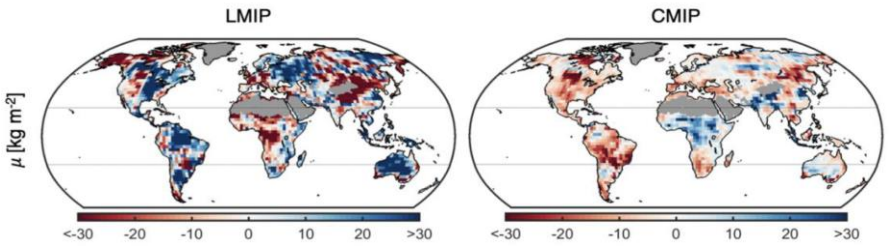
**P54/WGI-14 - Changes to the underlying scientific-technical assessment to ensure consistency with the approved SPM**

**These trickle backs will be implemented in the Chapter during copy-editing**

| SPM Page:Line | Chapter/Supp. Material | Chapter Page:Line | Summary of edit to be made |
|---|---|---|---|
| 30:20 ("Agricultural and ecological droughts are assessed based on observed and **simulated** changes in total column soil moisture, complemented by…") | 11SM | 18, Figure 11.SM.1 | Replace figure with figure below (referred to in Section 11.9, page 115, line 42). Caption: "Analysis similar to Padron et al. (2020) Figs 1b,c for simulated total soil moisture (instead of P-E) based on multi-model offline simulations of Land surface, Snow, and Soil Moisture Model Intercomparison Project within CMIP6 (left) and coupled CMIP6 simulations (right), for differences between 1985-2014 vs 1902-1950."   |

**AR6 WGI Report – List of corrigenda to be implemented**

The corrigenda listed below will be implemented in the Supplementary Material during copy-editing.

## CHAPTER 11 SUPPLEMENTARY MATERIAL

| Document (Chapter, Annex, Supp. Mat…) | Section | Page :Line (based on the final pdf FGD version) | Detailed info on correction to make |
|---|---|---|---|
| 11SM | | | Update the Data Table with omitted data citations for climate model data. |

# 11.SM Chapter 11: Weather and climate extreme events in a changing climate – Supplementary Material

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**Date:** August 2021

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

## 11.SM.1 Mean temperature anomalies for CMIP5 model output

Table 11.SM.1 lists mean annual mean global surface air temperature anomalies for CMIP5 model output for selected time periods and all RCPs, in a similar format as Table 4.2 (Chapter 4). See (Hauser, 2021b) for respective numbers for individual CMIP5 and CMIP6 models.

**[START TABLE 11.SM.1 HERE]**

**Table 11.SM.1:** CMIP5 annual mean global surface air temperature anomalies (°C) from the 1850–1900 reference period for selected time periods, regions and all RCPs. Displayed are multi-model averages and 5–95% ranges. Numbers in brackets in the top row indicate the number of models.

| | RCP2.6 (21) | RCP4.5 (30) | RCP6.0 (14) | RCP8.5 (32) |
|---|---|---|---|---|
| near-term (2021-2040) | 1.5 (1.1-2.0) | 1.6 (1.2-2.0) | 1.5 (1.0-1.9) | 1.7 (1.2-2.3) |
| mid-term (2041-2060) | 1.7 (1.3-2.2) | 2.0 (1.5-2.6) | 1.9 (1.4-2.4) | 2.5 (1.9-3.2) |
| long-term (2081-2100) | 1.7 (1.1-2.3) | 2.5 (1.8-3.2) | 2.8 (2.3-3.6) | 4.4 (3.2-5.5) |
| AR5 “near-term” (2016-2035) | 1.4 (1.0-1.9) | 1.4 (1.1-1.9) | 1.4 (0.9-1.8) | 1.5 (1.1-2.1) |
| AR5 “mid-term” (2046-2065) | 1.7 (1.2-2.2) | 2.1 (1.6-2.7) | 2.0 (1.5-2.5) | 2.7 (2.1-3.5) |
| 2020 (2011-2030) | 1.4 (1.0-1.8) | 1.3 (0.9-1.7) | 1.3 (0.9-1.7) | 1.4 (1.0-1.8) |
| 2030 (2021-2040) | 1.5 (1.1-2.0) | 1.6 (1.2-2.0) | 1.5 (1.0-1.9) | 1.7 (1.2-2.3) |
| 2040 (2031-2050) | 1.7 (1.2-2.2) | 1.8 (1.4-2.3) | 1.7 (1.2-2.1) | 2.1 (1.6-2.7) |
| 2050 (2041-2060) | 1.7 (1.3-2.2) | 2.0 (1.5-2.6) | 1.9 (1.4-2.4) | 2.5 (1.9-3.2) |
| 2060 (2051-2070) | 1.7 (1.2-2.3) | 2.2 (1.6-2.8) | 2.1 (1.6-2.6) | 2.9 (2.3-3.8) |
| 2070 (2061-2080) | 1.7 (1.2-2.3) | 2.3 (1.7-3.0) | 2.3 (1.9-2.9) | 3.4 (2.6-4.3) |
| 2080 (2071-2090) | 1.7 (1.1-2.3) | 2.4 (1.8-3.1) | 2.6 (2.1-3.3) | 3.9 (2.9-4.9) |
| 2090 (2081-2100) | 1.7 (1.1-2.3) | 2.5 (1.8-3.2) | 2.8 (2.3-3.6) | 4.4 (3.2-5.5) |
| 2100 (2091-2100) | 1.7 (1.0-2.3) | 2.5 (1.9-3.2) | 2.9 (2.4-3.7) | 4.6 (3.4-5.7) |

**[END TABLE 11.SM.1 HERE]**

## 11.SM.2 Methods used for the figures

### *11.SM.2.1 Overview*

This section provides additional methods used for the figures produced specifically for Chapter 11. These figures are either based on published observational data or data from the sixth phase of the Coupled Model Intercomparison Project (CMIP6) (Eyring et al., 2016). See also Appendix 11.A for additional information on the used data.

### *11.SM.2.2 Climate indices*

Figure 11.11 and Figure 11.17 show trends of observed climate indices. Most of the shown climate indices are defined by the expert group on Climate Change Detection and Indices (ETCCDI) (Karl, Nicholls, &

Ghazi, 1999; Peterson et al., 2001), which were calculated on an annual basis according to the standard procedure. The used ETCCDI indices include hottest daily maximum temperature (TXx), hottest daily minimum temperature (TNn), the annual number of days when daily maximum temperature exceeds its 90th percentile from a base period (TX90p), and consecutive dry days (CDD). Further, trends in the Standardized Precipitation Index (SPI) and the Standardized Precipitation-Evapotranspiration Index (SPEI) at an accumulation scale of 12 months (SPI-12 and SPEI-12) are shown.

Model data from CMIP6 is shown in Figure 11.2, Figure 11.9, Figure 11.16, Figure 11.18, and Figure 11.19 (all other figures showing CMIP6 data are taken from publications). The following indices were computed for the figures: TXx, TNn, annual maximum daily precipitation (Rx1day), and CDD. In addition, total soil moisture (summed over the whole column), a soil-moisture based drought frequency index and a soil-moisture based drought intensity index were analyzed. For soil moisture data from CMIP6 all values are masked over the ocean, land ice, Antarctica, and Greenland.

