



**IPCC WGII
Fourth Assessment Report
Climate Change Impacts, Adaptation and Vulnerability
*Government and Expert Review of Second Order Draft***

Specific Comments

GOVERNMENT REVIEW COMMENTS

Chapter 11

August 2006

Discussion of Government review comments and record keeping

IT IS RECOMMENDED THAT:

- AUTHORS BEGIN WORK ON THE COMMENTS IMMEDIATELY. SUBSTANTIVE COMMENTS NEED TO BE SEPARATED FROM NON-SUBSTANTIVE, AND THE TWO SHOULD BE TREATED DIFFERENTLY
- CONTACT IS MADE BETWEEN AUTHORS AND THEIR REVIEW EDITORS IN AUGUST

Substantive comments

- The chapter writing team should discuss all substantive Govt review comments, by email and/or at Cape Town.
- Substantive comments require full and proper consideration. The *Principles Governing IPCC Work* state that:
 - genuine controversies should be reflected adequately in the text of the Report and
 - it is the role of the Review Editors to advise the lead authors on how to handle contentious/controversial issues
- You must record the outcome of these discussions in this document, under the column 'Notes of the Writing Team'.

Non-substantive comments

- For non-substantive comments, a very brief entry should be made in the column 'Notes of the Writing Team'. The following terms are acceptable:
 - Addressed
 - Not applicable
 - Text removed
 - A tick to denote a comment has been addressed (somewhere on the document this should be stated)

General

- The record should be kept in this document, ideally electronically.
- The document becomes part of the traceable account of the Working Group II Fourth Assessment. When completed to the satisfaction of the Review Editors, a copy should be returned to the TSU by the **8th December 2006**.

IPCC WGII AR4 SOD *GOVERNMENT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
G-11-1	A	0				Very little mention is made of recent trends regarding monsoon rainfall in the north of Australia. The word “monsoon” only appears once in the Chapter, in the context of monsoons becoming drier in the Top End, which is not what has been observed to date. The nature of the monsoon is critical to north Australian ecosystems and the changing nature of the monsoon should be raised in this Chapter, if only as an area of uncertainty. A recent paper on this matter suggesting this is as a result of increased northern hemisphere aerosol concentrations, allows the opportunity to highlight “climate change” results from a multitude of factors, not just enhanced greenhouse. (Government of Australia)	KH: Noted, revised text in 11.2.1 regarding observed monsoon trends, but no new research has been done on projected changes in the Australian monsoon
G-11-2	A	0				Unlike the other regional chapters, this Chapter has no section on the implications of climate change for sustainable development. This omission needs to be explained. (Government of Australia)	JS Changed title of 11.7 to include “Sustainable Development”.
G-11-3	A	0				There is some confusion in this document as to the baselines used for comparison. Is it always 1990 unless stated otherwise? If it is 1990 then a brief description of where 1990 baseline occurs in the range of variation would be helpful. (Government of Australia)	JS & KH: For climate projections, the 1990 baseline is actually something like a 30-year average centred on 1990, i.e. 1975-2004. It isn’t relative to the actual year 1990. This is commonly understood and needs no further explanation
G-11-4	A	0				There are numerous occasions in this Chapter where inappropriately subjective terms are used. It is essential that the reputation of the IPCC for objectivity is not compromised by the use of such terms. It is recommended that the authors review the Chapter to remove such language. (Government of Australia)	KH: Noted. Removed “trauma” in line 39 page 3, placed “wasteful” with “inefficient” on page 9 line 6. Need specific examples if we are to make other corrections
G-11-5	A	0				The general climatic conditions between regions within Australia and New Zealand are considerably different, as such the authors should try to ensure that discussion of climate changes in the chapter clearly specify the regions concerned, and most importantly differentiate between Australian and New Zealand conditions. (Government of Australia)	KH: Noted. Regions have been more clearly differentiated.
G-11-6	A	0				The Chapter is silent on the possible impacts on precipitation of an acceleration in the polar vortex, if the authors have considered this phenomenon and have decided not to include it, it should be explained. (Government of Australia)	JS For NZ, models project increased westerly circulation across NZ, which is discussed in 11.3.1 KH: The general issue of linking projected climate changes to specific circulation processes is difficult. The climate projections integrate changes in ENSO, SAM (polar

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							vortex), the monsoon, etc, because it is hard to pull the processes apart. Little research has been published on this topic
G-11-7	A	0				Overall, this chapter is in very good shape. It is well written, with a good balance between information on impacts and adaptation. The authors have paid close attention to indicating likelihoods/confidence where they feel able to do so, and most statements reflect a careful appraisal of the available literature. Most of my comments are queries concerning detail, but there are a few issues worth considering that pertain to linkages and consistency with other chapters in this volume and the the other two AR4 reports. (Government of Finland)	KH: Noted.
G-11-8	A	0				Many of our institutions (how we allocate water, how we make infrastructure decisions...) are set up to deal with static climate not dynamic climate. What is generally being proposed is that they should now try to predict climate change and respond to likely future (but still static) conditions. This is a start but still deals with an ongoing situation in a one-off way. There would seem to be a need for serious work on how we should structurally change the institutions so they can respond dynamically as conditions actually change. An example of this is how subdivision rules could gradually change to account for sea level rise - not dealing with this as a series of crises but having a process that can incorporate new information about the present or likely future as it arrives and update rules. Another critical example is allocation of water for irrigation/urban use etc. Currently (in New Zealand) permits are fixed quantities and if the amount in the catchment falls (or rises), changing the allocations could be costly and contentious, and so may not happen efficiently. It may be helpful to move toward a system where the property rights are contingent on total water availability and can change frequently (so not in huge jumps) within a process involving science that people feel comfortable with. Similar issues may arise with disaster insurance. (Government of New Zealand)	KH: The role of the IPCC is to assess published scientific literature, without being policy prescriptive.
G-11-9	A	0				Joint attribution of climate change is very important in the Australian context. The authors of this Chapter need to review the Chapter to ensure that specific examples given of climate change are not actually merely representative of climatic variability but are example of human induced climate change. This is especially important in the context of decreasing water flows in to the Perth catchment area. (Government of Australia)	JS – Text on attribution added in 11.2.1. For NZ the contribution of human activities is unkonwn, for Australia text added with references.
G-11-	A	0				In various parts of the Chapter one gains the impression that recent research had	KH: Noted. We have now prefaced Section

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10						identified the main areas of concern. Rather than highlighting these as examples of vulnerabilities, they tend to be listed as the key vulnerabilities. For example, section 11.4 in general, and Table 11.5 in particular. This emphasis may give readers the wrong impression. (Government of Australia)	11.4 with a comment about conclusions being based on available literature.
G-11-11	A	0				Chapter is a little over-length, exceeding the 31 page indicative length by 3.5 pages (excluding 2 contents pages) (Government of Finland)	KH: Discussed with TSU and chapter is within acceptable range.
G-11-12	A	3	3	3	3	After "climate change" make it clear that this picture is a consolidation of natural climate variability and the beginnings of human-induced climate impacts. (Government of Australia)	KH: Disagree. IPCC glossary definition includes both natural & human contributions. No need to define here
G-11-13	A	3	3	4	23	The Executive Summary is in good shape. (Government of Finland)	KH: Agreed, but further refinements have been made
G-11-14	A	3	4	3	5	The drought effects due to climate change are rated as high confidence. Yet this appears to come from a single sentence and reference. Given the complexity of droughts and its various interpretations this rating is not justified. Future impacts in line 15 are rated as medium confidence. (Government of Australia)	KH: Accepted. Wording changed to "increasing stresses on water supply and agriculture".
G-11-15	A	3	5			The abbreviation 'NZ' is introduced for New Zealand but then is not used consistently in the following text. It would be more appropriate to introduce it when it will be used (in Table 11.5?) and to use "New Zealand" in this Executive Summary (I see 'NZ' is used in page 4 line 19 but not elsewhere in the Summary) (Government of New Zealand)	KH: Agreed. Done
G-11-16	A	3	7	3	7	After 'observed climate changes' add in parentheses '(a combination of natural and human caused)'. (Government of Australia)	KH: Disagree. IPCC glossary definition includes "climate change" includes both natural & human contributions. No need to define here
G-11-17	A	3	9	3	10	To avoid misunderstanding about where this vulnerability occurs, please reword "... droughts, floods, fire, tropical cyclones and hail ..." as follows: "... droughts and floods in New Zealand and Australia, and fire, tropical cyclones and hail in Australia ..." Note the section reference that follows should be to [11.2.2], not [11.2.3] as in this draft. (Government of New Zealand)	KH: Disagree. Fire, tropical cyclones (Bola) and hail also affect NZ. Reference should be to Sections 11.2.2 and 11.2.5.
G-11-18	A	3	12	3	12	The term 'climatic trends' is too sweeping here. Some key climatic trends are likely to accelerate - it cannot be said about all climate measurement parameters. (Government of Australia)	KH: Agreed. Text revised.
G-11-	A	3	12	3	12	The italicised heading suggests that climatic trends since 1950 are likely to	KH: Agreed. Italicised text revised. See

