UNDP Climate Change Country Profiles

Tanzania

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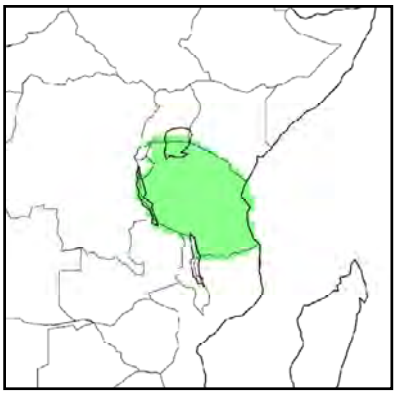
http://country-profiles.geog.ox.ac.uk



General Climate

Tanzania lies just south of the equator, at 1-11˚S and has a tropical climate with regional variations due to topography. With the exception of a narrow coastal strip, most of Tanzania is highland. The greater part of Tanzania is a central plateau of around 900-1800m, punctuated with mountain ranges (including Kilimanjaro, 5895m). The coastal regions of Tanzania are warm and humid, with temperatures 25 to 17˚C through most of the year, dipping just below 25˚C in the coolest months (JJAS). The highland regions are more temperate, with temperatures around 20-23˚C throughout the year, dropping by only a degree or so in JJAS.

Seasonal rainfall in Tanzania is driven mainly by the migration of the Inter-Tropical Convergence Zone (ITCZ), relatively narrow belt of very low pressure and heavy precipitation that forms near the earth's equator. The exact position of the ITCZ changes over the course of the year, migrating southwards through Tanzania in October to December, reaching the south of the country in January and February, and returning northwards in March, April and May. This causes the north and east of Tanzania experiences two distinct wet periods – the 'short' rains in October to December and the 'long' rains in March to May, whilst the southern, western and central parts of the country experience one wet season that continues October through to April or May. The amount of rainfall falling in these seasons is usually 50-200mm per month but varies greatly between regions, and can be as much as 300mm per month in the wettest regions and seasons. The movements of the ITCZ are sensitive to variations in Indian Ocean sea-surface temperatures and vary from year to year, hence the onset, duration and intensity of these rainfalls vary considerably inter-annually. One of the most well documented ocean influences on rainfall in this region is the El Niño Southern Oscillation (ENSO). El Niño episodes usually cause greater than average rainfalls in the short rainfall season (OND), whilst cold phases (La Niña) bring a drier than average season.

Recent Climate Trends

Temperature

- Mean annual temperature has increased by 1.0˚C since 1960, an average rate of 0.23˚C per decade. This increase in temperature has been most rapid in JF and slowest in JJAS.

- Daily temperature observations show only small increasing trends in the frequency hot days[1], but much larger increasing trends in the frequency of hot nights.
    - The average number of 'hot' days in Tanzania has only increased significantly in DJF when the average number of hot DJF days has increased by 2.5 days per month (an additional 8.2% of DJF days) between 1960 and 2003.
    - The average number of 'hot' nights per year increased by 50 (an additional 13.6% of nights) between 1960 and 2003. The rate of increase is seen most strongly in DJF when the average number of hot DJF nights has increased by 6 days per month (an additional 19.8% of DJF nights) over this period.
- The frequency of cold[2] days has not changed discernibly, despite the observed increases in mean temperature. The frequency of cold nights has, however, decreased significantly in all seasons.
    - The average number of 'cold' nights per year has decreased by 34 (9.3% of days). This rate of decrease is most rapid in DJF when the average number of cold DJF nights has decreased by 3.6 nights per month (11.5% of DJF nights) over this period.

Precipitation

- Observations of rainfall over Tanzania show statistically significant decreasing trends in annual, and JJAS and MAM rainfall. Annual rainfall has decreased at an average rate of 2.8mm per month (3.3%) per decade. The greatest annual decreases have occurred in the southern most parts of Tanzania. MAM and JJAS rainfalls have decreased by 4.0 and 0.8 mm per month per decade, respectively (3.0% and 6.0%).

- Trends in the extreme indices based on daily rainfall data are mixed. There is no statistically significant trend in the proportion of rainfall occurring in heavy[3] events. 1- and 5-day rainfall maxima show small, non-statistically significant decreasing trends. 5-day events show a significant increasing trend of +11.03mm per decade in MAM.

[1] 'Hot' day or 'hot' night is defined by the temperature exceeded on 10% of days or nights in current climate of that region and season.

[2] 'Cold' days or 'cold' nights are defined as the temperature below which 10% of days or nights are recorded in current climate of that region or season.

[3] A 'Heavy' event is defined as a daily rainfall total which exceeds the threshold that is exceeded on 5% of rainy days in current the climate of that region and season.

GCM Projections of Future Climate

Temperature

- The mean annual temperature is projected to increase by 1.0 to 2.7˚C by the 2060s, and 1.5 to 4.5˚C by the 2090s. The range of projections by the 2090s under any one emissions scenario is 1.5-2.0˚C.

- All projections indicate increases in the frequency of days and nights that are considered 'hot' in current climate.
    - Annually, projections indicate that 'hot' days will occur on 19-40% of days by the 2060s, and 19-65% of days by the 2090s.
    - Nights that are considered 'hot' for the annual climate of 1970-99 are projected to increase more quickly that hot days, occurring on 30-68% of nights by the 2060s and 35-91% of nights by the 2090s. Nights that are considered hot for each season by 1970-99 standards are projected to increase particularly rapidly in DJF, occurring on 47-99% of nights in the season by the 2090s.
- All projections indicate decreases in the frequency of days and nights that are considered 'cold' in current climate. These events are expected to become exceedingly rare, with cold days occurring on 0-4% of days and cold nights occurring on a maximum of 1% of days, and not at all under the two higher emissions scenarios, by the 2090s.

Precipitation

- Projections of mean rainfall are broadly consistent in indicating increases in annual rainfall. The ensemble range spans changes of -4 to +30% by the 2090s, and ensemble median changes of +7 to +14%.
- The annual increases in rainfall are similar across the whole country, but the seasonal patterns of change are more complex. Increases in JF rainfall affect most of the country but particularly the very south, whilst the increases in MAM and SON rainfall are greatest in the northern regions of the country. In JJAS, rainfall increases in the very north of the country, but decreases in central and southern Tanzania. This pattern suggests that rainfall generally increases in the wet-season(s) of each region.

- The models consistently project overall increases in the proportion of rainfall that falls in heavy events. The increases range from 1 to 14% in annual rainfall by the 2090s. Increases affect most of the country in the seasons JF, MAM and SON.
- The models consistently project increases in 1- and 5-day rainfall maxima by the 2090s of up to 24mm in 1-day events, and 4 to 37mm in 5-day events. The largest increases are seen in MAM.

Other Regional Climate Change Information

- Model simulations show wide disagreements in projected changes in the amplitude of future El Niño events. Tanzania's seasonal rainfall can be strongly influenced by ENSO, thus contributing to uncertainty in climate projections for this region.

- For further information on climate projections for Africa, see Christensen *et al.* (2007) IPCC Working Group I Report: '*The Physical Science Basis'*, Chapter 11 *(Regional Climate projections*): Section 11.2 *(Africa*).

Data Summary

	Observed Mean 1970-99	Observed Trend 1960-2006		Projected changes by the 2030s Min	Median	Max	Projected changes by the 2060s Min	Median	Max	Projected changes by the 2090s Min	Median	Max
Temperature												
	(˚C)	*(change in ˚C per decade)*		*Change in ˚C*			*Change in ˚C*			*Change in ˚C*		
			A2	0.9	**1.2**	1.4	1.8	**2.5**	2.7	2.9	**3.9**	4.5
Annual	22.2	0.23*	*A1B*	0.8	**1.3**	1.6	1.5	**2.3**	2.7	2.3	**3.2**	4.1
			B1	0.5	**1. 0**	1.3	1.0	**1.7**	2.1	1.5	**2.1**	2.6
			A2	0.7	**1.1**	1.4	1.4	**2.2**	2.8	2.4	**3.5**	4.4
JF	22.6	0.26*	*A1B*	0.8	**1.2**	1.5	1.4	**2.2**	2.5	2.1	**2.9**	3.9
			B1	0.4	**0.9**	1.2	1.0	**1.6**	2.0	1.3	**2.0**	2.4
			A2	0.8	**1.2**	1.4	1.6	**2.4**	2.8	2.9	**3.8**	4.5
MAM	22.0	0.24*	*A1B*	0.6	**1.3**	1.7	1.4	**2.3**	2.6	2.3	**2.9**	3.8
			B1	0.3	**1.0**	1.3	1.0	**1.8**	2.1	1.5	**1.9**	2.8
			A2	0.9	**1.4**	1.6	1.9	**2.5**	3.0	3.2	**4.1**	4.8
JJAS	21.1	0.21*	*A1B*	0.8	**1.4**	1.8	1.7	**2.5**	2.9	2.5	**3.3**	4.4
			B1	0.7	**1.0**	1.4	1.1	**1.8**	2.3	1.6	**2.2**	2.9
			A2	0.7	**1.2**	1.6	1.8	**2.4**	2.8	3.0	**3.9**	4.8
OND	23.3	0.23*	*A1B*	0.6	**1.3**	1.7	1.3	**2.2**	2.8	2.0	**3.3**	4.3
			B1	0.3	**1.0**	1.3	0.9	**1.7**	2.0	1.4	**2.0**	2.5
Precipitation												
	(mm per month)	*(change in mm per decade)*		*Change in mm per month*			*Change in mm per month*			*Change in mm per month*		
			A2	-4	**3**	8	-3	**6**	18	-5	**13**	30
Annual	85	-2.8*	*A1B*	-6	**3**	14	-1	**7**	11	-5	**8**	22
			B1	-3	**2**	12	-5	**5**	13	-5	**6**	17
			A2	-1	**4**	17	-8	**8**	46	0	**23**	50
JF	142.3	-3.9	*A1B*	-18	**11**	24	-2	**14**	31	-11	**19**	47
			B1	-10	**2**	24	-2	**13**	26	-13	**13**	29
			A2	-7	**4**	13	-2	**10**	43	-11	**15**	57
MAM	134.3	-4.0*	*A1B*	-12	**3**	27	-4	**8**	39	-6	**12**	40
			B1	-4	**5**	30	-6	**0**	30	-10	**11**	36
			A2	-3	**0**	3	-4	**0**	7	-6	**1**	13
JJAS	12.6	-0.8*	*A1B*	-5	**0**	4	-4	**0**	4	-5	**0**	7
			B1	-3	**0**	3	-3	**0**	4	-3	**0**	4
			A2	-14	**4**	18	-13	**8**	18	-18	**13**	35
OND	92.5	-3.3	*A1B*	-10	**0**	14	-12	**7**	21	-20	**8**	29
			B1	-12	**3**	27	-18	**4**	12	-18	**11**	18
Precipitation (%)												
	(mm per month)	*(change in % per decade)*		*% Change*			*% Change*			*% Change*		
			A2	-3	**3**	8	-3	**5**	18	-4	**14**	30
Annual	85.0	-3.3*	*A1B*	-6	**3**	13	-1	**6**	11	-3	**8**	22
			B1	-4	**2**	12	-6	**5**	13	-4	**7**	17
			A2	0	**2**	9	-5	**5**	24	0	**11**	26
JF	142.3	-2.7	*A1B*	-13	**5**	12	-1	**7**	16	-7	**9**	25
			B1	-7	**2**	12	-1	**7**	13	-7	**7**	16
			A2	-7	**4**	11	-1	**9**	40	-7	**16**	53
MAM	134.3	-3.0*	*A1B*	-13	**3**	25	-4	**7**	36	-3	**10**	42
			B1	-4	**3**	24	-6	**0**	28	-11	**9**	33
			A2	-13	**-2**	22	-16	**-3**	43	-19	**11**	80
JJAS	12.6	-6.0*	*A1B*	-23	**-4**	29	-13	**-2**	27	-17	**0**	43
			B1	-18	**-1**	18	-17	**-2**	27	-14	**0**	23
			A2	-8	**3**	13	-7	**5**	12	-10	**9**	24
OND	92.5	-3.5	*A1B*	-5	**0**	10	-9	**6**	14	-11	**4**	19
			B1	-8	**1**	23	-10	**3**	8	-10	**8**	13

