

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
1	58558	25	0	0	0	0	This is a clear and well-written chapter with arguments and assessments easy to follow and well illustrated. (Janice Lough, Australian Institute of Marine Science)	Thank you
2	60128	25	0	0	0	0	Define Australian State abbreviations at first use (e.g. NSW on page 11, line 3 and table 25-4). (AUSTRALIA)	All States are now spelled out in full in the text.
3	60129	25	0	0	0	0	There seems to be no section on impacts/adaptation for transport infrastructure (heatwaves on rail line buckling & road surfaces) see as a starting point <a href="http://www.csiro.au/science/adapt-heatwave-rail">http://www.csiro.au/science/adapt-heatwave-rail</a> and <a href="http://www.nccarf.edu.au/conference2010/wp-content/uploads/Minh-Nguyen.pdf">http://www.nccarf.edu.au/conference2010/wp-content/uploads/Minh-Nguyen.pdf</a> (AUSTRALIA)	We decided against a dedicated section due to the limited quantitative information available. However, impacts on transport infrastructure is included in the coastal box (25-2) and material has been added in the urban box (25-9) and is also included in the synthesis (25.10.2). We believe this presents adequate coverage given the relatively limited range of detailed research.
4	60218	25	0	0	0	0	While the description of the Australian water policy situation is reasonable in Chapter 25, throughout the document poor English expression and grammatical errors compromise readability and obscure meaning across significant portions of the text (see examples provided for Chapter 3 below). Further editorial work is required to improve the quality of expression so that a comprehensive review can be undertaken. In the manuscript's present form it is difficult to evaluate findings and assess the associated evidence base. For example, in Chapter 3, the generalisations made about the relative magnitude of ecological impacts of climate change versus abstraction/dams (page 3; lines 27-29) are extremely broad, are not convincingly supported by quantitative evidence and do not necessarily align with the Australian context. (AUSTRALIA)	This comments does not seem to relate to Chapter 25. Nonetheless we have paid general attention to further improve the language in our chapter, based on this and other comments.
5	62698	25	0	0	0	0	Overall I think this chapter is very well put together and covers the relevant issues thoroughly. From a social science perspective it clearly highlights what we don't know and where future research efforts should go. (Paula Blackett, Agresearch ltd)	Thank you
6	63021	25	0	0	0	0	The SOD of Chapter 25 is a major improvement over the FOD - overall this chapter is in good shape for a Second Order Draft. (David Wratt, NIWA, New Zealand)	Thank you
7	65066	25	0	0	0	0	This chapter is well written and structured. Great job! The Table of Contents shows that sections 25.5 to 25.8 have different sub-headings, i.e. some include observed impacts and some don't. It would be good to have a consistent structure, with at least a brief sub-section on observed impacts in each. (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	We have tried to follow a consistent structure for all sectoral assessments, but in some cases the material under observed impacts was too limited to warrant its own heading. Where this is the case, we used "observed and projected impacts" to indicate the consistent structure.
8	69746	25	0	0	0	0	There are many long and complex sentences, some of which are also ambiguous. Others become ambiguous due to the difficulty of reading them. Suggest simplifying them, including breaking them into two or more sentences. (NETHERLANDS)	We have made efforts to simplify the wording in the final draft, including reducing length of sentences.
9	70633	25	0	0	0	0	We congratulate the TSU and Chapter 25 authors on the production of the Second Order Draft for AR5 and thank you for all the hard work. (NEW ZEALAND)	Thank you
10	70634	25	0	0	0	0	Overall this chapter reads well and contains useful and well balanced information (NEW ZEALAND)	Thank you
11	70635	25	0	0	0	0	A general comment is that some clear statements on what we know and what we dont know is missing from this chapter for some of the variables.For example, it lacks information on best estimates of acidification in Australasian waters (NZ) and could reference required monitoring identified by Statistics New Zealand's Environmental Domain Plan (NEW ZEALAND)	We don't see sufficient benefit in duplicating the detailed analysis of WGI in our chapter, but we now provide clear cross-references to the WGI assessment (observations and projections) in 25.2 and again in 25.6.2.1.
12	70636	25	0	0	0	0	We'd like to see more explicit discussion of the potential of scientific research to aid in developing mitigation and adaptation strategies - particularly in relation to areas in which projections cannot yet be made with at least medium confidence, such as impacts on coastal infrastructure and low-lying ecosystems if sea level rise exceeds 1m; changes to tropical cyclone and severe storm occurrence in Australasia; impact on agricultural economic performance of drought in north and east of NZ. Specific sections where research is particularly warranted are 25.10.3 Challenges to Adaptation in Managing Key Risks, and Limits to Adaptation, and 25.11 Filling Knowledge Gaps to Improve Management of Climate Risks. (NEW ZEALAND)	Space constraints preclude us from expanding the section on knowledge gaps and research needs. The authors also feel that a comprehensive assessment of research needs is outside their scope and mandate. The existing section 25.11 provides clear entry points for initiating a robust process to identify knowledge needs and research priorities, if governments wish, following completion of the AR5.

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13	70637	25	0	0	0	0	There doesn't appear to be sufficient emphasis on the potential economic impacts for NZ, with a largely biologically-based economy, of changes in rainfall, soil conditions, pest habitat/conditions for growth/alterd distribution (25.6.1.2), etc. (NEW ZEALAND)	We agree on the potential economic importance of biophysical impacts, but the literature on economic impacts of climate change in New Zealand is extremely limited. We have assessed the available material. However, the comment does point to an important knowledge gap around economic impacts, which is now included in section 25.11.
14	70638	25	0	0	0	0	Support the decision to structure the chapter with the sections 25.3 and 25.4 ahead of sections 25.5-25.8. Reading these sections first helps provide context to sections 25.5-25.8. (NEW ZEALAND)	Thank you, the structure has been maintained in the final draft.
15	70639	25	0	0	0	0	Support the structure i.e. leading with adaptation (NEW ZEALAND)	Thank you, the structure has been maintained in the final draft.
16	75002	25	0	0	0	0	A number of comments to this chapter seek additional information. In many cases, this is asking the authors to move from simple review of the literature to an assessment of the state of our understanding. (UNITED STATES OF AMERICA)	Noted, and taken into account in revisions in response to subsequent specific comments (e.g. section 25.8.1.2).
17	75003	25	0	0	0	0	In general, it may be worthwhile to point out or comment upon major differences from and advances since AR4. What are the key differences in thinking/findings that should be elaborated upon? (UNITED STATES OF AMERICA)	Noted and taken into account in revisions where relevant in several sections (25.4.2, 25.8.1, 25.10.2).
18	75004	25	0	0	0	0	It's understandable for the authors to cite monetary figures in their national currency, but this makes comparisons of financial impacts across countries and regions difficult, both within this chapter, and throughout the report. The currency of USD\$ was used in other chapters. Recommend using the same here. (UNITED STATES OF AMERICA)	Based on guidance from the TSU, we have maintained the national currency in our chapter.
19	75005	25	0	0	0	0	The document would benefit from greater consistency in design of tables and figures. There are many instances where use of colors, symbols and layout vary and seem ill-designed for the purpose of this document. (UNITED STATES OF AMERICA)	Design of Tables and Figures in the final draft will be managed by the TSU, which will ensure greater consistency and readability.
20	75006	25	0	0	0	0	There were numerous references to climate models, and discussions on changing climate and its effects on ecosystems, yet there was no discussion on ecosystem modeling tools. Australia has advanced ecosystem modeling capabilities that have been applied globally, e.g. Atlantis (CSIRO) was rated the best in the world by the FAO. These tools may also be worth noting in this chapter. (UNITED STATES OF AMERICA)	We discuss models where the model choice is known to affect the conclusion regarding climate change impacts, adaptation and vulnerability, but it is outside the mandate of our chapter and certainly outside our space constraints to assess modelling tools in their own right.
21	75007	25	0	0	0	0	While there is some consideration of the impacts of climate change vis a vis relationships with other regions, more attention could be paid to: -impacts on the fishing sector, particularly due to expected impacts on Antarctic fishing -role of Australia and NZ in the Pacific Islands, including fishing and mining -possible impact of climate refugees from Pacific Islands and parts of Asia. There is some mention of this, but perhaps more is merited. -the authors mention a high growth rate for both countries, but don't mention whether climate change may affect migration policy. In contrast to some other chapters, this one tends to keep the discussion at a rather abstract level. More data and more concrete examples would balance this tendency. (UNITED STATES OF AMERICA)	We believe we have covered these issues to the extent that there is actual literature, and within the overall space constraints. Migration is covered in 25.9.2, but any changes in migration policy are conjecture not backed by literature. The same applies to the role of Australia and NZ in the Pacific Islands. Impacts on the fishing sector in the Antarctic are covered in relevant other chapters, but we found no literature to explicitly link climate-induced changes in these regions to the economy of Australia and NZ. The lack of literature on flow-on effects is noted as key knowledge gap in 25.11.
22	75008	25	0	0	0	0	While there is some description and discussion of the likely impacts on biodiversity and ecosystems, the chapter has only limited discussion of the impacts on essential ecosystem services. This is particularly pertinent to Australia and NZ which have very significant direct dependence on numerous ecosystem services. There is some discussion of impacts on fisheries and impacts on tourism in the Great Barrier Reef region. However, impacts on flood control capacity of wetlands and forested areas, coastal erosion and flooding control by coastal wetlands and mangroves, non-pelagic fisheries, coastal water quality maintenance by coastal ecosystems, the tourism value of other areas (e.g. SW Australia) and other services are not described. While the Australian/NZ specific literature may be limited on the impacts on these ecosystems, literature on the likely impacts of climate change on these system types is available and can indicate likely impacts in the region. (UNITED STATES OF AMERICA)	We included sentence at the end of 25.6.1.3 about ecosystem services, and included a cross-reference to the new Box CC-EA, but also note lack of quantitative literature. Further cross-reference to the Box CC-EA has been included in 25.4.3, and the text in Box 25-9 has been modified slightly to bring out the link to ecosystem-based adaptation more strongly, including cross-reference to Box CC-EA.

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23	83618	25	0	0	0	0	1) Overall -- The chapter team has developed a robust, compelling, superbly rich second-order draft. The emphasis throughout on adaptation, not just impacts, is very effective, especially the distinctions made between incremental and transformational adaptation. (Katharine Mach, IPCC WGII TSU)	Thank you.
24	83619	25	0	0	0	0	2) Coordination across Working Group II -- In developing the final draft of the chapter, the author team should continue to ensure coordinated assessment, both in the chapter text and at the level of key findings. Cross-references to other chapters should continue to be made--to specific sections of other chapters--with overlaps reduced and assessment harmonized wherever possible. (Katharine Mach, IPCC WGII TSU)	Thank you, we have added further cross-references to other chapters where possible, although in many cases this did not necessarily reduce space since the local detail was still necessary for the chapter to remain relevant to a regional audience.
25	83620	25	0	0	0	0	3) Harmonization with the Working Group I contribution to the AR5 -- The chapter team should ensure that all cross-references to the Working Group I contribution are updated based on the final drafts of the volume. (Katharine Mach, IPCC WGII TSU)	Thank you, we have cross-checked all references to WGI material.
26	83621	25	0	0	0	0	4) Report release -- The chapter team should be aware that the final drafts of the chapters will be posted publicly at the time of the SPM approval, before final copyediting has occurred. Thus, the chapter team is encouraged to continue its careful attention to refined syntax and perfected referencing. (Katharine Mach, IPCC WGII TSU)	Thank you, this has been taken into account in our final revisions and quality control.
27	83622	25	0	0	0	0	5) Parenthetical presentation of calibrated uncertainty language -- Wherever possible, the chapter team should consider presenting calibrated uncertainty language within parentheses at the end of sentences to maximize the clarity and directness of statements. That is, sentences beginning with "there is high confidence" should, preferably, be edited so that, instead, "(high confidence)" is presented at the end of the sentence. (Katharine Mach, IPCC WGII TSU)	We have mostly followed this suggestions in our revisions, except in instances where we felt that readability was clearly better if the calibrated uncertainty language was used within text rather than within brackets.
28	83623	25	0	0	0	0	6) Characterization of future risks -- The chapter team's approach to characterizing key regional risks within the chapter's typology and with clear indication of the potential for and limits to risk reduction through adaptation is a fantastic means of communicating core considerations for the region. Where possible, the chapter team may wish to consider the framing of differing eras--for the next few decades versus the 2nd half of the 21st century. Within 25.10, the chapter team could consider brief summary of its assessment with respect to these eras of climate responsibility and climate options, potentially also using the graphical summary of sectoral risks, which is being updated prior to the 4th lead author meeting. (Katharine Mach, IPCC WGII TSU)	We have included the revised and harmonised key risks diagram to replace the SOD version of our key risks Table 25-8. The discussion in 25.10 now points to the two different eras where relevant, either by explicit use of the terminology (especially in the caption of Table 25-8) or by reference to different time horizons for the key risks (in 25.10.1 and 25.10.2).
29	83624	25	0	0	0	0	7) Informing the summary products -- The findings of chapter 25 have provided important framing for understanding findings emerging more broadly across the report. The chapter team is encouraged to continue its careful attention to core themes: the degree to which extreme events have demonstrated adaptation deficits and vulnerabilities to date and may relate to future risks, the nature of adaptation experience to date, the synergies and trade-offs among mitigation, adaptation, and sustainable development within and across regions, and limitations in terms of understanding the human and socio-economic dimensions of future vulnerability. (Katharine Mach, IPCC WGII TSU)	Thank you, and we have continued our attention to the core themes pointed out by the reviewer in our revisions to the final draft.
30	85003	25	0	0	0	0	GENERAL COMMENTS: I congratulate the author team for all their work on a very interesting and informative SOD. Please see my detailed comments for a small number of suggestions related to ES findings and traceable accounts and specific clarifications. (Michael Mastrandrea, IPCC WGII TSU)	Thank you; the specific comments have been addressed.
31	85004	25	0	0	0	0	SUMMARY PRODUCTS: In preparing the final draft of your chapter and particularly your executive summary, please consider the ways in which your chapter material has been incorporated into the draft SPM and TS. For Chapter 25, this includes presentation of observed impacts and vulnerabilities in section A.i, adaptation experience in section A.ii, iterative management of risk in section B.i, sectoral and regional risks in section C.i, and interactions between adaptation and mitigation in section D.ii, as well as related figures and tables. Are there opportunities for presenting chapter findings and material in a way that further supports broad themes highlighted in the summary products and that facilitates additional cross-chapter synthesis in specific findings or figures/tables? Do the existing summary product drafts suggest additional coordination that should occur between Chapter 25 and other chapters at LAM4? (Michael Mastrandrea, IPCC WGII TSU)	These recommendations have been taken into account in the revisions for the final draft of this chapter, including adoption of the common key risks representation, contributions of key findings to chapters 16, 18 and 19, and careful checking of statements that are most likely to be used in the summary products.
32	56999	25	1	1	1	1	Do we have a region called "Australasia"? Or is it "Australia"? Further, the tile "Australasia" is hanging. Let the title capture the sprit of the underlying text in the entire document. In otherwords, the title always prepares the reader what he expects in the text of the document (KENYA)	Region has been decided by governments, and it is defined clearly in 25.1. No change made.

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33	60130	25	2	17	2	26	Needs to discuss impacts of projected increased incidence of extreme weather events on Australasia, in particular Australia.. (AUSTRALIA)	The impact of projected changes in extreme weather events is covered already in the executive summary (under the 'key risks'), and extensively in the underlying sections. We feel that no specific further change is warranted.
34	70640	25	2	49	2	53	Good. Emphasise "Observations show that the regional climate is changing" (NEW ZEALAND)	We feel the current wording is clear and appropriate and would not benefit from this addition. No change made.
35	69747	25	3	1	3	9	Re: projected annual rainfall changes. Different confidence levels between ES and body of Chapter. (NETHERLANDS)	This has been corrected; the confidence levels are now consistent between 25-1 and the ES.
36	69748	25	3	1	3	9	Executive Summary states TCs will increase in intensity but decrease in numbers, with low confidence. Chapter states numbers will stay similar or decrease, and that increases and decreases are projected for NZ, with low confidence. (NETHERLANDS)	The ES is now consistent with the text in Table 25-1. Note, the statement on NZ is with respect to cyclones, not tropical cyclones.
37	69749	25	3	1	3	9	The fire weather studies cited are only for southeast Australia, not most of southern Australia (NETHERLANDS)	Table 25-1 explains why the finding holds for all of southern Australia, which is the conclusion reflected in the ES. No change made.
38	69750	25	3	1	3	9	Projected changes to fire weather in the northeast of Australia are cited in the Chapter, but not the ES. Also, the NZ results are low confidence in the Chapter, medium confidence in the ES (NETHERLANDS)	In NE little change or decrease, and uncertain, hence not included in ES; NZ confidence rating is 'medium' in Table 25-1, consistent with the wording in the ES. No change made.
39	85234	25	3	1	3	9	Temperatures in New Zealand have remained almost constant since records began; see Gray V R 2011 The Seven Station Series. Energy and Environment 22 (40) 428-439'. Australia is similar. The projections are all wrong (Vincent Gray, Climate Consultant)	The stated reference (Gray, 2011) uses a flawed analysis which does not account for changes in station locations. The information presented in Mullan et al 2010, which does take into account station location changes, shows a statistically significant increase in temperature over the last 100 years. Australian temperature also shows a statistically significant temperature increase over the last 100 years (Fawcett et al., 2012). No change made.
40	70641	25	3	3	0	0	"flood risk" is not a meteorological hazard in the way the others are. Suggest "flood likelihood" (NEW ZEALAND)	Accepted in principle; we replaced "and flood risk" with "related to flood risk" to indicate that rainfall is related to but not the sole driver for changes in flood risk.
41	65067	25	3	3	3	6	Will increasing extreme rainfall occur in regions where annual average rainfall is expected to decrease? What about snow? (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Details are given in Table 25-1, row on extreme precipitation. We say "future increases in intensity of extreme daily rainfall are more likely where mean rainfall is projected to increase". This is a low confidence statement, so not brought into ES. Statement on snow has been added to the ES.
42	67806	25	3	4	3	4	Worth noting here that rainfall (and runoff) has already decreased significantly over the past few decades in southwestern Australia (as noted on p6) (Stuart Bunn, Griffith University)	Decreasing rainfall is already stated in the preceding paragraph, so not repeated here. Runoff is implied and not included to keep the ES concise.
43	75009	25	3	4	3	6	The passage suggests that there is high confidence in drying through the south of Australia and north-east New Zealand, which does not agree with the following material on Pg. 6, Lines 30-36. It is suggested that the authors consider more careful wording to avoid this confusion. (UNITED STATES OF AMERICA)	The wording has been revised to be as clear as possible, and consistent with 25.2 and 25.5.
44	85005	25	3	6	3	7	Table 25-1 states that tropical cyclones are projected to stay similar in number or decrease. (Michael Mastrandrea, IPCC WGII TSU)	The ES is now consistent with the text in Table 25-1.
45	60131	25	3	13	3	13	Please state what baseline the 2 degree global warming is based on. (AUSTRALIA)	This is relative to current levels, wording revised accordingly.
46	75010	25	3	15	3	15	For the non-expert, please explain the distinction between "transformative adaptation" and regular adaptation. (UNITED STATES OF AMERICA)	This is covered in the glossary, we are unable to include this definition here in the ES.

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47	85006	25	3	15	3	15	In what sense are "demands" meant here? Do you mean "needs" or "public calls" for transformative adaptation, or something else? (Michael Mastrandrea, IPCC WGII TSU)	We meant "needs" and changed the text accordingly.
48	70642	25	3	25	0	0	Can this be updated to include the NZ drought in 2012-2013? (NEW ZEALAND)	The occurrence of the 2012-13 drought is now included, but its economic implications are not quantified in the ES since we don't consider available material to be sufficiently robust and comprehensive for the total impact of the 2012/13 drought, given the literature cut-off date of 31 August 2013. Some more details on the impacts of the 2012/13 drought to date are given in the body of the chapter though, in a revision to Box 25-5.
49	70643	25	3	26	0	0	Mental health problems have also been described in the NZ 2012-2013 drought (NEW ZEALAND)	We have not been able to find robust publications documenting mental health problems associated with drought in New Zealand. Stress is documented, but 'mental health problems' is a stronger term that would require clearer evidence than is available. On balance, we decided to delete reference to mental health problems entirely from the ES to keep the sentence readable.
50	65068	25	3	28	3	28	include health. (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Correct; health has been included in the bold and supporting text.
51	70644	25	3	28	3	29	The word "projected" should be followed by the appropriate time frame. (NEW ZEALAND)	The qualitative statement given here applies to changes occurring throughout the 21st century, so we do not feel that a specific time frame would be appropriate here.
52	70645	25	3	29	3	35	OK but nothing specific on ocean pH (NEW ZEALAND)	Given the limited region-specific studies on the impacts of ocean acidification, we do not feel that a specific mention is warranted in the ES. A specific reference to ocean acidification is made in the bold text.
53	69751	25	3	31	3	31	Text states freshwater reduced in rivers in the eastern and northern parts of NZ, but more specifically this should read "north of the south island, and east and north of the north island" (NETHERLANDS)	Revised text in ES to read "north-east of the South Island, and the east and north of the North Island" to be consistent with text in main body.
54	69752	25	3	34	3	34	Text states endemic species are a risk of extinction but we find no reference to this, only that native species face this risk. (NETHERLANDS)	We replaced 'endemic' with 'native', even though many native species are also endemic.
55	85007	25	3	35	3	35	Section 25.7.1 focuses on forestry, and its relevance to this finding is not immediately clear. (Michael Mastrandrea, IPCC WGII TSU)	That was a mistake, reference to the forestry section has been deleted.
56	69753	25	3	37	3	41	ES states spring pasture growth would increase and be beneficial if it can be utilised. The Chapter states "projected increases in early spring pasture growth posed management problems in maintaining pasture quality, yet, if these were met, animal production could be maintained or increased" (NETHERLANDS)	We feel the two formulations are sufficiently consistent, but the ES wording is appropriately more concise. No change made.
