

#	Ch	From Page	From Line	To Page	To Line	Comment
1	SPM	0	0	0	0	"Summary for policymakers" paid no attention to geoengineering options though such options are discussed in many chapters of WGII report. However it is very probably that only geoengineering methods will provide a possibility will stave off climatic crisis during the second part of the 21-st century. It should be kept in mind that climate engineering does not replace any adaptation measures. Such approaches have independent significance and can be realized in parallel. (RUSSIAN FEDERATION)
2	SPM	0	0	0	0	This new draft of the SPM shows some improvements since the last version but it still remains too qualitative in parts and is frequently too general to be of value to policy makers. In many cases the key messages for policy makers are still not as obvious as they could be. To that end, the SPM would benefit enormously from a) being more quantitative and more specific where possible, and b) having some clear headlines, as seen in WGI. These headlines may not be so easy for this report but there are some messages that stand out as good summaries of the issues or could be emphasised. (European Union)
3	SPM	0	0	0	0	General comment on confidence levels: Many confidence statements in the SPM appear to be too low. It is appreciated that the AR5 uncertainty guidance did not assign numeric values to the various confidence levels. However, many policymakers will continue to use the ones from the AR4 ( <a href="http://www.ipcc.ch/pdf/supporting-material/uncertainty-guidance-note_ar4.pdf">http://www.ipcc.ch/pdf/supporting-material/uncertainty-guidance-note_ar4.pdf</a> , Table 3), and a specific confidence statement in the AR5 should not be interpreted hugely differently from the AR4. In this SPM, even obvious statements are generally assigned "high confidence" only, which in the AR4 referred to a "about 8 out of 10 chance of being correct" (i.e. a "2 out of 10 chance of being incorrect"). Some well established scientific findings are represented with "low confidence" only, which will generally be interpreted as a "about 2 out of 10 chance of being correct" (i.e. a "8 out of 10 chance of being incorrect"). These confidence levels appear to misrepresent the level of agreement in the scientific community on important statements. Various examples are provided in the specific comments later on. An effort should be made across the SPM, but where relevant also in the underlying chapters, to use the confidence levels in a way that is not distorting the evidence base, including in the eyes of readers who still use the quantitatively calibrated levels of confidence from the AR4." (European Union)
4	SPM	0	0	0	0	While mitigation is the focus of WGIII, there is a need to discuss the links and interdependencies between mitigation and adaptation in the WGII SPM. There are some sentences relating to this issue spread out throughout the SPM but it would be better to include all of these in a dedicated section, as this issue is important for policy makers. (European Union)
5	SPM	0	0	0	0	Noticeably missing is an assessment of the risk associated with medium term climate change which is highly policy relevant. We suggest, if possible, to include a high level statement on this, even if it is difficult to make robust statements on this. (European Union)
6	SPM	0	0	0	0	The references to chapters, figures or boxes in full report are here as footnotes. In WGI AR5 we use the braces {} in the text directly. I suggest to follow this. (CZECH REPUBLIC)
7	SPM	0	0	0	0	Although the SPM is an awe-inspiring document that is based on scientifically sound evidence, we fear it will not reach its intended audience. The length and language of the SPM need to be made user-friendly, the clarity of the visuals and tables needs to be improved, and concrete proposals for dealing with real-world issues need to be made in a way that is aimed at topical and context-specific concerns. There is a lot of information in the SPM, but because it is all in there, it is difficult to imagine policymakers dealing with climate change on the basis of the SPM and the insights it offers. Furthermore, not many concrete numbers are mentioned. (NETHERLANDS)
8	SPM	0	0	0	0	The SPM contains many vague expressions and sentences. In terms of the uncertainty guidance note, we believe that many statements are too general to have substantive meaning. We counted that the word 'can' occurs 25 times in the text, the word 'may' 7 times, the word 'some' 27 times and the word 'often' 3 times. What is wrong with that? Suppose we say: Tomorrow person x will be a millionaire (low confidence). Everybody will agree since buying a lot in a lottery makes this (in theory) possible. Now we say: Tomorrow person x can be a millionaire (high confidence). This is also a correct expression: indeed person x can become a millionaire, although chances are very low. Thus, high confidence is correct. The problem with the latter sentence is that it does not give any concrete information to the reader. An example is the final conclusion on page 14, lines 38-45: three times 'can' and one time 'may' makes this final conclusion of the complete SPM pretty meaningless. This is reinforced by the difficult terms: 'adaptation limits', 'paradigms and goals' and 'governance structures'. (NETHERLANDS)
9	SPM	0	0	0	0	The communication of uncertainties has improved as compared to the SOD but is still inconsistent and confusing in many sections. Statements are especially difficult to interpret which have more than one approach combined in one statement (e.g., combinations of confidence levels with either likelihoods or 2D statements). An estimated 80 % of the statements have confidence levels, 15 % the two-dimensional scale (amount of evidence and agreement, a measure not used in the AR4 WG2 SPM, but only in WG3) and 5 % has a likelihood scale. It is not generally clear why one of the options has been chosen. (NETHERLANDS)
10	SPM	0	0	0	0	The word "robust" seems to go beyond the "amount of evidence" but already suggests a judgment about the quality (or level of agreement) of the statement. (NETHERLANDS)
11	SPM	0	0	0	0	It is mentioned sometimes that climate change can also result in positive effects. However, the assessment of these effects is still limited in the SPM. (NETHERLANDS)
12	SPM	0	0	0	0	It would be good to compare the new findings to AR4. Is it like WG-I that numbers are comparable but more robust? Or are projected impacts/risks now more severe and maybe even less? Such info would avoid the question "what's new?" when reading through the multiple still qualitative assessments/examples. (NETHERLANDS)
13	SPM	0	0	0	0	Since not all policymakers are scientifically educated, a "partial pressure" might not be very meaningful to them. It would be better to mention to which RCP the numbers (ppm-s, temperatures, $\mu\text{atm-s}$ ) are related. For example, this could be added in figure SPM.6B (lower panel). The corresponding RCPs are mentioned in the caption, but there is enough space to add the RCPs in the figure to keep all the information in one place. (NETHERLANDS)

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14	SPM	0	0	0	0	Many conclusions deal with global phenomena and projections containing very extensive referencing, and often include chapters that deal with specific regions (such as chapter 25 which concerns the region of Australasia). Although correct referencing is important, overly extensive referencing may not serve its purpose and reduce readability. We suggest the authors reduce the generalization in the references. To give some examples: Footnote 42 (page 8) can be reduced to "3.4-5, Table 3-2". Footnote 43, (page 8) can be reduced to "3.2, 3.4-5, Table 3-2". Footnote 46 (page 9) can be reduced to "5.3-5". The same can be applied to other footnotes, such as 47, 56, and more. (NETHERLANDS)
15	SPM	0	0	0	0	Review all the long sentences with multiple comma's on readability. Then consider replacing them by shorter ones. (NETHERLANDS)
16	SPM	0	0	0	0	As a general comment, we appreciate the effort in improving the main messages from previous version of the SPM, but we feel there are yet room to provide details, examples or more specific information when analysing impacts in regions, sectors or systems. We also suggest to highlight the main messages of the different sections, as done in AR5 WG I – SPM (SPAIN)
17	SPM	0	0	0	0	IPCC (WG II) report is an excellent work, as is the present SPM, summarizing the results obtained by the scientific community the last years. (ARGENTINA)
18	SPM	0	0	0	0	1. In general, the report does not address the impact of climate change damage social and economic situation in the regions in general and in the countries most affected by climate change in particular. 2. Eitnol to report that the relationship between climate change and the losses and damages in any region or country, or the definition of damages and losses and how defined and identified. 3. The report did not address the cases of immigration as a result of climate change and its impact on development plans and conflicts that will result from immigration, such as the lack of food and water and the resulting depreciation and other facilities as well as increased competition among citizens on food and housing. (EGYPT)
19	SPM	0	0	0	0	In general the text is very condensed, it is not possible to extract information for local scales of eg. Europe. (DENMARK)
20	SPM	0	0	0	0	Thank you for the SPM draft and for all the hard work put into developing it. The material is extremely relevant and interesting. In order to clarify the key messages of WG2, some extra work is needed. WG1 SPM contains clear highlighted conclusions which make it easy for the reader even just to scan the report through or to use these statements for communication purposes. Please try if a similar approach would work here. (FINLAND)
21	SPM	0	0	0	0	The text still needs rewriting and editing in order to be much better understandable for policy makers. (FINLAND)
22	SPM	0	0	0	0	The text of the summary report is rather general which is natural. However, quite a few times the generalizations were expanded using specifications such as "in many places, in some areas" etc. It would be interesting to the reader to get some specific examples where relevant. (FINLAND)
23	SPM	0	0	0	0	Tipping points of climate change related risks are not covered at all even though there is a lot of published literature. Request adding a short para on tipping points (INDIA)
24	SPM	0	0	0	0	Any evidence of loss of GDP at 2°C and 4°C? If yes, kindly provide a table (INDIA)
25	SPM	0	0	0	0	Any information on the "Loss and Damage" related issues. It will be useful to have a paragraph, given its importance, post-Warsaw agreement (INDIA)
26	SPM	0	0	0	0	Overall, the SPM is not providing more focused strategies to the policy makers. Largely the report seems to be 'Business as usual'. A strong focus on green technologies, natural resource conservation in tedium with developmental policies should have helpe (INDIA)
27	SPM	0	0	0	0	This document does not make any explicit reference to the effect to disease-carrying vectors. This will likely to reduce the much needed attention of health policy makers to vector borne diseases (INDIA)
28	SPM	0	0	0	0	More specific reference to section and sub-section may be provided for reference, as existing reference is not helpful (INDIA)
29	SPM	0	0	0	0	The SPM has considerably improved since the previous draft. Still, it remains somewhat difficult to find the key findings. One could consider using the similar kind of "headline messages" which was implemented in the WGI SPM. (SWEDEN)
30	SPM	0	0	0	0	The use of the calibrated uncertainty language should be checked. There are many occasions when the agreement and amount of evidence are both given explicitly, also when they suggest a rather high confidence level (e.g. "robust evidence, high agreement" on page 13, line 31), rather than using the summarizing confidence level. The latter would seem to be more in line with the guidance notes. If there is an important message in varying the usage of the calibrated uncertainty language, the reason should be made clear. (SWEDEN)
31	SPM	0	0	0	0	The SPM lacks a narrative. Section A is relatively coherent. Tables are good, but the rationale of the choice of figures is unclear. Sections B & C are more of a pick-and choose character from the different chapters. How to justify key risks – why were these risks chosen. If these "cherry picking" are related to WG III, it should be noted in some way to give a better understanding and it would help in the missing narrative. (SWEDEN)
32	SPM	0	0	0	0	Risk of too general messages due to differences among chapters/regions which makes it more difficult to inspire and create awareness at a more regional and local level of policy making (SWEDEN)
33	SPM	0	0	0	0	We thank the authors for presenting a lot of the results in figures and tables which makes the results easier to use for those who want to spread the results. However,, the figures and texts need further work before they can be efficiently used by policymakers at i.e. the regional and local level. (SWEDEN)
34	SPM	0	0	0	0	There is a problem when using different definitions of terms such as risks, vulnerability etc. which may have led the discussions in different way in the assessment. (SWEDEN)
35	SPM	0	0	0	0	We suggest tu eliminate in all text of SPM all statements with "Low Confidence" and to use for the Headlines (in bold) only with "High Confidence" or "Very High Confidence" or "Robust evidence" "or "High Agreement". (ITALY)
36	SPM	0	0	0	0	It should be add that in Southern Europe precipitation is projected to decrease, therefore drought will increase, and as a consequence yields will decrease and irrigation needs will increase (9.3, 23.2, 23.4, 23.9). (ITALY)
37	SPM	0	0	0	0	We are very surprised about the full lack of focus on EUROPE and on the MEDITERRANEAN REGION (SOUTH EUROPE) in SPM. THERE IS NO CONSISTENCY WITH THE SEVERAL EVIDENCES TO EUROPE AND MEDITERRANEAN IN THE FULL REPORT WGII. We founf only one reference to Europe and no references to Mediterranean at all in the SPM. We found in the full report strong statements on the Mediterranean in Chapter 1, 3, 4, 5, 6, 7, 9, 10, 13, 18, 19, 21, 23. (ITALY)

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38	SPM	0	0	0	0	Some of these evidences on Mediterranean in the Full Report have "HIGH CONFIDENCE". For example: 1) CHAPTER 4 - "There is growing evidence that climate induced changes in precipitation will significantly alter ecologically important attributes of hydrologic regimes in rivers and wetlands, and exacerbate impacts from human water use in developed river basins (high confidence in detection, medium confidence in attribution, see Cross-Chapter Box CCRF.." 2) CHAPTER 5- "• Observations performed near natural CO2 vents in the Mediterranean Sea show that diversity, biomass, and trophic complexity of rocky shore communities will decrease at future pH levels ( Barry et al. , 2011; Kroeker et al. , 2011; high confidence )." - "• Coupling of downscaled model projections using the SRES A1B scenario in the Western Mediterranean with relationships between mortality rates and maximum seawater temperature led Jordá et al. (2012) to conclude that seagrass meadows may become functionally extinct by 2050 to 2060 (high confidence )." 3) CHAPTER 18 - "• Warming of the Mediterranean has been associated with mass mortality events as well as invasions and spread of new warm water species, resulting in the 'tropicalisation' of fauna with high confidence in a major role for climate " 4) CHAPTER 23 - "Changes in extreme precipitation depend on the region, with a high confidence of increased extreme precipitation in Northern Europe (all seasons) and Continental Europe (except summer). Future projections are regionally and seasonally different in Southern Europe..." - "Climate change has affected animal health in Europe [high confidence ]." - "• Sea levels have increased rapidly in some areas over recent decades and are also strongly influenced by NAO phases. The rate has been approximately 3.4 mm yr-1 (1990–2009) in the North-west Mediterranean (high confidence ) " - "The recent spread of warm-water species that have invaded through the Straits of Gibraltar and the Suez Canal into cooler northern areas is leading to the 'tropicalisation' of Mediterranean fauna (high confidence ) " (ITALY)
39	SPM	0	0	0	0	In many cases quantitative data are presented without a statement of the level of evidence and confidence (ITALY)
40	SPM	0	0	0	0	We strongly suggest to insert at least a couple of paragraphs concerning the impacts and vulnerability to climate change of the Mediterranean area in the SPM. This will be very consistent with the contents of the Full Report WGII. Finally we recall the concept of HOT SPOT for the Mediterranean, as has been shown in Chapter 21 of the full report WGII where some peer-reviewed studies have been quoted which identify "the Mediterranean Basin, Central America, Central and West Africa, the Northern high latitude regions, the Amazon, the southwestern United States, Southeast Asia and the Tibetan Plateau as prominent hot-spots". These important concept of hot spot should be shown in the SPM. (ITALY)
41	SPM	0	0	0	0	The effort to summarize and synthesize the wealth of information of the 30 chapters of the WGII report into less than 30 concise pages containing the most relevant information for policy makers is highly appreciated. The assessment of risks under different warming scenarios together with potential response options including adaptation potential is very useful. In this context we value in particular Table SPM.1 and Box SPM.4 Figure 1. Our comments are meant to further improve the text. (GERMANY)
42	SPM	0	0	0	0	THIS IS ONE OF THE HIGH PRIORITY COMMENTS OF GERMANY: The information on risks of climate change is highly appreciated. However, the foundations and concepts of risk assessment are not transparent to the reader. This weakens the whole report. We suggest extending Box SPM.1, L 27-19 to clearly describe the risk approach of WGII. 1) Please clarify the concept of risk and its analysis . Do you refer to "risks for/from adaptation"? Do you refer to "risks arising from climate change (see risk definition Box SPM1; partly Box SPM.4) and/or from development pathways" (compare Figure SPM.1)? Or as stated in the first sentence (P 6 L 30-31), do you analyse variations in climate change and development choices on a pre-given set (compare Box SPM.4) of risks identified? See also specific comments related to risk, e.g. P 2, L 14; P 15, L 29; P 6, L 31-32; P 29 SPM.8. 2) If the assessment relies on expert judgements and choices (e.g., key risks), please explain in more detail the methodology for the judgement including references to the underlying report. 3) Risk assessments presented in a very qualitative way (e.g. pictograms in Table SPM.1, reasons for concern), should be complemented by explanations on how risk has been assessed for individual regions, sectors, or systems, and how aggregated statements have been obtained. (GERMANY)
43	SPM	0	0	0	0	THIS IS ONE OF THE HIGH PRIORITY COMMENTS OF GERMANY: To facilitate readability and increase usability of the SPM, it would be extremely helpful to highlight the most important statements of each section by giving "headline statements". This has been done by WGI and has proven very useful. (GERMANY)
44	SPM	0	0	0	0	THIS IS ONE OF THE HIGH PRIORITY COMMENTS OF GERMANY: Many statements are very general, using expressions like "in some regions, in some sectors" etc. Please add more specific information wherever possible. In addition, many statements, even those in bold seem somewhat obvious for the reader who has not been part of the discussions, or have text book character. Examples are P5 L15, or P14 L17-21. If these statements cannot be put into context, to help the reader understand, if they are important, they should not be bold. (GERMANY)
45	SPM	0	0	0	0	Please add short titles to individual figures, not just letters, to facilitate readability. (GERMANY)
46	SPM	0	0	0	0	The SPM focuses on 2 and 4°C, there is no information on other temperature scenarios (e.g. on a 3°C world). Please indicate the reasons for this choice, in particular for 4°C as this is not rooted in UNFCCC decisions. The SPM does not give information on 1.5 °C, please add a comment, why this is not the case as 1.5°C is a topic in UNFCCC (e.g. under the 2013-2015 Review). (GERMANY)
47	SPM	0	0	0	0	Please indicate the link to the RCP of the 2 and 4 °C worlds to the RCP scenarios in order to increase comparability across Working Group Reports. (GERMANY)
48	SPM	0	0	0	0	Sea level rise is a very important topic under the different scenarios and even under the most optimistic one we will have severe impacts due to sea level rise. It is mentioned frequently in the SPM. We suggest to have at least one figure on global sea level rise indicating regional "hot-spots". (GERMANY)
49	SPM	0	0	0	0	Although WGIII deals with mitigation issues in detail, the SPM of WGII makes mention of mitigation. We see this within the mandate of WGII as it is due to the causal linking of mitigation, the magnitude of risks and adaptation challenges. We recommend the inclusion of a clarifying sentence, preferably in the introduction. E.g. on p.2 l.7 one could write: "The SPM of WGII necessarily mentions of mitigation because mitigation as an option of risk management will influence the level of risk as well as adaptation, or even prevent situations which cannot be managed adequately by adaptation." (GERMANY)

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50	SPM	0	0	0	0	THIS IS ONE OF THE HIGH PRIORITY COMMENTS OF GERMANY: Information on the costs for different climate change impacts, especially for non-action is currently very limited in the SPM. WGIII, in contrast, provides much more information on financial issues related to mitigation. This might be misconceived as mitigation being more expensive than non-action. We suggest adding information to the SPM of WGII on the costs of impacts in the case of non-action related to different emission pathways. If the scientific basis on this issue is too uncertain, at least this should be stated clearly. (GERMANY)
51	SPM	0	0	0	0	Limits of adaptation are shown in Table SPM.1, but the text does not sufficiently address that they exist and what this means for natural and human systems and how the probability is linked to different emission scenarios. Please add this information. (GERMANY)
52	SPM	0	0	0	0	To get the full information about observed and projected changes in annual average temperature, please add the information about the observed warming, which is 0,61 [0,55 to 0,67] °C from 1850 - 1900 to the reference period (1986 - 2005). [WG I-SPM, table SPM.2, p. 21]. This should be done in the text and in all figures. (GERMANY)
53	SPM	0	0	0	0	In this SPM, uncertainty is given in some cases in terms of the levels of agreement and evidence, and in other cases in terms of the synthesized level of confidence. This is confusing for the reader who has already to understand the IPCC-concepts of "likelihood" and "confidence" which are not obvious to non-experts. In addition, the choice of expressing confidence is not transparent. For example, on P6 L 5 a statement is characterized with "robust evidence, high agreement" which clearly qualifies this statement for "high confidence", as both the levels of evidence and agreement are high. Other examples include P6 L 4, P8 L31 and L37, P11 L22 and L51, P12 L 11, P13 L48. Please give the synthesized level of confidence wherever possible. This would facilitate the understanding of the information given and the usability of the SPM. (GERMANY)
54	SPM	0	0	0	0	The only general concern is whether the language is not sometimes overly technical for Policymakers. (POLAND)
55	SPM	0	0	0	0	Two issues are missing; mainstreaming adaptation measures with national policies (may be in A-3), and cross-sectoral issues (eg.spatial management) (in B-1) . For policy makers it is also unclear what does it mean "preindustrial levels". In some reports it refers to mid of 18 c, in some temperature profiles to mid of 19 c, or beginning of 20c. It might be clarified in Box SPM 1 (Terms Critical...) (POLAND)
56	SPM	0	0	0	0	the role of NGO's and education should be underlined in part C (POLAND)
57	SPM	0	0	0	0	Understanding climate changes, and simultaneously changes in water management, may be possible thanks to proper level of acceptance among citizens. In order to achieve this goal, one should take care of new educational programs. It is also important to <u>organize process of society involvement properly</u> (POLAND)
58	SPM	0	0	0	0	Certain external factors, like distribution of income, may cause appearance of the new economic tools used for water management and lead to the modification of water law. Nevertheless, it may be presumed that implementation of the rule mentioned above will <u>not be possible for particular water services.</u> (POLAND)
59	SPM	0	0	0	0	The path of economic development may determine changes in fields like life conditions, state policy concerning using of water resources and environment protection. The variant analysis will allow to take adaptive actions in economic and environmental policy (POLAND)
60	SPM	0	0	0	0	The Government of Belgium would like to express its appreciation for the very large amount of work that went into the WGII contribution to the AR5, and this SPM The comments made below are meant to further improve the text of the SPM, in order to make it more policy-relevant, while fully respecting the scientific assessment made in the underlying report. (BELGIUM)
61	SPM	0	0	0	0	Out of a total of 71 authors of the draft SPM, only 19 (taking into account double affiliations) originate from developing countries, while 18 authors come from the USA alone. A better balance needs to be pursued in the future assessment. (BELGIUM)
62	SPM	0	0	0	0	The messages of highest relevance to policymakers are not sufficiently highlighted. Key messages needs to be more emphasised. We would strongly welcome the insertion of headline statements at the beginning of each section (as in the SPM of WG1). These statements would be written so that, taken together, they provide a concise summary. (BELGIUM)
63	SPM	0	0	0	0	Many statements are too general. In many cases, it is very important to clarify the link between the considered issue and specific <u>emission scenarios or temperature increase levels.</u> (BELGIUM)
64	SPM	0	0	0	0	There are so many references in the footnotes that it is often difficult to find where there is more information, or where the interested reader should go first. Could you please highlight (e.g. show in bold letters, or sort by relevance) one or two key references to the underlying chapters, for each issue ? (the fact that it is done could then be explained in the introduction) (BELGIUM)
65	SPM	0	0	0	0	We suggest using a single list of figure numbers, i.e. avoiding references such as "Box SPM.4 Figure 1" ( labelling this figure "SPM.5" instead). This would facilitate the identification of figures when communicating about the report (avoiding potential confusion about which "SPM Figure 1" one is referring to) (BELGIUM)
66	SPM	0	0	0	0	There are far too many statements highlighted in bold: many of these do not carry additional important information (for example, page 12 lines 10-11 would not be needed in a short list of key statements if line 5-7 is included). In addition, the purpose of those bold sentences starting each paragraph is unclear. We would like to ask for an explanation of the choices made to structure the document, written in the introduction, as done in the report of the WGI. (BELGIUM)
67	SPM	0	0	0	0	Information related to costs is of particular importance for policymakers, and do not appear sufficiently reflected in this SPM; some more detail could be provided on economic losses associated with different levels of climate change and on adaptation costs, with a clear description of uncertainties, hypotheses, and limitations. (BELGIUM)
68	SPM	0	0	0	0	We suggest looking into the FAQs for material that could be useful in the SPM. As a rule, we regard the language used in the FAQs as much more relevant to policymakers than this draft SPM (BELGIUM)
69	SPM	0	0	0	0	The SPM is already in quite good shape and the revisions from the first draft are welcomed. (AUSTRIA)
70	SPM	0	0	0	0	It is noted that the SPM follows a new concept by including references to the underlying report in footnotes. It would be preferred to use the traditional format for the sake of consistency. Such change might be considered for future assessment reports. (AUSTRIA)
71	SPM	0	0	0	0	It is noted that the SPM does not include a list of abbreviations. It would be userfriendly to include such list as also abbreviations (such as RFC - reasons for concern) are used. (AUSTRIA)

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72	SPM	0	0	0	0	It is noted that limits of adaptation are not addressed in the SPM. However, they become apparent, e.g. in table SPM.1 that is one of the most relevant results of the assessment. It is strongly recommended to add a few lines explaining the limits of adaptation. Otherwise the figure SPM.1 is difficult to comprehend. (AUSTRIA)
73	SPM	0	0	0	0	Given the reality of the limits of adaptation it seems also important to highlight the challenges of transformation that are the logical consequence of crossing those limits of adaptation. Given the relevance of that topic for policy makers again a few lines should summarize the information included in the main report on challenges of transformation. (AUSTRIA)
74	SPM	0	0	0	0	Given the importance of risk management to address climate change risks in an appropriate manner and given the poor understanding of most of the readers on the nature of risks (that differs significantly from costs and benefits) it is suggested to include a short box that explains in as simple as possible words to the reader how risks add up and which risk is most significant for the sum of risks associated with a given activity. (AUSTRIA)
75	SPM	0	0	0	0	Given the significance of table SPM.1 a statement is required to inform the reader about the potential of climate change to change the current "risk landscape" significantly as it is very likely the risks related to climate change will increase throughout the 21 century. (AUSTRIA)
76	SPM	0	0	0	0	The SPM does not address the social dimension of adaptation which becomes visible if the limits of adaptation are related to financial and/or technological constraints. (AUSTRIA)
77	SPM	0	0	0	0	The SPM lacks "high level" key messages, comparable to those identified in the SPM of WG1. Given the current structure of the SPM it seems not really helpful to identify the "key message" for each section/sub-section. However, the following suggestions try to identify the most policy relevant high level key messages: (1) Key risks are increasing in all regions of the world throughout the 21st century under all scenarios, independent from efforts related to adaptation and mitigation. (2) An iterative risk management approach, combining adaptation and mitigation, could ensure that climate-resilient pathways are identified and would allow to significantly reduce climate change and its impacts. (3) More specifically, due consideration should be given to the interlinkages of energy, food/fibre, water, land use, and climate change as those have significant implications for the security of supply of energy, food, and water; adaptation and mitigation pathways; and health and economic impacts. This nexus is critical to effective climate-resilient-pathway decision making. (AUSTRIA)
78	SPM	0	0	0	0	The boxed headline statements in WGI SPM were incredibly powerful and successfully conveyed the overall messages and narrative from WGI; they made it accessible to policy makers, public and media. We would ask that boxed headline messages and 2-page summary approach is repeated for WGII SPM and that delegations are able to see the draft headline messages ahead of or at the start of the approval session. (UK)
79	SPM	0	0	0	0	The overall balance of the SPM is not helpful in our view. We would like to see a much greater emphasis and fuller treatment of climate risks, rather than on theory/principles (text book like). The latter is particularly true of the adaptation section. (UK)
80	SPM	0	0	0	0	Policy-makers are primarily interested in the potential impacts of climate change on people. The SPM gives many statements around topics with the higher levels of evidence quality/agreement, to the exclusion of statements about topics of interest to policy makers for which confidence is lower. It would be wrong to leave relevant information in underlying chapters (e.g. the first page of the SPM highlights the risks to Central American amphibians, but the no longer includes the text 'Emerging risks include exceedance of human physiological limits in some areas for a global temperature rise of 7 degrees' as per the earlier draft (dated 28 March 2013). Risks which are low probability but very high impact are at least as important for policy-making, if not more important, than central-estimate predictions. (UK)
81	SPM	0	0	0	0	Many of the assertions are over confident (use 'will' instead of 'could') and some statements are attributed high confidence when the underlying chapters stress the uncertainty/simplistic approach (e.g. economics TBC) risking undermining credibility of the SPM. (UK)
82	SPM	0	0	0	0	The evidence base in some sections is biased towards the case of developing countries and poverty reduction (likely due to focus of underlying available literature). IPCC has no poverty-reduction mandate so regional coverage should be balanced. (UK)
83	SPM	0	0	0	0	On occasion, the text infers political viewpoints (e.g. regarding sufficiency of financial flows for adaptation, without noting imperfections in identifying volumes of such flows). (UK)
84	SPM	0	0	0	0	In places, the SPM leaves the reader with an impression that the contribution of climate change to vulnerability is of little significance compared to other drivers/stressors, and conveys an incorrect message that climate impacts and adaptation are only an issue for developing countries and poor people. (UK)
85	SPM	0	0	0	0	The current structure of the SPM makes it hard to read and to follow. A restructuring might improve the flow and readability. A more logical structure might be to define observed risks, then describe current and future risks, before describing adaptation and decision making as the solutions. This would comprise re-ordering sections to be - observed impacts, vulnerability and exposure (A1) - future risks and opportunities and adaptive capacity (B1-3) - adaptation principles and decision-making (A2, A3 and C1, C3). (UK)
86	SPM	0	0	0	0	It would be useful to have a distinct section/box that clearly communicates the difference / increased knowledge we now have since AR4. (UK)
87	SPM	0	0	0	0	Where present, the description of potential impacts for 2°C and 4°C of warming above pre-industrial are useful, but they are not these two temperature warming scenarios are not consistently used throughout the SPM. It would be helpful for the SPM to acknowledge that warming could potentially be significantly above 4°C; at present the text gives the impression that 4°C is a worse case scenario. Temperature baselines should be consistent throughout WGII and be consistent with those set out, after considerable deliberation. by WGI. (UK)
88	SPM	0	0	0	0	It would also provide useful context for the reader for the different Representative Concentration Pathways (RCPs) to be given a high level description e.g. 'aggressive mitigation' or 'business as usual high emissions'. (UK)
89	SPM	0	0	0	0	Government delegations need to see the full revised version of the SPM text in advance of the start of the approval session in Japan. This is to allow us time to consider the text. At WGI governments could did not initially see the full text of the document, making commenting/discussion more difficult. (UK)
90	SPM	0	0	0	0	The previous draft of the SPM had a useful section - Box SPM5 - on the consequences of a >4 degree temperature increase. (This was on page 15 of the previous draft of the SPM). It is useful to have the impacts of a 4 degree rise summarised in one place. Could this box be reinstated? (UK)

#	Ch	From Page	From Line	To Page	To Line	Comment
91	SPM	0	0	0	0	Canada strongly recommends that the format of the SPM be revised to make clear the main, high level messages that policymakers should remember from the SPM. As currently written, the bolded statements are too numerous to facilitate effective communication with policymakers. The purpose of the bolded statements is also inconsistent and unclear - if they are intended to introduce or summarize the findings in each paragraph, then it is important that the sentences in the supporting paragraph directly link to the bolded sentence. In order to ensure consistency across the AR5, we recommend that WGII and WGIII use a format consistent with the "headline" statements that were used in the WGI report. Canada found these headline statements to be a useful format for communicating about the WGI report. (CANADA)
92	SPM	0	0	0	0	Canada continues to have significant concerns with the use of the two terms "era of committed climate change" and "era of climate options", as their interpretation can be misleading to policymakers and the terms have no basis in the existing scientific literature. We strongly recommend removing these terms and instead simply writing the representative time periods for considering near-term versus long-term impacts. There were no instances in the SPM where the use of these terms added additional value to a sentence - in all cases it would be more effective and clear to replace them with the representative time periods. Canada has included further comments where these terms appear in the text recommending their removal. (CANADA)
93	SPM	0	0	0	0	To facilitate effective communication of the SPM, Canada suggests that it would be very helpful if, throughout the SPM, more efforts were made to highlight new results, and advances in understanding and/or evidence since the AR4. The question "what's new since the AR4" is one that policymakers tend to ask and the answer is not readily apparent in this version of the SPM. (CANADA)
94	SPM	0	0	0	0	There are a number of instances in this SPM where the use of confidence statements is questionable or not necessary - we recommend that this be reviewed throughout the SPM. General statements about, for example, recommended approaches to a problem, or factors to be considered, do not need a confidence statement attached. Removal of unnecessary confidence statements would also help to make the SPM easier to read. In some cases, the authors should also consider whether it is more appropriate to describe the evidence for statements in the SPM using evidence/agreement statements. This would help to improve the utility of the report by identifying areas where evidence and agreement remain limited. (CANADA)
95	SPM	0	0	0	0	Many places in the SPM include reference to levels of risk, particularly Box SPM.4 Figure 1 and Table SPM.1 and associated text. It would be very useful to include criteria for determining risk level (presumably related to probability and consequence). Scale becomes a critical factor for consequence, as something that is a "high risk" at the local scale may be insignificant at the global scale. Understanding how these risk levels were determined is important for the application of the SPM to policy processes such as the UNFCCC Review. (CANADA)
96	SPM	0	0	0	0	In general, the SPM would benefit from being written in simpler terms, with fewer compound sentences and less use of disciplinary language and jargon. Assessment statements about real world impacts are more useful than more academic statements focused on approaches used and debates carried out in the literature. In a number of places, examples are used effectively to help convey meaning of statements using technical jargon. (CANADA)
97	SPM	0	0	0	0	The use of footnotes rather than in-text chapter references does improve the readability of the document. However, Canada did experience difficulty in understanding traceability of findings in the SPM to the underlying chapters. We also found that it was more difficult to identify footnotes containing important supplementary information about the SPM amongst the chapter references. Therefore, we suggest that important footnotes be integrated into the main text. (CANADA)
98	SPM	0	0	0	0	There are several opportunities to remove redundant figures from the SPM: (1) Figures SPM.1 and SPM.8 are repetitive and both of them are not necessary in the SPM. Suggest that the authors consider deleting Figure SPM.1, and then moving Figure SPM.8 up in the SPM, as this figure provides information about how the various sections of the SPM are related; (2) We recommend deleting Figure SPM.3, as the process shown in this diagram will already be well-known and understood by policymakers and others; and (3) We recommend deleting Figure SPM. 4 as it contains purely physical climate results, which is the domain of WGI, and it is repetitive of the information contained in Box SPM.4 Figure 1. Since Figure SPM.4 is a different presentation of information already contained in the WGI report, we are also concerned that presenting a different version of the figure in the WGII report may create potential error risks for the IPCC. (CANADA)
99	SPM	0	0	0	0	The overall section structure of SPM needs a careful pondering to avoid cross-sectional repetitions in content and improve the flow of presentation. As stated in paragraph 3 in the Introduction, Section B examines the range of future risks and potential benefits. Section C considers principles for effective adaptation. This sequence is logical and clear. However, in the following sections that address respective issues, the focus of each section is rather unclear. The reports on impact and adaptation are often mixed in each section without clear logic. For example: the title of Section B) is Future Risks and Opportunities for Adaptation. In this section, the potential adaptations/options are mentioned in an isolated and single faceted way for individual sectors or regions. Two problems arise here: one is that adaptations in individual sectors often require multiple approaches. A single measure cannot address the often complicated issues concerning effective adaptation; another problem is that this breaks the flow of the presentation and makes it difficult for readers to follow. In Section C, some adaptive issues mentioned in Section B are repeated, and some are not mentioned. In short, the entire report of SPM should be checked for consistency and logical sequence. Appointing a single person from the author team to take this task could be the most efficient way to do so. (SWITZERLAND)
100	SPM	0	0	0	0	It would be good to reduce the amount of generalized terms and statements, it would definitely reinforce the SPM: e.g. "Projected changes in climate and increasing atmospheric CO2 will have positive effects for some sectors in some locations." - projected changes over which timeframe? - some sectors and some locations such as? (SWITZERLAND)

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101	SPM	0	0	0	0	On the communication of the degree of confidence: the level of confidence (low, medium, high etc.) is sometimes provided, while in other cases - the degree of evidence (limited, medium, or robust) and agreement (low, medium, or high). Box SPM.2 explaining the communication of the degree of certainty includes no information as to when the level of confidence is provided and in which cases the qualifiers of the degree of evidence /agreement are given. Box TS.3 in the TS and 1.1. in Chapter 1 provide further details as follows: "Each finding has its foundation in evaluation of associated evidence and agreement. [...] In many cases, assessment authors additionally evaluate their confidence about the validity of a finding, providing a synthesis of the evaluation of evidence and agreement." Which exactly are these cases, particularly as later on it is stated "For a given evidence and agreement statement, different confidence levels could be assigned"? This should be made clear to the reader. (SWITZERLAND)
102	SPM	0	0	0	0	The overall SPM is written well. The information is rich and reflects the latest knowledge of the possible impacts of climate change on human systems and ecosystems. Some minor suggestions for the improvement of the readability of SPM can be done: 1) Given most of policy makers (PMs) have limited knowledge of the scientific bases of the relevant issues, it would be good to use more direct and less technical terminology in SPM. 2) Some statements are too general with no specific quantitative measures of the impacts, such as percentage and absolute quantities/values. 3) Some of the impacts stated are not directly related to climate change. (e.g., page 3, lines 30-33, 'Impacts from recent extreme climate events.... demonstrate significant vulnerability and exposure of some ecosystems and many human systems to climate variability'; page 3, lines 35-36, 'Climate related hazards constitutes an additional burden to people living in poverty, ...'). They can be either deleted, shortened, or combined with other items. This can shorten the text and leave more room for addressing the most important points. 4) The size of the text is too small. This may be because of the page limit of SPM. However, the small text makes it very difficult and tiresome to read. This is particularly a concern given the situation that most of PMs with real influence and power are senior people (e.g., over 45 years old). (SWITZERLAND)
103	SPM	0	0	0	0	Please consider to phrase the bolded key findings in such a way that, taken together, they provide a concise summary of the report. (NORWAY)
104	SPM	0	0	0	0	For all the figures in the SPM it would be helpful if they all had an individual headline that describes the key message. E.g. for Figure SPM.2., SPM.3., SPM.4., and SPM.6. the first sentence in their caption could be used as such. For the other figures you should develop short describing headlines. (NORWAY)
105	SPM	0	0	0	0	In our opinion it is very unfortunate that WGII use a significantly different definition of the term "tipping point". The last part of the definition "and does not return to the initial state even if the drivers of the change are abated" gives this term a very different content than in WGI. This will mean that you require that a "tipping point" needs to be irreversible and in that case we can hardly see a need for the term since every phenomena would be covered by "irreversibility". We believe that in this case you would also need to include a timeperspective related to the "return period" (as done in the definition for "irreversibility" in WGI Glossary). This will also create a lot of confusion for policymakers. Hence we recommend that WGII use a definition that does not contradict the WGI definition. E.g. the part "and does not return to the initial state even if the drivers of the change are abated" could be deleted from the definition. It would also be helpful if you include a definition for "irreversibility" in the Glossary. (NORWAY)
106	SPM	0	0	0	0	Please consider how the term risk is used throughout the report. I.e. the term risk is very much used in this report on issues where the AR4 WGII SPM used the term impact (potential impact). While important risks arise as a result of climate change, not all potential impacts of climate change are readily understood as risks, or should be addressed through risk management, for example slow-onset climate change, deeper social and human dimensions of vulnerability that are very important for adaptation and transformation. Words like "risk" and "hazard", and "risk management" might be understood in different ways and may not necessarily reflect all potential impacts and management strategies, since this concept have such a strong linkage to the disaster risk field. Please consider how this could be clarified in the SPM. (NORWAY)
107	SPM	0	0	0	0	South Africa welcomes the report as an improvement on the knowledge of climate impacts and vulnerability. The detailed information provided on table SPM.1.on climate related drivers of impacts, risks and potential for adaptation on Africa and other regions is very much useful. (SOUTH AFRICA)
108	SPM	0	0	0	0	The SPM ought to provide more findings related to observed impacts given the large body of literature available on the topic since AR4. One way of doing this may be to translate some of the findings from Figure SPM.2 (which are rather complex and potentially difficult for a policymaker to understand) into text and providing appropriate context for illustrating how these impacts affect society. (USA)
109	SPM	0	0	0	0	The overall balance of text between impacts (A.1) and decision making context (A.3) seems skewed. Please consider adding one or both of the following, which are based on the TS: (1) In many regions, changing precipitation or melting snow and ice are altering hydrological systems, reducing water resources and degrading water quality; and (2) Coastal systems are particularly vulnerable to changes in sea level and ocean temperature and to ocean acidification (USA)
110	SPM	0	0	0	0	There is a surprising lack of quantitative information in the SPM. There is a deep - and largely new - body of literature since AR4 that presents quantified impacts under various scenarios. Elevating more examples of that information to the SPM would be useful. (USA)
111	SPM	0	0	0	0	It would be useful if there were more of a framing of impacts in a 1.5C world vs a 2C world vs a 4C world. If differences are poorly understood, then explicitly saying so would be useful, as well. In its current form, the SPM is detached from current international policy discussions. (USA)
112	SPM	0	0	0	0	The authors need to have a careful look at the strength of the language used throughout the SPM. Specifically, the word "will" is used throughout when "is projected to" is a far more appropriate characterization of any potential climate-induced outcome. It is important to clearly distinguish between facts and projections. (USA)
113	SPM	0	0	0	0	The authors should contextualize the findings better - whether it be by presenting WG1 findings or by relating impacts to specific RCP scenarios. (USA)
114	SPM	0	0	0	0	When presenting what a potential impact might be, the authors need to be certain they include a reference to what scenario (warming, population, development, etc.) the stated impact is connected with. Without it, statements can be very misleading to a policymaker. (USA)

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115	SPM	0	0	0	0	The 1st paragraph could be strengthened substantially, and made more compelling by drawing specifics from Table TS.1 and the rest of the SPM impact evaluations. Also, allowing for the footnoted caveat (1) on the bottom of page 2, the 2nd sentence could be much stronger and more specific. Specific text referencing Fig. SPM.2 would also be powerful. The authors might also consider including items from the BAMS attribution issues for 2011 and 2012 ( <a href="http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-12-00021.1">http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-12-00021.1</a> <a href="http://www.ametsoc.org/2012extremeeventsclimate.pdf">http://www.ametsoc.org/2012extremeeventsclimate.pdf</a> ). (USA)
116	SPM	0	0	0	0	The flow of the document would be improved if all paragraphs under A-3 and one paragraph under B (page 7, lines 13-18) would be moved to section C "Managing Future Risks and Building Resilience". This would help the logical flow of the SPM: Observations (including adaptation experience to date) > Future Risks > Managing Future Risks. Furthermore, the authors should consider making the current paragraph under A-3 (page 5, lines 15-23) become the first paragraph under section C because this message about the benefits of adaptation and mitigation occurring over different timeframes is likely the most important message in what should be a revised section C. (USA)
117	SPM	0	0	0	0	The use of the comparison timeframe 1986-2005 as a baseline has obvious policy value (present day), but ignores impacts from preindustrial to that point. This seems to be potentially misleading (or liable to be misinterpreted) and should be made clear. If the authors choose to retain this timeframe, an explicit statement should be included that highlights that impacts did occur prior to that period but are not included in the analyses. (USA)
118	SPM	0	0	0	0	There are still missing pieces of information, or gaps in the SPM that are carried through to the TS and other chapters. For instance, the statement that climate change will decrease productivity and increase the vulnerability of food security systems is only half correct. Food production directly competes these days for biofuel production. The authors should acknowledge such facets (including these multiple stressors on systems) in the SPM. (USA)
119	SPM	0	0	0	0	While a paragraph in the SPM calls out the evidence of effects on the insurance industry other conclusions from chapter 10 with regard to sectoral impacts are not adequately reflected here. At a minimum, the authors should call out evidence on the energy, health, and recreation/tourism sectors since they are discussed in great detail in chapter 10. (USA)
120	SPM	0	0	0	0	A number of statements are made in section B-2 where it is not clarified if the statement is equally valid under all RCPs or only under the higher-end RCPs. (USA)
121	SPM	0	0	0	0	The chapter uses numerous reference time periods including, "from preindustrial", 1986-2005, era of climate commitment, era of climate options, last half of the 21st century. The authors are encouraged to use these different timeframes judiciously and to be clear as to what timeframe is being discussed in any given statement. (USA)
122	SPM	0	0	0	0	The header material for the SPM says that agreement, confidence and evidence levels will be indicated for the topical section heads and are intended to be applied to all subsidiary points under those heads unless otherwise labeled. In practice, however, this results in confusion where no confidence level is given where one can be taken from other chapters in WGII or WGI; and where a single agreement, confidence or evidence level is given following a compound sentence so that the actual description being modified by the agreement confidence or evidence level is unclear. (USA)
123	SPM	0	0	0	0	There are two conclusions regarding climate change and violent conflict in the SPM. Page 3 (lines 42-43) says that "violent conflict influences vulnerability to climate change" citing chapters 12.5, 19.4 and 19.6. Page 12 (lines 5-8) says that "climate change influences risks from violent conflict" citing chapters 12.5, 13.2 and 19.4. We have two concerns with these statements: 1) Both statements are based on language in the underlying chapters that is qualified by statements such as "emerging area of research" "modest bodies of research" and "very little research". Highlighting such new and uncertain scientific findings in the SPM seems premature. We suggest that these statements and the subsequent related text be removed. 2) If the authors chose to retain the comments, we suggest that they be consolidated and some discussion be provided for the seemingly circular relationship between these two factors. (USA)
124	SPM	0	0	0	0	The following elements from ch14 are missing from the SPM; the authors should consider including them to strengthen the SPM's presentation and increase its utility for policymakers: p4, (Executive Summary) change in definition of adaptation to include purposefulness; p5, (Executive Summary) definition of adaptation deficit; p12, (14.2.5) financial mechanisms and disaster relief and the connection to adaptation; p15, (14.3.1.3) ecosystem-based adaptation definitions and examples; p16, (14.3.2) "education is a key indicator for how people select adaptation options"; p18, (14.3.4) illuminating details co-benefits of adaptation; p20, (14.4.2) "Trends in Assessments"; p22 (14.5) "Measuring Adaptation"; p27, (14.5.4) climate change community far from common standards for adaptation option assessment; p28, (14.6) "Maladaptation" need not be inadvertent - a change from AR3 and AR4; p30, (14.7) success stories of collaboration. (USA)
125	SPM	0	0	0	0	It would be useful to pull into the SPM key points from Chapter 15, particularly into Section C: (1) literature currently focuses on impacts-led approaches to adaptation, i.e., construction of defensive infrastructure, and less on human vulnerability; (2) knowledge about impacts and vulnerabilities does not necessarily lead to most optimal adaptation policy decisions; (3) the fast growth of international mechanisms for supporting adaptation planning has assisted in the creation of adaptation strategies, plans, and actions; (4) most adaptation strategies and plans are regarded as the start of a policy process rather than its culmination; (5) climate adaptation efforts reported on at present are often piecemeal and fragmented, dealing with partial solutions and approaches, rather than a more full scale implementation; (6) the particular challenge of implementing local and short term decisions in the context of long-term climate information; (7) adaptive capacity signals potential but does not guarantee adaptive action; and (8) there have been very few documented changes in forecasts, plans, design criteria, etc. in response to climate risks. (USA)



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126	SPM	0	0	0	0	The following elements from ch16 are missing from the SPM; the authors should consider including them to strengthen the SPM's presentation and increase its utility for policymakers: p4, (Executive Summary) "but also exploiting available mechanisms for expanding the adaptive capacity of human and natural systems"; p4, (16.1) the chapter is organized by considerations grouped in three length-scales: near, medium, and longer, emphasizing the importance of integrating decisions across these scales to achieve the desired outcomes; p14, (16.3.2.1) "Globally, economic losses from climate extremes are doubling approximately every one to two decades ..."; p25, (16.4.2) discussion of transformational adaptation options and limits should be grouped with the definitions added from ch14 as listed above here; p29, (16.7) ethical dimensions of adaptation options and constraints are not presented as such in the SPM though several individual, related concepts are listed; p36 (Box CC-EA) information on Ecosystem-based Adaptation should be combined with the definition offered in ch14 as listed above here and included to give policy-makers a more complete sense of the options and benefits to adaptation. (USA)
127	SPM	0	0	0	0	Results from the projections of the CMIP5 experiments are reported without labeling the experiment, the model or ensemble of models, or the RCP that forced the models. Clarity on these points is very important context and the text should be revised throughout as needed. (USA)
128	SPM	0	0	0	0	The underlying chapters on human health and human security have both missed the point that both disease outbreaks and other acute health issues - as well as longer term changes in climate related health trends from chronic and infectious diseases - can exacerbate adaptation strategies. This was originally covered at least modestly in Chapter 12 but seems to have been omitted now. The authors should consider adding this back in and include a sentence in SPM related to either ch. 11 or 12. (USA)
129	SPM	0	0	0	0	Economic diversification is an important tool to adapt to climate change and a key factor for a country's ability to undergo adaptation efforts; as articulated in the underlying report "The effectiveness of adaptation efforts is likely to vary significantly between and within regions, depending on geographic location, vulnerability to current climate extremes, level of economic diversification and wealth, and institutional capacity". (Ch 9) (SAUDI ARABIA)
130	SPM	0	0	0	0	Economic diversification is a recognized tool for adaptation as an "actions that reduce the risks of observed or projected climate change even if they are also justified in the absence of climate change" (Ch 17) which is specifically useful to countries dependent on economic activities in highly vulnerable sectors and should be included as an example of adaptation efforts wherever examples are prompted. (SAUDI ARABIA)
131	SPM	0	0	0	0	Adaptation can be integrated in national plans and; "Adaptation – including through technological innovation, institutional strengthening, economic diversification, and infrastructure design – can help to reduce risks in the current climate, and to manage future risks in the face of climate change (medium confidence)" (Ch 26) (SAUDI ARABIA)
132	SPM	0	0	0	0	Economic diversification is inline with key messages of the report and as specifically cited in Chapter 17 that "Adaptation generally needs to be seen in the frame of the overall development path of the country, particularly for developing countries (high confidence)" as it build on the specific concerns, circumstance and priorities. (SAUDI ARABIA)
133	SPM	0	0	0	0	On a related note to economic diversification, We also notice that while section C in the SPM is planned to 'considers principles for effective adaptation and the broader interactions among adaptation, mitigation, and sustainable development', it does not adequately cover discussion on effects on sustainable development which is a topic of great importance, and a recognized overriding priority, to developing Countries. (SAUDI ARABIA)
134	SPM	0	0	0	0	In WGI AR5, detailed models of heating and precipitation are performed and analyzed by regions, and Central America is analyzed as a single region along with the island states of the Caribbean. However, for WGII AR5, Central America appears as a single region combined with South America, which reduces the ability to analyze the (regional specific) impacts, risks and vulnerabilities. In fact many of the threats present in Central America are different for South America. Could this be related to the uncertainties and/or lack of information? If so what would be the recommendations for the region in terms of adaptation? There are more questions than answers. We could not specify the measures for adaptation of the Central American region. (Nicaragua)
135	SPM	0	0	0	0	While WGI emphasizes the vulnerability of Central America, WGII does not continue with the emphasis stated by the WGI. In AR5 WGI states that short-lived greenhouse gases play an important role in future warming. Why was this issue not addressed as a risk in WGII AR5? What actions should be taken in adaptation measures? (Nicaragua)
136	SPM	0	0	0	0	In various parts of the document the role of Risk Management as a tool for vulnerability reduction is recognized, however, in Figure SPM8, page 29 this tool does not appear as a socioeconomic development pathway. Include the management of risk, losses and damages due to climate change in the economic options. (Nicaragua)
137	SPM	1	0	29	0	It is not clear what is intended by the bolded sentences throughout the document. Are these meant to serve as highlight statements? If so, this should be mentioned at the start of the SPM. (UK)
138	SPM	1	1	1	1	Remove ',' before 'and' (POLAND)
139	SPM	1	1	14	45	References to observed temperature changes should be consistent with WG1. The SPM refers throughout to temperature changes from 'pre-industrial' whereas WGI found that warming from 'pre-industrial' (defined as 1750) could not be determined. WG1 discusses changes in temperature either from 1850-1900 or over the period 1880-2012. (AUSTRALIA)
140	SPM	1	29	1	49	Is it usual / desirable to mention the Boxes in the table of content of the SPM? (SWITZERLAND)
141	SPM	1	42	1	44	Sectorial risks are addressed twice, in the titles B-1 (cross-sectorial) and B-2 (specific sectors). This difference should be clearer, please be adjust titles, e.g. for B-2 "Sector-specific risks and potentials for adaptation". (GERMANY)
142	SPM	2	0	0	0	footnote 2: Given the importance of this footnote it is suggested to include this text in the main text. The footnote should inform the reader that it is the report of working group I that addresses attribution of climate change to human activities, including to anthropogenic GHG emissions. (AUSTRIA)
143	SPM	2	0	0	0	Figure SPM.1: Not sure whether there is a need to have separate figures SPM.1 and SPM.8 The info in the two figures is repetitive to some extent, could be merged into one. (Likewise for for Figures TS.1 and TS.12 in the technical summary) (SWITZERLAND)

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144	SPM	2	0	2	0	Footnote 2: This footnote helpfully describes how attribution is treated with regard to observed impacts. How does the document consider attribution when discussing future risks? Are these also due to natural and human causes or are these risks from anthropogenic climate change alone. The document requires clarity on this issue. (USA)
145	SPM	2	0	4	0	Given the importance of water as a medium by which people will experience climate change, a summary of overall changes in the availability and flows of water in Section A.1 would be expected, but is not given. It would also warrant more profile when flagging the impact on people and their vulnerability. In setting out this evidence it is also important to flag the other drives of population growth, economic development, demographic change, diet etc that climate change will interact with. (UK)
146	SPM	2	0	4	0	Section should be more discursive about the socio-economic damage caused by extreme weather and climate events and what makes human systems vulnerable to these, including that in some parts of the world we have seen trends that are making some populations more vulnerable (e.g. rapidly growing mega-cities, over-abstraction of water resources). (UK)
147	SPM	2	0	4	0	Observed impacts section also is weak, and short by comparison to adaptation sections. There are no mention of observed impacts of ocean acidification on marine life for example. (UK)
148	SPM	2	0	4	0	The discussion of the impacts of climate change in this section could be easily misinterpreted - only a footnote clarifies that the report refers to all climate change, not just the climate change that can be attributed to anthropogenic activity. This is fundamental and should be drawn out much more explicitly in the text. Statements like "Observed impacts of climate change are widespread and consequential" will be copied and taken out of context. Statements could be revised to make it much clearer that they refer to all climate change (and should not be confused by anthropogenic climate change). You might also outline the challenges in attributing impacts to anthropogenic climate change. A definition of 'human system' and 'natural system' is also needed, since the climate change impacts to these systems are discussed. (UK)
149	SPM	2	0	4	0	This section states 'Observed impacts of climate change are widespread and consequential', but subsequent text does not make it apparent to the non-expert how consequential the impacts could be and the choice of examples (Central American amphibians) to highlight this serves to lessen the impact of the sentence. (UK)
150	SPM	2	0	4	0	This section could usefully include a reference to the work on attribution of extreme events. This work is relevant to policy-makers because it demonstrates the link between the current observed level of climate change, and the impacts on lives and property. (UK)
151	SPM	2	0	4	0	This section and Box SPM3 is too focused on the issues of DC's and the poor. It should either state this in the title or expand the treatment of this topic to other segments of the world population. Climate impacts will be felt by all and all will have some degree of vulnerability. This is particularly true for countries / societies with large amounts of sunk infrastructure. See WB Economics of Adaptation to Climate Change study (EACC) for some figures that clearly show that, in absolute terms, infrastructure rich regions will be very vulnerable. (UK)
152	SPM	2	0	4	0	More discussion of impacts after the year 2100 desirable. It would be helpful if there could be some discussion of what the consequences might be of continuing climate change after 2100, on the RCP8.5 pathway. (UK)
153	SPM	2	0	4	0	The SPM should include a reference to Ch19, page 14, lines 21-27 ('interactions between climate change impacts... are generally not included, or not well integrated, into projections of climate change impacts... meaning that some key risks have been overlooked'). This is important to include in the SPM because it provides context that will help the reader understand the rest of the report. The previous draft of the SPM had a useful reference (on page 14) to interactions between impacts; it would be good if this could be reinstated. (UK)
154	SPM	2	3	2	3	The word 'Natural' may be replaced by 'Ecosystems' (INDIA)
155	SPM	2	3	2	3	We agree with the statement "Human interference with the climate system is occurring, and climate change poses risks for human and natural systems", but there are also impacts in coupled human and natural systems. While this is a bit of an issue of semantics, it would be important to make clear that socio-ecological systems (such as almost any natural resource system under human use) will also be strongly impacted by climate change. (GERMANY)
156	SPM	2	3	2	3	The term "human interference" may imply a value judgment that suggests a particular point of view (e.g., all interference is bad). Suggest instead to repeat the words that have been adopted in the WG1 SPM - "Human influence on the climate system is clear". This would be a slightly more neutral statement and it would also be powerful to repeat this statement between the two WGs. (CANADA)
157	SPM	2	3	2	4	"... occurring, and...": please consider replacing the comma with a dot. The causality between the two parts of the sentence is not evident. (NETHERLANDS)
158	SPM	2	3	2	4	It would be useful for this text to relate more closely to the concepts shown in Fig SPM.1, for example, by expanding this sentence to say "...climate change poses risks for human and natural systems, the magnitude of which will be influenced by the vulnerability and exposure of those systems." We would also suggest alerting the reader here, in the main text, to the change in definitions since the AR4. There is acknowledgement of this in footnote 72 to Box SPM.1, but this seems insufficient. There would be a stronger rationale for including Figure SPM.1 in the SPM if it were made clear that at least part of it's value is in illustrating how the definitions of, for example, vulnerability, have changed from the AR4 to AR5. (CANADA)
159	SPM	2	3	2	4	We support the overall approach of WGII focusing on risk assessments and risk management, however the concept of risk can sometimes be misunderstood, and it is important that this SPM addresses all important aspects of climate change impacts, adaptation and vulnerability. Therefore please consider to include "impacts" in this first sentence and to bring it more in line with WGI SPM, page 10. We suggest the following change and that this text is bolded as a key finding: "Human influence on the climate system is clear, and leads to severe impacts that poses risks for human and natural systems (Figure SPM.1)." (NORWAY)
160	SPM	2	3	2	4	This introductory comment references the WG1 report, but it ought to quote it directly now that the report has been finalized. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
161	SPM	2	3	2	5	The general description of the WGII contribution lacks some major components such as impacts and vulnerability. We suggest to add these concept, e.g.: "The Working Group II (WGII) contribution to the IPCC's Fifth Assessment Report (AR5) assesses the impacts of climate change on human and natural systems, vulnerability for these impacts, including risks and opportunities that arise from climate change, and how these systems can adapt to better cope with these impacts. New in this contribution to the AR5 is a strong emphasis on regions, in order to satisfy the growing need for geographically specific information in support of adaptation to climate change. The knowledge on the relations between adaptation and mitigation is also assessed in this contribution." (NETHERLANDS)
162	SPM	2	3	2	6	The key message from WG1 could be included "Warming of the climate system is unequivocal, etc ." (IRELAND)
163	SPM	2	3	2	6	In Box SPM. 1 on page 15, line 29 the following sentence is provided: "This report assesses climate-related risks." Please consider moving this sentence to be included in the first paragraph, (including a reference to the Box SPM. 1 where the concept of risk is explained), as this represents key information to the reader. (NORWAY)
164	SPM	2	4	2	4	Not clear what the added-value of Figure SPM.1 is. It doesn't add anything substantial to this section and there's a second, more detailed version of it in Figure SPM.8 that can be eventually used/referred to . (European Union)
165	SPM	2	5	2	5	Perhaps "assesses" instead of "evaluates". (SWEDEN)
166	SPM	2	5	2	5	Suggest adding "climate-related" before "risks". E.g., "...evaluates how patterns of climate-related risks and benefits...". This makes clearer the scope of work undertaken by IPCC WGII. (CANADA)
167	SPM	2	5	2	6	Writing "how patterns of risks and potential benefits are shifting" may suggest that no new risks or benefits come about. Is this what is meant? (SWEDEN)
168	SPM	2	5	2	6	The writing suggests that mitigation and adaptation can only enable reducing of risks. Although emerging benefits due to climate change are very much less widespread and much more restricted, would some adaptation have the potential to enable better use of the benefits? (SWEDEN)
169	SPM	2	5	2	6	Does "potential benefits" in this context mean benefits from climate change or from adaptation? (USA)
170	SPM	2	6	0	0	Insert "risks can be reduced and benefits can be enhanced". (BRAZIL)
171	SPM	2	6	2	6	"... how risks can be reduced.": please verify if you can also speak about the capacity to act for the 'potential benefits', as mentioned in the same sentence. (NETHERLANDS)
172	SPM	2	6	2	6	The WG II Contribution should focus on adaptation to climate change. From the perspective of reducing the risks of climate change, 'adaptation' is more urgent than 'mitigation'. Therefore, 'adaptation' should be placed before 'mitigation' in this sentence. (CHINA)
173	SPM	2	6	2	6	Add 'these' before 'risks' (UK)
174	SPM	2	6	2	6	Introduce the words "... are shifting in natural and human systems around the world due to climate change ..." (SWITZERLAND)
175	SPM	2	6	2	6	An important dimension is lacking in the introduction: the importance of climate resilience pathways towards sustainable development and how such an overarching goal ties together mitigation and adaptation. Please consider adding: after "through mitigation and adaptation" the sentence "which are both considered important components of climate-resilient pathways towards sustainable development.". (NORWAY)
176	SPM	2	8	2	9	The current wording of this sentence could be read to suggest that socioeconomic literature is not scientific or technical. To avoid misinterpretation, suggest simply leaving as "scientific and technical literature" or possibly adding in brackets afterwards "biophysical and socioeconomic". (CANADA)
177	SPM	2	8	2	10	This should point to the fact that the current AR builds on earlier reports. Should revert to language used in the TS "The WGII AR5 builds from the WGII contribution to the IPCC's Fourth Assessment Report (WGII AR4), published in 2007, and the Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX), published in 2012". (IRELAND)
178	SPM	2	8	2	11	The paragraph mention "...a substantially larger knowledge base..", but the reader hasn't a reference level of this base. For illustrative purpose, it is suggestes to include some figure or indicative estimation of the rate of increase in the production of scientific literature in recent years, for example, "a doubling of the total number of publications on the topic of climate change impacts between 2005 and 2010 and on the topic of climate change adaptation between 2008 and 2010 has occurred" (SPAIN)
179	SPM	2	8	2	11	Can you give a percentage demonstrating this increase in body of literature? (UK)
180	SPM	2	8	2	11	Change the word 'treatment'. For example to 'maintenance' or 'coverage' (UK)
181	SPM	2	8	2	11	In addition to give a general description of the new literature, it would also be very useful to summarise what is the most important findings/improvements since AR4 and SREX. (NORWAY)
182	SPM	2	8	2	11	Be specific as to wich past WGII report(s) you are refering to. (SOUTH AFRICA)
183	SPM	2	9	2	9	What does "increased literature from all regions" imply? Literature produced in all the regions or literature that considers all the regions? (SWEDEN)
184	SPM	2	9	2	9	It is probably more accurate to say that AR5 facilitated a MORE comprehensive review rather than an absolute statement that this review is fully comprehensive. The authors should consider revising the text accordingly. (USA)
185	SPM	2	9	2	11	Would appreciate further clarification in order to help non-native English speakers understand this sentence that mentions new and deeper knowledge since WGII AR4. Propose the following sentence. "Increased literature from ~ topics and sectors, with new and deeper treatment of human systems, adaptation, and the ocean." (JAPAN)
186	SPM	2	9	2	11	This is better phrased in the technical summary and in Section 1.1: literature has not increased, but its volume did. (SWITZERLAND)
187	SPM	2	9	2	11	Important is also to note that although the authorship of literature from developing countries has increased, it still represents a rather small fraction of the global coverage. The report systematically mentions a number of regional data gaps. (SWITZERLAND)
188	SPM	2	10	2	10	To reflect the achievement of the WGII AR5 we would suggest adding : and regional coverage after sectors (MADAGASCAR)
189	SPM	2	10	2	11	Why did the authors chose 'human systems, adaptation, and the ocean'? Was the choice made for example for analytical reasons or because of the availability of literature? How do the categories human systems, adaptation and oceans relate to each other? Please clarivy. (GERMANY)

#	Ch	From Page	From Line	To Page	To Line	Comment
190	SPM	2	10	2	11	If possible, we would appreciate a more complete and specific description of the changes from AR4. Elements that may have changed since the AR4 include an increased focus on risk management (following the SREX). (BELGIUM)
191	SPM	2	10	2	11	The wording .., with expanded treatment of human systems, adaptation, and the ocean lacks clarity and does not convey a clear message. The following wording, from the executive summary of chapter 1 seems to be far clearer, albeit a little bit longer: .., with increasing attention to: (i) adaptation limits and transformation in social and natural systems; (ii) synergies between multiple variables and factors that affect sustainable development, (iii) risk management, and (iv) institutional, social, cultural, and value-related issues. (AUSTRIA)
192	SPM	2	11	2	11	The use of the singular "ocean" is confusing. Consider using the plural. (USA)
193	SPM	2	11	2	17	Along the lines with IPCC WG I SPM we recommend to use curly brackets for references from substantive paragraphs in the SPM which can be found in the chapter sections of the underlying report and in the TS. This should be considered for all references in the SPM. (Compare: IPCC WG I SPM A. Introduction] (GERMANY)
194	SPM	2	13	2	13	It should be noted that the vulnerability definition has changed since AR4. The problem is that later in the text (e.g. P4 L19) you are referring to studies on vulnerability that have used the "old definition" where exposure is part of vulnerability. This should be made clear to the reader in Box SPM.1, L16/17. The reason why the vulnerability definition has been changed should be explained. (GERMANY)
195	SPM	2	13	2	13	The following wording is suggested: .., vulnerability and exposure, as well as responses to date. (AUSTRIA)
196	SPM	2	13	2	13	Suggest adding "adaptation" before the word "responses" as this is what the material in section A of the summary specifically speaks to, rather than mitigation responses. (CANADA)
197	SPM	2	13	2	28	The inconsistent listing of what is in section A is confusing. Line 13 says "impacts, vulnerability and exposure and responses to date". Line 26 (section title) says "Impacts, vulnerability, and adaptation". The titles to sections A1, A2 and A3 include "impacts, vulnerability and exposure"; "adaptation experience"; and "decision-making context" respectively. The authors should revise the text to eliminate these inconsistencies. (USA)
198	SPM	2	14	0	0	The inconsistent listing of what is in section A is confusing. Line 13 says "impacts, vulnerability and exposure and responses to date". Line 26 (section title) says "Impacts, vulnerability, and adaptation". The titles to sections A1, A2 and A3 include "impacts, vulnerability and exposure"; "adaptation experience"; and "decision-making context" respectively. The authors should revise the text to eliminate these inconsistencies. (USA)
199	SPM	2	14	2	14	"Future risks": please check the coherence with page 1, line 5 "patterns of risks". For the reader the use of these two different terms might be confusing. (NETHERLANDS)
200	SPM	2	14	2	14	Does "potential benefits" in this context mean benefits from climate change or from adaptation? (USA)
201	SPM	2	14	2	22	There is some circularity in this definition. We propose to move the method of identification to a later sentence. Also we propose to add that the UNFCCC definition does not include human induced albedo changes either. We suggested to rephrase as follows: "Climate change: all changes in the mean and/or the variability of climate properties that persist over at least three decades. Climate change can be identified by statistic analysis, but cannot be derived from individual weather events. Climate change may be due to internal processes or external forcings such as modulation of the solar cycles, volcanic eruptions, and changes in the composition of the atmosphere or in the reflective properties of the surface. In contrast, Article 1 of the United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as: 'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods'. The UNFCCC thus restricts climate change to human induced changes to the atmospheric composition, while in the definition herein climate change is defined independent of cause and also includes albedo changes.". (NETHERLANDS)
202	SPM	2	15	2	15	Consider to replace "among" with "between". (NORWAY)
203	SPM	2	17	0	0	Square brackets already have an accepted meaning in UNFCCC negotiation texts. Suggest use of curly brackets for chapter references, as in the WGI report. (NEW ZEALAND)
204	SPM	2	17	2	18	Suggest including in this text an explanation of the references to the CC Boxes (e.g. CC-CR, CC-MB, CC-GC) and where these are to be found in the WGII report. (CANADA)
205	SPM	2	19	2	19	It would be helpful to have some information about the structure of the SPM, something like: The SPM follows the structure of the WG II report... Highlighted boxes or conclusions give a summary of the assessment in the paragraph... Main sections are introduced with a brief paragraph which outlines the basis of the assessment... (GERMANY)
206	SPM	2	20	2	21	Figure SPM1: the column describing 'Risk and potential for adaptaion' is a little confusing and too non-technical reader could be disengaging. I would suggest adding a note to explain this in more detail and demonstrating how risks increase with time as do potential for adaptation (UK)
207	SPM	2	20	2	22	As "Climate-related hazards, exposure, and vulnerability" are not actors they cannot "interact" and "produce" risk. Please rephrase. (GERMANY)
208	SPM	2	20	2	22	Appreciate the efforts to improve figures to ensure the key findings are captured and easily understood by policy makers. Although Figure SPM.1 provides information for policy makers, it is also used as the base for Figure SPM.8 (found on page 29 of AR5 WGII SPM FGD). Considering limited space constraints and needs to avoid duplication of material, suggest that Figure SPM.1 be deleted and only Figure SPM.8, be used in AR5 WGII SPM. (JAPAN)
209	SPM	2	20	2	22	Figure SPM 1 duplicates figure SPM 8. Our view is that figure SPM 8 is sufficient and should replace figure SPM 1 (some further efforts to simplify / clarify the design, especially the role of the red lines, could be useful). (BELGIUM)
210	SPM	2	20	2	22	Figure SPM1: Hazards, 'exposure' and 'vulnerability' don't feature in figure but do in the key. Definition of 'hazards' does not feature in Box 1 (UK)