	Observed Mean 1970-99	Observed Trend 1960-2006		Projected changes by the 2030s			Projected changes by the 2060s			Projected changes by the 2090s		
				Min	Median	Max	Min	Median	Max	Min	Median	Max
	% Frequency	Change in frequency per decade					Future % frequency			Future % frequency		
Frequency of Hot Days (TX90p)												
			A2	****	****	****	20	**28**	40	28	**49**	65
Annual	11.9	0.61	*A1B*	****	****	****	21	**27**	39	24	**40**	60
			B1	****	****	****	19	**25**	30	19	**28**	38
			A2	****	****	****	26	**43**	64	37	**65**	84
JF (DJF)	13.2	(1.91*)	*A1B*	****	****	****	25	**45**	61	32	**58**	85
			B1	****	****	****	20	**35**	52	27	**42**	62
			A2	****	****	****	30	**40**	67	48	**71**	87
MAM	12.1	1.44	*A1B*	****	****	****	29	**40**	61	39	**52**	85
			B1	****	****	****	26	**29**	48	28	**35**	59
			A2	****	****	****	22	**44**	48	37	**72**	78
JJAS (JJA)	11.1	(0.32)	*A1B*	****	****	****	23	**42**	52	31	**61**	77
			B1	****	****	****	19	**31**	41	22	**41**	51
			A2	****	****	****	28	**35**	57	40	**52**	79
OND	11.6	1.68	*A1B*	****	****	****	26	**35**	59	37	**47**	75
			B1	****	****	****	21	**31**	47	27	**34**	59
Frequency of Hot Nights (TN90p)												
			A2	****	****	****	42	**49**	68	70	**77**	91
Annual	11.8	3.16*	*A1B*	****	****	****	38	**53**	68	55	**69**	87
			B1	****	****	****	30	**38**	55	35	**46**	69
			A2	****	****	****	56	**78**	92	85	**96**	99
JF (DJF)	13.2	(4.60*)	*A1B*	****	****	****	54	**74**	93	71	**91**	99
			B1	****	****	****	36	**55**	76	47	**73**	93
			A2	****	****	****	49	**64**	85	82	**95**	98
MAM	11.8	3.87*	*A1B*	****	****	****	43	**67**	88	65	**89**	96
			B1	****	****	****	33	**48**	77	39	**56**	88
			A2	****	****	****	41	**48**	71	77	**85**	97
JJAS (JJA)	9.4	(1.52)	*A1B*	****	****	****	41	**53**	73	59	**73**	94
			B1	****	****	****	31	**32**	54	36	**45**	69
			A2	****	****	****	41	**63**	91	78	**91**	99
OND	8.8	1.65	*A1B*	****	****	****	49	**60**	90	61	**80**	98
			B1	****	****	****	31	**48**	76	36	**65**	90
Frequency of Cold Days (TX10p)												
			A2	****	****	****	1	**2**	3	0	**0**	1
Annual	8.4	0.03	*A1B*	****	****	****	1	**2**	3	0	**0**	2
			B1	****	****	****	2	**3**	4	1	**2**	4
			A2	****	****	****	1	**3**	5	0	**0**	1
JF (DJF)	8.4	(-0.47)	*A1B*	****	****	****	0	**2**	4	0	**1**	2
			B1	****	****	****	1	**3**	5	1	**2**	4
			A2	****	****	****	0	**2**	6	0	**0**	1
MAM	8.5	0.04	*A1B*	****	****	****	0	**2**	4	0	**0**	3
			B1	****	****	****	1	**2**	6	0	**2**	5
			A2	****	****	****	0	**1**	2	0	**0**	1
JJAS (JJA)	8.5	(0.15)	*A1B*	****	****	****	0	**1**	4	0	**0**	1
			B1	****	****	****	1	**2**	5	1	**2**	3
			A2	****	****	****	0	**2**	4	0	**0**	1
OND	8.7	0.01	*A1B*	****	****	****	1	**3**	4	0	**1**	2
			B1	****	****	****	1	**3**	5	1	**3**	4
Frequency of Cold Nights (TN10p)												
			A2	****	****	****	0	**0**	1	0	**0**	0
Annual	8.5	-2.15*	*A1B*	****	****	****	0	**0**	1	0	**0**	0
			B1	****	****	****	0	**1**	2	0	**0**	1
			A2	****	****	****	0	**0**	0	0	**0**	0
JF (DJF)	8.0	(-2.68*)	*A1B*	****	****	****	0	**0**	1	0	**0**	0
			B1	****	****	****	0	**1**	2	0	**0**	1
			A2	****	****	****	0	**1**	1	0	**0**	0
MAM	8.5	-2.48*	*A1B*	****	****	****	0	**0**	3	0	**0**	0
			B1	****	****	****	0	**1**	3	0	**1**	1
			A2	****	****	****	0	**0**	0	0	**0**	0
JJAS (JJA)	8.2	(-2.35*)	*A1B*	****	****	****	0	**0**	0	0	**0**	0
			B1	****	****	****	0	**0**	1	0	**0**	0
			A2	****	****	****	0	**0**	1	0	**0**	0
OND	9.1	-2.05*	*A1B*	****	****	****	0	**0**	1	0	**0**	0
			B1	****	****	****	0	**1**	2	0	**0**	1

	Observed Mean 1970-99	Observed Trend 1960-2006		Projected changes by the 2030s Min	Median	Max	Projected changes by the 2060s Min	Median	Max	Projected changes by the 2090s Min	Median	Max
% total rainfall falling in Heavy Events (R95pct)												
	%	*Change in % per decade*					*Change in %*			*Change in %*		
			A2	****	****	****	1	**5**	9	4	**10**	14
Annual	23.6	0.64	*A1B*	****	****	****	0	**5**	11	3	**7**	11
			B1	****	****	****	0	**3**	5	1	**5**	8
			A2	****	****	****	2	**4**	10	2	**6**	13
JF	****	****	*A1B*	****	****	****	1	**3**	10	0	**7**	13
(DJF)			*B1*	****	****	****	0	**3**	6	0	**4**	11
			A2	****	****	****	0	**4**	15	4	**8**	17
MAM	****	****	*A1B*	****	****	****	0	**4**	12	4	**5**	15
			B1	****	****	****	-1	**3**	13	1	**6**	12
			A2	****	****	****	-5	**-1**	11	-8	**2**	10
JJAS	****	****	*A1B*	****	****	****	-4	**0**	8	-9	**-1**	6
(JJA)			*B1*	****	****	****	-8	**-2**	6	-9	**0**	6
			A2	****	****	****	-1	**5**	9	0	**10**	13
OND	****	****	*A1B*	****	****	****	-3	**4**	10	-1	**7**	13
			B1	****	****	****	-3	**3**	6	0	**4**	9
Maximum 1-day rainfall (RX1day)												
	mm	*Change in mm per decade*					*Change in mm*			*Change in mm*		
			A2	****	****	****	-1	**3**	13	1	**7**	24
Annual	****	****	*A1B*	****	****	****	0	**2**	8	1	**5**	17
			B1	****	****	****	0	**1**	7	0	**2**	8
			A2	****	****	****	0	**1**	9	0	**5**	10
JF	29.8	(-1.79)	*A1B*	****	****	****	0	**1**	5	-3	**4**	8
(DJF)			*B1*	****	****	****	0	**2**	4	0	**1**	7
			A2	****	****	****	0	**2**	17	0	**7**	24
MAM	****	****	*A1B*	****	****	****	0	**1**	10	1	**3**	19
			B1	****	****	****	-1	**1**	14	0	**2**	12
			A2	****	****	****	0	**0**	3	-1	**0**	3
JJAS	8.6	(-0.56)	*A1B*	****	****	****	0	**0**	1	0	**0**	2
(JJA)			*B1*	****	****	****	-1	**0**	1	-1	**0**	1
			A2	****	****	****	0	**1**	10	0	**5**	14
OND	17.7	-2.41	*A1B*	****	****	****	0	**2**	6	-1	**3**	9
			B1	****	****	****	-1	**1**	7	0	**2**	6
Maximum 5-day Rainfall (RX5day)												
	mm	*Change in mm per decade*					*Change in mm*			*Change in mm*		
			A2	****	****	****	-5	**8**	22	5	**16**	37
Annual	153.6	7.48	*A1B*	****	****	****	0	**6**	14	5	**10**	32
			B1	****	****	****	0	**4**	15	4	**9**	15
			A2	****	****	****	-1	**5**	19	0	**8**	16
JF	52.2	(-0.93)	*A1B*	****	****	****	0	**3**	11	-3	**8**	18
(DJF)			*B1*	****	****	****	-1	**4**	10	0	**7**	9
			A2	****	****	****	0	**6**	33	3	**12**	36
MAM	86.6	11.03*	*A1B*	****	****	****	-1	**4**	17	3	**11**	35
			B1	****	****	****	-2	**4**	24	1	**6**	22
			A2	****	****	****	-1	**0**	8	-4	**1**	8
JJAS	13.4	(-1.39)	*A1B*	****	****	****	-2	**0**	4	-3	**0**	3
(JJA)			*B1*	****	****	****	-2	**0**	5	-1	**0**	3
			A2	****	****	****	-2	**5**	14	1	**9**	23
OND	26.8	-4.72	*A1B*	****	****	****	-4	**7**	14	-3	**7**	21
			B1	****	****	****	-4	**3**	11	-3	**7**	12

* indicates trend is statistically significant at 95% confidence

**** indicates data are not available

Bracketed trend values for extremes indices indicate values for the closest seasons that data is available. See documentation.

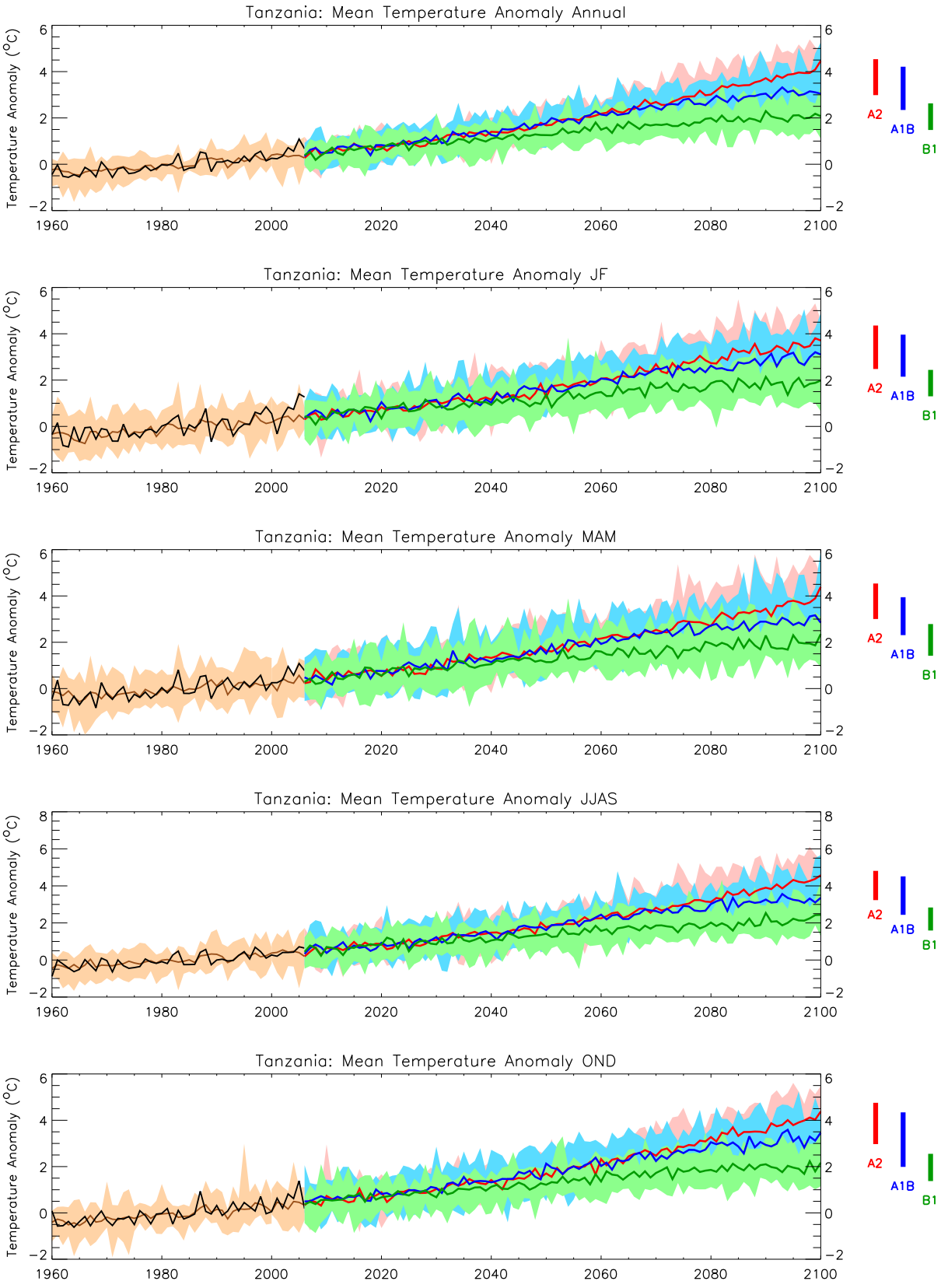


Figure 1: Trends in annual and seasonal mean temperature for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. Black curves show the mean of observed data from 1960 to 2006, Brown curves show the median (solid line) and range (shading) of model simulations of recent climate across an ensemble of 15 models. Coloured lines from 2006 onwards show the median (solid line) and range (shading) of the ensemble projections of climate under three emissions scenarios. Coloured bars on the right-hand side of the projections summarise the range of mean 2090-2100 climates simulated by the 15 models for each emissions scenario.