57	60132	25	3	40	3	41	This statement is very definitive, and instead should have a confidence statement. (AUSTRALIA)	The bold sentence has a confidence statement. We do not feel that the statement about spring growth is unduly definitive, since it is clearly conditional on the early growth being utilised.
58	70646	25	3	43	3	43	I am not sure that adaptation and adaptation planning is happening in the marine environment in NZ. The absence of this is a key point. (NEW ZEALAND)	This paragraph provides examples and is not intended to be an enumeration of all sectors; included "some" before "planning processes" to make this clear. Details on marine adaptation responses are mentioned in the marine section (25.6.2).

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59	60133	25	3	43	3	48	Comment relates to terminology used to describe adaptation planning in Australia; "albiet mostly conceptual rather than implementation level (high agreement, robust evidence)" and "implementation of specific policies remains piecemeal, subject to political changes, and open to legal challenges". These statements are generalist in nature and provide little evidence in their supporting references. Consideration should be given to the relative progress of adaptation planning in Australia and seek only to highlight areas for improvement (i.e along the lines of "adaptation planning is becoming embedded in planning processes, with increased implementation yet to be widely applied" and "many areas of adaptation planning, such as sea level rise and water security are incorporating climate change risk into their management regimes, however, further progress could be acheived at consistency across jurisdictional level policy.") (AUSTRALIA)	Rejected; we disagree that we provide little evidence for our conclusions, as ample discussion and evidence is provided in 25.4.1, 25.4.2, and Box 25-1. We consider it our duty as part of an unbiased assessment to point out current limitations, whereas pointing to specific areas of improvement could be seen as policy prescriptive and singling out specific measures while ignoring others. The supporting text provides many positive examples of current practice.
60	65069	25	3	44	3	44	Can "high agreement, robust evidence" be translated into a confidence rating? (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	We re-evaluated the evidence for our conclusions and decided that "high confidence" is warranted based on the assessment in 25.4.1, 25.4.2 and Table 25-2.
61	60134	25	3	46	3	46	It is not clear whether this statement refers to planning for sea level rise in Australia, or excluding Australia. Suggest re-wording. (AUSTRALIA)	Text has been revised to reduce this ambiguity.
62	70647	25	3	50	4	2	I was confused by the vocabulary used in terms of: 'impacts', 'adaptation' and 'vulnerability' in Chapter 25 as a whole. The distinction is very important for policymakers to immediately understand when they pick up the document. I suggest including a reference to the definitions at the start of the SPM. (NEW ZEALAND)	The terms are used consistent with their definition in the glossary, and we do not feel that a cross-reference to the glossary is appropriate within the ES.
63	70648	25	3	53	4	2	Support these summary statements. (NEW ZEALAND)	We assume that this comment means that the New Zealand government supports these statements, rather than asking the authors to support the statements (which is provided in the references at the end of the para). No change made.
64	85008	25	4	1	4	2	The distinction between differing values and beliefs related to risk and differing attitudes towards risk could be clarified slightly better here. (Michael Mastrandrea, IPCC WGII TSU)	The wording has been amended to clarify the difference between beliefs, values, and attitudes to risk.
65	69754	25	4	2	4	2	Suggestion: reference table 25-2 because it is highly relevant to this claim (NETHERLANDS)	Agreed, reference has been included.
66	75011	25	4	4	4	6	Suggest that the authors include mention of the social challenges faced by indigenous groups in this header sentence. This is mentioned in the following text, but social disadvantages and racism present more challenges to indigenous groups than does their reliance (if substantiated) on natural resources. (UNITED STATES OF AMERICA)	We believe that this is covered adequately in the current text as 'Social status and representation...' etc.
67	69755	25	4	4	4	11	Please consider improving this paragraph with reference to the traditional knowledge of the indigeonous people of environmental processes and hazards (reference to Maori knowledge- p30 line20- reference to Australian indigenous not found). (NETHERLANDS)	This is covered in 25.8.2.1, but it forms only a part of the overall vulnerability matrix, and hence we did not believe it should be singled out in the ES.
68	69756	25	4	8	4	9	Suggestion: make a reference to economic opportunities for indigenous people in relation to forestry as it is not mentioned in either section. (NETHERLANDS)	The underlying text in 25.8.2.2 has been amended to make this explicit; and we note that the end of 25.8.2.1 already contained this observation for Australian indigenous peoples.
69	69757	25	4	19	4	21	Please check the interpretation of the text: the original text says evidence is limited about the ability of reefs to respond to CC, but the claim is that a reef's ability to respond is limited. Is the original text wrong? Chapter states robust evidence. (NETHERLANDS)	The wording has been revised and made consistent across the different sections.
70	65070	25	4	21	4	21	mention projected decrease in snow here (very high confidence) (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Reference to rising snow lines has been added to the ES.

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71	60264	25	4	24	4	50	This section has attempted to distinguish difference levels of threat and ability to treat them. It does however run the risk that the impacts from line 44 will be given lesser priority by policy makers reading this section. Of particular concern is the way the sea level section has been written. It is tagged to a 1 metre of SLR. However it is expected in low lying coastal settlements that infrastructure like stormwater, water reticulation and waste water could be affected with around 0.5m SLR and this is noted in the main text on page 36 L15 with reference to Baynes 2012. Similar evidence can be found in Hart, G., (2011) Vulnerability and adaptation to sea-level rise in Auckland, New Zealand. New Zealand Climate Change Research Institute, Victoria University of Wellington, Wellington, New Zealand, p. 67. The problem with the 1 metre qualifier is that it will be perceived as a distant threat which could stop decision-makers considering the impacts of lower levels of sea level rise. I suggest that an additional risk be added to the section starting at L 24 on page 4 that uses similar wording to the first bullet point about flooding. RElated to this issue is the impact of coastal storms on elevated sea level which could also be acknowledged so teh ful nature of sea level ris is understood by the reader. Many people think that SLR is a slow onset impact but the damage is likely to occur first with groundwater rising refer Bjerklie, D.M., Mullaney, J.R., Stone, J.R., Skinner, B.J., Ramlow, M.A., (2012) Preliminary Investigation of the Effects of Sea-Level Rise on Groundwater Levels in New Haven, Connecticut. U.S. Geological Survey, p. 46. AND McGranahan, G., Balk, D., Anderson, B. (2007) The rising tide: assessing the risks of climate change and human settlements in low elevation coastal zones. Environment and Urbanization 19, 17-37. (Judy Lawrence, PS Consulting)	Thank you for this insightful comment. The wording has been revised to more clearly recognise that even though damages would escalate towards the upper end of the range, they are non-trivial even for lower amounts of sea level rise. The wording that characterises impacts that depend on climate variables with particularly wide ranges of future outcomes has also been adjusted to ensure consistency with this now more nuanced description. We do not agree that sea level rise should be listed twice, we believe the modified wording sufficiently addresses this comment.
72	65071	25	4	25	4	25	transformative adaptation is used here for the third time in the Summary, but will most readers understand what this means without digging into the chapter? Some readers may not realise that there are other types of adaptation, e.g incremental, so perhaps transformative adaptation should be defined when it is first used on page 3 (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Transformative adaptation is defined in the glossary, and we do not believe that it would help the readability of the ES to include definitions or references to the glossary.
73	60135	25	4	32	4	34	Statement relating to water resource use in southern Australia facing "implementation constraints" seems unnecessary in the context of the information (political). Comment could say "water measures are increasing across sectors, progressing towards an improved management outcomes over time" (AUSTRALIA)	The wording has been amended to signal that there is a positive trend towards implementation of some options, at least in regions already facing shortages.
74	65072	25	4	36	4	36	replace "extreme temperatures" with "extremely high temperatures" (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	We now say "extreme high temperatures". 'Extremely' could be seen as having an alarmist connotation.
75	69758	25	4	41	4	41	Fire weather has been interpreted as wildfire - fire weather is one risk factor contributing to wildfire risk, along with amount of fuel load, state of fuel load and the presence of ignitions. (NETHERLANDS)	The identification of wildfire as a key risk is based on increasing fire weather together with changing land-use and increasing value of assets, and challenges to fire management. This is discussed in detail in Box 25-6. Hence we believe the identification of wildfire as key risk (rather than fire weather) is justified.
76	65073	25	4	43	4	43	decreased snow cover, depth and duration are projected with very high confidence (in my view), so there should be some comment about adaptation options for tourism, e.g. snow-making in Table 25-7 (noting that the impact on montane ecosystems is covered in lines 21-23) (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Snow cover is now mentioned under montane ecosystems; however, we don't find impacts on tourism to be a key risk (with reasons given in 25.7.5) and hence tourism is not included here in this list of key regional risks.
77	69759	25	4	44	4	51	There is a significant passage on page 17 about how coastal ecosystems may account for 39% of Australia's average national annual carbon burial. We think this is a very important fact and worth adding to the ES, TS and SPM. (NETHERLANDS)	The literature is very limited and mostly is not about climate change impacts; based on the limited evidence, we do not consider that this statement warrants elevation to the ES.
78	60136	25	4	46	4	50	This statement implies that sea level is only a problem if it exceeds 1m? A lot of low-lying areas will be vulnerable at sea level rise less than this (i.e. Kakadu, <a href="http://www.climatechange.gov.au/~media/publications/adaptation/kakadu-coast-full.pdf">http://www.climatechange.gov.au/~media/publications/adaptation/kakadu-coast-full.pdf</a> ). (AUSTRALIA)	The wording has been revised to avoid this impression, which indeed would not be correct.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
79	65074	25	4	51	4	51	include south-western Australia (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	This has been included, given the importance of SW Australia for wheat production and the projected drying trends, and discussed in the chapter. After further consideration, we decided to remove reference to NZ from this para since even though impacts could be significant, the literature does not permit a high confidence assessment of a substantial (and sustained) reduction in agricultural production in a strong drying scenario.
80	69760	25	4	51	4	51	Reference to "food production" seems alittle alarmist because we can only find reference to the effects of water availability on "agriculture production" which includes animal and human food production, fibre, biofuel production, etc. (NETHERLANDS)	We did not consider this alarmist given that agriculture production encompasses food production; nonetheless, the comment is correct and the wording has been changed to "agriculture production".
81	60137	25	4	51	4	53	The Murray Darling Basin statement relating to the need for increased trading and allocation to improve the resilience of the system; comment should be made to the current trading system or the reason why the authors state the need for enhanced trading participation as the comment currently portrays that the trading structure does not exist. (AUSTRALIA)	use of the phrase "more efficient..." clearly indicates that end-use efficiency, allocation and trading exist already; no change made.
82	69761	25	5	4	5	11	This paragraph cites section 25.7.5 (tourism) yet does not mention tourism. Was it left out by accident? (NETHERLANDS)	Tourism is now mentioned explicitly.
83	60138	25	5	13	5	21	Paragraph states that socio-economic dimensions "receive only limited attention and are rarely included in vulnerability assessments" and are "lacking". This is a fairly strong and generalist statement- the authors should give consideration to context (some vulnerability assessments do not need to explicitly consider these dimensions) and provide comment to the need for such consideration. The statement also refers to NZ sectors using narrow assumptions- could an example of a good vulnerability assessment be given? (AUSTRALIA)	The chapter provides an extensive discussion of the role and extent of socio-economic vulnerability assessments (25.3, various sectoral sections, 25.10, 25.11), and hence we feel the wording is fully justified. Another comment also fully supports the conclusion for NZ. The ES is not the place to provide examples of individual studies.
84	60265	25	5	19	5	21	This comment about the limited studies in NZ is an important statement that reflects the current situation. Studies are ad hoc done at the lowest level of government or by only a few sectors including the ski industry, tourism and agriculture. No comprehensive assessment of vulnerability of our major urban settlements has been done unlike in Australia. The Ministry of Buisness Innovation and Employment is currently funding 4 year research on Climate Impacts and Implications which may address some of this gap but it does not have a comprehensive national vulnerability focus. Some councils have attempted to design policies for coastal erosion and inundation some of which include sea level rise but only two or three have gone through to operative stage- Tasman District Council and Hawkes Bay regional council. Most have used low end SLR estimates and only one (Kapiti District) has included allowance for change but as a buffer and not using a rule that can update the levels as per the MfE guidance 2008 c as cited in the references. (Judy Lawrence, PS Consulting)	Thank you, we take this comment to support the current wording.
85	60139	25	5	29	29	6	The references to Australia's Indigenous people is inconsistent. Line 29 reports that Australia has a significant indigenous population, while page 29, line 6 states that Australia's indigenous population is small at 2.5%. (AUSTRALIA)	We removed the word 'significant' here and shifted all statements relating to indigenous population numbers and percentages here.
86	60140	25	5	53	0	0	Please clarify "potentially large losses in areas of rapid coastal development in south-eastern Queensland". Does this refer to beach fronts, water resources, bio-diversity etc.? (AUSTRALIA)	The phrase has been reworded, consistent with the discussion in the AR4.
87	75012	25	5	53	5	54	It is suggested that this sub-bullet specify what type of loss is anticipated, as per the previous two sub-bullets. (UNITED STATES OF AMERICA)	The phrase has been reworded, consistent with the discussion in the AR4.
88	60141	25	6	0	0	0	Should mention the most recent extreme climate events in Australia, using reports from the Australian Bureau of Meteorology and Climate Commission ( <a href="http://www.bom.gov.au/climate/current/statements/">http://www.bom.gov.au/climate/current/statements/</a> and <a href="http://climatecommission.gov.au/effects/grim-warning-on-extreme-weather-for-australia/">http://climatecommission.gov.au/effects/grim-warning-on-extreme-weather-for-australia/</a> ) (AUSTRALIA)	Examples of recent extreme events such as heat waves and floods are presented within the body of the chapter (e.g. Box 25.8 and section 25.8.1), and a specific note on the heat wave of 2012/13 in Australia has been included in Table 25-1. Due to space limitations we do not mention these additionally in section 25.2.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
89	75016	25	6	0	0	0	It is difficult to ascertain whether the summation placed on this page corresponds to the findings of WG1 without having access to the relevant documents. The summation on this page (summation of section 25.2) should be compared to WG1 findings to ensure consistency. (UNITED STATES OF AMERICA)	We have thoroughly checked relevant WG1 FGD chapters (Chapters 6, 11, 12 & 14) and are satisfied that statements in our chapter are consistent.
90	75017	25	6	0	0	0	This is a good summary of general observed and projected climate changes over the region. However, it does not address questions of attribution (for example, attribution of precipitation trend changes to long-term climate change), which are found in other regional IPCC chapters. There is the possibility of the different regional chapters being disjointed at best and contradictory in message and tone at the worst. A clear discussion of *what* can be attributed is warranted (i.e., can precipitation changes at regional scales be attributed to anthropogenic climate change?). (UNITED STATES OF AMERICA)	There are attribution statements in Table 25-1, associated with observed trends in the comments column. We have added the word "attribution" to the text in paragraph two as well.
91	60142	25	6	1	6	54	There is inconsistency with referencing statements. Some statements are referenced while others aren't. Please ensure all statements are referenced. (AUSTRALIA)	We agree that paragraph one is light on references, especially the last sentence, which we have now remedied. Other paragraphs are summarising information presented in Table 25-1, which includes detailed referencing.
92	63022	25	6	3	0	0	Section 25.2: I repeat the suggestion made in my review comments for the FOD that this section could include some material on observed and predicted changes in ocean chemistry/pH in the region - I suggested some references in the FOD review. While the authors have later in the chapter addressed my suggestions regarding comment on impacts of and vulnerability to ocean acidification (OA), I still think it would be useful to add something about observed and predicted OA changes in this section, as a basis for these later "impacts" comments (David Wratt, NIWA, New Zealand)	For information on ocean acidification, we refer readers to WG1 ch 6 (ocean changes, including acidification) - see Table 25-1 caption. We feel that the WG1 chapter is the most appropriate resource for the presentation of projected changes to ocean pH, and that there is insufficient information for commenting on projections specifically for the Australasian region in our chapter, which would largely duplicate the information in WGI. We have now included explicit reference to ocean acidification in the text of 25.2 though, with cross-reference to the relevant WGI chapter and section. Note, regional impacts of changes to ocean pH are discussed in section 25.6.2, which again cross-references WGI.
93	69762	25	6	5	6	6	The first sentence is not reader friendly as it uses two "includings". A suggestion "Australasia exhibits a wide diversity of climate, such as moist tropical monsoonal, arid and moist temperate, including alpine conditions". (NETHERLANDS)	The first "including" has been changed to "such as".
94	78292	25	6	5	6	52	No mention of observed and projected climate change on regional sea levels and local relative sea levels - other than a single mention on line 49 - which doesn't convey anything very useful i.e. it will include regional increases. Also are these departures from a global mean projection or is it just saying regionally they will also increase like rest of world? (Robert Bell, NIWA)	Detailed information regarding mean and extreme sea level changes (relative to global mean changes) is contained in Table 25-1. The information in Table 25-1 is consistent with WG1 Ch13. .
95	63023	25	6	8	6	9	I suggest this sentence be reworded as: "Tropical cyclones affect the northern parts of Australia, and more rarely ex-tropical cyclones affect some parts of New Zealand." Reasons - Cyclone Bola affected the Eastern North Island, the Wahine Storm led to substantial loss of life in a ferry disaster in Wellington Harbour and caused high winds and building damage in Christchurch (I was there!)- so I think restricting this comment to "Northernmost areas of New Zealand" is incorrect. (David Wratt, NIWA, New Zealand)	Change made as requested.
96	58545	25	6	10	6	12	Another good reference on the various climate drivers is Risbey JS et al (2009) On the remote drivers of rainfall variability in Australia. Monthly Weather Review 137: 3233-3253. (Janice Lough, Australian Institute of Marine Science)	Change made as requested.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
97	77575	25	6	11	6	12	The term 'Interdecadal Pacific Oscillation' is used extensively in the literature and is used extensively in the AR5 WG1 report. The 'PDO' is based on an EOF of North Pacific SST, whereas the IPO is based on near-global SST, including southern hemisphere SST. The PDO includes variability linked to the Aleutian Low which has little if any relevance for Australasia. The impact of the IPO on Australia and New Zealand has also been specifically investigated (e.g. Salinger et al. I. J. Climatol. 2001; Power et al. I.J. Climatol. 1999, J. Climate 2006; Climate Dynamics 1999). Therefore, if only one term is used here then suggest it should be 'IPO'. Alternatively both terms could be used. However 'PDO' is not used anywhere else in this chapter, whereas 'IPO' is, so this approach does not seem optimal. Suggest also referring to this relevant research (i.e. Salinger et al. etc.), as it complements research cited in WG2 SOD. (Scott Power, Bureau of Meteorology)	We have replaced PDO with IPO as suggested, and have added one of the suggested references.
98	85009	25	6	26	6	32	Given that attribution to anthropogenic climate change is mentioned in the executive summary, it could be useful to address here in the text, rather than only in Table 25-1. (Michael Mastrandrea, IPCC WGII TSU)	There are attribution statements in Table 25-1, associated with observed trends in the comments column. We have added the word "attribution" to the text in paragraph two as well.
99	65075	25	6	30	6	32	are these changes statistically significant, including the "decreases elsewhere" in New Zealand? (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Yes, changes at several sites are statistically significant to $p=0.05$ (Figure 3 lower panel, Griffiths 2007). No change made to text or table 25-1.
100	60143	25	6	31	6	32	Needs rephrasing, as based on results in Figure 1 some areas of NZ are white indicating less than very high confidence - text suggests very high confidence over all of NZ (AUSTRALIA)	The previous Figure 25-1 has now been deleted. In Table 25-1 the observed changes in precipitation over NZ are stated with very high confidence.
101	75013	25	6	32	6	36	This does not reflect the evidence presented in an accurate way. If the summation were taken as a whole, then projections would suggest medium confidence of decreases in Southern Australia, the northeast South Island, along with the eastern and northern North Islands of New Zealand on the annual average and increase in other parts of New Zealand. However, confidence in the southwest of Australia appears to be greater than this (Figures 25-2,25-3) for the CMIP5 simulations. This should be reflected in the text by a greater statement of confidence for this area, while other areas are placed appropriately in the medium category. It is also concerning that while the period of greatest confidence is mentioned in the subsequent paragraph (Pg. 6 Line 38-46), this is not qualified when discussing the annual average. (UNITED STATES OF AMERICA)	Sentence now highlights all areas that are projected to have rainfall changes with high confidence.
102	75014	25	6	38	6	46	The changes listed in this section suggest limited if any importance or significance over either the Murray-Darling Basin or Queensland in terms of an annual change. This contrasts with the relatively robust results of Irving et al. (Fig 25-3), which shows significant model consensus in decreases for winter and spring precipitation in some areas. The authors are encouraged to reconsider the section to ensure appropriate qualification is given to the results for the wider audience. This would include clarifying which parts of the results are robust, which are a result of uncertainty in some seasons, and which are more certain. The changes shown in Figure 25-3 appear to be robust according to the model consensus, however in Panel C (describing the winter) they appear less certain. (UNITED STATES OF AMERICA)	The robust changes are indicated in the previous paragraph, as well as the key uncertainty of rainfall change in eastern and northern Australia. Nevertheless, we have added additional information on seasonal change to provide increased information on the more robust results from Irving et al 2012.
103	57878	25	6	40	0	0	Annual river discharge in the Murray River is projected to decrease by 22.5% (Nakaegawa et al. 2013) which is consistent with precipitation decrease. Nakaegawa, T., A. Kitoh, M. Hosaka. 2013: Discharge of major global rivers in the late 21st century climate projected with the high horizontal resolution MRI-AGCMs -overview-. Hydrological Processes. 27. DOI: 10.1002/hyp.9831 (Toshiyuki Nakaegawa, Meteorological Research Institute)	The CMIP5 model results indicate a very large range in projected annual rainfall changes for the Murray Darling Basin, encompassing increased and decreased rainfall. We prefer to state this range, based on several models, than to state the results based on a single model. No change made.
