WMO

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

UNEP

IPCC Synthesis Report
Fourth Assessment Report

Formal Government and Expert Review of First Order Draft

EXPERT and GOVERNMENT COMMENTS – TOPIC 3

All Batches (July 27, 2007)

Review Editors:
Sandra Diaz, Argentina
Hoesung Lee, South Korea

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-1	E-3-1	A	0				This section's hyping of the negative borders on the extreme. If we take the worst effects of the worst scenarios, we should also give equal treatment to the greatest benefits of the most benign scenarios. To do otherwise provides misinformation to policy makers and violates the IPCC charter. The underlying reports do not treat benefits adequately, but are not so selective as this section. (John Everett, Ocean Associates, Inc.)	Text modified.
3-2	E-3-2	A	0				The emphasis on drought is not reasonable in the face of likely extensive growth in precip that is 3X greater than in the GCMs (http://www.nature.com/news/2007/070528/full/070528-9.html) and does not comport with the observed greening of the Earth since the 1970s, likely due to warmth, increased precip and CO2 fertilization (http://www.nasa.gov/centers/goddard/news/topstory/2003/0530earthgreen.html . Even though the Nature article is new information, it should be acknowledged here because the wrong message is being given, and greener Earth observation is from a 2003 paper, not adequately treated in the IPCC analysis or in the tuning of GCMs. (John Everett, Ocean Associates, Inc.)	Rejected. The water box in 3.3 discussed why the discussion of future changes in drought is important.
3-3	E-3-3	A	0				message is clear. It is fine with the draft (Hisayoshi Morisugi, Japan Research Institute)	Noted.
3-4	E-3-4	A	0				In my opinion Topic 3 is the poorest section of the Synthesis report, which is a pity because it is also probably the most important section. It seems to be very uneven in respect of the quality of its content and gives me the impression, rightly or wrongly, that it is a collation of different bits of information written by different people with different perspectives, with little editorial rigour being applied to ensure consistency. It also gives me the impression, rightly or wrongly, that the selection process had a political bias, with greater emphasis being given to information on negative impacts than on positive impacts. This may reflect the process by which it has been produced and the trade-offs between individuals that has been necessary to get consensus. Unfortunately the overall result in my view is that in a significant number of instances objective science has been superceded by subjective politics. I believe that while one of the major purposes of the IPCC reports is to underpin political action, it is important to maintain as far as possible a strict adherence to scientific objectivity in the IPCC reports. Not to do so is to weaken the defences against the detractors of the IPCC reports, the most serious group of whom are fellow scientists who seize on subjective interpretations and inconsistencies, and whose views are then used politically to support those who, largely because of vested interests, oppose taking serious action in regard to anthropogenic climate change, particularly in relation to mitigation. (George Walker, Aon Re Asia Pacific)	Text modified.
3-5	E-3-5	A	0				I am missing in this topic a mentioning of the risks associated with biotic feedbacks, such as a diminishing carbon sequestration service from land ecosystems or even terrestrial biosphere becoming a net C source. Similarly impacts from a changing atmosphere and climate change are affecting ocean C uptake as well. All of these effects amplify climate change and are of key relevance. Compare WGII SPM, p. 6, first par., bullet 2 in TS (FGD, p. 20, section	Text modified to make carbon feedbacks on the climate system clearer.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							"Ecosystems" in TS.4.1), bullet 2 of ES of WGII chapter 4, and section 4.4.1 (Fig. 4.2), 4.4.10, and 4.4.11. While it is true that we discuss this point on SPM p. 8, lines 10-15, this is merely done in the manner this topic has been treated by WGI in chapter 7, but this text ignores entirely what WGII chapter 4 has contributed. Notably chapter 4 has considered more literature than just the Friedlingstein et al., 2006 study and discusses in its assessment also the role of other factors, such as land-use change, which tend to be neglected in the studies WGI chapter 7 discusses. This appears to be a major weakness of the topic 3 and I see much need for improvement. This comment does also pertain to the SPM and topic 2. (Andreas Fischlin, Integrative Biology - Systems Ecology)	
3-6	E-3-6	A	0				Ecosystems could profit from robust policy responses attempting to maximize resilience (WG II, sections 4.6, 4.7). I quote from our ES (WGII, chapter 4, end of bullet 3): "Current conservation practices 1 are generally poorly prepared to adapt to this level of change, and effective adaptation responses are likely to be costly to implement (high confidence) [4.4.11, Table 4.1, 4.6.1]." Moreover, I believe similar things can be stated for other systems than ecosystems as well. Please consider in this context also my comment on SPM on "no regret policies" and resilience preserving and/or enhancement. (Andreas Fischlin, Integrative Biology - Systems Ecology)	Text modified to make ecosystem response clearer.
3-7	E-3-7	A	0				CC impacts under different scenario are clearly explained - no specific comments (Michael Brady, Natural Resources Canada - Canadian Forest Service)	Noted.
3-8	E-3-8	A	0				I haven't seen anywhere statements about the fact that if temperature increases, dissoled oxygen decreases. This may have significant environmental impact (fresh waters biodiversity etc) (Michel Rixen, NATO Undersea Research Center)	Space limitations hinder including this topic as does the lack of clear statements in the approved WG SPMs.
3-9	G-3-1	A	0				We suggest the topic would be easier to read if its scope and structure were set out briefly in introductory text, before section 3.1, e.g.: "In this topic, we consider what the future emissions of greenhouse gases might be, the projected changes in climate, and the impacts of these climate changes." (Government of New Zealand)	The scope seems clear from the title. Space limitations hinder adding more details.
3-10	G-3-2	A	0				Topic 3: The consideration of how certain emission scenarios link to impacts is clearly insufficient. Reference is made to the emission scenario's in the SRES but at no point the policy maker gets an insight in what these emission scenarios really represent in emission profiles over the coming century. Furthermore no visual representation is given between these emissions profiles and the impacts both on temperature and variables such as represented in table SPM-2. The TAR SYR had a much better consideration of the link between emission mitigation scenarios (e.g., TAR SYR Fig. SPM-3 made the link with baseline scenarios and Figure SPM-6 made the link with stabilisation scenarios). A similar exercise needs to be included in the this topic in order to facilitate interpretation by policy makers of the overall findings.Table 3.1 contains no information about the emission scenarios ; Figure 3.1 contains no information on projected temperature ranges for	A new figure is added to section 3.1 to illustrate and add to the discussion of the SRES emission scenarios.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							emission scenarios; and Table 3.2 contains no information on projected temperature ranges for emission scenarios either. This is substantially less informative compared to the TAR SYR, which had a much better consideration of climate scenarios (e.g., TAR SYR Fig. SPM-6/6.1 and Fig. 6.3). (Government of European Community)	
3-11	G-3-3	A	0				General comment. Not enough attention is paid to the results from GCMs (Government of Russian Federation)	The whole of section 3.2 presents results from AOGCMs; section 3.3 presents impacts of climate changes simulated by the AOGCMs.
3-12	G-3-1	B	0				This topic should include quantitative estimates of the damages due to climate change (as in TAR) and discuss the limitations of this data. (Government of United Kingdom)	Topic 4 and 5 discuss the costs of the climate changes presented in topic 3.
3-13	G-3-2	B	0				the idea of convexity of impacts – i.e. the increase in severity of impacts with temperature – should come through more clearly (Government of United Kingdom)	Text modified.
3-14	G-3-1	C	0				" More emphasis should be put on the impacts in this description of the projections" (Government of Belgium)	Text modified,
3-15	E-3-9	A	1	1	1	1	"…and its impact in the near and long term…" (Michel J. Rossi, Ecole Polytechnique Fédérale de Lausanne)	Rejected. Title cannot be modified.
3-16	G-3-4	A	1	1	1	2	Please remove the words 'under different scenarios' from the title. They are not needed (given the existence of section 3.1) and are confusing. (Government of New Zealand)	Rejected. Title cannot be modified.
3-17	G-3-5	A	1	1	14	32	description of impacts of climate change on infrastructure are missing in the whole text of this chapter. A para on this issue should be added especially as at page 12 lines 23-26 changes of impacts on infrastructure are envisaged and in topic 4 table 4.1 adaption measure for several infrastructure sectors are mentioned . (Government of Germany)	Now, the word "infrastructure" appears seven times in Topic 3. Six times it has to do with impacts of climate change on infrastructure. However, space constraints do not allow the authors to go into details. Infrastructure, in the context of adaptation is also related to topic 4.
3-18	E-3-12	A	1	6	1	12	Because the emission scenarios are so fundamental to understanding the whole of Topic 3 I think Note 2 at the bottom of the page needs expanding to describe to lay people in qualitative terms what the actual number of 600, 700, etc mean - high, low, average etc.	Text modified and Box on SRES added.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(George Walker, Aon Re Asia Pacific)	
3-19	E-3-11	A	1	6	2	7	For greenhouse gases, it is true that "baseline emission scenarios published since the IPCC Special Report on Emission Scenarios (SRES), are comparable in range to those presented in SRES". However, a recent emission scenario by M. Amann and co-workers gives qualitatively different projections for the emissions of NOx and CO. Based on the current legislation, the new emission scenario projects a decrease rather than an increase of the global emissions of NOx and CO during the 21st century. This has important consequences for the indirect radiative forcing exerted by these gases through their impact on methane and tropospheric ozone. Simulations with a chemistry transport model using this new emission inventory show an increase of the atmospheric methane lifetime by 2.8-16.7% between 2000 and 2050, depending on the assumed change in the methane concentration (either zero or +600 ppbv). It is true that this new scenario has not been used in the studies quoted in WGI 7.4. In particular Stevenson et al. (2006) estimate only a modest increase of 2.7% due to emission changes (a.o. increasing NOx) between 2000 and 2030 based on an ensemble of 25 model simulations (in which methane increases by 330 ppbv). In the current draft, this section only discusses emission scenarios for greenhouse gases. To some extent this may be justified by the results presented in WGI 7.4, as explained above. However, the latest insights indicate that air pollution legislation is more important for climate change than suggested by the current text. (Twan van Noije, Royal Netherlands Meteorological Institute (KNMI))	Text modified to discuss aerosols.
3-20	E-3-10	A	1	6			Perhaps restructure sections 3.1-3.2. The discussion now jumps back and forth SRES and later emission scenarios on one hand, and emissions scenarios available and used in climate projections on the other. A possibility might be to move the 3.1-paragraph on page 1, lines 20-24, to (3.2). (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Accepted, third paragraph removed from text and box on SRES added.
3-21	E-3-13	A	1	8	1	8	The phrase: "With current climate change mitigation policies…" must be much clearly stated: Does it refer to Kyoto-driven policies? Voluntary programs at national and/or international levels? Isolated and/or combined actions, measures and policies emerging from environmental groups? (Germán Poveda, Universidad Nacional de Colombia)	Rejected, details can not be provided due to space limitation
3-22	E-3-14	A	1	8	1	8	Please rewrite as " With current spread and depth of climate change mitigation policies and sustainable development" (Joyashree Roy, Jadavpur University)	Rejected, approved text from SPM WGIII
3-23	G-3-7	A	1	8	1	8	Replace "With" with "Despite" to show that while current policies are having an impact they are currently not sufficient to halt emissions growth. (Government of Australia)	Rejected, approved text from SPM WGIII
3-24	G-3-6	A	1	8	1	12	This paragraph does a poor job of making the connection between "current climate change mitgation policies and related sustainable development policies" and the	Rejected, SPM approved text, and the footnote clarifies the

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							"baseline scnearios". This needs to be clarified. There are two possible suggestions: 1) that the word baseline either be removed from here, and "emissions scenarios" be used solely, or 2) that the bracket used in the SYR SPM (i.e., non-mitigation), be added here as well. (Government of Canada)	baseline / no-policy issue
3-25	G-3-8	A	1	9	1	9	The use of "will" fails to use IPCC uncertainty terminology. Is "virtually certain" too weak? (Government of Australia)	Rejected, approved text from SPM WGIII
3-26	E-3-15	A	1	10	1	10	you may omit the "s" at the end of "emissions" (Harald Pauli, University of Vienna & Austrian Academy of Sciences)	Rejected, approved text from SPM WGIII
3-27	G-3-9	A	1	10	1	10	The intent of this sentence ("Baseline scenarios … ") would be clearer if the word 'recently', and a coma, were inserted after the word 'published, thus: "Baseline emissions scenarios published recently, since the IPCC Special Report …". (There is otherwise a sense, or more of a sense, that they are comparable to the SRES scenarios BECAUSE of the SRES scenarios, as though those that have been published since since SRES have been forced by SRES to follow a particular range. (Government of New Zealand)	Rejected, approved text from SPM WGIII
3-28	E-3-16	A	1	11	1	11	The word "Emission' should be "Emissions" (i.e its plural form as is always defined in SRES) (Richard Anyah, Rutgers University)	Accepted
3-29	G-3-10	A	1	11	1	11	To provide more context for readers, the authors should note that the SRES was published in 2000. (Government of Australia)	Accepted, added box on SRES clarifies this point.
3-30	E-3-17	A	1	11			SRES: confusing acronyms.. (Michel Rixen, NATO Undersea Research Center)	Added to glossary
3-31	G-3-13	A	1	14	1	14	Should this read: "There is high agreement and much evidence that global baseline 'anthropogenic' GHG emissions…?" (Government of Australia)	Text redrafted to be consistent with WGIII SPM language.
3-32	G-3-12	A	1	14	1	15	The authors need to explicitly note (as done in WG3 SPM at page 4) that the 25-90% increase is based on the SRES and that "these" scenarios are the SRES scenarios. (Government of Australia)	Accepted
3-33	G-3-14	A	1	14	1	15	See above comment re: removing the word "baseline" from here or adding the brackets for "non-mitigation". (Government of Canada)	Text redrafted to be consistent with WGIII SPM language.
3-34	E-3-18	A	1	14	1	17	I agree that it currently looks as though fossil fuels will maintain their dominant position in the global energy mix to 2030, but the text should add a caveat that there is always a possibility of	Rejected, text refers to the SRES scenarios, and is thus factual.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							a faster transition to another energy source. One of the main reasons for technology 'lock-in' is that there is a substantial investment in infrastructure...so, for example, the fact that a hydrogen-powered vehicle is available does not help if there is no national chain of hydrogen filling stations. This is why so much innovation happens within the parameters defined by existing technology, and results in incremental improvement (such as increases in the efficiency of internal combustion engines, or a move to flex-fuel options). However, some innovations (such as the use of synthetic organisms to manufacture ethanol, for example) could be largely accommodated within the existing infrastructure, so it should be possible to make a faster switch-over. See also Topic 5, page 10. (Anthony Clayton, University of the West Indies)	
3-35	G-3-15	A	1	14	1	18	Given the near- and long-term foci in this topic, consider including 2100 (and 2050 if possible) increases in emissions. (Government of United States)	Accepted, a figure showing emissions projections of SRES and recent baseline scenarios were added.
3-36	E-3-19	A	1	14	1	27	All of the information in this text refers to the SRES scenarios, but the order in which it is presented is confusing. It would make more sense to start by introducing the SRES scenarios, then talk about the 2000-2030 information, then about the longer term. (See Para 6 of WG III's approved SPM for the attribution of the 2000-2030 information to SRES). In light of this, this section should rewritten as follows: "The SRES (Special Report on Emission Scenarios) emissions projections are widely used in recent assessments of future climate change (Section 3.2) and their underlying assumptions with respect to socio-economic, demographic and technological change serve as inputs to many recent climate change vulnerability and impact assessments. These scenarios project that global baseline greenhouse gas emission may increase by 25-90% by 2030 relative to 2000. In these scenarios fossil fuels are projected to maintain their dominant position in the global energy mix to 2030 and beyond. Hence, CO2 emissions from energy use are projected to grow by 40-110% over that period. [WG I 10.1, WG II 2.4, WG III 1.3, 3.2, SPM] (new paragraph) Longer term projections of future climate change are mostly based on SRES, but greenhouse gas emission ranges in recent long-term baseline scenarios are comparable to those presented in the SRES. ..." Since these are statements of fact about a single set of information, no confidence statement should be attached. The authors are merely reporting what is in the SRES publication. (Robert Siveter, IPIECA)	Accepted, text has been restructured and box on SRES has been added.
3-37	G-3-16	A	1	14	1	27	All of the information in this text refers to the SRES scenarios, but the order in which it is presented is confusing. It would make more sense to start by introducing the SRES scenarios, then talk about the 2000-2030 information, then about the longer term. See paragraph 6 of the WG3 SPM for the attribution of the 2000-2030 information to SRES. (Government of United States)	Accepted, text has been restructured and box on SRES has been added
3-38	G-3-11	A	1	14	14	18	This section is weak in its treatment of projections of future emissions. We suggest adding the following 2 lines that provides valuable information to policy makers. "In the same period, CO2 emissions from energy use are projected to grow by 45-110%, with 2/3	Rejected, due to space limitation

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							to 3/4 of the projected increase coming from non-Annex I regions. Non-Annex I per capita energy CO2 emissions are projected to remain substantially lower than Annex I, while Annex I economies are projected to have lower energy use per unit of GDP." (From WG3 page SPM-3) (Government of Canada)	
3-39	G-3-17	A	1	15	1	15	Replace "may" by "will" : the uncertainty is characterized by "high agreement, much evidence". The use of may confuse the issue (Government of France)	Text has been redrafted
3-40	E-3-20	A	1	15	1	16	The sentence should be rephrased as follows: "In these scenarios, effective policies to promote low carbon and renewable energy sources are not foreseen and fossil fuels are projected to maintain heir dominant position in the global energy mix to 2030 and beyond." Reason: see justification in comment n°2. [TSU note: See Comment E-SPM-563-A] (Christian Kjaer, European Wind Energy Association (EWEA))	Reject, WGIII approved text
3-41	E-3-21	A	1	15			Saying there is "high agreement and much evidence" that something "may" happen is a very weak statement. Should "may" be replaced by "will"? Or by "are likely to" - though "likely" is used in a specific sense elsewhere. (Adrian Simmons, European Centre for Medium-Range Weather Forecasts)	Accept, text changed to be consistent with SPM WGIII
3-42	E-3-22	A	1	16	1	16	Emissions to grow 40-110% by 2030? Seems beyond extreme. Peak oil and coal production has already passed in much of the world. Globally, peak oil has occurred or will occur soon and coal production should peak in the next decade or two. There are forecasts for more or less time before effective depletion of resources, at any price, but none that sustain extensive production through the end of the century. (Note: I spent considerable time acquiring and reviewing projections for my website (http://www.ClimateChangeFacts.info). The projections are all over the map until 2050, then converge towards sharply lower production later in the century, although most credible sources , such as US Energy Information Agency-with an almost uniquely positive view, only will project 2-4 decades.) (John Everett, Ocean Associates, Inc.)	Reject, statement not consistent with the scenario literature in WGIII including SRES as it ignores the existence of unconventional fossil resources.
3-43	G-3-18	A	1	20	1	24	This paragraph would be better placed as a footnote explaining the emission scenarios used in the AR4, as currently it breaks the flow of the narrative. (Government of Australia)	Accepted, paragraph deleted
3-44	G-3-19	A	1	20	1	24	The location of this paragraph implies more consistency than exists between new socio-economic and emissions scenarios and impacts scenarios. The similarity in global emissions between SRES and new emissions scenarios masks differences in regional population and GDP per capita projections between the new scenarios and SRES that are important to impacts and vulnerability estimates. To minimize this confusion, suggest moving the paragraph after the next paragraph, and also recommend changing the word “many” on line 23 to “some”—noting the lack of consistency across impacts studies in using the same socio-economic characterizations and the fact that feedbacks from	Accepted, paragraph deleted

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							impacts to the socio-economic condition are generally not accounted for. (Government of United States)	
3-45	G-3-20	A	1	20	1	24	The first two lines (20, 21) in this paragraph appear to contain redundant text. The first part of the second sentence could just be omitted, thus: "Longer term projections of future climatic changes to 2100 are mostly based on SRES (Section 3.2), and their underlying assumptions with respect to socio-economic, ..." (Government of New Zealand)	Accepted, paragraph deleted
3-46	E-3-26	A	1	26	1	26	Please reconstruct the sentence a "Ranges of green house gas emissions in recent ….." (Joyashree Roy, Jadavpur University)	Accepted, sentence improved for readability
3-47	E-3-23	A	1	26	1	27	This sentence is misleading. There is hardly any new scenario development, and none independent of SRES. The suggested consensus is for lack of challengers, not because SRES is in any sense robust. (Richard Tol, ESRI)	Reject, many scenarios in the literature are not dependent on SRES (eg., EMF21, USCCP to name just two major modeling comparison projects)
3-48	G-3-21	A	1	26	1	27	The first sentence (lines 26, 27) in this paragraph appears to be redundant, since it duplicates the statement made in the bold text above (this page, lines 10 and 11). It should be omitted. (Government of New Zealand)	Accepted
3-49	E-3-24	A	1	26		27	this line is redundant to lines 11-12 "Greenhouse gas emissions ranges in recent long-term baseline scenarios are comparable to those presented in the Special Report on Emission Scenarios (SRES) ." (Bruce McCarl, Texas A&M Univesity)	Accepted.
3-50	E-3-25	A	1	26			Replace "emissions" by "emission" (Adrian Simmons, European Centre for Medium-Range Weather Forecasts)	Rejected. Text seems clear.
3-51	E-3-27	A	1	26			correct "emissions" to "emission" (Hartmut Grassl, Max Planck Institute for Meteorology)	Rejected. Text seems clear.
3-52	E-3-28	A	1	27	1	27	There is not necessary to repeat the defonition of SRES, Please just use the abberivation (Caroline Leck, Department of Meteorology)	Accepted
3-53	E-3-29	A	1	27	1	27	SRES is already spelled - line 11 of this page (Antoaneta Yotova, National Institute of Meteorology and Hydrology)	Accepted
3-54	G-3-22	A	1	27	1	27	Editing: there is no need to expand SRES here (Government of Australia)	Accepted
3-55	G-3-23	A	1	27	1	27	Add “however” after “Studies since SRES…” On line 28, strike “. This concerns” and insert a comma. (Government of United States)	Text changed to be consistent with SPM WGIII

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-56	E-3-30	A	1	27			Remove 'the Special Report on Emission Scenarios'. This mentioning is not the first. (Roman Corobov, Modern institute for humanities)	Accepted
3-57	E-3-31	A	1	28	1	29	This sentence is not true. There are more recent population scenarios that are higher than SRES. The fact that this was ignored in the underlying chapter, despite repeated protests by reviewers, is no excuse for repeating the same mistake again. (Richard Tol, ESRI)	Rejected, text consistent with SPM WGIII and underlying chapters summarizing the relevant literature.
3-58	G-3-24	A	1	28	1	30	This sentence is not clear. Please rewrite it. (Government of China)	Text changed to be consistent with WGIII SPM
3-59	G-3-25	A	1	30	1	32	Insert "However," at the start of this sentence before "there", to link the two sentences and to tie the discussion in the text more closely to footnote 3. (Government of Australia)	Text changed to be consistent with WGIII SPM
3-60	E-3-32	A	1	34	1	34	This is really a comment on the Glossary - The Glossary provides information on PPP but not Market Exchange Rates (MER) (Ian Church, Yukon Government)	Added MER to glossary.
3-61	E-3-33	A	1	34	1	34	In the footnote of the page 1(there is no line number), there are descriptions such as 600,700,850….1550 ppm CO2 equivalent respectively. I think these values were calculated by WG1 method, in other word, WG1 people consider all GHGs. To avoid of confusion related to difference of CO2 equivalent concentration, I recommend more appropriate description. (Koki Maruyama, Central Research Institute of Electric Power Industry (CRIEPI))	Rejected, description seems clear and can't be changed without precise instructions
3-62	E-3-34	A	2	1			This is still the most indigestible topic because of the difficulties for the reader in understanding the implications of the different scenarios without any clear and simple explanation of what is the basis of assumptions underlying the scenarios presented in TAble 3.1 and Figure 3.1. Something is required by way of improved presentation for the reader who has not read the original WG report. (Edward Clay, Overseas Development Institute)	Accepted, box on SRES and figure showing emissions pathways was added.
3-63	E-3-35	A	2	1			e.g' in italic? (Michel Rixen, NATO Undersea Research Center)	Text deleted.
3-64	G-3-28	A	2	4	2	4	"While these new emissions scenarios…" is an indefinite reference. Perhaps qualify by substituting "post-SRES" for "new". (Government of United States)	Accepted.
3-65	G-3-26	A	2	4	2	7	While there is consistency in terms of global emissions, is this statement true at the regional and sectoral scale given known revisions to regional population and GDP per capita projections? (Government of United States)	The underlying chapter in WGIII has focused primarily on implications for global emissions as literature on regional trends is relatively scarce. A few studies indicate some deviations on

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
								regional scale (ALM) with minor implications however for globally aggregated emissions. Space limitations hinder including these details here.
3-66	G-3-27	A	2	4	2	7	The second half of this paragraph seems repetitive of the discussion in the preceding paragraph. (Government of Australia)	Accepted, Third paragraph on page 1 deleted.
3-67	E-3-36	A	2	4			the word these in the sentence "While these new emissions scenarios" is an indefinite reference (Bruce McCarl, Texas A&M Univesity)	Accepted, Text modified.
3-68	E-3-37	A	2	6	2	6	The term "future pathways" is undefined. Does it refer to development pathways, emission trajectories, or something else? (Robert Siveter, IPIECA)	Accepted, text refers to “development pathways”
3-69	E-3-38	A	2	7	2	7	The word 'the' should inserted before absence (Richard Anyah, Rutgers University)	Accepted.
3-70	G-3-29	A	2	8	2	8	Add information on comparison of SRES scenarios with observed trends. (Government of Germany)	Rejected, due to space limitations. Observed trends are discussed in topic 2.
3-71	G-3-30	A	2	11	2	11	Put the word “climate” before “simulations” (Government of United States)	Accepted.
3-72	G-3-32	A	2	11	2	11	For clarity insert "climate change" before "simulations". (Government of Australia)	Text modified.
3-73	G-3-31	A	2	11	2	12	For clarity, add "climate" before "simulations". (Government of European Community)	Text modified..
3-74	E-3-40	A	2	11	2	14	delete this paragraph (Suam Kim, Pukyong National University)	Accepted..
3-75	E-3-39	A	2	11			put the word "climate" before "simulations" (Bruce McCarl, Texas A&M Univesity)	Paragraph deleted.
3-76	G-3-33	A	2	16	2	16	We suggest replacing "… assessed projections have suggested global …" with " … assessments have projected global … ". This formulation highlights that the comparison is between the projections and the observations, rather than suggestions and the observations. (Government of New Zealand)	Reject. Approved WGI SPM language.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-77	E-3-41	A	2	16	2	20	The information in this section is very valuable, and should be printed in bold. The previous section, however, is not so important for the (lay) reader, and could be printed as a normal text. (Zoltán Somogyi, Hungarian Forest Research Institute)	Accepted.
3-78	G-3-34	A	2	16	2	20	The information in this section is very valuable, and should be printed in bold. The previous section, however, is not so important for the (lay) reader, and could be printed as a normal text. (Government of Hungary)	Accepted.
3-79	E-3-42	A	2	16	2	22	Distinguish between land and ocean (Germán Poveda, Universidad Nacional de Colombia)	Rejected. Space limitations and using approved WGI SPM language.
3-80	E-3-1	B	2	17			The upper rate of change to 2005 (0.3°C) is difficult to countenance from examples in the literature, given that it comes from the FAR. This number is out of context here because it implies a 0.45°C increase from 1990 (containing no allowance for sulphate aerosols), whereas the upper rate from the TAR (with aerosols) is closer to 0.22°C. Even allowing for the slight increase in AR4 (which is very hard to estimate from the information made available to date), the projected rate would not exceed 0.25°C rounded to the nearest 0.05°C. Findings should be consistent with WGI TS.26 and Rahmstorf et al. Science 316 (5825): 709 (though the latter was too late for inclusion in AR4). Over the next two decades, the rate is likely to increase to ~0.3°C if sulphate aerosols remain lower than SRES projections, consistent with some of the projections of aerosols in Figure 3.12 WGIII. This is supported by observations to date and the B2 and A1T scenarios. It will exceed this rate if current post AR4 mession projections for India and China are added and sensitivity exceeds 3°C. To me, this suggests short-term projections occurring at a rate of <0.2°C decade are unlikely and that if sulphate emissions are curbed, the rate of warming will accelerate over the short term. This is very important for adaptation (particularly ongoing, or incremental adaptation), which has to respond to the rate of change. (Roger Jones, CSIRO)	The FAR, SAR and TAR projections are what they are The purpose here is to note that the past IPCC projections of global mean temperature are not inconsistent with the observations..
3-81	G-3-35	A	2	19	2	20	Doesn't the statement more or less hold for mitigation scenarios as well, since this is climate change to which we are already committed? (Government of United States)	Text modified.
3-82	E-3-44	A	2	22	2	22	change 'Figure 3.1' to 'Table 3.1 and Figure 3.1' (Suam Kim, Pukyong National University)	Rejected. Table 3.1 shows the changes for the end of the 21st century.
3-83	E-3-43	A	2	22			reference to Figure 3.1. before table 3.1? (Michel Rixen, NATO Undersea Research Center)	Rejected. Table 3.1 shows the changes for the end of the 21st century

