#	Ch	From Page	From Line	To Page	To Line	Comment
1	25	0	0	0	0	This is a clear and well-written chapter with arguments and assessments easy to follow and well illustrated. (Lough, Janice, Australian Institute of Marine Science)
2	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)
3	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 http://www.csiro.au/science/adapt-heatwave-rail and http://www.nccarf.edu.au/conference2010/wp-content/uploads/Minh-Nguyen.pdf (AUSTRALIA)
4	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. \nIn 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)
5	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. (Blackett, Paula, Agresearch ltd)
6	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. (Wratt, David, NIWA, New Zealand)
7	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. (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
8	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.\n\n (NETHERLANDS)
9	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)
10	25	0	0	0	0	Overall this chapter reads well and contains useful and well balanced information (NEW ZEALAND)
11	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)
12	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)

#	Ch	From Page	From Line	To Page	To Line	Comment
13	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/altered distribution (25.6.1.2), etc. (NEW ZEALAND)
14	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)
15	25	0	0	0	0	Support the structure i.e. leading with adaptation (NEW ZEALAND)
16	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)
17	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)
18	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)
19	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)
20	25	0	0	0	0	There were numerous references to climate models, and discussions on changing climate and its effects on ecosytems, yet there was no discussion on ecosytem 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)
21	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:\n-impacts on the fishing sector, particularly due to expected impacts on Antarctic fishing\n-role of Australia and NZ in the Pacific Islands, including fishing and mining\n-possible impact of climate refugees from Pacific Islands and parts of Asia. There is some mention of this, but perhaps more is merited. \n-the authors mention a high growth rate for both countries, but don't mention whether climate change may affect migration policy.\nIn 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)
22	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)
23	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. (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
24	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. (Mach, Katharine, IPCC WGII TSU)
25	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. (Mach, Katharine, IPCC WGII TSU)
26	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. (Mach, Katharine, IPCC WGII TSU)
27	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. (Mach, Katharine, IPCC WGII TSU)
28	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. (Mach, Katharine, IPCC WGII TSU)
29	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. (Mach, Katharine, IPCC WGII TSU)
30	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. (Mastrandrea, Michael, IPCC WGII TSU)
31	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? (Mastrandrea, Michael, IPCC WGII TSU)
32	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)

#	Ch	From Page	From Line	To Page	To Line	Comment
33	25	2	17	2	26	Needs to discuss impacts of projected increased incidence of extreme weather events on Australasia, in particular Australia.. (AUSTRALIA)
34	25	2	49	2	53	Good. Emphasise "Observations show that the regional climate is changing" (NEW ZEALAND)
35	25	3	1	3	9	Re: projected annual rainfall changes. Different confidence levels between ES and body of Chapter.\n\n (NETHERLANDS)
36	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.\n\n (NETHERLANDS)
37	25	3	1	3	9	The fire weather studies cited are only for southeast Australia, not most of southern Australia\n\n (NETHERLANDS)
38	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\n\n (NETHERLANDS)
39	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 (Gray, Vincent, Climate Consultant)
40	25	3	3	0	0	flood risk is not a meteorological hazard in the way the others are. Suggest "flood likelihood" (NEW ZEALAND)
41	25	3	3	3	6	Will increasing extreme rainfall occur in regions where annual average rainfall is expected to decrease? What about snow? (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
42	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) (Bunn, Stuart, Griffith University)
43	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)
44	25	3	6	3	7	Table 25-1 states that tropical cyclones are projected to stay similar in number or decrease. (Mastrandrea, Michael, IPCC WGII TSU)
45	25	3	13	3	13	Please state what baseline the 2 degree global warming is based on. (AUSTRALIA)
46	25	3	15	3	15	For the non-expert, please explain the distinction between "transformative adaptation" and regular adaptation. (UNITED STATES OF AMERICA)
47	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? (Mastrandrea, Michael, IPCC WGII TSU)
48	25	3	25	0	0	Can this be updated to include the NZ drought in 2012-2013? (NEW ZEALAND)
49	25	3	26	0	0	Mental health problems have also been described in the NZ 2012-2013 drought (NEW ZEALAND)
50	25	3	28	3	28	include health. (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
51	25	3	28	3	29	The word "projected" should be followed by the appropriate time frame. (NEW ZEALAND)
52	25	3	29	3	35	OK but nothing specific on ocean pH (NEW ZEALAND)
53	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"\n\n (NETHERLANDS)
54	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.\n\n (NETHERLANDS)
55	25	3	35	3	35	Section 25.7.1 focuses on forestry, and its relevance to this finding is not immediately clear. (Mastrandrea, Michael, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
56	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"\n\n (NETHERLANDS)
57	25	3	40	3	41	This statement is very definitive, and instead should have a confidence statement. (AUSTRALIA)
58	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)
59	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)
60	25	3	44	3	44	Can "high agreement, robust evidence" be translated into a confidence rating? (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
61	25	3	46	3	46	It is not clear whether this statement refers to planning for sea level rise in Australia, or excluing Australia. Suggest re-wording. (AUSTRALIA)
62	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)
63	25	3	53	4	2	Support these summary statements. (NEW ZEALAND)
64	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. (Mastrandrea, Michael, IPCC WGII TSU)
65	25	4	2	4	2	Suggestion: reference table 25-2 because it is highly relevant to this claim\n\n (NETHERLANDS)
66	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)
67	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).\n\n (NETHERLANDS)
68	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.\n\n (NETHERLANDS)
69	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.\n\n (NETHERLANDS)
70	25	4	21	4	21	mention projected decrease in snow here (very high confidence) (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)

