IPCC WGII
Fourth Assessment Report
Climate Change Impacts, Adaptation and Vulnerability

Government and Expert Review of Second Order Draft

Specific Comments

GOVERNMENT REVIEW COMMENTS

Chapter 6

August 2006

inc late comments at the end

Discussion of Government review comments and record keeping

IT IS RECOMMENDED THAT:

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

Substantive comments

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

Non-substantive comments

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

General

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

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
G-6-1	A	0				This text mostly discusses the effects of climate change on human activities and society and its socio-economic consequences, whereas it is equally important to (if not more) to discuss the effects on the environment and different ecosystems around the world in detail. A detailed ananlysis concerning the possible effects of climate change, such as for example sea-level rise, on each ecosystem per se, is important in order to distinguish the individuality of every environment, and hence also the different measures that need to be acted upon. Through this detailed information it is easier to make conclusions on how the human society will be influenced and exactly what measures need to be foreseen in different areas. (Government of Finland)	The current draft reflects a balance based on earlier review comments. Section 6.4.1 addresses the issues raised here as much as our space limits allow.
G-6-2	A	0				The chapter captures most of the knowledge on coastal systems. However, the style is not always good. Some parts of the chapter are well written some other barely understandable. The Chapter reflects a great deal of knowledge and research by the various authors. The structure is reasonable. However, the report would benefit by bringing in a good writer or writer/editor to make this chapter easier to read. In many cases, the text seems to invite the reader to skip to the next chapter, through the use of complicated sentence structures or surplus verbiage with no information content. (Government of USA)	Agree – we have aimed to sharpen throughout.
G-6-3	A	0				Each chapter that mentions the SRES scenarios should include a reference to the description in the TS. (Government of USA)	Agree SRES scenarios need more explanantion – expanded beginning of Section 6.3 and refer to Chapter 2 where discussed in more detail.
G-6-4	A	0				Concerning the Baltic Sea, it is important to remember that it is already a highly stressed ecosystem as it is, and that severe climatic changes may have even more drastic effects on the environment. It is also important to consider the combined effects, for example sea-level rise together with anthropogenic eutrophication, in contrast to simply dividing the effects and consequences into separate groups and topics (although it is often more easy to understand when each effects is discussed separately) (Government of Finland)	Agree – we have stressed multiple stress as an important issue concerning coastal zones and climate change and this one of the main points in our Executive Summary. We have also increased references to the Baltic Sea.
G-6-5	A	0				Chapter 6 provides a very broad based assessment of world's coasts at a high level of generalisation. The authors must point out that direct translation from global scale effects to regional scale impacts is generally not possible. (Government of Australia)	Agree strongly and this point is in the Executive Summary and the main chapter.
G-6-6	A	0				Chapter 6 could incorporate/improve the information in chapter 4.4.8 (move from chapter 4) to avoid overlap and improve the text in chapter 4.4.8	Disagree – against plenary-approved structure.

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						(Government of Norway)	
G-6-7	A	0				Batic Sea is not mentioned in the chapter at all (Government of Finland)	There are now three mentions of the Baltic Sea plus references. and also a reference to Schmidt-Thorné, P, Ed., 2006: Sea level change affecting the spatial development in the Baltic Sea Region. Geological Survey of Finland, Special Paper 41, Geological Survey of Finland, 154pp.
G-6-8	A	0				Although it is commonly acknowledged that the sea level is rising, one has to keep in mind that the effect of this rise is counteracted by the land-rising. Especially in the Baltic area, the land-rising is at its highest in the Bothnian Bay. On the other hand, southern parts of the baltic are experiencing sinking of the land. (Government of Finland)	Agree – the importance of relative sea-level rise is made in Section 6.3.2 and the regional and local varianility that is likely is also stressed. However, we do focus on subsiding areas, especially deltas as many of them have high poulations and hence a large impact potential.
G-6-9	A	0				* I wish to add the specific biological and ecological references and data on the fisheries biomass and management changing aspect due to the climate change (Government of Korea)	Global fisheries are part of Chapter 5 – we only deal with fisheries in the narrower coastal sense.
G-6-10	A	0				* A point of view on the SPM and TS, this report is very good condition and it can be contributed to the management rule of coastal and shallow water and marine ecological conservation. (Government of Korea)	Thank you.
G-6-11	A	3	1	4	21	The executive summary is very badly written and needs some revision. There are some repeats, and a lack of precision in the choice of wording that does not do justice to the rest of the text. (Government of USA)	Agree. Completely revised for the FGD.
G-6-12	A	3	3	4	21	Exec summary should have all major points should be bolded; chapter authors are inconsistent and do not follow language regarding uncertainty provided in the introduction (eg. Virtually Certain, Very Likely, etc.), and instead use “will” (or similar wording) that suggest a higher level of certainty than the information provided in the chapter. Therefore, the authors do not use the appropriate terminology when referring to the “degree of confidence” AND “likelihood of occurrence/outcome” in all of the bullet points in the Exec. Summary for this chapter. (Government of USA)	Agree. New Executive Summary follows TSU recommendations, including the appropriate language, confidence levels – with asterisks and development since the TAR.
G-6-13	A	3	5	3	5	“Hurricanes are not climate events they are weather related events” (Government of USA)	Disagree – all weather phemonenoa are a product of climate. However, in the redraft of

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							the ES, this remark has been removed.
G-6-14	A	3	7		8	The sections cited here do not support the conclusion of these impacts being among the most costly and certain consequences of climate change. First, there is the issue of comparison (with other types of impacts) that can't be made from the data presented in this Chapter. Second, the costs presented, while very high, are for an amount of SLR that exceeds the high end from the SRES without extreme ice melt. The statement could be supported, but with better qualifications of the timeframe and assumptions of the statement. It would be a stronger conclusion if presented with characterization of the certainty (or range of results) available in the literature. (Government of USA)	Agree it could be stated more clearly – new ES states that the costs of inaction are higher than the costs of action – the literature supports this statement which has important policy implications.
G-6-15	A	3	17		29	Discussion should include current state of knowledge related to tropical cyclone frequency as well as intensity. (Government of USA)	Not included due to lack of space – writing team felt that increased intensity is much more important than frequency, which is mentioned in the main text (S6.3.2).
G-6-16	A	3	34		34	The basis for the "most" in this sentence is unclear, particularly whether it takes into account coastlines experiencing geologic uplift (which may increase with melting land ice?) or with existing steep slopes. Also, the use of both "most" and "particularly" is confusing – compared to what? (Government of USA)	Remark has been deleted.
G-6-17	A	3	36		36	The word "precluded" seems very strong, especially over long time spans of decades to centuries. "Obstructed" might be better, since humans could choose to (imperfectly) restore the opportunities for migration of natural systems, and the costs would almost certainly be very high (a point which can be made supported by research). (Government of USA)	Agree – have used "constrained"
G-6-18	A	3	42		51	Modify text of sentences as follows: "Line 43: of coastal communities and people in general, line 49: to climate related impacts; line 51: coastal communities with limited access…" (Government of USA)	Text completely rewritten noting this point.
G-6-19	A	3	51		51	These statements of the impacts being greatest in developing countries need either to be deleted or supported by specific information pertinent to the kind of impact being discussed throughout the text, which would make them more convincing and more powerful. (Government of USA)	Have strengthened and made one of six major bullets in the revised ES.
G-6-20	A	3				In the Intoduction, it will be better to start with providing estimates of global mean sea level from tide gauges/satellite altimetry. The authors have given refernce to Impact Chapter in TAR. It will be useful to provide a reference to Sea level Chapter	Links to WG1 chapters have been strengthened through the chapter, especially in Section 6.3.2, where WG1 scenarios are

