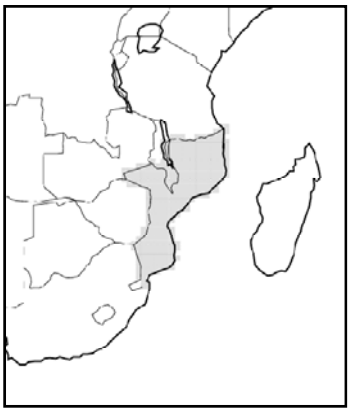
UNDP Climate Change Country Profiles

Mozambique



C. McSweeney[1], M. New[1,2] and G. Lizcano[1]

1. School of Geography and Environment, University of Oxford.
2.Tyndall Centre for Climate Change Research

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General Climate

Mozambique is located on the eastern coast of southern Africa at 11-26˚ south of the equator, and has a tropical to sub-tropical climate which is moderated by the influence of mountainous topography in the north-west of the country. Seasonal variations in temperature are around 5˚ between the coolest months (June, July and August) and the warmest months (December, January and February). Geographically, temperatures are warmer near to the coast, and in the southern, lowland regions compared with the inland regions of higher elevation. Average temperatures in these lowland parts of the country are around 25-27˚C in the summer and 20-25˚C in winter. The inland and higher altitude northern regions of Mozambique experience cooler average temperatures of 20-25˚C in the summer, and 15-20˚C in winter.

The wet season lasts from November to April, coinciding with the warmer months of the year. The Inter-tropical Convergence Zone (ITCZ) is positioned over the north of the country at this time of year, bringing 150-300mm of rainfall per month whilst the south receives 50-150mm per month. Topographical influences, however, cause local variations to this north-south rainfall gradient with the highest altitude regions receiving the highest rainfalls. Mozambique's coastal location means that it lies in the path of highly destructive hurricanes and cyclones that occur during the wet season. The heavy rainfall associated with these events contributes a significant proportion of wet season rainfall over a period of a few days.

Inter-annual variability in the wet-season rainfall in Mozambique is also strongly influenced by Indian Ocean Sea Surface Temperatures, which can vary from one year to another due to variations in patterns of atmospheric and oceanic circulation. The most well documented cause of this variability is the El Niño Southern Oscillation (ENSO) which causes warmer and drier than average conditions in the wet season of Eastern Southern Africa in its warm phase (El Niño) and relatively cold and wet conditions in its cold phase (La Niña).

Recent Climate Trends

Temperature

- Mean annual temperature has increased by 0.6˚C since between 1960 and 2006, an average rate of 0.13˚C per decade.
- This increase in temperature has been observed in the seasons DJF, MAM, and JJA only, at a rate of 0.15-0.16˚C per decade, but no discernible warming has been observed in the season SON.
- Daily temperature observations show significantly increasing trends in the frequency of 'hot' days[1] and nights in all seasons.
    - The average number of 'hot' days per year in Mozambique has increased by 25 (an additional 6.8% of days[2]) between 1960 and 2003. The rate of increase is seen most strongly in MAM when the average number of hot MAM days has increased by 3.2 days per month (an additional 10.2% of MAM days) over this period.
    - The average number of 'hot' nights per year increased by 31 (an additional 8.4% 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 3.6 days per month (an additional 11.6% of DJF nights) over this period.
- The frequency of cold days[3] and nights have decreased significantly since 1960 in all seasons except SON.
    - The average number of 'cold 'days per year has decreased by 14 (3.9% of days) between 1960 and 2003. This rate of decrease is most rapid in MAM when the average number of cold MAM days has decreased by 2.1 days per month (6.7% of MAM days) over this period.
    - The average number of 'cold' nights per year has decreased by 27 (7.4% of days). This rate of decrease is most rapid in MAM when the average number of cold MAM nights has decreased by 2.9 nights per month (9.5% of MAM nights) over this period.

Precipitation

- Mean annual rainfall over Mozambique has decreased at an average rate of 2.5mm per month (3.1%) per decade between 1960 and 2006. This annual decrease is largely due to decreases in DJF rainfall, which has decreased by 6.3mm per month (3.4%) per decade.
- Daily precipitation observations indicate that despite observed decreases in total rainfall, the proportion of rainfall falling in heavy[4] events has increased at an average rate of 2.6% and 5-day annual rainfall maxima have increased by 8.4 mm per decade, with largest increases in the wet season, DJF.

[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] The increase in frequency over the 43-year period between 1960 and 2003 is estimated based on the decadal trend quoted in the summary table.

[3] '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.

[4] 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 2.8˚C by the 2060s, and 1.4 to 4.6˚C by the 2090s. Under a single emissions scenario, the projected changes from different models span a range of up to 1.8˚C.
- The projected rate of warming is more rapid in the interior regions of Mozambique than those areas closer to the coast.

- All projections indicate substantial increases in the frequency of days and nights that are considered 'hot' in current climate.
    - Annually, projections indicate that 'hot' days will occur on 17-35% of days by the 2060s, and 20-53% of days by the 2090s. Days considered 'hot' by current climate standards for their season are projected to occur 26-76% 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 25-45% of nights by the 2060s and 29-69% of nights by the 2090s. Nights that are considered hot for each season by 1970-99 standards are projected to increase most rapidly in DJF, occurring on 47-97% of nights in every 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, and do not occur at all under the highest emissions scenario (A2) by the 2090s.

Precipitation

- Projections of mean rainfall do not indicate substantial changes in annual rainfall. The range of projections from different models is large and straddles both negative and positive changes (-15 to +20mm per month, or -15% to +34%). Seasonally, the projections show a more coherent picture, with the projections tending towards decreases in dry season rainfall (JJA and SON), offset partially by increases in wet season rainfall (DJF).
    - Projected changes in JJA rainfall range from -54 to +19% with ensemble median changes of -11 to -24% and in SON, -48 to +26% with ensemble median values -10 to -12%.
    - Projected changes in DJF rainfall range from -9 to +25% with ensemble median values of +1 to +8%. The increases in DJF rainfall are largest in the north of Mozambique.

- Overall, the models consistently project increases in the proportion of rainfall that falls in heavy events in the annual average under the higher emissions scenarios, of up to 15% by the 2090s.The proportion of total rainfall that falls in heavy events is projected to increase in DJF in projections from all models and all scenarios, by up to 18%. Models are also broadly consistent in indicating increases in MAM, but decreases in JJA and SON.

- The models consistently project increases in 1- and 5-day rainfall maxima by the 2090s under the higher emissions scenarios of up to 20mm in 1-day events, and 34mm in 5-day events. These also generally increase in DJF and MAM, but decrease in JJA and SON.

Other Regional Climate Change Information

- Tropical cyclones are poorly captured by GCMs and thus potential changes in intensity and tracks of tropical cyclones in the future are very uncertain. Whilst evidence indicates that tropical cyclones are likely to become, on the whole, more intense under a warmer climate as a result of higher sea-surface temperatures, there is great uncertainty in changes in frequency, and changes to storm tracks and their interactions with other features of climate variability (such as the El Niño Southern Oscillation) which introduces uncertainty at the regional scale (Christensen *et al*., 2007).
- The uncertainty in potential changes in tropical cyclones contributes to uncertainties in future wet-season rainfall. Potential increases in tropical cyclone activity, which may not be captured in the GCM projections, may add to the projected increases in wet-season rainfall in the region (Christensen *et al*., 2007).
- Model simulations show wide disagreements in projected changes in the amplitude of future El Niño events. Mozambique's climate can be strongly influenced by ENSO, thus contributing to uncertainty in climate projections for this region.
- Mozambique's coastal lowlands may be vulnerable to sea-level rise. Sea-level in this region is projected by climate models to rise by the following levels[5] by the 2090s, relative to 1980-1999 sea-level:
    - 0.13 to 0.43m under SRES B1
    - 0.16 to 0.53m under SRES A1B
    - 0.18 to 0.56m under SRES A2

- 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*).

[5] Taken from the IPCC Working group I (*The Physical Science Basis*): Chapter 10 (Global Climate Projections) (Meehl *et al*., 2007). Regional sea-level projections are estimated by applying regional adjustments (Fig 10.32, p813) to projected global mean sea-level rise from 14 AR4 models.

Data Summary

	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*
Temperature												
	(˚C)	*(change in ˚C per decade)*		*Change in ˚C*			*Change in ˚C*			*Change in ˚C*		
			A2	0.9	**1.2**	1.6	1.7	**2.3**	2.8	3.0	**3.9**	4.6
Annual	23.4	0.13*	*A1B*	0.8	**1.3**	1.7	1.6	**2.3**	2.7	2.3	**3.1**	4.1
			B1	0.5	**1.0**	1.2	1.0	**1.7**	2.1	1.4	**2.1**	2.6
			A2	0.7	**1.0**	1.7	1.4	**2.2**	2.6	2.6	**3.7**	4.4
DJF	25.3	0.16*	*A1B*	0.6	**1.2**	1.4	1.2	**2.2**	2.7	1.9	**2.9**	4.1
			B1	0.4	**1.0**	1.3	0.9	**1.7**	2.1	1.1	**1.9**	2.5
			A2	0.7	**1.2**	1.7	1.6	**2.2**	2.8	2.9	**3.9**	4.4
MAM	23.4	0.16*	*A1B*	0.8	**1.3**	1.7	1.6	**2.2**	2.7	2.1	**2.9**	4.0
			B1	0.5	**0.9**	1.3	1.0	**1.7**	2.3	1.4	**2.1**	2.8
			A2	1.0	**1.3**	1.7	1.8	**2.2**	3.1	3.1	**3.8**	4.9
JJA	20.2	0.15*	*A1B*	0.8	**1.3**	2.0	2.0	**2.1**	2.9	2.4	**3.2**	4.1
			B1	0.7	**0.9**	1.8	1.1	**1.7**	2.5	1.6	**2.1**	3.2
			A2	0.9	**1.3**	1.7	1.8	**2.6**	3.1	3.5	**4.2**	5.3
SON	25.0	0.05	*A1B*	0.8	**1.3**	1.8	1.7	**2.4**	2.8	2.4	**3.2**	4.2
			B1	0.4	**1.0**	1.4	1.0	**1.8**	2.1	1.5	**2.1**	2.7
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	-6	**0**	6	-9	**0**	8	-12	**0**	20
Annual	80.5	-2.5*	*A1B*	-12	**0**	6	-7	**0**	4	-15	**-1**	10
			B1	-6	**0**	5	-13	**0**	5	-7	**-1**	3
			A2	-18	**0**	13	-5	**1**	24	-16	**17**	47
DJF	186.6	-6.3*	*A1B*	-12	**5**	20	-14	**6**	22	-22	**4**	37
			B1	-11	**-1**	16	-11	**4**	13	-11	**3**	17
			A2	-13	**0**	14	-18	**4**	18	-16	**0**	57
MAM	84.7	-2.8	*A1B*	-19	**0**	10	-10	**5**	14	-17	**0**	17
			B1	-9	**3**	15	-24	**0**	14	-14	**0**	14
			A2	-6	**-1**	3	-9	**-2**	2	-15	**-4**	6
JJA	14.3	0.5	*A1B*	-10	**0**	2	-12	**-2**	1	-14	**-3**	3
			B1	-8	**-1**	1	-9	**0**	3	-11	**-3**	3
			A2	-9	**-4**	6	-14	**-7**	3	-21	**-12**	20
SON	36.2	-1.6	*A1B*	-10	**-3**	4	-11	**-7**	5	-19	**-11**	10
			B1	-7	**-1**	4	-13	**-4**	5	-11	**-6**	0
Precipitation (%)												
	(mm per month)	*(change in % per decade)*		*% Change*			*% Change*			*% Change*		
			A2	-8	**-1**	5	-10	**0**	13	-13	**0**	34
Annual	80.5	-3.1*	*A1B*	-13	**0**	7	-8	**0**	6	-15	**-2**	12
			B1	-7	**0**	6	-13	**0**	9	-7	**-1**	3
			A2	-11	**0**	6	-4	**0**	13	-7	**8**	25
DJF	186.6	-3.4*	*A1B*	-6	**2**	10	-10	**4**	10	-9	**2**	20
			B1	-5	**-1**	9	-5	**2**	7	-6	**1**	7
			A2	-13	**0**	17	-19	**3**	30	-15	**1**	98
MAM	84.7	-3.3	*A1B*	-20	**0**	14	-11	**4**	24	-19	**0**	29
			B1	-10	**3**	25	-25	**1**	24	-13	**0**	20
			A2	-28	**-6**	16	-32	**-15**	9	-54	**-24**	19
JJA	14.3	3.8	*A1B*	-33	**-2**	9	-40	**-8**	10	-47	**-17**	12
			B1	-28	**-7**	8	-36	**0**	24	-37	**-11**	22
			A2	-24	**-7**	11	-32	**-13**	4	-48	**-25**	26
SON	36.2	-4.5	*A1B*	-25	**-7**	5	-29	**-13**	6	-45	**-16**	13
			B1	-14	**-3**	14	-36	**-9**	8	-27	**-10**	-1

