UNDP Climate Change Country Profiles

Belize

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General Climate

Situated at a latitude of 16-18˚N, Belize has a typically moist tropical climate. There is little seasonal variation in temperature, but distinct 'wet' (May to October) and 'dry' (November to April) seasons. In the wet season, mean monthly rainfall can be 150 to 400mm, with highest rainfall totals in the south. In the dry season, most of the country receives less than 100mm of rainfall per month. The coastline of Belize is also vulnerable to Atlantic tropical cyclones and hurricanes from July through to October. Heavy rainfalls accompanying these storms contribute a significant fraction towards the high wet-season rainfall totals.

Mean annual temperatures are 23-27˚C, varying little with season through the year. The south-west, interior region of the country tends to be a little cooler than regions in closer proximity to the coast.

Inter-annual variations in climate in southern Central America are caused by the El Niño Southern Oscillation (ENSO). El Niño events bring relatively warm and dry conditions between June and August, and decreased frequencies of Atlantic tropical cyclones, whilst La Niña episodes bring colder and wetter conditions at that time of year, and more frequent than average tropical cyclones.

Recent Climate Trends

Temperature

- Mean annual temperature has increased by 0.45˚C since 1960, an average rate of 0.10˚C per decade. The average rate of increase is most rapid in the wet seasons (MJJ and ASO) at 0.14-0.15˚C per decade and slower in the dry seasons (NDJ and FMA) at 0.08-0.09˚C per decade.
- The frequency of particularly hot days[1] and hot nights has increased significantly since 1960 in every season.
    - The average number of 'hot' days per year in Belize has increased by 67 (an additional 18.3% of days[2]) between 1960 and 2003. The rate of increase is seen most

[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.

strongly in summer (JJA), when the average number of hot summer days has increased by 6.7 days per month (an additional 21.5% of summer days) over this period.

- The average number of 'hot' nights per year increased by 37 (an additional 10.2% of nights) between 1960 and 2003. The rate of increase is seen most strongly in SON when the average number of hot SON nights has increased by 5.6 days per month (an additional 18.1% of SON nights) over this period.

- The frequency of cold days[3] and nights, annually, has decreased significantly since 1960.
  - The average number of 'cold 'days per year has decreased by 21 (5.7% of days) between 1960 and 2003. This rate of decrease is most rapid in summer (JJA) when the average number of cold summer days has decreased by 2.1 days per month (6.9% of summer days) over this period.
  - The average number of 'cold' nights per year has decreased by 23 (6.2% of days). This rate of decrease is most rapid in winter (DJF) when the average number of cold winter nights has decreased by 2.3 nights per month (7.5% of winter nights) over this period.

Precipitation

- Mean annual rainfall over Belize has decreased at an average rate of 3.1mm per month per decade since 1960, but this trend is not statistically significant. Whilst all seasons appear to have shown decreasing precipitation trends since 1960, only FMA has a statistically significant trend.

- The percentage of rainfall that falls in heavy[4] events has not increased significantly since 1960.
- The observed maximum 1- and 5-day rainfalls generally show increasing trends, but are only statistically significant for 5-day rainfalls annually, and in MAM. Maximum 5-day rainfalls have increased by around 5.4mm per decade since 1960, annually, and by 2.7mm in MAM.

[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 0.8 to 2.9˚C by the 2060s, and 1.3 to 4.6 degrees by the 2090s. The range of projections by the 2090s under any one emissions scenario is 1.5-2˚C.
- The projected rate of warming is a little more rapid in the wet seasons, MJJ and ASO than the dry seasons NDJ and FMA.

- 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 20-55% of days by the 2060s, and 17-76% of days by the 2090s. Days considered 'hot' by current climate standards for their season are projected to occur on 21-95% of days of the season by the 2090s, with the fastest rates of increase projected for MJJ and ASO.
    - Nights that are considered 'hot' for the annual climate of 1970-99 are projected to occur on 30-61% of nights by the 2060s and 37-84% of nights by the 2090s. Nights that are considered hot for each season by 1970-99 standards are projected to occur on 34-99% of nights in every season by the 2090s, with the fastest rates of increase in MJJ and ASO.
- All projections indicate that days and nights that are considered 'cold' in current climate will become rarer, occurring on 0-6% of days and 0-8% of nights by the 2090s. The rate of decrease in their frequency is greatest in MJJ and ASO.

Precipitation

- Projections of mean annual rainfall from different models in the ensemble are broadly consistent in indicating decreases in rainfall for Belize. Ensemble median values for almost all seasons and emissions scenarios are negative. Projections vary between -64% and +20% by the 2090s with ensemble median values of -11 to -22%.
- Changes in rainfall projected show the strongest decreasing signal in MJJ rainfall, at -83 to +22% by 2090s.

- The proportion of total rainfall that falls in heavy events is projected to decrease in MJJ, consistent with decreases in total rainfall.
- Maximum 1- and 5-day rainfalls tend towards negative changes in MJJ, but show little consistent change in other seasons. This is inconsistent with the observed trends for increases in these maximum rainfalls.

Additional 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).
- This uncertainty in potential changes in tropical cyclone contributes to uncertainties in future wet-season rainfall. Potential increases in summer rainfall associated with tropical cyclone activity, which may not be captured in the GCM projections, may counteract projected decreases in rainfall in the region (Christensen *et al*., 2007).
- Model simulations show wide disagreements in projected changes in the amplitude and frequency of future El Niño events. ENSO influences on the monsoon system in Central America and affects the position of the ITCZ, thus contributing to uncertainty in climate projections for this region.
- The coastal lowlands in northern Belize 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:
    - 0.18 to 0.43m under SRES B1
    - 0.21 to 0.53m under SRES A1B
    - 0.23 to 0.56m under SRES A2

- For further information on projected changes in Central America, see Christensen *et al*. (2007) IPCC Working Group I Report: '*The Physical Science Basis'*, Chapter 11 *(Regional Climate projections*): Section 11.6 *(South and Central America*).

[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	0.7	**1.2**	1.5	1.7	**2.2**	2.9	2.8	**3.6**	4.6
Annual	24.9	0.10*	*A1B*	0.4	**1.3**	1.7	1.2	**2.3**	2.9	2.0	**3.0**	3.8
			B1	0.4	**1.0**	1.3	0.8	**1.6**	2.0	1.3	**1.8**	2.7
			A2	0.6	**1.1**	1.4	1.5	**2.0**	2.9	2.4	**3.3**	4.7
NDJ	23.0	0.09	*A1B*	0.2	**1.2**	2.0	1.2	**2.0**	2.8	2.0	**2.6**	3.8
			B1	0.5	**0.9**	1.5	0.9	**1.4**	2.0	1.1	**1.5**	2.8
			A2	0.7	**1.1**	1.6	1.6	**2.1**	2.8	2.5	**3.5**	5.1
FMA	24.6	0.08	*A1B*	0.4	**1.1**	2.0	0.9	**2.2**	3.3	1.8	**3.0**	3.8
			B1	0.1	**0.9**	1.6	0.6	**1.6**	2.0	1.1	**1.8**	2.6
			A2	0.5	**1.3**	1.6	1.8	**2.4**	3.0	3.2	**3.8**	5.0
MJJ	26.3	0.14*	*A1B*	0.5	**1.3**	1.9	1.3	**2.3**	3.1	2.1	**3.1**	4.2
			B1	0.3	**1.0**	1.5	0.6	**1.7**	2.2	1.3	**2.0**	2.7
			A2	0.7	**1.2**	1.8	1.7	**2.4**	3.0	2.9	**4.0**	5.2
ASO	25.6	0.15*	*A1B*	0.5	**1.3**	1.8	1.3	**2.3**	3.1	2.2	**2.9**	4.0
			B1	0.5	**1.0**	1.5	0.9	**1.7**	2.3	1.4	**1.8**	2.8
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	-20	**-5**	9	-18	**-8**	8	-37	**-13**	0
Annual	172.7	-3.1	*A1B*	-20	**-5**	5	-25	**-9**	11	-33	**-10**	6
			B1	-15	**-2**	10	-22	**-5**	9	-20	**-5**	20
			A2	-20	**0**	6	-15	**-4**	9	-20	**-5**	10
NDJ	151.2	-0.3	*A1B*	-17	**-2**	5	-20	**-3**	22	-14	**-4**	12
			B1	-7	**-2**	15	-14	**-2**	3	-11	**-1**	12
			A2	-14	**-3**	5	-17	**-2**	15	-19	**-7**	6
FMA	58.6	-4.0*	*A1B*	-17	**-5**	26	-15	**-4**	0	-20	**-7**	1
			B1	-12	**0**	5	-16	**-2**	7	-16	**-1**	12
			A2	-22	**-6**	15	-50	**-17**	29	-55	**-26**	-4
MJJ	220.2	-3.0	*A1B*	-40	**-9**	0	-50	**-19**	24	-41	**-22**	21
			B1	-28	**-8**	14	-30	**-8**	18	-30	**-9**	11
			A2	-68	**-2**	54	-34	**0**	60	-94	**-15**	29
ASO	258.5	-4.8	*A1B*	-34	**0**	46	-28	**-11**	30	-78	**-8**	33
			B1	-34	**-2**	50	-51	**-3**	28	-60	**-9**	55
Precipitation (%)												
	(mm per month)	*(change in % per decade)*		*% Change*			*% Change*			*% Change*		
			A2	-22	**-7**	13	-47	**-12**	10	-64	**-22**	0
Annual	172.7	-1.8	*A1B*	-34	**-7**	7	-47	**-12**	15	-55	**-17**	8
			B1	-21	**-3**	15	-40	**-5**	13	-51	**-11**	26
			A2	-17	**-2**	9	-40	**-7**	12	-47	**-10**	15
NDJ	151.2	-0.2	*A1B*	-19	**-5**	14	-33	**-7**	32	-36	**-3**	17
			B1	-20	**-1**	19	-16	**-5**	8	-22	**-1**	17
			A2	-36	**-16**	5	-31	**-8**	29	-58	**-24**	9
FMA	58.6	-6.9*	*A1B*	-36	**-11**	30	-31	**-14**	3	-53	**-20**	7
			B1	-38	**0**	20	-30	**-7**	10	-39	**-9**	25
			A2	-34	**-12**	16	-67	**-33**	12	-83	**-43**	-4
MJJ	220.2	-1.4	*A1B*	-54	**-18**	1	-72	**-23**	10	-80	**-33**	9
			B1	-48	**-18**	14	-68	**-13**	41	-77	**-14**	20
			A2	-40	**-1**	40	-51	**0**	39	-70	**-16**	19
ASO	258.5	-1.8	*A1B*	-37	**0**	35	-62	**-9**	19	-65	**-12**	21
			B1	-31	**-3**	37	-58	**-9**	21	-77	**-9**	36

