

Errata

Climate Change 2021: The Physical Science Basis

The Working Group I Contribution to the IPCC Sixth Assessment Report

Errata

The errata listed below have been implemented in the published documents. Page and line numbers refer to the FGD versions of the TS, Chapters, Annexes, and to the approved version of the SPM.

Item	Page	Correction
SPM	12	In bullet A.3.4, replace: "It is <i>likely</i> that the global proportion of major (Category 3–5) tropical cyclone occurrence has increased over the last four decades, and the latitude where tropical cyclones in the western North Pacific reach their peak intensity has shifted northward; these changes cannot be explained by internal variability alone (<i>medium confidence</i>)." with "It is <i>likely</i> that the global proportion of major (Category 3–5) tropical cyclone occurrence has increased over the last four decades, and it is <i>very likely</i> that the latitude where tropical cyclones in the western North Pacific reach their peak intensity has shifted northward; these changes cannot be explained by internal variability alone (<i>medium confidence</i>)."
SPM	16	In Figure SPM.4, panel (a), replace the x-axis tickmarks with the following intervals: 2015, 2020, 2030... 2090, 2100.
SPM	19	The line of sight for bullet B.2.2 should also include 11.9
SPM	19	In headline statement B.2, replace: "They include increases in the frequency and intensity of hot extremes, marine heatwaves, and heavy precipitation, agricultural and ecological droughts in some regions, and proportion of intense tropical cyclones, as well as reductions in Arctic sea ice, snow cover and permafrost." with "They include increases in the frequency and intensity of hot extremes, marine heatwaves, heavy precipitation, and, in some regions, agricultural and ecological droughts; an increase in the proportion of intense tropical cyclones; and reductions in Arctic sea ice, snow cover and permafrost."
SPM	19	In Footnote 29, add "about" before the +/- sign
SPM	20	In Footnote 31, replace "around 10%" by "around 15%"
SPM	32	In bullet C.2.2, line 4, replace: "...regions in all continents..." with "...regions in all inhabited continents..."
TS	4	Line 35, descriptions of the summary text in boxes was omitted. Add: "Text at the beginning of a section presented in dark blue with a blue vertical bar at the left, as shown here, provides a summary of the findings discussed in that section."
TS	8	Line 6–11, add "TS.3.1" to the parenthesis.
TS	9	Line 34, replace: "about 10 years earlier than the midpoint" with "in the early part".

TS	28	Line 5, replace: "about 10 years earlier than the midpoint" with "in the early part" "
TS	50	Line 14, add "WNA, NES, WCE" to the caption of Figure TS.12. Line 16, add "Limits of the 5%-95% confidence interval are shown in panel a)-c)." to the caption of Figure TS.12. Replace Figure TS.12 with updated Figure TS.12. Baseline numbers of panels (a) and (b) have been updated to match Figure SPM.6. Omitted trickleback. Panel (c) has been updated to reflect an update in the regions used for the computation in Figure 11.18 and Figure SPM.6
TS	52	Lines 33–39, add "Changes in the 'Today' column are based on a global warming level of 1°C." to the caption.
TS	53-54	Line 40, the line of sight was omitted. Add: "This infographic builds from several figures in the Technical Summary: Figure TS.4 (for top left panel), Figure TS.6 (bottom left), Figure TS.12 (top right) and Box TS.4, Figure 1b (bottom right)." Line 40, replace: "(top right) Response of some selected climate variables to 4 levels of global warming (°C). " with "(top right) Response of some selected climate variables to 4 levels of global warming (°C). Changes in the 'Today' column are based on a global warming level of 1°C."
TS	54	Panel (b), update the right panel of Infographic TS.1 with updated Infographic TS.1 panel. Numbers have been updated to reflect the 5th–95th percentile range rather than the 17th–83rd percentile range and late change in the regions considered as 'drought-prone'. Infographic is now consistent with Figure TS.12 and Figure SPM.6
TS	84	Line 18, replace: "multidecadal" with "meridional"
TS	108	Line 16, replace: "(See also Cross-Chapter Box 11.3)" with "{Cross-Chapter Box 11.3}"
TS	110	Line 4, the line of sight was omitted. Add : "{1.4.4, Box 4.1, 7.5, 11.4.3, 12.4}"
TS	112	Line 31, the line of sight was omitted. Add: "{2.3, 4.3, 4.4}"
TS	139	Replace Box TS.12, Figure 1, Panel a with updated Box TS.12, Figure 1 Panel a. This panel is now consistent with Chapter 10 Figure 10.20 Panel a, from which it is derived.
TS	150	Lines 5–18, replace: "Distribution of projected changes in selected climatic impact-driver indices for selected 6 regions for CMIP6, CMIP5 and CORDEX model ensembles." with "The intent of this figure is to show that many CID projections for multiple global warming levels and scenarios time slices, are available for all the AR6 WGI reference regions and are based on both global (CMIP5, CMIP6) and regional (CORDEX) model ensembles."
Chapter 1	177	Replace Figure 1.3 with updated Figure 1.3. Missed corrigendum to replace all chapter visual roadmaps with the updated visual identity.

