

**Supplementary Table 1.** 30-90°N land mean surface air temperature changes (°C) relative to the 1850-1900 base period for the hottest day of Annual/DJF/JJA.

	2025	2050	2075	2100
<b>SSP1-1.9</b>	1.2/2.2/0.2	1.9/2.8/1.2	2.1/2.6/1.2	2.4/2.4/0.7
<b>SSP1-2.6</b>	1.3/1.9/0.8	2.3/2.9/1.2	2.1/2.4/1.0	2.5/2.8/0.8
<b>SSP4-3.4</b>	1.1/2.0/0.5	1.8/2.6/1.1	2.5/2.5/1.3	2.3/3.1/1.1
<b>SSP2-4.5</b>	1.1/1.9/0.3	2.0/2.4/1.1	2.7/3.1/1.3	3.4/3.5/2.0
<b>SSP4-6.0</b>	0.9/1.6/-0.2	2.2/2.9/1.4	2.9/3.5/1.9	3.7/4.0/2.3
<b>SSP3-7.0</b>	1.0/1.3/0.01	2.1/2.9/1.0	3.3/3.7/2.2	4.3/4.3/3.0
<b>SSP3-7.0 LOW</b>	1.1/1.7/-0.1	2.3/2.6/1.1	3.5/3.3/2.0	4.3/4.3/2.7
<b>SSP5-8.5</b>	1.3/1.9/0.4	2.5/3.0/1.6	4.3/4.1/2.8	5.4/5.4/3.5
<b>SSP5-3.4 OS</b>	-	2.6/3.0/1.6	2.5/2.9/1.5	2.3/2.7/1.8

**Supplementary Table 2.** 30-90°N land mean surface air temperature changes (°C) relative to the 1850-1900 base period for the coldest day of Annual/DJF/JJA.

	2025	2050	2075	2100
<b>SSP1-1.9</b>	3.6/3.1/3.0	4.5/4.4/4.3	4.5/4.4/4.2	4.3/4.2/4.0
<b>SSP1-2.6</b>	3.7/4.1/3.9	4.9/4.8/4.8	5.1/4.6/4.5	4.7/4.8/4.7
<b>SSP4-3.4</b>	3.4/3.2/3.1	4.8/4.7/4.6	5.2/5.0/5.0	5.4/5.1/5.1
<b>SSP2-4.5</b>	3.9/4.0/3.9	4.9/4.7/4.6	5.5/5.5/5.4	6.0/5.9/5.8
<b>SSP4-6.0</b>	3.7/3.6/3.5	5.3/5.2/5.1	6.6/6.7/6.6	7.1/6.9/6.8
<b>SSP3-7.0</b>	3.5/3.3/3.3	5.9/5.5/5.4	7.3/7.3/7.2	8.3/8.0/7.9
<b>SSP3-7.0 LOW</b>	3.1/3.1/2.9	4.8/4.7/4.5	6.4/6.3/6.4	7.5/7.4/7.3
<b>SSP5-8.5</b>	3.6/3.7/3.6	5.8/5.5/5.5	7.8/7.6/7.5	9.6/9.5/9.4
<b>SSP5-3.4 OS</b>	-	5.9/5.9/5.8	5.3/5.4/5.3	4.5/4.5/4.4