#### *11.SM.2.2.1 Soil-moisture based drought indices*

The soil moisture-based drought indices are displayed in Figure 11.18 and Figure 11.19. Both drought indices are calculated for annual mean and seasonal mean data. First, soil moisture is normalized subtracting the mean over 1850-1900 and dividing it by the standard deviation over the same time period. For the drought frequency the $10^{th}$ quantile over the period 1850-1900 is calculated and all soil moisture values below this threshold are defined as drought. Finally, the drought frequency for a certain time period is given as fraction of years or season under drought. Time periods are selected for certain global warming levels (see below), where 30-year periods are used. For the drought intensity we calculate the $10^{th}$ quantile over the period 1850-1900 and for certain global warming levels.

### *11.SM.2.3 Observed trends in TXx, TNn, TX90p, and CDD*

Observed trends in TXx, TNn, TX90p, and CDD are shown in Figure 11.9 and Figure 11.17 (a). The data is obtained from (Dunn et al., 2020) and the calculation of the trends and the selection of valid grid points follows the method outlined in (Dunn et al., 2020). In contrast to (Dunn et al., 2020), however, we show trends for the time period 1960-2018 and the significance was calculated the p = 0.1 level.

### *11.SM.2.4 Observed trends in SPI and SPEI*

Trend in SPI and SPEI are shown in Figure 11.17 (b) and (c). The data is obtained from (Spinoni et al., 2019) and trends were calculated by linear regression analysis. Time was the independent variable and the drought severity the dependent variable. The slope of the regression indicates the amount of change. Data was available for 5-year periods. Significance was analyzed by means of the nonparametric Mann–Kendall statistic that measures the degree to which a trend is consistently increasing or decreasing. Autocorrelation was considered in the trend analysis returning the corrected p values after accounting for temporal pseudo replication (Hamed & Ramachandra Rao, 1998).

### *11.SM.2.5 CMIP6 data*

CMIP6 data is specifically analysed for Chapter 11 in Figure 11.3, Figure 11.11, Figure 11.16, Figure 11.18, Figure 11.19, and FAQ 11.1 Figure 1 (all other figures showing CMIP6 data are taken from publications). For these figures historical simulations (1850 to 2015) are combined with the shared socioeconomic pathways (SSPs) projections (O'Neill et al., 2016). The following SSPs were chosen: SSP1-1.9, SSP1-2.6, SSP2-4.5, SSP3-7.0, and SSP5-8.5. This subset of SSPs includes all Tier 1 scenarios (SSP1-2.6, SSP2-4.5, SSP3-7.0, and SSP5-8.5) and additionally the scenario most consistent with a stabilisation at +1.5°C at the end of the 21st century as aimed in the Paris Agreement (SSP1-1.9) (O'Neill et al., 2016).

A "ensemble of opportunity" is used, including all available models that pass very basic checks. Only the first ensemble member of each model is used, and all models are weighted equally. In order to be used, models must (i) provide the corresponding variable, (ii) run from 1850 to 2099, (iii) must not have duplicate time steps or missing time steps, and (iv) must not have any obvious data errors (e.g., negative soil moisture, or an inconsistency between historical simulation and projection). The exact model ensemble used for each figure is given in Appendix 11.

### *11.SM.2.6 Global warming levels*

Global warming levels expressed as changes in global mean surface air temperature (GSAT) relative to the 1850-1900 period are used to display changes in climate indices in Chapter 12. See Cross-Chapter Box 11.1 for details. Global warming levels are computed as outlined in (Hauser, Engelbrecht, & Fischer, 2021) using 20-year periods, except for the soil moisture-based drought indices where 30-year periods are used.

### *11.SM.2.7 Scaling of regional climate indices*

Figure 11.3 shows regional mean changes in TXx as function of GWL. To obtain regional averages of climate indices they are first calculated on the original model grid. Then regional averages are computed, weighting each grid cell with its area (if available, else the grid cells are weighted by the cosine of the latitude). Finally, the mean of the climate index is calculated at GWLs between 0.1°C and 5°C in steps of 0.1°C. In Figure 11.3 TXx scaling is shown for individual models (panel a), as multi-model mean for selected SSPs (panel a), or as multi model mean over all used SSPs (see Section 11.SM.1.5; all panels).

### *11.SM.2.8 Maps at global warming levels*

Maps of climate indices at global warming levels are shown in Figure 11.11, Figure 11.16, and Figure 11.19. The response of the climate indices is calculated at three different global warming levels: 1.5°C, 2°C, and 4°C. The model data is interpolated on a common 2.5° x 2.5° latitude-longitude grid using a conservative regridding scheme. All models from each of the five used SSPs (see Section 11.SM.1.5) that reaches the warming level is included in the ensemble, thus each model can contribute more than one data point for a given warming level. Finally, the median over all models is calculated.

### *11.SM.2.9 Warmest three-month season*

FAQ 11.1, Figure 1 displays changes in mean precipitation and temperatures for the warmest three consecutive months, which corresponds to summer in mid- to high-latitudes. The warmest months were determined for each model and grid point individually from the period 1850-1900. The warmest-three month season was kept constant over the whole period of the simulation.

## 11.SM.3 Multi-model-median regional means at warming levels for selected indices

**[START TABLE 11.SM.2 HERE]**

**Table 11.SM.2:** Multi model median regional changes in annual hottest daily maximum temperature (TXx) for the globe, global ocean, global land, global land excluding Antarctica, and the AR6 land regions for three global warming levels (GWL) as simulated by CMIP6 models under the forcing scenarios SSP1-1.9, SSP1-2.6, SSP2-4.5, SSP3-7.0, and SSP5-8.5. Regional averages are calculated from the original model grid using the grid cell area as weights if available, else the grid cells where weighted with the cosine of the latitude. See also Hauser (2021).