Chapter 1	196	Cross-Working Group Box: Attribution, Figure 1, add "or theory" after "hypothesis" in sections 3 and 4 or the figure.
Chapter 2	6	Lines 44–45, replace "The Hadley circulation has <i>very likely</i> widened since at least the 1980s" with "The Hadley circulation has <i>likely</i> widened since at least the 1980s".
Chapter 2	18	Lines 15–16 and 19, replace "Mitchell et al., 2013b" with "L. Mitchell et al., 2013"
Chapter 2	21	In Figure 2.6, replace: "HFC-141b" with "HCFC-141b"
Chapter 2	49	Replace Table 2.5 with updated Table 2.5. The updated table now uses ERA5.1 data rather than ERA5 and the calculations now include the SUNY dataset.
Chapter 2	66	Lines 10–11, replace: "During the LGM, proxies indicate that summer sea ice coverage reached the polar ocean front (e.g., Nair et al., 2019)." with "During the LGM, proxies indicate that austral winter sea ice coverage reached the polar ocean front (e.g., Nair et al., 2019)."
Chapter 2	79	Line 55, remove "McClymont et al., 2020"
Chapter 2	103	Line 1, remove "Sun et al., 2017"
Chapter 2	183	In Cross-Chapter Box 2.3, replace Cross-Chapter Box 2.3, Figure 1 with updated Cross-Chapter Box 2.3, Figure 1. The updated figure has corrected the y-axis tick marks and updated labels to reflect the figure shows the assessed change in temperature.
Chapter 2	213	Replace Figure 2.10 with updated Figure 2.10. Y-axis has been corrected due to a misplacement in the FGD.
Chapter 3	31	Line 46, Figure 3.12 caption, replace: " period 1998-2019" with "period 1988-2019"
Chapter 3	33	Line 24, replace: "Thackeray et al., 2018" with "Thackeray et al., 2018a"
Chapter 3	36	Line 2, replace: "Huffman and Bolvin, 2013" with "Adler et al., 2003"
Chapter 3	51	Lines 21 and 23, replace: "Thackeray et al., 2018" with "Thackeray et al., 2018b"

Chapter 3	78	Line 27, replace: "Morgenstern et al. (2020)" with "Morganstern (2021)"
Chapter 3	165	Replace Figure 3.12 with updated Figure 3.12. The updated figure uses all available CMIP6 ensemble members (see Section 3.2).
Chapter 3	200	FAQ 3.1, Figure 1 title, replace: "2018" with "2019"
Chapter 3	200	Line 5, FAQ 3.1, Figure 1 caption, replace: "2018" with "2019"
Chapter 4	62	Lines 25–26, replace: "GFDL-CM3, 20 members, (Rodgers et al., 2015)), GFDL-ESM2M (30 members, (Sun et al., 2018))" with "GFDL-CM3 (20 members, Sun et al., 2018), GFDL-ESM2M (30 members, Rodgers et al., 2015)"
Chapter 4	70	Line 2, replace: " Even though there is <i>limited agreement</i> in simulated changes in ENSO SST variability," with " Even though there is <i>low agreement</i> in simulated changes in ENSO SST variability,"
Chapter 4	73	Line 39, replace "SR1.5" with "Hoegh-Guldberg et al., 2018"
Chapter 4	92	Line 14, add "Williams et al., 2017" to the bracket Line 38, add "McDougall et al., 2020" to the bracket
Chapter 4	115	Line 59, add to the reference list "Endo et al. 2018" cited and not listed. This paper's information is here: Endo, H., A. Kitoh, and H. Ueda, 2018: A unique feature of the Asian summer monsoon response to global warming: The role of different land-sea thermal contrast change between the lower and upper troposphere. SOLA, 14, 57-63, doi:10.2151/sola.2018-010
Chapter 5	27	Lines 16–17, replace "(Ciais et al., 2019; Le Quéré et al., 2018ba; Sarmiento et al., 2010; Friedlingstein et al., 2019)" with "(Sarmiento et al., 2010; Ballantyne et al., 2017; Le Quéré et al., 2018b; Ciais et al., 2019; Friedlingstein et al., 2020)"
Chapter 5	33	Line 48, replace "BGR, 2019" with "BGR, 2020"
Chapter 5	33	Replace Figure 5.12 with updated Figure 5.12. Missed corrigendum for the FGD. Global carbon budget emissions were updated.
Chapter 5	47	Line 41, replace "East Asia" with "North Asia"

