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Framing, Context and Methods

Supplementary Material

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1.SM.1 Data Table

Table 1.SM.1 | Input data table. Input datasets and code used to create chapter figures.

Figure number	Dataset/ Code Name	Type	File Name/Specificities	License Type	Dataset/ Code Citation	Dataset/Code URL	Related Publications/ Software Used	Notes
Figure 1.4	CO_2: Antarctic ice core	Input dataset	grl52461-sup-0003-supplementary.xls			https://agupubs.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1002%2F2014GL061957&file=grl52461-sup-0003-supplementary.xls	Lüthi et al. (2008); Bereiter et al. (2015)	
	CO_2: direct air measurements	Input dataset	co2_trend_gl.txt			https://www.esrl.noaa.gov/gmd/ccgg/trends/gl_data.html	Tans and Keeling (2020)	
	Precipitation: Global Precipitation Climatology Centre (GPCC) V8	Input dataset	Baseline 1961–1990 using land areas only. Latitude bands are 33°N–66°N and 15°S–30°S			https://psl.noaa.gov/data/gridded/data.gpcc.html	Becker et al. (2013)	
	Glacier mass loss	Input dataset	Zemp_etal_results_regions_global.zip	Creative Commons Attribution 4.0 International	Zemp et al. (2019a)	https://doi.org/10.5281/zenodo.1492141	Zemp et al. (2019b)	
	Global mean surface temperature (GMST): Hadley Centre/ Climatic Research Unit Temperature (HadCRUT) 5.0	Input dataset	Baseline 1961–1990	Open Government License v3		https://www.metoffice.gov.uk/hadobs/hadcrut5/data/current/download.html	Morice et al. (2021)	
	Sea level change	Input dataset	Baseline 1900–1929			https://static-content.springer.com/esm/art%3A10.1038%2Fs41558-019-0531-8/MediaObjects/41558_2019_531_MOESM2_ESM.txt	Dangendorf et al. (2019)	
	Ocean heat content	Input dataset	Baseline1961–1990			https://www.ncei.noaa.gov/access/global-ocean-heat-content/heat_global.html	Zanna et al. (2019)	
Figure 1.5a	Left: CO_2, air enclosed in ice measurements	Input dataset	grl52461-sup-0003-supplementary.xls Uncertainty +/– 1.3 ppm			https://agupubs.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1002%2F2014GL061957&file=grl52461-sup-0003-supplementary.xls https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2014GL061957	Bereiter et al. (2015); AR6 Chapter 2, Table 2.1	
	Middle: CO_2, direct air measurements	Input dataset	Uncertainty +/– 0.12 ppm			https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2014GL061957 https://www.esrl.noaa.gov/gmd/ccgg/trends/gl_data.html	Bereiter et al. (2015); Tans and Keeling (2020) (consulted on 02.12.2020)	
	Right: CO_2, projected concentration for five SSPs	Input dataset	Uncertainty +/– 2 ppm	Creative Commons Attribution-ShareAlike 4.0 International License (CC BY-SA 4.0)		https://gmd.copernicus.org/articles/13/3571/2020/gmd-13-3571-2020-discussion.html	Meinshausen et al. (2020)	

