#	Comment	Response
1	I have mainly focused my reading on chapter 4, and only had a glance at the whole report, already a highly valuable set for the present stage of FOD. I hesitate to point out some small general remarks, but maybe they could be useful, even if they will come from by many other reviewers.They are mainly dealing with the status of the main keywords like extreme, exposure, vulnerability, resilience, disaster,etc.. We may understand that some chapters could need their own analysis, but the present status of FOD still contains too much developments on this subject in some chapters. I should therefore recommend a specific work for checking this point, with the idea that the basic definitions will be given by chapter 1 and the other chapters only add complements if necessary.The same question arises with the topic of adaptation: it seems logical that it will be assessed by several chapters, but a transverse reading would be useful for eliminating redundancies and heterogeneous developments. An other small remark concerns the use of the wording 'weather and climate extremes', which is frequently used along chapters 3 and 4, and maybe more occasionally elsewhere. It surely refers to a sound idea, but I have only seen some words about the differences between the two, with the examples of drought (OK) and heavy rainfall (which could be discussed). So that I may suggest , either to skip this subtlety because it leads to a systematic use of 'weather and climate' which is a little heavy, or to give more explanations about the differences between weather extremes and climate extremes. The frontier between chapters 3 and 4 is not evident for some events (floods, droughts, but also landslides, sand and dust storms) or sectors (cryosphere, hydrology): the final partition will be surely questionable, but at least it will need interactions between the two chapters. Within chapter 4, there is some inadequacy between the plan, which does not contain a section about projected changes, and the executive summary which refers to it: it seems that this discrepancy is purely formal and could be corrected with the title of sections. A last point (also surely evident for many persons) concerns the possible redudancy between chapter 9 on case studies and single case studies inserted in other chapters, as in the case of chapter 4. Like for the definitions given in chapter 1, we may think that the existence of a dedicated chapter does not forbid any development elsewhere, but this development will have to take the other chapter into account. The most evident illustration is given by the 'extreme' case of the same case study (cyclones Sidr and Nargis) both in chapters 9 and 4. (Seguin, Bernard, INRA)	Thank you for these comments. The overlap among chapters has been reduced through coordination among chapter teams, including related to definitions, discussion of adaptation, and case studies. The frontier between chapters 3 and 4 has also been better established, and the comment on use of 'weather and climate extremes' has been considered by both chapter teams.
2	The current chapter drafts, including their executive summaries, differ widely in terms of their length, structure, and format. (Fuessel, Hans-Martin, European Environment Agency)	Efforts have been made to harmonize these aspects of the executive summaries.
3	Key concepts applied in this report and related terminologies need to be clarified in a prominent position to avoid confusion and misunderstanding. This is particularly important around the term "vulnerability" because this report, being largely based on work from the natural hazards community, uses this term in a rather different way than it is defined in the glossary of the IPCC Fourth Assessment Report. This is partly done in Section 1.1.3 but this treatment is insufficient (see specific comment). Currently there is substantial overlap between Chapters 1 and 2 in the definition and discussion of key concepts (such as vulnerability), which requires close coordination between both author teams in order to avoid redundancies and provide consistent messages. (Fuessel, Hans-Martin, European Environment Agency)	The overlap between chapters has been reduced through coordination among chapter teams, including related to definitions of key terms such as vulnerability.
4	Statements about risk and vulnerability need to be clear and consistent in terms of normalization/scaling issues. In particular, it is sometimes asserted that population growth is a key factor in the growing vulnerability to extreme events, which is certaintly true in terms of "total risks" but not necessarily in terms of the vulnerability or risk per person. (Fuessel, Hans-Martin, European Environment Agency)	This comment has been considered in the context of relevant chapter discussions.
5	Close coordination is required between Chapters 3 and 4 author teams to ensure that consistent messages are given regarding projected changes in extreme events in different regions. (Fuessel, Hans-Martin, European Environment Agency)	The consistency between chapters has been improved through coordination among chapter teams.
6	References to and quotations from existing IPCC Assessment Reports should be made as specific as possible by stating the volume, the chapter, and possibly the page number. Examples where this has not been done include the (flawed) reference to "IPCC, 2001" in Chapter 1 on p. 22, l. 41 and the quotation from "IPCC, 2007" in Chapter 1 on p. 23, ll. 10-12. (Fuessel, Hans-Martin, European Environment Agency)	Efforts have been made to replace such references with more specific citations.

#	Comment	Response
7	I would like to appreciate IPCC, WGII , TSU and also all contributor including co lead authors and authors for such a useful and comprehensive report. I am sure that final report would be very valuable report of IPCC. (Rahimzadeh, Fatemeh, Atmospheric Science and Meteorological Research Center (ASMERC))	Thank you
8	I have conducted this review, after being nominated by the UNISDR Geneva office. I am a knowledge management consultant that specialises in global knowledge systems. I am interested in ways that effective knowledge management can help organizations, inter-organizations, and institutions, better identify, create, manage and apply knowledge, especially as global knowledge ecologies, as an effective solution to key world problems, as described in the UN Millennium Goals. Overall, I am disappointed to see that the report does not give enough attention, in my opinion, to effective global knowledge management and global knowledge systems, as a key emerging discipline, to better understand and respond to climate change. Effective knowledge management can be applied to smaller scale indigenous knowledge and also collective global knowledge systems. To individuals, teams, organisations and inter-organizations. Mention is made on p 474 to integrating local knowledge and Chapter 7 starting at page 618 on Knowledge creation, management and dissemination. I will comment on these separately. I believe that the report could substantially benefit from some stronger sentences of awareness and commitment to effective global knowledge management of the critical knowledge ecologies, and global knowledge systems for climate change. (Young, Ronald, Young International Ltd / Knowledge Associates International Ltd)	These issues have been considered to the extent they are reflected in the relevant literature and to the extent they are consistent with the agreed outline of the report chapters.
9.1	Overall comment on the IPCC SREX report The report gives a thorough and detailed overview on the scientific approaches in extreme event related disaster management. But besides this, the report could improve its logical frame of argumentation regarding the importance and the development of past, present and future impacts of extreme events. I have allowed myself to read the chapters of the report of my scientific background and to review them critically from a neutral scientific perspective. Due to lack of time I have given written feedback (below) only parts of chapters with most important messages (from my point of view). I have indicated trends under which the entire report could be reviewed, especially concerning references to undermine statements and overall argumentation. I got the impression that in its current state the report conveys the overall message that climate change is and will be the main driver for the (observed and potential increase) in overall losses (human and economic) caused by extreme events. This message does not really follow a clear logical chain of argumentation, and it is also lacking scientific evidence to substantial extent. Certainly there are, partly locally, and partly regionally observed trends of changes in extreme event patterns. But there is an overall lack of clear evidences of changing frequencies or magnitudes of extreme events. On the other hand there is clear evidence of a general rise of financial losses and humans affected due to hydro-meteorological hazards (extreme events). Therefore the report could consider to much stronger underline that the observed, i.e. evidently proven, increase of losses and affected people is due to increases in human vulnerability patterns. This vulnerability factor as the main driver for the overall increase in losses is mentioned in some chapters of the report, but unfortunately the report mainly discusses at large potential climate change effects, both in quantity and intensity in the overall argumentation. The observed increase in economic losses and affected people caused by natural hazards are very well documented by insurance and re-insurance companies “Consorcio de Compensación de Seguros. 2008. La cobertura aseguradora de las catastrophes naturales/Natural Catastrophes Insurance Cover, Madrid, 218/201 p.” and “Munich Re. 2009. Topics Geo. Natural catastrophes 2009. Munich. 46p”, as well as older versions of “Topics Geo”). “Topics Geo” has a long contribution on climate change and mentions, the potential of climate change impacts on extreme events. But it also very clearly states on page 35 the increase in vulnerabilities as the main cause for the increase in overall losses. The increase in vulnerability patterns can be attributed to three main factors: 1) population increase (mainly in poor countries), 2) poor or inappropriate land use and management (in both poor and rich countries), 3) an increase in asset values and insurance policies (mainly in rich countries). As already mentioned above, these vulnerability issues are addressed in the SREX	Thank you for these comments, which have been considered in the relevant chapters of the report. See more specific responses to specific comments there. The consistency between chapters has been improved through coordination among chapter teams, including on the issues raised here. Efforts have also been made to reduce overlap and condense the length of the report.

#	Comment	Response
9.2	report, but they could actually be moved more upfront in order to be used as the dominating explanatory factor for the increase in losses. Since there is both continuing population and economic growth rates, inevitably there is an ongoing development and increase of vulnerabilities, even despite climate change impacts on extreme events. In other words, if the current growth rates, as well as inappropriate land-use (planning and/or land-take) practices would not change, then we can expect a further increase in human fatalities and economic damages due to extreme events, even if there was no climate change. Coming back to the logical frame of argumentation, the report could rather focus on the potential effects of climate change on natural hazards that might come as a factor of (increasingly?) important importance in the future. The report repeatedly mentions the need to adapt to future climates and evolving extreme events, even though the direction the extreme events might take is still largely uncertain. The observed increase in losses and affected people on the other show pretty clearly that we are not appropriately adapted to the "current climate" and its extreme events. Instead of "climate change adaptation" it could therefore be considered to first of all talk about "climate adaptation". It may be expected that people need to understand current mismanagement and maladaptation practices first, before they are able to integrate potential future scenarios into planning practices. Other than the report states, it would certainly be of high value for many societies to learn from past hazardous events to plan for future, potential extreme events. Once this procedure is understood, it might be possible go take the next step and integrate potentially higher floods, etc into account. Another potential source of misunderstanding concerning the certainty of "to be expected" climate change impacts on extreme events is that mostly reference is made to AR4 and/or newer "likelihoods" of the effects of "anthropogenic forcing" on extreme events. Since our understanding of anthropogenic influences is still rather weak, this strong focus on "likelihoods" downplays other important factors related to extreme events, especially natural variability (which is also not fully understood as yet), and most importantly human vulnerability (which is pretty well understood, see above). There is also a scientific notion to this last argument. Since most of the climate change impacts on the frequency and magnitude of extreme events are still based on modeling, and not on scientifically proven facts or observed trends, scientists should be careful about what is communicated at the current stage. "What can be expected by climate change" is a very often used phrase in the report. Despite chapter three reporting the uncertainties (to some extent, the level of uncertainty could still be described more clearly than currently done), most of the other chapters state about the impacts climate change "will" have on extreme events, even coming to conclusions that do not stem	

#	Comment	Response
9.3	from chapter three (e.g. rise of river floods). Therefore, the discrepancy between the chapters regarding the use of the terms "might" and "will" of potential effects of climate change on extreme events, i.e. the expression regarding the scientific certainty of changes in extreme events, could be reconsidered. For example, the executive summary of chapter 1 stresses "the additional risks of climate change on extreme events", implying that these changes are fully understood. Chapter 3 on the other hand states in its second sentence that this "may" be the case. Most importantly the last sentence of the executive summary of chapter 3 underlines the "existing differences in confidence" that need to be taken into account. These differences in confidence are indeed very seldom addressed overall in the report. For most extreme events it is quite definite that the term "might" or "may", instead of "will", should be used (especially regarding the role of anthropogenic forcing might play on extreme events). This criticism shall not intend to downplay or even deny the potential role of climate change on natural hazards – quite the opposite. The intention is to put things into correct scientific perspective. It is certainly possible that climate change will have impacts on extreme event patterns – in all senses, i.e. increase and decrease of frequencies and magnitude. But the report focuses mainly on the linking the increase in losses to climate change, even though the scientific evidence gathered so far by both observations and models is still rather vague for most hydro-meteorological hazards. In summary, it could be considered to first explain in detail the past and ongoing evolution of vulnerabilities as well as our poor knowledge and respect for current extreme event patterns. This would underline the need for appropriate adaptation concepts, not only in the future but also to the current climate. Once these adaptation needs are understood and well communicated, it is possible to use further scenarios to respect potential developments of extreme event patterns. An overall technical comment regards the length of the SREX report: The entire document is very long and lengthy summarizes results achieved in international research approaches, of which only few have been published after AR4. Although lengthy discussions on definitions, especially long quotations from other documents, make the report somewhat difficult to read. It might be considered to substantially shorten the report; especially when no new research results lead to newer conclusions since AR4. In case of new results these might be explained in greater detail. Such a shortening process would increase the overall readability. (Schmidt-Thome, Philipp, Geological Survey of Finland)	
10	Also, had I had known the actual content better I could have suggested more appropriate reviewers. There are others, such as Veronica Strang at the University of Auckland (New Zealand) and Marina Alberti (University of Washington) who I'm sure would have had much to contribute to the review. (Naiman, Robert J, University of Washington)	Thank you for the suggestions
11	Sorry that I cannot be of more help. The subject is just too far outside my sphere of knowledge. Fortunately, it seems that the IPCC has assembled an excellent group of authors. (Naiman, Robert J, University of Washington)	Thank you
12	Several chapters used the grey literatures, such as chapter 5,9 and others. Those chapters have described why and how to use it in some sections or Box, separately. Some view points of grey literature in the diffeerent chapters are different. Suggestion is that the uniform comments add in Chapter 1. Other chapters do not introduce it again. Authors should point out the risk of trusts for using the grey literatures,especially in the local regions. (Zhao, Zong-Ci, National Climate Center)	These comments regarding the placement of information about non-journal literature have been considered by the relevant chapters.
13	The FOD of the Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) is very much appreciated and we thank the authors for their effort to deliver a product of very high quality. (Radunsky, KLaus, Umweltbundesamt GmbH)	Thank you
14	In order to further improve the SREX it is suggested to harmonize further the contributions included in the various chapters. This would help to improve readibility as well as internal consistency of the SREX. (Radunsky, KLaus, Umweltbundesamt GmbH)	The consistency among chapters has been improved through coordination among chapter teams.

