

# Regional Context Supplementary Material

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## SM21.1. National and International Groupings Referred to in Chapter 21

At the international level, the United Nations Framework Convention on Climate Change (UNFCCC) is explicit in its definitions regarding the status and groupings of its signatories or “Parties” (UNFCCC, 1992). The principle of “common but differentiated responsibilities” refers to a common goal of Parties to achieve the objective of the Convention and to implement its provisions, while recognizing specific national and regional development priorities, objectives and circumstances. The most fundamental distinction is drawn between the Annex I Parties, comprising industrialized (developed) countries<sup>1</sup>, and the Non-Annex I Parties, which are mostly developing countries (Table SM21-1). Annex I OECD members are further designated as Annex II Parties. These Parties have special responsibilities to provide financial assistance to developing countries as well as promoting the development and transfer of environmentally friendly technologies to transition economy Parties and developing countries. All but two of the Annex I Parties (Belarus and Turkey) also signed up to emissions limitations or reductions under the Kyoto Protocol (Annex B – Table SM21-1). Developing countries eligible to receive official development assistance (ODA) are classified by the OECD according to per capita income. 49 of these are designated by the United Nations as Least Developed Countries (LDCs)<sup>2</sup>, and are recognized under the Convention as meriting special consideration on account of their limited capacity to respond to climate change and adapt to its adverse effects.

The Convention also contains descriptions of regional types without specifying which countries fall within these categories. For example, Article 4 of the Convention describes the following regional types in relation to funding, insurance, and the transfer of technology: (a) small island countries; (b) countries with low-lying coastal areas; (c) countries with arid and semi-arid areas, forested areas, and areas liable to forest decay; (d) countries with areas prone to natural disasters; (e) countries with areas liable to drought and desertification; (f) countries with areas of high urban atmospheric pollution; (g) countries with areas with fragile ecosystems, including mountainous ecosystems; (h) countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products; and (i) landlocked and transit countries. Two of these (Landlocked Developing Countries and Small Island Developing States) are recognized by the United Nations Office of the High Representative for the Least Developed Countries (OHRLLS) (see Table SM21-1).

While the UNFCCC and its associated Protocols required global agreement to come into force, the implementation of policies to meet

these agreements occurs at a national level. Moreover, the negotiating process is often conducted among regional groupings of nation states. Some examples are shown below (from past COP<sup>3</sup> meetings):

- African Group
- Alliance of Small Island States (AOSIS – Table SM21-1)
- Asian Group
- A group of countries of Central Asia, Caucasus, Albania and Moldova (CACAM)
- Environmental Integrity Group (EIG) comprises: Mexico, Republic of Korea, and Switzerland
- European Union (Table SM21-1)
- Group of 77 and China<sup>4</sup> (Table SM21-1)
- OPEC (Organization of the Petroleum Exporting Countries – Table SM21-1)<sup>5</sup>
- Umbrella group: a loose coalition of non-EU developed countries, usually comprising: Australia, Canada, Iceland, Japan, New Zealand, Norway, the Russian Federation, Ukraine, and the United States of America.

Many of the initiatives emerging out of the UNFCCC process, are focused on capacity building at the national scale (e.g., the Nairobi Work Programme on Impacts, Vulnerability, and Adaptation to Climate Change; UNFCCC, 2007) while the international financial mechanisms for implementation of response measures (e.g., the Clean Development Mechanism for emissions reductions under the Kyoto Protocol (UNFCCC, 1998), or the Green Climate Fund to support adaptation actions under the Convention (Green Climate Fund, 2011)) are administered by committees drawn from different regional groupings.

It is also becoming clear that as climate change impacts become felt in different regions, some existing international institutional alignments are facing new challenges. For instance, the opening of new transport routes in the Arctic (see Section 21.6 and Chapter 28), coupled with new opportunities to exploit natural resources in the region and a number of territorial disputes, have raised national security concerns that the existing laws governing access and sovereignty may be too flimsy, and that institutions such as the Arctic Council may need to be strengthened to match the unified legal framework already in place for the Antarctic under the Antarctic Treaty (Bergman Rosamond, 2011; Government Office for Science, 2011). However, although there is no single legally binding Arctic environmental regime, there are already strong provisions within the United Nations Convention on the Law of the Sea (Stokke, 2007). Signatories of the Antarctic Treaty and UNCLOS, and members of the Arctic Council are indicated in Table SM21-1. Similar challenges face international authorities faced with large numbers of migrants, some of whom are moving directly or indirectly as a result of environmental change (see Section 21.6.2).

<sup>1</sup> Members of the Organisation for Economic Co-operation and Development (OECD) in 1992 plus transition economies.

<sup>2</sup> LDC status is determined by the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (OHRLLS) according to three criteria: gross national per capita income (GNI), a composite human assets index (HAI), based on indicators of nutrition, health, education and literacy, and an economic vulnerability index (EVI) based on seven economic indicators.

<sup>3</sup> The Conference of the Parties (COP) comprises all Parties to the Convention and is its supreme decision-making authority.

<sup>4</sup> The Group of 77 (G-77) was established on 15 June 1964 by seventy-seven developing country signatories of the “Joint Declaration of the Seventy-Seven Countries” issued at the end of the first session of the United Nations Conference on Trade and Development (UNCTAD). Although the membership of the G-77 has increased to 133 countries, the original name was retained because of its historical significance.

<sup>5</sup> OPEC is an international organization of 12 developing countries that are heavily reliant on oil revenues as their main source of income. Membership is open to any country which is a substantial net exporter of oil and which shares the ideals of the organization.

**Table SM21-1** | Countries and territories of the world, their regional treatment in this report, and some other illustrative groupings of relevance for international climate change policy making. Sources (status in September 2013): AOSIS (2013), Arctic Council (2013), G77 (2013a), OECD (2013a,b), OHRLLS (2013), OPEC (2013), Secretariat of the Antarctic Treaty (2013), UNCLOS (2013), UNFCCC (1992; 1998; 2013), United Nations (2013). Other territories indicated with (+) are listed only if they are included in at least one other grouping in the table.

UN member states and other territories	Chapter of this report	UNFCCC	Annex B	OECD	OECD ODA	LLDCs	SIDS	Transition Economies	AOSIS	G77 and China	OPEC	European Union	Antarctic Treaty	Arctic Council	UNCLOS
Afghanistan	24	3			1	1				1					2
Albania	23	4			4			1							1
Algeria	22	3			4					1	1				1
American Samoa (+)	29						2		2						
Andorra	23	3													
Angola	22	3			1					1	1				1
Anguilla (+)	29				4		2								
Antigua and Barbuda	29	3			4		1		1	1					1
Argentina	27	3			4					1			1		1
Armenia	23	4			3	1		1							1
Aruba (+)	29						2								
Australia	25	2	1	1									1		1
Austria	23	2	1	1								1	2		1
Azerbaijan	24	3			4	1		1							
Bahamas	29	3					1		1	1					1
Bahrain	24	3					1			1					1
Bangladesh	24	3			1					1					1
Barbados	29	3					1		1	1					1
Belarus	23	1			4			1					2		1
Belgium	23	2	1	1								1	1		1
Belize	27	3			3		1		1	1					1
Benin	22	3			1					1					1
Bhutan	24	3			1	1				1					2
Bolivia	27	3			3	1				1					1
Bosnia and Herzegovina	23	3			4			1		1					1
Botswana	22	3			4	1				1					1
Brazil	27	3		3	4					1			1		1
British Virgin Islands (+)	29						2								
Brunei Darussalam	24	3								1					1
Bulgaria	23	1	1									1	1		1
Burkina Faso	22	3			1	1				1					1
Burundi	22	3			1	1				1					2
Cambodia	24	3			1					1					2
Cameroon	22	3			3					1					1
Canada	26, 28	2	1	1									2	1	1
Cape Verde	29	3			3		1		1	1					1
Central African Republic	22	3			1	1				1					2
Chad	22	3			1	1				1					1
Chile	27	3		1	4					1			1		1
China	24	3		3	4					1			1	2	1
Colombia	27	3			4					1			2		2
Commonwealth of the Northern Mariana Islands (+)	29						2								

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Table SM21-1 (continued)

UN member states and other territories	Chapter of this report	UNFCCC	Annex B	OECD	OECD ODA	LLDCs	SIDS	Transition Economies	AOSIS	G77 and China	OPEC	European Union	Antarctic Treaty	Arctic Council	UNCLOS
Comoros	29	3			1		1		1	1					1
Congo	22	3			3					1					1
Cook Islands (+)	29	3			4		2		1						1
Costa Rica	27	3			4					1					1
Côte d'Ivoire	22	3			3					1					1
Croatia	23	1	1					1				1			1
Cuba	29	3			4		1		1	1			2		1
Cyprus	29	1										1			1
Czech Republic	23	1	1	1								1	2		1
Democratic People's Republic of Korea	24	3			2					1			2		2
Democratic Republic of the Congo	22	3			1					1					1
Denmark	23, 28	2	1	1								1	2	1	1
Djibouti	22	3			1					1					1
Dominica	27	3			4		1		1	1					1
Dominican Republic	27	3			4		1		1	1					1
Ecuador	27	3			4					1	1		1		1
Egypt	22	3			3					1					1
El Salvador	27	3			3					1					2
Equatorial Guinea	22	3			1					1					1
Eritrea	22	3			1					1					
Estonia	23	1	1	1								1	2		1
Ethiopia	22	3			1	1				1					2
European Union (+)	23	2	1												1
Fiji	29	3			3		1		1	1					1
Finland	23, 28	2	1	1								1	1	1	1
France	23	2	1	1								1	1	2	1
French Polynesia (+)	29						2								
Gabon	22	3			4					1					1
Gambia	22	3			1					1					1
Georgia	24	3			3			1							1
Germany	23	2	1	1								1	1	2	1
Ghana	22	3			3					1					1
Greece	23	2	1	1								1	2		1
Grenada	29	3			4		1		1	1					1
Guam (+)	29						2		2						
Guatemala	27	3			3					1			2		1
Guinea	22	3			1					1					1
Guinea-Bissau	22	3			1		1		1	1					1
Guyana	27	3			3		1		1	1					1
Haiti	27	3			1		1		1	1					1
Holy See (+)	23														
Honduras	27	3			3					1					1
Hungary	23	1	1	1								1	2		1
Iceland	23, 28	2	1	1								2		1	1

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Table SM21-1 (continued)

UN member states and other territories	Chapter of this report	UNFCCC	Annex B	OECD	OECD ODA	LLDCs	SIDS	Transition Economies	AOSIS	G77 and China	OPEC	European Union	Antarctic Treaty	Arctic Council	UNCLOS
India	24	3		3	3					1			1	2	1
Indonesia	24	3		3	3					1					1
Iran (Islamic Republic of)	24	3			4					1	1				2
Iraq	24	3			3					1	1				1
Ireland	23	2	1	1								1			1
Israel	24	3		1											
Italy	23	2	1	1								1	1	2	1
Jamaica	29	3			4		1		1	1					1
Japan	24	2	1	1									1	2	1
Jordan	24	3			4					1					1
Kazakhstan	24	4			4	1		1							
Kenya	22	3			2					1					1
Kiribati	22	3			1		1		1	1					1
Kosovo (+)	23				3										
Kuwait	24	3								1	1				1
Kyrgyzstan	24	3			2	1		1							
Lao People's Democratic Republic	24	3			1	1				1					1
Latvia	23	1	1									1			1
Lebanon	24	3			4					1					1
Lesotho	22	3			1	1				1					1
Liberia	22	3			1					1					1
Libya	22	3			4					1	1				2
Liechtenstein	23	1	1												2
Lithuania	23	1	1									1			1
Luxembourg	23	2	1	1								1			1
Madagascar	22	3			1					1					1
Malawi	22	3			1	1				1					1
Malaysia	24	3			4					1			2		1
Maldives	29	3			4		1		1	1					1
Mali	22	3			1	1				1					1
Malta	29	1										1			1
Marshall Islands	29	3			3		1		1	1					1
Mauritania	22	3			1					1					1
Mauritius	29	3			4		1		1	1					1
Mexico	26	3		1	4										1
Micronesia (Federated States of)	29	3			3		1		1	1					1
Monaco	23	1	1										2		1
Mongolia	24	3			3	1				1					1
Montenegro	23	3			4			1				2			1
Montserrat (+)	29				4		2								
Morocco	22	3			3					1					1
Mozambique	22	3			1					1					1
Myanmar	24	3			1					1					1
Namibia	22	3			4					1					1

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Table SM21-1 (continued)

UN member states and other territories	Chapter of this report	UNFCCC	Annex B	OECD	OECD ODA	LLDCs	SIDS	Transition Economies	AOSIS	G77 and China	OPEC	European Union	Antarctic Treaty	Arctic Council	UNCLOS
Nauru	29	3			4		1		1	1					1
Nepal	24	3			1	1				1					1
Netherlands	23	2	1	1								1	1	2	1
Netherlands Antilles (+)	29						2		2						
New Caledonia (+)	29						2								
New Zealand	25	2	1	1									1		1
Nicaragua	27	3			3					1					1
Niger	22	3			1	1				1					1
Nigeria	22	3			3					1	1				1
Niue (+)	29	3			4		2		1						1
Norway	23, 28	2	1	1									1	1	1
Oman	24	3								1					1
Pakistan	24	3			3					1			2		1
Palau	29	3			4		1		1						1
Panama	27	3			4					1					1
Papua New Guinea	24	3			3		1		1	1			2		1
Paraguay	27	3			3	1				1					1
Peru	27	3			4					1			1		
Philippines	24	3			3					1					1
Poland	23	1	1	1								1	1	2	1
Portugal	23	2	1	1								1	2		1
Puerto Rico (+)	29						2		2						
Qatar	24	3								1	1				1
Republic of Korea	24	3		1									1	2	1
Republic of Moldova	23	4			3	1		1							1
Romania	23	1	1									1	2		1
Russian Federation	23, 24, 28	1	1	2				1					1	1	1
Rwanda	22	3			1	1				1					2
Saint Kitts and Nevis	29	3			4		1		1	1					1
Saint Lucia	29	3			4		1		1	1					1
Saint Vincent and the Grenadines	29	3			4		1		1	1					1
Samoa	29	3			1		1		1	1					1
San Marino	23	3													
Sao Tome and Principe	29	3			1		1		1	1					1
Saudi Arabia	24	3								1	1				1
Senegal	22	3			1					1					1
Serbia	23	3			4			1				2			1
Seychelles	29	3			4		1		1	1					1
Sierra Leone	22	3			1					1					1
Singapore	29	3					1		1	1				2	1
Slovakia	23	1	1	1								1	2		1
Slovenia	23	1	1	1								1			1
Solomon Islands	29	3			1		1		1	1					1
Somalia	22	3			1					1					1

