

IPCC Working Group I Fourth Assessment Report

Expert and Government Review Comments on the Second-Order Draft

Chapter 11

The following compilation of review comments and author responses is supplied by the Working Group I Technical Support Unit as a record of the process used to prepare the Working Group I report. These comments and responses are not to be edited and/ or re-distributed in part or in full to others.

Please note that under IPCC procedures authors are required to take account of all substantive review comments in both review rounds. Thus responses to individual comments may be influenced by comments from other reviewers.

Batch AB (15 June 2006)

No.	Batch	Page:line		Comment	Notes
		From	To		
11-1	A	0:0	0:	This Chapter is the most disappointing of the whole set. It contains hardly any actual regional climate information, based on observations. Where there are observations, they are wrong. For example in Figure 11.3.4.3 on page 138 you show a temperature record for China which has now been comprehensively corrected for errors, and shows little or no warming since 1900 (See Zhou et al 2005 Acta Meteorologica Sinica Vol 19 pages 389-400). Then, in Figure 11.3.5.1 on page 138 you give uncorrected temperature records for the USA, ignoring the corrected version which is on Figure 3.2.3, which, again, shows little warming since 1930. . The rest of the the report is almost entirely devoted to speculative models, without any serious attempt to find out whether they actually work [VINCENT GRAY (Reviewer's comment ID #: 88-1712)]	a) The chapter is about projections, and hence the regional information is not based on the observations. b) We see no inconsistency as is claimed in the one case, and suggested the reviewer has misunderstood the paper.
11-2	A	0:0	0:0	For all figures done with Ferret, line thickness is insufficient, and/or labels are too small to read. Please improve those, we should try hard for a high quality standard on figures.. Applies to Fig. 11.1.1., 11.3.2.1, 11.3.3.2, 11.3.4.4, 11.3.5.2, 11.3.5.3, 11.3.6.2, 11.3.7.2, 11.3.8.2, 11.3.8.3, 11.3.8.4, 11.3.9.2, 11.3.9.3, [Reto Knutti (Reviewer's comment ID #: 133-63)]	Will be corrected
11-3	A	0:0	0:0	For all figures where panels are overlaid to maps of continents (e.g. 11.3.2.2 and similar), I suggest to make the map much less prominent (e.g. increase brightness), and the overlaying panel less transparent such that it is visible. In the current versions (e.g. 11.3.4.3) it is very hard to see anything, also because the fonts are too small. One could even think about reducing the map to the contours of the continents to remove some of the distracting elements (similar to Fig. 11.2.1). Also, I wonder whether a two standard deviation range would be better than an envelope showing the min max range, since the latter basically uses only two models, potentially outliers, and ignores everything in between. This is particularly problematic when comparing different scenarios, where the Miroc hires model is way above any other models, but has only calculated B1 and A1B, but not A2, thus seemingly the uncertainty is smaller for A2, but this is just an artefact of the simulations available (see. Fig. 10.3.2) [Reto Knutti (Reviewer's comment ID #: 133-64)]	Figures changed
11-4	A	0:0		For consistency throughout the chapter could the terms CGCM and AOGCM not both be used? [Govt. of Australia (Reviewer's comment ID #: 2001-444)]	These will be standardized throughout the AR4
11-5	A	0:0		Most of the comments I made on the FOD has been considered. I only see few more changes to be made at this stage. I'm happy with the considerable reduction of figures, which are much more clear now, and with the consistent cut of the text. [Marina Baldi (Reviewer's comment ID #: 11-1)]	Thank you.
11-6	A	0:0		I was surprised to see so little work on empirical-statistical downscaling (ESD) in this	While there are many papers, this is not

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				chapter, as ESD is not inferior to RCMs. In fact, ESD provides an independent means of deriving scenarios, and if providing similar results as RCMs, the results are more robust. Furthermore, ESD is cheaper and quicker to do and can be applied to the latest AR4 runs to obtain results before RCM-integrations have completed. Furthermore, ESD can provide diagnostics and analysis elucidating the reasons behind a response, whereas RCMs don't. A large number of relevant papers do not seem to be included. [Rasmus E. Benestad (Reviewer's comment ID #: 18-6)]	a review, and so only selected papers are highlighted. We will look more closely at available literature for Asia/S.America if there is material that will change our conclusions.
11-7	A	0:0		I think that the amount of new work is meagre for this chapter. Much discussion is devoted to GCM results from the AR4 or older simulations. The reason for this is probably that the time from the release of the latest simulations to the dead line for submission if the work was to be included in the IPCC report was too short. Therefore, my suggestion is that the IPCC process is more flexible with respect to dead lines for submission for those papers included (eg see http://www.pcmdi.llnl.gov/ipcc/subproject_publications.php and the STARDEX publications). Also, I think this problem should be kept in mind before the next report (AR5) so that the most recent GCM results are made available in good time so that they can be analysed/downscaled as published in time for being included in the report. [Rasmus E. Benestad (Reviewer's comment ID #: 18-57)]	We disagree and suggest the chapter has much that is new. Secondly, the GCMs are the basis for developing regional statements, and are hence a natural focus. The comment on STARDEX is noted, and additional consideration will be given to recent papers meeting IPCC deadlines.
11-8	A	0:0		Overall I thought this chapter was looking very good. My one overall comment is that although I am pleased to see Box 11.5 on modelling climate changes due to the biophysical effects of land cover change (which should be kept), discussion of the implications of land cover change for regional climate change should not be confined to this box alone. It should be mentioned in the regional discussions where studies have been done. I provide some specific suggestions of where such discussion should be included. [Richard Betts (Reviewer's comment ID #: 21-1)]	Will be considered in the next version.
11-9	A	0:0		I am pleased to see recognition of the role of biophysical feedbacks from vegetation changes in response to climate change (as well as climate forcing by direct anthropogenic land cover changes). However, the comments are mostly to the effect that the feedbacks from dynamic vegetation have not been studied yet. Although there are not included in models in the AR4 archive, they are in at least one set of simulations parallel to one of the AR4 models (eg: dynamic vegetation is in a version of HadCM3 - see Betts et al, 2004, Theoretical and Applied Climatology, 78:157-175 (sorry for the self-citation!). This could be used to support a number of statements made in the text - I provide some specific suggestions for this below. [Richard Betts (Reviewer's comment ID #: 21-2)]	Will be taken into account in the rewrite.
11-10	A	0:0		Chapter 11 is clear and comprehensive. I find its executive summary a fine piece of work.	Thank you.

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				The figures are interesting and the well done and. [Roxana Bojariu (Reviewer's comment ID #: 24-20)]	
11-11	A	0:0		No use has been made when commenting on changes in extremes of the multi-model study of Tebaldi et al 2006 or the perturbed physics ensemble of Barnett et al. 2006 or Clark et al. 2006. Surely these papers currently provide some of the best indicators of how robust particular regional changes are? GCMs still provide the best measure of robustness for regional changes and to omit such information in this chapter is a mistake. [Simon Brown (Reviewer's comment ID #: 32-6)]	We will reassess these papers to see if they change any of our conclusions. We do already assess these emerging multi-model methods.
11-12	A	0:0		Heatwaves seem to get very little attention in the actual text. The are mentioned a lot in the introduction parts and in the summary parts but doing a word search on wave and picking out the heatwave related ones shows that they are mentioned only 4 times in the main text body, 3 of these are references to the European heatwave of 2003. Clark et al 2006 show changes in intensity of 1 in 20 year heatwaves of various durations due to coubling of CO2 for 4 locations (their fig 7). I would have thought this very policy relevant information. Caviats should be given, noting that these results although they come from a perturbed physics model they all members have the same parent model [Simon Brown (Reviewer's comment ID #: 32-8)]	This is documented in the extremes tables (11.3)
11-13	A	0:0		The overall readeability of chapter 11 has greatly improved since the FOD. Congratulations to the Lead Authors. There is reference to the supplementary material over the whole chapter while it is mentioned that there is no need to review it. Will the reference in the text be removed in the final version? [Daniel Caya (Reviewer's comment ID #: 38-1)]	Supplementary material will continue to be referenced in the text as an extension to what is included in the chapter.
11-14	A	0:0		As an overall impression, this chapter is excellent in nature and extremaly rich in detail. It is well written and documented and description of projections for individual regions is better balanced than in FOD. [Govt. of Czech Republic (Reviewer's comment ID #: 2007-1)]	Thank you.
11-15	A	0:0		I note that your referencing of Frei et al (2005) suggests only one reference whereas there are two in the reference list at the end (a) and (b) [Hayley Fowler (Reviewer's comment ID #: 74-2)]	References will be checked.
11-16	A	0:0		I think the material in sections 11.1 and section 11.2 is substantially improved from the previous draft. In particular, the presentation of progress since the TAR is more measured, with greater emphasis on the caveats and limitations associated with activities such as time slice modelling, multi-GCM/multi-RCM simulations, comparison of downscaling techniques, early forays into probabilistic prediction, etc. This is to be welcomed, and it is important that these aspects of the assessment are preserved in the next draft. However, in several places it still seemed like the assessment of important questions had to be restricted to a few cryptic words, which was not really sufficient to make clear the	In redrafting the methods discussion, we see if we can present greater clarity on the issues surrounding the methods.

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				underlying scientific issues. So I wonder if the methods section could be made a little longer, at the expense of the large amount of space devoted to describing the regional changes. [James Murphy (Reviewer's comment ID #: 184-1)]	
11-17	A	0:0		I have an overall concern regarding some aspects of the precipitation discussion, but first I would like to express my admiration for the authors work in trying to assemble an ordered picture of this area despite the inherent difficulties and state of flux of the field. Overall the chapter is really very good and I commend it highly. My concern centers on the use of figures with no statistical significance estimates (in some cases with methodology not standard in the peer-reviewed literature) and the statements of confidence regarding some of the regional precipitation conclusions. While I generally support the conclusions, I am concerned that the presentation might leave the report open to attack, and may misrepresent to the level of regional agreement among the models. I say this because my group has done similar analysis with statistical significance tests and the results often appear noticeably different. Specific comments refer to the figures below. [J. David Neelin (Reviewer's comment ID #: 187-1)]	See response to comment 11-19 below.
11-18	A	0:0		Fig. 11.3.2.1, Fig. 11.3.3.2, , Fig. 11.3.4.4, , Fig. 11.3.5.2, 11.3.6.2, 11.3.7.2, 11.3.9.4 are all shown without masking the substantial parts of the field that would not pass a basic statistical significance test. While in some cases the authors may have other information that suggests to them which aspects are more reliable, many IPCC report readers will not, and from some of the statements, I suspect the authors may not have fully taken into account the impact a significance test would have had. While one can argue about which test is optimal, at least some basic test should be used. I feel concerned enough about this for the precipitation-related plots (panels b and c) that I would offer to have my group produce replacement plots if the authors do not wish to (email neelin@ucla.edu). [J. David Neelin (Reviewer's comment ID #: 187-2)]	See response to comment 11-19 below.
11-19	A	0:0		Fig. 11.3.2.1, Fig. 11.3.3.2, , Fig. 11.3.4.4, , Fig. 11.3.5.2, 11.3.6.2, 11.3.7.2, 11.3.9.4 (cont'd). For panel c of each of these figures, one reasonable (and referencable, e.g., Neelin et al 2006, PNAS, referenced in chpt 9 of the 4AR) methodology is to display the number of models that have a statistically significant signal (and above some minimum threshold of percent change). This might be considered a rather minimal standard of agreement. For the method shown in the current figs (just the number that have a positive change) models with insignificant change are being counted as agreeing with models that have significant change. (Also, in a spatially correlated random field, it is awfully easy to produce maps where 40% of 21 instances have a positive change over a similar region.) [J. David Neelin (Reviewer's comment ID #: 187-3)]	It is not accepted that the proposed minimum standard would be appropriate. To only count the number of models with a statistically significant change would be a test that is far too stringent. One only needs to imagine how unusual and potentially significant the case would be where all models show an increase even if that increase was not statistically significant in any model. This is why in principle,

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					statistical significance testing should only be applied to the final diagnostic and not interim ones. One could use binomial probability, but this would tend to overestimate significance by not allowing for the spatial autocorrelation the commenter noted as inherent in model results. There is no obvious method that could be applied that would allow for spatial autocorrelation and how this may vary within the domain of single model and between models
11-20	A	0:0		Chapter 11 is significantly improved over the FOD. The executive summary reads very well, as does almost all of the chapter. It is a much more coherent piece of work, with a set of good figures. Most of my gripes from the FOD have been dealt with, and the chapter is 20 pages shorter! Well done. [James Renwick (Reviewer's comment ID #: 211-3)]	Thank you.
11-21	A	0:0		Still some inconsistencies between US and non-US English spelling, e.g. vapor and vapour. [James Renwick (Reviewer's comment ID #: 211-20)]	Editorial work will be done prior to publication.
11-22	A	0:0		For added consistency, it might pay off to use only one acronym for each kind of global model, throughout Chapter 11. Presently, GCM, AOGCM and CGCM are used, in addition to AGCM. Suggest "GCM" when referring to coupled GCMs or general circulation models as a concept, and AGCM when the attention turns to an atmosphere-only variant. Also, some regional sub-chapters (such as North America and Australia) add sub-headings compared to the other regional subchapters. This might not be a matter for concern, but still seems a bit unfortunate as it might be understood as absence of such special studies of, e.g., snow, for the other regions. [Markku Rummukainen (Reviewer's comment ID #: 223-1)]	Acronyms will be homogenized across the entire AR4.
11-23	A	0:0		For added consistency, and to make the text easier to read, suggest duplicating detailed information in the text when it is also tabulated. Some(!) examples are found on page 36 lines 35-37, page 37 lines 1-5, 19-20 and 36-45, page 38 lines 22-26, page 39 lines 6-9, page 41 lines 1-7, page 52 lines 28-32, page 53, lines 3-5, page 54, lines 8-10, page 57, lines 24-26, page 58, lines 27-30, page 64 lines 4-22, page 68 lines 6-18 and 34-46, page 72 lines 31-41, page 73 lines 19-20 and 37-54, page 74 lines 9-17 and 26-41, in each case repeating numbers put forth in Table 11-2 and in some cases also quoting numbers from	Will be taken into consideration when re-editing the text.

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				the Supplementary material. In some cases, the format of the Table is also explained anew. Please observe that I do NOT note on this later on among my comments.) [Markku Rummukainen (Reviewer's comment ID #: 223-2)]	
11-24	A	0:0		The combination of figures, such as 11.3.2.1 and 11.3.2.2 seems terrific. Encourage using this for all the regions. Presently, this is largely true. There is, however, a deviation in the case of North America, the polar regions, and the small islands. [Markku Rummukainen (Reviewer's comment ID #: 223-3)]	Thank you, the deviation is noted and will be changed.
11-25	A	0:0		In few places, the discussion is made in terms of "we" and "our" (such as "we base" and "in our opinion"). Perhaps these could be reformulated into more neutral expressions (passives). Overall spell checking etc. would also be useful (a number of minor typos are NOT listed in my comments.) [Markku Rummukainen (Reviewer's comment ID #: 223-194)]	These will be examined in the redrafting.
11-26	A	0:0		The inclusion of better regional projections is an important advance, respect former assessments. Although we may be still far from capturing all regional changes by the available modelling resources. It is important to keep in mind that for governments, since they have to develop their adaptation and mitigation measures at national level (and we have to admit that regional scales are more relevant for them in that regard), the regional scale is the base for their planning in terms of short, mid and long term policies and measures to combat CC. [Govt. of Spain (Reviewer's comment ID #: 2019-15)]	Noted.
11-27	A	0:0		Overall figures in this chapter need a lot of improvement. The text on some of the plots is too small. [Govt. of United States of America (Reviewer's comment ID #: 2023-673)]	Will be corrected.
11-28	A	1:0		This chapter generally provides a very scholarly and comprehensive presentation of projected regional climate change. However, the presentation is overly lengthy in places, and a couple of sections remain less polished than they might be (specifics below). There is roughly 15 pages of introductory material before the Chapter actually gets down to its first regional assessment. While some of this material is indeed very informative, this does nonetheless seem to be on the long side. Also, there is a certain degree of repetition as one goes from one regional assessment to another - although this is probably difficult to avoid, given that readers will often only be interested in a particular region. A concern that popped up almost continually as I read through the chapter was that comparisons with observations generally do not identify the observations used, and questions concerning data quality that might affect regional model assessments are seldom raised. [Francis Zwiers (Reviewer's comment ID #: 305-109)]	Text has been improved to reduce length and improve clarity, including giving a higher profile to the leading messages. The text will also be revisited to give clarity to which observations are being used. See also the response to the related comment under 11-32 below.
11-29	A	1:1	1:1	General comments on the chapter: 1. The chapter is too long. One way to shorten the chapter is by combining the climate overview (climate factors) and simulation subsections.	See also comments on 11-28 and 11-32. 1. Effort will be made to implementing

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				Material is often repeated. The key in the new section is an evaluation of the models' performance. Are they reliable indicators of future climate change? 2. The assessment of future changes seems way too confident. I will highlight specific reasons in my detailed comments below. However I note that the box on land use changes seems to contradict much of the over confidence found in the rest of the chapter. The tone of both needs adjusted. The bulk of the adjustment should occur in the main body of the chapter (i.e. I think the land use section tone is more accurate in terms of its tone/confidence in future projections). 3. In all the major areas, temperature and precipitation ranges are given. How are the ranges determined? The reader needs to be reminded that the range applies to XXX models and XXX scenarios. If the range only applies to a few (or one scenario), then some assessment of the full scenario range of uncertainty needs to be made. How does this increased range impact the confidence of the assessment? 4. In many regions (Western Europe, SE US, S Asia, etc., sea level rise is as important as the temperature and precipitation changes. Its changes should be assessed too. 5. The chapter contained a fair number of type-o's which I did not point out. [Ronald J Stouffer (Reviewer's comment ID #: 258-38)]	the intent of this comment in the redraft. 2. We will revisit our robust statements and statements of confidence. See also responses to specific comments later. 3. The details for readers information will be included. We will try make clear that the focus is on the range within one scenario, and not endeavor to encompass or assess the validity of all possible scenarios. We will keep this in mind as well when re-assessing our robust statements, and indicate where these are scenario dependant and where not. 4. This is largely within the mandate of Ch 10, plus we have cross referenced information in Box 11.4. More is beyond the scope of Ch 11. We will try to give Box 11.4 a higher profile.
11-30	A	1:11	1:12	Instead of Gonzales-Rouco, use González-Rouco [Govt. of Spain (Reviewer's comment ID #: 2019-148)]	Noted.
11-31	A	1:16	1:16	Instead of Widman, use Widmann [Govt. of Spain (Reviewer's comment ID #: 2019-149)]	Noted.
11-32	A	2:0	3:	The entire Exec Summary is weak; it has a general review, but no real ES points. It needs some snappy, new real results: e.g., Does down-scaling work? What value is added by these techniques and this chapter that we cannot readily see from the global chapters? Are these results any different from analysis of 300 km global models? We realize that it is too late to re-organize the chapter, but the ES could be greatly shortened to what is new here. Given your own statements on p.2 line 8, what is new here? [Govt. of United States of America (Reviewer's comment ID #: 2023-675)]	We have addressed this concern and reworked the executive summary. The emphasis on methods has been greatly downplayed and the key robust messages brought to the fore. In addition, the layout of the chapter (without changing the content other than revisions based on comments) has been reorganized in light of this and other comments, again to prioritize the robust findings.
11-33	A	2:3	2:3	Replace "climate change" by "changes in the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1713)]	Rejected, no justification given.

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11-34	A	2:4	2:4	"weight in each region" -> "weight in each of the studied regions" (NOTE: The notation "->" means should be replaced by and is used throughout the revision) [Daniel Caya (Reviewer's comment ID #: 38-2)]	Rewording will be considered during the redraft. However, all regions are studied in the context of large scale regions.
11-35	A	2:4		GCM, AOGCM, Global Climate Model and Global atmosphere-ocean climate model are use indistinctly in the text. Some sort of uniformity should be used since the report is directed toward a large public. [Daniel Caya (Reviewer's comment ID #: 38-3)]	This will be homogenized across the entire AR4
11-36	A	2:6	2:6	Replace "climate change" by "changes in the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1714)]	Rejected, no justification given.
11-37	A	2:8	2:8	Add at beginning "By ignoring actual climate observations altogether" [VINCENT GRAY (Reviewer's comment ID #: 88-1715)]	Rejected, this is not valid.
11-38	A	2:8	2:8	Replace "remain" by "are here chosen as" [VINCENT GRAY (Reviewer's comment ID #: 88-1716)]	We disagree, and no justification given for this change.
11-39	A	2:9	2:9	Delete "the robust" [VINCENT GRAY (Reviewer's comment ID #: 88-1717)]	Rejected, no justification given.
11-40	A	2:10	2:10	Replace "climate change" by "changes in the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1718)]	Rejected, no justification given.
11-41	A	2:17	2:17	studies and it remains" -> "studies. It remains" [Daniel Caya (Reviewer's comment ID #: 38-4)]	Noted.
11-42	A	2:18	1:18	Extend the last sentence in the paragraph as follows: "... global model input and specific details of the downscaling techniques, which may tend to produce too flat PDFs, or PDFs reflecting the ones from the training periods". These indeterminations are also important from the point of view of downscaled information in my opinion. [Govt. of Spain (Reviewer's comment ID #: 2019-150)]	This comment will be taken into account in the next version of the Exec summary as appropriate. However, we consider that this may be too detailed for the exec summary.
11-43	A	2:18	2:18	"uncertainty including the sensitivity to the global model input." -> "uncertainty." (NOTE: The sensitivity to the global model input is only one of the possible source of uncertainty, it is therefore inappropriate to emphise it.) [Daniel Caya (Reviewer's comment ID #: 38-5)]	Noted, and we will rework this material in the next version.
11-44	A	2:20	2:20	Delete " The growing" [VINCENT GRAY (Reviewer's comment ID #: 88-1719)]	Rejected, no justification given.
11-45	A	2:20	2:20	Replace "that underlies" with "underlie" [VINCENT GRAY (Reviewer's comment ID #: 88-1720)]	Rejected, changes sentence sense inappropriately.
11-46	A	2:20	2:21	Delete from "increases" in line 20 to "projections" in line 21 [VINCENT GRAY (Reviewer's comment ID #: 88-1721)]	Rejected, no justification given.
11-47	A	2:22	2:22	Add at beginning "Projected"	Rejected, no justification given.

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				[VINCENT GRAY (Reviewer's comment ID #: 88-1722)]	
11-48	A	2:23	2:23	add "in parts of the tropics and" after increase [Erik Kjellström (Reviewer's comment ID #: 131-2)]	Will be considered.
11-49	A	2:24	2:24	Delete "robust" [VINCENT GRAY (Reviewer's comment ID #: 88-1723)]	Rejected, no justification given.
11-50	A	2:25		Write Boundaris ; [Ibouraïma YABI (Reviewer's comment ID #: 297-1)]	Noted
11-51	A	2:26	2:26	Insert before "poleward" "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1724)]	Rejected, the chapter is titles "projections"
11-52	A	2:27	2:27	Delete "especially robust" [VINCENT GRAY (Reviewer's comment ID #: 88-1725)]	Rejected, no justification given.
11-53	A	2:30		Writ high ; [Ibouraïma YABI (Reviewer's comment ID #: 297-2)]	Noted
11-54	A	2:31	2:31	That monsoonal circulations tend to weaken is counterintuitive in summer as the land-sea temperature contrast increases. Maybe a word on the causes for this weakening would be in place here. [Erik Kjellström (Reviewer's comment ID #: 131-1)]	Text will be adjusted.
11-55	A	2:31	2:32	Suggest stating the nature of the control by SST-changes on tropical precipitation. [Markku Rummukainen (Reviewer's comment ID #: 223-4)]	Text will be adjusted.
11-56	A	2:32	2:32	Add at beginning "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1726)]	Rejected, the chapter is titles "projections"
11-57	A	2:32		the statement 'while the pattern of warming over the tropical oceans exerts strong control on precipitation within the tropics' is actually not accurate. It could be replaced by 'while the pattern of warming over the tropical oceans interacts strongly with precipitation and tropospheric temperature within the tropics.' [J. David Neelin (Reviewer's comment ID #: 187-13)]	Text will be adjusted.
11-58	A	2:33	2:33	I think that the biophysical effects of land cover change should be mentioned in the ES, especially since some of the mainstream GCM simulations in the AR4 archive (eg: HadGEM1). May I suggest a short paragraph along the lines of "Since the TAR, modelling studies of the biophysical effects of land use / land cover change have begun to examine the implications of plausible land cover change scenarios including scenarios consistent with the emissions scenarios used in studies of radiatively-forced climate change. Such studies indicate that land use change in some regions may be a significant additional influence on climate change. While most such studies have considered land use change in isolation, some GCM simulations of 21st-century climate change include land use changes as well as scenarios of greenhouse gases and aerosols."	We agree this is a point of concern, and will evaluate ways to bring it into the ES.

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				[Richard Betts (Reviewer's comment ID #: 21-3)]	
11-59	A	2:34	2:34	Replace "climate change" by "changes in the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1727)]	Rejected, no justification given.
11-60	A	2:36	2:38	The sentence "For precipitation change..." is rather difficult to understand. Please clarify. [Markku Rummukainen (Reviewer's comment ID #: 223-5)]	Agreed. Text will be re-worked.
11-61	A	2:37	2:37	The assessment "Global and downscaling models" is not clear. [Constantin Mares (Reviewer's comment ID #: 160-1)]	Agreed. Text will be reworked.
11-62	A	2:39	2:39	Delete "robust" [VINCENT GRAY (Reviewer's comment ID #: 88-1728)]	Rejected, no justification given.
11-63	A	2:39	2:39	Suggest omitting "any" as it does not really seem to add information. [Markku Rummukainen (Reviewer's comment ID #: 223-6)]	Agreed.
11-64	A	2:40	2:40	Replace "climate change" by "changes in the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1729)]	Rejected, no justification given.
11-65	A	2:42	2:42	Delete "strong" [VINCENT GRAY (Reviewer's comment ID #: 88-1730)]	Rejected, no justification given.
11-66	A	2:42	2:42	Replace "climate change" by "changes in the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1731)]	Rejected, no justification given.
11-67	A	2:44	2:45	the lack of clear observational verification of the changes already occurring is not essential for the future climate change signal. The large natural variability could mask out these changes for long periods (maybe even decades) in some areas. [Erik Kjellström (Reviewer's comment ID #: 131-3)]	Yes, however the fact that observational verification is not yet available is an important context.
11-68	A	2:53	2:53	Replace "very likely" with "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1732)]	Rejected, no justification given.
11-69	A	2:56	2:56	Replace "robust" with "improved" [VINCENT GRAY (Reviewer's comment ID #: 88-1733)]	Rejected, no justification given.
11-70	A	3:1	3:1	Replace "likely or possibly even very likely" with "possible" [VINCENT GRAY (Reviewer's comment ID #: 88-1734)]	Rejected, no justification given.
11-71	A	3:1	3:1	What does "likely" and "very likely" mean here? Is there a general definition valid also in other AR4 chapters. Or, does it relate to Table 11.3? [Erik Kjellström (Reviewer's comment ID #: 131-4)]	AR4 has standard definitions for these terms which will be provided in the document.
11-72	A	3:1	3:1	delete "possibly even" (strange to combine "possibly" and "likely") [Bart Van den Hurk (Reviewer's comment ID #: 274-1)]	Agreed, text will be rephrased.
11-73	A	3:2		Write change ; [Ibouraïma YABI (Reviewer's comment ID #: 297-3)]	Noted
11-74	A	3:3	3:3	Insert after "available" "projected"	Disagree, analyses of past extremes is

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				[VINCENT GRAY (Reviewer's comment ID #: 88-1735)]	also relevant in this context.
11-75	A	3:5	3:5	Replace "findings" by "projections" [VINCENT GRAY (Reviewer's comment ID #: 88-1736)]	Rejected, no justification given.
11-76	A	3:6	3:6	Delete at end "in confidence" [VINCENT GRAY (Reviewer's comment ID #: 88-1737)]	Rejected, no justification given.
11-77	A	3:7	3:7	Replace "statements" by "projections" [VINCENT GRAY (Reviewer's comment ID #: 88-1738)]	Rejected, no justification given.
11-78	A	3:11	3:11	Delete "It is very likely that" [VINCENT GRAY (Reviewer's comment ID #: 88-1739)]	Rejected, no justification given.
11-79	A	3:11	3:11	Replace "will occur within" by " have been projected for" [VINCENT GRAY (Reviewer's comment ID #: 88-1740)]	Disagree, this would make nonsense of the sentence.
11-80	A	3:11	3:11	I suggest to precise century [Constantin Mares (Reviewer's comment ID #: 160-2)]	Agreed
11-81	A	3:11	3:43	This list is very diverse and possibly confusing. Even though it has in a way been stated earlier that the regional mean warming is a robust feature, as are some of the regional precipitation changes, this is "forgotten" on line 11. It is neither clear to the reader whether the choice of the aspects discussed is based on availability per region or results from across-regions common analyses. Suggest considering a change of content such as elaboration on common themes and uncertainties or a fuller region-per-region synopsis. Alternatively, base on Box 11.1/Figure 2 (see page 157). [Markku Rummukainen (Reviewer's comment ID #: 223-7)]	The point is well taken, and will be addressed in revisions of this section.
11-82	A	3:11	3:43	"very likely" - Much of this assessment seems way to confident to me. Details below. [Ronald J Stouffer (Reviewer's comment ID #: 258-39)]	Noted, and these terms will be reassessed.
11-83	A	3:11	3:11	I'm wondering if there should be some caveats stating the assumptions under which these assessments are made. Does the "very likely" take into account uncertainty in forcing over the 21st century? [Francis Zwiers (Reviewer's comment ID #: 305-110)]	Agreed. Text will be revised to provide a better context.
11-84	A	3:11		I recommend replacing "very likely" by "likely to very likely" as not all regions mentioned have same confidence. I also have the sense that some of the statements on precip are based on the figures in the chapter rather than on the peer-reviewed literature. While this is a natural thing to do, there is not enough information provided to really assess these the same way as a peer-reviewed paper is assessed. The authors might consider caveating these aspects. [J. David Neelin (Reviewer's comment ID #: 187-4)]	The strength of these statements will be revisited in the revision.
11-85	A	3:12	3:42	Since this is the first time the sub-regions are mentioned it would be good to make a clear reference to where they are defined (p14)	Agreed. Clarification will be provided.

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				[Erik Kjellström (Reviewer's comment ID #: 131-5)]	
11-86	A	3:13	3:13	add ", and increase in annual rainfall in East Africa" [Bart Van den Hurk (Reviewer's comment ID #: 274-2)]	The regional statements will be revised and this addition considered.
11-87	A	3:14	3:14	Could "and the Alps" be added to "northern Europe"? [Erik Kjellström (Reviewer's comment ID #: 131-6)]	The statement could be too catagoric this way, as high peaks seem to be less sensitive to changes.
11-88	A	3:14	3:15	I think is better to compare minimum with maximum temperatures, than minimum temperatures with the mean temperatures. Relating with this subject, I would like to emphasize that there are some zones in the central and south Europe, where the diurnal temperature range (DTR) has increased in observed and this fact is pointed out by the time slice experiments also (Cubasch et al., 1996). [Constantin Mares (Reviewer's comment ID #: 160-3)]	Noted, but most of the literature assessed actually does not describe change in DTR. To be in line with the literature and avoid speculations we prefer not to change.
11-89	A	3:14	3:19	Correct punctuation [JAVIER MARTIN-VIDE (Reviewer's comment ID #: 165-15)]	Noted
11-90	A	3:14	3:19	Correct punctuation [Govt. of Spain (Reviewer's comment ID #: 2019-75)]	Noted
11-91	A	3:15	3:15	Add "summer" after "highest" [Erik Kjellström (Reviewer's comment ID #: 131-7)]	Will do
11-92	A	3:18	3:19	Does snow depth really decrease everywhere in the future in N Europe in the AR4 and regional models? In many CMIP+ AOGCMs snow depth increased in late winter (March time mean). [Ronald J Stouffer (Reviewer's comment ID #: 258-40)]	Text has been modified
11-93	A	3:18	3:18	insert "length of" between "in" and "snow season" [Bart Van den Hurk (Reviewer's comment ID #: 274-3)]	Noted.
11-94	A	3:18	3:18	add "snow" after "and" [Bart Van den Hurk (Reviewer's comment ID #: 274-4)]	Noted
11-95	A	3:19		Write depth ; [Ibouraïma YABI (Reviewer's comment ID #: 297-4)]	Noted
11-96	A	3:20	3:20	"Tibetan plateau" - are the model results believable in this region? I doubt it. [Ronald J Stouffer (Reviewer's comment ID #: 258-41)]	We think that for the region as defined in this chapter, models are doing a reasonable job. Arguably, not much is known about the details of the precipitation climate. However, the convergence of the AR4 models about a positive change for the region is

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					convincing
11-97	A	3:25		Write Asia ; [Ibouraïma YABI (Reviewer's comment ID #: 297-5)]	Noted
11-98	A	3:26	3:26	Change "higher" to "larger". [Ronald J Stouffer (Reviewer's comment ID #: 258-42)]	Agreed
11-99	A	3:28	3:28	Does snow depth really decrease everywhere in N America in the AR4 and regional models? In many CMIP+ AOGCMs snow depth increased in late winter (March time mean) in central and northern Canada. [Ronald J Stouffer (Reviewer's comment ID #: 258-43)]	Noted, text will be modified in accordance with the NA section.
11-100	A	3:28		Write depth ; [Ibouraïma YABI (Reviewer's comment ID #: 297-6)]	Noted
11-101	A	3:29	3:30	Consider changing "Central and South America" to "Central, South America and the Caribbean". Add "Decrease in summer Caribbean precipitation". See change pg 17 and 53 for justification. [J. David Neelin (Reviewer's comment ID #: 187-5)]	Will be considered in the revision of regional statements.
11-102	A	3:29	3:32	Precipitation changes being "very likely" in mountainous regions. How well do GCMs and regional models simulate the present day climate? It is my assessment that they typically have lots of problems in mountainous regions. [Ronald J Stouffer (Reviewer's comment ID #: 258-44)]	Will be considered in the revision of regional statements.
11-103	A	3:30		Write América ; [Ibouraïma YABI (Reviewer's comment ID #: 297-7)]	Noted
11-104	A	3:32	3:33	"Increased frequency....." are these changes for both Australia and NZ? Generally this summary of the results from regional projections in Australia and New Zealand is unclear as it tends to conflate results from both countries. Suggest re-writing to make the results more clear. [Govt. of Australia (Reviewer's comment ID #: 2001-445)]	Will be accommodated in revision of these statements.
11-105	A	3:34		Write Australia ; [Ibouraïma YABI (Reviewer's comment ID #: 297-8)]	Noted
11-106	A	3:35	3:36	Arctic warming for most areas, with the annual mean warming clearly exceeding the warming of the global mean;" -> "Warming for most Artic areas are clearly exceeding the warming of the global mean [Daniel Caya (Reviewer's comment ID #: 38-6)]	Will be accommodated in revision of these statements
11-107	A	3:37	:38	Too many 'more slowly' in the sentence. [Steve Harangozo (Reviewer's comment ID #: 98-18)]	Agreed. Will be accommodated in revision of these statements
11-108	A	3:38		Write Artic ; [Ibouraïma YABI (Reviewer's comment ID #: 297-9)]	Noted

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11-109	A	3:41	3:43	I assume the sea level rise in the Arctic is related to the ice thinning (less weight on the water). Does this really lead to sea level rise for impacts? The sea level rise in the Southern Ocean is related to the atmospheric jet shift in GHG warming experiments. [Ronald J Stouffer (Reviewer's comment ID #: 258-45)]	We will remove or modify this statement
11-110	A	4:5	4:5	Replace "anthropogenic global climate change": by "human influences on the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1741)]	Disagree, anthropogenic climate change properly conveys our intended meaning.
11-111	A	4:6	4:10	Mitigation, and especially the potential to do so, also varies across localities and regions. Also adaptation actions are (should be?) based on observed and projected changes. Suggest rewriting these sentences. E.g., "Mitigation focuses on the global goal of reducing emissions and stabilising atmospheric concentrations of greenhouse gases. Detailed climate information is not so central for these efforts that depend more on the socio-economic setting and technology. In contrast, adaptation deals more directly with local and regional scale physical and biological systems and as such is affected much more by the confidence in the projected changes in climate at the same scales." [Markku Rummukainen (Reviewer's comment ID #: 223-8)]	The point is noted, and we will revisit the sentence to see what can be accommodated on this aspect.
11-112	A	4:8	4:8	Please avoid the comparison "nations" with "regions" in this case. [Constantin Mares (Reviewer's comment ID #: 160-4)]	Agreed, will revise.
11-113	A	4:9	4:9	delete "more of" [Bart Van den Hurk (Reviewer's comment ID #: 274-5)]	Agreed.
11-114	A	4:10	4:13	This could be construed as a slightly political statement - which I think should be avoided. The WG1 report should, presumably, avoid speculating on what kind of information might motivate different governments to act, because that then implies that we might somehow have been on the hunt for such information. [Francis Zwiers (Reviewer's comment ID #: 305-111)]	Agreed, will revise.
11-115	A	4:11	4:11	Replace "climate change" by "changes in the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1742)]	Rejected, no justification given
11-116	A	4:12	4:12	Replace "climate change" by "changes in the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1743)]	Rejected, no justification given
11-117	A	4:12		This is a policy statement and should be removed. Even adaptation belongs in WG3. [Govt. of United States of America (Reviewer's comment ID #: 2023-674)]	Sentence will be revised.
11-118	A	4:13	4:13	typo - practices not practises [James Murphy (Reviewer's comment ID #: 184-2)]	Noted.
11-119	A	4:16	4:18	Statements about 'resolved' and 'unresolved' scales should be more specific. E.g., "... they are able to resolve (generally greater than 700 km at best), but important aspects ..." [Govt. of Australia (Reviewer's comment ID #: 2001-446)]	Agreed, will accommodate

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11-120	A	4:16	4:16	Suggest providing a good example of the "resolved scale" of GCMs. [Markku Rummukainen (Reviewer's comment ID #: 223-9)]	Agreed, will accomodate
11-121	A	4:17	4:17	Make first letter of "World" lowercase [James Renwick (Reviewer's comment ID #: 211-4)]	Noted
11-122	A	4:18	4:18	Before Therefore must be "point" [Constantin Mares (Reviewer's comment ID #: 160-5)]	Noted.
11-123	A	4:18	4:18	Insert period after "scales" [Bart Van den Hurk (Reviewer's comment ID #: 274-6)]	Noted
11-124	A	4:18		Comma should be "." [Rasmus E. Benestad (Reviewer's comment ID #: 18-7)]	Noted
11-125	A	4:18		Write Scale. [Ibouraïma YABI (Reviewer's comment ID #: 297-10)]	Noted
11-126	A	4:21	4:21	Could omit "central to climate change". [Markku Rummukainen (Reviewer's comment ID #: 223-10)]	Agreed
11-127	A	4:23	4:23	"forcing GCMs". I'd suggest something like "driving GCMs" instead, in order to avoid any potential confusion between radiative forcing and the forcing of downscaling methods by surface or atmospheric variables from GCM runs. [James Murphy (Reviewer's comment ID #: 184-3)]	Agreed, will revise.
11-128	A	4:24	4:24	Add at end "But, or course, the models cannot project natural climate trends or influence" [VINCENT GRAY (Reviewer's comment ID #: 88-1744)]	Rejected, we disagree and no justification given.
11-129	A	4:28	4:28	"was based upon" seems awkward. Change to "contained"? [Ronald J Stouffer (Reviewer's comment ID #: 258-46)]	Agreed.
11-130	A	4:29	4:29	Delete "thorough" [VINCENT GRAY (Reviewer's comment ID #: 88-1745)]	Rejected, we disagree and no justification given.
11-131	A	4:29		I sugest you to writ this chapter instid of since the chapter [Ibouraïma YABI (Reviewer's comment ID #: 297-11)]	Noted
11-132	A	4:34	4:34	coarse resolution" -> "coarse-resolution [Daniel Caya (Reviewer's comment ID #: 38-7)]	Noted
11-133	A	4:35	4:35	The range of dates given (1960-2100) might represent the period analysed in some parts of the TAR, but I suspect that almost all, if not all, of the simulations that are referred to here would have been started in the 19th century. [Francis Zwiers (Reviewer's comment ID #: 305-112)]	Will revise to clarify.
11-134	A	4:39	4:39	high resolution" -> high-resolution" [Daniel Caya (Reviewer's comment ID #: 38-8)]	Noted
11-135	A	4:41	4:41	Insert before "climate "projected" 227 11-227 1746	Rejected, no justification given

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				[VINCENT GRAY (Reviewer's comment ID #: 88-8)]	
11-136	A	4:43	4:43	Suggest changing "enhanced performance" to "added value". [Markku Rummukainen (Reviewer's comment ID #: 223-11)]	Agreed, will revise.
11-137	A	4:46	4:46	Replace "very likely" with "projected that" 228 11-228 1747 [VINCENT GRAY (Reviewer's comment ID #: 88-11)]	Rejected, no justification given
11-138	A	4:46	4:46	insert "that" after "likely" [Bart Van den Hurk (Reviewer's comment ID #: 274-7)]	Noted
11-139	A	4:48	4:48	Replace "assessed" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1748)]	Rejected, no justification given
11-140	A	4:52	4:52	Replace "indicate" with "project" [VINCENT GRAY (Reviewer's comment ID #: 88-1749)]	Rejected, no justification given
11-141	A	4:56	4:56	Replace "statements" by "projections" [VINCENT GRAY (Reviewer's comment ID #: 88-1750)]	Rejected, no justification given
11-142	A	5:2	5:2	Replace "assessed" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1751)]	Rejected, no justification given
11-143	A	5:2	5:2	Replace "are likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1752)]	Rejected, no justification given
11-144	A	5:2	5:2	Replace "are" by "is" [Bart Van den Hurk (Reviewer's comment ID #: 274-8)]	Noted
11-145	A	5:3	5:3	Insert "to" after "and" [Bart Van den Hurk (Reviewer's comment ID #: 274-9)]	Noted
11-146	A	5:4	5:4	Replace "will very likely" with "could also" [VINCENT GRAY (Reviewer's comment ID #: 88-1753)]	Rejected, no justification given
11-147	A	5:6	5:6	Suggest omitting "from simulations". [Markku Rummukainen (Reviewer's comment ID #: 223-12)]	Will revise.
11-148	A	5:11	5:12	The regional climate would also be the result of forcing elsewhere and of feedbacks that are activated as a result of those forcings (e.g., snow/ice albedo feedback produces a response in the Arctic to forcing from well mixed greenhouse gases, but also to the more localized forcing from aerosol emissions in mid-latitudes). [Francis Zwiers (Reviewer's comment ID #: 305-113)]	Agreed, will revise sentence.
11-149	A	5:12	5:12	Insert after "scales" "plus a whole range of natural climate influences which are not included in these models" [VINCENT GRAY (Reviewer's comment ID #: 88-1754)]	This sentence is not referring to models.
11-150	A	5:14	5:14	ocean current distribution" -> "ocean temperature distribution [Daniel Caya (Reviewer's comment ID #: 38-9)]	Will reconsider sentence.

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11-151	A	5:15	5:16	Which are the "teleconnection patterns" associated with the NAO? To me tele-connection patterns are such patterns that influence the climate in some distant part of the globe not patterns that influence the region in question. [Erik Kjellström (Reviewer's comment ID #: 131-8)]	Agreed. Will reword
11-152	A	5:15	5:17	You could reference section 3.6 of Chapter 3 here, as it discusses teleconnection effects in some detail. [James Renwick (Reviewer's comment ID #: 211-5)]	Noted, thanks.
11-153	A	5:16	5:16	Atlatic" -> "Atlantic [Daniel Caya (Reviewer's comment ID #: 38-10)]	Noted.
11-154	A	5:16	5:16	Atlantic is mis-spelled [Bart Van den Hurk (Reviewer's comment ID #: 274-10)]	Noted.
11-155	A	5:17	5:17	Replace "climate change" by " othe changes in the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1755)]	Rejected, no justification given
11-156	A	5:17	:18	The sentence "The difficulties ... apparent" is unneeded and should be dropped. The entire opening paragraph is also weak and needs to focus on "Developments since the TAR". [Govt. of United States of America (Reviewer's comment ID #: 2023-676)]	Will revise the sentences.
11-157	A	5:18	5:18	Omit the second "therefore". [Markku Rummukainen (Reviewer's comment ID #: 223-13)]	Noted
11-158	A	5:24	5:24	Replace "climate change" by " other changes in the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1756)]	Rejected, no justification given
11-159	A	5:25	5:25	Something that I have noticed in other chapters as well is that we don't seem to have a common naming convention for things like the archive that is housed at PCMDI, coupled climate models (which are variously called CGCMs, AOGCMs and OAGCMs), etc. [Francis Zwiers (Reviewer's comment ID #: 305-114)]	A naming convention has been devised for the entire AR4.
11-160	A	5:26	5:26	Replace "climate changes" by " changes in the climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1757)]	Rejected, no justification given
11-161	A	5:26	5:26	Replace "robust" by "similar" [VINCENT GRAY (Reviewer's comment ID #: 88-1758)]	Rejected, no justification given
11-162	A	5:31	5:31	One other development since the TAR has been the use of GCMs for studying the biophysical effects of land use change. May I suggest that this could be mentioned here, eg: "Since the TAR, GCMs have begun to be used to study of the biophysical effects of land use / land cover change under scenarios consistent with the SRES emissions scenarios (Box 11.5)." [Richard Betts (Reviewer's comment ID #: 21-5)]	We will see how this messaqge could be incorporated here.
11-163	A	5:31	5:31	Mizuta et al. (2006) and Oouchi et al. (2006) are suitable for the citation rather than	Thanks, noted.