	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	****	****	****	24	**28**	35	37	**42**	53
Annual	12.0	1.58*	*A1B*	****	****	****	21	**28**	33	27	**38**	48
			B1	****	****	****	17	**24**	28	20	**29**	33
			A2	****	****	****	29	**40**	51	43	**57**	76
DJF	12.1	2.21*	*A1B*	****	****	****	28	**38**	49	42	**53**	69
			B1	****	****	****	24	**35**	45	26	**41**	54
			A2	****	****	****	34	**42**	48	54	**66**	74
MAM	12.5	2.37*	*A1B*	****	****	****	29	**42**	49	43	**60**	72
			B1	****	****	****	22	**37**	44	28	**44**	50
			A2	****	****	****	32	**38**	41	56	**63**	70
JJA	11.5	1.88*	*A1B*	****	****	****	30	**38**	45	50	**54**	68
			B1	****	****	****	24	**30**	36	31	**38**	46
			A2	****	****	****	33	**39**	48	57	**63**	72
SON	11.8	2.18*	*A1B*	****	****	****	29	**40**	44	41	**53**	63
			B1	****	****	****	23	**29**	34	28	**35**	45
Frequency of Hot Nights (TN90p)												
			A2	****	****	****	33	**37**	45	49	**57**	69
Annual	11.5	1.96*	*A1B*	****	****	****	30	**40**	45	39	**49**	61
			B1	****	****	****	25	**33**	37	29	**38**	44
			A2	****	****	****	55	**67**	85	83	**89**	97
DJF	12.0	2.69*	*A1B*	****	****	****	54	**66**	85	72	**86**	93
			B1	****	****	****	42	**55**	66	47	**69**	80
			A2	****	****	****	42	**52**	61	65	**75**	86
MAM	11.5	2.50*	*A1B*	****	****	****	33	**53**	61	50	**66**	82
			B1	****	****	****	28	**43**	48	37	**52**	61
			A2	****	****	****	40	**47**	52	70	**81**	85
JJA	11.0	1.52*	*A1B*	****	****	****	40	**50**	56	59	**68**	83
			B1	****	****	****	31	**36**	41	35	**45**	63
			A2	****	****	****	37	**41**	55	61	**68**	76
SON	11.4	1.53*	*A1B*	****	****	****	32	**42**	48	45	**58**	66
			B1	****	****	****	26	**32**	40	30	**37**	45
Frequency of Cold Days (TX10p)												
			A2	****	****	****	1	**2**	3	0	**0**	0
Annual	9.3	-0.90*	*A1B*	****	****	****	1	**2**	3	0	**1**	1
			B1	****	****	****	2	**3**	3	1	**2**	3
			A2	****	****	****	1	**2**	4	0	**0**	1
DJF	9.5	-0.91*	*A1B*	****	****	****	1	**2**	3	0	**1**	2
			B1	****	****	****	1	**3**	4	1	**2**	4
			A2	****	****	****	0	**1**	2	0	**0**	0
MAM	9.0	-1.55*	*A1B*	****	****	****	0	**1**	2	0	**0**	1
			B1	****	****	****	1	**2**	4	0	**1**	3
			A2	****	****	****	0	**1**	2	0	**0**	0
JJA	9.4	-1.24*	*A1B*	****	****	****	0	**1**	3	0	**0**	1
			B1	****	****	****	1	**2**	3	0	**1**	2
			A2	****	****	****	1	**2**	3	0	**0**	1
SON	9.6	-0.58	*A1B*	****	****	****	1	**2**	5	0	**1**	2
			B1	****	****	****	2	**4**	5	2	**2**	3
Frequency of Cold Nights (TN10p)												
			A2	****	****	****	0	**1**	2	0	**0**	0
Annual	8.8	-1.72*	*A1B*	****	****	****	0	**1**	2	0	**0**	1
			B1	****	****	****	1	**2**	3	0	**1**	2
			A2	****	****	****	0	**0**	2	0	**0**	0
DJF	8.5	-1.80*	*A1B*	****	****	****	0	**0**	1	0	**0**	1
			B1	****	****	****	0	**1**	2	0	**1**	2
			A2	****	****	****	0	**1**	2	0	**0**	0
MAM	8.6	-2.21*	*A1B*	****	****	****	0	**0**	3	0	**0**	1
			B1	****	****	****	1	**2**	4	0	**1**	2
			A2	****	****	****	0	**0**	1	0	**0**	0
JJA	8.6	-1.86*	*A1B*	****	****	****	0	**0**	1	0	**0**	0
			B1	****	****	****	0	**1**	2	0	**1**	1
			A2	****	****	****	0	**1**	2	0	**0**	0
SON	8.9	-1.21*	*A1B*	****	****	****	0	**1**	3	0	**0**	1
			B1	****	****	****	1	**2**	3	0	**1**	2

	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*
% total rainfall falling in Heavy Events (R95pct)												
	%	*Change in % per decade*					*Change in %*			*Change in %*		
			A2	****	****	****	0	**2**	6	0	**4**	15
Annual	25.2	2.57*	*A1B*	****	****	****	0	**1**	7	0	**4**	12
			B1	****	****	****	-2	**1**	5	-2	**3**	7
			A2	****	****	****	0	**4**	10	3	**6**	18
DJF	****	****	*A1B*	****	****	****	-1	**2**	7	0	**4**	14
			B1	****	****	****	-2	**1**	6	0	**2**	8
			A2	****	****	****	-2	**0**	9	-1	**2**	24
MAM	****	****	*A1B*	****	****	****	-3	**1**	10	-5	**3**	11
			B1	****	****	****	-3	**1**	5	-3	**2**	9
			A2	****	****	****	-10	**-2**	5	-19	**-4**	9
JJA	****	****	*A1B*	****	****	****	-10	**-2**	7	-25	**-3**	6
			B1	****	****	****	-14	**0**	7	-11	**-2**	8
			A2	****	****	****	-12	**-1**	7	-26	**-3**	15
SON	****	****	*A1B*	****	****	****	-12	**0**	8	-26	**-4**	12
			B1	****	****	****	-13	**-1**	7	-15	**-1**	4
Maximum 1-day rainfall (RX1day)												
	mm	*Change in mm per decade*					*Change in mm*			*Change in mm*		
			A2	****	****	****	-1	**3**	10	0	**8**	20
Annual	****	****	*A1B*	****	****	****	0	**1**	7	0	**5**	11
			B1	****	****	****	-1	**0**	7	-2	**2**	9
			A2	****	****	****	0	**1**	13	1	**8**	23
DJF	47.8	1.98*	*A1B*	****	****	****	-2	**1**	5	0	**4**	11
			B1	****	****	****	-1	**0**	3	0	**2**	9
			A2	****	****	****	-2	**0**	6	0	**1**	10
MAM	29.4	0.88	*A1B*	****	****	****	-2	**1**	11	-3	**2**	7
			B1	****	****	****	-2	**0**	4	-2	**1**	9
			A2	****	****	****	-2	**0**	1	-3	**-1**	3
JJA	6.4	0.18	*A1B*	****	****	****	-1	**0**	1	-4	**0**	0
			B1	****	****	****	-2	**0**	1	-1	**0**	0
			A2	****	****	****	-4	**0**	3	-9	**-1**	8
SON	20.9	1.0	*A1B*	****	****	****	-7	**0**	3	-9	**-1**	6
			B1	****	****	****	-6	**-1**	7	-5	**0**	3
Maximum 5-day Rainfall (RX5day)												
	mm	*Change in mm per decade*					*Change in mm*			*Change in mm*		
			A2	****	****	****	-2	**6**	21	0	**19**	31
Annual	149.4	8.44*	*A1B*	****	****	****	-4	**4**	18	0	**9**	34
			B1	****	****	****	-5	**1**	14	-1	**5**	18
			A2	****	****	****	-2	**4**	22	2	**19**	33
DJF	91.1	3.05	*A1B*	****	****	****	-6	**3**	14	0	**9**	32
			B1	****	****	****	-4	**1**	13	-2	**5**	19
			A2	****	****	****	-5	**0**	13	-7	**5**	37
MAM	51.9	0.56	*A1B*	****	****	****	-5	**3**	20	-13	**5**	16
			B1	****	****	****	-13	**1**	9	-10	**4**	15
			A2	****	****	****	-6	**0**	1	-7	**-2**	4
JJA	10.2	0.26	*A1B*	****	****	****	-3	**0**	2	-8	**-2**	2
			B1	****	****	****	-5	**0**	2	-4	**0**	2
			A2	****	****	****	-11	**-2**	8	-16	**-5**	22
SON	29.7	-0.16	*A1B*	****	****	****	-7	**-1**	13	-17	**-4**	15
			B1	****	****	****	-12	**-2**	10	-11	**-3**	3

* indicates trend is statistically significant at 95% confidence

**** indicates data are not available

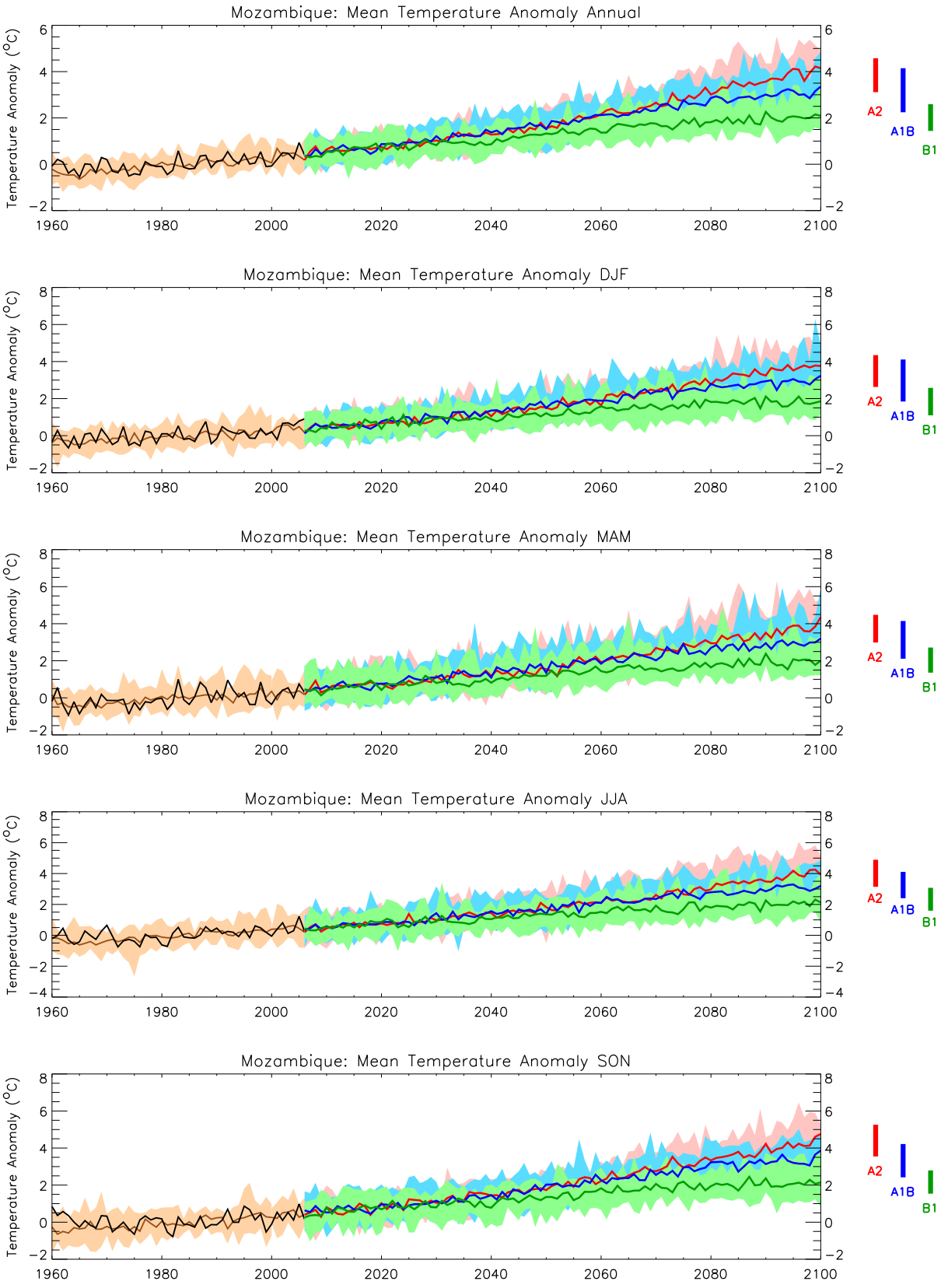

Figure 1: Trends in annual and seasonal mean temperature for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. Black curves show the mean of observed data from 1960 to 2006, Brown curves show the median (solid line) and range (shading) of model 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.