104	60144	25	6	40	0	0	Reference is made to a pattern of projected annual change (in rainfall) of -5+- 22% in Queensland. Please clarify the confidence associated with these numbers. Please indicate the relevant numbers for the populous south-eastern Queensland region. (i.e. a single value for the largest state conveys limited information) (AUSTRALIA)	Southeast Queensland results are now given, based on Irving et al (2012). The uncertainty ranges for rainfall change given in this paragraph are now explicitly indicated to be the intermodel standard deviation.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
105	57879	25	6	46	0	0	Please see Figure 6a in Nakaegawa et al. (2013) for downscaled projections over New Zealand: significant increase in South Island. See also AR5 WG I since the same results from the 60km mesh AGCM have been used for a regional climate projections. Nakaegawa, T., A. Kitoh, M. Hosaka. 2013: Discharge of major global rivers in the late 21st century climate projected with the high horizontal resolution MRI-AGCMs -overview-. Hydrological Processes. 27. DOI: 10.1002/hyp.9831 (Toshiyuki Nakaegawa, Meteorological Research Institute)	Figure 6a in Nakaegawa et al (2013) is not based on downscaled projections, but on a 20km mesh AGCM. It is very difficult to interpret the regional differences in projected rainfall for NZ from this figure. No changes made.
106	70649	25	6	48	6	48	Don't we also have at least medium confidence that acification is occurring and will continue to occur in our waters as well? (NEW ZEALAND)	Ocean acidification is now included, and for quantitative details readers are referred to WG1 Ch 6, which is also in the Table 25-1 caption.
107	75015	25	6	48	6	49	Projected change in extreme rainfall is listed as at least high confidence in the narrative, yet marked as only medium confidence in Table 25-1 (Precipitation row, Direction of Projected Change column). (UNITED STATES OF AMERICA)	The narrative has been changed to be consistent with the table.
108	65076	25	6	49	6	50	what about drought? Increased drought frequency in southern Australia seems to be at least a medium confidence projection, associated with the rainfall projections noted in lines 33-34. However, uncertainty about projected changes in ENSO is also relevant. (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Projected changes to drought are indicated in Table 25-1 with medium confidence only, while the text on page 6 lists other projected changes of at least high confidence. Listing medium as well as high confidence statements would essentially repeat the table in the text, hence no change made.
109	60147	25	7	0	0	0	Update with the 2012 ABARES Commodity Statistics instead of 2010, see <a href="http://www.daff.gov.au/abares/publications_remote_content/publication_series/australian_commodity_statistics">http://www.daff.gov.au/abares/publications_remote_content/publication_series/australian_commodity_statistics</a> (AUSTRALIA)	The statistics have been updated.
110	60145	25	7	14	7	22	There are three different baseline mentioned in three paragraphs 1986-2005, 1986-2006 and 1980 - 1999, some comment possibly needed as to actual climate in these "baselines" vs longer term measured climate due to decadal and longer scale natural variability e.g. IPO (AUSTRALIA)	One of these baselines is not now used (1980-1999) as the relevant figure was deleted. The remaining two differ only slightly, and thus do not need the suggested commentary.
111	60146	25	7	41	8	19	This subsection requires information integrity that would be aligned with the Australian Government's initiatives and actions of adaptation. On page 9 line 5: Could add text similar to text from Adapting to Climate Change in Australia: An Australian Government Position Paper; DCCEE 2010 "The Australian Government's Climate Change Adaptation program is helping Australia to better understand and manage risks linked to carbon pollution and to take advantage of potential opportunities. The Australian Government has funded a number of projects and assessments to improve our knowledge of the impacts of climate change, strengthen the capacity of decision-makers to respond and address major areas of national vulnerability." (AUSTRALIA)	Section 25.3 is about socio-economic trends influencing vulnerability, not about actions to reduce and managed vulnerability. Hence the requested information is covered and assessed in section 25.4, not here to avoid unnecessary duplication.
112	75018	25	7	47	7	47	The narrative states that half of the water extracted is used for irrigation. It would help to put this statement in context. How are important sectors that are heavily reliant on water projected to change (e.g., increases in agriculture, hydropower)? What are the major crops? How sensitive are they on climate change? How diversified is the agriculture base? What is the agriculture technological capacity? (UNITED STATES OF AMERICA)	Space constraints prevent us from adding this detail; we added that these are the second and third highest rates in the OECD. The cited figures make it clear that irrigation is important for agriculture, and this is discussed in more detail in 25.7.2.
113	75019	25	7	54	7	54	Please describe how mortality and fertility are expected to change. (UNITED STATES OF AMERICA)	The sub-clause on mortality and fertility has been deleted. The subsequent text makes it clear that reducing mortality is a factor (which is important for understanding changing vulnerability), but a more detailed analysis of the individual factors contributing to overall population growth is beyond the reasonable scope of this chapter, given that all are expected to contribute, but to differing degrees over time and under alternative scenarios.
114	60148	25	8	1	0	0	Change "Australian population from 22 million in 2011" to "Australian population from 23 million in 2013" (AUSTRALIA)	We have used the latest year for which Australian data are available rather than projected estimates, which is 2011 based on the 2011 Census. For consistency, we kept the same base year for New Zealand. However, we have updated the numbers based on the most recent publications.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
115	75020	25	8	4	8	8	This analysis appears to need several additional parameters. What is the percentage of population living within a given distance from the coast in Australia and NZ? What is the percentage of population living close to sea level? What is the rate of change for both measures? Also, what is the rate of urbanization in both countries? (UNITED STATES OF AMERICA)	We consider this too much detail given space constraints; the text already states qualitatively that most of the population lives near coast. The overall conclusions on vulnerability reached in this chapter are not contingent on the requested specific quantifications.
116	75021	25	8	6	8	6	Why are rural areas depleting and why is this expected to continue? And if depletion is being used to describe emigration, then would suggest using "emigration". (UNITED STATES OF AMERICA)	The requested detail conflicts with the overall space constraints in the chapter, and the reasons are covered in Box 25-5; a cross-reference to this box has been added.
117	75022	25	8	6	8	8	This statement warrants emphasis- many coastal areas in both nations are facing intense development pressure for tourism and recreation use, leading to maladaptive patterns of growth in areas vulnerable to sea level rise and extreme weather events. (UNITED STATES OF AMERICA)	These issues are covered in Box 25-1, and a cross-reference to this box has been added.
118	75023	25	8	7	8	7	If possible, it would be informative to state why some coastal non-urban areas are facing increasing pressure. (UNITED STATES OF AMERICA)	The requested detail conflicts with the overall space constraints in the chapter; a cross-reference to Box 25-1 has been added, which discusses coastal risks in more detail.
119	75024	25	8	12	8	12	Suggest that the authors include the current and recent change in the GINI Index for income for each country. (UNITED STATES OF AMERICA)	Given the overarching statement that measures of inequality are highly contested, it would be inconsistent to cite a specific index here; hence we chose not to include the GINI or any other index here.
120	69763	25	8	12	8	13	Replace "remain" with "remains" so that verb agrees. This sentence might read easier if phrased as "However, measurement of poverty and inequality is highly contested and it remains difficult to anticipate future changes and effects on adaptive capacity" (NETHERLANDS)	Thank you, the suggested wording indeed reads better and has been adopted. The wording of the first sentence has also been revised for readability.
121	63024	25	8	15	8	16	Reword as "...THEIR NUMBERS are growing faster than the average, and , in Australia THEY constitute ...". Reason: If read literally, the present wording suggests indigenous people are taller ("growing faster") than they used to be. (David Wratt, NIWA, New Zealand)	Thank you, this has been taken care of in another revision to this paragraph.
122	60149	25	8	22	14	22	Etkin et al speculated, not showed, that the root causes of climate change vulnerability cannot be addressed through risk management alone. However, this really depends on the definition of risk management and how comprehensive it is. (AUSTRALIA)	We agree with the comment, but our text does not actually state that risk management alone is sufficient to address vulnerability; hence no change made.
123	75025	25	8	32	8	32	Can the authors explain how socio-economic concerns are being used to understand the adaptive capacity of communities? (UNITED STATES OF AMERICA)	This is stated in the preceding paragraph; no change made.
124	62687	25	8	38	8	41	Agree - social and economic aspects are frequently excluded from vulnerability studies (Paula Blackett, Agresearch Ltd)	Thank you.
125	62688	25	8	44	11	39	reflects the current state of knowledge very well. (Paula Blackett, Agresearch Ltd)	Thank you.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
126	60150	25	8	53	9	3	The reference of adaptation responsibility being devolved to Natural Resource Management (NRM) bodies (among others) is becoming increasingly relevant. However, the statement regarding 'a standard risk management paradigm' being promoted to embed adaptation into decision-making practices is not fully representative of current approaches in the context of NRM. In Australia, and NSW particularly, there has been a considerable emphasis in recent years on the application of systems and resilience thinking to NRM planning. This differs to the more linear approach associated with standard risk management, which often has a focus on isolated issues rather than systems linkages. The move towards resilience thinking is being applied broadly to NRM and is not limited to adaptation planning. It focuses on the integration of biophysical and social information. References relating to the application of the resilience approach in NRM include: Walker, B. H., N. Abel, J. M. Anderies, and P. Ryan. 2009. Resilience, adaptability, and transformability in the Goulburn-Broken Catchment, Australia. <i>Ecology and Society</i> 14(1): 12. Natural Resources Commission. 2012. 'Framework for assessing and recommending upgraded catchment action plans.' <a href="http://www.nrc.nsw.gov.au/content/documents/Framework%20for%20CAPs2.pdf">http://www.nrc.nsw.gov.au/content/documents/Framework%20for%20CAPs2.pdf</a> HC Combs Policy Forum (2011), 'Synthesis of broad issues and opportunities: Documents I, II and II', HC Combs Policy Forum-Fenner School of Environment and Society NRM Initiative, The Australian National University. <a href="https://crawford.anu.edu.au/public_policy_community/research/nrm/NRM_Ref_Group_Combined.pdf">https://crawford.anu.edu.au/public_policy_community/research/nrm/NRM_Ref_Group_Combined.pdf</a> (AUSTRALIA)	Accepted; we added: ", but broader systems and resilience approaches are used increasingly for natural resource management" and cite the NRC and Combs policy forum report.
127	60151	25	9	1	9	3	Consider reference & web package available Cobon, D.H., Stone, G.S., Carter, J.O., Scanlan, J.C., Toombs, N.R., Zhang, X., Willcocks J. and McKeon, G.M. (2009). The climate change risk management matrix for the grazing industry of northern Australia. <i>A Climate of Change in Australian Rangelands, The Rangeland Journal, Volume 31 Number 1</i> . Accessory Publications: Matrix diagrams in Microsoft Excel format (Excel) as an additional / alternative refernce (AUSTRALIA)	We consider this to be too much of a sector-specific example. Agriculture-specific risk and adaptation issues are covered in the agriculture section (25.7.2), whereas 25.4 covers cross-sectoral rather than sector-specific issues.
128	60152	25	9	5	0	0	Information is inadequate. The following information can be added after –framework in 2007 (COAG 2007): “The Australian Government’s Climate Change Adaptation program is helping Australian to better understand and manage risks linked to the carbon pollution and to take advantage of potential opportunities. Australian Government has funded a number of projects and assessments to improve our knowledge of the impacts of climate change, strengthen the capacity of decision-makers to respond and address major areas of national vulnerability.” (Please see: <i>Adapting to Climate Change in Australia: An Australian Government Position Paper; DCCE 2010</i> ) (AUSTRALIA)	These requested points are already made in the text. We also need to distinguish between stated intent and actual effectiveness of measures and programmes; the text of this review comment seems to be reflecting only the stated intent of policies without providing evidence for those outcomes being achieved. By contrast, our assessment seeks to evaluate actual documented outcomes, and critiques of those outcomes, to date. No change made.
129	65077	25	9	7	9	9	the federal government also supported a review of drought policy that included consideration of climate change - see <a href="http://www.daff.gov.au/agriculture-food/drought/drought-program-reform">http://www.daff.gov.au/agriculture-food/drought/drought-program-reform</a> . Australian State/Territory governments also have climate change plans that include adaptation, e.g. <a href="http://www.climatechange.vic.gov.au/adapting-to-climate-change/Victorian-Climate-Change-Adaptation-Plan">http://www.climatechange.vic.gov.au/adapting-to-climate-change/Victorian-Climate-Change-Adaptation-Plan</a> . (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Drought policy reform already covered later in this section so it would be unnecessary duplication to repeat this here, which focuses on activities that take climate change as their primary motivation. We added a sentence regarding the development of adaptation plans by State and Territory governments, and made an additional reference to adaptation plans by local governments in section 25.4.2.
130	60153	25	9	13	9	15	In relation to the statement that 'no cross-sectoral adaptation policy framework .... exists', a key aspect of the South Australian Government's Climate Change Adaptation Framework is the adoption of a regional approach to climate adaptation. This approach recognises that climate change and its economic, social and environmental impacts will vary across South Australia and it is necessary to develop locally relevant adaptation responses. A key aspect of the approach is the assessment of climate change impacts and opportunities for 12 Victorian regions through regional integrated vulnerability assessments. South Australian Government, 2012. 'Prospering in a changing climate: A Climate Change Adaptation Framework for South Australia August 2012' The South East Queensland Climate Adaptation Research Initiative (SEQCARI) is another example of cross-sectoral climate change adaptation. Ref: S. Serrao-Neumann, F. Crick, B. Harman, M. Sano, O. Sahin, R. van Staden, G. Schuch, S. Baum, D. Low Choy, March 2013, <i>Improving cross-sectoral climate change adaptation for coastal settlements: insights from South East Queensland, Australia, Regional Environmental Change</i> , Springer-Verlag (AUSTRALIA)	This comment reflects a misunderstanding, the statement in question is about NZ not Australia. We inserted a line break to more clearly separate the discussion of Australian and New Zealand arrangements to avoid this misunderstanding.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
131	63025	25	9	15	9	15	I suggest you append to this sentence: "...and more recently on adaptation options for the primary sector (Clark et al 2012)". [The reference is Clark, A.J.; Nottage, R.A.C.; Hansford, D. (eds), 2012 : impacts of Climate Change on Land-based Sectors and Adaptation Options. Stakeholder Report. Ministry of Primary Industries, Wellington. 74pp]. (David Wratt, NIWA, New Zealand)	The citation has been added, and also a note that assessments have not just been about impacts but at least this one also about adaptation options.
132	75026	25	9	17	9	20	The paragraph on private and public sector adaptation could use one or two additional sentences explaining/illustrating some of the different approaches, barriers, or opportunities from this region. (UNITED STATES OF AMERICA)	We don't feel that a modest expansion within space constraints would add a lot of value since the key reasons for differences are already given; instead we added cross references to other chapters where some of those barriers and opportunities are discussed in more detail.
133	65078	25	9	26	9	26	consider including "management of flood risk (Qld Floods Commission of Inquiry, 2012)" <a href="http://www.floodcommission.qld.gov.au/">http://www.floodcommission.qld.gov.au/</a> (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Accepted, we included reference to the QFCI and the Queensland flood of 2011.
134	60154	25	9	26	9	28	The statement, 'demonstrate lag times in policy design and implementation and windows of opportunity presented by crises', begins by expressing policies that address climate vulnerability, but then goes on to demonstrate lag time/crises. This could be framed by expressing that policy traction is typically gained through crises/need for response and that proactive policy design must reflect public values and concerns. (AUSTRALIA)	We don't believe there is any evidence that, as suggested by the review comment, policy traction is 'typically gained through crises', they are simply one driver for change but not necessarily the only or most prevalent driver. The latter issue that policy design must reflect public values and concerns strikes us as so generic that it doesn't warrant spelling out in this assessment. No change made.
135	75027	25	9	26	9	29	Referring to the examples cited earlier in the paragraph as "mainstreaming adaptation" is too subjective for this report, particularly given the limited citation. The noted examples could safely be classified as "reactionary management solutions", but do not necessarily signify an emerging trend in public acceptance of adaptive management. (UNITED STATES OF AMERICA)	We do not accept this point. The phrase "may be seen" makes it clear that this is a view that has been expressed in the cited literature, without claiming that this is a universally held view. There are many more studies though than those cited that agree with this perspective. The paragraph does not claim that there is public acceptance of adaptive management (which is not the same as mainstreaming), so we do not think that any change is necessary.
136	60155	25	9	32	10	38	Section would benefit from information on Australian Government's initiatives on adaptation actions. Refer to Adapting to Climate Change in Australia: An Australian Government Position Paper; DCCEE 2010 and <a href="http://www.climatechange.gov.au/what-you-can-do/~media/publications/local-govt/localadaption_localgovernment.pdf">http://www.climatechange.gov.au/what-you-can-do/~media/publications/local-govt/localadaption_localgovernment.pdf</a> which outlines adaptation options for local government. Also, there is the DAFF funded climate change research and extension programs and bodies like NCCARF. (AUSTRALIA)	These points have already been covered in the preceding section on the national adaptation strategy, which also mentions funding for research and pilot programmes. No change made.
137	60156	25	9	32	10	38	The predicted timeline of the risk associated with sea level rise and planning instruments can be described for both Australia and New Zealand. (AUSTRALIA)	Issues specific to sea level rise are covered in Box 25-1. We feel it is difficult to narrow the range of issues down into a simple timeline of risk as suggested by the review comment. Table 25-8 on key risks provides an attempt at such a high-level summary of changing risk.
138	75028	25	9	34	9	42	Given the importance of this topic, it warrants elaboration and more synthesis on the topic instead of relying on the list in the table. (UNITED STATES OF AMERICA)	We feel that Table 25-2 already represents a significant amount of synthesis that elaborates on the high-level issues covered in this paragraph; the wording introducing the table has been revised accordingly. Within space constraints, we feel that the amount of space devoted to introducing these issues in this paragraph is appropriate, the subsequent paragraphs provide additional details.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
139	75029	25	9	41	0	0	By "specific climate change responses" do the authors mean explicit emissions policy goals? Some elaboration would be helpful for the reader. Additionally, do the authors feel that "translating goals into specific policies" is the end target of adaptation measures? (UNITED STATES OF AMERICA)	No we did not mean emissions goals but rather specific policies to adapt to a changing climate. This has been clarified. Translating goals into policies is not the end target of adaptation measures and the text does not say this, but it is clearly a necessary step to move from goals into any form of implementation and practical consequence, hence it is worth mentioning; no additional change made.
140	70650	25	9	46	9	49	Support (NEW ZEALAND)	Thank you.
141	75030	25	10	6	10	7	Suggest that the authors provide examples/case studies of maladaptation stemming from this approach. (UNITED STATES OF AMERICA)	Providing examples would add significantly to the length of this section, especially to avoid unfair criticism if examples of maladaptation are given. The cited studies are readily available as reference points for readers wishing to find some examples, and we feel the generic point is fairly clear even without specific examples.
142	75031	25	10	26	10	29	If the authors wish to us another regional example, of stakeholder engagement/co-production of knowledge, suggest considering the PCCSP 2011 project, which did an excellent job of bringing in country-level researchers and representatives in the production of the final report and products, which dramatically increased buy-in. Australian Bureau of Meteorology & CSIRO. (2011). Climate change in the Pacific: Scientific assessment and new research. Volume 1: Regional overview. Volume 2: Country reports. Retrieved from <a href="http://www.cawcr.gov.au/projects/PCCSP/">http://www.cawcr.gov.au/projects/PCCSP/</a> (UNITED STATES OF AMERICA)	We consider this suggestion to be out of scope as it is about Pacific Islands, not the territory covered by this chapter (Australia and New Zealand including their own outlying islands).
143	75032	25	10	42	11	40	The contents of this box are worth highlighting elsewhere, as it draws emphasis to the impacts of sea level rise, especially in Australia where the majority of population centers are highly exposed and planning efforts are varied. (UNITED STATES OF AMERICA)	We feel that the highlighting of sea level rise as a key risk in the executive summary adequately addresses this point.
144	60157	25	11	1	11	5	This section could make mentioned of the fact that in Australia Commonwealth, state and local government have invested considerable resources in developing high resolution DEM models of coastal and other flood prone areas as a basis for future planning e.g. <a href="http://www.nrm.qld.gov.au/property/mapping/dtdata/pdf/all-lidar-2-12.pdf">http://www.nrm.qld.gov.au/property/mapping/dtdata/pdf/all-lidar-2-12.pdf</a> (AUSTRALIA)	This has been added in a paragraph further below where it appeared to fit better; this paragraph is about benchmarks and high level policies in sea level rise, not on tools for responding once an overall policy has been set.
145	60158	25	11	1	11	22	A greater explanation of jurisdictional roles may enhance the context of these statements. Suggest that the word 'piecemeal' should be avoided, a diversity of approaches reflects differing needs and community values (i.e. there is no one-size-fits-all) (AUSTRALIA)	We don't feel that the jurisdictional roles can be explained in relevant and accurate detail within space constraints, especially given the differences between Australia and New Zealand. The cited references provide this detail for readers who wish to get into this. We have retained the word piecemeal, since this reflects the sense from the cited literature; it is not a case of reflecting "differing needs and community values" but refers to inconsistencies across different scales and significant short-term policy changes that are not sufficiently justified by different regional circumstances.
146	70651	25	11	6	0	0	Does the NZCPS discourage all protection, or only hard protection? (NEW ZEALAND)	It discourages mainly hard protection, or at least this is the sense in which this sentence was intended; we have inserted this to clarify.
147	78293	25	11	6	11	6	The NZ Coastal Policy Statement includes climate change in assessment of hazards and doesn't discourage protection of existing development per se - suggested wording is: "... for assessing hazard risks (including the effects of climate change), discourages hard coastal protection for existing development ..." (Robert Bell, NIWA)	We inserted "hard" before protection to clarify this without adding quite as many words.
148	60267	25	11	7	11	9	This sentence is not quite correctly written suggest the following be the substitute wording. Delete the text after 2090 and replace with "and considering the implications of at least 0.8m and for longer term planning an additional 0.1m per decade." Using the words 'where relevant' makes it sound too discretionary and not what was intended. the point is to convey a changing risk for long lived assets. (Judy Lawrence, PS Consulting)	Yes this is more consistent with the actual wording, accepted.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
149	78294	25	11	8	11	9	Suggest: " ...approach, starting with a base value .... Of 0.8 m by 2090s and 0.1 .....". (Robert Bell, NIWA)	The wording has been amended based on this and another comment to ensure full consistency with the actual wording of the guidelines.