#	Ch	From Page	From Line	To Page	To Line	Comment
211	SPM	2	20	2	22	Caption for Figure SPM.1. Suggest revising to say "Climate related hazards, exposure and vulnerability interact to produce climate-related risks." The central part of the figure just says "risks", which we suggest should be "climate-related risks". Adaptive responses to reduce vulnerability and exposure will not do anything to address climate change but will have an impact on climate related risks. Also, this is the only figure caption in the SPM where the first sentence of the SPM describes a "concept" rather than a literal description of the figure. Suggest the first sentence of the caption could be modified slightly to be more consistent with the format used elsewhere, e.g., "Illustration of interaction between..." (CANADA)
212	SPM	2	20	2	22	Caption for Figure SPM.1: Suggest that the figure caption could include some acknowledgement of the similarity between this figure and SREX Fig. SPM.1. Apart from a few words, they are identical. (CANADA)
213	SPM	2	20	2	22	Please consider replacing the word "Hazards" with "Potential impacts". Rationale: The concept of hazard is not very well defined and is often associated with the possibility of a sudden, unwanted or dangerous event. The concept of potential impact has a broader meaning, more relevant to the numerous slow and gradual changes; and the different perspectives and approaches covered in WGII report. Please also consider deleting "including adaptation and mitigation" in the second sentence as it is unnecessary in this overarching explanation. Furthermore changes in the climate system and development process are not directly drivers of hazards, exposure, and vulnerability, although they are influencing the risk. Please consider rephrasing e.g. "Figure SPM.1. Climate-related potential impacts, exposure, and vulnerability interact to produce risk. Changes in both the climate system (left) and development processes (right) are drivers of risk through interaction with potential impacts, exposure and vulnerability." (NORWAY)
214	SPM	2	20	2	22	The figure caption for Figure SPM.1 should include a short sentence describing the intent/meaning of the gray arrows in the figure such as " development processes affect emissions and land use change that result in anthropogenic climate change" and "the risk of impact from climate change on humans and ecosystems affects development processes" or other appropriate descriptive text. (USA)
215	SPM	2	20	30	22	As figure SPM.1 reflects the general framework and the elements that are considered in the different sections of the SPM, it is suggested to expand a little more the text of this figure with some information about the complex interaction between all these elements (SPAIN)
216	SPM	2	21	2	22	The page number (2) Line No. 20, 21.22 relationship between hazards, vulnerability, exposure and risk did not address the relationship with the adverse impacts, and in line No. 26 dealt with the relationship between the adverse impacts, vulnerability and adaptation without mentioning the relationship mentioned between risk and exposure and vulnerability, all topics are interrelated and connected to each some works, such as the rings in single chain. (EGYPT)
217	SPM	2	24	0	0	Why are Box 1 and Box 2 not inserted here? (SWITZERLAND)
218	SPM	2	24	2	24	BOX SPM,1: Please also include definitions for maladaptation and adaptation limits. (JAPAN)
219	SPM	2	26	0	0	Chapter A is too general for leading the issue. Chapter B is much more concrete. Recommendation to change their order). If the intention is that somebody should read the SPM, it is strongly recommended. (HUNGARY)
220	SPM	2	26	0	0	Unlike sections B and C, section A of the SPM does not have a short paragraph to introduce what is in the section. Suggest making this consistent throughout the SPM. (CANADA)
221	SPM	2	26	2	26	Headliner may be added after the heading 'Impacts, Vulnerability and Adaptation in a complex and changing world' (INDIA)
222	SPM	2	26	2	26	Change the title to "Observed impacts, vulnerability, exposure and adaptation ..." (POLAND)
223	SPM	2	26	2	26	Remove ',' before 'and' (POLAND)
224	SPM	2	26	3	23	The attribution of impacts to observed changes in climate, encompassing both anthropogenic and natural climate changes, needs to be explained in the main text, not in a footnote. It is important to be clear on this issue given that potential for misunderstanding between the usage of the term "attribution" by IPCC WGI (attribution to anthropogenic climate change) and by IPCC WGII (attribution to observed changes in climate). The footnote may be insufficient, and easily missed by the reader. To clarify this point, we recommend two things: 1. addition of a general explanation of what an assessment of impacts in WGII really means and what the limitations are (e.g., something along the lines of noting that changes in the climate system, whether directly attributable to human activities, indirect consequences of those activities, or natural variability, all combine to impact human and natural systems, increase vulnerability, etc., and so have to be considered together), and 2. specific edits to the text of section A-1, the caption to Figure SPM.2 and the glossary definition of 'Climate change' which are described in separate comments. (CANADA)
225	SPM	2	27	2	27	Since a summary paragraph is given in parts B and C of the SPM, it is suggested to add another summary paragraph to the beginning of part A to be structurally consistent. (CHINA)
226	SPM	2	28	0	0	Section A-1: It would be good to maintain consistency in the order of presenting the sectoral aspects (as everywhere else throughout the report), and re-order as 1-freshwater resources, 2- terrestrial/marine systems, 3-food production, 4- human health. (SWITZERLAND)
227	SPM	2	28	2	28	After introduction of Fig. SPM1, one would expect the word 'hazard' to be used. Suggest the section title is changed to: A-1. Observed impacts/hazards, Vulnerability, and Exposure. (European Union)
228	SPM	2	28	2	28	Remove ',' before 'and' (POLAND)
229	SPM	2	28	3	23	The section on Observed Impacts seems quite short relative to the rest of the SPM, especially in light of the wealth of information contained in the underlying chapters (as well as the findings from the WG1 report). Many of the statements are weakly supported, as well. It is critical for this first section of the SPM to be robust and well supported if the reader is to have confidence that we know enough about what is happening now to project future risks. The authors should add multiple supporting statements from underlying chapters for each of the bolded statements and ensure that the statements actually support the bolded statement. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
230	SPM	2	28	3	44	Section A-1: In A1 there is no single statement for the impact of climate change on air pollution and air quality and the related health impact although there are several sections on this aspect in different chapters of WGII AR5 report. See examples below: 1) section 8.2.3.6. Air Pollution: Means and extremes of WGII AR5 Chapter 8, 2) section 11.5.3. Air Quality of WGII AR5 Chapter 11, 3) section 21.3.3.3. Air Quality of WGII AR5 Chapter 21, 4) 23.6.1. Air Quality of WGII AR5 Chapter 23 I think that the impact of the anticipated future anthropogenic climate change on air pollution, air quality and the related health impact is an important issue that has attracted largely the scientific interest over the last decade (as also pointed in the different chapters of the WGII AR5 report) that deserves at least one statement in A-1 of SPM. (Prodromos Zanis, Department of Meteorology and Climatology, School of Geology, Aristotle University of Thessaloniki, Greece) (GREECE)
231	SPM	2	28	3	44	Section A-1 has no discussion of urban areas, rural areas and key economic sectors and services and so on. To ensure key findings of all sectors covered in underlying report are in the SPM, we suggest the following bullets be included from the TS after Line 23. Also, the sentence stating "Flooding ~ Box 25-7] should be a bold sentence. Urban climate change-related risks are increasing (including rising sea levels and storm surges, heat stress, extreme precipitation, inland and coastal flooding, landslides, drought, increased aridity, water scarcity and air pollution) with widespread negative impacts on people (and their health, livelihoods and assets) and on local and national economies and ecosystems (very high confidence based on high agreement, high evidence). These risks are amplified for those who live in informal settlements and in hazardous areas and either lack essential infrastructure and services or where there is inadequate provision for adaptation (8.2, Table 8-2). Flooding can have major economic costs, both in term of impacts (e.g., capital destruction, disruption) and adaptation (e.g., construction, defensive investment) (robust evidence, high agreement). Since the mid-20th century, socioeconomic losses from flooding have increased mainly due to greater exposure and vulnerability (high confidence). [3.2, 3.4, 10.3, 18.4, 23.2-3, 26.7, Figure 26-2, Box 25-7] If possible, would help policy makers if defensive investment was elaborated on or a specific example given so as to avoid misinterpretation of what defensive investment means within the context of AR5 WGII SPM and underlying report. Reflecting on the natural disasters which have struck coastal areas since 2007, (e.g. Hurricane Sandy, Typhoon Haiyan), and the dependence of many coastal people on coastal resources for livelihoods, impact assessments on coastal systems, which constitute key risks in the context of climate change as listed in the section B-1, is an important issue for policymakers and should be given here. Request the following sentence from AR5 WGII TS be added to SPM: "Coastal systems are particularly sensitive to changes in sea level and ocean temperature and to ocean acidification (very high confidence). Coral bleaching and species range shifts have been attributed to changes in ocean temperature. For many other coastal changes, the impacts of climate change are difficult to identify given other human-related drivers (e.g. land-use change, coastal development, pollution) (robust evidence, high agreement)." In Chapter 3 of underlying report, extreme hydrological events such as extreme precipitation change are also treated as section discussed in subsection 3.2.7., where the following sentence refers to risks of flooding at regional scale (Ch.3, page.8) is: "recent detection of trends in extreme precipitation and discharge in some catchments implies greater risks of flooding at regional scale (medium confidence)." Based on our understanding of the above, "risk of flooding" should also be added in the first sentence to read: "affecting not only water resources and quality but also risks of flooding at regional scale". Also request that the above sentence be added in the last part of this paragraph. (JAPAN)
232	SPM	2	29	2	29	We would suggest to insert a subtitle : Observed Impacts as a consistency with page 3 line 25 (MADAGASCAR)
233	SPM	2	29	2	29	Could you please add a new subtitle here "Observed impacts", to be consistent with the subtitle on page 3, line 25. (NORWAY)
234	SPM	2	30	0	0	The word "consequential" carries different meanings in UK English from American English. The Concise Oxford Dictionary defines it as: 1. Following as a consequence or 2. Resulting indirectly. However in American usage it also appears to carry the meaning "having significant consequences, important" (Merriam-Webster.com), which I think is the intended meaning here. We therefore suggest the bolded phrase be replaced by: "Observed impacts of climate change are widespread and have significant consequences" (NEW ZEALAND)
235	SPM	2	30	2	30	Please explain 'recent': since 1950, 1960, pre-industrial? (NETHERLANDS)
236	SPM	2	30	2	30	"Observed impacts" should be leading this section in italics, as it is "Vulnerability and exposure" in page 3, line 25 (SPAIN)
237	SPM	2	30	2	30	It has been mentioned that the natural and human systems are being impacted due to recent changes of climate. The word 'Recent' may be clarified. (INDIA)
238	SPM	2	30	2	30	What is the meaning of the term "consequential"? Does it mean that the observed impacts of climate change have (some? meaningful?) consequences? Or that the impacts are a consequence of climate change? We suggest rephrasing the sentence in order to make it more clear to the reader. (GERMANY)
239	SPM	2	30	2	30	Seems there is no confidence reading for bold text of bullet. Considering this is the first bold text bullet of AR5 WGII SPM it would help policy makers if there was a confidence reading. Request that to ensure consistency and full understanding of certainty in assessment findings, that degree of certainty and confidence readings be in parenthesis after all bold bullets throughout AR5 WGII SPM. (JAPAN)
240	SPM	2	30	2	31	"Observed impacts... and across the oceans." The first two sentences could almost be used as a key message for the section but they need more clarity. What does "consequential" mean in this context? How recently? What has changed since AR4? (European Union)
241	SPM	2	30	2	31	The same dichotomy of nature and humans as on P2, L3: Also coupled human-natural system should be referred to as much of the research presented in the WG2 chapters actually deals with such systems. (GERMANY)
242	SPM	2	30	2	31	Suggest that the sentence beginning 'Recent changes' needs a confidence qualifier. (CANADA)
243	SPM	2	30	2	31	Suggest that second sentence in this paragraph is more impactful. The first, more general, sentence could be deleted and the second sentence could become the bold statement. If the first statement remains, then suggest changing "climate change" to "changes in climate" to make clearer that it is observed changes in climate, not necessarily anthropogenic climate change, that is referred to here. (CANADA)
244	SPM	2	30	2	31	Please consider adding "observed" in front of "changes" and "severe " in front of impacts, so it reads "Recent observed changes in climate have caused severe impacts [...]" and consider replacing the currently bold sentence by this sentence that combines the first two sentences in the draft. (NORWAY)
245	SPM	2	30	2	34	Add one sentence on which regions are most impacted under the observed climate change (INDIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
246	SPM	2	30	2	34	It would be good to start this paragraph with a short statement what this section is exactly about, e.g. "This section describes the current observed impacts of climate change. The future risks of impacts due to climate change are illustrated in section B." (GERMANY)
247	SPM	2	30	2	34	This paragraph should be supplemented by giving specific examples on impacts of climate change already observed, since this is missing so far. One such example is given in the TS, P6, para 2: "Most reported impacts of climate change are attributed to warming and/or to shifts in precipitation patterns. There is also emerging evidence of impacts of ocean acidification. Few robust attribution studies and meta-analyses have linked impacts in physical and biological systems to anthropogenic climate change." (GERMANY)
248	SPM	2	30	2	34	Suggest moving the reference to footnote 2 to the end of sentence ending on page 2, line 33 (i.e., after "attributed to climate change"). It is in the context of attributing observed impacts to climate change that the different definitions of climate change are important (e.g., IPCC vs UNFCCC definitions). Also, suggest adding the words "versus other stressors" to the end of the third sentence of this paragraph so that it is clear that the meaning here is to confirm evidence that observed impacts can be attributed to climate change rather than to other stressors (e.g., habitat destruction, pollution). This may help to avoid misinterpretations that the evidence confirms impacts can be attributed to anthropogenic climate change vs natural climate change. (CANADA)
249	SPM	2	30	2	34	The WGII AR4 SPM had separate conclusions regarding observed responses (impacts) of natural systems to regional climate changes and to anthropogenic warming. In this AR5 WGII SPM there is no mention of conclusions regarding evidence in support of a discernible human influence on natural systems. Is there no longer a robust statement to be made about attributing observed impacts to anthropogenic climate change? TS pg. 6 says that "Few robust attribution studies and meta-analyses have linked impacts in physical and biological systems to anthropogenic change." If possible, it would be useful to update the AR4 conclusions that it is "likely that anthropogenic warming has had a discernible influence on many physical and biological systems" (IPCC AR4 WGII SPM page 9). (CANADA)
250	SPM	2	30	2	34	It would be useful to specify the period of these observed changes more especially on SPM.2:(A) (SOUTH AFRICA)
251	SPM	2	30	2	34	A couple of key points from chapter 10 are not reflected in the SPM. This paragraph references that human systems may be negatively affected, but it does not adequately capture that the impacts of climate change on most economic sectors is expected to be relatively small compared to other drivers. It also does not note that empirical evidence varies widely by sector. Related to this point, there is no agreement, confidence, or evidence statement associated with any of the points in this paragraph. The authors should address these points. (USA)
252	SPM	2	30	3	23	It is suggested to highlight as well other impacts not being mentioned. For instance, there is no reference to observed impacts in Coastal Systems and Low-Lying Areas and few in Ocean Systems, while chapter 5 has plenty of references on observed impacts in sections 5.4.2, 5.4.3. (SPAIN)
253	SPM	2	30	3	23	A better indication of the time periods covered by these statements about observed impacts would be helpful - e.g. do they refer to the period since 1950? In some cases no time period is specified (e.g. "Climate change has caused permafrost warming and thawing in high-latitude and high-elevation regions". Does this refer to the past 30 years? Past 50 years? Past 200 years?). In other places the word "recent" is used without any clear definition of what it means (over the past year, the past ten years, the past century...?) e.g. "Recent changes in climate have caused impacts on natural and human systems on all continents and across the oceans", "recent periods of rapid food and cereal price increases ...". [On page 7 line 40 "recent" is defined as 1986-2005. However we suspect this is not the definition of "recent" being assumed here?] (NEW ZEALAND)
254	SPM	2	30	3	23	The current draft has bolded statements sometimes followed by sentences that are often only tangentially related to the first sentence. If the authors do not intend for the paragraphs to follow standard paragraph format (topic sentence followed by supporting information), then they consider bulleting the findings so the reader clearly sees that the statements are stand alone. (USA)
255	SPM	2	30	3	23	The authors should consider splitting out marine from the first paragraph and bringing forward examples of shifting fish stocks. A discussion of coral impacts in this section would be useful. (USA)
256	SPM	2	30	3	30	The use of the word "consequential" is ambiguous given the multiple senses of the word: is it meant "important" or "or following as a consequence" in which case the addition of the words "to climate change" would be necessary (SWITZERLAND)
257	SPM	2	30	4	7	Section A-1. You write that there is also evidence of climate change impacts on some human systems, and refer to only two 'systems', crop and terrestrial food production (P 3 L 15) and human ill-health (P 3 L 20). Table SPM.1 mentions key risks (in different regions) for many sectors. This would imply evidence of climate change impacts on these sectors, which are, however, not mentioned in Section A-1. 1) Why do you include statements on these two systems (only); is it to highlight these (and why?) or is there a lack of analysis for other human systems? 2) If further impacts on human systems are analysed in the underlying report, they should be referenced at this point, e.g. socio-economic second order risks for different sectors (banks, insurances, infrastructure etc.). (GERMANY)
258	SPM	2	31	0	0	The phrase "on all continents and across the oceans" is not quite all inclusive, which is probably the intent behind the sentence. It does however leave out significant land areas that are not "continental" nor "oceans". Suggest that the authors find a phrase that is indeed global in its coverage. (NEW ZEALAND)
259	SPM	2	31	0	0	change "continents" to "land masses" to explicitly include islands. (JAMAICA)
260	SPM	2	31	2	31	Footnote 2: it would seem more clear to write "..., not explicitly to anthropogenic climate change...". Conceivably, observed impacts may have been affected by anthropogenic climate change, also when it has not been explicitly assessed. (SWEDEN)

#	Ch	From Page	From Line	To Page	To Line	Comment
261	SPM	2	31	2	33	The sentence could be read to mean that climate change has little impact on human systems and could potentially undermine the importance, if not validity, of WGII AR5's work on impacts of climate change. It also seems to deviate from the message of correlating lines in AR5 WGII TS (e.g. For human systems, effects of changing social and economic factors have often been larger than climate-change-related impacts, but despite this, some impacts in human systems have also been attributed to climate change.) and Executive Summary of Chapter 18 on page 3 (e.g. Substantial new evidence has been collected on sensitivities of human systems to climate change. Climate change related impacts on human systems are often dominated by effects of changing social and economic factors. [18.4]) To avoid unnecessary misunderstanding/misinterpretation suggest that it be rewritten to reflect the original text from the underlying report that states that although impacts on human systems are dominated by social and economic factors, some have been attributed to climate change. Proposed text is: "For many natural systems there is new or stronger evidence for substantial and wide-ranging impacts of climate change. For human systems, effects of changing social and economic factors have often dominated climate-change-related impacts, but despite this, some impacts in human systems have also been attributed to climate change and substantial new evidence has been collected on sensitivities of human systems to climate change." (JAPAN)
262	SPM	2	31	2	33	If possible, please give some examples of major impacts on natural systems and also examples on impacts on human systems. Giving examples will make it easier for the readers to understand. If possible, extract some examples from figure SPM2. (NORWAY)
263	SPM	2	32	2	32	Using "several impacts" would be more appropriate. (Anastasios Legakis, Department of Biology, University of Athens, Greece) (GREECE)
264	SPM	2	32	2	32	Suggest "stronger and more comprehensive for natural systems than human systems, although ..." (SWEDEN)
265	SPM	2	32	2	32	"...although some impacts in human systems have also been attributed to climate change" - Looking at figure SPM.2 and drawing from the literature it is clear that there are not only "some" impacts on human systems, but many. Please correct your statement: "Evidence of climate change impacts is strongest and most comprehensive for natural systems, but impacts in human systems have also been attributed to climate change." (GERMANY)
266	SPM	2	32	2	33	"...although....change.": The relevance of this sub sentence is not clear. Please consider revising it. (NETHERLANDS)
267	SPM	2	33	2	34	The terminology here is confusing: "summary of observed impacts and indicators of a changing climate" - what does "indicators of a changing climate" relate to? Suggest to delete "and indicators" from this sentence. (GERMANY)
268	SPM	2	33	2	34	Please add a sentence explaining the choice of the parameters of observed impacts shown in Figure SPM.2. Are these the only observed changes or the most significant ones? Those where confidence is highest? (GERMANY)
269	SPM	2	33	2	34	Figure SPM.2 caption: 1) Does the figure show the impacts of climate change or the changes itself? The text above and the figure are not consistent. 2) At (A) The text is too difficult. The distinction between "sub regional" and "more local scales" is not quite clear, please explain the terminology in the legend as done for the "regional-scale impact". 3) Can the observed changes with confidence be attributed to climate change? Please indicate confidence for each figure in the caption. (GERMANY)
270	SPM	2	33	2	34	Suggest this sentence could be removed and replaced simply with a figure reference in brackets. (CANADA)
271	SPM	2	33	2	34	Panel A from Figure SPM.2 should be placed as a separate figure below the introductory text in these lines to feature it more clearly, since there is a lot of information contained in it. (USA)
272	SPM	2	36	0	0	Suggest changing "Global patterns of observed climate change impacts" to "Global pattern of impacts attributed to observed changes in climate". This makes clear that "observed" refers to the change in climate, and hence that these impacts are not necessarily attributed to anthropogenic influence on climate. (CANADA)
273	SPM	2	36	2	36	Figure SPM 2 (B). The meaning of this graph, and declining trend, is obscured by the boxes used to indicate conventional measures. To improve it please a) bold or highlight the line indicating zero on the y-axis, and b) fade the conventional measurements boxes or remove the boxes completely. (AUSTRALIA)
274	SPM	2	36	2	37	Figure SPM2 caption: '(sub)regional' apparently indicates (sub)continental-scale, this is quite different from lay uses of these terms. It would be useful to clarify the use of the terms related to "regions" in the glossary and/or the SPM. This might also help clarifying the meaning of the terms "subregional and more local scales". (BELGIUM)
275	SPM	2	36	2	38	Figure SPM.2 (A): it is stated that "symbols indicate affected systems and sectors" but the figure (Page 22) then illustrates "physical", "biological" and "human and managed" systems ("sectors" are not mentioned). (ITALY)
276	SPM	2	36	2	39	Despite obvious effort to produce this figure, panel A is not completely clear. For instance in the uncertainty ranges, do open boxes also indicate a minor contribution of climate change? In some cases there are 2 or 3 filled bars without a confidence range on top, in other cases there is a confidence range. It's not clear why. The square box 'region' wide impact seems to have a very different meaning for different regions. For instance in Africa glacier melting is an important phenomenon of climate change but I guess the impact is not so large compared to other regions. Can the caption describe the rationale behind these boxes? Do the locations of the symbols indicate where change will happen (e.g Western USA, and does it mean that elsewhere this change doesn't happen e.g. East USA?). Overall, this is a very detailed figure for a policy maker and is not always clear what is the message (e.g. 'the symbol of 'marine ecosystems' appears in Southern Europe but is not evident what a policy maker may get out of this as information for action). (European Union)
277	SPM	2	36	2	39	(1) Climate change impacts on Asia should not be limited to what is shown in Figure SPM.2 (A). Based on the underlying report, it is suggested to add icons and confidences on "livelihoods, health, & economics" (11.1.1; 24.4.6), and "Coastal erosion & Sea level effects" (24.4.3) in the smaller box of Asia or where geographically appropriate. (2) In its caption, Figure SPM.2(A) should give a description to the time periods of these observed impacts. (CHINA)
278	SPM	2	36	2	39	Caption for Figure SPM.2, Panel A: Suggest clarifying in the caption whether symbols not grouped into regional scale impacts represent a single study or the findings of multiple studies examining the same sub-region. Suggest also better explaining how to interpret "confidence range" from the figure, as this is hard to understand from the figure itself. (CANADA)
279	SPM	2	36	2	49	The textbox for Figure 2 describes indicators of a changing climate - at line 37 it claims to describe patterns of observed climate at local scale - this should only be regional scale. (DENMARK)



#	Ch	From Page	From Line	To Page	To Line	Comment
280	SPM	2	36	2	49	Figure SPM.2.; Appreciate the efforts to improve figures and accompanying text to ensure the key findings are captured and easily understood by policy makers. Slightly unclear exactly what is trying to be communicated to policy makers in both the text for Figure SPM.2 and the actual figure, Figure SPM.2 (A, B, C, D and E inclusive). Though understand the limited availability of space, would appreciate larger figures as they are too small for the details to be clearly read and understood. It would also be appreciated if the significance of the impacts presented in the figures could be written out for better understanding of the consequences of these impacts. (For example, the reader wonders: Are there any specific intentions for emphasizing Himalaya-wide measurements in (B)? Is the significance of distribution change in (D) different for benthic species and migratory fish; and if so, which measurements are critical? Further, there are no confidence readings for B, C, D and E and although there is reference to AR5 WGI findings for Figure SPM.2 B, there are no reference for the other parts. (JAPAN)
281	SPM	2	36	2	49	Figure SPM.2. (A) This information is difficult for policy-makers to use presented in a figure made up of symbols, and could perhaps be redone into a table. Find it difficult to define the specific region to which each symbol is referring to and if it is intended as a comprehensive representation of observed impacts, believe that some key observed impacts are missing from each continent. The reader is also confused about the authors' intentions of selecting specific locations such as the Bering Strait, Hawaii and Mauritius in the figure. Regarding Figure SPM2-(A), criteria on the selection and description of "Observed impacts attributed to climate change" should be clearly described in SPM. For example, wonder if there may be some discrepancy with the observation of "glaciers snow & ice" in Africa. (JAPAN)
282	SPM	2	36	2	49	Fig SPM.2 : Make clearer that all items are concerned by unfilled and filled symbols (FRANCE)
283	SPM	2	36	2	49	This descriptive Box and Figure SPM.2 (on page 22) are trying to do too much in a single figure. The authors should split out the global observed/attributed changes from the additional figures on Page 22. The global map as a stand-alone figure will also enable it to be enlarged and therefore more legible. In addition, this figure could also use some additional editing for clarity. For example, the icon for fire looks a lot like the icon for forests to an untrained eye. The authors should consider translating the key messages from these panels of Figure SPM 2 into text (USA)
284	SPM	2	37	2	37	The terms of "regional", "subregional", "local" have various meaning as the perspective of research. Geographical scope will be clarified using footnote as the purposes of discussion. (REPUBLIC OF KOREA)
285	SPM	2	37	2	37	Remove ',' before 'at' (POLAND)
286	SPM	2	37	2	37	Remove ',' before 'and' (POLAND)
287	SPM	2	37	2	38	Figure SPM2 (A) : Could you clarify the meaning of "major" contribution of climate change ? Does "major" imply that the role of climate change has been at least as large as other pressures from human activities, and/or that the role of climate change is larger than the role of climate variability ? (BELGIUM)
288	SPM	2	38	2	39	Remove ',' before 'and' (POLAND)
289	SPM	2	39	2	39	Panel B. Is the word 'budget' correct when the unit meter per decade is used? Maybe 'retreat' is a better word? Or 'thinning'? It would be good if the caption could explain this better. (European Union)
290	SPM	2	39	2	43	Figure SPM2 caption: the caption does not clearly convey what the width of the blue box represents. (UK)
291	SPM	2	40	2	41	Translate the term 'standard deviation' into 'policymaker language'. (NETHERLANDS)
292	SPM	2	46	2	46	It is suggested to mention also autonomous adaptation, based on information included in chapter 4.4.1 (AUSTRIA)
293	SPM	2	46	2	46	Please add "in parenthesis" after "given for each category" to improve the readability. (NORWAY)
294	SPM	2	46	2	49	[See also page 22]For the purpose of clearer understanding, on Figure SPM2-(E), request insertion of description to indicate that "this part doesn't take into account the possible innovation or adaptation". For example, agricultural sector has been adapting to the climate change through improved technologies. (JAPAN)
295	SPM	2	46	2	49	[See also page 22]To facilitate/ensure clearer understanding, on Figure SPM2-(E), further explanation of "estimated impacts of observed climate changes", such as "this part doesn't take into account the innovation or adaptation", should be added. Further, observed yield changes (not confined to climate change impacts) such as FAOSTAT, described in that same unit (% change per decade) should be added if possible. (JAPAN)
296	SPM	2	46	2	49	Figure SPM2 (E) : Please clarify the meaning of the "data points" and boxplots : are data points study sites from various regions and publications, which means that the boxplot reflects the differences between regions in addition to any included uncertainty ? For example, this would mean that the plot for the tropical regions means that 25% of the study sites show no yield change at all (because in that example, the 75% percentile = the median), but NOT that there are 50% chances that, on average over the tropical regions, the impact will be 0 or positive (if there is no explanation, one might think that the second explanation is true = what is shown is the uncertainty for aggregated data). The first explanation means that there are 50% sites with yield losses, the second explanation only means that, in the tropical regions, we don't know if the impact is positive or negative - thus it is important to clarify. (BELGIUM)
297	SPM	2	46	3	7	Box SPM.3 is too general and merely gives some statements which are mostly common sense. It would be more meaningful to give a few examples for illustration and specification. (SWITZERLAND)
298	SPM	2	48	2	48	The sentence "with the number of data points analyzed given for each category" maybe needs rewording as: "along with the number of data points analyzed for each category". (GREECE)
299	SPM	2	48	2	48	Please change "...with the number of data points analyzed given for each category" with "...with the number of data points analyzed given for each category (in parentheses)". (GREECE)
300	SPM	2	48	2	48	Remove ',' before 'and' (POLAND)
301	SPM	2	48	2	48	Please add "in parenthesis" after "given for each category" to improve the readability. (NORWAY)
302	SPM	3	1	3	1	Define species 'range' (UK)
303	SPM	3	1	3	2	To be rigorous, it is suggested to add such qualifiers as 'some' or 'most of' before "terrestrial and marine species have shifted their ranges" based on the underlying report, because the available assessments can not cover all species. (CHINA)
304	SPM	3	1	3	3	We suggest to add the word "some" before terrestrial. The sentence should read " In response to ongoing climate change, some terrestrial ..... (UNITED REPUBLIC OF TANZANIA)
305	SPM	3	1	3	3	Please consider to use semi-colon for first level listing and comma for sub-level listing in the sentence. (NORWAY)

#	Ch	From Page	From Line	To Page	To Line	Comment
306	SPM	3	1	3	8	This paragraph seems to go from very specific findings to a final, more general one. It would be better to start with the last sentence ("Natural climate change at rates much slower than current anthropogenic climate change...in the past millions of year") followed by the first sentence ("In response to ongoing climate change... species interactions") followed by the more detailed points (e.g. the one on tree mortality). (European Union)
307	SPM	3	1	3	8	The bold text is with high confidence. But the text below it does not substantiate such a firm statement. Please add the word 'some' to 'terrestrial and marine species' in line 1 of page 3. (NETHERLANDS)
308	SPM	3	1	3	8	specific comments: This paragraph lacks coherence. The three sentences providing examples seem random and do not corroborate the first sentence in bold. It would be preferable to illustrate the statements in the first sentence with clear examples. (IRELAND)
309	SPM	3	1	3	8	It is worthwhile to add how the ecosystems shifted during the industrial era -may be post 1700s to date. Crop lands increased significantly in Europe, America and Asia. This should clearly bring out the rapidity of anthropogenic induced change in ecosyste (INDIA)
310	SPM	3	1	3	8	We recognize that those statements are scientifically correct, but for policymakers we feel that it could appear contradictory. Please improve the wording to clarify what is due to climate change and what is not. (BELGIUM)
311	SPM	3	1	3	8	We do not understand what is meant with "despite some speculative efforts". Please clarify or delete. (BELGIUM)
312	SPM	3	1	3	8	The examples in the section do not reflect the statement in bold, as no marine examples are given. Please check for consistency by adding an example for marine species. For example, you could add this sentence from chapter 6, page 3: "In marine ecosystems vulnerability is greatest for polar animals due to their narrow temperature ranges and for tropical species living close to upper thermal limits.". In addition , please consider including a sentence about the findings related to ocean acidification, for example, adapted from chapter 6, page 4: "Observed Impacts of ocean acidification range from changes in organismal physiology and population dynamics.". (NORWAY)
313	SPM	3	1	3	8	The bolded statement at the start of this paragraph has a high confidence assigned to it. However, the supporting sentences have either medium confidence or high confidence that most observed extinctions are NOT attributable to climate change. The authors need to bring forward high confidence findings from the text, including at least one on marine, to support the bolded statement. (USA)
314	SPM	3	1	3	23	It is suggested to include some quantitative data, if possible, when the observed impacts are detailed (SPAIN)
315	SPM	3	1	3	23	Observed impacts of climate change are described very briefly, without providing a complete overview of the most relevant climate change impacts around the world (i.e. sea level rise, ocean temperature rise, ocean acidification - see the Technical Summary - Section A). (ITALY)
316	SPM	3	1	3	23	The description of observed impacts of climate change lacks of geographical references (there is no specific reference to geographical areas - regional and/or sub-regional references - nor reference to hotspot such as for example the Mediterranean area). (ITALY)
317	SPM	3	1	3	23	Quantitive data to better exemplify the magnitude of the negative impacts on human and natural systems are lacking. (ITALY)
318	SPM	3	1	3	23	The SPM presents a range of observed impacts, which can necessarily not be fully complete. However, the current choice seems to a degree arbitrary and the coverage patchy. Some of the most prominent impacts are not mentioned, e.g. increased mass coral bleaching (Ch 5.4.2.4, Box 18-2, Ch 6, 30 and several regional chapters), impacts on livelihoods of high Arctic indigenous peoples (Ch 13.2.1.2, table 18-9, 28.2.4.2), the tundra biome shift (Ch 4.3.3.4, Ch 18.3.2.4), to name a few. There is also a lack of information about regional distribution, or hotspots of observed impacts. Please explain the reasoning behind your selection. (GERMANY)
319	SPM	3	1	3	23	That seems to be a short discussion of Fig. SPM.2, part A. To me this part of Fig. SPM.2 might be of greatest interest to PMs (as a basis of Table SPM.1) and the discussion should be more detailed with reference to all regions - not only to a single on (Central America) (POLAND)
320	SPM	3	2	3	2	Consider splitting up the sentence in order to increase the readability. One might put a "dot" after the word abundance. And replace the wording "...abundance, and.."by abundance. These.." (NETHERLANDS)
321	SPM	3	2	3	2	Remove ',' before 'and' (POLAND)
322	SPM	3	3	3	3	'Increased tree mortality, observed in many places worldwide [...]' observed over which period? (SWITZERLAND)
323	SPM	3	3	3	4	This paragraph is vague. Can a time frame be given for the increased tree mortality? Is this since 1970 as implied by Figure SPM.2, C? (AUSTRALIA)
324	SPM	3	3	3	4	..in some regions. Specify which regions are referred to. (NETHERLANDS)
325	SPM	3	3	3	4	There is no confidence statement associated with this statement. (NEW ZEALAND)
326	SPM	3	3	3	4	The probability in terms of level of confidence may be provided for the attribution of increased tree mortality to climate change (INDIA)
327	SPM	3	3	3	4	"...has been attributed to climate change in some regions." Please mention these regions (or at least some of them) in brackets to make the statement more specific, in particular as this aspect does not become clear in Figure SPM.2. There are many more statements in which you refer to "some regions", "some ecosystems", "some sectors", "some planning processes" etc. without giving any details. While acknowledging that in some cases there may be no alternative, we suggest to check the full text and verify whether these unspecific statements can be amended in order to make the text more meaningful to decision makers. (GERMANY)
328	SPM	3	3	3	4	Would it be more appropriate to say "attributed to recent warming and drying trends?". How does this statement relate to Figure SPM.2 C? (GERMANY)
329	SPM	3	3	3	4	Suggest adding a reference to Figure SPM.2, Panel C for the sentence beginning with "Increased tree mortality...". (CANADA)
330	SPM	3	3	3	4	Can the authors clarify what aspect(s) of "climate change" are driving this change in tree mortality - is it temperture? Rainfall? Insect? More information would be helpful. (USA)
331	SPM	3	3	3	5	The first sentence (tree mortality) is provided with no certainty qualifier - suggesting a statement of fact, while the second sentence (amphibian extinction) is qualified. This happens throughout the document. Please check to be sure that unqualified statements are indeed facts and that qualified statements are just that. (USA)
332	SPM	3	4	3	4	What does "many" mean here? (SWEDEN)
333	SPM	3	4	3	5	Unclear sentence. When recent climate change has contributed to extinction of amphibians, how is it then possible that observed extinctions could not be attributed to climate change ? (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
334	SPM	3	4	3	6	Please reformulate "most recent observed terrestrial-species extinctions have not been attributed to recent climate change" to explain that those extinctions have been attributed to other anthropogenic causes (chapter 4, p 30), not to natural causes. This is important because it is the combination of climate change with other pressures that is expected to pose the greatest threat to species (chapter 4). Additional remark : we suspect that there are observed local extinctions of at least one other group of species that have been linked to climate change and may hint at future changes (Sinervo et al., 2010, cited in chapter 4 about future risks). (BELGIUM)
335	SPM	3	4	3	6	According to Chapter 4, pg 31: "Due to low agreement among studies there is only medium confidence in detection of extinctions and attribution of Central American amphibian extinctions to climate change. While this case highlights difficulties in attribution of extinctions to recent global warming, it also points to a growing consensus that it is the interaction of climate change with other global change pressures that poses the greatest threat to species" I am missing this reference to interacting climate change with other global change drivers in the SPM, as it changes the perspective of presenting this finding. (SWITZERLAND)
336	SPM	3	5	3	5	Check the necessity of including the wording "medium confidence". (NETHERLANDS)
337	SPM	3	5	3	6	It is suggested to eliminate the phrase "most recent observed terrestrial -species extinctions have not been attributed to recent climate change, despite some speculative efforts". There are many causes of species extinction, but this report has focused on the ones with a clear attribution to climate change (SPAIN)
338	SPM	3	5	3	6	What does "high confidence" imply here? No studies and thus no findings? Studies but the results do not lend themselves to such a conclusion? (SWEDEN)
339	SPM	3	5	3	6	Suggest deleting the last part of the sentence that states "...despite some speculative efforts". This is a statement about the literature rather than an assessment statement about the real system. This sentence is also confusing in terms of the use and interpretation of the "high confidence" assessment. Suggest the sentence could be revised as "most recent observed terrestrial species extinctions are not due to recent climate change (high confidence)". (CANADA)
340	SPM	3	5	3	6	Please clarify which statement has high confidence, that "most recent observed terrestrial-species extinctions have not been attributed to recent climate change" or "speculative efforts" to attribute species extinctions to climate change? (NORWAY)
341	SPM	3	6	0	0	"despite some speculative effort" does not seem like appropriate language for an IPCC report. Please specify what is meant here, or remove those words. (GERMANY)
342	SPM	3	6	3	6	The phrase "despite some speculative efforts" involves a subjective evaluation of the efforts. The paragraph can live without this judgement or alternatively needs to be more precise. (European Union)
343	SPM	3	6	3	6	Natural climate...years. Please verify the order of the sentence. The various sub-parts of the sentence do not seem to match. One might put the sub-sentence "...in the past million of years" to the first part of the sentence. (NETHERLANDS)
344	SPM	3	6	3	6	"... at rates much slower than current anthropogenic change": we find this part difficult to understand, please consider revising it. (NETHERLANDS)
345	SPM	3	6	3	6	Please consider removing "despite some speculative efforts" and replacing it with "despite a growing consensus that it is the interaction of climate change with other global change pressures that poses the greatest threat to species" from Ch. 4.3.2.5 p. 31. RATIONALE: "...despite some speculative efforts (high confidence)." - this is a very unusual wording since it is expected that the SPM focus on robust science. The point is that it is very difficult to attribute specific species extinction events to climate change, due to multiple factors being involved and confounding factors masking the climate effect, in addition to other factors mentioned in chapter 18.2.2. In addition, habitat loss and fragmentation are still considered the greatest threats to terrestrial biodiversity, hence it is not surprising if species extinctions on land have not been attributed to climate change to any great extent. See e.g. Ch. 18.3.2.3 p. 12, 4.2.4.1, 4.3.2.5 p. 29-31, 22.3.2.1 p. 15, 25.6.1.1 p. 16, also see Box 18-3 and FAQ 18.3-5. (NORWAY)
346	SPM	3	6	3	6	The assertion " despite some speculative efforts" should be omitted, it is a very negative statement for research. The most important is the conclusion that "most recent observed terrestrial-species extinctions have not been attributed to recent climate change". (FRANCE)
347	SPM	3	6	3	7	The two sentences seem disconnected but they aren't. Writing "However, natural climate change at rates..." is more appropriate. Or you might start the sentence with "In the past millions of years, however,..." (GERMANY)
348	SPM	3	6	3	8	Some reference to the confidence/evidence for this statement is needed, as for all others in this paragraph. Consider adding "high confidence" based on first paragraph of Ch. 4's executive summary. (European Union)
349	SPM	3	6	3	8	Climate change in the recent decades is at a higher rate than natural climate change, State the extent of ecosystem shifts and species extinction observed in the recent past (INDIA)
350	SPM	3	6	3	8	Please provide context to the sentence on past impacts of slow natural climate change impacts, i.e. that the current rates are much faster. (GERMANY)
351	SPM	3	6	3	8	In what terms does this statement "Natural climate change at rate much slower than..." matter to policymakers? Species emergences and extinctions in remote past will become policy-relevant when they are discussed in the perspective of the ongoing climate change. This sentence needs to be revised to reflect a relevance to climate policies. (JAPAN)
352	SPM	3	6	3	8	The final sentence of this paragraph seems like a separate thought and may not be needed in the SPM - suggest considering whether it could be deleted. If it remains, suggest moving "in the past millions of years" to after "has led to significant ecosystem shifts" in order to better clarify for the reader that this is referring to historical ecosystem shifts. (CANADA)
353	SPM	3	6	3	8	Please consider to replace "emergences" with an easier to understand word. Rationale: for a non-english speaker it can easily be misunderstood as emergencies. It might be better to use "occurrences". (NORWAY)
354	SPM	3	6	3	9	This sentence has been derived from the Marine Species subsection on P9 in the TS, but put in this context, it appears to be discussing terrestrial species. We suggest the word MARINE be inserted before ECOSYSTEM. (JAPAN)
355	SPM	3	7	3	7	Introduce the word "... anthropogenic-induced change ..." (SWITZERLAND)
356	SPM	3	8	3	8	can examples of what observed/projected changes may/will have been given? (UK)
357	SPM	3	10	3	10	The word 'changing' may be removed (INDIA)
358	SPM	3	10	3	10	The authors should consider inserting "as a result of climate change" after the word "ice". (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
359	SPM	3	10	3	11	The words "altering" and "affecting" suggest that the changes can be positive, negative, or neutral. Could you provide a clearer message ? (BELGIUM)
360	SPM	3	10	3	11	Suggest either revising to state "affecting quantity and quality of water resources" or simply state "affecting water resources". (CANADA)
361	SPM	3	10	3	11	Can this be phrased more precisely in terms of what "affecting water resources and quality" means? Cf. Chapter 3 pg.3 "Climate change negatively impacts freshwater ecosystems by changing streamflow and water quality (high agreement, medium evidence)." (SWITZERLAND)
362	SPM	3	10	3	11	The impacts of these climatic changes on water resources and quality depend fundamentally on their interaction with non-climate stresses. (This is true with regard to other impacts, but with water it is particularly difficult to assign attribution and disentangle from these other stresses.) The authors should add a qualifier to this sentence such as "In many regions, changing precipitation or melting snow and ice are altering hydrological systems in conjunction with existing non-climate stresses, affecting water resources and quality". (USA)
363	SPM	3	10	3	12	The confidence statements appear to be too low. Evidence on glacier retreat in many world regions is clear (e.g. from data of the World Glacier Monitoring Service and the EEA report 12/2012 "Climate change, impacts and vulnerability 2012", <a href="http://www.eea.europa.eu/publications/climate-impacts-and-vulnerability-2012">http://www.eea.europa.eu/publications/climate-impacts-and-vulnerability-2012</a> ). Are there any alternative explanations for the widespread glacier retreat, other than climate change, that would justify assigning only "high confidence" rather than "very high confidence" ? Similarly, it appears obvious that changing precipitation and melting snow and ice affect hydrological systems. Therefore, one would expect that "high confidence" should have been assigned to this statement. (European Union)
364	SPM	3	10	3	13	"Changing precipitation" needs to be more specific. It would be better to specify whether you're referring to changes in amount, spatial patterns or temporal patterns. Some reference to the effects on the hydrologic cycle would complete the paragraph, for example, references to droughts, change in monsoon patterns etc. (European Union)
365	SPM	3	10	3	13	The SPM stresses that melting ice and snow cause changes in "many regions". However, there are also regions where the thickness of ice is increasing. In addition, it might be worthwhile to point out what regions are displaying which hydrological changes, rather than referring to "many regions", which is too generic. (NETHERLANDS)
366	SPM	3	10	3	13	The aspect of precipitation under discussion should be qualified. Is it spatial patterns, amounts or both? An additional sentence to illustrate changing precipitation would help substantiate this paragraph. (IRELAND)
367	SPM	3	10	3	13	The statement in bold is affixed with medium confidence, and the next statement with high confidence. What is the confidence level for the last statement in the paragraph? (SWEDEN)
368	SPM	3	10	3	13	Suggest this paragraph is moved above the previous one (p. 3, lines 1-8) so that discussion of observed physical / hydrological changes comes before that on biological changes. "water resources and quality" it is not clear here whether the medium confidence level applies to both volume and quality of water resources or whether it is affecting human or natural systems. (UK)
369	SPM	3	10	3	13	The text on lines 11-13 (non-bolded text) do not really support the bolded statement. The bolded statement is about the impact of changes in precipitation and in the cryosphere on hydrological systems, whereas the text on lines 11-13 simply restates what changes in glaciers and permafrost have been observed. Suggest replacing current text with text that illustrates observed changes in water resources. (CANADA)
370	SPM	3	10	3	13	Would it not be very informative for the reader to mention the regions where these changes have been observed? (SWITZERLAND)
371	SPM	3	10	3	13	The authors should add more examples from the text to support the bolded sentence. (USA)
372	SPM	3	10	3	13	Panel B from Figure SPM 2 should be included as a separate figure after the text for this key point. (USA)
373	SPM	3	11	3	11	The WGI Report states (pg 5) that 'glaciers have continued to shrink almost worldwide' - suggest using this phrase here for consistency across the Working Group reports. (AUSTRALIA)
374	SPM	3	11	3	11	The changes in the hydrology are already confirmed, because it is assigned the category of medium confidence. (ARGENTINA)
375	SPM	3	11	3	11	The word 'world wide' may be added after the Glaciers and the text 'in many regions' may be removed. (INDIA)
376	SPM	3	11	3	12	In the summary of WG1 the confidence is "very high confidence" (CHILE)
377	SPM	3	11	3	12	Please consider to include a sentence about the impacts related to changes in precipitations and glacier melting, e.g. related to drought and water availability. For example from Chapter 4, page 5: "Increases in the frequency or intensity of ecosystem disturbances such as droughts, wind-storms, fires and pest outbreaks have been detected in many parts of the world and in some cases are attributed to climate change (medium confidence)". (NORWAY)
378	SPM	3	12	3	13	This paragraph fails to make clear the conclusion on climate change impact on water. Additions should be made to the end of "Climate change has caused permafrost warming and thawing in high-latitude and high elevation mountain regions". (CHINA)
379	SPM	3	12	3	13	The sentence on permafrost is consistent with the statement in WGI, but it does not address the consequences of this thawing which would be appropriate for WGII. Please add. (GERMANY)
380	SPM	3	12	3	13	As it is currently written, "high-latitude" and "high-elevation" both modify "mountain regions". Assuming the intent is for only "high elevation" to modify "mountain regions", this would be best re-written as: "Climate change has caused permafrost warming and thawing in high-latitude regions and in high-elevation mountain regions". The link between permafrost warming/thaw and hydrology could also be made more clear in order to better relate this sentence to the bolded headline of this paragraph. Also, suggest that this statement requires a confidence qualifier. (CANADA)
381	SPM	3	12	3	13	In the summary of WG1 is indicated " The temperature increase for colder permafrost was generally greater than for warmer permafrost ( High confidence) (CHILE)
382	SPM	3	12	3	13	Please consider to include information regarding the effects from these observed climate changes: What are the effects of permafrost thawing? E.g. effects on infrastructure, livelihoods, erosion. (NORWAY)
383	SPM	3	12	3	13	So what is the impact or vulnerability induced by "permafrost warming and thawing in high-latitude and high-elevation mountain regions"? Why is this impact important (e.g., potential C releases; infrastructure losses; etc.)? The authors should clarify this to the policymaker in the text here. (USA)
384	SPM	3	12	3	13	This statement needs a confidence level. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
385	SPM	3	13	3	13	Text 'High Confidence' may be added at the end of the sentence i.e. after mountain regions in square brackets (INDIA)
386	SPM	3	14	3	15	Are "engineering and technological adaptation options" REALLY the most "commonly implemented" adaptive responses? Based on references throughout AR5 (including the SPM), it would seem more plausible that, globally, incorporating climate change into disaster risk management (or water use management or resource management or health) planning and implementation might actually be a dominant adaptive response globally. The authors should clarify the text accordingly. (USA)
387	SPM	3	15	0	0	What is meant by "terrestrial food production", besides crop production? Fig. 7-2, -3 and -7 all refer to crop yields, as does 18.4. And why is crop production not included in food production? We suggest to either say "food production" or specify "food production, in particular crops", but not to name both in parallel. (GERMANY)
388	SPM	3	15	3	15	What is terrestrial food? (INDIA)
389	SPM	3	15	3	15	Please consider to include "World-wide" at the beginning of this sentence. (NORWAY)
390	SPM	3	15	3	16	This conclusion seems to be drawn from figure 7.2. Looking at Figure 7.7, a conclusion could be that we might not know it. Historically we see a very small decrease (<1% per decade), and projected impacts for the different regions are not that much larger (except for temperate regions without adaptation). Looking at right/global total, the median looks even zero. Given the fact that farmers are very adaptive, this limited impact in temperate regions is also what we would expect. (NETHERLANDS)
391	SPM	3	15	3	16	This sentence is very confusing, please rephrase. The readers may fail to understand that 'which' refers to positive impacts only. Separate the statements, indicating clearly that "Positive impacts are evident in some high-latitude regions" (alternatively, one could replace "which" by 'the latter being evident...') (BELGIUM)
392	SPM	3	15	3	16	The confidence assessment for this bolded statement should be reviewed. We suspect that the confidence assessment belongs with the first part of the sentence before the comma (i.e., negative impacts are more common than positive impacts). We suggest that the sentence stop here, and then elaborate in a new sentence by saying "Positive impacts are evident in some high-latitude regions (evidence/agreement or confidence assessment, or no qualifier if this is a clear fact)." The first part of the sentence may also be more clear if it specified that it is a global finding (e.g., "Globally, negative impacts..."). (CANADA)
393	SPM	3	15	3	16	The sentence could be clarified. It is suggested to replace "more common than positive impacts, which are evident in some high-latitude regions" by "more common than positive impacts; the latter are more evident in some high-latitude regions" (FRANCE)
394	SPM	3	15	3	16	The confidence statement appears at the end of a compound sentence making it impossible to determine which concept is being qualified by the stated level. Please clarify. (USA)
395	SPM	3	15	3	16	The authors should consider stating this in a more forthright manner: "At a global scale, the overall negative impact of climate change on crop yields has been a 1 to 2% reduction per decade (high confidence). Recent climate extremes have contributed to global commodity price shocks." (USA)
396	SPM	3	15	3	18	Negative impacts of climate change and variability on crop and terrestrial food production is also very evident in tropical and low latitudes areas. We therefore request that the statement be recasted to incorporate the tropics and low latitudes. There is a need to harmonize this paragraph with the underlying chapter (Chapter 7). In the Executive summary of Chapter 7, paragraph 1- it seems that positive trends in food production is more evident in high-latitude and thus contradicting what is written in the SPM. (UNITED REPUBLIC OF TANZANIA)
397	SPM	3	15	3	18	Food security is dependent on both terrestrial and marine production potentials and limitations. This bullet about food production should also include observed impacts about marine food production which is also critical information for policy-makers around the world. Suggested reference from the underlying chapters be added to SPM: Climate trends are affecting the abundance and distribution of harvested aquatic species, both freshwater and marine, and aquaculture production systems in different parts of the world. [7.2.1.2, 7.3.2.4, 7.4.2] These are expected to continue with negative impacts on nutrition and food security for especially vulnerable people, particularly in some tropical developing countries [7.3.3.2], but with benefits in other regions which become more favourable for aquatic food production (medium confidence). [7.5.1.1.3](Chapter 7, P2) (JAPAN)
398	SPM	3	15	3	18	This paragraph infers a link to food security but does not make it explicitly. It talks about a medium confidence here whereas greater detail and breakdown on page 10 gives a wider and more specific range of confidences on more details issues. The final sentence implies that the recent food price fluctuations have been entirely driven by climate. This is obviously not the case - climate is one driver. This should be clarified. 'positive' and 'negative' impacts of climate change should be defined and a timescale specified for the statement '...have been more common than' It has always been the case that droughts affect food prices. This is known. What is new? It could be highlighted that climate fluctuations do cause non-linear, cascade effects that can lead to disproportionate volatility in food prices. (UK)
399	SPM	3	15	3	18	The authors should add more examples from the underlying text to support the bolded sentence. (USA)
400	SPM	3	15	3	18	As written, the the bolded sentence is confusing and difficult to understand. The authors should revise the text to improve its clarity. (USA)
401	SPM	3	16	3	16	Are positive impacts in Northern latitudes more evident than negative impacts? If not, why emphasise only the positive? Or are both evident? As it stands, this sentence is open to interpretation. (European Union)
402	SPM	3	16	3	16	the word 'which': does it point to positive or negative impacts? (NETHERLANDS)
403	SPM	3	16	3	16	The native species of high-latitude and altitude systems also get affected. Introduced species may benefit. The loss benefit effects are species/ sectoral specific. Some crop species in some region as of tropics also may benefit. Same species also may lo (INDIA)
404	SPM	3	16	3	18	It is surprising that this statement refers to markets in "key producing regions" only. For internationally traded agricultural commodities (including most cereals), market prices across the world are closely linked, and "key importing regions" are particularly affected by price increases. (European Union)
405	SPM	3	16	3	18	It may be difficult to support a direct causal relationship between food prices and current climatic events, since this relationship involves a multitude of factors, such as policies, increases in population, and increases in demand for food. (NETHERLANDS)

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406	SPM	3	16	3	18	It is suggested to delete the sentence: "Recent periods of rapid food and cereal price increase have indicated that current markets in key producing regions are sensitive to climate extremes" In the underlying document WGII AR5: Chapter 7: page 77, food and cereal index price are analysed, and it says textually: "At the same time, food prices are increasingly associated with the price of crude oil (blue line), making attribution of price changes to climate difficult. Thus, there is clear evidence since AR4 that prices can rise rapidly, but the role of weather in these increases remains unclear". (SPAIN)
407	SPM	3	16	3	18	The question how much climate extremes contributed to rising food prices is a highly sensitive issue, which will be of interest for many decision makers. Thus, it would be good to have some more information on the contribution of climate change on food prices from the relevant chapter, see e.g. Ch 7, P 10, L 26-29. (GERMANY)
408	SPM	3	16	3	18	For this section the SPM refers to Ch 7.3, where we could not find a related statement apart from "Given the hypothesis that climate change will be a contributing factor to food price increases..." (p.24, l.27), which is a rather weak formulation. Please check reference. (GERMANY)
409	SPM	3	16	3	18	Should "rapid food and cereal price increases" be "high food and cereal prices". Shouldn't climate extremes cause anomalously high prices, not anomalously rapid increases? Won't the prices decrease again after the climate extreme finishes? Suggest also making clear whether climate extremes can be distinguished from the many other factors that affect food and cereal prices. (CANADA)
410	SPM	3	16	3	18	Food price increases are linked to a variety of non-climate factors, and it may be difficult to make specific linkages between climate shocks and particular increases. Is the evidence from these underlying chapters sufficient to state that they are sensitive to climate extremes? The authors should look to Ch 9 and related areas to ensure the statements accurately and fully reflect the findings. (USA)
411	SPM	3	17	3	17	Define to which markets the summary refers. (NETHERLANDS)
412	SPM	3	17	3	17	'indicated': are there no real reductions seen? (NETHERLANDS)
413	SPM	3	17	3	17	Please consider to insert "especially" before "cereal prices", and consider to replace "cereal" with "grain". (NORWAY)
414	SPM	3	17	3	17	It is not clear what is meant by "social protection measures"? As this is the first time seeing that terminology in the SPM, the authors should explain what they mean by it in this context. (USA)
415	SPM	3	17	3	18	Given the global market for cereals, variations in local markets are a poor indicator of sensitivity to climate extremes. A statement about broader markets would be more compelling. (AUSTRALIA)
416	SPM	3	18	0	0	Please add the level of confidence: "...extremes (high confidence)". (GERMANY)
417	SPM	3	20	3	20	There is a mention of decades in relation to impact of Climate Change to human health. However, reference to the decade is missing and it may therefore be provided. (INDIA)
418	SPM	3	20	3	20	Please explain the term "human ill-health". (GERMANY)
419	SPM	3	20	3	20	Should "likely" be "high confidence" or "very high confidence"? Whether you use a likelihood term would depend upon whether there is a specific metric that would allow you to quantify what is meant by "ill-health" sufficiently well so that a probability can, at least in principle, be determined. The remainder of the sentence implies that the data are not well-quantified. Suggest the authors review. (CANADA)
420	SPM	3	20	3	21	Please insert at the beginning: "The health of human population is sensitive to shifts in weather patterns and other aspects of climate change (very high confidence)." [TS P 11] (GERMANY)
421	SPM	3	20	3	23	How can health impacts be "likely" and "not well quantified" at the same time? The IPCC uncertainty language requires high confidence in a statement, if likelihood quantified. The information given in this paragraph stays weak quite vague. Please insert more details on increased heat-related mortality. E.g., are there regional differences or other links between climate change and health in addition to heat effects, e.g. increases in vector-borne diseases? (GERMANY)
422	SPM	3	20	3	23	Paragraph presented through lens of ill-health. it would be more accurate to say that climate change has contributed towards avoidance of ill-health (the net impacts of temperature change on mortality - with fewer cold deaths more than offsetting the greater number of heat-related deaths). This could leave the IPCC vulnerable to accusations of bias in presentation of information, and of underplaying the benefits. In the long-term costs will outweigh benefits but to say that we have evidence of climate change contributing the ill-health in the emboldened top line but then underneath, in normal type, to say there also been reduced cold-related mortality looks like doom bias. The conclusion is currently weakly articulated. Could the regions be specified and the impact quantified? (UK)
423	SPM	3	20	3	23	The paragraph lacks of precision: regions are not mentioned and heat-cold are the unique factors mentioned. What about vector-borne diseases, floods, etc.? (SWITZERLAND)
424	SPM	3	20	3	23	Those two sentences are really important, however, in the last sentence, is it possible to clarify whether this is an exception to the statement of the first sentence? E.g., heat-related mortality is better quantify than other ill-health? (NORWAY)
425	SPM	3	20	3	23	Please add more examples from the text to support the bolded sentence. (USA)
426	SPM	3	20	3	23	In discussing "ill health," why are only heat stress mortality and cold-related mortality mentioned? Are not other health effects more prevalent? (USA)
427	SPM	3	20	3	23	Are there no other statements about health impacts that can be derived from the underlying chapters, e.g. on infectious diseases like malaria? (USA)
428	SPM	3	21	3	21	The word 'small' may be replaced by 'less' (INDIA)
429	SPM	3	22	2	3	Please place the medium confidence statement directly after "heat related mortality" and add another low confidence statement after "decreased cold-related mortality". Rational: both effects are not equal in their numbers and confidence [11.4.1]. (GERMANY)
430	SPM	3	22	3	23	The confidence statements appear to be too low. There is substantial evidence on the major death toll (tens of thousands of premature deaths each) for the 2003 west European heat wave and for the 2010 Russian heat waves, which redefined the maximum temperature map for large parts of Europe. Therefore, it's not clear why this statement has not been assigned with "high confidence". (European Union)
431	SPM	3	22	3	23	Perhaps a distinction between diseases and accidents needs to be made here. (NETHERLANDS)
432	SPM	3	22	3	23	Is the increase in heat-related mortality comparable to the decrease in cold-related mortality, or which is higher? (DENMARK)

#	Ch	From Page	From Line	To Page	To Line	Comment
433	SPM	3	22	3	23	This statement is quite vague, could you clarify? In some regions, the effect of climate change might be clearer - according to chapter 11, "the influence of seasonal factors other than temperature on winter mortality suggests that the impacts on health of more frequent heat extremes greatly outweigh benefits of fewer cold days". (BELGIUM)
434	SPM	3	22	3	23	"There has been increased heat-related mortality and decreased cold-related mortality in some regions as a result of warming". This equivalent weighting between increased heat-related mortality and decreased cold-related mortality is not consistent with the wording in Chapter 11, Section 11.4.1. The text notes that the association between increased heat and mortality is particularly robust, but states that the few studies of developing countries point to effects of increased heat but not cold on mortality. (USA)
435	SPM	3	23	3	23	Appearance of new diseases or new strains of disease organisms is not mentioned, though literature is available. (INDIA)
436	SPM	3	25	0	0	The subtitle "vulnerability and exposure" does not adequately describe the subsequent paragraphs, because they mainly address non-climatic factors that influence vulnerability (adaptation deficits, poverty, violent conflict), and they merely address natural systems. We therefore suggest replacing the subtitle by "vulnerability and exposure of human systems". (GERMANY)
437	SPM	3	25	3	25	This subheading (Vulnerability and exposure) is not necessary - recommend deleting. If kept, then to be consistent, there would need to be a subheading on page 2 for Observed Impacts. (CANADA)
438	SPM	3	25	3	44	This section is titled "Vulnerability and exposure", but there is actually not much on exposure. Exposure of people and assets to extreme climate events has increased in many regions due to changes in population distribution (e.g. migration to coasts), changes in climatic hazards, or both. This important fact deserves to be mentioned explicitly in one or two paragraphs. (European Union)
439	SPM	3	25	3	44	It could be expected that "vulnerability and exposure" synthetically illustrate which are the most vulnerable geographical areas worldwide. (ITALY)
440	SPM	3	27	3	27	Would it be possible to find a more understandable expression for "multidimensional inequalities"? (NORWAY)
441	SPM	3	27	3	27	What do the authors mean by the phrase "Differences in mortality:" Differences between what and what? Differences across regions? Please clarify. (USA)
442	SPM	3	27	3	28	"Differences in vulnerability and exposure arise from non-climatic stressors and multidimensional inequalities, which shape differential risks from climate change". Recognising that this statement is made with very high confidence and that the jargon is clarified in Box SPM.3, nevertheless it does not have significant impact in this wording. Can the author team please rewrite this sentence in simpler, more direct language suitable for the SPM audience? (NEW ZEALAND)
443	SPM	3	27	3	28	The sentence might need a definition of what "differential risk" means. (FINLAND)
444	SPM	3	27	3	28	Non climatic stresses and multi-dimensional inequalities may be expanded by specifying infrastructure and socio economic indicators. (INDIA)
445	SPM	3	27	3	28	Differences in exposure are not only due to stressors - this sentence (in conjunction with Box SPM.3) seems to say that marginalized populations are generally more exposed to climate change impacts. This is an oversimplification, as exposure can also relate to assets in exposed locations, which tend to increase with increasing wealth in some locales. Additionally, this statement seems to relate to human systems only, and should be extended to explicitly include natural systems. There are manifold examples in the report discussing compound effects of multiple (human) influences on ecosystems, and such confounding factors are important in the context of detection and attribution. Finally, the sentence in its current form is much too complex for non-experts; therefore, we suggest the following alternative: "In addition to climate change, people and natural systems are exposed to a multitude of other stressors. This fact and different types of multidimensional inequalities within societies result in differences in vulnerability in exposed location, which ultimately also shape risks of being negatively affected by climate change. For vulnerability, see Box SPM.3". (GERMANY)
446	SPM	3	27	3	28	Unnecessarily complicated development speak. This is an SPM and we want people to understand it - Sentence should be reworded using simple language e.g. "Vulnerability and exposure to climate impacts may be exacerbated or reduced by non-climatic factors, such as social inequalities or adaptation measures." At present the point is lost due to the structure. (UK)
447	SPM	3	27	3	28	The current sentence is very difficult to understand and should be revised. The term "multidimensional inequalities" will not be understood. A much clearer statement of this very simple concept would be "Many non-climatic factors affect vulnerability to climate change". (CANADA)
448	SPM	3	27	3	28	The acknowledgement of non-climatic stressors is highly appreciated. One could be more specific and mention e.g. economic development (albeit true, lack of adequate spatial planning can possibly not be mentioned that bluntly) (SWITZERLAND)
449	SPM	3	27	3	28	The text in bold would be easier to understand if it was elaborated in an additional sentence as for the other paragraphs. Please consider including the entire paragraph in TS on page 6, e.g. "Vulnerability and exposure [...] climate related hazards." The text will become clearer and give an explanation of what non-climatic stressors and multidimensional inequalities are. (NORWAY)
450	SPM	3	27	3	28	This sentence is not consistent with what is said in Figure SPM.1 caption. Please check for consistency. (NORWAY)
451	SPM	3	27	3	28	"Also" should be added so that the sentence "Differences in vulnerability and exposure "also" arise from no-climatic stressors" would avoid the wrong understanding (interpretation) that differences in climate change have no impact on differences on vulnerability and exposure. (FRANCE)
452	SPM	3	27	3	28	This statement as written is confusing. The authors of Box SPM.3 need to clarify the language to be more consistent with the text in the Box itself (e.g., ...heightened vulnerability is rarely due to a single cause. Rather, it is the product of intersecting...) (USA)
453	SPM	3	28	3	28	It's not clear whether the "very high confidence" assessment that is given here is consistent with the "medium evidence, high agreement" assessment reported in Box SPM.3. Suggest reviewing. (CANADA)

#	Ch	From Page	From Line	To Page	To Line	Comment
454	SPM	3	28	3	31	This statement is true, but maybe too abstract and difficult to understand for policy makers. We suggest to rephrase to: "Human and natural systems are not only exposed to by climate change, but to a range of factors (multi-stress), most of which are local or regional. These factors may exert a negative influence on the vulnerability for climate change. This implies that in efficiently reducing the impact or improving survival of systems, all stress factors need to be considered". (NETHERLANDS)
455	SPM	3	30	0	0	Can "recent" be quantified, e.g. "Impacts from extreme climatic events DURING THE PAST XX YEARS, such as heat waves ..."? (NEW ZEALAND)
456	SPM	3	30	0	0	Should wildfire be identified as a climatic event? Based on the usual meaning of climate, this may not be correct. (CANADA)
457	SPM	3	30	3	30	Use extreme 'weather' events than extreme climate events throughout text. In later text, weather extreme is also mentioned. Consistency is required. (INDIA)
458	SPM	3	30	3	30	After the word 'floods', add 'high intensity precipitation events' since these also fall under the scope of extreme climatic events (INDIA)
459	SPM	3	30	3	30	It would be more precise to write "reveal" instead of "demonstrate". (GERMANY)
460	SPM	3	30	3	30	Remove ',' before 'and' (POLAND)
461	SPM	3	30	3	30	To be consistent with the wording used in the definitions Box SPM.1 you should replace "extreme climatic events" with "extreme climate events". You should also consider to replace "to climate variability" with "to these climate changes". (NORWAY)
462	SPM	3	30	3	31	When talking about "significant adaptation deficit for some sectors and regions" it is imperative to give some examples. This is an important issue for policymakers. (SWITZERLAND)
463	SPM	3	30	3	32	Storms and tropical cyclones should be added to the list of "extreme climatic events". (European Union)
464	SPM	3	30	3	32	In order to explain the impacts, you might consider to include also some examples from the second sentence in TS on page 7 "Impacts include the alteration of ....." (NORWAY)
465	SPM	3	30	3	32	Exposure is generally considered to be a component of vulnerability in most definitions, so it is not clear why it is being broken out separately here. In the executive summary of chapter 25 (p. 3), from which this statement is derived, it is not broken out separately. The authors should be consistent with the underlying text. (USA)
466	SPM	3	30	3	33	Effects on human health are not clearly stated, I suggest to refer to them explicitly. (GREECE)
467	SPM	3	30	3	33	Please add one or 2 sentences on regional dimension of vulnerability (INDIA)
468	SPM	3	30	3	33	Storm surges and hurricanes (26.4.1) and heavy rains (24.4.6) should also be included as examples of climate extremes. (JAPAN)
469	SPM	3	30	3	33	Please check that "some" is the most appropriate term in the phrasing "some ecosystems are vulnerable..." : while this might not be demonstrated by observations so far (?), chapter 4 concludes that most (not just some) ecosystems are vulnerable. In addition, it would be useful to replace "climate variability" with "climate conditions" (or just "climate") to avoid the possible misinterpretation that recent extreme events are solely due to natural variability. (BELGIUM)
470	SPM	3	30	3	33	"some ecosystems and many human systems" is incredibly vague and not useful. Please give examples. Define 'adaptation deficit' presumably this means the shortfall of adaptation measures to cope with the impacts. Could also be due to a deficit of understanding, or maladaptation or just being taken completely by surprise, regardless of what the climate impacts scenarios might have suggested would happen. Societies can only adapt on the basis of the information they are provided with. (UK)
471	SPM	3	30	3	33	In this paragraph too, explicit reference to regions would be very useful for the reader (the reference to the chapters is not so informative and makes the SPM a non stand-alone readable document) (SWITZERLAND)
472	SPM	3	30	3	33	It is possible to indicate whether there has been a positive or negative development in vulnerability and exposure over for example the last decades? (NORWAY)
473	SPM	3	30	3	33	This paragraph, with its use of the word 'some', doesn't give the reader enough details to be of value. If it is going to be included, please add a few more sentences that discuss specific examples of ecosystems and systems that are vulnerable and exposed. (USA)
474	SPM	3	31	3	31	Replace 'climate variability' with 'climate extremes'. The key point here is that vulnerability to current extremes illuminates vulnerability to a changed climate in the future. (AUSTRALIA)
475	SPM	3	31	3	31	Why 'some' ecosystems only? May not be in line with page 2 line 32 statement. (European Union)
476	SPM	3	31	3	31	"some ecosystems and many human systems": please name some examples. (NETHERLANDS)
477	SPM	3	31	3	31	Climate "variability" or climate "extremes" (or suchlike)? (SWEDEN)
478	SPM	3	32	3	32	Please explain: 'adaptation deficit'. (NETHERLANDS)
479	SPM	3	32	3	32	Is "experiences" the right term here? Suggest that changing the text to "This is consistent with..." would achieve the same result and avoid the term. (CANADA)
480	SPM	3	32	3	32	Is it better to use the word "effects" instead of "experiences" ? (NORWAY)
481	SPM	3	32	3	32	"Significant adaptation deficit" is too restrictive. Proposal : "low resilience and low adaptation processes implementation" (FRANCE)
482	SPM	3	32	3	33	The last sentence of the paragraph does not read well. What do you mean by "experiences"? Impacts from extreme events? The last phrase also highlights adaptation deficits, but it should be enough to highlight that these deficits exist for both developing and developed countries. The reference to sectors and regions does not contribute anything. Suggest to delete 'for some sectors and regions' as it is too generic, or alternatively become more specific. (European Union)
483	SPM	3	32	3	33	Since developing countries are faced with a more noticeable deficit in adaptation, it is suggested to reword the expression as "...in developing and developed countries for some sectors and regions, especially in developing countries." (CHINA)



#	Ch	From Page	From Line	To Page	To Line	Comment
484	SPM	3	32	3	33	The meaning of the sentence, "These experiences are consistent with a significant adaptation deficit," is unclear. When the authors use "adaptation deficit" do they mean to refer to the fact that countries are underprepared for current and future climate change? Or that they have less capacity to adapt because of lower levels of development? And what does it mean for "these experiences" to be consistent with a significant adaptation deficit? If the authors mean that the impacts of extreme events are, to a great extent, related to the fact that countries are underprepared for current climate conditions, it would be better just to say that explicitly. The statement needs to be followed by supporting evidence in any case. (USA)
485	SPM	3	33	0	0	Please see our general comment on the need of concrete examples. This paragraph would benefit of some concrete examples of sectors and regions. (FINLAND)
486	SPM	3	33	3	33	Does this mean this statement is not valid for all regions? (NORWAY)
487	SPM	3	35	0	0	For consistency with other text, suggest using the word "risk" instead of "threat". (CANADA)
488	SPM	3	35	3	35	Some examples of climate -related hazards here would be useful. These could illustrate the distinction between climate-related hazards and climate extremes. (AUSTRALIA)
489	SPM	3	35	3	35	What are "climate-related hazards"? How do they differ from "extreme climatic events" discussed in the previous bullet? (USA)
490	SPM	3	35	3	35	After "people" insert " , especially those" (USA)
491	SPM	3	35	3	36	Please consider to use a more understandable term than "threat multiplier". (NORWAY)
492	SPM	3	35	3	36	The authors should replace "constitute" with "are adding" (USA)
493	SPM	3	35	3	40	This paragraph is closely linked to p.3, l.27-28. Maybe merge them. (GERMANY)
494	SPM	3	35	3	40	Can something be said here about the fact that people living in poverty are quite exposed to climate change inasmuch as their livelihoods are often directly dependent upon the healthy functioning of natural systems? can a statement about the relative costs/benefits of cc be made for developed countries, in the same way it has been for developing countries (in that the para talks about 'poor people')? (UK)
495	SPM	3	35	3	40	These hazards do not just affect poor people / people living in poverty. Middle-income and, indeed, high-income people's livelihoods may be negatively affected by climate change - just in different ways from poor people sometimes. The authors should consider making a more balanced presentation of views here. (USA)
496	SPM	3	35	3	40	This section describes the vulnerability of people in poverty to climate impacts and cites the health chapter, but does not refer at all to health as an impact on the poor, only livelihoods. The authors should consider adding the words "and health" after "livelihoods" in the bolded text. (USA)
497	SPM	3	36	3	38	Please consider if environmental degradations and health problems should also be mentioned here. (NORWAY)
498	SPM	3	36	3	40	It is mentioned that climate related hazards affect people's lives from all types, poor, marginal farmers and vulnerable groups (INDIA)
499	SPM	3	37	0	0	Food prices are one factor that can lead to food insecurity and one factor out of others that can indirectly affect people's livelihood. Therefore, please insert "such as" and skip "food insecurity". The sentence should read: "indirectly, such as through increased food prices"; (GERMANY)
500	SPM	3	37	3	37	It is suggested to add words on health impact here. "destruction of homes" should be added with "as well as harm to their health (11.3)" in the end. (CHINA)
501	SPM	3	38	3	38	"indirectly through increased food prices." Why is this considered indirect? It seems as direct as anything. (USA)
502	SPM	3	38	3	40	It is unclear how climate-related hazards can have positive effects; preparedness and agricultural diversification, for example, would be the result of prevention measures but not of hazards themselves. Need to re-phrase. (European Union)
503	SPM	3	38	3	40	These aspects (agricultural diversification, collective action etc.) are adaptation strategies, not "positive observed impacts" as suggested here. Please specify the dimension and magnitude of positive impacts of hazards on poor people and add a summarizing sentence on the overall effect of positive and negative impacts. What is the prevailing impact? (GERMANY)
504	SPM	3	38	3	40	This sentence is in a paragraph on impacts of climate change, but what it describes is not an impact of climate change : these are consequences of (some) climate adaptation. It says the equivalent of "A positive impact of being sick is that you take more care for your health" : it is misleading to attribute this change to the disease. A solution might be to explain that it is a positive impact of adaptation to climate-related hazards. (BELGIUM)
505	SPM	3	38	3	40	Is the positive observed impacts on poor people caused by climate change or their adaptation to climate change? Please clarify. (NORWAY)
506	SPM	3	38	3	40	Consider removing the word "limited" - the description of isolated cases makes the point. Having both adds too much emphasis on the limitations (USA)
507	SPM	3	39	3	39	Unclear what does social asset accumulation mean? Can this be reworded in simpler terms? (IRELAND)
508	SPM	3	39	3	39	Suggest that the concept of "social asset accumulation" may need to be explained for readers of the SPM in order to ensure the concept is fully understood. Also, suggest inserting "increased" ahead of "disaster preparedness". (CANADA)
509	SPM	3	39	3	39	The authors should clarify what is meant by "social asset accumulation". (USA)
510	SPM	3	39	3	40	The authors should clarify what is meant by "collective action". (USA)
511	SPM	3	42	3	42	Clarify if the word "affected" refers to "violent conflict" or to "climate change". (NETHERLANDS)
512	SPM	3	42	3	42	Please modify: "increases" instead of "influences". (GERMANY)
513	SPM	3	42	3	42	In some instances in the SPM, modifiers are used in statements that perhaps do not correspond well to the associated calibrated assessment. In this sentence, for example, given that there is "medium evidence", is it appropriate to state that violent conflict "strongly" influences vulnerability to climate impacts? Would it not be as informative to delete "strongly"? Suggest reviewing. (CANADA)
514	SPM	3	42	3	42	Is it possible to replace "influences" with "increases"? (NORWAY)
515	SPM	3	42	3	44	What is a violent conflict? I think conflict happen in on area may have serious transboundary effect on climate change adaptation (UNITED REPUBLIC OF TANZANIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
516	SPM	3	42	3	44	For a better description of human security issues it is suggested to see the Technical Summary (B-2. Sectoral risks and potential for adaptation - Human security). For example, it could be stated: "climate change over the 21st century will have significant impacts on forms of migration that compromise human security. It may also increase risks from violent conflicts, both between social groups and within states by exacerbating well established drivers such as poverty, economic shocks and availability of natural resources". (ITALY)
517	SPM	3	42	3	44	There are two conclusions regarding climate change and violent conflict in the SPM. Page 3 (lines 42-43) says that "violent conflict influences vulnerability to climate change" citing chapters 12.5, 19.4 and 19.6. Page 12 (lines 5-8) says that "climate change influences risks from violent conflict" citing chapters 12.5, 13.2 and 19.4. We have two concerns with these statements: 1) Both statements are based on language in the underlying chapters that is qualified by statements such as "emerging area of research" "modest bodies of research" and "very little research". Highlighting such new and uncertain scientific findings in the SPM seems premature. We suggest that these statements and the subsequent related text be removed. 2) If the authors chose to retain the comments, we suggest that they be consolidated and some discussion be provided for the seemingly circular relationship between these two factors. (USA)
518	SPM	3	43	3	43	Why only "large-scale" conflicts? And what are "large-scale" conflicts? (GERMANY)
519	SPM	3	43	3	44	The term "facilitate adaptation" should be replaced by "facilitate coping and adaptation". (European Union)
520	SPM	3	44	3	44	Remove ',' before 'and' (POLAND)
521	SPM	3	46	0	0	"Multidimensional Inequality" is jargon - please replace this phrase with everyday language more suitable for the SPM audience. (NEW ZEALAND)
522	SPM	3	46	4	7	Box SPM.3. is very small. Please consider making it into a ordinary paragraph. (FINLAND)
523	SPM	3	46	4	7	The findings presented in Box SPM.3 contain crucial messages worth mentioning in the main text. (JAPAN)
524	SPM	3	46	4	7	Box SPM.3: This Box is referred to on page 3 line 28 at the end of a single sentence paragraph. We recommend that the content (or parts thereof) of this Box be moved to follow the text on page 3 lines 27-28. The Box is unnecessary, and a more simply-worded version of it would be better placed in the main body of the text. The other three Boxes in the SPM are used to provide necessary background information for reading the SPM and do not present findings. The WGI SPM Box on RCPs was similarly used to provide essential background information. Findings are more appropriately positioned within the main text. (CANADA)
525	SPM	4	0	4	0	This section is not informative to most policymakers. This section should open with a fuller introduction to adaptation from a policymaker perspective. For example, give a definition. (UK)
526	SPM	4	0	4	0	Discussion seems to imply that adaptation does not include disaster risk management, as these are talked about these as separate concepts - a definition is needed at the outset to clarify interpretation of adaptation. (UK)
527	SPM	4	0	4	0	adaptation actions can be divided in planned/proactive and reactive/autonomous. This should be better conveyed. (UK)
528	SPM	4	0	4	0	Also, clarify "what is different about adaptation"? "how is adaptation different to normal disaster risk management or water resources management"? "how is it different to the adaptations that societies have been making for millennia to cope with natural climate variability"? All these questions are essential to set the context for your more technical discussion. (UK)
529	SPM	4	0	4	0	There are various references to substantial reduction of risks /indications of recommended actions, scattered throughout. This is hard to navigate It would be more accessible to policy makers were all mentions of recommended actions grouped, even if this introduces repetition. (UK)
530	SPM	4	0	4	0	this list gives many examples of good practice/process. Can statement on negative examples of failure to act/plan be added? (UK)
531	SPM	4	0	4	0	The section should be expanded to be similar to that of AR4, with country perspectives of impacts. This would be more interesting and policy relevant that as current , which does not convey this content from underpinning chapters well. (UK)
532	SPM	4	0	4	0	The regional list of governance/adaptation plans/policies could be represented as a figure on a map. I always find pictures more accessible. (UK)
533	SPM	4	1	4	3	This sentence pretends that only "marginalized" people are vulnerable, which is not true. The wording is confusing, please revise. (GERMANY)
534	SPM	4	1	4	7	The message in these lines seem to be a bit too general and not easy to understand. Please consider clarifying and making the message more concrete. (NORWAY)
535	SPM	4	2	4	2	We suggest that the sentence " highly vulnerable to to climate change and climate change responses" be recasted to read " highly vulnerable to climate change impacts" (UNITED REPUBLIC OF TANZANIA)
536	SPM	4	2	4	2	Please add after "vulnerable to climate change and": ",to a far lesser degree,". Rational: vulnerability caused by climate change and vulnerability caused by climate change responses are not equal in its magnitude and confidence [8.1, 8.5, 11.1,11.3,13.2]. (GERMANY)
537	SPM	4	2	4	2	What is meant by being "vulnerable to climate change responses"? Would "impacts" or "consequences" be a better word here than "responses"? (CANADA)
538	SPM	4	2	4	3	Please amend the second sentence as follows. "This heightened vulnerability of individuals, households and communities is multidimensional and rarely due to a single cause." With this addition you can delete the last sentence of the box. (FINLAND)
539	SPM	4	4	4	4	After "... including, for example," please add: "governance,". (GERMANY)
540	SPM	4	5	4	5	While we appreciate the focus on human systems, natural systems are also important and addressed comprehensively in the WGII report. We therefore suggest complementing the description of vulnerability by adding the following sentence after "(dis)ability": "In addition, social vulnerability is shaped by the surrounding natural resources and ecosystems, as people depend to different degrees on the services, these ecosystems provide". (GERMANY)
541	SPM	4	5	4	5	For the non-native reader of English, the term '(dis) ability' is a little confusing. For clarity, request that written either as disability or ability; depending on what the actual meaning is intended by the authors (JAPAN)
542	SPM	4	9	4	46	Adaptation is largely based towards ecosystem based, while the efforts on use of energy efficient lamps, technologies, appliances, transport systems, etc is almost neglected. Adding some examples of these will help the policy support (INDIA)
543	SPM	4	9	4	46	There are some statements missing: Are current adaptation activities sufficient to address current climate change? Can adaptation activities be enhanced for future climate change conditions? (GERMANY)