#	Comment	Response
15	In order to keep the SREX focused and to reduce the number of pages it is suggested to focus the assessment on policy relevant issues and to exclude information that is primarily relevant to the research community. (Radunsky, KLaus, Umweltbundesamt GmbH)	Efforts have been made to reduce overlap among chapters and condense the length of the report, while still covering the scope laid out in the approved outline of the report.
16	It is suggested to include a list of abbreviations used as there are many that are unclear to people outside the scientific community (e.g. NCEP reanalysis) (Radunsky, KLaus, Umweltbundesamt GmbH)	This will be included in the publication
17	To inform policy decisions properly, uncertainties related to the assessment need to be characterized and communicated clearly and coherent across all chapters. This is in particular important for the results presented in the executive summaries in order to inform the final summary for policy makers in a transparent manner. (Radunsky, KLaus, Umweltbundesamt GmbH)	The IPCC uncertainties guidance on consistent treatment of uncertainties has now been applied to SREX.
18	From nine chapters of the report only one (the first) involves the word 'disaster'. This looks controversial to a) the title of the report, which use disaster as a key notion and b) contents of many chapters of the report that discuss disasters and disaster risk extensively. My recommendation: restore the balance between the terms 'risk' and 'disaster' ('disaster risk') " (Porfiriev, Boris, Institute for Economic Forecasting, Russian Academy of Sciencs)	Chapter titles are part of the approved outline of the report and cannot be changed.
19	Some chapters after the 'basic' chapter 1 provide definitions and discussions of the basic notions like 'disaster'. This leads to repetition (duplication) as the smallest problem. In a few occasions (f.i. Chapter 4, p. 16) used are connotations of the term 'disaster' different from that implied in the basic chapter, which involves confusion. Recommendation: keep all definitions in chapter 1 and insert references to these in the subsequent chapters of the report. (Porfiriev, Boris, Institute for Economic Forecasting, Russian Academy of Sciencs)	The overlap among chapters has been reduced and consistency increased through coordination among chapter teams, including related to definitions.
20.1	Overall comment: Initially I was reluctant to comment on this report, because by doing so I was concerned that my name may be added to a list of “experts” that the IPCC process has contacted and consulted with ... and it may then be assumed by some people that I (or other people who have been similarly consulted) therefore necessarily agree with the IPCC’s conclusions. I do agree with some, but I differ strongly with others. I would like to state that I am “mildly sceptical” to the IPCC’s mode of work and “scientific” conclusions in general, and in particular about their claims concerning “extreme weather events” in the context of your email invitation. Based upon my own research, observations and readings in general, and especially in particular about marine and coastal processes of ecological and social changes internationally, I feel somewhat qualified to share some reflections with you. Despite the assertion in relation to the question in the first box in the draft report that you have sent us (Has there been a change in extreme events like heat waves, droughts, floods, and hurricanes? (IPCC, Climate Change 2007: The Physical Science Basis, Frequently Asked Question 3.3), I actually strongly doubt that there is convincing empirical evidence that extreme weather events have increased. This is one of many several fundamental flaws in the IPCC’s assumptions, which have lead to doubtful conclusions and policy recommendations. For your interest, as an example related to extreme weather events, I attach two figures that show: (i) the history of hurricanes in the USA which have been systematically documented by NOAA, and (ii) trends in accumulated cyclone energy shown by Ryan Maue (2009) — are there any trends towards more extreme weather?? If we examine the records of hurricanes in the USA, it is interesting to note that NOAA have detailed records of hurricanes going back to 1851, but they also have accounts back to 1492 ... and the most devastating hurricane recorded in the USA occurred in 1780, in which 22,000 people died; the second deadliest was in 1900 with 12,000 dead, whereas Katrina in 2005 left 1,800 dead – mostly African-American people of low income. I lived for most of my life in Tanzania, and the worst storms that I witnessed occurred in the 1960s: these are on record. I now live in Norway, and I cannot discern any trends towards more extreme weather. It is perhaps only that CNN and NRK are focusing more on exaggerated renditions of weather patterns. Where is the scientific evidence for these claims about increasing extreme weather??? HOWEVER, by strong contrast, I am completely convinced that the increasing gap between rich and poor people in the world, the increasing marginalisation of the poorest people to vulnerable locations and situations (which are clearly documented – in comparison to the fuzzy data on climate), and massive industrial interventions causing large-scale landscape	Thank you for these comments.

#	Comment	Response
20.2	change across the globe have INDEED resulted in more frequent and more serious conditions of exacerbated vulnerability in which many more people are killed or harmed by extreme weather events each year. But, in my opinion, these deaths and loses are less dependent upon the variation in intensity of the weather events than they are on other causes of vulnerability. The work by Karen O'Brien on "double exposure" (or perhaps we could refer to "multiple exposure") comes to mind. Another example of a climate-related issue, related to my own research, is that of sea-level rise, with the IPCC having made catastrophically exaggerated projections. These projections, for example, give a false impression of the causes for serious coastal erosion problems in eastern Africa, which come about mainly as a result of excavation of sand from near-shore river beds for urban building-materials, and other unwise uses of beach-front properties ... whilst the sea-level off eastern African coast is actually FALLING (not rising!!) relative to the tectonically uplifting land-masses ... and this in turn leads to misdirected policies which ignore the actual local problems causing beach erosion, and instead local authorities "blame" a global climate-claim which is of much less relevance in that particular case, and which they do not need to specifically address. This means, in my opinion, that Norway is in the forefront of (at least partly) misdirecting scarce research funds, and other development-related funds, into one-sided emphasis on climate research issues, and in pushing the development agendas of various recipient countries in that direction too. I completely agree that it is important to monitor, investigate and analyse climate trends, including extreme weather events, but there is an urgent need to recognise that there are MANY other more pressing and crucial environmental and developmental issues in the world that are now being relatively neglected. I hope these views may be of some interest and use for you. With best wishes, Ian Bryceson Ian Bryceson, Professor, PhD, Department of International Environment and Development Studies, Norwegian University of Life Sciences (UMB), Box 5003, 1432 Aas, Norway. ian.bryceson@umb.no (+47) 64965507 -- telephone at work (+47) 90621104 -- mobile phone http://www.umb.no/noragric Special interests: marine and coastal ecology, coastal fisheries and aquaculture, resilience, vulnerability and people's struggles for their rights ><> ><> ><> ><> ><> ><> ><> (Bryceson, Ian, Norwegian University of Life Sciences)	
21	Quote from Chapter 2, Page 10, Line 42 " Information without communication is of little use where the final objective of research is social improvement and change." It is evident the IPCC special report is a valuable piece of work, that when communicated throughout the world will support those who have responsibilty to address the issues with additional knowledge and insight into managing vulnerability and risk now and into the future. The Special Report when refined has particular application for bodies such as the Australasian Fire and Emergency Service Authorities Council (AFAC) whose member agencies have the challenge of managing vulnerability and risk reduction programs for the governments and communities they serve. The work of the IPCC special report represents a considerable advancement in the body of knowledge that will be available for strategic consideration and the aggregation of vast amounts of research and expert opinion is of immense value to AFAC member agencies and is something we could never do individually. (Edwards, Jill, Australasian Fire and Emergency Service Authorities Council (AFAC))	Thank you for these comments.
22	Having reviewed all Chapters and as the content is further synthesised and expanded, it is evident that the the quote as outlined above is of great significance. As practitioners and public policy agents who have responsibility for social improvement and change, AFAC member agencies need bodies such as the IPCC to assist with understanding the science and research. Impact assessments and use of plain language are important factors in easy interpretion and more importantly use of the evidence to influence thinking and develop workable adaptation strategies. (Edwards, Jill, Australasian Fire and Emergency Service Authorities Council (AFAC))	Again, thank you for these comments.

#	Comment	Response
23	In refining the draft report, consideration of the use of plain language (whilst it is pitched very well in some areas) could enhance the readability at the public policy and practitioner level. There is a degree of repetition through most chapters that detract from the learning experience which could be refined as the review process advances. I was encouraged by the experience of reading the drafts; the material, evidence, research and expert opinions provided a balance and authentication of my personal views (practitioner, not scientist) as well as the discussions I have heard and particiated in. I look forward to the final report and the opportunity for the 'communication' to occur on the findings and implications of such a comprehensive and valuable piece of work. (Edwards, Jill, Australasian Fire and Emergency Service Authorities Council (AFAC))	The overlap among chapters has been reduced through coordination among chapter teams, and efforts have also been made to condense the length of individual chapters and to improve the clarity of language where needed.
24	Finally, AFAC has prepared on behalf of its members an assessment of the impact of climate change on them as 'frontline' agencies responding to the impacts of climate change. The discussion paper and the findings is able to be found at: http://knowledgeweb.afac.com.au/__data/assets/pdf_file/0020/27911/AFAC_climate_discussion_april2010_PUBLISHED.pdf. Whilst climate change is a global challenge, the effects of it are acutely felt at a local levels. AFAC member agencies are heavily impacted by the occurrence of extreme events as evidenced in the devastating bushfires in Victoria, Australia in 2009. Perceived failures of public safety agencies (when their capacity to deal with such extremes is quickly outstripped) can result in devastating loss of public trust and confidence; key ingredients when trying to facilitate social improvement and lasting change. (Edwards, Jill, Australasian Fire and Emergency Service Authorities Council (AFAC))	Thank you for these comments.
25	The Special Report on extreme events and disasters with over 800 pages is much longer than the other special reports with around 400 pages. From my point of view 800 pages are too long and looking over the chapters, I had the impression that there is potential to abbreviate the text, especially with respect to definitions used (e.g. vulnerability, disaster, extreme event...) . My suggestion would be to put all the definitions in a common glossary and mark the words in the text that are defined in the glossary. Also some of the boxes can be deleted and it should be evaluated if all of the figures and tables are really needed. (Koppe, Christina, Deutscher Wetterdienst)	The overlap among chapters has been reduced through coordination among chapter teams, including related to definitions. SREX will include a glossary. Efforts have also been made to condense the length of individual chapters.
26	For tables that extend over more than 1 page I would find it very helpful if column headings could be on every page (Koppe, Christina, Deutscher Wetterdienst)	This will be the case in the final version.
27	The report should generally include more tables and figures (Luterbacher, Juerg, Justus Liebig University)	Thank you for this comment.
28	Report is very lengthy. It still has a considerable overlap between Chapters (I noticed definitions of vulnerability, risk and some aspects of climate change presented more than 10-15 times. Going through such a lengthy document the reader may loose the main points. I am also questioning the scope and aims of the document. (1) If it is to serve governments it missed the point (or better the key messages are buried in the too much text); (2) If it is to serve disaster community again it missed the point since it does not provide more practical guidance how to deal with climate change in the context of disasters (or better it offers too many ideas without much practical detail); (3) If it is to raise the issue of importance of climate change for disasters it does provide useful information; and (4) If it is too give the directions for closing research gaps it is not specific enough in identifying what are the most important gaps where additional knowledge may reduce the future disaster losses. (Simonovic, Slobodan, University of Western Ontario)	The overlap among chapters has been reduced through coordination among chapter teams, including related to definitions. Efforts have also been made to condense the length of individual chapters and to improve the clarity of language as needed. Improved, well structured executive summaries have helped frame the scope, aims, and condense the main findings of the report.

#	Comment	Response
29	This report is a huge piece of work which is to be commended. It brings together scholars with different views and backgrounds. Obviously it was a difficult task as reflected in brutal jumps from one idea to another, from one standpoint to another in all three chapters I reviewed. The overall volume however seems to stand as a good piece of academic work and some revision shall make it a reference material. I personally disagree with the larger focus on extreme events but I was please to see that the chapters I reviewed atually downplay the importance of such events in comparison to small-scale, frequent disasters. The major overall flaw of the report rests in the redundancy of many materials across chapters, the inconsistencies in terminologies across and within chapters, and different conceptual stands for the same concepts across chapters. I guess (hope) that future meetings among authors will help in nailing down these issues. (Gaillard, JC, The University of Auckland)	The overlap among chapters has been reduced and consistency increased through coordination among chapter teams, including related to definitions.
30	Even if I was only able to read (very) few parts of this interesting and important report, I think that there is a need to pay more attention to the proper definition of terms and concepts throughout the chapters. After the tiny bits I have read, I have a feeling that many terms like e.g. risk, flood, etc. are defined differently in different chapters/sections. Thus, the editor(s) will certainly need to further harmonize the whole report. Nevertheless, I must say that I am impressed by the amount of information that has been compiled. (Wehrli, Andre, European Environment Agency)	The overlap among chapters has been reduced and consistency increased through coordination among chapter teams, including related to definitions.
31	First, let me say BRAVO! What a giant undertaking with evidence of signifigant cooperation. (Longstaff, Pat, Syracuse University)	Thank you.
32	I see a tension in the whole paper that is mentioned on page 2 - this is a situation with high uncertainty, yet many of thesections try to deal with predictions and measuring things. I know that is the scientific method, but perhaps situations with high uncertainty need to be seperated out and dealt with on their own. I see this is attempted in section 1.3.4.1 and I agree with everything there, especially the unlikelyhood of optimal strategies due to brittleness. Also the discussion in that section of feedback and adaptive governance is very good. (Longstaff, Pat, Syracuse University)	Thank you for these comments
33	I got the impression that 30% of the text are redundant, even within the same chapter. Definitions are given in several chapters, basic findings are repeated over and over again,... I suggest to shorten the text considerably, 100 pages should be possible. Or, if you target readers who mostly only read single chapters, equip each chapter with a preface that includes the basics you repeat from other sections because knowing (about) them is necessary to understand this specific chapter. Persons interested in the entire report could thus skip these preliminaries and would surely get less frustrated and annoyed. (Rock, Joachim, Johann Heinrich von Thuenen-Institute)	The overlap among chapters has been reduced through coordination among chapter teams, including related to definitions. Efforts have also been made to condense the length of individual chapters and to improve the clarity of language as needed. Improved, well structured executive summaries have helped frame the scope, aims, and condense the main findings of the report.
34	Several case studies refer to "key messages" from other chapters of this report. I did not detect any section labelled "key messages" or "Key findings" in any of these other chapters (or I missed it in these 800 pages), although they are subliminally included in the "executive summaries". If you want to emphasize key messages / findings they should be explicitly stated in each single chapter, in a way readers can find and identify them easily. (Rock, Joachim, Johann Heinrich von Thuenen-Institute)	The executive summaries present key findings of each chapter.
35	The report currently lacks interconnection between the chapters. While each chapter is strong in its own right, the report appears more as a series of articles rather than a single report focused on one topic. The links and mutually supporting arguments between chapters needs to be strengthened. (Kull, Daniel, International Federation of Red Cross and Red Crescent Societies (IFRC))	The connections among chapters have been enhanced through coordination among chapter teams.