150	75033	25	11	17	11	17	Not all readers will understand what path-dependency is. Overall the document tends a bit towards over use of jargon. Suggest that the authors seek to emphasize plain English. (UNITED STATES OF AMERICA)	Wording has been revised to avoid use of the technical term.
151	60266	25	11	24	0	0	This first sentence could cite for New Zealand. Kenderdine, S., (2010) Examining climate change:an Environment Court perspective, in: Daya-Winterbottom, T., Resource Management Law Reform Association of New Zealand Inc (Ed.), Resource Management Theory and Practice Thomson Reuters, pp. 35-92. (Judy Lawrence, PS Consulting)	Thank you, the reference has been added (at the end of the para since it also supports the second sentence through the recommendations it makes).
152	60268	25	11	31	11	32	Tasman District Council and Hawkes Bay Regional Council both have operative planning schemes that have multiple risk based zoning with progressive controls as you go closer to the coast. Hawkes Bay Regional Council, (2012) Hawkes Bay Regional Coastal Environment Plan Version 3. Hawkes Bay Regional Council <a href="http://www.hbrc.govt.nz/HBRC-Documents/HBRC%20Document%20Library/Current%20RCEP%20(All%20Vol1).pdf">http://www.hbrc.govt.nz/HBRC-Documents/HBRC%20Document%20Library/Current%20RCEP%20(All%20Vol1).pdf</a> , p. 299.Tasman District Council, (2011) Public Notice of Legal Effect of Parts of Proposed Change 22 Mapua and Ruby Bay, Tasman Resource Management Plan. Retrieved on 5 January 2011 from <a href="http://www.tasman.govt.nz/home/SearchForm?Search=Plan+Change+22&amp;action_results=Search">http://www.tasman.govt.nz/home/SearchForm?Search=Plan+Change+22&amp;action_results=Search</a> . (Judy Lawrence, PS Consulting)	The TDC document is not an example of managed retreat, which is the focus of this sentence. We did however include reference to the Hawke's Bay District Council, which sought to implement a managed retreat scheme under the HBRC plan (although this has now been pushed back again, too).
153	70652	25	11	34	11	38	Support. (NEW ZEALAND)	Thank you.
154	65079	25	11	43	12	39	Section 25.4.3 seems to have a bit a repetition and could be reduced in length (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	The section has been edited for conciseness and two paragraphs have been re-arranged slightly to reduce repetition, but we found little material that could be cut without substantial loss of content.
155	62690	25	11	45	12	39	this section seems a bit thin on new zealand literature - this is probably more a reflection of the lack of work in this area. This section focuses on individuals do we have any information from a social psychology perspective on the roles of groups within society or community values. Although I think this is likely to be a gap in current knowledge. (Paula Blackett, Agresearch ltd)	We have been unable to identify much New Zealand work that is specific to climate change impacts and adaptation, as most published work from NZ is either focused on mitigation or much more broadly on environmental attitudes. The former is outside the scope of this chapter, and the latter would require an expansion of this section, in conflict with the overall space constraints. It would also make little difference to the key conclusions from this section, hence no additional material has been cited.
156	83625	25	12	5	12	6	The summary terms for evidence and agreement provided on these lines should be italicized. (Katharine Mach, IPCC WGII TSU)	The terms have been italicised.
157	83626	25	12	7	12	7	Casual usage of "likely" should be avoided as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	The sentence has been reworded to avoid the word 'likely', which was indeed used casually.
158	75034	25	12	10	12	10	Please explain what is meant by "general psychological distress levels". Do the authors mean to imply that if a person has mental health issues more generally, they are more likely to worry about climate? (UNITED STATES OF AMERICA)	The sub-clause has been deleted as the point it was trying to make was too subtle for a non-expert audience and/or would have required more space to explain fully.
159	62689	25	12	10	12	11	This sentence is very important - how do all these factors translate into action? (Paula Blackett, Agresearch ltd)	The key point in our assessment is that work that follows psychological distress levels all the way into action (at a range of scales, from individual to community level) is still very limited. We now cite the work that has looked at psychological adaptations, but space constraints prevent a more extensive treatment in this assessment. The limited knowledge in this area, and the limited links of psychological research with other research approaches to adaptation, are already flagged as key knowledge gap in 25.11.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
160	60159	25	12	17	12	18	Please clarify whether this statement refers to both Australia and NZ. (AUSTRALIA)	The sentence makes clear that it refers only to Australia. Similar results might apply in New Zealand but we have not been able to find literature that directly addresses climate change impacts from this perspective in New Zealand.
161	60160	25	12	18	12	21	Explain "place connections" or "place attachments" or give examples. (AUSTRALIA)	The sentence has been re-written to avoid these terms and explain in more plain language the conclusions from those studies.
162	83627	25	12	28	12	29	It would be helpful to specify briefly the mechanisms through which these factors can offer the described benefits and support. (Katharine Mach, IPCC WGII TSU)	The sentence has been revised and the paragraph re-ordered to provide greater clarity while being mindful of overall length constraints for this chapter.
163	69764	25	12	37	12	39	Sentence is unclear. Suggest simplifying or splitting in two. (NETHERLANDS)	The sentence has been revised to make its intention clearer.
164	83628	25	12	37	12	39	This statement would benefit from clarification. For example, are "psychological trends" meant on line 38? (Katharine Mach, IPCC WGII TSU)	The sentence has been revised to make its intention clearer.
165	65080	25	12	42	12	42	needs a sub-section on observed impacts, especially given the drought in southeast Australia from 1997-2009. A key reference is Leblanc et al (2012) doi:10.1016/j.gloplacha.2011.10.012, along with other references in lines 4-5 on page 13. (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Sub-section on "Observed Impacts" now added, including reference to the 1997-2009 Millennium drought.
166	75035	25	12	42	12	42	Suggest that the authors consider including an Observed Impacts sub-section. (UNITED STATES OF AMERICA)	Sub-section on "Observed Impacts" now added.
167	60269	25	12	42	13	0	This section has included nothing about high intensity rainfall events. I am aware that NIWA has done some work on this. It is an omission and leaves the reader with the impression that extreme events don't exist- far from the experience. Sam Dean has done at least one report on high intensity rainfall events in Nelson and your co author from NZ NIWA should be able to source a suitable reference. This gap should be filled. Also this section does not highlight the fact that urban settlements are affected. The focus of this section is somewhat unbalanced towards the source of the rainfall and not where it goes. At least a cross reference to later sections where impacts on urban settlement and infrastructure would rebalance this section. (Judy Lawrence, PS Consulting)	No change made because the point is made elsewhere in the Chapter. This section focusses on "Water Resources". Flood (and high intensity rainfall) impacts are addressed in detail in Box 25-8.
168	67807	25	12	42	13	38	One issue not covered here, which could be considered, is the likely change in intermittency in stream flows (and increased dry spell duration) across central south-eastern Australia in particular. This is likely to have significant implications for the persistence of fully aquatic biota but also terrestrial biota. (Sheldon et al. (2010). Dryland river waterholes: Ecological roles and threats to aquatic refugia in arid landscapes. MFR 61, 885-895. (Stuart Bunn, Griffith University)	This has been added in 25.6.1.2.
169	75036	25	12	47	12	49	Would it be more accurate to say "high inter-annual and inter-decadal variability of PRECIPITATION and river flows?" (UNITED STATES OF AMERICA)	No change has been made. High inter-annual variability of river flows is more precise for this section focussing on water resources. The term is used frequently in the literature (including in the references quoted).
170	83629	25	12	51	13	1	For clarity, it would be helpful to specify the baseline for the 1°C global average warming described on line 51 and the 2°C warming described on the 1st line of the next page--preindustrial? (Katharine Mach, IPCC WGII TSU)	This has been clarified to refer to warming relative to current levels.
171	60161	25	13	14	13	18	Caption for Figure 25-4 does not match (exactly) that present with the figure on page 98 (AUSTRALIA)	Rectified, we use the one in the text.
172	70653	25	13	15	0	0	Figure 25-4.: Change the order of "median, dry and wet" to "dry, median and wet" to match the order in the actual Figure. (NEW ZEALAND)	Accepted, the order has been changed.
173	75037	25	13	17	13	17	If projections are twice as high as what is shown on the map, why aren't they shown? Or, what is the difference between the stated and plotted values? (UNITED STATES OF AMERICA)	No change has been made. The figure shows results from detailed modelling study for 1°C warming. Post et al. (as referenced in the chapter) carried out limited modelling and showed that projections extrapolated to 2°C warming are generally still reasonable and are about twice the results for the 1°C warming. But that study did not produce full maps, hence we are only able to show the maps for 1°C warming.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
174	65081	25	13	25	13	25	earlier snow melt is documented in the paper by Hendrikk et al (2013) <a href="http://link.springer.com/content/pdf/10.1007/s10584-013-0741-4">http://link.springer.com/content/pdf/10.1007/s10584-013-0741-4</a> . (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Reference added.
175	60162	25	13	33	13	38	Section 25.5.1 projected impacts, describes the impact of climate change on groundwater recharge. It would be good if there was a figure illustrating the changes in ground water recharge, similar to figure 25-4. Please see OV Barron, RS Crosbie, SP Charles, WR Dawes, R Ali, WR Evans, R Cresswell, D Pollock, G.Hodgson, D Currie, F Mpelasoka, T Pickett, S Aryal, M Donn and B Wurcker (2011) Climate change impact on groundwater resources in Australia Waterlines report, National Water Commission, Canberra. (AUSTRALIA)	No change has been made. Projections of groundwater recharge are less reliable because (i) there has been fewer detailed studies, (ii) it is difficult to estimate current groundwater recharge, let alone future recharge or relative change in recharge, (iii) recharge is a 'threshold' process driven by high rainfall events, and there is considerably greater uncertainty in projections of extremes than the average rainfall. We consider that the current balance in the text is about right, with the one paragraph on groundwater recharge and expression of confidence levels.
176	70654	25	13	44	0	0	The sentence "In New Zealand, there is little evidence of this" is not clear. Obviously it refers to the previous sentence about Australia where both the 1997-2009 drought and projected declines in future water resources are already stimulating adaptation. Does the "this" in the second sentence refer to experiences with drought or projections of water availability, or both? Clearer drafting please. (NEW ZEALAND)	Sentence now says "In New Zealand, there is little evidence of water resources adaptation specifically to climate change".
177	62691	25	13	44	13	47	Waikato Regional Council has altered its water allocation policy to allow consents for 10 years rather than 20-30 in order to allow for a changing climate. This change has not been directly linked with climate change policy but the motivation behind it is to about providing future flexibility. However, these bits of information are likely to be hard to find and have not been reported in the literature to date. (Paula Blackett, Agresearch Ltd)	No change has been made. Yes, it is difficult to find clear evidence in the literature at present, consistent with our text. We modified the text to make clear that evidence about adaptation specifically to climate change is not evident, even though some non-climate related policies and practices may of course support flexibility in the face of climate change.
178	75038	25	14	1	15	10	Box 25-2 could talk about green infrastructure and ecosystem-based approaches that lead to improved management of water at a basin or catchment level. (UNITED STATES OF AMERICA)	No change has been made. Water sensitive urban design as a general principle is mentioned in this box. Green infrastructure is discussed in Box 25-9.
179	75039	25	14	1	15	10	In terms of evaluating program success, it is important to convey that not all positive outcomes are as easily measured by a cost-benefit analysis or a number of lives saved, but that positive systemic changes are non-linear, complex, auto-correlated, and difficult to directly attribute. (UNITED STATES OF AMERICA)	The last sentence in the second paragraph now captures this.
180	60163	25	14	3	14	33	Box 25-2 describes water reform in Australia. An update of the final Basin Plan would improve this section and provide some currency to the chapter. <a href="http://www.mdba.gov.au/what-we-do/basin-plan">http://www.mdba.gov.au/what-we-do/basin-plan</a> (AUSTRALIA)	This paragraph has been updated (see also Item 184).
181	67808	25	14	3	15	8	This Box is a nice summary. Might also be good to mention that the environment is intended to have the same level of security as consumptive users under the NWI, and that the establishment of the Commonwealth Water Holder (and other environmental water holders) will also be an important adaptation strategy to protect aquatic ecosystems during drought. (Stuart Bunn, Griffith University)	This is now addressed in the revised/updated paragraph (see also Item 184).
182	75040	25	14	6	14	8	Is there a reason why the references given for "Widespread drought and projections of a drier future in south-eastern and far south-west Australia" in this sentence are different from those included in the Drought row of Table 25-1? (UNITED STATES OF AMERICA)	The references used here discuss impact and adaptation from a water resources perspective. The references in Table 25-1 describes the drought, and the characteristics and causality of the drought.
183	60164	25	14	13	14	14	The report states "The broad policy framework is set out in the 2004-2014 National Water Initiative and the 2007 Commonwealth Water Act." As the National Water Initiative is an ongoing commitment, which began in 2004 and does not have an end date, it is more accurate to state "The broad policy framework is set out in the 2004 National Water Initiative and in the 2007 Commonwealth Water Act." (AUSTRALIA)	Text now says, "2004 National Water Initiative".

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
184	60165	25	14	21	14	26	The report states "Rural water reform in south-eastern Australia, focused on the Murray-Darling Basin, is still unfolding. The first draft Murray-Darling Basin Plan (MDBA, 2011) aims to return 2750 GL/year of consumptive water (about one fifth of current entitlements) to riverine ecosystems and develop flexible and adaptive water sharing plans to cope with current and future climates, although climate change is not factored in explicitly. The Plan recommends more than A\$10 billion be spent on public buyback of entitlements, upgrading infrastructure, and improving water use efficiency." Reflecting recent progress, this text should be updated as follows: "Rural water reform in south-eastern Australia, focused on the Murray-Darling Basin, is currently being implemented. The final Murray-Darling Basin Plan (MDBA,2012: Murray Darling Basin Plan, Murray Darling Basin Authority, Canberra, Federal Register of Legislative Instruments F2012L02240, p 28) was signed into law in November 2012 and returns 2750 GL/year of consumptive water (about one fifth of current entitlements) to riverine ecosystems. The Basin Plan also provides for an adjustment mechanism that enables the Basin-wide sustainable diversion limit to be changed in ways that provide benefits to the environment and communities. The Basin Plan provides a comprehensive response to climate change, for example, through accrediting state water resource plans and through substantial reviews of the plan scheduled every 10 years. The Australian Government has committed more than A\$12 billion to Murray-Darling Basin reform, with funding committed to upgrading infrastructure, improving water use efficiency, and public purchase of water entitlements for environmental use." (AUSTRALIA)	This paragraph has now been updated and is current.
185	69765	25	14	24	14	24	"although climate change is not factored in explicitly". Suggestion - remove in (NETHERLANDS)	Phrase has been removed.
186	60166	25	14	24	14	25	The Basin Plan does not recommend A\$10b be spent on water recovery measures; this is part of the Water for the Future initiative, managed by the Department of Sustainability, Environment, Water, Population and Communities: refer <a href="http://www.environment.gov.au/water/australia/index.html">http://www.environment.gov.au/water/australia/index.html</a> (in particular "water policy and programs") (AUSTRALIA)	Text has been corrected and revised in response to this and a related comment.
187	60167	25	14	25	15	8	Box25-2. Describes reduction in catchment yield and water supply due to lower than average rainfalls from 1970s onward. But this section is mainly concentrated on Melbourne and only there are 1 or two sentences describing Perth and south-west of Western Australia. I would suggest to enlarge this section. Please see the Water Corporation's 'Water Forever Report'. They have included desal, forest thinning, recycling as part of their 2030 planning. See Report : Water Corporation 2009. Water Forever, Towards Climatic Resilience. <a href="http://www.watercorporation.com.au/~media/Files/About%20us/Our%20strategies/Water-forever-50-year-plan">http://www.watercorporation.com.au/~media/Files/About%20us/Our%20strategies/Water-forever-50-year-plan</a> (AUSTRALIA)	Climate change impact and changed water management in Perth is highlighted clearly now at the start of the section, and with a direct reference to the Box in AR4 which specifically discusses Perth.
188	60168	25	14	27	14	27	Please insert the word "use" so that the end of the sentence reads "...and move toward higher value water use (NWC, 2010; Kirby et al., 2012) (AUSTRALIA)	Use' has been added as requested.
189	60169	25	14	28	14	18	The word "gross" needs to be added before agricultural returns, otherwise this is misleading (AUSTRALIA)	Gross' has been added as requested.
190	60170	25	14	29	14	29	"mainly because water use shifted" should be rephrased as "with one reason being that water use shifted to more valuable enterprises". Water trading is one reason but it is difficult to quantify to what extent it helped maintain agricultural production in the drought. See page 100 of the National Water Commission 2012, Impacts of water trading in the southern Murray-Darling Basin between 2006-07 and 2010-11, NWC, Canberra (AUSTRALIA)	No change has been made. Yes, water trading is one of several reasons, but the paper identified the shift to more valuable enterprises as the main reason for the relatively small impact on gross agricultural return.
191	75041	25	14	35	14	35	Can the authors cite examples of efforts to rehabilitate or fortify catchment areas? (UNITED STATES OF AMERICA)	No change has been made. We could not locate key studies on these that are directly relevant to water resources and climate change.
192	60171	25	14	44	14	44	Perth is not generally regarded as being in the 'far' south west of WA. Suggest deleting the word 'far'. (AUSTRALIA)	The word 'far' has been deleted.
193	70655	25	14	49	14	50	Insert "water" before "use" in both lines. (NEW ZEALAND)	Water' has been added before 'use' as requested.
194	60172	25	15	1	15	5	Probably need to mention (a) pricing and allocation constraints e.g. watering days (these often seem to be remaining in place following implementation in droughts and (b) pipelines to network individual water assesst (SEQ water grid for example). (AUSTRALIA)	No change has been made. There are sufficient examples to support the points being made
195	65082	25	15	8	15	8	is it worth mentioning the likely effect of increased fire, drought and flood frequency on water security and quality? (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Climate change impact on water quality is stated at the end of 25.5.1, and linked to discussions in Box 25-6 (fire) and Boz 25-8 (floods).

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
196	75042	25	15	13	17	14	The literature section on the impacts on natural ecosystems in Australia is not complete and a few things need to be added to provide more context. Suggest including more information on the array of threatening processes and the fact that these threats vary across the landscapes. Supporting citations include: Evans, M.C. Watson, J.E.M., Fuller, R.A., Venter, O. Bennett, S.C., Marsack, P.R., and H. P. Possingham (2011). The Spatial Distribution of Threats to Species in Australia. <i>BioScience</i> , 61: 281-289. There has been some excellent work on threatened species in Australia and the impact of protected areas (note the typical use of "protected areas") that could be included: Watson, J.E.M., Evans, M.C., Carwardine, J., Fuller, R.A, Joseph, L.N., Segan, D.B., Taylor, M.F., Fensham, R.J. and H.P. Possingham (2011). The capacity of Australia's protected-area system to represent threatened species. <i>Conservation Biology</i> , 25:324-332. Taylor, M., Sattler, P.S., Evans, M., Fuller, R.A., Watson, J.E.M., and H.P. Possingham (2011). What works for threatened species recovery? An empirical evaluation for Australia. <i>Biodiversity and Conservation</i> 20: 767-777. Fuller, R.A., McDonald-Madden, E., Wilson K.A., Carwardine, J., Grantham, H., Watson, J.E.M., Klein, C.J., Green, D. and H.P. Possingham (2010). Should we replace underperforming protected areas to achieve better conservation outcomes? <i>Nature</i> 466: 365-377. In terms of the adaptation options the authors should consider treatment of the need to protect ecological processes to ensure that species have the best chance to overcome climate change problems. Key papers around this theme are: Watson, J.E.M., Fuller, R.A., Watson, A.W.T., Mackey, B.G., Wilson, K.A., Grantham, H.S., Turner, M., Klein, C.J., Carwardine, J., Joseph, L.N. and H.P. Possingham (2009). Wilderness and future conservation priorities in Australia, <i>Diversity and Distributions</i> , 15: 1028-1036. Klein, C.J., Wilson, K., Watts, M., Stein, J., Berry, S., Carwardine, J., Smith, M.S., Mackey, B. & Possingham, H. (2009a) Incorporating ecological and evolutionary processes into large-scale conservation planning. <i>Ecological Applications</i> , 19, 206-219. Klein, C.J., Wilson, K., Watts, M., Stein, J., Carwardine, J., Mackey, B. & Possingham, H. (2009b) Spatial conservation prioritization inclusive of wilderness quality: a case study of Australia's biodiversity. <i>Biological Conservation</i> , 142, 1282-1290. Mackey, B. G., Watson, J.E.M., Hope, G. and S. Gilmore (2008). Climate change, biodiversity conservation, and the role of protected areas: An Australian perspective. <i>Biodiversity</i> , 9:11-18. Mackey, B., J.E.M. Watson and G. Worboys (2009). Connectivity Conservation and the Great Eastern Ranges Corridor. A report for the New South Wales Department of Environment Climate Change. ANU Enterprise Pty Ltd. Pp. 73. (UNITED STATES OF AMERICA)	Most of these references are of a general nature about conservation in Australia, threatening processes, and the role of protected areas. They are not specifically about climate change (although most of them mention this as a threatening process). Space does not permit an extended review of this general literature in addition to references already cited in 25.6.1.3 such as Kingsford et al 2009, which address the role of reducing other threats to increase resilience.
197	75043	25	15	17	15	20	Please clarify if the first sentence of the paragraph refers to trends in both countries, or only Australia? (UNITED STATES OF AMERICA)	The phrase refers to both countries and this is now specified
198	67809	25	15	20	15	21	This statement may need to be qualified a little - e.g. "especially in southern and eastern coastal regions in Australia" - these threats are (currently) relatively low across northern Australia for example. (Stuart Bunn, Griffith University)	The beginning of the sentence now says: "Many freshwater systems" and the suggested qualification has also been added.
199	75044	25	15	23	15	24	This citation seems mostly about biogeography and species status; is it the citation tha the authors intended for this sentence? (UNITED STATES OF AMERICA)	The reference has been replaced with Steffen et al 2009 which is more appropriate for this general point.