#	Ch	From Page	From Line	To Page	To Line	Comment
544	SPM	4	11	4	12	Is there a distinction between countries or regions who examine observed climate change impacts and those who look at projected climate change? In addition, is there a trend to be seen from observed to projected climate change impacts? Please name countries by name. (NETHERLANDS)
545	SPM	4	11	4	12	The formulation is much too complicated, while the message remains unclear and vague. Please rephrase. Do you mean that adaptation activities can be motivated by reasons beyond climate change impacts? (GERMANY)
546	SPM	4	11	4	12	The intentions of this sentence as an introduction of section A-2 is vague. Suggest deletion or rewriting to include the full paragraph from the TS (p11), which is far more understandable. (JAPAN)
547	SPM	4	11	4	14	Is it possible to indicate whether the existing adaptation efforts are sufficient compared to the problems at stake? (NORWAY)
548	SPM	4	14	0	21	Brazil appreciates the fact that the IPCC WGII AR5 SPM consolidates and highlights main impacts and sectors to be affected by climate change, representing a document more oriented to help decision making, in particular the sections highlighting the importance of social protection and income distribution policies as adaptation measures to climate change, such as the section about Adaptation Experience (page 4, line 14-21) which reads "increasing recognition of the value of ecosystem based, institutional, and social measures. Including provision of social protection measures, and of linkages with disaster risk reduction". (BRAZIL)
549	SPM	4	14	4	14	Here example of 'high confidence' in relation to 'some planning processes'. This is obvious, but could be specified. (NETHERLANDS)
550	SPM	4	14	4	21	This opening para is too long and uses complex language. It's hard to see what the main points are. It implies wide spread action is being taken on adaptation. It would be more realistic to add a caveat that there is very wide variation in the uptake of adaptation and even more on embedding in policy across the world, and that there is even more uncertainty of the success or failure of adaptation policies (UK)
551	SPM	4	14	4	21	"value" - what is the value here? Economic? Ecological? (UK)
552	SPM	4	14	4	21	"committed climate change" - definition needed (UK)
553	SPM	4	14	4	21	"large magnitudes" - can this be defined? (UK)
554	SPM	4	14	4	21	why has the 4 degree figure been selected? It seems an arbitrary choice. As goals are aimed at keeping temperature change to 2 degrees it seems appropriate to put in impacts for a range of outcomes (UK)
555	SPM	4	14	4	21	We believe it would be very helpful if you could list the tools that are already available for governance, of course in different quality in different regions of the world, to actively engage into processes to adapt and reduce vulnerability to climate change. Such as building laws and standards, spatial and land-use planning tools and other mechanisms that are present and can easily be developed to take the challenges from climate change into account. (NORWAY)
556	SPM	4	14	4	46	A very qualitative description. In l. 15 there is a suggestion of 'commonly implemented adoptive responses'. However in lines 20/21: very few assessments/evaluations of actual implementation seem to exist. Can a more quantitative statement somehow be made on the actual implementation of adaptation measures? This seems to be crucial information which is not well conveyed. (European Union)
557	SPM	4	15	4	15	Does this statement reflect reality? Engineering and technological adaptation are probably more conspicuous or take more resources (more expensive), but there are also other adaptation actions (including those listed in table SPM.2 and involving governance, capacity building, planning and decision making, mainstreaming, etc) that are being developed in many countries, regions, etc. Maybe some examples of these engineering/hard solutions might help. (European Union)
558	SPM	4	15	4	15	Please consider rephrasing this sentence to make it clearer. It is at the moment not clear if engineered and technological adaptation options are the most commonly implemented physical adaptive responses, or if such (physical) adaptive responses are more common than all other (ecosystem-based, institutional etc) categories of adaptation options combined. (NORWAY)
559	SPM	4	15	4	15	Engineered and technological adaptation options are the most commonly implemented adaptive responses? This surprising. There are likely many adaptive decisions that make for a shift in timing or shifting place that occur many times more frequently than engineered/technical solutions. Please see Ch 15.2.2, pg 8, paragraph beginning with Mullan (2013)...which indicates that much of the adaptation taking place is through accumulated knowledge and incremental and notes that, "In many cases, these practices have been embedded in existing policies, and thus not necessarily framed or made visible as climate adaptation actions." The authors should more accurately reflect this underlying text in the SPM. (USA)
560	SPM	4	15	4	17	We think this sentence is not very carefully worded. We propose to rephrase to: "Since AR4, there have been several periods of high food prices, demonstrating a high price sensitivity for small fluctuations in availability.". (NETHERLANDS)
561	SPM	4	15	4	17	The meaning of this sentence is not clear to readers outside the field of expertise. It seems "measures" means actions or options rather than metrics (as WGI experts might assume). Suggest adding the word "adaptation" before "measures". Also without referring to the underlying chapters, the meaning of "social measure", "institutional measure" or "social protection measure" is unclear, and may not be clear to policymakers either. Suggest using simpler language to describe these actions and giving concrete examples. Lastly, rather than writing "There is increasing recognition", which presumably refers to the literature, the authors could make an assessment themselves and write something like "Ecosystem-based measures..... are valuable/important/useful". (CANADA)
562	SPM	4	16	4	16	Remove ',' before 'and' (POLAND)
563	SPM	4	17	4	17	Remove ',' before 'and' (POLAND)
564	SPM	4	17	4	19	Consider making the language used in this sentence less technical in order to increase the readability (NETHERLANDS)
565	SPM	4	17	4	19	Please consider rephrasing this sentence, e.g. "[...] incremental adjustments and co-benefits, and increasingly with emphasis on flexibility and learning.". Maybe you could consider to give some examples of co-benefits? (NORWAY)
566	SPM	4	18	0	0	"Incremental adjustments and co-benefits". What is meant with this? Incremental compared to what? Benefit from what? (FINLAND)
567	SPM	4	18	4	18	"emphasize ... learning" - It is unclear what learning is referred to here. If it is "learning by doing" or "learning from mistakes" or "learning from experience" - this should be stated. (The latter one is used on P 13, L 26). (GERMANY)
568	SPM	4	19	4	19	Remove ',' before 'and' (POLAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
569	SPM	4	19	4	21	This is a statement about the literature rather than about the impacts themselves. Suggest either delete it, or if the lack of evaluations of implementation is important for setting the other results in context, consider something like 'Few studies have evaluated adaptation actions, limiting our confidence in....'. (CANADA)
570	SPM	4	19	4	21	"...with very few [evaluations] assessing the processes of implementation or actual adaptation actions". This statement does not reflect findings from underlying chapter 15, page 7, section 15.5.2.2, which states that there is a minority of academic literature on the implementation of plans and that most reports on implementation are from international organizations, governments, NGOs, etc. The authors should, therefore, change the text to read "...with very little academic literature that provides information on the implementation of adaptation action" (USA)
571	SPM	4	19	4	21	"Most evaluations of adaptation..." This sentence treats an important and interesting topic but is difficult to understand. For example, it is not clear what is meant by "Most evaluations of adaptation have been restricted to impacts..." This seems to say that adaptation measures have been evaluated by assessing their effectiveness at reducing impact; it seems doubtful, however, that this is actually the case. The authors should revise this statement for clarity. (USA)
572	SPM	4	20	0	0	add "that can be hindered by a lack of available resources." (JAMAICA)
573	SPM	4	21	4	21	There are so many references for this paragraph that it is necessary to help the reader interested in more information. Please provide suggestions for links that the reader interested in some more detail should open first - e.g. by showing these in bold, or sorting the reference by relevance rather than by chapter. (BELGIUM)
574	SPM	4	21	4	25	This statement is true, but could be made easier to understand. We suggest to rephrase to: "Adaptation to climate change in rural areas is hindered by non-climate stresses (high confidence). Environmental degradation, underinvestment, poor education of farmers, gender inequality, and limited policy implementation increase vulnerability to climate change of rural communities, particularly in developing countries." (NETHERLANDS)
575	SPM	4	23	0	0	Proposed change in the title: Governments...starting to develop and/or to implement adaptation plans.... (POLAND)
576	SPM	4	23	4	23	It bit of clarification is needed on what you mean by "at various scales"? Levels of government, regions? (European Union)
577	SPM	4	23	4	23	Some governments are making big efforts to integrate adaptation in relevant sectoral policies, and this should be reflected in these lines, making clear that governments are not only developing specific plans or policies for adaptation, but also integrating adaptation in sectoral or thematic policies and plans. (SPAIN)
578	SPM	4	23	4	23	The words 'related' and 'broad spectrum of' may be added before 'policies' and 'adaptation' respectively (INDIA)
579	SPM	4	23	4	23	Suggest that "levels" may be a better term than "scales"? It is implicitly understood that the lower the level government (e.g., municipal rather than federal) the more regionalized the scope of concern and operation. (CANADA)
580	SPM	4	23	4	24	There is substantial evidence of governments acting at various scales. For example in Europe, 16 out of 32 member countries of the European Environment Agency had developed national adaptation policies in early 2013, and many had also developed national action plans (see EEA report 3/2013 "Adaptation in Europe", <a href="http://www.eea.europa.eu/publications/adaptation-in-europe">http://www.eea.europa.eu/publications/adaptation-in-europe</a> ). Therefore the confidence should be "very high" (at least for the European case). (European Union)
581	SPM	4	23	4	24	"governments at various scales are starting to develop adaptation plans and policies" - is not very informative. A suggestion is to apply the same sentence in the TS (page 11, starting with "Adaptation is already ..." Additionally, we wonder the value of the 'high confidence' uncertainty qualifier at the end of this conclusion, as anyone could say that they are starting to develop plans and policies. Perhaps the following suggestion may be an improvement: "Governments at various scales strive to develop adaptation plans and policies with varying success rates, while continuously learning from each other." (NETHERLANDS)
582	SPM	4	23	4	24	If evidence exists, please state the incremental cost and additional burden for the rural communities and the governments in adapting to current climate risks and impacts (INDIA)
583	SPM	4	23	4	24	Could this list be referred to as a list of examples or is it more comprehensive? It does not seem evident that each statement lists all the key adaptation policies in the given region. Please clarify. (BELGIUM)
584	SPM	4	23	4	24	Governments at various scales: there is too much emphasis on government, and not enough on what citizens and the private sector are already doing as well. Either expand the section or add a distinct section to give the citizen/private sector perspective (UK)
585	SPM	4	23	4	45	The paragraph contains an inconsistency. Although the header reads "Governments ... starting to develop adaptations plans ...", the statements on the "Arctic" (L 41-43) only mention the special challenges the Arctic is facing and adaptation by residents. If there is current government engagement with respect to adaptation (plans), this should be said or otherwise clarified. (GERMANY)
586	SPM	4	23	4	45	Add another bullet for the Ocean (compare with Table SPM.1 pages 17, 18, 19) (POLAND)
587	SPM	4	23	4	45	An example from the Middle East (or the MENA region) would be useful too. (TURKEY)
588	SPM	4	23	4	45	Is this section trying to give the key adaptation actions regionally, or is it just giving example of what has been done? I suspect lots of countries will want to add other key examples from their region, so suggest making the aim of this section clearer. (UK)
589	SPM	4	23	4	46	It is great to see a section focused on progress. However, the inconsistency in detail about progress towards adaptation could be misconstrued. For example, coastal communities in the US (including some state governments) have approved/passed specific legislation, ordinances, or planning requirements, and some water utilities in North America are implementing new reservoir operating procedures. The different regions should either be consistently assessed (qualitative or quantitative) or comparably framed. (USA)
590	SPM	4	23	4	46	The regionally-specific examples are confusing. Do the authors intend to say that the examples cited (e.g., governance systems for adaptation in Africa) are limited to those regions? It seems reasonable to think that many of the examples cited for one region would apply to other regions as well. The authors should consider inserting a short explanation of the purpose of the examples and how they relate to the specific regions. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
591	SPM	4	24	4	45	You correctly attribute "high confidence" to the sentence P 4 L 23 to 24. As you insert the bullet points that list 'adaptation experiences' in regions directly after this sentence, it suggests that there is also a "high confidence" for these country experiences. Do the bullet points just list experiences or are the statements on regional experience based on high confidence (evidence and agreement)? If not, please insert an introductory sentence or a confidence statement to these bullet points. (GERMANY)
592	SPM	4	25	4	25	Split the sentence in two parts. For example by adding a dot after "...for adaptation" and starting a second sentence with in predominantly". (NETHERLANDS)
593	SPM	4	25	4	25	The word 'most' may be replaced by 'all' (INDIA)
594	SPM	4	25	4	25	The text 'and responding to climate change' may be added after the word 'adaptation' (INDIA)
595	SPM	4	25	4	25	Replace 'adaptation, and in' by 'adaptation and, in' (POLAND)
596	SPM	4	25	4	25	Meaning of: 'initiating governance systems for adaptation' obscure (UK)
597	SPM	4	25	4	25	We would propose to insert a chapeau for the list of bullets points that may read: "Examples of approaches in the various continents are:" (SWITZERLAND)
598	SPM	4	25	4	27	What exactly do you mean by "isolated efforts"? (GERMANY)
599	SPM	4	25	4	27	This sentence is quite complex, undermining its clarity. We suggest to split it in two, and reformulate the second half to "Vulnerability is reduced by predominantly isolated efforts in disaster risk management,..." (BELGIUM)
600	SPM	4	25	4	27	Suggest revising this sentence to avoid misinterpretation. Upon reading this sentence as written, we understood that governments were only, in isolated instances, initiating disaster risk management, etc. Suggest splitting this sentence into two, ending the first sentence after "for adaptation". The second sentence could begin with "Disaster risk management, adjustments in technologies....etc....are reducing vulnerability, although efforts to date tend to be isolated." (CANADA)
601	SPM	4	25	4	27	Please consider splitting this sentence in two, after "systems for adaptation". (NORWAY)
602	SPM	4	25	4	31	Chapter 11.7 is cited for each example in Africa, Europe, and Asia, yet health is treated minimally in the SPM. Recommend changing to "disaster health risk management" if the health chapter is being cited for the disaster risk management statement and also to include mention of other health adaptation measures, such as early warning systems for infectious diseases and heat waves. (USA)
603	SPM	4	25	4	40	It is very difficult to choose one example to represent an entire region, but there is, indeed, value in providing examples. Please scrub the adjectives in these examples to make sure that they don't inadvertently convey value judgements that diminish one region while praising others. In lists like this, it is easy to find one exception to disprove the statement. Therefore, the authors should consider deleting "and in predominantly isolated efforts" in line 25, "some" in line 28, "sometimes" in line 30, "major" in line 33, "incremental" in line 35. (USA)
604	SPM	4	25	4	45	Comments on a whole section: section is very broad ranging. As a result all detail is lost for regions. Should consider increasing content by introducing regions. Alternatively, use Table TS.6. from the TS (pg 50-53) (IRELAND)
605	SPM	4	25	4	45	Adaptation experiences in the least developed countries may also be provided (INDIA)
606	SPM	4	25	4	45	This list indicating government's adaptation measures is too short and lacks of information. For example there is a Europe-wide cooperation on adaptation specifics in the cities. Various nations, including Hungary, elaborated drought strategy, etc. Please scroll the referred Sections of the main Report and add more content to these lines. In the present way they are rather shallow! (HUNGARY)
607	SPM	4	25	4	45	This series of bullets add little of value to the bolded sentence. Furthermore, many of these bullets do not seem to directly address the bolded headline claims that governments are "starting" and that experience "is accumulating". In some cases (Asia, Arctic, small islands) the bullets do not give a sense of the direction of change (i.e., whether momentum is increasing or decreasing). The Arctic example does not make any reference to governments. We recommend deleting this series of bullets. Together, they comprise a full half page of text in the SPM, which is space that could be more effectively used. (CANADA)
608	SPM	4	25	4	46	For easy reading, these points could be reflected in a graphic element, a global map (SPAIN)
609	SPM	4	26	4	28	It is reductive to say that in Europe adaptation is confined only on water/coastal/disaster management although that's probably the most frequent one. Most European countries have National Adaptation Plans/Programmes and they are being implemented. (UK)
610	SPM	4	27	4	27	The text 'High confidence, medium evidence' may be added in the end of the sentence after 'vulnerability' in square brackets. (INDIA)
611	SPM	4	27	4	27	Conservation agriculture (CA) is a very specific adaptation option in agriculture (although still under debate), while overall the activities mentioned here, are on a higher level. Therefore, we suggest to remove CA. (GERMANY)
612	SPM	4	27	4	27	Remove ',' before 'and' (POLAND)
613	SPM	4	27	4	27	If it is necessary to use the term "conservation agriculture", please provide a definition in a footnote, or at least add the term in the glossary. (BELGIUM)
614	SPM	4	27	4	27	How does one 'reduce vulnerability', this is not clear here nor in the definition given in Table 1 (UK)
615	SPM	4	27	4	33	We think ill-health will be interpreted as caused by disease and not by accidents. We therefore propose to rephrase to: "In recent decades, climate change has likely contributed to weather-related casualties and loss of well-being. Changes in temperature, rainfall and sea-level have altered the distribution of vector-borne diseases, increased heat wave casualties, and reduced food production for vulnerable populations (medium confidence). Climate change exacerbates existing vulnerability to disease and accidents. The impact of climate change on health however is not well qualified and relatively small." (NETHERLANDS)
616	SPM	4	28	0	0	Insert "governance" before "scales", for clarity. (NEW ZEALAND)
617	SPM	4	28	4	28	Add a specification of the type of scales that are meant. (NETHERLANDS)
618	SPM	4	28	4	28	When "scales" is stated - does this mean spatial, temporal, governance scales? Please clarify. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
619	SPM	4	28	4	29	We realise that it is very difficult to summarise adaptation actions and plans for each region in such a small space, however, there needs to be some more detail here. For example, the summary of adaptation policy for Europe does not do justice to all ongoing adaptation activities. 'Across scales' needs to be clarified: EU level, national, local, some regional. Furthermore, adaptation action is integrated in many policies across Europe based on identified priorities and needs. Significant progress in planning, knowledge base, governance and financing adaptation might also be highlighted. Based on the information found in chapter 23, it might be better summarised as: "In Europe, adaptation policy has been developed at international (European Union), national and local government level. Considerable progress has been made to advance planning and development of adaptation measures, and there are an increasing number of national and local adaptation strategies in Europe. Actual implementation mostly targeted disaster risk reduction, environmental protection, spatial planning and coastal zone and water resource management". It would be worth mentioning that by early 2013, 16 out of 32 member countries of the European Environment Agency had developed national adaptation policies, and many had also developed national action plans. (EUROPEAN UNION)
620	SPM	4	28	4	29	May be worthwhile to mention that Europe has now its own adaptation strategy, likewise 13 EU-countries (and many to come). (NETHERLANDS)
621	SPM	4	28	4	29	Does "across scale" refer to the European Union and its member states, or does it mean that all European countries have adaptation policies including at local levels? Or did just some European countries develop adaptation policies "across scale"? (GERMANY)
622	SPM	4	28	4	29	In Europe, adaptation policy has been developed at national through to local scales, with some adaptation planning integrated into coastal, water and land management and into disaster risk management. Adaptation has been embedded far wider than this in Europe. Suggest adding 'including', or make it clear that this is just an example (UK)
623	SPM	4	28	4	29	At the end of this sentence, please consider including "environmental protection and spatial planning" - cf. Box 23.3. (NORWAY)
624	SPM	4	28	4	29	Based on this statement, it seems like few adaptation measures have been implemented in Europe. Is this correct? (NORWAY)
625	SPM	4	28	4	29	The sentence on Europe does not do justice to what has been done throughout the continent (as reflected in the Europe chapter). Can the authors reword it to be more specific and concrete? (USA)
626	SPM	4	29	4	29	in the end of sentence add : " primarily including floods" (POLAND)
627	SPM	4	29	4	29	Introduce the words: "... into disaster prevention and risk management" (SWITZERLAND)
628	SPM	4	30	0	0	Insert "in some instances" before "adaptation has been facilitated through integrated water resource management" to make it clear that this is not a universal practice. (NEW ZEALAND)
629	SPM	4	30	4	30	Remove ',' before 'and' (POLAND)
630	SPM	4	30	4	31	Asia also boasts success stories in adaptation like early disaster warning, including early warning in Asia (21.3.2.2), high temperature warning in China (Shanghai) and Japan (24.4.6.5), forest fire warning in Thailand (24.4.6.5), etc as reported. Therefore, it is suggested to add words on early warning in the section on Asian experience. (CHINA)
631	SPM	4	30	4	31	In Asia, the adaptation has been facilitated not only through integrated water resource management but also improved crop management. This sentence can be expanded accordingly. (INDIA)
632	SPM	4	30	4	31	Asia's adaptation efforts are reduced to integrated water resource management only. The information should be supplemented by the following: adaptation has been facilitated through integrated water resource management, early warning systems (Ch 24 P 24, section 24.4.6.5.), agroforestry (Ch 24 P 27, section 24.6), and coastal reforestation of mangroves (Ch 24 P 33; Box CC-TC). (GERMANY)
633	SPM	4	30	4	31	In section 24.5.2, there is a sentence which refers to the importance of climate change impact studies in each Asian country. Therefore, in the last part of this sentence, request the following sentence be added: "and a large number of climate change impact studies on flood risks and coastal inundation". Also request section 24.5 be added in the footnote 16. (JAPAN)
634	SPM	4	30	4	31	"Adaptation practices" seem too general as it covers a wide range of practices. Recommend that the first half of the sentence be rewritten to be more descriptive, in line with 24.4.6.5.. The latter half of this bullet could be more true to the original text in 24.4.1.5. A suggested revision is: In Asia, early-warning systems and adaptive measures are a means to provide livelihood benefits and adaptation has also been facilitated through adaptive management/integrated water resource management. (JAPAN)
635	SPM	4	30	4	31	Meaning of 'adaptation has been facilitated through integrated ...' obscure (UK)
636	SPM	4	30	4	31	Please consider replacing "sometimes" by "in some cases". What about the governance system in Asia? Now the statement only covers what it has delivered. (NORWAY)
637	SPM	4	30	4	31	The statement on Asia does not reflect the broad range of adaptation experience from the region, though this may be due to the underlying chapter which has the same problem. Also, the example of integrated water resource management is not supported by the chapter content. Section 24.4.1.5, on adaptation options for freshwater systems, mentions IWRM and its link to adaptation but does not specify whether it is being applied in Asia. The authors need to revise this bullet accordingly. (USA)
638	SPM	4	32	4	34	Australia and New Zealand' and 'Australasia' have different meanings. The former appears to be intended here. It would be more accurate to replace 'planning for sea level rise ... is becoming widely adopted' with 'planning for sea level rise has evolved considerably over the last 20 years but remains piecemeal and shows a diversity of approaches'. (AUSTRALIA)
639	SPM	4	32	4	34	Simpler language and sentence structure is recommended. Suggest splitting into two sentences, ending the first sentence after the words "widely adopted". Suggest rewriting the second sentence to say "Implementation faces major constraints, however, especially where transformative changes are required at local levels." Are community governments also local governments? It's perhaps redundant to have both terms. (CANADA)
640	SPM	4	32	4	34	The second part of this statement compresses two statements from the executive summary for chapter 25 in a misleading way. Implementation of planning for sea-level rise and water availability "remains piecemeal, subject to political changes, and open to legal challenges", whereas it is the implementation of adaptation more generally which "faces major constraints especially for transformational responses at local and community levels" (Ch. 25, p. 4). The authors need to revise the text accordingly to more accurately reflect the underlying text. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
641	SPM	4	33	4	33	What is meant by "transformational responses"? It's defined in Box SPM.1 much later on in the SPM, but it'd be useful to the reader to have this defined earlier. It may be worth having a footnote differentiating between "incremental" vs. "transformational" change. For example, Chapter 14, page 8, includes a paragraph that tries to define incremental adaptation. (USA)
642	SPM	4	33	4	34	Explain meaning of 'transformational' (UK)
643	SPM	4	35	4	37	But how about the serious drought in the Mid West in 2012 and hurricane Sandy in New York? The economic losses were enormous. This suggests that the present level of adaptation is low, even in the USA. We understand that the positive news should be highlighted. But our impression is that adaptation levels are low in many countries (see recent hurricane Philippines, etc.). This holds for developing countries but even for developed countries (although exceptions exist, such as strengthening dykes in the Netherlands since a huge flooding in 1953). (NETHERLANDS)
644	SPM	4	35	4	37	This sentence is awkward to read. Suggest revising to "...with some proactive adaptation occurring to protect longer-term investments in energy and public infrastructure from future climate change impacts". (CANADA)
645	SPM	4	35	4	37	Is it possible to mention recent US Federal actions on adaptation? (USA)
646	SPM	4	36	4	36	Please consider replacing "for" with "on". (NORWAY)
647	SPM	4	38	0	0	We recommend specifying indigenous peoples, ethnic and African-descendent communities (Nicaragua)
648	SPM	4	38	3	40	If the idea is to give key examples for each region, in South America, there are lots of projects on water resource management in response to glacial melt (in the Andean Region) as well as work on crop varieties as an adaptation response to increasing temperatures. These could be referred to. (UK)
649	SPM	4	38	4	40	These measures are described as 'ecosystem based adaptation', but seem to be general examples of good practice, and not changes made in response to or in anticipation of an anthropogenic climate impacts. (CANADA)
650	SPM	4	39	4	39	Remove ',' before 'and' (POLAND)
651	SPM	4	39	4	40	Referring to "with benefits for improvements in livelihoods and preservation of traditional cultures", chapter section 27.3.3.2 states that traditional cultures and livelihoods are related to marine protected areas only (e.g. in Brazil the "Marine Extractive Reserves") and not to other areas. Additionally, there is an error in the executive summary (page 3 of chapter 27) with references to 27.3.2.2 where nothing is mentioned about traditional cultures. (NETHERLANDS)
652	SPM	4	39	4	40	Please consider rephrasing so it reads: "benefits like improvements in...." (NORWAY)
653	SPM	4	40	4	40	The text here does not need "improvements in". Please delete to clarify the text. (USA)
654	SPM	4	41	4	41	For the Arctic, you say "residents have a history of adapting to change". So do all other regions!! Are you implying by this that the Arctic is doing something different? If so, please clarify your point. (UK)
655	SPM	4	41	4	43	Concerning the conclusion "[...] represent unprecedented challenges for northern communities" - it would be appropriate to be more specific and to include an example. Otherwise it refers to any northern region. Chapter 28.2.5 provides an example for Alaska: "In habitats across the Arctic, climate changes are affecting these livelihoods through decreased sea ice thickness and extent, less predictable weather, severe storms, sea level rise, changing seasonal melt/freeze-up of rivers and lakes, changes in snow type and timing, increasing shrub growth, permafrost thaw, and storm-related erosion which, in turn, are causing such severe loss of land in some regions that a number of Alaskan coastal villages are having to relocate entire Communities". One could add to the sentence: 'such as Alaskan coastal villages.' (NETHERLANDS)
656	SPM	4	41	4	43	Historically and todate communities in different part of the worldincluding in most African countries have been able to cope to climate variabiity and other environmental change through the use of Indigenous Knowledge. Therefore it is not only in Arctic. The use of the term " Northern communities" is not clear. I suggest we use " for communities in the Arctic region" (UNITED REPUBLIC OF TANZANIA)
657	SPM	4	41	4	43	The text on the Arctic focuses more on the nature of the change in the region. The text may convey a message that there are no adaptation plans and policies in the Arctic. Would it be possible to elaborate on Arctic relevant policies in the region's national adaptation policies and plans. (FINLAND)
658	SPM	4	41	4	43	The bullet regarding the Arctic should include reference to the concrete examples of adaptation actions presented in Chapter 28.4 (e.g., adapting critical infrastructure Box 28-1). In addition, it should include examples of government adaptation plans and policies in order to link to the bolded statement at the beginning of this paragraph. One example would be the Pan-Territorial Adaptation Strategy developed by Yukon, NWT and Nunavut (which should be included in Chapter 28 - currently there is no reference to it). (CANADA)
659	SPM	4	41	4	43	Is it possible to make this sentence clearer by deleting "residents have a history of .... to change, but"? (NORWAY)
660	SPM	4	42	4	42	Remove ',' before 'and' (POLAND)
661	SPM	4	44	0	0	Not obvious what is meant by 'physical and human attributes'. (AUSTRALIA)
662	SPM	4	44	4	44	It is not fully comprehensible what message the reader must grasp from this bullet. (NETHERLANDS)
663	SPM	4	44	4	44	What is meant by small islands? Please be more specific. If it is small island states, for instance in the Pacific and the Caribbean we believe you should especially mention the regions that the statement relates to. (NORWAY)
664	SPM	4	44	4	45	This sentence on small islands is very vague and could be applicable to many other regions of the world.What is meant by "human attributes"? What does "inconsistently" mean? (European Union)
665	SPM	4	44	4	45	Reference 21 does not reflect what these two lines are about (Table 29-3 and Figure 29-1 are about island types and topologies). (NETHERLANDS)
666	SPM	4	44	4	45	It is hard to understand what "diverse physical and human attributes" means. Could this be more specific or rephrased? (DENMARK)
667	SPM	4	44	4	45	This statement is difficult to understand. Don't all places have diverse physical and human attributes? Suggest clarifying. (CANADA)
668	SPM	4	44	4	45	Please revise this bullet; it is not clear as written. What is meant by the term human attributes and their sensitivity to climate-related drivers and how would one integrate them into adaptation planning? (USA)
669	SPM	4	44	4	45	The final bullet on this page does not appear to come from highlighted items in the Final Draft of Chapter 29 (Small Islands). Whatever key point from Chapter 29 that this bullet is trying to present should be taken directly from Chapter 29 text rather than re-interpreted in this confusing manner. (USA)
670	SPM	4	44	8	21	The RFC are not explained well, an introductory sentence would be very helpful to understand the concept. (GERMANY)

#	Ch	From Page	From Line	To Page	To Line	Comment
671	SPM	4	46	4	7	Box SPM.3. What does it add here to mention that discrimination contributes to inequality (which in turn affects vulnerability)? The authors should strongly consider deleting this clause, as it tends to politicize the document without adding useful information. (USA)
672	SPM	5	0	5	0	This section is useful but a bit technical. I suggest starting with an introduction to outline the decision making context. What are the challenges? How does this fit within normal day-to-day decision making? What is different from decision making in absence of climate change? What is the practical experience of decision making under a changing climate? How well tested are the tools mentioned and who is really using them in practice? What can we learn from other areas to apply to climate change-related decision making? (LUX)
673	SPM	5	0	5	0	Section currently reads as if considering political or high level decision making context. There is a substantial body of research looking at individual behaviour change in different contexts, the role and influence of culture, values, attitudes, beliefs etc as well as how individual decision making interacts with systems led decision making (and vice versa). Two countries may have similar values, interests and expectations, but implementation of adaptation planning could be heavily influenced by local culture (whether geographical, business etc). A paragraph summarising this should be included here. (UK)
674	SPM	5	0	5	0	This is a very useful list of principles but is it new scientific research? It would be good to have a statement in here that explains that this is a reflection of a growing consensus amongst practitioners and scientists but that it is very hard, nigh impossible, to have robust scientific analysis of this as it is hard to design experiments in this area of knowledge. Add a recommendation in terms of need to get more impact evaluations on this? (UK)
675	SPM	5	1	0	0	Section A-3. Make it more clear in this section that there are limits to adaptation and this is very important to the decision-making process. (NORWAY)
676	SPM	5	1	5	1	For some readers, the title "The Decision-making Context" may be slightly nebulous and confusing. Suggest that a possible alternative title for this section might be: "Toward Effective Decision-making for Adaptation." (JAPAN)
677	SPM	5	1	5	1	In adaptation decision-making processes, what kind and level of actors are supposed to be engaged, and what roles are they supposed to play? Addressing these questions in this section will provide findings very useful to policymakers. (JAPAN)
678	SPM	5	1	6	25	The order of paragraphs in this section is a little awkward. Consider regrouping paragraphs so that those related to decision-making under uncertainty are together (paragraphs 2 and 3 on page 6 and 1 and 2 on page 5) and those related to decision-making processes needing to reflect different values, etc., are together (paragraph 3 on page 5 and 1 on page 6). In addition, consideration could be given to beginning this series of paragraphs with paragraph 2 on page 6 about using scenarios for characterizing future conditions. This makes clear that there is a lot of uncertainty about future conditions, and why, which then lays the basis for subsequent paragraphs about decision-making under uncertainty. (CANADA)
679	SPM	5	3	0	0	In the page (5) Line No. 3 responded to the report of the response to climate change without mentioning anything about the negative effects of response measures to climate change on the national, regional and international level, and how to address them or deal with them. (EGYPT)
680	SPM	5	3	5	5	The statement ends with the sentence. "with potential limits to the effectiveness of incremental approaches". The whole statement is not of immediate understanding and does not seem to be appropriate for an SPM. The last sentence is in general cryptic concerning what incremental approaches are. What follows does not explain. (ITALY)
681	SPM	5	3	5	5	It is not clear what part of this statement the confidence assessment applies to. In general, most of this statement seems factual, so perhaps the authors could consider whether a confidence assessment is really needed. If some confidence assessment is retained perhaps evidence and agreement qualifiers would be better. (CANADA)
682	SPM	5	3	5	5	Please consider to end the sentence after "in a changing world" and delete the wording after the comma and replace it with "Activities that range from incremental steps to transformational changes are essential for the effectiveness of these responses." in bold. We believe that it is more relevant to describe what can be done rather than the limitations. This language is also closer to what was used in the SREX report. (NORWAY)
683	SPM	5	3	5	11	It's literally the same as a section in the technical summary on page 13, hence chapters 14.4 and 14.5 should be included in reference no. 22. (NETHERLANDS)
684	SPM	5	3	5	11	Of course it is important to better understand the range of future impacts etc. However, a statement is missing that under uncertainty of future climate change, win-win-options are one good way to go for, i.e. pathways that work under all scenarios. (GERMANY)
685	SPM	5	3	5	11	Please consider adding information on how uncertainty could be taken into account into decision making about adaptation. (BELGIUM)
686	SPM	5	3	5	11	The emphasis on continuous learning and hence an iterative approach to risk management in the face of substantial uncertainty is highly appreciated. Therefore experimentation should be mentioned as a precondition to the already mentioned learning. (SWITZERLAND)
687	SPM	5	3	5	11	There is a statement that it is essential to assess the full range of climate impacts including low probability outcomes with high consequences. However, as chapter 17 points out these are often quite difficult to quantify and data may even be lacking for more prosaic impacts. The authors should acknowledge these important challenges. (USA)
688	SPM	5	3	5	11	The authors should make the point that adaptation is a dynamic process (see 17.2.4), though this point could also be integrated into the paragraph on p. 4, lines 14-21. (USA)
689	SPM	5	3	5	11	The authors should delete the phrase "with potential limits to the effectiveness of incremental approaches" because it is not supported by the underlying text. Also, it would be good to add a reference to the low regret solutions discussed in Section 3.6. (USA)
690	SPM	5	3	5	11	Sections B and C are focused on future risks and managing them. So why do the authors also include a key finding in Section A so focused on risks? This finding seems better suited to Section C and the document would benefit from a discussion of the decision making context that is not so risk focused. On line 3, the word "risk" could be replaced by "changes" with a discussion that illuminates the very relevant topic of making decisions in the face of uncertainty. (USA)
691	SPM	5	3	5	13	Section C-2: the concept of adaptation pathways (sensu Haasnoot et al 2013, etc) as an important way of operationalising an iterative risk management approach by breaking down decisions into a well-defined set of steps and decision points is lost here and in Figure SPM.3, even though it is certainly discussed in Chapter 25 at least (AUSTRALIA)



#	Ch	From Page	From Line	To Page	To Line	Comment
692	SPM	5	4	5	4	Suggest deleting "...in a changing world...". This is not needed as change is already implied by the use of the term "climate change". Alternately, if the intent with this phrase is to make reference to other non-climate changes facing the world, then this should be made clear. (CANADA)
693	SPM	5	4	5	5	Suggest deleting "...with potential limits to the effectiveness of incremental approaches." This is a distinct concept and seems to be implying the need for transformational changes, but this is more appropriately dealt with in section C. If this part of the sentence remains, it would need to be better explained here. (CANADA)
694	SPM	5	4	5	8	Top bullet text the meaning is not clear and it could be misinterpreted as implying there is uncertainty over whether CC is happening (WGI confirms CC is happening). Suggested rewording: 'responding to climate related risks will require actions and decisions to be made in the context of a changing world with some residual uncertainty regarding the severity/timing of climate change impacts. This potentially limits the effectiveness of incremental approaches to decision making.' (UK)
695	SPM	5	4	5	8	Para should reference the large body of evidence and contribution made by the social sciences and humanities. (UK)
696	SPM	5	4	5	8	What is 'iterative risk management'? (UK)
697	SPM	5	6	5	6	Uncertainties are not only persistent but, for part of them, irreducible. (FRANCE)
698	SPM	5	7	5	7	Remove ',' before 'and' (POLAND)
699	SPM	5	7	5	8	Explain the term 'climate and non climate stressors' or consider leaving it out of the text. (NETHERLANDS)
700	SPM	5	8	5	10	Assessing the "full range of potential future impacts" might be impossible due to bounded rationality of social actors and uncertainties pertaining to climate change. It is uncertain whether this "full range" can be considered and whether we are presently discussing it (see also SPM p. 12 lines 40-1). (NETHERLANDS)
701	SPM	5	8	5	10	Suggest that further explanation is needed in terms of what "alternative risk management actions" means. If this is referring to transformational changes, then we suggest it is better dealt with in other paragraphs. (CANADA)
702	SPM	5	9	5	9	Replace the word "outcomes" by "events" (SWITZERLAND)
703	SPM	5	10	5	10	Suggest deleting 'increasing'. (European Union)
704	SPM	5	10	5	10	What does "context" mean in this regard? What about "across sectors"? (GERMANY)
705	SPM	5	10	5	10	"The increasing complexity of adaptation actions" is not self-evident and may raise a question of in what respect the complexity is increasing. To help policymakers understand the context, a clarification is requested. (JAPAN)
706	SPM	5	10	5	10	Replace the word "alternative" by "different" (SWITZERLAND)
707	SPM	5	10	5	10	"across scales." Does this refer to scales in time or space or both? (USA)
708	SPM	5	11	5	11	"Institutional learning" - it might be useful to explain this term since many policy makers are embedded in institutional settings and not all of them may recall the dimension behind it ( i.e. Institutional or organizational learning refers to an ongoing process in which evaluative information on research activities and outcomes feeds into a reflective analysis of what has worked and not worked. In turn, the lessons learned from the reflective analysis inform decisions about future directions (ILAC, 2005; Torres & Preskill, 2001.) (GERMANY)
709	SPM	5	13	5	13	Fig SPM.3. The arrows (curved lines) connecting the main boxes of "Scoping", "Implementation" and "Analysis" lack arrowheads, so it is unclear in which direction the flow is meant to go. (AUSTRALIA)
710	SPM	5	13	5	13	This figure needs further explanation, particularly the concept of Iterative Risk management which is not clearly defined. Where in Figure SPM3 are costs (and benefits) included? (European Union)
711	SPM	5	13	5	13	Figure SPM.3: it is suggested to expand a little more the text of this figure with information about the deliverative cycle, elements and interactions (SPAIN)
712	SPM	5	15	5	15	This statement is rather obvious; one would expect "very high confidence". (European Union)
713	SPM	5	15	5	15	Suggest the authors consider whether evidence and agreement qualifiers would be more appropriate for this sentence, rather than a confidence qualifier. (CANADA)
714	SPM	5	15	5	15	Please consider rephrasing this bold statement so it is more understandable "The benefits of mitigation occur over a longer timeframe than the benefits of adaptation and sometimes they can occur during comparable timeframes." (NORWAY)
715	SPM	5	15	5	16	"Figure SPM.4 illustrates projected climate futures", however figure SPM.4 illustrates only future temperatures, and not climate futures. Please reword so that it reads "Figure SPM.4 illustrates projected future temperatures". (NORWAY)
716	SPM	5	15	5	23	Several references to mitigation-adaptation interaction are scattered here and there (e.g. pg 7, 13-26, pg 14, 27-36). This might deserve a specific subsection somewhere, given its relevance for policy/decision making. (European Union)
717	SPM	5	15	5	23	This paragraph needs more clarity and could be explained more simply without bringing in somewhat complicated and confusing phrases such as "near-term era of committed climate change" and "longer-term era of climate options". The first sentence is important but what follows doesn't necessarily provide clear support. Maybe you mean that: (1) we are committed to a certain amount of climate change over the next few decades due to the delayed climate response to past emissions; (2) this means that the benefits of taking mitigation action now are not evident until later in the century (for example, in terms of avoided temperature rise); (3) this also means that adaptation will be necessary now to address climate impacts and variability over the next few decades as well as in the longer term. The second part of the paragraph (from line 18 onwards, "During this near-term...") seems to be a separate discussion around the key point that "Near-term choices affect the risks of climate change throughout the 21st century" so perhaps this could be a separate bullet? (European Union)
718	SPM	5	15	5	23	The idea that adaptation is needed now to address the long term implications of climate change to avoid being locked in unsustainable trends (e.g., land use, infrastructure projects) could be more clearly spelled out. Moreover, it is unclear whether the concepts of 'committed climate change', and 'the longer term era of climate options' have been defined elsewhere (see also comment above). (European Union)
719	SPM	5	15	5	23	The bold italic statement seems so obvious it is not very informative. Maybe the last sentence "Near-term choices effect the risks of climate change throughout the 21st century", which is also probably well-known but formulated in a more policy-relevant way. (NETHERLANDS)
720	SPM	5	15	5	23	Future climate projections have only be provided for RCP 2.6 and 8.5 scenarios. The findings of other RCP scenarios may also be provided. (INDIA)
721	SPM	5	15	5	23	text in bold NOT representative of the text in the paragraph. The message of this section is not clear. (UK)
722	SPM	5	15	5	23	next few decades' needs to be defined here - is this the first half of the twenty-first century? (UK)

#	Ch	From Page	From Line	To Page	To Line	Comment
723	SPM	5	15	5	23	Para could easily be interpreted to mean that regardless of which emissions scenario you use, temperature trajectories are similar/the same and so consequently we can emit as much as we like. WGI FigSPM10 highlights the importance of considering the total emitted Carbon into the latter part of 21st century. This text should acknowledge that the global temperatures diverge across scenarios, because the total emitted carbon diverges, with time lag on the effects. (UK)
724	SPM	5	15	5	23	The paragraphs on uncertainty should be sequential in this section. (UK)
725	SPM	5	15	5	23	Societal responses will influence near-term outcomes. Long term outcomes will also do this. Text should acknowledge that maintaining a long term vision in addition to short termism is important (UK)
726	SPM	5	15	5	23	As noted in Canada's overall comments on the SPM, we have significant concerns with the use of the two terms "era of committed climate change" and "era of climate options", as their interpretation is misleading to policymakers and the terms have no basis in the existing scientific literature. We strongly recommend removing these terms and instead simply writing the representative time periods for considering near-term versus long-term impacts. On line 18, the phrase "During this near-term era of committed climate change" could be revised to simply say "During this period of time" , as the time frame of the next few decades is already specified in the previous sentence. Similar revisions could be made in subsequent sentences to eliminate the phrase "era of climate options". (CANADA)
727	SPM	5	15	5	23	We struggled to understand whether the main message here was that the benefits of adaptation occur on different timeframes than the benefits of mitigation, or whether the benefits of both mitigation and adaptation are spread out over different timeframes. If the former is what is intended, then the bolded sentence could be rewritten to say "the benefits of mitigation occur primarily over different timeframes than the benefits of adaptation". If the latter is intended, then the bolded sentence could be revised to say "There are benefits from mitigation and adaptation both in the near-term and the longer-term." (CANADA)
728	SPM	5	15	5	23	This paragraph on risk seems misplaced in section A. It is better placed elsewhere in the SPM (i.e., Section B or Section C) (USA)
729	SPM	5	15	5	23	The bolded statement in this paragraph indicates that the benefits of mitigation occur in one timeframe and the benefits of adaptation in another, yet the supporting sentences do not support this. It is a confusing paragraph. Are the authors trying to say that for mitigation and adaptation actions taken at the same time, the benefits will be realized on different timescales? That might be supportable. If that is the case, please focus on actions and not risk - and include appropriate references as it would be an important finding - if robust. (USA)
730	SPM	5	15	5	23	The authors should include a statement regarding the very useful concept of evaluating whether particular actions perform well or are robust over many possible climate futures. This criterion is discussed at the bottom of page 13 in Chapter 17. (USA)
731	SPM	5	16	0	0	This is the first reference to the RCP scenarios, and seems to assume the reader will have knowledge of these. Suggest that either via a footnote or by using a box as in IPCC WGI SPM (Box SPM.1: Representative Concentration Pathways (RCPs)) some explanation of the scenarios is provided for the reader. A reference back to the explanation in IPCC WGI would likely not suffice as the WGII SPM needs to be able to be read as a stand-alone document. (NEW ZEALAND)
732	SPM	5	16	0	0	This line is the first place that RCPs are referred to in the text, but they have not been explained. Suggest including a footnote explaining what they are and where the reader can go for further information. Alternately, reference to RCPs could be removed here entirely, since this information is not essential in the SPM, and the introduction of the RCP/SRES scenarios doesn't occur until page 6. (CANADA)
733	SPM	5	16	5	16	Write out in words a description of scenario's "RCP2.6 and 8.5" (NETHERLANDS)
734	SPM	5	16	5	16	This is the first appearance of RCP in AR5 WGII SPM and should be spelled out in full as Representative Concentration Pathway (RCP) and this be accompanied by a footnote the same as in AR5 WGI SPM. (JAPAN)
735	SPM	5	16	5	16	In this sentence the expressions RCP2.6 and 8.5 are used for the first time in the SPM. To improve understanding I suggest to write for example "RCP2.6 (a low emission scenario) and RCP8.5 (a high emission scenario) [...]", or to add an explanation in Box SPM.1. (NORWAY)
736	SPM	5	17	5	17	There may be differing opinions regarding use of term "emissions scenarios" for RCP scenarios, which are primarily concentration scenarios. To express more precisely, suggest replacing with "scenarios within the range of radiative forcing defined in the RCPs" (JAPAN)
737	SPM	5	18	5	18	Difficult to understand the meaning of "committed climate change" Suggest this be replaced with, "scenario-independent climate change". (JAPAN)
738	SPM	5	18	5	19	Please clarify the meaning of "risks will evolve as socioeconomic trends interact with the changing climate." What socioeconomic trends in detail could contribute to high risks? (GERMANY)
739	SPM	5	18	5	19	It could be useful to state even more clearly that adaptation is the only explicit policy that can influence near-term outcomes. (BELGIUM)
740	SPM	5	18	5	21	The words of "near term" and "long term" are very uncertain. The use of the unclear terminology makes some distrust of climate change adaptation among the policy makers. This report could be suggest the specific information about the benefit of climate change. (REPUBLIC OF KOREA)
741	SPM	5	18	5	21	Please print the expressions "era of committed climate change" and "era of climate options" in bold. This will help the reader to understand that these are specific expressions of the IPCC WGII. (GERMANY)
742	SPM	5	18	5	21	It is suggested that the authors define the terms "era of committed climate change" and "era of climate options". While recognizing their common use in the IPCC, they are not necessarily intuitive terms. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
743	SPM	5	18	5	22	The term "longer-term era of climate options" does not seem fully clear and helpful for the understanding of this SPM. We have the impression that the idea of an "era of climate options" might be taken out of context and confused with a time when an option should be selected, which it is evidently not. Please consider avoiding the introduction of this new term. We suggest explaining that due to the accumulation of greenhouse gases and inertia in the climate system, climate change is due to past emissions over many decades. Hence the projected global temperature increase over the next few decades is largely related to emissions that already occurred or will occur in the coming years, and the near-term warming is thus similar for all scenarios - it is a commitment. For the same reasons, the longer term climate change will be influenced by the emissions over the next decades and beyond, and is thus scenario-dependent. The risks associated with climate change (not the risks OF climate change as written ?) beyond the next few decades will be determined by emissions from now until then, as well as adaptation and development pathways. (BELGIUM)
744	SPM	5	19	5	19	What specifically does the phrase "near-term outcomes" refer to? What exactly are the near-term "outcomes" being referred to here is unclear. This needs more clarification to help policymakers understand the context. (JAPAN)
745	SPM	5	19	5	19	Replace the word "outcomes" by "consequences" (SWITZERLAND)
746	SPM	5	20	5	20	There may be differing opinions regarding use of term "emissions scenarios" for RCP scenarios, which are primarily concentration scenarios. To express more precisely, suggest replacing with "scenarios within the range of radiative forcing defined in the RCPs" (JAPAN)
747	SPM	5	20	5	21	If the time frame "second half of the 21st century" is to be synonymous with "era of climate options" the authors need to insure that these terms are used consistently throughout the document. (USA)
748	SPM	5	21	5	22	After "climate options," the authors should insert "both" to come before "near-term". After "adaptation," the authors should insert "(or lack thereof)" and after "will" the authors should insert "largely" to come before "determine" because risks will also depend on key physical uncertainties such as climate sensitivity. (USA)
749	SPM	5	21	5	23	This could be expressed more clearly. For example: 'Near-term decisions about adaptation, mitigation and development pathways will also have a bearing on climate risks in the longer-term era of climate options.' (AUSTRALIA)
750	SPM	5	22	0	23	The final sentence in this paragraph ("Near-term choices thus affect the risks of climate change throughout the 21st century") is key, policy-relevant message. Suggest moving it to the bolded headline or otherwise adding emphasis to this point. (CANADA)
751	SPM	5	22	5	22	"as well as development pathways", do you mean RCPs? If so please clarify. (NORWAY)
752	SPM	5	22	5	23	Please clarify: Which kind of "Near term choices" about what will affect risks? Choices about development pathways in general or about mitigation and adaptation pathways in particular? (GERMANY)
753	SPM	5	22	5	23	"Near-term choices thus affect the risks of climate change throughout the 21st century". This is a very important statement, please consider writing it in bold and replace the current bold sentence. (NORWAY)
754	SPM	5	25	2	47	Figure SPM.4: I cant believe how long and complex this explanation is for a figure. Not accessible at all. If the figure really necessitates such a complicated explanation perhaps they should have split it up into several separate figures/ they should get rid of any info that isn't 100% necessary. (UK)
755	SPM	5	25	5	25	Can the TSU ensure that the same underlying data as for SPM WG1 have been used in order to ensure consistency ? The color schemes look so different that this is hard to reconcile. Figure A: In this color scheme there are isolated regioes above 2 C that are standing out and there is a risk of overemphasizing these regions. We would strongly recommend that the versions from WGI are used here rather than confuse users with alternative versions. (European Union)
756	SPM	5	25	5	25	For consistency with the WG1/SPM, "annual average temperature" should be amended as "global annual mean surface temperature" (see the legend of Figure SPM 7 (a) of WG1/SPM). If not possible throughout, request this be amended at least at the beginning of the legend text of the Figure SPM. 4 (JAPAN)
757	SPM	5	25	5	25	Caption for Figure SPM.4, line 25: Suggest revising to "Observed and predicted changes in annual average air temperature" (CANADA)
758	SPM	5	25	5	27	This Figure caption is far too long and complicated for a Summary for Policymakers. Effectively communicating a major point (or set of points) for a Policymaker should not require this much detailed information. It's also full of technical jargon better suited for a technical chapter than the SPM. (USA)
759	SPM	5	25	5	47	The explanation of this text box might be difficult to follow for a layman in this field. One might consider to transfer it to an annex and/or improve the readability of the text. Pay attention to all the abbreviations. (NETHERLANDS)
760	SPM	5	25	5	47	Also, in page number (5) from the line No. 25 to 47 models, which explains the increase or decrease from the baseline represent the < 66%. (EGYPT)
761	SPM	5	25	5	47	Although detailed information is useful and efforts to link the work of WGI with WGII is appreciated, due to length limitations and that the focus of WGII SPM should be to highlight the key findings of WGII, wonder if the results of WGI need to be elaborated to this extent in WGII SPM. Recommend the text for Figure SPM.3 be edited; shortened and focus on WGII key findings. (JAPAN)
762	SPM	5	25	5	47	That description uses the language that is too much technical for the PMs. (POLAND)
763	SPM	5	25	5	47	The figure text is very technical and long, we suggest that you simplify and shorten it. (NORWAY)
764	SPM	5	26	5	26	We suggest the wording "trends during 1901-2012" or "trends from 1901 to 2012" ("trends from 1901-2012" appears incorrect) (BELGIUM)
765	SPM	5	26	5	26	Figure SPM4 caption: linear regression is not generally an appropriate methodology for calculating temperature change. Suggest using a more sophisticated technique, or clarify in the text (perhaps with a footnote?) that this has been done for illustration purposes? We note that WGI session in Stockholm specifically considered the suitability of linear regression and why it should not be done in WGI. Hence some context as to why it is used here would be useful. (UK)
766	SPM	5	29	5	29	The meaning of significance at the 10% level needs to be explained to a policymaker. (USA)
767	SPM	5	29	5	30	The indication of the range of grid point values may not be key information and could be omitted for easier reading. (SWEDEN)

#	Ch	From Page	From Line	To Page	To Line	Comment
768	SPM	5	29	5	30	Figure SPM3: The content of the title for Figure SMP.3 on these line numbers says "Observed data (range of grid-point values: -0.53 to 2.50 oC over period) are from WG AR5 Figures SPM1 and 2.21" The acture Figure SPM.4(A) (in page 24) however shows observed temperature range above 2.5, whilst data only cover up to 2.50 oC. This leads to a question where the data above 2.50 oC come from, or whether the range of the colour bar is appropriate. The red shade on the map is not clear if there is any temperature over this limit. (UK)
769	SPM	5	31	5	31	Figure SPM3: Define magnitude and rate. This sentence is also missing something about the condition/state (whether cultural, political etc) of the region affected by climate change. (UK)
770	SPM	5	31	5	32	Figure SPM3: "Black lines show the .... estimates from observational measurements" Does this mean the black line plot includes both observed and predicted values? Should we say ""Black lines show the observational measurements and estimates from intrapolation using the GISTEMP, NCDC-MLOST, and HadCRUT4.2"? The way it is written raises a question why you have to use models to estimate observed data? (UK)
771	SPM	5	32	5	32	Remove ',' before 'and' after acronim NCDC-MLOST (POLAND)
772	SPM	5	32	5	34	Figure SPM.4, caption: Please explain the colours of the lines first and then the shading. This seems more intuitive. (GERMANY)
773	SPM	5	33	5	33	The 1.64 standard deviation -difficult expression, could be written to more lucidly to express what it implies, maybe you could use the sam phrasing as in WGI SPM (fig SPM.7a?): "...a measure of uncertainty (shading) are shown for scenarios RCP2.6 (blue) and RCP8.5 (red)". (SWEDEN)
774	SPM	5	33	5	33	Rather than using the 1.64 standard deviation range, it could be more consitent with WGI to use the likely range 5-95%. (FRANCE)
775	SPM	5	35	5	35	The phrase 'committed climate change' for near term era does not seem to be appropriate as climate change is a consequence and not a deliberate activity (INDIA)
776	SPM	5	35	5	35	Difficult to understand the meaning of "committed climate change" in this paragraph. Suggest this be replaced with "scenario-independent climate change". (JAPAN)
777	SPM	5	39	5	39	The term "baseline variability" is not defined. Does this refer to natural climate fluctuations during the 20-year period that is referred to as "internal variability" in the WG1 contribution? (JAPAN)
778	SPM	5	43	0	0	Figure SPM3: This is a different definition of the diagonal lines compared to the diagonal lines used in chart A of Figure 4: issue of consistency needs to be addressed (UK)
779	SPM	5	44	5	44	Add ',' before 'such as' (POLAND)
780	SPM	5	45	5	45	Concerning the conclusion "Range of grid-point values across RCP2.6 and 8.5: 0.06 to 11.71°C" - Figure SPM.4 should include the projected changes for the mid 21th-century, as does the main text (chapter 21, Figure RC-2). For policy makers it is most likely more important to see the changes of the next few decades. It would also be good to point the reader to figures RC-1 and RC-2 in reference no. 25. (NETHERLANDS)
781	SPM	5	45	5	45	The indication of the range of grid point values may not be key information and could be omitted for easier reading. (SWEDEN)
782	SPM	5	49	0	0	Insert "societal" before "values" (NEW ZEALAND)
783	SPM	5	49	5	49	Remove ',' before 'and' (POLAND)
784	SPM	5	49	5	49	What does "scales" refer to here - governance, spatial, temporal? Please clarify (USA)
785	SPM	5	49	5	50	This statement is rather obvious, so one would expect to be assigned "very high confidence". (European Union)
786	SPM	5	49	5	50	It doesn't seem that this statement needs a confidence qualifier since this statement isn't falsifiable. Perhaps a statement on agreement would be more appropriate, or consider deleting the qualifier. (CANADA)
787	SPM	5	49	5	50	Do you mean "range of governance scales" with "range of scales"? If so, please consider making it clearer. (NORWAY)
788	SPM	5	49	6	2	The last sentence seems the most important and clearest one; it could be placed at the beginning of the paragraph to highlight the importance of all inclusive governance systems in the adaptation process. (European Union)
789	SPM	5	49	6	2	The last sentence ("Recognition .... Decision-making processes") is more policy-relevant than the italic bold 1st sentence. Please replace the sentence the aforementioned italic sentence with the last sentence. (NETHERLANDS)
790	SPM	5	49	6	2	Can this be simplified to state that adaptation planning and resource allocation must consider differential exposure and vulnerabilities of poorer nations and communities (INDIA)
791	SPM	5	49	6	2	When addressing adaptation planning and implementation, consideration of ethical implications should also be mentioned (SWITZERLAND)
792	SPM	5	49	6	2	Please consider including this sentence from the TS (p. 14, lines 23-24): "Awareness that climate change may exceed the adaptive capacity of some people and ecosystems may have ethical implications for mitigation decisions and investments". This sentence pinpoints some of the critical aspects of climate adaptation and mitigation, and their relationship, that need to be considered for successful and responsible response to climate change. (NORWAY)
793	SPM	5	50	5	50	Check if "insurance" is to be positioned here as an adaptation option. An argument for not including it as an option, is that with insurance there is no risk reduction, but risk redistribution. (NETHERLANDS)
794	SPM	5	50	5	50	Insurance by itself is not an adaptation option. Insurance requirements to avoid damages give some adaptation options. (FRANCE)
795	SPM	5	50	6	1	To our knowledge, most -if not all- adaptation options will differently affect stakeholders. We suggest to reformulate or omit the sentence because it is obvious. (NETHERLANDS)
796	SPM	6	0	8	0	Risks and opportunities could be enlarged. (UK)
797	SPM	6	0	8	0	A very policy relevant topic, which could better drawn out would be the link between climate impacts and conflict. If the underlying chapters contain sufficiently robust findings, they must be drawn out more clearly. If they do not, then the section should identify what is know confidently, what may be the case and where more focus is needed. (UK)
798	SPM	6	0	8	0	Sections that talk about uncertainty in the risks and scenarios, trigger points/thresholds and non-linear increase in impacts/risks, extreme weather events and catastrophic risks should be drawn out further. Section needs a paragraph on potential opportunities, in the interest of balance. (UK)
799	SPM	6	1	6	1	The use of 'differentially' should be explained/qualified. (European Union)
800	SPM	6	1	6	1	Remove ',' before 'and' (POLAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
801	SPM	6	1	6	1	The phrase "...may differentially affect stakeholders" is unclear. Would it be possible to expand this slightly to give some sense of how different stakeholders would be affected differently? Otherwise readers may be left wondering about how to interpret this. (CANADA)
802	SPM	6	1	6	2	1) It is not fully consistent to mention "local and indigenous knowledge" in a sentence on interests, values and expectation, i.e. a certain motivation for a decision. We suggest splitting the sentence into two and adding the aspect of the neglecting indigenous knowledge, as follows. 2) It is highly appreciated that the value of other forms of knowledge are recognised. It should however be indicated that optimal pathways have yet to be explored, how different forms of knowledge can be considered (e.g. methodology/validation process). The TS states on P32: "Indigenous, local, and traditional forms of knowledge are a major resource for adapting to climate change (robust evidence, high agreement). Natural resource dependent communities, including indigenous peoples, have a long history of adapting to highly variable and changing social and ecological conditions. But the salience of indigenous, local, and traditional knowledge will be challenged by climate change impacts. Such forms of knowledge are often neglected in policy and research, and their mutual recognition and integration with scientific knowledge will increase the effectiveness of adaptation." 3) We suggest the following text: "Recognition of diverse interests, values, and expectations can benefit decision-making processes. Indigenous, local, and traditional forms of knowledge are a major resource for adapting to climate change (robust evidence, high agreement). Such forms of knowledge are often neglected in policy and research, and their mutual recognition and integration with scientific knowledge will increase the effectiveness of adaptation." (GERMANY)
803	SPM	6	2	0	0	Footnote 26 does not refer to section 15.4 of chapter 15, although there is a special item on the insurance issues. (RUSSIAN FEDERATION)
804	SPM	6	2	6	2	Please modify: "benefits" instead of "can benefit". (GERMANY)
805	SPM	6	2	6	2	after word knowledge add: "and disaster risk experience" (POLAND)
806	SPM	6	4	6	5	Please improve the explanation of what is meant with "Decision support sensitive to context". Does it mean that to be effective, decision support needs to take the actual decision processes into account to provide the appropriate scientific input in an appropriate manner rather than crude scientific data? It would be useful to flag one or two key references to subsections from the underlying report that provide the most important additional information. (BELGIUM)
807	SPM	6	4	6	8	This is not very clear for the following reasons: (i) first bold sentence is on decision making, 2nd on science-policy interaction; (ii) first sentence is very general, i.e. true/applicable for everything. What is the aim of this sentence? (NETHERLANDS)
808	SPM	6	4	6	8	This an important bullet for policy-makers and recommend that it be revised to include the full message in the correlating paragraph on Chapter2 P.2 3rd paragraph to make it clearer. (JAPAN)
809	SPM	6	4	6	16	For me, there is an important missing point in these two paragraphs, which discuss context and the usefulness of scenarios: There is no mention of the usefulness of identifying critical thresholds, which represent the boundary between tolerable and intolerable levels of climate-related risk. (UK)
810	SPM	6	4	6	16	They fall out of / follow on from considering the decision-makers' context (p. 6, lines 4 to 8) and are then useful when evaluating the significance of risks associated with scenario ranges (p. 6, lines 10 to 16). I haven't read WGII full report / TS, so I don't know whether critical thresholds are mentioned there, but I would hope so. They are mentioned often in the literature. (UK)
811	SPM	6	6	6	6	Suggest rewording 'bridging science and policy' to 'bridging science and decision-making', as there is a wider audience than policy-makers that needs support making decisions on adaptation (UK)
812	SPM	6	7	6	7	Remove ',' before 'and' (POLAND)
813	SPM	6	10	6	10	...climate change and its risks.. please check if benefits can also be mentioned here. (NETHERLANDS)
814	SPM	6	10	6	11	This statement is rather obvious and should be assigned "very high confidence". (European Union)
815	SPM	6	10	6	11	This bolded sentence does not seem to need a confidence statement. It is a statement of fact. (CANADA)
816	SPM	6	10	6	13	The first statement is not a major finding of the report that is of policy relevance and should not be highlighted in bold letters. It could well be dropped. Instead, the second sentence should be highlighted in bold letters. (GERMANY)
817	SPM	6	10	6	16	Line 13-16 is important and as such should be maintained. (JAPAN)
818	SPM	6	10	6	16	The bold text states 'Scenarios are useful' however the paragraph refers to pathways, modelled future impacts and projections. Definitions and distinctions need to be presented here as this is confusing (UK)
819	SPM	6	10	6	16	Uncertainties in regional impacts projections need to be mentioned here. At the moment it sounds like impacts projections and subsequent adaptation have got it all covered. But adaptation is, at best, going to be based on imperfect information and imperfectly implemented. At worst it could be completely misguided. Hence the need to mitigate primarily, but do our best to adapt to the residual. (UK)
820	SPM	6	10	6	16	Mentioning scenarios is a very useful tool in decision making support (SWITZERLAND)
821	SPM	6	10	6	16	We think this paragraph should focus on tools in a broader context, for example by adding a statement regarding climate services, e.g. from Chapter 2, page 3: "Climate services aim to make knowledge about climate accessible to a wide range of decision makers. [2.4.1]. In doing so they have to consider information supply, competing sources of knowledge and user demand." Please consider to include information about the role of national climate services, which is to develop regional scenarios based on the global ones. The development of climate services is very recent and deserves some special attention. (NORWAY)
822	SPM	6	10	6	25	This looks more appropriate for Part B. (European Union)
823	SPM	6	10	6	25	These two future-oriented statements seem to be better placed under B (Future risk and opportunities) than under A. (NETHERLANDS)
824	SPM	6	10	6	34	This paragraph between lines 10-16 is largely redundant with the paragraph on page 5, lines 15-23. Therefore, the authors should move the sentences in lines 14-16 to the opening chapeau paragraph for section B on page 6, lines 30-34, because these lines help set the context for all future risks presented in section B. (USA)
825	SPM	6	11	6	11	Here is another sentence focused on risks when it could just as well discuss climate change impacts. The authors should address the imbalance toward discussions of risk at the expense of talking about impacts and other important topics. (USA)
826	SPM	6	11	6	12	Time issue becomes important here. As mentioned elsewhere in SPM (& shown in SPM.3), impacts/risks are quite similar in next few decades, and as such do not differ among pathways. (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
827	SPM	6	11	6	13	The report recognises that climate risks will vary substantially according to the development pathway chosen. Here it would be pertinent to recognise that the evidence is very sparse (and anecdotal) as to the types of development pathway are optimal for resilience building. (UK)
828	SPM	6	13	6	13	Remove ',' before 'and' (POLAND)
829	SPM	6	14	6	14	Text states that modelled future impacts assessed in this report are generally RCP or SRES. If they are not RCP or SRES then it should be explained what they are. Perhaps add 'unless otherwise indicated' (UK)
830	SPM	6	14	6	16	We recommend a Box be added here to provide readers with more information about the methodological basis for impacts assessment by IPCC WGII. This one sentence seems insufficient. Such a Box could make reference to fact that the bulk of WGII literature still uses the older SRES scenarios, to the emergence of studies using the newer RCP scenarios, and to other approaches, as appropriate. (CANADA)
831	SPM	6	18	0	0	Please exchange "can be" with "are" or "are in most cases", this would avoid the statements from being too vague. (GERMANY)
832	SPM	6	18	0	22	understanding of vulnerability of human systems depends not only on incomplete consideration of data but thather lack of reliable data and information (POLAND)
833	SPM	6	18	6	18	Remove ',' before 'and' (POLAND)
834	SPM	6	18	6	19	Is this statement really true, taking into account that uncertainties in regional climate projections can even involve a different sign"? Maybe rephrase suggesting that they are of similar magnitude? (NETHERLANDS)
835	SPM	6	18	6	19	To be explicit about this fact is very much appreciated (SWITZERLAND)
836	SPM	6	18	6	19	To say that uncertainties in future vulnerability etc "can be larger" than uncertainties in projected future climate suggests that these sources of uncertainty can be expressed in the same units and compared quantitatively. Is this really the case? If not, then what point is actually being made here, and how can that be expressed more precisely? For example, is the point that uncertainties in vulnerability etc. are greater barrer to effective adaptation planning than uncertainties in projected future climate? (USA)
837	SPM	6	18	6	20	Uncertainties about future vulnerability etc. are a different subject from uncertainties in regional climate projections. The second is the cause while the first is the effect. I suggest that the text from "can be" to "and they" be deleted. (GREECE)
838	SPM	6	18	6	20	The statement on uncertainties could be better formulated. It could be explained that 'uncertainties' are accumulated when assessing vulnerabilities, since vulnerability is the result of the combination of climate projections, sensitivities and adaptive capacity, and given that each of these components is subject to uncertainties when trying to assess it. (European Union)
839	SPM	6	18	6	20	This is partly a "scenario uncertainty", i.e. an uncertainty that is linked to unknowns about future human behaviour and decisions. It would be useful to clarify this aspect, to avoid suggesting that human behaviour is a random factor. The comparison with regional climate projections, which clearly includes uncertainties related to knowledge limitations, further increase the potential for confusion. (BELGIUM)
840	SPM	6	18	6	20	It is not clear how these two types of uncertainty can be compared given that they are presumably quantified very differently? Could this statement be formulated differently, perhaps by saying "Uncertainties about future vulnerability, exposure, and response of human and natural systems are large, and are more difficult to quantify than uncertainties in regional climate projections. Nevertheless, assessments of future risks are beginning to account for both sources of uncertainty ."? Formulated in this way, a confidence assessment may not be needed. (CANADA)
841	SPM	6	18	6	20	The bolded statement would be more clear if it also referenced non-climate stressors, as discussed in the following sentences. The authors should consider revising the text to read: "Uncertainties about the role of non-climate stressors, future vulnerability, exposure, and responses of human and natural systems can be larger than uncertainties in regional climate projections." The underlying sentences contain no discussion about risk assessments so consider deleting that last clause as per the suggestion. (USA)
842	SPM	6	18	6	24	The meaning of the sentence unclear e.g. it's difficult to definitively say where larger uncertainties lie. What is being incorporated into the assessment of future risks? Sentence needs to be reworded. (IRELAND)
843	SPM	6	18	6	25	Potential tipping points (for both human and natural systems) should be mentioned here as a further source of uncertainty. (GERMANY)
844	SPM	6	20	6	0	Consider adding limits to adaptation here. "Understanding future vulnerability and exposure, as well as limits to adaptation, of interlinked human and natural systems...". (NORWAY)
845	SPM	6	22	6	22	The word 'wealth' may be replaced by 'resources' (INDIA)
846	SPM	6	22	6	22	after word society add: "and the level of education" (POLAND)
847	SPM	6	22	6	24	Please consider to include in this sentence also issues related to gender and children/youth. (NORWAY)
848	SPM	6	22	6	24	Are the larger structural factors adequatly covered here? For example international markets, trade regimes and regional instabilities. (NORWAY)
849	SPM	6	24	6	24	Here you may also wish to mention cross-scale interactions. (GERMANY)
850	SPM	6	24	6	24	after word phenomena add:" and disaster risk experience" (POLAND)
851	SPM	6	24	6	24	Not sure what is meant by 'cross-regional phenomena' here. Could an example be given? (UK)
852	SPM	6	24	6	24	After "Cross regional phenomena" add ", such as global trade or migration," (SWITZERLAND)
853	SPM	6	24	6	25	Which cross-sectoral phenomena? Please provide at least an example. (GERMANY)
854	SPM	6	25	6	25	An example of the cross-regional phenomena would help here. (USA)
855	SPM	6	28	0	0	Section B. Could you please clarify what is meant by "low", "moderate" and "high" risk? Could you please quantify it? (NORWAY)
856	SPM	6	28	6	26	The term " OPPORTUNITIES" in the headline title: "B) FUTURE RISKS AND OPPORTUNITIES FOR ADAPTATION" does not seem quite appropriate. "CHALLENGES" would be more neutral. (GERMANY)
857	SPM	6	28	6	28	It is suggested to add in the title of this section "of climate change" after "future risks", just to make clearer what the section is about. This should be also changed in the table of contents (SPAIN)
858	SPM	6	28	6	34	Section B. Future Risks and Opportunity for Adaptation: A reference to observed temperature rise would be useful here to clarify that some change has already occurred and adds to the adaptation challenge caused by further change in the future. (AUSTRALIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
859	SPM	6	28	14	45	In discussion about the risks of climate change, the authors need to make the link back to the previous sections of the SPM that underscore the role that non-climate stressors, like poverty, poor land use planning, etc. play in driving climate-related risks and vulnerability. If such a link back to these key points is not made, these latter segments of the SPM give the incorrect impression that non-climate stressors and current adaptation deficit play no role in determining levels of risk, such as risk of death, injury, food security, etc. (USA)
860	SPM	6	30	6	30	Delete "more limited" since this already involves a premature (in the introductory sentences) value judgment about the importance of benefits versus risks. (NETHERLANDS)
861	SPM	6	30	6	30	delete 'more' (INDIA)
862	SPM	6	30	6	30	It is unclear what "more limited potential benefits" means. Probably "to a limited extent potential benefits" is meant but the wording here is not clear. (GERMANY)
863	SPM	6	30	6	30	the text is ambiguous - is the section presenting the future risks together with a more limited selection of potential benefits of climate change? Or does the section present 'the potential risks and limited benefits....' (UK)
864	SPM	6	30	6	30	If potential future benefits of climate change are more limited than the future risks, the rewrite the sentence as follows: "... and potential benefits, that are more limited than risks, across ..." (SWITZERLAND)
865	SPM	6	30	6	30	The authors appear to be trying to indicate that future impacts are more likely to be negative than positive. But this sentence, as drafted, is not limited to impacts; it also references adaptations and societal choices such as development. Therefore, the authors should delete the words: more limited. (USA)
866	SPM	6	30	6	34	The wording "longer-term era of climate options" and "near-term era of committed climate change" are difficult for policy makers and general public to understand and could be accompanied by a more detailed explanation; specifically time frames. Insertion of exact times reference in parenthesis for each would be appreciated. (JAPAN)
867	SPM	6	30	6	34	The two sentences starting with 'This section....' and 'The section....' are almost talking about the same thing. These should be combined, or a clear distinction should be made. (SWITZERLAND)
868	SPM	6	31	6	31	..by development choices. Specify which development choices are referred to by "human development choices". (NETHERLANDS)
869	SPM	6	31	6	31	The words 'of vulnerability' and 'and processes' may be added after 'magnitude' and 'development choices' respectively (INDIA)
870	SPM	6	31	6	31	The term "development choices" would benefit from further explanation (e.g., in terms of its relation to developing and developed countries). (CANADA)
871	SPM	6	31	6	32	On 'opportunities' to reduce risk through mitigation and adaptation'; To what extent does this section relate/differ to paragraph P 5, L 15 - 23? (GERMANY)
872	SPM	6	32	0	0	The page number (6) the line No. 32 through awareness, capacity building and transfer of expertise, knowledge and technology available in addition to mitigation and adaptation (EGYPT)
873	SPM	6	32	6	32	Being a section on adaptation, it is suggested to reformulate 'through mitigation and adaptation' as 'through adaptation and mitigation'. (CHINA)
874	SPM	6	32	6	34	Here, two rather new terms are used: "near-term era of committed climate change" and "longer-term era of climate options". While these terms are comprehensible, they should be introduced better, and their origins made clear. (SWEDEN)
875	SPM	6	32	6	34	As noted in Canada's overall comments on the SPM, we have significant concerns with the use of the two terms "era of committed climate change" and "era of climate options", as their interpretation is misleading to policymakers and the terms have no basis in the existing scientific literature. We strongly recommend removing these terms and instead simply writing the representative time periods for considering near-term versus long-term impacts. This sentence on lines 32-34 works effectively without these introduced terms. (CANADA)
876	SPM	6	33	6	33	Difficult to understand the meaning of "committed climate change" in this paragraph. Suggest this be replaced with "scenario-independent climate change". (JAPAN)
877	SPM	6	33	6	33	is 'near term' defined at any stage? Parts of the SPM use 2040 or 2050, other do not. (UK)
878	SPM	6	33	6	34	It is not clear what is the difference between "the next few decades" and "the near-term era of committed climate change". If it is the same an "i.e." or brackets for "the near-term..." as well as "the longer-term era..." would be helpful to indicate this. Otherwise it reads like an enumeration. (GERMANY)
879	SPM	6	36	0	0	Section B-1. Congratulations for this very clear and instructive section. It is well written, easy to understand and important. You could consider to highlight it more, make it more visible in the text. (NORWAY)
880	SPM	6	36	7	11	Chapter 19 defines Key Risks as "potentially severe adverse consequences for humans and social-ecological systems due to the interaction of climate-related hazards with vulnerabilities of societies and systems exposed." Vulnerability is acknowledged to include non-climate factors such as wealth, social status and gender (see definitions Ch. 19, p. 9). Therefore, this section would benefit greatly from having this paragraph introduce the term with a clear reference to its definition. We suggest replacing the paragraph on Page 6, lines 38-42 with the following, pulling verbatim from the chapter text: "A Key Risk is a potentially severe adverse consequences for humans and social-ecological systems due to the interaction of climate-related hazards with vulnerabilities of societies and systems exposed [from the definition]. Risks are considered key due to high hazard or high vulnerability of societies and systems exposed, or both. As such, risk is strongly determined by coping and adaptive capacity but also by the magnitude, frequency and intensity of hazardous events and trends linked to climate change.[Ch 19, p.13] Key Risks can include potentially severe impacts relevant to "dangerous anthropogenic interference with the climate system" as described in Article 2 of the United Nations Framework Convention on Climate Change." (USA)
881	SPM	6	36	7	21	This section (B-1) on future impacts is entirely qualitative. This makes it un-useful for informing decisions, and for assessing the value of different mitigation scenarios for reducing impacts. More quantitative information, tied to specific emissions scenarios, would be a big improvement here. (USA)
882	SPM	6	37	6	37	Please consider adding a short conclusion from figure Box SPM.4 Figure 1 at the beginning of section B-1 in bold. For example: "Following the lowest projected scenario (RCP2.6) several RFCs will meet high level of risk. Following RCP8.5 will all RFCs meet high to very high levels of risk." (NORWAY)
883	SPM	6	38	0	0	Please remove the first sentence, as this is not a scientific statement, but rather an unnecessary recommendation without much content. (GERMANY)