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-84	G-3-36	A	2	24			Section 3.2.1: Many stakeholders need global warming and sea level rise ranges for other timeframes in the 21st century, e.g. 2020, 2050, 2080, while these were not provided in the WG1 SPM they can be derived from WG1 Chapter 10 (e.g. see Table 10.5). It would be useful if the Synthesis Report could publish this information. (Government of Australia)	The uncertainty estimates were only assessed for the 2090-2099 time period in the WG1 report. The temperature changes for some scenarios can be estimated from figure 3.1. The simple model (MAGICC) is not used in AR4 to produce productions (see 10.A.1).
3-85	G-3-37	A	2	25	2	25	It would be very effective to have the discussion of committed climate change at the outset of Section 3.2.1. (Government of United States)	The text has been modified.
3-86	G-3-40	A	2	30	2	30	Is “likely” in this context different from “likely” in the statistical context? If so, it should not be italicized here; to further reduce ambiguity, use “probable”… (Government of United States)	This text is approved WGI SPM language.
3-87	E-3-45	A	2	30	2	37	Distinguish between land and ocean (Germán Poveda, Universidad Nacional de Colombia)	That assessment was not performed by WGI. Text is approved WGI SPM language.
3-88	G-3-38	A	2	30	2	37	Should explicitly state what period these increases are for (2100, 2090 – 2099) and what’s the anomaly in reference to (1990?)? (Government of United States)	Accepted.
3-89	G-3-39	A	2	30	2	37	It should be mentioned that the warming estimates given here refer to warming during the 21st century rather than over preindustrial levels. (Government of European Community)	Accepted.
3-90	G-3-41	A	2	31	2	33	The sentence “Results…information.” is unnecessary. (Government of United States)	Accepted.
3-91	G-3-42	A	2	31	2	33	The sentence "Results for different … loss of policy-relevant information.", while expressing an admirable intent, does not seem to us to be necessary. Just do it. So we suggest omitting the sentence. (Government of New Zealand)	Accepted.
3-92	G-3-43	A	2	33	2	33	Is “likely” in this context different from “likely” in the statistical context? If so, it should not be italicized here; to further reduce ambiguity, use “probable”… (Government of United States)	The usage is correct in the text.
3-93	E-3-46	A	2	33	2	34	Could omit the "Best estimates and likely ranges for globally average surface air warming for six SRES emissions marker scenarios are given in this assessment" bit, as it more or less	Text modified.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							repeats what is already stated just above. (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	
3-94	G-3-44	A	2	34	2	35	It is not clear whether the assessment refered to in " … for six SRES ... are given in this assessment and are shown in Table 3.1 ..." is the SYR or the AR4 as a whole. In either case, the reference seems unneccessary and we suggest the statement read simply : " … for six SRES ... are shown in Table 3.1 ..." (Government of New Zealand)	Accepted.
3-95	G-3-45	A	2	35	2	35	The words "For example" starting this sentence are unneccessary. We suggest: "The best estimate for the low scenario …". (Government of New Zealand)	The examples have been deleted due to space limitations; they appear in table 3.1.
3-96	G-3-46	A	2	35	2	35	Suggest removing “including carbon feedbacks”. It is confusing in this location and is discussed adequately in the next paragraph. It might be useful to add it to the header of Table 3.1. (Government of United States)	Rejected. The phrase “including carbon feedbacks” is needed here for temperature, since the sea level rise projections do not include those feedbacks. Moving the phrase to the title would confuse the reader since the temperature changes include carbon feedbacks and the SLR changes do not. The table and text are from the approved WGI SPM.
3-97	G-3-47	A	2	35	2	35	"….including SOME carbon CYCLE feedbacks". Suggest adding words in caps. (Government of Canada)	Text deleted..
3-98	E-3-47	A	2	35	2	37	What is the time period for these projections? (The end of the 21st century?) (Henry Janzen, Agriculture and Agri-Food Canada)	Text deleted
3-99	G-3-49	A	2	36	2	37	The authors need to specify that these ranges are for 2090-2099 vs 1980-1999. (Government of Australia)	Text deleted
3-100	G-3-48	A	2	36			This is the first reference to the various SRES scenarios. It would be helpful if there was a more detailed footnote (above just referring readers to the TAR) or a special Box to provide a summarized overview of what all of these scenarios are and what they mean, as well as provide a link back to the explanation where the scenarios show up in subsequent sections/chapters. (Government of Canada)	Accepted. More information on the SRES scenarios will be included in 3.1.
3-101	E-3-48	A	2	37	2	37	It woud be useful to add that the temperature increases refer to "end of the 21st century". (Annarita Mariotti, ENEA)	Text deleted.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-102	E-3-49	A	2	37	2	37	It is useful to mention the time horizon . Before WGI 10.5 it is useful to add "over a period of 100 years." (Joyashree Roy, Jadavpur University)	Text deleted.
3-103	G-3-50	A	2	37	2	37	Add text to the end "…at 2090-2099 relative to 1980-1999." (Government of United States)	Text deleted.
3-104	G-3-51	A	2	39	2	43	The may be oppertunities to impove clarity of text (Government of Ireland)	Noted. Text is added to improve the clarity.
3-105	E-3-51	A	2	40	2	40	It is said that "they are not directly comparable", then they are indeed compared. This should be made clearer. By the way: why shouldn't they be comparable? (Marco Mazzotti, ETH Zurich)	The text is modified to note more clearly the reasons for the incompatibility of the estimates..
3-106	G-3-52	A	2	40	2	40	The TAR range of 1.4-5.8 was for 2100 relative to 1990. The authors should, therefore, refer to footnote 4. (Government of Australia)	Accepted.
3-107	E-3-50	A	2	40			you say "they are not directly comparable": then compare them. Perhaps you should say "they are not exactly the same" (Bruce McCarl, Texas A&M Univesity)	Text modified to make differences clear.
3-108	G-3-53	A	2	42	2	42	It is not clear why the authors have said " ... because the broader range of models now available suggests …" instead of merely " … because the models now available suggest …". Are they intending to imply that the result is a consequence of having more, statistically different, models? Otherwise the fact that the range of models is now broader, seems irrelevant to the point of the sentence. We suggest the shorter version " … because the models now available suggest …" is used. (Government of New Zealand)	The phrase is approved WGI SPM language.
3-109	E-3-52	A	2	43	2	45	Change this sentence to:"A range of climate models project that by 2100 carbon cycle feedbacks could add between 20 and 220 ppm to atmospheric CO2 concentration and between 0.1 and 1.5 C to temperature rise." The sentence in the draft is a direct quote from WG I's SPM, but it is a poor reflection of the underlying report. WG I, Chapter 10.4.1 discusses the effect of carbon cycle feedbacks on projected temperature rise in detail. Their magnitude is highly uncertain and the proposed sentence, which is drawn from that section of WG I's report, indicates that high level of uncertainty. Simply presenting average A2 results as is done in the draft is highly misleading. (Robert Siveter, IPIECA)	Accepted.
3-110	G-3-54	A	2	43	2	45	The authors need to explicitly state that the climate-carbon cycle feedback has been factored into the AR4 projections. (Government of Australia)	The text in the preceding paragraph and in the table make this point clear.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-111	G-3-55	A	2	43	2	45	Change this sentence to: “A range of climate models project that by 2100 carbon cycle feedbacks could add between 20 and 220 ppm to atmospheric CO2 concentration and between 0.1 and 1.5℃ to temperature rise.” The sentence in the draft is a direct quote from the WG1 SPM, but it is a poor reflection of the underlying report. WG1 Section 10.4.1 discusses the effect of carbon cycle feedbacks on projected temperature rise in detail. Their magnitude is highly uncertain and the proposed sentence, which is drawn from that section of the WG1 4AR, indicates that high level of uncertainty. Simply presenting average A2 results as is done in the draft is highly misleading. (Government of United States)	Accepted.
3-112	E-3-2	B	2	43	2	45	I have a great deal of trouble with carbon cycle uncertainties being factored into global warming as an expert judgement of a single proportional change made without reference to the potential of increasing warming to non-linearly increase feedback effects. (Two major types of uncertainties with different levels of confidence have been incorporated into global warming projections – the model-based projections are of higher confidence than the carbon cycle uncertainties). Section 2.3, where the carbon cycle uncertainties are briefly discussed suggest they are a feedback mechanism, where the feedback is subject to warming. This would suggest that carbon cycle uncertainties will increase with warming, but they have been judged to be proportional to mean global temperature increase. They may well be non-linear with a lesser expression below a given threshold. Such information will affect how risk is judged. (Roger Jones, CSIRO)	The assessment of WGI is approved.
3-113	E-3-53	A	3	1	3	3	This Table is VERY MISLEADING as the context of the changes in temperature and in sea level are very different. To derive the temperature estimates, a wide range of emissions scenarios and a wide range of likely climate sensitivity are used (with the latter accounting for both processes we understand and those we do not). This gives a quite wide range that very likely encompasses the change that is likely to happen. For the sea level estimates, this is not the case--while the wide range of emissions scenario is used, the numerical values include only those processes that we understand, and exclude the likely influences of process we do not--and this is particularly egregious as these excluded terms are, based on paleoclimatic experience, likely to be the largest contributors to long-term des level change. Just adding in the phrase "excluding future rapid dynamical changes in ice-flow" is not adequate--it gives no sense of the relative magnitude and importance of the terms--and that it is unlikely the climate models could come at all close to modeling the rates or amounts of sea level rise that we know occurred. I think it is absolutely essential to redo this table to convey the serious limitations of the sea level estimates for it is misleading and even improper to be conveying information this way--it is like suggesting a pedestrian watch out for a banana peel on the sidewalk when an uncountable number of tonnes of bricks are hurtling down at them. The Eemian had a 4-6 m sea level rise in a relatively short interglacial--and was only a degree or so warmer on a global basis. Coastal managers need to be made aware that the potential exists for a much greater rise, and that our existing capabilities for making estimates cannot explain about 40% of the rise since 1961 and the modeling capabilities cannot explain the recent acceleration in the rate (sure, we can explain it with observations of heat uptake--but do the models represent that?).	The table is approved in the WGI SPM. The analog of the future climate changes to past climates is very difficult. The exact forcings (e.g. aerosols) and timing of the past climate changes are not well known. The wording for the land ice uncertainties found in the paragraph below the table is clarified in the new draft.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							The IPCC is going to very much regret having used this type of formulation--it does not come close to encompassing the range of expert opinion about the potential for larger rates and amounts of sea level rise. (Michael MacCracken, Climate Institute)	
3-114	G-3-56	A	3	1	3	7	Delete constant concentration data in Tables 3.1, 3.2 and Figure 3.1. While such experiments are academically interesting they are obviously unrealistic and should not be incorporated in figures describing projections of future warming based on the SRES. Suggest that if the authors want to illustrate that we are already committed to a certain level of warming, that this be done as a new paragraph in the section at the start of 3.2. (Government of Australia)	We feel that these idealized integrations provide policymakers value information on the "committed" climate changes, particularly over the next few decades. This is an important new result in this report.
3-115	E-3-54	A	3	1	3	24	The SLR projections throughout the document do not differentiate between the anthropogenic and natural components, yet this is vital for estimating the impacts of the agw component. The way it is presented leads one to believe it is deliberately clouded in order to have maximal scare value. This needs to be addressed at the start of each significant discussion, such as here. (John Everett, Ocean Associates, Inc.)	The projections are for the anthropogenic changes. The text seems clear on this point.
3-116	E-3-3	B	3	1			Define scenarios briefly in the form of a table; would make Table 3.1 and most of the rest of this entire Topic section more intelligible to the layman (Kevin Grandia, DeSmogBlog)	More information on the SRES scenarios is included in section 3.1.
3-117	G-3-58	A	3	10	3	11	After this first sentence, please discuss the values in Table 3.1 before comparing it to the TAR. (Government of United States)	Text modified.
3-118	E-3-55	A	3	10	3	23	This paragraph needs to be reworded. It is misleading as it stands. It starts off by saying the ranges are smaller then previous assessments and then makes it clear that several uncertainties are ignored. It is inapproriate to make the ranges smaller by ignoring some terms. The link between the projections in the table and the additional uncertainties needs to be strengthened so that it is not ignored (as it is by many whoe read the WGI SPM. (John Church, CSIRO)	Accepted. Text modified.
3-119	E-3-56	A	3	10	3	23	I continue to think that this omission of recent evidence of the increasing rate of flow from the Greenland ice sheet will do the IPCC disservice in the long run. What has been observed is that the rate of increase is growing faster than linearly with temperature change and the contribution seems likely to be an unpleasant suprise. Yes, we can't model it yet, but we can see it. (Steve Sawyer, Global Wind Energy Council)	Noted.
3-120	E-3-57	A	3	10	3	23	Although the discussion of uncertainty is more detailed here than in the SPM, I have many of the same doubts about focusing attention via a table on numerical values (uncertainty ranges)	Text modified.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							that are incomplete. Furthermore, footnote 4 goes some way toward clarifying the reasons for differences with the TAR, so it ought to be in the main text, not buried at the bottom. All in all, keeping the column in the table can only be justified if an improved discussion of uncertainty is presented: what are the sources or major groups of sources of uncertainty, how are they treated differently than in the TAR, which ones do we think we know more about and which less. If only model-based uncertainty estimates are in the table, the presentation is skewed. If such numbers are to be presented in a table at all, then results of the sensitivity assessment (i.e., an additional 0.1-0.2m) should appear right beside them. (Michael Oppenheimer, Princeton University)	
3-121	G-3-57	A	3	10	3	23	Because of the importance of the uncertainties around sea level rise to policymakers, we suggest rewriting this paragraph to bring the uncertainties to the front, as follows: "Because the understanding of some of the effects determining sea level rise is too limited, this report does not assess their likelihood nor provide a best estimate or an upper bound for sea level rise. Instead, model-based projections of global average sea level rise at the end of the 21st century (2090-2099) are shown in Table 3.1. For each scenario, the midpoint of the range in Table 3.1 is within 10% of the Third Assessment Report model average for 2090-2099. The ranges are narrower than in the Third Assessment Report mainly because of improved information about some uncertainties in the projected contributions. The models used to make the sea level projections do not include uncertainties in climate-carbon cycle feedback nor do they include the full effects of changes in ice sheet flow, because a basis in published literature is lacking. The projections include a contribution due to increased ice flow from Greenland and Antarctica at the rates observed for 1993-2003, but these flow rates could increase or decrease in the future. For example, if this contribution were to grow linearly with global average temperature change, the upper ranges of sea level rise for SRES scenarios shown in Table 3.1 would increase by 0.1 m to 0.2 m. Larger values cannot be excluded. {WGI 10.6, SPM}" (Government of New Zealand)	Accepted. Text modified.
3-122	E-3-4	B	3	10	3	23	In contrast with projected temperatures that combine low and nigher confidence uncertainties as an advance on the TAR, sea level rise estimates do not have all the components of uncertainty as estimated for the TAR, and several areas of risk are described separately. Again, if 1990–2005 rates of change are assessed as the likely minimum, then the lower limit is well constrained and the upper limit, not very. This is very important for assessing risk, which exists whether outcomes are tightly quantified or not. (Roger Jones, CSIRO)	Text modified. We cannot change the WGI assessment.
3-123	E-3-58	A	3	11	3	12	The values are not consistent with those of WGI SPM. (Serge Planton, Météo-France)	Rejected. Table copied from the WGI SPM.
3-124	E-3-59	A	3	14	3	14	The footnote (4) should be revisited. Only one of the methodological differences in estimating the sea level rise ranges in TAR and AR4 is mentioned (the others being the	The details are found in the underlying reports. Space

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							inclusion/exclusion of ice sheet contributions and the width of the range) in the first sentence. This makes the second sentence prone to misinterpretation. Suggest omitting the first sentence of the footnote. (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	limitations prevents a full discussion here.
3-125	E-3-61	A	3	14	3	14	Given the importance of projected sea level rise, some explanation of which uncertainties have been reduced and why they have been reduced should be added. The narrower uncertainty range implies that policymakers should have greater confidence in the projection of sea level rise -- they should be told the basis for that greater confidence. (Robert Siveter, IPIECA)	Text modified to improve clarity.
3-126	G-3-60	A	3	14	3	14	Given the importance of projected sea-level rise, some explanation of which uncertainties have been reduced and why they have been reduced should be added. The narrower uncertainty range implies that policymakers should have greater confidence in the projection of sea-level rise. They should be told the basis for that greater confidence. (Government of United States)	Text modified for clarity.
3-127	G-3-59	A	3	14	3	16	This sentence needs some clarification to reinforce the difference between the treatment of climate-carbon cycle feedbacks in the warming vs. the SLR projections. Perhaps the easiest fix is simply to add in brackets after the word 'feedback" the following: "...feedback (as do the projections for global temperature change in Table 3.1).....". (Government of Canada)	Text modified.
3-128	E-3-60	A	3	14	3	23	The explanation of the reasons for not including carbon cycle feedbacks or the effects of increased ice flow is important and needs to be retained in future drafts. (Robert Siveter, IPIECA)	Noted. It is included in this draft.
3-129	E-3-62	A	3	16	3	16	is "a basis" correct? Would not "its basis" be better? (Zoltán Somogyi, Hungarian Forest Research Institute)	Text modified.
3-130	E-3-63	A	3	16	3	16	drop the adjective 'full". There is no evidence in the subsequent sentence that any of the models used included changes in ice sheet flows. (R. Allyn Clarke, Fisheries and Oceans, Bedford Institute of Oceanography)	Text modified.
3-131	G-3-61	A	3	16	3	16	The reason for the lack of carbon cycle feedbacks and ice sheet dynamics is not due to a lack of observational evidence in the published literature but due to a lack of model ability to include this biogeochemistry and physics. Fix the language. (Government of United States)	Text modified.
3-132	G-3-62	A	3	16	3	16	is "a basis" correct? Would not "its basis" be better? (Government of Hungary)	Text modified.
3-133	G-3-63	A	3	16	3	16	For accuracy the authors should insert "assessed for this report" after "published literature". (Government of Australia)	This is implied and it true for the whole report.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-134	E-3-64	A	3	16			Do the words "because a basis in published lieterature is lacking" apply both to climate-carbon cycle feedback and to changes in ice sheet flow, or just the latter? The sentence is ambiguous in this regard. (Adrian Simmons, European Centre for Medium-Range Weather Forecasts)	Text modified.
3-135	E-3-66	A	3	17	3	18	projections include' contradicts Table 3.1 ('Model-based range excluding future…')? (Michel Rixen, NATO Undersea Research Center)	Text modified.
3-136	E-3-65	A	3	17	3	19	The global average sea level increase since 1993 is (correctly) quoted in the Synthesis Report SPM, page 1, lines 24-25 to be 3.1 [2.4 to 3.8] mm/yr (including steric and eustatic contributions, i.e., thermal exp., land ice, ice sheets). These lines now say that Table 3.1 (at same page above) sea level rise ranges "include a contribution due to increased ice flow from Greenland and Antarctica at the rates observed 1993-2003..." Question: How can the the lower bound of the ranges of total sea level rise credibly be 0.18 m - 0.26 m (B1 - A1FI scenario) over 100 yrs from near 2000 to near 2100 if steric (essentially thermal expansion) is accounted for *and* dynamical at rates since 1993, where the lower bound estimated rate just from the total 1993-2003 rate is already 0.24 m / 100 yrs (if taking the 1993-2003 rate 2.4 mm /yr constant over 100 yrs)? Of course includes some subjective aspect to what is considered the "very unlikely" tail of the associated pdf one might perceive behind these range specifications. At least to be checked. (Gottfried Kirchengast, Wegener Center for Climate and Global Change, University of Graz)	Noted. The values in the table are correct and part of the approved WGI SPM.
3-137	E-3-67	A	3	17			delete "flow" and add ice "melt or ice discharge" (Hartmut Grassl, Max Planck Institute for Meteorology)	Text modified.
3-138	E-3-70	A	3	18	3	18	Over some short period, the flow rates may change in either direction--but over the long-term, given that the amount of warming projected, paleoclimatic evidence makes clear that substantial deterioration will take place. Thus, this phrasing lacks context and gives the impression that anything can happen over any length of time--and this simply is not the case. With respect to Antarctica, it has been losing ice mass since the Last Glacial Maximum and global conditions a few degrees C warmer have had no Antarctic ice--so it is pretty clear where we are headed long-term, even if there could be some short-term fluctuations. I think, therefore, this sentence has to be rewritten. (Michael MacCracken, Climate Institute)	Text modified.
3-139	E-3-68	A	3	18	3	19	The statement "but these flow rates could increase or decrease in the future" is a very weak one. Could one at least say " but it is not known whether these flow rates are likely to increase or decrease in the future"? (Adrian Simmons, European Centre for Medium-Range Weather Forecasts)	Text modified.
3-140	E-3-69	A	3	18			substitute "loss" for "flow" (Hartmut Grassl, Max Planck Institute for Meteorology)	Text modified.
3-141	E-3-71	A	3	19	3	23	Following this argumentation on the upper bounds (on those shown in Table 3.1) that "larger values cannot be excluded" and "…understanding of these effects is too limited to assess their	Text modified. We must rely on the assessed WG reports, not on

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							likelihood or provide a best estimate or an upper bound for sea level rise" it is hard to scientifically understand why upper bounds of the "model-based range" for sea level rise are shown at all in Table 3.1. Not to be misunderstood, I think the statements in these lines are very valid and important; not least because newest 2006/2007 results since the IPCC 2007 drafting re-enforced that upper bound on sea level rise is a very diffcult topic and that, if we are "unlucky", we may be near 1 m by 2100. I suggest the very least to do is that the upper bounds in Table 3.1 should be marked with some superscript symbol (e.g., c) and the statements of lines 19 to 23 should be included directly in the "Table notes:" i.e., right below the Table. The same should be done to the same Table in the Synthesis Report SPM (Table SPM 1, page 8, of that document). This will at least at this synthesis stage of the IPCC process somehow improve this particular aspect over how it was formulated in the SPM of Working Group I. (Gottfried Kirchengast, Wegener Center for Climate and Global Change, University of Graz)	newly published material which was not assessed in the AR4 reports.
3-142	E-3-72	A	3	21	3	21	The phrase "Larger values cannot be excluded" is much too understated--estimating sea level sensitivity to global average temperature from paleoclimatic evidence gives something like 10-20 meters per degree (LGM, down 120 m and 6 C; Eocene, up about 4 C and SL up by perhaps 70 m). Just because we don't understand this well is no reason to underplay the risk that much greater change could occur from the terms not yet understood than from those we do understand. (Michael MacCracken, Climate Institute)	Text modified. The analog of the future climate changes to past climates is very difficult. The exact forcings and timing of the past climate changes are not well known.
3-143	G-3-64	A	3	21	3	21	Insert "for sea level rise" after "Larger values". (Government of Australia)	Accepted. Text modified.
3-144	E-3-73	A	3	22	3	22	Several scientists (e.g. Rahmstorf) have published new results on a higher sea level rise, but this did not find consensus in the WG1 plenary. Please make a formulation that there is new evidence to imagine a higher sea level rise than that given in Table 3.1. E.g.: 'these effects is despite new scientific intelligence still too limited ...' (Manfred Treber, Germanwatch)	Text modified. We must rely on the assessed WG reports, not on newly published material which was not assessed in the AR4 reports.
3-145	E-3-74	A	3	25	5	13	The text of this sub-chapter is only half a page and not too much/enough specific regional features of climate change are presented and discussed. (Antoaneta Yotova, National Institute of Meteorology and Hydrology)	Noted. No specific suggestions offer. Pages limits hinder adding more.
3-146	E-3-75	A	3	27	3	27	For sake of clarity, I suggest replacing "The projected patterns.." with "The projected changes..". The next sentence could be modified as follows: "There is now higher confidence in projected regional patterns of warming.." (Annarita Mariotti, ENEA)	Text modified.
3-147	G-3-65	A	3	27	3	27	We suggest including 'climate change' thus: "The projected patterns of climate change are not uniform …". (Government of New Zealand)	Accepted.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-148	G-3-66	A	3	27	3	27	The sentence needs to explain what the "projected patterns" relate to. (Government of Australia)	Text modified.
3-149	G-3-68	A	3	27	3	27	Add the underlined words: “The projected patterns of climate change are not…” (Government of United States)	Accepted.
3-150	E-3-76	A	3	27	3	29	An explanation of why there is greater confidence in projections of patterns of warming and other regional-scale features needs to be added. The only hint at the reason for this greater confidence is that projections for the 21st century show similar patterns to the changes experience over the past few decades. If this is, in fact, the basis for the greater confidence, it should be explicitly stated. If there are other reasons, they need to be described. Policymakers need to know why IPCC authors are claiming greater confidence. (Robert Siveter, IPIECA)	The text below is this bullet and references address this issue.
3-151	G-3-67	A	3	27	3	29	An explanation of why there is greater confidence in projections of patterns of warming and other regional-scale features needs to be added. The only hint at the reason for this greater confidence is that projections for the 21st century show similar patterns to the changes experience over the past few decades. If this is, in fact, the basis for the greater confidence, it should be explicitly stated. If there are other reasons, they need to be described. Policymakers need to know why IPCC authors are claiming greater confidence. (Government of United States)	Approved WGI SPM language. Space limitations hinder adding more details.
3-152	E-3-77	A	3	27			"The projected patterns are not uniform across the globe" should be replaced by "Projected climate change is not uniform across the globe" or something similar. A pattern is not uniform across the globe by definition. (Adrian Simmons, European Centre for Medium-Range Weather Forecasts)	The text below this bullet and references address this issue.
3-153	E-3-78	A	3	29	3	29	To add "dynamics", or some other relevant term, after "ice" (before the full stop) to specify the changes (Antoaneta Yotova, National Institute of Meteorology and Hydrology)	Text modified.
3-703	E-3-1	D	3	29	3	29	"amplitude and return time of extreme events" and "ice cover/extent" would be more clear. "Some aspects of" is a little vague, needs rephrasing. (Stephen Hawkins, Marine Biological Association of the UK)	Rejected. Text seems clear.
3-154	E-3-79	A	3				Table 3.1, on the model-based ranges for sea level rise: the quoted ranges in the Table seem inconsistent with what is said in lines 17-19 on the same page that these ranges include as contributions; see next comment no. 2 in this review (Gottfried Kirchengast, Wegener Center for Climate and Global Change, University of Graz)	Text modified.
3-155	E-3-80	A	3				Table 3.1, Column on sea level rise. This table is misleading and an additional column should be added with the allowance of the dynamical ice sheet flow as referred to in the WGI SPM added and in the paragraph from lines 10-23. (John Church, CSIRO)	Text modified.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-156	E-3-81	A	3				Table 3.1 Insert reference to new footnote “b” alongside existing reference to existing footnote “a”. New footnote “b” should read; “To express temperature changes relative to 1850-1899, add about 0.5 oC” (This clarification drawn from Table SPM-2). Change existing footnote “b” to new footnote “c” and retain. (For same reasons as given for the same Table in the SPM as made in comment 9 above) (Pat Finnegan, Grian)	Adjusting temperatures to preindustrial and/or 1850-1899 is not straightforward. A comment in the footnotes for table 3.2 address part of this issue.
3-157	G-3-69	A	3				In the Table 3.1 footnotes, refer reader to the glossary for a characterization of the SRES scenarios. (Government of United States)	Section 3.1 describes SRES scenarios used here. The table is from the approved WGI SPM.
3-158	G-3-70	A	3				In Table 3.1, rightmost column, the estimated sea-level rise does not include rapid changes in ice flow. However, given the significance of observed ice melt rates that are faster than predicted, it would be valuable to provide a rough estimate of the potential incremental rise in sea level due to dynamic changes in ice flow. (Government of United States)	This is now more clearly stated in paragraph which follows the table.
3-159	G-3-72	A	4	1	4	1	The phrase "scenario-independent" needs to be explained. (Government of Australia)	Approved WGI SPM language.
3-160	G-3-73	A	4	1	4	1	It looks like patterns are scenario-dependent; for example, see South America 2020-2029 A1B versus the other two scenarios. (Government of United States)	Approved WGI SPM language. It is unclear to what extent the small difference in pattern noted in the comment are due to contour intervals and/or sampling.
3-161	G-3-71	A	4	1	4	5	This paragraph misses important information on regional temperature changes. Add the following headline statement from the WG 1 TS.5.3 after the first sentence: "For each continent, projected warming over 2000 to 2050 is greater than global average warming and greater than the observed warming over the past century." (Government of European Community)	Rejected. This statement does not belong in this section. If it should be included, it belongs in topic 2.
3-162	G-3-2	C	4	1	4	5	" Give more explanation why this is so (e.g. heat uptake by ocean…)" (Government of Belgium)	Rejected. The mechanisms for the pattern of change are not so important in this document. Approved WGI SPM language.
3-163	E-3-82	A	4	7	4	7	delete sentence above the graph (Zoltán Somogyi, Hungarian Forest Research Institute)	Reject. The figure title is important.
3-164	G-3-74	A	4	7	4	18	Define the emissions scenarios somewhere that is readily available, such as in the glossary. (Government of United States)	The emission scenario discussion in 3.1 is modified and clearer. This is the approved