#	Comment	Response
36	A very general comment concerns the aims of the report. As stated in Chpt. 1: "it addresses three major challenges associated with anthropogenic climate change...". If this is the case, from chapter 4 on, only those impacts related to climatic events with a reasonably clear anthropogenic attribution should be discussed. From what reported by chpt. 3 for instance this is NOT the case for ENSO or tropical cyclones. Consistently, they should not be analyzed thereafter (but they are indeed). If, on the contrary, the aim of the report is to analyze more generally climatic extrems and their impacts this will be ok but should be made explicit. Then, in general the report is well written and well structured. However it is not always easy to follow the developing of authors' expositions within single chapters and to appreciate a full consistency between the different chapters. This perfectly understandable at this preliminary stage, considering in addition that the different parts have been written independently by different groups of scientists and that the topics themselves are extremely wide and multifaceted. Similarly, troughout the report many concepts are defined (adaptation, vulneability, hazards etc.), but not always the same definition is used. This should be avoided not to confuse the reader (see my comments on chapter 1). This said, I do not see these as major problems, I think they will be easily accommodated during the revision process. Another general point refers to the enormous amount of qualiative statements/insights compared to quantitative evidence. I'm fully aware that this depends on data availability (and perhaps space), however, whenever possible, I encourage authors to include summary tables with "hard" figures in support. This refers in particular to one aspect i.e. the effectiveness of adaptation and of disaster risk management in reducing that risk. It would be very helpful for the reader and additional and key value added of a report like this if some indicators of benefits from those strategies could be provided (e.g. a summary table at the end of the report on case studies). Finally, there is a dedicated chapter to case studies. I suggest to gather all of them there as many are also sparse all along the report and in the chapters just address the reader to chapter 9. Always concerning cases study. The report is really wide already, thus I would suggest to report those case studies really helpful to illuminate the reader or clarify dubious issues. (Bosello, Francesco, Fondazione Eni Enrico Mattei, Milan University \)	The scope of the report encompasses an assessment of extreme weather and climate events and their interactions with climate change, not just those for which strong evidence of attribution to anthropogenic climate change exists. The overlap among chapters has been reduced and consistency increased through coordination among chapter teams, including related to definitions and case studies. Efforts have also been made to condense the length of individual chapters. Quantitative information on the effectiveness of adaptation and disaster risk management actions has been included to the extent reflected in the relevant literature.
37	A lot of examples are on mangroves. Chapter 2 and 8 cite examples of mangroves two times and four times respectively. Although relevant but new examples can be inserted to highlight the diverse areas of impact of climate change. (GARG, AMIT, INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD)	The overlap among and within chapters has been reduced through coordination among chapter teams, including related to case studies
38	Congratulations to lead authors and coordinators: a clear message emerges in terms of overlaping agendas and need for synergies to be fully understood and promoted between DRM and CCA/CCM. It is a solid review of existing mainstream literature and the "state of the art". There is, nevertheless, and in spite of valuable efforts in almost all chapters, need to further reference and research "gray" literature, particularly non-English research, papers and documents. (Zapata-Marti, Ricardo, United Nations Economic Commission for Latin America and the Caribbean (ECLAC))	Thank you, and further efforts have been made on this front.
39	Document is too long and there are unnecessary repetitions in terms of definitions and concepts, leading to sometimes not entirely coherent or compatible definitions. There are also repetitions and overlaps in terms of data, tables and graphs with different versions of such tables and graphs appearing in different chapters. A streamlining of those graphs and tables as well as a revision of data quoted to avoid diverse figures being used in different chapters would reduce the document's length and facilitate reading as well as make more coherent. (Zapata-Marti, Ricardo, United Nations Economic Commission for Latin America and the Caribbean (ECLAC))	The overlap among chapters has been reduced and consistency increased through coordination among chapter teams, including related to definitions and figures/tables.
40	The document's executive summary should highlight the main messages of the document in general. In similar fashion each chapter's summary must spell out clearly the main messages: some have it others don't (Zapata-Marti, Ricardo, United Nations Economic Commission for Latin America and the Caribbean (ECLAC))	Agreed, the SOD attempts to achieve this.

#	Comment	Response
41	Bibliography references and citations and reference in text do not always match and in some instances references cited in text are not included in the bibliography at the end of each chapter. Since some bibliographical references are cited in several chapters, this adds to the length of the document. A more concise presentation of bibliography is required, perhaps a consolidated one, indicating on the side of each reference in which chapter or chapters it is referenced. (Zapata-Marti, Ricardo, United Nations Economic Commission for Latin America and the Caribbean (ECLAC))	Referencing has been improved in this draft. Per the agreed structure each chapter will include a separate reference list.
42	In General, this report is well tailed out and could contribute to manage the risks of extreme events. Through the whole report, however, description and discussion on food and agriculture including fishery and forestry are to be extended, which are essential components to human society. (Watanabe, Tsugihiro, Research Institute for Humanity and Nature (RIHN))	This comment has been considered in the context of relevant chapter discussions.
43	The report is concise, comprehensive and to the point. It dwells on some new concepts and probes all possible aspects of disastor risk reduction and climate change adaptation. It is very well written, however, the following comments may be considered for updating the draft. (Iqbal, Muhammad Mohsin, Global Change Impact Studies Centre (GCISC))	Thank you.
44.1	As it is the study has an immense amount of interesting and pertinent analysis. But it requires a large amount of effort to get it to an homogenous, consistent, pertinent and consumable product. The principle overall comments one has, having closely read all the chapters, are the following: 1. Despite there being a great deal of very interesting analysis and discussion in all chapters one gets the feeling that a lot of this is not necessarily relevant for achieving the final aim of the study—that is, to get to knowledge and experience that helps us see how managing risk of extreme events and disasters in the past, modified according to new hazard and vulnerability circumstances, can help promote adaptation. That is to say, much of what is there is very illuminating but not particularly relevant to that goal and could be in annexes or another study. One gets the feeling that as the writing was done many times it was more the central chapter or section topic that guided what was put as opposed to a reading of information in the light of the central objective and choosing information and type of analysis that contributes to this. With this one is sure that with 350 pages plus some annexes one could achieve a more concrete, readable and consultable study. Some chapters are still very, overly long, there is much repetition chapter to chapter that must be eliminated etc. 2. As to repetition four topics seems to come up over and over again in chapters • Risk analysis and evaluation and scenario building • Information on disaster impacts historically and at present • Insurance and risk transfer and sharing • Definitions and interpretations of such concepts as coping, DRM, hazard, risk etc This has to be looked at closely. Maybe there are topics like the evidence as to impacts and costs over time, methods of risk analysis and data bases, etc that could be put in a chapter together under the notion of overriding themes or something like that, thus avoiding repetition of similar things of general relevance and use in different chapters. 3. Conceptually and in the usage of terms in the study there are still large differences in interpretation of such things as coping, DRM, resilience, risk, hazard etc Due to conceptual biases and preferences now almost all chapters define or redefine terms to greater or lesser degrees as they see them and there is little concatenation whereby what is in chapter 1 for example is accepted and built on with variations in future chapters. Rather, there are many times abrupt differences, chapter to chapter, and even within chapters. 4. The level and detail of	The overlap among chapters has been reduced and consistency increased through coordination among chapter teams, including related to definitions and case studies. Efforts have also been made to condense the length of individual chapters.

#	Comment	Response
44.2	information given on different cases or topics and themes is enormous even within chapters. Some topics or themes are given a couple of words and others a page with no clear reason for this difference, except who wrote that part. Most times where long and much detail is given we are not sure that the author is really considering why this information is there—to help understand how to advance adaptation through learning from historical experience with managing risk associated with extremes and disasters- and the example takes precedence over its usefulness for understanding this goal..This has to be looked at and a decision taken on what is a relevant level of detail given the final objective of the study not the inherent interestingness of the topic or theme as such. 5. Do we need to agree not to use the notion of natural disaster or natural risk given we are trying to debunk continually physicalist notions of risk and disaster? I would say so—personally I don't feel comfortable being associated with a tome that uses outdated ideas and supports the continuity of the use of such notions as natural disasters or natural risk having argued against these for decades! Even the Strategy does not use the word natural in its title now. 6. The whole thing as to what is an adaptation method or instrument and what is a good old fashioned or more recent fashioned disaster risk reduction or prevention method or instrument is just not resolved or defined. So time after time these are used indiscriminately as if not taking on the problem of definition will make it go away!! There seems to be a pervading but not consensual idea that the distinction between adaptation as long term and disaster risk management as short term and the difference between coping and adaptation defines the differences. This of course is just not true as coping is not the principle DRM strategy and is in fact a marginal necessary strategy associated with disaster response and rehabilitation (but it is used to describe all shorts of thing in the text and in fact becomes at times so wide in its usage that it substitutes the notions of DRM in general and its different components—some talk of coping with disaster risk as such and then coping with disaster, two completely different things-one is prevention and mitigation, reduction or control and the other is response and rehab) and that is as far as it goes. Moreover DRM is now very long term in its visions while CCA is also short term when it comes to dealing with climate change now on the ground as defined by the IPCC. Strikes me that when looking closely at this a good part of what is being called at times adaptation methods are clearly now well known and used DRM methods. Then	
44.3	there are other methods that are purely DRM and others that could be interpreted as being solely adaptation—i.e. where DRM is not relevant—but given these are not part of this study they are not relevant. 7. Seems many times the south does not exist!! The study is biased at present to more advanced economy considerations of method and instruments. Little referencing from the south occurs—the" hidden voices" Ken Hewitt once wrote about. This reflects of course amongst other things the weight in numbers of northern researchers, the lack of overall representation of southern scholars with wide knowledge of the theme in each chapter and the language and grey literature barrier. But, this imbalance must be resolved given the adaptation problem is principally, as is the disaster risk problem , a problem for southern countries. 8. Chapter 6 refers many times to the case studies in chapter 9. No other chapter does this. Should this be a common practice or should it be that chapter 9 refer back to and synthesize things that come out of the thematic chapters? Or should both methods be used? 9. Considerable attention must be given to the case study chapter as it is very heterogeneous, at times does not provide case studies but rather, compendiums of case examples, provides too much information on causes and impacts and not enough many times on management options, and is not necessarily comprehensive in dealing with some critical aspects brought up in the different thematic chapters. 10. Overall it seems this needs the keen eye of a general editor who can take decisions on many aspects and then go back to authors for approval—if we attempt to get 100 authors to agree we are going to be here for ever. A benign dictator with astuteness on his or her side is required to eliminate the many inconsistencies, repetitions, unbalanced writing, contradictions—all maybe valid from an individual perspective, but which cant be in a single study and hope to convince those who read it. (Lavell, Allan, Programme for the Social Study of Risk and Disaster (FLACSO))	

#	Comment	Response
45	My issue the role of biodiversity and ecosystem services for climate change adaptation and mitigation; consequently I have checked chapter 3, 4 and 8 only. I found the issue dealt with short but competently in section 8.5.2. In all other places where a reference to adaptive (eco-)system management would have been appropriate and in some cases would have changed the conclusions the issue was missing. For instance, when financial resources are mentioned as an obstacle, a reference to the cost analysis of TEEB would have been appropriate, showing the frequent superiority of ecosystem based responses. (Spangenberg, Joachim H., Sustainable Europe Research Institute SERI Germany)	This comment has been considered in the context of relevant chapter discussions.
46	The overall objective of the document is unclear. My impression was that there are many statements that are weak and not useful to a decision maker. For example, a statement such as - identification of "possible" trends that "could" affect a population" are of very limited value. I suggested such statements be removed. (Ballantyne, Donald, MMI Engineering)	Efforts have been made to improve the specificity of such statements, using the formal IPCC uncertainty language.
47	Generally are terms such as vulnerability, expsosure, resilience, susceptibility, coping/adpative capacity etc. not used concistently throughout the report. Sometimes they are even used with opposing meanings. (Kuhlicke, Christian, Helmhotz Centre for Environmental Research - UFZ)	The overlap among chapters has been reduced and consistency increased through coordination among chapter teams, including related to definitions.
48	Overall the whole report is a comprehensive and I support all the chapters to be addressed in the report. Unfortunately, I could not read in detail the all chapters. I have read and examined the Chapter 4. However, I have indicated some specific points in the other chapters given below. (Incecik, Salahattin/Selahattin, Istanbul Technical University)	Thank you
49	references should be re-checked . The style differs in each reference. (Incecik, Salahattin/Selahattin, Istanbul Technical University)	Referencing has been improved in this draft.
50	In references commas and dots were not used in correct form. Author names were not seperated from each orher properly. (Incecik, Salahattin/Selahattin, Istanbul Technical University)	Referencing has been improved in this draft.
51	In some tables, caption of the table is missing (Incecik, Salahattin/Selahattin, Istanbul Technical University)	Efforts have been made to add captions where needed.
52	Overall, excellent comprehensive compendium of scholarship on extreme events and DRR and CCA. The 'collective' work covers virtually all dimensions pertinent to this far-reaching topic. As might be expected with a first working draft, there are areas of substantive overlap / repetition as well as editorial and stylistic aspects that can be addressed in subsequent revisions. A prudent edit could and arguably should reduce the overall length by 20-30%. Presumably an executive summary of the whole document will be produced. It would be worth preparing such an executive summary at this point to distil pivotal messages, key themes and practical recommendations so that these can be be reinforced in subsequent revisions of the document as a whole. (Glavovic, Bruce, Massey University)	The overlap among chapters has been reduced through coordination among chapter teams, and a draft Summary for Policymakers is included in the SOD.