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				Mizuta et al. (2005). Mizuta, R., K. Oouchi, H. Yoshimura, A. Noda, K. Katayama, S. Yukimoto, M. Hosaka, S. Kusunoki, H. Kawai and M. Nakagawa, 2006: 20-km-mesh global climate simulations using JMA-GSM model -- mean climate states --. J. Meteor. Soc. Japan, 84, 165-185. Oouchi, K., J. Yoshimura, H. Yoshimura, R. Mizuta, S. Kusunoki and A. Noda, 2006: Tropical cyclone climatology in a global-warming climate as simulated in a 20km-mesh global atmospheric model: Frequency and wind intensity analyses. J. Meteor. Soc. Japan, 84, 259-276. [Akira Noda (Reviewer's comment ID #: 192-6)]	
11-164	A	5:37	5:37	Replace "validation" by "evaluation" [VINCENT GRAY (Reviewer's comment ID #: 88-1759)]	Rejected, no justification given
11-165	A	5:46	5:46	"rough quantitative estimates" sounds a bit vague. Presumably the issue is not that quantitative (and useful) uncertainty diagnostics cannot be calculated from the PRUDENCE runs, but that the experimental design and the number of integrations does not provide a basis for an authoritative estimate of the relative roles of "large scale" and downscaling uncertainty. [James Murphy (Reviewer's comment ID #: 184-4)]	Noted. Text will be redrafted to reflect this better
11-166	A	5:48	5:48	Replace Rowell (2005) by Rowell (2006), the latter being a peer-reviewed and much improved version of the former. The following comment gives details for the list of references. [Dave Rowell (Reviewer's comment ID #: 222-42)]	Thanks.
11-167	A	5:48	5:48	I believe the reference to Frei should be "2003" instead of "2005a" [Bart Van den Hurk (Reviewer's comment ID #: 274-11)]	Noted
11-168	A	5:48		Write (Rowell, 2005 ;) Frei et al., Grahan et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-12)]	Noted
11-169	A	5:50	5:50	Delete "significant" [VINCENT GRAY (Reviewer's comment ID #: 88-1760)]	Rejected, no justification given
11-170	A	5:50	5:50	Insert a "the" before "TAR". [Francis Zwiers (Reviewer's comment ID #: 305-115)]	Noted
11-171	A	5:51	5:51	Christensen an Christensen only discusses 50km simulations, not 20km. [Erik Kjellström (Reviewer's comment ID #: 131-9)]	Noted, will change
11-172	A	5:51		Maybe you are trying to avoid overuse of the term "inter-grid distances," which is used twice later in the paragraph, but this term is more precise and correct than "horizontal scales." Have a consistent use; do not keep varying the jargon. [Govt. of United States of America (Reviewer's comment ID #: 2023-677)]	Will reconsider the use of the term.
11-173	A	5:51		Write Kleim et al.,	Noted

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				[Ibouraïma YABI (Reviewer's comment ID #: 297-13)]	
11-174	A	5:52	5:52	Delete "naturally" [VINCENT GRAY (Reviewer's comment ID #: 88-1761)]	Rejected, no justification given
11-175	A	5:52		Write Kurihara et al., Yasunage et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-14)]	Noted
11-176	A	5:53	5:53	replace ";" by "," [Bart Van den Hurk (Reviewer's comment ID #: 274-12)]	Noted
11-177	A	5:53		'a few centres' or 'some centres' instead of 'many centres' [Govt. of Spain (Reviewer's comment ID #: 2019-90)]	Noted
11-178	A	5:54	5:54	Replace "depict" with "project" [VINCENT GRAY (Reviewer's comment ID #: 88-1762)]	Rejected, no justification given
11-179	A	5:54	5:55	"inter grid distance" reads a bit clumsy. Suggest "resolution", "grid spacing" or some suchlike expression. [Markku Rummukainen (Reviewer's comment ID #: 223-14)]	Will reconsider the use of the term
11-180	A	5:55	5:55	replace "may be" by "are" [Bart Van den Hurk (Reviewer's comment ID #: 274-13)]	Noted.
11-181	A	6:4		Write Barley et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-15)]	Noted
11-182	A	6:5	6:5	Please change 'Sasaki et al., 2005' to 'Sasaki et al., 2006' [Hidetaka Sasaki (Reviewer's comment ID #: 225-8)]	Noted
11-183	A	6:5		Sasaki et al., 2005 ? Sasaki et al., 2006; This is missing in the references; Sasaki, H., K. Kurihara, I. Takayabu, K. Murazaki, Y. Sato, and H. Tsujino, 2006: Preliminary results from the coupled atmosphere - ocean regional climate model at the Meteorological Research Institute, J. M. S. J., Vol.84, No. 2, 389-403. [Yasuo Sato (Reviewer's comment ID #: 226-2)]	Noted
11-184	A	6:5		Write Sasaki et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-16)]	Noted
11-185	A	6:8	6:8	Please change 'Sato, 2005' to 'Sato et al., 2006' [Hidetaka Sasaki (Reviewer's comment ID #: 225-9)]	Noted
11-186	A	6:8		Sato, 2005 ? Sato et al., 2006, This is missing in the references; Sato, Y., S. Yukimoto, H. Tsujino, H. Ishizaki, and A. Noda, 2006: Response of North Pacific ocean circulation in a Kuroshio-resolving ocean model to an Arctic Oscillation(AO) - like change in Northern Hemisphere atmospheric circulation due to greenhouse-gas forcing, J. M. S. J., Vol.84, No.2, 295-309. [Yasuo Sato (Reviewer's comment ID #: 226-3)]	Noted

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11-187	A	6:10	6:10	Should the i.e. at the end of the line perhaps be an e.g., or are these the only such papers? [James Renwick (Reviewer's comment ID #: 211-6)]	Could well be – will reassess
11-188	A	6:11	6:11	Replace "evaluating" by "projecting" [VINCENT GRAY (Reviewer's comment ID #: 88-1763)]	Rejected, no justification given
11-189	A	6:11	6:11	Kjellström et al should be 2005. This reference is missing in the reference list. [Erik Kjellström (Reviewer's comment ID #: 131-10)]	Noted
11-190	A	6:11	6:11	"Kjellström et al., 2006" meant here is not the entry in the References (page 95, lines 20-22). (However, Kjellström et al., 2006 is referred to elsewhere in the Chapter, so do not delete the entry.) Please change here to Kjellström, E., Bärring, L., Gollvik, S., Hansson, U., Jones, C., Samuelsson, P., Rummukainen, M., Ullerstig, A., Willén U. and Wyser, K., 2005. A 140-year simulation of European climate with the new version of the Rossby Centre regional atmospheric climate model (RCA3). Reports Meteorology and Climatology, 108, SMHI, SE-60176 Norrköping, Sweden. [Markku Rummukainen (Reviewer's comment ID #: 223-15)]	Noted
11-191	A	6:16		Section 11.1.3.3. Have there been any reported studies in which results from RCMs were further downscaled by empirical methods? If so, were the results superior to those by empirically downscaling the host GCM simulations? [Govt. of Australia (Reviewer's comment ID #: 2001-447)]	Will look into this further.
11-192	A	6:19	6:20	The use of the word "plethora" suggests that the authors think there was already an excessive number of statistical downscaling techniques available at the time of the TAR. They go on to say that this plethora has since "greatly expanded", thus suggesting that there is now an even greater excess of these methods. Is this the impression they mean to give? If so, some comment should be made on why the range of techniques has grown in such an uncontrolled way. It seems to suggest an absence of agreed objective criteria for narrowing the range of credible methods. [James Murphy (Reviewer's comment ID #: 184-5)]	Agreed, the text will be revised.
11-193	A	6:23	6:26	The wording of this sentence seems a little awkward. How about replacing "however, with" by "although", and replacing "offering" by "do offer". [James Murphy (Reviewer's comment ID #: 184-6)]	Agreed, will revisit the sentence structure.
11-194	A	6:25	6:25	techniques, however, with the" -> "techniques. However, the [Daniel Caya (Reviewer's comment ID #: 38-11)]	Noted.
11-195	A	6:25	6:26	Suggest a full stop after "...techniques", omitting "however, with" and a new sentence with "The European STARDEX... offer...". [Markku Rummukainen (Reviewer's comment ID #: 223-16)]	Noted
11-196	A	6:25	6:25	Start new sentence after "techniques" [Bart Van den Hurk (Reviewer's comment ID #: 274-14)]	Noted

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11-197	A	6:25	6:25	delete "with" [Bart Van den Hurk (Reviewer's comment ID #: 274-15)]	Noted
11-198	A	6:26	6:26	replace "offering" by "offer" [Bart Van den Hurk (Reviewer's comment ID #: 274-16)]	Noted
11-199	A	6:29	6:29	delete "to some degree" [Bart Van den Hurk (Reviewer's comment ID #: 274-17)]	Noted
11-200	A	6:33	6:33	Perhaps "soft literature" is a little bit too colloquial. [Roxana Bojariu (Reviewer's comment ID #: 24-21)]	Agreed, will change
11-201	A	6:40	6:44	I suggest the following: "Coupled Global Climate Models (CGCMs) constitute the primary tool for simulating the global climate system and its response to external forcing (see Chapter 10). They are used to study the processes responsible for maintaining the general circulation and its variability (natural and forced; see Chapter 8). Because of their significant complexity and the many centuries integrations, horizontal resolutions of the atmospheric components of the CGCMs in the AR4 range from 400 km to 125 km." [Daniel Caya (Reviewer's comment ID #: 38-12)]	Will consider
11-202	A	6:41	6:41	Replace "study" by "project" [VINCENT GRAY (Reviewer's comment ID #: 88-1764)]	Text reworded
11-203	A	6:43	6:43	Insert a comma after "centuries" [James Murphy (Reviewer's comment ID #: 184-9)]	Agree
11-204	A	6:46	6:47	begins of necessity with" -> "begins with [Daniel Caya (Reviewer's comment ID #: 38-13)]	Agree
11-205	A	6:46	6:47	the ability of CGCMs" -> "the CGCMs' ability [Daniel Caya (Reviewer's comment ID #: 38-14)]	Noted
11-206	A	6:46	6:46	Replace "process" by "projection" [VINCENT GRAY (Reviewer's comment ID #: 88-1765)]	The suggestion does not make sense
11-207	A	6:46	6:46	Replace "climate-change" by "changes in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1766)]	Noted
11-208	A	6:46	6:46	delete "of necessity" [Bart Van den Hurk (Reviewer's comment ID #: 274-18)]	Agree
11-209	A	6:47	6:48	The opening part of the sentence beginning "Contrary to numerical weather predictions ..." should be rewritten. In NWP, the spread of an ensemble of forecasts is primarily due to uncertainty in the determination of the initial state of the forecast, resulting from inadequate observational coverage and inadequate extraction of information from those observations that are available. The instability mechanisms that cause forecasts to diverge from similar but not identical initial conditions are the same mechanisms that are behind the natural variability of the atmosphere on synoptic time scales, so there is a sense in	Text reworded

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				which what is written is correct, but the text is rather misleading, as the spread of forecasts depends not only on the degree of instability of the atmospheric situation but also on where the most unstable regions are located relative to the distributions of observations of various types. [Adrian Simmons (Reviewer's comment ID #: 242-161)]	
11-210	A	6:49	6:49	Replace "climate-change" by "changes in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1767)]	Noted
11-211	A	6:49		Since the difference between the climate generated by different GCMs is not just due to natural (presume you mean 'internal' here) variability and predictability limits, but due to biases and differing responses among the GCMs, replace "also" with "only" or "primarily." Note that "ensemble" appear to be used incorrectly here as the average of different CGCMs rather than a set of runs from one. [Govt. of United States of America (Reviewer's comment ID #: 2023-678)]	Also => primarily Sentence modified to specify "Members of an ensemble of different AOGCMs"
11-212	A	6:50	6:50	Suggest referring to section 10.3.1 to support the point about different responses of models [James Murphy (Reviewer's comment ID #: 184-10)]	Cross-reference added
11-213	A	7:1	7:2	Add a statement and a reference after "particularly at regional scales" as "such as the East Asia (Zhou and Yu, 2006)." For the reference, see: Zhou T., and R. Yu, 2006, 20th century surface air temperature over China and the globe simulated by coupled climate models, Journal of Climate, in press [Govt. of China (Reviewer's comment ID #: 2006-72)]	The statement is meant to be generic and not region specific
11-214	A	7:1	7:1	Replace "robust" by "improved" [VINCENT GRAY (Reviewer's comment ID #: 88-1768)]	This is not what is meant
11-215	A	7:1	7:2	As written, the sentence starting "while some responses.." could be taken to imply that the spread of model responses is small where a robust response can be found. This is of course not true. Global mean temperature is robustly predicted to increase, yet there is still a large spread of changes. [James Murphy (Reviewer's comment ID #: 184-11)]	Robust was meant to mean small spread. Text reworded
11-216	A	7:3	7:3	used, but simply" -> "used but simply [Daniel Caya (Reviewer's comment ID #: 38-15)]	Noted
11-217	A	7:4	7:7	I suggest the following: "In the same way, convergence (small spread) in an ensemble of projections does not guaranty reliability (small uncertainty) of the projected climate changes. As an example, a climate-change projection from a single realisation from a single model provides no sense of associated uncertainties (spread is nil) therefore, such projections are of little practical use in an assessment.101 11-101 16 [Daniel Caya (Reviewer's comment ID #: 38-15)]	Text reworded

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11-218	A	7:5	7:5	guaranty" should be "guarantee [James Renwick (Reviewer's comment ID #: 211-7)]	Corrected
11-219	A	7:5	7:5	replace "of necessity guaranty" by "necessarily guarantee" [Bart Van den Hurk (Reviewer's comment ID #: 274-19)]	Corrected
11-220	A	7:9	7:9	Replace "climate-change" by "change in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1769)]	Noted
11-221	A	7:14		Are the large-scale statistics maintained in these methods? If not, they are doing more than merely 'downscaling'. The authors need to discuss this point clearly. [Govt. of Australia (Reviewer's comment ID #: 2001-448)]	Although the terminology downscaling may be somewhat improper, it is the conventional term
11-222	A	7:16	7:18	rephrase as "...high resolution nested numerical regional climate models (RCMs) that use data from CGCM simulations as boundary conditions. Empirical downscaling..." [Bart Van den Hurk (Reviewer's comment ID #: 274-20)]	Text reworded
11-223	A	7:17	7:18	The models are not always atmosphere-only, as you say earlier. [James Renwick (Reviewer's comment ID #: 211-8)]	Noted
11-224	A	7:18	7:20	I suggest the following: "Empirical downscaling uses statistical relationships derived from observed data or a statistical analysis of model behaviour and apply them to climate model simulations. 102 11-102 17 [Daniel Caya (Reviewer's comment ID #: 38-8)]	Text reworded
11-225	A	7:21	7:21	"perturbed forcing" does not read too well. Or does forcing refer to the large-scale conditions underlying some mesoscale effect instead of greenhouse gas forcing? Could just omit "under perturbed forcing conditions". [Markku Rummukainen (Reviewer's comment ID #: 223-17)]	Noted
11-226	A	7:22	7:23	Confidence in RCMs as downscaling tools also comes from quantitative demonstrations of their ability to skilfully reproduce observed fine scale detail below the resolution of global GCMs (as mentioned, for example, on page 8, lines 43-44). [James Murphy (Reviewer's comment ID #: 184-12)]	Text reworded
11-227	A	7:23	7:23	Suggest omitting "with the same set of equations". Alternatively, "based on physical principles". [Markku Rummukainen (Reviewer's comment ID #: 223-18)]	Text reworded
11-228	A	7:24	7:25	I think this statement needs some caveats. Empirical downscaling has the potential (in italics) to get to finer scales, but only to the extent that adequate observations are available at the desired scale over a long enough period to allow the SDM to be well trained. SD can, of course, get to very small scales in the sense that the downscaling can be site specific, but again only if adequate data are available at the site of interest. [Francis Zwiers (Reviewer's comment ID #: 305-116)]	Text reworded
11-229	A	7:26	7:28	I suggest: "The methods are computationally inexpensive though they have the drawback	Text reworded

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				as they require long time series of reliable, homogeneous station data and assume that the derived statistical relationships will remain unaltered under perturbed climate. Another drawback is that coherence between multiple climate variables is not natural to these methods. [Daniel Caya (Reviewer's comment ID #: 38-18)]	
11-230	A	7:28		Derived statistical relationships are used in ESD as well as GCM and RCM parameterisations. While it is true that ESD assumes that these relationships remain valid in the future, the single focus on ESD may give the false impression that this does not affect GCMs and RCMs. In fact, the caveat may arguably be an even greater constraint for GCMs and RCMs through non-linear feedbacks. In ESD, it is after all possible to assess the likelihood that the relationship holds by performing the analysis on model results only - i.e. by training the models on the first half and validating against the second half (See Benestad, 2001, Int. J. Clim. vol 21, pp. 1645-1668.) [Rasmus E. Benestad (Reviewer's comment ID #: 18-8)]	Text reworded
11-231	A	7:32	7:32	Insert "Atmosphere-only GCMs (AGCMs)" at beginning [Bart Van den Hurk (Reviewer's comment ID #: 274-21)]	Noted
11-232	A	7:34		delete 'of' before 'in' [Rasmus E. Benestad (Reviewer's comment ID #: 18-9)]	Of => or
11-233	A	7:38	7:38	If we need to mention the Earth Simulator explicitly, then we should explain what it is, for the benefit of the non-specialist: some might think it is a model ! [James Murphy (Reviewer's comment ID #: 184-7)]	Noted
11-234	A	7:38	7:38	Mizuta et al. (2006) is suitable for the citation rather than Mizuta et al. (2005). Mizuta, R., K. Oouchi, H. Yoshimura, A. Noda, K. Katayama, S. Yukimoto, M. Hosaka, S. Kusunoki, H. Kawai and M. Nakagawa, 2006: 20-km-mesh global climate simulations using JMA-GSM model -- mean climate states --. J. Meteor. Soc. Japan, 84, 165-185. [Akira Noda (Reviewer's comment ID #: 192-7)]	Corrected
11-235	A	7:38		As the Earth Simulator has now been overtaken by new computing systems offering higher peak performance, "The Earth Simulator now allows..." could be replaced by "Top-end computer systems such as the Earth Simulator now allow..." [Adrian Simmons (Reviewer's comment ID #: 242-162)]	Text reworded
11-236	A	7:39	7:39	Suggest "although ONLY for". [Markku Rummukainen (Reviewer's comment ID #: 223-19)]	Agree
11-237	A	7:41	7:45	Duffy et al showed that the *patterns* of simulated variables improved with higher resolution, but also showed that spatial mean values could be made worse (in cloud, radiation, precipitation etc), unless the physical parameterisations are "retuned". This is a difficult process, with no guarantee of total success, as any coupled modeller will	Text reworded

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				acknowledge. I think this point should be made: the text as currently written rather gives the impression that you can just take a model, increase its resolution and relax safe in the knowledge that everything will be better ! [James Murphy (Reviewer's comment ID #: 184-8)]	
11-238	A	7:53	7:54	This ("In AGCMs that derive...") seems to warrant a reference, or a fuller explanation. [Markku Rummukainen (Reviewer's comment ID #: 223-20)]	Reference to HadAM to be added
11-239	A	7:53	8:2	It should be pointed out that the same potential problems apply to RCMs. [Francis Zwiers (Reviewer's comment ID #: 305-117)]	Disagree. The SSTI would then be inconsistent with those of the AOGCM that provides the LBC to RCM
11-240	A	7:54	7:54	Insert "modelled" after "combining" [Bart Van den Hurk (Reviewer's comment ID #: 274-22)]	Agree
11-241	A	8:6	8:6	Remove the words "to achieve" [James Renwick (Reviewer's comment ID #: 211-9)]	Agree
11-242	A	8:6	8:8	I think one could argue about whether full interaction is really possible, given that feedback processes within the region of interest are resolved differently than feedback processes outside that region. [Francis Zwiers (Reviewer's comment ID #: 305-118)]	Agree
11-243	A	8:9	8:9	"Lorant and Royer, 2002" The year is 2001 in the reference list. [Daniel Caya (Reviewer's comment ID #: 38-19)]	Will check
11-244	A	8:9	8:10	Replace "display some...region," by "capture" [Bart Van den Hurk (Reviewer's comment ID #: 274-23)]	Agree
11-245	A	8:14	8:14	Replace "generate" by "project" [VINCENT GRAY (Reviewer's comment ID #: 88-1770)]	Agree
11-246	A	8:16	8:20	I think it would be appropriate to mention also that some RCMs also exert control on the large scale circulation by nudging within the domain (via so-called spectral nudging). [Francis Zwiers (Reviewer's comment ID #: 305-119)]	Noted
11-247	A	8:21	8:21	Kida et al. (1991) developed a new nesting method, that is spectral boundary coupling (SBC) method, for coupling a regional climate model to a GCM, and Mabuchi et al. (2002) demonstrated a usefulness of the SBC method for regional climate simulations. Kida, H., T. Koide, H. Sasaki, and M. Chiba, 1991: A new approach for coupling a limited area model to a GCM for regional climate simulations. J. Meteor. Soc. Japan, 69, 723-728. Mabuchi, K., Y. Sato, and H. Kida, 2002: Verification of the climatic features of a regional climate model with BAIM. J. Meteor. Soc. Japan, 80, 621-644. [Akira Noda (Reviewer's comment ID #: 192-8)]	A section on large-scale nudging will be added in this sub-section

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11-248	A	8:21	8:22	Why would 2-way nesting be useful, and how would this be different than a variable resolution AGCM? [Francis Zwiers (Reviewer's comment ID #: 305-120)]	Text reworted
11-249	A	8:23	8:25	Please add 'Sasaki et al., 2006' to the references for regional coupled models. Sasaki,H., K.Kurihara, I.Takayabu, K.Murazaki, Y.Sato, and H.Tsujino, 2006: Preliminary results from the coupled atmosphere-ocean regional climate model developed at Meteorological Research Institute. J.Meteor. Soc. Japan, 84, 389-403. [Hidetaka Sasaki (Reviewer's comment ID #: 225-1)]	Reference added
11-250	A	8:25	8:25	delete "some work has been initiated with" [Bart Van den Hurk (Reviewer's comment ID #: 274-24)]	Text reworted
11-251	A	8:25		Please insert Sasaki et al.,2006. [Yasuo Sato (Reviewer's comment ID #: 226-4)]	See 11-249
11-252	A	8:26		Write Xue et al.,). [Ibouraïma YABI (Reviewer's comment ID #: 297-17)]	Done
11-1648	B	8:28	8:37	There is no mention of the update frequency of the boundary forcing fields (possibly a greater source of error for RCMs than the boundary-value closure schemes). [Govt. of Ireland (Reviewer's comment ID #: 2025-5)]	Text reworted
11-253	A	8:30	8:30	insert "," after "Laprise" [Bart Van den Hurk (Reviewer's comment ID #: 274-25)]	Done
11-254	A	8:32	8:32	The sentence "These difficulties...simulations" is incomprehensible and should be deleted [Bart Van den Hurk (Reviewer's comment ID #: 274-26)]	Text reworted
11-255	A	8:33		While at short time ranges, a high resolution regional model produces better forecasts than those of the GCM in which it is nested because it better resolves surface heterogeneity, topography and small scale features in the flow, including growing instabilities, the advantages of the nested models diminishes very rapidly, and beyond about 1-2 days (depending on the domain size), its skill is no longer higher than than of the GCM (White et al., 1999). The performance of the regional model is superior to the GCM's as long as the forecast is mostly an initial value problem for the regional model, but it deteriorates rapidly as time progresses and the solution turns more into a boundary value problem. The mathematical interpretation is that nested models represent a fundamentally ill-posed-boundary-value problem (Staniforth, 1997). [Govt. of Spain (Reviewer's comment ID #: 2019-92)]	Disagree. There is confusion between weather prediction (initial value problem) and climate simulations (boundary value problem), as well as deterministic and statistical verification.
11-256	A	8:37		Some tools, like relaxation of the long waves in the domain to those of the driving fields, have been recently applied to palliate the distortion of the long wave dynamics by the regional models (von Storch et al, 2000; Miguez-Macho et al., 2003). It should be also mentioned the ongoing work on transparent boundary conditions which will prevent or	The revised text includes a discussion of the relaxation of long waves. We are not aware of any published work to apply transparent lateral boundary

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				reduce the distortion of meteorological structures when crossing through lateral boundaries (McDonald, 2002, 2003, 2005) [Govt. of Spain (Reviewer's comment ID #: 2019-93)]	conditions to regional climate modelling
11-257	A	8:39	8:39	Replace "predictability" by "reliability" [VINCENT GRAY (Reviewer's comment ID #: 88-1771)]	Predictability = > reliability
11-258	A	8:39	8:46	The succesful application of Numerical Weather Prediction already shows for quite a long time that there is added predictability to be gained with high resolution nested models. [Bart Van den Hurk (Reviewer's comment ID #: 274-27)]	As for 11-255, this may be a different issue
11-259	A	8:46	8:46	Some words or at least a full stop is missing. [Govt. of Finland (Reviewer's comment ID #: 2009-153)]	Corrected
11-260	A	8:46		Write large scale. [Ibouraïma YABI (Reviewer's comment ID #: 297-18)]	Corrected
11-261	A	8:48	8:56	This paragraph has very similar information as what is presented in section 11.1.3.2 and may be either be removed or consederably reduced in lenght. [Daniel Caya (Reviewer's comment ID #: 38-20)]	Text reworded
11-262	A	8:49	8:49	Replace "climate-change" by "change in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1772)]	Rejected, no justification given
11-263	A	8:50	8:52	Vidale et al study Europe. In the text it is said "continents". It should not be plural here. [Erik Kjellström (Reviewer's comment ID #: 131-11)]	Corrected
11-264	A	8:51	8:52	though this is weakest in summer over continents": one can also interpret differences between RCM results as an added number of degrees of freedom associated with local precipitation processes. It does not necessarily imply "weaker skill" [Bart Van den Hurk (Reviewer's comment ID #: 274-28)]	Acknowledged, text reworded
11-265	A	8:52	8:52	Start new paragraoh after "continents" [Bart Van den Hurk (Reviewer's comment ID #: 274-29)]	Text reworded
11-266	A	8:53	8:56	Suggest "Recently a small amount of climate-change..." and deleting the "for 10 years of...". The latter seems too detailed. [Markku Rummukainen (Reviewer's comment ID #: 223-21)]	Text reworded
11-267	A	8:53		such as 20 km (ex., Kurihara et al.,2005). [Yasuo Sato (Reviewer's comment ID #: 226-5)]	Reference added
11-268	A	9:3	9:3	deElia et al., 2006 is not in the reference list [Daniel Caya (Reviewer's comment ID #: 38-21)]	Reference removed
11-269	A	9:6	9:6	delete "would" [Bart Van den Hurk (Reviewer's comment ID #: 274-30)]	Done
11-270	A	9:12	9:12	replace "and" by ". This is" [Bart Van den Hurk (Reviewer's comment ID #: 274-31)]	done

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11-271	A	9:20	9:20	Delete "Important" [VINCENT GRAY (Reviewer's comment ID #: 88-1773)]	done
11-272	A	9:21	9:21	"Benestad, 2004b" seems to be missing from Chapter 11 references. 2002b? 2004? [Markku Rummukainen (Reviewer's comment ID #: 223-22)]	Reference added
11-273	A	9:21	9:21	Add reference (Fernández and Sáenz, 2003, package pycclimate) to the list of references providing available downscaling tools. It is provided in the free software package pycclimate (www.pycclimate.org). The complete reference is: Fernández, J., J. Sáenz, 2003: Improved field reconstruction with the analog method: searching the CCA space, Climate Research 24, 199-213. [Govt. of Spain (Reviewer's comment ID #: 2019-151)]	done
11-274	A	9:24	9:24	Replace "Wang et al. 2004a" with "Wang et al., 2004". [Xiaolan L. WANG (Reviewer's comment ID #: 282-28)]	done
11-275	A	9:25	9:25	Replace "Wang and Swail, 2004" with "Wang and Swail, 2006a, 2006b; Caires et al., 2006". Note that "Caires et al., 2006" is already included in the references section (see lines 9-10 on page 85) but I did not find it cited anywhere. It could be cited in many other places (see also comments below) [Xiaolan L. WANG (Reviewer's comment ID #: 282-24)]	Noted
11-276	A	9:28	9:28	Replace "Wang and Swail, 2004" with "Wang and Swail, 2006b". [Xiaolan L. WANG (Reviewer's comment ID #: 282-27)]	Noted
11-277	A	9:36	9:36	Please delete a comma after patterns [Constantin Mares (Reviewer's comment ID #: 160-6)]	done
11-278	A	9:36	9:36	Double comma [James Renwick (Reviewer's comment ID #: 211-10)]	done
11-279	A	9:36	9:36	delete one "," [Bart Van den Hurk (Reviewer's comment ID #: 274-32)]	done
11-280	A	9:36		delete one of double commas [Rasmus E. Benestad (Reviewer's comment ID #: 18-10)]	done
11-281	A	9:37	9:37	insert "," after "these" [Bart Van den Hurk (Reviewer's comment ID #: 274-33)]	done
11-282	A	9:40	9:42	This sentence is unclear on exactly was is improved. [Daniel Caya (Reviewer's comment ID #: 38-22)]	sentence deleted
11-283	A	9:42	9:42	What is CCA? Spell out abbreviations first time!? [Erik Kjellström (Reviewer's comment ID #: 131-12)]	sentence deleted
11-284	A	9:42	9:42	"CCA" is nowhere explained [Bart Van den Hurk (Reviewer's comment ID #: 274-34)]	sentence deleted
11-285	A	9:42	9:42	replace "T106 fields" by "the original T106 wind fields"	sentence deleted

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				[Bart Van den Hurk (Reviewer's comment ID #: 274-35)]	
11-286	A	9:44	9:44	Replace "predict" with "project" [VINCENT GRAY (Reviewer's comment ID #: 88-1774)]	done
11-287	A	9:44	9:44	Replace "cross-validation" with "cross-evaluation" [VINCENT GRAY (Reviewer's comment ID #: 88-1775)]	done
11-288	A	9:44	9:44	replace "opposed" by "instead of" [Bart Van den Hurk (Reviewer's comment ID #: 274-36)]	done
11-289	A	9:45	9:45	Replace "precipitation/wind distribution parameters" with "precipitation/wind/wave height distribution parameters" [Xiaolan L. WANG (Reviewer's comment ID #: 282-33)]	done
11-290	A	9:47	9:48	Insert "Wang and Swail, 2006a, 2006b;" between "Busuioc and von Storch, 2003;" and "Diaz-Nieto and Wilby, 2005". [Xiaolan L. WANG (Reviewer's comment ID #: 282-34)]	Noted
11-291	A	9:48	9:48	insert ";" after "2005" [Bart Van den Hurk (Reviewer's comment ID #: 274-37)]	done
11-292	A	9:49	9:49	Add "achieved" after "this is". [Erik Kjellström (Reviewer's comment ID #: 131-13)]	noted; "done" was inserted after "this is"
11-293	A	9:52	9:52	The stationarity problem in RCMs should be explained. [Daniel Caya (Reviewer's comment ID #: 38-23)]	text deleted
11-294	A	9:52	9:52	"as to some degree it may be with RCMs". Exactly what is meant by this statement? In what sense is this an issue with RCMs? [Erik Kjellström (Reviewer's comment ID #: 131-14)]	text deleted
11-295	A	9:52	9:52	The meaning of "as to some degree it may be with RCMs" seems obscure. Does this refer to climate models in general or RCMs in particular? How? Please explain or leave out. [Markku Rummukainen (Reviewer's comment ID #: 223-23)]	text deleted
11-296	A	9:52	9:52	delete "as to some degree is may be with RCMs" [Bart Van den Hurk (Reviewer's comment ID #: 274-38)]	text deleted
11-297	A	9:53	9:54	This is only weakly assessed..". Suggest we explain why, e.g. "because future changes in climate are likely to be substantially larger than historical changes during the instrumental period." [James Murphy (Reviewer's comment ID #: 184-13)]	Done
11-298	A	9:55	9:56	".. The degree of non-stationarity has been assessed.." What was the answer ? [James Murphy (Reviewer's comment ID #: 184-14)]	The text is restructured to note the answer
11-299	A	9:55	9:55	Suggest "lend credibility to", instead of "strengthen". [Markku Rummukainen (Reviewer's comment ID #: 223-24)]	Done

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11-300	A	9:55		Write Crane, 2006 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-19)]	Done
11-301	A	9:56	9:56	Replace "climate-change" by "change in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1776)]	Rejected, no justification given
11-302	A	9:56	9:56	replace last "a" by "an" [Bart Van den Hurk (Reviewer's comment ID #: 274-39)]	rejected: sugestion to cjang "a" to "an" is not correct; "a SD application" is correct
11-303	A	10:1	10:2	"Most appropriate are methods that combine both low and high frequency components of the variance". Not sure what point is being made here - most appropriate for what ? The variance of what ? [James Murphy (Reviewer's comment ID #: 184-15)]	text reformulated
11-304	A	10:1	10:1	Insert "; Wang and Swail, 2006a, 2006b" right after "Hewitson and Crane, 2006". [Xiaolan L. WANG (Reviewer's comment ID #: 282-35)]	These papaers will be revisited and included as appropriate
11-305	A	10:3	10:3	Replace "Wang et al. 2004a" with "Wang et al., 2004". [Xiaolan L. WANG (Reviewer's comment ID #: 282-36)]	noted
11-306	A	10:4	10:5	".. The best choice is to combine dynamical and moisture variables..". Does this need to be qualified ? It may be true when precipitation is the predictand variable, but is it true when temperature is the predictand ? [James Murphy (Reviewer's comment ID #: 184-16)]	text reformulated
11-307	A	10:4	10:5	The sentence is not complete. I guess it must be completed with something like: "For precipitation, regarding the predictors, the best ...". In fact, for temperature, moisture is not relevant, while sensible heat fluxes are quite important. [Govt. of Spain (Reviewer's comment ID #: 2019-152)]	noted; text reformulated
11-308	A	10:4	10:5	Surely the best choice would be application specific! [Francis Zwiers (Reviewer's comment ID #: 305-121)]	text reformulated
11-309	A	10:8	10:8	Replace "climate-change" by "changes in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1777)]	Rejected, no justification given
11-310	A	10:10	10:17	"Simple Climate Model (SCM)" seems a somewhat odd concept, and the acronym also overlaps that of Single Column Model. Suggest using the wording on page 13, lines 5-6 instead. [Markku Rummukainen (Reviewer's comment ID #: 223-25)]	noted
11-311	A	10:12		Pattern scaling results are presented in Chapter 10.3.1. [Govt. of Australia (Reviewer's comment ID #: 2001-449)]	rejected, pattern scaling results are presented in Chapter 10.3.1; confusion with climate change patterns
11-312	A	10:15	10:15	What is a "super-ensemble" ? [James Murphy (Reviewer's comment ID #: 184-17)]	An ansemlen of ensembles. The paper will be revisited to check

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					appropriateness of this description.
11-313	A	10:17	10:19	The presence of noise arising from internal variability is presented as "a problem", but this depends on the purpose of the pattern scaling exercise. If the purpose is to predict the forced component of the response if a particular model were to be run for a different emissions scenario, then yes it is a problem. But if the purpose is to quantify uncertainty in the response by scaling an ensemble of simulations, then wouldn't we want to keep the noise in, as this is a significant contributor to the spread of changes at regional scales (e.r. Raisanen, 2001) [James Murphy (Reviewer's comment ID #: 184-18)]	text deleted
11-314	A	10:18	10:19	Please reformulate to read: "the scaling was carried out using a super-ensemble consisting of GCM responses to several SRES scenarios instead of a response to a single scenario." [Govt. of Finland (Reviewer's comment ID #: 2009-154)]	text deleted
11-315	A	10:22	10:22	Replace "climate-change" by "changes in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1778)]	Rejected, no justification given
11-316	A	10:24	10:24	add "from GCMs" after "grid-point data" [Erik Kjellström (Reviewer's comment ID #: 131-15)]	Done
11-317	A	10:28	10:51	Sasaki et al., 2005' compared results of a high-resolution AGCM and RCM in the same resolution (20km) and showed usefulness of RCM for reproduction of present climate. Sasaki,H., K.Kurihara, and I.Takayabu, 2005: Comparison of climate reproducibilities between a super-high-resolution atmosphere general circulation model and a Meteorological Institute regional climate model, SOLA , 1, 81-84. [Hidetaka Sasaki (Reviewer's comment ID #: 225-2)]	he revised section has been amply modified taking all relevant references in consideration.
11-318	A	10:29	10:33	Unclear. Perhaps the first word should be "Many"? [Markku Rummukainen (Reviewer's comment ID #: 223-26)]	Noted
11-319	A	10:29	10:29	This sentence is probably better if started with "Different" or "Some" instead of "Any" [Govt. of Spain (Reviewer's comment ID #: 2019-153)]	Noted
11-320	A	10:29	10:29	replace "Any" by "Many" [Bart Van den Hurk (Reviewer's comment ID #: 274-40)]	Noted
11-321	A	10:29	10:33	Replace "Any studies... have been performed since the TAR" with "Many studies... have been performed since the TAR". [Xiaolan L. WANG (Reviewer's comment ID #: 282-37)]	noted
11-322	A	10:29	10:29	Replace "Any" with "Many". [Francis Zwiers (Reviewer's comment ID #: 305-122)]	noted
11-323	A	10:30	10:30	Add cite to (Fernández and Sáenz, 2003) before Goodess et al., 2006, since we compare the abilities of statistical downscaling for climatic purposes, using CCA, analogs and analogs in the CCA space, full reference: Fernández, J., J. Sáenz, 2003: Improved field	Fernández and Sáenz, 2003 was added.

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				reconstruction with the analog method: searching the CCA space, Climate Research 24, 199-213. There is another reference (Gutiérrez et al., 2004) which compares different versions of statistical downscaling methods for short-range weather forecasting, but some of them might be of interest for climate too: Gutiérrez, J. M., A. S. Cofiño, R. Cano, M. A. Rodríguez, 2004, Clustering methods for Statistical downscaling in Short-Range Weather Forecasts, Monthly Weather Review 132: 2169-2183. [Govt. of Spain (Reviewer's comment ID #: 2019-154)]	
11-324	A	10:30	10:30	Insert "Caires et al., 2006;" between "Wilby, 2005;" and "Goodess et al., 2006". [Xiaolan L. WANG (Reviewer's comment ID #: 282-38)]	added
11-325	A	10:35	10:35	delete "As regards temporal resolution, when" [Bart Van den Hurk (Reviewer's comment ID #: 274-41)]	Agreed
11-326	A	10:36	10:36	"..when comparing the merits of daily and monthly downscaling, daily models are preferable." Daily models are built to predict daily values, monthly models are built to predict monthly values, so how can they be compared ? Perhaps we are saying that when daily and monthly models are compared *in terms of their ability to predict monthly means*, then daily models are better. Please make the basis of the comparison clear. Also, only one reference is given for this : I wonder how general this result is. [James Murphy (Reviewer's comment ID #: 184-19)]	note, text reformulated
11-327	A	10:36	10:36	The preferable time resolution of the output from SD methods is surely application dependent. [Francis Zwiers (Reviewer's comment ID #: 305-123)]	Noted
11-328	A	10:40	10:40	insert "they" after "but" [Bart Van den Hurk (Reviewer's comment ID #: 274-42)]	Done
11-329	A	10:42	10:51	The argument in this paragraph assumes that SD and RCMs are interchangeable and that a selection between any of these must always be made. The techniques often give very different types of information, and are very often used in parallel. [Bart Van den Hurk (Reviewer's comment ID #: 274-45)]	text reformulated
11-330	A	10:43	10:43	Replace "climate-change" by "change in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1779)]	Rejected, no justification given
11-331	A	10:43	10:45	This sentence suggests that information from and RCM simulation was somehow combined with observations in fitting a statistical downscaling model. This sounds interesting, but it is not at all obvious how it would be done, so please clarify. Also, no comment is made as to how successful the exercise was. Did the use of RCM information improve the results ? [James Murphy (Reviewer's comment ID #: 184-20)]	text reformulated
11-332	A	10:44	10:44	delete "using"	Done

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				[Bart Van den Hurk (Reviewer's comment ID #: 274-46)]	
11-333	A	10:45	10:45	Perhaps rather: "Other STARDEX studies (e.g...) compared..." [Markku Rummukainen (Reviewer's comment ID #: 223-27)]	text reformulated
11-334	A	10:45	10:45	replace "resulted" by "resulting" [Bart Van den Hurk (Reviewer's comment ID #: 274-43)]	text reformulated
11-335	A	10:45	10:45	Replace "resulted" with "resulting". [Francis Zwiers (Reviewer's comment ID #: 305-124)]	text reformulated
11-336	A	10:46	10:47	The sentence needs to be phrased more carefully: as written, it could be taken to imply that the skill of the predictions of future changes was assessed, as well as the skill of the present climate reproductions. [James Murphy (Reviewer's comment ID #: 184-21)]	Will restructure the sentence.
11-337	A	10:47	10:47	Replace "climate-change" by "change in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1780)]	Rejected, no justification given
11-338	A	10:49	10:49	replace "appears to still hold" by "still holds" [Bart Van den Hurk (Reviewer's comment ID #: 274-44)]	Done
11-339	A	10:50	10:50	The statement is made that both RCM and SD have improved in skill since the TAR, but little or no quantitative proof of this seems to be given. Lots of evidence is presented of a proliferation of techniques (particularly on the SD side), but the conclusion that skill has improved does not necessarily leap out of the text. It would be good to summarise briefly the main evidence for this statement in a short summarising paragraph (e.g. you could quote figure 11.1.1 on the RCM side). [James Murphy (Reviewer's comment ID #: 184-22)]	text reformulated.
11-340	A	10:50	10:51	Suggest omitting the sentence "It is thus recommended..." as it does not really fit well in this part of the Chapter focusing on assessing present knowledge. [Markku Rummukainen (Reviewer's comment ID #: 223-28)]	text deleted
11-341	A	10:53		This section seems to really follow the one for GCMs presented in chapter 10 and a lot of the material presented actually refers to global analysis (e.g. section 11.2.2.2.3 on perturbed physics ensembles). I think this section could be significantly reduced by removing repetition of what has been said in section 10.5 and keeping only what relies to the regional analysis. May be the sub-sections in 11.2.2.2 can be merged in a single section highlighting differences with respect to the analysis made in chapter 10. [Daniel Caya (Reviewer's comment ID #: 38-25)]	We will reduce this section to avoid too much overlap with Chapter 10, and make more references to the appropriate sections in chapter 10.
11-342	A	11:1		Add two major categories to sources of regional uncertainty. The first is that shifts in circulation as depicted in GCMs can have considerable uncertainty and their effects may not be significant on a global scale, but they can have considerable impact on a regional scale. The second is the difficulty in understanding the relationship between grid	We are following the schema of uncertainty from Chapter 10. The first point, we do make reference to this in the text. The second point is true, but

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				spacing/spectral truncation of GCMs (and RCMs too) and the scale at which we should take their results as truly being representative (and the lack of awareness of this issue in the climate impacts community). [Govt. of United States of America (Reviewer's comment ID #: 2023-679)]	is already represented in uncertainty regarding how to represent processes.
11-343	A	11:6	11:8	Please reformulate. [Govt. of Finland (Reviewer's comment ID #: 2009-155)]	We will.
11-344	A	11:6	11:6	delete ";" after "2" [Bart Van den Hurk (Reviewer's comment ID #: 274-47)]	Yes.
11-345	A	11:6	11:8	The sentence "When analyzing...be considered" is incomprehensible and should be deleted. [Bart Van den Hurk (Reviewer's comment ID #: 274-48)]	We are reformulating the sentence.
11-346	A	11:6	11:8	I think one way to control the cascade of uncertainty is through properly applied statistical downscaling as a final step in the process (even when all of the preceding steps are dynamical), taking as many of the known sources of uncertainty into account as possible. This is somewhat analogous to the MOS (Model Output Statistics) procedures used in NWP centres, and has been noted in, for example, climate change detection. Detection methods can be used to constrain projected responses to forcing, bringing projections by different models into closer agreement. [Francis Zwiers (Reviewer's comment ID #: 305-125)]	So noted. This comment does not seem to require any change. The reviewer may be right in the value of a final statistical downscaling step, but that would not in and of itself 'control' the cascade of uncertainty
11-347	A	11:7	11:7	"to" instead of "too". [Markku Rummukainen (Reviewer's comment ID #: 223-29)]	OK
11-348	A	11:10	11:21	Perhaps this could be shortened given that these sources of uncertainty are discussed elsewhere? Cross-links to the authoritative descriptions of these sources of uncertainty could be used. [Francis Zwiers (Reviewer's comment ID #: 305-126)]	Yes, we have noted this point above and will be reducing this section.
11-349	A	11:11	11:11	Replace "anthropogenic": by "human-induced" [VINCENT GRAY (Reviewer's comment ID #: 88-1781)]	OK
11-350	A	11:14	11:19	Recent detailed analysis of the precipitation regimes in the last 50 yr in the western Mediterranean Basin coastal region evidence that the precipitation changes in the area may be more complex than a simple decrease (see M. M. Millán & others, J. Climate, 18, 684-701(2005)) [Govt. of Spain (Reviewer's comment ID #: 2019-12)]	So noted, but comment does not require a change.
11-351	A	11:14	11:14	replace "response" by "responses" [Bart Van den Hurk (Reviewer's comment ID #: 274-49)]	OK
11-352	A	11:16	11:16	, e.g. the strength" -> "and the strength [Daniel Caya (Reviewer's comment ID #: 38-24)]	OK

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11-353	A	11:16	11:17	Suggest omitting "e.g., the strength of feedback mechanisms on the global and regional scale." [Markku Rummukainen (Reviewer's comment ID #: 223-30)]	We think it is worthwhile to keep the phrase in.
11-354	A	11:16	11:16	replace "e.g." by "and" [Bart Van den Hurk (Reviewer's comment ID #: 274-50)]	OK
11-355	A	11:17	11:19	I suggest: "Global climate sensitivity is the property of the climate system, and of climate models, that integrates a large fraction of these sources of uncertainty and Chapter 10, Box 10.2 is dedicated to its in-depth treatment." [Daniel Caya (Reviewer's comment ID #: 38-26)]	Sentence will be reformualted
11-356	A	11:17	11:18	Rephrase as "A large fraction of these sources of uncertainty are integrated in a climate model property known as 'the climate sensitivity', and Chapter 10..." [Bart Van den Hurk (Reviewer's comment ID #: 274-51)]	Phrase will be reformulated
11-357	A	11:18	11:19	Please delete ",and" and put "Chapter 10 ... Treatment" in parantheses. [Govt. of Finland (Reviewer's comment ID #: 2009-156)]	OK
11-358	A	11:20	11:20	Add "regional" to read "the regional projections". [Govt. of Finland (Reviewer's comment ID #: 2009-157)]	OK
11-359	A	11:20	11:21	The example drawn might be inappropriate. If a change of, e.g. precipitation, will be of a lesser magnitude, a response that varies in sign across models might well be a "certain" result, i.e. reflect the expectation of no significant change. The uncertainty herein could be more connected to the uncertainty on whether changes will occur at all or on the natural variability. [Markku Rummukainen (Reviewer's comment ID #: 223-31)]	We will clarify the sentence to indicate that we are discussing significant changes in sign and magnitude of precipitation.
11-360	A	11:23	11:23	The regional impact of these uncertainties in the response of the climate system has been illustrated" ->"The regional impact of these uncertainties in climate projections has been illustrated [Daniel Caya (Reviewer's comment ID #: 38-27)]	OK
11-361	A	11:25		Write Cox et al., Jones et al., 2003 [Ibouraïma YABI (Reviewer's comment ID #: 297-20)]	OK
11-362	A	11:26	11:31	The differences in the simulated climate from various version of a model do not always translate into differences in the climate change projections obtained between these models (e.g. Plummer et al. 2006). [Daniel Caya (Reviewer's comment ID #: 38-28)]	True – but we do not say it always does.
11-363	A	11:27		Write Jones et al., 2003 Lorenz and straton, 2002 [Ibouraïma YABI (Reviewer's comment ID #: 297-21)]	OK
11-364	A	11:34	11:34	"especially for precipitation. The discrimination of a response is thus" -> "especially for precipitation making the discrimination of a response thus".	OK

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				[Daniel Caya (Reviewer's comment ID #: 38-29)]	
11-365	A	11:34	11:34	delete "on small scales" [Bart Van den Hurk (Reviewer's comment ID #: 274-52)]	OK
11-366	A	11:34	11:34	replace "discrimination" by "detection" [Bart Van den Hurk (Reviewer's comment ID #: 274-53)]	OK
11-367	A	11:44	11:44	"Other early examples of quantitative" -> "Early examples of quantitative". The previous sentence was about qualitative estimate. [Daniel Caya (Reviewer's comment ID #: 38-30)]	OK
11-368	A	11:47	11:47	Add "." [Bart Van den Hurk (Reviewer's comment ID #: 274-54)]	OK
11-369	A	11:47		Write Jones, 2000) [Ibouraïma YABI (Reviewer's comment ID #: 297-22)]	OK
11-370	A	11:49	11:49	Remove the comma [James Renwick (Reviewer's comment ID #: 211-11)]	OK
11-371	A	11:49	11:50	Rephrase as "More work has been accomplished in the area of quantifying uncertainties in regional climate change, albeit less than for the global scale" [Bart Van den Hurk (Reviewer's comment ID #: 274-55)]	OK, good rewording
11-372	A	11:50	11:50	Suggest "ongoing efforts" or "results" instead of "work". [Markku Rummukainen (Reviewer's comment ID #: 223-32)]	OK
11-373	A	11:53	11:53	Add "." [Bart Van den Hurk (Reviewer's comment ID #: 274-56)]	OK
11-374	A	11:53		Write Studies. [Ibouraïma YABI (Reviewer's comment ID #: 297-23)]	OK
11-375	A	12:1	13:20	Section 11.2.2.2: I don't see any reason not to include the regional PDFs from the Furrer et al. method. The description in the text can be reduced to a minimum, referring to chapter 10. A figure version which includes the results already exists. Being selective in including/ignoring certain studies in IPCC is very dangerous in my view, and care should be taken that the work of the lead authors is not presented more prominently than the work of others. It happened once with the reconstruction of the last millennium, and potentially similar cases should be avoided from the very beginning by presenting all available evidence, all methods, and discussing all published studies. There is a risk of underestimating uncertainties by ignoring certain papers. Others may disagree, but I think for an assessment, the more work is discussed, and the more independent lines of evidence and analyses methods are shown, the more we can trust the picture that is presented and the conclusions that are drawn. [Reto Knutti (Reviewer's comment ID #: 133-65)]	We have added Furrer et al in the text, with a reference to chapter 10 for the description of the method and to the figure in Chapter 10 that shows some results from Furrer et al. Moreover the Furrer method is discussed in Table 11.1 comparing methods. It is also very difficult to add a curve to the current version of Figure 11.2.1, so we have added a text description of the Furrer results. Moreover they are quite similar to those of Tebladi et al., and we describe this in the text.