| | Projections | | |
|---|---|---|---|
| | +1.5°C GWL | +2.0°C GWL | +4.0°C GWL |
| Global (global) | 1.40°C | 1.90°C | 3.93°C |
| Ocean (ocean) | 1.22°C | 1.64°C | 3.40°C |
| Land (land) | 1.88°C | 2.55°C | 5.25°C |
| Land w/o Antarctica (land_wo_antarctica) | 1.94°C | 2.65°C | 5.47°C |
| Greenland/Iceland (GIC) | 1.21°C | 1.54°C | 2.97°C |
| N.W.North-America (NWN) | 1.93°C | 2.55°C | 5.23°C |
| N.E.North-America (NEN) | 2.22°C | 2.99°C | 5.96°C |
| W.North-America (WNA) | 2.24°C | 3.01°C | 5.95°C |
| C.North-America (CNA) | 2.33°C | 3.12°C | 5.71°C |
| E.North-America (ENA) | 1.97°C | 2.72°C | 5.68°C |
| N.Central-America (NCA) | 1.81°C | 2.45°C | 4.84°C |
| S.Central-America (SCA) | 1.77°C | 2.32°C | 4.76°C |
| Caribbean (CAR) | 1.59°C | 2.11°C | 4.33°C |
| N.W.South-America (NWS) | 1.87°C | 2.52°C | 5.41°C |
| N.South-America (NSA) | 2.24°C | 2.98°C | 6.35°C |
| N.E.South-America (NES) | 2.04°C | 2.69°C | 5.39°C |
| South-American-Monsoon (SAM) | 2.58°C | 3.44°C | 7.33°C |
| S.W.South-America (SWS) | 1.91°C | 2.50°C | 4.83°C |
| S.E.South-America (SES) | 1.95°C | 2.57°C | 5.45°C |
| S.South-America (SSA) | 1.91°C | 2.41°C | 4.52°C |
| N.Europe (NEU) | 1.81°C | 2.54°C | 4.99°C |
| West&Central-Europe (WCE) | 2.33°C | 3.20°C | 6.23°C |
| E.Europe (EEU) | 2.20°C | 2.97°C | 5.76°C |
| Mediterranean (MED) | 2.50°C | 3.30°C | 6.61°C |
| Sahara (SAH) | 2.39°C | 3.09°C | 6.03°C |
| Western-Africa (WAF) | 1.62°C | 2.19°C | 4.53°C |
| Central-Africa (CAF) | 1.56°C | 2.12°C | 4.67°C |
| N.Eastern-Africa (NEAF) | 1.66°C | 2.24°C | 4.45°C |
| S.Eastern-Africa (SEAF) | 1.59°C | 2.08°C | 4.24°C |
| W.Southern-Africa (WSAF) | 2.03°C | 2.73°C | 5.29°C |
| E.Southern-Africa (ESAF) | 1.93°C | 2.66°C | 5.45°C |
| Madagascar (MDG) | 1.63°C | 2.17°C | 4.65°C |
| Russian-Arctic (RAR) | 1.99°C | 2.77°C | 5.52°C |

| | | | |
|---|---|---|---|
| W.Siberia (WSB) | 2.11°C | 2.80°C | 5.09°C |
| E.Siberia (ESB) | 2.09°C | 2.87°C | 5.97°C |
| Russian-Far-East (RFE) | 1.93°C | 2.69°C | 5.45°C |
| W.C.Asia (WCA) | 2.34°C | 3.08°C | 6.09°C |
| E.C.Asia (ECA) | 2.17°C | 2.92°C | 5.70°C |
| Tibetan-Plateau (TIB) | 1.65°C | 2.32°C | 4.55°C |
| E.Asia (EAS) | 1.50°C | 2.19°C | 4.66°C |
| Arabian-Peninsula (ARP) | 2.29°C | 3.06°C | 5.99°C |
| S.Asia (SAS) | 1.20°C | 1.81°C | 4.12°C |
| S.E.Asia (SEA) | 1.40°C | 1.85°C | 4.23°C |
| N.Australia (NAU) | 1.59°C | 2.03°C | 3.99°C |
| C.Australia (CAU) | 1.95°C | 2.53°C | 4.85°C |
| E.Australia (EAU) | 1.60°C | 2.13°C | 4.25°C |
| S.Australia (SAU) | 1.71°C | 2.30°C | 4.48°C |
| New-Zealand (NZ) | 1.36°C | 1.82°C | 3.68°C |
| E.Antarctica (EAN) | 1.18°C | 1.65°C | 3.22°C |
| W.Antarctica (WAN) | 0.62°C | 0.84°C | 1.81°C |

**[END TABLE 11.SM.2 HERE]**

**[START TABLE 11.SM.3 HERE]**

**Table 11.SM.3:** As Table 11.SM.2 but for changes in the annual hottest daily minimum temperature (TNn).

| | Projections | | |
|---|---|---|---|
| | +1.5°C GWL | +2.0°C GWL | +4.0°C GWL |
| Global (global) | 1.99°C | 2.63°C | 5.19°C |
| Ocean (ocean) | 1.74°C | 2.28°C | 4.53°C |
| Land (land) | 2.64°C | 3.48°C | 6.80°C |
| Land w/o Antarctica (land_wo_antarctica) | 2.73°C | 3.59°C | 7.05°C |
| Greenland/Iceland (GIC) | 3.88°C | 4.99°C | 9.90°C |
| N.W.North-America (NWN) | 4.46°C | 6.01°C | 12.38°C |
| N.E.North-America (NEN) | 4.85°C | 6.37°C | 13.22°C |
| W.North-America (WNA) | 2.80°C | 3.92°C | 7.80°C |
| C.North-America (CNA) | 2.54°C | 3.76°C | 7.82°C |
| E.North-America (ENA) | 3.67°C | 4.99°C | 9.72°C |
| N.Central-America (NCA) | 1.79°C | 2.36°C | 5.03°C |

| | | | |
|---|---|---|---|
| S.Central-America (SCA) | 1.59°C | 2.08°C | 3.87°C |
| Caribbean (CAR) | 1.51°C | 2.02°C | 3.74°C |
| N.W.South-America (NWS) | 1.87°C | 2.43°C | 4.89°C |
| N.South-America (NSA) | 1.81°C | 2.36°C | 4.62°C |
| N.E.South-America (NES) | 1.79°C | 2.35°C | 4.40°C |
| South-American-Monsoon (SAM) | 1.78°C | 2.41°C | 4.79°C |
| S.W.South-America (SWS) | 2.04°C | 2.66°C | 5.90°C |
| S.E.South-America (SES) | 1.42°C | 1.80°C | 3.75°C |
| S.South-America (SSA) | 2.14°C | 2.79°C | 6.40°C |
| N.Europe (NEU) | 5.08°C | 6.46°C | 10.59°C |
| West&Central-Europe (WCE) | 4.80°C | 6.06°C | 11.04°C |
| E.Europe (EEU) | 4.90°C | 6.16°C | 11.33°C |
| Mediterranean (MED) | 2.20°C | 2.79°C | 5.28°C |
| Sahara (SAH) | 2.15°C | 2.74°C | 5.35°C |
| Western-Africa (WAF) | 2.04°C | 2.65°C | 4.63°C |
| Central-Africa (CAF) | 1.89°C | 2.52°C | 4.94°C |
| N.Eastern-Africa (NEAF) | 1.95°C | 2.51°C | 4.90°C |
| S.Eastern-Africa (SEAF) | 1.83°C | 2.36°C | 4.54°C |
| W.Southern-Africa (WSAF) | 1.77°C | 2.40°C | 4.75°C |
| E.Southern-Africa (ESAF) | 1.78°C | 2.28°C | 4.42°C |
| Madagascar (MDG) | 1.63°C | 2.08°C | 3.93°C |
| Russian-Arctic (RAR) | 4.81°C | 6.44°C | 12.78°C |
| W.Siberia (WSB) | 4.05°C | 5.52°C | 10.26°C |
| E.Siberia (ESB) | 3.42°C | 4.55°C | 8.62°C |
| Russian-Far-East (RFE) | 4.10°C | 5.56°C | 11.17°C |
| W.C.Asia (WCA) | 2.75°C | 3.56°C | 7.32°C |
| E.C.Asia (ECA) | 2.26°C | 2.97°C | 5.77°C |
| Tibetan-Plateau (TIB) | 2.42°C | 2.97°C | 5.74°C |
| E.Asia (EAS) | 2.11°C | 2.95°C | 5.83°C |
| Arabian-Peninsula (ARP) | 2.30°C | 2.84°C | 5.96°C |
| S.Asia (SAS) | 1.79°C | 2.48°C | 5.23°C |
| S.E.Asia (SEA) | 1.46°C | 1.96°C | 4.10°C |
| N.Australia (NAU) | 1.97°C | 2.57°C | 5.08°C |
| C.Australia (CAU) | 1.62°C | 2.06°C | 4.22°C |
| E.Australia (EAU) | 1.37°C | 1.89°C | 3.76°C |