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19						accelerate. 'Accelerate'/'acceleration' although perhaps accurate (i.e. meaning an increase or decrease in rate of change over time) are not suitable terms to use in this context as they convey a sense of 'speeding up'. It is not appropriate to assume observed trends will change in a uniform manner as natural variability is an integral part of any climate trend and will ensure that future climate is not a simple extrapolation of current trends. Suggest the first sentence of this paragraph be deleted as it is misleading to the ordinary reader. The paragraph should also comment on the need for rigorous attribution studies to be undertaken to determine the cause of the trend (anthropogenic or natural). This is a critical omission that should be addressed by the authors. (Government of Australia)	comment 18. Further info about attribution has been inserted in section 11.2.1, but it doesn't seem warranted for the Executive Summary..
G-11-20	A	3	12	3	14	Multiple examples of impacts from different regions are provided in the same sentence, yet only a single indication of confidence is provided. Does this imply that all of these risks have a medium confidence or only the last impact in the sentence? (Government of Australia)	KH, BF: Agreed. Confidence levels revised. Changed to indicate that we have high confidence in warming, heat waves, sea level rise and increased fire damage, and medium confidence in the rest (due to uncertainty in rainfall/storm projections).
G-11-21	A	3	12	3	16	Commentary needs to give some indication of the time period over which these effects are likely to occur... As drafted the scientific message is opaque for policy development purposes. (Government of Australia)	KH: Disagree. No space for this level of detail in the Exec Summary. Readers should seek further detail from Section 11.3
G-11-22	A	3	16			Please insert "rainstorm induced landsliding, " before "major floods". Much of the economic losses associated with heavy rain in New Zealand occur from the loss of productive land through landslides, rather than flooding. (Government of New Zealand)	KH Agree. Wording revised
G-11-23	A	3	18	3	18	The conclusion seems poorly drafted. Suggest turning it around in opposite construction. For example: "the projected impacts of climate change are likely to be substantial, but in some fields could be resolved by adaptation efforts". (Government of Australia)	BF, JS Agree.Changed to "Projected impacts of climate change are likely to be substantial without further adaptation;:"
G-11-24	A	3	19	3	26	It would be preferable to see this dot point as the final dot point in this section, as it does not flow naturally following directly after the title "Without further adaptation..". (Government of Australia)	KH, BF: Disagree. Dot point about benefits kept up front but moved above headline about "without further adaptation"
G-11-25	A	3	20			Add "concentrations" after carbon dioxide (Government of New Zealand)	KH Done
G-11-26	A	3	22	3	22	Replace "and Tasmania" with "in a small part of Southern Australia". (Government of Australia)	KH: Noted, text changed to "Parts of southern Australia"

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G-11-27	A	3	28	3	28	There is a conflict on the future of Australian agriculture between lines 21, 28-29 and 50. This needs to be synthesised into a key message about the implications of the combination of effects - CO2 fertilisation, water, etc... (Government of Australia)	KH, BF, JS: Disagree – line 22 states “provided adequate water is available”. However, we have revised line 50 because the italicised text implies adaptation, which was supposed to be excluded.
G-11-28	A	3	39	3	39	Trauma' is a strong word. Is this an 'objective' description? (Government of Australia)	KH. Noted, removed social and economic trauma
G-11-29	A	3	34			Natural ecosystems can also contribute to primary productivity (some forestry, some agriculture?) and it may be appropriate to include this along with tourism etc as an example of a system that is impacted (Government of New Zealand)	JS, KH – Okay LH: forestry now added to list
G-11-30	A	3	36	3	40	It would be useful for the authors to include some expected timescale for these events, i.e. ‘during the 21st century’, ‘during the 22nd century’ and/or under what emission scenario. (Government of Australia)	NH & RW: Noted, all impacts are for the 21 st century, and this is self evident from 3 rd headline (revised) and in 11.4.12 (Table 6)
G-11-31	A	3	38	3	40	The impacts listed are wide ranging and from a number of different sectors, yet the confidence rating for each of them is listed as (very high confidence). The authors should confirm that this is accurate. (Government of Australia)	NH & RW: Noted and confirmed
G-11-32	A	3	43	3	43	Replace 'sewage' with 'sewerage'. (Government of Australia)	KH Done
G-11-33	A	3	44			Please re-word to clarify that the fire danger in New Zealand is not to major cities (Government of New Zealand)	KH Deleted “in major cities”
G-11-34	A	3	47	3	49	The assessment of biosecurity needs to be put in the context of adaptive protection - through biosecurity control measures. (Government of Australia)	KH: Disagree. These dot points exclude adaptation. Biosecurity control measures are now mentioned under adaptive capacity (line 9 page 4)
G-11-35	A	4	12	4	12	Insert "industry" between "insurance" and "are". (Government of Australia)	LH: Insurance deleted based on comments from Expert Reviewers
G-11-36	A	4	17	12	17	Change 'identifiable' to 'identified'. (Government of Australia)	KH Deleted “identifiable”
G-11-37	A	4	19			Change "eastern lowlands (NZ)" to "eastern regions (NZ)" (as includes Gisborne, Hawkes Bay, Marlborough) (Government of New Zealand)	RW: agree, text changed accordingly.
G-11-38	A	4	21	4	22	This sentence seems self evident. It would carry more information if it read ‘...high emission scenarios due to rate of change and magnitude of change than under low emission scenarios’.	KH: Agree, dot point deleted