#	Comment	Response
53	One topic that deserves greater emphasis is the 'politics' and 'political economy' of disasters and climate change. This topic is addressed at various points in the report, and most meaningfully in Ch 8. However, in general, this topic is dealt with somewhat 'lightly' viz. trade-offs, etc. There is a school of thought that some might label 'extreme' but nonetheless ought to be included as part of an endeavour to identify and address the drivers and root causes of vulnerability and, more generally, unsustainable, risk-generating practices. For example, Naomi Klein's book "Shock Doctrine" makes a compelling case re the destructive impact of 'free market' economics, including the deliberate exploitation of disaster situations. A less 'shrill' argument perhaps is presented by Freudenberg etal in "Catastrophe in the Making" (2009) re the 'growth machine' - a work is referenced in several places. A related argument has been made regarding the allegedly deliberate endeavours of vested political-corporate interests and associated climate change skeptics in obfuscating / downplaying the climate change imperative. As just one practical example, New Zealand's Government owned highly regarded National Institute of Weather and Atmospheric Research (NIWA) has had court action threatened on grounds that it has manipulated key climate data (see e.g., http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10666256). The point is that the 'rawness' of deliberate 'anti-sustainability' interests in general ought to be more explicitly exposed as an impediment to reducing vulnerability and building resilience and sustainability. In other words, addressing the drivers and root causes of vulnerability [see e.g., Wisner et al "At Risk" (2004) which is quoted repeatedly through the text] need to be identified and expounded upon in a more deliberate and explicit manner than is currently the case; and this should be conveyed through relevant sections of the report as a whole, starting in Ch 1 e.g., in sections dealing with political and institutional barriers, drivers of maladaptation, Ch 2 (eg. section 2.5), etc. (Glavovic, Bruce, Massey University)	This comment has been considered in the context of relevant chapter discussions.
54	A second topic that deserves mention as a matter relevant across various chapters is perhaps best described as the 'pessimists' outlook on prospects for containing extreme events through DRR and CCA. For example James Lovelock's books "The Revenge of Gaia" (2006) and "The Vanishing Face of Gaia" (2009) paint a picture of humanity having passed the point of no return - a rather dismal but plausible perspective that should perhaps be included as one possible outcome of 'business as usual'. One complementary way of portraying such a dismal future would be to paint a worst case scenario of an extreme event(s) that unfolds into a compound / concatenated disaster that transcends the capacity of prevailing global institutions. Another perspective that could be further developed is the notion of societies / civilisations that 'collapse' due to environmental change driven by humans or otherwise - as developed in Jared Diamond's book "Collapse" (2005) and the more recent counter by Patricia McAnany etal (2010) "Questioning Collapse" which argues that resilience is the distinguishing character of societies in crisis rather than collapse. (Glavovic, Bruce, Massey University)	This comment has been considered in the context of relevant chapter discussions.
55	Instead of using "poor countries", "rich countries" and so on, it could be usefull to take the terminology of Chapter 4, pg 9, lines 47 to 49: HDC, MDC and LDC. Or be consistent with the terminology used in IPCC assessment reports and other special reports. (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	This comment has been considered in the context of relevant chapter discussions.
56	Do not forget to insert some years missing along the text (for example, chapter 1, pg 25, line 50). (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	This comment has been considered in the context of relevant chapter discussions.
57	In order to be homogeneous, all names and years into brackets could be separated with a comma. For example chapter 1, pg 27, lines 21 to 23; there are two styles to make the reference. (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	Referencing has been improved in this draft.
58	Although errors in formatting, spelling, etc will be corrected in the publication it should be changed the way it is written the ºC as it is done in the International System of Units (SI) of the Bureau International des Poids et Mesures.Example: t= 30.2 ºC but not t=30.2ºC nor t=30.2º C (page 133, chapter 5 "Writing unit symbols and names, and expressing the values of quantities"; http://www.bipm.org/utils/common/pdf/si_brochure_8.pdf). In some parts of the text it is well written but not in other parts. (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	This will be addressed in publication.

#	Comment	Response
59	It is needed a clarification when the text talks about billion $. Are we talking about 10^9 (1,000,000,000)$ or 10^12 $?. The same with billion people or other billions along the text. The term "billion" does not have the same meaning all over the world. Avoiding the use of "billion" could be a solution for the misunderstandings. It is necesary to state the dimensionless quantity of all the data used in the SRREN. An annex of terms could be a also solution to avoid any misunderstanding. (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	This comment has been considered in the context of relevant chapter discussions.
60	this is an overall observation: the report as a whole is very repetitive, specifically in the context of insurance. Almost all chapters have a paragraph on the role and importance of insurance, sometimes using dated sources, while other chapters are more up-to-date. All chapters briefly touch on insurance and in some way or another make comments about the role/limitations/barriers. But instead of this repetitive high-level assessment it might be better to have one detailed analysis of insurance, that the other chapters can then refer to in their specific context (local, national, global etc.) (Surminski, Swenja , Association of British Insurers)	The overlap among chapters has been reduced through coordination among chapter teams, and this comment has been considered in the context of relevant chapter discussions.
61	A Glossary explaining most important abbreviations would be very helpful (Kunz, Michael, Karlsruhe Institute of Technology (KIT))	A glossary and abbreviation list will be included in the report.
62	The Thomas Stocker/WGI TSU review comments include contributions from Thomas Stocker, Gian-Kasper Plattner, Simon Allen, Pauline Midgley, Melinda Tignor, and Alexander Nauels. (Stocker, Thomas, IPCC WGI TSU)	Noted.
63	Several Chapters make very general statements about the observations and projections of trends in climate or in extreme events. These all need to be checked carefully for their consistency with Chapter 3. Indeed it may be better to use key messages from Ch. 3 or if the Ch. 3 author team could provide such overview statements for use in the other Chapters. (Stocker, Thomas, IPCC WGI TSU)	The consistency among chapters has been improved through coordination among chapter teams.
64	General comment on the treatment of the words "likely", "very likely", etc. throughout the chapter text. In IPCC, "Likely", "very likely" and all other expressions from the IPCC Uncertainty Guidance are part of calibrated IPCC language and therefore reserved. These words can only be used in relation to the formal treatment of uncertainty! They are formal terms used to quantify the likelihood of an outcome or result where a probabilistic basis can be established. For clarity and consistency, these words (e.g., "likely", etc.) can only be used when assigning a formal likelihood statement. In order to clearly visualize this in the text, they appear in italicized form as per the uncertainty guidance provided to all authors. (Stocker, Thomas, IPCC WGI TSU)	Efforts have been made to avoid casual use of such terms.
65	There needs to be an introduction/overview regarding the treatment of uncertainty in this report, and we suggest such an overview might be best given within a box appearing in Chapter 1. We thus propose that Chapter 1 add a Box on IPCC treatment of uncertainties, closely following the IPCC Guidance Note which is currently being revised for AR5 (Stocker, Thomas, IPCC WGI TSU)	A box like this is now included in the draft Summary for Policymakers.
66	Box 5.1 (pp 5-7 of Ch. 5) gives a useful description of the procedures for using grey literature. Consider putting this in Chapter 1 but only if it applies to the practice used in all Chapters. (Stocker, Thomas, IPCC WGI TSU)	These comments regarding the placement of information about non-journal literature have been considered by the relevant chapters.
67	In several Chapters, citations are given to Solomon et al or Parry et al (2007) which refer to the whole WGI or WGII AR4. This is far too general: cite the SPM if it is an overview from AR4 or better the specific Chapter. (Stocker, Thomas, IPCC WGI TSU)	Efforts have been made to replace such references with more specific citations.
68	The issues of overlap and redundancy among Chapters 5, 6, & 7 need to be discussed and solved in cross-chapter meetings. (Stocker, Thomas, IPCC WGI TSU)	The overlap among chapters has been reduced through coordination among chapter teams.
69	This report doesn't seem to cover a number of recent papers on impacts that I would have expected to see covered in more detail. Among these are the recent paper by Sherwood and Huber in PNAS in 2010 dealing with health linkages to extremes in wet bulb temperatures. Does this belong in chapter 4? (Solomon, Susan, NOAA)	This comment has been considered in the context of relevant chapter discussions.

#	Comment	Response
70	First of all I think that the initiative of the IPCC Panel to do efforts to include Disaster Risk Reduction as part of Climate Change adaptation´s challenge was a very important and neccesary desition. I take this effort as an important first step, that surely will demand additional efforts in the future in order to improve internal coherence and applicability of the document, but over any eventual weakness that could be found in the document, I recognise the value of the materials that have been produced to consolidate this first draft. (Linayo, Alejandro, Research Center on Disaster Risk Reduction CIGIR)	Thank you for this comment.
71	It would be good to see a more general connection throughout the document between the mulit-hazard approach from DRR and the concept of robustness within CCA. (O'Donnell, Ian, Asian Development Bank)	This comment has been considered in the context of relevant chapter discussions.
72	Very strong report, and huge efforts for complete and integrated look at the available knowledge (Cisse, Gueladio, Swiss Tropical and Public Health Institute)	Thank you for this comment.
73	Need more track of publications about situation about Africa, particularly in French speaking countries (Cisse, Gueladio, Swiss Tropical and Public Health Institute)	This comment has been considered in the context of relevant chapter discussions, to the extent that the available scientific literature can support a robust assessment.
74	My comments reflect a macro-analysis of Chapter 1, Chapter 2 and Chapter 9. It has been a great effort to put together the material presented in the draft report. I am sure that I will not do justice to the work of the authors and apologise in advance for any oversight on my part. (Abrahamsj, Jonathan, World Health Organization)	Thank you for this comment.
75	In order for the report to be coherent, consideration should be given to the consistent application of the terms raised in Chapter 1. Chapter 1 itself does not maintain a consistent line in the use of terminology. The case studies in Chapter 9 are not using the terms consistently. This indicates that there is not a common understanding of key terms, nor an appropriate model presented that reflects the focus on a more comprehensive risk management approach. This is a gap which needs to be addressed. (Abrahamsj, Jonathan, World Health Organization)	The consistency among chapters has been improved through coordination among chapter teams, including related to definitions.
76	The release of the ISO Risk Management Standard 3100 should be given more attention as it offers the potential for providing the basis of a holistic approach to the management of risk. (Abrahamsj, Jonathan, World Health Organization)	This comment has been considered in the context of relevant chapter discussions.
77	Overall, I would propose that more attetnion should be given to community impacts of climate risk expressed as impacts on health (not just deaths and injuries, but also disease, pychosocial impact, disability, loss of health facilitiies and services), livelihoods, agriculture, food and water, education etc. The analysis often stops short of community impact and the description of community interventions needed to manage the risk. (Abrahamsj, Jonathan, World Health Organization)	This comment has been considered in the context of relevant chapter discussions.

#	Comment	Response
78	The report promises to be a valuable resource to the public and private communities concerned with adaptation to climate change. Its broad scope and detailed attention to the state of knowledge and practice will make it a valuable resource policy makers, those concerned with actions and practices for adaptation, and to scholars and researchers. change because of its comprehensive scope and detailed references to the literature. 0 The review draft lacks an overall Executive Summary. This is the most critical element of the report - where all readers will begin and many will end. It should contain the principal findings and recommendations and be reviewed to assure such contents and that all its statements are supported in the text. start and many end. It should contain all principal findings and should be reviewed to assure that none are missed and that all are properly developed in the text. 0 Pervasively, the report ignores the important role of the private sector/business community in forecasting and managing the risks from climate change (though there are many references to Swiss RE). The private sector is a major stakeholder and actor - even in developing nations. See the World Business Council for Sustainable Development (www.wbcsd.org) as exemplary of the roles the private sector can and must play in adaptation. the risks from climate extremes - though there are many references to Swiss Re. The World Business Council for Sustainable Development (www.wbcsd.org) is exemplary of the role the private sector can play in both developed and developing nations. Note that the private sector bears much of the risk of climate change effects and plays major roles in both mitigation and adaptation. 0 Pervasively, the report overlooks the roles of private professional societies in developing and implementing measures for adaptation and risk reduction. In the developed world, most national standards and practices are developed and applied by members of such professional, technical and trade associations. In the developing world, and in the International Standards Organization, most standards and practices are based on those from developed nations. The American Society of Civil Engineers (www.asce.org) is just one such private professional society. See its "Vision for Civil Engineering in 2025," ASCE, 2007, 1801 Alexander Bell Dr., Reston ,VA, USA for its plans to help achieve a sustainable world. (Wright, Richard, American Society of Civil Engineers)	The SOD includes a draft Summary for Policymakers. The comments regarding the private sector have been considered in the context of relevant chapter discussions.
79	In many parts of the main text, GLOF is defined as glacier or glacial lake outburst flood. Unify the term definition. (Fujita, Koji, Nagoya University)	Both terms are synonomous and used widely in the relevant scientifc literature. Effort has been made to ensure consistency to the extent possible in the SREX.

#	Comment	Response
80.1	1. Pre-amble I congratulate the report's many authors on their comprehensive and perceptive compilation and interpretation of the body of research relating to extreme events and the putative influence of climate change upon them. My one major concern is that the report: (1) misses some possible geomorphological impacts, and; (2) barely touches upon the manifold and potentially hazardous geological responses to climate change. In the latter context, I build a case below for a far-more wide-ranging link between climate change and geological hazards, providing referenced material that the authors might wish to consider incorporating within (as, where and if appropriate), or alluding to, in a later version of the report. A key suite of relevant papers was published this year in a thematic issue Philosophical Transactions of the Royal Society A (McGuire et al. Phil. Trans. R. Soc. A., 368 Climate Forcing of Geological and Geomorphological Hazards). 2. Climate change and the Geosphere Periods of exceptional climate change in Earth history have been associated with a dynamic response from the geosphere, involving enhanced levels of potentially hazardous geological and geomorphological activity. The response is expressed through the adjustment, modulation or triggering of a broad range of surface and crustal phenomena, including volcanic and seismic activity, submarine and sub-aerial landslides, tsunamis and landslide 'splash' waves, glacial outburst and rock-dam failure floods, debris flows and gas-hydrate destabilization (McGuire, 2010). Such responses support the idea that anthropogenic climate change also has the potential to drive hazardous geological and geomorphological activity (Liggins et al., 2010; McGuire, 2010). This view is justified on the basis of four lines of evidence: (i) periods of exceptional climate change in Earth history are associated with a dynamic response from the geosphere; (ii) small changes in environmental conditions provide a means whereby physical phenomena involving the atmosphere and hydrosphere can elicit a reaction from the Earth's crust and sometimes at deeper levels; (iii) modelling studies and projection of current trends point towards increased risk in relation to a range of geological and geomorphological hazards in a warmer world; and (iv) observations suggest that the ongoing rise in global average temperatures may already be eliciting a hazardous response from the geosphere, for example through the triggering of giant rock and ice avalanches in elevated terrains (Huggel et al., 2008; 2010). Potential geological and geomorphological responses to contemporary climate change, not addressed in the IPCC SREX, are discussed below in the context of extreme precipitation, intense low-pressure systems, ice-mass loss and sea-level rise. 3. Extreme precipitation In unglaciated high-relief volcanic regions, including in the Caribbean, Europe, Indonesia, the Philippines and Japan, climate change may drive increased hazardous activity via modified precipitation patterns and, in particular, a rise in the frequency and magnitude of severe rainfall events. The main hazard ramifications are likely to be an increase in debris flow production and an elevated potential for the development of slope instability and landslides due to rises in pore-water pressure. Two recent incidents demonstrate the destructiveness and lethality of precipitation-triggered collapses and debris flows in volcanic landscapes. In 1998	This comment has been considered in the context of relevant chapter discussions, specifically within Chapter 3, and the section relating to glacial, geomorphic, and geological impacts.