| | | | |
|---|---|---|---|
| S.Australia (SAU) | 1.10°C | 1.52°C | 2.95°C |
| New-Zealand (NZ) | 1.33°C | 1.74°C | 3.41°C |
| E.Antarctica (EAN) | 1.64°C | 2.17°C | 4.38°C |
| W.Antarctica (WAN) | 2.26°C | 2.95°C | 5.58°C |

**[END TABLE 11.SM.3 HERE]**

**[START TABLE 11.SM.4 HERE]**

**Table 11.SM.4:** As Table 11.SM.2 but for changes in annual maximum daily precipitation (Rx1day).

| | Projections | | |
|---|---|---|---|
| | +1.5°C GWL | +2.0°C GWL | +4.0°C GWL |
| Global (global) | 6.96% | 9.96% | 24.02% |
| Ocean (ocean) | 6.49% | 9.12% | 22.81% |
| Land (land) | 8.42% | 11.42% | 26.58% |
| Land w/o Antarctica (land_wo_antarctica) | 8.37% | 11.30% | 26.56% |
| Greenland/Iceland (GIC) | 11.76% | 15.66% | 33.77% |
| N.W.North-America (NWN) | 9.06% | 12.49% | 27.28% |
| N.E.North-America (NEN) | 9.99% | 13.29% | 26.54% |
| W.North-America (WNA) | 7.09% | 8.01% | 16.89% |
| C.North-America (CNA) | 7.39% | 9.91% | 17.93% |
| E.North-America (ENA) | 8.05% | 10.67% | 22.03% |
| N.Central-America (NCA) | 5.28% | 7.29% | 15.89% |
| S.Central-America (SCA) | 2.24% | 4.55% | 8.36% |
| Caribbean (CAR) | 3.38% | 2.56% | 4.17% |
| N.W.South-America (NWS) | 8.05% | 11.05% | 26.81% |
| N.South-America (NSA) | 6.26% | 8.31% | 17.42% |
| N.E.South-America (NES) | 7.26% | 9.35% | 27.46% |
| South-American-Monsoon (SAM) | 5.73% | 9.06% | 18.72% |
| S.W.South-America (SWS) | 1.64% | 2.50% | 3.15% |
| S.E.South-America (SES) | 8.45% | 11.91% | 24.59% |
| S.South-America (SSA) | 4.87% | 7.09% | 14.37% |
| N.Europe (NEU) | 9.33% | 11.55% | 23.21% |
| West&Central-Europe (WCE) | 7.48% | 9.51% | 18.37% |
| E.Europe (EEU) | 7.28% | 8.78% | 18.88% |
| Mediterranean (MED) | 3.61% | 4.42% | 8.88% |

| | | | |
|---|---|---|---|
| Sahara (SAH) | 19.43% | 24.07% | 45.50% |
| Western-Africa (WAF) | 18.26% | 19.74% | 46.24% |
| Central-Africa (CAF) | 14.36% | 18.24% | 47.14% |
| N.Eastern-Africa (NEAF) | 13.38% | 17.42% | 46.12% |
| S.Eastern-Africa (SEAF) | 11.23% | 15.66% | 41.36% |
| W.Southern-Africa (WSAF) | 4.68% | 6.40% | 9.36% |
| E.Southern-Africa (ESAF) | 5.95% | 9.25% | 20.87% |
| Madagascar (MDG) | 6.28% | 8.18% | 22.26% |
| Russian-Arctic (RAR) | 10.95% | 15.89% | 31.50% |
| W.Siberia (WSB) | 8.22% | 10.53% | 19.17% |
| E.Siberia (ESB) | 8.11% | 11.36% | 24.80% |
| Russian-Far-East (RFE) | 10.54% | 15.40% | 35.29% |
| W.C.Asia (WCA) | 9.14% | 11.48% | 24.16% |
| E.C.Asia (ECA) | 9.10% | 12.75% | 29.93% |
| Tibetan-Plateau (TIB) | 8.80% | 12.46% | 30.70% |
| E.Asia (EAS) | 7.28% | 10.76% | 28.69% |
| Arabian-Peninsula (ARP) | 11.07% | 17.46% | 43.04% |
| S.Asia (SAS) | 10.39% | 15.84% | 41.56% |
| S.E.Asia (SEA) | 6.77% | 10.57% | 33.37% |
| N.Australia (NAU) | 6.97% | 9.33% | 28.35% |
| C.Australia (CAU) | 5.82% | 7.06% | 15.27% |
| E.Australia (EAU) | 4.01% | 5.97% | 14.73% |
| S.Australia (SAU) | 5.84% | 6.53% | 14.18% |
| New-Zealand (NZ) | 8.21% | 12.11% | 25.55% |
| E.Antarctica (EAN) | 11.68% | 15.56% | 35.98% |
| W.Antarctica (WAN) | 8.42% | 11.47% | 23.65% |

**[END TABLE 11.SM.4 HERE]**

**[START TABLE 11.SM.5 HERE]**

**Table 11.SM.5:** As Table 11.SM.2 but for changes in annual maximum five-day precipitation (Rx5day).

| | Projections | | |
|---|---|---|---|
| | +1.5°C GWL | +2.0°C GWL | +4.0°C GWL |
| Global (global) | 5.24% | 7.45% | 18.94% |
| Ocean (ocean) | 4.77% | 6.74% | 17.92% |
| Land (land) | 6.13% | 8.54% | 20.76% |

