#	Ch	From Page	From Line	To Page	To Line	Comment
1	5	0	0	0	0	sea level rise should have a hyphen so it is "sea-level rise" - whenever sea level is used as an adjective, it should have hyphen; when used as a noun (sea level), it should not be hyphenated. This needs to be corrected throughout the chapter. (Mcleod, Elizabeth, The Nature Conservancy)
2	5	0	0	0	0	Reference missing for Mcleod et al. 2010a in reference list (listed as Mcleod et al. 2010 in the text):\nMcleod, E., J. Hinkel, A.T. Vafeidis, R.J. Nicholls, N. Harvey, and R. Salm. 2010. Sea-level rise vulnerability in the countries of the Coral Triangle. Sustainability Science 5(2): 207-222. (Mcleod, Elizabeth, The Nature Conservancy)
3	5	0	0	0	0	Tribal/First Nations-specific issues are poorly represented (Hoffman, Jennifer, EcoAdapt)
4	5	0	0	0	0	The authors should consider including at least some mention of interactions between changing water chemistry (pH, salinity) and the toxicity and bioavailability of pollutants. (Hoffman, Jennifer, EcoAdapt)
5	5	0	0	0	0	There is too much emphasis on sea level rise in this chapter, and too little emphasis on subtidal communities. If it is a conscious choice to focus only on the land-based natural communities rather than including subtidal nearshore communities, that should be clear. Concerns such as innundation are clearly not a concern for subtidal communities. (Hoffman, Jennifer, EcoAdapt)
6	5	0	0	0	0	This is a substantially better version than V.1. It is coherent and balanced. That stated there is a widespread feel through the selection and presentation of material that the Review authors have been over-influential in issues presented and selection of material. (Orford, Julian, Queen\\\\\\'s University, Belfast)
7	5	0	0	0	0	Still a tendency to cite closed group reports which are not easily available and uncertain in terms of peer review status (Orford, Julian, Queen\\\\\\'s University, Belfast)
8	5	0	0	0	0	Tt is better to have a list on all the abbrivation, one can review this draft without going back for the context. (Ye, Siyuan, Qingdao institute of marine geology)
9	5	0	0	0	0	In order to reflect contributions made by developing countries in the aspect of climate change adaption, it is suggested to increase the adaptive policymaking and measures of adaption in coastal zones Science incorporated in “The Second National Assessment of Climate Change which was adopted as the formal reference literature. Since AR4, Chinese government has made great efforts in improving integrative management of coastal systems in response to climate change. However, as in many other developing countries, the progresses in this area in China were not mentioned in the AR5 WGII report. As reported in “The Second National Assessment Report on Climate Chang” (Science Press, 2011)?Chinese government has invested great amount of money in building dykes and levees, constructing coastal shelter forests and developing coastal and nearshore disaster prevention systems for reducing disastrous damages from coastal erosions, storm surges and floods associated with climate change. We recommend IPCC AR5 WG2 report should reflect the contributions made by developing countries like China. (Duan, Juqi, National Climate Center, Chinese Meteorological Administration)
10	5	0	0	0	0	This is a largely clear and well-written chapter with arguments and assessments easy to follow and well illustrated. (Lough, Janice, Australian Institute of Marine Science)
11	5	0	0	0	0	Great chapter! (Wright, David, University of Ottawa)
12	5	0	0	0	0	General comment. It might be helpful for the chapter to refer to some of the' land use' chapters/sections from the WGIII report (i.e. Chapter 11). (AUSTRALIA)
13	5	0	0	0	0	In the section the El Niño Southern Oscillation (ENSO) , La Niña and other climate drivers have not been discussed. Patterns of sea-surface warming and cooling in the tropical Pacific seem to be changing, as do the associated atmospheric effects. Increased global warming is implicated in these shifts in El Niño phenomena (e.g. Ashok and Yamagata 2009. Nature 461, 481-484). The ENSO significantly influences marine ecosystems and the sustained exploitation of marine resources in the coastal zone (e.g. Thatje et al. 2008. Helgol Mar Res 62 (Suppl 1):S5–S14). (AUSTRALIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
14	5	0	0	0	0	With global warming, sea surface temperature rise, remove the decadal changes, the middle and high latitudes in winter sea ice along the coast in reducing, ice days are reduced, which have a beneficial impact on coastal seawater aquaculture production, transportation and coastal oil exploitation.\n\n . (Zhu, Xiaojin, National Climate Center)
15	5	0	0	0	0	Chap. 5 is also one of the most anticipated chapters, because sea-level rise can cause tremendous impacts in low-lying areas. From this point of view the chapter is closely related to projections discussed in WGI. Chap. 5 makes a very welcome update on the state of coastal systems, potential impacts due to sea-level rise, potential responses to these impacts and the interaction of human drivers in exacerbating the effects of climate change. However, the most disappointing aspect of the full chapter are the values of global-mean-sea-level projections. These again disregard high-risk scenarios and neglects results from semi-empirical exercises. The consequence is that in chap. 5 global a sea-level of 1.3m is labeled as extreme. Several recently published work points out that 1.3m is one of the high projections, but rarely mentioned as extreme. For example, Global Sea Level Rise Scenarios for the United States National Climate Assessment, NOAA (2012) refers to the 0.5-1.2 meter level as intermediate-low to intermediate-high. Already in 2007 Ramstorf proposed the same range, 0.5 to 1.4 m. Recently Michiel Schaeffer W. Hare, S. Rahmstorf, and M. Vermeer (2012) in "Long-term sea-level rise implied by 1.5?°C and 2?°C warming levels", NCC 2, pp. 867-870 show that there is a 50% probability for 2?°C warming that sea-level may reach 2.7m above 2000 levels. It is important to the IPCC (a reference for many researchers and policy makers) that these assessments are adequately represented otherwise it will lose its credibility. Despite the crucial point of SLR projections the chapter makes an intensive update of the response of coastal systems to climate change impacts, e.g. several aspects of erosion, fisheries, tourism, acidification etc. The attention paid to the role of storm surges winds and wave are welcomed, but the conclusions are nevertheless poor and mostly reflects what was already highlighted in the SREX report. GDP % required for coastal adaptation should be clear throughout the chapter, e.g. pg. 35, line 16, GDP numbers do no have an associated time dimension., fig. 5-2 needs better legend. It is not possible to identify which bubbles refer to diffrent SLR allowances. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
16	5	0	0	0	0	Future impacts on coral reefs: these things are mainly illustrated by projections using the "old" SRES projections (a problem which occurs not only in this chapter!). There exists new literature using new RCPs and several GCMs, e.g. Frieler et al. (2012): Limiting global warming to 2C is unlikely to save most coral reefs. Nature Climate Change (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
17	5	0	0	0	0	Regarding costs of adaptation the chapter states that there is a "limited evidence and high agreement" that substantial impacts can be reduced through coastal protection. This is a strong statement based on such limited evidence. This need further explanation. Moreover, refer to chapt. 17, adaptation cost estimates to SLR are dominated by remarkably similar economic imapct frameworks. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)

#	Ch	From Page	From Line	To Page	To Line	Comment
18	5	0	0	0	0	I found this report to be substantially lacking. The presententation of hte science was cursory, and at times appeared to be somewhat absent minded of our understanding of how coastal systems function. The report seems to reflect a quick reading of the recent literature, rather than in in depth analysis of the impacts of climate change on coastal systems. I think that the report needs major revisions. These revisions should seriously examine how coastal systems are changing, and place this information within the context of the accepted geological ecological literuare of how coastal systems function. I am also a bit confused as to why the report spends more time discussing climate change impacts to tourism than the impacts of climate change on shipping and naval activities. Shipping plays a critical role in the global economy, resulting in hundreds of billions of dollars a year in economic activity. It depends on port faciities that by definition must be at or near sea level. Naval bases in nations across the world also must be located at or near sea level, and these locations play a critical role in global security. I believe that the impacts of sea level rise and storms on shipping and naval bases must be discussed in more depth. (Kolker, Alexander, Louisiana Universities Marine Consortium)
19	5	0	0	0	0	It is important that the numbers on estimated future sea-level rise are internally consistent within the chapter and are in agreement with the corresponding material from WG I. In the second order draft of WG II different estimates can be found for example on page 4, line 29, on page 15, line 18 and in Table 5-1. (Sjostrom, Asa, Swedish Meteorological and Hydrological Institute)
20	5	0	0	0	0	It would be useful to provide insights into urban-rural migration. (Afifi, Tamer, United Nations University Institute for Environment and Human Security)
21	5	0	0	0	0	Chapter 5 overall is a comprehensive, considered review and analysis of climate change impacts and adaptation issues in coastal zones worldwide. The authors are to be congratulated on the considerable progress since Draft Zero. There are only a small number of comments below that are put forward to strengthen points of arguments. (Kay, Robert, AdaptiveFutures)
22	5	0	0	0	0	Impacts on Arctic coasts with permafrost will be (and already are) widespread. A section on Arctic coasts must therefore be included. There important coastal erosion processes with rates increased due to permafrost thermal erosion on cliffs, potential damage for infrastructure, feedback to the global biogeochemical cycle of carbon... I could quickly prepare an overview on this, if needed. (Vieira, Goncalo, University of Lisbon)
23	5	0	0	0	0	Although we are not required to comment on text and typos, it is my feeling that the text needs in-depth revision (e.g. word repeating is constant throughout the text which, a number all through the text and references). (das Neves, Luciana, University of Porto - Faculty of Engineering)
24	5	0	0	0	0	Are storms expected to change with climate change, and if so, how? This does not seem to be well addressed in this section. It may be that the uncertainty of how storms might change is low, but that the potential changes could be large, but if so, that is not clear. As this is one of the impacts that is discussed so frequently, and one of the impacts hugely important to the general population in the nearer term, it would be helpful if the expected changes and impacts on storms was made a little more clear and explicit. (UNITED STATES OF AMERICA)
25	5	0	0	0	0	Authors should review the document for both internal consistency (see comments related to differences between the Executive Summary/FAQs and the body of this Chapter BUT ALSO with Chapter 29, the Summary for Policy Makers and Tecchnical Summary. (UNITED STATES OF AMERICA)
26	5	0	0	0	0	Both within the chapter and the executive summary, an effort should be made to connect the literature on drought and extreme precipitation to the increased coastal flooding\nthese have a fundamental relationship that is untouched upon in this chapter (UNITED STATES OF AMERICA)
27	5	0	0	0	0	In general, there ought to be a bit more coverage about water and transportation infrastructure in general....and the importance (economically and ecologically) of ports as a more specific need. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
28	5	0	0	0	0	It is appropriate that this chapter identifies both climate drivers and human drivers of change and impacts on coastal systems and the interactions between them. (UNITED STATES OF AMERICA)
29	5	0	0	0	0	It is suggested that the authors do a consistency check when referring to regions that the country or body of water is listed if it is not an internationally/universally known area (e.g. Gulf Coast should be US Gulf Coast). This would help reduce the impression that the chapter is dominated by US research. (UNITED STATES OF AMERICA)
30	5	0	0	0	0	The authors should consider including at least some mention of interactions between changing water chemistry (pH, salinity) and the toxicity and bioavailability of pollutants. (UNITED STATES OF AMERICA)
31	5	0	0	0	0	The chapter would benefit from addressing near and intermediate time scales. While a few of the projections provided are for mid-century, most are for late to end of century. Can an explanation of methods/overview be provided of what it is possible to say on the decadal to mid-century time frame? In particular the Adaptation framing and approaches (5.5.1) would benefit from an explanation of what time frames each approach is based on. (UNITED STATES OF AMERICA)
32	5	0	0	0	0	The use of the term "human drivers" could be easily mis-read that climate change isn't largely human driven. It appears that the Summary for Policymakers and the Technical Summary more commony use "other anthropogenic drivers". A scan of other chapters indicated that a couple other chapters also use "human drivers". An alternative that is used less frequently is the term "non-climatic drivers", but that also is missing distinguishing between natural and human non-climatic drivers. It is suggested that the editors pick a common term for the entire document. (UNITED STATES OF AMERICA)
33	5	0	0	0	0	There is too much emphasis on sea level rise in this chapter, and too little emphasis on subtidal communities. If it is a conscious choice to focus only on the land-based natural communities rather than including subtidal nearshore communities, that should be clear. Concerns such as innundation are clearly not a concern for subtidal communities. (UNITED STATES OF AMERICA)
34	5	0	0	0	0	I know it's editorial but still lots of inconsistencies with references especially et al, vs et al., (Vasseur, Liette, Brock University)
35	5	0	0	0	0	There are quite a large number of typing mistakes throughout this chapter (MacClenahan, Philippe, Synergies Environnement)
36	5	0	0	0	0	This is an excellent report that is very well written. However, one issue that is not currently mentioned is the arrival and spread of marine non-native species as a result of climate change. Perhaps a paragraph on this topic could e added somewhere. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
37	5	0	0	0	0	There are some missing/ incorrect citations in the chapter. These discrepancies have been highlighted in the ref check document for chapter 5 and is available in the supporting material web page. Chapter team may wish to rectify these errors before starting to work on SOD revisions and FGD preparation. (Chatterjee, Monalisa, IPCC WGII TSU)
38	5	0	0	0	0	1) Overall -- This chapter team has developed a very strong 2nd-order draft. In the final draft, the chapter team is encouraged to continue its prioritization of effective figures and tables, rigorous assessment, high specificity, and clear writing. (Mach, Katharine, IPCC WGII TSU)
39	5	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. Such coordination is relevant across many of the sectoral and regional chapters, but especially across chapters 5, 6, and 30. Where cross-references are made to other chapters, they should preferably cross-reference specific sections and/or assessment findings of the chapters, continuing to ensure that overlaps are reduced and assessment harmonized. (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
40	5	0	0	0	0	3) Harmonization with the Working Group I contribution to the AR5 -- In developing the final draft, the chapter team should also ensure all cross-references to the Working Group I contribution are updated, with discussion of climate, climate change, and climate extremes referencing the assessment findings in that volume. Where cross-references are made, wherever possible and appropriate they should specify the specific relevant sections of Working Group I chapters, instead of generic references to whole chapters. (Mach, Katharine, IPCC WGII TSU)
41	5	0	0	0	0	4) Shortening and tightening the chapter -- The chapter team is encouraged to shorten the text of the chapter as much as possible in preparing the final draft of the chapter. (Mach, Katharine, IPCC WGII TSU)
42	5	0	0	0	0	5) 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)
43	5	0	0	0	0	6) Characterization of future risks -- In characterizing future risks for coastal systems, to the degree appropriate the chapter team should indicate the extent to which risks (or key risks) can be reduced through mitigation, adaptation, and other responses. In discussing evolutionary adaptation or ecological shifts versus human responses and adaptation, clarity should be ensured. If possible, the chapter team should communicate how risks may increase as the level of climate change increases or, potentially, the relative importance of changes in mean conditions, as compared to changes in extreme events, as compared to potential non-linear changes associated with biome shifts or tipping points. Building from this, how much can risks be reduced through adaptation or other management approaches, in the near-term and the long-term? How are factors or stressors that multiply risks relevant in this context? As supported by its assessment of the literature, the author team should consider communicating risks for the era of climate responsibility (the next few decades, for which projected temperatures do not vary substantially across socioeconomic/climate scenarios) and for the era of climate options (the 2nd half of the 21st century and beyond). As would be helpful to the chapter, the framing of table SPM.4 could be considered in characterization of future risks, along with the key and emergent risk typology of chapter 19. (Mach, Katharine, IPCC WGII TSU)
44	5	0	0	0	0	7) Informing the summary products -- To further support robust and insightful summary products for the report, the chapter team is encouraged to maximize nuance as well as traceability in its key findings, continuing to use calibrated uncertainty language effectively. In addition to nuanced characterization of future risks (see the previous comment), the chapter team is encouraged to consider themes emerging across chapters, indicating for example how extreme events pose risks for coastal systems, how limits to adaptation may be relevant in the context of this chapter, and how interactions among mitigation and adaptation may occur. (Mach, Katharine, IPCC WGII TSU)
45	5	0	0	0	0	GENERAL COMMENTS: I congratulate the author team for all their work on an interesting and informative SOD. When considering the suite of review comments, please look for opportunities to continue to hone and focus the text in revision even further. Please see my detailed comments for suggestions related to specificity of ES findings and traceable accounts and specific clarifications. (Mastrandrea, Michael, IPCC WGII TSU)
46	5	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 5, this includes presentation of observed impacts and vulnerabilities in section A.i and sectoral and regional risks in section C.i, 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 5 and other chapters at LAM4? (Mastrandrea, Michael, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
47	5	0	0	0	0	Local relative sea level is the only basis for local planning. Global sea level, particular when based on models is largely irrelevant. No mention of any actual measurements of relative sea level. It mentions only isostasy as one of the many reasons why past measurements are unreliable. You should also mention measures to change local level, such as harbour development, dredging and erosion, changes in land level from buildings, removal of greound water and minerals, and chanes in equipment from styorm damage and inaccuracies in levelling. Only breecent measurements with GPS levelling sould be used for assessing "trends" and most of these show that sea level is not currently rising in many places (Gray, Vincent, Climate Consultant)
48	5	2	7	2	12	Given the importance of coastal (on- and offshore) subsistence to coastal dwellers, particularly in non-urban/deltaic settings, I suggest a dedicated subsection in 5.4.3 on food security. (Nunn, Patrick, University of New England)
49	5	2	45	0	0	Executive Summary: Please continue to refine the focus and clarity of the executive summary as you revise the chapter. Please also continue to ensure clear line of sight to underlying chapter sections--in general this is done well at present, but I have noted places where further clarity would be useful below. To the extent possible as supported by the literature, please also emphasize what risks are projected to emerge over different time horizons (e.g., mid-century vs. end-of-century), as well as the potential or lack of potential for mitigation and adaptation to reduce them. (Mastrandrea, Michael, IPCC WGII TSU)
50	5	2	45	3	47	I think it would be very useful to discuss the impacts of SLR and climate change on port infrastructure around the world. Given the importance of shipping to the global economic system, and the necessity for port facilities to be located very near sea level, this seems like an obvious point to consider. It does not seem to make sesne that the report sumamry mentions the economic impacts to tourism, but not trade. (Kolker, Alexander, Louisiana Universities Marine Consortium)
51	5	2	47	0	0	Characterizing Future Risks in the Executive Summary -- As much as possible, the chapter team should specify the degree to which future risks change or increase with increasing levels of climate change. Which risks emerge in the near-term, and which emerge in the long-term? What is the potential for reducing risks through adaptation and mitigation? (Mach, Katharine, IPCC WGII TSU)
52	5	2	47	2	48	Specify that this statement applies to terrestrial systems, but not necessarly to subtidal systems. Also, this statement seems to conflate exposure with sensitivity and adaptive capacity. Maybe qualify with "absent significant adaptation" (Hoffman, Jennifer, EcoAdapt)
53	5	2	47	2	48	The first sentence in bold of the Executive Summary ("Coastal systems…") would seem a statement of fact. Thus 'very high' confidence or 'virtually certain' (or even without any qualifier) would seem appropriate. Note that the first sentence does not say that ALL coastal systems and low-lying areas are at risk - they're not. But recognition of exceptions does not reduce confidence in the validity of the statement that is made. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
54	5	2	47	2	48	The sentence in bold should provide some indication as to what the impacts are (Hay, John, University of the South Pacific)
55	5	2	47	2	53	Please ensure clear line of sight for this paragraph. Section 5.3.1 does not appear to be relevant here, although 5.3.2 does. (Mastrandrea, Michael, IPCC WGII TSU)
56	5	2	48	2	48	It sounds as though the text should say "submergence and extreme flooding due to" (as sea level is included in the statement already). (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
57	5	2	48	2	48	Suggest broadening sentence to include coastal erosion and sedimentation in addition to submergence and flooding. This is consistent with chapter 5 material on coastal erosion. For example: "Due to relative sea-level rise, coastal systems and low-lying areas will increasingly experience adverse impacts associated with coastal erosion and sedimentation, submergence, and flooding from extreme coastal high water levels (high confidence)." The paragraph could also be expanded by a sentence or two to include examples, such as a) up to 3/4 of world coastline is rocky or cliffed (ch 5 P15/L38) and/or b) ch 5 P43L37-39 demonstrates that coastal response is the product of complex drivers and processes beyond simple submergence. (UNITED STATES OF AMERICA)
58	5	2	49	0	0	I suugest to change the term subsidence by a more general and comprensibe statement: subsidence and iso+G3static displacements (Anadon, Ricardo, University of Oviedo)
59	5	2	49	2	49	Here, it should be added that due to isostatic rebound, local sea level rise can also be lower than projected GMSL. (Sjostrom, Asa, Swedish Meteorological and Hydrological Institute)
60	5	2	49	2	49	It should be added that due to isostatic rebound, local sea level rise can also be lower than projected GMSL. (SWEDEN)
61	5	2	50	2	50	Say that GMSL is Global Mean Sea Level (said only p 6 line 16) (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
62	5	2	50	2	50	GMSL --> Global Mean Sea Level (GLSM) (Jung, Sukgeun, Jeju National University)
63	5	2	50	2	50	I suggest the acronym GMSL is fully expanded here as this is the first time it is used in this chapter. This will be consistent with the treatment of acronyms in rest of the chapter and avoid confusion. (Barciela, Rosa, Met Office Hadley Centre)
64	5	2	50	2	50	Where "larger" is mentioned, if the effect also holds for relative sea level rise "smaller" than global mean sea level rise, it would seem important to say instead "considerably larger or smaller" to ensure a balance presentation. (Mach, Katharine, IPCC WGII TSU)
65	5	2	50	2	51	Section ES: It is stated that “local factors such as subsidence suggests that relative sea level rise can be considerably larger than the projected GMSL ’’. It is suggested to modify it as “ local factors such as subsidence suggests that relative sea level rise in some regions can be considerably larger than the projected GMSL ’’ (INDIA)
66	5	2	51	2	51	Is it possible to specify which types of "storms" are meant here? (Mach, Katharine, IPCC WGII TSU)
67	5	2	51	2	53	The authors should clarify: It was unclear from this statement if the low confidence statement was referering to whether storms would change or our ability to predict what those changes would be. Generally it should be made more clear within this chapter what the expected effects on storms will be, in terms of frequency, geographical location, and magnitude. As currently written these expected effects are unclear. (UNITED STATES OF AMERICA)
68	5	2	51	2	53	Page 9 provides additional conclusions related to this point. It may be worth considering their inclusion here. (Mastrandrea, Michael, IPCC WGII TSU)
69	5	2	52	2	53	Section ES: It is stated as “ Changes in sea level extremes but the small number of regional storm surge studies, limited spatial coverage and different modelling approaches used means that there is low confidence in projections of storm surges. “ may be modified as “Changes in sea level extremes but the small number of regional storm surge studies, limited spatial coverage and different modelling approaches used means that there is low confidence in projections of storm surges. However, there is high confidence that mean sea level rise will contribute to the projected sea-level extremes.” (INDIA)
70	5	2	53	2	53	different modelling approaches are used and it is concluded that there is therefore low confidence. I would argue the reverse, the more really different modelling approaches used and yet the same result would be an asset. If you get the same outcome with models that are based on different scientific views, underlying concept, you would get better constraints. (Middelburg, Jack, Utrecht University)

#	Ch	From Page	From Line	To Page	To Line	Comment
71	5	3	1	3	1	The sentence in bold should provide some indication as to what the consquences are (Hay, John, University of the South Pacific)
72	5	3	1	3	12	This is missing the major warming-associated impact of shifts in species ranges (of fish and other organisms). (UNITED STATES OF AMERICA)
73	5	3	1	3	12	This summary paragraph does not mention salt marsh. Only seagrasses and mangroves are mentioned. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
74	5	3	1	3	12	For the potential impacts and risks described in this paragraph, is it possible to indicate how they would vary with levels of climate change or in the near term versus long term? Please see my overall comments on characterizing future risks. (Mach, Katharine, IPCC WGII TSU)
75	5	3	1	3	12	This is an example where further clarity about the evolution of the described changes over time would be useful. (Mastrandrea, Michael, IPCC WGII TSU)
76	5	3	2	3	3	Please confirm the line of sight for this statement. (Mastrandrea, Michael, IPCC WGII TSU)
77	5	3	3	3	4	should add the sentence“Moreover, stress from other causes (pathogen, ultra-violet radiation, runoff of sediment) may make corals more susceptible to bleaching and mortality (5.4.2.4).”to behand of the sentence“The interaction of acidification and warming exacerbates coral bleaching and mortality (very high confidence) [5.4.2.4, Box CC-OA].” (mou, lin, State Oceanic Administration of China, National Marine Data and Information Service)
78	5	3	8	0	10	I suggest to move all the paragraphs: In the absence of adaptation……5.4.2.2.] to the previous point because is related with SLR and not weith acidification (Anadon, Ricardo, University of Oviedo)
79	5	3	8	3	10	This description of erosion of beaches and rocky coasts is not related to the paragraph (Miloshis, Michael, Charles Darwin University)
80	5	3	8	3	10	Suggest moving this sentence to the previous paragraph. This sentence is about beach, dune and cliff erosion, but appears in a paragraph about ocean acidifcation and warming. (UNITED STATES OF AMERICA)
81	5	3	8	3	10	This statement belongs in the sea-level rise finding (as it's not about acidification or warming). (UNITED STATES OF AMERICA)
82	5	3	8	3	12	I don't quite follow the last sentence in the context of the previous text. In my opinion it is not clear the relation between acidification and warming with erosion and human-induced drivers. Rephrasing would be necessary to my understand. (das Neves, Luciana, University of Porto - Faculty of Engineering)
83	5	3	8	3	12	These sentences seem out of place and inconsistent with the rest of the paragraph. The authors should delete them, or add context. (UNITED STATES OF AMERICA)
84	5	3	10	3	12	Suggest separating this conclusion "Increased human-induced drivers have been the primary drivers of change in coastal aquifers, lagoons, estuaries, deltas, and wetlands (very high confidence)...." as this is an important conclusion which does not necessary follow from the paragraph heading on line 1. (Bettencourt, Sofia, World Bank)
85	5	3	10	3	12	Description of drivers and impacts not related to acidification and warming paragraph. (Miloshis, Michael, Charles Darwin University)
86	5	3	14	3	16	Not clear high confidence is warranted here, since adaptation is possible and coast-ward migration is not a certainty. (Hoffman, Jennifer, EcoAdapt)
87	5	3	16	3	17	Please clarify the definition of a 1 in 100 year coastal flood here. Is this held fixed in the analysis? (Mastrandrea, Michael, IPCC WGII TSU)
88	5	3	16	3	18	Please verify source. This increase seems to be a result of simple population growth in the exposed areas (an annualized rate of about 3%) rather than an increase in exposure due to socio-economic development. (Bettencourt, Sofia, World Bank)

#	Ch	From Page	From Line	To Page	To Line	Comment
89	5	3	17	3	17	Is it possible to indicate on what scale the "one in 100 year coastal flood" is being defined? (Mach, Katharine, IPCC WGII TSU)
90	5	3	17	3	24	On l. 17, the population exposed to the 1 in 100 yr flood runs to 2050, whereas on l. 24, population impacted or dispaced goes to 2100. Preferably, use consistent end dates for both cases. (UNITED STATES OF AMERICA)
91	5	3	18	3	18	Replace "[…]development only[…]" with "[…]development alone[…]" (de Gusmao, Diogo, Met Office Hadley Centre)
92	5	3	18	3	20	Please clarify the line of sight for this statement. Sections 5.3.4.5 and 5.3.4.6 in the line of sight do not exist, so please update these. (Mastrandrea, Michael, IPCC WGII TSU)
93	5	3	19	3	19	do you mean reduced sediment delivery? If so reformulale and how sure are you about this. (Middelburg, Jack, Utrecht University)
94	5	3	20	3	20	The source of conclusions are not [5.3.4.5, no 5.3.4.6] in the text, please check. (Zhu, Xiaojin, National Climate Center)
95	5	3	22	0	0	Consideration of adaptation/residual damage costs are high limited to the 21st century. For sea level rise, the consequences beyond the 21st warrant mention in the ES text, since they are potentially much more serious (under most RCPs), and probably unstoppable. Protection against 2m mean sea level rise is much more than twice as difficult/expensive than against 1m sea level rise; protection against 5m sea level rise is near impossible. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
96	5	3	22	0	23	This bolded finding is quite vague. Suggest being more specific (ego "inaction" on what? climate change mitigation, adaptation, both combined?) (CANADA)
97	5	3	22	3	22	Change to read: "The social and economic costs of inaction….." (Hay, John, University of the South Pacific)
98	5	3	22	3	23	The statement of the cost of inaction compared to other costs is extremely important and should be made very clear in the SPM. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
99	5	3	22	3	25	It would be helpful to specify the relevant scenarios of climate change and drivers (population, exposure, etc.) for these statements. (Mach, Katharine, IPCC WGII TSU)
100	5	3	22	3	29	As the SPM comment above; it is unclear how the 1.26m rise by 2100 scenario relates to the results in AR5 WG1 (Ch13, table 13.5).\n\n (NETHERLANDS)
101	5	3	23	3	24	Ranges are available on page 24--please consider whether further specificity is possible in this executive summary statement. (Mastrandrea, Michael, IPCC WGII TSU)
102	5	3	23	3	27	Where summary terms for agreement are provided on lines 23 and 27, it would be preferable to also present summary terms for evidence, following the uncertainties guidance for authors. (Mach, Katharine, IPCC WGII TSU)
103	5	3	25	3	25	very extreme mean sealevel rise of 1.3 m. Is this really very extreme. Reformulate to e.g. Even with upper uncertainty limtit mean sea level… (Middelburg, Jack, Utrecht University)
104	5	3	26	3	26	Say 1.26 instead of 1,3 as said line 29, or suppress (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
105	5	3	27	3	27	Add "a" between "Under" and "medium". It should read "[…]Under a medium socio-economic development assumption[…]" (de Gusmao, Diogo, Met Office Hadley Centre)
106	5	3	27	3	29	The sentence " under medium..." may be better revised as "under all given socie-economic scenarios, the expected direct global annual cost of coastal flooding may be 1.5-5.3 times higher in 2100 without adaptation than with adaptation under all considered SLR scenarios. Remarkably, annual expected number of people flooded may be two-three orders of magnitude smaller with adaptation in 2100 than without adaptation? (Ye, Siyuan, Qingdao institute of marine geology)

#	Ch	From Page	From Line	To Page	To Line	Comment
107	5	3	27	3	29	The sentence " under medium..." may be better revised as "under all given socie-economic scenarios, the expected direct global annual cost of coastal flooding may be 1.5-5.3 times higher in 2100 without adaptation than with adaptation under all considered SLR scenarios. Remarkably, annual expected number of people flooded may be two-three orders of magnitude smaller with adaptation in 2100 than without adaptation?" (Ye, Siyuan, Qingdao institute of marine geology)
108	5	3	27	3	29	This sentence references Chapter 5, section 5.5.3. However, the only reference in Section 5.5.3 to a study of impacts of SLR of 1.26m (Table 5.5), is Hinkel et al, 2011 which covers only Africa, not globally, and therefore does not support this statement. (AUSTRALIA)
109	5	3	27	3	29	According to the IPCC AR5 WG1 SOD, global mean sea level rise by 2100 is projected 0.56-0.96 m above 1986-2005 average, instead of 1.26 m, even under the RCP8.5 scenario. Besides, it is described in Chapter 13 of the IPCC WG1 AR5 SOD (P13-4, L25-26) that "there is no consensus about the reliability of semi-empirical models, which give higher projections than process-based models". The WG1 climate change projections need to be duly represented in the WG2 contribution. In this context, it is recommended to assess the impact of global mean sea level rise under the conditions of projected sea level rise in the IPCC WG1 AR5 SOD. (JAPAN)
110	5	3	27	3	29	The value of the sea level rise quoted here seems to reflect results of sensitivity analyses in Hinkel et al. (2012). According to Hinkel et al. (2012), a scenario of 1.26m global mean sea level rise is an extremely-high case. Considering the fact that this value is out of range shown in the WG1 report, it is recommended to clearly describe that this number is beyond the range shown in the IPCC WG1 AR5 SOD. (JAPAN)
111	5	3	27	3	29	For this statement, the chapter team may wish to consider the slightly revised wording used within the summary for policymakers, which may be clearer. (Mach, Katharine, IPCC WGII TSU)
112	5	3	27	3	29	Please clarify the reasoning for citing the results of one study here in the executive summary, as opposed to the others included in the chapter text. (Mastrandrea, Michael, IPCC WGII TSU)
113	5	3	28	3	29	the sentence states the following: '...under a 1.26 m sea-level rise'. In the Chapter these amounts (90 billion, 300 billion) are only mentioned with respect to a sea level rise of 0.6 to 1.3 m (see Table 5.8) and thus not '1.26 m'. Next to the fact that the 1.26 is mentioned in another perspective (cost estimation only for Africa), the bold statement made in the chapter summary is only based on one reference, while Table 5.8 shows the broad ranges in cost estimates if more impacts are taken into consideration. It seems therefore innapropriate to state only the numbers 90/300 billion. Suggestion: include broad cost estimates and impacts.\n\n (NETHERLANDS)
114	5	3	29	3	29	Include costs of the adaptation assumed to be undertaken (Hay, John, University of the South Pacific)
115	5	3	31	3	31	It may be preferable to avoid use of "required" here, instead indicating more precisely what is meant, to avoid potential interpretations of policy prescriptiveness. (Mach, Katharine, IPCC WGII TSU)
116	5	3	31	3	34	There are also strong inter-country variations, even in small islands (refer to Chapter 29). (Bettencourt, Sofia, World Bank)
117	5	3	32	3	33	The line states: 'While developed countries are expected to be able to adapt to even high levels of sea-level rise...'. This information cannot be found in Section 5.4.3 of 5.5.3 or anywhere else in Chapter 5. Nowhere it is stated that developed countries are expected to be able to deal with high sea level rises. Suggestion: skip this sentence.\n\n (NETHERLANDS)
118	5	3	32	3	33	This statement is unsupported. Not all developed countries will really be able to adapt for portions of their coasts. The text in 5.5.3 does not support such a strong statement. Either find citations to support, or strike. (UNITED STATES OF AMERICA)
119	5	3	32	3	34	For this statement, is it possible to specify a general time frame over which it pertains? Additionally, is it possible to specify more precisely the level of sea level change that is relevant, especially for the 2nd half of the statement? (Mach, Katharine, IPCC WGII TSU)
120	5	3	33	3	33	What about some low-lying developed countries - e.g. Netherlands? (Hay, John, University of the South Pacific)

#	Ch	From Page	From Line	To Page	To Line	Comment
121	5	3	35	3	35	Instead of "are impacted," it may be clearer to say "will be impacted." (Mach, Katharine, IPCC WGII TSU)
122	5	3	39	3	39	It could be helpful to specify the relevant geographic scope of this progress--equally across regions, developed and developing countries? (Mach, Katharine, IPCC WGII TSU)
123	5	3	39	3	40	I guess what is meant here is "climate resilient and sustainable coastal management or practices"; coast themselves are often neither resilient nor sustainable: they are evolving constantly. (Le Cozannet, Goneri, BRGM)
124	5	3	39	3	47	The statements tend to focus on the "novel" and other special initiatives rather than describing overall progress relative to the identified levels of risk that need to be managed. (Hay, John, University of the South Pacific)
125	5	3	40	3	40	Is it "sustainable coasts", or sustainable "coastal systems"? (Hay, John, University of the South Pacific)
126	5	3	41	3	47	These statements would be stronger if further indication of relevant contexts (types of impacts and corresponding responses, geographic regions, etc.) were provided. (Mach, Katharine, IPCC WGII TSU)
127	5	3	43	3	45	These referenced chapter sections should be 5.5.1.X rather than 5.5.2.X. (Mastrandrea, Michael, IPCC WGII TSU)
128	5	3	46	3	46	states (typo). (Middelburg, Jack, Utrecht University)
129	5	3	46	3	46	Should be "states" (UNITED STATES OF AMERICA)
130	5	3	46	3	46	change 'sates' to states' (POLAND)
131	5	3	46	3	46	Replace "sates" with "states". (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
132	5	3	46	3	47	This sounds over confident about a range of policies which vary from marginal (threat recognition only) to proactive. The scale of proactive vs reactive policies needs to be identified. How much so-called adaptive is no more than an in situ reactive measure that follows the past event, rather than leading for the next one. I think that this statement will be seen as over-reassuring, when some concern is necessary over the state of preparedness for future coastal living. (Orford, Julian, Queen\\\\\\'s University, Belfast)
133	5	3	47	3	47	Is it possible to illustrate more specifically what types of coastal adaptation have been mainstreamed and how? (Mach, Katharine, IPCC WGII TSU)
134	5	3	53	0	0	Explain the decision to emphasize sea level rise. Is it based on available data? Perceived severity of risk? (Hoffman, Jennifer, EcoAdapt)
135	5	4	1	4	2	Specify which materials pertinent to the oceans omitted in this chapter will be covered in two new ocean chapters 6, 30. (UNITED STATES OF AMERICA)
136	5	4	15	4	15	AR4 assessed the sea-level rise out to the period 2090 to 2099 (or could say the 2090s) - but isn't quite correct to say 2100 (Bell, Robert, NIWA)
137	5	4	16	4	16	Add "to" between "deemed" and "be". It should read "[…]The coastal systems were deemed to be[…]" (de Gusmao, Diogo, Met Office Hadley Centre)
138	5	4	16	4	16	The line has a grammatical error....\n16 The coastal systems were deemed be affected mainly (UNITED STATES OF AMERICA)
139	5	4	16	4	16	It seems this is a future-oriented statement about future impacts, but it would be helpful to clarify this. (Mach, Katharine, IPCC WGII TSU)
140	5	4	17	4	17	pH is not reduced, acidity increases leading to a lower pH. Suggestion: ".. Larger storm surges and increased ocean acidity."\n\n (NETHERLANDS)
141	5	4	19	4	20	Could state why each of these regions are vulnerable (low lying, population density, finance, adaptive capacity). (Brown, Sally, University of Southampton)
142	5	4	23	4	23	In place of "unavoidability" would it be clearer to use a phrase such as "locked in"? (Mach, Katharine, IPCC WGII TSU)
143	5	4	29	4	29	Here, the GMSL numbers given are different to those used earlier in the chapter. It is important to be consistent. (Sjostrom, Asa, Swedish Meteorological and Hydrological Institute)

#	Ch	From Page	From Line	To Page	To Line	Comment
144	5	4	29	4	29	0.96 cm -> 0.96 m (Jung, Sukgeun, Jeju National University)
145	5	4	29	4	29	In 2100 - with respect to what initial time period? (Brown, Sally, University of Southampton)
146	5	4	29	4	29	The GMSL numbers given are different to those used earlier in the chapter. Be consistent. (SWEDEN)
147	5	4	29	4	29	The unit should be meters not centimeters. (UNITED STATES OF AMERICA)
148	5	4	29	4	29	replace 'cm' with 'm' (POLAND)
149	5	4	29	4	29	It would be preferable to specify the range of scenarios of climate change for which these projected levels of sea level change pertain. (Mach, Katharine, IPCC WGII TSU)
150	5	4	29	4	30	Two comments: a) The sentence doesn't read right as it doesn't include a the word "rise" or "higher" and somewhat less important a baseline period for which it is relative - so should read e.g. "GMSL is projected to be higher by ….."; b) the units ar metres not cm (Bell, Robert, NIWA)
151	5	4	32	4	24	Also the complex interrelationships depend on different methods and responses of coastal management (Brown, Sally, University of Southampton)
152	5	4	32	4	34	Statement is not sufficiently substantiated in Chapter 5 (relation between geomorphological and ecological attributes of coastal systems and climate change). Morphology and changes thereof is not discussed in Chapter 5, so references (crossref?) are necessary.\n\n (NETHERLANDS)
153	5	4	36	4	42	Reorganise paragraph so first 2 sentences relating to shellfish & corals come last; also suggest using "structural integrity" rather than "stability". (Lough, Janice, Australian Institute of Marine Science)
154	5	4	37	4	38	It would be helpful to clarify if this is a future-oriented statement about expected impacts. (Mach, Katharine, IPCC WGII TSU)
155	5	4	46	4	46	Instead of "acceptable" it seems a more precise term could be used. (Mach, Katharine, IPCC WGII TSU)
156	5	4	50	5	2	While I realise this is a summary paragraph, I think it sends the wrong message to the reader to focus for developing countries only on extremes in coastal urban areas. I would suggest an additional sentence/phrase that identifies problems likely to arise from climate-change effects on the already (generally) ineffective coastal-zone management in many parts of developing countries and cite one of Dasgupta's papers. (Nunn, Patrick, University of New England)
157	5	4	50	5	2	I think it would be useful to mention the impacts of SLR and storms on critical infrastructure such as ports and naval facilities. It seems odd the the authors discuss renewable energy, but not these issues, which are more critical to the daily lives of many people in developed and developing countries today. (Kolker, Alexander, Louisiana Universities Marine Consortium)
158	5	5	7	5	12	The definition given for "Coastal systems and low-lying areas" is unsatisfactory, since i) "areas near to mean sea level" apparently only relates to land; ii) it is not made clear whether "near" is intended to relate to 10m elevation (as mentioned in line 10); iii) there can be low-lying areas (including depressions below sea level) at considerable distance from the coast, but it is not presumably intended that all these are included; and iv) the implication from line 12 is that shelf seas are included. If that is the case, it needs to be explicitly stated (and a water depth given). (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
159	5	5	8	5	10	If there is no single definition of the coastal zone, what is the definition adopted by the IPCC? Is it the LECZ? If so, state it. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
160	5	5	10	0	10	The issue of what is coastal must be taken a little more in detail than just a little 10 m number. In some cases, it makes sense but in others, it means not a lot. In some literature, we talk about a certain distance from the high tide. I believe that this makes more sense. E.g. a highly varying coasta with a stretch of 30 km you pass from a low lying for 15 km followed by a cliff for 5 km and then back to low lying. would you expect "no effect" on the cliff. I would completely disagree for two reasons: storm surges will erode this cliff sometimes faster than low lying area and the people living on the top of this cliff are not immune to damage from storms. (Vasseur, Liette, Brock University)
161	5	5	11	5	11	This chapter does consider polar coasts (as artic coasts which according to google is the same) and small islands a few times (for example p. 10, l. 48; p. 14, l. 50; p. 27, l. 5-6) so the statement is wrong. Suggestion: ad "indepth" in the sentence: "does not consider the polar coasts indepth (chapter 28), nor small islands (chapter 29)"\n\n (NETHERLANDS)
162	5	5	11	5	11	The statement "This chapter does not consider...small islands" is innacurate as the chapter does on occasion consider small islands and on other occasions refers the reader to chapter 29. (UNITED STATES OF AMERICA)
163	5	5	11	5	12	After "not" I would add "explicitly" because there is a lot about small islands in this chapter (as I believe there should be). (Nunn, Patrick, University of New England)
164	5	5	11	5	12	The text here would more appropriately be placed on page 4, lines 1-2 (UNITED STATES OF AMERICA)
165	5	5	12	5	12	The region beyond the continental shelf, is by definition, not part of the coastal zone, so no need to mention it. (UNITED STATES OF AMERICA)
166	5	5	16	5	16	should add "river mouths" after deltas as many rivers don't have deltas (Bell, Robert, NIWA)
167	5	5	17	5	17	provide (instead of provde) (Le Cozannet, Goneri, BRGM)
168	5	5	17	5	17	Should be "provide". (UNITED STATES OF AMERICA)
169	5	5	19	5	21	line 20 (and subsequent supporting part): Please change to .....environment (settlements, water and transportation infrastructure and networks). (UNITED STATES OF AMERICA)
170	5	5	20	5	20	In terms of climate change adaptation, should also identify after transport networks - "drainage/stormwater networks" as a special case of infrastructure - given drainage issues will be a major challenge (Bell, Robert, NIWA)
171	5	5	29	5	29	The title is misleading as drivers can mean many different things, and it was also unclear if we were talking about "driver" associated with climate or all coastal impacts.The authors should consider lengthening the title of this section to be more descriptive of what it includes, such as "Drivers of Impacts in Coastal Zones" (UNITED STATES OF AMERICA)
172	5	5	31	0	0	Section 5.3.1. The chapter team could consider deleting this section, instead providing cross-reference to working group 1 and 2 framing chapters with such introductory material where scenarios are 1st used within chapter 5. (Mach, Katharine, IPCC WGII TSU)
173	5	5	33	5	34	Unclear sentence: "changes in climate drivers (any climate-induced factor that directly or indirectly causes a change), including sea level rise". This implies that a driver of climate change is induced (caused) by climate, one of them being sea level rise. Please clarify if it is about change in climate drivers, change in climate itself or change of effects of climate.\n\n (NETHERLANDS)
174	5	5	33	5	44	To assist readers it might be useful to indicate the metric of RCP as Table 1 is not otherwise understood. Likewise in moving from last to this assessment should there not be an attempt to cross ref old Scenarios with new ones. I can see you identify Box 1.2 but many readers might not start there but dip straight into Ch 5 (Orford, Julian, Queen\\\\\\'s University, Belfast)
175	5	5	34	5	36	We believe that this statement could be misunderstood since it may be confused with storage in geological reservoirs under the seabed which is not geoengineering in this report (see Glossary). Therefore we propose to add after deep ocean: "above the seafl (NORWAY)