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Table SM21-1 (continued)

UN member states and other territories	Chapter of this report	UNFCCC	Annex B	OECD	OECD ODA	LLDCs	SIDS	Transition Economies	AOSIS	G77 and China	OPEC	European Union	Antarctic Treaty	Arctic Council	UNCLOS
South Africa	22	3		3	4					1			1		1
South Sudan	22	5			1										
Spain	23	2	1	1								1	1	2	1
Sri Lanka	24	3			3					1					1
St Helena (+)	29				4										
Sudan	22	3			1					1					1
Suriname	25	3			4		1		1	1					1
Swaziland	22	3			3	1				1					1
Sweden	23, 28	2	1	1								1	1	1	1
Switzerland	23	2	1	1									2		1
Syrian Arab Republic	22	3			3					1					
Tajikistan	24	3			2	1		1		1					
Thailand	24	3			4					1					1
The former Yugoslav Republic of Macedonia	23	3			4	1		1				2			1
Timor-Leste	24	3			1		1		1	1					1
Togo	22	3			1					1					1
Tokelau (+)	29				3										
Tonga	29	3			3		1		1	1					1
Trinidad and Tobago	29	3					1		1	1					1
Tunisia	22	3			4					1					1
Turkey	23	1		1	4							2	2		
Turkmenistan	24	4			3	1		1		1					
Tuvalu	29	3			1		1		1						1
U.S. Virgin Islands (+)	29						2		2						
Uganda	22	3			1	1				1					1
Ukraine	23	1	1		3			1					1		1
United Arab Emirates	24	3								1	1				2
United Kingdom of Great Britain and Northern Ireland	23	2	1	1								1	1	2	1
United Republic of Tanzania	22	3			1					1					1
United States of America	26, 28	2	1	1									1	1	
Uruguay	27	3			4					1			1		1
Uzbekistan	24	4			3	1		1							
Vanuatu	29	3			1		1		1	1					1
Venezuela (Bolivarian Republic of)	27	3			4					1	1		2		
Viet Nam	24	3			3					1					1
Wallis and Futuna (+)	29				4										
West Bank and Gaza Strip (+)	24	5			3					1					
Yemen	24	3			1					1					1
Zambia	22	3			1	1				1					1
Zimbabwe	22	3			2	1				1					1

Key to country groupings and numerical codes. **UNFCCC** (United Nations Framework Convention on Climate Change) Parties – 1: Annex I, 2: Annex II, 3: Non-Annex I, 4: Non-Annex I Special Decision, 5: Non-Annex I Observer; **Annex B** Parties to the Kyoto Protocol – 1: Annex B (terms applying to these Parties are subject to an amendment to the Kyoto Protocol, adopted in Doha, Qatar on 8 December 2012 but not yet in force); **OECD** (Organisation for Economic Co-operation and Development) – 1: Member, 2: Accession process, 3: Enhanced engagement; **OECD ODA** (Overseas Development Assistance) – 1: Least developed, 2: Other low income, 3: Lower middle income, 4: Upper middle income; **LLDCs** (Landlocked Developing Countries) – 1: Member; **SIDS** (Small Island Developing States) – 1: UN Member, 2: Non-UN/Associate; **Transition Economies** – 1: UN designated; **AOSIS** (Alliance of Small Island States) – 1: Member, 2: Observer; **G77 and China** – 1: Member; **OPEC** (Organization of the Petroleum Exporting Countries) – 1: Member; **European Union** – 1: Member State, 2: Candidate; **Antarctic Treaty** Parties – 1: Consultative, 2: Non-Consultative; **Arctic Council** – 1: Member, 2: Permanent Observer; **UNCLOS** (United Nations Convention on the Law of the Sea) – 1: Ratified, 2: Signed but not ratified.

Finally, to illustrate how international agreements can be used to promote regional development, and hence might also be promising instruments for furthering trans-national aspects of climate policy, it can be noted in Table SM21-1 how a large number of UNCLOS signatories are actually Landlocked Developing Countries (LLDCs). Thus, UNCLOS makes provision for LLDCs and other “geographically disadvantaged States” to participate in the equitable exploitation of resources in the exclusive economic zones of coastal neighbors, as well as being guaranteed rights of access and tax-free transit via coastal ports (UNCLOS, 1982).

## SM21.2. Summary Information on Projected Regional Climate Changes

As discussed in Chapter 21, a broad range of climate information is required to assess the risks associated with climate change vulnerability and impacts and options for adapting to climate changes.

A broad overview of projected global and continental scale regional climate changes is presented in Box CC-RC and in equivalent figures in many of the regional chapters. As these figures deal only with annual averages they are not able to convey any information about projected changes on seasonal time scales or shorter, such as for extremes. In addition, they are derived solely from the CMIP5 global climate models (GCMs) and do not display any information derived from CMIP3 data which are widely used in many of the studies assessed within the WGII contribution to the AR5. To provide additional context two additional sets of figures are presented in Box 21-2 and Box 21-4 that display temperature and precipitation changes at seasonal and daily time scales, respectively. These provide examples for specific regions and this supplementary material presents a full set of these figures for all inhabited continents.

A single set of regions, previously defined in the IPCC *Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate*

*Change Adaptation* (IPCC, 2012), is used to calculate and display this information (though many other regional definitions could have been used; see Section 21.2 and Box 21-3). The regions are shown in Figure 21-4 and their spatial coordinates are given in Table SM21-2. The first set of figures displays projected seasonal and annual mean changes averaged over the regions contained in each of the following continental regions: Africa – Figure SM21-1, Europe – Figure SM21-2, Asia – Figures SM21-3 and SM21-4, Australasia – Figure SM21-5, North America – Figure SM21-6, and Central and South America, Figure SM21-7 (same as Figure 21-3). Projected changes are shown for temperature and precipitation for the period 2070-2100 relative to 1961-90 in GCM projections from 35 models from the CMIP5 ensemble under four RCP scenarios (van Vuuren et al., 2011) compared with GCM projections from 22 CMIP3 models under three SRES scenarios (IPCC, 2000). Temperature changes are given in °C and precipitation changes in mm per day. Axes are scaled to the maximum changes projected across the range of models for each sub-region.

The models for which data are shown under each RCP are listed in Table SM21-3. The 30-year periods were chosen for consistency with the figures displayed in Box 21-4 (Figures 21-7 and 21-8) and Figures SM21-8 to SM21-19, showing changes in daily temperatures and precipitation.

Following this set of figures an analysis of projected changes in indices of daily temperature and precipitation is presented over the same continental regions and SREX sub-regions. Both sets of figures consider projected changes at certain time-periods but another way of presenting regional climate changes is to plot time-series of area-averaged variables. Several regional chapters (22, 24, 25, 26, 27 and 30) present information in this way comparing both observed and simulated past climate variations and trends as well as the range of future projections. The data used in these figures include several observed data sets and CMIP5 simulations covering the full range of RCP scenarios; details are provided in Table SM21-5.



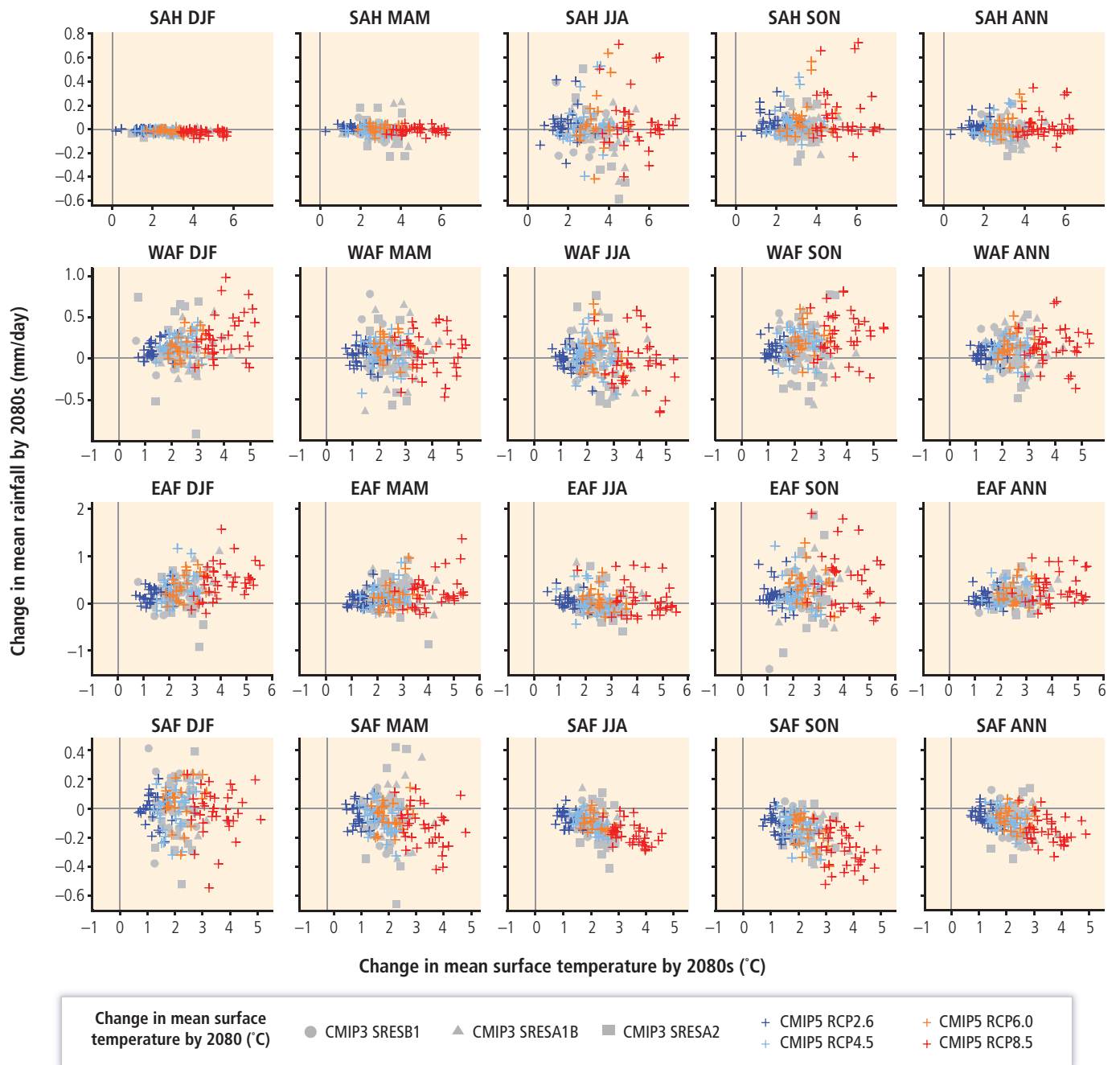
**Table SM21-2** | Coordinates of the corners of the regions displayed in Figure 21-4 and used in Figures 21-3, 21-7, and 21-8; Table 21-7; and supplementary figures SM21-1 to SM21-19.