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						in TAR (or even recent papers of global sea level rise) (Government of India)	reported.
G-6-21	A	4	6		6	" Section 6.6.2) in reducing climate risks" (Government of USA)	Text completely rewritten noting this point.
G-6-22	A	5	4	5	5	delete : 'since the Third Assessment Report (TAR)' (Government of Korea)	Agree
G-6-23	A	5	15		28	"In that paragraph we should also talk about the problems for areas that are already below sea-level. e.g. New Orleans, the Netherlands, etc" (Government of USA)	Disagree due to space constraints – later text discussed New Orleans, the Netherlands, etc. (e.g., S6.4.2.3)
G-6-24	A	6	5		5	Instead of saying "the common template," just spell out the organization for readers who are not looking at other chapters or who can't remember the common template. (Government of USA)	Agree
G-6-25	A	6	37		37	It is surprising that no human influences are cited here, as much erosion must be due to removal or degradation by human activities of stabilizing vegetation. (Government of USA)	Considered - no change made - space constraints.
G-6-26	A	6	44	6	51	The authors should confirm that in terms of climatic variability (eg ENSO) in relation to east Australia that longer-term variations such as interdecadal (PDO) have been considered. Evidence for climate driven impacts in NSW coast have been identified by McLean and Shen (2006) in Journal of Coastal Research (Volume 22, pages 28-36) and other authors since Andrews in 1916. NSW is one of the best documented coasts in the world for evidence of episodic storm impacts on beaches and dunes. (Government of Australia)	Agree –- added.
G-6-27	A	6	44		44	Is it more appropriate to say "climate associated" rather than "climate induced"? The current formulation may suggest that these historically present oscillations are due to climate change, notwithstanding changes in them due to climate change (Government of USA)	Agree –- adopted.
G-6-28	A	7	13			20th century, a trend which seems -> 20th century. This trend seems (Government of Korea)	Not clear what is meant here – no change.
G-6-29	A	7	15		15	Insert residential after silviculture, and change "use" to "uses". (Government of USA)	Done.
G-6-30	A	7	16	7	16	The estimation that 23% of the world's population lives on the coast is based on a 1990 study. The authors should point this out, or assess any new literature that may provide an update on this figure. (Government of Australia)	This figure is based on Small and Nicholls study and is appropriate here. Rewording clarifies, and Chen and McAnaney 2006 ref about Australia added as requested.
G-6-31	A	7	20	7		This finding is not reflected in (and seems possibly to even contradict) the	This has been reconsidered and reworded as

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						statement in the Executive Summary at page 3, lines 10-15. (Government of Australia)	appropriate where needed. The comment is true for much of world, except Australia.
G-6-32	A	7	22		22	Change "drainage of coastal wetlands" to "draining, dredging, and filling of coastal wetlands". (Government of USA)	Disagree, the general term covers these more specific issues also – and space constraints limit extent to which this can be clarified.
G-6-33	A	7	25		25	Insert "beach nourishment" (Government of USA)	Done.
G-6-34	A	8	45		45	"for series of (negative?) impacts" (Government of USA)	Not clear what is meant here – left unchanged.
G-6-35	A	9	11		13	Explain how overfishing stresses coral reefs. (Government of USA)	This is adequately covered in other parts of the coral cross chapter case study [1.3.4.1].
G-6-36	A	9	27	9	27	line "anomalously high sea temperature" . Mention sea surface temperature. (Government of India)	Done.
G-6-37	A	9				Box 6.1 - this text is generally not well written (poor grammar, convoluted sentences, etc), is repetitive of earlier material and inconsistent with many conclusions in earlier coral reef entries. Details below. (Government of Australia)	This has been addressed in the revised Box 6.1.
G-6-38	A	9				"Legend of Fig B6.1.1 is unreadable. Also there is no citation in ref list for Earth Trends 2000" (Government of USA)	Figure replaced.
G-6-39	A	10	1	10	1	What is the spatial context referred to here? Global bleaching events? (Government of Australia)	This issue addressed in revised Box and also by revised and expanded Figure.
G-6-40	A	10	1	10	25	Some useful refernce on Coral reef bleaching in the Indian Ocean region may be found in the Proceedings of International Symposium on Coral Reef, Bali (2000). (Government of India)	This has been covered and much more recent papers have been used to supplement this.
G-6-41	A	10	4	10		Indian Ocean Dipole was first reported by Saji et al. that reference is missing (Saji, N.H., Goswami, B.N., Vinayachandran, P.N., Yamagata, T., 1999, A dipole mode in the tropical Indian Ocean, Nature 401, p. 360-363). (Government of India)	Ref added to 6.2.1 where it seems more appropriate.
G-6-42	A	10	7	10	8	While bleaching was extensive on the GBR in 1998 and 2002, there was minimal coral mortality. This qualifier is critically important and must be added, as it is in the following sentence. (Government of Australia)	This point has been adddressed during revision of Coral reef cross-chapter case study and is especially clear in Box 11.1.
G-6-43	A	10	13		13	It would be more effective to state the research-based evidence for temperature thresholds and then to say that climate models predict increasing exceedances of these over time. The evidence for the first point should be made more clear, and would make the importance of the existing statement better founded and more	This point has been adddressed during revision of Coral reef cross-chapter case study – and the thresholds are now consistently defined. Bleaching ~1 degree C above

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						powerful. (Government of USA)	seasonal aveage monthly max; mortality >2 degree C above same threshold.
G-6-44	A	10	19	10	21	There is a more thorough and accurate treatment of the potential for acclimation through swapping of zooxanthellae types in Box 4.5, Chapter 4, page 36.Text in Box 6.1 should either not repeat the treatment of this issue, or at least be made consistent with the treatment in Box 4.5. (Government of Australia)	This point has been adddressed during revision of Coral reef cross-chapter case study.
G-6-45	A	10	19		25	Even as adaptation or acclimation occurs, it is very likely to result in loss of diversity in coral reefs, is it not, as it results selectively in elimination of less heat tolerant species. So even as reefs may persist, they will be compositionally very different than today. (Government of USA)	This point has been adddressed during revision of Coral reef cross-chapter case study – text revised to capture this point
G-6-46	A	10	20		20	Remove "the" and "hypothesis" around "adaptive bleaching." It sounds somewhat derogatory, and the hypothesis is as much supported by evidence as many other statements made. (Government of USA)	Done.
G-6-47	A	10	44	10	44	o must brought up (Government of Mauritius)	Done.
G-6-48	A	11	30		30	"Add Schleswig-Holstein in ref list" (Government of USA)	German example deleted.
G-6-49	A	11				"Table 6.1 needs to explain clearly what the different scenarios (A1, A2, B1 and B2) are. Some of the readers may not read the other chapters and that table is not clear as is. Must explain the assumptions better" (Government of USA)	Agree – added a brief explanation of the SRES – including A1T, A1B and A1FI.
G-6-50	A	12	1	2	11	It is very important that a consistent message is presented on sea level rise across each of the Working Group reports. As such this section should reflect the Working Group 1 findings on sea level and should cross reference the findings of that report and any quantification of future SLR should be based in the observed changes presented in WG1. (Government of Australia)	Agree – the climate scenarios are all from WG1 with citations.
G-6-51	A	12	13			Table 6.2 last row: The current language is ambiguous: delete "impacts" in the second line and insert "impacts of" before "decreased.": (Government of USA)	Text revised – see G-6-54 below
G-6-52	A	12	17		17	Providing the maximum decadal rate of change would be more relevant in terms of understanding the potential impacts for human and natural system and the implications for adaptation. (Government of USA)	Agree with the idea – but the information in WG1 did not lend itself to this type of treatment –for example, having had a correspondance with WG1, the sea-level rise

