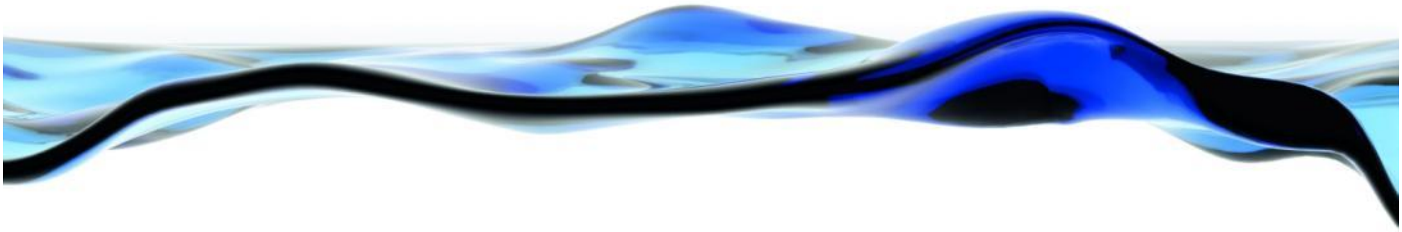
Statistically Downscaled Climate Change Projections for South Australia

Stephen P. Charles and Guobin Fu



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Contents

Executive summary

This report summarises the statistically downscaled projections produced for South Australian stations, on a natural resource management (NRM) region basis, by Task 3 of the Goyder Institute of Water Research Project '*Development of an agreed set of climate projections for South Australia*'. There are eight NRM regions across South Australia: (1) Adelaide and Mt Lofty Ranges; (2) Alinytjara Wilurara; (3) Eyre Peninsula; (4) Kangaroo Island; (5) Northern and Yorke; (6) SA Arid Lands; (7) SA Murray-Darling Basin; and (8) South East. Statistical downscaling models have been calibrated on a seasonal basis to each NRM region individually, with the exception of the Alinytjara Wilurara NRM as there is a lack of stations with sufficient data in this region. The seasonal partitioning used is summer as December-January-February (DJF), autumn as March-April-May (MAM), winter as June-July-August (JJA), and spring as September-October-November (SON).

Downscaled climate change projections are derived from statistical downscaling models. These were calibrated to observed rainfall stations with regional-scale climate forcing, as simulated by global climate models (GCMs) from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5). These GCMs encompass the international scientific community's most up to date understanding of the climate system and its response to projected future greenhouse gas and aerosol concentration pathways, as defined by Representative Concentration Pathways (RCPs). A range of scenarios is represented here by using GCM output following an intermediate (RCP4.5) and a high-emission (RCP8.5) RCP.

These projections are summarised, by NRM region and season, for 20-year future time periods, with the projected changes shown relative to a recent 20-year period (1986-2005). The changes are shown for 20-year periods centred on 2030 (2020-2039), 2050 (2040-2059), 2070 (2060-2079) and 2090 (2080-2099). In addition to tables and figures summarising the projected changes, the daily time series of simulated weather variables (daily rainfall, maximum and minimum temperatures, solar radiation, vapour pressure deficit (VPD), and areal potential evapotranspiration (APET)) are also available for impacts modelling and adaptation planning. One hundred downscaled replicates for each of fifteen GCMs are available spanning the period 1962-2005 for historical climate and 2006 to 2100 for projected future climate following RCP4.5 and 8.5.

There are several sources of uncertainty inherent in the downscaled projections, resulting in a spread of possible future climate for the variables investigated. There is uncertainty as to the range of future emissions which we assess by using an intermediate (RCP4.5) and high end (RCP8.5) pathway. There is uncertainty due to different GCM's responses to the differing concentration pathways, which we assess by using 15 GCMs and also comparing a subset of six better performing GCMs to a subset six poorer performing GCMs (these subsets were determined in terms of the GCM's ability to reproduce the large scale drivers important for South Australian climate variability, as evaluated by Task 2). There is also uncertainty due to natural variability, as we cannot predict the pathway of natural variability in the future (e.g. we can't know which years will be El Niño, or La Niña, or neutral years). However, we can assess a range of natural variability as produced by the different GCMs. Further, the stochastic nature of the downscaling model allows for a range of local responses to be simulated for a given forcing climate simulation (i.e. the 100 replicates generated for each GCM and RCP combination). We do not assign confidence ratings to the projected future changes however, robust projected changes are evident in the results.

An overall pattern emerges of a warmer and drier South Australia as the century progresses. The mean precipitation projections for all NRM regions are for progressively drier conditions, with the strongest relative decreases in spring for RCP8.5. By the end of the century there is a large difference in the magnitude of precipitation declines projected by the two pathways, with the declines from RCP8.5 approximately twice those from RCP4.5 (for the majority of regions and seasons). This highlights the benefits that South Australia would realise from global emissions reduction.

Both maximum and minimum temperatures are projected to increase, again for all regions and all seasons. There are larger projected temperature increases for the inland and northerly NRMs relative to the coastal regions. Also, maximum temperature is projected to increase more than minimum temperature for all regions and seasons. Solar radiation and VPD are also projected to increase, concurrent with the reduced precipitation projections (i.e. less rainfall means less clouds and so a clearer and drier atmosphere, hence increased solar radiation and VPD). Together these changes result in increased calculated APET estimates for all regions and seasons. Again, there is an approximate factor of two between the end of century changes in APET from RCP8.5 and RCP4.5 that, together with the projected precipitation decreases, will increase the likelihood of further stressed hydrological systems throughout South Australia.

These projections are from only one statistical downscaling technique, and so should not be interpreted in isolation of other sources of climate change information relevant to South Australia. The CSIRO and Bureau of Meteorology have updated their Australia-wide climate change projections, on a clustered NRM region basis, and whilst not at the station scale the results from this initiative should be used in conjunction with the results and data provided herein. Other possible sources of projection information and data, of potential relevance to South Australian natural resource managers, are also listed in an appendix.

1 Statistically downscaled projections

1.1 Precipitation downscaling

The Nonhomogeneous Hidden Markov Model (NHMM) is the statistical downscaling model used for precipitation downscaling in this project. Statistical downscaling is a commonly applied technique for dealing with the spatial mismatch between the scale of global climate model (GCM) output, i.e. grids with length scales on the order of 150 to 250km, and the requirements of researchers and managers of systems sensitive to fine scale precipitation variability, e.g. station-scale data for assessing hydrological sensitivity to regional precipitation changes (Maraun et al., 2010).

The NHMM simulates daily precipitation at multiple stations (the 'predictand'), as a function of a discrete set of 'weather states' (the hidden states of the model) representing spatial patterns of rainfall across the station network. The simulated sequences of (daily) weather states are influenced by atmospheric 'predictors'. These predictors act to modify the probabilities for the state to state transitions (Charles et al., 1999a; Kirshner, 2005). The NHMM has been successfully applied in various studies across southern Australia, particularly for hydrological impact research (Charles et al., 2007; Frost et al., 2011; Fu et al., 2013).

The NHMMs were calibrated to the rainfall stations selected for each NRM region (Figure 1.1). The station networks were determined by assessing all available stations within a NRM region for length of record and lack of missing data, including tests for 'untagged accumulations' (Viney and Bates, 2004). The rainfall data used was obtained from the SILO Patched Point Data (PPD), which is Bureau of Meteorology station data with missing data infilled via interpolation (Jeffrey et al., 2001), with daily recorded totals of less than 1 mm set to zero prior to NHMM calibration.

The atmospheric predictors for NHMM calibration were derived from variables extracted from the NCEP/NCAR Reanalysis 1 (NNR) (Kalnay et al., 1996) for the South Australian region. This reanalysis product was selected as it is up to date and readily available, as it has been processed and archived locally (i.e. by CSIRO - Mark Collier, CSIRO, *pers. comm.*). Mean Sea Level Pressure (MSLP), and at the 850, 700 and 500 hPa levels the wind components (U-wind, i.e. east-west wind speed; and V-wind, i.e. north-south wind speed), air temperature and specific humidity were extracted on the grid shown in Figure 1.2.

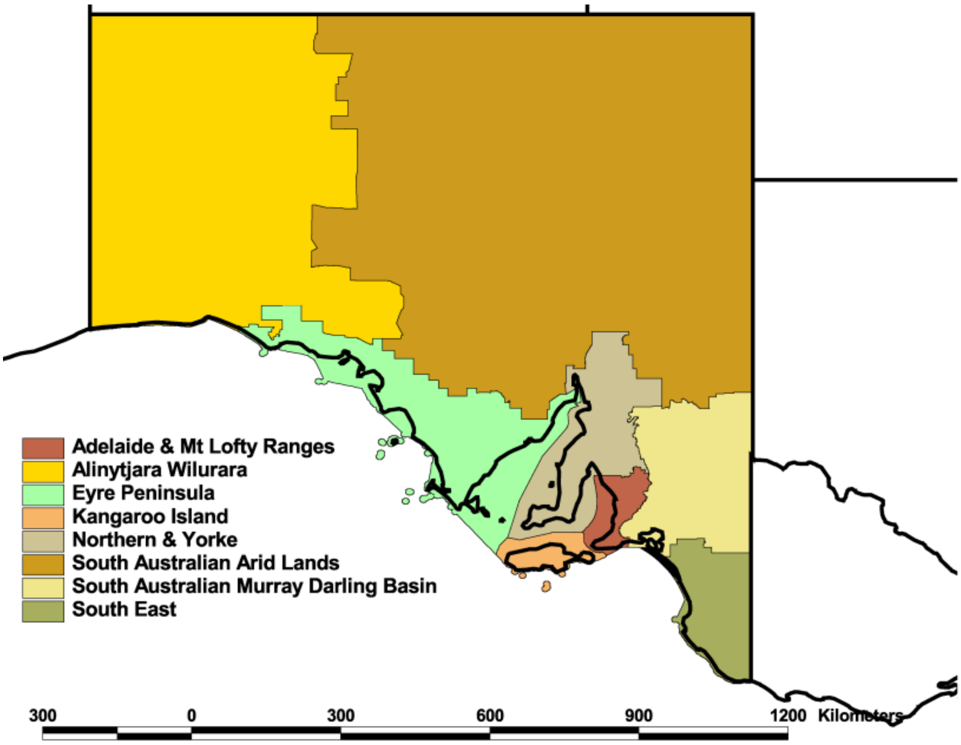

Figure 1.1 South Australian NRM regions

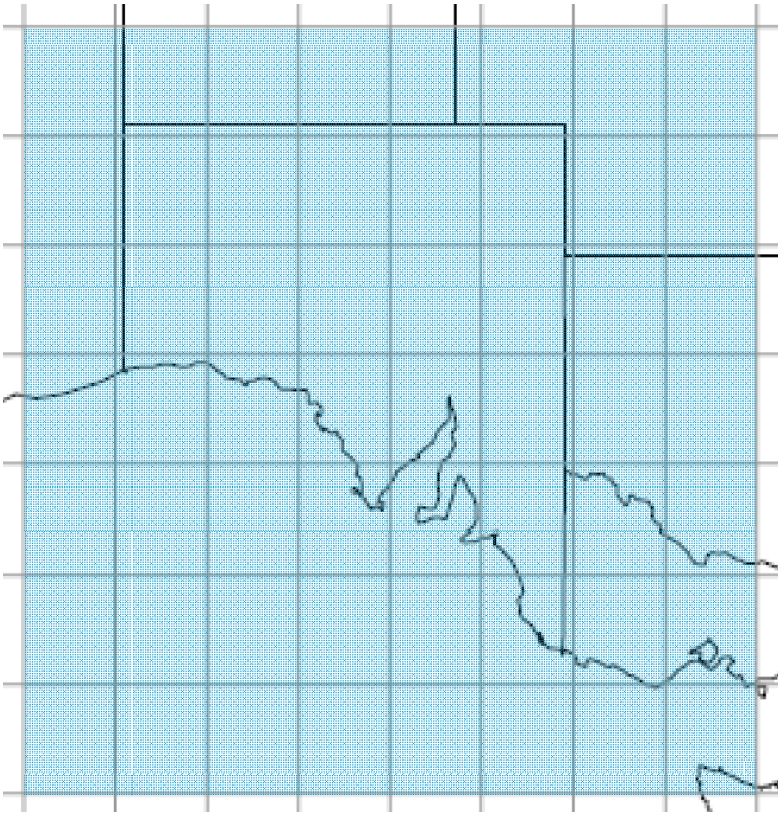

Figure 1.2. Grid of NNR variables extracted over the South Australian region. The grid is 2.5° by 2.5.

Calibration of seasonal NHMMs involved the following steps:

1. Calibration of HMMs (i.e. a rainfall-only model without atmospheric predictor conditioning) with differing number of weather states (e.g. sequentially calibrating for 2, then 3, and so on up to 8 states) to determine optimum number of states for each season, based on assessment of model fit (parsimony) using the Bayesian information criterion (BIC) (Schwarz, 1978).
2. Extract gridded daily atmospheric variables from the NNR archive for the region shown in Figure 1.2 for the variables mean sea-level pressure (MSLP), and for the 850, 700 and 500 hPa levels temperature, specific humidity, U-wind (easterly wind speed) and V-wind (northerly wind speed). Calculate dewpoint temperature depression (DTD) from the temperature and specific humidity variables.
3. On a seasonal basis, correlate the daily time-series of each variable, at each grid-point in Figure 1.2, with the daily precipitation series for each station, averaging over stations. This identifies the sub-region for which each variable has the highest correlation with precipitation for the particular station network. These are the candidate predictors for NHMM calibration. Additionally, for MSLP, each north-south and east-west difference for adjacent grid-points is also calculated and candidate predictors selected for the sub-regions of their highest correlation with precipitation. Thus twelve candidate predictor series are produced for each season: (1) MSLP, (2) east-west MSLP, (3) north-south MSLP, (4) DTD atat 500 hPa, (5) DTD at 700 hPa, (6) DTD at 850 hPa, (7) U-wind at 500 hPa, (8) U-wind at 700 hPa, (9) U-wind at 850 hPa, (10) V-wind at 500 hPa, (11) V-wind at 700 hPa, and (12) V-wind at 850 hPa.
4. Seasonal NHMMs are calibrated using all combinations of four predictors from the twelve candidates, with a constraint that at least one of the four is a SLP predictor (i.e. predictor 1, 2 or 3 above) and one is a DTD predictor. This constraint is based on previous experience identifying the importance of surface circulation (i.e. SLP) and atmospheric moisture (i.e. DTD) for providing realistic projections (Charles et al., 1999b). This resulted in 258 NHMM calibrations per season. The calibration period is 1981 to 2010 (30 years) with 1961 to 1980 (20 years) used as a validation period.
5. The calibrated NHMMs were assessed using three criteria: (1) BIC (as a measure of parameter parsimony) for the calibration period, and for both the calibration and validation periods (2) mean bias calculated for each year and station and then averaged, and (3) interannual correlation calculated for each station and then averaged. The NHMMs are ranked according to best overall performance across these criteria.
6. NHMMs are selected based on the ranked performance whilst also attempting to use similar predictor combinations between seasons and NRM regions to minimise spurious discontinuities across seasons and regions. This selection has a degree of subjectivity given similarly high-ranked NHMMs produce similar performance from quite different combinations of predictors (i.e. the problem of equifinality).