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					In particular as they support the same projections as the empirical histograms and the Tebaldi et al. PDFs. The message of Figure 11.2.1 may be as much about how the two methods portrayed give contrasting results, and why that is, as about the actual values of the projections.
11-376	A	12:3	12:3	would "driven by the same forcing scenarios" be clearer than "that have run the same climate experiments" ? [James Murphy (Reviewer's comment ID #: 184-23)]	Yes, we will change the wording
11-377	A	12:5	12:6	The statement that box 10.2 "demonstrates" that multi-model ensembles explore only a limited range of the uncertainty seems to imply an underlying belief that the multi-model range is somehow wrong, whereas pdfs derived from other sources, and showing a wider uncertainty range, are somehow more credible. While Box 10.2 does compare the range of the AR4 AOGCMs with some pdfs, it stops short of judgements such as this, for good reasons. For example, can we rule out the possibility that some of the pdfs in Box 10.2 are too flabby because they are determined only by the rather weak constraint offered by large-scale observations of a few basic variables, whereas the multi-model ensemble is tighter because it is constrained by a much more detailed understanding of climate system processes built into the world's collection of GCMs ? Or do we believe that the multi-model ensemble range is too narrow because the world's modellers share ideas, parameterisations, and errors ? I think we could argue the case either way, so we need to be more cautious. Perhaps we can say that since the multimodel ensemble does not explore the full range implied by pdfs derived from other sources, we cannot be confident that it represents the full spread of possible regional changes consistent with our current understanding. [James Murphy (Reviewer's comment ID #: 184-24)]	The proposed sentence at the end of this review comment is going to be used, we agree on the necessity of a less decisive wording.
11-378	A	12:6	12:6	"demonstrate t that" -> "demonstrate that". [Daniel Caya (Reviewer's comment ID #: 38-31)]	OK
11-379	A	12:6	12:6	Stray "t" between "demonstrate" and "that" [James Renwick (Reviewer's comment ID #: 211-12)]	OK
11-380	A	12:6	12:6	"demonstrate t that" -> t is not needed. [Govt. of Spain (Reviewer's comment ID #: 2019-155)]	OK
11-381	A	12:6	12:6	remove "t" [Bart Van den Hurk (Reviewer's comment ID #: 274-57)]	OK
11-382	A	12:6	12:6	There is a stray "t" after "demonstrate".	OK

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				[Francis Zwiers (Reviewer's comment ID #: 305-127)]	
11-383	A	12:6		typo [Rasmus E. Benestad (Reviewer's comment ID #: 18-11)]	OK
11-384	A	12:6		Remove "t" between demonstrate et that [Ibouraïma YABI (Reviewer's comment ID #: 297-24)]	OK
11-385	A	12:7	12:7	Would "cannot be considered" be more appropriate than "does not form"? [Markku Rummukainen (Reviewer's comment ID #: 223-33)]	The suggested substitution will be used
11-386	A	12:7	12:8	How do we know that the sample is not representative? We have no way to assess this, but one bit of empirical evidence that is available indicating that the available models do somehow sample a reasonable facsimile of "model-space" is that the ensemble mean climate, when averaged over many models, is usually closer to observed than the climate simulated by any particular model. This is something that seems to hold across a range of climate variables. See Ch 8. [Francis Zwiers (Reviewer's comment ID #: 305-128)]	This comment falls along the lines of the previous comment by J. Murphy (#184-24) and we will incorporate the idea while editing the text along the lines suggested earlier.
11-387	A	12:9	12:10	Alternatively, possible robustness of projected changes could be misrepresented by an outlier or outliers, if in a representative sample there were a clustering of results in a similar manner as in the presently derived pdf... [Markku Rummukainen (Reviewer's comment ID #: 223-34)]	We are rewriting this paragraph .
11-388	A	12:9	12:9	Spell out "PDF" [Bart Van den Hurk (Reviewer's comment ID #: 274-58)]	OK
11-389	A	12:10	12:10	Replace "climate-change" by "change in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1782)]	Climate change has become an acceptable form, but we will change it as suggested
11-390	A	12:14	12:14	Suggest deleting "but physically plausible". Isn't the issue whether or not 1% per year is plausible from a socio-economic, rather than a physical, perspective ? [James Murphy (Reviewer's comment ID #: 184-25)]	We have deleted the questionable phrase.
11-391	A	12:15	12:15	"thresholds" -> "thresholds". [Daniel Caya (Reviewer's comment ID #: 38-32)]	OK
11-392	A	12:15	12:15	Please replace "thresholds" with thresholds" 450 11-450 7 [Constantin Mares (Reviewer's comment ID #: 160-32)]	OK
11-393	A	12:15	12:15	typo in "threshold" [Bart Van den Hurk (Reviewer's comment ID #: 274-59)]	OK
11-394	A	12:17	12:17	replace "demonstrating" by "including" [Bart Van den Hurk (Reviewer's comment ID #: 274-60)]	We prefer 'demonstrating'
11-395	A	12:18	12:21	It could be mentioned that their method is called the "REA-method". The abbreviation is used in Table 11.1 without explanation.	OK

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				[Erik Kjellström (Reviewer's comment ID #: 131-16)]	
11-396	A	12:26	12:33	Lopez et al (2006) provide an important demonstration of the sensitivity of the method of Tebaldi et al to expert choices in the methodology, and should be cited here in support of the caveats at the end of the paragraph. [James Murphy (Reviewer's comment ID #: 184-26)]	The paragraph will be rewritten and Lopez et al. Will be cited.
11-397	A	12:27	12:27	insert "study" after "in this" [Bart Van den Hurk (Reviewer's comment ID #: 274-61)]	OK
11-398	A	12:29	12:29	Is this referring to a uniform prior? I have never seen the word "flat" used in this context before. [Govt. of Australia (Reviewer's comment ID #: 2001-451)]	We have replaced 'flat' with diffuse
11-399	A	12:32	12:32	Rephrase as "This application of the observed and model data is a matter of expert judgement, as are the..." 1040 11-1040 62 [Bart Van den Hurk (Reviewer's comment ID #: 274-451)]	Yes, same point as above (184-26) the phrase does not make any sense and was the result of a last minute edit. Will rephrase!
11-400	A	12:33	12:33	Replace "judgement" with "guesswork" [VINCENT GRAY (Reviewer's comment ID #: 88-1783)]	We disagree with this comment. Expert judgement is a completely valid technique
11-401	A	12:36	12:37	The calibration is made globally or regionally? [Daniel Caya (Reviewer's comment ID #: 38-33)]	Regionally, but the statistical model allows for borrowing information across regions, at a certain level. We will try to clarify in the text.
11-402	A	12:44	12:44	typo focnings. [James Murphy (Reviewer's comment ID #: 184-27)]	OK
11-403	A	12:44	12:44	typo in "forcings" [Bart Van den Hurk (Reviewer's comment ID #: 274-63)]	OK
11-404	A	12:44		typo [Rasmus E. Benestad (Reviewer's comment ID #: 18-12)]	OK
11-405	A	12:45	13:45	Replace "anthropogenic": by "human-induced" [VINCENT GRAY (Reviewer's comment ID #: 88-1787)]	OK
11-406	A	12:46	12:47	Is "Giorgi regions" well enough defined for the reader? Perhaps "Giorgi and Francesco (2000)" as on page 14, line 52. [Markku Rummukainen (Reviewer's comment ID #: 223-35)]	Yes, OK, should be Giorgi and Francesco
11-407	A	12:48	12:48	Perhaps "Northern Hemisphere winter" instead of "December, January and February"? So that the risk of interpreting the first row as December, the second and January etc. is less. [Markku Rummukainen (Reviewer's comment ID #: 223-36)]	OK
11-408	A	12:49	12:49	replace "differing" by "different"	OK

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				[Bart Van den Hurk (Reviewer's comment ID #: 274-64)]	
11-409	A	12:49		I think that the main reason the 'Bayesian' approaches (e.g. Tebaldi et al) tend to produce a smaller range than others (and 'empirical' fitting to model values?) is that like standard statistical theory, the range decreases as the number of models increases. Is this not the case? [Govt. of Australia (Reviewer's comment ID #: 2001-450)]	Yes, we will incorporate a mention of this and use Lopez et al. to support it.
11-410	A	12:52	12:52	delete "so as" [Bart Van den Hurk (Reviewer's comment ID #: 274-65)]	OK
11-411	A	12:53	12:53	Perhaps "Northern Hemisphere summer" instead of "June, July and August"? [Markku Rummukainen (Reviewer's comment ID #: 223-37)]	OK
11-412	A	12:54		What is this empirical distribution? Are the labels in Fig. 11.2.1, with Tebaldi range being similar to empirical, but less than Greene (also Bayesian) correct? [Govt. of Australia (Reviewer's comment ID #: 2001-452)]	The new display renders this comment moot, but we will be clearer about the empirical distribution being simply the histogram of model projections.
11-413	A	13:1	13:1	Super-ensemble again - sounds great, but how does it differ from an ensemble unencumbered by superlatives ? [James Murphy (Reviewer's comment ID #: 184-28)]	We will use multi-model ensemble, given that the methods do not actually treat single-model ensembles within the ensemble
11-414	A	13:7	13:8	Dessai et al (2005) find that emissions uncertainty has a larger impact than uncertainty in climate sensitivity, in determining the spread of (the upper tail of) regional temperature changes. Firstly, this conclusion is probably a function of the period considered (late 21st century). Emissions uncertainty is less important during the first half of the 21st century. Second, it should be pointed out that more work is probably needed to confirm how robust this result is. For example, it is not obviously consistent with the results of chapter 10 (Figure 10.5.3), which suggest that response uncertainty (at least in the global mean) is, if anything, slightly larger than the range implied by the SRES scenarios considered by Dessai et al. [James Murphy (Reviewer's comment ID #: 184-29)]	We will incorporate these points.
11-415	A	13:9	13:9	"does not produce substantial differences". I assume that one refers to the second half of the 20th century for this statement, but this is never explicitly indicated in this paragraph [Bart Van den Hurk (Reviewer's comment ID #: 274-66)]	Yes, as in the last comment's response, we will clarify.
11-416	A	13:11	13:13	Using a larger ensemble will produce a wider range of results, but that doesn't necessary mean that the result is a better characterization of uncertainty. I think a few words are needed here to make this point, and to indicate that the issue of how to constrain estimates of uncertain remains unresolved (i.e., in this particular context, how does one weight results from different models ... see the discussion in Ch 8 on model metrics). [Francis Zwiers (Reviewer's comment ID #: 305-129)]	Yes, agree, we'll incorporate this important point.

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11-417	A	13:18	13:18	Insert period after "averages" [Bart Van den Hurk (Reviewer's comment ID #: 274-67)]	OK
11-418	A	13:18	13:20	The last sentence of this paragraph is quite vague and can be deleted [Bart Van den Hurk (Reviewer's comment ID #: 274-68)]	We will improve the sentence or delete it.
11-419	A	13:18		typo [Rasmus E. Benestad (Reviewer's comment ID #: 18-13)]	OK
11-420	A	13:22	13:40	Good stuff, but could this not be removed, as it is covered in Chapter 10? [James Renwick (Reviewer's comment ID #: 211-13)]	We will shorten this section
11-421	A	13:27	13:27	Suggest omitting "preliminary", or motivating this attribute. [Markku Rummukainen (Reviewer's comment ID #: 223-38)]	OK
11-422	A	13:31	13:31	The reference should be to Webb et al (2006), not Murphy et al (2004). [James Murphy (Reviewer's comment ID #: 184-30)]	OK
11-423	A	13:36	13:37	For the sentence starting "The latter..", we suggest a minor rewording: "The latter are quantified by comparing the scaled equilibrium response with the transient response for 17 model versions with identical parameter settings." [James Murphy (Reviewer's comment ID #: 184-31)]	Sure, we will use this better wording
11-424	A	13:36	13:36	Perhaps "errors introduced by the pattern-scaling technique", rather than "pattern scaling errors". [Markku Rummukainen (Reviewer's comment ID #: 223-39)]	OK
11-425	A	13:38	13:39	Harris et al do not weight alternative model versions according to present day simulation biases, so this sentence should be deleted. [James Murphy (Reviewer's comment ID #: 184-32)]	Agree.
11-426	A	13:40	14:40	It is not clear what the main result of this study was, it seems that it just demonstrates some sensitivity to weighing assumptions, but that seems quite trivial [Bart Van den Hurk (Reviewer's comment ID #: 274-69)]	It is not clear which comment the reviewer is referring to.
11-427	A	13:42	13:42	replace "quantifying" by "quantify" [Bart Van den Hurk (Reviewer's comment ID #: 274-70)]	OK
11-428	A	13:43	13:43	Replace "climate-change" by "change in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1784)]	OK
11-429	A	13:44	13:44	Delete "robust" [VINCENT GRAY (Reviewer's comment ID #: 88-1785)]	We disagree – this is the appropriate term to use here.
11-430	A	13:45	13:45	Replace "climate-change" by "change in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1786)]	OK
11-431	A	13:46	13:46	The reference should be to Stott et al (2006a) [James Murphy (Reviewer's comment ID #: 184-33)]	OK

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11-432	A	13:46	13:46	delete "(or continental in this case)" [Bart Van den Hurk (Reviewer's comment ID #: 274-71)]	We will rewrite the sentence
11-433	A	13:48	13:49	"differing from the studies described in Section 11.2.2.2" appears as circular, as it appears within the said section. [Markku Rummukainen (Reviewer's comment ID #: 223-40)]	We will correct the reference
11-434	A	13:49	13:49	I think the reference here should be to 11.2.2.2.2? [Francis Zwiers (Reviewer's comment ID #: 305-130)]	Agreed
11-435	A	13:50	13:50	The reference should be Stott et al (2006b) [James Murphy (Reviewer's comment ID #: 184-34)]	OK
11-436	A	13:50	13:51	"The regional projections derived are compared to scaled projections using factors computed at the global scale". This wording is somewhat ambiguous. Need to clarify that Stott et al consider two methods of constraining future continental temperature projections, one based on using observed historical changes only over the region of interest, and one based on using observed changes of global temperature patterns. [James Murphy (Reviewer's comment ID #: 184-35)]	Sure, will use this better wording
11-437	A	13:52	13:53	delete "which forms the basis of the estimated scaling factors" [Bart Van den Hurk (Reviewer's comment ID #: 274-72)]	We prefer to leave this in for the sake of clarity
11-438	A	13:54	13:54	insert "that" after "assumes" [Bart Van den Hurk (Reviewer's comment ID #: 274-73)]	OK
11-439	A	14:0		Sect.11.3: There is lots of repetition of information, and inclusion of some unnecessary/trivial information; I guess a 5-10% reduction in the length of this section could be achieved without loss of the important points. [Dave Rowell (Reviewer's comment ID #: 222-21)]	We will reduce the size of the section
11-440	A	14:1	14:1	Replace "climate-change" by "change in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1788)]	OK
11-441	A	14:1	14:8	It is not immediately obvious how Rowell and Jones (2006) fits into section 11.2.2.2.4, which is about quantifying uncertainty, not diagnosing drivers of changes. Perhaps the link could be made clearer by swapping the order of this paragraph and the following one. So we can say first that assessment of the uncertainty in regional changes in 11.3 is based mainly on expert understanding of relevant processes (rather than formal probabilistic methods which are still in their infancy), and then go on to cite Rowell and Jones as a good example of the type of evidence our qualitative assessments are based on. [James Murphy (Reviewer's comment ID #: 184-36)]	Good suggestion
11-442	A	14:1	14:8	The study of Rowell and Jones use - if I remember well - only one driving GCM, which is probably not adequate to pone farreaching conclusions. [Bart Van den Hurk (Reviewer's comment ID #: 274-74)]	Yes, but being that this is a methodological section we are using the study as an example of a process-

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					based approach to evaluating model uncertainties, not necessarily for the specific results.
11-443	A	14:2	14:3	Replace "an assessment" with "a projection" [VINCENT GRAY (Reviewer's comment ID #: 88-1789)]	We disagree – assessment is the correct term
11-444	A	14:4	14:4	Replace "analysis" with "projection" [VINCENT GRAY (Reviewer's comment ID #: 88-1790)]	We disagree – analysis is the correct term
11-445	A	14:7	24:7	Replace "robust" by "likely" [VINCENT GRAY (Reviewer's comment ID #: 88-1791)]	We disagree – robust is the correct term
11-446	A	14:8	14:6	Replace "processes" by "projections" [VINCENT GRAY (Reviewer's comment ID #: 88-1792)]	We disagree – processes is the correct term
11-447	A	14:10	14:13	This short paragraph doesn't seem to connect very well to the other two paragraphs in this subsection. It is not clear which ideas are being applied. [Francis Zwiers (Reviewer's comment ID #: 305-131)]	We will clarify or remove the paragraph
11-448	A	14:11	14:11	Delete "likelihood" [VINCENT GRAY (Reviewer's comment ID #: 88-1793)]	We disagree – the term 'likelihood' is needed in this sentence
11-449	A	14:15	14:32	This is the first mention of downscaling uncertainty in section 11.2.2.2. I wonder if a short discussion of the sources of uncertainty should be placed at the start of this section, so that the earlier discussion (which does not consider downscaling uncertainty) is placed in context. [James Murphy (Reviewer's comment ID #: 184-37)]	This is a good idea – we will do so.
11-450	A	14:16	14:16	replace "one's" by "the" [Bart Van den Hurk (Reviewer's comment ID #: 274-75)]	OK
11-451	A	14:19	14:19	What is the fourth dimension of Rowell (2005), in addition to emissions, GCMs and RCMs ? [James Murphy (Reviewer's comment ID #: 184-38)]	Internal variability, assessed through ensemble simulations at the level of the driving GCMs. We will add this missing piece. Reference will be changed to Rowell (2006)
11-452	A	14:24	14:24	A missprint. Should be "Ruosteenoja et al." [Govt. of Finland (Reviewer's comment ID #: 2009-158)]	OK
11-453	A	14:24	14:24	Spelling is wrong "Ruosteenoja" [Erik Kjellström (Reviewer's comment ID #: 131-22)]	OK
11-454	A	14:24	14:24	Spelling is wrong "Déqué" [Erik Kjellström (Reviewer's comment ID #: 131-24)]	OK
11-455	A	14:25	14:25	A missprint. Should be "Kjellström et al." [Govt. of Finland (Reviewer's comment ID #: 2009-159)]	OK

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11-456	A	14:25	14:25	Spelling is wrong "Kjellström" [Erik Kjellström (Reviewer's comment ID #: 131-23)]	OK
11-457	A	14:27	14:29	It is good to see an appropriate caveat placed on the responses of ensembles of RCMs when driven by a single GCM, but the comment is rather cryptic: I think the point could be made clearer. I presume the issue is that if the RCM diverges from the driving model solution at large scales, then the RCM is no longer acting purely as a downscaling tool, so some of the spread of responses reflects the projection of uncertainties in the regional physics onto larger scales. The two way nesting paper of Lorenz and Jacob (2005) could perhaps also be cited in this regard. [James Murphy (Reviewer's comment ID #: 184-39)]	We will make these points clearer and cite Lorenz and Jacob
11-458	A	14:32	14:32	Please provide some reference to CREAS and consider adding also CLARIS (cf. http://www.claris-eu.org). [Markku Rummukainen (Reviewer's comment ID #: 223-41)]	We will add appropriate references
11-459	A	14:32	14:32	Add the following the end of this line: ", or for other climate variables such as ocean wave height (Wang and Swail, 2006b; Caires et al., 2006)" [Xiaolan L. WANG (Reviewer's comment ID #: 282-25)]	The sentence refers to programs as opposed to specific studies.
11-460	A	14:34		Sections 11.3.2 to 11.3.9 should have uniform presentation for the analysis that is common to all of them. A suggestion would be to make all the common analysis in the first sub-sections for each regions. For example each region could have (numbering from Europe is used as example): 11.3.3.1 Key processes, 11.3.3.2 Skill of models in simulating present and past climates, 11.3.3.3 Climate projections, 11.3.3.3.1 Mean Temperature, 11.3.3.3.2 Mean precipitation. All of these are common for each region. Then the elements that are not analysed for each region can be described. This will ease the reading when we go from region to region since the presentation will be uniformised and the sequence of figures will follow the same order for the common section. [Daniel Caya (Reviewer's comment ID #: 38-34)]	The sections is being revised, and the intent of this comment will be taken into account.
11-461	A	14:37	14:37	Is heading 11.3.1.1 missing? There is a subsection 11.3.1.2 further on. [Francis Zwiers (Reviewer's comment ID #: 305-132)]	Yes: will correct.
11-462	A	14:48	14:49	I suggest deleting the example, as it seems unnecessary. [Dave Rowell (Reviewer's comment ID #: 222-4)]	Acknowledged, and will be addressed in the revisions, possibly just though shortening.
11-463	A	14:51	14:51	If these regions are the same as in Figure 11.2.1, the more casual reader could be instructed to consult the Figure for easier access. [Markku Rummukainen (Reviewer's comment ID #: 223-42)]	Noted
11-464	A	14:52	14:52	A reference is missing between the words "of" and "and". [Govt. of Finland (Reviewer's comment ID #: 2009-160)]	Noted

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11-465	A	14:52	14:52	delete "similar to those" and "and" [Bart Van den Hurk (Reviewer's comment ID #: 274-76)]	Noted
11-466	A	14:53	14:56	sentence does not make sense. [Rasmus E. Benestad (Reviewer's comment ID #: 18-14)]	Will be rephrased in revision
11-467	A	14:54	23:3	These sentences seem to add little useful information. It is also implied that Cook and Vizy suggest the GFDL projection is realistic, whereas they actually conclude the opposite towards the end of their paper. [Dave Rowell (Reviewer's comment ID #: 222-25)]	Will be reconsidered. TSU Note: the start line of this comment is wrong.
11-468	A	14:55	14:55	delete "where possible" [Bart Van den Hurk (Reviewer's comment ID #: 274-77)]	Agreed
11-469	A	15:5	15:7	I suggest deleting the examples on lines 5 and 7; they seem unnecessary, and imply these regions relate better to the points being made than others, which I don't think is true. [Dave Rowell (Reviewer's comment ID #: 222-5)]	The text will be reexamined to try make this point better.
11-470	A	15:9		Are these results (Figs 11.3.2.1 etc) identical to those already plotted in Chapter 10? Could these use a finer interpolation grid, at least. [Govt. of Australia (Reviewer's comment ID #: 2001-453)]	No, they are not completely identical, although similar. The resolution is chosen as an appropriate compromise between the different GCM grid resolutions.
11-471	A	15:22	15:23	Where are these so-called time series graphs pulished and how were they obtained? They are obviously misleading, because the two examples which have been subjected to a comprehensive correctionoin process, that for the USA, which is shown in Figure 3.2.3, and for China, which has been published by Zhou et al 2005 Acta Meteorologica Sinica Vo 19 pages 389-400 are not used here, but instead the uncorrected versions. It is highly proable that the rest would show similar looss of most "warming" as USA and China if the correction process was made [VINCENT GRAY (Reviewer's comment ID #: 88-1794)]	References will be added
11-472	A	15:22	15:32	Intro to the uncertainty plumes of 11.3. The measures of "spread" and "range" should be explicitly defined. Is "spread" measured by standard deviation, twice the standard deviation, 5-95% confidence interval based on an assumed gaussian dsitribution, or something else ? [James Murphy (Reviewer's comment ID #: 184-40)]	Spread is measured as 5-95% confidence interval and this is now described in the text.
11-473	A	15:22	15:32	The number of AOGCMs used in the 20th century portion of the plots should be stated. More fundamentally, I worry about the mismatches at 2000, when the ensemble of runs with all historical forcings are augmented by runs which (presumably) only included anthropogenic forcings during the 20th century. This will artificially inflate the spread, because those runs will tend to be warmer at 2000. At minimum this should be pointed out, at best it might be worth plotting the 21st century changes for each simulation relative	Agreed. Information about the number of experiments and allowance for the difference in forcings in the 20th century is now included.

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				to its 1980-1999 value (as is done in Figure 10.3.2), to reduce the impact of differences in historical forcing (though there will still be a residual effect arising from differences in the warming commitment at 2000). [James Murphy (Reviewer's comment ID #: 184-41)]	
11-474	A	15:27	15:29	I would raise two issues with the idea of using the ensemble mean of several realisations, where these are available. Firstly, this makes the results statistically inhomogeneous, as some models cannot be treated this way. Secondly, it is not clear why it is thought to be a good idea to minimise (where possible) the role of internal variability. Isolating the forced component of the response is of course scientifically interesting, but is that our main purpose, or is it to quantify uncertainty in order to inform risk assessments ? If the latter, then surely the effects of internal variability should be included. [James Murphy (Reviewer's comment ID #: 184-42)]	Agreed and now model realisations are included separately in the plumes (with text explaining this).
11-475	A	15:29		The red, green and blue bars in these figures (11.3.2.2, etc) do not seem explained. [Govt. of Australia (Reviewer's comment ID #: 2001-454)]	Now explained in the captions.
11-476	A	15:29		Figure 11.3.2.2. The results shown are not downscaled, right? And which observations were used? More information should probably be provided, so that it's straight forward to repeat the exercise and obtain the same plots. [Rasmus E. Benestad (Reviewer's comment ID #: 18-15)]	Reference added to the equivalent Chapter 9 figures where the observations used are explained in detail.
11-477	A	15:31	15:31	replace "one" by "to" [Bart Van den Hurk (Reviewer's comment ID #: 274-78)]	Agreed
11-478	A	15:33		Do not forget to include [INSERT TABLE 11.2] call out. [Govt. of United States of America (Reviewer's comment ID #: 2023-680)]	Noted
11-479	A	15:34	15:54	Would the A2 scenario be a more realistic projection of future emissions than A1B, and so maybe it's better to focus on A2? [Dave Rowell (Reviewer's comment ID #: 222-6)]	We have chosen to use A1B as this has the greatest number of models. The choice of whether one scenario is more realistic than another is not answerable
11-480	A	15:35	15:35	In connection to this first description of the time periods it should be argued why you have chosen 20-year periods instead of the more traditional 30-year periods used in climate research. Compare also with the statement on p50, l30-31. [Erik Kjellström (Reviewer's comment ID #: 131-17)]	Following lead of Chapter 10
11-481	A	15:35	15:35	Refer to where "20C3M" is defined. [Erik Kjellström (Reviewer's comment ID #: 131-18)]	Will be clarified
11-482	A	15:37	15:38	"by the median, the 25% and 75%, or quartile, values (half of the models lie between these two values) and the maximum and minimum" -> "by the median, the 25% and 75% (the quartiles; half of the models lie between the 25% and 75% values), the maximum and the minimum".	Text will be clarified.

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				[Daniel Caya (Reviewer's comment ID #: 38-35)]	
11-483	A	15:37	15:37	"fractional precipitation" is also a chemistry term, although, granted, the risk of misunderstanding is nil. Here, but also elsewhere in the Chapter, relative precipitation changes or just precipitation changes might still be better. Also, the Chapter uses also "percent precipitation". Many terms for the same is confusing in a scientific text. [Markku Rummukainen (Reviewer's comment ID #: 223-43)]	The point will be accommodated in the text revisions.
11-484	A	15:40	15:42	This sentence is not clear. I do not understand to which time-series plots the text refers or where they are. [Daniel Caya (Reviewer's comment ID #: 38-36)]	Text will be clarified
11-485	A	15:44	15:44	Most of the discussion for all of the regions or only in 11.3.1? [Daniel Caya (Reviewer's comment ID #: 38-37)]	Will be clarified
11-486	A	15:46		These ratios follow from Table 10.3.1 (almost). [Govt. of Australia (Reviewer's comment ID #: 2001-455)]	Noted.
11-487	A	15:49	15:49	of the A1B scenario for the other cases." -> "of the A1B for the other scenarios." [Daniel Caya (Reviewer's comment ID #: 38-38)]	Agreed
11-488	A	15:49	15:49	Replace "cases" by "scenarios" for clarity. [Dave Rowell (Reviewer's comment ID #: 222-7)]	See above
11-489	A	15:49	15:49	"scaling" instead of "caling". [Markku Rummukainen (Reviewer's comment ID #: 223-44)]	Noted
11-490	A	15:49	15:49	replace "caling" by "scaling" [Bart Van den Hurk (Reviewer's comment ID #: 274-79)]	Noted
11-491	A	15:49	15:49	rephrase end of sentence as "...discussion for the other scenarios." [Bart Van den Hurk (Reviewer's comment ID #: 274-80)]	See 11-487
11-492	A	15:49	15:49	Replace "caling" with "scaling". [Francis Zwiers (Reviewer's comment ID #: 305-133)]	Noted
11-493	A	15:49		typo [Rasmus E. Benestad (Reviewer's comment ID #: 18-16)]	Noted
11-494	A	15:51	15:51	"although not as precisely as the temperature itself." -> "although not as precisely as for the temperature." [Daniel Caya (Reviewer's comment ID #: 38-39)]	Agreed
11-495	A	16:1	16:2	Would quasi-linear be better than very linear ? The results seem to show some departures from linearity, especially in the upper and lower extremes of the plumes of uncertainty. [James Murphy (Reviewer's comment ID #: 184-43)]	Agreed
11-496	A	16:1	16:2	Non-linearity wrt to time between the 20th and 21st centuries seems significant to me. Could this be stated instead in terms of linearity wrt radiative forcing or GHG concentrations?	See above

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				[Dave Rowell (Reviewer's comment ID #: 222-8)]	
11-497	A	16:1	16:9	While we don't see much evidence of non-linear or non-additive response on large scales, this might be more of an issue on regional scales (e.g., as the snow or ice line advances across a region, one can at least imagine a local response associated with snow-ice albedo feedback that is non-linear). [Francis Zwiers (Reviewer's comment ID #: 305-134)]	See above
11-498	A	16:3	16:3	Rephrase as "In the ensemble mean GCM projections there is no indication of ..." [Bart Van den Hurk (Reviewer's comment ID #: 274-81)]	Agreed
11-499	A	16:7	16:7	replace "having" by "there is" [Bart Van den Hurk (Reviewer's comment ID #: 274-82)]	Noted
11-500	A	16:8	16:8	Insert ". Therefore" after "Chapter 10" [Bart Van den Hurk (Reviewer's comment ID #: 274-83)]	Noted
11-501	A	16:11	16:21	Please state what significance level the value of 2.88 used in Table 11.2 corresponds to. [Dave Rowell (Reviewer's comment ID #: 222-9)]	Will be clarified
11-502	A	16:11	16:11	Although I appreciate the effort to include a signal/noise measure here, the definition of the variability in Table 11.2 is not fully clear. Is it the variance of an ensemble of 20yrs simulations from a range of models, or is it variance of the collection of years (the interannual variability) of the full set of results? And for either choice, what is the reason for taking this measure of variability as a reference in this analysis? [Bart Van den Hurk (Reviewer's comment ID #: 274-84)]	The explanation will be clarified
11-503	A	16:11	16:21	I have a few concerns about this particular calculation. First, I suspect that many readers will implicitly interpret this waiting time as a time for the signal to emerge above INTERANNUAL variability (even though I think the caption for Table 11.2 is clear about what standard deviation is being used). Quoting waiting times of less than the averaging interval invites such an interpretation, particularly for those who are tempted to skim over the details. [Francis Zwiers (Reviewer's comment ID #: 305-135)]	Agreed. The text will be reworked to avoid mis-interpretation
11-504	A	16:11	16:21	A second minor concern is that it would be useful to describe the details of the calculation a bit more completely. In particular, it would be useful to explain to readers why one uses the threshold of 2.88 standard deviations. [Francis Zwiers (Reviewer's comment ID #: 305-136)]	Agreed. See above
11-505	A	16:11	16:21	A third comment with respect to the calculation of the waiting time T is that this simply calculation probably over-estimates the time to detection. The optimal detection techniques described in Chapter 9 should allow earlier detection. [Francis Zwiers (Reviewer's comment ID #: 305-137)]	Agreed, See above
11-506	A	16:11	16:21	A fourth (also minor) concern with respect to the calculation of the waiting time T is that	Agreed, see above

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				this calculation does assume a linear response over time. While there is not much evidence, non-linearity might be an issue in some regions for some variables, as suggested above. This assumption also implicitly assumes a certain class of forcing scenarios (e.g. instantaneous stabilization, as characterized by the climate change commitment simulations performed by many groups, would not fall within this group of scenarios, because instantaneous stabilization results in a relatively quick change in the derivative of the global mean transient warming response). [Francis Zwiers (Reviewer's comment ID #: 305-138)]	
11-507	A	16:14	16:14	"signal is clearly discernable" - What does this mean in practise? It needs defined. [Ronald J Stouffer (Reviewer's comment ID #: 258-47)]	Reference to definition will be made more prominently
11-508	A	16:23	16:37	20 years is really too short for analysing extremes, which are very sensitive to inter-annual and inter-decadal fluctuations. Using a multi-model ensemble does improve this, but if the GCMs have different biases (different distributions in different GCMs), then there is a need for correction, which can be tricky. The final statistics from each GCM may be aggregated, but it's not really clear that a simple mean over models is the correct way to do this. Perhaps there should be some references on this - after all, IPCC AR4 should not conduct new research? [Rasmus E. Benestad (Reviewer's comment ID #: 18-17)]	We believe that the number of models is sufficient to make the multi-model ensemble results meaningful. We are careful to compare results within each model separately, so that different biases do not confound the results.
11-509	A	16:23	16:23	Table 11.2 - Some measure of the present day error needs included in the table. In my opinion, the chapter suffers from a lack of a critical appraisal of the performance of models in the present day climate. This seems to lead to over confidence in their projections of future changes. [Ronald J Stouffer (Reviewer's comment ID #: 258-48)]	A table of biases is included in supplementary material and we have tried to take these into account in the assessment
11-510	A	16:23	16:30	I think some caveats need to be added here concerning uncertainties associated with these estimated probabilities. Uncertainty arises from a number of sources, including sampling, model sensitivity, whether processes leading to extreme seasons are well represented in models, etc. While probably not the largest uncertainty, sampling uncertainty in the estimated threshold would also be a factor, particularly for models where there is only one 20th century simulation. [Francis Zwiers (Reviewer's comment ID #: 305-139)]	We will describe these uncertainties more fully in the revisions
11-511	A	16:28	16:29	How "100" should be interpreted in the column Extreme seasons Warm of Table 11.2? Does 100 mean that all simulated summers in the period 2080-2099 exceed the warmest summer of the period 1980-1999? [Daniel Caya (Reviewer's comment ID #: 38-40)]	100 means that all seasons in the latter period are warmer than any season in the earlier period – this will be explained more carefully
11-512	A	16:32	16:37	This paragraph seems unnecessary. [Dave Rowell (Reviewer's comment ID #: 222-10)]	Revision to be considered
11-513	A	16:32	16:32	Swap "reference" and "in the following"	Noted

No.	Batch	Page:line		Comment	Notes
		From	To		
				[Bart Van den Hurk (Reviewer's comment ID #: 274-85)]	
11-514	A	16:39	17:50	I find the sub-section "11.3.1.2 Some unifying themes" very useful in the economy of the section. [Roxana Bojariu (Reviewer's comment ID #: 24-22)]	Noted
11-515	A	16:39	17:50	The section on unifying themes is very welcome, and helps to provide some context for the detailed discussions that follow. [James Murphy (Reviewer's comment ID #: 184-44)]	Noted
11-516	A	16:41	16:46	There's a lot of repetition between these 2 sentences. [Dave Rowell (Reviewer's comment ID #: 222-12)]	Will be reworked.
11-517	A	16:42	16:43	Rephrase as "...projections, with models being most sensitive in terms of globally averaged quantities often also being locally sensitive." [Bart Van den Hurk (Reviewer's comment ID #: 274-86)]	See above
11-518	A	16:43	16:46	It is not only the different treatment of regional processes that cause the spread on regional level, it is also the different dynamical forcing on a given region that generates spread (e.g. the study by Van Ulden and Van Oldenborgh, 2005). [Bart Van den Hurk (Reviewer's comment ID #: 274-88)]	Agreed
11-519	A	16:45	16:45	delete "also" [Bart Van den Hurk (Reviewer's comment ID #: 274-87)]	Noted
11-520	A	16:49	16:49	Replace "continually" by "continuously" [Bart Van den Hurk (Reviewer's comment ID #: 274-89)]	Noted
11-521	A	17:1	17:1	Change "the extent that" to "the extent to which" [James Renwick (Reviewer's comment ID #: 211-14)]	Noted
11-522	A	17:1	17:2	See also Chapter 9, Section 9.5.4 and Figure 9.5.4. [Francis Zwiers (Reviewer's comment ID #: 305-140)]	Noted, cross referencing will be included.
11-523	A	17:2	17:2	insert "precipitation" before "observations" [Bart Van den Hurk (Reviewer's comment ID #: 274-90)]	Agreed
11-524	A	17:8	17:8	delete "models" [Bart Van den Hurk (Reviewer's comment ID #: 274-91)]	Agreed
11-525	A	17:11		Annular mode, in other words, Arctic or Antarctic Oscillation, or when focusing ??? [Yasuo Sato (Reviewer's comment ID #: 226-6)]	Text will be rephrased.
11-526	A	17:12	17:12	replace "towards" by "of increased" [Bart Van den Hurk (Reviewer's comment ID #: 274-92)]	Agreed
11-527	A	17:15	17:15	replace "trends" by "tends" [Bart Van den Hurk (Reviewer's comment ID #: 274-93)]	Agreed
11-528	A	17:15		tends" should replace "trends"	Agreed

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				[Adrian Simmons (Reviewer's comment ID #: 242-163)]	
11-529	A	17:22	17:27	This paragraph doesn't seem to say much. [Dave Rowell (Reviewer's comment ID #: 222-13)]	Noted
11-530	A	17:31	17:31	"thus" instead of "in there". [Markku Rummukainen (Reviewer's comment ID #: 223-45)]	"there" should be "their"
11-531	A	17:32	17:32	delete "some of" [Bart Van den Hurk (Reviewer's comment ID #: 274-94)]	Agreed
11-532	A	17:32		I believe the references to Chou and Neelin (2003) and Chou and Neelin (2004) in the text are reversed. On pg. 17, line 32 please change to Chou and Neelin (2004) [coordinated change on pg. 23. Refs are already in reference section] [J. David Neelin (Reviewer's comment ID #: 187-9)]	Noted
11-533	A	17:35		after "future of tropical climates" add "at regional scales". [J. David Neelin (Reviewer's comment ID #: 187-11)]	Agreed
11-534	A	17:37		At end of paragraph add "Tropical precipitation changes tend to be large in many of the models so the uncertainty in where the changes will occur should not be taken to mean that the changes will be small. Indeed Neelin et al (2006) show that amplitudes of the regional tropical precipitation increases and decreases, respectively, agree reasonably well among models and increase with the tropical warming. Thus while the locations of these impacts are uncertain, changes to the tropical hydrologic cycle at the regional scale may be considered likely. [ref already added pg 100]. 523 11-523 12 [J. David Neelin (Reviewer's comment ID #: 187-11)]	The intent of this point will be added with the revised text.
11-535	A	17:38	17:42	As this paragraph is referred back to in the different regional discussions, typically as "11.3.1", it should be made even easier for the reader to read. Either make sure that reference is made to the very sub-section of 11.3.1.2 or consider transferring these lines to Box 11.1. [Markku Rummukainen (Reviewer's comment ID #: 223-46)]	Noted, text will be revised.
11-536	A	17:47	17:47	contain" should be "contains [James Renwick (Reviewer's comment ID #: 211-15)]	Noted
11-537	A	17:47	17:47	insert "s" after "contain" [Bart Van den Hurk (Reviewer's comment ID #: 274-95)]	Noted
11-538	A	18:5	18:5	Add at end "but these records have not been comprehensively corrected in the fashion published by US and Chinese workers" [VINCENT GRAY (Reviewer's comment ID #: 88-1795)]	Irrelevant. The data have been corrected. Reference to data source will be given.
11-539	A	18:6		Thus, these results have not been downscaled. Observed 20th century T(2m) from GISS/GRU? Interpolated to the same grid? [Rasmus E. Benestad (Reviewer's comment ID #: 18-18)]	Text will be modified to clarify this issue

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11-540	A	18:8	18:8	Insert before "surface "uncorrected" 277 11-277 1796 [VINCENT GRAY (Reviewer's comment ID #: 88-18)]	Not correct. The data have been corrected.
11-541	A	18:15	18:15	Box 11.1 Figure 1 is very nice, as are the consistent and matching regional figures shown later. [James Renwick (Reviewer's comment ID #: 211-17)]	Thanks
11-542	A	18:18	18:21	Could omit the explanation of the backdrop here and provide it only in the Figure caption. The description here seems wrong anyway as the backdrop considers the fraction of GCMs showing consistent increases or decreases in precipitation in the grid cells. [Markku Rummukainen (Reviewer's comment ID #: 223-47)]	Valid point. The text of the box is being revised and this will be considered.
11-543	A	18:21	18:21	Should be "Aspects of this pattern are examined..." [James Renwick (Reviewer's comment ID #: 211-16)]	Noted
11-544	A	18:25	18:25	Box 11.1 Figure 2 is a good attempt to capture complex changes, but it is very busy and does not work as well as Fig 1. No real suggestions, but could some elements be removed for clarity? [James Renwick (Reviewer's comment ID #: 211-18)]	Box is being refined.
11-545	A	18:28		Section 11.3.2. Reference should be made to the paper by EK Penlap, C Matulla, H von Storch and FM Kanga, "Downscaling of GCM scenarios to assess precipitation changes in the little rainy season (March-June) in Cameroon", Climate Research, 26(2), 85-96, 2004. [Govt. of Australia (Reviewer's comment ID #: 2001-456)]	Reference will be examined for suitability
11-546	A	18:32	18:32	replace "is" by "in" [Bart Van den Hurk (Reviewer's comment ID #: 274-96)]	accepted
11-547	A	18:34		Do you mean "poleward" here rather than "northward"? Please check exactly what shifts of the storm tracks you mean. [Govt. of United States of America (Reviewer's comment ID #: 2023-681)]	corrected
11-548	A	18:46	18:46	Change "waters" to "SSTs". It is not the water, but the water temperature that matters. [Ronald J Stouffer (Reviewer's comment ID #: 258-49)]	This paragraph to be cut
11-549	A	18:47	18:47	delete "s" of "controls" [Bart Van den Hurk (Reviewer's comment ID #: 274-97)]	This paragraph to be cut
11-550	A	18:51	18:51	replace "interconnectedness of" by "interconnections between" [Bart Van den Hurk (Reviewer's comment ID #: 274-98)]	This paragraph to be cut
11-551	A	18:54	19:13	I suspect this paragraph could be shortened by using cross-links to Ch 3 and also to Ch 9 (see Section 9.5.4.3.1). [Francis Zwiers (Reviewer's comment ID #: 305-142)]	Paragraph shortened and cross-link added
11-552	A	18:55	18:55	The word "profound" elicits the question, in what sense (e.g., relative to what record)? Perhaps "extended" would be a better in this context.	accepted

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				[Francis Zwiers (Reviewer's comment ID #: 305-141)]	
11-553	A	18:56	18:56	swap "due" and "primarily" [Bart Van den Hurk (Reviewer's comment ID #: 274-99)]	accepted
11-554	A	19:2		Write Folland et al., 1986 [Ibouraïma YABI (Reviewer's comment ID #: 297-25)]	accepted
11-555	A	19:3		Write Giannini et al., 2003 ; Hoerling et al., 2006). [Ibouraïma YABI (Reviewer's comment ID #: 297-26)]	accepted
11-556	A	19:7	19:9	Please either provide a full list of all the SST areas affecting the Sahel (ie. including the Mediterranean and Pacific), or no list at all. [Dave Rowell (Reviewer's comment ID #: 222-14)]	List removed
11-557	A	19:7		after :SST anomalies" consider adding "(Zeng et al 1999)" 525 11-525 14 [J. David Neelin (Reviewer's comment ID #: 187-14)]	Section shortened; referece deemed to be unnecessary
11-558	A	19:12		Rotstayn and Lohmann (2002) is not in the references list. [Govt. of United States of America (Reviewer's comment ID #: 2023-682)]	To be corrected
11-559	A	19:13	19:13	Remove comma from "Held, et al." [James Renwick (Reviewer's comment ID #: 211-19)]	Reference removed
11-560	A	19:20		Write Southern Africa. [Ibouraïma YABI (Reviewer's comment ID #: 297-27)]	corrected
11-561	A	19:22	19:23	The stabilization is only true if the upper troposphere is warming more than the PBL [Erik Kjellström (Reviewer's comment ID #: 131-19)]	text clarified
11-562	A	19:22	19:23	All other things being equal, warming and moistening the lowermost atmosphere from higher SSTs would be expected to increase rather than suppress convection, so the statement made here should be clarified by a few more words and/or a reference. [Adrian Simmons (Reviewer's comment ID #: 242-164)]	text clarified
11-563	A	19:30	19:33	I agree with the statement "Vegetation changes are generally thought of as providing a positive feedback....if they did". If you wanted a recent reference for this, you could cite Betts et al (2004), Theoretical and Applied Climatology,78:157-175 (sorry for the self-citation!) [Richard Betts (Reviewer's comment ID #: 21-6)]	Reference to be added
11-564	A	19:30	19:30	replace "thought of as providing" by "considered to" [Bart Van den Hurk (Reviewer's comment ID #: 274-100)]	accepted
11-565	A	19:36	19:36	"less reversible" - Is "more stable" clearer? [Ronald J Stouffer (Reviewer's comment ID #: 258-50)]	Have decided to rатаin original formulation
11-566	A	19:40	19:40	Please check the period (1979-1999 is quoted, which clashes with the more common "1980-1999" applied in Chapter 11). [Markku Rummukainen (Reviewer's comment ID #: 223-48)]	to be corrected

No.	Batch	Page:line		Comment	Notes
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11-567	A	19:48	19:48	"larger cold biases in drier areas" - Usually hot goes with dry. What is going on here? [Ronald J Stouffer (Reviewer's comment ID #: 258-51)]	This sentence to be removed
11-568	A	20:10	20:10	This sentence doesn't quite correctly characterize the AGCMs used by Hoerling et al (2006), some of which were not available for the TAR. [Francis Zwiers (Reviewer's comment ID #: 305-143)]	corrected
11-569	A	20:10		Write Hoerling et al [Ibouraïma YABI (Reviewer's comment ID #: 297-28)]	corrected
11-570	A	20:13	20:13	The first continuous multi-decadal simulation forced by observed SSTs, and focussing on African rainfall, was Rowell (1996). Rowell, D.P., 1996: Reply to comments by Y.C. Sud and W.K.-M. Lau: Further analysis of simulated interdecadal and interannual variability of summer rainfall over tropical north Africa. Q. J. R. Meteorol. Soc., 122, 1007-1013 [Dave Rowell (Reviewer's comment ID #: 222-15)]	Reference added
11-571	A	20:13		Write Latif, 2003 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-29)]	corrected
11-572	A	20:22	20:23	It is not clear which studies are meant. Neither is the meaning of the statement very clear. How do such studies inform about model quality (such as, if the events that took place in the mid-Holocene are not certain). [Markku Rummukainen (Reviewer's comment ID #: 223-49)]	Literature will be re-examined before next draft
11-573	A	20:26	20:26	Perhaps more likely "may indicate poor representation of some centennial scale positive feedbacks"? Note the importance of including the time-scale on which these feedbacks could have operated to amplify the mid-Holocene anomaly, and so the important implication that they may or may not be relevant to multi-annual to multi-decadal variability today. [Dave Rowell (Reviewer's comment ID #: 222-16)]	accepted
11-574	A	20:27		Write 1997). [Ibouraïma YABI (Reviewer's comment ID #: 297-30)]	corrected
11-575	A	20:29	21:13	The discussion on the ESD-analysis merits more room. The diagnostics can be discussed - i.e. is the response due to circulation changes? Relevant papers by Lau et al(2006)? If I google ("empirical downscaling" OR "statistical downscaling") AND Africa, I get 11000 hits. I can understand that there are not many RCM-studies for Africa, but it is odd that there are not more ESD-studiesfor Africa - which is comparably easy to do! [Rasmus E. Benestad (Reviewer's comment ID #: 18-19)]	Inseption of this search list yields few if any additional ESD studies useful for our assesment
11-576	A	20:40		Write Arnel et al. [Ibouraïma YABI (Reviewer's comment ID #: 297-31)]	accepted
11-577	A	20:44	20:44	Which model is referred to by "this model"? [Erik Kjellström (Reviewer's comment ID #: 131-20)]	corrected