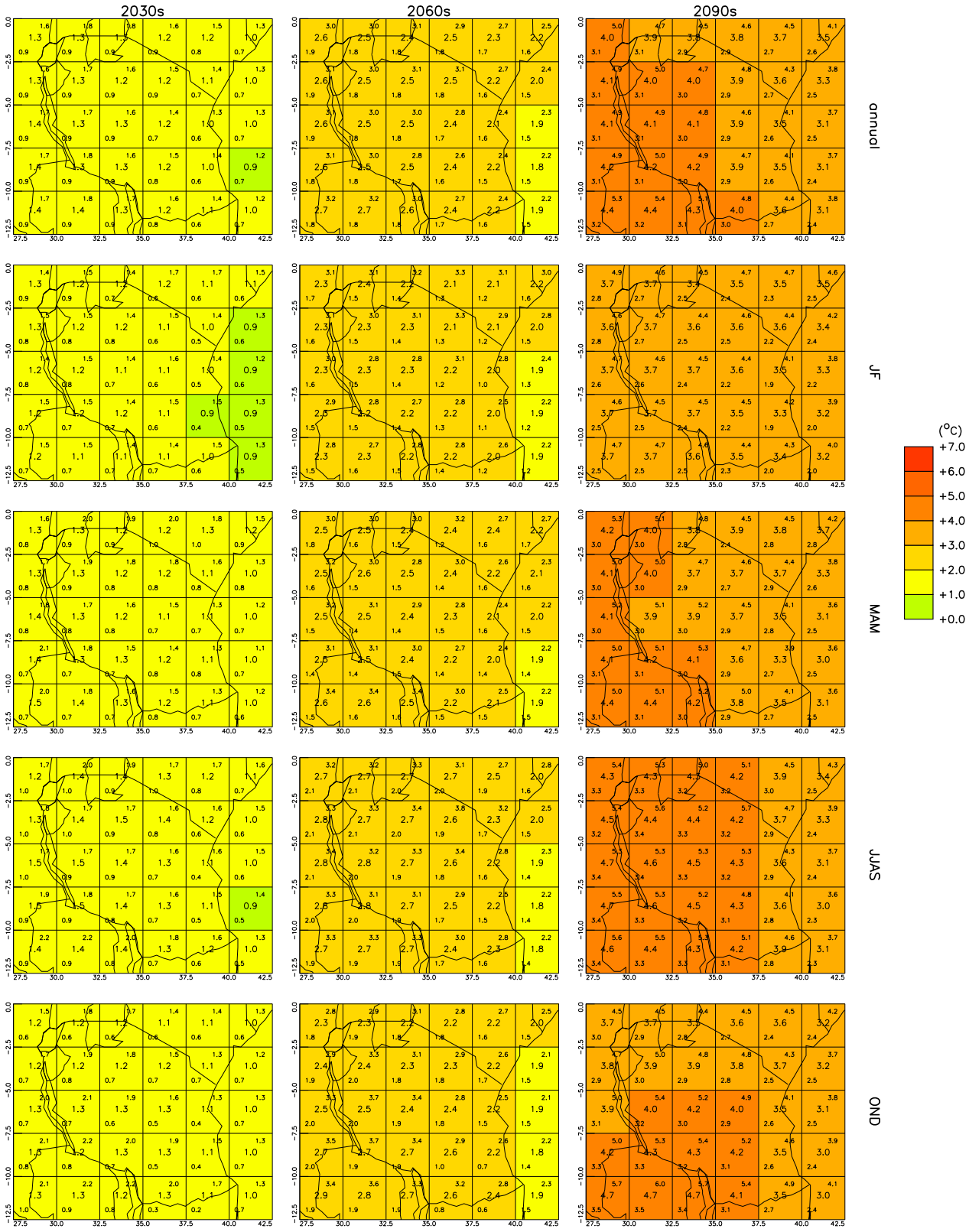


Figure 2: Spatial patterns of projected change in mean annual and seasonal temperature for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. In each grid box, the central value gives the ensemble median and the values in the upper and lower corners give the ensemble maximum and minimum.

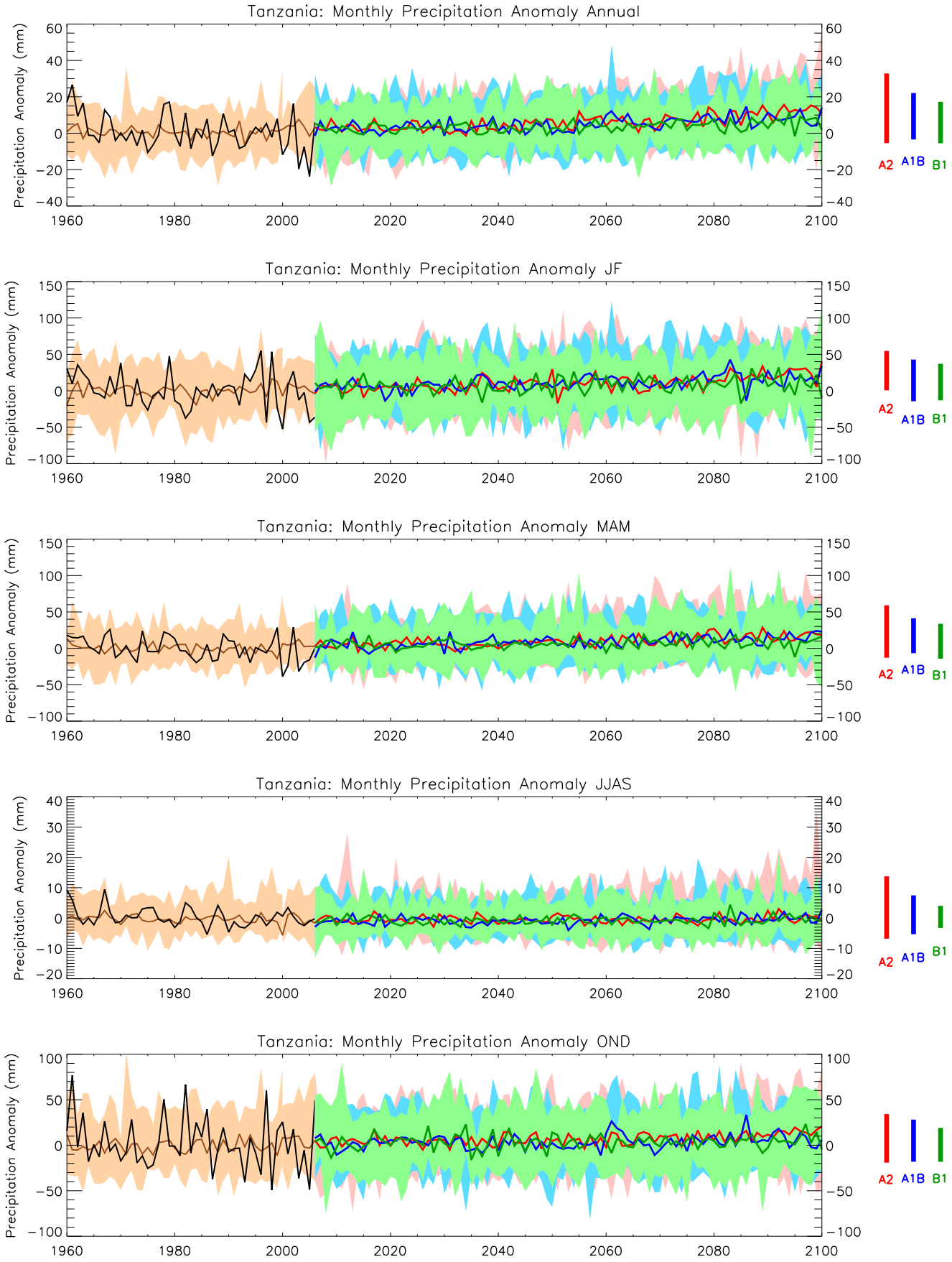


Figure 3: Trends in monthly precipitation for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

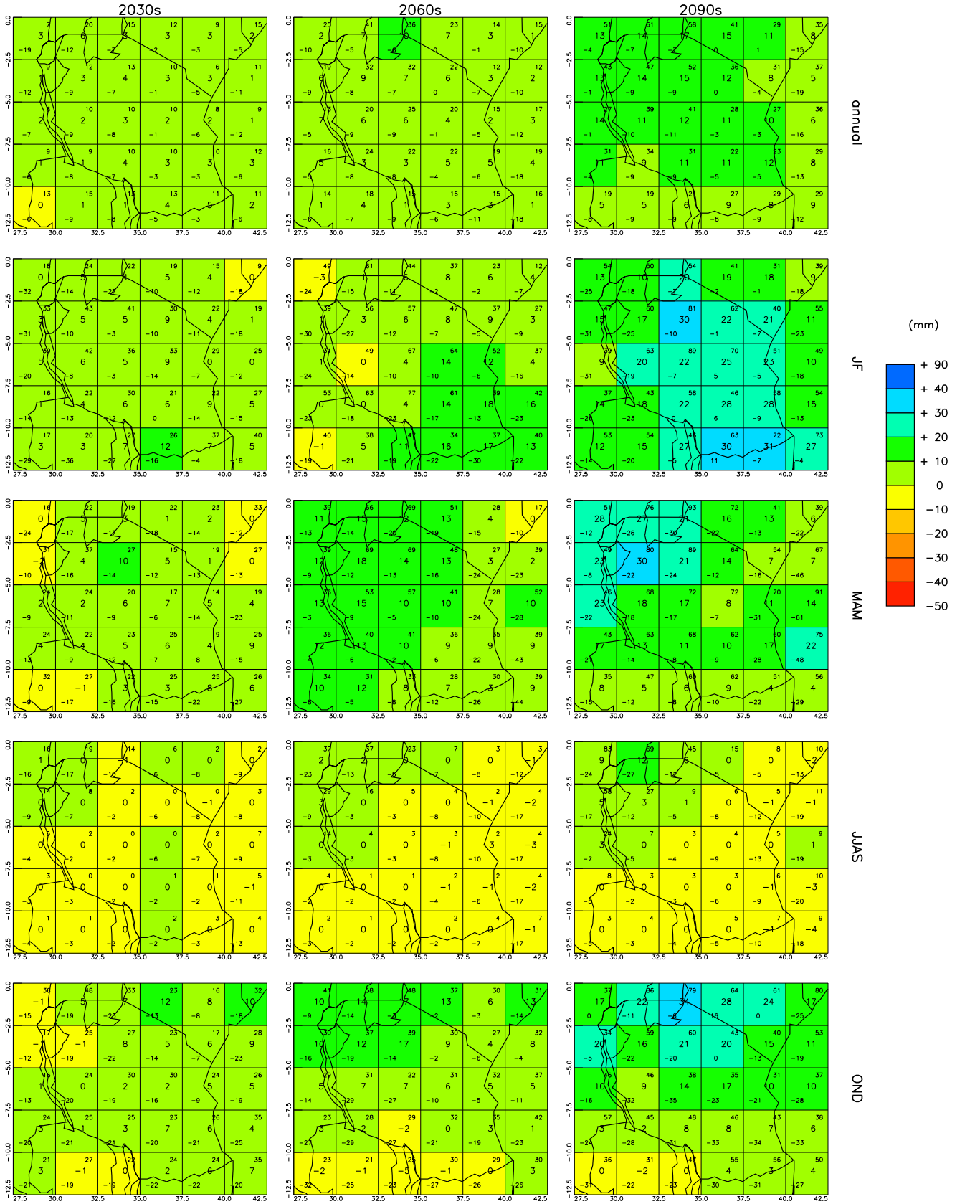


Figure 4: Spatial patterns of projected change in monthly precipitation for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999.See Figure 2 for details.