Region Label	Region Number	Coordinates (latitude [°], longitude [°]) of region corners
ALA	1	(60.000N, 105.000W) (60.000N, 168.022W) (72.554N, 168.022W) (72.554N, 105.000W)
AMZ	7	(20.000S, 66.377W) (1.239S, 79.729W) (11.439N, 68.800W) (11.439N, 50.000W) (20.000S, 50.000W)
CAM	6	(11.439N, 68.800W) (1.239S, 79.729W) (28.566N, 118.323W) (28.566N, 90.315W)
CAS	20	(30.000N, 60.000E) (50.000N, 60.000E) (50.000N, 75.000E) (30.000N, 75.000E)
CEU	12	(45.000N, 10.000W) (48.000N, 10.000W) (61.320N, 40.000E) (45.000N, 40.000E)
CGI	2	(50.000N, 10.000W) (50.000N, 105.000W) (85.000N, 105.000W) (85.000N, 10.000W)
CNA	4	(50.000N, 85.000W) (28.566N, 85.000W) (28.566N, 105.000W) (50.000N, 105.000W)
EAF	16	(11.365S, 25.000E) (15.000N, 25.000E) (15.000N, 51.990E) (11.365S, 51.990E)
EAS	22	(20.000N, 100.000E) (50.000N, 100.000E) (50.000N, 145.000E) (20.000N, 145.000E)
ENA	5	(25.000N, 60.000W) (25.000N, 85.000W) (50.000N, 85.000W) (50.000N, 60.000W)
MED	13	(30.000N, 10.000W) (45.000N, 10.000W) (45.000N, 40.000E) (30.000N, 40.000E)
NAS	18	(50.000N, 40.000E) (70.000N, 40.000E) (70.000N, 180.000E) (50.000N, 180.000E)
NAU	25	(30.000S, 110.000E) (10.000S, 110.000E) (10.000S, 155.000E) (30.000S, 155.000E)
NEB	8	(20.000S, 34.000W) (20.000S, 50.000W) (0.000N, 50.000W) (0.000N, 34.000W)
NEU	11	(48.000N, 10.000W) (75.000N, 10.000W) (75.000N, 40.000E) (61.320N, 40.000E)
SAF	17	(35.000S, 10.000W) (11.365S, 10.000W) (11.365S, 51.990E) (35.000S, 51.990E)
SAH	14	(15.000N, 20.000W) (30.000N, 20.000W) (30.000N, 40.000E) (15.000N, 40.000E)
SAS	23	(5.000N, 60.000E) (30.000N, 60.000E) (30.000N, 100.000E) (20.000N, 100.000E) (20.000N, 95.000E) (5.000N, 95.000E)
SAU	26	(50.000S, 110.000E) (30.000S, 110.000E) (30.000S, 180.000E) (50.000S, 180.000E)
SSA	10	(20.000S, 39.376W) (56.704S, 39.376W) (56.704S, 67.348W) (50.000S, 72.141W) (20.000S, 66.377W)
SEA	24	(10.000S, 95.000E) (20.000N, 95.000E) (20.000N, 155.000E) (10.000S, 155.000E)
TIB	21	(30.000N, 75.000E) (50.000N, 75.000E) (50.000N, 100.000E) (30.000N, 100.000E)
WAF	15	(11.365S, 20.000W) (15.000N, 20.000W) (15.000N, 25.000E) (11.365S, 25.000E)
WAS	19	(15.000N, 40.000E) (50.000N, 40.000E) (50.000N, 60.000E) (15.000N, 60.000E)
WSA	9	(1.239S, 79.729W) (20.000S, 66.377W) (50.000S, 72.141W) (56.704S, 67.348W) (56.704S, 82.022W) (0.530N, 82.022W)
WNA	3	(28.566N, 105.000W) (28.566N, 130.000W) (60.000N, 130.000W) (60.000N, 105.000W)

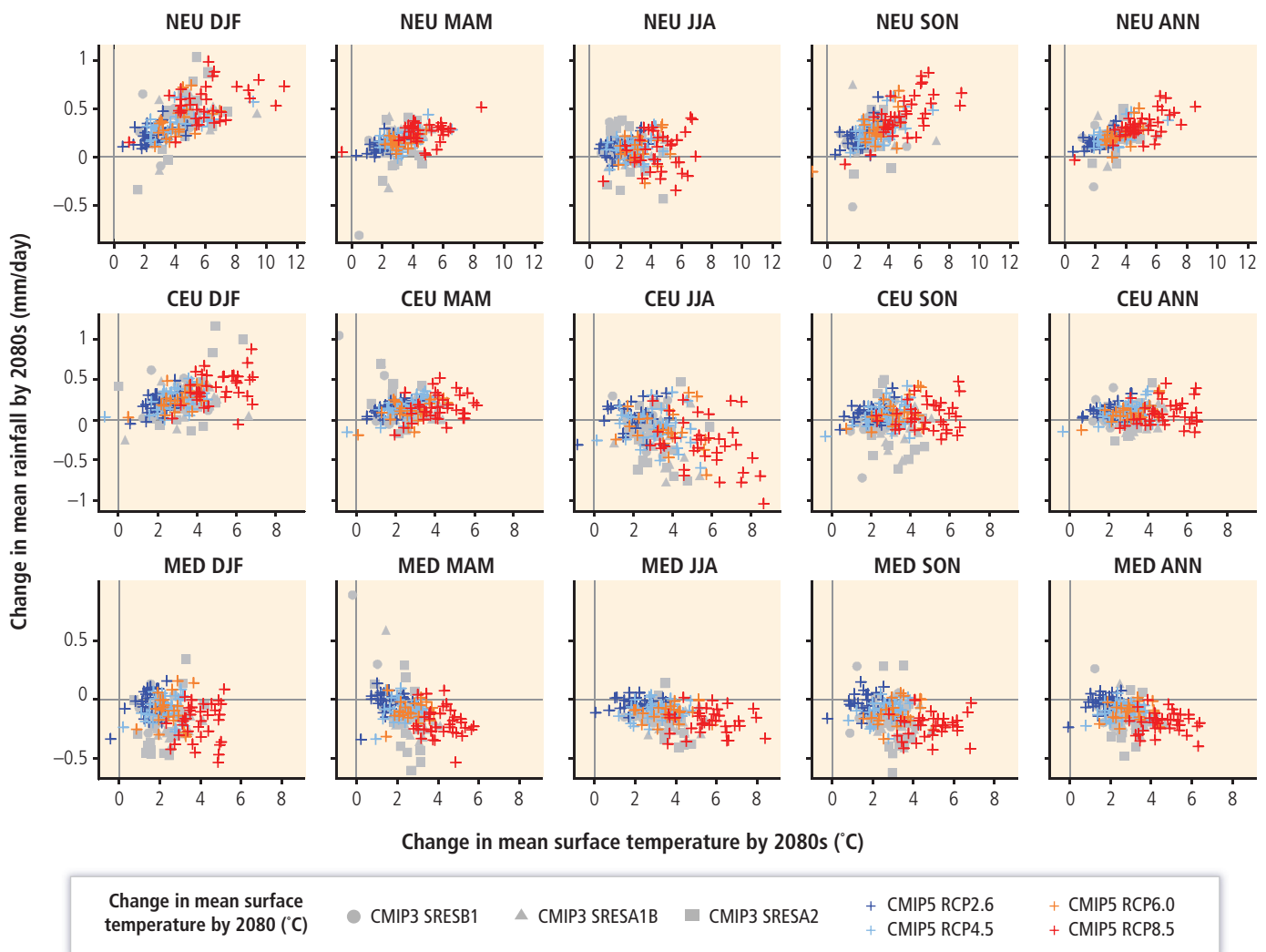
**Table SM21-3** | Model projections from the CMIP3 and CMIP5 experiments included in Figures SM21-1 to SM21-7. Subset of full CMIP3 and CMIP5 ensemble used reflects availability of monthly data at the time of accessing (September 2013).

CMIP5 model	RCP			
	2.6	4.5	6.0	8.5
HadGEM2-ES	1	1	1	1
ACCESS1-0	0	1	0	1
ACCESS1-3	0	1	0	1
bcc-csm1-1	1	1	1	1
bcc-csm1-1-m	1	1	1	1
BNU-ESM	1	1	0	1
CanESM2	1	1	0	1
CESM1-CAM5	1	1	1	1
CMCC-CESM	0	0	0	1
CMCC-CM	0	1	0	1
CMCC-CMS	0	1	0	1
CCSM4	1	1	1	1
CNRM-CM5	1	1	0	1
CSIRO-Mk3-6-0	1	1	1	1
FGOALS-g2	1	1	0	1
FIO-ESM	1	1	1	1
GFDL-CM3	1	1	1	1
GFDL-ESM2G	1	1	1	1
GFDL-ESM2M	1	1	1	1
GISS-E2-R	1	1	1	1
GISS-E2-H	1	1	1	1
GISS-E2-R-CC	0	1	0	0
GISS-E2-H-CC	0	1	0	0
HadGEM2-CC	0	1	0	1
HadGEM2-AO	1	1	1	1
inmcm4	0	1	0	1
IPSL-CM5A-LR	1	1	1	1
IPSL-CM5A-MR	1	1	1	1
IPSL-CM5B-LR	0	1	0	1
MIROC5	1	1	1	1
MIROC-ESM	1	1	1	1
MIROC-ESM-CHEM	1	1	1	1
MPI-ESM-LR	1	1	0	1
MPI-ESM-MR	1	1	0	1
MRI-CGCM3	1	1	1	1
NorESM1-M	1	1	1	1
NorESM1-ME	1	1	1	1

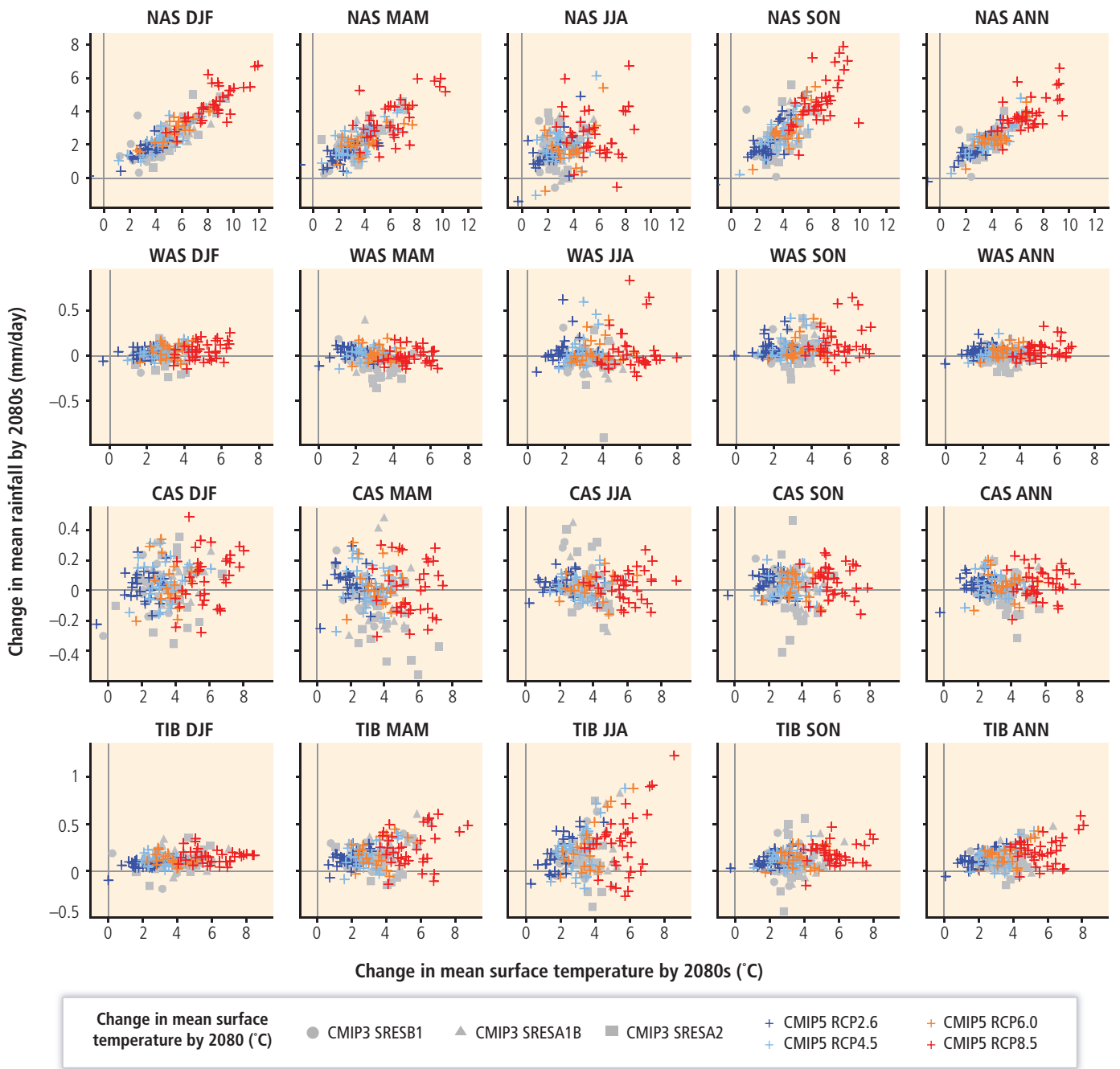
CMIP3 model	SRES		
	B1	A1B	A2
bccr_bcm2_0	1	1	1
ccma_cgcm3_1	1	1	1
ccma_cgcm3_1_t6	1	1	0
cnrm_cm3	1	1	1
csiro_mk3_0	1	1	1
csiro_mk3_5	0	1	0
gfdl_cm2_0	1	1	1
gfdl_cm2_1	1	1	1
giss_aom	1	1	0
giss_model_e_h	0	1	0
giss_model_e_r	1	0	1
iap_fgoals1_0_g	1	1	0
ingv_echam4	0	1	1
inmcm3_0	1	1	1
miroc3_2_hires	1	1	0
miroc3_2_medres	1	1	1
mpi_echam5	1	1	1
miub_echo_g	1	1	1
mri_cgcm2_3_2a	1	1	1
ncar_pcm1	1	1	1
ncar_ccsm3_0	1	1	1
ukmo_hadgem1	0	1	1
ukmo_hadcm3	1	1	1



