

## List of Substantive Edits to the IPCC WGII AR5 Final Draft Chapters of 28 October 2013

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
1	0					The IPCC follows the practice of the United Nations (UN) with regards to the geographical denominations used in its reports. Consultations take place regularly with the Office of Legal Affairs at UN Headquarters. In line with UN practice, a disclaimer has been included on the dedicated WGII AR5 launch web site and will be placed in the front matter of the printed volume(s) to indicate that the designations employed and the presentation of material on maps do not imply the expression of any opinion on the part of the IPCC concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Any issues discovered in the posted Final Government Distribution (FGD) drafts will be brought to the UN standard and addressed as part of production prior to publication.	31-Mar-14
2	1	4	1	4	2	Text edit as follows in the final WGII report: "The number of publications per year on the topic of climate change impacts between 2005 and 2010 and on the topic of climate change adaptation between 2008 and 2010 has roughly doubled (Figure 1-1c). Thus, the total number of publications more than doubled from 2005 to 2010." from the original FGD version of: "A doubling of the total number of publications on the topic of climate change impacts between 2005 and 2010 and on the topic of climate change adaptation between 2008 and 2010 has occurred (Figure 1-1c)."	31-Mar-14
3	1	5	26	5	26	Switch from commas to semi-colons for separating the items in this list. Delete the "and" before the word "oceans" and insert a semi-colon after "zones", then add "and snow, ice, and permafrost."	15-Oct-14
4	1	5	36	5	37	Put a comma after "primers" and delete the "and" before "eighteen"	15-Oct-14
5	1	8	1	8	1	Change "(2007)" to "(2007a,b)"	15-Oct-14
6	1	8	43	8	43	Specify "Figure 1-4" within the parenthetical, so that it now reads "(see Figure 1-4 caption)".	15-Oct-14
7	1	13	25	13	25	Change "IPCC, 2001c" to "IPCC, 2001b".	15-Oct-14
8	1	13	26	13	27	Put quotation marks around the following phrase: "reasons for concern identified in the TAR remained a viable framework to consider key vulnerabilities" and change the reference date from "2007c" to "2007d".	15-Oct-14
9	1	13	30	13	31	Change "(2007c, page 22)" to "(IPCC, 2007d, p. 22)".	15-Oct-14
10	1	13	35	13	35	Change "2007c" to "2007d".	15-Oct-14
11	1	14	22	14	25	Rewording of items (3) and (4) for brevity and to incorporate a direct quote; also change source from "2007c" to "2007d".	15-Oct-14
12	1	15	26	15	26	Replace "2011a" with "2011"	15-Oct-14
13	1	15	29	15	29	Insert the word "energy" after "ocean".	15-Oct-14
14	1	15	35	15	35	Replace "2011a" with "2011"	15-Oct-14
15	1	17	33	17	33	Change "brackets [ ]" to "parentheses".	15-Oct-14
16	1	19	16	19	16	Correct a missing word; add "increased" between "has" and "in" before the phrase "North America and Europe".	15-Oct-14
17	1	19	37	19	37	Add the word "Atmospheric" before "circulation".	15-Oct-14
18	1	19	40	19	40	move "Alaska" to the end of the list.	15-Oct-14
19	1	22	4	22	4	Delete the phrase "at different levels" and replace it with "in 2100".	15-Oct-14
20	1	22	11	22	11	Replace the incomplete reference "WGIII g" with "WGIII AR5 Chapter 6".	15-Oct-14
21	1	22	28	22	28	Replace the word "undone" with the word "counteracted" for clarity.	15-Oct-14
22	1	25	47	25	49	Delete Mullan et al. from the references, as it is not cited in the final text.	15-Oct-14
23	1					Table 1-2: Legend: change "no assessment made" to "no explicit assessment made"	15-Jul-15
24	1					Table 1-2: Legend: change "Very Low or No confidence" to "Very low confidence or No formal confidence level given".	15-Jul-15
25	1					Table 1-3: Land cover changes row, right column: change "19.4, 19.4" to "19.3, 19.4".	15-Oct-14
26	1					Figure 1-1: Figure brought to IPCC specification.	15-Jul-15
27	1					Figure 1-2: Cover photo added to 2014 report, figure brought to IPCC specification.	15-Jul-15
28	1					Figure 1-3: Figure brought to IPCC specification.	15-Jul-15
29	1					Figure 1-4: SRES scenarios in panel (b) connected with dashed line for clarity; entire figure brought to IPCC specification	15-Jul-15
30	1					Figure 1-5: Map projections redrawn without country borders and colors added to clarify pathways; figure brought to IPCC specification.	15-Jul-15
31	1					Figure 1-6: Numbers added to attributed (squares) and projected (circles) changes in climate system phenomena; figure brought to IPCC specification.	15-Jul-15
32	2	7	2			Add the word "for" within the quote before the words "its appropriate use" to match the exact phrasing used in the underlying source.	15-Oct-14
33	2	13	41	13	43	Change the sentence: "With respect to human security, this report does not see them as an issue of rights alone, given that a minimum set of universal rights exists but they are not always exercised (Box 12-1) but instead investigates a wide range of forces." to: "Human security in this report is not seen just as an issue of rights (Box 12-1), given that a minimum set of universal rights exists (though not always exercised), but is instead assessed as being subject to a wide range of forces."	15-Oct-14

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34	2	17	16			In the phrase "...adaptive capacity, though tracking..." replace ", though" with " by".	15-Oct-14
35	2	18	36			In the phrase "They supply climate information..." replace "They" with "These institutions" for clarity.	15-Oct-14
36	2	18	37	18	38	Remove quotation marks from the phrase "as an important component of sustainable development" as this is not a direct quote.	15-Oct-14
37	2					Figure 2-1: Figure brought to IPCC specification.	15-Jul-15
38	2					Figure 2-2: Figure brought to IPCC specification.	15-Jul-15
39	2					Figure 2-3: Figure brought to IPCC specification.	15-Jul-15
40	2					Figure 2-4: Figure brought to IPCC specification.	15-Jul-15
41	3	2	30	2	33	Replace the last two sentences of the first key finding. Original sentences: "Each degree of warming is projected to decrease renewable water resources by at least 20% for an additional 7% of the global population. By the end of the 21st century, the number of people exposed annually to a 20th-century 100-year flood is projected to be three times greater for very high emissions (RCP8.5) than for very low emissions (RCP2.6) [Table 3-2; 3.4.8]." New sentences: "For each degree of global warming, approximately 7% of the global population is projected to be exposed to a decrease of renewable water resources of at least 20% (multi-model mean). By the end of the 21st century, the number of people exposed annually to the equivalent of a 20th-century 100-year river flood is projected to be three times greater for very high emissions (Representative Concentration Pathway 8.5 (RCP8.5)) than for very low emissions (RCP2.6) (multi-model mean) for the fixed population distribution at the level in the year 2005. {Table 3-2, 3.4.8}"	15-Oct-14
42	3	9	23			Delete in-line reference to Munich Re, 2012.	15-Oct-14
43	3	9	26	9	27	Replace this sentence. Original sentence: "Since 1980, the annual number of flood-related deaths has been in the thousands, with over 95% in developing countries and 75% in southern, southeastern and eastern Asia (Handmer et al., 2012)." New sentence: "Since 1970, the annual number of flood-related deaths has been in the thousands, with more than 95% in developing countries (Handmer et al., 2012)."	15-Oct-14
44	3	10	19	10	21	Replace the first bullet. Original bullet: "Surface temperature, which affects the vapor-carrying capacity of the atmosphere and the ratio of snowfall to precipitation, increases non-uniformly, but by about 1.5 times more over land than over ocean (very high confidence)." New bullet: "Surface temperature, which affects the vapor-carrying capacity of the atmosphere and the ratio of snowfall to precipitation, increases non-uniformly (very high confidence), probably by about 1.5 times more over land than over ocean."	15-Oct-14
45	3	12	44	12	45	Change 20% to 37%, and delete 'and then begin to increase slightly'	31-Mar-14
46	3	16	45			"where a single event may contribute 40% of total annual erosion": Replace with "where extreme events may contribute about half of total erosion; for instance, in Mediterranean Spain 43% of sediment yield over the time period 1990-2009 was produced by a single event".	31-Mar-14
47	3	17	1			"2010-2099": replace with "2070-2099".	31-Mar-14
48	3	17	4			"soil erosion increasing by 5-195%": replace with: "-5 to 195% of soil loss".	31-Mar-14
49	3	17	10			Replace "9-16%" with "9 to 36%".	15-Oct-14
50	3	18	16	18	18	Delete the following sentence: "Projections from 21 GCMs under SRES A1B of the population exposed by 2050 to a doubling of flood frequency range from 31 to 449 million people, and the change in risk varies between -9 and +376% (Arnell and Gosling, 2013)."	15-Oct-14
51	3	19	1	19	4	Table 3-2 Caption: update values in these sentences and add a new final sentence to the caption. Original sentences: "GW is projected to be, for RCP8.5, approximately 2°C in the 2040s and 4°C in the 2080s. For RCP6.0, GW is 2°C in the 2060s and 2.5°C in the 2080s, while in RCP2.6, GW stays below 1.8°C throughout the 21st century (Figure 1-4 in Chapter 1). Population scenario SSP2 assumes a medium population increase." New sentences: "GW since pre-industrial is projected to be, for RCP8.5, approximately 2°C in the 2040s and 4°C in the 2090s. For RCP6.0, GW is 2°C in the 2060s and 2.5°C in the 2090s, while in RCP2.6, GW stays below 1.5°C throughout the 21st century (Figure 1-4 in Chapter 1). Population scenario SSP2 assumes a medium population increase. The number of GCMs that were used in the studies is provided."	15-Oct-14
52	3	24	5			Replace: "Section 16.5 in Chapter 16." with "Section 16.4."	15-Oct-14
53	3	25	13	25	15	Replace this sentence. Original sentence: "Globally, to maintain water services at non-climate change levels to the year 2030 in more than 200 countries, total adaptation costs for additional infrastructure were estimated as US\$531 billion, with US\$451 billion (85%) required in developing countries, mainly in Asia and Africa (Kirshen, 2007)." New sentence: "Globally, to maintain water services at non-climate change levels to the year 2030 in more than 200 countries, total adaptation costs for additional infrastructure were estimated as US\$531 billion for the SRES A1B scenario (Kirshen, 2007)."	15-Oct-14
54	3	25	17			After the phrase "...or US\$11 billion per year" insert the text: "...for the SRES A1B scenario".	15-Oct-14

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55	3	25	18	25	20	Exchange the dollar amounts given in this sentence. Original sentence: "Average annual water-supply and flood-protection costs to 2050 for restoring service to non-climate change levels were estimated to be US\$14.0 billion for a dry GCM projection of the SRES A2 scenario and US\$19.7 billion for a wet GCM projection (World Bank, 2010; Ward et al., 2010)." New sentence: "Average annual water supply and flood protection costs to 2050 for restoring service to non-climate change levels were estimated to be US\$19.7 billion for a dry GCM projection of the SRES A2 scenario and US\$14.4 billion for a wet GCM projection (Ward et al., 2010; World Bank, 2010)."	15-Oct-14
56	3	25	21			Replace "US\$13.7 billion (dry)..." with "US\$13.0 billion (dry)..."	15-Oct-14
57	3	25	28	25	29	Update the numbers in this sentence. Original sentence: "Annual estimates of adaptation costs for urban water storage are \$0.15-0.5 billion for existing facilities and \$0.55-1.5 billion for new developments." New sentence: "Annual estimates of adaptation costs for urban water storage are US\$0.05 to 0.15 billion for existing facilities and US\$0.015 to 0.05 billion for new developments."	15-Oct-14
58	3	25	30	25	32	Delete the following sentence: "For the coterminous United States under "business as usual", over 45% of economic costs are due to water quality and environmental flow impacts, suggesting significant costs for wastewater treatment infrastructure (Henderson et al., 2013)."	15-Oct-14
59	3	28	5			Add callout to Box CC-VW.	31-Mar-14
60	3	52	36	52	37	Delete Munich Re, 2012 from the bibliography.	15-Oct-14
61	3					Table 3-1 Ref 12: "1988-2004": replace with "1988-2003".	31-Mar-14
62	3					Table 3-1 Ref 13: "1954-2007": replace with "1964-1991 and 1994-2007".	31-Mar-14
63	3					Table 3-1 Ref 15: "1970s-2002": replace with "1978-2003".	31-Mar-14
64	3					Table 3-1: Caption: remove "in the diagram, symbols with borders represent end-to-end attribution of the impact on resources to anthropogenic climate change".	15-Oct-14
65	3					Table 3-3: Create new header ("Category") for new left-most column (which uses existing material).	15-Oct-14
66	3					Figure 3-1: Figure brought to IPCC specification.	15-Jul-15
67	3					Figure 3-2: Figure brought to IPCC specification.	15-Jul-15
68	3					Figure 3-3: Color added and legend reworded to improve clarity; figure brought to IPCC specification.	15-Jul-15
69	3					Figure 3-4: Map projection changed to improve figure, figure brought to IPCC specification.	15-Jul-15
70	3					Figure 3-5: Updated figure to reflect changes in data; figure brought to IPCC specification.	15-Jul-15
71	3					Figure 3-6: Map projection changed to improve clarity in panel (a); figure brought to IPCC specification.	15-Jul-15
72	3					Figure 3-6: Add to the caption: "Regions with mean runoff less than 0.01 mm day <sup>-1</sup> , Antarctica, Greenland, and Small Islands are excluded from the analysis and indicated in white."	31-Mar-14, updated 15-Oct-14
73	3					Figure 3-7: Figure brought to IPCC specification.	15-Jul-15
74	4	1				Title Page: Reverse CLA order.	31-Mar-14
75	4	1	8			Insert "Louise P. Chini (New Zealand)," before "Frank Couchamp" in the list of Contributing Authors.	15-Oct-14
76	4	9	34			Change "last century" to "20th century".	15-Oct-14
77	4	9	42			Change "next century" to "21st century".	15-Oct-14
78	4	12	6	12	7	Change "(high certainty)" to "(high confidence)" in order to align with calibrated uncertainty language used in this report.	15-Oct-14
79	4	14	20			Replace the phrase "... first third of the century..." with "...first third of the 21st century..."	15-Oct-14
80	4	28	22			Replace the phrase "At mid-century..." with "At mid-21st-century..."	15-Oct-14
81	4	32	15	32	18	Replace this sentence. Original sentence: "Even species whose populations are not projected to decline rapidly over the next century can face a substantial "extinction debt"; i.e., will be in unfavourable climates that over a period of many decades to many centuries, leading to large projected reductions in population size (Dullinger et al., 2012)." New sentence: "Even species whose populations are not projected to decline rapidly over the next century can face a substantial "extinction debt," that is, will be in unfavorable climates that over a period of many centuries are projected to lead to large reductions in population size and increase the risk of extinction (Dullinger et al., 2012)"	15-Oct-14
82	4	36	44			Add "2013" after the other publications by Schurr in the last paragraph of Section 4.3.3.1.1.	31-Mar-14
83	4	44	5			Remove the words 'at least', resulting in "...with estimates that roughly 10,000-20,000 freshwater species are extinct or imperilled as a consequence of human activity (Strayer and Dudgeon, 2010)."	31-Mar-14
84	4	61	33			Change this reference from "Martin et al., 2010" to "Buongiorno et al. 2011".	15-Oct-14