#	Ch	From Page	From Line	To Page	To Line	Comment
71	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. (Lawrence, Judy, PS Consulting)
72	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 (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
73	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)
74	25	4	36	4	36	replace "extreme temperatures" with "extremely high temperatures" (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
75	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.\n\n (NETHERLANDS)
76	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) (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
77	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.\n\n (NETHERLANDS)
78	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, http://www.climatechange.gov.au/~/media/publications/adaptation/kakadu-coast-full.pdf). (AUSTRALIA)
79	25	4	51	4	51	include south-western Australia (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
80	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. \n\n (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
81	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)
82	25	5	4	5	11	This paragraph cites section 25.7.5 (tourism) yet does not mention tourism. Was it left out by accident?\n\n (NETHERLANDS)
83	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 explictly 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)
84	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. (Lawrence, Judy, PS Consulting)
85	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%.\n (AUSTRALIA)
86	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)
87	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)
88	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 (http://www.bom.gov.au/climate/current/statements/ and http://climatecommission.gov.au/effects/grim-warning-on-extreme-weather-for-australia/) (AUSTRALIA)
89	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 (summartion of section 25.2) should be compared to WG1 findings to ensure consistency. (UNITED STATES OF AMERICA)
90	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 attrbiuted is warranted (i.e., can precipitation changes at regional scales be attributed to anthropogenic climate change?). (UNITED STATES OF AMERICA)
91	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)

#	Ch	From Page	From Line	To Page	To Line	Comment
92	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 (Wratt, David, NIWA, New Zealand)
93	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".\n\n (NETHERLANDS)
94	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 inlcude 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? (Bell, Robert, NIWA)
95	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. (Wratt, David, NIWA, New Zealand)
96	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. (Lough, Janice, Australian Institute of Marine Science)
97	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 Zealnd 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. (Power, Scott, Bureau of Meteorology)
98	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. (Mastrandrea, Michael, IPCC WGII TSU)
99	25	6	30	6	32	are these changes statistically significant, including the "decreases elsewhere" in New Zealand? (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
100	25	6	31	6	32	Needs rephrasing, as based on results in Figure 1 some ares of NZ are white indicating less than very high confidence - text suggests very high confidence over all of NZ (AUSTRALIA)
101	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)

#	Ch	From Page	From Line	To Page	To Line	Comment
102	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)
103	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.\nNakaegawa, 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 (Nakaegawa, Toshiyuki, Meteorological Research Institute)
104	25	6	40	0	0	Reference is made to a pattern of projected annual change (in rainfall) of -5+- 22% in Queensland.\nPlease clarify the confidence associated with these numbers.\nPlease indicate the relevant numbers for the populous south-eastern Queensland region. (i.e. a single value for the largest state conveys limited information) (AUSTRALIA)
105	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. \nNakaegawa, 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 (Nakaegawa, Toshiyuki, Meteorological Research Institute)
106	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)
107	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)
108	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. (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
109	25	7	0	0	0	Update with the 2012 ABARES Commodity Statistics instead of 2010, see http://www.daff.gov.au/abares/publications_remote_content/publication_series/australian_commodity_statistics (AUSTRALIA)
110	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 cimate in these "baselines" vs longer term measured climate due to decadal and longer scale natural variability e.g. IPO (AUSTRALIA)
111	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)

#	Ch	From Page	From Line	To Page	To Line	Comment
112	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)
113	25	7	54	7	54	Please describe how mortality and fertility are expected to change. (UNITED STATES OF AMERICA)
114	25	8	1	0	0	Change “Australian population from 22 million in 2011” to “Australian population from 23 million in 2013” (AUSTRALIA)
115	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)
116	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)
117	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)
118	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)
119	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)
120	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"\n\n (NETHERLANDS)
121	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. (Wratt, David, NIWA, New Zealand)
122	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)
123	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)
124	25	8	38	8	41	Agree - social and economic aspects are frequently excluded from vulnerability studies (Blackett, Paula, Agresearch ltd)
125	25	8	44	11	39	reflects the current state of knowledge very well. (Blackett, Paula, Agresearch ltd)