#	Ch	From Page	From Line	To Page	To Line	Comment
884	SPM	6	38	0	42	In general, this introductory paragraph is a little awkward to read. To improve it, the short introductory sentence could be deleted and "Key risks" at the beginning of the final sentence could be changed to "These" to avoid excessive repetition. Suggest also being more consistent about the use of the terms "impacts" and "consequences" in this paragraph. In Box SPM.1, it is explained that these terms can be used interchangeably, but the use of both terms in this short paragraph implies that they may be different concepts - this could be confusing for readers. (CANADA)
885	SPM	6	38	6	38	This section could benefit from a statement on the risks at 2 degrees of warming, as the current text does not well distinguish from risks associated with 2 degrees of warming and 4 degrees of warming. Note the Technical Summary states: 'Over this longer term, magnitude of climate change diverges across high and low emission scenarios, and the assessment distinguishes potential outcomes for 2°C and 4°C global mean temperature increase above preindustrial levels. The section elucidates how and when choices matter in reducing future risks, highlighting the differing timeframes for mitigation and adaptation benefits.' (AUSTRALIA)
886	SPM	6	38	6	38	The first sentence ("Many risks ...") is unclear (SWITZERLAND)
887	SPM	6	38	6	38	"warrant", please consider to replace this by "justify" or "legitimate". (NORWAY)
888	SPM	6	38	6	38	Shouldn't all risks of climate change "warrant consideration"? They may not, upon consideration, all warrant action but they should all be considered. I believe that this was a point raised in the Second Draft Review as well. (USA)
889	SPM	6	38	6	40	It is not clear whether this sentence is meant to be a factual statement or a definition of "key risks". (European Union)
890	SPM	6	38	6	42	Please explain the concept of key risks and the reasons for identifying these specific RFCs and the criteria behind this choice. The contribution of expert judgment to the risk assessment should be explained. (GERMANY)
891	SPM	6	38	6	42	This discussion of key risks and reasons for concern stands on its own and does not need to be linked to Article 2 of the UNFCCC. The phrase on line 39 that states "...as described in Article 2..." is incorrect because Article 2 describes dangerous anthropogenic interference differently than the key risks of this section (although it does align well with subsequent text looking at risks to ecosystems and food production). We recommend that the reference to Article 2 be deleted here. It is more appropriately addressed in the AR5 Synthesis Report, which will have a full box on information relevant to Article 2 (CANADA)
892	SPM	6	39	6	39	Replace the word "described" by "provided for" (SWITZERLAND)
893	SPM	6	39	6	42	Article 2 doesn't really describe what dangerous anthropogenic interference is. I would be better to state that Article 2 refers to this. (UK)
894	SPM	6	39	6	42	It would be very useful for readers to have excerpts of text from Article 2 given in the SPM e.g. as a footnote. (UK)
895	SPM	6	40	6	41	Definition of 'key risks' is not entirely clear, particularly the reference to limited adaptive capacity. Do key risks include those for which adaptive capacity will be limited forever because of their specific attributes? (European Union)
896	SPM	6	43	6	43	Please display box SPM.4 in line 43 to simplify the reading. It is important that you introduce the concept of RFCs before listing key risks. (NORWAY)
897	SPM	6	44	0	0	Include risks for losses in natural ecosystems such as biodiversities, loss of forest cover, etc. (Nicaragua)
898	SPM	6	44	6	44	Key risks that span sectors and regions (high confidence)... - doesn't make sense as written; high confidence in what? (UK)
899	SPM	6	44	6	44	The placement of "(high confidence)" in this statement occurs at an odd place and, therefore, should either be moved to clarify to what the confidence refers, or removed. (USA)
900	SPM	6	44	6	45	It is not clear what the confidence statement at the beginning of the sentence refers to. (European Union)
901	SPM	6	44	6	45	It would be better to spell out "RFC" in full in this heading. (European Union)
902	SPM	6	44	6	45	The location of '(high confidence)' is strange in this sentence. Furthermore, many readers will have forgotten what 'RFC' means by this point (better write in full: 'reasons for concern'). (NETHERLANDS)
903	SPM	6	44	6	45	To which statement does the "high confidence" belong? Why not at the end of this statement? (GERMANY)
904	SPM	6	44	6	45	It is not clear what is being assessed as having high confidence in this statement. Suggest reviewing. (CANADA)
905	SPM	6	44	6	45	If possible, please clarify the use of "high confidence" in this statement and whether it is valid for all the following bullet points. (NORWAY)
906	SPM	6	44	7	11	This section needs to have added to it reference to biodiversity loss which is mentioned in several of the eight key risks mentioned in the TS. (GERMANY)
907	SPM	6	44	7	11	Not quite clear on the basis of judgment for choosing these eight risks. Moreover, are not fully convinced that they are truly an exhaustive selection and reflection of what is included in the underlying chapters. For better understanding among policy-makers, request that this information about selection elaborating on why these eight risks have been chosen be included in the text. (JAPAN)
908	SPM	6	44	7	11	Though appreciate space and text length constraints, each risk should be explained as they are in the TS as this is critical information for policy-makers. This SPM version seems too much shortened with important essence and information left out. However. If space does not allow for such extensive inclusion, we request that (i) (vi) and (vii) be rewritten to include reference to biodiversity, which we seem to miss in all the risks: (i) Risk of death, injury, and disruption to livelihood and common-pool resources, due to sea-level rise, coastal flooding, and storm surges affecting economic activity biodiversity, and critical infrastructure in low-lying coastal zones and small island developing states. (vi) Risk of loss of biodiversity and marine and coastal ecosystems and the services they provide for livelihoods, especially for fishing communities in the tropics and the Arctic. (vii) Risk of loss of terrestrial ecosystems and the services they provide for terrestrial livelihoods, due to rising temperatures, changes in precipitation patterns and extreme weather events, especially for communities whose livelihoods depend on provisioning services. (JAPAN)
909	SPM	6	44	7	11	The addition of confidence statements for each of the sub-bullets would greatly improve the usefulness of these statements for policy makers. Please include. (USA)
910	SPM	6	44	7	47	It is questionable whether the paragraph (starting on page 6, line 44 to page 7, line 11) is necessary; risks that "span sectors and regions" would exclude very little. Furthermore, this bulleted list is redundant with the paragraphs that follow. Suggest either deleting this paragraph, or integrated some of these examples into Box SPM.4 (USA)



#	Ch	From Page	From Line	To Page	To Line	Comment
911	SPM	6	45	7	11	Good list of risks but need to tell us what the magnitude of these are in relation to other sources of risk - or say that there is no evidence of magnitude if this is the case. Misses some key risks. For example, what about lower impact, but reoccurring events, such as small droughts, which overtime could have larger systematic effects (not just on agriculture, but health, industry, energy etc...). I don't feel like process for choosing these impacts has been well explained. (UK)
912	SPM	6	46	0	0	Also in the page number (6) the line number 46, you must add the spread of pests and diseases and losses after injury (EGYPT)
913	SPM	6	46	0	47	The reference to "low-lying coastal zones and small island developing states" is far to restrictive. Several significant populations, urban and rural, who live in steep or mountainous areas are prone to severe risk of death, injury and disruptive livelihoods in case of coastal flooding, storm surges and other extreme weather events. This is one of the major risks associated with climate change in South America. Please include ", steep or mountainous areas" after "low-lying coastal zones". (BRAZIL)
914	SPM	6	46	6	46	Add after "small island developing states" "and states with small islands". (GREECE)
915	SPM	6	46	6	46	Remove ',' before 'and' (POLAND)
916	SPM	6	46	6	46	Suggest deleting "developing" to be consistent with the term "small island states", which is used elsewhere in the SPM. (CANADA)
917	SPM	6	46	6	46	The phrase "... low lying coastal zones and small developing island states" should read "low lying coastal zones and small islands". This RFC applies to all islands, not only small developing island states. (USA)
918	SPM	6	46	6	47	Statement is true, but how (much) is this related to climate change? (NETHERLANDS)
919	SPM	6	46	6	47	i.: Please consider including reference to effects on ecosystems/biodiversity since this will be an important aspect in low-lying coastal zones and on small islands. Loss of biodiversity is included in this point in the TS (p. 16). See also Ch. 5.4.2. for example. (NORWAY)
920	SPM	6	46	6	47	Clarify why this risk is being linked to all five RFCs. (USA)
921	SPM	6	46	7	10	It may be somehow confusing to have 5 reasons for concern, and then another list of 8 examples as risks. Can possibly be integrated in Box SPM4 ? (European Union)
922	SPM	6	46	7	11	This list contains some inconsistencies: for the risk of food insecurity, climatic events are given as trigger (i.e. direct impacts of cc), while for the loss of rural households, reduced agricultural productivity is mentioned as one trigger (i.e. indirect impact of cc) - food insecurity comes from reduced agricultural productivity, which comes from climatic extremes; thus, triggers for risks should all be on the same hierarchical level; for vi. and vii. triggers are missing completely. In addition, some of the key risks seem to partly overlap, e.g. i. and iii, or ii, iv, vii. Please explain concept and clarify. (GERMANY)
923	SPM	6	46	7	11	Suggest it would be useful in the chapeau for this section to introduce the concept of multiple stressors, which is well developed in other parts of the SPM, as this list of bullet points may make it sound as though climate change is the exclusive driver behind these risks. (CANADA)
924	SPM	6	46	7	12	All these risks would indeed be key risks when they would have same likelihood. But this is not the case. As such the risk could be more prioritized? Or not? (NETHERLANDS)
925	SPM	6	47	6	47	maybe better: "RCF: 1,2,3,4,5". (GERMANY)
926	SPM	6	47	7	11	Square brackets already have an accepted meaning in UNFCCC negotiation texts. Suggest use of curly brackets for references to the RFCs, which would also be more consistent with the WGI report. (NEW ZEALAND)
927	SPM	6	48	6	48	Remove ',' before 'and' (POLAND)
928	SPM	6	48	6	48	Please clarify: should 'precipitation variability' be 'precipitation change' or 'changes in precipitation extremes'? This section is describing risks of climate change. (CANADA)
929	SPM	6	48	6	49	The text 'including children, old population and women' may be included after 'populations' in square brackets (INDIA)
930	SPM	6	48	6	49	The authors should consider replacing "poorer" with "marginal" so that the phrase reads "particularly for marginal populations" (USA)
931	SPM	6	49	6	49	maybe better: "RCF: 2,3,4,5" etc. (GERMANY)
932	SPM	7	0	0	13	redraft title on: Substantial and effective global mitigation of greenhouse gases over the next few decades can reduce... (POLAND)
933	SPM	7	0	7	0	Footnote 33: Strike "3.4-5" and replace with "3.4-8" (USA)
934	SPM	7	0	7	0	Footnote 34: Strike "3.4-5" and replace with "3.5-2-1" (USA)
935	SPM	7	0	7	0	Footnote 39: Strike "3.4-5" and replace with "3.5-1" (USA)
936	SPM	7	1	7	1	In the section of "Urban areas (chapter 8)" in Chapter19 Box CC-KR Table (p86), both "Inland flooding" and "Coastal flooding (including sea level rise and storm surge)" are listed. Moreover, in this SPM, "inland and coastal flooding" is referred in section "Urban areas"(P.10, II.41). On the other hand, chapter 9 shows that rural areas are also affected by floods. Therefore, this sentence should be changed to "Risk of severe harm for especially urban populations due to inland and coastal flooding". (JAPAN)
937	SPM	7	1	7	1	Is "iii. Risk of severe harm for large urban populations due to inland flooding" really a climate-induced key risk? This risk seems to be far more dominated by urban planning decisions vs. any incremental change in climate-induced rainfall amounts. (USA)
938	SPM	7	1	7	1	This statement is not supported by Chapter 3, which lists an increase in flooding as "medium agreement, limited evidence", and points out that the flood risk varies by region. (USA)
939	SPM	7	2	7	2	Irrigation water is too restrictive. Insufficient "water resources" in general is the problem. (FRANCE)
940	SPM	7	2	7	3	In the Indian context, we need to emphasize particularly small holder farmers and pastoralists with minimum capital in arid and semi arid regions. (INDIA)
941	SPM	7	2	7	4	Why only in semi-arid regions? These water issues can be encountered in arid, semi-arid and dry sub-humid regions, thus, in those regions prone to desertification. (GERMANY)
942	SPM	7	2	7	4	Risk (iv) seems to be the same or at least closely related to risk (ii), namely reduced agricultural productivity. Suggest considering whether it is possible to condense or better link them. (CANADA)
943	SPM	7	2	7	4	Is this "key risk" (iv. loss of rural livelihood due to water scarcity and reduced agricultural productivity) significantly different than "ii": food insecurity linked to warming, drought and precipitation variability? Consider condensing these two risks given their close links. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
944	SPM	7	3	7	4	The authors should delete the phrase "particularly for farmers and pastoralists with minimal capital in semi arid regions". (USA)
945	SPM	7	5	7	5	To be more comprehensible it is helpful to add the examples like in the TS. "v. Systemic risks due to extreme events leading to breakdown of infrastructure networks and critical services such as electricity, water supply, and health and emergency services." (MADAGASCAR)
946	SPM	7	5	7	5	Is the term "extreme events" here referring to extreme weather events or something else? Suggest being consistent with the term used in the Glossary (i.e., extreme weather events). (CANADA)
947	SPM	7	5	7	5	Can the authors include an example(s) of "infrastructure networks" and how their breakdown creates systemic risks? (USA)
948	SPM	7	5	7	6	Extreme events have the potential to also threaten social networks (not just infrastructure networks). The authors should assess the underlying chapter to see where this important aspect is discussed and bring it forward to this key risk. (USA)
949	SPM	7	7	7	7	LOSS of marine ecosystem ..... It should be altering / change in marine ecosystem. Ecosystems are dynamic and have been changing in the past and will change in future as well. But the increased frequency of climatic stresses make some species to lose and t (INDIA)
950	SPM	7	7	7	8	We suggest including "and hunting" after "fishing" in line 7. In the Arctic this is an issue for hunting communities. (NORWAY)
951	SPM	7	7	7	8	The authors should delete "for fishing communities" so that the line reads "especially in the tropics and the Arctic". (USA)
952	SPM	7	7	7	9	"the service they provide for coastal livelihoods ...the services they provide for terrestrial livelihoods ..." - The services of marine and terrestrial ecosystems go far beyond ensuring livelihoods (example: discovery of new class of antibiotics found in marine species in the Pacific in 2013). We suggest the wording "the service they provide for .... livelihoods and development". (GERMANY)
953	SPM	7	7	7	9	Suggest that some justification is required for why risk of loss of marine ecosystems encompasses all five Reasons for Concern (RFC), whereas risk of loss of terrestrial ecosystems excludes RFC 2 and 5. (CANADA)
954	SPM	7	7	7	9	Delete "for coastal livelihoods" and "for terrestrial livelihoods" - the different ecosystem services are not limited to only these livelihoods, eg. food from the sea are not limited to the "coastal livelihood" (NORWAY)
955	SPM	7	8	7	8	LOSS of terrestrial ecosystem ..... It should be altering / change in terrestrial ecosystem. (INDIA)
956	SPM	7	9	7	9	Please consider including "irreversible loss of biodiversity and ecosystem services" (INDIA)
957	SPM	7	9	7	9	It may make sense to include the term "function" here. The sentence would thus read: "Risk of loss of terrestrial ecosystems or the degradation of their functions and services ....". (GERMANY)
958	SPM	7	9	7	9	Following the wording in Chapter 4, we suggest rewording this to "Risk of loss of terrestrial and inland aquatic ecosystems and the services they provide for inland livelihoods" (BELGIUM)
959	SPM	7	10	0	11	"extreme heat" is only one of several extreme weather events (RFC2) that impact vulnerable urban populations. Please replace "extreme heat" by "extreme weather events" or, alternatively, "extreme heat and other extreme weather events". (BRAZIL)
960	SPM	7	10	7	10	Remove ',' before 'and' (POLAND)
961	SPM	7	10	7	11	Extreme air pollution events in a changing climate during cases of extreme heat like heat waves can increase the Risk of mortality. This has been shown already in cases such as the heat wave of 2003 over western and central Europe and the heat wave of 2010 over Eastern Europe and Russia. I think that the additive role of air pollution levels on the risk of mortality during periods of extreme heat should be included in the statement. For example it could be rearranged as follows: "viii. Risk of mortality, morbidity, and other harms during periods of extreme heat and induced high air pollution levels, particularly for vulnerable urban populations." (GREECE)
962	SPM	7	10	7	11	We think adding examples like in the TS will make the term 'vulnerable urban populations' more specific. "Risk of mortality, morbidity, and other harms during periods of extreme heat, particularly for vulnerable urban populations such as the elderly, infants, people with chronic ill-health, and expectant mothers." (MADAGASCAR)
963	SPM	7	13	7	13	It is unclear whether the term climate change, as used in Section B, is natural and human induced or solely anthropogenic. This needs to be clarified, such as was done in Footnote 2 for observed changes. This bolded sentence looks like it should reference "anthropogenic" climate change. (USA)
964	SPM	7	13	7	14	This statement is rather obvious; one would expect to be assigned "very high confidence". This is also a key message that could be placed in a more prominent position. Again, it could be useful to have a dedicated section on the relationship between mitigation and adaptation. (European Union)
965	SPM	7	13	7	14	The bold text "Mitigation of greenhouse gas emissions over the next few decades can substantially reduce risks of climate change in the second half of the 21st century" needs some modification as. 1) "Mitigation" needs to have added before it "Substantial and rapid" to convey the sense that very significant mitigation is needed rapidly to make this statement true. 2) the phrase "in the second half of the 21st century" needs to be modified to something like "beyond the next few decades and into the second half of the 21st century" to describe the RCP2.6-pathway adequately. SPM Figure 4B indicates significant avoided climate change by the 2040s from RCP2.6 compared to RCP8.5. (GERMANY)
966	SPM	7	13	7	14	Request that "substantially" be deleted from this part. The degree of risk reduction depends on how far the mitigation could be advanced, which is a subject covered by IPCC WGIII. (JAPAN)
967	SPM	7	13	7	14	Please consider replacing "can" with "will". In addition we believe that mitigation of greenhouse gas emissions also have implications in the first half of the 21st century, although the implications are larger in the second half and even further. One way could be to add "especially" in front of "the second half of the 21st century". (NORWAY)
968	SPM	7	13	7	14	It is not clear that mitigation alone will "substantially reduce the risks of climate change in the second half of the century." It might reduce the rate, timing and magnitude of changes in greenhouse gas concentrations and the impacts from these but evidence suggests that the world will still see significant climate-related risks throughout this century from climate variability and ongoing vulnerability. Recommend editing to clarify this important item. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
969	SPM	7	13	7	17	Page 7, line 13-17 refer to the relation between mitigation and reducing the risks of climate change, without referring to the historical responsibility and the rights of developing countries in the atmosphere which dominated by largest GHGs emitters. Therefore, it recommended to change the para language to refer to the importance of mitigating emissions from the largest GHGs emitters to give the opportunity for the developing countries to take its share in the atmosphere and reduce the climate change risks that particularly threaten developing countries whose adaptive capacity to face climate change impacts are weak already. (EGYPT)
970	SPM	7	13	7	18	The bold sentence in this paragraph doesn't seem to be connected to the examples showed. To clarify this paragraph, we suggest redrafting in the following way: "Examples of risks of climate change that can be reduced through mitigation of GHG emissions include...". (SPAIN)
971	SPM	7	13	7	18	Adaptation is more urgent to adverse impacts already caused by climate change. This paragraph, while pointing out the importance of mitigation to reducing the long-term risks of climate change, ignores adaptation. It is suggested to reformulate it with additions. (CHINA)
972	SPM	7	13	7	18	Under all assessed scenarios for Mitigation and Adaptation, some risk from residual damages is unavoidable but is possible to minimize loss of Human life to great extent by adopting structural and non-structural measures. (INDIA)
973	SPM	7	13	7	18	The examples given in this paragraph are all about how the impact of climate change may be reduced if greenhouse gas emissions are mitigated, but the starting sentence refers to mitigating emissions reducing the risk of climate change which is a different issue. This needs re-wording to be clear what is being said. (UK)
974	SPM	7	13	7	18	This paragraph could be strengthened with a few examples of by how much risk is reduced through mitigation. (UK)
975	SPM	7	13	7	18	The assessment of "high confidence" on line 14 seems to conflict with "very high confidence" on line 18. Suggest reviewing. (CANADA)
976	SPM	7	13	7	18	This paragraph should be moved to section C. (USA)
977	SPM	7	13	7	26	Suggest to change the order of the two paragraphs line 13-18 and 20-26 to improve logic and understanding; the first paragraph on page 6 line 44 - page 7 line 11 deals with the key risks, the second paragraph is dealing with how these key risks and impacts are increased by "Large magnitudes of warming [...]" and the third paragraph shows that "Mitigation of greenhouse gas emissions over the next few decades can substantially reduce warming and the associated risks of climate change in the second half of the 21 st century " (NORWAY)
978	SPM	7	14	7	14	For more clarity, write: "Examples of risk reduction include ...". (SWITZERLAND)
979	SPM	7	15	7	15	Remove 'of' after 'impacts', remove 'of' after 'scarcity' (POLAND)
980	SPM	7	15	7	16	Risks due to sea-level rise are not restricted to major challenges to urban settlements and infrastructure. Considering the fact that other risks are not discussed in detail, examples of impacts of sea-level rise need not be elaborated. Therefore request that the notation "of major challenges to urban settlements and infrastructure from sea-level rise" should be shortened to "sea-level rise". (JAPAN)
981	SPM	7	16	7	16	Delete the wording "...and.." and replace it by a comma. (NETHERLANDS)
982	SPM	7	16	7	16	Remove ',' after 'rise' and 'of' before 'adverse', remove ',' after 'floods' (POLAND)
983	SPM	7	16	8	21	Consider transferring this explanatory text box to an annex. (NETHERLANDS)
984	SPM	7	17	7	18	Suggest to use 'residual impacts' instead of 'residual damages', to be consistent with past IPCC definitions. We suggest to add 'at least' to the final sentence, so as to also cover impacts that might not be projected, such as tipping points or as a result of uncertainty. Suggested: 'some risk, at least from residual impacts, is unavoidable'. (European Union)
985	SPM	7	17	7	18	Some risks from residual damages is unavoidable. What is "some"? If this is not specified more, this sentence is not very informative. (NETHERLANDS)
986	SPM	7	17	7	18	Suggest that the term "residual damages" may benefit from further definition/explanation. (CANADA)
987	SPM	7	17	7	18	Please consider to further develop this sentence with information from TS p. 17, and also discussed in e.g. Ch. 4.4.4. "Some mitigation or adaptation options also pose risks". (NORWAY)
988	SPM	7	17	7	18	While mitigation and adaptation can reduce risk from residual damages, development and development pathways also play a critical role (as noted earlier in the SPM). To say that "under all assessed scenarios for mitigation and adaptation, some risk from residual damages is unavoidable" completely ignores the role that development and development pathways play. The authors need to re-word this sentence to read something like: " Under all assessed scenarios for development, mitigation and adaptation, some risk from residual damages is unavoidable". (USA)
989	SPM	7	18	0	0	Footnote 39 refers, in particular, to table 8-5 "Main sources of funding and financial instruments for urban adaptation" of chapter 8. However, the table has very poor relation to lines 13-18 of SPM. Probably, table 8-6 of chapter 8 "Current and Indicative future climate risks for Dar es Salaam, Durban, London, and New York City" should be cited in this regard. (RUSSIAN FEDERATION)
990	SPM	7	18	7	18	Add at the end of this para: 'and significant adaptation challenges are likely.' (AUSTRALIA)
991	SPM	7	20	0	0	"challenging" is not an appropriate word in the context of climate change impacts. (GERMANY)
992	SPM	7	20	7	20	Please add a confidence level to this statement. (GERMANY)
993	SPM	7	20	7	20	Remove ',' before 'and' (POLAND)
994	SPM	7	20	7	20	Please consider to include after "warming", ", caused by high greenhouse gas emissions,". (NORWAY)
995	SPM	7	20	7	21	It should be made clear why four-degrees is discussed. Is it a definitive cross-over from one regime or another? Or relates to what has been assessed? (SWEDEN)
996	SPM	7	20	7	23	Regarding the phrase "Risks associated with global temperature rise in excess of 4C.... include potential adverse impacts... and potentially extensive ecosystem impacts... (high confidence)", are the words "potential" and "potentially" needed in this sentence? The fact that these are not certain impacts is implied by the use of the word 'risks' and by the confidence assessment. The two "potentials" followed by the "possible" (crossing of thresholds) seem to weaken this sentence to the point where it loses meaning. (CANADA)
997	SPM	7	20	7	24	The second sentence in the paragraph seems to underestimate the potential risks associated with higher temperature rise. Human health impacts are not mentioned, nor impacts on sectors like energy, transport or buildings. Why are these specific examples mentioned? (European Union)

#	Ch	From Page	From Line	To Page	To Line	Comment
998	SPM	7	20	7	24	Over what timescales are these statements relevant? Will a 4C rise in 50 years present the same risks and impacts as if that 4C rise were realized over 200 years? The authors should clarify the temporal timescales under consideration for these statements. (USA)
999	SPM	7	20	7	27	There is also clear evidence that such a large increase in temperature will lead to greater water scarcity and variability of water availability. (UK)
1000	SPM	7	20	7	27	Tipping point is not defined. Also, by mentioning 4C, the text implies 4C is a tipping point. Is this what is meant? (UK)
1001	SPM	7	20	7	27	Define "large earth system responses". (UK)
1002	SPM	7	20	7	27	An explanation of how risk is quantified here would be useful, though inferring it's low, moderate, high? (UK)
1003	SPM	7	20	7	27	likelihood of crossing tipping points decreases with 'reduced GHG emissions' - this should be explicit - does it mean reduced emissions rates, or reduced cumulative emissions? (UK)
1004	spm	7	21	7	21	This sentence could be interpreted as suggesting that there is little or no impact below 4°C. please clarify and ensure consistency with the formulation on page 8 line 13. (BELGIUM)
1005	SPM	7	21	7	21	Please explain the meaning of the "pre-industrial" reference when used for temperatures, for example by indicating in a footnote that it is acceptable to refer to the average temperature over the period 1850-1900 as an approximation for the pre-industrial temperature. This pre-industrial average would then be 0.61 [0.55 to 0.67] °C below the average temperature in the period 1986-2005 (as indicated in WGI). (BELGIUM)
1006	SPM	7	21	7	24	THIS IS ONE OF THE HIGH PRIORITY COMMENTS OF GERMANY: The 4°C level given for the conclusion that "Risks associated with global temperature rise in excess of 4°C relative to preindustrial levels include potential adverse impacts on agricultural production worldwide,...etc" does not appear to be supported as the sentence is presently written - most of the risks mentioned are already high to very high below 4°C warming. It would be more accurate to refer to a warming level of "around 2oC" or 1.5-2oC. This can be seen from TS Pages 17-18, and the Executive Summary of Chapter 7 page 3. (GERMANY)
1007	SPM	7	22	7	22	Remove ',' before 'and' (POLAND)
1008	SPM	7	22	7	23	It is correct to state that temperature rise can lead to increased species extinction risk. However, it might be just as relevant to mention that new ecosystems might emerge with a different composition of species and with different potential to provide ecosystem services. The ecological, economic and social impacts of these changes cannot be assessed at the moment, see Ch 4, P 3, P6. P7. (GERMANY)
1009	SPM	7	23	6	24	"disproportionally large earth system responses" is difficult to understand for non-experts. Please use a simpler expression for this important message. (GERMANY)
1010	SPM	7	23	7	23	Please consider to remove "disproportionately" from this sentence as it is hard to understand disproportionate to what. (NORWAY)
1011	SPM	7	23	7	23	Please consider to make to sentences. "[...] extinction risk (high confidence) . Additionally possible crossing of treshold [...]". (NORWAY)
1012	SPM	7	23	7	24	Suggest adding 'and consequences'. This report is about impacts and vulnerabilities; the climate system is analysed in WGI. (European Union)
1013	SPM	7	23	7	24	We suggest to delete "as well as possible...(low confidence)". We would prefer seeing in the SPM sentences reflecting findings with medium confidence or higher. (SPAIN)
1014	SPM	7	23	7	24	Suggest that the trace back for the statement on large Earth system responses should, presumably, also include references to material in the WGI report. (CANADA)
1015	SPM	7	23	7	25	"earth system" usually is written "Earth system". (FRANCE)
1016	SPM	7	23	7	26	The "low confidence" assessment for large earth system responses is misleadingly low, and it appears to be inconsistent with Statement (5) in Box SPM.4 (p. 8, ll. 10-14) and with Box SPM.4 Figure 1. According to the arguably most extensive review of tipping points (Kriegler et al. 2009; doi: 10.1073/pnas.0809117106), the likelihood of crossing thresholds for large-scale irreversible climate change is above 50% for several tipping elements in a scenario with more than 4°C temperature increase (named C3 in that publication). This is substantially higher than "low confidence", which suggests (according to the AR4 guidance) only a "2 out of 10 chance of being correct". The same study shows clearly that all experts assign higher likelihoods for crossing tipping points for high-temperature scenarios than for low-temperature scenarios. Therefore the final "medium confidence" statement should be changed (at least) to "high confidence". Can you also ensure that this is consistent with the findings of WGI? (European Union)
1017	SPM	7	24	7	26	It is important that this discussion of tipping points be properly supported by references to both IPCC WGI and WGII reports. Currently, there are no references to the WGI report. WG I provides an assessment of "tipping points" in the physical climate system in Table 12.4. Only two such changes are identified as being abrupt and not reversible (characteristics of tipping points as defined in the WGII glossary) on centennial timescales, namely an Atlantic MOC collapse and a clathrate methane release. These two changes are however both assessed as 'very unlikely' within the 21st century. We suggest that this text could be made more relevant by providing information on what specific "tipping points" are being considered. (CANADA)
1018	SPM	7	24	7	26	As written this sentence is not very informative and seems obvious (e.g., that we don't know the precise level of climate change associated with tipping points, and are less likely to cross any possible thresholds if emissions are lower). Suggest considering whether such a statement could be made with at least the 'very high confidence' level. Also, the current wording is awkward. Consider revising to read as follows: "Critical thresholds in human and natural systems remain poorly delineated/quantified, but the likelihood...etc. ". (CANADA)
1019	SPM	7	24	8	11	There seems to be a contradiction: According to P 7, L 24 "The precise levels of climate change sufficient to trigger tipping points [...] remain uncertain". On the other hand, specific levels are given on P 8, L 11: "tipping points become moderate between 0-1°C [...] 1-4°C [...] 1-2°C. Please clarify. Maybe the following two sentences could be added: "Due to the non-linear character of the relevant systems, ranges can only be indicated with probabilities. Due to the high relevance early warning systems for those tipping points might be considered." (GERMANY)
1020	SPM	7	26	0	26	The term "...decreases with reduced GHG emissions" seems somewhat inconsistent with the tone of the rest of this SPM. If it is also true that the risks "increase with growing GHG emissions", consider using terminology along these lines instead. (CANADA)
1021	SPM	7	28	7	28	The title for Box SPM.4 does not reflect the content of the box. Suggest changing text to: "Evaluating risks at various levels of warming" or "Risk assessment to estimate 'dangerous' climate change" (AUSTRALIA)

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1022	SPM	7	28	7	28	Suggest the Box title is changed to include "Reasons for Concern". (European Union)
1023	SPM	7	28	7	28	It is suggested to change box title in order to be more in line with box content, for instance " Key Risks due to Human Interference with Climate System and Reason for Concern" (SPAIN)
1024	SPM	7	28	7	33	The term "interference" communicates a value judgment that suggests a particular point of view (all interference is bad). But many types of interference, historically, reflect human adaptations to climate. Slightly more neutral (and very powerful) would be to use the word "influence" and cast the title as "Human influence on the climate system.". Also, it would be very powerful to repeat the words that have been adopted in the WG1 SPM in the first sentence, by replacing "Human interference with the climate system is occurring" with "Human influence on the climate system is clear". In the paragraph that follows the title of the Box, the word "yet" suggests a contrast, but the reason for the contrast is not clear. A suggestion for how to formulate this paragraph, that also makes the contrast clear would be as follows: "Human influence on the climate system is clear. Nevertheless, determining whether this influence is dangerous, as relevant to Article 2 of the UNFCCC, is challenging because both risk assessment and value judgments are required." (CANADA)
1025	SPM	7	28	8	14	We recommend some slight revisions to the naming of the Reasons for Concern (RFC). The RFC, as currently "titled" or ("named"), are each very different things and do not form a coherent list. 'Unique and threatened systems' are systems which are impacted by climate change. 'Extreme weather events' are climatic drivers of impacts. 'Large-scale singular events' are impacts in specific systems. 'Distribution of impacts' and 'Global aggregate impacts' are aspects of overall impacts of climate change. This is particularly a problem when the risks associated with the RFCs are compared in Box SPM.4, Figure 1. Although these RFCs have been used in previous IPCC WGII reports with the current phrasing, we strongly recommend that some minor changes be made to the descriptions of the RFC so that all the items in the list are impacts. Some choices in wording would be available. For consideration, we suggest the following: 'Impacts on threatened unique systems', 'Impacts of extreme weather events', 'Impacts become more widely distributed', 'Impacts become global in scale', and ' Impacts of large-scale singular events'. (CANADA)
1026	SPM	7	28	8	15	Suggest that in the final editing and layout, Box SPM.4 (Human Interference with the Climate System) follows immediately after the list of key risks. (NEW ZEALAND)
1027	SPM	7	28	8	15	Is this box based on modelling, value judgement or a combination of both? Needs to be stated somewhere. (UK)
1028	SPM	7	28	8	15	Box SPM.4. Human Interference with the Climate System. The content presented in the box does not really directly address the human interference with the climate system, but is about the key risks across sectors and regions. Given Section B-1 is on Key risks across sectors and regions, the content in the box would be better presented in the main body, instead of in the box. In (3) Distribution of impacts, it states 'Developed countries also have highly vulnerable populations'. The regions and causes should be specified here. (SWITZERLAND)
1029	SPM	7	28	8	21	Box SPM.4 describes risks for various levels of temperature changes, where these changes are specified relative to 1986-2005. However Policymakers are probably more used to considering temperature changes relative to "pre-industrial". Defining the date for "pre-industrial" and a temperature offset associated with it is fraught with problems. However it might be useful to add here (e.g. by footnote) that WGI indicates the warming between the average of the period 1850-1900 and of the AR5 reference period of 1986-2005 was 0.61[0.55 to 0.67] °C (WGI SPM Section E - for which the introductory italicised section contains several lines on this matter). (NEW ZEALAND)
1030	SPM	7	28	8	21	This is one of the best boxes and compliments to IPCC (INDIA)
1031	SPM	7	28	8	21	To get the full information about observed and projected changes in annual average temperature please add the information about the observed warming, which is 0,61 [0,55 to 0,67] °C from 1850 - 1900 to the reference period (1986 - 2005). [WG I-SPM, table SPM.2, p. 21] (compare comment P 5 L 25). (GERMANY)
1032	SPM	7	28	8	21	BOX,SPM4: Unclear as to where in underlying report of AR5 WGII the references for RFCs are from. Request that references to underlying chapters for each RFC be provided as in Executive Summary of Chapter 19. Though searched for correlating sections in the underlying chapters, were not able to find evidence of the temperatures provided in the BOX. Ask that this be clarified and that specific references (eg.19.6.3) for each RFC be added. (JAPAN)
1033	SPM	7	28	8	21	Box SPM.4 : the reference time period for temperature used in this box and the associated figure is 1986-2005, while a reference to pre-industrial is used both in the text and in table SPM.1. To avoid confusion and improve policy relevance, it would be very useful to change the reference in this box and figure to pre-industrial. (BELGIUM)
1034	SPM	7	28	8	21	Box SPM.4 overall comment: It is important that this Box (and/or caption to associated figure) provide clarity on the criteria and/or methods used to determine level of risk. If specific criteria were not used, then examples of different risk levels would be useful. Without such information it appears that the risk levels represent a value judgment by the writing team (which is acceptable - but should be stated as such). This figure will be important in discussions of the 2013-2015 Review under the UNFCCC and the authors need to be as clear as possible regarding the rigour of the risk levels presented. (CANADA)
1035	SPM	7	28	8	21	Please relate the RFC to different geographical areas e.g. by referencing to Figure SPM.2., as the level of risk shown in Box SPM.4. Figure 1 will depend on where you are on the globe, and how prepared you are. (NORWAY)
1036	SPM	7	30	7	33	Suggest that the first sentence be broken up into two separate sentences because it is a convoluted sentence and rather difficult for non-native speakers to precisely understand. (JAPAN)
1037	SPM	7	32	0	0	Suggest replacing "providing a basis for value judgments" with "and can inform value judgments". The IPCC has consistently and usefully stated that determining what constitutes dangerous interference is a value judgment. The current formulation seems contradictory. (CANADA)
1038	SPM	7	35	8	14	Reasons for concern. Interesting to see that they are still used. Would be interesting to indicate where and how much they have changed compared to AR4 and TAR. This would give an added value. (NETHERLANDS)
1039	SPM	7	36	0	0	Canada recommends that it would be very useful for Box SPM.4 to include a comparison of risk levels assessed in the TAR with those in the AR5 to demonstrate how our understanding of risk has evolved. This should explain how and why the risk levels have changes (e.g., methods used, changes in evidence base, etc.). (CANADA)
1040	SPM	7	36	0	39	The acronym for reasons for concern should be used on lines 36 and 39 rather than the full spelling, since the acronym was already identified in the sentence above. (CANADA)
1041	SPM	7	36	7	36	Box SPM 4 Needs to be reworded. Reword As identified and emphasised in earlier IPCC Reports/ the TAR & AR4....." .... (IRELAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
1042	SPM	7	37	7	37	"Adaptation limits" is a critical concept in the AR5 WGII report and should be defined more clearly so as to ensure clear understanding of its use in AR5 WGII. If not here, its addition to BOX SPM1 would be greatly appreciated. (JAPAN)
1043	SPM	7	37	7	37	Remove ',' before 'and' (POLAND)
1044	SPM	7	39	7	40	All temperature changes refer to local temperatures and are given relative to 1986-2005: please distinguish clearly this from the 2 degree global mean temperature goal. (NETHERLANDS)
1045	SPM	7	40	7	40	To ensure the projections can be interpreted in the context of already observed warming, suggest adding text similar to the statement from WGI (pg 14) 'Based on the longest global surface temperature dataset available, the observed change between the average of the period 1850-1900 and of the AR5 reference period is 0.61 [0.55 to 0.67] degrees C. However, warming has occurred beyond the average of the AR5 reference period. Hence this is not an estimate of historical warming to present'. Adding this would help interpreting projections from the 'recent' (1986-2005) baseline, such as the statement on page 8 line 11 "Risks of such tipping points become moderate between 0 - 1°C". (AUSTRALIA)
1046	SPM	7	40	7	40	The baseline for temperature changes is provided relative to 1986-2005. However, a recent baseline year i.e 2012 may be provided for temperature change. (INDIA)
1047	SPM	7	40	7	40	If this is what is meant, please clarify in the following manner : 1986-2005 (referred to as "recent" in the remaining of this box) (noting that "recent" probably has other meanings in the SPM, and is used before this page) (BELGIUM)
1048	SPM	7	40	7	40	it would be beneficial to the reader to add text to explicitly state that extra over warming did occur from pre-industrial up to the 1986-2005 temp baseline and must also be considered in context of a temp-target above pre-industrial. If possible, this should be quantified in line with WGI estimates. (UK)
1049	SPM	7	40	7	40	It would be helpful to expand this statement, that all temperature changes are given relative to 1986-2005, to include mention of how to obtain temperature changes relative to pre-industrial as per the conclusions of IPCC AR5 WGI. The Figure (Box SPM.4 Figure 1) makes suitable adjustments to the schematic to illustrate changes in temperature relative to 1850-1900, but no mention of this is made here, or in the caption to Box SPM.4 Figure 1. Please add this information so readers know the source and basis for adding 0.6degC to changes expressed relative to 1986-2005. (CANADA)
1050	SPM	7	40	7	40	Please consider including a sentence to inform policymakers how to get an estimate of the temperature compared to pre-industrial: "For an estimate of temperatures compared to pre-industrial, add 0.6C." (NORWAY)
1051	SPM	7	40	7	40	With respect to this important caveat regarding all temperature changes being relative to 1986-2005, the authors should make two changes: (1) include an explanation why this period is chosen (i.e., the base period for the CMIP5 projections, and (2) more importantly, state how much warming has occurred between 1850-1900 and the AR5 reference period (i.e., 0.61C) as has been done in th WG1 report. Otherwise, the reader is left with an incomplete presentation. (USA)
1052	SPM	7	41	0	0	It is not clear if 'Unique and threatened systems' means 'Unique systems and threatened systems' or 'Threatened unique systems'. We think it's the latter and, if so, suggest using 'Threatened unique systems' to avoid the ambiguity. (CANADA)
1053	SPM	7	41	7	41	The word 'cultures' may be replaced by 'socio-cultures' (INDIA)
1054	SPM	7	41	7	41	Unique and threatened systems' is very vague (UK)
1055	SPM	7	41	7	44	In this category, it should made more explicit that there are unique human communities, cultures, systems and activities that may also be threatened because either their ecosystem or livelihoods depend on these unique natural threatened ecosystems (or even other reasons related to climate change) (SWITZERLAND)
1056	SPM	7	41	7	44	Over what timescales are these statements relevant? Will these temperatures increases have the same impacts if realized over 30 years vs 300 years? The authors should include temporal context. (USA)
1057	SPM	7	42	0	0	Suggest replacing "at risk from climate change climate change at recent temperatures" with "already at risk from climate change". (CANADA)
1058	SPM	7	43	0	0	Is there an abrupt increase in the number of species at risk at 1degC, or is this just part of a gradual increase with warming? If it's the latter then calling out 1degC seems misleading. If the 1degC temperature is retained, then suggest some quantitative information on the fraction of systems at risk should be included for this threshold. (CANADA)
1059	SPM	7	43	7	43	Here, the discussion of when impacts emerge and how they appear at different levels of warming differs from the discussion of the other RFCs in Bon SPM.4. Supposedly there are levels of risk already at below +1degC. (SWEDEN)
1060	SPM	7	43	7	44	Please consider to include information about the high risk related to ocean acidification caused by increasing levels of atmospheric CO2. E.g. by inserting "and ocean acidification" after "climate change" and replacing "at" with "corresponding to". (NORWAY)
1061	SPM	7	44	7	44	"particularly Arctic sea ice systems and coral reefs", do you have other examples, for example for humans, culture? (NORWAY)
1062	SPM	7	45	7	45	It is suggested to reword 'Extreme weather events' as 'Extreme events'. (CHINA)
1063	SPM	7	45	7	47	Box SPM.4: Statement (2): It could be argued whether there is "high confidence" that the risks from extreme weather events such as heat waves are "moderate at recent temperatures". The substantial death toll (tens of thousands of premature deaths each) for the 2003 west European heat wave and for the 2010 Russian heat waves, which redefined the maximum temperature map for large parts of Europe, seem to suggest otherwise. (European Union)
1064	SPM	7	45	7	47	Without doubt, risk from existing climate variability is considerable. It is however not clear how the assessment here was derived: we interpret the statement as a moderate ADDITIONAL risk from recent climate change. It would be helpful to specify what this statement is based on, as has been done for RFC 1 and 3-5. Additionally it should be clarified whether it can be excluded that the additional risk from recent climate change is already higher even if present methodologies don't allow to quantify this. (GERMANY)
1065	SPM	7	46	7	46	Remove ',' before 'and' (POLAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
1066	SPM	8	0	0	0	Box SPM.4 Figure 1: The inclusion of that figure is supported. It is noted that it also is based on expert judgement. Given the relevance of that figure and the expectation that it will be updated in some years reflecting the additional knowledge available on impacts of climate change there is a strong need to document all the expert judgements in such a manner that a comparable judgement by other experts is possible in the future. Those expert judgements could be included in the Technical Summary as an annex. The documentation of the expert judgement should follow a standardized format, including e.g. date of the judgement, name(s) of the expert involved, expert's background, the logical basis for judgement, including any data taken into consideration, this should include the rationale for the estimated level of risk; the result (level of risk for a specified impact/reason for concern); identification of any external reviewer; approval by the writing team (date). (AUSTRIA)
1067	SPM	8	0	8	0	Footnote 42: Strike "3.4-5" and replace with "3.4-8" (USA)
1068	SPM	8	0	9	0	The level of detail in the Sectoral risk section should be used for the regional impacts section and examples should be provided throughout the section. This will also help link to the regional risks more rather than having each section clearly separated. (UK)
1069	SPM	8	0	9	0	Table SPM1 covers adaptation potential for key risks across regions and Table SPM2 categorises types of adaptation but there is little in the main text about what adaptation in different sectors looks like. It would be nice to see, for each section, a summary of the risks at different levels of warming, what the potential for adaptation is (technical or socio-economic) and what it simply isn't possible to adapt to. Of all the sub-sections the 'health' section comes closest to doing this. Maybe a few case studies in boxes might help? (UK)
1070	SPM	8	0	9	0	It would be good to stipulate magnitude of risk as compared to other sources of risk for each of the sectors mentioned (eg: in comparison with growing demand from growing population and economy) (UK)
1071	SPM	8	0	9	0	Section makes use of results for RCPs are mentioned. It would be very helpful if a briefly introduction to what RCPs really mean could be given. E.g. instead of saying just 'RCP8.5' - say 'the highest emissions scenario considered (RCP8.5), and instead of just 'RCP2.6' say 'the most ambitious mitigation scenario', otherwise it will not mean anything to many policymakers and readers. (UK)
1072	SPM	8	0	12	0	In all sections in this chapter it would be useful to add also some examples of potential benefits as it is mentioned in line 27 (POLAND)
1073	SPM	8	0	12	0	Sections B-2 and B-3: The section on regional risks (B-3) is limited to an introduction to table SPM.1. As a result, there is almost no discussion of regionally specific aspects of impacts in the text. We think that when a sector is specifically at risk in a given region, it is important to summarize this information in the text. A possibility could be to add such specific cases in section B-2, which needs to be as concrete and precise as possible. (BELGIUM)
1074	SPM	8	1	8	1	Instead of using the expression "Distribution of impacts", its seems more appropriate to say "Consequences of impacts" (SWITZERLAND)
1075	SPM	8	1	8	3	Box SPM.4: Statement (3): The reasoning is not clear. Are risks really "moderate at recent temperatures because of regionally differentiated climate-change impacts on food production"? Some clarification is necessary. (European Union)
1076	SPM	8	1	8	3	It would be useful to find here this sentence from Chapter 7 (executive summary p3 paragraph 3): "Crop production will be consistently and negatively affected by climate change in the future on low latitude countries, while climate change may have positive or negative effects in northern latitudes (high confidence)". May be instead of "regionally differentiated climate-change impacts on food production (medium to high confidence)" which is a bit unclear. (FRANCE)
1077	SPM	8	1	8	4	Would it be possible to have other issues than just agriculture dealt with in this summary statement. (FINLAND)
1078	SPM	8	1	8	5	We have the impression that the text is not fully consistent with the figure : the text includes "Risks for disproportionately affected people" (...) "are moderate at recent temperatures", while the "recent" temperature level correspond to a white area in the figure column regarding "distribution of impacts". It seems that the "moderate risk" level corresponds to an increase in temperature above 86-2005 of about 0.5 °C, or slightly more (1 to 1.5°C above pre-industrial). Please verify the consistency between the text and the figure. (BELGIUM)
1079	SPM	8	1	8	5	Please clarify the meaning of the concept of "level of risk associated with the distribution of impacts". What is increasing when this level is increasing ? Is it the level of risk in the most affected countries ? Or the number of countries / regions which are affected ? Or both ? (BELGIUM)
1080	SPM	8	1	8	5	Regarding Reason for Concern 3, Distribution of Impacts: Given the current sequence of sentences here, readers could be mistaken in thinking that sentence 2 is linked to concerns about "food production". Suggest making it clearer, generally, that the context for vulnerability is broader than food production and that all countries have some highly vulnerable populations. (CANADA)
1081	SPM	8	1	8	5	Box SPM 4, reason 3 refers only to the developed countries without any reference to the developing countries. We suggest that you add developing countries to ensure balance or you delete the sentence. (SOUTH AFRICA)
1082	SPM	8	1	8	21	Significance of the 5 RFCs for coasts is there strongly. The impacts for World level coasts/ coastal lowlands, not just specific Coast environments could be expressed (IRELAND)
1083	SPM	8	2	8	2	Remove ',' before 'and' (POLAND)
1084	SPM	8	3	0	0	Would it be appropriate to add "some", that is "Developed countries also have some highly vulnerable populations" ? (BELGIUM)
1085	SPM	8	3	8	3	When referring to climate change differentiated impacts, we agree on the importance of food productions, but there are other aspects such as water availability that are also relevant. Therefore, we suggest re-drafting the sentence saying "because of regionally differentiated climate-change impacts, particularly on food production". (SPAIN)
1086	SPM	8	3	8	3	"medium to high confidence" is not a standard formulation. It is suggested to use a standard one on confidence based on Box 2. (CHINA)
1087	SPM	8	3	8	3	Does "medium to high confidence" mean medium confidence for some regions, and high confidence for others, or is this a blanket assessment at a level between medium and high? If the latter, we suggest that only one level be selected (medium or high, but not "medium to high"). Using "medium to high" as a modifier suggests an ability to distinguish between levels of confidence that is finer than can probably be achieved. (CANADA)
1088	SPM	8	3	8	4	The vulnerability of population of other regions, besides 'developed countries' should also be emphasized in the paragraph (INDIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1089	SPM	8	3	8	4	We suggest to write: "However, developed countries also have highly vulnerable populations." The "however" makes the connection to the previous sentence clearer. (GERMANY)
1090	SPM	8	3	8	4	Explain how developed countries also have vulnerable populations (UK)
1091	SPM	8	3	8	4	Suggest to change the sentence "Developed countries also have highly vulnerable populations" to "In developed countries there are population groups that are highly vulnerable". Furthermore the text does not specifically mention developing countries, only less-developed areas are mentioned. (NORWAY)
1092	SPM	8	4	8	4	Based on regional crop production models, but implies that risks are only high above 2 degrees. Presumably risks would be high for some regions under 2 degrees and indeed might already be high. (UK)
1093	SPM	8	4	8	4	"in some countries" sounds vague. Would it be possible to be more precise? (FRANCE)
1094	SPM	8	4	8	5	Does the scientific literature truly allow a statement about regional crop productivity based on a *global* warming of 2C? The authors should re-consider the inclusion of this statement. (USA)
1095	SPM	8	5	8	5	high' needs to be defined. (UK)
1096	SPM	8	6	8	7	Is this accurate? Paper by Rockstrom et al (2009) states that the rate of biodiversity loss is beyond this planetary boundary (UK)
1097	SPM	8	7	8	7	what happens between 2 and 3 degrees? (UK)
1098	SPM	8	7	8	8	Box SPM.4: Statement (4): It is surprising that the statement of "warming-dependent increases in risks of economic impacts" is assigned only "low confidence". There seems to be very wide agreement across integrated assessment models of climate change that the risk of economic impacts increases with the level of warming (see e.g. Füssel, 2009, DOI: 10.1002/wcc.40). Also this SPM states on p. 11, ll. 23-24 that "Losses increase with greater warming". (European Union)
1099	SPM	8	8	8	9	has eco-system services been define>? (UK)
1100	SPM	8	8	8	10	BOX SPM4: Please consider to rephrase this RFC and exchange the word concomitant with a word easier to understand, for example "simultaneous". (NORWAY)
1101	SPM	8	10	8	10	Suggest that you include ("tipping points") in bold after "large-scale singular event" as it is a well known expression. (European Union)
1102	SPM	8	10	8	11	In our opinion it is very unfortunate that WGII use a significantly different definition of the term "tipping point". The last part of the definition "and does not return to the initial state even if the drivers of the change are abated" gives this term a very different content than in WGI. This will mean that you require that a "tipping point" needs to be irreversible and in that case we can hardly see a need for the term since every phenomena would be covered by "irreversibility". We believe that in this case you would also need to include a timeperspective related to the "return period" (as done in the definition for "irreversibility" in WGI Glossary). This will also create a lot of confusion for policymakers. Hence we recommend that WGII use a definition that does not contradict the WGI definition. E.g. the part "and does not return to the initial state even if the drivers of the change are abated" could be deleted from the definition. It would also be helpful if you include a definition for "irreversibility" in the Glossary. Such a change in the definition would also bring the definition more in line with the text in line 10-11. (NORWAY)
1103	SPM	8	10	8	12	It is not clear that an irreversible regime shift represents a large-scale singular event. Identifying examples of what would constitute a "large scale singular event" would be helpful. Also consider adding another sentence explaining the relevance of the examples given for the climate system broadly, as it is not currently clear why these examples would be considered large scale singular events. (CANADA)
1104	SPM	8	10	8	12	Would "regime shifts" in biological communities already be captured by RFC #1 (unique and threatened systems)? If there is a regime shift, then this would mean the extinction of the existing community, would it not? Suggest clarifying. (CANADA)
1105	SPM	8	10	8	14	BOX SPM 4: Please consider to change the name of this RFC to "Tipping points". The name of this RFC is not intuitive. (NORWAY)
1106	SPM	8	10	8	14	The authors need to clarify which of the many concepts listed here "medium confidence" at the end of L14 applies to. (USA)
1107	SPM	8	11	8	11	moderate' needs to be defined. (UK)
1108	SPM	8	11	8	11	Suggest replacing "drastic" with "irreversible", as "drastic" just sounds like a synonym for "abrupt". Also, consider replacing "become" with "are" since we have already experienced warming of close to 1C. (CANADA)
1109	SPM	8	11	8	12	Please clarify whether the intent here is to refer to regime shifts in physical Arctic systems or to biological systems. We suspect the intent is to refer to sea-ice associated biological (or human?) communities, but we recommend this be explained in the text, otherwise readers will think this is referring to sea ice, which would conflict with conclusions of WGI. WGI concludes that the disappearance of Arctic summer sea ice is 'reversible within years to decades' (Table 12.4) and the Executive Summary to Ch. 12 states "There is little evidence in global climate models of a tipping point (or critical threshold) in the transition from a perennially ice-covered to a seasonally ice-free Arctic Ocean beyond which further sea ice loss is unstoppable and irreversible". (CANADA)
1110	SPM	8	11	8	12	In general, this sentence is confusing. It seems to say that risks are moderate because there is evidence that they are already being realized. Doesn't that mean that risks are large (e.g., for coral reef systems) for even moderate changes in climate? (CANADA)
1111	SPM	8	11	8	12	The wording in the existing sentence does not seem logical. Please consider changing "due to" with "as indicated by". (NORWAY)
1112	SPM	8	12	8	12	irreversible regime shifts for Arctic systems- is that in line with WG I? (SWEDEN)
1113	SPM	8	12	8	12	Please add the confidence level to this statement at the end of the sentence. (GERMANY)
1114	SPM	8	12	8	12	both coral reef and Arctic systems are already experiencing irreversible regime shifts' - are we talking about the same causal factors here, i.e. warming? Or is this due to warming and OA (in the case of coral reefs)? It might be worth delineating causal factors. (UK)
1115	SPM	8	12	8	14	It would be helpful if could be clearer on which risks in which part of the world this sentence is referring to. (JAPAN)
1116	SPM	8	12	8	14	Please consider adding the notion that a commitment to irreversible ice-sheet loss requires that the warming is sustained over some time, as written in the SPM of WGI. This might be added at the end of the current sentence : "and irreversible sea-level rise from ice-sheet loss if the warming is sustained over some time" (BELGIUM)



#	Ch	From Page	From Line	To Page	To Line	Comment
1117	SPM	8	12	8	14	It would be useful if some examples could be given of risks of large-scale singular events that could be triggered by global temperature increases as low as 1degC versus those that could be triggered by an increase of 4degC. A global warming of 1degC is virtually unavoidable and therefore policymakers should be informed about these potentially high impact events that are probable, given committed global warming. (CANADA)
1118	SPM	8	13	8	13	high between 1-4C' this is a large range and the same range approximately covered by the 4 example RCPs used in AR5. It is not therefore a very helpful statement. (UK)
1119	SPM	8	13	8	14	Is this assessment based on the results of a single modelling study of the response of the Greenland ice sheet to warming which found a strong sensitivity between 1 and 2 C (Robinson et al., 2012, discussed in IPCC WGI 13.4.5.2)? If so, as shown in IPCC WGI Fig 13.4, panel (h), 2000 years after an increase in temperature, there is no such enhanced sensitivity of Greenland melt to temperature rises between 1 and 2 C. So this sensitivity only arises if that temperature is held constant for tens of thousands of years (see caption to Figure 13.4). This is comparable to the lifetime of CO2-induced temperature change, so this change may not be irreversible in practice. If this is based on a single modelling study, it may not deserve to be highlighted here in the WGII SPM. Suggest reviewing. (CANADA)
1120	SPM	8	14	8	14	It should be noted that a large and irreversible sea-level rise associated with ice sheet loss, projected to materialize many centuries or millennia into the future, has a distinctively different time horizon from other reasons for concerns. (JAPAN)
1121	SPM	8	14	8	14	irreversible' on what timescale? Forever? If not, then I'd suggest it is reversible, just not on short-to-medium term timescales (though these would also need to be defined) (UK)
1122	SPM	8	16	8	21	Box SPM.4, Figure 1: Please clarify the baseline temperature rise (the diagram suggests a rise of 0.6 degC for pre-industrial) and ensure it is consistent with the values presented in the WGI SPM (which only gives a warming of about 0.6degC from 1850-1900 to 1986-2005, i.e. not pre-industrial). (European Union)
1123	SPM	8	16	8	21	The matter of the temperature difference between "pre-industrial" and the AR5 reference period of 1986-2005 also arises with respect to Box SPM.4 Figure 1. The bar plot in this figure indicates an offset of 0.6°C between pre-industrial and this reference period - but gives no source for this. Again, we suggest a reference to the WGI SPM, Section E. (NEW ZEALAND)
1124	SPM	8	16	8	21	[See also page 25]As a beneficial change for policy makers, we would like to request the following for the SPM text in BOX SPM.4. Would also like to request replacing the figure, based on change of texts, with the graph that was presented in AR5 WG2 SOD Box SPM.6 Fig.1(J.B. Smith et al., 2009) and/or add a figure similar to that of Figure SPM2 from AR4 to give policy makers a more concrete idea of "risk". Our requests are as follows; Clarification needed especially for the part : -Page 8 (line10-14) "Risks of such tipping points become moderate between 0-1°C, (...) Risks become high between 1-4°C, with a disproportionate increase in risks as temperature increases between 1-2°C (relative to 1986-2005)". "the potential for commitment to a large and irreversible sea-level rise from ice sheet loss". However it does not explain why disproportionate rise between 1 - 2 degree actually occurs. * Clarification of the method used in expert judgement (the number of studies, qualitative assessment of effect caused by temperature rising etc.) is needed in order to give policy makers a more concrete idea about the contents of risk other than the information whether it is high or not. Box SPM4 States "updated based on assessment of the literature and expert judgment", however, (1) The description "GMT was not more than 2°C warmer than pre-industrial (AR5 WGI SPM, medium confidence)." Actually do not exist in WG1 SPM. (2) Effect of "different orbital forcing" is added to the relevant article besides high-latitude surface temperature as a factor that caused the sea level rise. Thus, it cannot be simply explained a partial analog for the magnitude of mid-to-late 21st century warming BECAUSE GMT was not more than 2°C warmer than pre-industrial. ** the approved text of WG1 SPM This change in sea level occurred in the context of different orbital forcing and with high-latitude surface temperature, (...) at least 2 °C warmer than present (high confidence)". (JAPAN)
1125	SPM	8	16	8	21	[See also page 25]Request the left figure of the BOX SPM.4 Figure 1.(past and projected future global annual average temperature) be made consistent with AR5 WGI Figure SPM 7 (a). Current figure on the left might cause misunderstanding that all risks will occur around 2100 since the left figure only shows timeframe until 2100. Would appreciate additional explanations/comments on potential time frame of each risk inserted into current text. (JAPAN)
1126	SPM	8	16	8	21	Box SPM 4 Figure 1, figure text. Could you please start by explaining the left panel first and then the right panel? (NORWAY)
1127	SPM	8	16	8	21	Box SPM.4, Right panel: it is unclear what are "distribution of impacts" (FRANCE)
1128	SPM	8	18	8	18	The term 'irreversibilities' deserves more attention/weight here. (NETHERLANDS)
1129	SPM	8	18	8	18	Suggest replacing "the presence of significant irreversibilities" with "the possibility of irreversible changes", both to improve grammar and to acknowledge that, in most cases, risk is associated with the (uncertain) potential for irreversible change. (CANADA)
1130	SPM	8	20	8	20	For consistency with the WGI/SPM, "future global annual average temperature" suggest that be amended as "future global annual mean surface temperature" (see the legend of Figure SPM 7 (a) of WGI/SPM). (JAPAN)
1131	SPM	8	23	0	0	Section B-2: The presentation of sectoral risks is quite well balanced, good summary of chapters 3-13. (SWITZERLAND)
1132	SPM	8	23	0	0	Section B-2: Most of the statements of this section are phrased with "will". Are those statements valid for all RCPs or is it valid only for the highest RCPs? If so, it should be specified. (NORWAY)
1133	SPM	8	23	8	23	General comment for section B-2: it is suggested to compile the main sectoral risk in a table, according with the level of temperature increase or the RCPs, in a similar fashion as it was done in AR4 (fig SPM.2- AR4-WG II) (SPAIN)
1134	SPM	8	23	12	26	In section B-2. there are specific statements on the potential for adaptation missing, e.g. in coastal systems, marine systems as well as terrestrial ecosystems. This should be added, to give examples on how to adapt. Even if no adaptation is possible, this should be mentioned. Table TS 4. might give some input on potential for adaptation. (GERMANY)
1135	SPM	8	23	12	26	Given that all of the underlying chapters discuss adaptation to some extent, it is not clear why some sections on key sectors describe the potential for adaptation, while others (e.g. Coastal systems) say nothing. The authors should present a more balanced representation of this information throughout the SPM. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1136	SPM	8	23	12	27	In this chapter, some of the sections describe potential for adaptation while others do not. Some examples of the latter: coastal systems, marine systems, food production, etc. A more consistent approach would improve the quality of the section. (European Union)
1137	SPM	8	25	8	25	The word 'ecosystem' may be added after 'natural' (INDIA)
1138	SPM	8	25	8	25	This sentence may be read as suggesting that all risks from climate change will be of the same type as climate-related risks in the recent past, which will only be amplified - that is, no "new risks". Please check that this is indeed true (for example, may a large warming in the Arctic have consequences which differ in nature from what could be expected without it, not just in magnitude?). A possible writing could be : ... Climate change will amplify climate-related risks to natural and human systems, and possibly create new risks. (BELGIUM)
1139	SPM	8	25	8	27	The authors should consider mentioning the fact that climate change will also interact with non-climate stresses, sometimes acting as a multiplier. (USA)
1140	SPM	8	25	8	27	Can confidence levels be assigned to the statements in this paragraph? It's unclear how the authors decide which statements are assigned confidence levels. (USA)
1141	SPM	8	26	8	26	Remove ',' before 'and' (POLAND)
1142	SPM	8	26	8	26	We can read: To lesser extent. We think the term lesser needs clarification, what really mean lesser, is it refer to local? (VENEZUELA, BOLIVARIAN REPUBLIC OF)
1143	SPM	8	26	8	26	To a lesser extent' - can this be demonstrated more robustly? It is timescale dependent too, so might want to say something about the timing of risks (or perhaps costs) and benefits. (UK)
1144	SPM	8	26	8	26	Define 'cascading effects' (UK)
1145	SPM	8	26	8	27	Here positive impacts are mentioned. But at the end, they are rarely described. (NETHERLANDS)
1146	SPM	8	26	8	27	The sentence "To a lesser extent, climate change will also reduce some climate-related risks and have some potential benefits." should be shortened to "To a lesser extent, climate change will also have some potential benefits." This is just to use simple and non-redundant phrases. (GERMANY)
1147	SPM	8	26	8	27	"To a lesser extent, climate change will also reduce some climate -related risks and have some potential benefits". Could you please quantify to which extent? Is it a 1 to 10 relation or a 1 to 100 compared to negative benefits for example? (NORWAY)
1148	SPM	8	27	8	27	Define 'benefits' and attached timescale - this will likely be misquoted otherwise! (UK)
1149	SPM	8	29	8	45	No mention is made of potential for adaptation (despite the header of Section B-2). Chapter 3 specifically mentions low-regret solutions, which should be mentioned in the SPM. This would be a good place to add them. (USA)
1150	SPM	8	31	0	0	...increase significantly with increasing greenhouse gas concentration ( rather than emissions or both) (POLAND)
1151	SPM	8	31	0	0	The statement that "risks of climate change increase significantly with increasing greenhouse gas emissions" is not unique to freshwater resources. Consider whether this could be deleted here and positioned more effectively elsewhere as a generic statement. (CANADA)
1152	SPM	8	31	8	31	WG1 demonstrates the relationship between climate change and greenhouse gases. Do the authors really want to talk about GHGs or rather about climate change here? (or add the sentence GHGs<=>CC). (European Union)
1153	SPM	8	31	8	31	We suggest deleting this sentence. It is true that freshwater-related risks of climate change increase with the increase in GHG emissions, but this is true for all sectors, not only for freshwater resources. We suggest moving it to the chapeau of section B-2, in line 27, after "some potential benefits", saying that "the risk of climate change increase significantly with increasing GHG emissions" (SPAIN)
1154	SPM	8	31	8	31	It is suggested not to link the risks of climate change with increasing greenhouse gas emissions but rather with increasing global mean temperature. This avoids a discussion on the underlying climate sensitivity and attribution. It is suggested to link impacts in a coherent manner to impacts. A more appropriate approach seems to be the wording used on page 9, lines 6 to 9. (AUSTRIA)
1155	SPM	8	31	8	33	Do these numbers for RCP 2.6 and 8.5 refer to the same socio-economic and vulnerability conditions ? This may not necessarily be expected, as very different emissions may relate to different socio-economic pathways, so it would be useful to clarify (e.g. add "under the same socio-economic conditions"). Does the confidence level indicated at the end of the paragraph apply to both statements ? (BELGIUM)
1156	SPM	8	31	8	34	Correlation of climate change hydrological impacts to increasing greenhouse gas emissions may be further elaborated. (INDIA)
1157	SPM	8	31	8	34	Impacts on freshwater resources due to climate change has only be provided for two sceanrios i.e RCP 2.6 and RCP 8.5. Impacts on freshwater resources for other RCP scenarios may also be highlighted. (INDIA)
1158	SPM	8	31	8	34	The statement that the number of people exposed annually to a 20th century 100 year river flood is projected to be three times greater for RCP 8.5 than for RCP 2.6 may be examined in detail before arriving at the conclusion. (INDIA)
1159	SPM	8	31	8	34	This sentence is rather difficult to understand. RCP 8.5 and RCP 2.5 are compared, but the reader will probably want to know how often the "100-years flood during the 20th century" can be expected to occur in the end of the 21st century. (SWEDEN)
1160	SPM	8	31	8	34	Presumably the increase in number of people exposed to floods is a function of both increases in population living in flood prone area as well as increase in the frequency or size of flood or increase in area flooded. This is however not clear from the statement. (i.e., there is a climate component as well as a population component). Suggest clarifying. (CANADA)
1161	SPM	8	31	8	34	If possible, please provide estimates of numbers of people affected, to illustrate the level of importance of this issue. You should also consider to include a simplified version of Figure TS.6. in the SPM since it gives a very informative and visual presentation of regions that will be mostly affected to both floods and droughts and how many people that will be affected by floods. (NORWAY)
1162	SPM	8	31	8	44	The risk to glaciers as an important source of fresh water should be mentioned here. (UK)
1163	SPM	8	32	8	33	The conclusion "three times greater for RCP8.5 than for RCP2.6" is based on figure 3.6 of chapter 3. This is true for a fixed population (2005), although 'three' should actually be 'four' to be consistent. But in addition, it is noted in the figure caption of figure 3.6 that when moderate global population growth (UN, 2011) is taken into account the projections show another factor 7 to 25 growth, for RCP2.6 and RCP 8.5 respectively. We believe that moderate growth is a much more realistic approach than fixed population. We consider modifying this conclusion to included a more realistic approach for future population growth. (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
1164	SPM	8	32	8	33	The expression "the number of people exposed annually to a 20th-century 100-year river flood" refers to probability, but it should be written in a more understandable way. The figure from the Technical Summary TS.6 or from Ch 3 Figure 3-6 could be lifted here to clarify this. (FINLAND)
1165	SPM	8	32	8	33	The sentence starting with "By the end of the 21st century" might contain too much information. It compares numbers for RCP8.5 with numbers for RCP2.6, but it also compares the occurrence of floods in the 20th century ("100 year river floods") and by the end of the 21st century ("annually"). Please try to sharpen the language so the message can be understood more easily. (GERMANY)
1166	SPM	8	32	8	33	'By the end of the 21st century, the number of people exposed annually to a 20th-century 100-year river flood is projected to be three times greater for RCP8.5 than for RCP2.6' - what does this mean in absolute terms? (SWITZERLAND)
1167	SPM	8	32	8	33	Can a confidence level be assigned to this finding? It's unclear how the authors decide which statements are assigned confidence levels. (USA)
1168	SPM	8	32	8	33	This statement regarding the number of people being exposed annually to a 20th century 100-yr river flood needs context for what assumption is made about population growth and changing geographical patterns of residence. (USA)
1169	SPM	8	33	0	0	Suggest adding "the equivalent of" prior to "a 20th century 100-yr flood" (CANADA)
1170	SPM	8	33	0	34	The final sentence in the paragraph reports only on RCP 8.5. Does this mean that there is no risk projected under other RCPs or that there is insufficient information to determine this? Suggest clarifying. (CANADA)
1171	SPM	8	33	8	33	Please explain what is meant by a "20th-century 100-year river flood". (NETHERLANDS)
1172	SPM	8	33	8	33	Please make a statement about spatial heterogeneity? Can we assume that the regions that aren't presently dry will not experience an increase in drought frequency? (UK)
1173	SPM	8	33	8	33	Insert "high confidence" after RCP2.6 to reflect the results in Chapter 3 (USA)
1174	SPM	8	33	8	34	"In presently dry regions, drought frequency will likely increase by the end of this century under RCP8.5 (medium confidence)." This is the only statement in the SPM describing projected changes in drought properties. Given the importance of drought, a more detailed treatment seems appropriate. Furthermore, this statement should be more specific: are we talking here about meteorological, agricultural, or hydrological drought? (USA)
1175	SPM	8	34	8	34	Is this statement only valid under RCP8.5? What about other scenarios? (USA)
1176	SPM	8	36	8	36	The authors cannot make such statements with definite certainty; "will" should be deleted and replaced with "is projected to". (USA)
1177	SPM	8	36	8	37	Add "arid and semi arid areas in tropical regions" (UNITED REPUBLIC OF TANZANIA)
1178	SPM	8	36	8	37	How are renewable surface and ground water resources affected in regions other than subtropical regions. We assume there may also be robust evidence for potential impacts other regions, such as North America, and Europe, which could also be reported here. (CANADA)
1179	SPM	8	36	8	44	It would be good if this paragraph could include some of the information contained in Ch19, page 26, lines 39-45, in particular lines 43-45 relating to the expansion of the 'drought disaster area'. This is helpful in giving an indication of the extent of the problem. (UK)
1180	SPM	8	36	8	44	The evidence is not as strong as indicated on the impact on renewable groundwater resources which is highly context and timescale specific. It is not helpful to combine surface water and groundwater as is presented here as they will react in different ways and over different timescales. (UK)
1181	SPM	8	37	8	37	Please consider replacing "exacerbating" with "intensifying" or "amplifying". (NORWAY)
1182	SPM	8	37	8	38	increased water resources in high latitudes". This is also a matter of timing. It might be the case on annual base. But seasonal drought periods might become more frequent & severe, also in high latitudes (although not all scenario's agree on this = more uncertain). (NETHERLANDS)
1183	SPM	8	37	8	38	Will water resources really increase at all high latitudes? The statement appears to be too general. The authors should revise to ensure full accuracy and true reflection of the findings from the underlying chapter. (USA)
1184	SPM	8	38	0	39	This statement ("Each degree of warming...") is relevant and impactful for a policy audience. Suggest considering whether it could be included in the bolded headline. (CANADA)
1185	SPM	8	38	8	38	Important statement. Is this based on future or present population? (European Union)
1186	SPM	8	38	8	38	Where does such a certain number come from? Could be softened in language to reflect inherent uncertainty in projections and variables involved (e.g. global population drivers) (UK)
1187	SPM	8	38	8	38	The authors cannot make such statements with definite certainty; "will" should be deleted and replaced with "are projected to". (USA)
1188	SPM	8	38	8	39	There is no specification of evidence and confidence levels for the statement regarding the 20% decrease in renewable resources (ITALY)
1189	SPM	8	38	8	39	The following text "Each degree of warming is projected to decrease renewable water resources by at least 20% for an additional 7% of the global population" is not quite clear for the non-native English speaker. According to the body text, corresponding texts are as below; "Percent of global population affected by a water resource decrease of more than 20% as compared to the 1990s", "up to 2°C above the 1990s (GW 2.7°C) each degree of GW affects an additional 7%" (Chapter 3:Table3-2). Would appreciate further clarification on this sentence based on the underlying report (Table 3-2, Chapter 3). (JAPAN)
1190	SPM	8	38	8	39	We do not understand this sentence : does the "additional 7% of the global population" set a context to the statement (which is only valid in that context), and if so, what is the reference population (year) used ? (BELGIUM)
1191	SPM	8	38	8	39	Sentence beginning 'each degree..' is confusing. Please revise. (UK)
1192	SPM	8	38	8	39	Reference is needed for the statement made here. (SWITZERLAND)
1193	SPM	8	38	8	39	Please consider to rephrase this sentence to clarify. Does this mean that in a 5 degree scenario (RCP 8.5), 35 (5*7) percent of the global population will have access to 20 percent less renewable water resources? Or would 7 percent of the global population have no access (5*20%=100% less water) to renewable water resources? (NORWAY)
1194	SPM	8	38	8	39	It would be clearer to specify if the sentence "each degree of warming is projected to decrease renewable water resources .." is indeed in global average. Otherwise there is some confusion with the two previous sentences. (FRANCE)