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11-578	A	20:44	20:44	Which model? [Markku Rummukainen (Reviewer's comment ID #: 223-50)]	corrected
11-579	A	21:4	21:6	These lines probably refer to AGCM-studies, but it is not altogether clear. The meaning could be made clearer as well. E.g. "High resolution AGCM time-slice simulations for African climate change in are very few (e.g. Coppola and Giorgi 2005) and do not lend themselves for concise interpretation." [Markku Rummukainen (Reviewer's comment ID #: 223-51)]	corrected
11-580	A	21:5	21:5	other references could be added, for instance Maynard, K., Royer J.F., and F. Chauvin, 2006: Impact of Greenhouse warming on the West African Monsoon. Clim. Dyn., 19, 499-514 Caminade, C., L. Terray and E. Maisonnave, 2006: West African Monsoon System response to greenhouse gas and sulfate aerosol forcing under two emission scenarios. Clim. Dyn., 26, 531-547 [Govt. of France (Reviewer's comment ID #: 2010-84)]	References will be checked for inclusion
11-581	A	21:28	21:28	Instead of "50% larger", could consider "1.5 times that of the" [Markku Rummukainen (Reviewer's comment ID #: 223-52)]	accepted
11-582	A	21:30	21:30	Is the meaning of "in percentage terms" clear? Perhaps, "... is comparable to the range of global mean warming, although shifted to larger values"? Or what is meant? [Markku Rummukainen (Reviewer's comment ID #: 223-53)]	Modified
11-583	A	21:31	21:37	These sentences repeat material in sect.11.3.1.2, so could be deleted. [Dave Rowell (Reviewer's comment ID #: 222-17)]	Will be cut
11-584	A	21:40		Write Giorgi et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-32)]	
11-585	A	21:47	21:47	How does the considered RCM-result relate to the GCM from which boundary conditions were taken? [Markku Rummukainen (Reviewer's comment ID #: 223-54)]	Information to be added
11-586	A	21:51	21:54	This sentence repeats material at the top of p16, so could be deleted. [Dave Rowell (Reviewer's comment ID #: 222-18)]	Material has been cut
11-587	A	21:51	21:51	Perhaps "project", "emulate" or "derive" rather than "predict". [Markku Rummukainen (Reviewer's comment ID #: 223-55)]	Material has been cut
11-588	A	21:53	21:53	"in the 2080 2099" should be "in the 2080-2099". [Chiu-Ying LAM (Reviewer's comment ID #: 139-22)]	Material has been cut
11-589	A	22:1	22:1	Please state when the 10 years begin (1999?). [Dave Rowell (Reviewer's comment ID #: 222-19)]	Text clarified
11-590	A	22:4	22:4	This is the first occurrence of several figures that show regional or continental scale past	uestions will be addressed based on

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				and future projections. Please interact with chapter 9 regarding the issue of how these data should best be normalized and scaled. Also, please consider carefully what needs to be in the text and in the figure caption regarding the bars at the side. I presume these represent B1, A1B, and A2 ranges across the models in the archive - is that correct, and is it stated in the text? Please add material to discuss the issue of the different numbers of models that reported results for these cases - as chapter 10 shows, differences can occur between these that are not due to the scenarios but rather due to different sampling across the range of available models. This issue is likely to be more severe for smaller scales, and that should be stated as well. [Susan Solomon (co-chair WG1) (Reviewer's comment ID #: 246-13)]	interaction with Ch.9 .
11-591	A	22:8	22:11	No need to repeat information in the figure caption. [Dave Rowell (Reviewer's comment ID #: 222-20)]	accepted
11-592	A	22:14	22:14	A missprint. Should be "Ruosteenoja et al." [Govt. of Finland (Reviewer's comment ID #: 2009-161)]	corrected
11-593	A	22:14	22:14	Spelling is wrong "Ruosteenoja" [Erik Kjellström (Reviewer's comment ID #: 131-21)]	corrected
11-594	A	22:15	22:17	Delete this sentence; less than two-thirds of models show this "tendency". [Dave Rowell (Reviewer's comment ID #: 222-22)]	accepted
11-595	A	22:46	22:48	Delete 2 sentences: repetition from earlier, and unnecessary info in brackets. [Dave Rowell (Reviewer's comment ID #: 222-23)]	Bracketed material has been cut
11-596	A	22:46	22:46	Perhaps this robustness should be qualified by a comment that we do not yet understand the mechanisms for this response. I guess this why East Africa is not mentioned in the summary on page 3? [Dave Rowell (Reviewer's comment ID #: 222-36)]	No action taken
11-597	A	22:51	22:52	It cannot be said that the lack of continuation the 20th century drying trend into the 21st century implies a 20th century forcing by aerosols. I believe the current majority wisdom is that the late-20th century drought was forced by SSTs (internal variability of the coupled ocean-atmosphere system), with a major contribution from aerosol forcing being a minority view at present. [Dave Rowell (Reviewer's comment ID #: 222-24)]	Text misunderstood by reviewer. The ensemble mean model response is drying in the 20th and moistening in the 21st centuries, implying that the ensemble mean 20th century response, which must be forced, is likely due to aerosols. There is no claim about the observed drying trend.
11-598	A	22:51	22:52	I think the appropriate reference for the aerosol hypothesis would be Rotstayn and Lohmann (2002) - see Section 9.5.4.3.1. [Francis Zwiers (Reviewer's comment ID #: 305-144)]	accepted
11-599	A	22:52	22:52	insert "by" after "not"	Accepted

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				[Bart Van den Hurk (Reviewer's comment ID #: 274-101)]	
11-600	A	23:3		Write Hoerling et al., 2006 [Ibouraïma YABI (Reviewer's comment ID #: 297-33)]	corrected
11-601	A	23:6		On pg. 23, line 6 please change "Chou and Neelin 2004" to "Chou and Neelin 2003" [coordinated change on pg. 17, refs are reversed. Refs already in reference section.] Consider adding Neelin et al 2003 to this list. [J. David Neelin (Reviewer's comment ID #: 187-10)]	corrected
11-602	A	23:6		Write Chou et al., 2006 [Ibouraïma YABI (Reviewer's comment ID #: 297-34)]	corrected
11-603	A	23:11	23:15	This is more or less stated also on page 24, lines 11-15. Suggest omitting the lines here, as they also seem less of assessment character. [Markku Rummukainen (Reviewer's comment ID #: 223-56)]	Text deemed appropriate as is
11-604	A	23:12	23:12	Correct and check the spelling of "Haarsma" throughout the chapter. [Dave Rowell (Reviewer's comment ID #: 222-26)]	corrected
11-605	A	23:13	23:13	Conclusion is mis-spelled. [Francis Zwiers (Reviewer's comment ID #: 305-145)]	corrected
11-606	A	23:13		typo [Rasmus E. Benestad (Reviewer's comment ID #: 18-20)]	corrected
11-607	A	23:13		Write conclusion (not conclonsion) [Ibouraïma YABI (Reviewer's comment ID #: 297-35)]	corrected
11-608	A	23:14	23:15	Most scientists are of the view that SSTs drive Sahelian decadal variability (ie. internal variability of the coupled ocean-atmosphere sytem), so please cite this mechanism prior to the aerosol theory. [Dave Rowell (Reviewer's comment ID #: 222-27)]	accepted
11-609	A	23:17	23:18	Repeated information. [Dave Rowell (Reviewer's comment ID #: 222-28)]	Material omitted in final draft
11-610	A	23:26	23:27	Omit "pdfs" and change from "regions/seasons" to "projected regional and seasonal changes". [Markku Rummukainen (Reviewer's comment ID #: 223-57)]	accepted
11-611	A	23:26	23:26	Replace "pdfs" with "pdf". This type of minor error (adding an s at the end of various acronyms or nouns when followed by another noun in plural), occurs frequently in this chapter. [Francis Zwiers (Reviewer's comment ID #: 305-146)]	accepted
11-612	A	23:32	23:32	Write instead "between 1996 and 2015"? [Dave Rowell (Reviewer's comment ID #: 222-29)]	accepted
11-613	A	23:40	23:40	Point out that the HadAM3H runs are themselves time-slice simulations based on lower	accepted

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				resolution CGCM simulations. [Francis Zwiers (Reviewer's comment ID #: 305-147)]	
11-614	A	23:50	24:15	I think far too much weight (in terms of length of text and inclusion of a diagram) is given to this paper (written by one of the chapter's lead authors!). I suggest reducing this to 2-3 sentences of text only. [Dave Rowell (Reviewer's comment ID #: 222-30)]	Consensus of lead authors other than author of this paper is that this work is distinctive in the African downscaling literature and deserves the space allotted to it
11-615	A	23:51	23:52	Omit the sentence in the parenthesis. It is either too much or too little detail. [Markku Rummukainen (Reviewer's comment ID #: 223-58)]	accepted
11-616	A	24:11	24:15	Not sure if this is the right place for this I would have thought Burke et al 2006 (Burke, E.J., S.J. Brown, and N. Christidis, 2006: Modelling the recent evolution of global drought and projections for the 21st century with the Hadley Centre climate model. J. Hydromet., in press.) would have a usefull contribution to make here. Not only do they formaly detect the influence on CO2 on the increased Palmer Drought Severity Index on the global scale but they also produce mas of the trend ihn PDSI through this century showing most Africa tending to more arid conditions except for central/eastern areas. [Simon Brown (Reviewer's comment ID #: 32-10)]	Reference will be checked for suitability
11-617	A	24:14	24:14	To resist something suggests intransigence. Perhaps it would be better to "down weight" the projection. [Francis Zwiers (Reviewer's comment ID #: 305-148)]	accepted
11-618	A	24:15		Writ literature. [Ibouraïma YABI (Reviewer's comment ID #: 297-36)]	corrected
11-619	A	24:23	24:28	It might be useful to remind the reader that the nominally expected frequency is 5% (assuming that the thresholds are accurately estimated - which they might not be). Incidentally, this business of estimating thresholds is not simple. The out of sample threshold crossing frequency will likely be different than the nominal 5% that is expected. See Zhang, X., G.C. Hegerl, F.W. Zwiers, J. Kenyon, 2005: Avoiding inhomogeniety in percentilebased indices of temperature extremes. J. Clim., 18, 1641-1651. [Francis Zwiers (Reviewer's comment ID #: 305-149)]	Accepted, and reference to be checked for relevance
11-620	A	24:24	24:24	A comma is missing after Table 11.2. [Govt. of Finland (Reviewer's comment ID #: 2009-162)]	accepted
11-621	A	24:24	24:24	Omit "We focus... Table 11.2". [Markku Rummukainen (Reviewer's comment ID #: 223-59)]	accepted
11-622	A	24:25	24:25	I suggest only mentioning the wet seasons (MAM and SON); JJA and DJF have much less practical relevance. [Dave Rowell (Reviewer's comment ID #: 222-33)]	Section rewritten

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11-623	A	24:27	24:27	"increases to 20%" sounds wrong, given the used definition of extreme seasons". Perhaps, "In South Africa, in contrast, one of five austral winter and spring appears as extremely dry by the end of the 21st century." 706 11-706 60 [Markku Rummukainen (Reviewer's comment ID #: 223-33)]	accepted
11-624	A	24:33	24:33	"Tadross" instead of "Tandross". [Markku Rummukainen (Reviewer's comment ID #: 223-61)]	corrected
11-625	A	24:38	24:38	Mizuta et al. (2006), Oouchi et al. (2006) and Kamiguchi et al. (2006) are suitable for the citation rather than Mizuta et al. (2005). Kamiguchi, K., A. Kitoh, T. Uchiyama, R. Mizuta and A. Noda, 2006: Changes in Precipitation-based Extremes Indices Due to Global Warming Projected by a Global 20-km-mesh Atmospheric Model. SOLA, 2, 64-67, doi:10.2151/sola.2006-017. Mizuta, R., K. Oouchi, H. Yoshimura, A. Noda, K. Katayama, S. Yukimoto, M. Hosaka, S. Kusunoki, H. Kawai and M. Nakagawa, 2006: 20-km-mesh global climate simulations using JMA-GSM model -- mean climate states --. J. Meteor. Soc. Japan, 84, 165-185. Oouchi, K., J. Yoshimura, H. Yoshimura, R. Mizuta, S. Kusunoki and A. Noda, 2006: Tropical cyclone climatology in a global-warming climate as simulated in a 20km-mesh global atmospheric model: Frequency and wind intensity analyses. J. Meteor. Soc. Japan, 84, 259-276. [Akira Noda (Reviewer's comment ID #: 192-9)]	References to be examined for inclusion
11-626	A	24:44	24:45	Recall the relevant types of evidence, at least in a foot note: very likely, many policymakers will read the subchapter "Robust conclusions and uncertainties" only [Govt. of France (Reviewer's comment ID #: 2010-85)]	Method for referring to types of evidence to be revised
11-627	A	24:47	25:2	Given the model errors noted in 11.3.2, this assessment seems way to confident of the future changes. In addition, missing physics in the models (i.e. interactive vegetation) should also lower the confidence...I would think. [Ronald J Stouffer (Reviewer's comment ID #: 258-52)]	Some confidence estimates to be lowered to final version
11-628	A	24:49	24:50	It's not clear to me what "1 and 2" refer to. Same comment for subsequent list items, and subsequent sections. [Dave Rowell (Reviewer's comment ID #: 222-31)]	Method for referring to types of evidence to be revised
11-629	A	24:49	24:50	I must say that I had to search hard to find the bit of text describing the types of evidence considered (are they the three points outlined in Box 11.1??). The three types need to be outlined a bit more prominently - perhaps by laying them out in a small table within the box, with some discussion for each type of evidence describing how it is used to make the various assessments. Also, the citation of where the three types are outlined needs to be made more precise, rather than just pointing at the 4 page intro to section 11.3. [Francis Zwiers (Reviewer's comment ID #: 305-150)]	Method for referring to the types of evidence to be revised
11-630	A	24:50		Write 2 ;	No longer relevant

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				[Ibouraïma YABI (Reviewer's comment ID #: 297-37)]	
11-631	A	24:51	24:51	Please clarify what is meant by "North Africa"; to me it means all of Africa north of the equator. [Dave Rowell (Reviewer's comment ID #: 222-32)]	accepted
11-632	A	24:52		Write and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-38)]	No longer relevant
11-633	A	24:54	24:54	"East Africa" only, not "tropical" Africa (the latter meaning all longitudes of Africa equatorward of 23deg). [Dave Rowell (Reviewer's comment ID #: 222-34)]	accepted
11-634	A	24:55		Write and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-39)]	accepted
11-635	A	25:0		In sections 11.3.3 and 11.3.5, reference is made to the "THC". Elsewhere in the WG1 report, the reference is to the "MOC". Unless there is a good reason for the change of terminology - perhaps a subtle distinction that I have not appreciated - the terminology should be unified. [Adrian Simmons (Reviewer's comment ID #: 242-165)]	Accepted. THC replaced by MOC
11-636	A	25:4	:21	The summary does not say anything on the change about the temperature [Ibouraïma YABI (Reviewer's comment ID #: 297-44)]	Issues of temperature are not a major source of uncertainty, however, will reconsider adding to this section.
11-637	A	25:8		Write West cost) ; [Ibouraïma YABI (Reviewer's comment ID #: 297-40)]	Noted
11-638	A	25:12		Write projections ; [Ibouraïma YABI (Reviewer's comment ID #: 297-41)]	Noted
11-639	A	25:14		limited ; [Ibouraïma YABI (Reviewer's comment ID #: 297-42)]	Noted
11-640	A	25:15	25:16	This statement on empirical downscaling does not seem specific for Africa. [Markku Rummukainen (Reviewer's comment ID #: 223-62)]	Will rephrase for context of Africa
11-641	A	25:15		ESD cannot capture changes in local feedback mechanisms, but can RCMs? (only if they are explicitly represented, I'd think). [Rasmus E. Benestad (Reviewer's comment ID #: 18-21)]	Noted; but they do capture some degree of feedbacks in terms of soil moisture changes. Text will be modified.
11-642	A	25:17	25:18	Does this also apply to other regions of Africa? [Dave Rowell (Reviewer's comment ID #: 222-35)]	No completely. This is most particularly true for Sahel.
11-643	A	25:18		région ; [Ibouraïma YABI (Reviewer's comment ID #: 297-43)]	Noted
11-644	A	25:23	32:55	Too much weight put on the PRUDENCE results! After all, the PRUDENCE project does not represent any new information in terms of large spatial scales, as it consists of a	AR4 results have a primary role in our assessment and we don't feel they are

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				number of RCMs driven by 3 TAR GCMs. Most of the results are in fact based on HadCM3. The PRUDENCE results reveal uncertainties or robustness associated in using different RCMs for regionalisation, but does not alleviate the main bottleneck - uncertainties with respect to emission scenarios and GCM biases (note that HadAM3H is a re-run of HadCM3 after SST biases have been 'swept under the carpet'). ESD is barely mentioned, and the reader can get the false impression that it is inferior to RCM. As mentioned below, some of the PRUDENCE results are unrealistic. There has been another project called STARDEX - not even mentioned! More weight should be put on the new AR4-runs. The KNMI has recently published a report (van den Hurk et al. (2006), KNMI Climate Change Scenarios 2006 for the Netherlands, KNMI Scientific Report WR 2006-01) in which there should be references to more work. Also, there is the BACC (Chapter 3; Graham et al., 2006) which I cannot see cited (different citation for the whole report?). [Rasmus E. Benestad (Reviewer's comment ID #: 18-23)]	underrepresented. The discussion of PRUDENCE will be shortened slightly for the final version. Nonetheless, a relatively wide use of the PRUDENCE results is motivated because the comprehensive analysis made for these simulations makes them very useful for illustrating some of the mechanisms and uncertainties involved in European climate change. The focus of this subsection is future climate change in Europe, not the methodologies used to derive the climate change information. In practice the assessment is mainly based on results from dynamic models because many SD studies are site-specific and difficult to generalize for the European area. The few published STARDEX results that are currently available have little overall impact on our assessment of European climate change. The same is true for BACC which is largely based on TAR generation model results.
11-645	A	25:23		Section 11.3.3. Rainfall trend estimation in Mediterranean areas as well as outputs of model projections has a great degree of uncertainty. Main causes are related with the following facts: a) winter precipitation contribution is lower than autumn or spring contributions, and, in some regions, than in summer; the chapter refers mainly to winter and summer precipitation; b) the role of the Mediterranean air mass, specific features of Mediterranean Meteorology, and topography, is decisive in the rainfall distribution as well as heavy rainfall events (Llasat, in press); c) when the length of the rainfall series increases to more than 100 years, trends have not a good significance in some regions (Llasat and Quintas, 2004). Precipitation in Mediterranean countries have a strong component related with systems developed in the own Mediterranean region as well as a strong orographic influence (e.g. Mediterranean cyclogenesis and lee depressions). A recent climatology of surface cyclones covering the whole Mediterranean region from an operational analysis spanning June 1998 to May 2001 (Gil et al., 2003), shows that the	A general decrease in Mediterranean precipitation in a warming climate is strongly supported by model results and our physical understanding. The possibility of a regional variation in the trends is acknowledged in the section but there is no space to discuss this in detail. Also, a distinction should be made between the past and the future, because the climate changes in the 20th century were weaker, and therefore more likely to be significantly modified by internal climate variability, than the

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				mean frequency is above 2200 cyclones/year Jansà et al.(1996) have identified the presence of a cyclonic centre in 79% of 721 heavy rain cases in the Mediterranean area, and Rigo and Llasat (2003) have shown that 79% of heavy rainfall events occurring in NE of Spain, were related to a Mediterranean cyclone. This uncertainty in the projected precipitation changes using different regional models over Spain is showed in the report made by the Ministerio de Medio Ambiente (2005) , although results point to a “more like than not” trend to decrease precipitation. Ministerio de Medio Ambiente, 2005. Evaluación Preliminar de los Impactos en España por efecto del Cambio Climático. J.Moreno (coord.), OECC, 822 pp. http://www.mma.es/oecc/impactos2.htm Gil, V.E., A. Genovés, M.A. Picornell and A. Jansà (2002) Automated database of cyclones from the ECMWF model: preliminary comparison between west and east Mediterranean basins. Proceedings of the 4th EGS Plinius Conference held at Mallorca, Spain, October 2002. Jansà, A., A. Genovés, R. Riosalido and O. Carretero (1996) Mesoscale cyclones vs heavy rain and MCS in the Western Mediterranean. MAP Newsletter 5: 24-25 Rigo, T. and M.C. Llasat (2003) Features of Convective Systems in the NW of the Mediterranean Sea. Proceedings of 5th EGU Plinius Conference on Mediterranean Storms Ajaccio, France, 1-3 octubre 2003. (European Geosciences Union, EGU). Llasat, in press. The Physical Geography of the Mediterranean Basin. Chapter 24: High magnitude storms and floods. Oxford University Press.Llasat, M.C., L. Quintas, 2004. Stationarity of Monthly Rainfall Series since the Middle of the XIXth Century. Application to the case of Peninsular Spain. Natural Hazards 31, 613-622. [Govt. of Spain (Reviewer’s comment ID #: 2019-54)]	changes projected for the 21st century.
11-646	A	25:25	25:35	As a part of key processes should be (except of summer heat wave 2003) also mentioned some flooding episodes, in particular, summer 2003 in central E. or spring/summer 2005 in southeastern E, which have been also influenced by atmospheric circulation. [Govt. of Czech Republic (Reviewer’s comment ID #: 2007-2)]	The flood of 2002 will be mentioned briefly.
11-647	A	25:27	25:27	The reason for referring here to Box 11.1 is unclear. [Govt. of Finland (Reviewer’s comment ID #: 2009-163)]	Incorrect reference will be fixed.
11-648	A	25:28	25:29	CHANGE IN: Variations in the atmospheric circulation influence the European climate both on interannual and longer time scales (Lionello, 2006). [Marina Baldi (Reviewer’s comment ID #: 11-2)]	We don’t think this statement really needs a reference, and if one were given it should cover all of Europe rather than only the Mediterranean.
11-649	A	25:31	25:33	Correlation between NAO and precipitation in the Mediterranean is very low, and can not be generalised. Besides this, winter is not the rainiest season in the major part of	NAO - see response to next comment. Winter versus other seasons: to

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				Mediterranean regions, where rainiest seasons are autumn and spring. For these seasons correlation between NAO and rainfall are still lower that for winter season. An upward trend in the NAO in winter doesn't mean a decrease in winter precipitation in the entire region. [Govt. of Spain (Reviewer's comment ID #: 2019-55)]	alleviate this potential problem we also show results for changes in annual precipitation.
11-650	A	25:31	25:32	Insert "most of" between "in" and "the" in the phrase "and the simultaneous decrease in winter precipitation in the Mediterranean area". Rationale: taking into account the great variability in mediterranean precipitation, there is not enough information and evidences that can support this statement for the whole Mediterranean area [Govt. of Spain (Reviewer's comment ID #: 2019-91)]	Sentence deleted.
11-651	A	25:34	25:35	Suggest to broad the sentence to say complex terrain rather than mountainous, more references can be added like (Millán, M. M., et al., 2000 J. Appl. Meteor., 39, 487-508) [Govt. of Spain (Reviewer's comment ID #: 2019-13)]	Complex terrain - accepted. Additional references – the one in the next comment is probably a better example.
11-652	A	25:35	25:35	Add reference (Fernández et al., 2003) to Bojariu and Giorgi, 2005, it shows that the third EOF of winter precipitation is linked to orographically forced ascent of moisture. Full reference: J. Fernández, Sáenz, J., Zorita, E., 2003, Analysis of wintertime atmospheric moisture transport and its variability over southern Europe in the NCEP reanalyses, Climate Research, 23:195-215. [Govt. of Spain (Reviewer's comment ID #: 2019-156)]	Accepted.
11-653	A	25:38	25:38	"THC" - "MOC" is used in most of the rest of the report to describe the ocean circulation in view here. [Ronald J Stouffer (Reviewer's comment ID #: 258-53)]	Accepted. THC replaced by MOC
11-654	A	25:44	25:44	"In the north-eastern part of the continent". Also true for many high-altitude regions. [Erik Kjellström (Reviewer's comment ID #: 131-25)]	Wording modified to incorporate both cases.
11-655	A	25:46	25:46	I would refute the implication that "occasionally" also applies to the key processes involved in future changes. [Dave Rowell (Reviewer's comment ID #: 222-37)]	"Occasionally" replaced with "at times"
11-656	A	25:53	25:55	It worth to explain abbreviations NEU/SEU (additionally to reference to Supplementary material) - it could help to readers through the text [Govt. of Czech Republic (Reviewer's comment ID #: 2007-3)]	The reference to the definition of the regions will be made clearer.
11-657	A	25:53	25:55	"NEU" and "SEU" - I missed their definitions. [Ronald J Stouffer (Reviewer's comment ID #: 258-54)]	See comment 11-656.
11-658	A	25:54		See comment #142 about the possibility of a "rogue" model. If it is felt appropriate here to exclude one model with an obvious defect, should this model's results have been excluded in earlier sections of the report? This is rather disconcerting. See also comment #168. [Adrian Simmons (Reviewer's comment ID #: 242-166)]	The case discussed for northern Europe is probably the single most obvious example where the climate response is biased by a severe regional bias in

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					control climate. However, because the performance of models varies from region to region, it is not clear that this model is the worst in a universal sense.
11-659	A	25:55	25:55	At least in Figure 11.2.1, the southern European region is referred to as MED, rather than SEU. See also later in this part of Chapter 11. [Markku Rummukainen (Reviewer's comment ID #: 223-63)]	Consistency will be ensured in the final version.
11-660	A	26:12	26:16	Repeated? [Rasmus E. Benestad (Reviewer's comment ID #: 18-22)]	Paragraph deleted for brevity.
11-661	A	26:12	26:12	Insert "reasonably" between simulated and well. [Govt. of Netherlands (Reviewer's comment ID #: 2016-53)]	Paragraph deleted for brevity.
11-662	A	26:16	26:16	Add: " ,2006" after 2005. [Govt. of Netherlands (Reviewer's comment ID #: 2016-54)]	2005 replaced by 2006
11-663	A	26:17	27:11	What is this box doing in the history chapter? [Dennis Hartmann (Reviewer's comment ID #: 100-3)]	Layout will be improved.
11-664	A	26:22	26:24	If causality is established, as it might be given the relation of state variables and processes, these lines are fine. Otherwise, perhaps "coincides with". [Markku Rummukainen (Reviewer's comment ID #: 223-64)]	Wording will be modified to the direction of this suggestion.
11-665	A	26:33	26:33	delete "some" [Bart Van den Hurk (Reviewer's comment ID #: 274-102)]	Accepted.
11-666	A	26:37	26:37	delete "maximum" [Bart Van den Hurk (Reviewer's comment ID #: 274-103)]	Accepted.
11-667	A	26:38	26:40	What type of data were the models compared to? If station data, scaling considerations would lead one to expect models that operate "correctly" to underestimate observed extremes, even at RCM resolutions. [Francis Zwiers (Reviewer's comment ID #: 305-151)]	As specified in the final version: gridded observations. The comparison should be fair.
11-668	A	26:43	26:43	I think the author is "Booij" instead of "Booji" [Bart Van den Hurk (Reviewer's comment ID #: 274-104)]	Fixed.
11-669	A	27:0		The current content of sect.11.3.3.3.1 could probably be made a bit more concise. On the other hand, it would also be good include some brief discussion of the role of snow and soil moisture feedbacks on the pattern and seasonality of the temperature changes. [Dave Rowell (Reviewer's comment ID #: 222-39)]	We will try to shorten the text. The role of snow and soil moisture feedbacks is mentioned in Sections 11.3.3.1 and 11.3.3.3.2
11-670	A	27:1	27:1	Replace "Prediction" with "Projection" [VINCENT GRAY (Reviewer's comment ID #: 88-1797)]	Rejected. Project names are not changed afterwards.
11-671	A	27:2	27:2	Could replace "over twenty" with the actual number, unless the sentence reflects various roles/kinds of contributions in PRUDENCE.	The exact number is not unambiguous (21 or 25, depending on the definition

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				[Markku Rummukainen (Reviewer's comment ID #: 223-65)]	of "participant").
11-672	A	27:3	27:3	Replace "climate change" with "projected changes in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1798)]	Rejected. The meaning of "Climate change scenario" is not unclear.
11-673	A	27:10	27:12	Point out that the HadAM3H runs are themselves time-slice simulations based on lower resolution CGCM simulations. [Francis Zwiers (Reviewer's comment ID #: 305-152)]	Rejected. Unnecessary technical detail.
11-674	A	27:18	27:23	Is Table 1 really necessary if in majority of simulations only one experiment has been conducted? Meaning of Table could be substitute by one sentence. [Govt. of Czech Republic (Reviewer's comment ID #: 2007-4)]	Table deleted.
11-675	A	27:18	27:23	I don't find the table 1 in box 11.2 very informative. Can we have some ideas about the "uncertainty" (i.e. the spreading of the RCM) runs instead of only the number of RCM runs by GCMs ? [Eric Martin (Reviewer's comment ID #: 166-2)]	Table deleted.
11-676	A	27:21	27:21	Why not identify the RCMs in the upper row of the table? [Francis Zwiers (Reviewer's comment ID #: 305-153)]	Table deleted.
11-677	A	27:27		11.3.3.3.1 to 4 Sections 11.3.3.3.1 and 2 give barely a mention to GCM results (eg Tebaldi et al 2006, Barnett et al. 2006, Clark et al. 2006) yet section 11.3.3.3.3 and 4 use GCM results very effectively to show how robust regional changes are. I would have thought that all sections should utilise the information GCM results provide on regional changes, but at the very least the use of GCM results should be consistent between sections. Refs:Barnett, D.N., S.J. Brown, J.M. Murphy, D.M.H. Sexton, and M.J. Webb, 2006: Quantifying uncertainty in changes in extreme event frequency in response to doubled CO2 using a large ensemble of GCM simulations. Clim. Dyn., online 1432-0894. Clark, R., S. Brown, and J. Murphy, 2006: Modelling northern hemisphere summer heat extreme changes and their uncertainties using a physics ensemble of climate sensitivity experiments. J. Clim., in press. Tebaldi, C., K. Hayhoe, J.M. Arblaster, and G.A. Meehl, 2006: Going to the extremes: An intercomparison of model-simulated historical and future changes in extreme events. Clim. Change, in press. [Simon Brown (Reviewer's comment ID #: 32-7)]	We will add these references to the subsection on temperature variability and extremes.
11-678	A	27:33	27:33	Put the reference to Table 11.2 in brackets? [James Renwick (Reviewer's comment ID #: 211-21)]	Fixed.
11-679	A	27:33	27:33	"temperatures rising above the background of natural variability" - Is this 1 sigma? What is the control period? Present day? [Ronald J Stouffer (Reviewer's comment ID #: 258-55)]	We will try to explain this more clearly.
11-680	A	27:33	27:33	put "Table 11.2" between brackets [Bart Van den Hurk (Reviewer's comment ID #: 274-106)]	Fixed.

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11-681	A	27:41	27:41	Replace "is likely to" with "may be" [VINCENT GRAY (Reviewer's comment ID #: 88-1799)]	Rejected. No evidence given to support the suggestion.
11-682	A	27:41	27:42	This sentence does not make sense. [Dave Rowell (Reviewer's comment ID #: 222-38)]	We will clarify the sentence.
11-683	A	27:43	27:43	put "Table 11.2" between brackets [Bart Van den Hurk (Reviewer's comment ID #: 274-107)]	Fixed.
11-684	A	28:12	28:12	replace "unrelated" by "not related" [Bart Van den Hurk (Reviewer's comment ID #: 274-108)]	Noted. The sentence will be reformulated.
11-685	A	28:14	28:14	"THC" - "MOC" is used in most of the rest of the report to describe the ocean circulation in view here. [Ronald J Stouffer (Reviewer's comment ID #: 258-56)]	Accepted.
11-686	A	28:14	28:14	I think the agreed term for use in the AR4 is MOC, not THC. [Francis Zwiers (Reviewer's comment ID #: 305-154)]	Accepted.
11-687	A	28:15	28:16	Is the part of sentence "...as the direct atmospheric effects of increased greenhouse gases dominate over the changes in ocean circulation." really true? [Govt. of Czech Republic (Reviewer's comment ID #: 2007-5)]	See comment 11-688.
11-688	A	28:16	28:16	Delete "direct". [Ronald J Stouffer (Reviewer's comment ID #: 258-57)]	Wording modified for clarity: "other climatic effects of increased CO2".
11-689	A	28:23	28:23	I think Stouffer et al. 2006 is a better reference than either M+S 97 or Velliga and Wood 2002. Stouffer, R. J., K. W. Dixon, M. J. Spelman, W. Hurlin, J. Yin, J. M. Gregory, A. J. Weaver, M. Eby, G. M. Flato, D. Y. Robitaille, H. Hasumi, A. Oka, A. Hu, J. H. Jungclaus, I. V. Kamenkovich, A. Levermann, M. Montoya, S. Murakami, S. Nawrath, W. R. Peltier, G. Vettoretti, A. Sokolov, and S. L. Weber, 2006: Investigating the causes of the response of the thermohaline circulation to past and future climate changes. Journal of Climate, 19(8), 1365-1387. [Ronald J Stouffer (Reviewer's comment ID #: 258-58)]	Accepted.
11-690	A	28:26	28:35	Not more ESD-based studies? A google-scholar search on '(empirical OR statistical) AND downscaling AND Europe AND scenarios' yielded 1300 hits. I would expect to see more Bayesian statistics and probabilistic scenarios ESD can be used for providing diagnostics and quality control against real observations. [Rasmus E. Benestad (Reviewer's comment ID #: 18-24)]	This subsection focuses on projections of climate change, not on methodologies to derive the projections. ESD results are taken into account in our assessment but they are discussed only to the extent that they add to the information available from dynamical models.
11-691	A	28:26	28:26	The acronym was introduced as SD on page 9, line 13.	Fixed.

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				[Markku Rummukainen (Reviewer's comment ID #: 223-66)]	
11-692	A	28:30	28:30	21th" should be "21st [James Renwick (Reviewer's comment ID #: 211-22)]	Fixed.
11-693	A	28:32	28:32	replace "localities" by "locations" [Bart Van den Hurk (Reviewer's comment ID #: 274-109)]	Accepted.
11-694	A	28:33	28:33	replace "localities" by "locations" [Bart Van den Hurk (Reviewer's comment ID #: 274-110)]	Accepted.
11-695	A	28:37		11.3.3.3.2 Extreme in themperature are only really talked about in terms of changes in variability. Although this is valid, I am not sure that this as useful to policy makers as discussions of extreme temperatures themselves, eg changes in high percentiles would be. Clark et al 2006 does this and gives change maps for the 99th percentile of daily maximum temperature due to doubling of co2. Calrk also shows that changes in the daily temperature distributions can be very non-uniform which changes in variance will not accurately describe. Barnett et al 2006 give maps of changes in relative frequency of teperature extremes which I also woudl think would be more policy friendly than changes in variance. [Simon Brown (Reviewer's comment ID #: 32-9)]	Disagreed. Given the available information, the best that we can do is to give an idea of whether the extremes are likely to increase more or less than the mean. We are hesitant to cite the numbers in any individual study, particularly studies based on idealized forcing scenarios.
11-696	A	28:38	28:38	Replace "indicated" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1800)]	Wording modified to eliminate possible ambiguity.
11-697	A	28:39	:42	Please, specify if it is possible the values of the temperature change [Ibouraïma YABI (Reviewer's comment ID #: 297-45)]	See comment 11-695.
11-698	A	28:46		Write et al., Lechebush et al., Pinto et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-46)]	Fixed.
11-699	A	28:47		Remove ' ' t " which is repeated [Ibouraïma YABI (Reviewer's comment ID #: 297-47)]	Fixed.
11-700	A	28:48	28:49	"The PRUDENCE simulations suggest that temperature conditions similar to those observed in 2003 may occur in an average summer in the late 21st century (Beniston, 2004)" But Stott et al. 2004 says this will happen by mid 21st century. [Simon Brown (Reviewer's comment ID #: 32-4)]	Noted. This portion of the text will be deleted for brevity.
11-701	A	28:48	28:48	Replace "suggests" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1801)]	Rejected. No motivation given to the suggested change.
11-702	A	28:51	28:51	Replace "analysed" with "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1802)]	Rejected. No motivation given to the suggested change.
11-703	A	28:53	28:53	the increased variability in sourthern Europe is surprising; I thought the variability would even reduce, as dry conditions become more common [Bart Van den Hurk (Reviewer's comment ID #: 274-111)]	Noted. Other mechanisms such as increased land-sea temperature contrast might explain the model results, but we

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					have no space to discuss this in detail.
11-704	A	28:54	28:55	The text mentions southern and central Europe, whereas Figure 11.3.3.3 depicts the British Isles (as an example of a region where this was not so evident) and Eastern Europe. I.e., reconcile between southern/central and eastern Europe. [Markku Rummukainen (Reviewer's comment ID #: 223-67)]	Text modified accordingly.
11-705	A	28:55	28:55	Replace "found" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1803)]	Wording modified for clarity.
11-706	A	29:1	29:2	Clark et al 06, with their perturbed physics ensemble also supports these results in general (their fig 6), however they also show areas such as eastern Europe where inter-annual variance goes down. Clark's distinction between intra and inter-annual variance is useful and could be mentioned here. Or at least which this paragraph is talking about could be made clearer. [Simon Brown (Reviewer's comment ID #: 32-5)]	We will make it more explicit that this paragraph considers variability on the daily time scale.
11-707	A	29:6	29:6	Replace "indicate" with "project" [VINCENT GRAY (Reviewer's comment ID #: 88-1804)]	Rejected. No motivation given for the suggested change.
11-708	A	29:11	29:11	Replace "indicate" with "project" [VINCENT GRAY (Reviewer's comment ID #: 88-1805)]	Rejected. No motivation given for the suggested change.
11-709	A	29:11	29:32	Summer contribution to total rainfall in Mediterranean countries is usually low (exception: high mountain regions). On the other hand it is difficult to find a common trend. Mosmann et al (2004) shows an increase of summer convective precipitation in south of Spain on July and August. Mosmann, V, A. Castro, R. Fraile, J. Dessens, J.L. Sánchez, 2004. Detection of statistically significant trends in the summer precipitation of mainland Spain. Atmospheric Research 70, 43-45. [Govt. of Spain (Reviewer's comment ID #: 2019-56)]	Given that the changes in annual precipitation are also given and it is said that the numbers refer to per cent change, this requires no change to the text. Details of observed precipitation changes are difficult to interpret due to interdecadal climate variability. They do not alter our assessment that a general decrease in precipitation in Southern Europe is very likely.
11-710	A	29:11		Causality for reduced snow cover: is it reduced snow causing increased temperature or the other way round? (Can there be extremely cold temperatures in the absence of snow? OR more to do with temperature inversions and calm conditions, whereas Fohn effects tend to get rid of snow?). Representation of snow in climate models is crude and not very accurate. [Rasmus E. Benestad (Reviewer's comment ID #: 18-25)]	Both ways: warmer temperatures lead to reduced snow but the decrease in snow reduces the thermal isolation between the ground and the air, thus warming up particularly the lowest temperatures. Wording modified.
11-711	A	29:13	29:13	Add "Kjellström, E., 2004. Recent and Future Signatures of Climate Change in Europe. Ambio, 33(4-5), 193-198." to the references. [Erik Kjellström (Reviewer's comment ID #: 131-26)]	Rejected. Kjellström (2004) is in this matter essentially a subset of Kjellström et al. (2006).

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11-712	A	29:16	29:16	Replace "is very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1806)]	Rejected. No motivation given to the suggested change.
11-713	A	29:19	29:19	Replace "indicated" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1807)]	Rejected. No motivation given to the suggested change.
11-714	A	29:24	29:24	Replace "indicate" with "project" [VINCENT GRAY (Reviewer's comment ID #: 88-1808)]	Rejected. No motivation given to the suggested change.
11-715	A	29:31	29:31	"the 5 95% uncertainty" should be "the 5-95% uncertainty". [Chiu-Ying LAM (Reviewer's comment ID #: 139-23)]	Text deleted.
11-716	A	29:37	29:38	M. M. Millán & others, J. Climate, 18, 684-701(2005), can be used as a reference that illustrate that in the western coast of Spain is is found appropriated. [Govt. of Spain (Reviewer's comment ID #: 2019-14)]	Rejected. A nice paper, but not one that would be necessary for the readers to follow the text.
11-717	A	29:38	29:40	The evidence of RCMs driven by different GCMs does not on its own show that changes in atmospheric circulation are key; temperature and moisture LBCs also differ, and could be as/more important than the circulation changes, unless further analysis is cited to suggest otherwise. [Dave Rowell (Reviewer's comment ID #: 222-40)]	We will reconsider the wording. However, from the nature of the differences between the two simulations, it is likely that differences in circulation change are the primary explanation.
11-718	A	29:41		The PRUDENCE results are not realistic for changes in precipitation along the northwest coast of Norway in RCAO/ECHAM4. Glomfjord, which lies in the region Fig. 11.3.3.4 indicates >60% increase in precipitation already receives an annual amount of 2069mm! Lathough there is a jump in the series before 1920 (discontinuity), historical trends do not indicate increases anywhere near a 6%/decade. The scenario is an outlier. [Rasmus E. Benestad (Reviewer's comment ID #: 18-26)]	No change necessary. The magnitude of past changes gives no firm constraint to the changes that may happen in the future.
11-719	A	29:50	29:55	Repeat? [Rasmus E. Benestad (Reviewer's comment ID #: 18-27)]	No. We don't think this is repeated.
11-720	A	29:50	29:50	Replace "demonstrated" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1809)]	Rejected. No motivation given to the suggested change.
11-721	A	29:50	30:2	I suggest emphasising more strongly that this analysis is of monthly data, which (for trivial statistical reasons) experiences a greater role from circulation changes (internal atmospheric variability) than an analysis of seasonal data. [Dave Rowell (Reviewer's comment ID #: 222-41)]	Wording modified accordingly.
11-722	A	29:51	29:51	AR4 or TAR? [Govt. of Finland (Reviewer's comment ID #: 2009-164)]	This is AR4.
11-723	A	29:52	29:53	Easterly flow type in summer enhances precipitation in some Mediterranean regions. Some regional models tends to over-estimate the frequency of westerly type situations and under-estimate the frequency of easterly type circulations, responsible in some	No change necessary. This example is for central Europe, not for the Mediterranean.

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				Mediterranean areas oh summer and autumn heavy rainfalls (Sumner et al, 2003). Sumner, G. N., R. Romero, V. Homar, C. Ramis, S. Alonso, and E. Zorita, 2003: An estimate of the effects of climatic change on the rainfall of Mediterranean Spain by the late 21st century. Climate Dyn., 20, 789-805. [Govt. of Spain (Reviewer's comment ID #: 2019-57)]	
11-724	A	29:53	29:53	It is good to add a sentence like "The differences in simulated response of the atmospheric flow resulted in a range of projected total precipitation change where even the sign was not consistent between all simulations" after "flow type." [Bart Van den Hurk (Reviewer's comment ID #: 274-112)]	Accepted. We will add something like the suggested sentence to the text.
11-725	A	29:55	29:55	between models that the actual precipitation change." ->"between models. [Daniel Caya (Reviewer's comment ID #: 38-41)]	Accepted.
11-726	A	30:6	30:6	Replace "found" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1810)]	Rejected. No motivation given for the suggested change.
11-727	A	30:14	30:19	ESD do not yield 60% increase. SLP-based ESD tend not to give much of a trend in precipitation, and using large-scale precipitation as a predictor yields weaker variability. I am surprised there are not more ESD-based studies. ESD-based work merits more discussion than a last short paragraph, some of which involving larger multi-model ensembles than the PRUDENCE project. The fact is that the inter-GCM differences can be larger than inter-RCM differences. Some papers which may be relevant include Lambert et al. (2006), Nieto & Rodriguez-Puabla (2006), van Ulden & van Oldenburg (2006) and STARDEX-results. This will also encourage more ESD-work for future IPCC reports - as it now stands, the reader may get the impression that ESD is inferior and an activity barely useful.. [Rasmus E. Benestad (Reviewer's comment ID #: 18-28)]	Small-scale variation: we will add the word "some" before SDMs on line 30:18. This subsection focuses on projections of climate change, not on methodologies to derive the projections. ESD results are taken into account in our assessment but most of the available studies are too site- or area-specific for a discussion within the limited space that is available.
11-728	A	30:21	30:32	We would propose to add one sentence about risks of flooding as precipitation extremes will contribute to more severe flooding (to be better balanced with similar section in 11.3.5) [Govt. of Czech Republic (Reviewer's comment ID #: 2007-6)]	Rejected. Although this conclusion is plausible, we are not aware of studies that would have specifically addressed the impact of changed extreme precipitation on river flow in Europe.
11-729	A	30:22	30:22	replace "time" by "temporal" [Bart Van den Hurk (Reviewer's comment ID #: 274-113)]	Rejected. "Time mean" is used more commonly than "temporal mean".
11-730	A	30:23	30:23	Replace "are also likely to" by "could also" 292 11-292 1811 [VINCENT GRAY (Reviewer's comment ID #: 88-113)]	Rejected. No motivation given to the suggested change.
11-731	A	30:24	30:25	What is meant by "extreme short-term precipitation" here? The magnitude of the heaviest occurrences, the frequency of events exceeding some threshold of some integral of threshold-exceeding events and their heaviness? The reasoning to follow seems to	We will try to clarify this but an exact wording may turn out too cumbersome. In addition, as far as only the direction

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				incorporate more than one definition. Does this reconcile lines 44-45 on this same page? [Markku Rummukainen (Reviewer's comment ID #: 223-68)]	of the changes is considered, the exact definition is unimportant.
11-732	A	30:27	30:28	See also Kharin and Zwiers (2005, J. Clim, 18, 1156-1173), Figure 9. [Francis Zwiers (Reviewer's comment ID #: 305-155)]	The reference will be added to our list.
11-733	A	30:29	30:29	I think the author is "Booij" instead of "Booji" [Bart Van den Hurk (Reviewer's comment ID #: 274-114)]	Fixed.
11-734	A	30:40	30:40	Replace "indicated" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1812)]	Rejected. No motivation given to the suggested change.
11-735	A	30:40		The eight models are only RCMs - based on only 3 different driving TAR models? [Rasmus E. Benestad (Reviewer's comment ID #: 18-29)]	No change necessary. The fact that this study does not cover the GCM-related uncertainty is stated clearly in the end of the paragraph.
11-736	A	30:51	30:52	To support this statement you can add the reference of Alpert et al, 2002. Following it, days with torrential rainfall in Italy and Spain has increased during 1951-1995 although no significant trends have been found in Israel and Cyprus (in coherence with page 11-30, line 32). Alpert, P., T. Ben-gai, A. Baharad, Y. Benjamini, D. Yekutieli, M. Colacino, L. Diodato, C. Ramis, V. Homar, R. Romero, S. Michaelides, A. Manes, 2002. The paradoxical increase of Mediterranean extreme daily rainfall in spite of decrease in total values. Geophys. Res. Letters, 29, 11, 31-1 - 31-4. [Govt. of Spain (Reviewer's comment ID #: 2019-58)]	Rejected. Reference not central to this specific statement.
11-737	A	30:52	30:52	Replace "estimated" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1813)]	Rejected. No motivation given to the suggested change.
11-738	A	30:55	30:55	Replace "found" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1814)]	Rejected. No motivation given to the suggested change.
11-739	A	31:5	31:5	Replace "is likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1815)]	Rejected. No motivation given to the suggested change.
11-740	A	31:5	31:5	Replace "indicated" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1816)]	Rejected. No motivation given to the suggested change.
11-741	A	31:8	31:8	Replace "found" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1817)]	Rejected. No motivation given to the suggested change.
11-742	A	31:9		Taking the mean of 20 GCMs does not yield a good representation for the actual minimum or maximum seasonal precipitation. There is no reason to believe that the models produce variables with the same distribution (pdf). It's not straight forward to combine data having different pdfs to study extremes. By taking the mean, one typically	We feel that this comment suggests a misunderstanding of the paper discussed but will nevertheless reconsider the necessity of this reference.