#	Ch	From Page	From Line	To Page	To Line	Comment
126	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.\nReferences relating to the application of the resilience approach in NRM include:\nWalker, B. H., N. Abel, J. M. Anderies, and P. Ryan. 2009. Resilience, adaptability, and transformability in the Goulburn-Broken Catchment, Australia. Ecology and Society 14(1): 12.\nNatural Resources Commission. 2012. 'Framework for assessing and recommending upgraded catchment action plans.' http://www.nrc.nsw.gov.au/content/documents/Framework%20for%20CAPs2.pdf\nHC 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. https://crawford.anu.edu.au/public_policy_community/research/nrm/NRM_Ref_Group_Combined.pdf (AUSTRALIA)
127	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. A Climate of Change in Australian Rangelands, The Rangeland Journal, Volume 31 Number 1 . Accessory Publications: Matrix diagrams in Microsoft Excel format (Excel)‡] as an additional / alternative refernce (AUSTRALIA)
128	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: Adapting to Climate Change in Australia: An Australian Government Position Paper; DCCE 2010) (AUSTRALIA)
129	25	9	7	9	9	the federal government also supported a review of drought policy that included consideration of climate change - see http://www.daff.gov.au/agriculture-food/drought/drought-program-reform. Australian State/Territory governments also have climate change plans that include adaptation, e.g. http://www.climatechange.vic.gov.au/adapting-to-climate-change/Victorian-Climate-Change-Adaptation-Plan. (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
130	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. \nSouth Australian Government, 2012. 'Prospering in a changing climate: A Climate Change Adaptation Framework for South Australia August 2012'\nThe 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, Improving cross-sectoral climate change adaptation for coastal settlements: insights from South East Queensland, Australia, Regional Environmental Change, Springer-Verlag (AUSTRALIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
131	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]. (Wratt, David, NIWA, New Zealand)
132	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)
133	25	9	26	9	26	consider including "management of flood risk (Qld Floods Commission of Inquiry, 2012)" http://www.floodcommission.qld.gov.au/ (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
134	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)
135	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)
136	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 http://www.climatechange.gov.au/what-you-can-do/~/media/publications/local-govt/localadaption_localgovernment.pdf which outlines adaptation options for local government. Also, there is the DAFF funded climate change research and extension programs and bodies like NCCARF. (AUSTRALIA)
137	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)
138	25	9	34	9	42	Given the importance of this topic, it warrants eloboration and more synthesis on the topic instead of relying on the list in the table. (UNITED STATES OF AMERICA)
139	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)
140	25	9	46	9	49	Support (NEW ZEALAND)
141	25	10	6	10	7	Suggest that the authors provide examples/case studies of maladaptation stemming from this approach. (UNITED STATES OF AMERICA)
142	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 http://www.cawcr.gov.au/projects/PCCSP/ (UNITED STATES OF AMERICA)
143	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)

#	Ch	From Page	From Line	To Page	To Line	Comment
144	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. http://www.nrm.qld.gov.au/property/mapping/dtdata/pdf/all-lidar-2-12.pdf (AUSTRALIA)
145	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)
146	25	11	6	0	0	Does the NZCPS discourage all protection, or only hard protection? (NEW ZEALAND)
147	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 ..." (Bell, Robert, NIWA)
148	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. (Lawrence, Judy, PS Consulting)
149	25	11	8	11	9	Suggest: " …approach, starting with a base value …. Of 0.8 m by 2090s and 0.1 …..". (Bell, Robert, NIWA)
150	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)
151	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. (Lawrence, Judy, PS Consulting)
152	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 http://www.hbrc.govt.nz/HBRC-Documents/HBRC%20Document%20Library/Current%20RCEP%20(All%20Vol1).pdf, 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. Retreived on 5 January 2011 from http://www.tasman.govt.nz/home/SearchForm?Search=Plan+Change+22&action_results=Search. (Lawrence, Judy, PS Consulting)
153	25	11	34	11	38	Support. (NEW ZEALAND)
154	25	11	43	12	39	Section 25.4.3 seems to have a bit a repetition and could be reduced in length (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
155	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. (Blackett, Paula, Agresearch ltd)
156	25	12	5	12	6	The summary terms for evidence and agreement provided on these lines should be italicized. (Mach, Katharine, IPCC WGII TSU)
157	25	12	7	12	7	Casual usage of "likely" should be avoided as it is a reserved likelihood term. (Mach, Katharine, IPCC WGII TSU)
158	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)
159	25	12	10	12	11	This sentence is very important - how do all these factors translate into action? (Blackett, Paula, Agresearch ltd)