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85	4	65	8	65	9	In the last sentence of FAQ 4.7, specify that dollar amounts are US\$. Original sentence: "Its value has been estimated globally at \$350 billion for the year 2010 (The range of estimates is 200 – 500 \$billion)." New sentence: "Its value has been estimated globally at US\$350 billion for the year 2010 (range of estimates of US\$200 to 500 billion)."	15-Oct-14
86	4	81	41			Add the following reference to the bibliography: "Buongiorno, J., R. Raunikar, and S. S. A. Zhu, 2011: Consequences of increasing bioenergy demand on wood and forests: An application of the Global Forest Products Model. <i>Journal of Forest Economics</i> , 17(2), 214-229."	15-Oct-14
87	4	123				Add the following reference: Schuur, E.A.G., B.W. Abbott, W.B. Bowden, V. Brovkin, P. Camill, J.G. Canadell, J.P. Chanton, F.S. Chapin III, T.R. Christensen, P. Ciais, B.T. Crosby, C.I. Czimczik, G. Grosse, J. Harden, D.J. Hayes, G. Hugelius, J.D. Jastrow, J.B. Jones, T. Kleinen, C.D. Koven, G. Krinner, P. Kuhry, D.M. Lawrence, A.D. McGuire, S.M. Natali, J.A. O'Donnell, C.L. Ping, W.J. Riley, A. Rinke, V.E. Romanovsky, A.B.K. Sannel, C. Schädel, K. Schaefer, J. Sky, Z.M. Subin, C. Tarnocai, M.R. Turetsky, M.P. Waldrop, K.M. Walter Anthony, K.P. Wickland, C.J. Wilson, and S.A. Zimov, 2013: Expert assessment of vulnerability of permafrost carbon to climate change. <i>Climate Change</i> , 119, 359–374. doi:10.1007/s10584-013-0730-7.	31-Mar-14
88	4					Table 4-3: First key risk (reduction in terrestrial carbon sink): remove the words "medium high".	15-Oct-14
89	4					Table 4-3: Second key risk (boreal tipping point): change "medium confidence" to "low confidence".	15-Oct-14
90	4					Figure 4-1: Legend expanded to improve clarity; figure brought to IPCC specification.	15-Jul-15
91	4					Figure 4-2: Figure brought to IPCC specification.	15-Jul-15
92	4					Figure 4-2: Figure caption updated to reflect changes to figure layout made during production; in addition, the following text was added in the second half of the caption: "For example, climate change-driven biome shift is projected in many Arctic land areas (d) which are unaffected by direct human land use at the present day (a) and in the RCP2.6 and 6.0 land use scenarios (b, c), indicating that climate change is the dominant influence on Arctic land ecosystems in these scenarios. In contrast, in Borneo, none of the GCMs analysed by Gonzalez et al. (2010) project climate change-driven biome shift (d), and instead a reduction in primary vegetation cover occurs in the mitigation scenario RCP2.6 as a consequence of direct human land use (b). A smaller reduction occurs in RCP6.0. Land use is therefore projected to be the dominant driver of change in Borneo in these scenarios. In the boreal forest regions of North America, Europe, and north-west Asia, climate change-driven biome shift (d) is projected in regions already subject to some influence of present-day human land use (a), and increased land use leading to further reductions in primary vegetation occur in both RCP2.6 (b) and RCP6.0 (c). Hence in these boreal forest regions, both climate change and land use are projected to be drivers of ecosystem change in these scenarios."	15-Oct-14
93	4					Figure 4-3: Figure brought to IPCC specification.	15-Jul-15
94	4					Figure 4-4: Legend renumbered to correct mistake and figure brought to IPCC specification.	15-Jul-15
95	4					Figure 4-5: Figure brought to IPCC specification.	15-Jul-15
96	4					Figure 4-6: Figure brought to IPCC specification.	15-Jul-15
97	4					Figure 4-6, caption: Provide reference to Moritz et al., 2012 in the description of panel h (note: shown as panel g in the revised version due to layout changes made during production.)	15-Oct-14
98	4					Figure 4-7: Figure brought to IPCC specification.	15-Jul-15
99	4					Figure 4-8: Figure brought to IPCC specification.	15-Jul-15
100	4					Figure 4-9: Figure brought to IPCC specification.	15-Jul-15
101	4					Figure 4-10: Figure brought to IPCC specification.	15-Jul-15
102	5	2	44	2	45	Update this sentence for clarity. Original sentence: "Beaches, sand dunes and cliffs currently eroding will continue to do so under increasing sea level (high confidence)" New sentence: "In the absence of adaptation, beaches, sand dunes, and cliffs currently eroding will continue to do so under increasing sea level (high confidence)."	15-Oct-14
103	5	3	2	3	5	Update this sentence for clarity. Original sentence: "The storms related impacts and associated storm surges will be worsened by GMSL rise although uncertainty related to changes in tropical and mid-latitude cyclones at the regional scale will signify that there is low confidence in projections of storm surge change [5.3.3.2]." New sentence: "Changes in storms and associated storm surges may further contribute to changes in sea level extremes but the small number of regional storm surge studies, and uncertainty in changes in tropical and mid-latitude cyclones at the regional scale, means that there is low confidence in projections of storm surge change [5.3.3.2]"	15-Oct-14

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104	5	3	36	3	37	Update this sentence for clarity. Original sentence: "The analysis and implementation of coastal adaptation has progressed more significantly in developed countries than in developing countries towards climate resilient and sustainable coasts (high confidence)." New sentence: "The analysis and implementation of coastal adaptation toward climate-resilient and sustainable coasts has progressed more significantly in developed countries than in developing countries (high confidence)."	15-Oct-14
105	5	4	6	4	7	Wording updated for clarity. Original wording: "and an in depth presentation will not be found herein." New wording: "so an in-depth discussion is not provided herein."	15-Oct-14
106	5	4	32			Wording updated for clarity. Original wording: "...higher than the projected for the GMSL." New wording: "...higher than that projected for the GMSLR."	15-Oct-14
107	5	4	37	4	38	In the following phrase: "it causes coral reefs to lose their structural integrity with negatively implicating reef communities and shore protection" replace the "with" with a comma, so that it becomes "it causes coral reefs to lose their structural integrity, negatively implicating reef communities and shore protection"	15-Oct-14
108	5	5	12			In the phrase "further referred to as coasts" replace "further" with "also" so that it becomes "also referred to as coasts"	15-Oct-14
109	5	5	41	5	44	Within the text "In addition, Extended Concentration Pathways (ECPs) have been introduced for the 2100-2300 period (Meinhausen et al., 2009 ) providing the opportunity to assess the long-term commitment to sea level rise, which is very likely to continue beyond 2500 unless global temperature declines (WG1, Chapter 1, 13.5.2)," at the bottom of page 5, replace 'very likely' with 'virtually certain' and, in the source info, replace 2009 with 2011, resulting in the following new text: "Extended Concentration Pathways (ECPs) have been introduced for the 2100-2300 period (Meinhausen et al., 2011) providing the opportunity to assess the long-term commitment to sea level rise, which is virtually certain to continue beyond 2500 unless global temperature declines (WG1, Chapter 1, 13.5.2)".	31-Mar-14
110	5	15	20	15	21	Reword this sentence. Original sentence: "The impacts will likely be first apparent by sea level rise adding to storm surge, making extreme water levels higher and more frequent to attack beaches and dunes (Tebaldi et al., 2012)." New sentence: "In the first instance, the impacts will be apparent through sea level rise which, combined with storm surge, will make extreme water levels higher and more frequent and therefore enable greater attack on beaches and dunes (Tebaldi et al., 2012)."	15-Oct-14
111	5	15	38	15	39	Reword this phrase. Original wording: "especially in the intertidal zone where challenges are posed by both aquatic and aerial climatic regimes, such as temperature and desiccation." New wording: "especially in the intertidal zone where both marine and atmospheric climate regime changes can pose challenges."	15-Oct-14
112	5	17	14			In the phrase: "Vegetated coastal habitats are globally declining globally" delete the first instance of "globally".	15-Oct-14
113	5	20	34	20	36	Reword this sentence for clarity. Original sentence: "Droughts, floods and other runoff events, as well as sea level rise impact estuarine circulation, tidal characteristics, suspended matter, and consequently the light climate, and biological communities, in particular in microtidal systems." New sentence: "Droughts, floods, and sea level rise impact estuarine circulation, tidal characteristics, suspended matter, and hence turbidity with consequences for biological communities, particularly in microtidal systems."	15-Oct-14
114	5	25	8	25	9	Reword this sentence for clarity. Original sentence: "Over the last 10 years an extensive number of climate related extreme events (Coumou and Rahmstorf, 2012) have served as an example to evidence impacts on coastal industry, infrastructure, transport and network industry." New sentence: "Over the last 10 years an extensive number of climate-related extreme events (Coumou and Rahmstorf, 2012) illustrate the potential for impacts on coastal industry, infrastructure, transport, and network industry."	15-Oct-14
115	5	25	33	25	35	Reword this sentence for clarity. Original sentence: "Furthermore, sea level rise will reduce the extreme flood return periods and will lower the design critical elevations of infrastructure such as airports, tunnels, coastal protections and ship terminals requiring adaptation (Jacob et al., 2007, Becker et al. 2013)." New sentence: "Furthermore, sea level rise will reduce extreme flood return periods and therefore increase the need for adaptation of infrastructure such as airports, tunnels, coastal protections, and ship terminals to extreme sea level impacts (Jacob et al., 2007; Becker et al., 2013)."	15-Oct-14

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116	5	25	39	25	42	Reword this paragraph for clarity. Original paragraph: "The projected impacts of climate change, considering different possible levels and adaptation, to Alaska's public infrastructure including, but not limited to coastal erosion, inundation and flooding, could add US\$3.6-6.1 billion (+10% to 20% above normal wear and tear) from 2006 to 2030 and US\$5.6-7.6 billion (+10% to 12%) to 2080 to future costs (Larsen et al., 2008)." New paragraph: "The estimated costs of climate change to Alaska's public infrastructure could add US\$3.6 to 6.1 billion (+10 to 20% above normal wear and tear) from now to 2030 and US\$5.6 to 7.6 billion (+10 to 12%) from now to 2080 (Larsen et al., 2008). Higher costs of climate change for coastal infrastructure are expected due to its proximity to the marine environment. Other projected impacts are beneficial for the transportation system. For example, decline of Arctic sea-ice coverage could extend seasonal accessibility to high-latitude shipping routes such as the northwest shipping route that connects the Atlantic to the North Pacific."	15-Oct-14
117	5	26	25	26	27	Reword this sentence for clarity, and add further relevant detail. Original sentence: "In southeastern Australia, Last et al. (2011) found an increasing abundance of some fish species of warm temperate origin (Ridgeway, 2007) and a decline in abundance for fewer other species." New sentence: "In southeastern Australia, Last et al. (2011) found an increasing abundance of 45 fish species of warm temperate origin, which they linked to the observed strengthening of the East Australian Current (EAC) bringing warm waters further south (Ridgeway, 2007)."	15-Oct-14
118	5	26	40	27	1	Within the text: "Narita et al. (2012) estimated that the global economic costs of production loss of mollusks due to ocean acidification (5.3.3.5) by the year 2100 could be over 100 billion US\$," insert the phrase 'based on IPCC IS92a business as usual scenario,' resulting in the following new text: "Narita et al. (2012) estimated that the global economic costs of production loss of molluscs due to ocean acidification (5.3.3.5) by the year 2100 based on IPCC IS92a business-as-usual scenario could be higher than US\$100 billion".	31-Mar-14, updated 15-Oct-14
119	5	29	22			Reword this sentence for clarity. Original sentence: "Phenomena with high and very high degree of confidence in trend detection are mainly selective in this figure." New sentence: "Mainly phenomena with high to very high confidence in trend detection are illustrated in this figure."	15-Oct-14
120	5	29	23	29	24	Reword this sentence for clarity. Original sentence: "The increase of coral bleaching and the shift in range limits of some species distribution are attributed to climate change with high degree of confidence." New sentence: "The increase of coral bleaching and the shift in distribution and range limits of some species are attributed to climate change with high confidence."	15-Oct-14
121	5	29	28	29	29	Reword these sentences for clarity. Original sentences: "However attribution to climate-related and human-related drivers for decrease calcification is difficult. Its attribution is medium confidence because the primary climate-related driver appears to be ocean warming globally." New sentence: "Although the attribution of decreased calcification to either climate- or human-related drivers is difficult, we have medium confidence that the primary climate-related driver is ocean warming globally."	15-Oct-14
122	5	37	33	37	37	Combine these two sentences. Original sentences: "Regarding natural (unassisted) adaptation, several researchers have examined biophysical limits, e.g., of coastal marshes (Kirwan et al., 2010; Craft et al., 2009; Langley et al., 2009; Mudd et al., 2009). Kirwan et al. (2010) found that under certain nonlinear feedbacks among inundation, plant growth, organic matter accretion and sediment deposition coastal wetlands can adapt to conservative rates of sea level rise (A1B) if suspended sediment surpasses a certain threshold." New sentence: "Regarding natural (unassisted) adaptation, several researchers have examined biophysical limits, for example, of coastal marshes (Craft et al., 2009; Langley et al., 2009; Mudd et al., 2009; Kirwan et al., 2010), and found that under certain nonlinear feedbacks among inundation, plant growth, organic matter accretion, and sediment deposition coastal wetlands can adapt to conservative rates of sea level rise (SRES A1B) if suspended sediment surpasses a certain threshold."	15-Oct-14