200	58546	25	15	31	15	31	What is an "atmospheric trend"? Do you mean changes in atmospheric circulation patterns? (Janice Lough, Australian Institute of Marine Science)	"Atmospheric trend" has been removed from the sentence and "changes in atmospheric carbon dioxide" has been added to the list of non-climatic drivers in the next sentence.
201	60173	25	15	32	15	35	It would be worthwhile to include a comment that the data does not allow comparison to the Federation drought as a baseline case (AUSTRALIA)	Comment rejected. The Federation drought is not mentioned and is not used as a baseline. The sentence is about impacts of the most recent drought on species and simply provides an example of the effects of extremes.
202	63026	25	15	36	15	36	Change to: "... few if any impacts ON ECOSYSTEMS have been directly attributed to climate change ..." to guard against this sentence being (willfully) quoted out of context to imply no impacts on anything have been attributed to climate change in NZ. (David Wratt, NIWA, New Zealand)	Change made as suggested.
203	75045	25	15	38	15	38	0.9 degree Celsius average warming over what time period? (UNITED STATES OF AMERICA)	"over the past century" has been added

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
204	67810	25	15	42	16	35	It would be good to mention the implications of rising temperature (and changes in hydrology) for the many mountain top freshwater species. There are several endemic species of stream dwelling species (e.g. spiny crayfish and frogs) distributed on mountain tops along the eastern coast that are highly threatened by climate (noting these are areas that are relatively unimpacted by human activity). (Stuart Bunn, Griffith University)	While there certainly are many threatened and very restricted species in these regions and several papers mention in passing that they will be at risk in future, we have been unable to find recently published studies that specifically model future impacts on these species. However, the rainforests of the Wet Tropics of North Queensland (and implicitly, the biodiversity within them) are mentioned as an ecosystem that is threatened in general (2nd last paragraph in 25.6.1.2).
205	75046	25	15	42	16	35	There is no specific description of likely impacts on capacity of ecosystems to provide essential services e.g., erosion control. (UNITED STATES OF AMERICA)	There is virtually no literature that specifically assesses the impacts of climate change on provision of ecosystem services in the future in either New Zealand or Australia. A sentence to this effect has been added to the end of 25.6.1. Note also that potential global and local losses of species and ecosystem services is mentioned in the last sentence of the first paragraph of 25.6.1.3.
206	60174	25	15	47	15	48	It is not clear what is happening to savannah trees and eucalypts ("migrating" to regions with different type of vegetation). (AUSTRALIA)	This sentence and the following two have been revised to improve readability.
207	57892	25	15	49	0	0	The following article may be useful for projections in Caribbean: Hall TC, Sealy AM, Stephenson TS, Taylor MA, Chen AA (2012) Future climate of the Caribbean from a super-high resolution atmospheric general circulation model. Theoretical and Applied Climatology. DOI 10.1007/s00704-012-0779-7 Nakaegawa, T., A. Kitoh, H. Murakami, and S. Kusunoki. Maximum 5-day Rainfall Total and the Maximum Number of Consecutive Dry Days over Central America in the future climate projected by an atmospheric general circulation model with three different horizontal resolutions. Theoretical and Applied Climatology. To be accepted. (Toshiyuki Nakaegawa, Meteorological Research Institute)	This comment appears to be in the wrong chapter.
208	60175	25	16	1	16	1	Is the use of 'native species' referring to only animal species? No plant examples given. (AUSTRALIA)	One of the examples given is the projected impacts on banksias (which are plants) in Western Australia.
209	75047	25	16	4	16	6	Please provide examples of which species. (UNITED STATES OF AMERICA)	Comment rejected. The specific species examples are listed in the previous sentence. This sentence provides an overview of the main conclusion.
210	75048	25	16	13	16	15	This sentence is confusing and hard to follow. Can very high confidence be attributed with only one citation? Are there any other references that corroborate the statement? (UNITED STATES OF AMERICA)	The sentence has been revised to improve readability. The cited reference is a comprehensive review (now indicated in the citation) of the relevant literature and hence justifies the assessment of very high confidence.
211	60176	25	16	21	0	0	Reference is made to high confidence in substantial risks to .....rainforests in Queensland. Please indicate what the source of these risks (e.g. higher temperatures, less rainfall..). (AUSTRALIA)	The drivers considered to be important in driving future change in these ecosystems have now been included.
212	58547	25	16	26	16	26	What is "atmospheric change"? Again, an unclear term. (Janice Lough, Australian Institute of Marine Science)	"atmospheric change" has been removed from the sentence
213	75049	25	16	27	16	29	One would expect high agreement between two papers with the same author (the two references given for the statement). Are there any additional papers, written by a different author, that support the statement? (UNITED STATES OF AMERICA)	Both references are reviews and support the strong statement of agreement here: the fact that they are reviews has been added in the citation.
214	58548	25	16	33	16	33	Maybe mention that tuatara are reptiles. (Janice Lough, Australian Institute of Marine Science)	Comment rejected, we believe that tuatara are sufficiently well recognised as being reptiles that specifying this is redundant.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
215	67811	25	16	40	16	42	Also might be worth mentioning there is little opportunity for latitudinal (southward) movement of full aquatic freshwater species because few large rivers flow in north-south direction (Stuart Bunn, Griffith University)	Comment rejected: the statement refers in general to "limited migration options" and is intended to apply to both terrestrial and freshwater systems in both countries. If a specific reference was made to rivers in eastern Australia there would also need to be detail given for other systems and regions and space restrictions preclude this. Note also that the Moringiello et al reference cited to support the point refers to freshwater systems.
216	75050	25	16	40	17	14	Suggest that the authors include discussion of possible adaptation to address impacts to ecosystem services. (UNITED STATES OF AMERICA)	There is virtually no literature that specifically assesses the impacts of climate change on provision of ecosystem services in the future in either New Zealand or Australia. A sentence to this effect has been added to the end of 25.6.1. Note also that potential global and local losses of species and ecosystem services is mentioned in the last sentence of the first paragraph of 25.6.1.3.
217	60177	25	16	50	16	51	Adaptation research has "been guided by the NARPs" is a little NCCARF-centric. This section could provide further context including the Australian Government's initiatives and the CSIRO adaptation flagship. Refer to <a href="http://www.climatechange.gov.au/en/government/adapt.aspx">http://www.climatechange.gov.au/en/government/adapt.aspx</a> and <a href="http://www.csiro.au/Organisation-Structure/Flagships/Climate-Adaptation-Flagship/ClimateAdaptationFlagshipOverview.aspx">http://www.csiro.au/Organisation-Structure/Flagships/Climate-Adaptation-Flagship/ClimateAdaptationFlagshipOverview.aspx</a> for detail (AUSTRALIA)	The CSIRO Climate Adaptation Flagship has now been included.
218	60178	25	16	51	17	7	Section could refer to the Aust Govt's "Climate Change in NRM Planning Program". Refer to <a href="http://www.environment.gov.au/cleanenergyfuture/regional-fund/">http://www.environment.gov.au/cleanenergyfuture/regional-fund/</a> and <a href="http://www.climatechange.gov.au/NRMfundstream2">http://www.climatechange.gov.au/NRMfundstream2</a> (AUSTRALIA)	Comment rejected. Reference to NRMs has already been made in the sentence and space restrictions preclude any further details.
219	60179	25	16	52	17	7	Line 52& 53: change reference to "supported by substantial federal government funding" to "Australian Government". Suggest addition to text on Australia's investment/management actions to support adaptation: "The national biodiversity policies (Australia's Biodiversity Conservation Strategy 2010-2030 and Australia's Native Vegetation Framework, 2012) provide shared goals to improve ecosystem resilience. The Australian Government, through its initiatives Caring for our Country and the Biodiversity Fund, has invested in a range of practical measures which will contribute to biodiversity adaptation to climate change in Australia by improving habitat connectivity and function." (AUSTRALIA)	The sentence now says "Australian" rather than "federal" in relation to provision of funding. The rest of the comment is rejected due to space restrictions precluding the suggested level of detail about funding sources.
220	75051	25	17	7	17	7	Recognizing that these options have identified in various plans, can the authors discuss to what extent these adaptation options have actually been applied? (UNITED STATES OF AMERICA)	The sentence now reads: "Few specific measures have yet been implemented and thus their effectiveness cannot yet be assessed."
221	75052	25	17	13	17	14	Suggest that the authors specifically address the potential for mal-adaptation and the need for multi-sectoral and integrated assessments. (UNITED STATES OF AMERICA)	Comment rejected. Interactions, both positive and negative, between adaptation measures in different sectors, and between adaptation and mitigation, are addressed in 25.9 and in Tables 25.6 and 25.7.
222	58549	25	17	25	17	25	units for 25.3 density of coastal populations? (Janice Lough, Australian Institute of Marine Science)	The word "section" has been added before 25.3 to clarify.
223	75053	25	17	27	17	30	Suggest that the authors explicitly address importance the of coastal systems for carbon storage and mitigation. Include the increasing evidence that buried carbon is released upon destruction of these systems the carbon, enhancing the importance of these systems. (UNITED STATES OF AMERICA)	The sentence has been clarified with explicit reference to carbon storage but lack of space precludes a more extensive discussion. Further, there is no clear evidence in Australia or New Zealand as to how climate change will affect carbon storage in these systems.
224	65340	25	17	33	0	50	Is it possible to summarize these observed impacts on marine species and define degree of confidence levels of detection and attribution to climate change? (Lourdes Tibig, The Manila Observatory)	This has been done in Box 25.3, no change to text.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
225	64591	25	17	35	18	9	25.6.2.1. The differentiated view on impacts is highly appreciated. The directions of change have, however, not generally been included and should also be discussed and summary terms of agreement and confidence levels added, to be balanced with WGII chapters 6 and 30. (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	Details of direction of change have been included in the examples in Box 25.3. Space restrictions preclude further detail in 25.6.2.1
226	75054	25	17	35	19	2	Suggest including specific discussion of the likely impacts on the capacity of ecosystems to provide essential services, for example coastal erosion control, coastal water quality. (UNITED STATES OF AMERICA)	The sentence now reads: "Coastal habitats provide many ecosystem services including coastal protection (Arkema et al. 2013) and carbon storage, particularly in seagrass, saltmarsh and mangroves, which could become increasingly important for mitigation (e.g. Irving et al., 2011)."
227	70656	25	17	37	17	38	Nothing on ocean acidification here, yet NZ had the only southern hemisphere time series; also there is an emerging issue that southward extension and warming of the EAC in Australia may result in leakage of warm water across to NZ Subantarctic waters. Not sure if this can be incorporated here: talk to Lionel Carter at VUW (NEW ZEALAND)	Reject comment: we have consulted with Lionel Carter who has indicated that the data series has not been published.
228	83630	25	17	37	17	38	The time frames for these described shifts should be clarified. (Katharine Mach, IPCC WGII TSU)	"since 1950" has been added
229	75055	25	17	43	17	50	This paragraph reads as a literature review rather than an assessment. Suggest that the authors provide conclusions. Also, it would seem to warrant a statement of confidence. (UNITED STATES OF AMERICA)	The first sentence has been rewritten as follows: "Recently observed changes in marine systems around Australia are consistent with warming oceans (high confidence) (Box 25-3). Examples include ..."
230	58550	25	17	46	17	46	Cooper et al (2012; in references) maybe should be included under coral as it did show changes in growth rates related to SST (Janice Lough, Australian Institute of Marine Science)	Reference added
231	58551	25	17	54	18	2	The Wernberg et al (2013) study examined the temperate marine communities to the south of Ningaloo at Jurien Bay. They did NOT report on coral bleaching. The first ever recorded coral bleaching was in the Houtman Abrolhus - see Abdo DA et al (2012) Turning up the heat: increasing temperature and coral bleaching at the high latitude coral reefs of the Houtman Abrolhus Islands. PLoS one 7 (8) doi:10.1371/journal.pone.0043878. Another pertinent reference is Feng M et al (2013) La Nina forces unprecedented Leeuwin Current warming in 2011. Scientific Reports 3 doi:10.1038/srep01277. (Janice Lough, Australian Institute of Marine Science)	References have been added to support the first part of the sentence (on bleaching).
232	58552	25	18	2	18	3	decline since 1985; also tropical cyclones. (Janice Lough, Australian Institute of Marine Science)	Time period has been added.
233	83631	25	18	2	18	3	The timeframe for the observed decline should be specified. (Katharine Mach, IPCC WGII TSU)	Time period has been added.
234	70657	25	18	8	18	9	Wording implies that we are monitoring things sufficiently at this stage to detect an impact. Clarify if this is the case. (NEW ZEALAND)	Phrase "although this may be due to insufficient of monitoring" added; we don't know whether this is the reason or not.
235	78295	25	18	14	18	17	Another encompassing review of temperate mangroves globally that includes the likely impacts from climate change is: Morrissey et al (2010). The Ecology and Management of Temperate Mangroves. Oceanography and Marine Biology: An Annual Review, 2010, 48, 43-160. (Robert Bell, NIWA)	A cross reference to Chapter 6 has been included.
236	64592	25	18	14	19	2	25.6.2.2. The differentiated view on impacts is highly appreciated. The directions of change have, however, not generally been included and should also be discussed and summary terms of agreement and confidence levels added, to be balanced with WGII chapters 6 and 30. (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	Details of direction of change have been included in the examples in Box 25.3. Space restrictions preclude further detail in 25.6.2.1
237	60180	25	18	20	18	22	Suggest rewording the last sentence of the paragraph to make it more clear. (AUSTRALIA)	Phrase added "will affect tourism".
238	75056	25	18	24	18	30	The authors should consider discussing the economic impacts of OA, if there are supporting studies, such as declines in fisheries and aquaculture, as well as indigenous subsistence activities which depend on OA-sensitive organisms. Cross-references to appropriate chapters on oceans would allow this with minimal additional text. (UNITED STATES OF AMERICA)	Cross reference to Box CC-OA, Chapters 6 & 30 has been added. There is no literature on the economic impacts specifically of ocean acidification in the region.
239	75057	25	18	32	18	45	The citations provided seem old. Authors are encouraged to seek newer citations for impacts and issues associated with the Great Barrier Reef and corals more generally. (UNITED STATES OF AMERICA)	All references are post AR4 and include 2012.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
240	58553	25	18	33	18	34	"Recent observations of bleaching" - the references currently cited relate to coral growth rates. A better reference relating to coral bleaching on the GBR is: Great Barrier Reef Outlook Report 2009, Great Barrier Reef Marine Park Authority, Townsville, Qld, 192pp. (available at <a href="http://www.gbrmpa.gov.au/outlook-for-the-reef/great-barrier-reef-outlook-report">http://www.gbrmpa.gov.au/outlook-for-the-reef/great-barrier-reef-outlook-report</a> ). Also Cooper et al (2012) did not report reduced calcification on WA reefs - they did find calcification was responding to rates of SST warming with the two most southerly cool water reefs (which showed greatest warming) actually increasing their calcification rates (suggesting temperature has been limiting factor). Their overall conclusion was that rates of SST warming are currently driving changes in calcification rates. Also suggests that on GBR (De'ath et al 2009) that optimum temperatures for calcification have been exceeded. (Janice Lough, Australian Institute of Marine Science)	GBRMPA 2009 reference now included after "Recent observations of bleaching..."
241	83632	25	18	36	18	38	In place of beginning the sentence with "there is high confidence," it would be preferable to present the level of confidence within parentheses at the end of the sentence. (Katharine Mach, IPCC WGII TSU)	Change made as suggested
242	58554	25	18	38	18	38	More likely that these factors will result in changes in coral reef community structure and increasing dominance of macroalgae (cf Fabricius et al 2011). (Janice Lough, Australian Institute of Marine Science)	Addition made as suggested
243	75058	25	18	39	18	40	Recommend either explaining the significance of decoupling from the 4-7 year El Nino cycle, or deleting this statement altogether. (UNITED STATES OF AMERICA)	Statement has been deleted
244	58555	25	18	40	18	41	"tropical cyclones"; see also Great Barrier Reef Marine Park Authority 2011. Impacts of tropical cyclone Yasi on the Great Barrier Reef: a report on the findings of a rapid ecological impact assessment, July 2011, GBRMPA, Townsville (available at <a href="http://www.gbrmpa.gov.au/_data/assets/pdf_file/0008/8783/GBRMPA_ImpactsTC_Yasi_onGBRSept2011.pdf">http://www.gbrmpa.gov.au/_data/assets/pdf_file/0008/8783/GBRMPA_ImpactsTC_Yasi_onGBRSept2011.pdf</a> ). Also note that extreme freshwater flood events is also a stress to corals and can cause bleaching as observed in recent extreme wet seasons. (Janice Lough, Australian Institute of Marine Science)	GBRMPA reference added, freshwater also added in list of stresses
245	75059	25	19	5	19	31	Please describe the extent to which these adaptation options have been tested or applied. (UNITED STATES OF AMERICA)	Sentence has been modified to read "have been proposed but remain untested at scale"
246	60182	25	19	7	19	8	Adaptation research has "been guided by the NARPs" is a little NCCARF-centric. This section could provide further context including the Australian Government's initiatives and the CSIRO adaptation flagship. Refer to <a href="http://www.climatechange.gov.au/en/government/adapt.aspx">http://www.climatechange.gov.au/en/government/adapt.aspx</a> and <a href="http://www.csiro.au/Organisation-Structure/Flagships/Climate-Adaptation-Flagship/ClimateAdaptationFlagshipOverview.aspx">http://www.csiro.au/Organisation-Structure/Flagships/Climate-Adaptation-Flagship/ClimateAdaptationFlagshipOverview.aspx</a> for detail (AUSTRALIA)	CSIRO flagship and GBRMPA now added
247	60181	25	19	7	19	15	Section could provide reference to work undertaken by the Great Barrier Reef Management Protection Authority-adaptation plan. <a href="http://www.gbrmpa.gov.au/outlook-for-the-reef/climate-change/marine-park-management">http://www.gbrmpa.gov.au/outlook-for-the-reef/climate-change/marine-park-management</a> (AUSTRALIA)	GBRMPA 2007 reference now added
248	64593	25	19	7	19	31	25.6.2.3. A crucial point is how adaptation is defined. A species moving away to cooler waters according to its thermal preference evades the temperature effects, however, a species able to stay is the one displaying adaptation to warming in an evolutionary sense. The fact that marine species can move along large gradients is beneficial, however, then the species composition of communities and ecosystems will change putting organisms under new adaptative pressures due to changing species interactions. These principles have been addressed in WGII ch. 6. (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	A sentence on autonomous adaptation has been added to the first paragraph of 25.6.2.3
249	83633	25	19	19	19	22	In place of beginning the sentence with "there is high confidence," it would be preferable to present the level of confidence within parentheses at the end of the sentence. (Katharine Mach, IPCC WGII TSU)	Edit made as suggested
250	65083	25	19	22	19	22	clarify that forecasting refers to seasonal forecasting of high sea surface temperatures (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	"seasonal" has been added before "forecasting" as suggested.
251	75060	25	19	24	19	31	The authors are encouraged to consider additional discussion of how climate change will impact the off-shore fisheries in Antarctica and the Pacific Islands. (UNITED STATES OF AMERICA)	This subject area is covered to the extent possible by other chapters and so is not covered in this chapter. We could not find literature about the implications of climate change impacts in those fisheries back in Australia and New Zealand (this knowledge gap is flagged in 25.11).
252	75061	25	19	24	19	31	While the authors discuss possible adaptation actions for impacts to fisheries it would seem important to include at least mention of possible adaptation for impacts to other ecosystem services. (UNITED STATES OF AMERICA)	Comment rejected due to lack of available literature on the impacts of climate change on ecosystem services.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
253	60183	25	19	39	19	41	Not strictly true that only one study "describes climate-related change in a managed ecosystem", e.g. Sadras and Petrie (2011) and Darbyshire et al. (2013). Please clarify if you actually mean the study has formally attributed the changes seen in the ecosystem to climate change. Darbyshire R, Webb L, Goodwin I, Barlow EWR. (2013) Evaluation of recent trends in Australian pome fruit spring phenology. Int J Biometeorol DOI 10.1007/s004840-012-0567-1 (AUSTRALIA)	The sentence has been deleted here in light of those other studies. However, the Darbyshire et al reference is now cited in the introduction to the agriculture section since we feel that this is indeed worth noting.
254	75062	25	20	7	20	10	Native forests are excluded from this section. The rationale is not obvious. Are they not part of the forestry sector in these countries? (UNITED STATES OF AMERICA)	We are puzzled by this comment as the text does NOT say that native forests are excluded here. Instead, it does explicitly mention that Australia's forest estate does 'include .... multiple-use native forests'. At the same time, while not actually stated in the text, it is also true that forestry in Australia and New Zealand does largely depend on plantations of exotic species. Wording has been revised slightly to further reduce the risk of this misunderstanding.
255	60184	25	20	8	20	9	Please update the references: Instead of ABARES 2011a, use 'Australia's forests at a glance 2012' ABARES and Gavran, M and Parsons, 2010 could be updated with Gavran, Mijo, 2012 "Potential effects of climate change on forests and forestry in Australia, 2011, ABARES. (AUSTRALIA)	The references ABARES 2011b, MPIGA and Gavran and Parsons 2010 have been replaced by ABARES 2012
256	70658	25	20	9	0	0	The NZ Greenhouse Gas Inventory (2013) suggests 2 Mha plantation estate (page 195) (NEW ZEALAND)	The suggested 1.7 Mha in the text are based on statistics published by the NZ Forest Owner's Association in conjunction with the Ministry of Primary Industries. They refer to production forests. The data in the NZ Greenhouse Gas Inventory list 2.0 Mha, and the text states in the Inventory states that this includes areas planted for non-production purposes, such as for erosion control. We have modified the text to clarify that the 1.7 Mha refer only to production forests.
257	70659	25	20	10	0	0	Refer to the more recent MfE Net Position (2013) or the Greenhouse Gas Inventory (2013) for a statement on the influence of the profitability of dairy farming (p 229) (NEW ZEALAND)	The citation has been updated to refer to the 2013 GHG inventory which makes the same point as the earlier net position report.