#	Ch	From Page	From Line	To Page	To Line	Comment
176	5	5	42	5	42	Meinhausen et al. 2009 is not in the reference list. Could it be(with an s in between) Meinshausen et al. 2011 in the sources list? Meinhausen et al. 2009. does exist (Nature 458) but does not deal with pathways nor the period beyond 2100.\n\n (NETHERLANDS)
177	5	5	43	5	44	In WG1,ch 13.5.2 (13-53 lines 43-44 of SOD) it is stated that it is virtually certain that sea-level rise will continue beyond 2500 unless global temperature declines\n\n (NETHERLANDS)
178	5	5	43	5	44	Cannot find a statement about sea-level rise to continue after 2500 in ch.1 of WG1, the reference to ch 13.5.2 of WG1 is correct\n\n (NETHERLANDS)
179	5	6	1	6	10	No mention of any actual measurements of relative sea level. It mentions only isostasy as one of the many reasons why past measurements are unreliable. You should also mention measures to change local level, such as harbour development, dredging and erosion, changes in land level from buildings, removal of greound water and minerals, and chanes in equipment from styorm damage and inaccuracies in levelling. Only breecent measurements with GPS levelling sould be used for assessing "trends" and most of these show that sea level is not currently rising in many places (Gray, Vincent, Climate Consultant)
180	5	6	3	6	10	Include changes in sediment input and accretionary processes here (Hoffman, Jennifer, EcoAdapt)
181	5	6	6	6	10	Spatial variability in relative rates of sea-level rise can also be due to ocean circulation patterns and inter-annual & decadal variability e.g. Zhang X and Chruch JA (2012) Sea level trends, interannual and decadal variability in the Pacific Ocean. Geophysical Research Letters39, doi:10.1029/2012GL053240 and Ganachaud et al (2011) Observed and expected changes to the tropical Pacific Oceanin Bell et al (eds) Vulnerability of Tropical Pacific Fisheries and Aquaculture to Climate Change. SPC, Noumea, New Caledonia, pp 101-187 (Lough, Janice, Australian Institute of Marine Science)
182	5	6	9	6	9	locally and regionally' (GIA is not a local effect) (Le Cozannet, Goneri, BRGM)
183	5	6	9	6	10	Tektonic changes can also lead to local sea level reductions\n\n (NETHERLANDS)
184	5	6	15	0	17	This sentence is quite weird. Very likel when we are talking about historical data. Better explained a little more. Especially when the next sentence you talk about thermal expansion without the same qualitative. (Vasseur, Liette, Brock University)
185	5	6	15	6	16	It is possible to give an approximate range of how large these regional variabilities might be. (UNITED STATES OF AMERICA)
186	5	6	15	6	26	Local relative sea level is the only basis for local planning. Global sea level, particular when based on models is largely irrelevant. (Gray, Vincent, Climate Consultant)
187	5	6	16	6	16	If my previous comment for Page 2, line 50 is accepted then there is no need to expand the GMSL acronym here so I suggest "global mean sea level" is removed and the GMSL acronym is used instead. (Barciela, Rosa, Met Office Hadley Centre)
188	5	6	17	6	17	Loose wording for a rate since 1993 - not clear if the range 2.8 to 3.6 mm/yr is the CI for a particular period e.g. 1993 to 2012, or covers the variability in rates over that period? If the former, then should state the end year of the analysis, if the latter, then is somewhat misleading as it will include an variable component on the rate due to climate variability. (Bell, Robert, NIWA)
189	5	6	19	6	19	The reference to "AR5, Chapter 13" is unclear. Please specifically refer to AR5 WGI Ch13. (Plattner, Gian-Kasper, IPCC WGI TSU)
190	5	6	19	6	19	It would be preferable to indicate the specific relevant sections of Chapter 13 in place of a generic reference to the full chapter. (Mach, Katharine, IPCC WGII TSU)
191	5	6	20	6	20	For clarity and to help reader, should give the rate of rise for 1971 to 2010 without having to look it up. (Bell, Robert, NIWA)

#	Ch	From Page	From Line	To Page	To Line	Comment
192	5	6	20	6	21	Missing likelilood of statement that sea level may continue to rise beyond 2100\n\n (NETHERLANDS)
193	5	6	25	6	25	The reference to (13.5.2) is unclear. Please provide a more detailed reference to AR5 WGI Ch 13.5.2. (Plattner, Gian-Kasper, IPCC WGI TSU)
194	5	6	26	6	26	Note that Table 1 has only got RCP levels and needs GHG conc to be added (Orford, Julian, Queen\\\\\\'s University, Belfast)
195	5	6	29	6	29	For ease of reading and assimilation - in caption should add the length of baseline period e.g. relative to the 20-year period 1986-2005. Also may slip the reader, that the baseline period is changed from the 1980 to 1999 used in AR4, that doesn't seem to have been mentioned in this WGII chapter. (Bell, Robert, NIWA)
196	5	6	37	6	37	Table 5.2 Ocean acidity: why this is not a physical effect ? You mean a "chemical effect" ? (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
197	5	6	39	6	39	suppress this symbols not used in Table 5.2 (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
198	5	6	40	6	52	I suggest the authors discuss why areas near glaciers and ice sheets are experiencing a sea level fall. For readers not familiar with the concept of glacial isostacy, this might seem confusing. (Kolker, Alexander, Louisiana Universities Marine Consortium)
199	5	6	42	0	0	Section 5.3.2.2 I suggest including a figure summarizing projected regional sea level rise trends as compared to the global average. (Coughlan, Erin, Red Cross / Red Crescent Climate Centre)
200	5	6	44	6	44	Is "impacts of sea level rise" what is intended here, or are the authors simply takling about the physical increase in relative sea level rise, which is very different as impacts depends on many things beyond simply the magnitude of the rise in relative sea level. From a reading of the section, it sounds as though the authors are talking about magnitude of rise, not the actual impacts, and therefore they should consider rephrasing this first part of the sentence. (UNITED STATES OF AMERICA)
201	5	6	44	6	54	It might be helpful to indicate if we can currently predict these regional variations with any accuracy over longer time scales (>10 years). For example if the sea level is going to vary by 40 cm that could completely wipe our any sea level rise predictions at a specific site, and if we cannot predict this, we may see huge differences between our predicted and observed sea levels at specific locations. (UNITED STATES OF AMERICA)
202	5	6	45	6	45	Climate variability occurs at interannual scales also - in fact more so so some regions, so should read "affect rise on interannual and interdecadal time periods". In fact ENSO is reported in next sentence so needs to incl. interannual (Bell, Robert, NIWA)
203	5	6	47	6	49	This sentence needs a citation (Kolker, Alexander, Louisiana Universities Marine Consortium)
204	5	6	49	6	50	Changes in shape of the ice sheets also contribute to local sea level changes due to gravitational effects\n\n (NETHERLANDS)
205	5	6	49	6	51	This sentence needs a citation. I suggest papers by G. Milne and colleagues (Kolker, Alexander, Louisiana Universities Marine Consortium)
206	5	6	50	6	51	Brief explanation required as to why sea levels near ice sheets fall\n\n (NETHERLANDS)
207	5	6	51	6	52	5.3.2.2. please give reference for this, maybe ch30 should refer to this in 30.3.2.1, they do not mention that some regions experience adrop in sea level.\n (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
208	5	6	52	6	52	how about the scenarios RCP2.6 and RCP6.0,Why give a low and an intermediate scenario ? Need to explain.\n (mou, lin, State Oceanic Administration of China, National Marine Data and Information Service)
209	5	6	52	6	52	should be "relative" sea level fall (Nunn, Patrick, University of New England)
210	5	6	52	6	54	Maybe should be made clear that the regional % departures from GMSL are absolute (not relative) particularly as "coastlines" are mentioned rather than regional "oceans" - so maybe be amiguous. (Bell, Robert, NIWA)

#	Ch	From Page	From Line	To Page	To Line	Comment
211	5	6	54	6	54	50% above the GMSL --> 50% above the GMSL change (??) (Jung, Sukgeun, Jeju National University)
212	5	6	54	6	54	A rise of 50% above the GMSL is incorrect (GMSL: Global Mean Sea Level). If it is really 50% it could be enormous, depending on the measurement of the GMSL (from the bottom of the sea?). It should be 50% of the current projected GMSL change (or rise).\n\n (NETHERLANDS)
213	5	6	54	6	54	The reference to "AR5, Chapter 13.6" is unclear. Please specifically refer to AR5 WGI Ch13.6. (Plattner, Gian-Kasper, IPCC WGI TSU)
214	5	7	3	7	33	While the emphasis on SLR driven flooding, the change in frequency and severity is already driving flooding further inland is evident, there are two factors that need to be mentioned...extremes exacerbate, SLR exacerbates even more (UNITED STATES OF AMERICA)
215	5	7	5	7	0	The authors should define and briefly explain GIA. (Kolker, Alexander, Louisiana Universities Marine Consortium)
216	5	7	5	7	6	Relative SLR can also occur due to uplift not just subsidence - which is same for GIA by implication in early part of sentence (i.e. up or down) - change wording to "… relative sea level rise due to subsidence of coastal plains or uplift can occur …" otherwise state "relative sea level rise will be heightened due to subsidence ..." (Bell, Robert, NIWA)
217	5	7	5	7	11	In addition to the causes mentioned, natural subsidence can occur due to sediment compaction and loading, as in the Mississippi River, and other deltas (e.g., Dokka, R.K., 2011. The role of deep processes in late 20th century subsidence of New Orleans and coastal areas of southern Louisiana and Mississippi. J. Geophsyical Research 116, B06403, doi:10.1029/2010JB008008;Trnqvist, T.E., et al., 2008. Mississippi Delta subsidence proimariliy caused by compaction of Holocene strata. Nature Geoscience 1:173-176). (UNITED STATES OF AMERICA)
218	5	7	7	0	8	March 11, 2011 earthquake in Japan should be referred to by its correct formal name: the Great East Japan Earthquake. (JAPAN)
219	5	7	7	7	8	No Source named for the numbers for the subsidence of the Tohoku Earthquake\n\n (NETHERLANDS)
220	5	7	13	7	24	Change to anthropogenic influences on sea level, not just anthropogenic causes of relative sea level rise. In areas where major dams are being removed (e.g. the Glines and Elwha dams in Washington State) increased sediment input may contribute to slower relative sea level rise. Large-scale clearing of forest can also lead to rapid wetland expansion, e.g. Kirwan, ML, Murray, AB, Donnelly, JP, and Corbett, DR, 2011. Rapid wetland expansion during European settlement and its implication for marsh survival under modern sediment delivery rates. Geology, v. 39; p. 507–510, doi:10.1130/G31789.1. (Hoffman, Jennifer, EcoAdapt)
221	5	7	13	7	24	Change to anthropogenic influences on sea level, not just anthropogenic causes of relative sea level rise. In areas where major dams are being removed (e.g. the Glines and Elwha dams in Washington State) increased sediment input may contribute to slower relative sea level rise. Large-scale clearing of forest can also lead to rapid wetland expansion, e.g. Kirwan, ML, Murray, AB, Donnelly, JP, and Corbett, DR, 2011. Rapid wetland expansion during European settlement and its implication for marsh survival under modern sediment delivery rates. Geology, v. 39; p. 507-510, doi:10.1130/G31789.1. (UNITED STATES OF AMERICA)
222	5	7	15	7	0	The correct citation for Kolker et al., is Kolker, A.S., Allison, M.A., Hameed, S., 2011. An evaluation of subsidence rates and sea-level variability in the Northern Gulf of Mexico. Geophysical Research Letters, 38: L21404, 10.1029/2011GL049458,2011 (Kolker, Alexander, Louisiana Universities Marine Consortium)
223	5	7	18	7	20	It might be ueful to point out that subsdience is important in not deltaic areas such as Houston, T,X, USA and Venice, Italy. (Kolker, Alexander, Louisiana Universities Marine Consortium)

#	Ch	From Page	From Line	To Page	To Line	Comment
224	5	7	18	7	20	Numbers about subsidence of deltas not stated in references (whereof data is missing in reference list). Only the Po delta is substantiated by "Teatini et al. 2011. Quantitative evidence that compaction of holocene sediments drives the present land subsidence of the Po delta, Italy". General picture is substantiated by Nicholls et al. 2011. Suggestion: Syvitski et al. 2008 give several numbers which can be used here. Else the right reference should be included.\n\n (NETHERLANDS)
225	5	7	19	7	20	the conculation that Shanghai has subsided during the last 100 years by up to 3m may not exact. From the the "Bulletin of the Sea Level of China in 2012", the cumulate subsidence of Shanghai was 2.63m from 1921 to 2008. Besides, the referrence of Teatini et al 2011 is not full. (mou, lin, State Oceanic Administration of China, National Marine Data and Information Service)
226	5	7	22	7	22	It would be preferable to provide the full range relevant here. That is, instead of only indicating how much higher sea level rise can be as compared to the global mean, it would be best to also indicate how much lower the rate of change can be. (Mach, Katharine, IPCC WGII TSU)
227	5	7	23	7	23	the delta surface area vulnerable to flooding could increase by 50% under projected sea-level rise in the twenty-first century: which delta is this ? Delta are generally not subsiding uniformly (Le Cozannet, Goneri, BRGM)
228	5	7	29	7	30	The statement "...increasingly experience adverse impacts associated with submergence" is not substantiated since the whole chapter thus far doesn't mention submergence and 'submerge' just ones related to vegetation. Nor is the relation with subsidence, sea level rise and the effect 'submergence' dealt with. Only flooding is named but this is only about the possible increase of vulnerable areas and not impacts of flooding or submergence. Reconsider this statement.\n\n (NETHERLANDS)
229	5	7	31	7	31	spatial variations is related to a scale - so say "Large regional variations ... (Bell, Robert, NIWA)
230	5	7	32	7	32	The statement "… relative sea level rise can be much larger than projected GMSL …" is incorrect since GMSL is the global mean sea level. Suggestion: "projected GMSL change/rise". Maybe check the use of the abbreviation GMSL throughout the document.\n\n (NETHERLANDS)
231	5	7	36	0	0	Section 5.3.3: include at least a mention of air temperature as a driver. In intertidal systems, zonation is often set by the interaction of abiotic factors above (e.g. air temp, moisture) and biotic factors from below (competition, predation). The importance of air temperature is captured in Harley et al 2011, discussed in this chapter on p. 16 lines 20-23; the "warming" refered to in line 20, is of air, not water. Also include at least a mention of changing salinity and dissolved oxygen levels as climate drivers. (Hoffman, Jennifer, EcoAdapt)
232	5	7	36	0	0	Section 5.3.3: Suggest authors include at least a mention of air temperature as a driver. In intertidal systems, zonation is often set by the interaction of abiotic factors above (e.g. air temp, moisture) and biotic factors from below (competition, predation). The importance of air temperature is captured in Harley et al 2011, discussed in this chapter on p. 16 lines 20-23; the "warming" refered to in line 20, is of air, not water. Also include at least a mention of changing salinity and dissolved oxygen levels as climate drivers. (UNITED STATES OF AMERICA)
233	5	7	36	0	0	Salinization of freshwater bodies e.g. lowland rivers & streams and groundwater aquifers, which is a major issue for adaptation, is not mentioned at all in section 5.3.3 - either in the preamble or in section 5.3.3.6 - the driver is a balance between higher SL and changes in freshwater inputs - so doesn't fit nicely into one or the other (Bell, Robert, NIWA)
234	5	7	36	7	36	Please clarify: It is unclear why sea level rise is a separate section and not included under the climate driver section. (UNITED STATES OF AMERICA)
235	5	7	40	7	40	Clarify: "erosion...arise[s] from...erosion"? (UNITED STATES OF AMERICA)
236	5	7	41	0	42	changes in drivers won't "...lead to erosion or accretion" as these states may already be present - these changes will "… lead to changes in erosion or accretion patterns". (Bell, Robert, NIWA)

#	Ch	From Page	From Line	To Page	To Line	Comment
237	5	7	43	7	44	The sentence is correct but unbalanced; it should also reflect the fact that ocean temperature change can also lead to increases in some species. The point is about change or reconfiguration of coastal biodiversity not just loss. (Nunn, Patrick, University of New England)
238	5	7	44	7	44	add ' and invasion of alien species' after 'in some species' (POLAND)
239	5	7	45	7	45	Species "declines" are not the same as loss of biodiversity. Recommend instead "lead to local impacts, such as declines or loss of some species, with impacts on biodiversity." (UNITED STATES OF AMERICA)
240	5	7	50	0	0	Section 5.3.3.1. To ensure clarity for the reader, it would be helpful to specify which types of storms are relevant to discussion in this section--cyclones, extratropical cyclones, typhoons only, or also weaker storms? (Mach, Katharine, IPCC WGII TSU)
241	5	7	52	7	52	Add "atmospheric" between "low" and "pressure". I would also add "due to the inverse barometer effect," after "which," (de Gusmao, Diogo, Met Office Hadley Centre)
242	5	7	52	7	52	Are severe storms leading to strong winds and low pressure regions or is that severe storms are associated with strong winds and low pressure regions? (das Neves, Luciana, University of Porto - Faculty of Engineering)
243	5	7	52	7	53	5.3.3.1. ch30 p 15 L 10-11 reads\n" Coastal ecosystems and human communities are likely to experience greater storm surge impacts as increased storm intensity interacts with rising sea levels". Can you present a confidence level, or the levels of agreement and evidence?\n (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
244	5	7	52	8	13	From a reading of this section, we should expect neither an increase in magnitude nor frequency of storms. This implies that severe storms should not be considered a climate change threat, and all mentions of "increased storm magnitude" should be removed from this chapter in terms of coastal impacts. However, it is often understood that the warming atmosphere will actually allow larger storms to develop, and thus we should actually expect some larger storms to occur (or at least occur more frequently). Suggestion to authors: the section needs to be consistent in terms of whether increased storm magnitude/intensity and frequency is or is not a potential impact - and a discussion of the regional differences is probably warranted. (UNITED STATES OF AMERICA)
245	5	7	54	0	0	population would need a s (Vasseur, Liette, Brock University)
246	5	7	54	8	13	Tropical cyclones pose a significant threat to habitats, such as coral reefs and mangroves. This should be mentioned in this paragraph given the widespread distribution of coral reefs and their importance to a range of communities worldwide. References include De'ath 2012 http://www.pnas.org/content/early/2012/09/25/1208909109 and references therein. (AUSTRALIA)
247	5	8	1	8	1	Rappaport (2000) is not in the reference list. Suggestion: include "Rappaport, E.N. 2000. Loss of life in the United States Associated with recent Atlantic Tropical Cyclones. Bulletin of the American Meteorological Society 81(9) pp. 2065-2073" in the references.\n\n (NETHERLANDS)
248	5	8	1	8	2	The authors can mention here that there will likely be an increase in the number of most intense tropical cyclones (e.g., Elsner et al., 2008 Nature 455, 92-95; Bender et al., 2010; Science 327:454-458; Knutson et al., Nature Geoscience 3:157-163). (UNITED STATES OF AMERICA)
249	5	8	1	8	13	Haarsma et al (2013) show that tropical hurricanes can reach W-Europe more often in 2100 in de Autumn, thereby increasing the likelihood of extreme winds\n\n (NETHERLANDS)
250	5	8	5	8	6	ch30 p 15 L 9-10 states "medium confidence that extra-tropical storm tracks will shift polewards".The terms "likely" and "medium confidence" seem contradictoray. ch5 and ch30 should agree on a common statement (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
251	5	8	6	8	6	In what way is this related to Chapter 2? Maybe this is a typo, alternatively, please give the section within chapter 2. (Wright, David, University of Ottawa)

#	Ch	From Page	From Line	To Page	To Line	Comment
252	5	8	6	8	7	5.3.3.1.ch30 p 14 L 49-51 reads\n" There is robust evidence that the frequency of the most intense cyclones in the Atlantic has increased since 1987 (WG1 2.6.3) and robust evidence of inter-decadal changes in the storm track activity within the North Pacific and North Atlantic" check for consistency\nch5 & ch30 should agree on a common statement. (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
253	5	8	8	8	8	What is SH? (UNITED STATES OF AMERICA)
254	5	8	9	8	11	ch30 p 15 L 7 reads\n" number of extra-tropical and tropical storm events are likely to decrease"\nch5 & ch30 should agree on a common statement\n (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
255	5	8	11	8	11	Can I assume SH is a standard convention for Southern Hemisphere, if so why use 'southern hemispere' 4 lines futher on? (Orford, Julian, Queen\\\\\\'s University, Belfast)
256	5	8	11	8	13	The draft paper "Climate Change in Madagascar" by Tadross, Randriamarolaza, Rabefitia, and Ki Yip (2008), published in March 2008 by Direction Generale de la Meteorologie (2008) "Le changement climatique a Madagascar". Antananarivo, Madagascar, also concluded that there would be a decrease in the number of TCs in the early part of the season, but overall increase in intensity by 2060-2100. This analysis was based on simulated Genesis Potential and maximum Potential Intensity of cyclone tracks over the southwest Indian Ocean. Please see ClimateReport2.pdf sent as supporting document to this review. (Bettencourt, Sofia, World Bank)
257	5	8	12	0	0	twice "lower confidnece" (Vasseur, Liette, Brock University)
258	5	8	12	0	13	This last sentence seems lost. (Vasseur, Liette, Brock University)
259	5	8	12	8	12	delete one of the lower confidence (Middelburg, Jack, Utrecht University)
260	5	8	12	8	12	Twice "lower confidence' in italic, please remove one\n\n (NETHERLANDS)
261	5	8	12	8	12	lower confidence repeats twice. (UNITED STATES OF AMERICA)
262	5	8	12	8	12	lower confidence' is doubled - remove one (POLAND)
263	5	8	12	8	12	Need to correct "lower confidence lower confidence". (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
264	5	8	12	8	13	This statement about "low confidence in the influence on extreme events of storm track changes" should be expanded upon further in this chapter. (UNITED STATES OF AMERICA)
265	5	8	18	8	18	It may be necessary to give the definition of "Extreme Sea Level" (mou, lin, State Oceanic Administration of China, National Marine Data and Information Service)
266	5	8	18	8	19	Extreme sea levels in the upper regions of tidal rivers and estuaries can also be attributed to seasonal and episodic high river flow volume. Examples are Washington , DC (Potomac River) and Philadelphia, PA (Delaware River). (UNITED STATES OF AMERICA)
267	5	8	18	8	22	it might be valuable to make a formal difference between large tsunamis (e.g. Indian ocean 2004 and Tohoku 2011) and smaller ones (e.g. South Pacific 2009, Chile 2010) as they are associated with very different extreme sea levels. Large tsunamis are rare, whereas smaller tsunamis are more frequent. In a context odf rising sea level, smaller tsunamis might generate some submersion situations more frequently than in the past. Moreover, tsunamis are not all related to tectonic: large mass movement in coastal areas, and volcanic eruptions are important tsunami triggers. By contrast, meteorological tsunamis (not mentioned in the text) might be affected by climate change and should be considered. (Etienne, Samuel, Ecole Pratique des Hautes Etudes)
268	5	8	18	9	10	It should be noted that storm surge is only one effect that storms have on sea level. Run-up and set-up induced by waves will also affect the relative sea level at the coast (at least the level important to onshore impacts) and these will scale with the waves. It should at least be mentioned that water level are affected by more than just storm surge (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
269	5	8	18	9	38	General comment: is there any evidence on change in dominant direction for both, extreme and less extreme events, due to climate-related drivers? If there is it would cause significant disruptive impact event for mean events. (das Neves, Luciana, University of Porto - Faculty of Engineering)
270	5	8	19	8	19	change 'Tsunamis' to 'tsunamis' (POLAND)
271	5	8	19	8	20	... Tsunamis, although the latter are tectonic and therefore not related to climate is a problematic statement. Commonly tsunamis are regarded as big waves which can be caused by numerous drivers like land slides, ice berg collapses, vulcanos, and indeed tectonic movement (see wikipedia, googles first hits). In peer-reviewed literature for example Tinti et al. (2004) adopt the definition: "tsunami is a series of sea waves generated by a large-scale source that can be 1) the sudden displacement of the sea floor due to tectonic dislocation, or 2) the motion of a body sliding along the sea floor" (p. 440). Due to erosion or melting of ice induced by antrophogenic climate change this type of tsunami can be induced. Suggestion: delete the statement or use Tinti et al and other literature to take Tusnamis due to landslides and icecollapses into account in the IPCC report. (Tinti, S., A. Maramai, L. Graziani. 2004. The New Catalogue of Italian Tsunamis. Natural Hazards 33, 439-465) See also for meteorological tsunamis (Haslett and Bryant, 2009. Geo. Rev. 99, 146-163; Rabinovich and Monserrat, 1996. Nat. Haz. 13, 55-90) and (coastal and submarine) land slide tsunamis (Mosher, 2009. Geoscience Canada 36, 179-190; Smith et al. 2004. Quat. Sci. Rev. 23, 2291-2321; Ten Brink et al. 2006. Geophysical Res. Lett. 33(11), no. L11307).\n\n (NETHERLANDS)
272	5	8	20	8	20	for this sentence"the frequency of extreme sea level will be increased by relative sea level rise", how about the confidence, low or high? It needs to reassess the level of reliability if high reliability but limited evidence. (mou, lin, State Oceanic Administration of China, National Marine Data and Information Service)
273	5	8	20	8	20	The frequency of extreme sea level will be increased by relative sea level rise This statement needs a definition of extreme sea level since with a normal distribution a different mean, the top 5% will not change. Only by taking the former upper level the amount will increase.\n\n (NETHERLANDS)
274	5	8	20	8	22	This sentence could do with restructuring as it does imply some form of dynamic link between RSL and surge return elevations. RSL is passive in this shift in return periods (Orford, Julian, Queen\\\\\\'s University, Belfast)
275	5	8	24	8	27	This appears to indicate that current changes in extreme sea levels are only increasing because of rising sea levels, and not extreme storms, but it is unclear if these trends are expected into the future, or if changes in storms are predicted to have a larger effect going forward (though as noted above, the previous wording seems to indicate that changes in storms are not expected to be important). It would be helpful to make the future predicted changes explicit as well here. (UNITED STATES OF AMERICA)
276	5	8	26	0	0	missing) after SREX (Vasseur, Liette, Brock University)
277	5	8	26	8	26	SREX =? Missing) (Orford, Julian, Queen\\\\\\'s University, Belfast)
278	5	8	29	8	29	the letter 'r' in 'Hunter' is in italic, correct' (POLAND)
279	5	8	29	8	32	I do not understand this sentence. Allowance of what ? (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
280	5	8	29	8	32	Suggest the authors clarify this sentence. It is unclear exactly what a sea level allowance is (other than a reference to it). If this term is going to be used, suggest it be defined. Also, it is unclear if this increase in sea level allowance is uniform globally, or locally specific, it is also unclear how accurate it will be given all the local factors that also affect relative sea level. It would be helpful if this sentnece was either clarified or removed. (UNITED STATES OF AMERICA)
281	5	8	30	8	30	0.542 m implies millimeter precision of estimate, which is very likely indefensible. Suggest rounding to at least centimeter. (UNITED STATES OF AMERICA)
282	5	8	31	8	31	Suggest update A1FI (SRES) to RCP 8.5 with appropriate RCP-based SLR estimate. (UNITED STATES OF AMERICA)
283	5	8	31	8	32	change 'and' to 'to' (Orford, Julian, Queen\\\\\\'s University, Belfast)

#	Ch	From Page	From Line	To Page	To Line	Comment
284	5	8	36	8	36	Its Figure 5-3 not 5-2 (Orford, Julian, Queen\\\\\\'s University, Belfast)
285	5	8	36	8	44	The caption and figure (fig 5-2) are very confusing. It is not clear (to me) how to interpret the three different scales within the overall map. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
286	5	8	37	8	44	Section 5.3.3.2: Figure 5-2, Results are shown for the AR4 A1FI scenario. It will be better to use sea level rise from RCP projections for these calculations. (INDIA)
287	5	8	46	9	5	this paragraph needs to be reviewed. Quitre complicated at read compared to the rest of the text. (Vasseur, Liette, Brock University)
288	5	8	49	8	52	The severe storm section suggests that there will not be any significant changes in severe storms, so it is unclear what "tropical cyclone changes" this sentence is referring to. It would help if this was clarified, and the comments on storms and potential changes were made consistent. (UNITED STATES OF AMERICA)
289	5	8	52	9	3	The authors contrast Lin and Mousavi's work, but only presented the findings for Lin's work. If these two studies are to be contrasted, then the same type of information from both studies should be presented. (Kolker, Alexander, Louisiana Universities Marine Consortium)
290	5	8	52	9	5	Make it clear here whether talking about TCs or ETCs rather than just "cyclones". (Lough, Janice, Australian Institute of Marine Science)
291	5	9	1	9	3	It might be helpful if the modeled timeframe was indicated here as sea level rise rates are expected to accelerate later this century. (UNITED STATES OF AMERICA)
292	5	9	7	9	10	These two confidence statements could be further expanded on, especially in conjunction with the previous two comments; i.e., explain the interplay between severe storms and extreme se levels vis a vis extreme wave events. (UNITED STATES OF AMERICA)
293	5	9	8	9	8	After "…low confidence in projections of storm surges" add: due to changes in storm behavior (or characteristics). (UNITED STATES OF AMERICA)
294	5	9	8	9	10	For clarity and directness of wording, it would be preferable to place "high confidence" within parentheses at the end of the sentence. (Mach, Katharine, IPCC WGII TSU)
295	5	9	10	0	0	replace: "Chapter 13", by "WGI AR5, Chapter 13".\n\n (NETHERLANDS)
296	5	9	10	9	10	Section 5.3.3.2: Replace (see also Chapter 13) with (see also Chapter 13.7) (INDIA)
297	5	9	10	9	10	please indicate that this is WGI (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
298	5	9	10	9	10	The reference to "Chapter 13" is unclear. Please provide a more detailed reference to AR5 WGI Ch13.7. (Plattner, Gian-Kasper, IPCC WGI TSU)
299	5	9	17	9	17	add ' and cross-shore' after ' longshore' and before 'currents' (POLAND)
300	5	9	17	9	17	In place of the reference to the entirety of chapter 6, it would be preferable to indicate the specific relevant sections. (Mach, Katharine, IPCC WGII TSU)
301	5	9	21	9	22	Also disruption to shipping, including ferry services. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
302	5	9	26	9	32	The paper by Tadross, M and Tumon, F. (2009) on "São Tomé and Príncipe: Adaptation to Climate Change Program - Technical support for climate modelling Historical decadal changes in regional climate and aerosols" suggests a slight increase in the strength of the south easterly winds from the 1980s to 2000s in the coastal region of equatorial West Africa (Eastern Atlantic). Reference sent as Supporting Material. [WB_saotome_report_final.pdf] (Bettencourt, Sofia, World Bank)
303	5	9	26	9	38	See also Young et al (2011) Global trends in wind speed and wave heights. Science 332: 451-455. (Lough, Janice, Australian Institute of Marine Science)
304	5	9	31	9	31	Positive trends between what and what? Clarify what the trend relationship is referring to? (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
305	5	9	31	9	32	it is likely that there have been positive trends in the North Atlantic: I suggest adding that this varies locally. (Le Cozannet, Goneri, BRGM)
306	5	9	31	9	32	The authors state that there have been positive trends in the North Atlantic, Pacific and Souther Oceans. Are these positive trends in the wave climate or positive trends in the modes of variabilty? (In other words are there more waves, or has the NAO shifted to a positive phase?) (Kolker, Alexander, Louisiana Universities Marine Consortium)
307	5	9	44	0	45	high inconsistency making it difficult to read. (Vasseur, Liette, Brock University)
308	5	9	44	9	44	delete "highly" (Nunn, Patrick, University of New England)
309	5	9	45	9	45	For the average rate provided here, it would be preferable to specify the relevant geographic scope--averaged over all coastal waters on earth? (Mach, Katharine, IPCC WGII TSU)
310	5	9	47	9	47	Seasonal shift of what? Needs explanation. (UNITED STATES OF AMERICA)
311	5	9	51	9	52	5.3.3.4. confidence is the summary term derived from agreement and evidence.\nPlease specify either confidence or evidence and agreement.\n (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
312	5	9	52	9	52	why there were limited evidence, was the short of available datasets? Here, it is necessary to show the reasons owning to limited evidence. (mou, lin, State Oceanic Administration of China, National Marine Data and Information Service)
313	5	10	4	10	11	Maybe also mention that coral reefs can modify their sewater chemistry, e.g. Anthony et al (2011) Coral reefs modify their seawater carbon chemistry - implications for impacts of ocean acidification. Global Change Biology doi:10.1111/j.1365-2486.2011.02510.x (Lough, Janice, Australian Institute of Marine Science)
314	5	10	5	0	9	Additionally - seawater pH variability is also driven by benthic community composition which affect processes (eg photosynthesis, respiration, calcification, CaCO3 dissolution); Anthony et al. 2011; Kleypas et al. 2011) \nAnthony KRN, Kleypas J, and Gattuso JP. 2011. Coral reefs modify the carbon chemistry of their seawater – implications for the impacts of ocean acidification. Glob Change Biol 17: 3655–66.\n\nKleypas J, Anthony KRN, and Gattuso J-P. 2011. Coral reefs modify their seawater carbon chemistry – case study from a barrier reef (Moorea, French Polynesia). Glob Change Biol 17: 3667–78. (Mcleod, Elizabeth, The Nature Conservancy)
315	5	10	5	10	5	Use subscript (Middelburg, Jack, Utrecht University)
316	5	10	5	10	9	Variability in pH/pCO2 is also caused by local patterns primary productivity as a result of seasonal plankton blooms and as a result of eutrophication (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
317	5	10	8	10	9	as well as photosynthesis, respiration and calcification (in coral reefs) (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
318	5	10	9	10	10	It would be preferable to specify broadly the geographic regions of these 24 estuaries. (Mach, Katharine, IPCC WGII TSU)
319	5	10	13	10	14	In some coastal waters time series of ocean acidification started in the 1900s though large data gaps exist before 1978 (e.g. Danish waters), 1950s (central North Sea) ,1970s (US waters), 1980s (Icelandic waters) and 1990 (German waters). Reference: ICES SGOA report (2012). Report of the Joint OSPAR/ICES Ocean Acidification Study Group (SGOA), ICES CM2012/ACOM:83. Reference: Beare D, McQuatters-Gollop A, van der Hammen T, Machiels M, Teoh SJ, et al. (2013) Long-Term Trends in Calcifying Plankton and pH in the North Sea. PLoS ONE 8(5): e61175.doi:10.1371/journal.pone.0061175 (Barciela, Rosa, Met Office Hadley Centre)
320	5	10	13	10	14	Beare et al. (2013) found that, for the period between 1958 and 2010, average pH records have not been decreasing uniformly in the central North Sea despite steadily increasing levels of CO2 in the atmosphere, which contrasts the recent rapid rate of acidification reported in the southern North Sea (Provoost et al., 2010) and at long-term monitoring stations at Hawaii, Tatoosh Island in the North Pacific, and Bermuda (Wootton et al., 2008; Hofmann et al. 2011). (Barciela, Rosa, Met Office Hadley Centre)