#	Ch	From Page	From Line	To Page	To Line	Comment
1195	SPM	8	39	8	39	This is fairly complicated expression, and also rather unprecise ("at least 20%"; is an "additional 7%" an absolute or relative expression?). (SWEDEN)
1196	SPM	8	39	8	39	The statement 'at least 20% for an additional 7% of the global population' is confusing. Please simplify. (UK)
1197	SPM	8	40	8	40	Please check that the term "raw" (water quality) is necessary. It could be unclear to policymakers. Please provide an explanation or reformulation if this word is necessary. (BELGIUM)
1198	SPM	8	40	8	40	What is "raw water"? Please consider including a definition in the glossary. (NORWAY)
1199	SPM	8	40	8	42	Text may confuse those not very familiar with climate change impacts. In the same sentence quality is predicted to reduce due to both heavy rainfall and reduced flow. Separate these out into 2 sentences. (IRELAND)
1200	SPM	8	41	8	42	Rephrase "reduced dilution of pollutants during droughts" to "increased concentration of pollutants during droughts" (Likewise in the Technical Summary on pg. 20, and Chapter 3 on page 3). This is in accordance with how this is presented throughout Chapter 3 - pages 21-31 and Chapter 4 pg 61. (SWITZERLAND)
1201	SPM	8	42	8	44	The last sentence of the conclusion is the start of a separate bold conclusion at page 20 of the TS. This TS conclusion is very relevant to policymaking. Especially the end of the TS conclusion dealing with barriers to progress, which has been left out in the SPM, but is a key policy issue. We therefore propose to change the structure of this conclusion consistent with the TS in order to highlight its importance. Which means only adding one sentence and changing the existing sentence to bold. This means that the conclusion becomes: In bold: "Adaptive water management techniques, including scenario planning, learning-based approaches, and flexible and low-regret solutions, can address uncertainty due to climate change (limited evidence, high agreement). - end bold. Barriers to progress include lack of human and institutional capacity, financial resources, awareness, and communication. [3.6]" In the references "Box 25-2" can be deleted. (NETHERLANDS)
1202	SPM	8	43	8	43	after word planning add : " risk mapping" (POLAND)
1203	SPM	8	43	8	43	Remove ',' before 'and' (POLAND)
1204	spm	8	43	8	43	Is it necessary to use the term "low-regret" rather than the more usual "no-regret" ? (BELGIUM)
1205	SPM	8	43	8	43	The authors should define the expression "low-regret solutions". (USA)
1206	SPM	8	44	0	0	Suggest inserting the word "help" between "can" and "address". (CANADA)
1207	SPM	8	46	8	46	Concerning the title: "Terrestrial and freshwater ecosystems", actually an ecosystem includes all kind of living organisms and also the non-living environment (soil, water, air, solar radiation). But after this title it is explained the following: "A large fraction of terrestrial and freshwater species", which is only a part of an ecosystem. So, I suggest to change the title by: "Terrestrial and freshwater species" (ARGENTINA)
1208	SPM	8	46	8	46	Can we have a separate para for terrestrial and fresh water ecosystems to provide clarity to policy makers on the impacts of climate change on these 2 major ecosystems (INDIA)
1209	SPM	8	46	9	13	An important policy relevant message in this section ("Terrestrial and freshwater ecosystems") that needs to be brought out here is that RCP2.6, of all the scenarios, would substantially reduce all of the risks described, including for freshwater systems. This is very important for the whole message from this assessment. (GERMANY)
1210	SPM	8	46	9	13	Please consider formulating something about the risk of extinction which makes it possible for the reader to compare AR5 to AR4 - in which the message was very clear: "Approximately 20 to 30% of plant and animal species assessed so far are likely to be at increased risk of extinction if increases in global average temperature exceed 1.5 to 2.5°C (medium confidence). " Do the new assessments in AR5 show larger or smaller risks of extinction? (NORWAY)
1211	SPM	8	46	9	20	Please consider including findings about adaptation for terrestrial and freshwater ecosystems. Rationale: B-2 is supposed to deal with sectorial risks and potential for adaptation, however nothing is written about adaptation for terrestrial and freshwater ecosystems. (NORWAY)
1212	SPM	8	46	9	21	Ecosystem services, the link between ecosystems and human societies and probably a key hook for policy makers, are not described in the Risk section. What services might be at risk and indications of confidence/certainty should be added on this key topic. (European Union)
1213	SPM	8	46	11	7	In the remainder of this section on sectoral risks information on evidence and agreement is absent, and only confidence statements are given. This shift in level of information provided is confusing to the reader. Suggest striving for greater consistency where possible. (CANADA)
1214	SPM	8	47	8	50	With respect to the text: "...specially as climate change interact with other pressures, such as habitat modification, over-exploitation, pollution, and invasive species ...", climate change interacts with "pressures on the ecosystem", not with "pressures" alone, so please change the sentence by the following (or a similar one): (ARGENTINA)
1215	SPM	8	48	8	48	A large fraction' - undefined. Pls quantify. (UK)
1216	SPM	8	48	8	48	is the projected climate change referred to that which is likely under all RCP, or just some? (UK)
1217	SPM	8	48	8	48	The authors should replace "fraction" with "number" or "proportion". (USA)
1218	SPM	8	48	8	49	The phrase that '...under projected climate change during and beyond 21st century' is not clear as projections for time period beyond 21st century has not been covered. (INDIA)
1219	SPM	8	48	8	50	Interactions with other pressures are indeed important. But how often is climate change really dominating, compared to these other pressures? (NETHERLANDS)
1220	SPM	8	48	8	50	Any quantitative estimates of risk of extinction of biodiversity or species loss in the topics? (INDIA)
1221	SPM	8	49	8	49	"...with other human-induced pressures..." (GERMANY)
1222	SPM	8	50	8	50	Remove ',' before 'and' (POLAND)
1223	SPM	8	50	8	50	Suggest to replace "Extinction risk is increased" with "Extinction risk is higher" (SWITZERLAND)
1224	SPM	8	50	8	50	Please consider exchanging "habitat modification" with "habitat destruction", see e.g. Ch. 5.4.2 p.14. (NORWAY)
1225	SPM	8	50	8	51	The point about rate of climate change in important. This sentence could also be strengthened using the text from the first bullet point of the executive summary of Chapter 4. (European Union)
1226	SPM	8	51	0	0	"with risk increasing in both..." in stead than "with both" (ITALY)
1227	SPM	8	51	8	51	"rate of climate change" - this term appears here for the first time. It reappears on P 9, L 6. Is it appropriate to conclude that the "rate of CC" is important only for terrestrial and freshwater ecosystems? Or does it imply that there is lack of evidence on importance of "rate of CC" for other systems? If so, this should be clearly stated. (GERMANY)

#	Ch	From Page	From Line	To Page	To Line	Comment
1228	SPM	8	51	8	52	In this section, terrestrial ecosystems are illustrated as a mixed concept of fauna and flora. The movement of 'many species' seems that it focuses on fauna. In Korea, many studies projects that conifer forest would be decreased and broadleaf forest would be prevailed until 2100. The changes of flora and fauna are highly linked notions, but it should be illustrated separately. Changes of ecosystems can also affect forest-related industries such as wood production, forest products like fungi. Also they affects forest-related leisure industries with high probabilities of climate change, which controls blooming season and autumn coloring season. (REPUBLIC OF KOREA)
1229	SPM	8	52	8	52	Replace the word "move" by "migrate" and "track" by "find". The word "track" should not be used to describe the ability of species to adapt to climate change (SWITZERLAND)
1230	SPM	8	52	9	20	Figure 5 refers to observed rates of displacements - this does not necessarily mean that trees, plants, mammals, birds, etc. cannot move faster. This may explain the "medium confidence" on page 9, line 1, but this issue would need to be clarified, i.e. there may be more lines of evidence supporting the statements on "inability to track climate". (NETHERLANDS)
1231	SPM	9	1	9	1	management action' is too vague and not the only action! How about political, individual, local etc? (UK)
1232	SPM	9	3	9	3	It is more accurate to change phrase to "...through reduction of other stresses (such as habitat fragmentation), maintenance of....". Habitat fragmentation is usually considered to be one of the stresses on biodiversity, not something different. (AUSTRALIA)
1233	SPM	9	4	9	4	Remove ',' before 'and' (POLAND)
1234	SPM	9	6	0	0	Include the categories of tropical forests and subtropical. (Nicaragua)
1235	SPM	9	6	9	6	Please provide a short description of "RCP4.5 and 8.5". (NETHERLANDS)
1236	SPM	9	6	9	6	The inclusion of the RCP4.5,6.0 and 8.5 in the headline statement complicate the delivery of message. We suggest that we refrain from using the RCPs in the headline statement (UNITED REPUBLIC OF TANZANIA)
1237	SPM	9	6	9	9	"leading to substantial climate change (medium confidence)". This is not supported by the WG-I-report. In WG-I Table 12.4 mentions 'low confidence in projections of the collapse of large areas of tropical forest', which is in contrast with the word 'medium confidence' used in the SPM. Also, p.6.77 of the WG-I report: 'However modeling studies and expert judgment indicate that methane and carbon dioxide emissions [from permafrost] will increase under Arctic warming, and that they will provide a positive climate feedback. Over centuries, this feedback will be moderate', which is in contrast with the word 'substantial' used in the SPM. (NETHERLANDS)
1238	SPM	9	6	9	9	Would appreciate further clarification of the reasons/rationale on the following sentence: "magnitudes and rates of climate change associated with RCP4.5, 6.0 and 8.5 pose high risk". If difficult to provide concisely, would appreciate if this figure were to be modified based on the AR4 WGII Figure SPM2. (JAPAN)
1239	SPM	9	6	9	9	According to the logic of RCP scenarios, which prescribes future concentration pathways, "high risk of abrupt and irreversible regional-scale change" will not only lead to "substantial additional change" but imply the necessity of further lowering anthropogenic emissions to stay on track of the scenarios. This implication is highly policy-relevant and believe this should be communicated to policymakers. (JAPAN)
1240	SPM	9	6	9	9	This assessment for tropical forests appears to be inconsistent with the assessment of Working Group I (Table 12.4). It's not clear if the boreal-tundra Arctic system change described here is the same as the boreal forest dieback considered in WGI, but if so, then this also appears inconsistent. WGI Table 12.4 concludes that tropical forest dieback and boreal forest dieback are both reversible within centuries, and that there is "Low confidence in projections of the collapse of large areas" of both ecosystems. Section 6.4.9 concludes "Recent evidence from models (Huntingford et al., 2013) and studies on climate variability (Cox et al., 2013) suggests that large scale loss of tropical forest as previously projected in some models (Cox et al., 2004; Scholze et al., 2006) is unlikely...". The text here concludes that there is a high risk of abrupt and irreversible change in these ecosystems (medium confidence). Further the text here concludes that these changes will lead to "substantial additional climate change". This is also not consistent with the discussion in WGI. IPCC WGI Section 6.4.2.3.2 discusses the regional land carbon response to climate change and concludes among other things that "confidence is low regarding the sign and magnitude of future high-latitude land carbon response to climate change." This assessment should be made consistent with the assessments made by WGI on the physical climate system. (CANADA)
1241	SPM	9	6	9	9	It is not clear here whether the analysis has been done using the RCP scenarios or whether they are based on analysis done using SRES and translated into RCP for the sake of consistency in the AR5. Suggest clarifying. (CANADA)
1242	SPM	9	6	9	9	This is too broad a statement to be true. The authors should consider more specificity if this statement is to be retained. (USA)
1243	SPM	9	6	9	13	In general, this discussion of positive carbon cycle feedbacks, should be tied back to supporting discussions in Chapter 6 of the WG1 report, which anchors understanding of and projections of changes in the carbon cycle. (CANADA)
1244	SPM	9	7	9	7	Remove ',' before 'and' (POLAND)
1245	SPM	9	7	9	7	Suggest that IPCC WGII needs to define "irreversibility" in the context of ecosystem change. "Irreversible" is not in the WGII glossary. In the WGI glossary, it is defined in terms of centennial to millennial timescales. (CANADA)
1246	SPM	9	7	9	7	Is the word "irreversible" justified here? Tree mortality and forest die-back, which are cited here, are NOT irreversible. Extinction IS irreversible, but it's not clear that that is at issue here. The authors should caveat this statement accordingly. (USA)
1247	SPM	9	8	9	8	..ecosystems, for example..replace the comma by a dot, thereby creating a new sentence. (NETHERLANDS)
1248	SPM	9	9	9	9	No mention is made about possible release of CO2 stored in the ice caps, glaciers and in polar ice -due to their melting. (INDIA)
1249	SPM	9	9	9	11	In the sentence: "Carbon stored in the terrestrial biosphere is vulnerable to loss to the atmosphere as a result of climate change, deforestation, and ecosystem degradation (high confidence)", we think that "release to the atmosphere" is more adequate than "loss to the atmosphere". (VENEZUELA, BOLIVARIAN REPUBLIC OF)
1250	SPM	9	9	9	11	Please consider inserting "i.e. the natural carbon sink on land" (from TS p. 21) in this sentence, to generate "Carbon stored in the terrestrial biosphere, i.e. the natural carbon sink on land, is vulnerable to loss..." (NORWAY)

#	Ch	From Page	From Line	To Page	To Line	Comment
1251	SPM	9	9	9	13	Permafrost thaw likely represents a larger potential carbon release than does boreal tree mortality. The authors should consider adding a comparable reference to the change in terrestrial carbon storage associated with permafrost thaw by looking to see if a finding from the underlying chapter can be pulled into the SPM. (USA)
1252	SPM	9	10	9	10	Remove ',' before 'and' (POLAND)
1253	SPM	9	11	9	11	Should this read - 'increased' tree mortality. i.e. the figure earlier shows we are already seeing tree mortality? (AUSTRALIA)
1254	SPM	9	11	9	11	is this short time scale in line with underlying findings? (SWEDEN)
1255	SPM	9	11	9	11	The authors cannot make such statements with definite certainty; "will" should be deleted and replaced with "is projected to". Also, is this statement relevant for all three RCP scenarios considered? This should be clarified as it is a surprising finding if forest dieback is going to occur starting in the next decade(!) (USA)
1256	SPM	9	11	9	13	Please consider a more careful formulation. The sentence on tree mortality is summarized from box 4.2 (page 34). But this box also clearly states that "appropriate field data sets are currently lacking for many regions (Anderegg et al., 2013a), leading to low confidence in our ability to detect a global trend". So, yes, we see something, but not sufficient data to make a global conclusion. (NETHERLANDS)
1257	SPM	9	11	9	13	The sentence does not seem to be a balanced summary of what is stated in the relevant parts of the underlying chapters (please see examples below (*)) and could be misunderstood by readers. Therefore, it is requested to rewrite the sentence as follows: "Tree mortality and associated forest dieback COULD (instead of "will") occur in many regions in the next SEVERAL (instead of "one to three") decades, with forest dieback posing risks for carbon storage, biodiversity, wood production, water quality, amenity, and economic activity." To explain further, (i) the use of "will" in combination with "in many regions" can give readers an impression that this sentence is suggesting a very likely global phenomena of tree mortality and associated forest dieback, whereas in the underlying chapters, for example, detecting a global trend of such is written to be of low confidence due to lack of data; (ii) in the relevant parts of underlying chapters, we cannot find the phrase "in the next one to three decades" but "the next few decades" and "by 2100", which makes us reluctant to use "one to three" decades as an appropriate representative expression of overall relevant descriptions made in the underlying chapters and request its replacement with "several". (*)The followings indicate some of the relevant sentences in the underlying chapters. Chapter 4, page 34, the 1st to 4th lines in Box 4-2. Chapter 4, page 34, the 12th to 15th lines in Box 4-2. Chapter 4, page 35, the 4th to 9th lines from the top of the page. Chapter 4, page 35, the 4th to 12th lines of the section 4.3.3.1.1. Chapter 4, page 39, the 1st to 8th lines in Box 4-3. (JAPAN)
1258	SPM	9	11	9	13	The statement "Tree mortality and associated forest dieback will occur in many regions in the next one to three decades" is a quite important one, please make sure that the details have been checked very carefully; could the extent of these impacts be made clearer, noting that according to chapter 4, potential thresholds of widespread forest loss are currently highly uncertain? (BELGIUM)
1259	SPM	9	11	9	13	Please clarify if the rate of tree mortality will increase as a function of climate change, assuming there is a natural rate of tree mortality. Please also specify if climate change actually is expected to cause large scale forest dieback. If possible, please indicate forest ecosystems most at risk, i.e. boreal, tropical or subtropical forests. Please also consider to include "linked to drought and temperature stress" in this sentence (cf Box 4-2) to generate "Tree mortality and associated forest dieback linked to drought and temperature stress will occur [...]" to make clearer that we are not talking about the important old-growth forests. (NORWAY)
1260	SPM	9	13	0	0	"amenity" is a more difficult word for "tourism"? Then please use the simple word. (GERMANY)
1261	SPM	9	13	9	13	Top soil degradation or desertification' may also be added as one of the risks posed by climate change on forest resources (INDIA)
1262	SPM	9	13	9	13	Remove ',' before 'and' (POLAND)
1263	SPM	9	13	9	13	Suggest finding another word for "amenity", which we assume may have an academic interpretation that may not be understood by the average reader. (CANADA)
1264	SPM	9	15	9	15	Fig SPM.5. A very interesting and informative figure but also a partly confusing figure because it mixes species with highly adaptive capacities (rodents and primates) which do not need to move and other very specialized (split-hooded mammals) for ex. Note also that "primates" has to be replaced by "non-human primates". (FRANCE)
1265	SPM	9	15	9	15	To be clear, the authors should specify what "human intervention" here refers to positive or adaptive or mitigative intervention. (USA)
1266	SPM	9	15	9	16	is this sentence intentional?: "Rates of displacement of several terrestrial and freshwater species groups in the absence of human intervention, indicating climate velocities for temperature." the meaning of the second part of the phrase seems contradictory, please clarify. (GERMANY)
1267	SPM	9	15	9	20	Figure SPM.5: "Climate velocity" needs explanation. (European Union)
1268	SPM	9	15	9	20	The icons of the figure SPM-5 should be changed. In rodents the image of a squirrel is illustrated, however these organisms don't have a cosmopolitan distribution. It could put on a mouse that would be more representative of the group. In the case of the freshwater mollusks, the image of a snail should be changed by an aquatic mollusk that is more representative. (ARGENTINA)
1269	SPM	9	15	9	20	[See also page 26]In the AR5 WG2 Second Order Draft, Figure SPM.5 also showed the temperature rise from the past ("Rate of climate change") to the left of the figure, but it is deleted in final government draft. This is very significant and useful information, thus, suggest the figure to be replaced with Figure 4-5 from the body text Ch.4, p.143. (JAPAN)
1270	SPM	9	15	9	20	Caption for Figure SPM.5: Does "rates of displacement" mean the same thing as "maximum speed that species can move" (used in the Figure itself)? If yes, suggest consistent phrasing be used to avoid misunderstanding. If not, then how these two phrases are related needs explaining as "rates of displacement" does not appear anywhere in Fig SPM.5. (CANADA)
1271	SPM	9	15	9	20	Caption for Figure SPM.5: Although the technical term "climate velocity" is defined in the glossary, this is a very unfamiliar term and this figure will not be readily understood by readers of the SPM without additional explanation of the term here in the text. Also, lines 15-16 says that rates of displacement indicate climate velocities for temperature. Suggest replacing "indicate" with "reflect" (i.e., it is, if we understand correctly, climate velocity that drives rates of species displacement not the other way around). (CANADA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1272	SPM	9	15	9	20	Caption for Figure SPM.5: As this figure and the SPM in general treats ecosystem shifts very simplistically, it would be useful to also convey in the caption that climate change will inevitably result in the creation of unique ecosystems. Similarly, reference to "in the absence of human intervention" in the final sentence is important to retain. (CANADA)
1273	SPM	9	15	9	20	Please indicate if displacement is only by latitudes (not altitude). (NORWAY)
1274	SPM	9	16	0	0	The term "climate velocity" may need an explanation. (FINLAND)
1275	SPM	9	16	9	16	The term 'climate velocities for temperature' is not clear. (INDIA)
1276	SPM	9	16	9	17	The listing is not clear because "birds" are mentioned and yet they are not included in the Figure SPM.5. (Page 26) (MADAGASCAR)
1277	SPM	9	17	9	17	Remove ',' before 'and' (POLAND)
1278	SPM	9	18	9	19	Define climate velocity, this is hard to understand. Give more clarity on on what it means if species groups are 'unable to track climate' (UK)
1279	SPM	9	19	9	20	"... unable to track climate ...", do you mean they would go extinct? If it is what you mean, could you please clarify? (NORWAY)
1280	SPM	9	20	9	20	We would suggest adding the word suitable before climate to get suitable climate (MADAGASCAR)
1281	SPM	9	22	9	35	The discussion of sectoral risks and potential for adaptation of coastal systems and low lying areas gives no differentiation between implications of different future concentration scenarios. It seems likely (for example) that the impacts on small island states would be much greater for RCP8.5 than for RCP2.6 - and this is a policy-relevant matter. Is there some information on this which could be brought through from the underlying chapters ? (NEW ZEALAND)
1282	SPM	9	22	9	35	Please consider including figure 5-2 from WGARII-Chap05 in this chapter, as it provides an illustration of how the challenge of SLR related flood defense adaptation varies across regions. An adjustment in line with this suggestion would serve two purposes for policymakers. Firstly it illustrates the limitation of the concept of average global SLR, as expected SLR and adaptation needs are highly specific to different parts of the world. Secondly, it illustrates how one of the key global climate risks affecting a large number of people can be adressed by raising flood protection structures. (NORWAY)
1283	SPM	9	22	9	49	The bolded statements for the coastal and marine ecosystem sections are declarative regarding effects (e.g., using "will") and should be backed up by linking to the actual projections. Suggest changing the use of "will" to "are projected to" in all four statements. (USA)
1284	SPM	9	22	10	3	Please consider adding examples of potential for adptation in this section. Nothing is mentioned her about potential for adaptation with the exception of a few words about adaptation costs in line 34. (NORWAY)
1285	SPM	9	24	9	24	This would be better to read as 'coastal systems and adjacent low lying areas. (IRELAND)
1286	SPM	9	24	9	24	Please consider removing "coastal" before "flooding". (NORWAY)
1287	SPM	9	24	9	26	Is this statement valid under all RCPs? The authors need to clarify. (USA)
1288	SPM	9	24	9	28	can examples be given? (UK)
1289	SPM	9	24	9	35	Is there a figure (a map) showing coastal high risk areas? It would be useful here. (FINLAND)
1290	SPM	9	24	9	35	It is not clear how the impacts being assessed are different in these two paragraphs. The first paragraph (lines 24-28) is about sea level rise and coastal impacts. The second paragraph (lines 30-35) is about climate change and coastal impacts. While there may be additional considerations beyond SLR in the assessment in the second paragraph, the nuance is lost on readers. Consider revising if possible. (CANADA)
1291	SPM	9	24	9	35	These two bullets seem to be mixing together phenomena that could be separated. In particular, why do both bullets discuss the increasing population exposed to coastal flooding? (USA)
1292	SPM	9	25	9	25	What does the word "submergence" means here? Presume means, "full/ permanent marine inundation". (IRELAND)
1293	SPM	9	25	9	25	Remove ',' before 'and' (POLAND)
1294	SPM	9	25	9	26	The uncertainty 'very high confidence' cannot be found in chapter sections 5.4.2.1 and 5.4.2.2, but just 'high confidence'. Coastal erosion refers to section 5.4.2.7 and also contains high confidence. Our suggestion is to change this conclusion to: "Due to sea-level rise throughout the 21st century and beyond, coastal systems and low-lying areas will increasingly experience adverse impacts such as submergence, coastal flooding, and coastal erosion (high confidence). Referencing chapter sections 5.4.2.1-2 and 5.4.2.7. (NETHERLANDS)
1295	SPM	9	26	9	28	Sentence is confusing and doesn't make sense. It should be rewritten (IRELAND)
1296	SPM	9	26	9	28	Sea level rise will play a role as well - as highlighted in the preceding sentence, so the text should be revised to read: "The population and assets exposed to coastal risks as well as human pressures on coastal ecosystems will increase significantly in the coming decades due IN PART to NON-CLIMATE FACTORS SUCH AS population growth, economic development, and urbanization (high confidence)." (USA)
1297	SPM	9	27	9	27	Remove ',' before 'and' (POLAND)
1298	SPM	9	28	0	0	Section 8.2 of chapter 8 has not been mentioned under footnote 46 of SPM, although the section presents some information on sea level rise impact on the urban infrastructure. (RUSSIAN FEDERATION)
1299	SPM	9	30	0	0	Include the Central America and the Caribbean regions (Nicaragua)
1300	SPM	9	30	9	30	Is it possible to give some sense of the relative importance of the two factors, climate change and development patterns? (CANADA)
1301	SPM	9	30	9	30	in the sentence " By 2100,.....patterns and without...", the word "and" should be deleted (VIETNAM)
1302	SPM	9	30	9	31	`This statement may be high confidence, but "without adaptation" makes it a statement about an unrealistic situation. It may be rephrased by saying that major adaptation action is needed to avoid..... (NETHERLANDS)
1303	SPM	9	30	9	31	Suggest restructuring sentence to start with "Without adaptation ..." so that it parallels the statement on page 10, line 19. (CANADA)
1304	SPM	9	30	9	31	Could you please provide a more specific range for the number of people affected? (NORWAY)
1305	SPM	9	30	9	35	Costs of adaptation. All of this is valuable. More detail is needed to give it more substance. (IRELAND)
1306	SPM	9	30	9	35	In this para, the role of cyclonic rains need to be highlighted for the coastal regions against the recent heavy damage in Philippines and India to coastal agriculture. (INDIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1307	SPM	9	30	9	35	The headline/bold sentence seems to have high confidence, but does not reflect the uncertainty in climate projections and development patterns that inherently increase adaptive capacity (i.e. autonomous adaptation). (UK)
1308	SPM	9	30	9	35	Also worth clarifying if the last sentence, which notes adaptation costs of several percentage points of GDP, whether these calculations of adaptation costs include pre-impact risk management actions or only post impact disaster recovery actions (i.e. without adaptation)? (UK)
1309	SPM	9	30	9	35	Given that some small island states will be inundated, it would be inferred that adaptation costs are infinite. The current text is therefore misleading. This seems to be a rather example of the underestimation of economic impacts, as discussed in Ch19 pages 44-45. Please revise. (UK)
1310	SPM	9	30	9	35	Examples from developed countries should be given. (UK)
1311	SPM	9	30	9	35	Define 'species richness' and clarify which RCP is being discussed. (UK)
1312	SPM	9	31	9	31	The majority... Consider adding some wording to clarify the causality between the two sentences. For example " This is due to the majority.." (NETHERLANDS)
1313	SPM	9	31	9	31	The authors should consider replacing "affected by" with "vulnerable to". (USA)
1314	SPM	9	31	9	31	The authors cannot make such statements with definite certainty; on line 31, "will" should be deleted and replaced with "are projected to". Also, under what warming / SLR scenario(s) is this statement related to? This information needs to be presented. (USA)
1315	SPM	9	31	9	31	This statement refers to 24.4, but there are no specific references there to "hundreds of millions of people" likely to be affected or displaced in this manner, only a series of more general statements about the vulnerability of large coastal cities in Asia to climate hazards. The authors need to correct the reference OR remove the assertion altogether. (USA)
1316	spm	9	31	9	32	We suggest avoiding the wording "the majority", as the word implies a comparison with other regions, while impacts in other regions might be important and affecting a lot of people as well. We suggest a formulation such as "a large number of people...". It should also be noted that many other low-lying regions would be affected. (BELGIUM)
1317	SPM	9	31	9	35	What about coastal infrastructure lost? And economic activity lost? Where will those impacts be concentrated? Please delete the word "developing" -it is not just low-lying developing countries and small island states that are "expected to face very high impacts and associated annual damage and adaptation costs of several percentage points of GDP". Indeed many places along the U.S. East Coast, the Netherlands and Japan - with populations in the millions - will likely have enormous adaptation costs. A more balanced view of impacts is warranted. (USA)
1318	SPM	9	32	0	0	The page number (9) the line No. 32 stated that the most affected areas in the world is the east, southeast and South Asia, while the fourth report of IPCC stated that Egypt is one of the very extremely affected areas in the world by climate changes according to the scenarios issued by IPCC. Also did not mention during the paragraph (line 30 to 35) anything about the losses and damages and compensation, especially in coastal areas. (EGYPT)
1319	SPM	9	32	9	32	The probability in term of confidence level of the effect on east, southeast and south asia due to coastal flooding and land loss may be provided. (INDIA)
1320	SPM	9	32	9	32	Clarify the reasons that East, Southeast and South Asia will be heavily affected by SLR - i.e. very dense concentrations of people in coastal cities. (also low-lying deltas and subsidence?) (UK)
1321	SPM	9	32	9	33	Is this sentence regarding relative costs of adaptation unique to coastal systems? If so, then recommend referring to coasts in this sentence. If not, then suggest moving it to elsewhere in the SPM. (CANADA)
1322	SPM	9	33	0	0	We recommend including the coastal areas of developing countries that are not necessary islands (Nicaragua)
1323	SPM	9	33	9	34	Add after "small island developing states" "and states with small islands". (GREECE)
1324	spm	9	33	9	35	It would be highly relevant to add a sentence related to developed (or high-income) countries to express the fact that these countries are not immune to high impacts and associated annual damage and adaptation costs related to coastal flooding and land loss. Such a sentence could possibly be (if compatible with the underlying report) : "However, in absolute terms, large economic losses and adaptation costs are expected in low-lying developed countries". (BELGIUM)
1325	SPM	9	34	9	34	very high impacts and, in some cases, irreversible loss. Also perhaps need to say something about long term migration, where land is lost to the oceans. (UK)
1326	SPM	9	34	9	34	We suggest this sentence present a more balanced discussion of the threats faced by all low-lying countries, which could be re-written as: "Some low-lying countries and small islands are expected to face very high impacts, which could in some cases have high associated costs of several percentage points of GDP." (USA)
1327	SPM	9	34	9	35	Would it be possible to detail a range of values for "several percentage points of GDP" (SPAIN)
1328	SPM	9	35	9	35	For clarity the word "their" is needed before "GDP". (USA)
1329	SPM	9	37	9	45	The main messages in this para on marine systems is incomplete as it fails to convey the full risks. Adding the sentence "The progressive redistribution of species and the reduction in marine biodiversity in sensitive regions and habitats puts the sustained provision of fisheries productivity and other ecosystem services at risk." from the TS 22 would address this. (GERMANY)
1330	SPM	9	37	10	3	Please consider including the aspect of risk of reduced O2 ventilation and increased hypoxic zones in the ocean due to increased thermal stratification, and preferably also the potentially severe effects on marine biodiversity and ecosystems (including ecosystem functions and services). This is a potential serious risk for marine life and merits being mentioned in the SPM. See e.g. Ch. 18.3.4.1-2. (NORWAY)
1331	SPM	9	37	10	39	Please consider the structure of this text (including headlines) as marine systems are highly relevant to food production and global food security but this is not mentioned in the food subsection. FAO estimates that fish provides 22 percent of the protein intake in sub-Saharan Africa. This share, however, can exceed 50 percent in the poorest countries (especially where other sources of animal protein are scarce or expensive). In West African coastal countries, for instance, where fish has been a central element in local economies for many centuries, the proportion of dietary protein that comes from fish is extremely high: 47 percent in Senegal, 62 percent in Gambia and 63 percent in Sierra Leone and Ghana ( <a href="http://www.fao.org/fishery/topic/14886/en">http://www.fao.org/fishery/topic/14886/en</a> ). (NORWAY)
1332	SPM	9	39	9	39	The authors cannot make such statements with definite certainty; on line 39, "will" should be deleted and replaced with "are projected to". Also, the bolded statement, as well as the statement in lines 42-43 need specification as to what scenarios they are relevant to. The authors need to provide appropriate context. (USA)



#	Ch	From Page	From Line	To Page	To Line	Comment
1333	SPM	9	39	9	40	Is this message supported by any kind of evidence? The fact that species be displaced northwards will not necessarily cause an accumulation of species in Northern latitudes. New ecological relationships in communities could lead to predation, competition, extinction, etc. Shifting species northwards could have a similar effect as invasive alien species. The redistribution of catches and potential effects on food security seems more likely. (European Union)
1334	SPM	9	39	9	40	this is not the case for the Baltic Sea, and other brackish seas where species are "trapped" and not can find suitable environmental conditions by migration – and where also salinity is expected to be changed (possible decreased in the case of the Baltic sea) which will alter the composition of species. (SWEDEN)
1335	SPM	9	39	9	40	It would be helpful to address the potential inconsistency between the latitudinal changes in maximum catch potential and changes in species richness. Here, the text says that species richness will increase at high latitudes, but Figure SPM.6 shows a 50% decline in max catch potential in high latitude areas. (CANADA)
1336	SPM	9	39	9	42	Here is an example of a potential positive effect. But how is this related to the earlier statements of negative impacts in marine ecosystems (e.g. Figure SPM.2)? (NETHERLANDS)
1337	SPM	9	39	9	42	This statement needs to clarify if it is a valid statement under all RCPs or under the high-end RCPs only. (USA)
1338	SPM	9	39	9	45	I'm not sure we can say anything with great confidence about any increases in species richness at mid and high latitudes (we know little about the synergistic impacts of acidification, warming, de-oxygenation, stratification, changes to primary productivity, pollution and other human impacts). Impacts likely to be wholly negative on marine ecosystems and there is a knowledge gap. (UK)
1339	SPM	9	39	9	45	We note that in the corresponding section of the SPM about terrestrial ecosystems (page 8 line 48 to page 9 line 4) there is nothing said about impacts of climate change on terrestrial biodiversity other than extinction risk. It would be of interest to understand if the nature of the risks to terrestrial and marine ecosystems are in some way fundamentally different, and if so, why? (CANADA)
1340	SPM	9	39	9	45	It is difficult to discuss "species richness" without context because species are migrating polewards, and endemic species in the High Arctic can be lost from the different areas. Please reconsider this text. (NORWAY)
1341	SPM	9	40	9	40	..confidence), resulting...consider replacing the comma by a dot, herewith creating a new sentence. (NETHERLANDS)
1342	SPM	9	42	9	42	Substitute the term "Animal" by the term "Species" as used in the original formulation of the sentence in the TS [p.21 last line], and insert in addition a reduced version of the subsequent sentence from the TS [P 22, first line] to describe the expected consequences for fishery. (GERMANY)
1343	SPM	9	42	9	42	Please consider changing "animal" to "species" in this sentence, to generate "Species displacements are projected...", since this effect concerns not only animal species, but also primary producers. See TS p. 21 where the same statement is phrased "Species displacement". (NORWAY)
1344	SPM	9	43	9	43	It is suggested to provided examples when talking about local extinction in semi-enclosed seas, adding "(e.g. Mediterranean Sea, Persian Gulf)" (5.5.2) (SPAIN)
1345	SPM	9	43	9	44	Aren't there conclusions/findings about the shifting food patterns? For example about a possible new focus on marine protein production, in favor of dairy production on land, which might decrease? (NETHERLANDS)
1346	SPM	9	43	9	44	It would be useful to state the evidence that supports this statement, and also explain why only RCP 8.5 is reported. It seems unlikely that there has been a great deal of analysis using the RCP scenarios. (CANADA)
1347	SPM	9	46	10	3	This paragraph on ocean acidification is of interest from a policy perspective. However, it is currently a little difficult to read and to understand (particularly the last two sentences). Suggest clarifying what the main take-away message is for policymakers. (CANADA)
1348	SPM	9	47	9	47	The word 'marine' may be added before 'ecosystems' (INDIA)
1349	SPM	9	47	9	48	This statement needs to clarify if it is equally valid under all RCPs or under the high-end RCPs only. (USA)
1350	SPM	9	47	9	51	Also in the page number (9) the line number 47 to 51 report addressed acidification and its impact on the ecosystem, coral reefs and behavior change did not mention anything about the phytoplankton, which are fixing carbon dioxide and the impact of this on the food chain and the relationship between the increase in the of carbon dioxide and acid rain (EGYPT)
1351	SPM	9	47	9	51	Can this section be moved to the top of the 'marine systems' section, as this talks about the global impacts, about which we are more confident than the regional impacts. (UK)
1352	SPM	9	47	10	3	Ocean acidification is discussed as a key risk to marine systems, however Table SPM 1 contains no information on adaptation potential for this risk. Table 1 should be modified to include this information. (USA)
1353	SPM	9	48	9	48	Remove ',' before 'and' (POLAND)
1354	SPM	9	49	9	49	Remove ',' before 'and' (POLAND)
1355	SPM	9	49	9	49	Please consider explaining how severe those risks are, for example by adding "severe" in front of "risks". Another approach could be to highlight the importance of those systems by including "essential" before "ecosystems" so it reads " Ocean acidification poses risks to essential ecosystems. [...]". (NORWAY)
1356	SPM	9	49	9	51	Please consider to include some examples to show how acidification on certain species (certain levels in the food web) strongly affects species foraging on them. Indirect effect on top predators like walruses and bearded seals from effects on clams is an example. Ecosystem effects might also impact fisheries. (NORWAY)
1357	SPM	9	51	9	51	In order to enhance clarity it is suggested to add "in oceans" or "in marine systems" after "other environmental changes". This is because some readers might link some of the described changes to the atmosphere. (AUSTRIA)
1358	SPM	9	51	10	1	This is a factual statement; shouldn't it be assigned "very high confidence" ? (European Union)
1359	SPM	10	0	0	0	Figure SPM7: useless as considers both with and without adaptation and unclear what scenarios are used (UK)
1360	SPM	10	0	10	0	Footnote 52: Strike "3.5" and replace with "3.5-2" (USA)
1361	SPM	10	2	10	2	Remove ',' before 'and' (POLAND)
1362	SPM	10	3	10	3	Clarify that the impacts are for for species, food chains and the human populations that depend on the oceans for food and livelihoods. (UK)
1363	SPM	10	3	10	3	It would be helpful to include a trace-back to the WGI assessments of historical and projected changes in ocean pH. (CANADA)
1364	SPM	10	5	0	0	Because this figure deals with the ocean, it should be clarified whether the "2°C increase" refers to the water temperature, or to global average surface air temperature. (NEW ZEALAND)
1365	SPM	10	5	10	5	The way the caption is written is somewhat confusing: I think it is meant that SRES A1B by 2051-2060 effectively results in a 2C temperature increase. The compatability with RCP6.0 is only partly true (perhaps more for drivers than impacts). WG1 SPM7.a even RCP8.5 is less than 2 degrees above 2000s by 2050. (European Union)

#	Ch	From Page	From Line	To Page	To Line	Comment
1366	SPM	10	5	10	5	Figure SPM 6: The use of scenarios is confusing as this is the old one.. (UK)
1367	SPM	10	5	10	5	Caption for Figure SPM.6, line 5: Suggest adding the words "mid-century" after "2degC increase", to avoid any confusion that SRES A1B has a peak warming of 2degC. (CANADA)
1368	SPM	10	5	10	6	Caption for Figure SPM.6, lines 5-6: We strongly recommend not suggesting an approximate equivalency between certain SRES and RCP scenarios in the SPM. A1B and RCP6.0 might be comparable with respect to some elements of forcing (e.g., CO2 concentration at some point in time), but could be quite different with respect to others (e.g., aerosols). On page 6, line 14-16, Canada also submitted a comment recommend that a Box be added to provide readers with more information about the methodological basis for impacts assessment by IPCC WGII, including the use of the older SRES scenarios and the newer RCP scenarios - this information will be more helpful and accurate to readers than trying to draw equivalencies between the two scenarios. (CANADA)
1369	SPM	10	5	10	15	This figure does not include marine fisheries, which represent the world's highest percentage (SOFÍA, FAO, 2012). (ARGENTINA)
1370	SPM	10	6	10	6	Request that a definition of the term "catch potential" be provided. (JAPAN)
1371	SPM	10	6	10	6	Replace '1000 species of exploited fishes and invertebrates' with '1000 exploited fish and invertebrate species' (POLAND)
1372	SPM	10	7	10	8	After "...without analysis of potential impacts of overfishing", please add "and of ocean acidification". It is very important to emphasize that the change in fish catch potential illustrated by figure SPM.6 (A) could be further aggravated by ocean acidification. By inserting these words, it is more obvious that ocean acidification is only addressed in figure SPM.6 (B). (GERMANY)
1373	SPM	10	8	10	8	Please specify that catch rates are annual, or use unit of 'tonnes per sq. km per year' (BELGIUM)
1374	SPM	10	8	10	15	Figure SPM.6 panel B : for corals and mollusks, all scenarios give very similar results although the percentage of species negatively affected, compared to control, is substantial. Does it mean that the magnitude of the pCO2 change has no importance (as the figure might suggest), or that the magnitude of the negative effect might increase with increased CO2 in spite of the fact that the number of species is the same ? If the magnitude of the negative effect increases with increasing acidification, it is an important to make this remark (if there is a limit, e.g. because the negatively affected species would become extinct, this information might be useful too). (BELGIUM)
1375	SPM	10	9	10	9	Caption for Figure SPM.6, line 9: Insert "projected" ahead of "distribution of ocean ...". (CANADA)
1376	SPM	10	13	10	13	pCO2 has not been introduced earlier and it is unclear here if this is CO2 or CO2 equivalents. (GERMANY)
1377	SPM	10	13	10	14	The using of partial pressure of CO2 (pCO2) in µatm unit for CO2 concentration is not very standard. I suggest to change it to CO2 in ppm. For whole AR5 report is very important to be consistent. (CZECH REPUBLIC)
1378	SPM	10	13	10	14	Suggest using ppm instead of micro-atm. (SWEDEN)
1379	SPM	10	17	0	0	This section on Food Production is quite confusing to read and would benefit from further consideration by the authors in terms of how to draw out relevant and easily understood messages. (CANADA)
1380	SPM	10	17	10	17	Food systems: this is a very important but unfortunately very weak section that needs working on. The title of the first para mentions that this applies to the without adaptation scenario, but doesn't stipulate what scenario and the text refers to with and without adaptation. (UK)
1381	SPM	10	17	10	27	No mention about quality is made. Demand may increase not only for quantity but also for quality of food. (INDIA)
1382	SPM	10	17	10	27	Food systems: is this finding based on yields now or on yields as they are projected to increase anyway because of increased yield performance in response to BAU technological investments? (UK)
1383	SPM	10	17	10	27	No mention of effect of CO2-fertilisation which should be made (UK)
1384	SPM	10	17	10	34	The messages from chapter 7 need to be brought through more clearly: (UK)
1385	SPM	10	17	10	34	1. The negative impacts of climate change on food production far outweigh the positive and are already evident - in both low to mid, and high latitude regions. (UK)
1386	SPM	10	17	10	34	2. These negative impacts will only get worse with projected climate change from 2050 onwards, particularly in low latitude regions, but also on a global scale. (UK)
1387	SPM	10	17	10	34	3. Extreme climate and weather events will counter any positive impacts on food production identified in AR4 in high latitude regions. (UK)
1388	SPM	10	17	10	34	4. Warming of between 4-6 degrees is a huge risk to food production and will impact severely on future food security, due to renewed uncertainty around crop sensitivity to extreme heat – this seems to have increased in confidence since AR4. Even with adaptation at low levels of warming, negative impacts on food production will still occur (UK)
1389	SPM	10	19	0	34	line 21-22 reads that adaptation will also lead to reduction of yields, and in line 29 that adaptations improves yields. For those who are not familiar with the issue it is confusing. Should be redraft (POLAND)
1390	SPM	10	19	9	27	can this be broken out to give a statement about yields relative to no cc with and then without adaptation? It is a bit confusing as is. (UK)
1391	SPM	10	19	10	19	We suggest the sentence to start with "Local temperature increases ...." delete without adaptation. (UNITED REPUBLIC OF TANZANIA)
1392	SPM	10	19	10	19	If we're using the preindustrial baseline, we are close to 1C above already. This suggests an immediate need for adaptation in affected regions. If this is the intent of the statement it could be clearly stated. (IRELAND)
1393	SPM	10	19	10	21	Important: 'increment of 1 C or more'. This is an incorrect number. The old text in the SOD SPM named 2 C, for temperate regions (page 11, line 18). These temperatures are derived from Figure 7-4 on page 78 of Chapter 7 (final draft text). After careful reading, we must conclude that both figures (1 degree and 2 degrees) come from this graph only. Now, the text in the final SPM is for tropics and temperate regions combined or in other words: extracted from all six panels of Figure 7-4. If we read from these six panels when crop yields are significant negative, we come to the following figures: Maize temperate 2.5 C, Maize tropical 1.5 C, Wheat temperate 2.0 C, Wheat tropical 2.5 C, Rice temperate 4.0 C and Rice tropical 3.5 C. The average of these 6 numbers is 2.7 C. To our surprise, the body of Chapter 7 on page 3 states 3 C !! In conclusion: the value of 1 C is incorrect, even the old value of 2 C was too low. The best estimate is 3 C, as stated in Chapter 7 on page 3. Please change! (NETHERLANDS)
1394	SPM	10	19	10	21	It is not clear if the confidence level is referring to the first part of the sentence or it is referring to the second part about individual locations benefits. We suggest deleted the second part. "Without adaptation, local temperature increases of 1°C or more above preindustrial levels are projected to negatively impact yields for the major crops (wheat, rice, and maize) in tropical and temperate regions (medium confidence)." (VENEZUELA. BOLIVARIAN REPUBLIC OF)

#	Ch	From Page	From Line	To Page	To Line	Comment
1395	SPM	10	19	10	21	The AR5 conclusion on the negative impact on crops for temperature increase above 1°C in temperate regions is quite changed from AR4 where a more positive statement was given for mid to high-latitudes. This is important to stress this change from AR4. (FRANCE)
1396	SPM	10	19	10	21	According to the WG1 report, globally averaged surface temperatures are already 0.85C above preindustrial levels, which is awfully close to the 1C stated here. And, indeed, some regions have already warmed by 1C. So, are the impacts stated here already being realized? Has 1C warming - in reality, not projections - led to negative impacts in yields? Can it be attributed to climate change? (USA)
1397	SPM	10	19	10	21	The SPM mentions but does not discuss or even list benefits and opportunities, many of which are described in detail in supporting ch 14, 15, and 16. The authors should consider bringing such examples forward. (USA)
1398	SPM	10	19	10	23	This sentence is confusing and not conveying the message properly. It is also contradicting the point in Line 29 and 30 of Page 10. (INDIA)
1399	SPM	10	19	10	23	The first and the second statement are not consistent, or maybe after heavy thinking. Please improve. (GERMANY)
1400	SPM	10	19	10	27	In Indian context, the impacts on horticulture and livestock is also very important in the context of small farmers. This may be inserted after wheat, rice and maize in the tag lines. (INDIA)
1401	SPM	10	19	10	27	It would be useful to have a reference in the SPM to Ch19, page 20, lines 40-41: that 'compared to the assessment in AR4, the evidence points to an increased risk that tropical and sub-tropical regions will experience significant crop yield declines due to climate change'. This is a very important statement, that will be of interest to policy-makers, especially those in countries in tropical and sub-tropical regions. It is useful to know that the evidence has changed since AR4. This ought to be highlighted in the SPM. (UK)
1402	SPM	10	19	10	27	For completeness, effects on yields in high latitudes should also be included. (NORWAY)
1403	SPM	10	19	10	30	Please clarify what is meant by 0 in this interval, e.g. if it means "up to 2%". Also please clarify under what assumptions climate change will reduce yields by 0-2% pr decade, i.e. RCP2.6 or 8.5. Please also clarify why adaptation is not relevant to these numbers. And how is this consistent with the number of 15-18 % for yield improvement by adaptation in the next paragraph? Is this the difference in 2100? And how is this consistent with 2 % per decade? (NORWAY)
1404	SPM	10	20	0	0	Add other crops (basic grains, vegetables, tubers, fruits, cover crops) relevant to medium and small producers to ensure consumption, food sovereignty and security. (Nicaragua)
1405	SPM	10	20	10	20	Remove ',' before 'and' (POLAND)
1406	SPM	10	20	10	20	Are impacts on yields likely to be similarly negative in tropical and temperate regions? This is how the statement currently reads. (USA)
1407	SPM	10	21	10	21	The meaning of the phrase 'With or without adaptation' is unclear. Is 'even with adaptation' intended? Please clarify. (AUSTRALIA)
1408	SPM	10	21	10	21	with or without adaptation': does this mean that it makes no difference if adaption takes place or not? Line 29 on this page shows that it makes a difference ! (NETHERLANDS)
1409	SPM	10	21	10	21	We suggest the deletion of "with or without adaptation". The evidence is that climate change will reduce median yields, and the words we suggest to delete don't add any value to this evidence. In addition to this, this text can support inaction in adaptation if the yields will be reduced anyway. (SPAIN)
1410	SPM	10	21	10	21	The authors should clarify or delete "with or without adaptation" as it does not make sense. How can climate change be projected to reduce median crop yields in scenarios with OR without adaptation? If the point is that the range of crop loss is 0-2 percent, and it depends on levels of adaptation, then the authors need to reword the sentence to say that explicitly so it is more clear. (USA)
1411	SPM	10	21	10	22	Seems overconfident in asserting that median yields will reduce. Should change the word 'will' to 'could' or 'are likely'. There are too many drivers to assert climate is the only factor. (UK)
1412	SPM	10	21	10	22	This sentence stating "With or without adaptation" and "as compared to a baseline without climate change" is not clear. Suggest clarifying what specifically is being compared and better explaining why adaptation will not affect this finding. (CANADA)
1413	SPM	10	21	10	22	"climate change will reduce median yields by 0 to 2% per decade for the rest of the century." Neither this statement nor the accompanying figure (SPM7) describe how crop yield impacts will depend on emissions scenario. Yield impacts in the late 21st century must depend strongly on scenario, and it's important to state what we know about this dependence. (USA)
1414	SPM	10	21	10	23	What does 'With or without adaptation' mean? Is it suggesting that the reduction in yields will be the same, irrespective of whether adaptation is implemented or not? This can transmit a message that adaptation will not be necessary for this particular sector. Also the reference to "median" yields is not clear as it could refer to different samples. (European Union)
1415	SPM	10	21	10	23	The sentence about reduction of median yields by 0 to 2% per decade is confusing. This does not convey any sense of the wide range of possible yield reductions (which are summarised in table SPM.7, and discussed in Ch7 and Ch19). It would be better to have a clearer and more detailed statement on the range of possible yield reductions for major crops, including the risk of very high reductions. (UK)
1416	SPM	10	21	10	23	The authors cannot make such statements with definite certainty; on line 21, "will" should be deleted and replaced with "is projected to". Also, under what scenario is this finding relevant? The authors need to provide appropriate context. (USA)
1417	SPM	10	22	10	23	The "baseline without climate change" should be described. Does this mean flat surface temperatures beyond present? Beyond the 1986-2005 average? (USA)
1418	SPM	10	23	10	23	"...without climate change" - this seems to be a sentence that should end with a confidence level (UK)
1419	SPM	10	23	10	24	to increase by about 14% per decade until 2050 - whose estimate is this, and what is it based on? UN population projections? (UK)
1420	SPM	10	24	10	24	Recommend specifying under which scenarios the results in Fig SPM.7 are valid. We assume it matters whether there is a 1-2degC change or a 4-5degC changes (for example). (CANADA)
1421	SPM	10	25	0	0	The phrase "given projected impacts that exceed adaptive capacity" suggests a quantitative comparison and that we should be able to map out thresholds of impacts that can be dealt with given different levels of adaptive capacity. Is the relationship is that simple? Suggest that this phrase needs to be reviewed and clarified. Possible rephrasing could be along lines of "projected impacts that are expected to overwhelm the current capacity to adapt". (CANADA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1422	SPM	10	25	10	25	"Risks are greatest for tropical countries". Would it be possible to add a confidence level on this sentence? (FRANCE)
1423	SPM	10	25	10	25	"...given projected impacts that exceed adaptive capacity" - do the authors mean current adaptive capacity or potential/future adaptive capacity? This needs to be clarified. (USA)
1424	SPM	10	25	10	26	This sentence suggests that risks in tropical regions are greater ONLY due to anthropogenic reasons. It should be made clearer that it is also climatic reasons (e.g., stronger climate variability) that contribute to this higher risk - as suggested in the next sentence (but here without the link to tropical regions). (GERMANY)
1425	SPM	10	26	10	26	Please assign confidence level to the statement on expected inter-annual variability (TURKEY)
1426	SPM	10	26	10	26	"Climate change will increase inter-annual variability of crop production". Would it be possible to add a confidence level on this sentence? (FRANCE)
1427	SPM	10	26	10	26	The authors cannot make such statements with definite certainty; on line 26, "will" should be deleted and replaced with "is projected to". Also, under what scenario is this finding relevant? The authors need to provide appropriate context. (USA)
1428	SPM	10	26	10	27	This statement needs a confidence level. (USA)
1429	SPM	10	27	10	27	It has been mentioned that the climate change impacts crop yields in many regions. The specific regions may therefore be specified. (INDIA)
1430	SPM	10	29	10	29	This statement should clarify that not all people will have access to these adaptation benefits. (UK)
1431	SPM	10	29	10	29	"Adaptation improves yields by the equivalent of 15-18% of current yields". What is written in chapter 7 p3 paragraph 6 "the yield difference between the adapted and the non-adapted cases which is equivalent to above 15 to 18% of current yields" is more clear. (FRANCE)
1432	SPM	10	29	10	29	How can this be quantified to this level of precision? And what is "adaptation" in this context? Can its effects be singled out from other factors influencing yields? (USA)
1433	SPM	10	29	10	30	Unclear message. Adaptation improves yields by that percentage by when? Compared to what? Shouldn't comparisons be between future with and without adaptation? The effectiveness of adaptation is highly variable is highly variable when the former sentence indicates and improvement of nearly 20% in yields? (European Union)
1434	SPM	10	29	10	30	statement is not clear. Please specify timeframe (15-18% per ?). (GERMANY)
1435	SPM	10	29	10	30	adaptation' - now or in the future? This sentence is confusing because how can we know exactly how effective adaptation has been without knowing what would have happened in its absence? Also, is the 15-18% a global average figure? And when does it relate to? Now? on what basis (ie: on top of expected increasing yield performance or in response to specific adaptation interventions)? Over what period? (UK)
1436	SPM	10	29	10	30	Please consider if the last part of the sentence is necessary since you already mention a range in the first part. If the last part is needed, please clarify in which way the "effectiveness of adaptation is highly variable"? E.g., over time, regions, countries, from year to year, etc.? (NORWAY)
1437	SPM	10	29	10	30	This statement as currently written is not entirely clear regarding how meaningful the 15-18% figure is; the corresponding statement in Chapter 7 is likewise not entirely clear. The 15-18% of current yields comparison is one comparison but another useful comparison would be the difference between projected baseline yields without adaptation (which could be higher or lower than current yields) and projected baseline yields with adaptation. Suggest the authors clarify this comparison. (USA)
1438	SPM	10	29	10	34	There is now a temperature increase of two degrees Celsius rather than one degree Celsius as mentioned in the previous version of the SPM. Is this correct? (NETHERLANDS)
1439	SPM	10	29	10	34	An important message on the regional implications is needed in this paragraph to include policy relevant information. Text from Ch 7 executive summary may be appropriate: "Projected benefits of adaptation are greater for crops in temperate, rather than tropical regions" (Ch7 Executive Summary 3) (GERMANY)
1440	SPM	10	30	10	30	A very important phrase but very badly constructed ... (UK)
1441	SPM	10	30	10	30	Positive and negative' - why +ve and -ve for 2 degrees, but wholly negative for the lesser warming of 1 degree (from previous bullet)? Suggests that 2 degrees is less risky than 1. (UK)
1442	SPM	10	31	10	31	There is no "high confidence" in the effective adaptation at +2C in chapter 7. (FRANCE)
1443	SPM	10	32	10	32	Is the "4C or more" referenced here above pre-industrial (as in line 31) or above the 1986-2005 reference period? Please clarify. (USA)
1444	SPM	10	32	10	34	For countries of low resilience, climate change poses a worse threat to food security. It is suggested to reformulate the sentence as "..., posing significant risks to food security even with adaptation, especially for the countries with weak adaptive capacity". (CHINA)
1445	SPM	10	32	10	34	This statement needs a confidence level. (USA)
1446	SPM	10	34	10	34	Please assign confidence level to the last sentence. (TURKEY)
1447	SPM	10	34	10	34	is the 'adaptation' referred to on a global or local scale. May benefit from including 'local' as the reference point. (UK)
1448	SPM	10	36	0	0	Figure SPM7: The content of Figure SPM.7 and Figure itself on page 28 is too board and non-specific to be meaningful for policy makers. The projected percentage changes in crop yields are model projections, but there was no information on climate scenario being used. What type of crop was used in this projection? Different crop types respond differently to environmental, including climate, factors. Was data number (n = 1090) the total numbers used in each 20-year period, or in all 5 sets of 20-year? (UK)
1449	SPM	10	36	0	0	Figure SPM.7 shows a large spread in yield changes shown and a small but significant number of studies predict increased crop yields. This large spread should be highlighted in the summary. (UK)
1450	SPM	10	36	10	36	"with and without adaptation" ==> This sounds as if there were two panels in the figure while you actually mean that the figure does not differentiate between studies including or excluding adaptation. Please change the wording. (GERMANY)
1451	SPM	10	36	10	36	Figure SPM.7 : What is the meaning of "with and without adaptation" in the caption ? We only see one type of data on the figure. Please revise the caption (or replace the figure as suggested in our other comment) (BELGIUM)
1452	SPM	10	36	10	36	Caption for Figure SPM.7: Suggest that information about for which crops these results apply should be brought into the Figure caption. (CANADA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1453	SPM	10	36	10	37	It appears that figure SPM7 lumps together all studies, regardless of the greenhouse gas concentration scenarios assumed - although the Page 10 text referring to it does imply significant differences in yields between scenarios. The Figure SPM7 caption should make it clear whether this figure does in fact lump together all scenarios, or predominantly reflects results for a particular scenario. (NEW ZEALAND)
1454	SPM	10	36	10	37	Change sentence "Summary of projected...for all regions." to the one used in the figure caption in Ch 7 for Figure 7-5 "...shows projected impacts...". It is clearer and easier to understand. (FINLAND)
1455	SPM	10	36	10	38	Figure SPM 7 Caption: More information is needed about the figure. Which emissions scenarios are covered by these studies? Further the statement 'with or without adaptation' is confusing and could be interpreted to mean adaptation has little effect on crop yields. If this figure is based on multiple studies, some considering adaptation and some not, this should be clearly explained and it should be noted that although adaptation can reduce impacts on crop yield some residual impacts will remain. (AUSTRALIA)
1456	SPM	10	36	10	38	"With and without adaptation": it is not clear to what extent adaptation is included; is it in a few or in the majority of the projections? Particularly for mid- to late century crop yields one would expect it to be important. It would seem helpful to separate projections with and without adaptation. What does "across studies" mean? The figure SPM 7 needs more caption text in order for the reader to understand it. (DENMARK)
1457	SPM	10	36	10	38	The information contained in the figure SPM.7 would seem to be too diluted. The caption suggests that the data cover results with adaptation and without adaptation. Albeit one sees that there is a general trend over time to smaller yields (signals limits of adaptation), it is not evident, e.g., how adaptation may buffer negative climate impacts. (SWEDEN)
1458	SPM	10	36	10	38	[See also page 28]Wonder how is this figure has been constructed? Are the studies used in this figure based on the same scenario, especially in connection to the RCP scenarios in WGI SPM? If so, upon which scenario does the projection for this figure depend on? According to the description in the last paragraph of page 21 Chapter 7 of underlining report, "Some important differences by emission scenario and region are masked in Figure 7-5", we assume this figure only considers the percentages of these limited studies, without considering differences by emission scenarios, regions and with and without adaptation. For policy makers, this figure might be misleading. Therefore request this figure be replaced with Figure 7-4. In that case, the 4th line from the bottom of page 78, Chapter 7 of underlining report, "In the case... non-adapted crops", is necessary sentences to explain the figure. If Figure SPM.7 is maintained, the projection term should be only one (ex. 20 years in the end of this century). Further, request that, "Some important differences by emission scenario and region are masked in this figure", an important sentence, be inserted to ensure concise clarity of this figure. (JAPAN)
1459	SPM	10	36	10	38	Figure SPM.7: the caption of Figure SPM.7 does not mention to which climate scenario this assessment is related; should these results be read as evolution of crop yield under a business as usual scenario or a mitigation scenario ? Please indicate the scenario. If the studies encompass a large range of emissions (and crops), we do not think that it is sufficiently useful for a SPM. In this case, we suggest replacing it with a figure that is more concrete in terms of scenarios or temperatures, and preferably also in term of crops, such as figure 7-4 or part of figure 7-4. (BELGIUM)
1460	SPM	10	36	10	38	Caption for Figure SPM.7: In order to help make this figure more clear, suggest the caption include some further detail , such as the number of studies reporting for each period and some indication of the extent to which the geographical distribution of the studies is representative of cultivated land globally would also be useful. For example, if the vast majority of studies are for cultivated land in Europe, then a globally aggregated frequency of results, as shown, would not be globally representative. (CANADA)
1461	SPM	10	36	10	38	The legend of Figure SPM.7 needs some improvements. Explain better that this is a compilation of both "with and without adaptation". Make more clear that this results from compilation of studies from all regions without weighting and distinction. (FRANCE)
1462	SPM	10	36	10	38	This figure could use additional explanation to clarify that it is plotting the numbers of studies. (USA)
1463	SPM	10	37	10	37	Data(n=1090) is based on how many studies? How are the observations ((n=1090) distributed on the horizontal axis (i.e. do all studies considered make projections accorss the same timeframe). What are the "crops" considered? Do all studies cover all crops considered. If not, qualifying statements may be added (e.g. most studies focused on wheat, maize etc.) How many of these observations are with adaptation, which is surely an important factor as one moves from shorter to longer time horizon. (TURKEY)
1464	SPM	10	40	11	8	There is no indication here of the way vulnerability, impacts and adaptation potential for urban areas (or for rural areas) varies as a function of greehouse gas emission or concentration scenario (e.g. RCP2.6 cf RCP 8.5). Could anything be brought through from the underlying chapters on this very policy-relevant matter ? (NEW ZEALAND)
1465	SPM	10	42	10	42	Remove 'and' before 'drought (POLAND)
1466	SPM	10	42	10	42	We would suggest to drop the and before drought (MADAGASCAR)
1467	SPM	10	42	10	43	Should "worsening air pollution / stagnation" be included in this list? (USA)
1468	SPM	10	42	10	44	The statement could be reinforced with a reference to 'The combined effects of climate events such as..' at the beginning. (European Union)
1469	SPM	10	42	10	44	The role of forward-looking risk management is pivotal (see e.g. scenarios as a tool above) to prevent mentioned outcomes to happen - and to identify mitigating action early on. Investing in climate resilience now is cheaper than to wait for the damages to occur. See e.g. <a href="http://media.swissre.com/documents/rethinking_shaping_climate_resilient_development_en.pdf">http://media.swissre.com/documents/rethinking_shaping_climate_resilient_development_en.pdf</a> (SWITZERLAND)
1470	SPM	10	42	10	44	We suggest that also include "rising sea levels and storm surges", and "air pollution" in this list, as it is done in the TS page 23. In addition the frequency of landslides an avalanches is expected to increase in a changing climate. In Chapter 4.3.3.5.4., page 50, it is stated that "Climate change is projected to increase the frequency of landslides (UN Habitat, 2011)". We suggest that you also consider to include"landslides and avalanches" in this listing. (NORWAY)
1471	SPM	10	42	10	44	The SPM is completely silent on the degree to which human health may be affected by climate change impacts on air quality. It would be a failure of the SPM if there is no attempt to summarize the current state of knowledge on this for policymakers. The authors should bring forward a statement from the underlying chapter 11 for either this paragraph on Urban areas or the parapraph on Human health. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1472	SPM	10	42	10	49	This paragraph is unclear, partly because it is packed with jargon such as 'basic service deficits' and 'multi-level urban risk governance'. (AUSTRALIA)
1473	SPM	10	42	10	49	Again, the air pollution and air quality parameter for the human risks in urban areas under a changing climate is missing from the paragraph although it is well-known how important is for urban populations. I think this parameter should be included. (GREECE)
1474	SPM	10	42	10	49	The sentences are very long. Shortening them would increase readability. (FINLAND)
1475	SPM	10	42	10	49	Irrespective of "urban adaptation " there will be limits of adaptation and remaining risks and vulnerability of urban areas - because of e. g. limited financial resources. This should be mentioned here to avoid the impression urban areas could reach a zero-risk level by adaptation. Additionally: Because of this, the aspect of appropriate insurance should be added. (GERMANY)
1476	SPM	10	42	10	49	Some risk factors that are referred to in the TS have been left out here and should be included in the SPM; for example rising sea levels, storm surges. (JAPAN)
1477	SPM	10	42	10	49	Can we say anything about which factors have the greatest influence over urban resilience? That might be helpful for decision makers and I'm sure some analysis must exist. (UK)
1478	SPM	10	42	10	49	The bullet on urban areas (ch. 8) is quite broad and generic and as such, is not particularly compelling to a policymaker. Moreover, it does not do a fair job of relaying the key findings from Chapter 8, nor the plight and significance of cities or urban areas. The authors should add some context that illustrates why cities are so important and why they are at the same time, so at-risk. For example, they could bring forward some of the observations and trends projected for cities (e.g., cities house most of the worlds population today and are projected to house upwards of 70% by 2050; cities account for a large proportion of GDP and are projected to account for an even higher proportion in the not-too-distant future; cities account for a large amount of greenhouse gases; cities are first responders by circumstance etc.....). (USA)
1479	SPM	10	43	10	43	Remove ',' before 'and' (POLAND)
1480	SPM	10	44	0	0	The page number (10) the line No. 44 report addressed the infrastructure without mentioning the effects of immigration as a result of climate change and the challenges caused by the development plans and the pressure on utilities, environmental, economic, social and competition for food and housing. (EGYPT)
1481	SPM	10	44	10	44	Define 'service deficits' (UK)
1482	SPM	10	44	10	44	"Reducing basic service deficits" is confusing, please consider rephrasing with "Improving basic services". (NORWAY)
1483	SPM	10	44	10	49	What do the authors mean by 'resilient urban infrastructure'? non-infrastructure mechanisms should be considered e.g. catchment management, demand management, efficiency gains etc. (UK)
1484	SPM	10	46	0	0	Insert the level of confidence as mentioned in the TS [p. 23, para 2]: "...areas (very high confidence). Urban adaptation benefits....." (GERMANY)
1485	SPM	10	46	10	46	What does "multi-level urban risk governance" mean? (European Union)
1486	SPM	10	46	10	46	after word governance add: " urban planning" (POLAND)
1487	SPM	10	46	10	46	Suggest that "multi-level urban risk governance" be edited to use more plain language that will be understood by readers. (CANADA)
1488	SPM	10	46	10	49	Consider splitting up the sentence in smaller ones, in order to increase the readability. (NETHERLANDS)
1489	SPM	10	46	10	49	This sentence is very long and complex. We suggest splitting it in two. (BELGIUM)
1490	SPM	10	48	10	48	it would be interesting to underline the role of local leaders (POLAND)
1491	SPM	10	48	10	48	Remove 'and' before 'increased' (POLAND)
1492	SPM	10	49	0	0	add the following chapters in note 52: 23.3, 23.5, 23.7 (ITALY)
1493	SPM	11	0	12	0	Interesting to note economic and security impacts picked up on– helpful that these are picked up (UK)
1494	SPM	11	2	11	2	Please consider mentioning more specifically what the time range "beyond" refers to. (NETHERLANDS)
1495	SPM	11	2	11	2	Suggest that a definition of "near-term" is required here. One is given on page 12, but it is not clear if the same time-frame is intended here. Readers are likely to assume that near-term means the text couple decades, and with that thought, questions may arise about whether it would be possible to verify that such impacts (which are reported continuously in the global media) are due to climate change and not some other cause. (CANADA)
1496	SPM	11	2	11	2	Please consider using a different word than "shifts" that would reflect the seriousness described in the next sentences. (NORWAY)
1497	SPM	11	2	11	4	Suggest changing "impacts will be felt" to "impacts are projected to be felt...." (USA)
1498	SPM	11	2	11	4	What can be said about infrastructure impacts such as on electric grids, roads, bridges, tourism? There is an unbalanced focus on agriculture impacts vs. those on other sectors and the authors ought to address this imbalance. (USA)
1499	SPM	11	2	11	7	What about subsistence agriculture as a food security adaptation strategy? This should be discussed. (UK)
1500	SPM	11	2	11	7	Why again is there a repeated emphasis on the poor and especially the female headed households? Rural folks of all walks of life will be affected in diverse ways (UK)
1501	SPM	11	2	11	7	Examples should be given. (UK)
1502	SPM	11	2	11	7	This entire paragraph on "Rural Areas" is entirely qualitative. Can anything quantitative be brought forward from Chapter 9 or elsewhere? (USA)
1503	SPM	11	2	11	7	Food price increases are likely to affect the urban poor significantly too. The authors should reflect this fact. Also, the authors should consider referencing other adaptation options for rural areas besides trade - e.g. Box 25-5 in Ch. 25 mentions livelihood diversification, safety nets, etc. (USA)
1504	SPM	11	3	11	3	Remove ',' before 'and' (POLAND)
1505	SPM	11	3	11	7	It is not clear what are the "Options exist for adaptation within internal agricultural trade." Please briefly explain the options. (THAILAND)
1506	SPM	11	4	0	6	Rural people are much older than people living in urban area. According to related studies, most of people dying from heatstroke are elderly people living in rural area, working at their workplaces in high temperature. In addition to 'female-headed household', old, poor, less educated rural people are very vulnerable to climate change. (REPUBLIC OF KOREA)
1507	SPM	11	4	11	4	What is a "climate shock"? If extreme events affecting agriculture are meant, then it would be best to say that explicitly rather than allowing the reader to imagine what a "climate shock" might be. (CANADA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1508	SPM	11	4	11	4	"climate shocks": what is it? Please add a definition in the glossary. (NORWAY)
1509	SPM	11	6	0	0	What is a "modern agricultural input"? Please clarify. (GERMANY)
1510	SPM	11	6	11	6	Please consider to insert "land area" before "modern agricultural inputs". This would make it consistent with the text in chapter 9.3.3.1.1. p.8 next last paragraph. The logic is ; food price rises impact especially the poor with limited access to land where they can grow their own food. In addition, what is actually meant by "modern agricultural inputs"? Could you use more precise language? (NORWAY)
1511	SPM	11	6	11	7	'Options exist for adaptations within international trade' is vague. Better to say 'international trade could promote adaptation by ...' (AUSTRALIA)
1512	SPM	11	6	11	7	Can this be further developed? What kinds of options exist? Can examples be added? (European Union)
1513	SPM	11	6	11	7	The relevance of this last sentence to rural areas is not clear. (NEW ZEALAND)
1514	SPM	11	6	11	7	The last sentence of the paragraph highlights adaptation options in international agricultural trade. Is there material for broader discussion on adaptation options regarding rural areas? (FINLAND)
1515	SPM	11	6	11	7	There are far more options for adaptation in rural areas than only int. Agricultural trade. Thus, either give a more comprehensive overview or delete this sentence. Apart from this, the sentence suggests that all rural areas are the same, which is not true. Agricultural trade might not really be an option for rural areas in the dry zone of Western Africa, while for some rural areas in Europe it could be. (GERMANY)
1516	SPM	11	6	11	7	This sentence ("Options exist...") is very vague and as is, would be a statement of fact and not one requiring a confidence statement. Suggest concrete examples be brought into the text, which could be qualified with the confidence statement. But in that case, is medium confidence expressed about the very existence of such options, or about their potential success? (CANADA)
1517	SPM	11	9	0	0	Sectors such as infrastructure and critical services are not described here, despite being identified as Key risks. From CH 10 Executive summary: Climate change may negatively affect transport infrastructure (high agreement, limited evidence). Transport infrastructure malfunctions if the weather is outside the design range, which would happen more frequently as the climate continues to change. (European Union)
1518	SPM	11	9	0	0	The service is one of the economic sectors. The topic can be reduced to "Key economic sectors" or "changed to Economics and key sectors" (THAILAND)
1519	SPM	11	9	11	28	Under 'Key economic sectors and services', suggest adding the first two sentences of an additional point from the Technical Summary: 'Climate change may influence the integrity and reliability of pipelines and electricity grids. Climate change may require changes in design standards for the construction and operation of pipelines and power transmission and distribution lines.' (AUSTRALIA)
1520	SPM	11	11	11	12	The authors cannot make such statements with definite certainty; on line 12, "will" should be deleted and replaced with "are projected to". Also, under what warming / emissions scenario(s) is this statement related to? This information needs to be presented. (USA)
1521	SPM	11	11	11	13	This statement depends on the timeframe considered (e.g., 2050 or 2100) and the climate scenario assumed. Some clarification is required. (AUSTRALIA)
1522	SPM	11	11	11	13	This statement does not mean that climate change does not have to be considered. The source for it seems to be Table 10.10, where the impact of climate change is compared with that of all other drivers together. For many of the sectors, the relative impact of climate change is only considered to be 'Less' than that of all other drivers together. There is not a classification of the individual importance of drivers (which means that climate change could be the main or a very significant driver when compared one by one with others). Even with this kind of partial approach there are some sectors where climate change alone is identified as equalling or surpassing the effects of all other stressors. It would be better highlighting that climate change is an additional risk factor to integrate in sectoral planning (and by the way it is much more certain than any other of the drivers mentioned, which are quite contingent). The importance of climate change will vary depending on the sector, and the generalisation 'for most economic sectors' might be sending a simplified and wrong message that climate change is a minor issue. (European Union)
1523	SPM	11	11	11	13	Please add a confidence statement. On the "long run" impacts of unmitigated climate change could have much larger effects on key economic sectors (and the function/ stability of markets and the economic system) than e.g. lifestyle and income. This should be additionally added. Otherwise economic effects of climate change seem to be of minor importance, which is a misperception. Furthermore it should be pointed out, whether the statement applies for a 2° or a 4° world, and whether it includes only about first order effects (direct weather related effects) or also second and third order effects. (GERMANY)
1524	SPM	11	11	11	13	This is timescale and emissions trajectory dependent - needs more details. Also: knock-on effects? this conclusion suggests to the reader that climate change is not a major driver - is this the conclusion you wish to draw? (UK)
1525	SPM	11	11	11	13	This finding does not seem to relate to the text below and the meaning is a bit unclear: do you mean that the cumulative impacts of all other drivers are larger than impacts from climate change? Or do you mean that e.g. regulations alone would have larger impacts than climate change impacts? Furthermore, it is not clear whether those impacts are negative or positive. Please consider rephrasing. (NORWAY)
1526	SPM	11	11	11	13	The authors should consider adding at the end of this statement, "especially over the near term." (USA)
1527	SPM	11	11	11	20	Unclear why the only sectors described are energy and insurance. There are assessments available of potential impacts of climate change in other sectors as well, such as transport, construction, tourism, agriculture and forestry. Besides, climate change has implications for business activities across all sectors, via potential disruptions in supply chains or impacts of climate change on labour productivity. this should be reflected in this summary as well. Examples extracted from summary Ch.10. 1) Climate change will affect tourism resorts, particularly ski resorts, beach resorts, and nature resorts (high agreement, robust evidence) and tourists may spend their holidays at higher altitudes and latitudes (high agreement, medium evidence). 2) Climate change will affect the health sector (high agreement, medium evidence) through increases in the frequency, intensity, and extent of extreme weather events as well as increasing demands for health care services and facilities, including public health programs, disease prevention activities, health care personnel, infrastructure, and supplies related to treatment of infectious diseases and temperature related events. [10.8] (European Union)
1528	SPM	11	11	11	20	This paragraph does not provide a very clear message. The introducing sentence in bold would seem to suggest that what follows (specifically about climate impacts) is overall not important. (SWEDEN)