The selected NHMMs are used to produce projections of plausible future station precipitation for the 21st century when driven by atmospheric predictors from the GCMs outlined in Section 1.3. It is important to emphasise that *projections* are not *predictions*, as outlined in Section 1.3.

1.2 Non-precipitation downscaling

Subsequent to the selection of the NHMMs for multi-site daily rainfall simulation (i.e. selecting the optimum number of states and atmospheric predictor combinations for each NRM region and season), a weather generator using a modified WGEN-type (Richardson, 1981) approach was developed and applied for the non-rainfall variables using the following procedures.

Calibration:

1. Extract the PPD daily series for all stations for the variables: maximum temperature (Tmax, °C), minimum temperature (Tmin, °C), solar radiation (Radn, MJ/m^2) and vapour pressure (VP, hPa).
2. Convert the Tmax and Tmin to daily mean (Tmean) and range (Trange) values.
3. Calculate vapour pressure deficit (VPD) from VP and saturation VP at Tmean.
4. Produce a residual series for Tmean, Trange, Radn and VPD by subtracting monthly mean and dividing by monthly standard deviation, on a wet-day and dry-day basis.
5. Normalise the Tmean, Trange and VPD residual series using a Box-Cox transform calculated on a wet/dry-day basis for each month.
6. Fit beta distributions to the Radn residual series for each month, on a wet-day and dry-day basis.
7. Calculate covariance matrix of the normalised residual series across all stations and variables for each month.
8. Calculate lag-1 autocorrelation of the normalised residual series across all stations and variables.

Simulation:

1. Generate daily synthetic residual series, using the calculated covariance and autocorrelation matrices to maintain the calibrated inter-station and inter-variable relationships using a method based on Matalas (1967) as originally implemented by Richardson (1981).
2. Back-transform each residual series (i.e. for each station and variable) using the calibrated Box-Cox parameters for Tmean, Trange and VPD and beta distribution parameters for Radn for the approriate month and wet/dry-day status of each station and day.
3. Convert Tmean and Trange back to Tmax and Tmin
4. For historical simulations, add the monthly anomalies calculated from the PPD series.
5. For climate change projections, add the monthly trends calculated from the GCM data (interpolated to each station) for each variable.
6. Areal potential evaporation (APET) estimates are calculated from the variables using the method of Morton (McMahon et al., 2013) (Seth Westra, University of Adelaide, pers. comm., 2013).

1.3 Global Climate Model Projections

GCMs are the most sophisticated tools available to determine how the climate may plausibly change in response to increased atmospheric concentrations of greenhouse gases and changes in aerosol loads. They are complex computer models of the earth-climate system using physically-based algorithms to simulate the interrelationships between matter and energy. The simulations produced by GCMs, when forced by inputs representing plausible future greenhouse gas concentrations and aerosols over time, are projections. Thus a climate projection is a climate simulation that extends into the future based on a hypothetical but plausible scenario of future external forcing. A projection is distinguished from a prediction because the forcing scenario is based on assumptions concerning future socioeconomic and technological developments which are irreducibly uncertain (IPCC, 2013).

Fifteen GCMs from the Coupled Model Intercomparison Project Phase 5 (CMIP5) (Taylor et al., 2012) were chosen on the basis that they had all the variables available to produce the atmospheric predictors required for input to the calibrated NHMMs. These CMIP5 GCMs were used in the most recent IPCC AR5 report (IPCC, 2013). Their names and host institutions are listed in Table 1.1. The CMIP5 GCM simulations were forced by plausible scenarios of greenhouse gas concentrations and aerosols throughout the 21st century, referred to as Representative Concentration Pathways (RCPs) (Van Vuuren et al., 2011). In order to assess a range of plausible changes, this project has used projections for RCP4.5, an intermediate-concentration pathway similar to the B1 scenario, and RCP8.5, a high-concentration pathway similar to the A1F1 scenario in the previous IPCC AR4. The RCP numbers refer to the approximate enhanced radiative forcing levels by 2100, i.e. an additional 4.5 W/m^2 and 8.5 W/m^2 of radiative forcing, respectively, corresponding to CO_2 levels of approximately550 ppm and 940 ppm by 2100. Global warming simulated for RCP4.5 and RCP8.5 does not diverge significantly until after 2050 (Knutti and Sedlacek, 2013). Each GCM-derived daily predictor time series was bias corrected, on a monthly basis, so that the GCM predictor means and standard deviations for the NHMM calibration period match those of the NNR predictors.

Given the use of common code between the CMIP5 GCMs and the co-development in their lineage, they cannot be considered as independent of one another. This model interdependence is an often overlooked issue that complicates interpretation of multi-model ensembles (Knutti et al., 2013). Acknowledging this limitation, there is still a desire to compare projections from GCMs assessed as better performing, in terms of their ability to simulate the large-scale processes of relevance to South Australian climate drivers. The research undertaken in Task 2 assessed a set of CMIP5 GCMs that included 12 of the 15 GCMs available for downscaling. Based on this assessment it was possible to classify the 12 into a subset of six better and six poorer performing GCMs, based on their ability to reproduce drivers. These subsets are identified in Table 1.1. Details of the GCM assessment are summarised in the Task 2 section of the Final Report and the cited papers (Cai et al., 2014a; Cai et al., 2014b).

Table 1.1 Coupled Model Intercomparison Project Phase 5 (CMIP5) global climate models and institutions.

GLOBAL CLIMATE MODEL	INSTITUTION	INSTITUTION ID
ACCESS1.0* ACCESS1.3*	Commonwealth Scientific and Industrial Research Organization (CSIRO) and Bureau of Meteorology (BOM), Australia	CSIRO-BOM
BCC-CSM1.1(m)	Beijing Climate Center, China Meteorological Administration, China	BCC
CanESM2#	Canadian Centre for Climate Modelling and Analysis, Canada	CCCMA
CNRM-CM5#	Centre National de Recherches Meteorologiques / Centre Europeen de Recherche et Formation Avancees en Calcul Scientifique, France	CNRM-CERFACS
CSIRO-Mk3.6.0*	Commonwealth Scientific and Industrial Research Organisation in collaboration with Queensland Climate Change Centre of Excellence, Australia	CSIRO-QCCCE
GFDL-ESM2G GFDL-ESM2M#	NOAA Geophysical Fluid Dynamics Laboratory, USA	NOAA GFDL
INM-CM4*	Institute of Numerical Mathematics, Russia	INM
IPSL-CM5A-LR * IPSL-CM5B-LR#	Institut Pierre-Simon Laplace, France	IPSL
MIROC-ESM*	Japan Agency for Marine-Earth Science and Technology, Atmosphere and Ocean Research Institute (The University of Tokyo), and National Institute for Environmental Studies, Japan	MIROC
MIROC5#	Atmosphere and Ocean Research Institute (The University of Tokyo), National Institute for Environmental Studies, and Japan Agency for Marine-Earth Science and Technology, Japan	MIROC
MRI-CGCM3#	Meteorological Research Institute, Japan	MRI
NorESM1-M	Norwegian Climate Centre, Norway	NCC

= ensemble of six better performing GCMs
* = ensemble of six poorer performing GCMs

2 Projections for Adelaide and Mount Lofty Ranges

2.1 Overview

The Adelaide and Mount Lofty Ranges (AMLR) is the NRM region with the most complex landscape and greatest biological diversity in South Australia. The region has a land area of approximately 6,600 km^2 encompassing suburban Adelaide and the western side of the Mount Lofty Ranges from Mallala and the Barossa in the north, to the Fleurieu Peninsula in the south (AMLRNRMB, 2013).

Twenty seven weather stations were selected for the statistical downscaling model calibration. Their mean rainfall characteristics are summarised in Table 2.1, in terms of seasonal mean number of wet-days and rainfall totals for the 1986 to 2005 baseline period (representing current climate, this is the period that the projections are compared to in later results). Annual rainfall totals vary across stations by a factor of three, ranging from approximately 340 mm (Port Parham, in the coastal northwest of the region) to 1070 mm (Aldgate, in the central Mount Lofty Ranges).

The selected downscaling models, for the four seasons, are summarised in Table 2.2. In each season the four selected predictors include at least one of either the ‘east minus west’ or the ‘north minus south’ SLP difference over the region, or both. The DTD over the region at the 850 hPa level is also selected in each season, as is the northerly component of wind speed (V-wind) at the 700 hPa level. For the summer and autumn seasons, respectively, the V-wind at the 500 and 850 hPa levels are additional predictors. The seasonal mean rainfall characteristics, associated with each NHMM weather state for the 1986 to 2005 baseline period, are presented in Appendix A, Table A.1 to Table A.4.

Table 2.1 Adelaide and Mount Lofty Ranges NRM Climate Stations for NHMM-Downscaling. For each station's seasonal rainfall measure, the 1986-2005 mean value is shown in the first row and the proportion of the annual total in the second row.

BoM ID	Name	Latitude	Longitude	Rain days (# days)				Rain amount (mm)			
		(°S)	(°E)	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
				9	15	32	20	62	86	181	121
23013	PARAFIELD AIRPORT	34.80	138.63	0.12	0.20	0.42	0.26	0.14	0.19	0.40	0.27
				9	15	33	20	60	89	177	117
23034	ADELAIDE AIRPORT	34.95	138.52	0.12	0.19	0.43	0.26	0.14	0.20	0.40	0.26
				8	13	28	17	55	64	125	95
23076	PORT PARHAM	34.43	138.29	0.12	0.20	0.42	0.26	0.16	0.19	0.37	0.28
				9	15	33	20	59	82	171	111
23079	ADELAIDE (DRY CREEK SALTWORKS)	34.83	138.58	0.12	0.19	0.43	0.26	0.14	0.19	0.40	0.26
				8	13	31	19	57	72	164	112
23083	EDINBURGH RAAF	34.70	138.62	0.11	0.18	0.44	0.27	0.14	0.18	0.40	0.28
				10	16	37	22	65	110	232	144
23090	ADELAIDE (KENT TOWN)	34.92	138.62	0.12	0.19	0.44	0.26	0.12	0.20	0.42	0.26
				11	17	38	24	71	113	253	154
23096	ADELAIDE (HOPE VALLEY RESERVOIR)	34.86	138.68	0.12	0.19	0.42	0.27	0.12	0.19	0.43	0.26
				10	15	33	22	61	84	184	145
23343	ROSEDALE (TURRETFIELD RESEARCH CENTRE)	34.55	138.83	0.12	0.19	0.41	0.28	0.13	0.18	0.39	0.31
				10	13	32	21	64	78	173	137
23356	HAMLEY BRIDGE (LINWOOD)	34.39	138.76	0.13	0.17	0.42	0.28	0.14	0.17	0.38	0.30
				9	12	29	19	80	81	180	138
23360	ST KITTS	34.33	139.09	0.13	0.17	0.42	0.28	0.17	0.17	0.38	0.29
				11	16	36	25	77	95	217	167
23361	KAPUNDA (HAMILTON)	34.22	138.88	0.12	0.18	0.41	0.28	0.14	0.17	0.39	0.30
				14	22	46	31	91	184	399	229
23709	CHERRY GARDENS	35.06	138.66	0.12	0.19	0.41	0.27	0.10	0.20	0.44	0.25
				12	20	41	27	75	143	292	163
23721	HAPPY VALLEY RESERVOIR	35.06	138.56	0.12	0.20	0.41	0.27	0.11	0.21	0.43	0.24
				14	23	46	30	97	190	441	251
23727	LONGWOOD	35.05	138.73	0.12	0.20	0.41	0.27	0.10	0.19	0.45	0.26

				12	19	42	27	86	150	387	219
23731	CUDLEE CREEK (MILLBROOK)	34.83	138.82	0.12	0.19	0.42	0.27	0.10	0.18	0.46	0.26
				13	22	45	29	82	166	353	200
23734	MOUNT BOLD RESERVOIR	35.12	138.68	0.12	0.20	0.41	0.27	0.10	0.21	0.44	0.25
				9	17	41	24	54	102	235	126
23741	NORMANVILLE	35.45	138.32	0.10	0.19	0.45	0.26	0.10	0.20	0.45	0.24
				14	23	44	27	74	133	296	160
23743	VICTOR HARBOR (RIVINGTON GRANGE)	35.54	138.50	0.13	0.21	0.41	0.25	0.11	0.20	0.45	0.24
				10	17	40	26	75	120	318	190
23756	WILLIAMSTOWN (GLEN GILLIAN)	34.66	138.93	0.11	0.18	0.43	0.28	0.11	0.17	0.45	0.27
				10	16	40	26	79	127	345	203
23758	KERSBROOK (MABENJO)	34.74	138.87	0.11	0.17	0.43	0.28	0.10	0.17	0.46	0.27
				15	27	50	30	93	186	424	214
23761	PARAWA (SHARON)	35.56	138.34	0.12	0.22	0.41	0.25	0.10	0.20	0.46	0.23
				12	21	45	27	71	143	318	169
23783	MYPONGA RESERVOIR	35.40	138.43	0.11	0.20	0.43	0.26	0.10	0.20	0.45	0.24
				10	16	39	24	70	117	292	170
23806	HERMITAGE UPPER	34.79	138.76	0.11	0.18	0.44	0.27	0.11	0.18	0.45	0.26
				15	23	47	31	106	207	487	273
23817	ALDGATE	35.02	138.73	0.13	0.20	0.41	0.27	0.10	0.19	0.45	0.25
				10	16	40	25	77	119	302	186
23820	WILLIAMSTOWN (SOUTH PARA RESERVOIR)	34.68	138.86	0.11	0.18	0.44	0.27	0.11	0.17	0.44	0.27
				14	25	47	30	86	180	394	208
23823	HINDMARSH VALLEY (FERNBROOK)	35.41	138.58	0.12	0.22	0.41	0.26	0.10	0.21	0.45	0.24
				15	25	49	31	94	192	427	217
23824	HINDMARSH VALLEY (SPRINGMOUNT)	35.44	138.54	0.12	0.21	0.41	0.26	0.10	0.21	0.46	0.23