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80.2	at Sarno (Campania, Italy), sustained, extreme, rainfall mobilized pyroclastic material derived from the Vesuvius and Campi Flegrei volcanic centres, leading to the formation of ca 150 debris flows, which resulted in 160 fatalities and extensive damage to Sarno and neighbouring population centres (Brondi & Salvatori 2003). Later the same year, torrential precipitation associated with Hurricane Mitch triggered a small flank collapse at Casita volcano (Nicaragua) (Scott et al. 2005). The resulting landslide rapidly transformed into a watery debris flood and then into a debris flow that inundated two towns and took 2500 lives. Looking ahead, many volcanoes provide a ready source of unconsolidated debris that can be rapidly transformed into potentially hazardous debris flows by extreme precipitation events that are predicted to become broadly more common as a consequence of planetary warming. Notably, as for Casita, many volcanoes occupying coastal, near-coastal or island locations in the tropics are particularly susceptible to torrential rainfall associated with tropical cyclones, which are projected by some to become wetter (e.g. Knutson et al. 2008). A future characterized by more frequent extreme rainfall events may also exacerbate the impact of large, explosive, volcanic eruptions, through providing an effective means of reworking large volumes of unconsolidated ash and pyroclastic flow debris downslope. Following the Pinatubo (Philippines) eruption in 1991, reworking due to the heavy rains associated with the passage of tropical storms resulted in the damming of river systems and massive flooding across the region, which continued for several years after the eruption had ended. Heavy rainfall events are also capable of influencing the behaviour of active volcanoes. For example, Mastin (1994) relates the violent venting of volcanic gases at Mount St Helens between 1989 and 1991 to slope instability or accelerated growth of cooling fractures within the lava dome following rainstorms, while Matthews et al. (2002) link episodes of intense tropical rainfall with collapses of the Soufriere Hills lava dome on Montserrat (Caribbean). 4. Intense low-pressure systems In addition to driving extreme precipitation, intense low-pressure systems – most notably tropical cyclones - may also influence critically-poised geological systems as a consequence of their very low core pressures. For example, Liu et al. (2009) have demonstrated that slow earthquakes in eastern Taiwan are triggered by stress changes of ca 2 kPa on faults at depth, associated with atmospheric pressure falls caused by passing typhoons. Similarly, Neuberg (2000) reports a convincing correlation between changes in barometric pressure and activity of Stromboli volcano (Italy). A greater frequency of more powerful storms, with lower core pressures, will increase the potential for them to influence seismic and volcanic systems and potentially to trigger earthquakes or eruptions where the systems are critically poised. 5. Ice mass loss The potential for triggering geological and geomorphological hazards is elevated at high latitudes, most notably as ice mass is lost from the great ice sheets, smaller ice caps and individual glaciers and ice fields. In Greenland and Antarctica, isostatic rebound as ice mass is reduced may result in increased	

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80.3	seismicity (Turpeinen et al. 2008; Hampel et al. 2010), which may in turn trigger submarine landslides that could be tsunamigenic (Tappin 2010). In Iceland, Kamchatka and Alaska, melting of ice in volcanically and tectonically active terrains may herald a rise in the frequency of volcanic activity (Pagli & Sigmundsson 2008; Sigmundsson et al. 2010) and earthquakes (Sauber & Molnia 2004; Sauber & Ruppert 2008). Projected temperature rises for high latitudes will affect smaller ice caps, ice fields and glaciers more rapidly than the major ice sheets. Of these, Iceland's Vatnajökull ice cap (area ca 8000km3) presents the greatest threat in relation to the resultant triggering of a potentially hazardous geospheric response. As reported in Pagli et al. (2007), mass-balance measurements show that the ice cap is thinning at a current rate of ca 0.5m a year, and has lost ca 435km3 between 1890 and 2003—about 10 per cent of the total volume. In post-glacial times, the reduction in vertical load associated with an annual ice thinning rate of ca 2 m, across a much larger ice cap (180km diameter compared with 50km today) (Pagli et al. 2007), was instrumental in triggering a significant increase in the frequency of volcanic eruptions. Furthermore, Jull & McKenzie (1996) showed that removal of the countrywide ice load reduced pressure on the underlying mantle to such a degree that melt production jumped by a factor of 30. The smaller size of the current Vatnajökull ice cap, and slower thinning rate, supports a more measured reaction from the crust and mantle to contemporary warming. Nevertheless, Pagli & Sigmundsson (2008) predict, on the basis of finite-element modelling, that the reduced ice load will result in an additional 1.4km3 of melt being produced in the underlying mantle every century, comparable to an eruption equivalent in size to the 1996 Gjálp eruption beneath Vatnajökull, every 30 years. The authors also speculate that stress changes in the crust in response to ice-mass loss may already be contributing towards elevated levels of seismicity with 'unusual' focal mechanisms in the northwest of the region. While the direct effects of increased levels of volcanic eruptions in Iceland may impinge upon relatively small populations, large events that are explosive or release significant volumes of sulphur gas may have far wider effects. The Laki (Lakagigar) eruption in 1783, for example, generated a tropospheric sulphurous haze that spread southeastwards over Europe. This resulted in extremely poor air quality and anomalously high temperatures during the summer months, and dramatically reduced winter temperatures, and led to significant excess deaths in the UK and continental Europe (e.g. Grattan et al. 2005). Furthermore, the 1783 eruption lasted for six months; a similar event today would have the potential to cause major disruption to the North Polar air transport routes. Elsewhere, ice-mass loss at glaciated volcanoes, most notably in Alaska, Kamchatka, the Cascade range (NW USA), the Andes, has the potential to promote eruptions, either as a consequence of reduced load pressures on magma reservoirs or through increased opportunity for magma–water interaction. Tuffen (2010) observes, for example, that ice thinning of 100m or more at volcanoes with ice cover in excess of 150 m, such as Sollipulli (Chile), may promote more explosive eruptions, with increased tephra hazards. Additionally, the	

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80.4	potential for edifice lateral collapse could be enhanced as a consequence of debuttressing and withdrawal of support previously supplied by ice (Tuffen, 2010) or due to elevated pore-water pressures arising from meltwater (Capra 2006; Deeming et al. 2010). The potential for both volcanic and non-volcanic landslides may also be promoted by increased availability of water leading to slope destabilization and failure due to slow cracking, held to be a contributory factor in the formation of stürtzstroms (giant, rapidly moving, landslides) (e.g. Kilburn & Petley 2003). During post-glacial times, the melting of major continental ice sheets, such as the Laurentian and Fennoscandian, triggered intense seismic activity associated with isostatic rebound of the crust (e.g. Wu 1999; Wu et al. 1999; Muir-Wood 2000). For a 1km ice load, the rebound may have amounted to hundreds of metres, with associated stresses totalling several megapascals, comparable with plate-driving stresses (Stewart et al. 2000). Ice thicknesses at Greenland and Antarctica currently exceed 3 km, providing potential for an ultimate rebound of more than 1km should all the ice melt. While this is an extreme scenario, smaller-scale ice loss may also trigger a potentially hazardous seismic response as high-latitude temperatures climb. Turpeinen et al. (2008) use finite-element modelling in support of the idea (e.g. Johnston 1987) that current low levels of seismicity in regions such as Greenland and Antarctica are a consequence of ice sheet load, and speculate that future deglaciation of these regions may result in a pronounced increase in seismicity. The effects of ice mass loss on seismicity may already be apparent, with glacier mass fluctuations in south central Alaska having been charged with modulating the recent seismic record, and even implicated in the triggering of the 1979 magnitude 7.2 St Elias earthquake (Sauber et al. 2000; Sauber & Molnia 2004; Sauber & Ruppert 2008). 6. Rising sea levels Quidelleur et al. (2008) have speculated that erosion and pore-pressure changes associated with rapidly rising sea levels at glacial–interglacial transitions may play a role in major lateral collapse of ocean island volcanoes, while McGuire et al. (1997) have linked the incidence of volcanic activity in the Mediterranean region to the rate of sea-level change over the last 80 ka. They note, in particular, a significant increase in intensity of volcanism during times of very rapid Holocene sea-level rise, between 17 and 6 kaBP, broadly coincident with the catastrophic rise events of Blanchon & Shaw (1995), which saw centennial global eustatic sea-level rise rates of ca 5m. Perhaps most significantly, in relation to the impact of future sea-level rise on volcanic systems, McNutt & Beavan (1987) attribute the modulation of eruptive activity at Pavlof volcano (Alaska) to the development of compressive strain beneath the volcano when adjacent sea levels are elevated due to seasonal factors, with magma being preferentially squeezed out under these conditions. McGuire et al. (1997) describe finite-element modelling results demonstrating that sea-level rise adjacent to a volcanic body reduces compressive stress within the edifice. They suggest that, during times of rapid sea-level rise, this may result in the triggering of eruptions at 'charged' volcanoes, whereat magma is stored at 5km depth or less. The findings of McNutt & Beavan (1987), McNutt (1999) and McGuire et al. (1997) are compatible with ocean	

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80.5	loading resulting in a bending moment in the crust at ocean margins, leading to reduced compression at higher levels and increased compression at depth. Progressive bending at ocean margins as ocean mass increases at the expense of melting glaciers and ice sheets has the potential to trigger eruptions at 'primed' volcanoes. The volcanic response is likely to occur across a range of time scales dependent upon the nature of individual 'plumbing' systems and the availability of magma; the cumulative effect, however, would most probably be an increase in the frequency of eruptions in areas close to the marine environment. Clustering of volcanic eruptions in response to external forcing is addressed by Mason et al. (2004), in the context of the recognized seasonality of eruptions, with a mathematical treatment provided by Jupp et al. (2004). The numbers of volcanoes potentially susceptible to crustal strain changes associated with future sea-level rise are large. Of the 550 or so volcanoes at which eruptions have been historically documented, McGuire et al. (1997) determine that 57 per cent form islands or are coastally located, while a further 38 per cent are found within 250km of a coastline. When or if rising sea levels will result in a recognizable signal in the intensity of global volcanism remains a matter for debate. It is notable, however, that a 2m rise by 2100 would result in a cumulative load pressure on the sea floor (20 kPa) that is an order of magnitude greater than that held responsible by McNutt & Beavan (1987) and McNutt (1999) for modulation of Pavlof's eruptive behaviour. Available evidence suggests that rising sea levels are also likely to have the potential to influence seismicity. Rubinstein et al. (2008) have correlated episodes of slow fault slip and accompanying seismic tremor at subduction zones in Cascadia (Pacific North West) and Japan with the rise and fall of ocean tides, involving peak-to-peak load-pressure changes of 15 kPa. Wilcock (2001) provides convincing evidence for micro-earthquakes on the Endeavour segment of the Juan de Fuca Ridge (northeast Pacific) being triggered by the loading effect of ocean tides, which result in vertical stress variations of 30–40 kPa. Guillas et al. (2010) propose that ocean load-pressure fluctuations as small as a few kilopascals modulate micro-seismicity on the East Pacific Rise. Provided the crust is sufficiently permeable, increased water load is capable of raising pore-fluid pressure in active fault zones, thereby modulating or triggering seismicity through reducing the frictional resistance to fault slip. This mechanism has long been recognized in relation to the filling of reservoirs (Talwani 1997), and has been held responsible for a lethal earthquake that followed the Koyna reservoir in India in the early 1960s (Simpson et al. 1988). Pore-pressure changes in oceanic or submerged continental crust arising from a 1–2m global sea-level rise this century would be orders of magnitude smaller than those associated with filling of reservoirs. Nevertheless, they must be considered as having the potential to trigger earthquakes on faults that are already critically stressed and, therefore, close to rupture. This in turn provides a means for generating submarine landslides and/or tsunamis, both of which carry threats to coastal communities. 7. Rates, thresholds and timescales Evidence from the study of periods of exceptional climate change, together with contemporary observations, supports a	

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80.6	robust link between changing climatic conditions and a broad portfolio of potentially hazardous geological processes. Modelling studies and the projection of current trends argue for elevated levels of a range of geological and geomorphological hazards in a warmer world, while viable physical mechanisms capable of eliciting a geospheric reaction in response to small changes in environmental conditions are well established. Questions remain, however, most particularly in relation to the time scales over which a geospheric response may be detectable. Although increases in the incidence of climate-change-driven, large-volume rock and ice avalanches (Huggel et al. 2008, 2010; Huggel, 2009), and the suggested modulation of seismicity in areas of large-scale ice wastage (Sauber & Molnia 2004; Sauber & Ruppert 2008), lead to speculation that climate change is already drawing out a crustal response, no increase in the global incidence of either volcanic activity or seismicity has been identified to date, nor has any change in the stability of submarine slopes been detected. It may be the case that modulation of potentially hazardous geological and geomorphological processes due to anthropogenic climate change proves to be too small a signal to extract from the background noise of 'normal' geophysical activity, at least in the short to medium term. Furthermore, there are few constraints on the timing of a geospheric response, which may well lag significantly behind the warming trend. With respect to ice wastage in Greenland and Antarctica, Turpeinan et al. (2008) and Hampel et al. (2010) suggest that enhanced seismicity may be important on time scales as short as 10–100 years. A comparable time scale has been proposed (Gruber et al. 2004; Harris et al. 2009) in relation to the formation of large, deep-rooted, landslides following temperature rise and permafrost thaw in mountain regions. With respect to increased levels of melt production in the mantle beneath Iceland's Vatnajökull ice cap, Sigmundsson et al. (2010) speculate that it could take centuries or longer for fresh magma to reach the surface. There is also considerable uncertainty in relation to the linearity of possible responses, with different elements of the geosphere responding, for example, in a nonlinear manner, with thresholds or tipping points resulting in step-like increases in frequency or scale. References Blanchon, P. and Shaw, J. 1995 Reef drowning during the last glaciation: evidence for catastrophic sea-level rise and ice-sheet collapse. Geology 23, 4-8. Brondi, F. and Salvatori, L. 2003 The 5-6 May 1998 mudflows in Campania, Italy. In: Lessons learned from landslide disasters in Europe (ed. J. Hervás). European Commission Joint Research Centre, p5 – 16. Capra, L. 2006 Abrupt climate changes as triggering mechanisms of massive volcanic collapses. J. Volcanol. Geotherm. Res. 155, 329-333. Deeming, K. R., McGuire, W. J. and Harrop, P. 2010 Climate forcing of volcano lateral collapse: evidence from Mount Etna, Sicily. Phil. Trans. R. Soc. A., 368, 2559 – 2578. Grattan, J., Rabartin, R., Self, S., Thordarson, T. 2005 Volcanic air pollution and mortality in France 1783-1784. Comtes Rendus Geoscience 337, 641-651. Gruber, S., Hoelzle, M. and W. Haeberli 2004 Permafrost thaw and destabilization of Alpine rock walls in the hot summer of 2003. Geophys. Res. Lett. 31, doi:10.1029/2004GL020051. Guillas, S., Day, S. J. and McGuire, W. J. 2010 Statistical analysis of ENSO and sea-floor seismicity in the eastern tropical Pacific. Phil. Trans. R. Soc. A., 368, 2461 – 2480. Hampel, A., Hetzel, R. and Maniatis, G. 2010 Response of faults to climate-driven changes in ice and water volumes on Earth's surface. Phil. Trans. R. Soc. A., 368, 2501 – 2518. Harris, C., Arenson, L.U., Christiansen, H.H., Etzelmüller, B., Frauenfelder, R., Gruber, S., Haeberli, W., Hauck, C., Hölzle, M.,	

