Comment from Peer Reviewers					Authors' Response					
Reviewer ID - Comment #	Chapter #	Page #	Line #	Comment Text	Acknowledged. No further response or revisions are required.	Revisions have been incorporated as suggested.	Agree, but see "Notes on Response."	Disagree; see "Notes on Response."	Beyond scope of report/chapter; see "Notes on Response."	Notes on Response
				Reviewer #8						
8-1	1	3	13	'SOME past changes....' (i.e. not every rapid change in every record was subcontinental or global).		X				
8-2	1	6	1	A much better definition than the NRC one.	X					
8-3	1	7	1-14	This is not the correct IPCC projection. Specifically, it leaves out the the huge caveat that no upper bound can be given because of the uncertainty in the dynamic ice sheet contribution. The phrasing from the AR4 Synthesis report should be used here. The authors here should be very careful on this point to avoid giving the sense that there is any precise information about the future contributions, particularly from Antarctica.		X				We have specified that the IPCC numerical projection excludes possible contributions from ice dynamics.
8-4	1	7	18	this is a false reading of IPCC (see above).			X			Yes and no. As discussed in recent Letters in Science (Jan. 25, 2008) issue, the actual numbers for sea-level projections by IPCC, reproduced here, are what get attention, versus the qualitative statements about uncertainty.

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										In the absence of numbers on the uncertainty related to ice dynamics, the statement in this Report is correct insofar as it says that Rahmstorf's numerical projections are higher than those of the IPCC. This has been reworded accordingly.
8-5	1	12	18-19	This should be restated so as not to imply that 'sea level projections' are currently any good. It is much better to state the uncertainty up-front rather than imply that the low (no dynamic ice melt) numbers may be revised upwards.		X				
8-6	1	14	2	not all abrupt climate changes necessarily lead to drought. Rewrite it as 'abrupt climate changes involving drought'.		X				
8-7	1	14-18		Why is there a sole and parochial focus on N. American drought? This is unbalanced and inappropriate. The Mediterranean, Middle East, Sahel regions are equally worthy of discussion here and may have similarly serious consequences. Monsoon failure in India would impact substantially more people than any continuation of the US South west drought. I suggest a much wider focus in this section, with regional details relegated to the specific chapter.				X		The CCSP SAP series is meant to focus on the United States, and by extension, North America. The primary audience is US policy makers. Therefore, a global perspective on hydrological variability and abrupt change is not warranted.

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8-8	1	22	20-22	This is not a 'typical' scenario. It is simply a particular scenario. Thus it is much more appropriate to say that 'In a 1% increasing to 2xCO2 scenario, the models show X'. However, in this section, it is necessary to add in a caveat about the quality of the models. The AR4 models have not in general been evaluated for their sensitivity to 'known' forcings relevant to past episodes of rapid MOC change (the 8.2 kyr event for instance). Thus the sensitivity of these models is relatively unconstrained. It may well be that all are deficient due to a misrepresentation of the effects of sub-grid scale eddies or overflow processes. Thus, in this of all model projections, the consensus of the models cannot be taken as a pdf.	X	X				Revised accordingly. Discussion added.
8-9	1	24	8	A hydrate is a special class of clathrate (i.e. one with water molecules as the cage). This definition of a 'clathrate hydrate' is thus confusing and novel.		X				Definition revised.
8-10	1	25	3	Unnecessary and not clear if it is true. Presumably the unknown actual set of events explain the PETM better than any currently known theory, but it certainly isn't clear that any current theory with no methane hydrate component can explain the PETM better than ones with such a component.		X				Removed caveat.

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8-11	1	37	1-5	Methane increases do not necessarily rely on increased wetland extent, nor do they solely rely on tropical sources. Increased precip and temperature can both increase methane production very rapidly in tropical and boreal wetlands (i.e. Walter et al, 2001). Thus the title on fig 1 indicating that the CH4 record reflects 'tropical water balance' is an overstatement. Retitle it 'Wetland methane production' or similar.		X				
8-12	1	42		Please add 2006 and 2007 numbers. They should be available for this publication (if not, why not?).		X				
8-13	1			Somewhere in this chapter should be a paragraph or two discussing other potential or speculative changes that could be classed as abrupt - hurricanes appearing in large numbers in the South Atlantic or Mediterranean? large scale shifts in storm tracks associated with the annular modes etc.					X	This SAP restricts itself to the four topics identified. Variability in hurricanes and storms will be discussed in S.A.P. 3.3.
				Reviewer #24						

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24-1	1	18	11-15	**[this appears to have been taken straight from chapter 3 and so the same criticism applies, as repeated here]:** The wording here is problematic. Surely an 'adequate' (if not conclusive) explanation for the extended duration La Nina-like conditions in the tropical Pacific during the Medieval *is* available, i.e. the Mann et al (2005) ar ticle discussed and cited in chapter 3. By contrast, the confidence with which it can be stated that the droughts in question were caused by La Nina conditions is overstated here: there are other mechanisms that can explain the drought conditions, including changes in the strength of the zonally-symmetric (Hadley) circulation, or changes in Indian ocean temperatures that are entirely independent of what the Pacific is doing (e.g. the Hoerling and Kumar 2003 'Perfect ocean for drought' mechanism).			X	X		Two points made by reviewer. Re: explanation for duration: as discussed in Chap. 3, we have added some wording to reflect the Mann result, but because GCMs show a different response than the Mann result, we leave the "adequate" caveat in. Re: "other mechanisms": Chap. 3 does mention the "Perfect Ocean for Drought", i.e. the Indian Ocean as a possible player in the development of droughts over NA, especially in more recent times. It is not at all clear how much of a role the Indian Ocean played in the development of megadroughts in the Medieval Period. The likely coupling between the Indian Ocean and the tropical Pacific argue for some influence perhaps, but we are not aware of any paleo evidence to directly support it other than to say that the global map of precipitation/ drought anomalies during Medieval times argues for a near-global impact that is likely to also include the Indian Ocean as an influence. We have added some wording to reflect this.

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24-2	1	18	11-15	For consistency with chapter 3, there should be some discussion here of recent work indicating that La Nina conditions were indeed prevalent during Medieval times (Cobb et al, 2003) as well as the recent work providing a plausible explanation for a prolonged La Nina-like state as a response of the tropical Pacific to combined solar and radiative forcing changes (Mann et al, 2005). These latter studies are important in potentially closing the loop in the potential relationship between radiative (including anthropogenic) forcing and continental drought and it is appropriate and important to discuss such issues in the introduction as well as the specific chapter on hydrologic change and drought (i.e., chapter 3).		X				We have added some discussion here. As noted in reply to this comment in Executive Summary, however, the Mann et al. result has not "closed the loop" insofar as GCMs have not replicated it.
				Reviewer #34						
34-1	1			Much of the comments on the Executive Summary also fit with the introduction in terms of weaknesses. There are opportunities to include some of the uncertainties or contributing issues (such as how ENSO will change in the future) that have not been taken.	X					

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34-2	1			In addition, I would add that this is also easy to read and largely well referenced and does an excellent job of introducing the major topics in a fairly concise manner. I found the methane section to be more poorly referenced than the other topics, with some fairly large statements on budgets, etc., without attribution.		X				
34-3	1			In an introduction, I am surprised to see the words "conclusions" at the end of each section. I see this in individual chapters and in an executive summary, but they don't necessarily follow from introductory material on each topic. I would have preferred the notion of a summary of the sections.		X				