| | | | |
|---|---|---|---|
| Land w/o Antarctica (land_wo_antarctica) | 6.07% | 8.42% | 20.52% |
| Greenland/Iceland (GIC) | 11.38% | 15.12% | 34.24% |
| N.W.North-America (NWN) | 7.87% | 11.44% | 24.67% |
| N.E.North-America (NEN) | 8.83% | 11.51% | 22.90% |
| W.North-America (WNA) | 5.08% | 6.24% | 11.99% |
| C.North-America (CNA) | 5.04% | 7.74% | 14.33% |
| E.North-America (ENA) | 6.06% | 8.47% | 18.41% |
| N.Central-America (NCA) | 3.30% | 4.34% | 10.77% |
| S.Central-America (SCA) | 0.23% | 1.02% | 1.72% |
| Caribbean (CAR) | 0.21% | -0.18% | -1.94% |
| N.W.South-America (NWS) | 5.65% | 7.47% | 17.66% |
| N.South-America (NSA) | 3.91% | 5.48% | 11.10% |
| N.E.South-America (NES) | 6.19% | 8.32% | 20.24% |
| South-American-Monsoon (SAM) | 4.56% | 7.04% | 11.26% |
| S.W.South-America (SWS) | -0.96% | -0.24% | -1.75% |
| S.E.South-America (SES) | 6.75% | 9.53% | 21.74% |
| S.South-America (SSA) | 2.71% | 3.92% | 8.37% |
| N.Europe (NEU) | 7.44% | 9.42% | 18.64% |
| West&Central-Europe (WCE) | 6.26% | 8.05% | 15.30% |
| E.Europe (EEU) | 6.20% | 8.10% | 16.22% |
| Mediterranean (MED) | 1.02% | 1.36% | 2.24% |
| Sahara (SAH) | 17.35% | 21.19% | 42.94% |
| Western-Africa (WAF) | 13.91% | 16.20% | 31.56% |
| Central-Africa (CAF) | 11.01% | 14.67% | 33.88% |
| N.Eastern-Africa (NEAF) | 9.63% | 14.11% | 35.71% |
| S.Eastern-Africa (SEAF) | 7.35% | 9.84% | 29.05% |
| W.Southern-Africa (WSAF) | 2.33% | 3.13% | 4.53% |
| E.Southern-Africa (ESAF) | 4.40% | 6.25% | 16.42% |
| Madagascar (MDG) | 4.93% | 5.46% | 15.03% |
| Russian-Arctic (RAR) | 10.02% | 14.39% | 29.14% |
| W.Siberia (WSB) | 7.18% | 9.21% | 16.93% |
| E.Siberia (ESB) | 6.32% | 9.03% | 21.07% |
| Russian-Far-East (RFE) | 8.74% | 12.76% | 28.94% |
| W.C.Asia (WCA) | 7.42% | 9.60% | 20.98% |
| E.C.Asia (ECA) | 8.48% | 11.50% | 26.81% |

| | | | |
|---|---|---|---|
| Tibetan-Plateau (TIB) | 5.78% | 9.01% | 26.12% |
| E.Asia (EAS) | 4.08% | 6.38% | 22.49% |
| Arabian-Peninsula (ARP) | 10.86% | 16.94% | 45.56% |
| S.Asia (SAS) | 8.55% | 13.32% | 34.05% |
| S.E.Asia (SEA) | 4.56% | 7.44% | 23.12% |
| N.Australia (NAU) | 5.98% | 7.14% | 21.51% |
| C.Australia (CAU) | 4.55% | 5.50% | 11.15% |
| E.Australia (EAU) | 2.48% | 3.81% | 10.23% |
| S.Australia (SAU) | 3.04% | 2.80% | 8.64% |
| New-Zealand (NZ) | 5.85% | 8.08% | 18.04% |
| E.Antarctica (EAN) | 10.74% | 14.50% | 34.17% |
| W.Antarctica (WAN) | 7.75% | 10.22% | 21.85% |

**[END TABLE 11.SM.5 HERE]**

**[START TABLE 11.SM.6 HERE]**

**Table 11.SM.6:** As Table 11.SM.2 but for changes in annual mean total soil moisture (summed over the whole soil column).

| | Projections | | |
|---|---|---|---|
| | +1.5°C GWL | +2.0°C GWL | +4.0°C GWL |
| Global (global) | - | - | - |
| Ocean (ocean) | - | - | - |
| Land (land) | - | - | - |
| Land w/o Antarctica (land_wo_antarctica) | -0.93σ | -1.63σ | -3.53σ |
| Greenland/Iceland (GIC) | -0.54σ | -0.50σ | -2.04σ |
| N.W.North-America (NWN) | -0.02σ | 0.34σ | -2.72σ |
| N.E.North-America (NEN) | -1.00σ | -0.77σ | -2.21σ |
| W.North-America (WNA) | -0.53σ | -0.72σ | -1.63σ |
| C.North-America (CNA) | -1.28σ | -1.14σ | -1.59σ |
| E.North-America (ENA) | -0.35σ | -0.32σ | -0.76σ |
| N.Central-America (NCA) | -0.94σ | -1.04σ | -1.52σ |
| S.Central-America (SCA) | -1.40σ | -1.40σ | -3.42σ |
| Caribbean (CAR) | -0.54σ | -0.69σ | -1.22σ |
| N.W.South-America (NWS) | -1.20σ | -1.33σ | -3.50σ |
| N.South-America (NSA) | -1.21σ | -1.66σ | -3.05σ |

| | | | |
|---|---|---|---|
| N.E.South-America (NES) | -0.38σ | -0.31σ | -0.50σ |
| South-American-Monsoon (SAM) | -1.34σ | -1.71σ | -3.81σ |
| S.W.South-America (SWS) | -2.33σ | -2.91σ | -4.83σ |
| S.E.South-America (SES) | 0.16σ | 0.32σ | -0.11σ |
| S.South-America (SSA) | -1.22σ | -1.58σ | -2.10σ |
| N.Europe (NEU) | 0.42σ | 0.16σ | -0.28σ |
| West&Central-Europe (WCE) | 0.05σ | -0.11σ | -0.72σ |
| E.Europe (EEU) | 0.55σ | 0.38σ | 0.59σ |
| Mediterranean (MED) | -2.03σ | -2.75σ | -4.18σ |
| Sahara (SAH) | 1.31σ | 1.59σ | 3.59σ |
| Western-Africa (WAF) | 2.14σ | 2.44σ | 2.68σ |
| Central-Africa (CAF) | 1.76σ | 2.03σ | 2.57σ |
| N.Eastern-Africa (NEAF) | 1.40σ | 2.27σ | 3.78σ |
| S.Eastern-Africa (SEAF) | 0.70σ | 1.14σ | 2.08σ |
| W.Southern-Africa (WSAF) | -0.93σ | -1.21σ | -2.54σ |
| E.Southern-Africa (ESAF) | -0.66σ | -0.82σ | -1.89σ |
| Madagascar (MDG) | -0.09σ | -0.28σ | -1.01σ |
| Russian-Arctic (RAR) | 0.80σ | 0.88σ | -1.28σ |
| W.Siberia (WSB) | 1.22σ | 1.24σ | 1.43σ |
| E.Siberia (ESB) | 0.09σ | 0.11σ | 0.99σ |
| Russian-Far-East (RFE) | -0.20σ | 0.00σ | -0.04σ |
| W.C.Asia (WCA) | 0.04σ | 0.25σ | 0.15σ |
| E.C.Asia (ECA) | 0.13σ | 0.29σ | 1.27σ |
| Tibetan-Plateau (TIB) | -0.16σ | -0.48σ | -1.39σ |
| E.Asia (EAS) | -0.30σ | -0.23σ | -0.35σ |
| Arabian-Peninsula (ARP) | 0.47σ | 0.74σ | 3.12σ |
| S.Asia (SAS) | 1.03σ | 1.33σ | 2.26σ |
| S.E.Asia (SEA) | -0.16σ | -0.07σ | -0.72σ |
| N.Australia (NAU) | -0.03σ | -0.03σ | -0.20σ |
| C.Australia (CAU) | -0.16σ | -0.21σ | -0.46σ |
| E.Australia (EAU) | -0.41σ | -0.46σ | -0.68σ |
| S.Australia (SAU) | -0.61σ | -0.96σ | -1.14σ |
| New-Zealand (NZ) | -0.23σ | -0.10σ | -0.17σ |
| E.Antarctica (EAN) | - | - | - |
| W.Antarctica (WAN) | - | - | - |