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				alters the distribution, away from extreme distributions and towards more Gaussian (central limit theorem). CMIP2-results were furthermore reported in TAR - using old runs is probably a consequence of the tight time schedule dealt to the authoers by the IPCC process, as the recent runs were only recently made open for the analysts/researchers. [Rasmus E. Benestad (Reviewer's comment ID #: 18-30)]	
11-743	A	31:14	31:15	Replace "is very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1818)]	Rejected. No motivation given to the suggested change.
11-744	A	31:17	31:17	Please note that this refers to GCM results. By the way, does the statement refer to the Northern Europe as a whole, and as such perhaps lump together more coherent contrasting changes in different parts of the region? [Markku Rummukainen (Reviewer's comment ID #: 223-69)]	Sentence modified to indicate that it is based on GCMs. There is no part of northern Europe where there would be a universal agreement between the models.
11-745	A	31:21	31:21	Replace "suggested" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1819)]	Rejected. No motivation given for the suggested change in wording.
11-746	A	31:21	31:21	insert "future" after "increased" [Bart Van den Hurk (Reviewer's comment ID #: 274-115)]	Accepted.
11-747	A	31:24	31:24	Replace "reported" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1820)]	Rejected. No motivation given to the suggested change.
11-748	A	31:27	31:27	Replace "tend to indicate" by "project" [VINCENT GRAY (Reviewer's comment ID #: 88-1821)]	Rejected. No motivation given to the suggested change.
11-749	A	31:40	31:40	Replace "suggest" by "project" [VINCENT GRAY (Reviewer's comment ID #: 88-1822)]	Rejected. No motivation given to the suggested change.
11-750	A	31:45	31:45	Replace "indicated" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1823)]	Rejected. No motivation given to the suggested change.
11-751	A	31:46	31:46	reference to Somot (2005) is missing in the reference list: Somot (2005) Modélisation climatique du bassin méditerranéen : variabilité et scénarios de changement climatique. Ph-D thesis. Université Paul Sabatier, Toulouse- France. 333 pages, in French [Govt. of France (Reviewer's comment ID #: 2010-86)]	Will be corrected.
11-752	A	31:46	31:46	a reference to a recent review paper here: Ulbrich U., W. May, P. Lionello, J.G. Pinto, S. Somot (2006) The Mediterranean Climate Change Under Global Warming (chapter 8). In: Mediterranean Climate Variability, Lionello, P. and Malanotte, P. and Boscolo, R.(eds), Elsevier B.V, pp. 399- 415 [Govt. of France (Reviewer's comment ID #: 2010-87)]	Accepted.
11-753	A	31:46	31:46	Replace "consensus" with "agreement" [VINCENT GRAY (Reviewer's comment ID #: 88-1824)]	Accepted.

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11-754	A	31:47	31:47	Replace "will" with "might" 306 11-306 1825 [VINCENT GRAY (Reviewer's comment ID #: 88-1824)]	Rejected. No motivation given to the suggested change.
11-755	A	31:50	32:6	The topography even for RCMs tends to be too smooth to represent the real altitude. This problem cause biases for representation of snow. Snow melt is not adequately represented, due to local landscape effects - snow in forests melts much slower than on open ground due to different sun conditions and roughness height (wind).Therefore, it's extremely important to validate the models, e.g. by comparing the seasonal variations and geographical distribution. [Rasmus E. Benestad (Reviewer's comment ID #: 18-31)]	These concerns do not affect our assessment that future changes in snow conditions will be primarily dictated by changes in temperature and precipitation. Nevertheless, because changes in snow depth are likely to be affected differently by temperature and precipitation changes, the confidence level of the snow depth change has been degraded to likely.
11-756	A	31:51	31:51	Replace " will very likely" by "might" [VINCENT GRAY (Reviewer's comment ID #: 88-1826)]	Rejected. No motivation given to the suggested change.
11-757	A	31:54	31:54	Replace "found" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1827)]	Rejected. No motivation given to the suggested change.
11-758	A	31:55	31:55	The decrease of number of days with snow cover would be more useful if expressed in % than in absolute. [Daniel Caya (Reviewer's comment ID #: 38-42)]	Both alternatives have their positive and negative sides. Absolute units preferred.
11-759	A	32:1	32:1	Replace "occurred" with "was projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1828)]	Rejected. No motivation given to the suggested change.
11-760	A	32:8	32:8	Replace "is likely to" by "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1829)]	Rejected. No motivation given to the suggested change.
11-761	A	32:9	32:9	Replace "estimated" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1830)]	Rejected. No motivation given to the suggested change.
11-762	A	32:13	32:13	Replace "simulated" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1831)]	Rejected. No motivation given to the suggested change.
11-763	A	32:18	32:19	Recall the relevant types of evidence, at least in a foot note: very likely, many policymakers will read the subchapter "Robust conclusions and uncertainties" only [Govt. of France (Reviewer's comment ID #: 2010-88)]	References to the different types of evidence will be deleted from the final version.
11-764	A	32:21	32:21	Replace "are likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1832)]	Rejected. No motivation given to the suggested change.
11-765	A	32:22	32:22	Replace "is likely to" by "could" 314 11-314 1833 [VINCENT GRAY (Reviewer's comment ID #: 88-1832)]	Rejected. No motivation given to the suggested change.
11-766	A	32:23	32:24	This statement is not fully consistent with the one in chapter 10, page 24, lines 40-42 which excludes the possibility of any cooling	Statement deleted.

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				[Govt. of France (Reviewer's comment ID #: 2010-89)]	
11-767	A	32:23	32:24	What is the 10%-estimate based on? If there is no quantitative basis for it, suggest "... however, precludes excluding in full the possibility of cooling...". [Markku Rummukainen (Reviewer's comment ID #: 223-70)]	Statement deleted.
11-768	A	32:25	32:25	Replace "are very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1834)]	Rejected. No motivation given to the suggested change.
11-769	A	32:25	32:27	Lowest winter temperatures in much of Europe are associated with atmospheric blocking events and the Siberian high invading Western Europe. I did not see an assessment of the models' performance for these events. Is it "very likely" that the response is correct? [Ronald J Stouffer (Reviewer's comment ID #: 258-59)]	Confidence level degraded to likely. However, even with the uncertainty in circulation changes, other physical factors such as decreases in snow and the large-scale temperature gradient support a larger increase in the lowest temperatures than in the mean.
11-770	A	32:26	32:26	Replace "are likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1835)]	Rejected. No motivation given to the suggested change.
11-771	A	32:28	32:28	Replace "is very likely to" by "could" 317 11-317 1836 [VINCENT GRAY (Reviewer's comment ID #: 88-1835)]	Rejected. No motivation given to the suggested change.
11-772	A	32:29	32:29	Replace "is likely to" by "could" 318 11-318 1837 [VINCENT GRAY (Reviewer's comment ID #: 88-1835)]	Rejected. No motivation given for the suggestion.
11-773	A	32:31	32:31	Replace "will very likely" with "possibly" [VINCENT GRAY (Reviewer's comment ID #: 88-1838)]	Rejected. No motivation given to the suggested change.
11-774	A	32:33	32:33	Replace "is very likely to" by "could" 320 11-320 1839 [VINCENT GRAY (Reviewer's comment ID #: 88-1838)]	Rejected. No motivation given to the suggested change.
11-775	A	32:33	32:33	Insert "." after "area" [Bart Van den Hurk (Reviewer's comment ID #: 274-116)]	Accepted.
11-776	A	32:35	32:35	Replace "is likely to" by "could" 321 11-321 1840 [VINCENT GRAY (Reviewer's comment ID #: 88-116)]	Rejected. No motivation given to the suggested change.
11-777	A	32:38	32:39	Please, check if the first part of sentence is consistent with section 11.3.3.3.5 [Govt. of Czech Republic (Reviewer's comment ID #: 2007-7)]	Wording will be reformulated.
11-778	A	32:39	32:39	insert "mean" after "increased" [Bart Van den Hurk (Reviewer's comment ID #: 274-117)]	In fact, we think that the statement is valid for both means and extremes.
11-779	A	32:40	32:40	Replace "are very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1841)]	Rejected. No motivation given to the suggested change.
11-780	A	32:48	32:48	"models disagree" GCMs, RCMS or all of them? [Daniel Caya (Reviewer's comment ID #: 38-43)]	No change needed. This statement is common to all types of models.

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11-781	A	33:1	41:45	No ESD-analysis for Asia? Hard to believe as ESD is quicker to do, cheaper and provides diagnostics and analysis that can shed light onto the question of why the local response is as it is. On the IPCC sub-project publications for AR4, there are some papers which may be relevant: Hori & Ueda (2006), Kripalani et al (2005), Kripalani et al (2006), Ueda et al (2006), Chen & Chen (2003), Liao (2004). Fan et al (2005,2006), Jia et al (2006) [Rasmus E. Benestad (Reviewer's comment ID #: 18-34)]	Rejected. ESD has begun to be applied over Asia, however no solid findings for climate change so far. Of the listed references, some are based on RCM; the others are ESD but they did not do future projection, except Fan et al, (2006). But Fan et al. (2006) will not be published this year to meet the AR4 requirement of the deadline.
11-782	A	33:8	33:8	Would it be possible to explain the reasoning to the reader? [Francis Zwiers (Reviewer's comment ID #: 305-156)]	Accepted; some explanations are added
11-783	A	33:11	33:11	Adding a reference to the sophisticated analysis by Dairaku and Emori (2006) would reinforce the consensus on the dominance of moisture increase in future monsoonal precipitation. Dairaku, K. and S. Emori, 2006: Dynamic and thermodynamic influences on intensified daily rainfall during the Asian summer monsoon under doubled atmospheric CO2 conditions. Geophys. Res. Lett., 33, L01704, doi:10.1029/2005GL024754. [Seita Emori (Reviewer's comment ID #: 62-20)]	Accepted.
11-784	A	33:11		Write (Giorgi et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-48)]	Accepted.
11-785	A	33:13	33:15	This is a tad unclear. Is there evidence on the South Asian monsoon varying in concert with ENSO or on this connection varying with time? [Markku Rummukainen (Reviewer's comment ID #: 223-71)]	This refers to the connection varying with time. Text has been edited to make the meaning more clear.
11-786	A	33:20	33:23	"although aerosol effects may have been large as compared to the impacts of changing greenhouse forcing in the 20th century, ...", this opinion is still controversial, and it is inconsistent with the following sentence. So the above sentence should be deleted. [Govt. of China (Reviewer's comment ID #: 2006-76)]	Accepted; the sentence is removed.
11-787	A	33:20	33:23	Are these conclusions limited to India and China? [Ronald J Stouffer (Reviewer's comment ID #: 258-60)]	In SOD, they are based on studies over the South Asian region; text has been revised to make this more explicit.
11-788	A	33:22	33:22	Replace "will" by "might" [VINCENT GRAY (Reviewer's comment ID #: 88-1842)]	Rejected.
11-789	A	33:28		Remove "the" which is repeated [Ibouraïma YABI (Reviewer's comment ID #: 297-49)]	Accepted.
11-790	A	33:39	33:39	Please check the sentence. [Markku Rummukainen (Reviewer's comment ID #: 223-72)]	Accepted; text has been revised

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11-791	A	33:43	33:43	centrasl" -> "central [Daniel Caya (Reviewer's comment ID #: 38-44)]	Accepted; text has been revised
11-792	A	33:43	33:43	"centrasl" should be "central"? [Seita Emori (Reviewer's comment ID #: 62-21)]	Accepted; text has been revised
11-793	A	33:43	33:43	A missprint. Should be "central". [Govt. of Finland (Reviewer's comment ID #: 2009-165)]	Accepted
11-794	A	33:43	33:43	"of centrasl importance" should be "of central importance". [Chiu-Ying LAM (Reviewer's comment ID #: 139-24)]	Accepted
11-795	A	33:43		typo [Rasmus E. Benestad (Reviewer's comment ID #: 18-32)]	Accepted
11-796	A	33:47	33:47	Please replace the term "diffusion" or rewrite the sentence. [Markku Rummukainen (Reviewer's comment ID #: 223-73)]	Accepted, changed to "spread"
11-797	A	33:48	33:48	Please elaborate on which processes/circulation are responsible for this moisture transport. [Markku Rummukainen (Reviewer's comment ID #: 223-74)]	Noted; the sentence is inexplicit and has been removed
11-798	A	34:2	34:2	Insert after "show" "multiple" [VINCENT GRAY (Reviewer's comment ID #: 88-1843)]	Accepted
11-799	A	34:4	34:6	Is there a link between bias and elevation? Model surfaces would not be at the same elevation as real surfaces. Also, observations would predominantly have been taken in valleys. A further related question that arises is which observational data set is used to assess bias and whether biases in that data set have been assessed (e.g., in Ch 3). [Francis Zwiers (Reviewer's comment ID #: 305-157)]	Taken into account. We have a short discussion in the Tibetan section in SOD. The discussion has been expanded and moved to here.
11-800	A	34:6	34:12	The wet bias over the Tibet may be exaggerated because the observed data used for the estimation of bias (Xie and Arkin, 1998) doesn't capture the precipitation over the southern periphery of the plateau, which is actually seen in TRMM satellite observation. [Seita Emori (Reviewer's comment ID #: 62-22)]	Answered in review comments 11-799.
11-801	A	34:30	34:32	This statement is not very clear. Is the discussion here about a response to SST change simulated by a coupled model under anthropogenic forcing that was then prescribed in an AGCM? [Francis Zwiers (Reviewer's comment ID #: 305-158)]	Accepted; the statement has been modified to add more clarity.
11-802	A	34:48		Writing GCM. [Ibouraïma YABI (Reviewer's comment ID #: 297-50)]	Accepted; it is indeed 'driving GCM'.
11-803	A	34:52	34:54	What types of extremes were considered and what type of data were used in the comparison? Did the assessment of agreement take scaling considerations into account? For example, a model that produces 20-year 24-hour precipitation events that are as large as found in station data would be at least somewhat suspect since local intensities	Accepted; text has been edited to provide more complete information, addressing these concerns.

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				measured by rain gages should be greater than grid box mean intensities simulated by models (even in models running at T106 resolution). [Francis Zwiers (Reviewer's comment ID #: 305-159)]	
11-804	A	34:56	35:22	In section 11.3.4.2, as to the evaluation on simulation ability in East Asia, it is suggested to referring to Ding et al.(2006), in which the recent-year simulations on monsoon circulation, shift of rain band, extreme drought/flood events in East Asia and their systematic errors are addressed in detail. Reference:Ding Y H, et al., Multi-year simulations and experimental seasonal predictions for rainy seasons in China by using a nested regional climate model (RegCM_NCC). Part I: Sensitivity study, Advances in Atmospheric Sciences, Vol.23, No.3, 2006, 323-341 [Govt. of China (Reviewer's comment ID #: 2006-75)]	Accepted
11-805	A	35:1	35:1	After "Simulated temperatures in most AR4 models are too low in all seasons over East Asia", add the following statements: "and barely any model could reproduce the observational cooling downstream of the Tibetan Plateau in the 20th century climate simulation (Zhou and Yu, 2006)." For the reference, see: Zhou T., and R. Yu, 2006, 20th century surface air temperature over China and the globe simulated by coupled climate Models, Journal of Climate, in press [Govt. of China (Reviewer's comment ID #: 2006-73)]	Taken into account. Propriate statments from the reference has been added.
11-806	A	35:5	35:5	An error is found. After "(e.g., Gao et al., 2001; Gao et al., 2004", add the following reference "Zhou and Li, 2002".The paper of "Zhou and Li (2002)" has already been listed in the "References" section. [Govt. of China (Reviewer's comment ID #: 2006-74)]	Accepted
11-807	A	35:6	35:6	extratropical" should be "extratropical [Seita Emori (Reviewer's comment ID #: 62-23)]	Accepted
11-808	A	35:15	35:16	If any of these RCM studies uses reanalysis-based lateral boundary conditions, the more realistic climate may be obtained not solely because of high resolution but also because of realistic boundary condition, which is an obvious advantage for RCMs compared with AOGCMs. [Seita Emori (Reviewer's comment ID #: 62-24)]	Taken into account; RCM studies are classified by the driving fields of re-analysis and GCM
11-809	A	35:16		Sasaki et al., 2005 ? Sasaki et al.,2006 [Yasuo Sato (Reviewer's comment ID #: 226-7)]	Accepted
11-810	A	35:16		Writ al., (each time) [Ibouraïma YABI (Reviewer's comment ID #: 297-51)]	Accepted
11-811	A	35:17		very high resolution (5 km) RCM [Yasuo Sato (Reviewer's comment ID #: 226-8)]	Accepted
11-812	A	35:18		Write Yasunga et al.,	Accepted

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				[Ibouraïma YABI (Reviewer's comment ID #: 297-52)]	
11-813	A	35:20	35:24	Suggest omitting Figure 11.3.4.2 as the information seems to lend itself to an easy textual description. (I.e., provision of a figure seems excessive.) [Markku Rummukainen (Reviewer's comment ID #: 223-75)]	Taken into account. This part has been discussed in 11.2
11-814	A	35:24	35:24	Figure 11.3.4.2: Caption should say "significance level" not "significant level" [James Renwick (Reviewer's comment ID #: 211-23)]	Accepted. Figure has been removed
11-815	A	35:24		Figure really necessary? [Rasmus E. Benestad (Reviewer's comment ID #: 18-33)]	Accepted. Figure has been removed
11-816	A	35:33	35:34	Use "AGCMs". [Markku Rummukainen (Reviewer's comment ID #: 223-76)]	Accepted.
11-817	A	35:37	35:38	This could be discussed under "Key Processes". [Markku Rummukainen (Reviewer's comment ID #: 223-77)]	Noted
11-818	A	35:46	35:46	CSIRO CCAM is a global model, how can it be nested in CSIRO Mk3? [Daniel Caya (Reviewer's comment ID #: 38-45)]	Will be re-written
11-819	A	35:49	35:49	Consider another expression in lieu of "broadscale". [Markku Rummukainen (Reviewer's comment ID #: 223-78)]	accepted
11-820	A	36:5		Write Gao et al., 2001). [Ibouraïma YABI (Reviewer's comment ID #: 297-53)]	Accepted.
11-821	A	36:17	36:17	The assessment of a "significant acceleration" is not supported by Figure 11.3.4.3. To my eye, rates of change in the 21st century are approximately the same as in the late 20th century. [Francis Zwiers (Reviewer's comment ID #: 305-160)]	Accepted; text has revised.
11-822	A	36:41	36:43	This seems more appropriate in the AR4 chapters on observations and/or detection. [Markku Rummukainen (Reviewer's comment ID #: 223-79)]	Taken into account; this has been appropriately addressed in consultation with the relevant chapters.
11-823	A	36:55	36:55	"EAS" is used without definition (again in P.37 L.6), though it appears in Table 11.2. [Seita Emori (Reviewer's comment ID #: 62-25)]	Taken into account; EAS and other regions are defined now in Box 11.1.
11-824	A	37:4	37:5	Instead of stating the A2 result, consider referring to the supplemental information as done elsewhere. [Markku Rummukainen (Reviewer's comment ID #: 223-80)]	Taken into account; text has revised.
11-825	A	37:7	37:8	Please include 'Kurihara et al., 2005' to the references for temperature projection by RCM over East Asia. Kurihara,K., K. Ishihara, H. Sasaki, Y. Fukuyama, H. Saitou, I Takayabu, K. Murazaki, Y. Sato, S. Yukimoto and A. Noda, 2005: Projection of Climatic Change over Japan due to Global Warming by high-resolution regional climate model in MRI. SOLA . 1. 97-100. (This is already included in the reference list :page 82-110)	Accepted.

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				[Hidetaka Sasaki (Reviewer's comment ID #: 225-3)]	
11-826	A	37:8	37:8	'Kanada et al,2005' did not discuss temperature projection over East Asia. They discussed mainly projection for precipitation and structure of meso-beta disturbance systems. [Hidetaka Sasaki (Reviewer's comment ID #: 225-4)]	Accepted.
11-827	A	37:8		Write Xue et al., 2003a [Ibouraïma YABI (Reviewer's comment ID #: 297-54)]	Accepted.
11-828	A	37:10	37:10	"very like increase" should be "very likely increase"? [Seita Emori (Reviewer's comment ID #: 62-26)]	Accepted.
11-829	A	37:15	37:16	The formulation suggests a possibly misleading causality. Which is more fundamental, the DTR or the daytime/nighttime leading processes? Suggest reversing the sentence or replacing "giving" with "and". [Markku Rummukainen (Reviewer's comment ID #: 223-81)]	Accepted; text has been revised.
11-830	A	37:28	37:29	This information could be provided for all the regions, or none of them, or only in the supplemental information. Does it complement the AR4 GCM analyses well? [Markku Rummukainen (Reviewer's comment ID #: 223-82)]	Noted
11-831	A	37:28		Write Rwoteenja et al. (2005) [Ibouraïma YABI (Reviewer's comment ID #: 297-55)]	Accepted; text has been revised.
11-832	A	37:31	37:33	This appears somewhat strange. What does the "few studies" indicate. Is "no studies" meant. In the latter case, the statement is more or less speculative and could be deleted. [Markku Rummukainen (Reviewer's comment ID #: 223-83)]	Noted. Will consider deletion
11-833	A	37:44		Write Xue et al., 2003a [Ibouraïma YABI (Reviewer's comment ID #: 297-56)]	Accepted.
11-834	A	37:51	37:51	Why is ECHAM5 so different? Is there no change in snow in ECHAM5 for this area? Or, if so what causes the temperature increase to stay on the low side? [Erik Kjellström (Reviewer's comment ID #: 131-27)]	Noted; this is interesting however it beyonds the report scope to do further analysis.
11-835	A	37:52	37:52	Perhaps "Winter" instead of "winter half-year", not in the least considering the reference to figure 11.3.4.4 on three-month means. If there is a regional significance to winter half-year, the text might be considered to be fine. [Markku Rummukainen (Reviewer's comment ID #: 223-84)]	Accepted; text has been revised.
11-836	A	38:2	38:2	Perhaps "summer" instead of "summer half-year". [Markku Rummukainen (Reviewer's comment ID #: 223-85)]	Accepted; text has been revised.
11-837	A	38:3	38:7	Omit the added detail in the parentheses. [Markku Rummukainen (Reviewer's comment ID #: 223-86)]	Accepted; text has been revised.
11-838	A	38:3	38:3	I'm wondering if there should be some caveats stating the assumptions under which these assessments are made. Does the "very likely" take into account uncertainty in forcing over the 21st century?	Noted; the "very likely" is "Based on these simulations", thus does not take account the of the forcing uncertainties.

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				[Francis Zwiers (Reviewer's comment ID #: 305-161)]	
11-839	A	38:10	38:12	If the latter part of the sentence refer to "winter", please simplify the formulation. Otherwise please clarify the whole sentence. [Markku Rummukainen (Reviewer's comment ID #: 223-87)]	Accepted; text has been revised.
11-840	A	38:16	38:18	This seems an entry that is rather general and could be made under the "unifying themes" earlier in Chapter 11. [Markku Rummukainen (Reviewer's comment ID #: 223-88)]	Accepted; text has been revised.
11-841	A	38:21	38:28	This is just a very minor point, but the chapter would be slightly easier to read if the ranges were presented in the same way in all of the regional assessments. [Francis Zwiers (Reviewer's comment ID #: 305-162)]	Accepted; text has been revised.
11-842	A	38:53	38:53	It would be useful to add the following: "Dairaku and Emori (2006) showed from a T106 AGCM result that the increased extreme precipitation over land in South Asia would arise mainly from dynamic effect, that is, enhanced upward motion due to the northward shift of monsoon circulation." Dairaku, K. and S. Emori, 2006: Dynamic and thermodynamic influences on intensified daily rainfall during the Asian summer monsoon under doubled atmospheric CO2 conditions. Geophys. Res. Lett., 33, L01704, doi:10.1029/2005GL024754. [Seita Emori (Reviewer's comment ID #: 62-27)]	Accepted.
11-843	A	39:4	40:6	There was a paragraph in FOD, but not in SOD, mentioning weakening East Asian winter monsoon, which, I think, is a fairly robust projection result and might be retained. [Masahide Kimoto (Reviewer's comment ID #: 127-8)]	Accepted; text has been revised.
11-844	A	39:10	39:11	Some elaboration of the connection between precipitation and MSLP changes would be useful. [Markku Rummukainen (Reviewer's comment ID #: 223-89)]	Noted; however the page limits does not allow for this.
11-845	A	39:15	39:24	Kurihara et al., 2005' supports results by AOGCMs using result of a RCM. They shows increase of precipitation over western Japan in summer. In this paragraph, I recommend to include results by RCMs. [Hidetaka Sasaki (Reviewer's comment ID #: 225-5)]	Accepted.
11-846	A	39:16	39:16	Which 17 models were used? Where they IPCC AR4 models? [Francis Zwiers (Reviewer's comment ID #: 305-163)]	17 models are AR4 models. List of models are given in the paper.
11-847	A	39:18	39:20	A climate change effect is not obvious from these lines. [Markku Rummukainen (Reviewer's comment ID #: 223-90)]	Accepted; text has been revised.
11-848	A	39:22	39:23	"Oouchi et al., 2006" should be "Kusunoki et al., 2006", as Oouchi et al. is on tropical cyclones and not on Baiu? [Seita Emori (Reviewer's comment ID #: 62-28)]	Accepted; text has been revised.
11-849	A	39:23	39:23	The sentence seems a bit obscure. Does this front shift seasonally northwards under	Accepted; text has been revised.

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				current climate, but not under climate change? Or is the result that no change is projected (even though this is expected for some reason or raised as a possibility?). [Markku Rummukainen (Reviewer's comment ID #: 223-91)]	
11-850	A	39:37	39:37	What is the physical significance of the chosen areal extent? [Markku Rummukainen (Reviewer's comment ID #: 223-92)]	Accepted; text has been revised.
11-851	A	39:43		Write Fujibé et al., 2005 [Ibouraïma YABI (Reviewer's comment ID #: 297-57)]	Accepted.
11-852	A	40:12	40:12	Missing right bracket) after "...to 16%" [James Renwick (Reviewer's comment ID #: 211-24)]	Accepted.
11-853	A	40:24		typo [Rasmus E. Benestad (Reviewer's comment ID #: 18-35)]	Accepted.
11-854	A	40:35	40:39	This appears speculative if there are no regional analyses. [Markku Rummukainen (Reviewer's comment ID #: 223-93)]	
11-855	A	41:0		Section 11.3.5 refers to "CGCMs" whereas the other subsections of 11.3 refer to "AOGCMs". The terminology should be unified. [Adrian Simmons (Reviewer's comment ID #: 242-167)]	Accepted; the terminology has been unified.
11-856	A	41:8	41:10	These lines could be omitted, or discussed in the unifying themes as they are probably not specific for the Tibetan Plateau. [Markku Rummukainen (Reviewer's comment ID #: 223-94)]	Accepted; text has been removed.
11-857	A	41:9	41:9	A missprint. Should be "precipitation". [Govt. of Finland (Reviewer's comment ID #: 2009-166)]	Accepted.
11-858	A	41:9		typo [Rasmus E. Benestad (Reviewer's comment ID #: 18-36)]	Accepted.
11-859	A	41:9		Write in precipitation [Ibouraïma YABI (Reviewer's comment ID #: 297-58)]	Accepted.
11-860	A	41:12	41:12	Delete "robust" [VINCENT GRAY (Reviewer's comment ID #: 88-1844)]	Accepted.
11-861	A	41:13	41:14	Recall the relevant types of evidence, at least in a foot note: very likely, many policymakers will read the subchapter "Robust conclusions and uncertainties" only [Govt. of France (Reviewer's comment ID #: 2010-90)]	Noted.
11-862	A	41:13	:29	The summary does not say anything on the change a bout the temperature [Ibouraïma YABI (Reviewer's comment ID #: 297-59)]	Noted. Warming is discussed in line 15-17, which is the temperature change.
11-863	A	41:15	41:15	Replace "is very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1845)]	Accepted.
11-864	A	41:15	41:15	Replace "is likely to" by "could" 327 11-327 1846	Accepted.

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				[VINCENT GRAY (Reviewer's comment ID #: 88-1845)]	
11-865	A	41:15	41:29	The changes seem too certain to me. The role of aerosols in these projection seems important. Aerosols are not well modeled (Chapter 2). In addition their future projections are also uncertain. Therefore the assessment of the future changes seems too certain. [Ronald J Stouffer (Reviewer's comment ID #: 258-61)]	Certainty is not high, but sufficient for the 'likely' assessment used in most cases.
11-866	A	41:18	41:18	Replace "will increase very likely" by "might increase" [VINCENT GRAY (Reviewer's comment ID #: 88-1847)]	rejected
11-867	A	41:20	41:20	Replace "will likely " by "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1848)]	Rejected; this is a unified terminology in the Report.
11-868	A	41:21	41:21	Replace "will likely " by "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1849)]	Rejected.
11-869	A	41:22	41:22	Delete "It is very likely that" [VINCENT GRAY (Reviewer's comment ID #: 88-1850)]	Rejected.
11-870	A	41:22	41:22	Replace "will" by "might" [VINCENT GRAY (Reviewer's comment ID #: 88-1851)]	Rejected.
11-871	A	41:24	41:24	Replace "very likely" by "possible" [VINCENT GRAY (Reviewer's comment ID #: 88-1852)]	Rejected.
11-872	A	41:25	41:25	Replace "very likely" by "possibly" [VINCENT GRAY (Reviewer's comment ID #: 88-1853)]	Rejected.
11-873	A	41:26	41:26	At least for Southeast Asia, on page 40, lines 35-39 a statement is made on no explicit regional studies or evidence of this. [Markku Rummukainen (Reviewer's comment ID #: 223-95)]	Accepted. Will amend.
11-874	A	41:27	41:27	Replace "are likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1854)]	Rejected.
11-875	A	41:33	41:33	The sentence "A range of..." does not seem appropriate as it is a suggestion rather than an assessment. [Markku Rummukainen (Reviewer's comment ID #: 223-96)]	Accepted; the sentence has been removed.
11-876	A	41:45	50:38	Relevant references from IPCC AR4 sub-project publications list: Cayan et al (2006a,b,c), Frei et al (2005), Kunkel et al (2006?), Kutzbach et al (2005a,b), Sewall (2005), Takle et al (2005), [Rasmus E. Benestad (Reviewer's comment ID #: 18-37)]	Noted
11-877	A	41:45		Remove the more general references on regional climatology. [Markku Rummukainen (Reviewer's comment ID #: 223-97)]	Section reworked
11-878	A	41:48	41:48	Replace "arctic" with "Arctic". [Francis Zwiers (Reviewer's comment ID #: 305-164)]	Accepted

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11-879	A	42:10	42:10	The PNA explanation sounds a little wrong. The positive phase has a strengthened Aleutian Low, with a stronger and elongated Asian/Pacific jet, but the negative phase has a weakened low with a tendency towards a truncated jet, or a jet that turns northwards towards the Bering Sea area, not "a more zonal flow". [James Renwick (Reviewer's comment ID #: 211-25)]	Section reworked
11-880	A	42:18	42:19	In several CGCMs projections the changes over the Pacific look roughly like the El Niño phase of the ENSO cycle" Though strictly spoken true, there are about as many models in which the mean state changes in the direction of La Nina. In both cases the change is small (less than one quarter of the standard deviation of ENSO in models with a reasonable ENSO simulation), so this suggestive sentence should be replaced with "On average, GCMs show no change in the mean state that resembles the ENSO pattern, although individual models show change both to El Niño and La Nina. [Govt. of Netherlands (Reviewer's comment ID #: 2016-55)]	Section reworked
11-881	A	42:23	42:25	As it is stated that "several GCMs...", the part of "some models do not show..." seems repetitive. [Markku Rummukainen (Reviewer's comment ID #: 223-98)]	Accepted
11-882	A	42:29		Should be Higgins and Mo 1997 rather than Higgins et al. 1997. [Govt. of United States of America (Reviewer's comment ID #: 2023-683)]	Accepted
11-883	A	42:44	42:44	Delete "northern" before "plains". [Ronald J Stouffer (Reviewer's comment ID #: 258-62)]	Section reworked
11-884	A	43:8	43:9	What is the difference between "ensemble-mean bias" and "annual-mean bias"? Against what data set is bias assessed? Does the assessment of bias depend upon which observational data set is used to make the assessment? [Francis Zwiers (Reviewer's comment ID #: 305-165)]	Section reworked
11-885	A	43:10	43:14	The biases are between -1.9 to 0.6 (line 10) but said to reach more than +1 and +2 over the Canadian prairies (line 14). [Daniel Caya (Reviewer's comment ID #: 38-46)]	Corrected
11-886	A	43:10	43:11	Consider using "This cold bias is largest over the Rocky Mountains, and smallest..." [Markku Rummukainen (Reviewer's comment ID #: 223-99)]	Section reworked
11-887	A	43:16	43:41	This paragraph could be considerably shortened. It seems to discuss the Supplementary material. [Markku Rummukainen (Reviewer's comment ID #: 223-100)]	Section reworked
11-888	A	43:16	43:41	Something that seems to be missing is a discussion of whether biases elsewhere (e.g., in the tropical Pacific) have an influence on the simulated North American climate. [Francis Zwiers (Reviewer's comment ID #: 305-168)]	Agree; to be added in section on uncertainty
11-889	A	43:27	43:27	Add "not resolved" before "with coarse resolution".	Agree; Section reworked

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				[Ronald J Stouffer (Reviewer's comment ID #: 258-63)]	
11-890	A	43:33	43:36	This reason should be supported with a reference. [Francis Zwiers (Reviewer's comment ID #: 305-166)]	Done; Section reworked
11-891	A	43:38	43:41	The reason given needs to be supported with a reference. [Francis Zwiers (Reviewer's comment ID #: 305-167)]	Done; Section reworked
11-892	A	43:38		Write Duffy et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-60)]	Noted
11-893	A	43:48	43:50	Mearns et al. 2004, 2005 are not peer-reviewed publications. [Daniel Caya (Reviewer's comment ID #: 38-47)]	Only available references
11-894	A	43:48	43:52	The discussion feels a bit too detailed. [Markku Rummukainen (Reviewer's comment ID #: 223-101)]	Disagree
11-895	A	43:55	43:56	If used! I'm only aware of a couple of RCMs that use large-scale nudging. [Francis Zwiers (Reviewer's comment ID #: 305-169)]	Noted.
11-896	A	44:3	44:3	Pan et al., 2001)" -> "Pan et al., 2001; Plummer et al., 2006) [Daniel Caya (Reviewer's comment ID #: 38-48)]	Noted.
11-897	A	44:14	44:15	Right! I think this point needs to be made a bit more prominently in the various discussions of extremes, and perhaps it should be used to be a bit more critical in the assessment of extremes (e.g., if a model with 50km grid boxes produces 24-hr precipitation extremes as intense as observed at stations, then one might raise a question about whether the model is really getting it right). [Francis Zwiers (Reviewer's comment ID #: 305-170)]	Noted
11-898	A	44:17	44:17	Insert "layer" after "planetary boundary" [James Renwick (Reviewer's comment ID #: 211-26)]	Agree
11-899	A	44:22	44:22	"over North America." -> "However, Jiao and Caya, 2006 showed that the distribution of the summer precipitation is more influenced by the water vapour distribution in the boudary layer than by the values of the parameters in the mass flux convective scheme. (Jiao, Y. and D. Caya, 2006: An Investigation of Summer Precipitation Simulated by the Canadian Regional Climate Model. Mon. Wea. Rev., 134, pp. 919-932) 134 11-134 49 [Daniel Caya (Reviewer's comment ID #: 38-26)]	Accepted
11-900	A	44:24	44:24	"The RCMs' simulations generally inherit several biases of the driving CGCMs." -> When driven by GCMs, RCMs' simulations generally inherit several biases of the driving data." 135 11-135 50 [Daniel Caya (Reviewer's comment ID #: 38-26)]	Accepted
11-901	A	44:24	44:24	Replace "RCMs" with "RCM" - lots more examples like this. [Francis Zwiers (Reviewer's comment ID #: 305-171)]	Accepted

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11-902	A	44:26	44:26	"than the recent simulations" ->"than the simulations". [Daniel Caya (Reviewer's comment ID #: 38-51)]	Accepted
11-903	A	44:29	44:31	In both Han and Roads 2004 and Plummer et al. 2006, the sensitivity to lateral boundary conditions is not high in summer. My reading of the two references seems to indicate that RCMs are not very sensitive to LBC in summer. This is also reported in deElia et al. 2006 [Daniel Caya (Reviewer's comment ID #: 38-52)]	Disagree, see last sentence of Plummer: "The CRCM projections of surface air temperature changes are strongly affected by ...changes in the physical parameterizations ... for the summer season"
11-904	A	44:31	44:34	The beginning is rather general and should be lifted somewhere in the general introductory discussions. The specification of RCM-results is also stated below on lines 41-42. [Markku Rummukainen (Reviewer's comment ID #: 223-102)]	Accepted
11-905	A	44:37	44:44	Most of this introductory material does not need to be repeated here. [Francis Zwiers (Reviewer's comment ID #: 305-172)]	Accepted
11-906	A	44:38	44:40	There should be no need to explain A1B here. Also, please check the periods (are 2080-2099 and 1980-1999 meant instead of those quoted?). [Markku Rummukainen (Reviewer's comment ID #: 223-103)]	Accepted and corrected
11-907	A	44:39	44:40	The reference periods in other regions are 1980-1999 and 2080-2099. Why are they different over North America? [Daniel Caya (Reviewer's comment ID #: 38-53)]	Corrected
11-908	A	44:40		This should say "temperature change" rather than "climate change." [Govt. of United States of America (Reviewer's comment ID #: 2023-684)]	Disagree; we meant both precipitation and temperature
11-909	A	44:41	44:42	A repeated sentence. Compare to page 44, lines 33-34. [Govt. of Finland (Reviewer's comment ID #: 2009-167)]	Agree
11-910	A	44:55	44:55	will be" should be replaced with "is projected to be [James Renwick (Reviewer's comment ID #: 211-27)]	Agree
11-911	A	45:7	45:10	Is this result obtained using many projections? Models? Scenarios? A statement on the confidence of this result should be made. [Daniel Caya (Reviewer's comment ID #: 38-55)]	Revised version will stress that this result is based on single, short simulation from one model
11-912	A	45:7		What is meant by "quite skilful"? Reference ought to be included. [Rasmus E. Benestad (Reviewer's comment ID #: 18-38)]	Reference to be added
11-913	A	45:8	45:8	Geng and Sugi 2003 is not in the reference list. [Daniel Caya (Reviewer's comment ID #: 38-54)]	Will add it
11-914	A	45:8	45:10	What is the assessment? Should we trust this result from 1 model at this level of detail? [Ronald J Stouffer (Reviewer's comment ID #: 258-64)]	Agree; see reply to comment 11-911
11-915	A	45:13	45:23	Consider adding temperature change projection panels to Figure 11.3.5.2 as are shown for	Will do.

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				many of the other regions and, subsequently, quoting so much detail here. Omit also the details in the parentheses. [Markku Rummukainen (Reviewer's comment ID #: 223-104)]	
11-916	A	45:17	45:17	"highly significant" and "exceeding the spread amongst the models" What is the measure of significance? [Ronald J Stouffer (Reviewer's comment ID #: 258-65)]	Reworded
11-917	A	45:18	45:19	Why a specific statement for warming in the USA and not for Canada and Mexico? [Daniel Caya (Reviewer's comment ID #: 38-56)]	Specific statement for Canada is in the following sentence
11-918	A	45:19	45:19	"more than 5 GCMs" Out of how many? [Ronald J Stouffer (Reviewer's comment ID #: 258-66)]	Out of 21. Text modified
11-919	A	45:31	45:35	The "warming hole" in central US - Is there a role for aerosols? [Ronald J Stouffer (Reviewer's comment ID #: 258-67)]	Not the argument of the authors.
11-920	A	45:35		You may wish to clarify that LLJ simulation is aided by "increases in both horizontal and vertical resolution." [Govt. of United States of America (Reviewer's comment ID #: 2023-685)]	Accepted
11-921	A	45:46		Please refer the reader to Table 11.2 and the relevant Supplementary material, and reduce the amount of detail in the text. The text should provide additional information, explanation and interpretation to the tabulation, instead of repeating it. [Markku Rummukainen (Reviewer's comment ID #: 223-105)]	Text reworked
11-922	A	45:48	45:48	In the other sections the number of AR4-GCMs is 21, why 20 for North America? [Daniel Caya (Reviewer's comment ID #: 38-57)]	Corrected
11-923	A	45:53	45:53	"ALA", CGI and friends - Where are these defined? [Ronald J Stouffer (Reviewer's comment ID #: 258-68)]	In introduction to regions
11-924	A	45:55	46:2	Can we know for sure that the winter time warming should be larger for winter as a reduced period of snow-cover? The solar angle tends to be low and local temperatures tend to be determined by wind (directions), cloud cover and inversions in Norway. Moreover, it is possible that it is the higher temperatures that cause a snow retreat. The GCMs and RCMs must be validated with respect to temperature. I think that a reference is definitely required here to support the statement. [Rasmus E. Benestad (Reviewer's comment ID #: 18-39)]	There is a positive feedback between warming and snow decrease. Text reworked
11-925	A	46:1	46:1	4.5 and 11.0C - Over what scenarios? [Ronald J Stouffer (Reviewer's comment ID #: 258-69)]	We stated "A1B unless otherwise stated"
11-926	A	46:27		put space between 2.5 and to [Ibouraïma YABI (Reviewer's comment ID #: 297-61)]	Accepted
11-927	A	46:32	46:38	This paragraph is applicable for all regions, not only North America. I suggest to move it to the general section.	Accepted; Moved to introduction to regions

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				[Daniel Caya (Reviewer's comment ID #: 38-58)]	
11-928	A	46:32	46:42	This feels rather too general to appear under the North American sub-section, and could be omitted. [Markku Rummukainen (Reviewer's comment ID #: 223-106)]	Moved to introduction to regions
11-929	A	46:42	46:56	There is probably no great need to remind the reader of the exact ranges of projected temperature changes, nor explaining how many GCMs showed what. If feasible, please use more general statements on confidence instead. [Markku Rummukainen (Reviewer's comment ID #: 223-107)]	Accepted. Text reworked
11-930	A	46:44	46:46	" +20%" and " +30%" - Over what scenarios? [Ronald J Stouffer (Reviewer's comment ID #: 258-70)]	We stated "A1B unless otherwise stated"
11-931	A	46:46	46:50	This has been already said on page 11.42 line 34-38 and could be removed. [Daniel Caya (Reviewer's comment ID #: 38-59)]	Text reworked
11-932	A	46:53	46:53	20 vs 21 CGCMs in the other sections. [Daniel Caya (Reviewer's comment ID #: 38-60)]	Corrected
11-933	A	46:53	46:53	of precipitation there." -> "of precipitation." [Daniel Caya (Reviewer's comment ID #: 38-61)]	There => over that region
11-934	A	46:55	46:55	"of precipitation in spring there." -> "of precipitation." 147 11-147 62 [Daniel Caya (Reviewer's comment ID #: 38-61)]	There => over that region
11-935	A	47:4	47:9	Which AGCM? many members? Periods? [Daniel Caya (Reviewer's comment ID #: 38-63)]	Will be more specific
11-936	A	47:4	47:9	This begins with an overly general statement (could be made in the Chapter introductory sections) and ends with a statement on results that are not significant. Perhaps "Averaged over the USA (Govindasamy, 2003), the few existing AGCM results do not significantly differ from those obtained with GCMs." [Markku Rummukainen (Reviewer's comment ID #: 223-108)]	- Moved to introduction to regions 2) Accepted
11-937	A	47:21	47:22	This seems to be different from the PRUDENCE experience. Should there be some more discussion of this point (perhaps in the introductory material to this chapter) that RCMs are not necessarily slave to the driving model. Is the assessment here different because of characteristics of the region that is involved, the size of the domain, greater variation in nesting approaches (if that is the case), etc.? [Francis Zwiers (Reviewer's comment ID #: 305-173)]	The exact reason is not well known
11-938	A	47:37	47:40	Either delete "except for two... mean precipitation" or change, if appropriate, to "... in mean precipitation. Most of the considered hydrological basins experiences reduced mean and heavy precipitation. However, in two of the basins there was an increase in both the mean and the heavy precipitation". The physical reason for this should, preferably, also be explained.	Accepted

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				[Markku Rummukainen (Reviewer's comment ID #: 223-109)]	
11-939	A	47:50		Please refer the reader to Table 11.2 and the relevant Supplementary material, and reduce the amount of detail in the text. The text should provide additional information, explanation and interpretation to the tabulation, instead of repeating it. [Markku Rummukainen (Reviewer's comment ID #: 223-110)]	Text reworded
11-940	A	47:52	47:52	20 vs 21 AR4-CGCMs [Daniel Caya (Reviewer's comment ID #: 38-64)]	Corrected
11-941	A	48:4	48:5	What is the physical reasoning for the orographic precipitation to increase? The precipitable water is increasing but the westerlies are shifting poleward and slightly weakening. [Ronald J Stouffer (Reviewer's comment ID #: 258-71)]	Increase in precipitable water dominates over the other changes
11-942	A	48:27	48:27	It might be worth putting in "average" before "precipitation changes", as the range encompasses some quite large possible changes, up to 20% or more. [James Renwick (Reviewer's comment ID #: 211-28)]	The sentence starts with "averaged over the region"
11-943	A	48:55	48:56	Suggest omitting the sentence "Because there is... contain large uncertainties." The meaning is conveyed already in the previous sentence, and this does neither concern only snow modelling. [Markku Rummukainen (Reviewer's comment ID #: 223-111)]	Disagree
11-944	A	48:55	48:56	There is some assessment of the representation of snow in global models in Ch 8. I think it would be useful to cross-link to that assessment. [Francis Zwiers (Reviewer's comment ID #: 305-174)]	Will add a reference to section 8.3.4.1
11-945	A	49:8	49:9	What is the upshot - is there an assessment? [Francis Zwiers (Reviewer's comment ID #: 305-175)]	Text reworked to emphasize remaining uncertainties
11-946	A	49:15	49:26	If there has been a large number of ESD-based projections across North America, should not a discussion of these deserve more than 11 lines? ESD bridges the GCM simulations with observations and provide more realistic (down-to-earth) results, whereas RCMs then to contain biases (e.g. an unrealistically large number of drizzle-days), so I don't see how one can justify devoting a disproportionate amount of space on RCMs. [Rasmus E. Benestad (Reviewer's comment ID #: 18-40)]	These do not contribute much to the "assessment" due to the absence of coordinated framework for the individual studies
11-947	A	49:25	49:25	"A1FI" (f-i) instead of "A1F1" (f-one). [Markku Rummukainen (Reviewer's comment ID #: 223-112)]	Corrected
11-948	A	49:29	49:30	Recall the relevant types of evidence, at least in a foot note: very likely, many policymakers will read the subchapter "Robust conclusions and uncertainties" only [Govt. of France (Reviewer's comment ID #: 2010-91)]	Agree
11-949	A	49:34	49:34	possibility of cooling" -> "possibility of weak cooling [Daniel Caya (Reviewer's comment ID #: 38-65)]	Noted; see reply to 11-950

