



**IPCC Synthesis Report
Fourth Assessment Report**

Comments on the Final Government Draft

GOVERNMENT and ORGANIZATION COMMENTS

– SPM (all batches to 7 November 2007) –

November 7, 2007



INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
SPM-A-1	0	0			We suggest adding a section at the beginning to highlight how much progress there has been since the TAR. The UK supports the highlighting in bold in the text important changes since the publication of TAR. (Government of United Kingdom)
SPM-A-2	0	0			We recognise the great deal of work that has gone into this Summary for Policymakers, and the difficulties that have had to be overcome. We would like to reiterate our earlier remarks and ask the authors, in their work on this final SPM draft, to recall that the Summary for Policymakers should be just that: a summary for policymakers. It needs to focus on information that is policy-relevant, not that which is science-relevant. (Government of New Zealand)
SPM-A-3	0	0			We are very concerned that the ocean acidification is not been mentioned in the draft SYR. It is in the WG I and II SPMs and is a new finding. It should be highlighted as an important feature since TAR, especially as it is already observable and the consequences need to be identified. (Government of United Kingdom)
SPM-A-4	0	0			To keep the document within its target page limit, most discussion of the graphics/tables have been removed from the text. While it is important for graphics to speak for themselves, it does add to the "choppiness" of the report and requires the reader to determine the message contained in the graphic themselves. (Government of Canada)
SPM-A-5	0	0			The UK thanks the IPCC for preparing this final draft of the SYR, which is a key document for communicating the AR4 to policy makers. (Government of United Kingdom)
SPM-A-6	0	0			<p>The UK notes the progress since the previous draft but feels that more could still be done to integrate more effectively information from different Working Groups, as was done in the TAR SYR and that more care could be taken to improve figure and introduce new figures. The SYR could make more use of the totality of information available in the underlying reports. We suggest the following as an introduction: "The six years since the IPCC's Third Assessment Report (TAR) have seen significant progress in understanding past and recent climate change and in projecting future changes. These advances have been made possible because of large amounts of new data, more sophisticated analyses, improvements in the understanding and simulation of physical processes in climate models and more extensive exploration of uncertainty ranges. The increased confidence in climate science provided by these developments is evident in this IPCC's Fourth Assessment Report.</p> <p>There is now higher confidence in projected patterns of warming and other regional scale features, including changes in wind patterns, precipitation, and some aspects of extremes and of sea ice. Since TAR confidence has increased that some weather events and extremes will become more frequent, more widespread and/or more intense during the 21st century.</p> <p>Studies since the TAR have enabled a more systematic understanding of the timing and magnitude of impacts related to differing amounts and rates of climate change. There is better understanding of impacts and risks, more precise identification of especially vulnerable systems, sectors, and regions, and growing evidence of the risks of very large impacts on multiple century time scales. This resulted in a stronger assessment of the key vulnerabilities</p> <p>Furthermore, whilst the TAR focussed mainly on CO₂, the AR4 discusses all relevant aspects of mitigation, including multi-gas stabilisation, sectoral options, technology, cost, policies etc., are now discussed, to provide the user with a comprehensive overview of how to achieve deep cuts in emissions."</p>

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					(Government of United Kingdom)
SPM-A-7	0	0			The synthesis report for IPCC AR4 is a very valuable document in relation to informing actions under the UNFCCC. (Government of Ireland)
SPM-A-8	0	0			The Summary for Policymakers will often be read as a standalone document, without the benefit of the detail in the underlying Topic chapters. Great care must be taken to ensure that all acronyms, scenario nomenclature, WG-specific jargon, uncertainty descriptions, etc., are all adequately explained—whether via footnotes or as an annex to the SPM itself. A thorough copyedit (grammatical, not substantive) should address this problem. (Government of United States of America)
SPM-A-9	0	0			The SPM has become so concise that it has sometimes become unintelligible to the policymaker, its intended audience, who is generally a lay reader. We urge the authors to consider, as they undertake their final revision, that including less information might mean more is transferred to the reader. (Government of New Zealand)
SPM-A-10	0	0			The SPM does not mention the role of changes in lifestyle and behaviour, an important element added to the WGIII SPM at the request of the Belgian delegation in Bangkok. It could be tackled under 4 (Government of Belgium)
SPM-A-11	0	0			The robust findings and key uncertainties of Topic 6 are central to policy making. While many of the key robust findings are noted in the SPM anyway, it is a little unfortunate that Section 6 of the SPM is not more extensive, to provide a summary guide for the policymaker. To the extent that space allows, we urge the authors to expand this section. (Government of New Zealand)
SPM-A-12	0	0			The reference time period should be clear for all statements, in particular re. Impacts. If the reference period is 1980-99 unless specifically mentioned otherwise, please indicate it at the beginning of this SPM. (Government of Belgium)
SPM-A-13	0	0			The flow/readability has been improved from the previous draft. (Government of Japan)
SPM-A-14	0	0			Some reviewers have commented that the SPM is confusing and contains a lot of repetition. While careful reading shows that the imagined repetitions are actually new statements about the same or similar climate variables, it seems clear that the use of the SPM would improve if the authors accommodated such readers by placing more emphasis on the information that is new in each case. We provide comment of specific examples through the text as they arise, but they include page 8 lines 3 to 9 and page 10 lines 16 to 27. (Government of New Zealand)
SPM-A-15	0	0			Please write out all acronyms the first time they are used throughout this report. This would improve the readability for those policymakers not intimately involved with climate change work. (Government of Canada)

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SPM-A-16	0	0			Please add the decline of permafrost to the list of impacts. (Government of United Kingdom)
SPM-A-17	0	0			Of concern is the constant switching between the use of a 1980-1999 baseline for temperatures and a pre-industrial temperature baseline in the document. It would be better for a synthesis report to use a consistent temperature baseline, so that policy makers are not confused by these changes. (Government of Canada)
SPM-A-18	0	0			Note that all SPM figure and caption modifications need to be incorporated into sister graphics in the underlying Topic chapters. (Government of United States of America)
SPM-A-19	0	0			It is therefore unfortunate that the text remains quite general and somewhat reticent (Government of Ireland)
SPM-A-20	0	0			It is suggested to include some reference in sections 1 to 5 (e.g. as a footnote) to the specific subsections of section 6. This would be userfriendly and inform the reader that there is some useful information on uncertainties in the document. (Government of Austria)
SPM-A-21	0	0			It is recommended that where possible the text is clarified and that key information is integrated in a manner (Government of Ireland)
SPM-A-22	0	0			It is noted that although the draft report has 22 pages, from the Austrian perspective the first page should not be counted, about two pages in total have been left free due to poor editing (which is quite natural in this stage). From that perspective the current draft has only a length of some 19 pages. This should give room for some additions that are identified in some specific remarks. (Government of Austria)
SPM-A-23	0	0			It is in places over qualified with respect to substantive issues. (Government of Ireland)
SPM-A-24	0	0			In general, the decision to make a distinction between the short-term and long-term perspective makes the report very confusing, and it is an unclear distinction in many cases - for example under mitigation scenarios it is simply a difference of 20 years! We had made suggestions with the previous draft to merge and re-order especially sections 3 and 4 in the summary report, but we notice that these have not been taken into account. We want to make this point again - as we think significant improvements could be made to the report if this were accepted by the authors. (Government of United Kingdom)
SPM-A-25	0	0			Generally, we think that figures and tables have been considerably improved since the last version. However, we think that readability could still be improved by simplification. We would also point out the importance of producing the figures in such a way that they also can be read in black and white printouts. (Government of Norway)

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SPM-A-26	0	0			General comment: Risk management is raised under 5 (The long-term perspective), but it is equally if not more valid to discuss this under 4 (Adaptation and mitigation actions). Many decision makers are currently addressing adaptation using a risk management approach, and it would be misleading to imply that the approach is applicable only for long-term responses. The issue is raised in many WG II chapters (especially 2, 17 and 19) but most of the text that alludes to risk management here is taken from WGT III, and focuses primarily on mitigation. Adaptation is an urgent near-term policy need, and risk management techniques are highlighted throughout the WG II report as being ideally suited to this challenge. (Government of Finland)
SPM-A-27	0	0			General comment: It might be useful to highlight the issue of "mainstreaming" of adaptation measures into existing policies (section 4). This again is emphasised in WG II chapters (2, 17 and 18) (Government of Finland)
SPM-A-28	0	0			Comments on text are aimed to its improve clarity. Some issues may be bettter conveyed more clearly via tables and figures. (Government of Ireland)
SPM-A-29	0	0			Canada is pleased with many of the changes made since the previous draft, particularly with respect to Section 5. However, we note that the SPM still lacks value added to the individual working group SPMs; there is little synthesis. In addition, the SPM is not written in a manner that is understandable to policy-makers who do not work exclusively on climate change issues, but who are a target for this product. This is unfortunate, as it will necessitate another level of synthesis / summation by persons outside the IPCC to communicate key messages that should have be delivered clearly in this document. (Government of Canada)
SPM-A-30	0	0			Austria notes that the length of the SPM is now 22 pages compared to 21 pages in the version from 15 May 2007. However, Austria also notes that the space in some pages is not used in an efficient manner (e.g. page 4). Furthermore Austria feels that the IPCC should not limit the information it feels is very important for the policy level because of constraints in space. The IPCC should show some flexibility because otherwise we would loose a lot of time in ranking the information according to its importance. It might be very difficult to reach such agreement. (Government of Austria)
SPM-A-31	0	0			Another instance of the lack of synthesis in this report arises from the continued switching between SRES scenarios. While Figure SPM.5 and the underlying text (Topic 3, Figure 3.2) focus on the scenarios B1, A1B and A2, Table SPM.2 uses scenarios A1B and B2. It is suggested that a true synthesis be more consistent in its choice of scenarios. (Government of Canada)
SPM-A-32	0	0			An overall comment is that truncated writing in the SPM seems to sometimes be inconsistent with or deviate from the well articulated and carefully constructed more lengthy statements in the six individual topics sections of the synthesis report. (Government of United States of America)
SPM-A-33	1	0			We question the description (last line of text) of the rest of the report as "the longer report of the Synthesis Report". It would seen to be more consistent with the useage in the other volumes of the AR4 to refer to "the full Synthesis Report". The term 'longer report' is used again instead of 'full report' at the botton of page 2 (in footnote 2).

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					(Government of New Zealand)
SPM-A-34	1	0			Reference to the glossary in the longer report might be helpful. (Government of Denmark)
SPM-A-35	1	36	1	38	On cyclones. An explanation of the difference between 'cyclone activity' and 'number of cyclones' was requested in the review preceding the current one. The fragment which raised that request then has not been essentially modified. The problem with those terms stemmed from the assertion that there has been an increase in tropical cyclone activity in the North Atlantic (lines 36-37) but the annual number of tropical cyclones has remained put (lines 37-38). For the layman on climatology-likely to be an average policymaker-it is counterintuitive that cyclone activity increases but the number of cyclones does not change. Perhaps combining the current text in lines 36-38 with a brief statement taken from Table 3.8 of AR4WG1 helps to dispel any confusion for the layman. The text proposed for lines 36-38 is: "There is observational evidence for an increase in intense tropical cyclone activity-longer lifetimes and greater storm intensities-in the North Atlantic since about 1970, but there is no clear trend in the annual numbers of tropical cyclones. {1.1, 1.4}" (suggested modification of the original in italics). (Government of Argentina)
SPM-A-36	2	1	5	25	The changes in climate and its effects is well described. However, sometimes a table with the major changes over the last century could be helpful for lay man readership as well as the difference with TAR (better estimates, indication of error margins) (Government of Belgium)
SPM-A-37	2	1			Section 1. Observed changes in climate and their effects. Reference to the increasing acidification of the oceans is important, as new findings of AR4. The inclusion of Topic 1 p.5, 28-30 (Increasing atmospheric carbon dioxide (CO2) concentrations lead to increasing acidification of the oceans. The average pH of near-surface seawater has fallen by 0.1 units since pre-industrial times,) in the SPM is suggested. (Government of Japan)
SPM-A-38	2	1	5	25	It is suggested to put together in a clear table, at the end of the chapter 1 the information about the observed changes and their effects, to get the most important information at a glance. (Government of Germany)
SPM-A-39	2	1			General comment on Section 1: The TAR SYR Q2 had an excellent Table SMP-1 on "20th century changes in the Earth's atmosphere, climate, and biophysical system". The AR4 SYR would improve with an update of this table, which presents much more information than the current text. (Government of European Community)
SPM-A-40	2	1			General comment on Section 1: The previous draft had a paragraph on observed ocean acidification (p. 4, ll. 27-30), which was deleted in the FGD. This very important information needs to be put back in. We suggest to add the following text based on Topic 1, p. 5, ll. 28-31 at the end of Section 1: "As a result of anthropogenic CO2 emissions, ocean surface water has become more acidic. The average pH has fallen by 0.1 units since preindustrial times, corresponding to a 30% increase in the concentration of hydrogen ions". (Government of European Community)

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SPM-A-41	2	2			Topic 1: Ocean acidification and its risks are not mentioned in the SPM, and it should. It is an emerging issue with lacking knowledge on the consequences for eg the marine ecosysteme and the C. Cycle. Since it i s rather an effect of the increasing concentration of GHG in the atmosphere and not of CC we suggest a paragr. on the effect of increasing concentration GHG in the atmosphere before topic 1 or change the title of topic 1 'observed changes in the effects of the increasing GHG concentration , in particular CC and its effects' (Government of Belgium)
SPM-A-42	2	2	2	2	Suggest adding the following text from Topic 1, pg. 1 lines. 7-10: "Since the TAR, progress in understanding how climate is changing in space and time has been gained through improvements and extensions of numerous datasets and data analyses, broader geographical coverage, better understanding of uncertainties, and a wider variety of measurements ." (Government of Canada)
SPM-A-43	2	3	2		. End sentence after “unequivocal”. Next sentence starts at “This” and continues “This is evident from observations of increases in global average air temperature, ocean temperature, widespread melting of snow and ice and rise global average sea level”. (Government of Ireland)
SPM-A-44	2	6			Insert an introductory paragraph about all observed changes, it could facilitate the reading and understanding. (Government of Spain)
SPM-A-45	2	6			Insert also a sentence/paragraph related to the significant increase of the global concentrations of GHG related to the GHG emissions growth from energy, transport... (Government of Spain)
SPM-A-46	2	7	2	8	We think that this sentence could be simplified e.g.: "Eleven of the last twelve years (1995-2006) rank among the twelve warmest years since 1850 based on observed global surface temperature." (Government of Norway)
SPM-A-47	2	7	2	8	The sentence "Eleven of the last twelve years (1995-2006) rank among the twelve warmest years in the instrumental record....." does not make sense. At best the second "twelve" is redundant. Either twelve years are among the twelve warmest, or eleven of the last twelve rank among the warmest. This has been a problem through previous versions and the English needs sorting out. (International Chamber of Commerce)
SPM-A-48	2	7	2	12	Note after the second sentence that the 100-year warming trend in the AR4 (0.74°C) is much larger than in the TAR (0.6°C). [WG1 TS3.1.1]. (Government of United Kingdom)
SPM-A-49	2	7	2	12	It would be important to mention as well (after the second sentence) that the updated 100-year warming trend in the AR4 (0.74°C) is much larger than in the TAR (0.6°C). [WG1 TS3.1.1]. (Government of European Community)
SPM-A-50	2	7	2		Insert “since 1850” after years.

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					(Government of Ireland)
SPM-A-51	2	7	1	11	For comparability with other information, and as the reference to changes relative to pre-industrial levels is often relevant for policy-makers, please insert following sentences: "This 100 year linear trend is higher than the one given in the TAR for (time frame) of 0,6°C. The total temperature increase from 1850-1899 to 2001-2005 is 0.76 [0.57 to 0.95] °C." (Government of Germany)
SPM-A-52	2	7	2	11	Add the phrase from the WGI SPM "The linear warming trend over the last 50 years (give numbers) is nearly twice that of the last 100 years." The result will be of particular importance to policymakers because it indicates that an increasing rate of warming has persisted for some time and therefore adds context to the sentence about 11 of the last 12 years being among the warmest on record. (Government of Canada)
SPM-A-53	2	8	2	9	To reflect the improvement of the scientific knowledge since the TAR, it should be convenient to compare the warming trend of 0.74°C in AR4 to the warming trend in TAR (0.6°C). It is relevant to include after this sentence:is therefore larger than the corresponding trend for 1901 to 2000 given in the TAR of 0.6°C [0.4 to 0.8] °C. (Government of Spain)
SPM-A-54	2	8	2	9	The significance of the 1906-2005 range, that it is 100 years, is lost to the lay reader. We suggest this is one occasion where the text has lost some meaning by being too concise, and propose: "The linear trend of global surface temperature over the last 100 years (1906-2005) was 0.74 [0.56 to 0.92]°C warming per century (Figure SPM.1)" (Government of New Zealand)
SPM-A-55	2	8	2	8	Replace "the 1906-2005 linear trend" by "the 1906-2005 linear approximation" as the temperature increase is not linear, this could lead to confusion (Government of Belgium)
SPM-A-56	2	8	2		Replace "The 1906-2005 linear trend etc with "The global surface temperature increased was 0.74 [0.56 to 0.92] C between 1906 and 2005 (Government of Ireland)
SPM-A-57	2	8	2		. Remove "(since 1850)" (Government of Ireland)
SPM-A-58	2	9	2	9	We suggest to eliminate "per century", as it seems redundant since you already mentioned the period "1906-2005" (Government of Mexico)
SPM-A-59	2	9	2	9	In footnote 1, the last sentence is not necessary and could be deleted in order to reduce unnecessary information. (Government of France)
SPM-A-60	2	9	2	9	In footnote 1, please replace "i.e., there is" by "with". (Government of France)

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SPM-A-61	2	9	2	19	Editorial: References to Figure SPM.1 should be revised to indicate SPM.1a, SPM.1c and SPM.1b, as appropriate. (Government of Canada)
SPM-A-62	2	10	2		Replace sentence text by “The temperature increase was greatest at higher northern latitudes (Government of Ireland)
SPM-A-63	2	11	2	11	We suggest a slightly shorter and less scientific wording, namely: “Land regions have warmed faster than oceans.” (Government of Netherlands)
SPM-A-64	2	11			Figure SPM.2 only supports this statement for the time frame 1970-2004. Suggest remove reference to figure in this spot. (Government of Canada)
SPM-A-65	2	12	2	12	The finding about the unprecedented nature of current warming from paleoclimatic evidences, noted on page 3 (lines 10-12) is more appropriately placed immediately following the conclusions from instrumental record. (World Meteorological Organization)
SPM-A-66	2	12	2	12	Please add the sentence from former SPM, because this is an important information: "On average, surface air temperatures over land have risen about double the ocean rate after 1979." (Government of Germany)
SPM-A-67	2	14	2	18	In order to clarify the text, please consider adding Figure SPM2 from the WGIII SPM. (Government of Denmark)
SPM-A-68	2	15	2	16	Unless the annual average sea ice extent has some special significance, we do not feel it is useful to give both it and the summer extent. The winter extent would seem more meaningful, if a second parameter is given. But we suggest the summer extent is enough to give the message to a policymaker, and propose: "Satellite data since 1978 show that average Arctic sea ice extent in summer has shrunk by 7.4 [5.0 to 9.8]% per decade" (Government of New Zealand)
SPM-A-69	2	19	2	22	Wording of the second sentence in this paragraph should be improved to make clear over what time period the rate of 1.8mm/yr applies (1961-1993 or 1963-2003). Would suggest "Global average sea level rose at an average rate of 1.8 [1.3 to 2.3] mm/yr between 1961 and 2003, and by 3.1 [2.4 to 3.8] mm/yr between 1993 and 2003, with concentrations..." (Government of Canada)
SPM-A-70	2	19	2	23	We suggest that this paragraph on sea level is moved to between lines 12 and 14, I.e. between the paragraph on temperature and that on snow and ice, to match the order in which the parameters are displayed in Figure SPM.1. (or that the figure be re-drawn). (Government of New Zealand)
SPM-A-71	2	19	2	19	Rewrite start of sentence to read “Observational evidence for sea-level rise is consistent with warming ...” (Government of United States of America)

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SPM-A-72	2	19	2	23	At some point in this paragraph (perhaps lines 19-20), reference should be made to the observed changes to sea levels and ocean temperature. We suggest using the sentence from Topic 1, pg. 1, lns. 38-40: "Observations since 1961 show that the average temperature of the global ocean has increased to depths of at least 3000 m and that the ocean is taking up over 80% of the heat added to the climate system." [From Topic 1, page 1, line 38-40] (Government of Canada)
SPM-A-73	2	25	2		Start with "Precipitation has increased (Government of Ireland)
SPM-A-74	2	25	2	28	In order to give more accurate information on the reduction of precipitations the sentence would be:central Asia but "drying has been observed" in the Sahel, the Mediterranean,.... (Government of Spain)
SPM-A-75	2	26	2		End sentence after "Asia". New sentence starts "Precipitation has declined .." (Government of Ireland)
SPM-A-76	2	27	2	28	The statement that "The area affected by drought has likely increased in many regions since the 1970s" is vague and potentially misleading without further information or context. For example, are there other regions (e.g., such as those cited earlier in this paragraph) where the incidence and/or area affected by drought is either unchanged or has decreased? The finding as stated is weak. As in any 30-year period, even solely from natural variability, the areal coverage of drought would be expected to increase in many regions, while decreasing or remaining about the same in many others. Further regional description is required, or an assessment should be provided of whether there has been a net global change (systematic trend) at some level of confidence in the areal coverage of drought. (Government of United States of America)
SPM-A-77	2	27	2	28	Insert please the former information: "There is a likely increase in heavy precipitation events and strengthening of westerly winds." Both parameters have important effects on human systems, hence it is important to mention these observed changes. (Government of Germany)
SPM-A-78	2	28	2	28	Mention explicitly the regions instead of writing "... increased in many regions ..." (Government of Switzerland)
SPM-A-79	2	30	2	33	Only the trends in extreme high sea level are clearly stated to have started (or been detected in data) since 1975. The trends in other extremes should include a start date too. Define the period of time for these observed trends in extremes, as was done in WG1 Table SPM-2. (Government of United States of America)
SPM-A-80	2	30	2	31	It is unclear whether the likelihood statement applies to reduced cold alone or also to increased heat. We suggest to reorder the sentence to: "It is very likely that cold days, cold nights and frosts have become less frequent over most land areas, and that hot days and hot nights have become more frequent." (Government of Netherlands)

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SPM-A-81	2	31	3	31	What is the likeliness of hot days and hot nights having become more frequent? The term "very likely" applies only to the first part of the sentence. (Government of France)
SPM-A-82	2	31			We propose the following rewording: "... hot days and warm nights..." (Government of Norway)
SPM-A-83	2	31	2	34	There is still ambiguity in the current phrasing of this sentence as to whether or not the likelihood statement applies to the second set of observations (hot days and nights.) Suggest rewording as follows: "It is very likely that: cold days, cold nights and frosts have become less frequent over most land areas, while hot days and hot nights have become more frequent. It is likely that: heat waves have become more frequent over most land areas; the frequency of heavy precipitation events has increased over most land areas; the incidence of extreme high sea level..." (Government of Canada)
SPM-A-84	2	31	2	31	Precise if the increase of frequency ("more frequent") is a global fact or only in some regions (Government of Switzerland)
SPM-A-85	2	33	2	33	What is meant by "incidence of extreme high sea level"? Rewrite to read "and that the incidence of extreme high sea levels from storm surge (excluding...." Or at a minimum include a definition for the non-coastal science reader. (Government of United States of America)
SPM-A-86	2	33	2	33	The meaning of "extreme high sea level" is not likely to be clear to a policymaker. We suggest both a footnote reference to the glossary (where the entry for 'extreme weather event' is probably adequate as an explanation) AND the inclusion of additional text 'including storm surge but', thus " ... the incidence of extreme high sea level (including storm surge but excluding tsunamis) ..." (Government of New Zealand)
SPM-A-87	2	33	2	34	This should read as :...(except tsunamis, which are related to tectonic processes). I make this comment because there is a widespread believe that tsuanmis are caused by climate change (Government of Argentina)
SPM-A-88	2	36	2	38	There is still some confusion with the interpretation of cyclone intensity and frequency when these two points are used together. The current text still gives the feeling that there has been a quantitative "increase in intense tropical cyclone activity". The following is suggested to replace the current text: "There is observational evidence for and increase in the intensity of tropical cyclone activity in the North Atlantic since about 1970, but there is no clear trend in the annual numbers of tropical cyclones." (Government of Japan)
SPM-A-89	2	36	2	36	The phrase "increase in intense tropical cyclone activity" might be changed to "increase in the intensity of tropical cyclones", for more accuracy and clarity. (Government of Mexico)
SPM-A-90	2	36	2	36	Replace "evidence for" with "evidence of".

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					(Government of Australia)
SPM-A-91	2	36	2	38	On line 37, delete “, but” and initial cap “There” as a separate sentence. Consider adding the word “all” before “tropical” to make the distinction clear for the reader. Then add the following sentence from WG1 SPM (p.9 final version) to the end of line 38: “Multidecadal variability and the quality of the tropical cyclone records prior to 1970 complicate the detection of long-term trends in tropical cyclone activity.” The current statement fails to recognize how the multi-decadal variability and the quality of data before 1970, mentioned in the WG1 SPM, complicate these conclusions. (Government of United States of America)
SPM-A-92	2	36	2		In a footnote, explicit mention should be made of hurricanes, as a sub-class of cyclones. (Government of Canada)
SPM-A-93	2	36	2	38	For some readers the use of the terms "North Atlantic" together with "tropical" might appear somewhat confusing. We would propose that it is made clear that tropical cyclones here include hurricanes and typhoons. (Government of Norway)
SPM-A-94	3	1	3	2	In panel C of Figure SPM.1, add “spring-time” before ‘snow cover’. (Government of United States of America)
SPM-A-95	3	1			Figure SPM.1. comment: The label on the vertical axis ("Difference from 1961-1990") is poor. Please use "Change since 1961-1990" . (It otherwise implies that the time period 1961-1990 is somehow being compared to the temperature and other variables plotted.) (Government of New Zealand)
SPM-A-96	3	1	3	2	Editorial: It would be logical to make Northern hemisphere snow cover Figure SPM.1b, and global average sea level Figure SPM.1c, in order to provide parallel structure with discussion on p. 2. (Government of Canada)
SPM-A-97	3	2			Figure SPM1c – the NH snow cover data is not conveying a particularly clear trend or essential message this could be cut to save space, which is presumably at a premium in the SPM (Government of Belgium)
SPM-A-98	3	10	3	12	We question whether this text adds useful information for a policymaker (bearing in mind that the full Synthesis Report is available). The information about global temperatures for the last twelve years and for the last 100 years has been given earlier. This is just for part of the globe (albeit a populous part). If it must be included, it should be moved to follow the other temperature information in this section, on page 2 lines 7 - 12. (Government of New Zealand)
SPM-A-99	3	10	3	12	Shift these lines to Page 2, immediately following Line 12. (World Meteorological Organization)

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
SPM-A-100	3	10	3	12	reconsider wording (Government of Ireland)
SPM-A-101	3	10	3	12	Move this paragraph to the beginning of line 7 of page 2. This would allow putting together all findings related to temperature (Government of Spain)
SPM-A-102	3	10	3	12	Move this para up. It should not be under 'extreme weather events'. (Government of Australia)
SPM-A-103	4	1			Why aren't coral reefs in this section? Or polar sea ice? No two effects are more pronounced. (WWF International)
SPM-A-104	4	1	4	3	The current sentence states that observations were made on all continents and most oceans. However, it does not make completely clear whether systems in all these regions have actually been affected by recent climate change. For clarity, the sentence should be reworded to "Observational evidence shows that many natural systems, on all continents and most oceans, are being affected...". (Government of European Community)
SPM-A-105	4	1	4	3	For greater precision, the sentence should be reworded as "Observational evidence shows that many natural systems, on all continents and most oceans, are being affected...". (Government of United Kingdom)
SPM-A-106	4	5	4	5	We suggest to eliminate "per century", as it seems redundant since you already mentioned the period "1906-2005" (Government of Mexico)
SPM-A-107	4	5	4	7	This sentence as constructed suggests that 'Changes in snow, ice, and frozen ground was done with high confidence'. Rewrite using the same introductory structure as on lines 9 and 10: "There is high confidence that changes in snow, ice, and frozen ground have increased the number and size of glacial lakes, ..." The structure under Topic 1.2 is fine. Problem was introduced when two items were combined into a single sentence. (Government of United States of America)
SPM-A-108	4	5	4	7	Add start dates for the trends discussed. There is no mention of time frames prior to this point in the SPM. The remedy may involve adding an introductory paragraph summarizing all time frame considerations. (Government of United States of America)
SPM-A-109	4	7			Could "Arctic and Antarctic flora and fauna" be substituted by "polar ecosystems"? (Government of Norway)
SPM-A-110	4	9	4	11	Revert to the statement under Topic 1 (page 5, lines 6-9): "There is high confidence that certain hydrological systems are being affected around the world: ..." The meaning of the sentence in the SPM is different than that of the corresponding sentence in Topic 1. (Government of United States of America)

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
SPM-A-111	4	10	4	11	It is unclear what the meaning of "and changing ..." is. We suggest to add a comma after "snow-fed rivers" and then write "which have changed thermal structure ..." (Government of Mexico)
SPM-A-112	4	13	4	14	Would it be possible to explain "poleward and upward shifts in plant and animal ranges" in simpler terms, more easily understandable for any SPM reader. (Government of Mexico)
SPM-A-113	4	13	4	14	Revert to the sentence structure in Topic 1 (page 5, lines 11-14): "There is very high confidence that recent warming is strongly affecting terrestrial biological systems, including the timing of spring events and poleward and upward shifts in the ranges in plant and animal species." The statement in the SPM alters the meaning of the underlying statement in Topic 1 and that of corresponding statements within the WG2 report. (Government of United States of America)
SPM-A-114	4	13	4	13	Change to: "In terrestrial ecosystem, observed earlier..." (Government of Belgium)
SPM-A-115	4	14	4	16	Use the corresponding statement from Topic 1 (page 5, lines 19-21) with a minor revision for brevity: "There is high confidence that observed changes in marine and freshwater biological systems, including shifts in algal, plankton and fish abundances, are associated with rising water temperatures, as well as related changes in ice cover, salinity, oxygen levels, and circulation." (Government of United States of America)
SPM-A-116	4	14	4	14	To read smoothly in English, the words 'with very high confidence' should be moved to after 'linked': "... upward shifts in plant and animal ranges are linked with very high confidence to recent warming ..." (Government of New Zealand)
SPM-A-117	4	16	4	16	To read smoothly in English, the words 'with high confidence' should be moved to after 'associated': "... fish abundance are associated with high confidence with rising water temperatures ..." (Government of New Zealand)
SPM-A-118	4	17	4	17	We suggest to change last phrase from "They include:" to "They include effects on:" Otherwise the phrasing of the bullets seems odd. (Government of Mexico)
SPM-A-119	4	18	4	22	This paragraph deals with the issue of lack of data. This is good, but it should also include, as mentioned in TOPIC 6, a reference for improved or enhanced observation networks. (Government of Argentina)
SPM-A-120	4	18	4	20	Editorial: This sentence is rather long and awkward. Suggest a phrasing similar to that used for reporting on observational changes on page 2 of the SPM: "Of the more than 29,000....., more than 89% have changes consistent with warming." (Changes shown in italics.)