#	Ch	From Page	From Line	To Page	To Line	Comment
1529	SPM	11	11	11	20	This paragraph is rather short and undifferentiated - given the heterogeneity of economic sectors and their relevance for decision making. Overall the text remains quite vague and is therefore not useful for policy makers. Please add sector-specific information. E.g. it does not take into account agriculture as a very important economic sector in many developing countries. Here, negative impacts of cc will be significant. (GERMANY)
1530	SPM	11	11	11	20	This paragraph makes an abrupt leap into specific detail about energy demand on line 13. It doesn't flow well from the preceding sentence. The sole discussion of the energy and insurance sectors in this para also sits uncomfortably / reads oddly. Why are these two sectors alone mentioned? (UK)
1531	SPM	11	11	11	20	The full section is much welcome the explicit mention of large-scale public-private risk prevention initiatives - and that risk transfer (insurance) is seen as a complementing, not stand-alone solution. (SWITZERLAND)
1532	SPM	11	11	11	20	The construction of this paragraph is unhelpful in that the bolded sentence is not supported by the underlying statements. Rather, the bolded lead sentence states that effects of climate change will be small compared to those of other stressors. The rest of the paragraph, however, does not support or amplify this statement, but rather discusses effects of climate change (which almost seems to undercut the bolded lead statement). The authors should consider breaking this into two paragraphs, one which discusses relative importance of climate change vs other stressors, and another which discusses effects of climate change. (USA)
1533	SPM	11	11	11	28	In terms of global cost estimates – this should be clear that these models only look at a subset of impacts and hence costs and cannot capture the interaction between impacts that could compound themselves [meaning that these are likely to be underestimates]. (UK)
1534	SPM	11	11	11	28	The actions in the key sectors and services all need more temporal specificity. (USA)
1535	SPM	11	12	11	12	The meaning of the wording "large relative" is difficult to understand in this context. Please clarify. (NETHERLANDS)
1536	SPM	11	12	11	12	the word "large" should be changed to "largely" (VIETNAM)
1537	SPM	11	13	10	14	Is this statement about energy demand for heating and cooling meant as a global-scale finding or are there regional differences that can be elaborated? Suggest clarifying. (CANADA)
1538	SPM	11	13	11	13	The authors cannot make such statements with definite certainty; on line 13, "will" should be deleted and replaced with "is projected to". (USA)
1539	SPM	11	13	11	14	"climate change....commercial sectors" - this much vary between regions. I think additional detail should be stated when robust evidence and high agreement are given on an issue (UK)
1540	SPM	11	13	11	20	The sentence "Climate change will reduce energy demand...." should be considered moved to the end of this paragraph, following the principle of writing the most important first. (NORWAY)
1541	SPM	11	14	11	16	Will there be a net negative or positive effect? This rather neutral phrasing could be complemented with: 'Gradual changes in various climate attributes (temperature, precipitation, windiness, cloudiness, etc.) and possible changes in the frequency and intensity of extreme weather events will progressively affect operations over time.' (Ch. 10, pg 3) (European Union)
1542	SPM	11	15	11	16	We consider that the examples of resource of energy must include oil, gas and carbon because they are the major resources of energy by now. (VENEZUELA, BOLIVARIAN REPUBLIC OF)
1543	SPM	11	15	11	16	Do these potential impacts apply to all energy sources, or are some exempt? Suggest clarifying. It could also be noted that climatic impacts on energy distribution systems (e.g., the effects of hot episodes on transmission lines) are also a concern. (CANADA)
1544	SPM	11	16	11	16	Correct 'insolation' by 'insulation' (POLAND)
1545	SPM	11	16	11	16	the word "involved" should be deleted (VIETNAM)
1546	SPM	11	16	11	17	Are these more frequent and/or severe weather disasters meant to be the result of climate change? If it is the case, say it explicitly. (SWITZERLAND)
1547	SPM	11	16	11	18	Please modify: "More frequent and/or intensive weather disasters will increase losses and loss variability in various regions and challenge insurance systems or reduce the value of insurance systems for affected persons and regions." Rational: delete "some regions/hazards" as it delivers no additional information. Alternative: Copy complete sentence from Ch 10 P4 para 3. (GERMANY)
1548	SPM	11	17	0	0	The use of 'will' is too confident. The success of pre-impact risk management activities will determine whether losses increase or not. (UK)
1549	SPM	11	17	11	17	"some regions" - the paper is inconsistent in the level it gives on regions. This must of course vary on the academic base it has to draw on but where more detail could be put in I think the paper would benefit from it (UK)
1550	SPM	11	18	11	18	Challenges to insurance systems can also finally result in challenges to financial systems and financial stability (e. g. in case of high damages / economic shocks). This should be added. (GERMANY)
1551	SPM	11	19	0	0	"Risk prevention" should be changed to "risk management" since insurance can help to manage risk but cannot prevent risk from happening. (THAILAND)
1552	SPM	11	19	0	0	Include segments of population living under extreme poverty in the paragraph (Nicaragua)
1553	SPM	11	19	11	20	The adaptation mechanisms presented here seem quite limited and partial. (European Union)
1554	SPM	11	19	11	20	Sentence seems very vague is it saying governments will underwrite the risk and that we will all benefit. Need to reworded to be clearer. (IRELAND)
1555	SPM	11	19	11	20	It is not clear why such initiatives have to be of "large-scale". This implies that small scale initiatives are not helpful, but this does not seem to be supported by the literature. Suggest that examples of what is meant by "government insurance" would also be helpful. (CANADA)
1556	SPM	11	19	11	20	Reference to government insurance should mention the importance of not incentivizing maladaptive behavior. (USA)
1557	SPM	11	20	11	20	Delete 'government insurance of the non-diversifiable portion of risk'. There are circumstances where this may promote risky behaviour and thus be maladaptive. (AUSTRALIA)
1558	SPM	11	22	11	23	It would be useful to clarify whether these figures take adaptation into account. (AUSTRALIA)
1559	SPM	11	22	11	23	Changes in global aggregate income are not very meaningful for policy formulation. These estimates should be complemented here with additional information which geographical regions, country groupings and possibly social strata will be most strongly affected. (European Union)
1560	SPM	11	22	11	23	Unclear as to what are the economic losses between 0.2 and 2.0% of income relative to? (JAPAN)



#	Ch	From Page	From Line	To Page	To Line	Comment
1561	SPM	11	22	11	23	This sentence is not sufficiently clear and appears incomplete. What is the time period used for the income changes numbers ? (% / year ? ) Could something be said about costs below 2.5°C ? Are these costs considering adaptation and including its own cost ? It is also very important to ensure that all the relevant literature has been included. (BELGIUM)
1562	SPM	11	22	11	23	This statement (on possible global aggregate economic losses for 2.5 degrees being between 0.2 and 2% of income) risks being deeply misleading. Ch19 p44 lines 20-28 indicate that some of the models used in arriving at this estimate 'do not include expected catastrophic damages'. Ch19 p44 lines 30-31 state that 'most IAMs exclude a number of potentially significant factors'. Later in the same paragraph, it is noted that 'there is high confidence that the exclusion of these factors together leads to an underestimate of global aggregate impacts'. On the basis of the information contained in those paragraphs, it seems reasonable to conclude that the quoted figures of 0.2 to 2% of GDP are at best an under-estimate, and at worst completely meaningless. It is more relevant for policymakers to understand the short-comings of these kind of estimates - as well described in Ch19 - than to be presented with the estimates themselves. Proposal: remove the reference to 0.2 - 2% of GDP. (UK)
1563	SPM	11	22	11	23	It should be clarified whether this aggregate impact is per year. Does this include the full range of probabilistic impact projections? If not, please state that these are just mean estimates from a range of studies and do not include uncertainties. (UK)
1564	SPM	11	22	11	23	Is it possible to phrase this sentence in a clearer way, especially what is meant by "of income"? (NORWAY)
1565	SPM	11	22	11	23	Is the estimate of global aggregate economic losses based on scenarios with or without adaptation? This is an important point to include in the sentence. (USA)
1566	SPM	11	22	11	28	The paragraph discusses uncertainties of economic estimates as well as large differences between and within countries. Some discussion on the difficulties to assess economic values for some losses is needed. (FINLAND)
1567	SPM	11	22	11	28	Overall the text remains quite vague - mainly stressing the uncertainty and lack of information as for costs. Please add more specified information on costs ( e.g. for different climate and impact scenarios). It should be added that exponential growth of cost can be expected if certain tipping points of the earth system are crossed. (GERMANY)
1568	SPM	11	22	11	28	Wonder if this is consistent with the figures provided on P14, line 9-13. Request that the premises/rationale for these estimates are given. (JAPAN)
1569	SPM	11	22	11	28	Would appreciate further clarification and background on the following description; "Global mean temperature increase of 2.5°C above preindustrial levels may lead to global aggregate economic losses between 0.2 and 2.0% of income". Underlying report (Chapter 10.9.2, Figure 10-1, Table 10.B.1) suggests that these figures were based on research that analyzed data from different regions and sectors on the same plane. Therefore request clarification of what research this is based on and further explanation of these figures. Would also appreciate to explain this "economic losses" include "direct" and "indirect" losses based on the underlying report Chapter 10.9. If this is too complicated, this sentence should be deleted because referring studies are based on different methods according to the body text (Chapter 10.9.2 [page 34], Figure 10-1, Table 10.B.1) and not really comparable. Or at least, the following sentence should be clearly stated either in the SPM text or footnotes. "welfare impacts have been estimated with different methods, ranging from expert elicitation to econometric studies and simulation models. Different studies include different aspects of the impacts of climate change, but no estimate is complete. Most experts speculate that excluded impacts are on balance negative" (underlying report, ch.10.9.2). (JAPAN)
1570	SPM	11	22	11	28	This section requires a description of corresponding range of temperature rise to global aggregate economic losses between 0.2 and 2.0% of income. (JAPAN)
1571	SPM	11	22	11	28	A sector by sector approach to impact estimates would be more useful than global aggregation of income losses. (JAPAN)
1572	SPM	11	22	11	28	In the context of the loss and damage agenda discussed under the UNFCCC, it would be highly relevant for policymakers to know more about the global/regional aggregate economic cost of residual impacts on key economic sectors and services for different levels of mitigation and adaptation efforts. (BELGIUM)
1573	SPM	11	22	11	28	This is a very important paragraph. However, it lacks some important conclusions that might be very important for the policy level. Therefore it is suggested to include some additional conclusions that are based on the main report. The following language is suggested: The aggregate economic impacts of climate change are relative small but with a large downside risk. Climate change may trap more people in poverty. (AUSTRIA)
1574	SPM	11	22	11	28	By what year? (UK)
1575	SPM	11	22	11	28	The difficulty with this paragraph is that it is carrying information which is mostly weak. It is suggested to suppress this whole paragraph, as its message is unclear, and is not widely accepted by the community (it is one of the few messages in the SPM with "medium agreement"). If this paragraph is to be kept, it is suggested to use the same caveats than in paragraph from line 9 p. 14 to line 14 p. 14 : "important omissions and shortcomings render these estimates highly preliminary" (FRANCE)
1576	SPM	11	23	0	0	"0.2-2% of income should be changed to other term such as " world GDP" or "world income" because it is not clear whose income or what basis of the percentage. (THAILAND)
1577	SPM	11	23	0	0	Extend the range of loss of GDP to 6%, this is based on loss and damage assessments by recent events linked to climate change in Nicaragua (Nicaragua)
1578	SPM	11	23	11	23	Please specify/ explain what is meant by "losses between 0.2 and 2.0 % of income" (annual/ p. a. reduction of GDP?). Please add costs per year and aggregated costs. (GERMANY)
1579	SPM	11	26	11	26	Are this "The (estimation of) incremental costs...." please check. (GERMANY)
1580	SPM	11	26	11	26	The authors should consider replacing "between" with "among". (USA)
1581	SPM	11	26	11	27	This sentence would be much clearer if there was consistency in the units used (i.e. tonne of CO2 or tonne of carbon). A suggestion could be: 'The incremental economic impact of emitting a tonne of carbon (as carbon dioxide) lies between a few dollars and several hundreds of dollars per tonne.' (AUSTRALIA)
1582	SPM	11	26	11	27	The incremental...carbon. Please adapt the wording for an audience of policymakers. (NETHERLANDS)
1583	SPM	11	26	11	27	Request clarification. The sentence starting as "The incremental..." does not make sense due to "a tonne of carbon dioxide" on one hand and "per tonne of carbon" on the other hand in the same sentence. Consistent use of carbon unit is appreciated. (JAPAN)

#	Ch	From Page	From Line	To Page	To Line	Comment
1584	SPM	11	26	11	27	Could it be clarified if the " incremental economic impact of emitting a tonne of carbon dioxide " is the metric known as the social cost of carbon? Many policymakers will recognize this term and avoiding using it misses an opportunity to flag an important finding to them. If there are more than one metric for evaluating this impact, then that would also be useful to know. (CANADA)
1585	SPM	11	26	11	27	The text of this statement should be internally consistent since emissions are discussed in tonnes of CO2, but the costs are discussed in tonnes of carbon. Please revise the text for consistency. (USA)
1586	SPM	11	26	11	28	Please explain this equivalence more clearly. (NETHERLANDS)
1587	SPM	11	26	11	28	The language on the incremental economic impact of emitting a tonne of CO2 omits the most important piece of information that can be said about this question. Proposal: include here the language from Ch19 page 45, lines 20-24: 'A further source of uncertainty is whether and how the possibility of catastrophic damages is accounted for, which requires bounding potential losses with a parameter akin to the value of a statistical life (representing, essentially, willingness to pay to avoid human extinction). Without such a parameter, SCC estimates incorporating risk aversion and potential catastrophic impacts can be unboundedly high.' (UK)
1588	SPM	11	27	11	27	The authors should replace "lies between" with "is currently estimated to lie between" to reflect the fact that this estimate continues to be refined. (USA)
1589	SPM	11	28	0	0	Should this sentence say that larger values are estimated when using lower discount rates, rather than larger ranges? (CANADA)
1590	SPM	11	28	11	28	The last part of the sentence "with larger ranges for lower discount rates" lacks clarity. A clearer language might read such as: lower discount rates result in higher economic impacts and vice versa. (AUSTRIA)
1591	SPM	11	28	11	28	The authors should consider inserting "most" before "strongly", and add to the end of the statement: "...for lower discount rates, BUT ALSO WITH THE EXTENT TO WHICH THE BREADTH OF CLIMATE CHANGE IMPACTS ARE MONETIZED." (USA)
1592	SPM	11	30	11	46	This paragraph gives direct impacts from climate change on human health. It does not have a section on indirect influences (such as ecosystems providing ever new components for medicines and loss of ecosystems compromises on this service). In the following section on Human Security, indirect climate change consequences are mentioned. Please mention indirect impacts in the Human Health section as well, as climate change indirectly impacts human health and development i.e. by loss of ecosystem services -leading for instance to diminished potential to develop new medical remedies -, by increasing casualties in violent conflicts or by erosion of food security and increasing poverty and their respective health impacts, see Ch 11. (GERMANY)
1593	SPM	11	30	11	46	The para does not summarise the underlying chapter well. I am surprised at the lack of any comment on whether climate change risks increasing the potential for emerging diseases and pathogens (particularly zoonoses). The vectors will have a negative impact through changing pattern of disease and vector distribution. Extreme weather, including flooding, will have impact on human health, not just heatwaves. (UK)
1594	SPM	11	32	11	32	Replace "will" by "is projected to" and "problems" by "risks" to soften the statement and recognize the potential for adaptation to avoid the impacts from materializing. (NETHERLANDS)
1595	SPM	11	32	11	32	What applies after mid-century? Emergence of new health problems? (SWEDEN)
1596	SPM	11	32	11	32	Please consider changing "exacerbating" with a more understanding word, e.g. "intensifying". In addition is it possible to indicate how serious those impacts are? E.g. "major impacts"? (NORWAY)
1597	SPM	11	32	11	33	This statement is not clear. Does it refer to "health problems that already exist" in the affected region or anywhere in the world? In the former case, the "very high confidence" statement appears too strong, considering the unpredictability of disease outbreaks, including climate-sensitive diseases. (European Union)
1598	SPM	11	32	11	33	The authors cannot make such statements with definite certainty; on lines 32 and 33, "will" should be deleted and replaced with "is projected to". (USA)
1599	SPM	11	32	11	34	This sentence, which is basically two statements, refers to the second and fourth conclusion of the executive summary of chapter 11. However, the confidence statement 'high confidence' for the second part if this conclusion is too scattered in the main text to be directly linked to high confidence. Only in section 11.6.1.2 'increased likelihood of under-nutrition resulting from diminished food production in poor regions' the confidence statement is clearly mentioned. (NETHERLANDS)
1600	SPM	11	32	11	34	But there will also be positive effects in some regions (e.g. reduction in cold-related deaths). I realise the positives are mentioned later on, but to not mention them in bold at the top opens IPCC up to continued (and mostly unfair) accusations of cherry-picking doom facts. (UK)
1601	SPM	11	32	11	34	Please consider to split this bolded sentence into two bolded sentences and make them more comparable: e.g. "Until mid-century, climate change will impact [...]" and "Throughout the 21st century, climate change will lead [...]". (NORWAY)
1602	SPM	11	32	11	46	Although many parameters are discussed that may affect human health in a changing climate, there is no single reference for the strong relation between air quality and human health. I think this parameter should be included. (GREECE)
1603	SPM	11	32	11	46	In this conclusion the confidence statements should be formulated in a more consistent way with the executive summary of chapter 11. Examples include "greater likelihood of injury, disease, and death due to more intense heat waves and fires (very high confidence); increased likelihood of under-nutrition resulting from diminished food production in poor regions (high confidence); risks from lost work capacity and reduced labor productivity in vulnerable populations (high confidence); and increased risks from food- and water-borne diseases (very high confidence)." (NETHERLANDS)
1604	SPM	11	32	11	46	Please consider adding a sentence about the links between climate change (including climate-altering pollutants) and air quality issues, building on material from chapter 11. (BELGIUM)
1605	SPM	11	32	11	46	This paragraph does not provide very much information about the probability and likely extent of extreme heatwaves at different levels of climate change. Ch19 page 27 lines 29-30 contains a reference (to the Russian heatwave of 2010 becoming typical), which could be included here as an illustrative example. Alternatively, could there not be a reference to the section on extreme heatwaves in the World Bank report 'Turn Down the Heat'? (UK)
1606	SPM	11	33	11	33	The conclusion "... and climate change throughout the 21st century will lead to increases..." refers to the main text in chapter 11 based on "RCP scenarios until mid-century" rather than throughout the 21st century. This should be corrected. (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
1607	SPM	11	34	11	34	There is a mention of the impacts of climate change on human health in many regions. The text 'specially in developing countries' may be added after 'many regions'. (INDIA)
1608	SPM	11	34	11	38	In accordance with chapter/section 11.6.3. mental health should be mentioned here as well. (GERMANY)
1609	SPM	11	35	11	35	Remove ',' before 'and' (POLAND)
1610	SPM	11	36	11	36	Replace ';' by ',' (POLAND)
1611	SPM	11	36	11	36	please, better clarify what the "lost work" means ? (VIETNAM)
1612	SPM	11	37	11	37	Remove ';' (POLAND)
1613	SPM	11	37	11	38	The authors should consider mentioning the human health impacts of decreases in water quality and quantity (in addition to water-born diseases) (USA)
1614	SPM	11	38	11	39	Reduced impacts of vectorial diseases appear as a positive effect, but there is evidence that changes in the distribution of vector species might increase the risk of climate-sensitive vectorial diseases in many areas. Some recent observations (e.g. chikungunya virus in Italy) might be linked to these new risks. (European Union)
1615	SPM	11	38	11	39	In addition the positive effects of a modest improvement in cold-related mortality and morbidity in some areas due to fewer cold extreme, there is the additional risk that cold-related mortality and morbidity could increase in some areas due to lack of preparedness. A plausible theory is that what causes excessive death rates are just not extreme temperatures, but unusual temperatures, that is temperatures that people did not expect and were not prepared for. (UK)
1616	SPM	11	38	11	39	Add "(low confidence)" after "Positive effects will include modest improvements in cold-related mortality and morbidity in some areas due to fewer cold extremes"- according to Chapter 11, pg 3 ("Modest improvements in cold-related mortality and morbidity in some areas due to fewer cold extremes [low confidence], geographical shifts in food production, and reduced capacity of disease-carrying vectors due to exceedance of thermal thresholds [medium confidence]. These positive effects will be out-weighed, world-wide, by the magnitude and severity of the negative effects of climate change [high confidence]."). Same amendment needed in the TS, pg 24 (SWITZERLAND)
1617	SPM	11	38	11	41	It is to state that in absence of being provided with references, it is difficult to appreciate what is the source of this knowledge. It is rather well accepted among health scientists that one of the major impacts of climate change would increase and spr (INDIA)
1618	SPM	11	38	11	45	The authors cannot make such statements with definite certainty; on lines 38, 40 and 45, "will" should be deleted and replaced with "are projected to". (USA)
1619	SPM	11	39	11	39	We suggest to add the word geographical in the conclusion: "... due to fewer cold extremes, GEOGRAPHICAL shifts in food production..." The statement 'in some areas' is related to cold-related mortality and morbidity. But 'shifts in food production' critically depend on the geography, which should be added. (NETHERLANDS)
1620	SPM	11	39	11	39	Remove ',' before 'and' (POLAND)
1621	SPM	11	39	11	39	Suggest explaining what is meant by "reduced capacity of disease-carrying vectors". Also, are these vectors of food and water-borne disease or direct disease vectors? Some additional information is required for the reader to understand the increasing risk from food and water-borne diseases and the reduced risk from this reduced capacity of disease-carrying vectors. It would also be helpful to clarify regional difference as well; for example, in Northern latitudes, there may in an increase in vector-borne diseases. (CANADA)
1622	SPM	11	39	11	40	The only mention here of vector borne diseases is of reduced carrying capacity of vectors under the positive health impacts, implying that climate change will only have positive, beneficial impacts on vector-borne diseases. This is misleading and inconsistent with the text of the chapter, which lists numerous examples of increased habitat suitability and climate responsiveness of vector borne diseases that are negative impacts. The authors should add "vector-borne" to "Food and water borne" in line 37, perhaps with the qualifier (in some regions). (USA)
1623	SPM	11	40	11	40	Please replace "outweighed" by "overcompensated" as the sum of both negative and positive impacts is not zero. (GERMANY)
1624	SPM	11	40	11	41	Make it clear that this depends on the timescale and emissions scenario. (UK)
1625	SPM	11	41	0	46	It seems it would be useful to add sentence on improvement security of some social groups particularly vulnerable on climat change impact in urban areas (POLAND)
1626	SPM	11	41	0	46	Brazil appreciates the fact that the IPCC WGII AR5 SPM consolidates and highlights main impacts and sectors to be affected by climate change, representing a document more oriented to influence decision making, in particular the sections highlighting the importance of social protection and income distribution policies as adaptation measures to climate change, such as this section, which affirms that "the most effective adaptation measures for health in the near term are programs that implements basic public health measures such as provision of clean water and sanitation, secure essencial health care including vaccination and child health services, increase capacity for disaster preparedness and response, and alleviate poverty". (BRAZIL)
1627	SPM	11	41	11	43	Does this assessment consider acute and chronic health impacts, or chronic impacts only? What about measures to improve air quality? (CANADA)
1628	SPM	11	41	11	44	There is a significant difference between the wording of the SPM and the text of Chapter 11: The SPM reads "The most effective adaptation measures for health in the near-term are programs that implement basic public health measures.." The text reads: "Although...evidence of effectiveness in specifically reducing climate change impacts is currently lacking, there is abundant evidence of steps that may be taken to improve relevant public health functions." There are two critical differences. First, the SPM implies that there is evidence of effectiveness of adaptation, which the text clearly states there is not. Second, the SPM implies that the implementation of "basic" public health measures constitutes effective adaptation, while the text stresses "improving" public health functions. The fact is that what the SPM may be referring to as "basic" measures, like disease surveillance and environmental monitoring, are currently quite inadequate in most parts of the world (especially, but by no means limited to, developing countries), and improvements in these functions are needed not just for climate change, but as implied, also to close the current gap in public health protection. The authors should reword the SPM to reflect the lack of evidence at present as well as the need to improve, not just implement basic, health systems. (USA)
1629	SPM	11	43	11	43	Remove ',' before 'and' (POLAND)
1630	SPM	11	43	11	43	the word" response" should be changed to "reponses" (VIETNAM)

#	Ch	From Page	From Line	To Page	To Line	Comment
1631	SPM	11	44	0	0	Suggest clarifying whether this text refers to an increase in humidity, or just the current level of humidity and increased temperature. Also, suggest clarifying whether this was referring to relative humidity or specific humidity. If it is referring to an increase in relative humidity then this is inconsistent with WGI. Relative humidity is projected to stay constant or decrease over most land areas - WGI, section 12.4.5.1 "indicating with medium confidence that reductions in near-surface RH over many land areas are likely." Specific humidity by contrast is projected to increase. (CANADA)
1632	SPM	11	44	11	44	The text 'high temperature' may be replaced by '4-7 degree higher' (INDIA)
1633	SPM	11	44	11	44	Impacts of climate change on human health is only provided for RCP 8.5. However, it may also be provided for other RCP Scenarios. (INDIA)
1634	SPM	11	44	11	44	Is the finding exclusively for RCP8.5 and 2100, or are no other cases assessed? Would be good to clarify. (SWEDEN)
1635	SPM	11	44	11	46	If possible, please indicate which regions are most affected, and include estimates of population that currently live in these regions. (NORWAY)
1636	SPM	11	45	11	47	This sentence originates from the seventh conclusion of the ES of chapter 11. In this conclusion we read "raising doubt about the habitability of some areas , for parts of the year". This is a very powerful statement and we suggest to add it to the conclusion of the SPM. (NETHERLANDS)
1637	SPM	11	47	11	47	Please consider adding the paragraph that was in the SPM SOD page 17, line 44-48: "Reducing emissions of climate-altering pollutants [...]". (NORWAY)
1638	SPM	11	49	12	4	The underlying chapter highlights the importance of social networks and culture in adapting to climate variability and change. This notion is not included in the SPM. The authors should add a sentence to the first paragraph of this Human Security section that brings this out. (USA)
1639	SPM	11	49	12	16	One key issue addressed in the Human Security chapter, but not reflected in the SPM is the impact on and role of indigenous peoples and traditional knowledge. The authors should consider adding a paragraph about this to the SPM. (USA)
1640	SPM	11	50	11	50	on forms of migration that compromise human security: please specify shortly which forms of migration (type and geographical area) are meant. (NETHERLANDS)
1641	SPM	11	50	11	51	Please give any quantitative estimates of migration of people at 2°C and 4°C. Any further evidence of regions likely to experience large scale migration. (INDIA)
1642	SPM	11	50	11	51	forms of migration that compromise human security' - is this another word for 'environmental refugee'? Maybe the latter term is seen as simplistic and unacceptable, but the former is a bit vague. I would suggest emergency migration or perhaps involuntary migration. (UK)
1643	SPM	11	50	11	51	The use of 'will' is too confident and inappropriate. The literature notes that there are multiple drivers of migration and that climate change impacts are only one of that set - indeed rarely the primary driver. At least the word 'will' should be changed to 'could' and perhaps the word 'significant' should be removed. (UK)
1644	SPM	11	50	11	51	As written, this sentence says that it is the migration that will compromise human security. Presumably, the intent is to say that migration will be compromised in ways that could compromise human security. Suggest some revisions to clarify (e.g., could say "Migration over the 21st century will be impacted by climate change in ways that compromise human security (e.g. by.....(explain))". (CANADA)
1645	SPM	11	50	11	51	We suggest that you consider to first mention the impacts on human security and then the mechanism causing it "Climate change over the 21st century will have significant consequences for human security caused by impacts on forms of migration". (NORWAY)
1646	SPM	11	50	11	51	The authors cannot make such statements with definite certainty; on line 50, "will" should be deleted and replaced with "are projected to". Also, under what warming / emissions scenario(s) is this statement related to? This information needs to be presented. (USA)
1647	SPM	11	50	12	3	This statement is too strong when compared to the more tentative claims of Chapter 9. It would be better to argue in terms of likelihoods, e.g. "climate change might" or "climate change is likely to impact migration". (NETHERLANDS)
1648	SPM	11	50	12	3	This conclusion seems to be based on contradictions in the main text. In 9.3.3.3.1 page 12 (last paragraph) begins with: "It is difficult to establish a causal relationship between environmental degradation and migration." In the remainder of this section (page 13 chapter 9) it is stated that scientists predict environmental related migration, but other scientists state that this claim is "not supported by past experiences" and say that these predictions are "tentative at best". In contradiction, section 12.4.1.3 (page 13 chapter 12) states: "Long-term environmental change, sea-level rise, coastal erosion, and loss of agricultural productivity will have a significant impact on migration flows." And that doesn't seem to be in agreement with the chapter 9, but is in agreement with the conclusion in the SPM. So either the statement made in chapter 9 should be omitted from the main text, or the conclusion of the SPM should point out that there are parts in the chapter describing other studies that are not in agreement with the statement that is made. This could mean that the certainty qualifier should be altered. The SPM attributes high agreement to that statement, but this can be questioned if different studies contradict each other. The evidence qualifier is also questionable, since chapter 9 clearly states that the statement is not supported by past experiences. So the certainty qualifier should be altered to medium evidence, medium agreement and a few lines should be added to the conclusion in the SPM, where it's explained that there are studies which are not in agreement with this conclusion. Or the authors should refute the statements made in chapter 9 with scientific evidence and/or reasoning. (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
1649	SPM	11	50	12	14	Unable to find the expression of such paragraph 2 of Human Security from the underlying report. Would propose the alternative paragraph based on the ES (Ch12, p3, 1para). Some of the factors that increase the risk of violent conflict within states can be sensitive to climate change (medium agreement, medium evidence). The evidence on the effect of climate change and variability on violence is contested [12.5.1]. Although there is little agreement about direct causality, low per capita incomes, economic contraction, and inconsistent state institutions are associated with the incidence of violence [12.5.1]. These factors can be sensitive to climate change and variability. Poorly designed adaptation and mitigation strategies can increase the risk of violent conflict [12.5.2]. There is difference between current SPM, 3rd paragraph of "Human security", and ES and propose the alternative sentence based on the ES (Ch12, p3, 3para). Climate change will lead to new challenges to states and will increasingly shape both conditions of security and national security policies (medium agreement, medium evidence). Physical aspects of climate change, such as sea level rise, extreme events and hydrologic disruptions, pose major challenges to vital transport, water, and energy infrastructure [12.6]. Some states are experiencing major challenges to their territorial integrity, including, small island states and other states highly vulnerable to sea level rise [12.6.2]. Some trans boundary impacts of climate change, such as changes in sea ice, shared water resources, and the migration of fish stocks, have the potential to increase rivalry among states. The presence of robust institutions can manage many of these rivalries such that human security is not severely eroded [12.5.1, 12.6.2]. (JAPAN)
1650	SPM	11	50	12	14	We suggest deleting "and create new poverty pocket"(replace with "may impact poverty") "with increasing inequity" (line 21-22, p12). And add the sentence "At the same time, climate change is rarely the only factor that affects livelihood trajectories and poverty dynamics; climate change interacts with a multitude of non-climatic factors, which makes detection and attribution challenging"(the underlying text ch.13. ES, p.2) in order to reflect the underlying text Ch.13 Suggesting text is as below. Throughout the 21st century, climate change impacts will slow down economic growth and poverty reduction, further erode food security, and trigger new poverty traps, the latter particularly in urban areas and emerging hotspots of hunger (medium confidence). Climate change will exacerbate poverty in low and lower-middle income countries and may impact poverty in upper-middle- to high-income countries. At the same time, climate change is rarely the only factor that affects livelihood trajectories and poverty dynamics; climate change interacts with a multitude of non-climatic factors, which makes detection and attribution challenging In urban and rural areas, wage-labor-dependent poor households that are net buyers of food will be particularly affected due to food price increases, including in regions with high food insecurity and high inequality (particularly Africa), although the agricultural self-employed could benefit. Insurance programs, social protection measures, and disaster risk management may enhance long-term livelihood resilience among poor and marginalized people, if policies address multidimensional poverty. From the perspective of policy makers, it should be clearly described the actual content of inequity and how climate change contributes to exacerbating these in order to take appropriate actions; without this information action is difficult if not possible. We must place our understanding of inequity caused by climate change context within the complex, dynamic, and intersecting power relations and other structural and place-based causes of inequality (underlying report, ch.13. Box 13-1.) in order to take appropriate measures against it. There are only limited examples of inequity shown in the underlying report ch.13. (JAPAN)
1651	SPM	12	0	0	0	Table SPM.1 is too long and difficult to read, trying to capture too much information, probably not the best option for a SPM. (SWITZERLAND)
1652	SPM	12	1	0	0	Add segments of poverty and extreme poverty (Nicaragua)
1653	SPM	12	2	12	3	The part of the final sentence in this paragraph starting with "...but altered migration flows ..." is confusing and does not seem necessary. Consider deleting. (CANADA)
1654	SPM	12	3	0	0	Section 8.2 of chapter 8 has not been mentioned under footnote 57 of SPM, although "Human security" item of the SPM (FROM page 11 line 48 TO page 12 line 3) touches some problems of the urban population. (RUSSIAN FEDERATION)
1655	SPM	12	3	12	3	can also create risks as well as potential benefits for migrants and for sending and receiving regions and states' - this says everything and nothing at the same time. Presumably adaptation would be for states to accept people displaced by climate change. What kind of risks and benefits? (UK)
1656	SPM	12	5	0	8	Remove this paragraph since it is no longer the mandate of the IPCC to refer to political issues. (Nicaragua)
1657	SPM	12	5	12	5	Remove ',' before 'and' (POLAND)
1658	SPM	12	5	12	5	indirectly'? I'd suggest drought in this context would be fairly direct. (UK)
1659	SPM	12	5	12	6	Suggest revising to say "Climate change can indirectly increase risks from forms of violent conflict such as civil war, inter-group violence etc." (CANADA)
1660	SPM	12	5	12	7	This conclusion is made with medium confidence. The main text (section 19.4.2.2, page 23, first paragraph), however, states: "Violent conflict between individuals or groups arises for a variety of reasons (Section 12.5). Factors such as poverty and economic shocks that are associated with a higher risk of violent conflict are themselves sensitive to climate change and variability (high confidence; Sections 12.5.1, 12.5.2; 13.2)." So the main text attributes high confidence to this statement, the ES, TS and the SPM attribute medium confidence to this conclusion. Please clarify. (NETHERLANDS)
1661	SPM	12	5	12	7	Statement too confident in the language, given the complex nature of the relationship between climate change impacts and drivers of conflict and instability. Insert 'could' so it reads 'Climate change could indirectly...'. Also, there is no recognition of the literature highlighting where climate change impacts on natural resources can drive cooperation, not just conflict related tensions - this should be reflected. (UK)
1662	SPM	12	5	12	7	Please consider replacing "exacerbating" with "intensifying" or "amplifying". In addition, what is meant by "economic shocks"? Would it be appropriate to use "economic crisis"? (NORWAY)
1663	SPM	12	5	12	8	I am not sure that you can draw the conclusion that climate change may lead to increases in violent conflict on the basis of statistical association with current variability - as the latter does not demonstrate causation and in any case would only be one factor in driving conflict, which typically has multiple drivers of which climate is likely to be fairly small. Even where conflicts relate to access to natural resources, it is common to find other power, wealth and identity politics issues are more important. (UK)

#	Ch	From Page	From Line	To Page	To Line	Comment
1664	SPM	12	5	12	8	There are two conclusions regarding climate change and violent conflict in the SPM. Page 3 (lines 42-43) says that "violent conflict influences vulnerability to climate change" citing chapters 12.5, 19.4 and 19.6. Page 12 (lines 5-8) says that "climate change influences risks from violent conflict" citing chapters 12.5, 13.2 and 19.4. We have two concerns with these statements: 1) Both statements are based on language in the underlying chapters that is qualified by statements such as "emerging area of research" "modest bodies of research" and "very little research". Highlighting such new and uncertain scientific findings in the SPM seems premature. We suggest that these statements and the subsequent related text be removed. 2) If the authors chose to retain the comments, we suggest that they be consolidated and some discussion be provided for the seemingly circular relationship between these two factors. (USA)
1665	SPM	12	6	12	6	Add food security to the drivers. (UK)
1666	SPM	12	7	12	7	The word 'shocks' may be replaced by 'loss' (INDIA)
1667	SPM	12	7	12	7	It is suggested to delete "Statistical" before studies, because there are multiple lines of evidence that underpin that finding (according to chapter 12.7). (AUSTRIA)
1668	SPM	12	7	12	8	This conclusion is based on statistical studies, so there should be data present. Section 19.4.2.2, page 23 states: "Results from modern contexts (1950-2010) indicate that the frequency of violence between individuals rises 2.3% and the frequency of intergroup conflict rises 13.2% for each standard deviation change towards warmer temperatures (Hsiang et al., 2013)." It should be noted that these numbers are questionable, because no range is given. It's highly unlikely that a study produces robust data like this. Furthermore, the conclusion in the SPM states: "Statistical studies show that climate variability is significantly related...". It seems strange that medium confidence is attributed to a statement which claims to show a significant relation. So either the statement 'significantly' should be removed from this conclusion, or the confidence qualifier should be altered to high or very high confidence. And when the conclusion is based on statistical studies then explicitly show the data, or remove 'statistical studies' from the conclusion. (NETHERLANDS)
1669	SPM	12	8	0	0	It seems possible that this sentence could be used as an excuse for not developing any adaptation and mitigation strategies. Is it possible to clarify whether the risks associated with poor strategies are greater than the risks associated with no strategies? (CANADA)
1670	SPM	12	8	12	8	The last sentence is formulated in a very pessimistic way. Please reformulate it in a constructive way. How should adaptation and mitigation strategies be designed to potentially reduce risks from violent conflicts? Suggestion: "While well designed mitigation and adaptation strategies have the potential to reduce this risk, poorly designed strategies might even increase the risk." (GERMANY)
1671	SPM	12	8	12	8	Replace 'conflict' by 'conflicts' (POLAND)
1672	SPM	12	8	12	8	It is suggested to insert "also" before "risks" as those changes in risks are in addition to those imposed by climate change. (AUSTRIA)
1673	SPM	12	8	12	8	It seems important to add before the last sentence the following wording: "Although in general adaptation and mitigation activities reduce risks of climate change", poorly ..... (AUSTRIA)
1674	SPM	12	8	12	8	Please clarify your statement that poorly designed interventions can increase the risk of conflict. This is a big statement that some people will not have seen before. I suggest explaining it better and giving an example. (UK)
1675	SPM	12	8	12	8	"increase risks" should change to "increase the risks" (VIETNAM)
1676	SPM	12	10	12	10	The word 'increasingly' may be removed (INDIA)
1677	SPM	12	10	12	10	The words 'both conditions' may be added before the word 'national' (INDIA)
1678	SPM	12	10	12	11	Again, headline statement is over confident. Change 'will' to 'could'. The impact on national security policies will depend on our mitigation actions over the next 20 years and how they translate into climate change impacts. (UK)
1679	SPM	12	10	12	11	The authors cannot make such statements with definite certainty; on line 10, both instances where "will" appears should be deleted and replaced with "is projected to". (USA)
1680	SPM	12	10	12	14	Two topics are running into each other here, rivalry and sea level change. Suggest they should be separated out. (IRELAND)
1681	SPM	12	10	12	14	Of equal importance to climate driving tensions between states is that climate change may become a driver for greater cooperation - even in the absence of robust transboundary institutions. (UK)
1682	SPM	12	10	12	14	In this text you use the term "states" while in other parts of the text you use "countries" or "nations". Could this be changed or does "states" here mean something else, e.g. states within a country? (NORWAY)
1683	SPM	12	10	12	22	Replace "will" by "is projected to" (4 times) (NETHERLANDS)
1684	SPM	12	11	12	11	Add after "small-island states" ", states with small islands". (GREECE)
1685	SPM	12	11	12	12	Under what scenario and over what timescales is this statement related to? This information needs to be presented. (USA)
1686	SPM	12	11	12	14	Fish stock is too generic. A reference to chapter 7 can provide further specification to give this statement more depth and detail. (NETHERLANDS)
1687	SPM	12	14	12	14	The word 'conflict' may be deleted (INDIA)
1688	SPM	12	14	12	14	robust intergovernmental institutions (UK)
1689	SPM	12	14	12	14	Are the 'robust institutions' mentioned here intended to reference national institutions, or perhaps bilateral or multilateral international institutions? Suggest that some more detail here would be useful. (CANADA)
1690	SPM	12	16	12	26	Replace 'will' by 'could' - these effects are context specific and food price hikes are not only caused by climate change but also and especially by very rapidly growing demand from a limited resource base (UK)
1691	SPM	12	18	12	19	The key message in bold font should also include "increase income inequality" in order to make it consistent with the content in this paragraph. (THAILAND)
1692	SPM	12	18	12	20	The summary gives medium confidence to the statement that climate change will lead to a slow down in economic growth, but this differs from chapter 10 of the full report (see executive summary page 4 of chapter 10) where this statement is labelled limited evidence, high agreement where it is also stated that this is not well understood. Also the effects on food security are uncertain if the economy slows down because even if climate change affects the supply side of food production an economic slowdown would affect demand, so food prices could decrease. (UK)
1693	SPM	12	18	12	20	This is a big statement and needs some qualification. Perhaps qualify it as 'WITHOUT EFFECTIVE ADAPTATION, climate change impacts will slow down economic growth' (UK)

#	Ch	From Page	From Line	To Page	To Line	Comment
1694	SPM	12	18	12	20	This sentence is a bit confusing to us, please consider rephrasing it to e.g. "Throughout the 21st century, climate change will negatively impact poverty and food security; slow down economic growth; and initiate new poverty traps particularly in urban areas and emerging hotspots of hunger.". (NORWAY)
1695	SPM	12	18	12	22	Again, headline statement is over confident. Change 'will' to 'is likely to' - there are so many drivers of economic growth and poverty reduction and there is inherent uncertainty in the climate projections and their projected impacts. Softer language is more credible here. Similarly, in the followin sentence it should be clear that (a) we are referring to climate change 'impacts', not just climate change; and (b) that it 'could' rather than 'will'. (UK)
1696	SPM	12	18	12	26	It would useful to convey the evidence and agreement associated with statements of triggering / creating new poverty traps. Consider rephrasing to indicate that it could exacerbate existing, and potentially contribute to new, poverty traps. If current language about creating new poverty traps is retained, then suggest providing a clear example. (CANADA)
1697	SPM	12	18	12	26	The authors cannot make such statements with definite certainty; on lines 18, 20, and 22, "will" appears should be deleted and replaced with "is/are projected to". (USA)
1698	SPM	12	18	12	27	This paragraph seems very affirmative, when compared with previous paragraphs. It is at odds with the fact that its conclusion have only "medium confidence", and this seems rather confusing. It is suggested to replace the affirmations "climate change will" by expressions such as "climate change could", thus showing that we do not deal here with predictions, but with risk analysis. (FRANCE)
1699	SPM	12	18	18	20	Like other similar sentences earlier in the document, this sentence is too declarative. The text should be revised to more clearly reflect text from Chapter 13, which leads off on this topic with: "Observed evidence suggests that climate change and climate variability worsen existing povertv...." (USA)
1700	SPM	12	19	12	19	The text 'local area as well' may be added after 'urban areas' (INDIA)
1701	SPM	12	22	12	22	Instead of wage-labour dependent households, simply "net -food buyer households" might be more appropriate here. In rural areas, agricultural wage earners are stand to gain from increased prices of agricultural commodities (as their wage would increase). So rural wage earners and urban wage earners have different exposure to price hikes. (TURKEY)
1702	SPM	12	24	0	0	Include other areas of poverty and extreme poverty in the world such as Central America and add the urgency to capitalize on and put into implementation the international mechanism of losses and damages of Warsaw approved by the parties of the COP 19. (Nicaragua)
1703	SPM	12	24	12	24	This sentence is not well conceived and provides a wrong impression to policy makers. Agricultural self employed are vulnerable due to their dependence on crops and live stock, which are prone to climatic risk damages. Those involved in processing sector (INDIA)
1704	SPM	12	24	12	24	Reference to 'the agricultural self-employed could benefit' seems somewhat at odds with earlier discussion on rural areas (p. 11, lines 2 to 7) (UK)
1705	SPM	12	24	12	24	"particularly Africa" should be change to "particularly in Africa" (VIETNAM)
1706	SPM	12	26	12	26	here the "if" qualifier seems to be misplaced. Those programs mentioned at the beginning of the sentence would work to improve resilience regardless. And they normally address "multidimensional poverty" too. (TURKEY)
1707	SPM	12	26	12	26	multidimensional poverty' is a bit development-esque; I'm sure there must be a better, plain English way of describing it. (UK)
1708	SPM	12	28	0	0	Section B-3: The discussion on regional risks is minimal/not sufficient (this is much better presented in the TS). Favouring schematics over text does not necessarily attract the reader, particularly when too much / complex information is squeezed in a table (see comment on Table SPM.1). The way it currently stands, this section might not be given the proper attention by the reader. Also note that AR4 gave significantly more prominence to the discussion of regional risks. (SWITZERLAND)
1709	SPM	12	28	0	0	Section B-3: Proportionally, the discussion on "positive effects for some sectors in some loctions" is too large in the short paragraph addressing regional risks. Overall, it plays down the risk aspect. (SWITZERLAND)
1710	SPM	12	28	12	51	There are 9 chapters dedicated to regional impacts. Table SPM 1 is an excellent summary of key risks and adaptation potential for each region, however the table is long and potentially overwhelming to the policymaker. At least one key statement for each chapter should be included in the chapter text. For example, a statement for Africa could be crafted to read "Key risks for Africa include compounded stress on water resources, reduced cop productivity, and changes in the incidence and geographic range of vecor and water-borne diseases" as an introduction to the detailed information that is provided in Table SPM 1. Similar, concise statements can be made for each of the other regions. (USA)
1711	SPM	12	30	12	30	"dependent" should be changed to "depending" (VIETNAM)
1712	SPM	12	30	12	31	"Risks will vary....mitigation and adaption" - this is an incredibly broad sentence that I do not think adds value (UK)
1713	SPM	12	30	12	34	More information is needed in this section on regional risks to render the document more interesting to national stakeholders. Suggest taking some information from the accompanying Table SPM1 and inserting into the main text here. (IRELAND)
1714	SPM	12	31	12	31	Insert "Some of the key regional risks....", because several regional risks as identified with medium to high confidence in the TS [p. 27-39] are not presented explicitly in Table SPM 1. (GERMANY)
1715	SPM	12	31	12	32	Why are these "risks identified with medium to high confidence" only? Are there no risks with very high confidence, such as those associated with sea level rise and heat waves ? (European Union)
1716	SPM	12	32	12	32	Suggest replacing "will have positive effects" with "could have positive effects". Using the word "will" seems quite strong, and we assume that it would be difficult to judge the balance between a local positive effect on a sector and indirect negative effects on that sector due to effects on inputs and markets related to negative impacts on other sectors and locations. (CANADA)
1717	SPM	12	33	12	33	Please omit "more limited". (NETHERLANDS)
1718	SPM	12	33	12	33	timescale and emissions scenario dependent. (UK)
1719	SPM	12	34	12	35	Please consider drawing some main conclusions from table SPM.1. to emphasis both where the potential for adaptation is largest (sectors and regions) and where the potential is non-existing (sector and regions). (NORWAY)
1720	SPM	12	36	12	36	Table SPM.1; Entry for Asia: Adaptation issues and prospects, entry for risk to water and food shortages: the explanation here is sparse compared to other entries in the table and might be expanded. (AUSTRALIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1721	SPM	12	36	12	36	In Table SPM.1, Australasia Section: the risk to coral reefs and montane ecosystems is based on two separate risks from Table 25-8. It is not an accurate reflection of the information in Table 25-8 to combine the risks to coral reefs and montane ecosystems and present an average of the risk levels from each in the right-hand column (Risk for current and high adaptation) of Table SPM.1, Australasia Section. Suggest only including the risk to either coral reefs or montane ecosystems in Table SPM.1, Australasia Section - not both. (AUSTRALIA)
1722	SPM	12	36	12	36	In Table SPM.1; Entry for Ocean, second line (coral reefs), column on climate drivers. The ocean acidification icon should be included here, not in the third row (coastal inundation and habitat loss). (AUSTRALIA)
1723	SPM	12	36	12	36	'mitigation' is not found in Table SPM.1 on Page 17 for risk reduction. It is suggested to delete 'mitigation' in this sentence. (CHINA)
1724	SPM	12	36	12	50	Explain why for some regions 3 key risks were selected and others only 2. Figure caption should explain that the table is not intended to be a) comprehensive b) internally consistent in terms of selected issues and the way they are discussed. (European Union)
1725	SPM	12	36	12	50	The wording "longer-term era of climate options" and "near-term era of committed climate change" are difficult to understand and would help if there was more explanatory text for these words to ensure clarity of meaning and time reference. Further, confusion may stem from insertion of 'here, assess over...'. Does this infer that elsewhere in the SPM where near-term and longer-term are used, the time frame is different? (JAPAN)
1726	SPM	12	36	12	50	Table SPM.1 : It is important to clarify to what extent this table is comprehensive. Are the reported risks merely examples ? Are they all risks that could be "identified with medium to high confidence", as suggested in the text (but not in the caption, so consistency would be needed) ? For example in Europe, one might wonder if there are no substantial impacts on alpine ecosystems, or if those should not be part of the table due to a selection of risks that should be clarified ? (BELGIUM)
1727	SPM	12	36	12	50	Table SPM.1: It is suggested to include also a box explaining how risks add up (1 + 1 ≠ 2 but 1.4) and how the single largest risks dominates the overall risk, e.g. along a supply chain - which is reflected in the saying that a chain is only as strong as its weakest element). (AUSTRIA)
1728	SPM	12	36	12	50	Table SPM.1: There is no clarity about the comparability of risks within a given region and between regions. This needs to be clarified. (I assume that the absolute values of risks can only be compared within each single subfigure describing the change in risk for a given key risk in a given region). The caption in Table SPM.1 explains that risks are not comparable across regions whereas the caption for table TS.4 explains that risk levels are not comparable across sectors. Both explanations do make sense; therefore the caption probably should inform that risk levels are not comparable across sectors as well as across regions. (AUSTRIA)
1729	SPM	12	36	12	50	Table SPM.1: There is no clarity about the drivers of the increase in risk over time. Do the underlying calculations only reflect the current socio-economic situation and is the only variation the change in climate or do the calculations also reflect changes in welfare, population, and adaptive capacity? (AUSTRIA)
1730	SPM	12	36	12	50	Table SPM.1: This table is probably one of the most parts of the SPM. The details should be well reflected in the Technical Summary and the underlying report. One of those details relate to the question about assumptions on the limits of adaptation - has transformational adaptation been considered or not? Which kind of risks have been considered? only those that can be linked to a market value? What about risks related to values/interests without a market value? (AUSTRIA)
1731	SPM	12	36	12	50	Caption for Table SPM.1: If possible, suggest adding statement in the caption that indicates the scale of costs incurred and saved between continued current levels of adaptation and a highly adapted state. (CANADA)
1732	SPM	12	37	0	0	Caption to the Table SPM.1. It is written: "Risks have been identified based on assessment of the relevant scientific, technical and socioeconomic literature, as detailed in supporting chapter sections". Insert "and expert judgments" after "literature". Reason: three entries for Asia in the Table SPM.1 at pp. 17-18 are similar to the corresponding entries in the Table 24-1 of the AR5 FGD Chapter 24 Asia, pp. 62-63. AR5 FGD Chapter 24 Asia, p. 62, Capture to the Table 24-1: "Key risks are identified based on assessment of the literature and expert judgments...". (RUSSIAN FEDERATION)
1733	SPM	12	37	12	37	Please add "for different regions". (GERMANY)
1734	SPM	12	37	12	37	Remove ',' before 'and' (POLAND)
1735	SPM	12	37	12	38	The "Risks have been identified--- supporting chapter sections." states the obvious without really providing real information how the key regional risks were identified. This would be good to develop into a more informative statement. (SWEDEN)
1736	SPM	12	38	12	38	Explicitly state- very low-low-medium- medium/high- very high (or adapt caption of figure). (European Union)
1737	SPM	12	38	12	38	Caption for Table SPM.1, line 38: Suggest clarifying how the authors distinguish between the different levels of risk or what the different levels are linked to. Is risk quantified as a probability or as cost times probability, or is the level of risk judged on the basis of an established set of criteria? It would be useful if the table caption could say a few words on the approach to risk assessment and on the interpretation of the bars representing risk. For example, for a given key risk, is it reasonable to infer that a bar that is twice as long indicates twice the risk? (CANADA)
1738	SPM	12	39	12	39	Please clarify, why for the near-term timeframe in this context the period 2030-2040 is used, instead of 2016-2035 as it was defined for the projections in IPCC WG I - Table SPM.2. (GERMANY)
1739	SPM	12	39	12	39	Table SPM.1, text: Please consider defining in this sentence "near-term era of committed climate change" and "longer-term era of climate options". (NORWAY)
1740	SPM	12	40	12	41	Assessing the "full range of possible outcomes" might be impossible due to bounded rationality of social actors and uncertainties pertaining to climate change. It is uncertain whether this "full range" can be considered and whether we are presently discussing it (see also SPM p. 5 lines 8-10). (NETHERLANDS)
1741	SPM	12	42	12	42	Difficult to understand the meaning of "committed climate change" in this paragraph. Suggest this be replaced with "scenario-independent climate change". (JAPAN)
1742	SPM	12	42	12	43	Caption for Table SPM.1, lines 42-43: As noted in Canada's overall comments on the SPM, we have significant concerns with the use of the two terms "era of committed climate change" and "era of climate options", as their interpretation is misleading to policymakers and the terms have no basis in the existing scientific literature. We strongly recommend removing these terms and instead simply writing the representative time periods for considering near-term versus long-term impacts. Suggest this sentence simply say "For the near-term period (2030-2040), projected levels....For the longer-term period (2080-2100), risk levels are.....". (CANADA)



#	Ch	From Page	From Line	To Page	To Line	Comment
1743	SPM	12	42	12	43	Please indicate the temperature increase considered for 2030-2040. This also applies for the table SPM.1. (NORWAY)
1744	SPM	12	43	12	43	There may be differing opinions regarding use of term "emissions scenarios" for RCP scenarios, which are primarily concentration scenarios. To express more precisely, suggest replacing with "scenarios within the range of radiative forcing defined in the RCPs" (JAPAN)
1745	SPM	12	44	12	44	"potential role" may sound weaker than what the importance of mitigation is. Suggest "the potential of mitigation" or suchlike wording. (SWEDEN)
1746	SPM	12	46	12	48	It is better to put additional information and/or references for the potential for adaptation to reduce risk (REPUBLIC OF KOREA)
1747	SPM	12	47	12	48	Good if some clarification is provided on the IPCC's definition of 'adaptation limits' - given that they consider adaptation to be incremental changes, not longer term, larger scale transformational changes - A definition the UK disagrees with (as do most developed countries). (UK)
1748	SPM	12	48	0	0	To some extent, the phrase "Risk levels are not necessarily comparable, especially across regions, ..." is valid. However, it should be revised since it will have implications on the development of tools to measure risk and vulnerability as well as adaptation funding. If risk levels are not necessarily comparable, incorporating with coping capacity, it will be difficult to prioritize adaptation project. (THAILAND)
1749	SPM	12	48	12	48	Caption for Table SPM.1: Please clarify whether risk levels are linked to changes in (increases/decreases) or occurrences of the climate variables (extreme heat, extreme precipitation etc.) (CANADA)
1750	SPM	12	48	12	50	The following statement needs more explanation: "Risk levels are not necessarily comparable, especially across regions, because the assessment considers potential impacts and adaptation in different physical, biological and human systems across diverse regional contexts." If (1) risk is a function of vulnerability, exposure and hazards and (2) vulnerability is a function of sensitivity and adaptive capacity, why is it not be possible to compare the level of risk of one specific RFC over two geographical regions? In a well-specified empirical model physical, biological and human determinants would be covered. The sentence could be rephrased as follows: "Risk levels are not necessarily comparable, especially across regions, because the assessment considers potential impacts and adaptation in different physical, biological and human systems with many uncertain functional relationships." (GERMANY)
1751	SPM	12	49	12	49	Remove ',' before 'and' (POLAND)
1752	SPM	12	50	12	50	Please explain the meaning of the column heading "adaptation issues and prospects". (GERMANY)
1753	SPM	12	51	12	51	Please explain in an additional box, what the very important orange risk bars in the last column of Table SPM.1 can explain and what they cannot explain. For understanding the expert judgement of risks it is crucial to state that the orange bars giving the risks reflect the combined effects caused by all climatic drivers (not only the anthropogenic climate change) and that the bars are only comparable within one regional key risk between present, near-term and long-term. Please state clearly, that the risk level of water stress in Africa cannot be compared with the risk level of heat-related mortality in North America or the risk of biodiversity loss in the ocean. (GERMANY)
1754	SPM	13	0	14	0	It is odd to see this section on adaptation here, after you've already discussed some issues of adaptation and decision making in Section A. Readers will lose the shape of the arguments if the whole SPM is not restructured as outlined above. (UK)
1755	SPM	13	0	14	0	Section should give more detail on the barriers to adaptation, particularly in developing countries. It should also talk more about what is the same and different between adaptation and 'normal' decision making. It should also give more emphasis to the need to integrate adaptation into other areas of policy and planning, rather than treating it as a separate agenda (i.e. mainstreaming). (UK)
1756	SPM	13	0	14	0	Please highlight the priority role of avoiding locking in more vulnerable development pathways, and also, adapting long-lived investments. These are at least as important as low-regrets measures. (UK)
1757	SPM	13	0	14	0	Not enough is said about the global response to adaptation – while not explicit enough it is clear that most adaptation is inherently local. BUT there are some things where the spillover benefits justify doing some things at a more global level to ensure they happen at sufficient scale (e.g. crop research for resilient crops, climate modelling). (UK)
1758	SPM	13	0	14	0	Managing future risks is a very useful set of principles, but it is doubtful that the derivation is amenable to the scientific method of enquiry. What you have here is a growing consensus based on theoretical considerations and case studies. It is unlikely that there is much scientifically conducted 'impact evaluation' in this space. This section should therefore be accompanied by a caveat which stipulates this. (UK)
1759	SPM	13	2	14	13	It is noted that there is no clear statement in the SPM that adaptation will become sooner or later an issue for all regions during the 21st century, countries and sectors given that key climate related risks will increase in all continents, independent from mitigation and adaptation efforts. (AUSTRIA)
1760	SPM	13	4	11	7	Not sure 'adaptation as a means to build resilience' is a definition all would agree on, what about the extent to which adaptation means responding to and dealing with the aftermaths of climate change, impacts and extreme events? (UK)
1761	SPM	13	4	13	5	The word 'societies' may be removed and rather it needs to be included as 'in the society' in the end of the sentence i.e. after the word 'climate'. (INDIA)
1762	SPM	13	5	13	5	Please verify the positioning of the "limits of adaptation". In practice adaptation efforts might be easily restrained when costs exceed the benefits. (NETHERLANDS)
1763	SPM	13	5	13	5	The word 'extents' may be added before the word 'limits' (INDIA)
1764	SPM	13	5	13	5	Remove ',' before 'and' (POLAND)
1765	SPM	13	6	13	6	Remove ',' before 'and' (POLAND)
1766	SPM	13	6	13	7	Suggest revising to say "Figure SPM.8 provides an overview of responses for addressing climate-related risks". The central part of the figure just says "risks", which we suggest should be "climate-related risks" in this Figure and/or in Figure SPM.1. Adaptive responses to reduce vulnerability and exposure will not do anything to address climate change but will have an impact on climate related risks. (CANADA)
1767	SPM	13	9	13	10	Caption for Figure SPM.8: Suggest "climate change" should be changed to "climate-related risk". (CANADA)
1768	SPM	13	9	13	11	The Figure should, in the same sense as for WGIII, picture the link to WGI. Information on climate change has bearing on the "hazards"... (SWEDEN)