258	75063	25	20	13	20	40	Authors are encouraged to include consideration of plantations and their potential to reduce streamflow in a water-scarce future. See Zhang et al, 2011, "Estimating effects of plantation expansion and climate variability on streamflow for catchments in Australia," Water Resources Research 47(12). (UNITED STATES OF AMERICA)	We agree that the interaction of land cover and stream flow is an important one, but it is already covered in 25.5 and explicitly in Box 25.10. While this interaction is an important one, its importance level would seem to be sufficiently covered with its existing treatment in this Box.
259	60185	25	20	17	20	19	Should also refer to the results for future forest growth from the report "Potential effects of climate change on forest and forestry in Australia", 2011, ABARES (AUSTRALIA)	The 2011 ABARES report excluded CO2 fertilisation from their modelling runs. It thereby presented an unrealistic worst-case scenario, and not a meaningful exploration of what might realistically happen. Other studies typically explore future simulations with different assumptions about forest responsiveness to increasing CO2 to cover the range of possibilities. Studies that completely ignore CO2 fertilisation have become uncommon in the recent literature.
260	75064	25	20	23	20	24	Please explain what is meant by, "In New Zealand, temperatures are mostly sub-optimal for forest growth...". (UNITED STATES OF AMERICA)	This statement referred to the growth of Pinus radiata forests rather than forests in general. We have made that more specific in the text and hope that it is sufficiently clear now.
261	75065	25	20	45	20	46	It is unclear to what impacts these changes would adapt -- fires, pests? On pests, add Singh et al, 2010, "Implications of climate change for forests, vegetation and carbon in Australia," New Zealand Journal of Forestry Science 2010 Vol. 40 pp. 141-152. (UNITED STATES OF AMERICA)	The sentence has been made more explicit to indicate the aim of different adaptive responses. The reference to Singh et al. (2010) has been added to the references.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
262	75066	25	20	45	20	52	A modest expansion in the treatment of adaptation would be very useful, particularly considering the level of expertise of the authors and the focus of WG2. (UNITED STATES OF AMERICA)	The section has been re-ordered to provide a more logical flow. However, space constraints preclude expanding the section substantially, and we believe the key issues are all covered as it stands.
263	75067	25	21	7	21	7	What are the other non-climate stressors that have made it hard to attribute impacts to climate change? (UNITED STATES OF AMERICA)	Added "management" and cross-reference to Chapters 7 and 18 where details may be found.
264	60186	25	21	15	21	16	Please clarify from what baseline this 3 degree rise is from. (AUSTRALIA)	Baseline added.
265	60187	25	21	15	21	48	The section on impacts on livestock is inadequate and focussed on a very limited number of studies relating mainly to pasture. The section fails to discuss the impacts of increased temperatures on livestock, in particular the impacts of heat stress, and conversely the potential benefits of reduced frost. Both are of particularly relevance to the Australian livestock industries, with impacts on animal health and quality of product (such as wool quality). It also fails to discuss the potential impact of temperature change on vectors and severity of pests and diseases. Also critical for livestock. This section requires further work and a broader canvassing of the literature. (AUSTRALIA)	A section on heat stress has been added. There is no post-AR4 literature on vectors and pests and diseases.
266	60188	25	21	28	21	29	Is this correct? That 25 sites in southern Australia cover 40 per cent of beef production regions? Maybe a percentage of total area is better as the type/size of the production regions aren't mentioned. (AUSTRALIA)	This is by value which is now made clear in the text.
267	60189	25	21	29	21	29	Explain the reason for shorter growing season. (AUSTRALIA)	Due to changes in both rainfall and temperature which has been added to the text.
268	70396	25	21	32	21	32	The paper cited as Ghahramani and Moore (submitted) was rejected by Crop and Pasture Science. A revised version will very shortly be re-submitted. Some of the material in it will be also covered in an oral paper to the International Grassland Congress. (Andrew Moore, CSIRO)	The sentence referring to this unpublished paper has been removed as it was not accepted by the cut-off date.
269	60190	25	21	39	21	40	Paragraph notes that future rainfall remains the most uncertain change. This is true, yet research indicates with reasonable certainty that rainfall over southern Australia is expected to reduce, particularly during winter - and this is noted elsewhere in the chapter (eg. pages 12-13). Suggest the paragraph also note this expected drying over southern Australia. (AUSTRALIA)	As the reviewer notes this fact is already in the Chapter and is not repeated here simply for reasons of space.
270	60191	25	21	40	0	0	In this section there is little about the impacts, adaptive capacity and vulnerability of the grazing industry, a land use that occupies so much of Australia (line 15). Insert in Line 40, between the existing sentences, 'More droughts and lower summer rainfall are likely to have the largest negative impact, lowest adaptive capacity and highest vulnerability on the northern Australia pastoral industry (Cobon et al 2009).' Reference citation Cobon, D.H., Stone, G.S., Carter, J.O., Scanlan, J.C., Toombs, N.R., Zhang, X., Willcocks J. and McKeon, G.M. (2009). The climate change risk management matrix for the grazing industry of northern Australia. A Climate of Change in Australian Rangelands, The Rangeland Journal, Volume 31 Number 1, pg 31-49. (AUSTRALIA)	A sentence and the Cobon reference have been added.
271	75068	25	21	42	21	43	"Reduced stomatal conductance" - This phrase will not be meaningful to a non-expert audience. (UNITED STATES OF AMERICA)	Have removed this phrase.
272	60192	25	21	47	0	48	Soil erosion also likely to be important in Australia especially in areas with low ground cover and high rainfall intensities (AUSTRALIA)	No literature for Australia could be found to support this assertion.
273	75069	25	21	53	22	2	Luo et al. seems less optimistic about offsetting projected impacts. Please reconsider this conclusion (or its support by the cited references). (UNITED STATES OF AMERICA)	A caveat has been added to the Luo references sentence to make this point clearer.
274	57747	25	21	53	22	5	this statement could be expanded a little more, to give impacts both with and without adaptation, and if possible to add a little quantitative information. Also, the authors may want to check some more recent papers such as Potgieter, A., Meinke, H., Doherty, A., Sadras, V., Hammer, G., Crimp, S., & Rodriguez, D. (2013). Spatial impact of projected changes in rainfall and temperature on wheat yields in Australia. Climatic Change, 1-17 (David Lobell, Stanford University)	Space restrictions prevent further discussion of specific adaptation options for wheat. The Potgieter paper does not include elevated CO2 across all sites although the impact of CO2 is shown to be large in the limited set of sites where it is considered. Consequently we feel this paper does not add substantially to the conclusion stated in the text.
275	75070	25	22	19	22	19	This is an important research and warrants consideration for inclusion in Section 25.11. (UNITED STATES OF AMERICA)	This is dealt with by a slight expansion in Section 25.11

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
276	75071	25	22	19	22	23	The reference to "biocontrol" or "biological control agent introductions" is important to this section, but the range of biocontrol applications is fairly broad and not widely understood by a non-expert audience. Suggest providing examples of biocontrol here. (UNITED STATES OF AMERICA)	Space restrictions prevents us adding a list of examples here as there is a wide variety of approaches; the reader will need to refer the the reference. We did add a generic example of a type of biocontrol though to give a generic sense to readers who may not be familiar with the concept of biocontrol at all.
277	60193	25	22	29	0	0	Update the DAFF, 2010 reference with DAFF, 2012 (AUSTRALIA)	The first several sentences have been revised and references updated.
278	75072	25	22	45	22	45	It would be helpful to identify the group(s) from which a higher level of commitment is needed. Farmers? Politicians? Munciple water service providers? All? (UNITED STATES OF AMERICA)	Yes, all groups. This has been added.
279	83634	25	22	53	23	2	In place of beginning the sentence with "there is high confidence," it would be preferable to present the level of confidence within parentheses at the end of the sentence. (Katharine Mach, IPCC WGII TSU)	Changed as suggested.
280	75073	25	23	14	23	14	What percentage of Australia's population is considered "rural"? (UNITED STATES OF AMERICA)	This information is already contained in section 25.3 (in that more than 85% of the Australasian population lives in urban areas and their satellite communities) and, given space constraints, is not re-stated here. Also the size of the rural population is only one of several measures to characterise the importance of rural areas.
281	62692	25	23	14	24	12	reflects the current state of knowledge very well. (Paula Blackett, Agresearch ltd)	Thank you
282	65084	25	23	44	23	47	I think these data were presented in the AR4. It would be good to present some more recent data for the AR5. For example, Leblanc et al (2012) state "it was estimated that during 2005–06 and 2007–08 the total area of irrigated land fell by 42% compared to normal conditions (MDBA, 2010). The Australian Reserve Bank estimated that the 2006–07 dry year in Australia reduced gross domestic product (GDP) by almost 1%, whereas farm GDP fell by around 20% (RBA, 2006). A modeling study of the impact of the drought on regional economies found that from 2006 to 2009 the drought resulted in an estimated ~6000 jobs being lost in southern part of the MDB (Wittwer and Griffith, 2011). The model showed that depressed farm investments continue to affect employment levels several years after the end of the drought (Wittwer and Griffith, 2011)". See doi:10.1016/j.gloplacha.2011.10.012 (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Thank you for this helpful pointer. We revised this paragraph fundamentally to provide more recent information on droughts in Australia and New Zealand based on these and other references.
283	75074	25	24	18	25	2	In this paragraph, authors say there will be negative and positive effects from climate and fire interactions in the future. However, the list includes only negative impacts. What are the positive effects that may occur? (UNITED STATES OF AMERICA)	Text now says there will be complex impacts.
284	60194	25	24	52	24	52	Note that Queensland is currently considering future fire risk for urban infrastructure under a review of State Planning Policy (AUSTRALIA)	Noted - This is starting to happen, but there is no direct reference to adaptation to climate change, hence this has not been included here.
285	75075	25	25	7	25	20	The authors state, "Recent events demonstrated significant vulnerability to climate extremes." However, only the example of vulnerability of the mining sector to flood risk is described. Providing at least one other example would support the plural use of "events" and "extremes". (UNITED STATES OF AMERICA)	We now also give production losses during cyclones as additional example.
286	60195	25	25	9	25	20	The section on mining is very lightly discussed. Statements relating to "tensions among industry, social and ecological objectives" and "climate scepticism" add very little to the chapter and provide a perspective that the industry is not adapting. Authors should give consideration to providing examples of adaptation in industry (generally- mine water management and transportation, specifically, design criteria and programs by Rio Tinto and BHP Billiton). <a href="http://www.riotinto.com/ourapproach/7212_climate_change_adaptation.asp">http://www.riotinto.com/ourapproach/7212_climate_change_adaptation.asp</a> and Sharma, V, van de Graaff, S, Loechel, B, and Franks, DM (2012) Extractive resource development in a changing climate: learning the lessons from extreme weather events in Queensland, Australia, National Climate Change Adaptation Research Facility, Gold Coast pp.110. (AUSTRALIA)	We have accepted the request by the reviewer and expanded the discussion, including recognising the climate risk assessments already undertaken by the industry. However, the broad picture from Sharma et al is consistent with the constraints already cited, which are based on other peer-reviewed studies, and hence no fundamental change was made.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
287	75076	25	25	9	25	20	Authors may wish to mention the dependence on overseas mining, e.g. PNG and to include issues associated with ports. (UNITED STATES OF AMERICA)	Climate change impacts on mining in PNG is not within the scope of our chapter. We have not been able to find literature on the dependence of Australia on overseas mining operations in the context of climate change.
288	65085	25	25	23	25	23	Should mention that heatwaves have led to black-outs, not just increasing energy demand. See Institutional Adaptability to Redress Electricity Infrastructure Vulnerability Due to Climate Change, John Foster et al., The University of Queensland and University of Technology, Sydney, 2012. (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	This was already mentioned (Victoria 2009 heat wave) but has now been stated more generally.
289	75077	25	25	25	25	25	Authors may wish to mention use of deep seawater and OTEC for cooling and as an alternative energy source. (UNITED STATES OF AMERICA)	The main relevance of the highlighted technologies is for mitigation of GHG emissions, which is outside the scope of our chapter. We have not been able to identify any literature that addresses climate change impacts or adaptation options for those (partly speculative) new technologies.
290	75078	25	25	25	25	26	Do projected demand statistics include any consideration of demand management? (UNITED STATES OF AMERICA)	The available scenarios all assume a continuation of existing demand management and in some cases further improvements, but none assume major new policies. This has now been clarified.
291	58556	25	26	13	26	13	"Tropical Cyclone Yasi" (Janice Lough, Australian Institute of Marine Science)	The world Tropical has been added
292	60196	25	26	14	0	0	Reference is made to the costs associated with floods and cyclone Yasi. Please indicate (in the next section) what is projected for both flood events and cyclones (with confidence estimates). For example, there is little evidence for an increase in cyclone numbers. There is some confidence in projections for an increase in heavy rainfall events. (AUSTRALIA)	This information is provided in 25.2 and given space constraints we feel it is not useful to duplicate this information here, but a cross-reference to 25.2 has been included. The text makes clear that these examples are cited as evidence of sensitivity to extreme events.
293	75079	25	26	21	26	35	The importance of the GBR for tourism and the potential impacts on the GBR for tourism potential are discussed. However, no other natural areas are flagged for potential impacts to tourism (e.g., SW Australia forests, coastlines nationally etc.). The also applies to page 31 lines 8-50. (UNITED STATES OF AMERICA)	The reason the GBR was chosen is because it is one of the iconic tourism assets in Australia and one of the most at-risk, with the most comprehensive literature. Impacts on other regions are clearly flagged in our text (coasts, alpine region, skiing, generic destinations such as Margaret River and the MDB), but often the information is much more sparse and qualitative. Reference to risks to coastlines is already included. Hence we feel that within space constraints, this represents an adequate balance of material. No change made.
294	60197	25	26	22	0	0	Reference is made to "The Great barrier Reef is expected to degrade under..." Please indicate the source of this projected degradation (i.e. bleaching events, runoff events,...) (AUSTRALIA)	The sources for this statement are given already in brackets (CC-CR, 25.6.2, 30.5).
295	70660	25	26	40	26	42	The relative applicability of these statements to NZ and Australia is not made clear. (NEW ZEALAND)	Formal national strategies have been developed in both countries, but regional activities are only evident in Australia. Sentence has been revised to make this clear.
296	75080	25	27	10	28	11	Estimates of current and/or projected changes in injury and death from extreme weather events and fires should be included in the human health section. Impacts on respiratory problems should also be included here. (UNITED STATES OF AMERICA)	Projections of impacts are only available for heat-associated impacts. Some estimates of deaths and injuries from flooding are provided in Box 25.8 and for fires are referred to in Box 25.6. The association of fires with respiratory problems is also mentioned in Box 25.6.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
297	60198	25	27	12	0	0	Are there any observed impacts for NZ? (AUSTRALIA)	There is no published literature specifically relating recent climate trends to health impacts in New Zealand.
298	60199	25	27	20	27	21	25% to 46%? Or just 46? There are three days but two values. (AUSTRALIA)	The text has been shortened and clarified. The 25% referred to total emergency calls over the whole period of the heatwave and the 46% to the calls over the three hottest days. The text has now been shortened to just refer to the 3 hottest days.
299	75081	25	27	32	27	33	This statement needs a citation, or does it go with the 2nd sentence in the section? Either way, suggest clarifying what is meant. (UNITED STATES OF AMERICA)	Bambrick et al 2008 reference now inserted.
300	60200	25	27	35	27	49	This paragraph is particularly confusing, as it is not at all clear why the different scenarios were chosen and how to compare them. Suggest re-phrasing. (AUSTRALIA)	This paragraph has been substantially shortened with much of the detail about scenarios and GCMs removed.
301	65086	25	27	38	27	38	was the hot dry scenario based on one GCM? If so, the model should be stated (as in line 43). Projections based on one model understate the range of uncertainty. (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	This paragraph has been substantially shortened with some of the detail about scenarios and GCMs removed.
302	69766	25	27	41	27	45	Is the baseline (1961-1990) for A2 and B2 scenarios different? It should presumably be either 2.5 or 2.6 for both. Also, the colon after the reference in parentheses should be removed. (NETHERLANDS)	This paragraph has been substantially shortened with much of the detail about scenarios and GCMs removed. Results from the B2 scenario have been removed.
303	65087	25	27	46	27	46	based on which GCM(s)? (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	This paragraph has been substantially shortened with much of the detail about scenarios and GCMs removed. Results from the B2 scenario have been removed.
304	62693	25	28	15	28	19	Neels Botha may have some work to contribute in this section with regards to farmer welfare and stress for NZ. I can follow up if needed (Paula Blackett, Agresearch Ltd)	Thank you, we feel that material related to stress is covered sufficiently in Box 25-5 and does not need to be repeated here.
305	75082	25	28	33	28	53	The adaptation section for human health focuses primarily on heat stress. The authors should consider current or planned adaptive measures for the other aspects of health that will be impacted by climate change (for instance, extreme weather events). (UNITED STATES OF AMERICA)	The potential co-benefits for health of better preparedness for extreme events is now mentioned, with cross-reference to Boxes 25.6 and 25.8 (fire, floods).
306	75083	25	28	35	28	35	The first sentence of the paragraph is unclear. Do the Authors mean that research on climate change and human health has mainly focused on health impacts rather than adaptation strategies? (UNITED STATES OF AMERICA)	Yes. The first two sentences have now been linked to clarify the point that most of the focus since the AR4 has been on climate change impacts rather than adaptation, although some adaptation strategies for Australia are listed.
307	75084	25	29	4	29	39	Has potential migration of indigenous peoples to less impacted areas been studied at all? Likewise, should the potential (and current) impact of climate induced migration INTO Australia and New Zealand from Pacific Islands be considered in this chapter, as countries are already making agreements for land and resources? (UNITED STATES OF AMERICA)	No change made here; section 25.9.2. covers this to the extent that there is literature, and explicitly refers to the potential migration of Torres Strait islanders to locations less affected by sea level rise.
308	60202	25	29	6	29	6	The indigenous population here is stated to be 2.5%, whereas on pg 8 it is 2%. This is no doubt due to rounding however this should be consistent. (AUSTRALIA)	Percentages have been made consistent and this is now covered in (and only in) 25.3.1
309	65088	25	29	6	29	7	this text should be moved to page 8 (lines 15-19) (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	This has been shifted as suggested (except for the land area, which has been moved into the next paragraph further down).
310	75085	25	29	6	29	9	It is very interesting that 2.5% of the population controls 25% of the land area. Are indigenous lands (not just the population) more subject to climate impacts than non-Indigenous lands? For example, in the case of the U.S. and Canada, indigenous populations are clustered on marginal lands that were allocated to them as the most undesirable areas and hence may be more subject to drought, fire, etc. (UNITED STATES OF AMERICA)	Lands in the indigenous 'estate' are no more or less susceptible to climate change except inasmuch as they include many remote areas. The issues are adequately covered in the text as it stands.
311	60201	25	29	6	29	34	Comments relate to use of "controls" (line 6) which may be better reflected by "manages". And "Indigenous re-engagement with environmental management" (line 32) which may be enhanced by providing context of the significant role Indigenous Australians already play in environmental management (AUSTRALIA)	We now refer to the Indigenous 'estate' and do not use the word 'control'. Indigenous engagement in management is dealt with in the last para of this section.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
312	75086	25	29	28	29	39	The paragraph seems to focus primarily on managed adaptation. Have there been any studies on autonomous adaptation to date by Indigenous communities? (UNITED STATES OF AMERICA)	We are not aware of any literature that describes recent instances of 'autonomous adaptation' in Indigenous Australia. Moreover we are not aware of any Australian literature that highlights the importance of this distinction, except Leonard et al. (2013, writing about the East Kimberley) who affirm the need for planned adaptation in this context. Green et al (2009) for example found the distinction unhelpful in their study of north Australian climate change impacts, arguing that: "endogenous and planned adaptation fall on a continuum, not in neatly separated boxes, and that adaptive capacity is a multi-scalar, nested concept in which the capacity of the Indigenous community itself both affects and is affected by the capacity of individual households within the community and the wider regional, state and national level policy and programs context outside the community".
313	69767	25	29	29	29	29	Not clear what this statement means: Institutions external to Indigenous communities can constrain their adaptive capacity (NETHERLANDS)	This sentence has been reworded to increase clarity.
314	75087	25	29	36	29	36	Suggest that the authors recheck this reference with regard to the stated conclusion. In a quick scan of the reference (Prober et al 2011), this statement was not evident. (UNITED STATES OF AMERICA)	Prober et al, along with Woodward et al. were quoted as examples of literature proposing useful communication tools. Prober has been replaced by Leonard et al (2013b) which is more recent and more relevant
315	75088	25	30	8	30	24	This is quite a one-directional consideration of vulnerability and adaptation among Maori. Could Maori knowledge help mainstream NZ society to adapt? See Berkes, 2009, "Indigenous ways of knowing and the study of environmental change", for instance. (UNITED STATES OF AMERICA)	No changes made. We believe the statements and references already used cover the issues adequately without straying into conjecture.
316	70661	25	30	14	30	15	This sentence refers to what might be termed the "impact of response measures" not the physical impacts of climate change. It seems out of scope and could be deleted. (NEW ZEALAND)	Agree. Sentence has been deleted
317	70662	25	30	20	30	25	Recommend the addition (onto the end of the paragraph) of the following sentence: Specific Māori participation in climate adaptation planning and action will assist in the identification of priorities and targeting of initiatives to reduce vulnerability and build the adaptive capacity of Māori (King D., et al 2012. P96; King D., Penny, G. 2006). (NEW ZEALAND)	No change made; participation of affected groups is beneficial in all groups, not just Maori. General benefits of participatory approaches are covered in 25.4
318	75089	25	30	27	30	54	This section does not mention coastal flood insurance. Is this not relevant in either country? (UNITED STATES OF AMERICA)	The box does not mention any hazard-specific insurance product due to space constraints.