	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	****	****	****	27	**41**	55	35	**62**	76
Annual	14.0	4.25*	*A1B*	****	****	****	29	**39**	52	30	**56**	66
			B1	****	****	****	20	**32**	45	17	**39**	48
			A2	****	****	****	19	**45**	53	34	**70**	79
NDJ	12.3	(2.76*)	*A1B*	****	****	****	22	**46**	53	33	**61**	71
(DJF)			*B1*	****	****	****	20	**30**	42	21	**38**	55
			A2	****	****	****	30	**43**	61	36	**67**	80
FMA	13.6	(3.64*)	*A1B*	****	****	****	27	**46**	53	40	**60**	75
(MAM)			*B1*	****	****	****	22	**31**	43	21	**37**	58
			A2	****	****	****	38	**64**	78	55	**91**	95
MJJ	14.4	(4.99*)	*A1B*	****	****	****	42	**61**	77	44	**86**	88
(JJA)			*B1*	****	****	****	27	**47**	66	21	**62**	75
			A2	****	****	****	31	**65**	75	46	**81**	92
ASO	13.8	(4.73*)	*A1B*	****	****	****	35	**58**	75	36	**76**	87
(SON)			*B1*	****	****	****	23	**53**	68	22	**62**	78
Frequency of Hot Nights (TN90p)												
			A2	****	****	****	42	**52**	61	63	**78**	84
Annual	11.2	2.37*	*A1B*	****	****	****	42	**51**	61	54	**69**	80
			B1	****	****	****	30	**38**	49	37	**46**	59
			A2	****	****	****	34	**52**	66	51	**78**	89
NDJ	12.0	(3.56*)	*A1B*	****	****	****	35	**53**	69	48	**67**	88
(DJF)			*B1*	****	****	****	25	**38**	45	34	**47**	69
			A2	****	****	****	37	**51**	65	57	**81**	91
FMA	11.6	(1.92*)	*A1B*	****	****	****	33	**54**	68	51	**72**	84
(MAM)			*B1*	****	****	****	26	**41**	47	37	**48**	63
			A2	****	****	****	66	**78**	87	94	**97**	98
MJJ	11.3	(2.73*)	*A1B*	****	****	****	66	**76**	87	83	**94**	96
(JJA)			*B1*	****	****	****	36	**59**	72	60	**71**	85
			A2	****	****	****	72	**83**	92	93	**96**	99
ASO	12.3	(4.22*)	*A1B*	****	****	****	71	**81**	90	86	**94**	98
(SON)			*B1*	****	****	****	48	**64**	80	65	**77**	90
Frequency of Cold Days (TX10p)												
			A2	****	****	****	1	**4**	5	0	**1**	3
Annual	8.4	-1.33*	*A1B*	****	****	****	1	**4**	5	0	**2**	4
			B1	****	****	****	2	**4**	6	1	**4**	6
			A2	****	****	****	1	**3**	6	0	**0**	3
NDJ	8.2	(-1.09*)	*A1B*	****	****	****	0	**4**	5	0	**1**	4
(DJF)			*B1*	****	****	****	2	**4**	7	0	**4**	6
			A2	****	****	****	0	**4**	6	0	**1**	3
FMA	8.9	(-1.08*)	*A1B*	****	****	****	1	**3**	7	0	**1**	5
(MAM)			*B1*	****	****	****	2	**3**	7	1	**5**	6
			A2	****	****	****	0	**1**	2	0	**0**	0
MJJ	8.3	(-1.60*)	*A1B*	****	****	****	0	**1**	2	0	**0**	2
(JJA)			*B1*	****	****	****	0	**2**	4	0	**1**	3
			A2	****	****	****	0	**1**	4	0	**0**	2
ASO	9.1	(-0.81)	*A1B*	****	****	****	0	**1**	4	0	**0**	1
(SON)			*B1*	****	****	****	0	**1**	6	0	**1**	2
Frequency of Cold Nights (TN10p)												
			A2	****	****	****	0	**4**	6	0	**1**	4
Annual	7.5	-1.44*	*A1B*	****	****	****	0	**3**	6	0	**2**	3
			B1	****	****	****	2	**4**	6	1	**4**	8
			A2	****	****	****	0	**4**	6	0	**1**	2
NDJ	8.0	(-1.74*)	*A1B*	****	****	****	0	**3**	4	0	**2**	4
(DJF)			*B1*	****	****	****	1	**3**	6	0	**3**	8
			A2	****	****	****	0	**3**	4	0	**0**	4
FMA	8.4	(-1.02)	*A1B*	****	****	****	0	**2**	6	0	**1**	3
(MAM)			*B1*	****	****	****	2	**3**	5	0	**3**	6
			A2	****	****	****	0	**0**	0	0	**0**	0
MJJ	6.6	(-1.35*)	*A1B*	****	****	****	0	**0**	0	0	**0**	0
(JJA)			*B1*	****	****	****	0	**0**	1	0	**0**	1
			A2	****	****	****	0	**0**	3	0	**0**	1
ASO	7.3	(-1.52*)	*A1B*	****	****	****	0	**0**	2	0	**0**	0
(SON)			*B1*	****	****	****	0	**1**	4	0	**0**	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*
% total rainfall falling in Heavy Events (R95pct)												
	%	*Change in % per decade*					*Change in %*			*Change in %*		
			A2	****	****	****	-15	**0**	6	-14	**0**	9
Annual	17.3	0.85	*A1B*	****	****	****	-11	**0**	6	-12	**1**	11
			B1	****	****	****	-10	**1**	4	-8	**0**	7
			A2	****	****	****	-13	**0**	3	-9	**-1**	8
NDJ	****	****	*A1B*	****	****	****	-7	**1**	6	-7	**2**	7
(DJF)			*B1*	****	****	****	-11	**0**	4	-4	**2**	11
			A2	****	****	****	-12	**-1**	6	-20	**-4**	5
FMA	****	****	*A1B*	****	****	****	-15	**-1**	4	-15	**-3**	8
(MAM)			*B1*	****	****	****	-20	**0**	4	-10	**0**	10
			A2	****	****	****	-27	**-4**	5	-28	**-10**	8
MJJ	****	****	*A1B*	****	****	****	-26	**-10**	8	-30	**-5**	10
(JJA)			*B1*	****	****	****	-26	**-4**	11	-21	**-3**	10
			A2	****	****	****	-10	**1**	7	-28	**0**	14
ASO	****	****	*A1B*	****	****	****	-14	**0**	5	-20	**0**	13
(SON)			*B1*	****	****	****	-15	**0**	6	-20	**0**	6
Maximum 1-day rainfall (RX1day)												
	mm	*Change in mm per decade*					*Change in mm*			*Change in mm*		
			A2	****	****	****	-7	**0**	7	-34	**-1**	18
Annual	86.4	2.92	*A1B*	****	****	****	-15	**0**	13	-19	**0**	18
			B1	****	****	****	-25	**0**	10	-18	**0**	10
			A2	****	****	****	-4	**0**	4	-3	**0**	5
NDJ	17	(-0.01)	*A1B*	****	****	****	-2	**0**	5	-3	**0**	7
(DJF)			*B1*	****	****	****	-8	**0**	3	0	**0**	3
			A2	****	****	****	-3	**0**	2	-3	**-1**	4
FMA	26.6	(0.99)	*A1B*	****	****	****	-2	**-1**	1	-4	**0**	1
(MAM)			*B1*	****	****	****	-4	**0**	4	-3	**0**	4
			A2	****	****	****	-13	**0**	4	-14	**-3**	9
MJJ	45.6	(1.35)	*A1B*	****	****	****	-5	**-1**	11	-11	**-2**	9
(JJA)			*B1*	****	****	****	-13	**0**	11	-7	**0**	5
			A2	****	****	****	-4	**0**	5	-43	**0**	13
ASO	42.8	(0.64)	*A1B*	****	****	****	-16	**1**	9	-29	**0**	11
(SON)			*B1*	****	****	****	-23	**0**	2	-28	**0**	11
Maximum 5-day rainfall (RX5day)												
	mm	*Change in mm per decade*					*Change in mm*			*Change in mm*		
			A2	****	****	****	-18	**2**	13	-86	**-5**	37
Annual	159.9	5.37*	*A1B*	****	****	****	-27	**3**	17	-59	**-1**	29
			B1	****	****	****	-49	**-1**	42	-48	**0**	19
			A2	****	****	****	-10	**0**	9	-9	**-2**	6
NDJ	29.5	(1.12)	*A1B*	****	****	****	-2	**0**	16	-7	**0**	14
(DJF)			*B1*	****	****	****	-15	**0**	5	-3	**2**	13
			A2	****	****	****	-7	**0**	8	-9	**-2**	10
FMA	43.4	(2.72*)	*A1B*	****	****	****	-5	**-2**	1	-8	**-2**	3
(MAM)			*B1*	****	****	****	-8	**0**	9	-9	**0**	14
			A2	****	****	****	-31	**-5**	6	-35	**-12**	13
MJJ	94.6	(1.39)	*A1B*	****	****	****	-16	**-6**	15	-30	**-8**	21
(JJA)			*B1*	****	****	****	-25	**-3**	42	-19	**-2**	17
			A2	****	****	****	-12	**1**	17	-94	**-2**	31
ASO	83.7	(1.63)	*A1B*	****	****	****	-35	**0**	16	-77	**0**	23
(SON)			*B1*	****	****	****	-46	**-2**	7	-62	**0**	24

* 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.

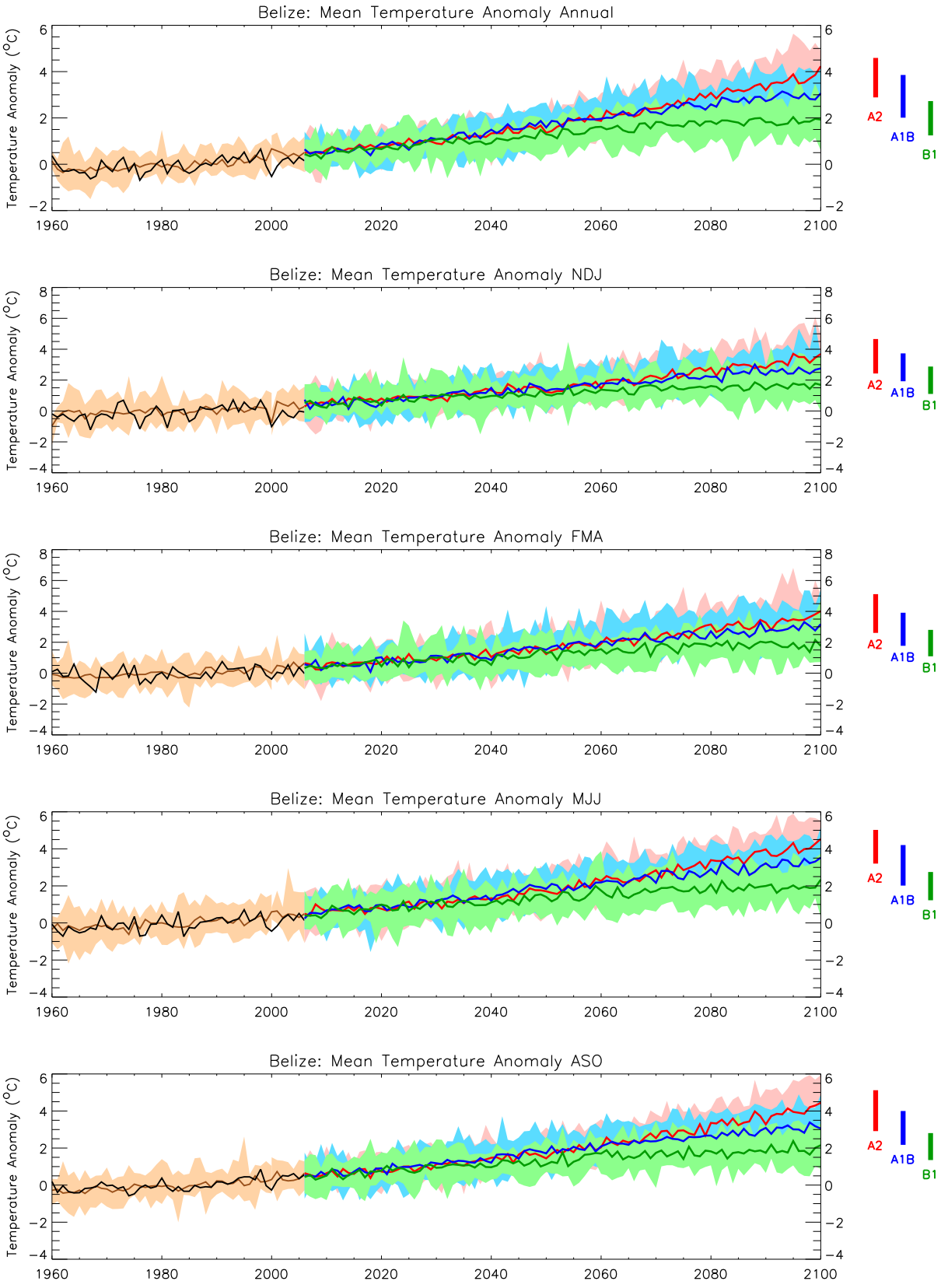

Figure 1: Trends in annual and seasonal mean temperature for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. Black curves show the mean of observed data from 1960 to 2006, Brown curves show the median (solid line) and range (shading) of model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