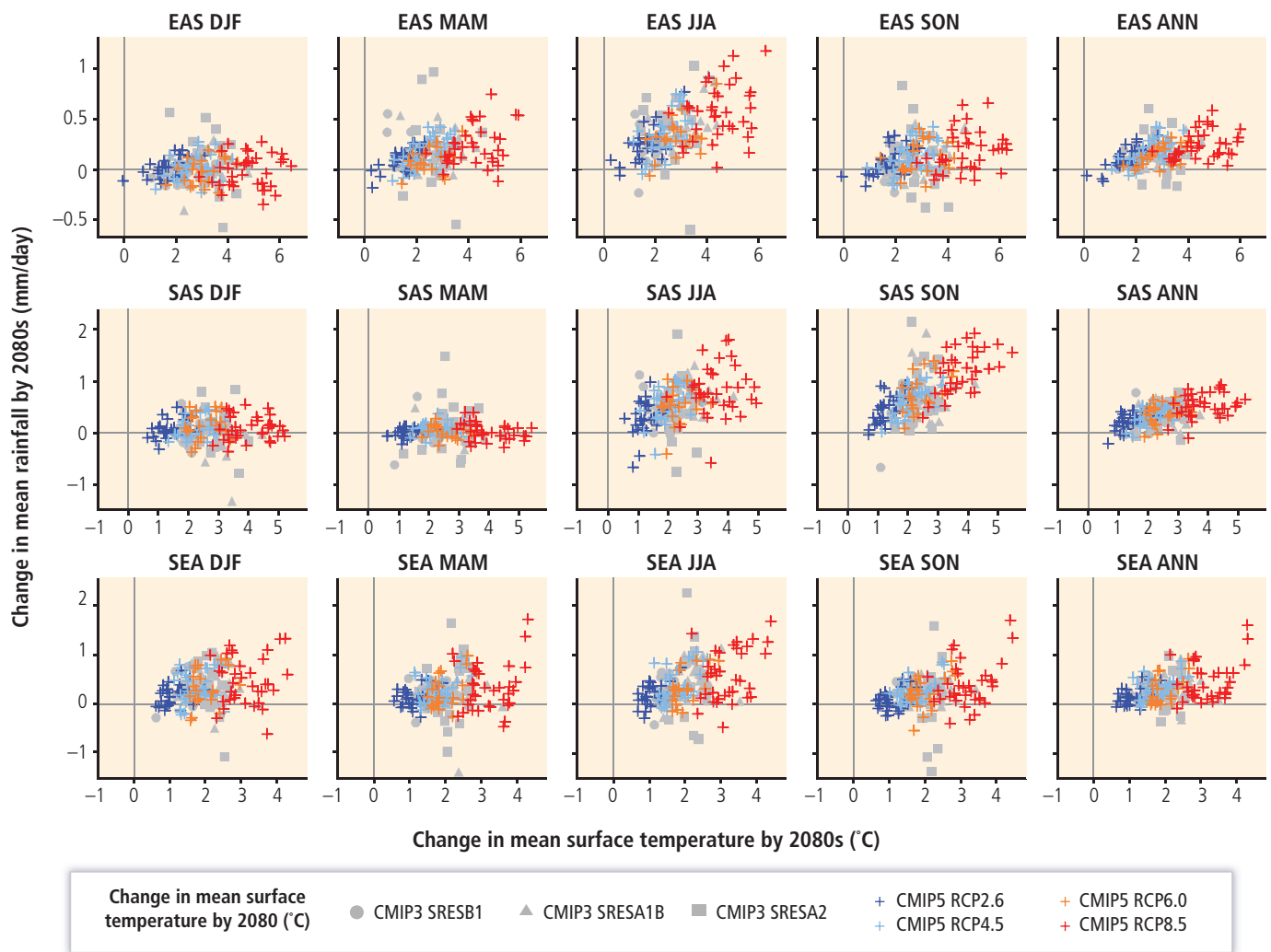
**Figure SM21-1** | Regional average change in seasonal and annual mean temperature and precipitation over four sub-regions covering Africa for the period 2071–2100 relative to 1961–1990 in GCM projections from 35 CMIP5 ensemble under four RCP scenarios (van Vuuren et al., 2011) compared with GCM projections from 22 CMIP3 ensemble under three SRES scenarios (IPCC, 2000); see Table 21-1 for details of the relationship between the SRES and RCP scenarios. Regional averages are based on SREX region definitions (see Figure 21-3). Temperature changes are given in °C and precipitation changes in mm/day with axes scaled relative to the maximum changes projected across the range of models. The models which generated the data displayed are listed in Supplementary Material Table SM21-3.



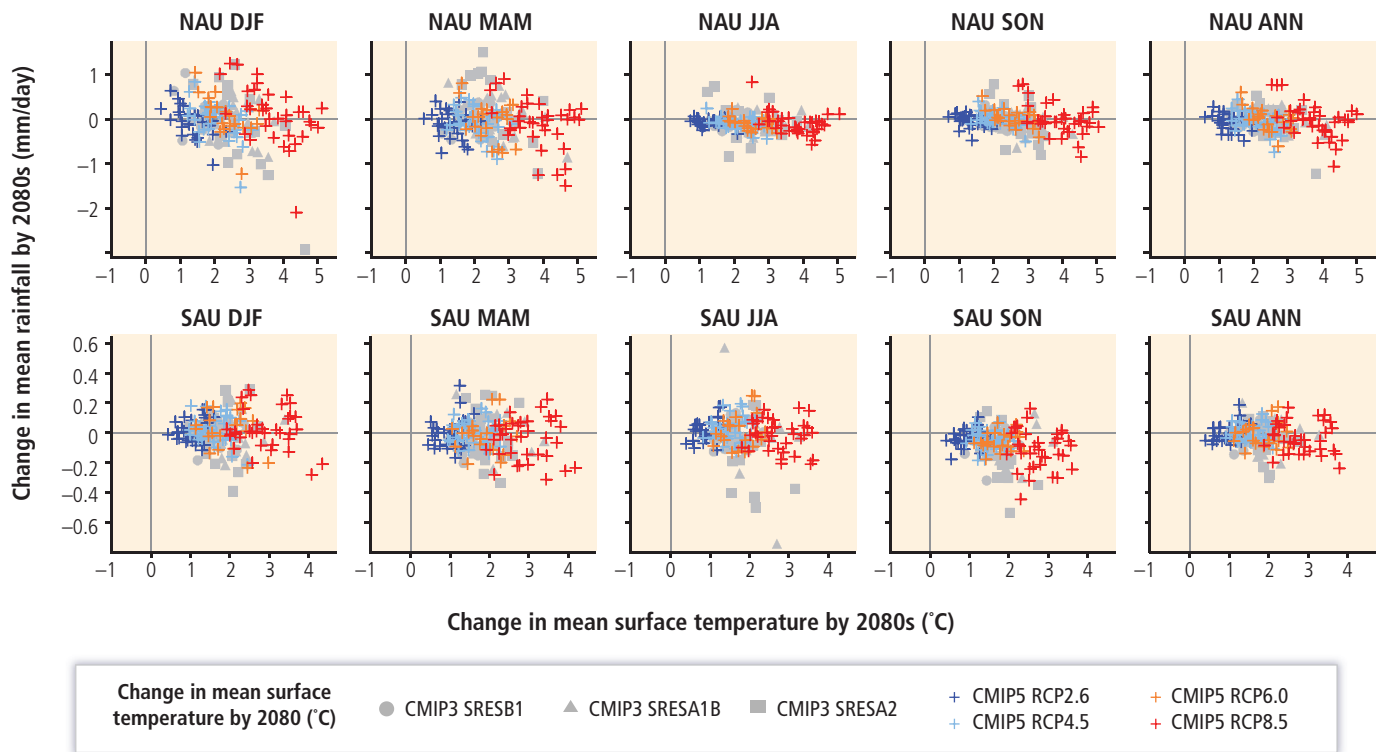
**Figure SM21-2** | Regional average change in seasonal and annual mean temperature and precipitation over three sub-regions covering Europe for the period 2071–2100 relative to 1961–1990 in GCM projections from 35 CMIP5 ensemble under four RCP scenarios (van Vuuren et al., 2011) compared with GCM projections from 22 CMIP3 ensemble under three SRES scenarios (IPCC, 2000); see Table 21-1 for details of the relationship between the SRES and RCP scenarios. Regional averages are based on SREX region definitions (see Figure 21-3). Temperature changes are given in °C and precipitation changes in mm/day with axes scaled relative to the maximum changes projected across the range of models. The models which generated the data displayed are listed in Supplementary Material Table SM21-3.



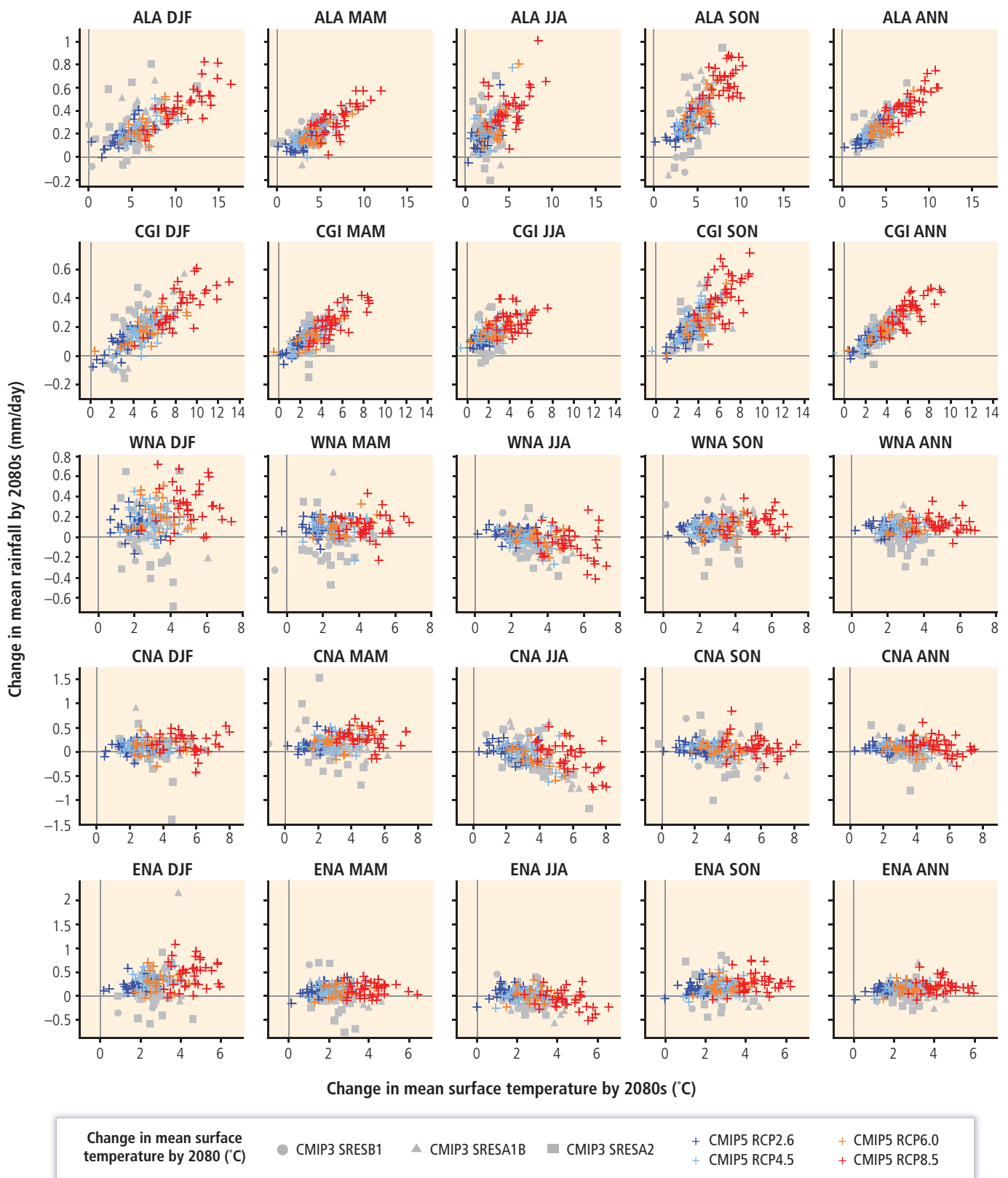
**Figure SM21-3** | Regional average change in seasonal and annual mean temperature and precipitation over four sub-regions covering north, central and west Asia for the period 2071–2100 relative to 1961–1990 in GCM projections from 35 CMIP5 ensemble under four RCP scenarios (van Vuuren et al., 2011) compared with GCM projections from 22 CMIP3 ensemble under three SRES scenarios (IPCC, 2000); see Table 21-1 for details of the relationship between the SRES and RCP scenarios. Regional averages are based on SREX region definitions (see Figure 21-3). Temperature changes are given in °C and precipitation changes in mm/day with axes scaled relative to the maximum changes projected across the range of models. The models which generated the data displayed are listed in Supplementary Material Table SM21-3.



**Figure SM21-4** | Regional average change in seasonal and annual mean temperature and precipitation over five sub-regions covering east and south Asia for the period 2071–2100 relative to 1961–1990 in GCM projections from 35 CMIP5 ensemble under four RCP scenarios (van Vuuren et al., 2011) compared with GCM projections from 22 CMIP3 ensemble under three SRES scenarios (IPCC, 2000); see Table 21-1 for details of the relationship between the SRES and RCP scenarios. Regional averages are based on SREX region definitions (see Figure 21-3). Temperature changes are given in °C and precipitation changes in mm/day with axes scaled relative to the maximum changes projected across the range of models. The models which generated the data displayed are listed in Supplementary Material Table SM21-3.