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						(Government of Australia)	
G-11-39	A	4	22	4	22	Given the Australia and New Zealand region is a small contribution to global greenhouse emissions it is not clear why Australia and New Zealand mitigation is stated to be necessary to manage regional vulnerability. Regional vulnerability is a consequence of global emissions. (Government of Australia)	RW: Agree, dot point deleted
G-11-40	A	4	32	4	33	Check this sentence against WG1 report and its references to Spencer's Creek snow depth. Also see lines 51-52, page 6, Chapter 11 - as it is difficult to see how these statements reconcile. (Government of Australia)	KH: there is no line 32 on page 4. Couldn't find any reference to Spencers Creek in WG1 report Chapter 3.
G-11-41	A	5	3	6	2	These opening two sections are very informative. Section 11.1.2 describes in general terms what is new in the report. I wonder if it would be useful to be a little more specific about a few key new findings since the TAR. This technique is used successfully in the North America chapter. (Government of Finland)	BF: Accepted. Text rewritten to meet objective.
G-11-42	A	5	44	5	45	The last sentence seems to be over-stating the role and capabilities of this Chapter. It was defined earlier that this chapter is meant to identify new information for the region since the TAR. It doesn't look into 'hotspots' where development trends and climatic trends are likely to lead to high vulnerability in enough detail to make such a claim. (Government of Australia)	JS Noted.. We now discuss in more detail the interaction of climatic and development trends in 11.4.12
G-11-43	A	5	49	5	51	Are systems presently coping under the full range of natural variability, eg severe drought? Suggest for clarity the sentence is changed to read 'As climate begins to change, impacts may exceed this range more frequently, but these can be alleviated....' (Government of Australia)	KH Done
G-11-44	A	6	4	6	12	Figure 11.1, though simple, is very clear and effective. This might be deployed in the introductory chapter to save it being required here (or in any of the regional or sectoral chapters). (Government of Finland)	KH: Agree. The figure is now used in the Introduction chapter so we have cross-referenced.
G-11-45	A	6	35	6	36	An explanation for this counter-intuitive result (decreased evap. with increasing temperature) might be useful here. (Government of Finland)	JS – Disagree. Result not counter intuitive since evaporation is driven by radiation, wind, vapor pressure deficit, and not temperature alone. Pan evaporation only decreased at 6 out of 19 sites, the other 13 had no significant change.
G-11-	A	6	35	6	37	Has this decline in pan evaporation been satisfactorily explained? It is a	JS Text and reference added

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46						contentious issue. The authors should refer to WG1, Chapter 3, Box 3.2 to ensure consistency. (Government of Australia)	
G-11-47	A	6	41	6	41	Could the authors confirm their statement that "aerosols have significantly contributed to this warming". (Government of Australia)	KH: Noted. We now state "While the causes of decreased rainfall in the east are unknown, the decrease in the southwest is likely due to a combination of increased greenhouse gas concentrations, natural climate variability and land use change, and the increased rainfall in northwest may be due to increased aerosols resulting from human activity, especially in Asia (Nicholls, submitted)".
G-11-48	A	6	45	6	46	The statement "The northwest two-thirds of the country has become wetter since 1950..." should point out that this increase comes from an increase in the summer monsoon rainfall, the sentence should therefore read "In the northwest two-thirds of the country summer monsoon rainfall has increased since 1950..." (Government of Australia)	KH: Done
G-11-49	A	6	47	6	48	While the 1990s and first part of the 21st Century is drier in southeastern Australia than the 1950's, it is worth noting that both in NSW and Victoria, the 1950s and 1970s were the wettest decades of the 20th century. treating the rainfall trend from 1950's to 2005 as linear and in isolation from what occurred prior to 1950 is misleading. More analysis/ attribution studies are needed to establish what has caused the recent trends. (Government of Australia)	JS: NZ rainfall changes are attributed to circulation changes, mainly arising from the IPO. Text has been added.
G-11-50	A	6	50	6	51	Is this the intensity of extremes that is changing faster than the means? (Government of Finland)	KH: Alexander et al (submitted) say trends in the extremes are rising faster than those in the means, so it's both frequency and intensity
G-11-51	A	6	52	7	2	This is confusing on the one hand pan evaporation is said to be decreasing; on the other hand potential evaporation has increased. This needs to explain both the difference between the two evaporations and why it is occurring. It also needs to be reconciled with lines 35-36 on page 6, Chapter 11. (Government of Australia)	JS: See G45 and G46
G-11-52	A	7	1	7	2	Again, an explanation for this trend in pan evaporation would be useful (Government of Finland)	JS See G45 and G46
G-11-53	A	7	18	7	20	Further explanation of what constitutes a "natural disaster" is necessary. It should also be footnoted that when comparing this figure across regions, Australia is very tectonically stable and experiences few earthquakes.	KH: BTE (2001) defines natural disasters as storms, floods, cyclones, earthquakes, fires and landslides. Sentence reworded

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						(Government of Australia)	
G-11-54	A	7	19	7	20	Is drought included in the remaining 13% of damage? (Government of Finland)	KH: Drought has been deleted from this sentence
G-11-55	A	7	25	7	25	The title of Box 11.1 " Extreme Events" needs to be more explicit. For example - "Costs of Recent Extreme Weather Events in Australia and New Zealand". (Government of Australia)	KH Done "Examples of extreme weather events in Australia and New Zealand"
G-11-56	A	7	25	7	50	Box 11.1 concerns extreme events. It is necessary for the authors to include an introduction pointing out that these events are not necessarily the result of human induced climate change but serve as examples of the possible impacts of extreme weather events. (Government of Australia)	KH: Disagree. Attribution is never discussed or implied. The IPCC Glossary defines climate change as including both natural and anthropogenic changes.
G-11-57	A	7	34	7	34	The authors could also point out that this hailstorm was the most expensive in history. (Government of Australia)	KH Done
G-11-58	A	7	40	7	40	Why would dams be rendered useless by runoff? Brief explanation needed. (Government of Finland)	KH: text added "sediment contamination"
G-11-59	A	7	40	7	40	Insert at the end of the sentence "were rendered useless by post-fire runoff, for a short period of time". (Government of Australia)	KH Done.
G-11-60	A	7	43	7	46	The intensity of TC Larry is still under post analysis scrutiny, and landfall intensity may be downgraded. Further, the information in this box seems an ad-hoc selection of events. In this context, why is TC Larry the only TC mentioned. Within a six week period two other Category 5 TCs impacted on the Australian coast, one of them a very high-end Category 5 (TC Monica). The heading could be "Category 5 Tropical Cyclones", with a listing of the three that occurred in March/April 2006. The authors should consider this and in addition the authors should insert "national" before "banana crop". (Government of Australia)	KH: The goal of this box is to quantify damage, not event frequency. Better references have been sourced.
G-11-61	A	7	46	7	46	The authors should find a more suitable reference than "Wikipedia, 2006". (Government of Australia)	KH Done
G-11-62	A	8	7	8	9	Table 11.1: New Zealand Fish: The description of change needs to be inverted to match the other descriptions (i.e. impact described followed by probable cause) (Government of Finland)	KH Done
G-11-63	A	8	7	8	9	Table 11.1: Can the driving climate variable(s) be indicated alongside all of the impacts described in this table? For example, are any of these changes thought to be due to increased drying? (Government of Finland)	LH: In many cases the driving variable is not known. For example, bird migration is triggered by a complex interaction of direct climatic variables such as temperature, as well

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							as indirect impacts such as the effect of climate on regional food supply. Where the driving variable is known it is indicated in the table.
G-11-64	A	8	8	8	8	Reference is made to Winn et al, 2006, which partly attributes wetland changes of the Top End to “drier monsoonal conditions”. An abstract for the paper is at http://cat.inist.fr/?aModele=afficheN&cpsidt=17432578 . It refers to East Alligator region. A suitable rainfall observation site nearby is Oenpelli. The rainfall record for this site shows decadal variation but no consistent downward trend in rainfall since 1980. In fact 1980 is the highest rainfall in the 95-year record at Oenpelli, the lowest (about half the amount of recent annual rainfalls) occurring in 1950. This claim of “drier monsoonal conditions” contradicts observed trend, stated earlier, of northwest of country getting wetter. The authors should review this statement. (Government of Australia)	LH I have checked the reference and it does indeed conclude that there have been drier than average monsoonal conditions. However after some enquiries to Colin Woodroffe wording has been altered to remove reference to “drier monsoonal conditions”
G-11-65	A	8	8	11	9	Suggest following change to Table 11.1, delete reference to increasing El Nino frequency, as this is not an observed change in fish species/systems. (Government of Australia)	KH: sentence reworded, as per comment 62
G-11-66	A	9	4	9	4	Why is the NZ consumption expressed as a range? (Government of Finland)	JS – The NZ figures are given as a range due to regional variation.
G-11-67	A	9	5	9	6	The phrase "over consumption and wasteful use of water resources" is unnecessarily emotive and value laden. Suggest amendment. (Government of Australia)	BB text modified
G-11-68	A	9	16	9	17	This is widely assumed but is there any citation that confirms and/or measures this? (Government of Australia)	RW: Agree, making a big assumption with little to back it up. Have deleted contentious sentence.
G-11-69	A	9	22	9	38	If the authors are looking for possible shortening, this Figure (though useful) could be omitted because it illustrates general issues that are treated in chapters 17 and 2. Indeed, this figure might be considered as an addition to chapter 17. (Government of Finland)	RW: disagree. Figure has proved useful for clarifying a number of reviewers comments.
G-11-70	A	9	42	9	42	Insert 'the' in front of 'region'. (Government of Australia)	KH Done
G-11-71	A	9	47	9	48	A more comprehensive reference (because it affects agencies such as CSIRO as well as ARC) is to refer to this as "Australia's National Research Priorities as set in 2003 lists" (refer to http://www.dest.gov.au/sectors/research_sector/policies_issues_reviews/key_issues/national_research_priorities/default.htm)	KH Done