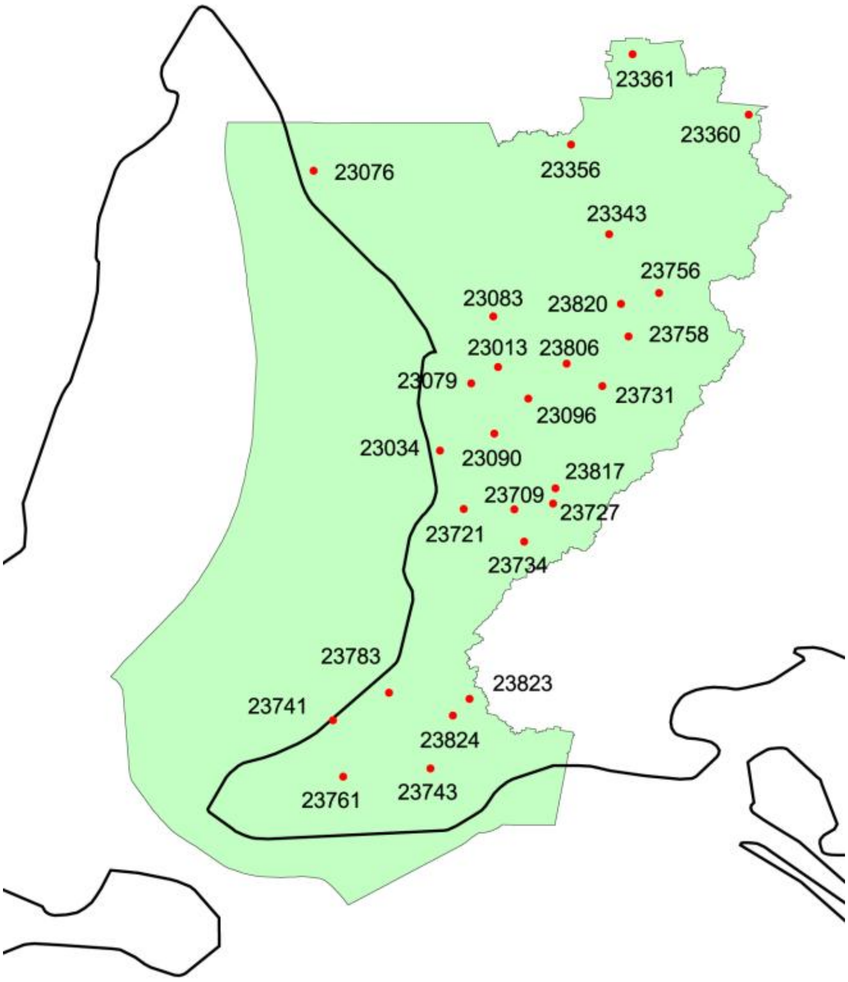

Figure 2.1 Location of AMLR stations in Table 2.1 and NRM region boundary

Table 2.2 Selected NHMMs (number of weather states and predictor combinations) for AMLR

DJF	MAM	JJA	SON
4 states	5 states	5 States	5 States
East – West SLP DTD at 850 hPa V-wind at 500 hPa V-wind at 700 hPa	North – South SLP DTD at 850 hPa V-wind at 700 hPa V-wind at 850 hPa	East – West SLP North – South SLP DTD at 850 hPa V-wind at 700 hPa	East – West SLP North – South SLP DTD at 850 hPa V-wind at 700 hPa

2.2 Precipitation

The mean and median projected changes obtained from statistically downscaling the 15 GCMs indicate future precipitation declines for all seasons under both RCPs, whereas the ranges (10^{th} to 90^{th} percentiles) indicate the possibility of increases for some seasons and periods (Table 2.3). Time-series plots of the downscaled seasonal means and ranges for RCP4.5 (Figure 2.2) and RCP8.5 (Figure 2.3) highlight the trends and the variance of the projected precipitation changes. These plots show the downscaled median and 10^{th} to 90^{th} percentile ranges from the 15 GCMs, for both 20-year running means and annual means (i.e. year-to-year variability), as anomalies relative to the 1962 to 2005 historical period of the plots.

By the end of the century, the mean seasonal changes projected for RCP8.5 are about a factor of two greater than those of RCP4.5 (Table 2.3). The relative changes projected for spring are the largest, up to a mean decline of 31.7% by 2090 for RCP8.5 (Table 2.3). By the end of the century following RCP4.5, all seasons can still have wet years above the baseline mean whereas for RCP8.5 only summer, autumn and winter can still have wet years, as all spring simulations are below the baseline mean (Figure 2.4).

Comparison between the downscaled and the GCM grid-scale precipitation changes shows the downscaled projections have a narrower range than the projections at the GCM-grid scale, thus there are no cases of the downscaled projections being outside the range of the direct GCM projections (Figure 2.4). Comparisons between downscaled projections from subsets of six GCMs selected as better and poorer performers are presented in Table 2.3 and Figure 2.5 (based on the GCM assessment undertaken, see Task 2 section of the Final Report, Cai et al. (2014a) and Cai et al. (2014b) for more details). A consistent pattern emerges of smaller median declines when downscaling from the better GCMs, relative to the poorer GCMs.

The mean, median and range of changes presented in Table 2.3 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.1 for RCP4.5 and Table B.2 for RCP8.5.

Table 2.3 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	-7.5	-4.9	-12.2	-4.4	2.7	-9.9
		Median	-6.9	-1.6	-13.0	-6.6	2.9	-11.4
		10th	-19.3	-20.7	-19.1	-12.6	-5.1	-12.5
		90th	3.0	7.7	-4.4	7.6	10.4	-5.8
2030	MAM	Mean	-3.8	-3.3	-3.4	-4.7	-4.3	-6.2
		Median	-3.8	-2.2	-4.4	-4.1	-4.2	-3.3
		10th	-12.3	-10.4	-16.1	-16.6	-10.9	-17.9
		90th	5.9	2.7	10.3	3.2	2.3	2.5
2030	JJA	Mean	-2.7	-0.8	-4.9	-5.1	-5.0	-4.6
		Median	-3.0	0.5	-4.7	-4.8	-4.4	-4.7
		10th	-9.5	-7.0	-9.3	-10.6	-9.2	-8.5
		90th	3.1	4.1	-0.9	-1.1	-1.6	-0.7
2030	SON	Mean	-8.8	-13.4	-7.5	-12.1	-10.7	-14.1
		Median	-9.3	-12.2	-9.2	-12.5	-10.8	-14.5
		10th	-16.9	-18.8	-14.5	-19.2	-17.1	-19.2
		90th	0.8	-9.3	1.2	-5.1	-4.2	-8.6
2030	Annual	Mean	-5.0	-4.9	-6.1	-6.6	-5.4	-7.9
		Median	-4.4	-4.7	-6.4	-5.8	-4.8	-6.3
		10th	-10.4	-8.9	-11.3	-11.3	-7.9	-12.2
		90th	-0.2	-1.0	-0.6	-3.3	-3.4	-5.2
2050	DJF	Mean	-6.6	-2.9	-11.4	-10.8	-6.5	-14.1
		Median	-4.5	-3.0	-6.6	-10.1	-9.6	-13.2
		10th	-20.5	-10.4	-28.3	-22.8	-17.6	-22.7
		90th	4.8	4.6	0.8	-5.7	7.8	-6.4
2050	MAM	Mean	-3.9	-3.0	-3.2	-6.0	-3.9	-6.7
		Median	-7.1	-4.4	-6.5	-9.6	-3.5	-7.5
		10th	-11.2	-10.5	-14.3	-16.6	-13.1	-23.0
		90th	9.3	6.0	11.3	5.4	4.9	10.3
2050	JJA	Mean	-5.3	-4.9	-5.1	-6.3	-5.0	-5.3
		Median	-6.0	-4.3	-6.2	-5.1	-4.9	-4.9
		10th	-12.0	-9.6	-9.5	-13.9	-9.4	-11.5
		90th	1.2	-0.9	0.4	-0.2	-0.6	0.6
2050	SON	Mean	-12.9	-13.6	-15.6	-17.1	-19.6	-18.4
		Median	-10.9	-11.9	-15.0	-16.6	-21.0	-17.6
		10th	-21.7	-20.4	-21.9	-28.5	-29.3	-28.3

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	-6.6	-8.5	-10.0	-7.5	-8.6	-9.4
2050	Annual	Mean	-6.9	-6.3	-7.9	-9.4	-8.4	-9.8
		Median	-7.4	-6.8	-9.2	-8.0	-7.4	-8.3
		10th	-10.7	-8.8	-12.5	-14.4	-14.0	-16.3
		90th	-0.9	-3.5	-2.0	-4.6	-4.0	-4.9
2070	DJF	Mean	-9.0	-3.0	-14.8	-13.8	-8.3	-20.1
		Median	-12.4	-9.6	-14.9	-14.0	-7.5	-22.1
		10th	-18.1	-13.8	-21.1	-26.8	-19.2	-32.6
		90th	4.9	14.3	-8.4	-0.9	1.7	-5.5
2070	MAM	Mean	-7.3	-6.2	-7.9	-14.6	-11.9	-16.9
		Median	-7.5	-3.2	-9.3	-12.8	-11.6	-19.8
		10th	-16.7	-16.3	-20.3	-28.7	-19.2	-30.1
		90th	3.9	0.9	5.7	-0.6	-4.9	-0.8
2070	JJA	Mean	-6.0	-4.7	-6.4	-11.2	-9.2	-12.6
		Median	-7.1	-6.0	-7.3	-9.7	-7.6	-14.1
		10th	-13.6	-9.1	-15.2	-20.8	-15.5	-20.5
		90th	3.6	1.0	3.4	-2.6	-4.6	-3.1
2070	SON	Mean	-16.7	-17.0	-19.3	-24.4	-25.2	-27.9
		Median	-14.7	-16.4	-21.3	-22.2	-20.6	-25.0
		10th	-26.4	-26.0	-25.6	-38.6	-39.7	-38.1
		90th	-9.0	-8.6	-10.9	-13.4	-15.4	-20.6
2070	Annual	Mean	-9.2	-7.8	-10.8	-15.4	-13.6	-18.1
		Median	-9.7	-5.7	-10.1	-15.0	-11.0	-17.1
		10th	-13.1	-12.9	-16.7	-23.8	-21.0	-25.6
		90th	-3.5	-4.7	-5.6	-8.5	-8.7	-11.7
2090	DJF	Mean	-9.4	-2.1	-16.6	-19.9	-13.6	-29.0
		Median	-8.8	-0.8	-15.5	-20.7	-17.4	-26.5
		10th	-22.7	-10.9	-27.0	-33.0	-26.1	-40.8
		90th	1.7	5.5	-7.4	-6.6	2.8	-19.7
2090	MAM	Mean	-7.7	-6.5	-9.9	-17.9	-14.2	-25.8
		Median	-7.7	-9.3	-8.2	-13.5	-11.8	-25.7
		10th	-14.8	-11.7	-18.1	-34.6	-25.8	-44.3
		90th	-0.7	1.4	-3.5	-2.7	-5.0	-7.4
2090	JJA	Mean	-5.7	-4.2	-6.5	-15.6	-11.8	-20.7
		Median	-6.6	-5.2	-6.5	-15.7	-11.9	-21.8
		10th	-10.9	-9.2	-13.9	-27.3	-18.5	-30.2
		90th	2.4	1.7	0.9	-6.9	-4.9	-10.2

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	-17.8	-17.6	-20.5	-31.7	-31.9	-38.9
		Median	-16.3	-15.3	-23.0	-29.6	-27.4	-37.7
		10^{th}	-24.4	-25.1	-24.4	-49.8	-44.9	-51.4
		90^{th}	-11.5	-12.6	-14.3	-21.4	-23.3	-27.7
2090	Annual	Mean	-9.5	-7.8	-11.8	-20.5	-17.4	-27.2
		Median	-8.1	-7.7	-10.3	-22.9	-15.6	-27.1
		10^{th}	-13.6	-10.7	-17.0	-29.7	-25.3	-36.0
		90^{th}	-6.7	-5.0	-8.2	-10.3	-11.2	-18.5

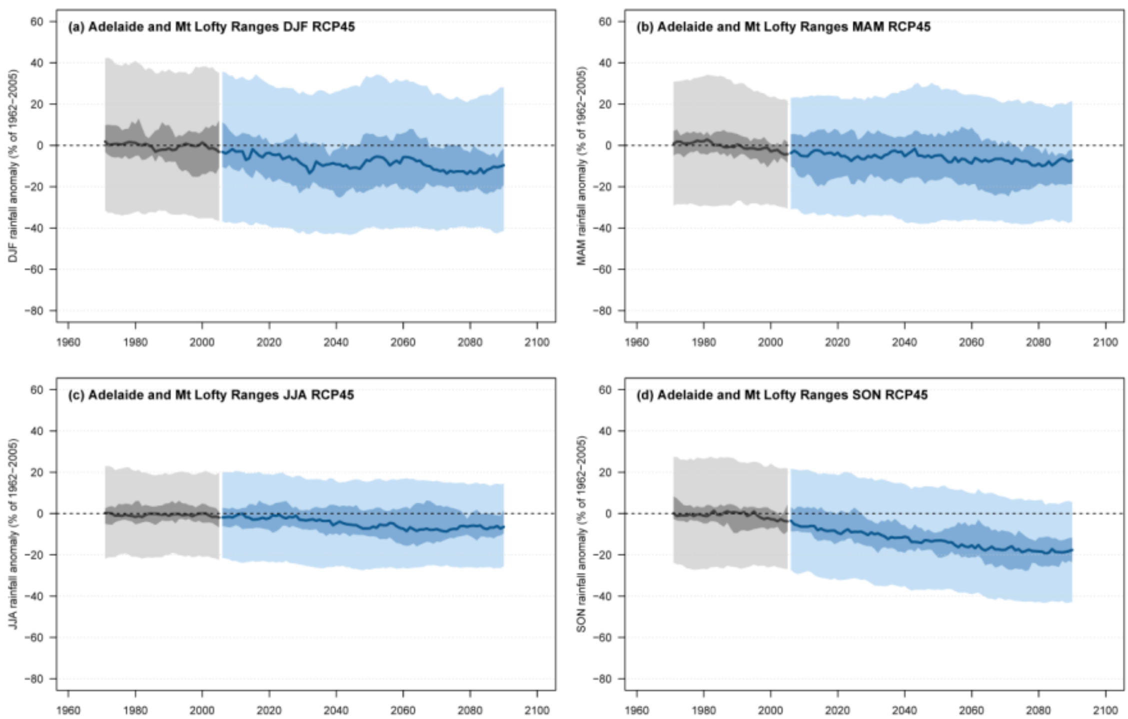

Figure 2.2 Adelaide and Mount Lofty Ranges NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