Figure number	Dataset/ Code Name	Type	File Name/Specificities	License Type	Dataset/ Code Citation	Dataset/Code URL	Related Publications/ Software Used	Notes
Figure 1.5b	Left: Global mean surface air temperature (GSAT)	Input dataset	Only 50% column used (Snyder, 2016) Referenced to 1850–1900 by adding +0.36°C (Hansen et al., 2013)			https://www.nature.com/articles/nature19798 (Snyder, 2016); https://doi.org/10.1098/rsta.2012.0294 (Hansen et al., 2013); https://www.science.org/doi/suppl/10.1126/science.aba6853/suppl_file/aba6853_tables_s8_s34.xlsx (Westerhold et al., 2020)	Hansen et al. (2013); Snyder (2016); Westerhold et al. (2020); AR6 Chapter 2, Section 2.3.1.1; Cross-Chapter Box 2.3, Table 1	
	Middle: Observed and reconstructed temperature changes since 1850, Hadley Centre/Climatic Research Unit Temperature (HadCRUT) 5.0	Input dataset	Referenced to 1850–1900 baseline AR6 assessed 4-dataset mean	Open Government License v3		https://www.metoffice.gov.uk/hadobs/hadcrut5/data/current/download.html	Morice et al. (2021)	
	Right: Projected mean and ranges of warming; CMIP6 models and experiments (2081–2100)	Input dataset	CMIP6 models and experiments (2081–2100)				AR6 Chapter 4, Table 4.5	
	Right: Projected mean and ranges of warming; Model for the Assessment of Greenhouse Gas Induced Climate Change (MAGICC7)	Input dataset	Simulations (2300)				AR6 Chapter 4, Table 4.9	
Figure 1.5c	Left: Sea level reconstruction	Input dataset	https://www1.ncdc.noaa.gov/pub/data/paleo/contributions_by_author/spratt2016/spratt2016.txt Uncertainty +/– 5 m. Only long time series used			https://www.ncdc.noaa.gov/paleo-search/study/19982	Spratt and Lisiecki (2016); AR6 Chapter 2, Section 2.3.3.3 and Chapter 9, Section 9.6.2	
	Middle: Sea level record over the historical period	Input dataset	First referenced to its own 1850–1900 average Sea level record from 1850 to 1900			https://www.pnas.org/content/113/11/E1434	Kopp et al. (2016)	

Figure number	Dataset/ Code Name	Type	File Name/Specificities	License Type	Dataset/ Code Citation	Dataset/Code URL	Related Publications/ Software Used	Notes
Figure 1.5c (continued)	Middle: Sea level record over the historical period	Input dataset	20th-century sea level record referenced to 1850–1900	CC BY 3.0 licence		https://iopscience.iop.org/article/10.1088/1748-9326/abdaec	Palmer et al. (2021)	
	Right: Sea level projections based on SSP-based simulations (2081–2100). CMIP6 models and experiments	Input dataset	Relative to 1850–1900, by adding +0.16m				AR6 Chapter9, Table 9.9 total (2100)	
	Right: Sea level projections based on SSP-based simulations (2281–2300)	Input dataset					AR6 Chapter 9, Section 9.6.3.5	
Figure 1.6	Surface air temperature (GMST): Hadley Centre/ Climatic Research Unit Temperature (HadCRUT) 5.0	Input dataset	Referenced to 1850–1900 baseline AR6 assessed 4-dataset mean	Open Government License v3		https://www.metoffice.gov.uk/hadobs/hadcrut5/data/current/download.html	Morice et al. (2021)	See Cross-Chapter Box 2.3 and Section 2.3.1.1 for details
	CO_2: Antarctic ice core	Input dataset	grl52461-sup-0003-supplementary.xls			https://agupubs.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1002%2F2014GL061957&file=grl52461-sup-0003-supplementary.xls	(Bereiter et al., 2015)	
	CO_2: direct air measurements	Input dataset	Uncertainty +/– 0.12 ppm			https://www.esrl.noaa.gov/gmd/ccgg/trends/gl_data.html	Tans and Keeling (2020)	
Figure 1.8a	Annual mean surface temperatures, 60°N–60°S, as calculated by G.S. Callendar. Transcribed by Ed Hawkins	Input dataset	https://rmets.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1002%2Fqj.2178&file=qj_2178_sm_suppinforS1.dat			https://rmets.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1002%2Fqj.2178&file=qj_2178_sm_suppinforS1.dat	Callendar (1938); Hawkins and Jones (2013)	
Figure 1.8b	Surface temperature, Climatic Research Unit Temperature (CRUTEM) 5	Input dataset	Processed to produce 60°S–60°N average	Open Government License v3		https://www.metoffice.gov.uk/hadobs/crutem5/	Osborn et al. (2021)	
Figure 1.9	Past model projections of global temperature change	Input dataset				https://github.com/hausfath/OldModels	Hausfather et al. (2020)	
	Hadley Centre/ Climatic Research Unit Temperature (HadCRUT) 5.0	Input dataset		Open Government License v3		https://www.metoffice.gov.uk/hadobs/hadcrut5/data/current/download.html	Morice et al. (2021)	
	Anthropogenic forcing	Input dataset			Dessler and Forster (2018b)	https://zenodo.org/record/1323162#.X2tTzNZ7mHo	Dessler and Forster (2018a)	