#	Ch	From Page	From Line	To Page	To Line	Comment
321	5	10	13	10	14	References: Beare D, McQuatters-Gollop A, van der Hammen T, Machiels M, Teoh SJ, et al. (2013) Long-Term Trends in Calcifying Plankton and pH in the North Sea. PLoS ONE 8(5): e61175.doi:10.1371/journal.pone.0061175. (Barciela, Rosa, Met Office Hadley Centre)
322	5	10	13	10	14	Provoost P, van Heuven S, Soetaert K, Laane RWPM, Middelburg JJ (2010). Seasonal and long-term changes in pH in the Dutch coastal zone. Biogeosciences 7: 3869–3878; (Barciela, Rosa, Met Office Hadley Centre)
323	5	10	13	10	14	Wootton JT, Pfister CA, Forester JD (2008). Dynamic patterns and ecological impacts of declining ocean pH in a high-resolution multi-year dataset. Proceedings of the National Academy of Sciences 105: 18848; (Barciela, Rosa, Met Office Hadley Centre)
324	5	10	13	10	14	Hofmann GE, Smith JE, Johnson KS, Send U, Levin LA, et al. (2011). High frequency dynamics of ocean pH: a multi-ecosystem comparison. PLoS One 6:e28983. (Barciela, Rosa, Met Office Hadley Centre)
325	5	10	13	10	16	Would the Bermuda (BATS) and Hawaii (HOTS) ocean time series be relevant here? http://hahana.soest.hawaii.edu/index.html and http://bats.bios.edu/index.html (Lough, Janice, Australian Institute of Marine Science)
326	5	10	14	10	14	Replace "with" with "compared to" (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
327	5	10	18	10	18	Are you sure that is only P otherwise reformulate to nutrient removal policy. Moreover, this sentence should be referenced. (Middelburg, Jack, Utrecht University)
328	5	10	18	10	18	Need to state who has the 'phosporus removal policy' - Also, how is it monitored and evaluated? Is it an international policy? Under what convention? How many countries are implementing it? (AUSTRALIA)
329	5	10	18	10	18	What policy is this referring to? Is this global? Phosphorous removal from oceans or land? How much of an effect has this had on primary productivity? Needs more specificity. (UNITED STATES OF AMERICA)
330	5	10	18	10	19	This sentence about "phosphorous removal policy" is very unclear - where? Who? Why? (Lough, Janice, Australian Institute of Marine Science)
331	5	10	18	10	19	Sentence needs substantiation or sources. Is there really causality between increased acidity and phosphorus removal policy that is limiting primary production? A search in literature did not provide evidence for this link.\n\n (NETHERLANDS)
332	5	10	18	10	23	A modelling study for the Southern North Sea by Blackford and Gilbert (2007) was used to simulate the temporal and spatial dynamics of pH across the Southern North Sea up to the year 2100, under several IPCC (2001) CO2 emission scenarios. Their results show a reduction in pH of 0.2 units by 2050 and a total decline of 0.5 pH units below pre-industrial times, by the 2100s (assuming a worst case scenario and atmospheric concentrations of 1000 ppmv). Their work suggest a pH range completely distinct from current levels, for most of the Southern North Sea by 2100 and suggests a pH variability of up to 1.0 unit in near-shore environments influenced by riverine inputs and seasonal phytoplankton blooms. Reference: Blackford, J. C and Gilbert, F. J. (2007). pH variability and CO2 induced acidification in the North Sea. Journal of Marine Systems 64 (2007) 229–241. (Barciela, Rosa, Met Office Hadley Centre)
333	5	10	19	10	21	It would seem beneficial also to cross-reference the specific findings of working group 1 here, in terms of change projected over the coming century across RCP scenarios. (Mach, Katharine, IPCC WGII TSU)
334	5	10	21	10	21	Style of sentence needs adjustment (Orford, Julian, Queen\\\\\\'s University, Belfast)
335	5	10	30	0	0	Section 5.3.3.6. It would seem beneficial to provide further citations to supporting literature within this section, assuming there is relevant literature that is not being cited here, in order to fully support the key findings. (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
336	5	10	30	11	8	Increases in the volume or duration of freshwater input can have significant impacts on marine ecosystems (especially inshore ones) related to the sediment load, that are additional to impacts caused by exposure to low salinity water, nutrients and pesticides. Sediments can smother seagrass and corals and cause associated reductions in light availability. It is suggested that this be mentioned under 5.3.3.6. References: \nFOR CORAL: \nFabricius, K.E. 2005, Effects of terrestrial runoff on the ecology of corals and coral reefs: review and synthesis, Marine Pollution Bulletin 50(2): 125-146. \nFabricius, K.E. 2011, Factors determining the resilience of coral reefs to eutrophication: a review and conceptual model, in Coral reefs: an ecosystem in transition, editors Z. Dubinsky and N. Stambler, Springer, Dordrecht, pp. 493-508. \nRiver discharge reduces reef coral diversity in Palau. Yimnang Golbuu, Robert van Woesik, Robert H. Richmond , Peter Harrison, Katharina E. Fabricius. Marine Pollution Bulletin 62 (2011) 824–831 \nSEAGRASS:\nMcKenzie, L.J., Collier, C. and Waycott, M. 2012, Reef Rescue Marine Monitoring Program: Nearshore Seagrass, Annual Report for the sampling period 1st July 2010 - 31st May 2011. Fisheries Queensland, Cairns, 20471 http://www.gbrmpa.gov.au/resources-and-publications/publications/annual-reef-rescue-marine-monitoring-science-report. \nMartin, K., Schaffelke, B., Thompson, A., McKenzie, L., Muller, J., Bentley, C., Paxman, C., Collier, C., Waycott, M. and Brando, V. 2013, Reef Rescue Marine Monitoring Program Synthesis Report 2010/11, Great Barrier Reef Marine Park Authority, Townsville, 19253. \nCollier, C.J., Waycott, M. and McKenzie, L.J. 2012, Light thresholds derived from seagrass loss in the coastal zone of the northern Great Barrier Reef, Australia, Ecological Indicators 23(0): 211-219.\nCollier, C., Waycott, M. and Ospina, A.G. in press, Responses of four Indo-Pacific seagrass species to shading, Marine Pollution Bulletin. (AUSTRALIA)
337	5	10	32	10	32	drought is a "precipitation" change. (Lough, Janice, Australian Institute of Marine Science)
338	5	10	32	10	42	Probably best to refer to Chapter 3 (3.2.6) for implications of increase soil erosion from extreme flow events (Bunn, Stuart, Griffith University)
339	5	10	41	10	41	add ' is' after 'this' (POLAND)
340	5	10	41	10	41	It would be preferable to specify the specific relevant sections of chapter 4, in place of this generic reference to the full chapter. (Mach, Katharine, IPCC WGII TSU)
341	5	10	44	10	46	Dai et al. (2009) only find significant changes in one third of the top 200 rivers while here is stated that it is in all 925's rivers. Dai et al. (2009): "results reveal large variations in yearly streamflow for most of the world's large rivers and for continental discharge, but only about one-third of the top 200 rivers (...) show significant trends during 1948-2004, with the rivers having downwards trends (45) outnumbering those with upward trends (19)." (p. 2773)\n\n (NETHERLANDS)
342	5	10	44	10	48	What was the impact of dams and other impoundments on these trends? This is a period when many dams and impoundments were constructed. (Kolker, Alexander, Louisiana Universities Marine Consortium)
343	5	10	47	10	48	Pacific, Indian and Atlantic Oceans are also correlated with ENSO. Dai et al (2009): "The interannual variations are correlated with ENSO events for discharge in to the Atlantic, Pacific, Indian, and global ocean as a whole" (p. 2773). The global ocean should be included, or whole sentence can be erased.\n\n (NETHERLANDS)
344	5	10	50	10	50	There is a Syvitski et al paper c 2011 which has afuller global assessment of freshwater changes re dam affects. Sorry can't find reference. (Orford, Julian, Queen\\\\\\'s University, Belfast)
345	5	10	52	11	2	Supporting citations should be provided for this paragraph. (Mach, Katharine, IPCC WGII TSU)
346	5	10	53	10	53	It would be preferable to specify the specific relevant sections of chapter 3, in place of this generic reference to the full chapter. (Mach, Katharine, IPCC WGII TSU)
347	5	11	4	11	4	In addition to the summary term for evidence provided here, it would be preferable to also present a summary term for agreement. (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
348	5	11	11	13	17	Several major human drivers (that can interact with and exacerbate climate impacts) are missing - such as overfishing and destructive fishing practices, coastal habitat destruction and conversion, etc. These are just as important (if not more) as sediment delivery, hypoxia, etc. and the authors should consider expanding upon them here - or making relevant references to other chapters (e.g., 30.6 and 6.4) if they are covered elsewhere. (UNITED STATES OF AMERICA)
349	5	11	21	11	31	This paragraph needs substantial work. Are the authors referring to a specific study, or are there just 5 SSPs for all people on earth? If the authors are referring to a specific study, then they need to describe the methods used by this analysis and, most importantly, the findings of this study and its relevance to this report. (Kolker, Alexander, Louisiana Universities Marine Consortium)
350	5	11	21	11	31	The relevance of this paragraph to the section seems limited, with cross-reference to similar subsections of framing chapters seeming to me to be a preferable option. (Mach, Katharine, IPCC WGII TSU)
351	5	11	22	11	23	The authors shold define a shared socio-economic pathway. (Kolker, Alexander, Louisiana Universities Marine Consortium)
352	5	11	33	11	34	More specific line of sight should be given to relevant chapters of the special report. Additionally, "very high confidence" could be presented parenthetically at the end of the statement to increase the directness and clarity of wording. Finally, the chapter team should carefully ensure that the assertion here regarding "coastal flood damage" can be supported by the special report, for which the overall findings about increasing exposure pertain to all weather-and climate-related damages. (Mach, Katharine, IPCC WGII TSU)
353	5	11	33	11	35	The latter half of this sentence seems unclear. Is this statement meant to relay the idea that SED will cause sea level rise and other climate impacts to be more significant? It might be helpful to reword to make more clear. (UNITED STATES OF AMERICA)
354	5	11	35	11	37	The wording of this statement could be clarified, in terms of the juxtaposition of "currently" and "based on 2000 estimates." (Mach, Katharine, IPCC WGII TSU)
355	5	11	41	11	43	Do these cities have the most exposed populations because they have the greatest number of people, or the greatest number of physical risks, or some combination of the two? (Kolker, Alexander, Louisiana Universities Marine Consortium)
356	5	11	41	11	44	Hanson et al (2011) only look into port cities with a population larger then 1 million people, for example riverine flooding is not taken into account. The suggestion in this section is that the numbers are global. This should be made clear. Suggestion: "the top 10 exposed cities in the coastal zone in terms ..." and "In terms of assets exposed with respect to the major ports/urban areas, 60% are ...". \n\n (NETHERLANDS)
357	5	11	42	11	42	Recommend adding country information for each city (e.g. New Orleans, United States). (UNITED STATES OF AMERICA)
358	5	11	43	11	44	60% of what? Of all assets on earth? I'm guessing this is the case, but the authors need to be specific. Also, it would be very useful to know if these risks are a function of the physical environment (say likelihood of storms and sea level rise), or the value of the assets (lots of expensive buildings in these areas.) (Kolker, Alexander, Louisiana Universities Marine Consortium)
359	5	11	44	11	44	Use of "comparatively" here is a bit ambiguous--"compared to other regions"? (Mach, Katharine, IPCC WGII TSU)
360	5	11	44	11	46	In the previous sentence the authors stated that the majority of exposed assets were in the USA, Japan and Netherlands, and now the authors say the greatest exposure in terms of population, assets and productivity is in asia. These two sentences are inconsistent. Where are the greatest exposed assests- USA or Asia? (Kolker, Alexander, Louisiana Universities Marine Consortium)
361	5	11	48	11	50	I suggest adding reclamation to the list (Nunn, Patrick, University of New England)
362	5	11	48	11	50	To maximize the clarity and directness of this statement, "high confidence" could be placed within parentheses at the end of the sentence. (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
363	5	12	1	12	3	There are three Black et al (2011) references in the list - which is this? (Nunn, Patrick, University of New England)
364	5	12	7	0	0	It would have been nice to know which nations we are talking about. Or at least refer there to table 5-3 (Vasseur, Liette, Brock University)
365	5	12	12	12	13	In this line the following sections are introduced: freshwater input, water diversion, nutrients and hypoxia. However, only Nutrients and hypoxia are dealt with in the following sections. Freshwater input is dealt with in [5.3.3.6] and water-diversion isn't dealt with at all in the chapter.\n\n (NETHERLANDS)
366	5	12	25	12	26	NH3 emissions from livestock are another significant source for nitrogen at least concerning the land. This might be noteworthy for river transport as well. (Hebbinghaus, Heike, North-Rhine Westphalian State Agency for Nature, Environment and Consumer Protection)
367	5	12	28	12	36	Need stronger connections to climate in this paragraph. (UNITED STATES OF AMERICA)
368	5	12	28	12	36	Doesn't really say anything about consequences in the marine environment e.g. plankton blooms, HABs etc. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
369	5	12	32	12	36	The describe future nutrient projections but only summarize past nutrient changes. Please keep the writing style parallel. The same informtion should be provided for all material wherever possible. (Kolker, Alexander, Louisiana Universities Marine Consortium)
370	5	12	39	0	0	Section 5.3.4.3. For this section, specific cross-reference to chapter 6 and 30 should be provided, with consideration of relevant key findings in the chapters and their supporting chapter sections. (Mach, Katharine, IPCC WGII TSU)
371	5	12	39	12	51	5.3.4.3. principles of hypoxia effects have been dealt with in WGII ch6 (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
372	5	12	40	12	44	Authors should clarify the drivers of coastal hypoxia - excess nutrients can result from input of freshwater with high nutrient concentrations, intense upwelling (e.g. Grantham), etc. Upwelling is not a "secondary" driver of hypoxia; it's a primary driver in some regions (e.g. Pacific Northwest U.S.). (UNITED STATES OF AMERICA)
373	5	12	41	12	51	The section on hypoxia should cross reference to the more detailed information in chapter 6. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
374	5	12	44	0	0	delete rather (Middelburg, Jack, Utrecht University)
375	5	12	51	12	51	Few modelling studies have investigated future hypoxia trends in coastal waters. Meire et al. (2013) performed simple model simulations, under the SRES A1B scenario, to understand the importance of climate change on the bottom water oxygen dynamics of the central North Sea (Oyster Grounds). They found that the difference between the bottom water oxygen concentration, under present and future climate conditions, showed a marked inter-annual variability. By 2100, model results showed a decrease in winter oxygen concentration of 5% (or 13 ?M), which is mainly explained by reduced solubility of oxygen due to high temperatures. By late summer 2100, the reduction of oxygen was at its highest (11.5 % or 24?M) and in this case, the dominant mechanism was enhanced stratification (explaining 58% of the modelled variability), followed by reduced solubility of oxygen (27 %) and enhanced metabolic rates in warmer bottom waters (15 %). (Barciela, Rosa, Met Office Hadley Centre)
376	5	12	51	12	51	Reference: L. Meire, K. E. R. Soetaert, and F. J. R. Meysman (2013). Impact of global change on coastal oxygen dynamics and risk of hypoxia. Biogeosciences, 10, 2633–2653, 2013 doi:10.5194/bg-10-2633-2013. (Barciela, Rosa, Met Office Hadley Centre)
377	5	12	51	12	51	The text would be more accurate if it were to say "coastal current shifts and changes in upwelling" (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
378	5	13	0	30	0	There are considerable redundancies within the parts of this section describing different coastal formations (e.g. wetlands, estuaries, deltas), and information should be streamlined. It is not entirely clear, how section 5.4.4 is derived from the underlying discussion of observed impacts in sections 5.4.1-5.4.3. figure 5-5 is not always consistent with the text of 5.4.4. Given ample confounders in most coastal regions, it would be helpful for the reader to have some guidance regarding the relative role of the climate trends in observed changes. Information on observed impacts on coastal infrastructure, settlements, and economic activities, e.g. damages from flooding and extreme sea levels should be substantiated. (GERMANY)
379	5	13	1	13	17	5.3.4.4. this would be a good point to include in ch18 table 18-8, \nTable 18-8: Observed impacts of climate change on marine ecosystems, and coastal processes, across eight major world regions, with confidence in detection / confidence in attribution to climate change stated for each impact. References to related chapters are given as well as key references underlying the assessment. \n (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
380	5	13	1	13	17	Another related issue perhaps worth mentioning is the reduction in Si loads to coastal waters from retention in reservoirs - e.g. implications for diatom production and coastal food webs (Bunn, Stuart, Griffith University)
381	5	13	3	13	17	For completeness, it could be added that the fine sediments and more coarse ones are not necessarilly following the same trends. For example, there could be in general more fine sediments available (due to land use practices) while coarser sediments may be retained by dams. (Le Cozannet, Goneri, BRGM)
382	5	13	3	13	17	Another effect on sediment delivery not mentioned is the hardening of shorelines from coastal defences that invariably results in loss of intertidal sediments. (Bell, Robert, NIWA)
383	5	13	4	13	5	Add "sand and gravel mining in beaches and river channels all act to decrease sediment delivery…" (Bettencourt, Sofia, World Bank)
384	5	13	16	13	16	add a comma before 'whereas', change 'increase' to 'increased' before 'delivery' (POLAND)
385	5	13	17	13	17	Sediment load loss is also a factor of coasts where supply has not been regulated by rivers and dams. There is a need to consider the changing nature of sediment supply during the last millennia where Medieval Warming and LIA have made profound shifts to coastal supply. Though this may only reflect lag behaviour of NH mid-lats, it does underly the consequences of lags in supply that are only achieving a new equilibrium in coastal supply during the 20th c. (Orford, Julian, Queen\\\\\\'s University, Belfast)
386	5	13	17	13	17	I suggest the text is edited to read "....due to soil erosion impacts on coastal ecosystems such as coral reefs". (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
387	5	13	24	13	25	On my opinion C1, SREX and WG2 Glossary make a distintion between those terms. Those references are or will be (Suarez, Avelino, Institute of Ecology and Systematic, Cuban Environmental Agency)
388	5	13	24	13	26	While it makes sense to cover both vulnerability and risk together given the lack of linguistic clarity in the literature, the authors would do well to highlight here the distinct concepts behind the two terms, namely likelihood of something happening (risk) vs. factors contributing to vulnerability, regardless of likelihood. (Hoffman, Jennifer, EcoAdapt)
389	5	13	24	13	26	While it makes sense to cover both vulnerability and risk together given the lack of linguistic clarity in the literature, the authors would do well to highlight here the distinct concepts behind the two terms, namely likelihood of something happening (risk) vs. factors contributing to vulnerability, regardless of likelihood. (UNITED STATES OF AMERICA)
390	5	13	24	13	26	The chapter team should here consider and cross-reference similar discussion of vulnerability versus risk within chapter 19, in the context of its assessment of key vulnerabilities and key risks. (Mach, Katharine, IPCC WGII TSU)
391	5	13	27	13	27	The authors should consider adding "climate" between the words "key" and "drivers" (UNITED STATES OF AMERICA)
392	5	13	29	13	29	Abundance and distribution of species would be better examples of ecosystem features than those currently listed, as this is commonly measured in the field. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
393	5	13	30	13	30	Has "remote sensing" really been able to document the "extent of coral bleaching"? I know it is an area of active research but am not sure this goal has been achieved yet. (Lough, Janice, Australian Institute of Marine Science)
394	5	13	30	13	30	The remote sensing examples are not particularly helpful as a way to distinguish across techniques (perhaps should be delete the examples and just leave as "remote sensing"?), as these can also be measured using field observations. (UNITED STATES OF AMERICA)
395	5	13	31	13	32	For infrastructure impacts, in addition to SLR there has also been a big focus on storm surge - even though it is difficult to identify how storms may change in the future (besides the addition of SLR, which is addressed on lines 40-42), there is recognition that infrastructure might need to be designed for more significant storm surges than in the past. Suggest addition of infrastructure impacts. (UNITED STATES OF AMERICA)
396	5	13	31	13	33	This is not necessarily true. Many efforts also focus on impacts of human systems resulting from climate-related impacts to fisheries, etc. Extreme events are another major focus. This sentence is too narrow and doesn't accurately reflect the breadth of research on the impacts of climate change on human systems in coastal regions. Also, these studies aren't distinguished primarily by what biophysical impacts they address - but instead by what scientific techniques they apply (e.g. studies of risk perception; ecosystem services valuation; cost-benefit analyses; etc.). (UNITED STATES OF AMERICA)
397	5	13	38	13	54	This section is very technical and does not really address IPCC issues. (Middelburg, Jack, Utrecht University)
398	5	13	41	13	44	The authors need to mention that physical stratification of the water column is a major driver of hypoxia. This physical stratificaion is linked key climatic and meteorological parameters, such as freshwater input, wind-driven mixing, and ocean temperatures. (Kolker, Alexander, Louisiana Universities Marine Consortium)
399	5	13	42	13	42	Add to references: Horton et al. 2011). Horton, R.H., Gornitz, V., Bader, D., Ruane, A.C., Goldberg, R., Rosenzweig, C., 2011. Climate hazard assessment for stakeholder adaptation planning in New York City. J. Applied Meteorology and Climatology, 50:2247-2266. (UNITED STATES OF AMERICA)
400	5	13	44	13	47	I strongly recommend to mention the pioneering work of Gornitz for indicator based approaches (coastal vulnerbaility index, CVI) here: Gornitz V (1991) GLOBAL COASTAL HAZARDS FROM FUTURE SEA-LEVEL RISE. Global and Planetary Change 89:379-398. (Le Cozannet, Goneri, BRGM)
401	5	13	44	13	47	An additional suggested referrence for indicator-based approaches would be the U.S. Geological Survey (USGS) Coastal Vulnerability Index project. See: Theiler, E.R. and Hammar-Klose, E.S, 1999 and 2001. That project specificall addressed vulnerability to sea-level rise on the outer coasts. (UNITED STATES OF AMERICA)
402	5	13	48	14	12	Suggest this section be refined to be more representative of the diversity of work on climate and Chapter 5 - Coastal systems and low-lying areas. It is written as though all coastal work fits into these methodological categories, which is not the case. (UNITED STATES OF AMERICA)
403	5	13	51	13	52	More frequently, the Bruun rule is used for assessing impacts of RSLR at 'local scales'. I don't know if this falls within "morphodynamic models" (morphodynamic modellers would certainly not agree !); May be could add "morphodynamic models OR simple geometric cross-shore models (Bruun, 1962) ... (Le Cozannet, Goneri, BRGM)
404	5	13	52	13	52	RSlR ?? (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
405	5	13	52	13	52	RSLR (Relative Sea Level Rise) (Jung, Sukgeun, Jeju National University)
406	5	14	3	14	3	I think it would be necessary to remind here shortly on what DIVA is based: as far as I know it is based on the Bruun rule (for erosion) and on simple submersion models (impacts of RSLR on a DEM); this would help understanding the uncertainties. (Le Cozannet, Goneri, BRGM)
407	5	14	8	0	0	The authors should briefly describe how these 145 rivers were chosen. (Kolker, Alexander, Louisiana Universities Marine Consortium)

#	Ch	From Page	From Line	To Page	To Line	Comment
408	5	14	8	14	8	In this line a reference to biophysical systems is given, while the section is titled natural systems. Suggestion: change either one of them to be consistent.\n\n (NETHERLANDS)
409	5	14	8	14	9	This sentence doesn't read well, it's not clear what the authors mean. (de Gusmao, Diogo, Met Office Hadley Centre)
410	5	14	8	14	9	This statement should be clarified. (Mach, Katharine, IPCC WGII TSU)
411	5	14	15	0	0	The impact of climate change on important coastal habitats is missing: (1) The impact on maerl beds in many seas (see the report MAERL: An overview of dynamics and sensitivity characteristics for conservation management of marine SACs available online at http://www.ukmarinesac.org.uk/pdfs/maerl.pdf), (2) The impact on coralligenous assemblages (different from coral reef) in the Mediterranean (e.g Roghi et al. 2010 Biol Mar Medit 17(1):59-62. http://www.academia.edu/1118270/DECADAL_EVOLUTION_OF_A_CORALLIGENOUS_ECOSYSTEM_UNDER_THE_INFLUENCE_OF_HUMAN_IMPACTS_AND_CLIMATE_CHANGE). In some cases sea warming is known to increase emerging diseases of benthic sessile organisms that are key for these assemblages. E.g. Bally and Garrabou 2007. Global Change Biology (2007) 13, 2078-2088, (3) The impact on "algal forests" or canopy-forming macroalgae (e.g. the community of the Cystoseira algae inhabiting the infralittoral zone of the Mediterranean). See e.g. http://www.mba.ac.uk/wp-content/uploads/2013/01/Smale-Wernberg-2013-Proc-Roy-Soc-B.pdf (LLORET, [illegible]
412	5	14	15	0	0	*Observation: No reference provided for reforestation activities? Also, may be worth noting that at least one study also suggests that preventing further habitat loss and encouraging natural recovery is a more cost-effective solution to long-term carbon capture and storage than active restoration of lost habitats (Irving et al 2011).\n\n*References: Irving AD, Connell SD, Russell BD (2011) Restoring coastal plants to improve global carbon storage: Reaping what we sow. PLoS ONE 6: e18311. (Galloway McLean, Kirsty, United Nations University - Institute of Advanced Studies)
413	5	14	20	0	0	Sentence - "There are few wetlands, mangroves …." - mangroves are wetlands so this should be clarified; e.g., mangroves could be put in parentheses following wetlands. (Mcleod, Elizabeth, The Nature Conservancy)
414	5	14	22	14	23	Are we really convinced about this? We all agree that habitat destruction is one of the key issues, but whether that eutrophication is only a repsonse and not a driver, I am not convinced. It depends on the scale. (Middelburg, Jack, Utrecht University)
415	5	14	27	15	13	The ability of sand dunes and barrier to migrate landward with SLR should be included (e.g. Johnson 1997 or Leatherman 1979). FAQ 5.2 gives a clear explanation of this process. (UNITED STATES OF AMERICA)
416	5	14	27	30	53	Most of the sub-chapters of this section are divided into "observed impacts" and "expected impacts", the clarity and readibility of the chapter would increase if this division was extended to sections 5.4.3.1; 5.4.3.2 and 5.4.3.5 (Baills, Audrey, BRGM)
417	5	14	29	14	29	This text is inconsistent with p. 15, l. 38: If 75 % of the world coasts are rocky and one thirds is sandy (beach/sand dunes), we end up with more than 100% and vegetated systems, etc are not yet covered. This should be made internally consistennt. (Middelburg, Jack, Utrecht University)
418	5	14	29	14	29	The statement "beaches, barriers and sand dunes constitute about one-third of world's coasts" needs a source or substantiation.\n\n (NETHERLANDS)
419	5	14	29	14	29	A citation should be provided for this statistic. (Mach, Katharine, IPCC WGII TSU)
420	5	14	29	14	31	The text here should point out the valuable habitat and ecosystem services of beaches, barriers, and sand dunes. (UNITED STATES OF AMERICA)
421	5	14	29	15	38	says 1/3 of shores are beaches, dunes, etc.; then says ¾ are rocky (Hoffman, Jennifer, EcoAdapt)
422	5	14	29	15	38	The separate estimates of 1/3 shorelines being beach, barrier or dune plus 3/4 being Rocky Shores sums to >1 without considering other systems. Suggest some process that breaks down all shorelines in a consistent way. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
423	5	14	29	15	42	Beaches etc constitute 33% of world's coasts (p.14 line 29) and rocky coasts 75% (p.15 line 38), this makes 108%... Of course we all know that this is approximative, but it would be good to have consistency in the report, let's say 1/3 and 2/3... (Etienne, Samuel, Ecole Pratique des Hautes Etudes)
424	5	14	30	14	30	The phrase "due to their attractive attributes" is not completely clear and could be deleted. (Mach, Katharine, IPCC WGII TSU)
425	5	14	36	0	0	Suggest the authors clarify whether net erosion in this line means net loss of acres of beaches and sand dune or landward movement of those systems and the shoreline (UNITED STATES OF AMERICA)
426	5	14	36	14	37	the statement hat beaches are generally eroding is emblematic and not supported by any emperical data in Bird (2000). In fact Bird's book fails to provide any evidence other than selected case studies that a larger portion of the worlds beaches are eroding. (Stephenson, Wayne, University of Otago)
427	5	14	36	15	33	While dunes are vulnerable to sea-level rise and storm surge, they are also resilient (particularly when intact) and can provide critical buffering capabilities to adjacent communities. This section should better reflect that. Also, this section lacks any information on biological impacts - what about changes in dune/beach plant/animal community composition? (UNITED STATES OF AMERICA)
428	5	14	37	14	42	Coastal sediment starvation from dam building can also be a process here? (Jung, Sukgeun, Jeju National University)
429	5	14	41	14	41	Do you really mean changes in the loss of natural or do you mean loss of natural or changes of natural… (Middelburg, Jack, Utrecht University)
430	5	14	41	14	41	Gravelle not Grevelle (Nunn, Patrick, University of New England)
431	5	14	46	14	47	The original source is not adequatly cited regarding the percentage of 68 and the amount of measurement locatios. Hapke et al (2011): "The rate is based on shoreline change rates averages from 21184 individual transects, of which 65% were eroding " (p. 1). Suggestion: "and 65% showed net erosion based on 21,184 transects equally spaced along more than 1000 km of coast".\n\n (NETHERLANDS)
432	5	14	47	14	50	This sentence is misleading for a number of reasons. There is a huge amount of literature, albeit much grey, showing that most Pacific island coasts are eroding, as you would expect after 200 years or so of sea-level rise. Most of Webb and Kench's sample islands showed BOTH erosion and progradation; their conclusion about growth in area says nothing about change in the volume of these islands, which is the critical issue. And in their conclusions, Webb and Kench specifically cautioned against the interpretation of their study in the way that it has (inevitably) been popularly interpreted, and in the way it is here. (Nunn, Patrick, University of New England)

#	Ch	From Page	From Line	To Page	To Line	Comment
433	5	14	47	14	50	Delete the sentence … "However, a survey using historical aerial photographs and satellite images of 27 atoll islands in the central Pacific showed that 86% of the islands have remained stable or increased in area over a 19 to 61 year period, contradicting the widespread perception that small islands are eroding with sea-level rise (Webb and Kench, 2010)." and replace with "A similar study by Webb and Kench (2010) in the central Pacific utilised historical aerial photographs and satellite images to show physical changes in 27 atolls over a 19 to 61 year period. The analysis highlighted the dynamic nature of sea-level rise response in the recent past, with physical changes in shoreline progradation and displacement influencing whether island area increased (46%), remained stable (46%) or decreased (14%). " Extra references for this material are: Dickinson, W.R. 2009. Pacific atoll living: how long already and until when. GSA Today, 19, 4-10.\nGillie, R.D. 1993. Coastal erosion problems in the Gilbert Islands group, Republic of Kiribati. SOPAC Technical Report 167.\nNunn, P.D. 1990a. Recent environmental changes on Pacific islands. The Geographical Journal, 156, 125-140.\nNunn, P.D. 1990b. Recent coastline changes and their implications for future changes in the Cook Islands, Fiji, Kiribati, the Solomon Islands, Tonga, Tuvalu, Vanuatu and Western Samoa. In: Pernetta, J.C. and Hughes, P.J. (editors). Implications of expected climate changes in the South Pacific region: an overview. UNEP Regional Seas Reports and Studies, 128, 149-160.\nRankey, E. C. 2011. Nature and stability of atoll island shorelines: Gilbert Island chain, Kiribati, equatorial Pacific. Sedimentology, 58(7), 1831-1859.\nWoodroffe, C.D. 2008. Reef-island topography and the vulnerability of atolls to sea-level rise. Global and Planetary Change, 62, 77-96.\n (AUSTRALIA)
434	5	14	47	14	50	Suggest citing the Webb and Kench, 2010 study as "contradicting the widespread perception" is not appropriate for several reasons. First, the study did not perform a rigorous analysis of errors; the authors merely assumed that changes below a certain threshold (2% of an island's area) were not measurable. Among other things, this approach does not scale appropriately with island size. The preferred method for error analysis is to sum the various error sources in quadrature (e.g., Fletcher et al., 2012: http://pubs.usgs.gov/of/2011/1051/). Second, many of the largest land area increases are due to anthropogenic manipulation of the shoreline, specifically, land reclamation for infrastructure (see Webb and Kench, section 5.4.2). It is unclear at best whether this practice is sustainable over the 21st century, particularly because much of the data for these sites covers only the past 4 decades or so. Third, and perhaps most importantly, many of the measured increases in land area result from the creation of new, low-lying mobile landforms (e.g., spits) from erosion of higher-elevation, older landforms (e.g., dune complexes). So yes, new land is forming, but it is low-quality land that is unlikely to serve useful habitat, resource, or human habitation purposes. Thus, it is potentially misleading for IPCC to say based on this one study that small islands are not eroding with sea-level rise. (UNITED STATES OF AMERICA)
435	5	14	47	14	50	While historic analysis may show that a subset of Pacific atoll islands (27 out of 2,000+) have remained stable or increased over the past 2-6 decades, suggest authors see other analyses which show a different picture; see e.g., Bochicchio*, C., Fletcher, C.H., Vitousek*, S., Romine*,B., Smith, T. (in revision http://www.soest.hawaii.edu/coasts/publications/Bochicchio_Marine_Geo09.pdf) Understanding long-term shoreline change through integration of historical aerial photographic, sedimentological, and computer modeling techniques: Lanikai and Bellows Beaches, Oahu, Hawaii. Marine Geology. For future projections of SLR and wave interaction see also: Storlazzi, C.D., Berkowitz, P., Reynolds, M.H., and Logan, J.B., 2013, Forecasting the impact of storm waves and sea-level rise on Midway Atoll and Laysan Island within the Papahanaumokuakea Marine National Monument—a comparison of passive versus dynamic inundation models: U.S. Geological Survey Open-File Report 2013-1069, 78 p. (UNITED STATES OF AMERICA)
436	5	14	48	14	48	The study by Webb and Kench is not focused on 27 atoll islands but on 27 islets located in 4 atoll islands (Le Cozannet, Goneri, BRGM)

#	Ch	From Page	From Line	To Page	To Line	Comment
437	5	14	48	14	50	Here the authors state that small islands are not eroding wtih sea level rise. However, in the executive summary the authors not that "small island states are expected to and somelow-lying developed countries are expected to face very high impacts....." (p 3, line 33) This seems to be an important contradiction. If smal islands are not eroding with present day rates of SLR, why should we expect very high impacts in the fuure? (Kolker, Alexander, Louisiana Universities Marine Consortium)
438	5	15	2	15	4	Statistically linking sea-level rise with beach erosion is challenging but it has been done for certain stretches of the US East coast, as per the Leatherman, Zhang, Douglas (2000) papers, above. Also, Zhang, Douglas, and Leatherman followed up on these papers with a more comprehensive paper published in Climatic Change in 2004 (Zhang, Douglas, Leatherman, Global Warming and Coastal Erosion; 64, 41-58). This paper should also be cited along with the Leatherman et al. 2000 papers as it is more authoritative. \nFinally, because there has been some success linking long-term beach erosion with long-term sea level rise (see for example Marcel Stives editorial comment in Climatic Change referring to the Zhang, et al. 2004 paper (64: 27-39, 2004)), suggest authors change as follows: "Statistically linking sea-level rise to observed magnitudes of beach erosion has had some success even though the coastal sea-level change signal is often small relative to other processes (e.g. Sallenger et al., 2000; Leatherman et al., 2000a; 2000b; Zhang et al., 2004)." (UNITED STATES OF AMERICA)
439	5	15	4	15	6	Suggest change to clarify conclusions of the cited paper. "A Bayesian network incorporating a variety of factors affecting coastal change including relative sea-level rise, has been successful in hindcasting shoreline change, and can be used to evaluate the probability of future shoreline change (Gutierrez et al., 2011)." (UNITED STATES OF AMERICA)
440	5	15	8	15	13	The original text reads: 'Where an eroding shoreline approaches hard, immobile, structures like seawalls or resistant natural cliffs, the beaches will narrow due to coastal squeeze that removes the sands and associated habitats, and potentially steepens the beach slope, impacting the survivability of a variety of organisms (Jackson and McIlvenny, 2011). With coastal squeeze, sand dunes will ultimately be removed as the beach erodes and narrows. Extreme storms can erode and completely remove dunes, degrading land elevations and exposing them to inundation and further change if recovery does not occur before the next storm (Plant et al., 2010)'. In my opinion the term coastal squeeze is not used precisely here as it appears that it basically refers to beach loos due to wrong use of hard coastal structures. The term is much broader: it generally denotes the lack of space caused on the one hand by coastal erosion and spatial developments (usually residential areas) in immediate hinterland on the other. Thus, it has two aspects; physical and socio-economic - such a squeeze can hamper and paralyze future management strategies. In my view a more appropriate formulation of this section should be: 'Where an eroding shoreline approaches hard, immobile, structures like seawalls or resistant natural cliffs, the beaches will narrow due to the resultant sediment deficit; it produces such adverse impacts as habitat destruction, impacting the survivability of a variety of organisms (Jackson and McIlvenny, 2011). With such a manifestation of coastal squeeze, sand dunes will ultimately be removed as the beach erodes and narrows. Extreme storms can erode and completely remove dunes, degrading land elevations and exposing them to inundation and further change if recovery does not occur before the next storm (Plant et al., 2010)' (POLAND)
441	5	15	9	15	9	Suggested rewording: Beaches will narrow due to an interuption in longshore drift resulting in coastal squeeze (Brown, Sally, University of Southampton)
442	5	15	11	0	0	Define coastal squeeze. Please avoid the use of jargon in the future. (Kolker, Alexander, Louisiana Universities Marine Consortium)
443	5	15	11	15	11	Insert extra sentence after the one ending Jackson and McIlvenny (2011): This can potentially exacerbate local erosion. Suggested reference: Brown S, Barton ME, Nicholls RJ (submitted). Soft cliff erosion and hard adaptation: Historic and future response. Maritime Engineering (Brown, Sally, University of Southampton)

#	Ch	From Page	From Line	To Page	To Line	Comment
444	5	15	11	15	12	Add sentence: “Even in the absence of hard obstructions, barrier island erosion and narrowing can occur, as a result of rising sea level and recurrent storms, as in the Chandeleur Islands and Isles Dernieres, Louisiana, U.S.A. (Penland et al., 2005).” Penland, S., Connor, P.F., Jr. Beall, A., Fearnley, S., and Williams, S.J. 2005. Changes in Louisiana’s Shoreline: 1855-2002. Journal of Coastal Research Special Issue 44:7-39. (UNITED STATES OF AMERICA)
445	5	15	18	15	18	Again, new GMSL numbers. (Sjostrom, Asa, Swedish Meteorological and Hydrological Institute)
446	5	15	18	15	18	Again, new GMSL numbers. (SWEDEN)
447	5	15	18	15	18	For the projected sea level rise described here, the relevant scenarios of climate change should be specified, and it would be preferable to indicate the full range of projected outcomes instead of just describing the upper bound. (Mach, Katharine, IPCC WGII TSU)
448	5	15	18	15	33	You appear to be ignoring the resilience of some coastal systems , such that one should differentiate between retreat and erosion. In the former the coastal system may move onshore and still be capable of geomorphic functioning by which the distribution of extreme elevations (apart from the top n%) can be absorbed (see Orford 2011, Coastal Sediments'11) Under erosion the ability of the coastal system may be compromised by loss of foreshore (steepening) for morphodynamic control, or sediment for buffering capacity. (Orford, Julian, Queen\\\\\\'s University, Belfast)
449	5	15	19	15	21	More accurate would be to crossrefer to [5.3.3]\n\n (NETHERLANDS)
450	5	15	23	15	23	I think "some investigators" could be replaced by "many investigators" since the Bruun rule is probably the most commonly used model for evaluating sea level rise potential impact on shoreline erosion (Le Cozannet, Goneri, BRGM)
451	5	15	23	15	24	Maybe need to explain the "Bruun rule"? (Lough, Janice, Australian Institute of Marine Science)
452	5	15	26	15	27	You might also add the work of Dickinson (2009, GSA Today) on Pacific atolls here, which explains the nature of a complex response beyond simple retreat. (Nunn, Patrick, University of New England)
453	5	15	29	0	0	Define coastal squeeze. Please avoid the use of jargon in the future. (Kolker, Alexander, Louisiana Universities Marine Consortium)
454	5	15	29	15	30	We recommend this be changed to: ...rebuild beaches and dunes will likely become increasingly difficult AND MORE EXPENSIVE .... (UNITED STATES OF AMERICA)
455	5	15	36	18	36	It would make more sense to have kelp systems covered in the "Rocky Shores" section, as kelp aren't wetlands, and they are found subtidally along temperature rocky coastlines. Also, kelps need to be better covered - there is quite a bit of work on the impacts of temperature change on kelp plants and associated invertebrate/fish communities. (UNITED STATES OF AMERICA)
456	5	15	38	0	0	Here the authors state that 3/4 of the world's coasts are rocky, whereas on p 14, line 29 the authors state that 1/3 of the world's coasts are beaches, barriers and sand dune. This yeilds a number >100%, before soft shorelies such as marshes and mangroves are taken into account. Obviously, these numbers both can't be right. Please check the sources and clarify. (Kolker, Alexander, Louisiana Universities Marine Consortium)
457	5	15	38	15	38	See above comment to p. 14, l. 29; This is internally inconsistent. (Middelburg, Jack, Utrecht University)
458	5	15	38	15	38	This needs reassessment: Davis and Fitzgerald (2004) state that 75 percent of the world's coasts are rocky. P. 14, l. 46 states that about 33 percent of the world's coast consists of sand, dunes and barriers. This means that already for those two types of coasts we have 108 percent of coasts.\n\n (NETHERLANDS)
459	5	15	38	15	39	It is disappointing to see undergraduate text books being cited in AR5, especially when these are not the original source and in this case inaccurate. It would be far more accurate to report 80% of the world's coastal ine is rocky and cite: Emery, K.O. and Kuhn, G.G., 1982. Sea cliffs: their processes, profiles, and classification. Geological Society of America Bulletin, 93, 644-654. (Stephenson, Wayne, University of Otago)

#	Ch	From Page	From Line	To Page	To Line	Comment
460	5	15	38	15	39	It is unclear how a coast made of unconsolidated sediments is considered as a "rocky" coast. Maybe you should specify that frozen (permafrost) unconsolidated coasts are considered as "rocky coast", then it is pertinent to deal with them in this section. (Etienne, Samuel, Ecole Pratique des Hautes Etudes)
461	5	15	38	16	53	In both the rocky shores and beaches, barriers and sand dunes, it was a little confusing as there was little difference made between changes in rates and absolute changes in location. For example, even though the rate of rocky shores may increase more significantly, the effect on sandy beachs may be more important because the absolute change is larger. It would be helpful if the authors also indicate the actual rates that were changing to give a sense if the actual changes in these rates are cause for concern. (UNITED STATES OF AMERICA)
462	5	15	38	17	16	One thing missing from this section is any consideration of geology. The section focuses entirely on processes, but the geomorphic response of cliffs and platforms is also greatly depended on the geological settting, so that attempts to predict impacts need to consider the resistence of the lithology under consideration. Furthermore all rock coasts regardless of their degree of resistence are erosion landforms, their on response to changing climate and sea level will be further erosion. (Stephenson, Wayne, University of Otago)
463	5	15	40	15	40	abrasional shore platform (939 google hits), more common is "abrasion shore platform" (413.000 google hits)\n\n (NETHERLANDS)
464	5	15	40	15	41	Rocky coasts include lithified coasts with plunging cliffs, and shore platform/cliff. Both types have very different answer to rising sea level, so both should mentioned (Etienne, Samuel, Ecole Pratique des Hautes Etudes)
465	5	15	42	15	42	You need to differentiate between rock coasts which are formed from 'hard' rock and non-lithified soft rocks. The behaviour is different in both cases and they should not be lumped under the same title. Certainly the subsequent references are not universal in application. (Orford, Julian, Queen\\\\\\'s University, Belfast)
466	5	15	49	15	50	The authors first include rainfall regime as something that contributes to cliff erosion and then say that precipitation (along with frost) does not contribute to cliff retreat. Both of the statements can't be correct. Please check the sourcs and clarify. (Kolker, Alexander, Louisiana Universities Marine Consortium)
467	5	15	49	15	51	Last 2 sentences contradictory - first says rainfall important and second says precipitation is not important; is snowfall meant in last sentence? (Lough, Janice, Australian Institute of Marine Science)
468	5	15	50	15	51	The use of Dornbush et al. (2008) to argue that frost and precipitation do not play a role in cliff erosion is a case of selected and misleading referencing. Dornbusch et al noted that their results are tentative because the length of their data record was insufficiently long. Further more they worked on a very specific geological setting (chalk) and their result is contary to at least 5 papers that that showed precipitation is important for cliff retreat in chalk. A. Duperret, A. Genter, R.N. Mortimore, B. Delacourt, M. De Pomerai. Coastal cliff erosion by collapse at Puys, France: the role of impervious marl seams within the chalk of NW Europe J. Coast. Res., 18 (2002), pp. 52–61. A. Duperret, A. Genter, A. Martinez, R.N. Mortimore. Coastal chalk cliff instability in NW France: role of lithology, fracture pattern and rainfall, in: R.N. Mortimore, A. Duperret (Eds.), Coastal Chalk Cliff stability, Eng. Geol. Spec. Publ., The Geological Society, London (2004), pp. 33–55. P. Lahousse, G. Pierre The retreat of chalk cliffs at Cap Blanc-Nez (France): autopsy of an erosional crisis. J. Coast. Res., 19 (2) (2003), pp. 431–440. R.N. Mortimore, J. Lawrence, D. Pope, A. Duperret, A. Genter. Coastal cliff geohazard in weak rock: the UK Chalk cliffs of Sussex,in: R.N. Mortimore, A. Duperret (Eds.), Coastal Chalk Cliff stability, Engineering Geology Special Publications, The Geological Society, London (2004), pp. 3–31. Y. Lageat, A. Hénaff, S. Costa. The retreat of the chalk cliffs of the Pays de Caux (France): erosion processes and patterns. Z. Geomorphol., 144 (2006), pp. 183–197 Supplement Volume. This sentences needs to be significantly modified to reflect the research that shows precipitation is important for cliff retreat in chalk. (Stephenson, Wayne, University of Otago)