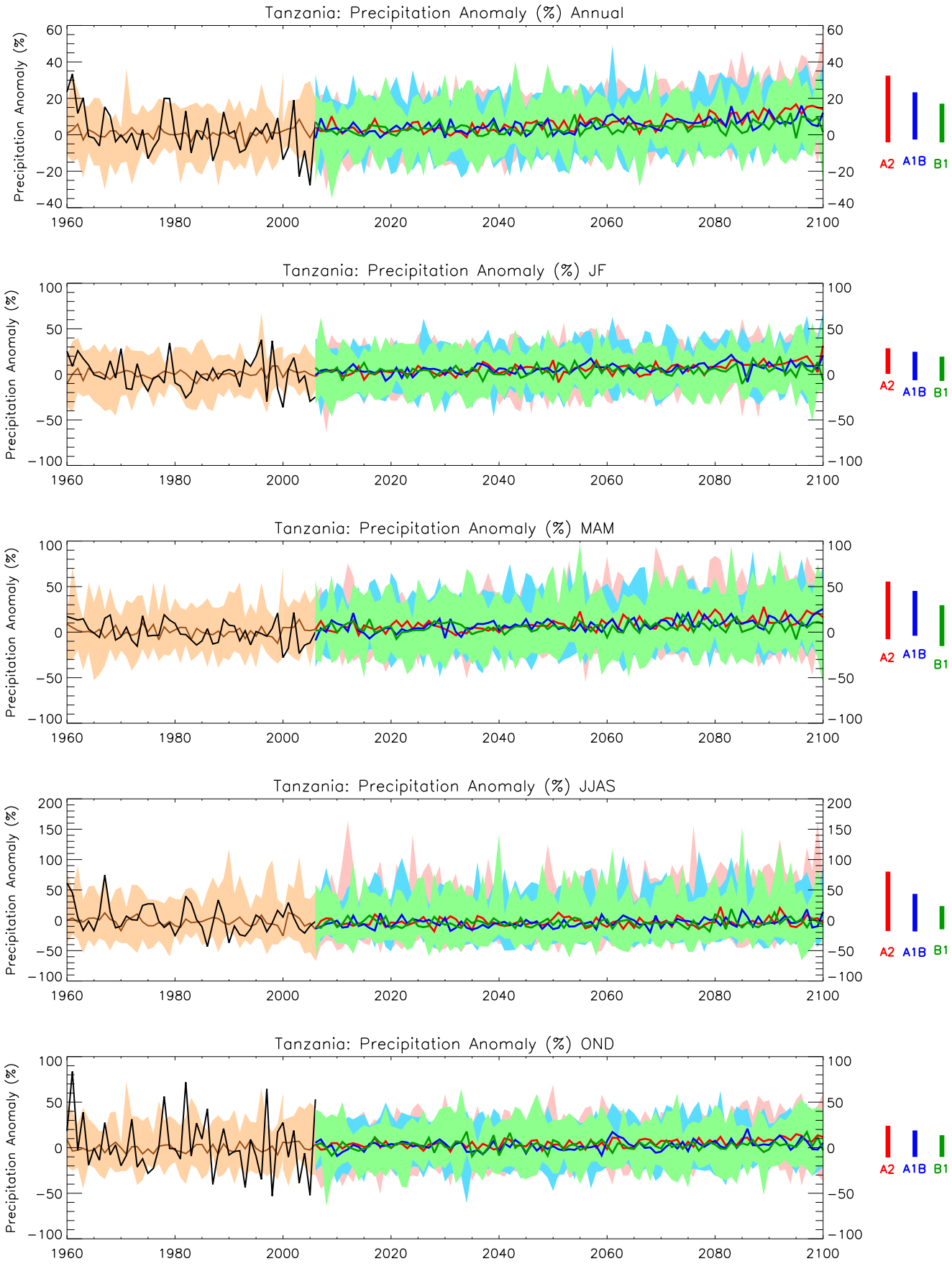


Figure 5: Trends in monthly precipitation for the recent past and projected future. All values shown are percentage anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

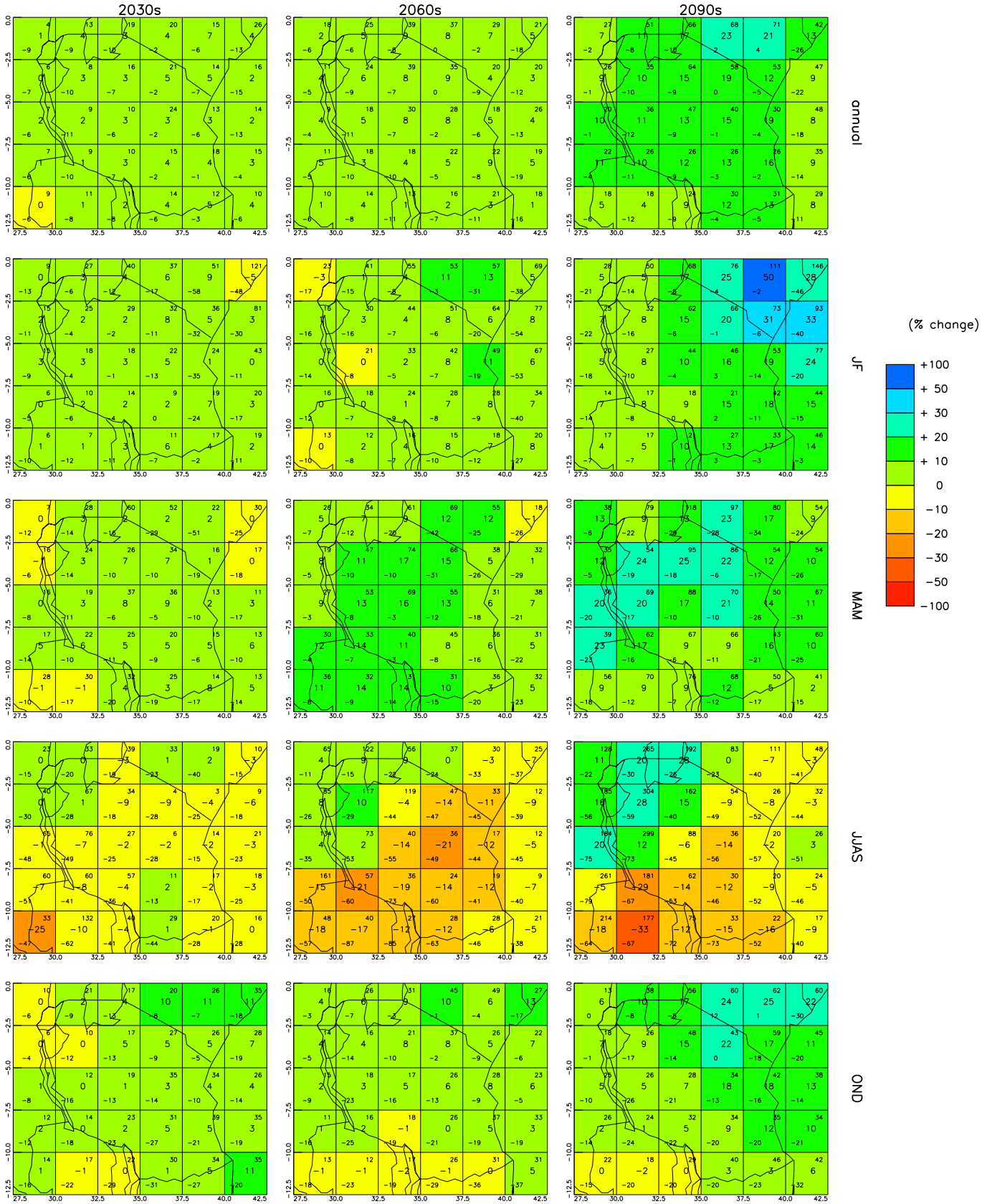


Figure 6: Spatial patterns of projected change in monthly precipitation for 10-year periods in the future under the SRES A2 scenario. All values are percentage anomalies relative to the mean climate of 1970-1999.See Figure 2 for details.

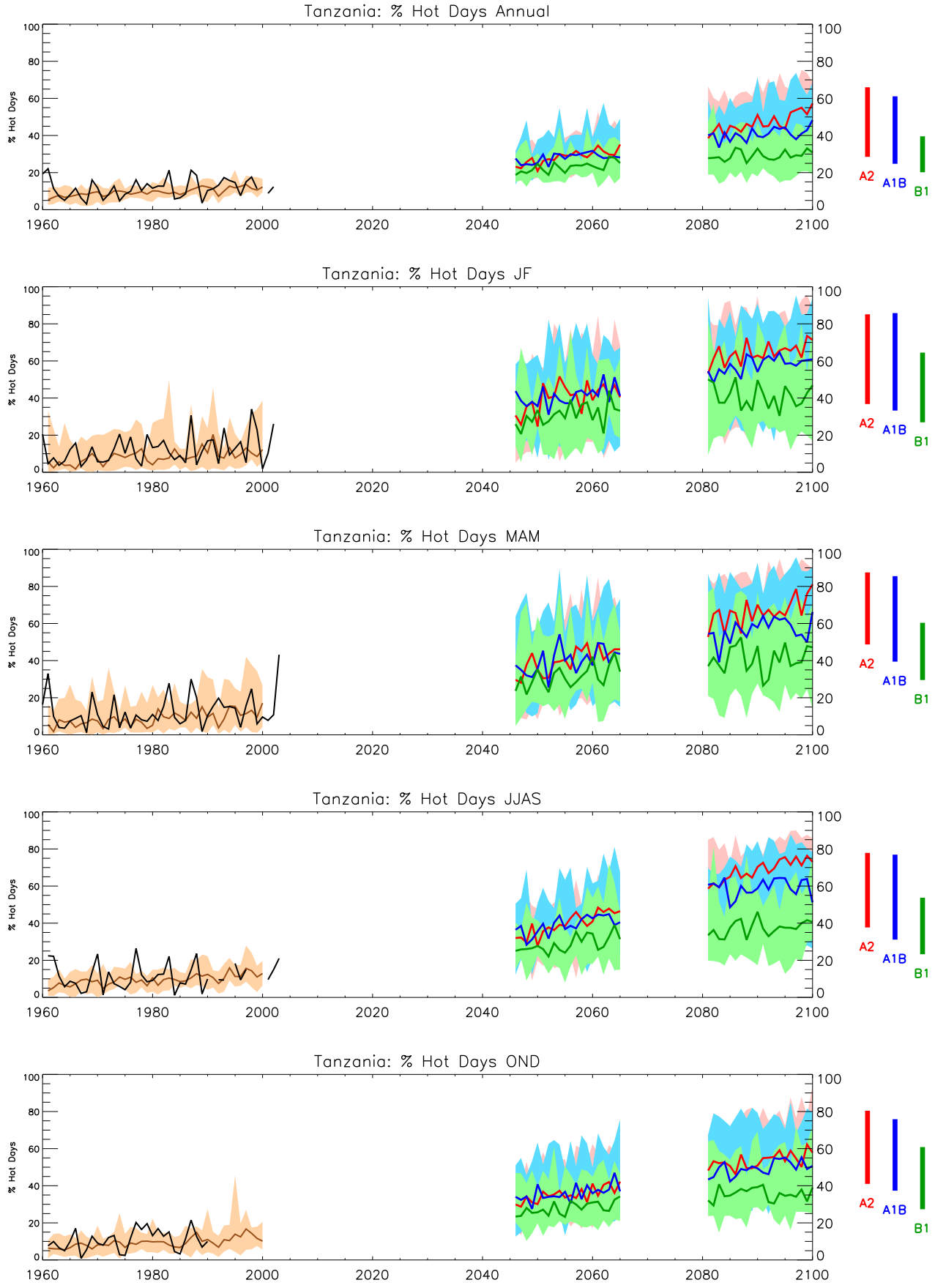


Figure 7: Trends in Hot-day frequency for the recent past and projected future. See Figure 1 for details.