#	Ch	From Page	From Line	To Page	To Line	Comment
1769	SPM	13	13	0	0	Section C1: This section is very theoretical. Please consider to include information from case studies in order to highlight what is actually meant by the text page 13, line 34-38 (possibilities for low-regret measures) and page 13, line 47-49 (failure to adaptation). In the cross-chapter boxes pdf-file, there are many references to such case studies, e.g. Box CC-TC on Tropical cyclone disasters or in Box CC-EA Ecosystem-based approaches to adaptation - Emerging possibilities. (NORWAY)
1770	SPM	13	13	13	13	Provide any conclusion from the chapters on 'Maladaptation' due to current policies, programmes and the need to avoid them. (INDIA)
1771	SPM	13	13	14	13	Some key principles that are in Ch 15 and not reflected in the SPM and would need consideration: A) The national level plays a key role in adaptation planning and implementation, while adaptation responses have diverse processes and outcomes at the subnational and local levels (high agreement, robust evidence). Linkages with national and subnational levels of government, as well as the collaboration and participation of a broad range of stakeholders are important. Institutional dimensions in adaptation governance play a key role in promoting the transition from planning to implementation of adaptation. (high agreement, robust evidence). B) Adaptation planning and implementation are dynamic iterative learning processes recognizing the complementary role of adaptation strategies, plans and actions at different levels (national, subnational and local) (high agreement, robust evidence). C) Climate change adaptation (CCA) takes place as a response to multiple stresses, which highlights the need of connecting CCA with development strategies and plans, and disaster risk management (DRM). D) Combined approach: coupling adaptive improvements in infrastructure with efforts to improve ecosystem resilience, governance, community welfare, and development improve community resilience. Combining top-down and bottom-up approaches strengthens adaptation planning and implementation. E) Integration, while it remains a challenge, streamlines the adaptation planning and decision making process and embeds climate sensitive thinking in existing and new institutions and organizations. This can help avoid mismatches with the objectives of development planning, facilitates the blending of multiple funding streams and reduces the possibility of maladaptive actions. (European Union)
1772	SPM	13	13	14	13	It is strongly recommended to include in chapter C-1 also the following text from the TS: Integration of adaptation into planning and decision-making can promote synergies with development and reduce the possibility of maladaptive actions (robust evidence, high agreement). (AUSTRIA)
1773	SPM	13	13	14	13	It is also strongly recommended to include in chapter C-1 the following text from the TS: Indigenous, local, and traditional forms of knowledge are a major resource for adapting to climate change (robust evidence, high agreement). (AUSTRIA)
1774	SPM	13	15	0	16	The choice of adaptation strategies is highly dependent on cultural values of the peoples. Suggest to insert "including cultural values" after "context specific". (BRAZIL)
1775	SPM	13	15	13	15	The word "regionally" is not very precise unless the scale/space-dimension is further defined, e.g. interstate level, regions within states, or referring to crossborder ecosystems etc. (GERMANY)
1776	SPM	13	15	13	15	The authors should consider replacing "regionally and" because regionally can be interpreted in many different ways. (USA)
1777	SPM	13	15	13	15	"regionally" should be changed to "regional" (VIETNAM)
1778	SPM	13	15	13	16	This statement appears self-evident; one would expect to be assigned "very high confidence". (European Union)
1779	SPM	13	15	13	16	This sounds to be a general statement, why not use a higher confidence level. If higher confidence is not warranted, qualifications to the statement might be added. But we note that there seems to be more specific claims in the chapter (with potentially less concrete evidence available) seem to have been assigned higher confidence. (TURKEY)
1780	SPM	13	15	13	16	Suggest that this statement does not seem to need a confidence qualifier. Consider either removing or using evidence/agreement qualifiers. (CANADA)
1781	SPM	13	15	13	18	The means of "Regional" will be clarified as the perspective of report. Especially the definition of region is so important in the perspective of adaptation. (REPUBLIC OF KOREA)
1782	SPM	13	16	13	16	The "medium confidence" affixed to this finding would seem to be rather conservative. The finding would not seem to be very unexpected or controversial. (SWEDEN)
1783	SPM	13	16	13	16	The authors should consider whether this statement can be made with high confidence, not just medium confidence. (USA)
1784	SPM	13	17	13	18	'response to climate change' involves both adaptation and mitigation measures. Since Table SPM.2 elaborates on no more than adaptation, it is suggested to reword 'response' as 'adaptation', and remove 'mitigation' in the last line of Table SPM.2. (CHINA)
1785	SPM	13	20	13	20	Remove ',' before 'and' (POLAND)
1786	SPM	13	20	13	22	the term "entry points" suggests a point of application/policy action. However, figure 14,2-3 and table 14-1 do not clearly show that. (NETHERLANDS)
1787	SPM	13	20	13	22	This key does not describe the figure well, it is hard to tell what is an entry point, strategy and adaptation option. Instructions on a process to read the figure would be helpful (UK)
1788	SPM	13	24	13	24	Replace the word 'actors' with 'people' (IRELAND)
1789	SPM	13	24	13	25	Suggest that this statement does not seem to need a confidence qualifier. Consider either removing or using evidence/agreement qualifiers. (CANADA)
1790	SPM	13	24	13	27	Please insert a confidence reading for the sentence in bold. (JAPAN)
1791	SPM	13	24	13	32	The paragraph is about the governance of the adaptation action at all levels, with all actors, across scales, but the concept "governance" is missing. It is suggested to include this concept in the paragraph (SPAIN)
1792	SPM	13	24	13	32	Is there text in the background material that would describe the role and responsibilities of an individual in adaptation? (FINLAND)
1793	SPM	13	24	13	32	Can anything be said about regional and transboundary actors based on the underlying chapters? For example, transboundary aspects of water management and adaptation are mentioned in 24.4.1.5. The authors should consider bringing forward some of the findings from this section. (USA)
1794	SPM	13	26	13	26	Remove ',' before 'and' (POLAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
1795	SPM	13	26	13	38	"...achieving synergies with disaster risk reduction" - DRR is mentioned quite prominently here. The potential synergies between adaptation and development are mentioned in the next paragraph, but only in the last sentence. Please emphasize more prominently and clearly that a sustainable social and economic development contributes to adaptation. Please explain "resilience" in Box SPM.1 as it is a new term, difficult to understand and used more than 10 times in the SPM. (GERMANY)
1796	SPM	13	27	13	27	Please add a confidence level to this statement. (GERMANY)
1797	SPM	13	27	13	29	It is not clear that the task of scaling-up lies with local governments and the private sector; this is something that national and sub-national governments are in a much stronger position to make happen. Suggest reviewing and editing as needed. (CANADA)
1798	SPM	13	28	13	28	Meaning of 'scaling up adaptation of communities and households' is unclear. (AUSTRALIA)
1799	SPM	13	29	13	29	The text 'assume a coordinating role on' may be added in place of the word 'coordinate' (INDIA)
1800	SPM	13	29	13	31	Please consider including "networks" in this list so it reads: "National government can coordinate adaptation by local and regional government, creating legal frameworks, protecting vulnerable groups, and providing information, policy frameworks, networks, and financial support". (NORWAY)
1801	SPM	13	30	0	0	Suggest deleting the reference to legal frameworks, as these are rare with respect to adaptation, and they are already covered under the broader term "policy frameworks". (CANADA)
1802	SPM	13	30	0	0	Add subnational, regional and local levels such as autonomous regional governments and indigenous territorial governments of Nicaragua. (Nicaragua)
1803	SPM	13	30	13	30	Remove ',' before 'and' (POLAND)
1804	SPM	13	30	13	31	We may highlight the gender issue in this paragraph by adding women in the vulnerable groups, viz., protecting vulnerable groups, particularly women. (INDIA)
1805	SPM	13	31	13	31	Insert the words 'including public finances' after the word 'financial support' as for reasons that it constitutes an important source of funds. (INDIA)
1806	SPM	13	31	13	31	The text 'Adaptation governance plays key role to promote the transition from planning to implementation of adaptation' (INDIA)
1807	SPM	13	31	13	31	Remove ',' before 'and' (POLAND)
1808	SPM	13	31	13	31	"action" should be changed to "actions" (VIETNAM)
1809	SPM	13	31	13	32	Sentence needs rewording. Suggest "National and local government can also help to coordinate adaptation in the private sector (as well as influencing adaptation actions). (IRELAND)
1810	SPM	13	34	13	35	Please consider to describe how important this first step is, by e.g. stating "In many cases, an important first step towards [...]". (NORWAY)
1811	SPM	13	34	13	35	This statement seems to be a matter of fact yet it is given with a certainty measure. (USA)
1812	SPM	13	34	13	38	Although the issue of maladaptation is picked up in para starting line 47 on this page, the importance of avoiding maladaptation or commitments to undesirable path contingency might profitably be mentioned in this para too. (AUSTRALIA)
1813	SPM	13	34	13	38	Using 'resilience' to frame empirical phenomena is still under discussion, see for example Smith, A. and Stirling, A., 2010, The politics of social-ecological resilience and sustainable socio-technical transitions. Ecology & Society, vol. 15, iss. 1, art. 11. (NETHERLANDS)
1814	SPM	13	34	13	38	Wording is too vague; Needs more detail (IRELAND)
1815	SPM	13	34	13	38	Need to add a little explanation to different entry points cited in Table SPM.2. Mention the full sentence "entry points for looking at climate change risks" (IPCC, 2012). (ITALY)
1816	SPM	13	34	13	38	The recommendation here is that the first step towards adaptation should be activities that reduce vulnerability and through low regrets measures. I question whether there is a longer discussion as to what low regrets measures look like elsewhere in the report? Forthcoming UK research on 'low regrets' adaptation shows that there are some key characteristics of adaptation options that are likely to make them 'low regrets'. However the research will show that low regrets is very context specific - options that offer good value for money in one location will not always offer good value for money elsewhere. (UK)
1817	SPM	13	34	13	38	The authors should consider acknowledging the potentially competing interests (non-climate goals) and potential co-costs of adaptation actions. They could also acknowledge some of the challenges policymakers may encounter. See sections 17.2.3.1 and 17.2.7.2. (USA)
1818	SPM	13	34	13	38	The authors should consider inserting the word "health" in line 37 and citing section 11.7. This is clearly relevant to the main adaptation conclusions of the health chapter. (USA)
1819	SPM	13	36	13	36	replace 'available strategies' with "Robust strategies..." or "Robust decision-making strategies.." (IRELAND)
1820	SPM	13	37	13	37	Remove ',' before 'and' (POLAND)
1821	SPM	13	38	13	38	The word 'sustainable' may be added before 'development' (INDIA)
1822	SPM	13	38	13	38	Insert the following sentence in SPM P13 L38: „Adaptation strategies that also strengthen livelihoods, enhance development, and reduce poverty include improved social protection, improved water and land governance, enhanced water storage and services, greater involvement in planning, and elevated attention to urban and peri-urban areas heavily affected by migration of poor people.“ (TS P 31). This additional sentence clarifies the synergies between adaptation planning and development. (GERMANY)
1823	SPM	13	38	13	38	Please consider inserting "and reduce the possibility of maladaptive actions" (from TS p. 31, line 55-56) at the end of this sentence. (NORWAY)
1824	SPM	13	38	13	38	This statement could be strengthened if it were to be re-written as: "Integration of adaptation into planning and decision-making contributes to more effective and sustainable development". (USA)
1825	SPM	13	40	0	45	Brazil considers the recognition of constraints for implementation of adaptation measures particularly important, in particular in light of the purpose of the SPM to be oriented to help decision making. (BRAZIL)
1826	SPM	13	40	13	40	To improve the understanding of this sentence, please consider to replace "multiple" with "numerous" and "impede" with "obstruct" or "hinder". (NORWAY)
1827	SPM	13	40	13	41	Suggest this may be more of a factual statement and may not need a confidence qualifier. (CANADA)
1828	SPM	13	40	13	45	Rephrase into a positive recommendation to advance adaptation? (NETHERLANDS)
1829	SPM	13	40	13	45	We suggest that lack of awareness on climate change and limited knowledge on adaptation options and strategies be included as among the constraints (UNITED REPUBLIC OF TANZANIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1830	SPM	13	40	13	45	It is important to include the limitation imposed by the dominance of short-term factors in decision-making e.g. planning processes being typically 5 years, with very limited scope for inclusion of considerations playing out beyond 15 years as being of importance for strategic and flexible adaptation in mainstream planning (Addressed briefly in lines 47-50) (IRELAND)
1831	SPM	13	40	13	45	In this paragraph, in the Indian context, technological constraints is also an important issue. Hence, the word limited technological options may be added after the word limited financial and human resources. (INDIA)
1832	SPM	13	40	13	45	Insufficient or lacking public awareness raising activities might need to be added here as another factor that can also slow down or prevent adaptation planning and implementation activities. (GERMANY)
1833	SPM	13	40	13	45	It might be more useful if possible measures to overcome adaptation constraints, not only factors that constitute constraints, are provided in this paragraph. (JAPAN)
1834	SPM	13	40	13	45	This paragraph misses one of the key barriers for action on adaptation - that the economic or financial case for action has not been made effectively. (UK)
1835	SPM	13	40	13	45	Suggest that adding some information on overcoming constraints would be a useful complement to this paragraph. (CANADA)
1836	SPM	13	40	13	45	It would be very useful to include high-level points from Chapter 15 (page 2) on how institutional dimensions in adaptation governance play a key role in promoting the transition from planning to implementation. Chapter 15 highlights that there are a multitude of various institutional barriers; however, it also underscores the most common five: multilevel institutional coordination, champions, horizontal coordination, political dimensions, and formal/informal sector coordination. These were key messages in Chapter 15 that are worth highlighting in the SPM. (USA)
1837	SPM	13	41	13	32	Suggest deleting 'uncertainty about projected impacts and limited financial and human resources'. Uncertainty about the future is intrinsic and resources will always be limited. Alternatively reword to take this into account. (AUSTRALIA)
1838	SPM	13	41	13	41	This is a useful paragraph. However, the first item in the list is given as "uncertainty about projectd impacts". This may be not correct. This expression can abusively increase the impression, for the reader, that little is known about the impacts, which is not the point here. The point is : there are various scenarios in front of us, so that deciding and designing adaptation measures is not an easy task. Proposal : something like "a wide range of climate evolutions scenarios " or "a wide range of possible climate changes" (FRANCE)
1839	SPM	13	41	13	41	the word "about" should be replaced by "of" (VIETNAM)
1840	SPM	13	42	13	44	Replace ';' by ',' (POLAND)
1841	SPM	13	44	13	44	It is not only the aspect of limited tools to monitor adaptation effectiveness but going along with that also a lack of possibilities for "backward engineering" that can ensure improvement of adaptation measures in case the monitored effectiveness is sub-optimal. (GERMANY)
1842	SPM	13	44	13	44	Please give examples or define what are "adptation leaders and champions". Please consider to replace "champions" with "role models". (NORWAY)
1843	SPM	13	44	13	45	The sentence "understanding ... unrealistic expectations" is unclear. The concept of "social process" should be better explained as well as 'unrealistic expectations'. (European Union)
1844	SPM	13	45	13	45	It is suggested to add at the end of this paragraph "For developing countries, availability of resources and building adaptation capacity are particularly important". (CHINA)
1845	SPM	13	47	13	47	The authors should delete the first "or" in this line and insert "inaccurate" in its place; it's not just including discounting that can result in maladaptation - it's inaccurate discounting that can do that. (USA)
1846	SPM	13	47	13	48	Due to the repetition of "or", this sentence is unclear. Please consider to use ";" instead of ",". (NORWAY)
1847	SPM	13	47	13	49	Maladaptation is an important concept in the WGII report and should be defined more clearly. If not here, its addition to BOX SPM1 would be greatly appreciated. (JAPAN)
1848	SPM	13	47	13	49	Suggest adding examples of maladaptation. It will be easier for readers to understand this message if supported by concrete examples. Without examples, the second sentence is quite vague. (CANADA)
1849	SPM	13	48	13	48	Insert the following sentence in SPM P 13 L 48: „Narrow focus on quantifiable costs and benefits can bias decisions against the poor, against ecosystems, and against those in the future whose values can be excluded or are understated.“ (Source: TS P 32 para 3). This sentence emphasizes the meaning of non-monetary values which should be considered from the perspectives of sustainability (environmental protection, development, social justice). (GERMANY)
1850	SPM	13	48	13	48	Maladaptation can also refer to adapting to a scenario that doesn't materialise. Might be worth acknowledging this. (UK)
1851	SPM	13	49	13	49	The text 'High agreement, medium evidence' may be added after 'sectors' in square brackets (INDIA)
1852	SPM	14	0	14	0	The footnote 70 may be removed. (INDIA)
1853	SPM	14	1	14	2	This statement was high confidence in the SOD SPM. Now, it has become medium confidence. However, due to the word 'can' it must be high confidence. (NETHERLANDS)
1854	SPM	14	1	14	7	Given the complexity of adaptation, its actions need to be supported with a portfolio of measurements and tools, and the adaptation should be initiative and orderly. Planning, early warning, infrastructure, education and public awareness building, and public sector investment are all adaptation enablers. However, this paragraph only emphasizes the role of economic measures like insurance. It is suggested to reduce the current text of the paragraph and add words on other adaptation measures based on the underlying report (15.3, 15.4, 17.3.1, 17.4, 17.5) and Table SPM.2. (CHINA)
1855	SPM	14	1	14	7	Behavioural approaches are not just economic tools, there is a huge body of literature on the contributions from social, psychological etc. fields to behavioural approaches. Instruments for adaptation should also include information support, supporting climate evidence/research, and voluntary instruments. Another one that should be mentioned is risk monitoring/disclosure. One example is the UK Adaptation Reporting Power. (UK)
1856	SPM	14	1	14	8	This paragraph highlights the role that economic instruments can play in fostering adaptation, a correct statement. However, chapter 10 makes a slightly different point that should be reflected here: well-functioning markets can provide an important mechanism for reducing some negative impacts of climate change through the transmission of effects via price signals, even absent specific economic instruments. (USA)
1857	SPM	14	1	14	12	Please consider replacing "foster" with "improve" to make the sentence easier to understand. (NORWAY)

#	Ch	From Page	From Line	To Page	To Line	Comment
1858	SPM	14	2	14	2	A suggested addition would be, after 'loans', 'innovative financial instruments'. (European Union)
1859	SPM	14	2	14	2	..reducing impacts: consider replacing this by the following wording "..thus reducing impacts". This clarifies the causality. (NETHERLANDS)
1860	SPM	14	2	14	2	The underlying text does not support the claim that risk transfer mechanisms provide incentives for anticipating and reducing impacts. Quite the contrary: transfer mechanisms export the responsibility. The authors should revise the text to reflect the underlying chapter text more accurately. (USA)
1861	SPM	14	3	14	4	Please insert an example for "payments for environmental services" or delete the example for "resource pricing". Giving examples should be consistent among the mentioned different instruments. (GERMANY)
1862	SPM	14	3	14	4	Replace "(e.g. water markets)" by "(e.g. water, energy... pricing policies)" (FRANCE)
1863	SPM	14	4	14	4	Remove 'and' before 'regulations' (POLAND)
1864	SPM	14	4	14	4	Remove ',' before 'and' (POLAND)
1865	SPM	14	4	14	6	Risk financing "can also provide disincentives". Because of this can result in increased vulnerability and risk. This should be mentioned explicitly. (USA)
1866	SPM	14	5	14	5	insurance: please refer to the review suggestion given on sentence 50, page 5. (NETHERLANDS)
1867	SPM	14	5	14	5	Please change ".. risk pools, can contribute .." Rational: risk pools do not necessarily contribute to resilience. (GERMANY)
1868	SPM	14	6	14	6	Remove ',' before 'and' (POLAND)
1869	SPM	14	6	14	6	The words "cause market failure" sound too specific and negative ; this aspect would require more nuances and context ; thus, it is suggested to remove it. (FRANCE)
1870	SPM	14	6	14	7	Please change: "and climate variability, but this involves major design challenges so as to avoid providing disincentives, causing market failure and worsening equity situations. ...". Rational: The given insertion doesn't say why disincentives, market failure etc. happen. This is not a natural-law but a question of good governance/policy design. Please use the exact formulation from Ch 17 summary (P 3 para 5). (GERMANY)
1871	SPM	14	7	14	7	Please add a message concerning the possible role of the private sector. (GERMANY)
1872	SPM	14	7	14	7	Because of the role of the public sector as "insurer of last resort" financial stability of public budgets becomes an important factor for adaptation. This should be added. (GERMANY)
1873	SPM	14	9	14	11	This statement should be at least "high confidence", considering that the adaptation cost estimates in the next sentence are about an order of magnitude larger than the current adaptation funding. (European Union)
1874	SPM	14	9	14	13	The cost estimates can also be presented as percentages of GDP to give more weight to the matter. (NETHERLANDS)
1875	SPM	14	9	14	13	Please also mention the situation for developed countries. (NETHERLANDS)
1876	SPM	14	9	14	13	If assessed, information on adaptation costs in developed countries could be included. (SWEDEN)
1877	SPM	14	9	14	13	Only adaptation costs for developing countries are cited. Need to add estimates for developed countries to have a complete information. Also, add estimates and references to costs of inaction, which is of interest for policy makers. (ITALY)
1878	SPM	14	9	14	13	This is a bit sloppy and unclear I suggest rephrasing and clarifying. There is quite a bit of work on it but agree that findings are very preliminary (eg see OECD work on this or the Macroeconomics of climate change above gives a good review of the literature) (UK)
1879	SPM	14	9	14	13	This statement is not appropriate as the headline statement and is a risk to IPCC credibility and impartiality. Most worryingly, it makes an extrapolation of sufficiency of finance flows - which does not recognise the industry's methodological difficulties in tracking private finance for adaptation actions. Without knowing how much private money is flowing, it is impossible to say whether there is a 'funding gap' or not. This headline should stick to commenting on the currently available estimates of global costs of adaptation - not make political extrapolations. (UK)
1880	SPM	14	9	14	13	The revised sentence should include an example of where the major gaps in adaptation funding lie. (UK)
1881	SPM	14	9	14	13	Suggest that this paragraph needs to include more information on evidence, particularly with respect to current investment in adaptation, which cannot be assumed to be limited to programs that involve the word "adaptation" but that include all development activities / disaster risk management / infrastructure investment that involves a climate-resilient component. This is the only place in the SPM where findings with low confidence are presented, and that high confidence is only associated with the shortcomings of associated methods. Greater information on the full range of understanding would be helpful. (CANADA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1882	SPM	14	9	14	13	It is unclear why this paragraph is included in the SPM. Whatever is included in the SPM has status in policy discussions. The SPM should, therefore, only include robust findings. An examination of the underlying text in Chapter 17 relevant to this paragraph underscores that this is decidedly not the case. An examination of the underlying text (Chapter 17, Executive Summary, page 3) demonstrates that the statement used in the SPM regarding a funding gap for adaptation is supported by limited evidence. In addition, while Chapter 17 (p. 16) notes that, "...there is evidence of underinvestment in adaptation (UNDP, 2007) with global estimates of the need for adaptation funds variously estimated in the range of \$70-100 billion annually (World Bank, 2010), but with actual expenditures in 2011 estimated at \$244 million (Elbehri et al, 2011) and in 2012 estimated at \$395 million (Schalatek et al., 2012)", it provides no further elaboration to support the statement made in the SPM. The estimate of costs will as a general matter be related to the level of risk that decision makers are willing to take in the context of a specific policy and investment context, and often occurs at local levels. In addition, there is little confidence in the numbers cited (\$70-\$100 billion) in the SPM. The Executive Summary of Chapter 17 states that there is "strong evidence of important omissions and shortcomings in data and methods rendering these estimates highly preliminary (high confidence)..." Moreover, we question whether these figures are in fact an accurate statement about the range of cost estimates identified. Chapter 17 specifies that there are other global cost estimates. These estimates demonstrate a very wide range, from as low as \$4 billion (Stern, 2006) to as high as \$171 billion (UNFCCC 2007), and are in part influenced by non-climate related factors (Chapter 17, page 14, notes, for example, that "future development paths affect climate change impacts, and can alter estimates from positive to negative impacts or vice versa.") Rather than include findings that are supported by only limited evidence in the SPM, the authors should instead include other, more robust points from the underlying text in Chapter 17. For example, as noted in the Executive Summary of Chapter 17: "Economic thinking on adaptation has evolved from a focus on cost benefit analysis and identification of 'best economic' adaptations to the development of multi-metric evaluations including the risk and uncertainty dimensions in order to provide support to decision-makers". The SPM should also highlight that while local-level cost benefit analyses can help guide specific investment decisions, economic analysis is moving away from cost benefit analyses of adaptation to include consideration of non-market and non-monetary measures, risks, inequities, behavior biases, etc. This is a critical point because, as noted in Chapter 17, "a narrow focus on quantifiable costs and benefits can bias decisions against the poor and against ecosystems...". (USA)
1883	SPM	14	10	14	10	Adaptation deficit' appears to be used here in a different sense to elsewhere in the SPM (AUSTRALIA)
1884	SPM	14	11	0	0	Quantify and reflect upon the losses and economic damages as a consequence of not having the financial resources for the implementation of adaptation projects in developing countries (Nicaragua)
1885	SPM	14	11	14	11	Please add more specified information on adaptation costs, e. g., for specific regions, country groups or sectors. Further information should be added for example from Ch 17, or at least the TS. (GERMANY)
1886	SPM	14	11	14	12	We suggest deleting the low confidence sentence "The most...": this information is incomplete, as it references to global adaptation cost but it only mentions developing countries. We suggest keeping the last sentence with the following formulation: "Omissions and shortcomings in data and methods render the estimations on global adaptation costs at global level highly preliminary (high confidence)". (SPAIN)
1887	SPM	14	11	14	12	Clarify for which emissions scenario the estimates are? (UK)
1888	SPM	14	11	14	13	Considering the underlying report (17.4.2) and the World Bank report, it is suggested to add a sentence at the end of this paragraph "considering that the assessment does not include deficits of developing countries in adaptation, 70-100 billion may be an underestimate". (CHINA)
1889	SPM	14	11	14	13	Wondering if this statement with a low confidence level can be referred to as a key finding of AR5 WGII. Further consideration might be necessary since the referenced report from World Bank is a grey literature. Also, there seems to be an inconsistency with the underlying report. According to the Executive Summary of Chapter 17, the figure represents "per year globally" whereas in the SPM it states "per year in developing countries". Furthermore, it should be made clear that the range provided is based on only one reference. Suggest deletion or revision. A proposed revision is: One recent global adaptation cost estimate suggests a range of 70 to 100 US\$ billion per year globally from 2010 to 2050 (low confidence) but important omissions and shortcomings in data and methods render these estimates highly preliminary (high confidence). (JAPAN)
1890	SPM	14	11	14	13	This is very important and should be made as clear and complete as possible. Please clarify the context of these numbers : is it related to a specific socio-economic / climate scenario (could that refer to +2°C above pre-industrial already by 2050) ? Is it an average over the period, in \$ of a certain base year ? Are values available for lower or higher levels of warming ? It would also be useful to have estimates of residual costs, given adaptation. (BELGIUM)
1891	SPM	14	11	14	13	IPCC reports should synthesize studies. However, SPM presents a unique study from the World Bank concerning global adaptation cost (see 17.4.2 page 1380 of the full report). A focus on one specific study should not appear in the SPM (especially in the economy of adaptation, where a lot of methodological uncertainties exist, as mentioned in 17.4.1). Thus the two phrases should be deleted. (FRANCE)
1892	SPM	14	12	14	12	The wording is not the same in term of dates: while the executive summary from the full report notes "by 2050", SPM notes "from 2010 to 2050". (FRANCE)
1893	SPM	14	14	14	14	Since international cooperation and institutional arrangements in the area of adaptation are also important aspects of the Principles for Effective Adaptation, it is suggested to add a paragraph based on the underlying report (14.2.3, 14.2.5, 15.2.1, 15.2.3, 16.7, 17.2.1, 17.3.1 and 17.5.5) to describe such cooperation and arrangements including financing, technology transfer and capacity building. (CHINA)
1894	SPM	14	15	0	0	Section C-2: You should also consider to include Figure TS.13. in the SPM. We believe that the important section C-2 in the SPM really could be easier to grasp for the readers if this figure is included. (NORWAY)
1895	SPM	14	15	14	45	How is the notion of climate-resilient pathways mutually related to transformation? (JAPAN)
1896	SPM	14	15	14	45	It is strongly recommended to include in chapter C-2 the following text from the TS: Under all assessed scenarios for mitigation and adaptation, some risk from residual damages is unavoidable (very high confidence). Greater rates and magnitude of climate change increase the likelihood of exceeding adaptation limits that emerge from the interaction among climate change and biophysical and socioeconomic constraints (high confidence). Residual loss and damage will occur from climate change despite adaptive and mitigative action. (AUSTRIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1897	SPM	14	15	14	45	It is recommended to include in chapter C-2 the following text from the TS: Societal debates over risks from forced and reactive transformations as opposed to deliberate transitions to sustainability may place new and increased demands on governance structure at multiple levels to reconcile conflicting goals and visions for the future. (AUSTRIA)
1898	SPM	14	15	14	45	It is recommended to include in chapter C-2 the following text from the TS: Consideration of the interlinkages of energy, food/fiber, water, land use, and climate change has implications for security of supplies of energy, food, and water; adaptation and mitigation pathways; air pollution reduction; and health and economic impacts. This nexus is increasingly recognized as critical to effective climate-resilient-pathway decision making (medium evidence, high agreement). (AUSTRIA)
1899	SPM	14	15	14	45	It is strongly recommended to include figure 25-3 that describes adaptation as an iterative risk management process. This figure describes nicely and very clear the very important iterative risk management process. It should be definitely included; in addition the figure also helps to understand maladaptation. (AUSTRIA)
1900	SPM	14	17	0	20	The statements in this paragraph are very relevant and should not become weaker. (AUSTRIA)
1901	SPM	14	17	14	17	The text 'combine adaptation and mitigation' may be replaced by 'at global level will include both climate change adaptation and mitigation. At sub-global level will involve a range of action to potential for vulnerability' (INDIA)
1902	SPM	14	17	14	18	These two statements read more like contextual material or a definition and less like a key finding. The authors should consider adding a qualifier such as: "The most climate-resilient pathways are those sustainable development trajectories that....." (USA)
1903	SPM	14	17	14	19	This text sounds more like a definition than an assessment that warrants a confidence statement. (European Union)
1904	SPM	14	17	14	19	This text is more a definition of how 'resilient pathways' are defined. Its fits better in the Box on page 15. In general: the idea of resilient pathways comes from a UN report and the idea is not proven very well according to peer-reviewed literature. (NETHERLANDS)
1905	SPM	14	17	14	19	Highly appreciated that climate-resilient pathways are mentioned and that iterative approaches are highlighted. (SWITZERLAND)
1906	SPM	14	17	14	19	After "trajectories" please consider to rephrase to "and are a useful tool to ensure effective and sustained risk management related to the combination of adaptation and mitigation to [...]". Rationale: In this way the second sentence can be deleted and instead we suggest that you include the aspects from the TS (p. 32, line 50) as another bold sentence in this paragraph: "Delaying actions may reduce options for climate-resilient pathways in the future." (NORWAY)
1907	SPM	14	17	14	20	The heading in this paragraph is a definition and so doesn't need a confidence statement. The second part is very obvious and has been stated in many different ways throughout the assessment. This paragraph could usefully be deleted. (AUSTRALIA)
1908	SPM	14	17	14	20	It is suggested to quote Paragraph 7, ES, Chapter 20 of the underlying report in full, and add at the end of the paragraph "but both mitigation and adaptation are essential for climate change risk management at all scales". (CHINA)
1909	SPM	14	17	14	20	THIS IS ONE OF THE HIGH PRIORITY COMMENTS OF GERMANY: This paragraph addresses climate-resilient pathways and the link between adaptation and mitigation to reduce climate change and its impacts. It does however not mention that delaying action now may reduce options for climate resilient pathways in the future. Please insert the following sentence from the TS, P 32 at the end of the paragraph: „Delaying actions may reduce options for climate-resilient pathways in the future. See Figure TS.13.“ and include Figure TS.13 in the SPM. These additions clarify the message of the bold sentences given at the beginning of the paragraph in the SPM and they show the relation between climate change, non-climatic drivers and social development to achieve sustainable development through climate-resilient pathways. (GERMANY)
1910	SPM	14	18	14	18	The text 'climate change and its impacts' may be replaced by 'the impacts of climate change risk' (INDIA)
1911	SPM	14	19	14	19	The text 'and medium evidence' may be added after 'high confidence' (INDIA)
1912	SPM	14	19	14	20	Suggested rewording: 'The extent to which climate-resilient development pathways are needed is related fundamentally to international progress with climate change mitigation.' (UK)
1913	SPM	14	20	14	20	What is meant with the word 'fundamentally'? One should first know exactly what is reached by mitigation before using such strong wording. (NETHERLANDS)
1914	SPM	14	20	14	20	The text 'High confidence, medium evidence' may be added in the end of the sentence after 'climate change mitigation' in square brackets. (INDIA)
1915	SPM	14	20	14	20	The authors should consider replacing the word "fundamentally" with "directly". (USA)
1916	SPM	14	21	14	26	"Adaptation limits" is a critical concept in the WGII report and should be defined more clearly so as to ensure clear understanding of its use in WGII. If not here, its addition to BOX SPM1 would be greatly appreciated. (JAPAN)
1917	SPM	14	22	14	22	Please define what is meant by 'limits to adaptation' in this context. For example, later (line 40-41) you imply that transformational adaptation can cover some limits. Surely, it is not a real limit if transformational adaptation can overcome it. Perhaps you mean 'limits to marginal adaptation'? (UK)
1918	SPM	14	22	14	22	Exceeding limits in what way? Climate, or too much adaptation? (UK)
1919	SPM	14	22	14	23	Again, this headline should recognise the narrow definition that the IPCC gives to adaptation when it makes comments about 'exceeding adaptation limits'. It's own chapters note an extremely narrow definition based on incremental, short term action. Those chapters also note that limits are determined by an interaction with societal values, preferences and choices - not just capacities to adapt. Again IPCC is risking its credibility as impartial by creating headlines rather than taking a balanced view. (UK)
1920	SPM	14	22	14	24	This statement is rather obvious; one would expect to be assigned "very high confidence". (European Union)
1921	SPM	14	22	14	25	The concepts of "adaptation limits" (or limits to adaptation) is not well understood, so suggest it be explained more clearly. What does it mean when "limits to adaptation are exceeded"? Suggest providing examples. Is loss of territory exceeding limits to adaptation? If so, is relocation not adaptation? There is presumably some value consideration in this concept, but because it is becoming an increasingly important policy issue (for example, loss and damage discussions under the UNFCCC) it would be helpful to have a strong scientific foundation for those discussions. (CANADA)
1922	SPM	14	22	14	26	Consider adding a more positive undertone in this paragraph, focusing on building resilience to climate change. (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
1923	SPM	14	22	14	26	Expand this section. Add "limits to adaptation may be signaled by the inability to prevent intolerable risks to an actor's objectives and/or to the needs of an ecosystem" and "Limits to adaptation are context-specific and closely linked to cultural norms and societal values." and "There are both "soft" and "hard" limits to adaptation. For "soft" limits, there are opportunities in the future to alter limits and reduce risks, for example through the emergence of new technologies or changes in laws, institutions, or values. In contrast, "hard" limits are those where there are no reasonable prospects for avoiding intolerable risks." and "When limits of adaptation have been surpassed, there may be a need for transformational adaptation to change fundamental attributes of a system". (ITALY)
1924	SPM	14	22	14	26	It is unclear what message is contained in this paragraph beyond the obvious i.e. that large changes in climate will increase the risk that an adaptation measure may be exceeded. (UK)
1925	SPM	14	23	0	0	Is this text necessary? Greater climate change increases the likelihood of exceeding all limits to adaptation, surely. This complex phrase about the interaction of climate change with constraints is redundant. (AUSTRALIA)
1926	SPM	14	25	14	25	To say that climate resilient pathways are 'related fundamentally' to mitigation is vague. Need to say what the relationship is. (AUSTRALIA)
1927	SPM	14	25	14	25	This is the first mention of limits to adaptation. It would be better to explain what these are and give some examples. (AUSTRALIA)
1928	SPM	14	25	14	25	"In some parts of the world...":Some further details on where should be welcome (SPAIN)
1929	SPM	14	25	14	25	The phrase 'particularly if the limits to adaptation are exceeded' . This requires more explanation to be of benefit to policy makers. (IRELAND)
1930	SPM	14	25	14	25	The text 'In some parts of the world' may be specified and probably it would be North America. (INDIA)
1931	SPM	14	25	14	25	"particularly if the limits to adaptation are exceeded" - It would be very useful for authors to clarify if they mean the limits of current adaptation efforts are exceeded. When authors describe limits, do they mean limits when full potential for adaptation has been exhausted, or just current efforts, which may be minimal? It is important to make this point clear here. (USA)
1932	SPM	14	25	14	26	The last sentence of the para (" In some parts of the world ... address emerging change: risks instead of impacts ....basis for sustainable development.") is highly important and should introduce (in bold) a new para. After "...current failures" add:"including governance failures". Following this sentence please give the 8 to 10 most important challenges identified in the WGII report (e.g. decreasing food production and security, heat stress and risks for ecosystems) and explain the finding in more detail. Otherwise this important finding will remain unclear. (GERMANY)
1933	SPM	14	25	14	26	This is a very strong statement. Does the report document clear examples where failure to address climate change impacts absent other factors is eroding the basis for sustainable development? The text more accurately reflects instances where multiple stressors contribute to an inability to address emerging impacts, thereby challenging sustainable development. The authors should revise the text accordingly. (USA)
1934	SPM	14	28	14	28	Remove ',' before 'and' (POLAND)
1935	SPM	14	28	14	29	This paragraph on co-benefits seems to restrict attention to mitigation and adaptation. Please consider integrating co-benefits in the broader framework of sustainable development, building on material from chapter 20. (BELGIUM)
1936	SPM	14	28	14	29	Suggest that this statement does not seem to need a confidence qualifier. Consider either removing or using evidence/agreement qualifiers. (CANADA)
1937	SPM	14	28	14	36	Include the role of halting deforestation, agro-forestry, watershed programmes as examples of mitigation and adaptation synergy. (INDIA)
1938	SPM	14	28	14	36	This paragraph is better in-context under the section C-1. (JAPAN)
1939	SPM	14	28	14	36	This whole paragraph would probably be better placed first in section C2. (UK)
1940	SPM	14	28	14	36	The paragraph discussing co-benefits and synergies between mitigation and adaptation and alternative adaptation responses mentions "improved energy efficiency and cleaner energy sources, leading to reduced local emissions of health-damaging climate-altering air pollutants". This is the only reference to CAPs in the SPM. Considering that "the health impacts of non-CO2 CAPs are substantial globally" (11.5.3. Air Quality), this would need a bit more emphasis in my view (SWITZERLAND)
1941	SPM	14	29	14	29	Replace the word "alternative" by "different" (SWITZERLAND)
1942	SPM	14	31	14	31	"..biodiversity, but..": please replace the comma with a dot. Thus, the positive tone in the first part of the original sentence is retained. (NETHERLANDS)
1943	SPM	14	31	14	31	Remove ',' before 'and' (POLAND)
1944	SPM	14	31	14	31	Please consider adding "health" in this list, together with "water, energy, land-use, and biodiversity". (NORWAY)
1945	SPM	14	31	14	33	For instance..confidence).Please reflect on this example in this part of the text. (NETHERLANDS)



#	Ch	From Page	From Line	To Page	To Line	Comment
1946	SPM	14	32	0	33	The phrase "For instance, increasing bioenergy crop cultivation....reduce climate-related risks (high confidence)" should be deleted. It is a gross and biased generalization that do not reflect the current state of knowledge. Furthermore, Brazil regrets to acknowledge that WG-II has failed to follow the evolution of the discussions on bioenergy and biofuels under the WG-III and the SRREN. Several references along the WG-II report have a clear negative undertone towards bioenergy, outside the scope of adaptation measures. Possible negative aspects are emphasized, while positive implications are not at all considered. One example is the alleged competition between bioenergy and food production - Brazil's experience with large scale energy crop production proves that, with appropriate policies and agroecological practices, there is no competition with food crops but rather a complementation (as food/energy crops are planted alternatively for land management). Such references seem as a biased initiative from its very origin. Bioenergy is recognized as an important energy alternative that can provide significant reductions of GHG emissions thus contributing to combat climate change. In Brazil, the second largest producer of biofuels, there is a large body of evidence indicating that sugarcane ethanol and soybean biodiesel contribute to significant reductions in GHGs emissions and promotes sustainable development, which was completely ignored by the authors in this assessment report. There is no legitimate reason for singling out bioenergy negatively among other mitigation technologies; moreover, it would be essential to provide a basis for comparison with a report on the fossil alternative. Such biased references do not reflect a balanced science-based approach and thus compromises the credibility of IPCC. Hence, the WG-II report itself and its Technical Summary should be ammended appropriately to ensure consistency and balance throughout the AR-5. (BRAZIL)
1947	SPM	14	32	14	33	The sentence " For instance, increasing bioenergy crop cultivation posed risks to ecosystem and biodiversity,..." should be deleted or changed because it is true only in few cases such as deforestation or change from forest land to agricultural land. It is not necessary true in case the increase in cultivation occurs in agricultural lands or abandon fields (THAILAND)
1948	SPM	14	32	14	33	On the risks of biofuels (on "...ecosystems and biodiversity "), global food security should also be added. (TURKEY)
1949	SPM	14	33	14	33	For clarity, the statement should be revised to read: "...biodiversity, although biomass energy contributes to the mitigation of climate-related risks." As worded, it is clunky and unclear what the meaning of the statement is. (USA)
1950	SPM	14	34	14	35	The example of cleaner energy sources for mitigation with adaptation benefits is questionable, since renewable sources such as biofuels and hydropower can be highly vulnerable to climate change and hence have trade-offs rather than benefits. (NETHERLANDS)
1951	SPM	14	34	14	35	Regarding your example i): There is no clear adaptation component of this example. This should be made more explicit. (GERMANY)
1952	SPM	14	34	14	35	Suggest considering whether "adaptation" should be deleted here. For example, clean energy sources can help mitigate climate change, and have co-benefits in terms of leading to cleaner air, but why do clean energy sources help adaptation to climate change? (CANADA)
1953	SPM	14	34	14	35	Suggest adding "non-emitting" to the phrase about "cleaner energy sources". (CANADA)
1954	SPM	14	34	14	35	Need to possibly mention water efficiency as one of the adaptation co - benefits that interacts with mitigation and adaptation (SOUTH AFRICA)
1955	SPM	14	34	14	36	Two examples of mitigation actions with adaptation co-benefits are presented. It is very difficult to see the adaptation benefit in the first example, as the health co-benefit is not an adaptation co-benefit (and in some instances may be the driver behind the need for improved energy efficiency and cleaner energy sources). In the second example it is again difficult to see the link between reduced energy consumption and an adaptation co-benefit. Suggest the authors find some better, more convincing examples of mitigation actions with adaptation co-benefits. (NEW ZEALAND)
1956	SPM	14	34	14	36	The authors should include the example of mangrove (and other natural coastal buffer ecosystem like seagrass beds, etc.) preservation and expansion - as they serve both as a large natural carbon sink while also providing a number of important ecosystem services, including protection against inundation / extreme sea levels. (USA)
1957	SPM	14	35	14	35	We would suggest, reducing local emissions ...instead of leading to reduced emissions (MADAGASCAR)
1958	SPM	14	35	14	35	Please consider deleting "local" in front of emissions. (NORWAY)
1959	SPM	14	36	14	36	It should be noted that greening cities will not necessarily reduce water consumption (and in some cases may increase) and recycling water may increase energy consumption. I would have expected to see better examples in terms of better technology choice to reduce the requirements for pumping (e.g. moving away from conventional sewerage to modified sewers) and to improved efficiency through reduce water losses (although in some cities leaking pipes have positively contributed to greening). (UK)
1960	SPM	14	38	14	38	Remove ',' before 'and' (POLAND)
1961	SPM	14	38	14	39	Why is sustainable development only "promoted", rather than facilitated" as adaptation and mitigation ? Please consider rephrasing. (BELGIUM)
1962	SPM	14	38	14	39	For people from outside the field, this sentence is hard to understand. Is it only transformation resulting from changes in paradigms and goals that can facilitate adaption? What about transformation resulting from other things? The examples given in the paragraph, such as shifting the location of activities or introducing a new technology, do not sound like they necessarily involve a change in paradigm or goal. The glossary definition of transformation allows for transformation to occur without necessarily changing paradigms and goals. Suggest deleting the phrase "from changes in paradigms and goals". (CANADA)
1963	SPM	14	38	14	39	Please consider to replace "paradigms" with an easier and less scientific word. (NORWAY)
1964	SPM	14	38	14	45	The relationship between 'transformation' and 'adaptation' is unclear - to what extent and how do these concepts differ? (NETHERLANDS)
1965	SPM	14	38	14	45	Transformation can help adaptation - but adaptation to climate change is also an intricate part of transforming society towards sustainability. Therefore we suggest to add: "... to reconcile conflicting goals and visions for the future, including the mitigation of climate change and sustainable development.", see Ch 14, P5. (GERMANY)
1966	SPM	14	38	14	45	We should recognise that transformational patterns of development that build resilience to climate risks might have trade offs in the short run. For example there may be a trade off with economic growth in the short run. More evidence and analysis is needed to explore possible trade offs. (UK)
1967	SPM	14	38	14	45	How can transformational adaptation be a response to limits to adaptation? Surely (UK)

#	Ch	From Page	From Line	To Page	To Line	Comment
1968	SPM	14	38	14	45	they were not really limits if transformational adaptation can overcome them? (UK)
1969	SPM	14	38	14	45	Also, must define transformational adaptation (UK)
1970	SPM	14	38	14	45	This paragraph is very difficult to understand and heavy on jargon. There are four different uses of the word transformation: transformation, transformational adaptation, reactive transformation, forced transformation. Suggest that the authors review the paragraph overall. we have suggested specific ways to simplify sentences in other comments. (CANADA)
1971	SPM	14	38	14	45	The authors should provide definitions in the SPM of what they mean explicitly when they say "incremental adaptation" as well as "transformational adaptation". Chapter 16 provides some useful context for consideration. (USA)
1972	SPM	14	40	14	41	Transformational adaptation may be needed based on the level of mitigation success, not just limits of incremental adaptation. The text should be revised to reflect this fact. (USA)
1973	SPM	14	40	14	43	Suggest not using the phrase "transformational adaptation". It is easier for the reader to stick to using transformation as a noun. Suggest these sentences be revised to say "Opportunities for transformation are important considerations for decisions involving long life-or lead times , especially where there are known limits to adaptation. Examples would include.....". (CANADA)
1974	SPM	14	43	14	45	This sentence "Social debates over .. for the future" is difficult to understand and may not be understood by non-native English readers and the general public who are also readers of this. Request revision of this text using simpler and clearer language to accurately convey what the authors intend to say. (JAPAN)
1975	SPM	14	43	14	45	This sentence is jargon-heavy and hard to understand. The sentence reads 'Societal debates... place new and increased demands on governance structures to reconcile conflicting goals and visions for the future'. First, is it really the societal debates which place demands on governance structures, rather than the risks from forced and reactive transformations? Second, could 'governance structures' be replaced by 'governments' in this context? Third, are the demands on governance structures really to reconcile goals and visions for the future, rather than to mitigate the risks associated with the transformations? (CANADA)
1976	SPM	15	0	0	0	The definition of climate change does not include a reference to (human-induced) albedo changes, which can be relevant in this context. (NETHERLANDS)
1977	SPM	15	0	0	0	Box SPM.1: It is suggested to include also the definition of climate velocity in order to make the SPM more user-friendly. This term is used in the caption for figure SPM.5 (AUSTRIA)
1978	SPM	15	0	16	0	Display similarly to AR4: in a column rather than in prose (UK)
1979	SPM	15	0	16	0	Boxes SPM.1 and SPM.2 ideally might be moved to the start of the SPM text. 'Resilience' could also be defined in SPM.1 (UK)
1980	SPM	15	0	16	0	Hazard should be defined. (UK)
1981	SPM	15	1	0	0	Footnote 72 should be more precise: which definitions differ? The statement "...some definitions differ in breadth and focus from the definitions used in the AR4 and other IPCC reports" is overly vague, given the complicated terminology and definitions involved. It should thus be complemented by a cross-reference to an annex or table that lists the changes in definitions. The additional statement could be, e.g.: "A comparison of central terms and definitions used in AR4 and AR5 is provided in annex X". (GERMANY)
1982	SPM	15	1	15	1	Box SPM 1: Please consider to retitle the box to "Central terms for Understanding the Summary". Rationale: "central" seems more appropriate than "Critical". Please also consider to mention that there are more relevant terms defined in the Glossary of WGII. (NORWAY)
1983	SPM	15	1	15	37	Resilience is an important concept. Please add the explanation into this Box. (NETHERLANDS)
1984	SPM	15	1	15	37	The term 'hazards' should also be explained in box SPM.1. (NETHERLANDS)
1985	SPM	15	1	15	37	We suggest that Box SPM.1 on central concepts should include all the terms and elements that are in the figure SPM.1. Specifically, the term "Hazard" is missed (SPAIN)
1986	SPM	15	1	15	37	Please add resilience as it is a new term, difficult to understand and is used more than 10 times in the SPM. (GERMANY)
1987	SPM	15	1	15	37	Please include the word "mitigation" also into BoxSPM1. This expression is used in 2nd par. of A-3, but one should be sure that mitigation is everywhere understood as slowing down the changes and not as reduction of harmful consequences, which sometimes still happens. (HUNGARY)
1988	SPM	15	1	15	37	BOX SPM,1: Please also include definitions for maladaptation and adaptation limits. (JAPAN)
1989	SPM	15	1	15	37	I suggest to include to terms on the list: Adaptation deficit and resilience to ensure that the SPM has a consistent and clearly understood understanding of those two terms (UK)
1990	SPM	15	1	15	37	Box SPM 1: Given the fact that mitigation is mentioned several times in this SPM, "mitigation (of climate change)", as it is in the Glossary, should be considered included in this list - particularly as adaptation and mitigation in other instances often are used interchangeably (for example "this is done to mitigate the effects of climate change"). (NORWAY)
1991	SPM	15	1	15	37	Box SPM.1.: Resilience is lacking from the list of critical terms for understanding the SPM, although included in the TS. Please consider including it. This is a term that is often used in climate change effects and adaptation contexts, however it can be very unclear what is actually meant. The description used in the TS would illucidate how resilience is used in both the SPM and the whole WGII report, and therefore increase the readers' understanding of the report. (NORWAY)
1992	SPM	15	1	15	37	Box SPM.1: possibility to add a definition of hazards? (FRANCE)
1993	SPM	15	3	15	3	Box SPM.1: Climate change refers HERE to a change..... (FRANCE)
1994	SPM	15	3	15	4	what other e.g. can you give? It's not obvious what other methods would be used. (UK)
1995	SPM	15	3	15	37	Box SPM 1: We suggest to use alphabetical order. (GERMANY)
1996	SPM	15	4	15	4	In order to explain what climate properties are, you might consider to include an example so it reads "[...] variability of its properties (e.g. temperature, precipitation), and that persist [...]" (NORWAY)
1997	SPM	15	5	15	5	It would be helpful to also include some specific examples of natural internal processes. (NORWAY)
1998	SPM	15	7	15	11	We recommend that the difference between the IPCC and UNFCCC definitions be strengthened by replacing "Note that" with "Note that, by contrast," (line 7). This would make clearer that the UNFCCC definition is not the one used here. The distinction between them is important in the context of attribution. (CANADA)
1999	SPM	15	11	15	11	Remove ',' before 'and' (POLAND)

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2000	SPM	15	13	15	14	The description of "exposure" as the "presence" of something "that could be adversely affected" is very broad. It elicits the question "who or what affects"? In the IPCC 2001 definition, "exposure" is confined to "the nature and degree to which a system is exposed to significant climatic variations". Why do you analytically broaden the term "exposure" ? Does it mean that the understanding of "exposure" in the present IPCC also includes exposure of systems to, for example, 'financial crisis'? (GERMANY)
2001	SPM	15	13	15	14	Please consider to use semi-colon between first level elements that are listed, and use comma on sub-level listing. Rationale: This was done successfully in the SREX report, and it makes it much easier for the non-english readers to understand which elements that are linked together in sentences with comprehensive listing. The definition of exposure would then look like: "Exposure: The presence of people; livelihoods; species or ecosystems; environmental services and resources; infrastructure; or economic, social, or cultural assets in places that could be adversely affected." (NORWAY)
2002	SPM	15	13	15	17	Box SPM.1: new definitions of vulnerability and exposure are provided. It is worth to illustrate relevant references in scientific literature supporting these new definitions and their interrelations. (ITALY)
2003	SPM	15	14	0	0	Please skip "adversely", because exposure does not imply any judgement (negative or positive). (GERMANY)
2004	SPM	15	16	15	16	Please consider to replace "propensity" with "tendency" (NORWAY)
2005	SPM	15	16	15	17	We think that it would be useful to include an explanation about the reasons why the IPCC includes a new definition of "vulnerability" as compared to AR4 (and previous assessments). (BELGIUM)
2006	SPM	15	16	15	17	Why does the definition of vulnerability make no mention of exposure? (UK)
2007	SPM	15	16	15	17	This is a somewhat "negative" framing of the elements of vulnerability. A "capability to cope and adapt" can be either positive or negative; it should not be considered inherently negative or a deficit. The authors should revise the text accordingly. (USA)
2008	SPM	15	17	0	0	Suggest deleting "lack of". Vulnerability encompasses capacity to cope and adapt - whether that is an excess or deficit of capacity. (CANADA)
2009	SPM	15	17	15	17	Please consider to include a comma after "harm" (NORWAY)
2010	SPM	15	19	15	25	refers to both extreme weather and climate events. Consider defining both . (UK)
2011	SPM	15	20	0	0	The term "climate event" is not understandable given that "Climate" is defined as 'long term average weather' [...]. Suggest to skip words "and climate". (GERMANY)
2012	SPM	15	20	15	20	Please consider to include a comma after "climate events" (NORWAY)
2013	SPM	15	20	15	23	Please consider to use semi-colon for first level listing and comma for sub-level listing in the sentence that starts with "Impacts generally [...]". (NORWAY)
2014	SPM	15	21	15	21	Remove ',' before 'and' (POLAND)
2015	SPM	15	22	15	22	Remove ',' before 'and' (POLAND)
2016	SPM	15	25	15	25	Remove ',' before 'and' (POLAND)
2017	SPM	15	27	15	27	Throughout this SPM, the term "risk" is used with a negative connotation and contrasted with benefits or opportunities. We suggest that the glossary definition of risk should reflect this usage. We recommend the glossary definition could be revised to say "the potential for negative consequences.....etc.". Also, while we recognize that this definition of risk is the same as that used in the IPCC SREX, we question why the definition requires something at risk to have human value. Surely the risk to the species or system exists whether or not humans value it. (CANADA)
2018	SPM	15	27	15	29	The definition of risk included here is the often-quoted one, but is different from the one shown in Figure SPM.1. (p. 21) which follows Crichton (1999, 2001). It would help if the text here could explain this. (UK)
2019	SPM	15	27	15	29	The first and second sentence actually represents two very different perspectives of risk, the first sentence deals with consequences which is similar to impacts (see definition of impacts). Therefore this sentence should be moved to a new definition of "Potential impact" or alternatively moved to the existing definition of "Impacts". Hence we suggest that the definition of "Risk" is focused more on the risk related issues e.g. on the second and third sentence. The last sentence should be adjusted accordingly: "This report assesses potential impacts of anthropogenic climate change and climate-related risks." (NORWAY)
2020	SPM	15	28	0	0	"risk is often represented as probability...". What exactly do you mean? (actor is hidden behind passive voice) Does this refer to the SPM or to the articles reviewed in the WGII e.g.? (GERMANY)
2021	SPM	15	29	0	0	The statement "this report assesses climate-related risks" is not consistent with the risk concept that is presented in Figure SPM1 and your actual claim of analysis, compare e.g. section B, where you also analyse development related risks, i.e. for example how mitigation activities and development pathways influence risks, (P 6 L 30-31). Please clarify. (GERMANY)
2022	SPM	15	31	15	33	Suggest adding a sentence that addresses limits to adaptation. (CANADA)
2023	SPM	15	31	15	33	Is it possible to replace "its effect" with "its impacts" in the first and the last sentence? Rationale: Since impact are already defined above, or does effects mean something else in this context. If so you should define effects. (NORWAY)
2024	SPM	15	31	15	37	box SPM.1. In this box the terms adaptation and transformation are two separate terms. However, the glossary includes under adaptation incremental as well as transformational adaptation. The latter concept is the preferred one given the continuum between both forms of adaptation. As there is no clear border line between both forms of adaptation it is suggested to be coherent with respect to terminology between box SPM.1 and the glossary. Coherence could be achieved by including the full definition of adaptation in the box following the approach in the Technical Summary (Box TS.2). (AUSTRIA)
2025	SPM	15	35	15	37	Transformation also affects behaviour, this should be added. (GERMANY)
2026	SPM	15	35	15	37	We lack an explicit reference to humans, human communities and our role in transformation in this definition, please clarify. You should also consider to replace "paradigms" with an easier to understand and less scientific word or deleted since it seems to be covered by the rest of the list. (NORWAY)
2027	SPM	15	36	15	36	Remove ',' before 'and' (POLAND)
2028	SPM	15	36	15	37	This definition of transformation is identical to that presented in the Glossary, but is much more narrow in scope than the way the term is used in Table SPM.2. Most notably, Table SPM.2 correctly highlights the importance of transformation at the individual and collective (personal) scale related to changing assumptions, beliefs, values and worldviews. These are not captured in the glossary definition that is repeated in Box SPM.1. A possible solution would be to delete the second sentence of the definition. (CANADA)

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2029	SPM	15	36	15	37	Please consider to use semi-colon for first level listing and comma for sub-level listing in the sentence that starts with "Transformations can [...]". (NORWAY)
2030	SPM	15	38	15	38	Please consider adding a definition for 'weather' in contrast to 'climate'. Note: this distinction is not made in the Glossary either. (NETHERLANDS)
2031	SPM	15	39	15	54	Box SPM.2. We think it would be very helpful for the readers if you include a figure of confidence levels and a table that lists the terms indicating the assessed likelihood from the Technical summary Box TS.3 Figure 1 and Box TS.3. This was done successfully in the SREX report and makes the calibrated language terms more accesible and makes the substance in the SPM easier to understand for the readers. (NORWAY)
2032	SPM	15	39	16	4	The boxes should be in the beginning of the chapter because they are needed to understand the text. (FINLAND)
2033	SPM	15	41	15	41	Remove ',' before 'and' (POLAND)
2034	SPM	15	43	0	0	Robust implies judgment beyond a certain amount of evidence. (NETHERLANDS)
2035	SPM	15	45	0	0	In AR4 these terms were quantified (x out of y chance) - why keep it vague now? (NETHERLANDS)
2036	SPM	15	45	15	46	does high confidence infer a minimum degree of evidence quality/agreement? If so, can you please state this. (UK)
2037	SPM	15	45	15	46	Suggest that the wording explaining how confidence assessments are derived be worded to more closely match the AR5 uncertainty guidance. E.g., "Confidence synthesizes the author teams' judgments about the validity of findings as determined through evaluation of evidence and agreement." (CANADA)
2038	SPM	15	46	11	46	Are the confidence descriptors the same as in AR4? If so could we keep the descriptors (i.e. 'at least 9 out of 10 chances'); if not, can this be stated and justified. (UK)
2039	SPM	15	46	11	46	I would suggest adding a line saying how additional levels have been added compared to AR4 (i.e. 95-100%) as well as why some levels overlap, also a difference since AR4 (i.e. virtually certain: 99-100%, extremely likely 95 to also 100%). Again, explain justification for change (UK)
2040	SPM	15	49	15	51	Please use a table or bullet-points for better visualization. (GERMANY)
2041	SPM	16	1	16	1	Remove ',' before 'and' (POLAND)
2042	SPM	17	0	0	0	Table SPM.1: The Part of the Table referring to Europe; "Adaptation issues and prospects" 3rd line ". Add "Urban planning to reduce heat islands" and "Personalized health for vulnerable groups". (GREECE)
2043	SPM	17	0	0	0	There is no polar region section in Table. SPM.1, although respective underlying chapter 28 presents many serious impacts in polar regions, see respective statements in the chapter Executive Summary (pp. 2-3). The table should be updated. (RUSSIAN FEDERATION)
2044	SPM	17	0	0	0	Figures SPM.1 and SPM.8 are similar. Delete Figure SPM.1 (RUSSIAN FEDERATION)
2045	SPM	17	0	0	0	Table SPM.1: The symbol for "Extreme precipitation" in the second entry for Europe seems not appropriate and should be replaced by the symbol for "Drying trend". (European Union)
2046	SPM	17	0	0	0	Table SPM.1: The "medium confidence" in the third entry for Europe appears too low, considering that massive impacts from heat waves have already been observed in the last decade, and climate models agree on an increase in the severity and frequency of heat waves in the future. (European Union)
2047	SPM	17	0	0	0	Table SPM 1: In Asia, the climatic risks on water availability and quality is more important. This may be included. Water management at all levels is the most important factor for reducing the effects of droughts or heat waves. (INDIA)
2048	SPM	17	0	0	0	Table SPM.1: In general: 1)The table is very crucial for the understanding of the results of WGII, since it points out many important information in a very comprehensible and compact way. Therefore Table SPM.1 should be kept in any case. 2) Uncertainty is only stated in the first column. It should be added whenever possible, but at least in the far right one. 3) We suggest adding the global aspects given in the TS, table TS.4. In specific: 1) Europe: Does the statement on water restrictions also apply to the North? Not only extreme temperature and extreme precipitation, but also "warming trend" and "precipitation" are the climatic drivers for the risk "water restrictions". With respect to "extreme heat events": for the impact "crop productivity" and the adaptation aspect "wildfire management" extreme temperature is not the essential driver, so precipitation should be included or the risk "crop productivity" and the adaptation issue "wildfire management" should be excluded. As in Asia, also in Europe, urban planning is an adaptation option and heat-related mortality is one of the key risks. Please change first row, second column, first bullet point: The focus on "hard flood-protection" is not explicitly discussed in the underlying Ch 13. It is clear that so called "soft" measures do already foster adaptation in Europe, too. Suggestion: add a second bullet point: "experiences in soft flood-protection, like flood retention space and integrated water management policy" [23.7.1, 23.7.2, 23.7.3] 2) Africa - Adaptation issues and prospects - first row: conservation agriculture can further reduce runoff ... and increase rainwater capture and soil water-holding capacity (Ch 22 P 40, section 22.4.5.7.) and reduce pressure on water resources. It should thus be added to adaptation issues and prospects. 3) North America, heat-related human mortality: Why are the adaptations issues different from the ones in Asia and Europe? For both regions residential A/C could be an adaptation option (in Asia it is already in many regions as prevalent as in the US). 4) Asia - Adaptation issues and prospects - third row: Adaptation issues and prospects should be amended with more concrete examples; e.g. adaptive/integrated water resource management; water infrastructure development; water re-use; building water reservoirs (Ch 24 P 9, Section 42.4.1.5.). editorial: 1) The blue headline and the brown one should be exchanged for each region. (GERMANY)
2049	SPM	17	0	0	0	[In Table SPM1, Asia]In the column of "increased flooding leading to widespread damage to infrastructure and settlements in Asia (medium confidence)", "structural measures " is listed thirdly, however, many policy makers may believe that this is the first priority for adaptation. Especially for such a small country as Japan, there are cases where effective land use or selective relocation are not realistic measures. Considering this, suggest that, "structural measures" be listed firstly as follows: "Exposure reduction via structural measures, effective land-use planning and selective relocation." (JAPAN)
2050	SPM	17	0	0	0	[In Table SPM1, Asia]In the column of "increased flooding leading to widespread damage to infrastructure and settlements in Asia (medium confidence)", risk management measures which are listed in Table 2 are not included as examples at all. Therefore, "Construction of monitoring and early warning systems" and "Hazard & vulnerability mapping" should be added in this column as examples. (JAPAN)
2051	SPM	17	0	0	0	Remove ',' before 'and' (POLAND)
2052	SPM	17	0	0	0	Add Arctic (compare with list on page 4) (POLAND)
2053	SPM	17	0	0	0	We can enlarge the format of the Table SPM.1. , for example the widths of the 1st and 2nd columns (MADAGASCAR)

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2054	SPM	17	0	0	0	Table SPM.1, overall comment: Assuming it is trends in all the climate-related drivers which are the focus here, then while the confidence in projected changes in most of the variables shown is relatively high, the confidence for projected trends in 'Damaging cyclones' is relatively low, based on the WGI assessment. For example, in WGI, section 12.4.4.3 'Substantial uncertainty and thus low confidence remains in projecting changes in Northern Hemisphere winter storm tracks, especially for the North Atlantic basin.' and in WGI, Table SPM.1 'Increases in intense tropical cyclone activity' are 'More likely than not in the Western North Pacific and North Atlantic'. As currently formulated the table might give the impression that increases in damaging cyclones are projected with high confidence. Suggest revising. (CANADA)
2055	SPM	17	0	0	0	Table SPM.1, page 17, last row: Assessment of medium present-day risk of increased flooding leading to widespread damage to infrastructure and settlements in Asia does not appear to be supported by Section 24.4 of the underlying chapter. The only statement in that section regarding attribution of flood changes or their impacts to climate change seems to be 'Severe floods in Mumbai in 2005 have been attributed to both climatic factors and non-climatic factors'. This does not have any supporting references and does not refer to the impacts of the flooding. Suggest reviewing. (CANADA)
2056	SPM	17	0	0	0	Table SPM 1. "Damaging ciclone " is nor clear if it only refers to a troppical cyclone" or also includes " estra tropical cyclones" and other types of cyclonic circulation (CHILE)
2057	SPM	17	0	0	0	Table SPM.1. We lack information about "Polar region" as it was in the SOD. Please consider to reinstall this text. (NORWAY)
2058	SPM	17	0	0	0	Table SPM.1. River basin flooding is highlighted as a key risk for Europe. But stormwater flooding urban areas following more frequent and more intense extreme precipitation events poses important economic risks and health risks also outside river basins, ref. Chapter 23 and Box CC-KR A Selection of the Hazards, Key Vulnerabilities, Key Risks, and Emergent Risks Identified in the WGII Contribution to the Fifth Assessment Report. Please consider reflecting this in table SPM. 1, for example by adjusting the relevant text on key risks for Europe as follows: "Increased economic losses and people affected by flooding in urban areas, river basins and coasts, driven by increasing urbanization and by increasing sea level, rainfall extremes and peak river discharge." (NORWAY)
2059	SPM	17	0	0	0	Table SPM.1. Last column, "Present, Near-term (2030-2040)". Please, indicate the temperature increase used in the scenario for the near- term period (2030-2040) as well as present. (NORWAY)
2060	SPM	17	0	0	0	Table SPM.1. Africa, adaptation issues and prospects, second row, last bullet point: Is it not relevant to strengthen the institutional capacity at national level in Africa? It seems relevant to include national level in this statement. (NORWAY)
2061	SPM	17	0	0	0	Table SPM.1. Africa, adaptation issues and prospects, third row, first bullet point: Which development goal is made reference to in the table? Is it the UN millennium development goals? If so, please include this in the text. (NORWAY)
2062	SPM	17	0	0	0	Table SPM.1. Europe, adaptation issues and prospects, third row, third bullet point: please consider emphasising the co-benefits of improving air quality on climate, for example " [...] to improve air quality, with co- benefits on climate". (NORWAY)
2063	SPM	17	0	0	0	Table SPM 1. Far right column: Please consider to replace "Risk for current and high adaptation" with "Risk level with current and high adaptation". (NORWAY)
2064	SPM	17	0	0	0	Table SPM 1: this is a very important table which includes a lot of information not otherwise found in the text. It has become very good (improved since last hearing). Still, the table could be improved by adding Table TS.4. as the first "part" of the table - presenting global risks in a comprehensive and accessible way, in addition to the different regions. (NORWAY)
2065	SPM	17	0	0	0	Tale SPM.1. This table is very helpful for giving the overview in each region. But, some minor editorial changes are needed to make it more useful, readable and understandable for policymakers. Key risk needs to be sorted in same order for each geographical region. Please be consistent for the entire table. Please consider if the "Supporting ch. sections" really are needed as a coulumn. We believe this information could be presented to the reader either in the end of each individual key risk or as footnotes. (NORWAY)
2066	SPM	17	0	0	0	Table SPM.1. Please consider adding a keyword for each key risk. Rationale: As it is presently done the reader needs to read a lot of text to understand the risk that are described. One way is to include another column to the far left with appropriate keyword or write it in bold before the text in the key risk. For example the first keyword for Africa could be "water resourses". (NORWAY)
2067	SPM	17	0	0	0	In the second box mentionning key risks in Africa, the SPM mentions risks in reduced crop productivity and increased pest and disease damages as high confidence. But when looking at the regional chapter in Africa, only the reduced crop production is of high confidence while the risk of increased pest and disease is of low confidence. (FRANCE)
2068	SPM	17	0	17	0	Table SPM.1, the last column is difficult to interpret. In some regions and sectors, the potential for adaptation to reduce risk leads to the same risk level for global mean temperature increase of 2°C and 4°C but, at what cost?. We also believe that the title "risk for current and high adaptation" is not clear. We would prefer something along the lines of "risks depending on time and intensity of adaptation" (SPAIN)
2069	SPM	17	0	17	0	Table SPM 1. Under the heading "Europe", first key risk: Since sea level rise leads to increased coastal erosion which leads to increased flooding we suggest a minor addition to the text: "affected by flooding of river basins, coast and increased erosion of coasts, driven by.." (DENMARK)
2070	SPM	17	0	17	0	Table SPM 1 has a very generalised description on the key risks for Europe; risks vary from southern to northern Europe which is not reflected in the table (DENMARK)
2071	SPM	17	0	17	0	Table SPM 1. Missing info on Arctic and Global risks. Suggest to include the information in Table TS.4. (DENMARK)
2072	SPM	17	0	17	0	Table SPM1: Add : "Vulnerable areas and households" in Section Asia Column 2 on Adaptation Issues and Prospects (3rd Bullet) (INDIA)

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2073	SPM	17	0	17	0	Table SPM.1 (Asia). Considering the massive damage due to flood/storm surge in Asia, (i.e. in the Philippines in November and in Oshima and other parts of Japan, which was exacerbated by the combination of typhoon and landslides), some may think current risk are higher than medium (with current adaptation), indicated on the orange bar for "Present", in the first column of "Risk for current and high adaptation" for Asia. Underlining report (Ch.24, p.62, L2) says the assessment is partially based on expert judgment; clarification is desired on how this assessment is made (in terms of logics behind it and methods used) in the explanation of the Table. Also, in this Table, is it possible to compare within the same area? Current draft says the comparison between the same risk category in different areas is not possible, but since such info is important, would it be possible to make improvements? (JAPAN)
2074	SPM	17	0	17	0	Table SPM 1, second line about Europe : there is no explicit mention of a trend towards drying / more droughts in southern Europe - could you check that this does not need to be added ? (possibly with a contribution to wildfires) (BELGIUM)
2075	SPM	17	0	17	0	Table SPM 1, Europe : the long-term risk on water resources and economic losses from extreme events seems to be the same for a warming of 2°C and 4°C. Could you please check that this is accurate ? It would then be necessary to provide information on the costs - are they substantially higher at 4°C ? (BELGIUM)
2076	SPM	17	0	17	0	Table SPM.1, Legend: The labelling of the legend at the top of the table appears inconsistent. Whereas some aspects are described as trends (e.g., 'warming trend', 'drying trend', 'ocean acidification'), others are not (e.g., 'extreme temperature', 'damaging cyclone', 'snow cover', 'carbon dioxide concentration'). Is it intentional that trends are only considered for three of the variables, while for all the other variables only the variability or current mean state which is considered? Or are trends considered in all variables? If it's the latter then suggest either putting 'trend' in all the labels or omit it from all the labels and put it in the legend title. (CANADA)
2077	SPM	17	0	17	0	The authors need to provide the table with greater consistency in terms of detail provided between regional subsections. Also, under the Key risk column, the authors should remove references to names of regions within regional sections as they are superfluous, e.g. reference to "in Asia" in first item under Asia subsection. (USA)
2078	SPM	17	0	17	0	in the table SPM 1: Africa session: Adaptation issues and prospects for the key risk "Compounded stress on water resources...": should add 1 more adaptation prospect: encouraging the development of advanced technologies and the awareness of using reused wastewater (VIETNAM)
2079	SPM	17	0	17	0	in the table SPM 1: Asia: Adaptation issues and prospects for the key risk "increased flooding leading to...in Asia", should add 2 more adaptation issues: 1. developing early flood warning system and 2. low cost adaptive measures for flood (VIETNAM)
2080	SPM	17	0	18	0	Table SPM.1.: We appreciate the untiring efforts that have been put in revising the table used in AR5 WGII SOD but would like to point out that more could be elaborated on Asia. Would also like to request five bullets for Asia, considering the vast area and large population, and thus diversity, covered by the Asian continent. Some suggestions are: a) Additional emphasis on increased coastal vulnerability due to sea-level-rise for "Increased flooding leading to widespread damage to infrastructure and settlements in Asia": Assistance to vulnerable sectors and households, E.G., IN LOW ELEVATION COASTAL ZONES THAT ARE PARTICULARLY AT RISK FROM CLIMATE CHANGE HAZARDS, INCLUDING SEA-LEVEL RISE, STORM SURGES AND TYPHOONS. b) Additional examples of adaptation issues and prospects for "Increased risk of heat-related mortality AND VECTOR-BORNE DISEASES: Development of sustainable cities with fewer fossil-fuel driven vehicles and with more trees and greenery / New work practices to avoid heat stress among outdoor workers/ increased risk of diarrheal diseases, dengue fever and malaria c) Additional examples of adaptation issues and prospects for "Increased risk of drought-related water and food shortage causing malnutrition": Increased water demand due to growing population and irrigated agriculture (Chapter 24 P.8) / Unavailability of water accompanied by degradation of water quality due to climate change as well as human activities. (Ch. 24, P8) / Developing adaptive/integrated water resource management (Ch. 24, P9) d) Biodiversity loss is also a critical issue in Asia and therefore suggest that it be included in table. A suggested key risk is: Impact on marine biodiversity due to rising water temperature and ocean acidification. Suggested adaptation risks and prospects are: Creating marine protected areas / Increased navigability of Arctic Ocean suggests need for revision of environmental regulations to minimize risk of marine pollution / Impacts on marine productivity due in part to loss of coral reefs and redistribution of species / Maintaining or restoring natural shorelines where possible e) Food security is another critical issue in Asia and suggest that it also be included. A suggested key risk is: Reduced marine and terrestrial food production with negative impacts on food security. Suggested adaptation risks and prospects are: Global fisheries and aquaculture, as well as rice production are dominated by Asia and also a vital component of regional livelihoods / indigenous and local adaptation strategies / adaptation options including early planting, fixing variety growing duration, late-planting (JAPAN)
2081	SPM	17	0	19	0	The methodology used to assess the "potential for adaptation to reduce risk" is not really explained and can be subject to differences in interpretation. Knowledge gaps are such that it seems very unlikely we can identify with the level of precision suggested in the bar charts the potential impacts of adaptation on mitigating the risks of climate change. The bar charts should at least reflect uncertainty levels regarding expected impacts of climate change, in particular as regards the warming scenarios considered, and expected benefits associated with adaptation. Some conclusions one could reach watching at this graphs for Europe: a) residual impacts in water sector might be identical with high adaptation independent of the level of climate change (2°C or 4°C). b) Extreme heat: The risk is identical in the near term to that in the long term with 2°C; furthermore, current adaptation (very limited) will be equally useful in the long term, as risk level will remain the same. If all this is true, it might discourage adaptation action. in any case, where these graphs come from should be carefully justified. (European Union)

#	Ch	From Page	From Line	To Page	To Line	Comment
2082	SPM	17	0	19	0	The summary made of the key risks for Europe presents an oversimplification for a region where abundant knowledge is available. In page 12, 31 of SPM, it is mentioned that regional risks identified with medium to high confidence are presented. Taking only high confidence from Ch.23's summary, we find risks to energy production-transmission, agriculture (yields, pests, diseases, irrigation, distribution of wine, costs), forestry (wildfire, pests, diseases), biodiversity (species, habitats, ecosystems and their services, a key potential effect not sufficiently acknowledged). Sectors mentioned to be under risk include health, agriculture, forestry, energy production and use, transport, tourism, labour productivity, the built environment, and ecosystems services... There is no mention of cyclones for North America. Overall, although the intention of summarising most significant risks in one table is praiseworthy, it may still be too early to do so given the range of uncertainties summarised in the SPM and could lead to political attention paid to some but not all relevant issues for climate change adaptation. (European Union)
2083	SPM	17	0	19	0	The presentation is a laudable effort to allow for a comprehensive overview of risks and adaptation potential in all regions of the world, but (maybe unavoidable due to the complexity and diversity) also leads to questions. E.g., why is the potential to adapt in Asia smaller than in other regions (e.g., Africa)? Why are cyclones a problem in Europe but not in North or Central America? And SLR not in Central and Latin America? Why are changes in rainfall (as opposed to changes in extreme events) not a problem in Europe (Mediterranean)? Etc. (NETHERLANDS)
2084	SPM	17	0	19	0	In the case of Europe, "...increasing urbanization..." is mentioned as driver of "Increased of economic losses and people affected" in column "Key risks". Please consider adding similar information about non-climatic drivers of risk in the column "Key risks" for other regions, too, where relevant. (FINLAND)
2085	SPM	17	0	19	0	Wind gusts (strong winds) should be displayed separately from damaging cyclones. At the temperate latitudes (at least) strong winds are not always connected to cyclones but to mesoscale objects. On the other hand, damaging cyclones hit nature and mankind by strong wind, heavy precipitation and storm surges. The latter two are listed among the figures but not the wind-gust (strong wind). (NOTE: Submitted as Chapter 8, but cannot find connection, so believe it should be SPM) (HUNGARY)
2086	SPM	17	0	19	0	Table SPM.1.: It is strongly requested to include also the global risks as included in table TS.4. This omission in the SPM cannot be justified, given the relevance of the addressed risks. (AUSTRIA)
2087	SPM	17	0	19	0	It is odd that risks to ecosystems (particularly the Amazon rainforest and Andean ecosystems) and the consequences for ecosystem services aren't mentioned here, as these are key risks for the region. (UK)
2088	SPM	17	0	19	0	Table 1: great table - but how exhaustive is the list of adaptation issues and prospects? Looks a bit amateur or 'workshop' led to me ... (UK)
2089	SPM	17	0	19	0	Table SPM.1. There is a huge amount of information in this very long table - can a shortened version be included which summarises the main points? (UK)
2090	SPM	17	0	19	0	Risks should be in order as a function of level of confidence: the risks with highest level of confidence should feature at the top and risks with lower levels of confidence should be below. (UK)
2091	SPM	17	0	19	0	Should risks to regions be displayed alphabetically? i.e. Africa, Asia, Australasia etc. (UK)
2092	SPM	17	0	19	0	Table SPM.1 - might benefit from an explanation of how the key risks have been selected. This is a really nice table, but some sections are more discursive than others in the issues and prospects boxes - e.g. The Ocean is more informative compared to Asia (which is fairly frugal in its use of words) (UK)
2093	SPM	17	0	19	0	Table SPM.1. It would be helpful to have the key risk highlighted in each row, perhaps using a title e.g. for Africa, including the titles 'Water Resources', 'Crop Productivity' and 'Disease Vectors' in the Key Risk column of each row. This would be similar to the 'Category' column of Table SPM.2. (UK)
2094	SPM	17	0	19	0	Table SPM.1, overall comment: Why are the Polar Regions excluded from this table? Canada recommends that it would be beneficial to have additional details on key risks and adaptation issues and prospects for these regions. All other regional chapters have been included in this table except the Polar Regions chapter. (CANADA)
2095	SPM	17	0	19	0	Table SPM.1, overall comment: Suggest that the caption for this Table expand on how the table was developed, including the assessment framework for how each of the key risks were selected for each region. Currently, it appears that key risks were "cherry-picked" as examples, with no clear explanation for why they were selected and no common set of risks assessed across all regions. (CANADA)
2096	SPM	17	0	19	0	Table SPM.1, overall comment: Key risks described at the beginning of each row are given a confidence assessment (e.g., high confidence for the risk on water resources in Africa). However, it is not really clear what is being assessed or how the assessment applies across the row. The risk is evidently evaluated under 8 different sets of circumstances in each row (under current and high adaptation for the present, near term, and two different long-term futures). Does the confidence assessment apply equally to the evaluated risk under all 8 of these sets of circumstances? One could imagine that some of those evaluations could be more confident than others, so which are high confidence, which are very high confidence, and are there any that fall below the level assessed for the row? (CANADA)
2097	SPM	17	0	19	0	Table SPM.1, overall comment: While some of these Key Risk statements are framed in terms of changes in risks, which seems appropriate, others are not (e.g. 'Heat-related human mortality' in North America). We assume this is by mistake (for Asia, this risk is described as an increasing risk of heat related mortality), in which case all should be framed in terms of changes or trends. (CANADA)
2098	SPM	17	0	19	0	Table SPM.1, overall comment: An additional column providing the detailed traceback references that underlie the assessments in each row would be useful. (CANADA)
2099	SPM	17	0	19	0	This table is quite complicated and unlikely to be meaningful to a policy-maker as it now stands. A major shortcoming of the table is that it purports to estimate the potential for adaptation into the future. Moreover, it is not at all clear what this assessment of future potential is based upon. We strongly urge the authors to condense this table by removing the "Risk and potential for adaptation" column on the far right (i.e., the orange bars). (USA)
2100	SPM	17	0	19	0	There is a category labelled 'climatic drivers'. Yet it seems clear from other elements of this table that is not the entire panoply of climatic drivers, but some subset of drivers in these regions. Were these intended to be key climatic drivers for different regions or regional examples? (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
2101	SPM	18	0	0	0	Table SPM.1, entry "Increased risk of heat-related mortality", the last column. Please, alter the bottom bar, namely, make it identical to the bottom bar in the last column of the entry "Increased risk of heat-related mortality" in the Table 24-1 of the AR5 FGD Chapter 24 Asia, p. 62. (RUSSIAN FEDERATION)
2102	SPM	18	0	0	0	In 'Asia', Table SPM.1, the adaptation potential of "increased risk of drought-related water and food shortage causing malnutrition" for risk reduction stands at zero. An explanation is requested. (CHINA)
2103	SPM	18	0	0	0	[In Table SPM1(Asia)]In the column of "Adaptation issues and prospects" at the "key risk" of "Increased risk of drought related water and food shortage causing malnutrition", only "early warning" and "local response strategies" are exemplified as disaster preparedness. But this risk is originated from drought and the risk should be reduced through "disaster preparedness", otherwise the measure doesn't contribute to the improvement of social security. In this regard, "water infrastructure development", which is exemplified as adaptation of freshwater resources to climate change at 24.4.1.5, should explicitly be shown in the column. "Mismanagement of water resources has increased tension due to water scarcity (24.4.1.4)", therefore "Improving reservoir management (3.6.1 Table 3-3) is required. 3.6.1 Table 3-3 also lists climate change adaptation options for the management of fresh water resources such as "Diversifying water sources" to increase resilience and promote "Efficient use of water". One of the options for diversifying water sources is "water re-use (24.4.1.5)". Therefore we suggest modifying the sentence in the column as follows. "Disaster preparedness such as development of water infrastructure, improving reservoir management, diversifying water sources including water reuse, efficient use of water, early warning and local response strategies." (JAPAN)
2104	SPM	18	0	0	0	Remove ',' before 'and' (POLAND)
2105	SPM	18	0	0	0	Remove ',' before 'and', remove ';' before 'and' (POLAND)
2106	SPM	18	0	0	0	Table SPM.1. For clarity you might consider to specify in a footnote what countries "Australasia" includes. (NORWAY)
2107	SPM	18	0	0	0	Table SPM.1. Australasia, second row: Regarding flood damage in Australasia, As we understood the text, the risk presented in the bar ("Risk for current and high adaptation") should be larger. Please be consistent between the text and the risk bar. (NORWAY)
2108	SPM	18	0	0	0	Table SPM.1.Please consider to include air quality as a separate point under key risks for Asia. See Chapter 24.6, page 41 line 42-44. (NORWAY)
2109	SPM	18	0	18	0	Table SPM1: Add 4th bullet : "Green buildings" in Section Asia Column 2 on Adaptation Issues and Prospects after 3rd bullet (INDIA)
2110	SPM	18	0	18	0	Table SPM.1, Australasia section: It seems that wildfire is missing as a risk for Australia? Should this be included? (CANADA)
2111	SPM	18	0	18	0	Under the Asia subsection, the second risk in the Adaptation Issues and Practices column, the authors should add "Changes to work practices" (USA)
2112	SPM	18	0	18	0	Under the Asia subsection, the third risk in the Adaptation Issues and Practices column, the authors should add "Changes to agricultural practices," "Water storage," etc. (USA)
2113	SPM	18	0	18	0	Under the Australasia subsection, the first risk in the Adaptation Issues and Practices column, the authors should add protected areas/improved connectivity (USA)
2114	SPM	18	0	18	0	in the table SPM1: Asia: adaptation issues for " increased risk of drought-related.... Malnutrition": should add "integrated water-wastewater", irrigation management (VIETNAM)
2115	SPM	19	0	0	0	The second key risk listed in 'The ocean', Table SPM.1, suggests almost no adaptation potential for risk reduction. An explanation is requested. (CHINA)
2116	SPM	19	0	0	0	Remove ',' before 'and' (POLAND)
2117	SPM	19	0	0	0	Replace 'Large' by 'large', 'Flexible' by 'flexible', 'Improvement' by 'improvement', 'Expansion' by 'expansion' (POLAND)
2118	SPM	19	0	0	0	Remove ',' before 'and' twice (POLAND)
2119	SPM	19	0	0	0	Table SPM.1, Top row: "extreme precipitation" is mentioned in the Key risk box, but is not included in the Climatic drivers box. Was this an oversight? Suggest reviewing. (CANADA)
2120	SPM	19	0	0	0	Table SPM.1, Fifth row: Isn't ocean acidification also a potential driver of a distributional shift in fish and invertebrate species? Suggest reviewing whether this should be included. (CANADA)
2121	SPM	19	0	0	0	Table SPM1 " Central and South America " is a very large region with different climates. At least shoul be a difference between the tropical region ( central and northern part of south America) and extra tropical region. See also in the text (CHILE)
2122	SPM	19	0	0	0	Table SPM.1. Small islands: You might consider specifying which regions are included in "small islands", e.g. Pacific, Caribbean, Indian Ocean etc. (NORWAY)
2123	SPM	19	0	0	0	Table SPM.1. The Ocean. The ocean part of the table focuses mainly on more coastal issues. We suggest inclusion of open ocean issues as well. (NORWAY)
2124	SPM	19	0	0	0	Table SPM.1. Ocean, Second row: The symbol for ocean acidification should also be included as a climatic driver. (NORWAY)
2125	SPM	19	0	0	0	Table SPM.1. Ocean, first row, second bullet point: The statements "Improvement of fish resilience to thermal stress by reducing other stressors such as pollution and eutrophication" and "Expansion of aquaculture" seem contradictory. Aquacultural activities cause emissions of large amounts of nutrients to seawater, and therefore expansion of aquaculture will be in conflict with the aim of reducing eutrophication. Please check for consistency. (NORWAY)
2126	SPM	19	0	0	0	Table SPM.1 - in the Central and South Americ rows, the climatic drivers do not fit well with the key risk. Upper row mentions flooding whereas rain is not quoted in the lower raw. (FRANCE)
2127	SPM	19	0	19	0	Table SPM.1.Central and South American region, second column: bullet starting with "Developement of new crop varieties: the use of existing resilient crop varieties should also be included, there is no need to develop new ones in all cases. (SPAIN)
2128	SPM	19	0	19	0	Table SPM.1. Small Island region, second column: We would suggest the deletion of the first bullet "Significant potential exists..." as we believe that this table should include concrete adaptation issues and prospects for all regions, and the affirmation that additional resources and technologies will enhance response is true for all regions, not only for small islands. In addition to this, not only "external" resources and technologies will enhance response. (SPAIN)