#	Ch	From Page	From Line	To Page	To Line	Comment
469	5	15	50	15	51	Precipitation and frost appear to have a limited role in cliff retreat (Dornbusch et al., 2008). I would query that for some cliffs, where rainfall is linked to mass failure of the cliffs, although these types of cliff tend to occur on soft shores. Perhaps add a qualifier after 'retreat' - 'along rocky shores.' (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
470	5	15	51	15	51	Add: …except in the Arctic (e.g., Jones, B.M., 2009. Increase in rate and uniformity of coastal erosion in Arctic Alaska. Geophysical Research Letters 36, L03503, doi:10.1029/2008GL036205; see also Chap. 28). (UNITED STATES OF AMERICA)
471	5	16	1	16	43	no confidence scale used (Middelburg, Jack, Utrecht University)
472	5	16	8	16	8	Add "to" between "due" and "non-climatic". (de Gusmao, Diogo, Met Office Hadley Centre)
473	5	16	11	16	11	50km per decade is far beyond the numbers mentioned in ch6 p 29. ch6 should consider inclusion of these numbers (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
474	5	16	11	16	11	The timeframe over which these reported shifts occurred should be specified. (Mach, Katharine, IPCC WGII TSU)
475	5	16	11	16	12	Locations for these reported shifts? (Lough, Janice, Australian Institute of Marine Science)
476	5	16	14	0	0	substrata or substrates? (Vasseur, Liette, Brock University)
477	5	16	19	16	20	Would be more accurate to summarize this study by saying "Patterns of mussel growth in Oregon are strongly tied to climate variability and associated temperatures and food availability." (UNITED STATES OF AMERICA)
478	5	16	27	16	27	There should be space between algal-barnacle and dominated (Ye, Siyuan, Qingdao institute of marine geology)
479	5	16	27	16	27	can you provide a confidence statement? (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
480	5	16	33	0	0	The authors state that based on contemporary and historic data the major driver os shoreline retreat (for rocky shores) is sea level rise. However, on the previous page (15, line 49-60), the authors state hat significant climate drivers include storminess, wave climate and rainfall regime. Why are the factors listed on p 15 not included on p 16. This seems like an important contradiction. (Kolker, Alexander, Louisiana Universities Marine Consortium)
481	5	16	33	16	33	Based on contemporary and historic data for shoreline retreat the major driver appears to be sea-level rise: Is this sure ? I would say that in general, cliffs erosion would depend on the sediments at their foot, and also on geotechnical and geological properties, size of waves, number of storms, hydrogeology… Any change in these conditions may change the erosion/cllapse patterns. This is actually what is saud in page 15 lines 47, which I entierely agree with. (Le Cozannet, Goneri, BRGM)
482	5	16	33	16	34	Earlier in this chapter (line 2-4, page 15) it is stated that statistically linking sea-level rise to beach erosion has been challenging. Here it is stated that sea-level rise appears to be a major driver for shoreline retreat. This is somewhat contradictory. Also, the Brooks and Spencer, 2012 citation is not listed in the References section. Nevertheless, the Brooks and Spencer papers from 2012 show that their analyses were conducted on the clifflines on the Suffolk coast of the U.K. However, the Leatherman et al. (2000) and Zhang et al. (2004) papers focus on a much broader geographic area (the U.S. mid-Atlantic coast from NY to SC) and come to similar conclusions--stated in part: this does not mean that sea level rise causes long-term erosion directly; there is too little energy associated with it. Rising sea levels act as an enabler of erosion because higher water levels allow waves to act further up the beach profile and move sediment seaward.\nIn summary, the Leatherman et al. (2000) and Zhang et al. (2004) papers seem to be the first that show a statistical link between sea level rise and shoreline retreat. If not the first, they certainly pre-date the Brooks and Spencer, 2012 paper. (UNITED STATES OF AMERICA)
483	5	16	41	16	43	Why mention Scotland here? Is it special, or representative of other rocky shores? I have no problem with the report including specific case studies, if they are justified. (Kolker, Alexander, Louisiana Universities Marine Consortium)
484	5	16	42	16	42	It probably missed m behind 0.3 (Ye, Siyuan, Qingdao institute of marine geology)
485	5	16	42	16	42	add 'm' after '0.3' (POLAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
486	5	16	45	0	0	Please define what is meant by a climate envelope approach. (Kolker, Alexander, Louisiana Universities Marine Consortium)
487	5	16	45	16	49	In relation to multiple stressors, there is some work from Australia showing that starved limpets are more susceptible to temperature related mortality, not sure if this is published. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
488	5	16	52	16	52	Casual usage of "likely" should be avoided, as it is a reserved likelihood term. (Mach, Katharine, IPCC WGII TSU)
489	5	16	52	16	53	Why are mussel beds singled out here? Is there really no research on any other organisms? This should be phrased as an example, otherwise it runs the risk of misrepresentation (e.g. mussel beds are singled out by policy makers for increased protection, when they are only one of a number of things that need protecting). If this really represents a gap in our knowledge base this needs highlighting to facilitate future research. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
490	5	16	52	17	2	While the relationship between mussel growth and water temperature is positive (in this study), high air temperatures can lead to mortality of intertidal mussel populations (e.g. Harley, C.D.G. 2008. Tidal dynamics, topographic orientation, and temperature-mediated mass mortalities on rocky shores. Marine Ecology Progress Series 371: 36-46). Need to clarify that intertidal species are exposed to both changes in air and water temperature. (UNITED STATES OF AMERICA)
491	5	17	1	17	2	These studies weren't projections, so it is not accurate to refer to them as such. Instead, the authors could say "Importantly, extrapolations of ecosystem change based on temperature-focused studies alone are likely to be conservative, as hypoxia (e.g. Grantham et al. 2004) and ocean acidification (Feely et al. 2008) are also known to occur in this region." (UNITED STATES OF AMERICA)
492	5	17	4	11	0	Why is this section on CO2 vents and acification included here? This seems out of place. (Kolker, Alexander, Louisiana Universities Marine Consortium)
493	5	17	5	0	0	trophic complexity of rocky … (Middelburg, Jack, Utrecht University)
494	5	17	6	0	0	At abundant food supply, tolerance.. (Middelburg, Jack, Utrecht University)
495	5	17	13	17	13	It's not just rising sea levels but also (importantly) the loss of individuals/populations from the intertidal zone due to aerial temperature stress (e.g. Harley 2008), leading to compression of the intertidal zone (as described in Harley et al. 2006 - Harley, C.D.G., A.R. Hughes, K.M. Hultgren et al. 2006. The impacts of climate change in coastal marine systems. Ecology Letters 9: 228-241). Also, this sentence seems out of place as the introductory sentence of this concluding paragraph. (UNITED STATES OF AMERICA)
496	5	17	13	17	13	The text should say "Rocky shores are among the most well-understood coastal ecosystems In terms of potential impacts of climate variability and change." (UNITED STATES OF AMERICA)
497	5	17	13	17	13	In addition to the summary term for evidence provided here, it would be preferable to also specify a summary term for agreement. (Mach, Katharine, IPCC WGII TSU)
498	5	17	13	17	13	The wording of the sentence starting with "with coral reefs, rocky shores" could be clarified--instead of "with" using "along with" or "after" might provide a clearer signal of intended logic for the reader. (Mach, Katharine, IPCC WGII TSU)
499	5	17	13	17	16	Greater storminess is just as important as SLR in reducing the ability of rocky shores and corals to provide wave attenuation (UNITED STATES OF AMERICA)
500	5	17	13	17	16	Given the flow of preceding sections, it would be clearer to start this paragraph with "in summary" to clarify to the reader that assessment findings are being presented here. (Mach, Katharine, IPCC WGII TSU)
501	5	17	14	17	14	As another small point, it would be clearest to indicate that this evidence pertains to "observed" impacts of climate change, to ensure clarity especially if the statement is used in another context. (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
502	5	17	15	17	15	Given that biodiversity can be affected in a number of ways (changes in species distribution or abundance, extinction, etc.), it would be preferable to specify what type of changes in biodiversity are meant here. (Mach, Katharine, IPCC WGII TSU)
503	5	17	19	0	0	Wetlands and seagrass beds (Middelburg, Jack, Utrecht University)
504	5	17	19	0	0	*Observation: If the impact of losses of ecosystem services, such as fisheries and coastal protection, are taken into account, the economic and social costs will be much greater (Crooks et al 2011).\n\n*References: Crooks S, Herr D, Tamelander J, Laffoley D, and Vandever J (2011) Mitigating Climate Change through Restoration and Management of Coastal Wetlands and Near-shore Marine Ecosystems: Challenges and Opportunities. Environment Department Paper 121, World Bank, Washington, DC. (Galloway McLean, Kirsty, United Nations University - Institute of Advanced Studies)
505	5	17	19	17	19	Why are seagrasses singled out in the title? They are no more important (arguable less important) than salt marshes and mangrove forests. I would change this to 'Coastal Wetlands' (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
506	5	17	19	18	36	No mention is made in this section about the effects of rainfall on these habitats. Rainfall is increasingly being recognised as a key factor mediating sediment, nutrient and contaminant dynamics. (See papers by Pilditch, Torres and Tolhurst). Given rainfall is predicted to change by approximately +/-25% in the UK by 2050, this could be a significant impact of climate change. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
507	5	17	19	18	36	No mention is made in this section about the effects of climate change on fauna. For example, migrating wading birds have a significant impact on these habitats and some species are no longer migrating. What about direct effects of climate change on the benthic macrofauna, or indirect effects via changes to the microalgae? (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
508	5	17	19	18	36	Section 5.4.2.3: Additional suggested references: Arnell et al. 2013 doi:10.1038/nclimate1793; Brown S, Nicholls RJ, Lowe JA, Hinkel submitted. Spatial variations of sea-level rise and impacts: An application of DIVA. Climatic Change (special issue) (Brown, Sally, University of Southampton)
509	5	17	21	0	0	In general, I found this section lacking. There is a wealth of information showing that vegetated coastal environments are responding to accelerated rates of relative sea level rise. This includes shifts in plant community composition (Warren and Neiring, 1993, Watson and Byre, 2012), changes in the morphology and drainage density of tidal creek (Hughes et al., 2009, Rizzetto and Tosi, 2012), changes in sediment accretion rates (Kolker et al., 2010). I suggest that this section be re-written to such that it show that many investigators of several decades have shown that climate change is impacts coastal wetlands. (Kolker, Alexander, Louisiana Universities Marine Consortium)
510	5	17	21	17	21	Why are vegetated coastal habitats singled out? Mudflats are not obviously vegetated, but support a diverse photosynthetic biomass that has primary productivity rates that can be greater than rain forest. Macroalgal beds are mentioned, why are microalgal beds not mentioned? These are vital to the structure and functioning of the ecosystem as well as mediating physical processes such as erosion. I would delete 'vegetated' and and 'vegetation' from this sentence and just talk about 'coastal habitats' and include 'mudflats' after salt marshes. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
511	5	17	21	17	22	The idea that vegetated environments make up only a thin belt is misleading. In many places, such as the Mississippi River Delta, marshes can be many miles wide. (Kolker, Alexander, Louisiana Universities Marine Consortium)
512	5	17	21	17	24	Fresh water coastal wetlands should also be mentioned here. Reports from Australia such as Cobb et al, (2007) mention the loss of fresh water coastal wetlands to factors including sea level rise... (Cobb, S., M. Saynor, et al. (2007). Saltwater intrusion and mangrove encroachment of coastal wetlands in the Alligator Rivers Region, Northern Territory, Australia. Supervising Scientist Report. S. Scientist. 191.) (Miloshis, Michael, Charles Darwin University)

#	Ch	From Page	From Line	To Page	To Line	Comment
513	5	17	21	17	24	Many mangroves have been removed as a result of direct human pressure, for example in order to create coastal lagoons for prawn culture. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
514	5	17	22	0	0	not always occuring as a "thin" vegetation belt fringing the shoreline (Mcleod, Elizabeth, The Nature Conservancy)
515	5	17	22	17	23	This sentence needs to be revised; suggestion: "Coastal wetlands, including mangrove forests and tidal marshes, are prominent features and important intertidal habitats." (UNITED STATES OF AMERICA)
516	5	17	24	17	24	Not valid for all coasts as this sentence implies. (Orford, Julian, Queen\\\\\\'s University, Belfast)
517	5	17	29	17	29	Although in Australia mangroves are expanding, particularly since the arrival of Europeans. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
518	5	17	29	17	29	add 'to' after 'due' (POLAND)
519	5	17	30	17	30	erosion due increased sea level rise ... should be revised by "erosion due to increased sea level rise..." (Ye, Siyuan, Qingdao institute of marine geology)
520	5	17	30	17	30	Add "to" between "due" and ""increased". (de Gusmao, Diogo, Met Office Hadley Centre)
521	5	17	32	17	32	Information of Pendleton et al. (2012) is missing and can't be traced.\n\n (NETHERLANDS)
522	5	17	34	0	0	suggest adding reference so it reads "coastal protection and carbon burial (Mcleod et al. 2011), has led to large-scale reforestation…"\n\nMcleod, E., G. Chmura, S. Bouillon, R. Salm, M. Bjork, C.M. Duarte, C.E. Lovelock, W.H. Schlesinger, and B. Silliman. 2011. A blueprint for blue carbon – toward an improved understanding of the role of vegetated coastal habitats in sequestering CO2. Frontiers in Ecology and the Environment 9: 552–560. (Mcleod, Elizabeth, The Nature Conservancy)
523	5	17	34	17	35	Add: Bangladesh (Heering et al., 2009). Heering, H., Firoz, R., and Khan, Z.H., 2010. Climate change adaptation measures in the coastal zone of Bangladesh. Deltas in Times of Climate Change, Rotterdam, 2010: Connecting World Science and Deltas. Scientific Programme—Deltas in Depth, PDDI1.5-09 (abstr.). (UNITED STATES OF AMERICA)
524	5	17	35	17	35	Can some references for these coasts be supplied? (Orford, Julian, Queen\\\\\\'s University, Belfast)
525	5	17	37	17	37	This is incorrect, many salt marshes have responded to increasing sea level by increasing in elevation, with little or no lateral movement and keeping pace with sea level rise over thousands of years. The question here should be whether they can continue to do this with increasing rates of sea level rise. Later in the text the Kirwan et al 2010a paper is refernced, which suggests that salt marshes can keep pace with conservative rates of sea-level rise, but will be submerged by more rapid sea level rise. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
526	5	17	37	17	38	This status will depend on the RSL change rate. (Orford, Julian, Queen\\\\\\'s University, Belfast)
527	5	17	37	17	38	This statement is missing critical information. Salt marshes can respond to sea level rise by accreting vertically and prograding horizontally. If the sediment supplies are ample, and vegetation is not drowned sea level rise can cause marshes to expand. This has been well known since Redfield's classic 1972 paper. The problem arises if sediment supplies are limited (relative to the rate of sea level rise) and the new flooding regime caused by sea level rise is hostile to the plant community. (Kolker, Alexander, Louisiana Universities Marine Consortium)
528	5	17	37	17	38	This sentence would benefit from the addition of: and vertical accretion, which if it is not able to keep up with accelerated rates of SLR can result in submergence at lower elevations and drowning of interior marshes. e.g. Cahoon et al 2009 (in USGCRP 2009). It would also benefit from a discussion of interactions with Nitrogen (e.g. Deegan et al 2012). (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
529	5	17	37	17	43	The discussion of the observed impacts of sea level rise on coastal wetlands is not sufficient to properly express the threat in this report. It is suggested that the authors review and summarize works such as: Nicholls, R.J., F.M.J. Hoozemanns, and M. Marchand Increasing flood risk and wetland losses due to global sea-level rise regional abd global analyses, Global Environmental Change 9 (1999) S69-S87. Even though dated, this paper is an excellent overview. (UNITED STATES OF AMERICA)
530	5	17	37	17	43	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)
531	5	17	39	17	40	This statement regarding mangroves is misleading. There are mangroves in the Mississippi River Delta, where the mean winter temperature is 10oC or less. (Kolker, Alexander, Louisiana Universities Marine Consortium)
532	5	17	43	0	0	The statement about increased sediment accretion resulting from mangrove expansion is a non-sequiter. (Kolker, Alexander, Louisiana Universities Marine Consortium)
533	5	17	45	18	8	The authors state on p 17 that sea grasses are already stressed due to climate change, but on 18 state that they will fare well with ocean acidification. While warming and pH effects are clearly different, this needs a bit of clarification. (Kolker, Alexander, Louisiana Universities Marine Consortium)
534	5	17	53	0	0	The correct reference of Fernandez et al, 2011 was: Fernández, C. (2011): The retreat of large brown seaweeds on the north coast of Spain: the case of Saccorhiza polyschides , European Journal of Phycology, 46:4, 352-360]. (Anadon, Ricardo, University of Oviedo)
535	5	17	53	17	53	The juxtaposition of "believed" with "high confidence" seems a bit odd, and more precise indication of the attribution of these trends to climate change could be provided in place of "believed." (Mach, Katharine, IPCC WGII TSU)
536	5	18	1	0	0	The same question that previous point (Anadon, Ricardo, University of Oviedo)
537	5	18	1	0	0	I suggest to incorporate the changes in other macroalgal groups dominant in some North East Atlantic waters like Fucaeans thath shows a very rapid decline in their suothern limit [Lamela, C., Fernández, C., Arrontes, J. y Anadón, R. 2012. Fucoids Assemblages on the North Coast of Spain: Past and Present (1977-2007). Bot.Mar., 55: 199-207. As complementary reference related to geographycal shift of species I suggest the reference Müller, R. Laepple, T. Bartsch, I. Wiencke, C. 2009. Impact of oceanic warming on the distribution of seaweeds in polar and cold-temperate waters. Botanica Marina 52: 617-638] (Anadon, Ricardo, University of Oviedo)
538	5	18	8	18	9	No mention of effects on microalgae or mangroves (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
539	5	18	8	18	19	These first two paragraphs are confusing as written as one states sea grass production will be increased, while the other indicates sea grass will disappear by 2050. While this difference is clarified in the last paragraph of the section, it might be helpful to indicate sooner in the section that these are competing effects. (UNITED STATES OF AMERICA)
540	5	18	13	0	0	Why is the western Mediterranean mentioned here? When case studies are included, the locations should be justified. Are these areas typically of other areas likely to be impacted, or are there special unique areas that may be different from many other places on Earth? (Kolker, Alexander, Louisiana Universities Marine Consortium)
541	5	18	14	18	14	Information of Jorda et al. (2012) is missing and can't be traced.\n\n (NETHERLANDS)
542	5	18	21	0	23	This paragraph seems to be in contradiction with some of the wording in lines 8 and 32: up or down, not clear. (Vasseur, Liette, Brock University)
543	5	18	21	18	23	This paragraph should be combined with the first paragraph in this sub-section (p. 18 Lines 8-11), as it is both redundant and somewhat contradictory. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
544	5	18	25	18	29	Kirwan et al., (2010) established thresholds at which marshes would have difficulty keeping pace with SLR. That is about 5 mm/yr. Please see: Kirwan, M.L. et al., 2010. Limits on the adaptability of coastal marshes to rising sea level Geophysical Research Letters, 37: L23401. (Kolker, Alexander, Louisiana Universities Marine Consortium)
545	5	18	25	18	30	The result of salt marsh accretion was from measurement rather than projection, the earliest study can be traced back to 1978 by Dr. Delaunne. The reference I suggested here is “DeLaune, R.D., W.H. Patrick Jr., R.J. Buresch. 1978. Sedimentation rates determined by 137Cs dating in a rapidly accreting salt marsh. Nature. 275:532-533” (Ye, Siyuan, Qingdao institute of marine geology)
546	5	18	26	18	26	Is the implication that marsh elevation change is due to organic growth only, as if not, what is the relations between CO2, warming and sediment supply? (Orford, Julian, Queen\\\\\\'s University, Belfast)
547	5	18	27	18	30	Suggest clarifying - what does this mean? Does this assume marsh migration and expansion? What about limitations to migration due to coastal development? (UNITED STATES OF AMERICA)
548	5	18	32	18	33	It would be helpful to indicate how this impact is expected to differ across time frames and levels of climate change. (Mach, Katharine, IPCC WGII TSU)
549	5	18	39	19	21	The section on climate change and ocean acidification impacts on coral reefs does not mention the growing literature on the impacts of ocean acidification on the reproductive success of corals. Effects have been demonstrated on fertilization success, settlement and post-settlement growth. Reductions in the success of sexual reproduction of corals will have potentially large consequences for the maintanence of viable populations of these species both from the standpoint of the population being able to replace colonies lost due to normal attrition as well as increased rates of mortality due to more frequent storms and mass bleaching events. It also means that the rate of adaptation or evolution will slow because fewer new colonies with potentially adaptive mutations will be produced. (Langdon, Christopher, Uni of Miami)
550	5	18	39	19	21	Referemces: Albright, R. and C. Langdon (2011). "Ocean acidification impacts multiple early life history processes of the Caribbean coral Porites astreoides." Global Change Biol. 17(7): 2478-2387, 10.1111/j.1365-2486.2011.02404.x\nAlbright, R., B. Mason and C. Langdon (2008). "Effect of aragonite saturation state on the settlement and post-settlement growth of Porites astreoides larvae." Coral Reefs 27(3): 485-490. 10.1007/s00338-008-0392-5\nAlbright, R., B. Mason, M. Miller and C. Langdon (2010) "Ocean acidification compromises recruitment success of the threatened Caribbean coral Acropora palmata." Proc. Nat. Acad. Sci. 107 DOI: 10.1073/pnas.1007273107.\nAlbright, R. (2011). Reviewing the Effects of Ocean Acidification on Sexual Reproduction and Early Life History Stages of Reef-Building Corals. Journal of Marine Biology, 2011(year 2100), 1–14. doi:10.1155/2011/473615\nDoropoulos, C., S. Ward, G. Diaz-Pulido, O. Hoegh-Guldberg and P. J. Mumby (2012). "Ocean acidification reduces coral recruitment by disrupting intimate larval-algal settlement interactions." Ecology Letters 15(4): 338-346. 10.1111/j.1461-0248.2012.01743.x (Langdon, Christopher, Uni of Miami)
551	5	18	43	18	43	add: (coastal protection, fisheries, tourism) (Pecheux, Martin, Institut des Foraminifères Symbiotiques)

#	Ch	From Page	From Line	To Page	To Line	Comment
552	5	18	46	20	7	I think this section on coral reefs should include mention of factors other than warming and OA that have had deleterious effects on coral reef ecosystems - primarily human related e.g. water quality/pollution adjacent to agricultural catchments; over-exploitation (over fishing/ destructive fishing) etc. See, for example, the Status of Coral Reefs of the World publications of the Global Coral Reef Monitoring Network (http://gcrmn.org/publications-info-center/publications/). Should also note that bleaching can occur due to freshwater stress (as observed on the Great Barrier Reef, Australia - see http://www.gbrmpa.gov.au/outlook-for-the-reef/extreme-weather). Also tropical cyclones are an important driver of physical damage and recent study demonstrated tropical cyclones were major driver of recent decline in coral cover on the GBR, Australia (De'ath et al (2012) The 27-year decline of coral cover on the Great Barrier Reef and its causes. PNAS 109: 17995-17999). Given projected changes to tropical rainfall (and hence river flows into nearshore environments) and more intense tropical cyclones, these climate drivers should be included here. (Lough, Janice, Australian Institute of Marine Science)
553	5	18	48	18	48	All ecosystems are susceptible to climate and non-climate related processes, why are corals singled out with their own box? (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
554	5	18	48	18	48	Replace "climated" with "climate" (10th word on line) (de Gusmao, Diogo, Met Office Hadley Centre)
555	5	18	48	18	48	The chapter team may wish to consider if the words "affected" and "stressors" would be clearer than "susceptible" and "processes" here. (Mach, Katharine, IPCC WGII TSU)
556	5	18	49	18	50	instead of "sometimes" write "followed in perhaps half of the time y mass mortalities" (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
557	5	18	50	0	0	The paper by by Eakin et al in PLoS ONE is a seminal one for coastal systems, and should be referenced here. The full reference is: Eakin C.M., Morgan J.A., Heron S.F., Smith T.B., Liu G., Alvarez-Filip L., Baca B., Bartels E., Bastidas C., Bouchon C., Brandt M., Bruckner A., Bunkley-Williams L., Cameron A., Causey B.D., Chiappone M., Christensen T.R.L., Crabbe M.J.C., Day O., de la Guardia E., Díaz-Pulido G., DiResta D., Gil-Agudelo D.L., Gilliam D., Ginsburg R., Gore S., Guzman H.M., Hendee J.C., Hernández-Delgado E.A., Husain E., Jeffrey C.F.G., Jones R.J., Jordán-Dahlgren E., Kaufman L., Kline D.I., Kramer P., Lang J.C., Lirman D., Mallela J., Manfrino C., Maréchal J-P., Marks K., Mihaly J., Miller W.J., Mueller E.M., Muller E., Orozco Toro C.A., Oxenford H.A., Ponce-Taylor D., Quinn N., Ritchie K.B., Rodríguez S., Rodríguez Ramírez A., Romano S., Samhouri J.F., Sánchez J.A., Schmahl G.P., Shank B., Skirving W.J., Steiner S.C.C., Villamizar E., Walsh S.M., Walter C., Weil E., Williams E.H., Woody Roberson K., and Yusuf Y. (2010) Caribbean Corals in Crisis: Record Thermal Stress, Bleaching, and Mortality in 2005. PLoS ONE 5(11), e13969. doi:10.1371/journal.pone.0013969 (Crabbe, Michael James, University of Bedfordshire)
558	5	18	50	0	0	This statement lacks estimate of confidence. I recommend including a statement of the confidence in which the authors find corals and coral reefs have already been impacted by climate change. The paragraph should also distinguish between how much the response to climate processes is due to climate change vs climate variability. Note that a statement of certainty is already included in section 5.4.4 page 30 line 17. (Eakin, Mark, National Oceanic and Atmospheric Administration)
559	5	18	50	18	50	Add ref: van Oppen and Lough, 2009) van Oppen MJH, Lough JM, 2009, Coral bleaching. Pattern, processes, causes and consequences. Ecological Studies 205, Springer Berlin Heidelberg, 178 pp; (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
560	5	18	50	18	50	However, from seven cases studies, thermal stress prior to 1979 were comparable to those observed now (Barton and Casey, 2005) Barton AD, Casey KS, 2005, Climatological context for large-scale bleaching. Coral Reefs, 24, 536-554 (Pecheux, Martin, Institut des Foraminifères Symbiotiques)

#	Ch	From Page	From Line	To Page	To Line	Comment
561	5	18	50	18	54	The authors need to explain that bleaching is related to anomalously high water temperatures. (UNITED STATES OF AMERICA)
562	5	18	51	0	0	The reference to grid cell is meaningless if the size of the grid cells is not mentioned. (Kolker, Alexander, Louisiana Universities Marine Consortium)
563	5	18	51	18	51	Grid cells of what? Is there a way to translate this into a more meaningful scale/area? (UNITED STATES OF AMERICA)
564	5	18	51	18	51	Since the use of "grid cells" here is a bit non-intuitive, it could be helpful to specify more precisely what is meant. (Mach, Katharine, IPCC WGII TSU)
565	5	18	51	18	52	This sentence misses a source or crossref to point out where the numbers come from. The numbers don't come from Baker et al. 2008.\n\n (NETHERLANDS)
566	5	18	52	18	52	partly due to intense el Nino events (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
567	5	18	52	18	54	Additional citation: "Recovery of an Isolated Coral Reef System Following Severe Disturbance" by James P. Gilmour et al. Science 340, 69 (2013) (UNITED STATES OF AMERICA)
568	5	18	52	18	54	I recommend citing the recent publication showing the rate of recovery of Scott Reef since the 1998 ENSO (James P. Gilmour, Luke D. Smith, Andrew J. Heyward, Andrew H. Baird, and Morgan S. Pratchett, 2013, Recovery of an Isolated Coral Reef System Following Severe Disturbance, Science 5 April 2013: 69-71). (Eakin, Mark, National Oceanic and Atmospheric Administration)
569	5	18	54	18	54	Add: In 2008, 19% of reefs where effectively lost, and summing all partial coral cover loss, there was a global reduction of 40.05% of coral cover (Global Coral Reef Monitoring Network, Wilkinson, 2008, Tab p. 11) Wilkinson W (ed) and 376 authors, 2008, Status of Coral Reefs of the World: 2008. Aust Inst Mar Sci, Townsville, Australia, 296 pp. Available at www.reefbase.org (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
570	5	19	2	0	0	I'm not convinced about the evidence for high confidence in the poleward expansion. It is true that some species may expand, depending on zooxanthellae, but the evidence for overall expansion within the timescale is not high. (Crabbe, Michael James, University of Bedfordshire)
571	5	19	2	19	16	I think it needs to be stated here that the evidence for bleaching by thermal effects is much greater than the evidence currently for damager by acidifcation. (Crabbe, Michael James, University of Bedfordshire)
572	5	19	7	19	7	It is not clear where 'It' refers to. Suggestion replace it with: 'Ocean acidification'.\n\n (NETHERLANDS)
573	5	19	10	19	10	In addition, with normal summer light and temperature, ocean acidification induces bleaching (Pecheux, 1993, 1998, Anthony et al., 2005) Pecheux M, 1993, Is present coral reef mass bleaching due to CO2 rise? Proc 7th Int. Symp. Biomineralisation, 17-20 Nov. 1993, Monaco, Allemand D, Cuif JP (eds), 174. Available from www.reefbase.org or martin-pecheux.fr. Pecheux M. 1998, Review on coral reef bleaching. Atoll Res Bull. Edilivre, Paris, printed in 2013, 245 pp. Available from www.reefbase.org or martin-pecheux.fr. Anthony KRN, Kline DI, Diaz-Pulido G, Dove S, Hoegh-Guldberg O, 2005, Ocean acidification causes bleaching and productivity loss in coral reef builders. Proc Nat Acad Sci US, 105, 17442-17446 (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
574	5	19	12	19	14	Several aspects of this statement could be clarified. 1st, where "already decreased" is mentioned, is this intended to refer to calcification rather than pH? 2nd, where "most" studies are asserted to support the described trend, it would be preferable to provide more than one citation. (Mach, Katharine, IPCC WGII TSU)
575	5	19	12	19	15	The following references should be included in this discussion: \nPerry C.T., Murphy G.N., Kench P.S., Smithers S.G., Edinger E.N., Steneck R.S., Mumby P.J. (2013) Caribbean-wide decline in carbonate production threatens coral reef growth. Nature Communications 4: 1402 \nKwaitkowski L, Cox P.M., Economou T, Halloran P.R., Mumby P.J., Booth B.B., Carilli J, Guzman H.M. (2013) Caribbean coral growth influenced by anthropogenic aerosol emissions. Nature Geoscience (in press). (AUSTRALIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
576	5	19	12	19	16	Suggest clarifying coral reef migration as a means of adaptation may be limited in range because there will be a squeeze between poleward range shifts for cooler water and equatorward range shifts to adapt to aragonite saturation state (e.g. Yara et al. 2012, Ocean acidification limits temperature-induced poleward expansion of coral habitats around Japan, Biogeosciences, 9:12) (UNITED STATES OF AMERICA)
577	5	19	18	19	18	For the described "obvious changes" it would be helpful to specify what variables or categories of changes are meant here. (Mach, Katharine, IPCC WGII TSU)
578	5	19	18	19	19	This first sentence is unclear and does not obviously follow from preceding paragraphs. (Lough, Janice, Australian Institute of Marine Science)
579	5	19	18	19	19	Corals are negatively impacted by turbid water, I can see the potential for changing patterns of rainfall altering supply of turbid river water to coral reef areas. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
580	5	19	18	19	21	What about hurricane frequency and resulting damage to coral reefs (including the cumulative effects of multiple hurricanes). This is a well researched topic that is not mentioned in the text. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
581	5	19	19	0	0	Is the growth of all corals related to sea level, or just some? (Kolker, Alexander, Louisiana Universities Marine Consortium)
582	5	19	19	19	21	This line states that coral reefs seem to have kept pace with recent sea level rise. However, the study cited is from 1988. Is this date correct? Is there a more recent study that could be looked to? Page 6 lines 16-18 of this chapter note that the rate of Global Mean Sea Level rise has very likely increased significantly in the latter part of the 20th century. That calls into question whether a 25 year old study on the ability of corals to keep pace with sea level rise is appropriate. (UNITED STATES OF AMERICA)
583	5	19	20	19	21	However, reefs were unable to keep up with the rate of sea level rise seen in the years leading into the last interglacial peak and had to migrate inland to keep up (P. Blanchon, A. Eisenhauer, J. Fietzke et al. (2009) Rapid sea-level rise and reef back-stepping at the close of the last interglacial highstand, 881-884. In Nature 458 (7240).\nhttp://dx.doi.org/10.1038/nature07933). (Eakin, Mark, National Oceanic and Atmospheric Administration)
584	5	19	21	19	21	Add two refs: Brown BE, Dunne RP, Phongsuwan N, Somerfield PJ, 2011, Increased sea level promotes coral cover on shallow reef flats in the Andaman sea, eastern Indian Ocean. Coral Reefs, 30, 867-878. Scopélitis J, Andréfouet S, Phinn S, Done T, Chaanet T, 2011, Coral colonisation of a shallow reef flat in response to rising sea level: quantification from 35 years of remote sensing at heron Island, Australia; Coral Reefs, 30, 951-965. (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
585	5	19	21	19	21	Please increase “Moreover, stress from other causesmay make corals more susceptible to bleaching and mortality. The principal threats include: 1) pathogen; 2) runoff of sediment, freshwater and other pollutants caused by deforestation, farming and urbanization; 3) ultra-violet radiation”(Maragos et al., 1996; Torregiani et al.,2007; Wooldridge 2009). [1]Maragos J.E., M.P. Crosbyand J.W. McManus.Coralreefsand biodiversity: A critical and threatened relationship. Oceanography, 1996, 9(1):83-99. [2] Torregiani J. H. and P. L. Michael. The effects of short-term exposures to ultraviolet radiation in theHawaiian coral Montiporaverrucosa.Journal of Experimental Marine Biology and Ecology, 2007, 340: 194–203.\n[3] Wooldridge, S.A.Water quality and coral bleaching thresholds: Formalising the linkagefor the inshore reefs of the Great Barrier Reef, Australia. Marine Pollution Bulletin, 2009,58 :745–751.\n (Zhu, Xiaojin, National Climate Center)

#	Ch	From Page	From Line	To Page	To Line	Comment
586	5	19	26	19	39	Projections of global coral bleaching under AR5 RCPs can be found in "Temporary refugia for coral reefs in a warming world" by R. van Hooidonk, J. A. Maynard and S. Planes. Nature Climate Change. PUBLISHED ONLINE: 24 FEBRUARY 2013. DOI: 10.1038/NCLIMATE1829. Also, Figure 5-3 should be replaced with figure 1 or 4 from the van Hooidonk publication. (UNITED STATES OF AMERICA)
587	5	19	27	19	29	Since the use of "grid cells" here is a bit non-intuitive, it could be helpful to specify more precisely what is meant. (Mach, Katharine, IPCC WGII TSU)
588	5	19	29	19	30	Given low confidence, would perhaps make more sense to say "Some coral species are more sensitive to temperature-related bleaching than others, and local acclimation and adaptation may also be possible in some species/regions, but the likelihood is not well-understood" (UNITED STATES OF AMERICA)
589	5	19	29	19	30	Similar results found in modeling studies by Baskett et al. 2009, 2010 (M.L. Baskett, R.M. Nisbet, C.V. Kappel, P.J. Mumby, and S.D. Gaines. 2010. Conservation management approaches to protecting the capacity for corals to respond to climate change: a theoretical comparison. Global Change Biology 16(4):1229-1246.; M.L. Baskett, S.D. Gaines, and R.M. Nisbet. 2009. Symbiont diversity may help coral reefs survive moderate climate change. Ecological Applications 19(1):3-17). (Eakin, Mark, National Oceanic and Atmospheric Administration)
590	5	19	30	0	0	I don't think there is good evidence for avoidance of high frequency bleaching due to adaptation within the time-scales projected (Crabbe, Michael James, University of Bedfordshire)
591	5	19	30	19	30	very low agreement (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
592	5	19	30	19	30	If evidence is so limited and confidence is low, then why mention it? (UNITED STATES OF AMERICA)
593	5	19	32	19	39	The caption on page 19 is slightly different to the caption on page 89. The version on page 89 includes colour codes to help interpret the figure - although these descriptions do not seem to match the actual colours very well. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
594	5	19	33	19	34	fig 5.3: the color in legend are not those seen in figure (not given in text legend) (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
595	5	19	41	19	41	Please change "fleshy algae" to "algae" (Delete "fleshy"). Explanation: The term "fleshy" is a descriptive term. Is there really evidence, that all the algae will be "fleshy" and not for instance "filamentous" (or in an other growth form)? (GERMANY)
596	5	19	41	19	41	It would be helpful to specify the mechanism through which ocean acidification produces these effects. (Mach, Katharine, IPCC WGII TSU)
597	5	19	44	19	45	say first: "elevate coral mortality, reduce calcification…" (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
598	5	19	47	0	0	suggest also mentioning that as OA can weaken coral skeletons, changes in storm frequency/intensity due to CC can lead to increased coral breakage and thus breakdown of reef framework. (Mcleod, Elizabeth, The Nature Conservancy)
599	5	19	49	19	53	The second sentence is not validated by the first. It does not follow simply that because maximum rates of vertical reef accretion reached 20 mm/yr during the early Holocene, when reef ecology was optimally configured for upgrowth (unlike today) and when human pressures on reefs, both proximal and distant, were negligible (unlike today), that reefs "could" keep up with sea-level rise of 15 mm/yr in the future. (Nunn, Patrick, University of New England)
600	5	19	51	19	51	Is this rate of 40mm /yr correct? Very high. (Orford, Julian, Queen\\\\\\'s University, Belfast)
601	5	20	1	0	0	something wrong or missing? (Vasseur, Liette, Brock University)
602	5	20	1	20	1	change '…capability.high confidenceReef...' to '…capability (high confidence). Reef...' mind italics! (POLAND)
603	5	20	1	20	2	Turbidity is an important point. I would also mention the effects of urban runoff on turbidity, as well as from the remobilization of coastal sediments as a result of sea-level rise (which is what I suspect is happening in a lot of Webb and Kench's sites - see earlier comment). (Nunn, Patrick, University of New England)

#	Ch	From Page	From Line	To Page	To Line	Comment
604	5	20	1	20	2	There is strange formatting in the middle of this sentence, as such the sentence does not make sense. (AUSTRALIA)
605	5	20	1	20	2	Isn't this also about reduced light penetration, which would reduce food/energy (given that their symbionts are photosynthestic)? (UNITED STATES OF AMERICA)
606	5	20	4	0	0	While this statement identifies climate-related drivers, I recommend clarifying if there is agreement on impacts from climate change rather than just climate variability such as ENSO. As written, the reader could assume this was due to either. The effect of the two needs to be clearly separated. (Eakin, Mark, National Oceanic and Atmospheric Administration)
607	5	20	6	20	7	The statement "with a moderating role of biological acclimation and adaptaton which appears limited (medium confidence)" seems to conflicts with p. 19, l 29-30: "half of the coral reefs may avoid high frequency bleaching through 2100 assuming acclimation and/or adaptation (limited evidence, low agreement)". Suggestion: don't give an expert judgement on the statement on page 19 or reformulate one of the sentences to make the distinction or similarity between the statements more clear. \n\n (NETHERLANDS)
608	5	20	7	20	7	Suggested reaplcement text: "with a potential moderating role due to biological acclimation and adaptation, which appears to be limited." (UNITED STATES OF AMERICA)
609	5	20	10	21	2	This section doesn't really address the impacts of drought on aquifers (with the exception of one mention of changes in precipitation in the conclusion). Drought is impacting groundwater and estuaries in many areas of the world, so this merits some discussion here. (UNITED STATES OF AMERICA)
610	5	20	12	20	38	It might be helpful to indicate in this section the potential reversability of salt water intrusion. Once the process starts, it is almost impossible to reverse in the near-term, so we need to be very careful to ensure it does not happen at all. This would add to the emphasis of being concerned about this process. The authors should consider revising the text to address this. (UNITED STATES OF AMERICA)
611	5	20	33	0	0	In fact there are many cases reported but NOT in peer reviewed literature but in governmental reports. E.g. New Brunswick and Nocva Scotia, Canada. Well known cases. (Vasseur, Liette, Brock University)
612	5	20	49	20	49	hydrogeological (Middelburg, Jack, Utrecht University)
613	5	20	51	20	53	To maximize clarity and directness of wording, "very high confidence" could be placed within parentheses at the end of this statement. Additionally, it would be helpful to indicate broadly the timeframe over which this change has been observed. (Mach, Katharine, IPCC WGII TSU)
614	5	20	53	20	53	For this statement, it would be helpful to indicate the broad timeframe and scenarios of climate change (all?) to which it pertains. (Mach, Katharine, IPCC WGII TSU)
615	5	21	0	0	0	Mixing of fresh and salt water is fundamental to the concept of an estuary. I suggest that this be included here. (Kolker, Alexander, Louisiana Universities Marine Consortium)
616	5	21	0	23	0	I provide via e-mail a couple of reviews on the impacts of climate change on coastal lagoons and deltas, that may be useful for the correspodent sections:\nIbáñez, C. (2009). Impacts of climate change on Mediterranean coastal wetlands. In: Climate Change Impacts on the Coastal Zone (A. Yáñez-Arancibia Ed.), INECOL, Mexico.\nThe response of deltas to sea-level rise: natural mechanisms and management options to adapt to high-end scenarios. Ecological Engineering, under review. (Carles, Ibáñez, IRTA)
617	5	21	5	0	0	The issue of strait and lower flowing current should be discussed. Such as Northerberland Strait in Atlantic Canada as acidification and other issues caused by climate change are encoutnered. (Vasseur, Liette, Brock University)
618	5	21	5	21	5	Why is the estauries and lagoon section seperated from the coastal wetlands section by coral reefs and coastal aquifers? Mangroves and salt marshes occur in estuaries, so it makes sense for these sections to be next to each other. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)

#	Ch	From Page	From Line	To Page	To Line	Comment
619	5	21	5	22	25	This section is dominated by physical impacts; there are very few ecological/social impacts included, with the exception of a few mentions of some biological impacts towards the end of the section. This section needs more balance. (UNITED STATES OF AMERICA)
620	5	21	5	22	25	In section 5.4.2.6 for estuaries and lagoons, there is no mention of the effect of climate and environmental changes (e.g. sedimentation) on tidal characteristics (tide range, currents - especially at tidal entrances, tidal prism) that may be significantly altered. This driver wasn't mentioned in section 5.3.3 either. Further, estuaries with relatively small tidal ranges, will be impacted proportionately more, given the same sea-level rise, than estuaries with a higher tidal range - leading to higher probabilities that tides or storm-tide levels will exceed present-day shoreline berm or bank heights. (Bell, Robert, NIWA)
621	5	21	11	21	29	It's not just about changes in sediment and nutrient loading - but also about the impacts of reduced freshwater input due to drought, which is having a major effect on certain estuaries. This should be a point of discussion here (e.g. it's more about "changes in freshwater input" as opposed to just more flooding and nutrient loading). (UNITED STATES OF AMERICA)
622	5	21	13	0	0	The authors should justify why sediment accumulation in estuaries is important. I understand that it is, but the average reader might not understand why so much text is dedicated to mud. (Kolker, Alexander, Louisiana Universities Marine Consortium)
623	5	21	13	21	29	I am confused as to why there is nothing on how climate change will effect the basics of estuarine circulation. In a typical estuary, fresh water flows outward while denser salt water flows landward. Clearly this process could be effected by changes in precipitation, temperature or sea level, but this is not mentioned. (Kolker, Alexander, Louisiana Universities Marine Consortium)
624	5	21	14	21	14	change 'is' to 'are' (POLAND)
625	5	21	16	21	16	Please delete "highly". Explanation: "highly" is a qualitative term, not scientifically defined or quantified. The term is not necessary here. (GERMANY)
626	5	21	18	21	18	Please delete "strongly". Explanation: "strongly" is a qualitative term, not scientifically defined or quantified. The term is not necessary here. (GERMANY)
627	5	21	20	21	20	Insert: Increased tidal ranges have been observed in Jamaica Bay, New York City, due to dredging and other development (Swanson and Wilson, 2008). Swanson, R.L. and Wilson, R.E., 2008. Increased tidal ranges coinciding with Jamaica Bay development contribute to marsh flooding. Journal of Coastal Research 24(6):1565-1569. (UNITED STATES OF AMERICA)
628	5	21	24	21	29	It would be helpful if this statements were put in the context of a changing climate. (Kolker, Alexander, Louisiana Universities Marine Consortium)
629	5	21	27	21	27	Please change "longer" to "long" (Delete "-er"). The comparative degree is not necessary here. (GERMANY)
630	5	21	27	21	28	ch6 p 46 L 36-37 sees low confidence\n"limited evidence and low confidence on how harmful algal blooms and the prevalence of pathogens will respond to climate change."\n (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
631	5	21	30	21	30	It might be useful to insert a new sentence along the lines of "Climate change and habitat modification (e.g. dams and obstructions) have also been shown to have impacted diadromous fish species such as salmon and eels which pass through estuaries. Climate change (temperature rises, changes in river flow rates etc.) is thought to impact such species during both the riverine and maritime parts of life cycles (e.g. Lassalle & Rochard 2009) [Global Change Biology, 15: 1072-1089]. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
632	5	21	37	0	0	changes… were the main… (Middelburg, Jack, Utrecht University)
633	5	21	41	0	44	This paragraph seems out of place and parts should be itnegrated in other parts. Not complete and parts are vague with no reference. (Vasseur, Liette, Brock University)