**Supplementary Table 3.** 30-90°N land annual changes relative to the 1850-1900 base period.

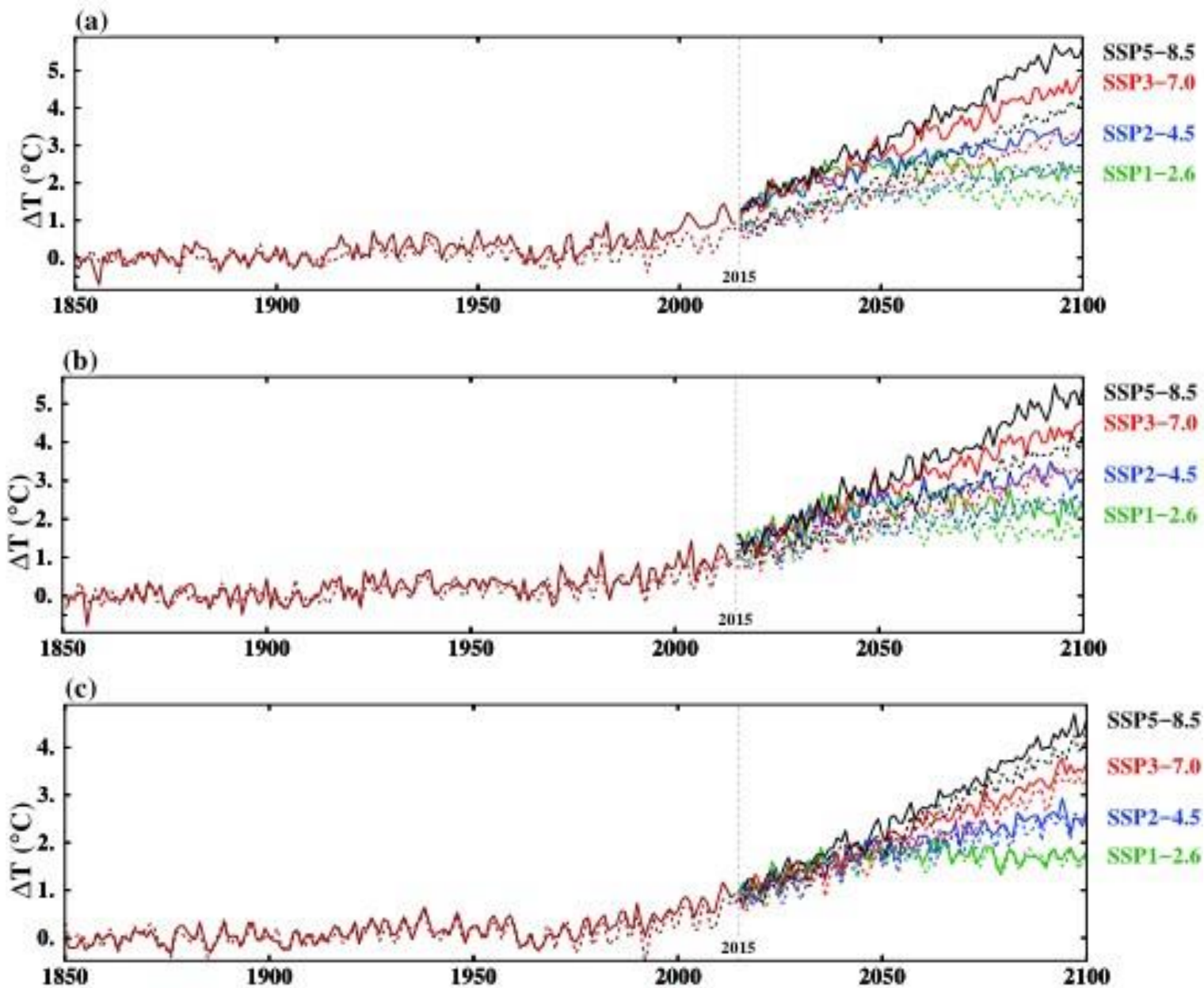
		Total Precip (%)	R95p (%)	SDII (%)	R10mm (day)	CDD (day)
<b>SSP1-1.9</b>	2025	5.9	16.6	0.6	0.8	-3.1
	2050	9.1	28.9	4.2	1.5	-3.6
	2075	8.1	25.3	5.2	1.4	-3.3
	2100	8.4	27.1	7.3	1.4	-3.3
<b>SSP1-2.6</b>	2025	6.9	19.7	1.7	1.0	-3.3
	2050	11.3	35.1	7.9	1.9	-4.1
	2075	9.6	32.2	7.3	1.6	-2.8
	2100	10.8	35.0	10.0	1.8	-3.3
<b>SSP4-3.4</b>	2025	6.5	19.2	3.1	0.9	-4.0
	2050	9.8	29.9	6.3	1.6	-3.6
	2075	10.3	34.1	8.8	1.7	-3.5
	2100	10.6	36.0	7.7	1.7	-2.6
<b>SSP2-4.5</b>	2025	6.5	18.9	6.1	0.9	-3.8
	2050	9.6	30.0	5.8	1.5	-3.0
	2075	9.4	33.8	2.7	1.5	-2.4