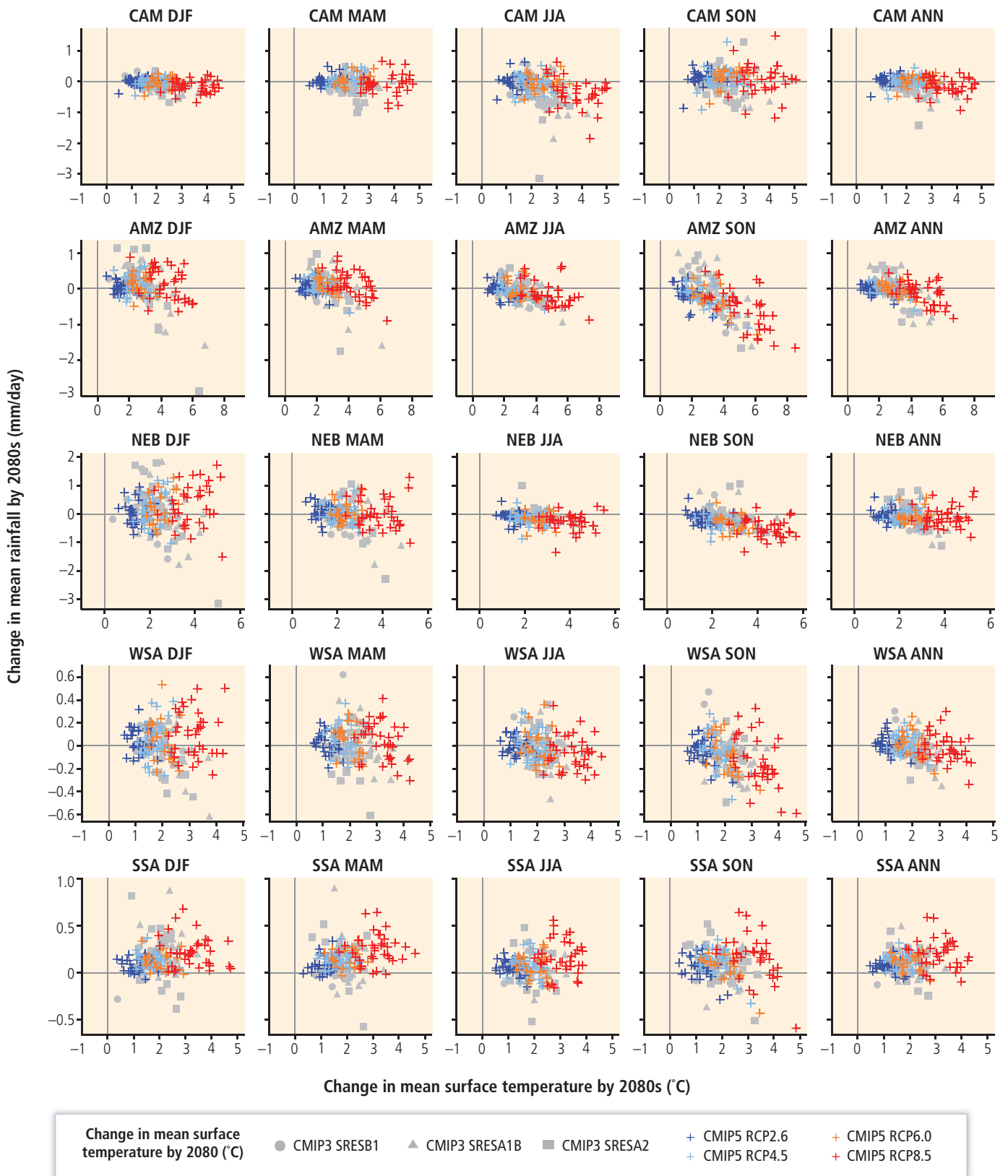


**Figure SM21-5** | Regional average change in seasonal and annual mean temperature and precipitation over two sub-regions covering Australasia for the period 2071–2100 relative to 1961–1990 in GCM projections from 35 CMIP5 ensemble under four RCP scenarios (van Vuuren et al, 2011) compared with GCM projections from 22 CMIP3 ensemble under three SRES scenarios (IPCC, 2000); see Table 21-1 for details of the relationship between the SRES and RCP scenarios. Regional averages are based on SREX region definitions (see Figure 21-3). Temperature changes are given in °C and precipitation changes in mm/day with axes scaled relative to the maximum changes projected across the range of models. The models which generated the data displayed are listed in Supplementary Material Table SM21-3.



**Figure SM21-6 |** Regional average change in seasonal and annual mean temperature and precipitation over six sub-regions covering North America for the period 2071–2100 relative to 1961–1990 in GCM projections from 35 CMIP5 ensemble under four RCP scenarios (van Vuuren et al., 2011) compared with GCM projections from 22 CMIP3 ensemble under three SRES scenarios (IPCC, 2000); see Table 21-1 for details of the relationship between the SRES and RCP scenarios. Regional averages are based on SREX region definitions (see Figure 21-3). Temperature changes are given in °C and precipitation changes in mm/day with axes scaled relative to the maximum changes projected across the range of models. The models which generated the data displayed are listed in Supplementary Material Table SM21-3.



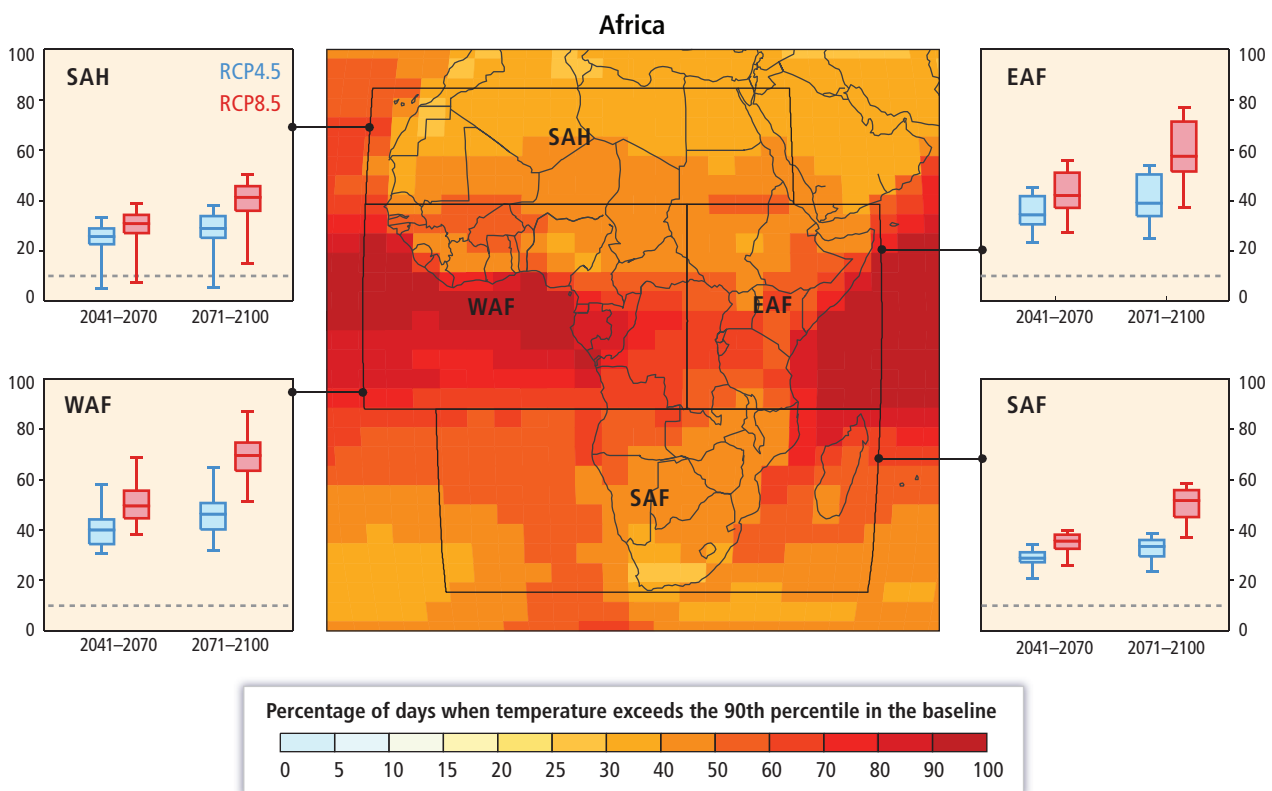


**Figure SM21-7** | Regional average change in seasonal and annual mean temperature and precipitation over five sub-regions covering central and south America for the period 2071–2100 relative to 1961–1990 in GCM projections from 35 CMIP5 ensemble under four RCP scenarios (van Vuuren et al., 2011) compared with GCM projections from 22 CMIP3 ensemble under three SRES scenarios (IPCC, 2000); see Table 21-1 for details of the relationship between the SRES and RCP scenarios. Regional averages are based on SREX region definitions (see Figure 21-3). Temperature changes are given in °C and precipitation changes in mm/day with axes scaled relative to the maximum changes projected across the range of models. The models which generated the data displayed are listed in Supplementary Material Table SM21-3.

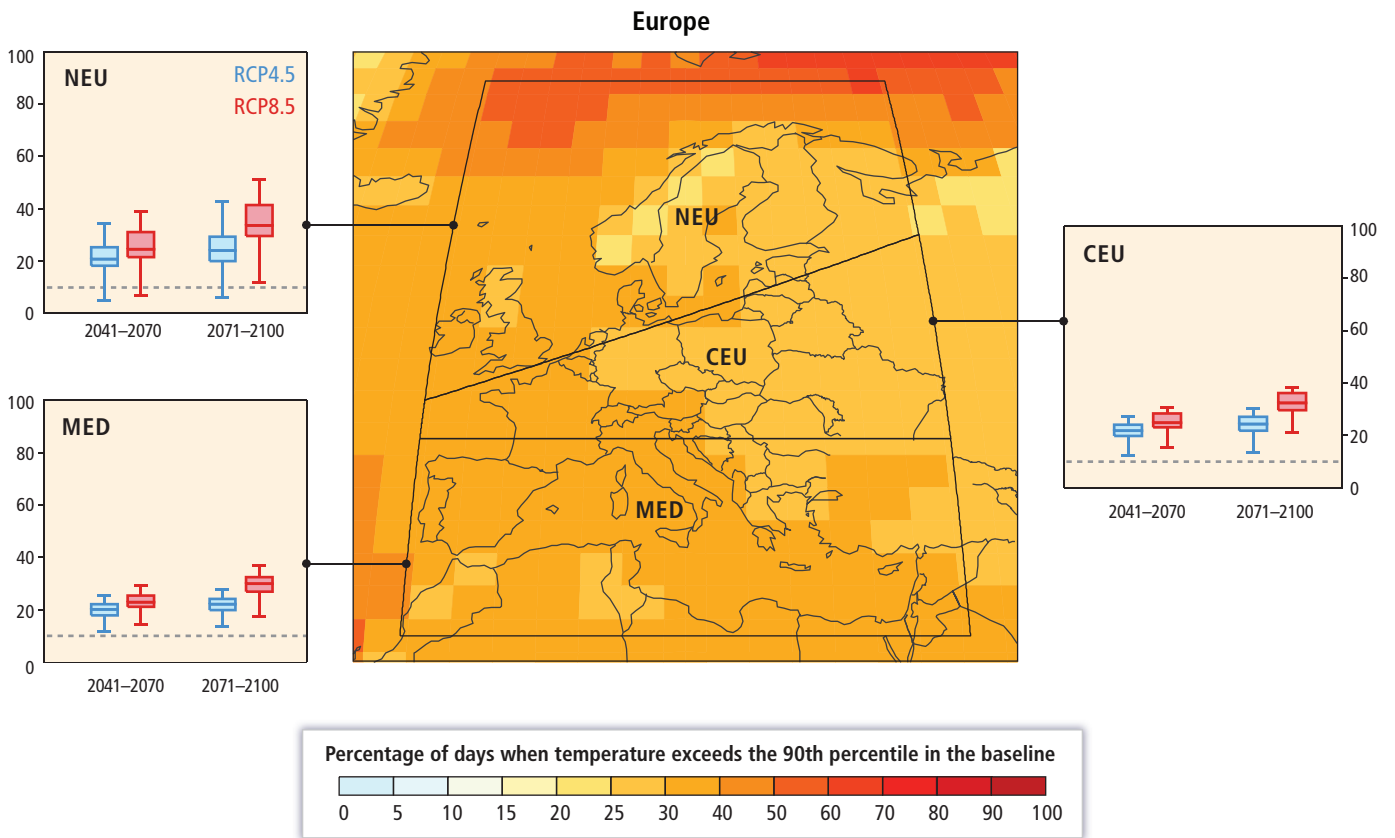
The previous figures provide information only on projected changes in multi-year averages of annual or seasonal climate. In many cases climate change vulnerability and impacts result from extreme climate events, which were extensively covered in the SREX report. However, the only coordinated global multi-model ensemble information on projected changes in extremes presented in the report was from the CMIP3 ensemble. In order to provide information consistent with projections assessed elsewhere in the WGI and WGII contributions to the AR5, this supplementary material analyses 26 CMIP5 projections of changes in two extreme indices; the 90th percentiles of the daily maximum temperature and daily precipitation amounts on wet days. Changes in these indices were calculated over 30-year periods (1961-1990 for the baseline and two future periods, 2041-2070 and 2071-2100), the analysis being focused on less extreme daily events to reduce problems with the number needed to be sampled to generate robust statistics (Kendon et al., 2008). Projected changes were calculated for RCPs 4.5 and 8.5 and the results are displayed as a map for each of the six continental regions referred to above and also as regional averages over the SREX regions within that continent. Results of projected changes in daily temperature are show in Figures SM21-8 to SM21-13 and for daily precipitation in Figures SM21-14 to SM21-19. The CMIP5 models whose data were used in this analysis are listed in Table SM21-4.

**Table SM21-4** | Models for which data are shown in Figures SM21-8 to SM21-19. Subset of CMIP5 ensemble used reflects availability of daily data at the time of accessing (September 2013).