Chapter 5	47	Figure 5.18, in caption replace "Contributions of carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O) and halogenated species to the total effective radiative forcing (ERF) increase since 1850 and 1960, and for 2000 to 2009. " with "Contributions of carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O) and halogenated species to the total effective radiative forcing (ERF) increases in 2019 since 1850, 1960, and 2000, respectively."
Chapter 5	51	Lines 34–35, add "Merlivat et al., 2018" to the bracket
Chapter 5	65	Line 9, add "Saunois et al., 2020" to the bracket
Chapter 5	76	Line 38, replace "Model projections accounting for the combined effects of CO ₂ and climate change suggest a potentially larger climate feedback (0.01–0.16 W m ⁻² °C ⁻¹ ; <i>limited evidence, limited agreement</i>)" with "Model projections accounting for the combined effects of CO ₂ and climate change suggest a potentially larger climate feedback (0.01–0.16 W m ⁻² °C ⁻¹ ; <i>limited evidence, low agreement</i>)" Line 43, replace "Methane emissions from thermokarst ponds and wetlands resulting from permafrost thaw, is estimated to contribute an additional CH ₄ -climate feedback of 0.01 [0.003–0.04, 5–95th percentile range] W m ⁻² °C ⁻¹ (<i>limited evidence, limited agreement</i>)" by "Methane emissions from thermokarst ponds and wetlands resulting from permafrost thaw, is estimated to contribute an additional CH ₄ -climate feedback of 0.01 [0.003–0.04, 5–95th percentile range] W m ⁻² °C ⁻¹ (<i>limited evidence, low agreement</i>)"
Chapter 5	82	Line 34, replace "Li et al., 2019" with "Ilyina et al., 2021"
Chapter 5	89	Line 20, replace "This suggests <i>limited agreement</i> among models as to the reversibility of the TCRE in response to net-negative CO ₂ emissions." with "This suggests <i>low agreement</i> among models as to the reversibility of the TCRE in response to net-negative CO ₂ emissions."
Chapter 5	94	Line 23, replace "A.P. Walker et al., 2019" with "X.J. Walker et al., 2019"
Chapter 5	96	Table 5.8 In row corresponding to 1.9°C warming and the 83rd percentile, replace "120" by "210" In row corresponding to 2.1°C warming and the 67th percentile, replace "560" by "350"
Chapter 5	104	Line 9, replace "Due to <i>limited agreement</i> between models there is <i>low confidence</i> in the timing of the sink-to source transition and the magnitude of the CO ₂ source in scenarios with net-negative CO ₂ emissions." with "Due to <i>low agreement</i> between models there is <i>low confidence</i> in the timing of the sink-to source transition and the magnitude of the CO ₂ source in scenarios with net-negative CO ₂ emissions."
Chapter 5	109	Line 45, replace "Keller, 2019" with "Keller, 2018"
Chapter 5	109	Line 50, add "GESAMP, 2019"