Figure number	Dataset/ Code Name	Type	File Name/Specificities	License Type	Dataset/ Code Citation	Dataset/Code URL	Related Publications/ Software Used	Notes
Figure 1.10	Temperature projection 1990–2030	Input dataset					IPCC (1990)	
	Hadley Centre/ Climatic Research Unit Temperature (HadCRUT) 5.0	Input dataset		Open Government License v3		https://www.metoffice.gov.uk/hadobs/hadcrut5/data/current/download.html	Morice et al. (2021)	
	Cowtan and Way	Input dataset				https://www-users.york.ac.uk/~kdc3/papers/coverage2013/series.html	Cowtan and Way (2014)	
	NASA GISTEMP	Input dataset				https://data.giss.nasa.gov/gistemp/	GISTEMP Team (2020)	
	Berkeley Earth	Input dataset				http://berkeleyearth.org/data-new/		
	NOAAGlobalTemp	Input dataset				https://www.ncdc.noaa.gov/data-access/marineocean-data/noaa-global-surface-temperature-noaaglobaltemp		
	Projected temperature change by 2030	Input dataset					Grose et al. (2017)	
Figure 1.11	GSAT ERA-5	Input dataset	1979–2020			https://www.ecmwf.int/en/forecasts/datasets/browse-reanalysis-datasets		
	GMST Berkeley Earth (1850–2020)	Input dataset				http://berkeleyearth.org/data/		
	GMST Jones (1961–1990)	Input dataset					Jones et al. (1999)	
	GSAT, CMIP6 historical simulation (1850–2014)	Input dataset			Nicholls et al. (2020)	https://doi.org/10.5281/zenodo.3951890	Nicholls et al. (2021)	The data archive grows as new CMIP6 results are added. An up-to-date full collection can be found at https://cmip6.science.unimelb.edu.au
	GSAT, CMIP6 SSP1-2.6	Input dataset			Nicholls et al. (2020)	https://doi.org/10.5281/zenodo.3951890	Nicholls et al. (2021)	
Figure 1.12	Hadley Centre/ Climatic Research Unit Temperature (HadCRUT) 5.0	Input dataset			Data provided by Chapter 2		Morice et al. (2021); data provided by Chapter 2	
	Berkeley Earth	Input dataset			Data provided by Chapter 2		Data provided by Chapter 2	
	NOAAGlobalTemp	Input dataset			Data provided by Chapter 2		Data provided by Chapter 2	