**[END TABLE 11.SM.6 HERE]**

**[START TABLE 11.SM.7 HERE]**

**Table 11.SM.7:** As Table 11.SM.2 but for changes in annual mean soil moisture in the upper 10 cm of the soil column.

| | Projections | | |
|---|---|---|---|
| | +1.5°C GWL | +2.0°C GWL | +4.0°C GWL |
| Global (global) | - | - | - |
| Ocean (ocean) | - | - | - |
| Land (land) | - | - | - |
| Land w/o Antarctica (land_wo_antarctica) | -1.40σ | -2.38σ | -6.72σ |
| Greenland/Iceland (GIC) | -0.92σ | -1.12σ | -3.14σ |
| N.W.North-America (NWN) | -0.00σ | -0.01σ | -0.93σ |
| N.E.North-America (NEN) | -0.45σ | -0.63σ | -2.14σ |
| W.North-America (WNA) | -0.70σ | -0.97σ | -1.66σ |
| C.North-America (CNA) | -0.59σ | -0.83σ | -1.50σ |
| E.North-America (ENA) | -0.78σ | -1.14σ | -2.64σ |
| N.Central-America (NCA) | -0.62σ | -0.76σ | -1.20σ |
| S.Central-America (SCA) | -1.04σ | -1.36σ | -3.43σ |
| Caribbean (CAR) | -0.54σ | -0.66σ | -1.44σ |
| N.W.South-America (NWS) | -0.95σ | -1.23σ | -3.22σ |
| N.South-America (NSA) | -1.06σ | -1.44σ | -2.92σ |
| N.E.South-America (NES) | -1.01σ | -1.25σ | -2.59σ |
| South-American-Monsoon (SAM) | -1.58σ | -1.92σ | -3.36σ |
| S.W.South-America (SWS) | -1.53σ | -1.87σ | -2.89σ |
| S.E.South-America (SES) | -0.39σ | -0.37σ | -0.96σ |
| S.South-America (SSA) | -1.25σ | -1.32σ | -2.46σ |
| N.Europe (NEU) | -0.88σ | -1.39σ | -3.79σ |
| West&Central-Europe (WCE) | -0.81σ | -1.23σ | -1.97σ |
| E.Europe (EEU) | -0.48σ | -0.77σ | -1.59σ |
| Mediterranean (MED) | -1.45σ | -2.03σ | -3.62σ |
| Sahara (SAH) | 0.70σ | 0.69σ | 1.35σ |
| Western-Africa (WAF) | 1.33σ | 1.24σ | 1.54σ |
| Central-Africa (CAF) | 0.92σ | 1.11σ | 1.52σ |
| N.Eastern-Africa (NEAF) | 0.56σ | 0.74σ | 2.22σ |

| | | | |
|---|---|---|---|
| S.Eastern-Africa (SEAF) | 0.17σ | 0.29σ | 0.62σ |
| W.Southern-Africa (WSAF) | -0.93σ | -1.16σ | -2.08σ |
| E.Southern-Africa (ESAF) | -0.86σ | -1.11σ | -2.41σ |
| Madagascar (MDG) | -0.51σ | -0.82σ | -1.68σ |
| Russian-Arctic (RAR) | 0.44σ | 0.37σ | -1.21σ |
| W.Siberia (WSB) | 0.21σ | 0.08σ | -0.06σ |
| E.Siberia (ESB) | 0.62σ | 0.65σ | 1.06σ |
| Russian-Far-East (RFE) | -0.07σ | -0.39σ | -1.51σ |
| W.C.Asia (WCA) | -0.21σ | -0.38σ | -0.55σ |
| E.C.Asia (ECA) | 0.66σ | 0.97σ | 2.38σ |
| Tibetan-Plateau (TIB) | 0.15σ | 0.25σ | -0.00σ |
| E.Asia (EAS) | -0.43σ | -0.49σ | -0.81σ |
| Arabian-Peninsula (ARP) | 0.20σ | 0.25σ | 0.64σ |
| S.Asia (SAS) | 0.71σ | 0.80σ | 1.41σ |
| S.E.Asia (SEA) | -0.51σ | -0.34σ | -1.12σ |
| N.Australia (NAU) | -0.14σ | -0.14σ | -0.24σ |
| C.Australia (CAU) | -0.16σ | -0.21σ | -0.54σ |
| E.Australia (EAU) | -0.42σ | -0.41σ | -0.67σ |
| S.Australia (SAU) | -0.57σ | -0.62σ | -0.98σ |
| New-Zealand (NZ) | -0.37σ | -0.39σ | -0.37σ |
| E.Antarctica (EAN) | - | - | - |
| W.Antarctica (WAN) | - | - | - |

**[END TABLE 11.SM.7 HERE]**

**[START TABLE 11.SM.8 HERE]**

**Table 11.SM.8:** As Table 11.SM.2 but for changes in consecutive dry days (CDD).

| | Projections | | |
|---|---|---|---|
| | +1.5°C GWL | +2.0°C GWL | +4.0°C GWL |
| Global (global) | 0.91day | 0.96day | 1.48day |
| Ocean (ocean) | 1.65day | 1.80day | 3.24day |
| Land (land) | -0.61day | -0.71day | -2.11day |
| Land w/o Antarctica (land_wo_antarctica) | 0.37day | 0.46day | 0.73day |
| Greenland/Iceland (GIC) | -3.46day | -4.85day | -8.52day |
| N.W.North-America (NWN) | -0.91day | -1.47day | -2.51day |