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11-950	A	49:34	49:34	Compare with page 32, lines 23-24. If there is no quantitative basis for "small", suggest "... however, precludes excluding in full the possibility of cooling...". [Markku Rummukainen (Reviewer's comment ID #: 223-113)]	Agree
11-951	A	49:34	:55	Atlantic THC is used here to refer to the same thing that is called in SPM, page 15, Atlantic MOC. This should be consistent. Please check your usage here and throughout the chapter for consistency with the glossary and the other global climate chapters. [Govt. of United States of America (Reviewer's comment ID #: 2023-686)]	Changed to MOC
11-952	A	49:35		Write America ; [Ibouraïma YABI (Reviewer's comment ID #: 297-62)]	Changed
11-953	A	49:36	49:36	"lowesat winter temperature" - How well do models simulate this in the present day climate? If their simulation is relatively poor, how can the change be "very likely"? [Ronald J Stouffer (Reviewer's comment ID #: 258-72)]	The issue of bias Vs consensus will be discussed in general section
11-954	A	49:38		Write 1, 2 and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-63)]	Changed
11-955	A	49:40		Write 1, 2 and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-64)]	Changed
11-956	A	49:41	49:42	Precipitation decrease in summer - How well do models simulate present day precipitation in these regions in the summer? The observed precipitation patterns over N America look very different than the model simulations to me. If this is correct, how can the change be "likely"? [Ronald J Stouffer (Reviewer's comment ID #: 258-73)]	The issue of bias Vs consensus will be discussed in general section
11-957	A	49:42		Write 1, 2 and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-65)]	Changed
11-958	A	49:46	49:47	But a couple of times there is mention that the CGCM response to forcing is not always determinant of the RCM response. [Francis Zwiers (Reviewer's comment ID #: 305-176)]	But the assessment is strongly based on AR4 AOGCMs
11-959	A	49:46	50:14	I might be getting tired at this stage, and reading less carefully than I should be, but I have the impression that there are a number of points made here that don't seem to be based on the assessment in Chapter 11. For example, ocean circulation, mid-latitude cyclones, land-sea contrasts ... Presumably there needs to be supporting discussion, or cross-links to other chapters that provide the supporting discussion. Also, it is not clear to me that all of the points made are correct. For example, I was under the impression that we are able to say some things about changes in the frequency and intensity of mid-latitude cyclones (for example, isn't the projection that there will be fewer in number in total, but more intense cyclones, a relatively robust result across models?). H186 [Francis Zwiers (Reviewer's comment ID #: 305-177)]	Cross links will be made to other chapters. Wording on mid-latitude cyclones modified

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11-960	A	49:48	49:50	How does this statement compare with the GCM analysis in the relevant AR4 Chapter? [Markku Rummukainen (Reviewer's comment ID #: 223-114)]	Cross links will be made to other chapters.
11-961	A	49:50	49:50	before this assessment" -> "before the completion of this assessment [Daniel Caya (Reviewer's comment ID #: 38-66)]	Noted
11-962	A	49:54	49:55	Is this correct (i.e. is it the quantitative or the qualitative uncertainty that is large)? How much do the regional projections vary across most or all of the GCMs? [Markku Rummukainen (Reviewer's comment ID #: 223-115)]	Text reworded
11-963	A	50:16	50:36	This is rather general and could be considered in the introductory parts of Chapter 11. [Markku Rummukainen (Reviewer's comment ID #: 223-116)]	Noted
11-964	A	50:20	50:20	Replace "climate-change" with "change of climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1855)]	Noted
11-965	A	50:20	50:36	Are these uncertainties specific for North America? Otherwise they could be made into a subchapter of 11.3.1 [Erik Kjellström (Reviewer's comment ID #: 131-28)]	Mostly specific to NA
11-966	A	50:20	50:36	Following on from comments #142 and #166, the tenor of this paragraph is also disconcerting, especially the reference to "outdated design". It again raises the question as to whether a threshold was (or in future should be) set on basic model performance before the results of a model are accepted for consideration. "More" is not necessarily "better". [Adrian Simmons (Reviewer's comment ID #: 242-168)]	Mostly agree
11-967	A	50:20	50:36	This list also contains items that should probably be supported by some kind of assessment or at least pointers to appropriate review articles (e.g., assessment of physics packages in RCMs, assessment of what would be an adequate vertical resolution, perhaps assessment of what would be an adequate time slice, and what about assessment of nesting approaches??) [Francis Zwiers (Reviewer's comment ID #: 305-178)]	Text reworded
11-968	A	50:31	50:31	hyphen missing: "under-samples" [James Renwick (Reviewer's comment ID #: 211-29)]	Agree
11-969	A	50:38	55:5	Some relevant papers from the IPCC list may be: Boulanger et al (2006?), Li et al (2006), Rusticucci et al (2006). A google-scholar search '(empirical OR statistical) AND downscaling AND ("Latin America" OR Amazon) AND scenarios' gave 231 hits. [Rasmus E. Benestad (Reviewer's comment ID #: 18-41)]	Some of those papers are already present in 11.3.6. Will search additional literature on statistical downscaling for the region and included if appropriate.
11-970	A	50:48		Write Magana et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-66)]	It is written Magaña in the reference so it is Magaña
11-971	A	50:49	50:49	Remove comma in "...to a large extent, the result..." [James Renwick (Reviewer's comment ID #: 211-30)]	Removed

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11-972	A	51:3	51:4	Cross-link to Chapter 3 to ensure that statements on observed changes agree. [Francis Zwiers (Reviewer's comment ID #: 305-179)]	Agreed. Cross chapter reference included.
11-973	A	51:40	51:43	It's not completely clear what is being said here. AGCMs and AOGCMs are mentioned in the same breadth. I think this is saying that the atmospheric component of AOGCMs is improving, but coupled performance is not yet up to snuf. Such an assessment should, presumably be supported by appropriate cross-references to Ch 8 (which does talk about tropical model performance). [Francis Zwiers (Reviewer's comment ID #: 305-180)]	Both refer to AOGCMs
11-974	A	51:45	51:47	This could be reformulated for clarity. What is the meaning? [Markku Rummukainen (Reviewer's comment ID #: 223-117)]	Please check Magaña et al 1999
11-975	A	51:48	51:48	Replace "very likely" with "possible" [VINCENT GRAY (Reviewer's comment ID #: 88-1871)]	The expression "very likely" is not present in section 11.3.6.2.
11-976	A	51:49	51:49	Replace "will very likely with "could" 353 11-353 1872 [VINCENT GRAY (Reviewer's comment ID #: 88-1871)]	See 11-975.
11-977	A	51:49	51:49	Need a few additional words to set the context - were these AMIP2 simulations? Which models were used? [Francis Zwiers (Reviewer's comment ID #: 305-181)]	The AGCM outputs used by Zhou and Lau (2002) were provided by the CLIVAR Asian-Australian Monsoon AGCM Intercomparison Project (Kang <i>et al</i> , 2002, J.Clim., 15, 2791-2805).
11-978	A	51:52	51:52	Replace "likely" with 'possible' [VINCENT GRAY (Reviewer's comment ID #: 88-1873)]	See 11-975.
11-979	A	51:54	51:54	Replace " very likely" with 'possible' [VINCENT GRAY (Reviewer's comment ID #: 88-1874)]	See 11-975.
11-980	A	52:2	52:2	Omit "too", unless the sufficient simulation length is known. [Markku Rummukainen (Reviewer's comment ID #: 223-118)]	Accepted.
11-981	A	52:39		Verify orthograph of inner [Ibouraïma YABI (Reviewer's comment ID #: 297-67)]	Verified.
11-982	A	52:41	52:42	Could perhaps leave out the information in the parentheses, as well as the "On finer scales". [Markku Rummukainen (Reviewer's comment ID #: 223-119)]	Accepted.
11-983	A	53:1	53:56	Section 11.3.6.3.2: This is very nicely written. [James Renwick (Reviewer's comment ID #: 211-31)]	Thanks.
11-984	A	53:2		Change "most of Central America, where the median change" to "most of Central America (Neelin et al 2006). A region including Central America and the Caribbean also	Accepted

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				exhibits a drying trend in observations, as discussed in Chapter 9. Over Central America, the median change". [Reason for suggested change: the conclusions in this section are light on peer-reviewed references, and one exists on precisely this topic. The reference meets the IPCC criteria, is published, and is already discussed in chpt 9. The model agreement in this region also meets higher standards than the authors have been using. Ref added pg 100] [J. David Neelin (Reviewer's comment ID #: 187-6)]	
11-985	A	53:13	53:15	Why is it so that the precipitation increase close to the storm centre? Is it due to a change in storm intensity? Or is it the changing moisture convergence due to the higher temperature that comes into play? [Erik Kjellström (Reviewer's comment ID #: 131-30)]	It is within 100 km of the storm center, where most of the hurricane bands occur. Refer to Knutson and Tuleya (2004)
11-986	A	53:13	53:15	If possible, refer to the discussion elsewhere in AR4 on tropical storms so as to capture the big picture. [Markku Rummukainen (Reviewer's comment ID #: 223-120)]	Check Chapter 10
11-987	A	53:25	53:29	Good. This type of reasoning seems to be missing from much of the rest of the chapter. [Ronald J Stouffer (Reviewer's comment ID #: 258-74)]	Thanks. In rewriting the sections, efforts will be made to take this into account.
11-988	A	53:29	53:29	What does "sufficient accuracy" mean? [Erik Kjellström (Reviewer's comment ID #: 131-29)]	See 11-989.
11-989	A	53:29	53:29	What is meant by "sufficient accuracy"? Perhaps, rather, "show considerable biases". [Markku Rummukainen (Reviewer's comment ID #: 223-121)]	Accepted.
11-990	A	53:46	53:56	It may make it easier for the reader to note in a parenthesis that the historical trend has so far been positive (p.51, L3). [Rasmus E. Benestad (Reviewer's comment ID #: 18-42)]	Paragraph reworked.
11-991	A	53:46	53:56	I am very pleased to see this discussion here, it is very important and I mostly agree with what is written. However, can I suggest some improvements in the following comments. [Richard Betts (Reviewer's comment ID #: 21-10)]	Thanks.
11-992	A	53:46	53:46	Instead of "accelerate" say "contribute to acceleration of" - the carbon cycle feedbacks is actually mainly from global soil carbon release and only about 10% from Amazon forest die-back [Richard Betts (Reviewer's comment ID #: 21-11)]	Accepted.
11-993	A	53:51	53:52	More recent work (Harris, PhD thesis, University of Reading) shows that it is not just a El Nino-like state but also greater warming in the North Atlantic which reduces precip in Amazonia in HadCM3. [Richard Betts (Reviewer's comment ID #: 21-12)]	Noted.
11-994	A	53:51	53:56	It is not clear if HadCM3 does include dynamic vegetation? If so, how about the other	Paragraph reworked.

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				AR4-models? If Had CM3 does include it and the others don't they are not very comparable. If HadCM3 does not include dynamic vegetation, what causes the decrease in precipitation? [Erik Kjellström (Reviewer's comment ID #: 131-31)]	
11-995	A	53:51	53:56	This carries some risk of misunderstanding, if the HadCM3 result quoted on regional precipitation change ("among the AR4") is not the very same model run that also leads to the vegetation dieback. [Markku Rummukainen (Reviewer's comment ID #: 223-122)]	Noted. Paragraph reworked.
11-996	A	53:54	53:56	I only partly agree with this comment. Although I made a similar point in my paper in TAC (Betts et al 2004), we should remember that most of the carbon cycle feedback in the Cox et al result and the other C4MIP results (see chapter 10) comes from global soil carbon release which is less dependent on regional climate change and therefore probably more robust than suggested here. [Richard Betts (Reviewer's comment ID #: 21-13)]	Noted. Paragraph reworked.
11-997	A	53:56	53:56	The importance of biophysical feedbacks (changes in surface albedo and particularly moisture availability and evaporation) should be mentioned, as this provides an important feedback on the regional climate. Loss of forest means less recycling of rainfall and also less moisture convergence, so enhances the precip reduction over Amazonia. This is part of the reason why the drying in the Cox et al result was so extreme. Also, HadCM3 includes plant stomatal closure which again reduces rainfall recycling over Amazonia. See Betts et al 2004, TAC, for full discussion. [Richard Betts (Reviewer's comment ID #: 21-14)]	Noted. Paragraph reworked.
11-998	A	54:2	54:13	The paper by Tebaldi et al (2006) show some simulation of extremes in South America using the IPCC AR4 models and show a signal of warming even though the extremes of rainfall are different in the various models [Jose Marengo (Reviewer's comment ID #: 159-8)]	Tebaldi et al (2006) will be quoted.
11-1649	B	54:2	54:13	The paper by Tebaldi et al (2006) show some simulation of extremes in South America using the IPCC AR4 models and show a signal of warming even though the extremes of rainfall are different in the various models [Govt. of Brazil (Reviewer's comment ID #: 2024-29)]	See 11-998.
11-999	A	54:4	54:4	Should it really say "1980-1999" here? [Erik Kjellström (Reviewer's comment ID #: 131-32)]	Yes.
11-1000	A	54:17	54:19	See also Kharin and Zwiers (2005, J. Clim, 18, 1156-1173). [Francis Zwiers (Reviewer's comment ID #: 305-182)]	Noted.
11-1001	A	54:21	54:21	Delete "robust" [VINCENT GRAY (Reviewer's comment ID #: 88-1856)]	Disagree.

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11-1002	A	54:22	54:23	Recall the relevant types of evidence, at least in a foot note: very likely, many policymakers will read the subchapter "Robust conclusions and uncertainties" only [Govt. of France (Reviewer's comment ID #: 2010-92)]	Noted.
11-1003	A	54:25	54:25	Replace "is very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1857)]	Disagree.
11-1004	A	54:27		Write 1 and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-68)]	Changed.
11-1005	A	54:28	54:28	Replace "is likely to" with "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1858)]	Disagree.
11-1006	A	54:29		Write 1 and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-69)]	Changed.
11-1007	A	54:30	54:30	Replace "is likely to" with "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1859)]	Disagree.
11-1008	A	54:33	54:33	Replace "likely" with "possibly" [VINCENT GRAY (Reviewer's comment ID #: 88-1860)]	Disagree.
11-1009	A	54:33		Write increase) ; [Ibouraïma YABI (Reviewer's comment ID #: 297-70)]	Changed.
11-1010	A	54:34	54:34	Replace "is likely to" with "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1861)]	Disagree.
11-1011	A	54:35		Write 1 and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-71)]	Changed.
11-1012	A	54:36	54:36	Replace "will" by "might" [VINCENT GRAY (Reviewer's comment ID #: 88-1862)]	Disagree.
11-1013	A	54:42	54:42	Suggest: "The systematic errors in simulating current tropical climates (see ...". [Markku Rummukainen (Reviewer's comment ID #: 223-123)]	Accepted.
11-1014	A	55:2	55:3	What is the basis for the sentence on mid-latitude cyclones? [Francis Zwiers (Reviewer's comment ID #: 305-183)]	Statement has been modified.
11-1015	A	55:7		If feasible, reduce the number of basic climatological, and especially the older such, references. [Markku Rummukainen (Reviewer's comment ID #: 223-124)]	This section will be shortened
11-1016	A	55:8	55:9	What about the Southern Ocean? Its existence was acknowledged by the International Hydrographic Organization in 2000. [Govt. of Australia (Reviewer's comment ID #: 2001-457)]	The Southern Ocean will be referred to as appropriate
11-1017	A	55:8	55:8	"South-western" Pacific. [Govt. of Australia (Reviewer's comment ID #: 2001-458)]	Accepted. Will be corrected

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11-1018	A	55:16	55:16	Salinger et al. reference is 2001, not 2002 - bibliography needs changing too [James Renwick (Reviewer's comment ID #: 211-32)]	Will be corrected
11-1019	A	55:20	55:28	This discussion underplays the effects of the Indian Ocean and associated features such as northwest cloudbands on Australia's climate. [Govt. of Australia (Reviewer's comment ID #: 2001-459)]	Accepted. Will be addressed in rewriting section
11-1020	A	55:20	55:22	References for these descriptions of climate regimes in Australia? [Govt. of Australia (Reviewer's comment ID #: 2001-460)]	References will be included as appropriate (noting also comment 11-1015)
11-1021	A	55:20	55:28	This paragraph needs rewriting - as it does not provide a very clear picture of the major climatic zones of Australia. Also it needs to make it clearer that the "Australian monsoon" (see lines 10-11 on this page), is a much more variable feature than the Asian monsoon. [Govt. of Australia (Reviewer's comment ID #: 2001-462)]	Will be addressed in re-writing the section
11-1022	A	55:22	55:24	"Extreme rainfall events..." remove "rarely" and replace with "are often associated with tropical cyclones". [Govt. of Australia (Reviewer's comment ID #: 2001-461)]	Will be corrected.
11-1023	A	56:3	56:3	It is unclear as to which country "Southeast and Southwest" refer to, (Australia or New Zealand). [Govt. of Australia (Reviewer's comment ID #: 2001-463)]	Accepted. Will add 'of the Australian continent'
11-1024	A	56:10	56:10	Could omit "Inspection of the model maps". [Markku Rummukainen (Reviewer's comment ID #: 223-125)]	Noted.
11-1025	A	56:16	56:16	Cai et al., 2003a, - remove the comma at the end (I don't think you intended to add "b" as this covers a different topic). This happens elsewhere too. [James Renwick (Reviewer's comment ID #: 211-33)]	Will be corrected
11-1026	A	56:17	56:18	Could omit "such as RMS erros and pattern correlations as well as qualitative evaluation." [Markku Rummukainen (Reviewer's comment ID #: 223-126)]	Noted.
11-1027	A	56:23	56:23	Please consider omitting the line entirely, as it is repetition. [Markku Rummukainen (Reviewer's comment ID #: 223-127)]	Noted.
11-1028	A	56:50	56:50	AR4 instead of Fourth Assessment. [Markku Rummukainen (Reviewer's comment ID #: 223-128)]	Will be corrected
11-1029	A	56:54		Write AOGCMs and (not plus) [Ibouraïma YABI (Reviewer's comment ID #: 297-72)]	Will be corrected
11-1030	A	57:2	57:2	Cai et al., 2003a, - remove the comma at the end (I don't think you intended to add "b" as this covers a different topic). This happens elsewhere too. [James Renwick (Reviewer's comment ID #: 211-34)]	Will be corrected
11-1031	A	57:10	57:10	Please consider some other word in lieu of "background".	Accepted.

No.	Batch	Page:line		Comment	Notes
		From	To		
				[Markku Rummukainen (Reviewer's comment ID #: 223-129)]	
11-1032	A	57:14	57:17	This paragraph seems odd, as if there's something missing. Of course downscaling has been undertaken, like in lots of other places. What are you trying to say that's "special" about New Zealand, or the topography there? [James Renwick (Reviewer's comment ID #: 211-35)]	Will be amended to say that <i>most</i> climate change projection work for New Zealand has used downscaling. This contrasts with the Australian work for which many studies have only used GCM results directly.
11-1033	A	57:15	57:15	Insert "statistical" before "downscaling". [Francis Zwiers (Reviewer's comment ID #: 305-184)]	There has been older work for New Zealand based on dynamical downscaling but this work is not referenced here. Will make change or reference dynamical downscaling work.
11-1034	A	57:21	57:21	The assessment of a "significant acceleration" is not supported by Figure 11.3.7.1. To my eye, rates of change in the 21st century are approximately the same as in the late 20th century. [Francis Zwiers (Reviewer's comment ID #: 305-185)]	This may be a true for a comparison with the late 20th century, but the projected warming over the 21st century is significantly faster than the warming over the 20th century.
11-1035	A	57:27	57:27	in summer" -> "in austral summer [Daniel Caya (Reviewer's comment ID #: 38-67)]	Will change to 'DJF'.
11-1036	A	57:33	57:35	Use "less warming" and "greatest warming" rather than "smaller values" and "largest values" [Govt. of Australia (Reviewer's comment ID #: 2001-464)]	Accepted. Will change.
11-1037	A	57:35	57:35	Could reference be made to Figure 11.3.7.1 instead? [Markku Rummukainen (Reviewer's comment ID #: 223-130)]	Figure 11.3.7.1 does not have the necessary subregional detail.
11-1038	A	57:39	57:49	What are the scenarios used to estimate the ranges? [Ronald J Stouffer (Reviewer's comment ID #: 258-75)]	Will amend to include reference to scenarios
11-1039	A	57:40	57:40	Could omit "plausibly". [Markku Rummukainen (Reviewer's comment ID #: 223-131)]	Noted
11-1040	A	58:10	58:10	Insert "observed" before "20th century trends". [Govt. of Australia (Reviewer's comment ID #: 2001-465)]	Accepted. Will change.
11-1041	A	58:10	58:16	This would place better in AR4 chapters on observations and/or detection. [Markku Rummukainen (Reviewer's comment ID #: 223-132)]	As the regions were not dealt with systematically in those other chapters, a decision was made to include coverage of this in the regional sections of chapter 11.
11-1042	A	58:12	58:13	Need to explain why this is a cause for concern, ie it clearly conflicts with instrumental	Addressing would lead into a

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				observations of recent trends in Australian maximum & minimum temperatures. [Govt. of Australia (Reviewer's comment ID #: 2001-466)]	discussion overlapping with section 9.4.1.7 in chapter 9. The sentence at lines 12 to 13 will be deleted.
11-1043	A	58:13	58:13	Is the "continuing cause for concern" the model inability to pick up the decreasing DTR? This is not entirely clear in the present text. [James Renwick (Reviewer's comment ID #: 211-36)]	Addressing would lead into a discussion overlapping with section 9.4.1.7 in chapter 9. The sentence at lines 12 to 13 will be deleted.
11-1044	A	58:23	58:23	Please check the quoted period (should it read 1980-1999?). [Markku Rummukainen (Reviewer's comment ID #: 223-133)]	Accepted. Will correct.
11-1045	A	58:24	58:24	Reword - Figure 11.3.7.2 (bottom) shows the number of models projecting an increase in precipitation. [Govt. of Australia (Reviewer's comment ID #: 2001-467)]	Accepted. Will correct
11-1046	A	58:26	58:26	Should this reference be to the "southwest coast" rather than "south coast"? At the very least, this statement does not encompass the far southeast coast of Australia, as evidenced from Figure 11.3.7.2. [Govt. of Australia (Reviewer's comment ID #: 2001-468)]	Will reword to indicate that Tasmania is not in the decrease zone.
11-1047	A	58:39	58:39	North Island should be capitalised ("island" presently isn't) [James Renwick (Reviewer's comment ID #: 211-37)]	Accepted. Will correct.
11-1048	A	58:44	58:48	Only the first and last sentences of this paragraph are valid. As such the two middle sentences should be deleted to prevent confusion for readers. [Govt. of Australia (Reviewer's comment ID #: 2001-469)]	It is not accepted that the middle two sentences are invalid. Will re-word to clarify meaning.
11-1049	A	58:48	58:48	Could omit "as seen above". [Markku Rummukainen (Reviewer's comment ID #: 223-134)]	Noted.
11-1050	A	58:50	58:50	Could omit "published". [Markku Rummukainen (Reviewer's comment ID #: 223-135)]	Noted.
11-1051	A	59:6	59:6	2001;)." -> "2001). [Daniel Caya (Reviewer's comment ID #: 38-68)]	Accepted. Will correct.
11-1052	A	59:6	59:6	Stray ";" at the end of the line (in citation) [James Renwick (Reviewer's comment ID #: 211-38)]	Accepted. Will correct.
11-1053	A	59:6		Write wheffu et al., 2001 [Ibouraïma YABI (Reviewer's comment ID #: 297-73)]	Accepted. Will correct.
11-1054	A	59:7	59:7	Remove the word "rainfall" [James Renwick (Reviewer's comment ID #: 211-39)]	Accepted. Will correct.
11-1055	A	59:7		Remove Whetton et al., 2001 (repetition) [Ibouraïma YABI (Reviewer's comment ID #: 297-74)]	Accepted. Will correct.
11-1056	A	59:10	59:10	Reference should also be made to the IOCI (2002) summary report which can be found at	Accepted. Will correct.

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				http://www.ioci.org.au/publications/pdf/IOCI_TechnicalReport02.pdf. [Govt. of Australia (Reviewer's comment ID #: 2001-470)]	
11-1057	A	59:10	59:10	to obtain to" -> "to obtain the [Daniel Caya (Reviewer's comment ID #: 38-69)]	Accepted. Will correct.
11-1058	A	59:19	59:33	Most of the rainfall decline has occurred in the first half of the winter half-year (May to July). [Govt. of Australia (Reviewer's comment ID #: 2001-471)]	Will amend to indicate an early winter trend.
11-1059	A	59:19	59:33	This would place better in AR4 chapters on observations and/or detection. [Markku Rummukainen (Reviewer's comment ID #: 223-136)]	As the regions were not dealt with systemically in those other chapters, a decision was made to include coverage of this in the regional sections of chapter 11.
11-1060	A	59:21	59:21	trend and has been" -> "trend has been [Daniel Caya (Reviewer's comment ID #: 38-70)]	Accepted. Will correct.
11-1061	A	59:22	59:22	changes in large scale changes in circulation" -> "changes in large scale circulation [Daniel Caya (Reviewer's comment ID #: 38-71)]	Accepted. Will correct.
11-1062	A	59:29	59:30	west south" -> "south west [Daniel Caya (Reviewer's comment ID #: 38-72)]	Will reword.
11-1063	A	59:33	59:33	.." -> ". [Daniel Caya (Reviewer's comment ID #: 38-73)]	Accepted. Will correct.
11-1064	A	59:33	59:33	Extra ". [James Renwick (Reviewer's comment ID #: 211-40)]	Accepted. Will correct.
11-1065	A	59:37	59:38	See also Kharin and Zwiers (2005, J. Clim, 18, 1156-1173), Figure 9. [Francis Zwiers (Reviewer's comment ID #: 305-186)]	Will consider for inclusion
11-1066	A	59:40	59:42	Re-order to "Recently Abbs (2004) dynamically downscaled to a resolution of 7km current and enhanced greenhouse sets of ... as simulated by the CSIRO GCM." [James Renwick (Reviewer's comment ID #: 211-41)]	Accepted. Will correct
11-1067	A	59:43		Write runs. [Ibouraïma YABI (Reviewer's comment ID #: 297-75)]	Will consider rewording
11-1068	A	60:17	60:22	How does the persistent relationship between moisture and wind changes give a strong indication of drying? [Markku Rummukainen (Reviewer's comment ID #: 223-137)]	The strong indication comes mainly from the research quoted in the first sentence of the paragraph. Will rewrite the paragraph to clarify.
11-1069	A	60:19	60:19	Insert the word "larger" rather than "stronger". [Govt. of Australia (Reviewer's comment ID #: 2001-472)]	Accepted. Will correct
11-1070	A	60:20	60:20	in 10 M wind" -> "in 10-m wind	Accepted. Will correct

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				[Daniel Caya (Reviewer's comment ID #: 38-74)]	
11-1071	A	60:24	60:28	Delete paragraph due to inconsistent new findings on trends in Australian pan evaporation data described in the paper by JJ Sharples and MF Hutchinson Spatio-temporal analysis of climatic data using additive regression splines. In Zerger, A. and Argent, R.M. (eds) MODSIM 2005 International Congress on Modelling and Simulation. Modelling and Simulation Society of Australia and New Zealand, December 2005, pp. 1695-1701. ISBN: 0-9758400-2-9. http://www.mssanz.org.au/modsim05/papers/sharples.pdf . [Govt. of Australia (Reviewer's comment ID #: 2001-473)]	Will consider deleting paragraph.
11-1072	A	60:24	60:28	This would place better in AR4 chapters on observations and/or detection. [Markku Rummukainen (Reviewer's comment ID #: 223-138)]	Will consider deleting paragraph.
11-1073	A	60:30		If possible, refer to the discussion elsewhere in AR4 on tropical storms so as to capture the big picture. [Markku Rummukainen (Reviewer's comment ID #: 223-139)]	Will include cross-reference
11-1074	A	60:31	60:39	If there is any research describing suggested changes in tracks, this should be included. [Govt. of Australia (Reviewer's comment ID #: 2001-474)]	Text indicates that there is no clear picture with respect to movement.
11-1075	A	60:36	60:36	Make "-1" superscript in "ms-1" [James Renwick (Reviewer's comment ID #: 211-42)]	Accepted. Will correct
11-1076	A	60:48	61:6	The comments on wind/pressure gradient changes over New Zealand appear correct for JJA, but the reverse seems to hold in DJF, with a general rise in MSLP over most of New Zealand and an easterly anomalous gradient over the north of the country (Fig 10.3.6), possibly implying stronger seasonality in the circulation. Similar comments could perhaps be made for Tasmania and parts of Chile/Argentina. Talk of the expansion of the subtropical highs and the poleward contraction of the stormtrack/SAM seem to suggest at first glance less wind over NZ and other mid-latitude locations, over the whole year. The implied changes in westerly gradient depend on the ability of GCMs to model changes in the planetary waves, as well as in ENSO and the SAM. I suspect we should not be too confident about this. [James Renwick (Reviewer's comment ID #: 211-43)]	Accepted. Will amend the text.
11-1077	A	60:51	60:53	Suggest omitting Figure 11.3.7.4, reducing the discussion to an overall impression and leaving out also the brief mention of A2-based results. [Markku Rummukainen (Reviewer's comment ID #: 223-140)]	Figure will be omitted and the text modified.
11-1078	A	61:1	61:6	Pressure gradients in the paragraph are expressed in hPa which is a pressure unit not a pressure gradient unit. [Daniel Caya (Reviewer's comment ID #: 38-75)]	Accepted. Will amend the text.
11-1079	A	61:5	61:6	This sentence is not clear - I don't understand what is changing over what period or distance.	Accepted. Will amend the text.

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				[Francis Zwiers (Reviewer's comment ID #: 305-187)]	
11-1080	A	61:10		Suggest leaving this discussion entirely for Box 11.4. [Markku Rummukainen (Reviewer's comment ID #: 223-141)]	Will consider shifting text.
11-1081	A	61:29	61:29	Delete "Robust" [VINCENT GRAY (Reviewer's comment ID #: 88-1863)]	Do not accept, as this is agreed terminology
11-1082	A	61:30	61:31	Recall the relevant types of evidence, at least in a foot note: very likely, many policymakers will read the subchapter "Robust conclusions and uncertainties" only [Govt. of France (Reviewer's comment ID #: 2010-93)]	Will consider if space allows.
11-1083	A	61:33	61:33	Replace "are very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1864)]	Not accepted. Statement well justified
11-1084	A	61:36	61:36	Replace "likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1865)]	Not accepted. Statement well justified
11-1085	A	61:36		Write 1 and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-76)]	Accepted. Will correct
11-1086	A	61:37	61:37	Replace "is likely to" with "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1866)]	Not accepted. Statement well justified
11-1087	A	61:37	61:54	Points 2, 4, 6, 10 seem impacted by the poor simulation of the present day location SH atmospheric jet in models. The certainty of the changes seems way to high to me. [Ronald J Stouffer (Reviewer's comment ID #: 258-76)]	Points 2 and 6 are only rated 'likely' and considered well justified all things considered. The 'very likely' rating on points 4 and 10 will be reassessed with reference to model jet performance.
11-1088	A	61:37		Write 2 and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-77)]	Accepted. Will correct
11-1089	A	61:38	61:38	Replace "is very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1867)]	Not accepted. Statement well justified
11-1090	A	61:38		Write 2 and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-78)]	Accepted. Will correct
11-1091	A	61:39	61:39	Replace "very likely" with "possibly" [VINCENT GRAY (Reviewer's comment ID #: 88-1868)]	Not accepted. Statement well justified
11-1092	A	61:39	61:39	Insert "western" immediately before "South Island" [James Renwick (Reviewer's comment ID #: 211-44)]	Accepted. Will correct
11-1093	A	61:40		Write 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-79)]	Accepted. Will correct
11-1094	A	61:41	61:41	Replace "consensus" with "agreement" [VINCENT GRAY (Reviewer's comment ID #: 88-1869)]	Will consider change

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11-1095	A	61:44		Write on : 1 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-80)]	Accepted. Will correct
11-1096	A	61:46	61:46	Replace "likely" with "possibly" [VINCENT GRAY (Reviewer's comment ID #: 88-1870)]	Not accepted. Statement well justified
11-1097	A	61:47	61:47	Where are the increase frequency of high temperatures to be found? All locations? [Ronald J Stouffer (Reviewer's comment ID #: 258-77)]	Yes. Will clarify in the text.
11-1098	A	61:48		Write 2 and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-81)]	Accepted. Will correct
11-1099	A	61:49	61:51	What is the role of aerosols in these changes? Certainty seems too high. [Ronald J Stouffer (Reviewer's comment ID #: 258-78)]	There is no evidence to suggest that future changes in extreme rainfall in the Australia-New Zealand region are influenced by aerosols
11-1100	A	61:51		Write spring) ; [Ibouraïma YABI (Reviewer's comment ID #: 297-82)]	Accepted. Will correct
11-1101	A	61:53		Write temperature ; [Ibouraïma YABI (Reviewer's comment ID #: 297-83)]	Accepted. Will correct
11-1102	A	62:2		Write behaviour ; [Ibouraïma YABI (Reviewer's comment ID #: 297-84)]	Accepted. Will correct
11-1103	A	62:5		Write region ; [Ibouraïma YABI (Reviewer's comment ID #: 297-85)]	Accepted. Will correct
11-1104	A	62:7		Write change ; [Ibouraïma YABI (Reviewer's comment ID #: 297-86)]	Accepted. Will correct
11-1105	A	62:8	62:12	These two bullet points seem rather redundant here. The first bullet could place in Chapter 11 introductory parts and the second should be evident as such results have not been discussed in this part of the Chapter. [Markku Rummukainen (Reviewer's comment ID #: 223-142)]	Will consider deletion.
11-1106	A	62:10		Write region ; [Ibouraïma YABI (Reviewer's comment ID #: 297-87)]	Accepted. Will correct
11-1107	A	62:19	62:19	"...cryosphere, oceans, land AND ECOSYSTEMS". [Richard Betts (Reviewer's comment ID #: 21-9)]	Accepted; has been included
11-1108	A	62:20		sea ice also affects the atmospheric moisture source and oceanic salinity (fresh water and salinity fluxes) - 'puts a lid on top of the ocean', making the climate dry for the atmosphere, and precipitation does not cause freshening. Freezing and melting also affects the sea ice. The seaice also filters out small-spatial scale wind forcing, as it's 'stiffer than the ocean' and may react in a non-Newtonian way (ice packing up). Sorry - don't have references at hand, these remarks are purely based on physical reasoning...	Noted. The coupling between atmosphere, ice, ocean is of course manifold, but we highlight here only the albedo feedback.

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				[Rasmus E. Benestad (Reviewer's comment ID #: 18-43)]	
11-1109	A	62:29	62:29	The "North Pacific Index" is not an atmospheric pattern of variability, it is a time series. Replace with words describing what the NPI represents, e.g. "the Aleutian low". [James Renwick (Reviewer's comment ID #: 211-45)]	Accepted; text has been revised and shortened
11-1110	A	62:33	62:36	A trend is perhaps a too strong of a term (perhaps "tendency"), not in the least as the more recent years appear different from this. The question could be, also, that the variation has been more chaotic than deterministic and as such not possible to model in anything less than a large set of runs. "Inconsistent record" sound a bit off as well. Perhaps "inconsistency between the observed and modelled 20th century conditions". [Markku Rummukainen (Reviewer's comment ID #: 223-143)]	Accepted. The text has been revised according to Ch. 3 statements.
11-1111	A	62:35	62:35	"this inconsistent record" - The record is not inconsistent. All the models fail. Reword. [Ronald J Stouffer (Reviewer's comment ID #: 258-79)]	Accepted. The text has been revised according to Ch. 8 and 9 statements.
11-1112	A	62:38	62:45	A cross-link to Chapter 3 would probably be useful here. [Francis Zwiers (Reviewer's comment ID #: 305-188)]	Accepted, cross-link is made
11-1113	A	62:48	62:48	Could omit "The complexity described above includes". [Markku Rummukainen (Reviewer's comment ID #: 223-144)]	Accepted
11-1114	A	63:8	63:33	Figures of temperature and precipitation maps would help the reading. [Daniel Caya (Reviewer's comment ID #: 38-76)]	Rejected. Such figures cannot be included due to space limitation. References to literature are made.
11-1115	A	63:13	63:13	Could change "previous models" to "earlier model versions". [Markku Rummukainen (Reviewer's comment ID #: 223-145)]	Accepted
11-1116	A	63:20	63:22	Starting from "suggesting that..." is less of an assessment and more of a suggestion, and also uncertain as such. [Markku Rummukainen (Reviewer's comment ID #: 223-146)]	Accepted; this part of the sentence has been deleted.
11-1117	A	63:28	63:28	How good are the models when evaluated against the observations? [Ronald J Stouffer (Reviewer's comment ID #: 258-80)]	Text has been modified
11-1118	A	63:32	63:33	Include reference to chapter 9 or 10? [Ronald J Stouffer (Reviewer's comment ID #: 258-81)]	Accepted; cross-reference is made to Ch.8
11-1119	A	63:43	63:43	Arctic shelf processes and/or wind forcing - Is ocean mixing also an issue here? [Ronald J Stouffer (Reviewer's comment ID #: 258-82)]	No change necessary. We highlight here only the most prominent issues.
11-1120	A	64:4	64:5	5C - What scenario? What model(s)? [Ronald J Stouffer (Reviewer's comment ID #: 258-83)]	No change necessary. All this information has been given.
11-1121	A	64:13	64:13	Manabe and Stouffer (1979) is the first paper to note the fact that the Arctic SAT is near freezing in the summer. Manabe, S., and R. J. Stouffer, 1979: A CO2-climate sensitivity study with a mathematical model of the global climate. Nature, 282(5738), 491-493. [Ronald J Stouffer (Reviewer's comment ID #: 258-84)]	Noted. We don't think this statement really needs a reference here. More detailed description of this, and the reference are given in Section 10.3.3.1

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11-1122	A	64:15	64:16	Suggest omitting Figure 11.3.8.2. Perhaps replace with a figure like 11.3.2.1. [Markku Rummukainen (Reviewer's comment ID #: 223-148)]	Rejected. The figure shows the distinct seasonal cycle of the temperature and precipitation changes in the Arctic. In contrast, the spatial variability of these changes are small (see suppl. material)
11-1123	A	64:20	64:20	Could omit "prediction". [Markku Rummukainen (Reviewer's comment ID #: 223-147)]	Accepted
11-1124	A	64:23	64:23	There should be some mention of the additional feedback on warming from expanded vegetation cover which decreases surface albedo. Several paper on this, the one I know best is obviously my own (Betts, J. Phys. IV, 121, (EDP Sciences, Les Ulis, France), 37-60, 2004) but I can provide more references to the authors or TSU if required. [Richard Betts (Reviewer's comment ID #: 21-8)]	Rejected. Box 11.5 is dedicated to land use/cover change in-depth treatment.
11-1125	A	64:24	64:24	Figure 11.3.8.2 could be clearer [James Renwick (Reviewer's comment ID #: 211-46)]	Noted. The figure is ok, it was only a technical/editorial mistake
11-1126	A	64:29	64:30	I think this needs to be elaborated just a bit more so that readers will understand that the suggestion is that ice-albedo feedback might operate in an inappropriate place [Francis Zwiers (Reviewer's comment ID #: 305-189)]	Accepted; text has been revised.
11-1127	A	64:32	64:32	Reduced mixing? [Francis Zwiers (Reviewer's comment ID #: 305-190)]	Accepted
11-1128	A	64:33	64:33	Manabe et al. 1991 were the first to note the weakening of the THC when GHG increase. Manabe, S., R. J. Stouffer, M. J. Spelman, and K. Bryan, 1991: Transient responses of a coupled ocean-atmosphere model to gradual changes of atmospheric CO ₂ . Part I: Annual mean response. Journal of Climate, 4(8), 785-818. [Ronald J Stouffer (Reviewer's comment ID #: 258-85)]	No change necessary. THC projection is handled in Ch. 10, and we make here only a cross-link to Ch.10.
11-1129	A	64:39	64:39	I assume the "clear signal" is relative to present day. How is it determined? 1 sigma? [Ronald J Stouffer (Reviewer's comment ID #: 258-86)]	No change necessary. Details are given in the cited reference of Chapman and Walsh (2006a). (2 sigma)
11-1130	A	64:41	64:50	Are these results consistent with real observations? (validation issue) It's fairly well-known that the NAO has a weaker effect as one goes north in Fennoscandia, and that the effect NAO is weak in summer. This should be double-checked... [Rasmus E. Benestad (Reviewer's comment ID #: 18-44)]	Noted. We talk here about future projections.
11-1131	A	64:41	64:41	Should there be a cross-link to Ch 3 here? [Francis Zwiers (Reviewer's comment ID #: 305-191)]	Accepted, cross-link is made to Ch.10. Ch.3 is not appropriate as we talk here about future projections.
11-1132	A	65:2	65:3	The sentence "Further systematic work..." does not place well herein, being a suggestion rather than an assessment.	Accepted. The sentence has been deleted.

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				[Markku Rummukainen (Reviewer's comment ID #: 223-149)]	
11-1133	A	65:14	65:14	Figure 11.3.8.3: indicate what the star stands for - the mean response? [James Renwick (Reviewer's comment ID #: 211-47)]	Accepted. The legend has been improved.
11-1134	A	65:46	65:52	See also Kharin and Zwiers (2005, J. Clim, 18, 1156-1173), Figure 9. [Francis Zwiers (Reviewer's comment ID #: 305-192)]	Noted. The problem with using this paper for our assessment is that it is based on a single model projection. Difficult to say how much of their findings apply to other AOGCMs.
11-1135	A	65:49	65:49	suggest rewording to "...every DJF and JJA season, in all model runs, is "extremely" warm..." [James Renwick (Reviewer's comment ID #: 211-48)]	Accepted, text has been modified
11-1136	A	65:55	66:2	Change to "Sea ice and Northern Hemisphere snow projections are discussed in Chapter 10, Section 10.3; projected changes in the surface mass balance of Arctic glaciers and of the Greenland ice sheet are discussed in Chapter 10, Sections 10.3 and 10.6. Projections for frozen soil and permafrost changes are discussed in the WGII Report, Chapter 15." [James Renwick (Reviewer's comment ID #: 211-49)]	Accepted, text has been modified
11-1137	A	66:1	66:1	"(Sections 10.3, 10.6 and 10.6)" 10.6 and 10.6 ? [Daniel Caya (Reviewer's comment ID #: 38-77)]	Accepted, text has been modified
11-1138	A	66:7	66:7	Replace "Oceans" with "Ocean". [Francis Zwiers (Reviewer's comment ID #: 305-193)]	Accepted, text has been modified
11-1139	A	66:19	:19	Refer to tropospheric rather than atmospheric warming - there's cooling in the stratosphere [Steve Harangozo (Reviewer's comment ID #: 98-19)]	Accepted, text has been modified
11-1140	A	66:27	66:27	Remove "the" from before "recent decades" [James Renwick (Reviewer's comment ID #: 211-50)]	Accepted, text has been modified
11-1141	A	66:31	66:32	It can equally, and perhaps more than equally, be said that "there is lack of evidence of spatially widespread COOLING over the rest of the continent during the last half of the 20th Century". See comments #64, #73, #131 and #133, and Page 4-25, lines 16-32. [Adrian Simmons (Reviewer's comment ID #: 242-169)]	Accepted; text has been revised and cross-link to Ch. 3 & 4 is made.
11-1142	A	66:33	66:35	Instead of "makes any simple... inappropriate", please consider another formulation. E.g. "would be expected to ameliorate during the 21st century". Cf. also page 68, lines 29-31. [Markku Rummukainen (Reviewer's comment ID #: 223-150)]	Taken into account. The sentence has been modified according comment 1144.
11-1143	A	66:34	:34	An 'a' is missing after 'also' [Steve Harangozo (Reviewer's comment ID #: 98-20)]	Accepted
11-1144	A	66:35	66:35	Perhaps replace "inappropriate" with "uncertain", to avoid sounding judgemental. [Francis Zwiers (Reviewer's comment ID #: 305-194)]	Accepted

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11-1145	A	66:41	66:41	Instead of "is being debated", please consider, e.g., "is not clear". [Markku Rummukainen (Reviewer's comment ID #: 223-151)]	Accepted
11-1146	A	66:44	66:45	Remove "the" from before "recent decades" [James Renwick (Reviewer's comment ID #: 211-51)]	Accepted
11-1147	A	66:47	66:48	As to "The possibility...", please either substantiate with a reference, or delete. [Markku Rummukainen (Reviewer's comment ID #: 223-152)]	Accepted. Text has been modified and cross-link to Ch. 10 is made.
11-1148	A	66:51	67:4	It should be made clear for which time period the remarks on reanalyses are made, as southern-hemispheric performance is known to be considerably different (and poorer) prior to the end of 1978 than after it. [Adrian Simmons (Reviewer's comment ID #: 242-171)]	Taken into account. The different (re)analyses show significant differences among each other, independently which period is considered, but clear improvement of bias after satellite era. Text has been revised.
11-1149	A	66:56		I am puzzled by the reference to "satellite monthly temperature data" here. Satellites do not reliably measure surface temperature, which is the subject of this paragraph, and it is difficult to extract lower tropospheric temperature information over ice-covered surfaces, especially when the terrain is elevated. [Adrian Simmons (Reviewer's comment ID #: 242-170)]	Taken into account. Surface temperature data sets have been derived from satellite infrared radiometer data (e.g., Comiso, 2000; King and Comiso, 2003). Text has been improved.
11-1150	A	67:6	67:7	Perhaps make it clear that you mean present-day simulations, rather than future change runs. At first reading, I thought you had the sense backwards and should have said "poleward" not "equatorward". [James Renwick (Reviewer's comment ID #: 211-52)]	Accepted. Text has been revised.
11-1151	A	67:6	67:7	I assume that this is based on Section 9.5.3.7. The assessment there is that the models simulate changes in storm track position over the 20th century that are generally consistent with observed changes (i.e., they displace the storm tracks poleward, not equatorward as stated here!). Chapter 9 does not provide a basis for making a statement about bias. Note that Ch 8 provides an assessment of the storm track climatologies produced by climate models (see 8.3.1.3). However, that section also does not provide a basis for making the statement about bias that is made here. [Francis Zwiers (Reviewer's comment ID #: 305-195)]	Accepted. Text has been revised, and cross-links are made.
11-1152	A	67:6	:7	I suggest it is made clear from the outset that confidence in AR4 projections for Antarctica is low because of their poor skill in capturing observed C20 changes [Steve Harangozo (Reviewer's comment ID #: 98-21)]	Noted. Limited simulation skill is highlighted in 11.3.8.2.2
11-1153	A	67:24	67:24	The temperature bias is assessed relative to which observational data set? Do we trust this data set? [Francis Zwiers (Reviewer's comment ID #: 305-196)]	Accepted. Carril et al. used NCEP. We emphasize the uncertainty in the data

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11-1154	A	67:44	67:46	This sentence is not quite clear. It suggests that observational uncertainty contributes to uncertainty in simulations of precipitation. I think what is meant, that observational uncertainty contributes to uncertainty in the differences between observations and simulations. [Francis Zwiers (Reviewer's comment ID #: 305-197)]	Accepted; the sentence has been reformulated.
11-1155	A	67:46	:46	Commas needed after 'models' and 'reanalyses' [Steve Harangozo (Reviewer's comment ID #: 98-22)]	Accepted
11-1156	A	67:48	:48	Scatter' in what? [Steve Harangozo (Reviewer's comment ID #: 98-23)]	Scatter in simulated monthly precipitation is meant. But, sentence has been deleted
11-1157	A	68:1	68:1	This subsection seemed to be a bit less "polished" than many other parts of the Chapter. [Francis Zwiers (Reviewer's comment ID #: 305-198)]	Accepted. This subsection has been improved.
11-1158	A	68:9	68:11	This is a minor comment on a matter of style. My personal preference is not to combine two sentences into one by including bits of replaceable text in parentheses. I find this makes the text considerably more difficult to read, and this practice generally does not save very much space. This doesn't happen often in Ch 11, but it did crop up in a few places. [Francis Zwiers (Reviewer's comment ID #: 305-199)]	Noted
11-1159	A	68:22	68:22	Change "relative" to "relatively" [James Renwick (Reviewer's comment ID #: 211-53)]	Accepted
11-1160	A	68:24	68:24	Should there be a cross-link to Ch 3 here? [Francis Zwiers (Reviewer's comment ID #: 305-200)]	Rejected. We give the appropriate cross-links to Ch.3 & 4 already in the "Key processes" concerning the temperature trends.
11-1161	A	68:26		The reference to "cooling trends" should be reconsidered. See comments #64, #73, #131, #133 and #169. [Adrian Simmons (Reviewer's comment ID #: 242-172)]	Accepted; text has been revised.
11-1162	A	68:30	68:31	Could change starting from "requires further..." to "is not readily understood". [Markku Rummukainen (Reviewer's comment ID #: 223-153)]	Accepted
11-1163	A	68:33	68:53	Should there be some mention of implications for Antarctic ice-sheet mass balance, or perhaps a cross-link to the suitable part of Ch 10? [Francis Zwiers (Reviewer's comment ID #: 305-202)]	Accepted; a cross-link to Ch. 10 is given.
11-1164	A	68:41	68:41	Saying that Antarctica is projected to become wetter might confuse a few casual readers because this invokes the notion of liquid precipitation. Perhaps it would be better to say that precipitation is projected to increase over the continent. See also page 69, line 22. [Francis Zwiers (Reviewer's comment ID #: 305-201)]	Accepted; text has been revised

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11-1165	A	68:41		"wetter" is perhaps not the best word to use for Antarctica. "snowier" might be more appropriate. [Adrian Simmons (Reviewer's comment ID #: 242-173)]	Accepted. The sentence has been changed according to the comment 1164.
11-1166	A	68:50		Write section 10,3). Particularity [Ibouraïma YABI (Reviewer's comment ID #: 297-88)]	Accepted
11-1167	A	69:1	69:7	See also Kharin and Zwiers (2005, J. Clim, 18, 1156-1173), Figure 9. [Francis Zwiers (Reviewer's comment ID #: 305-203)]	Noted. The problem with using this paper for our assessment is that it is based on a single model projection. Difficult to say how much of their findings apply to other AOGCMs.
11-1168	A	69:9	69:11	Snow and frozen ground are also part of the cryosphere! [Francis Zwiers (Reviewer's comment ID #: 305-204)]	Noted. This is true, but projections for this part of the cryosphere are not available. Headline has been changed.
11-1169	A	69:13	69:13	Delete "Robust" [VINCENT GRAY (Reviewer's comment ID #: 88-1875)]	Rejected. No motivation given for the suggested change.
11-1170	A	69:14	69:15	Recall the relevant types of evidence, at least in a foot note: very likely, many policymakers will read the subchapter "Robust conclusions and uncertainties" only [Govt. of France (Reviewer's comment ID #: 2010-94)]	Noted.
11-1171	A	69:17	69:17	Replace "is very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1876)]	Rejected. No motivation given for the suggested change.
11-1172	A	69:17	69:18	Replace "is very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1877)]	Rejected. No motivation given for the suggested change.
11-1173	A	69:18	69:19	Small changes in summer should be noted. [Ronald J Stouffer (Reviewer's comment ID #: 258-87)]	Accepted; text has been modified
11-1174	A	69:19	:21	Based on 1 and 3' etc. What are 1, 2 etc? [Steve Harangozo (Reviewer's comment ID #: 98-24)]	Noted. The explanation is given in 11.3.1 Introduction to Regional Projections.
11-1175	A	69:19		Write and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-89)]	Noted
11-1176	A	69:20	69:20	Replace "is very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1878)]	Rejected. No motivation given for the suggested change.
11-1177	A	69:20	69:21	Why are the precipitation increase largest in the winter? I assume the precipitable water increases are largest in the summer in the Arctic. Is the statement correct? [Ronald J Stouffer (Reviewer's comment ID #: 258-88)]	The relative increase in precipitation is largest in winter, smallest in summer according to the seasonality of projected temperature changes. The text has been modified for clarification.