## List of Substantive Edits to the IPCC WGII AR5 Final Draft Chapters of 28 October 2013

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
123	5	41	26	41	29	Rephrase these sentences for clarity. Original sentences: "When atmospheric carbon dioxide is absorbed into the ocean, it reacts to produce carbonic acid, increasing the acidity of seawater and diminishing the amount of a key building block (carbonate) used by marine species like shellfish and corals to make their shells and skeletons. The decreased amount of carbonate makes it harder for many of these 'calcifiers' to make their shells and skeletons, weakening or dissolving them." New sentences: "When atmospheric carbon dioxide is absorbed into the ocean, it reacts to produce carbonic acid, which increases the acidity of seawater and diminishes the amount of a key building block (carbonate) used by marine 'calcifiers' such as shellfish and corals to make their shells and skeletons and may ultimately weaken or dissolve them."	15-Oct-14
124	5					Table 5-2: Remove the column of temperature projections from this table.	15-Oct-14
125	5					Table 5-2: Reorganize layout. Label left column "Emission scenario". Change cell entries in left column from "Low", "Medium", "High", [empty cell] to "Low", "Medium low", "Medium high", "High".	15-Oct-14
126	5					Table 5-2: Caption: add "and the high scenario includes projections based on RCP6.0 and RCP8.5".	15-Oct-14
127	5					Table 5-4: Impact column, Salinity row: change "Salinity" to "Increased salinity".	15-Oct-14
128	5					Table 5-4: Impact column, Flooding/waterlogging row: change "waterlogging" to "inundation".	15-Oct-14
129	5					Figure 5-1: Figure brought to IPCC specification.	15-Jul-15
130	5					Figure 5-2: Figure brought to IPCC specification.	15-Jul-15
131	5					Figure 5-3: Figure brought to IPCC specification.	15-Jul-15
132	5					Figure 5-4: Figure brought to IPCC specification.	15-Jul-15
133	5					Figure 5-5: Legend reformulated to improve clarity and figure brought to IPCC specification.	15-Jul-15
134	5					Figure 5-6: Figure brought to IPCC specification.	15-Jul-15
135	5					Figure 5-6: Updated labels of red dashed lines. Original labels had been "Defra", "TE2100 H+", and "TE2100 H++". New labels are, respectively, "Defra and upper part of new TE2100 likely range", "Tope of new H++ range", and "Previous extreme used in TE2100".	15-Oct-14
136	5					Figure 5-6: Updated caption to reflect new figure labels, eliminated mention of "2.6m", and added reference to the relevant underlying publication.	15-Oct-14
137	6					Table 6-3: Caption, last sentence: change "implications" to "persistence"	15-Jul-15
138	6					Table 6-3: Caption, remove "NA. not available".	15-Jul-15
139	6					Table 6-4: Change from letter coding to color coding.	15-Jul-15
140	6					Figure 6-1: Panel (d) edited to display information in a clearer format and figure brought to IPCC specification.	15-Jul-15
141	6					Figure 6-2: Figure brought to IPCC specification.	15-Jul-15
142	6					Figure 6-3: Data reorganized to improve clarity and figure brought to IPCC specification.	15-Jul-15
143	6					Figure 6-3, industrialization column: The "Normalized calcification" data corresponding to Caribbean corals have been reoriented to correct a positional error.	15-Oct-14
144	6					Figure 6-3, industrialization column: The "Temperature anomaly" data have been updated to correct an error.	15-Oct-14
145	6					Figure 6-4: Figure brought to IPCC specification.	15-Jul-15
146	6					Figure 6-5: Information reorganized to improve clarity and figure brought to IPCC specification.	15-Jul-15
147	6					Figure 6-6: Figure brought to IPCC specification.	15-Jul-15
148	6					Figure 6-7: Figure brought to IPCC specification.	15-Jul-15
149	6					Figure 6-8: Figure brought to IPCC specification.	15-Jul-15
150	6					Figure 6-9: Presentation of data edited for clarity and figure brought to IPCC specification.	15-Jul-15
151	6					Figure 6-10: In Panel (b) 'Corals' information now also displayed as 'warm-water and cold-water corals' and entire figure brought to IPCC specification.	15-Jul-15
152	6					Figure 6-11: Presentation of data edited for clarity and figure brought to IPCC specification.	15-Jul-15
153	6					Figure 6-12: Figure brought to IPCC specification.	15-Jul-15
154	6					Figure 6-13: Figure brought to IPCC specification.	15-Jul-15
155	6					Figure 6-14: Figure brought to IPCC specification.	15-Jul-15
156	6					Figure 6-14, panel (c): Data have been updated to correct and error.	15-Oct-14
157	6					Figure 6-15: Presentation of data edited for clarity and figure brought to IPCC specification.	15-Jul-15
158	7	2	21			Executive Summary, para 1: Add the word "terrestrial" before food production in key finding #1	31-Mar-14
159	7	4	16			Replace "other studies report a lower number" with "this is arguably a low-end estimate"	15-Oct-14
160	7	24	25			7.4.2 (2nd paragraph): change "by 0.33%" to "only marginally."	31-Mar-14
161	7	24	28			7.4.2 (2nd paragraph): Change "both species" to "tuna"	31-Mar-14

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
162	7	52	52	52	53	Replace "FAO, 2008: Policy Measures taken by Government to Reduce the Impact of Soaring Prices. Global Information and Early Warning System." with "FAO, 2008: The State of Food Insecurity in the World: High Food Prices and Food Security—Threats and Opportunities. Food and Agricultural Organization of the United Nations (FAO), 56 pp."	15-Oct-14
163	7					Table in Box 7-1 (impacts on crops): Africa section, second All regions subrow: change "Thornton et al. (2009)" to "Thornton et al (2011)".	15-Jul-15
164	7					Table in Box 7-1 (impacts on crops): Central & South America section, Paraguay subrow, for Maize, interchange numbers for A2 and B2 scenarios; for Soybean, change "10" to "-10".	15-Jul-15
165	7					Table in Box 7-1 (impacts on crops): Central & South America section, second Brazil subrow: for Bean, change "+45" to "up tp +45".	15-Jul-15
166	7					Table in Box 7-1 (impacts on crops): Central & South America section, Andean region row: for barley yield impact, change "-1/-8" to 0 to -13", and for maize yield impact, change "o/-14" to -5".	15-Jul-15
167	7					Table in Box 7-1 (impacts on crops): East Asia section, Eastern China row: change "Tao et al. (2013)" to "Tao and Zhang (2013)".	15-Jul-15
168	7					Table in Box 7-1 (impacts on crops): East Asia section, first China row: expanded data to include ranges and to include data for both irrigated and rainfed crops.	15-Jul-15
169	7					Table in Box 7-1 (impacts on crops): Europe section: add "Wheat, maize, soybean" for each data entry.	15-Jul-15
170	7					Table in Box 7-1 (impacts on crops): For each entry in Reference column that refers to a chapter, specify which section in that chapter and/or add a citation to other literature.	15-Jul-15
171	7					Table in Box 7-1 (impacts on crops): For many entries in the Scenario column, specify the relevant climate scenario and/or climate model.	15-Jul-15
172	7					Table in Box 7-1 (impacts on crops): North America section, fourth line of yield impacts (soy): change "-4.4 (+2.4)" to "-2.4 (+5.0)".	15-Jul-15
173	7					Table in Box 7-1 (impacts on crops): North America section, US NW subrow, yield impact for spring wheat: change "+7/+3" to "-2.2, -5.6".	15-Jul-15
174	7					Table in Box 7-1 (impacts on crops): South Asia section, second South Asia subrow: change "+2°C" to "+3°C" and changed "Lal (2010)" to "Lal (2011)".	15-Jul-15
175	7					Table in Box 7-1 (impacts on crops): World row, Yield impacts column: expanded data to include data for both irrigated and rainfed crops.	15-Jul-15
176	7					Table in Box 7-1 (impacts on livestock): Australia section, final row (New Zealand): change "National pasture production for dairy, beef, and sheep will decrease by 4%" to "Change in agricultural production: Dairy: -2.8%, -4.3%; Sheep and beef: -6.1%, -8.8%".	15-Jul-15
177	7					Table in Box 7-1 (impacts on livestock): Australia section, fourth row: interchanged "7%" and "9%". Change "Operating profit to fall by 27% in 2030, 32% in 2050, and 48% in 2070" to "Declines in ANPP were larger at lower rainfall locations. Operating profit (at constant prices) fell by an average of 27% in 2030, 32% in 2050, and 48% in 2070".	15-Jul-15
178	7					Table in Box 7-1 (impacts on livestock): Australia section, Northern Australia row: change "3°C increase will cause 4% reduction in gross value of beef, sheep, and wool sector" to "3°C increase in temperature will result in 21% reduction in forage production for CO2 at 350 ppm level and no change at 650 ppm level. Changes of ±10% in rainfall were exacerbated to ±15% change in forage production at 350 ppm CO2".	15-Jul-15
179	7					Table in Box 7-1 (impacts on livestock): Australia section, penultimate row: change "Hanslow et al. (2012)" to "Hanslow et al. (2014)".	15-Jul-15
180	7					Table in Box 7-1 (impacts on livestock): Europe section, French Uplands subrow: change source from "Graux et al. (2011)" to "Cantarel et al. (2013)".	15-Jul-15
181	7					Figure 7-1: Figure brought to IPCC specification.	15-Jul-15
182	7					Figure 7-2: Figure brought to IPCC specification.	15-Jul-15
183	7					Figure 7-3: Figure brought to IPCC specification.	15-Jul-15
184	7					Figure 7-4: Figure brought to IPCC specification.	15-Jul-15
185	7					Figure 7-5: Presentation of data and caption edited for clarity and figure brought to IPCC specification.	15-Jul-15
186	7					Figure 7-6: References added to legend and presentation altered for clarity; figure brought to IPCC specification.	15-Jul-15
187	7					Figure 7-7: Figure brought to IPCC specification.	15-Jul-15
188	7					Figure 7-8: Figure brought to IPCC specification.	15-Jul-15
189	8	40	28	40	34	Add the word 'storage' before the word 'capacity,' and replace 'natural areas' with 'land outside the city'.	31-Mar-14
190	8					Table 8-2: Header: change "but needs to be acted on" to "but not yet acted on".	15-Jul-15
191	8					Table 8-4: Institutional—community organization row, right-most column: change "is evident for community organizations and actions to persist" to "were evident and these helped community organizations and actions to persist".	15-Jul-15

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#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
192	8					Table 8-6: London section, Housing row: change "London has an extensive historic housing stock that demonstrates poor thermal performance in summer and winter, poor water efficiency, and significant numbers of which are at risk of flooding" to "London has an extensive historic housing stock that demonstrates poor thermal performance in summer and winter and poor water efficiency. A significant proportion of this housing stock is at risk of flooding".	15-Jul-15
193	8					Figure 8-1: Country borders added to map and figure brought to IPCC specification.	15-Jul-15
194	8					Figure 8-2: Country borders removed from map and figure brought to IPCC specification.	15-Jul-15
195	8					Figure 8-3: Figure brought to IPCC specification.	15-Jul-15
196	8					Figure 8-4: Figure brought to IPCC specification.	15-Jul-15
197	8					Figure 8-5: Figure brought to IPCC specification.	15-Jul-15
198	8					Figure 8-6: Figure brought to IPCC specification.	15-Jul-15
199	9					Table 9-1: Jamaica row, Reference column: change "2012" to "2012:iv".	15-Jul-15
200	9					Table 9-2: Header: create new header ("Finding") for main column.	15-Jul-15
201	9					Table 9-3: Dependence on agriculture row, Developed countries column: change "(2006)" to "OECD (2006)".	15-Jul-15
202	9					Table 9-3: First body row, Developing countries column: remove "(UN-DESA Population Division, 2012)".	15-Jul-15
203	9					Table 9-3: Poverty and inequality row, right column: change "Table 9-3" to "Table 9-4".	15-Jul-15
204	9					Table 9-3: Poverty and inequality row, right column: remove "UN, 2010".	15-Jul-15
205	9					Table 9-4: Incidence of rural poverty, 2008: change "80.9" to "60.9".	15-Jul-15
206	9					Table 9-5: Cocoa row, Change in total area by 2050 column: add "without adaptation measures" as the last words in the cell.	15-Jul-15
207	9					Table 9-5: Header row: change "changes to 2050" to "changes by 2050".	15-Jul-15
208	9					Table 9-6: Left column, antepenultimate row: add "in farm property values".	15-Jul-15
209	9					Table 9-6: Remove "Authors /s" from header row.	15-Jul-15
210	9					Table 9-7: Changing amount or area of land under cultivation row: add location associated with reference Lin et al. (2005): "China".	15-Jul-15
211	9					Table 9-7: Changing amount or area of land under cultivation row: remove "and expanding rice crops".	15-Jul-15
212	9					Table 9-7: Diversifying crops and/or animal species row: change "Cows by goats and camels" to "Replacing cattle with hardier goats and camels".	15-Jul-15
213	9					Table 9-7: Ensuring optimal herd size row: add location associated with reference Rees et al. (2008): "Northern areas of Norway, Sweden, Finland, and Russia".	15-Jul-15
214	9					Table 9-7: First row: remove "Anchioreta in Brazil (Bonatti et al., 2012)".	15-Jul-15
215	9					Table 9-7: In header, change "Where it has been observed" to "Where observed". Add header ("Examples").	15-Jul-15
216	9					Table 9-7: Modifying grazing patterns for herds row: change "moving livestock to less densely populated pastures" to "Utilizing spatial variability in resources".	15-Jul-15
217	9					Table 9-7: Using different varieties row: change "Drought-tolerant" to "Drought-tolerant cultivars".	15-Jul-15
218	9					Table 9-7: Water control mechanisms row: remove "(known as zai)" from "Small water harvesting pits".	15-Jul-15
219	9					Table 9-8: Demand-side mechanisms section, first subrow: change "Quiroga and Gaggioi, 2011" to "Quiroga and Gaggioi, 2010".	15-Jul-15
220	9					Figure 9-1: Figure brought to IPCC specification.	15-Jul-15
221	9					Figure 9-2: Legend added and presentation of data edited to improve clarity; figure brought to IPCC specification.	15-Jul-15
222	10	24	35	24	38	Original wording: "Increasing volatility and burden of losses in many regions are expected to fundamentally impact the industry, leading insurers to adapt their business to the changing risk [...], including the use of short-term contracts to adapt to changing circumstances (Botzen et al., 2010a)". New wording: "Increasing volatility and burden of losses in many regions are expected to fundamentally impact the industry, leading insurers to adapt their business to the changing risk [...]. However, prevailing short-term contracts facilitate adaptation to changing circumstances (Botzen et al., 2010a)."	15-Oct-14
223	10	25	23	25	24	Original wording: "Apart from detection, loss trends have not been conclusively attributed to anthropogenic climate change; most such claims are not based on scientific attribution methods" New wording: "Apart from detection, loss trends have not been conclusively attributed to anthropogenic climate change; most such discussions are not based on scientific attribution methods."	15-Oct-14
224	10	25	35	25	37	In this sentence, the wrong numbers were used. Original wording/numbers: "[...], the 25-year loss is projected (A1B) to change by -10% to +18% (2011-2040) [...]" New wording/numbers: "[...], the 25-year loss is projected (A1B) to change by -10% to +26% (2011-2040) [...]"	15-Oct-14