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							scenarios in the new Table 6.3 are only available for 2100, and the time evolution is unavailable
G-6-53	A	12	17		23	A more detailed discussion of various scenarios for loss of continental ice sheets would be helpful. Postulated rates and failure mechanisms would be of particular value. This is key issue in the debate about the impacts of sea-level rise. (Government of USA)	Agree – consolidated in a new Box 6.6 linked to WG1 results which addresses this issue and its implications for impacts and responses has been developed following a number of reviewers comments.
G-6-54	A	12				In Table 6.2, the final entry is very poorly written. Rather than saying 'increased ocean acidification,' it would be better to state it as decreased seawater pH negatively impacting coral reefs and other pH sensitive ecosystems. As there may been contributing factors beyond CaCO3 saturation state that may be manifested in either reduced calcification rates or a host of other effects, it might be best to leave it as a broader statement. (Government of USA)	Agree – text amended.
G-6-55	A	12				Column headers are inadequate and need improvement; change "climate variable" or "climate parameter" is better than "climate driver". (Government of USA)	Disagree – we are looking at these climate parameters as potential "drivers" of change.
G-6-56	A	13	24	13	25	barotropic surge models may be changed to barotropic storm surge models and replace 'predictions' with 'projections'. (Government of India)	Agree – text amended
G-6-57	A	13	25		25	Where did the climate change predictions come from and what where the most important characterizations of them (for example, they are associated with what global SLR or increase in intensity of storms?). (Government of USA)	In principle we agree, but to add this information would make Box 6.2 too big. Its purpose is to show that (1) this type of modelling is now quite feasible, (2) the results suggest signiifcant spatial variability in the projected changes, and (3) the results can be linked to response planning.
G-6-58	A	13	28		28	What does "appropriate" mean in this context? What were the SLR assumptions used to get the results provided? (Government of USA)	Agree – change to "consistent"
G-6-59	A	13	29	13	30	Would it be simpler to say 'Around the UK, extreme sea level (should be a likelihood?) increases. (Government of Australia)	Agree – text amended
G-6-60	A	13				Box 6.2: Mention which future scenario they refer to ? (Government of India)	Agree – the Bay of bengal case is IS92a, the NW Europe case is A2 scenario and Cairns is a2 x CO2 scenario (now in captions).

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G-6-61	A	14	16	14	29	Figure B6.2.3 shows flooding around Cairns under 2050 climate conditions on the basis of a 2 x CO2 scenario, this should be explained. (Government of Australia)	Agree
G-6-62	A	14	51		51	Insert "equilibrium" before "shoreline recession" and change "100" to "50-200". Explanation: "100" is too precise. Studies along the east coast of North America found a range of 50-200 (eg., Kana et al., Kyper and Sorensen, Leatherman, Everts,). Studies along the Pacific Coast of North America suggest 400 (e.g. Wilxoen 1986). Leave it to author discretion whether it is necessary to cite the basis for this wider range, but if the authors have such a desire, below are some citations that collectively support the wider range: Kyper, T. and R. Sorensen. 1985. "Potential Impacts of Selected Sea Level Rise Scenarios on the Beach and Coastal Works at Sea Bright, New Jersey. In Magoon, O.T., et al. (eds). Coastal Zone '85.. New York: American Society of Civil Engineers. Kana, T.W., J Michel, M.O. Hayes, and J.R. Jensen. 1984. "The Physical Impact of Sea Level Rise in the Area of Charleston, South Carolina." In: Barth, M.C. and J.G. Titus (eds). 1984. Greenhouse Effect and Sea Level Rise: A Challenge for This Generation. New York: Van Nostrand Reinhold. Wilcoxen, P.J. 1986. Coastal Erosion and Sea Level Rise: Implications for Ocean Beach and San Francisco's Westside Transport Project. Coastal Zone Management Journal 14:3. Everts, C. H. 1985. Effects of sea level rise and net sand volume change on shoreline position at Ocean City, Maryland." In Potential impacts of sea level rise. US Environmental Protection Agency. "National Assessment of Beach Nourishment Requirements Associated with Accelerated Sea Level Rise" by Stephen P. Leatherman. In The Potential Effects of Global Climate Change on the United States. Report to Congress. Appendic B: Sea Level Rise. 1989. Washington, D.C.: U.S. Environmental Protection Agency. (Government of USA)	Done.
G-6-63	A	15	3		3	Insert "and wave climate" at the end of the sentence. And then add: "Although the original paper by Bruun (1962) considered a simple shore extending from dune crest to an offshore limit of sediment transport, later applications have considered more complex profiles, such as the complete barrier island-lagoon-mainland profile (e.g. Dean and Mauermeyer, 1983). Dean, R.G. and E.M. Maurmeyer, 1983: Models for beach profile response, in CRC Handbook of Coastal Processes and Erosion, P.D. Komar, ed., Boca Raton: CRC	Text has been modified and reduced. We agree with the statement but have not included for space considerations. The major point is now stated in the concluding sentence of the paragraph "Thus there is not a simple relationship between sea-level rise and horizontal movement of the shoreline, and

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						press, 151-166, (Government of USA)	sediment budget approaches are most useful to assess beach response to climate change (Cowell *et al.* 2006)": a view which has been informed by the influential Dean and Maurmeyer (1983) paper.
G-6-64	A	15	8		10	Insert: "the original formulation of" before "the Bruun model". The subsequent extended formulations of the Bruun rule consider elevation of the entire profile, which includes the lagoon. (Government of USA)	Not include for the same reason as response to G-6-63. What is needed is a complete sediment budget for which the Bruun process is only one element. The Cowell method has developed from synthesis of US-European and Australian thinking which is all informed by the Bruun Rule and its various extensions.
G-6-65	A	15	16			Add a new sentence: "The system of natural dunes are very important for the protection of coastal resources such as property and infrastructure. If the dunes will be removed or damaged by natural and human activities the risk for flooding will increase." (Government of Sweden)	We address the role of natural coastal barriers in the subsequent section on ecosystem services.
G-6-66	A	15	39		39	" formed in" change to "formed by" (Government of USA)	No, cliffs are not formed by soft rock but in soft rock.
G-6-67	A	15	46	15	46	quietness instead of quintessence??? (Government of Spain)	Spelling has been corrected.
G-6-68	A	16	3		4	This statement is not correct. The Bruun model does not predict a rate of sea level rise— it is an equilibrium model. Do the authors mean that the cliff erosion approaches the Bruun-predicted equilibrium more slowly than beach erosion? (Government of USA)	Reference to Bruun model was deleted here.
G-6-69	A	16	21		28	Discussion of habitat losses from major storms is an important point that needs broader development (i.e., it's not just limited to deltas). (Government of USA)	We have added information about storm impacts on gravel beaches, corals, marshes, sand beaches and esturaries.
G-6-70	A	16	30	16	41	These lines give an impression that deltas are theatened by climate change. However, deltaic regions in the Indo-Gangetic region undergo subsidence thereby causing sea level rise. This message is not appearing in this pargarpah. (Government of India)	Agreed. The word "subsidence" was added to the list of factors affecting warter levels iin the Indo- Gangetic region, and the text was improved to stress this important general point.
G-6-71	A	16	30		30	Because the sentence says that deltas have long been recognized as vulnerable, the citations should be to early reports. Two appropriate citations would be Barth and Titus (1984), "Greenhouse Effect and Sea Level Rise," and the original IPCC	The synthesis work we have referenced describes many papers that support this statement in section 6.4.1.2. We elaborate