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80.7	Humlum, O., Isaksen, K., Kääb, A., Kern-Lütschg, M.A., Lehning, M., Matsuoka, N., Murton, J.B., Nötzli, J., Phillips, M., Ross, N., Seppälä, M., Springman, S.M. and Vonder Mühll, D. 2009. Permafrost and climate in Europe: Monitoring and modelling thermal, geomorphological and geotechnical responses. Earth Science Reviews 92, 117-171. Huggel, C. 2009 Recent extreme slope failures in glacial environments: effects of thermal perturbation. Quaternary Science Reviews 28, 1119-1130. Huggel, C., Salzmann, N., Allen, S., Caplan-Auerbach, J., Fischer, L., Haeberli, W., Larsen, C., Schneider, D. and Wessels, R. 2010 Attributing warm extreme events to high-mountain slope failures: an analysis of worldwide large slope failures. Phil. Trans. R. Soc. A., 368, 2435 – 2460. Huggel, C., Caplan-Auerbach, J. and Wessels, R. 2008 Recent extreme avalanches: triggered by climate change? EOS, Trans. Am.Geophys. Union, 89, 469-470. Johnston, A.C., 1987. Suppression of earthquakes by large continental ice sheets. Nature 330, 467–469. Jull, M., and D. McKenzie 1996 The effect of deglaciation on mantle melting beneath Iceland. J. Geophys. Res. 101, 21,815– 21,828. Jupp, T., Pyle, D., Mason, B. and Dade, W., 2004. A statistical model for the timing of earthquakes and volcanic eruptions influenced by periodicprocesses. J. Geophys. Res. 109, doi:10.1029/2003JB002584. Kilburn, C. R. J.& Petley, D. N. 2003 Forecasting giant, catastrophic slope collapse: lessons from Vajont, northern Italy. Geomorphology 54, 21-32. Knutson, T., Sirutis, J., Garner, S., Vecchi, G. And Held, I. 2008 Simulated reduction in Atlantic hurricane frequency under twenty-first century warming conditions. Nature Geoscience 1, 359-364. Liggins, F., Betts, R. and McGuire, W. J. 2010 Projected climate changes in the context of geospheric responses. Phil. Trans. R. Soc. A., 368, 2345 – 2368. Liu, C., Linde, A. T. and Sacks, I. S. 2009 Slow earthquakes triggered by typhoons. Nature 459, 833-836. Mason, B., Pyle, D., Dade, W. and Jupp, T., 2004. Seasonality of volcanic eruptions. J. Geophys. Res 109, doi:10.1029/2002JB002293. Mastin, L.G. 1994 Explosive tephra emissions of Mount St. Helens, 1989–1991: The violent escape of magmatic gas following storms? Geological Society of America Bulletin 106, 175–185. Matthews, A.J., Barclay, J., Carn, S., Thompson, G., Alexander, J., Herd, R., and Williams, C. 2002 Rainfall-induced volcanic activity on Montserrat. Geophysical Research Letters 29, 2211–2214. Matthews, R. K. 1969 Tectonic implications of glacio-eustatic sea level fluctuations. Earth. Planet. Sci. Lett. 5, 459-462. McGuire, W. J. 2010 Potential for a hazardous geospheric response to projected future climate changes. Phil. Trans. R. Soc. A., 368, 2317 – 2346. McGuire, W. J., Howarth, R. J., Firth, C. R., Solow, A. R., Pullen, A. D., Saunders, S. J., Stewart, I. S. and Vita-Finzi, C. 1997 Correlation between rate of sea level change and frequency of explosive volcanism in the Mediterranean. Nature 389, 473-476. McNutt, S. 1999 Eruptions of Pavlof Volcano, Alaska, and their possible modulation by ocean load and tectonic stresses: Re-evaluation of the hypothesis based on new data from 1984-1998. Pure Appl. Geophys. 155, 701-712. McNutt, S. and Beavan, R. 1987 Eruptions of pavlof volcano and their possible modulation by ocean load and tectonic stresses. J. Geophys. Res. 92, 11509-11523. Muir-Wood, R. 2000. Deglaciation seismotectonics: a principal influence on intraplate seismogenesis at high latitudes. Quat. Sci. Rev. 19, 1399–1411. Neuberg, J., 2000. External modulation of volcanic activity. Geophys. J. Int. 142, 232-240. Pagli, C. and Sigmundsson, F. 2008 Will present day glacier retreat increase volcanic activity? Stress induced by recent glacier retreat and its effect on magmatism at the Vatnajökull ice cap, Iceland. Geophys. Res. Lett. 35. doi: 10.1029/2008GL033510, Pagli, C.,	

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80.8	Sigmundsson, F., Lund, B., Sturkell, E., Geirsson, H., Einarsson, P., Arnadóttir, T. and Hreinsdóttir, S. 2007 Glacio-isostatic deformation around the Vatnajökull ice cap, Iceland, induced by recent climate warming: GPS observations and finite element modeling, J. Geophys. Res. 112, doi:10.1029/2006JB004421. Quidelleur, X., Hildenbrand, A. and Samper, A. 2008 Causal link between Quaternary palaeoclimatic changes and volcanic islands evolution. J. Geophys. Res. 35, doi:10.1029/2007GL031849. Rubinstein, J. L., La Rocca, M., Vidale, J. E., Creager, K. C. and Wech, A. G. 2008 Tidal modulation of nonvolcanic tremor. Science 319, 186 – 189. Sauber, J. & Ruppert N. A. 2008 Rapid ice mass loss: does it have an influence on earthquake occurrence in southern Alaska? In: J. T. Freymüller, P. J. Haeussler, R. L. Wesson & G. Ekström (eds). Active Tectonics and Seismic Potential of Alaska. Geophys. Monograph Series 179. American Geophysical Union. Washington DC. Sauber, J. and Molnia, B.F. 2004 Glacier ice mass fluctuations and fault instability in tectonically active Southern Alaska. Glob. Planet. Change 42, 279–293. Sauber, J., Plafker, G., Molnia, B.F. and Bryant, M.A., 2000. Crustal deformation associated with glacial fluctuations in the eastern Chugach Mountains, Alaska. J. Geophys. Res. 105, 8055–8077. Scott, K. M., Vallance, J. W., Kerle, N., Macías, J. L. Strauch, W. and Devoli, G. 2005 Catastrophic precipitation-triggered lahar at Casita volcano, Nicaragua: occurrence, bulking and transformation. Earth Surface Processes and Landforms 30, 59-79. Sigmundsson, Freysteinn., Pinel, Virginie., Lund, Björn., Albino, Fabien., Pagli, Carolina., Geirsson, Halldór. and Sturkell, Erik. 2010 Climate effects on volcanism: Influence on magmatic systems of loading and unloading from ice mass variations with examples from Iceland. Phil. Trans. R. Soc. A., 368, 2519 – 2534. Simpson, D., W. Leith, and C. Scholz 1988 Two types of reservoir-induced seismicity. Bull. Seismol. Soc. Amer. 78, 2025-2040. Stewart, I. S., Sauber, J. and Rose, J. 2000 Glacio-seismotectonics: ice sheets, crustal deformation and seismicity. Quaternary Science Reviews 19, 1367-1389. Talwani, P. 1997 On the nature of reservoir-induced seismicity. Pure Appl. Geophys. 150, 473-492. Tappin, D. R. 2010 Submarine mass failures as tsunami sources: their climate control. Phil. Trans. R. Soc. A., 368, 2417 – 2434. Tuffen, H. 2009 How will melting of ice affect volcanic hazards in the 21st century? Phil. Trans. R. Soc. A., 368, 2535 – 2558. Wilcock, W. 2001 Tidal triggering of micro earthquakes on the Juan de Fuca Ridge. Geophys. Res. Lett. 28, 3999-4002. Wu, P., 1999. Intraplate earthquakes and postglacial rebound in eastern Canada and Northern Europe. In: P. Wu (Ed.), Dynamics of the Ice Age Earth, a Modern Perspective. Trans. Tech. Publ, Zurich, 443-458. Wu, P., Johnston, P. and Lambeck, K. 1999 Postglacial rebound and fault instability in Fennoscandia, Geophys.J.Int.139, 657-670 (McGuire, Bill, University College London)	
81	Report is way too long, overly wordy, and very reptitive. Each chapter should be told they can have half of the numbe rof pages in this version. (Wuebbles, Donald, University of Illinois)	The overlap among chapters has been reduced through coordination among chapter teams. Efforts have also been made to condense the length of individual chapters.
82	General remarks on the report: the report seems to be in need of much more thorough coordination among the chapters. A few observations: * In particular cross-referencing needs to be done much more often, and be more specific to sections and tables/figures. A general reference to a Chapter does not suffice. * Many sections treat topics beyond the scope of the chapter; e.g. many sections discuss (again) changes in hazards, observed disasters, their social and economic impacts, even though specific sections and chapters do this already. This is causing a wide spread in conclusions related to these issues, selective and incomplete referencing, etc. This should be improved in subesquent drafts. (Bouwer, Laurens, Institute for Environmental Studies)	The consistency among chapters has been increased through coordination among chapter teams.

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83	I recommend using ISDR terminology through the document to communicate with disaster risk reduction and humanitarian assistance community. An example is the use of DRM instead of DRR through the report. DRM is defined as the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster (ISDR, 2009). While DRR is the concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events (ISDR, 2009). (Tokar, Ayse Sezin, U.S. Agency for International Development)	This comment has been considered in the context of relevant chapter discussions.
84	Given the importance of this report there will be a need for a “Summary for Policy Makers” to provide a synthetic practical tool to adapt it to real situations. (Ben Mohamed, Abdelkrim, University of Niamey)	The SOD includes a draft Summary for Policymakers.
85	The report is extremely long and many things are repeated several times, like the definition/discussion of terms, the fact that developing countries are more vulnerable, that a disaster depends not only on the climatic event but also on the vulnerability. It could be condensed and streamlined more. (Villholth, Karen G., GEUS, Geological Survey of Denmark and Greenland)	The overlap among chapters has been reduced through coordination among chapter teams.
86	The issue of groundwater is treated very superficially and in cases biased or wrong. I propose to include a small section on groundwater in Chapter 2.6.4 or 4.4.2.1. I would be happy to contribute such a sub-section, which bothe discusses the role of GW in CCA and DRR (http://iopscience.iop.org/1755-1315/6/29/292062/pdf/ees9_6_292062.pdf) (Villholth, Karen G., GEUS, Geological Survey of Denmark and Greenland)	This comment has been considered in the context of relevant chapter discussions.
87	Climate change adaptation and advanced learning needs a DIRECTION, a topic which is not covered well in the report. Climate change adaptation itself is not a goal, it lacks concreteness. Guiding principles (Leitbilder) for designing and developing strategies are probably helpful. (Goessling-Reisemann, Stefan, University of Bremen)	This comment has been considered in the context of relevant chapter discussions.
88	Looking at the different ways extreme events are described in the chapters (e.g., 1, 3, 5) it would be good if the terminology could be standadized across all chapters. Possibly this general terminology could be defined in a first chapter or in an introduction. For example, in Section 1.2 there are good definitions of an extreme natural event and an extreme impact; chapter 3 also makes similar differences. If all chapters are using the definitions described in Section 1.2, then it should be mentioned this in chapter 1. (Cavazos, Tereza, CICESE)	The consistency among chapters has been increased through coordination among chapter teams, including related to definitions.
89	I am very pleased to see this manuscript shaping up. I am especially happy to see that a dozen or more reviewers come from sub-Saharan Africa or have considerable experience in these countries. I myself have worked in eastern and southern Africa for more than 40 years, and it is in Africa that some of the most vulnerable people reside. Extreme climate event will have very heavy impacts on these populations, and every effort needs to be made to provide support for strengthening their livelihood systems. However, more can be done in SREX to raise awareness on the part of international partners, government officials and the scientific and policy community about the importance climate change adaptation in Africa. Firstly, there need to be examples from Africa in every chapter. Examples from Africa are presently insufficient. Secondly, there needs to be better treatment of local knowledge, understanding and skill in Africa. African farmers, pastoralists and fishers have considerable traditional and other forms of local knowledge and repetoires of spontaneous adaptation that are under-appreciated. Thus discussion of "vulnerability" (a major theme of the mss, and rightly so) needs to be balanced with discussion and examples of "capacity" (the ability of people in Africa and elsewhere to cope and to adapt to changes spontaneously). (WISNER, BENJAMIN, Aon-Benfield UCL Hazard Research Centre, University College London)	This comment has been considered in the context of relevant chapter discussions. An assessment of physical changes, and the use of case studies from Africa have been included to the extent the available scientific literature can provide, and in keeping with the balance of the report, which includes case studies from many regions of the world.