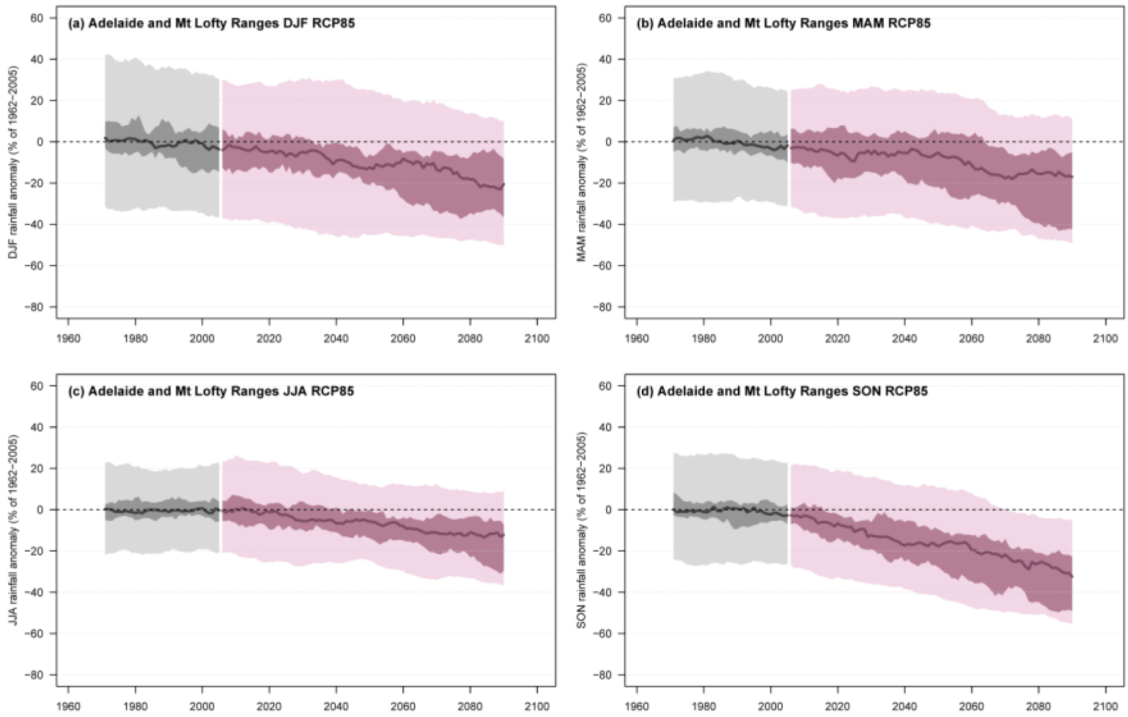

Figure 2.3 Adelaide and Mount Lofty Ranges NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

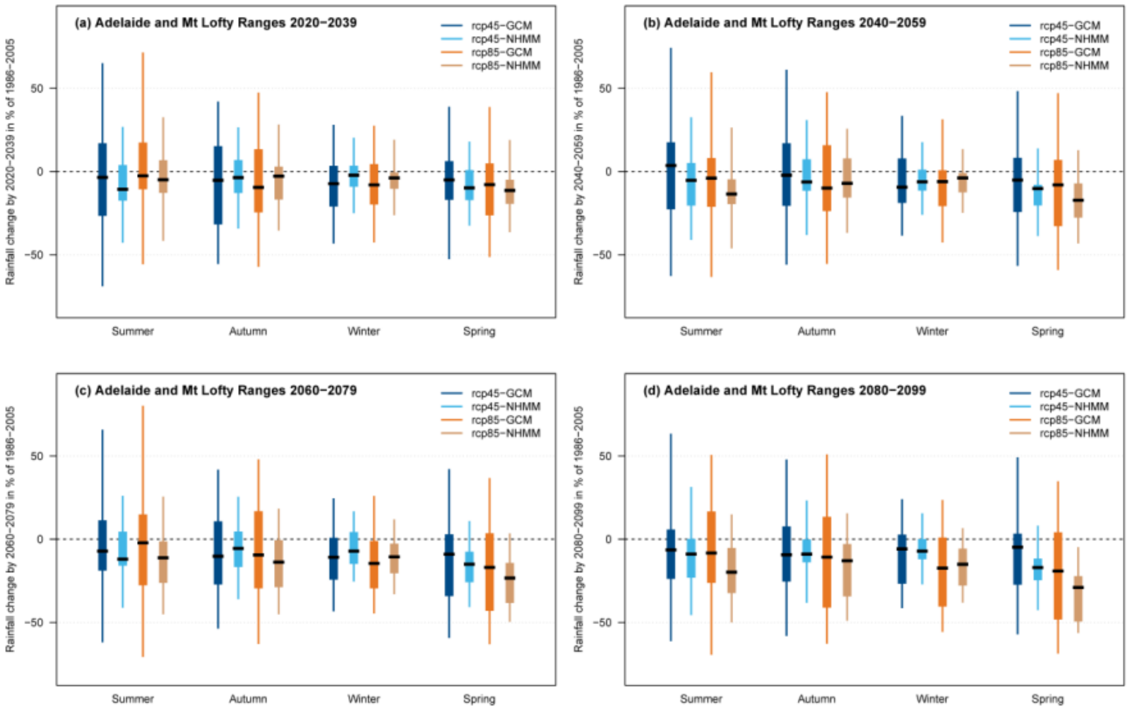

Figure 2.4 Adelaide and Mount Lofty Ranges NRM CMIP5 GCM and NHMM-downscaled projected seasonal precipitation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall.

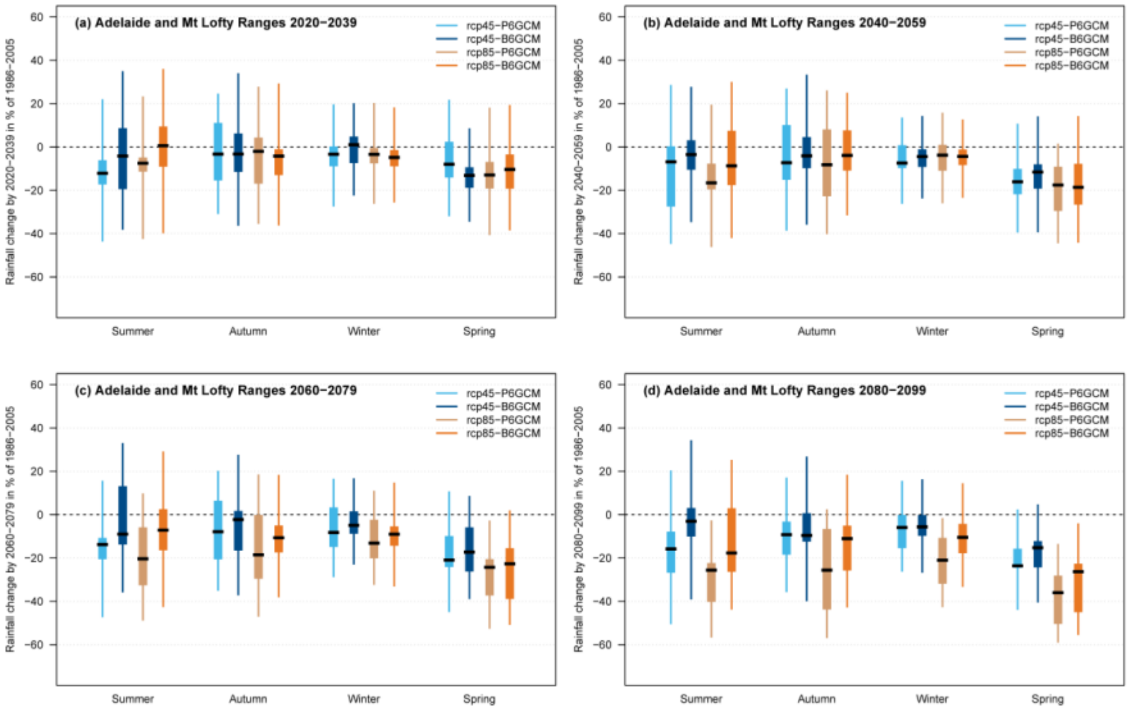

Figure 2.5 Adelaide and Mount Lofty Ranges NRM NHMM-downscaled projected seasonal precipitation changes from six better (B6GCM) and six poorer (P6GCM) performing CMIP5 GCMs for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall. Selection of better and poorer performing GCMs according to Cai et al. (2014a) and Cai et al. (2014b).

2.3 Non-precipitation variables

Table 2.4 summarises the mean, median and range (10th to 90th percentile) of changes in seasonal maximum daily temperature projected from downscaling the set of 15 GCMs for the two RCPs. Figure 2.6 (RCP4.5) and Figure 2.7 (RCP8.5) present the corresponding downscaled range in seasonal trends, highlighting the projected steady progression of warming. The use of a weather generator with stationary parameters and averaging over the 100 stochastic replicates results in similar ranges in decadal and interannual variability in these, and later, non-rainfall time-series plots. The high-concentration RCP8.5 produces in the order of 1.5° more warming by the end of the century than the intermediate-concentration RCP4.5, i.e. approximately double. The projected warming in the spring (SON) season is about 0.5° more than for the other seasons by the end of the century, consistent with this season experiencing relatively larger projected drying than the other seasons.

Table 2.4 also compares the subsets of six better and poorer GCMs. The ensemble mean and median of the six poorer GCMs is consistently higher than that of the six better GCMs, particularly for RCP8.5. This suggests using the poorer GCMs for impacts research or natural resource management would produce overly pessimistic results.

Figure 2.8 compares the range of projected changes obtained directly from the GCM-grid scale results to those obtained from the downscaling. The median projected changes are quite similar in all cases, with the downscaling producing less year to year variability than the GCM direct results.

The mean, median and range of changes presented in Table 2.4 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.3 for RCP4.5 and Table B.4 for RCP8.5.

Table 2.4 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal maximum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	1.0	0.9	1.1	1.2	1.0	1.4
		Median	0.9	0.9	1.0	1.1	0.9	1.3
		10th	0.6	0.6	0.8	0.6	0.6	1.1
		90th	1.4	1.2	1.6	1.8	1.5	1.9
2030	MAM	Mean	0.8	0.8	0.6	1.0	1.0	1.0
		Median	0.8	0.8	0.6	1.0	1.0	1.0
		10th	0.5	0.8	0.4	0.7	0.8	0.6
		90th	1.1	0.9	1.0	0.7	1.3	1.5
2030	JJA	Mean	0.8	0.7	0.8	1.0	0.9	1.0
		Median	0.8	0.8	0.8	0.9	0.9	1.0
		10th	0.4	0.5	0.6	0.7	0.7	0.8
		90th	1.0	0.9	1.0	1.3	1.2	1.3
2030	SON	Mean	1.0	1.1	1.0	1.3	1.3	1.4
		Median	1.0	1.2	1.0	1.2	1.2	1.5
		10th	0.8	1.0	0.8	0.9	1.0	1.0
		90th	1.3	1.3	1.3	1.7	1.7	1.7
2030	Annual	Mean	0.9	0.9	0.9	1.1	1.1	1.2
		Median	0.9	0.9	0.9	1.0	1.0	1.3
		10th	0.6	0.7	0.7	0.8	0.9	0.9
		90th	1.2	1.1	1.2	1.6	1.4	1.6
2050	DJF	Mean	1.4	1.3	1.5	1.9	1.7	2.2
		Median	1.2	1.2	1.3	1.7	1.5	2.0
		10th	1.0	1.0	1.2	1.3	1.3	1.7
		90th	1.9	1.7	2.1	2.7	2.3	3.1
2050	MAM	Mean	1.1	1.2	1.0	1.7	1.7	1.8
		Median	1.0	1.2	1.0	1.6	1.6	1.8
		10th	0.8	1.0	0.6	1.3	1.3	1.2
		90th	1.6	1.3	1.4	2.4	2.2	2.4
2050	JJA	Mean	1.1	1.1	1.2	1.7	1.6	1.8
		Median	1.2	1.2	1.3	1.6	1.5	1.8
		10th	0.7	0.9	1.0	1.2	1.3	1.4
		90th	1.4	1.3	1.4	2.2	2.0	2.2
2050	SON	Mean	1.5	1.5	1.6	2.1	2.2	2.3
		Median	1.5	1.6	1.6	2.0	2.0	2.4
		10th	1.2	1.4	1.3	1.7	1.8	1.7