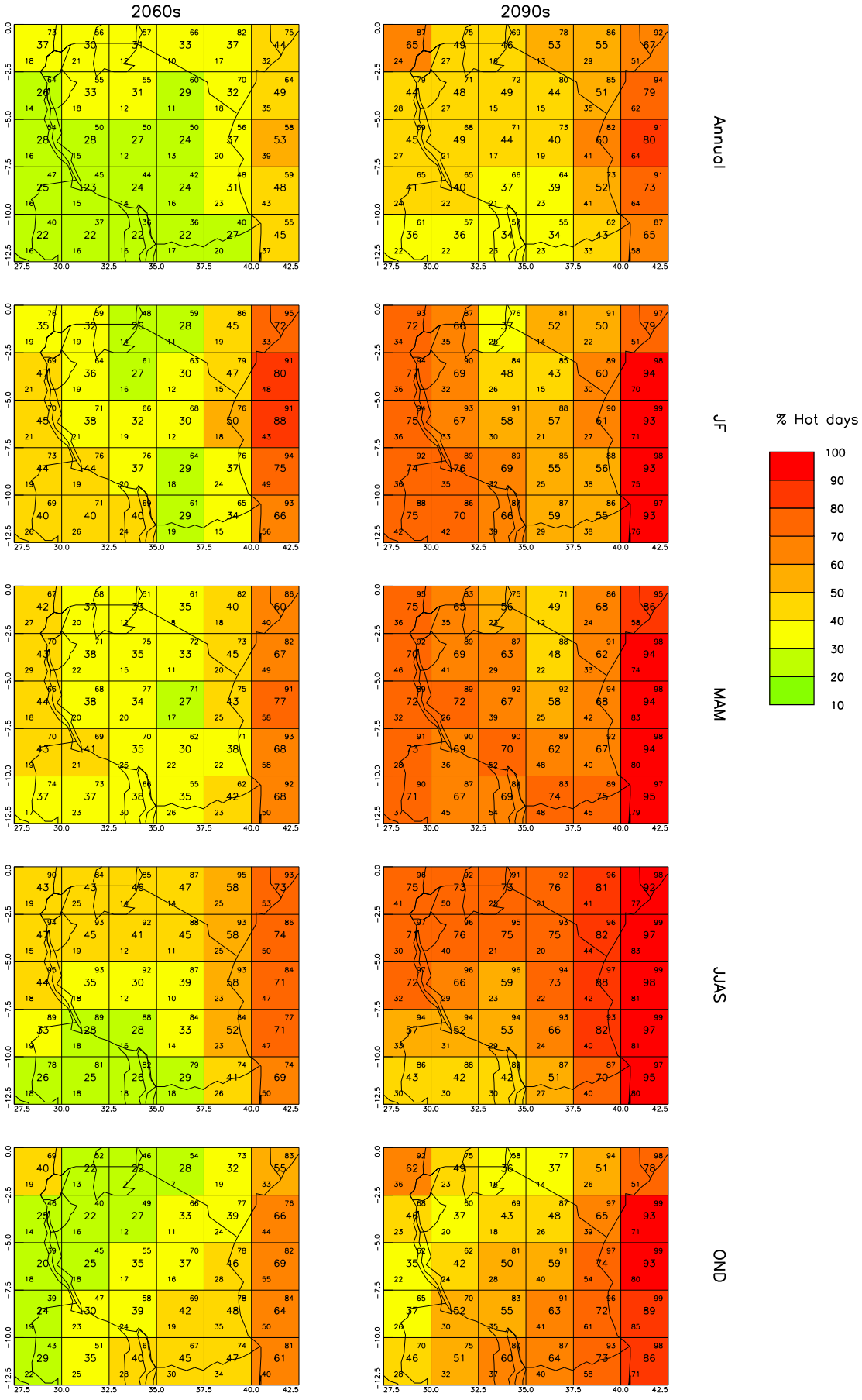


Figure 8: Spatial patterns of projected change in Hot-day frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

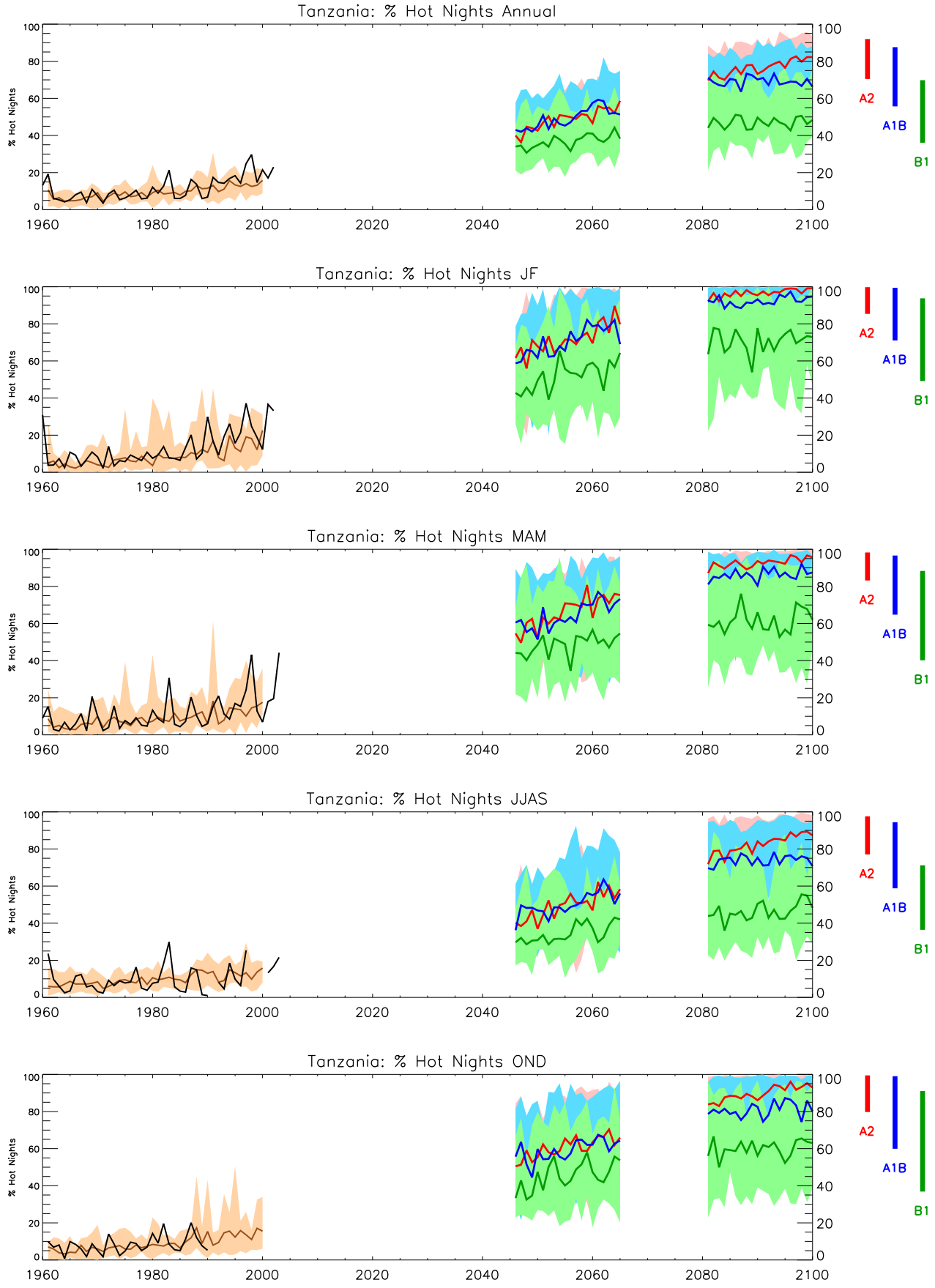


Figure 9: Trends in hot-night frequency for the recent past and projected future. See Figure 1 for details.

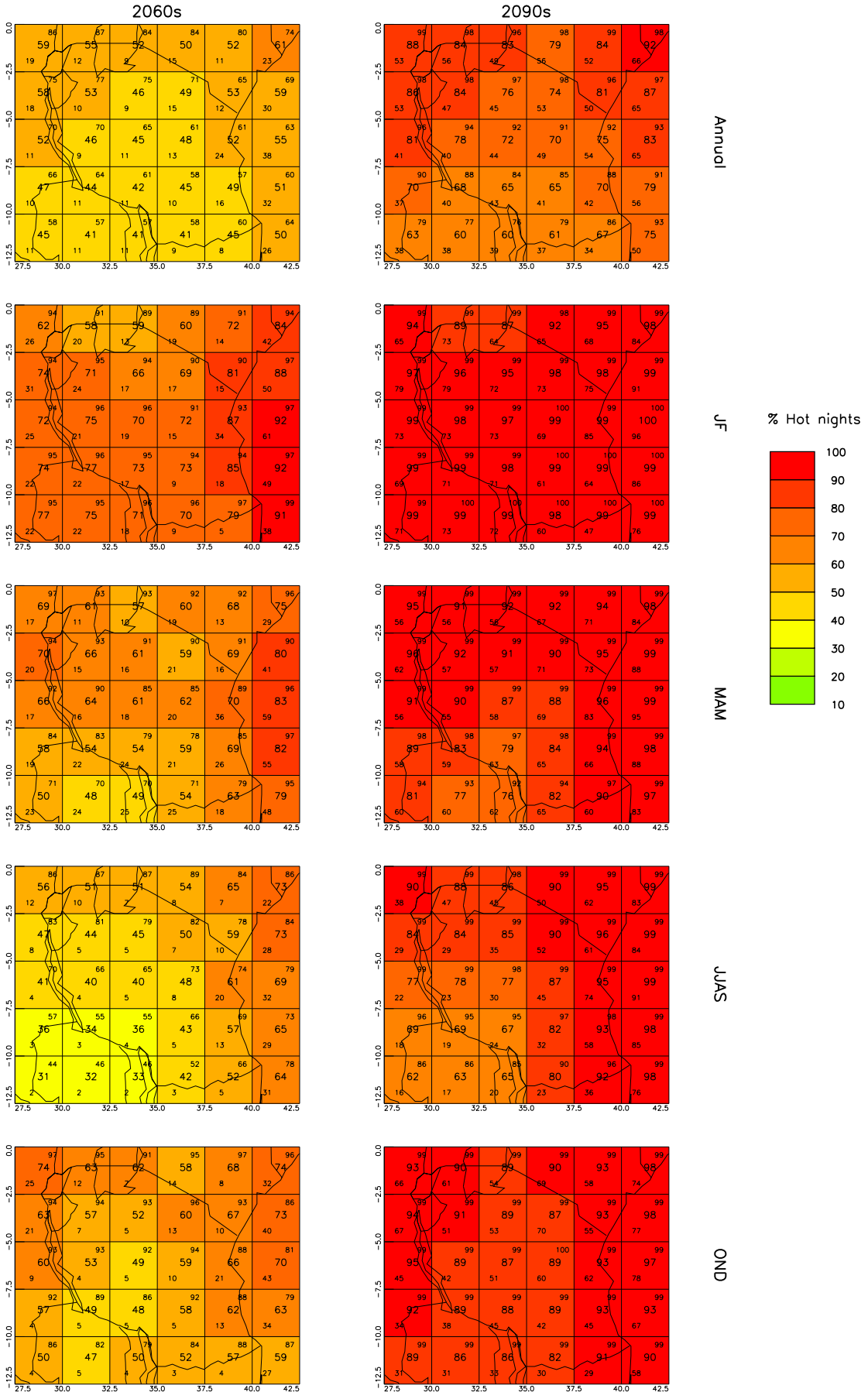


Figure 10: Spatial patterns of projected change in hot-night frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