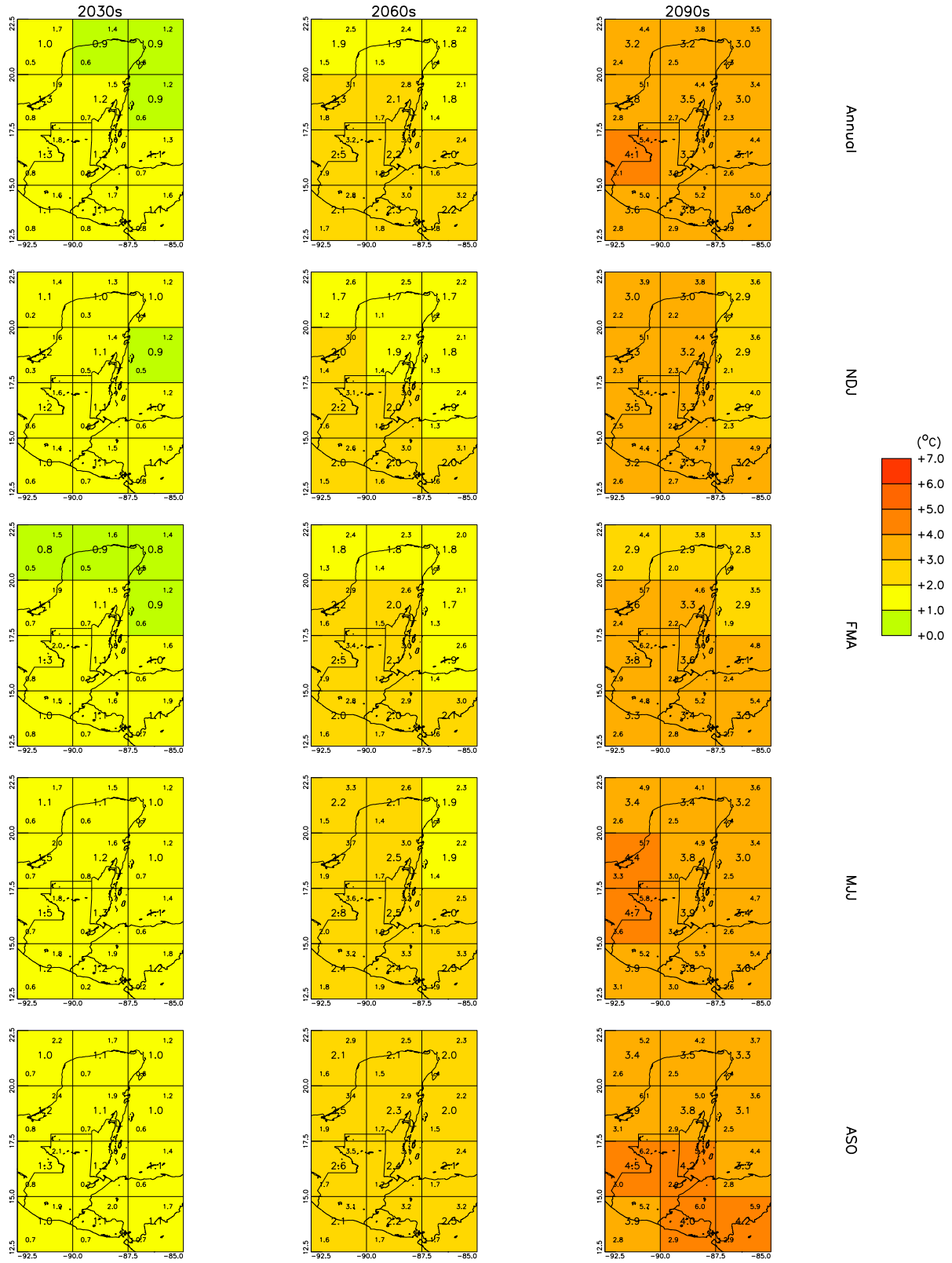

Figure 2: Spatial patterns of projected change in mean annual and seasonal temperature for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. In each grid box, the central value gives the ensemble median and the values in the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

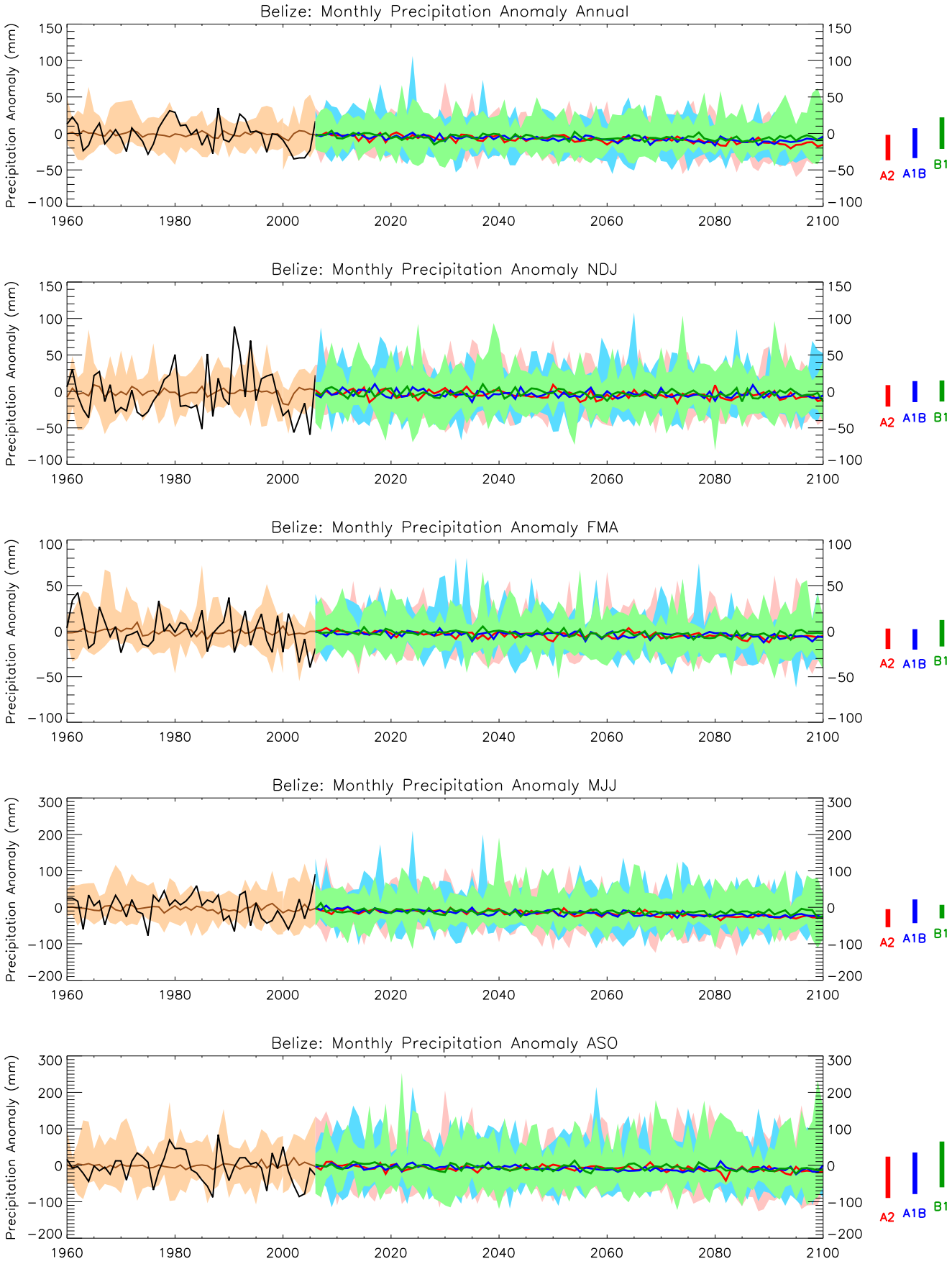

Figure 3: Trends in monthly precipitation for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

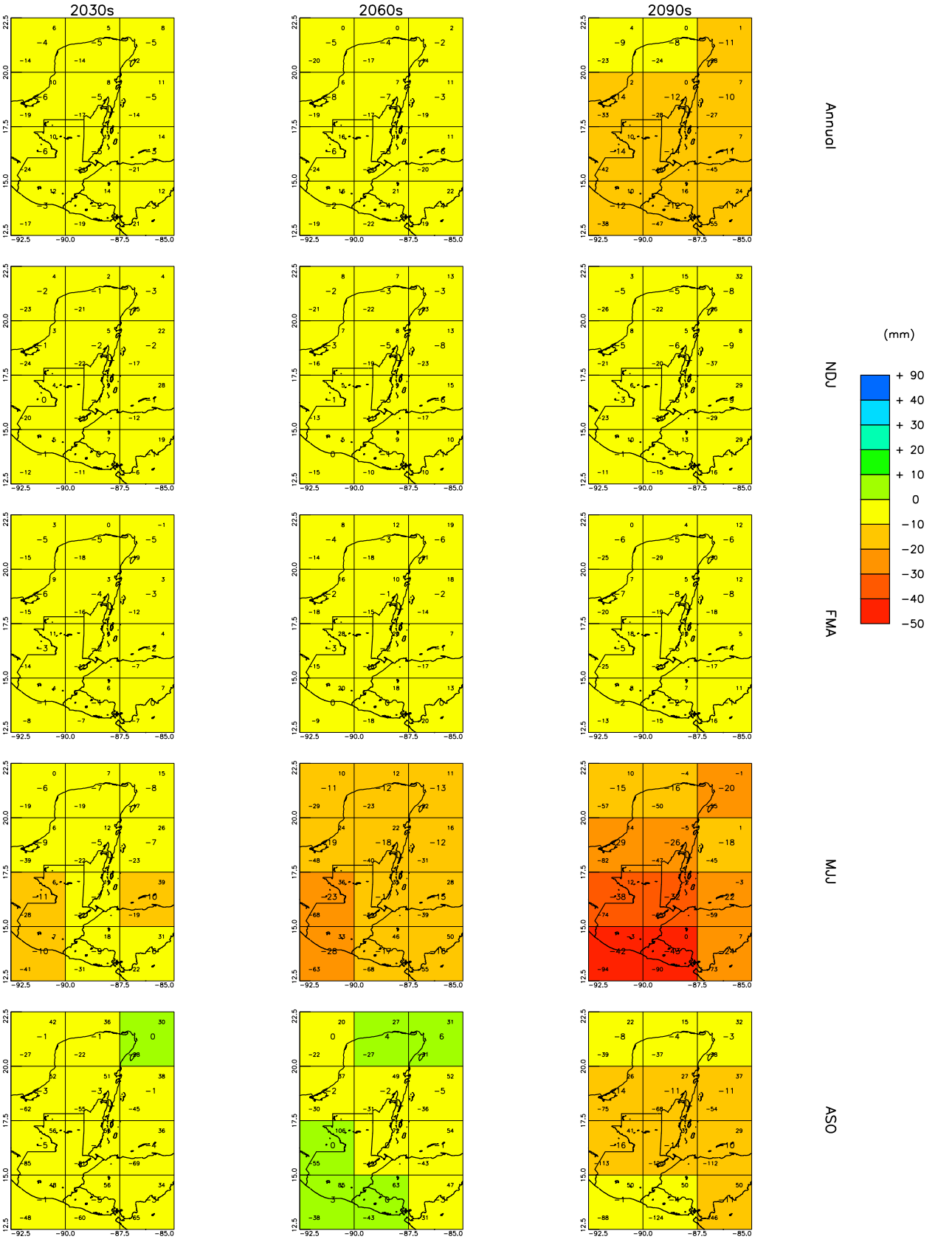

Figure 4: Spatial patterns of projected change in monthly precipitation for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999.See Figure 2 for details.