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						(Government of Australia)	
G-11-72	A	10	5	10	6	Does the Shaw reference only apply to regional and local risk assessments in relation to stormwater? If so, then this statement could be seen as misleading if no additional references can be added in support. (Government of Australia)	KH: Noted. Sentence citing Shaw deleted. Inserted " A wide range of regional and sectoral risk assessments has been undertaken since 2001 (see Section 11.4). Both countries occasionally produce national reports that synthesize these assessments, and provide a foundation for adaptation (e.g. (Howden <i>et al.</i> 2003c:MfE 2001a:Pittock 2003:Warrick et al 2001; Allen Consulting Group, 2005; Preston and Jones, 2006)"
G-11-73	A	10	17	10	21	In addition to integration into national strategies, climate change has been integrated into several state-based and regional strategies. For example, South Australia's Natural Resources Management Plan 2005 includes a goal to achieve 'Landscape scale management that maintains healthy natural systems and is adaptive to climate change' and includes several milestones and strategies to achieve this goal. The authors should also consider the inclusion of the Victorian Government White Paper - "Securing our water future together" (2004), which notes that the State Government will vary water entitlements and environmental reserves if future long-term reductions in water availability (as a result of climate change) occur. Subsequently, the regional sustainable strategies currently being developed, are required to consider the implications of climate change and adaptive management options which include monitoring and review of climate change impacts (Draft for Community Comment - Sustainable Water Strategy for the Central Region (2006). (Government of Australia)	KH: New text inserted RW: have added Wratt et al., 2004, which is guideline, provided by central government, in support of regional and local risk assessment
G-11-74	A	10	19	10	19	The "National Biodiversity and Climate Change Action Plan 2004-2007" is the correct citation that should be used for this document. (Government of Australia)	KH Done
G-11-75	A	10	20	10	21	The Representative Areas Program Zoning Plan does not explicitly include climate change. However, the Great Barrier Reef Climate Change Action Plan should be referred to here, instead. (Government of Australia)	KH, LH: Agree - Done
G-11-76	A	10	22	10	24	Threat abatement plans are required for listed threatening processes under the Environment Protection and Biodiversity Conservation Act only if the Minister believes that having and implementing a threat abatement plan is a feasible, effective and efficient way to abate the process.	LH: reference to drafting of Threat Abatement Plans deleted

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						(Government of Australia)	
G-11-77	A	10	37	10	39	The authors should consider whether to include the fact that individual State and Territory Governments in Australia also commission research to assess climate change knowledge, gaps and priorities. (Government of Australia)	RW: agree, have added text
G-11-78	A	10	41	10	42	The first sentence is obtuse, and possibly incorrect. What are the literature sources for this conclusion? (Government of Australia)	RW: agree. To avoid confusion, sentence has been deleted.
G-11-79	A	10	41	10	42	The authors should be clear as to what they mean by "regional and local levels" as regular monthly, seasonal and 'special event' monitoring of meteorological and related climate variables is currently undertaken at the State and NRM Board scale by the Bureau of Meteorology. Agree there is potential for expansion of elements, however, the broad statement as it stands is incorrect. (Government of Australia)	RW: agree. To avoid confusion, sentence has been deleted.
G-11-80	A	10	51	10	51	Why is this statement restricted to 'on-line' resources? (Government of Australia)	KH: Agree that awareness raising goes beyond the internet. "on-line" replaced with "have developed a variety of products and services for raising awareness"
G-11-81	A	11	10	11	10	Can a capacity be "systematically implemented"? Do they mean that adaptation is under its capacity (which might be a good thing) or that capacity needs increasing on a wide scale? (Government of Australia)	KH: Agree. Replaced "systematically implemented" with "realised". RW: OK
G-11-82	A	11	17			This section reports some of the up-to-date projections of climate for the region. Several issues are worth considering here: 1) Have these projections actually been applied in the IAV studies reported in the chapter? 2) Is it really true to say that Ch 11, WG I doesn't consider these fine-scale results? 3) How do these results compare with the SRES-driven AOGCM results produced at around the time of the TAR and assumed in at least some of the impact studies cited? 4) Are the "likelihood" terms used throughout this section consistent with the AR4 standard terminology? 5) Are these conclusions consistent with and approved by the Oz/NZ representatives making statements about regional climate in Chapter 11? (Government of Finland)	JS, KH 1. Probably not in some cases. 2. Yes 3. NZ ones from SRES driven scenarios, Aus TAR scenarios broadly consistent with Aus AR4 scenarios. 4. Yes. 5. Yes. KH: Text modified accordingly
G-11-83	A	11	22	11	24	Does this mean and increase in frequency of westerly types or in windspeeds? (Government of Finland)	JS See D Wratt correction, E181
G-11-84	A	11	27	11	30	Do these statements refer to the 2080s? (Government of Finland)	JS Yes – and beyond for snowlines
G-11-	A	11	34	11	35	Table 11.2 should include the words "precipitation" and "temperature" in the	JS Agree. table now consistent with 11.3

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85						appropriate columns. (Government of Australia)	
G-11-86	A	11	40	11	40	Where does this finding come from? At least one projection indicates increased rainfall in parts of tropical Australia. It does not fit well with the statements in lines 44- 47 about increases in intensity in various parts of Australia. (Government of Australia)	KH: Statement now attributed to Suppiah et al (2006). We say increases in extreme rainfall are possible where mean rainfall decreases slightly, so there's no inconsistency with lines 44-47. Have added data for NSW, based on new info.
G-11-87	A	11	44			It might be worth mentioning that NZ hosted one of the first international government-level workshops on adaptation (International workshop on adaptation practices and strategies in developed countries, 11-13 October 2004, Wellington, New Zealand) (Government of Finland)	KH, JS: Noted, actually applies to page 10 line 44, but no space to include this example.
G-11-88	A	11				Table 11.2: The table could be greatly improved by setting it out in the same way as Table 11.3. In Table 11.2, for example, the column heading "2030s(%)" does not communicate that this is a rainfall change, although this can be interpreted from the table heading. Could be much clearer. (Government of New Zealand)	JS – See G 85. The table has now been reformatted consistent with Table 11.3
G-11-89	A	12	17	12	18	'Two climate models...' More detail is needed here. 'Which two and why only these two?' (Government of Australia)	KH: Pilot study with limited resources. Reference to two models deleted
G-11-90	A	12	27	11	27	What is "fire-line" intensity? (Government of Finland)	KH: "line" deleted
G-11-91	A	13	1			Critics have raised the issue that that land is rising in NZ, suggesting this will negate sea level rise. It would be helpful if this issue could be addressed here. The text here suggests "... land movement ... can be large ... ". Could land movement be quantified in broad terms relative to sea level rise, from existing data? (Government of New Zealand)	RW: Noted, changed text,.
G-11-92	A	13	7			The information given here is interesting and potentially relevant, but has it been used in scenarios developed for studies reported in this chapter? SRES isn't mentioned here, but SRES-based scenarios do appear in some of the studies cited later. They are also introduced in Chapter 2 in general terms. They need to be referred to here, if only to state that they have not been applied in Oz/NZ studies. (Government of Finland)	KH, BF: Rejected. There are no regional disaggregations of SRES scenarios. The material in this section is provided as background information to give the reader some context. It is mentioned in 11.4.11 regarding heat-related deaths including demographic change, and in a new paragraph on interacting impacts in 11.4.12
G-11-	A	13	28	13	33	Can these SRES pathways be presented in a table with a third column added to	KH, BF, JS: Noted and text added to convey