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
					(Government of Canada)
SPM-A-121	4	20	4	20	The value added by Figure SPM.2 is limited. Since we are pleading for the inclusion of update to the TAR "Reasons for Concern" diagram, we suggest to make space for this RFC diagram by removing Figure SPM.2. This figure does not add much useful information to what is already said in the text, and its presence in the long report (Topic 1) should be sufficient. (Government of Belgium)
SPM-A-122	4	20			However, is redundant. Reword to start sentence "The marked scarcity of data due to the lack of (Government of Ireland)
SPM-A-123	4	21			Please add "notable" before "lack of geographic" to be consistent with the original words. Reason: the original sentence from WGII SPM is "There is, however, a notable lack of geographic balance in data and literature on observed changes, with marked scarcity in developing countries". (Government of China)
SPM-A-124	4	22	4	23	Please add the former information about the observed acidification of the ocean is missing (draft SPM from 15 May, p. 4 line 27-30) (Government of Germany)
SPM-A-125	4	22	4	22	Actually, the data are mostly from the Northern Hemisphere and Antarctica and the lack of data is not only from "developing countries" from the Southern Hemisphere. (Government of Switzerland)
SPM-A-126	4	23			Insert a new paragraph " Sea level rise and human development are together contributing to losses of coastal wetlands and mangroves and increasing damage from coastal flooding in many areas" (1.2) (see page 6 line 2-3 of the longer report) (Government of Spain)
SPM-A-127	5	1	5	2	Without the tables providing regional summaries (WG2 Figure SPM-1), the statements beginning "Polar regions include ..." and "Marine and freshwater includes ..." have no context, thus should be deleted. If the regional boxes are included in the final figure, disregard this comment. (Government of United States of America)
SPM-A-128	5	1	5	1	Insert "Documented" as the first word of the title for Figure SPM.2. Use of the term helps explain the clustering of observations seen in the map. (Government of United States of America)
SPM-A-129	5	1	5	1	Figure SPM-2: Many good changes have been made to enhance this graphic. However, it is not possible to discern the relative size of the dots in the Figure. We suggest collapsing the categories so there is not more than 3 dot sizes. (We suggest that the dot sizes represent 1-100 data series, 100-1200 data series and greater than 1200 series). Also, in the box that comprises the lower part of Figure SPM.2: DELETE the lines that start with "polar regions include ..." and "Marine and freshwater includes ...". Both of these are relics from the WGII figure and refer to data boxes that do not appear in this figure. Also DELETE the text in brackets following "Physical systems" and "Biological systems" as it is redundant with text in the figure caption. (Government of Canada)

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
SPM-A-130	5	1			Figure SPM-2. Much better than the previous draft. (Government of Argentina)
SPM-A-131	5	1			Figure SPM.2. The value added by Figure SPM.2 is limited. Since we are pleading for the inclusion of update to the TAR "Reasons for Concern" diagram, we suggest to make space for this RFC diagram by removing Figure SPM.2. This figure does not add much useful information to what is already said in the text, and its presence in the long report (Topic 1) should be sufficient. (Government of Belgium)
SPM-A-132	5	1	5	2	Figure SPM.2, lower right corner: A heading/ explanation is missing (number of observations). (Government of Norway)
SPM-A-133	5	1			Fig.SPM.2. Please use the original one in WGII SPM, and please do not delete any content in the original figure in order to provide a full picture of the assessment results on the temperature change and data used. Meanwhile, change the word 'documented' at the end of the notes to 'shown in this figure' to make the meaning clearer. (Government of China)
SPM-A-134	5	1	5	2	Could the temperature-gradient be made more visible on black and white printouts? (Government of Norway)
SPM-A-135	5	1	5	2	Concerning Figure SPM.2: The legend in the lower part of the figure should be modified, as it carries information that is specific for the more complete figure given in WGII. I.e., the specifiers starting "Polar regions...", "Marine and freshwater..." and "Circles in Europe..." should be removed. Even the latter is given by the explanations of the circles to the right. These could, on the other hand, be amended by "Number of data series". (Government of Sweden)
SPM-A-136	5	5			Figure SPM.2: Add : "... biological systems) consistent with temperature trend in the considered region, are shown..." (Government of Belgium)
SPM-A-137	5	5	5	6	figure SPM.2, caption: Please, include a footnote explaining GHCN-ERSST or delete the text in brackets (from the GHCN-ERSST dataset). (Government of Austria)
SPM-A-138	5	6	5	6	Editorial: A footnote is required to explain what "GHCN-ERSST dataset" is. (Government of Canada)
SPM-A-139	5	11	5	12	This sentence, "Regions without dots have no time-series that meet the criteria; in these regions physical and biological systems may or may not be changing but are not documented." is too sweeping and would be better to read: "In regions without dots physical and biological systems may or may not be changing, but the regions have no documented time-series that meet the criteria." We can be sure that in some of the regions without dots there are documented physical or biological systems but the documentation may not include time series ending since 1990 or spanning twenty years. (Government of New Zealand)

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
SPM-A-140	5	12	5	12	Revise the last sentence in the caption to: "In regions without circular symbols, the assessment did not identify time series that meet all criteria for inclusion in this analysis; physical and biological systems within these regions may or may not be changing." (Government of United States of America)
SPM-A-141	5	12	5	12	figure SPM.2, caption: Please, delete the last part of the last sentence "but are not documented" because the first part of the sentence already explains that those regions lack time-series that meet the criteria. That last part is somehow contradicting the first part - there may be some documentation of changes in biological and physical systems but the data do not match the criteria. (Government of Austria)
SPM-A-142	5	15	5	17	Revert to corresponding text in the WG2 SPM (page 3 of final version), which includes the introductory clause: "Effects of temperature increases have been documented in the following (medium confidence): ..." (Government of United States of America)
SPM-A-143	5	16	5	17	After "due to adaptation", please add "to a changing environment" for clarity. (Government of Sweden)
SPM-A-144	5	18	5	25	In these three bullets, sometimes the direction of change is indicated (e.g. earlier spring planting of crops). In other cases it is not, even when this direction is known (e.g. for heat-related mortality). This is inconsistent, and makes this part less informative than the previous pages (2-4), where direction of change is systematically given. A few extra words can adjust this, for example, replacing "such as heat-related mortality" by "such as enhanced heat-related mortality". (Government of Belgium)
SPM-A-145	5	21	5	23	The geographic reference is incomplete. Furthermore, the direction of effects is not clear from the current text. Please use language from WG II TS.2, which refers to EXCESS heat-related mortality in Europe AND ASIA, to changes in the distribution of some disease vectors IN PARTS OF EUROPE AND AFRICA, and to LONGER AND STRONGER allergenic pollen seasons in northern mid- and high latitudes. (Government of European Community)
SPM-A-146	5	21	5	23	The geographic reference is incomplete. Furthermore, the direction of effects is not clear from the current text. Please use language from WG II TS.2, which refers to "excess" heat-related mortality in "Europe and Asia", to changes in the distribution of some disease vectors "in parts of Europe and Africa", and to "longer and stronger" allergenic pollen seasons in northern mid- and high latitudes. (Government of United Kingdom)
SPM-A-147	5	21	5	23	Please, use more accurate language. See WGII TS.2 (Government of Spain)
SPM-A-148	5	22	5	22	There is no need for the comma after 'areas'. (Government of New Zealand)
SPM-A-149	5	24	5	25	Replace "travel" by "shorter travel season" and add "limitations in" before "mountain sports" (as in Topic 1, p. 5, ll. 47-48)

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
					(Government of United Kingdom)
SPM-A-150	5	24	5	25	Replace "travel" by "shorter travel season" and add "limitations in" before "mountain sports" (as in Topic 1, p. 5, ll. 47-48) (Government of European Community)
SPM-A-151	6	0			The omission on specific data on GHG concentrations should be rectified. It would be useful to include a graphic on GHG concentration and specific data here (Government of Ireland)
SPM-A-152	6	1			Section 2. Causes of change. Reference to Climate sensitivity and its feedbacks is important. It is suggested that Topic2, 2.3 Climate sensitivity and feedbacks is succinctly included in the SPM. (Government of Japan)
SPM-A-153	6	1			Please consider rewriting this part "2. Causes of change". The new version should include the emissions of GHGs from 1750, especially the long lived GHGs. (Government of China)
SPM-A-154	6	2	6	2	We urge the authors to re-insert the introductory sentence from the previous draft "Changes in the atmospheric concentrations of greenhouse gases and aerosols, land cover, clouds, and solar radiation alter the energy balance of the climate system." (We have inserted clouds, which seem to have been inadvertently omitted from the earlier list.) The sentence provides a simple and readable rationale for then proceeding to describe GHG emissions. In this draft it has been moved to lines 25-26 on this page. (Government of New Zealand)
SPM-A-155	6	2			Please add "This topic considers both natural and anthropogenic drivers of climate change including the chain from greenhouse gas (GHG) emissions to atmospheric concentrations to radiative forcing to climate responses and effects." of P1 L5-7 in Topic2. Reason: Add these words in order to provide a clear image that the causes of climate change are anthropogenic and natural. (Government of China)
SPM-A-156	6	3	6	4	The percentage figures quoted for glonal totla anthropogenic GHG emissions is 70% growth during 1970 and 2004 but it is 76.7%(Ref: figure SPM-3(b): total share of different anthropogenic GHG emissions CO2-eq. Clarifications for such a discrepancy is to be incorporated in this report. (Government of Oman)
SPM-A-157	6	3	6	16	The fluorinated greenhouse gases (those covered by the Kyoto-protocol, as well as those covered by the Montreal-protocol) should also be mentioned briefly in this context. (Government of Norway)
SPM-A-158	6	3			Please add "long lived" before "greenhouse gas (GHG)". Reason: the main context is only about long-lived GHG, therefore, the title should be consistent with the main context.

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
					(Government of China)
SPM-A-159	6	3	6	4	We suggest to change the sentence to "Global greenhouse gas (GHG) emissions have grown since pre-industrial times, with an increase of 70% between 1970 and 2004, from 28.7 to 49 GtCO ₂ -equivalent. (Government of Spain)
SPM-A-160	6	4	6	4	Footnote 3: Please insert 'reporting under' after 'with', thus: "GHG emissions have been weighted by their 100-year Global Warming Potentials, using values consistent with reporting under the UNFCCC" (the UNFCCC itself does not contain GWPs). (Government of New Zealand)
SPM-A-161	6	6	6	6	Write:Carbon dioxide (CO ₂) is the dominant anthropogenic emitted GHG. (Government of Switzerland)
SPM-A-162	6	6	6	8	The terms "energy intensity" and "carbon intensity" should be explained (for example in a footnote or by specification of the denomination). (Government of Norway)
SPM-A-163	6	7	6	7	The sentence should be shortened by removing the words "despite a decrease in global energy intensity". The point of the sentence is to note the growth in emissions. There are many reasons why one might have hoped the CO ₂ emissions would drop, but they do not need to be mentioned here. (Government of New Zealand)
SPM-A-164	6	7	6	8	Redraft to "Carbon intensity of energy supply increased since 2000 after a long-term declining trend" (Government of United Kingdom)
SPM-A-165	6	7	6	8	Neither “energy intensity” nor “carbon intensity” are defined and could be easily confused. Please add parenthetical definitions or a footnote explaining the terms. (Government of United States of America)
SPM-A-166	6	7	6	8	Add at the end of this sentence the reason for the recent rise in the carbon intensity of energy supply since 2000. Was it primarily because of the addition of significantly new coal-fired generating capacity in developing/emerging economies? (Government of United States of America)
SPM-A-167	6	8	6	8	We note that 'carbon intensity' is defined in the glossary as emissions per unit of GDP. It is not defined in relation to energy supply. (Government of New Zealand)
SPM-A-168	6	8	6	8	Section 2.0 covers concentrations, climate responses and radiative forcing quite well, however, the section on emissions needs to provide a little more context. Thus we would like to include the following sentence at the end of page 6, line 8: "The largest growth in GHG emissions between 1970 and 2004 has come from energy supply, transport and industry." This inclusion would demonstrate the linkages between energy and GHG emissions. (From Topic 2, page 2, line 9-10) (Government of Canada)

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
SPM-A-169	6	8	6	8	Please add: "Investments today are again more carbon intensive than before 2000. {2.1}" (Government of Germany)
SPM-A-170	6	8	2	8	At this point, the comments made on lines 14-16 and 18-23 of page 2 of Topic 2 of the Synthesis Report should also be reported. I believe these are key information, particularly for the policymakers that cannot be left out of the SPM. (Government of Switzerland)
SPM-A-171	6	10	6	12	Figure SPM.3B: Does the figure for F-gases include CFCs and other gases covered (only) by the Montréal-Protocol? Otherwise SPM 3 is a good and well-explained figure. (Government of Norway)
SPM-A-172	6	10	6	11	Figure SPM.3: Energy supply of 25.9% in Fig SPM-3 is really "Electricity supply" I assume if transport is separate and heat is included in other sectors - eg buildings. (International Energy Agency)
SPM-A-173	6	11			Figure SPM.3. For the sake of clarity, the numbers corresponding to the different bars of the bar chart could be reported on the figure itself. (Government of Switzerland)
SPM-A-174	6	12	6	14	The caption here says that for figures SPM-3 b and c, the data are shown in CO ₂ -eq whereas they are actually given in percentages. (Government of Canada)
SPM-A-175	6	13			Figure SPM.3: "...different anthropogenic long-lived GHG in total..." (Government of Belgium)
SPM-A-176	6	17	6	28	This whole paragraph about global atmospheric concentrations of GHGs does not provide a concentration value. At least that for CO ₂ should be given. Suggest adding the following sentence to the beginning of this paragraph (taken from Topic 2 of the underlying report): "The global atmospheric concentration of CO ₂ increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005." (Government of Canada)
SPM-A-177	6	17	6	19	The fact that the observational record of CO ₂ reaches back 650.000 years (not just "many thousand years") should be mentioned in the bold text rather than in the next paragraph only, for instance by using language from Topic 2 p.3, ll. 21-27. (Government of European Community)
SPM-A-178	6	17	6	19	I suggest that the values of CO ₂ , CH ₄ and N ₂ O concentrations be given in the text. (Government of Switzerland)
SPM-A-179	6	21	6	21	The sentence in these lines does not correspond to the text provided in the SPM-WG1. The current text changes the meaning of the assessment of both the SPM-WG1 and the full report of WG1. The text should be changed to the text in the SPM-WG1: "The primary source of the increased atmospheric concentration of carbon dioxide since the pre-industrial period results from fossil fuel use, with land use change providing another significant but smaller contribution"

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
					(Government of Brazil)
SPM-A-180	6	21			Not clear on the use of plurals? Insert “atmospheric” before CO2 (Government of Ireland)
SPM-A-181	6	23	6	23	Write:Increases in global atmospheric concentrations of CH4 and N2O are primarily due to agriculture. (Government of Switzerland)
SPM-A-182	6	23			Include values for CH4 and N2O (Government of Ireland)
SPM-A-183	6	23	6	23	An important point for policymakers in many countries is that CH4 and N2O concentrations have been relatively static over recent years. The importance of this point should be reflected in the text, quite simply by writing "Increases in CH4 and N2O are primarily due to agriculture and have been relatively static over recent years." (Government of New Zealand)
SPM-A-184	6	25	6	28	This is a very important conclusion. We would like to see Figure 2.4 brought into the SPM here and referenced at the end of line 28. At a minium, reference Figure 2.4 at the end of line 28. (Government of Canada)
SPM-A-185	6	25	6	26	The first sentence in this paragraph (modified by the inclusion of clouds in the list of moderators) would be better moved to be introductory text, right after the section header 'Causes of change'. (Government of New Zealand)
SPM-A-186	6	26	6	28	Change sentence to: “While anthropogenic aerosols produce a net cooling effect and GHG produce a net warming effect, there is high confidence that...” (Government of Belgium)
SPM-A-187	6	26			“While” is redundant. (Government of Ireland)
SPM-A-188	6	26	6	28	"While anthropogenic aerosols produce a net cooling effect, there is very high confidence that the global net effect of human activities since 1750 has been one of warming." To emphasize this evidence, please put the sentence in bold letters. (Government of Germany)
SPM-A-189	6	27			End sentence after “effect” or add text that indicates that the cooling has masked GHG warming (Government of Ireland)
SPM-A-190	6	28	6	28	Delete “one of” (Government of United States of America)

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
SPM-A-191	6	29			Insert a section on radiative forcing based on the SPM of WG1: Heating and cooling influences on the climate system are expressed in terms of radiative forcing. The combined radiative forcing of increased greenhouse gas concentrations since 1750 is estimated to be +2.3Wm ⁻² . Increased concentrations of aerosols from human activities over the same period have a net cooling effect of about -1.2 Wm ⁻² . though with greater uncertainty. Other human and natural effects, including solar, are much smaller by comparison. There is now very high confidence that the global average net effect of human activities since 1750 has been one of warming with a radiative forcing of +1.6 Wm ⁻² (SPM1 p3) (Government of United Kingdom)
SPM-A-192	7	3	7	4	The reference to Antarctica is easily misunderstood. We would like the authors to clarify it by including the footnote 5 in the main text: "It is likely that there has been significant anthropogenic warming over the past 50 years averaged over each continent (except Antarctica, for which there is insufficient observational coverage to make a continent scale assessment) (Figure SPM.4). If this is not acceptable to the authors we would like them to at least put the reference to Antarctica in brackets: "It is likely that there has been significant anthropogenic warming over the past 50 years averaged over each continent (except Antarctica5). (Figure SPM.4) (Government of New Zealand)
SPM-A-193	7	3			The message of Footnote 4 is not at all clear. Please clarify or delete. (Government of Canada)
SPM-A-194	7	3	7	3	It is suggested to delete footnote 4. The footnote does not really include important information for policy makers because it is the general assumption of the reader that consideration of uncertainty is based on current methodologies (and not old, outdated ones). (Government of Austria)
SPM-A-195	7	3	7	3	Footnote 4: This footnote is so abbreviated it is incomprehensible even to scientists. It needs to be re-written or removed. (Government of New Zealand)
SPM-A-196	7	3	7	3	Footnote 4 is obscure. Delete the footnote because it does not clarify the referenced statement. (Government of United States of America)
SPM-A-197	7	4	7	4	A better linguistic construction for footnote 5 might be: "there is insufficient observational coverage for Antarctica to make a continental-scale assessment". (Government of Australia)
SPM-A-198	7	6	7	10	During last 50 years, the sum of solar and volcanic forgings have produced cooling. This means there was no warming. Explanations/clarifications are to be included in this report taking into account the aerosols and brown haze etc. (Government of Oman)
SPM-A-199	7	6	7	10	Consider removing lines 6-10 so as not to dilute the main conclusions of the SPM with explanatory text already included in Topic 2.4. Or, at minimum, make the clear connection between natural forcing and solar/volcanic by changing "the sum of ..." to "natural forcings (the sum of solar and volcanic forcings)". Another option might be to change the first sentence to read: "During the past 50 years ... , not warming, in the absence of anthropogenic GHG emissions."

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
					(Government of United States of America)
SPM-A-200	7	6	7	7	“have had a cooling impacts on global temperatures” (Government of Ireland)
SPM-A-201	7	6			Replace “would” by “is” (Government of Ireland)
SPM-A-202	7	7	7	7	Write: ... cooling, not warming, and its magnitude is much smaller than the one from anthropogenic GHG. (Government of Switzerland)
SPM-A-203	7	7	7	8	Please delete "over time" and add "are extremely unlikely to be explained without external forcings." Continue the next sentence with: "The pattern of warming" go on with "are only simulated by models...." (Government of Germany)
SPM-A-204	7	7	7	8	In Line 7, say '...not the observed warming...' and in line 8, delete 'However' and start sentence with 'Difficulties....' (Government of United Kingdom)
SPM-A-205	7	7			. Replace text by “The observed temperature record are only...” (Government of Ireland)
SPM-A-206	7	8			Include “global” before models. “However” is redundant (Government of Ireland)
SPM-A-207	7	9	7	10	Text can be shortened (Government of Ireland)
SPM-A-208	7	10	7	10	It should be added that this difficulty is associated with the unpredictable, natural variability of smaller scale climate fluctuations. (Government of Sweden)
SPM-A-209	7	10	7	10	Insert at end of sentence: 'due to relatively larger natural variability at the smaller scale.' (Government of United Kingdom)
SPM-A-210	7	13	7	13	Consider to make the difference between natural forcings and natural/antropogenic forcings more visible in the figures (Government of Norway)
SPM-A-211	7	15	7	20	In the description of Figure SPM.4., there are some statistical details noted relating to the figure which are complex and not easy to understand. We suggest simplifying the caption so as not to confuse the message. (Government of Canada)

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SPM-A-212	7	17	7	17	Change “where” to “when”. It’s a time plot, not a spatial one. (Government of United States of America)
SPM-A-213	8	0	14	0	Generally the summary is meant to be a guideline for policymakers, and particularly in chapter 3 the text is a bit too much of a list of facts and citings from the underlying reports, rather than concluding in a broader context. (Government of Norway)
SPM-A-214	8	1	8	1	Write: " ... aspects global of climate" because the bullets points introduced by this sentence refer to the global climate (Government of Switzerland)
SPM-A-215	8	1	8	9	This text should be replaced (or omitted). At first glance it describes observed changes in climate parameters, is thus out of place in this section dealing with 'Causes of change', and confuses readers. Although here the attribution is being made, this aspect is a subtle point for the average policymaker who has assumed that was the message of Section 1 (Observed changes). We suggest the message is one that either needs to be made more clearly and succinctly or omitted. We note that the observations described in the first, third and fourth bullet points have already been mentioned - the second (winds) could squeeze in earlier too. If the authors wish to retain the attribution point we suggest they replace these 9 lines by two sentences such as: "Several of the observed changes in climate noted earlier have be shown, with greater or lesser certainty, to be related to [the warming caused by] human releases of GHGs. These include (with the certainty shown in brackets): the sea level rise (very likely); changes in wind patterns (likely); increased temperatures of the most extreme hot nights, cold nights and cold days (likely); increased the risk of heat waves and the area affected by drought (more likely than not)." This short paragraph could go between lines 18 and 20 on this page, immediately before the sentence describing the difficulty of attribution. (Government of New Zealand)
SPM-A-216	8	1	8	1	This sentence is rather difficult to understad. As the sea level rise is very likely and also very relevant information we propose to include it in the chapeau and to change the bold text as follows: " Discernible human influences have very likely contributed to sea level during the latter half of the 20th century and also extend to other aspects of climate, such as, continental average temperatures, temperatures extremes and wind patterns". (Government of Spain)
SPM-A-217	8	1	8	1	This sentence does not stand for itself. Suggest to change to "Discernible human influence on climate extends to other aspects than mean temperature." (Government of European Community)
SPM-A-218	8	1			Replace “also extent to” with “also evident in” (Government of Ireland)
SPM-A-219	8	5			We think that the term "extra-tropical" is not widely understood, so the term should be explained or the sentence should be rewritten. (Government of Norway)
SPM-A-220	8	10	8	10	The bullet about changes in precipitation over land has been deleted since the previous draft ("more likely than not an increased risk of heavy precipitation events"). The rational for this deletion is not clear nor is it clear what criteria were used to select which findings from the WGI results

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					would be included here in the SPM. Please provide this rationale or add the bullet about heavy precip events to be consistent with the WGI SPM. (Government of Canada)
SPM-A-221	8	10			Add bullet saying 'likely to have produced significant warming at the continental scale' (see fig SPM.4) (Government of United Kingdom)
SPM-A-222	8	11	8	22	Revise to the language accepted for the WG2 SPM (page 2 of final layout), and cite the WG2 SPM: "A global synthesis of studies since 1970 has shown it is likely that anthropogenic warming has had a discernible influence on many physical and biological systems." "At the global scale" implies that observations are available with reasonable coverage across the globe. This is not the case. Observations are scarce or nonexistent over most of the Earth's land surface, particularly the Southern Hemisphere, Eurasia, and the boreal zones. (Government of United States of America)
SPM-A-223	8	14	8	16	The sentence is very difficult to read - suggest simplifying to "the spatial agreement between regions of significant warming and locations of significant observed change consistent with warming is very unlikely to be due solely to natural variability". (Government of United Kingdom)
SPM-A-224	8	14	8	22	Is this two para text needed in the SPM of the SYR?? (candidate for deletion for the sake of brevity); if retained: The language in line 20-22 is somewhat unclear (what does "more complete" mean?) and too strong ("prevented"). Suggest to rephrase as follows: "Higher confidence in the attribution of natural system responses to anthropogenic warming is hindered by...". (Government of European Community)
SPM-A-225	8	14	8	14	First part of the sentence is confusing. We suggest to to change it from "the spatial agreement between regions of significant warming across the globe..." to "significant warming across regions of the world..." (Government of Mexico)
SPM-A-226	8	14	8	16	Editorial: This sentence is rather long and awkward. Suggest splitting into two sentences as follows (with some minor word changes): "There is strong spatial agreement.....consistent with warming. (End of first sentence.) This is very unlikely to be....natural variability." (Government of Canada)
SPM-A-227	8	14	8	16	can be shorted and clarified suggest start with "It is very unlikely that natural variability is... (Government of Ireland)
SPM-A-228	8	14	8	18	Austria strongly supports the proposed wording which is a very good description of the scientific facts. (Government of Austria)
SPM-A-229	8	16	8	18	We suggest to add examples of "some specific responses" referred to in this paragraph. (Government of Mexico)
SPM-A-230	8	16			. "In addition" is redundant. Replace "few" by "number" (Government of Ireland)

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SPM-A-231	8	20	8	22	This text would be made more readable by the addition of a few extra words: 'the' before 'short'; 'the fact that' to replace 'greater'; 'is greater' after 'variability'; 'smaller' before 'regional' and 'the' before 'possible'. Thus the text would read: "More complete attribution of observed natural system responses to anthropogenic warming is prevented by the short time scales of many impact studies, the fact that natural climate variability is greater at smaller regional scales, and the possible contributions of non-climate factors in some regions." (Government of New Zealand)
SPM-A-232	8	20			For clarity move “responses” to after “observed” and put “of” before natural. (Government of Ireland)
SPM-A-233	8	22	8	22	We suggest to change from "contributions" to "contribution". (Government of Mexico)
SPM-A-234	8	22	8	22	Revise to adhere more closely to the corresponding statement in Topic 2 (page 8, lines 44-49): “Limitations and gaps prevent more complete attribution of the causes of observed system responses to anthropogenic warming. First, the available analyses are limited in the number of systems and locations considered. Second, natural temperature variability is larger at the regional than the global scale, thus affecting identification of changes due to external forcing. Finally, at the regional scale other factors (such as land-use change, pollution, and invasive species) are influential [1.4].” (Government of United States of America)
SPM-A-235	8	22	8		Delete "possible" and "in some regions" in this sentence . It erroneously suggests that there are some regions where non-climate factors do not affect natural system responses. (Government of Canada)
SPM-A-236	8	25	11	22	The SRES scenarios are frequently referred to in this chapter. Since we think that most readers of the SPM will have little or no knowledge about these scenarios and many readers will not have the full report, we think that it is very important to include a description of these scenarios in the SPM. E.g. as a box at the end as in the WG-SPMs. (Government of Norway)
SPM-A-237	8	25			Section "Projected Climate Change and its impacts". This is a very important section. However, it could be improved by integrating more of the relevant information from the WG reports that is relevant for policymakers from the point of view of risk assessment and risk management under uncertainty. Therefore, information on potential impacts with large or large-scale damages involved should be included, even if they cannot be assessed with high confidence or if the likelihood is estimated low or if the impacts would occur beyond 2100. See topic 5 page 1 lines 14 to 17, where it says explicitly that information is needed on impacts arising from lower-probability but higher-consequence events. In this section, this necessary information should be summarised. (Government of Germany)
SPM-A-238	8	25			In this section we would like to see projected emissions and concentrations. Diagrams would be ideal but alternatively the data could be inserted into table SPM.1

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					(Government of United Kingdom)
SPM-A-239	8	25	8	25	Austria supports the new title which is shorter and clearer. (Government of Austria)
SPM-A-240	8	27	8	27	Substitute “GHG” for “climate change” to read “GHG mitigation”. (Government of United States of America)
SPM-A-241	8	27	8	29	In our view the relationship between current climate change mitigation policies and practices and sustainable development is not always clear. Hence we propose that the words: and related sustainable development practices" is deleted. (Government of Norway)
SPM-A-242	8	27	8	29	Consider removing text between evidence and global (Government of Ireland)
SPM-A-243	8	27	8	29	A clearer statement is needed about the role of mitigation. Need to link to pages 15, Line 22. Possibly use more from section 5.3. Line 27-29 needs re-writing for clarity to read 'There is high agreement and much evidence that without greater effort on emissions mitigation policies, global...'. Similarly page 11 line 4 to 5 needs to be reviewed. (Government of United Kingdom)
SPM-A-244	8	27	8	27	Please write "without additional climate change mitigation" instead of "with current...". to avoid misunderstanding. The text as it stands could lead to the wrong conclusion that mitigation policy in general would not be useful. (Government of Germany)
SPM-A-245	8	28	8	28	Please exchange "related" for "other". The sustainable development practices leading to continued growth of GHG emissions do not necessarily have to be related to CC mitigation policies. (Government of Sweden)
SPM-A-246	8	31	8	31	The expression 'non-mitigation' is confusing to policymakers. They are unfamiliar with the fine and subtle details of SRES and many see the lower-emissions scenarios as unlikely to represent the future unless governments take deliberate steps to limit emissions, i.e. to mitigate. In our experience they have been unsure whether this paragraph refers only to the higher SRES scenarios or to all of them. The text 'Non-mitigation scenarios from [SRES] ...' is seen as implying the SRES includes both mitigation and non-mitigation scenarios. Please remove the text 'Non-mitigation scenarios from', so the text reads: "The IPCC Special Report on Emission Scenarios (SRES)6 projects an increase of global GHG emissions by 25-90% (CO2-eq) between 2000 and 2030, with fossil fuels maintaining...". If it is felt by the authors that this is not adequate then the words ' if no specific mitigation policies are put in place' could be added after '2030', although we firmly consider this would lead to less understanding by a policymaker, not more. In that case the text would read: "The IPCC Special Report on Emission Scenarios (SRES)6 projects an increase of global GHG emissions by 25-90% (CO2-eq) between 2000 and 2030 if no specific mitigation policies are put in place, with fossil fuels maintaining ..." .