#	Ch	From Page	From Line	To Page	To Line	Comment
634	5	21	41	21	41	Casual usage of "likely" should be avoided as it is a reserved likelihood term. (Mach, Katharine, IPCC WGII TSU)
635	5	21	41	21	43	Add: Other sea level rise inpacts include increasing salinity, changes in tidal range and submergence period. (UNITED STATES OF AMERICA)
636	5	21	42	21	44	The authors state that the size of lagoons may decrease if landward migration is restricted by human occupation. On the other hand, if sea level rises causes marshes to deteriorate, coastal lagoons may increase in size. (Kolker, Alexander, Louisiana Universities Marine Consortium)
637	5	21	46	22	2	You mention implications of altered hydrology on coastal lagoons through changes in salinity. Is it likely that increased water withdrawals (ie human driver) will lead to increases in salinity - especially in closed or semi-closed lagoons? The Coorong system in southern Australia is a good example where the balance between inflows and evaporation has shifted and resulted in hypersaline conditions and loss of biodiversity. Another issue not mentioned is the implication of altered hydrology on the frequency of open/close events of intermittently closed lagoons. If it is likely that many regions will experience increase extreme run-off events (see Chapter 3), then this will undoubtedly influence the nature of these systems. (Bunn, Stuart, Griffith University)
638	5	21	49	21	52	In the causal link: "altered riverine discharge, effects on estuarine stratification, consequences for x, y and z" there could be included a short part about the effects to make clear what causes the stated consequences. Suggestion: Altered riverine discharge may affect estuarine stratification regarding salinity on certain locations, oxygen and nutrient concentrations and changed current-pattern. This has consequences for ... " Make a distinction between the effects on stratification and the consequences thereof for balances and processes.\n\n (NETHERLANDS)
639	5	21	50	21	50	Stratification is newly introduced and could use a short sentence about what it is.\n\n (NETHERLANDS)
640	5	21	53	21	54	There are in fact several examples of national guidelines in Sweden (unfortunately, only in Swedish). However, what is lacking is a written strategy. All ongoing activities relates to the Governments Climate Bill 2009 (prop.2008/09:162) and they will be evaluated in 2015. (ref 1. Länsstyrelserna, 2012: Klimatanpassning i fysisk planering – Vägledning från länsstyrelserna. Available at: http://www.lansstyrelsen.se/skane/SiteCollectionDocuments/Sv/publikationer/2012/Klimatanpassning_fysiska_planeringen_2012.pdf) (Ref. 2: Karin Mossberg Sonnek, Johan Lindgren, Anna Lindberg, 2011: Integrera klimatanpassning i kommunala risk- och sårbarhetsanalyser - en vägledning. Available at: www.foi.se) (Ref.3: The Swedish National Board of Housing, Building and Planning, 2011: Klimatanpassning i planering och byggande - analys, åtgärder och exempel. Avaliable at: http://www.boverket.se/Om-Boverket/Webbokhandel/Publikationer/2011/Klimatanpassning-i-planering-och-byggande/ (SWEDEN)
641	5	21	54	21	54	Please delete or substitute "dramatic". Explanation: "dramatic" is a qualitative term, not scientifically defined or quantified. (GERMANY)
642	5	22	1	0	0	change dverse by diverse (Anadon, Ricardo, University of Oviedo)
643	5	22	2	22	2	Also impacts on diadromous fish species such as salmon, where water temperature in the estuary and river flows determine whether or not the salmon migrate upstream (e.g. Solomon & Sambrook 2004) [Fisheries Management and Ecology: 11: 353-363]. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
644	5	22	4	22	25	Suggest that the authors evaluate whether the language in these paragraphs appropriately reflects the identified levels of evidence and agreement. For example, line 4 states that warming will lead to enhanced stratification and increasing hypoxia though that is notes as being shown with only medium confidence. Perhaps that sentence should read that it is expected that warming will lead to enhanced stratification or may lead to, or is likely to lead to. The same question applies throughout the four paragraphs in lines 4 - 25. (UNITED STATES OF AMERICA)
645	5	22	15	22	15	empirical correlation should be "correlation": if it is not empirical it is not worth mentioning.\n\n (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
646	5	22	15	22	16	Given that correlation is not causation, the logic of this statement should be very carefully considered. (Mach, Katharine, IPCC WGII TSU)
647	5	22	18	22	18	Please change "leads" to "may lead" . Explanation: A projected scenario "may lead" to something in the future, but if the scenario really "leads" to something is rather uncertain. There is no confidence level reported in the text. (GERMANY)
648	5	22	21	22	21	It would be preferable to specify the time frame of this statement, broadly speaking. (Mach, Katharine, IPCC WGII TSU)
649	5	22	21	22	22	In summary, the primary drivers of change in lagoons and estuaries are human drivers rather than climate change (very high confidence). I STRONGLY disagree with this statement. There has simply not been the research done to have any confidence in this at all. There are many key processes which are affected by climate factors. Take rainfall, for example, there is a growing body of research showing it is an essential driver of processes, yet we have very little data on its effects, although one paper considers 25% of winter sediment dynamics to be due to rainfall. Temperature is known to increase benthic algal growth/productivity, as well as benthic fauna activity, but the interaction of these 2 is poorly understood. Neither rainfall nor temperature are human drivers. I could go on and on highlighting gaps in our knowledge where climate change could have a significant impact on these ecosystems. I would change this to say that the potential effects of climate change on these habitats is poorly understood. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
650	5	22	21	22	22	The "in summary" statement (while it may be true) is not consistent with the entire preceding discussion of Projected Impacts which did not discuss non-climate human drivers. It would fit better on p. 21 line 30. There appears to be an organizational issue where the end of each section summarizes both Observed impacts and Projected impacts, but because of the sub-heading, one assumes it is a summary of Projected impacts. (UNITED STATES OF AMERICA)
651	5	22	21	22	25	This is not entirely accurate (particularly the statement on Lines 21-22). While estuaries are indeed very impacted by non-climatic stressors, many of them are also affected by climatic stressors (e.g. drought impacts on salinity, temperature impacts on species invasions, etc.) - so it is the interaction between climatic and non-climatic stressors that is the reality for these systems. That needs to be better communicated here. (UNITED STATES OF AMERICA)
652	5	22	24	22	25	.. But the impacts cannot be assessed at the global scale as the key drivers operate at a local to regional scale. Why is the whole section dealing with a range of impacts on ecosystems in lagoons and estuaries? Suggestion: leave the cited sentence out.\n\n (NETHERLANDS)
653	5	22	27	23	34	Many of the issues raised in Delta section have been covered before in wetlands and other subsystems of deltas. However, I do miss the C burial in coastal systems (blue carbon iniative etc). Is this covered somewhere else. (Middelburg, Jack, Utrecht University)
654	5	22	31	22	31	I think the number should replace by 7000 years. As indicated in the following reference: Liu, J., Saito, Y., Wang, H., Yang, Z., Nakashima, R., Sedimentary evolution of the Holocene subaqueous clinoform off the Shandaong Peninsula in the Yellow Sea, Marine geology, 236 (2007) 165-187. (Ye, Siyuan, Qingdao institute of marine geology)
655	5	22	47	22	47	This is a statement that needs some context. Some deltas are not dammed, but sediment loss upon all parts of the distributary are not equal, especially where embankments/ dykes are a major policy to protect inhabitants. Moral: its not whether you have sediment or not, its whether you have the pathways to deposit sediment in a constructive manner to the delta surface. (Orford, Julian, Queen\\\\\\'s University, Belfast)
656	5	23	1	23	2	You might add Wilby and Keenan (Progress in Physical Geography, 2012) here. (Nunn, Patrick, University of New England)
657	5	23	9	23	9	Add a reference to post-Katrina flood protection measures in New Orleans. (UNITED STATES OF AMERICA)
658	5	23	11	0	0	Tsunamis are only important to deltas on some coasts. (Kolker, Alexander, Louisiana Universities Marine Consortium)
659	5	23	11	23	11	Tsunamis should not be dealt with, see p. 8, l. 19-20. Suggestion: leave it out or change the tsunami part on page 8.\n\n (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
660	5	23	21	23	24	It is confusing as to what "accompanying" refers to: does it refers to sea level rise as it is unclear how floods will effect waves (though could affect storm surge impacts)? Also, the changes in wave climate due to sea level rise might not all be bad. It is possible that some changes could reduce erosion, or at least transport away from the delta. (UNITED STATES OF AMERICA)
661	5	23	32	23	32	It would be preferable to specify the broad timeframe for this statement. Additionally, clarity and directness of wording would be improved by moving "very high confidence" into the parentheses at the end of the sentence. (Mach, Katharine, IPCC WGII TSU)
662	5	23	33	23	33	Where a summary term for agreement is given here, it would be preferable to also specify a summary term for evidence. (Mach, Katharine, IPCC WGII TSU)
663	5	23	34	23	34	As noted above, the previous sections never indicate that "increased storminess" is an expected impact, and actually imply that there is not expected to be an "increased storminess". It would be helpful if the authors indicated exactly what was meant by "increased storminess" (i.e., frequency, magnitude, both?) as well as then make this consistent with the earlier sections. (UNITED STATES OF AMERICA)
664	5	23	37	0	0	Section 5.4.3: The authors should add information on impacts on cultural, spiritual, archaeological, and historical assets as well. Examples include inundation of many sites within Jamestown National Historic Site in Virginia or the potential loss of native access to key food species as they disappear from traditional and accustomed access sites (e.g. Lynn K, Daigle J, Hoffman J, Lake F, Michelle N, Ranco D, Viles C, Voggesser G, Williams P (2013) The Impacts of Climate Change on Tribal Traditional Foods. Climatic Change. DOI: 10.1007/s10584-013-0736-1) (UNITED STATES OF AMERICA)
665	5	23	37	23	0	Section 5.4.3: The authors should add information on impacts on cultural, spiritual, archaeological, and historical assets as well. Examples include inundation of many sites within Jamestown National Historic Site in Virginia or the potential loss of native access to key food species as they disappear from traditional and accustomed access sites (e.g. Lynn K, Daigle J, Hoffman J, Lake F, Michelle N, Ranco D, Viles C, Voggesser G, Williams P (2013) The Impacts of Climate Change on Tribal Traditional Foods. Climatic Change. DOI: 10.1007/s10584-013-0736-1) (Hoffman, Jennifer, EcoAdapt)
666	5	23	39	0	0	Section 5.4.3.1: human settlements - suggest this section needs to also reference the heightened vulnerability of those areas as well (UNITED STATES OF AMERICA)
667	5	23	39	25	13	Section 5.4.3.1: Additional suggested references: Arnell et al. 2013 doi:10.1038/nclimate1793; Brown S, Nicholls RJ, Lowe JA, Hinkel submitted. Spatial variations of sea-level rise and impacts: An application of DIVA. Climatic Change (special issue) (Brown, Sally, University of Southampton)
668	5	23	39	27	13	sections 5.4.3.1 and 5.4.3.2 do miss the distinction between observed and projected impacts. Re-arrange. (Middelburg, Jack, Utrecht University)
669	5	23	44	23	44	Insert "coastal" before "settlements" (UNITED STATES OF AMERICA)
670	5	24	5	24	5	It could be helpful to clarify the geographic scale on which this one in 100 year coastal flood is being defined. (Mach, Katharine, IPCC WGII TSU)
671	5	24	5	24	6	As mentioned in the context of the executive summary, please clarify the definition of a 1 in 100 year coastal flood here. Is this held fixed in the analysis? (Mastrandrea, Michael, IPCC WGII TSU)
672	5	24	7	24	7	Source information of Jongman et al. 2012 is missing.\n\n (NETHERLANDS)
673	5	24	7	24	8	To maximize clarity and directness of wording, "high confidence" could be placed within parentheses at the end of the statement. (Mach, Katharine, IPCC WGII TSU)
674	5	24	12	0	0	It would be useful to know if Asia has the largest population that is exposed to flooding because of something physical about its coast, or if that's just beause a lot of people live there. (Kolker, Alexander, Louisiana Universities Marine Consortium)

#	Ch	From Page	From Line	To Page	To Line	Comment
675	5	24	13	24	13	On what is the claim based that sub-Saharan Africa will have the largest increases in exposure due to sea level rise? Also, are there not differences between eastern and western Africa? And what about other drivers? Please expand on what the literature states that supports this conclusion. (UNITED STATES OF AMERICA)
676	5	24	18	0	0	85% does not mean a lot: it would ne good to have examples of what we are talking here about. (Vasseur, Liette, Brock University)
677	5	24	18	24	20	This is repetition of what has been presented before in delta section. (Middelburg, Jack, Utrecht University)
678	5	24	19	24	20	For this projection, the relevant scenario of climate change should be specified. (Mach, Katharine, IPCC WGII TSU)
679	5	24	21	24	22	The timeframe for this increase, as well as the baseline for the percentage increase given, should be specified. (Mach, Katharine, IPCC WGII TSU)
680	5	24	29	24	29	Given that the table seems to suggest more than limited evidence, it could be helpful to clarify further why the evidence is limited. (Mach, Katharine, IPCC WGII TSU)
681	5	24	31	24	32	It is suggested the authors edit this sentence to also include soft measures, such as coastal planning and zoning. They should avoid avoid the words coastal protection as they envoke an image of hard solutions only, even though the concept may also include all coastal measures. Soft measures have a much greater impact in terms of reducing the impacts on human settlements than hard structures, at least in developing countries and in the medium term (UNITED STATES OF AMERICA)
682	5	24	31	24	38	As mentioned in the context of the executive summary, please consider whether further specificity is possible in the executive summary statement, given the ranges provided here. (Mastrandrea, Michael, IPCC WGII TSU)
683	5	24	37	24	37	Given this essentially conditional statement, it may be clearer to use "if" instead of "assuming." (Mach, Katharine, IPCC WGII TSU)
684	5	24	40	24	40	It would be preferable to specify the specific relevant chapter sections instead of a broad reference to the entire chapter. (Mach, Katharine, IPCC WGII TSU)
685	5	24	43	24	43	At the end of the line replace "flooded a factor 50%" with "flooded by a factor of 50%". (de Gusmao, Diogo, Met Office Hadley Centre)
686	5	24	43	24	44	It may be clearest to specify the ppm in 2110 for the described scenario of unmitigated emissions. (Mach, Katharine, IPCC WGII TSU)
687	5	24	46	24	46	The baseline for comparison could be specified--as compared to business as usual emissions scenarios? (Mach, Katharine, IPCC WGII TSU)
688	5	24	51	25	4	In this discussion of regional differences in coastal vulnerability and expected impacts, the authors might also consider discussing the tendency in the United States at least (and likely other developed nations as well) for property values to be highest along the coasts (hence high potential costs from disasters) while much poorer communities remain in coastal areas as well (hence high social vulnerability and low adaptive capacity). This dynamic has been prominent in the aftermath of Hurricane Sandy as rebuilding costs and rising flood insurance premiums have threatened to alter the demographics of coastal communities. The discussion in this paragraph is clearly higher-level (continent scale) but if similar dynamics are observed in other developed countries that dual nature of vulnerability (property value on one hand and low adaptive capacity on the other) might be worth mentioning. (UNITED STATES OF AMERICA)
689	5	24	51	25	4	While implied in this section, it might be helpful to state explicitly that the regional variability in vulnerability has as much, if not more, to do with senstivity and adaptive capacity (i.e., folks do not have the resources to deal with the impacts) as to exposure. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
690	5	25	1	25	0	The statement that economic growth increases the ability to adapt is primarily true for engineering-based adaptation options; many social or ecosystem-based options are at least as available, if not perhaps more availble, in areas with lower economic growth. Also note that stating that the benefits of adaptation are greatest in areas of high economic growth implies that expensive infrastructure is more valuable than human communities (Hoffman, Jennifer, EcoAdapt)
691	5	25	7	25	10	One local study which considers a large ice sheet contribution is Horton et al., 2010; also Horton et al., 2011. Horton, R.H., Gornitz, V., Bader, D., Ruane, A.C., Goldberg, R., Rosenzweig, C., 2011. Climate hazard assessment for stakeholder adaptation planning in New York City. J. Applied Meteorology and Climatology, 50:2247-2266. (UNITED STATES OF AMERICA)
692	5	25	9	25	9	It would be preferable to specify the specific relevant chapter sections instead of a broad reference to the entire chapter for this reference to chapter 13. (Mach, Katharine, IPCC WGII TSU)
693	5	25	15	0	0	Box 5-1: References are needed in this box and must be added. (Mastrandrea, Michael, IPCC WGII TSU)
694	5	25	17	0	0	Box 5-1. Citations must be provided in support of ALL statements within this box. (Mach, Katharine, IPCC WGII TSU)
695	5	25	17	26	5	Box 5-1 There is a lot of jargon in this section, much of it not defined or referenced (e.g. "joined-up", "green-engineered"). (UNITED STATES OF AMERICA)
696	5	25	20	25	21	The sentence: "When climate related disasters hit megacities costs can be very high: Storm Sandy is estimated..." Storm Sandy is here used as an example of a climate related disaster. This link can't be made. Suggestion: "… very high. An example of the costs of a large storm (either or not related to climate) was the storm Sandy ..."\n\n (NETHERLANDS)
697	5	25	20	25	21	Is New York technically a megacity if the population is less than 10 million (as per the definition articulated in this box)? (UNITED STATES OF AMERICA)
698	5	25	20	25	21	Reference needed for statement “Sandy is estimated to have resulted in more than $100 billion in damages for New York and its hinterland”. (UNITED STATES OF AMERICA)
699	5	25	21	0	0	$100 Billion in damages from Sandy seems a bit high. The numbers I've seen are closer to $50-60 Billion. Please double check this figure. (Kolker, Alexander, Louisiana Universities Marine Consortium)
700	5	25	23	25	26	The sentence: "Large-scale coastal urbanization is most concentrated in south and southeast Asia" is not supported by appropriate evidence from published, peer-reviewed literature as appropriate. We expect east Asia is more concentrated (or at least equally concentrated). (MALAYSIA)
701	5	25	30	25	31	The statement "growth will be largely through planned development" especially in the developing world (Africa in particular) could be debated. In those countries, which are referred to as being especially vulnerable, the authors should consider discussing that organic, unplanned growth is more likely to occur, especially in the areas along the coast most exposed to climate effects. The authors should consider revising the text accordingly. (UNITED STATES OF AMERICA)
702	5	25	34	25	34	I find it odd to see São Paulo listed as a "coastal" city. Whilst it is within 100km from the coast it sits firmly at an elevation of 760m above mean sea level and has a mountain range (Serra do Mar) separating it from the coast. In my opinion it is wrong to list São Paulo as a coastal city. If you want to list a South American megacity at 0 meters elevation then you should list Rio de Janeiro. Whilst the municipality of Rio de Janeiro itself has less than 10 million people, the metropolitan area of Rio de Janeiro has over 12 million inhabitants (2010), with very large parts of the population at significant risk from future coastal erosion and sea-level rise - a far more significant risk than São Paulo. (de Gusmao, Diogo, Met Office Hadley Centre)
703	5	25	40	25	41	Fig 5.4: Put the references in references. Why is there not Sao Paulo and London (cf. p 25 line 34) (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
704	5	25	46	25	46	add a comma after 'However' (POLAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
705	5	25	51	25	52	The wording of this statement should be considered. "Dangerous" should not be used, as it entails value judgments beyond the context of this assessment, and use of "serious" also seems to be overly editorializing. (Mach, Katharine, IPCC WGII TSU)
706	5	25	51	26	3	The reference to "dangerous" here is not appropriate and should be deleted. (Mastrandrea, Michael, IPCC WGII TSU)
707	5	26	2	26	2	Casual usage of "likely" should be avoided, as it is a reserved likelihood term. (Mach, Katharine, IPCC WGII TSU)
708	5	26	3	26	3	Dangerous should not be used, as it entails value judgments beyond the context of this assessment. Additionally, the phrase "joined up" should be clarified. (Mach, Katharine, IPCC WGII TSU)
709	5	26	10	27	13	The following reference could be added to this section: http://www.nccarf.edu.au/publications/enhancing-resilience-seaports-synthesis-and-implications. (AUSTRALIA)
710	5	26	10	27	13	It is unclear why the format of this section does not match that of previous sections where there is a summary introduction, observed impacts, and then projected impacts - are there not impacts? (UNITED STATES OF AMERICA)
711	5	26	10	27	13	While this Industry, Infrastructure, Transport, and Network Industries section discusses the great value and vulnerability of infrastructure along coasts, it does not address the particular dynamics that will make adaptation so difficult in this space. For example, the necessity of locating ports on waterfronts, sewage treatment plants at or near sea level, support facilities for offshore oil and gas (e.g. Port Fourchon in Louisiana), and the attractiveness of reclaimed land for airports and industrial sites. Discussion of that tension between the benefits and vulnerabilities of coastal environments could enrich this section. (UNITED STATES OF AMERICA)
712	5	26	12	26	13	To maximize clarity and directness of wording, it would be preferable to place "high confidence" within parentheses at the end of the sentence. (Mach, Katharine, IPCC WGII TSU)
713	5	26	14	0	0	are they projected or forced? I do not agree in putting words that implicit something thatr will NOT happen because the companies may not want to more this direction. Unless you have great proof and not only suggestions, (Vasseur, Liette, Brock University)
714	5	26	15	26	17	A more widespread and common example might be major pieces of transportation infrastructure, such as bridges, which can also be in place for 100 years or more. In addition, the right-of-way for transportation facilities such as roads or rail lines is fixed virtually indefinitely, even if the infrastructure on it is rehabilitated or replaced. (UNITED STATES OF AMERICA)
715	5	26	16	26	16	“twenty-second horizon”. Do you mean “century”? (UNITED STATES OF AMERICA)
716	5	26	30	26	30	replace 'and' for a comma after 'volume)' (POLAND)
717	5	26	34	26	34	In 5.3.3.2. (about extreme sealevels) nothing is stated about the vulnerability of line infrastructure. It is not traceable which section is ment. Suggestion: find the right crossref or another source.\n\n (NETHERLANDS)
718	5	26	34	26	43	With regards to impacts on transportation infrastructure, it should also be noted that sea level rise will negatively impact operational bridge clearance (air gap). For some bridges, clearance windows for large vessels will increasingly be limited to times of low tide. this listed in a table later on, but it should be stated here as well. (UNITED STATES OF AMERICA)
719	5	26	35	26	35	Word(s) missing at the beginning of this line. (UNITED STATES OF AMERICA)
720	5	26	36	26	36	“…extreme sea levels, unless adaptation is enforced.” Add reference: e.g., Aerts, J.C.J.H., and Botzen, W.J.W., 2011. Flood-resilient waterfront development in New York City: Bridging flood insurance, building codes, and flood zoning. Annals of the New York Academy of Sciences, 1127:1-82. (UNITED STATES OF AMERICA)
721	5	26	41	26	41	permafrost thaw causing ground stability it should be instability !\n\n (NETHERLANDS)
722	5	26	45	26	46	To maximize clarity and directness of wording, it would be preferable to place "high confidence" within parentheses at the end of the sentence. (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
723	5	26	48	26	48	In addition to the summary term for evidence provided here, a summary term for agreement could be provided, given the guidance for authors. (Mach, Katharine, IPCC WGII TSU)
724	5	26	48	26	52	These two sentences are confusing, mostly because one usually would not see sea level rise as an exterme event. Sea level rise might cause the impacts of extreme events to become worse, especially in terms of damage to infrastructure, but the rise itself is not really an event. It might be helpful to edit these sentences to be a bit more consistent. (UNITED STATES OF AMERICA)
725	5	27	1	27	3	For this projected outcome, the relevant scenario of climate change should be specified. Additionally, instead of "now" it would be preferable to indicate the relevant year more precisely, especially given that the study was completed in 2008. (Mach, Katharine, IPCC WGII TSU)
726	5	27	3	27	4	Higher costs is a relative term, and it would be helpful to know what this comparision is with. (UNITED STATES OF AMERICA)
727	5	27	4	27	4	other few projected impact (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
728	5	27	4	27	6	MCCIP is a consortium of a range of stakeholders, the source is grey. However there are peer-reviewed articles available. Suggestions: Peters et al. (2011) Future emissions from shipping and petroleum activities in the Artic, Atmospheric Chemistry and Physics 11(11), 5305-5320. Valsson and Ulfarsson (2009) Adaptation and change with global warming: emerging spatial world structure and transportation impacts, Transportation Res. Records 2139, 117-124. Valsson and Ulfarsson (2011) Future changes in activity structures of the globe under a receding Arctic ice scenario, Futures 43(4), 450-459\n\n (NETHERLANDS)
729	5	27	5	27	6	The effect of the decline in Arctic sea ice on shipping routes seems out of scope for this chapter (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
730	5	27	8	0	13	Suggest authors look at Austin Becker: 2012 publications specifically on the point of the relative vulnerability of the worlds major ports to SLR and increased storminess (UNITED STATES OF AMERICA)
731	5	27	12	27	12	sp estimated (Orford, Julian, Queen\\\\\\'s University, Belfast)
732	5	27	12	27	12	Should read "estimated". (UNITED STATES OF AMERICA)
733	5	27	12	27	12	change 'estomated' to 'estimated' (POLAND)
734	5	27	16	0	0	This subchapter is too short (not detailed) considering the importance of coastal fisheries world-wide. In my opinion must be extended. The impact of river runoff (affected by climate change) on coastal fish production is neglected, for example. See e.g. Lloret et al. 2001. Fisheries Oceanography 10(1):33-50. Should make reference to artisanal (small scale) fisheries, which are commercial fisheries practiced in coastal waters, and to recreational fisheries. Regarding small scale fisheries, see e.g. ftp://ftp.fao.org/Fi/DOCUMENT/ssf/SSF_guidelines/ZeroDraftSSFGuidelines_MAY2012.pdf Regarding recreational fisheries, see e.g. http://recfishing2012.com.au/wp-content/uploads/2012/08/Dallas-DSilva.pdf. Also climate change is affecting jellyfish populations, which are jeopardizing fisheries as well as coastal tourism activities (5.4.3.4) see eg. http://www2.fiu.edu/~dchac004/. Sea warming is known to affect the biology of coastal fish reproduction, including fish health (condition) and reproduction. See e.g. Bodilis et al. 2003. Journal of Fish Biology 62:242-246 (LLORET, JOSEP, UNIVERSITY OF GIRONA)
735	5	27	16	0	0	Distributional effects are very important for migratory pelagic fisheries, such as tuna. Refer for example to Table 29-2 of Chapter 29 "Small Islands which indicates preliminary projected percentage changes in tuna catches in 2035 and 2100 relative to the 20 year average (1980-2000). (Bettencourt, Sofia, World Bank)
736	5	27	16	0	0	The treatment of fisheries and aquaculture here is short. It should refer to other chapters (6,7,30) that deal more comprehensively with fisheries and be consistent with them. There are a details concerning particular species (mosquitofish, sea urchins) that seem out of context. (Brander, Keith, Technical University of Denmark)

#	Ch	From Page	From Line	To Page	To Line	Comment
737	5	27	16	0	0	Section 5.4.3.3: The section mentions loss of food production in first paragraph, but doesn't get into it in the rest of the section. Either delete or expand. (UNITED STATES OF AMERICA)
738	5	27	16	0	0	Section 5.4.3.3. This section should be very carefully coordinated with chapters 6 and 30, with cross-reference to the specific relevant key findings and sections of those chapters. (Mach, Katharine, IPCC WGII TSU)
739	5	27	16	27	0	Section 5.4.3.3: The section mentions loss of food production in first paragraph, but doesn't get into it in the rest of the section. Loss of shellfish harvest, eulachon & other beach-spawning fishes is very important to many coastal tribes and First Nations in North America (Hoffman, Jennifer, EcoAdapt)
740	5	27	18	27	20	The importance of fisheries and aquaculture is not only expressed by livelihood and employment but also by 1) post-harvest activities carried out and dependents on fishers and those in the fish chain as well as 2) global fish trade. When considering post-harvest activities and workers' dependents are con-sidered, the number of people directly or indirectly supported by marine fisheries is about 520 million, or close to 8% of the world's population.\n(Ref: Sumaila, R, W. Cheung, V. Lam, D. Pauly and S. Herrick. 2011. Climate change impacts on the biophysics and economics of world fisheries. Nature Climate Change 1(9): 449-456).\nFish and fishery products are also among the most traded food commodities worldwide. With an annual trade value of US$ 102 billion it accounts for approximately 10 percent of total agricultural exports and 1 percent of world merchandise trade in value terms (FAO, 2012: 14-15). (FAO 2012. The State of World Fisheries and Aquaculture, Rome. FAO). (Monnereau, Iris, University of the West-Indies)
741	5	27	18	28	8	Can anything be said about upwelling or downwelling. Upwelling strength can have significant implimications for local fisheries and that changes in these patterns could possibly be linked to climate change. (UNITED STATES OF AMERICA)
742	5	27	21	27	21	This needs more support - some measure of world volume and contribution as main item of carbohydrate for what proportion of world's coastal population? (Orford, Julian, Queen\\\\\\'s University, Belfast)
743	5	27	26	27	26	I suggest the gender-neutral term "fishers" (Nunn, Patrick, University of New England)
744	5	27	26	27	32	Many organisms respond to climate change by shifting their distribution patterns with latitude and depth. However, an important complication in assessing the impact of climate change on fish populations is to disentangle the effect of multiple drivers, including fishing pressure. Nevertheless, there is mounting evidence that climatic fluctuations are playing an important role in changing fish distributions and abundances, which cannot alone be explained by trends in abundance due to fishing (Heath, 2011). Temperature is one of the primary factors (together with food availability, depth, salinity, shelter and suitable spawning grounds) that determine the large-scale distribution patterns of fish. (Barciela, Rosa, Met Office Hadley Centre)

#	Ch	From Page	From Line	To Page	To Line	Comment
745	5	27	26	27	32	Rijnsdorp et al. (2009, 2010) reviewed the impact of climate change on Northeast Atlantic fish species and found that pelagic species showed changes in seasonal migration patterns related to climate induced changes in zooplankton productivity. They concluded that Lusitanian species have increased in recent decades (sprat, anchovy, and horse mackerel), especially at the northern limit of their distribution areas, while Boreal species apparently decreased at the southern limit of their distribution range (cod and plaice), but increased at the northern limit (cod). Although the underlying mechanisms were unclear, the authors concluded that the available evidence suggested climate-related changes in recruitment success to be the key process, as a result of either higher production or survival in the pelagic egg or larval stage, or owing to changes in the quality/quantity of nursery habitats. Recent analyses of Scottish and English research survey data in the North Sea spanning the period 1913–2007, by Engelhard et al. (2011) have shown that the locations where peak catches of target species such as cod, haddock, plaice, and sole are obtained, have all shifted throughout the 20th century. High sole catches seem to have moved southwards towards the eastern Channel. High plaice catches have moved steadily north-westwards, while cod catches seem to have shifted north-eastward, towards deeper water in the North Sea over the past 9 decades. Haddock catches have moved very little in terms of their centre of distribution, but their southern boundary has shifted northwards by approximately 130km over the past 80–90 years (Heath et al., 2011). (Barciela, Rosa, Met Office Hadley Centre)
746	5	27	26	27	32	Dulvy et al. (2008) studied the response of the North Sea demersal (bottom-living) fish assemblage to climatic changes over the 25 years from 1980 to 2004. They shown that the whole North Sea demersal fish assemblage deepened by ~3.6 m per decade in response to climatic changes between 1980 and 2004. The latitudinal response to warming seas was the result of at least two patterns: (i) a northward shift in the average latitude of abundant, widespread thermal specialists (cod, wolfish etc.), and (ii) the southward shift of relatively small, southerly species e.g. scaldfish, solenette, sole and lesser-spotted dogfish. (Barciela, Rosa, Met Office Hadley Centre)
747	5	27	26	27	32	Heath, M. R., Neat F., Pinnegar, J. K., Reid, D. J. , Sims, D. W. and Wright P. J. (2011). Review of climate change impacts on marine fish and shellfish around the UK and Ireland. Aquatic Conserv: Mar. Freshw. Ecosyst. 22: 337–367 (2012). DOI: 10.1002/aqc.2244. (Barciela, Rosa, Met Office Hadley Centre)
748	5	27	26	27	32	Rijnsdorp AD, Peck MA, Engelhard GH, Möllmann C, Pinnegar JK. 2009. Resolving the effect of climate change on fish populations. ICES Journal of Marine Science 66: 1570–1583. (Barciela, Rosa, Met Office Hadley Centre)
749	5	27	26	27	32	Rijnsdorp AD, Peck MA, Engelhard GH, Möllmann C. Pinnegar JK (eds). 2010. Resolving climate impacts on fish stocks. ICES Cooperative Research Report 301. (Barciela, Rosa, Met Office Hadley Centre)
750	5	27	26	27	32	Engelhard GH, Pinnegar JK, Kell LT, Rijnsdorp AD. (2011). Nine decades of North Sea sole and plaice distribution. ICES Journal of Marine Science 68: 1090–1104. (Barciela, Rosa, Met Office Hadley Centre)
751	5	27	26	27	32	It would be worth including a reference to the much more detailed information contained in Chapter 6. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
752	5	27	26	27	44	This section is weak and would benefit from more cohesion and organization. It doesn't clearly articulate the major impacts and vulnerabilities to global fisheries. There have been many observed impacts of temperature change on shifts in species distributiosn and other impacts, and that work should be reflected here. For example: Hare, J.A., and K.W. Able. 2007. Mechanistic links between climate and fisheries along the east coast of the United States: explaining population outbursts of Atlantic croaker (Micropogonias undulatus). Fisheries Oceanography 16(1): 31-45. Nye, J., Link, J.S., Hare, J.A. & Overholtz, W.J. 2009. Changing spatial distributions of Northwest Atlantic Fish stocks in relation to temperature and stock size. Marine Ecology Progress Series 393, 111_129. Nye, J.A., Joyce, T.M., Kwon, Y. & Link, J.A. 2011. Silver hake tracks changes in Northwest Atlantic circulation. Nature Communications 2, 412. Barange, M. & Perry, R.I. 2009. Physical and ecological impacts of climate change relevant to marine and inland capture fisheries and aquaculture. In Climate Change Implications for Fisheries and Aquaculture: Overview of Current Scientific Knowledge, K. Cochrane et al. (eds). FAO Fisheries and Aquaculture Technical Paper No. 530. Rome: Food and Agricultural Organization of the United Nations, 7_106. (UNITED STATES OF AMERICA)
753	5	27	27	2	28	Please clarify the phrause "8 times more" The original text is "Over eight times more fish species displayed increased distribution ranges in the North Sea (mainly small-sized species of southerly origin) compared with those whose range decreased (primarily large and northerly species)." (Jung, Sukgeun, Jeju National University)
754	5	27	27	27	27	The statement about "8 times more fish" is incorrect and I suspect that part of the sentence has been accidentally deleted? I suggest the text be edited to say something like "A study of 36 species of demersal (bottom-living) fishes in the North Sea, indicated that centres of distribution shifted by distances ranging from 48 to 403 km during the period 1977 – 2001 (Perry et al., 2005), also that the North Sea demersal fish assemblage deepened by ~3.6 m per decade in response to climate change between 1980 and 2004 (Dulvy et al. (2008)". (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
755	5	27	27	27	28	Really, 8 time more fish species ?? (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
756	5	27	27	27	28	The statement that there were 8 times more fish species (in the North Sea) due to warming is incorrect. What Hiddink & Hofstede (2008) reported was "Over eight times more fish species displayed increased distribution ranges… compared with those whose range decreased". This is a very different conclusion. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
757	5	27	27	27	28	The number of fish species in the North Sea has not increased 8 times! (Brander, Keith, Technical University of Denmark)
758	5	27	27	27	28	This statement is directly wrong. I reckon it is due to a misunderstanding of a sentence in the paper cited. The number of fish species for sure did not increase by a factor of 8. The abstract of the cited paper gives the far less alarming statement: ”Over eight times more fish species displayed increased distribution ranges in the North Sea (mainly small-sized species of southerly origin) compared with those whose range decreased (primarily large and northerly species)”. (Ottersen, Geir, Institute of Marine Research)
759	5	27	27	27	28	With regards to the "8 times more fish species", does this refer to the number of species present, caught, or something else. Did this start from a really low base as an increase of almost an order of magnitude seems to be very large to be caused just by warming. (UNITED STATES OF AMERICA)
760	5	27	27	27	28	Is "8 times" is the correct here? If so, it would be preferable to specify the number of fish species at the start of the interval. Additionally, what is the relative importance of warming versus reasons for invasion? (Mach, Katharine, IPCC WGII TSU)
761	5	27	30	0	0	link with ocean acidification text on p. 17 could be made (Middelburg, Jack, Utrecht University)
762	5	27	32	27	32	Surely there is evidence that declines of mid-lats stocks relate to shifting SST andhence indirectly climate change, though natural oceanographic variability may also account for such changes. This section otherwise reads as if all will be better under climate change. (Orford, Julian, Queen\\\\\\'s University, Belfast)

#	Ch	From Page	From Line	To Page	To Line	Comment
763	5	27	32	27	32	I suggest that the following text be added "....but are thought to have included changes in the virulence of diseases, parasites and pathogens; harmful algal blooms that negatively affect bivalve farming ; changes in the frequency and strength of storms that pose a risk to infrastructure, such as salmon cages". (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
764	5	27	34	27	35	The negative impact of sea surface temperature on fisheries yields mentioned here is inconsistent with the material on impacts of warming on N hemisphere high latitude (>50 degrees) yields mentioned in chapter 6. (Brander, Keith, Technical University of Denmark)
765	5	27	34	27	35	It would be helpful to clarify if this statement merely asserts correlation or whether more rigorous attribution has occurred. (Mach, Katharine, IPCC WGII TSU)
766	5	27	34	27	39	The relation between climate change and the topic in this section is hard to see. The example of Louisiana and the pacific coast should be linked to the topic.\n\n (NETHERLANDS)
767	5	27	35	27	37	Please delete or substitute the sentence: "In coastal Louisiana, 36 saltwater intrusion was found to reduce the population size of the freshwater western mosquito fish (Gambusia affinis) (Purcell et al., 2010)." Explanation: The chapter 5.4.3.3. is about Fisheries, Aquaculture, and Agriculture. "Gambusia affinis" is a small up to 7 cm long fish, which is not relevant for Fisheries, Aquaculture, and Agriculture. It is also not clear, if this species can be used as a "Model" for fishes relevant for Fisheries & Aquaculture. Gambusia affinis were introduced directly into ecosystems in many parts of the world as a biocontrol to lower mosquito populations which in turn negatively affected many other species in each distinct bioregion.\n\n (GERMANY)
768	5	27	37	27	38	Effects of hypoxia on coastal fishes and fisheries, especially for demersal fishes, may be briefly introduced here (e.g., de Leiva Moreno JI, Agostini VN, Caddy JF and Carocci F. 2000. Is the pelagic-demersal ratio from fishery landings a useful proxy for nutrient availability? A preliminary data exploration for the semi-enclosed seas around Europe. ICES J Mar Sci 57, 1091-1102.; Pollock MS, Clarke LMJ and Dube MG. 2007. The effects of hypoxia on fishes: from ecological relevance to physiological effects. Environ Rev 15, 1-14.; Breitburg D. 2002. Effects of hypoxia, and the balance between hypoxia and enrichment, on coastal fishes and fisheries. Estuaries 25, 767-781. (Jung, Sukgeun, Jeju National University)
769	5	27	37	27	38	In my opinion, the sentence "Eutrophication and hypoxia give rise to frequency and intensity of harmful algal blooms" seems out of place here. The Health section (5.4.3.5) in page 29 has a short paragraph on HABs (line 42), where this sentence would fit better. (Barciela, Rosa, Met Office Hadley Centre)
770	5	27	37	27	38	The effect for the frequency and intensity of blooms should be further clarified. (Mach, Katharine, IPCC WGII TSU)
771	5	27	39	27	39	The chapter team should consider if the term "exposed" would be more appropriate here in place of or in addition to "vulnerable." (Mach, Katharine, IPCC WGII TSU)
772	5	27	41	27	42	Presumably this statement refers to an observed outcome. The relevant time frame for it should be specified. (Mach, Katharine, IPCC WGII TSU)
773	5	27	47	28	8	Should include extensive study on impacts of climate change on Pacific fisheries (including coastal) and aquaculture by Bell et al (2011)Vulnerability of Pacific Fisheries and Aquaculture to Climate Change, SPC, Noumea, New Caledonia, 925pp; and Bell et al (2013) Mixed responses of tropical Pacific fisheries and aquaculture to climate change. Nature Climate Change doi:10.1038/NCLIMATE1838. (Lough, Janice, Australian Institute of Marine Science)
774	5	27	49	28	8	The statements here on fisheries and changes in fish distributions are somewhat superficial and not limited to coastal fisheries. Fish and fishery-related impacts would seem best covered under 'Ocean systems' and/or 'Food production' (with cross-referencing) (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)