PERIOD	SEASON		RCP4.5 15 GCMS	RCP4.5 BETTER 6 GCMS	RCP4.5 POORER 6 GCMS	RCP8.5 15 GCMS	RCP8.5 BETTER 6 GCMS	RCP8.5 POORER 6 GCMS
		90th	1.7	1.7	1.8	2.8	2.7	2.8
2050	Annual	Mean	1.3	1.3	1.3	1.9	1.8	2.0
		Median	1.3	1.3	1.3	1.7	1.6	2.0
		10th	0.9	1.1	1.1	1.4	1.5	1.6
		90th	1.6	1.5	1.7	2.5	2.3	2.6
2070	DJF	Mean	1.7	1.5	1.9	2.7	2.4	3.1
		Median	1.5	1.5	1.7	2.4	2.1	2.6
		10th	1.2	1.2	1.5	2.0	2.0	2.3
		90th	2.1	2.0	2.6	3.9	3.3	4.5
2070	MAM	Mean	1.5	1.5	1.4	2.5	2.5	2.6
		Median	1.4	1.5	1.3	2.4	2.3	2.6
		10th	1.1	1.3	1.0	2.0	2.1	2.0
		90th	1.9	1.8	1.9	3.2	3.2	3.4
2070	JJA	Mean	1.4	1.3	1.6	2.5	2.3	2.7
		Median	1.4	1.3	1.6	2.4	2.2	2.7
		10th	1.0	1.1	1.3	1.9	1.9	2.2
		90th	1.9	1.6	1.9	3.2	2.9	3.2
2070	SON	Mean	1.8	1.8	2.0	3.1	3.0	3.3
		Median	1.9	1.9	2.1	3.0	2.9	3.6
		10th	1.5	1.6	1.7	2.3	2.5	2.5
		90th	2.2	2.1	2.3	4.1	3.7	4.0
2070	Annual	Mean	1.6	1.5	1.7	2.7	2.6	3.0
		Median	1.6	1.5	1.6	2.4	2.3	2.9
		10th	1.3	1.3	1.5	2.1	2.2	2.3
		90th	1.9	1.8	2.1	3.5	3.3	3.8
2090	DJF	Mean	1.9	1.7	2.2	3.5	3.2	4.1
		Median	1.8	1.7	2.0	3.0	2.8	3.3
		10th	1.4	1.3	1.6	2.6	2.6	3.0
		90th	2.4	2.2	3.0	5.2	4.3	6.0
2090	MAM	Mean	1.8	1.8	1.8	3.4	3.4	3.7
		Median	1.6	1.8	1.6	3.3	3.1	3.6
		10th	1.4	1.5	1.3	2.5	2.8	2.9
		90th	2.2	2.2	2.4	4.3	4.3	4.6
2090	JJA	Mean	1.7	1.5	1.9	3.3	3.1	3.7
		Median	1.6	1.5	1.9	3.3	3.0	3.8
		10th	1.3	1.3	1.6	2.5	2.6	3.1
		90th	2.2	1.8	2.4	4.1	3.9	4.3

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	2.2	2.1	2.4	4.0	4.0	4.5
		Median	2.1	2.1	2.4	4.0	3.9	4.7
		10th	1.7	1.8	2.1	3.0	3.2	3.2
		90th	2.7	2.5	2.7	5.3	4.9	5.5
2090	Annual	Mean	1.9	1.8	2.1	3.6	3.4	4.0
		Median	1.9	1.8	2.0	3.3	3.2	3.8
		10th	1.5	1.5	1.8	2.7	2.8	3.1
		90th	2.2	2.2	2.4	4.7	4.3	5.1

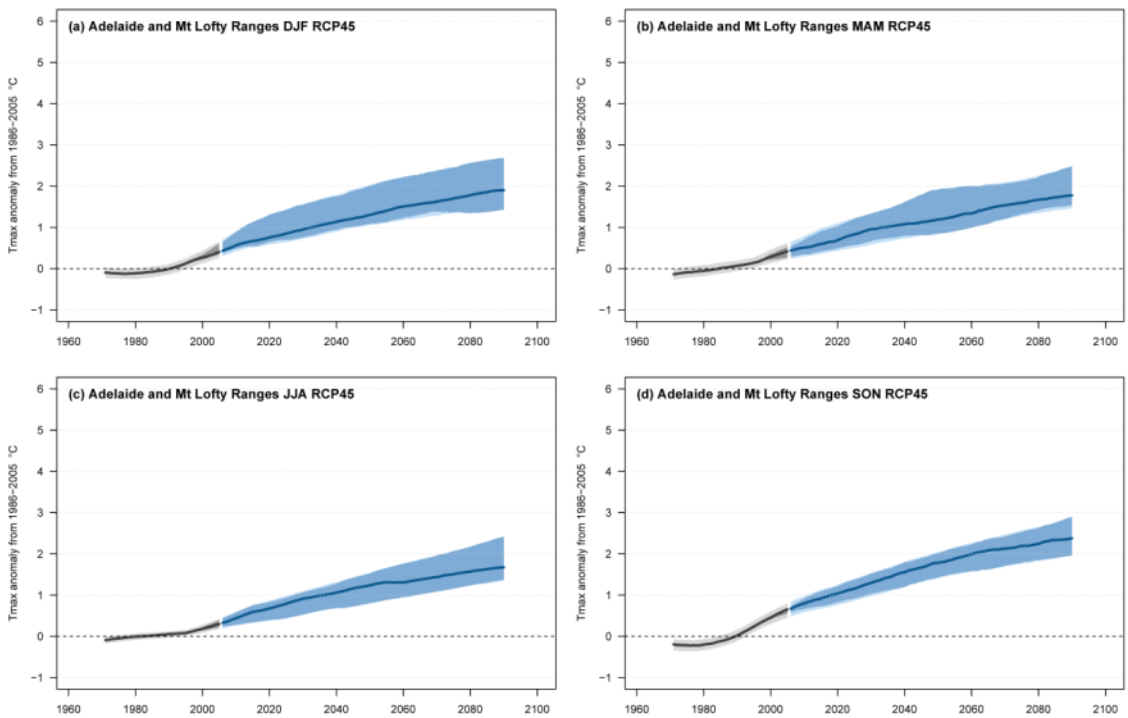

Figure 2.6 Adelaide and Mount Lofty Ranges NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

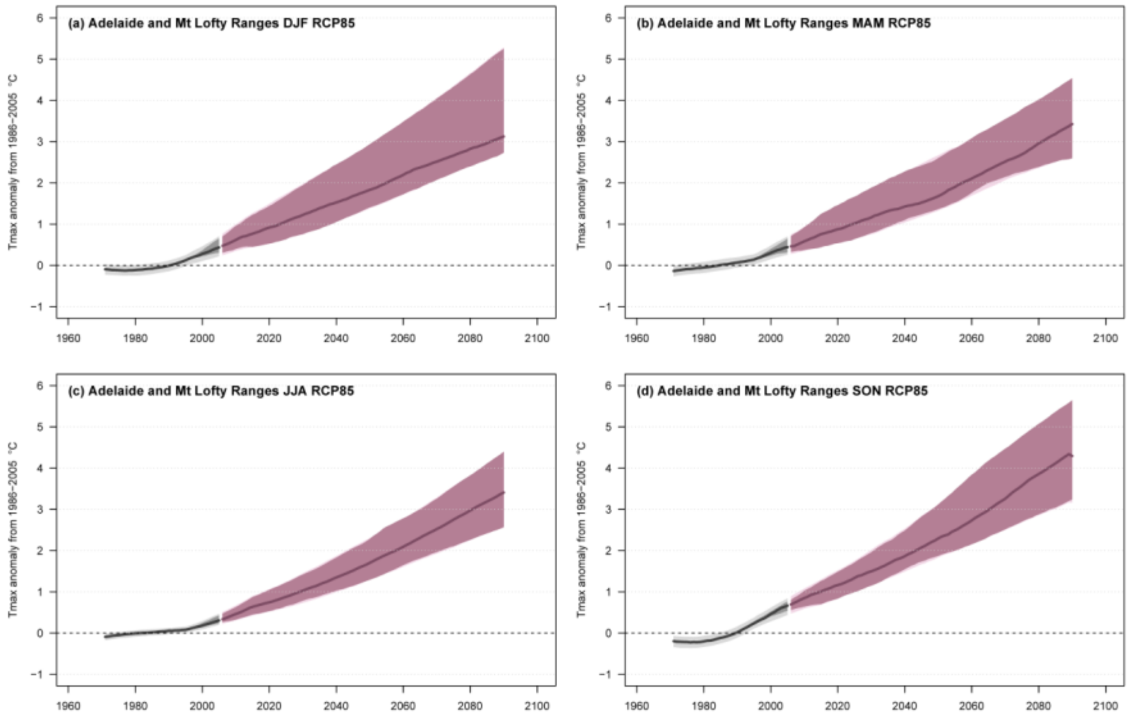

Figure 2.7 Adelaide and Mount Lofty Ranges NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

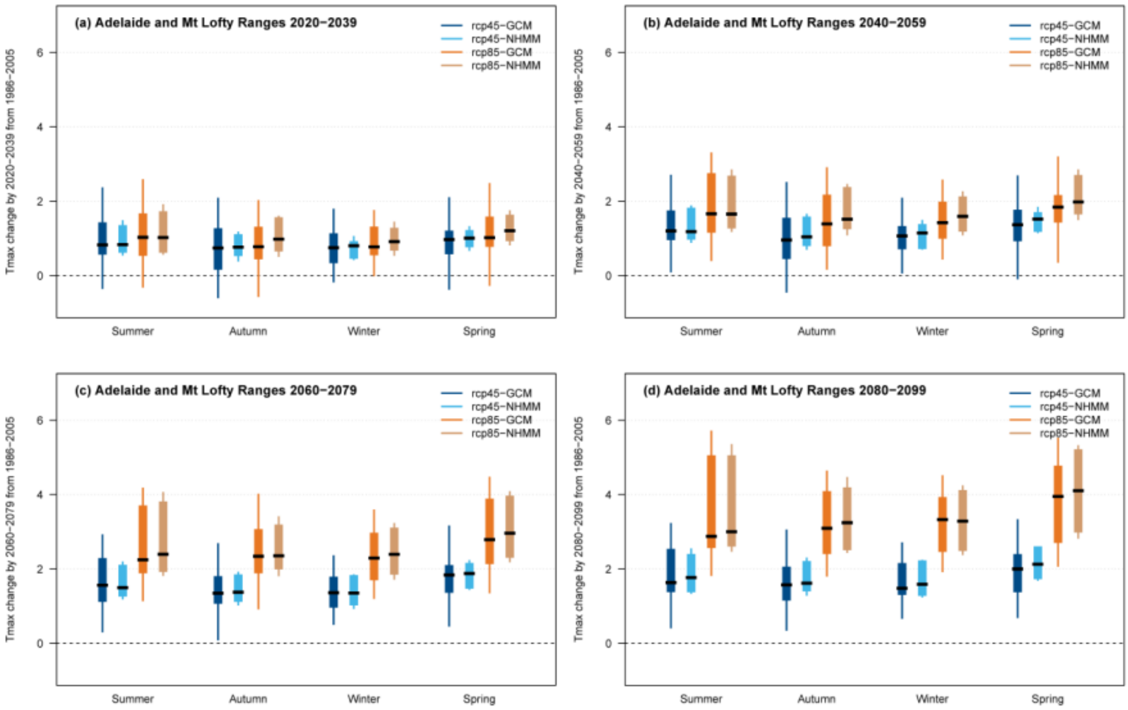

Figure 2.8 Adelaide and Mount Lofty Ranges NRM CMIP5 GCM and NHMM-downscaled projected seasonal maximum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean maximum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean maximum daily temperature.

Table 2.5 presents the projected minimum daily temperature changes. Similar to maximum daily temperature, the projected RCP8.5 changes are greater than RCP4.5, by over 1° (i.e. double) by the end of the century (Figure 2.9 and Figure 2.10). There is some difference when comparing downscaled changes from the subset of six better to the six poorer GCMs, the poorer being warmer, but the differences are not as large as for maximum temperature. The marked spring warming seen in maximum temperature is not repeated in the minimum temperature projections, with autumn seeing slightly more warming than the other seasons by the end of the century. Direct GCM changes and downscaled changes are similar (Figure 2.11).

The mean, median and range of changes presented in Table 2.5 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.5 for RCP4.5 and Table B.6 for RCP8.5.

Table 2.5 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal minimum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.8	0.7	0.9	1.0	0.8	1.2
		Median	0.7	0.7	1.0	0.9	0.7	1.2
		10th	0.4	0.4	0.6	0.5	0.5	0.9
		90th	1.1	1.0	1.2	1.5	1.3	1.6
2030	MAM	Mean	0.8	0.7	0.8	1.0	0.9	1.1
		Median	0.7	0.8	0.7	0.9	1.0	1.0
		10th	0.4	0.5	0.6	0.7	0.7	0.8
		90th	1.2	0.9	1.2	0.7	1.2	1.4
2030	JJA	Mean	0.6	0.5	0.6	0.7	0.7	0.8
		Median	0.6	0.6	0.6	0.8	0.7	0.9
		10th	0.3	0.4	0.6	0.5	0.5	0.7
		90th	0.7	0.7	0.7	0.9	0.9	0.9
2030	SON	Mean	0.6	0.6	0.7	0.8	0.8	0.9
		Median	0.7	0.7	0.7	0.9	0.9	0.9
		10th	0.4	0.5	0.5	0.6	0.7	0.7
		90th	0.8	0.8	0.8	1.0	1.0	1.0
2030	Annual	Mean	0.7	0.6	0.7	0.9	0.8	1.0
		Median	0.7	0.7	0.7	0.9	0.8	1.0
		10th	0.5	0.5	0.6	0.7	0.6	0.8
		90th	0.9	0.8	0.9	1.2	1.1	1.2
2050	DJF	Mean	1.1	1.0	1.3	1.6	1.4	1.9
		Median	1.0	0.9	1.3	1.4	1.3	1.9
		10th	0.7	0.7	0.9	1.0	1.0	1.4
		90th	1.6	1.4	1.7	2.5	2.1	2.6
2050	MAM	Mean	1.1	1.0	1.1	1.6	1.6	1.7
		Median	1.0	1.1	1.1	1.5	1.5	1.7
		10th	0.7	0.8	0.8	1.2	1.2	1.3
		90th	1.4	1.3	1.5	2.2	2.1	2.2
2050	JJA	Mean	0.8	0.7	0.9	1.3	1.2	1.4
		Median	0.9	0.8	0.9	1.2	1.2	1.5
		10th	0.5	0.6	0.8	0.9	1.0	1.2
		90th	1.0	0.9	1.0	1.6	1.4	1.6
2050	SON	Mean	0.9	1.0	1.0	1.4	1.4	1.5
		Median	1.0	1.0	1.1	1.4	1.5	1.5
		10th	0.6	0.8	0.7	1.1	1.2	1.2