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
225	10	26	49	26	51	Update numbers and wording used in this sentence. Original wording/numbers: "In high-income countries, some 35% of direct natural disaster losses have been covered by insurance in the period 1980-2011, about 5% in middle-income countries, and less than 1% in low income countries (Wirtz et al., 2013)" New wording/numbers: "In high-income countries, some 37% of direct natural disaster losses have been covered by insurance in the period 1980-2011, about 4% in middle-income countries, and even less in low income countries (Wirtz et al., 2013)."	15-Oct-14
226	10	29	10	29	11	Further detail added to this wording, for clarity. Original wording: "Expected post-disaster relief has been shown to counteract insurance uptake (Raschky et al., 2013)" New wording: "Expected governmental post-disaster relief has been shown to counteract insurance uptake (Raschky et al., 2013)."	15-Oct-14
227	10	29	31	29	32	Sentence broken up to clarify meaning. Original wording: "For instance, group policies that foster mutual monitoring, programs or legislative actions that encourage purchase of insurance may increase participation rates" New wording: "For instance, group policies foster mutual monitoring. Programs or legislative actions that encourage purchase of insurance may increase participation rates."	15-Oct-14
228	10	34	22	34	24	Replace the following text: "... Estimates agree on the size of the impact (small relative to economic growth) but disagree on the sign (see Figure 10-1). Climate change may be beneficial for moderate climate change but turn negative for greater warming. Impacts accelerate for larger warming, and estimates diverge." with: "Estimates agree on the size of the impact (small relative to economic growth), and 17 of the 20 impact estimates shown in Figure 10-1 are negative. Losses accelerate with greater warming, and estimates diverge."	15-Oct-14
229	10					Table 10-3: Expand all arrows (">") into words (usually "affects" or "induces").	15-Jul-15
230	10					Table 10-3: In all instances, expand "hydro" to "hydroelectric" or "hydroelectric production".	15-Jul-15
231	10					Table 10-3: Row for de Lucena et al. (2003): change "in years with worst-case hydro production" to "for each year in which worst-case hydroelectric production occurs".	15-Jul-15
232	10					Table 10-5: First body row, right-most column: change "For entire Europe they will be halved" to "For entire Europe they will roughly be halved".	15-Jul-15
233	10					Table 10-5: Second body row, right-most column, Norway/Canada category: in first sentence, add footnote 3.	15-Jul-15
234	10					Table 10-5: Second body row, right-most column, Norway/Canada category: in second sentence, add "approximately" before "10%" and add footnote 3.	15-Jul-15
235	10					Table 10-5: Tropical cyclones row, right-most column: change "contrarious" to "contradictory".	15-Jul-15
236	10	77		77		Table 10-5, third row (including header) and third column: When discussing losses from Canadian cities, change "four" to "three". Original text: "...losses from heavy precipitation in property and business interruption insurances in four city areas in Canada..." New text: "...losses from heavy precipitation in property and business interruption insurances in three city areas in Canada..."	15-Oct-14
237	10	77		77		Table 10-5, third row (including header) and third column: Clarifying content added to statements on Netherlands. Original text: "The Netherlands: expected annual property loss with an assumed flood insurance system..." New text: "The Netherlands: expected annual property loss caused by increasing river discharge and sea level with an assumed flood insurance system ..."	15-Oct-14
238	10	77		77		Table 10-5, fourth row (including header) and third column: wording changed to clarify assumptions. Original text: "(under the assumptions of strained reinsurance capacity and current adaptation)" New text: "(under the assumptions of strained reinsurance capacity, i.e. hard market condition, and current adaptation)".	15-Oct-14
239	10	77		77		Table 10-5, sixth row (including header) and third column: dates and variables referred to in projections have been corrected Original text: "Japan: paddy rice insurance payouts are projected to decrease by 13% at the end of the century, on the basis of changes in standard yield and yield variability [11]." New text: "Japan: paddy rice insurance payouts are projected to decrease by 13% in the 2070s, on the basis of changes in standard yield and yield loss (A2) [11]."	15-Oct-14
240	10	78		78		Table 10-6, third row (including header) and second column: Statement relating to premium incentives has been corrected to reflect the proper grammatical tense: Original text: "In this respect, premium incentives to reduce residual flood risk are missing." New text: "In this respect, premium incentives to reduce residual flood risk were missing in the past."	15-Oct-14
241	10					Table 10-6: Fourth body row, Example/Explanation column: change footnote associated with sentence "Defense costs could be covered by liability insurance" from 21 to 20.	15-Jul-15
242	10					Table 10-6: Second body row, Example/Explanation column: change "older properties" to "the large majority of older properties". Change footnote from "1, 6, 7, 11, 14, 15" to "14; see also 1, 6, 7, 11, 15".	15-Jul-15

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
243	10					Table 10-7: Last row, Example/Explanation column: change footnote associated with sentence that begins with "For the Caribbean scheme" from 29 to 31.	15-Jul-15
244	10					Table 10-9: Add header ("PRTP") to left-most column.	15-Jul-15
245	10					Table 10-10: Add a legend to explain the X and Y axes of each line plot in the "Sensitivity to climate change" column.	15-Jul-15
246	10					Appendix 10.A (Industrial Classification): move to On-Line Supplementary Material (OLSM)	31-Mar-14
247	10					Appendix 10.B (Estimates of the Total and Marginal Economic Impact of Climate Change): move to OLSM	31-Mar-14
248	10	82		82		Table 10.1.B: Wording corrected in the caption, and sentence added to the caption. Original caption: "Estimates of the welfare loss due to climate change (as equivalent income loss in percent); estimates of the uncertainty are given in bracket as standard deviations or 95% confidence intervals." New caption: "Estimates of the welfare impact of climate change (expressed as an equivalent change in income, calculated as a percent of global aggregate GDP); estimates of the uncertainty are given in brackets as standard deviations or ranges. Table entries based on regional results are simple sums of impacts on regional economic output; other weightings yield different estimates."	31-Mar-14, updated 15-Oct-14
249	10	82		82		Table 10.B.1, entry for "Nordhaus 1994a" and "Impact, GDP (%)": Numbers corrected to address errors found in fact check. Original numbers: "-4.8, (-30.0 to 0.0)" New numbers: "-1.9 (median), -3.6 (mean), (-21 to 0.0)"	15-Oct-14
250	10	82		82		Table 10.B.1, entry for "Plamberk and Hope (1996)": Correct spelling of author name to "Plambeck and Hope (1996)"; And, in the impact column, switch order of range values given, for clarity. Original order: (-0.5 to -11.4) New order: [-11.4 to -0.5]	15-Oct-14
251	10	82		82		Table 10.B.1, for both entries citing "Mendelsohn et al. (2000)": In the "Warming" column, correct the value given from "2.5" to "2.2".	15-Oct-14
252	10	82		82		Table 10.B.1, entry for "Hope 2006a" and "Impact, GDP (%)": Numbers corrected to address errors found in fact check. Original numbers: "-0.9, (-0.2 to 2.7)" New numbers: "-0.9, (-2.7 to 0.0)"	31-Mar-14, updated 15-Oct-14
253	10	82		82		Table 10.B.1, entry for "Nordhaus (2008)" and "Impact": Correct the value given here from "-2.5" to "-2.6".	15-Oct-14
254	10	82		82		Table 10.B.1, entry for "Maddison and Rehdanz 2011" in the "Impact" column: Update the value given from "-11.5" to "-12.4".	15-Oct-14
255	10	82		82		Table 10.B.1, entry for "Roson and van der Mensbrugge 2012" and "Warming, (°C)": Numbers corrected to address errors found in fact check. Original numbers: "2.3, 4.9" New numbers: "2.9, 5.4"	15-Oct-14
256	10	82		82		Table 10.B.1, entry for "Roson and van der Mensbrugge 2012" and "Impact, GDP (%)": Numbers corrected to address errors found in fact check. Original numbers: "-1.8, -4.6" New numbers: "-2.1, -6.1"	15-Oct-14
257	10	82		82		Table 10.B.1: Added new footnote (a) to the "Impact, GDP (%)" column for clarification: Footnote (a): "Central estimates of welfare impact of climate change; some of these estimates are the expected impacts from a regression analysis, some are the average impacts from a Monte Carlo experiment with a model, some are the expected impacts from a meta-analysis, and some are best guesses. The estimates of the uncertainty about the central estimates have similarly diverse interpretations. Therefore, the spread between estimates indicates the range of results but does not constitute a confidence interval. For example, the standard deviation of the estimates for a ~2.5°C warming relative to pre-industrial (estimates labeled with a †) is 0.9% of GDP with an average of -1.1% (i.e., -0.2 to -2.0% GDP). The distribution of the uncertainty is asymmetric such that losses are more likely than not to be greater, rather than smaller, than this range."	31-Mar-14, updated 15-Oct-14
258	10	82		82		Table 10.B.1, for the 9 entries corresponding to the following 8 studies: Fankhauser (1995), Tol (1995), Nordhaus and Yang (1996), Plambeck and Hope (1996), Mendelsohn et al. (2000), Nordhaus and Boyer (2000), Maddison (2003), and Hope (2006a): Add dagger symbols (†) as described in the new footnote (a).	15-Oct-14
259	10	82		82		Table 10.B.1, entry for "Nordhaus (1994a)" and "Method": Added new footnote (b): "Nordhaus (1994a) reported results for additional scenarios at greater or more rapid warming. Knowledge of climate impacts at that time was limited and the uncertainty of those scenarios, based on expert elicitation, is therefore very large. See original study for more details."	15-Oct-14
260	10	82		82		Table 10.B.1: Relabel footnote (a) as footnote (c), and revise footnote to read: "Results aggregated by Tol (2013). For details on aggregations, see accompanying spreadsheet: TableSM10-1_SupplementarySpreadsheet.xls."	15-Oct-14
261	10	82		82		Table 10.B.1: Remove footnote (a) [now labeled as footnote (c)] regarding aggregation by Tol (2013) from both entries citing Mendelsohn et al. (2000).	15-Oct-14

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
262	10	82		82		Table 10.B.1, entries for "Nordhaus and Boyer (2000)" and "Nordhaus (2008)" in the "Method" column: Added new footnote (d): " The table entries are output weighted. Nordhaus and Boyer (2000) also report a population weighted output of -1.9%. Nordhaus (2006) reports values with and without midcontinental drying, and with weighting by output, area or population. Population weights would increase the estimated impacts of the CC1 and CC2 scenarios to -1.7% and -3.0%, respectively."	15-Oct-14
263	10	82		82		Table 10.B.1, entries for "Maddison and Rehdanz 2011", "Maddison (2003)" and "Rehdanz and Maddison (2005)" in the "Warming, (°C)" column: Added new footnote (e) regarding temperature baselines: "The temperature increase is calculated relative to a variety of country-specific historical baselines."	15-Oct-14
264	10	84		84		Figure 10-1: In the caption, reference to "studies published since IPCC AR5" has been corrected to "studies published since IPCC AR4"	15-Oct-14
265	10	84		84		Figure 10-1: As the data in this figure are based on the numbers given in table 10.B.1, data points have moved to reflect corrections to the data in that table.	15-Oct-14
266	10					Figure 10-1: Figure edited to incorporate data changes; figure brought to IPCC specification.	15-Jul-15
267	10					Figure 10-2: Figure brought to IPCC specification.	15-Jul-15
268	10	84		84		Table 10.B.1: revise with the following edits: <ul style="list-style-type: none"> <li>• In table title, replace 'loss due to' with 'impact of'</li> <li>• In cell intersection Hope (2006a) row and Impact (% GDP) column, change '-0.2 to 2.7' to '-2.7 to 0.2'</li> <li>• Add a footnote to the Impact column, which reads: "Central estimates of welfare impact of climate change; some of these estimates are the expected impacts from a regression analysis, some are the average impacts from a Monte Carlo experiment with a model, some are the expected impacts from a meta-analysis, and some are best guesses as reported by the authors. The estimates of the uncertainty about the central estimates have similarly diverse interpretations. Therefore, the spread between estimates (e.g., the standard deviation of the estimates for a 2.5°C warming relative to pre-industrial is 0.9% of GDP with an average of -1.1%) indicates the range of results (e.g., -0.2 to -2.0% GDP for a 2.5°C warming) but does not constitute a confidence interval."</li> </ul>	15-Jul-15
269	11					Figure 11-1: Figure brought to IPCC specification.	15-Jul-15
270	11					Figure 11-2: Legend added and figure brought to IPCC specification.	15-Jul-15
271	11					Figure 11-3: Temp line dropped from figure and figure brought to IPCC specification.	15-Jul-15
272	11					Figure 11-4: Figure brought to IPCC specification.	15-Jul-15
273	11					Figure 11-5: Figure brought to IPCC specification.	15-Jul-15
274	11					Figure 11-6: Figure brought to IPCC specification.	15-Jul-15
275	11					Figure 11-7: Figure brought to IPCC specification.	15-Jul-15
276	12					Table 12-1: Water stress and scarcity row, Illustrative examples of observed impacts column: change "Glaciers lower river flows affect water stress and scarcity, with livelihood and cultural loss (Orlove et al., 2008): glacier recession in the Cordillera Blanca in Peru is altering the hydrological regime with implications for local livelihoods and water availability in the arid coastal zone (Mark et al., 2010)" to "Glacier retreat leads to lower river flows and hence affect water stress, livelihoods and represent a cultural loss (Orlove et al., 2008). For example glacier recession in the Cordillera Blanca in Peru has altered the hydrological regime with implications for local livelihoods and water availability downstream (Mark et al., 2010)".	15-Jul-15
277	12					Table 12-3: Add headers ("Type of impact or extreme" and "Region").	15-Jul-15
278	12					Table 12-3: Drought and land degradation section, Evidence for decreased mobility row, Mali subrow: change "during 1980s drought and an increase in cyclical migration" to "occurred during the 1980s drought concurrently with an increase in localized cyclical migration".	15-Jul-15
279	12					Table 12-3: Drought and land degradation section, Evidence for increased mobility subsection, Canada subsection: change "McLeman and Ploeger (2011)" to "McLeman and Ploeger (2012)". Two rows down, change "Scheffran et al. (2012b,c)" to "Scheffran et al. (2012b,d)".	15-Jul-15
280	12					Table 12-3: Flooding section, Decreased mobility row, lower subrow, last column: change "Quoted in Black et al. (2011b)" to "Foresight (2011)".	15-Jul-15
281	12					Table 12-3: Flooding section, Increased mobility row, last subrow, last column: change "Penning-Rowsell et al. (2013)" to "Foresight (2011)".	15-Jul-15
282	12					Figure 12-1: Figure brought to IPCC specification.	15-Jul-15
283	12					Figure 12-2: Figure brought to IPCC specification.	15-Jul-15
284	12					Figure 12-3: Figure brought to IPCC specification.	15-Jul-15
285	12					Reconcile in-text cites with RefWorks reference list.	31-Mar-14
286	13					Figure 13-1: Figure brought to IPCC specification.	15-Jul-15
287	13					Figure 13-2: Presentation of data edited for clarity and figure brought to IPCC specification.	15-Jul-15
288	13					Figure 13-3: Figure brought to IPCC specification.	15-Jul-15
289	13					Figure 13-4: Figure brought to IPCC specification.	15-Jul-15
290	13					Figure 13-5: Presentation of data edited to improve clarity and figure brought to IPCC specification.	15-Jul-15