	2100	10.2	38.3	8.6	1.6	-2.0
<b>SSP4-6.0</b>	2025	7.4	18.7	3.3	1.1	-4.3
	2050	10.1	31.3	4.0	1.6	-3.7
	2075	10.7	37.4	4.6	1.7	-2.6
	2100	13.9	47.0	11.1	2.1	-2.6
<b>SSP3-7.0</b>	2025	6.4	18.9	4.4	1.0	-3.4
	2050	8.8	28.2	4.0	1.3	-3.4
	2075	11.5	42.8	4.6	1.7	-2.2
	2100	13.9	52.8	6.1	2.1	-3.5
<b>SSP3-7.0 LOW</b>	2025	6.6	19.8	3.5	1.0	-3.4
	2050	9.2	28.8	4.4	1.5	-3.5
	2075	10.9	40.2	9.3	1.8	-2.1
	2100	14.1	54.6	11.3	2.2	-1.9
<b>SSP5-8.5</b>	2025	6.7	20.0	-1.5	0.9	-3.2
	2050	9.6	32.7	4.4	1.5	-2.5
	2075	12.7	49.2	9.0	1.9	-2.3
	2100	15.4	63.5	11.7	2.4	-0.3
<b>SSP5-3.4 OS</b>	2025	-	-	-	-	-
	2050	11.4	37.5	4.0	1.8	-3.8
	2075	9.9	33.9	6.9	1.5	-3.0
	2100	11.2	36.0	2.9	1.8	-2.6