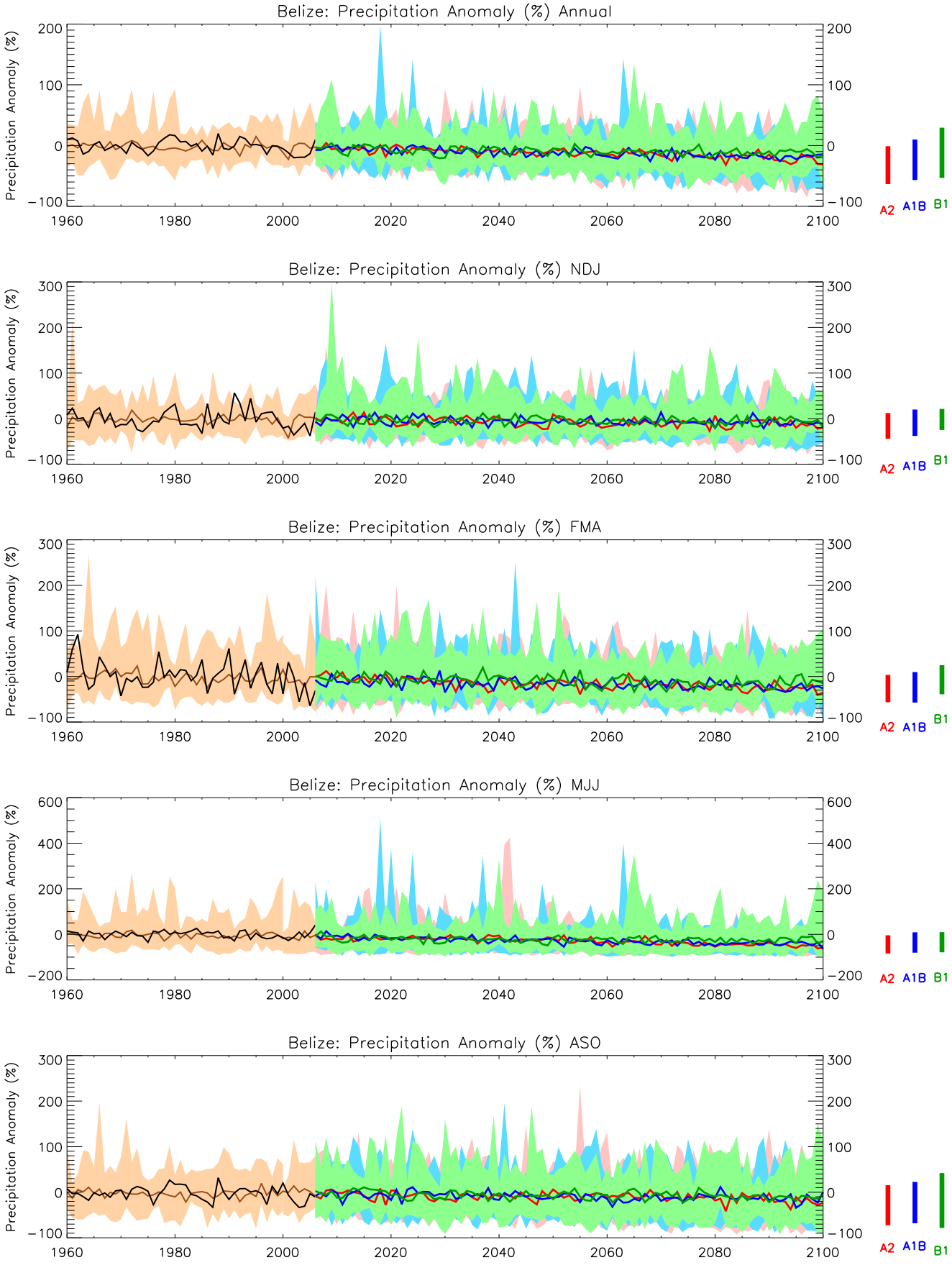

Figure 5: Trends in monthly precipitation for the recent past and projected future. All values shown are percentage anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

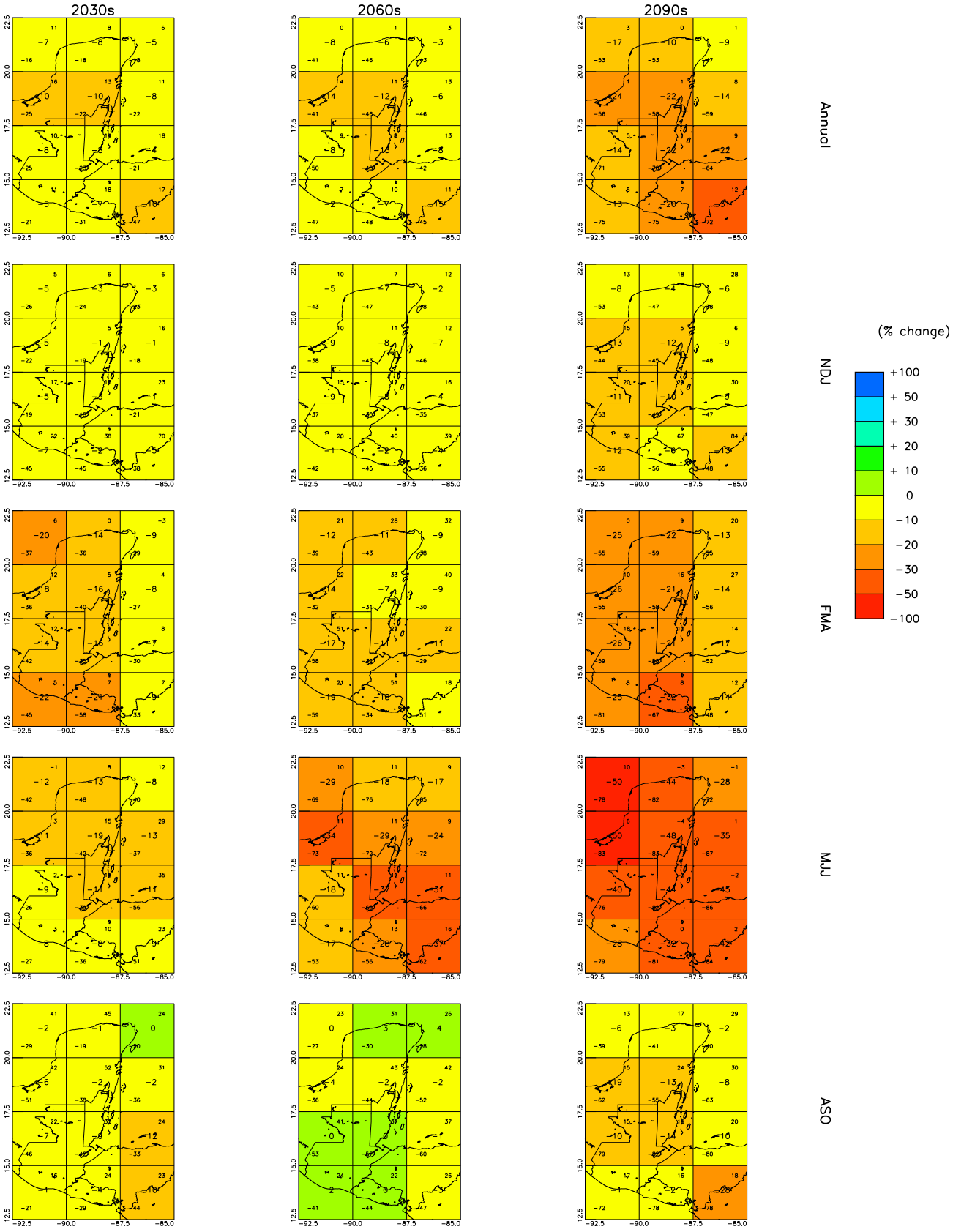

Figure 6: Spatial patterns of projected change in monthly precipitation for 10-year periods in the future under the SRES A2 scenario. All values are percentage anomalies relative to the mean climate of 1970-1999.See Figure 2 for details.

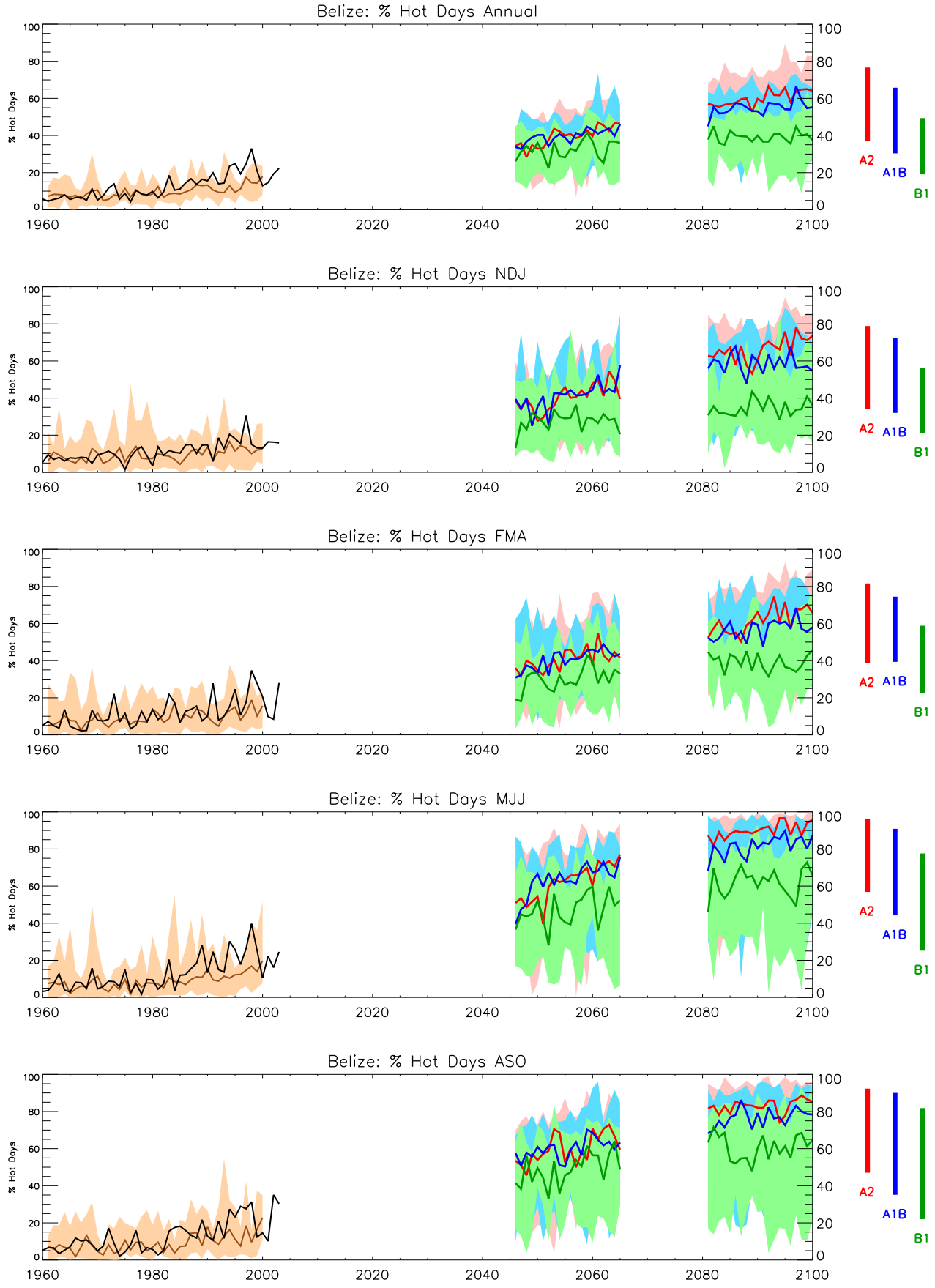

Figure 7: Trends in Hot-day frequency for the recent past and projected future. See Figure 1 for details.