Figure number	Dataset/ Code Name	Type	File Name/Specificities	License Type	Dataset/ Code Citation	Dataset/Code URL	Related Publications/ Software Used	Notes
Figure 1.12	Kadow et al. (2020) (updated)	Input dataset			Data provided by Chapter 2		Kadow et al. (2020); data provided by Chapter 2	
Cross-Chapter Box 1.2, Figure 1	Radiative forcing estimates from AR6 emulator	Input dataset			Data provided by Chapter 7		AR6 Chapter 7	See Cross-Chapter Box 7.1 in Chapter 7
Figure 1.13	Ocean heat content; surface air temperature; ice volume: historical and RCP4.5 experiments	Input dataset	MPI large ensemble			https://esgf-data.dkrz.de/projects/mpi-ge/	Maher et al. (2019)	
Figure 1.14, Top Panel	Left. Total change in temperature since 1850–1900	Input dataset					Hawkins et al. (2020)	
	Right. Year-to-year variability	Input dataset					Hawkins et al. (2020)	
Figure 1.14, Middle Panel	Left. Signal-to-noise ratio	Input dataset					Hawkins et al. (2020)	
	Right. Global warming level of emergence	Input dataset					Hawkins et al. (2020)	
Figure 1.14, Bottom Panel	Annual mean surface air temperatures: N North America, Northern Europe, East Asia, N South America, Tropical Africa, Australasia	Input dataset	Berkeley Earth air temperature over land dataset	Creative Commons BY-4.0	Rohde and Hausfather (2019)	https://doi.org/10.5281/zenodo.3634713	Rohde and Hausfather (2020)	
Figure 1.15, Left	GSAT projections (CMIP6 model outputs)	Input dataset				https://cmip6.science.unimelb.edu.au	Nicholls et al. (2021)	
Figure 1.15, Middle	Northern South America temperature change projections (CMIP6 model outputs)	Input dataset				https://cmip6.science.unimelb.edu.au	Nicholls et al. (2021)	
Figure 1.15, Right	East Asia JJA rainfall change projections (CMIP6 model outputs)	Input dataset				https://cmip6.science.unimelb.edu.au	Nicholls et al. (2021)	
Figure 1.16	GSAT projections	Input dataset	Projected changes for 2020–2090 in Chapter 4				AR6 Chapter 4	
Figure 1.24	Historical GMST	Input dataset						See Chapter 2
	GMST projections	Input dataset						See Cross-Chapter Box 11.1

Figure number	Dataset/ Code Name	Type	File Name/Specificities	License Type	Dataset/ Code Citation	Dataset/Code URL	Related Publications/ Software Used	Notes
Figure 1.24 (continued)	Historical cumulative CO_2	Input dataset				greenhousegases.science.unimelb.edu.au		
	Cumulative CO_2 projections	Input dataset				greenhousegases.science.unimelb.edu.au		
Figure 1.25	Historical global mean surface air temperatures	Input dataset	From 1750 to 1850				PAGES 2k Consortium (2017, 2019)	
	Historical global mean surface air temperatures	Input dataset	From 1850 to 2018			Chapter 2		
	CMIP6 temperature projections under five SSPs	Input dataset	Projections from 2020			https://doi.org/10.22033/ESGF/input4MIPs.9864 https://doi.org/10.22033/ESGF/input4MIPs.9865 https://doi.org/10.22033/ESGF/input4MIPs.9866 https://doi.org/10.22033/ESGF/input4MIPs.9861 https://doi.org/10.22033/ESGF/input4MIPs.9868		
	CMIP6.ScenarioMIP. MIROC.MIROC6	Input dataset	CMIP6.ScenarioMIP. MIROC.MIROC6					
Figure 1.26	CO_2, CH_4, N_2O historical concentration	Input dataset				https://greenhousegases.science.unimelb.edu.au	Meinshausen et al. (2017)	
	Temperature proxies (PAGES 2k consortium)	Input dataset					PAGES 2k Consortium (2017, 2019)	http://www.pastglobalchanges.org/science/wg/2k-network/data/phase-2-data
	GMST Hadley Centre/ Climatic Research Unit Temperature (HadCRUT) 5.0	Input dataset					Chapter 2	
	Temperature projections (CMIP6 ScenarioMIP experiment examined in Chapter 4)	Input dataset				https://cmip6.science.unimelb.edu.au		
Cross-Chapter Box 1.4, Figure 1	(Left panel) Temperature evolution from ScenarioMIP	Input dataset				https://greenhousegases.science.unimelb.edu.au	Meinshausen et al. (2020)	