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					(Government of New Zealand)
SPM-A-247	8	31	8	34	For non-mitigation scenarios, we suggest adding a definition in the glossary, as policy makers may not understand the term. Suggested glossary addition: "Scenarios without policies designed specifically to reduce emissions." (Government of Canada)
SPM-A-248	8	31	8	31	Change "(SRES)" to "(SRES, 2000)". Need to know SRES date of publication to understand how recent the "more recent" scenarios might be. (Government of United States of America)
SPM-A-249	8	32	8	32	At the end of this clause, there needs to be some recognition of where most of the future emissions are expected. As stated in WG3 Section 1.3.2.2, "As the bulk of energy demand growth occurs in developing countries, the CO2 emission growth accordingly is dominated by developing countries. The latter would contribute two-thirds to three-quarters of IEA projected increase in global energy-related emissions. Developing countries, which accounted for 40% of total fossil fuel-related CO2 emissions in 2004, are projected to overtake the OECD as the leading contributor to global CO2 fossil fuel emissions in the early part of the next decade." (Government of United States of America)
SPM-A-250	8	34	8	36	There should be reference to the stabilization scenarios expounded upon on page 20 at this point. These scenarios show up in Fig. SPM-6, without proper introduction. This is the most logical point to bring them up. (Government of Canada)
SPM-A-251	8	34			The point of last sentence could be clarified (Government of Ireland)
SPM-A-252	8	36	9	25	We propose that positive feedback mechanism due to increased terrestrial and oceanic methane emissions caused by warmer climate is included here. (Government of Norway)
SPM-A-253	8	36	8	36	Insert after further warning.."and sea level rise"..and induce many changes.... (Government of Spain)
SPM-A-254	8	41	8	43	The information provided is fine but not complete. The fact that current emissions are significantly higher compared to the those emissions as assumed under the scenarios assessed should be mentioned - at least in a footnote. (Government of Austria)
SPM-A-255	8	41			Replace "for a range" by "all" or "almost all" (Government of Ireland)
SPM-A-256	8	41	9	25	Despite the care taken by the authors in their text (and which we appreciate) there still seems to be a tendency for policymakers to skim down Section 3 (projected changes and impacts) to Table SPM.1, see column 3, and then think they have the IPCC values for sea level rise. Our preferred solution is to move Table SPM.1 to after the sea level paragraph on page 9 lines 18-25. An alternative and less preferred option (because it will both take more

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					space and be less successful) would be improve the clarity by inserting a sub-heading "Temperature" at page 8 line 41, and then a similar sub-heading "Sea level" at page 8 line 18 to draw the reader on from the Table. (Government of New Zealand)
SPM-A-257	8	42	8	43	We propose that the sentence is changed as follows: "Beyond the next few decades, the projected warming increasingly depends on future GHG emission levels." Rationale: The projections are about many factors but here we talk about the warming. (Government of Norway)
SPM-A-258	9	1			Table SPM-1: This table lacks information on the emission profiles and the associated concentration profiles for the SRES marker scenarios. If this information is not clearly presented, it is difficult for a policy maker to make a link between baseline emissions and temperature impacts, as reported in this Table SPM-1 and in Figure SPM-5. Suggest to add information on the emission levels of each scenario in 2030, 2050 and 2100 compared to today, and on associated CO2 and CO2-equivalent concentrations in this table, or in Figure SPM-5. Note that the TAR SYR did this in the integrative Figure SYR SPM-3. (Government of European Community)
SPM-A-259	9	1	9	9	Table SPM-1 should refer to the Box where the SRES scenarios are defined (International Energy Agency)
SPM-A-260	9	1	9	10	Table SPM 1: It should be stated explicitly that the projections are based on EMISSION scenarios. (Government of Norway)
SPM-A-261	9	1	9	10	Table SPM 1: In view of the large uncertainties in the sea-level projections, the column "Sea-level rise" in the table can be deleted. The uncertainties in the sea-level are stated in the last paragraph (lines 18-25) on this page. (Government of India)
SPM-A-262	9	1	9	10	Table SPM 1, constant year 2000 concentrations: We think that this might be rather confusing to many readers and that some might misinterpret this case as a constant emissions scenario. Since this is, implicitly, also an emission scenario, we propose that it is reworded to, for example, "Emissions maintaining year 2000 atmospheric concentrations" or "constant year 2000 atmospheric concentrations". The footnote could then further elaborate on the emission reductions needed to achieved this. (Government of Norway)
SPM-A-263	9	1	9	1	Table SPM 1 is very relevant to policy makers, but the information needs to be completed with the range of CO2 stabilization concentration level related to scenarios B1, B2...and emissions pathways. In addition, in note c) is the first time the reference to SRES appear, please include a footnote explaining the SRES: "SRES refers to the IPCC Special Report on Emissions Scenarios (2000). Approximate carbon dioxide equivalent concentrations corresponding to the computed radiative forcing due to anthropogenic GHG and aerosols in 2100 (see p .823 of the TAR) for the SRES B1, A1T, B2, A1B, A2 and A1FI illustrative marker scenarios are about 600, 700, 800, 850, 1250 and 1,550 ppm respectively (Government of Spain)

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SPM-A-264	9	1	10	9	It is difficult for a policy maker to make a link between baseline emissions and temperature impacts, as reported in this Table SPM-1 and in Figure SPM-5. It would be helpful to add information on the emission levels of each scenario in 2030, 2050 and 2100 compared to today, and on associated CO2 and CO2-equivalent concentrations in this table, or in Figure SPM-5. (Government of United Kingdom)
SPM-A-265	9	1	9	1	Given the uncertainty in the sea level rise figures, in particular, we suggest that in Table SPM.1 the word 'Projected' in the caption might be better replaced by 'Modelled', thus: "Table 3.1. Modelled global average ...". To the lay reader, 'projected' seems to carry a high and IPCC-sanctioned level of certainty that is not appropriate here. (Government of New Zealand)
SPM-A-266	9	2			Table SPM.1, column 3. All of these numbers are out of date. They do a disservice to the reader by giving them a false sense of security. This needs a disclaimer. (WWF International)
SPM-A-267	9	2	9	2	For the first column of Table SPM.1 the reader would be helped by understanding what these scenarios mean in terms of emissions pathways and atmospheric concentration pathways to the end of the 21st century. This could be done through a footnote cross-linking to fig. 3.1 and suitable concentrations cross-link. (Government of Australia)
SPM-A-268	9	4	9	4	It is suggested to delete shorten the text of footnote a) by deleting "assessed". (Government of Austria)
SPM-A-269	9	6	9	6	This is the first occurrence of the acronym AOGCM in the SPM and it is not explained, nor is it an entry in the Glossary. Perhaps there is room for '(see notes (a) and (b) to Table 3.1)' to be added to this line? (Government of New Zealand)
SPM-A-270	9	6	9	6	Table SPM.1: Footnote b) Put AOGCMs in full here - not explained till much later in report at Table 3.1 (International Energy Agency)
SPM-A-271	9	6			Table SPM.1. The acronym AOGCM is used for the first time and not explained (in Table 3.1 of topic 3 of the Synthesis Report - page 3, line 28-29 - it is on the contrary explained). (Government of Switzerland)
SPM-A-272	9	6	9	6	Explain/define AOGCM. (Government of Norway)
SPM-A-273	9	7	9	7	Specify the nature of the scenarios, rather than providing the jargon labels only. Change "All scenarios above are six SRES marker scenarios" to "All scenarios above are six non-mitigation SRES marker scenarios". (Government of Germany)

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SPM-A-274	9	7	9	7	Note (c) is not called out in the table. Delete it. (Government of United States of America)
SPM-A-275	9	7	9	7	It is suggested to delete footnote c) because it relates to a technical detail and is not reflected in the table itself. (Government of Austria)
SPM-A-276	9	7			Editorial: Note "c" is not referred to in table above. Either add it as a footnote following the word "Case", or integrate the text of the note into the Table caption. (Government of Canada)
SPM-A-277	9	7	9	7	Add reference to box on SRES scenarios in Topic 3.1. (Government of United States of America)
SPM-A-278	9	8	9	8	There should be given a number (0.5) instead of "half a degree C" due to we are giving decimal accuracy in the table (Government of Spain)
SPM-A-279	9	8	9	8	Table SPM.1: Footnote d) add after "to obtain warming" to date..... (International Energy Agency)
SPM-A-280	9	9			Table SPM.1. A note "e" should be added to highlight that the increase of temperature over land, where most of the population lives is significantly higher than the global average values in all regions North of 30°S and South of 50°South. (see WGI Figure 10.6). Text proposed: "The temperature change over land areas located North of 30°S is up to two times larger than the global average values (see WGI Figure 10.6 and WGI Section 10.3.2.1)." This information is highly relevant for policy-makers and adaptation planners, and consistent with the equivalent information given about past trends in Fig SPM.4. (Government of Belgium)
SPM-A-281	9	10	9	10	This paragraph beginning on line 11 needs to be preceded with some information about the probabilistic climate change projections to reinforce for policymakers the value of these projections and the significant advance from the TAR in being able to provide such projections. This was something that policy-makers were specifically asking for and the success in the AR4 was that the projections separated modeling uncertainty from emission uncertainty. The simplest revision would be to include text from Topic 3 page 3 lines 11-12: Advances in climate change modeling now enable best estimates and likely assessed uncertainty ranges to be given for projected warming for different emissions scenarios." (Government of Canada)
SPM-A-282	9	11	9	16	This text is still biased towards a single study (Fridlingstein et al., 2006) and does not adequately reflect in a more comprehensive manner the current understanding on these issues. In particular the phrase varies markedly among models should be rephrased to include at the end (l.16): "... among models, while new, more comprehensive models tend towards a stronger feedback". This would account for the fact, that these models are not all of the same quality and their origin is rooted in different traditions of understanding (some formulations of processes being rather old and can't stand up to newer, more state-of-the-art formulations including relevant processes such as fire disturbances). Other studies (e.g. Scholze et al., 2006, all reviewed in Fischlin et al., 2007) need also to be considered and they tend to reduce the uncertainty subsumed in this sentence, i.e. they do not

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					<p>indicated that the strength of this feedback ranges from minor to significant, but are more likely than not (>50%) to be significant (for details on this reasoning see also IPCC, 2007, p. 11, 2nd col., par. 2 and Fischlin et al., 2007, sections 4.4.1 and 4.4.11).</p> <p>In this context SPM, p.22, 1.37-39, are of paramount relevance and the point we are making here becomes even more relevant should anything be changed in that paragraph (see also e.g. Jones et al., 2006).</p> <p>Fischlin, A., Midgley, G.F., Price, J.T., Leemans, R., Gopal, B., Turley, C., Rounsevell, M.D.A., Dube, O.P., Tarazona, J. & Velichko, A.A., 2007. Ecosystems, their properties, goods and services. In: Parry, M.L., Canziani, O.F., Palutikof, J.P., van der Linden, P.J. & Hanson, C.E. (eds.), Climate change 2007: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel of Climate Change (IPCC). Cambridge University Press, Cambridge, UK, pp. 211-272.</p> <p>Friedlingstein, P., Cox, P., Betts, R., Bopp, L., Von Bloh, W., Brovkin, V., Cadule, P., Doney, S., Eby, M., Fung, I., Bala, G., John, J., Jones, C., Joos, F., Kato, T., Kawamiya, M., Knorr, W., Lindsay, K., Matthews, H.D., Raddatz, T., Rayner, P., Reick, C., Roeckner, E., Schnitzler, K.G., Schnur, R., Strassmann, K., Weaver, A.J., Yoshikawa, C. & Zeng, N., 2006. Climate-carbon cycle feedback analysis: Results from the (CMIP)-M-4 model intercomparison. J. Clim., 19(14): 3337-3353.</p> <p>IPCC, 2007. Summary for policymakers. In: Parry, M.L., Canziani, O.F., Palutikof, J.P., van der Linden, P.J. & Hanson, C.E. (eds.), Climate change 2007: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel of Climate Change (IPCC). Cambridge University Press, Cambridge, UK, pp. 7-22.</p> <p>Jones, C.D., Cox, P.M. & Huntingford, C., 2006. Climate-carbon cycle feedbacks under stabilization: uncertainty and observational constraints. Tellus B, 58(5): 603-613.</p> <p>Scholze, M., Knorr, W., Arnell, N.W. & Prentice, I.C., 2006. A climate change risk analysis for world ecosystems. PNAS, 103(35): 13116-13120. (Government of Switzerland)</p>
SPM-A-283	9	11	9	13	<p>This sentence would be more readily understandable if cut into 2 or 3 sentences. (Government of France)</p>
SPM-A-284	9	11	9	13	<p>This sentence is not clear. Stronger climate-carbon cycle feedbacks will increase the upper temperature ranges but how is this the explanation for larger 'assessed uncertainties'. In the corresponding text on page 13 of the WGI SPM stronger climate-carbon cycle feedbacks are used only to explain the increase in the upper temperature range. (Government of Canada)</p>
SPM-A-285	9	11	9	11	<p>There is some information missing in this line. Suggest changing it to: "The range of projections of change in Table SPM.1 is broadly consistent with that of the Third Assessment Report (TAR)." (Government of Canada)</p>
SPM-A-286	9	11	9	13	<p>The comparison with the TAR could be deleted here. Instead focus on the feedbacks and also explain that the temperature will continue to raise beyond 2100 especially in the high emission scenarios. Climate-carbon cycle feedbacks may also be explained e.g. in a footnote or the glossary. (Government of Norway)</p>

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SPM-A-287	9	11			Shorten to “The temperature projections are broadly consistent with the TAR” and end at this point. (Government of Ireland)
SPM-A-288	9	11	9	11	Add after "(TAR)": "TAR projections were made for 2100, whereas projections in this report are for 2090-2099. The TAR would have had similar ranges to those in Table SPM-1 if it had treated the uncertainties in the same way." Then continue with new sentence: "Assessed uncertainties...". This information (that TAR projections would have been similar if uncertainties had been treated the same way) is very policy-relevant. (Government of Germany)
SPM-A-289	9	12			Start with the “The broader range of models used some of which now include carbon feedbacks....” (Government of Ireland)
SPM-A-290	9	14	9	15	This sentence could be understood as meaning that there is an absolute reduction of carbon uptake due to warming, while it could be a reduction of the proportion of carbon uptake to emitted carbon. Please correct (Government of France)
SPM-A-291	9	14			Move “uptake ...etc ” to after “reduce” end sentence at CO2. (Government of Ireland)
SPM-A-292	9	15			Start new sentence with “The” (Government of Ireland)
SPM-A-293	9	18	9	23	Table SPM-1 does show a range for projected SLR and readers may think the upper ranges are 'upper bounds' and may therefore be confused by the text on line 20 that says upper bounds are not provided. Suggest for clarification that the following phrase be added to line 23 (changes shown in italics): "The projections.....nor the full effect of changes in ice sheet flow, therefore the upper values of the ranges given are not to be considered upper bounds for SLR." (Government of Canada)
SPM-A-294	9	18	9	18	Specify "some important effects", eg "rapid dynamical changes in ice flow" (Government of Denmark)
SPM-A-295	9	18	9	25	If statement is not “a best estimate or an upper bound”, clarify what it is. (Government of United States of America)
SPM-A-296	9	20	9	20	The word "Instead" does not seem necessary, neither the words "model based", as all projections are in principle based on some model. (Government of France)
SPM-A-297	9	20	9	20	After “... bound for sea-level rise.”, add a sentence from WG1 SPM: “Larger values for sea-level rise cannot be excluded.” (Government of United States of America)
SPM-A-298	9	21	9	21	Include after “... (2090-2099).”, the same footnote given on page 3 of Topic 3. “TAR projections were made for 2100, whereas the projections for this

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					report are for 2090-2099. The TAR would have had similar ranges to those in Table 3.1 if it had treated uncertainties in the same way.” (Government of United States of America)
SPM-A-299	9	23			Indicate the implications of the absence of such feedbacks (Government of Ireland)
SPM-A-300	10	1	10	1	It is confusing, that the lines (multi-model averages) do not correspond to the solid lines within the bars (best estimate), and there is no explanation of the difference (Government of Denmark)
SPM-A-301	10	1	10	9	Information from Figure SPM.5 is very relevant. The figure needs to be improved. (Government of Spain)
SPM-A-302	10	1			Figure SPM-5: Please include curve for A1FI results WITHIN the diagram, together with the other SRES-curves, because it is highly policy relevant with respect to recent global emission trends. (Government of Germany)
SPM-A-303	10	1	10	2	Figure SPM-5.: This figure lacks information on the emission profiles and the associated concentration profiles for the SRES marker scenarios. If this information is not clearly presented, it is difficult for a policy maker to make a link between baseline emissions and temperature impacts, as reported in this Figure SPM-5 and in Table SPM-1. Suggest to add information on the emission levels of each scenario in 2030, 2050 and 2100 compared to today, and on associated CO2 and CO2-equivalent concentrations in this Figure SPM-5 (as well as in Table SPM -1). Note that the TAR SYR did this in the integrative Figure SYR SPM-3. (Government of European Community)
SPM-A-304	10	1			Figure SPM-5. We note that this is reproduced from WG1. However we consider that it is misleading because the full range of SRES marker scenarios are not shown and information on the emission profiles and the associated concentration are not included. We urge you to consider adding these based on simpler models, suitably tuned to the GCM range, with appropriate annotation that this has been done. (Government of United Kingdom)
SPM-A-305	10	1	10	10	Figure SPM.5: This map is very important and should be enlarged in the final version of the report. (Government of Norway)
SPM-A-306	10	1			Figure SPM.5: The fluctuations in global warming projections are not related to fluctuations in forcing nor do they indicate the range of natural variability. Suggest to "smooth" them by applying a moving average filter since they do not contain useful information for policy makers. (Government of European Community)
SPM-A-307	10	1	10	10	Figure SPM.5: The figure should be subdivided into two figures ("a) and "b)"). (Government of Norway)

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SPM-A-308	10	1			Figure SPM.5. The large number of different reddish colours (14!) make it difficult to read the high latitude temperature changes. Reducing the resolution to 1 °C steps above 3 °C would help. (Government of Belgium)
SPM-A-309	10	2	10	2	Figure SPM.5: The red line for scenario A2 seems to end at 3.6 degrees C, whilst the solid line in the corresponding bar seems to indicate 3.4 degrees C, consistent with the value in Table SPM.1 (Government of Norway)
SPM-A-310	10	2	10	2	Figure SPM.5: Is it possible to make the first figure and the caption easier to understand in black and white print e.g. instead of reference to colours, arrows linking the explanations with the graphs? (Government of Norway)
SPM-A-311	10	3			Figure SPM.5: could include Figure 3.3 of the SYR below the two graphs, in order to show the impact of climate change on precipitation. (Government of Belgium)
SPM-A-312	10	4			Figure SPM.5: add: "..., shown as continuations of ther 20th century simulations, consistant with observations.", as shown in Figure SPM.4 (Government of Belgium)
SPM-A-313	10	5	10	5	The term "experiment" is misleading to the audience of the SYR. Replace with "simulation". (Government of European Community)
SPM-A-314	10	5	10	5	"The bars in middle of figure ..." is too abbreviated to read without grating. Please write: " The bars in the middle of the figure ..." (Government of New Zealand)
SPM-A-315	10	7			Typo... 2090-2999 should be changed in 2090-2099. (Government of Korea)
SPM-A-316	10	7	10	7	The range should be corrected to "2090-2099" (Government of Mexico)
SPM-A-317	10	7	10	8	Figure SPM.5: The average reader probably will not know terms like AOGCM average and the assumptions behind the A1B scenario. Is it possible to tell this story in an easier way? E.g. describe the main characteristics of the development leading to the surface warming pattern shown on the map in plain text. (Government of Norway)
SPM-A-318	10	7	10	7	Change "2999" to "2099" (Government of United States of America)
SPM-A-319	10	7	10	7	2090 - 2099 not 2999. (Suspect this was a test to see who might spot the error!) (International Energy Agency)

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SPM-A-320	10	8			Figure SPM.5. The acronym AOGCM is used and not explained. (Government of Switzerland)
SPM-A-321	10	8	10	8	Again acronym AOGCM not clear - but maybe OK if put in full in footnote d) of Table SPM 1 (International Energy Agency)
SPM-A-322	10	12	10	16	There should be a sentence added stating why there is now higher confidence. From section 3.2.2 it appears that this confidence is based primarily on the agreement of model projections with observed trends. (Government of Canada)
SPM-A-323	10	12	10	27	The findings related to acidification of the ocean should be included in this para. (Government of Norway)
SPM-A-324	10	12	10	27	On line 12, the qualification "higher confidence" leaves the decision maker unaware of the present level of confidence. This acceptable if the level of confidence is explicited in the bullets, as it is on lines 21, 22, 26. However, this level is not mentionned in lines 17, 18; 24 (Government of France)
SPM-A-325	10	12			Insert regional before warming. (Government of Ireland)
SPM-A-326	10	12	10	12	Change sentence to read: "There is now higher confidence than in the TAR in ..." (Government of United States of America)
SPM-A-327	10	12	10	14	To make it quite clear to the lay reader, and avoid any sense that this is just a repeat of earlier statements, please insert the word 'future' before 'patterns', thus: "There is now higher confidence in projected future patterns of warming ..." (Government of New Zealand)
SPM-A-328	10	16	10	27	Why do two of the bullets reference recent trends and the others not? (Government of United States of America)
SPM-A-329	10	16	10	27	We need to make clear that all of the projected changes are already occuring. (Government of Netherlands)
SPM-A-330	10	16	10	27	Three of the six bullets illustrating regional-scale changes include confidence expressions (likely, very likely ...). The other three bullets need confidence expressions as well. (Government of Canada)
SPM-A-331	10	16	10	27	This is another example of apparently duplicated information. We suggest the lead-in sentence be changed to emphasise the new information here: "The projected regional scale changes in future include further change in many of the variables in which changes have already been seen in recent decades." Presenting each variable as a new bullet point tends to reinforce the focus on the variable, rather than the new information about it, so again

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					(as for page 8 lines 3 to 9) we suggest they are removed. The text would then read: "The projected regional scale changes in future include further change in many of the variables in which changes have already been seen in recent decades. These include (with greater or lesser uncertainty, as shown in brackets when it has been quantified): further warming in similar geographical patterns; contraction of snow cover area, increases in thaw depth over most permafrost regions, and decrease in sea ice extent (in some projections using SRES scenarios, Arctic late-summer sea ice disappears almost entirely by the latter part of the 21st century); increase in frequency of hot extremes, heat waves, and heavy precipitation (very likely); increase in tropical cyclone intensity (likely) - there is less confidence in a projected global decrease of tropical cyclone numbers; a poleward shift of extra-tropical storm tracks with consequent changes in wind, precipitation, and temperature patterns; precipitation increases in high latitudes (very likely) and decreases in most subtropical land regions (likely). {3.2.2}" (Government of New Zealand)
SPM-A-332	10	16	10	27	states the "Projected regional - scale changes..." with six bullet points. The first, second and the fifth points do not include and confidence level, this may be included as it is very useful for policy makers. In the fourth bullet the sentence beyond the semicolon starting with "less confidence ...numbers" may be deleted. In the last bullet point, "continued observed patterns in recent trends" may be deleted as it does not convey any clear changes. (Government of India)
SPM-A-333	10	17	10	17	The phrase “geographical patterns of warming similar to those observed in recent decades” would benefit from some additional description. For example, does this refer primarily to a tendency for greater warming over continents than oceans, and relatively more warming at polar latitudes? As it is, it might also be misleading about those regions that have yet to experience significant change, i.e., is this expected also to continue in the future? (Government of United States of America)
SPM-A-334	10	18	10	18	Add: “further” before “contraction” (Government of Netherlands)
SPM-A-335	10	19	10	20	Fact also out of date. (WWF International)
SPM-A-336	10	21	10	21	Add: “further” before “increase” (Government of Netherlands)
SPM-A-337	10	22	10	22	Add: “further” before “increase” (Government of Netherlands)
SPM-A-338	10	24	10	24	Add: “further” before “poleward” (Government of Netherlands)
SPM-A-339	10	26	10	27	Need some clarifying statement on what is meant by “high latitudes”. (Government of United States of America)
SPM-A-340	10	26	10	27	Changes in precipitation receive only two text lines of attention. This is very unbalanced relative to, for example, sea level rise (full page 9), since future changes in water availability will affect as many people as sea level rise. Note that water scarcity is even listed as already unavoidable on page

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					11 line 11. (Government of Belgium)
SPM-A-341	10	29	10	33	There is nothing in Figure SPM.6 which relates to RATES of change. We suggest rewording line 33, inserting 'some of' to reflect this limitation in the figure: "Figure SPM.6 presents examples of some of this new information ...". (Government of New Zealand)
SPM-A-342	10	29	11	13	The two paragraphs here are the first information the readers are given about the consequences of climate changes, but the examples selected to illustrate the projected impact are not the most severe impacts. Even though the selected examples possibly are the ones which are regarded as "unavoidable" the even more severe impacts should be lifted in the text, to make it more visible than they are now. (Government of Norway)
SPM-A-343	10	29	11	2	The chapeau text talks of impacts being related to amounts and RATES of change; in the later text (page 11 lines 1 to 2) it talks of it being related to the amount and TIMING of change. If these are essentially the same variable we suggest that using the same term in both places (and in Topic 3, Section 3.3, page 6, lines 40 - 42) would avoid confusion. (Government of New Zealand)
SPM-A-344	10	33	10	37	The words "... which are judged to be relevant for people and the environment ..." are unnecessary and we suggest they be removed, thus: "Entries have been selected for which there is high confidence in the assessment." (Government of New Zealand)
SPM-A-345	10	35	10	35	The sentence "Adaptation is not included" is, in this generality, not correct and therefore misleading. For instance, the range shifts reported in Figure SPM.6 constitute a form of adaptation by natural systems, and most crop model simulations include seasonal changes in crop management as well as switching crop varieties. Suggest to change to "Explicit policies aimed at planned adaptation to climate change are not included." The same comment applies to p. 12, ll. 13-14. (Government of United Kingdom)
SPM-A-346	10	35	10	35	The sentence "Adaptation is not included" is, in this generality, not correct and therefore misleading. For instance, the range shifts reported in Figure SPM.6 constitute a form of adaptation by natural systems, and most crop model simulations include seasonal changes in crop management as well as switching crop varieties. Suggest to change to "Explicit policies aimed at planned adaptation to climate change are not included." The same comment applies to p. 12, ll. 13-14. (Government of European Community)
SPM-A-347	10	35	10	35	Please replace the text "Adaptation is not included in these estimations." with "No allowance is made in these examples for adaptation." or similar. The entries in the Table have been described as 'examples' in the preceding text, not as 'estimates'. Note "Adaptation is not included in these examples." would not convey the intended meaning. (Government of New Zealand)