| | | | |
|---|---|---|---|
| N.E.North-America (NEN) | -1.94day | -2.51day | -5.16day |
| W.North-America (WNA) | 0.92day | 1.00day | 0.25day |
| C.North-America (CNA) | 0.37day | 0.32day | 1.20day |
| E.North-America (ENA) | 0.19day | 0.27day | 0.84day |
| N.Central-America (NCA) | 3.46day | 4.04day | 8.48day |
| S.Central-America (SCA) | 2.63day | 4.01day | 9.50day |
| Caribbean (CAR) | 1.27day | 1.56day | 3.29day |
| N.W.South-America (NWS) | 1.48day | 1.78day | 3.99day |
| N.South-America (NSA) | 6.65day | 9.37day | 19.56day |
| N.E.South-America (NES) | 15.14day | 18.63day | 28.44day |
| South-American-Monsoon (SAM) | 8.90day | 10.34day | 19.05day |
| S.W.South-America (SWS) | 4.11day | 5.90day | 10.09day |
| S.E.South-America (SES) | 2.54day | 2.90day | 3.99day |
| S.South-America (SSA) | 0.91day | 1.16day | 2.09day |
| N.Europe (NEU) | -0.27day | -0.06day | 0.25day |
| West&Central-Europe (WCE) | 1.03day | 1.82day | 4.09day |
| E.Europe (EEU) | 0.33day | 1.08day | 1.83day |
| Mediterranean (MED) | 4.96day | 7.13day | 16.07day |
| Sahara (SAH) | -8.12day | -7.92day | -15.07day |
| Western-Africa (WAF) | -1.07day | -0.43day | -0.79day |
| Central-Africa (CAF) | -1.39day | -1.05day | -1.29day |
| N.Eastern-Africa (NEAF) | -1.89day | -2.63day | -9.28day |
| S.Eastern-Africa (SEAF) | 2.11day | 2.50day | 0.89day |
| W.Southern-Africa (WSAF) | 9.81day | 14.63day | 28.84day |
| E.Southern-Africa (ESAF) | 8.76day | 11.29day | 23.51day |
| Madagascar (MDG) | 5.98day | 8.23day | 17.35day |
| Russian-Arctic (RAR) | -3.73day | -4.75day | -7.41day |
| W.Siberia (WSB) | -0.83day | -1.02day | -0.16day |
| E.Siberia (ESB) | -3.46day | -4.73day | -8.75day |
| Russian-Far-East (RFE) | -2.55day | -3.25day | -5.71day |
| W.C.Asia (WCA) | -1.07day | -0.42day | -0.55day |
| E.C.Asia (ECA) | -6.75day | -8.59day | -14.95day |
| Tibetan-Plateau (TIB) | -1.48day | -1.66day | -5.48day |
| E.Asia (EAS) | 1.42day | 0.93day | 1.08day |
| Arabian-Peninsula (ARP) | -6.79day | -8.04day | -19.71day |

| | | | |
|---|---|---|---|
| S.Asia (SAS) | -2.13day | -2.13day | -8.97day |
| S.E.Asia (SEA) | 3.11day | 3.29day | 7.74day |
| N.Australia (NAU) | 6.61day | 5.46day | 8.13day |
| C.Australia (CAU) | 3.76day | 4.06day | 9.81day |
| E.Australia (EAU) | 4.46day | 4.37day | 9.06day |
| S.Australia (SAU) | 2.93day | 3.38day | 7.07day |
| New-Zealand (NZ) | 0.11day | 0.17day | 0.32day |
| E.Antarctica (EAN) | -12.44day | -16.04day | -34.35day |
| W.Antarctica (WAN) | -2.09day | -2.79day | -5.22day |

**[END TABLE 11.SM.8 HERE]**

**[START FIGURE 11.SM.1 HERE]**

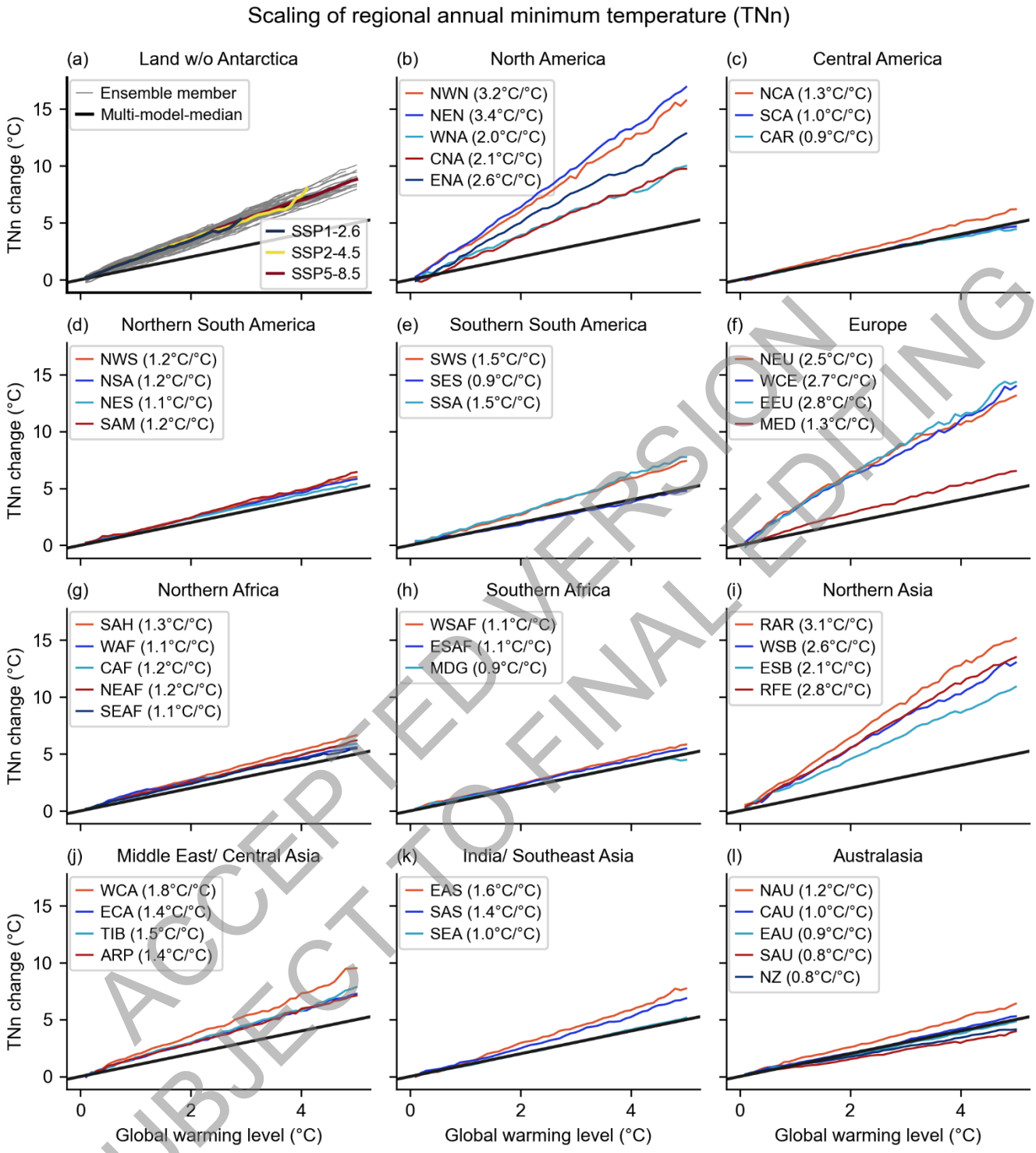




**Figure 11.SM.1:** As Figure 11.2 but for the annual minimum temperature (TNn).

**[END FIGURE 11.SM.1 HERE]**

## 11.SM.4 Data Table

**[START TABLE 11.SM.9 HERE]**

**Table 11.SM.9:** Input Data Table. Input datasets and code used to create chapter figures.

| Figure number | Dataset / Code name | Type | Filename / Specificities | License type | Dataset / Code citation | Dataset / Code URL | Related publications / Software used | Notes |
|---|---|---|---|---|---|---|---|---|
| **Figure 11.2** | HadEX3 (v3.0.2) - TXx | Input dataset | HadEX3_TXx_1901-2018_ADW_61-90_1.25x1.875deg.nc | Open Government License http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/ | | https://www.metoffice.gov.uk/hadobs/hadex3/ | (Dunn et | |
| | HadEX3 (v3.0.2) - TNn | Input dataset | HadEX3_TNn_1901-2018_ADW_61-90_1.25x1.875deg.nc | Open Government License | | https://www.metoffice.gov.uk/hadobs/hadex3/ | (Dunn et | |
| | Global average annual mean temperature | Input dataset | glob_temp.csv | | | | Section 2.3.1.1.3 | Data provided by from Chapter 2. |
| | Land average annual mean temperature | Input dataset | land_temp.csv | | | | Section 2.3.1.1.3 | Data provided by from Chapter 2. |