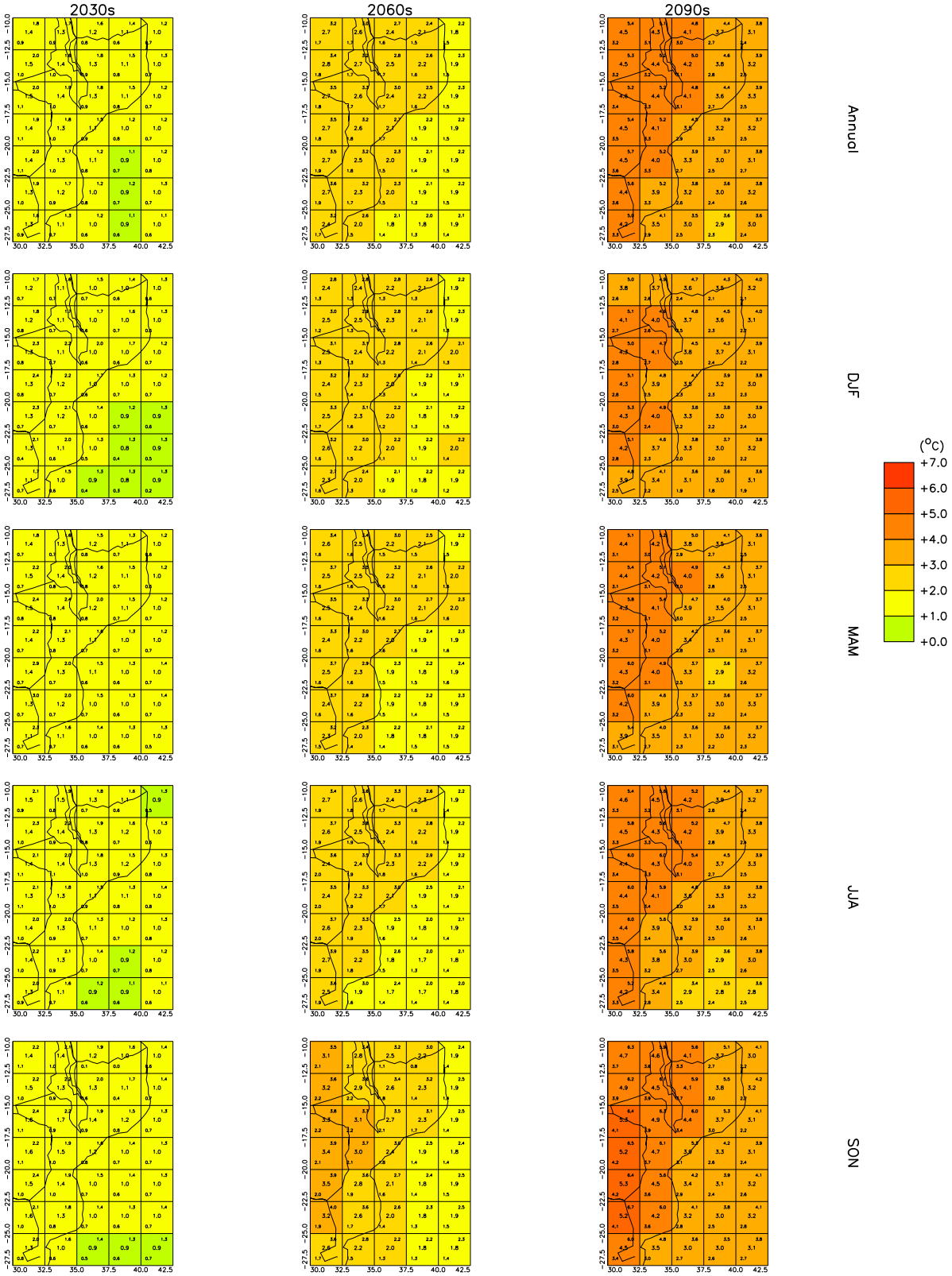

Figure 2: Spatial patterns of projected change in mean annual and seasonal temperature for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. In each grid box, the central value gives the ensemble median and the values in the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

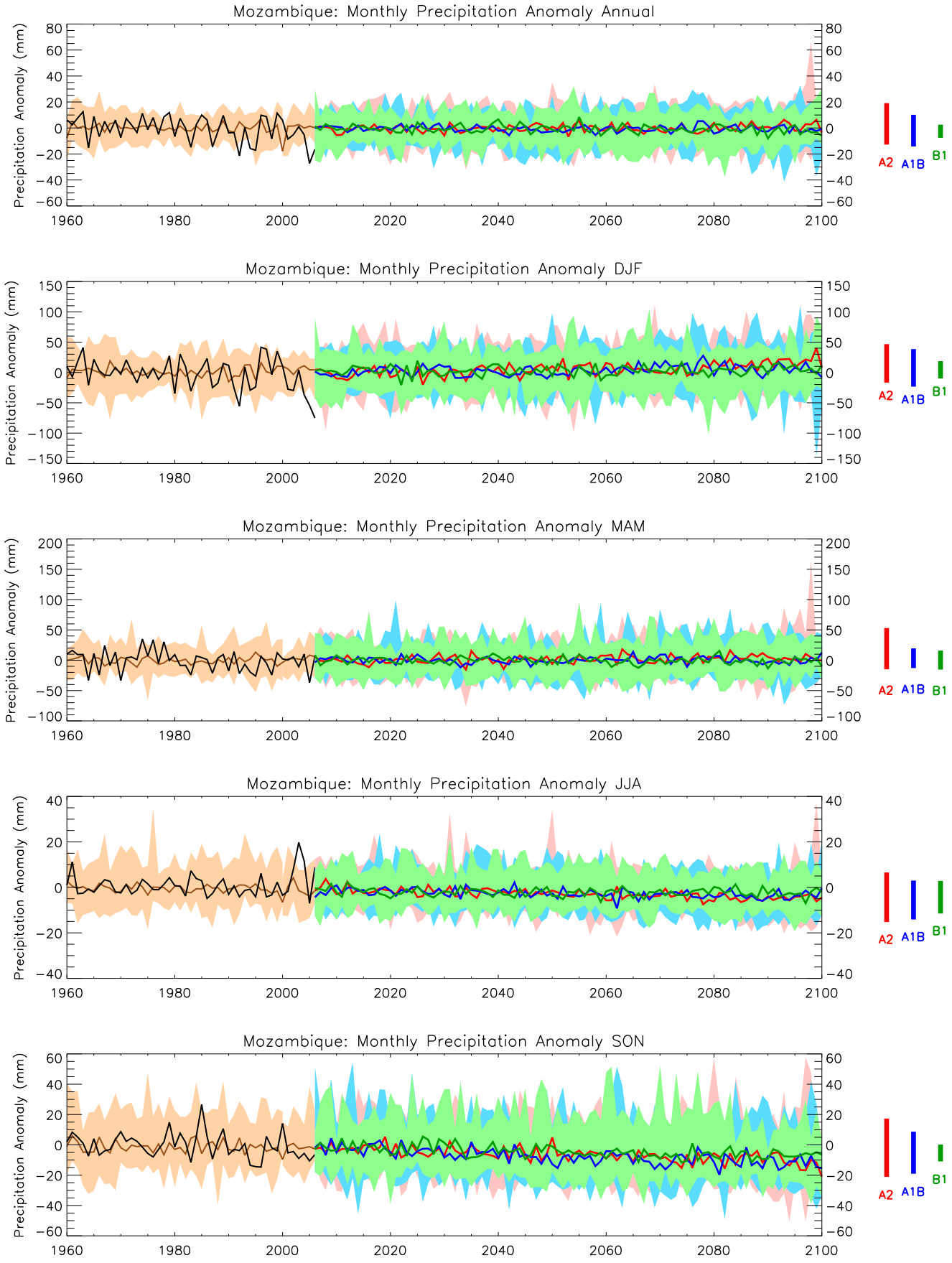

Figure 3: Trends in monthly precipitation for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

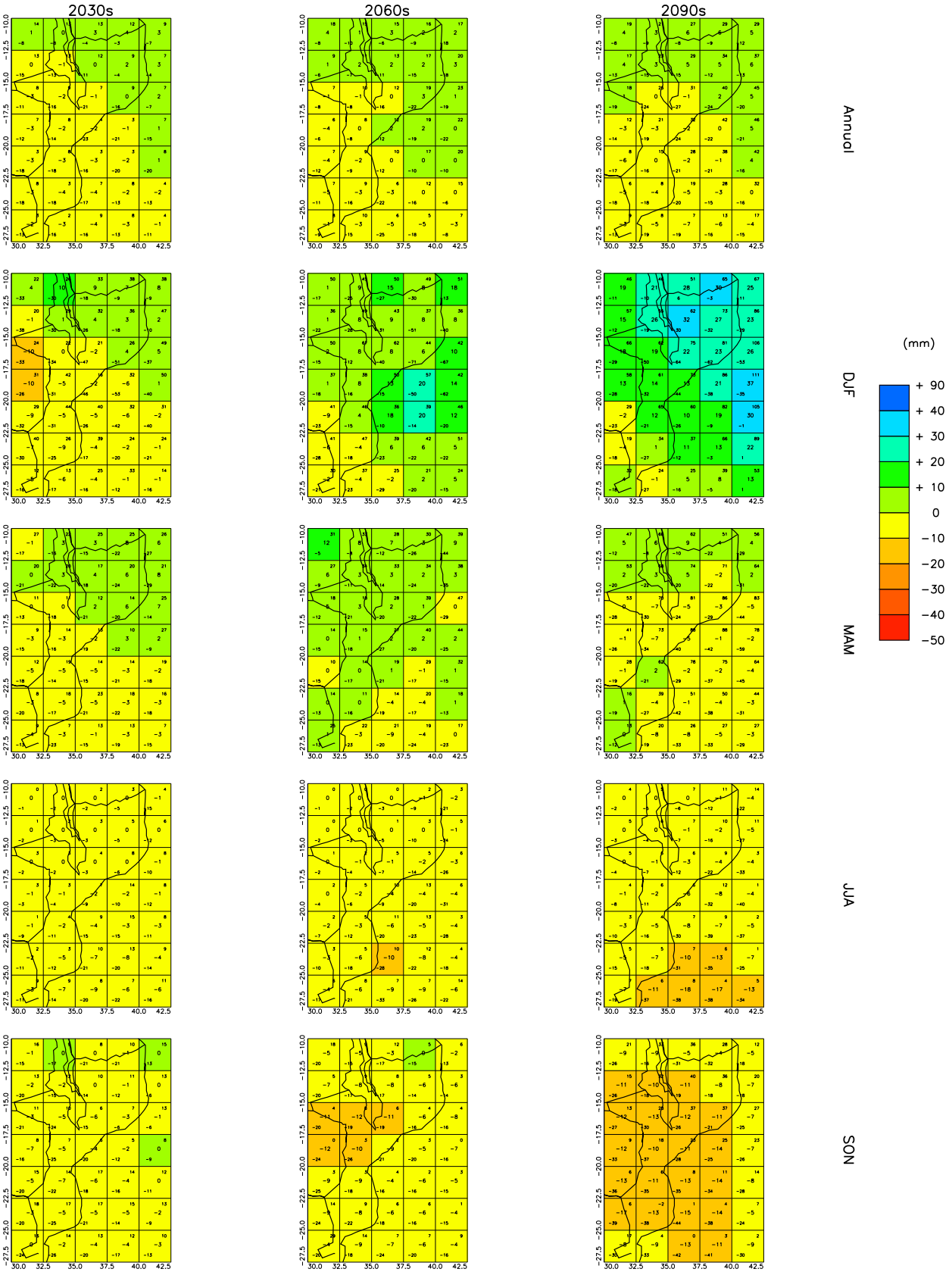

Figure 4: Spatial patterns of projected change in monthly precipitation for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999.See Figure 2 for details.