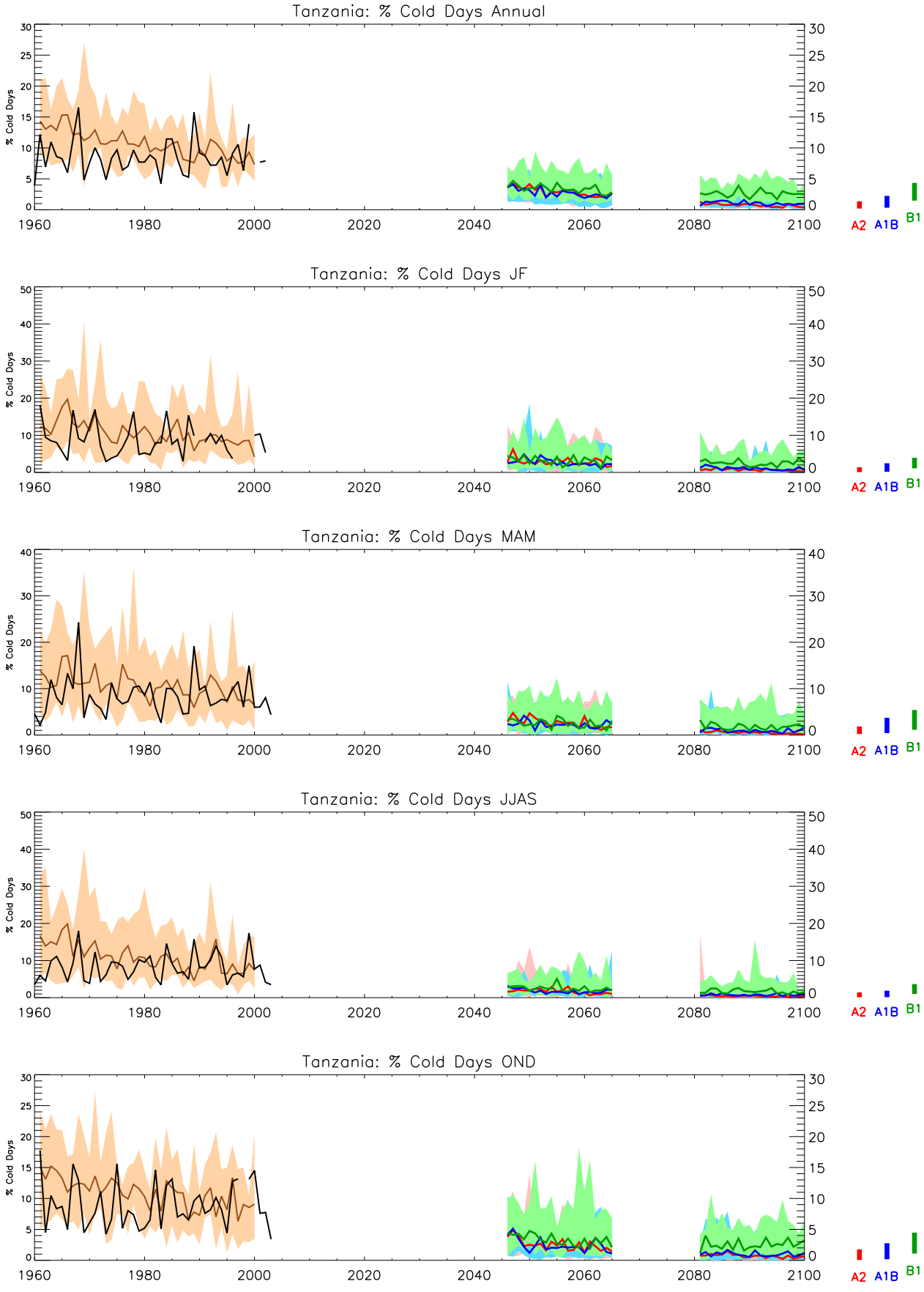


Figure 11: Trends in cold-day frequency for the recent past and projected future. See Figure 1 for details.

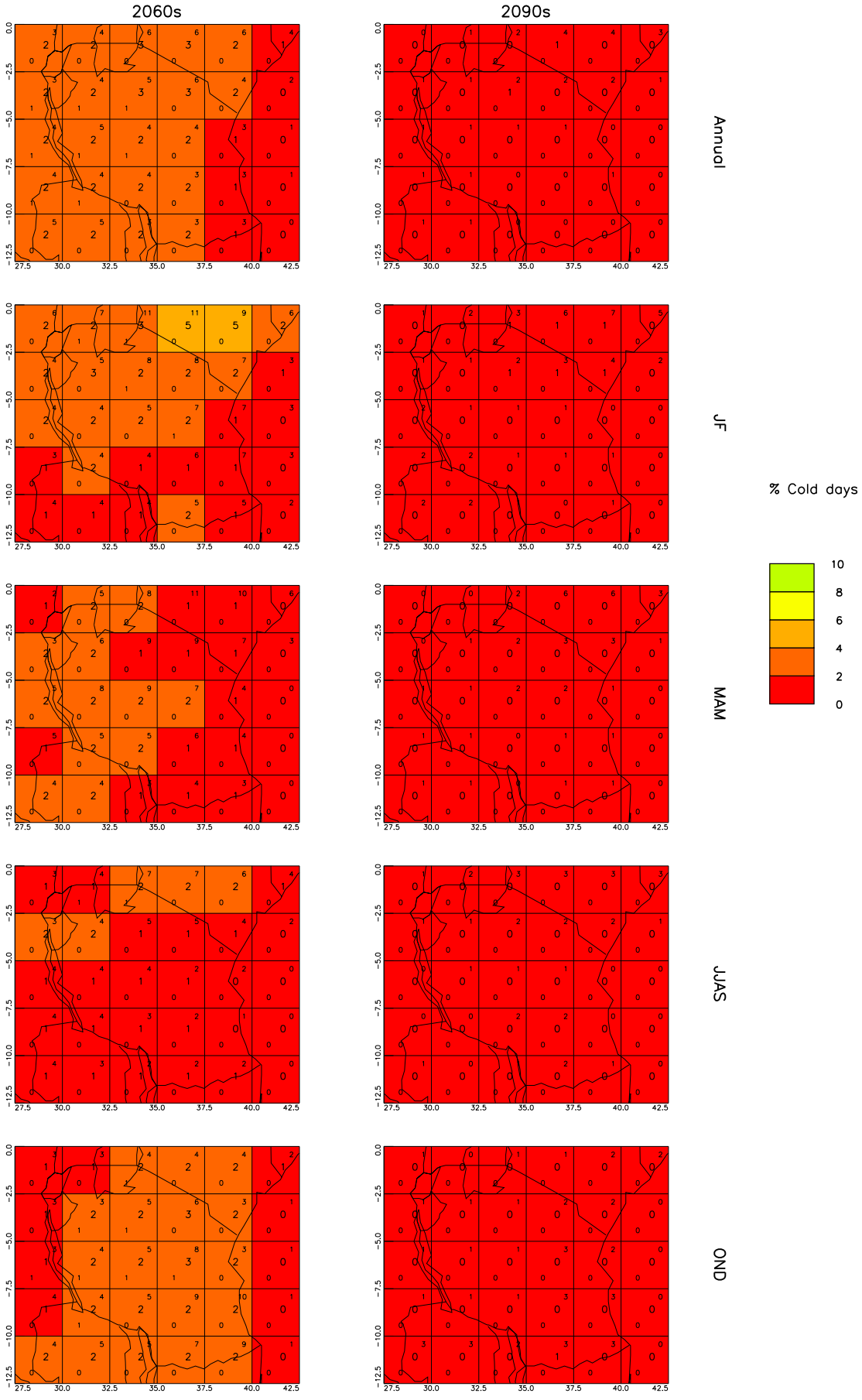


Figure 12: Spatial patterns of projected change in cold-day frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

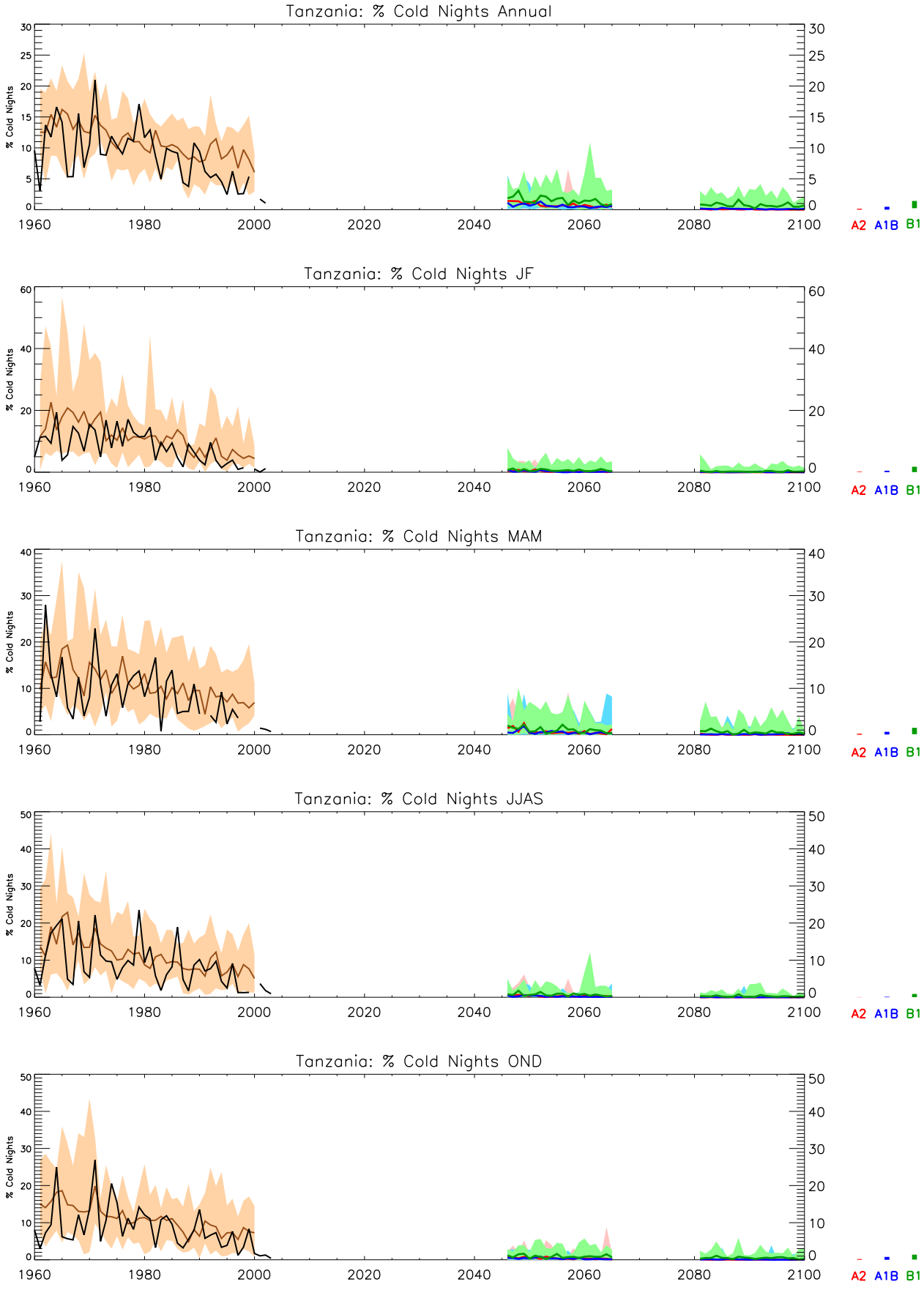


Figure 13: Trends in cold-night frequency for the recent past and projected future. See Figure 1 for details.

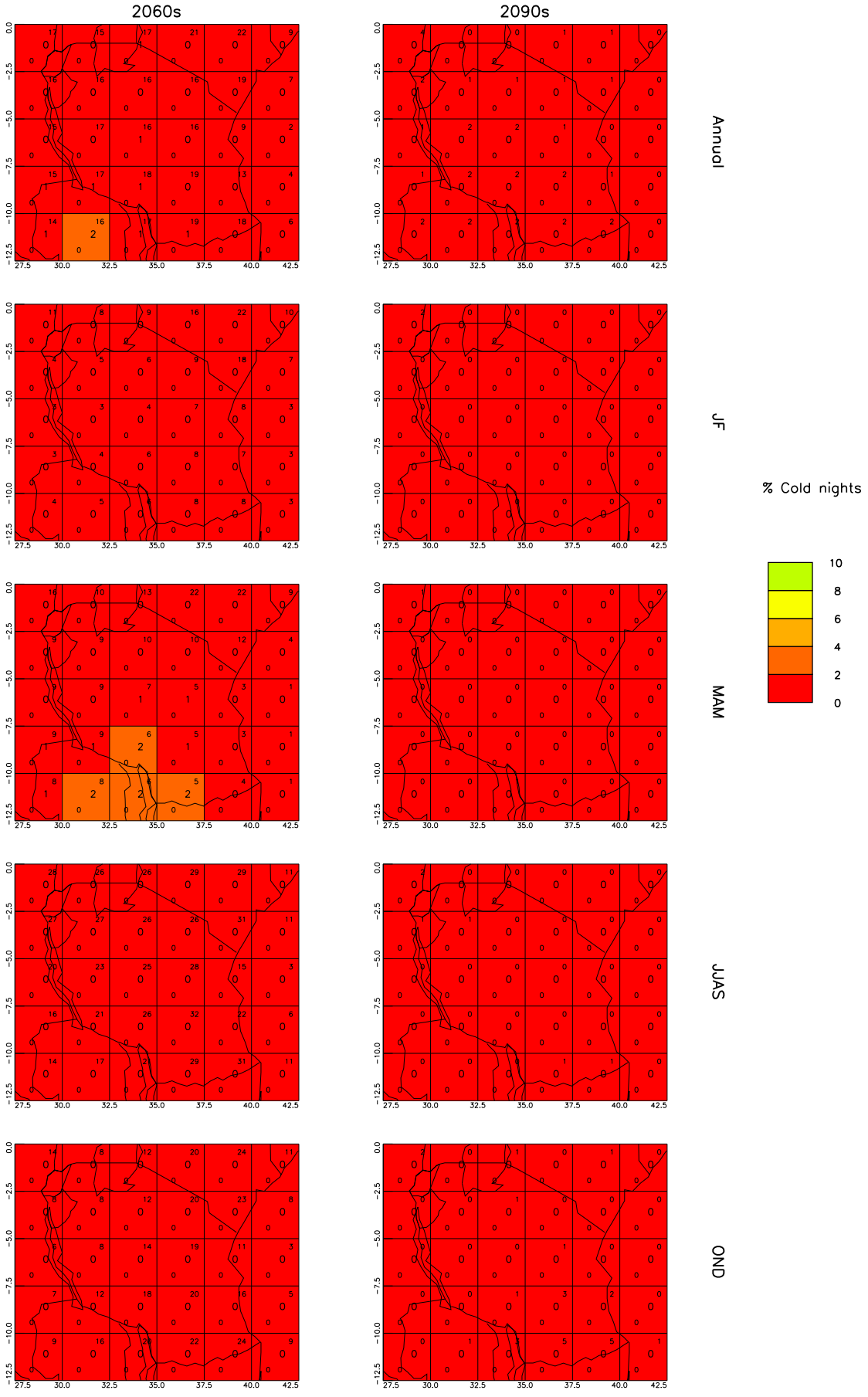


Figure 14: Spatial patterns of projected change in cold-night frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