#	Ch	From Page	From Line	To Page	To Line	Comment
160	25	12	17	12	18	Please clarify whether this statement refers to both Australia and NZ. (AUSTRALIA)
161	25	12	18	12	21	Explain "place conections" or "place attachments" or give examples. (AUSTRALIA)
162	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. (Mach, Katharine, IPCC WGII TSU)
163	25	12	37	12	39	Sentence is unclear. Suggest simplifying or splitting in two.\n\n (NETHERLANDS)
164	25	12	37	12	39	This statement would benefit from clarification. For example, are "psychological trends" meant on line 38? (Mach, Katharine, IPCC WGII TSU)
165	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. (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
166	25	12	42	12	42	Suggest that the authors consider including an Observed Impacts sub-section. (UNITED STATES OF AMERICA)
167	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 ommission 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 gaps should be filled. Also this section does not highlight teh 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 infratsructure would rebalance this section. (Lawrence, Judy, PS Consulting)
168	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. (Bunn, Stuart, Griffith University)
169	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)
170	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? (Mach, Katharine, IPCC WGII TSU)
171	25	13	14	13	18	Caption for Figure 25-4 does not match (exactly) that present with the figure on page 98 (AUSTRALIA)
172	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)
173	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)
174	25	13	25	13	25	earlier snow melt is documented in the paper by Hendrikx et al (2013) http://link.springer.com/content/pdf/10.1007/s10584-013-0741-4. (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
175	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)

#	Ch	From Page	From Line	To Page	To Line	Comment
176	25	13	44	0	0	The sentence "In New Zealand, there is little eveidence 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)
177	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 likley to be hard to find and have not been reported in the literature to date. (Blackett, Paula, Agresearch ltd)
178	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)
179	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)
180	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. http://www.mdba.gov.au/what-we-do/basin-plan (AUSTRALIA)
181	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. (Bunn, Stuart, Griffith University)
182	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)
183	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."\n (AUSTRALIA)
184	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." \n\nReflecting 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)

#	Ch	From Page	From Line	To Page	To Line	Comment
185	25	14	24	14	24	although climate change is not factored in explicitly. Suggestion - remove in \n\n (NETHERLANDS)
186	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 Communitites: refer http://www.environment.gov.au/water/australia/index.html (in particular "water policy and programs") (AUSTRALIA)
187	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. http://www.watercorporation.com.au/~/media/Files/About%20us/Our%20strategies/Water-forever-50-year-plan (AUSTRALIA)
188	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)
189	25	14	28	14	18	The word "gross" needs to be added before agricultural returns, otherwise this is misleading (AUSTRALIA)
190	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)
191	25	14	35	14	35	Can the authors cite examples of efforts to rehabilitate or fortify catchment areas? (UNITED STATES OF AMERICA)
192	25	14	44	14	44	Perth is not generally regarded as being in the 'far' south west of WA. Suggest deleting the word 'far'.\n (AUSTRALIA)
193	25	14	49	14	50	Insert "water" before "use" in both lines. (NEW ZEALAND)
194	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 implememtation in droughts and (b) pipelines to network indervidual water assesst (SEQ water grid for example). (AUSTRALIA)
195	25	15	8	15	8	is it worth mentioning the likely effect of increased fire, drought and flood frequency on water security and quality? (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)