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.2	1.2	1.1	1.7	1.7	1.8
2050	Annual	Mean	1.0	0.9	1.1	1.5	1.4	1.6
		Median	1.0	1.0	1.1	1.4	1.3	1.6
		10th	0.7	0.7	0.9	1.1	1.2	1.4
		90th	1.2	1.2	1.3	2.0	1.8	2.0
2070	DJF	Mean	1.3	1.3	1.5	2.3	2.2	2.7
		Median	1.2	1.1	1.7	2.0	1.9	2.7
		10th	0.8	0.9	1.1	1.6	1.7	1.8
		90th	1.9	1.9	1.9	3.5	3.0	3.6
2070	MAM	Mean	1.3	1.3	1.4	2.4	2.4	2.6
		Median	1.2	1.2	1.5	2.2	2.3	2.6
		10th	0.9	1.0	1.1	1.7	1.7	2.0
		90th	1.7	1.7	1.7	3.2	3.1	3.2
2070	JJA	Mean	1.0	1.0	1.1	1.9	1.8	2.0
		Median	1.1	1.0	1.2	1.9	1.8	2.1
		10th	0.7	0.7	0.9	1.4	1.5	1.7
		90th	1.3	1.2	1.3	2.2	2.1	2.3
2070	SON	Mean	1.1	1.2	1.2	2.1	2.1	2.2
		Median	1.2	1.2	1.3	2.0	2.2	2.1
		10th	0.7	1.0	1.0	1.7	1.8	1.8
		90th	1.4	1.5	1.4	2.5	2.4	2.6
2070	Annual	Mean	1.2	1.2	1.3	2.2	2.1	2.4
		Median	1.2	1.2	1.4	2.0	2.0	2.2
		10th	0.8	0.9	1.1	1.7	1.8	2.0
		90th	1.5	1.6	1.5	2.9	2.6	2.9
2090	DJF	Mean	1.5	1.4	1.7	3.1	2.9	3.6
		Median	1.3	1.2	1.9	2.7	2.7	3.5
		10th	0.9	0.9	1.2	2.2	2.2	2.4
		90th	2.1	2.2	2.1	4.7	4.0	4.8
2090	MAM	Mean	1.5	1.5	1.6	3.2	3.2	3.4
		Median	1.5	1.4	1.7	3.0	3.1	3.5
		10th	1.1	1.1	1.4	2.3	2.5	2.6
		90th	2.0	2.1	1.8	4.2	4.2	4.2
2090	JJA	Mean	1.2	1.2	1.3	2.5	2.5	2.7
		Median	1.3	1.3	1.5	2.6	2.5	2.7
		10th	0.7	0.9	0.9	1.8	2.2	2.2
		90th	1.6	1.5	1.6	2.9	2.7	3.1

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	1.4	1.4	1.5	2.7	2.8	2.9
		Median	1.4	1.5	1.5	2.6	2.9	2.8
		10th	1.0	1.2	1.2	2.2	2.4	2.4
		90th	1.7	1.7	1.7	3.3	3.2	3.5
2090	Annual	Mean	1.4	1.4	1.5	2.9	2.9	3.1
		Median	1.3	1.3	1.6	2.6	2.8	2.9
		10th	1.0	1.0	1.3	2.2	2.3	2.6
		90th	1.8	1.9	1.8	3.9	3.5	3.9

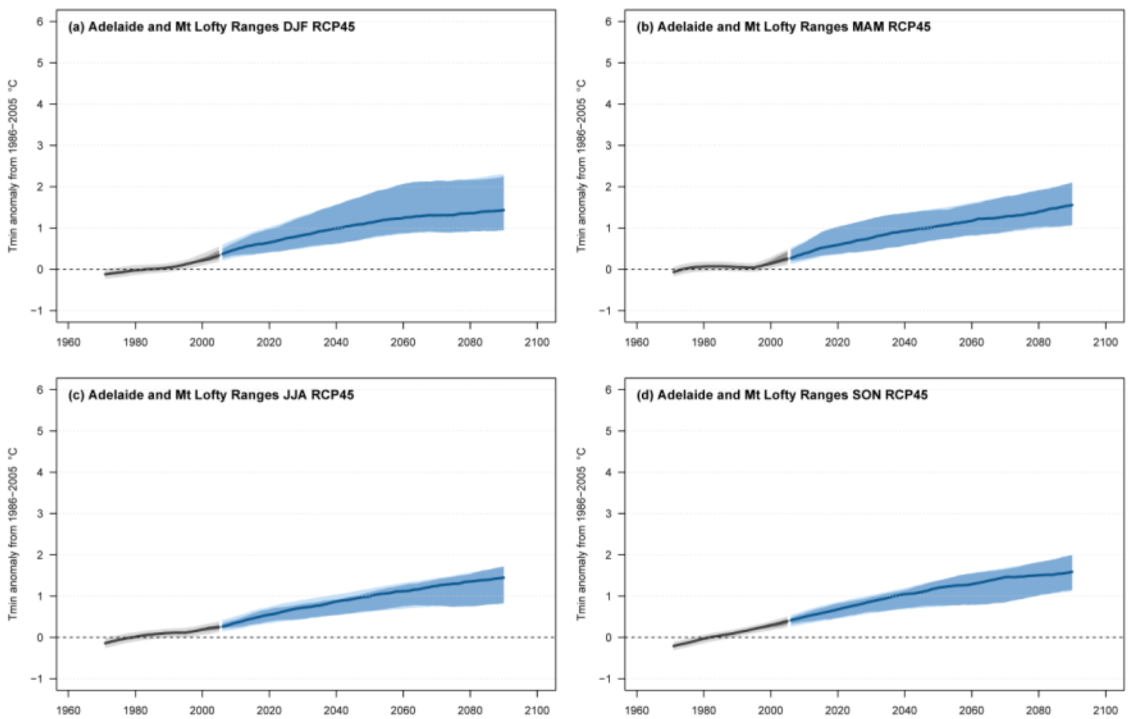

Figure 2.9 Adelaide and Mount Lofty Ranges NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

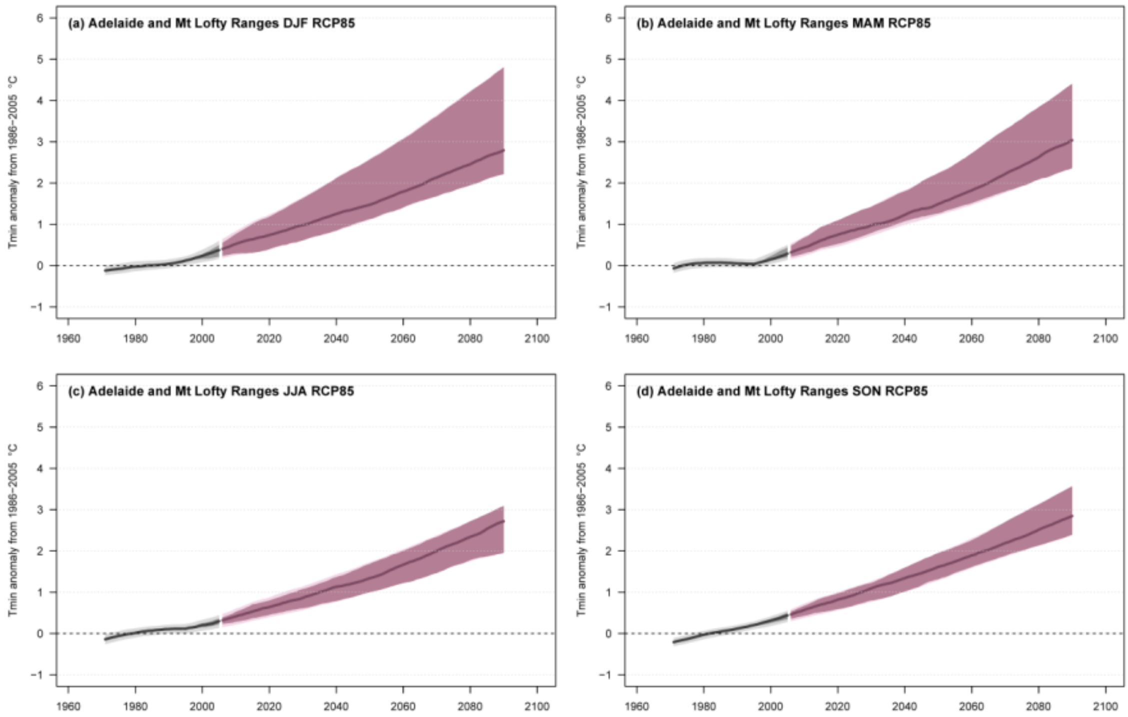

Figure 2.10 Adelaide and Mount Lofty Ranges NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

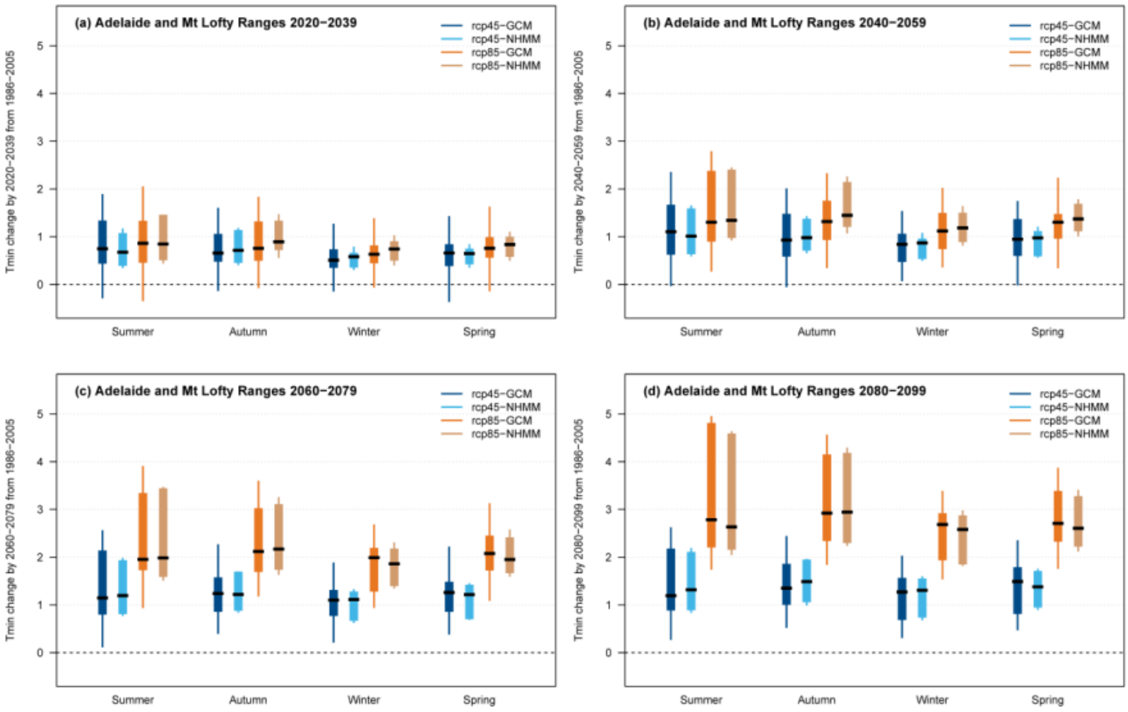

Figure 2.11 Adelaide and Mount Lofty Ranges NRM CMIP5 GCM and NHMM-downscaled projected seasonal minimum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean minimum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean minimum daily temperature.

The projected solar radiation changes are presented in Table 2.6. The corresponding time-series plots are shown in Figure 2.12 for RCP4.5 and Figure 2.13 for RCP8.5. The increases in solar radiation correspond with the projected drying trends, as the reduced cloud-cover associated with more frequent dry days results in more solar radiation being received at the surface. There are distinct differences between the projections from the subset of six better and six poorer GCMs, particularly by the second half of the century, with smaller increases projected by the better GCMs. This corresponds with the poorer GCMs producing drier projections. Comparing the direct GCM grid-scale solar radiation changes with those obtained from the downscaling (Figure 2.14) indicates larger increases from downscaling, particularly for winter and spring towards the end of century, possibly because of relatively more dry days in the downscaled simulations compared to the GCMs that would correspond to decreased cloud cover and hence increased radiation.

The mean, median and range of changes presented in Table 2.6 can be compared to the range of changes shown in Appendix B, where the mean changes obtained from downscaling each individual GCM are presented in Table B.7 for RCP4.5 and Table B.8 for RCP8.5.

Table 2.6 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.8	0.6	1.1	0.9	-0.2	1.6
		Median	0.8	0.2	1.3	0.8	0.1	1.8
		10th	-0.2	-0.3	0.1	-0.3	-1.3	0.7
		90th	1.8	1.8	1.9	1.9	0.6	2.5
2030	MAM	Mean	0.6	1.0	-0.2	1.0	1.2	0.9
		Median	-0.2	0.3	-0.6	0.5	0.7	1.1
		10th	-1.2	-0.9	-2.2	-0.5	-0.1	-1.7
		90th	2.4	3.7	2.2	-0.5	3.2	3.2
2030	JJA	Mean	1.9	1.1	2.5	2.6	1.9	2.9
		Median	2.1	1.2	3.1	2.3	1.8	3.1
		10th	-0.4	-0.4	0.6	0.5	0.9	0.9
		90th	4.0	2.4	4.0	4.8	3.0	4.8
2030	SON	Mean	2.4	2.6	2.5	2.8	2.5	3.2
		Median	2.4	2.2	2.6	2.6	2.0	3.0
		10th	1.5	1.6	1.9	1.4	1.4	2.5
		90th	3.7	4.1	3.0	4.3	4.2	4.2
2030	Annual	Mean	1.4	1.3	1.4	1.7	1.2	2.1
		Median	1.3	1.0	1.6	1.8	1.0	2.3
		10th	0.6	0.7	0.4	0.4	0.3	0.9
		90th	2.4	2.3	2.4	3.1	2.2	3.2
2050	DJF	Mean	0.8	0.5	1.3	1.2	0.1	2.1
		Median	0.6	0.5	1.2	1.2	0.5	2.5
		10th	-0.5	-0.4	-0.1	0.2	-1.3	0.8
		90th	2.4	1.5	2.7	2.7	1.0	3.2
2050	MAM	Mean	1.0	1.2	0.3	1.5	1.4	1.3
		Median	0.9	1.2	0.2	1.6	1.3	1.8
		10th	-1.8	-1.1	-2.6	-1.3	-0.8	-2.5
		90th	3.3	3.6	3.1	4.7	3.7	4.7
2050	JJA	Mean	2.8	2.2	3.4	3.9	2.8	4.5
		Median	3.2	2.7	3.9	4.1	2.4	4.4
		10th	0.3	0.6	1.4	0.8	1.4	2.0
		90th	4.9	3.5	4.9	6.9	4.6	7.2
2050	SON	Mean	3.2	3.0	3.8	4.1	4.1	4.7
		Median	3.1	2.3	3.8	3.9	3.1	4.8
		10th	2.1	1.7	3.2	2.6	2.7	3.5