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						(1990) assessment. In: Barth, M.C. and J.G. Titus (eds). 1984. Greenhouse Effect and Sea Level Rise: A Challenge for This Generation. New York: Van Nostrand Reinhold. IPCC 1990. Strategies for Adaption to Sea Level Rise. Report of the Coastal Zone Management Subgroup of the Response Strategies Working Group. (Government of USA)	further in box 6.4, "Deltas: Hotspots for Vulnerability" . Note that we are also required in the assessment to focus on post-2000 literature, with earlier citations only if absolutely essential.
G-6-72	A	17	6	18	27	First paragraph needs to add something about the role of climate change for the introduction, spread and persistence of invasive species. In the seventh paragraph you need to include the risks associated with retreating coastlines relating to the inundation of toxic waste sites and other serious sources of contamination that will affect coastal ecosystems and fresh water supplies. (Government of USA)	We address invaseive species briefly in 6.6.3 and contamination of fresh warter supplies in 6.4.2.1. Chapter 1 has a table that addresses geographical range shifts and invasive species in coastal zones.
G-6-73	A	17	6			6.4.1.3: The rising of the sea level will highly affect the mosaic-structured archipelago in for example in the Baltic Sea Saaristomeri area. The chapter concerning estuaries and lagoons is hence of great relevance when considering the often special aspects of the Baltic Sea. (Government of Finland)	We agree but no reference was available to support a specific statement about the archipelago in the Baltic Sea Saaristomeri area.
G-6-74	A	17	15		15	This first sentence is not very well explained. Moreover, the text needs to explain why changes in physical mixing characteristics are more important than the other impacts on estuaries, or perhaps be rephrased. Every impact cannot be "one of the most important impacts". (Government of USA)	We have reordered and simplified this section so that several aspects of climate change impacts on estuaries are emphasized, but we maintain that physical mixing characteristcs are very important based on the US government publication cited therein.
G-6-75	A	17	32	17	32	add 'is' in '...uptake of CO2 is the…' (Government of Spain)	This paragraph was rewritten for clarity.
G-6-76	A	17	32		32	Add "is" after CO2. (Government of USA)	This paragraph was rewritten for clarity.
G-6-77	A	17	42	17	45	The statement "The propensity for algal blooms is further enhanced by the fertilization effect of increasing dissolved CO2 levels" is debatable and should be eliminated. I suggest: "The propensity for algal blooms is further enhanced by increased nutrient loads and the construction of coastal infrastructures that increase water residence times" (Government of Spain)	This paragraph was rewritten for clarity.
G-6-78	A	18	33	18	34	The sentence stating that a 1-m rise in sea level over the course of a century could cause a 44% loss of coastal wetlands by 2080, is confusing due to the conflating of timescales, suggest revision to utilise the same time-scales. (Government of Australia)	Sentence was revised to indicate that this was the result of one modeling study. We cannot change the time scales used in that study.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
G-6-79	A	19	3		4	Are mangroves, salt marshes and sea grasses really threatened in the Baltic? (Government of Finland)	Coastal wetlands do exit along the southern parts of Baltic sea coastline in Germany, Poland and these systems are threatenend by sea-level rise. Estonian wetands are also threatened. Text has been amended to stress that we are talking about coastal wetlands in general, which in the Baltic Sea will mean brackish marshes.
G-6-80	A	19	45	19	45	"Taxodium distichum" instead of "Taxodium distium" (Government of Spain)	Spelling was corrected.
G-6-81	A	20	10		10	The text needs to address increases in submerged aquatic vegetation due to projected wetland loss, which would appear to have the potential to offset the losses described in this paragraph. (Government of USA)	We disagree that lossses of marshes will be offset by gains in submerged aquatic vegetation. Short and Neckles (1999) have shown how light availability is a key factor in the survival of marine seagrasses. Seagrasses may be shifted landward as sea level rises, but their areal extent does not necessarily increase. Nor will the habitat and coastal protection functions of marshes be offset by gains in submerged aquatic vegetation in brackish waters.
G-6-82	A	20	18	20	19	This needs to be updated in the context of the recent (2006) mass-bleaching event that has caused substantial coral mortality to Caribbean reefs. (Government of Australia)	This refers to the 2005 Caribbean event rather than 2006, and this is captured in the revised Box 6.1 especially the revised Figure which shows 2005 bleaching.
G-6-83	A	20	19	20	20	This suggestion, that deterioration of Pacific reefs is mostly due to bleaching, is not entirely accurate. Firstly, Indian Ocean reefs have generally suffered more severe damage from bleaching-induced mortality than have Pacific reefs, and secondly, many Pacific reefs have suffered significant damage from non-climate stresses such as pollution and destructive fishing. (Government of Australia)	Agree. These points have been captured in the revised Box 6.1 especially the revised Figure.
G-6-84	A	20	23	20	24	It would be helpful for this sentence to include the short-term temperature at which coral bleaching events generally can occur. (Government of Australia)	Agree – and this point has been addressed with consistent treatment across all of the Coral reef cross chapter case study.
G-6-85	A	20	24	20	26	Coral bleaching associated with the 1998 El Nino event affected reefs globally, not just Indo-Pacific region. (Government of Australia)	This point has been addressed. Coral reefs are not global but it has been adddressed – especially by new Figure in Box 6.1.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
G-6-86	A	20	31		31	For clarity, stop the sentence after "bleaching" and begin the next with "the" (Government of USA)	Done.
G-6-87	A	20	32		32	Wouldn't "degraded" better be replaced by "stressed"? (Government of USA)	Done.
G-6-88	A	20	38	21	6	In this section, include the role of fine sediment coming from increased erosion of coastal areas and carried by rivers, and currents that suffocate corals. (Government of USA)	This point is made elsewhere in Coral reef cross chapter case study [Fig 16.1].
G-6-89	A	20	38		47	Ocean acidification is not truly an impact of climate change. Rather it's another manifestation of increasing CO2. Climate change is NOT synonymous with global change, the latter is broader. The points raised are important, but raise the question "where does one draw the line between discussing all anthropogenic affects vs. climate change?" (Government of USA)	Text has been reworded. The impact of ocean acidification is covered in Box 4.5 in Chapter 4 in more detail as part of Coral reef cross chapter case study.
G-6-90	A	20	42		43	During periods of rapid Sea Level Rise in the Holocene, when coral reef growth kept up, were aragonite saturation levels interfering with calcification rates? (Government of USA)	Text reworded to indicate that other stresses did not impact reefs to same extent during Holocene.
G-6-91	A	20				Section 6.4.1.5 This section would benefit from a discussion of "optimal" temperatures for coral growth, with growth increasing toward the optimal temperature and decreasing away from it towards the threshold of "no growth" or mortality. There would be chronic effects of increasing temperature on a coral reef balance between growth-recruitment-mortality, and implicitly on a reef's rate of recovery from a bleaching event or other stressor. (Government of USA)	This point has been addressed in consideable detail as part of the Coral reef cross chapter case study, and is clarified especially by new threshold Figure and text in Box 6.1.
G-6-92	A	21	12		12	Why presume that the decline of social and ecological systems on atolls will be subject to a threshold, rather than a linear or non-linear decline. The reference to "thresholds" seems to be overused, even when not supported by reason to think that there would be a step-change in the damage function. (Government of USA)	Disagree. Threshold is the specific term used in the Barnett and Adger paper. The point is covered in more detail in Box 16.6.
G-6-93	A	21	18	31	9	Consequences for human health and ecology due to contaminated land should be described. (Government of Sweden)	Disagree; not related to CC; space constraint.
G-6-94	A	21	20		30	Need to include more clearly the risks associated with increased pollution (Government of USA)	Diagree; not related to CC; space constraint.
G-6-95	A	21	23		23	Insert "the effectiveness of" before "adaptation" (Government of USA)	Addressed. The words have been included.
G-6-96	A	21				Table 6.3: This table is not very helpful and the sources of information used to provide this synthesis are unclear. Related to this, the text describing the table	Addressed. The original table was based partly on Klein & Nicholls 1999 (Ambio 28: 182-