319	75090	25	30	31	30	32	The conclusion that insurance schemes effectively distribute risk is not universally held. (UNITED STATES OF AMERICA)	The text does not make any claim that the risk re-distribution is effective (and the box points out several aspects that make the re-distribution of risk through insurance problematic), but there is little disagreement that insurance, where it is available, enhances resilience to disasters, which is what is stated.
320	75091	25	30	36	30	36	"Oceania" can include regions outside "Australasia". Suggest taking care to keep geographical references consistent. (UNITED STATES OF AMERICA)	Correct, however the only data available for this statement is based on the geographical region. Insurance losses in the region are dominated by Australia and NZ.
321	65089	25	30	36	30	37	if there has been an increase in the frequency and / or intensity of some extreme events in recent decades in Australia, with no trend in normalised insurance losses, does this suggest that adaptation has offset the losses? What can be said about the proportion of the population with full insurance cover, and has there been a trend? To what extent are under-insured people/businesses being bailed out by government disaster relief funding and public donations? Is this a form of mal-adaptation? (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	A qualifier and further references have been added, noting that Crompton and McAneney normalisation has some problems that makes conclusions about the effectiveness of adaptation or other causes difficult. The implications of under-insurance and unaffordability, and cross-subsidisation, are discussed in the following two paragraphs.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
322	60270	25	30	49	0	0	the EQC government scheme does not only manage geological risk. It covers the impacts to land associated with rainfall and storm events as well. This should be corrected. (Judy Lawrence, PS Consulting)	Corrected, "to manage geological risk" was deleted.
323	75092	25	30	51	30	54	Suggest an explanation of the extent to which insurance private and/or subsidized or provided by the government is provided, as this may have implications for possible incentives toward risk reduction. (UNITED STATES OF AMERICA)	The data needed to answer this question are very difficult to collect, and there is no published analysis of this question; hence the answer would require research, not an assessment of the published literature as is the mandate for this chapter.
324	65090	25	30	54	30	54	consider using material from "Sharing Risk: Financing Australia's Disaster Resilience", by Edward Mortimer, Anthony Bergin and Rachel Carter, ASPI Special Report, Issue 37, The Australian Strategic Policy Institute, February 2011 <a href="http://www.aspi.org.au/publications/publication_details.aspx?ContentID=280&amp;pubtype=-1">http://www.aspi.org.au/publications/publication_details.aspx?ContentID=280&amp;pubtype=-1</a> . The paper advocates thinking strategically about how to reduce future losses from natural disasters and aid victims in their recovery efforts. It urges that fundamental questions are asked about how private insurance and government assistance can be better leveraged to help communities recover. The paper asserts that a new approach is needed to financing the costs of natural disasters and encouraging those living in high-risk areas to be better prepared. It includes nine recommendations to strengthen the role of insurance for Australian disaster resilience. (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	We added a sentence highlighting the link between insurance and a broader national disaster resilience approach. Given the limited peer-review of the cited report and absence of supporting publications in peer-reviewed journals, we feel reluctant to go into more details or cite some of the report's recommendations as generally valid conclusions.
325	60203	25	31	8	31	8	This is a very old reference. Given that there have been a number of very costly natural disasters post 2001 (i.e. 2011 floods in Queensland, 2009 bushfires in Vic), is the use of this reference valid, and this statement still accurate? (AUSTRALIA)	The introductory sentence has been deleted since it mainly repeats what is stated already in the Insurance Box 25-7. The opening sentence now cuts straight to the chase of the more recent floods.
326	63031	25	31	18	31	18	I think the reference to Griffiths 2007 given here should be removed. (The Griffiths paper is about an analysis of observations, not about downscaling of climate model projections). (David Wratt, NIWA, New Zealand)	Griffith reference has been removed.
327	65091	25	31	35	31	36	perhaps mention the planned update of the Australian Rainfall and Runoff Handbook being managed by Engineers Australia. (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	No change has been made. The Westra reference is a discussion paper for Engineers Australia, so we feel this area is covered sufficiently by the cited studies.
328	75093	25	31	35	31	42	Suggest additional consideration of ecosystem-based approaches to adaptation, such as restoring/protecting wetlands to absorb excess water. (UNITED STATES OF AMERICA)	"Restoring wetlands" is now referred to specifically, as is the concept of ecosystem-based approaches.
329	70663	25	31	46	31	50	Support. (NEW ZEALAND)	Thank you
330	60271	25	31	47	0	0	The word 'structural ' is used to refer to the type of transformative approaches. This word in the NZ context can be confused with structures like stopbanks(levees). Suggest you delete the word as you go on to say what you mean. (Judy Lawrence, PS Consulting)	The term 'structural' has been removed.
331	60272	25	32	1	32	29	It is surprising that Urban settlement impacts and adaptation are not one of the main sectors in the previous sections which has a heavy bias towards the traditional economic sectors. Most of our populations in NZ and Australia reside in urban areas as do our most significant investments in infrastructure. At this juncture this can only be rectified by some careful cross referencing elsewhere in the Chapter. However one change would be to add at Line 12 the words "stormwater, waste water and water reticulation and storage." These are systems that could be the first to be affected by rising water tables and sea level rise in low-lying areas. (Judy Lawrence, PS Consulting)	As pointed out by the reviewer, urban issues are discussed throughout the chapter, and the box is simply an attempt to highlight these multiple occurrences, including through the condensed summary of adaptation options in Table 25-5. Following the reviewer's suggestion, we now specifically mention stormwater and wastewater infrastructure in the text, and added a further sentence on impacts on transport infrastructure.
332	83635	25	32	8	32	8	Would it be better to use the term "synergies" here in place of or in addition to "co-beneficial"? (Katharine Mach, IPCC WGII TSU)	No change has been made; we feel that 'co-beneficial' is a slightly better term, and is therefore used here.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
333	65092	25	32	12	32	12	transport is mentioned in passing here and in 7 other places in the chapter. Given the importance and exposure of this sector, perhaps it deserves more detailed discussion. See Taylor and Philp (2010). Also see Sustainable Urban Planning and Urban Responses to Climate Change - A Review of Practices in the ACT, New South Wales and Victoria, Australia, Hitomi Nakanishi, John Black and Ken Doust, Paper Presented at Fifth Urban Research Symposium, France, 2009 <a href="http://www.urs2009.net/docs/papers/Nakanishi.pdf">http://www.urs2009.net/docs/papers/Nakanishi.pdf</a> . The paper focuses on the Australian government, both in terms of responses to the Kyoto Protocol and to the current policies of the Labor Government. It reviews state policies on climate change with particular reference to cities and transport. The paper describes the new institutional arrangements and policies that are emerging for mitigation, adaptation and risk assessment associated with climate change in cities. (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	An additional sentence on transport has been added. The potential impact of sea level rise and coastal flooding on transport infrastructure is also discussed in Box 25-1, and 25.7.3, which we didn't want to repeat here. Table 25-5 now also specifically mentions heat and flooding impact on transport infrastructure.
334	60204	25	32	18	0	0	Move "e.g." prior to "City of Melbourne" (AUSTRALIA)	Error corrected.
335	63027	25	32	20	32	20	I suggest you add a reference to the Urban Impacts toolbox developed in New Zealand. [The actual reference is: NIWA, MWH, GNS and BRANZ, 2012: Impacts of climate change on urban infrastructure and the built environment: Toolbox Handbook, NIWA Wellington, 32pp. (David Wratt, NIWA, New Zealand)	Reference added.
336	62694	25	32	20	32	29	agree with this paragraph (Paula Blackett, Agresearch Ltd)	Thank you
337	70664	25	32	22	32	29	Support - this is a significant barrier to resolving this issue. Please ensure this is reflected in Table 25.2. (NEW ZEALAND)	This is indeed covered in Table 25-2.
338	60273	25	32	48	33	23	There are other links missed in this section. E.g. increase in flood frequency and intensity and roading infrastructure access following extreme events. This is an issue in NZ -the Gisbourne railway was closed for this reason; the Manawatu Gorge was closed for almost a year with major costs to freight companies and people movement in teh NI of New Zealand References to these can be found online in reports by NZtransport Authority (Judy Lawrence, PS Consulting)	This section is seeking to provide examples only, not a comprehensive enumeration. The specific example cited by the reviewer does not seem to add to the focus of this section, which is about synergies and trade-offs, whereas impacts on roading from road closures appear to be a rather straightforward consequence.
339	62695	25	32	50	33	23	agree with this section (Paula Blackett, Agresearch Ltd)	Thank you
340	70665	25	33	29	33	29	Should biosecurity be included here? (NEW ZEALAND)	We don't see sufficient justification in including biosecurity here.
341	75094	25	33	44	33	46	This sentence is arguably too technical for a non-expert audience. Suggest revising. (UNITED STATES OF AMERICA)	The sentence has been revised to make it less technical, although not all technical terms such as albedo have been removed, since this would have required a significant length addition.
342	60205	25	33	49	33	50	Does the statement "Carbon sequestration would mostly improve water quality through reduced erosion" relate to revegetation (biological) sequestration? (AUSTRALIA)	Yes; the two sentences have been joined to make this clear.
343	69768	25	34	12	34	54	25.9.2. There is nothing here on the impacts of Australasia on other countries, other than to say they may pay more for food. What about the role of Australia as a coal producer? (NETHERLANDS)	This comment relates solely to GHG emissions with no link to impacts of climate change or adaptation, and hence is considered outside the mandate for our chapter.
344	61655	25	34	17	34	22	States that climate change impacts could reduce demand for coal, but is this due to reduced economic activity or does it take account of mitigation policy responses? i.e. a response to impacts which come about through a simplified policy response, or as a direct result of policy? (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	This is a baseline scenario (A1FI), which has been clarified in the revised text.
345	75095	25	34	46	34	50	There are several studies cited here that suggest climate change may affect emmigration/immigration in the Australia region. Even if there are only a few causal theories, they may be worth noting in this report. (UNITED STATES OF AMERICA)	We feel this section covers the issue of migration as far as is defensible within space constraints. Additional details and examples of causal theories can be found in chapter 12, which is cross-referenced twice in this section.
346	60274	25	35	24	35	26	The statement that scenario-based studies give high confidence that mitigating emissions from a high to medium low emissions scenario "would markedly" lower the projected increase in flood risks sound s an odd statement because you can't use a scenario study to say something would happen. I suggest this is an language issue if teh authors could find a rewording to address this impression to the reader. Maybe replace 'would' with 'have the potential to'. (Judy Lawrence, PS Consulting)	The wording has been revised to address this language issue.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
347	60275	25	36	2	36	5	This sentence needs a qualifier that moderation or delay should not create maladaptation. This same qualifier is also needed in the Executive summary as well where a similar wording appears. The last clause of the sentence doesn't quite follow possibly something at the end is missing? The authors need to check the meaning and the language here. "where the need" could be replaced with "and require transformative adaptation as the rate and amount of climate change increases" (Judy Lawrence, PS Consulting)	The reviewer seems to have misread the statement; it's not the adaptation or mitigation response that can be moderated or delayed, but the impact. Nonetheless, to reduce the risk of such misunderstanding we have revised and shortened the risk characterisation, and also revised the second part of the sentence that the reviewer stumbled over.
348	60206	25	36	12	36	14	Use of word 'inland' not optimal. Can give the impression of arid zone or well away from populated regions and, therefore, areas with less infrastructure. Perhaps reword as non-coastal? (AUSTRALIA)	Replaced by 'river' flooding.
349	60276	25	36	17	0	0	It is good to see the emerging risk of compounding extreme events identified. There is some evidence in NZ that communities repeatedly hit by summer high intensity storms like Nelson and Takaka in northwest Nelson NZ. Again the NIWA co author should be able to identify that could go here. One concern about the typology of key and emerging risks is that the emerging risk mentioned is the type of risk that required staged addressing over time and therefore if policy makers only address 'key' risks then anticipatory adaptations will not be taken. The authors need to consider the risks associated with highlighting some risks and not others in this case of extreme events. (Judy Lawrence, PS Consulting)	We have been following the typology of risks developed by chapter 19 and see no benefit in deviating from this. There is not enough evidence to be stronger in the assessment of the risk presented by compound events; in contrast to other risks that have much more solid and multiple lines of evidence in the literature, which we feel justified in highlighting as 'key'.
350	83636	25	36	17	36	17	For this risk, is the concept of an emergent risk (given the chapter 19 distinction between emergent and emerging risks) more appropriate? (Katharine Mach, IPCC WGII TSU)	Both notions apply; the risk is emergent (the result of multiple drivers/conditions), and emerging (having received relatively little treatment in the literature and only beginning to be recognised). On balance, we feel that emerging is the more policy relevant characterisation here, in that more work is needed to fully appreciate the importance and response options to these compound events.
351	75096	25	36	38	36	44	Has Australia's use of cost-benefit analyses and other tools for analyzing trade-offs been examined? If so, it could warrant discussion. (UNITED STATES OF AMERICA)	The key existing study on analysing costs and benefits across mitigation and adaptation is the Garnaut report, already discussed in 25.10.1. The analysis of costs and benefits of individual adaptation responses is discussed throughout the report, including the challenges of integrating economic costs with social and environmental ones, and we feel the current treatment (including its consideration as a key knowledge gap) is sufficient.
352	62696	25	36	38	37	22	agree with this section (Paula Blackett, Agresearch Ltd)	Thank you.
353	60277	25	36	38	44	0	This is an extremely important set of statements and I suggest that it be elevated into the executive summary. It is at the heart of the adaptation challenge for decision-makers. (Judy Lawrence, PS Consulting)	We agree with the overall view about the importance of this discussion, but we feel that within the space constraints for the Executive Summary, the importance of transformative adaptation is already flagged clearly and prominently enough in several places.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
354	60278	25	36	52	36	54	I have real problems with this sentence as it can only hold true if the incremental adjustments and use of current tools do not entrench risk exposure and result in maladaptation. I also checked the reference and can't exactly find a statement that supports this sentence?? It also could be seen to contradict the earlier references to new research which is questioning the ability of current tools and planning approaches to increase resilience or address changing climate risk Page 10 Line 31 to 38 refers. Even if they were sufficient under limited change scenarios they would not address the extremes where the most significant damage occurs. the impression is that limited change scenarios would give a false sense of confidence and not address the range of possible conditions. Refer Lawrence J, Reisinger A, Mullan B, Jackson B 2013 Exploring climate change uncertainties to support adaptive management of changing climate risk. Environmental Science and Policy (in press) . The reference needs checking but it certainly needs amendment to avoid the inconsistency with the Page 10 statements and the sentences that follow and the false impression it gives to decision-makers. Suggested rewording of the sentence is as follows. Change the 'will' to 'may be perceived as increasing resilience to CC variability and thus being sufficient under scenarios of limited CC. Then the next sentence should start with "However...." This would then make the qualification in the sentence that follows more logical and flow better. (Judy Lawrence, PS Consulting)	The sentence has been toned down to avoid this interpretation; it now makes clearer reference to the SREX as key assessment of the benefits of low-regrets measures, which will be particularly beneficial in the near term when more transformative approaches are not (yet) needed. The subsequent sentences have also been revised to bring out the time-dependence of adequate responses.
355	75097	25	37	4	37	8	These examples are of transformative, not incremental approaches. The sentence is confusing. (UNITED STATES OF AMERICA)	We inserted "of transformational changes" to make clear the role of the examples given.
356	75098	25	37	10	37	14	While that authors were right to note drawbacks to the deferral of adaptation decisions due to limited information in this paragraph, it would also be pertinent to note similar pitfalls to premature adaptation decisions that could lead to maladaptation. This is noted later in FAQ 25-1, lines 32-34, and should be included here as well. (UNITED STATES OF AMERICA)	We have not been able to find literature from Australasia that directly considers premature (or over-) adaptation, as the risk is generally seen to lie in the opposite direction. However, we have added a half-sentence that points to the near-term investment and opportunity cost of adaptation, which balances the argument for early and long-term adaptation.
357	75099	25	37	25	38	8	Two knowledge gaps in this section are data collection and enhancement of climate models. As a general statement, many of the conclusions in this report were derived from climatic data or products of climate models. It is important to note that to increase the accuracy of climate projections, more research is needed to enhance current climate models and gain a better understanding of natural climate variability patterns driven by events such as ENSO, IOD, Pacific Decadal Oscillation and the Southern Annular Mode. The input necessary to feed the models comes from in situ and satellite data. In situ data gaps currently exist in these regions, and the costs to maintain/operate the infrastructure supplying the current observations are increasing, while funding support is decreasing in many globally recognized research institutions both within and outside the Australasia region. Inability to fill current data gaps will limit the extent of climate forecast accuracy. Inability to maintain current data streams (or replace them with adequate data streams that are more affordable to maintain) will cause gaps in the data record and can increase climate forecast error. The long-term implications of this can be extrapolated through the previous sub-chapters. (UNITED STATES OF AMERICA)	Our assessment does not support current data gaps in physical climate variables (as implied in the review comment) as being a key uncertainty in understanding future impacts. If current data streams are curtailed this could present a serious problem, but this becomes a science needs assessment - not a result of our assessment of the existing literature. The existing text already notes the need to improve rainfall projections, but also that model uncertainty as such is not the biggest barrier to adaptation. Hence no change made.
358	62697	25	37	44	37	47	strongly agree with this paragraph (Paula Blackett, Agresearch Ltd)	Thank you.
359	69769	25	37	44	37	47	What about the vulnerability of the economic system? (NETHERLANDS)	Economics has been added although it was already included implicitly, being part of human systems.
360	60279	25	37	51	0	0	Add a reference after word 'responses' Dovers, S. 2013 How much adaptation: are existing policy and institutions enough? Chapter 8 in J Paultikof, A Boulter, A Ash, M Stafford Smith, M Parry, M Waschka and D Guitart. Climate Adaptation Futures, Wiley-Blackwell, Sussex UK (Judy Lawrence, PS Consulting)	We decided not to reference specific studies in this section since it represents an integrated view across this assessment; also, Dovers (2013) is cited in 25.4.2, which is in what this overall assessment of critical knowledge gap is based on.
361	60207	25	37	53	9	15	Sections relate to Australian governance arrangements. Refinements could be made here. Provide comment to the role of COAG (see <a href="http://www.climatechange.gov.au/government/initiatives/sccc/discussion.aspx">http://www.climatechange.gov.au/government/initiatives/sccc/discussion.aspx</a> ) for roles and responsibilities across the three tiers of government. (AUSTRALIA)	This comment does not seem relevant here as it focuses on knowledge gaps and questions around the adequacy of existing arrangements across spheres of government; the role of COAG is covered in 25.4.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
362	75100	25	38	11	39	11	It seems odd that there are only 2 questions in the FAQ? What was the basis for identifying topics for FAQ's. (UNITED STATES OF AMERICA)	The selection of FAQs was based on guidance from the TSU regarding the number, and the consideration and experience of the authors in most frequently asked questions in public fora and key issues arising from this assessment.
363	81279	25	38	13	0	0	FAQ 25-1 Authors may wish to name the different approach in line 15. The figure may use an hypothetical example of a specific sector issue to make it less conceptual. That way it will become more accessible for the general audience. (Monalisa Chatterjee, IPCC WGII TSU)	The FAQ has been revised for readability and conciseness, which supersedes the first comment regarding naming of the approach. We feel hesitant to put a particular example around the figure since any particular application will raise issues that a generic figure is unable to do justice to.
364	60208	25	38	13	38	13	Suggest removing the use of the word 'so'. It implies that uncertainties are huge, and isn't necessary. (AUSTRALIA)	Accepted (along with a further revision of the title).
365	83637	25	38	15	38	16	The framing for this timeframe as an era of climate responsibility could be mentioned. (Katharine Mach, IPCC WGII TSU)	We are unconvinced that use of the terminology of the era of climate responsibility will add to the readability of this FAQ, which aims to address and audience that may not have read any other part of the report. The use of the phrases of "era of climate responsibility" and "era of climate options" would in itself require a 'translation' within this FAQ, adding to its length and reducing its accessibility. We have however made explicit mention of near-term and longer-term issues for some risks.
366	83638	25	38	20	38	20	The wording here could be adjusted slightly to avoid potential interpretations the policy prescriptiveness. (Katharine Mach, IPCC WGII TSU)	The wording has been revised to address this language issue.
367	60209	25	38	20	38	23	This paragraph could probably could be enhanced by comments regarding better management of current climate variability (large in most parts of Australia) e.g. through use of seasonal climate forecasting will help adaptation as conditions slowly become more extreme. e.g. <a href="http://www.theccrpsonference.com.au/inewsfiles/presentations3/Alistair_Hobday_C10.pdf">http://www.theccrpsonference.com.au/inewsfiles/presentations3/Alistair_Hobday_C10.pdf</a> (AUSTRALIA)	Reference to early warning systems has been included in the responses to near-term management options.
368	60280	25	38	23	0	0	The statement that " when the adaptation challenge is reframed as implications for near-term decisions, many decisions are not greatly affected or do not require dedicated adaptation response". This may be the case for decisions by farmers but definitely not for public authorities making decisions on infrastructure and urban settlement planning that have long lifetimes. By making climate change relevant to those decisions has the effect of changing the response by public policy agents who can consider the need to staged decisions over time. While this FAQ needs to be read in totality I find the wording at line 23 detracts from the overall message and could be confusing to the reader. Perhaps some distinction could be made between decisions taht individuals make in the course of their business and which are affected by self interest as compared with decisions taken by public authorities who make decisions for the wider public interest. Otherwise these statemente could be read as absolutes which of course they are not. (Judy Lawrence, PS Consulting)	The FAQ has been revised for readability in a way that partly takes care of this issue. We also now flag explicitly the need for a longer-term perspective when decisions of a public-good nature are involved.
369	81280	25	38	47	0	0	FAQ 25-2 Authors may wish to drop the first paragraph of the answer. In an FAQ it is best to go directly to the actual answer. (Monalisa Chatterjee, IPCC WGII TSU)	The paragraph has been removed.
370	69770	25	38	49	38	51	This is a very important point, but it hides much detail - for each thing in an ecosystem or human society, there is a different definition (including timespan) of "current climate" (NETHERLANDS)	The paragraph has been removed.
371	65093	25	38	51	38	51	this is not a comprehensive list of sectors likely to be affected, so replace "affect" with "affect sectors such as" (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	The paragraph has been removed.