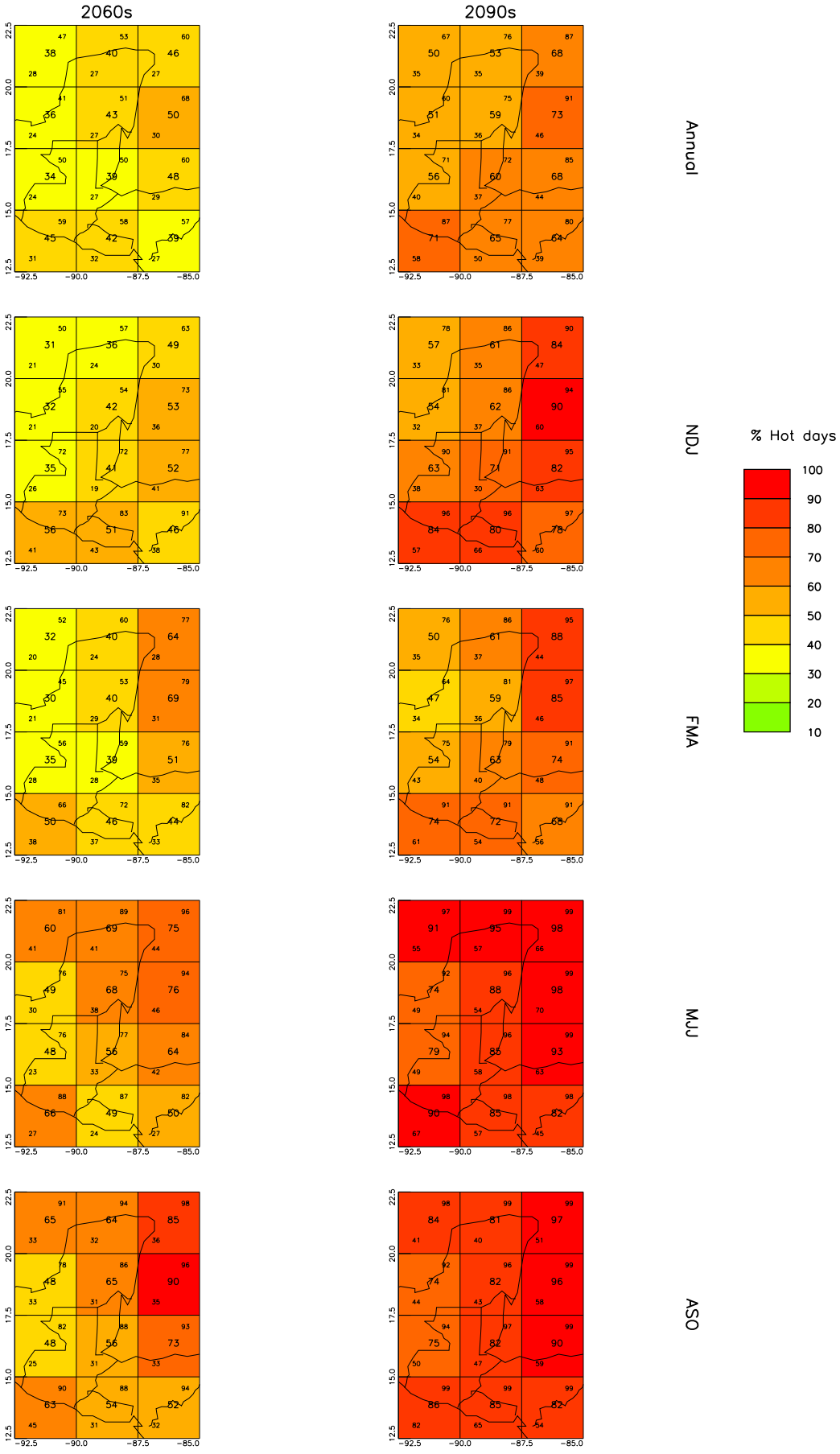

Figure 8: Spatial patterns of projected change in Hot-day frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

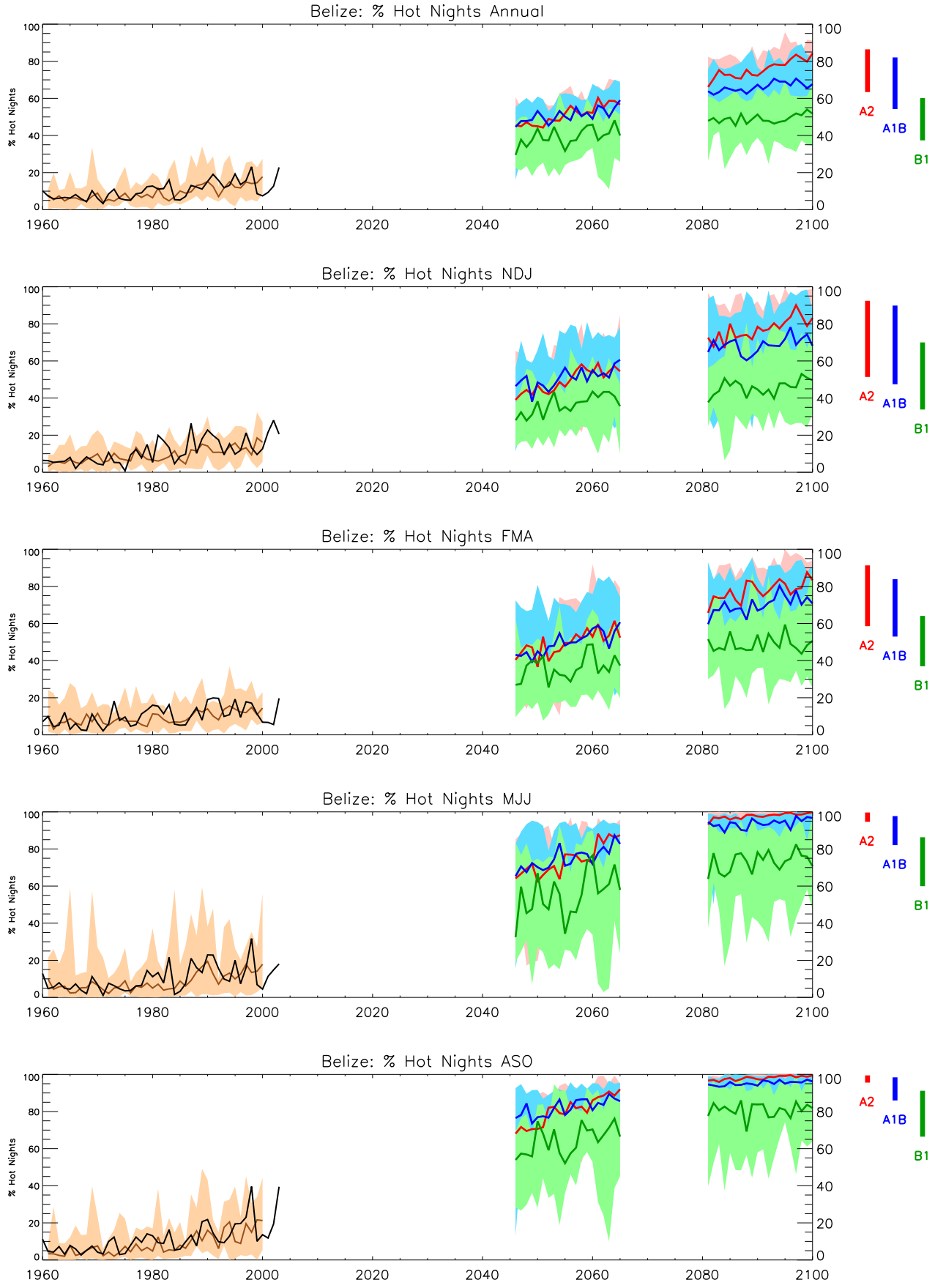

Figure 9: Trends in hot-night frequency for the recent past and projected future. See Figure 1 for details.

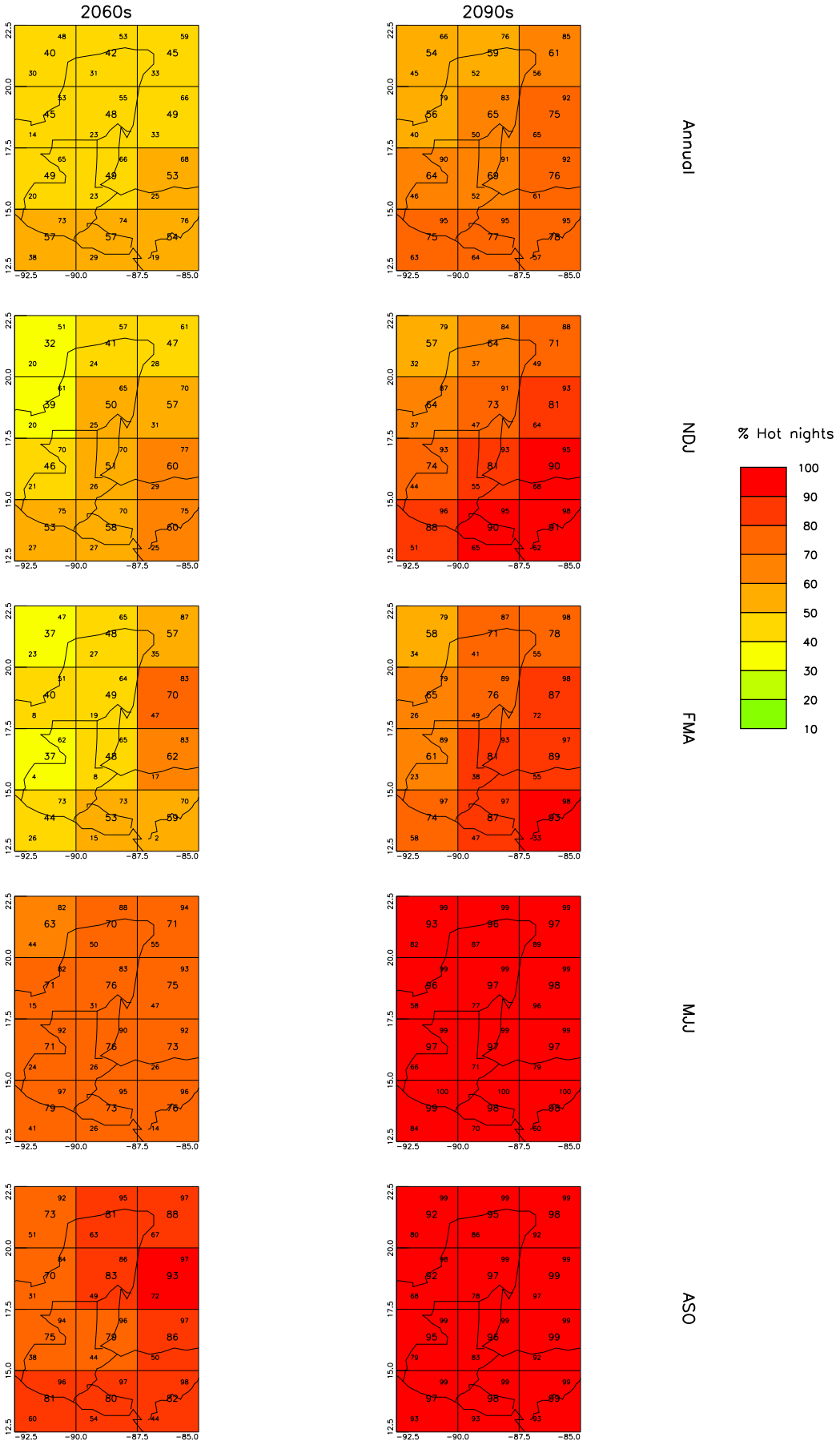

Figure 10: Spatial patterns of projected change in hot-night frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

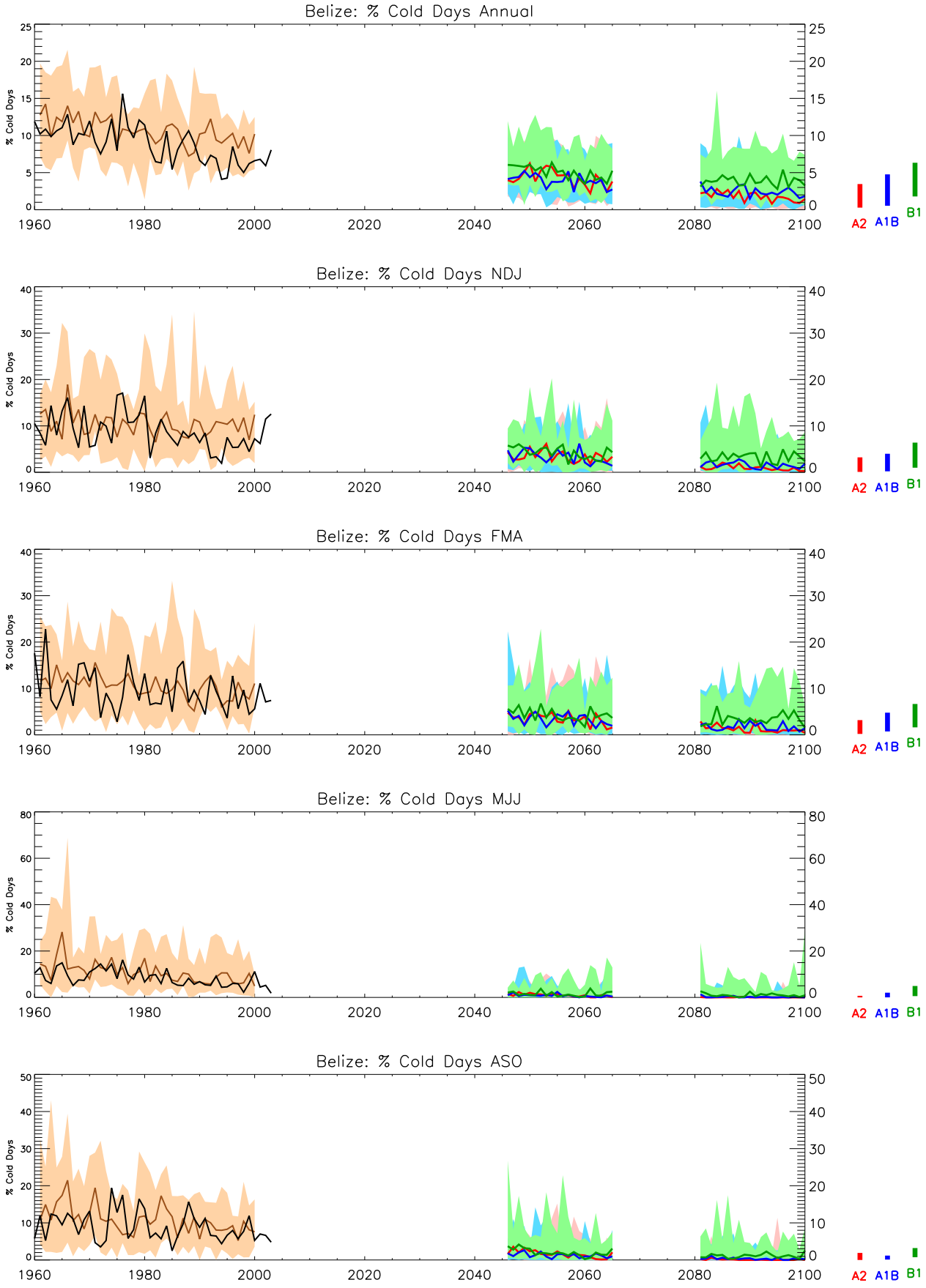

Figure 11: Trends in cold-day frequency for the recent past and projected future. See Figure 1 for details.