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SPM-A-348	10	36	10	37	Instead of referring to the longer report, it would be informative to insert a figure with regional impacts for different magnitudes of climate change, such as WG II Table 20.9. (Government of European Community)
SPM-A-349	11	1	11	2	Several concerns. 1 - it is not the capacity to adapt that will determine the magnitude and timing of impacts, rather it is the adaptation measures that enacted. (Elsewhere the SPM notes that severe impacts have been observed in countries with high adaptive capacity because no action was taken). 2 - it is unclear why the qualifier "in some cases" is used as it implies that there are instances where adaptation will make no difference (while development pathway does). 3 - this statement appears in section 3.3 of the longer report, not subsections 3.3.1 and 3.3.2). Proposed alternative text: "The magnitude and timing of impacts will vary with the amount and timing of climate change, development pathway, and anticipatory adaptation measures undertaken. {3.3}" (Government of Canada)
SPM-A-350	11	1	11	2	Much of this text is a repeat of the chapeau text (on page 10 lines 29-31) (or its implication). Such duplication risks being irritating to the reader. At the same time, the references to development pathway and capacity are important to retain and expand on (using the explanation of development pathway from 3.3, page 6 lines 40-42). We suggest "The magnitude and timing of impacts will vary with the development pathway (including social and economic changes) and, in some cases, the capacity to adapt." (Government of New Zealand)
SPM-A-351	11	1	11	2	"The magnitude and timing of impacts will ... the capacity to adapt": this is confusing, because "impacts" in this case no longer refers to figure SPM.6, which is without adaptation (page 10 line 35). Suggest to modify as: "The magnitude and timing of impacts that will ultimately be realized will..." (Government of Belgium)
SPM-A-352	11	2	11	2	The "capacity to adapt" is a concept difficult to explain and its definition should appear in the glossary. The existence of a capacity to adapt does not imply that adaptation measures are taken, and therefore, the impacts are also dependent on the implementation of adaptation, including on the timing of this implementation. Please replace "capacity to adapt" by "implementation of adaptation". (Government of France)
SPM-A-353	11	2	11	2	Insert agreed wording from WG AR4: "Poor communities can be especially vulnerable, in particular those concentrated in high-risk areas. They tend to have more limited adaptive capacities, and are more dependent on climate-sensitive resources such as local water and food supplies." (Government of Switzerland)
SPM-A-354	11	4	11	4	This is the first mention of mitigation in the SPM. It would be clearer for readers to use at this point 'emissions mitigation'. (Government of Australia)
SPM-A-355	11	4	11	5	The statement in the SPM is quite different from that in Topic 3.3.1 (page 11, lines 6-7): "Some future impacts already appear unavoidable owing to the inertia of the climate system." Use that formulation instead. The underlying report supports neither the definitiveness of the second part of the SPM chapeau nor the strong overall conclusion. The conclusion depends on casual association of independent research results and not specific studies that have identified the unavoidable impacts, over the whole 21st century, regardless of the mitigation scenarios. Also, "mitigation scenarios" is too

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					general. For example, what about geo-engineering? (Government of United States of America)
SPM-A-356	11	4	12	17	Some examples of impacts associated with projected global average surface warming, as those presented in Figure SPM.6, merit a further analysis of their causes. A good example is the bold statement that temperature increases may lead to “hundreds of millions of people exposed to increased water stress”. Consequently, in the third bullet of page 11 (line 11) a mention of these causes should also be stated. This is in line with what is presented in Topic 3 document, section in 3.3.1, in particular in Box “Climate change and water” where it is stated that more than one-sixth of the world population currently lives in regions supplied by melt water from major mountain ranges. (Government of Chile)
SPM-A-357	11	4			Expand on stringent and remove "some" (Government of Ireland)
SPM-A-358	11	4	11	5	Change "Even under the most stringent mitigation scenarios, further warming [...] already unavoidable" to "Even under the most stringent assessed mitigation scenarios, further warming until at least the mid of the 21st century and some associated impacts are already unavoidable." The implied statement of the current formulation, i.e. that under the most stringent mitigation scenarios, temperatures are continuing to increase throughout the 21st century, is not factually correct, as there are scenarios that show the contrary, e.g. see the CO2 scenarios by Azar et al. or the multi-gas IMAGE 2.6 scenario. (Government of Germany)
SPM-A-359	11	4	11	5	Add: “... already unavoidable, thus making adaptation necessary.” as mentioned in topic 5 of SYR section 5.3 (Government of Belgium)
SPM-A-360	11	5	11	5	We suggest moving the paragraph from 8, line 41-43 to page 11, after line 5, or move pg. 11 lns. 4-13 page 8, line 41-43. Both paragraphs are linked and it would fit nicely with a short sentence added, such as "For example, even under a range of SRES non-mitigation scenarios, there is a projected warming of about 0.2°C per decade for the next two decades. Beyond the next...." (Government of Canada)
SPM-A-361	11	7	11	13	with “Examples of projected impacts” may be removed, as the point in bold is quite clear and examples included in the longer report. (Government of India)
SPM-A-362	11	7	11	7	should "adaptation" be "mitigation" in this sentence? The listed impacts are environmental impacts, and the reference to adaptation does not appear to be relevant. (Government of Denmark)
SPM-A-363	11	7	11	8	Please delete ",even with adaptation,". Reason: this representation has no adequate original contents as evidence in three working group reports. Therefore, it is too absolute and not scientific. (Government of China)

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SPM-A-364	11	7			Coral Bleaching, species range shifts, and risks to wildlife are not "projected", they are already happening. (WWF International)
SPM-A-365	11	7			"even with adaptaion" seems out of place in context of a number of the examples (Government of Ireland)
SPM-A-366	11	11	11	11	Revise to: "Decreasing water availability and increasing drought in mid-latitudes and semi-arid low latitudes." to be consistent with WG2 Table SPM-1. (Government of United States of America)
SPM-A-367	11	12	11	12	Delete the work 'risk' to read "occurrence of wildfire". (Government of United States of America)
SPM-A-368	11	14	11	14	It is suggested to also include "health, direct impacts from heat waves, floods and droughts" (Government of Austria)
SPM-A-369	12	1	12	2	We think that this figure has been improved since the last version, however there are still room for further improvements. For example the start of the effect could be more clearly indicated by adding the start of the arrow to the left of the text (for example by an "I--"). Since the scenarios cover up to 6 degrees of warming, it might also be feasible to increase the interval of the arrows on effects to cover this interval. (Government of Norway)
SPM-A-370	12	1	12	2	Under "Food" the right arrow might be missing on "Cereal productivity" - or, if this effect is now longer pronounced at higher temperature increases, this should be indicated by an ending "--I". If space allows for it one might also consider to extend the text to "some regions IN MID- TO HIGH LATITUDES" (Government of Norway)
SPM-A-371	12	1	12	1	This figure merges information on SRES scenarios and stabilisation scenarios. The difference between the warming by 2090-2099 in SRES and long-term warming in stabilisation scenarios is very confusing to many policy makers. It should be explained thoroughly at this place (Government of Denmark)
SPM-A-372	12	1	12	1	The lower part of the Figure relative to long term warming may be confusing for readers. The title could be included in this part of the figure, instead of standing above it, so that no confusion is possible, and it could be written as "very long tem " instead of "long term". (Government of France)
SPM-A-373	12	1	12	1	Revert to the title on WG2 Figure SPM-2: "Key impacts as a function of increasing global average temperature change." And include the statement: "(Impacts will vary by extent of adaptation, rate of temperature change, and socio-economic pathway.)" The emissions and warming scenarios depicted in the top and bottom panels of Figure SPM.6 are not fully consistent with the key impacts listed in the middle panel. (Government of United States of America)

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SPM-A-374	12	1	12	2	It is still room for improvement of this very important figure SPM6. Could it be made more clear in the middle panel that the impact start where the left hand text is located? Furthermore some arrows seem to be missing eg. for "Increasing species range shifts..". (Government of Norway)
SPM-A-375	12	1			<p>It is most welcome that this figure contains information not only about impacts for different warming values, but also puts these warming values in perspective with the non-mitigation and stabilisation scenarios.</p> <p>The original version of this table proposed for WG2 SPM included a sixth category of impacts “singular events”, including abrupt changes to the Greenland and WAIS, and the MOC. This was excluded for two reasons: firstly that this topic was more the expertise of WG1 than WG2, and secondly that the timescale on which these events may occur reaches beyond SRES. These reasons do not apply here in the SYR which should combine information from all three WG, and noting also that the inclusion of the lower panel with long term warming from stabilisation scenarios resolves the timescale issue. Indeed delegates to WG2 plenary explicitly suggested that this box be brought back in the SYR. (note: positioning within this box may need to be adjusted to reflect the same confidence level as for the other sectors)</p> <p>block 'ECOSYSTEMS'</p> <p>superscript on 3rd arrow reads now as 'Terrestrial biosphere tends toward a net carbon source'. Do the authors want to tell the audience that it is now a sink and can/will turn in a source? Maybe more clear may be 'Terrestrial biosphere turns from a sink in a net carbon source'</p> <p>legend:</p> <p>The legend says that confidence levels for all statements are high. However, in the sector Ecosystems, the entry "Up to 30% of species at increasing risk of extinction" has only medium confidence (see page 14 line 18).So, maybe indicate this exception</p> <p>Lower Panel</p> <p>The inclusion of the lower panel (long-term warming from stabilisation scenarios) is very welcome, however it naturally invites comparison with the similar bars in the upper one (SRES scenarios), which were calculated in a different way. Therefore some further clarification is needed. Suggested additional points for the caption (which we presume to be true, but should be checked by the authors of this figure)</p> <p>* The mean and range of the climate sensitivity used in the lower panel are slightly different to those used in the upper panel</p> <p>* The uncertainty range in the lower panel is also wider due to the spread of scenarios within each category"</p> <p>add “(a few centuries)” after “long term” in figure (as noted in footnote 9 of this SPM)</p> <p>add note “ Add about half a degree °C to the temperature ranges shown to obtain warming relative to pre-industrial” as in Table SPM.1</p> <p>add note “ Even if GHG concentrations for SRES scenarios are kept constant in 2100, surface temperature will continue to rise (additional 0,5°C for B1 and A1B concentrations kept constant from 2100 to 2300) until equilibrium is reached”, as shown in figure WGI Figure TS.32.</p> <p>Additional symbols (for example open circles) could be used in the lower panel to indicate the warming by 2090-2099, the same timescale as for the top panel, to help the reader to see the importance of the difference in timescales.</p> <p>The same colors as in figure SPM 8 could be used for these bars, to aid comparison.</p> <p>(Government of Belgium)</p>

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SPM-A-376	12	1	12		In Figure SPM6, the lower panel with warming projections corresponding to AR4 stabilization categories does not convey any additional information to that given by the top panel with marker scenarios. (Government of India)
SPM-A-377	12	1	12	17	In Figure SPM.6 is missing important information and sectors, in particular Water and Coasts. These two resources are crucial for most of the countries, specially for the most vulnerables LDC. (Government of Spain)
SPM-A-378	12	1	12	17	Figure SPM-6: The caption for this figure needs some work as it should do a better job of walking the reader through the figure and its main messages. 1)Suggest the sentence on lines 6-7 be revised to: "Together, the upper and middles parts of this figure demonstrate the severity of impacts associated with different SRES emission scenarios, while together the middle and bottom parts of the figure demonstrate the severity of impacts associated with various stabilization categories". This sentence should also then be moved to the second sentence or last sentence of the caption. 2) Sentence on line 10, Revise to state "... indicate impacts continuing to increase with increasing temperature." 3)It is not possible to reconcile the values plotted in the bottom panel and that appear in Table SPM.3 with "multi-century" warming. Table SPM.3 only provides estimates of global temperature increase at stabilization, which elsewhere is stated will generally occur between 2100 and 2150. (Government of Canada)
SPM-A-379	12	1	12	1	Figure SPM.6: Please delete "Examples" and insert "key impacts" in the headline (Government of Germany)
SPM-A-380	12	1			Figure SPM.6. The line extending to the left of the sentence "Ecosystem) "up to 30% of species at increasing risk of extinction"" seems to have been overlooked during editing. Deletion of this line is suggested. (Government of Japan)
SPM-A-381	12	1			Figure SPM.6. In "Coasts": the verb "could" is giving weakness to the statement and, also, was never used elsewhere in this Figure. (Government of Switzerland)
SPM-A-382	12	1			Figure SPM.6 Excellent use of graphic combined with temperature ranges from non-mitigation scenarios and AR4 Stabilization categories. Figure summarises the various impacts concisely. (World Meteorological Organization)
SPM-A-383	12	1			Figure SPM 6: Include information on impacts even if they are not expected before 2100, but which could be triggered at certain levels of warming, such as triggering of Greenland ice sheet melting, risk of disintegration of West-Antarctic Ice Sheet, - should be given separately). In particular, add more rows including key vulnerabilities and risks for biophysical systems, because of the large scale of potential impacts implied, such as given in Table 19.1 in chapter 19 of WG II of the underlying report, as this is important for the Synthesis of information from a risk management perspective (see topic 5). Otherwise this table can be misleading and does not give the full picture in terms of risks linked to global warming at different levels, and in terms of which risks can be avoided by certain lower levels of temperature. If this information is not included, there is a mismatch between this section and the assessment in topic 5 on what the necessary information for policymakers is.

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					(Government of Germany)
SPM-A-384	12	1			Figure SPM 6: important Figure but it would be much more useful if the following information was included: in upper part: include curves for warming over the course of the 21st century. to also give some information on the timing of expected levels of warming for different scenarios. In general, information in Figure SPM 6 should not be limited to high-confidence-statements, as this can be misleading for policymakers and contradicts the approach described later in topic 5 (decision making involves an iterative risk management process. Information on impacts with large or large-scale or irreversible damages are relevant even if it is only given with medium or even low confidence.). Therefore, include more information e.g. on impacts for freshwater ecosystems, geophysical systems, extreme events - see table 19.2 in WG II, chapter 19 of the underlying report. (Government of Germany)
SPM-A-385	12	1	12	17	Fig.SPM.6. It is suggested to delete the upper and the lower panels and only keep the middle one. Reason: the upper panel is the projection by the end of the 21st century, the middle one shows different impacts which would occur in different periods of the 21st century, while the lower one provides the corresponding temperatures of six stabilized GHG concentration, which will take several centuries to reach. Therefore, the three figures are incomparable and it is not scientific to put them together here. Furthermore, the upper one and the lower one show the same contents with p10 Fig.SPM.5 and p20 Table.SPM.3 respectively. Please delete them to avoid confusion for readers. (Government of China)
SPM-A-386	12	1	12	2	Excellent to have this graph. Keep the panels with the estimated warming ranges at the top and the bottom. (Government of Switzerland)
SPM-A-387	12	1	12	3	Delete top and bottom panels depicting emissions and warming scenarios as well as associated text in the caption. The scenarios depicted in the top and bottom panels of Figure SPM.6 are not sufficiently consistent with the impacts listed in the middle panel to justify associating the occurrence of impacts with particular scenarios. The SPM does not define or explain "stabilization categories" prior to introducing these into Figure SPM.6, making the lower panel in the graphic particularly difficult to interpret. Further, the temporal relationships between the top and bottom panels are unclear. Finally, the top and bottom panels (depicting warming scenarios) are redundant with Figure SPM.5 and Table SPM.1 (projections of surface temperatures under the SRES marker scenarios) and with Table SPM.3 and Figure SPM.8 (emissions and warming under stabilization categories). Readers will likely find Figure SPM.5 located near Figure SPM.6 in the final layout, allowing adequate and convenient cross-reference between surface warming and impacts in Figure SPM.6 and the SRES scenarios with the temporal context of warming scenarios in Figure SPM.5. Thus, the top and bottom panels are not needed. (Government of United States of America)
SPM-A-388	12	1	12	2	As regards the last sentence on "Coasts" the term "millions" might be more detailed (is it tens of millions?). (Government of Norway)
SPM-A-389	12	3			Does this imply extinction of more than 40% of species globally? If so 'significant' would seem an understatement. But the meaning needs clarification (Government of United Kingdom)

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
SPM-A-390	12	4	12	17	Revert verbatim to relevant text from the caption for WG2 Figure SPM-2: "Illustrative examples of global impacts projected for climate changes (and sea level and atmospheric carbon dioxide where relevant) associated with different amounts of increase in global average surface temperature in the 21st century. The black lines link impacts; dotted arrows indicate impacts continuing with increasing temperature. Entries are placed so that the left-hand side of the text indicates the approximate onset of a given impact. Quantitative entries for water stress and flooding represent the additional impacts of climate change relative to the conditions projected across the range of Special Report on Emissions Scenarios (SRES) scenarios A1FI, A2, B1, and B2. Adaptation to climate change is not included in these estimations. Confidence levels for all statements are high." The authors should consider whether they would like to make mention of the other related figures [Figure SPM.5 and Table SPM.1 (projections of surface temperatures under the SRES marker scenarios) and with Table SPM.3 and Figure SPM.8 (emissions and warming under stabilization categories)] in the caption of this figure. (Government of United States of America)
SPM-A-391	12	6	12	6	It is suggested to substitute "parts" by "panels" in order to increase clarity. (Government of Austria)
SPM-A-392	12	10	12	12	Although this is drawn from WG2's SPM, it is still difficult to understand. It should be clarified that a certain impact starts at the first letter, on each sentence appearing in the Figure. (Government of Japan)
SPM-A-393	12	12			Figure SPM.6: This figure lacks some important quantitative information, compared to the underlying WG II Table 20.8 (in particular for the "Water" and "Coasts" entries). Suggest to replace the central part by WG II Table 20.8. (Government of European Community)
SPM-A-394	12	13	12	14	The sentence "Adaptation is not included" is, in this generality, not correct and therefore misleading. For instance, the range shifts reported in Figure SPM.6 constitute a form of adaptation by natural systems, and most crop model simulations include seasonal changes in crop management as well as switching crop varieties. Suggest to change to "Explicit policies aimed at planned adaptation to climate change are not included." (Government of European Community)
SPM-A-395	12	17	12	17	The sentence would be more easily understood by policy makers, if the line would read "approximately for the change of the temperature base line from pre-industrial value to 1980-1999 average value" (Government of France)
SPM-A-396	13	0			It strikes us that avoided deforestation, energy efficiency and waste are not mentioned. (Government of United Kingdom)
SPM-A-397	13	1	13	6	Very uninformative section, and repetitive of page 10 line 22, which was already more concrete on a single line. In terms of text space: aren't extremes in this century at least as important as the melting of Greenland over millennia (page 13 line 34-49)? (Government of Belgium)

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
SPM-A-398	13	1	13	32	This new text is very much appreciated because it is a very informative synthesis of key results of WG II that has not been included in SPM of WGII due to time constraints. (Government of Austria)
SPM-A-399	13	1	13	3	Revert to the corresponding headline in the WG2 SPM (page 14 of final layout): "Impacts due to altered frequencies and intensities of extreme weather, climate, and sea level events are very likely to change." The current statement is near verbatim from the WG2 SPM; however, it appears there as the introduction to Table SPM-2 rather than a statement of a key finding. The headline is more appropriate and includes a confidence estimate. (Government of United States of America)
SPM-A-400	13	1	13	1	"Confidence has increased" does not inform the policy makers on the present level of confidence. The sentence should be also more specific on which weather events and extremes will become more frequent, and in which cases there is no clear trends. (Government of France)
SPM-A-401	13	8	13	19	This paragraph is kind of "meaningless" as nothing is stated in which way systems, sectors and regions are affected. Some more effort should be made to stress the actual consequences for these areas. (Government of Norway)
SPM-A-402	13	8	13	29	This is an important section to carry WG2's message, and its continuous inclusion in the final draft is fully welcomed. (Government of Japan)
SPM-A-403	13	8	13	9	The current text is much less clear than the corresponding text in the previous draft . In particular, changing "vulnerable" to "affected" hides that all impacts mentioned here are negative. Reverse ll. 8-9 to "Some systems, sectors, and regions can now be identified as particularly vulnerable to climate change."; reverse l. 11 to "Particularly vulnerable systems and sectors are"; and reverse l. 21 to "Particularly vulnerable regions are". (Government of European Community)
SPM-A-404	13	8	13	29	The construction "Regarding [systems and sectors]" is clumsy and does not read well. We suggest replacing the chapeau text ("Some systems, sectors and regions are likely to be especially affected by climate change. {3.3.4}" with "Impacts of climate change will not be uniform. {3.3.4}" and then replacing line 6 "Regarding systems and sectors, these are: {3.3.4}" with "Systems and sectors likely to be especially affected by climate change are: {3.3.4}" and line 18 "Regarding regions, these are: {3.3.4}" with "Regions likely to be especially affected by climate change are: {3.3.4}" (Government of New Zealand)
SPM-A-405	13	8	13	8	Reword "especially affected" to the original wording "particularly vulnerable", as this is a summary of the analysis of particularly vulnerable systems and regions in WG II, and "especially affected" is much less meaningful. A reference to the general discussion in topic 5 or the relevant section in the SPM could be made, where the concept is introduced and explained, but it is important to keep the wording here, as really this section has to be consistent with topic 5. Again, this is an example where some general concepts introduced in topic 5 should be applied specifically in terms of presenting the information in a way that is relevant for policymakers. (Government of Germany)

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Topic - Batch - Comment	Page	Line	To Page	To Line	Comment
SPM-A-406	13	8	13	32	Regarding systems and sectors in the world likely to be particularly affected by climate change, systems that are important for ensuring fresh water availability in Latin American countries (for instance glaciers in the Andean region) should not be left away in any list of vulnerable systems. This is in line with Box "Climate Change and Water" presented in Topic 3 document, section 3.3.1 where it is stated that "Regional scale mountain snow pack, glaciers and small ice caps play a crucial role in fresh water availability. Widespread mass losses from glaciers and reductions in snow cover over recent decades are projected to accelerate reducing water availability, hydropower potential and changing seasonality of flows in regions such as the Andean region". (Government of Chile)
SPM-A-407	13	8	13	29	re. the terms used for systems and sectors, regions: In the first draft, the term 'particularly vulnerable' has been used, whereas in the final draft weaker terms 'to be especially affected/particular ecosystems, regions,' are used. Maintaining the term 'vulnerable' is suggested. (Government of Japan)
SPM-A-408	13	8	13	8	Please exchange "be especially affected" for "experience increased pressure". A change a wording may be appropriate since WP2 point at also affects that can be valued as positive in certain sectors in certain regions and all the examples here are of negatively affected areas. (Government of Sweden)
SPM-A-409	13	8	13	9	It is noted that in revising the text compared to the May draft the language was changed from "vulnerable" systems, sectors and regions to "affected" systems, sectors and regions. The following wording is suggested in order to convey the message that those systems, sectors and regions are in particular vulnerable: Some systems, sectors and regions are likely to be in particular vulnerable to climate change". (Government of Austria)
SPM-A-410	13	8	13	32	Corresponding to previous comment, regarding a list of regions of the world where these systems are located, Latin American countries (particularly those on the Andean region) should be included as vulnerable regions due to the water stress forecasted for them. As stated in section 3.3 of Topic 3 document, water availability is projected to be affected due to precipitation pattern changes and disappearance of glaciers in specific zones of Latin America. Also, salinisation and desertification of agricultural land will cause serious harm if occurs as projected with a high confidence level. This is also in line with Box "Climate Change and Water" presented in Topic 3 document: at regional scale, widespread mass losses from glaciers and reductions in snow cover over recent decades are projected to accelerate reducing water availability, hydropower potential and changing seasonality of flows in regions such as the Andean region. This is also reinforced following a series of comments stated in the WG2 Chapter. (Government of Chile)
SPM-A-411	13	10	13	11	The sentence “ The probability of ... with confidence” to be rewritten as “ However, the confidence level is low in assessment of probability of large abrupt climate changes beyond 2100.” (Government of India)
SPM-A-412	13	11	13	19	We suggest to add to the list: “glacier-fed river basins” (Government of Netherlands)

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SPM-A-413	13	11	13	19	Suggest biodiversity be added to this list of sectors that will be impacted the most given that fig SPM.6 indicates serious impacts at medium temperature increases e.g. 30% of species at risk of extinction. (Government of United Kingdom)
SPM-A-414	13	15	13	15	We think that the term "biome" would be unknown to many readers, and would propose that the term "ecosystems" is considered used instead. (Government of Norway)
SPM-A-415	13	19	13	19	We suggest, after "in areas", to add "and among groups". (Government of Mexico)
SPM-A-416	13	21			The text give only very partially information, many region and subregion are not included. For governments and policy makers the regional information it is very relevant. In order to have as much information as possible for all regions, one possibility could be to include a Figure with regional information (instead of sectorial) similar to SPM-6. (Government of Spain)
SPM-A-417	13	21	13	29	The presentation of the regional impacts is very limited and does not convey a sense of urgency. It could be improved significantly by introducing a table of regional impacts for different temperature levels, similar to table SPM-2 for sectors. (Government of United Kingdom)
SPM-A-418	13	21	13	29	Regarding the regions, there is a lot of detail left out here, and the current language is very vague. Please include more specific details, e.g. describe what the "projected climate change impacts" in line 24 are. (Government of Germany)
SPM-A-419	13	21	13	29	As it has been mentioned in the SPM of WGII add another region: Southern Europe and northern Africa because of the worsen condition projections for a region already vulnerable to climate variability (Government of Spain)
SPM-A-420	13	22	13	22	We suggest to change " high rates of projected warming" to "projected high rates of warming". (Government of Mexico)
SPM-A-421	13	22	13	25	The reference to the Arctic should identify the effect on human communities as well as natural systems and the Africa reference should refer to natural ecosystems as well as by implication the impact on people. It would be helpful to highlight that in parts of Africa water and food resources are already stretched and therefore, any worsening would impact the populations more severely. (Government of United Kingdom)
SPM-A-422	13	24	13	24	The statement “especially the sub-Saharan region” is not supported by the precipitation projections shown in Figure 3.3. This figure indicates that major drying is projected for the Northern and the Southern parts of Africa, i.e. in the dry tropics and subtropics. Therefore, we propose to replace “especially the sub-Saharan region” by “especially the dry tropics and subtropics”. (Government of Netherlands)

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SPM-A-423	13	25	13	25	The sentence to be replaced by “There are some likely irreversible impacts”. (Government of India)
SPM-A-424	13	28	13	28	The reference to Asian megadeltas should be changed to "Mega-deltas of Asia and Africa", to reflect properly the WGII approved SPM (see WGII SPM, page 7, and even the SYR SPM, Topic 3, Page 8 Line 1) (Government of Belgium)
SPM-A-425	13	31	13	32	This is an important section to carry WG2's message, and its new inclusion in the final draft is fully welcomed. (Government of Japan)
SPM-A-426	13	31	13	32	Revert to the corresponding statement in the WG2 Technical Summary: “Within other areas, even those with high incomes, some people can be particularly at risk (such as the poor, young children, and the elderly) and also some areas and some activities.” (Government of United States of America)
SPM-A-427	13	31	13	32	"The poor, young children, the elderly and the ill" are neither "areas, sectors and communities" but population groups. Edit language for consistency. (Government of United Kingdom)
SPM-A-428	13	31	13	32	"The poor, young children, the elderly and the ill" are neither "areas, sectors and communities" but population groups. Edit language for consistency. (Government of European Community)
SPM-A-429	13	32	13	32	Change to: “... the young children, the poor, the elderly...”, clearer to read (Government of Belgium)
SPM-A-430	13	33	13	33	The sentence needs to be rewritten as “Adaptive and Mitigative responses, the inter-”. Options and responses are repetitive in a sense. (Government of India)
SPM-A-431	13	33	13	33	Add: " Both past and future anthropogenic carbon dioxide emissions will continue to contribute to warming and sea level rise for more than a millennium. (Government of Germany)
SPM-A-432	13	34	13	36	We think that some non-experts might, incorrectly, think that stabilisation of emissions implies stabilisation of concentrations. We propose to include the word "atmospheric" before GHG in line 35. Furthermore, to underline that stabilisation of concentrations is a very demanding task, we propose that reference is made to the emission reductions needed to attain stabilisation of concentrations. This could be done by adding a bracketed sentence in the bold text ("something which implies that emissions are to be greatly reduced") or by adding an extra sentence explanatory in the main text body. (Government of Norway)
SPM-A-433	13	34	13	36	This needs a qualifier that these effects will get worse the longer we wait to stabilize GHG levels. (WWF International)
SPM-A-434	13	34	13	36	The current sentence "Anthropogenic warming and sea level rise would continue for centuries [...], even if GHG concentrations were stabilized" is not