#	Ch	From Page	From Line	To Page	To Line	Comment
775	5	27	49	28	8	There appears to be more variability in projected impacts on fisheries and aquaculture in the Pacific than this subsection indicates. See e.g., (1) Bell, J. D., Adams, T. J. H., Johnson, J. E., Hobday, A. J., & Sen Gupta, A. (2011). Pacific communities, fisheries, aquaculture and climate change: An introduction. In J. D. Bell, J. E. Johnson, & A. J. Hobday (Eds.), Vulnerability of tropical Pacific fisheries and aquaculture to climate change (pp. 1–48). Noumea, New Caledonia: Secretariat of the Pacific Community. (2) Polovina, J. J., Dunne, J. P., Woodworth, P. A., & Howell, E. A. (2011). Projected expansion of the subtropical biome and contraction of the temperate and equatorial upwelling biomes in the North Pacific under global warming. ICES Journal of Marine Science, 68(6), 986–995. doi:10.1093/icesjms/fsq198 (UNITED STATES OF AMERICA)
776	5	27	49	28	8	This section is weak and would benefit from more cohesion, organization, and examples. It doesn't clearly articulate the major climate-related impacts projected for fisheries. The conclusion that there is "medium confidence" that distributional changes have occurred seems relatively weak; there is more than "limited evidence" that these shifts have occurred. Some of these impacts are illustrated in the following papers: Cheung, W.W.L., Lam, V.W.Y., Sarmiento, J.L., Kearney, K., Watson, R. & Pauly, D. 2009. Projecting global marine biodiversity impacts under climate change scenarios. Fish and Fisheries 10, 235_251. Cheung, W.W.L., Lam, V.W.Y., Sarmiento, J.L., Kearney, K., Watson, R., Zeller, D. & Pauly, D. 2010. Large-scale redistribution of maximum fisheries catch potential in the global ocean under climate change. Global Change Biology 16, 24_35. (UNITED STATES OF AMERICA)
777	5	27	50	27	52	As a result of increased sea temperatures, the reduction in coral cover and its associated fisheries production is expected to lead to a potential net revenue loss of between US$95 million and 140 million (cur-rent net revenue is US$310 million) per year in the Caribbean basin by 2015 (Trotman et al, 2009). (Trotman, A., Gordon, R. M., Hutchinson, S. D., Singh, R. & McRae-Smith, D.2009. Policy responses to GEC impacts on food availability and affordability in the Caribbean community. Environ. Sci. Policy 12, 529–541).\nEconomic losses in landed catch value and the costs of adapting fisheries resulting from a 2°C global temperature increase by 2050 have been estimated at US$ 10-31 billion globally (Sumaila and Cheung, 2010, Sumaila et al. 2011). (Sumaila, U. and W. Cheung, 2010. Development and Climate Change: Cost of Adapting Fisheries to Climate Change. Discussion paper Number 5, International Bank for Reconstruction and Development/World Bank, Washington, D.C. USA. 37 pp. Sumaila, R, W. Cheung, V. Lam, D. Pauly and S. Herrick. 2011. Climate change impacts on the biophysics and economics of world fisheries. Nature Climate Change 1(9): 449-456.)\n (Monnereau, Iris, University of the West-Indies)
778	5	27	50	27	52	The relevant scenario of climate change for this statement should be specified. (Mach, Katharine, IPCC WGII TSU)
779	5	27	52	27	53	The detail about migration of a sea urchin species seems out of place here (Brander, Keith, Technical University of Denmark)
780	5	27	52	27	53	I suggest that the sentence about sea urchins be removed as this seems very parochial (especially given the huge number of alternative studies that could have been mentioned). (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
781	5	27	53	27	53	See chapter 6 for projections of climate change impacts on future fishery yields (including those of Cheung et al. (2009) [Global Change Biology, 16: 24-35.]. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
782	5	28	1	28	2	no negative effect does not include that there is a positive effect? check with lines below (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)

#	Ch	From Page	From Line	To Page	To Line	Comment
783	5	28	3	28	3	The UK Climate Chang Risk Assessment (CCRA) is a thorough and comprehensive, but not exhaustive, review of the scientific evidence for over 700 potential impacts of climate change in a UK context. The CCRA report can be found here: http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=15747). The CCRA includes Projections of future fish distribution, which suggest that plaice will move approximately 140 km to the northwest in the North Sea over the next 70 to 80 years, although other species respond in a variety of different ways. This has very complex implications for the UK fishing industry, since some shifts may result in greater fuel costs for vessels that continue to target these resources, whereas other shifts may result in species becoming more abundant in UK waters, bringing key resources nearer to the UK coast and offering new fishing opportunities. Future model projections for the North Sea, under the (SRES A1B) scenario, included in the CCRA, suggest that climate warming will increase rates of carbon cycling in the pelagic system (by up to 20% by 2098), making less carbon available to the benthic system, resulting in reduced biomass of benthic organisms, and shifting the balance towards a more pelagic-oriented system than at present. An important implication of reduced biomass of benthic organisms is a reduction in prey items which are important in the diet of commercially important fish stocks (particularly plaice, haddock and juvenile cod). The authors mention the need to interpret these result swith caution, given the simplistic approach of the modelling analysis performed. The CCRA also highlights that there is increasing evidence, that climate change has enabled invasive non-native species to expand into new regions and efforts are underway globally to contain, if not eradicate many high-impact marine invasive non-native species. Nine key invasive non-native marine species that are present in UK waters have been evaluated. The analysis has shown that under a medium emissions scenario the projected rise in seawater temperatures for seas around the UK would mean that ALL assessed invasive non-native species will be able to expand their range by the 2080s to encompass the entire UK. It is very difficult to estimate the potential costs of the shift in the centre of gravity of fish stocks is judged to be Low, i.e. between £1 to £9 million per annum – though this could be positive or negative in net terms, unless the stocks move outside of UK territorial waters. (Barciela, Rosa, Met Office Hadley Centre)
784	5	28	4	28	5	For this statement, "medium confidence" could be placed within parentheses at the end of the sentence to maximize directness of wording. Additionally, it would be preferable to specify the general time frame for the statement. (Mach, Katharine, IPCC WGII TSU)
785	5	28	5	28	5	In addition to the summary term for evidence provided here, a summary term for agreement could be provided, following the guidance for authors. (Mach, Katharine, IPCC WGII TSU)
786	5	28	5	28	6	no negative effect does not include that there is a positive effect? check with lines above (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
787	5	28	7	28	8	For this statement, "medium confidence" could be placed within parentheses at the end of the sentence to maximize directness of wording. Additionally, it would be preferable to specify the general time frame for the statement. (Mach, Katharine, IPCC WGII TSU)
788	5	28	11	0	0	This subchapter is too short considering the importance of tourism activities in coastal waters world-wide. In my opinion must be extended, should incorporate different maritime activities e.g. yachting, whale watching, scuba diving, snorkeling, etc. There is a huge nr of references (LLORET, JOSEP, UNIVERSITY OF GIRONA)

#	Ch	From Page	From Line	To Page	To Line	Comment
789	5	28	11	28	11	In this section the change in tourism (in time and location) due to different weather patterns could be better included. There are for example results showing the effect of climate change on changing holiday seasonality. Suggested additional sources: Amelung et al. 2007. Implications of global climate change for tourism flows and seasonality. J. of Travel Res. 45(3), 285-296. Ceron and Dubois (2005) The potential impacts of climate change on French tourism. Current Issues In Tourism 8(2-3), 125-139. Dawson et al. (2007) Climate change, marine tourism and sustanability in the Canadian Arctic: contributions from systems and complexity approaches. Tourism in Marine Environments 4(2-3), pp. 69-83. In the ExSum these changing patterns are also mentioned with very high confidence, which contrasts with the findings in this section. \n\n (NETHERLANDS)
790	5	28	11	28	54	The idea that climate change does not affect demand could be made more nuanced. It seems that climate change could affect demand in a number of ways, from people not wanting to travel owing to climatic events (i.e., storms, increased rainfall) or owing to impacts of these events (i.e., flooding, damaged infrastructure, damaged natural beauty). Therefore demand in the short term would be fairly robust and unconcerned with climate change, but in the longer term certain areas might see a huge decline in demand owing to either damage to infrastructure or to natural beauty. (UNITED STATES OF AMERICA)
791	5	28	13	28	16	5.4.3.4. what about whale watching, windsurfing? maybe pronounced diving at coral reefs? check with ch30 p 51 if parts of the text on coastal tourism should be moved to ch5? (Menzel, Lena, Alfred Wegener Institute for Polar and Marine Research)
792	5	28	21	28	22	The assertion of this statement should be very carefully considered. For example, the special report on extremes did not demonstrate changes in all of the types of extremes listed here. (Mach, Katharine, IPCC WGII TSU)
793	5	28	21	28	27	What about impacts on ecotourism (e.g. whale watching, seabirds etc) and on water sports such as sailing, surfing etc. (that could benefit from changes in winds/waves) (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
794	5	28	24	28	26	The sentence reads 'Observed climate change impacts on the Great Barrier Reef include the coral bleaching episodes in 1998 and 2002 due to higher summer sea temperatures, more severe storms, rising sea levels and coastal erosion although tourists show a low level of climate change concern with respect to coral bleaching (Zeppel, 2012).' The author of the paper quoted advised that the paper does not mention levels of concern about coral bleaching. It is suggested that this sentence and the reference be deleted.\n\nAlternative references for tourism and commercial fishing in the Great Barrier Reef include:\nMarshall, N., Tobin, R., Marshall, P., Gooch, M., and Hobday, A. (2013) Vulnerability of marine resource users to extreme weather events. Ecosystems DOI 10.1007/s10021-013-9651-6\nGooch, M., Vella, K., Marshall, N., Tobin, R., and Pears, R. (2012) A rapid assessment of the effects of extreme weather on two Great Barrier Reef industries. Australian Planner DOI:10.1080/07293682.2012.727841\nMarshall, N.A., Tobin, R.C. (2012). More Than What Meets the Eye: The Social and Economic Impacts of Recent Natural Disasters on Marine Resource Dependent Industries of the Great Barrier Reef Region. Great Barrier Reef Marine Park Authority, Townsville, pp. 1-82. (ISBN 978-1-921682-98-8)\nMoon, K. and Gooch, M. (unpublished) Rapid Impact Assessment of Great Barrier Reef commercial fishing and tourism sectors affected by floods and cyclones during 2010/2011. Internal Report prepared for the Great Barrier Reef Marine Park Authority. (AUSTRALIA)
795	5	28	35	28	35	The phrase "less is known" implies a comparison that is not completely clear here. (Mach, Katharine, IPCC WGII TSU)
796	5	28	35	28	48	Changes in tourism demand pattern for Greece from 2010 to 2080 can be found in a joint report by the Met Office Hadley Centre (UK) and Manchester Metropolitan University for Eurocontrol (2010) - http://www.eurocontrol.int/sites/default/files/content/documents/official-documents/facts-and-figures/statfor/challenges-of-growth-climate-adaptation-march-2010.pdf (de Gusmao, Diogo, Met Office Hadley Centre)
797	5	28	37	28	37	It seems there are missing words in this sentence and/or that the sentence has been truncated (MacClenahan, Philippe, Synergies Environnement)

#	Ch	From Page	From Line	To Page	To Line	Comment
798	5	28	38	0	0	Eliminate et al. Also I suggest to intruduce the term: until now. Probably when climate exhacerbate temperature at least promote changes in holydays temporality i.e in Southern Europe (Anadon, Ricardo, University of Oviedo)
799	5	28	38	28	38	I suspect impact of Boxing day tsunami had more impact on tourism of SE Asia than climate change. Likewise Tokohura event has changed perceptions well beyond CC per se. (Orford, Julian, Queen\\\\\\'s University, Belfast)
800	5	28	38	28	38	change 'holidays et al. although' to 'holidays et all, although', remove italics (POLAND)
801	5	28	38	28	38	Use of "et al." here should be clarified. (Mach, Katharine, IPCC WGII TSU)
802	5	28	41	28	41	“A scenario of 1 m sea level rise…” Add: “by 2100”. (UNITED STATES OF AMERICA)
803	5	28	42	28	42	It are not 19 countries, for example the bermuda Islands, the British Virgin Islands and Anguilla are all part of the British oversea areas. Suggestion: use the term of Scott et al. (2012): "community countries (CARICOM)". However, in the same section p. 28, l. 48-51 it is dealt with more indepth. This whole sentence thus also could be deleted.\n\n (NETHERLANDS)
804	5	28	46	28	46	The sentence "Ocean acidification … (Box CC-CR)." is redundant and can be deleted since it is already extensively dealt with in other parts of the chapter. The reference to the box can be included at the references in the sentence before.\n\n (NETHERLANDS)
805	5	28	46	28	46	It would be preferable to indicate more precisely what is meant by the toll of ocean acidification described here. (Mach, Katharine, IPCC WGII TSU)
806	5	28	48	28	48	A recent study (Foresight International Dimensions of Climate Change, 2011) found that eleven per cent of the world’s airports are within the Low Elevation Coastal Zone (LECZ) and are therefore at risk from sea-level rise. [Foresight International Dimensions of Climate Change (2011), Final Project Report, The Government Office for Science, London, UK - http://www.bis.gov.uk/assets/foresight/docs/international-dimensions/11-1042-international-dimensions-of-climate-change.pdf] (de Gusmao, Diogo, Met Office Hadley Centre)
807	5	28	48	28	48	Is it possible to provide more specific indication of what is meant (as compared to "enormous")? (Mach, Katharine, IPCC WGII TSU)
808	5	28	49	28	49	The authors should define CARICOM. (UNITED STATES OF AMERICA)
809	5	29	7	0	0	Climate change may have an indirect impact on human health. Through the impact of CC on fish resources (which provide omega-3 fatty acids to humans) or marine biodiversity (new medicines). Also coastal areas provide environments for practising maritime leisure activities that provide physical and psychological benefits to users. See e.g. Lloret 2010. Human health benefits supplied by Mediterranean marine biodiversity. Marine Poll. Bull. 60(10):1640-1646 http://www.sciencedirect.com/science/article/pii/S0025326X10003401 (LLORET, JOSEP, UNIVERSITY OF GIRONA)
810	5	29	7	30	6	Unclear why this section does not confrom to typically format pattern used. Is there information missing? Or doesn't exist? (UNITED STATES OF AMERICA)
811	5	29	8	30	6	In my opinion, the layout of this subsection is inconsistent with previous ones (e.g. subsection on "Fisheries, Aquaculture and Agriculture" in page 27 and/or subsection on "Coastal Tourism and Recreation" in page 28) , both of which include headers labelled as "Observed impacts" and "Projected impacts". Lines 9 to 46 in page 29, in the Health subsection, seem to cover "observed impacts" and subsequent lines, from 48 (page 29) to line 6 (page 30) seem to align very well to "projected impacts" (Barciela, Rosa, Met Office Hadley Centre)
812	5	29	9	30	6	Suggest authors address interconnections between human and ecosystem health that aren't articulated here. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
813	5	29	19	29	24	There is a research result which shows that coastal areas are recorded twice high mortality caused by meteorological disasters than other areas and that rural areas and urban areas with large income gap shows 6 times difference in mortality linked to meteorological disasters. (Source: Causes of death and demographic characteristics of victims of meteorological disasters in Korea from 1990 to 2008. Environmental Health 2011, 10:82) (REPUBLIC OF KOREA)
814	5	29	27	29	27	Vineas et al. (2011) is missing in the reference list.\n\n (NETHERLANDS)
815	5	29	33	29	33	There is also evidence of links between noroviros outbreaks and rainfall-driven pollution events, particularly when these occur over wintehr months (Lees, 2000). Reference: Lees, D., (2000). Viruses and bivalve shellfish. International Journal of Food Microbiology 59: 81–116. (Barciela, Rosa, Met Office Hadley Centre)
816	5	29	35	29	35	It would be preferable to indicate the specific relevant subsections of chapter 29. (Mach, Katharine, IPCC WGII TSU)
817	5	29	39	29	39	After Koelle et al 2005, inset "Other vibrio outbreaks have been related to heat waves and low salinity, for example in the Baltic Sea (see Baker-Austin et al 2013)". [Nature Climate Change 3(1): 73-77.] (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
818	5	29	39	29	39	Replace "Outbreaks" with "Occurence" ("outbreaks of toxins" doesn't make sense) (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
819	5	29	42	29	42	change 'suggests' to 'suggest' (POLAND)
820	5	29	42	29	42	It would be preferable to indicate the specific relevant subsections of chapter 6. (Mach, Katharine, IPCC WGII TSU)
821	5	29	49	29	49	Also insert a citation to Baker-Austin et al 2013 [Nature Climate Change 3(1): 73-77.] (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
822	5	29	51	29	51	remove first 'also' (POLAND)
823	5	30	9	0	0	Section 5.4.4. As much as possible, the general time frame for described changes and their geographic extent (for example, global versus regional) should be specified for all statements within this section. (Mach, Katharine, IPCC WGII TSU)
824	5	30	9	30	50	Can anything be said about detection and attribution of sea level rise impacts? It seems strange that this section makes no mention of sea level rise, yet the technical summary section on Coastal systems and low lying areas has a statement that says detection is not possible. (UNITED STATES OF AMERICA)
825	5	30	11	30	50	It seems odd that in a number of previous sections sea level rise is given prominance as the main climate change impact, but is then not mentioned in this section, and instead warming and acidification are given prominance. Does this imply that the impacts primary impacts to date may not be the primary impacts going into the future? While sea level rise may not have had a significant impact to date, it would be helpful to at least have a brief discussion of the challenge in the future to attributing coastal impacts (especially erosion and flooding) to these rises as opposed to other drivers (i.e., population growth, poor urban planning, damming rivers, etc...) (UNITED STATES OF AMERICA)
826	5	30	11	30	54	The impacts of sea level rise on coastal wetlands is not mentioned in this summary section and a few more sentences summarizing those impacts should be added in this section. (UNITED STATES OF AMERICA)
827	5	30	14	30	14	I strongly disagree with this statement. Rocky shores and coral reefs only show the most evidence of impacts of climate change because they receive more research effort (for various reasons). Other ecosystems may be showing more evidence of climate change, but are not being investigated sufficiently. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
828	5	30	14	30	17	As it reads now, this suggests that there have been "range shifts" in coral reef species - although there is some regional evidence for this in, for example, Japan (Yamano et al (2011) Rapid ploeward range expansion of tropical reef corals in response to rising sea surface temperatures. Geophysical Research Letters 38, doi:10.1029/2010GL046474), it has not, as far as I am aware, been widely observed to date. (Lough, Janice, Australian Institute of Marine Science)

#	Ch	From Page	From Line	To Page	To Line	Comment
829	5	30	17	30	19	Reports of recent declines in coral calcification rates have largely come from massive corals and it is unclear how representative these are of "reef-building corals" in general. Also, how much evidence is there for observed declines in calcification rates of coralline algae? (Lough, Janice, Australian Institute of Marine Science)
830	5	30	18	30	19	The statement: "Decreased calcification …, however its attribution to either warming or acidification has proven difficult (medium confidence)" is conflicting with the text in section 5.4.2.4 where these are driving the decreasing calcification with 'high confidence' (see for example statement on p. 19, l. 44-45).\n\n (NETHERLANDS)
831	5	30	19	0	0	See my comment to page 19 line 2 above (NOTE: Pasted in for your convenience: I'm not convinced about the evidence for high confidence in the poleward expansion. It is true that some species may expand, depending on zooxanthellae, but the evidence for overall expansion within the timescale is not high.) (Crabbe, Michael James, University of Bedfordshire)
832	5	30	19	30	19	change ')(' to ') (' (POLAND)
833	5	30	20	30	20	change ')(' to ') (' (POLAND)
834	5	30	23	30	23	change ')(' to ') (' (POLAND)
835	5	30	25	30	25	change ')(' to ') (' (POLAND)
836	5	30	26	30	26	change ')(' to ') (' (POLAND)
837	5	30	27	30	27	In addition to the summary term for evidence provided here, a summary term for agreement could be presented. (Mach, Katharine, IPCC WGII TSU)
838	5	30	30	30	30	Again, mangrove forests are increasing in Australia. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
839	5	30	32	30	32	In addition to the summary term for evidence provided here, a summary term for agreement could be presented. (Mach, Katharine, IPCC WGII TSU)
840	5	30	32	30	34	Expert judgement of this statement is strange: there is low confidence that it is difficult to attribute shoreline change to CC. This should be reconsidered since it contradicts with p. 14, l. 52 to p. 15, l. 6. Suggestion: change low confidence into high confidence.\n\n (NETHERLANDS)
841	5	30	34	30	34	This is a strategic statement which needs clarity - what has low confidence: attributing shoreline change to CC, or the difficulty itself of attributing shoreline change to CC (Orford, Julian, Queen\\\\\\'s University, Belfast)
842	5	30	34	30	36	To maximize clarity and directness of wording, "very high confidence" could be placed within the parentheses at the end of the sentence. (Mach, Katharine, IPCC WGII TSU)
843	5	30	38	30	38	change ')(' to ') (' (POLAND)
844	5	30	41	30	41	In tex it is 271 million, here it is more than 270. Suggestion: change "more than 270" into "271" to be concise.\n\n (NETHERLANDS)
845	5	30	41	30	41	Population of people is not appropriate it should rather be "Population living in …" (MacClenahan, Philippe, Synergies Environnement)
846	5	30	42	30	42	change ')(' to ') (' (POLAND)
847	5	30	45	30	45	change ')(' to ') (' (POLAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
848	5	30	48	30	49	Again, I think attribution of changes in most coastal systems to human drivers merely reflects the research focus, rather than reality. This is a very sweeping statement, including all coastal systems, and I personally find it hard to believe that this is true for all ecosystems. There is no hard scientific evidence presented in this chapter (so far) to support this statement. Just off the top of my head, are changes in coastal ecosystems in Antarctica really mainly attributed to human activities? I would have thought that a statement indicating a high level of uncertainty is more realistic. (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
849	5	30	48	30	49	More coastal changes than just bleaching and species range shifts are attributed to climate variability and change, so it's not necessarily accurate to say "most of causes in other changes to the coastal system are attributed to mainly human activities (human drivers)." This statement overly weakens the conclusions. Also, it fails to recognize that climate change IS an anthropogenic driver of coastal change (which is not the way it's articulated here). Seems like if this clause was deleted, the key take-home message would be the same - that more research is needed to better understand the interactions between climatic and other human drivers of change in Chapter 5 - Coastal systems and low-lying areas. Perhaps instead could change that sentence to say "There is high attribution to climate-related changes for certain coastal impacts, such as coral bleaching and temperature-related shifts in species ranges; however, for many other coastal changes, the impacts of climate change are often difficult to tease apart from non-climatic human drivers (e.g. land-use change, coastal development, pollution)." (UNITED STATES OF AMERICA)
850	5	30	50	30	50	Agreed. Question is whether future increases in RSL rise rate will outweigh human induced driver affects. (Orford, Julian, Queen\\\\\\'s University, Belfast)
851	5	30	53	30	53	fig 5.5: what is acisse axe ?? (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
852	5	31	0	43	0	The list of references here could have been better exploited to provide a wider and more balanced geographical and scale (Local/Regional/Continents/Global) coverage. In many paragraphs is very site specific and failts to provide some more global perspectives. (das Neves, Luciana, University of Porto - Faculty of Engineering)
853	5	31	1	0	0	This section is highly flawed. The writinng is too obtuse, filled with jargon, and imcomplete. (Kolker, Alexander, Louisiana Universities Marine Consortium)
854	5	31	1	43	16	The section on Adaptation and Managing Risk is very light on mention of Louisiana's 2012 Coastal Master Plan. This plan developed a series of modeling tools to evaluate future conditions under several scenarios, identified and evaluated projects to restore ecosystems and protect citizens, and was developed with a great deal of public input and support. In addition, this plan was approved unanimously by the Louisiana Legislature and is the basis for protection and restoration in Louisiana in the face of future environmental uncertainty. It contains information that applies to all of the sub-categories in this Section and can be held as an example of a robust and adaptive strategy (it is mandatorily updated/revised on a 5-year cycle), and will reverse net land loss in Louisiana (to net land-gain) within the next 20-50 years. This master plan is an excellent example of coastal adaptation and risk management. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
855	5	31	2	43	16	For all of section 5.5: This section looks at coastal adaptation. It is clear from reading the section that the primary focus is on adaptation to help protect human communities and infrastructure from climate change impacts. Nowhere is there any discussion of adaptation strategies to help protect or mitigate damages to natural systems from climate impacts. Does this simply reflect the literature that is out there? If so, that should at least be noted. Earlier parts of the chapter discuss the climate driven impacts to natural coastal systems. As such it would be appropriate for the authors to include adaptation of natural systems in the chapter as well. Note that while ecosystems-based adaptation is discussed, this is still primarily discussed as an adaptation strategy to protect human systems and built infrastructure by making use of ecosystem services. That is different from discussion strategies to protect the natural systems and ecosystem services in and of themselves. (UNITED STATES OF AMERICA)
856	5	31	4	31	4	remove second 'on' (POLAND)
857	5	31	10	31	10	The following reference is highly relevant to this section: Hay, J.E. and N. Mimura, 2013: Vulnerability, Risk and Adaptation Assessment Methods in the Pacific Islands Region: Past Approaches, and Considerations for the Future. Sustainability Science (DOI 10.1007/s11625-013-0214-8) (Hay, John, University of the South Pacific)
858	5	31	12	32	46	This section is too theoretical and filled with technical jargon (e.g. "Contextually differentiated institutional analysis") that is confusing and difficult to wade through even for a scientific reader. Would be more understandable and compelling if this section served as an assessment of the state of coastal adaptation approaches, communicated through different examples that illustrate each of the different types of approaches that different communities/countries are using, as well as where they are (e.g. in the planning stage vs. implementation vs. evaluation) - and a few examples of the types of methodologies they're using. (UNITED STATES OF AMERICA)
859	5	31	14	34	11	Theses sections are not as clear as the previous ones (Baills, Audrey, BRGM)
860	5	31	17	31	17	It would seem relevant to also cross reference Chapter 14 here. (Mach, Katharine, IPCC WGII TSU)
861	5	31	20	31	22	The authors should reconsider the way they describe these categories. Certainly decision-analytical approaches, especially Structured Decision Making, is eminently practical, and there are examples where decision analytic approaches have been used to move an adaptation process from beginning to implementation. Likewise, governance and institution approaches can be eminently practical. (Hoffman, Jennifer, EcoAdapt)
862	5	31	20	31	22	The authors should reconsider the way they describe these categories. Certainly decision-analytical approaches, especially Structured Decision Making, is eminently practical, and there are examples where decision analytic approaches have been used to move an adaptation process from beginning to implementation. Likewise, governance and institution approaches can be eminently practical. (UNITED STATES OF AMERICA)
863	5	31	25	0	0	Section 5.5.1.2: overall this section presents a limited and inaccurate view of decision analysis. Decision analysis, in particular Structured Decision Making, has a wide variety of tools for working with uncertainty, only some of which rely on the criterion of optimality. Indeed, the approach of Robust Decision Making is a subset of the broader set of approaches for consciously choosing particular approaches to risk management. Similar analyses could be done but with a precautionary rather than robust approach to risk, for example, or any other established risk tolerance approaches. A particularly powerful set of decision analytic tools for working with uncertainty involve analyzing how much any given uncertainty matters to the decision at hand (decision sensitivity analysis and expected value of perfect information analysis). In sum, this section is in need of significant reworking. At a minimum, the paragraph from line 33-38 is unnecessary; many methods do depend on optimality, but many do not. Climate change isn't the only problem for which optimality-oriented decision-making doesn't work. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
864	5	31	25	31	0	Section 5.5.1.2: overall this section presents a limited and inaccurate view of decision analysis. Decision analysis, in particular Structured Decision Making, has a wide variety of tools for working with uncertainty, only some of which rely on the criterion of optimality. Indeed, the approach of Robust Decision Making is a subset of the broader set of approaches for consciously choosing particular approaches to risk management. Similar analyses could be done but with a precautionary rather than robust approach to risk, for example, or any other established risk tolerance approaches. A particularly powerful set of decision analytic tools for working with uncertainty involve analyzing how much any given uncertainty matters to the decision at hand (decision sensitivity analysis and expected value of perfect information analysis). In sum, this section is in need of significant reworking. At a minimum, the paragraph from line 33-38 is unnecessary; many methods do depend on optimality, but many do not. Climate change isn't the only problem for which optimality-oriented decision-making doesn't work. (Hoffman, Jennifer, EcoAdapt)
865	5	31	25	32	9	It is suggested that the authors consider the balance in this adaptation section between re-introducing key adaptation concepts and approaches that have already been introduced in other chapters (adaptation, decision-making, economics) and discussing examples of their application in coastal areas. In the Decision Analysis section in particular, providing more detail on the types of questions the analytic approaches can help answer in coastal environments might be more valuable to readers than the current summaries of each technique (again, repeating the decisions chapter) with only brief mention that it had been applied in the Port of Los Angeles, Thames Estuary, etc. What unique uncertainties or socio-economic dynamics in coastal areas can these approaches help address? The Institutional and Governance Analysis section does this much better. Could Box 5-2 on Thames Estuary 2100 Plan be located closer to this section? (UNITED STATES OF AMERICA)
866	5	31	25	32	9	This subsection (5.5.1.2.) would benefit from further explication of the "applications" or "approaches" referenced; i.e., 1-2 sentences that set the context for the decision reached (UNITED STATES OF AMERICA)
867	5	31	29	0	0	Avoid words like," paradigmatic," Instead, use words like, "common." (Kolker, Alexander, Louisiana Universities Marine Consortium)
868	5	31	30	31	30	Should be "comprehensive," not "compressive." (UNITED STATES OF AMERICA)
869	5	31	35	31	35	This description ("not possible in principle") could be clarified--does the intended logic follow from the subsequent sentence? (Mach, Katharine, IPCC WGII TSU)
870	5	31	43	31	44	This statement on Los Angeles is imcomplete. What was the problem that the Port of LA faced? What analytical methods did they use? What was the solution they decided to use? How was this solution implemented? Is the port functioning better today now that they used this analysis? (Kolker, Alexander, Louisiana Universities Marine Consortium)
871	5	31	51	31	51	It would be preferable to indicate if and/or how "adaptation tipping points" are different from adaptation limits. (Mach, Katharine, IPCC WGII TSU)
872	5	31	54	32	3	Same problem as above. What was the driving factor behind these analyses, what analysis was conducted, what were the outcomes of this analysis and how was behavior changed as a result of this analysis? (Kolker, Alexander, Louisiana Universities Marine Consortium)
873	5	32	0	0	0	Section 5.5.1.3. I suggest discussing this with the author of 2.2.2. Is section 2.2.2 really useful to 5.5.1.3? If so it should be referenced within 5.5.1.3. If not the authors of 2.2.2 need to justify 2.2.2 in relation to some other chapter(s). (Wright, David, University of Ottawa)
874	5	32	7	32	9	This statement is repetitive with page 33, line 17-23. (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
875	5	32	12	0	0	*Observation: The section should also include reference to traditional marine management systems (perhaps under the governance subsection?). In many countries, formally recorded data are lacking and traditional ecological knowledge (TEK) may represent the only area-specific knowledge on the environment (Drew 2005; Hickey and Johannes 2002; Vierros et al 2010). Pre-existing traditional management systems and ownership structures, which include marine tenure systems in many parts of the world are often used in accordance with traditional spiritual beliefs, and may include a variety of tools and approaches, which include seasonal bans on harvesting, temporary closed (no-take) areas, and restrictions on time, places, species, gear or taking by certain classes of persons (Vierros et al 2010). \n\n*References: Drew JA (2005) Use of traditional knowledge in marine conservation. Conservation Biology 19(4): 1286-1293. | Hickey FR and Johannes RE (2002) Recent evolution of village-based marine resource management in Vanuatu. SPC Traditional Marine Resource Management and Knowledge Information Bulletin, No. 14, pp. 8–21. Available online at www.spc.int/coastfish/News/Trad/trad.htm. | Vierros M, Tawake A, Hickey F, Tiraa A and Noa R (2010). Traditional Marine Management Areas of the Pacific in the Context of National and International Law and Policy. Darwin, Australia: United Nations University – Traditional Knowledge Initiative. Available online via http://www.unutki.org (Galloway McLean, Kirsty, United Nations University - Institute of Advanced Studies)
876	5	32	23	32	23	To maximize clarity and directness of wording, "high confidence" could be placed within parentheses at the end of the sentence. (Mach, Katharine, IPCC WGII TSU)
877	5	32	23	32	24	What is meant by horizontal an vertical integration of policies. Please remember that a large audience for this report is folks outside of the academic world. (Kolker, Alexander, Louisiana Universities Marine Consortium)
878	5	32	28	32	28	"…fragmented economic incentives and political jurisdictions in the US" (UNITED STATES OF AMERICA)
879	5	32	28	32	28	Should be "incentives," not "incentivices." (UNITED STATES OF AMERICA)
880	5	32	32	32	32	To maximize clarity and directness of wording, "medium evidence" could be placed within parentheses at the end of the sentence. Additionally, it would be beneficial to also provide a summary term for agreement. (Mach, Katharine, IPCC WGII TSU)
881	5	32	34	32	34	"…public opinion geared toward protection (Tunstall and Tapsell, 2007). Add reference: Tunstall, S. and Tapsell, S. 2007. Local Communities Under Threat: Managed Realignment at Corton Village, Suffolk. In Managing Coastal Vulnerability, eds. L. McFadden, R.J. Nicholls and E. Penning-Rowsell, 97-120. Amsterdam and Oxford: Elsevier, Ltd. (UNITED STATES OF AMERICA)
882	5	32	36	32	37	This statement is not exactly accurate. Suggested rewording to: Along the Queensland coast, the option of planned retreat is limited due to rapid coastal development combined with favourable development liability laws. (AUSTRALIA)
883	5	32	41	32	41	To maximize clarity and directness of wording, "high confidence" could be placed within parentheses at the end of the phrase. (Mach, Katharine, IPCC WGII TSU)
884	5	32	42	0	0	The authors should avoid the use of terms like contextually differentiated institutional analysis and should replace them with terms that can be used by non-academic decision makers. (Kolker, Alexander, Louisiana Universities Marine Consortium)
885	5	32	46	0	0	It is not sufficient to say that most work focuses on these countries. What analyses have been conducted, what did they find, and how are these findings relevant for the IPCC report? (Kolker, Alexander, Louisiana Universities Marine Consortium)
886	5	32	46	32	46	An additional point could be made here that 'The polictical factors that influence the realities of coastal adaptation decision making in many coastal nations, and the biases that this can bring to deciding to implment particular adaptive options, are also highly under researched (Kay, 2013)" ref: Robert Charles Kay (2012): Adaptation by ribbon cutting: time to understand where the scissors are kept, Climate and Development, 4:2, 75-77\nTo link to this article: http://dx.doi.org/10.1080/17565529.2012.728509 (Kay, Robert, AdaptiveFutures)

#	Ch	From Page	From Line	To Page	To Line	Comment
887	5	32	49	0	0	The report on outcomes from a program for the Great Barrier Reef contains examples of work that has led to practical progress in adaptation planning, adaptive management approaches, assessment of vulnerability, and on ground actions etc. It is suggested that real world examples from this report be included in this chapter, for example at page 32, line 49 and page 35, line 49. GBRMPA (2012). Climate Change Adaptation: Outcomes from the Great Barrier Reef Climate Change Action Plan 2007–2012. http://elibrary.gbrmpa.gov.au/ispui/handle/11017/1139 (AUSTRALIA)
888	5	32	49	0	0	Section 5.5.1.4: This section focuses too heavily on ICZM to the exclusion of other approaches to adaptation on the ground. Indeed, it is unclear what characteristic distinguishes this section from the previous two. (UNITED STATES OF AMERICA)
889	5	32	49	32	0	Section 5.5.1.4: This section focuses too heavily on ICZM to the exclusion of other approaches to adaptation on the ground. Indeed, it is unclear what characteristic distinguishes this section from the previous two. (Hoffman, Jennifer, EcoAdapt)
890	5	32	49	37	48	Organizationally, it is unclear if Adaptation Practice as discussed in 5.5.1.4 and in 5.5.4 are the same concept. If they are the same, can these sections be combined? (UNITED STATES OF AMERICA)
891	5	32	51	34	11	Some paragraphs are juxtaposed. The method listed (ICZM, AM, CBA…) may be introduced as principal pratices before their development in order to improve clarity of teh section (Baills, Audrey, BRGM)
892	5	33	1	39	33	There is a very strong emphasis on ICZM as an adaptation solution; while ICZM is one approach that practitioners pursue for coastal adaptation, there are many others, including many that are not officially labeled as "ICZM." Not sure the strong focus on ICZM in the chapter accurately reflects the landscape of adaptation actions. (UNITED STATES OF AMERICA)
893	5	33	9	33	9	In addition to the summary term for evidence provided here, it would be preferable to also provide a summary term for agreement. (Mach, Katharine, IPCC WGII TSU)
894	5	33	9	33	14	The following references to activities at European level should be considered in the paragraph: \nFor an interdisciplinary management of coastal areas is to be adopted a strategic approach according to the EU's ICZM Recommendation (2002/413/EC). The strategic approach is to recognise the dangers arising from climate changes (sea level rise, increase in storms) and to consider appropriate and ecologically responsible coastal protection measures.\nThe European Commission evaluated the ICZM recommendations in 2007 (COM/2007/0308 final).\nOn 12 March 2013, the European Commission has presented a proposal for a directive on maritime spatial planning and coastal management (COM (2013) 133 final). In Article 5 is identified as a target of maritime spatial planning and ICZM "to ensure climate resilient coastal and marine areas". \nIn 2008 an ICZM Protocol for the Mediterranean area was signed (http://www.camplevantedealmeria.com/en/content/iczm-mediterranean-mediterranean-iczm-protocol).\nThe EU's internet-based platform OURCOAST (http://ec.europa.eu/ourcoast/index.cfm?menuID=3) includes a good practice database on ICZM projects.\n (GERMANY)
895	5	33	10	33	10	spelling - should be "benefits" (Bell, Robert, NIWA)
896	5	33	11	0	11	There is insufficient justification regarding the evidence of the demonstrated effectiveness of ICZM (only one referene). Suggest add additional references to key ICZM texts, e.g. Kay, R.C., & Alder, J. (2005). Coastal planning and management (2nd ed.), 834pp. London: E&F Spon (Routledge). (Kay, Robert, AdaptiveFutures)
897	5	33	17	33	23	Needs reconsidering. Adaptive management as developed by Holling et al 1968 is used for ecosystem management since many years and is for example integrated in fisheries management by means of MSY and other resource management questions in ecosystems. The statement that it is 'very recent' asks therefore more substantiation, or a better description of 'coastal management'. \n\n (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
898	5	33	17	33	37	It is suggested that the authors focus the discussion of adaptive management and community based adaptation more on specific examples of application in coastal environments and their suitability for addressing problems in that space. The current text is more general and likely duplicative of the adaptation sections of chapters on other sectors/topics. (UNITED STATES OF AMERICA)
899	5	33	21	33	21	In addition to the summary term for evidence provided here, it would be preferable to also provide a summary term for agreement. (Mach, Katharine, IPCC WGII TSU)
900	5	33	22	33	22	remove one 'and' (POLAND)
901	5	33	31	33	31	spelling - should be "important" (Bell, Robert, NIWA)
902	5	33	31	33	31	Replace "import" with "important". (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
903	5	33	31	33	35	This is good advice and the authors should be sure to follow it. (Kolker, Alexander, Louisiana Universities Marine Consortium)
904	5	33	39	33	41	It is suggested that the authors expand the discussion of disaster risk reduction as a policy and practice framework with great relevance to coastal adaptation. This paragraph could be expanded to address this framework's application (as in the Storm Smart Coasts effort) to conceptually unify and leverage any number of specific strategies in coastal areas, including coastal construction practices, warning systems, coastal evacuation preparedness, green infrastructure, and management of long-term erosion. (UNITED STATES OF AMERICA)
905	5	33	43	33	43	In addition to the summary term for agreement provided here, it would be preferable to also provide a summary term for evidence, following the guidance for authors. (Mach, Katharine, IPCC WGII TSU)
906	5	33	44	0	0	change need by needs (Anadon, Ricardo, University of Oviedo)
907	5	33	46	33	48	after the word "stakeholders", I would add "in ways that are culturally appropriate" to emphasise the point (made by Nunn, 2009, Climate Research) that many such efforts in the past have failed because they have completely ignored the cultural context (and language preferences) of community-level stakeholders in particular. (Nunn, Patrick, University of New England)
908	5	33	47	33	48	Use of "should" and "must" on these lines should ideally be avoided to avoid a potentially prescriptive formulation. More specific indication of the benefits of these processes would be preferable. (Mach, Katharine, IPCC WGII TSU)
909	5	33	50	33	50	This sentence somewhat jumps out of nowhere. A transition such as "for example" would be helpful. (Mach, Katharine, IPCC WGII TSU)
910	5	33	51	33	52	For completeness about wicked problems Rittel introduced it in 1972, this could be included. Also the information of Rittel and Webber (1973) is missing. Rittel, H. (1972) On the planning crisis: systems analysis of the 'first and second generations'. Bedriftsokonomen 8, 390-396.\n\n (NETHERLANDS)
911	5	34	9	34	9	add a comma after 'Meanwhile' (POLAND)
912	5	34	9	34	11	I suggest overexploited rather than overdrawn. (Nunn, Patrick, University of New England)
913	5	34	9	34	11	after "populated areas", I would add ", traditional coastal resource management systems are proving increasingly adequate," - a point made by Mercer. (Nunn, Patrick, University of New England)
914	5	34	16	34	35	Would recommend expanding on this section and condensing the section from p. 31 Line 12 thru page 32 Line 46, which is too conceptual. "Adaptation Options" could include more concrete examples from different locations. (UNITED STATES OF AMERICA)
915	5	34	17	34	17	The reference here should be to chapter 14, not 16. (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
916	5	34	22	34	31	This paragraph might be read as implying nothing much has changed in terms of the magnitudes of the forcing factors since the IPCC came up with the "retreat, accommodation, protection" in the 1990s (I don't think Nicholls et al 2007 is the right citation, by the way). Of course it has. When AR4 was published in 2007, the maximum that sea level might reach in 2100 was thought to be 59 cm, something that allowed accommodation in the minds of planners more readily than perhaps 1-2 m will. I would suggest some rephrasing of this paragraph to show that this response trinity is not (and should not) necessarily be perceived as equally possible as they once were. This is a key issue for adaptation along vulnerable coasts where retreat/relocation is understandably the least popular option but now appears increasingly inevitable. (Nunn, Patrick, University of New England)
917	5	34	31	35	43	Table 5-8 is an important summary of global assessments of costs of sea-level rise, although no text which refers to this table is found in main body. It is recommended to add some text to main body on summary of assessments of global cost with/without adaptation. (JAPAN)
918	5	34	35	34	35	The word "implemented" here implies that these examples have already been implemented. If this is the case, clearer wording could be used here, with further detail provided in the table. (Mach, Katharine, IPCC WGII TSU)
919	5	34	37	34	38	For this table, it would be much preferable to specify when and where the options have been implemented, if it is the case that all of these examples have already been observed to date. (Mach, Katharine, IPCC WGII TSU)
920	5	35	2	0	11	If we are talking here about protection walls (as this is unclear), it seems that the argument is quite naïve. If several countries were to protect this way, the global sedimentation loads would drasticially change. It seems very little reflection was put into this paragraph. (Vasseur, Liette, Brock University)
921	5	35	2	35	11	In terms of sea level rise, have any studies looked at the grace period in which we have to act. As sea level rise is a long term impact, can we delay acting now, at least for decisions that do not have long life spans. Note that on page 36, line 29 this very point is made with regards to the case study. (UNITED STATES OF AMERICA)
922	5	35	5	35	5	In place of "low" the phrase "limited evidence" should be used, given the guidance for authors. (Mach, Katharine, IPCC WGII TSU)
923	5	35	8	35	8	It would be helpful to clarify what is meant by "worth protecting"--based on economic calculations. (Mach, Katharine, IPCC WGII TSU)
924	5	35	13	35	13	In addition to the summary term for agreement provided here, it would be preferable to also provide a summary term for evidence, following the guidance for authors. (Mach, Katharine, IPCC WGII TSU)
925	5	35	13	35	16	This statement is associated with high confidence in the executive summary, and it would be useful to match that here, as "high agreement" on its own is not standard usage of the calibrated language. (Mastrandrea, Michael, IPCC WGII TSU)
926	5	35	26	35	23	Another huge remaining gap is better understanding non-climate coastal drivers such as population and economic growth, and how these will interact with the physical changes associated with climate change. (UNITED STATES OF AMERICA)
927	5	35	27	35	27	In place of "low" the phrase "limited evidence" should be used, given the guidance for authors. (Mach, Katharine, IPCC WGII TSU)
928	5	35	34	35	43	These are key points. There are examples of retreat and accomodation, but they have not been evaluated or modeled in the ways that protection has. The trade offs between protection of infrastructure and negative impacts of that on natural resources is lacking in the above discussion. (UNITED STATES OF AMERICA)
929	5	35	36	35	36	Suggested sentence: The short and long-term benefits and suitablity of hard and soft adaptation should be considered (Brown et al. submitted), so to avoid maladaptation or 'lock-in' to one adaptation pathway. Brown S, Barton ME, Nicholls RJ (submitted). Soft cliff erosion and hard adaptation: Historic and future response. Maritime Engineering (Brown, Sally, University of Southampton)