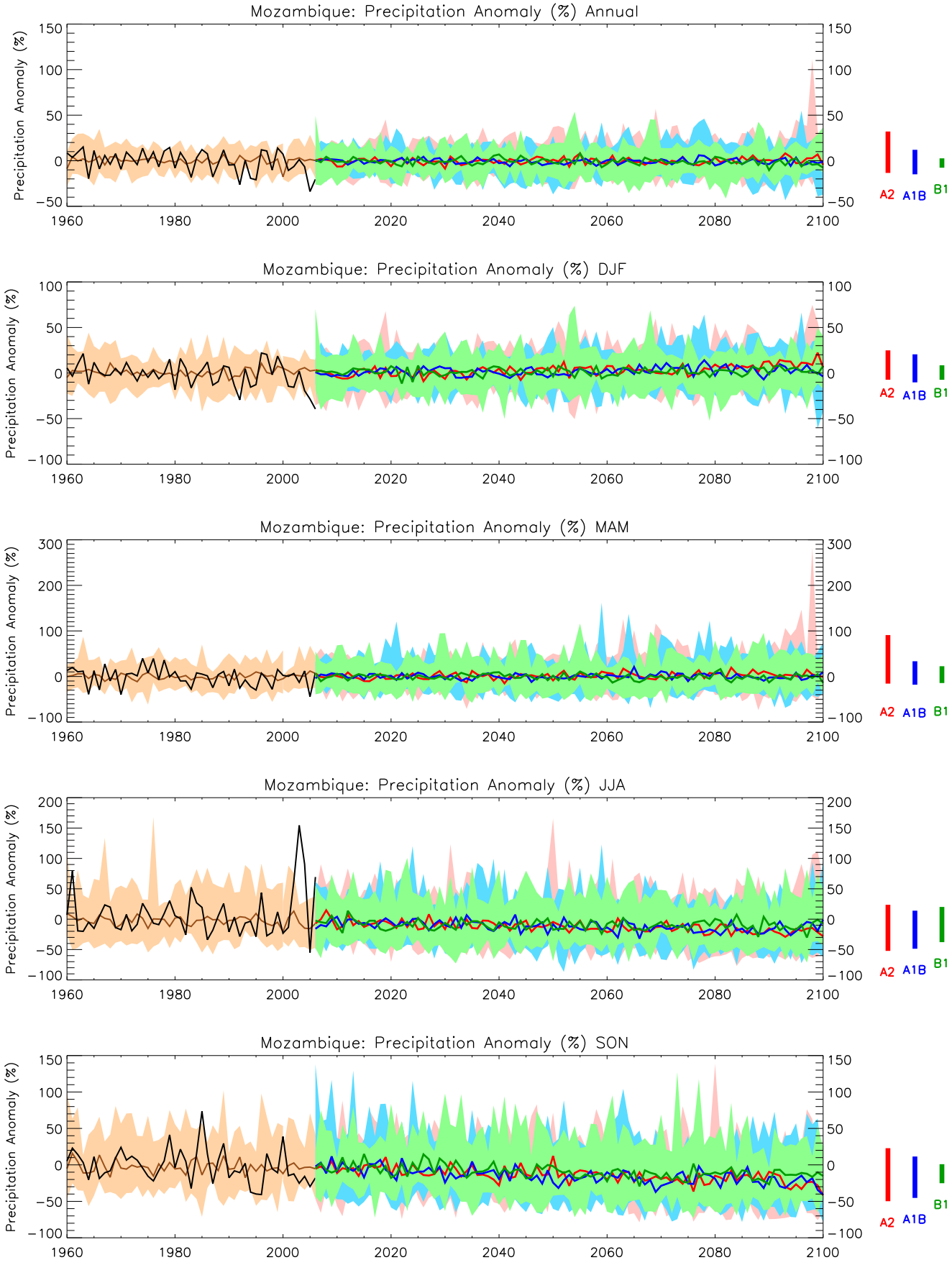

Figure 5: Trends in monthly precipitation for the recent past and projected future. All values shown are percentage anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

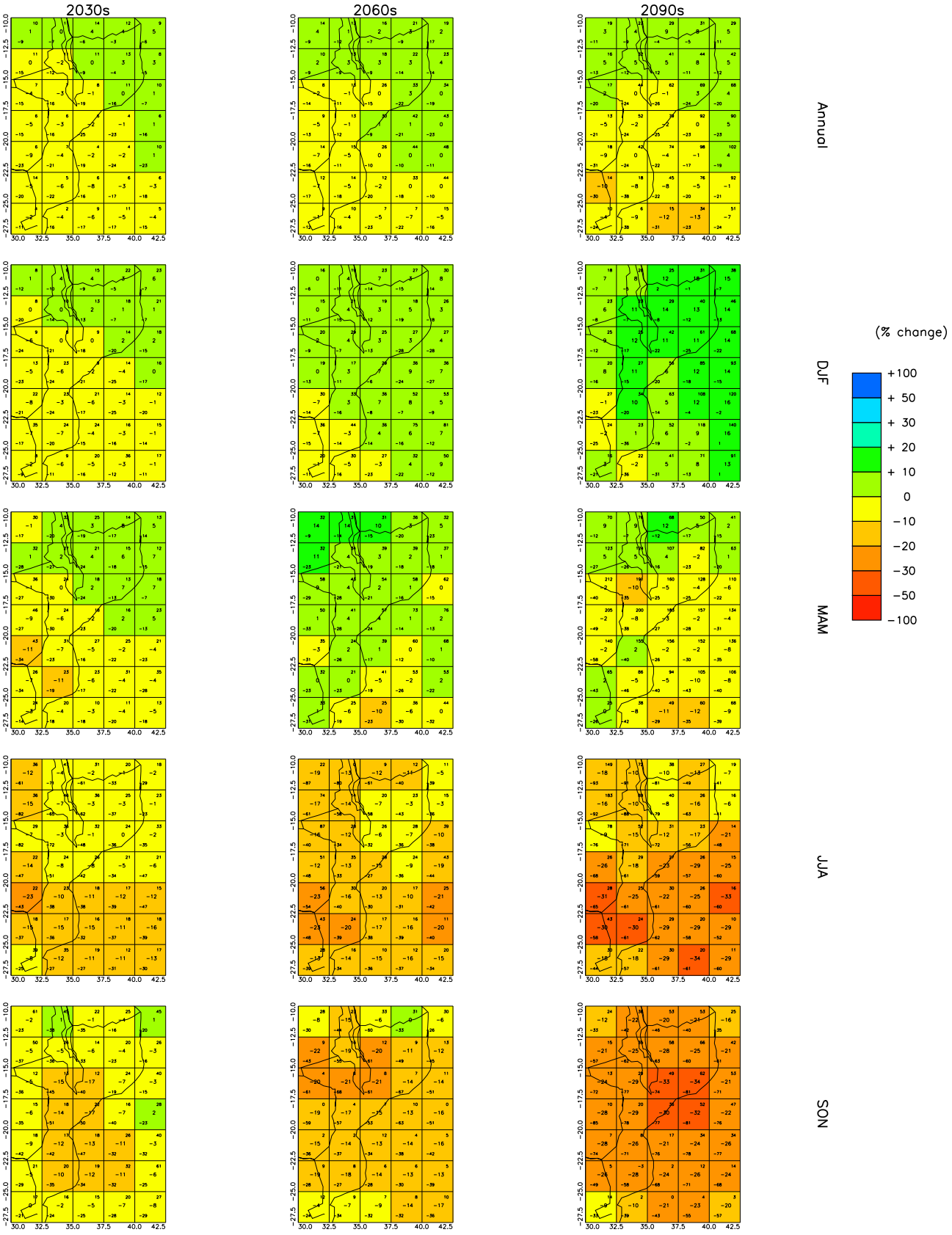

Figure 6: Spatial patterns of projected change in monthly precipitation for 10-year periods in the future under the SRES A2 scenario. All values are percentage anomalies relative to the mean climate of 1970-1999.See Figure 2 for details.

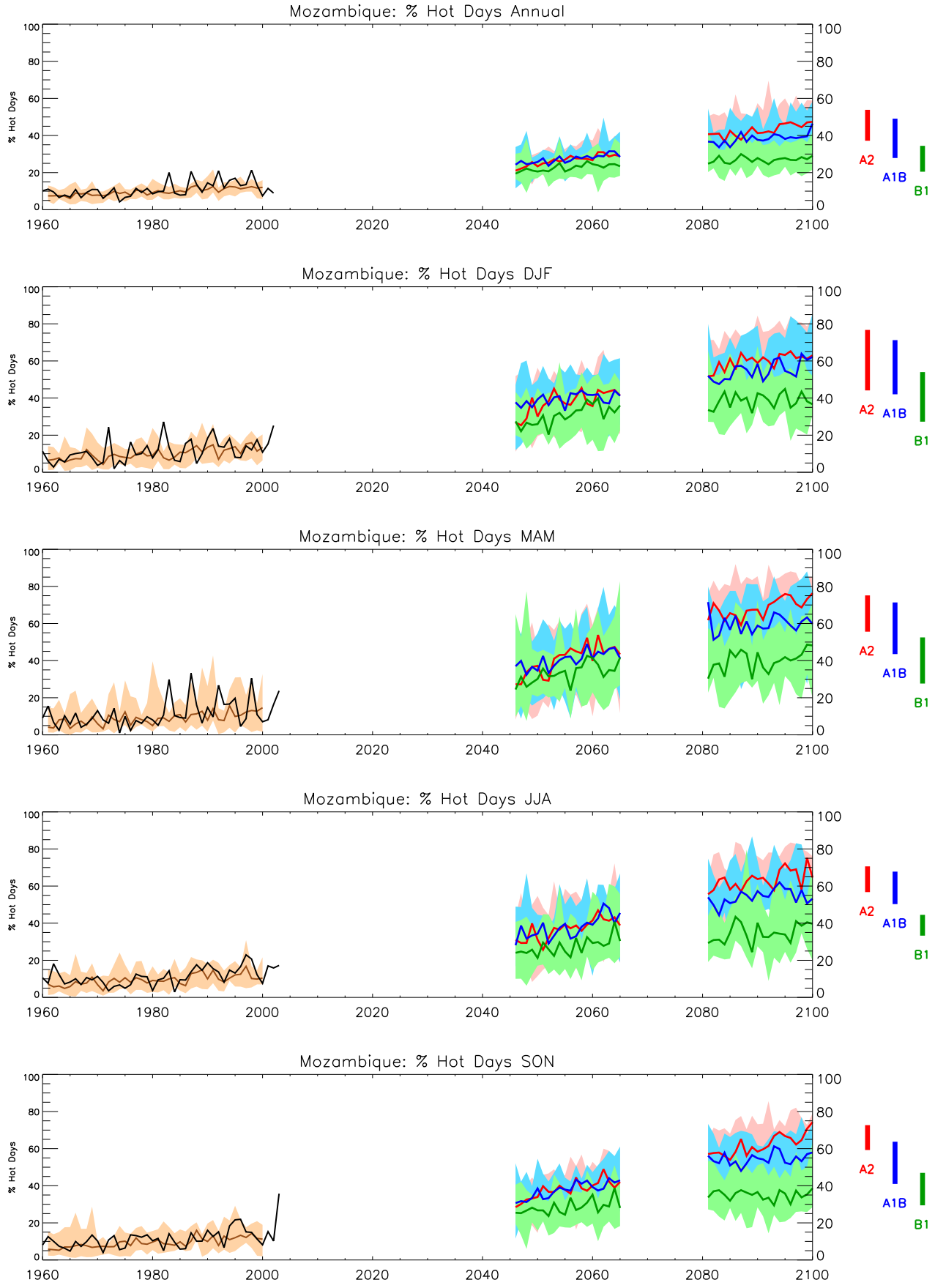

Figure 7: Trends in Hot-day frequency for the recent past and projected future. See Figure 1 for details.