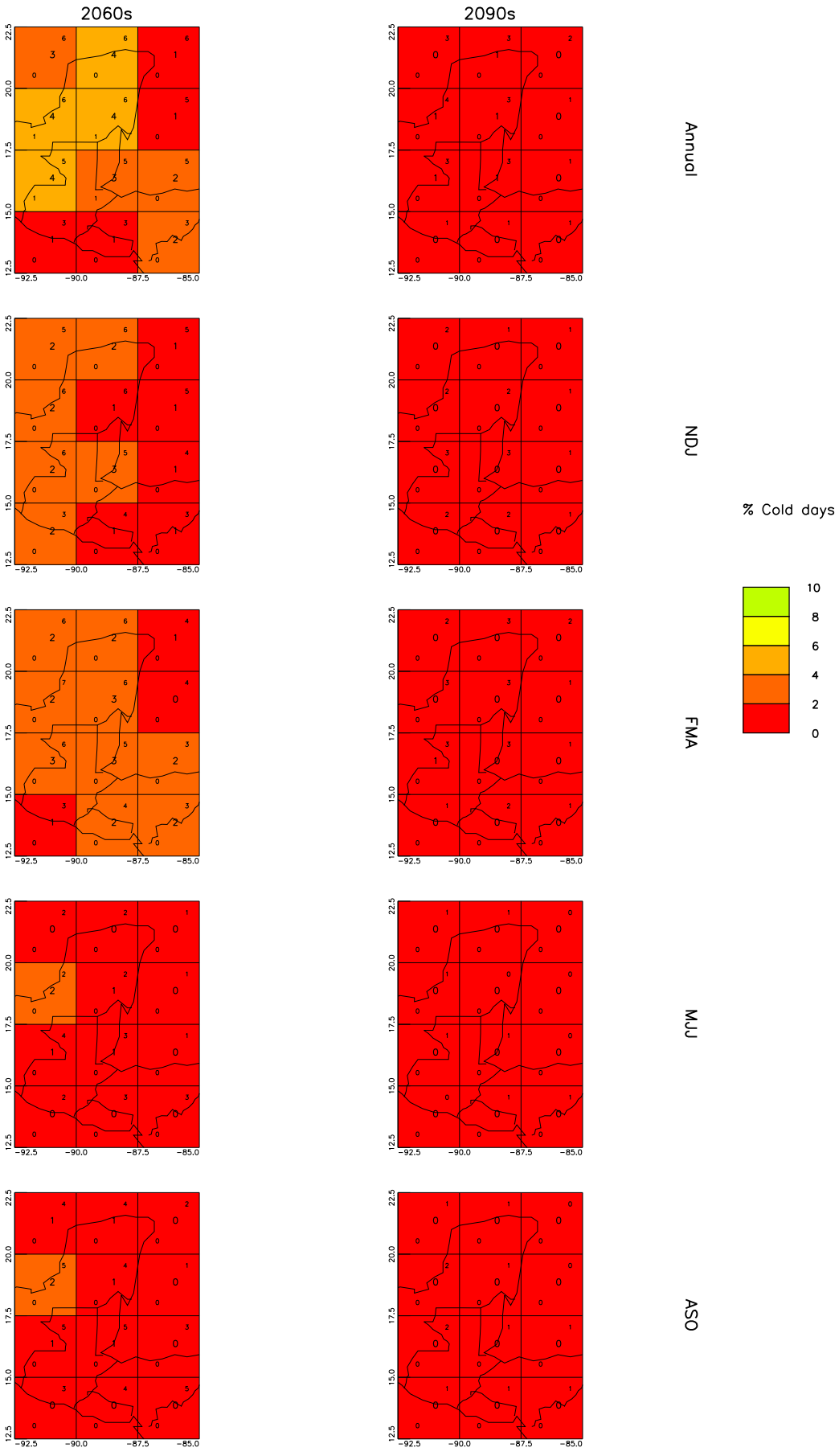

Figure 12: Spatial patterns of projected change in cold-day frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

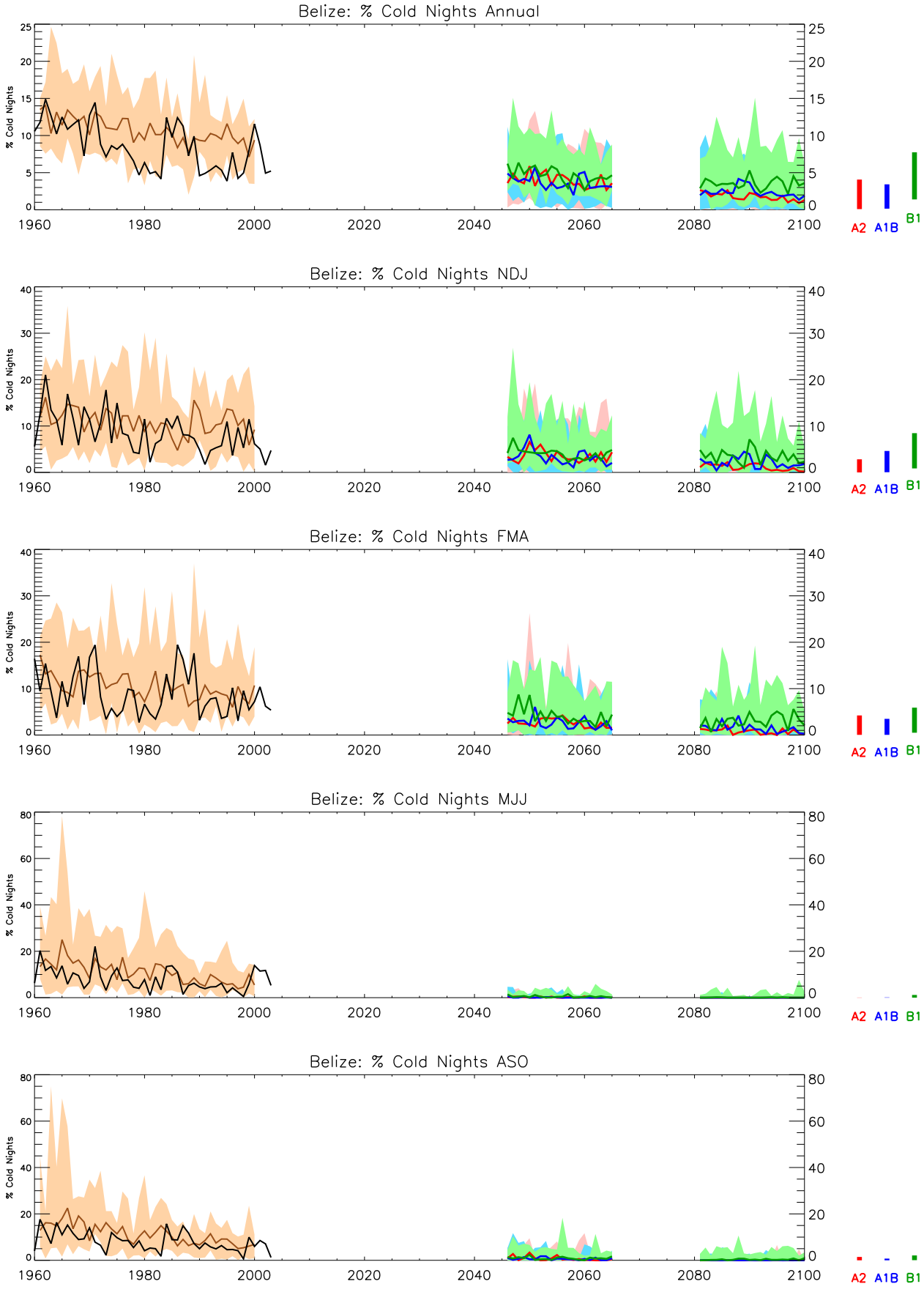

Figure 13: Trends in cold-night frequency for the recent past and projected future. See Figure 1 for details.

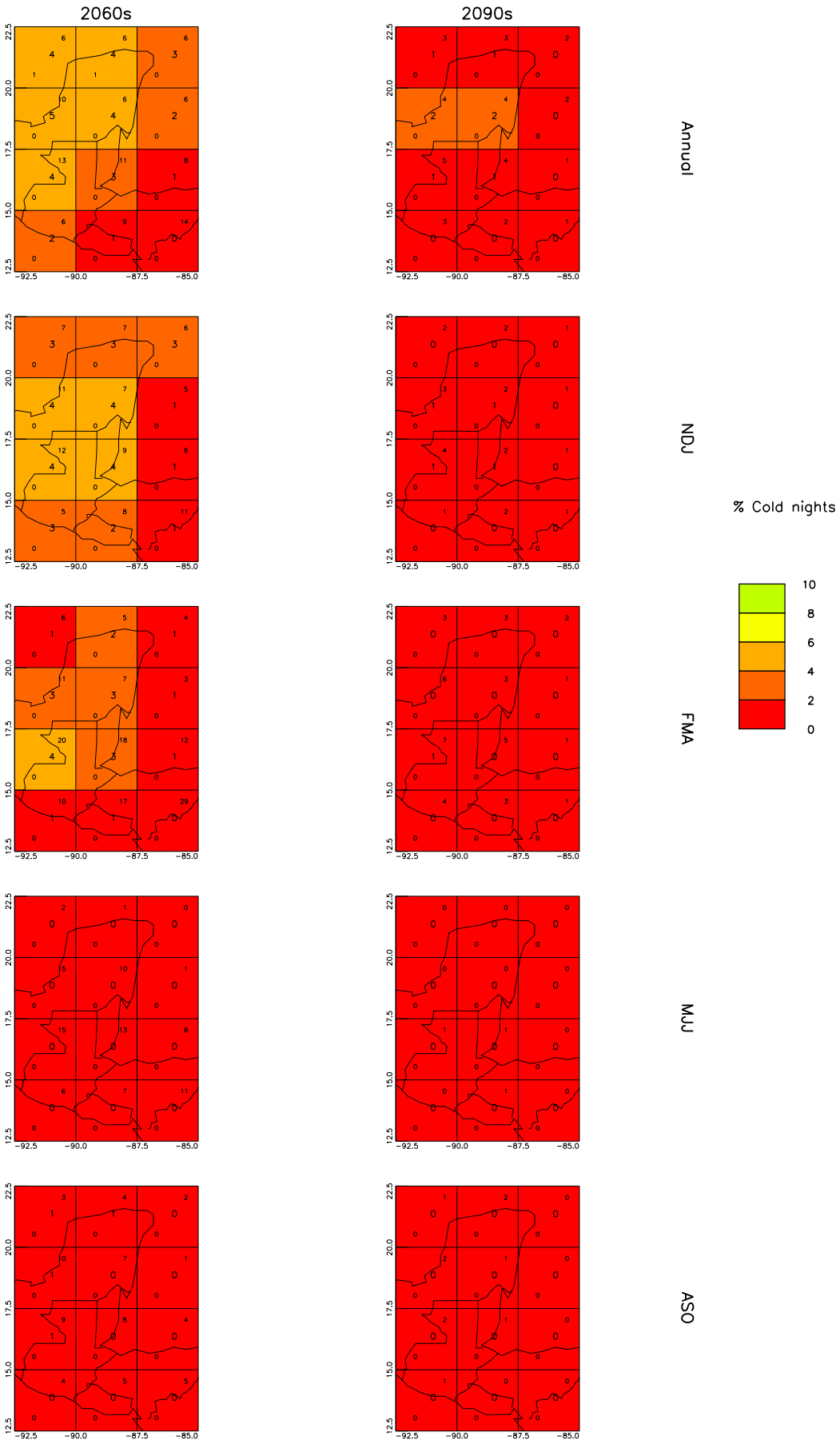

Figure 14: Spatial patterns of projected change in cold-night frequency for 10-year periods in the future under the SRES A2 scenario. See Figure 2 for details.