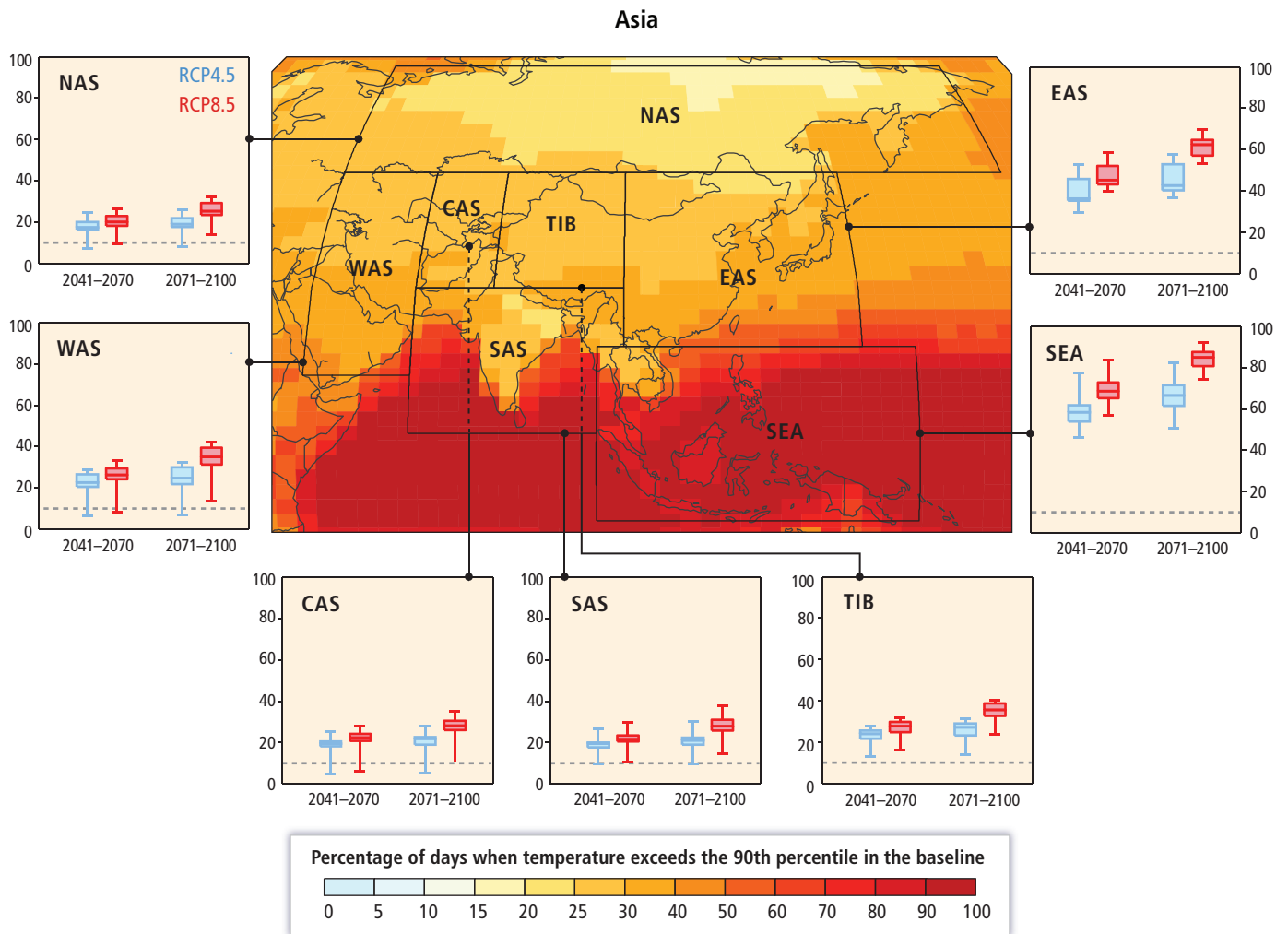
CMIP5 model	
ACCESS1-0	HadGEM2-CC
ACCESS1-3	HadGEM2-ES
bcc-csm1-1	inmcm4
bcc-csm1-1-m	IPSL-CM5A-LR
BNU-ESM	IPSL-CM5A-MR
CanESM2	IPSL-CM5B-LR
CESM1-BGC	MIROC5
CMCC-CMS	MIROC-ESM
CCSM4	MIROC-ESM-CHEM
CSIRO-Mk3-6-0	MPI-ESM-LR
GFDL-CM3	MPI-ESM-MR
GFDL-ESM2G	MRI-CGCM3
GFDL-ESM2M	NorESM1-M



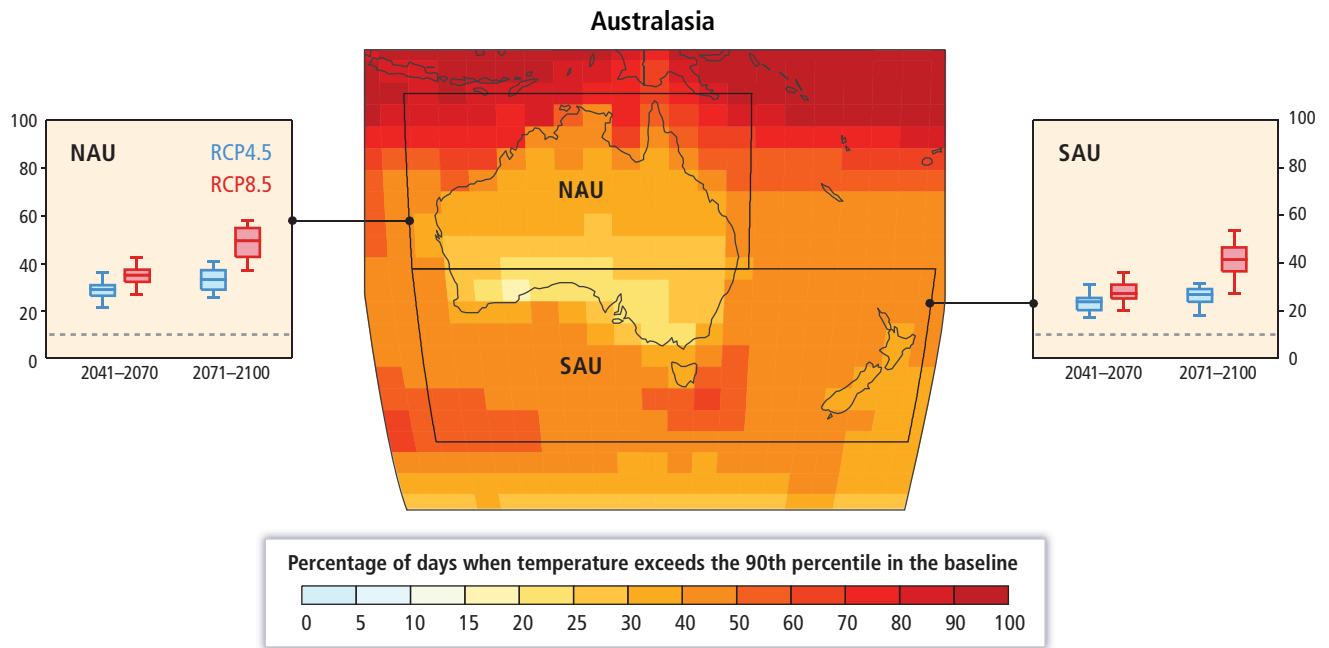
**Figure SM21-8** | The frequency of 'warm days' (defined here as the 90th percentile daily maximum temperature during a baseline period of 1961–1990) projected for the 2071–2100 period by 26 CMIP5 GCMs for Africa. Map: Ensemble median frequency of 'warm days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'hot-day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in Africa. Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'warm days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4.



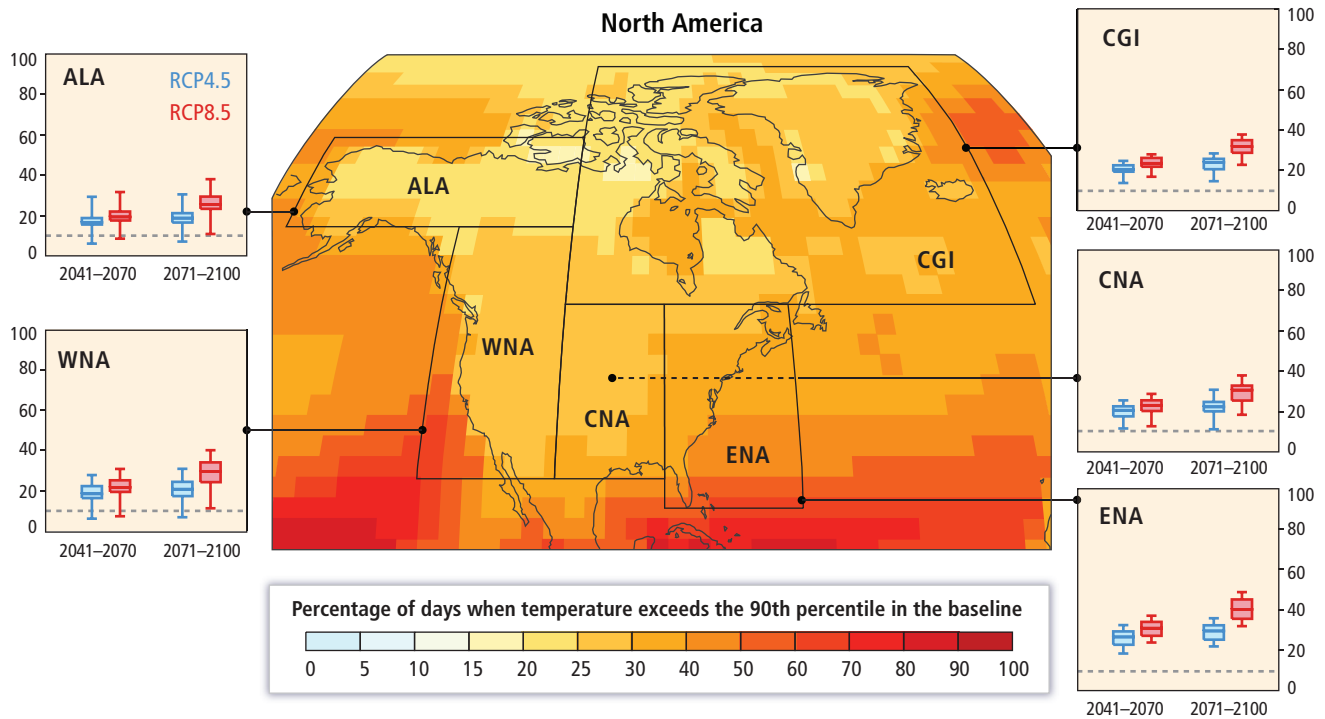
**Figure SM21-9** | The frequency of 'warm days' (defined here as the 90th percentile daily maximum temperature during a baseline period of 1961–1990) projected for the 2071–2100 period by 26 CMIP5 GCMs for Europe. Map: Ensemble median frequency of 'warm days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'hot-day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in Europe. Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'warm days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4.



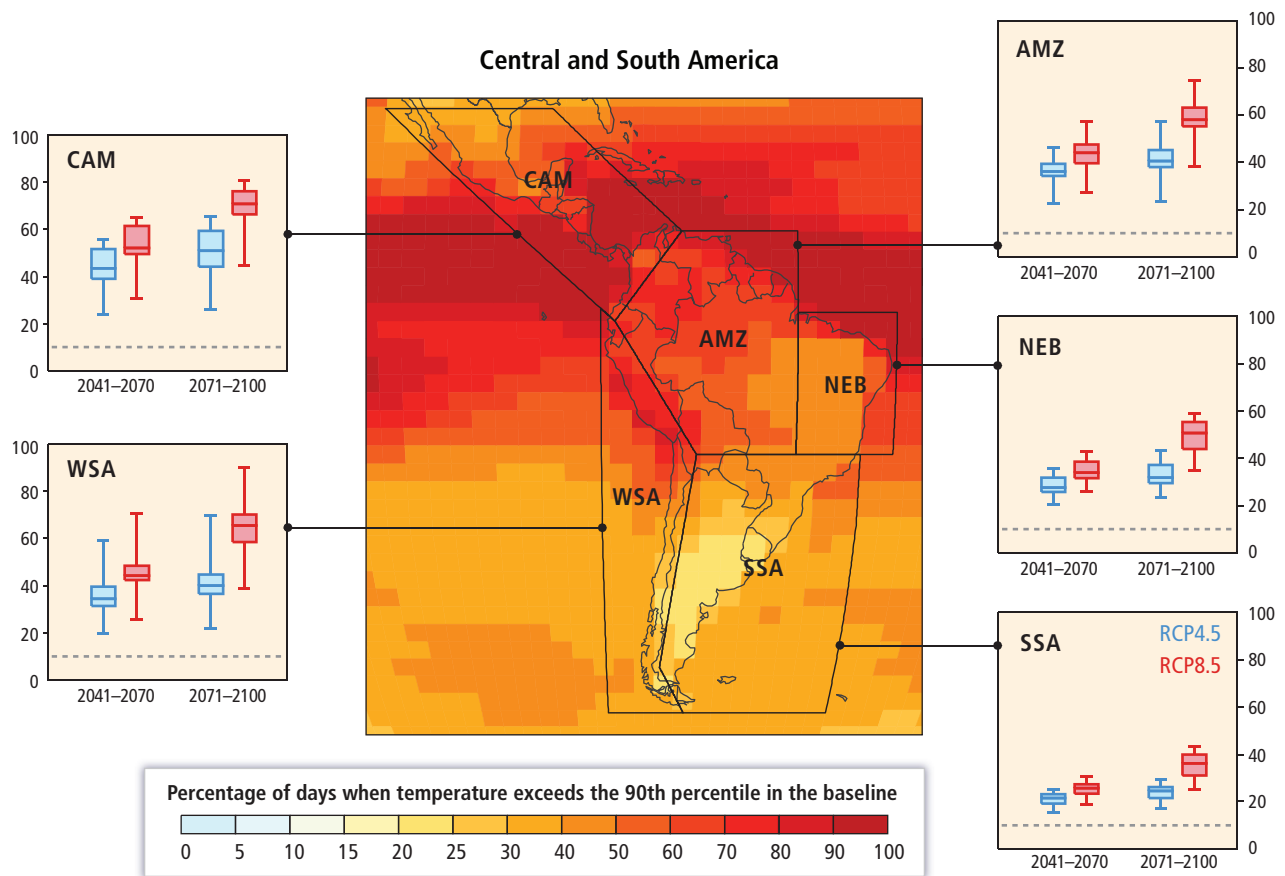
**Figure SM21-10** | The frequency of 'warm days' (defined here as the 90th percentile daily maximum temperature during a baseline period of 1961–1990) projected for the 2071–2100 period by 26 CMIP5 GCMs for Asia. Map: Ensemble median frequency of 'warm days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'hot-day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in Asia. Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'warm days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4.