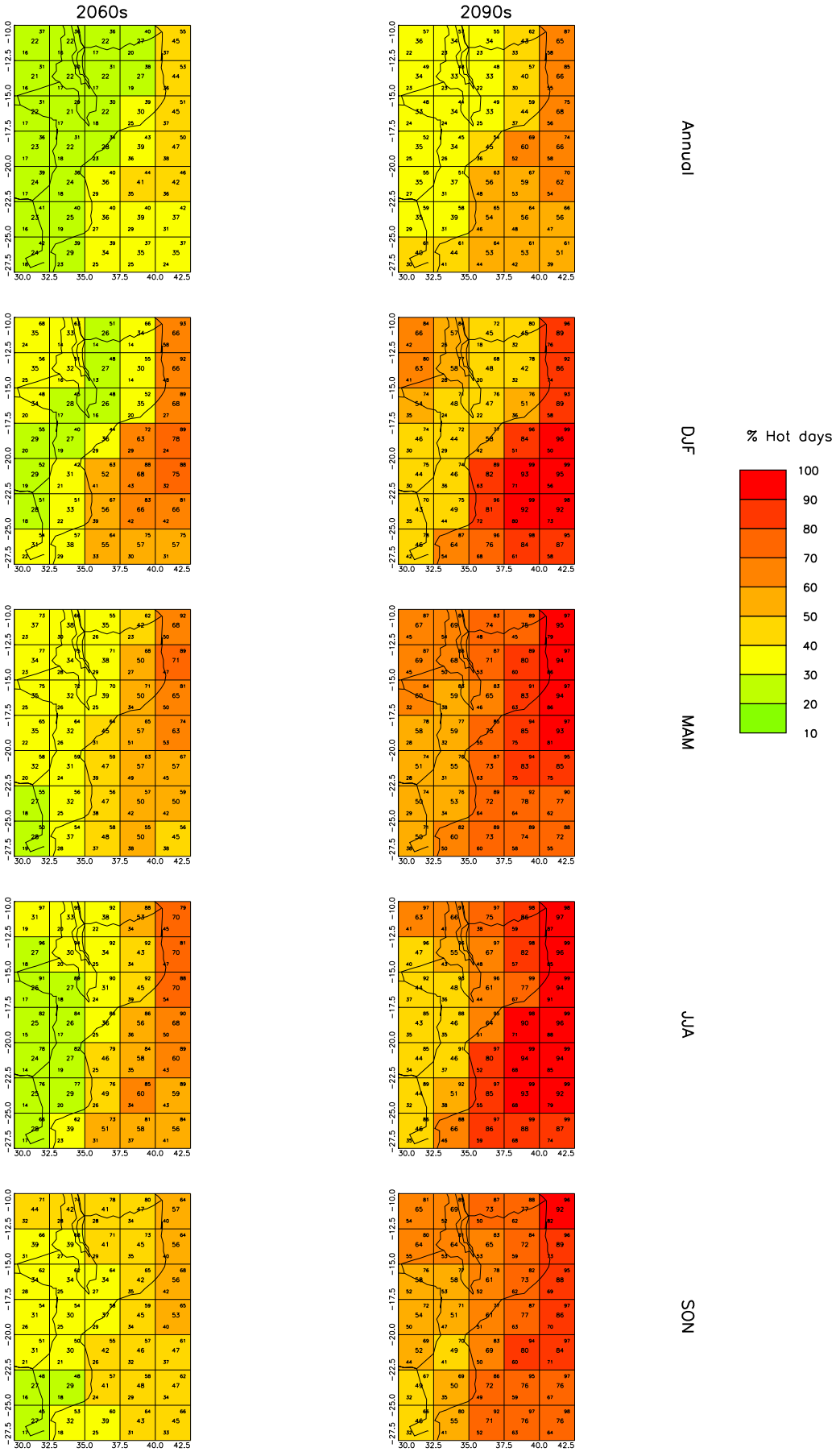

Figure 8: Spatial patterns of projected change in Hot-day frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

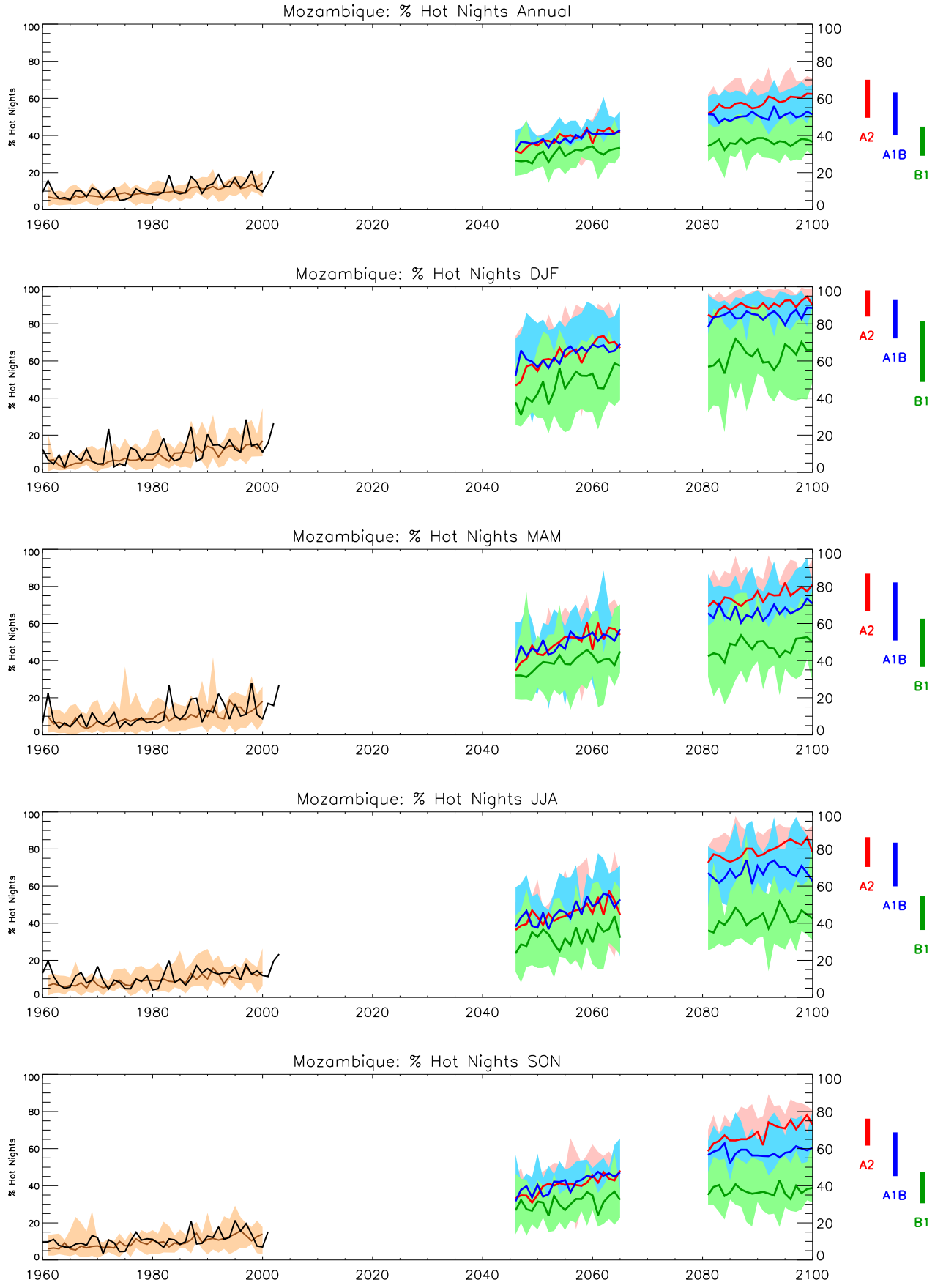

Figure 9: Trends in hot-night frequency for the recent past and projected future. See Figure 1 for details.

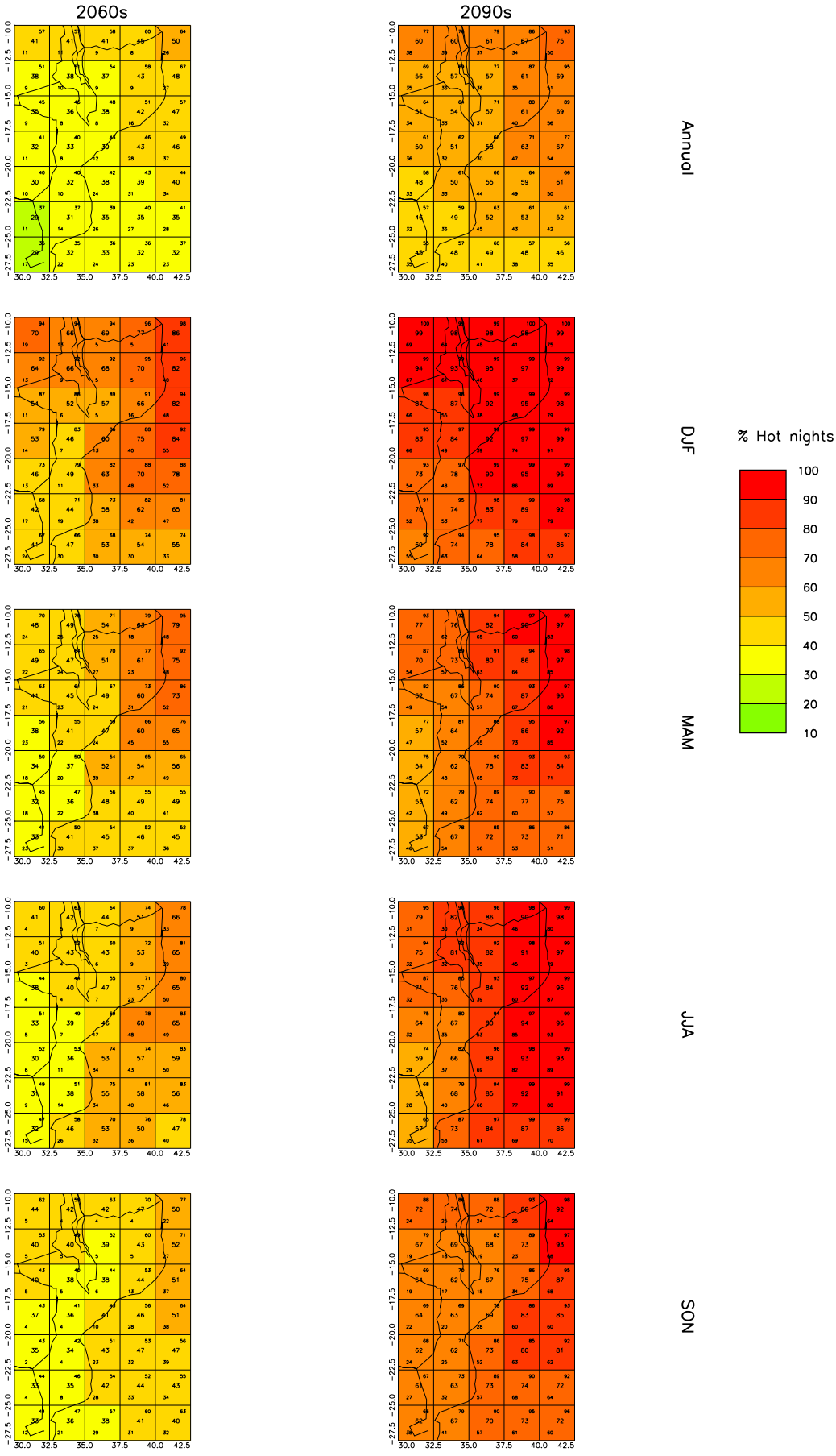

Figure 10: Spatial patterns of projected change in hot-night frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