#	Ch	From Page	From Line	To Page	To Line	Comment
196	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.\nSuggest including more information on the array of threatening processes and the fact that these threats vary across the landscapes. Supporting citations include:\nEvans, M.C. Watson, J.E.M., Fuller, R.A., Venter, O. Bennett, S.C., Marsack, P.R., and H. P. Possinghamn (2011). The Spatial Distribution of Threats to Species in Australia. BioScience, 61: 281-289.\nThere 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:\nWatson, 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. Conservation Biology, 25:324-332.\nTaylor, 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. Biodiversity and Conservation 20: 767-777.\nFuller, 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? Nature 466: 365-377.\nIn 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:\nWatson, 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, Diversity and Distributions, 15: 1028-1036.\nKlein, 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. Ecological Applications, 19, 206-219.\nKlein, 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. Biological Conservation, 142, 1282-1290.\nMackey, 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. Biodiversity, 9:11-18.\nMackey, 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)
197	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)
198	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. (Bunn, Stuart, Griffith University)
199	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)
200	25	15	31	15	31	What is an "atmospheric trend"? Do you mean changes in atmospheric circulation patterns? (Lough, Janice, Australian Institute of Marine Science)
201	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)
202	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. (Wratt, David, NIWA, New Zealand)
203	25	15	38	15	38	0.9 degree Celsius average warming over what time period? (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
204	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). (Bunn, Stuart, Griffith University)
205	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)
206	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)
207	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\nNakaegawa, 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. (Nakaegawa, Toshiyuki, Meteorological Research Institute)
208	25	16	1	16	1	Is the use of 'native species' referring to only animal species? No plant examples given. (AUSTRALIA)
209	25	16	4	16	6	Please provide examples of which species. (UNITED STATES OF AMERICA)
210	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)
211	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)
212	25	16	26	16	26	What is "atmospheric change"? Again, an unclear term. (Lough, Janice, Australian Institute of Marine Science)
213	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)
214	25	16	33	16	33	Maybe mention that tuatara are reptiles. (Lough, Janice, Australian Institute of Marine Science)
215	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 (Bunn, Stuart, Griffith University)
216	25	16	40	17	14	Suggest that the authors include discussion of possible adaptation to address impacts to ecosystem services. (UNITED STATES OF AMERICA)
217	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 http://www.climatechange.gov.au/en/government/adapt.aspx and http://www.csiro.au/Organisation-Structure/Flagships/Climate-Adaptation-Flagship/ClimateAdaptationFlagshipOverview.aspx for detail (AUSTRALIA)
218	25	16	51	17	7	Section could refer to the Aust Govt's "Climate Change in NRM Planning Program". Refer to http://www.environment.gov.au/cleanenergyfuture/regional-fund/ and http://www.climatechange.gov.au/NRMfundstream2 (AUSTRALIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
219	25	16	52	17	7	Line 52& 53: change reference to "supported by substantial federal government funding" to "Australian Government".\n\nSuggest 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)
220	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)
221	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)
222	25	17	25	17	25	units for 25.3 density of coastal populations? (Lough, Janice, Australian Institute of Marine Science)
223	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)
224	25	17	33	0	50	Is it possible to summarize these observed impacts on marine species and define degree of confidence evels of detection and attribution to climate change? (Tibig, Lourdes, The Manila Observatory)
225	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. (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
226	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)
227	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)
228	25	17	37	17	38	The time frames for these described shifts should be clarified. (Mach, Katharine, IPCC WGII TSU)
229	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)
230	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 (Lough, Janice, Australian Institute of Marine Science)
231	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. (Lough, Janice, Australian Institute of Marine Science)
232	25	18	2	18	3	decline since 1985; also tropical cyclones. (Lough, Janice, Australian Institute of Marine Science)
233	25	18	2	18	3	The timeframe for the observed decline should be specified. (Mach, Katharine, IPCC WGII TSU)
234	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)

#	Ch	From Page	From Line	To Page	To Line	Comment
235	25	18	14	18	17	Another encompassing review of temperate mangroves globally that includes the likely impacts from climate change is: Morrisey et al (2010). The Ecology and Management\nof Temperate Mangroves. Oceanography and Marine Biology: An Annual Review, 2010, 48, 43-160. (Bell, Robert, NIWA)
236	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. (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
237	25	18	20	18	22	Suggest rewording the last sentence of the paragraph to make it more clear. (AUSTRALIA)
238	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)
239	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)
240	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 http://www.gbrmpa.gov.au/outlook-for-the-reef/great-barrier-reef-outlook-report). 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. (Lough, Janice, Australian Institute of Marine Science)
241	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. (Mach, Katharine, IPCC WGII TSU)
242	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). (Lough, Janice, Australian Institute of Marine Science)
243	25	18	39	18	40	Recommend either explaning the significance of decoupling from the 4-7 year El Nino cycle, or deleteing this statement altogether. (UNITED STATES OF AMERICA)
244	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 asessment, July 2011, GBRMPA, Townsville (available at http://www.gbrmpa.gov.au/__data/assets/pdf_file/0008/8783/GBRMPA_ImpactsTC_Yasi_onGBRSept2011.pdf). Also note that extreme freshwater flood events is also a stress to corals and can cause bleaching as observed in recent extreme wet seasons. (Lough, Janice, Australian Institute of Marine Science)
245	25	19	5	19	31	Please describe the extent to which these adaptation options have been tested or applied. (UNITED STATES OF AMERICA)
246	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 http://www.climatechange.gov.au/en/government/adapt.aspx and http://www.csiro.au/Organisation-Structure/Flagships/Climate-Adaptation-Flagship/ClimateAdaptationFlagshipOverview.aspx for detail (AUSTRALIA)
247	25	19	7	19	15	Section could provide reference to work undertaken by the Great Barrier Reef Management Protection Authority- adaptation plan. http://www.gbrmpa.gov.au/outlook-for-the-reef/climate-change/marine-park-management (AUSTRALIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
248	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. (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
249	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. (Mach, Katharine, IPCC WGII TSU)
250	25	19	22	19	22	clarify that forecasting refers to seasonal forecasting of high sea surface temperatures (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
251	25	19	24	19	31	The authors are encouaged to consider additional discussion of how climate change will impact the off-shore fisheries in Antarctica and the Pacific Islands. (UNITED STATES OF AMERICA)
252	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)
253	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)
254	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)
255	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)
256	25	20	9	0	0	The NZ Greenhouse Gas Inventory (2013) suggests 2 Mha plantation estate (page 195) (NEW ZEALAND)
257	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)
258	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)
259	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)
260	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)
261	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)
262	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)
263	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)
264	25	21	15	21	16	Please clarify from what baseline this 3 degree rise is from. (AUSTRALIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
265	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). If 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)
266	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)
267	25	21	29	21	29	Explain the reason for shorter growing season. (AUSTRALIA)
268	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. (Moore, Andrew, CSIRO)
269	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)
270	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)
271	25	21	42	21	43	Reduced stomatal conductance - This phrase will not be meaningful to a non-expert audience. (UNITED STATES OF AMERICA)
272	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)
273	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)
274	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\n (Lobell, David, Stanford University)
275	25	22	19	22	19	This is an important research and warrants consideration for inclusion in Section 25.11. (UNITED STATES OF AMERICA)
276	25	22	19	22	23	The reference to "biocontol" 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)
277	25	22	29	0	0	Update the DAFF, 2010 reference with DAFF, 2012 (AUSTRALIA)
278	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? Municiple water service providers? All? (UNITED STATES OF AMERICA)