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93						indicate the range of potential temperature increases within that particular scenario? This would be particularly useful for policy-makers. (Government of Australia)	idea that SRES global warming projections are given in WG1, and that regional warming is close to global mean warming given for each SRES scenario in WG1.
G-11-94	A	13	38	14	15	The probability approach used in section 11.4.1.1 is good. It provides much more useful information than does a simple statement of 'range of possible outcomes' without some indication of likelihood. (Government of Australia)	KH, BF: Noted – no action required.
G-11-95	A	13	44	13	46	How can salinity estimates be plus or minus if streamflow estimates are only for decreases? (Government of Finland)	BB: results taken directly from cited paper
G-11-96	A	14	4	14	28	This is rather heavy going. I wonder if a summary table could be produced to extract the essential messages from these studies. (Government of Finland)	Disagree, and suggestion would require extra space in a chapter that has already exceeded its page limit.
G-11-97	A	14	14	14	15	The statement that planned supply and demand-side actions are likely to alleviate water shortages needs either a reference or examples given as to how this will be achieved. (Government of Australia)	BB : Noted - reference now provided
G-11-98	A	14	14	14	15	It is not clear what location/region the penultimate sentence refers to. What is the literature source for this sentence? (Government of Australia)	Agree – text modified.
G-11-99	A	14	24			"suppressed" is not a good antonym for 'enhanced' and would be better replaced in this context by 'lessened' (or 'attenuated' or 'reduced') (Government of New Zealand)	JS – Agree – use 'lessened'
G-11-100	A	14	32	14	44	Has there been any inundation modelling in Oz catchments as reported later for NZ examples? (Government of Finland)	The paragraph captures the available literature. Studies of changes in flood frequency and intensity are now listed as a research priority in Section 11.8.
G-11-101	A	14	47	14	48	Include references to Glade (1998) (Environmental Geology, 35 (2-3), August 1998, pp 160-174) and Dymond et al. (2006) (Geomorphology, 74 (2006), pp 70 - 79) (Government of New Zealand)	JS: Text modified to include landslides and references added
G-11-102	A	15	11	15	12	The ordering of the sentence needs to be changed so that the meaning is clear. Suggest "By 2020, about 50 percent of the time, the average salinity.....set for desirbale drinking water" (Government of New Zealand)	KH Done
G-11-	A	15	12	15	12	This sentence is incomplete. The lines should read “ By 2050 the average salinity of	BB: Text has been modified to better reflect

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103						the lower Murray River in Australia is likely to exceed the 800 EC threshold set for desirable drinking and irrigation water about 50 per cent of the time (MDBMC 1999)". Furthermore, since this statement was made in 1999 several Australian Governments have made significant investments in salinity management in the Murray Darling Basin, particularly through the Murray Darling Basin Council. These investments are likely to reduce the probability of salinity targets being exceeded. The National Action Plan for Salinity and Water Quality is also addressing the salinity issue. (Government of Australia)	its original intent. .
G-11-104	A	15	12	15	15	The authors should revise this sentence as the South Australian Government has undertaken a range of studies on the potential impact of climate change on Adelaide's water supply, although these are not all in the peer reviewed literature. For example, the implications of climate change for Mt Lofty Ranges water resources are being investigated by the Department of Water, Land and Biodiversity Conservation, which has engaged CSIRO to develop rainfall data suitable for catchment modelling. The South Australian Government has also developed 'Water Proofing Adelaide - A Thirst for Change 2005-2025' that outlines 63 strategies for the management of Adelaide's available water resources to 2025. The strategy takes climate change into account, and includes strategies for better managing existing water resources, responsible use, and for significantly increasing the use of stormwater and recycled water. The strategy should ensure that Adelaide has sufficient water for its needs until at least 2025, in all but the most severe droughts. (Government of Australia)	BB: See response to G-11-103. The SA Government's strategy is now noted in the Adaptation of water supplies in cities box in Section 11.6.
G-11-105	A	15	12	15	15	The authors should delete the reference to policies for ameliorating salinity, as the impacts of climate change have been informally considered in the ongoing development of South Australia's salinity policy, and will be considered more formally in an upcoming review of the "Basin Salinity Management Strategy". In addition, South Australia's revegetation policies are not all primarily directed towards ameliorating salinity. It is therefore suggested that the words relating to revegetation policies are deleted. (Government of Australia)	BB: See response to G-11-103.
G-11-106	A	15	12	15	14	For readers not familiar with the geography, it should be stated that the Murray supplies Adelaide. (Government of Finland)	BB: See response to G-11-103.
G-11-	A	16				Table 11.4: Alpine regions - reliance on snowmaking and its impacts on species,	KH Agree, words revised

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107						suggests that snowmaking is used to protect species, when I suspect this is referring to snowmaking for winter sports. (Government of Finland)	
G-11-108	A	17	23	17	28	Given that there is quantitative estimates in these sentences, the text should be referenced. (Government of Australia)	MH: Reference included to Howden and Jones (2004)
G-11-109	A	17	30	17	44	Figure 11.3. Nice figure, though you might consider superimposing b) on a) using different colours to illustrate the shift in distribution. (Government of Finland)	MH: Figures retained in current format as information obscured if figures are overlaid.
G-11-110	A	17	30	17	44	Figure 11.3 is useful, however, having different vertical axis's for the two graphs is misleading, the authors should amend to ensure the vertical axis are the same in each graph. (Government of Australia)	MH: Axes fixed
G-11-111	A	17	44	17	44	Figure 11.3 should be referenced. (Government of Australia)	KH: Reference included
G-11-112	A	17				Figure 11.3: The figure is a misleading without careful reading. The two graphs should be produced with the same scales. (Government of New Zealand)	MH: Axes fixed
G-11-113	A	18	9	18	12	The section on land degradation considers CO2 impact on evapotranspiration but overlooks another most significant change - rising temperatures. The authors should consider if the combination of changes (projected temperature, rainfall and CO2) were taken into account would the same conclusion be drawn – i.e. an increased risk of water moving below the root zone and exacerbating existing land degradation? (Government of Australia)	MH: The text eplicitly deals with these factors on page 18 lines 14 to 16
G-11-114	A	18	9	18	19	The authors should consider whether this section needs to mention the potential impact of climate change on erosion. Where climate change results in crop failure or change in land use, the risk of erosion may increase. (Government of Australia)	MH: No studies since the TAR to reference on this topic
G-11-115	A	18	44			Delete "dates" [confused me momentarily - I was reading about grapes, and then suddenly the fruit changed to dates]. Reads much better without "dates" and no meaning is lost. (Government of New Zealand)	KH: Text altered to address this comment
G-11-116	A	19	26	19	26	"erosion" is NOT mentioned in section 11.4.3.1 or anywhere else in the chapter: This could be either deleted or be change to reference acidification. (Government of Australia)	MH: No studies since the TAR to reference on this topic.
G-11-	A	19	40	19	40	20% in 2030 and by 230% in 2100 -> 20% to 2030 and 230% to 2100	MH Text altered to address this comment