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
								WGI SPM figure.
3-165	E-3-83	A	4	13			scenarios in 2100?' (Michel Rixen, NATO Undersea Research Center)	Text modified.
3-166	G-3-75	A	4	21	4	21	Add the underlined word: “Snow cover area is …” (Government of United States)	Accepted.
3-167	G-3-3	C	4	21	4	21	" could add that thawing permafrost is releasing methane and that the this presents a positive feedback " (Government of Belgium)	The methane release is not directly related to the thawing. The text is approved WGI SPM language.
3-168	E-3-85	A	4	21	4	22	In general, thaw depth is determined primarily by summer conditions of temperature and insulation and shows limited correlation with annual air temperature. In general warmer conditions give a stronger temperature gradient between summer air temperature and permafrost, but drier surface soils with reduced thermal conductance. I'm not sure the thermal conductance in included in the modelsWhat might be most relevant to policy makers would be decreased areal extent of permafrost. Permafrost temperature would increase and the thickness of the permafrost layer would decrease, but policy makers might not care about this. The text may be consistent with model simulations that assume constant thermal conductance of thawed soils with climate warming. In other words the text may be technically correct but misleading. (F. Stuart Chapin, III, University of Alaska Fairbanks)	Text is approved WGI SPM language. Space limitations hinders a more detailed discussion.
3-169	E-3-84	A	4	21	4	24	There are also projections in WG2. For example, in WG2 Ch 15 there are projections of thaw depth in permafrost regions. This should be referenced and incorporated into the discussion as well (since it is a synthesis report there should be an integration of material from both WG reports) (Sharon Smith, Geological Survey of Canada)	Reference for WGII 15.3.4 is added to the list.
3-170	G-3-76	A	4	22	4	24	Sea ice is expected to shrink in area and thickness in summer and winter (i.e., seasonal and “permanent ice”). (Government of United States)	Rejected. Text is approved WGI SPM language. Space limitations hinders a more detailed discussion.
3-171	G-3-77	A	4	26	4	27	WG1 Section 10.3 does not give convincing evidence for human-induced changes in these extremes; this chapter is not cited. This should read “ … events will become more frequent.” (Government of United States)	Accepted.
3-172	G-3-78	A	4	26	4	27	This statement appears to contradict statements in previous sections. For example, in Topic 1 (p. 4, line 18) an increase in heavy precipitation events is described as merely likely. Likewise, in Topic 2 (p. 8, lines 7-10), the contribution of anthropogenic forcing to	The statement appearing in topic 3 clearly relates to projections. The 3.3 discussion

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							daily and nocturnal temperatures is described as likely and to heat waves as more likely than not. The potential exists for the reader to become confused when the observational record has a lower confidence level than projections for the future. Please clarify for the lay reader. (Government of United States)	on extremes and new table may help the lay reader understand the point of the comment.
3-173	G-3-79	A	4	26	4	27	Is the statement true for all regions? Please provide appropriate spatial qualifiers. (Government of United States)	Rejected. Text is approved WGI SPM language. Space limitations hinders a more detailed discussion.
3-704	G-3-1	D	4	26	4	34	It should be noted that twisters are one of the major challenges regarding weather conditions that electric power lines must confront. Having in mind that severe weather conditions have grown in intensity and frequency, the Buenos Aires – Comahue line would be the most affected. If this line stops operating, electric power plants located north of the restriction imposed by this failure should be used which forces to send less efficient units that imply more costs to the demand. (Government of Argentina)	Text is approved WGI SPM language. Space limitations hinders a more detailed discussion. Any statement on tornadoes would have very low confidence.
3-174	E-3-86	A	4	26			It might be better to delete "hot extremes,". "Heat waves" will get the message across, and one has to be careful what one means by an extreme, because one has to define it relative to to something. The "hot extreme" in a 30-year climatological record could be defined as the warmest temperature in that record, and that is not something that can become "more frequent". (Adrian Simmons, European Centre for Medium-Range Weather Forecasts)	The text is approved SPM language. The definition of extreme is important (especially to scientists) and covered in the underlying reports.
3-175	E-3-87	A	4	29	4	32	The findings on tropical cyclones and the impacts are interesting and well synthesised. (Ramachandran Srikanthan, Physical Research Laboratory)	Noted.
3-176	E-3-88	A	4	29	4	34	Conclusions should be fully consistent to previous statements (see Chap 1 page 4 line 24-28) where observed trends are also attributed to multi-decadal non climate warming patterns. The sentence "The apparent increase in the proportion of very intense storms since 1970 in some regions is much larger than simulated by current models for that period" also implies that there are other multi-decadal patterns for changes which are not included in model based projections. This should be somehow mentioned here (Markus Erhard, European Environment Agency)	The text is approve WGI SPM language. Space limitation hinders a more complete discussion.
3-177	E-3-89	A	4	30			Replace "more heavy" by "heavier" (Adrian Simmons, European Centre for Medium-Range Weather Forecasts)	Text is approved WGI SPM language.
3-178	E-3-90	A	4	31	4	31	Are projected changes in tropical cyclones ONLY due to warmer SSTs? (Janice Lough, Australian Institute of Marine Science)	"Associated" implies other factors being important. The text is approved WGI SPM language.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-179	E-3-91	A	4	31			"There is less confidence in projections of a global decrease in numbers of tropical cyclones": No need for this statement as the previous sentence establish the same. (Ben Muirheid, International Fertilizer Trade Association (IFA))	Rejected. The first statement deals with intensity. The second with frequency.
3-180	E-3-95	A	4	32	4	32	Add: ¨….of a global decrease OR INCREASE in numbers of tropical cyclones ¨ (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Rejected. The statement is clear on the current assessment of frequency. Text is approved WGI SPM language.
3-181	E-3-93	A	4	32	4	33	this is again a case of inverse logic: sentence should read something like: "The simulated fraction of the proportion of very intense storms since 1970 is much smaller than the apparent increase in some regions and for that period." Models simulate observations, and not the inverse! (Michel J. Rossi, Ecole Polytechnique Fédérale de Lausanne)	The text seems clear.
3-182	E-3-92	A	4	32			What is meant by 'apparent': 'observed'? (Michel Rixen, NATO Undersea Research Center)	There is some uncertainty in the observations. Text is the approved WGI SPM language.
3-183	E-3-94	A	4	32			I propose change "a global decrease in number" to "the frequency" or "the global number". (Sergio Alonso, University of the Balearic Islands)	The meaning of the text is clear. Text is the approved WGI SPM language.
3-184	G-3-80	A	4	34	4	34	Replace "current" with "climate" (Government of Australia)	Text seems clear. Text is the approved WGI SPM language.
3-185	G-3-81	A	4				Topic 3: Figure 3.1 should be enlarged to give the reader a better graphical presentation of temperature projections for each scenario. The same applies to Figure 3.2 on precipitation. (Government of Colombia)	Space limitations hinder making the figure larger. These decisions will be made at the copy layout stage.
3-186	G-3-82	A	4				Figure 3.1: Please include curve for all SRES scenarios, in particular A1FI results, WITHIN the diagram, analogue to the other SRES-curves, because it is highly policy relevant with respect to recent global emission trends. (Government of Germany)	The failure of the simple climate model (MAGICC) to successfully emulate the AOGCMs results prevents us from including scenarios not run by the AOGCMs used by WGI. See 10.A.1 for more details. The figure is from the approved WGI SPM.
3-187	G-3-83	A	4				Figure 3.1: Please include curve for A1FI results WITHIN the diagram, analogue to the other SRES-curves, because it is highly policy relevant with respect to recent global emission trends. (Government of Germany)	The failure of the simple climate model (MAGICC) to successfully emulate the AOGCMs results prevents us from including

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
								scenarios not run by the AOGCMs used by WGI. See 10.A.1 for more details. The figure is from the approved WGI SPM.
3-188	G-3-84	A	4				Fig 3.1: add after 'scenarios': "averaged over the period 2090-2099" (Government of Netherlands)	Text modified.
3-189	G-3-85	A	4				delete sentence above the graph (Government of Hungary)	Reject. The figure title seems clear.
3-190	G-3-4	C	4				" Figure 3.1. It is possible to include all the SRES scenarios on the left panel? " (Government of Belgium)	The failure of the simple climate model (MAGICC) to successfully emulate the AOGCMs results prevents us from including scenarios not run by the AOGCMs used by WGI. See 10.A.1 for more details. The figure is from the approved WGI SPM.
3-191	E-3-96	A	5	1	5	6	In discussing model results possibly a very short sentence or two on the general nature of the models. I know they are GCMs but do they for example all have coupled ocean models , thin layer oceans with no currents …or what ???? One should not go beyond a sentence or two. (David Fisher, NRCan)	Rejected. These details are found in the underlying reports. AOGCM is short-hand for fully coupled atmosphere-ocean models as stated in the figure caption.
3-192	E-3-100	A	5	2	5	2	"…very likely at high latitudes, while…" (Michel J. Rossi, Ecole Polytechnique Fédérale de Lausanne)	Text seems clear. Approved WGI SPM language.
3-193	E-3-101	A	5	2	5	2	"…an improved understanding of…" (Michel J. Rossi, Ecole Polytechnique Fédérale de Lausanne)	Text seems clear. Approved WGI SPM language
3-194	E-3-98	A	5	2	5	3	The basis for the statement that there is an improving understanding of projected patterns of precipitation needs to be provided. Policymakers need to know why IPCC authors are claiming greater understanding. (Robert Siveter, IPIECA)	Text seems clear. Approved WGI SPM language. The underlying reports document the reasons for the improved understanding.
3-195	G-3-86	A	5	2	5	3	The basis for the statement that there is an improving understanding of projected patterns of precipitation needs to be provided. Policymakers need to know why IPCC authors are claiming greater understanding. (Government of United States)	Text seems clear. Approved WGI SPM language. The underlying reports document the reasons for the improved understanding. Space limitations hinder adding more details.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-196	G-3-88	A	5	2	5	6	Given the importance of precipitation, it would be helpful to include more information on regions where specific changes are assessed as very likely in the WG1 TS.6.4.5. Change text to "Increases in the amount of precipitation are very likely in many high-latitude regions, including most of northern Europe, Canada, the northeast USA and the Arctic; decreases are very likely in many subtropical regions, including the European and African regions bordering the Mediterranean." (Government of European Community)	The text is approved WGI SPM language. Space limitations hinder including more details.
3-197	G-3-87	A	5	2	5	13	Suggest moving the precipitation subsection before the discussion of tropical cyclones (p. 4, line 29). (Government of United States)	Rejected. The current structure keeps the extreme events together. The order is the same as that found in the approved WGI SPM report.
3-198	E-3-97	A	5	2			there is an improved understanding' (Michel Rixen, NATO Undersea Research Center)	Text seems clear. Approved WGI SPM language
3-199	E-3-99	A	5	2			correct "improving" to "improved" (Hartmut Grassl, Max Planck Institute for Meteorology)	Text seems clear. Approved WGI SPM language
3-200	E-3-102	A	5	4	5	4	Figure 3.2 referenced here, clearly supports "very likely" changes in parts of the sub-tropics (South Europe/Mediterranean regions), for both DJF and JJA (more than 90% model aggrement). Although regional detail is not appropriate in this section, I think the sentence "decreases are likely in most subtropical land regions" should be replaced with "decreases are likely in most subtropical land regions (very likely in certain regions)" or something along these lines. (Annarita Mariotti, ENEA)	Text is the approved WGI SPM language. The assessment of the WGI authors was “likely”.
3-201	E-3-103	A	5	4	5	5	Could delete the text in the parenthesis, as it is specific to A1B, rather than a "full" figure. (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Noted.
3-202	E-3-105	A	5	5	5	5	replace “continuing” with “in continuation of” (Michel J. Rossi, Ecole Polytechnique Fédérale de Lausanne)	Text seems clear. Approved WGI SPM language
3-203	E-3-104	A	5	5			substitute "decades" for "trends" (Hartmut Grassl, Max Planck Institute for Meteorology)	Text seems clear. Approved WGI SPM language
3-204	E-3-106	A	5	8	5	8	delete sentence above the graph (Zoltán Somogyi, Hungarian Forest Research Institute)	Rejected. The figure title is clear.
3-205	G-3-89	A	5	11	5	11	Multi-model = how many models exactly? This comment also applies for page 4 line 16 (Government of Australia)	There are differing number s of models in each ensemble average. See underlying text for more details. Space limitations prevent us from including those

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
								details here. Approved WGI SPM figure and caption.
3-206	E-3-108	A	5	11	5	12	add "(DJF)" and "(JJA)" to explain abbreviations (Zoltán Somogyi, Hungarian Forest Research Institute)	Text/figure seems clear. Approved WGI SPM language and figure
3-207	G-3-90	A	5	11	5	12	add "(DJF)" and "(JJA)" to explain abbreviations (Government of Hungary)	Text seems clear. Approved WGI SPM language and figure
3-208	E-3-107	A	5	11	5	13	multi-model: how many models? Are these changes significant? Is 90% significant?Whatr about net total precipitation? Is it growing, decreasing? (Michel Rixen, NATO Undersea Research Center)	There are differing number s of models in each ensemble average. See underlying text for more details. Space limitations prevent us from including those details here.
3-209	G-3-91	A	5	12	5	13	How many total models? (Government of United States)	There are differing number s of models in each ensemble average. See underlying text for more details. Space limitations prevent us from including those details here. Approved WGI SPM figure and caption.
3-210	G-3-92	A	5	16	5	16	We suggest the title of the section would read better as: "Changes beyond the 21st century". (Government of New Zealand)	Text seems clear. Approved WGI SPM language
3-211	E-3-110	A	5	16	6	15	In this section I am missing the point I raised in the context of the SPM (difference between high level "stabilization" vs. low level stabilization scenarios). My comment for p.19, l. 1-10. My comment especially pertains to p. 5, lines 25-29. (Andreas Fischlin, Integrative Biology - Systems Ecology)	We can only provide some details due to space limitations. The text is the approved WGI SPM language.
3-212	E-3-109	A	5	16			To write the subtitle 3.2.3 Beyond 21st century changes in italics (Nováky Béla, Szent István University, Gödöllö, Hungary)	Text seems clear. Approved WGI SPM language
3-213	G-3-94	A	5	18	5	18	Use of "would" fails to use IPCC uncertainty terminology. Is "virtually certain" too weak? (Government of Australia)	Text seems clear. Approved WGI SPM language
3-214	G-3-96	A	5	18	5	18	Replace 'would' with 'will', thus: "Anthropogenic warming and sea level rise will continue for centuries ... " (Government of New Zealand)	Text seems clear. Approved WGI SPM language
3-215	G-3-93	A	5	18	5	19	We suggest the intent is clearer if 'timescales' is qualified by 'long', thus: " … sea level rise would continue for centuries due to the long timescales associated with …".	Text seems clear. Approved WGI SPM language

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Government of New Zealand)	
3-216	E-3-111	A	5	18	5	20	The bold face statement is correct. However it would be better to include the message that the that the time scale for sea level rise stabilization is much longer than for temperature change. (Jürgen Willebrand, Leibniz Institut für Meereswissenschaften)	Text seems clear. Approved WGI SPM language. Space limitations hinder adding more details.
3-217	G-3-95	A	5	18	5	20	Section 3.2 fails to inform the reader that there is inertia in the climate system and why that is. Suggest that this topic is explicitly addressed by the authors. (Government of Australia)	P5L18-20, P5L28-29 address this issue.
3-218	G-3-97	A	5	20	5	20	This statement in bold gives no indication of the timescale for the stabilization referred to (it could be centuries), and this makes he statement significantly less useful. We suggest the word 'now' be added, thus: " … were to be stabilized now." (Government of New Zealand)	The statement is true, no matter when concentrations are stabilized.
3-219	E-3-112	A	5	22	5	23	This is potentially confusing, as the header (lines 18-20) talks about greenhouse gas concentrations being stabilised, but here you are almost saying that even if they are stabilised, they wont be stabilised. (Keith Shine, University of Reading)	Paragraph deleted as this is already covered in 2.3 and 3.2.1.
3-220	E-3-113	A	5	22	5	23	not sure why this sentence fits here? Carbon cycle feedbacks apply throughout, not just after 21st century. (Chris Jones, Met Office Hadley Centre)	Paragraph deleted as this is already covered in 2.3 and 3.2.1.
3-221	E-3-114	A	5	22	5	23	additionally, this sentence isn't correct - climate-carbon cycle feedbacks are expected to reduce the strength of natural uptake, but not necessarily cause the carbon cycle to become a source. So rather than saying "expected to add CO2…", you should say "expected to reduce natural uptake of CO2 from the atmosphere..." (Chris Jones, Met Office Hadley Centre)	Paragraph deleted as this is already covered in 2.3 and 3.2.1.
3-222	G-3-98	A	5	22	5	23	This issue, of climate-carbon cycle feedbacks, is an important one. This one sentence seems insufficient to provide readers with the necessary context for understanding future risks, and in fact, this sentence adds nothing to what was already said on this subject in section 2.3 and 3.2.1. Something more is needed here. First, and at least, the word 'positive' should be added before the word 'feedback' on line 23. Second, some more explanatory text is required to explain what ADDITIONAL concerns there are beyond the climate-carbon cycle uncertainties that are built into the projections for 21st century change. Furthermore, the new text should distinguish between the more 'known' but not quantified positive feedbacks, and the 'surprise elements' there could be in the climate system response (e.g methane hydrate issue). This would be a valuable addition to the Synthesis Report since such a discussion is not well covered in the other summary products of the AR4. (Government of Canada)	Paragraph deleted as this is already covered in 2.3 and 3.2.1.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-223	E-3-115	A	5	23	5	23	Here, reference should be made also to WG II results (4.ES, Figure 4.2, SPM). (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Paragraph deleted as this is already covered in 2.3 and 3.2.1.
3-224	E-3-116	A	5	23	5	23	Change "uncertain" to "highly uncertain." WG I, Chapter 10.4.1 discusses carbon cycle feedbacks in detail indicating that a range of climate models project that by 2100 carbon cycle feedbacks could add between 20 and 220 ppm to atmospheric CO2 concentration and between 0.1 and 1.5 C to temperature rise. The uncertainty range on both CO2 concentration and temperature rise is more than an order of magnitude, which certainly qualifies as highly uncertain. (Robert Siveter, IPIECA)	Paragraph deleted as this is already covered in 2.3 and 3.2.1.
3-225	E-3-117	A	5	25	5	25	where may I find footnote 1? (Michel J. Rossi, Ecole Polytechnique Fédérale de Lausanne)	Footnote is deleted.
3-226	E-3-118	A	5	25	5	25	The footnote should probably be to number 2 (this Topic 3, page 1). (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Footnote is deleted
3-227	E-3-120	A	5	25	5	25	Is the superscript number after "(A1B) levels" 1 or 2 (see the explanations on p. 1) ? (Antoaneta Yotova, National Institute of Meteorology and Hydrology)	Footnote is deleted
3-228	E-3-121	A	5	25	5	25	In A1B1 levels1……. What is the meaning of 1? Footnote is lacking??. (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria)	Footnote is deleted
3-229	E-3-122	A	5	25	5	25	In : ¨ If radiative forcing were to be stabilised in 2100 at B1 or A1B levels1…..¨ Lack this footnote in the page or it is a mistake (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Footnote is deleted
3-230	E-3-123	A	5	25	5	25	foot note 1 is appearing here but no footnote seen in the page. (Joyashree Roy, Jadavpur University)	Footnote is deleted
3-231	E-3-124	A	5	25	5	25	Erratum: The note number 1 after levels, without test, must be rubed out (Félix Hernández, IEG-CSIC)	Footnote is deleted
3-232	G-3-99	A	5	25	5	25	There is a superscript '1' after 'A1B levels' but no corresponding footnote on this page. (Government of New Zealand)	Footnote is deleted
3-233	G-3-100	A	5	25	5	25	Please specify the exact SRES B1 and A1B radiative forcing levels. Also, couldn't find footnote 1. If referring to those on p. 1, which one? Footnote 2? (Government of United States)	Text modified to use approved WGI SPM language. Footnote is deleted
3-234	G-3-101	A	5	25	5	25	Please check if the explanation given for footnote 1 at page No. 1of Topic 3 sheets is what is desired. (Government of Pakistan)	Footnote is deleted
3-705	G-3-2	D	5	25	5	25	In A1B1 levels1, the footnote is lacking. (Government of Argentina)	Footnote is deleted

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-235	E-3-119	A	5	25			Superscript '1' (Michel Rixen, NATO Undersea Research Center)	Footnote is deleted
3-236	G-3-102	A	5	26	5	26	What does “mostly by 2200” mean? Does this mean that most but not all of the 0.5°C increase will occur by then? Clarify. (Government of United States)	Text modified.
3-237	E-3-125	A	5	27	5	28	Given the preceding sentence, it could be worthwhile to give the sea level changes relative to 2100. (Perhaps also adding that additional contributions might arise from ice sheet melt.) (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Text is clear. As it stands, it can easily be compared the the estimates for 2100 found in table 3.1.
3-238	E-3-126	A	5	28	5	29	This sentence ("Thermal expansion would continue for many centuries, due to the time required to transport heat into the deep ocean") should be reconsidered from the viewpoint of whether transport of heat from higher in the ocean to the deep ocean would produce a net thermal expansion (it would expand the deep water but contract the shallower water). (Claire Parkinson, NASA Goddard Space Flight Center)	The text seems clear. Approved WGI SPM language. Space limitations prevent the inclusion of more details.
3-239	E-3-127	A	5	28	5	29	Remember that if the deep oceans take a long time (~1000yrs) to warm up then the delayed effects of the CO2 warming become scaled to deep ocean response time . A delayed warming of deeper tropical waters will effect the ENSO process in a chaotic and unpredictable manner,,,, a long long time after the cause has been brought under control. (David Fisher, NRCan)	Noted.
3-240	E-3-129	A	5	31	5	39	Comment: These statements appear to be less adequate for a synthesis report, given the very long time scales considered and the high degree of uncertainty associated. (Maria Rosa Paiva , Universidade Nova de Lisboa [New University of Lisbon])	The future sea level rise because of its potentially large magnitude is an very important issue for policymakers..
3-241	E-3-128	A	5	31	6	10	This discussion suffers from the same fragmentation referred to in my comment on the SPM p.10 line 1-8 [TSU note: See Comment E-SPM-667-A]: P. 6 lines 7-10 properly belong ahead of p.6 lines 2-5. Furthermore, re-word the current lines 2-5 as follows, for reasons noted in my SPM comments: "Dynamical processes related to ice flow not included in current models but suggested by recent observations could increase the vulnerability of the GREENLAND AND WEST ANTARCTIC ice sheets to warming, increasing future sea level rise. Understanding of these processes is limited and there is no consensus on their magnitude, BUT RAPID ICE LOSS ON A TIMESCALE OF CENTURIES CANNOT BE RULED OUT." (Michael Oppenheimer, Princeton University)	Text is approved WGI SPM language. Text seems clear and has been the subject of intense negociation.
3-242	G-3-103	A	5	32	5	32	Replace "current" with "climate" (Government of Australia)	Text seems clear. Approved WGI SPM language.
3-243	E-3-130	A	5	32	5	34	The Eemian interglacial, which was brief and so ice may not have been at equilibrium, was only about 1 C warmer globally, yet had sea level rise of 4-6 meters--there is really no basis other than admittedly incomplete models to go with the millennial time scale and the suggested large amount of warming for melting to occur. IPCC owes the public and	The analog of the future climate changes to past climates is very difficult. The exact forcings and timing of the past climate changes