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	4.7	4.9	4.4	6.3	6.5	5.8
2050	Annual	Mean	1.8	1.6	2.1	2.5	1.9	3.1
		Median	1.4	1.2	2.2	2.5	1.5	3.2
		10th	0.9	0.9	0.7	0.7	0.8	1.4
		90th	3.4	2.7	3.5	4.3	3.4	4.6
2070	DJF	Mean	1.0	0.3	1.5	1.5	0.2	2.7
		Median	1.0	-0.1	1.5	0.9	0.2	2.9
		10th	-0.4	-0.8	0.4	0.0	-0.8	0.6
		90th	2.3	1.6	2.8	3.6	1.3	4.7
2070	MAM	Mean	1.5	1.5	1.0	2.2	1.6	2.7
		Median	1.6	1.6	0.8	1.2	0.8	3.1
		10th	-1.0	-0.5	-2.0	-0.3	-0.3	-1.5
		90th	4.2	3.5	4.2	6.1	4.2	6.6
2070	JJA	Mean	3.5	2.7	4.2	5.4	3.7	6.8
		Median	3.9	2.8	3.9	6.0	3.2	6.7
		10th	1.3	1.4	2.2	1.3	1.6	3.4
		90th	6.0	4.1	6.4	9.1	6.5	10.3
2070	SON	Mean	3.8	3.1	4.7	5.4	5.2	6.4
		Median	4.1	2.9	4.9	6.3	4.6	6.7
		10th	2.3	1.5	4.1	3.0	3.3	5.0
		90th	5.2	5.1	5.3	8.0	7.9	7.7
2070	Annual	Mean	2.3	1.7	2.7	3.3	2.4	4.4
		Median	1.9	1.6	2.7	3.2	1.8	4.7
		10th	1.2	0.9	1.4	1.4	1.6	2.0
		90th	3.9	2.7	4.2	5.6	4.0	6.5
2090	DJF	Mean	1.0	0.0	1.6	1.9	0.6	3.5
		Median	1.2	0.1	1.7	1.8	0.5	3.5
		10th	-0.5	-1.6	0.6	-0.3	-0.6	1.2
		90th	2.7	1.5	2.7	4.7	1.9	5.9
2090	MAM	Mean	1.8	1.8	1.3	2.6	1.5	4.0
		Median	2.5	2.4	1.1	1.9	1.7	4.4
		10th	-0.9	-0.4	-1.5	-1.1	-0.9	-1.3
		90th	3.9	3.4	4.1	7.8	3.8	8.9
2090	JJA	Mean	3.9	3.0	4.6	6.9	4.9	9.1
		Median	4.2	2.9	4.8	6.9	4.0	8.7
		10th	1.7	1.8	2.5	2.1	2.3	4.6
		90th	6.2	4.5	6.7	11.8	8.4	14.2

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	4.1	3.2	5.3	6.8	6.6	8.4
		Median	4.0	3.4	4.9	7.6	6.8	8.7
		10th	2.3	1.4	4.4	2.6	3.8	6.0
		90th	6.2	4.9	6.6	9.7	9.3	10.6
2090	Annual	Mean	2.5	1.7	3.0	4.2	3.2	5.8
		Median	2.2	1.8	3.2	4.0	2.8	6.3
		10th	1.3	0.8	1.6	1.5	1.9	2.7
		90th	4.1	2.6	4.4	7.3	4.8	8.6

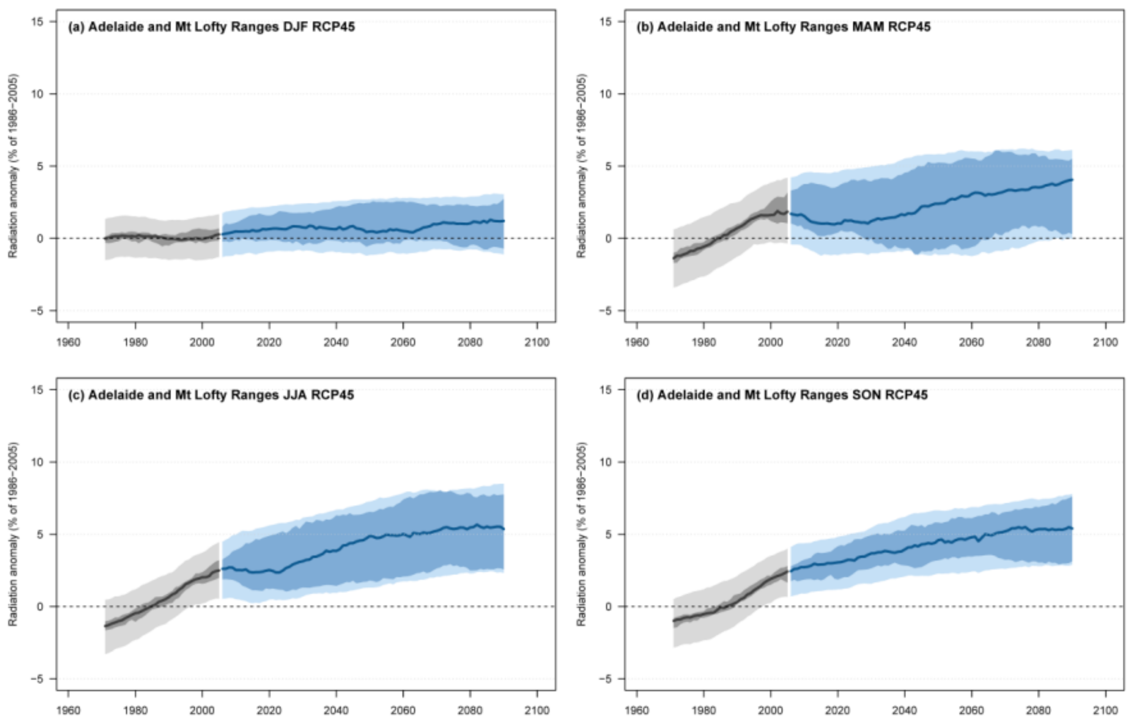

Figure 2.12 Adelaide and Mount Lofty Ranges NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

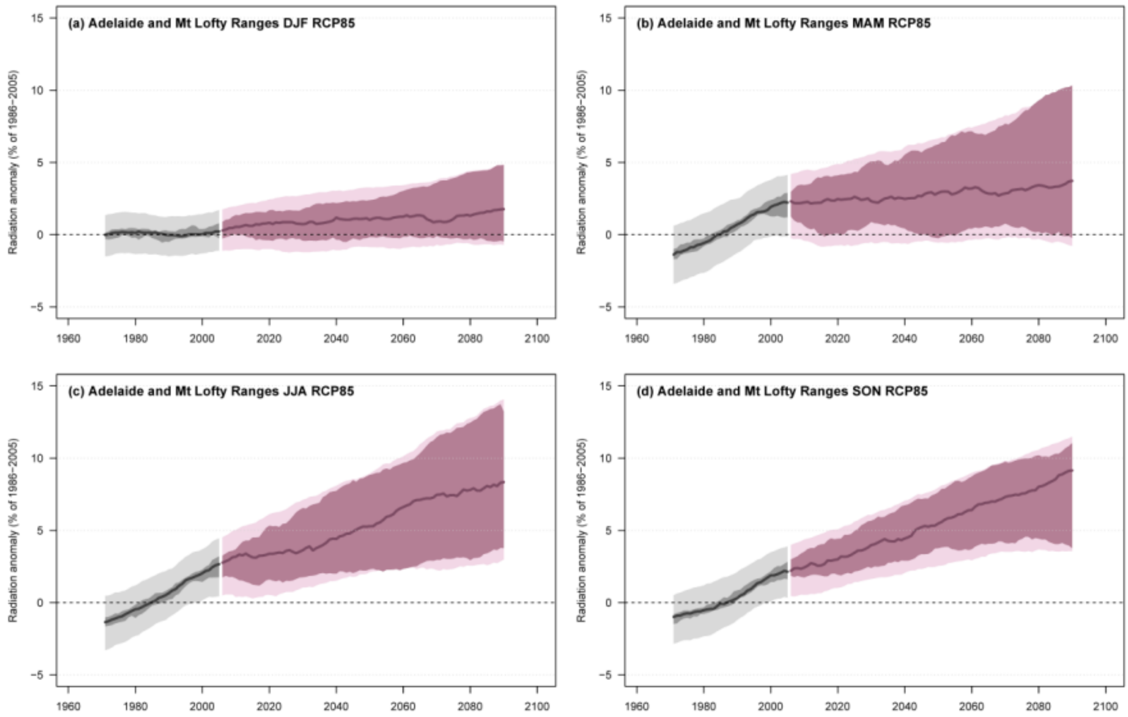

Figure 2.13 Adelaide and Mount Lofty Ranges NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

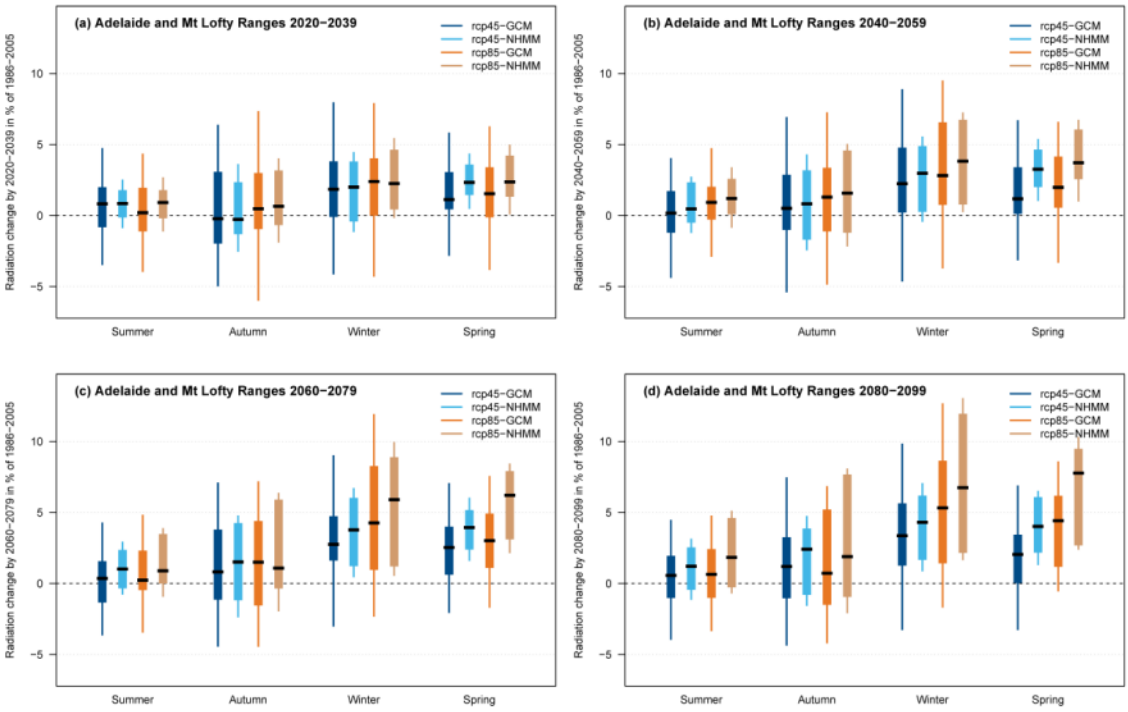

Figure 2.14 Adelaide and Mount Lofty Ranges NRM CMIP5 GCM and NHMM-downscaled projected seasonal solar radiation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean solar radiation (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean solar radiation.

Vapour pressure deficit (VPD) is a derived variable, and as such is not a direct output from GCMs. It is a function of temperature and relative humidity changes, and is one of the required inputs for calculation of potential evapotranspiration. The combination of projected warming and drying lead to large relative changes in VPD, as summarised in Table 2.7, show increases become relatively much larger for RCP8.5 as the century progresses (Figure 2.15, Figure 2.16 and Figure 2.17).

The mean. median and range of changes presented in Table 2.7 can be compared to the range of changes shown in Appendix B, where the mean changes obtained from downscaling each individual GCM are presented in Table B.9 for RCP4.5 and Table B.10 for RCP8.5.

Table 2.7 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	8.0	7.8	9.1	9.7	7.1	12.9
		Median	7.5	7.6	7.8	10.1	6.4	11.7
		10th	4.7	5.6	5.8	4.8	3.5	9.2
		90th	10.9	10.2	13.6	14.5	11.5	17.7
2030	MAM	Mean	8.2	10.0	5.0	10.7	11.3	9.0
		Median	7.9	9.9	3.5	10.8	11.8	8.6
		10th	2.2	6.5	1.1	4.2	9.6	3.0
		90th	14.0	13.8	10.3	4.2	12.5	15.6
2030	JJA	Mean	9.2	9.2	9.0	12.6	11.8	12.5
		Median	7.9	5.4	8.3	11.0	10.5	12.4
		10th	5.1	5.2	4.0	9.3	9.5	6.8
		90th	15.8	17.1	14.8	18.7	15.4	18.3
2030	SON	Mean	12.5	14.5	11.0	15.4	16.6	15.4
		Median	11.4	12.3	10.4	14.1	15.8	14.3
		10th	9.0	11.0	8.8	11.0	11.1	12.7
		90th	15.9	20.3	13.8	21.0	23.0	19.3
2030	Annual	Mean	9.2	10.0	8.5	11.6	10.8	12.5
		Median	8.4	8.8	7.2	10.4	10.7	11.5
		10th	6.2	8.1	5.9	8.5	9.3	9.2
		90th	13.8	13.2	12.5	16.2	12.5	16.8
2050	DJF	Mean	10.9	10.7	12.4	16.1	13.4	20.4
		Median	10.1	10.4	10.2	16.4	12.3	17.5
		10th	7.1	8.7	8.8	9.8	9.5	14.5
		90th	14.0	12.9	18.3	23.0	18.5	29.2
2050	MAM	Mean	11.4	13.5	7.7	17.3	18.2	15.9
		Median	11.6	13.4	7.0	16.0	19.8	14.7
		10th	4.8	10.2	2.2	10.4	14.0	8.2
		90th	17.8	17.0	14.0	24.5	20.8	25.0
2050	JJA	Mean	13.2	13.8	12.9	20.8	19.4	21.3
		Median	12.0	10.9	12.2	19.5	17.4	21.5
		10th	4.8	8.0	3.8	14.1	14.3	12.6
		90th	23.0	22.5	22.8	30.9	26.7	29.8
2050	SON	Mean	17.9	19.7	17.2	25.7	27.9	25.9
		Median	16.8	17.4	16.7	24.5	27.2	24.6
		10th	13.9	15.0	14.9	17.6	19.1	20.7