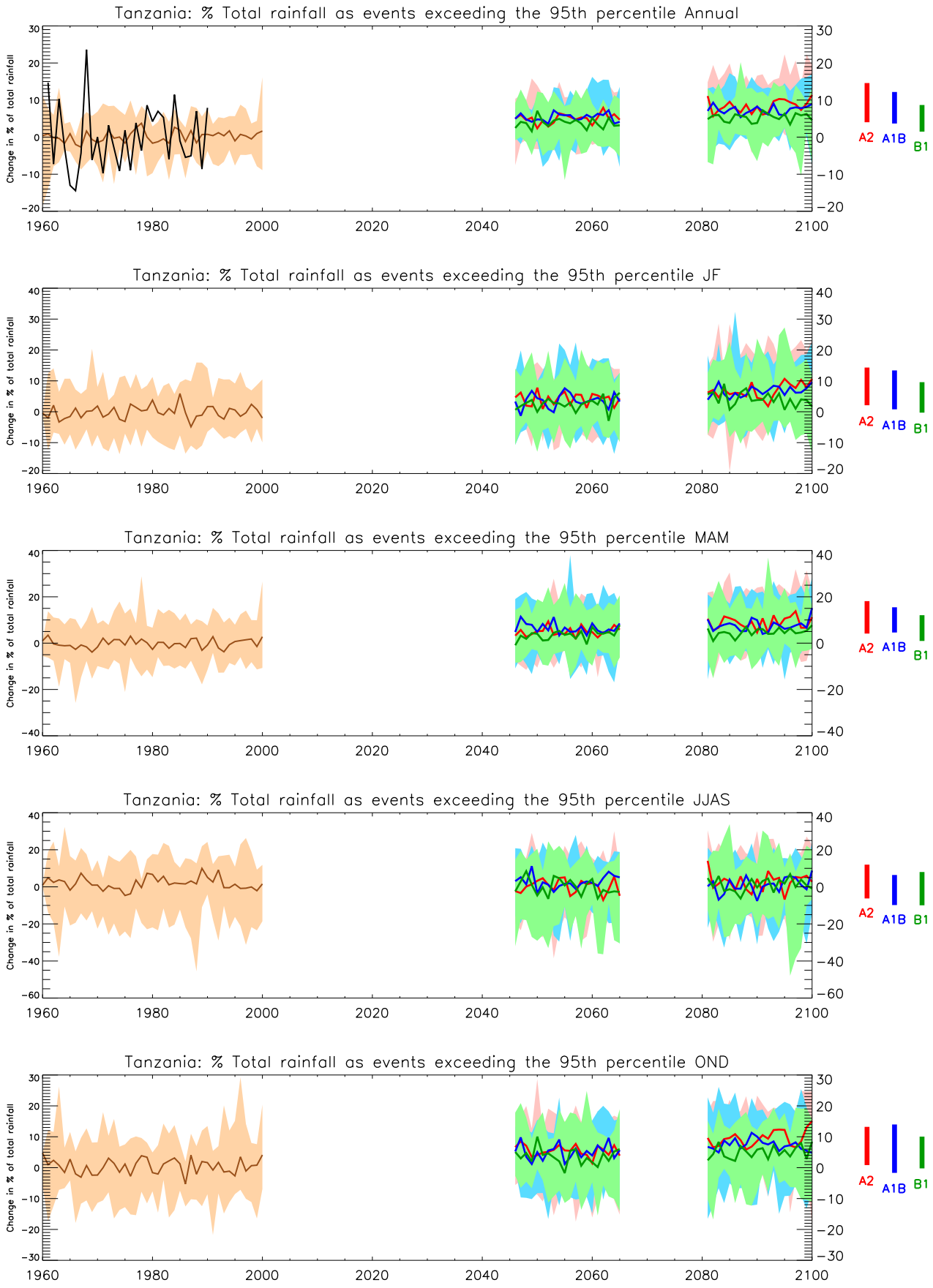


Figure 15: Trends in the proportion of precipitation falling in 'heavy' events for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

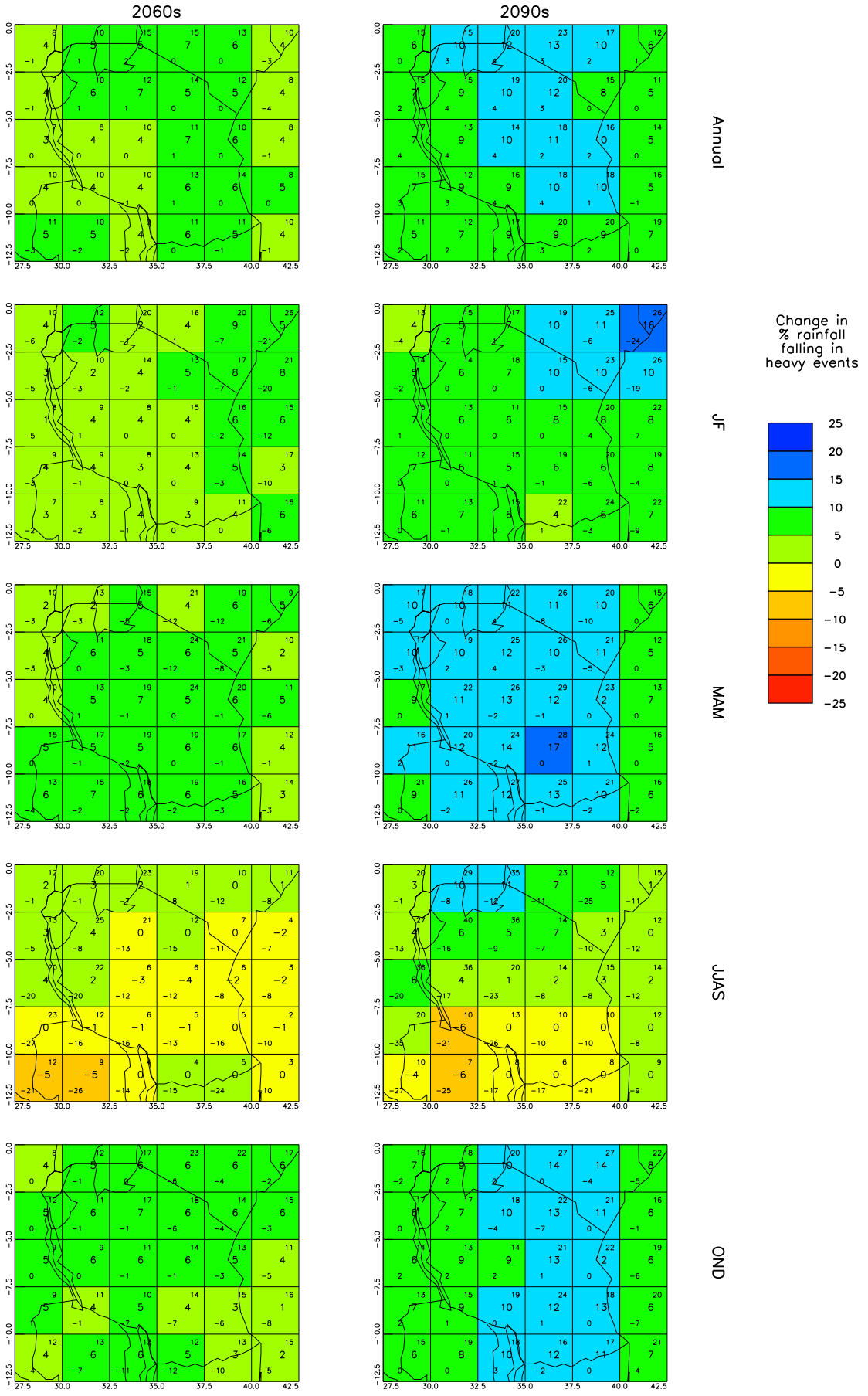


Figure 16: Spatial patterns of projected change in the proportion of precipitation falling in 'heavy' events for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. See Figure 2 for details.

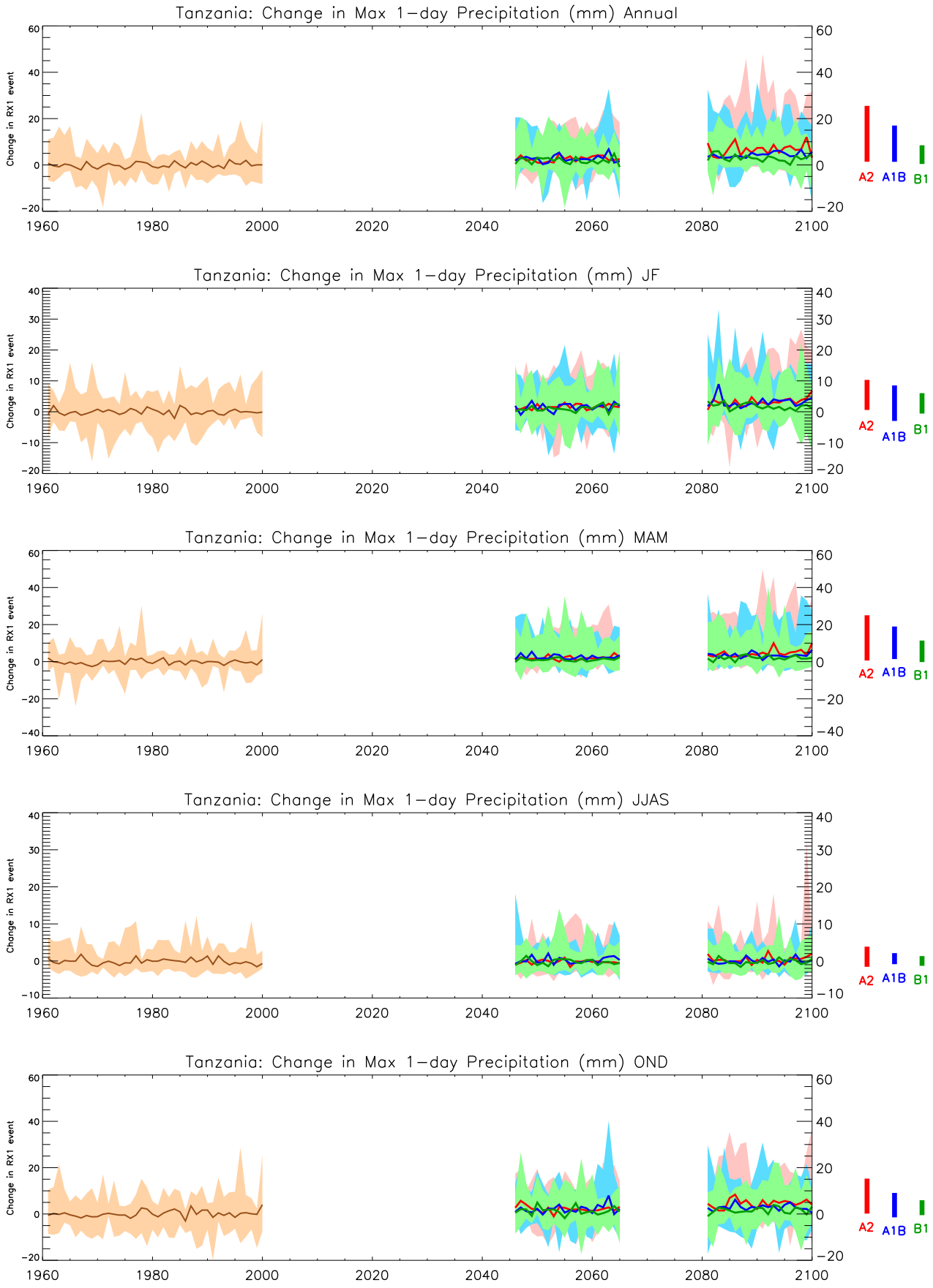


Figure 17: Trends in maximum 1-day rainfall for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