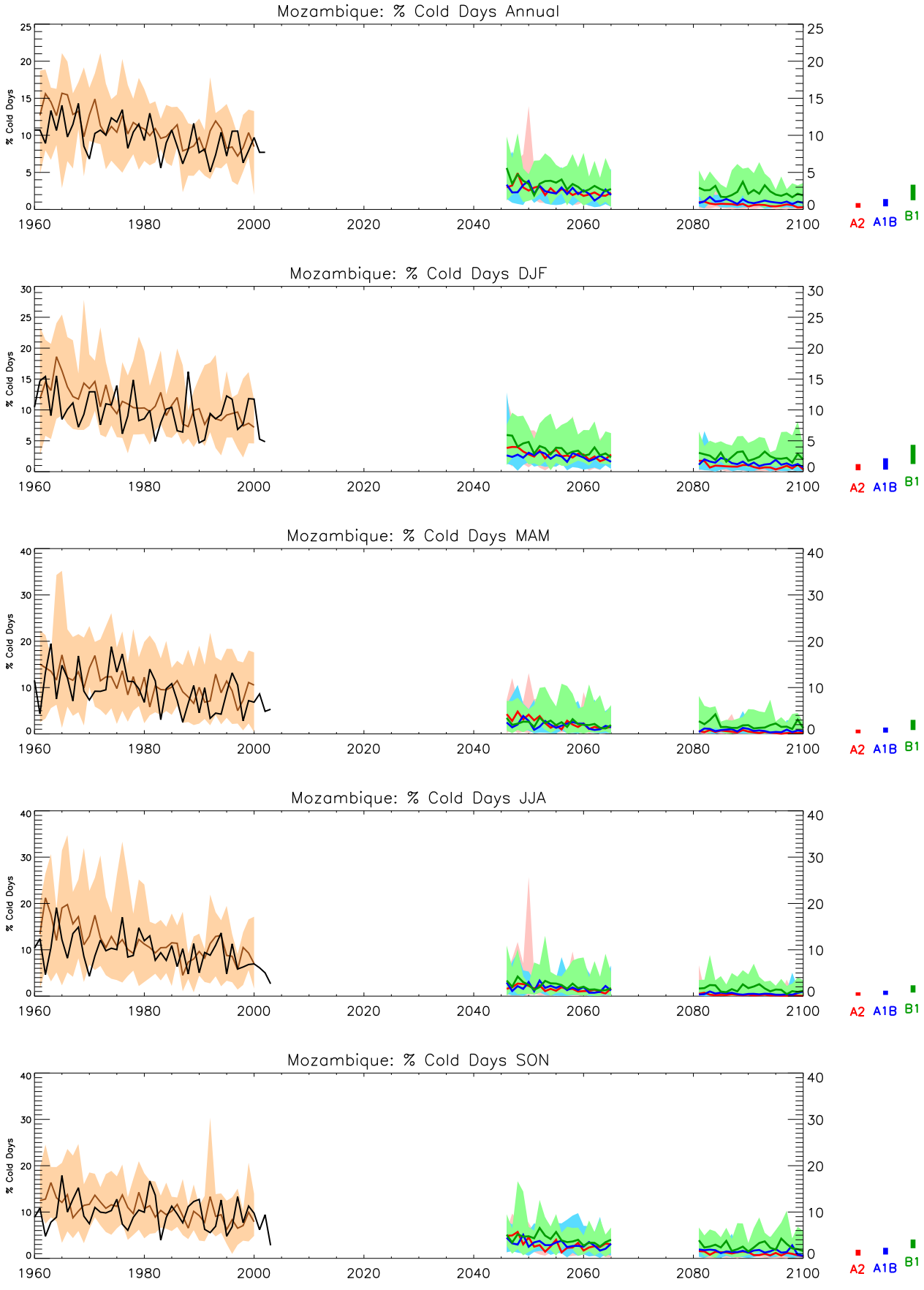

Figure 11: Trends in cold-day frequency for the recent past and projected future. See Figure 1 for details.

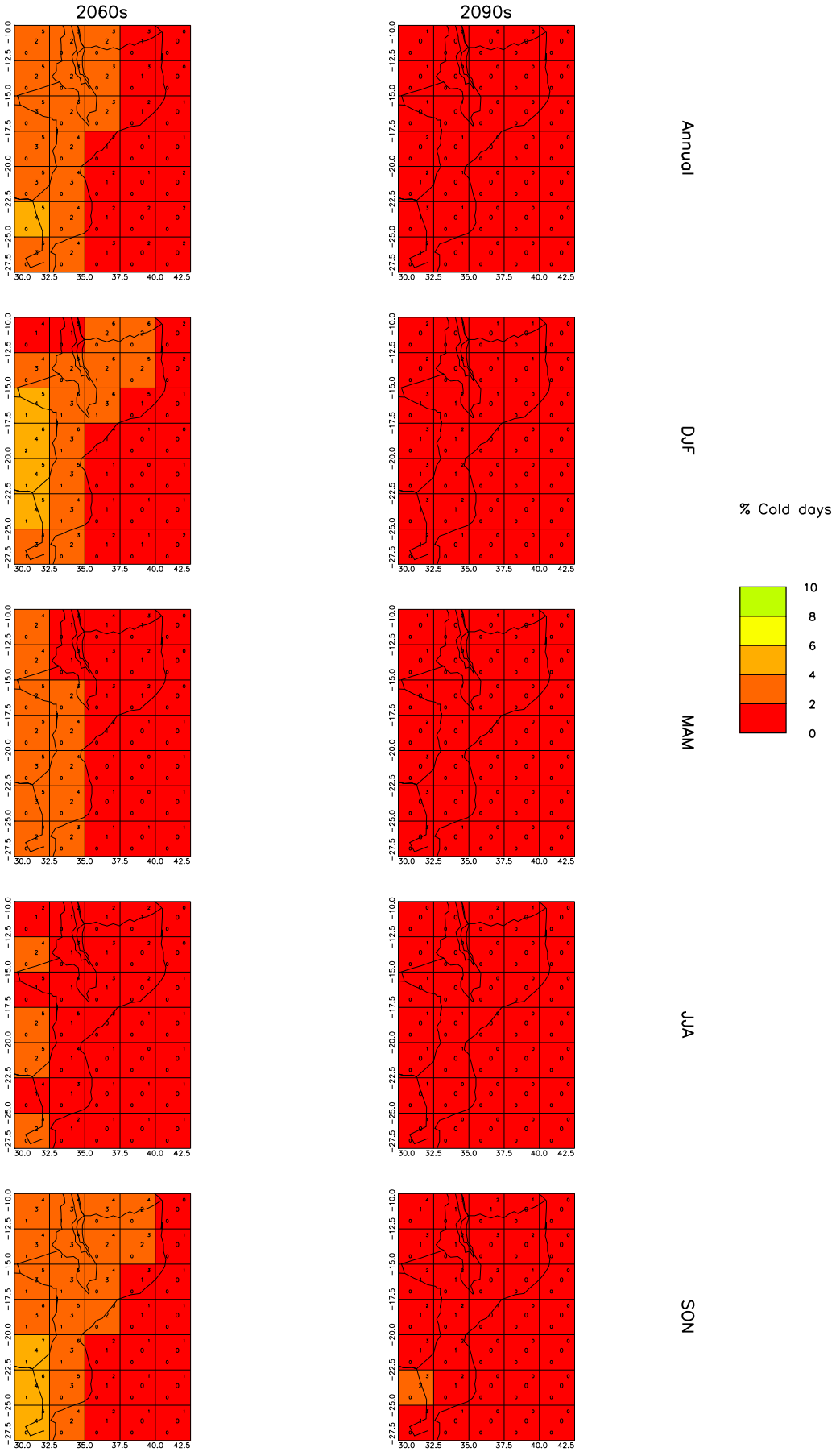

Figure 12: Spatial patterns of projected change in cold-day frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

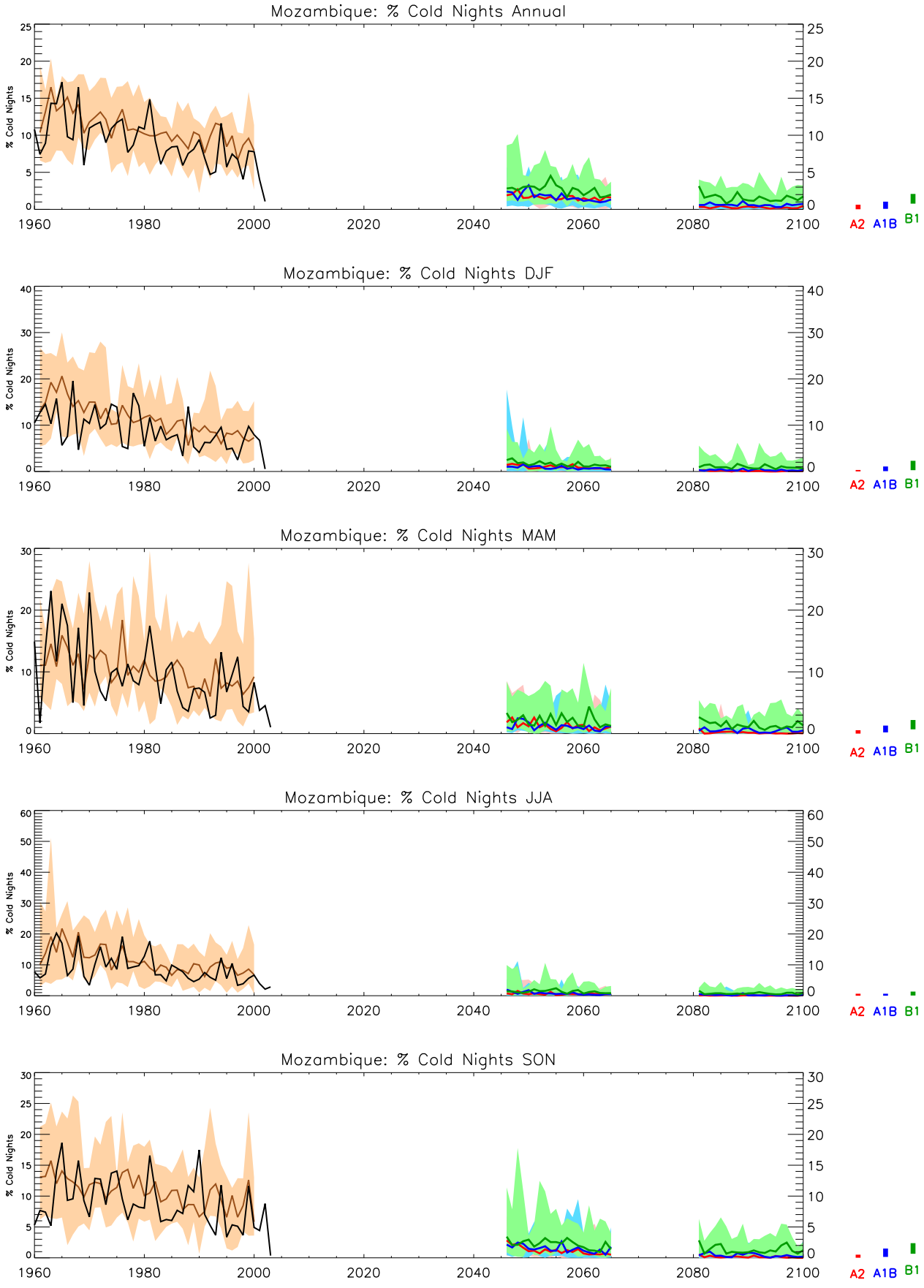

Figure 13: Trends in cold-night frequency for the recent past and projected future. See Figure 1 for details.

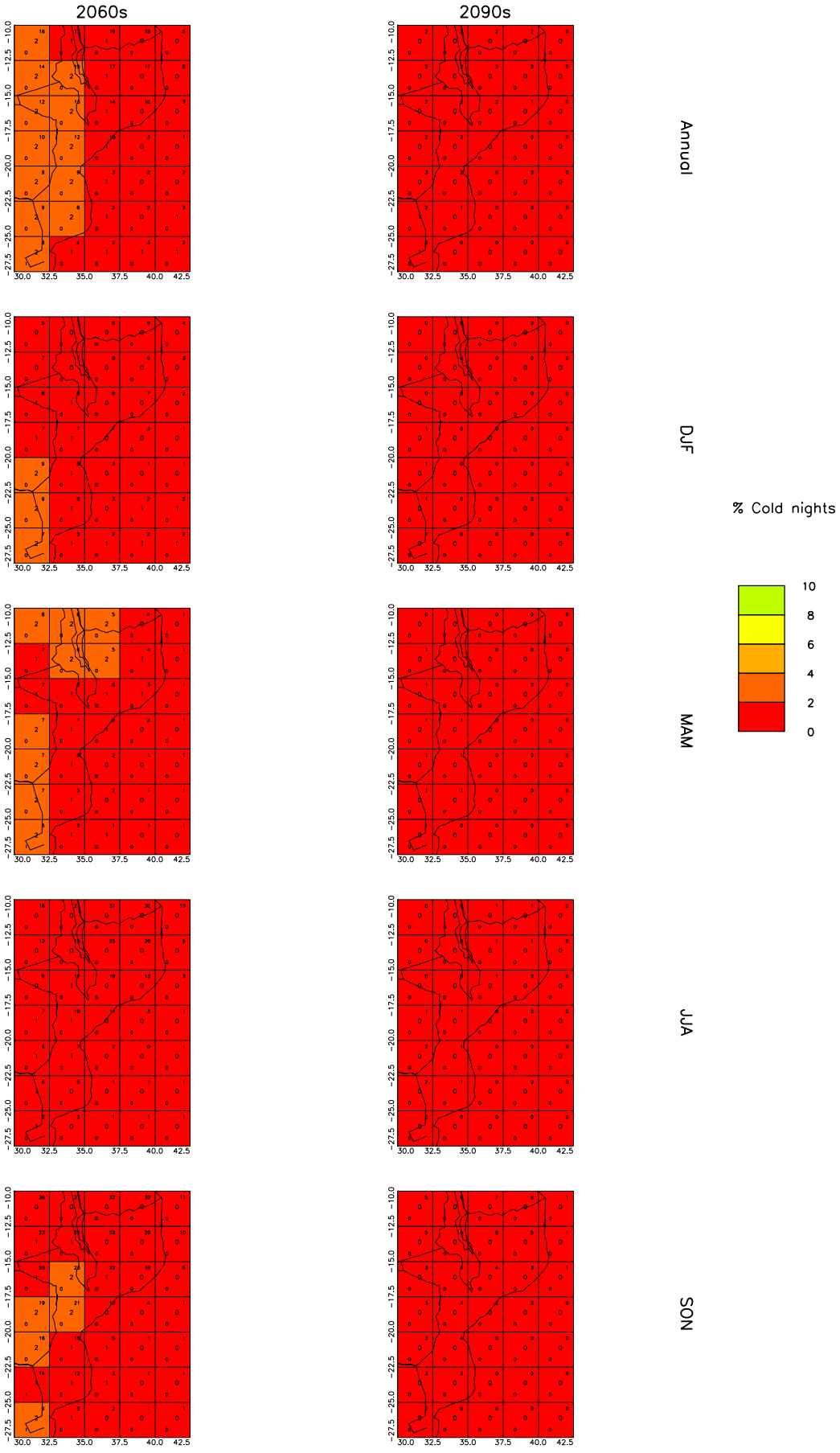

Figure 14: Spatial patterns of projected change in cold-night frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