**Supplementary Table 4.** 30-90°N land maximum 5-day precipitation changes (%) relative to the 1850-1900 base period for Annual/DJF/JJA.

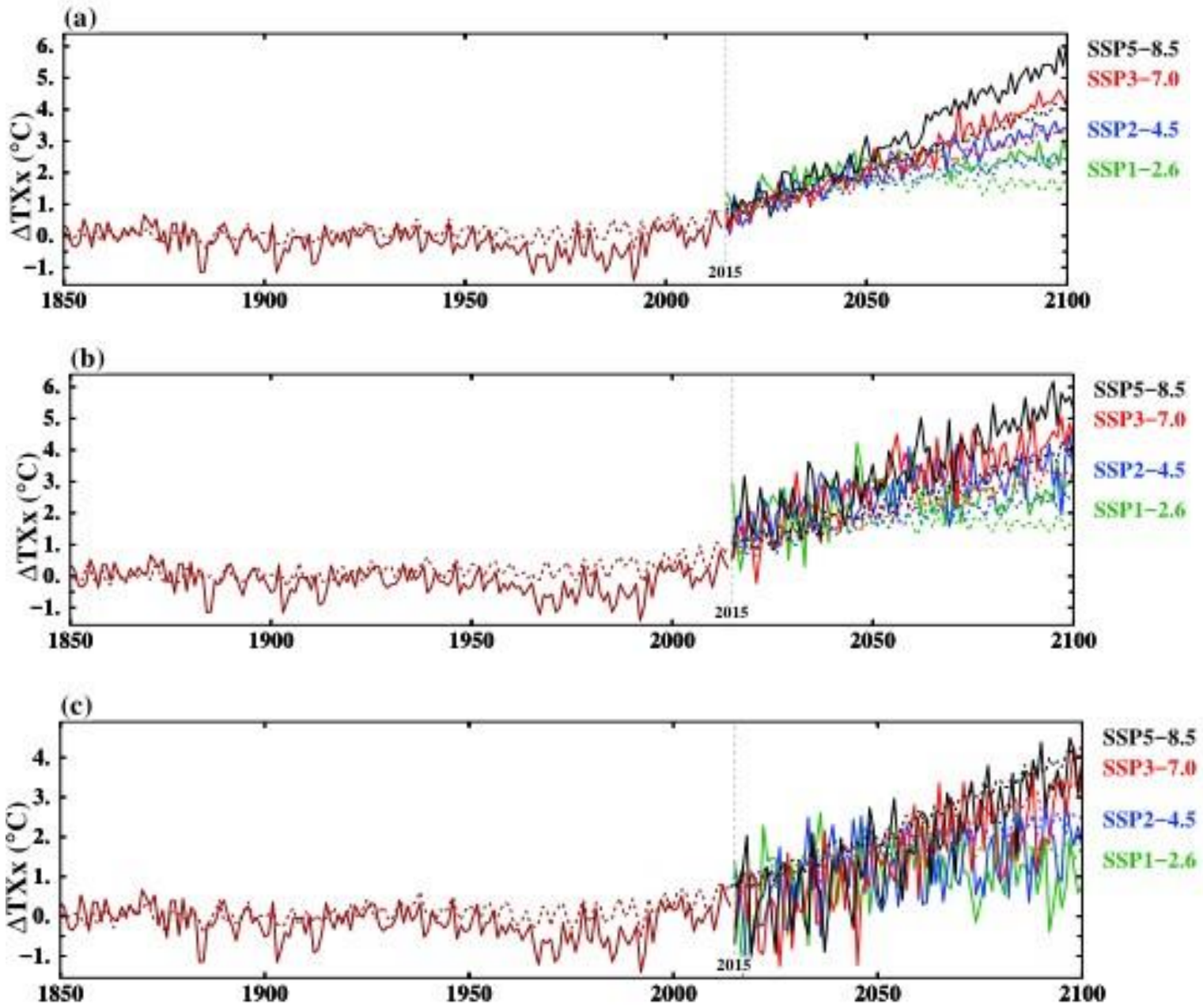
	2025	2050	2075	2100
<b>SSP1-1.9</b>	4.2/7.8/7.3	9.0/11.8/10.8	9.2/10.8/7.6	8.7/9.3/12.1
<b>SSP1-2.6</b>	6.0/8.1/10.3	11.8/16.1/16.2	10.0/13.4/11.8	11.3/13.6/13.7
<b>SSP4-3.4</b>	5.4/11.6/9.1	9.1/13.3/14.8	10.5/13.6/14.6	11.9/16.6/13.4
<b>SSP2-4.5</b>	6.1/10.9/8.5	9.3/15.3/12.1	10.0/10.6/13.5	11.5/14.1/13.8
<b>SSP4-6.0</b>	5.9/10.6/6.8	9.3/14.4/14.7	11.3/18.31/13.8	14.2/17.7/15.1
<b>SSP3-7.0</b>	6.8/13.4/11.6	9.5/17.3/14.5	13.2/15.9/18.3	15.6/19.1/18.1
<b>SSP3-7.0 LOW</b>	6.0/10.7/8.8	8.6/14.4/10.3	12.5/17.3/13.0	16.8/22.0/17.5
<b>SSP5-8.5</b>	7.1/10.9/8.6	10.3/13.3/14.0	14.7/20.4/19.6	20.2/19.9/22.6
<b>SSP5-3.4 OS</b>	-	11.6/16.4/17.8	11.2/15.7/13.8	9.7/13.8/13.7