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117						(Government of Finland)	
G-11-118	A	19	40			Is 230% correct? (Government of New Zealand)	MH: Text altered to address this comment
G-11-119	A	19	47	19	47	On this line US\$5 billion is said to be 1 % of GDP but on page 21, line 31 US\$1.7 billion is also said to be 1 % of GDP. (Government of Australia)	MH: Text altered to address this comment
G-11-120	A	19	48	19	49	The statement that 7% of forests in Australia are native forests for timber production is incorrect and misleading. The 7% figure refers to multiple use native forests on public land (state forests) and does not refer to the 70 percent of Australia's forests on private land which may also be available for timber production. Also there is no reference to the proportion of native forest in conservation reserves in Australia which should be included. A more accurate statement taken in part from Australia's State of the Forests Report by BRS (2003), page 29 is: 'Australia's forest estate is 164 million hectares, consisting of 162.7 million hectares of native forest and 1.7 million hectares of plantations. Approximately 13% of Australia's native forest estate is formally protected in nature conservation reserves and 70 per cent of forest is privately managed. Seven per cent is available for timber production in state managed multiple-use native forests.' (Government of Australia)	MH: Text altered to include the information provided by this reviewer
G-11-121	A	19	50	19	50	The statement 'adding to the current but declining native forest area of 18M ha (NGGI 2000)' is incorrect and misleading. As stated above, the area of native forest in Australia is 162.7 million hectares. While it is true that access to native forests in Australia has reduced over recent years as timber producing forests are put into conservation reserves, it is not true that the area of native forest has declined, in fact in many instances it is increasing as previously cleared areas are revegetated to native vegetation. On this basis, I suggest that the above statement be taken out as it is incorrect and misleading. (Government of Australia)	MH: Text altered to include the information provided by this reviewer.
G-11-122	A	19	52			Suggest "plantations" is changed to "plantings" as this is what has actually declined. (Government of New Zealand)	MH: Text altered to address this comment
G-11-123	A	20	17			Isn't the term usually "carbon dioxide fertilization" not "carbon fertilization"? (Government of New Zealand)	KH: Text altered to address this
G-11-124	A	20	18	20	19	Suggested rephrasing to read: "were enhanced during the first two years of artificial CO2 enrichment" (Government of Finland)	MH: Sentence restructured to incorporate this comment

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G-11-125	A	20	29	20	31	What is an "address"? The opening of the sentence "a significant sea level rise of 6m" is opaque. Under what circumstances would 6m SLR occur and by when? 6m would be more than 'significant'. (Government of Australia)	NH: Text has been changed in response to expert comments
G-11-126	A	20	29	20	30	Is it relevant to talk about a 6 metre rise in MSL? How likely is this? Would it be more appropriate to couch this in terms of 'storm surge'? (Government of Australia)	NH: Text has been changed in response to expert comments
G-11-127	A	20	36	20	39	The authors should give some idea of the timeframe that would apply to these sentences. (Government of Australia)	NH: disagree: this sentence is about spatial differences and pattern changes, rather than time-dependency.
G-11-128	A	20	46	20	47	The phrase "shoreline erosion of up to 50m could occur near the Waipara River with 50% less southerly waves" is not clear. It could be interpreted to mean that if the frequency of southerly waves decreases by 50% then up to 50m of shoreline erosion would occur. Or it could mean that both shoreline erosion and a decrease in southerly waves are independently possible. Similarly with the relationship between the Waimakariri shoreline erosion and river sand. (Government of New Zealand)	NH: changed text to clarify
G-11-129	A	20	48	20	48	What are "setbacks" in this context? (Government of Finland)	NH: this is a common term in Australia and New Zealand.
G-11-130	A	21	7	21	9	Is this damage incurred in a single event (50-year storm) or in aggregate over the full period? (Government of Finland)	NH: changed text to clarify
G-11-131	A	22	45	22	52	The assertion about the potential impact of increased extreme rainfall on the Jabiluka billabong country relies upon a single seven page source described in the references as a file note. The uranium mine proposal was the subject of a detailed environmental impact assessment which reached a different conclusion about risks. The statement that the Traditional owners are concerned is valid, the subsequent assertion that they could lose a significant part of their estate is contested and should not be presented as a statement of fact. (Government of Australia)	DG text revised to "projected increases in extreme events - such as floods and cyclones - have the potential to increase erosion, slow re-vegetation, shift capping materials and expose tailings in the area that contains Ranger and Jabiluka mines. These impacts have not been adequately considered in long-term mining planning (Wasson <i>et al.</i> , 1988; Parliament of Australia, 1999-2002). The Traditional Owners, the Mirrar, are concerned that these impacts may detrimentally affect land between Madjinbardi Billabong and the East Alligator River and the lowlands on the floodplain margins that lie downstream from these mine sites (Kyle, 2006)."

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G-11-132	A	23	1	23	1	Replace 'but' with 'and'. (Government of Australia)	KH Done
G-11-133	A	23	29	23	34	The finding that about 60,000-90,000 from Pacific-islands may be at pressure from sea level rise is not reflected in Chapter 16. Additionally the finding that Australia and New Zealand may be pressured to consider emergency immigrants does not coincide with the finding at Chapter 7 that "estimates of the number of people who may become environmental migrants are at best guess work and at worst, dangerous". Suggest deletion of lines 29-34. (Government of Australia)	KH: Revised text is "Climate change may contribute to destabilising unregulated population movements in the Asia-Pacific region, providing an additional challenge to national security (Dupont and Pearman, 2006; Preston <i>et al.</i> , 2006). Population growth and a 1 m rise in sea-level is likely to affect 200-450 million people in the Asia-Pacific region (Mimura, 2006), and an increase in migrations from the Asia-Pacific region to surrounding nations such as New Zealand and Australia is possible (Woodward <i>et al.</i> , 2001)".
G-11-134	A	23	33	23	34	The statement that displacement of Torres Strait Islanders to mainland Australia is likely to occur mid century is unreferenced. (Government of Australia)	DG: cite (Green 2006) – same ref as in main section of text on this issue.
G-11-135	A	23	39	23	40	Including the gross percentage of population of indigenous people in Australia, is misleading as in central and northern Australia the indigenous population makes up a much larger percentage of the population, which has significant repercussions on the adaptive capacity of some regions. This should be pointed out by the authors. (Government of Australia)	DG we now state NT is about 30% indigenous, but we don't have space for a full run down?
G-11-136	A	24	12	24	12	As per previous paragraph on New Zealand (page 23, line 47) the authors should explain the geographical distribution of Indigenous Australians. (Government of Australia)	DG See comment 135
G-11-137	A	25	40	26	3	The PB associates report referred to here also noted that 'approximately 10% of the existing asset levels may be required to allow for climate change peak demand impacts above those required for normal load growth' by 2030. (Government of Australia)	KH: Noted, text added.
G-11-138	A	25	47	25	48	The statement that reduced output from wind farms needs to include a caveat that reduced output may be offset by technological advances in control systems and turbine design. Therefore suggest that authors add 'without adaptation' to the beginning of the sentence 'Reduced output from windfarms...'. (Government of Australia)	MH: Text removed
G-11-139	A	25	47	25	48	No literature references are provided to support the conclusion about climate change and impacts on wind power. The conclusion should be tied to a timeframe and the correlate assumptions.	MH: Text removed