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| | Figure 11.2 code | Code | Figure_11.2_obs_ts_plots.ipynb | | | | | |
| **Figure 11.3** | Figure 11.3 code | Code | Figure_11.3_TXx_scaling.ipynb | | | | | |
| **Box 11.1, Figure 1** | Changes in annual maximum precipitation | Input dataset | pfahl_2017.nc | | | | (Pfahl, | Data provided by Stephan Pfahl. |
| | Box 11.1, Figure 1 code | Code | Box_11.1_Figure_1_Pfahl_2017.ipynb | | | | | |
| **Figure 11.6** | Figure 11.6 input dataset | Input dataset | Changes in txx_baseline0deg.xlsx | | | | (Li et al., 2020) | Figure created by Chao Li. |
| **Figure 11.7** | Figure 11.7 input dataset | Input dataset | Changes in rx1day_baseline0deg.xlsx | | | | (Li et al., 2020) | Figure created by Chao Li. |
| **Figure 11.9** | HadEX3 (v3.0.2) - TXx | Input dataset | HadEX3_TXx_1901-2018_ADW_61- | Open Government License | | https://www.metoffice.gov.uk/hadobs/hadex3/ | (Dunn et al., 2020) | |

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| | | | 90_1.25x1.875deg.nc | | | | | |
| | HadEX3 (v3.0.2) – TX90p | Input dataset | HadEX3_TX90p_1901-2018_ADW_61-90_1.25x1.875deg.nc | Open Government License | | https://www.metoffice.gov.uk/hadobs/hadex3/ | (Dunn et al., 2020) | Converted from % to days per year. |
| | HadEX3 (v3.0.2) - TNn | Input dataset | HadEX3_TNn_1901-2018_ADW_61-90_1.25x1.875deg.nc | Open Government License | | https://www.metoffice.gov.uk/hadobs/hadex3/ | (Dunn et | |
| | Figure 11.9 code | Code | Figure_11.9_HadEX3_maps.ipynb | | | | | |
| **Figure 11.10** | CMIP6 data | Input dataset | TXx_TNn_error_CMIP6.nc | | | | (Wehner, Gleckler, & Lee, 2020) | Data provided by Michael Wehner.. |
| | Figure 11.10 | Code | Figure_11.10_Wehner_temperature_bias.ipynb | | | | | |
| **Figure 11.11** | Figure 11.11 code for annual maximum temperature (TXx) | Code | Figure_11.11_TXx_map.ipynb | | | | | |
| | Figure 11.11 code for annual maximum temperature (TNn) | Code | Figure_11.11_TNn_map.ipynb | | | | | |

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| **Figure 11.12** | Figure 11.12 input dataset | Input dataset | Changes in txx_baseline 0deg.xlsx | | | | (Li et al., 2020) | Figure created by Chao Li. |
| **Figure 11.13** | Figure 11.13a | Input dataset | | | | | (Sun, | Panel a created by Qiaohong Sun |
| | Figure 11.13 b and c | Input dataset | station_MK_1950_2018.csv | | | | (Sun et al., | Data provided by Qiaohong Sun. |

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| | Code for Figure 11.13 b and c | Code | Figure_11.13_Rx1day_trend_maps_Sun.ipynb | | | | | |
| **Figure 11.14** | Bias of CMIP6 w.r.t ERA5 | Input dataset | Rx_CMIP6_errors_ERA5.nc | | | | (Wehner et al., 2020) | Data provided by Michael Wehner. |
| | Bias of CMIP6 w.r.t HadEX3 | Input dataset | Rx_CMIP6_errors_HadEx3.nc | | | | (Wehner et al., 2020) | Data provided by Michael Wehner. |
| | Bias of CMIP6 w.r.t REGEN | Input dataset | Rx_CMIP6_errors_REGEN.nc | | | | (Wehner et al., 2020) | Data provided by Michael Wehner. |
| | Figure 11.14 code | Code | Figure_11.14_Wehner_precipitation_bias.ipynb | | | | | |
| **Figure 11.15** | Figure 11.15 input dataset | Input dataset | Changes in rx1day_baseline0deg.xlsx | | | | (Li et al., 2020) | Figure created by Chao Li. |
| **Figure 11.16** | Figure 11.16 code | Code | Figure_11.16_Rx1day_map.ipynb | | | | | |
| **Figure 11.17** | HadEX3 (v3.0.2) - CDD | Input dataset | HadEX3_CDD_1901-2018_ADW_61-90_1.25x1.875deg.nc | Open Government License | | https://www.metoffice.gov.uk/hadobs/hadex3/ | (Dunn et al., 2020) | |
| | SPI-12 and SPEI-12 trends | Input dataset | results_spinoni_01.nc | | | | (Spinoni et al., 2019) | SPI & SPEI data from (Spinoni et al., 2019) processed by Sergio Vincente Serrano. |
| | Figure 11.17 code | Code | Figure_11.17_CDD_SPI_SPEI.ipynb | | | | | |

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| **Figure 11.18** | Figure 11.18 code | Code | SMDroughtIndex.ipynb | | | | | |
| **Figure 11.19** | code for CDD | Code | Figure_11.19_CDD_map.ipynb | | | | | |
| | code for total soil moisture | Code | Figure_11.19_SM_map.ipynb | | | | | |
| | code for soil moisture based drought frequency | Code | SMDroughtIndex.ipynb | | | | | |
| **Box 11.4, Figure 1** | Input dataset Box 11.4 Figure 2 | Input dataset | sippel_2015_fig3.txt | | | | (Sippel et al., 2015) | Data provided by Sebsatian Sippel.. |
| | Box 11.4, Figure 1 code | Code | Box_11.4_Figure_1_Sippel_2015.ipynb | | | | | |
| **Box 11.4 Figure 2** | Global ECMWF Reanalysis v5 (ERA5) - temperature | Input dataset | era5_deterministic_recent.t2m.025deg.1m.*.nc | Copernicus License https://cds.climate.copernicus.eu/api/v2/terms/static/licence-to-use-copernicus-products.pdf | | | (Hersbach et al., 2020) | |
| | Global ECMWF Reanalysis v5 (ERA5) - geopotential | Input dataset | era5_deterministic_recent.z200.025deg.1m.2018.nc | Copernicus License | | | (Hersbach et al., 2020) | |
| | Box 11.4, Figure 2 code | Code | Box_11.4_Figure_2_2018.ipynb | | | | | |

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| **FAQ 11.1, Figure 1** | FAQ 11.1 Figure 1 | Code | FAQ_11.1_Figure_1_mean_vs_extreme.ipynb | | | | | |

**[END TABLE 11.SM.9 HERE]**

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