**Supplementary Table 5.** Regional changes for 2081-2100 relative to the 1995-2014 base period. Temperatures are in °C; precipitation indices are in %.

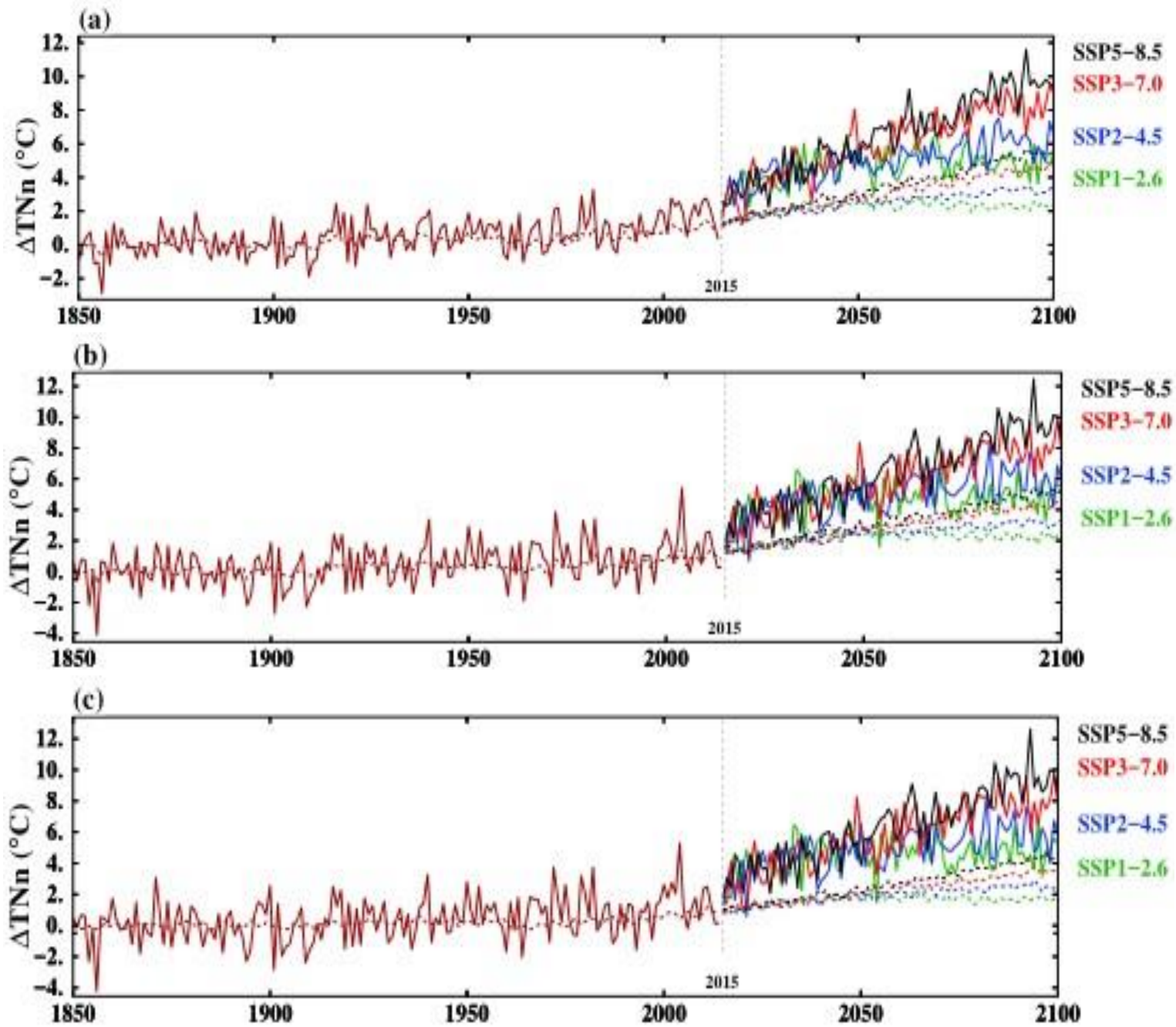
	NAmerica	CSAm	Europe	Asia	Africa	Australia	RAR
TXx	2.5 3.1	1.4 2.5	2.2 3.3	1.8 2.6	1.6 2.7	1.9 2.6	6.1 6.0
	4.0 5.0	3.6 4.3	4.1 4.9	3.4 4.5	3.9 4.7	3.7 4.9	6.8 8.1
TNn	3.4 5.0	1.2 2.1	2.5 3.7	2.4 3.4	1.5 2.7	0.9 2.0	4.2 6.4
	7.4 8.6	3.3 3.9	6.1 6.7	4.9 6.0	3.8 4.8	3.6 4.9	9.9 11.4
Tot.Precip.	8.2 6.6	1.9 -1.1	3.7 -1.2	3.1 4.0	1.3 -0.6	-11.1 -4.9	16.9 21.8
	8.1 10.7	-8.9 -2.4	-0.5 -4.5	2.1 6.3	-4.9 -5.6	-9.8 -13.9	28.6 39.3
R95p	23.3 24.1	14.6 16.6	20.8 13.3	19.0 24.2	6.3 4.0	-5.4 -9.1	46.6 52.7
	31.9 42.2	6.4 25.8	17.8 12.6	30.91 45.6	-7.0 -0.6	4.3 -0.6	63.0 91.8
RX5day	7.6 7.3	6.0 7.2	5.4 3.7	10.8 10.7	1.9 2.4	0.1 8.3	16.5 16.3
	8.7 12.7	4.0 10.6	4.1 2.5	15.5 21.3	-0.6 1.3	6.4 2.2	20.2 27.4
R10mm	10.2 6.9	0.0 -4.6	9.5 1.4	1.5 2.0	1.1 -1.7	-15.5 -9.3	48.8 53.5
	8.1 9.6	-15.1 -9.1	3.5 -2.3	-3.0 0.5	-7.6 -9.2	-15.1 -20.9	62.5 91.2
SDII	6.6 5.7	1.9 1.5	5.2 3.1	5.1 5.6	1.0 0.3	-3.2 1.0	7.9 7.7
	6.9 8.2	-3.5 0.5	4.5 2.7	6.6 9.5	-0.6 -0.8	-0.6 -4.0	8.2 12.4
CDD	-3.2 -2.9	-4.6 1.0	10.3 18.7	-3.6 3.2	-3.0 0.0	11.3 9.2	-6.7 -6.5
	0.7 -0.5	-0.8 -0.5	23.2 39.7	-2.7 2.0	-2.7 -0.2	18.9 17.2	-17.3 -17.7