#	Ch	From Page	From Line	To Page	To Line	Comment
930	5	35	40	35	42	Thank you for this sentence. I think it is extremely important and does not always get the attention it deserves. (UNITED STATES OF AMERICA)
931	5	35	50	36	10	Perhaps useful to mention of Blue Carbon literature including: Mcleod, Elizabeth, et al. "A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO2." Frontiers in Ecology and the Environment 9.10 (2011): 552-560; Nellemann, Christian, and Emily Corcoran, eds. Blue carbon: The role of healthy oceans in binding carbon. Earthprint, 2009.; Vierros, Marjo. (In Press) Communities and blue carbon: the role of traditional management systems in providing benefits for carbon storage, biodiveristy conservation and livelihoods. In Climatic Change Special Issue on (Ramos Castillo, Ameyali, United Nations University - Institute of Advanced Studies)
932	5	36	16	36	16	The EA responsibilities have changed and now include coastal risk management too. The end of this line should in fact read: "[…]main responsibility for flood and coastal risk management[…]" (de Gusmao, Diogo, Met Office Hadley Centre)
933	5	36	20	36	26	Citations must be provided for these statements. (Mach, Katharine, IPCC WGII TSU)
934	5	36	35	36	35	remove 'as' and 'with' (POLAND)
935	5	36	39	36	39	Would be nice to see the three period adaptation themes (instead of "50 to 100 years"). The plan lists three adaptation periods: 1) 2010-2034 (The First 25 years) - Continuing maintenance, operation and essential improvements; Safeguarding the spaces for future flood management; TE2100 will have a real influence in the preparation of, and updating of regional and local strategic and spatial plans. 2) 2035-2069 (The Middle 35 years) - Many of the existing walls, embankments and smaller barriers will need raising and major refurbishment or replacement in this period; These major projects provide an opportunity to reshape our riverside environment through working with spatial planners, designers, environmental groups and those who live and work in the Estuary area; Towards the end of this period, a decision will be made on the century option to be adopted. 3) 2070+ (The End of the Century) - From 2070 (based on government's current climate change guidance) a major change will be needed and one of our "end of the century" options will be implemented; This is a long time in the future but your views are important as they will set the basis from which future changes in attitudes are measured. (de Gusmao, Diogo, Met Office Hadley Centre)
936	5	36	42	36	43	How were flood risks reduced? The document would be improved if people could learn from these boxes. (Kolker, Alexander, Louisiana Universities Marine Consortium)
937	5	36	49	36	54	On figure 5-6 what does "HLO" refer to (not mentioned in the caption) (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
938	5	36	50	36	50	replace 'boxed' for 'boxes' (POLAND)
939	5	37	4	37	14	These principles are better suited to the approaches section than practices. (UNITED STATES OF AMERICA)
940	5	37	16	37	23	This paragraph needs an introductory sentence; otherwise, all sentences should have to do with Europe, as that's currently the subject of the topic sentence. (UNITED STATES OF AMERICA)
941	5	37	25	37	41	These paragraphs are a bit redundant with information on p. 33; this should be better integrated. (UNITED STATES OF AMERICA)
942	5	37	29	37	30	What were these structural project? I understand that the document does not have the space to discuss all 11, a few important ones could be mentioned. Again, the document would be improved if people could read it and take away practical changes that they can make in their coastal environment. (Kolker, Alexander, Louisiana Universities Marine Consortium)
943	5	37	29	37	30	The Louisiana Coatal Master Plan (CPRA 2012) only includes 9 project types (not 11), unless you also include "non-structural" projects. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
944	5	37	30	37	31	It is unclear what the phrase "coping with the dynamic nature of coastal areas" is referring to as both coastal adaptation and ICZM must deal with this, and it is therefore not a difference between the two. (UNITED STATES OF AMERICA)
945	5	37	30	37	32	The original sentence reads: 'The major difference of coastal adaptation from ICZM is\n coping with the dynamic nature of coastal areas, greater uncertainty, longer time frames in planning (beyond 30\nyears), and long-term commitments inherent in climate change'. I do not agree that ICZM does not cope with dynamic nature of coastal areas, ignores climate change perspective or copes with long-term time frames in planning with less strength than Coastal Adaptation. My opinion is that ICZM and CA are equivalent as methodologies of achieving sustainable use of coastal areas despite the fact that numerous particular, site specific solutions can be found. In my view the difference originates only from higher (verbal) emphasis on climate change impacts in CA. However, the current ICZM also fully acknowledges the changing climate, but since this term had been coined before the importance of climate change emerged, when the most pressing issues were ecology and mitigation of coastal squeeze, the first ICZM-based studies and strategies could not contain the climate change facet explicitly. Nowadays, both methodologies seem to be synonymous to a high extent. (POLAND)
946	5	37	34	37	47	Where "likely" is used on lines 34, 36, 46, 47, the chapter team should carefully consider whether the likelihood term was assigned based on available probabilistic information in each case. It seems that qualitative levels of confidence would be preferable. (Mach, Katharine, IPCC WGII TSU)
947	5	37	39	0	0	It is suggested that the authors clarify what is mean by Ïinnovative measures in this sentence. (UNITED STATES OF AMERICA)
948	5	37	39	37	40	There is not enough information on ecosystem-based adaptation (EBA) in this chapter; EBA is a useful strategy (in many cases) for enhancing coastal resilience - it's not just about using mangroves but also marshes, dunes, and other coastal habitats to enhance coastal protection and sustain/enhance the many other benefits/services provided by intact ecosystems - that message does not resonate strongly here. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
949	5	38	1	38	42	This whole section is outdated and contains various errors. It needs rewriting. Some of the errors: The Delta Committee was commissioned (commissie Veerman) by the Government in 2007, the advice is given (including the set of recommendations) to the government and not from the goverment. The recommendation were translated in a large, nation-wide programme 'The Deltaprogramme, http://www.deltacommissaris.nl/english/' wherein the recommendations are further analysed to see if they are possible and, if so, how the exact plan can be translated into policy (like the multiannual programme for infrastructure, space and transport: the MIRT). The recommendations regarding 'room for river' are older than the report of 2008 and are embedded in the near-disasters of 1993 and 1995. The current state of the art regarding some of the recommendations mentioned in the box is that increasing dikes with a factor 10 will not happen, the water level in the major lakes in the centre of the Netherlands will not be hightened (based on a Cost Effectiveness Analysis by the Dutch bureau for planning CPB: KEA IJsselmeer) and the coast will likely not be expanded seawards. The total cost of implementing the recommendations would have been 2.5-3 billion but this is not going to happen. Recently the Minister of Infrastructure and the Environment reduced the budget even more for the Delta programme. Conclusion: rewrite box 5-3.\n\n (NETHERLANDS)
950	5	38	7	38	7	Please delete or substitute "dramatic". Explanation: "dramatic" is a qualitative term, not scientifically defined or quantified. (GERMANY)
951	5	38	14	38	15	add two commas: one after '2007' and the other after 'vulnerability' (POLAND)
952	5	38	18	38	23	This test may be done by constructing a chain of storage spaces on the either side of the bank of river, running from the emergence of upstream to the end of downstream.\nThese chain of storage spaces are constructed by erecting two main dams, spaced wide apart, to suit the topography and storage capacity needed and sufficiently higher enough than that of the past flood level experience of the locality. To prevent the downward flow of stored high level water, these two dams are joined by cross dams at suitable locations (i.e. the point of steep change in the level gradient of the bank).\nThese main and cross dams are provided with pipes coupled with hydro-generators for the inflow of water from the river and outflow from storage spaces to the adjoining and far off dry zones to meet the fresh water need for agriculture and drinking purposes through long pipe/tunnels. Green energy is generated from the water flowing through the pipe in either directions.\nIn this way storage spaces will conserve and distribute flood water in a controlled manner without confining the fury of Swelling River inside dams, to allow it to flow in neighboring and far off areas.\nThe fresh water conserved in these storage spaces will remain protected from mixing with saline water, spilled over by rising tides, in the similar way as that by a conventional single dam system.\nThis concept of storage space, indicated here, has a reference to my article" The Hidden Treasure in devastating Flood" which being enclosed herewith.\n (Hussain, Ahmad, Electrical Superintendig Engineer (Retd.) from Bihar State Electricity Board)
953	5	38	21	38	26	This is excellent. This is the kind of specific information that the report needs. (Kolker, Alexander, Louisiana Universities Marine Consortium)

#	Ch	From Page	From Line	To Page	To Line	Comment
954	5	38	25	38	25	Box 5-3 The statement "expanding the coast seaward" seems counterintuitive and would benefit from additional explanation. (UNITED STATES OF AMERICA)
955	5	38	33	38	33	Is the damage estimate provided here a yearly value? (Mach, Katharine, IPCC WGII TSU)
956	5	38	46	39	35	Box 5-4 talks about ICZM in developing countries. Despite its initial promise, I rather thought this was an approach regarded to have failed, largely because of the lack of institutional coherence in such countries. I suggest this box be retitled, perhaps starting from paragraph 4 and removing/reducing paragraphs 1-3. That said, I do think a box focused on developing-country coasts is an excellent idea. (Nunn, Patrick, University of New England)
957	5	38	53	38	10	Migration to the coast from interior populations is also a huge issue for ICZM in developing countries given that these people usually are new to the community, do not have the knowledge to adequately manage coastal resources, and are also the most vulnerable. (UNITED STATES OF AMERICA)
958	5	38	53	38	53	add a comma after 'countries' (POLAND)
959	5	38	53	38	54	It would be helpful if a sentence or two could be added that more fully explains why ICZM in developing countries fostered by international organizations struggles. It would be primarily be owing to a lack of good goverance and information? (UNITED STATES OF AMERICA)
960	5	38	53	39	10	Another issue why ICZM goals have not been achieved in developing countries is that normally these policies/plans have been created within the environmental sector. As with climate change, ICZM is a transversal issue that has remained for too long on the environment table. ICZM has surged inside environmental agencies that do not have much influence and capacity, and often do not actively involve other sectors of the economy so implementation becomes very difficult. Often ministries of environment are very weak and do not have the capacity to debate and argue against a more strong mining Ministry or infrastructure or in coastal areas in particular against a port or tourism development. See for example the case of Santos in Brazil, where port activities seem to be prioritized over any other activity. Mangroves are protected by law in Brazil, but in Santos (exceptional circumstances) the port has expanded and plans to continue expanding towards the mangroves. (Lacambra Segura, Carmen, Grupo La era)
961	5	39	5	39	7	It is not just politics but power dynamics that are important. While politics covers some of the power dynamics, in developing countries power dynamics goes well beyond politics, and especially in terms of local level ICZM those power dynamics can be quite important, (UNITED STATES OF AMERICA)
962	5	39	12	39	14	These instruments might exist, but most probably will exist. The issue is that they are not implemented (see previous comment) (Lacambra Segura, Carmen, Grupo La era)
963	5	39	12	39	14	The intended meaning of this sentence is difficult to determine. Could the authors try to clarify what the intended point of this sentence is? (UNITED STATES OF AMERICA)
964	5	39	23	39	33	It could be mentioned that ICZM is an integrated, systems framework to holistically integrate all these other strategies, and while it is likely applying one strategy in isolation will not be effective, but using ICZM as a framework to ensure all the necessay strategies are considered and include, the whole system can be protected. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
965	5	39	45	39	45	It would be preferable to reference specific subsections of chapter 14, in place of reference to the whole chapter. (Mach, Katharine, IPCC WGII TSU)
966	5	39	49	39	51	This statement (that there is a very high agreement and high confidence that ICZM can make it possible for coastal regions to achieve their diverse goals in their adaptation to climate change) seems to contradict the conclusions of Box 5-4 which highlights the shortcomings and utility of the approach in coastal adaptation. (Bettencourt, Sofia, World Bank)
967	5	39	49	39	51	This is not entirely in agreement with Sec. 5.5.1.4, in particular p. 33 lines 12-15 which is more about limits than opportunities. (UNITED STATES OF AMERICA)
968	5	39	49	39	51	To maximize clarity and directness of wording, it would be best to present all calibrated uncertainty language within parentheses at the end of the sentence. Additionally, "very high agreement" is not a term within the guidance for authors, and it would be preferable to avoid the term accordingly. (Mach, Katharine, IPCC WGII TSU)
969	5	39	50	39	50	add a space after 'agreement' (POLAND)
970	5	39	51	39	51	This comment re ICZM capacity seems at odds with the actual evidence. I suggest that theory confidence is never sufficient to outweigh practice's pragmatism (Orford, Julian, Queen\\\\\\'s University, Belfast)
971	5	39	53	39	53	remove 'for adaptation' (POLAND)
972	5	39	53	40	3	This should be earlier in the chapter and include more information (UNITED STATES OF AMERICA)
973	5	40	1	40	3	by using biodiversity and the ecosystem services they provide is not enough. For example, in coastal areas in particular biodiversity is relevant, but what is crucial is structure, these ecosystems are physical barriers as well. (Lacambra Segura, Carmen, Grupo La era)
974	5	40	2	40	2	replace 'mean' for 'means' (POLAND)
975	5	40	3	40	3	It is essential that EBA is not restricted to thinking about bio-physical systems. All coasts can be seen as part of EcoSystemServices and as such ecosystems understanding of physical coastal systems is also valid. Witness EU 2013 potential directives on integrating marine spatial planning frameworks with ICZM through ESS (Orford, Julian, Queen\\\\\\'s University, Belfast)
976	5	40	5	0	19	It seems that this discussion is quite superficial here. "Constraint" may not be an appropriate term for many of the issues that are put here with some being in fact obstacles and others barriers. There is a very strong literature review on these concepts and are not the same in terms of actions and potential solutions. this should be revised. (Vasseur, Liette, Brock University)
977	5	40	5	40	51	Suggest that, at least in developing countries, resource tenure and political will are also large constraints to coastal adaptation. (UNITED STATES OF AMERICA)
978	5	40	10	40	10	It would be preferable to provide specific reference to subsections of chapter 16, in place of this reference to the entire chapter. (Mach, Katharine, IPCC WGII TSU)
979	5	40	12	40	12	remove first 'for' (POLAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
980	5	40	23	40	24	The statement on this line about the relative importance of a lack of information needs to be caveated and the references provided. If one is going to refute such a claim, the studies, not just some vague reference to "the wide range of contraints identified" needs to be provided. Furthermore, the relative importance of different contraints likely varies significantly from one place to another, and therefore such a blanket statement is likely not appropriate. Furthermore, a lack of information is likely not as important in the developed world, but relative more so in the developing world. (UNITED STATES OF AMERICA)
981	5	40	23	40	25	Although this statement regarding lack of information makes sense, there is a related issue with how information is presented that does create problems with coastal adapatation at the project level. For instance, in transportation at least there is a gap between the way climate projections are presented by scientists versus the way engineers are used to using historic climate information in their planning/design procedures. As a result, it is difficult for engineers to "plug in" the information on future projections, and thus difficult to systematically incorporate it into normal design procedures. New protocols are needed at the engineering level to address this gap. This is addressed somewhat on page 44 lines 8-9 but it could bear repeating here or perhaps linking to the concept for consistency. (UNITED STATES OF AMERICA)
982	5	40	25	40	25	Need references. (UNITED STATES OF AMERICA)
983	5	40	26	40	26	"…public opinion geared toward protection (Tunstall and Tapsell, 2007). Add reference: Tunstall, S. and Tapsell, S. 2007. Local Communities Under Threat: Managed Realignment at Corton Village, Suffolk. In Managing Coastal Vulnerability, eds. L. McFadden, R.J. Nicholls and E. Penning-Rowsell, 97-120. Amsterdam and Oxford: Elsevier, Ltd. (UNITED STATES OF AMERICA)
984	5	40	40	40	40	remove 'with' (POLAND)
985	5	40	47	40	47	Instead of unassisted adaptation it is common in literature to use the distinction planned versus autonomous adaptation. In this case is should autonomous adaptation.\n\n (NETHERLANDS)
986	5	40	48	40	50	I think the authors misunderstand the role of the Kirwan paper. The idea that salt marshes can respond to modest rates of SLR if there is sufficient sediment supply is attributed to earlier authors, notably Redfield (1972) and Orson et al., (1985). The advance of the Kirwan paper is that they were able to put constraints on this process- and that several models suggest a threshold of about 5 mm/yr SLR for certain marshes. The Kirwan model also notes the importance of plants survival in this process. See Redfield, A.C., 1972. Development of a New England salt marsh. Ecological Monographs, 42(2): 201-237, and Orson, R., Panageotou, W., Leatherman, S.P., 1985. Response of tidal salt marshes of the U.S. Atlantic and Gulf coasts to rising sea levels. Journal of Coastal Research, 1(1): 29-37.\n (Kolker, Alexander, Louisiana Universities Marine Consortium)
987	5	40	50	40	50	Use of "likely" should be considered here. If the likelihood term was not assigned on the basis of available probabilistic information, a level of confidence would be preferable, or alternatively, the term should be avoided. (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
988	5	41	1	0	0	You may want to update this box with The World Bank Institute (2012) "Knowledge Note 4-2: Cluster 4 - Recovery and Planning, Reconstruction Policy and Planning". Government of Japan, GFDRR, and World Bank. Reference sent as Supporting Material. [4.2 Recovery Planning 2012.5.20.pdf] (Bettencourt, Sofia, World Bank)
989	5	41	1	0	0	This box lacks references, for example regarding the numbers in section 3 (l. 21-27.)\n\n (NETHERLANDS)
990	5	41	9	41	9	replace 'established' with 'establish' (POLAND)
991	5	41	14	41	14	replace 'of' for 'for' before 'storm' (POLAND)
992	5	41	19	41	19	add a comma after 'class' (POLAND)
993	5	41	23	41	23	add a comma after 'cm' (POLAND)
994	5	41	35	41	35	Use of "needs" here could be avoided to ensure a policy neutral formulation. (Mach, Katharine, IPCC WGII TSU)
995	5	41	44	0	0	This section should include a discussion of Blue Carbon. Literature on this topic includes: Vierros, Marjo. (In Press) Communities and blue carbon: the role of traditional management systems in providing benefits for carbon storage, biodiveristy conservation and livelihoods in Journal of Climatic Change Special Issue on Climate Change Mitigation and Adaptation with Local Communities and Indigenous Peoples (2013) | McLeod, Elizabeth, et al (2011). "A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO2." Frontiers in Ecology and the Environment 9.10 (2011): 552-560 | Nellemann, Christian, and Emily Corcoran, eds. Blue carbon: The role of healthy oceans in binding carbon. Earthprint, 2009.| Herr D, Pidgeon E and Laffoley D (eds.) (2012) Blue Carbon Policy Framework: Based on the discussion of the International Blue Carbon Policy Working Group. Gland, Switzerland: International Union for Conservation of Nature and Arlington, Virginia: Conservation International. | Murray, BC, Watt, CE, Cooley, DM and Pendleton, LH et al (2012) Coastal Blue Carbon and the United Nations Framework Convention on Climate Change: Current Status and Future Directions. Policy Brief NI PB 12-01. Nicholas Institute for Environmental Policy Solutions, Duke University, Durham. Online at http://nicholasinstitute.duke.edu/sites/default/files/publications/coastal-blue-carbon-and-the-unfccc-paper.pdf. | Pendleton L, Donato DC, Murray BC, Crooks S, Jenkins WA, Sifleet S, Craft C, Fourqurean JW, Kauffman JB, Marba N, Megonigal P, Pidgeon E, Herr D, Gordon D. and Baldera A. (2012) Estimating Global ‘‘Blue Carbon’’ Emissions from conversion and degradation of vegetated coastal ecosystems. PLoS ONE, vol 7, issue 9, pp: 1-7. (Galloway McLean, Kirsty, United Nations University - Institute of Advanced Studies)
996	5	41	44	42	32	This section touches on a very important point but did not seem to give it the attention and detail it deserves (UNITED STATES OF AMERICA)
997	5	41	54	41	54	21st century (Orford, Julian, Queen\\\\\\'s University, Belfast)
998	5	41	54	41	54	Please add "century" after "21st" (UNITED STATES OF AMERICA)
999	5	41	54	41	54	add 'century' after '21st' (POLAND)
1000	5	42	8	42	14	What about the recent expansion of offshore renewables (wind and tidal) and possibly marine biofuels as a means of mitigation in coastal zones? (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
1001	5	42	9	0	0	The idea that 50% of total marine carbon burial in the ocean occurs in vegetated environments seems high. Does this number include "organic" carbon or does it also include, "inorganic" carbon (i.e. shells). References should be checked and double checked. (Kolker, Alexander, Louisiana Universities Marine Consortium)
1002	5	42	9	42	9	50% of organic caron burial (not total, with CaCO3) (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1003	5	42	16	42	17	change 'the' to 'them' before 'may' (POLAND)
1004	5	42	16	42	21	It might be worth pointing out that the offshore oil industry uses infrastructure that sits at or very near sea level., and is thus sensetive to storms and sea level rise. it might be worth examining the case of the Murphy Oil Spil in Louisiana after Hurricane Katrina as an example of this. (Kolker, Alexander, Louisiana Universities Marine Consortium)
1005	5	42	16	42	21	Proposed recommendations based on reducing or cessation of off shore oil production contradict commitments of the United Nations Framework Convention on Climate Change regarding an special considerations to those "countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products". Those countries are considered vulnerable because their economies depend on oil extraction. Therefore, cessation or reductions of oil production will increase their vulnerability. I suggest to delete the whole paragraph. (VENEZUELA, BOLIVARIAN REPUBLIC OF)
1006	5	42	17	0	0	change the for them (Anadon, Ricardo, University of Oviedo)
1007	5	42	18	42	21	This example seems to be a bit oversimplified. While there are clearly benefits to reducing offshore oil production, the net benefits completely depend on what form of energy replaces it. If it is replaced by coal, or by oil from somewhere else that then needs to be transported large distances, then the net benefits are less clear. Suggest the authors clarify or strengthen the example. (UNITED STATES OF AMERICA)
1008	5	42	25	42	26	The statement regarding increase in sprawl could use some clarification to explain why this would be the case - does this refer to the case in which you would be relocating out of a dense historic core and into a more suburban location? (UNITED STATES OF AMERICA)
1009	5	42	27	42	27	Regarding GHG emissions related to construction there are more sources then just cement production. Adding these can strengthen the substantion of construction related to CC.\n\n (NETHERLANDS)
1010	5	42	31	42	31	add a comma after 'energy' (POLAND)
1011	5	42	35	42	35	This title is confusing and it is not clear on what the intended message of this section was as it seems more about mitigation than adaptation. Could this title be edited to make the intended point of the section more clear? (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1012	5	42	35	43	16	I suggest 5.5.7 be renamed. Adaptation is inevitable whatever happens. You need to emphasise the point here that adaptation to profound coastal change is unavoidable because of climate change. Mitigation is a long-term solution, which only reduces risk in the long term. It would be good to have these points made explicitly. (Nunn, Patrick, University of New England)
1013	5	42	42	42	42	It seems this reference should be to table 5-1? Additionally, is it possible to provide more specific line of sight to relevant subsections of chapter 13? (Mach, Katharine, IPCC WGII TSU)
1014	5	42	42	42	45	Table 5-2 does not appear to include the information this text is discussing; it looks like it should be referencing Table 5-1. (UNITED STATES OF AMERICA)
1015	5	42	47	42	48	Need references. (UNITED STATES OF AMERICA)
1016	5	42	47	42	49	Is that true? If so, need to show evidence that ocean acidification is more responsive to reduced GHG emissions than it is to sea-level rise. (UNITED STATES OF AMERICA)
1017	5	42	47	42	49	Reference should be provided to the specific relevant sections of chapter 19 supporting this statement. (Mach, Katharine, IPCC WGII TSU)
1018	5	42	49	42	49	add a comma after first 'efforts' (POLAND)
1019	5	42	52	42	52	add a comma after 'models' (POLAND)
1020	5	43	7	43	7	Again, new GMSL numbers. (Sjostrom, Asa, Swedish Meteorological and Hydrological Institute)
1021	5	43	7	43	7	Again, new GMSL numbers. (SWEDEN)
1022	5	43	7	43	11	It seems table 5-8 could be cross-referenced here. (Mach, Katharine, IPCC WGII TSU)
1023	5	43	19	0	0	More research is clearly needed on the impacts of climate change on naval bases and areas of vital national security located near the ocean. (Kolker, Alexander, Louisiana Universities Marine Consortium)
1024	5	43	19	0	0	More research is clearly needed on the impacts of climate change on global shipping and port facilities. (Kolker, Alexander, Louisiana Universities Marine Consortium)
1025	5	43	19	43	50	In the information gaps - two not mentioned were in respect of salinization of freshwater/brackish systems (both surface and sub-surface) and the effect of climate changes multiple drivers on tides (levels, ranges, currents) in estuaries and lagoons. (Bell, Robert, NIWA)
1026	5	43	26	43	26	consider changing '2100' to '2000' (POLAND)
1027	5	43	26	43	27	Suggest stating uncertainties exist around the RATE and MAGNITUDE of future sea level rise. Not just the magnitude. (UNITED STATES OF AMERICA)
1028	5	43	26	43	27	There are two main uncertainties: the magnitude of future sea lever(sic) rise - particularly over multiple centuries, but where the uncertainty is in the short to medium term is in the rate of SLR e.g. 0.8 m SLR may be not be reached by 2100, but it is highly likely to be exceeded, and then only a few decades or so later - so uncertainty is not that 0.8 m will be reached buy when. Suggest changes to sentence along the lines of Chapter 25, page 10, lines 52-53 (Bell, Robert, NIWA)
1029	5	43	27	0	27	Typo: Change 'sy' to 'st' (Kay, Robert, AdaptiveFutures)
1030	5	43	27	43	27	Change "lever" to "level"; Change "21sy" to "21st" (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1031	5	43	27	43	28	As a likelihood term, "very likely" should be italicized. Additionally, it would be preferable to provide specific cross-referencing of the relevant sections within chapter 13. (Mach, Katharine, IPCC WGII TSU)
1032	5	43	28	43	28	2010, not 2100 (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1033	5	43	28	43	28	should "1971-2100" actually be "1971-2010"? (UNITED STATES OF AMERICA)
1034	5	43	34	43	36	It is important to address the inconsistencies between the multiple reference surfaces (vertical datums) used in each spatial domain (topography x bathymetry) and by each technological approach (airborne photogrammetry, LIDAR, integration of existent high resolution DEMs etc). The raw estimation of population displacements maybe can be performed without this concern, but it is essential for planning, implementation and monitoring the actions for mitigation and adaptation (Keysers et al., 2012; Eakins et al., 2011; Ministerio do Meio Ambiente, 2013, p.20). (Teixeira Luz, Roberto, Brazilian Geography and Statistics Institute (IBGE))
1035	5	43	34	43	39	At the World Bank, we are working on a publication of Coastal Zone changes in Sao Tome and Principe, which compares topographic maps from the 1950s with high resolution satelite data from 1990s, 2000, and 2010s. Projections of future climate change impacts are being added. Draft report sent as Supporting Material (WB-FinalReport_CoastalChange-STP_GeoVille_v2.pdf)\n (Bettencourt, Sofia, World Bank)
1036	5	43	38	43	38	Not just sediment supply, but also mobilization and storage. (Nunn, Patrick, University of New England)
1037	5	43	42	43	45	The sentence starting on Line 42 is incomplete. Many coastal ecosystems are well-studied through both observational and experimental approaches, and this seems to underestimate the amount of work that has been done. (UNITED STATES OF AMERICA)
1038	5	43	43	43	43	change 'deltas area' to delta areas' (POLAND)
1039	5	43	43	43	43	To list of environmental sub-domains, add "river mouths" - see my earlier comment (Bell, Robert, NIWA)
1040	5	43	46	43	46	change 'parametrize' to 'parameterize' (POLAND)
1041	5	43	46	43	48	This is not true; models have also been developed based on findings from multi-stressor experiments (both field and laboratory) in coastal ecosystems. More of this work needs to be done (so it is a major research need), but it's not accurate to say "virtually all." (UNITED STATES OF AMERICA)
1042	5	44	4	44	11	In this paragraph, I would make the additional point that all the statements about assessment and data generally apply more to developing countries than their richer counterparts. Also, particularly in developing countries, there are often steep development/information gradients between cores and peripheries that also account for the unevenness of adaptation challenges. (Nunn, Patrick, University of New England)
1043	5	44	8	44	9	Specifically at the project level (in transportation at least), there is a gap between the way climate projections are presented by scientists versus the way engineers are used to using historic climate information in their planning/design procedures. As a result, it is difficult for engineers to "plug in" the information on future projections, and thus difficult to systematically incorporate it into normal design procedures. New protocols are needed at the engineering level to address this gap. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1044	5	44	11	44	11	change 'accessable' to accessible' (POLAND)
1045	5	44	13	44	18	Need references. (UNITED STATES OF AMERICA)
1046	5	44	13	44	18	Quite a bit of work has been done to examine the effects of multiple stressors on coastal ecosystems, and more work is being done to look at the relationships between human and natural systems. It's not just temperature change that we're confident about. This paragraph needs to better reflect the current, integrated state of understanding. (UNITED STATES OF AMERICA)
1047	5	44	20	44	25	This paragraph should more clearly articulate the need for valuation studies of coastal ecosystem services. (UNITED STATES OF AMERICA)
1048	5	44	27	0	30	The above comment can also be applied to this paragraph. Suggested simply to add the Kay (2013) article as justification for this conclusion (Kay, Robert, AdaptiveFutures)
1049	5	44	32	44	34	Suggest adding citation to recent U.S. efforts to complement mention of EU, Med, Australia: Thieler, E.R., Anderson, K.E., Cahoon, D.R., Williams, S.J., and Gutierrez, B.T., 2009, A science strategy for improving the understanding of sea-level rise and its impacts on U.S. coasts. In: Coastal Sensitivity to Sea-Level Rise: A Focus on the Mid-Atlantic Region. A report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. [J.G. Titus (coordinating lead author), K.E. Anderson, D.R. Cahoon, D.B. Gesch, S.K. Gill, B.T. Gutierrez, E.R. Thieler, and S.J. Williams (lead authors)]. U.S. Environmental Protection Agency, Washington DC, pp. 185-192. (http://www.climatescience.gov/Library/sap/sap4-1/final-report/) (UNITED STATES OF AMERICA)
1050	5	44	39	44	40	The delta commission is a grey source while there is a lot to find about the significance of technological advancement in general and specific with regards to climate change and the aspect stated here.\n\n (NETHERLANDS)
1051	5	44	49	0	0	Section Frequently Asked Questions: Suggest adding a question about the physical effects of climate change on storms. That is the one impact that seems to get quoted very often in the general literature and by the media, but the actual effects seem to be less certain. This seems like a good opportunity to really answer what the possible effects on storms will be in layman's terminology. (UNITED STATES OF AMERICA)
1052	5	44	49	44	49	Another FAQ should consider the costs and benefits of coastal adaptation (Hay, John, University of the South Pacific)
1053	5	44	49	45	42	Generally, a Frequently Asked Questions section should be entirely based on the text and not be introducing new information. This section would benefit from a check that each statement ties to the body of this chapter. An example is the reference to rolling easements (p. 44 line 17), which could be added to section 5.5.4. (UNITED STATES OF AMERICA)
1054	5	44	51	0	0	FAQ 5-1 The author team may wish to add details about observed and projected impacts as some examples here. (Chatterjee, Monalisa, IPCC WGII TSU)
1055	5	44	51	45	3	Sea level rise will also have secondary impacts on ecosystems by reducing the livable space along the coast, either squeezing out those ecosystems or by forcing people to move into areas that are important to ecosystems (e.g., mangroves) (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1056	5	44	52	45	3	I would consider storms, both tropical and extratropical, to also be key climate drivers. (Lough, Janice, Australian Institute of Marine Science)
1057	5	44	53	44	54	Perhaps this phrase requires further explanation as corals and mangroves have the capacity to migrate and keep up with climate change, they have evolved under variable conditions of SLR. The problem at the moment is coastal squeeze and other stressors such as over sedimentation and contamination. Drivers/factors that are independent of climate change. (Lacambra Segura, Carmen, Grupo La era)
1058	5	44	54	44	54	"…mangroves" Add: "and saltmarshes". (UNITED STATES OF AMERICA)
1059	5	44	54	44	54	Would be more accurate to say "many organisms." (UNITED STATES OF AMERICA)
1060	5	44	54	45	1	The authors should clarify whether the statement on ocean warming affecting all organisms currently pertains to deep ocean organisms. My understanding is that global warming as of yet has only had a limited impact on the temperature structure of the deep ocean, which is the largest habitat on earth. The author should coordinate with deep ocean specialists to ensure the correctness of this statement. (Kolker, Alexander, Louisiana Universities Marine Consortium)
1061	5	45	2	45	3	FAQ 5.1 It is suggested that this statement reflect the variability of coastal systems as described in section 5.3.3.5. (UNITED STATES OF AMERICA)
1062	5	45	5	0	0	FAQ 5-2 A figure with this FAQ would be very useful for readers. Moreover, authors may consider explaining how climate change may affect winds, waves and currents. (Chatterjee, Monalisa, IPCC WGII TSU)
1063	5	45	5	0	12	Consider mentioning also that CC can lead to breakdown in reef framework and destruction of other coastal habitats which can help to buffer the impacts of storms/ sea-level rise (Mcleod, Elizabeth, The Nature Conservancy)
1064	5	45	5	45	12	This would benefit from some translation for non-scientists; quite a bit of jargon. (UNITED STATES OF AMERICA)
1065	5	45	7	45	7	for deltas: I suggest adding: "and other estuaries" (Le Cozannet, Goneri, BRGM)
1066	5	45	7	45	7	Sediment supply is not just important to deltas, but for many coasts that lay down drift from a river mouth. (UNITED STATES OF AMERICA)
1067	5	45	7	45	11	FAQ 5.2 This statement is an important one, but is not included in the body of the text. As indicated in an earlier comment, this point would be well suited to p. 14. (UNITED STATES OF AMERICA)
1068	5	45	9	45	9	change 'waves' to 'wave' (POLAND)
1069	5	45	10	45	10	It is unclear what is causing the "higher waves and surges" as previous sections seemed to indicate insignficant impacts on storms. Are these owing to a higher relative sea level? (UNITED STATES OF AMERICA)
1070	5	45	12	45	12	add 'longshore' after 'increased' (POLAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
1071	5	45	14	0	0	FAQ 5-3 The author team should avoid framing of FAQs where the answers are essentially provided in a list. Instead of listing range of available adaptation strategies, the author team could highlight the circumstances under which the specific types of strategies could be useful. Moreover, authors can match characteristics of communities with types of response strategies that could be beneficial. Chapter 14 provides a framing for policy options. To be consistent authors may wish to coordinate. (Chatterjee, Monalisa, IPCC WGII TSU)
1072	5	45	19	45	19	Use of "required" may be best to avoid here, to ensure a policy neutral formulation. (Mach, Katharine, IPCC WGII TSU)
1073	5	45	25	0	0	FAQ 5-4 The answer covers all broad points but the language is academic. The example of Netherlands could be explained further and developing country challenge could be illustrated with an example. (Chatterjee, Monalisa, IPCC WGII TSU)
1074	5	45	25	0	34	The word "adequate" here is confusing. Is the purpose of the question to define what is adequate? This may be considered policy prescriptive for the IPCC. Suggest that the question focus more factually on how planning measures can reduce risks from climate change. (CANADA)
1075	5	45	25	45	25	Planning can only be adequate if it contributes to reducing climate change risks (Hay, John, University of the South Pacific)
1076	5	45	34	45	34	redundant fullstop at the end of sentence (POLAND)
1077	5	45	36	0	0	suggest including link to Box on OA (CC-OA) for more details or possibly the section that explains OA impacts in more detail in chapter 6. (Mcleod, Elizabeth, The Nature Conservancy)
1078	5	45	36	0	0	FAQ 5-5 There will be other FAQs on ocean acidification, perhaps coordinate with chapter 7 and 6 to agree on one chapter having it. (Chatterjee, Monalisa, IPCC WGII TSU)
1079	5	45	36	0	42	Including an FAQ on relevance of acidification to coastal systems seems useful, but neither the question nor the response here seem sufficient. The chapter contains many interesting findings that could be summarized here. The introduction of "pH" at the beginning seems to unnecessarily complicate the current response, since it is a measurement scale that is not really explained or used in the rest of the response. (CANADA)
1080	5	45	37	45	37	pH, not PH (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1081	5	45	45	51	30	Consistency in the cross cutting boxes is lacking. Coral reef impacts and the discussion of ocean acidification support a similar format - introduction, a substatial discussion of adaptation / mitigation options etc (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
1082	5	45	47	48	35	In my opinion, the cross chapter box on Coral Reefs will be better placed inmediately after subsection 5.4.2.4., whose focus is also on Coral Reefs. This suggested change will make the document consistent with the layout of subsequent subsections (especifically, for example, with subsection 5.4.3.1 Human Settlements). It will also make the document section flow better and self-contained. (Barciela, Rosa, Met Office Hadley Centre)

#	Ch	From Page	From Line	To Page	To Line	Comment
1083	5	45	51	45	51	They occupy 0.551% of Earth surface (Spalding et al. 2001). Spalding M, Ravilious C, Green E (2001) World Atlas of Coral Reefs. UNEP World Conservation Monitoring Centre, Univ. California Press pp. 424 (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1084	5	45	51	45	52	Burke et al. (2011) only deal with tropical reefs, here also only the tropics are stated. However, cold water coral reefs also exist. This should be mentioned and if possible also be taken into account. See for example Roberts et al. (2009) Mingulay reef complex: an interdisciplinary study of cold-water coral habitat, hydrography and biodiversity. Marine Ecology Prog. Ser. 397, 139-151. \n\n (NETHERLANDS)
1085	5	46	1	46	1	SUPPRESS oxygen supply, it is totally wrong: there is no organic caron sedimented in reefs (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1086	5	46	4	46	8	This reads as if OA is already having an impact on coral reefs - I think there is very limited, if any, evidence for OA impacts at present. (Lough, Janice, Australian Institute of Marine Science)
1087	5	46	6	46	6	began to have noticeable effect (mass bleaching) (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1088	5	46	6	46	6	The text should read " the most important and pervasive environmental variables". (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
1089	5	46	11	46	13	Insert: Bleaching involves the breakdown and loss of photosynthetic endosymbionts which live in the host tissues and play a key role in supplying the host with energy and nutrients (Barker et al.,2008). It affects the most spectacular the corals and all others cnidarians, symbiotic with the dinoflagellate genus Symbiodinium ("zooxanthellae"), but also Tridacna molluscks with zooxanthellae, sponges with either zooxanthellae or cyanobacteria, larger foraminifera with diatoms or chlorophytes, ascidians with Procholoron sp. (if a reference is needed, Pecheux, 1998). Put here in the Coral Box the physiological details Chapter 6.2.5.4 p 26 line 9-12 as modified by me. (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1090	5	46	13	46	15	This statement lacks estimate of confidence as well. (Eakin, Mark, National Oceanic and Atmospheric Administration)
1091	5	46	17	46	17	(Lough, 2000). However, mass bleaching occurs also at lower temperature, and from seven worldwide case studies, Barton and Casey (2005) conclude that thermal stresses prior to 1979 were comparable to those observed now. Ocean acidification induces bleaching with summer stress (Pecheux, 1993, 1998, Anthony et al., 2008) Barton AD, Casey KS, 2005, Climatological context for large-scale mass bleaching. Coral Reefs, 24, 536-554. Pecheux M, 1993, Is present coral reef mass bleaching due to CO2 rise? Proc 7th Int. Symp. Biomineralisation, 17-20 Nov. 1993, Monaco, Allemand D, Cuif JP (eds), 174. Available from www.reefbase.org or martin-pecheux.fr. Pecheux M. 1998, Review on coral reef bleaching. Atoll Res Bull. Edilivre, Paris, printed in 2013, 245 pp. Available from www.reefbase.org or martin-pecheux.fr. Anthony KRN, Kline DI, Diaz-Pulido G, Dove S, Hoegh-Guldberg O, 2005, Ocean acidification causes bleaching and productivity loss in coral reef builders. Proc Nat Acad Sci US, 105, 17442-17446. (Pecheux, Martin, Institut des Foraminifères Symbiotiques)