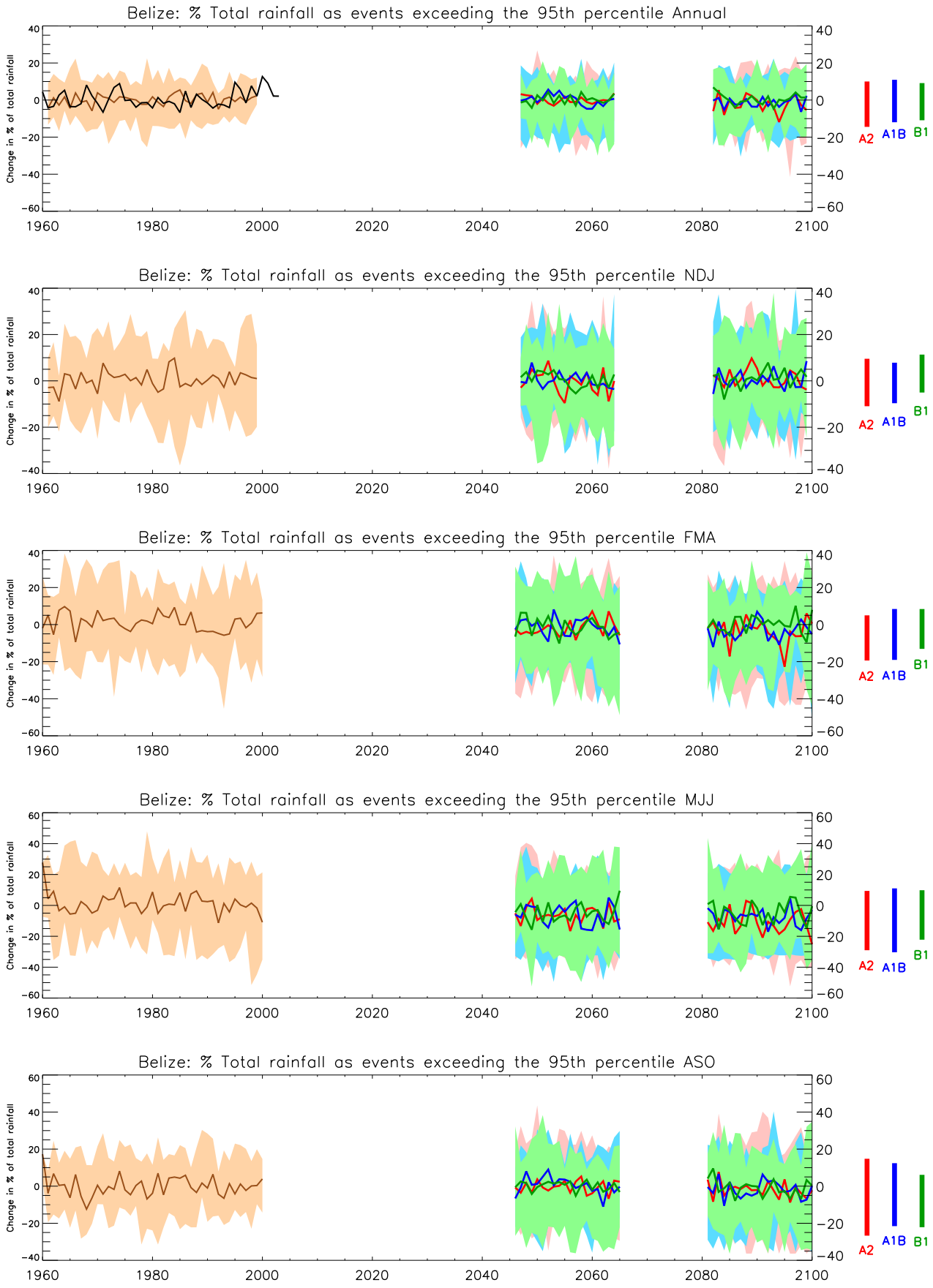

Figure 15: Trends in the proportion of precipitation falling in 'heavy' events for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

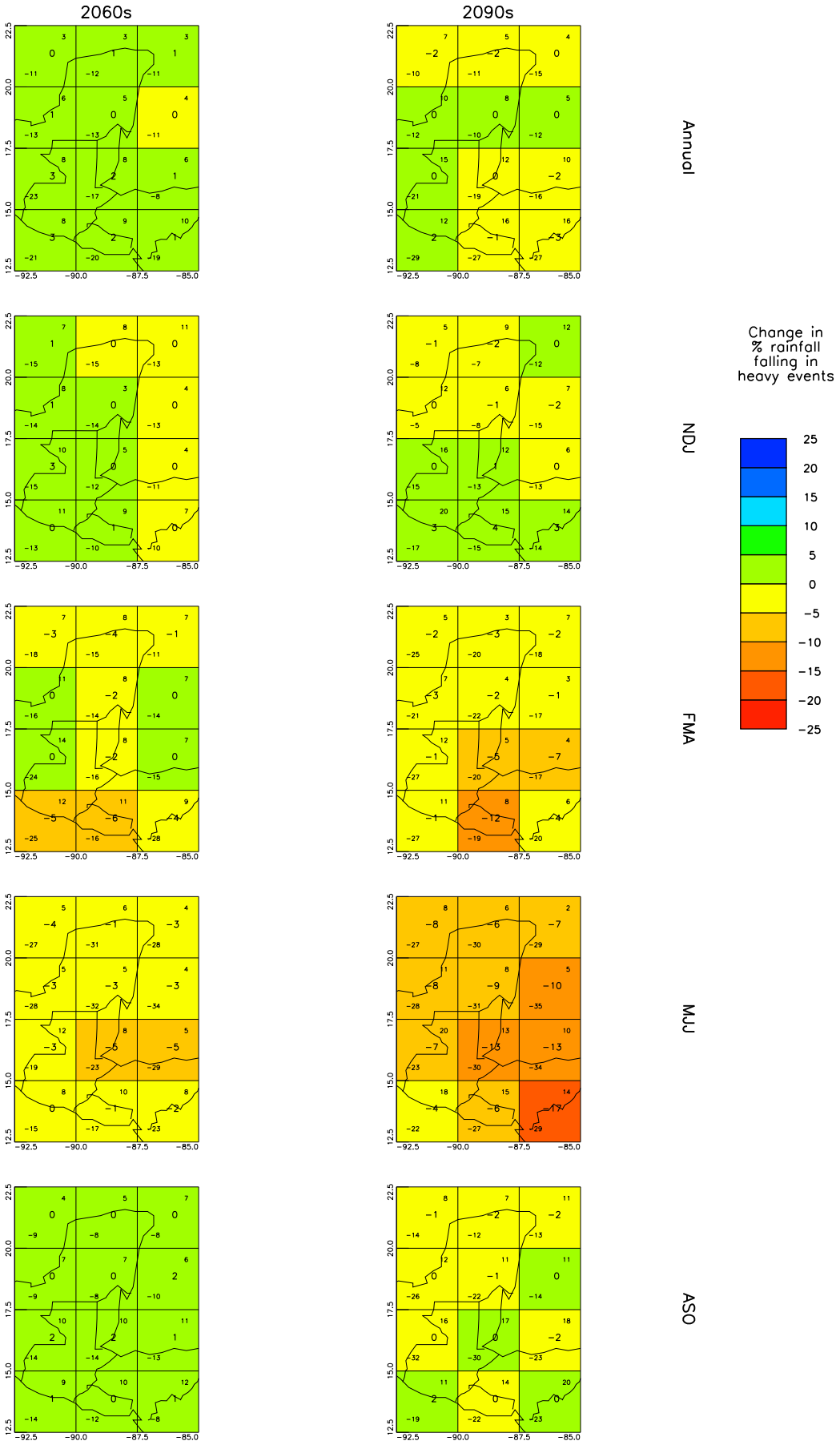

Figure 16: Spatial patterns of projected change in the proportion of precipitation falling in 'heavy' events for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. See Figure 2 for details.

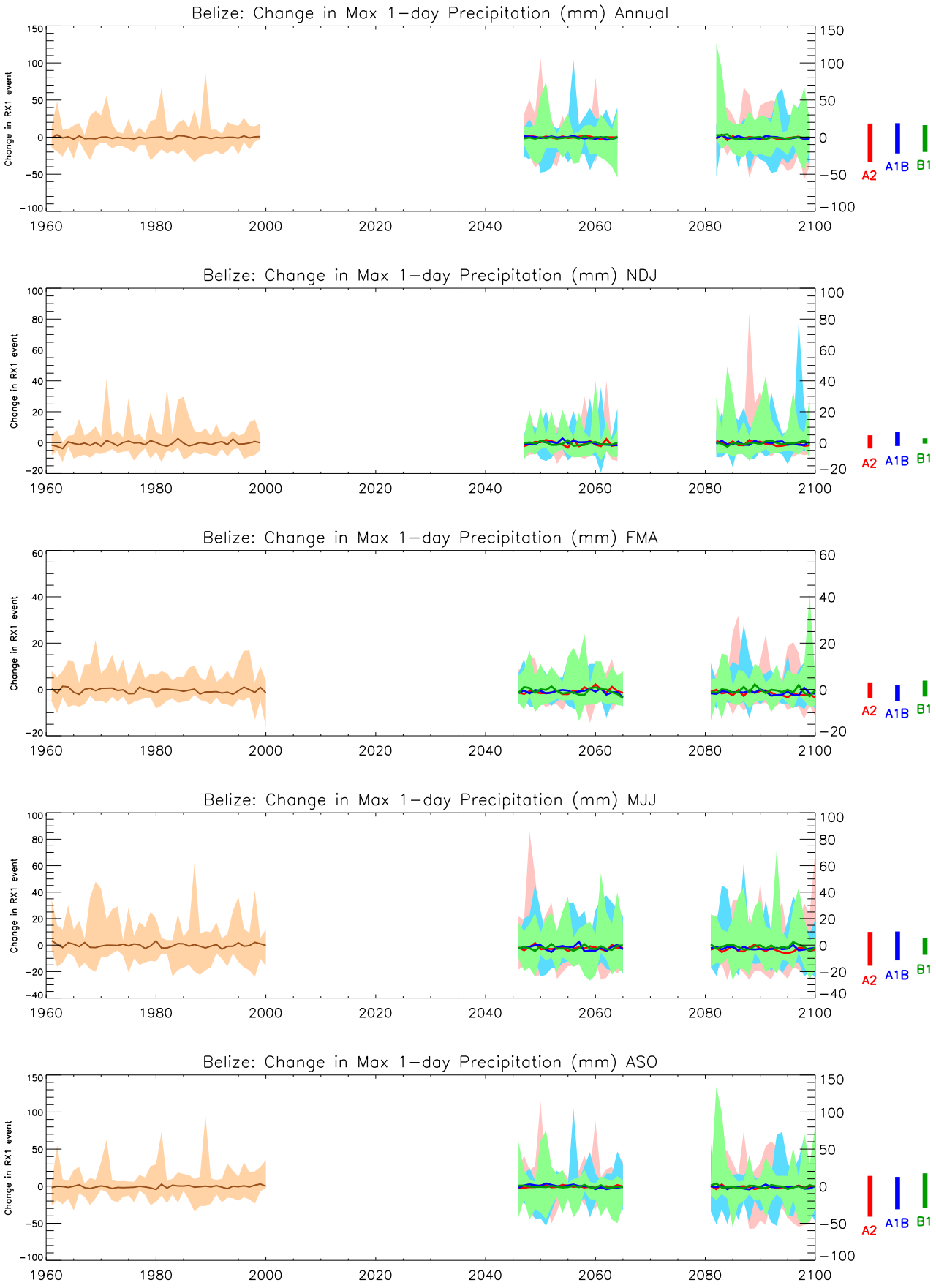

Figure 17: Trends in maximum 1-day rainfall for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