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						refers to sections, which then refer back to the table as their supporting evidence in many cases. The table doesn't identify the directionality of effects. It is very unclear what the basis is for the judgments represented in the table. It needs to be much more strongly supported by evidence in the chapter sections, and better indicative of directional changes (which may be positive in some locations and negative in others) Nor does the table identify how the size of the X's were determined from the underlying literature or according to what criteria.. The text in the sections frequently seems at variance with the table. Whose judgments are represented here? Also, unclear if "sedimentation" is included in "erosion", and where "wetland losses" are included in this table. (Government of USA)	187) and a Canadian study (C-CIARN 2001, Proceedings of a Workshop on Coastal Impacts and Adaptation related to Climate Change: the C-CIARN Coastal Node, available on the web). Since the FOD, expert reviewers have provided inputs to improve the table and none have suggested its removal. The table is not meant for biophysical systems such as wetlands and also not for the directionality of effects as pathways are not fully understood. The revised table relates what is discussed in the text, thus removing inconsistencies with the text.
G-6-97	A	22	32		34	The statement about biodiversity is vague and should be backed up by research. It would be more helpful if more specific and quantitative. Does use of the word "particularly" suggest that coastal systems are more at risk than, say, high latitudes or high altitudes or areas subject to desertification or along ecotomes? How is this determined? (Government of USA)	Addressed. The assessment was made by CBD 2003. Yes, "particularly" suggests that coastal systems are more at risk than other biophysical systems.
G-6-98	A	23	1		3	This is an important point that should be given more emphasis. Also, it would seem that the speed of the SLR may be as or more important to adaptation than the absolute level over the long run, wouldn't it? (Government of USA)	Agree – this point is made in Section 6.6.5 where it is supported by the study of Hall et al (2005).
G-6-99	A	23	5	23	5	To be accurate the start of the sentence should read "Vulnerability to the impacts of climate change is likely to be greater in developing countries…." (Government of Australia)	Addressed. Sentence revised to read : 'Vulnerability to the impacts of climate change including the higher socio-economic burden imposed by present climate-related hazards and disasters is likely to be greater in developing countries than developing countries due to…'.
G-6-100	A	23	5		12	While these examples are useful and important, they are strictly anecdotal evidence. They do not support the sentence in line 5 that the impacts are likely to be greater in developing countries than in developed countries. Certainly, low-lying areas will likely be more affected, as well as those that experience cyclones. What is the global distribution of those? What do Small and Nichols say about the distribution of people, infrastructure and vulnerable ecosystems? The developing/developed country dimension is not very useful in this regard and should be eliminated unless	Addressed. Examples are given to reflect the situation in developing countries.

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						better supported. Perhaps with less infrastructure, and more population growth and development than developed countries, developing countries have opportunities for easier planning and less challenging adaptation than where infrastructures are well developed and populations are aging. (Government of USA)	
G-6-101	A	23	16	25	2	This section is badly written. Needs to be seriously revised. Some parts are difficult to understand. (Government of USA)	Comments are not specific.
G-6-102	A	23	23		23	What will be the role and opportunity for desalinization, with or without climate change? As costs come down rapidly, is seawater not a renewable water supply? (Government of USA)	N.A. Salinization is not the solution as it also degrades the environment.
G-6-103	A	23	24		24	Change "issue" to "imbalance" (Government of USA)	Addressed.
G-6-104	A	23	26		26	What is the citation for the statement in this line (especially comparing developing to developed countries)? (Government of USA)	Addressed. See map on water-stressed areas in Alcamo and Henrichs 2002 (Aquatic Sciences, 64: 352-362).
G-6-105	A	23	29		31	This is not necessarily a climate change problem. (Government of USA)	Addressed. Sentence has been revised to make meaning clearer. See Expert Comments.
G-6-106	A	23	33		33	Concerns about exaggerating the impact of potential sea level rise on coastal groundwater aquifers. In many areas, seawater intrusion is already a problem for the basin. Sea level rise would add to the problem, but only slightly. As a typical example, for a coastal California basin of about 80,000 hectares, with a specific yield of about 0.1, and an average safe extraction rate of, say, 120 million cubic meters per year, the change would show little effect. Even if the sea level rise would double estimated current rates to be 4 mm per year, the amount of water involved to balance the aquifer would be 0.32 million m3, which would be 0.27 percent of the annual yield. That is not a major impact, since it can be accommodated by reducing pumping by about one quarter of 1 percent. Multiple layer aquifers are more complicated and might show more impacts to underground water movement and quality. (Government of USA)	Addressed. The local factors have been mentioned in the paragraph.
G-6-107	A	23	33		40	"Paragraph unclear. Also e.g. the Red Sea replace by the Red sea region" (Government of USA)	Addressed. Paragraph revised. See also Expert Comment E-6-274 to E-6-276.
G-6-108	A	23	33			Change the adjective from "strong" impact to "some". The same would be for Chapter 6, Page 23, line 33, and the Table 6.3 X on Page 21 and possibly elsewhere in the report. (Government of USA)	N.A. Should remain as 'strong'.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
G-6-109	A	23	46		48	What is the reason for this particular sensitivity? (Government of USA)	Addressed. Paragraph revised. See also Experts Comment E-6-279 and E-6-280.
G-6-110	A	24	3		8	Revise paragraph to more clearly describe what will be discussed in this section. As an introductory paragraph does not mention the topics of the section (Ag., Forestry, Fisheries). (Government of USA)	Addressed. The paragraph has been revised as an introduction for the agriculture, forestry and fisheies.
G-6-111	A	24	5		5	"Most seriously" compared to what? (Government of USA)	Addressed. 'Most' deleted.
G-6-112	A	24	14		15	Relevance to coastal systems should be made more explicit. (Government of USA)	Addressed. Example removed.
G-6-113	A	24	24	24	26	It would be helpful for the authors to include the crops that were affected in Sri Lanka, Kenya and North Queensland due to extreme events. (Government of Australia)	Addressed. Examples for India (coconuts) and Queensland (sugar cane).
G-6-114	A	24	26		26	Is there a citation for the impacts of Cyclone Larry? (Government of USA)	Addressed. 2nd IPCC Lead Authors was held in Cairns in March and newspapers have just reported the event.
G-6-115	A	24	28		30	Is the term "major factor" appropriate relative to over fishing or other factors. (Government of USA)	Addressed. Replaced by 'significant factor'.
G-6-116	A	24	46		48	Authors are mixing factors that have inverse affects (ENSO warm or cold events). Instead of using ENSO events, El Nino or La Nina since they have contradictory effects. (Government of USA)	Addressed. Intensification of ENSO is noted and some of the ensuing effects have negative impacts.
G-6-117	A	24	47		47	"change to: thermocline , will reduce spawining…" (Government of USA)	Addressed. 'which' deleted.
G-6-118	A	24	50		50	"change to: influencing diseases of aquatic organisms and compromising human health." (Government of USA)	Addressed. 'as well as' replaced by 'and compromising'.
G-6-119	A	25	6	25	6	"One is that" instead of "One is" (Government of Spain)	Addressed. See also Expert Comment E-6-288.
G-6-120	A	25	6		13	While these impacts will be highly variable, this paragraph is written with certainty and as unqualified statements. And the last sentence doesn't seem to belong in this assessment on climate change, unless its importance can be made clearer. (Government of USA)	Addressed. See also Expert Comment E-6-289 and E-6-290.
G-6-121	A	25	7	25	7	Add to sentence: "including sand dunes" after "the loss of natural coastal systems " (Government of Sweden)	NA. 'Natural coastal systems' would include sand dunes, mangroves, etc.
G-6-	A	25				"Fig,B6.3.1: Figure on Chandeleur Islands impossible to read. Same for the other	Agree. Figure has been improved in quality