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11-1178	A	69:21		Write 1 and 3 ; [Ibouraïma YABI (Reviewer's comment ID #: 297-90)]	Noted
11-1179	A	69:22	69:22	Delete "It is likely that" 360 11-360 1880 [VINCENT GRAY (Reviewer's comment ID #: 88-90)]	Rejected. No motivation given for the suggested change.
11-1180	A	69:22	69:22	Replace "will" by "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1881)]	Rejected. No motivation given for the suggested change.
11-1181	A	69:22		Another reference to a "wetter" Antarctica. [Adrian Simmons (Reviewer's comment ID #: 242-174)]	Accepted. This part has been changed according comment 1164
11-1182	A	69:23	69:24	They statement that simulations are hard to compare to observations doesn't quite convey the problem correctly. Presumably the problem is not specifically with the models, but rather that a lack of observations and/or uncertain analyses limits our ability to assess models in this region. [Francis Zwiers (Reviewer's comment ID #: 305-205)]	Accepted. This part has been deleted here, but introduced into the uncertainty sub-section.
11-1183	A	69:24		A further questionable reference to "cooling" over non-Peninsula Antarctica. See comments #64, #73, #131, #133, #169 and #172. [Adrian Simmons (Reviewer's comment ID #: 242-175)]	Accepted; part has been deleted here
11-1184	A	69:25		Write Antartic) ; [Ibouraïma YABI (Reviewer's comment ID #: 297-91)]	Noted
11-1185	A	69:26	69:26	Replace "is very likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1882)]	Rejected. No motivation given for the suggested change.
11-1186	A	69:27	69:28	"Large present day sea simulations ..." - It is unclear to me what is meant. Reword. [Ronald J Stouffer (Reviewer's comment ID #: 258-89)]	Accepted. Part has been deleted here
11-1187	A	69:28		Write observations ; [Ibouraïma YABI (Reviewer's comment ID #: 297-92)]	Noted
11-1188	A	69:29	69:29	"It is uncertain how the Arctic Ocean will change" - I assume the Arctic Ocean circulation is what is in view. Be careful with statements like these! [Ronald J Stouffer (Reviewer's comment ID #: 258-90)]	Accepted
11-1189	A	69:29	69:31	Lack of observations against which to assess models, and for developing process knowledge, is presumably also a serious problem. [Francis Zwiers (Reviewer's comment ID #: 305-206)]	Accepted; this issue has been included in the uncertainty sub-section
11-1190	A	69:31		Write Artic ocean ; [Ibouraïma YABI (Reviewer's comment ID #: 297-93)]	Noted
11-1191	A	69:35		Please use the same formatting for the Arctic and the Antarctic region cases when discussing uncertainties. Preferably write out the latter instead of using bullets. [Markku Rummukainen (Reviewer's comment ID #: 223-154)]	Accepted; uncertainty sub-section has been revised
11-1192	A	69:37	70:3	I think the summaries of uncertainties capture well what we would like to know better, but	Accepted; uncertainty sub-section has

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				is it worth making the Arctic and Antarctic summaries the same format? Either both a prose paragraph, or both bulleted lists. [James Renwick (Reviewer's comment ID #: 211-54)]	been revised
11-1193	A	69:40	69:42	This is a detection and attribution issue, so it is perhaps best left to Chapter 9. Note that Ch 9 does assess anthropogenic influence on sea-ice extent. [Francis Zwiers (Reviewer's comment ID #: 305-207)]	Accepted; sentence has been deleted
11-1194	A	69:52	70:3	These bullets need to be further developed and justified. [Francis Zwiers (Reviewer's comment ID #: 305-208)]	Accepted; uncertainty sub-section has been revised
11-1195	A	69:52		Write timescales ; [Ibouraïma YABI (Reviewer's comment ID #: 297-94)]	Noted
11-1196	A	69:53		Write section 10,3) ; [Ibouraïma YABI (Reviewer's comment ID #: 297-95)]	Noted
11-1197	A	69:54	69:55	"ozone forcing" could be confused by its global scale radiative forcing effects, whereas it is the regional (radiative) effect of the ozone hole that is in focus. Also, please explain "SH circulation". [Markku Rummukainen (Reviewer's comment ID #: 223-155)]	Accepted; uncertainty sub-section has been revised
11-1198	A	69:54		Write variability ; [Ibouraïma YABI (Reviewer's comment ID #: 297-96)]	Noted
11-1199	A	69:56		Write tend) ; [Ibouraïma YABI (Reviewer's comment ID #: 297-97)]	Noted
11-1200	A	70:3		Write precipitation). [Ibouraïma YABI (Reviewer's comment ID #: 297-98)]	Noted
11-1201	A	70:5	70:5	I don't at all mean to offend by making this comment, but unfortunately, subsection 11.3.9 left me with the impression of being less authoritative in its assessment than other parts of this chapter. I could not judge from the presentation whether this was because there was a lack of literature to assess, or whether the literature had not been found. Note that this impression may be completely erroneous - it may just reflect my ignorance, or be an ideosyncrasy of my interpretation of the text. [Francis Zwiers (Reviewer's comment ID #: 305-209)]	Noted. There is a lack of published literature. Most of the studies done were for the Pacific Islands and they are discussed. Work has only just started in the Caribbean. Virtually no work except for PCMDI models was found for the Indian Ocean. Some of the interesting work on hurricanes which affect the small islands was removed from this section to the global section in Chapter 10.
11-1202	A	70:8	70:8	Use AR4. [Markku Rummukainen (Reviewer's comment ID #: 223-156)]	Accepted
11-1203	A	70:11	70:11	Could omit "by dynamic or statistical means".	Accepted

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				[Markku Rummukainen (Reviewer's comment ID #: 223-157)]	
11-1204	A	70:24	70:31	Could leave our these lines as this is mostly common to all the regional discussions and explained the chapter introduction. [Markku Rummukainen (Reviewer's comment ID #: 223-158)]	Accepted
11-1205	A	70:53	71:17	Section 11.3.9.1.2: could be tidied up a bit, it does not seem to read quite as well as the rest of what is a very well-written and laid out chapter. [James Renwick (Reviewer's comment ID #: 211-55)]	Accepted
11-1206	A	71:4	71:7	Please use NET instead of repeating "trough of low pressure" as the former has been defined. [Markku Rummukainen (Reviewer's comment ID #: 223-159)]	Accepted. Section to be tidied up
11-1207	A	71:35	71:38	Probably a detailed explanation of Table S11.2 is not necessary here. [Markku Rummukainen (Reviewer's comment ID #: 223-160)]	Accepted
11-1208	A	71:35	71:41	What observations are used to assess biases? [Francis Zwiers (Reviewer's comment ID #: 305-210)]	Noted. Jones et al., 2001: <i>J. Geophys. Res.</i> , 106 , 3371-3380. Xie and Arkin, 1997: <i>Bull. Amer. Meteor. Soc.</i> , 78 , 2539-2558
11-1209	A	71:40	71:40	Stray "l" at the end of "satisfactory". [James Renwick (Reviewer's comment ID #: 211-56)]	Accepted
11-1210	A	71:41	71:45	A figure, such as in conjunction of Figure 11.9.1 might be rather useful. [Markku Rummukainen (Reviewer's comment ID #: 223-161)]	Accepted; will refer to 11.3.9.1
11-1211	A	71:47	71:50	Starting off this paragraph in this particular way sends a rather odd message. First it seems to say that finally, someone has succeeded in simulating the climate of the region - but then the following sentences say that the ensemble of AR4 models also do a decent job. I think the order of presentation should be reversed, first describing the consensus result, and then noting specific studies of the region and whether they strengthen the consensus, or provide information on other aspects of the region's climate. [Francis Zwiers (Reviewer's comment ID #: 305-211)]	Accepted
11-1212	A	71:48	71:55	The text gives seemingly more weight to a single-model(?) study (Angeles et al) than the AR4-results. [Markku Rummukainen (Reviewer's comment ID #: 223-162)]	Taken into account. See 11-1211
11-1213	A	72:1	72:2	Starting from "so that..." seems as such self-evident. [Markku Rummukainen (Reviewer's comment ID #: 223-163)]	Accepted
11-1214	A	72:1	72:2	The last bit of the sentence "so that uncertainties ..." is redundant, given that the first half of the sentence says that there are uncertainties. [Francis Zwiers (Reviewer's comment ID #: 305-212)]	Accepted
11-1215	A	72:5	72:9	What observations are used to assess biases?	Noted. Jones et al., 2001: <i>J. Geophys.</i>

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				[Francis Zwiers (Reviewer's comment ID #: 305-213)]	<i>Res.</i> , 106 , 3371-3380. Xie and Arkin, 1997: <i>Bull. Amer. Meteor. Soc.</i> , 78 , 2539-2558
11-1216	A	72:8	72:9	If I am right assuming that the area means are compared, then these comparisons are not 'fair' as they represent different area sizes/shapes and hence different degrees of freedom. Furthermore, the different regions are associated with different temporal and spatial variance. One cannot therefore say that the models have better skill in simulating one area mean over the other. Differences may be due to random statistical fluctuations and the ad-hoc (available) sample of GCMs. Actually, using area means over such large regions is fairly meaningless for the purpose of providing indication of how the local climate will change - it's better to use ESD-downscaled results that represent local climate variables or RCM giving a spatial pattern. [Rasmus E. Benestad (Reviewer's comment ID #: 18-45)]	Accepted – to be removed. No ESD results for Indian Ocean have been reported
11-1217	A	72:11	72:18	A cross-link to Ch 8 would be useful. An issue raised in Ch 8 concerns the tendency of many models to simulate a split ITCZ. Perhaps there should also be some mention of this problem here? [Francis Zwiers (Reviewer's comment ID #: 305-214)]	Accepted
11-1218	A	72:12	72:12	Replace "investigated" by "projected" [VINCENT GRAY (Reviewer's comment ID #: 88-1883)]	Rejected
11-1219	A	72:13		Write Jones et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-99)]	Noted. Text is correct; no correction needed
11-1220	A	72:31	72:36	It is not necessary to redescribe the table. [Francis Zwiers (Reviewer's comment ID #: 305-215)]	Accepted
11-1221	A	72:37	72:41	This material also does not need to be repeated. [Francis Zwiers (Reviewer's comment ID #: 305-216)]	Accepted
11-1222	A	72:43	72:43	Figure 11.3.9.1: caption has incorrect figure number. [James Renwick (Reviewer's comment ID #: 211-57)]	Accepted
11-1223	A	72:46	72:54	The figure 11.3.9.1 seems to contain additional regions compared to these lines. It should not be necessary to explain the figure in detail here (rather in Figure caption). The "observed anomaly" should be reformulated to, e.g. "observed change" or "behaviour". [Markku Rummukainen (Reviewer's comment ID #: 223-164)]	Taken into account: Text to be amended to note that figure refers to all ocean regions. Figure caption conforms to that used in fig 11.3.5.1. Necessary additional comment will remain in text. Paragraph to be rewritten to remove ambiguities referred to in other comments below.
11-1224	A	72:47	72:47	Remove sentence starting "A detailed explanation..."	Accepted. Sentence was intended to

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				[James Renwick (Reviewer's comment ID #: 211-58)]	refer to section 11.3.1
11-1225	A	72:50	72:51	Change sentence to "Thus although model biases exist, the observed anomalies lie within the envelope of model-simulated anomalies." [James Renwick (Reviewer's comment ID #: 211-59)]	Taken into account. Text to be simplified and made clearer.
11-1226	A	72:50	72:51	I think Figure 11.3.9.1 has been misinterpreted here. I believe that biases were removed in creating this figure. I believe the 1901-1997 climatological mean appropriate to each record was removed prior to plotting - i.e., models were centered relative their climatologies, and observations were centered relative to the observational climatology. [Francis Zwiers (Reviewer's comment ID #: 305-217)]	Taken into account. Comment misinterprets a badly written paragraph. Paragraph to be simplified and sentence on model biases is to be removed.
11-1227	A	73:1		The text gives seemingly more weight to a single-model(?) study (Angeles et al) than the AR4-results. Suggest also omitting Figure 11.3.9.2. (pertains, of course, also to some later parts of this regional sub-section). The parts on observed regional changes (lines 12-17 and lines 29-30) could fit better in AR4 Chapters on observations and/or detection. [Markku Rummukainen (Reviewer's comment ID #: 223-165)]	Accepted; order of presentation to be reversed. Suggestion to remove Figure 11.3.9.2 accepted. Comment on observed changes not accepted since Chapter 3 has a global slant and merely referred to this study. Results are mentioned briefly here to help support projections. No mention is made of this study in Chapter 9
11-1228	A	73:2	73:17	There is a similar problem with the order of presentation here as noted previously (see comment concerning p71, lines 47-50). Also, it would be preferable to briefly describe the observed changes before discussing model results. In discussing the observations, cross-links to Ch 3 would be appropriate. [Francis Zwiers (Reviewer's comment ID #: 305-218)]	First sentence accepted. Author prefer to mention observed changes after model results since observations here are playing a supporting role. Otherway around may place undue emphasis on observations. Cross link to Chapter 3 accepted
11-1229	A	73:2		Write Angels et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-100)]	Accepted
11-1230	A	73:15		Consider changing: "Peterson et al (2002) found" to "While Peterson et al (2002) found" and adding at end of sentence ", Neelin et al (2006) note a modest but statistically significant Caribbean summer drying trend over recent decades in several observational data sets." (Same ref as added pg 100, for comment pg 53) [J. David Neelin (Reviewer's comment ID #: 187-8)]	Taken into account. Paper to be looked at. Changes may not be as suggested and will depend particularly on the period analyzed by Neelin et al.
11-1231	A	73:26	23:28	based on an RCM (L28)? Predictors used for ESD? [Rasmus E. Benestad (Reviewer's comment ID #: 18-46)]	Angeles used the Parallel Climate Model (T42). Several predictors were used for ESD including surface vorticity, 500 hPa rel. humidity and surface temperature

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11-1232	A	73:32	73:32	Figure 11.3.9.2: Change caption to begin: "Temperature change (oC) by month of the year from..." [James Renwick (Reviewer's comment ID #: 211-60)]	Accepted. Figure to be put in Supplementary material.
11-1233	A	73:37	73:44	Here and elsewhere - change order of presentation so that observed changes are described first. In discussing the observations, cross-links to Ch 3 would be appropriate. [Francis Zwiers (Reviewer's comment ID #: 305-219)]	See comment 11-1228
11-1234	A	73:41	73:44	This would place better in AR4 chapters on observations and/or detection. [Markku Rummukainen (Reviewer's comment ID #: 223-166)]	See comment 11-1227
11-1235	A	73:41	73:44	It should be explained how and for what period the 10th and 90th percentiles are defined. As climate changes, the percentiles will change if based on shifting 30-year periods. [Adrian Simmons (Reviewer's comment ID #: 242-176)]	Comment on explanation of how is noted; the paper does not elucidate. The more important comment on duration is accepted. The period for all data analyzed was approximately 1961-90.
11-1236	A	73:50	73:54	sentence does not make sense. [Rasmus E. Benestad (Reviewer's comment ID #: 18-47)]	Accepted. 'in other months' to be added between 'decreases' and 'in'
11-1237	A	73:51	73:54	This would place better in AR4 chapters on observations and/or detection. [Markku Rummukainen (Reviewer's comment ID #: 223-167)]	See comment 11-1227
11-1238	A	74:19	74:24	This would place better in AR4 chapters on observations and/or detection. [Markku Rummukainen (Reviewer's comment ID #: 223-168)]	See comment 11-1227
11-1239	A	74:20	74:20	Stray commas in the two citations on this line (and elsewhere in the chapter) [James Renwick (Reviewer's comment ID #: 211-61)]	Rejected. Comma is the accepted notation
11-1240	A	74:26	74:26	Capitalise "Pacific" [James Renwick (Reviewer's comment ID #: 211-62)]	Accepted
11-1241	A	74:35	74:37	I don't really understand what this sentence is trying to say - it seems to break up the flow in this paragraph. [Francis Zwiers (Reviewer's comment ID #: 305-220)]	Taken into account. This sentence and next to be put in a new paragraph
11-1242	A	74:38	74:41	This would place better in AR4 chapters on observations and/or detection. [Markku Rummukainen (Reviewer's comment ID #: 223-169)]	See comment 11-1227
11-1243	A	74:46	74:47	Perhaps just quote the range without listing the contributing mechanisms here. [Markku Rummukainen (Reviewer's comment ID #: 223-170)]	Accepted
11-1244	A	74:49	74:50	The relevance of the Arctic region changes is probably not meaningful here. [Markku Rummukainen (Reviewer's comment ID #: 223-171)]	Accepted
11-1245	A	74:55	74:56	There is also an assessment of sea-level rise, and its causes, in Ch 9, that is linked to the assessment in Ch 5. See Section 9.5.2. Note that there is presently some minor inconsistency between 9.5.2 and Ch 5 that will be corrected in the next revision.	Taken into account. Not sure that this should be mentioned in the regional section since 9.5.2 does not mention

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				[Francis Zwiers (Reviewer's comment ID #: 305-221)]	any specific region and is concerned with reconciling model results to obs.
11-1246	A	74:55	75:4	This would place better in AR4 chapters on observations and/or detection. [Markku Rummukainen (Reviewer's comment ID #: 223-172)]	See comment 11-1227
11-1247	A	75:1		Reference to Chapter 2 is incorrect, as that Chapter deals with constituents and radiative forcing. [Adrian Simmons (Reviewer's comment ID #: 242-177)]	Accepted. Should be Chap 5
11-1248	A	75:6	75:18	section 11.3.9.5 refers only on regional-model based studies in the Pacific. A recent study in the Atlantic suggests a decrease in frequency but an enhancement in strength in the Gulf of Mexico: Chauvin, F., Royer, J.F., and Déqué, 2006. Response of hurricane-type vortices to global warming as simulated by ARPEGE-Climat at high resolution. Climate Dynamics, DOI 10.1007/s00382-006-0135-7 [Govt. of France (Reviewer's comment ID #: 2010-95)]	Noted. The northwest corner of the Caribbean barely touches the Gulf of Mexico. This result is best reported in Chapter 10 into which all hurricane discussion is subsumed. Only material quite specific to a region is included in Chap. 11. Comment to be sent to Chap. 10.
11-1249	A	75:20	75:20	Delete "Robust" [VINCENT GRAY (Reviewer's comment ID #: 88-1884)]	Reject. Adhering to chapter format
11-1250	A	75:21	75:22	Recall the relevant types of evidence, at least in a foot note: very likely, many policymakers will read the subchapter "Robust conclusions and uncertainties" only [Govt. of France (Reviewer's comment ID #: 2010-96)]	Taken into account. Referred to CLAs for possible standardization
11-1251	A	75:23	75:23	Replace "will likely" by "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1885)]	Rejected; IPCC terminology used. Changing 'very likely' to 'likely' will be given consideration.
11-1252	A	75:23	75:26	Lack the source of the information (1, 2 or 3). [Markku Rummukainen (Reviewer's comment ID #: 223-173)]	Accepted. 'Based on 1' to be added
11-1253	A	75:23	:40	Put ; at the end of each heading [Ibouraïma YABI (Reviewer's comment ID #: 297-101)]	Rejected. Chap 11 uses full stop throughout.
11-1254	A	75:27	75:27	Replace "are very likely to" by "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1886)]	See 11-1251
11-1255	A	75:31	75:31	Replace "are very likely to" by "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1887)]	See 11-1251
11-1256	A	75:31	75:31	Remove "of" [James Renwick (Reviewer's comment ID #: 211-63)]	Accepted
11-1257	A	75:33	75:33	Replace "is likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1888)]	Rejected; IPCC terminology used
11-1258	A	75:35	75:35	Replace "are very likely to" by "may"	See 11-1251

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				[VINCENT GRAY (Reviewer's comment ID #: 88-1889)]	
11-1259	A	75:35	75:35	Remove "of" [James Renwick (Reviewer's comment ID #: 211-64)]	Accepted
11-1260	A	75:37	75:37	Replace "is likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1890)]	Rejected; IPCC terminology used
11-1261	A	75:39	75:39	Replace "are very likely to" by "may" [VINCENT GRAY (Reviewer's comment ID #: 88-1891)]	See 11-1251
11-1262	A	75:39	75:39	Remove "of" [James Renwick (Reviewer's comment ID #: 211-65)]	Accepted
11-1263	A	75:41	75:41	Replace "is likely to" by "could" [VINCENT GRAY (Reviewer's comment ID #: 88-1892)]	Rejected; IPCC terminology used
11-1264	A	75:45	75:46	"Insufficient" can be a bit of problematic term. (Is it well-defined what would constitute "sufficiency"?) Perhaps: "available model simulations do not allow for conclusions on possible changes in tropical cyclone behaviour". [Markku Rummukainen (Reviewer's comment ID #: 223-174)]	Accept
11-1265	A	75:45	75:50	The discussion of limitations probably needs to be developed a bit further? [Francis Zwiers (Reviewer's comment ID #: 305-222)]	Accept
11-1266	A	75:46		Write changes ; [Ibouraïma YABI (Reviewer's comment ID #: 297-102)]	Accept
11-1267	A	75:48		Write behaviour ; [Ibouraïma YABI (Reviewer's comment ID #: 297-103)]	Accept
11-1268	A	75:52	76:52	Box 11.3. Empirical/statistical downscaling methods are not mentioned as a means of obtaining climate projections in mountain regions where instrumental records exist. [Govt. of Australia (Reviewer's comment ID #: 2001-475)]	This will be noted in the revisions.
11-1269	A	76:1	76:1	What is the significance of CO2-variations in this context? [Markku Rummukainen (Reviewer's comment ID #: 223-175)]	Agreed tis is not obvious, will rework.
11-1270	A	76:4	76:4	Perhaps "all" instead of "other". [Markku Rummukainen (Reviewer's comment ID #: 223-176)]	Noted
11-1271	A	76:10	76:12	I stumbled on this because there are many RCM simulations (and not just recent ones) over domains that include mountainous terrain (e.g., Plummer et al 2006). I think something needs to be added to this sentence so that it is clear that the development that is being talked about is the applications of RCMs at very high resolution over such domains. [Francis Zwiers (Reviewer's comment ID #: 305-223)]	Agreed, will adapt text.
11-1272	A	76:15		Write Weisman et al., Walser et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-104)]	Noted

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11-1273	A	76:19	76:24	The discussion on NAO and ENSO is perhaps not specially needed here, or is some special significance just for mountain regions implied? [Markku Rummukainen (Reviewer's comment ID #: 223-177)]	It is used merely as an example, the retention of this phrase will be reconsidered.
11-1274	A	76:23	76:24	It is not completely clear whether the comment here is on topographic control of precipitation in global climate models, or the simulation of large scale modes of variability that affect precipitation. Also, I think cross-links to Chapter 8 (both with respect to the simulation of precipitation, and the large scale modes) would be appropriate. [Francis Zwiers (Reviewer's comment ID #: 305-224)]	Will be rephrased.
11-1275	A	76:25	76:25	What about high resolution global models? See Ch 8. [Francis Zwiers (Reviewer's comment ID #: 305-225)]	Agreed, will re-phrase.
11-1276	A	76:27		Write al., 2005a et al., 2006). [Ibouraïma YABI (Reviewer's comment ID #: 297-105)]	Noted
11-1277	A	76:33		Write Lunq et al., 2004 [Ibouraïma YABI (Reviewer's comment ID #: 297-106)]	Noted
11-1278	A	76:36		Write Vincent, 2002 [Ibouraïma YABI (Reviewer's comment ID #: 297-107)]	Noted
11-1279	A	76:40	76:40	"by" instead of "to". [Markku Rummukainen (Reviewer's comment ID #: 223-178)]	Noted
11-1280	A	76:46	76:51	this important topic deserves more discussion. [Rasmus E. Benestad (Reviewer's comment ID #: 18-48)]	Yes, but not here. This paragraph begins to touch on WG2 territory, and expansion would not be appropriate for a chapter on projections.
11-1281	A	76:46	76:51	Could consider making a reference to the review article of "Barnett, T. P., Adam, J. C. and Lettenmeier, D. P. 2005. Potential impacts of a warming climate on water availability in snow-dominated regions. Nature 438, 303-309, doi:10.1038/nature04141. 825 11-825 179 [Markku Rummukainen (Reviewer's comment ID #: 223-48)]	Will consider.
11-1282	A	76:46	76:47	Mountain vs. lowland contribution to river flow. Change the "likely to have significant repercussions". What fraction of the lowland flow comes from the mountains? The "likely" and "significant" are words with special meanings in this report. How are they being used here? [Ronald J Stouffer (Reviewer's comment ID #: 258-91)]	Agreed. Will rephrase
11-1283	A	76:51	76:51	"Graham et al, 2006)" should be "Graham et al., 2006)". [Chiu-Ying LAM (Reviewer's comment ID #: 139-25)]	Noted
11-1284	A	76:53	76:53	Replace "climate change" with "changes in climate"	Rejected, no justification given

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				[VINCENT GRAY (Reviewer's comment ID #: 88-1893)]	
11-1285	A	76:53	81:2	These are very large boxes - perhaps they should simply be added to the Chapter as additional subsections. Also, Box 11.4 doesn't have a call-out in the Chapter body. [Francis Zwiers (Reviewer's comment ID #: 305-226)]	Appropriate call outs will be added. We prefer to keep theses as boxes.
11-1286	A	77:3	77:3	perhaps "mean" instead of "time averaged". [Markku Rummukainen (Reviewer's comment ID #: 223-180)]	Agreed.
11-1287	A	77:5	77:6	Add "zone" after "coastal". Also, please consider replacing "insufficient reliable" by "little". [Markku Rummukainen (Reviewer's comment ID #: 223-181)]	Agreed.
11-1288	A	77:5	77:5	Insert "zone" after "coastal". [Francis Zwiers (Reviewer's comment ID #: 305-227)]	Agreed
11-1289	A	77:5		end of sentence missing? [Rasmus E. Benestad (Reviewer's comment ID #: 18-49)]	Noted
11-1290	A	77:10	77:10	Could omit "temporal". [Markku Rummukainen (Reviewer's comment ID #: 223-182)]	Agreed.
11-1291	A	77:20		Write level change). [Ibouraïma YABI (Reviewer's comment ID #: 297-108)]	Noted.
11-1292	A	77:26	77:27	Suggest omitting starting from "for general details...". [Markku Rummukainen (Reviewer's comment ID #: 223-183)]	Will consider
11-1293	A	78:11	78:11	Do these nu,bers refer to the whole Australian coastline or for some particular location along it? In any case, could consider omitting the details in the parenthesis. [Markku Rummukainen (Reviewer's comment ID #: 223-184)]	Will clarify.
11-1294	A	78:16	78:16	Consider leaving out "recently using the dynamic method". [Markku Rummukainen (Reviewer's comment ID #: 223-185)]	Agreed.
11-1295	A	78:26	78:27	The result is on the non-linearity of changes in storm surges compared to changes in the mean se level. The present formulation might not be sufficiently clear on this. Suggest instead: "the possibility of even larger changes in storm surges than in those in the mean sea level. Meier et al. (2006) note, e.g., that the 100-year surge in the Gulf of Riga could increase by 41 cm more than the wintertime mean sea level." [Markku Rummukainen (Reviewer's comment ID #: 223-186)]	Will rephrase.
11-1296	A	78:37	78:37	Suggest "Wang et al. (2004b) inferred an increase in... from AOGCM projections...". [Markku Rummukainen (Reviewer's comment ID #: 223-187)]	Agreed
11-1297	A	78:39	78:41	Does this signifiy that the inferred changes were not statistically significant? If so, please state it. [Markku Rummukainen (Reviewer's comment ID #: 223-188)]	Will clarify
11-1298	A	78:49	78:50	This ("Furthermore...") is probably not a very important point as such and might not	Agreed

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				need raising here. [Markku Rummukainen (Reviewer's comment ID #: 223-189)]	
11-1299	A	79:1	79:2	Wording issues. Reword. "expected to occur" is a frequency statement. "which is likely to continue in the future" does not modify it properly. [Ronald J Stouffer (Reviewer's comment ID #: 258-93)]	TSU: this comment is presumably pg 80, not 79. Will reword.
11-1300	A	79:1	81:2	This section on land cover at odds with the rest of the chapter. This land cover section suggests lots of local uncertainty in the future projections, while the rest of the chapter expresses lots of certainty in those projections. There is a need to reconcile the parts. I tend to lean towards the land cover section in terms of the certainty in the projections. [Ronald J Stouffer (Reviewer's comment ID #: 258-92)]	TSU: this comment is presumably pg 80, not 79. Noted. The strength of the statements will be reconsidered in the revisions and in light of the rest of the chapter.
11-1301	A	79:3	79:4	This sounds more pessimistic than the Ch 10 assessment of projected sea level pressure change. Presumably there should be a cross-link. [Francis Zwiers (Reviewer's comment ID #: 305-228)]	The statement will be reassessed against Ch 10.
11-1302	A	79:3		reference missing [Rasmus E. Benestad (Reviewer's comment ID #: 18-50)]	Agreed, will add.
11-1303	A	79:7	79:7	"lead to different future climate outcomes" is too broad. The pattern of the warming will be modified only slightly...if at all. [Ronald J Stouffer (Reviewer's comment ID #: 258-94)]	TSU: this comment is presumably pg 80, not 79 Agreed, will modify
11-1304	A	79:8	81:2	Box 11.5 is excellent. Please keep this in!! [Richard Betts (Reviewer's comment ID #: 21-15)]	Thank you , we will
11-1305	A	79:8	81:2	I think it should be mentioned somewhere that land use / cover change is included in some of the AR4 archive models (HadGEM1 anyway) [Richard Betts (Reviewer's comment ID #: 21-16)]	OK, yes
11-1306	A	79:8	81:2	Should this box also mention land cover change in response to climate change providing feedbacks on regional climate change (as well as land use change as a direct anthropogenic driver of climate change)? [Richard Betts (Reviewer's comment ID #: 21-19)]	Yes, we will add something on this
11-1307	A	79:12	79:12	Cross-reference to Chapter 2 land use section? [Richard Betts (Reviewer's comment ID #: 21-18)]	Yes, OK
11-1308	A	79:17	79:17	Add "ones". [Markku Rummukainen (Reviewer's comment ID #: 223-190)]	OK
11-1309	A	79:21	79:23	sentence does not make sense. [Rasmus E. Benestad (Reviewer's comment ID #: 18-51)]	We will clarify the meaning
11-1310	A	79:21	79:21	Omit "(GHG)". [Markku Rummukainen (Reviewer's comment ID #: 223-191)]	OK
11-1311	A	79:33	79:33	Please consider using "... i.e. the general warming is roughly offset..." instead of the	OK

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				longer present formulation. [Markku Rummukainen (Reviewer's comment ID #: 223-192)]	
11-1312	A	79:37		Write Chapin et al., 2005 Foley, 2005 [Ibouraïma YABI (Reviewer's comment ID #: 297-109)]	OK
11-1313	A	79:41	79:43	Does the statement about future cooling due to agricultural expansion include the effects of CO2 changes resulting from the agricultural expansions, or does it simply refer to the direct local sensitivity of surface air temperature to the nature of the local vegetation? [Adrian Simmons (Reviewer's comment ID #: 242-178)]	The latter – we will make this point clearer
11-1314	A	79:41		Wriet et al., 2005a [Ibouraïma YABI (Reviewer's comment ID #: 297-110)]	OK
11-1315	A	79:45	79:45	The text implies that urbanised areas are simulated in GCMs. The authors should clarify this and explain how are urbanised areas simulated in GCMs: through differences in albedo across grid cells? Is the horizontal resolution of GCMs sufficient to adequately resolve megacities such as London, Mexico City and New York? [Govt. of Australia (Reviewer's comment ID #: 2001-476)]	We will clarify how and to what degree urban areas are represented in climate models
11-1316	A	79:45	79:45	I suggest you delete "significant". Urbanization effects may be significant locally, and they may affect a lot of people, but they might not be climatically significant on larger scales. [Francis Zwiers (Reviewer's comment ID #: 305-229)]	We have substituted important for significant. This chapter is focused on smaller scales, and so these effects are important.
11-1317	A	79:45	79:50	I wonder if the suggestion of more rapid climate change in cities is correct. I think there is recent work by David Parker, or one of his colleagues, indicating that temperature changes at the same rate within urban heat islands as outside those areas. My understanding is that there is a temperature increment at a given station when an urban heat island spreads to include that station, but after this has happened, the rate of change at that+H240 station is again the same as elsewhere. The implication is that those living in urban areas who already find themselves within a heat island may not experience changes any greater than people living in areas that will never become part of an urban heat island. A cross link to Ch 3 would probably be useful. [Francis Zwiers (Reviewer's comment ID #: 305-230)]	Essentially there will be expansion of urban areas in the future. We will clarify this in the sentence.
11-1318	A	79:50	79:50	There could be a cross reference to Chapter 2's discussion of anthropogenic heat release as a localised climate forcing. [Richard Betts (Reviewer's comment ID #: 21-17)]	Yes, we will include a cross reference
11-1319	A	79:52	79:56	The message concerning agricultural land use seems a bit unclear. On the one hand, there is the statement that most areas suitable to large scale agriculture have already been converted (and further down, a statement that some reforestation, presumably of formerly cleared land, is taking place in North America), but there is also a statement that conversion to agriculture is likely to continue.	Both statements are correct. It is a question of relative amount of new land that will be converted even if this land is not prime agricultural land. We will clarify this point in the text.

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				[Francis Zwiers (Reviewer's comment ID #: 305-231)]	
11-1320	A	80:13	80:15	Given that the text says "Most model simulations...", is there a more recent example than McGuffie and Henderson-Sellers (1995)? [Francis Zwiers (Reviewer's comment ID #: 305-232)]	We will include a more recent reference.
11-1321	A	80:19		Wriet chase et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-111)]	OK
11-1322	A	80:22	80:33	There are a few typos here. Replace "intothe" with "into the" (line 22). Replace "Ocean" with "ocean" (line 23). Add an "s" to the end of "appear" (line 29). Insert "the" before "Inter-Tropical" (line 33). [Francis Zwiers (Reviewer's comment ID #: 305-233)]	OK, we will correct all typos
11-1323	A	80:27		Wriet Feddema et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-112)]	OK
11-1324	A	80:28		Write Feddema et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-113)]	OK
11-1325	A	80:34		Write Feddema et al., 2005b [Ibouraïma YABI (Reviewer's comment ID #: 297-114)]	OK
11-1326	A	80:38		Write Fries et al., Stich et al. Feddema et al., 2005b [Ibouraïma YABI (Reviewer's comment ID #: 297-115)]	OK
11-1327	A	80:40		Write Feddema et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-116)]	OK
11-1328	A	80:41		Write Delive et al., 2005 Feddema et al., [Ibouraïma YABI (Reviewer's comment ID #: 297-117)]	OK
11-1329	A	80:42	80:44	sentence does not make sense. [Rasmus E. Benestad (Reviewer's comment ID #: 18-52)]	We will clarify the sentence
11-1330	A	80:55	81:2	sentence is difficult. What about forest fires and associated landscape changes? [Rasmus E. Benestad (Reviewer's comment ID #: 18-53)]	We will clarify the sentence and add the effect of forest fires
11-1331	A	81:1	81:1	Perhaps "comprehensive" rather than "complete". [Markku Rummukainen (Reviewer's comment ID #: 223-193)]	We will change the term to comprehensive
11-1332	A	81:1	81:1	"complete" - Change to "accurate"? [Ronald J Stouffer (Reviewer's comment ID #: 258-95)]	See point above
11-1333	A	81:2	81:2	I think there should also be some mention of the implications of the biophysical effects of land cover change for mitigation strategies which involve afforestation/reforestation/avoided deforestation, ie: there are effects beyond those considered in carbon accounting. eg: Betts 2000 albedo effects of high-latitude afforestation, plus more recent work by other authors in press which I can enquire about if required.	We will make a reference to this issue

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				[Richard Betts (Reviewer's comment ID #: 21-20)]	
11-1334	A	82:1	102:25	(references)Following papers were refered in the text, but not included in the reference list. Please include the following papers. Sasaki,H., K.Kurihara, and I.Takayabu, 2006: Comparison of climate reproducibilities between a super-high-resolution atmosphere general circulation model and a Meteorological Institute regional climate model, SOLA , 1, 81-84. Sasaki,H., K.Kurihara, and I.Takayabu, 2005: Comparison of climate reproducibilities between a super-high-resolution atmosphere general circulation model and a Meteorological Institute regional climate model, SOLA , 1, 81-84. Sato Y., S. Yukimoto, H. Tsujino,H.Ishizaki and A.Noda 2006: Response of North Pacific ocean circulation in a Kuroshio-resolving ocean model to an Arctic Oscillation (AO)-like change in Northern Hemisphere atmospheric circulation due to greenhouse-gas forcing. J. Meteor. Soc. Japan, 84, 295-309. [Hidetaka Sasaki (Reviewer's comment ID #: 225-6)]	Will correct
11-1335	A	82:10	:11	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-118)]	Will correct
11-1336	A	82:18		Write pdf. [Ibouraïma YABI (Reviewer's comment ID #: 297-119)]	Will correct
11-1337	A	82:36		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-120)]	Will correct
11-1338	A	82:48	82:49	Correct size letter here and in another pages [JAVIER MARTIN-VIDE (Reviewer's comment ID #: 165-16)]	Will correct
11-1339	A	82:48	82:49	Correct size letter here and in another pages [Govt. of Spain (Reviewer's comment ID #: 2019-76)]	Will correct
11-1340	A	82:48	:49	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-121)]	Will correct
11-1341	A	82:49		Write pp. [Ibouraïma YABI (Reviewer's comment ID #: 297-122)]	Will correct
11-1342	A	82:54		Write 803. [Ibouraïma YABI (Reviewer's comment ID #: 297-123)]	Will correct
11-1343	A	83:35	83:36	Please delete lines 35 and 36 because are same with the lines 28 and 29. [Constantin Mares (Reviewer's comment ID #: 160-8)]	Will correct
11-1344	A	83:41		Write 29-42. [Ibouraïma YABI (Reviewer's comment ID #: 297-124)]	Will correct
11-1345	A	83:47		Write SPECIAL. [Ibouraïma YABI (Reviewer's comment ID #: 297-125)]	Will correct

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11-1346	A	83:54		Write and D. Chen, 2003 : [Ibouraïma YABI (Reviewer's comment ID #: 297-126)]	Will correct
11-1347	A	83:55		Write 136. [Ibouraïma YABI (Reviewer's comment ID #: 297-127)]	Will correct
11-1348	A	84:12		Write GLO23378. [Ibouraïma YABI (Reviewer's comment ID #: 297-128)]	Will correct
11-1349	A	84:15	84:15	I think the author is "Booij" instead of "Booji" [Bart Van den Hurk (Reviewer's comment ID #: 274-105)]	Will correct
11-1350	A	85:8		Write 2005. [Ibouraïma YABI (Reviewer's comment ID #: 297-129)]	Will correct
11-1351	A	85:9	85:9	Replace "2005" with "2006". [Xiaolan L. WANG (Reviewer's comment ID #: 282-32)]	Will correct
11-1352	A	85:19		Write GLO23581. [Ibouraïma YABI (Reviewer's comment ID #: 297-130)]	Will correct
11-1353	A	85:32		Control and correct 2006a20062006a [Ibouraïma YABI (Reviewer's comment ID #: 297-131)]	Will correct
11-1354	A	85:33		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-132)]	Will correct
11-1355	A	85:34		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-133)]	Will correct
11-1356	A	85:38		Write 660. [Ibouraïma YABI (Reviewer's comment ID #: 297-134)]	Will correct
11-1357	A	86:4		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-135)]	Will correct
11-1358	A	86:18		Write pdf. [Ibouraïma YABI (Reviewer's comment ID #: 297-136)]	Will correct
11-1359	A	86:33		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-137)]	Will correct
11-1360	A	86:47		Write htm. [Ibouraïma YABI (Reviewer's comment ID #: 297-138)]	Will correct
11-1361	A	86:49		Write htm. [Ibouraïma YABI (Reviewer's comment ID #: 297-139)]	Will correct
11-1362	A	86:51		Write pdf. [Ibouraïma YABI (Reviewer's comment ID #: 297-140)]	Will correct
11-1363	A	86:52	86:52	Please insert before the line 52 the following reference: Cubasch, U., Hans von Storch, J.	Will correct

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				Waszkewitz and E. Zorita, 1996 : Estimates of climate Southern Europe derived from dynamical climate model output. Climate Research, 7, 129-149. [Constantin Mares (Reviewer's comment ID #: 160-9)]	
11-1364	A	87:16		Write 2081-2084. [Ibouraïma YABI (Reviewer's comment ID #: 297-141)]	Will correct
11-1365	A	87:29		Write 321-339. [Ibouraïma YABI (Reviewer's comment ID #: 297-142)]	Will correct
11-1366	A	87:41	87:41	replace "og" by "of" [Bart Van den Hurk (Reviewer's comment ID #: 274-118)]	Will correct
11-1367	A	87:41		Write (D19108). [Ibouraïma YABI (Reviewer's comment ID #: 297-143)]	Will correct
11-1368	A	87:50		Write 056042102. [Ibouraïma YABI (Reviewer's comment ID #: 297-144)]	Will correct
11-1369	A	87:51	:56	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-145)]	Will correct
11-1370	A	88:1		Write R.M. and R.X. [Ibouraïma YABI (Reviewer's comment ID #: 297-146)]	Will correct
11-1371	A	88:14	86:14	Please write this reference in accordance with general rule [Constantin Mares (Reviewer's comment ID #: 160-10)]	Will correct
11-1372	A	88:14		Write Douville H., 2005 [Ibouraïma YABI (Reviewer's comment ID #: 297-147)]	Will correct
11-1373	A	88:15		Write 391. [Ibouraïma YABI (Reviewer's comment ID #: 297-148)]	Will correct
11-1374	A	88:24		Write 390. [Ibouraïma YABI (Reviewer's comment ID #: 297-149)]	Will correct
11-1375	A	88:42		Write 0038-z. [Ibouraïma YABI (Reviewer's comment ID #: 297-150)]	Will correct
11-1376	A	88:54	:55	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-151)]	Will correct
11-1377	A	89:3		Not write et al., but list all the auteurs [Ibouraïma YABI (Reviewer's comment ID #: 297-152)]	Will correct
11-1378	A	89:8	89:8	After 2005 must be ":" [Constantin Mares (Reviewer's comment ID #: 160-11)]	Will correct
11-1379	A	89:9		Write 574.	Will correct

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		From	To		
				[Ibouraïma YABI (Reviewer's comment ID #: 297-153)]	
11-1380	A	89:14		Not write et al., but list all the auteurs [Ibouraïma YABI (Reviewer's comment ID #: 297-154)]	Will correct
11-1381	A	89:22	89:22	Why is written 2005a ? 2005b is not exist! [Constantin Mares (Reviewer's comment ID #: 160-12)]	Will correct
11-1382	A	89:22	89:22	The title of this reference is a copy of the former line, and the 2005a version should be deleted [Bart Van den Hurk (Reviewer's comment ID #: 274-119)]	Will correct
11-1383	A	89:44		Write 2274. [Ibouraïma YABI (Reviewer's comment ID #: 297-155)]	Will correct
11-1384	A	89:45	:46	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-156)]	Will correct
11-1385	A	89:46		Write 572. [Ibouraïma YABI (Reviewer's comment ID #: 297-157)]	Will correct
11-1386	A	89:56		Write 592. [Ibouraïma YABI (Reviewer's comment ID #: 297-158)]	Will correct
11-1387	A	90:17		Write 05J003]. [Ibouraïma YABI (Reviewer's comment ID #: 297-159)]	Will correct
11-1388	A	90:21		Write 047. [Ibouraïma YABI (Reviewer's comment ID #: 297-160)]	Will correct
11-1389	A	90:23		Write 311. [Ibouraïma YABI (Reviewer's comment ID #: 297-161)]	Will correct
11-1390	A	90:27		Write 339. [Ibouraïma YABI (Reviewer's comment ID #: 297-162)]	Will correct
11-1391	A	91:10		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-163)]	Will correct
11-1392	A	91:13	91:16	Please reverse lines 15-16 with 13-14 [Constantin Mares (Reviewer's comment ID #: 160-13)]	Will correct
11-1393	A	91:30		Write 1194. [Ibouraïma YABI (Reviewer's comment ID #: 297-164)]	Will correct
11-1394	A	91:31	91:43	Please insert Guo before Gutowski [Constantin Mares (Reviewer's comment ID #: 160-14)]	Will correct
11-1395	A	91:33		Write 3847. [Ibouraïma YABI (Reviewer's comment ID #: 297-165)]	Will correct
11-1396	A	91:39		Write 1163-1172.	Will correct

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		From	To		
				[Ibouraïma YABI (Reviewer's comment ID #: 297-166)]	
11-1397	A	91:55		Write 15. [Ibouraïma YABI (Reviewer's comment ID #: 297-167)]	Will correct
11-1398	A	92:8		Write [Accepted]. [Ibouraïma YABI (Reviewer's comment ID #: 297-168)]	Will correct
11-1399	A	92:19	92:20	Journal name should be "SOLA", instead of "Scientific Online Letters on the Atmosphere". [Akira Noda (Reviewer's comment ID #: 192-10)]	Will correct
11-1400	A	92:38	:44	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-170)]	Will correct
11-1401	A	92:40		Write pdf. [Ibouraïma YABI (Reviewer's comment ID #: 297-169)]	Will correct
11-1402	A	92:57		Write 244. [Ibouraïma YABI (Reviewer's comment ID #: 297-171)]	Will correct
11-1403	A	93:6		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-172)]	Will correct
11-1404	A	93:12		Write 3036. [Ibouraïma YABI (Reviewer's comment ID #: 297-173)]	Will correct
11-1405	A	93:14	:17	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-175)]	Will correct
11-1406	A	93:15		Write L0116-x. [Ibouraïma YABI (Reviewer's comment ID #: 297-174)]	Will correct
11-1407	A	93:44		Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-176)]	Will correct
11-1408	A	93:47		Write 2555. [Ibouraïma YABI (Reviewer's comment ID #: 297-177)]	Will correct
11-1409	A	94:1		Complete [Ibouraïma YABI (Reviewer's comment ID #: 297-178)]	Will correct
11-1410	A	94:2		Complete [Ibouraïma YABI (Reviewer's comment ID #: 297-179)]	Will correct
11-1411	A	94:9		(in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-180)]	Will correct
11-1412	A	94:13		Write 286. [Ibouraïma YABI (Reviewer's comment ID #: 297-181)]	Will correct
11-1413	A	94:15		Write 1564.	Will correct