#	Ch	From Page	From Line	To Page	To Line	Comment
2129	SPM	19	0	19	0	Table SPM.1. Ocean section, second column: We suggest to change the phrase: "... limiting pressures from tourism, fishing and aquaculture" by " planning tourism, fishing and aquaculture in order to limit pressure". The reason is that these sectors, especially aquaculture, are adaptation options rather than stressors, unless badly managed (SPAIN)
2130	SPM	19	0	19	0	Section: 'The Ocean' - climatic drivers could be reworded CO2-related drivers (as includes Ocean Acidification) and I would definitely put the OA icon within the drivers box for all key risks within this section. (UK)
2131	SPM	19	0	19	0	The Small Islands subsection of Table SPM.1 on Page 19 is incomplete in that it is missing the third risk entry (on corals) from Table 29-4 on page 55 of the Final Draft of Chapter 29. The authors should revise the table to include this omission. (USA)
2132	SPM	19	0	19	0	Ocean acidification is discussed as a key risk to marine systems on page 9-10, lines 47-3. However, Table SPM1 contains no information on adaptation potential for this risk. This information needs to be included in Table SPM 1. (USA)
2133	SPM	19	0	19	0	in the table SPM 1: small islands: adaptation issue for " the interation of rising global..." should add 1 more prospect " develop desalination technologies" (VIETNAM)
2134	SPM	20	0	0	0	Table SPM.2, column "Category", line "Transformation/Social/Behavoiral options": There should be a reference to sections 8.2 and 8.3 of chapter 8, because the sections consider issues of "household preparation" and "mitigation". (RUSSIAN FEDERATION)
2135	SPM	20	0	0	0	Table SPM.2, column "Category", line "Structural/physical": Section 14.3 of chapter 14 has not been mentioned in all four examples, although respective issues (Engineered & build-environment options, Technological options, Ecosystem-based options, Services) are considered in the chapter in details. (RUSSIAN FEDERATION)
2136	SPM	20	0	0	0	Propose to drop the strict distinction between adaptation (including incremental and transformational adjustments) and vulnerability reduction and transformation, e.g. by calling all examples adaptation but grade (e.g. shading) from incremental to transformational or make boundaries fuzzy. The word "overlapping" in title and caption had better be visualized. (NETHERLANDS)
2137	SPM	20	0	0	0	Table SPM.2: 3rd row (Livelihood security): what is meant by the term "enhanced agency"? (NEW ZEALAND)
2138	SPM	20	0	0	0	Table SPM.2 - not clear what "overlapping entry points" are, it may be especially unclear for policy makers looking at the difference between Adaptation (including transformational adjustments) and Transformation (ITALY)
2139	SPM	20	0	0	0	Table SPM.2: 1) Could you explain how the "overlapping entry points" relate to the "categories" column? The representation of the "overlapping entry points" as a row on top or at the bottom of the table (instead of a column at the left) would be more appropriate/clearer as the different entry points could be taken in each category/or have to decided for each category. If not, pls. explain question above. 2) Category "Disaster risk management": "Transport & road infrastructure". A road is part of the Transport infrastructure. Suggest to skip "& road" Category "Structural/physical" as above. 3) As for adaptation/ institution / economic options: Financial stability and "resilience" of financial markets (e.g. with regards to economic shocks) should be added. (GERMANY)
2140	SPM	20	0	0	0	[In Table SPM2]There is no adaptation measure for drought in the column of "Examples" at the category of "Disaster risk management" in "Vulnerability reduction through development & planning". Request that both "water infrastructure development", which is shown at 24.4.1.5 and "Improving reservoir management", which is shown at 3.6.1 Table 3-3 be included in the column. (JAPAN)
2141	SPM	20	0	0	0	[In Table SPM2]In the column of "Examples" at the section of "Technological options" of "Structural/physical" in the "Adaptation", "Diversifying water sources", which is shown at 3.6.1 Table 3-3, should also be included. Diversifying water resources means various technological options such as water reuse, rain water harvesting, and desalination, among others (3.6.1 Table 3-3 note (1)). (JAPAN)
2142	SPM	20	0	0	0	[In Table SPM2]In the column of "Examples" at the section of "Disaster risk management", "Improved drainage" and "Transport & road infrastructure improvements" are listed also at the section of "Structural/physical". Those two examples are appropriate to be dealt at the section of "Structural/physical". Thus request that, those at the section of "Disaster risk management" be deleted. (JAPAN)
2143	SPM	20	0	0	0	[Table SPM2]In the column of "Structural/physical", "Flood levees" is listed. However, "Flood levees" is nothing but one of structural adaptation measure against river flooding. It is necessary to consider social, economic and environmental context of a region for planning of structural adaptation. To include other structural measures as examples, we suggest the usage of "Flood control structures" (Ch.10, p.25), instead of "Flood levees". (JAPAN)
2144	SPM	20	0	0	0	When listing items replace uppercase with lowercase letters at the beginning of each item: e.g., 'Improved' replace by 'improved' (POLAND)
2145	SPM	20	0	0	0	Replace ' sea walls & coastal protection structures' by 'coastal protection structures incl. Sea walls & eco-friendly measures e.g., beach nourishment' (POLAND)
2146	SPM	20	0	0	0	Table SPM.2: The following issues are noted without providing suggestions how to add clarity. What does the concept of "enhanced agency" mean? This term is only included in the corresponding table in the TS but not in the main text. What are "easements"? It is not explained in the main text - only one cited document of the EPA includes easements in its title. (AUSTRIA)
2147	SPM	20	0	20	0	Table SPM.2, column 3 "Technological options". As we have commented for table SPM.1, we believe that not all cases require development of new crop and animal varieties, there can be existing crop and animal varieties that can be used. We suggest redrafting the sentence "new or existing resilient crop and animal varieties" (SPAIN)
2148	SPM	20	0	20	0	We have the impression that the potential role / the co-benefits of sustainable development could be made clearer in this table. (BELGIUM)
2149	SPM	20	0	20	0	We feel that the categorization proposed in the first column is highly questionable : - land-use is in the "vulnerability" category while it is an exposure issue, - examples listed under "vulnerability" also falls in the adaptation category - what is the added value of separating vulnerability reduction from adaptation ? We suggest deleting the first column. In any case, it is absolutely needed to explain that all these issues are related to adaptation. (BELGIUM)
2150	SPM	20	0	20	0	Table SPM.2 - a nice table, but some of the examples might be integrated into the actual text of the SPM (see comment above). (UK)

#	Ch	From Page	From Line	To Page	To Line	Comment
2151	SPM	20	0	20	0	Table SPM.2, under Adaptation/Structural-Physical/Technological Options: Genetic engineering seems to be offered as a possibility, implicitly if not explicitly. Suggest that adding a few more words that explain the range of technologies, including conventional hybridization and breeding approaches, might be helpful to readers. (CANADA)
2152	SPM	20	0	20	0	Table SPM.2: Shouldn't "exposure" be added to the left hand column in dark red after "vulnerability". This would be consistent with the related text on page 13 lines 34-36. (CANADA)
2153	SPM	20	0	20	0	There is necessarily some overlap between examples that fit under Vulnerability Reduction (VR) and Adaptation, but several placements seem incorrect and should be revised, e.g. "Assisted translocation" under VR should be under Adaptation; "Protected areas" under "Spatial planning" should be under "Ecosystem mgmt."; "Controlling overfishing" under Adaptation should be under VR. Also, the authors should consider renaming "Government policies and programs" to "Governance" reflecting some non-governmental examples like Community-based adaptation. (USA)
2154	SPM	21	0	0	0	The figure overlaps another one (SPM 8). May be is better to use only figure SPM 8. (CZECH REPUBLIC)
2155	SPM	21	0	0	0	Figure SPM.1. This figure is adapted from the IPCC SREX report (page 4). But the text has been changed in a problematic way. Now it looks like that hazards exists without risks, vulnerability without risks. We suggest to use original SREX figure. (NETHERLANDS)
2156	SPM	21	0	0	0	The white arrows pointing to 'Hazards' and 'RISK' are easily overlooked. Perhaps because their appearance deviates from the other arrows in this graph. Perhaps redraw the figure? (NETHERLANDS)
2157	SPM	21	0	0	0	Figures and Tables: SPM figure 1 is somewhat obscure. The connections between Hazards, Vulnerability, Exposure & Risk could be better defined, consider the use of arrows internally to show how these are integrated? (IRELAND)
2158	SPM	21	0	0	0	Figure SPM.1. A somewhat more detailed explanation to this figure is needed. For example, adaptation and mitigation actions are often the result of governance: how do the boxes of adaption and mitigation actions relate to the governance box? Also, the two arrows, one from risk to development and the other from development to climate are not explained. One or two examples is needed to explain how the different parts of the figure come together. Please, include an example in the text to make it easier for the reader to understand this rather theoretical figure. Also, the distance between climate and risk is larger than between development and risk. Is this the intention (then what does it mean?) or just a coincidence? (SWEDEN)
2159	SPM	21	0	0	0	Figure SPM.1: In order to reduce repetition, suggest that Figure SPM.1 be deleted and that Figure SPM.8 moved up to this placement as it provides a very useful introduction to how the various sections of the SPM are related. (CANADA)
2160	SPM	21	0	0	0	Figure SPM.1: Suggest the centre white area in this Figure should say "climate-related risks". That is the context of this assessment and the aim of this Figure is to illustrate the scope of this WGII assessment. Climate and climate change are determinants of the hazards; development issues are determinants of vulnerability and exposure; these drivers interact to influence the nature of the climate related risk. This would also make it easier to relate this Figure to the similar one in the IPCC SREX which has "Disaster Risk" in the centre area, specific to the context of that report. (CANADA)
2161	SPM	21	0	0	0	Figure SPM.1. Please consider replacing the word "Hazards" with "Potential impacts". Rationale: The concept of hazard is not very well defined and is often associated with the possibility of a sudden, unwanted or dangerous event. The concept of potential impact has a broader meaning, more relevant to the numerous slow and gradual changes; and the different perspectives and approaches covered in WGII report. Furthermore please consider to give this figure a headline e.g. "Overview of responses to climate change" (NORWAY)
2162	SPM	21	0	21	0	Figure SPM.1. Instead of "anthropogenic climate change" we suggest saying "anthropogenic influence with climate system". In addition to this, we would suggest, as figure SPM.1. and figure SPM.8. are mostly the same, using only one of them. Figure SPM.8 looks more complete, therefore, we suggest considering the use of this figure and delete figure SPM.1. (SPAIN)
2163	SPM	21	0	21	0	Figure SPM.1.: We appreciate the untiring work that has been put into revising the figure from the version in the SOD. However, in view of the fact that it is used as a basis for Figure SPM.8., we would suggest its deletion and that readers be asked to refer to the latter figure. This will save space in the limited amount of pages allowed for the SPM and give room for other important discussions. (JAPAN)
2164	SPM	21	0	29	0	Figures are generally complex, busy and many lack new information (UK)
2165	SPM	21	0	29	0	All figures: please consider including a title on each figure, as it is done in WGI. (NORWAY)
2166	SPM	21	0	29	0	While we can appreciate the authors attempting to "complete the picture" from Figure SPM.1 to Figure SPM.8 given all the information presented in the SPM, we are not convinced that the figures actually add any value and - in fact - appear to only confuse the reader. The authors should strongly consider deleting both figures. For example, changes in "development" will necessarily alter anthropogenic climate change and will alter the risk, exposure, and vulnerabilities accordingly, though these feedback responses are not indicated here. Furthermore, risk is not identical with impacts, as depicted in this figure; risk does not even always even entail impacts. Moreover, economics is missing from Figure SPM.1 and SPM.8. The idea of evaluating risk tradeoffs could be added to the risk box, economic analysis and tools could also be added as a way to inform decision-making and identify priorities under governance. It is notable in its absence. The same figure also has some bias built into it: For example, it's important to evaluate tradeoffs, not just co-benefits and synergies (adaptation and interaction with mitigation). In the same box, the term complementary is not accurate without the flip side of competing roles. The information contained in these figures might best be left to descriptive text or a table - perhaps in some sort of bulleted/formatted form that illustrates the connectivity. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
2167	SPM	22	0	0	0	Delete Figure SPM.2.A. 1. Term "Attribution" is used in the Figure SPM.2.A. legend with no explanations. Confidence in attribution to climate change is also not explained: is it based on literature, or on expert judgments? These terms are not included in the Box SPM.1. "Terms critical for understanding...". 2. Not all symbols appeared in a region are included in respective frame for the region, some are included with another confidence in attribution. For instance: (1) Food production symbol appears in the Europe framed section, but not on the Europe map. (2) Food production symbol appears on the Asia map, but not in the Asia framed section. (3) River, lakes, floods & drought symbol appears in the Arctic framed section but not on the Arctic map. (4) River, lakes, floods & drought symbol appears two times on the Asia map with med confidence in attribution to climate change, however in the Asia framed section it appears with high confidence in attribution to climate change. 3. Degree of generalization of chapter information is too high at the figure, as a result the figure does not reflect properly chapters' content. (RUSSIAN FEDERATION)
2168	SPM	22	0	0	0	The middle left panel is on Himalayan glaciers. The graph is very unclear. In particular the meaning of the y-axis. It is not described in the SPM figure caption nor in the underlying scientific article on which this graph is based. We further doubt whether this variable is the most appropriate one. It is very difficult to understand for non-experts and secondly, the units that are commonly applied, either in square units or Gigatons per year or expressed as mm global sea level change (362 Gton ice equals 1 mm global sea level change) are not presented here. Furthermore, the many blue blocks have a width of 1-standard deviations. But, most (statistical) studies show 2-standard deviations. If applied to this graph: the widths become so large that the decreasing trend becomes insignificant and the trend values are even not significant from the zero line. This is supported by the space-borne observations (red box), suggesting no decreasing trend. Minor note: for the red box the legend refers to 'conventional measurements' with no indication that this is derived from satellites. We suggest a rephrase: ground-based measurements, versus satellite-based measurements. However, given the very large spread in observations we believe the message of this figure becomes lost and consider removing this graph from the SPM. (NETHERLANDS)
2169	SPM	22	0	0	0	Figure SPM.2, upper panel. The regional-scale impact boxes sometimes contain symbols that are not indicated on the map of the corresponding region, and vice versa. For example, The Central & South America box contains a symbol for glaciers/snow/ice, whereas this symbol is not present in the map of this region. And the map of this region shows a fish, which is not present in the box. Please explain in the caption. (NETHERLANDS)
2170	SPM	22	0	0	0	The world map in the upper panel of Figure SPM.2 contains a number of differences compared to the 'same' figure in Chapter 18: fig. 18.3. First, the most right tableau for Asia contains an open drop and a closed one. This is not the case in Figure 18.3! Furthermore, an open and closed drop in one tableau is logically impossible. Second, the most upper tableau for Arctic contains a confidence summary with dark blue and light blue. But what does the light blue mean? There seems an explanation at the lower left of the graph: not understandable for us. But more interesting: this explanation is not present in fig 18.3! Third, the tableau for 'Europe' contains a red, open, vehicle symbol. This symbol is not present in fig. 18.3. Fourth, the fish symbol for the tableau 'small islands' is not present in the same tableau in fig. 18.3. Fifth, the symbols for Hawaii differ amongst the two graphs. Please make both graphs consistent and explain (or remove) the two confidence bar colors (light and dark blue). (NETHERLANDS)
2171	SPM	22	0	0	0	All 5 panels in this graph have a different way of showing uncertainty. The upper panel shows confidence bars in two colors. The middle left panel shows a large number of wide blue blocks: following the caption these are 1-standard deviation. The panel middle right has no uncertainty. The panel lower left shows uncertainties as 'standard error'. Finally, the panel lower right shows uncertainty by percentiles (25 and 75). This is confusing for many readers. Note: 'standard error' is not the same as 'standard deviation' for statisticians! (NETHERLANDS)
2172	SPM	22	0	0	0	The lower right panel has an odd feature. For some bars the 25 percentile lies on the 50 percentile (the median). We have seen many skewed data but this is really strange. Take the most left lying bar. For the reader it is suggested that a lot of data are negative (decrease in yields). But in reality 50% of the data has no decrease since the median equals 0.0 % ! (NETHERLANDS)
2173	SPM	22	0	0	0	The middle right panel shows tree mortality occurring over the sample period 1970-2011. However, just summing up locations with tree mortality does not show that climate is changing (See line 36 of page 2: widespread indicators of a changing climate). (NETHERLANDS)
2174	SPM	22	0	0	0	Figure SPM.2a, we find the number of 'high confidences' in ecological effects on marine ecosystems a surprise. This might be true for phytoplankton species. But for fish species and mammals other influences are more dominating, at least in current observations. This might change in the future when we run into fast climate change. (NETHERLANDS)
2175	SPM	22	0	0	0	Figure SPM.2a: Color choice is strange. Normally red depicts a worsening situation, green an improvement. The current colors may give a wrong first impression. (NETHERLANDS)
2176	SPM	22	0	0	0	Figure SPM.2e. The caption states "estimated impacts of observed climate change". Thus the depicted decreases are not measures, but (probably) simulated with observed climate. As such the figure has a quite different base compared to the others. It should not be shown here when the aim is to show 'OBSERVED impacts, vulnerabilities and exposures. (NETHERLANDS)
2177	SPM	22	0	0	0	All these panels are presented but not described in the main text. But graphs should have an explaining nature for the text at hand. A solution would be to draw more attention in the running text for these panels. (NETHERLANDS)
2178	SPM	22	0	0	0	Panel (D): please explain the terms 'warmer' and 'cooler', presented at the right y axis. Water temperatures? (NETHERLANDS)
2179	SPM	22	0	0	0	Panel (E): the first two bars (regional, in blue) suggest to be an average of four crop types, shown in the orange bars. But is it? It would better to avoid misunderstanding, and make two separate panels: one for tropical and one for temperate. (NETHERLANDS)
2180	SPM	22	0	0	0	Figures and Tables: SPM Figure 2, the details are a little small and difficult to read. Comment; The diagram (a) could be clearer & inclusive of more detail since this is an important statement diagram. The lack of symbols on the role of climate change on North Atlantic Coasts should show coasts symbols for the region at the "very low – low" level (Climate change impacts/ causes are debatable, but are there.) It is not clear how to interpret the confidence range in the graphic indicated. Diagram (b) given the number of blue boxes that are overlapping, it is very difficult to appreciate the individual boxes. Other than illustrating that there have been many more measurements in recent years and possible higher variability, any other message is not clear. (IRELAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
2181	SPM	22	0	0	0	Figure SPM.2. (A) There is a wealth of information included but it is somewhat difficult to comprehend. It might help if each panel would have a title. (FINLAND)
2182	SPM	22	0	0	0	Figure SPM.2. (E) Is there a better way of presenting the information than as box plots if the median is the same as the 25th percentile as for the tropical region and for rice. (FINLAND)
2183	SPM	22	0	0	0	Figure SPM2 A. In the Box about Asia, there are two symbols for rivers. lakes, floods and drought, one filled and one unfilled? Does this mean that in some part of Asia there are impacts with minor contributions from climate change and that in other parts climate change impacts rivers etc in a major way? (SWEDEN)
2184	SPM	22	0	0	0	Figure SPM2 B. This figure needs to be explained in a better way for the target group. What is Water-equivalents per decade for example? It is not possible to use the figure without knowing this. (SWEDEN)
2185	SPM	22	0	0	0	Figure SPM2 C: What are the purple areas? Put it in the legend. (SWEDEN)
2186	SPM	22	0	0	0	Figure SPM2 D:What does negative distribution changes mean? (non-bony fish) Explain. (SWEDEN)
2187	SPM	22	0	0	0	Figure SPM2: All 5 figures merged into SPM.2 are interesting and should be contained. However, the figures are too small and it is not clear what the added value of the joint display is. 5 figures of such different character and content in one panel makes the figure hard to read, and limits the value of the visual representation. Please consider separate the panels. It would seem more logical to associate each panel with the text paragraph containing related information, e.g. panel A stays with the more general introductory paragraph P 2 L 30; panel B to P 3 L 10; panels C and D to P 3 L 1, and panel E to P 3 L 15. Currently the visuals and the text appear to be disconnected. Therefore, the language should be revised in order to make a connection. (GERMANY)
2188	SPM	22	0	0	0	Correct 'Glaciers, snow , & ice' by 'Glaciers, snow & ice (POLAND)
2189	SPM	22	0	0	0	Correct 'Rivers, lakes, & drought' by ' Rivers, lakes & drought' (POLAND)
2190	SPM	22	0	0	0	Correct ' Livelihoods, health, & economics' by 'Livelihoods, health & economics (POLAND)
2191	SPM	22	0	0	0	Parts /B/ and /D/ might be difficult to read for the PMs. The otherds, especially /A/ are excellent (POLAND)
2192	SPM	22	0	0	0	Figure SPM.2 is not userfriendly. We would suggest to split it into 2 pages which would increase the size of the figures. Figure SPM.2.B, we would recommend the removal of the blue boxes for more clarity (MADAGASCAR)
2193	SPM	22	0	0	0	Figure SPM.2: This Figure is far too complex to be left as a single Figure. Each of the individual panels is sufficiently complex that detailed captions - more detailed than the current ones - will be needed to support each panel. While we understand that all five panels are intended to support the high-level conclusion that observed impacts of a changing climate have been widespread, we nonetheless recommend that careful thought be given to whether all five panels are necessary in this SPM. Our priority is to retain Panel A, position it as a stand-alone Figure, and provide additional information in the caption (see other comments) to facilitate correct interpretation of this Panel. (CANADA)
2194	SPM	22	0	0	0	Figure SPM.2, Panel A: Suggest considering splitting flooding and drought into two categories (icons) if possible. (CANADA)
2195	SPM	22	0	0	0	Figure SPM.2, Panel A: In the legend, the term "Glaciers, snow and ice" is used. Does this include permafrost/frozen ground? If so, suggest including this in the list or consider using the term "cryosphere", which would encompass permafrost as well. (CANADA)
2196	SPM	22	0	0	0	Figure SPM 2, Panel A legend: Suggest the legend in Panel A could be improved by moving the information about the "filled" and "unfilled" symbols over the left hand side of the legend, as this text currently appears as though it applies only to the Human and Managed Systems symbols. (CANADA)
2197	SPM	22	0	0	0	Figure SPM.2, Panel A legend: Regarding the bars representing confidence in attribution to climate change, what is the difference between, for example, two shaded bars alone, vs two shaded bars with unshaded bars on top? If none, then suggest being consistent and either only showing the correct number of shaded bars, or always showing these along with the full number of unshaded bars. (CANADA)
2198	SPM	22	0	0	0	Figure SPM.2, Panel B: Panel B is extremely difficult to understand and the associated caption text does not help sufficiently in its interpretation. It is also unclear why there is a focus specifically on Himalayan glaciers in a figure examining "widespread indicators of a changing climate". Suggest that it would be more appropriate to include average plots for all glacierized regions along with the global average. If this is not possible, then suggest the authors consider removing this panel. (CANADA)
2199	SPM	22	0	0	0	Figure SPM.2, Panel C: The grey areas are not explained in the figure or in the caption. Suggest information on this to the figure and/or caption. (CANADA)
2200	SPM	22	0	0	0	Figure SPM.2, Panel C: This Panel is a little difficult to interpret because this figure does not explicitly indicate a direction or significance of change. We assume we would expect to see some red dots even in an unchanging climate, and thus, without further information, it seems hard to judge whether the number of red dots is larger than would be expected by random chance. Suggest clarifying in the figure or caption how "change" is depicted here. (CANADA)
2201	SPM	22	0	0	0	Figure SPM.2, Panel C: In western North America, is the very large die-back caused by the Mountain Pine Beetle considered to be "heat-induced" mortality. If so, should an ellipse be drawn over north-western North America? (CANADA)
2202	SPM	22	0	0	0	Figure SPM.2, Panel D: Please explain in the caption to this Panel what the negative distribution change means. (CANADA)
2203	SPM	22	0	0	0	Figure SPM2. It is not clear what it means the open and filled symbols in the Physical and Biological Systems (CHILE)
2204	SPM	22	0	0	0	Figure SPM.2. Please consider adding a title for each subfigure to make the reading easier. (NORWAY)
2205	SPM	22	0	0	0	Figure SPM.2. (A) What does it mean if there are no symbols? Does it mean there are no impact? (NORWAY)
2206	SPM	22	0	0	0	Figure SPM.2. (B) We find this figure confusing: 1. Why do you choose to show Himalayan glaciers and not only a global average? 2. Are all the conventional measurement boxes necessary? 3. The glacier mass-budget rate is in water-equivalent meters per decade, is that correct? 4. We propose that you instead show an average glacier mass budget rate for all glaciers, including Antarctica and Greenland. (NORWAY)
2207	SPM	22	0	0	0	Figure SPM. 2. (E) This is a very nice and instructive figure. (NORWAY)
2208	SPM	22	0	0	0	Figure SMP 2. (C) Could you please explain what the difference between the two shadings for "other wooded regions" is? (NORWAY)

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2209	SPM	22	0	0	0	Figure SPM.2 - The top figure is not always straightforward. 1) the boxes are often not clearly linked to the drivers over the map, e.g. in Africa where we would expect rain to appear; in Asia where we have both minor and major rain changes; in Europe where rain sign is missing on the map ; 2) for the bars, in some cases there are for the same sign dark and light bars which is unclear. (FRANCE)
2210	SPM	22	0	22	0	Figure SPM.2 (A). Very difficult to understand. Impacts at regional scale might be misleading, For instance Floods and droughts in Europe (unfilled symbol) = minor contribution of climate Change?; Glacier snow and ice in Africa ( filled symbol) = Mayor contribution of Climate Change; Marine ecosystem in Small Island has both opposite symbols (filled and unfilled), idem in Asia with water symbols. We miss also observed impacts in the physical system of coasts in regions beyond the Artic and small island (SPAIN)
2211	SPM	22	0	22	0	Figure SPM.2 (B)- The blue boxes of Himalaya conventional measures rather than information become noise. We suggest to avoid them and focus the figure in the brown global average band and the average Himalayan blue line (SPAIN)
2212	SPM	22	0	22	0	Figure SPM 2 has very condensed information - the figure needs more text in order to be understood. (DENMARK)
2213	SPM	22	0	22	0	Figure SPM 2. It seems puzzling for the non-expert reader that "Glaciers, snow and ice" is a regional-scale impact for Africa (rather than local), and that it is the only regional-scale impact for Africa. (DENMARK)
2214	SPM	22	0	22	0	Figure SPM 2. Suggest to include the symbol for "coastal erosion and sea level effects" for Europe, Denmark/Wadden Sea area. (DENMARK)
2215	SPM	22	0	22	0	Figure SPM.2 (A): there is no reference to "coastal erosion and sea level effects" nor to "livelihoods, health and economics" for Europe. These systems are relevant for Europe and for the Mediterranean in particular (see EEA Report N. 12/2012). As a matter of fact, with reference to the second point, in chapter 23 - table 23.1 it is stated that "extreme weather events currently have significant impacts in Europe in multiple economic sectors as well as adverse social and health effects" (high confidence). (ITALY)
2216	SPM	22	0	22	0	Figure SPM.2 (A). There are both major and minor symbols on rivers, lakes, floods & drought in the regional-scale impacts for Asia. Isn't one major symbol is enough? (JAPAN)
2217	SPM	22	0	22	0	Figure SPM.2.(A) This figure is difficult for policy-makers to use presented in a figure, and could perhaps be renewed into a table. We find it hard to define the specific region to which each mark is referring to and if it is intended as a comprehensive presentation of observed impacts, we are under the impression that some observed impacts are missing from each continent. The reader is also confused about the authors' intentions of selecting specific locations such as the Bering Strait, Hawaii and Mauritius in the figure. (JAPAN)
2218	SPM	22	0	22	0	Figure SPM2 (A) shows impacts on marine ecosystems almost everywhere except in Africa. Does it mean that the assessment is that marine ecosystems were much less affected in Africa than in other regions, or that there is a lack of data (hence no attribution) ? If the absence of "icon" in a region may result from lack of data, this should be explained. An possible solution could be to add grey or dashed icons for "lack of data" in the relevant regional boxes. (BELGIUM)
2219	SPM	22	0	22	0	Figure SPM2 (A) : It is not easy to identify the key features of this map rapidly. Please improve the following icons : terrestrial ecosystems, food production, livelihoods, coasts and sea-level. As these icons are small, they should be as simple and schematic as possible - look for "tree, agriculture... " (not necessarily with a tractor). There are simple icons that would facilitate the reading of the map. (BELGIUM)
2220	SPM	22	0	22	0	Figure SPM2 (A): according to the map, there are no observed impacts on livelihoods, health & economics in Europe. Could you check that this is correct ? (e.g. regarding heatwaves) (BELGIUM)
2221	SPM	22	0	22	0	Figure SPM.2: the combination of so many information of different nature in the same figure makes it difficult to read. Panels B, C and E would not be clear to policymakers as they are. (B) is too detailed, and (E) is extremely difficult to understand. (BELGIUM)
2222	SPM	22	0	22	0	Figure SMP2(b) and its description are not useful - not meaningful, particularly the blue boxes are overlapped. The only clear information shown in this figure (b) is the dark blue line of average conventional measurements and the global average. (UK)
2223	SPM	22	0	22	0	Figure SPM.2 may be useful for indicating the range of sectors affected, but it gives no information about the extent of any of the impacts. Is this the most useful information that could be presented? Are the movements of benthic algae and bony fish of wide enough interest to be given this prominence? (UK)
2224	SPM	22	0	22	0	Figure SPM.2. There is great detail included in these individual figures, particularly the maps, and it would be beneficial to enlarge these and spread them across two pages. (UK)
2225	SPM	22	0	22	0	Figure SPM.2. The top figure showing observed impacts is confusing due to the number of symbols scattered across the map. In places there are two symbols of the same type adjacent to each other but with different confidence levels, which makes it confusing to understand the message e.g. In the North Atlantic beside Europe there are two marine ecosystem symbols, one with medium confidence and one with high confidence. (UK)
2226	SPM	22	0	22	0	This figure is actually 5 separate figures combined into a single figure and as such is quite unwieldy and overwhelming for a layperson or policymaker. The first figure at the top of SPM.2 depicts observed impacts on different systems attributed to climate change. Unfortunately, the figure is so overly populated with icons and small text that it likely invites policymakers not to read it and try to decipher it. For example, the icon for wildfire looks a lot like the icon for terrestrial ecosystems to an untrained eye. The authors should greatly simplify this and reduce the number of symbols throughout. Please simplify the figure by asking: what are the most important pieces the authors need to convey to policymakers? (USA)
2227	SPM	22	0	22	0	Figure SPM .2 B is far too busy, but perhaps more importantly - the figure presents a concept whose implications are unlikely to be readily apparent to a policymaker. The authors should delete this figure, translate the relevant information into text and add it to the passage on p 3, lines 10-13. (USA)
2228	SPM	22	0	22	0	The figure SPM .2 C would be far more useful at a larger scale. The figure should be made stand-alone. In addition, it's unclear why certain regions are highlighted with black circles. Certainly studies exist beyond southern Europe, tropical Africa and the Amazon? Perhaps there is a way of showing which regions have been most affected by drought and/or tree mortality with the degree of darkness of the red dot in each area? (USA)
2229	SPM	22	0	22	0	Figure SPM .2 D: We support a graphic representation of changes in the marine environment, but find the present example doesn't convey useful information to the policymaker. Can the authors find a more policy relevant example? (USA)
2230	SPM	22	0	22	0	Figure SPM .2 E includes important information that deserves attention in the text. The authors should delete this figure, translate the relevant information into text and add it to the passage on p 3, lines 15-18. (USA)

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2231	SPM	22	1	0	0	Figure SPM 2 A: 1) This is a great and really informative map although quite complicated. Figure SPM2 A should become a separate figure and the legend should be extended. 2) Please explain the reasoning behind your selection of the impacts presented, including information about regional distribution, or hotspots of observed impacts. It is unclear how the localized impacts were selected. The underlying tables 18-5-18-9 show much more "points" and the process of "graphical synthesis" is not really clear. For example how is "Increase in rock slope failures in Western Alps" from Table 18-5 represented in Figure SPM.2? Please explain the concept in the caption. 3) Please change the symbol used for livelihoods, health and economics, the filled symbol is inappropriate. (GERMANY)
2232	SPM	22	2	0	0	Figure SPM.2 B: 1) It is not clear, what this figure is meant to indicate. It should be explained why this is important. 2) The figures focuses much on glaciers in the Himalayan region and doesn't give a good impression on global glacier mass loss. Further the graph is somewhat confusing. It is proposed to be substituted by a graph which presents a clear message as e.g. Fig.4.12 from the IPCC 5AR-WG I-Report (P 4-87). (GERMANY)
2233	SPM	22	3	0	0	Figure SPM.2 C: 1) It is not obvious whether the data on Panel C show trends of increased tree mortality (consistent with warming?), or simply the incidence of tree mortality due to heat and drought - please clarify in the legend. It seems like Panel C is suggesting a climate change impact on the occurrence of tree mortality, but this should be spelled out clearly. Also, it is difficult to reconcile the content of Figure SPM2 panel A and panel C. 2) What is the relationship between wildfires and "heat and drought induced tree mortality"? 3) Legend: It is not clear what "broad areas described in specific publications" means. Please specify. (GERMANY)
2234	SPM	22	4	0	0	Figure SPM.2 D: The figures shows the data from 1900 to 2010, i.e. for 110 years. The cumulative (i.e. total) distribution change of this period should be shown, not the shift per decade. The legend says "standard error", please explain what this is for non-scientist. (GERMANY)
2235	SPM	22	5	0	0	Figure SPM.2 E: The figures shows the data from 1960 to 2013, i.e. for 53 years (although it seems that trend for 2013 cannot be complete). The cumulative (i.e. total) distribution change of this period should be shown, not the shift per decade. (GERMANY)
2236	SPM	23	0	0	0	This scheme with cycles and arrows contains many vague terms to us. E.g.: 'Deliberative process'. We can only guess: does it mean that there is no dictator in the region? The term analysis in orange: but 'analysis' occurs in all panels. 'Review & learn' is also a form of 'analysis', etc. Or to assess risks in orange block one should monitor too in many cases, etc. There is nothing wrong with the graph but the question is: is this graph helpful for the reader? (NETHERLANDS)
2237	SPM	23	0	0	0	Figures and Tables SPM Figure 3: Vague: Need arrows on the component linkages, to show / emphasise the connections between the component parts (IRELAND)
2238	SPM	23	0	0	0	Figure SPM 3 Is this figure needed? If so, it lacks an explanation in the text, merely a title. It needs an explanation with an example. (SWEDEN)
2239	SPM	23	0	0	0	Figure SPM.3: This figure is very academic and not useful for policy makers. The statements might mean a lot within the academic discussion, but for non-experts who are not involved in these discussions, they seem quite self-evident. The text or the caption should indicate why these statements are a significant and policy relevant research finding. In addition, what do the linkages between the coloured boxes mean? (GERMANY)
2240	SPM	23	0	0	0	Change title to "The decision-making context" (POLAND)
2241	SPM	23	0	0	0	Correct 'vulnerabilities, & objectives' by 'vulnerabilities & objectives' (POLAND)
2242	SPM	23	0	0	0	Figure SPM.3: It is suggested to substitute this figure by figure 25.3 from the main report because the inclusion of the loop describing the involvement of people and the relevance of knowledge seem is very relevant also for the policy level. (AUSTRIA)
2243	SPM	23	0	0	0	Figure SPM.3. Canada recommends deleting Figure SPM.3. Iterative risk management is not what the IPCC WGII is assessing and readers can refer elsewhere for diagrams illustrating the concept. The process shown in this diagram will also already be well-known and understood by policymakers and others. Suggest that space in the SPM for Figures would be better used to present results of the WGII assessment. (CANADA)
2244	SPM	23	0	0	0	Figure SPM 3: This figure is based on a general risk approach. Have you considered using other ways of drawing the adaptation circle, like e.g. at EU level ( <a href="http://climate-adapt.eea.europa.eu/adaptation-support-tool/step-4">http://climate-adapt.eea.europa.eu/adaptation-support-tool/step-4</a> ). Would it be useful to include "adaptation" in terms applied in the figure? E.g. "identify adaptation options" instead of "scoping". Could you also consider to put some arrows between the boxes to simplify the understanding? (NORWAY)
2245	SPM	23	0	23	0	Figure SPM.3 would be improved by the addition of clockwise arrow heads on the curved lines between the main boxes (UK)
2246	SPM	24	0	0	0	Figure SPM.4 A - This figure differs from Fig 2.12 of WG1, which had 3 figures representing NCDC, GISS and HadCRU. It is not clear how SPM.4 A has been created from these three datasets, as the WG2 figure does not match any of the individual WG1 figures. (AUSTRALIA)
2247	SPM	24	0	0	0	Description of the left axis in the figure SPM 4, Part (B) is wrong. Not "above" but "°C difference from 1986-2005 period" or just °C with description in the text. (CZECH REPUBLIC)
2248	SPM	24	0	0	0	The upper panel of this graph comes from WG I, albeit with different coloring. We checked how the trends were obtained: linear OLS regression. This is okay. But if one uses the uncertainty in the slope there is a statistical assumption which should be fulfilled: the residuals should be a white noise process. This is typically not the case for temperatures in a grid box over the sample period 1900-2010. The consequence of this is that the uncertainty estimates become 'uncertain'. Perhaps showing no uncertainties? (NETHERLANDS)
2249	SPM	24	0	0	0	Please include a reference to the calculations underlying figure SPM.4. (NETHERLANDS)
2250	SPM	24	0	0	0	Figures and Tables: SPM Figure 4 (diagram b). RCPs should be explained in text. Comments: In the TS the section on Consequences of Large Temperature Increase (pgs 18 & 19) sets out the impacts projected for large temperature rise. It would be useful to include some of this as a way to illustrate the salience of the different RCPs (IRELAND)
2251	SPM	24	0	0	0	Figure SPM.4. Panel (C) white dots in the figure are difficult to detect especially on top of the yellow background. Please, consider revising color coding of temperature changes to make the maps easier to read. (FINLAND)
2252	SPM	24	0	0	0	Figure SPM4 B: here the term RCP is used without explanation. The policymakers who read this SPM may not at all be familiar with these new ways to work instead of emissions scenarios. Also, terms like GISTEMP etc are used without explanation. (SWEDEN)

#	Ch	From Page	From Line	To Page	To Line	Comment
2253	SPM	24	0	0	0	Figure SPM.4: Panel A) should read 'Observed Temperature Rise' It might be more useful to show diagonal lines as diagonal lines in the key, rather than showing a box labelled 'diagonal lines' (UK)
2254	SPM	24	0	0	0	Figure SPM.4: Panel B) it would be easier to read if y-axis tick marks were also shown on the right hand side y axis. (UK)
2255	SPM	24	0	0	0	Figure SPM.4: Panel C) should read 'projected temp rise'. Better to show diagonal lines in the key than label a box with diagonal lines. the scale of panel c is hard to read/see - especially the white dots. The use of white boxes with labels to mean slightly different things to Panel A) could lead to confusion (UK)
2256	SPM	24	0	0	0	Figure SPM 4, (A) and (C). There is an inconsistency between the data of section A and of section C. The central region of the Amazon Forest is shown on map A in white, which means there is "insufficient data" for that part. On the map for RCP8.5 of section C, roughly the same region is considered to have a projected temperature increase of approximately 6 degrees Celsius. It seems very improbable to be able to have such a projection with insufficient data. (BRAZIL)
2257	SPM	24	0	0	0	Figure SPM.4: Canada recommends the authors consider deleting this figure as it contains purely physical climate results, which is the domain of WGI. References to the figure in the text of the SPM merely point out that the scenarios are similar in the early 21st century and diverge at the end. Box SPM.4, Figure 1 left panel would be an equally good reference for this point. The observed changes shown in the Panel A are not discussed in the SPM at all, and the figure in Panel B seems to be a repetition of the figure in Box SPM.4. We suggest replacing the figure with appropriate references to WGI and Box SPM.4. IF there is a strong desire to retain such a figure, then we strongly recommend using the appropriate WGI Figure as the information is based in the WGI report. We are concerned that the use of two different figures conveying the same information, by two different IPCC Working Groups, will create communication challenges and create potential error risks for the IPCC. We are also particularly concerned by the artificially abrupt change in colour along the colour scale in this WGII version (see also the subsequent comment from Canada on Figure SPM.4). (CANADA)
2258	SPM	24	0	0	0	Figure SPM.4, Panel A: Canada strongly encourages the use of a more conventional colour scale in order to ensure objectivity in the reporting. Currently, the gradation jump at 2degC is quite strong, which suggests that there may be a bias in figure in highlighting this level. Then at 4 C the colour scheme reverts to cooler tones (violet). The colour scale could be adjusted to distinguish more clearly between regions of positive and negative trends, i.e., by using blues indicate negative trends, and shades of yellow, red and purple indicate positive trends. Consistent with the previous comment from Canada on Figure SPM.4, we recommend that using the appropriate figure from the WGI report would be preferable if this figure is to be retained in the SPM in order to ensure consistency between WGs and limits potential risks to the IPCC. (CANADA)
2259	SPM	24	0	0	0	Figure SPM.4, Panel C: References to "gray areas" in the legend for Panel C should be deleted as there do not appear to be any gray areas in the Figures. With readers' attention drawn to the possibility of gray areas, they may wonder whether they are missing something when they can't find it on the figure. (CANADA)
2260	SPM	24	0	0	0	Figure SPM.4, Panel B: This panel appear to present the same information/figure as shown in Figure 1 in Box SPM.4 on page 25. Suggest deleting to avoid repetition. (CANADA)
2261	SPM	24	0	0	0	Figure SPM.4. panels A and C: Could you please present these maps with the temperature scales referring to the same period so they can be comparable? For example by showing the temperature in 1986-2005 compared to 1901. (NORWAY)
2262	SPM	24	0	0	0	Figure SPM.4. C: In the legend: "Gray: divergent changes" could be placed as the lower right since it is least used. (NORWAY)
2263	SPM	24	0	0	0	Figure SPM.4. Please consider to insert Figure TS.5. in the SPM. Since also Box SPM.4 Figure 1. focuses on temperature it would be appropriate to include this figure as Figure SPM.5. (NORWAY)
2264	SPM	24	0	0	24	Figure SPM.4: To get the full information about observed and projected changes in annual average temperature please add the information about the observed warming, which is 0,61 [0,55 to 0,67] °C from 1850 - 1900 to the reference period (1986 - 2005), as done in Box SPM.4. Figure 1. [WG I-SPM, table SPM.2, P 21] (compare comment P 7, L 28). This information is highly relevant for policy makers. In A and C, the information could be integrated below the colour range in the top left corner. In Figure B, it could be integrated as a solid line at approx. -0.6°C. (GERMANY)
2265	SPM	24	0	24	0	Throughout most of the text global warming levels are referenced to preindustrial, so it would be appropriate to do this for figure B at least, as this gives a clear reference from preindustrial to end 21st-century for the observations and scenarios considered. It would also assist policymakers reconcile the levels reported in the SPM for impacts, vulnerabilities and risks against the projections shown in figure B. (GERMANY)
2266	SPM	24	0	24	0	Figure SPM.4 part C) is taken from WGI AR5. Could this figure be replaced or complemented by projections done by WGII? See Figure SPM.6 B as an example, where information from WGI and II have been combined. Rational: Taking regionalized projections from WGII could ease as well as strengthen the connection between Figure SPM.4 and Box SPM.4 Figure 1 (RFC). The argumentation in chapter B-1 could exclusively base upon results of WGII then. (GERMANY)
2267	SPM	24	0	24	0	Figure SPM.4 (A). This figure looks different from the quoted sources: WGI AR5 Figures SPM.1 and 2.21 (as stated on L30, p.5). How are the figure modified from the original two? We've noticed, for example, there is a solid red box just next to white area (where data is insufficient) in Sahel. In Figure SPM.1 in WGI report, the same spot is dark red, indicating only 1.5-1.75 C increase. There are also other differences between this figure and the WGI figure, i.e. the shape of white area in South America. (JAPAN)
2268	SPM	24	0	24	0	Figure SPM.4: The white areas in figure (A) where the temperature trend cannot be calculated do not match with those in the WG1 figure SPM1b. Some of the white-dotted areas in figure (C) are hatched in the WG1 figure SPM8. These two figures should be consistent with WG1 figures. (JAPAN)
2269	SPM	24	0	24	0	Figure SPM.4 (A) : please change "observed temperature" to "observed temperature change" or move the temperature label bar (BELGIUM)
2270	SPM	24	0	24	0	Panel B of figure SPM 4 is duplicated as left panel of figure Box SPM 4 Figure 1. We would suggest deleting panel B of figure SPM 4, because it is useful to keep the left panel of Box SPM4 Figure 1. (BELGIUM)
2271	SPM	24	0	24	0	Figure SPM.4 : please revise the temperature color scale - currently all the red colors are little distinguishable, and it may seem odd that a trend near 0 is coloured in light yellow, as if it could already mean some danger (even for "no trend during the 20th century", upper panel). The color bar also seems inconsistent with the map. (BELGIUM)

#	Ch	From Page	From Line	To Page	To Line	Comment
2272	SPM	24	0	24	0	Figure SPM.4, Panel C: Suggest that the colour scale be adjusted to distinguish more clearly between regions of positive and negative trends, i.e., by using blues indicate negative trends, and shades of yellow, red and purple indicate positive trends. We also encourage the use of a more conventional colour scale in order to ensure objectivity in the reporting - currently, the gradation jump at 2degC is quite strong, which suggests that there may be a bias in figure in highlighting this level. Then at 4 C the colour scheme reverts to cooler tones (violet). (CANADA)
2273	SPM	24	0	24	0	It is redundant and unnecessary to include panel (B) in Fig SPM.4, since the exact same information is presented in the following figure more clearly (Box SPM.4, Figure 1). The authors should, therefore, delete panel (B) in Fig. SPM.4 and, in the process, make Figure SPM.4 less cluttered. (USA)
2274	SPM	24	0	24	0	It appears that Panel A would benefit from making the color scale a little more sensitive. This would allow greater discrimination of warming levels in most regions, while rendering few or no regions "off scale." Presumably this scale was chosen to match that used in Panel C; however, for most readers the value of greater clarity in Panel A would exceed the value of having the same color scale in Panels A and C. (USA)
2275	SPM	24	0	24	0	In "SPM.4-C" do any "Gray" areas exist? If so, they are indistinguishable from other light colors. It would be worthwhile for the authors to specifically call out such regions in the caption if they exist - or remove that legend descriptor if there are no such regions. (USA)
2276	SPM	24	0	25	0	For more clarity and consistency throughout the SPM, all temperature changes (in Fig SPM4 and Box SPM4 Fig 1) should be given relative to a "preindustrial" reference. (BELGIUM)
2277	SPM	25	0	0	0	Description of the left axis in the figure Box SPM 4, Figure 1 is wrong. Not "above" but "°C difference from 1986-2005 period" or just °C with description in the text. Using the thermometers instead of left axes are not suitable here. (CZECH REPUBLIC)
2278	SPM	25	0	0	0	The legend for the right panel gives the level of risk. But the risk for what or whom? Please explain in the caption. Furthermore, the third bar is entitled 'distribution of impacts'. But what is meant with that? We could not understand that from the caption or the text on page 8, lines 1-5. Finally, for the same bar (the third one): in line 2 on page 8 it is stated as moderate at recent temperatures. But if we check the color in the right panel of Figure 1 Box SPM.4, the color is white around a warming of 0.0 degrees, meaning 'neutral'. Either something is wrong here or we fail to correctly interpret the text. (NETHERLANDS)
2279	SPM	25	0	0	0	Box SPM.4 Figure 1. BOX SPM 4 The new Reasons for concern figure is welcome. It would be interesting to the reader to learn about the changes since the TAR. Please include some details from the chapter on how the concept has been developed and the colour scheme modified - Chapter 19, section 19.6.3., p. 37 as well as pp. 39-46. The figure in the TS (in Figure 19-4, p. 104) contains more information than the respective SPM figure. The texts in Ch. 19 figure seem very relevant also for the SPM. We also ask you to explore, if key messages from Figure 19-5 could be added to the SPM; on how vulnerability may change under alternative socio-economic developments, see also section 19.6.3.1 p. 38. (FINLAND)
2280	SPM	25	0	0	0	Box SPM 4 Figure 1. This figure is quite well explained in the text, but maybe it would be more clear to write Level of risk for severe impacts in the Figure rather than just Level of risk as it is now. (SWEDEN)
2281	SPM	25	0	0	0	Box SPM.4 Figure 1: Consistent with Canada's comments on Box SPM.4, we recommend that the descriptors of the five Reasons for Concern be made more consistent and described in each case as "impacts" (i.e. Impacts to unique and threatened systems, Impacts of extreme weather events etc.). (CANADA)
2282	SPM	25	0	0	0	Box SPM.4, Figure 1: Why does the risk associated with extreme events not change between 1 C warming (where it is high), to 5 C warming (where it is still high, not very high)? Would not the risks associated with extreme events be much higher at 5 C warming than at 1 C warming? (CANADA)
2283	SPM	25	0	0	0	Box SPM.4 Figure 1: This is a very important and useful figure. (NORWAY)
2284	SPM	25	0	0	0	Box SPM4 Figure 1: In Figure 1 we were unable to identify the criteria used to measure risk levels expressed on the graph. (Nicaragua)
2285	SPM	25	0	24	0	Figure SPM.4: The left figure in Box SPM 4 Figure 1 is the same as Figure SPM.4. B: Please delete Figure SPM.4. B and refer to it in the figure caption. (GERMANY)
2286	SPM	25	0	25	0	Box SPM4 Figure 1: We strongly support the inclusion of this figure in the SPM. Right panel: the colour coding for extreme events does not seem to be in line with the text on P 7 L 45-47, where it is indicated that recent temperature were related with moderate risk, while here the risk area is neutral. (GERMANY)
2287	SPM	25	0	25	0	Box SPM.4 Figure 1. We assume that the 0.6 degree C value (change from preindustrial to 1986-2005 mean) is intentionally rounded from 0.61---the value approved for IPCC WGI AR5---to one decimal place. But in order for the policy makers to know the authority of 0.6, a footnote should be added to site the source of 0.6: "0.61 degree C in 1986-2005 compared to 1850-1900" in WGI/AR5/ SPM on p.17 and p.21. (JAPAN)
2288	SPM	25	0	25	0	Box SPM.4 Figure 1: The level of risks shown as burning embers in the right-side panel, when flanked with the left-side panel showing global temperature increases, might lead to misunderstanding that those risks are projected to materialize exactly at the time when the temperature reaches the thresholds. To avoid this concern, the two figures should not be placed side by side. (JAPAN)
2289	SPM	25	0	25	0	Box SPM.4 Figure 1: The left-side panel showing future projections based on RCP2.6 and RCP8.5 could bring about a wrong understanding that there are no more than two pathways available for choice in the future. In accordance with the WG1 figure SPM7a, results based on RCP4.5 and RCP6.0 should be given in this figure. (JAPAN)
2290	SPM	25	0	25	0	Box SPM4 Figure 1 is a combination of two WGI figures. We would like to suggest to either use WGI SPM.7 alone, or to include more information from it, that is, at least keeping the model uncertainty range for the past : in this final draft SPM, the past looks "disconnected" from the future, partly because the type of data is changing near 2005 - 2010. We are wondering if the past and the future are really comparable in this way, knowing that WGI did not do it in its SPM. Whatever is decided, we need to have the guarantee from the WGI that it is correct and consistent. (the WGI performed in-depth model - observations comparisons, for example in WGI TS.9; difficulties with the combination done in this WGII draft include incomplete data coverage in the observations combined with full coverage for the models, absence of appropriate knowledge of the uncertainties, and most probably inadequacy of "visually" comparing year averages for the observations to the uncertainty range provided for the future - as a result, this gives the impression that model results are further from observations than shown in figure WGI TS.9) (BELGIUM)
2291	SPM	25	0	25	0	Box SPM.4 Figure 1: please add the global warming projections in 2100 for each RCP, as done in WGI SPM.7. As all RCPs are referred to in the text (in relation with impacts), it is relevant to have all RCPs here. (BELGIUM)



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2292	SPM	25	0	25	0	Box SPM.4 Figure 1, right panel : it is difficult to understand the meaning of some of the indicators presented here, especially for the "distribution of impacts". The text does provide enough information (see our related comment on page 8, line 1-5), and we would prefer to have a figure that is more self-sufficient. We suggest replacing this panel with figure 19.4, which provides more information. (BELGIUM)
2293	SPM	25	0	25	0	Box SPM.4 Figure 1. We would greatly appreciate to have a summary figure presenting the level of risks associated to the level of climate change for different sectors (water, food, health, ecosystems...), as it was available in the SPM of the AR4. This would provide information in a more concrete form. (BELGIUM)
2294	SPM	25	0	25	0	Box SPM4 Figure 1: Right panel: Horizontal gridlines for temperatures do not align with y-axis (UK)
2295	SPM	25	0	25	0	This is really two figures that logically tie together. However, the right hand figure depicts levels of risk within certain phenomenological categories such as extreme weather events, with increasing globally averaged temperatures. On the face of it, the diagram seems to convey a sense that temperature change and the associated risks are gradual and quasi-linear, yet everywhere in the text and in the text of all of the chapters (as well as in WG1), there is reference to the fact that climate change is likely to be non-linear. In addition, there is no sense of what the assessment of risk is built upon - expert judgement? Among other things the risk of this figure in its present configuration, is that it erroneously gives one the impression that climate change is linearly progressive/gradual, as are the risks. The authors should carefully consider whether this is an accurate message to relay to policymakers. (USA)
2296	SPM	26	0	0	0	The y axis says: maximum speed that species can move. But in what direction? Note: Figure 4-5 on page 143 of Chapter 4 shows that the figure shown in the SPM is based on temperature envelopes alone. What about precipitation changes? And what is ment here: maximum speed that species can move or maximum speed from observations? (NETHERLANDS)
2297	SPM	26	0	0	0	Figure SPM.5. The term 'carnivores' is much broader than the species assessed; it should be called 'carnivorous mammals', which is more consistent with the studies from Schloss 2012, Santini 2013 and Pacifici 2013. (NETHERLANDS)
2298	SPM	26	0	0	0	Figure SPM.5. To allow for the conclusions derived from this figure to be more meaningful, the consequences of species being below the climate-velocity-line should be clarified. According to 4,3,2,5 "The consequences of losing favorable climate space are not yet understood very well. (...). In the absence of adaptation, losing favorable climate space is projected to lead to reduced fitness, declining abundance and local extinction, with potentially large effects on biodiversity and ecosystem services". This is very relevant additional information that should be added to the caption, preferably with a confidence qualifier. (NETHERLANDS)
2299	SPM	26	0	0	0	There are important limitations of figure SPM.5 mentioned in section 4.3.2.5: "There are significant uncertainties in climate velocities, measured estimates of dispersal and establishment rates, and model formulations." In the same section: climate velocity is based solely on temperature, though for example precipitation may be a stronger driver (tentative conclusion); displacement includes both dispersal and establishment, with this figure focusing on dispersal (except for trees), though for many species establishment could be the limiting factor (4.3.2.5); the displacement rate for trees has medium confidence, for all other groups it's low confidence; some limiting factors are not included, like a portion of the plant-feeding insects' dependency on (slower displacing) host plants; implication of the outcome (ability to track climate velocity) are unclear. Also, climate change itself might not be the most prominent influence on species displacement. 4.3.2.5 mentions the increased vulnerability of species near a habitat boundary and how habitat fragmentation adds to this problem. In the RCPs, urbanization is included as a factor. The increase in world population, urban areas, roads, etc. and general change in land use might have a greater influence on species displacement than climate change. Considering all this together, we consider to remove this figure from the SPM. The single conclusion it supports (beginning on SPM page 8, line 48) can reference 4,3,2,5. This chapter shows a figure (4-5) containing the same information (Figure SPM.5 is derived from this figure but also discusses its limitations and uncertainties. (NETHERLANDS)
2300	SPM	26	0	0	0	Figures and Tables; SPM Figure 5; Figure is overly complicated and not intuitive, its communication point could be clearer. Consider redrawing the figure (IRELAND)
2301	SPM	26	0	0	0	Figure SPM 5. This figure is difficult to understand, even when reading the explaining textbox. The average climate velocity is also expressed as km per decade I guess, could be stated more clearly. (SWEDEN)
2302	SPM	26	0	0	0	Figure SPM.5: Suggest that the label for the right hand Y axis should be positioned horizontally as is the label for the left hand Y axis. Positioned as it is, it looks like it belongs with the other items of text along the right side of the graph (the info about the RCPs). Is the scale for the right hand Y axis (average climate velocity) also in km per decade? (CANADA)
2303	SPM	26	0	0	0	Figure SPM.5: There does not appear to be a black median bar for the Plant-feeding Insects column. Suggest explaining this either on the figure or in the caption. (CANADA)
2304	SPM	26	0	0	0	Figure SPM. 5. Vertical axis title, please consider rephrasing so that it reads "Maximum speed at which species can move/migrate". (NORWAY)
2305	SPM	26	0	0	0	Figure SPM. 5. Could you also include species in marine and coastal systems? (NORWAY)
2306	SPM	26	0	0	0	Figure SPM. 5. "plant-feeding insects" is there no median? (NORWAY)
2307	SPM	26	0	26	0	Figure SPM.5- Difficult to interpret: Which are the units of the right vertical axis, climate velocity for temperature? (SPAIN)
2308	SPM	26	0	26	0	Figure SPM.5: Relevant and interesting topic, but this figure is quite difficult to understand and needs further explanation. E.g. there should be a comment that this figure refers to changes in temperature only and that concomitant changes in temperature, precipitation etc. maybe potentially worse (or at least may complicate things even further). Please clarify what is meant by "climate velocity" - the right axis of the graph is not self-explaining. (GERMANY)
2309	SPM	26	0	26	0	Figure SPM.5: Climate velocity for RCP6.0 flat area (about 50km/decade) seems to be inconsistent with the underlying report: In the Figure 4-5 (A) of the underlying report, the Rate of Climate Change for RCP6.0 for 2050-2090 is slightly below 0.04 degree C/year, and corresponding climate velocity for RCP6.0 flat area is estimated to be about 4km/year (i.e. ca. 40km/decade) by the relationship shown in the Figure 4-5 (B). (JAPAN)
2310	SPM	26	0	26	0	The "plant-feeding insects" bar has no median bar. Is this correct? Also, the right-hand y-axis ("Average climate velocity") needs units and values (are they the same as the primary y-axis?). (USA)
2311	SPM	26	0	26	0	The authors should consider bringing additional information from the text and caption to the figure itself to increase its immediate clarity and relevance for policymakers. (USA)

#	Ch	From Page	From Line	To Page	To Line	Comment
2312	SPM	27	0	0	0	On how many studies is this figure based? Probably small, in which case it would be good to mention it in the Figure or caption. (NETHERLANDS)
2313	SPM	27	0	0	0	Please add to the graphs that it is the difference 2051-2060, compared to 2001-2010. (NETHERLANDS)
2314	SPM	27	0	0	0	Figure SPM.6. Color codes for "Warm water corals" is quite similar to -0.5 and -0.4 change in pH. (FINLAND)
2315	SPM	27	0	0	0	Figure SPM.6, B: The bar chart for corals integrates information for cold water and warm water corals. It should be replaced by two graphs with separated information for warm and cold corals, in order to complement the information shown on the map above. (GERMANY)
2316	SPM	27	0	0	0	Figure SPM.6.(B): It is suggested to include also for the Control calculation the underlying pCO <sub>2</sub> . (AUSTRIA)
2317	SPM	27	0	0	0	Figure SPM 6: Rather a lot of information within these diagrams - particularly the second. The blue shading is unclear and the lightening shade as the pH change becomes more extreme also feels counter-intuitive. You also cannot see the pH change AND the location of corals and fisheries, which is presumably what we need to see here. Also 'mollusk' or 'mollusc'? Both are accepted ways of spelling it, but there needs to be consistency within the document (and the other WG2 AR5 documents). I'm also not sure about the top-most of these two figures, for the reasons given for p9 line 39-45. (UK)
2318	SPM	27	0	0	0	Figure SPM.6. B. The colour coding is confusing where different categories overlap (UK)
2319	SPM	27	0	0	0	Figure SPM.6: Panel A) it is hard to discern between colours for catch potential 0-4% and -1to-5% (UK)
2320	SPM	27	0	0	0	Figure SPM.6: Panel B) hard to discern between no effect and negative effect colouration. Perhaps use other colours? (UK)
2321	SPM	27	0	0	0	Figure SPM.6: The colour scale on this figure is a little confusing. Usually blue colours show a decrease and red an increase, but the opposite is used here. Moreover the colour bar is backwards, with increases on the left and decreases on the right. Also, is there a reason why the ranges for each colour bar are very slightly different for the negative vs positive values? (CANADA)
2322	SPM	27	0	0	0	Figure SPM. 6. Figure (A) is for RCP 6.0 while figure (B) is for RCP 8.5, this is somewhat confusing. Please consider if is possible to use the same RCP for both panels or it would help to mark the individual panels with its corresponding RCP. (NORWAY)
2323	SPM	27	0	0	0	Figure SPM. 6. (B) Color scale for pH: please consider using different colors, as it is now, we can distinguish only 2 colors. Please consider inverting the scale so that the reference (0) are on the left side. (NORWAY)
2324	SPM	27	0	0	0	Figure SPM. 6. (B) The 3 graphs under the map. Horizontal axis in pCO <sub>2</sub> (microatm): how does this axis relate to the color scale of pH? We need to be able to link those two values to extract meaning from this figure. Please clarify. You write in the caption that each category corresponds to a different RCP, could you please write it on the figure aswell? (NORWAY)
2325	SPM	27	0	27	0	Figure SPM 6 : panel A and panel B relate to very different scenarios (SRES A1B and RCP 8.5) and time horizons (2051-2060 and 2100) . Would it be possible to harmonise this by using similar or identical scenarios ? If not, it is important to clearly flag that those scenarios and time periods are different. (BELGIUM)
2326	SPM	27	0	27	0	Figure SPM.6: The bar charts at the bottom of this figure might be a bit easier to read if the three components (positive, negative and no effect) were plotted in three contrasting colours. Also, the numbers at the tops of these charts need to be explained (e.g., number of studies?). (CANADA)
2327	SPM	27	0	27	0	It is unclear why cold water and warm water corals are shown on the map, while sensitivity is shown only for "all" corals. It would be preferable to show sensitivity for both categories. (USA)
2328	SPM	27	0	27	0	Given global variability in ocean acidification throughout ocean regions and systems, it would be most accurate to also provide sensitivity for some of the higher pCO <sub>2</sub> categories included in the underlying Chapter 6 figure. (USA)
2329	SPM	27	0	27	0	The blue values for pH look like conventional depictions of water. In addition, it is difficult to distinguish among them. The authors should, therefore, use a different color scale. (USA)
2330	SPM	28	0	0	0	This graph is unclear. We have never seen a graph in the literature with on the y axis a percentage of studies which show 'something', no matter what. This is tricky for many reasons. First, there are many quality differences between Journals. A result in an article from Nature should not be compared to one from a Journal with impact factor around 0.9, etc. Furthermore, one article shows results for one crop yield while another article shows crop yields for say 10 crops. Then, one article will show global results, others results for a continent or even for a country. Each study will assume other emission or economic scenarios for the period up to 2109 (being the end point of this graph). Finally, some studies will incorporate adaptation, others not. To conclude: it is not wise to aggregate all these different studies with different levels of quality into one graph. It would be better to show yield results from one top journal. And then in words how other studies compare to these results. Our final comment is on the interpretation of this graph: the thick black line is almost constant from 2030 to 2109. This is highly unlikely given climate change projected for the coming 100 years. (NETHERLANDS)
2331	SPM	28	0	0	0	The y axis presents percentages from 0 to 100. But the colored boxes can be both negative and positive, which may be confusing. You could present the negative yield changes under the zero y axis and the positive values above zero. That would avoid misunderstanding. (NETHERLANDS)
2332	SPM	28	0	0	0	It is suggested to clarify Figure SPM.7, which is confusing. (CHINA)
2333	SPM	28	0	0	0	Figure SPM7: It is not clear from figure and caption what is shown here: please specify the future climate change scenario or range of scenarios this figure refers to. Also please clarify the role of adaptation here, the current legend entry is not clear. (GERMANY)
2334	SPM	28	0	0	0	Graph presents crop yield as a function of of time with and without adaptation. It is confusing as both scenarios are probably cumulate whereas it would be more clear if graphs will be separate for each of them (POLAND)
2335	SPM	28	0	0	0	Figure SPM.7. It would be useful for this figure to delineate between study results which include adaptation measures and those which don't. (UK)
2336	SPM	28	0	0	0	Figure SPM.7: There is no indication of changes with and without adaptation on the figure, even though the caption says that this is what is shown. Suggest clarifying in the figure and caption how this is represented. It would be more useful (and more closely aligned with Table SPM.1) if for each time period two ranges of yield change were presented - one with adaptation and the other without adaptation. (CANADA)

#	Ch	From Page	From Line	To Page	To Line	Comment
2337	SPM	28	0	0	0	Figure SPM.7: This figure is difficult to interpret, and the y-axis had no label other than a percentage sign. We suspect the y-axis shows the percentage of studies finding yield changes within the ranges given, but this wasn't very clear. Please clarify. Suggest also that at least one examples be given in the caption to help ensure the graph is interpreted properly (e.g., assuming we have understood the graphic properly, then an example could indicate that for 2090-2109, >75% of studies agree that yields will decrease, with about half of these projecting decreases greater than 25%). (CANADA)
2338	SPM	28	0	0	0	Figure SPM. 7. Under which RCP or temperature increase is this figure valid? Please clarify. (NORWAY)
2339	SPM	28	0	0	0	Figure SPM 7 : The figure mixes up both changes with and without adaptation, and there is no mention of how the different studies differ (especially if they are all equally relevant or not). (FRANCE)
2340	SPM	28	0	0	0	Figure SPM.7 : Writing 0, 25, 50, 75, 100 as a scale on the left side of the figure is a bit confusing at first sight. What has to be shown is that the vertical dimension corresponds to 100% of the studies. Proposal : on the left side of the figure, simply draw a curly bracket and write 100% beside. (FRANCE)
2341	SPM	28	0	28	0	Figure SPM 7. The figure is hard to grasp. The percentage of studies in and of itself seems a strange parameter to illustrate. Should it be projections? (DENMARK)
2342	SPM	28	0	28	0	This figure is very difficult to understand and seems meaningless at best and misleading at worst without additional information. The primary message that seems to be conveyed is that there is an approximately 25% decrease in crop yield between 2009 and 2109. However, such a blanket conclusion masks critically important details such as - crop and regional variability (not all crops and regions are going to be affected similarly). If this is meant to be more of a "global assessment of the food picture", then the caption needs to explicitly state this. Moreover, the caption states that the figure shows impacts with and without adaptation, but it's not clear how one is to decipher the "with adaptation" scenario from the "without adaptation" scenario in this figure. A far more useful figure could show the differences in crop yield for wheat, rice, and maize, etc. in tropical vs. temperate regions. (USA)
2343	SPM	29	0	0	0	This graph is identical to Figure SPM.1 (and taken from the SREX report). We do not understand why this graph is repeated at the end of the SPM with the addition of the paragraphs with titles. In fact, we read it is a 'content' but placed at the end of the text. This is highly unusual: the structure of any text is always given at the beginning, not at the end. (NETHERLANDS)
2344	SPM	29	0	0	0	Figures and Tables; SPM Figure 8: Essentially the same as Figure SPM1. Consider integrating this with SPM figure 1 (IRELAND)
2345	SPM	29	0	0	0	Figure SPM.8 - delete the 2 sub-bullets under Limits to adaptation, under Adaptation & Interaction with mitigation pop-up window, for coherence with other lists (ITALY)
2346	SPM	29	0	0	0	Figure SPM.8: 1) Slow onset events are missing. The word "hazard" should be exchanged by "climate or weather events". 2) The lower grey arrow suggests that the two categories "emissions and land use change" cause anthropogenic climate change. This is misleading as emissions can result from a lot of different human activities, land use change only being one activity out of many (industrial activities, lifestyle etc.). Please revise. In addition, similar to the perspective shown in the label of the upper arrow "Impacts on Human and Ecosystems" you might want to write "Impacts of human activities on anthropogenic climate change". 3) The upper arrow is labelled "Impacts on Humans and Ecosystems". The SPM mainly differentiates between human and natural systems. How do natural systems relate to ecosystems? 4) Why does the upper arrow point from risk to development? It would seem more logical to us, if it would start above the left hand side box entitled "CLIMATE". 5) Please insert the references in the figure regarding your claim that the report also analyses "opportunities for reducing risks through mitigation and adaptation", see also P 6, L 32. This could be done for example with a reference to "reason for concern" in B-1 (footnotes 33 to 40) and regional risks for 2° or 4° warming in Table SPM.1 of B-3. (GERMANY)
2347	SPM	29	0	0	0	Figure SPM.8: Consistent with Canada's comments on Figure SPM.1, we recommend that Figure SPM.8 be moved up to replace Figure SPM.1 in order to reduce duplication. Space in the SPM, especially for figures, should avoid duplication and give priority to the presentation of results. (CANADA)
2348	SPM	29	0	29	0	Figure SPM.8. Same comment as on figure SPM.1: As both figures are mostly the same, we suggest using only one of them. Figure SPM.8 looks more complete, therefore, we suggest considering the use of this figure and delete figure SPM.1. (SPAIN)
2349	SPM	29	0	29	0	Figure SPM.8: this figure summarizes all aspects of climate change, however the role of WGI and WGIII is either ambiguous or very limited : in the "development" side of the diagram, mitigation only appears in relation to its interaction with adaptation. We think that the "Socioeconomic Pathways" box should include a reference to WGIII, as does the "mitigation" box in the lower left part of the figure. WGI is not cited either, while at least 2 boxes are relevant, - thus a solution might be to remove the reference to WGIII and explain that the figure, while being about all aspects of climate change, provides details and references solely for WGII-related aspects. (BELGIUM)
2350	SPM	29	0	29	0	Figure SPM. 8. The figure is abit hard to follow and could benefit from some improvements, and it needs a headline e.g. ". Please consider replacing the word "Hazards" with "Potential impacts", and describe it with core considerations as you do with the others. Rationale: The concept of hazard is not very well defined and is often associated with the possibility of a sudden, unwanted or dangerous event. The concept of potential impact has a broader meaning, more relevant to the numerous slow and gradual changes; and the different perspectives and approaches covered in WGII report. (NORWAY)