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
291	14					Table 14-1: Update cross-references.	15-Jul-15
292	14					Table 14-2: Update cross-references.	15-Jul-15
293	14					Table 14-4: Remove left column.	15-Jul-15
294	14					Table 14-4: Update cross-references.	15-Jul-15
295	14					Figure 14-1: Figure brought to IPCC specification.	15-Jul-15
296	14					Figure 14-2: Figure brought to IPCC specification.	15-Jul-15
297	15	2	26	2	28	Executive Summary, 2nd para: Delete "there is a common trend that local governments are hindered by the absence of applicable guides to adaptation decision-making. Local agencies and planners are often confronted by the complexity of adaptation, and even" and replace it with "local agencies and planners are often confronted by the complexity of adaptation without adequate access to guiding information or data on local vulnerabilities and potential impacts. Even..."	31-Mar-14, updated 15-Oct-14
298	15					Table 15-2: Albay Province row, second column from left: change "though establishing farm clusters to assist farmers and fisher folks in their agricultural needs, food assistance, technological needs and training needs" to "established farm clusters to assist farmers and fisher folk in their agricultural, food, technological, and training needs".	15-Jul-15
299	15	7	1			Section 15.2.1.3, before 3rd para: Insert new para – "Indigenous communities are those populations that have cultural and historical ties to specific homelands. They are generally distinct from politically dominant populations (Battiste, 2008). Because of these characteristics, they are particularly vulnerable to climate change impacts. When assessing indigenous vulnerability and developing CCA strategies and resilience to climate change, the following issues need to be examined and addressed: the relationship of indigenous peoples to land, the degree of migration or displacement of indigenous communities (Miron, 2008), and their adaptive capacity. Vulnerability and challenges to adaptation for indigenous people are discussed broadly in Chapters 13, 27, and 28."	31-Mar-14
300	15	13	7			Section 15.4.1, 1st para: Insert new topic sentence – "A feature of adaptation planning is decision making under uncertainty. There is a large body of literature that examines how to integrate uncertain information into decision-making processes and use this information to evaluate the significance of uncertainties for decision outcomes. Treatment of uncertainty is dealt with in Section 2.3.1."	31-Mar-14, updated 15-Oct-14
301	15	17	26			Section 15.4.4: Insert new closing para – "There are various adaptation options that target the specific vulnerability of disadvantaged groups as social options of CCA. Social protection programs include public and private initiatives that transfer income or assets to poor people, protect against livelihood risks, and raise the social status and rights of the marginalized (see Glossary). The roles of social protection in CCA are discussed in Section 14.3.2 and Box 13-2."	31-Mar-14, updated 15-Oct-14
302	16					Figure 16-1: Figure brought to IPCC specification.	15-Jul-15
303	17					Figure 17-1: Figure brought to IPCC specification.	15-Jul-15
304	17					Figure 17-2: Figure brought to IPCC specification.	15-Jul-15
305	17					Figure 17-3: Figure brought to IPCC specification.	15-Jul-15
306	17					Figure 17-4: Figure brought to IPCC specification.	15-Jul-15
307	17					Figure 17-5: Figure brought to IPCC specification.	15-Jul-15
308	18					Table 18-10: Caption: change "natural disasters" to "impacts".	15-Jul-15
309	18	4	38	4	39	Insert the word "change" (missing), and "as well" at the end of the sentence.	31-Mar-14
310	18	18				Add cross-referencing and references at close of second para in Section 18.3.4.2: "(Wang et al., 2006; Mueter and Lizow, 2008; Brown and Arrigo 2012; See also Section 30.5.1.1.2)."	31-Mar-14, updated 15-Oct-14
311	18					Update RefWorks export provided as master reference list.	31-Mar-14
312	18	92		92		Figure 18-3: To reflect a correction made to table 18-8 (documented in the list of SPM tricklebacks, entitled "Changes to the Underlying Scientific/Technical Assessment (IPCC-XXXVIII/DOC.4)", the coastal and marine ecosystems icon near Japan, corresponding to this corrected entry, has shifted location.	31-Mar-14
313	18					Table 18-3: First row, last column: change "Rey et al., 2006" to "Rey et al., 2007".	15-Jul-15
314	18					Table 18-3: Fourth row, last column: change "UNISDR, 2013" to "OSSO, 2013" (2 instances).	15-Jul-15
315	18					Tables 18-3 through 18-9: Table references updated to reflect final referencing check.	15-Oct-14
316	18					Table 18-3: row Thailand, 2011, last column: change 'subsistence' to 'subsidence'	31-Mar-14
317	18					Table 18-5: Africa row, second column: remove reference to Table 22-3.	15-Jul-15
318	18					Table 18-5: Asia row, lower subrow, second column: remove reference to WGI AR5 Section 4.3.2.	15-Jul-15
319	18					Table 18-5: Asia row, upper subrow, second column: change "WGI AR5 Section 10.5.3" to "WGI AR5 Section 4.7.2".	15-Jul-15
320	18					Table 18-5: Beginning of caption: change "Observed impacts of climate change" to "Observed impacts of climate change reported since AR4".	15-Jul-15
321	18					Table 18-5: End of caption: add sentence "Absence of climate change impacts from this table does not imply that such impacts have not occurred."	15-Jul-15

## List of Substantive Edits to the IPCC WGII AR5 Final Draft Chapters of 28 October 2013

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
322	18					Table 18-5: North America row, lower subrow, second column: add citation of Barnett et al. (2008).	15-Jul-15
323	18					Table 18-5: Polar regions row, last subrow: change "WGI AR5 Sections 4.2.3, 4.4, 4.6, and 10.5.2.1" to "WGI AR5 Sections 4.3.3, 4.4, and 10.5.2.1".	15-Jul-15
324	18					Table 18-5: Asia Section. In the entry "Permafrost degradation in Siberia, Central Asia, and the Tibetan Plateau", delete cross-reference to Box 3-2.	31-Mar-14
325	18					Table 18-5: Asia Section. second entry: Change "Shrinking mountain glaciers across Asia" to "Shrinking mountain glaciers across most of Asia"	31-Mar-14
326	18					Table 18-5: Australasia Section. Move "Nicholls, 2006" from references in entry 1 (New Zealand Glaciers) to entry 2 (Australian snow depth).	31-Mar-14
327	18					Table 18-6: Asia Section, first entry: Delete Shrestha and Aryal, 2011; insert "Table SM24-4"	31-Mar-14, updated 15-Oct-14
328	18					Table 18-6: North America, second entry: Delete 'Southern states', and change 'Northwestern' to 'northeastern'. New statement: "Runoff increases in the midwestern and northeastern USA (Georgakakos et al., 2013)"	31-Mar-14, updated 15-Oct-14
329	18					Table 18-6: South and Central America, First entry: Delete Rodríguez-Morales et al., 2010 from citations, and from reference list; New statement: "Changes in extreme flows in Amazon River [27.3.1.1; (Butt et al., 2011; Wang, G. et al., 2011; Espinoza et al., 2013)]"	31-Mar-14, updated 15-Oct-14
330	18					Table 18-6: South and Central America, second entry: Add Casassa et al., 2009, Baraer et al., 2012 to the citations; remove Jomelli et al and Bradley et al; change "role of climate" column from 'minor' to 'major'; Resulting in: "Changing discharge patterns in rivers in the Western Andes; for major river basins in Colombia discharge has decreased during the last 30-40 years [27.3.1.1, Table 27-3; (Casassa et al., 2009; Baraer et al., 2012; Poveda and Pineda, 2009; Rabatel et al., 2013; Vuille et al., 2008)]"	31-Mar-14, updated 15-Oct-14
331	18					Table 18-6: Africa section, third subrow, second column: remove reference to Section 22.2.3.	15-Jul-15
332	18					Table 18-6: Asia row, second subrow, second column: remove reference to Box 3-1.	15-Jul-15
333	18					Table 18-6: Asia row, second subrow, sixth column: remove "change in snow".	15-Jul-15
334	18					Table 18-6: Asia row, upper subrow, second column: change "Increased flow in many rivers due to shrinking glaciers in the Himalayas and Central Asia" to "Increased flow in many rivers in China due to shrinking glaciers".	15-Jul-15
335	18					Table 18-6: Beginning of caption: change "Observed impacts of climate change" to "Observed impacts of climate change reported since AR4".	15-Jul-15
336	18					Table 18-6: End of caption: add sentence "Absence of climate change impacts from this table does not imply that such impacts have not occurred."	15-Jul-15
337	18					Table 18-6: North America row, upper subrow, second column: remove reference to WGI AR5, Section 2.6.2.	15-Jul-15
338	18					Table 18-7: Asia row, third subrow, second column: remove "Dulamsuren et al. (2007)".	15-Jul-15
339	18					Table 18-7: Asia row, third subrow, second column: remove "growth decline in Mongolian larches".	15-Jul-15
340	18					Table 18-7: Beginning of caption: change "Observed impacts of climate change" to "Observed impacts of climate change reported since AR4".	15-Jul-15
341	18					Table 18-7: End of caption: add sentence "Absence of climate change impacts from this table does not imply that such impacts have not occurred."	15-Jul-15
342	18					Table 18-7: Africa section, first entry: Change "Tree density decreases in Sahel and semi-arid Morocco" to "Tree density decreases in Western Sahel and semi-arid Morocco"	31-Mar-14
343	18					Table 18-7: North America Section, fourth entry: Change "Increase in wildfire activity, fire frequency and duration, and burnt area in boreal forest of North America" to "Increase in wildfire activity, fire frequency and duration, and burnt area in forests of the western US and boreal forests in Canada"	31-Mar-14
344	18					Table 18-7: Polar Regions, fourth entry: Replace Callaghan et al, 2013, with Callaghan et al., 2011. New statement: "Impacts on tundra animals from increased ice layers in snow pack, following rain-on-snow events [28.2.3.1.3; (Callaghan et al., 2011; Hansen et al., 2013)]"	31-Mar-14
345	18					Table 18-8: Add Africa row.	15-Jul-15
346	18					Table 18-8: Asia row, first subrow, second column: change to "Decline in coral reefs in tropical Asian waters".	15-Jul-15
347	18					Table 18-8: Asia row, first subrow, second column: remove "Nagai et al. (2011)".	15-Jul-15
348	18					Table 18-8: Asia row, second subrow, second column: change to "Northward range extension of corals in the East China Sea and western Pacific, and a predatory fish in the Sea of Japan".	15-Jul-15
349	18					Table 18-8: Australasia section, first subrow, second column: change "Ling et al. (2009)" to "Ling et al. (2009b)"; change "Wernberg et al. (2011)" to "Wernberg et al. (2011b)".	15-Jul-15
350	18					Table 18-8: Beginning of caption: change "Observed impacts of climate change" to "Observed impacts of climate change reported since AR4".	15-Jul-15
351	18					Table 18-8: End of caption: add sentence "Absence of climate change impacts from this table does not imply that such impacts have not occurred."	15-Jul-15
352	18					Table 18-9: Africa row, first subrow, third column: change "Section 13.2.1.1" to "Section 13.2.1.2".	15-Jul-15
353	18					Table 18-9: Australasia row, second subrow, third column: change "Section 25.8.11" to "Section 25.8.1.1".	15-Jul-15

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
354	18					Table 18-9: Beginning of caption: change "Observed impacts of climate change" to "Observed impacts of climate change reported since AR4".	15-Jul-15
355	18					Table 18-9: End of caption: add sentence "Absence of climate change impacts from this table does not imply that such impacts have not occurred."	15-Jul-15
356	18					Table 18-9: Africa section, third entry: Change the reference to chapter 11 from 11.4.4 to 11.5.1.1. New statement: "Malaria increases in Kenyan highlands [11.5.1.1; (Alonso et al., 2011; O'Meara et al., 2010; Stern et al., 2011)]"	31-Mar-14
357	18					Table 18-9: Asia Section, second entry: Remove Auffhammer and Vincent, 2012 from citations. New statement: "Negative impacts on aggregate wheat yields in South Asia [7.2.1; Figure 7-2; (Pathak et al., 2003)]"	31-Mar-14
358	18					Table 18-9: Central and South America Section, first entry (which reads "More vulnerable livelihood trajectories for indigenous Aymara farmers in Bolivia, due to water shortage [13.1.4; (McDowell and Hess, 2012)]"): Change entry in the "confidence in detection" column from "high" to "medium"	31-Mar-14, updated 15-Oct-14
359	18					Table 18-10: Caption: change "The assessment is for the impacts on various systems, in attribution of those trends to climate change, and in the existence of observed trends in that extreme weather" to "The assessment, for the impacts on various systems, is of attribution of those trends to climate change and of the confidence in existence of observed trends in that extreme weather".	15-Jul-15
360	18					Table 18-10: Second body row, last column: change reference from WGI AR5 2.5.3 to WGI AR5 2.5.2.	15-Jul-15
361	18					Figure 18-1 Presentation of data edited to improve clarity and figure brought to IPCC specification.	15-Jul-15
362	18					Figure 18-2: Legend added to improve clarity and figure brought to IPCC specification.	15-Jul-15
363	18					Figure 18-3: Presentation of data edited to improve clarity and figure brought to IPCC specification.	15-Jul-15
364	18					Figure 18-4: Presentation of data edited to improve clarity and figure brought to IPCC specification.	15-Jul-15
365	18					Figure 18-5: Presentation of data edited to improve clarity and figure brought to IPCC specification.	15-Jul-15
366	18					Figure 18-6: Figure brought to IPCC specification.	15-Jul-15
367	19	15	45			Also include a reference to WGI 6.4.8.1 before Sections 12.4.3 and 12.4.5 references.	31-Mar-14
368	19	17	1			Replace 6.4.3.3 with 6.3.2.2.	31-Mar-14
369	19	18	31			Add reference to WGI 6.4.3.2.	31-Mar-14
370	19	25	37			Replace "AR5 WG1 TS" reference with "WGI AR5 Figure TS.20"	31-Mar-14, updated 15-Oct-14
371	19	26	23			Delete WGI 12.4.5 reference.	31-Mar-14
372	19	26	25	26	27	"The AMOC is considered very likely to weaken for such warming, with best estimates of loss over the 21st century under RCP8.5 ranging from 36-44% (AR5 WGI Sections 12.4.7.2 and 12.5.5.2)." Replace "36-44%" with "12 to 54%".	31-Mar-14, updated 15-Oct-14
373	19	26	27	26	28	"The best estimated range for CTP by 2100 is from 50 to more than 250 PgC for RCP8.5 (AR5 WGI Section 6.4.3.4) although there are large uncertainties." Delete "...more than..."	31-Mar-14
374	19	26	32	26	33	"Regions of the boreal forest could witness widespread forest dieback (low confidence) putting at risk the boreal carbon sink, estimated at 0.5 Pg year <sup>-1</sup> in 2000-2007 (AR5 WGI Section 12.5.5; AR5 WGII Section 4.3.3.1.1)." Delete "...estimated at 0.5 Pg year <sup>-1</sup> in 2000-2007."	31-Mar-14
375	19	26	42	26	43	"Ocean acidification is defined as 'a reduction in pH of the ocean over an extended period, typically decades or longer, caused primarily by the uptake of carbon dioxide from the atmosphere' (AR5 WGI 3.3.2, Box 3.2; Box CC-OA; see also WGII Glossary)." Add "(CO2)" after "carbon dioxide".	31-Mar-14
376	19	28	28			Remove AR5 WGI Section 6.5 reference.	31-Mar-14
377	19	34	22			Replace "AR5 WGI Section 11.3.2.5" with "AR5 WGI FAQ 12.2."	31-Mar-14
378	19	41	1			"WGI finds medium confidence in attribution of intensification of heavy precipitation over Northern Hemisphere land areas with sufficient data (AR5 WGI Section 10.6.1.2)" Delete "Northern Hemisphere"	31-Mar-14
379	19	41	11			"Among the conclusions are, 'In most regions the frequency of warm days and warm nights will likely increase in the next decades, while that of cold days and cold nights will decrease' (AR5 WGI Chapter 11 ES)." Add "land" before "regions".	31-Mar-14
380	19	41	12			"Specifically, 15% of currently observed maximum daily temperatures exceed the historical 90th percentile values (rather than the historical 10%) and by about 2035, 25-30% of daily maximums are projected to exceed the historical 90th percentile value (AR5 WGI Figures 11-17)." Add "about" before "15%"	31-Mar-14
381	19	41	19			"The frequency and intensity of heavy precipitation events over land will likely increase on average in the near term. However, this trend will not be apparent in all regions because of natural variability and possible influences of anthropogenic aerosols and land use change (AR5 WGI Chapter 11 ES)." Delete "and land use change"	31-Mar-14
382	19	45	3			"The Greenland ice sheet (very likely) and the Antarctic ice sheet (medium confidence) contributed to the 5m (very high confidence) to 10m (high confidence) sea level rise that occurred during the Last Interglacial (AR5 WGI SPM; Kopp et al. 2009; McKay et al., 2011; Dutton and Lambeck, 2012)." Add "higher than present" after "5m" and "above present" after "10m"	31-Mar-14