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							policymakers a much more forthright statement of the situation rather than the one-sided cautious statement here. (Michael MacCracken, Climate Institute)	are not well known.
3-244	G-3-104	A	5	33	5	33	Add “(net ice loss)” after “mass balance becomes negative” (Government of United States)	Accepted.
3-245	G-3-107	A	5	34	5	34	Generally in relation to projections on future warming 1980-1999 is used as the base year. It would help readers if it was used consistently and references temperature rises based on pre-industrial levels (as here) were converted. (Government of Australia)	Text modified.
3-246	G-3-105	A	5	34	5	37	This sentence was phrased slightly differently in the WGI report which referred to a sustained WARMING rather than a sustained negative surface mass balance. The simpler phrasing would be more easily understood by readers but in addition, it better links this sentence to the one that follows. (Government of Canada)	Text is the WGI SPM language.
3-247	G-3-106	A	5	34	5	37	It is tautological to suggest that if the negative mass balance is maintained, then eventually the ice sheet will be eliminated. And the negative mass balance must be maintained for millenia only if the rate of mass loss requires this - but the statement just says "If A neg surf mass bal ..." (not THE [projected] neg surf mass bal ...). It is also not clear why, if the negative mass balance is maintained, the text says ice sheet would be only 'virtually' eliminated, not completely eliminated. We suggest: " If a negative surface mass balance was sustained into the future, leading to elimination of the Greenland ice sheet (which would probably [likely?] take millennia) the resulting contribution to sea level rise would be about 7 m." OR " If the negative surface mass balance were sustained for millennia at the rates currently projected, that would lead to virtually complete elimination of the Greenland ice sheet over this time and a resulting contribution to sea level rise of about 7 m." (Government of New Zealand)	Text is the approved WGI SPM language. Text seems clear.
3-248	E-3-131	A	5	37	5	37	The word "future" is too vague. How distant future are we talking about? (Jon Egill Kristjansson, University of Oslo)	Text modified. The “corresponding future temperature in Greenland” refer to a time when the global temperatures are 1.9 to 4.6C above preindustrial.
3-249	G-3-108	A	5	37	5	37	When in the “future”? By 2100? After 2100, and if so, when? (Government of United States)	Text modified. The “corresponding future temperature in Greenland” refer to a time when the global temperatures are 1.9 to 4.6C above preindustrial.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-250	G-3-109	A	5	37	5	37	The authors need to provide the time period for when temperatures in Greenland will correspond with those of the last inter-glacial, and provide what those average temperatures were. (Government of Australia)	Text modified. The “corresponding future temperature in Greenland” refer to a time when the global temperatures are 1.9 to 4.6C above preindustrial.
3-251	E-3-132	A	5	39	5	39	It is unclear what the 4-6 m of sea level rise here refers to, as there was far more sea level rise than that to get to the last interglacial period 125,000 years ago (referred to earlier in the sentence) from the preceding glacial period. Likely the meaning (not clear as written) is: "4 to 6 m of sea level rise beyond today's levels." If so, adding "beyond today's levels" would help considerably. (Claire Parkinson, NASA Goddard Space Flight Center)	Text seems clear. Text is the approved WGI SPM language.
3-252	E-3-133	A	5				Figure 3.2: I suggest a couple of changes to improve the readability of the figure. (i) Above the figure: I believe that the two indications "multi-model" and "A1B" can be moved to the figure description (on line 8), since they belong to both figures. (ii) Above the figure: the two figures differ for the periods of the year, and this should be made clear by replacing DJF above the left figure with "Dec-Jan-Feb 2090-2099", and JJA above the right figure with "Jun-Jul-Aug 2090-2099". (iii) Below the figure, where the color bar with the color code is: I would write "% change" instead of "%" on the l.h.s. of the color bar, and "relative to 1980-1999" on the r.h.s. of the color bar. (Marco Mazzotti, ETH Zurich)	The figure and caption seem clear. It is the approved WGI SPM version.
3-253	G-3-110	A	5				delete sentence above the graph (Government of Hungary)	Rejected. Figure title seems clear.
3-254	E-3-134	A	6	1	6	5	Comment: same as previous. [TSU Note: The "previous" comment was: These statements appear to be less adequate for a synthesis report, given the very long time scales considered and the high degree of uncertainty associated.] (Maria Rosa Paiva , Universidade Nova de Lisboa [New University of Lisbon])	Text is the approved WGI SPM language and the assessment of the WGI authors.
3-255	E-3-135	A	6	2	6	4	it is hard to figure out what you are talking about when you say "Dynamical processes related to ice flow not included in current models but suggested by recent observations could increase the vulnerability of the ice sheets to warming, increasing future sea level rise. (Bruce McCarl, Texas A&M Univesity)	Text seems clear. Text is the approved WGI SPM language.
3-256	G-3-111	A	6	2	6	4	This statement may be confusing for the lay reader: “Dynamical processes related to ice flow—which are not included in current models, but suggested by recent observations—could increase the vulnerability of the ice sheets to warming, increasing future sea level rise.” Please make syntactical corrections such as the inserted em-dashes in hopes of clarifying. (Government of United States)	Accepted.
3-257	G-3-113	A	6	2	6	5	It seems like expecting a lot of readers to expect them to understand what is meant by the first sentence here. Suggest adding a new sentence after the first sentence to explain	Text has been modified to make meaning clearer. Space

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							what is meant by "dynamical processes related to ice flow". (Government of Canada)	limitations hinder more details.
3-258	G-3-112	A	6	2	6	7	Replace "current" with "climate" (Government of Australia)	Text is the approved WGI SPM language.
3-259	E-3-136	A	6	2	6	10	It is beyond my understanding how IPCC can call the numbers it gives on sea level rise a projection when it admits that there are very important terms left out. It is a bit like telling a patient there is no need to worry about his health because we have stitched the small cut on his leg when one can't yet figure out what happened as a result of a crushing blow to the head and torso. Be more forthright about the importance of what we don't know and cannot rule out. (Michael MacCracken, Climate Institute)	Text is the approved WGI SPM language and the assessment of the WGI authors.
3-260	E-3-137	A	6	3	6	4	Suggest "increasing the rate and the amount of future sea level rise" (John Church, CSIRO)	Text seems clear and the approved WGI SPM language. Space limitations hinder inclusions of more details.
3-261	G-3-114	A	6	3	6	4	The text says " … increasing future sea level rise." Did the authors mean " … increasing the rate of future sea level rise." ? (Government of New Zealand)	Text seems clear and is the approved WGI SPM language. Any additional ice flow into the ocean would increase whatever sea level changes were occurring at that time.
3-262	G-3-115	A	6	7	6	8	Is there a need to indicate a timeframe over which the models show this proposition to hold? (Government of Australia)	Due to the height of East Antarctica, the statement is true for any scenario run in the assessed AOGCMs or EMICs.
3-263	E-3-138	A	6	7			Does this statement reflect recent research on the West Antarctic Ice Sheet,and specifically the Pine Island region? (Peter Convey, British Antarctic Survey)	The statement is for the whole of Antarctica. Space limitations hinder more details. Text is the approved WGI SPM language.
3-264	E-3-139	A	6	8	6	8	In view of the fear by many that the Antarctic ice sheet will indeed discharge more ice into the oceans than any mass it gains in snowfall (e.g., see the next sentence in the p.6 text), I'd suggest changing "gain in mass due to increased snowfall" to "gain mass due to increased snowfall" (i.e., delete 'in'). (Claire Parkinson, NASA Goddard Space Flight Center)	Accepted.
3-265	G-3-116	A	6	9	6	10	Both the text of WG1 10.7 and the scientific debate might be better represented if the sentence included: '… as some observational studies have indicated ...'. Thus: "However, net loss of ice mass could occur if, as some observational studies have indicated, dynamical ice discharge dominates the ice sheet mass balance. {WGI 10.7, SPM} "	The text seems clear and is the approved WGI SPM language.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Government of New Zealand)	
3-266	E-3-5	B	6	9			Define "dynamical ice discharge" in line 9 -- needs to be made clearer that we still could see overall net ice loss in Antarctic (Kevin Grandia, DeSmogBlog)	The text seems clear and is the approved WGI SPM language.
3-267	G-3-117	A	6	10	6	10	add "and may have occurred in the past", see IPCC WG I SPM (Government of Germany)	The text seems clear and is the approved WGI SPM language.
3-268	E-3-140	A	6	10	6	20	Suggest add at the end of this sentence "as has occurred on the Antarctic Peninsular following the collapse of the Larsen B Ice Shelf and as may be currently occurring near the Pine Island Glacier in East Antarctica" (John Church, CSIRO)	The text seems clear and is the approved WGI SPM language. Space limitations hinder including more details.
3-269	G-3-118	A	6	12	6	15	This paragraph should be moved earlier in section 3.2 as part of an explanation of inertia in the climate system (refer to Australian comment: Topic 3 page 5 lines 18-20). (Government of Australia)	The inertia of the climate system is mentioned earlier on P5L18-20 and P5L28-29. The placement is the same as found in the approved WGI SPM.
3-270	G-3-119	A	6	12	6	15	Substitute approved WG1 SPM text for that of lines 12-15, as follows: “Both past and future anthropogenic carbon dioxide emissions will continue to contribute to warming and sea-level rise for more than a millennium, due to the time scales required for removal of this gas from the atmosphere.” (Government of United States)	Accepted.
3-271	E-3-141	A	6	13	6	13	To change "after the emissions" with "after their release" (Antoaneta Yotova, National Institute of Meteorology and Hydrology)	Text modified.
3-272	E-3-142	A	6	14			add an s to remain in "about 20 percent remain" (Bruce McCarl, Texas A&M Univesity)	Text deleted.
3-273	G-3-120	A	6	15	6	15	Consider mentioning appropriate non-CO2 greenhouse gases. (Government of United States)	Text deleted.
3-274	G-3-123	A	6	17	7	23	Headings should be provided in bold or italic for the issues the paragraphs on these pages discuss (ex. Ecosystems, food, health, coasts, costs etc.) (Government of Canada)	Agreed and acted upon.
3-275	G-3-5	C	6	17	7	23	" Could put more emphasis on measures that can act as mitigation and adaptation measures (e.g. adapted housing)" (Government of Belgium)	Noted. Good comment but this is a section on impacts.
3-276	E-3-6	B	6	17	10	24	Warming impacts on water and agriculture are largely interested in by policy makers and habitats. However, it is not so clear whether the documents and numbers here took into	Here in this section essentially focus in impacts (without

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							account the adaptability options. If possible, the authors add some comments on the assumptions of adaptive option employment. (Shunsuke Mori, Tokyo University of Science)	adaptation). Adaptation is dealt with in further topic.
3-277	G-3-122	A	6	17	13	39	It is said in the SPM (page 10, line 17), that more information on projected impacts is given in the Longer report, but also in the Longer report only Table 3.2 covers the sectoral impacts - particularly with regard to impacts on ecosystems, which are rarely included in the texts on regional impacts. Sectoral impacts should be give some more space or at least ecosystem effects should to a lager degree be include in the texts on regonal impacts. (Government of Norway)	Longer report contains individual paragraphs with bullet points on sectors and regions. Additional focus on specific sector not possible within space constraints.
3-278	E-3-143	A	6	17			The whole section needs some re-structuring. First, the highlighted text in lines 17-19 are not so much important for the reader as highlights of expected changes, which should be highlighted. Second, the section should be organized around topcis of changes, like: ecosystems; oceans; ice; water; human population; and regions. Climate change and water is now highlighted with a box suggesting that water is something very important - it is, of course, important, but so are health, crop, sea level rise etc. However, sea level rise gets too much focus. (Zoltán Somogyi, Hungarian Forest Research Institute)	Agreed and acted upon. Bold font removed.
3-279	E-3-144	A	6	17			Chapter 3.3 A more clear distinction between general annual and seasonal trends would help for a better understanding of future impacts esp. link between agriculture and water. Benefits may be mentioned more explicitly (e.g. higher yields in northern latitudes esp. northern America and northern Europe. and the outweighting by negative effects should also be mentioned more explicitly "what, where, why" (Markus Erhard, European Environment Agency)	Noted. Text adapted, to the extent allowed by the page limit.
3-280	G-3-121	A	6	17			The whole section needs some re-structuring. First, the highlighted text in lines 17-19 are not so much important for the reader as highlights of expected changes, which should be highlighted. Second, the section should be organized around topcis of changes, like: ecosystems; oceans; ice; water; human population; and regions. Climate change and water is now highlighted with a box suggesting that water is something very important - it is, of course, important, but so are health, crop, sea level rise etc. However, sea level rise gets too much focus. (Government of Hungary)	Agreed. See response to 3-278 above.
3-706	E-3-2	D	6	17			There is no mention of fish and shellfish. There is evidence of interactions between overfishing with climate change acting through recruitment (Beaugrand et al. 2003). Much aquaculture is coastally based and will beimpacted upon by sea level rise. (Stephen Hawkins, Marine Biological Association of the UK)	Message important for ecosystems and food, but space restriction preclude inclusion.
3-281	E-3-145	A	6	19	6	19	"system, sectors" needs to be given meaning for readers not directly involved in the field. To exemplify would be one suggestion.	Examples follow.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Caroline Leck, Department of Meteorology)	
3-282	G-3-124	A	6	20	6	20	The word 'fields' (in " … including for some fields and places …") is not clear and is distracting for readers. We do not have a good solution; the best we can offer is: " … including for some systems, sectors and places …". (Government of New Zealand)	Wording changed.
3-283	E-3-146	A	6	20			"variables" might be better than "fields" (Adrian Simmons, European Centre for Medium-Range Weather Forecasts)	Wording changed.
3-284	G-3-126	A	6	23	6	23	Please note the selection criteria for the "key findings." (Government of United States)	Given as footnote.
3-285	G-3-125	A	6	23	6	26	The phrase 'judged to be relevant for people and the environment' is not necessary and should be omitted, given that the material following has already been described in ther same sentence as 'key findings'. (Government of New Zealand)	Plenary-approved wording (WHII SPM)
3-286	E-3-147	A	6	23			The projected impacts are those without any responses to climate change, so I suggest to write The following is a selection of the key findings regarding projected impacts without any adaptations, as well…. (Nováky Béla, Szent István University, Gödöllö, Hungary)	Wording modified.
3-287	E-3-149	A	6	25	6	25	Given that many of the findings relate to rather small further temperature increases and thus apply also under (well, partially) mitigated climate change, such as stabilisation scenarios, one could omit "(unimitigated)". This could, of course, depend on how one defines "mitigated". (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Wording changed.
3-288	E-3-148	A	6	25			what does "this century" refer to (Bruce McCarl, Texas A&M Univesity)	Wording changed.
3-289	E-3-150	A	6	25			"judged to be relevant" - don't like this wording (Paula Harrison, Oxford University Centre for the Environment)	Plenary-approved wording (WHII SPM)
3-290	G-3-127	A	6	26	6	26	As was done in WG2 SPM, the authors should footnote the criteria of choice for relevance to "people and the environment". (Government of Australia)	Done
3-291	G-3-128	A	6	27	6	27	It is helpful to make clear whether or not adaptation is considered in the discussions of projected physical impacts. Use third-level headers to help structure Section 3.3 (as done in Section 3.2): physical impacts and additional risks are described, followed by potential socio-economic implications and adaptation findings. (Government of United States)	Wording modified.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-292	G-3-129	A	6	28	6	28	Suggest adding a line here to note to readers that temperature increases for this section are presented relative to 1980-1999 levels (or a footnote). (Government of Canada)	Wording modified.
3-293	E-3-153	A	6	29	6	29	high confidence that is likely -- so this is a probability of 0.90 x 0.66 = 0.59? (Richard Tol, ESRI)	Confidence levels follow assessment in WGII SPM. Confidence is not a statistical probabilistic measure.
3-294	E-3-152	A	6	29	6	30	It is unusual to read of "resilience" being "exceeded". Perhaps the sentence could begin "There is high confidence that many ecosystems are unlikely to be resilient enough to survive an unprecedented combination of …". I assume that an ecosystem cannot survive if its "resilience" is "exceeded". (Adrian Simmons, European Centre for Medium-Range Weather Forecasts)	Approved WG2 SPM language
3-295	G-3-130	A	6	29	6	32	What does the combination of "high confidence" and "likely" mean? This combination of two uncertainty statements in a single sentence is not meaningful and not foreseen by the IPCC uncertainty guidance paper cited in the introduction. It should therefore be avoided, (Government of European Community)	See response to 3-293
3-296	G-3-6	C	6	29	6	32	Using both confidence and likelihood statements in the same sentence is confusing. The uncertainty should be made more clear. Making a statement that applies to ALL unmitigated scenarios is difficult and it may result in a statement that has little meaning (Government of Belgium)	See response to 3-293
3-297	E-3-154	A	6	29	6	41	As stated by a recent UNEP report, the marine ecosystems are already seriously impacted by and use change and habitat loss, overfishing, invasive species and other factors. Thus, I suggest to add habitat loss and invasive species to the examples listed in line 30. Reference: UNEP (2006) Marine and coastal ecosystems and human wellbeing: A synthesis report based on the findings of the Millennium Ecosystem Assessment. UNEP. 76pp (Jilan Su, Second Institute of Oceanography, State Oceanic Administration)	Wording modified according to Plenary-approved WGII SPM language
3-298	G-3-131	A	6	29	6	41	This paragraph summarizing the important ecosystem effects has surprisingly omitted a major quantitative result about projections for loss of biodiversity. This result should be included here - 20-30% of species assessed so far at increasing risk of extinction. So as not to make the sentence too long and difficult to read, suggest deleting the phrase about 'ecological interactions" since this would seem to be captured by the 'changes in ecosystem structure and function'. (Government of Canada)	This information is available in Fig. 3.5 and also section 3.4.
3-299	G-3-133	A	6	29	6	41	My comments in item 5 (above) are relevant for this paragraph. [TSU note: See Comment G-1-147-A] (Government of Brazil)	Not sure of this comment – understanding.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-300	G-3-132	A	6	29	41	6	On this parragraph should be included the conclusion of the SPM WG II Section C under the section Ecosystems that states: ¨ Over the course of this century net carbon uptake by terrestrial ecosystems is likely to peak before midcentury and then weaken or even reverse, thus amplifying climate change. ** [4.ES].¨ (Government of Cuba)	Wording modified according to Plenary-approved WGII SPM language.
3-301	E-3-151	A	6	29			The term “resilience” is not included in the Glossary. I think a definition should be included in the Glossary or in a footnote. (Sergio Alonso, University of the Balearic Islands)	It is included in the Glossary.
3-302	E-3-155	A	6	30	6	31	Add. ¨…. (e.g., natural disasters as flooding, drought, wildfire, insects) (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Rejected. Disturbance is a more general term of relevance here.
3-303	G-3-134	A	6	31	6	31	Is it reasonable to imply 'insects' as a class are a disturbance? We suggest replacing 'insects' with 'invasive species'. (Government of New Zealand)	Plenary-approved WGII SPM language.
3-707	E-3-3	D	6	31	6	31	It could be argued that land-use change, pollution and over-exploitation are local or regional scale drivers that can scale up globally. (Stephen Hawkins, Marine Biological Association of the UK)	Used plenary-approved WGII SPM language.
3-304	E-3-156	A	6	31	6	32	Fragmentation of natural systems as consequence of land use changes should be include explicitly (Mercedes Bustamante, University of Brasilia)	Plenary-approved WGII SPM language.
3-305	E-3-157	A	6	31			"insects" - what does this mean? Does it refer to invasive species or something else? (Paula Harrison, Oxford University Centre for the Environment)	Plenary-approved WGII SPM language.
3-306	G-3-136	A	6	32	6	32	It is not clear in what way "over-exploitation of resources" is a driver other than through its effects on land use and pollution. We question the usefulness of including it here. Note drivers of climate change have earlier been listed (Topic 2, p3, lines 10 - 11) as "Changes in the atmospheric concentration of greenhouse gases and aerosols, in solar radiation and in land surface properties". (Government of New Zealand)	SPM accepted wording (e.g. over-exploitation of water, overfishing)
3-307	G-3-135	A	6	32	6	33	The authors need to explain what reference date attaches to the temperature increases (e.g. present, pre-industrial, etc.). (Government of Australia)	Statement made in introduction
3-308	E-3-158	A	6	32	6	35	Reword to make clearer: "For increases in global average temperature exceeding 1.5-2.5oC and concomitant atmospheric CO2 concentrations, major changes in ecosystem structure and function, ecological interactions and geographic ranges of species are projected, with an increasing risk of extinction for many species." (Paula Harrison, Oxford University Centre for the Environment)	Plenary-approved WGII SPM language.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-309	E-3-159	A	6	33	6	33	Please be specific in stating temperature increases, i.e. providing the reference period. As an example, see footnote 5 in Topic 5, page 2. (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	See 3-307
3-310	G-3-137	A	6	33	6	33	Editing: replace "in" with "the" (Government of Australia)	Plenary-approved WGII SPM language.
3-311	E-3-160	A	6	33	6	35	A very complex final part of the sentence. May be better to have: '….major changes in ecosystem structure and function are projected, including an increasing risk of extinction for many species, the ecological interactions and changes in their geographic ranges'. (Roman Corobov, Modern institute for humanities)	Plenary-approved WGII SPM language.
3-312	E-3-161	A	6	35	6	35	Insert "shifts in" before "geographic ranges of species" (Andreas Fischlin, Integrative Biology - Systems Ecology)	Accepted, as it does not change meaning of WGII SPM statement.
3-313	E-3-162	A	6	35	6	35	I suggest to include the following after "ranges of species." Which in turn impact the integrity and self organising capacity of ecosystems to an an unforseeable extent via indirect effects. (Wilhelm Windhorst, Ecology Centre, Kiel University)	Noted. Complex statement, support not readily available in background material.
3-314	G-3-138	A	6	35	6	35	We suggest the sentence "Increasing atmospheric carbon dioxide …" starts instead with 'Also,', thus: "Also, increasing atmospheric …". This clarifies that there is a change in the impact process, from warming to acidification, at this point in the paragraph. (Government of New Zealand)	Text follows plenary-approved WGII SPM language.
3-315	G-3-140	A	6	35	6	35	Insert paragraph break before “Increasing…” (Government of United States)	Bullets introduced.
3-708	E-3-4	D	6	35	6	35	this statement needs amplifying, suggest "including changes in phenology and geographic ranges of species with consequences for ecological interactions and ecosystem functioning." (Stephen Hawkins, Marine Biological Association of the UK)	Text follows plenary-approved WGII SPM language.
3-316	G-3-139	A	6	35	6	40	It would improve the structure of this paragraph if these final sentences were made a separate paragraph. (Government of Australia)	Bullets introduced
3-317	G-3-141	A	6	36	6	36	Editing: replace "leads" with "has lead" (Government of Australia)	Wording modified.
3-318	G-3-142	A	6	38	3	41	The confidence level seems too low. The corresponding statement in the WG 2 TS.4.1 reads :"Ocean acidification is likely to impair aragonite-based shell formation in a wide range of planktonic and shallow benthic marine organisms." This "likely" statement (66-90% probability) corresponds best to "high confidence" (~80%) not "medium confidence" (~50%). (Government of European Community)	SPM wording

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-319	E-3-163	A	6	38	6	40	The magnitude of the consequences of ocean acidification could be indicated here (Mercedes Bustamante, University of Brasilia)	For all impacts high – by default as per introductory paragraphs.
3-320	E-3-164	A	6	39	6	39	Replace "shell forming" with "calcifying" (Janice Lough, Australian Institute of Marine Science)	Text follows plenary-approved WGII SPM language.
3-709	E-3-5	D	6	39	6	39	It is not just corlas that are expected to suffer with ocean acidification, pelagic organisms with calcareous plates and benthic organisms with calcium carbonate shells have also been shown in laboratory manipulations to reduce their shell formation in waters of increased acidity (Doney et al. 2006). (Stephen Hawkins, Marine Biological Association of the UK)	Text follows plenary-approved WGII SPM language.
3-321	E-3-165	A	6	39			Is this the only effect of ocean acidification? Lowering pH of the ocean surface water will have no other effects? (Ben Muirheid, International Fertilizer Trade Association (IFA))	Text follows plenary-approved WGII SPM language.
3-322	E-3-166	A	6	39			Is there a possible impact on phytoplankton (e.g. coccolithophores)? (Michel Rixen, NATO Undersea Research Center)	Rejected. No information readily available in background documents.
3-323	E-3-167	A	6	40	6	40	Please source also Figure TS-6 of WGII (it differs from Figure 4.4.!) (Andreas Fischlin, Integrative Biology - Systems Ecology)	Done
3-324	G-3-143	A	6	43	6	43	Add the word 'slightly' after 'increase' at the end of this line. This is consistent with the results as communicated in the WGII SPM and technical summary. (Government of Canada)	Done
3-325	E-3-169	A	6	43	6	48	I suggest to introduce a commentary about fisheries or food production from seas. As an example: Exploitation could be the principal driver of fisheris stabilisation or reducttion. But changes in pelagic communities, composition and productivity, driving by climate change (SST, wind circulation or timing) could affect sinergisticallly to reduce specific fisheries and marine food abailavility. The question could be of interest for polycimakers of countries with extractive activity, and in general as protein source for human and animal feeding. (Ricardo Anadón, Universidad de Oviedo)	Noted. Inclusion not possible due to lack of information in background documents and space restrictions
3-326	E-3-170	A	6	43	6	48	I begin to get confused as to how these values relate to the discussion on the impacts of water availability later - do these numbers refer to the effect on productivity of a change in temperature, assuming no change in water availability? (Keith Shine, University of Reading)	Assessment is based on joint effects as far as models have incorporated this information.
3-327	E-3-168	A	6	43			The possible increase of fire incidence in seasonally dry ecosystems should be mentioned too. This will be mentioned only in page 13 of this section. (Mercedes Bustamante, University of Brasilia)	Rejected. Not a proper place. Wildfire mentioned in a few places.
3-328	E-3-7	B	6	43			Any estimates on the number of people expected to be impacted by lower crop productivity? Would be good to include such a number to further illustrate the severity of the the issue.	Rejected. Low to medium confidence of estimates

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Kevin Grandia, DeSmogBlog)	
3-329	E-3-171	A	6	44	6	44	Add: ¨…with increases in local average temperature over a range of 1-3 oC IN HIGHER LATITUDES, but above…¨ (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Rejected. General, global statement
3-330	G-3-144	A	6	45	6	45	Suggest addition on line 45 of bullet from WG2 SPM that describes the short-term benefit for mid-latitude crop yields: "Crop productivity is projected to increase slightly at mid- to high latitudes for local mean temperature increases of up to 1-3℃ depending on the crop, and then decrease beyond that in some regions." (Government of United States)	Text amended
3-331	G-3-145	A	6	45	6	47	At lower latitudes, especially seasonally dry and tropical regions, including small islands crop productivity is projected to decrease for even small local temperature increases (1-2℃), which would increase risk of hunger. (Government of Mauritius)	Text follows plenary-approved WGII SPM language.
3-332	E-3-172	A	6	45			Seems, 'in' is missed before 'seasonally' . (Roman Corobov, Modern institute for humanities)	Done
3-333	G-3-146	A	6	46	6	46	It is suggested to change the word "could" to "might". (Government of China)	Approved SPM language - would
3-334	G-3-147	A	6	47	6	48	The statement on adaptation does not adequately reflect the findings in the underlying report. This statement seems to have been derived from WG 2 Figure 5.2.b/d/f. According to the caption, adaptation in this figure includes "included changes in planting, changes in cultivars, and shifts from rain-fed to irrigated conditions". The text in the SYR draft omits mentioning of the last adaptation option (introduction of irrigation), which may not be feasible in many regions due to insufficient economic resources and/or freshwater. Furthermore, the figure suggests that implementation of these management options would increase baseline yields (in the absence of climate change) as well. In this case, there would still be a marginal impact of climate change would still be negative, assuming equal management". In summary, this sentence should be deleted, or it would have to substantially changed in order to better reflect the information in the underlying report. (Government of European Community)	Agreed. Text removed.
3-335	G-3-148	A	6	47	6	48	Does this sentence refer to yields in general or for certain regions? (Government of Sweden)	Text removed.
3-336	E-3-173	A	6	47			adaptation such as altered cultivars…' The whole idea behind the AR4 is the precaution principle. Is this sentence suggesting the use of GMOs? (Michel Rixen, NATO Undersea Research Center)	Text removed.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-337	E-3-174	A	6	48			"be maintained at or above baseline yields" question: Is this related to low latitudes? (Hartmut Grassl, Max Planck Institute for Meteorology)	Text removed.
3-338	E-3-177	A	7	1	7	6	Stongly support conclusion (Robert Kay, Coastal Zone Management Pty Ltd)	Fine.
3-339	E-3-175	A	7	1	7	23	The term 'millions of people' is used several times. In the context of global significance over a projected period af approximately a century this seems a small unit. I suspect 'tens of million' would be more correct. May be it should also be pointed out that this assumes minimal adaptation. (George Walker, Aon Re Asia Pacific)	Approved SPM wording.
3-340	E-3-176	A	7	1	9	49	The same comment than in 2. Two Tables with high discrepancies in the sea lecel rise stimations need and explicit comment to a better understanding for non expert readers [TSU note: See Comment E-SPM-585-A] (Ricardo Anadón, Universidad de Oviedo)	Agreed. But topic 3 is not appropriate place.
3-341	G-3-149	A	7	2	7	2	Editing: replace "the effect" with "these effects". (Government of Australia)	Re-wordced.
3-342	E-3-178	A	7	2			The words "due to climate change and sea-level rise" read as if climate change and sea-level rise are two different things, rather than the latter being (mostly) a part of the former. (Adrian Simmons, European Centre for Medium-Range Weather Forecasts)	Text follows plenary-approved WGII SPM language.
3-343	E-3-180	A	7	3	7	3	Add: ¨…pressures on coastal areas,for example, urbanizations and touris. Many millions….¨ (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Approved SPM language. Specification would require more words.
3-344	E-3-181	A	7	3	7	3	"millions" should be 'million' (Jon Egill Kristjansson, University of Oslo)	No, it is o.k.
3-345	E-3-182	A	7	3	7	3	"Many million more people ….". The question is: more than what or when? More than today? Please explain. (Jon Egill Kristjansson, University of Oslo)	Wording changed.
3-346	E-3-179	A	7	3	7	4	This is the kind of sentence that I understand less the more I read it. Does it mean that every year, many more millions will become vulnerable to flooding? I don't think so. (Keith Shine, University of Reading)	Rephrased
3-347	G-3-150	A	7	3	7	4	The densely-populated and low lying areas, namely the mega-deltas of Asia and Africa are especially at risks and the small islands are especially vulnerable.Many millions more people are projected to be flooded every year due to sea-level rise by the 2080s. (Government of Mauritius)	Rephrased
3-348	G-3-151	A	7	4	7	4	The authors should consider including WG2 Fig TS-8 showing a map of vulnerability of populations in coastal deltas displaced by current sea level trends to 2050. This would	Thanks for support of this fine Figure. However, space