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					factually correct, as the lower stabilization scenarios show a peak in concentrations, subsequent return to lower stabilization levels with global mean temperatures likely starting to drop again towards the end of the 21st century (see e.g. IMAGE 2.6 scenario or Azar et al. CO2 only scenarios). The statement holds for sea level rise. Thus rephrase to: "Anthropogenic warming and sea level rise would continue for centuries under non-mitigation scenarios due to the timescales associated with climate processes and feedbacks, as well if GHG emissions follow the higher of the assessed mitigation scenarios." (Government of Germany)
SPM-A-435	13	38	13	44	The statements made are correct as such. However, the discussion back and forth on local and global temperatures in the past and according to the future projections leads to a risk of misinterpretation. One might get the impression that the last interglacial global mean conditions would resemble the projected future global means. This is not the case, as is clear from WGI, chapter 6.4.1.6. Easiest fix would be to omit lines 41-44, starting from "The corresponding...". (Government of Sweden)
SPM-A-436	13	38	13	49	The statement of a temporal reference ("millennial/century time scales") without a statement of the magnitude of the effect is not very helpful. Suggest to add "of several meters" before "on century time scales". suggest redraft line 48 to read: '...if ice discharge turns out to be greater than expected.' (Government of United Kingdom)
SPM-A-437	13	38	13	49	move these paragraphs on the ice sheets further down into the subsection on abrupt or irreversible changes, e.g. to page 14 line 12 (Government of Germany)
SPM-A-438	13	38	13	49	Clarify what the implication is of the 4-6 m rise 125,000 years ago. (Government of United Kingdom)
SPM-A-439	13	39	13	39	Although the phrase “virtually complete elimination” appears in the WG1 SPM text, the WG1 SPM text is clearer and preferable for consistency. Revert to the more precise text in the WG1 SPM (page 17 of final layout). (Government of United States of America)
SPM-A-440	13	41	13	44	The details in this sentence do not contribute to the policy-relevant aspect of the section. Suggest sentence starting "The corresponding future ..." be deleted to shorten text or provide room for new, more significant, material. (Government of Canada)
SPM-A-441	13	41	13	44	Revert to the more precise text in the WG1 SPM (page 17 of final layout). (Government of United States of America)
SPM-A-442	13	41	13	41	Check whether " if global average warming were sustained FOR MILLENNIA" is the correct wording here, as it implies that a high warming over many centuries were not sufficient to trigger eventual elimination of the Greenland ice sheet. In other words, 1.9-4.6 temperatures might be sufficient as trigger, if sustained for many centuries, although the eventual elimination operates on a longer time scale. Negative ice sheet mass balance could proceed at temperature levels even lower than 1.9-4.6°C once the height of the ice sheet started to be reduced sufficiently. Check wording. (Government of Germany)

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SPM-A-443	13	46	13	49	This misses regional melt issues. (WWF International)
SPM-A-444	13	46	13	48	Please rewrite this important sentence about uncertainty in future SLR in language that will be understandable to the intended audience. (Government of Canada)
SPM-A-445	13	46	13	47	Modify sentence to read: "If the current rate of ice loss were sustained for millennia, that would lead to near total loss of the Greenland ice sheet and about a 7-m rise in sea level." (Government of United States of America)
SPM-A-446	13	47	13	49	It is not clear whether "dynamical ice discharge" is a function of temperature/climate or not. This should be clarified. (Government of Canada)
SPM-A-447	13	47	13	49	Delete "is expected to" (Government of United States of America)
SPM-A-448	13	48	13	48	This sentence is not easy to understand for policy makers. The sentence could read as: "However, if a break-up of ice shelves will increase, that could compensate increased accumulation of the ice sheet or even lead to the net loss of the ice sheet mass." or "However, if a break-up of ice shelves will increase due to the accelerated flow of ice, that could compensate increased accumulation of the ice sheet or even lead to the net loss of the ice sheet mass." (Government of Finland)
SPM-A-449	13	48	13	48	The word "net" is confusing. It could be deleted for clarity, or replaced by "overall". (Government of France)
SPM-A-450	14	1	14	22	This "chapter" could well be lifted earlier and clearer in the report. Irreversible climate changes and impacts should be a very important finding to communicate to policymakers, and should not be saved to the last part of chapter 3, indicating less importance. E.g. even though there is only medium confidence that 20-30% of species are at increasing risk of extinction, this is such a severe consequence and need to be made clear to policymakers. (Government of Norway)
SPM-A-451	14	1	14	21	One important finding in WG II was that the resilience of many ecosystems will be exceed and this should be included in the Synthesis SPM. Hence, we propose to include a new sentence from SPM WG II here: "The resilience of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change, associated disturbances (e.g., flooding, drought, wildfire, insects, ocean acidification), and other global change drivers (e.g., land use change, pollution, overexploitation of resources)." (page 5 WG II SPM). (Government of Norway)
SPM-A-452	14	2	14	21	We would expect to find information about feedbacks and thresholds such as for tropical forest die-back, reduced carbon uptake by acidified oceans, methane emissions from soils and clathrates, increased melting if the surface of ice sheets drops, but this information is totally absent. Also the main conclusion suggests that human activities through other mechanisms than anthropogenic climate change may lead to abrupt or irreversible change and impacts, which is strange. The consideration on MOC has too much detail in relation to its relevance.

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					(Government of Netherlands)
SPM-A-453	14	2	14	3	These sentences are not clear. What are the "human activities" mentioned? What is the relationship between impacts and climate change? Suggest changing to "Anthropogenic greenhouse gas emissions can lead to abrupt and/or irreversible climate change and impacts. The risks of large irreversible impacts increases with the rate and magnitude of climate change." (Government of European Community)
SPM-A-454	14	2	14	3	Revise second sentence of bold material to the corresponding statement in the WG2 SPM (page 15 of final layout): "Some large-scale climate events have the potential to cause very large impacts, especially after the 21st century." (Government of United States of America)
SPM-A-455	14	2	14	3	It is noted that "human activities" is not a term included in the glossary. It is suggested to use the wording: "Anthropogenic warming" could lead tobecause "anthropogenic" is a well defined term (see glossary). (Government of Austria)
SPM-A-456	14	2	14	2	"Human activities could lead to abrupt..." This sentence implies that human activities (no specification) could directly cause abrupt or irreversible climate changes and impacts. Preferred language would refer to something along the lines of "Anthropogenic warming could lead to..." or the language used to introduce these paragraphs in SPM AR4 WG1, "Some large-scale climate events have the potential to cause very large impacts, especially after the 21st century". (Government of Canada)
SPM-A-457	14	5	14	11	Replace this paragraph with the exact approved language from the WG2 SPM, which is much clearer and lends the proper emphasis and balance. Delete the last sentence as it is ambiguous. The statement that changes 'may' do something does not reflect a confidence or likelihood. (Government of United States of America)
SPM-A-458	14	5	14	11	Percentage of certainties or uncertainty in the current model simulations and long term changes in MOC are to be incorporated in this report. (Government of Oman)
SPM-A-459	14	6	14	8	It is essential that the following sentence be added, to put these projections in perspective, as it was better done in the WGII SPM: "Temperatures over the Atlantic and Europe are projected to increase even if the MOC slows down, due to global warming". (Government of Belgium)
SPM-A-460	14	8	14	9	The statement that Longer-term changes in the MOC cannot be assessed with confidence should be qualified by adding something along the lines of: "However, there is high confidence that the likelihood of large-scale and persistent MOC responses increases with the extent and rate of anthropogenic forcing.". Otherwise, this paragraph does not give the whole picture of the assessment in the WG II report (see section 19.3.5.3 WG II). (Government of Germany)
SPM-A-461	14	12	14	12	Please move page 13 line 38 to 49 (on ice sheets) here, where it fits better into the context, and add : "Dynamical Processes related to ice flow not includes in current models but suggested by recent observations could increase the vulnerability of the ice sheet warming, increasing future sea level

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					rise." (Government of Germany)
SPM-A-462	14	13	14	16	It is noted that neither the SPM nor the longer report of the Synthesis Report include some quantitative information on the possible sea level rise due to deglaciation of polar ice sheets. As such information seems to be of significant policy relevance it is suggested to include such quantitative information either in the SPM or at least in the longer report. (Government of Austria)
SPM-A-463	14	13	14	13	"Partial deglaciation of polar ice sheets" is a somewhat strange formulation. Maybe it could be substituted by "Partial deglaciation of polar land masses". (Government of Denmark)
SPM-A-464	14	15	14	16	This section should be reconsidered (Government of Ireland)
SPM-A-465	14	15	14	16	The statement of a temporal reference ("millennial/century time scales") without a statement of the magnitude of the effect is not very helpful. Suggest to add "of several meters" before "on century time scales". (Government of European Community)
SPM-A-466	14	15			More detail on timescales should be provided (Government of Ireland)
SPM-A-467	14	18	14	21	Provide reference levels for temperatures, i.e. "above pre-industrial levels" or "above 1980-1999 average"... (Government of Germany)
SPM-A-468	14	18	14	21	Irreversible impacts of climate change as it pertains to Small Islands and the effects of an increase in temperature of 2 degrees celsius would have on Small Islands should be included within the paragraph. (Government of Trinidad and Tobago)
SPM-A-469	14	18	14	21	Delete this paragraph. It does not fit with recommended new bolded heading, it is only a medium confidence finding (i.e., 50/50 chance) and findings are already included in Figure SPM.6. (Government of United States of America)
SPM-A-470	14	18	14	20	As with page 12 line 3, does this text imply extinction of more than 40% of species globally? If so 'significant' would seem an understatement. But the meaning needs clarification (Government of United Kingdom)
SPM-A-471	14	18	14	18	We note this text states "Climate change IS likely to lead to ..." whereas the underlying text in Topic 3.4 (Topic 3 page 16 line 11) states "Climate changeS ARE likely to lead to ...". We suggest the authors make the texts consistent. (Government of New Zealand)

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SPM-A-472	14	19	14	20	"at increasing risk of extinction" is imprecise and weaker than the initial wording. Please use the accurate wording from WG2 TS (page 38) : "at increasingly high risk of extinction". (Government of Belgium)
SPM-A-473	14	20	14	21	We suggest that the text should specify whether the figures for increased global warming are related to preindustrial values or values for 1980-99 (Government of Norway)
SPM-A-474	14	20	14	21	Since the word "significant" appears to have been given a precise definition (>40%), we think that it might be written in italics. Furthermor, consider to use the word "considerable" instead. (Government of Norway)
SPM-A-475	14	20	14	21	Reword to state "...of significant extinctions (>40% of species assessed so far) around the globe for warming greater than 4oC above 1980-1999 temperatures." (Government of Canada)
SPM-A-476	14	20	14	21	Please clarify what is the reference temperature or period used here.> 4°C refers to pre-industrial level, for 1980-99 it should thus be 3.5°C (from WG2 chapter 4 page 242 : " As global average temperature exceeds 4°C above pre-industrial levels, model projections suggest significant extinctions (40-70% species assessed)". Please indicate that the reference period is pre-industrial OR adapt the temperature level. (Government of Belgium)
SPM-A-477	14	20	14	20	Please add "relative to the preindustrial". (Government of Sweden)
SPM-A-478	14	20	14	20	baseline for the cited warming should be given (1980-1999) (Government of Denmark)
SPM-A-479	14	22	14	22	Include information from WG II (in particular Chapter 19, see e.g. table 19.1 in WG II, chapter 19, for a summary) on the following risks, including relationship to global mean temperature, as this is highly policy relevant from the point of view of risk assessment and risk management under uncertainty: risks from positive feedbacks leading to accelarated release of GHG (Methane release from wetlands and permafrost melt and methane release of marine hydrates, CO2 from biosphere), risk of ice-sheet desintegration (separate information for Greenland and Antarctica), risk . Information should be given even if not included in SPMs of WG reports, as highly relevant for the purpose of this Synthesis report. (Government of Germany)
SPM-A-480	14	24	15	27	We note that the section on adaptation is weak. There are two key messages that were in the SPM WGII that have been omitted from the overall SPM: <input type="checkbox"/> the baseline adaptation situation (the SPM WGII report has two statements carrying similar messages): 'some adaptation is occurring now but on a limited basis. There are barriers, limits and costs, but these are not fully understood'. <input type="checkbox"/> It should be made clear that adaptation can reduce risks and impacts but very seldom reduces them to zero. Adaptation will help us deal with unavoidable changes in the short term but mitigation is the only way of avoiding dangerous climate change in the long term (i.e. both types of action are necessary – neither are sufficient).

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					(Government of United Kingdom)
SPM-A-481	14	24	17	41	This section is very weak on Adaptation (especially cross-sectoral issues) and is not reflective of the depth given to this topic in almost every chapter of WG2. Suggest including more of the insights summarized in Topics 4, 5, and 6. (Government of United States of America)
SPM-A-482	14	24	15	7	There is currently no reference given to the limitations of adaptation for ecosystems. Mention these limitations. (E.g. Section WG2, Ch. 17, 17.4.2.1 refers to: Scheffer et al. (2001) and Steneck et al. (2002), for instance, find thresholds in the resilience of kelp forest ecosystems, coral reefs, rangelands and lakes affected both by climate change and other pollutants.) (Government of Germany)
SPM-A-483	14	24			Re-title this section as “Managing the risks of climate change through adaptation and mitigation”, then add a short para on the nature of adaptation and mitigation which : a) defines what they are b) notes that adaptation needs to deal with local risks, may have different options and needs to start soon, but that the scale of adaptation will grow with time and depend on the level of mitigation. Ultimately it has its limits c) notes that mitigation deals with the problem at source, will have limited impact in the short term but that action now is essential for the longer term reduction of the impacts of climate change. What needs to be conveyed is that the more we mitigate, the less we need to adapt. (Government of United Kingdom)
SPM-A-484	14	26	14	40	We think that the bold part of this statement (Line 26) is too obvious and would propose that it is substituted by the following part of the body text (line 29-31): "Regardless of the scale of mitigation undertaken up to 2030, additional adaptation measures will be required to reduce the adverse impacts of projected climate change and variability." (Government of Norway)
SPM-A-485	14	26	14	26	This title is too general, and does not reflect the nuances contained in the WGII SPM. Barriers, limits and costs should be mentioned. The reference to "short term" does not reflect appropriately the last sentence of page 17, WGII SPM ("Adaptation alone...), which is more nuanced. (Government of Belgium)
SPM-A-486	14	26	15	6	This seems to ignore autonomous adaptation, as mentioned very briefly in Topic 6. (Government of United Kingdom)
SPM-A-487	14	26	14	26	The statement that "Adaptation reduces vulnerability" is not universally correct, because some adaptation to climate change may be ineffective. Reverse to the corresponding statement in the previous draft (p. 13, ll. 40-41), which was much better: "There is high confidence that adaptation can reduce vulnerability" to climate change. Furthermore, the temporal reference "especially in the short-term" is not correct. Most adaptations are effective (though possibly not sufficiently so) in the long-term as well, and some adaptations work only in the long term (e.g., changes in town and regional planning, or in building codes; improved coastal protection; major behavioural changes). Suggest to change to "Some adaptations can be effective in the short term (up to a few years) whereas others are effective in the long term only (several decades)".

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					(Government of United Kingdom)
SPM-A-488	14	26	14	26	The statement that "Adaptation reduces vulnerability" is not universally correct, because some adaptation to climate change may be ineffective. Reverse to the corresponding statement in the previous draft (p. 13, ll. 40-41), which was much better: "There is high confidence that adaptation can reduce vulnerability" to climate change. Furthermore, the temporal reference "especially in the short-term" is not correct. Most adaptations are effective (though possibly not sufficiently so) in the long-term as well, and some adaptations work only in the long term (e.g., changes in town and regional planning, or in building codes; improved coastal protection; major behavioural changes). Suggest to change to "Some adaptations can be effective in the short term (up to a few years) whereas others are effective in the long term only (several decades)". (Government of European Community)
SPM-A-489	14	26	14	26	The phrase is not very accurate. Some adaptation can reduces vulnerability but some adaptation can have no effects; some systems are at the physical limit and no vulnerability can be reduce via adaptation. It should be redrafted in order to consider that most adaptation measures can be effective and may reduce vulnerability in the short term and/or in the long term but no all the adaptation measures (Government of Spain)
SPM-A-490	14	26	14	26	the old wording ("There is high confidence that adaptation can reduce vulnerability, especially in the short term") seems to be more appropriate and more consistent with other parts of the report - why was this statement made more apodictic? Change to old wording, and add, for better balance: "However, adaptation alone is not expected to cope with all the projected effects of climate change, especially over the long term as most impacts increase in magnitude." (Government of Germany)
SPM-A-491	14	26	14	26	Reference should be made to the limits of adaptation, as described on (19, 2-4). Should find a line to reflect that adaptation has its limits, ultimately (Government of Canada)
SPM-A-492	14	26			Important to note that adaptation and mitigation are both necessary - neither is sufficient alone. There is still no clear link between adaptation and mitigation in this report. (Government of United Kingdom)
SPM-A-493	14	26	15	6	Adaptation options are one of the crucial issues. In the text adaptation appears short and weak. It would be important to identify examples of options and barriers for adaptation, highlight the need to integrate adaptation in all national sectoral policies (mainstreaming).To include a table as Table 4.1 or similar could be very useful. (Government of Spain)
SPM-A-494	14	28	14	40	This section does not reflect appropriately the content of section D of the WGII SPM. In particular, it does not contain appropriate mention of the limits of adaptation. (Government of Belgium)
SPM-A-495	14	28	15	6	These sentences attempt to summarize the present status (and potential) of adaptation practice yet do not actually discuss the capacity needed for learning and mainstreaming activities into present practice for responding to extremes and variability discussed in WG2. Adaptation practice will be

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					learned and refined throughout the lifetime of climate changes, from event to event including potential surprises in the interaction of variability and anthropogenic climate change. The section needs a richer discussion of adaptation—more representative of the results of WG2. (Government of United States of America)
SPM-A-496	14	28	14	28	Please insert "There is high confidence that adaptation and mitigation can together reduce risks of climate change and can act as complementary response measures to climate change. (4.1, 4.4)", from the former SPM p. 13, line 37-38, as a good introduction to this section. (Government of Germany)
SPM-A-497	14	29	14	30	Suggest avoiding reference here to a specific year (2030). Instead use the following phrasing (changes shown in <i>italics</i>): "Regardless of the scale of mitigation undertaken in the next two to three decades, additional adaptation measures will be required to reduce the adverse impacts of projected climate change and variability." (Government of Canada)
SPM-A-498	14	31	14	33	Re. Non-climate stresses that can exacerbate vulnerability and reduce capacity to respond: "Trends in economic globalisation" is out of place in the list of examples because all of the other elements in the list are strongly negative factors (poverty, food insecurity...). Please delete 'trends in economic globalisation'. (Government of Canada)
SPM-A-499	14	32			Suggest giving this sentence further consideration for balance - what about rapid population growth/demographics, access to water resources and security of water supply, and security of energy supply as factors which increase vulnerability? (Government of United Kingdom)
SPM-A-500	14	32	14	32	Please add "inequity" after "unequal access" to resources to account for inequalities in areas such as power relations, gender, ethnicity, indigenous populations, migrations, refuges, children (Government of Sweden)
SPM-A-501	14	33	14	33	Replace "exacerbate" by "increase". (Government of Netherlands)
SPM-A-502	14	33	14	33	Remove “can exacerbate vulnerability and” (Government of United States of America)
SPM-A-503	14	33	14	33	Adaptive capacity is one of the factors of vulnerability, so this is an inconsistent listing. Please replace “vulnerability” by “sensitivity”. (Government of Netherlands)
SPM-A-504	14	36			We propose that the word "planned" is deleted or substituted by "preparations for". (Government of Norway)
SPM-A-505	14	36	14	40	There may be some benefit to adding a few of the best adaptation options, particularly those that are synergistic with mitigation. Suggested text: "Some of the adaptation options that offer particular benefit include:

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					<ul style="list-style-type: none"> - agricultural land management strategies; - creation of buffer zones to protect settlements from impacts such as sea level rise and flooding; - reforestation and afforestation to protect soils from erosion." <p>We would also like to see Table 4.1 from Topic 4 be included in the SPM.</p> <p>(Government of Canada)</p>
SPM-A-506	14	36	14	37	<p>Delete the word "development", as it could be interpreted as indicating that adaptation is a developing country issue only. There are several examples of planned adaptation in developed countries that have been achieved through mainstreaming into existing programs and policies.</p> <p>(Government of Canada)</p>
SPM-A-507	14	37	14	37	<p>This shouldn't be limited to development. Adaptation is for all global sectors - conservation, natural resources, agriculture, business, infrastructure, etc.</p> <p>(WWF International)</p>
SPM-A-508	14	37	14	40	<p>This sentence could be misleading - are these really low cost options - defending against sea-level rise for example, potentially hugely expensive and may be better to retreat? The definition of net or gross is important here. Also need to point out that for retrofitting tends to be more expensive than building new adaptive infrastructure, and that adaptation costs tend to vary hugely between and within regions, and in some cases, the benefits from adaptation are not sufficient to outweigh the damage costs. This would also explain, to an extent, why global estimates are currently limited. Please clarify this, as the discussion on costs in Chapter 17 of WG II suggests lower confidence in this kind of statement (although it has high confidence in Part 4 of the synthesis - it is with respect to assessed studies).</p> <p>(Government of United Kingdom)</p>
SPM-A-509	14	37	14	39	<p>Instead of "benefit-cost ratios" word "net benefits" should be used. This is more consistent and easily understood after the word "low cost" used earlier in the sentence.</p> <p>(Government of Canada)</p>
SPM-A-510	14	37	14	39	<p>"benefit-cost ratios" is normally stated "cost-benefit ratios"</p> <p>(Government of Japan)</p>
SPM-A-511	14	38			<p>We suppose that the "sectors" referred to here are different than the economic sectors used elsewhere in the report (eg. Figure SPM.7). We proposed that words like "areas", "places" or "parts of society" are used instead.</p> <p>(Government of Norway)</p>
SPM-A-512	14	39	14	40	<p>Put the sentence "However... limited" on a separate line, in bold print.</p> <p>(Government of Netherlands)</p>
SPM-A-513	14	39	14	39	<p>"...with high benefit-cost ratios" at limited levels of climate change.</p> <p>(WWF International)</p>

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SPM-A-514	14	40	14	40	"...benefits of adaptation are limited" and in some cases may be unquantifiable but crucial. (WWF International)
SPM-A-515	14	41			It would be useful to incorporate the Adaptation options table (Table 4.1) into the text of the SPM. This is likely more relevant to policy makers than almost anything else in the report. (Government of Canada)
SPM-A-516	15	1	15	6	With regards to adaptation capacity, in the same bibliographical source used to prepare this part of the document (section 4.2 of Topic 4) it also appears that such an uneven distribution of adaptive capacity affects to particular members of the society. Exact quotation is: "the poor, elderly, women, children, and indigenous populations typically have less capacity". These associated distributive consequences should be cited alongside statements related with adaptive capacity, such as the one presented in this section of the document. (Government of Chile)
SPM-A-517	15	1	15	4	The text fails to note that adaptation has limits and drawbacks, the knowledge of which is essential for striking a balance between adaptation and mitigation policies. We propose to insert a new paragraph: "Adaptation has limits and drawbacks such as: it may exacerbate climate change by increasing energy use (air conditioners), it may increase impacts elsewhere, it only relieves one type of impact (dykes don't prevent heat waves), it is not available for every impact (extinct species don't return), it has technical and financial limits, and its positive effect on an impact is local." (Government of Netherlands)
SPM-A-518	15	1	15	1	Add: "limited and" before intimately connected. (Government of Netherlands)
SPM-A-519	15	4	15	6	This paragraph needs to be made clearer about the fact that effective action depends not only on the availability of economic resources but also on other factors such as governance. See Part 4 of the report - p. 2, lines 15-19. (Government of United Kingdom)
SPM-A-520	15	4	15	6	This paragraph is directly relevant to many policymakers. It will also be quite pertinent over the next few years. It would be useful therefore if it was expanded slightly to include a list of at least some of the barriers (from 4.2, Topic 4, page 2, line 22). "Both the implementation and effectiveness of adaptation measures are limited by a range of barriers which include ..." (Government of New Zealand)
SPM-A-521	15	4	15	6	This paragraph aims to correctly point out that effective action depends not only on the availability of economic resources but also on other factors such as governance. However, these non-economic factors are generally included in the conceptualization of adaptive capacity, which would make the second sentence incorrect. A clearer formulation would be "Without good governance and effective institutions, economic resources do not automatically translate into effective action, as highlighted by the large damage caused by recent extreme climate events in high-income countries". (Government of European Community)
SPM-A-522	15	4	15	4	It would be useful to list some of the barriers that limit the implementation and effectiveness of adaptation measures. These could come from Table 4.1 or from WGII SPM.

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					(Government of Australia)
SPM-A-523	15	6	15	8	The previous paragraphs have been concerned with adaptation. It is important for clarity that the reader realises this paragraph will be concerned with mitigation. We suggest the simplest way to do this is to insert at the start of this chapeau text the words 'mitigation potential'. Thus: "Mitigation potential: there is high agreement and much evidence from both bottom-up ..." (Government of New Zealand)
SPM-A-524	15	6	15	6	Add a sentence about those who have less adaptive capacity, for instance; "The poor, elderly, women, children and indigenous populations typically have less adaptive capacity". (Government of Norway)
SPM-A-525	15	8	15	11	We think that the reference to bottom-up and top-down studies could be deleted from the text in bold. (Government of Norway)
SPM-A-526	15	8	16	24	This section still lacks information on the type of reduction measures that can be found in the <0 cost range of the bottom-up studies. It would be important to stress the importance of energy efficiency improvement that often come at negative costs. Suggest to mention also co-benefits as for instance improved energy security through demand side energy policies. (Government of European Community)
SPM-A-527	15	8	16	16	This section is missing extremely important text from the WG3 SPM that is needed for readers to properly interpret the statements and numbers: – The definitions of “economic potential”, “market potential”, “bottom-up studies”, and “top-down studies” from the WG3 SPM Box SPM-2. They should be included explicitly in the SYR SPM as a footnote (not via a reference to the glossary as is currently done with footnote 15). – A footnote is needed to clarify that the top-down estimates are from climate stabilization scenarios and imputed prices (WG3 SPM page 9, 2nd bullet under “Top-down studies”), which are very different from the constant price carbon paths assumed by many bottom-up studies. – A footnote is needed reflecting the fact that all the estimates assume an idealized global climate policy (WG3 SPM Box SPM-3). The uncertainties note from the WG3 SPM should be added (WG3 SPM, page 9): “Uncertainties in the estimates are shown as ranges in the tables below to reflect the ranges of baselines, rates of technological change, and other factors that are specific to the different approaches. Furthermore, uncertainties also arise from the limited information for global coverage of countries, sectors, and gases.” (Government of United States of America)
SPM-A-528	15	8	16	25	The difference between top-down and bottom-up studies could be explained briefly. (Government of Norway)
SPM-A-529	15	8	15		The definitions of top-down and bottom-up studies should be well explained, preferably in a box, together with othes economic terms (market potential, economic potential fr instance). (Government of Norway)
SPM-A-530	15	8	15	11	It appears appropriate to place together with the statement that “there is substantial economic potential for the mitigation of emissions over the coming decades that could offset the projected growth of emissions” that this potential of mitigation allowing a significant contribution to reductions on global

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					greenhouse gas emissions, will only be reached on a world scale basis whether technology transfer from developed countries to the rest of the world occurs on a massive basis and as soon as possible. This concept is included on the Topic 5 document, section 5.5, where it is stated that stabilisation levels can be achieved by deployment of portfolio of technologies, assuming that appropriate and effective incentives are in place for development, acquisition, deployment and diffusion of technologies and for addressing related barriers, albeit only related with the long term perspective. The selected approach in the document to relate such an important concept only to the long-term perspective does not appear to keep pace with the way several regions of the world are currently developing. (Government of Chile)
SPM-A-531	15	8	15	11	Change the first part of the bolded header to read: “There is high agreement and much evidence that both bottom-up and top-down studies indicate that...” The WG3 SPM statement (page 9, paragraph 5) was designed to indicate that both the bottom-up global estimate and the top-down global estimates indicated similar magnitudes of economic potential. The current wording here misleadingly suggests that there is “much evidence” from bottom-up studies. That is simply not the case, since there was only one bottom-up global estimate, and it was generated by WG3 Chapter 11 for AR4 (see note in WG3 SPM Box SPM-2). (Government of United States of America)
SPM-A-532	15	10	15	10	please replace "or" by "or even" (Government of France)
SPM-A-533	15	10	15	10	Change “the projected growth in global emissions” to “their projected growth”. (Government of United States of America)
SPM-A-534	15	11	15	11	We suggest that "current levels" should be specified, eg by a footnote similar to footnote 16 on page 4 of topic 4. It states that global emissions in 2000 were equal to 43 Gt CO ₂ -eq. We think that this is a usefull information, helping to see the figures in Table SPM.2 in a context (Government of Norway)
SPM-A-535	15	13	15	13	To be consistent with the WG3 SPM, change “agree” to “are in line with”. (Government of United States of America)
SPM-A-536	15	13	15	22	There is no much point in giving details in this SPM on the differences between bottom-up and top-down models results. This whole part would be clearer if shorter and if there were less technical details and a clearer presentation of overall results, with a simpler table. (Government of France)
SPM-A-537	15	13	15	13	Please insert at the end of the sentence the words 'and within individual sectors'. Thus: "While top-down and bottom-up studies agree at the global level (Table SPM.2) there are considerable differences at the sectoral level and within individual sectors." It is important the variability within sectors is recognised. While this sentence focuses on the differences between top-down and bottom-up studies, the change we have requested provides a simple opportunity to note in the SPM the differences within sectors, without detracting from the accuracy or focus of the sentence. (Government of New Zealand)