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122						figure. Also the red color does not show well for the delta area" (Government of USA)	and text size has been increased.
G-6-123	A	26	8	26	10	There should be recognition of new policies designed for less reliance on structures that could fail as sea level, combined with coastal subsidence, increase flood risks in densely populated coastal areas (Government of Canada)	NA. This is stated in 'upgraded design criteria'.
G-6-124	A	26	8	26	10	Recognition should be incorporated of policy development and implementation that limits development or revises coastal planning so that it is more flexible in general (Government of Canada)	NA. This is planning.
G-6-125	A	26	8	26	8	Add to sentence: "roads and railways." after "infrastructure, such as port facilities," (Government of Sweden)	Addressed. 'roads and railways' included.
G-6-126	A	26	23			Add the new sentences: "In some areas the isostatic uplift will compensate for the predicted sea-level rise, as in Northern Europe (and other formerly glaciated areas). However, low lying areas are prone to flooding as the relative sea level will rise because the uplift rate is less than the actual sea-level rise, e.g. in an area of southwest of Sweden more than 42 % will be flooded if sea-level rise and storm surges coincide (see Rankka and Rydell, 2005). (Government of Sweden)	NA. This is a minor point.
G-6-127	A	26				Paragraphs 1, 2 and 3. This information would be more useful if information on the magnitude of upgrades and of potential costs were provided, with citations. (Government of USA)	Agreed, but plenary-agreed structure is that costs come in Section 6.5.3. In particular, see Figure 6.4 which cross-refences back to this section and includes protection costs.
G-6-128	A	26				"Fig 6.3: Explain what are: A1Fl, A2, B2" (Government of USA)	Agree – these are all now defined explicitly in Section 6.3
G-6-129	A	27	6	27	6	Replace "low income countries" with "low income communities". (Government of Australia)	NA. Coastal communities are stated.
G-6-130	A	27	6		12	This paragraph cites Table 6.4, which cites this section for its information. Instead, the statements made and conclusions need scientific citations. In particular, what is the basis for the final sentence on low income groups most at risk, that can be generalized globally here? (Government of USA)	Addressed. The cross-references are given in the third column of table 6.4. '..populations at risk..are in high, middle and low income countries. Within countries, low income groups are disproportionaltely affected'.
G-6-131	A	27	9	27	10	The sentence starting as: "As recent events . ." is not complete. (Government of Spain)	Addressed. Examples provided.
G-6-132	A	29	6		6	Box 6.4: With significant expanding urban area. Remove an. (Government of USA)	Addressed.
G-6-133	A	29	51	29	51	add "that": "waters that could" (Government of Spain)	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
G-6-134	A	30	11		12	Not clear. This refers to assumptions that were never discussed in this chapter. Need to give more info to the reader (Government of USA)	Addressed. See also Expert Comment E-6-310 and E-6-311.
G-6-135	A	30	27	30	27	Could 'carbon flux' be replaced by a clearer term? (Government of Australia)	Text deleted.
G-6-136	A	30	29			Table 6.5: This table probably should have separate columns for natural adaptive capacity, and the adaptive capacity given human activities. Consider deltas: they actually have a very high capacity to adapt to sea level rise—they move inland, but continue to form. But with human activities, their capacity to adapt to sea level rise is very low. (Government of USA)	Table 6.5 has been deleted.
G-6-137	A	31	23	35	19	This section is often unclear with repeats. Need to clarify the ideas and the text. (Government of USA)	The text has been revised, including taking this comment into account.
G-6-138	A	31	25			Change climate “chrange” to “change”. (Government of USA)	Corrected.
G-6-139	A	31				Table 6.6, first row, second column: consider adding Rotterdam and Tokyo. Row four, second column: If available, discuss Antarctica results; these should be added in the table and in the text. (Government of USA)	Comment relevant to other Las
G-6-140	A	32	32		32	Add to the end of the sentence, “Also, few CGE models represent physical processes and constraints well.” (Government of USA)	Done.
G-6-141	A	32	50		51	Please provide the factual evidence (and criteria) for the “main brunt” statement. (Government of USA)	References added.
G-6-142	A	32				Section 6.5.2 is particularly well written, factual, and supported by citations. It is a good model of style for the rest of the chapter. (Government of USA)	The authors appreciate such comments.
G-6-143	A	33	34	33	36	The authors should provide an explanation of what types of costs are included in this assessment of US weather-related disasters. (Government of Australia)	Done, to the extent space allows – more details are in the reference provided.
G-6-144	A	33	35		35	Meaning of sentence unclear; I thought that the $1B was a yearly average. Please verify. (Government of USA)	Text has been revised to make meaning clear.
G-6-145	A	33	36		39	Meaning of sentence unclear; do authors cited address increasing frequency or increasing costs? If there are differing views whether climatic factors contribute, why is it assumed that damaged costs will increase as opposed to other factors? (Government of USA)	Text has been revised to make it clear that changes in damage costs reflect many factors, and not necessarily an increase in extreme climate-related events.