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							break up 2 pages of text and provide a relevant example of vulnerability. (Government of Australia)	restriction precludes inclusion.
3-349	G-3-153	A	7	4	7	4	Change “be flooded” to “experience floods”. (Government of United States)	Done.
3-350	E-3-183	A	7	4	7	6	This statement may be justified in thinking about small amounts of sea level rise, but it cannot possibly be the case for large ones, given all the infrastructure already located along the coasts of developed nations--there are major cities, ports, energy and transportation facilities, homes, etc. For larger amounts of SL rise, one cannot simply build levees on the seaward side and assert that this will be easily and cheaply done just because The Netherlands has done it. There will be tremendous disruption, especially where there are potential storm surges of ten meters or more. Reword to give a more balanced view--indicating only applicable for small amounts of rise--for large ones, situation dire for everyone. (Michael MacCracken, Climate Institute)	Statement removed
3-351	G-3-152	A	7	4	7	6	It is unclear why this statement stating that adaptation will be more challenging in developing countries due to constraints on adaptive capacity is placed in the context of coastal regions. It applies equally to all regions / sectors. The statement should be retained but it should be moved (perhaps p.6 after line 27). (Government of Canada)	Agreed. Statement deleted
3-352	E-3-184	A	7	4			"millions more people" clarify if this is due to more widespread flooding or merely due to population growth. (can this be stated as an increase in the per centage of the relevant population flooded?) (Leonard Allen Smith, London School of Economics)	Approved SPM wording. Joint effect.
3-353	E-3-185	A	7	6	7	6	I suggest to end the last sentence as follows: , but ignorance in industrialized country may also contribute to a growing vulnerability. (Wilhelm Windhorst, Ecology Centre, Kiel University)	Cannot accept , policy prescriptive.
3-354	E-3-186	A	7	6	7	6	Add: ¨… due to constraints on adaptative capacity AND FINANCIAL RESOURCES. ¨ (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Noted. Adaptive capacity depends, to large extent, on financial resources.
3-355	E-3-187	A	7	8	7	10	You forgot to say that (Richard Tol, ESRI)	Not sure what this is referring too? No suggested inputs for changes?
3-356	G-3-154	A	7	10	7	10	The authors should include an additional sentence along the lines of WG2 SPM (page 7) that poor communities can be especially vulnerable to the effects of climate change. (Government of Australia)	Vulnerability is covered more extensively in topic 4.
3-357	G-3-156	A	7	12	7	12	Re: "There is 'high confidence' that the health status of millions of people is 'likely' to be affected…"Is 'likely' used here as confidence indicator (ie: >66%)? If not, the appropriate confidence indicatory should be used here.	Likelihood statement dropped and replaced with ‘projected’. Confidence is high as per

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Government of Australia)	introduction to 3.3. Also see response to 3-293.
3-358	E-3-189	A	7	12	7	17	Include "psychosocial health problems of displaced people". (Hisashi Ogawa, World Health Organization Regional Office for the Western Pacific)	Text follows plenary-approved WGII SPM language.
3-359	G-3-155	A	7	12	7	17	What does the combination of "high confidence" and "likely" mean? This combination of two uncertainty statements in a single sentence is not meaningful and not foreseen by the IPCC uncertainty guidance paper cited in the introduction. It should therefore be avoided, (Government of European Community)	See response to 3-293. Likelihood statement dropped.
3-360	E-3-188	A	7	12	7	23	Please use neutral language. You give the negatives without qualification, but the positives are all qualified. Is this the IPCC or Greenpeace? (Richard Tol, ESRI)	It was attempted now to render positives better visible. Revised text follows WGII SPM findings.
3-361	G-3-157	A	7	12	7	23	General comment: no information is given concerning the risk of UVB radiation - about the causes and effects like increaing incidence of skin cancer. It is generally accepted that ozone depletion is not related to climate change, however the increasing number of sunny days during the summer poses a risk of the impact of UVB radiation. (Government of Hungary)	Too little evidence on relationship climate change and skin cancer, since it depends on uncertain changes in cloud cover, plus behavioural changes. Findings follow WGII SPM findings.
3-362	E-3-191	A	7	14	7	15	Add: ¨…. ; increased burden of diarrhoeal AND OTHER WATER DISEASES; the increased frequency of….¨ (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Not included, because not in WGII SPM, space constraints.
3-363	G-3-158	A	7	14	7	15	"increased burden of diarrhoeal diseases" comment: please give the most important causative agents as examples (Government of Hungary)	Space does not allow details – please consult WGII chapter 8
3-364	E-3-190	A	7	14			To include "higher precepitation" between "fires" and "droughts;" (Ben Muirheid, International Fertilizer Trade Association (IFA))	Wording reduced to refer to “extremes” only.
3-365	E-3-192	A	7	15	7	16	Although it is clear that O3 formation depends on temperature, health effects related to air pollution are not only the result of O3 levels, but as a results of mixtures in which PM play an important role. Would it be possible to state: “higher concentrations of pollutants e.g. ozone”. (Alvaro Osornio Vargas, Universidad Nacional Autónoma de México)	SPM wording followed.
3-366	E-3-195	A	7	16	7	16	Plesae add "and aerosol particles" after ozone (Caroline Leck, Department of Meteorology)	Rejected – not confirmed in chapter 8. WGII SPM discusses ground-level ozone only.
3-367	G-3-159	A	7	16	7	17	"altered spatial distribution of some infectious disease vectors" give the most relevant vector borne diseases as examples	Space does not allow details – please consult chapter 8.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Government of Hungary)	
3-368	E-3-193	A	7	16	7	19	The likely impact of climate changes on vector-borne diseases such as malaria will not be only as a result of "altered spatial distribution of infectious disease vectors" but is also a function of changes in temperature suitabilities for the cycle of the parasite. Therefore I would recommend that "vectors"be dropped from the sentence and "disease"changed to "diseases" (Frank Tanser, Africa Centre for Health and Population Studies)	Addressed. Wording modified to conform to WGII SPM wording.
3-369	E-3-194	A	7	16			replace "ground level ozone ..." with "ground level air pollution a.e. Ozone ...." (Andreas Matzarakis, Meteorological Institute, University of Freiburg)	Noted. WGII SPM wording followed.
3-370	E-3-196	A	7	17	7	17	Please exemplify "disease vectors" (Caroline Leck, Department of Meteorology)	Space does not allow details – please consult chapter 8.
3-371	E-3-197	A	7	18	7	19	This sentence is unclear. Whilst malaria is projected by one model to show a small latitudinal increase in the Southern fringe of distribution (and a net retreat in some areas) in Africa, the same model projected a large increase in transmission potential in the fringe areas. Thus the overall effect was still overwhelmingly negative; yet the sentence does not convey this. I would suggest something to the effect of: " .....from cold exposure and potential retreats in the distribution of malaria in selected localities are projected (although the net effect is still an increase in the range and transmission potential)". (Frank Tanser, Africa Centre for Health and Population Studies)	Addressed – WGII SPM wording followed.
3-372	G-3-160	A	7	19	7	20	It is suggested to include a footnote in order to inform the reader about how well current emissions match the emission projections assessed. This footnote might read as follows: It should be noted that the actual emission trend for the years 2000 to 2004 (see also figure SPM-3) is not reflected in any of the emissions scenarios assessed (see also figure SPM-8) because of the strong increase in emissions. Work to update the SRES scenarios has already started and updated results could be made available by 2009?. (Government of Austria)	Misplaced comment?
3-373	G-3-161	A	7	21	7	21	For clarity the authors should insert "in determining the health impacts due to climate change" after "critically important". (Government of Australia)	WGII SPM wording used in revised text
3-374	E-3-198	A	7	22	7		After health prevention add: "food security" (Martha Yvette Munguía de Aguilar, Ministry of Environment and Natural Resources)	Wording follows WGII SPM list of key issues
3-375	E-3-199	A	7	23	7	23	The reference to WGI Box 7.4 is probably ok (tropospheric ozone), whereas the reference to WGI 7.6 seems less appropriate. One could consider some subchapter of WGI Chapter 7 instead dealing more directly on tropospheric ozone. (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	References changed.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-376	E-3-201	A	7	25	8	14	This section seems to have been written from an entirely negative point of view, and also contains some significant anamalies. There is no doubt that the changes in rainfall patterns and run-off have great significance. There is no question that where rainfall and or run off is predicted to decrease then this has serious implications for the future population in those areas, particularly if like Australia they are already relatively arid regions and already suffering stress from lack of water resources. However to only emphasise the negative consequences of flooding where run-off is likely to increase is not being very objective. Southern China currently and for centuries has been one of the most flood prone areas of the world. It has also agriculturally been one of the most productive, one consequence of which being the high population density it has sustained over centuries. The benefits arising from plenty of rainfall and run-off historically have almost always outweighed the losses arising from floods. The negative connotations ascribed to higher intensity rainfall also seems to me be partly misplaced. Most major reservoirs are only filled by intense rainstorms. Indeed it is the lack of intense rain in eastern Australia over the past 20 years or so that has led to a serious depletion of water supplies. Frequent light rain does not help this situation. Looking at Figure 3.3 gives a significantly more optimistic future for some regions than is described in the text. (George Walker, Aon Re Asia Pacific)	Agreed. Wording changed and text added.
3-377	E-3-200	A	7	25	8	18	Why is this part in a box? (Marco Mazzotti, ETH Zurich)	Important cross-cutting issue of general interest.
3-378	E-3-202	A	7	25	8	18	Some explanations need why the projected impacts on water resources were introduced in special form. In Boksz form (Nováky Béla, Szent István University, Gödöllö, Hungary)	See above.
3-379	G-3-162	A	7	25	8	18	The box "Climate change and water" misses a very important statement on droughts from the underlying report. Add the following sentence, based on WG 2 Chapter 3.4.3: "Projections based on one climate model and one baseline emissions scenario suggest that the proportion of the global land surface in extreme drought is predicted to increase from 1-3 % for the present-day to 30 % by 2090s." (Government of European Community)	Important information, yet the box is already large, so it was reduced rather than extended.
3-380	G-3-163	A	7	25	8	18	Important section, please keep, in particular figure 3.3 on water run-off, as this is an impact affecting many people around the world (Government of Germany)	Great
3-381	G-3-164	A	7	25	8	18	Box on climate change and water. This is an unusual format, perhaps, to single out one cross-cutting issue to highlight like this. However, we are supportive of doing this for the climate change and water issue given that so many of the concerns about future impacts are linked to water resources. What is missing from this Box, however, is a critical statement from the WGII discussion that says " All IPCC regions show an overall net negative impact of climate change on water resources and freshwater ecosystems." (See TS4.1 last major finding re water resources.)	Thanks for supporting out TS statement. However, the box is already large, so that reduction rather than extension is needed, in view of the critical overall page limit.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Government of Canada)	
3-382	E-3-203	A	7	27	7	29	It is true that population growth usually may lead to the increasing water stresses, but some chnages in economy (especially changes in technology, e.g. use of watersave technology) may reduce the water demand (comsumption) and lead to decreasing water stresses (Nováky Béla, Szent István University, Gödöllö, Hungary)	Noted. However, increase of population and increasing water demand (stronger than population increase) dominate.
3-710	G-3-3	D	7	28	8	18	The retraction of glaciers taking place at the North Patagonian area of The Andes mounting range might affect the hydro electric generation of the region. This could also have an impact on the whole country because it would presuppose a reduction of the national supply of around 8 % of hydro electricity, which in turn will have to be replaced by more expensive sources. Sources: Torcuato Di Tella Foundation and Institute Torcuato Di Tella, Vulnerability of the Patagonia and South of Buenos Aires and La Pampa Provinces, Final Report, April 2006, Buenos Aires. (Government of Argentina)	Agreed.
3-383	E-3-204	A	7	31	7	34	Which are these regions? (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria)	Regions listed.
3-711	G-3-4	D	7	31	7	34	It is suggested to clarify the regions referred to. (Government of Argentina)	Regions listed.
3-384	E-3-8	B	7	34			Define "one-sixth of the world popoulation" -- state how many people that is. (Kevin Grandia, DeSmogBlog)	There are arguments supporting either form. It was decided to stick to the existing wording (over one-sixth = over one billion)
3-385	E-3-206	A	7	37	7	40	In text the expected change in annual runoff is given by mid-century, while in referred Figure 3.3 the change in annual runoff is given for the period 2090-2099, that is by the end of century (Nováky Béla, Szent István University, Gödöllö, Hungary)	Fig. 3.3 is a logical continuation of Figs 3.1 and 3.2, illustrating 2090-2099. The text refers to a published information (and SPM wording).
3-386	G-3-165	A	7	37	7	41	This sentence is too long and is not clear (is it the changes which are projected to increase, or the runoff or the water availability?). We suggest: "Changes in precipitation (Figure 3.2) and temperature (Figure 3.1) lead to changes in runoff and water availability. Water availability is projected to increase by 10-40% by mid-century at higher latitudes and in some wet tropical areas, including populous areas in E and SE Asia, and decrease by 10-30% over some dry regions at mid-latitudes and dry tropics (Figure 3.3), due to decreases in rainfall and higher rates of evapotranspiration." (Government of New Zealand)	Done
3-387	G-3-166	A	7	37	7	41	This sentence is too long and is not clear (is it the changes which are projected to increase, or the runoff or the water availability?). We suggest: "Changes in precipitation	As 3-386

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Figure 3.2) and temperature (Figure 3.1) lead to changes in runoff and water availability. Water availability is projected to increase by 10-40% by mid-century at higher latitudes and in some wet tropical areas, including populous areas in E and SE Asia, and decrease by 10-30% over some dry regions at mid-latitudes and dry tropics (Figure 3.3), due to decreases in rainfall and higher rates of evapotranspiration." (Government of New Zealand)	
3-388	G-3-167	A	7	37	7	41	Change in precipitation does not necessarily lead to increase in runoff. Even so, RCM projects that in 2070s part of northern China would decrease in precipitation, especially during the summer season, based on Chinese scientists' results. (Government of China)	Wording modified to include the caveat.
3-389	E-3-205	A	7	37			Reference to Figure 3.2 before Fig 3.1… (Michel Rixen, NATO Undersea Research Center)	Correct, ref to Fig. 3.2 should come before Fig. 3.1 here, but this is not the first time these figures are referred to. The order of figures results from the logic of earlier section (3.2)
3-390	G-3-168	A	7	38	7	38	Split into 2 sentences to avoid ambiguity and improve readability. Replace "water availability which are projected to increase" with "water availability. Runoff is projected to increase" (Government of Australia)	Agreed. Text changed.
3-391	G-3-169	A	7	38	7	38	For better readability, suggest ending the sentence after “water availability” and beginning a new sentence with “Runoff and water availability are projected…” (Government of United States)	Agreed. Text changed.
3-392	E-3-207	A	7	39	7	39	It may be useful to expand E and SE as, East and SouthEast (Richard Anyah, Rutgers University)	Done
3-393	E-3-208	A	7	44	7	44	Could omit reference to WGI 8.3 here. (Even though climate model performance of course is relevant to the fidelity of the projections, the interested reader might not readily make this connection, and thus wonder about the reference. References to model evaluation are neither made for the other listed findings.) (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Done
3-394	G-3-170	A	7	47	7	47	Change “trend for an increase” to “future increase”. (Government of United States)	Done
3-395	E-3-209	A	7	47	7	49	Increase in heavy precipitation usually lead to flash flood, so it is better to write 'The resulting increased flash flood risk posee … (Nováky Béla, Szent István University, Gödöllö, Hungary)	Present wording is more general.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-396	G-3-171	A	7	48	7	49	This sentence is redundant. Delete it. (Government of United States)	Noted. But this sentence conveys important information.
3-397	E-3-210	A	8	0	9	0	Increased risk of forest fires and wildfires is now only mentioned for North America, but will surely be a growing problem also in Eurasia, e.g., Siberia. (Jon Egill Kristjansson, University of Oslo)	Misplaced comment referring to regional information. Forest fires are mention a few times in topic 3.
3-398	E-3-211	A	8	1	8	4	Maybe add that the intensity of a given drought will be exacerbated by higher temperatures. (Janice Lough, Australian Institute of Marine Science)	Agreed. Text modified.
3-399	E-3-9	B	8	1			Define "20% of the world population" (Kevin Grandia, DeSmogBlog)	Noted. Preferential expression (as in the background information).
3-400	G-3-172	A	8	2	8	3	There are lot of grids without any color in Figure 3.3, please indicate what kind of change will happen in these grids, or no data available. Otherwise, we cannot draw such conclusions. (Government of China)	White areas explained in the caption.
3-401	G-3-173	A	8	6	8	6	Use of "will" fails to use IPCC uncertainty terminology. Is "virtually certain" too weak? (Government of Australia)	Paragraph deleted due to space limit.
3-402	E-3-212	A	8	6	8	10	What is the comparative climate change impact (increase in surface average temperatures) on the freshwater bodies(lakes). For example lake levels may be reduced due to increased evaporation. (Richard Anyah, Rutgers University)	Paragraph deleted due to space limit.
3-403	G-3-174	A	8	6	8	10	There is a general lack of uncertainty language in this section. (Government of Australia)	Paragraph deleted due to space limit.
3-404	E-3-213	A	8	8	8	8	please add and change as follwos: composition, water quality and ecosystem functioning. (Wilhelm Windhorst, Ecology Centre, Kiel University)	Paragraph deleted due to space limit.
3-405	E-3-214	A	8	14	8	26	While the statements made may be true in respect of negative impacts, Figure 3.3 suggests that the effects described will not apply to the Horn of Africa and some countries to the south of it. In a document intended for use globally they deserve some mention, and even more so if for some reason Figure 3.3 is misleading. (George Walker, Aon Re Asia Pacific)	Explanation in the box text. Figure caption changed.
3-406	E-3-215	A	8	15	8	15	I think SRES A1B emissions Scenario is not popular than A2/B2, change the figure under A2/B2 scenario. (Liu Yingjie, Institute of Environment and Sustainable Development in Agriculture)	It is a logical suite = Fig. 3.1 and 3.2 are for A1B
3-407	G-3-175	A	8	15	8	16	This map should be deleted as it appears to conflict with text on the regional chapters contained in Working Group 2 and is inconsistent with some of the findings contained in the SYR (e.g. the key Australian statement about water scarcity on page 9 lines 5-6), as such presenting the global model outputs for runoff changes in this way could confuse	No deletion. Explanatory text added.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							policy readers. (Government of Australia)	
3-408	E-3-219	A	8	20	8	20	It would be interesting to know what percentage of the population is 75 to 250 million people. (Marco Mazzotti, ETH Zurich)	Space reasons prevent this; governments agreed to refer to millions in this instance in WGII SPM.
3-409	E-3-217	A	8	20	8	21	The population likely to be affected should be expressed as a fraction of the projected total population (Richard Anyah, Rutgers University)	Space reasons prevent this; governments agreed to refer to millions in this instance in WGII SPM.
3-410	E-3-221	A	8	20	8	21	How do these numbers for the African continent relate to today's values (i.e. how many suffer from water stress today), also expressed as percentage of the respective population at present and in the 2020s? (Dieter Gerten, Potsdam Institute for Climate Impact Research)	Space reasons prevent this; governments agreed to refer to millions in this instance in WGII SPM.
3-411	G-3-176	A	8	20	8	26	This paragraph lacks any quantitative impact projections beyond 2020. Suggest to add the following sentence from WG 2 Chapter 9 Executive Summary: "A 3°C temperature increase is expected to lead to 0.4 – 1.8 billion more people at risk of water stress." (Government of European Community)	Entries revised to include effects for greater warming
3-412	E-3-216	A	8	20	9	3	There are only examples from the water and agricultural sectors, this may be enriched by findings from other domains. Also, a note on potential direct CO2 effects, which may significantly affect crop production, is desirable, even if the extent of this effect is uncertain. (Dieter Gerten, Potsdam Institute for Climate Impact Research)	Entry on ecosystems added
3-413	E-3-220	A	8	20	10	12	In my opinion this is the worst section in the whole Synthesis report. There is no consistency in the reporting of the likely impacts on the different areas, and some of it seems inconsistent with the information presented in Figures 3.2 and 3.3. Some of the reports focus solely on the negative impacts, some discuss both positive and negative impacts; some try to cover the whole region, one (Latin America) focuses on one region (Eastern Amazonia) only. The Polar regions are combined despite being totally different in nature and in relation to the expected impact on them. (George Walker, Aon Re Asia Pacific)	Section revised.
3-414	G-3-177	A	8	20	10	12	This is a very important summary section for this synthesis, but confidence levels are provided for a seemingly random selection of climate effects, and these are all ones where the confidence level is high or very high, leading to the possibly mistaken impression that that level of confidence applies to all projections. Following the careful statement of confidence levels in previous parts of this report, every statement made about future changes should be assigned the appropriate confidence level, or, if the high confidence level is assignable to all the projections in a regional summary, that should be	Agreed , section revised with clear introduction and more transparent choice of bullets for each sector/region.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							made explicit. (Government of United States)	
3-415	G-3-7	C	8	20	10	25	" Why not put the changes for different regions and their impacts of the different regions together? I.e. merge sections 3.2 and 3.3" (Government of Belgium)	Rejected; would lead to repetition of same impacts in different regions.
3-416	E-3-218	A	8	20			Similar concerns to my comment on page 9 Re: working group 2 assessment of confidence on water stress. The Southern Hemisphere winter storm tracks are not well simulated in many of the models, and so the South African changes, and assessments of impacts on that region have less confidence than one would attribute based on the multi-model mean and a count of models that agree on sign of the change. Agreement on sign is a very weak condition and the maps of precipitation and runoff (fig 3.3) change in a manner that is very sobering if other means of establishing statistical significance or conditions regarding the number of models predicting substantial change of the water supply are applied. Unfortunately, since it was not a reviewer Working Group 2, I do not have it available to me to evaluate how the assessment of "High confidence" was arrived at. My guess however is that there is an uneven evaluation of confidence relative to Working Group 1 for things that depend on precipitation inputs. I'd suggest careful scrutiny of these confidence statements, although the basic concern regarding increased water stress is well-founded. Similar concerns apply to statements for Australia and New Zealand on page 9, line 5. (J. David Neelin, UCLA)	Wording revised where appropriate, with strict adherence to confidence levels in approved WGII SPM
3-417	E-3-222	A	8	20			between 75 and 250 million (more?) people? Or in total? (Michel Rixen, NATO Undersea Research Center)	See underlying chapter on Africa – space limitations prevents details here.
3-712	E-3-6	D	8	20			The section is a little vague on the kind of biological responses have been observed. More can be put in here with some examples, particularly phenology and biogeographic range shifts (see No. 4 for specific references). [TSU note: See Comment SPM-2131] (Stephen Hawkins, Marine Biological Association of the UK)	Entry on ecosystem effects added
3-418	G-3-178	A	8	21	8	21	If "water stress" is used here as a quantifiable term, it should have a footnote providing a definition. (Government of Australia)	Water stress is included in glossary.
3-419	E-3-223	A	8	23	8	24	So, is the reduction in yield here due to water availability or due to the temperature changes referred to on page 6 (lines 43-48)? (Keith Shine, University of Reading)	Due to temp and climate change induced precip; role of humans via abstraction not included.
3-420	G-3-179	A	8	24	8	26	Africa is one of the most vulnerable continents to climate variability and change because of multiple stresses and low adaptive capacity. Some adaptation to current climate variability is taking place, however, this may be insufficient for future changes in climate.	Factored in when key vulnerabilities addressed later.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							{WGII 8.2, 8.4, 8.5} (Government of Mauritius)	
3-421	G-3-180	A	8	28	8	30	This sentence conveys only part of the message from the underlying report. Suggest to change to the following sentence from the WG 2 Chapter 10 Executive Summary: "Climate change will impinge on sustainable development of most developing countries of Asia as it compounds the pressures on natural resources and the environment associated with rapid urbanization, industrialization, and economic development." (Government of European Community)	Rejected due to space reasons; bullets aim to provide specific findings
3-422	E-3-224	A	8	28	9	3	Again while the statements made may be correct they only appear to give part of the story. If Figure 3.3 is correct large areas of China and India which currently are regarded as dry areas are expected to become significantly wetter, which overall, notwithstanding the greater frequency of floods, is like to lead to greater agricultural productivity in regions supporting a high proportion of the world's population. (George Walker, Aon Re Asia Pacific)	Figure only shows annual runoff changes; in seasonally dry countries, seasonal shifts are important; wording changed in water box and regional section to clarify.
3-423	E-3-226	A	8	30	8	30	Figure 3.3 seems to show an increase in freshwater availability in many of these regions, for the year as a whole, so I find this sentence a bit confusing. (Keith Shine, University of Reading)	Figure only shows annual runoff changes; in seasonally dry countries, seasonal shifts are important; wording changed in water box and regional section to clarify.
3-424	E-3-225	A	8	30	8	33	It is said that freshwater availability in Central, South, East and Southeast Asia is projected to… decrease during dry seasons. Conversely, Figure 3.3 (on the same page) shows increases in runoff in most of these regions. Isn't it controversial? How can that be reconciled with the text? Perhaps a short additional explanation is needed. (Arnaud Hequette, Université du Littoral Côte d'Opale)	Figure only shows annual runoff changes; in seasonally dry countries, seasonal shifts are important; wording changed in water box and regional section to clarify.
3-425	E-3-227	A	8	32	8	33	i suggest to rewrite: In Northern Europe, climate change is initially projected to bring mixed effects including some benefits, such as reduced demand for heating, increased crop yields and increased forest growth, but the negative impacts are likely to outweigh its benefits as climate change continues. (Nováky Béla, Szent István University, Gödöllö, Hungary)	Taken into account in revised wording.
3-426	E-3-228	A	8		9		Some of the text contradicts what is seen in Fig 3.3 or does not relate to Fig 3.3. Is the mean river runoff over Asia increasing? (Michel Rixen, NATO Undersea Research Center)	Figure only shows annual runoff changes; in seasonally dry countries, seasonal shifts are important; wording changed in water box and regional section to clarify.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-427	E-3-229	A	8				Figure 3.3: the legend beside the color bar is not readable well. (Marco Mazzotti, ETH Zurich)	Legend seems clear; no suggestion made for change?
3-428	E-3-230	A	8				Figure 3.3: (i) The use of relative values can be misleading. A small relative change to an already small number can have more detrimental implications than the same relative change to a larger number. Addition of a information about aboslute runoff would help to clarify this. (ii) Showing results for the A1B scneraio only is not an objective decision. It would be better to refer to degree of change in T and P underlying such a map, following the concept used in Table 3.2 . (Fuhrer Juerg, Agroscope Research Station ART)	Use of absolute values can be equally misleading; on balance, authors believe relative change is more important as existing water management systems tend to be adapted to available quantity, so relative change is what matters. Model results only available for A1B.
3-429	E-3-231	A	8				Fig 3.3 Provide instruction on how a decision maker might possibly use a mult-model median shown in the figure. Explain what this graph is showing us, it seems open to naïve misinterpretation (Leonard Allen Smith, London School of Economics)	Too much detail for SYR. Not clear how it is open to naïve misinterpretation, no suggestion made?
3-430	E-3-232	A	8				delete sentence above the graph (Zoltán Somogyi, Hungarian Forest Research Institute)	Rejected; editorial decision to have figure titles.
3-431	G-3-181	A	8				Topic 3: Figure 3.3 should be enlarged to give the reader a better graphical presentation of runoff projections and an explanation of what the white-coloured areas indicate (areas with no change, or data-sparse areas?) (Government of Colombia)	White areas explained in caption. Figure serves illustrative purposes only on broad regional scales.
3-432	G-3-182	A	8				delete sentence above the graph (Government of Hungary)	Rejected; editorial decision to have figure titles.
3-433	G-3-183	A	9	1	9	2	Please replace "… while it could decrease …" by either "… while they could decrease …" OR "… while yields could decrease …" (Government of New Zealand)	WGII SPM wording used.
3-434	G-3-184	A	9	1	9	3	Please clarify whether this result includes adaptation measures or not. (Government of China)	As per introduction, adaptation is not included.
3-435	E-3-233	A	9	2	9	2	"it could decrease" - I remain confused about this - Figure 3.3 is showing increased water availability - so is the decrease in yield coming from the temperature change? (Keith Shine, University of Reading)	Figure only shows annual runoff changes; in seasonally dry countries, seasonal shifts are important; wording changed in water box and regional section to clarify.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-436	G-3-185	A	9	2	9	2	Editing: replace "it" with "they". (Government of Australia)	Wording revised to match WGII SPM.
3-437	G-3-186	A	9	2	9	2	Change “it” to “they”. (Government of United States)	Wording revised to match WGII SPM.
3-438	E-3-234	A	9	5	9	11	The main water impacts for New Zealand appear to be: 1. increasing drought and resulting stress on surface water and groundwater resources in some eastern parts, 2. increasing precipitation and flood risk in some western areas, 3. geomorphological modifications to New Zealands very long coastline due to sea level rise, and 4. increasing influence of subtropical storms (i.e. flooding) in the north. (Marc Schallenberg, University of Otago)	Too much detail.
3-439	G-3-187	A	9	5	9	11	The current text contains no information for expected climate change and impacts beyond 2030. Suggest to add the following sentence from WG 2 Chapter 11 Executive Summary: "The climate of the 21st century is virtually certain to be warmer with changes in extreme events: Heat waves and fires are virtually certain to increase in intensity and frequency; floods, landslides, droughts and storm surges are very likely to become more frequent and intense; and snow and frost are likely to become less frequent." (Government of European Community)	Additional impact for broader temperature range included in rewritten text.
3-440	G-3-188	A	9	5	9	11	The authors should insert the following: "Production from agriculture and forestry is projected to decline by 2030 over much of southern and eastern Australia, and over parts of eastern New Zealand, due to increased drought and fire (high confidence)". Replace, "The region has substantial adaptive capacity due to well-developed economies and scientific and technical capabilities" with "Human systems in the region have considerable adaptive capacity", as the current structure of the paragraph leads to an implication that Australia's ecological rich sites have substantial adaptive capacity, which is misleading. This construction also aligns better with the WG2 SPM. (Government of Australia)	Accepted.
3-441	G-3-189	A	9	5	9	11	Agriculture and forestry are hugely important to the New Zealand economy and this paragraph is therefore incomplete without reference to them. Please include (we suggest immediately before the last sentence in this paragraph) the sentence: "Significant impacts on agriculture and forestry are projected, with consequent economic repercussions." OR "Significant impacts on agriculture and forestry are projected, with the consequent economic repercussions initially both positive and negative." (Government of New Zealand)	Taken into account (see 3-440)
3-442	E-3-235	A	9	6	9	6	Looking at Figure 3.3, I wonder whether "eastern" should be "western"? (Keith Shine, University of Reading)	These are the regions of focus chosen by governments in the WGII SPM