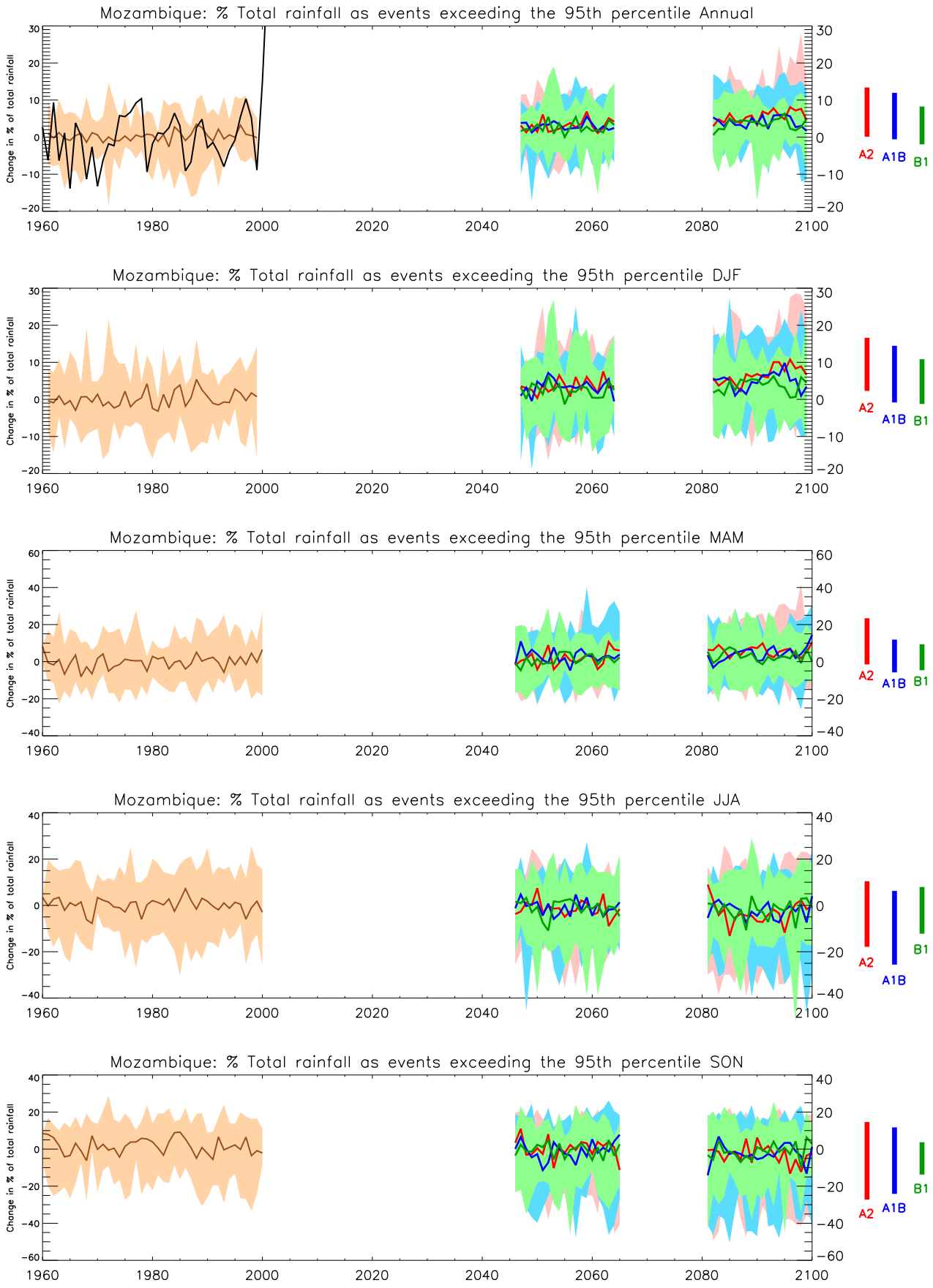

Figure 15: Trends in the proportion of precipitation falling in 'heavy' events for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

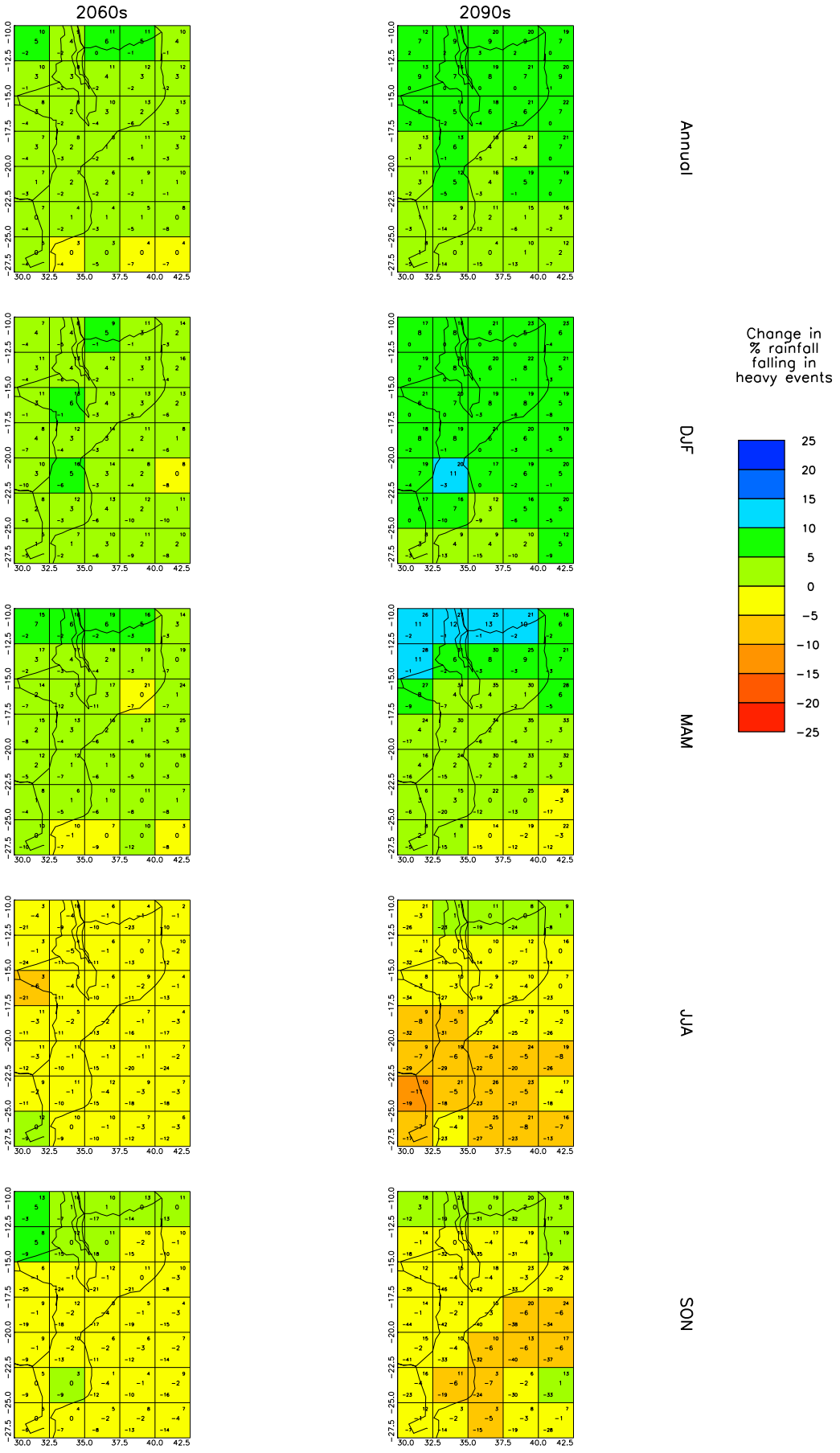

Figure 16: Spatial patterns of projected change in the proportion of precipitation falling in 'heavy' events for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. See Figure 2 for details.

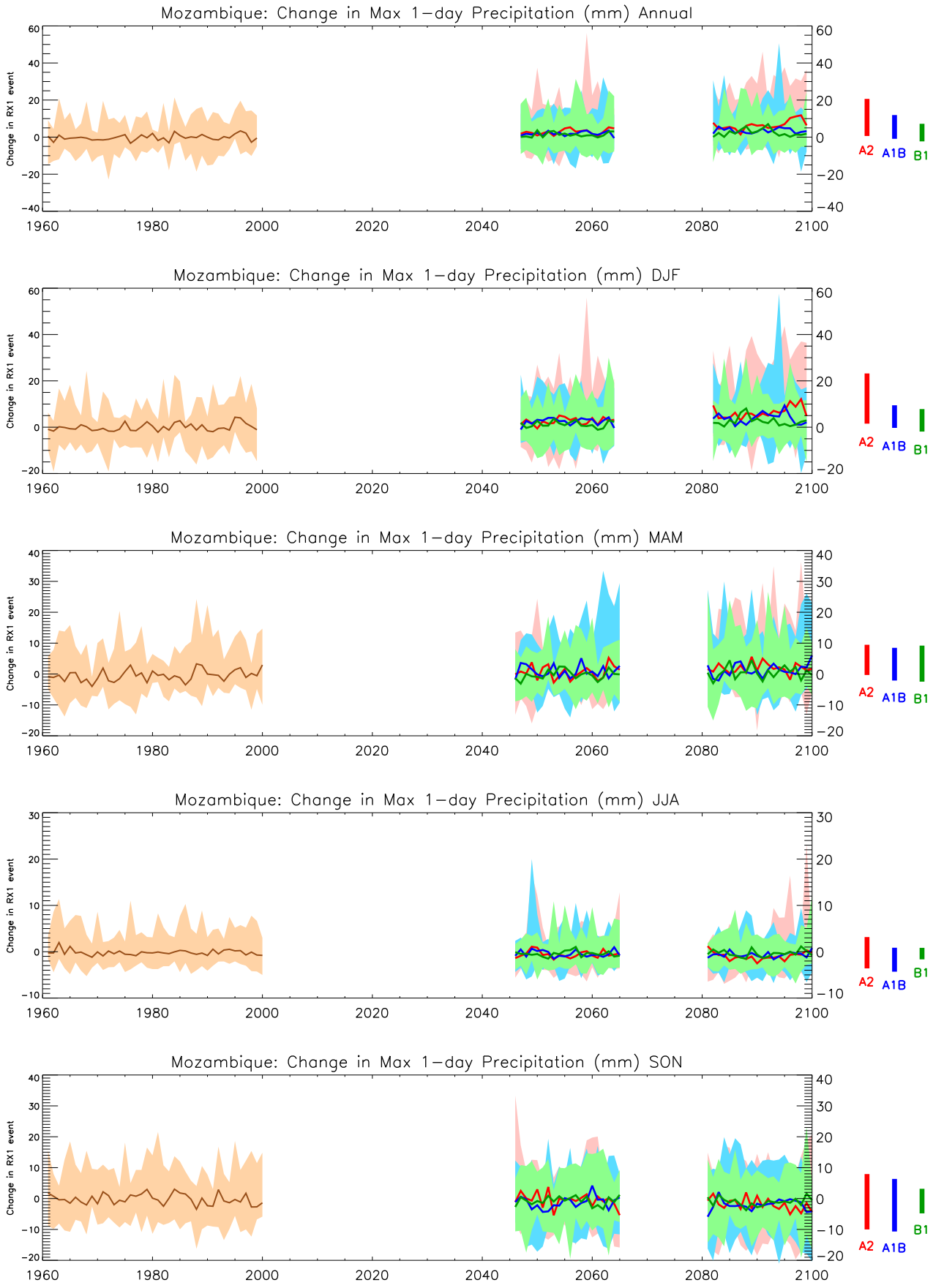

Figure 17: Trends in maximum 1-day rainfall for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