#	Ch	From Page	From Line	To Page	To Line	Comment
1092	5	46	20	46	20	Add: There is no evidence of mass bleaching in the past, and larger foraminifera show now spectacular shell malformations never seen in the geological past, apart in planktonic ones just after the Cretaceous/Tertiary boundary (Pecheux, 1998, 1999). Pecheux M. 1998, Review on coral reef bleaching. Atoll Res Bull. Edilivre, Paris, printed in 2013, 245 pp. Available from www.reefbase.org or martin-pecheux.fr. Pecheux M, 1999, Weighting up the threat to the world's coral. Nature, 402, 457. (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1093	5	46	23	46	23	Add ref of (Wilkinson, 2008). Wilkinson W (ed) and 376 authors, 2008, Status of Coral Reefs of the World: 2008. Aust Inst Mar Sci, Townsville, Australia, 296 pp. Available at www.reefbase.org (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1094	5	46	37	46	37	Coral reefs are the most vulnerable Earth ecosystem to global change. (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1095	5	46	39	46	40	I would suggest including more intense tropical cyclones as a future climate stressor and possibly, in near equatorial locations, more intense rainfall events. (Lough, Janice, Australian Institute of Marine Science)
1096	5	46	41	46	41	Even under very optimistic (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1097	5	46	43	46	43	RCP3-PD ?? RCP2.6 ! (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1098	5	46	50	46	53	Statistics for Pacific Island coral reef fisheries in Bell et al (2011)Vulnerability of Pacific Fisheries and Aquaculture to Climate Change, SPC, Noumea, New Caledonia, 925pp; (Lough, Janice, Australian Institute of Marine Science)
1099	5	47	1	47	10	Quote coastal protection before tourism ! (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1100	5	47	3	47	3	Please in US$ (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1101	5	47	3	47	3	The Biggs 2011 reference mentioned on line 3 does not appear in the reference list at the bottom of the page. (AUSTRALIA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1102	5	47	17	0	23	Although they are key conservation and management tools, they are less effecting in reducing coral loss from thermal stress (Selig et al. 2012)… this part of the sentence is unclear and misleading. When it says, "they are less effective" - less effective than what? unprotected areas? Suggest clarifying to "Although they are key conservation and management tools, they are unable to protect corals directly from thermal stress (Selig et al. 2012).....\n\nwhile MPAs may need to be complemented by additional strategies (Rau et al. 2012) - they also MUST be implemented in a broader management framework that addresses threats outside their boundaries. This is a critical omission and suggest the following to address it: \nBefore sentence beginning "Controlling the input of nutrients..." suggest adding \n"While MPA networks are a critical management tool for conserving marine biodiversity, they must be established in conjunction with other management strategies to be effective. MPA networks should be established considering other forms of resource management (e.g., fishery catch limits and gear restrictions) and integrated ocean and coastal management to control land-based threats such as pollution and sedimentation. The most effective configuration may be networks of highly protected areas nested within a broader management framework (Salm et al. 2006). Such a framework might include an extensive multiple-use area integrated with coastal management regimes that help minimize land-based sources of pollution (Mcleod et al. 2009).\n\nSalm RV, Done T, and Mcleod E. 2006. Marine protected area planning in a changing climate. In: Phinney JT, Hoegh-\nGuldberg O, Kleypas J, et al. (Eds). Coral reefs and climate change: science and management. Washington, DC: American Geophysical Union.\n\nMcleod, E., R. Salm, A. Green, and J. Almany. 2009. Designing marine protected area networks to address the impacts of climate change. Frontiers in Ecology and the Environment 7(7): 362-370. (Mcleod, Elizabeth, The Nature Conservancy)
1103	5	47	17	47	18	Perhaps it would be good to cite the excellent recent publication showing the post-bleaching recovery of Scott Reef as an example of resilience at work (Gilmour et al. 2013). (Eakin, Mark, National Oceanic and Atmospheric Administration)
1104	5	47	17	47	25	Note, however, that MPAs are starting to incorporate principles of climate resilience, e.g. by selecting areas with the most heat resistant corals as core protection areas. Some pioneering work was done by The Nature Conservancy in Palau, starting from the early 2000s. (Bettencourt, Sofia, World Bank)
1105	5	47	18	47	18	(limited evidence, good agreement) (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1106	5	47	20	47	21	Which additional and alternative strategy ?? (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1107	5	47	21	47	21	Locally, controlling... (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1108	5	47	31	47	31	…to more thermotolerant but less productive types (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1109	5	47	32	47	32	2' in 'CO2' should be a subscipt (POLAND)
1110	5	47	33	47	33	'2' in 'CO2' should be a subscipt (POLAND)
1111	5	47	34	47	37	Fig CR-1. Why pHT and not pH ? (Pecheux, Martin, Institut des Foraminifères Symbiotiques)

#	Ch	From Page	From Line	To Page	To Line	Comment
1112	5	48	38	50	38	Box CC-OA As this box is a cross-cutting box, and is primarily aligned with Ch. 6 Ocean Systems, it can seem incongruous with section 5.3.3.5. It may help if the box gives an overview of how coastal and marine OA are different (beyond p. 48 line 54). (UNITED STATES OF AMERICA)
1113	5	48	38	50	53	In my opinion, the cross chapter box on Ocean Acidification will be better placed inmediately after subsection 5.3.3.5., which also focuses on Ocean Acidication. This suggested change will make the document consistent with the layout of subsequent sections (such as, for example, section 5.4.3 Human Systems). It will also make the ocean acidification section flow better and self-contained. (Barciela, Rosa, Met Office Hadley Centre)
1114	5	48	38	50	53	This box (on ocean acidification seems unnecessary as almost everything here is included in the chapter 6 text, where it is substantially better written! (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
1115	5	48	44	48	44	It has also been shown that acidification has the potential to affect ecosystems. It has been hypothesised that a reduction in nitrification and NO3? could lead to a substrate-based reduction in denitrification, decreasing volatile nitrogen emissions and leading to eutrophication. Biogeochemical modelling studies in the North Sea suggests that a 10% reduction in nitrification would lead to a similar reduction in denitrification and subsequent eutrophication, although the consequences due to this alone on an already eutrophic North Sea system would be negligible (Blackford and Gilbert, 2007) (Barciela, Rosa, Met Office Hadley Centre)
1116	5	48	44	48	44	Reference: Blackford, J. C and Gilbert, F. J. (2007). pH variability and CO2 induced acidification in the North Sea. Journal of Marine Systems 64 (2007) 229–241. (Barciela, Rosa, Met Office Hadley Centre)
1117	5	48	44	48	45	Note that a variety of pollutants (SOx, NOx, some fertilizers) can also contribute directly to acidification, not just via eutrophication. See e.g. Doney, S.C., N. Mahowald, I. Lima (more) , 2007: Impact of anthropogenic atmospheric nitrogen and sulfur deposition on ocean acidification and the inorganic carbon system. Proceedings of the National Academy of Sciences of the United States of America, 104(37), (Hoffman, Jennifer, EcoAdapt)
1118	5	48	44	48	45	Note that a variety of pollutants (SOx, NOx, some fertilizers) can also contribute directly to acidification, not just via eutrophication. See e.g. Doney, S.C., N. Mahowald, I. Lima (more) , 2007: Impact of anthropogenic atmospheric nitrogen and sulfur deposition on ocean acidification and the inorganic carbon system. Proceedings of the National Academy of Sciences of the United States of America, 104(37) (UNITED STATES OF AMERICA)
1119	5	48	45	48	45	change 'futures' to 'future' (POLAND)
1120	5	48	51	48	51	virtually certain (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1121	5	48	54	48	54	…are more variable, but follow the same trends. (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1122	5	49	1	49	8	Sources are missing and are not traceable.\n\n (NETHERLANDS)

#	Ch	From Page	From Line	To Page	To Line	Comment
1123	5	49	4	49	5	is this really so. Warming will on the short term stimulate respiration, but on the longer term it is the production/flux of labile carbon that sets respiration rates, unless system growth efficiency is very temperature sensitive (on the long term). This short-term/long-term distinction should be made: see the history of temperature effects on soil discussions. (Middelburg, Jack, Utrecht University)
1124	5	49	6	49	8	Biologically, the more important is the increase of proton H+. So write: …a pH change of -0.146 unit with RCP2.6 (421 ppm CO2, +1°C, +39.6% proton H+ concentration, -20.8% carbonate ion concentration) to a pH change of -0.447 unit with RCP8.5 (936 ppm CO2, +3.7°C, +179.3% proton H+ concentration, -52.0% carbonate ion concentration). This was calculated for mean ocaen seawater (34.78 S, 2322 Alk, 19.2°C - Takahashi et al, 1981 - and CO2SYS software. (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1125	5	49	11	49	13	There is increasing evidence that growth rate, reproduction and development of eggs, juveniles and larval stages of some planktonic organisms. Kurihara (2008) reviewed the effects of ocean acidification on early developmental and reproductive stages of calcifiers, both of which are believed to be the most vulnerable stages to environmental change within a life cycle. Laboratory experiments showed that ocean acidification has negative impacts on the fertilization, cleavage, larva, settlement and reproductive stages of several marine calcifiers, including echinoderm, bivalve, coral and crustacean species. It concluded that future changes in ocean acidity will potentially impact the population size and dynamics, as well as the community structure of calcifiers, and will therefore have negative impacts on marine ecosystems. Further studies are needed to evaluate the potential impacts on non-calcifiers, as well as the synergistic impacts of ocean acidification and climate change. Reference: Kurihara H. (2008). Effects of CO2-driven ocean acidification on the early developmental stages of invertebrates. MARINE ECOLOGY PROGRESS SERIES, Vol. 373: 275–284, 2008 doi: 10.3354/meps07802 (Barciela, Rosa, Met Office Hadley Centre)
1126	5	49	18	0	0	Note that OA actually increases calcification rates in some species of crab. (UNITED STATES OF AMERICA)
1127	5	49	18	49	0	Note that OA actually increases calcification rates in some species of crab. (Hoffman, Jennifer, EcoAdapt)
1128	5	49	18	49	21	Observational studies using Continuous Plankton Recorder (CPR) and pH data from the ICES data base (admittedly of debatable quality), for the central North Sea, show that the abundances of three out of the six calcifying plankton taxa, identified as potentially vulnerable to ocean acidification, fell between 1958 and 2010, while the abundances of both coccolithophores and foraminiferans, by far the most important planktonic CaCO3 producers in the world ocean, appear to be soaring in the North Sea. Reference: Reference: Beare D, McQuatters-Gollop A, van der Hammen T, Machiels M, Teoh SJ, et al. (2013) Long-Term Trends in Calcifying Plankton and pH in the North Sea. PLoS ONE 8(5): e61175.doi:10.1371/journal.pone.0061175. (Barciela, Rosa, Met Office Hadley Centre)
1129	5	49	18	49	29	More references are needed. (UNITED STATES OF AMERICA)
1130	5	49	19	49	19	coraline algae (Anthony et al., 2008) Anthony KRN, Kline DI, Diaz-Pulido G, Dove S, Hoegh-Guldberg O, 2005, Ocean acidification causes bleaching and productivity loss in coral reef builders. Proc Nat Acad Sci US, 105, 17442-17446 (Pecheux, Martin, Institut des Foraminifères Symbiotiques)

#	Ch	From Page	From Line	To Page	To Line	Comment
1131	5	49	19	49	19	Do seaweeds really compete with snails (this is how the sentence reads). Also I'm not sure I would label marine gastropods 'snails' as this might confuse the reader (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
1132	5	49	21	49	21	…affect the other components of the ecosystem dependent on the habitats they create. this should include an 'amongst others' since more important effects can be located in for example the disturbed foodchain balance (for example snails and bivalves are in the foodchain of birds, fish and humans) and habitats are not only important for ecosystems but also for preventing erosion. These could be added to better substantiate the effects of ocean acidification by reduced performance of calcifying ecosystem builders.\n\n (NETHERLANDS)
1133	5	49	22	49	23	The impact of ocean acidification on the occurrence of harmful and nuisance algal blooms, and the overall phytoplankton community has yet to be fully investigated. However, lower pH has the potential to affect nutrient speciation (like, for example, nitrogen, phosphate, silicate and iron) which are critically important for phytoplankton growth (Turley et al., 2009). Model results for the North Sea (Blackford and Gilbert, 2007) show that measurable biogeochemical consequences of pH reduction can be predicted in the chemical speciation of nitrogen, a key limiting nutrient in this region. However no claim can be made yet about the ecosystem consequences of such a process effect. (Barciela, Rosa, Met Office Hadley Centre)
1134	5	49	22	49	23	Turley C., Findlay H.S., Mangi S., Ridgwell A. and Schmidt D. N. (2009) CO2 and ocean acidification in Marine Climate Change Ecosystem Linkages Report Card 2009. (Barciela, Rosa, Met Office Hadley Centre)
1135	5	49	22	49	23	Blackford, J. C and Gilbert, F. J. (2007). pH variability and CO2 induced acidification in the North Sea. Journal of Marine Systems 64 (2007) 229–241. (Barciela, Rosa, Met Office Hadley Centre)
1136	5	49	24	49	26	The authors imply that there are few known effects on fishes, but there is certainly enough known to warrant discussion, e.g. effects on physiology and respiration, reviewed in Fabry, V. J., Seibel, B. A., Feely, R. A., and Orr, J. C. 2008. Impacts of ocean acidification on marine fauna and ecosystem processes. – ICES Journal of Marine Science, 65: 414–432. (Hoffman, Jennifer, EcoAdapt)
1137	5	49	24	49	26	The authors imply that there are few known effects on fishes, but there is certainly enough known to warrant discussion, e.g. effects on physiology and respiration, reviewed in Fabry, V. J., Seibel, B. A., Feely, R. A., and Orr, J. C. 2008. Impacts of ocean acidification on marine fauna and ecosystem processes. ICES Journal of Marine Science, 65: 414-432. (UNITED STATES OF AMERICA)
1138	5	49	33	49	33	Should mention the possibility of potential 'bottom up' impacts through marine food-webs. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
1139	5	49	36	49	0	This is a very weak line of argument. The fact that OA coincided with past mass extinctions doesn't mean that evolutionary rates weren't fast enough to handle OA. The actual cause of widespread death might not have been OA at all. (Hoffman, Jennifer, EcoAdapt)
1140	5	49	39	49	42	In my opinion, there is also a need to especifically understand the effect of ocean acidification on the flux exchanges across the pelagic and benthic interface. (Barciela, Rosa, Met Office Hadley Centre)

#	Ch	From Page	From Line	To Page	To Line	Comment
1141	5	49	42	49	42	Reduced biocalcification is an Earth regulatory system, as it corresponds to an asorbtion of CO2. (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1142	5	49	50	49	50	…of corals (and leaching, Anthony et al., 2008) Anthony KRN, Kline DI, Diaz-Pulido G, Dove S, Hoegh-Guldberg O, 2005, Ocean acidification causes bleaching and productivity loss in coral reef builders. Proc Nat Acad Sci US, 105, 17442-17446 (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1143	5	50	6	50	6	Can we have a precise definition of "efficient". Are you assuming a constant CO2 concentration in the atmosphere? If the CO2 concentration in the atmosphere increases faster than its concentration in the ocean, then the rate of absorbtion of CO2 into the ocean will surely increase. (Wright, David, University of Ottawa)
1144	5	50	23	0	53	These paragraphs are repeated verbatim in Chapter 6 p. 676 line 30 to p.677 line 6, Chapter 7 p. 824 lines 16-46 and Chapter 30 p. 2644. Lines 45 to p. 2645 line 21. Is this repetition necessary? (Vivian, Chris, IMAREST)
1145	5	50	24	0	25	Suggest adding reference Mcleod et al. 2012 so it reads: "and adaptation to the consequences (Mcleod et al. 2012; Rau et al. 2012; Bille et al., sbm)."\nMcleod, E., K.R.N. Anthony, A. Andersson, R. Beeden, Y. Golbuu, J. Kleypas, K. Kroeker, D. Manzello, R. Salm, H. Schuttenberg, and J.E. Smith. 2012. Preparing to manage coral reefs for ocean acidification: Lessons from coral bleaching. Frontiers in Ecology and the Environment. doi:10.1890/110240. (Mcleod, Elizabeth, The Nature Conservancy)
1146	5	50	25	0	0	Suggest adding reference Mcleod et al. 2012 so it reads: "and adaptation to the consequences (Mcleod et al. 2012; Rau et al. 2012; Bille et al., sbm)."\nMcleod, E., K.R.N. Anthony, A. Andersson, R. Beeden, Y. Golbuu, J. Kleypas, K. Kroeker, D. Manzello, R. Salm, H. Schuttenberg, and J.E. Smith. 2012. Preparing to manage coral reefs for ocean acidification: Lessons from coral bleaching. Frontiers in Ecology and the Environment. doi:10.1890/110240.\n (Mcleod, Elizabeth, The Nature Conservancy)
1147	5	50	26	50	28	Indeed, SRM 'would have no direct effect on ocean acidification. It is obviously. However this fact cannot be considered as a shortcoming of SRM methods which have been designed to counteraction of global warming ONLY. According to chapter's logic we should say that any dike construction for adaptation "has no direct effect on ocean acidification". It is truth but it is not a shortcoming of this adaptation activity. (Ryaboshapko, Alexey, Institute of Global Climate and Ecology)
1148	5	50	27	0	30	As in the above comments, we suggest alternate wording: "Climate geoengineering techniques based on solar radiation management will not abate ocean acidification, and, in some cases, could increase it (Williamson and Turley, 2012)." In line 30, REPLACE "has yet to be" WITH: "has not been demonstrated to-date." (Mooney, Pat Roy, Action Group on Erosion, Technology and Concentration (ETC Group))
1149	5	50	36	50	36	There is some evidence (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1150	5	50	38	50	38	Also see Roberts et al (2013) [Global Change Biology, 19: 340-351.] on the interaction between metal toxicity/pollution and ocean acidification. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)

#	Ch	From Page	From Line	To Page	To Line	Comment
1151	5	50	42	50	48	Fig. OA-1. I am not very satisfied with this figure. A) is not very useful and Geoengineering in Policy Option is nothing. B) if pCO2 is prescribed, there is few use of models to determine pH a very little for temperature, but alkalinity change are unknown. C) It is not informative unless we read the references. For example corals lower photosynthesis with OA while seagrasses increase it, and it is significative. And I don't believe in bootstrap in meta-analysis, it is tricky. Perhaps better suppress this figure. (Pecheux, Martin, Institut des Foraminifères Symbiotiques)
1152	5	50	48	50	53	The caption for panel C is not understandable and appears incomplete. The labels of the figure panel need better definition (e.g. what is LnRR; what is "significant", and what is meant precisely by each of the labels on the y-axis). (Kheshgi, Haroon, ExxonMobil Corporate Strategic Research)
1153	5	51	37	51	37	Suggest rephrasing the statement "Tropical cyclones (also referred to as hurricanes and typhoons in some region". It is because hurricane (or typhoons in WNP) is one of the classifications of tropical cyclones. (Lee, Sai-ming, Hong Kong Observatory)
1154	5	51	38	51	40	Box CC-TC It is suggested to remove "for example" - the sentence is not an example of the previous statement. (UNITED STATES OF AMERICA)
1155	5	51	40	51	40	“(i.e., Categories 3, 4, 5)” Add: “on the Saffir-Simpson scale.” (UNITED STATES OF AMERICA)
1156	5	51	48	51	51	Apologies for harping on storms, but this sentence seems to contradict what is in the main section as it seems to draw a very strong link between climate change and increased storm magnitude. It would be helpful if this difference was made more clear. (UNITED STATES OF AMERICA)
1157	5	51	51	51	51	Add references: Elsner et al., 2008 Nature 455, 92-95; Bender et al., 2010; Science 327:454-458; Knutson et al., Nature Geoscience 3:157-163).” (UNITED STATES OF AMERICA)
1158	5	51	52	51	52	The word "lower confidence" repeated twice. (Lee, Sai-ming, Hong Kong Observatory)
1159	5	51	52	51	52	duplication of "lower confidence" (JAPAN)
1160	5	51	52	51	52	lower confidence repeats twice. (UNITED STATES OF AMERICA)
1161	5	51	52	51	52	the phrase 'lower confidence' is doubled (POLAND)
1162	5	52	1	52	1	change 'includes' to 'include' (POLAND)
1163	5	52	19	52	19	change 'Nargs' to 'Nargis' (POLAND)
1164	5	53	1	0	0	References to be included: (1) JH Keysers, ND Quadros, PA Collier (2012) Vertical Datum Transformations across the Littoral Zone: Developing a method to establish a common vertical datum before integrating land height data with nearshore seafloor depth data. Cooperative Research Centre for Spatial Information, CRCSI. www.crcsi.com.au / Research / Commissioned-Research / UDEM-for-CC ; (2) BW Eakins, LA Taylor, KS Carignan, MR Kenny (2011) Advances in Coastal Digital Elevation Models, EOS, Transactions, American Geophysical Union, 92(18):149-150 ; (3) Ministerio do Meio Ambiente (Ministry of Environment) (2013) Dialogos Brasil-Espanha: Sistema de Modelagem Costeira, Resumo Executivo. Editora IABS, Brasilia, Brasil. www.mma.gov.br / gestao-territorial / gerenciamento-costeiro / smc-brasil. (Teixeira Luz, Roberto, Brazilian Geography and Statistics Institute (IBGE))
1165	5	53	1	77	6	Incomplete references and inconsistent notation (Orford, Julian, Queen\\\\\\'s University, Belfast)

#	Ch	From Page	From Line	To Page	To Line	Comment
1166	5	53	1	77	6	A lot of references are incomplete. Some are pointed out but there are dozens which are not complete and by a random check several aren't in the list at all. \n\n (NETHERLANDS)
1167	5	54	37	54	37	This line states: 'PH, a measure of sea water acidity,(...)', pH is just a general measure of acidity, not specifically of sea water acidity. Suggestion: 'pH, a measure of acidity..'\n\n (NETHERLANDS)
1168	5	54	52	54	52	Add references: Elsner et al., 2008 Nature 455, 92-95; Bender et al., 2010; Science 327:454-458; Knutson et al., Nature Geoscience 3:157-163).” (UNITED STATES OF AMERICA)
1169	5	60	25	60	27	Incorrect reference. The reference is cited on P15/L6 and P15/L25. The correct reference is: Gutierrez, B.T., Plant, N.G., Thieler, E.R., 2011, A Bayesian network to predict coastal vulnerability to sea-level rise. Journal of Geophysical Research 116, F02009, doi: 10.1029/2010JF001891. (UNITED STATES OF AMERICA)
1170	5	65	24	65	26	It should be "Zhang," not "Zang." This mistake is made twice here. (UNITED STATES OF AMERICA)
1171	5	65	50	65	50	3, 1-13 --> Nature Communications 3, 1-13. (Jung, Sukgeun, Jeju National University)
1172	5	68	44	68	44	This reference is incorrect. Is should read: "Nicholls, R. J., Marinova, N., Lowe, J. A., Brown, S., Vellinga, P., de Gusma?o, D., Hinkel, J. and Tol, R. S. J., 2011: Sea-level rise and its possible impacts given a ‘beyond 4°c world’ in the twenty-first century. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 369 (1934), 161-181." (de Gusmao, Diogo, Met Office Hadley Centre)
1173	5	69	8	69	12	These lines repeat lines 3 to 7. (UNITED STATES OF AMERICA)
1174	5	69	36	69	36	[…] de Gusmão, D., not "[…] De Gusmão, D." (de Gusmao, Diogo, Met Office Hadley Centre)
1175	5	78	0	0	0	In the Table5-1, why the the lower limit of rise in sea level of PCP4.5 less than PCP2.6 Please check (Zhu, Xiaojin, National Climate Center)
1176	5	78	0	0	0	Table 5-2, second row, fourth column : unknown symbol "Likely ¯ - Ë in". Please check. Moreover, the projected increase in TC related rainfall rate should be mentioned here. (Lee, Sai-ming, Hong Kong Observatory)
1177	5	78	0	0	0	Table 5.1. The results in this table are confusing. They show rather moderate increases of sea-levels between 2100 and 2200 as compared to previous international assessment. This requires further clarifications. (Sjostrom, Asa, Swedish Meteorological and Hydrological Institute)
1178	5	78	0	0	0	Table 5.1. The results in this table are confusing. They show rather moderate increases of sea-levels between 2100 and 2200 as compared to previous international assessment. This requires further clarifications. (SWEDEN)
1179	5	78	0	0	0	Table 5-2: Suggest eliminating key with symbols for increase, decrease, no change, etc or use the symbols throughout the table. Only one symbol is utilized in the table, and that one only once. (UNITED STATES OF AMERICA)
1180	5	78	0	0	0	Table 5-2: What does "GMSL very likely" mean, assuming that GMSL stands for Global Mean Sea Level? Please revise those statements and cross-check with WGI Ch13. (Plattner, Gian-Kasper, IPCC WGI TSU)
1181	5	78	0	0	0	Table 5-1. In finalizing this table, the chapter team should ensure that any confidence levels associated with the information in working group 1 are also provided here. Additionally, interpretation of the bottom entries for 2200 through 2500 should be clarified--are they for RCP 6.0? (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
1182	5	78	0	78	0	Table 5-2: "Likely ... E in frequency" should be "Likely (decrease) or (no change) in frequency" (JAPAN)
1183	5	78	0	78	0	Table 5-2 Currently unclear what this table is saying - no time frames or locations (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
1184	5	78	0	79	0	Table 5-2. For all examples given within the columns for trends and projections, the relevant time frames for the observations and projections should be specified. Beyond this, I have a number of small points for consideration. Within the row for sea level, presumably the trend in GMSL should be specified--increases are very likely? 2nd, within the storms row, a symbol within the projections box is used that is unclear, and it would be preferable to specify in what way extratropical cyclones will demonstrate "reduction"--in terms of frequency? Within the row for waves, it would be helpful to specify the relevant variables within the trends and projections entries, as it is currently not very clear what is being described. For the extreme sea levels entries, it would be helpful to further clarify how they are different from the "waves" entries. For the freshwater input entries, the relevant variable could be more precisely indicated within the projection entry--increase in freshwater input (and how defined)? It would be also helpful to clarify what is meant by "emerging information" within the final entry. Finally, within the ocean acidity entries, the bracketed information is not clear within physical effects column, it would be best to indicate more precisely what variable has demonstrated "increase" within the trend and projection entries, and for the final entry, is the working group 1 contribution to the 4th assessment report meant? (Mach, Katharine, IPCC WGII TSU)
1185	5	78	0	113	0	The chapter underlines with very expressive figures the impact of climate change on water resources on regional scale; in the paragraph 5.1.2.5 analysing situation of agriculture sector in Africa, it is important to mention socio-economic constraints like poverty and illiteracy of the majority of rural population; (Some, Leopold, Centre National de la Recherche Scientifique Technologique)
1186	5	80	0	0	0	Table 5-3. Very good table, compare nations with largest populations and the highest proportion of population in the low-lying coastal areas. Unfortounately contries with fewer than 100 000 inhabitants were not included (15 SIDS). Would be good to include the or some of them. Is Macao a nation or part of PR China? (Suarez, Avelino, Institute of Ecology and Systematic, Cuban Environmental Agency)
1187	5	80	0	0	0	In Table 5-3, Macao being a special administrative region of China instead of a country, it is suggested to change “nations” to “country/region”. (CHINA)
1188	5	80	0	0	0	Figure 5-3: Projections of global coral bleaching under AR5 RCPs can be found in "Temporary refugia for coral reefs in a warming world" by R. van Hooidonk, J. A. Maynard and S. Planes. Nature Climate Change. PUBLISHED ONLINE: 24 FEBRUARY 2013. DOI: 10.1038/NCLIMATE1829. Also, Figure 5-3 should be replaced with figure 1 or 4 from the van Hooidonk publication. (UNITED STATES OF AMERICA)
1189	5	80	0	0	0	Table 5-4: For Wetland loss, in the Other Human Drivers column, an additional important driver is excess Nitrogen (e.g. Deegan et al 2012, Coastal eutrophication as a driver of salt marsh loss, Nature Vol 490: 388-392) (UNITED STATES OF AMERICA)
1190	5	80	0	0	0	Table 5-3: What are the shaded cells showing? (Estrada, Yuka, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
1191	5	80	0	0	0	Table 5-4: Please clarify what it means by “Other” in the column headers, “other climate drivers” and “other human drivers.” (Other than what?) Please also specify what exactly is meant by “morphological changes” under “other climate drivers” and “other human drivers.” (Estrada, Yuka, IPCC WGII TSU)
1192	5	80	0	0	0	Table 5-3. Within the table caption, it could be helpful to describe why Bangladesh and Vietnam are highlighted (although the reader can of course deduce the reason). (Mach, Katharine, IPCC WGII TSU)
1193	5	80	0	80	0	Table 5-4. is this table only reflecting other climate drivers related to SLR? If so should be clearly stated. Should temperature not be included in other drivers in dry areas? Species of many drylands could be already at threshold level for temperature. If the combined effect of increased temperature and reduced precipitation occur there could be a shift in species composition leading to a change on ecosystems. (Lacambra Segura, Carmen, Grupo La era)
1194	5	80	0	80	0	For Table 5-3: It is not clear from the table heading why some lines are highlighted in the table. (Hebbinghaus, Heike, North-Rhine Westphalian State Agency for Nature, Environment and Consumer Protection)
1195	5	81	0	0	0	Table 5-5: It's unclear what the reader is supposed to take away from this table. The examples listed are not comparable due to application of different SLR scenarios and/or methods. Is this a simple compendium of efforts? (UNITED STATES OF AMERICA)
1196	5	81	0	81	0	Table 5-5. The table is very informative and useful. A further very useful G29contribution could be an extra column describing the limitations of each of the researched listed. (Lacambra Segura, Carmen, Grupo La era)
1197	5	81	0	81	0	Table 5-5. There is no information at all about Coastal Vulnerability Assessments for Latin America and the Caribbean and there are plenty in the literature (Lacambra Segura, Carmen, Grupo La era)
1198	5	82	34	82	37	Under EUROPE:DENMARK-COPENHAGEN / The statement implying that Copenhagen is "not highly vulnerable to coastal flooding due to existing flood protection" is at odds with invesitgations done by myself in 2010 [http://www.eurocontrol.int/sites/default/files/content/documents/official-documents/facts-and-figures/statfor/challenges-of-growth-climate-adaptation-march-2010.pdf] and more recently the conclusions in the Copenhagen Climate Adaptation Plan (2011) [https://subsite.kk.dk/sitecore/content/Subsites/CityOfCopenhagen/SubsiteFrontpage/LivingInCopenhagen/~/media/9FC0B33FB4A6403F987A07D5332261A0.ashx] where one can read in page 32 that "the risk over the course of 30-40 years will be so significant that the damage in flooding from the sea is unacceptably great". Figure 5 in page 36 of Copenhagen's Adaptation Plan shows a rather different picture regarding present levels of flood defences when compared to Figure 15 in Hallegatte et al., 2011. I suggest that a different approach is used when describing coastal flood risk for Copenhagen, e.g. "Copenhagen is presently well protected in most coastal areas, but it is expected that the risk of flooding from the sea will dominate beyond 2050. If no form of protection facility is established, the combined costs of damage over the next 100 years will total DKK 15-20 billion". (de Gusmao, Diogo, Met Office Hadley Centre)

#	Ch	From Page	From Line	To Page	To Line	Comment
1199	5	83	0	0	0	Table 5-5: line 2: France: it should be carified that the statement on the French Atlantic coast only applies to the Aquitaine sandy coast (column 5). In other French Atlantic coasts, the situation may be completely different. (Le Cozannet, Goneri, BRGM)
1200	5	85	0	0	0	Table 5-6?please replace "infraesctructure" by "infrastructure" (Ye, Siyuan, Qingdao institute of marine geology)
1201	5	85	0	0	0	Table 5.6 comment: last (5th) bullet in the 1st column: change 'Increase' to 'Increased' (POLAND)
1202	5	85	0	85	0	Table 5-6. Question: Are hospitals and schools not considered critical infrastructure? (Lacambra Segura, Carmen, Grupo La era)
1203	5	85	0	85	0	Table 5 - -: column headers require realigment (communication, energy, transportation, water and waste) (MacClenahan, Philippe, Synergies Environnement)
1204	5	86	0	0	0	Table 5-7: Should say "Increased Salinity." (UNITED STATES OF AMERICA)
1205	5	86	0	0	0	Table 5-7: The term "waterlogging" under "Impacts" is not one used in the chapter text, whereas "inundation" is commonly used in conjunction with flooding and may be better suited for this usage. (UNITED STATES OF AMERICA)
1206	5	86	0	87	0	Table 5-7 The impacts of climate change on ecosystems and adaptation options could be brought out more explicitly as well as more ecosystem based approaches to adaptation in the community (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
1207	5	88	0	0	0	Fig.5-1 need to be improved, the current content was not very informative, the elements presented in this fig were not in the same hierarchy level. (Ye, Siyuan, Qingdao institute of marine geology)
1208	5	88	0	0	0	Fig 5-2?the caption of "1.0/1.0 m Projection" need to be clarified. (Ye, Siyuan, Qingdao institute of marine geology)
1209	5	88	0	0	0	Figure 5.2 is being presented in slightly different form in WGI Chapter 13, so I suggest you align. (Nunn, Patrick, University of New England)
1210	5	88	0	0	0	Figure 5-2. Do a, b & c all have to be dots? Impossible to distinguish between then on the figure unless it will be colour coded… (Miloshis, Michael, Charles Darwin University)
1211	5	88	0	0	0	Totally incomprehensible Figure 2. What do the various dots represent? Where do the a, b, and c of the caption refer to? What does the legend represent with 3 seemingly similar black dots?\n\n (NETHERLANDS)
1212	5	88	0	0	0	Figure 5.2: This figure is unclear. Which set of dots correspond to which columns in the Key? What is “sea level rise allowance”? What is a “raised cosine distribution”? (UNITED STATES OF AMERICA)
1213	5	88	0	0	0	Figure 5-1: The box needs some work; human drivers should be worded as coastal development, natural resource use, pollution, nutrient loading, etc. Not sure why freshwater input and realtive sea level are in the middle; they make sense under the Climate box. (UNITED STATES OF AMERICA)
1214	5	88	0	0	0	Figure 5-2: The map and graphic look nice, but the legend is very confusing and needs some translation for non-experts in this field of science / Figure 5-2 The complexity of the figure description, especially of the key makes this figure difficult to follow. It is not entirely clear from the text on p. 8 what the take home message of the figure is. (UNITED STATES OF AMERICA)

#	Ch	From Page	From Line	To Page	To Line	Comment
1215	5	88	0	0	0	Figure 5-2: This figure is very confusing. Are the dot sizes on the map derived from the key in column a, b, or c? How can one distinguish between dots of column a, b, and c, when they are on the map? (Coughlan, Erin, Red Cross / Red Crescent Climate Centre)
1216	5	88	0	0	0	Figure 5-1: Requires more explanation in the figure caption than is given. (Estrada, Yuka, IPCC WGII TSU)
1217	5	88	0	0	0	Figure 5-2: The three sets of legends for dots with similar diameters are very hard to tell apart. The caption is also hard to follow to understand what each number/dot is representing exactly. Colors would probably resolve these issues. (Estrada, Yuka, IPCC WGII TSU)
1218	5	88	0	0	0	Figure 5-2. It is not completely clear how A, B, and C should be observed within the table, which should be clarified. (Mach, Katharine, IPCC WGII TSU)
1219	5	88	0	88	0	Figure 5.2 Legend is not clear, the a, b and c letters should be added on top of each symbol column in the left lower corner of the figure; (MacClenahan, Philippe, Synergies Environnement)
1220	5	88	0	88	0	dots have the same black color so it is not possible to know to which parameter (a, b or c) theu relate on the map (MacClenahan, Philippe, Synergies Environnement)
1221	5	88	0	88	0	The caption and figure (fig 5-2) are very confusing. It is not clear (to me) how to interpret the three different scales within the overall map. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
1222	5	88	1	0	0	Figure 5-2 could be taken to show that there will be no increase in the frequency of flooding events in most of Asia and Africa. I am assuming that the lack of dots is actually due to a lack of data, rather than no change in frequency. Could this be made clearer in the figure? (Kentarchos, Anastasios, European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)
1223	5	89	0	0	0	Figure 5-4: On the map: Is Cairo supposed to be a coastal megacity or did you mean Alexandria ? - What are the criteria for inserting a coastal megacity on this map ? San Francisco could be considered as a coastal megacity, Singapour as well: they are not indicated on the map (Le Cozannet, Goneri, BRGM)
1224	5	89	0	0	0	Figure 5.3 - colours don't match with caption (Nunn, Patrick, University of New England)
1225	5	89	0	0	0	Figure 5.4 - better not to have the key (Coastal Megacity 2011) in the middle of the Pacific without a differently shaded box around it. (Nunn, Patrick, University of New England)
1226	5	89	0	0	0	Figure 5-3. Colour in figure are different to the wording below. (Miloshis, Michael, Charles Darwin University)
1227	5	89	0	0	0	Figure 5-4 contains a world map with national borders. It is suggested to use a map without borders to avoid unnecessary disputes. (CHINA)
1228	5	89	0	0	0	Figure 5.3: The colors do not correspond to the caption. (UNITED STATES OF AMERICA)
1229	5	89	0	0	0	Figure 5-3: The colors in the legend are not the same as the colors in the figure. (UNITED STATES OF AMERICA)
1230	5	89	0	0	0	Figure 5-3. The colors described within the caption do not match the colors in the figure, which should be clarified. Additionally, where "the standard degree heating month formula" is mentioned, it could be helpful to further specify the thresholds for bleaching for an unfamiliar reader. (Mach, Katharine, IPCC WGII TSU)

#	Ch	From Page	From Line	To Page	To Line	Comment
1231	5	89	0	0	0	Figure 5-4. It would be helpful to specify how coastal megacities are defined in terms of which are included in this figure. (Mach, Katharine, IPCC WGII TSU)
1232	5	89	0	0	0	Fgure 5.3 caption : colors mentionned in the caption are not those used in the figure. (Petit, Michel , CGIET rue de Bercy)
1233	5	89	0	89	0	The caption for figure 5-4 gives no information about the content of the figure. (Hebbinghaus, Heike, North-Rhine Westphalian State Agency for Nature, Environment and Consumer Protection)
1234	5	89	0	89	0	FIg. 5.3, colors mentionned in the text do not match those in the figure, e.g. category "None" is grey in the Fig. while it is indicated as "Green" in the text (MacClenahan, Philippe, Synergies Environnement)
1235	5	89	0	89	0	fig 5-3:The caption on page 19 is slightly different to the caption on page 89. The version on page 89 includes colour codes to help interpret the figure - although these descriptions do not seem to match the actual colours very well. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
1236	5	89	0	89	0	On figure 5-6 what does "HLO" refer to (not mentioned in the caption) (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)
1237	5	90	0	0	0	Fig.5-5 and Fig.5-6 need indicate what were the horizontal axis (Ye, Siyuan, Qingdao institute of marine geology)
1238	5	90	0	0	0	The layout of figure 5-5 should be reviewed so that the absisses axes ad legend are brought together (Le Cozannet, Goneri, BRGM)
1239	5	90	0	0	0	Figure 5-5. Horizontal axis needs a caption. We also need a reference within the text to this figure. (Wright, David, University of Ottawa)
1240	5	90	0	0	0	Figure 5-5 Axis need to be fixed… one for detection and one for attribution? (Miloshis, Michael, Charles Darwin University)
1241	5	90	0	0	0	Figure 5-5: Need to label x axis. (UNITED STATES OF AMERICA)
1242	5	90	0	0	0	Figure 5-6: This figure is really confusing; is there a simpler version or different figure to communicate the same concept? (UNITED STATES OF AMERICA)
1243	5	90	0	0	0	Fig. 5-5 comment: description of a horizontal axis is missing (POLAND)
1244	5	90	0	0	0	Fig. 5-6 caption comment: replace 'boxed' with 'boxes' in line 1, replace 'measures' with 'measure' in line 3 (POLAND)
1245	5	90	0	0	0	Figure 5-6: What are the orange arrows indicating? What is “top of new H++ range” showing? (Estrada, Yuka, IPCC WGII TSU)
1246	5	90	0	0	0	Figure 5-5. The chapter team should consider presenting this information as a table to complement the figure. For example, for each entry within the figure, the relevant geographic scope and time frame could be specified within table columns. (Mach, Katharine, IPCC WGII TSU)
1247	5	90	0	0	0	Figure 5-6. Interpretation of the yellowish vertical arrows should be clarified. (Mach, Katharine, IPCC WGII TSU)
1248	5	91	0	0	0	Figure 5-8 Should the axis be High-Low instead of Low-High? (Miloshis, Michael, Charles Darwin University)

#	Ch	From Page	From Line	To Page	To Line	Comment
1249	5	91	0	0	0	Figure 5-7: This figure is also confusing and not intuitive. Perhaps could replace this with a diagram that shows the adaptive management cycle? (UNITED STATES OF AMERICA)
1250	5	91	0	0	0	Figure 5-7: Since this figure is pretty busy, it may be better to take out the legend (and possibly related texts from the map) and make it as an accompanying table. It will increase readability of the map as well as will allow reduction in the size of map in production. As it is presented currently, this figure would take up at least half of the page to keep the text readable. (Estrada, Yuka, IPCC WGII TSU)
1251	5	91	0	0	0	Figure 5-8: The caption of this figure should clarify that the diagram is showing the priority in adaptation strategies for the coastal management. What are the examples of “other soft measures”? Also, would the boundaries of each box be defined clearly as illustrated in this diagram? I’d imagine there would be some cases that fall into a “fuzzy zone” where priorities cannot be clearly defined and that need to be evaluated closely in a case by case basis. (Estrada, Yuka, IPCC WGII TSU)
1252	5	91	0	0	0	Figure 5-8. It would be very helpful to further explain the figure, and especially its axes, within the caption. (Mach, Katharine, IPCC WGII TSU)
1253	5	92	0	0	0	Fig.CR-1,Please clarify what is PHT. (Ye, Siyuan, Qingdao institute of marine geology)
1254	5	92	0	0	0	Figure CR-1: Legend should say "because these coral communities" (not just "communities"); also, says that C and D show 3 seeps and mentions 3 CO2 treatments and Fig. XA and XB - all of this info seems to be missing, as C and D each only depict one image, and there are no accompanying figures. (UNITED STATES OF AMERICA)
1255	5	93	0	0	0	Fig.OA-1, Please indicate the horizontal axis by "year" (Ye, Siyuan, Qingdao institute of marine geology)
1256	5	93	0	0	0	The caption for panel C is not understandable and appears incomplete. The labels of the figure panel need better definition (e.g. what is LnRR; what is "significant", and what is meant precisely by each of the labels on the y-axis). (Kheshgi, Haroon, ExxonMobil Corporate Strategic Research)
1257	5	93	0	0	0	Figure OA-1: Why is "cement manufacture" in the first panel? Also, isn't the Kroeker et al. "in press" paper now published? Need to update this citation. (UNITED STATES OF AMERICA)