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G-6-146	A	33	44		46	Please change "and is threatening the sustainability of [Delaware coast] as a major summer recreation attraction" to "necessitating publicly funded beach nourishment projects to maintain the area's attractiveness as a summer resort." The real estate market in the Delaware coast remains very robust. (Government of USA)	The text has been revised, taking into account the proposed text.
G-6-147	A	34	5		5	"Change to: consequences of climate change" (Government of USA)	Done.
G-6-148	A	34	14	34	14	"reduced cold-water . . ." (Government of Spain)	Done.
G-6-149	A	34	14		14	Change "uced" to "reduced". (Government of USA)	Done.
G-6-150	A	34	21		46	How can the left hand most figure be both global sea-level rise (as titled) and relative sea-level rise (as the y-axis is labeled)? (Government of USA)	Figure has been revised in order to resolve this issue.
G-6-151	A	35	3		3	Identify the circumstances, and their joint likelihood (even qualitatively) for the "worst case." (Government of USA)	Have made consistent with the revised Figure 6.2.
G-6-152	A	35	3		6	Figure 6.4 is interesting, but does not provide any information on uncertainty, especially concerning location of populations and population growth, migration, etc. The term "consequences" in the paragraph and the table is unclear and should be specified (land lost? People at risk? What definition?). Finally, given the uncertainty and related precision of the cost estimate, it seems unclear that one could conclude with certainty that the costs will be higher in developing than developed countries (especially if based on SRES scenarios that assume high rates of convergence of incomes). Note that "people displaced" in an earlier decade means that the population growth will be unlikely to occur in the inundated location in subsequent decades, reducing the implicit "people displaced," which is a general problem with using static population and income scenarios as input to impact analysis. (See p. 37, lines 42-43) (Government of USA)	Addressing these points would require space that is simply not available to Ch 6 authors. Many of the questions can be answered by consulting the reference provided. However, the nature of the "consequences" has been clarified and the fact that the conclusion is scenario-based has been noted. In principle the figure would be too complex if uncertainties were shown. In reality, scenario-based deterministic modelling does not yield uncertainties.
G-6-153	A	35	28			Add new sentence: "Adaption for existing and planning of new infrastructure should be made within the time horizon of the expected life time of the systems, no less than 100 years." (Government of Sweden)	This statement was considered to be too prescriptive to be included in an IPCC report.
G-6-154	A	36	13	36	14	It is surprising that Cowell et al. (2006) study of stochastic modelling of beach change to assist in assessing probabilities of risk is not referred to as a tool in Table 6.8 given its relevance in assessing consequences (page 32) and that it is cited in	The table cannot include all relevant models; also Cowell et al. focused on impact assessment, not adaptation – the topic of the

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						the references. (Government of Australia)	table.
G-6-155	A	36				Table 6.8. Add new line: "Description: Internalize socio-economic analyses in valutation of the shoreline (e.g. Persson et al., 2006)" (Government of Sweden)	The table relates to adaptation not more generic valuation of shorelines; the proposed description and reference are not appropriate for inclusion in the table.
G-6-156	A	36				"Table 6.8: row six, second column: the web address is not in the ref list" (Government of USA)	Omission is rectified.
G-6-157	A	37	31		37	Add language on importance of public awareness and education. (Government of USA)	We feel this is not the appropriate place. The subject is taken up in Section 6.6.4 on Adaptive Capacity.
G-6-158	A	37	46			Add new sentence: "The importance of such analyses and methods to include socio-economic analyses have been reported in the EU Inttereg Messina project (See Persson et al., 2006)." (Government of Sweden)	Reference included, but insufficient space to add proposed text.
G-6-159	A	38				"Fig 6.5: First column header, date of IPCC CZM is 1992 not 1990 in the ref list. Which one is the correct one?" (Government of USA)	1990 – reference corrected.
G-6-160	A	39				Table 6.9: This table is very useful. However, the key assumptions especially regarding SLR, year of the currencies, discounting (or not) that go into the cost estimates should be provided in the table. Are these all the strong cost studies available, or only a selection? (Government of USA)	These are only a selection of available studies. Insufficient space to add others, or to give more details. Latter can be found in the references.
G-6-161	A	39				Table 6.9: This table is very difficult to understand in fact there are 4 tables put together. Either make things clearer graphically or separate it in 4 tables. (Government of USA)	Space limitations preclude the second option; an attempt has been made to improve clarity of the table.
G-6-162	A	40	1		8	"This seems ambiguous: ecosystems have a role in the socio-economic system. Not clear (Government of USA)	The text has been revised.
G-6-163	A	40	15		15	After "(Adam 2002)", please insert the following sentence: "Considering these factors, the United States Environmental Protection Agency is developing sea level rise planning maps that divide all shores along its Atlantic Coast into those where shore protection is certain, likely, unlikely, or precluded by existing conservation policies (Titus 2004)." TITUS, J. G. (2004) Maps that depict the business-as-usual response to sea-level rise in the decentralized United States of America. OECD Global Forum on Sustainable Development: Development and Climate Change. 11-12 November,	Done

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						Paris (Government of USA)	
G-6-164	A	40	17		17	"Location of the Humber Estuary?" (Government of USA)	Now provided.
G-6-165	A	40	27		29	Change "start with the premise that coasts need space and that government must work…sacrosanct existing shoreline (Pethick 2002)" to "start with the premise that coasts need space. Some argue that governments must work…sacrosanct existing shoreline (Pethick 2002), while others argue that the highest priority should be the purchase of "rolling easements" in lightly developed areas to ensure that the right of wetlands and beaches to migrate inland becomes a pre-existing expectation before the existing shoreline becomes sacrosanct (Titus 2001)." J.G. Titus. 2001. "Does the U.S. Government Realize that the Sea is Rising? How to Restructure Federal Programs so that Wetland and Beaches Survive." Golden Gate University Law Review, Vol. 30, Number 4 (2001). (Government of USA)	Accept suggested revision, but some changes made to text in light of need for brevity and consistency with adjacent sentences.
G-6-166	A	40	28	40	29	The position taken in the report is that "governments must work to increase public awareness, scientific knowledge and political will to facilitate such a retreat from the sacrosanct existing shorelines". This statement should also reflect that property interests often make achievement of such goals difficult. (Government of Australia)	Suggested addition now included.
G-6-167	A	40	29		36	Same point was repeated twice. Also consider using New Orleans efforts to rebuild at the same place as an example. Emphasize the role and need for education at all levels. (Government of USA)	Corrected. Suggestions accepted.
G-6-168	A	40	32	40	35	Sentence starting as "Socio-economic and cultural . . " is repeated. (Government of Spain)	Corrected.
G-6-169	A	40	35		35	Many what can be resolved…? (Government of USA)	Sentence revised.
G-6-170	A	41	9		9	Not *desirable* policy but *indispensable* policy (Government of USA)	"indispenable" considered policy prescriptive; used "critically important"
G-6-171	A	42	7		10	As currently stated it's not clear that 550 ppm is an atmospheric concentration. Is 550 ppm the only CO2 concentration that Tol (2005) used in this study? Do other authors consider emission reductions at other levels? What is the scientific justification for the chapter picking 500 ppm as an example. Also, is "momentum" the most appropriate term here? (Government of USA)	Text revised in order to address these points. Space limitations allow the use of illustrative examples only.
G-6-	A	42	39	42	39	"holistic" instead of "holisitic"	Addressed.