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
383	19	45	8	45	15	"With regard to projection... might be irreversible (AR5 WGI SPM)"Change to "With regard to projection, AR5 WGI finds that "There is high confidence that sustained warming greater than some threshold would lead to the near-complete loss of the Greenland ice sheet over a millennium or more, causing a global mean sea level rise of up to 7 m. Current estimates indicate that the threshold is greater than about 1°C (low confidence) but less than about 4°C (medium confidence) global mean warming with respect to pre-industrial" (AR5 WGI SPM). A threshold for the disintegration of WAIS remains difficult to identify due to shortcomings in various aspects of ice sheet modeling, including representation of the dynamical component of ice loss and ocean processes. For RCP8.5, projected sea level rise is 1 to more than 3 m (medium confidence) by 2300. Beyond 2300, "Sustained mass loss by ice sheets would cause larger sea level rise, and some part of the mass loss might be irreversible" (AR5 WGI SPM)."	31-Mar-14
384	19	45	22	45	23	"The risk of substantial carbon release in the form of methane or carbon dioxide increases with warming. (AR5 WGI Section 6.4.7.3, Figure 6.37; Archer et al., 2009; O'Connor et al., 2010)." Change "The risk" to "The probability". Also, delete AR5 WGI Section 6.4.7.3 and Figure 6.37 references.	31-Mar-14
385	19	45	28	45	30	"WGI AR5 finds that... tipping point" (AR5 WGI Chapter 12 ES)." Change to: "WGI AR5 finds that a "nearly ice-free Arctic Ocean (sea ice extent less than 1 × 10 <sup>6</sup> km <sup>2</sup> for at least 5 consecutive years) in September before mid-century is likely under RCP8.5 (medium confidence)." Furthermore, "There is little evidence in global climate models of a tipping point (or critical threshold) in the transition from a perennially ice-covered to a seasonally ice-free Arctic Ocean beyond which further sea ice loss is unstoppable and irreversible." (AR5 WGI Chapter 12 ES)"	31-Mar-14
386	19	45	48			"Overall, recent multi-model estimates based on different CMIP3 climate scenarios and different dynamic global vegetation models predict a moderate risk of tropical forest reduction in South America (AR5 WGI Section 12.4.8.2)." Add "and even lower risk for African and Asian tropical forests" after "South America" and put quotes starting before "multi-model" and ending after "forests".	31-Mar-14, updated 15-Oct-14
387	19	46	34			Add "(1850-1900)" after "pre-industrial".	31-Mar-14
388	19	50	23			Change TFE5 to TFE.5	31-Mar-14
389	19					Table 19-1: First body right, right-most column: change "Gallai et al. (2008)" to "Gallai et al. (2009)".	15-Jul-15
390	19					Table 19-1: Fourth row: Value becomes "6.6 million", Currency becomes "Yuan RMB", and Citation becomes "Shi et al. (2012)".	15-Jul-15
391	19					Table 19-1: Penultimate row, right-most column: change "Section 19.3.2.4" to "Section 19.3.2.1".	15-Jul-15
392	19					Table 19-1: Remove bottom row.	15-Jul-15
393	19					Table 19-2: First and second body rows, References column: change "Melillo et al. (2009)" to "Melillo et al. (2009a,b)".	15-Jul-15
394	19					Table 19-2: Second body row, Reference column: change "Fargione et al. (2010)" to "Fargione et al. (2008)".	15-Jul-15
395	19					Table 19-4: Row i, end of first subrow: add "and other small islands".	15-Jul-15
396	19					Table 19-4: Row ii: add reference to Section 7.3.	15-Jul-15
397	19					Table 19-4: Row vi: add reference to Section 24.4.	15-Jul-15
398	19					Table 19-4: Row vii: change reference to FAQ 4.4 to FAQs 4.5 and 4.7; change reference to Table 23-2 to Box 23-1.	15-Jul-15
399	19					Figure 19-1: Figure brought to IPCC specification.	15-Jul-15
400	19					Figure 19-2: Symbols updated and figure brought to IPCC specification.	15-Jul-15
401	19					Figure 19-3: References added and figure brought to IPCC specification.	15-Jul-15
402	19					Figure 19-4: Presentation of information altered to incorporate tricklebacks and figure brought to IPCC specification.	15-Jul-15
403	19					Figure 19-5: Presentation of information altered to incorporate tricklebacks and figure brought to IPCC specification.	15-Jul-15
404	19					Figure 19-6: Presentation of legend altered for clarity and figure brought to IPCC specification.	15-Jul-15
405	19					Figure 19-7: Presentation of information altered to incorporate tricklebacks and figure brought to IPCC specification.	15-Jul-15
406	20	2	43			replace "Both kinds of responses" with "Adaptation and mitigation"	31-Mar-14
407	20	3	7			delete "moderately"	31-Mar-14
408	20	3	7			delete "high" after "medium"	31-Mar-14
409	20	3	46			change "strong" to "robust"	31-Mar-14, updated 15-Oct-14
410	20	4	3			replace "of what we should be most worried about" with "reasons for concern" (probably refers to same revision as above)	31-Mar-14
411	20	4	33			add "; also see Working Group III, Chapter 6 on Assessing Transformation Pathways"	31-Mar-14
412	20	4	43			delete "given growing evidence that the"	31-Mar-14

## List of Substantive Edits to the IPCC WGII AR5 Final Draft Chapters of 28 October 2013

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
413	20	4	44			delete "world is on a trajectory toward relatively major climate change"	31-Mar-14
414	20	5	34			replace "adopted" with "identified"	31-Mar-14
415	20	5	35			replace "equated" with "implicitly equating"	31-Mar-14
416	20	5	45			insert "meets the needs of the present without compromising the ability of future generations to meet their own needs (see Glossary). It" after "development that"	31-Mar-14, updated 15-Oct-14
417	20	6	6			replace "In principle" with "Overall"	31-Mar-14
418	20	6	5			Insert after sentence on 4th line ending "offset already achieved gains": "Resilience is defined in this report as the ability of a social, ecological, or socio-ecological system and its components to anticipate, reduce, accommodate, or recover from the effects of a hazardous event or trend in a timely and efficient manner (see Glossary). Climate resilience refers to the outcomes of evolutionary processes of managing change in order to reduce disruptions and enhance opportunities."	31-Mar-14, updated 15-Oct-14
419	20	12	21	12	23	Replace "Box 20-3 lists a number of attributes of climate-resilient pathways categorized into awareness and capacity, resources and practices" with "Box 20-3 draws on material throughout the chapter to list a number of attributes of climate-resilient pathways categorized into awareness and capacity, resources and practices"	31-Mar-14, updated 15-Oct-14
420	20	13	36			Replace "climate extremes and extreme events" with "extreme weather and climate events"	31-Mar-14
421	20	13	37	13	40	delete the sentence beginning "Perspectives among countries..."	31-Mar-14
422	20	13	41			replace "greenhouse" with "carbon dioxide"	31-Mar-14
423	20	13	42			Delete "greenhouse gas emission and/or"	31-Mar-14
424	20	14	11			replace "leads to socially unacceptable pain and distress" with "is not sufficiently successful"	31-Mar-14
425	20	14	13			replace "sun's radiation that" with " amount of absorbed solar energy in the climate system"	31-Mar-14
426	20	14	14			delete "reaches the surface of the earth"	31-Mar-14
427	20	14	14			insert "(see Glossary)" after "atmosphere"	31-Mar-14, updated 15-Oct-14
428	20	14	28			replace "ocean corals" with "biodiversity"	31-Mar-14
429	20	14	31			Add "and risks" after "ancillary effects"	31-Mar-14
430	20	14	35			insert "Chapter 19.5.4; WGIII AR5 Chapter 3.3.7;" after "e.g.,"	31-Mar-14, updated 15-Oct-14
431	20	16	33	16	36	Format these lines into a new table: Table 20-1.	15-Oct-14
432	20	16	34			replace "Btu2" with "109 m3"	31-Mar-14, updated 15-Oct-14
433	20	16	38			delete "results" after "temperature".	31-Mar-14, updated 15-Oct-14
434	20	16	45			replace "91 to 129" with "19 to 29"	31-Mar-14, updated 15-Oct-14
435	20	21	2	21	6	Replace these sentences with the following: "Organizational mechanisms are central to building linkages between local level adaptation action and national level planning. In six case studies in West Africa and Latin America, Agrawal et al. (2011) found that these connections are missing in all the countries studied. However, in these countries external policy support catalyzed adaptation actions through three types of intervention mechanisms: information, incentives, and institutions."	31-Mar-14, updated 15-Oct-14
436	20	21	15			insert "potentially" after "could"	31-Mar-14
437	20	20	32			Add a cross-reference to the Glossary "(see Glossary)".	31-Mar-14, updated 15-Oct-14
438	20	23	41			replace O'Brien, 2013 with O'Brien, 2012	31-Mar-14
439	20	24	11			replace O'Brien, 2013 with O'Brien, 2012	31-Mar-14
440	20	24	22			replace O'Brien, 2013 with O'Brien, 2012	31-Mar-14
441	20	25	4	25	5	Replace "multiple paths" with "alternative paths", replace "the same total amount" with "similar levels", and delete ": alternative stable states"	31-Mar-14, updated 15-Oct-14
442	20	25	12			Start sentence with "Examples in this chapter demonstrate that" (m)any of the choices...	31-Mar-14
443	20	26	9			Replace "forthcoming" with "2013"	31-Mar-14
444	20	34	5			replace "Osford" with "Oxford"	31-Mar-14
445	20	35	38	35	39	Replace O'Brien 2012 reference with complete reference: O'Brien, K., 2012: Global environmental change II: from adaptation to deliberate transformation. Progress in Human Geography, 36(5), 667-676.	31-Mar-14, updated 15-Oct-14

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
446	20					Figure 20-1: Map projection and colors altered to improve clarity and figure brought to IPCC specification.	15-Jul-15
447	20					Figure 20-2: Figure brought to IPCC specification.	15-Jul-15
448	21					Provide new master reference list	31-Mar-14
449	21					Table 21-2: Replace all instances except the first of "Giorgi" or "modified Giorgi" with "Giorgi-type".	15-Jul-15
450	21					Table 21-2: SR Regional Impacts row: change "Baseline (1990) Socio-Economic data" to "reference socioeconomic data for 1990".	15-Jul-15
451	21					Table 21-4: Caption, first sentence: change "reduce" to "reducing" and change "enhance" to "enhancing".	15-Jul-15
452	21					Table 21-7: Change all instances of "IPCC (2012a)" to "IPCC (2012)".	15-Jul-15
453	21					Table 21-7: East Asia row: change "Increase heat wave in China" to "Increased heat waves in China".	15-Jul-15
454	21					Table 21-8: Fourth body row, "Research need" column: add "into" between "observations" and "processed".	15-Jul-15
455	21					Figure 21-1: Figure brought to IPCC specification.	15-Jul-15
456	21					Figure 21-1: Caption and data updated; figure brought to IPCC specification.	15-Jul-15
457	21					Figure 21-3: Legend added and figure brought to IPCC specification.	15-Jul-15
458	21					Figure 21-4: Figure brought to IPCC specification.	15-Jul-15
459	21					Figure 21-5 Figure brought to IPCC specification.	15-Jul-15
460	21					Figure 21-5: Within the caption, change "66%" to "67%" on the first line, and change the phrase "annual precipitation" to "JJA percentage precipitation changes".	15-Oct-14
461	21					Figure 21-6: Figure brought to IPCC specification.	15-Jul-15
462	21					Figure 21-7: Figure brought to IPCC specification.	15-Jul-15
463	21					Figure 21-8: Figure brought to IPCC specification.	15-Jul-15
464	21					Figure 21-9: Figure brought to IPCC specification.	15-Jul-15
465	21					Figure 21-10: Presentation of data changed for clarity and figure brought to IPCC specification.	15-Jul-15
466	21					Figure 21-11: Legend added and figure brought to IPCC specification.	15-Jul-15
467	21					Figure 21-12: Legend added and figure brought to IPCC specification.	15-Jul-15
468	22					Table 22-3: Changes in Ecosystem Structure, lowest cell in Examples column: change cell contents to "In long-term field experiments (between 1970s and 1990s) in South Africa where disturbance from fire and herbivory was controlled, density of trees and shrubs increased almost threefold in mesic savannas (from original MAP of more than 700 mm yr-1 in 1970s) but showed no change in a semi-arid savanna (original MAP of over 500 mm yr-1 in 1970s) (Buitenwerf et al., 2012)".	15-Jul-15
469	22					Table 22-5: Human rights-based approaches row, fourth column: change "Urquhart, 2014" to "Urquhart, 2013". Right-most column: change "Nilsson and Schnell, 2010" to "SIDA, 2010".	15-Jul-15
470	22					Table 22-5: In Key Issue Column, change first Child-Centered issues bullet to "50% of Africa's population is under the age of 20 years (UN DESA Population Division, 2011), yet their issues are largely absent from adaptation policy (ADF, 2010)".	15-Jul-15
471	22					Figure 22-1: Legend added and figure brought to IPCC specification.	15-Jul-15
472	22					Figure 22-2: Legend added and figure brought to IPCC specification.	15-Jul-15
473	22					Figure 22-3: Map added and presentation of data changed to improve clarity; figure brought to IPCC specification.	15-Jul-15
474	22					Figure 22-3: In the second to last line of the caption, delete call-out to "2.3.3" and add call-out to "22.2.3".	15-Oct-14
475	22					Figure 22-4: Correct a misalignment of data displayed on the map.	15-Oct-14
476	22					Figure 22-4: Figure brought to IPCC specification.	15-Jul-15
477	22					Figure 22-5: Figure brought to IPCC specification.	15-Jul-15
478	22					Figure 22-6: Figure brought to IPCC specification.	15-Jul-15
479	23					Table 23-1: 2007 – Southern Europe row, Health and social welfare column: removed "Significant mortality impact".	15-Jul-15
480	23					Table 23-1: In Iberian Peninsula row, remove "Portugal" from row header.	15-Jul-15
481	23					Table 23-2: Sweden row, Cost estimate column: change "10" to "2.4"; Sectors/outcomes column: change "Multi-sector" to "Investments in structural adaptation, information campaigns, and research".	15-Jul-15
482	23					Table 23-3: Agriculture, northern and continental Europe row, Adaptation measures column: add "Changing".	15-Jul-15
483	23					Table 23-4: Energy section, Hydropower generation row, Atlantic column: remove upward arrow.	15-Jul-15
484	23					Table 23-6: Infrastructure section, Flood losses row: change "some locations" to "Spain".	15-Jul-15
485	23					Figure 23-1: Figure brought to IPCC specification.	15-Jul-15