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SPM-A-538	15	15			We would like to see the following sentence added: "In all sectors, except for the transport sector, the highest economic potential for emission reduction is thought to be in the non-OECD/EIT region". This sentence added to the current one on page 15, line 15 would provide valuable information to policymakers regarding mitigation potential. (Government of Canada)
SPM-A-539	15	15	15	17	This sentence could be misleading. Suggest it is made more specific - e.g. "A range of technologies are required to realise the full scale of mitigation potential in sectors - no one technology can do it all. And realising economic potential, which is generally greater than the market potential, often requires the implementation of complementary Government policy in addition to carbon pricing, for example, to address barriers to technology." (Government of United Kingdom)
SPM-A-540	15	15	15	15	It reads better with "No single technology can ..." instead of "No one technology can ..." and we suggest the authors make this change. (Government of New Zealand)
SPM-A-541	15	15	15	17	Editorial: This should be split into two sentences, with a period after "mitigation potential in any sector." (Government of Canada)
SPM-A-542	15	15	15	16	Change to: "A single technology is not able to provide...", clearer to read (Government of Belgium)
SPM-A-543	15	16	15	16	Some explanation for the reader should be given on the differences between economic and market potentials. One way could be to add to the text after the words "market potential" the words "which is based on private costs and private discount rates". (Government of Finland)
SPM-A-544	15	16	15	16	Replace "which is generally greater than the market potential, can only be achieved" with "which is greater than the market potential due to barriers to uptake of technologies, can only be approached". (Government of United States of America)
SPM-A-545	15	16	15	17	"The economic potential, which is generally greater than the market potential, can only be achieved when adequate government policies are in place" should be in bold. Also, the possibility for significant no-regrets (<\$0/ton) emissions reductions should be stressed by inserting the bullet on page 9 of the Working Group 3 SPM. Suggest using the following text: "Bottom-up studies suggest that mitigation opportunities with net-negative costs have the potential to reduce emissions by around 6 GtCO ₂ -eq/yr in 2030. Realizing these requires dealing with implementation barriers." (Government of Canada)
SPM-A-546	15	17	15	17	At the end of this sentence, insert the following new paragraph: "Investing in energy efficiency is often more cost-effective than investing in new energy supplies. Renewable energy, nuclear power, and carbon capture and storage are technology options that could make important contributions to mitigation from energy supply by 2030." (Government of United States of America)
SPM-A-547	15	19	15	22	Table SPM.2: This table might be difficult to understand for policy makers that are not so familiar with the different SRES scenarios. In order to provide an easier context for those readers it is suggested to include additional columns in table SPM.2 that inform about the resulting emission level

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					compared to the emissions in 1990. Such column would show the significant impact of the willing to pay (expressed by the carbon price) as well as about the significant impact about the socio-economic development, characterized by the different scenarios. (Government of Austria)
SPM-A-548	15	19	15	22	Table SPM.2: It is suggested to check the consistency of the figures in this table. E.g. reduction relative to SRES A1B projection for a Carbon price up to 20 US\$/t seems to be 13% instead of 14% and for a carbon price up to 50% only 19% instead of 20%. (Government of Austria)
SPM-A-549	15	19	15	22	Table SPM.2. In both the title of the table and the heading of column 2 has the text "Economic Mitigation Potential". In the paragraph above (line 9), "economic potential for mitigation" is used. There is a lack of clarity in either of these expressions, which can perhaps be resolved by using "Potential Economic Gains of Mitigation" or some other suitable expression. (Government of India)
SPM-A-550	15	19			Table SPM.2 comment: The table would be more useful for policymakers if the mitigation potential could be expressed here as a reduction relative to the 'Band I' group of emissions scenarios used in Section 5 of this SPM. We ask the authors to consider this as an additional, fourth, column. (Government of New Zealand)
SPM-A-551	15	19			Table SPM.2 comment: A major issue for all parties in Post-2012 negotiations over the next five years is likely to be the mitigation potential of Annex 1 and non-Annex 1 countries. We suggest this table would be very much more useful for policymakers and negotiators if the Annex 1 and non-Annex 1 contributions to the mitigation potential were separately identified in the table, and we ask the authors to consider this change. We note the information in e.g. WG3 Chapter 13, in particular Box 13.7 and the references underlying it, which might be useful for this purpose. (Note there appear to be two 'Box 13.7' in this chapter; we are referring to the first of these.) (Government of New Zealand)
SPM-A-552	15	19			replace decision with is (Government of Ireland)
SPM-A-553	15	19	16	17	It is unfortunate that Table SPM.2 on page 15 and Figure SPM.7 are aggregated at such a high level that the technological opportunities that are embedded within these global summaries are for the most part hidden to policy makers. It would be beneficial to give an example of some of the major low-carbon technologies and energy and emission management strategies. One option would be to insert Table 4.3. At a minimum, a reference to Table 4.3 would be requested in the text. Another option would be to include some text regarding some of the major technologies and practices that could have significant emission reduction potential. Suggested text: "Some of the key mitigation technologies and practices that could reduce emissions include: - more efficient end-use electrical equipment, appliances and heating and cooling technologies; - carbon capture and storage; - renewable energy (e.g. hydropower, wind, solar; geothermal and bioenergy); - higher efficiency transport options (public transit and more efficient vehicles); and - afforestation, reforestation and reduced deforestation. {Table 4.3}"

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					(Government of Canada)
SPM-A-554	15	19	15		A footnote needs to be added to this table to clarify whether or not the numbers in the table are cumulative or independent. That is, taking the numbers in the "bottom-up studies/economic potential" box as an example, are there 5-7 GtCO ₂ eq/yr available at negative cost PLUS ANOTHER 9-17 GtCO ₂ eq/yr available at 20\$ PLUS ANOTHER 13-26 GtCO ₂ eq/yr at 50\$ etc. or is each successive result inclusive of the one before? We suspect the numbers are inclusive but feel this should be made explicit to the reader. (Government of Canada)
SPM-A-555	15	20	15	22	Table SPM.2.: "Reduction relative to SRES B2 projection" should be explained. Does it correspond to stabilisation on 2004 levels (referring to figure SPM.3.)? (Government of Norway)
SPM-A-556	15	20	15	22	Table SPM.2.: "Economic mitigation potential" should be explained. (Government of Norway)
SPM-A-557	15	22	15	22	the number ~1.5 US cents/kWh electricity from gas (for a 50 US\$/tCO ₂ -eq) is quite extreme, and assumes [for 50g/MJ CO ₂ emission in burning gas] an efficiency of 60%, i.e. CCGT plants at top condition. Even with CCGT the rate will be >1.5 (and not ~) and in practice ~1.75 (Government of Belgium)
SPM-A-558	15	24			Insert a paragraph referring to the high mitigation option from the energy efficiency and from renewable. It could be very useful to include the figure SPM-9 of WGIII (Government of Spain)
SPM-A-559	16	1	16	17	We think that this is a very important figure. However, to further facilitate reading, some reference to total or sectoral emission levels (now or in 2030) should be included. (Government of Norway)
SPM-A-560	16	1			Figure SPM.7: add note: "Sectors use different baselines.", as explained in note c in Figure 4.1 of the SYR (Government of Belgium)
SPM-A-561	16	1	16	2	Figure SPM.7.: EIT should be explained. (Government of Norway)
SPM-A-562	16	1	16	19	Figure SPM - 7: This image could be clarified if there was text that conveyed that emission reductions are cumulative at the higher carbon costs, as opposed to additional. Suggest adding text at the end of line 5 that states: "Emission reductions are cumulative; emission reductions shown in each column are all those available at that carbon cost or lower." (Government of Canada)
SPM-A-563	16	1	16	2	Figure SPM - 7: The addition of the extra information beneath the chart makes for a very busy graphic. Suggest deleting all the GtCO ₂ eq/yr along the

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					bottom under each individual graph, and simply expanding the note at the side that explains what the numbers are to say (add words in italics): "potential at <US\$100/tCO ₂ -eq in GtCO ₂ eq/yr." (or " GtCO ₂ eq/yr potential at <US\$100/tCO ₂ -eq") (Government of Canada)
SPM-A-564	16	1			Fig.SPM.7. Please check the notes of this figure and revise the notes in order to be consistent with the notes in original figure. Please add "c) Sectors used different baselines. For industry, the SRES B2 baseline was taken; for energy supply and transport, the WEO 2004 baseline was used; the building sector is based on a baseline in between SRES B2 and A1B; for waste, SRES A1B driving forces were used to construct a waste specific baseline; agriculture and forestry used baselines that mostly used B2 driving forces." (Government of China)
SPM-A-565	16	7	16	7	Add sentence on lief style changes from topic 4, page 7, lines 25-27. (Government of Germany)
SPM-A-566	16	10			As a summary of the Key options, it could be very illustrative to insert a simplified version of Table 4.3 (Government of Spain)
SPM-A-567	16	12	16	12	Editorial: What does "part of material efficiency options" mean? This is a confusing line. Suggest "some material efficiency options". (Government of Canada)
SPM-A-568	16	15	16	16	If the underestimation is known, why not correct for it? (Government of United Kingdom)
SPM-A-569	16	16	16	16	Change "of the order of" to "approximately" (Government of United States of America)
SPM-A-570	16	19	16	19	Please add "near" before "future", as the text is talking of present to 2030. (Government of France)
SPM-A-571	16	19	16	19	Change "up to" to "cumulative through" (Government of United States of America)
SPM-A-572	16	20	16	21	This sentence would read better as "energy infrastructure and other capital stock" or "energy and other infrastructure capital stock". It is awkward in this format, and would be clearer with either of the suggestions, as it is not only energy plants, but the energy carrier production and refinement infrastructure that have long life-times. (Government of Canada)
SPM-A-573	16	23	16	23	Strike "to 5-" (Government of United States of America)
SPM-A-574	16	23			Say "...although globally, the net...", and say "from negligible to 10%", as there is no need for the 5% in the middle.

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					(Government of United Kingdom)
SPM-A-575	16	26	16	27	This whole sentence seems too policy prescriptive. We suggest to change the wording to "A wide variety of national policies and instruments available to governments would create the incentives for mitigation action." (Government of Mexico)
SPM-A-576	16	26	16	32	Mitigation options are given only 6 lines in this document, which is insufficient. Table 4.3 from the report should be incorporated into this section, as this would be among the most relevant sections for policy makers in the document. (Government of Canada)
SPM-A-577	16	26	16	32	Delete "national" (Government of United States of America)
SPM-A-578	16	26	16	27	"A wide variety ..." after this sentence the following text from the longer version may also be included. "Their applicability depends on national circumstances and an understanding of their interactions, but experience from implementation in various countries and sectors shows there are advantages and disadvantages for any given instrument." (Government of India)
SPM-A-579	16	29	16	32	We suggest it would be valuable to add text from 4.3 (Topic 4, page 7, lines 33 to 35) to this paragraph. The final sentence would then be: "Policies that provide a real or implicit price of carbon could create incentives for producers and consumers to significantly invest in low-GHG products, technologies and processes." (Government of New Zealand)
SPM-A-580	16	31	16	31	The word "instruments" is not necessary and could be deleted. (Government of France)
SPM-A-581	16	31	16	32	The sentence "Their applicability depends on national circumstances" should be deleted, as it does not reflect in a balanced way the discussion in WG III report (chapters 7, 12 and 13) on what influences effectiveness of different policies and instruments. If at all, include old sentence from May-draft of topic 4: "Their effectiveness depends on how well they are designed, national circumstances, an understanding of their interactions, stringency, and monitoring to improve implementation." (see WG III chapters 7.9, 12.2, 13.2) (Government of Germany)
SPM-A-582	16	31	16	32	Last sentence is not needed (Government of Ireland)
SPM-A-583	16	34	16	36	The accuracy and certainties of modeling studies predicting the carbon price rising to 20-80 US\$tCO ₂ -eq by 2030 and mitigation poential need to be substantiated. (Government of Oman)

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SPM-A-584	16	34	17	2	Move footnote 10 on page 21 to here and refer to it again later. This is important information for properly interpreting the statements. Also, the second sentence needs a footnote: "Relevant literature implies that policies and measures may induce technological change. Remarkable progress has been achieved in applying approaches based on induced technological change to stabilization studies; however, conceptual issues remain." (WG3 SPM Box SPM-4) (Government of United States of America)
SPM-A-585	16	34	16	34	I suggest that you add this sentence before line 34: "Policies that provide a real or implicit price of carbon could create incentives for producers and consumers to significantly invest in low GHG products, technologies and processes." (Government of Norway)
SPM-A-586	16	35	16	36	We think that this is the first time concentrations in ppm are mentioned in the text and consequently the average reader might have problems in understanding the magnitude of the value stated. We propose that a reference to pre-industrial or current concentrations is included in the text. (Government of Norway)
SPM-A-587	16	35	16	36	Suggest the inclusion of the word 'global' in the following: Modelling studies show that global carbon prices rising to 20-80 US\$/ton (Government of Canada)
SPM-A-588	16	36	17	2	Re. carbon price modeling. The expression "take into account" induced technological change is too weak, and does not reflect the models' underlying assumption that there is successful investment in technology. Suggest the phrase "...since the TAR based on investment that induces technological change..." (Government of Canada)
SPM-A-589	16	39			insert "the impacts of" before climate change (Government of Ireland)
SPM-A-590	17	1	17	1	"induced technological change" may not be easy to interpret for policy-makers. In the technical summary, p. 41, the a useful description is given which is included here: "...taking into account induced technological change due to policy measures which causes higher benefits of early action, as models assume that early deployment of technologies leads to benefits of learning and cost reductions which lower the price ranges to 5-65 US\$/tCO ₂ eq in 2030." (Government of Finland)
SPM-A-591	17	3	17	3	The following sentence from the WG3 SPM on this material would be useful to fully inform policymakers: "Barriers to the implementation of mitigation options are manifold and vary by country and sector. They can be related to financial, technological, institutional, informational, and behavioral aspects." (WGIII SPM page 19, paragraph 23, bullet 4) (Government of United States of America)
SPM-A-592	17	4	17	6	Reinforcing the importance of considering co-benefits for a more complete assessment, it is stated in 4.3 of Topic 4 that "energy efficiency and utilisation of renewable energy offer synergies with sustainable development". From an strategic viewpoint, this statement sends a message worth to be included in this SPM.

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					(Government of Chile)
SPM-A-593	17	8	17	10	We would like this paragraph to be more balanced and to better reflect the underlying text in Topic 4 (page 7, line 15-18). Please add "Fossil fuel exporting nations (in both Annex I and non-Annex I countries) may expect, as indicated in the TAR, lower demand and prices due to mitigation policies. The extent of this spill over depends strongly on assumptions related to policy decisions and oil market conditions. {WGIII 11.7, SPM}" (Government of Canada)
SPM-A-594	17	8	17	10	This sentence is not clear. Suggest to delete. (Government of European Community)
SPM-A-595	17	8	17	10	This sentence does not convey a message. Suggest changing the text to say something a bit more tangible, e.g. "There is high agreement and medium evidence that the actions of Annex I countries to reduce emissions may affect the global economy and the balance of global emissions, although the scale of emissions leakage to countries without emissions targets remains uncertain." Also include a short mention of the uncertainties involved in the assessment of carbon leakage as discussed in Topic4, page 7, line 20. (Government of Canada)
SPM-A-596	17	8	17	10	This sentence as it stands is unacceptable as it risks misinterpretation. It refers exclusively to Annex I countries. There is ample evidence (e.g. WGIII 11.4.3.5, 13.3.3.3) that the actions of non-Annex I countries may also affect global emissions. To ensure that the IPCC is seen to maintain a balance, it is essential that either the sentence removed or it is followed by another sentence along the lines of: "There may also be effects on global emissions from non-Annex I countries actions." (Government of New Zealand)
SPM-A-597	17	8	18	9	The scale of carbon leakages uncertainties need to be minimized or atleast to be quantified in this report. (Government of Oman)
SPM-A-598	17	8	17	10	Since the two previously not explained concepts of "Annex 1 countries" and "carbon leakage" are used without further explanation, we think that this sentence is a bit too complicated for the average reader of the SPM. Even for the well-informed reader, we think that the message adds little new information (It is rather obvious that mitigation action, in some way or another, may affect global economy and global emissions). We propose that the sentence is rewritten to pinpoint some particular aspects of spill over and carbon leakage (For example by condensing the information in Topic 4, page 7, line 20-23: "Country-specific mitigation action may influence emissions and the general economy in other countries. However the magnitude of this effect on emissions (carbon leakage) is uncertain and would be less if low-emissions technologies were effectively diffused". (Government of Norway)
SPM-A-599	17	8	17	10	Please delete this sentence, as it is not clear at all what it intends to say. Of course any action to reduce emissions will affect global emissions. The relationship to carbon leakage included here is not at all clear for policymakers. (Government of Germany)
SPM-A-600	17	8	17	10	Move text to below the headline that begins on line 12.

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					(Government of United States of America)
SPM-A-601	17	8	17	8	Annex I countries could be explained. (Government of Norway)
SPM-A-602	17	9	17	9	Strike “remains uncertain” and insert in it place “is potentially high (as much as 20%)”. (Government of United States of America)
SPM-A-603	17	9	17	9	It would be more informative to state "although the carbon leakage has been estimated to offset 5-20 % of the emission reductions in Annex I countries." (See Topic 4, Page 7, line 20) (Government of Finland)
SPM-A-604	17	9	17	9	"carbon leakage" should either be explained in a glossary, or referred to the glossary of WGIII (Government of Denmark)
SPM-A-605	17	11	17	11	Please add "There is also high agreement and medium evidence that changes in life style and 26 behaviour patterns can contribute to climate change mitigation across all sectors. 27 Management practices can also have a positive role." {4.3} (Government of Sweden)
SPM-A-606	17	11			In our view a chapter on mitigation is incomplete without mentioning lifestyle changes. As a minimum, we think that the paragraph on page 15, line 34-35 in the last draft should be reinserted, but we would prefer that this is changed to something like: "There is high agreement and medium evidence that changes in life style and behaviour patterns can contribute to climate change mitigation across all sectors." If lifestyle changes are left out completely from the report, we think that the overall message will be very unbalanced - signalling that the only options available are the options that have been highly researched. (Government of Norway)
SPM-A-607	17	12	17	23	The nature and origin of the mitigation actions can also become very important to present a more complete framework for the range of potentially available actions related with mitigation which can be taken. A message in this direction is quoted in Section 4.5 of Topic 4 document, and WGIII 13.3 SPM: “Actions can be binding and not binding, include fixed or dynamic targets, and participation can be static or vary over time”. This is also in line with findings about the performance of policies presented and discussed in Topic 4 document, Section 4.3. (Government of Chile)
SPM-A-608	17	12	17	13	Remove “through international cooperation” or change to “including international cooperation” (Government of United States of America)
SPM-A-609	17	12	17	23	It is not at all clear how the changes made to this section have improved the document. This new header is much too long and the organization of text is not an improvement. We much preferred the simplicity and directness of the header from the previous draft. Suggest abbreviating this new header to keep the first sentence, amended to include the confidence statements from the last draft, as follows: "There is high agreement and much evidence that

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					there are many options for reducing global greenhouse gas emissions through international cooperation." The remaining text of this header can be converted to a paragraph under the header. (Government of Canada)
SPM-A-610	17	13	17	13	the word "notable" is ambiguous. Change to "important achievements". (Government of Germany)
SPM-A-611	17	13	17	17	the aspects 'the creation of an international carbon market and new institutional mechanisms' are rather unclear to a readership; what exactly has to be understood by both elements? Is it possible to phrase this in a more transparent way, that it is understood equally by the readership? Also the following words 'that may provide' creates some second thoughts on the "high agreement and much evidence" start of the statement: even when all the important outcomes of the UNFCCC/Kyoto protocol would realize, they only "may provide the foundation". So the question arises: what else or more can be done? (Government of Belgium)
SPM-A-612	17	13	17	17	Instead of current text, the document should note that the UNFCCC and Kyoto Protocol were instrumental in providing the institutional framework that allowed governments and private sector entities to create a carbon market. As currently worded the text reads as if it was the UNFCCC and Protocol that created the market. Suggested text: an array of policies which in turn led to the creation of an international carbon market..." We suggest changing "global" to "international carbon market" to be consistent with the WGIII SPM. (Government of Canada)
SPM-A-613	17	14	17	14	Replace "achievements of the UNFCCC and its Kyoto Protocol" with "progress has been made globally" (Government of United States of America)
SPM-A-614	17	16	17	16	Please add "local and" (Government of Sweden)
SPM-A-615	17	18			The sentence have lost an important message from WG III about there basis for future mitigation efforts (WG III SPM page 32) and from Topic 4.5 about the Kyoto-protocols modest emissions limits. We suggest that the following paragraph is added: "Although the Kyoto Protocol is currently constrained by its modest emission limits it would be more effective if the first commitment period is followed up by measures to achieve deeper reductions and the implementation of policy instruments covering a higher share of global emissions." (Government of Norway)
SPM-A-616	17	19	17	23	This § is not easy to read and comprehend, because so many different components of the policy cycle are mingled up (targets, instruments, actions, efforts, ...). A suggestion of re-ordering the information: "Greater cooperative efforts will help to improve environmental effectiveness while reducing global costs to achieve this. Efforts (can) include sectoral, local, sub-national and regional actions, in particular development oriented ones, e.g. RD&D programmes. Efforts can grow more effective and efficient by adopting common policies for setting emissions targets, expanding market instruments or financing instruments." (the info in section 4.5 of Topic 4, p.ç-10 is more organized but over more statements) (Government of Belgium)

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SPM-A-617	17	19	17	19	Suggest you add the sentence from Topic 4 page 10 lines 5-7 "To be more environmentally effective, future mitigation efforts would need to achieve deeper reductions covering a higher share of global emissions". This would provide a link between the previous paragraph and this paragraph. (Government of Australia)
SPM-A-618	17	19	17	20	Sentence is mixing meanings, as market mechanisms typically reduce costs but do not themselves improve environmental effectiveness. Sentence should be split, e.g. "Expansion of market mechanisms may reduce global costs for achieving a given level of mitigation. Greater cooperative efforts may improve environmental effectiveness." (Government of Canada)
SPM-A-619	17	19	17	20	In the two instances where it occurs, strike "will" and insert "could". (Government of United States of America)
SPM-A-620	17	19	17	20	Change the word "will" to "can" (2 times). (Government of European Community)
SPM-A-621	17	19	17	23	"Greater cooperative efforts ..." there is a need to specifically mention "Technology transfer" here. Without this, developing country's inherent capacities to shift on to energy efficient and low-carbon pathways cannot be sustained. (Government of India)
SPM-A-622	17	21	17	21	We suggest that "... emissions targets ..." should be "... emissions reduction targets ..." (Government of New Zealand)
SPM-A-623	17	24			To highlight the importance of CDM, we suggest to include the following sentence: "Financial flows to developing countries through Clean Development Mechanism projects have the potential to reach levels of the order of several billion US\$ per year" (Government of Spain)
SPM-A-624	17	25	17	26	Rewrite to clarify – not sure what "conflicts" are being avoided. (Government of United States of America)
SPM-A-625	17	25	17	26	Re "Climate response options in several sectors can be implemented to realize synergies and avoid conflicts..." Suggest rewording to: " In several sectors, climate response options have been identified that can be implemented ..." (Government of Canada)
SPM-A-626	17	25	17	25	Please add "positive" in front of "synergies". Synergies can have positive, neutral and negative consequences depending on the goal. This is pointed out in climate change literature after 2005. However, since it is a correction in the usage of concepts rather than a new climate science finding, I think it is appropriate to correct the terminology here. Most synergies will involve trade-offs, thus it is confusing to use the pair "synergies and trade-offs". Alternatively the concept "convergences" can be used in pair with "trade-offs". (Government of Sweden)

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SPM-A-627	17	30	17	33	We suggest this paragraph tries to say too much in too short a space and is barely fully intelligible. It does not appear to be new information for policymakers. We suggest that it be dropped. (Government of New Zealand)
SPM-A-628	17	30	17	33	This paragraph does not address the bolded heading since it discusses synergies and trade-offs between mitigation and adaptation rather than synergies and trade-offs between these processes and sustainable development. Suggest moving this paragraph to p.19, after the paragraph ending on line 7. The bolded heading for this section does address the issue of how mitigation and adaptation can complement one another. (Government of Canada)
SPM-A-629	17	30	17	30	Please add "positive" in front of "synergies". (Government of Sweden)
SPM-A-630	17	30	17	33	In the case of trade offs between adaptation and mitigation, for several countries possibly the most important example in this regard is “water management” which should be included in this list of examples. (Government of Chile)
SPM-A-631	17	30	17	32	Important notion, but the language of these sentences could be improved. Furthermore, the order of "forestry" and "energy use in buildings" should be switched for logical consistency. (Government of European Community)
SPM-A-632	17	30	17	31	Change text to "Examples of synergies include sustainable bioenergy production...". (Government of Canada)
SPM-A-633	17	32	17	32	either delete ", and forestry" or specify, otherwise it is misleading as it gives the impression that all measures in forestry. (Government of Germany)
SPM-A-634	17	35	17	41	This paragraph should be moved to the beginning of the section, to tie in with the suggested discussion of synergies between responses to the impacts of climate change. The last sentence in the paragraph also seems to be very important - we suggest it is made a chapeau for the rest of the paragraph (starting "It is very likely..." and finishing "...goals."). Suggest delete 'On the other hand' at the beginning of this sentence, since there is no contradiction. (Government of United Kingdom)
SPM-A-635	17	35	17	36	Important statement, but the language of this sentence could be improved. What are "trends in ... concerns"? (Government of European Community)
SPM-A-636	17	35	17	36	Delete, as this sentence does not seem to make much sense without the context it was taken out from WG III. (Government of Germany)
SPM-A-637	17	40	17	41	There are currently no mid-century Millennium Development Goals. They only extend to 2015. Suggest changing text to "could impede further progress on the Millennium Development Goals beyond 2015." Also suggest changing underlying text to demonstrate that MDGs do not exist beyond

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					2015 as yet (Topic 5, pg. 10, line 35). (Government of Canada)
SPM-A-638	18	0			This text is quite weak and should be strengthened (Government of Ireland)
SPM-A-639	18	1			This section is very relevant for policy makers and direct related to UNFCCC Article 2. Therefore it will be very useful to update all TAR finding, including figures and tables. In this context, an update of figure SPM-2 of the TAR WG II including the Burning-amber diagram should be included. (Government of Spain)
SPM-A-640	18	1	18	43	This is not the strongest page of the SPM. For one, it is repetitive. Lines 8-11 repeat page 14 lines 28-34. Also the information on lines 22-25 was mentioned before at multiple locations. Lines 17-19 merely add that vulnerability is now estimated more precisely, which is not of great value to the reader when the estimates themselves have been given already (figure SPM.6). Idem for lines 29-31, and 36-38. In fact the whole page has a single message: we know much more now. But in each case the new information itself was given before. (Government of Belgium)
SPM-A-641	18	1	18	21	<p>The treatment of key vulnerabilities is problematic. Rigorous application of a set of criteria to determine key vulnerabilities can be an important contribution to future reports; however, this topic as presented in the WG2 4AR is not mature enough to be referenced at length in this synthesis without proper qualifiers.</p> <ul style="list-style-type: none"> – This is the first time the term “key vulnerability” has entered the formal lexicon of the IPCC. However, despite improvements throughout the drafting of the report, the authors still failed in clearly defining what is meant by the term. Authors stated that the term may refer to a vulnerable system (low-lying island), an impact to a system (flooding), or the mechanism causing this impact (disintegration of ice sheet). – In WG2 Chapter 19, the authors failed to elaborate for the reader how ‘key vulnerabilities’ should be distinguished from other vulnerabilities. The authors identify seven criteria to use as a guide in determining what vulnerabilities rise to the level of “key” but give no indication of how these should be methodologically applied. In fact, it appears the criteria were not even applied in determining ‘key vulnerabilities’ in the systems and sectors chapters. As a result, the determination of ‘key’ seems a subjective and normative judgment. Must a vulnerability meet three of the criteria to be deemed ‘key’? Just one? Just one everywhere on the planet or is it dependent on other circumstances? – The WG2 SPM says determination of key vulnerabilities is “dependent on circumstances” but the discussion here leaves out that important caveat. It also leaves out import words like ‘potential’ and ‘illustrative’ that are contained in the WG2 report (see Tech Summary) and serve to alert the reader that the examination of key vulnerabilities is not as certain as the SYR text implies. – There was not much literature on key vulnerabilities to assess. Much of the discussion on key vulnerabilities was clearly the authors fitting vulnerability and impacts research from the literature into their new construct. Also, there is no clear, scientific connection between illustrative key vulnerabilities and dangerous anthropogenic interference. Until the topic is more mature, it should not have such a prominence in the SYR. – The argument that the treatment of key vulnerabilities is based on subjective and normative judgment and perhaps not scientifically mature is supported by many references from Chapter 19. In crafting a table of potential key vulnerabilities, the authors “provide an indicative, rather than exhaustive list of key vulnerabilities, representing the author’s collective judgments, based on the criteria...from a vast array of possible candidates in the literature.” They claim that “the assessment of key vulnerabilities and review of the particular assemblage of literature needed to do so is unique to the mission of Chapter 19”; therefore, the authors “have made value judgments with regard to likelihood and confidence where in some cases other