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279	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. (Mach, Katharine, IPCC WGII TSU)
280	25	23	14	23	14	What percentage of Australia's population is considered "rural"? (UNITED STATES OF AMERICA)
281	25	23	14	24	12	reflects the current state of knowledge very well. (Blackett, Paula, Agresearch ltd)
282	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 (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
283	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)
284	25	24	52	24	52	Note that Queensland is curretly considering future fire risk for urban infrastructure under a review of State Planning Policy (AUSTRALIA)
285	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)
286	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).http://www.riotinto.com/ourapproach/7212_climate_change_adaptation.asp 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)
287	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)
288	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. (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
289	25	25	25	25	25	Authors may wish to mention use of deep seawater and OTEC for cooling and as an alterative energy source. (UNITED STATES OF AMERICA)
290	25	25	25	25	26	Do projected demand statistics include any consideration of demand management? (UNITED STATES OF AMERICA)
291	25	26	13	26	13	Tropical Cyclone Yasi (Lough, Janice, Australian Institute of Marine Science)

#	Ch	From Page	From Line	To Page	To Line	Comment
292	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)
293	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)
294	25	26	22	0	0	Reference is made to "The Great barrier Reef is expected to degrade under…"\nPlease indicate the source of this projected degradation (i.e. bleaching events, runoff events,….)\n (AUSTRALIA)
295	25	26	40	26	42	The relative applicability of these statements to NZ and Australia is not made clear. (NEW ZEALAND)
296	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)
297	25	27	12	0	0	Are there any observed impacts for NZ? (AUSTRALIA)
298	25	27	20	27	21	25% to 46%? Or just 46? There are three days but two values. (AUSTRALIA)
299	25	27	32	27	33	This statement needs a citation, or does it go with the 2nd sentence in the section? Either way, suggest claifying what is meant. (UNITED STATES OF AMERICA)
300	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)
301	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. (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
302	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.\n\n (NETHERLANDS)
303	25	27	46	27	46	based on which GCM(s)? (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
304	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 (Blackett, Paula, Agresearch ltd)
305	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)
306	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)
307	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)
308	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)
309	25	29	6	29	7	this text should be moved to page 8 (lines 15-19) (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)

#	Ch	From Page	From Line	To Page	To Line	Comment
310	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)
311	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)
312	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)
313	25	29	29	29	29	Not clear what this statement means: Institutions external to Indigenous communities can constrain their adaptive capacity\n\n (NETHERLANDS)
314	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)
315	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)
316	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)
317	25	30	20	30	25	Recommend the addition (onto the end of the paragraph) of the following sentence:\nSpecific M?ori 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 M?ori (King D., et al 2012. P96; King D., Penny, G. 2006). (NEW ZEALAND)
318	25	30	27	30	54	This section does not mention coastal flood insurance. Is this not relevant in either country? (UNITED STATES OF AMERICA)
319	25	30	31	30	32	The conclusion that insurance schemes effectively distribute risk is not universally held. (UNITED STATES OF AMERICA)
320	25	30	36	30	36	Oceania can include regions outside "Australasia". Suggest taking care to keep geographical references consistent. (UNITED STATES OF AMERICA)
321	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? (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
322	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 hould be corrected. (Lawrence, Judy, PS Consulting)
323	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)