Figure number	Dataset/ Code Name	Type	File Name/Specificities	License Type	Dataset/ Code Citation	Dataset/Code URL	Related Publications/ Software Used	Notes
Cross-Chapter Box 1.4, Figure 2	International Institute for Applied Systems Analysis (IIASA) SSP database	Input dataset	Annual			IIASA SSP database: https://secure.iiasa.ac.at/web-apps/ene/SspDb/dsd?Action=htmlpage&page=about	Riahi et al. (2017); Gidden et al. (2019); Rogelj et al. (2019)	
	RCP database	Input dataset				https://tntcat.iiasa.ac.at/RcpDb/dsd?Action=htmlpage&page=welcome		
	Panel (p) and (q), CMIP6–CMIP5	Input dataset					Hoesly et al. (2018)	Figure 7 in Hoesly et al. (2018)
Cross-Chapter Box 1.4, Figure 2 (continued)	Cross-Chapter Box 1.4, Figure 2 code	Code				https://gitlab.com/magicc/ar6-wg1/-/blob/master/notebooks/SSPSCENDAT-rcp-ssp-comparisons/100-SSPSCENDAT-rcp-ssp-comparison-plot.ipynb		
Figure 1.28	Range of CO_2 emissions from IS92	Input dataset	Since 1992			https://sedac.ciesin.columbia.edu/data/set/ipcc-is92-emissions-scenarios-v1-1	IPCC (2020)	
	Range of CO_2 emissions from SRES	Input dataset	Since 2000			https://sedac.ciesin.columbia.edu/ddc/sres/		
	Range of CO_2 emissions from RCPs	Input dataset	Since 2010			http://www.iiasa.ac.at/web-apps/tnt/RcpDb	(Fujino et al., 2006; Smith and Wigley, 2006; Clarke et al., 2007; Riahi et al., 2007; van Vuuren et al.,2007; Hijioka et al., 2008; Wise et al., 2009)	
	Range of CO_2 emissions from SSPs	Input dataset				https://doi.org/10.22033/ESGF/input4MIPs.9868 https://doi.org/10.22033/ESGF/input4MIPs.9824 https://doi.org/10.22033/ESGF/input4MIPs.9861 https://doi.org/10.22033/ESGF/input4MIPs.9863 https://doi.org/10.22033/ESGF/input4MIPs.9866 https://doi.org/10.22033/ESGF/input4MIPs.9865 https://doi.org/10.22033/ESGF/input4MIPs.9864 https://doi.org/10.22033/ESGF/input4MIPs.9862 https://doi.org/10.22033/ESGF/input4MIPs.9867		
	SR1.5 scenario database	Input dataset				https://data.ene.iiasa.ac.at/iamc-1.5c-explorer/#/login?redirect=%2Fworkspaces	Huppmann et al. (2018) (Huppmann et al., 2019)	
	CO_2 historical emissions	Input dataset				https://www.pik-potsdam.de/paris-reality-check/primap-hist/	Gütschow et al. (2016)	

Figure number	Dataset/ Code Name	Type	File Name/Specificities	License Type	Dataset/ Code Citation	Dataset/Code URL	Related Publications/ Software Used	Notes
Figure 1.29	SR1.5 scenario database	Input dataset				https://data.ene.iiasa.ac.at/iamc-1.5c-explorer		
	SSP1-1.9	Input dataset				https://doi.org/10.22033/ESGF/input4MIPs.9864	Chapter 7	
	SSP1-2.6	Input dataset				https://doi.org/10.22033/ESGF/input4MIPs.9865	Chapter 7	
	SSP2-4.5	Input dataset				https://doi.org/10.22033/ESGF/input4MIPs.9866	Chapter 7	
	SSP3-7.0	Input dataset				https://doi.org/10.22033/ESGF/input4MIPs.9861	Chapter 7	
	SSP5-8.5	Input dataset				https://doi.org/10.22033/ESGF/input4MIPs.9868	Chapter 7	
	Figure 1.29 code	Code				https://gitlab.com/magicc/ar6-wg1/-/tree/master/notebooks/CO2DRIVER-ghg-erf-contributions		

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