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		From	To		
				[Ibouraïma YABI (Reviewer's comment ID #: 297-182)]	
11-1414	A	94:43	94:44	Revise the title of the reference to "Climate change projections for Finland during the 21st century". [Govt. of Finland (Reviewer's comment ID #: 2009-168)]	Will correct
11-1415	A	94:46	:47	Write Climatic charge, PRUDENCE SPECIAL, (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-183)]	Will correct
11-1416	A	94:53		Write D004689. [Ibouraïma YABI (Reviewer's comment ID #: 297-184)]	Will correct
11-1417	A	94:56		Write 117-120 [Ibouraïma YABI (Reviewer's comment ID #: 297-185)]	Will correct
11-1418	A	95:13		Write 1926-1942. [Ibouraïma YABI (Reviewer's comment ID #: 297-186)]	Will correct
11-1419	A	95:18	:19	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-187)]	Will correct
11-1420	A	95:36	:40	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-188)]	Will correct
11-1421	A	95:46	95:48	Replace by the following updated citation; Kusunoki, S., J. Yoshimura, H. Yoshimura, A. Noda, K. Oouchi and R. Mizuta, 2006: Change of Baiu rain band in global warming projection by an atmospheric general circulation model with a 20-km grid size. J. Meteor. Soc. Japan. [In press] [Akira Noda (Reviewer's comment ID #: 192-11)]	Will correct
11-1422	A	95:48		Write 25-28. [Ibouraïma YABI (Reviewer's comment ID #: 297-189)]	Will correct
11-1423	A	96:16		Write 179-192. [Ibouraïma YABI (Reviewer's comment ID #: 297-190)]	Will correct
11-1424	A	96:18		Write 1225. [Ibouraïma YABI (Reviewer's comment ID #: 297-191)]	Will correct
11-1425	A	96:20		Write 2055. [Ibouraïma YABI (Reviewer's comment ID #: 297-192)]	Will correct
11-1426	A	96:37		The author list is incomplete: S. Zacharias. See the IPCC sub-project publications: http://www.pcmdi.llnl.gov/ipcc/subproject_publications.php for entire list of recent papers relevant for AR4. Some have been highlighted here in these comments, but there may be more papers relevant for this chapter. [Rasmus E. Benestad (Reviewer's comment ID #: 18-54)]	Will correct
11-1427	A	96:39		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-193)]	Will correct

No.	Batch	Page:line		Comment	Notes
		From	To		
11-1428	A	96:40	96:40	replace "der" by "den" [Bart Van den Hurk (Reviewer's comment ID #: 274-120)]	Will correct
11-1429	A	96:42		Write PRUDENCE SPECIAL, (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-194)]	Will correct
11-1430	A	97:4		Write 5329. [Ibouraïma YABI (Reviewer's comment ID #: 297-195)]	Will correct
11-1431	A	97:9		ADD THE FOLLOWING REFERENCE: Lionello P., 2006: Mediterranean Climate Variability. Eds: P. Lionello, P. Malanotte-Rizzoli, R. Boscolo. Elsevier, pp.438 [Marina Baldi (Reviewer's comment ID #: 11-3)]	Will correct
11-1432	A	97:11		Write C002381. [Ibouraïma YABI (Reviewer's comment ID #: 297-196)]	Will correct
11-1433	A	97:14	97:14	The title of this paper is "Influence of regional scale information on the global circulation: a two-way nested climate simulation" [Bart Van den Hurk (Reviewer's comment ID #: 274-121)]	Will correct
11-1434	A	97:14		Write 2005. [Ibouraïma YABI (Reviewer's comment ID #: 297-197)]	Will correct
11-1435	A	97:27		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-198)]	Will correct
11-1436	A	97:48		Write 284. [Ibouraïma YABI (Reviewer's comment ID #: 297-199)]	Will correct
11-1437	A	97:54	:55	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-200)]	Will correct
11-1438	A	98:1	:3	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-201)]	Will correct
11-1439	A	98:5		Write 1234. [Ibouraïma YABI (Reviewer's comment ID #: 297-202)]	Will correct
11-1440	A	98:27		Write 358. [Ibouraïma YABI (Reviewer's comment ID #: 297-203)]	Will correct
11-1441	A	98:35		McDonald, A., 2002: A step to transparent boundary conditions for meteorological models. Mon. Wea. Rev., 130, 140-151. [Govt. of Spain (Reviewer's comment ID #: 2019-98)]	Will correct
11-1442	A	98:35		McDonald, A., 2003: Transparent boundary conditions for the shallow water equations: testing in anested environment. Mon. Wea. Rev., 131, 698-705. [Govt. of Spain (Reviewer's comment ID #: 2019-99)]	Will correct
11-1443	A	98:35		McDonald, A. 2005: Transparent lateral boundary conditions for baroclinic waves: a	Will correct

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		From	To		
				study of two elementary systems of equations. Tellus, 57A, 171-182 [Govt. of Spain (Reviewer's comment ID #: 2019-100)]	
11-1444	A	98:36	:40	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-204)]	Will correct
11-1445	A	98:45	:48	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-205)]	Will correct
11-1446	A	99:1	:3	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-206)]	Will correct
11-1447	A	99:3		Write pdf. [Ibouraïma YABI (Reviewer's comment ID #: 297-207)]	Will correct
11-1448	A	99:6	:8	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-208)]	Will correct
11-1449	A	99:8		Write pdf. [Ibouraïma YABI (Reviewer's comment ID #: 297-209)]	Will correct
11-1450	A	99:20		Write AMS. [Ibouraïma YABI (Reviewer's comment ID #: 297-210)]	Will correct
11-1451	A	99:26	:28	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-211)]	Will correct
11-1452	A	99:51		Write html. [Ibouraïma YABI (Reviewer's comment ID #: 297-212)]	Will correct
11-1453	A	100:7		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-213)]	Will correct
11-1454	A	100:11		GLO161086. [Ibouraïma YABI (Reviewer's comment ID #: 297-214)]	Will correct
11-1455	A	100:19	:20	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-215)]	Will correct
11-1456	A	100:26		Write 848. [Ibouraïma YABI (Reviewer's comment ID #: 297-216)]	Will correct
11-1457	A	100:29		Add reference: J. D. Neelin, M. Munnich, H. Su, J. E. Meyerson and C. Holloway, 2006: Tropical drying trends in global warming models and observations. Proc. Nat. Acad. Sci.,103, 6110--6115. [J. David Neelin (Reviewer's comment ID #: 187-7)]	Will correct
11-1458	A	100:29		if added pg 23, add to refs: Neelin, J. D., C. Chou, and H. Su, 2003: Tropical drought regions in global warming and El Niño teleconnections. Geophys. Res. Lett., 30(24),	Will correct

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		From	To		
				2275, doi:10.1029/2003GL018625. [J. David Neelin (Reviewer's comment ID #: 187-16)]	
11-1459	A	100:43	100:43	The 5th author name "K. S." should be corrected as "S. Kusunoki". [Akira Noda (Reviewer's comment ID #: 192-12)]	Will correct
11-1460	A	100:43	100:45	The paper has been published as: Oouchi, K., J. Yoshimura, H. Yoshimura, R. Mizuta, S. Kusunoki and A. Noda, 2006: Tropical cyclone climatology in a global-warming climate as simulated in a 20km-mesh global atmospheric model: Frequency and wind intensity analyses. J. Meteor. Soc. Japan, 84, 259-276. [Akira Noda (Reviewer's comment ID #: 192-13)]	Will correct
11-1461	A	100:54		Write 54. [Ibouraïma YABI (Reviewer's comment ID #: 297-217)]	Will correct
11-1462	A	100:56		Write 208. [Ibouraïma YABI (Reviewer's comment ID #: 297-218)]	Will correct
11-1463	A	101:1	:3	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-219)]	Will correct
11-1464	A	101:3		Write (19). [Ibouraïma YABI (Reviewer's comment ID #: 297-220)]	Will correct
11-1465	A	101:9		Write 17752. [Ibouraïma YABI (Reviewer's comment ID #: 297-221)]	Will correct
11-1466	A	101:40		Write 2085. [Ibouraïma YABI (Reviewer's comment ID #: 297-222)]	Will correct
11-1467	A	102:2		Write 2411. [Ibouraïma YABI (Reviewer's comment ID #: 297-223)]	Will correct
11-1468	A	102:19	:21	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-224)]	Will correct
11-1469	A	102:23		Write 5333. [Ibouraïma YABI (Reviewer's comment ID #: 297-225)]	Will correct
11-1470	A	102:28		Write 2116. [Ibouraïma YABI (Reviewer's comment ID #: 297-226)]	Will correct
11-1471	A	102:38		Write List. [Ibouraïma YABI (Reviewer's comment ID #: 297-227)]	Will correct
11-1472	A	103:0		Rowell et al. (1995) is omitted (but cited on p20 line45 at least): Rowell, D.P., Folland, C.K., Maskell, K. and Ward, M.N., 1995: Variability of summer rainfall over Tropical North Africa (1906-92): Observations and modelling. Q. J. R. Meteorol. Soc., 121, 669-	Will correct

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				704 [Dave Rowell (Reviewer's comment ID #: 222-45)]	
11-1473	A	103:4		Write information). [Ibouraïma YABI (Reviewer's comment ID #: 297-228)]	Will correct
11-1474	A	103:15	103:16	Repetition of a reference which is correctly located a few lines below. [Dave Rowell (Reviewer's comment ID #: 222-44)]	Will correct
11-1475	A	103:16		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-229)]	Will correct
11-1476	A	103:19	103:20	Replace Rowell (1995) [which should have read 2005!] by Rowell (2006), the latter being a peer-reviewed and much improved version of the former. The citation is: Rowell, D.P., 2006: A demonstration of the uncertainty in projections of UK climate change resulting from regional model formulation. Climatic Change, in press (note this really is 'in press'; proofs have been approved!) [Dave Rowell (Reviewer's comment ID #: 222-43)]	Will correct
11-1477	A	103:24		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-230)]	Will correct
11-1478	A	103:25		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-231)]	Will correct
11-1479	A	103:30	103:30	A missprint. Should be "Jylhä". [Govt. of Finland (Reviewer's comment ID #: 2009-169)]	Will correct
11-1480	A	104:8		Write christchurch. [Ibouraïma YABI (Reviewer's comment ID #: 297-232)]	Will correct
11-1481	A	104:29		Write 151. [Ibouraïma YABI (Reviewer's comment ID #: 297-233)]	Will correct
11-1482	A	105:0		A reference (Sugi et al. 2002) should be added in the list: Sugi, M., A. Noda, and N. Sato, 2002: Influence of the global warming on tropical cyclone climatology: An experiment with the JMA Global Model. J. Met. Soc. Japan, 80, 249-272. [Note: This citation is made in page 120.] [Akira Noda (Reviewer's comment ID #: 192-14)]	Will correct
11-1483	A	105:8		Write 25. [Ibouraïma YABI (Reviewer's comment ID #: 297-234)]	Will correct
11-1484	A	105:13	105:15	This citation is incomplete or misplaced. [Franklin SCHWING (Reviewer's comment ID #: 230-17)]	Will correct
11-1485	A	105:13	105:15	This citation is incomplete or misplaced. [Govt. of United States of America (Reviewer's comment ID #: 2023-687)]	Will correct
11-1486	A	105:15		Write Toulouse, France.	Will correct

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		From	To		
				[Ibouraïma YABI (Reviewer's comment ID #: 297-235)]	
11-1487	A	105:25	:26	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-236)]	Will correct
11-1488	A	105:48		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-237)]	Will correct
11-1489	A	106:2		Write GLO24460. [Ibouraïma YABI (Reviewer's comment ID #: 297-238)]	Will correct
11-1490	A	106:13		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-239)]	Will correct
11-1491	A	106:14	:17	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-240)]	Will correct
11-1492	A	106:17		Write L244213. [Ibouraïma YABI (Reviewer's comment ID #: 297-241)]	Will correct
11-1493	A	106:32		Write 7954-2. [Ibouraïma YABI (Reviewer's comment ID #: 297-242)]	Will correct
11-1494	A	106:41		Write 1260. [Ibouraïma YABI (Reviewer's comment ID #: 297-243)]	Will correct
11-1495	A	107:5	107:7	This reference should be updated to "Van Ulden, A.P. and G.J. Van Oldenborgh (2006): Large-scale atmospheric circulation biases and changes in global climate model simulations and their importance for climate change in Central Europe. Atmos. Chem. Phys. 6, 863-881" [Bart Van den Hurk (Reviewer's comment ID #: 274-123)]	Will correct
11-1496	A	107:7		Write 7455. [Ibouraïma YABI (Reviewer's comment ID #: 297-244)]	Will correct
11-1497	A	107:8	107:10	Please delete (a repeated reference). [Govt. of Finland (Reviewer's comment ID #: 2009-170)]	Will correct
11-1498	A	107:8	107:10	Note new title and change into: Van Ulden, A.P. and G.J. van Oldenborgh, 2006: Large-scale atmospheric circulation biases and changes in global climate model simulations and their importance for climate change in Central Europe. Atmos. Chem. Phys., 6, 863-881. Freely accesible at: www.atmos-chem-phys.net/6/863/2006/ [Govt. of Netherlands (Reviewer's comment ID #: 2016-56)]	Will correct
11-1499	A	107:8	107:10	this reference is a duplicate and can be deleted [Bart Van den Hurk (Reviewer's comment ID #: 274-122)]	Will correct
11-1500	A	107:11	107:11	replace "der" by "den" [Bart Van den Hurk (Reviewer's comment ID #: 274-124)]	Will correct

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11-1501	A	107:13		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-245)]	Will correct
11-1502	A	107:18		Write [Accepted]. [Ibouraïma YABI (Reviewer's comment ID #: 297-246)]	Will correct
11-1503	A	107:20	107:20	change case in "French" [Bart Van den Hurk (Reviewer's comment ID #: 274-125)]	Will correct
11-1504	A	107:20		Write Paris, France. [Ibouraïma YABI (Reviewer's comment ID #: 297-247)]	Will correct
11-1505	A	107:27		Write PRUDENCE SPECIAL, (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-248)]	Will correct
11-1506	A	107:31		Write D000832. [Ibouraïma YABI (Reviewer's comment ID #: 297-249)]	Will correct
11-1507	A	107:33		Write 874. [Ibouraïma YABI (Reviewer's comment ID #: 297-250)]	Will correct
11-1508	A	107:42		Write 3888. [Ibouraïma YABI (Reviewer's comment ID #: 297-251)]	Will correct
11-1509	A	108:12	108:12	Replace "2004" with "2006a". [Xiaolan L. WANG (Reviewer's comment ID #: 282-29)]	Will correct
11-1510	A	108:15	108:16	Insert the following reference between line 15 and 16: "Wang, X. L. and V. R. Swail, 2006b: Climate change signal and uncertainty in projections of ocean wave heights. Climate Dynamics, 26, 106-126 (DOI 10.1007/s00382-005-0080-x)." [Xiaolan L. WANG (Reviewer's comment ID #: 282-26)]	Will correct
11-1511	A	108:15	108:15	Replace "300 pp." with "240 pp." [Xiaolan L. WANG (Reviewer's comment ID #: 282-30)]	Will correct
11-1512	A	108:16	108:16	Replace "Wang, X., F. Zwiers and V. Swail" with "Wang, X. L., F. W. Zwiers and V. R. Swail" [Xiaolan L. WANG (Reviewer's comment ID #: 282-31)]	Will correct
11-1513	A	108:21	108:25	Please reverse Walser with Warner [Constantin Mares (Reviewer's comment ID #: 160-15)]	Will correct
11-1514	A	108:25		Write 577. [Ibouraïma YABI (Reviewer's comment ID #: 297-252)]	Will correct
11-1515	A	108:36		Write 527-548. [Ibouraïma YABI (Reviewer's comment ID #: 297-253)]	Will correct
11-1516	A	108:48	:51	Conform the format of the characters to the format of the text [Ibouraïma YABI (Reviewer's comment ID #: 297-254)]	Will correct

No.	Batch	Page:line		Comment	Notes
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11-1517	A	109:12	109:12	Change simulation to simulation [Govt. of Spain (Reviewer's comment ID #: 2019-157)]	Will correct
11-1518	A	109:53	109:56	Yasunaga et al., 2006 has been published. Yasunaga et al., 2006: Changes in the Baiu frontal activity....., J.Meteor.Soc.Japan, 84, 199-220. [Hidetaka Sasaki (Reviewer's comment ID #: 225-7)]	Will correct
11-1519	A	109:56		Write (in press). [Ibouraïma YABI (Reviewer's comment ID #: 297-255)]	Will correct
11-1520	A	110:8		if added p 19, add Zeng, N., J. D. Neelin, W. K.-M. Lau, and C. J. Tucker, 1999: Enhancement of interdecadal climate variability in the Sahel by vegetation interaction. Science, 286, 1537-1540. [J. David Neelin (Reviewer's comment ID #: 187-15)]	Will correct
11-1521	A	110:19		Write 180. [Ibouraïma YABI (Reviewer's comment ID #: 297-256)]	Will correct
11-1522	A	111:1	111:1	Replace "climate change" with "changes in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1894)]	Unnecessary
11-1523	A	111:1	111:28	FAQ 11.1: It would be helpful to include a figure with FAQ 11.1. One suggestion is a simplified version of the figure for Box. 11.1, Figure 2 showing latitudinal "trends" in precipitation. [Melinda Marquis (Reviewer's comment ID #: 162-85)]	Agreed, figure inserted and referred to paragraph 2
11-1524	A	111:1		Suggest changing the "Question" to: WILL Regional Climate Change Vary from Region to Region ? Reason: The text in the body of the FAQ refers to expected future changes, rather than changes which have occurred already, whereas "DOES regional climate change vary ..." refers to the present. [David Wratt & David Fahey (Reviewer's comment ID #: 67-120)]	Reworded in line with suggestion.
11-1525	A	111:1		The word "Regional" could be omitted from the question [Adrian Simmons (Reviewer's comment ID #: 242-179)]	Done.
11-1526	A	111:1	:18	Bring back this framed 'just' before the bibliographical references if it is possible [Ibouraïma YABI (Reviewer's comment ID #: 297-258)]	OK
11-1527	A	111:3	111:6	This paragraph forms the "headline answer" and should be italicised. [David Wratt & David Fahey (Reviewer's comment ID #: 67-123)]	OK
11-1528	A	111:3	111:3	FAQ 11.1: I think it'd be helpful to begin answering the question with a simple, "yes." [Melinda Marquis (Reviewer's comment ID #: 162-94)]	Reworded in line with suggestion.
11-1529	A	111:3	111:28	I think the response to this question should somehow include the notions (a) that forcing may differ from one region to another, and (b) that the response to forcing is, in part, governed by feedback processes that may operate in different regions from those in which	Agreed and now done.

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				the forcing is greatest. For example, the first order pattern of response to aerosol forcing is global in nature, and looks quite a bit like the pattern of response to ghg forcing despite the fact aerosol forcing is much less spatially homogenous than ghg forcing - see Fig 12.3 and the associated discussion in Ch 12 of the TAR. Thus the response to forcing in a given region may not be commensurate with the forcing in that region. [Francis Zwiers (Reviewer's comment ID #: 305-234)]	
11-1530	A	111:3		Suggest more complete and direct answer to question as: 'Yes, the regional response to global change varies from region to region, because the response is dependent on a variety of factors, including a region's latitude, proximity to the oceans, and the' [David Wratt & David Fahey (Reviewer's comment ID #: 67-89)]	Reworded in line with suggestion.
11-1531	A	111:6	111:6	Perhaps "grows steadily". [Markku Rummukainen (Reviewer's comment ID #: 223-195)]	Text changed in response to other comments.
11-1532	A	111:8	111:10	We think the statement "in nearly all climate models the amplitude of the warming generally increasing (sic) as one moves from the tropics to the poles" is true for the Northern hemisphere, but not for the Southern Hemisphere (e.g. see Fig 10.3.4). We suggest qualifying this sentence by adding the phrase "in the Northern Hemisphere". Also, change "increasing" to "increases". [David Wratt & David Fahey (Reviewer's comment ID #: 67-121)]	Reworded in line with suggestion.
11-1533	A	111:8	111:8	Replace "climate change" with "changes in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1895)]	Unnecessary.
11-1534	A	111:8	111:10	Is this true in both hemispheres? It certainly holds in the Northern Hemisphere, but the reverse seems to be the case for much of the Southern Hemisphere, at least for the present century. [James Renwick (Reviewer's comment ID #: 211-66)]	Reworded in line with comment.
11-1535	A	111:8	111:8	Perhaps "a particular" instead of "one's". See also line 14. [Markku Rummukainen (Reviewer's comment ID #: 223-196)]	Text changed in response to other comments.
11-1536	A	111:10	111:12	FAQ 11.1: For consistency with the TS (page 43, lines 12), do you want to add a statement about projected precipitation increases in the tropics? [Melinda Marquis (Reviewer's comment ID #: 162-95)]	Done.
11-1537	A	111:10	111:10	This is more true for the Northern Hemisphere than the Southern Hemisphere. [Markku Rummukainen (Reviewer's comment ID #: 223-197)]	Agreed.
11-1538	A	111:12		Grammar; Replace ".. In THE many parts of the subtropics" by "... in many parts of the subtropics". [David Wratt & David Fahey (Reviewer's comment ID #: 67-122)]	Done.
11-1539	A	111:16		Suggest improving structure as: '...not only to the continental geometry, but also to the shape of nearby mountain ranges. Monsoons, extratropical cyclones....'	Text changed in response to other comments.

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				[David Wratt & David Fahey (Reviewer's comment ID #: 67-90)]	
11-1540	A	111:17	111:17	Suggest a new sentence after "mountain ranges". [Markku Rummukainen (Reviewer's comment ID #: 223-198)]	Text changed in response to other comments.
11-1541	A	111:18		Suggest describing/defining 'themes'. [David Wratt & David Fahey (Reviewer's comment ID #: 67-91)]	Not clear and no relevant suggestion provided.
11-1542	A	111:21	111:21	Replace "climate change" with "changes in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1896)]	Unnecessary.
11-1543	A	111:21	111:21	FAQ 11.1: For clarity, consider adding "understanding and projecting" before "regional climate change." [Melinda Marquis (Reviewer's comment ID #: 162-96)]	Agreed.
11-1544	A	111:24	111:24	Sentence should read: This is true whether it is coastal zones ... [Wilmer Anderson (Reviewer's comment ID #: 5-56)]	Agreed.
11-1545	A	111:24		Correct to: 'This is true whether it is coastal zones...' [David Wratt & David Fahey (Reviewer's comment ID #: 67-92)]	Agreed.
11-1546	A	111:27		Suggest clarifying to: 'Many of the regional issues within the climate change puzzle remain to be resolved.' [David Wratt & David Fahey (Reviewer's comment ID #: 67-93)]	Text changed in response to other comments.
11-1547	A	111:28	111:28	Replace "climate change" with "changes in climate" [VINCENT GRAY (Reviewer's comment ID #: 88-1897)]	Unnecessary.
11-1548	A	111:28		Write Resolved. [Ibouraïma YABI (Reviewer's comment ID #: 297-257)]	Text changed in response to other comments.
11-1549	A	112:0	113:	Table 11.1 is very useful. In the model performance evaluation column, could brief details be given of which observables were used to constrain the predictions (present day time averages of x and y, historical changes during the 20th century of z, etc) etc ? For example, the entry for Greene et al, which just says "performance evaluated through R-square statistics", isn't very illuminating. Under "time resolution", I'd suggest "annual decadal means" for Stott et al, and "multiannual easonal means" for Harris et al, rather than "original integration (HadCM3)", or "original integration (EBM)". The entry for Harris et al neglects to mention that the technique is based on fitting to transient simulations of an AOGCM, not just on EBM runs. So we'd suggest the following alternative text for the methods column: "PDFs at arbitrary level of aggregation. Scale equilibrium response patterns from a large slab-model PPE, using transient responses of an EBM driven by PPE climate feedbacks. Quantify scaling errors against a smaller PPE of transient simulations, and include in PDFs. " Finally, in the performance evaluation column for Harris et al, we'd suggest that "All model versions assumed equally likely" would be clearer than "no model performance evaluation". The point is that the ensemble	OK, we can add more explanation on the observable/constraints and use the suggested edits.

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				itself *was* constructed from plausible variants of the model, even if variations in quality were not used formally in the construction of probabilities. [James Murphy (Reviewer's comment ID #: 184-45)]	
11-1550	A	112:5	112:5	What does "original integration" means in the column "Time Resolution"? [Erik Kjellström (Reviewer's comment ID #: 131-33)]	Daily or monthly output from models. Will check and clarify in the final version.
11-1551	A	114:0		Table needs to refer to Figure 11.2.1. [Govt. of United States of America (Reviewer's comment ID #: 2023-688)]	Accepted; cross-link to be made
11-1552	A	114:1	114:1	I very much like the way this table is presented! [Francis Zwiers (Reviewer's comment ID #: 305-235)]	noted
11-1553	A	114:1	117:4	Table 11.2: I am not convinced that this table really is informative in the sense of being useful in terms of regional scenarios. Perhaps such results could fit in in a different context/chapter, examining the 'finger print' of climate change. Here area means seem to be compared(?), and changes in the area mean over northern Europe is just barely more meaningful for Oslo or any other given location as the change in the global mean. Furthermore, different regions represent different area size and shape, thus different degrees of freedom in addition to different degree of inherent variability. Thus the different regions are not really comparable either. Furthermore, extreme climate events tend to be local, especially with respect to precipitation and droughts. Only RCMs and ESD can provide information on spatial scales sufficient for meaningful results, and not enough details are given in the caption as to how the extremes have been estimated nor the method for estimating the probability (units in %). [Rasmus E. Benestad (Reviewer's comment ID #: 18-55)]	noted -- use of regions is considered useful for presenting AOGCM results; computation of extremes to be clarified in revised text
11-1554	A	114:1	117:3	Table 11.2 is a neat summary of a great deal of information. The use of different font sizes, and shading, is really nice. [James Renwick (Reviewer's comment ID #: 211-67)]	noted
11-1555	A	114:1	156:8	I assume that the A1B simulations used here were AOGCMs without carbon cycle feedbacks. This needs to be made clear in the table and figure captions. The phrase "A1B emissions scenario" used in most of the figure captions is not really correct these days; the models in the AR4 archive were driven by *concentration* scenarios and NOT "emissions" scenarios - the concentration scenarios were derived from emissions scenarios by making particular assumptions about how to translate emissions to concentrations (ie: ignoring carbon cycle feedbacks). But Chapter 10 also included 11 models from C4MIP (coupled climate-carbon cycle model intercomparison project) which all agree that carbon cycle feedbacks are non-zero but subject to considerable uncertainty, therefore there is no trivial one-to-one mapping from emissions scenarios to concentration scenarios as assumed in the TAR. For consistency with chapters 7 and 10, chapter 11	accepted -- to be clarified in revised text

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				should recognise that the AOGCM and RCMs which ignore carbon cycle feedbacks are only part of the story. In particular, the upper bound of the green envelope in the regional temperature timeseries in figs 11.3.2.2, 11.3.3.1, 11.3.4.3, 11.3.5.1, 11.3.6.1, 11.3.7.1, 11.3.8.1, 11.9.1 and Box 11.1 figure 1 is likely to be an underestimate of the maximum rate of warming. [Richard Betts (Reviewer's comment ID #: 21-7)]	
11-1556	A	114:6	114:6	Change "degrees Celsius" into "K" [Erik Kjellström (Reviewer's comment ID #: 131-34)]	accepted
11-1557	A	114:7	114:7	Table 11.2: Change in precip is "percentage" not "fractional". [Dave Rowell (Reviewer's comment ID #: 222-2)]	accepted
11-1558	A	114:12	114:12	From where does the number 2.88 emanate? [Erik Kjellström (Reviewer's comment ID #: 131-35)]	To be clarified in revised text
11-1559	A	114:12	114:12	Perhaps "a measure" instead of "an estimate". Could also add, if true, that the signal is in relation to 1980-1999. [Markku Rummukainen (Reviewer's comment ID #: 223-199)]	accepted
11-1560	A	114:13	114:14	Table 11.2: Add that units of probability are %. [Dave Rowell (Reviewer's comment ID #: 222-3)]	accepted
11-1561	A	114:14	114:14	Could also, if appropriate, refer to Figure 11.2.1. However, note that the southern sub-region of Europe is termed MED on the figure and SEU in the table. There are also some other such discrepancies. [Markku Rummukainen (Reviewer's comment ID #: 223-200)]	Names of regions to be harmonized in final draft
11-1562	A	114:15	117:	It would be easier to compare different lines if MIN 25 50 75 MAX were divided into separate columns (especially for precipitation) [Erik Kjellström (Reviewer's comment ID #: 131-36)]	Insufficeint room for more comumns in table; format will bel improved in final version
11-1563	A	118:0		I think that Table 11.3 will be criticised after the publication of the report. [Rasmus E. Benestad (Reviewer's comment ID #: 18-56)]	Possibly, as will indeed the entire IPCC report.
11-1564	A	118:0		Table 11.3. Three columns insteead of two might make the table easier to read. Alternatively, the levels of confidence and the explanations given in the parantheses could be given in a different font (e.g., in italics). [Govt. of Finland (Reviewer's comment ID #: 2009-171)]	Will be taken into consideration when revising the chapter.
11-1565	A	118:1	118:2	Why are the periods different here compared to the rest of the chapter? [Erik Kjellström (Reviewer's comment ID #: 131-37)]	Corrected
11-1566	A	118:1	118:2	Please check the quoted periods (should they be 2080-2099 and 1980-1999 instead?). [Markku Rummukainen (Reviewer's comment ID #: 223-201)]	Corrected
11-1567	A	120:1	120:1	Note i: Kharin and Zwiers 2005a should be Kharin and Zwiers (2005, J. Clim, 18, 1156-1173). This paper is citable, but is missing from the references. It includes some regional	Corrected

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				analyses of extremes. Kharin and Zwiers 2005b is, unfortunately, still (!) under review. [Francis Zwiers (Reviewer's comment ID #: 305-236)]	
11-1568	A	123:3	123:3	To be fair the observations should be presented interpolated to 50, 25 and 12 km grids so that te comparisons could be made at the same resolution as the model. [Erik Kjellström (Reviewer's comment ID #: 131-38)]	The figure has been removed
11-1569	A	123:5	123:5	The observational analysis is at what resolution, and how was it produced? [Francis Zwiers (Reviewer's comment ID #: 305-237)]	The figure has been removed
11-1570	A	124:0		Figure 11.2.1 needs some work. In the title, 'vs' should be replaced by '- ', to keep with standard convention of reporting differences between two periods. Legend on the left hand side should include 'Global'. Corresponding change of vs should also be made on page 11-12, line 48. Also page 11-12, line 48 did the authors mean average of temperature changes for December, January, February, or average of temperature change for DJF as in title for the figure. This needs to be clarified. [Govt. of United States of America (Reviewer's comment ID #: 2023-689)]	The figure has been completely redrawn
11-1571	A	124:1		The southern European region is termed SEU in the text and Table 11.2. (And MED in this figure.) Table 11.2 also uses ARC, rather than ART for the Arctic region. There are also some other such discrepancies. [Markku Rummukainen (Reviewer's comment ID #: 223-202)]	Will be homogenised
11-1572	A	124:5	124:5	Should be A1B instead of A2. [Govt. of Finland (Reviewer's comment ID #: 2009-172)]	Noted
11-1573	A	125:5	125:9	How is the count in the lower panels actually produced? When a model has an ensemble of simulations, did you use only one ensemble member, or the ensemble mean? If the latter, then there might be a sampling problem in the sense that some models in the sample of 21 (those with ensemble means) would appear to have less internal variability than others. Note that this comment applies to all similar figures. [Francis Zwiers (Reviewer's comment ID #: 305-238)]	Will describe more adequately in text
11-1574	A	126:0		The bars on the right side of the figures are not explained in the caption. [Daithi Stone (Reviewer's comment ID #: 256-28)]	Will do
11-1575	A	126:2	126:2	The red envelope is difficult to distinguish from the land areas in the map. [Erik Kjellström (Reviewer's comment ID #: 131-39)]	Noted
11-1576	A	126:5	126:8	Caption should define the meaning of the clor bars on the right hand side of the graphs [Daniel Caya (Reviewer's comment ID #: 38-78)]	Noted
11-1577	A	126:5	126:8	Fig.11.3.2.2: The caption does not explain the 3 vertical lines on the RHS of each panel. Ditto all other figures like this. [Dave Rowell (Reviewer's comment ID #: 222-1)]	Will do
11-1578	A	126:5	126:8	There should be recognition in the captions for all of these figures that they extend Figure	Will be done

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				9.4.8. [Francis Zwiers (Reviewer's comment ID #: 305-239)]	
11-1579	A	126:5	126:8	Is this really for only 11 simulations? I suspect 11 models, with multiple simulations per model - Daithi Stone can verify. The details of what the envelop represents should also be provided. [Francis Zwiers (Reviewer's comment ID #: 305-240)]	The latter is correct and full details will be provided
11-1580	A	126:5		Actually the period is 1906-2005. [Daithi Stone (Reviewer's comment ID #: 256-26)]	Noted
11-1581	A	126:6	126:8	Not quite. Simulations were only included provided that the corresponding section of the pre-industrial control simulation was not drifting, judged by lack of exceedence of a 0.2K/century threshold. This removed quite a few simulations. [Daithi Stone (Reviewer's comment ID #: 256-27)]	Noted
11-1582	A	126:8	126:8	Please explain the bars on the right-hand side of the curves. [Govt. of Finland (Reviewer's comment ID #: 2009-173)]	Will do
11-1583	A	127:5	127:5	Precipitation anomalies are reported in % in all other figures, why using mm here? [Daniel Caya (Reviewer's comment ID #: 38-79)]	The material is bsed on a differnt study
11-1584	A	128:0		The bars on the right side of the figures are not explained in the caption. [Daithi Stone (Reviewer's comment ID #: 256-31)]	Noted
11-1585	A	128:0		The vertical bars on the right of each panel are not explained in the legend [Bart Van den Hurk (Reviewer's comment ID #: 274-126)]	Noted
11-1586	A	128:4		Actually the period is 1906-2005. [Daithi Stone (Reviewer's comment ID #: 256-29)]	Noted
11-1587	A	128:6	128:7	Not quite. Simulations were only included provided that the corresponding section of the pre-industrial control simulation was not drifting, judged by lack of exceedence of a 0.2K/century threshold. This removed quite a few simulations. [Daithi Stone (Reviewer's comment ID #: 256-30)]	Noted
11-1588	A	129:0	:9	Write increase. [Ibouraïma YABI (Reviewer's comment ID #: 297-259)]	Noted
11-1589	A	129:5	129:9	Units for temperature and precipitation are missing. (NOTE: This comment is valid for all the regions) [Daniel Caya (Reviewer's comment ID #: 38-80)]	Noted
11-1590	A	129:5	129:9	Relative units (% of models) for the last row (number of models) would be more natural than absolute numbers. (NOTE: This comment is valid for all the regions) [Daniel Caya (Reviewer's comment ID #: 38-81)]	We do not agree
11-1591	A	130:2	130:9	Change "oC" to "K" [Erik Kjellström (Reviewer's comment ID #: 131-40)]	Will do, Figure likely to be removed

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11-1592	A	130:8	130:9	delete "for example, ...95th percentile." Is trivial [Bart Van den Hurk (Reviewer's comment ID #: 274-127)]	Will do, Figure likely to be removed
11-1593	A	131:2	131:2	The color scale for precipitation change should be shifted so that blue colors indicate "more wet" and red "drier". [Erik Kjellström (Reviewer's comment ID #: 131-41)]	Idea is being assessed
11-1594	A	132:2	132:2	The abbreviations in the legend are not consequently used. GKSS should be shifted to CLM and SMHI should be shifted to RCAO. If these changes are included all abbreviations denote models, now it is a mixture between models and institutes. [Erik Kjellström (Reviewer's comment ID #: 131-42)]	Will consider
11-1595	A	134:1		Suggest omitting the figure (the contents should be easy enough to explain by text only). [Markku Rummukainen (Reviewer's comment ID #: 223-203)]	Will do
11-1596	A	134:5	134:5	Please give the name of the region considered. [Govt. of Finland (Reviewer's comment ID #: 2009-174)]	Figure removed
11-1597	A	134:5	134:5	Given the coarse resolutions shouldn't it be "GCM" instead of "RCM"? [Erik Kjellström (Reviewer's comment ID #: 131-43)]	Figure removed
11-1598	A	135:0		The bars on the right side of the figures are not explained in the caption. [Daithi Stone (Reviewer's comment ID #: 256-34)]	Noted
11-1599	A	135:6		Actually the period is 1906-2005. [Daithi Stone (Reviewer's comment ID #: 256-32)]	Noted
11-1600	A	135:7	135:9	Not quite. Simulations were only included provided that the corresponding section of the pre-industrial control simulation was not drifting, judged by lack of exceedence of a 0.2K/century threshold. This removed quite a few simulations. [Daithi Stone (Reviewer's comment ID #: 256-33)]	Noted
11-1601	A	136:0	136:	The corrected figures for China are not used {see Zhou et al 2005 Acta Meteorologic Sinica Vol 19 pages 389-400} [VINCENT GRAY (Reviewer's comment ID #: 88-1898)]	References to the data used are now provided
11-1602	A	137:0	:8	Write Uchiyama, 2006). [Ibouraïma YABI (Reviewer's comment ID #: 297-260)]	Noted
11-1603	A	137:5	137:6	Pentad? Each unit equals five days or some five-day period? Unclear. [Markku Rummukainen (Reviewer's comment ID #: 223-204)]	Will clarify
11-1604	A	138:0	138:	You do not use the corrected figures for the USA (see Figure 3.2.3) [VINCENT GRAY (Reviewer's comment ID #: 88-1899)]	References to the data used are now provided
11-1605	A	138:0		The bars on the right side of the figures are not explained in the caption. [Daithi Stone (Reviewer's comment ID #: 256-37)]	Noted
11-1606	A	138:4		Actually the period is 1906-2005. [Daithi Stone (Reviewer's comment ID #: 256-35)]	Noted

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11-1607	A	138:6	138:7	Not quite. Simulations were only included provided that the corresponding section of the pre-industrial control simulation was not drifting, judged by lack of exceedence of a 0.2K/century threshold. This removed quite a few simulations. [Daithi Stone (Reviewer's comment ID #: 256-36)]	Noted
11-1608	A	139:1	139:5	The color scale for this figure should follow the same scale as the one on page 140. [Daniel Caya (Reviewer's comment ID #: 38-83)]	This figure is changed in the revised version.
11-1609	A	139:1	140:17	Figure 11.3.5.2 should be separated in two distinct figures. The first one following the model use for the other regions (that is top row for temperature, middle row for precipitation and bottom row for the number of models) and the second figure presenting the results on the first three rows of the actual Figure 11.3.5.2. [Daniel Caya (Reviewer's comment ID #: 38-82)]	This figure is changed in the revised version.
11-1610	A	139:1	140:3	The temperature figure would be nice to see here to be facilitate comparisons with other continents. Further the ordering of the columns in these figures should be changed so that it better agrees with the other continents (ie. ANN, DJF, JJA). Finally, it would be nice to see all maps with the same color scale (brown-green). [Erik Kjellström (Reviewer's comment ID #: 131-44)]	This figure is changed in the revised version.
11-1611	A	139:1	140:18	Please consider similar graphics as for the previous regional discussions. As the figure (caption) stands now, consider leaving CO2-concentration details out, check the quoted periods on line 15 (should the second one be 1980-1999?) and whether the last two rows are based on 19 or 21 (as for other regions) of the AR4 GCMs. [Markku Rummukainen (Reviewer's comment ID #: 223-205)]	This figure is changed in the revised version.
11-1612	A	141:5	141:5	How is the "climatological snow amounts" determined? Is it in today's climate? In any of today's and the future scenario climate? In both? I take it that it is not from any observational climatology since the white areas are different in the different panels. [Erik Kjellström (Reviewer's comment ID #: 131-45)]	Details are provided in the revised version.
11-1613	A	142:0		The bars on the right side of the figures are not explained in the caption. [Daithi Stone (Reviewer's comment ID #: 256-40)]	Noted --
11-1614	A	142:5	142:6	Actually the period is 1906-2005. [Daithi Stone (Reviewer's comment ID #: 256-38)]	Noted
11-1615	A	142:7	142:8	Not quite. Simulations were only included provided that the corresponding section of the pre-industrial control simulation was not drifting, judged by lack of exceedence of a 0.2K/century threshold. This removed quite a few simulations. [Daithi Stone (Reviewer's comment ID #: 256-39)]	Noted
11-1616	A	144:0		The bars on the right side of the figures are not explained in the caption. [Daithi Stone (Reviewer's comment ID #: 256-43)]	Noted
11-1617	A	144:4		Actually the period is 1906-2005.	Noted

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				[Daithi Stone (Reviewer's comment ID #: 256-41)]	
11-1618	A	144:6	144:7	Not quite. Simulations were only included provided that the corresponding section of the pre-industrial control simulation was not drifting, judged by lack of exceedence of a 0.2K/century threshold. This removed quite a few simulations. [Daithi Stone (Reviewer's comment ID #: 256-42)]	Noted
11-1619	A	147:1		Suggest omitting the figure (the contents should be easy enough to explain by text only). [Markku Rummukainen (Reviewer's comment ID #: 223-206)]	Will do
11-1620	A	147:4	147:5	Units for pressure gradient are pressure unit (hPa) and should be hPa per unit of distance [Daniel Caya (Reviewer's comment ID #: 38-84)]	Figure removed
11-1621	A	148:0		The bars on the right side of the figures are not explained in the caption. [Daithi Stone (Reviewer's comment ID #: 256-46)]	Noted
11-1622	A	148:1	148:8	Why not showing a map as for the other regions? [Daniel Caya (Reviewer's comment ID #: 38-85)]	Will consider
11-1623	A	148:1	148:3	The red envelope is not present for the right hand side figure. [Daniel Caya (Reviewer's comment ID #: 38-86)]	Noted, a comment will be made
11-1624	A	148:5	148:6	"1900 2000" should be "1900-2000"; "2001 2100" should be "2001-2100". [Chiu-Ying LAM (Reviewer's comment ID #: 139-26)]	Noted
11-1625	A	148:5		Actually the period is 1906-2005. [Daithi Stone (Reviewer's comment ID #: 256-44)]	Noted
11-1626	A	148:7	148:8	Not quite. Simulations were only included provided that the corresponding section of the pre-industrial control simulation was not drifting, judged by lack of exceedence of a 0.2K/century threshold. This removed quite a few simulations. [Daithi Stone (Reviewer's comment ID #: 256-45)]	Noted
11-1627	A	149:1	149:8	The text on the figure is impossible to read [Daniel Caya (Reviewer's comment ID #: 38-87)]	Noted. The figure is ok, it was only a technical/editorial mistake. The figure has been updated.
11-1628	A	149:1		Suggest replacing the figure with a figure in the format of Figure 11.3.2.1. [Markku Rummukainen (Reviewer's comment ID #: 223-207)]	Noted. The figure is ok, it was only a technical/editorial mistake. The figure has been updated.
11-1629	A	149:2	149:2	This Figure is not legible. Light and dark grey areas can not be separated from each other. Fonts for numbers and months are too small. [Erik Kjellström (Reviewer's comment ID #: 131-46)]	Noted. The figure is ok, it was only a technical/editorial mistake. The figure has been updated.
11-1630	A	150:0		What means the signs in figure 11.3.8.3. ? [Ibouraïma YABI (Reviewer's comment ID #: 297-261)]	The star stands for the mean response. The legend has been improved.
11-1631	A	150:1	150:8	The meaning of the star in the middle of the Figure is not define. [Daniel Caya (Reviewer's comment ID #: 38-88)]	Accepted. The star stands for the mean response. The legend has been

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					improved.
11-1632	A	152:0		The bars on the right side of the figures are not explained in the caption. [Daithi Stone (Reviewer's comment ID #: 256-49)]	Noted
11-1633	A	152:5		Actually the period is 1906-2005. [Daithi Stone (Reviewer's comment ID #: 256-47)]	Noted
11-1634	A	152:6	152:8	Not quite. Simulations were only included provided that the corresponding section of the pre-industrial control simulation was not drifting, judged by lack of exceedence of a 0.2K/century threshold. This removed quite a few simulations. [Daithi Stone (Reviewer's comment ID #: 256-48)]	Noted
11-1635	A	153:1	153:7	Which models are used, or at least detail how many models and total number of runs used to calculate these changes. Secondly, what is the explanation for the asymmetry in the change - is there an outlier model? [Francis Zwiers (Reviewer's comment ID #: 305-241)]	This Figure has been deleted
11-1636	A	153:1	154:6	Suggest omitting these figures. [Markku Rummukainen (Reviewer's comment ID #: 223-208)]	This Figure has been deleted
11-1637	A	156:0		The bars on the right side of the figures are not explained in the caption. [Daithi Stone (Reviewer's comment ID #: 256-52)]	Noted
11-1638	A	156:0		The vertical bars on the right of each panel are not explained in the legend [Bart Van den Hurk (Reviewer's comment ID #: 274-128)]	Noted
11-1639	A	156:1		Assume that the figure will be redrawn or note is made on the discontinuity at year 2000/2001 and the discrepancy of the shaded green region at year 2100 and the vertical green bar to the left of it. (This applies also to the region-specific similar figures.) [Markku Rummukainen (Reviewer's comment ID #: 223-209)]	Noted
11-1640	A	156:5	156:8	Please note in the caption that this is an extended version of Figure 1, Question 9.2. [Francis Zwiers (Reviewer's comment ID #: 305-242)]	Noted
11-1641	A	156:5		Actually the period is 1906-2005. [Daithi Stone (Reviewer's comment ID #: 256-50)]	Noted
11-1642	A	156:7	156:8	Not quite. Simulations were only included provided that the corresponding section of the pre-industrial control simulation was not drifting, judged by lack of exceedence of a 0.2K/century threshold. This removed quite a few simulations. [Daithi Stone (Reviewer's comment ID #: 256-51)]	Noted
11-1643	A	157:0		Box 11.1, Figure 2. Please increase the size of the numbers referring to the notes and check the exact locations of the symbols (e.q., for drought). [Govt. of Finland (Reviewer's comment ID #: 2009-175)]	Figure will be updated
11-1644	A	157:0		Fig.2 of Box11.1: I could hardly make out the shading for increased P in >75% of simulations; please change to a different colour. Otherwise this is an excellent diagram.	Figure will be updated

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				[Dave Rowell (Reviewer's comment ID #: 222-11)]	
11-1645	A	157:0		Box 11, Figure 2 may have some errors. For example, if I look at Balkan Europe in Fig 11.3.3.2 there seems to be a consensus of DJF ppt increase in that region, but Box 11 Fig 2 DJF shows the region as white, implying that 75% of the models show neither an increase nor decrease. This seems inconsistent. I have not tested this for other regions, but the authors should be encouraged to do so. In the JJA map the drought symbol hides some of the local detail; move the symbol into the Med. [Govt. of United States of America (Reviewer's comment ID #: 2023-690)]	Figure will be updated
11-1646	A	157:4	157:10	Figure caption for Box. 11.1, Figure 2 would be clearer if you added some info, e.g., this shows prediction for 2080-2099 compared to 1980-1999. [Melinda Marquis (Reviewer's comment ID #: 162-86)]	Figure will be updated
11-1647	A	157:6	157:7	Could leave out "based studies" on line 6, and "is" on line 7. [Markku Rummukainen (Reviewer's comment ID #: 223-210)]	Figure will be updated