#	Comment	Response
90	I tried first to read all chapters (but chapter 3), to have a general picture of the whole study before going into deeper analysis of a few chapters which I felt more competent to make specific comments. Given the lengh of the study, by the time I managed to go over most of the chapters I realized I only had time to go back and pick one chapter to comment in more detail. I chosen Chapter 6 since I have done a recent study of national mechanisms in LAC which I noticed it was missing in the chapter. In any case, I would like make a few overall comments on the study based on that first rapid reading I did. 1- Some of the chapters are a little bit overloaded with detailed information (for instance, chapter 2, but not only that). It seems to me that some detailed information which is not relevant to the central topic of the study (even though is pertinent for the chapter subject), can be spared. On the other hand, some topics are given too little elaboration in the study, so it is a little unbalanced in that sense. 2- While Chapter 1 sets the main concepts and definitions I noticed that there inconsistencies/different interpretations when authors are referring to the same terms in other chapters (for instance, basic concepts such as hazard, risk and disaster risk management). That should be addressed somehow. 3- I also noticed unnecessary repetition of some subjects (such as risk analyss and risk transfer) in different chapters. 4- Finally, I perceived that there is not much reference to relevant literature and examples from the developing world, which I consider essential given the nature of the central topic of the study (I did include an overall comment about this for chapter 5). (Sanahuja , Haris Eduardo , Senior Consultant)	The overlap among chapters has been reduced and consistency increased through coordination among chapter teams. Efforts have also been made to condense the length of individual chapters.
91	a chapter should be added which summarizes all the chapters ("Extended Executive Summary") (Ammann, Walter J., Global Risk Forum GRF Davos)	The SOD includes a draft Summary for Policymakers.
92	a lot of redundant information exists across the various chapters. All the redundancies should be eliminated to the sake of shortening the whole report. (Ammann, Walter J., Global Risk Forum GRF Davos)	The overlap among chapters has been reduced through coordination among chapter teams. Efforts have also been made to condense the length of individual chapters.
93	A critical reader of the current draft report, coming from the practical side in DRR management, might evaluate the report to be excellent but too science driven and "not enough down to the earth". The reader - after having taken the effort to read around 1000 pages should not be left with the question "So what?". It will be of utmost importance to come up with overall conclusions and recommendations (at least in a separate document?) (Ammann, Walter J., Global Risk Forum GRF Davos)	The SOD includes a draft Summary for Policymakers.
94	Overall Comments. I have managed to read the whole text. It is a positive start to an on-going process but there are several criticisms. It is not people focused and comes as a text which seems not just to present answers but to boast of the DRR community: the overall tone is wrong. I think it better to start from the MDGs, then go to Climate Change and then to what DRR experience offers. And it needs one voice to do this, probably one author. Secondly, it is far too long. There is not enough new un-quoted scientific literature (see Chapters 3 and 4) to warrant this length and not so much to say on DRR that does lead to over repetition (Chps 2,,5,6,7 and 8). As a policy document, therefore, it does not fly. Chapter 1, by itself, could be the basis of a coherent paper. Chapter 5 was quite excellent but I would add the importance of the market and embedding social learning...it is a stand-alone paper with little additional work. I feel a stronger acknowledgement to work is needed in Figure 5-4. (Much of Chp 6 could, however, be incorporated into Chp 5.) Chp 7, and its authors, acknowledge the limitation of their efforts but it is the legal framing of this, with reference to Rights, that is useful. Chp 8 is strong as far as it goes but it is difficult to summarise and perhaps beyond the range of this paper. Case studies (Chapter 9) are useful. So overall, a start but one that requires leadership not competing claims. In particular, the different voices in Chapter 2 hinder rather than help the message. It starts and stops with people: vulnerability analysis, not risk assessment, is the key. Phil O'Keefe. (O'Keefe, Phil, Northumbria University)	The overlap among chapters has been reduced and consistency increased through coordination among chapter teams, and these comments have been considered in the context of relevant chapter discussions.
95	The report is well reasoned and well drafted. (Bender, Stephen Bender, Organization of American States (retired))	Thank you for this comment.

#	Comment	Response
96	The report appears to be well read by the CC, CCA and DRM communities, but not beyond this circumscribed grouping. (Bender, Stephen Bender, Organization of American States (retired))	Thank you for this comment.
97	There is reference to the impact of CC and natural hazard risks on what is understood to be development (as represented by the occasional reference to sustainable development. (Bender, Stephen Bender, Organization of American States (retired))	Thank you for this comment.
98	It seems pertinent at this point to note that references to anthropogenic climate change by the CC, CCA and DRM communities (often refered to as "participation, intervention or impact of man") IS development as viewed by a much larger portion of society at all levels and in all sectors. Development policy and practice are aware of the trade offs between adopted development goals (the task and focus of sovereign states) and their impact. Unless reports such as this engage the development community with a vocabularly and arguements that directly addess that community by name (by sector and by scale), then change in how development takes place will be more than difficult. (Bender, Stephen Bender, Organization of American States (retired))	This comment has been considered in the context of relevant chapter discussions.
99	In the same vein, references to the impact of actions that create (where none existed before) and increase vulnerability to natural hazard events is seen by most in society and their respective governments (and by the international organizations and specialized agencies those sovereign states create and populate) as development. A good portion of all societies and their sovereign states is on the development road to creating the causes of what the CC, CCA and DRM communities call impacts. (Bender, Stephen Bender, Organization of American States (retired))	This comment has been considered in the context of relevant chapter discussions.
100	Given the report's focus on managing the risks of extreme events and disasters (read other natural hazazd impacts) to advance CCA, the report must direct some effort to address this management through development, its actors, its policies and its practices. (Bender, Stephen Bender, Organization of American States (retired))	This comment has been considered in the context of relevant chapter discussions.
101	go to number 30 (Bender, Stephen Bender, Organization of American States (retired))	Comment unclear.
102	Overall thoughts on Chapters 6, 7 and 8 - much of the material is relevant but it could be presented much more concisely - there does appear to be repitition - for example the material on insurance could be a standalone section or chapter with links where needed. The issues of the event focus of DRR and the process focus of adaptation is really dealt with - essentially a new approach is needed and thought needs to be given to the starting point for this and the principles that should underpin this - ideally sustainable development should be the context but given the contested nature of this then perhaps a focus on MDgs would be more appropriate (O'Brien, Geoff, Northumbria University)	The overlap among chapters has been reduced and consistency increased through coordination among chapter teams, and these comments have been considered in the context of relevant chapter discussions.
103	General coment.: The chapter is very usefull and gives a widespread view os the analised issues. (Garrido Vazquez, Raul J. , Min. Science, Technology and Environment)	Thank you for this comment.
104	I appreciate your efforts to write these valuable contents. (Khazaee, Mahnaz, Atmospheric Science and Meteorological Research Center (ASMERC))	Thank you for this comment.
105	The style of this report is complicated and it is difficult for me as a user to underestand it. (Khazaee, Mahnaz, Atmospheric Science and Meteorological Research Center (ASMERC))	Revision of the report has aimed to enhance clarity of language.
106	The whole body of report is descriptive and afew charts and tables have been used. Thus, this content is difficult to be underestood. (Khazaee, Mahnaz, Atmospheric Science and Meteorological Research Center (ASMERC))	Efforts have been made to increase the number of figures and tables used in the report, while ensuring that all material remains robust and supported by the underlyinig literature.
107	The small font size of the written text causes fewer tendency to read it. (Khazaee, Mahnaz, Atmospheric Science and Meteorological Research Center (ASMERC))	The comment has been considered by the formatters
108	In references, most studies in developing countries are used, while more studies in this field have been done world wide and regarding the persuasion to use the grey literature in AR5 report which has been also approved in IPCC meetings, it's expected more resources to be used. (Khazaee, Mahnaz, Atmospheric Science and Meteorological Research Center (ASMERC))	This comment has been considered in the context of relevant chapter discussions.

#	Comment	Response
109	Insurance appears to be a crosscutting theme- there is lots of good text on the the implications of cliamte change on index insurance at: http://iri.columbia.edu/csp/issue2/download see pages 8-9, 38. Specifically on the viability of insurance, the role of insurance in climate change adaptation and disaster risk managmenet (Hellmuth, Molly, International Research Institute for Climate and Society)	This comment has been considered in the context of relevant chapter discussions.
110	The subject of this Special Report is particularly thorny and the authors have succeeded in conveying a good deal of the complexity that attends it, as well as the promise of progress that can be achieved by pursuing a joint approach to climate adaptation and disaster reduction. Though the comments that follow mostly point to gaps, strategic missteps and other worrying matters, I am mindful of the difficulties of the task and of the genuine good work that has been accomplished. It is a Herculean endeavor. (Mitchell, james, Rutgers University)	Thank you for this comment.
111	Implications of a difficult charge. As reflected in the title, the report addresses a bifurcated task: (1) to advance climate change adaptation, and (2) to do so by managing the risks of extreme events and disasters. The authors are thus in an awkward expositional posture whose implications should be – but are not – explicitly recognized at the outset. The relevant reasoning follows. Climate change adaptation is currently pursued in more ways than by managing risks of extreme events/disasters, and extreme events/disasters are currently managed in more ways than those that are relevant to climate change adaptation. In other words, the two problems do not coincide; they only partly overlap. The climate change community and the disaster reduction community typically each have different sets of challenges, goals, tools and constituencies. Hence, it will be necessary for their members to be sure that acts of collaboration between the two do not inadvertently interfere with other legitimate interests that are not common to both. For example, many managers of extreme events/disasters have responsibilities that stretch beyond climate hazards to encompass geological ones, technological malfunctions, terrorism and other threats to safety and security. Likewise, climate managers are confronted by issues of shifting atmospheric means as well as shifting extremes, and by possibilities that the changes they address bring opportunities as well as threats. Moreover, many institutions that have responsibilities for hazard management and climate reduction are not exclusively devoted to those ends but address hazards/climate change on a contingent basis while also discharging everyday continuing responsibilities for other matters. The report has little or nothing to say about these contextual limitations on both the discourse and the prospects for implementation of its ideas. Earthquakes, tsunamis, volcanoes, transportation accidents, inadequate home ventilation, ambient releases of hazardous chemicals or pathogens, cyber attacks and a great many other subjects that routinely fall under the jurisdiction of hazard management organizations and often monopolize their attention are not addressed. Likewise, the report says very little about the climate “mean” versus climate “extremes” dichotomy that is woven through climate change discourse. Most of the missing topics may not be within the remit that was handed to the authors, (NOTE 1) but they should not ignore the exigencies of life in the institutions that will be expected to execute a blended climate change adaptation/hazards reduction strategy. By so doing the report misses an opportunity to specify the full dimensions of the problems of merging the climate change management and disaster reduction agendas. (Mitchell, james, Rutgers University)	This comment has been considered in the context of relevant chapter discussions.
112	The terminology minefield - Further problems that stem from differences between the climate community and the disasters community show up throughout the report. One of these is the treatment of terminologies used by climate and disaster researchers. A great deal of space is given over to terminological disputes (especially in Chapters 1 and 2) but what is perhaps the most important terminology issue is not addressed at all. (See comments on Mitigation and Adaptation, below). (Mitchell, james, Rutgers University)	Efforts have been made to streamline such discussions of terminology and definitions and to reduce overlap across chapters.

#	Comment	Response
113	"Adaptation" is the central concept of the report. The term is employed as an organizing concept in every chapter except 2 and 3 and the word itself appears almost 1,100 times in the text of the report. Adaptation is defined twice in Chapter 1 (Note 2) first on page 4 by the authors and second in the report of Working Group II of the Fourth IPCC Assessment (p. 21). Apart from the authors' addition of the word "sustainable" as a qualifier, the two are virtually identical. In both definitions of "adaptation", the term is primarily explained with reference to "adjustment" – a word that is itself not defined and rarely appears elsewhere in the text. (See below for a recommendation about the use of the existing but overlooked literature on adjustment to clarify the confusion.) Extensive sections of several chapters (especially 1 and 2) are devoted to explaining aspects of "adaptation", especially different interpretations of "adaptation" and "coping" as well as "capacity" and "vulnerability". Despite the authors' vigorous efforts to sort out the overlaps and contrasts, key definitions are sometimes circular, usages are typically interchangeable and distinctions among them remain murky (as is frequently admitted in the text). (Mitchell, james, Rutgers University)	This comment has been considered in the context of relevant chapter discussions.
114	(Adaptation continued) Of all the topics about terminology that deserve explicit foregrounding in any discussion about bringing disaster research and climate change research into line, disagreements about the meaning of "adaptation" and "mitigation" must rank near the top. Yet the report makes no direct mention of this crucial area of difference not does it discuss its implications (Note 3). Most hazards and disaster specialists are accustomed to viewing "mitigation" as a set of techniques for avoiding and reducing losses by focusing on a range of preventive interventions at various points along long chains or nets of underlying causes rather than by coping with consequences in the aftermath of disasters. This view cuts across the notion of "mitigation" that has been employed among climate change specialists. There mitigation is viewed as curbs on the buildup of greenhouse gases in the atmosphere mainly through mechanisms of "emissions reduction" and "geo-engineering". Differences between the two views are deep and their implications portentous. There is not time to go into all of the issues here so one will suffice. Many hazards/disaster researchers think of mitigation as nested within adaptation (and therefore subject to its conceptual and managerial norms); whereas climate researchers tend to view each as separate – at best complementary but at worst competing - alternatives. The IPCC is complicit in this problem for it has formalized what some would perceive as an idiosyncratic division between Adaptation and Mitigation in its institutional structure (i.e. IPCC Working Groups II and III). Once again this puts the report's authors in a difficult position. Perhaps in response, they seem to have privileged "adaptation" and ignored "mitigation" in the organizational structure of chapter headings and subheadings and to have skirted around the contradictions of usage by relegating use of the term "mitigation" to a minor role in the text. It is up to the report's authors to point out awkward truths like these as well as to deliver a document that informs the IPCC agenda. (Mitchell, james, Rutgers University)	This comment has been considered in the context of relevant chapter discussions.
115	(Adaptation continued) A second terminological hiatus is the absence of a clear definition of "capacity" – one of the central concepts on which the entire document rests. Section 1.1.3.3 comes closest but tells readers what capacity "involves" - not what it is. Elsewhere in the report many different types of capacity are identified – at least 30 (Note 4) - but very few are defined. The main exception is "adaptive capacity" for which half a dozen definitions are supplied in Chapter 2 (Note 5). What remains unacknowledged in that discussion is the degree to which this concept is rooted in notions of "human adjustment" that were elaborated by geographers over the past 60 years and have a distinguished intellectual lineage stretching back to antiquity; in the words of one noted observer, human adjustment is truly one of the "geographic ideas that changed the world." (Note 6) (Hanson, 1997) Taken together with Gilbert White's "range of alternatives" notion (Note 7) (Mitchell 2008), the concept of human adjustment is a basic contribution to the literature on (adaptive) capacity that, if correctly applied here, would rescue the report's text from much of its current terminological confusion and might set it on a firmer path toward action. (Mitchell, james, Rutgers University)	This comment has been considered in the context of relevant chapter discussions.