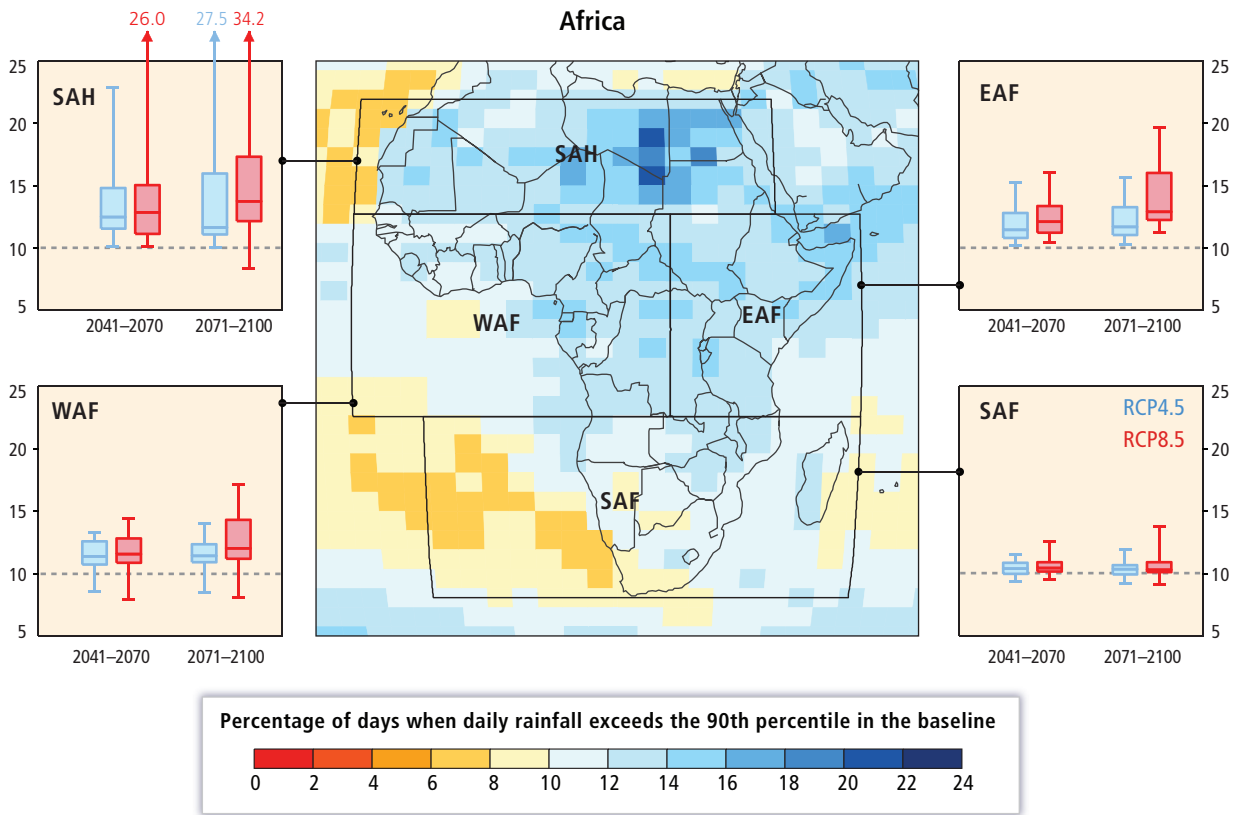
**Figure SM21-11** | The frequency of 'warm days' (defined here as the 90th percentile daily maximum temperature during a baseline period of 1961–1990) projected for the 2071–2100 period by 26 CMIP5 GCMs for Australasia. Map: Ensemble median frequency of 'warm days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'hot-day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in Australasia. Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'warm days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4.



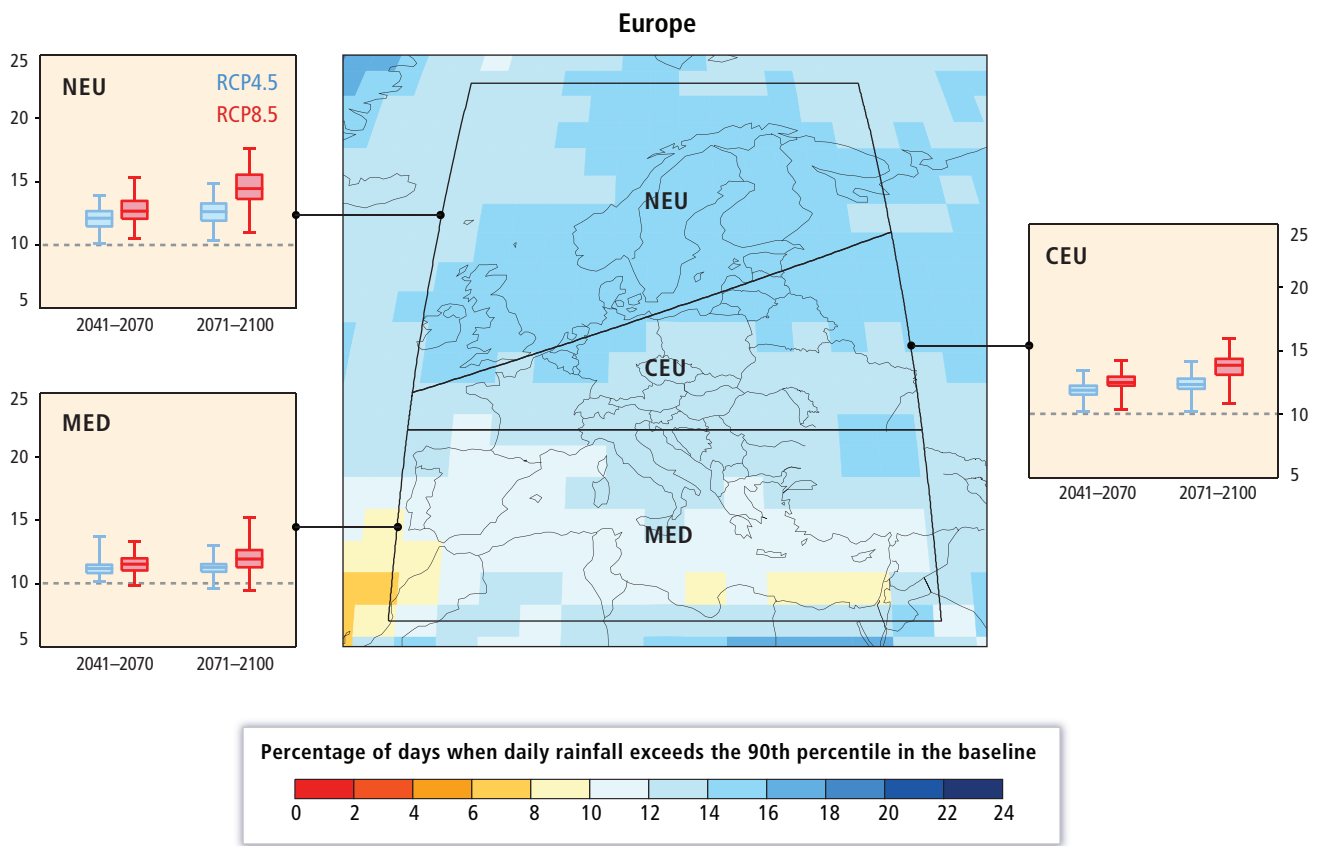
**Figure SM21-12** | The frequency of 'warm days' (defined here as the 90th percentile daily maximum temperature during a baseline period of 1961–1990) projected for the 2071–2100 period by 26 CMIP5 GCMs for North America. Map: Ensemble median frequency of 'warm days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'hot-day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in North America. Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'warm days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4.



**Figure SM21-13** | The frequency of 'warm days' (defined here as the 90th percentile daily maximum temperature during a baseline period of 1961–1990) projected for the 2071–2100 period by 26 CMIP5 GCMs for South and Central America. Map: Ensemble median frequency of 'warm days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'hot-day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in South and Central America. Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'warm days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4.

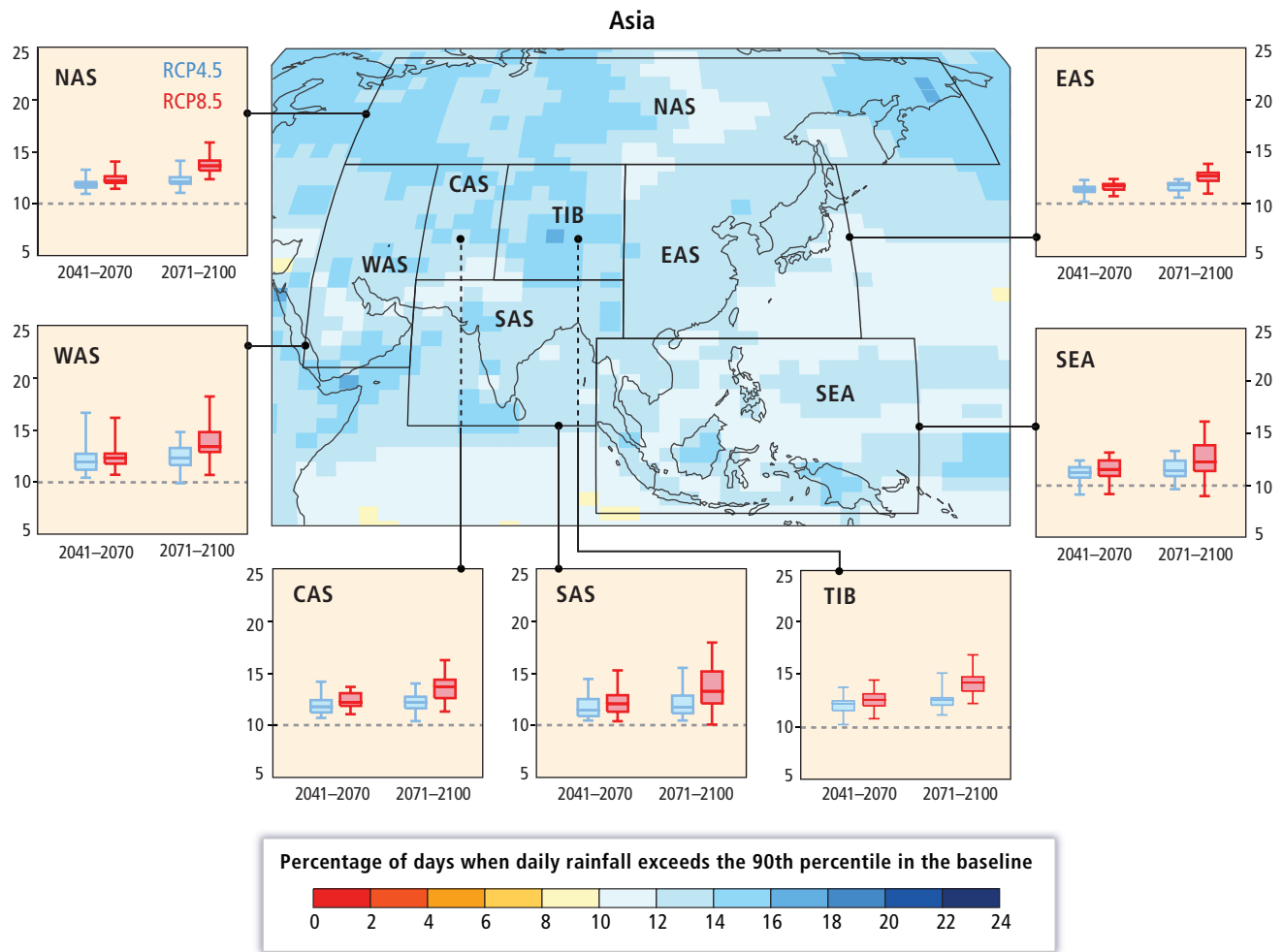


**Figure SM21-14** | The frequency of 'very wet days' (defined here as the 90th percentile of daily precipitation on wet days during a baseline period of 1961–1990 with wet days defined as days with 1mm of precipitation or more) projected for the 2071–2100 period by 26 CMIP5 GCMs for Africa. Map: Ensemble median frequency of 'very wet days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'very wet day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in Africa. Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'Very wet days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4. (Note the WMO Expert Team on Climate Change Detection Indices defines "very wet days" threshold as the 95<sup>th</sup> percentile daily precipitation event.)