372	60210	25	39	0	0	0	Cross chapter box seemed out of place in Australasian chapter. Would fit better if some reference to Aust/NZ, as an example, were provided. (AUSTRALIA)	The cross-chapter box was only provided for reference to readers, it does not form part of our chapter.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
373	83639	25	39	1	39	2	How much of the difficulty of avoiding such impacts is due to climate change that is locked in over the next few decades? The framing of the era of climate responsibility could be mentioned here. (Katharine Mach, IPCC WGII TSU)	We are unconvinced that use of the terminology of the era of climate responsibility will add to the readability of this FAQ, which aims to address an audience that may not have read any other part of the report. The use of the phrases of "era of climate responsibility" and "era of climate options" would in itself require a 'translation' within this FAQ, adding to its length and reducing its accessibility. We have however made explicit mention of near-term and longer-term issues for some risks.
374	70666	25	39	14	40	54	This is titled "Cross-Chapter Box" but no information is given as to its placement in the WGII report. Is it to be repeated in each chapter? Or only included once with a reference? The second approach would seem to have the most merit. (NEW ZEALAND)	The cross-chapter box was only provided for reference to readers, it does not form part of our chapter.
375	65094	25	39	37	39	37	citation of Gerbens-Leenes is not in the correct IPCC format (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	The cross-chapter box was only provided for reference to readers, it does not form part of our chapter. The comment has been passed on to the authors of the cross-chapter box.
376	69771	25	39	37	39	39	Suggest removing this sentence as it does not add materially beyond what the subsequent sentence states. (NETHERLANDS)	The cross-chapter box was only provided for reference to readers, it does not form part of our chapter. The comment has been passed on to the authors of the cross-chapter box.
377	75101	25	41	19	41	19	The reference should be 'Impact of the drought on Australian production in 2002-03' (not 2003-04 as stated). (UNITED STATES OF AMERICA)	Reference has been corrected.
378	75102	25	46	34	46	35	The reference is incomplete (UNITED STATES OF AMERICA)	Reference has been corrected.
379	75103	25	46	38	46	41	The references are incomplete (UNITED STATES OF AMERICA)	Reference has been corrected.
380	75104	25	48	31	48	32	The journal should be The Australian Journal of Agricultural and Resource Economics (UNITED STATES OF AMERICA)	Reference has been corrected.
381	75105	25	53	39	53	41	The first authors last name is Gorddard, not Gorrdard (as printed). Also, the title of the report is Striking the balance: Coastal development and ecosystem values" not "Striking a balance: the tradeoffs between coastal ecosystems and development" (as printed) (UNITED STATES OF AMERICA)	Reference has been corrected.
382	63028	25	64	17	64	17	This line should read: "[Nottage, R.A.C., Wratt, ... (David Wratt, NIWA, New Zealand)	Reference has been corrected.
383	63029	25	67	4	67	5	This reference is incomplete. It should read: "Mullan, A.B., ...Temperature Series. NIWA, Wellington. 175 pp". (David Wratt, NIWA, New Zealand)	Reference has been corrected.
384	60211	25	83	0	0	0	Sea surface temperature/observed change (row 3, column 2): for consistency, replace "from 1909-2009" with "over1909-2009". (AUSTRALIA)	Change made as requested.
385	60212	25	83	0	0	0	Table 25-1. Reference needed for Precipitation Extremes, NZ, Observed Change statement. (AUSTRALIA)	Griffiths (2007) reference added.
386	63030	25	83	0	0	0	Table 25.1: The entry in the bottom left-hand cell on this page (on NZ extreme annual one day rainfalls) should be backed up by a reference - presumably the Griffiths 2007 paper already referred to elsewhere in this table (No 33 in the Table references). (David Wratt, NIWA, New Zealand)	Griffiths (2007) reference added.
387	70667	25	83	0	0	0	Table 25-1: This is a very useful table. (NEW ZEALAND)	Thank you. Appreciated.
388	75106	25	83	0	0	0	Table 25-1 Comment: It would be helpful to provide information about changing patterns of rain vs. snow precipitation, if it exists. (UNITED STATES OF AMERICA)	As far as the authors are aware, this information is not available in published material.
389	75107	25	83	0	0	0	Table 25-1 Comment: It would be more demonstrative to provide good examples of sea surface temperature projections for NZ. (UNITED STATES OF AMERICA)	The level of detail presented is consistent with the available published material.
390	75108	25	83	0	0	0	Table 25-1 Comment: 'Mean air temperature' row, 'Examples of projected magnitude of change' column: D Table 4.3 of the given reference (5) gives the following numbers: Aus: 0.5-1.4 (2030, A1B), 0.9-2.4 (2070, B1), 1.7-4.6 (2070, A1F1), which are different than the ones given in Table 25-1 (UNITED STATES OF AMERICA)	Table 4.3 in reference (5) lists global temperature projections, not those specifically for Australia. Page 9 of reference (5) contains the correct figures. We note, however that for 2030 A1B, the temperature range in reference (5) is 0.6-1.5 degrees, not 0.5-1.5 degrees as was in our Table 25-1. This correction has now been made.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
391	75109	25	83	0	0	0	Table 25-1 Comment: Mean air temperature row, Observed change column -- cannot find the reported 0.09 degree Celsius increase per decade since 1909 for NZ in the given reference [Mullen, et. al. 2010] (UNITED STATES OF AMERICA)	The reference states a temperature trend of 0.9 degrees per century. The authors have converted this to 0.09 degrees per decade for consistency reasons. The trend is equivalent. No change made.
392	75110	25	83	0	0	0	Table 25-1 Comment: 'Precipitation extremes' row, 'Observed change' column -- The reference(s) for NZ is missing. (UNITED STATES OF AMERICA)	Griffiths (2007) reference added.
393	75111	25	84	0	0	0	Table 25-1 Comment: Given the constraints of using existing research, it would be highly preferable to work with a single definition of drought. (UNITED STATES OF AMERICA)	Though it would be preferable, the existing literature uses different definitions of drought so adopting a single definition here is not possible.
394	75112	25	84	0	0	0	Table 25-1 Comment: Inclusion for the table Tropical Cyclones and Other Severe Storms: Observed Change: No significant trends in the occurrence of environments conducive to severe thunderstorms over Australia for the period 1979-2011 (Allen and Karoly 2013) - Include relevant reference Allen, J. and D. Karoly, 2012: A Climatology of Australian Severe Thunderstorm Environments 1979-2011: Inter-annual Variability and the ENSO Influence. International Journal of Climatology. DOI: 10.1002/joc.3667 (UNITED STATES OF AMERICA)	This point, and reference has been added to the table
395	75113	25	84	0	0	0	Table 25-1 Comment: The language in the table does not clearly communicate the results, and does not describe the findings of Timbal et al. 2010b, or Leslie et al. 2008 adequately and misses a number of references. There should also be a statement of the limited research over Australia concerning convective storms. A suggested phrasing: "Single studies project decreased frequency of cool season tornadoes in southern Australia [ref 94 below], while hail is expected to increase in magnitude but decrease in frequency over the Sydney region." [ref 95 below] Single GCM studies have shown a similar trend in convective environments over the region as compared to global findings [refs 96,97,98 below] with increases to surface temperature and moisture increasing the available energy for severe thunderstorms, outweighing decreases in other parameters. However, mid-atmospheric warming is expected to moderate increases to the frequency. 96: Niall, S. and K. Walsh, 2005: The impact of climate change on hailstorms in southeastern Australia. International Journal of Climatology, 25, 1933-1952, doi:10.1002/joc.1233. 97: Abbs, D. J., B. Timbal, A. S. Rafter, and K. J. E. Walsh, 2007: Severe Weather. Climate Change in Australia: Technical Report 2007, 102-106. 98: Trapp, R. J., N. S. Diffenbaugh, H. E. Brooks, M. E. Baldwin, E. D. Robinson, and J. S. Pal, 2007: Changes in severe thunderstorm environment frequency during the 21st century caused by anthropogenically enhanced global radiative forcing. Proc. Natl. Acad. Sci. (USA), 104, 19 719-19 723. (UNITED STATES OF AMERICA)	We have modified the text in the relevant table cell according to the suggested rephrasing in the first part of the comment, and have added the Abbs et al. (2007) reference (noting that this is referred to as CSIRO and BoM (2007) in which the Abbs reference was a chapter). We do not agree that the Niall and Walsh (2005) reference adds significantly different information. Also, we do not have sufficient room in the table to compare our results with global studies, hence have not referenced the Trapp et al (2007) study.
396	60213	25	84	0	84	0	Table 25-1: Box on tropical cyclones. Note that grey literature (i.e. Abbs 2012: The impact of climate change on the climatology of tropical cyclones in the Australian region. CSIRO Climate Adaptation Flagship Working paper No. 11) suggests that tropical cyclones could move south in the future. There is however, an existing absence of this research being published in the peer-reviewed literature. (AUSTRALIA)	Information on the southward movement of tropical cyclones has now been included in Table 25-1.
397	77576	25	84	0	84	0	Table 25.1. A magnificent job! First column: should say: "... but frequency of severe landfalling tropical cyclones in NE Aus have declined significantly since the late 19th Century" (Scott Power, Bureau of Meteorology)	Thank you. Suggested change made.
398	70668	25	86	0	0	0	Table 25-2: This is a very useful table from a policy-makers perspective. (NEW ZEALAND)	Thank you.
399	75114	25	86	0	0	0	Table 25-2 Comment: It may be more helpful to have the references numbered underneath the table (as in Table 25-1). Then for every enabling factor, i.e. improved guidance and tools to manage uncertainty, the proper references can be cited. As it is now, it's not clear which references line up with each enabling factor (in each row). (UNITED STATES OF AMERICA)	The table has been restructured as suggested.
400	77577	25	86	0	86	0	Table 25.2. Suggest also mentioning Power et al. BAMS 2005 here regarding uncertainty in projections as an impediment to use of projections information and importance of clear and ongoing communication of uncertainty (amongst other things), and resource intensity of ongoing communication needs. This study also raises important issues not addressed in this Table. e.g. mismatch between spatial or temporal scale of projections provided and scale of information needed for decision-making; crucial need for decision-makers to regard the scientists as credible; need for contextual information over and above pure projections information; importance of contextual setting that can in some cases (as it did in swWA) raise priority of making use of (uncertain) projections information; sometimes other issues override projections information. (Scott Power, Bureau of Meteorology)	The reference has been included and the wording for two enabling factors in the first and second row amended slightly to capture the additional points.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
401	60214	25	87	0	89	0	Table 25-3. Life cycles section examples do not reflect the majority of studies. Since the vast majority of phenological studies in Australia are avian at least one example from this taxa should be provided. E.g Chambers et al. (2011) provides examples for seabirds and warming sea surface temperatures, but there are also many more examples available. (AUSTRALIA)	Two more recent articles by Chambers et al (2013) have been included in the revised version of this table.
402	65341	25	87	0	89	0	There are some differences in the assessment of confidence levels in the detection and attribution of observed impacts to climate change in the different sectors as presented in Table 25-3 with that of Chapter 18. Is it possible to come to an agreement? (Lourdes Tibig, The Manila Observatory)	We will be in communication with Chapter 18 after Chapter 25 has been revised to ensure consistency.
403	58557	25	89	0	89	0	Table 25.3 Coral Reefs; the De'ath et al (2009) dataset covers the period 1900-2005; Also note that a "correction" to this paper is "in press" in Science - this will amend the decline of 14.2% from 1990-2005 to 11.1% - the significance of the decline remains the same. (Janice Lough, Australian Institute of Marine Science)	We thank the reviewer for noting the amended paper. We have received the erratum from Glenn De'ath, confirmed the number and verified that the corrected figure does not affect the overall conclusion on detection and attribution. The text has been updated with the correct figure, and the erratum uploaded to the grey literature database.
404	70669	25	90	0	0	0	Table 25-4: Three of the entries in the table are not clear about whether they apply to Australia, to New Zealand or to both countries. These are the entries about Pheidole megacephala, Queensland fruit fly, and Fusarium pseudograminearum (NEW ZEALAND)	Details have been added.
405	69772	25	91	0	0	0	Table 25-5. Suggest adding cost as a barrier to adoption of desalination. (NETHERLANDS)	Cost being a barrier to adoption of some augmentation measures is now listed.
406	75115	25	91	0	0	0	Table 25-5 Comment: Under Flooding and coastal erosion, it is suggested that the authors include ecosystem-based approaches to adaptation and not just approaches that rely on hard infrastructure. (UNITED STATES OF AMERICA)	Several ecosystem-based approaches are now listed, examples include retaining floodplains/floodways and restoring wetlands.
407	69773	25	92	0	0	0	Table 25-6. Re: desalination. It is not immediately clear how discharge from desal. plants reduces effectiveness of measures to reduce water demand. (NETHERLANDS)	There is insufficient space in the Table to provide this detail. The text has been revised slightly, but a more detailed explanation is given in Box 25-2, which is now cross-referenced.
408	75116	25	92	0	0	0	Table 25-6 Comment: Under Water security, it is suggested that authors include approaches such as water storage and desalination plants can which also perpetuate inefficient and otherwise unsustainable water uses (e.g. irrigated agriculture) in some areas for longer term. (UNITED STATES OF AMERICA)	We agree, and revised the wording for the water security entry to 'augmentation of supply' which covers this broader set of issues.
409	60215	25	92	0	92	0	Table 25-6 should be reviewed as the provision of desalinated water is not usually considered to affect water demand management, with the exception of price effects. Suggested removing the text "and reduce the effectiveness of measures to reduce water demand (Barnett and O'Neill, 2010)". (AUSTRALIA)	We disagree; there is clear evidence in the cited studies (see also Box 25-2, which is now also cross-referenced) that augmenting supply can reduce the effectiveness of demand-side measures because it reduces the perceived need for demand management and thus can increase overall system vulnerability.
410	69774	25	93	0	0	0	Table 25-7. Re: camels. It is confusing to refer to them as camels, then as exotic vertebrate pests. Suggest removing that term. (NETHERLANDS)	The table entry has been revised to remove this confusion.
411	65095	25	93	0	93	0	adapting to decreasing snowfall would affect the tourism sector (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	While correct, this is not an example of a key interaction, which is the focus of this table. No change made.
412	69775	25	94	0	0	0	Table 25-8. This is a very complex figure, particularly the narrow/thick/multiple horizontal bars. Consider simplifying if possible. (NETHERLANDS)	The design of the table has been changed to achieve consistency with the representation of regional key risks in other chapters. This hopefully has also improved the readability of the figure and the information it seeks to convey.
413	69776	25	94	0	0	0	Table 25-8. It is possibly confusing to refer to very high risk in fully adapted state. Suggest clearly stating what the hypothetical fully adapted state refers to. It is tempting to interpret it as 'risks reduced to very low'. (NETHERLANDS)	Description has been changed to 'high adaptation' consistent with the representation in all regional chapters.
414	69777	25	94	0	0	0	Table 25-8. Top row, last column. Not clear what the evidence is for (lack of) genetic adaptation in corals (NETHERLANDS)	The evidence for this is in the cited box and text section. Wording here has been edited to ensure full consistency with this underlying assessment.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
415	69778	25	94	0	0	0	Table 25-8. Top row, last column. Technical Summary does not mention options from Chapter 25: translocation, shading, forecasting (NETHERLANDS)	Wording has been revised and additional material on direct adaptation options added based on 25.6.2.3.
416	69779	25	94	0	0	0	Table 25-8. Second row, last column. Text makes it sound as if predator control is a stress. Reword to "pests and diseases, predator control and". (NETHERLANDS)	Thanks, edit made as suggested to avoid misunderstanding.
417	69780	25	94	0	0	0	Table 25-8. Third row, last column. Not clear what the evidence is for trade-offs between different (wildfire) management objectives and settlement patterns and goals (NETHERLANDS)	This has been clarified, by inserting '(biodiversity versus protection of human life and property)' at the end. Details on this can be found in Box 25-6.
418	69781	25	94	0	0	0	Table 25-8. Fourth row, last column. "Unlimited water demand" might be misleading. Suggest rewording to "very high water demand" or similar. (NETHERLANDS)	Revised to 'unrestrained' water demand, i.e. absence of incentives to use less water than is currently the case.
419	69782	25	94	0	0	0	Table 25-8. Fifth row, last column. Not clear what the evidence is for transport and power infrastructure already being at coping limit in many regions, or that there are significant financial costs from future upgrades. (NETHERLANDS)	"coping limit" has been revised to "severely stressed"; evidence for this is contained in 25.7.3, 25.7.4, 25.10.2, and Box 25-9. References to those sections are now all included.
420	69783	25	94	0	0	0	Table 25-8 contains inconsistencies as noted in other comments (NETHERLANDS)	These inconsistencies have been dealt with where noted in other comments.
421	70670	25	94	0	0	0	Table 25-8: Clear and helpful, thanks. (NEW ZEALAND)	Thanks. The design of the table has been changed to achieve consistency with the representation of regional key risks in other chapters, but the content has remained unchanged except for changes requested in other review comments and the expert judgement of the authors in response to those comments.
422	60216	25	95	0	0	0	Figure 25-1. CRU needs defining? (AUSTRALIA)	The caption for this figure is being revised by Chapter 21 for all regional chapters.
423	70671	25	95	0	0	0	Figure 25-1: The explanation of the figure is very difficult to understand. From a policy-makers perspective the text needs to be much clearer if the figure is to be of any use in a policy context. (NEW ZEALAND)	The figure and its caption is being revised by Chapter 21 for all regional chapters.
424	75117	25	95	0	0	0	Figure 25-1 Comment: The projection used for this figure is a poor choice. NZ details are obscured and viewed at too low an angle. Consider revising this figure to use the same projection as Figure 25-3, both for consistency and for better understanding. (UNITED STATES OF AMERICA)	The projection for this figure has been changed. Figure 25-3 has been deleted.
425	75118	25	96	0	0	0	Figure 25-2 Comment: This figure is very difficult to interpret. There is not enough contrast between the color used, the detail is too small to be seen clearly, and overall there is probably too much information on one chart to make a point definitively. Find a way to separate the lines more obviously, or split this out into multiple charts. (UNITED STATES OF AMERICA)	The graphic design of this figure has been improved by the TSU graphics team.
426	85235	25	96	1	96	10	Both temperature records show no warming for 15 years so the projections are all wrong. (Vincent Gray, Climate Consultant)	Temperature projections for NZ and Australia are not contingent upon observed changes over the last 15 years. Long-term temperature records are consistent with projected warming trends (Easterling et al, others). No change made.
427	60217	25	97	0	0	0	Figure 25-3. Grey (rather than white) areas are where models agree on change but not direction? (AUSTRALIA)	Figure 25-3 has been deleted as it showed similar information to 25-1
428	75119	25	97	0	0	0	Figure 25-3 Comment: Similar information is being relayed in Figures 25-1 and 25-3. What is the utility of having both figures? Also, the four boxes of Figure 25-3 are not clearly explained in the caption. (UNITED STATES OF AMERICA)	Figure 25-3 has been deleted as it showed similar information to 25-1
429	75120	25	97	0	0	0	Figure 25-3 Comment: The detail on this figure is lost, the dots and carets are not distinguishable at this resolution. (UNITED STATES OF AMERICA)	Figure 25-3 has been deleted as it showed similar information to 25-1
430	65096	25	97	0	97	0	need to explain what djf, mam, jja and son mean in the caption. How many models were used in the multi-model mean? Are they the same models as in Figure 25-1? (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	Figure 25-3 has been deleted as it showed similar information to 25-1
431	83640	25	98	0	0	0	Figure 25-4. The baseline for the 1°C global average warming and 2°C global average warming should be specified--preindustrial? (Katharine Mach, IPCC WGII TSU)	The warming is relative to current levels, this has been clarified.
432	65097	25	98	0	98	0	how many models were used? (Kevin Hennessy, Commonwealth Scientific and Industrial Research Organisation)	15 CMIP3 GCMs, now included in the figure caption.

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433	70672	25	98	0	99	0	It would be nice to see similar maps of NZ (NEW ZEALAND)	We agree but there has been no scientific work published that currently would allow production of a similar figure.
434	69784	25	99	0	0	0	F25-5. This is a very complex figure. Consider simplifying / choosing a simpler alternative if possible. (NETHERLANDS)	The overall graphic design of the Figure has been improved further by the TSU graphics team, but we don't see undue complexity in this figure as it is a simple series of three maps plus one overlaid bar chart.
435	69785	25	99	0	0	0	F25-5. It is not clear what a "statistical local area" is. (NETHERLANDS)	The phrase has been deleted as it didn't add important information for the understanding of the figure. A statistical local area is similar but not identical to local government boundaries.
436	75121	25	99	0	0	0	Figure 25-3 Comment: The figure caption should include the definitions of the abbreviations used in the bar graph (UNITED STATES OF AMERICA)	Accepted and included.
437	69786	25	100	0	0	0	F25-6. Consider relabelling bottom panel "Adaptation Pathways" (NETHERLANDS)	Accepted and changed.
438	63787	25	100	0	100	0	Figure 25-6: It remains unclear why the adaptive space is widening in time (along the adaptation pathway). We think it should shrink. Please insert a dimensionless time bar below the figure to show the time dependency of the process. Ratio: In accordance to Chapter 16, p.2 I.43-44 as well as Figures 22-7 and 26-6 the adaptation corridor should shrink in time as adaptation limits are a result of interaction between climate change and biophysical and socioeconomic constraints. If climate change likely aggravates at least during the era of climate responsibility the potential for adaptation to reduce risks will decrease or in other words the adaptive space may narrow. Figures 22-7 and 26-6 illustrate this narrowing by clear adaptation limits in a 4°-world in a lot of sectors. (GERMANY)	We revised the adaptive space to be constant over time. It is correct that in some circumstances the adaptive space may be shrinking, but in others it could be widening as a result of socio-economic development, increasing technological options, changing societal values, etc. We also note that Figure 25-6 makes no assumption about whether the future is a 2° or a 4° world. Given that a definitive judgement about the evolution of the adaptation space across all sectors is not possible, we consider a constant space (with suitable shading) to be the most defensible representation.