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-443	G-3-190	A	9	7	9	7	The finding on coastal development exacerbating risks from SLR is a "very high" confidence finding and should be noted as such. (Government of Australia)	Space limitations prevent reference to all sectors
3-444	E-3-236	A	9	8	9	9	I don't agree with the following statement, as it currently refers to New Zealand: "Significant loss of biodiversity is projected with very high confidence to occur by 2020 in some ecologically rich sites." While this may be true for parts of Australia, I'm not aware of any information from New Zealand supporting this statement. (Marc Schallenberg, University of Otago)	Wording revised.
3-445	G-3-191	A	9	8	9	9	Is this loss due to climate change or human development? Specify. (Government of United States)	Wording revised, consistent with WGII SPM.
3-446	E-3-237	A	9	13	9	13	What is the content of "nearly all"? Does it mean that some parts of Europe are anticipated not to be negatively affected by some future impacts, or that this cannot be assessed for some parts with the very high confidence level? (Readers could be expected to be interested to know which.) (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Wording revised.
3-447	G-3-192	A	9	13	9	13	To ensure consistency in the treatment of the different regions, replace "anticipated" with "projected". (Government of Australia)	See re-write – in most cases projected used where applicable.
3-448	E-3-239	A	9	13	9	15	Of, there is high confidence that there will be some negative impacts. By and large, however, the impacts of climate change on western and northern Europe are positive. Please say so. (Richard Tol, ESRI)	See re-write tried to ensure balance. Unequivocal statement on positive effects is not consistent with WGII assessment.
3-449	E-3-240	A	9	13	9	15	JUSTIFICATION: Alternative text is proposed to better capture the range of impacts in Europe. The proposed text is more in alignment with the SPM of WGII and with the general content of Chapter 12. Further, in the current text the reader will have difficulties in grasping the nature of changes and the differences between North and South, which are most relevant. OLD TEXT: Nearly all European regions are anticipated, with very high confidence, to be negatively affected by some future impacts of climate change, which would magnify regional differences in Europe's natural resources and assets. NEW TEXT: Nearly all European regions are anticipated, with very high confidence, to be negatively affected by some future impacts of climate change, and these will pose challenges to many economic sectors. Impacts, however, will be unevenly distributed, and thus are very likely to magnify regional differences in Europe's natural resources and assets.	Wording revised.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Jose M. Moreno, Faculty of Environmental Sciences)	
3-450	G-3-195	A	9	13	9	15	The sentence can be misunderstood and misinterpreted, since the expression "with very high confidence" refers to the degree of our ability to assess the individual impacts of the projected changes in each region, but not to an integrated European balance-assessment with the same confidence. E.g. the EEA (2004) assessment is a correct inventory of the projected changes, impacts and vulnerabilities but it has not such unequivocal conclusions. Compared to the similar paragraphs of the present SYR, it gives an impression that Europe is the most unequivocally endangered continent, what seems to be unjustified and may not be acceptable by the majority of the countries. (Government of Hungary)	Wording revised consistent with WGII SPM.
3-451	E-3-242	A	9	13	9	22	Comment: Biodiversity is not mentioned for Europe. Some data available from EEA (European Environment Agency) Report 5/2006 "Halting the loss of Biodiversity by 2010" could be incorporated. Among others, see Figure 3.4.7 - Causes of change of butterfly species in Alpine regions. (Maria Rosa Paiva , Universidade Nova de Lisboa [New University of Lisbon])	Cannot detract too far from SPM language and underlying TS etc. Revised wording includes a statement that should cover this concern.
3-452	G-3-193	A	9	13	9	23	This paragraph does not specifically mention the substantial risks anticipated for Southern Europe. Suggest to add the following text based on WG 2 SPM.C: "In Southern Europe, climate change is projected to worsen conditions in a region already vulnerable to climate variability by reducing water availability, hydropower potential, summer tourism, and in general, crop productivity, and by increasing health risks due to heat waves and the frequency of wildfires." (Government of European Community)	See re-write ….tried not to favour any one region over another.
3-453	G-3-194	A	9	13	9	23	This paragraph does not mention the substantial projected impacts on ecosystems. Suggest to add the following text based on WG 2 SPM.C: "The great majority of organisms and ecosystems will have difficulties adapting to climate change. Mountainous areas will face extensive species losses (in some areas up to 60% under high emission scenarios by 2080)." (Government of European Community)	Included part of this suggestion but space limitations prevents all being included.
3-454	E-3-238	A	9	13			This paragraph (Europe) is messy, and should be better structured/developed (Ulf Molau, Göteborg University)	Wording revised
3-455	E-3-241	A	9	13			Europe - mention of impacts on agriculture and biodiversity would make this section more consistent with the other regional summaries, rather than some of the very broad statements (Paula Harrison, Oxford University Centre for the Environment)	See re-write endeavored to be more consistent.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-456	E-3-243	A	9	13			As stated above [TSU note: See Comment E-1-108-A]: In Europe heat waves should be stated as well See chapter 12 in WG II. (Christof Appenzeller, Federal Office of Meteorology and Climatology MeteoSwiss)	See re-write but space and the need to try and link it to temp change made inclusion of these more general statements difficult. No quantitative information on projected impacts in chapter 12.
3-457	G-3-196	A	9	13			Comment on the whole section: in other sections the risk of changes of vector borne diseases and allergic plants in time and space is mentioned, including the Northern Hemisphere. It would be advisable to mention these risks in this section as well, mentioning concrete examples. This would help the reader to get the most relevant information in that case if he/she reads the topics separately. (Government of Hungary)	Space limitations cannot include all details – see underlying TS and chapters for more relevant details.
3-458	E-3-244	A	9	15	9	18	JUSTIFICATION: Same as above OLD TEXT: Negative impacts include with high confidence increased risk of inland flash floods, more frequent coastal flooding and increased erosion, and in Southern, Eastern and Central Europe, increased water stress, drought risk and heat waves. NEW TEXT: Negative impacts include with high confidence increased risk of inland flash floods, more frequent coastal flooding and increased erosion, and in Southern Europe, reduced crop productivity, hydropower potential, summer tourism and increased risk of wildfires, added to increased water stress, drought risk and heat waves that will also affect Eastern and Central Europe. (Jose M. Moreno, Faculty of Environmental Sciences)	See re-write ….tried to account for better balanced treatment.
3-459	E-3-246	A	9	18	8	19	JUSTIFICATION: Clarification of some negative effects in N. Europe. OLD TEXT: In Northern Europe, climate change is initially projected to bring mixed effects, but the negative impacts are likely to outweigh its benefits as climate change continues. NEW TEXT: In Northern Europe, climate change is initially projected to bring mixed effects, but the negative impacts (increased winter flooding, frozen-ground instability) are likely to outweigh its benefits as climate change continues (Jose M. Moreno, Faculty of Environmental Sciences)	Wording revised.
3-460	E-3-245	A	9	18	9	18	when you mention "mixed" impacts, can you list some of the positive ones as well, even if negative are expected to be more important. The report must be objective and not open to criticism of bias towards the negative aspects. (Chris Jones, Met Office Hadley Centre)	Wording revised to clarify.
3-461	E-3-247	A	9	18	9	19	It is not clear why "In Northern Europe …. the negative impacts are likely to outweigh its benefits as climate change continues", except perhaps in the case of the most dramatic	Wording revised

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							global warming scenarios. (Jon Egill Kristjansson, University of Oslo)	
3-462	E-3-248	A	9	18	9	19	For the other regions, examples of the key positive and/or negative expected effects of climate change are given. I suggest including a sentence for Northern Europe describing the mixed effects and later negative impacts of climate change. (Torsten Clemens, OMV E&P)	Wording revised to be more specific.
3-463	G-3-8	C	9	19	9	19	" Precise temperature range above which the negative impacts are likely to outweigh " (Government of Belgium)	Wording revised to be more specific.
3-464	E-3-250	A	9	20	9	20	I would write "in reacting to" rather than "in reaction to". (Marco Mazzotti, ETH Zurich)	Wording revised.
3-465	E-3-249	A	9	20	9	22	The statement "Adaptation ro……..adaptation plans" - is this not true for everywhere, not just Europe? (Janice Lough, Australian Institute of Marine Science)	Statement on adaptation deleted
3-466	E-3-251	A	9	22	9	22	please add at the end of the break: Which are for example part of integrated management schemes for coastal zones or part of the endeavor to elaborate a European wide integrated marine policy. (Wilhelm Windhorst, Ecology Centre, Kiel University)	Statement on adaptation deleted.
3-467	E-3-252	A	9	24	9	30	What about coastal issues? mangroves and corals?? (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria)	Noted but again cannot choose each and every sector. See underlying texts
3-713	G-3-5	D	9	24	9	30	The mention of coastal issues, mangroves and corals is missing. (Government of Argentina)	Noted but again cannot choose each and every sector. See underlying texts
3-468	E-3-253	A	9	24	9	31	The seemingly sole focus on eastern Amazonia does not give a true picture of the effects on Latin America. Again from Figure 3.3 it would appear that Argentina will experience wetter conditions, which as a large agricultural producer, is likely to be beneficial, a factor that could have a significant impact on the relevant economies of the agricultural sectors in Australia, where the opposite is forecast, and Argentina as major food competitive exporters. It also appears that while Chile will get sigificantly drier, Peru will get wetter. It does not seem reasonable that major countries such as these, where the effects could be significant one way or another, should be ignored. (George Walker, Aon Re Asia Pacific)	Section revised for more balanced treatment.
3-469	G-3-197	A	9	24	9	31	We have data showing that some tropical trees from the atlantic forest and savanna under high CO2 increase photosynthesis, growth and as a consequence the storage of starch and cellulose. Primary productivity therefore will be higher in a scenario of	Not enough evidence in the final reports, no reference given and no data so we acknowledge the

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							increasing CO2. We have been using 720ppm compared with current CO2 concentration and we are consistently finding increases in photosynthesis and biomass in the species studied. Thus, based on most of the scenarios put forward in item 3 of the FAR, carbon sequestration will increase. Regarding the replacement of the Eastern Amazon by a savanna, I would recommend to use the term “grassland” instead. This is because the savannas, especially in South America, are very complex biomes containing endemic woody species that grow slowly and not only grasses. The level of uncertainty of obtaining a savanna is enormous as most species in this biome are endemic and require very specific conditions of soil, water and pollinisation. Furthermore, the savanna biome stability is not only related to water availability, but also to soil conditions and strong seasonality. The term grassland would therefore be more appropriate as it is more general and can avoid confusion as there is no time in only one hundred years for a savanna to take the place of a forest such as the Amazon. (Government of Brazil)	comment but cannot be included. Wording revised consistent with WGII SPM.
3-470	E-3-255	A	9	25	9	26	By saying that forest will be replace by savanna could give the impression the savannas are less valuable systems. I think that it would be more appropriate to say degraded forest with low density and stature or savanna-like vegetation. (Mercedes Bustamante, University of Brasilia)	See responses above and re-write – more general statement as per SPM included.
3-471	E-3-254	A	9	25			The assessment of "high confidence" for the replacement of tropical forest by savanna and Eastern Amazonia appears excessively confident. This is attributed to Working Group 2, and I imagine it must have involved taking as input the multi-model mean precipitation and looking at ecosystems impact. However, the model simulations of the seasonal cycle in this region are often poor, and the models do not validate well for precipitation changes under inter-annual variability such as El Niño in this region. Thus while I myself have been involved in collaborations arguing that this is an area of concern, the attribution of high confidence worries me. (J. David Neelin, UCLA)	Wording changed.
3-472	E-3-257	A	9	26	9	27	Text states for Latin America:"In drier areas, climate change is expected to lead to salinisation and desertification of agricultural land." The linkages (changes and desertification-salinization) are technicaly confusing and not well established; will be more appropriate to write: "In drier areas, climate change is expected to increase aridity indexes and desertification processes of agricultural land". Again, those adjustments make the text more responsive to the UNCCD concepts on that matter. (Silvio Sant'Ana, Fundaçao Grupo Esquel Brasil)	Entry deleted
3-473	E-3-256	A	9	26	9	30	The placement of areas where salinization-desertification, and the dissapearance of glaciers could occur should be mentioned. (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria)	Entry deleted

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-714	G-3-6	D	9	26	9	30	It should be clarified the area of occurrence of salinization-desertification, and melting of glaciers. (Government of Argentina)	Wording revised to provide bullet on glaciers.
3-474	E-3-258	A	9	28	9	28	only a limited number of small Andean glaciers is in danger of disappearence within te next decades (see WGI, 4.5). Write "small glaciers" instread of "glaciers" (Georg Kaser, Geography)	Accepted.
3-475	G-3-198	A	9	30	9	30	The last phrase on settlements is unclear. (It is noted that the same construction appears in WG2 SPM - where it is no more clear). (Government of Australia)	Statement on adaptation deleted.
3-476	G-3-199	A	9	33	9	42	This paragraph does not mention the anticipated severe impacts on water supply. Suggest to add the following sentence from the WG 2 Chapter 14 Executive Summary: "Climate change will, with very high confidence, constrain North America's already heavily utilized water resources, increasing competition among agricultural, municipal, industrial, and ecological uses." (Government of European Community)	Wording revised based on WGII SPM
3-477	G-3-9	C	9	34	9	34	" Precise temperature for which this is true " (Government of Belgium)	Temperature range is now given
3-478	E-3-259	A	9	35	9	37	A key issue that needs to be mentioned is the loss of snowpack and the implications this has for seasonality of runoff, etc. Also, there will be increased demand with warming, and so greater competition for water resources. (Michael MacCracken, Climate Institute)	See changes made in re-write bullet one, held to SPM agreed text.
3-479	G-3-200	A	9	35	9	37	Text raises questions such as: Reduced summer flows of what? Rivers? Are the forest disturbances good things or bad, and are they projected for all of N. America, or just the west? The text is nearly verbatim from the WG2 SPM, but clarity lost when concepts merged. This paragraph is essentially verbatim from the WG2 SPM; however, by combining separate items into a single paragraph, the authors introduce confusion. The authors should revise for clarity. (Government of United States)	Wording revised consistent with WGII SPM
3-480	G-3-201	A	9	38	9	38	Should say negative impacts on forests. The text is nearly verbatim from the WG2 SPM, but clarity lost when concepts merged. (Government of United States)	Wording revised consistent with WGII SPM
3-481	E-3-262	A	9	44	9	44	suggest changing "Changes in snow and ice cover…" to "Reductions in thickness and extent of snow and ice cover…" (Chiu-Ying Lam, Hong Kong Observatory)	Not necessarily reductions in all places; current wording is shorter and applies more generally

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-482	G-3-202	A	9	44	9	49	There is a general lack of uncertainty language in this section. (Government of Australia)	Uncertainty language used where provided in underlying assessment.
3-483	E-3-260	A	9	44	10	2	There seems no rationale for combining Antarctic with Arctic regions, since they are so different, and the expected effects are so different. What is described is almost all focussed on Arctic regions, which is what the heading should be. It seems that little can be said about Antarctic regions at this stage, and this is all that should be said, rather than implying what is said about Arctic regions also applies to Antarctic regions. (George Walker, Aon Re Asia Pacific)	See re-write, try to be more specific and not to mix areas.
3-484	E-3-261	A	9	44	10	2	The unilateral focus on negative effects of changes in snow and ice cover is hardly warranted. Hence, I do not agree that changes in snow and ice cover in polar regions predominantly will have detrimental effects on organisms such as migratory birds, mammals and higher predators. While it is probably very true for ice dependent organisms like certain fish, certain seals and polar bears, many other arctic organisms will benefit from earlier ice- and snowmelt, particularly most migratory birds. In contrast, overgrowing of the tundra with shrubs and even tree-growth will reduce the availability of arctic habitat severely, particularly in the high-arctic zone. So, in our opinion it is not the reduction in snow cover, which is the biggest problem, but the disappearance of maybe half the tundra zone within the next century. Also note that many human societies in the Arctic may benefit considerably from a warmer climate. "Traditional lifestiles" are likely to disappear anyway, maybe even long before climate change becomes a problem. (Hans Meltofte, National Environmental Research Institute, University of Aarhus)	Revised wording more balanced and specific.
3-485	G-3-10	C	9	44			" Could point out the fact that temperature changes are more important over polar regions" (Government of Belgium)	Rejected; ”more important” is value judgement; not clear more important compared to what.
3-486	G-3-204	A	9	46	9	46	Syntax of current sentence indicates that there are higher predators than mammals. Recast. (Government of United States)	Wording revised.
3-487	G-3-203	A	9	46	10	2	The phrasing of the findings on Polar Regions is a little different here than in the WGII SPM and it does make a difference. The WGII report noted the detrimental impacts for Arctic human communities but the statement about potential benefits was not applied to any group of people specifically. Whether or not more navigable sea routes will be beneficial to residents of the Arctic is probably debatable, and at least cannot be expected to be true for all Arctic residents. Therefore, suggest restructuring this paragraph to be more consistent with the conclusions for Polar Regions in WGII SPM by	Wording revised based on WGII SPM and TS

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							removing the phrase about 'more navigable northern sea routes' from line 48 and putting a sentence about this to the end of line 2 on page 10. The new sentence could be: "Reduced sea ice in the future is expected to lead to more navigable northern sea routes." (Government of Canada)	
3-488	G-3-205	A	9				figure SPM-5: It is suggested to specify the "0" level of the global surface warming (presumably temperature 1980 to 1999). (Government of Austria)	See intro to sectors and regions this should be accommodated now in new text.
3-489	E-3-264	A	10	4	10	4	replace “inundation” with “flooding” (Michel J. Rossi, Ecole Polytechnique Fédérale de Lausanne)	See re-write – tried to adhere to SPM language approved text.
3-490	E-3-266	A	10	4	10	4	"Small islands" is a misleading heading, because it appears that one is here talking explicitly about low-lying islands. Some small volcanic islands are high enough not to be threatened by sea-level rise. (Jon Egill Kristjansson, University of Oslo)	”Small islands” is the category heading used in WGII SPM
3-491	G-3-207	A	10	4	10	6	Small islands have characteristics which make them especially vulnerable to the effects of climate change, sea level rise and extreme weather events. Sea-level rise is expected with very high confidence to exacerbate inundation storm surge, erosion and other coastal hazards, thus threatening vital infrastructure, settlements and facilities that support the livelihood of island communities (Government of Mauritius)	Noted and tried to refer to this in bullets identified.
3-492	E-3-263	A	10	4	10	12	The increasing instensity of storms and the relative magnitude of impact on storms in small island economies is also likely to me that more xtreme sotorm events will further constrain development in small islands. This is worth adding. In the relavant discussion in the SPM (page 13) the sensitivity of reefs to bleaching could be included. (Jon Barnett, University of Melbourne)	Space and equal treatment across regions – cannot include all impacts but see underlying supporting documents – chapters etc.
3-493	E-3-265	A	10	4	10	12	Mangroves dissapearance and impacts on coastal erosion is not mentioned. (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria)	Implicit in bullet referring to damages for coastal areas etc.
3-494	G-3-206	A	10	4	10	12	This paragraph does not mention the projected impacts of climate change on agriculture and tourism. Suggest to add the following text based on WG 2 Chapter 16 Executive Summary: "Climate change will very likely have adverse effects on subsistence and commercial agriculture, will likely have negative impacts on tourism, and will likely have adverse impacts on human health." (Government of European Community)	See re-write cannot however, include all impacts and reference to livelihood impacts is made.
3-715	G-3-7	D	10	4	10	12	Mangroves dissapearance and impacts on coastal erosion are missing. (Government of Argentina)	See response E-3-265