Chapter 5	130	Line 34, replace "Chen, C.T.A.A." with "Chen, C.T.A."
Chapter 5	219	In FAQ5.2, Figure 1 caption, replace units "kg C" with "hg C"
Chapter 6	16	Lines 23–25, replace "At a regional level, bottom-up derived SLCF emission trends and magnitudes in regions with strong economic growth and changing air quality regulation are highly uncertain and better constrained with top-down methods (Section 6.3)." with "At a regional level, bottom-up derived SLCF emissions trends and magnitudes in regions with strong economic growth and changing air-quality regulation are highly uncertain but can be better constrained with top-down methods (Section 6.3)."
Chapter 6	17	Lines 36–39, replace "Under warmer climate, the overall nitrogen fixation in non-agricultural ecosystems is expected to be 40% larger than in 2000, due to increased enzyme activity with growing temperatures, but the emission rates of NO (and N ₂ O) is expected to be dominated by changes in precipitation patterns and evapotranspiration fluxes (Fowler et al., 2015)." with "By the end of the 21st century, the overall nitrogen fixation in non- agricultural ecosystems is expected to be 40% larger than in 2000, due to increased enzyme activity with growing temperatures, but the emission rates of NO (and N ₂ O) could be dominated by changes in precipitation patterns and evapotranspiration fluxes (Fowler et al., 2015)."
Chapter 6	24	Line 20, replace: "tropospheric OH which in turn decreases the lifetime and therefore the methane burden" with "tropospheric OH which in turn increases the lifetime and therefore the methane burden"
Chapter 6	25	Replace Table 6.3 with updated Table 6.3. First 2 rows of the global tropospheric ozone budget terms and burden have been updated
Chapter 6	51	Line 52, replace: "There is <i>high evidence</i> and <i>high agreement</i> from field" with "There is <i>robust evidence</i> and <i>high agreement</i> from field"
Chapter 6	57	Lines 50–51, replace "Processes like temperature, CO ₂ -sensitive BVOC emissions, deposition, and branching ratio in isoprene nitrates chemistry have been shown to be particularly sensitive." with "Ozone response to climate change has been shown to be particularly sensitive to model representation of processes like BVOC emissions, deposition, and isoprene chemistry."

Chapter 6	58	<p>Lines 8–9, replace “Consistent with AR5 findings, global surface ozone concentration decreases by up to -1.2 to 2.3 ppb for annual mean due to the dominating role of ozone destruction by water vapor are found in four member ensemble of CMIP6 ESM for surface warmings of 1.5 to 2.5 °C” with “Consistent with AR5 findings, global mean surface ozone concentration decreases range from 0.69 ± 0.16 ppb to 2.28 ± 0.24 ppb due to the dominating role of ozone destruction by water vapour in a four-member ensemble of CMIP6 ESM for surface warmings of 1.5°C–2.5°C (Figure 6.14).”</p>
Chapter 6	59	<p>Lines 6–8, replace “For each model the change in surface O₃ is calculated as difference between following SSP3-7.0 (ssp370pdSST). The ssp370SST and ssp370pdSST experiments in the year when the difference in the global mean surface air temperature between the experiments exceeds the temperature threshold. The difference is calculated as a 20-year mean in surface O₃ around the year when the temperature threshold in each model is exceeded. The multi- model change in global annual mean surface O₃ concentrations with $\pm 1 \sigma$ are ...” with “For each model, the change in surface O₃ is calculated as the difference between two AerChemMIP experiments – one with evolving future emissions and sea surface temperatures (SSTs) under the SSP3-7.0 scenario and the other with the same setup but with fixed present-day SSTs. The difference is calculated as a 20-year mean in surface O₃ around the year when the temperature threshold in each model is exceeded. The multi-model change in global annual mean surface O₃ concentrations with ± 1 standard deviation are...”</p>
Chapter 6	123	<p>Line 48, add: “Van Damme, M., Clarisse, L., Whitburn, S. et al. Industrial and agricultural ammonia point sources exposed. <i>Nature</i> 564, 99–103 (2018). https://doi.org/10.1038/s41586-018-0747-1” to the list of references (the citation was omitted in the FGD).</p>
Chapter 7	31	<p>Lines 51–53, replace: “Since AR5 the SARF from methane-induced stratospheric water vapour changes has been calculated in two models (Winterstein et al., 2019; O’Connor et al., 2021), both corresponding to 0.09 W m^{-2} (1850 to 2014, by scaling the Winterstein et al., 2019 study).” with “Since AR5 the SARF from methane-induced stratospheric water vapour changes has been calculated in Winterstein et al., 2019, corresponding to 0.09 W m^{-2} when scaling to 1850 to 2014 methane changes.”</p> <p>Lines 54–55, delete the following sentence as it is based on a citation that did not make the literature cutoff deadline: “However, O’Connor et al. (2021) found the ERF to be approximately zero due to a negative cloud adjustment”</p>
Chapter 7	47	<p>Line 50, replace: “From SO₂ gas, reflective sulphate aerosol is formed in the stratosphere where it may persist for months, reducing the incoming solar radiation” with “From SO₂ gas, reflective sulphate aerosol is formed in the stratosphere where it may persist for months to years, reducing the incoming solar radiation”</p>
Chapter 7	48	<p>Line 8, replace: “Due to <i>limited agreement</i>, the contribution to volcanic ERF due to sulphate aerosol effects on ice clouds is not included in the overall assessment.” with “Due to <i>low agreement</i>, the contribution to volcanic ERF due to sulphate aerosol effects on ice clouds is not included in the overall assessment.”</p>
Chapter 7	116	<p>Line 23, replace: “Kamae et al., 2016” with “Kamae et al., 2016b”</p> <p>And insert the following reference into the references list: Kamae, Y., H. Shiogama, M. Watanabe, T. Ogura, T. Yokohata, and M. Kimoto, 2016b: Lower tropospheric mixing as a constraint on cloud feedback in a multiparameter multiphysics ensemble. <i>Journal of Climate</i>, 29(17), 6259-6275, doi:10.1175/JCLI-D-16-0042.1.</p>