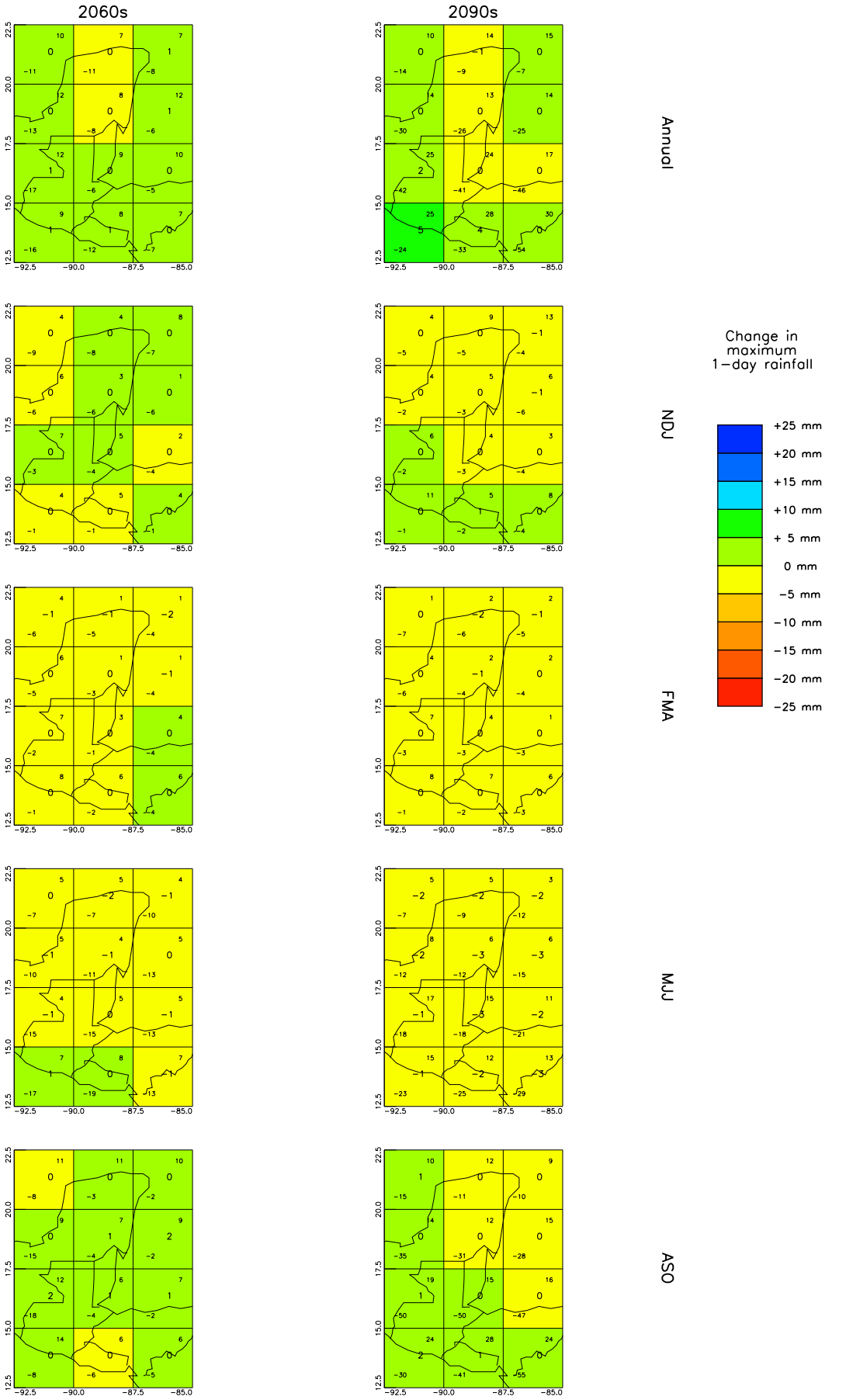

Figure 18: Spatial patterns of maximum 1-day rainfall for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. See Figure 2 for details.

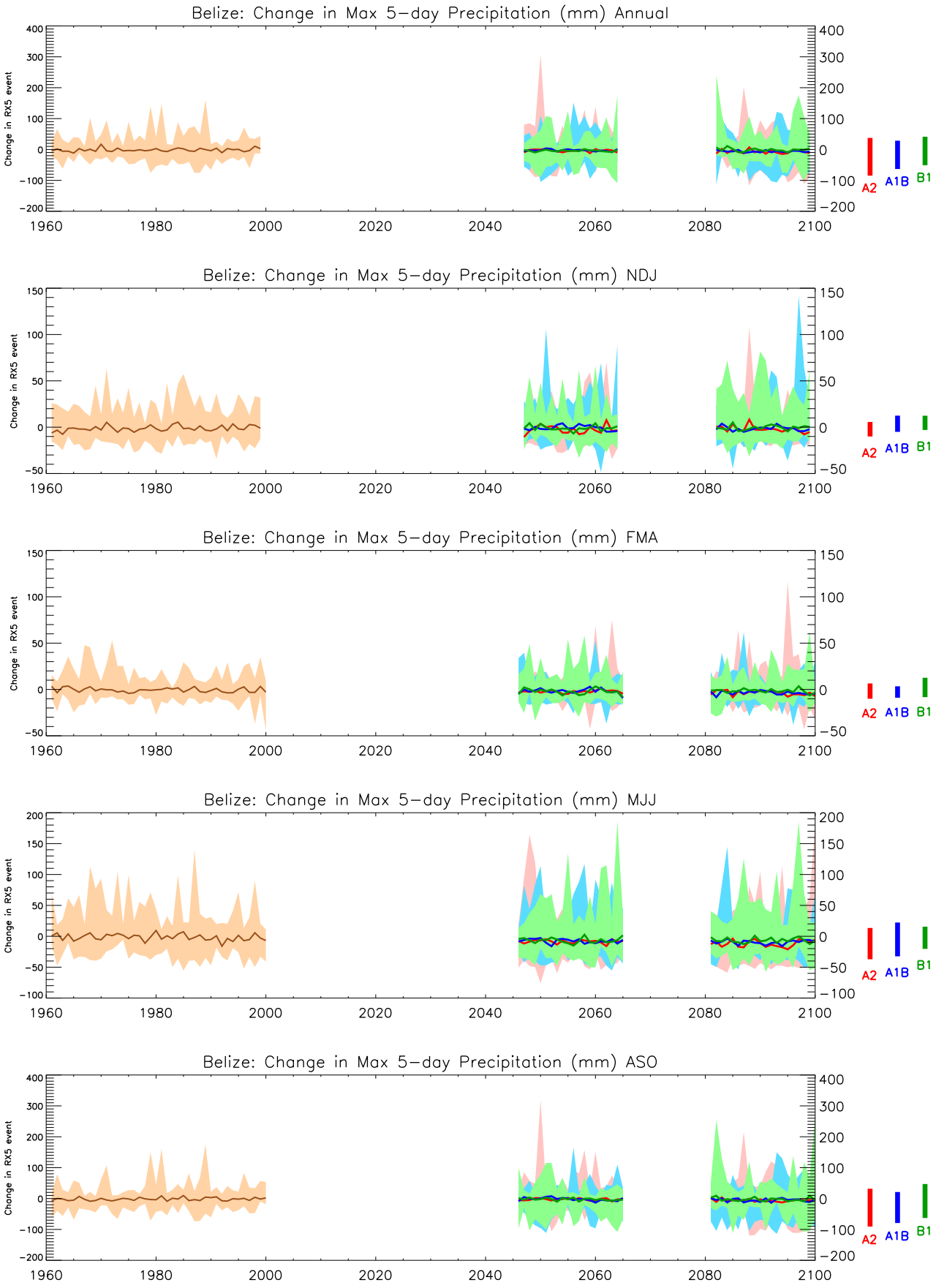

Figure 19: Trends in maximum 5-day rainfall for the recent past and projected future. All values shown are anomalies, relative to the 1970-1999 mean climate. See Figure 1 for details.

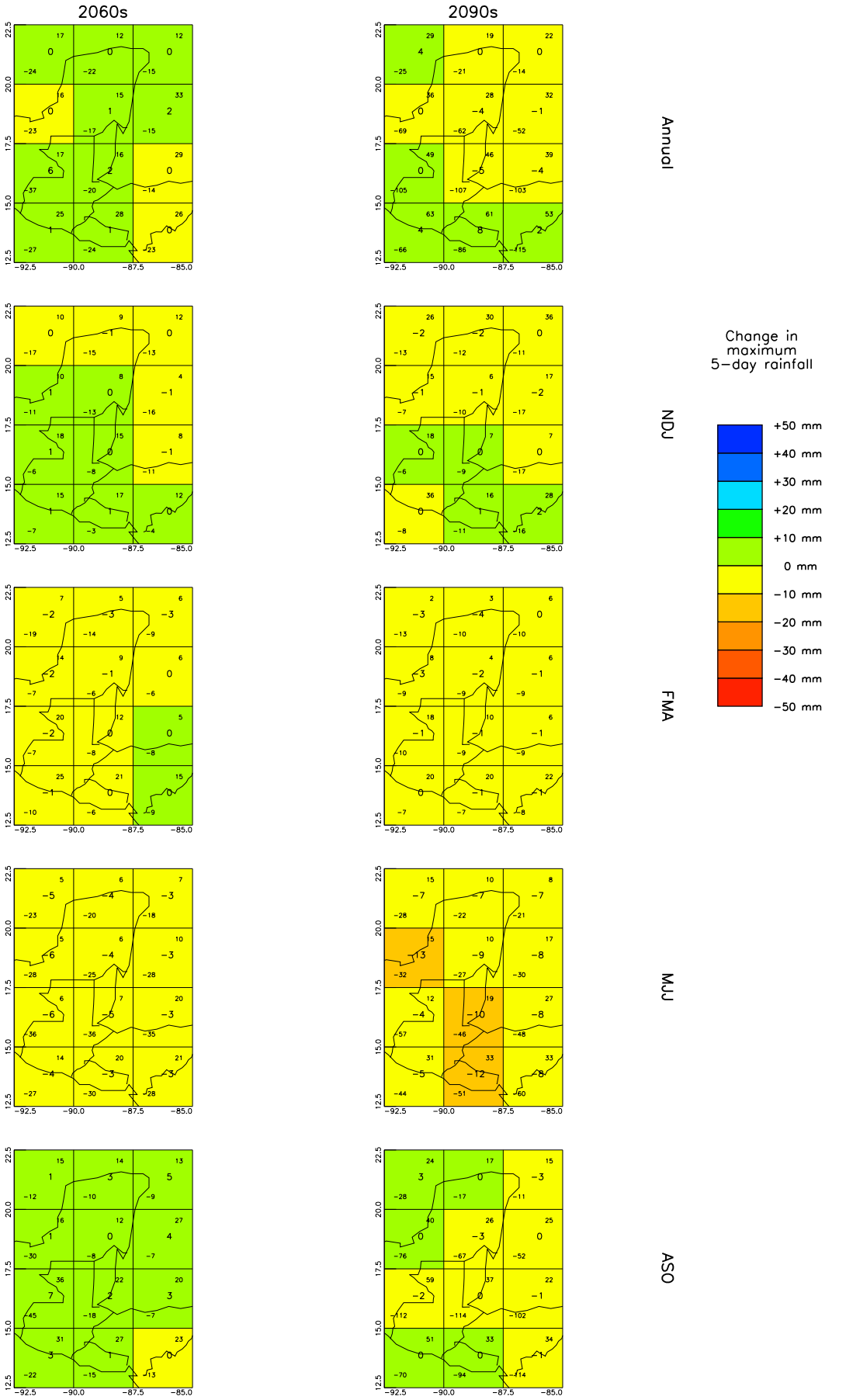

Figure 20: Spatial patterns of projected change in maximum 5-day rainfall for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999. See Figure 2 for details.