#	Comment	Response
116	(Adaptation continued)If the goal of this document is to encourage convergence between two communities of practice (hazard/disaster reduction and climate change adaptation) it may be unwise to construct the report around concepts that are still highly fluid. Given that there is often only a tenuous relationship between research and policy making in the field of hazards management, convergence might better be served by focusing instead (or in addition) on how members of each group have worked together successfully in the past and how they can have improved collaboration in the future (i.e. an emphasis on praxis rather than theory). (for elaboration see: Mitchell, James K. 2010. "Changing knowledge about disaster recovery," in Risk and Planet Earth, Edited by Anne Dolemeyer, Janek Zommer and Gerd Tetzlaff. Stuttgart: Schweitzerbart Science Publishers. Pp. 31-42.) The report's research-producer perspective needs to be balanced by a stronger users' perspective. A strengthened Chapter 9 (case studies) might perform at least some of this role (see next section on integration). (Mitchell, james, Rutgers University)	This comment has been considered in the context of relevant chapter discussions.
117	Integration: Closely connected with the previous item is the subject of integration. The term "integration" appears frequently in the text of every chapter, including 51 times in Chapter 9, 44 in Chapter 7, 40 in Chapter 2, 31 in Chapter 6 and 26 in Chapter 1. But "integration" is not defined in the report and appears to have been used to mean different things in different places. Sometimes it refers to the merging of data, sometimes to the harmonization of (analytic or administrative) procedures, and sometimes to the synthesis of intellectual models or other ways of thinking. Again, this deficiency is not really the responsibility of the authors; it stems in large part from the structure and operational arrangements of the IPCC itself. The decisions to have three working IPCC groups (science, adaptation, mitigation) – and to give much of the responsibility for exploring societal topics to a separately established Human Dimensions of Global Change Program - were pragmatic compromises that implicitly recognized different styles and stages in the evolution of modes of inquiry among the various disciplines and interests that converge around the topic of climate change.Within the report Chapter 3 stands on its own as a fine summary of findings from climate science. However, it is not well integrated into the rest of the volume. For example, it contains almost no mention of overarching themes that animate the rest of the report and provide the organizational structure of its other chapters. (e.g. capacity.) (Mitchell, james, Rutgers University)	This comment has been considered in the context of relevant chapter discussions.
118	Integration remains a core challenge for the IPCC as a whole, which it has sought to address through the mechanism of Synthesis reports. But there is no synthesis section in this report (apart from the brief and highly specific synthesis of case study "lessons learned" in section 9.4), nor any explicit consideration of the limitations of the IPCC's approach to integrating information; indeed the term "synthesis" itself appears fewer than a dozen times in the text. At the very least a discussion of the problems of merging atmospheric science, biological science and human science ideas and information require exposure and elaboration in this context. I would farther and suggest that issues affecting the dialogue between experts and laypersons should also be included in this section because it will be difficult to get agreement on the implementation of policies without recognition that the way in which hazards/climate risks are framed in the public arena is often at odds with the discourse of the sciences. Some authors have attempted to open this door (see the discussion of "Grey literature" in Chapter 5) but context is about much more than "literature"; it extends to include the multiple understandings of disaster and climate that pervade cultures (vernacular and professional) throughout the world and the linkages that humans – users of research as well as producers - have made between them. For a discussion of these matters see: Mitchell, James K. 2005. "Urban disasters as indicators of global environmental change: Assessing functional varieties of urban vulnerability," Earth System Science in the Anthropocene. Berlin: Springer-Verlag: 135-152. (Mitchell, james, Rutgers University)	The SOD includes a draft Summary for Policymakers, and This comment has been considered in the context of relevant chapter discussions.

#	Comment	Response
119	Foreshortened historical perspective-Chapter 1 discusses the important concept of "stationarity" (i.e. "the realization that past experiences may no longer be a reliable predictor of the future character and frequency of events" and hence that human responses to hazards will be forced to change). (Executive Summary) Implied in the report's usage of this notion is the assumption that shifts in hazard management systems are, mainly and directly, responses to extreme events. This has clearly not been the case – there are many other drivers of policy and management. Moreover, the process of adaptation can be long and slow, requiring correspondingly long historical purviews when analyzing both the effectiveness of previous measures and the potential for further improvements (adaptive capacity?) (See: Mitchell, James K. 2009. "American Disasters during the Twentieth century: The case of New Jersey," Natural Disasters, Cultural Responses: Case Studies Toward a Global Environmental History. Christof Mauch and Christian Pfister, Eds. Lanham and Washington, D.C.: Lexington Books and the German Historical Institute. Pp. 327-354.) However, most of the research about human responses to climate perturbations (including hazardous extreme events) that is surveyed in the report has a short historical perspective, typically derived from studying human responses to extreme events that took place over periods from days to years. Historically-oriented scholars in the social sciences are now producing a significant and rapidly growing literature on longer temporal contexts of adaptation/adjustment/coping and developing ideas about long-term trends in adaptation that need to be taken into consideration by climate and hazards scholars. (e.g. Brookfield, Harold. 1999. "Environmental damage: Distinguishing human from geophysical causes," Global Environmental Change: Part B – Environmental hazards 1(1): 3-11; Richardson, Bonham C. 2004. Igniting the Caribbean's past: Fire in British West Indian history. Raleigh-Durham: University of North Carolina Press; Butzer, Karl W. 2005. "Environmental history in the Mediterranean world: Cross-disciplinary investigation of cause and effect for degradation and soil erosion," Journal of Archaeological Science 32: 1773-1800; Colten, Craig E. 2005. An Unnatural Metropolis: Wresting New Orleans from Nature. Baton Rouge: LSU Press; Mulcahy, Mathew. 2006. Hurricanes and Society in the British Greater Caribbean 1624-1783. Baltimore: Johns Hopkins University Press; Mauch, Christof and Pfister, Christian (Ed.) 2009: Natural disasters, cultural responses: case studies toward a global environmental history. Lanham and Washington, D.C.: Lexington Books and the German Historical Institute.) There is also a significant body of unacknowledged research on land cover/land use transformation that might inform debates about longer-term shifts in adaptation. (Mitchell, james, Rutgers University)	This comment has been considered in the context of relevant chapter discussions.

#	Comment	Response
120	The report's intellectural bloodline - It would be helpful to readers for the report to be more transparent with respect to its intellectual progenitors and the line of descent that has brought many of the authors to their present views. A disproportionate number of the ideas contained herein have emerged in a series of other reports produced over the past decade by organizations like the International Federation of Red Cross and Red Crescent Societies (IFRC), United Nations Development Programme (UNDP), the United Nations Human Settlements Programme (UN-Habitat), and the International Strategy for Disaster Reduction (ISDR). These reports have highlighted the hazards of developmentally disadvantaged countries. The heavy burden of humanitarian issues associated with hazards and disasters in less developed countries is undeniable but it does not encompass all of the issues that are likely to be troubling in many more advantaged parts of the world. None of the preceding bodies has made the developed world a focus of attention; they have instead emphasized issues of empowerment of marginalized populations that are deemed most vulnerable to loss. But – and it is an important caveat - one of the most significant features of projected climate change is that it challenges, and threatens to undermine, well-functioning adaptations in more privileged (often mid-latitude) countries, placing in jeopardy coping arrangements that have proved their worth over decades to centuries. Moreover, such adaptive systems are often quite different from those of the LDCs and the transfer of knowledge from LDC experience to MDC context is unlikely to be smooth, or maybe appropriate. Not only might the results of increased risks be disastrous for more privileged countries but, in an increasingly interconnected world, the repercussions of such failures could be global in scope. It is also noticeable that Africa and Europe receive greater mention in most chapters of the report than, for example, the Americas. The contrast is especially noticeable in Chapters 3 and 4, which contain the bulk of scientific evidence about broad physical dimensions and social dimensions of climate change hazards, respectively. For example, Europe is referred to 112 times in Chapter 3 (physical dimensions) and 98 times in Chapter 4 (social dimensions), more than any other continent, despite the fact that it accounts for less than 11% of the global population and is less exposed to extreme natural (including climatic) risks than most parts of the earth. The relative paucity of adaptation examples from the United States is worrying because of the role that this country has played as a hazard-management model for other states and its influence on the global political and economic processes that are important factors in the hazards reduction problematique. (Mitchell, james, Rutgers University)	This comment has been considered in the context of relevant chapter discussions.
121	How might the report have been different if the order of terms in its title was reversed (i.e. Special Report on Managing the Risks of Climate Change to Advance Adaptation to Extreme Events and Disasters)? A compelling case might be made for the argument that protection against future environmental disasters deserves the higher priority. (Mitchell, james, Rutgers University)	An interesting hypothetical question
122	The authors' definition is: "Climate change adaptation refers to sustainable adjustments in society and ecosystems which moderate harm or exploit beneficial opportunities in response to existing or future predicted climate change." The Working Group definition is: "The adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits beneficial opportunities." (Mitchell, james, Rutgers University)	Comparison noted.
123	Section 1.3.1 contains a tangential comment about mitigation that seems to curtail further discussion of this topic. (Mitchell, james, Rutgers University)	This comment has been considered in the context of relevant chapter discussions.
124	Among others these include: "adaptive capacity"; "absorptive capacity"; "coping capacity"; "carrying capacity"; "capacity for learning"; "anticipatory capacity"; "response capacity"; "capacity to recover"; "informational, technological and scientific capacity"; "warning capacity"; "management capacity"; "institutional capacity"; "storage capacity"; "infiltration capacity"; "day-to-day capacity"; "full capacity"; "governance capacity"; "defensive capacity"; "state capacity"; "delivery capacity"; "supporting capacity"; "technical capacity"; "national capacity"; "financial capacity"; "implementation capacity"; "spare capacity"; "redundant capacity"; "baseline adaptive capacity"; "socially optimal adaptive capacity"; "natural adaptive capacity" (Mitchell, james, Rutgers University)	Comment unclear.

#	Comment	Response
125	These include: "…the ability of a unit to gradually transform its structure, functioning or organization to survive under hazards threatening its existence"; "the ability of a system to adapt to climate change"; "the vulnerability of a society before disaster strikes and its resilience after the fact"; "the ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, or to cope with the consequences"; "the property of a system to adjust its characteristics or behavior, in order to expand its coping range under existing climate variability, or future climatic conditions"; and "capacity to change and adjust". (Mitchell, james, Rutgers University)	Comment unclear.
126	Kates, Robert W. 1997. "Human adjustment," in Ten Geographic Ideas that Changed the World, (Mitchell, james, Rutgers University)	Reference noted.
127	Mitchell, James K. 2008. "Perspectives on alternatives: Differentiation and integration in pursuit of a better fit between society and nature," Mini-forum on the contributions of Gilbert F. White, Progress in Human Geography 32(3): 451-458. (Mitchell, james, Rutgers University)	Reference noted.
128	Many areas of the report provide a valuable synthesise of current thinking on the current and changing dimensions of climate change and disaster risk. The thoughts here are provided on the basis of learning developed during efforts to strengthen more effective science policy dialogue on emerging climate science and other issues of future vulnerability. On this basis, given the repeated references to the risks of 'maladaptation'(top p35, Chapter 1) and inappropriate understanding and application of emerging climate science, the report would have benefited from a specific focus on: Developing useful climate information. The need to develop climate information for specific decision making processes and a constructive review of those approaches to date which have been most successful in supporting the development of such 'useful' climate information. Within such discussion, consideration could be given to identification of 'useful' climate information across different timescales and regions, where and how best to develop centres of expertise and how these may be accessed by those most at risk of the changing dimensions of climate change. Supporting dialogue between climate scientist producers and the humanitarian and development organisations and the communities with which they work. Efforts to foster this dialogue are beginning, but are still not sufficiently resourced. But even where they are underway, the effectiveness of these fora is dependent on capacity to employ effective approaches and frameworks for dialogue. Ensuring an appropriate focus of climate research. Within such a review, it is important to consider the two-way dialogue required to develop useful climate information. Yes, scientists need to consider developing climate information for specific decision making processes and yes, humanitarian and development organisations need to develop their capacities to understand climate science. But even more fundamental is the question of whether there is a need to review the focus of the existing climate science research agenda to better reflect the information needs of those most vulnerable. (Visman, Emma, Humanitarian Futures Programme, King\'s College, London)	This comment has been considered in the context of relevant chapter discussions.

#	Comment	Response
129	Review of IPCC special report on Managing the Risks of Extreme vents and Disasters to Advance Climate Change Adaptation This is a very lengthy and tedious publication and a rather difficult to review. In general I found that this version is a very comprehensive one that cover many aspect of extreme. Nonetheless, readers need a general view of the subject in simplifier format such as in a map presentation probably at the end of chapter one or early chapter two. The map gives the world situation on the common extremes facing many parts of the world that is common. The publication shall take into account come annual report on extreme as well, but in this publication it is not mentioned. For example there are many climate outlook forum, annual climate status report and others that always report on the extreme events occured in many part of the globe. Then the publication is also required to mention some aspect of extreme that is highly needed by different sectors of society, for example what are some extreme event that are important for tourism, health, forestry and agriculture. Is there differences among regions on the issue of that. It would be nice is such an information could be presented in a map showing the extreme information needed at different part of the world. The discussion on ENSO is too short and does not discuss how the climate change change the extreme behavior of ENSO itself. There is strong indication on the much intensifier and much frequent ENSO cycles due to global warming. Some areas in the tropics also experience the changing behaviour of intraseasonal cycle due to climate change. But there is no discussion on the Madden Julian oscillation and its changing behaviour due to climate change. For specific review: There are still some misspelling error in the publication but I am sure that this problem will be taken care later Many sub chapters still have no titles Many figures with proper citation but it is not referred in the references part such as fig 2.3 (Aldrian, Edvin, BMKG)	This comment has been considered in the context of relevant chapter discussions.
130	Fist of all, I think that this report can be a major contribution, milestone and top reference in the fields of climate change impacts and adaptation, and disaster risk reduction. (Huggel, Christian , University of Zurich)	Thank you for this comment.
131	I read parts of chapters 3, 4, and 6, and in general found the text very interesting and mostly pertinent. I personally contributed to chapter 3 and found this chapter in good shape. I did a more thorough review for chapter 4. My general impression is that the authors have achieved bringing together important material. However, there are also significant deficiencies in the current version. (Huggel, Christian , University of Zurich)	Thank you for this comment.