Chapter 7	123	<p>Line 21, replace: “By comparison expressing methane emissions as CO₂ equivalent emissions using GWP-100 overstates the effect of constant methane emissions on global surface temperature by a factor of 3–4 over a 20-year time horizon (Lynch et al., 2020, their Figure 5), while understating the effect of any new methane emission source by a factor of 4–5 over the 20 years following the introduction of the new source (Lynch et al., 2020, their Figure 4).”</p> <p>with “By comparison expressing methane emissions as CO₂ equivalent emissions using GWP-100 overstates the effect of constant methane emissions on global surface temperature by a factor of 3–4 (Lynch et al., 2020, their Figure 5), while understating the effect of any new methane emission source by a factor of 4–5 over the 20 years following the introduction of the new source (Lynch et al., 2020, their Figure 4).”</p>
Chapter 7	124	<p>In Table 7.15, row 4, columns 4 to 10, replace “80.8, 27.2, 7.3, 10.3, 4.7, 2701, 3254”</p> <p>with “79.7, 27.0, 7.2, 10.4, 4.7, 2675, 3228”</p>
Chapter 7	204	<p>Replace Figure 7.14 with updated Figure 7.14. Arrows added and resized in Panels a and a to reflect missed atmospheric responses.</p>
Chapter 8	44	<p>Line 53, replace: “<i>In contrast, due to limited agreement in the observational records at the global scale, there is only low confidence in the observed decline of the natural surface water extent in recent years (see also SRCCL).</i>”</p> <p>with “<i>In contrast, due to low agreement in the observational records at the global scale, there is only low confidence in the observed decline of the natural surface water extent in recent years (see also SRCCL).</i>”</p>
Chapter 8	197	<p>Replace Figure 8.1 with updated Figure 8.1. “Land ice discharge $3 \pm 40\%$” has been modified to “Net loss of land ice and groundwater to oceans $0.8 \pm 15\%$”</p> <p>In Figure 8.1, caption, replace “Depiction of the water cycle based on previous assessments (Trenberth et al., 2011; Rodell et al., 2015; Abbott et al., 2019) with minor adjustments for groundwater flows (Kwon et al., 2014; Zhou et al., 2019c; Luijendijk et al., 2020), seasonal snow (Pulliainen et al., 2020) and ocean precipitation and evaporation (Stephens et al., 2012; Allan et al., 2020; Gutenstein et al., 2020). In the atmosphere, which accounts for only 0.001% of all water on Earth, water primarily occurs as a gas (water vapour), but it is also present as ice and liquid water within clouds. The ocean is the primary water reservoir on Earth, which is comprised mostly of liquid water across much of the globe, but also includes areas covered by ice in polar regions. Liquid freshwater on land forms surface water (lakes, rivers), soil moisture and groundwater stores, together accounting for 1.8% of global water (Stocker et al., 2013). Solid terrestrial water that occurs as ice sheets, glaciers, snow and ice on the surface and permafrost currently represents 2.2% of the planet’s water (Stocker et al., 2013). Water that falls as snow in winter provides soil moisture and streamflow after melting, which are essential for human activities and ecosystem functioning.”</p> <p>with “Depiction of the present-day water cycle based on previous assessments (Trenberth et al., 2011; Rodell et al., 2015; Abbott et al., 2019) with adjustments for groundwater flows (Zhou et al., 2019c; Luijendijk et al., 2020), seasonal snow (Pulliainen et al., 2020) and ocean precipitation and evaporation (Stephens et al., 2012; Allan et al., 2020; Gutenstein et al., 2021). The net loss of frozen and liquid water from land to ocean is estimated from Chapter 9, Table 9.5. In the atmosphere, which accounts for only 0.001% of all water on Earth, water primarily occurs as a gas (water vapour), but it is also present as ice and liquid water within clouds. The ocean is the primary water reservoir on Earth, which is comprised mostly of liquid water across much of the globe, but also includes areas covered by ice in polar regions. Liquid freshwater on land forms surface water (lakes, rivers) and combined with soil moisture and mostly unusable groundwater stores, together account for less than 2% of global water (Stocker et al., 2013). Solid terrestrial water that occurs as ice sheets, glaciers, snow and ice on the surface and permafrost currently represents nearly 2% of the planet’s water (Stocker et al., 2013). Water that falls as snow in winter provides soil moisture and streamflow after melting, which are essential for human activities and ecosystem functioning. Note that these best estimates do not lead to a perfectly closed global water budget and that this budget has no reason to be closed given the on-going human influence through both climate change (e.g., melting of ice sheets and glaciers, see Chapter 9) and water use (e.g., groundwater depletion through pumping into fossil aquifers, see Figure 8.10).”</p>

