

Chapter 1: Framing, context, methods - Supplementary Material

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19 **This document is subject to copy-editing, corrigenda and trickle backs.**

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1 **1.SM.1 Data Table**2
3 **[START TABLE 1.SM.1 HERE]**4
5 Table 1.SM.1: Input Data Table. Input datasets and code used to create chapter figures.

Figure number / Table number / Chapter section (for calculations)	Dataset / Code name	Type	Filename / Specificities	License type	Dataset / Code citation	Dataset / Code URL	Related publications / Software used	Notes [Can add info on data processing, e.g., reference period conversion]
Figure 1.4	CO2: 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)	
	CO2: direct air measurements	Input dataset	co2_trend_gl.txt			https://www.esrl.noaa.gov/gmd/ccgg/trends/gl_data.html	Tans and Keeling (2019)	
	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_glob	Creative Commons	10.5281/zenodo.1492141	https://doi.org/10.5281/zenodo.1492141	Zemp et al. (2019)	

			al.zip	Attribution 4.0 International		2141		
	Surface air 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 1.5, panel a	Left. CO ₂ , air enclosed in ice measurements	Input dataset	gr152461-sup-0003-supplementary.xls			https://agupubs.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1002%2F2014GL061957&file=gr152461-sup-	Bereiter et al. (2015) AR6 Chapter 2 Table 2.1	

						0003-supplementary.xls https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2014GL061957		
	Middle. CO2, 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 (2019) (consulted on 02.12.2020)	
	Right. CO2, Projected concentration for five SSPs	Input dataset	uncertainty +/- 2ppm.	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 1.5, panel b	Left. Global Mean Surface Air Temperature	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://science.sciencemag.org/high	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	

						wire/filestream/749806/field_highwire_adjunct_files/0/aba6853_Tables_S8_S34.xlsx (Westerhold et al., 2020)		
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 MODEL & EXPERIMENTS (2081-2100)	Input dataset	CMIP6 MODEL & EXPERIMENTS (2081-2100)					AR6 Chapter 4 Table 4.5	
Right. Projected mean and ranges of warming; Model for the Assessment of Greenhouse	Input dataset	(2300) simulations					AR6 Chapter 4 Table 4.9	

	Gas Induced Climate Change (MAGICC7)								
Figure 1.5, panel c	Left. Sea level reconstruction	Input dataset	https://www1.nodc.noaa.gov/pub/data/paleo/contributions_by_author/spratt2016/spratt2016.txt . Uncertainty +/- 5m 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)		
	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 SSPs-based simulations (2081-2100). CMIP6 MODELS & EXPERIMENTS	Input dataset	Relative to 1850-1900, by adding +0,16m					AR6 Chapter 4 Table 9.9 Total (2100)	
	Right. Sea level	Input dataset						AR6 Chapter 4	

	projections based on SSPs-based simulations (2281-2300).						Section 9.6.3.5	
Figure 1.6	Surface air 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)	see Cross-Chapter Box 2.3 and section 2.3.1.1 for details
	CO2: 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		
	CO2: direct air measurements	Input dataset	co2_trend_gl.txt (??)			https://www.esrl.noaa.gov/gmd/ccgg/trends/gl_data.html	Tans and Keeling (2019)	
Figure 1.8, panel a	Annual mean surface temperatures, 60°N to 60°S, as calculated by G.S. Callendar.	Input dataset	https://rmets.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1002%2Fqj.2178&file=qj_2178_sm_s			https://rmets.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1002%2Fqj.2178&file=qj_2178_sm_suppinfoS	Callendar (1938); Hawkins and Jones (2013)	

	Transcribed by Ed Hawkins		uppinfoforS1.dat			1.dat		
Figure 1.8, panel b	Surface temperature, Climatic Research Unit Temperature (CRUTEM) 5	Input dataset	Processed to produce 60S-60N 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				https://zenodo.org/record/1323162#.X2tTzNZ7mHo	Dessler and Forster (2018)	
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/~	Cowtan and Way (2014)	

					kdc3/papers/coverage2013/series.html		
	NASA GISTEMP	Input dataset			https://data.giss.nasa.gov/gistemp/	GISTEMP Team, 2020: GISS Surface Temperature Analysis (GISTEMP), version 4. NASA Goddard Institute for Space Studies. https://data.giss.nasa.gov/gistemp/ .	
	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				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				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	
	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	Input dataset			Data provided by Chapter 7		AR6 Chapter 7.	see Cross-Chapter Box 7.1 in

	AR6 emulator							Chapter 7
Figure 1.13	Ocean heat content; Surface air t°; 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 t° 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		https://doi.org/10.5281/zenodo.3634713	Rohde and Hausfather (2020).	
Figure 1.15, left	GSAT projections (CMIP6 Model	Input dataset				https://cmip6.science.unimelb.edu.au	Nicholls et al. (2021)	

	outputs)							
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						
	GMST projections	Input dataset						
	Historical cumulative CO2	Input dataset						
	Cumulative CO2 projections	Input dataset						
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.Scenario MIROC.MIROC6	Input dataset	CMIP6.Scenario MIROC.MIROC6					
Figure 1.26	CO ₂ , CH ₄ , N ₂ O historical concentration	Input dataset				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	Input dataset				cmip6.science.unimelb.edu.au		

	projections (CMIP6 ScenarioMIP experiment examined in Chapter 4)					melb.edu.au		
Cross-chapter box 1.4, Figure 1	(left panel) temperature evolution from ScenarioMIP	Input dataset				greenhousegases.science.unimelb.edu.au	Meinshausen et al. (2020)	
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						
	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 code	Code				https://gitlab.com/magicc/ar6-wg1/-/blob/master/notebooks/SSPSCENDAT-rcp-ssp-comparisons/100-SSPSCENDAT-rcp-ssp-comparison-plot.ipynb	Figure code	
Figure 1.28	Range of CO2 emissions from IS92	Input dataset	since 1992			https://sedac.ciesin.columbia.edu/data/set/ipcc-is92-emissions-		

						scenarios-v1-1		
Range of CO2 emissions from SRES	Input dataset	since 2000				https://sedac.ciesin.columbia.edu/dc/sres/		
Range of CO2 emissions from RCP	Input dataset	since 2010				http://www.iiasa.ac.at/web-apps/tnt/RcpDb		
Range of CO2 emissions from SSP	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		
Scenarios IPCC	Input dataset					https://data.ene.iaa	Huppmann et al.	

	SR1.5					sa.ac.at/iamc-1.5c-explorer/#/login?redirect=%2Fworkspaces	(2018)	
	CO2 historical emissions	Input dataset				https://www.pik-potsdam.de/paris-reality-check/primap-hist/	Gütschow et al. (2016)	
Figure 1.29	SR1.5 scenario database	Input dataset				https://data.ene.iaa-sa.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			Will be generated by TSU	https://gitlab.com/magicc/ar6-wg1/-/tree/master/notebooks/CO2DRIVE		
						R-ghg-erf-contributions		

1 **[END TABLE 1.SM.1 HERE]**

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