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						(Government of Australia)	
G-11-140	A	25	50	25	52	The risk for LNG carriers should be referenced (as should an indication of why this type of shipping in particular is at risk). The authors should explain why temperature effects LNG production capacity. This finding should also be tied to a reference in the literature. (Government of Australia)	MH: Text removed
G-11-141	A	25	50	25	50	Increasing extreme wind speeds and wave heights are presumably related to increasing intensity of tropical cyclones. This should be made clear that it does relate to these relatively infrequent, and short duration events. (Government of Australia)	MH: This issue not dealt with directly in the report.
G-11-142	A	26	14	26	15	The authors should explain whether this study has taken into account technological shifts - i.e. increasing use of air conditioning and better insulation through community affluence, expectations, technological advancement etc. Otherwise the paragraph should commence with 'Assuming no adaptation....' or 'Assuming no change in other circumstances, including uptake of technology..' Also it is not clear whether all aspects of Section 11.4.11 are based on 'no adaptation measures'. (Government of Australia)	JS Has already indicated 'Assuming no adaptation' at beginning KH: See page 13 line 28
G-11-143	A	26	25	26	27	The authors should explain how will fewer but heavier rainfall events affect mosquito breeding (i.e. will there be an increase/ a decrease or mixed?) (Government of Australia)	RW: two references provided, space precludes further explanation, which should be in the health chapter in any case.
-144	A	26	33	26	34	Estimating the future number of cases of dengue fever and other climate sensitive diseases, eg at 2020 and 2050 would be more meaningful on a 'per 100,000' basis (see previous page 26, line 17) as general population growth distorts the figures that can be attributed to climate change. (Government of Australia)	Rosalie Woodruff: data per 100,000 not given in any published literature
G-11-145	A	26	48			Change "is" to "are" (Government of New Zealand)	KH Done
G-11-146	A	27	7	27	19	There seems to be some inconsistency between the use of terms here and in Chapter 19. Chapter 19 refers to 'critical levels' as those which result in non-linear shifts from one system state to another or which are considered 'unacceptable'. The criteria mentioned in Chapter 11 as being used to determine critical levels are used in Chapter 19 to identify key vulnerabilities - a different but related concept. The statement that impacts are likely to reach a critical level once local warming exceeds 1 or 2 C is not adequately supported. A more nuanced treatment is required. For example, there is evidence that some impacts are likely to reach levels that many stakeholders would consider unacceptable. In addition, mid-term impacts for the low emissions scenario presented in table 11.6, although serious, are	KH & BF: Text rewritten to better relate to Table 11.5 and Table 11.6 Use of word "critical" and threshold avoided at this stage of text. Vulnerability discussed after adaption is considered.- then thresholds introduced. Vulnerability criteria made consistent with Ch 19.

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						arguably not 'critical' even though the projected warming is close to 1 C. (Government of Australia)	
G-11-147	A	27	10	27	10	Now the SRES scenarios are mentioned, but they haven't been introduced earlier (see earlier comment). Note that SRES is introduced in general terms in Chapter 2. (Government of Finland)	KH: We also mention SRES on pages 11, 12, 13, 14, 17, 23, and 25, but we don't describe each scenario. We now cross-reference relevant section of CH 2 at the beginning of 11.4.
G-11-148	A	27	21	28	1	Table 11.5 - Water security row: if there has been research conducted on water security in Tasmania, especially as it related to power production, it may be useful to include. (Government of Australia)	KH: Peter McIntosh published a report on climate change impacts in Tas, but did not include water security
G-11-149	A	27	21	28	1	Table 11.5 - Natural Systems row: It would be helpful if the authors provided some detail of the systems upon which climate change could be "potentially catastrophic". The "Hot-spots" column should also be re-named as "Identified Hot-spots" and a description of why these sites have been chosen should be included. (Government of Australia)	KH: This table is a synthesis of detailed information already provided in other parts of section 11.4. LH: Impacts on endemic Wet tropics vertebrates now added as an example
G-11-150	A	27				Table 11.5: Where "capital cities" are mentioned - what is referred to? (Government of Finland)	NH: agree, text changed.
G-11-151	A	28	3	29	1	Table 11.6. Formatting. Is it possible to line up the impacts (i.e. sea level rise, coral bleaching etc) across the scenarios for easier comparison? In addition the authors should review, as the table refers to 'impacts after adaptation' but at least some health impacts taken from 11.4.11 are documented as under 'no adaptation conditions'. (Government of Australia)	KH & BF: First part considered, but rejected as this would require extra space. Second part accepted: Replaced "after adaptation" with "assuming no planned adaptation".
G-11-152	A	28	3	29	1	Table 11.6 is very useful, consideration should be given to including it in the Synthesis Report. However there are some changes that should be made to the figure. The authors should include the baseline for the increase in temperature (i.e. pre-industrial, or from 1990-2000); for the Near-term impacts row: delete "2 cm" as this confuses the finding; and the authors should review the SRES B1 and SRES A1F1 columns for consistency (for example in the near term impacts row (0.4-0.8 degrees) the A1F1 column sees "coastal property losses due to 13cm sea level rise", however in the mid-term impacts row (0.9-2.2 degrees) the B1 column sees "negligible sea level rise". When compared with the temperature ranges provided, these findings seem contradictory). (Government of Australia)	KH & BF Table has been revised and clarified to accommodate these points.
G-11-	A	28				Table 11.6 -Row 4 (long-term impacts) Column 3 (A1F1 Scenario) - "large scale	KH Done

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153						alteration to coral reefs" not a very informative statement; and difficult to relate in terms of scale or severity of impact to other projections. Suggest replacing with "widespread and potentially irreversible deterioration of coral reefs". (Government of Australia)	
G-11-154	A	28				Table 11.6 - Row 4 (long-term impacts) Column 2 (B1 scenario) - Suggest the following: replace "coral reefs replaced by macro algae communities, species extinctions very likely" with "coral reefs degraded, with significantly reduced coral cover and localised extinctions of some species". (Government of Australia)	KH done
G-11-155	A	28				Table 11.6 - Row 3 (mid-term impacts) Column 3 (A1F1 scenario) - Suggest the following: replace "coral reefs replaced by macro algae and sea weed" with "coral reefs degraded toward dominance by algae". (Government of Australia)	KH Done
G-11-156	A	28				Table 11.6 - Row 3 (mid-term impacts) Column 2 (B1 Scenario) - need to include projected impacts on coral reefs. (Government of Australia)	LH & OH-G Agree - done
G-11-157	A	28				Table 11.6 - References to scale of coral bleaching are based here on spatial metrics (eg "localised", "most reefs"). The more important and relevant measure of "seriousness" is the duration and frequency (return intervals) of thermal stress events. (Government of Australia)	LH: Noted - phrase "reduced return times" added
G-11-158	A	28				Table 11.6 - Projections are very pessimistic, and not well justified on the basis of current knowledge. At the least, the wording is more definitive than is warranted given current knowledge and levels of uncertainty about ecosystem responses to future warming. Certainly, there would not be good consensus on the specifics of this projection. This is likely to be particularly the case for the lower end of the range of warming for B1 scenarios. More specific language should be used that captures the direction and general magnitude of change (about which there is strong consensus) rather than predicting specific community shifts. Specific suggestions below. (Government of Australia)	KH & BF: Noted - Attempt is made to identify more benefits. Language revised. to address some of concerns. TSU requested such a Table for all regions. This required an assessment by our writing team of these issues, even though there is sparse literature for some of the projection cells.
G-11-159	A	29	20	30	4	This section criticises several governments' 'nature link' policies without any referencing, and uses terms such as 'oft-promoted' that are inappropriate. The development of biodiversity corridors has multiple benefits in addition to facilitating adaptation to climate change by enabling migration, such as linking existing populations of species together, creating buffer zones and revegetation. Furthermore, creating biodiversity corridors does not always necessitate change in	LH: Disagree. The section does not criticise the policy. Rather, it makes the point that some changes of land tenure that will be required for corridors to assist species migration will be costly. The term "oft-prtomoted" has been removed.