Chapter 9	38	Lines 1–3, replace "Under strong radiative forcing, in scenario SSP5-8.5, CMIP6 models project that the East Australian Current Extension and Agulhas Current Extension will intensify in the 21st century, while the Gulf Stream and Brazil Current will weaken (Figure 9.11)." with "Under strong radiative forcing, in scenario SSP5-8.5, CMIP6 models project that the East Australian Current Extension, Agulhas Current Extension and Brazil Current will intensify in the 21st century, while the Gulf Stream will weaken (Figure 9.11)."
Chapter 9	43	Replace Figure 9.12 with updated Figure 9.12. Colour scale in Panel (d) was inconsistent with other panels.
Chapter 10	11	Replace Figure 10.3 with updated Figure 10.3. "TC" timescales shortened.
Chapter 10	28	Lines 52–53, replace "Perpetual data sparsity results in some climate characteristics not being observed (Yokoyama et al. 2019)" with "In areas with increasing observational capabilities there are still challenges. For instance, satellite observation are used to compensate for the ground-based precipitation radar data sparsity to prevent an oversight of significant climate change signals (Yokoyama et al. 2019)".
Chapter 10	76	Line 44, replace "There is <i>high confidence</i> (high evidence and medium agreement) that anthropogenic forcing has contributed to multidecadal mean precipitation changes in several regions such as for example West Africa, southeast South America, southwestern Australia, northern Central Eurasia, South and East Asia." with "There is <i>high confidence</i> (robust evidence and medium agreement) that anthropogenic forcing has contributed to multidecadal mean precipitation changes in several regions such as for example West Africa, southeast South America, southwestern Australia, northern Central Eurasia, South and East Asia."
Chapter 10	115	Line 2, replace "Chen et al., 2016b" with "B. Chen et al., 2016".
Chapter 10	134	Lines 56–57, replace "Chen, H. et al., 2016: Large-scale urbanization effects on eastern Asian summer monsoon circulation and climate. <i>Climate Dynamics</i> , 47(1–2), 117–136, doi:10.1007/s00382-015-2827-3." with "Chen, H., Y. Zhang, M. Yu, W. Hua, S. Sun, X. Li and C. Gao, 2016b: Large-scale urbanization effects on eastern Asian summer monsoon circulation and climate. <i>Climate Dynamics</i> , 47(1–2), 117–136, doi:10.1007/s00382-015-2827-3."
Chapter 10	134	Line 60, insert new reference Chen, B., Dong, L., Liu, X., Shi, G.Y., Chen, L., Nakajima, T. and Habib, A. (2016c), Exploring the possible effect of anthropogenic heat release due to global energy consumption upon global climate: a climate model study. <i>Int. J. Climatol.</i> , 36: 4790-4796. https://doi.org/10.1002/joc.4669
Chapter 10	214	Replace Figure 10.15 with updated Figure 10.15. Panel (b) featured an incorrect threshold of signal emergence as a result of a scripting error
Chapter 11	156–157	In Table 11.8, in row East Asia (EAS), move "Kawase et al., 2019" from the "Projections" columns (columns 4–6) to the "Detection and attribution; event attribution" column (column 3)
Chapter 12	37	Line 10, replace "RCP4.5, RCP6.0 and RCP8.5" with "RCP2.6, RCP4.5 and RCP8.5"