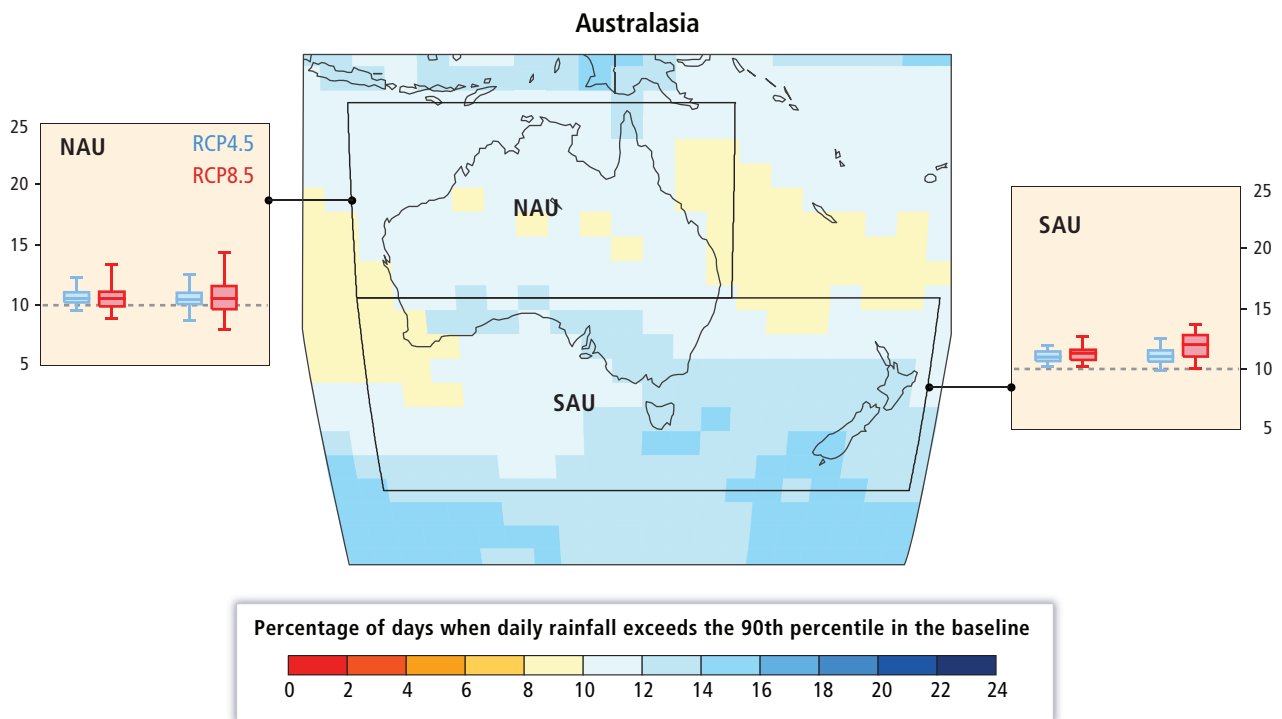


**Figure SM21-15 |** The frequency of 'very wet days' (defined here as the 90th percentile of daily precipitation on wet days during a baseline period of 1961–1990 with wet days defined as days with 1mm of precipitation or more) projected for the 2071–2100 period by 26 CMIP5 GCMs for Europe. Map: Ensemble median frequency of 'very wet days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'very wet day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in Europe. Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'Very wet days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4. (Note the WMO Expert Team on Climate Change Detection Indices defines "very wet days" threshold as the 95<sup>th</sup> percentile daily precipitation event.)

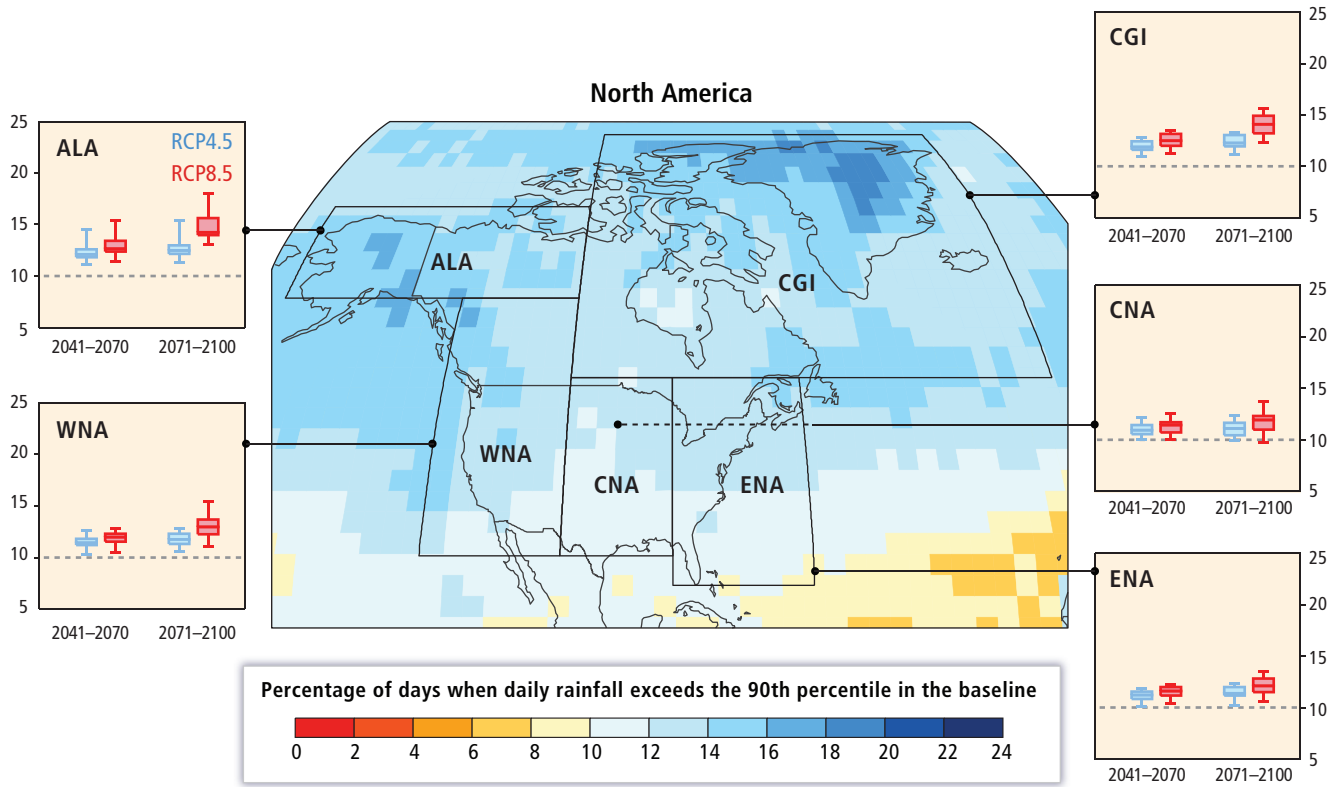




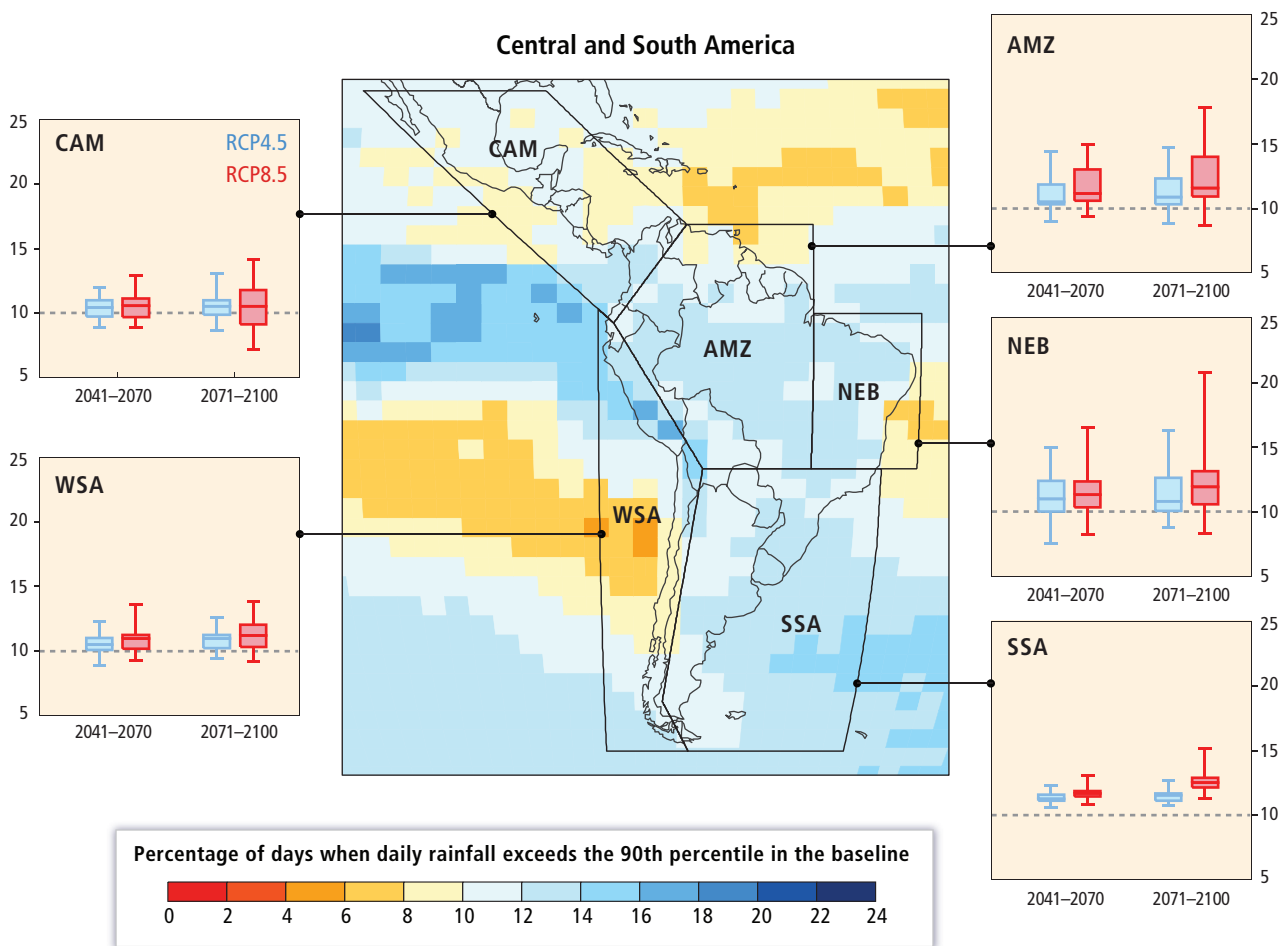
**Figure SM21-16** | The frequency of 'very wet days' (defined here as the 90th percentile of daily precipitation on wet days during a baseline period of 1961–1990 with wet days defined as days with 1mm of precipitation or more) projected for the 2071–2100 period by 26 CMIP5 GCMs for Asia. Map: Ensemble median frequency of 'very wet days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'very wet day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in Asia. Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'Very wet days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4. (Note the WMO Expert Team on Climate Change Detection Indices defines "very wet days" threshold as the 95<sup>th</sup> percentile daily precipitation event.)



**Figure SM21-17** | The frequency of 'very wet days' (defined here as the 90th percentile of daily precipitation on wet days during a baseline period of 1961–1990 with wet days defined as days with 1mm of precipitation or more) projected for the 2071–2100 period by 26 CMIP5 GCMs for Australasia. Map: Ensemble median frequency of 'very wet days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'very wet day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in Australasia Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'Very wet days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4. (Note the WMO Expert Team on Climate Change Detection Indices defines "very wet days" threshold as the 95<sup>th</sup> percentile daily precipitation event.)



**Figure SM21-18 |** The frequency of 'very wet days' (defined here as the 90th percentile of daily precipitation on wet days during a baseline period of 1961–1990 with wet days defined as days with 1mm of precipitation or more) projected for the 2071–2100 period by 26 CMIP5 GCMs for North America. Map: Ensemble median frequency of 'very wet days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'very wet day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in North America. Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'Very wet days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4. (Note the WMO Expert Team on Climate Change Detection Indices defines "very wet days" threshold as the 95<sup>th</sup> percentile daily precipitation event.)



**Figure SM21-19** | The frequency of 'very wet days' (defined here as the 90th percentile of daily precipitation on wet days during a baseline period of 1961–1990 with wet days defined as days with 1mm of precipitation or more) projected for the 2071–2100 period by 26 CMIP5 GCMs for South and Central America. Map: Ensemble median frequency of 'very wet days' during 2071–2100 under RCP8.5. Graphs: Box-and-whisker plots indicate the range of regionally-averaged 'very wet day' frequency by 2041–2070 and 2071–2100 under RCPs 4.5 and 8.5 across the 26 CMIP5 models for each SREX sub-regions in South and Central America. Boxes represent inter-quartile range and whiskers indicate full range of projections across the ensemble. The baseline frequency of 'Very wet days' of 10% is represented on the graphs by the dashed line. A full list of CMIP5 models for which data are shown here can be found in supplementary material Table SM21-4. (Note the WMO Expert Team on Climate Change Detection Indices defines "very wet days" threshold as the 95<sup>th</sup> percentile daily precipitation event.)

**Table SM21-5** | List of datasets used in the regional time series plots in the FGD of IPCC WGII AR5.

pr = precipitation      tas = near-surface air temperature      tos = sea surface temperature

**(a) Observational products**

Dataset source	Dataset realization	Box CC-RC			Chapters 21, 22, 26, 27			Chapter 25			Chapter 30					
		Observed or historical	RCP2.6	RCP8.5	Observed or historical	Natural-historical	RCP2.6	RCP8.5	Observed or historical	Natural-historical	RCP2.6	RCP8.5	Observed or historical	Natural-historical	RCP2.6	RCP8.5
CMAP	v1201	pr			pr											
CRU-TS-3.21	2013-07-10	pr			pr											
GISTEMP-250km	2013-07-29	tas			tas		tas									
GPCP-v2.2	2012-08-01	pr			pr											
HadISST1	2013-03-12											tos				
HadCRUT3	2013-07-26	tas			tas		tas									
HadCRUT4.0.0	2013-07-26, estimates 1-100	tas			tas		tas									
NOAA-MLOST	2013-03-05	tas			tas		tas									
NOAA-PRECL	2013-07-29	pr			pr											
Total number of realizations (total number of sources)		4 (4)			4 (4)							103 (4)				1 (1)

**(b) CMIP5 climate model simulations**

Dataset source	Dataset realization	Box CC-RC			Chapters 21, 22, 26, 27			Chapter 25			Chapter 30					
		Observed or historical	RCP2.6	RCP8.5	Observed or historical	Natural-historical	RCP2.6	RCP8.5	Observed or historical	Natural-historical	RCP2.6	RCP8.5	Observed or historical	Natural-historical	RCP2.6	RCP8.5
BCC-CSM1-1	r11ip1	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas
BCC-CSM1-1-M	r11ip1	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas
BNU-ESM	r11ip1	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas
CanESM2	r11ip1	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas
	r21ip1	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas
	r31ip1	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas
	r41ip1	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas
	r51ip1	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas	pr, tas

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