#	Ch	From Page	From Line	To Page	To Line	Comment
324	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 http://www.aspi.org.au/publications/publication_details.aspx?ContentID=280&pubtype=-1. 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. (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
325	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)
326	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). (Wratt, David, NIWA, New Zealand)
327	25	31	35	31	36	perhaps mention the planned update of the Australian Rainfall and Runoff Handbook being managed by Engineers Australia. (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
328	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)
329	25	31	46	31	50	Support. (NEW ZEALAND)
330	25	31	47	0	0	The word 'structural ' is used to refere to the type of transforamative 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. (Lawrence, Judy, PS Consulting)
331	25	32	1	32	29	It is surprising that Urban settlement imoacts 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 poulations 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. (Lawrence, Judy, PS Consulting)
332	25	32	8	32	8	Would it be better to use the term "synergies" here in place of or in addition to "co-beneficial"? (Mach, Katharine, IPCC WGII TSU)
333	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 http://www.urs2009.net/docs/papers/Nakanishi.pdf. 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. \n (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
334	25	32	18	0	0	Move "e.g." prior to "City of Melbourne" (AUSTRALIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
335	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. (Wratt, David, NIWA, New Zealand)
336	25	32	20	32	29	agree with this paragraph (Blackett, Paula, Agresearch ltd)
337	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)
338	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 frieght companies and people movement in teh NI of New Zealand References to these can be found online in reports by NZtransport Authority (Lawrence, Judy, PS Consulting)
339	25	32	50	33	23	agree with this section (Blackett, Paula, Agresearch ltd)
340	25	33	29	33	29	Should biosecurity be included here? (NEW ZEALAND)
341	25	33	44	33	46	This sentence is arguably too technical for a non-expert audience. Suggest revising. (UNITED STATES OF AMERICA)
342	25	33	49	33	50	Does the statement "Carbon sequestration would mostly improve water quality through reduced erosion" relate to revegetation (biological) sequestration? (AUSTRALIA)
343	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?\n\n (NETHERLANDS)
344	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? (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
345	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)
346	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'. (Lawrence, Judy, PS Consulting)
347	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" (Lawrence, Judy, PS Consulting)
348	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)
349	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 srorms like Nelson and Takaka in northwest Nelson NZ. Again the NIWA co author should be able to identhat 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. (Lawrence, Judy, PS Consulting)

#	Ch	From Page	From Line	To Page	To Line	Comment
350	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? (Mach, Katharine, IPCC WGII TSU)
351	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)
352	25	36	38	37	22	agree with this section (Blackett, Paula, Agresearch ltd)
353	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. (Lawrence, Judy, PS Consulting)
354	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 sens eof 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 butit certaintly 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 percieved 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. (Lawrence, Judy, PS Consulting)
355	25	37	4	37	8	These examples are of transformative, not incremental approaches. The sentence is confusing. (UNITED STATES OF AMERICA)
356	25	37	10	37	14	While that authors were right to note drawbacks to the deferal of adapatation 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)
357	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 understaning of natural climate variability patterns driven by events such as ENSO, IOD, Pacific Decadal Oscillation and the Southern Annual Node. The input necessary to feed the models comes from in situ and satellite data. In situ data gaps curently 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 acuracy. 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)
358	25	37	44	37	47	strongly agree with this paragraph (Blackett, Paula, Agresearch ltd)
359	25	37	44	37	47	What about the vulnerability of the economic system?\n\n (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
360	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 (Lawrence, Judy, PS Consulting)
361	25	37	53	9	15	Sections relate to Australian governance arrangements. Refinements could be made here. Provide comment to the role of COAG (see http://www.climatechange.gov.au/government/initiatives/sccc/discussion.aspx) for roles and responsibilities across the three tiers of government. (AUSTRALIA)
362	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)
363	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. (Chatterjee, Monalisa, IPCC WGII TSU)
364	25	38	13	38	13	Suggest removing the use of the word 'so'. It implies that uncertainties are huge, and isn't necessary. (AUSTRALIA)
365	25	38	15	38	16	The framing for this timeframe as an era of climate responsibility could be mentioned. (Mach, Katharine, IPCC WGII TSU)
366	25	38	20	38	20	The wording here could be adjusted slightly to avoid potential interpretations the policy prescriptiveness. (Mach, Katharine, IPCC WGII TSU)
367	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 forcasting will help adaptation as conditions slowly become more extreme. e.g. http://www.theccrspiconference.com.au/inewsfiles/presentations3/Alistair_Hobday_C10.pdf (AUSTRALIA)
368	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 pubic authorities making decisions on infrstructure 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. (Lawrence, Judy, PS Consulting)
369	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. (Chatterjee, Monalisa, IPCC WGII TSU)
370	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"\n\n (NETHERLANDS)
371	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" (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
372	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)
373	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. (Mach, Katharine, IPCC WGII TSU)
374	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)