Chapter 12	45	Line 15, replace "RCP4.5, RCP6.0 and RCP8.5" with "RCP2.6, RCP4.5 and RCP8.5".
Atlas	92	Line 51, replace "very likely" with "likely"
Atlas	132	Lines 60-61, replace "Iturbide, M. et al., 2021: Repository supporting the implementation of FAIR principles in the IPCC-WG1 Interactive Atlas. Zenodo, DOI: 10.5281/zenodo.3595626. Available from: https://github.com/IPCC-WG1/Atlas ." with Iturbide, M. et al., 2021: Repository supporting the implementation of FAIR principles in the IPCC-WG1 Interactive Atlas. Zenodo. Retrieved from: http://doi.org/10.5281/zenodo.5171760 .
Annex III	4	Replace Table AIII.1a with updated Table AIII.1a. Year 1990 values were missing and copy paste errors to years 1991-1994 corrected
Annex III	17	Replace Table AIII.4f with updated Table AIII.4f. Copy paste error to Montreal gas columns and rounding errors corrected
Annex VII	2	In definition for 'Aerosol', replace "A suspension of airborne solid or liquid particles, with typical diameters between a few nanometres and a few micrometres and atmospheric lifetimes of up to several days in the troposphere and up to years in the stratosphere. The term aerosol, which includes both the particles and the suspending gas, is often used in this report in its plural form to mean 'aerosol particles'. Aerosols may be of either natural or anthropogenic origin in the troposphere; stratospheric aerosol mostly stems from volcanic eruptions. Aerosols can cause an effective radiative forcing directly through scattering and absorbing radiation (aerosol-radiation interactions), and indirectly by acting as cloud condensation nuclei or ice nucleating particles which affect the properties of clouds (aerosol-cloud interactions), and upon deposition on snow- or ice-covered surfaces. Atmospheric aerosols may be emitted as primary particulate matter (PM), and form within the atmosphere from gaseous precursors (secondary production). Main classes of aerosol chemical composition are sea salt, organic carbon, black carbon (BC), mineral species (mainly desert dust), sulphate, nitrate, and ammonium. See also Short-lived climate forcers (SLCFs)." with "A suspension of airborne solid or liquid particles, with typical particle size in the range of a few nanometres to several tens of micrometres and atmospheric lifetimes of up to several days in the troposphere and up to years in the stratosphere. The term aerosol, which includes both the particles and the suspending gas, is often used in this report in its plural form to mean 'aerosol particles'. Aerosols may be of either natural or anthropogenic origin in the troposphere; stratospheric aerosols mostly stem from volcanic eruptions. Aerosols can cause an effective radiative forcing directly through scattering and absorbing radiation (aerosol-radiation interaction), and indirectly by acting as cloud condensation nuclei or ice nucleating particles that affect the properties of clouds (aerosol-cloud interaction), and upon deposition on snow- or ice-covered surfaces. Atmospheric aerosols may be either emitted as primary particulate matter or formed within the atmosphere from gaseous precursors (secondary production). Aerosols may be composed of sea salt, organic carbon, black carbon (BC), mineral species (mainly desert dust), sulphate, nitrate and ammonium or their mixtures. See also Particulate matter (PM) and Short-lived climate forcers (SLCFs)."
Annex VII	2	Line 27, remove "IPCC, 2014"
Annex VII	31	Line 10, replace "ICS, 2018" with "Walker et al., 2019"
Annex VII	50	Lines 4–6, remove "Regional climate messages"
Annex VII	55	In definition for 'Short-lived climate forcers (SLCFs)', replace "(from hours to decades)" with "(from hours to about two decades)"