#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
486	23					Figure 23-2: Figure brought to IPCC specification.	15-Jul-15
487	23					Figure 23-2: In the caption, replace "December to January" with "December to February".	15-Oct-14
488	23					Figure 23-3: Figure brought to IPCC specification.	15-Jul-15
489	23					Figure 23-4: Figure brought to IPCC specification.	15-Jul-15
490	23					Figure 23-5: Figure brought to IPCC specification.	15-Jul-15
491	23					Figure 23-6: Figure brought to IPCC specification.	15-Jul-15
492	24					Figure 24-1: Presentation of data changed to improved clarity and figure brought to IPCC specification.	15-Jul-15
493	24					Figure 24-2: Figure brought to IPCC specification.	15-Jul-15
494	24					Figure 24-3: Figure brought to IPCC specification.	15-Jul-15
495	25	31	23	31	26	<p>Revise text to clarify the high degree of consensus surrounding the point that the dominant cause for trends in non-adjusted losses is asset accumulation, in addition to clarifying issues arising from the use of differing time scales and quantities in different studies.</p> <p>Within the text: "Normalised insured losses in Australia show no significant trend from 1967 to 2006 (Crompton and McAneney, 2008; Crompton et al., 2010; Table 10.4), though this conclusion rests on a simplified accounting of population growth and may also reflect improved building codes and early warning systems (Nicholls, 2011; IPCC, 2012)," delete the word "insured," and add the words "at least" before "1967 to 2006," and replace the second half of this sentence, after "(Crompton and McAneney, 2008; Crompton et al., 2010; Table 10.4)," with the following text: "...consistent with the global conclusion (IPCC, 2012) that increasing exposure of people and economic assets has been the major cause of long-term increases in economic losses from weather- and climate-related disasters." After this sentence, add an additional sentence which reads: "Issues relating to data quality and methodological choices prevent definitive conclusions regarding the role of climate change in loss trends (Nicholls, 2011; Crompton et al 2011; IPCC, 2012)."</p> <p>The resulting revised text reads: "Normalised losses in Australia show no significant trend from at least 1967 to 2006 (Crompton and McAneney, 2008; Crompton et al., 2010; Table 10.4), consistent with the global conclusion (IPCC, 2012) that increasing exposure of people and economic assets has been the major cause of long-term increases in economic losses from weather- and climate-related disasters. Issues relating to data quality and methodological choices prevent definitive conclusions regarding the role of climate change in loss trends (Nicholls, 2011; Crompton et al 2011; IPCC, 2012)."</p>	15-Oct-14
496	25					In support of the change to chapter 25, page 31, lines 23-26, add the following reference: Crompton, R. P., K. J. McAneney, K. Chen, R. A. Pielke Jr., and K. Haynes, 2011. Response to Nicholls (2011) on "Influence of Location, Population and Climate on Building Damage and Fatalities due to Australian Bushfire: 1925-2009". Weather, Climate and Society, 3:63-66, doi: 10.1175/WCAS-D-11-00002.	15-Oct-14
497	25					Table 25-1: Snow and ice row, Examples of projected magnitude column: change "to decline 14–54%" to "to decline by 14–54%".	15-Jul-15
498	25					Table 25-1: Tropical cyclones row, Examples of projected magnitude column: change "Modeling study" to "One modeling study".	15-Jul-15
499	25					Table 25-1: Tropical cyclones row, Examples of projected magnitude column: change "occur" to "occurrences".	15-Jul-15
500	25					Table 25-1: Tropical cyclones row, Observed change column: change "east–west distribution changed" to "the east–west distribution has changed".	15-Jul-15
501	25					Table 25-2: Footnote number 37: change "Norman et al. (2012)" to "Norman et al. (2013)".	15-Jul-15
502	25					Table 25-2: References: change "Norman et al. (2012)" to "Norman et al. (2013)".	15-Jul-15
503	25					Table 25-3: Geographic distribution section, first row, Examples column: include reference to Ling et al. (2009).	15-Jul-15
504	25					Table 25-3: Life cycles section, third row, Examples column: change "Webb et al., 2012" to "Webb, L.B. et al., 2012".	15-Jul-15
505	25					Table 25-3: Marine productivity section, spring phytoplankton row, Potential climate change driver(s) column: change "EAC" to "of the EAC".	15-Jul-15
506	25					Table 25-5: Second body row, second column: change "integrated urban sensitive design" to "integrated water-sensitive urban design".	15-Jul-15
507	25					Figure 25-1: Figure brought to IPCC specification.	15-Jul-15
508	25					Figure 25-2: Legend added and figure brought to IPCC specification.	15-Jul-15
509	25					Figure 25-3: Figure brought to IPCC specification.	15-Jul-15
510	25					Figure 25-4: Figure brought to IPCC specification.	15-Jul-15
511	25					Figure 25-5: Years added under maps and figure brought to IPCC specification.	15-Jul-15
512	26					Figure 26-1, item 14: delete the word "heat" so that it reads only "Changes in cold-related mortality (Section 26.6.1.2)"	15-Oct-14
513	26					Figure 26-1: Presentation of data altered to improve clarity and figure brought to IPCC specification.	15-Jul-15

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514	26					Figure 26-2: Presentation of data altered to improve clarity and figure brought to IPCC specification.	15-Jul-15
515	26					Figure 26-2, panel (a): Correct many data points on the map in the parameters of position, color, or year. Expand southern extent of map to include additional data points. Correct coloring of map near eastern US-Canada border. Update caption to clarify method of data point placement and classification.	15-Oct-14
516	26					Figure 26-2, panel (b): add spatial units to the population map legend and update caption to describe these units; update Y-axis for the GDP chart to include "(thousands)".	15-Oct-14
517	26					Figure 26-2, caption: Change caption to reflect data changes described in 2 previous substantive edits, and update the in-line citations "NatCatSERVICE, 2010" to "NatCatSERVICE, 2013" and "Romero-Lankao et al., 2012" to "Romero-Lankao et al., 2012b". Original caption (part): "...The figure includes: a) A map (bottom) with population density at 1km resolution highlighting exposure and represented using 2011 Landsat data (Bright et al., 2012). b) A map (top) with significant weather events taking place during 1993-2012. The map only includes disasters with overall losses of more than \$1 billion US dollars in US, or more than \$500 million US dollars in Mexico and Canada, adjusted to 2012 values (Source: (NatCatSERVICE, 2010). Hence, it does not include the occurrence of disasters of small and medium impact, and it does not capture the impacts of disasters on populations' livelihoods and wellbeing. Disasters represented by points that are located at the approximate geographic center of affected regions, frequently span more than one subnational jurisdiction (e.g., the 2012 drought affected 12 Mexican states, Annex Table). c) Four panels (right) with trends in socio-demographic indicators used in the literature to measure vulnerability to hazards (Romero-Lankao et al., 2012): poverty rates, percentage of elderly, GDP per capita and total population (Sources: Comisión Económica para América Latina y el Caribe; U.S. Census Bureau, 2011; Statistics Canada, 2012)." New caption (part): "... The figure contains three elements. (a) A map with significant weather and climate events taking place during 1993–2012 (data derived from NatCatSERVICE, 2013). The categories "Severe storm" and "Winter storm" are aggregations of multiple types of storms; e.g., hailstorms are shown as Winter storms and tornadoes as Severe storms. Boxed numbers refer to the years in which the extreme events occurred. Hurricanes are placed offshore of the point of initial landfall, and placement of all other boxes (which may span multiple subnational jurisdictions) is weighted towards areas with the highest expected impacts (defined by estimated affected populations when finer subnational detail was not available). The map includes only events with overall losses $\geq$ US\$1 billion in the USA, or $\geq$ US\$500 million in Mexico and Canada, adjusted to 2012 values; hence, it does not include events of small and medium impact. Additionally, losses do not capture the impacts of disasters on populations' livelihoods and well-being. (b) A map (facing page) with population density per $\sim 0.0083^\circ$ gridbox at 1-km resolution highlighting exposure and represented using 2011 Landsat data (Bright et al., 2012). Note that a $\sim 0.0083^\circ$ grid box is approximately 1 km <sup>2</sup> , but this approximation varies by latitude. (c) Four panels (facing page) with trends in socio-demographic indicators used in the literature to measure vulnerability to hazards (Romero-Lankao et al., 2012b): poverty rates, percentage of elderly, GDP per capita and total population (U.S. Census Bureau, 2011; Statistics Canada, 2012, CEPAL, 2013)."	15-Oct-14
518	26					Figure 26-3: Figure brought to IPCC specification.	15-Jul-15
519	26					Figure 26-4: Figure brought to IPCC specification.	15-Jul-15
520	27					Table 27-1: Amazon region section, rows 1, 6, and 7: change "Marengo et al. (2009)" to "Marengo et al. (2009b)".	15-Jul-15
521	27					Table 27-1: Andes section, first row, Observed changes column: change "8 days" to "+8 days".	15-Jul-15
522	27					Table 27-1: Southeastern SA section, fourth row, Observed changes column: change "10–20%" to "+10–20%".	15-Jul-15
523	27					Table 27-1: Southeastern SA section, Lightning activity row: change "Sao" to "São Paulo".	15-Jul-15
524	27					Table 27-1: Southeastern South America section, first row, observed changes: remove "–31.4 - –47.6 mm/decade".	15-Jul-15
525	27					Table 27-1: Southeastern South America section: interchange observed changes for 7th and 8th rows.	15-Jul-15
526	27					Table 27-1: West coast of SA section, third row, Observed changes column: change "+0.37" to "+0.37%".	15-Jul-15
527	27					Table 27-1: West coast of South America section, final row: change "Temperature and precipitation" to "Temperature and extreme precipitation". Observed changes cell becomes: "Increase in annual maximum temperature from +0.5C° to +1.1C° per decade; change in days with intense rainfall events from –2.7 to +4.2 days per decade."	15-Jul-15
528	27					Table 27-2: All 6 instances: change "Marengo et al. (2009)" to "Marengo et al. (2009a)".	15-Jul-15
529	27					Table 27-2: Amazon region section, 4th row: change "+50 SALLJ events" to "+50% SALLJ events".	15-Jul-15
530	27					Table 27-2: Amazon region section, fifth row: change "mm/" to "mm/day".	15-Jul-15
531	27					Table 27-2: Andes section, penultimate row: change "2999" to "2099".	15-Jul-15
532	27					Table 27-2: Northeast Brazil section, first row: change "–20 to –20%" to "–20 to +20%".	15-Jul-15

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#	Ch	From Page	From Line	To Page	To Line	Substantive Edits	Date
533	27					Table 27-2: Northeastern Brazil section, 6th row: change "reduction by –15 to 75 days" to "reduction by –15 to –75 days".	15-Jul-15
534	27					Table 27-2: West coast of South America section: remove "heavy precipitation in Panama and Venezuela, CDDs over Panama and Colombia by 2099."	15-Jul-15
535	27					Table 27-3(a): Bolivia section, row for Sur Lipez, Caquilla: change wording to reduce redundancy.	15-Jul-15
536	27					Table 27-3(a): Bolivia section, Zongo glacier subrow, inside parentheses: change "maximum" to "maximum rate of loss".	15-Jul-15
537	27					Table 27-3(a): Ecuador section, Antisana row: change "+300" to "+300 m".	15-Jul-15
538	27					Table 27-3(a): Header: change "Value" to "Description".	15-Jul-15
539	27					Table 27-3(a): Peru section, Cordillera Blanca row, fourth subrow: change "glaciers" to "watersheds".	15-Jul-15
540	27					Table 27-3(a): Peru section, Cordillera Blanca row, last subrow: change variable code number from 7 to 8.	15-Jul-15
541	27					Table 27-3(a): Peru section, Cordillera Blanca row, second subrow: remove "–26% (1962 and 2000)".	15-Jul-15
542	27					Table 27-3(a): Peru section, Cordillera Vilcanota row, second subrow: change variable code numbers from "2–4" to "3, 5".	15-Jul-15
543	27					Table 27-3(b): Central Andes section, Aconcagua Basin glaciers row, second subrow: change variable code number from 2 to 3.	15-Jul-15
544	27					Table 27-3(b): Central Andes section, Aconcagua basin glaciers row: remove Nicholson et al. (2009) from references.	15-Jul-15
545	27					Table 27-3(b): Central Andes section, ELA across central Andes row: remove "ELA across" (redundant with variable code number).	15-Jul-15
546	27					Table 27-3(b): Central Andes section, last row: change "CT date" to "centroid timing date" for clarity.	15-Jul-15
547	27					Table 27-3(b): First body row: add latitude of "South of 15°S".	15-Jul-15
548	27					Table 27-3(b): Header: change "Value" to "Description" and change "massifs" to "massifs/sites".	15-Jul-15
549	27					Table 27-3(b): Patagonian Andes section, Cordón Martial row with Chen et al. (2007) as source: this becomes Patagonian Ice Field row (Cordón Martial is incorrect) with same source and changed latitude, 47°S–51°S.	15-Jul-15
550	27					Table 27-3(b): Patagonian Andes section, first row: remove "Streamflow from" (redundant with variable code number).	15-Jul-15
551	27					Table 27-3(b): Patagonian Andes section, Gran Campo Nevado row, first subrow: this subrow leaves the Gran Campo Nevado row and becomes the Cordón Martial glaciers row (The source in question, Strelin and Iturraspe, 2007, applies to the latter region and not the former.) New latitude is 54°S.	15-Jul-15
552	27					Table 27-3(b): Patagonian Andes section, North Patagonian Icefield row: provide latitude of 47°S.	15-Jul-15
553	27					Table 27-3(b): Patagonian Andes section, single row for NPI, SPI, Cordillera Darwin Icefield: provide latitudes of 47°S–51°S, 54°S.	15-Jul-15
554	27					Table 27-3(b): Patagonian Andes section, South Patagonian Icefield row: provide latitude of 48°S–51°S.	15-Jul-15
555	27					Table 27-4: Both instances: change "ECLAC (2009)" to "ECLAC (2009a)".	15-Jul-15
556	27					Table 27-4: La Plata Basin section, Concórdia River row: add A2 and B2 as scenarios.	15-Jul-15
557	27					Table 27-4: Northeastern Brazil section, Mimoso River row: change "Similar" to "no change".	15-Jul-15
558	27					Table 27-4: Northeastern Brazil section, Mimoso River row: change variable code number for wet scenario from 2 to 1.	15-Jul-15
559	27					Table 27-4: Period column: remove both instances of the word "climatology".	15-Jul-15
560	27					Table 27-4: Small wording additions (throughout) to names of regions/basins to clarify South American geographic locations, for example, "Paraná River Basin" instead of "Paraná".	15-Jul-15
561	27					Table 27-5: All 4 instances: change "ECLAC (2010)" to "ECLAC (2010a)".	15-Jul-15
562	27					Table 27-5: Expand notation for clarity: "+T" means "considering technological improvement (genetic changes)".	15-Jul-15
563	27					Table 27-6: Change "20,63" to "20,630". Change "45,92" to "45,920". Change "59,44" to "59,440".	15-Jul-15
564	27					Figure 27-1: Presentation of data edited to improve clarity and figure brought to IPCC specification.	15-Jul-15
565	27					Figure 27-2: Figure brought to IPCC specification.	15-Jul-15
566	27					Figure 27-3: Figure brought to IPCC specification.	15-Jul-15
567	27					Figure 27-4: Figure brought to IPCC specification.	15-Jul-15
568	27					Figure 27-5: Figure brought to IPCC specification.	15-Jul-15
569	27					Figure 27-6: Figure brought to IPCC specification.	15-Jul-15
570	27					Figure 27-7: Figure brought to IPCC specification.	15-Jul-15
571	27					Figure 27-8: Map inserted to improve clarity and figure brought to IPCC specification.	15-Jul-15