#	Ch	From Page	From Line	To Page	To Line	Comment
375	25	39	37	39	37	citation of Gerbens-Leenes is not in the correct IPCC format (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
376	25	39	37	39	39	Suggest removing this sentence as it does not add materially beyond what the subsequent sentence states.\n\n (NETHERLANDS)
377	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)
378	25	46	34	46	35	The reference is incomplete (UNITED STATES OF AMERICA)
379	25	46	38	46	41	The references are incomplete (UNITED STATES OF AMERICA)
380	25	48	31	48	32	The journal should be The Australian Journal of Agricultural and Resource Economics (UNITED STATES OF AMERICA)
381	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)
382	25	64	17	64	17	This line should read: "[Nottage, R.A.C.., Wratt, ... (Wratt, David, NIWA, New Zealand)
383	25	67	4	67	5	This reference is incomplete. It should read: "Mullan, A.B., …Temperature Series. NIWA, Wellington. 175 pp". (Wratt, David, NIWA, New Zealand)
384	25	83	0	0	0	Sea surface temperature/observed change (row 3, column 2): for consistency, replace "from 1909-2009" with "over1909-2009". (AUSTRALIA)
385	25	83	0	0	0	Table 25-1. Reference needed for Precipitation Extremes, NZ, Observed Change statement. (AUSTRALIA)
386	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). (Wratt, David, NIWA, New Zealand)
387	25	83	0	0	0	Table 25-1: This is a very useful table. (NEW ZEALAND)
388	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)
389	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)
390	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)
391	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)
392	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)
393	25	84	0	0	0	Table 25-1 Comment: Given the contraints of using existing research, it would be highly preferable to work with a single definition of drought. (UNITED STATES OF AMERICA)
394	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 relevent 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)

#	Ch	From Page	From Line	To Page	To Line	Comment
395	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)
396	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)
397	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" (Power, Scott, Bureau of Meteorology)
398	25	86	0	0	0	Table 25-2: This is a very useful table from a policy-makers perspective. (NEW ZEALAND)
399	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)
400	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. (Power, Scott, Bureau of Meteorology)
401	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 temperatues, but there are also many more examples available. (AUSTRALIA)
402	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? (Tibig, Lourdes, The Manila Observatory)

#	Ch	From Page	From Line	To Page	To Line	Comment
403	25	89	0	89	0	Table 25.3 Coral Reefs; the De'ath et al (2009) datset covers the period 1900-2005; Also note that a "correction" to this paper is "in press" in Science - this will ammend the decline of 14.2% from 1990-2005 to 11.1% - the significance of the decline remains the same. (Lough, Janice, Australian Institute of Marine Science)
404	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 psuedograminearum (NEW ZEALAND)
405	25	91	0	0	0	Table 25-5. Suggest adding cost as a barrier to adoption of desalinisation. \n\n (NETHERLANDS)
406	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)
407	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. \n\n (NETHERLANDS)
408	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)
409	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)
410	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.\n\n (NETHERLANDS)
411	25	93	0	93	0	adapting to decreasing snowfall would affect the tourism sector (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
412	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.\n\n (NETHERLANDS)
413	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'.\n\n (NETHERLANDS)
414	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\n\n (NETHERLANDS)
415	25	94	0	0	0	Table 25-8. Top row, last column. Technical Summary does not mention options from Chapter 25: translocation, shading, forecasting\n\n (NETHERLANDS)
416	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". \n\n (NETHERLANDS)
417	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\n\n (NETHERLANDS)
418	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.\n\n (NETHERLANDS)
419	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. \n\n (NETHERLANDS)
420	25	94	0	0	0	Table 25-8 contains inconsistencies as noted in other comments\n\n (NETHERLANDS)
421	25	94	0	0	0	Table 25-8: Clear and helpful, thanks. (NEW ZEALAND)
422	25	95	0	0	0	Figure 25-1. CRU needs defining? (AUSTRALIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
423	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)
424	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)
425	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)
426	25	96	1	96	10	Both temperature records show no warming for 15 yearsm so the projections are all wrong. (Gray, Vincent, Climate Consultant)
427	25	97	0	0	0	Figure 25-3. Grey (rather than white) areas are where models agree on change but not direction? (AUSTRALIA)
428	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)
429	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)
430	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? (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
431	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? (Mach, Katharine, IPCC WGII TSU)
432	25	98	0	98	0	how many models were used? (Hennessy, Kevin, Commonwealth Scientific and Industrial Research Organisation)
433	25	98	0	99	0	It would be nice to see similar maps of NZ (NEW ZEALAND)
434	25	99	0	0	0	F25-5. This is a very complex figure. Consider simplifying / choosing a simpler alternative if possible.\n\n (NETHERLANDS)
435	25	99	0	0	0	F25-5. It is not clear what a "statistical local area" is.\n\n (NETHERLANDS)
436	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)
437	25	100	0	0	0	F25-6. Consider relabelling bottom panel "Adaptation Pathways"\n\n (NETHERLANDS)
438	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 l.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)