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					chapters in this report and in the report of WG1 did not.” Does this constitute an approach that should be highlighted with a box and lengthy description in Topic 5 and referenced in the SPM? Note: The WG2 SPM included much less information about key vulnerabilities than the SYR. Since a synthesis is usually a distillation, one questions the inclusion of so much text in both the SPM and SYR body, when it warranted just small mention in the WG2 SPM. (Government of United States of America)
SPM-A-642	18	1			Section 5, IMPORTANT GENERAL COMMENT: The current draft of this section is unclearer and scientifically much less precise than the previous draft. It is essential that key information from the underlying report is reported correctly and as concisely as possible in the SYR to provide policy relevant information (see detailed comments below). (Government of European Community)
SPM-A-643	18	1	22		Section 5 lacks information on sustainable development. Sustainable development is specifically important in the long term because it is a key factor influencing baseline emissions and vulnerability. We would like that this section on long term perspective clearly includes the issue, e.g. based on text from the previous draft : "There is high agreement and much evidence that making development more sustainable can significantly reduce vulnerability to climate change by promoting effective mitigation and adaptation. (...) Sustainable development can reduce vulnerability to climate change by reducing sensitivities (through adaptation) and/or exposure (through reduced emissions)." (Government of Belgium)
SPM-A-644	18	3	18	6	A reference here to ‘dangerous anthropogenic interference’ without the context of the UNFCCC objective is an incomplete and confusing construct. Referring the reader to Topic 5 is insufficient. Either move the entire discussion to the body of the document or make this paragraph more understandable by adding a sentence or two at the beginning that explains the objective of the UNFCCC. (Government of United States of America)
SPM-A-645	18	3	18	38	Important section on reasons for concern, however, this highly relevant information on how the assessment of the reasons for concern has developed since the TAR would be much more useful for policymakers if the relevant graph from the Synthesis Report of the TAR would be updated. Strongly suggest to include an update of figure SPM-2 of the TAR WG II report (and included in SPM 3 of the Synthesis Report of the TAR,, using the "burning-ember" framework to show how the reasons for concern increase with temperature, should be included with high priority, as this figure from TAR SYR is one of the most widely used, and an update of it in the AR4 is therefore necessary. This should include the figure from TAR and updated next to it, for better comparison. (Government of Germany)
SPM-A-646	18	8	18	10	This language or concept is not in the referenced underlying text. Delete it. (Government of United States of America)
SPM-A-647	18	10			Change wording from "most susceptible to climate change" to "most susceptible to climate-related damages". This is consistent with the wording used in Topic 5 (p.1, 1.43-44). (Government of Canada)

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SPM-A-648	18	13	18	15	We suppose that there is a typing error here: should it be "larger risks at HIGHER temperature increases"? (Government of Norway)
SPM-A-649	18	13	18	15	This sentence contains two separate statements and should thus be split into two sentences as follows: "The five 'reasons for concern' identified in the TAR remain a viable framework to consider key vulnerabilities. The 'reasons for concern' are now assessed to be stronger than in the TAR, with larger risks at lower temperature increases." Also: In the TAR, the discussion of these "reasons for concern" was accompanied with a figure, generally dubbed the "burning embers diagram" (see TAR SYR Fig. SPM-3 and Fig. 6-3). It would improve the value for policy makers significantly to have an update of this widely cited figure being included in the AR4 SYR as well, based on the text in SYR Section 5.2 and WG 2 Section 19.3.7; see also comments on section 5 (5.2) (Government of European Community)
SPM-A-650	18	13	18	15	This sentence about "Reasons for concern" (RFC) is very important for policy-makers, and the justification contained below (lines 17 to 38) is most welcome, even if it could be more precise in some areas. However, we believe there would be significant added value to the SYR and its SPM if the points made about the "stronger" reasons for concerns could be illustrated graphically by an update to the RFC diagram contained in the TAR. Such an update was actually proposed by the WGII Chapter 19 authors at the WGII Plenary in Brussels, but the time did not allow a full discussion of this inclusion then, and several delegations suggested that it should be part of the Synthesis Report. To facilitate the discussion, we include here the figure proposed by the WGII Chapter 19 author team in Brussels. This diagram does not contain information that has not been assessed in AR4, it is only an illustration of the material contained between lines 13 and 38. The plot is contained in the following comment, followed by the proposed caption. If space needs to be made for this figure, we suggest the removal of Figure SPM.2, as we believe the added value of this RFC diagram is much higher. (Government of Belgium)
SPM-A-651	18	13	18	15	The sentence, as written, could be misinterpreted as implying that the risks will be lower as temperatures increase. We would recommend "The five "reasons for concern" identified in the TAR remain a viable framework to consider key vulnerabilities. These vulnerabilities are assessed to be greater than previously reported within the TAR: the risks are larger and become evident at lower increases in regional temperatures. {5.2}'. (Government of United Kingdom)
SPM-A-652	18	13			The findings of the AR4 show that reasons for concern identified in the TAR have increased (Government of Ireland)
SPM-A-653	18	13	18	38	Canada is very pleased to see that this section on "Reasons for Concern" has been greatly strengthened from the previous version. However, the present wording for lines 13-15 is ambiguous, and could be interpreted to state that we are more confident that the five reasons for concern are good metrics, rather than stating that we should be more concerned. Alternative text, borrowing from the previous draft of Topic 5, would state, "Compared to results assessed in the Third Assessment Report, the "reasons for concern" are now stronger and there is recognition that the risks at lower temperature increases are greater than previously assessed." (Government of Canada)
SPM-A-654	18	13	18	15	Authors should revert to the language in WG2 SPM and delete everything after "vulnerabilities" through to end of sentence. The statements in Topic 5 (page 2, lines 1-10) on which the latter part of this sentence is based do not correspond to information summarized by the WG SPMs. For example, the

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					WG1 conclusion that 'human activities are responsible for climate change' would seem to be the fundamental basis for stronger conviction in the 'reasons for concern'. Large-scale impacts (e.g., across polar regions) would seem to constitute more reason for concern than specific vulnerabilities. However, this is not the information presented in topic 5. Nor does the presentation here reflect the much briefer discussion of reasons for concern in the WG2 SPM. (Government of United States of America)
SPM-A-655	18	14	18	15	Please delete "with larger risks at lower temperature increases". Reason: This sentence provides too much damage and vulnerability, and overestimated the negative impacts related to the relative small increase of temperature, which is in lack of adequate evidence. (Government of China)
SPM-A-656	18	15			According to 5.2, larger risks at higher temperature increases not lower temperature increases. 'lower' should be replaced by 'higher'. (Government of Korea)
SPM-A-657	18	17	18	21	This repeats ealier points and could be shortened and strenghtened (Government of Ireland)
SPM-A-658	18	17	18	38	The material presented in lines 17-38 is redundant with tables in the SPM. No additional information or synthesis is presented here. As the information is duplicative, why this categorization? How many frameworks are needed to present the same information? How does this information differ from the table of impacts? The WG2 SPM refers directly to the table of impacts and does not list out in detail the reasons for concern. As the SYR is a distillation of information from the three WGs, why expand upon this topic at the level of the SYR SPM? The material on these lines is redundant with other information in the report that is more rigorously presented, and thus should be deleted. (Government of United States of America)
SPM-A-659	18	19	18	21	This sentence can be misunderstood because key vulnerabilities are not necessarily associated with thresholds. Suggest to delete the part after the comma. (Government of European Community)
SPM-A-660	18	19	18	37	Re. expressions of time scale - Please reword the time scale expressions: "over millennial time scales", "on century time scales", "on multiple century time scales", "on many century time scales" to be consistent and to clarify meaning. (Government of Canada)
SPM-A-661	18	21			Suggest replace 'that are defined subjectively' by 'that depend on societal values'. (Government of United Kingdom)
SPM-A-662	18	21	18	42	Consider clearer wording (Government of Ireland)
SPM-A-663	18	22	18	39	This can be strengthened (Government of Ireland)

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SPM-A-664	18	22	18	38	The text is very general. Could it be more descriptive and present more results? For example text on distribution of impacts and vulnerabilities describes only methodological improvements, but not results of these improvements. (Government of Finland)
SPM-A-665	18	22	2	25	Suggest to reformulate as follows: "Based on new and stronger evidence of observed adverse impacts of regional climate change on many unique and vulnerable systems, there is now high confidence that a warming of up to 2°C above 1990-2000 levels would have significant adverse impacts on many unique and vulnerable systems, including many biodiversity hotspots." The current FGD significantly understates the risks to unique and vulnerable ecosystems by suggesting that "predominantly negative effects" are projected only "if global average temperature increase exceeds 1.5-2.5°C above 1980-1999". The underlying text in WG II Section 19.3.7 reads as follows: "Since the TAR, there is new and much stronger evidence of observed impacts of climate change on unique and vulnerable systems, many of which are described as already being adversely affected by climate change. [...] Furthermore, confidence has increased that an increase in global mean temperature of up to 2°C relative to 1990 temperatures will pose significant risks to many unique and vulnerable systems, including many biodiversity hotspots. In summary, there is now high confidence that a warming of up to 2°C above 1990-2000 levels would have significant impacts on many unique and vulnerable systems, and is likely to increase the endangered status of many threatened species, with increasing adverse impacts and confidence in this conclusion at higher levels of temperature increase." (Government of European Community)
SPM-A-666	18	22	18	38	Reorder sentence as follows: 'Risks of species extinction within this century have been identified and large sea level rise may occur on century to millenium time scale' (Government of United Kingdom)
SPM-A-667	18	22	18	25	Please change "with the risk of significant extinctions of species" to "Approximately 20-30% of plant and animal species assessed so far are likely to be at increased risk of extinction if increases in global average temperature exceed 1.5-2.5°C". Reason: the text should provide the scientific truth about the species extinction, but the current sentence may confuse the readers to the effect that all species would face the risk of significant extinctions instead of the 20-30% of assessed species. (Government of China)
SPM-A-668	18	22	18	25	In the first bullet point there is a reference to the temperature increase referred to the period 1980-1999. It should be interesting to refer also into brackets the temperature increase since the pre-industrial time/period) as it has been done for the Greenland ice sheet loss in page 19 line 26. (Government of Spain)
SPM-A-669	18	22	18	25	"Predominantly negative effects" is inaccurate. We suggest a sentence based on the previous SYR draft and WG2 TS (p38) : "New evidence of observed impacts of regional climate change on vulnerable ecosystems has increased confidence in projected future effects. Roughly 20 to 30% of species assessed so far are likely to be under increasingly high risk of extinction if global average temperature increase exceeds 1.5-2.5°C" (Government of Belgium)
SPM-A-670	18	24	18	24	Change "1999" to "1999 level" (Government of United States of America)

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SPM-A-671	18	24	18	25	“with the risk of significant extinctions...”, replace “with the risk of significant extinctions for warming over 4°C” (Government of India)
SPM-A-672	18	26	18	28	This text omits very important information from the underlying WG II report. Suggest to reformulate as follows, based on the text in WG II Section 19.3.7: "Recent research indicates that human influence has already increased the risk of certain extreme events such as heatwaves and intense tropical cyclones. Recent extreme climate events with significant loss of life and property damage have exposed a higher level of vulnerability to these events than previously assessed, including in developed countries. There is high confidence that a warming of up to 2°C above 1990-2000 levels would increase the risk of many extreme events, including floods, droughts, heatwaves and fires." (Government of European Community)
SPM-A-673	18	26	18	28	This short version of a longer statement of the underlying text of the Working Group II report (Section 19.3.7) seems to be difficult to understand. The following wording might be clearer: Recent research indicates that human influence has already increased the risk of certain extreme events such as heatwaves and intense tropical cyclones. There is high confidence that a warming of up to 2 degrees C above 1990-2000 levels would increase the risk of many extreme events, including floods, droughts, heatwaves and fires, with increasing levels of adverse impacts at higher levels of temperature increase. (Government of Austria)
SPM-A-674	18	26	18	28	The word “higher” is used here to indicate increased level of vulnerability relative to the TAR (as stated in the sentence following)? If so, then it’s incorrect since the “recent events” were not assessed in the TAR. Change “Recent ... the TAR” to “Recent extreme events and higher confidence in projected changes have exposed greater vulnerability than was assessed in the TAR.” (Government of United States of America)
SPM-A-675	18	26			Redraft to say 'Recent extreme events have revealed higher vulnerability' (Government of United Kingdom)
SPM-A-676	18	26	18	38	At is has been done in the first bullet point it will be necessary to make a reference to the global average temperature increase referred for both 1980-1999 and the pre-industrial time/period, or at least to one of the previous periods where possible (Government of Spain)
SPM-A-677	18	27			Unclear what it is higher than. Revise to state "Recent extreme events have exposed a higher level of vulnerability than was assessed in the TAR." (Government of Canada)
SPM-A-678	18	27	18	28	"Higher confidence in projected changes..." : the link with higher impacts is unclear. We suggest using text from WG2 SPM (page 17) : " confidence has increased that some weather events and extremes will become more frequent, more widespread and/or more intense", bringing larger impacts. (Government of Belgium)
SPM-A-679	18	29	18	31	This sentence is much less clear than the previous draft, and it contains hardly any useful information for policy makers. It is important to convey the main messages from the underlying WG II Section 19.3.7. Suggest to reformulate as follows, based on text from WG II Section 19.3.7: "There is still

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					high confidence that low-latitude, less-developed areas are generally at greatest risk from climate change. However, recent work has shown that some population groups in developed countries are also highly vulnerable even to a warming of less than 2°C. In summary, there is high confidence that warming of 1 to 2°C above 1990-2000 levels would induce key negative impacts in some regions of the world, and pose new and significant threats to certain highly vulnerable population groups in other regions, with increasing levels of adverse impacts at higher levels of temperature increase." (Government of European Community)
SPM-A-680	18	29	18	31	This paragraph could provide more relevant information. We suggest "There is more confidence in projected climate patterns and new evidence that impacts will be highly contrasted among regions, with low-latitude, subtropical, and less-developed areas generally facing the greatest risk due to higher sensitivity and lower adaptive capacity" (Government of Belgium)
SPM-A-681	18	29	18	38	The text is weaker than in the previous draft. The information is very policy relevant, clear and main messages should be included. (Government of Spain)
SPM-A-682	18	31	18	31	Please include an example here, from Topic 5, pg 3, lines 5-7. Suggested text: "For example, Africa is one of the most vulnerable continents because of the range of projected impacts, multiple stresses and low adaptive capacity". (Government of Canada)
SPM-A-683	18	32	18	35	This entry is difficult to understand. It omits crucial information on damages from climate change that were contained in the previous draft, in section and in WGII - which concluded in its SPM (p. 17) that "taken as a whole, the range of published evidence indicates that the net damage costs of climate change are likely to be significant and to increase over time". Mentioning benefits at the beginning of the sentence - especially when referring to global estimates of impacts - is therefore very misleading. (Government of United Kingdom)
SPM-A-684	18	32	18	35	This entry does not provide a balanced summary of the text in the underlying WG II Section 19.3.7, and it omits crucial information on damages from climate change that were contained in the previous draft. It is essential that the available information from the underlying report is summarized as concisely as possible. Suggest to reformulate based on WG II Section 19.3.7: "Recent research suggests that initial net market benefits from climate change will peak at a lower magnitude and sooner than was assumed for the TAR, and it is likely that there will be higher damages for larger magnitudes of global mean temperature increases than estimated in the TAR. There is low to medium confidence that most people in the world will be negatively affected at global mean temperature increases of 1-2°C above 1990-2000 levels, with increasing levels of adverse impacts and confidence in this conclusion at higher levels of temperature increase." or for sake of brevity, just "There is low to medium confidence that most people in the world will be negatively affected at global mean temperature increases of 1-2°C above 1990-2000 levels, with increasing levels of adverse impacts and confidence in this conclusion at higher levels of temperature increase." (Government of European Community)
SPM-A-685	18	32	18	35	This § is not easy to read and comprehend; what is the message a non-IPCC audience can derive from this statement? After three times re-reading it, it remains unclear. (Government of Belgium)

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SPM-A-686	18	32	18	35	The text for most of the "reasons for concern" has been strengthened. However, this is an exception. The second part of the sentence does not present a clear message. Suggest using the wording from the previous draft and that in WGII Technical Summary: There is some evidence that initial net market benefits from climate change will peak at a lower magnitude and therefore sooner, and that damages would be higher for larger magnitudes of global mean temperature increase, than was concluded in the previous assessment." (WGII TS 5.3) (Government of Canada)
SPM-A-687	18	32	18	35	"Initial market benefits" could be better if it reads as "Initial economic benefits". This statement seems to be in contradiction with the text of the first paragraph of the WG2 SPM page 16. Another point: "global risks calibrated in other aggregate metrics" - what does calibration mean here and what are the other metrics. It would be useful to give some examples. (Government of Finland)
SPM-A-688	18	34	18	35	Delete "was assumed" and "and global risks...better quantified." (Government of United States of America)
SPM-A-689	18	36	18	38	This sentence is much less clear than the previous draft. The statement that "risks .. have been identified" contains hardly any useful information for policy makers. It is important to convey the main messages from the underlying WG II Section 19.3.7. Suggest to reformulate as follows, based on text from WG II Section 19.3.7: "Recent research suggests that at least partial deglaciation of the Greenland ice sheet, and possibly the WAIS, would occur over a period of time ranging from centuries to millennia for a global average temperature increase of 1-4°C (relative to 1990-2000), causing a contribution to sea-level rise of 4-6 m or more (medium confidence). There is now more confidence than in the TAR on the amplification of climate change from feedbacks in the carbon cycle." (Government of European Community)
SPM-A-690	18	36	18	37	This paragraph provides little information and may be misleading : "have been identified" is either vague or wrong, as progresses occurred in those areas but large uncertainties remain. Writing "Have been better identified" would be more satisfying, but in addition, more concrete examples of possible abrupt/irreversible changes would be welcome. (Government of Belgium)
SPM-A-691	18	36	18	36	The term 'singularities' is a very technical term. Its use here does not add anything to the specification of the issue that is being discussed, nor to the understanding of the lay reader. We suggest the term is dropped and the text in bold read simply: "Risks of large scale abrupt or irreversible changes". (Government of New Zealand)
SPM-A-692	18	36	18	38	The current text does not provide information on the actual risks. In general it would be welcome if all the bullet points would provide some information on the main risks in order to be user-friendly. A more informative language, based on section 5.2 of the longer report, could read as follows: A gradual widespread loss of ice from the Greenland ice sheet is projected of warming were to be sustained for millennia. Complete deglaciation of the Greenland ice sheet would raise sea level by 7m and could be irreversible. (Government of Austria)
SPM-A-693	18	36	18	38	Please make consistent with the underlying topic. Species extinctions is listed under Risks to unique and threatened systems and should not be included here as well.

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					(Government of Canada)
SPM-A-694	18	37	18	38	The mentioning of risk of "species extinction within this century" is partly a duplication - and actually an understatement of the text line 24 (above) - which states: "the risk of significant extinctions of species". Please either remove or strengthen. (Government of Denmark)
SPM-A-695	18	37	18	37	"many century time scales" is an unclear statement in a "policy" document. Suggest "over several centuries" (Government of United States of America)
SPM-A-696	18	39	18	39	New Figure to add, as proposed by the WGII Chapter 19 author team at the Brussels Plenary: PLEASE INSERT HERE THE CONTENT OF FILE "UPDATED RFC" IN ANNEX, as the macros presumably prevent us from doing it; We will also post it on www.climate.be/RFC . (Government of Belgium)
SPM-A-697	18	39	18	39	Caption for new proposed Figure (Updated Reasons for concern): "The consequences from climate change are expressed by reasons for concern (RFC). Climate change consequences are plotted against increases in global mean temperature (°C) after circa 1990. Impacts caused by warming up to 1990 are also considered. Each column corresponds to a specific RFC, and represents additional outcomes associated with increasing global mean temperature. The color scheme represents progressively increasing levels of risk, and should not be interpreted as representing "dangerous anthropogenic interference." It should be noted that this figure addresses only how risks change as global mean temperature increases, not how risks might change at different rates of warming. Furthermore, it does not address when impacts might be realized, nor does it account for the effects of different development pathways on vulnerability. Figure 1A displays the Reasons for Concern from the IPCC TAR (Smith et al., 2001). Figure 1B presents the update of the Reasons for Concern." (Government of Belgium)
SPM-A-698	18	40	18	40	We suggest this statement would be strengthened by the inclusion of the calibrated confidence statement from 5.3 ("There is high confidence neither adaptation nor ..." (if this confidence statement also applies to the second part of the statement, on reducing risks) (Government of New Zealand)
SPM-A-699	18	40	18	43	This should be part of the introduction. See comment on page 18 line 13 to 15. (Government of United Kingdom)
SPM-A-700	18	40	18	42	Replace this sentence with agreed wording from the AR4 WG II SPM: "However, adaptation alone is not expected to cope with all the projected effects of climate change, and especially not over the long run as most impacts increase in magnitude" (Government of Switzerland)
SPM-A-701	18	40	18	42	Replace bolded statement with "Both adaptation and mitigation efforts are required to avoid significant climate change impacts." There is no language in the WG2 SPM to support the statement in its current formulation. (Government of United States of America)

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SPM-A-702	18	42	18	42	replace 'risks of climate change' by 'risks brought by climate change' or 'risks caused by climate change' (Government of Belgium)
SPM-A-703	19	1	19	4	We find this paragraph poorly structured and suggest the following revisions which will serve to make explicit why both mitigation and adaptation are needed and will highlight the issue of limits and barriers to adaptation by making that issue a separate sentence. Suggested revisions: "Adaptation is necessary in the short and long term even for the lowest stabilization scenarios assessed because some climate change is unavoidable. Mitigation is necessary because unmitigated climate change would (delete 'in the long term') be likely to exceed the resilience of natural systems and the capacity of human and managed systems to adapt. When such limits would be reached will vary between sectors and regions and in some cases there may be significant barriers and costs to adaptation." (Note: 1) 'in the long term' should be deleted because for some systems, such impacts could come sooner rather than later, 2) resilience rather than adaptive capacity is the preferred term to use when discussing natural systems and limits to adaptation.) (Government of Canada)
SPM-A-704	19	1	19	6	This paragraph contains many ambiguities. Adaptation is necessary for what? Strike "unmitigated". What is meant by "The time at which such limits..."? Suggest replacing with language from page 20 (final layout version) of the WG2 SPM. (Government of United States of America)
SPM-A-705	19	1	19	6	There is an idea missing in this paragraph that should be inserted. With higher mitigations measures, lower adaptation measures will be needed and important savings can be obtained. (Government of Spain)
SPM-A-706	19	1	19	5	The need for adaptation and the barriers have been described earlier (Section 4). We do not believe the first three sentences in this paragraph, neither the one on adaptation, nor the next two on mitigation, add useful information for the policymaker. We suggest they be dropped. (Government of New Zealand)
SPM-A-707	19	1	19	2	The first sentence of the paragraph should be written in bold text, and should be included on the previous page, line 40-42. (Government of Norway)
SPM-A-708	19	4	19	4	Change "could" to "would". (Government of European Community)
SPM-A-709	19	5			Editorial: To indicate that we are already locked into carbon intensive infrastructure, add the word "further" such that the sentence reads "Early mitigation actions would avoid further locking in carbon intensive infrastructure ..." (Government of Canada)
SPM-A-710	19	7	19	7	Include important statement from topic 5 page 9 line 29: "Many impacts can be avoided, reduced or delayed by mitigation." (Government of Germany)
SPM-A-711	19	8	19	11	This paragraph should be made bold. This is quite important. However should come after line 31. (Government of United Kingdom)

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SPM-A-712	19	9	19	11	This statement is not supported by Topic 5 or the underlying reports. Statements from pages 4 and 9 of Topic 5 have been inappropriately combined here. The strong mitigation-impacts relationship implied by the statement has not yet been robustly established in the literature. It is an important area for future research. (Government of United States of America)
SPM-A-713	19	9	19	11	Can mitigation (emissions reductions) really determine which risks can be reduced etc? a specific risk? Or should the wording be "These efforts determine to a large extent whether long-term risks ... can be reduced ..."? (Government of Canada)
SPM-A-714	19	9	19	9	After "lower stabilization levels" insert ", both through reduction of emissions via technology deployment and through development of new technologies to address the large CO2 mitigation levels required later in the century, as shown in Figure SPM.8." (Government of United States of America)
SPM-A-715	19	9	19	11	"long-term risks for vulnerable systems" : the risks associated with delayed mitigation and investment or lack thereof are not limited to "vulnerable systems". We suggest removing these words, leaving only "long-term risks" (this closely follows WG3 SPM). (Government of Belgium)
SPM-A-716	19	13	19	14	We think that this sentence is somewhat confusing. A decline in emissions is obviously needed for stabilisation - however a (future) peak in emissions is probably unavoidable, but not needed. We suppose that the main message here should be that in order to stabilize concentrations emissions have to decline considerably. We propose that the text is substituted by something in the line of: "Due to the considerable atmospheric lifetimes of GHGs, emissions would need to decline considerably to stabilize concentrations of GHGs. The lower the stabilisation level, the more quickly stabilization and subsequent emission reductions need to occur." (Government of Norway)
SPM-A-717	19	13	19	15	This paragraph is very policy relevant, but lacks the quantitative information on when emissions need to peak for achieving the lowest assessed stabilization levels. Thus, append the paragraph with a sentence like "For the lowest mitigation scenario category assessed, emissions would need to peak by 2015 at the latest (see Table SPM.3)." (Government of Germany)
SPM-A-718	19	13	19	14	The wording "would need to peak" is misleading for non-native speakers and non-experts. They might think that emissions reach a threshold, but actually emissions must stay below a certain value, and then decline. Please clarify, e.g. by an explanation in brackets: "...need to peak (i.e. reach their maximum level) and then decline..." (Government of Germany)
SPM-A-719	19	13	19	13	For the sake of clarity it is suggested to insert "global" before "emissions". The term "global emissions" was already used in the previous draft. (Government of Austria)
SPM-A-720	19	13	19	15	Change "would need to" to "must" in two instances. (Government of United States of America)

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SPM-A-721	19	15	19	15	We would like to see a little more detail from the WGIII SPM included here on mitigation efforts and clarity on early action. Suggest adding at the end of the paragraph: "Choices about the scale and timing of GHG mitigation involve balancing the economic costs of more rapid emission reductions now against the corresponding medium- and long-term climate risks of delay." (From WGIII SPM, page 18, paragraph 21). (Government of Canada)
SPM-A-722	19	15	19	15	After “would need to occur,” insert “Scenarios for stabilization at 490-540 ppm CO ₂ -equivalent presented in Topic 5 indicate that 95% of the CO ₂ mitigation required this century occurs after 2030.” (Government of United States of America)
SPM-A-723	19	15	19	15	Add at the end of line 15: “Scenarios that use alternative emission pathways show substantial differences on the rate and magnitude of global climate change.” And add 5.3 and 5.7 to the bracketed cross-references. (Government of United States of America)
SPM-A-724	19	17	19	19	These lines refer the reader to Table SPM.3 and Fig SPM.8 but make no mention of the fact that the required emission levels to meet different stabilisation concentrations changes depending on the value of climate sensitivity used. We suggest adding the following sentence: "Figure SPM.8 also shows how the required emission levels will change depending on whether climate sensitivity is low or high." (Government of Canada)
SPM-A-725	19	17	19	19	Insert the callout for Footnote 10 after the first sentence of this paragraph (renumber if appropriate). (Government of United States of America)
SPM-A-726	19	18	19	19	Use the same expression as in Table SPM 3 which is easier to understand: "and resulting long-term equilibrium global average temperature and sea-level rise from thermal expansion only." (Government of Norway)
SPM-A-727	19	19	19	19	To ensure optimal clarity we urge the authors to insert the words 'the component of' before the words 'long-term' thus: "... global average temperature increase and the component of long-term sea level rise due to thermal expansion ..." (Government of New Zealand)
SPM-A-728	19	19	19	19	If Footnote 9 is retained, add to the end: "...and exceeded prior to equilibrium." (Government of United States of America)
SPM-A-729	19	19			Footnote 9: The equilibrium temperature increase in the Table SPM.3. could mislead policy makers, because it is not still clear that the equilibrium temperature increase will be reached only after a long period. For clarification, add the following sentence after the second sentence of Footnote 9: "Even under a stabilization concentration scenario, only about 70% of the equilibrium temperture increase would be realised at the time of stabilization and 80% of the equilibrium warming would be realized in 100 years." (ref.: section 10.7.2 of AR4/WG1). And we suggest moving the footnote into the corresponding part of the main text.