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-495	E-3-267	A	10	9	10	10	what evidence is there in the scientific literature that increased coral bleaching is linked to fisheries? (Thomas Spencer, University of Cambridge)	See re-write – attended to
3-496	G-3-208	A	10	10	10	12	The following wording is proposed: More specific and some additional information on projected impacts of future climate change is now available across a wider range of systems, sectors and regions. Comment: The meaning of "fields and places" is unclear in the context and those terms are not used later on in the text. (Government of Austria)	This sentence has been removed.
3-497	E-3-268	A	10	14	10	15	This sentence should be moved somewhere else under Topic 3, perhaps up front. (Ulf Molau, Göteborg University)	Need to keep here because it is linked to subsequent Figure.
3-498	E-3-269	A	10	17	10	20	This explanation of why better estimates can be made for impacts of climate change should be retained in future drafts and used as a model for explaining other statements asserting better understanding or higher confidence. (Robert Siveter, IPIECA)	Wording revised due to space constraints; integrated in revised introduction to 3.3.
3-499	G-3-209	A	10	17	10	20	This explanation of why better estimates can be made for impacts of climate change should be retained in future drafts and used as a model for explaining other statements asserting better understanding or higher confidence. (Government of United States)	Wording revised due to space constraints; integrated in revised introduction to 3.3.
3-500	G-3-210	A	10	22	10	24	While the U.S. Government suggests deletion of some conclusions and interpretations of the table presented in Topic 5, some discussion of Table 3.2 would be useful here, both because it would be interesting and as a guide for using the table. For example, what does it suggest with respect to committed climate change and A1B climate change? Also, it is important to discuss limitations/uncertainties in using the table due to the degree to which interactions across sectors are accounted for, as well as inconsistencies of assumptions/modeling across sectors and studies. Readers need to have a sense for the uncertainties associated with putting together a set of predicted impacts across sectors and global mean temperatures. Finally, something more needs to be said about adaptation beyond the sentence in the table notes. (Government of United States)	Discussion in topic 5 is separate from topic 3 (avoided damages vs projected impacts). Space constraints prevent further discussion in addition to regional and sectoral bullets.
3-501	E-3-271	A	11	1	11	1	The word 'increase' in the third line in top row (WATER) should be 'increased' (Richard Anyah, Rutgers University)	corrected
3-502	G-3-212	A	11	1	11	1	It is suggested to delete the figure above Table 3.2. (Government of China)	Rejected – no reason provided.
3-503	E-3-270	A	11	1	11	2	Wrong figure. Same applies as to what I said about SYR Table SPM-2 (Andreas Fischlin, Integrative Biology - Systems Ecology)	Updated with final WGII SPM figure.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-504	G-3-211	A	11	1	11	19	The U.S. Government appreciates the authors' continuing efforts to incorporate a temporal dimension into the summary of potential impacts provided by Table SPM-2. The SRES scenarios are a reasonable means of making this connection while indicating the uncertainties involved. We find, however, that the approach offered in this Synthesis Report draft is confusing. • Clarify the measures of scenario uncertainty. The error bars along the top of the figure need to be labeled and defined more clearly in the caption. There appears to be a relationship between the colors of the error bars and the colors used to plot scenarios, but the correspondence is difficult to discern. Why is the best estimate for scenario A2 (presumably the red bar along the top) differ from the value of the red line on the plot in 2001? How do envelopes indicating uncertainties in the plots relate to the error bars along the top? Is it really useful to portray uncertainty on the same figure with both of these measures? • Consider plotting all SRES scenarios. Some readers may interpret the current draft figure as indicating that no impacts portrayed in the table to occur at temperature changes beyond 4°C will occur prior to 2100. • Consider adding text to the caption, near the beginning, to explain that the scenarios provide a means of understanding the temporal timeframes of potential impacts. A straightforward sentence or two that explain "how to read this figure" are needed. Warnings about uncertainties and over-interpretation by drawing attention to the error bars will be useful as well. • By adding the plot of scenarios to the table of potential impacts, the authors create the impression that a number of major impacts are occurring now. Perhaps the most troubling example is that "Hundreds of millions of people are exposed to increase water stress." We urge the authors to look for a way in adding the scenario plot to the table of impacts, to portray the impacts as occurring into the future. (Government of United States)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-505	E-3-272	A	11	3	11	3	"Lower part of table" could be new row (Antoaneta Yotova, National Institute of Meteorology and Hydrology)	Editorial
3-506	G-3-213	A	11	3	11	19	The caption needs to indicate that sources from WG2 are given in the right hand column of the Table. (Government of Canada)	Accepted
3-507	E-3-273	A	11	6	11	6	"dotted arrows indicate impacts continuing *or worsening* with increasing temperature" (add text in **) (Mark Lawrence, Max Planck Institute for Chemistry)	Using approved wording in caption.
3-508	E-3-274	A	11	7	11	7	"Entries are placed so that the left hand side of text" : isn't it the right hand side? (Nicole Lenotre, BRGM)	Wording is correct.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-509	E-3-275	A	11	8	11	8	Increased drought risk is expected in dry tropics as it is shown for water resources in line 21 in page 11 (Nováky Béla, Szent István University, Gödöllö, Hungary)	Not sure what comment refers to – there is no line 21 page 11.
3-510	E-3-276	A	11	8	11	8	"Quantitative entries for water scarcity and flooding…" - this also applies to the topic "ecosystems" (Mark Lawrence, Max Planck Institute for Chemistry)	This is more relevant for impacts directly related to human development.
3-511	E-3-277	A	11	10	11	10	SRES is already spelled - line 11 on page 1 of this Topic (Antoaneta Yotova, National Institute of Meteorology and Hydrology)	Accepted
3-512	E-3-278	A	11	11	11	11	"Upper part of table" could be new row (Antoaneta Yotova, National Institute of Meteorology and Hydrology)	Editorial
3-513	G-3-214	A	11	11	11	11	Italicize “high” for consistency with the rest of the report. (Government of United States)	Accepted.
3-514	E-3-279	A	11				Upper figure: it is repetition of the left panel of Figure 3.1, so it is redundant, and takes away the focus from the impacts, so it is not needed. Delete associated text from figure heading. (Zoltán Somogyi, Hungarian Forest Research Institute)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-515	E-3-280	A	11				Table 3-2. It is difficult to see how 'increased coral bleaching' 'most coral bleached' and 'widespread coral mortality' can be argued for on the basis of a global mean annual temperature change because bleaching incidence is related to thresholds to bleaching and the 'distance' in local temperature terms of corals in any one location from that of the regional threshold to bleaching. In some locations these statements may well be true but it is difficult to see how one can make a blanket statement of this kind as there is no blanket response of corals around the world to temperature rise. There will even be locations on the margins of the reef seas where increased temperature will be beneficial to corals. This argument is quite apart from the additional arguments about coral adaptation to increased temperatures. (Thomas Spencer, University of Cambridge)	Table is approved WGII SPM material; regional specification not possible within space constraints.
3-516	E-3-281	A	11				Table 3-2 is too hard to read and so of limited value. It could be disagregated by sector, or by temperature (dare I say its better in Stern?) (Jon Barnett, University of Melbourne)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios,

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
								and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-517	E-3-282	A	11				Table 3.2: Remove the coloring in the lower part of this table because it's confusing in view of not corresponding with the coloring in the upper part of the table. (Claire Parkinson, NASA Goddard Space Flight Center)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-518	E-3-283	A	11				Table 3.2: It seems unlikely that one third of ecosystem diversity may face a risk of extinction if temperature raises by 1 degree. This conclusion should be supported by ecosystem vulnerability assessment, which is not provided here. Propose to explain the effects of temperature increase on ecosystems in more details. Otherwise remove this conclusion from the text. (Michael Gytarsky, Institute of Global Climate and Ecology)	Table is approved WGII SPM material; supporting evidence in WGII chapter 4.
3-519	E-3-284	A	11				Table 3.2: indicate somewhere explicitly (in the caption?) the meaning of the numbers in the box to the right of the bottom panel; also, a small grammar error in the last line of text under the topic "water" in the bottom panel: "…exposed to increased water stress" (rather than "...increase water stress...") (Mark Lawrence, Max Planck Institute for Chemistry)	Accepted.
3-520	E-3-285	A	11				Table 3.2: emphasizes the negatives, downplays the positives. This is not an unbiased reflection of the literature. (Richard Tol, ESRI)	Table is approved WGII SPM material
3-521	E-3-286	A	11				Table 3.2: “water” box: “…to increased water stress” (Michel J. Rossi, Ecole Polytechnique Fédérale de Lausanne)	Accepted
3-522	E-3-287	A	11				Table 3.2. The left -hand side of the text is supposed to indicate the approximate level of warming that is associated with the onset of a given impact. For improved, at-a-glance rendering, the arrows could directly underline the text and start together with the text, not to the right of the text as in the current version of this table.	Considered, but rejected to maintain consistency with WGII SPM

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Annarita Mariotti, ENEA)	
3-523	E-3-288	A	11				Table 3.2. In the section on Food at the lower right hand end, presumably the comment should be 'Cereal productivity to decrease on mid- to high latitude regions'. Otherwise it is confusing given the comment above it for low latitudes. (George Walker, Aon Re Asia Pacific)	Rejected – not in all mid- high latitude regions
3-524	E-3-289	A	11				Table 3.2, top section: Use same colors as Fig. 3.1 for different scenario lines. (Alan Robock, Rutgers University)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-525	E-3-290	A	11				Table 3.2 Water: Hundreds of millions of people exposed to increase'd' water stress [insert 'd'] (David White, ASIT Consulting)	Accepted.
3-526	E-3-291	A	11				Table 3.2 Insert reference to new footnote at end of bolded title of x axis “Global Mean Temperature relative to 1980-1999 (oC)”. Text in the footnote is the existing last sentence of the explication, so reads; “To express temperature changes relative to 1850-1899, add about 0.5 oC” Also, enlarge garphic to fit full page. It might be worth sacrificing point size in the explication in order to gain point size and therfore clarity in the vital far righthand box in the graphic which contains the vital references to the chapters/ sections concerned. (For same reasons as given for the same Table in the SPM as made in comment 10 above) (Pat Finnegan, Grian)	Taken into account in revision of graphic. Temperature baseline stated in introduction to 3.3; offset to preindustrial provided in additional footnote.
3-527	E-3-292	A	11				Table 3.2 Health: Change 'diarhoeal' to 'diarrhoeal' (David White, ASIT Consulting)	Accepted
3-528	E-3-293	A	11				Table 3.2 and text especially between lines 47 (p. 12) and 5 (p. 13) make an important point about the continued warming even in the case of unchanged GHG concentrations. However, they do not bring up the CO2 emission reduction rate that would be required to achieve unchanged GHC concentrations. Adding this reference both to the figure and the text would translate the argument to practical implications. See comment 1 above, too. (Jouni Paavola, University of Leeds)	Issue for topic 5.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-529	E-3-294	A	11				Table 3.2 : the meaning of numbers in the right hand side part of the table should be better explicited (Nicole Lenotre, BRGM)	Accepted
3-530	E-3-295	A	11				Table 3.2 - This table appears to incorporate an element of time which was removed from WG2 SPM. Although the temperature changes may occur over the period given it is not clear whether the projected impacts would occur over a similar time scale or they represent an equilibrium condition. (see comment on SPM) [TSU note: See Comment E-SPM-713-A] (Sharon Smith, Geological Survey of Canada)	Revised table shows warming by 2090-2099 and equilibrium only, with caveat in caption about multi-century adaptive capacity.
3-531	E-3-296	A	11				Suggest using the same colour as in Figure SPM.5 of WG I also for the "constant year 2000 concentrations" line, i.e. ~orange. Revise line 14 accordingly. (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-532	E-3-297	A	11				Same comment on Table 3.2 as above for table in SPM [SyR TSU: The comment referred to is "I have reviewed Table SPM-2 several times and can find no definition of the information in the right hand box, should be provided"] (Robert Molinari, University of Miami)	Accepted.
3-533	E-3-298	A	11				Quality of Table SPM-2 is bad. What is the list of symbols to the right? There is a different list of scenarios for the lower and upper part of the table. Is it possible to make these consistent? (Michel Rixen, NATO Undersea Research Center)	Caption revised and graphic improved.
3-534	E-3-299	A	11				Please consider extending the time extent of the top part of the table back to 1990, to match the time extent of the lower part of the table. (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-535	E-3-300	A	11				On water availability: Increasing Water availability in moist tropics. This is not necessarily true in some tropical countries (See lines 37 to 41 in page 7 and lines 30 to 33 in page 8 of Intro 3 and lines 39 to 40 in page 12 of SPM). (Lourdes Tibig, Philippine Atmospheric, Geophysical and Astronomical Sevices Administration)	That's why the statement specifically points to moist tropics.
3-536	E-3-301	A	11				In Table 3.2 rationale for adding 0.5 degrees C? (Robert Jefferies, University of Toronto)	Footnote revised.
3-537	G-3-215	A	11				Upper figure: it is repetition of the left panel of Figure 3.1, so it is redundant, and takes away the focus from the impacts, so it is not needed. Delete associated text from figure heading. (Government of Hungary)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-538	G-3-216	A	11				The grey bars need to be labeled or dropped from the upper part of the table. (Government of United States)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-539	G-3-217	A	11				Table SPM-2: The inclusion of the upper part of the table is welcomed. However, it is suggested to harmonize the description of the uncertainty with that used in figure SPM-5 in order to be more user-friendly. (Government of Austria)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-540	G-3-218	A	11				Table SPM-2: It is suggested to delete the right column with the references to specific parts of the WG III report, However, those references should be included in table 3.2 of the technical report including some text that links it to Working Group III report. (Government of Austria)	Accepted.
3-541	G-3-219	A	11				Table 3.2: Please include curves for all SRES scenarios, in particular A1FI results WITHIN the diagram, analogue to the other SRES-curves, because it is highly policy relevant with respect to recent global emission trends. (Government of Germany)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-542	G-3-220	A	11				Table 3.2: Please include curve for A1FI results WITHIN the diagram, analogue to the other SRES-curves, because it is highly policy relevant with respect to recent global emission trends. (Government of Germany)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-543	G-3-221	A	11				Table 3.2: It is suggested to add a similar Table on regional impacts, as apart from this globally aggregated information regionally differentiated information is very important for policymakers. (Government of Germany)	Rejected due to space constraints.
3-544	G-3-222	A	11				Table 3.2: Important Table, but it would be much more useful if the following information was included: in upper part: include all SRES scenarios, not only B1, A1B, A2. Include mitigation scenarios, including temperature ranges for equilibrium temperature. Include information on impacts even if they are not expected before 2100 (such as triggering of Greenland ice sheet melting and risk of disintegration of West-Antarctic Ice sheet), if this impact is triggered by global warming of certain scale. In particular, add more rows including key vulnerabilities and risks of triggering abrupt non-linear changes, such as ice sheet melting/disintegration and impact on sea-level rise also beyond 2100. Otherwise this table gives the wrong impression 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	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							certain lower levels of temperature. If this irnformation is not included, there is a gap between this section and the important summary of topic 5 following later (page 16 onwards). IN general, information in Table SPM-2 should not be imited to high-confidence-statements, as thiscan 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. (Government of Germany)	
3-545	G-3-223	A	11				Table 3.2 is not clear; it may be too complicated. (Government of United States)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-546	G-3-224	A	11				Table 3.2 comment: This table has confused a number of readers, who have not read the caption fully, because it is not clear that the level of warming associated with the onset of a given impact is to be read from the left-hand side of the text. We suggest that in ALL cases, the start of the black lines forming the arrow shafts is used to indicate the onset of impacts and the text is inserted along the line,as for the first impact, extinctions, in the 'ecosystems' row. A small vertical bar, to form a 'T' at the left to indicate the onset would be still clearer, although we appreciate the onsets are generally approximate. (Government of New Zealand)	Considered, but rejected to maintain consistency with WGII SPM
3-547	G-3-225	A	11				Table 3.2 comment: Ecosystems - top line: It is not clear why one text entry reads "Up to 30% of species at increasing risk of extinction", while the other reads "Significant extinctions around the globe" and has a footnote "Significant is defined here as more than 40%". Why not replace 'significant' with 'more than 40%' ? That then avoids the question of why 40% is defined as significant and not 30% or 50%. We note the Glossary for the SYR does not give a definition of 'significant'. (Government of New Zealand)	This is how governments decided they wanted to present this information in WGII SPM; maintained here for consistency
3-548	G-3-226	A	11				Table 3.2 (upper): The bars need a legend to identify the relevant SRES scenarios. In addition, can we state that the B1 warming range is similar to that for stabilising CO2 concentrations at 550 ppm? (Government of Australia)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
								Stabilisation is discussed in topic 5.
3-549	G-3-227	A	11				Table 3.2 (upper): It would be useful if the authors note in the explanation for the upper part of the table that it is a reformatted version of SYR Fig 3.1. (Government of Australia)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-550	G-3-228	A	11				Table 3.2 (upper): Delete constant concentration data, it is academically interesting but totally unrealistic. (Government of Australia)	Deleted in revised figure.
3-551	G-3-229	A	11				It should be noted up front that the “Upper part of the table” is Figure 3.1 (left panel) of this Synthesis Report. (Government of United States)	Table revised, comment no longer applies.
3-552	G-3-230	A	11				In Table 3.2, why are there four scenarios in the time series but six in the dot and bar graph? The linking of tables is very confusing to the lay reader. (Government of United States)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-553	G-3-231	A	11				In Table 3.2, what do the alphanumeric characters on the right-hand side of the lower part of the table mean? In addition, it’s not abundantly clear what the connection is between the lower and upper parts of the table; it would be helpful to point out in the caption that the temperature scales on the upper and lower parts of the table match up. (Government of United States)	Caption now explains.
3-554	G-3-232	A	11				Add a headline above the graph: Key impacts as a function of increasing global average temperature change" (Government of Germany)	Heading added.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-555	G-3-233	A	11				A few suggestions that would improve the clarity of this figure. 1) Label the scenarios at the top as is done in Figure SPM-5. 2) Keep the colours the same as in Figure SPM-5 and as is used in the WGI original figure for ease of comparison. 3) Move the last sentence from the caption, "Add about 0.5°C to express the temperature change relative to pre-industrial" to the end of the current x-axis label. This would make the conversion much easier and allow readers to directly make the association to pre-industrial. (Government of Canada)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-556	G-3-3	B	11				Table 3.2 – this is a very useful diagram. Given that international negotiations are heading towards discussing stabilisation and long term goals, it would be more useful to show these impacts in the context of stabilisation levels, rather than business as usual (or even, as well as). For stabilisation levels, the authors could use the likely ranges of equilibrium temperature rise contained in table TS-5 of Working Group I. (Government of United Kingdom)	Table (now Figure 3.5) revised to provide warming at end of 21st century for all SRES scenarios, and at equilibrium for stabilisation scenarios. This avoids a number of issues in the previous draft. Caption amended. Presentation of impacts is identical to that in approved WGII SPM.
3-557	G-3-11	C	11				Table 3.2 : the top grey bar (A1FI) does most probably end at a lower value than it does in figure 3.1or table 3.1 (6.4°C). It seems that the printed line is limited by the paper margin (!). (Government of Belgium)	Graphic presentation revised.
3-558	E-3-302	A	12	1	12	2	The formulation is a bit complex as it now stands. Suggest using: "Impacts due to extreme weather, climate and sea-level events are very likely to change." Possibly add to the end: "due to altered frequencies and intensities of such events". (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Text changed.
3-559	G-3-235	A	12	1	12	2	This sentence makes little sense. Impacts do not change, either impacts occur or something else changes. Furthermore, climate and sea-level cannot have "altered frequencies and intensities". Needs reformulation. (Government of European Community)	Text changed.
3-560	G-3-236	A	12	1	12	2	Authors need to clarify for the reader, here and throughout the whole report, the differences between likelihood determinations for observations of the current climate and the likelihoods of modeled projections of future climate. (Government of United States)	Text changed.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-561	E-3-303	A	12	1	12	26	Again, the negatives are emphasized, and the positives are qualified. This is just unacceptable. Please use neutral language and an even-handed assessment. (Richard Tol, ESRI)	Plenary-approved table included.
3-562	G-3-234	A	12	1	12	26	To the extent this material is included, this section should be integrated with other existing impacts statements rather than repeated here. Alternatively, just include Table SPM-2 from the WG2 4AR in place of these multiple, repeating impacts discussions. (Government of United States)	Agreed. Table included.
3-563	G-3-237	A	12	1	12	27	A table similar to WGI SPM Table 2 would also be useful for inclusion here. (Government of Australia)	Agreed. Table included.
3-564	G-3-238	A	12	4	12	26	It is unclear why the authors have not included WG2 Table SPM-2, in the SYR as it places impacts on sectors in the context of the WG1 discussion of the likelihood of projected changes to extremes. There seems to be no reason why the authors cannot use WG2 Table SPM-2 as a basis for this discussion; and add extra information on impacts or update the table as they feel necessary. (Government of Australia)	Agreed. Table included.
3-565	E-3-307	A	12	8	12	9	Agriculture, forestry and ecosystems are threaten not only by heat wave, but also by warm spells, so I suggest to rewrire - …are projected to be negatively affected by increases of heat stress, including heat waves. (Nováky Béla, Szent István University, Gödöllö, Hungary)	Now, Plenary-approved Table included.
3-566	G-3-239	A	12	8	12	13	Areas suitable for individual crop species are likely to migrate poleward and in some cases, such as the North American corn belt, such migration could result in migration to areas of substantially less favorable soils (e.g. the Canadian Shield). (Government of United States)	Agreed. But in view of including the large Table (as per other US government comment) there is no room to discuss the details.
3-567	E-3-304	A	12	8	12	26	Why is there no mention of El Nino-mean like conditions which will cause more drought events resulting to mostly adverse impacts even on human health? Line 26 in page 12 of SPM specifically states decreased water availability and increased drought risk in the tropics and subtropics. (Lourdes Tibig, Philippine Atmospheric, Geophysical and Astronomical Sevices Administration)	Text changed. Now, Plenary-approved Table included.
3-568	E-3-306	A	12	8	12	26	Include Hydropower generation (which in LatinAmerica is really important) (Germán Poveda, Universidad Nacional de Colombia)	Hydropower included in the Table.
3-569	E-3-305	A	12	8			replace "or" with "and" (Bruce McCarl, Texas A&M Univesity)	Text changed. Table included.
3-570	G-3-240	A	12	9	12	9	Change "or" to "and". (Government of European Community)	Text changed. Table included.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-571	G-3-241	A	12	10	12	11	The statement that “a reduced frequency of cold days and nights is projected to increase agricultural yields in colder environments but would also increase insect outbreaks” bears some further evaluation, since agricultural and other plants often have chilling requirements. Cold nights are required as developmental cues to initiate flowering and subsequent fruit production, which implies that fruit crops may not in fact increase. Buds of Douglas fir trees exposed to warm nights had increased internal temperatures and deformities that influenced tree architecture, which in turn can influence lumber derived from the trees. (Government of United States)	Text changed. Table included.
3-572	E-3-308	A	12	12	12	12	What is the value of this statement? What is the risk of 'extreme' high sea level? What is extreme? Either skip this sentence of rephrase to something like 'continious sea level rise will increase salinisation of irrigation water etc.' (Bram Bregman, Netherlands Organisation of Applied Research)	Text changed. Table included.
3-573	G-3-242	A	12	12	12	12	What is the value of this statement? What is the risk of 'extreme' high sea level? What is extreme? Either skip this sentence of rephrase to something like 'continious sea level rise is projected to increase salinisation of irrigation water etc.' (Government of Netherlands)	Text changed. Table included.
3-574	G-3-243	A	12	14	12	14	The word 'affected' here seems unnecessarily vague. It's hard to imagine how increased hot extremes and droughts would be anything but stressful for water demand and supply. Suggest replacing "to be affected in terms of' with "increasingly stressed in terms of". (Government of Canada)	Text changed. Table included.
3-575	G-3-244	A	12	14	12	15	Add "adversely" before "affected". (Government of European Community)	Text changed. Table included.
3-576	G-3-245	A	12	18	12	18	Insert "Greater" before "heat extremes". (Government of Australia)	Text changed. Table included.
3-577	E-3-309	A	12	18	12	22	This comment may be to late for the 4th report but needs to be considered for subsequent reports. The synergistic and cumulative efects of a changing climate and in particular extreem events needs to be considered when projecting the effects on people and other ecosystem components. Recent reports of approximately 750,000 pollution related deaths per annum in China suggests to me that the situation could be greatly exhasperated if the appropriate weather events occured. (Ian Church, Yukon Government)	Proposal for further assessments noted.
3-578	E-3-310	A	12	20	12	20	The SPM WGI does not highlight an increase in intense tropical cyclones as such. It is a bit more careful and questions the quality of the satellite data that has been used to derive trends. It clearly concludes that the number of tropical cyclones has not increased. (Bram Bregman, Netherlands Organisation of Applied Research)	Text changed. Table included.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-579	G-3-246	A	12	20	12	20	Replace "and intense tropical cyclone activity" by "and possibly increases in intense tropical cyclone activity" (Government of Netherlands)	Text changed. Table included.
3-580	G-3-247	A	12	21	12	22	Please delete "and" between "injuries and post-traumatic" and add the following to the end of the sentence after "disorder": " ...death and injuries, post-traumatic stress disorders, and outbreaks of infectious diseases in the aftermath." (Government of Sweden)	Text changed. Table included.
3-581	E-3-311	A	12	28	12	42	Delete this paragraph. It is redundant to the much fuller discussion of the effects of development pathway on vulnerability in Topic 4. (Robert Siveter, IPIECA)	Deleted paragraph. Elements included elsewhere.
3-582	G-3-248	A	12	28	12	42	The authors might consider deleting this section (lines 28-42) as this material appears to be redundant with material on development pathways and vulnerabilities covered in Topic 4. (Government of United States)	Deleted paragraph. Elements included elsewhere.
3-583	E-3-312	A	12	31			correct "impacts" to "impact" (Hartmut Grassl, Max Planck Institute for Meteorology)	Deleted paragraph.
3-584	E-3-313	A	12	33	12	33	No need of free line here (Antoaneta Yotova, National Institute of Meteorology and Hydrology)	Noted.
3-585	E-3-10	B	12	35	12	35	Policy to prefer the social invesment to the short term profittability is mostly the key factor. (Shunsuke Mori, Tokyo University of Science)	Deleted paragraph.
3-586	E-3-314	A	12	35	12	36	Add: ¨….. income, ENVIRONMENTAL PROTECTION, and technological development. ¨ (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Deleted paragraph.
3-587	G-3-249	A	12	37	12	42	This statement is *not* backed by the underlying report, including the cited Tables. WG 2 Table 20.6 shows that many millions (up to 1.2 billions) people would be adversely affected by climate change (compared to a hypothetical constant-climate scenario) in terms of water stress, coastal flooding, and risk of hunger. WG 2 Table 6.6 presents more detailed but similar information for flood victims. There is no statement there or in the WG 2 TS suggesting that differences in expected numbers of people at risk would be largely explained not by changes in climate but by differences in vulnerability. For that reason, this statement needs to be dropped. On a technical note, differences in population between scenarios would have to be characterized as differences in exposure, not vulnerability. (Government of European Community)	Deleted paragraph.
3-588	G-3-250	A	12	41	12	41	Does the statement hold despite the more rapid climate change, higher global mean temperatures, and the greater uncertainty associated with A2 (Figure 3.1)? If so, it should	Deleted paragraph.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							say so by inserting the following underlined text: "…in changes in climate despite more rapid climate change, higher global mean temperatures, and the greater uncertainty associated with A2 (Figure 3.1), but by…" (Government of United States)	
3-589	E-3-315	A	12	41			suggest change 'vulnerability' to 'exposure and adaptive capacity'. (Jon Barnett, University of Melbourne)	Deleted paragraph.
3-590	E-3-316	A	12	44	12	45	The inertia argument immediately above can be repeated here. The last echos of the CO2 adventure will not die out until ENSO and tropical deep water effects have responded . (David Fisher, NRCan)	Deleted preceding paragraph.
3-591	E-3-317	A	12	44	12	45	"appear" should be replaced by "are", in order to guarantee consistency with the text in SPM,Page 12, line 23; Topic 3, Page 13, line 4 and WGI 10.3, 10.7, SPM; WGII Table SPM-1; WGIII 3.2, 3.3. (Christian Kjaer, European Wind Energy Association (EWEA))	Noted. Wording is believed to be adequate.
3-592	E-3-11	B	12	44			Commitment in 2000 shows that some climate change is inevitable, but for assessing adaptation needs it would be useful to better characterise near-term commitments, say to 2030. For example Figure 3.1 shows very little difference in 2030 for the multi-model average projections. This change is around 1°C. If it is assumed that this is roughly the median estimate, constrained below by the current rate of change (0.2°C, likely to accelerate if sulphate emissions are lower than projected), then it is as likely as not that global mean temperature will reach or exceed ~1°C by 2030. This is important information for adaptation needs. Even stringent mitigation will not reduce this by much – significantly lower temperature would only be reached by sensitivity at the low end of the range or unexpected natural causes. (Roger Jones, CSIRO)	Agreed. Space restrictions prohibit more detailed discussion.
3-593	G-3-251	A	12	47	12	49	Delete first sentence. The constant concentration scenario is academically interesting but totally unrealistic. Replace with "The most optimistic SRES scenario gives a global warming of 1.1-2.9 C by 2090-2099 relative to 1980-1999. Consequently, replace the 2nd sentence with "Even the scenario that stabilises the CO2-eq concentration at 445-490 ppm (see Topic 5) leads to a global warming of 2.0-2.4 C at equilibrium" (Government of Australia)	Constant concentration scenario provides an important lower bound. Transient warming during 21st century has not been assessed for stabilisation scenarios; equilibrium warming takes longer to materialise.
3-594	G-3-252	A	12	48	12	49	Re: "…a further warming of about 0.6 deg C relative to 1980-1999 levels would be expected over the 21st century." What does would be expected mean - what is the probability? (Government of Australia)	Present wording straightforward.
3-595	E-3-318	A	13	1	13	1	Remove ',' after 'topic 5)' (David White, ASIT Consulting)	Editorial, accepted.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-596	G-3-12	C	13	1	13	9	Adaptation may take place, especially sea-level. There may be some unavailable damage (e.g. to wetlands), but it should be explained that adaptation is / is not taken into account (Government of Belgium)	Agreed. Adaptation mentioed now.
3-597	E-3-12	B	13	2	13	2	The definition of "sustainable development" is not clearly established. Therefore, this sentence is ambiguous. Rather, one of the property of "sustainable development" can be addressed by this. "Sustainable development can, thereby, reduce ..." should be replaced by "In other words, sustainable development should, thereby, be addressed by reduding ..". (Shunsuke Mori, Tokyo University of Science)	Agreed. See Glossary .
3-598	G-3-253	A	13	2	13	9	The impacts information in this paragraph is only drawn from WG2 Table SPM-1, which indicates that the table is being over-interpreted to come up with these concrete statements of impacts to which we are already committed. We questions whether all the bulleted impacts labeled as unavoidable are truly unavoidable. In the fourth bullet, for example, “increased coastal damage” could be avoided through coastal defenses or other adaptation measures. Suggest deleting the last sentence and four bullets. (Government of United States)	Reference to adaptation now included; the impacts listed cannot be completely avoided with adaptation.
3-599	G-3-254	A	13	4	13	4	What is the probability that these impacts are "already unavoidable"? (Government of Australia)	Wording changed.
3-600	G-3-255	A	13	4	13	4	Add the phrase "and may already have begun" after the word 'unavoidable' on line 4. (Government of Canada)	Inappropriate to make an implicit attribution of observed impacts here; see discussion in topic 2.
3-601	E-3-320	A	13	6	13	6	increased coral bleaching 'in some localities' (Thomas Spencer, University of Cambridge)	Space-saving option followed.
3-602	E-3-319	A	13	6	13	9	Same applies as what I said on SPM (see my comments on SPM p. 12, lines 25 and 28) (Andreas Fischlin, Integrative Biology - Systems Ecology)	Wording changed.
3-603	G-3-256	A	13	6	13	9	We suggest these bullet points may have more impact on those policymakers who are likely to read them if the order was changed to be: (1) decreased water availability; (2) increased coastal damage; (3) increased species range shifts; (4) increased coral bleaching (Government of New Zealand)	Some re-organization of bullets done.
3-604	E-3-13	B	13	6			Write … bleaching ; (ponctuation) (Ibouraïma Yabi, LECREDE/DGAT/FLASH/UAC)	editorial
3-605	E-3-321	A	13	7	13	7	make "risk of wildfire" a separate bullet point. (Janice Lough, Australian Institute of Marine Science)	Done.
3-606	G-3-257	A	13	7	13	7	It is unclear why species range shifts and risk of wildfire is commingled in the same dot point, suggest these issues are separate and should be individual bullets.	Separated.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Government of Australia)	
3-607	E-3-14	B	13	7			Write … Wildfire ; (ponctuation) (Ibouraïma Yabi, LECREDE/DGAT/FLASH/UAC)	editorial
3-608	E-3-322	A	13	8			This statement does not seem to be correct as a generalisation as far as the tropics are concerned and is inconsistent in this respect with Figures 3.2 and 3.3 which suggest that in general, but with some exceptions low latitudes will be marked by increased rainfall and run-off. (George Walker, Aon Re Asia Pacific)	Wording changed.
3-609	E-3-323	A	13	8			confusing with the Table 3.2 "increased water availability in moist tropics …" (tropics as generally in the text here) (Tomas Halenka, Charles University, Prague, Faculty of Mathematics and Physics)	Wording changed.
3-610	E-3-15	B	13	8			Write … subtropic ; (ponctuation) (Ibouraïma Yabi, LECREDE/DGAT/FLASH/UAC)	editorial
3-611	G-3-258	A	13	9	13	9	The authors should consider whether their construction for this dot point is accurate. As it currently reads, coastal damage from floods will occur independent of sea level rise, and not because of sea level rise. The authors need to confirm that this is correct. (Government of Australia)	Floods, causing increased damage, are combined with sea-level rise.
3-612	E-3-324	A	13	9	13	10	Add: ¨….with sea - level rise, AND HURRICANES WITH MORE INTENSITY. ¨ (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Reject. Further specification would be needed and this is not feasible due to space restrictions.
3-613	G-3-259	A	13	9			add to end of statement "and, in polar regions, reduction in sea ice cover. WGII 15.4.61.1 (Government of Canada)	A short list only is proposed. Does not appear to be an impact but a physical climate change.
3-614	G-3-260	A	13	10	13	10	The health impacts that have already begun and/or are unavoidable are missing from this list of bullets: 1) increased morbidity and mortality from increased heat waves etc., 2) changes in disease vectors. Using the phrase "For example" permits the omission of some key impacts but it will not help get the important messages about key impacts to policymakers. Suggest not using the 'for example' format and instead simply put the colon after the word 'unavoidable' and then include all the appropriate impacts from Table SPM-2. (Government of Canada)	A short list only is proposed. Health impacts are more amenable to adaptation.
3-615	G-3-261	A	13	11	13	12	The concept of vulnerability needs some introduction here before presenting the results about particularly vulnerable systems and sectors. There is some useful text in the Introduction to section TS.5.3 (Key Vulnerabilities section). Suggest drawing on sentences 1&3 in particular, but rephrasing slightly: "Vulnerability to climate change is the	Criteria given in footnote.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							degree to which geophysical, biological and socio-economic systems are susceptible to, and unable to cope with, adverse impacts of climate change. Vulnerability is evaluated on the basis of a number of criteria, such as.....etc.)" (Government of Canada)	
3-616	G-3-262	A	13	11	13	38	The bolded statement and related discussion were not contained in the WG2 SPM. Governments have had no time to debate whether these systems/regions were 'particularly vulnerable'. Are we making a clear distinction between these and the impacts highlighted in the section on impacts (summarized here in the beginning of Topic 3.3)? If these are to be included, then the authors must explain the difference between impacts and vulnerabilities and elaborate why these systems/regions are vulnerable. It adds little to list these without elaboration. In addition, the authors must be careful with this discussion. Vulnerability in systems and sectors is not just a function of impacts, it is also a function of adaptive capacity, so general statements about coasts, agriculture and health might be best left to portions of the SYR that deal with impacts. (Government of United States)	Agreed. Introduction to 3.3 changed so that these concerrns are addressed.
3-617	G-3-263	A	13	12	13	12	Suggest changing the reference in this line from SPM WGII to WGII Technical Summary Section T.S. 4.5. (Government of Canada)	Done.
3-618	E-3-325	A	13	14	13	24	To the list of vulnerable systems and sectors, "aquatic ecosystems dependent on meltwater" (e.g. alpine/glacial aquatic ecosystems), should be included. (Marc Schallenberg, University of Otago)	Not of same importance at same scale
3-619	G-3-264	A	13	14	13	38	imprtant section on vulnerable systems and regions, important to keep this (also in SPM) (Government of Germany)	Fine.
3-620	E-3-326	A	13	14			Change "are" to "include" to indicate list is not comprehensive, as evidenced by line 37-38 (Donald Lemmen, Natural Resources Canada)	Rejected; this is intended to be a selection of the most important regions and sectors.
3-621	G-3-265	A	13	14			Change the word "are" to "include". The list should not be considered comprehensive. (Government of Canada)	Rejected; this is intended to be a selection of the most important regions and sectors.
3-622	G-3-266	A	13	15	13	15	The authors might like to consider reinforcing the message by adding more information to this bullet point, thus: "Some ecosystems which have limited adaptive capacity {WGII 4.ES, 4.4, 6.4} " (Government of New Zealand)	Ecosystems have limited adaptive capacity. A few ecosystems were selected here.
3-623	E-3-327	A	13	16	13	16	you mention boreal forests here, but should also mention tropical forests, especially Amazonia (as discussed in topic 3, page 9) (Chris Jones, Met Office Hadley Centre)	Rejected; not at same level of confidence and relevance as other entries