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572	27					Figure 27-8: Update caption to include the phrase "to climate change" so that the new caption reads: "Observed impacts of climate variations and attribution of causes to climate change in Central and South America."	15-Oct-14
573	28	2	37	2	38	4th Key finding: Change "annual ice over continental shelves" to "annual sea ice cover"	31-Mar-14
574	28	2	21	2	36	Adjust line of sight in key findings 1 and 3	31-Mar-14, updated 15-Oct-14
575	28	3	39			Key finding 10, 6th sentence: change "as" to "if"	31-Mar-14, updated 15-Oct-14
576	28	4	16			Introduction, third para: After topic sentence, insert two sentences capturing WGI AR5 findings: "There is evidence that Arctic land surface temperatures have warmed substantially since the mid-20th century and the future rate of warming is expected to exceed the global rate. Sea ice extent at the summer minimum has decreased significantly in recent decades, and the Arctic Ocean is projected to become nearly ice free in summer within this century."	31-Mar-14, updated 15-Oct-14
577	28					Add confidence statements to the following sections: 28.2.4 Health and Wellbeing of Arctic Residents 28.2.4.1 (2 statements) page 16 28.2.4.2 (2 statements) page 16/17 28.2.5 Indigenous Peoples and Traditional Knowledge (1 statement) page 18 28.2.6. Economic Sectors 28.2.6.1.6 Informal Subsistence-based Economy (1 statement) page 21 28.3.4 Economic Sectors 28.3.4.2 Forestry and Farming (1 statement) page 30 28.3.4.3 Infrastructure, Transportation, and Terrestrial Resources (2 statements) page 30 28.4 Human Adaptation (6 statements) page 31/32	31-Mar-14, updated 15-Oct-14
578	28					Section 28.4, subheader "indigenous Peoples": Move last two sentences of 1st para to the beginning of 4th para. Insert at the end of the 1st paragraph: "While many of these adaptation activities tend to be short-term or reactive in nature (e.g., dealing with other issues such as disaster response planning), some indigenous communities are beginning to develop more formal adaptation plans (Galloway-McLean, 2010; Brubaker et al., 2011b,c; Nakashima et al., 2012). Comprehensive adaptation planning must take into account underlying social issues of some indigenous populations when addressing the new challenges from climate and development. Indigenous communities are especially vulnerable to climate change because of their strong dependence on the environment for food, culture and way of life; their political and economic marginalization; the social, health, and poverty disparities; and community locations along exposed ocean, lake, or river shorelines (Ford and Furgal, 2009; Galloway-McLean, 2010; Larsen et al., 2010; Cochran et al., 2013)."	31-Mar-14, updated 15-Oct-14
579	28					Figure 28-1: Figure brought to IPCC specification.	15-Jul-15
580	28					Figure 28-2: Figure brought to IPCC specification.	15-Jul-15
581	28					Figure 28-3: Figure brought to IPCC specification.	15-Jul-15
582	28					Figure 28-4: Legend and additional data added to improve clarity; figure brought to IPCC specification.	15-Jul-15
583	28					Figure 28-4, caption: Replace in-line citation "Mokhow and Khon, 2008" with "Khon et al., 2010"	15-Oct-14
584	29	16	18			Change "warming to less than 1.5±1.3°C" to "warming to less than 1.5°C (1.3°C to 1.8°C Atmosphere-Ocean General Circulation Model (AOGCM) range)"	31-Mar-14, updated 15-Oct-14
585	29					Table 29-1: Change "Southern tropical Pacific" to "Southern Pacific".	15-Jul-15
586	29					Table 29-1: In caption, change "medium" to "intermediate low".	15-Jul-15
587	29					Table 29-2: Add + signs for change in government revenue in 2035 (B1/A2) for Federated States of Micronesia and Solomon Islands.	15-Jul-15
588	29					Table 29-2: Bigeye tuna row, Western fishery subrow, right column: change -24 to -34.	15-Jul-15
589	29					Table 29-2: Caption: change "Bell et al. (2010)" to "Tables 12.7 and 12.9 of Bell et al. (2010)".	15-Jul-15
590	29					Table 29-2: Country section, 2035 column: numbers now rounded. 2100 column is now split into B1 column and A2 column with updated numbers.	15-Jul-15
591	29					Table 29-5: Caption: change "ESCAP and UNISDR, 2010" to "Tables 1.10 and 1.11 of ESCAP and UNISDR, 2010".	15-Jul-15
592	29					Figure 29-1: Figure brought to IPCC specification.	15-Jul-15
593	29					Figure 29-2: Figure brought to IPCC specification.	15-Jul-15
594	29					Figure 29-3: Figure brought to IPCC specification.	15-Jul-15
595	29					Figure 29-3 caption: Delete the sentence beginning "To get projections..."	31-Mar-14
596	29					Figure 29-4: Figure brought to IPCC specification.	15-Jul-15
597	29					Figure 29-5: Figure brought to IPCC specification.	15-Jul-15

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598	30					Table 30-1: Caption: change "see ... Table 30-2" to "see ... Table SM30-2".	15-Jul-15
599	30					Table 30-1: Change wording slightly for various parts of the oceans for consistency and clarity. For example, "Atlantic Equatorial" becomes "Atlantic Equatorial Upwelling"; "total" and "combined" are removed since they are already implied.	15-Jul-15
600	30					Table 30-1: Coral Reef Provinces row: change "see Figure 30-3" to "Figure 30-4(b)".	15-Jul-15
601	30					Table 30-1: Coral Reef Provinces section and Basin Scale section: remove numbers 7 and 8, respectively, to avoid confusion arising from figures in Chapter 30 where 7 applies to Deep Sea and 8 applies to nothing.	15-Jul-15
602	30					Table 30-2: At end of caption, change "exceed" to "do not exceed".	15-Jul-15
603	30					Table 30-4: Ecosystem regime shifts column, first row, Key risks column: change "at coastal habitats" to "of coastal habitats".	15-Jul-15
604	30					Table 30-4: Remove "UW = upwelling" from caption because it does not appear in table.	15-Jul-15
605	30	1				Title page: Adjust author order.	31-Mar-14
606	30	3	9			Exec Summary point 2: Changed confidence level to "certain" from "virtually certain" in sentence "Global average sea surface temperatures have increased since both the beginning of the 20th Century and the 1950s (virtually certain)" to align with WGI.	31-Mar-14
607	30	8	40			30.3.1.1.Heat Content and Temperature, Changed confidence level to "certain" from "virtually certain" in sentences "The Ocean has absorbed 93% of the extra heat arising from the enhanced greenhouse effect (1971–2010), with most of the warming (64%) occurring in the upper (0–700 m) ocean (1971–2010; WGI Section 3.2.3, Figure 3.2, Box 3.1). It is virtually certain that global average sea surface temperatures (SST) have increased since the beginning of the 20th Century."	31-Mar-14
608	30					Figure 30-1: Revise white boundary lines between the ocean sub-regions.	15-Oct-14
609	30					Figure 30-1: Panel (b) split into graphs to improve clarity and figure brought to IPCC specification.	15-Jul-15
610	30					Figure 30-2: Figure brought to IPCC specification.	15-Jul-15
611	30					Figure 30-3: Figure brought to IPCC specification.	15-Jul-15
612	30					Figure 30-4: Presentation of land area changed to improve clarity and figure brought to IPCC specification.	15-Jul-15
613	30					Figure 30-4: Add definition of darkest green color to the legend for panels (c) and (d).	15-Oct-14
614	30					Figure 30-4: Update caption to clarify "reference period" as well as to more clearly describe the two measures of change in thermal stress being shown in the figure. Original caption: "Recent changes in thermal stress calculated using HadISST1.1 data. A monthly climatology was created by averaging the HadISST monthly SST values over the period 1985–2000 to create twelve averages, one for each month of the year. The Maximum Monthly Mean (MMM) climatology was created by selecting the hottest month for each pixel. Anomalies were then created by subtracting this value from each SST value, but only allowing values to be recorded if they were greater than zero [Donner et al., 2007]. Two measures of the change in thermal stress were calculated as a result: (a) The total thermal stress for the period 1981–2010, calculated by summing all monthly thermal anomalies for each grid cell. (b) The location of coral reef grid cells used in Table 30-1 and for comparison to regional heat stress here. Each dot is positioned over a 1x1 degree grid cell within which lies at least one carbonate coral reef. The latitude and longitude of each reef is derived from data provided by the World Resources Institute's Reefs at Risk report ( <a href="http://www.wri.org">http://www.wri.org</a> ). The six regions are as follows: Red – Western Pacific Ocean; Yellow – Eastern Pacific Ocean; Dark Blue – Caribbean & Gulf of Mexico; Green – Western Indian Ocean; Pink – Eastern Indian Ocean; and Light Blue – Coral Triangle & SE Asia. (c) Proportion of years with thermal stress, which is defined as any year that has a thermal anomaly, for the periods 1951–1980 and (d) 1981– 2010." New caption: "Recent changes in thermal stress calculated using Hadley Centre Interpolated sea surface temperature data (HadISST1.1). A monthly climatology was created by averaging the HadISST monthly SST values over a reference period of 1985–2000 to create 12 averages, one for each month of the year. The Maximum Monthly Mean climatology was created by selecting the hottest month for each pixel. Anomalies were then created by subtracting this value from each sea surface temperature value, but allowing values to be recorded only if they were greater than zero (Donner et al., 2007). Two measures of the change in thermal stress were calculated as a result: The total thermal stress for the period 1981–2010, calculated by summing all monthly thermal anomalies for each grid cell (a); and the proportion of years with thermal stress, which is defined as any year that has a thermal anomaly, for the periods 1951–1980 (c) and 1981–2010 (d). The location of coral reef grid cells used in Table 30-1 and for comparison to regional heat stress is depicted in (b). Each dot is positioned over a 1 x 1 degree grid cell within which lies at least one carbonate coral reef. The latitude and longitude of each reef is derived from data provided by the World Resources Institute's Reefs at Risk report ( <a href="http://www.wri.org">http://www.wri.org</a> ). The six regions are as follows: red—Western Pacific Ocean; yellow—Eastern Pacific Ocean; dark blue—Caribbean and Gulf of Mexico; green—Western Indian Ocean; purple—Eastern Indian Ocean; and light blue—Coral Triangle and Southeast Asia."	15-Oct-14
615	30					Figure 30-5: Figure brought to IPCC specification.	15-Jul-15

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616	30					Figure 30-6: Figure brought to IPCC specification.	15-Jul-15
617	30					Figure 30-6, caption: Add in-line reference to "Hosoda et al., 2009".	15-Oct-14
618	30					Figure 30-7: Figure brought to IPCC specification.	15-Jul-15
619	30					Figure 30-7, caption: Update the date range given for panel (b), changing the phrase "Maps of the median model's change in surface pH from 1850–2100" to "Maps of the median model's change in surface pH from 1990s".	15-Oct-14
620	30					Figure 30-8: Legend added and figure brought to IPCC specification.	15-Jul-15
621	30					Figure 30-9: Figure brought to IPCC specification.	15-Jul-15
622	30					Figure 30-9, caption: Correct units given from micromoles to millimoles, changing the phrase "Multi-model mean dissolved O <sub>2</sub> (μmol m <sup>-3</sup> )..." to "Multi-model mean dissolved O <sub>2</sub> (mmol m <sup>-3</sup> )..."	15-Oct-14
623	30					Figure 30-10, panel (b): Swap data between the Western Indian Ocean and the Eastern Indian Ocean charts, to correct a previous error.	15-Oct-14
624	30					Figure 30-10: Map and legend added and figure brought to IPCC specification.	15-Jul-15
625	30					Figure 30-11: Presentation of data changed to improve clarity and figure brought to IPCC specification.	15-Jul-15
626	30					Figure 30-11: Move the statement regarding coral bleaching and mortality from the square for very high confidence in detection/high confidence in attribution to the square for very high confidence in detection/very high confidence in attribution; remove Coastal Boundary Systems marker from the statement regarding tuna stocks. Add map inset to clarify location of impacts.	15-Oct-14
627	30					Figure 30-12: Update background map to match revisions to figure 30-1; update wording on most of the featured statements for clarity; Change confidence level on statement 3 (about upwelling) from "very low" to "low".	15-Oct-14
628	30					Figure 30-12: Presentation of data edited for clarity and figure brought to IPCC specification.	15-Jul-15
629	Box CC-CR	1	24	1	27	Text of Figure CR-1 caption revised. Original text: "Coral cover at the time of bleaching was 95% bleached almost all of it severely bleached, resulting in mortality of 20.9% (Elvidge et al., 2004). Mortality was comparatively low due in part because these coral communities were able to shuffle their symbiont to more thermo-tolerant types (Berkelmans and van Oppen, 2006; Jones et al., 2008)." New text: "Approximately 95% of the coral community was severely bleached in 2002 (Elvidge et al., 2004). Corals experience increasing mortality as the intensity of a heating event increases. A few coral species show the ability to shuffle symbiotic communities of dinoflagellates and appear to be more tolerant of warmer conditions (Berkelmans and van Oppen, 2006; Jones et al., 2008)."	15-Oct-14
630	Box CC-CR	1		1		Figure CR-1, Panel (e): unclear what 'N' referred to; N=214 was added to the graph	15-Jul-15
631	Box CC-MB					Figure MB-1, Caption: Sentence 1 ok. Sentence 2 change to: "Data shown include changes that are attributed (at least partly) to climate change (blue), changes that are inconsistent with climate change (red), and no change (orange)." Sentence 3 ok. Sentence 4 change to: "Where points fall on land, it is because they are centroids of distributions that surround an island or peninsula." Sentence 5, comma after e.g. both times.	15-Jul-15
632	Box CC-MB					Figure MB-3, Caption: time frame in panel (b) should read '1960 - 2009'	15-Jul-15
633	Glossary	23		23		Definition for Risk management: deleted "implemented" after "policies".	15-Oct-14