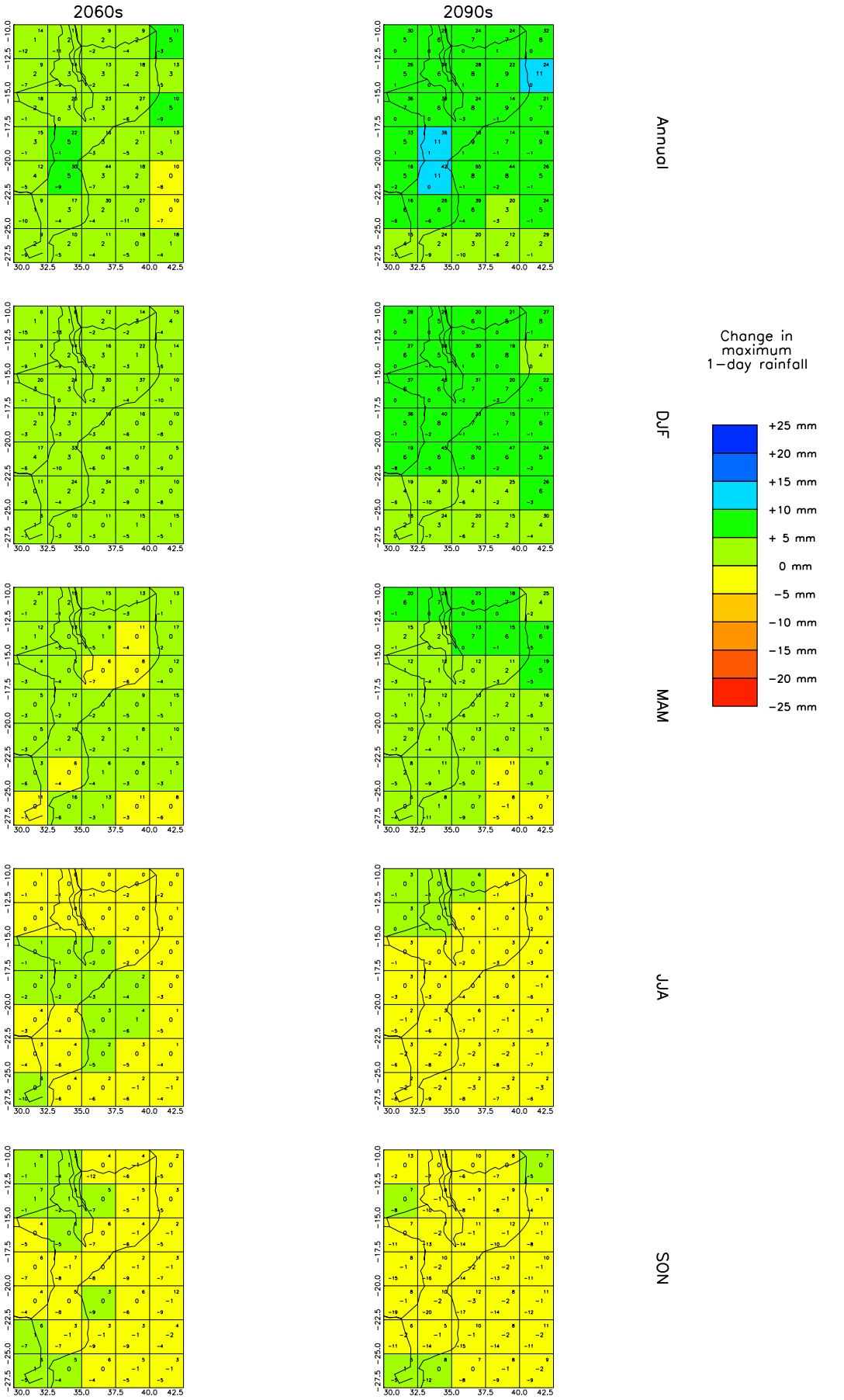

Figure 18: Spatial patterns of maximum 1-day rainfall for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. See Figure 2 for details.

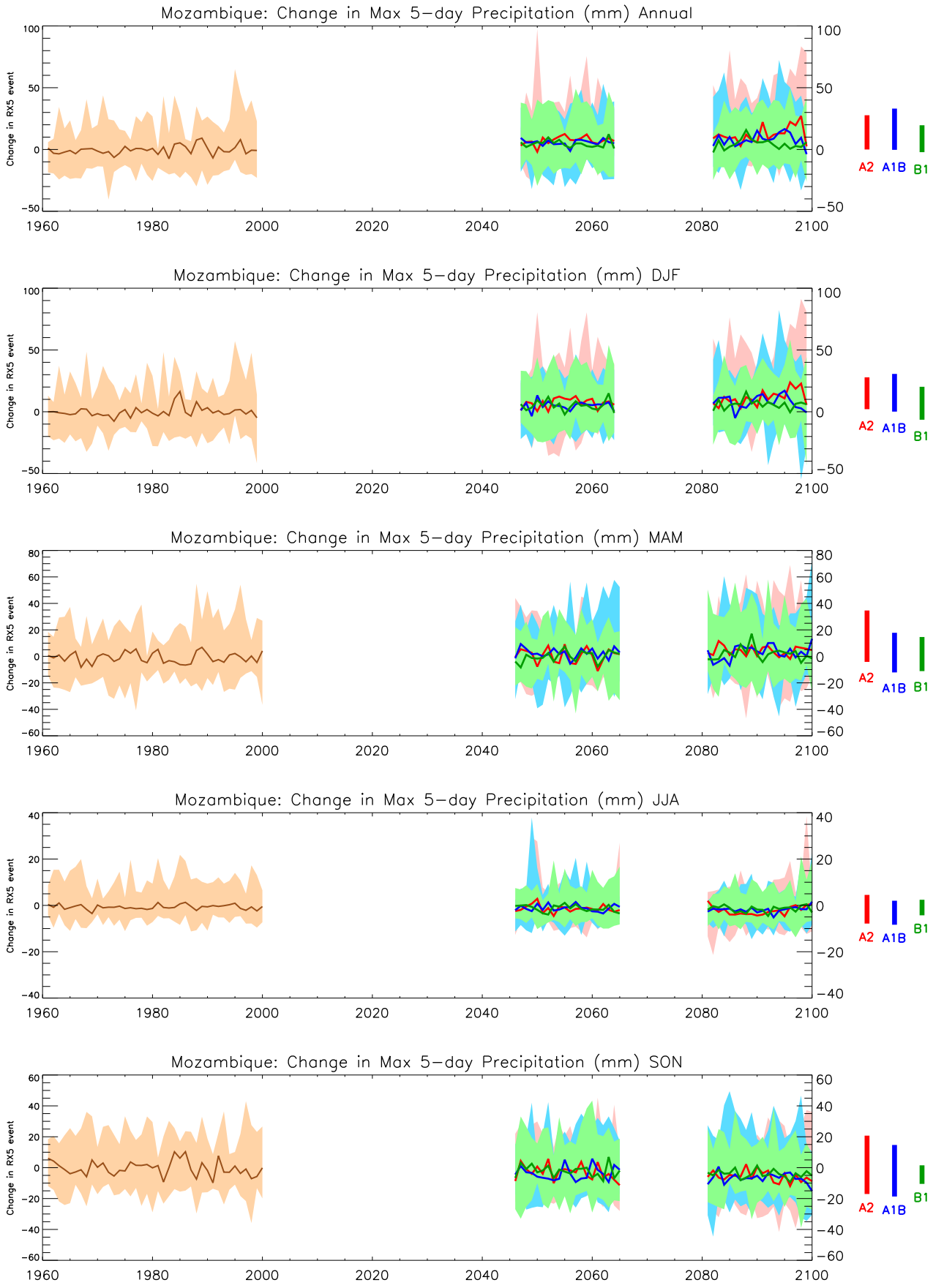

Figure 19: Trends in maximum 5-day rainfall for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

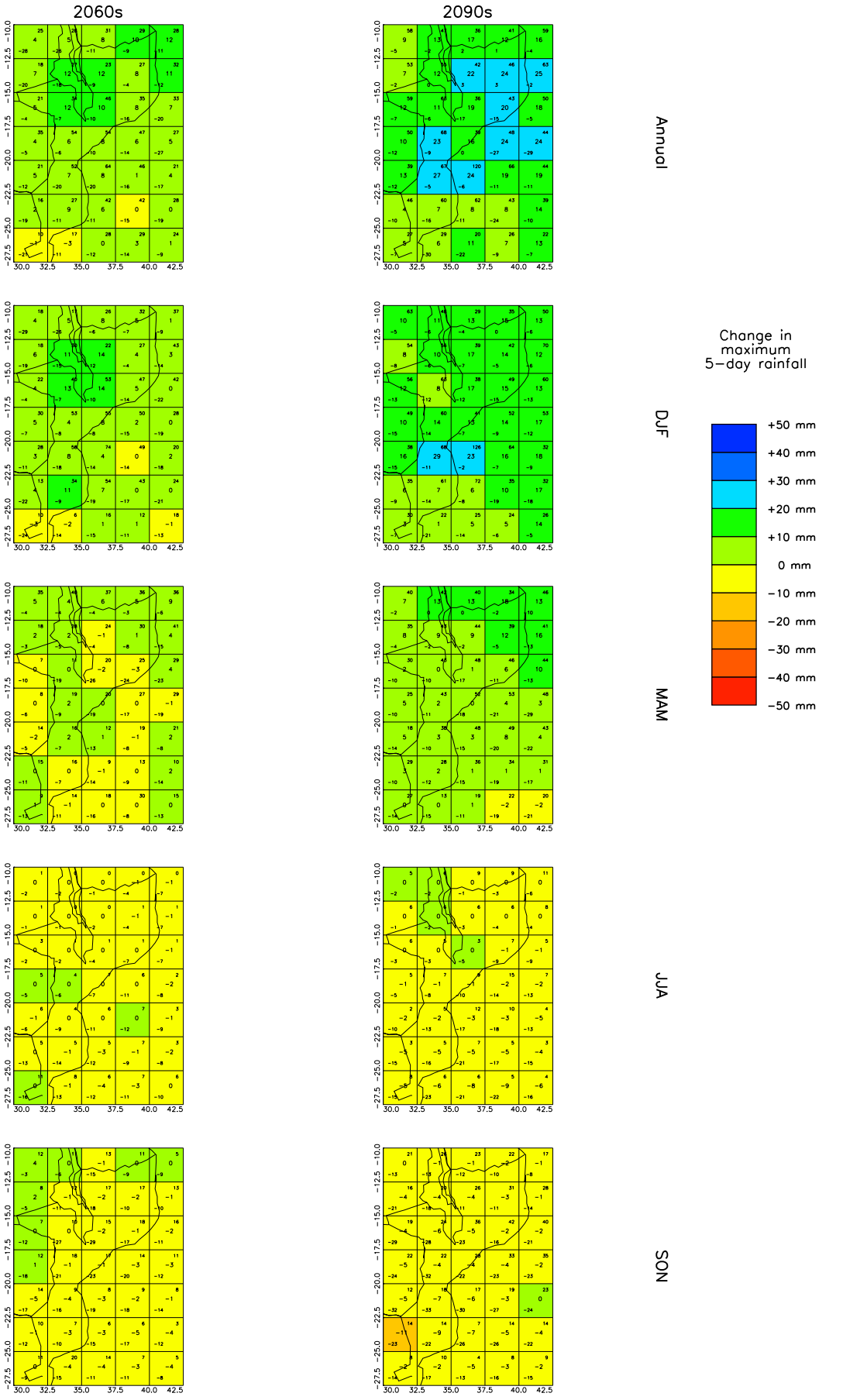

Figure 20: Spatial patterns of projected change in maximum 5-day rainfall for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. See Figure 2 for details.