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172						(Government of Spain)	
G-6-173	A	42	41		42	Sentence is not supported by information in preceding paragraph. (Government of USA)	Addressed. 'Hence' deleted.
G-6-174	A	43	17		17	"….other drivers generally exacerbate…" (Government of USA)	Addressed.
G-6-175	A	43	19		37	Also include mention of comprehensive understanding of factors contributing to relative sea-level rise, and more comprehensive network of in situ measurement to document it. Global sea-level rise (even accelerated) may be only a minor portion of total sea-level rise seen at some locations. Policy decisions will be made at a local or regional level; predicted changes in global rates of sea-level rise have limited value at those localities unless other drivers are captured and quantified. (Government of USA)	Addressed. 'Local factors and sea-level rise' are included.
G-6-176	A	43	28	43	30	There is a need for increased focus on research into "individual" ability and willingness to change in the context of adaptive capacity (Government of Canada)	Addressed. See G-6-177.
G-6-177	A	43	28	43	30	Adaptive capacity should be made more explicit than "developing a better understanding of human systems in the coastal zone" (Government of Canada)	Addressed. Revised to 'better understand of the adaptive capacity of human systems' .
G-6-178	A	44	1	64	40	"Add details to references that are incomplete." (Government of USA)	Addressed.
G-6-179	A	52	14		15	"Missing: Hulmes et al (2002) " (Government of USA)	Added
G-6-180	A	52	19		19	Is it 1990 or 1992? (Government of USA)	It is 1990 – corrected.
G-6-181	A	60	19		19	Add Schleswig-Holstein (Government of USA)	Remark not understood – might be a typo referring to p11 line 30? The German example is not cited as it does not include socio-economic scenarios.

This section contains LATE GOVT comments for chapter 6

CHAPTER 6

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
6-1	LATE	0				Under the same sub-section: Climate and sea level scenarios, there is an interesting reference on the coastal water quality, as a result of the hydrological cycle enhancement and the earlier and rapid snowmelt. Being the Rio de la Plata estuary in the southern cone of South America, the paragraph is saying that, in the same environment there are both increases and reduction of river discharges. A small re-drafting will solve this contradiction. (Government of Argentina)	Agreed – text amended.
6-2	LATE	0				This is a well structured chapter presenting some of the common shortcomings mentioned in the introductory remarks, mainly the abundance of references on developed country's research activities and poor on developing countries ones. Further, there is no reference to the need of more geophysical and socio-economic data, it is interesting to learn that, in spite of the fact that some Chapter 6 's authors have been involved in the GCOS effort to improve the climate observation network in its three domains, the oceanic and terrestrial, no reference to this need is included. (Government of Argentina)	We see GCOS as a WG1 activity – here we are more concerned with impacts and adaptation – hence the reason that we focus on IGBP/IHDP LOICZ programme in S6.8.
6-3	LATE	0				The quality of the sectoral chapters (3 to 8) looks quite diverse. However, practically all of them show the same two shortcomings. 1.- the lack of strong appeal to decision makers regarding the assumption of their country s responsibility to implement fully their commitments in respect to the performance of geophysical and biological observations and compile the necessary social, economic and related human health information to understand better the implications of climate change in their different trades. 2.- The necessity to improve cross referencing among them and with the regional chapters (Government of Argentina)	1. Not possible in an IPCC chapter to provide policy prescriptive statements for countries. 2. We have improved cross-referencing throughout the FGD draft, including section 6.4.2 and including to regional and some sectoral chapters.
6-4	LATE	0				Sub-section 6.2.4.- Thresholds in the behavior of coastal systems, points out the complexity of some environmental situations, of an atmospheric, oceanic and terrestrial nature, bringing abrupt changes when certain thresholds are crossed. In	Accept. This is now covered in 6.2.4.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						fact, in addition to low-lying areas, crossing thresholds of SLR and landward winds may bring not only floods but also abrupt and / or persistent inundation conditions, exceeding the coastal zone. In this same line of thinking, the WMO publication Hydrological aspects of combined effects of storm surges and heavy rainfall on river flow shows how crossed thresholds may bring critical situations. These conditions are also given when in large flatlands are persistently inundated because sea level rise obstructs their river discharges. The problem been exacerbated when landward winds provide additional dynamic forces to maintain the effect of such hydraulic stopper more efficiently. This is the case of the combination of heavy storms and landward winds (sudestadas), in the coasts of the Rio de la Plata estuary and its vicinity (Canziani, O.F. , J.C. Gimenez, Hydrometeorological aspects of the Impact of climate change on the Argentina's Pampas, EPA Report, 2002). (Government of Argentina)	
6-5	LATE	0				Regarding cross-reference with other chapters, it would be wiser to improve coordination and convergence with chapter 4, so to obviate repetitions regarding coastal ecosystems. (Government of Argentina)	Accept. We have improved cordination with Chapter 4, see coral section as an example.
6-6	LATE	0				One issue which should deserve clarification involves the common people attribution of frequent tsunamis to climate change. Although the cause of tsunamis is geological, it might be clarifying to say so and, maybe, depending on available bibliography, to refer sea level rise as an additional cause in the development of higher than before sea waves. Nevertheless, people should understand the differences. Chapter 6 would be the one to bring this issue to the public's attention (Government of Argentina)	We are not implying that tsunamis are relating to climate, but we have reworded 6.2.3 in a way that clarifies this point.
6-7	LATE	0				It is particularly interesting to note the repetition of the tendency to speak only about increasing sea surface temperatures, missing the opportunity to refer to the remarkable ocean's warming, registered in the last 50 years (Barnett et al, Science, 13 April 2001). The substantial amount of heat energy fed in the upper ocean layer due to the increased greenhouse effect, has increased the energy available in the amount of, approximately, 1023 Joules. This energy increment means both temperature and evaporation rate have increased. Been water vapor the necessary fuel for the thermodynamic processes in the atmosphere, as it has been very clearly shown during the last tropical cyclone season, in the Northern Hemisphere, the information on the foot of page 12 should be complemented with this information. (Government of Argentina)	This level of detail about climate processes and sea sruface temperature is more appropriate for the Working Group I report.
6-8	LATE	0				It is interesting to remark that, although sea water acidification, due to larger concentrations of CO2 in the atmosphere is mentioned in the chapter, this important	Ocean acidification is included in the second paragraph on compounding climate-change

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						change is not presented in the Executive Summary. Further, the problem stemming from the deposition of TFA (Trifluoric Acid) on the oceans needs to be studied, at the light of the comments made in the IPCC- TEAP Special Report "Safeguarding the Ozone Layer and the Global Climate System". This comment is also valid for Chapter 4. (Government of Argentina)	factors in the revised ES.
6-9	LATE	0				Better data availability would enable to improve Figure 6.2. In fact, the sea water intrusion in some estuaries is not only affecting recreation and tourism activities but also the very basic need to obtain freshwater, a task becoming progressively harder because of seawater intrusion (Rio de la Plata estuary, on the left margin) (Government of Argentina)	We have deleted Figure 6.2.