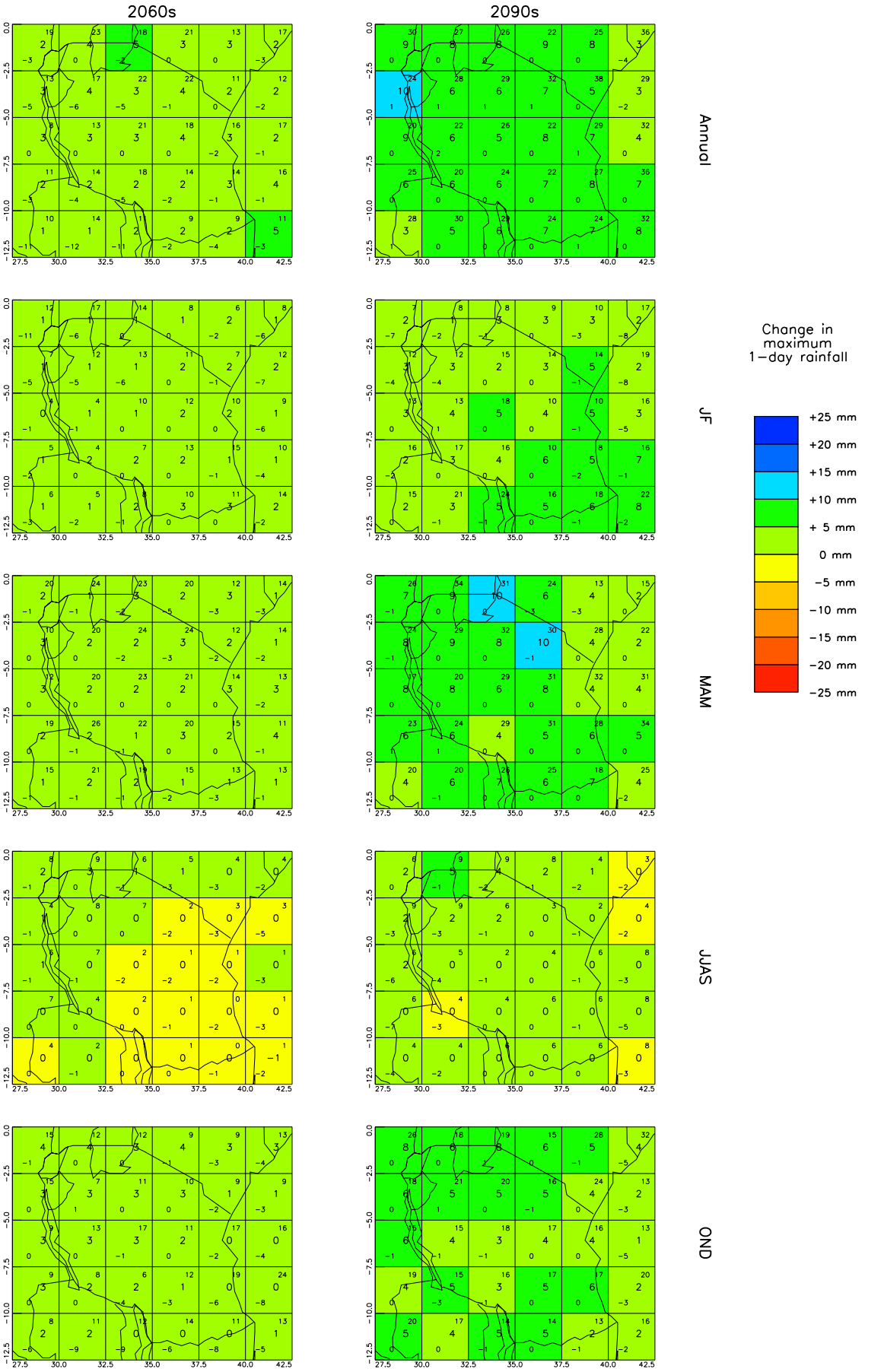


Figure 18: Spatial patterns of maximum 1-day rainfall for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. See Figure 2 for details.

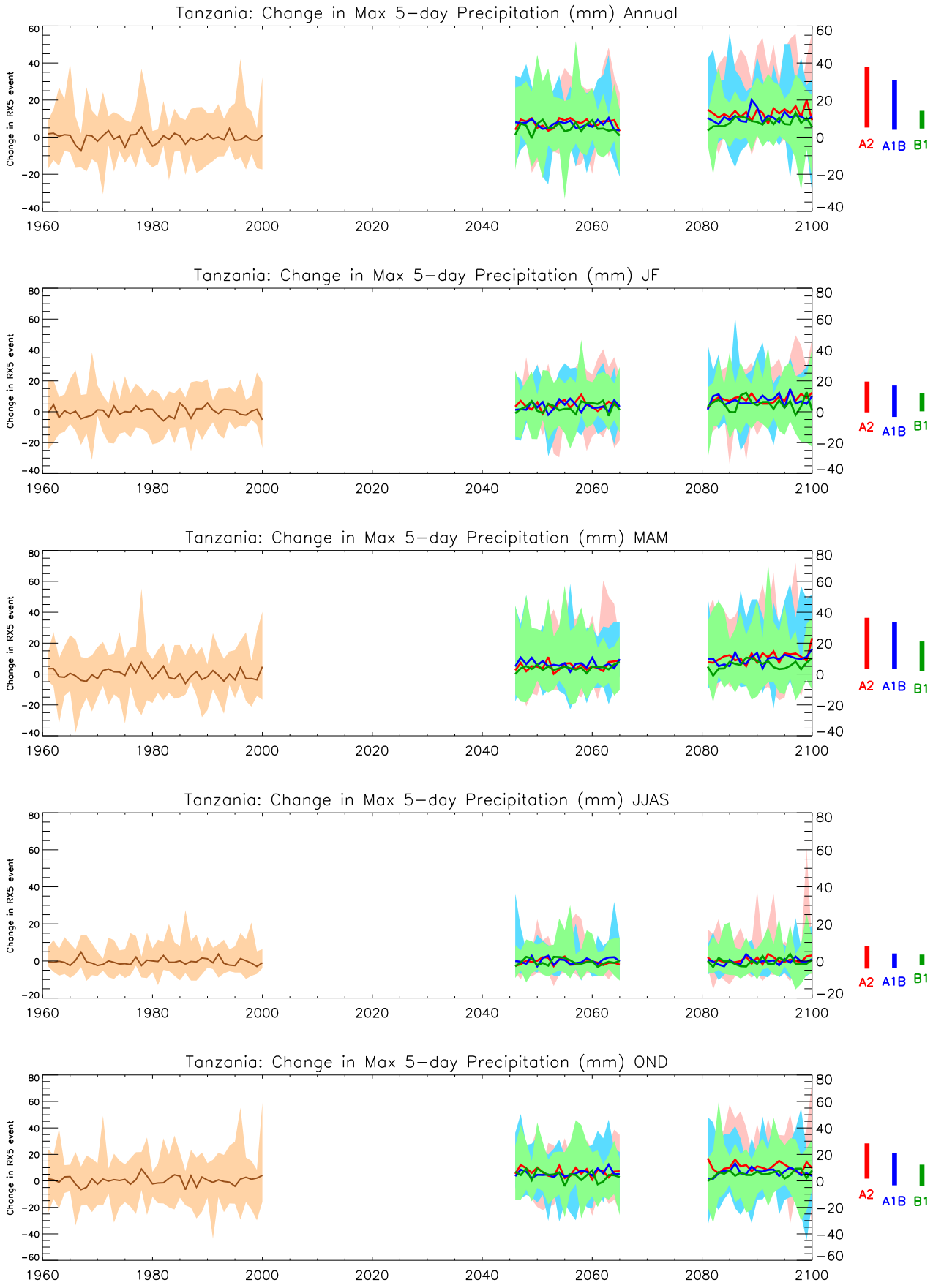


Figure 19: Trends in maximum 5-day rainfall for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

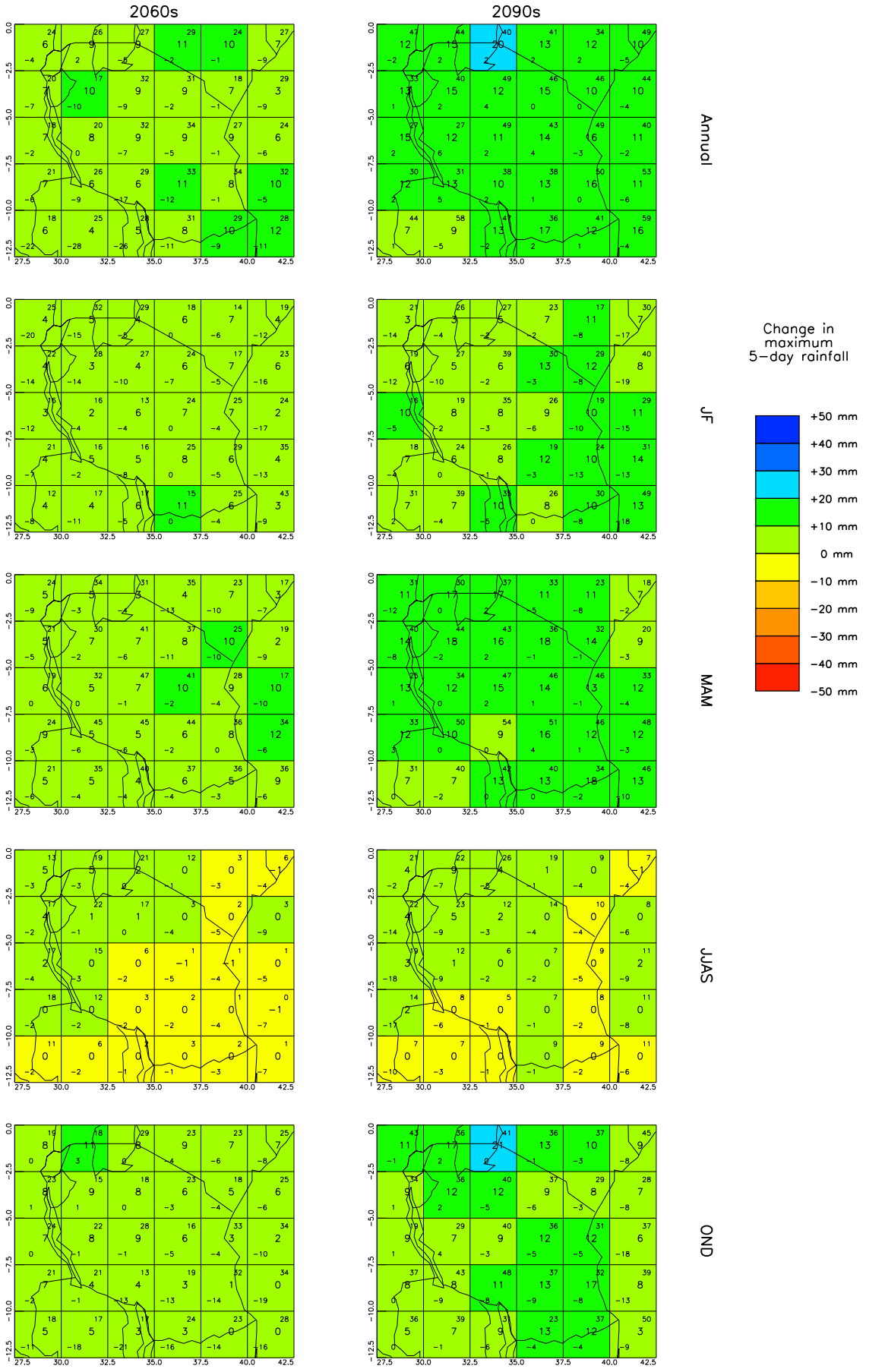


Figure 20: Spatial patterns of projected change in maximum 5-day rainfall for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. See Figure 2 for details.