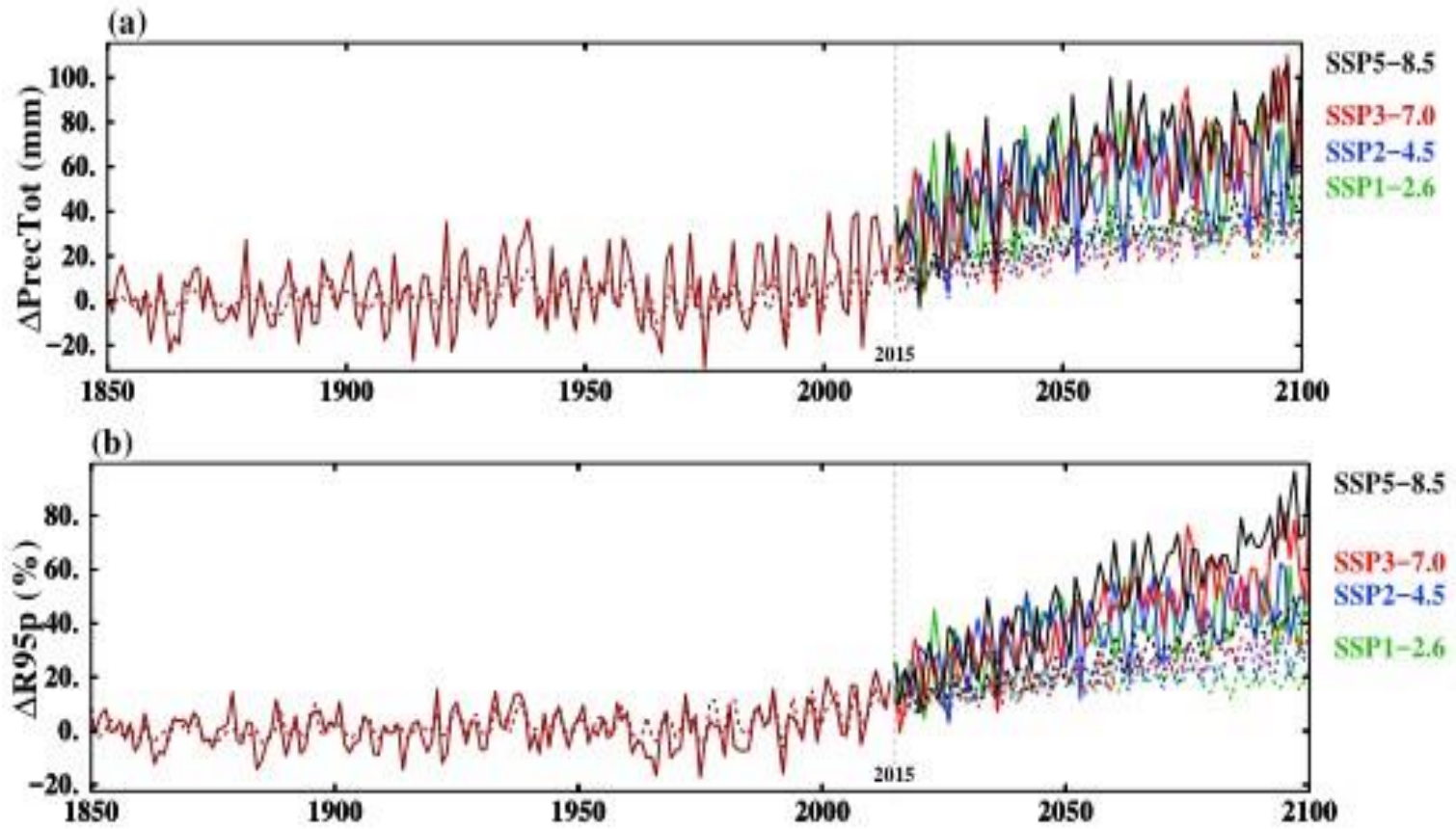
Supplementary Figure 1. Global mean surface air temperature anomalies relative to the 1850-1900 base period. (a) annual; (b) DJF; (c) JJA. Solid lines are TNn. Dashed lines are TXx.



Supplementary Figure 2. TXx temperature anomalies relative to the 1850-1900 base period. (a) annual; (b) DJF; (c) JJA. Solid lines are for the northern 30-90°N land areas. Dashed lines are for the global means.



Supplementary Figure 3. TNn temperature anomalies relative to the 1850-1900 base period. (a) annual; (b) DJF; (c) JJA. Solid lines are for the northern 30-90°N land areas. Dashed lines are for the global means.



**Supplementary Figure 4.** Anomalies relative to the 1850-1900 base period for (a) total precipitation (mm); (b) 95<sup>th</sup> percentile of precipitation (%). Solid lines are for the northern 30-90°N land areas. Dashed lines are for the global means.