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-624	G-3-267	A	13	16	13	16	Semi-arid to arid terrestrial ecosystems are highly vulnerable to climate change (due to increased stress of water supplies, and vulnerability to heat waves) yet there is no mention of this anywhere. (Government of United States)	Mediterranean-type ecosystems listed.
3-625	E-3-328	A	13	16			Replace mediterranean-type ecosystems by seasonally dry ecosystems. (Mercedes Bustamante, University of Brasilia)	Wording from TS followed.
3-626	E-3-16	B	13	16			Write … ecosystems ; (ponctuation) (Ibouraïma Yabi, LECREDE/DGAT/FLASH/UAC)	Editorial
3-627	G-3-268	A	13	17	13	17	Insert “ecosystems” after “mangrove”. (Government of United States)	It is clear now.
3-628	E-3-17	B	13	17			Write … mashes ; (ponctuation) (Ibouraïma Yabi, LECREDE/DGAT/FLASH/UAC)	Editorial
3-629	E-3-329	A	13	18	13	18	also mention calcifying organisms at risk from ocean acidification (Chris Jones, Met Office Hadley Centre)	Rejected; not at same level of confidence and relevance as other entries
3-630	E-3-18	B	13	18			Write … {…..} ; (ponctuation) (Ibouraïma Yabi, LECREDE/DGAT/FLASH/UAC)	Editorial
3-631	E-3-330	A	13	19	13	20	"Low-lying coastal regions …" should perhaps be included in the next section ("Particularly vulnerable REGIONS are:" (Henry Janzen, Agriculture and Agri-Food Canada)	Agreed. But in the convention used coasts are among systems (coastal systems)
3-632	E-3-19	B	13	20			Write … {…..} ; (ponctuation) (Ibouraïma Yabi, LECREDE/DGAT/FLASH/UAC)	Editorial
3-633	E-3-331	A	13	22	13	22	Add: ¨….higher rates of evapotranspiration, WITH PARTICULAR IMPORTANCE IN ISOLATED SIDS ¨ (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Rejected. No need for specification
3-634	E-3-20	B	13	22			Write … {…..} ; (ponctuation) (Ibouraïma Yabi, LECREDE/DGAT/FLASH/UAC)	Editorial
3-635	E-3-332	A	13	25			I would add here 'Semi-enclosed Seas' (e.g. Mediterranean, Black Sea) (Michel Rixen, NATO Undersea Research Center)	Rejected; not at same level of confidence and relevance as other entries
3-636	E-3-333	A	13	26			Change "are" to "include" to indicate list is not comprehensive, as evidenced by line 37-38 (Donald Lemmen, Natural Resources Canada)	Rejected; this is intended to be a selection of the most important regions and sectors.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-637	G-3-269	A	13	26			Change the word "are" to "include". The list should not be considered comprehensive. (Government of Canada)	Rejected; this is intended to be a selection of the most important regions and sectors.
3-638	G-3-270	A	13	27	13	28	Writing the sentence " The Arctic because of high rates of projected warming and its impacts on natural systems" would stress the basic phenomenon : a warming larger than the average value (Government of France)	Present wording found adequate.
3-639	G-3-271	A	13	27	13	28	The authors might like to consider reinforcing the message by adding more information to this bullet point, thus: "The Arctic, because of the impacts of high rates of projected warming on natural systems and loss of ice and thus habitats on which communities and animals and ecosystems depend {WGII 15.3} " (Government of New Zealand)	Likewise, other messages could be reinforced. Space limitations are critical.
3-640	E-3-21	B	13	28			Write …{…..} ; (ponctuation) (Ibouraïma Yabi, LECREDE/DGAT/FLASH/UAC)	Editorial
3-641	G-3-272	A	13	29	13	30	The authors might like to consider reinforcing the message by adding more information to this bullet point, thus: "Africa, especially the sub-Saharan region, because of current low adaptive capacity and projected water shortages {WGII 9.ES, 9.5} " (Government of New Zealand)	Agreed. Reinforced.
3-642	E-3-22	B	13	30			Write … {…..} ; (ponctuation) (Ibouraïma Yabi, LECREDE/DGAT/FLASH/UAC)	Editorial
3-643	G-3-273	A	13	31	13	32	Small islands, due to high exposure of population and infrastructure to sea-level rise, increased storm surge and prone to natural disasters and climate extremes {WGII 16.1, 16.2} (Government of Mauritius)	Agreed. But present wording conveys the essence of the general message.
3-644	E-3-334	A	13	32	13	32	Add: ¨….. And increased storm surge, AND WATER AVAILABILITY¨{WG II 16.1, 16.2} (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Short list only.
3-645	E-3-23	B	13	32			Write … {…..} ; (ponctuation) (Ibouraïma Yabi, LECREDE/DGAT/FLASH/UAC)	Editorial
3-646	G-3-274	A	13	33	13	33	Also calling it the “Pearl River delta” might help clear up some confusion with “Zhujiang.” (Government of United States)	Examples deleted.
3-647	G-3-275	A	13	34	13	35	The change of period location is needed : flooding {WG Ⅱ ~}. ⇒ flooding. {WG Ⅱ ~} (Government of Republic of Korea)	O.k.
3-648	E-3-335	A	13	37	13	37	Remove ',' after 'In all regions' (David White, ASIT Consulting)	Accepted; editorial

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-649	E-3-336	A	13	37	13	38	In addition to the poor, young children, and the elderly, this list of sectors particularly vulnerable could include the ill (or, more specifically, those with asthma, etc.). (Claire Parkinson, NASA Goddard Space Flight Center)	Agreed. Inserted.
3-650	E-3-337	A	13	37	13	39	Comment: additionally a reference to the situation of women in many non-European regions / countries should be made. Statistics indicate that they are often underfed, overworked and have no access to medical care. Suggestion: "…vulnerable, for example the poor, young children, the elderly and in some parts of the world, women." (Maria Rosa Paiva , Universidade Nova de Lisboa [New University of Lisbon])	Agreed, but space limits preclude inserting this. Also, difficult to find this statement in the background information. Discussed in more detail in topic 4.
3-651	G-3-276	A	13	40	14	32	This section could be shortened to help adhere to overall page constraints. There is an inordinate amount of attention paid to the MOC in this document, given that it is just one large scale circulation pattern and very unlikely to slow down during the 21st century. Perhaps this is one place to reduce the document to adhere to proscribed page lengths. (Government of United States)	Headline statement is reworded. Some bullet are shortened.
3-652	G-3-277	A	13	40			Section 3.4: This important section should be expanded to give a more complete picture to policymakers from the perspective of risk assessment. Include other risks which involve potentially large and/or large-scale impacts, e.g. feedback effects leading to accelerated warming (methane releases, CO2 from biosphere). (Government of Germany)	Potential future methane release are important and included in the carbon feedbacks bullet in 3.2.3 Lack of space and confidence in making specific comments hinders their inclusion here.
3-653	G-3-278	A	13	40			It would assist readers for the authors to break up the text of this section through the insertion of sub-headings. Suggest that at page 14 line 6 "Ocean Circulation Changes" be inserted; then at line 21 "Ice Sheet Changes" be inserted. (Government of Australia)	Headline statement and some bullets have been reworded to make the flow better.
3-654	E-3-338	A	13	42	13	45	same comment as SPM p13, lines 9 to 18 (Stephan Halloy, Conservation International)	Text deleted. The statements on the MOC are the assessed likelihood of the changes in the MOC.
3-655	G-3-279	A	13	42	13	45	This bold-faced paragraph is by no means a summary of Section 3.4. Most of the information is repeated on p.14, lines 7-16. Suggest to either drop this paragraph and abstain from a bold-faced statement altogether or to replace it by a balanced summary paragraph. (Government of European Community)	Headline statement and some bullets have been reworded to make the flow better.
3-656	G-3-280	A	13	42	13	45	Missing a word after “ice sheet”? WG1 has stated that it is very unlikely that there will be large abrupt change to MOC in the 21st century; however, no such likelihood statement has been provided about abrupt changes to ice sheets in this time period. Need to identify WG1 as the source within the brackets.	Text deleted.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
							(Government of United States)	
3-657	E-3-339	A	13	43	13	43	use plural: "ice sheets" (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Text deleted.
3-658	E-3-340	A	13	43	13	43	the english of this sentence is not very clear "or ice sheet " Huh ? (David Fisher, NRCan)	Text deleted.
3-659	E-3-341	A	13	43	13	43	Definition of MOC not clear (meridional overturning circulation) (Sharon Smith, Geological Survey of Canada)	Text deleted. MOC is defined in the glossary.
3-660	E-3-342	A	13	43	13	43	change 'circulation (MOC)' to 'circulation such as MOC' (Suam Kim, Pukyong National University)	Text deleted.
3-661	G-3-282	A	13	43	13	43	Consider changing “The probability” to “However, the probability”. Also, what makes 2100 a special year? Switching from an assessment of very unlikely abrupt changes to an inability to assess with confidence? (Government of United States)	Text deleted.
3-662	G-3-283	A	13	43	13	43	"Ice sheet" should be plural: "ice sheets" (Government of New Zealand)	Text deleted.
3-663	G-3-281	A	13	43			Section 3.4 comment: As it stands the bold text at the beginning of this section ("It is very unlikely that there will be large ... changes ...") does not give a balanced picture of what follows. We suggest moving this bold text to after the first of the following paragraphs, i.e. between lines 5 and 6 on page 14. This leaves its message intact while ensuring the statement is surrounded by the balancing subsidiary information. (Government of New Zealand)	Headline statement and some bullets have been reworded to make the flow better.
3-664	E-3-343	A	13	44	13	45	Add WG-number (I) and also a reference to WGII 19.3. (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	Text deleted.
3-665	E-3-344	A	13		14		Am I understanding right: 'Abrupt change very unlikely but MOC slowing down very likely'? (Michel Rixen, NATO Undersea Research Center)	Correct. Bullet on MOC edited to make this clearer.
3-666	E-3-345	A	14	1	14	7	Same applies as what I said on SPM (see my comments on SPM p. 8 lines 1 and 7) (Andreas Fischlin, Integrative Biology - Systems Ecology)	The assessed changes in ice and MOC are for the SRES scenarios and climate sensitivities assessed by WGI.
3-667	E-3-346	A	14	2	14	5	It is not clear why an abrupt change is defined to have a decadal time scale. The 50% reduction in MOC in a century could be defined as an abrupt change. The MOC reduction in the Atlantic Ocean can be taken as the evidence for the Global Conveyor Belt, since the North Atlantic is the start point, and it may take a century to reach the Pacific. (Motoyoshi Ikeda, Hokkaido University)	These sentences are included so that the reader understands what time scale we have in view when we say abrupt. Monthly or interannual abrupt changes are

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
								not in view here.
3-668	G-3-284	A	14	2	14	5	This paragraph seems imprecise and unclear. The reference in the first sentence to decades seems to contradict the preceding bold text (at the bottom of page 3). (Government of Australia)	These sentences are included so that the reader understands what time scale we have in view when we say abrupt. Monthly or interannual abrupt changes are not in view here. We see no contradiction with bold text on page 3.
3-669	E-3-347	A	14	4	14	4	Cross-reference to 5.1 seems to be incorrect (James Crampton, GNS Science)	Text modified. It should read 5.2.
3-716	E-3-7	D	14	4	14	4	"quite high" is an understatement of the impact of a new younger-Dryas-type cooling event. (Stephen Hawkins, Marine Biological Association of the UK)	The text seems clear.
3-670	G-3-285	A	14	7	14	7	Replace "current" with "climate" (Government of Australia)	Text seems clear. Text is approved WGI SPM language.
3-671	E-3-348	A	14	7	14	16	same as above [TSU Comment: Comment "Above" is: "It is not clear why an abrupt change is defined to have a decadal time scale. The 50% reduction in MOC in a century could be defined as an abrupt change. The MOC reduction in the Atlantic Ocean can be taken as the evidence for the Global Conveyor Belt, since the North Atlantic is the start point, and it may take a century to reach the Pacific."] (Motoyoshi Ikeda, Hokkaido University)	These sentences are included so that the reader understands what time scale we have in view when we say abrupt. Monthly or interannual abrupt changes are not in view here. These section is considering changes which are abrupt on decadal to centennial time scales.
3-672	E-3-349	A	14	9			25% of what? Transport? (Michel Rixen, NATO Undersea Research Center)	Correct. Text deleted due to space limitations.
3-673	G-3-286	A	14	12	14	13	Delete this sentence as it repeats the bolded heading text to this section. (Government of Australia)	Accepted.
3-674	G-3-287	A	14	13	14	16	This sentence should be replaced by the shorter sentence from the WG 1 SPM p. 16: "Longer-term changes in the MOC cannot be assessed with confidence." (similar to the sentence on p. 13, lines 43-45 of the current draft). (Government of European Community)	Accepted.
3-675	E-3-350	A	14	16	14	16	The first reference does not exist, and the second seems misplaced. (Markku Rummukainen, Swedish Meteorological and Hydrological Institute (SMHI))	10.3 and 10.5 discuss the MOC changes in the WGI report, as does the SPM (reference added). The WGII references discuss the

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
								impacts of the MOC changes.
3-676	E-3-351	A	14	18	14	20	It would be likely that once the marine ecosystem and ocean CO2 uptake are changed, large abrupt climate changes occur. It should rather state that the feedback mechanisms between the climate change and the ecosystem change have not been quantified yet. (Motoyoshi Ikeda, Hokkaido University)	This uncertainty is part of the WGI assessment of the likelihood of the MOC changes. Text added to note the possibility of feedbacks on the physical climate system.
3-677	G-3-288	A	14	18	14	20	Clarify whether this statement refers to marine and/or terrestrial vegetation. (Government of European Community)	Terrestrial. Text added.
3-678	E-3-352	A	14	20			MOC has also an influence on the rate of storage of heat in the ocean (Michel Rixen, NATO Undersea Research Center)	Noted. Sentence is discussing the impacts on natural and human systems.
3-679	G-3-290	A	14	22	14	22	Are the coastline changes global or along polar ice sheets (Greenland and Antarctica)? (Government of United States)	Global. Text added.
3-680	G-3-291	A	14	22	14	23	Add "low-lying islands (e.g. coral atolls) and" before "river deltas". (Government of European Community)	Text modified.
3-681	E-3-353	A	14	22	14	26	It would be useful to provide the magnitude of these possible changes, for example the loss of the Greenland Ice Sheet will contribute about 7 metres of rise (WG1 SPM page 17). (R. Allyn Clarke, Fisheries and Oceans, Bedford Institute of Oceanography)	The magnitude of a total deglaciation of Greenland is discussed in 3.2.3. Space limitation hinder more details here.
3-682	G-3-289	A	14	22	14	26	expand this para to give more complete information on risk assessment for partial and potential complete deglaciation, include separate paragraphs both for Greenland and for West-Antarctic Ice sheet (Government of Germany)	This information is discussed in section 3.2.3 using the WGI assessment of these potential changes (as noted in the reference list). Space limitations hinder repeating them here.
3-683	E-3-354	A	14	23	14	23	replace “inundation” with “flooding” (Michel J. Rossi, Ecole Polytechnique Fédérale de Lausanne)	Text seems clear.
3-684	G-3-292	A	14	23	14	23	Replace "current" with "climate" (Government of Australia)	Text seems clear. Text is approved WGI SPM language.
3-685	G-3-293	A	14	25	14	25	What is it that is being sustained—the rate or transient level? (Government of United States)	The level. The text seems clear. Since the end point in time is not stated for the temperature changes (i.e sustained), a rate is not implied.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-686	E-3-355	A	14	25	14	26	The same comment that in 4. The higher sea level in 4 to 6 m 123000 years ago could be incorporated a specific cause of concern [TSU note: See Comment E-SPM-816-A] (Ricardo Anadón, Universidad de Oviedo)	Noted. The analog of the future climate changes to past climates is very difficult. The exact forcings and timing of the past climate changes are not well known.
3-687	G-3-294	A	14	25	14	26	This sentence needs to be explained - why are such rates a potential risk? Suggest adding to the end of this sentence this phrase: "which could occur as a result of dynamical change in ice sheet flow rates." (See earlier comment regarding line 2-5 on page 6 which suggested this phrase be explained; this would also facilitate use of this phrase here.) (Government of Canada)	This is discussed in section 3.2.3 (see reference list). Space limitations hinder more details here. The text seems clear.
3-688	G-3-295	A	14	25	14	26	The authors need to rephrase this sentence to make its meaning more clear and to explain how the finding is derived. The authors also need to include a certainty indicatory eg "Based on modelling projections, the possibility that sea level may rise rapidly on centenary time scales is (very unlikely?) but cannot be ruled out. (Government of Australia)	Reject. This assessment was not made in the underlying reports.
3-689	E-3-358	A	14	28	14	28	make the first sentence thick, and the second sentence starts from Line 30 (Suam Kim, Pukyong National University)	The headline statement is reword to be more general. This bullet now supports the new headline statement.
3-690	E-3-359	A	14	28	14	28	I suggest elaborating on the sentence “Gradual climate changes are likely to lead to irreversible and abrupt impacts”. As far as I understand the paragraph, the impact is on expected species extinction. I suggest making this clear in the first sentence. (Torsten Clemens, OMV E&P)	Text modified.
3-691	G-3-297	A	14	28	14	28	Following the format in the SYR SPM, suggest that the first sentence of this paragraph is bolded as a new sub-heading. (Government of Australia)	The headline statement is reword to be more general. This bullet now supports the new headline statement.
3-692	G-3-299	A	14	28	14	28	Change "are likely to" to "can". (Government of European Community)	Text modified.
3-693	E-3-356	A	14	28	14	32	Time scale is not specified here: 21st century? (Michel Rixen, NATO Undersea Research Center)	The assessment related the extinctions to temperature, independent of the time scale.

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
3-694	E-3-357	A	14	28	14	32	Same applies as what I said on SPM (see my comments on SPM p. 13, lines 27 and 30) (Andreas Fischlin, Integrative Biology - Systems Ecology)	Text added.
3-695	E-3-360	A	14	28	14	32	I do not understand the meaning of the expression "20-30% of species assessed so far", particularly because in the second part the sentence refers to ">40%" without saying whether it is the same groupas before or not. (Marco Mazzotti, ETH Zurich)	Text seems clear. Approved WGII SPM text.
3-696	E-3-361	A	14	28	14	32	Comment: Some concrete examples as well as some more quantitative data would be desirable. (Maria Rosa Paiva , Universidade Nova de Lisboa [New University of Lisbon])	Space limitations hinders more details here.
3-697	G-3-296	A	14	28	14	32	What does the combination of "medium confidence" and "likely" mean? This combination of two uncertainty statements in a single sentence is not meaningful and not foreseen by the IPCC uncertainty guidance paper cited in the introduction. It should therefore be avoided, (Government of European Community)	Taken into account in re-wording to avoid dual use of uncertainty language
3-698	G-3-298	A	14	28	14	32	Delete lines 28-32. Species extinctions are not an abrupt impact. This para does not belong in this section. (Government of United States)	The section title is “Abrupt or irreversible changes”. Extinctions seems to fit irreversible changes.
3-699	G-3-13	C	14	28	14	32	Using "medium confidence" and "likely to be at increasing risk" is a weak and confusing statement. The uncertainty should be made more clear. (Government of Belgium)	Taken into account in re-wording to avoid dual use of uncertainty language
3-700	G-3-300	A	14	29	14	29	For policy readers it would be useful for the authors to explain how many species have been "assessed so far". (Government of Australia)	Space limitation prevent more details here. The number does not seem to rise to the level that it should be included.
3-701	G-3-301	A	14	32	14	32	Note that authors place a probability indicatory around use of significant (>40%) in this context. They should do this across the paper when using descriptors like 'significant'. (Government of Australia)	Noted.
3-702	G-3-14	C					Many temperature changes refer to 1980-1999 as the reference period. However, some of the indicated temperature changes have not explicit reference year. I did not see a note explaining that 1980-99 is always the reference period (unless otherwise stated) (Government of Belgium)	Text modified making the reference period more explicit..