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						land-tenure. It is suggested that this section is removed or significantly amended. (Government of Australia)	
G-11-160	A	29				Table 11.6 - Row 4 (long-term impacts) Column 2 (B1 scenario) - not clear whether species extinction relates to coral species or species in ecosystems more generally. (Government of Australia)	KH See comment 154
G-11-161	A	30	6	30	14	Paragraph beginning at line 6 - should discuss the role of the National Water Initiative and the NAP in addressing the issues raised in the paragraph. (Government of Australia)	BB, This is discussed in 11.2.5, Table 11.2
G-11-162	A	30	17	30	18	Why extend into regions with "historically higher" rainfall? Higher than what, and won't these regions be susceptible to future changes too? (Government of Finland)	JS: Noted. The intent here was some areas in NZ are particularly humid, and a slight drying enhances production
G-11-163	A	30	19	30	21	Recognising and acknowledging the value and the critical role of individuals and their behaviour, of the 'people on the ground', is important in a review of adaptation options. Therefore while we appreciate the space constraints we would like to see a sentence included (after "... Kenny (2005).") along the lines of: "They have indicated the availability, harvesting, storage and reticulation of water as a high priority and have expressed a wish for support and education for 'bottom-up' adaptation." (Government of New Zealand)	JS Text amended to regions, and word added
G-11-164	A	30	19			Change "lowlands" to "regions" (as includes Gisborne, Hawkes Bay, Marlborough) (Government of New Zealand)	JS Text amended to regions
G-11-165	A	30	21	30	22	The reason for the likelihood of "increasingly challenging" needs to be expressed. (Government of Australia)	MH text revised.
G-11-166	A	30	46	30	52	The authors should consider whether to include examples of adaptation activities and programs that are being undertaken by individual States and Territories. (Government of Australia)	JS Reference to Environment Bay of Plenty Coast Care programme made NH and RW: disagree, not appropriate for section 11.5 which discusses constraints and opportunities. Current adaptation activities are discussed in 11.2.5
G-11-167	A	31	46	31	50	As a further example of adaptation of water supplies in cities, the authors could mention the water restrictions imposed in many states and territories. (Government of Australia)	BB done
G-11-168	A	32	1			Figure 11.4: Are these natural streamflows? If so, is there an explanation for the sharp jump around 1975? (Government of Finland)	BB: natural run-off now specified in text
G-11-	A	32	49	32	49	For accuracy insert "National" before "Sea-Change Taskforce".	KH Done

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169						(Government of Australia)	
G-11-170	A	33	3	33	49	The box on "Climate change and the Great Barrier Reef" needs to be reviewed to ensure that it is consistent with the findings reported throughout the WG2 report. (Government of Australia)	LH: Meeting in Cape Town on the coral reef cross-cutting theme was aimed at ensuring consistency
G-11-171	A	33	3			Box on the GBR could be shortened somewhat. (Government of Finland)	LH & OH-G: length considered appropriate
G-11-172	A	33	24	33	26	This description of disease incidence implies that the impacts of disease on the GBR are severe and widespread. Neither of these implications is correct. Work by Bette Willis and colleagues has found an increase in occurrence of some diseases, but these are highly localised. There is no evidence to support claims or implications that disease is currently causing ecologically-significant impacts to the GBR generally. Suggest the following wording: "The 2002 event was followed by localised outbreaks of coral disease, with incidence of some disease-like syndromes increasing by as much as 500% over the past decade at a few sites. While impacts of coral disease on the GBR ecosystem are currently minor, experiences in other parts of the world suggest that disease has the potential to be a major threat to GBR reefs." (Government of Australia)	LH & OH-G text modified as suggested
G-11-173	A	33	26	33	26	Authors should confirm that 500% is correct. (Government of Australia)	LH & OH-G text modified
G-11-174	A	33	39	33	40	This should be referring to "recovery time from a severe bleaching-induced mortality event", rather than "recovery time from a severe bleaching event" (Government of Australia)	KH Done
G-11-175	A	33	39	33	40	These time estimates are both unjustifiably precise, and not entirely accurate. Suggest the following wording: "significant recovery...is unlikely to occur for many years to decades, with full recovery requiring several decades." (Government of Australia)	LH & OH-G text modified
G-11-176	A	34	1	34	1	Should the title include mention of sustainable development, as in the outline? (Government of Finland)	KH Done
G-11-177	A	34	12			Figure 11.5: Nice figure indeed! (Government of Finland)	KH Noted
G-11-178	A	34	14	34	14	Fig 11.5. This diagram consolidates information well from section 11.4 and 11.5, except that virtually no mention was made in these sections regarding "insurance" / insurance industry. The diagram shows insurance as having very low coping range, and similarly low adaptive capability. There is no discussion on this matter, there should be some clarification of why it has low adaptive capacity. (Government of Australia)	TC, BF & KH: Insurance deleted.

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
G-11-179	A	34	36	34	36	The statement that adaptive capacity of human systems is likely to be limited if warming exceeds 2 C this century requires stronger support. This seems a low threshold for human systems. The statement appears to be inconsistent with figure 11.5, which suggests a threshold closer to 3 C. (Government of Australia)	BF: Overall thrust accepted. Text revised .
G-11-180	A	35	5	35	5	Insert 'identified' in front of 'key hotspots'. (Government of Australia)	KH Done
G-11-181	A	35	18	35	18	An explanation of the use of the term "Catastrophic species loss" in Figure 11.6 is necessary. 'Catastrophic' is a value judgement and the text on the Wet Tropic should be reworded to 'Multiple species extinctions predicted for upland endemic vertebrates at moderate levels of warming'. There is a lot of published work on species extinctions in the Wet Tropics, little of which is cited in the report. See, for example, 'Environmental Crisis: Climate Change and Terrestrial Biodiversity in Queensland' (Krockenberger, Kitchnig and Turton eds) published by the Rainforest CRC and references therein. The chapter would be strengthened by citing more of this literature. (Government of Australia)	LH: Wording modified as suggested. The primary references for predictions of species extinctions in the Wet Tropics are Williams et al 2003 and Shoo et al 2005 and these are both cited several times in the Chapter. The Krockenberger et al report is not a primary source.
G-11-182	A	35	40	35	40	Insert 'identified' in front of 'key hotspots'. (Government of Australia)	KH Done
G-11-183	A	35				Figure 11.6: For New Zealand, please replace "eastern lowlands" with "eastern regions" (as includes Gisborne, Hawkes Bay, Marlborough) (Government of New Zealand)	JS Done
G-11-184	A	35				Fig 11.6 - text box beginning "Queensland Wet Tropics...." - statement "Loss of coral reefs" is not accurate or meaningful. Suggest: "Deterioration of coral reefs". (Government of Australia)	KH Done
G-11-185	A	36	3	36	31	The authors should consider whether they regard the following as critical enough to be included in section 11.8.1 on research priorities: identification of terrestrial, freshwater and marine species (including key indicator species) that will be most vulnerable to climate change; assessment of the potential for native species to become invasive as a result of climate change; identification of the properties or processes that confer resilience to climate change on species and ecosystems, especially as these relate to practical management solutions; the development of improved modelling and other assessment methods; identification of the component responses and sensitivities of species and ecosystems to natural between-year variation in climate; and identification of the species, communities and ecosystems that would benefit most from targeted action. (Government of Australia)	LH: suggestions added to research priorities in 11.8.1

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G-11-186	A	37	13	37	15	Is there also need for integrated assessment across sectors. This has certainly been flagged as a priority in European countries, where effective urban and regional land use planning requires simultaneous consideration of climate-related hazards across different sectors (soemtimes with conflicting outcomes). Another related issue that is probably of importance in Oz/NZ, as elsewhere, is the need for mainstreaming of climate change into environmental impact assessments and other regional planning and development schemes. (Government of Finland)	KH: Agree. Inserted relevant text in 11.8.2 on page 36.
G-11-187	A	41	43	41	43	The South Australian Government department should be referred to as “Department for Environment and Heritage”, not ‘of’. (Government of Australia)	KH EndNote reference modified
G-11-188	A	48	42			"NZCCO of the " is superfluous (see e.g. p48 line 35) (Government of New Zealand)	KH modified EndNote reference modified
G-11-189	A	49	38			To be consistent with other references this should be referenced under "MfE, 2003" (Government of New Zealand)	KH modified EndNote reference modified