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					(Government of Japan)
SPM-A-730	19	19			Footnote 9: Delete the last sentence "For the much lower ... be reached earlier.", because there is no basis for the statement. (Government of Japan)
SPM-A-731	19	19	19	19	Delete Footnote 9. It is full of jargon and not necessary. (Government of United States of America)
SPM-A-732	19	20	19	20	Change "risks that would be reduced" to "risks that might be reduced". The inconsistencies in socioeconomics between the stabilization scenarios and the impacts studies in Figure SPM.6 makes it impossible to be definitive in this statement. Also, note the massive overlap in the likely temperature ranges across concentration levels in Figure SPM.8 (right panel). (Government of United States of America)
SPM-A-733	19	23	19	30	Editorial: This paragraph could be shortened as it contains unnecessary detail some of which is provided elsewhere in the SPM. Recommended revision: "Sea level rise from thermal expansion would continue for many centuries after GHG concentrations have stabilised, causing an eventual sea level rise much larger than projected for the 21st century, for any of the stabilisation levels assessed. The eventual contributions from Greenland ice sheet loss could be much larger than from thermal expansion. The long time scales of thermal expansion and ice sheet response to warming imply that stabilisation of sea level will not occur for many centuries. {5.3, 5.4}" (Government of Canada)
SPM-A-734	19	25	19	25	Add callout to Table SPM.1 after "century" (Government of United States of America)
SPM-A-735	19	26	19	28	Please provide more precise information, at least stating that total sea level rise in this case will eventually reach several meters, (and add a reference to page 13) (Government of Belgium)
SPM-A-736	19	26	19	26	How can you have an increase at the bottom end of the range (1.9-4.6°C)? Do the authors mean that sustained temperatures within that range or above results in ... ? (Government of United States of America)
SPM-A-737	19	31	19	31	Include para on Art. 2 UNFCCC based on a section in topic 5 that needs to be reintroduced, see May draft of both SPM and topic 5 (see SPM in May-draft, page 17, lines 34-37). Art. 2 is an agreed cross-cutting theme, and therefore should be addressed in the SPM and in topic 5 with high priority, as this is relevant for policymakers. (Government of Germany)
SPM-A-738	20	1	20		This Table is an improvement over what was presented in WG3. We would like to congratulate the authors for the improved clarity, particularly with the changes to Note a.

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					(Government of Canada)
SPM-A-739	20	1	20		This is also an improvement over what was presented in WG3, and is much more comprehensible. That said, there is a discrepancy between the 2000 starting point of these emission scenarios (at 30 Gt CO ₂ e) and those of the SRES scenarios (which start at 40 Gt CO ₂ e), and Figure SPM.3 (which shows 44 Gt CO ₂ e). While the SRES emissions projections are not shown in the SPM, they are in Topic 3. Should these be more aligned, and if not, why should it remain as so? Please clarify the difference (are the stabilisation scenarios being analyzed here looking solely at fossil carbon or global energy-related emissions? Why are the emissions at the outset so much lower than in the other sections of the SPM?) (Government of Canada)
SPM-A-740	20	1	20	19	Suggest adding the words "at stabilisation" to columns 2 and 3 of Table SPM-3. (Government of Canada)
SPM-A-741	20	1			P18 Table SPM-3. We have noted that the co-chair of WG3 mentioned in a talk that the requirements on emission reductions to meet stabilisation goals are harder than in the TAR. This is because the climate sensitivity is now somewhat higher. This seems to us a key result and should be reflected in the text. A point also to be reflected in the introduction. (Government of United Kingdom)
SPM-A-742	20	1	20	3	Amend title as follows for clarity: Characteristics of "6 categories" of..... (International Energy Agency)
SPM-A-743	20	2	20	2	To ensure clarity on first reading we urge the authors to insert the word 'the' before 'sea' and 'component' before 'from' thus: "... average temperature and the sea level rise component from thermal expansion ..." (Government of New Zealand)
SPM-A-744	20	3	20	4	Table SPM3:In order to make more readable and comparable the tables it could be useful to arrange by CO ₂ concentrations or CO ₂ equivalent concentrations levels the tables SPM.3 and SPM.4 in the same way (preferable from lower to higher) (Government of Spain)
SPM-A-745	20	3			Table SPM.3: a purely editorial suggestion: transpose the matrix of this table,so that there are 7 columns: the first one with the text now hanging in the top row, and the other 6 ones the categories I to VI. The transposed table may read easier; also the left to right ranking of the I to VI categories will conflict less with the ranking in the legend of Figure SPM.8 (same page left part of the figure) and the numbering in the right part of Figure SPM.8 (Government of Belgium)
SPM-A-746	20	5	20	5	Table SPM3 footnote a: in addition, please clarify whether all anthropogenic forcing agents are included in the CO ₂ equivalent figures in the table (Government of Belgium)
SPM-A-747	20	5	20	5	Table note (a) from WG3 Table SPM-5 is missing and should be included. (Government of United States of America)

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SPM-A-748	20	6	20	8	These three lines are rather confusing. These figures are not in the Working Groups SPMS. They should be deleted or explained in detail, if they are in full AR4 report. (Government of France)
SPM-A-749	20	10			Please add a definition of climate sensitivity and clarify that the presented ranges do not include the climate - carbon cycle feedback. (Government of United Kingdom)
SPM-A-750	20	11	20	11	Should "climate sensitivity" be defined a little here (International Energy Agency)
SPM-A-751	20	11	20	11	Add "per doubling of CO ₂ " after "3°C." (Government of United States of America)
SPM-A-752	20	11			"Climate sensitivity" should be explained here or in the main text. (Government of Norway)
SPM-A-753	20	12	20	13	The text i d) should explain that the temperature at equilibrium will happend much later than the time of GHG stabilisation and not only that it will be different. (Government of Norway)
SPM-A-754	20	13	20	14	Is it possible also to indicate when the equilibrium temperature will be reached as for the concentrations? (Government of Norway)
SPM-A-755	20	15	20	15	Add "ocean" before "thermal" (Government of United States of America)
SPM-A-756	20	17	20	17	Presumably, AOGCM and EMICs will be spelled out and/or defined somewhere. Otherwise, "several EMICs" sounds a bit like characters from a Star Wars movie. (Government of United States of America)
SPM-A-757	20	17	20	17	Footnote e) acronyms EMICs in full. Not given till Table 3-1 (International Energy Agency)
SPM-A-758	20	17	20	17	Add "per doubling of CO ₂ " after "3°C." (Government of United States of America)
SPM-A-759	20	18			include the word 'melting' before 'ice sheets' (Government of Belgium)
SPM-A-760	20	19	20	19	per degree "Centigrade" or "per oC" (International Energy Agency)

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SPM-A-761	20	19	20	19	Is the "above present temperatures" a needed qualifier? (It's use suggests that the long-term response to the warming so far would be significantly different than the one mentioned here.) (Government of Sweden)
SPM-A-762	20	20	20	20	Add: "f) On timescales of many centuries, the melting of land ice will give a considerable contribution to sea level rise. For example, the melting of the Greenland ice sheet may add up to 7m to the final sea level rise, when the temperature rise is maintained long enough." (Government of Netherlands)
SPM-A-763	20	22	20	22	The title of this Figure needs to reflect the full content and message of the Figure better by bringing in reference to the effect of uncertainty about climate sensitivity. We suggest adding to the end of the Figure title the words "and climate sensitivity" (i.e. "CO2 emissions and equilibrium temperature increases for a range of stabilisation levels and climate sensitivity".) Also suggest adding to the RH axis of the RH panel of the Figure an arrow indicating the lower and upper range for climate sensitivity and the best estimate. (Government of Canada)
SPM-A-764	20	22	20	22	Is this title really required if there is a caption too where the words can be incorporated? (International Energy Agency)
SPM-A-765	20	22	20	23	I understand the reasoning for having GtCO2 and GtCO2-eq in the same figure SPM-8 but it can be VERY confusing for the reader and I don't think the reasoning is explained in the text or caption sufficiently (International Energy Agency)
SPM-A-766	20	22			Fig.SPM.8. It is suggested to change the start of x axis from '280' to 300 and to make it consistent with the figure in WGIII SPM in order to avoid confusing readers, because the 280 is only the CO2 concentration in pre-industry period while other concentration levels refer to CO2-eq. (Government of China)
SPM-A-767	20	24	20	24	Change word "groups" to "categories" in order to standardise on use of terminology (International Energy Agency)
SPM-A-768	21	3	21	3	Change "category"to "categories" (International Energy Agency)
SPM-A-769	21	5	21	5	Not sure if "climate sensitivity" has been explained well enough for lay readers (International Energy Agency)
SPM-A-770	21	7	21	8	"Post-SRES baseline scenarios" should be explained (Government of Denmark)
SPM-A-771	21	12	21	12	Were the stabilisation levels "assessed" or "identified"? (International Energy Agency)

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SPM-A-772	21	12	21	19	This part has been shortened significantly. Without figure SPM.9 of the previous draft the text is very abstract. Figure SPM.9 has the advantage of informing about concrete examples of possible mitigation scenarios, indicating the key technologies needed as well as their contributions in the medium and long-term. As many pages in the current draft are not really fully used re-insertion of this figure seems to be consistent with the requirement of the limit in pages. (Government of Austria)
SPM-A-773	21	12	21	19	This does not appear in 5.6; it is in 5.5. (Government of Canada)
SPM-A-774	21	12	21	20	The text is weaker than in the previous draft. The information from the figure is very policy relevant. Clear text and main messages should be included. (Government of Spain)
SPM-A-775	21	12	21	14	Please reconstitute the uncertainty statement ("high agreement, much evidence") from the previous draft. The first word of the sentence should be changed from "The" to "All" for clarity. (Government of European Community)
SPM-A-776	21	12	21	14	It should appear more clearly that what is meant is that the technical potential is available, not that it is sufficient to achieve any stabilisation level given any baseline emissions. (Government of Belgium)
SPM-A-777	21	14	21	14	The full second sentence from WG3 SPM page 16 (paragraph 19) is more informative and should be used in place of the current text: "This assumes that appropriate and effective incentives are in place for development, acquisition, deployment, and diffusion of technologies and for addressing related barriers." (Government of United States of America)
SPM-A-778	21	14	21	14	Add assuming "appropriate" incentives (International Energy Agency)
SPM-A-779	21	16	21	19	To provide balance and accurately reflect the constraints on the wide variety of countries attempting our about to attempt emissions reductions, we believe it is important that the authors include in this paragraph the text from 5.5 (Topic 5 page 7 lines27 - 28): "Including non-CO2 and CO2 land-use and forestry mitigation options provides greater flexibility and cost-effectiveness." (Government of New Zealand)
SPM-A-780	21	16	21	19	This short paragraph is all that remains from extensive text and a figure on greenhouse gas stabilisation, sectoral mitigation potentials, and the interaction between climate change and sustainable development in the previous draft. The text from that draft (p.20, l. 16 - p. 21, l. 31) and the accompanying Figure SPM-9 needs to be reconstituted because it is very important to policy makers. (Government of European Community)

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SPM-A-781	21	16	22	39	There is room to improve and add valuable information to this section. This could be facilitated with edits elsewhere (Government of Ireland)
SPM-A-782	21	18	21	19	Please add: "increased diffusion and transfer of technology and" before "more rapid commercialisation" (Government of Sweden)
SPM-A-783	21	20	21	20	We propose that fig 5.2 from Topic 5 is also introduced here because it gives valuable information about the different mitigation options (Government of Norway)
SPM-A-784	21	20	21	31	These two paragraphs would sit better at the beginning of section 4 or at the end of section 3 - setting additional context for the need for an adequate response to climate change. (Government of United Kingdom)
SPM-A-785	21	21			Also need to recognise that estimated costs of mitigation tend to fall under 5.5% of GDP, and in some cases can be positive (Government of United Kingdom)
SPM-A-786	21	23	21	24	Revise sentence to read: "The economic costs of mitigation generally rise with the stringency of the stabilisation target (Table SPM.4). For specific countries and sectors, costs and impacts on growth vary considerably from the global average." NOTE: Page 21 lines 21-23 and 25-27 should refer to {5.6}. (Government of Canada)
SPM-A-787	21	23	21	23	In Footnote 10, for clarification and greater relevance to the top-down numbers reported in this section, insert "of stabilization scenarios" at the end of the first sentence. The last two sentences could be dropped altogether from the footnote. If they are kept, the full text from WG3 Box SPM-4 should replace the last sentence in order to provide a proper characterization. (Government of United States of America)
SPM-A-788	21	23			Footnote 10: The term "use of revenues from carbon taxes and auctioned permits" is not clear. Of course, all governments will use these revenues in some way. If current models wrongly assume otherwise, this caveat should be pointed out explicitly, such as: "Most current models overestimate the costs of climate mitigation because they assume that the revenues from carbon taxes and auctioned permits (not assumed in most models) are thrown away rather than used to reduce existing distortive taxes or in other productive ways." (Government of European Community)
SPM-A-789	21	23			footnote 10: The footnote does not include information what use of revenues from carbon taxes and auctioned permits would decrease costs. It is suggested to include that information as it is very policy relevant. (Government of Austria)
SPM-A-790	21	23			Footnote 10: Suggested text for the footnote: "Studies on mitigation portfolios and economic costs assessed in this report are based on top-down modelling. Most models use a global least cost approach to mitigation portfolios with perfect implementation of mitigation measures throughout the 21st century, which may lead to optimistic results. Costs are given for a specific point in time. Costs will increase if some regions, sectors (e.g. land-use), options or gases are excluded. Costs are lower for those scenarios that start with lower baselines, as well as for those that include induced

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					technological learning. These models generally do not consider climate benefits or the co-benefits of mitigation measures, or equity issues." We would like to delete the last line of footnote 10 in the final draft because the point is already made in the 5th line. (Government of Canada)
SPM-A-791	21	23			Footnote 10: Clarify the line on global modelled costs decreasing. How does the "use of revenues from carbon taxes and auctioned permits" reduce the costs of reducing emissions? Suggest changing the line "Global modelled costs will decrease with lower baselines, use of revenues from carbon taxes and auctioned permits, and if induced technological learning is included." to "Global modelled costs are lower for those scenarios that start with lower emission baselines, as well as for those that include induced technological learning." (Government of Canada)
SPM-A-792	21	23			Foot note 10. This footnote is unnecessary and too long. Suggest it is deleted. (Government of United Kingdom)
SPM-A-793	21	23			Editorial: Footnote 10: In the last line, it should say that "In models that consider induced technological change, projected costs for a given stabilisation level are reduced; the cost reductions for the induced technological change scenarios compared to other scenarios are greater for lower stabilisation levels." (Government of Canada)
SPM-A-794	21	23	21	23	A balanced view on mitigation costs must remind that making development more sustainable also reduces mitigation costs : the explanation in the footnote that " global modelled costs will decrease with lower baselines " could be made more visible. (Government of Belgium)
SPM-A-795	21	25	21	27	Unless this sentence is made less technical (e.g. see our comment with respect to p. 21 line 21), then it is unnecessary - the table SPM4 illustrates the point and sets out the numbers adequately. (Government of United Kingdom)
SPM-A-796	21	25	21	27	The reduction in percentage per annum is difficult to understand. Is it possible instead to tell that the projected GDP in 2030 will be reached x years later for the y stabilisation scenario...? (Government of Norway)
SPM-A-797	21	25	21	27	The assumptions behind the modelling exercises can lead to optimistic results. The comments in footnote 10 might be more appropriate within the text. It would also be helpful to know what business-as-usual growth rates are expected to be in these scenarios. We would also suggest the following text: "The reduction of average annual global GDP growth rates ranges from less than 0.12 to less than 0.06 percentage points per annum for the 445-535 and 590-710 CO2-eq stabilisation scenario ranges, respectively, assuming global, fully functioning and transparent carbon markets and no transaction costs. {5.5, WG3 SPM}" (Government of Canada)
SPM-A-798	21	25	21	27	445-535 ppm CO2eq relates to categories I and II in Table SPM 3. 590-710 is Category IV. I find this somewhat confusing. Maybe Table SPM 4 should also show the categories - or better still even, have separate lines for categories I, II, III and IV even if I and II are repeated. Also should the

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					text state state "by 2030"? (International Energy Agency)
SPM-A-799	21	26	21	26	We suggest that 'ppm' is inserted before 'CO2-eq'. (Government of New Zealand)
SPM-A-800	22	0			There is no mention of the cost of inaction. This should be conveyed. (Government of United Kingdom)
SPM-A-801	22	3	22	4	See comment 30th. Table SPM4:In order to make more readable and comparable the tables it could be useful to arrange by CO2 concentrations or CO2 equivalent concentrations levels the tables SPM.3 and SPM.4 in the same way (preferable from lower to higher) (Government of Spain)
SPM-A-802	22	7	22	7	insert "on" after "... based" and before "market exchange ..." (Government of Switzerland)
SPM-A-803	22	11	22	12	Table SPM.4, Note d): Full stop after "The number of studies that report GDP figures is relatively small." Delete: "and they generally use low baselines. High emissions baselines generally lead to higher costs." Reason: In the underlying Chapter 3 of WGIII, Fig 3.20 shows that the baselines are NOT generally low, but similar to other studies. The scatter is too broad for such a statement. (Government of Germany)
SPM-A-804	22	15	22	15	We suggest the phrase 'Decision making about' is superfluous. Without any loss of meaning or accuracy the sentence can start: "Responding to climate change involves ...". (Government of New Zealand)
SPM-A-805	22	15	22	44	This is very important part of the SPM for the policy makers. Now the statement is about risk management, but the text below is about cost and benefits and uncertainties. Robust findings and key uncertainties are not discussed at all. There could also be something general on the risk management approach here for example from chapter 5.1 in Topic 5. Also some text from Topic 6 chapter 6.3 Responses to climate change could be used here. (Government of Finland)
SPM-A-806	22	15	22	39	The text is weaker than in the previous draft. The information from the table is very policy relevant. Clear text and main messages should be included. (Government of Spain)
SPM-A-807	22	20	22	39	The text in the previous draft contained information on key areas for emission reduction under different stabilisation levels (page 20, line 24-31 and Figure SPM-9 of the previous draft). This information is missed in the current text. (Government of European Community)
SPM-A-808	22	20	22	20	Rephrase: "...impose net annual economic costs..." (Government of Australia)

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SPM-A-809	22	21	22	23	Describe source/pedigree/expertise behind these estimates. Do these estimates result from peer reviewed published assessments or an elicitation of expert judgments. (Government of United Kingdom)
SPM-A-810	22	21	22	21	Add footnote/reference to define “social costs”. (Government of United States of America)
SPM-A-811	22	22	22	22	Re: \$95/t co2 - corresponding figure in WGII SPM is \$130/t co2. (Government of Australia)
SPM-A-812	22	25	22	25	Suggest modifying to “ sectors, regions, ecosystems, and populations and very likely...” (Government of United States of America)
SPM-A-813	22	28	22	31	Suggest to delete this statement from the SPM, as it is very misleading without necessary qualifiers. Alternatively, this statement needs to be qualified by information from WG III on the underestimation of damage costs in model studies, see text in topic 5 page 9 lines 32-27 (Government of Germany)
SPM-A-814	22	28	22	31	Replace with “Limited and early results from integrated analyses indicate that the costs and benefits of mitigation are broadly comparable in magnitude. No unambiguous determination of an emissions pathway or stabilization level wherein benefits exceed costs has yet been identified.” (Government of United States of America)
SPM-A-815	22	33	22	39	Suggest combining these 2 paragraphs to make more clear that carbon cycle feedbacks affect climate sensitivity. (Government of Canada)
SPM-A-816	22	34	22	34	Revise to read “...then the required mitigation must occur earlier and be more stringent...” (Government of United States of America)
SPM-A-817	22	34	22	35	Change “were high” to “is high” and “were lower” to “is low” (Government of United States of America)
SPM-A-818	22	37	22	39	This paragraph summarizes well a point of paramount importance and appears to be very well phrased. It must not be changed and needs to be maintained in a balanced manner together with SPM p. 9, 1.11-16. A paper of relevance in this context is Jones et al. (2006) used by WGI in their assessment). Jones, C.D., Cox, P.M. & Huntingford, C., 2006. Climate-carbon cycle feedbacks under stabilization: uncertainty and observational constraints. Tellus B, 58(5): 603-613. (Government of Switzerland)
SPM-A-819	22	41	22	44	This section is very important for policy makers. What is the point in referring to a whole chapter. A summary of key findings and scope for further research should be included. (Government of United Kingdom)

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SPM-A-820	22	41	22	44	This section ends the Summary too abruptly. Include some key findings and recommendations summary from Topic 6 and trim other redundancies in the SPM to meet page allowance. (Government of United States of America)
SPM-A-821	22	41	22	44	This chapter is highly welcome. To increase its usefulness, It is suggested to link the sections 6.1, 6.2 and 6.3 to the appropriate sections of the SPM (sections 1 to 5). (Government of Austria)
SPM-A-822	22	41	22	43	The status of this section is unclear: by adopting these lines, are we adopting also the "... selection of policy-relevant robust findings and key uncertainties ... provided in topic 6 of the longer report. {6.1, 6.2, 6.3}" (Government of Switzerland)
SPM-A-823	22	41	22	44	Surely "Robust findings and key uncertainties" are a fundamental part of a summary for policymakers? It is therefore rather strange that this SPM contains only a pointer to their position in the longer report and, furthermore, that what is provided in the full report is a "selection" of policy relevant information. Surely selection is the prerogative of the policymakers? Much of the substance of Topic 6 is already included elsewhere in the full report and the SPM, so is the point of these lines that Topic 6 draws together the policy relevant robust findings and key uncertainties that are evident within the report? In that case, the words should reflect that and not give the impression that Topic 6 includes additional information. (International Chamber of Commerce)
SPM-A-824	22	41	22	44	Section 6. It does not appear appropriate that such an important issue for policymakers be wholly referred to documents not forming part of the SPM itself. (Government of Chile)
SPM-A-825	22	41	22	44	Please provide the main robust findings and key uncertainties in order to provide a full picture of the reports. Suggested contents are attached as a single file "robust findings and key uncertainties.doc". [TSU Note: Refer to additional material; "2. Robust Findings and Key Uncertainties"] (Government of China)
SPM-A-826	22	41	22	44	It may be useful to summarize the robust findings and key uncertainties, highlighting a couple of the most important ones, in the SPM itself rather than referring to the Longer Report. In this context, it is important to highlight the inadequate climate data coverage and climate model resolutions that contribute to key uncertainties at the regional and national levels. (World Meteorological Organization)
SPM-A-827	22	41	22	44	It is noted that the uncertainty about the feasibility of overshooting scenarios has not been addressed under section 6.3 although figure SPM.8 includes negative emissions in the lowest stabilisation scenarios. In general it seems very relevant to identify all important uncertainties in the longer report because those gaps in knowledge might guide decisions on future research activities. (Government of Austria)
SPM-A-828	22	41	22	44	It is noted that section 6.2 of the longer report does not address the uncertainty related to the fact that outdated emission scenarios are the basis for the AR4 and that actual emissions are significant higher compared to the scenarios accessed and that as a consequence it will be more costly or even

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					unlikely to achieve stabilization at low concentration levels. (Government of Austria)
SPM-A-829	22	43	22	44	There is a need to include at least a brief overview of the the robust findings and key uncertainties. Please remember that this report and particularly the SPM will be the only document many policy-makers will ever read an thus all the necessary information is to be included. It is better to include a couple more pages than have policy-makers making decisions without the full picture. (Government of Argentina)
SPM-A-830	22	43	22	44	Replace "A selection of policy-relevant robust findings and key uncertainties is provided in topic 6 of the longer report." by "The observed 20th century warming of the Earth, the observed increase of atmospheric CO2 concentrations, and the anticipated further warming of the Earth are examples of robust findings in this report. A number of scientific uncertainties remain, such as the role of aerosols, the value of the climate sensitivity, the detection and projection of trends in certain extremes, the importance of certain feedbacks and the dynamics of ice sheet flow. In the realm of socio-economics the cost of climate change, the costs of adaptation, the speed of technology development and long term economic growth are key uncertainties. A more extensive list of policy-relevant robust findings and key uncertainties is provided in topic 6 of the longer report." (Government of Netherlands)
SPM-A-831	22	43	22	44	Why not repeating some of the robust findings and key uncertainties here? (Government of Switzerland)

Additional material referred to in Formal Government Review Comments

2. Robust Findings and Key Uncertainties:

Proposal by the Government of China (Refer to Comment SPM-A-825)

Please provide the main robust findings and key uncertainties in order to provide a full screen of the reports. The corresponding contents are attached as a single file "robust findings and key uncertainties.doc". Please add the following text under the Point 6.

Robust findings

Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level. {WGI 3.9, SPM}

Most of the global average warming over the past 50 years is very likely due to anthropogenic GHG increases and it is likely that there is a discernible human induced warming averaged over every continent except Antarctica²⁶. {WGI 9.4, SPM}

For the next two decades a warming of about 0.2°C per decade is projected for a range of SRES emission scenarios. {WGI 10.3, 10.7, SPM}

Some systems, sectors and regions are more vulnerable to climate change than others. Vulnerable sectors are some ecosystems, low-lying coasts, water resources in dry tropics and subtropics, agriculture in low-latitude regions, and human health in areas with low adaptive capacity. Vulnerable regions are the Arctic, sub-Saharan Africa, small islands and Asian megadeltas. Within other regions, even those with high incomes, some people, areas and activities can be particularly at risk. {WGII TS.4.5}

Some adaptation is occurring now, and more extensive adaptation is required to reduce vulnerability to higher levels and rates of warming. {WGII 17.ES, 20.5, Table 20.6, SPM}

The range of stabilisation levels assessed can be achieved by deployment of a portfolio of technologies that are currently available and those that are expected to be commercialised in coming decades, provided that appropriate and effective incentives are in place. Making development more sustainable by changing development paths can make a major contribution to climate change mitigation and adaptation and to reducing vulnerability. {WGII 18.7, 20.3, SPM; WGIII 13.2, SPM}

Key uncertainties

Climate data coverage remains limited in some regions and there is a notable lack of geographic balance in data and literature on observed changes in natural and managed systems, with marked scarcity in developing countries. {WGI SPM; WGII 1.3, SPM}

Analysing and monitoring changes of extreme events including drought, tropical cyclones, extreme temperatures, and the frequency and intensity of precipitation is more difficult than for climatic averages as it requires longer data time-series of higher spatial and temporal resolution. {WGI 3.8, SPM}

Effects of climate changes on human and some natural systems are difficult to detect due to adaptation and non-climatic drivers. {WGII 1.3}

Difficulties remain in reliably simulating and attributing observed temperature changes to natural or human causes at smaller than continental scales. At these smaller scales, factors such as land-use change and pollution also complicate the detection of anthropogenic warming influence on physical and biological systems. {WGI 8.3, 9.4, SPM; WGII 1.4, SPM}

The magnitude of CO₂ emissions from land-use change and from individual methane sources remain as key uncertainties. {WGI 2.3, 7.3, 7.4; WGIII 1.3, TS.14}

Uncertainty in equilibrium climate sensitivity creates uncertainty in the expected warming for a given CO₂-eq stabilisation scenario. Uncertainty in the carbon cycle feedback creates uncertainty in the emission trajectory required to achieve a particular stabilisation level. {WGI 7.3, 10.4, 10.5, SPM}

Models differ considerably in their estimates of the strength of different feedbacks in the climate system, particularly cloud feedbacks, oceanic heat uptake, and carbon cycle feedbacks, although progress has been made in these areas. Also, the confidence in projections is higher for some variables (e.g. temperature) than for others (e.g. precipitation), and is higher for larger spatial scales and longer time averaging periods. {WGI 7.3, 8.1-8.7, 9.6, 10.2, 10.7, SPM; WGII 4.4}

Aerosol impacts on the magnitude of the temperature response, clouds and precipitation remain uncertain. {WGI 2.9, 7.5, 9.2, 9.4, 9.5}

Future changes in the Greenland and Antarctic ice sheet mass, particularly due to changes in ice flow, are a major source of uncertainty that could increase sea level rise projections. The uncertainty in the penetration of the heat into the oceans also contributes to the future sea level rise uncertainty. {WGI 4.6, 6.4, 10.3, 10.7, SPM}

Large scale ocean circulation changes beyond the 21st century cannot be reliably assessed because of uncertainties in the meltwater supply from Greenland ice sheet and model response to the warming. {WGI 6.4, 10.3, 10.7, SPM}

Projections of climate change and its impacts beyond about 2050 are strongly scenario- and model-dependent, and improved projections would require improved understanding of sources of uncertainty and enhancements in systematic observation networks. {WGII TS.6}

Impacts research is hampered by uncertainties surrounding regional projections of climate change, particularly precipitation. {WGII TS.6}

Understanding of low-probability/high-impact events, which is required for risk-based approaches to decision-making, is generally limited. {WGII 19.4, 20.2, 20.4, 20.9, TS.6}

Understanding of how development planners incorporate information about climate variability and change into their decisions is limited. This is a key uncertainty in the integrated assessment of vulnerability. {WGII 18.8, 20.9}

The evolution and utilisation of adaptive and mitigative capacity depend on underlying long-term socio-economic development pathways. {WGII 17.3, 17.4, 18.6, 19.4, 20.9}

Barriers, limits and costs of adaptation are not fully understood, partly because effective adaptation measures are highly dependent on specific geographical and climate risk factors as well as institutional, political and financial constraints. {WGII SPM}

Mitigation costs and potentials depend on assumptions about future socio-economic growth, technological change and consumption patterns. Uncertainty arises in particular from assumptions regarding the drivers of technology diffusion and the potential of long-term technology performance and cost improvements. {WGIII 3.3, 3.4}

The effects of non-climate policies on emissions are poorly quantified. {WGIII 12.2}