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	22.3	26.9	20.0	33.8	37.5	32.3
2050	Annual	Mean	12.9	13.8	12.4	19.1	18.6	20.7
		Median	12.2	12.9	11.1	17.8	18.9	19.7
		10th	9.0	11.9	8.9	13.6	15.5	15.3
		90th	17.7	16.7	17.3	23.4	21.3	27.1
2070	DJF	Mean	13.0	12.2	15.1	23.3	20.7	28.7
		Median	11.5	11.2	13.5	21.8	19.2	23.4
		10th	9.6	10.5	10.7	16.0	16.6	19.5
		90th	15.8	15.1	21.2	34.2	26.2	43.4
2070	MAM	Mean	13.9	15.7	10.9	25.0	26.6	24.6
		Median	14.2	15.7	10.3	22.3	28.5	22.3
		10th	6.8	13.5	4.8	15.9	18.1	15.5
		90th	20.6	18.0	17.7	33.2	33.2	36.0
2070	JJA	Mean	15.9	15.2	16.7	30.8	29.4	32.7
		Median	14.2	13.8	15.1	29.9	26.9	34.7
		10th	5.8	9.7	5.0	19.2	19.3	20.8
		90th	26.1	22.2	30.0	44.5	42.2	42.5
2070	SON	Mean	21.4	22.5	21.9	36.9	39.4	38.5
		Median	20.7	20.1	21.2	37.2	37.8	39.2
		10th	16.6	17.4	19.5	23.8	28.4	29.2
		90th	27.2	30.0	25.0	47.2	52.2	47.1
2070	Annual	Mean	15.5	15.8	15.8	27.7	27.4	30.4
		Median	15.0	15.6	14.5	27.8	28.4	28.8
		10th	11.9	14.4	12.1	18.7	22.0	22.3
		90th	18.1	17.3	20.9	33.6	31.8	40.2
2090	DJF	Mean	14.5	13.2	16.9	31.2	28.9	37.9
		Median	14.6	13.7	16.4	28.7	28.6	30.2
		10th	9.0	8.7	10.6	20.9	23.6	24.6
		90th	18.5	17.4	23.7	47.2	34.5	59.0
2090	MAM	Mean	16.3	17.7	13.4	33.4	35.7	34.7
		Median	18.1	18.1	12.2	33.1	36.0	31.9
		10th	8.5	16.0	6.9	19.9	22.7	23.5
		90th	23.0	18.9	21.1	48.5	48.5	48.7
2090	JJA	Mean	18.7	17.0	20.8	41.4	40.4	44.6
		Median	18.5	18.4	17.4	39.4	36.8	47.3
		10th	7.3	11.3	7.6	24.8	25.2	28.9
		90th	32.7	21.3	37.3	59.4	59.4	57.6

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	24.3	24.2	25.7	48.9	52.1	52.3
		Median	23.5	22.5	25.1	48.5	50.1	55.1
		10th	19.6	18.4	22.0	30.5	37.0	38.0
		90th	31.1	31.7	30.0	64.0	69.4	63.8
2090	Annual	Mean	17.7	17.2	18.5	36.9	37.1	41.2
		Median	17.4	17.4	17.4	36.6	39.7	38.2
		10th	14.9	16.4	15.2	24.2	27.8	29.9
		90th	19.8	18.0	23.0	47.3	43.9	55.5

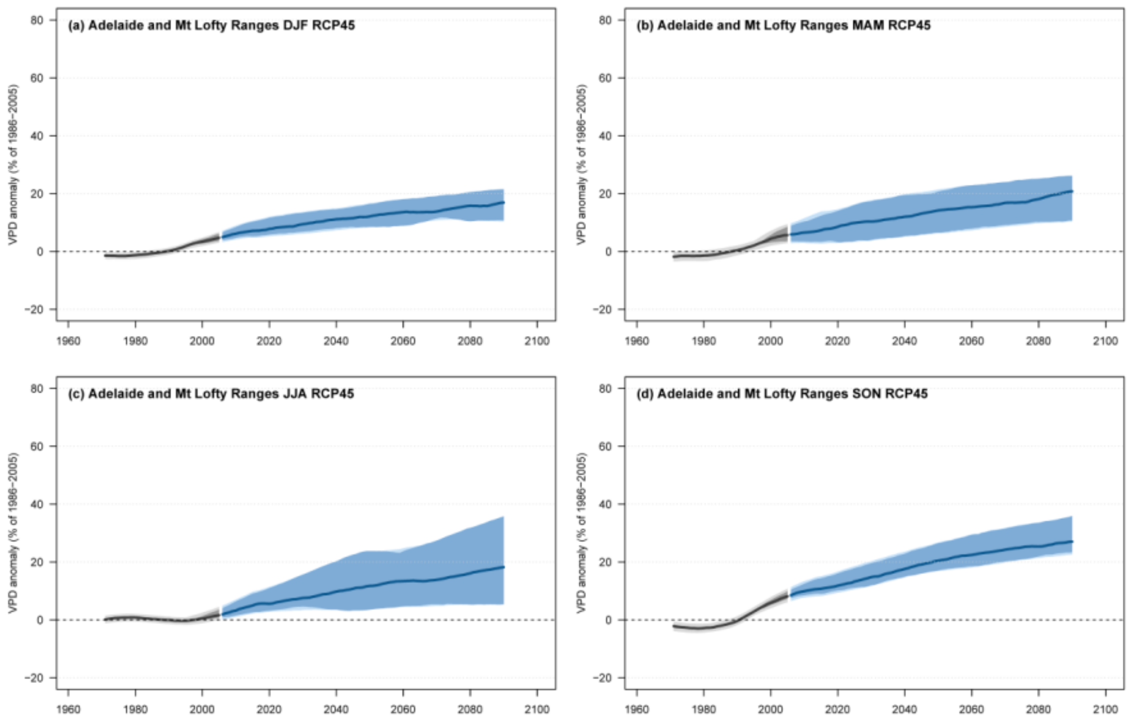

Figure 2.15 Adelaide and Mount Lofty Ranges NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

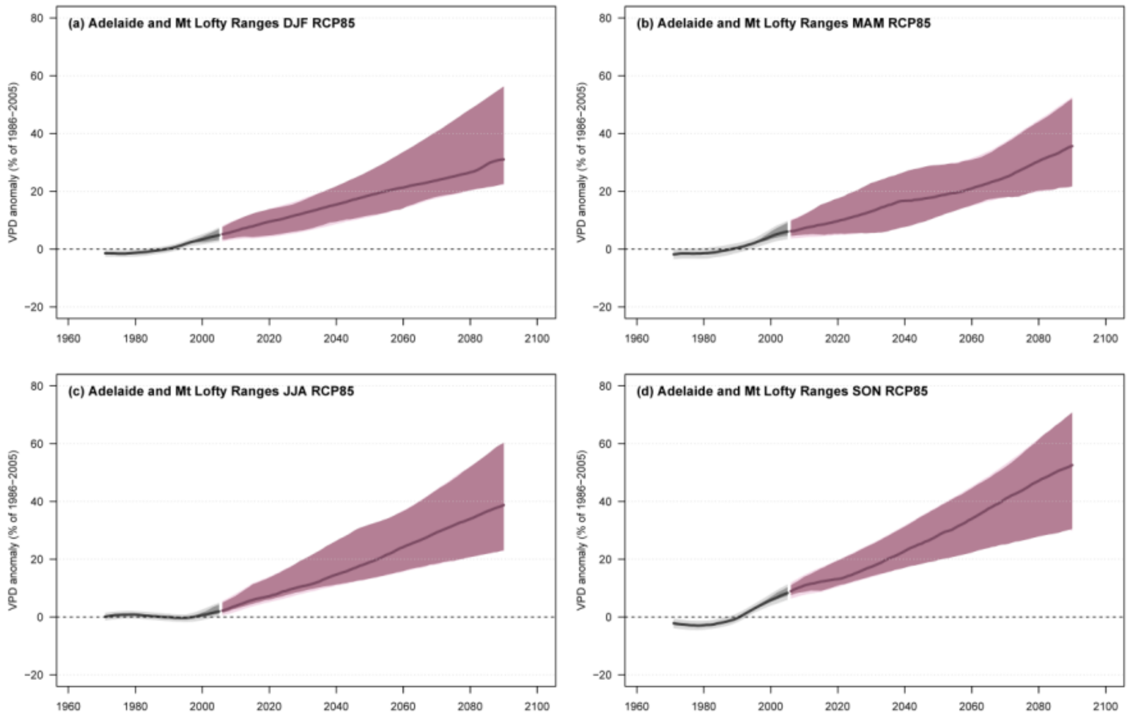

Figure 2.16 Adelaide and Mount Lofty Ranges NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

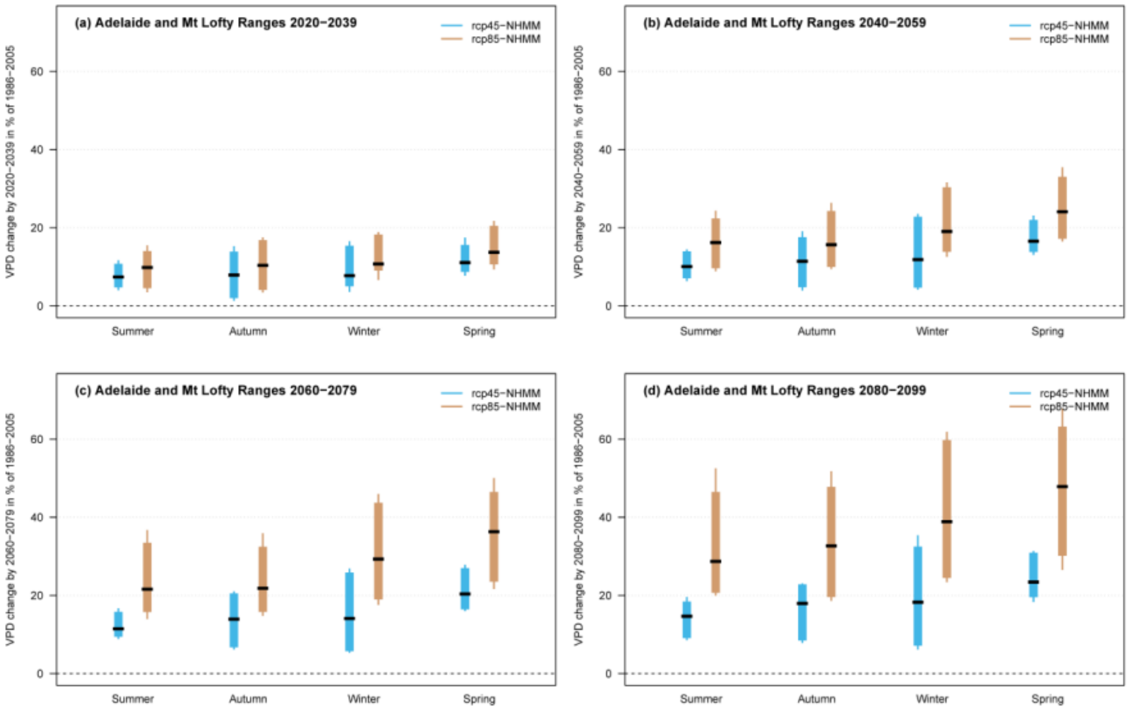

Figure 2.17 Adelaide and Mount Lofty Ranges NRM NHMM-downscaled projected seasonal vapour pressure deficit changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean vapour pressure deficit (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean vapour pressure deficit.

The projected temperature, solar radiation and VPD series are used to calculate the APET series, resulting in the mean, median and range (10th to 90th percentile) of projected APET changes as presented in Table 2.8. Consistent with the results for these input variables, there is a progressive increase in projected APET throughout the century, which is stronger for RCP8.5 than RCP4.5 (Figure 2.18, Figure 2.19, and Figure 2.20) with the subset of six poorer GCMs producing larger increases than the better subset (Table 2.8). By the end of the century there is a 7% increase for summer and a 10 to 13% increase for the other seasons for RCP8.5, with increases approximately half of that for RCP4.5.

The mean, median and range of changes presented in Table 2.8 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.11 for RCP4.5 and Table B.12 for RCP8.5.

Table 2.8 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	2.5	2.0	3.0	3.0	1.9	4.1
		Median	2.4	2.2	2.8	2.8	2.0	3.5
		10th	1.3	1.3	2.1	1.7	0.7	3.1
		90th	3.3	2.7	4.2	4.9	3.0	5.7
2030	MAM	Mean	2.5	2.8	1.8	3.5	3.6	3.3
		Median	2.3	2.5	1.4	3.6	3.7	3.4
		10th	1.3	2.0	0.7	1.9	2.5	1.4
		90th	4.4	4.1	3.4	1.9	4.7	5.1
2030	JJA	Mean	2.9	2.3	3.3	3.9	3.3	4.3
		Median	3.0	2.2	3.7	3.9	2.9	4.1
		10th	1.4	1.6	2.1	2.4	2.6	3.2
		90th	4.2	3.3	4.2	5.6	4.3	5.6
2030	SON	Mean	3.6	3.7	3.7	4.4	4.2	5.0
		Median	3.8	3.7	4.0	4.3	3.8	5.0
		10th	2.4	2.8	2.9	2.9	3.1	4.0
		90th	4.4	4.8	4.3	6.0	5.7	6.0
2030	Annual	Mean	2.8	2.7	3.0	3.6	3.1	4.2
		Median	2.6	2.6	3.0	3.2	3.1	4.3
		10th	2.0	2.2	2.1	2.4	2.1	3.1
		90th	3.8	3.5	3.9	5.1	4.0	5.3
2050	DJF	Mean	3.3	2.8	4.1	4.9	3.6	6.2
		Median	2.9	2.7	3.7	4.3	3.7	5.5
		10th	2.1	2.1	2.8	3.2	1.8	4.7
		90th	4.5	3.7	5.8	7.1	5.2	8.5
2050	MAM	Mean	3.6	3.9	2.9	5.6	5.4	5.5
		Median	3.7	4.1	2.8	4.9	5.3	5.7
		10th	1.7	2.8	1.1	3.5	3.8	2.8
		90th	5.7	4.9	4.9	7.9	7.2	8.2
2050	JJA	Mean	4.3	3.9	4.9	6.2	5.6	6.7
		Median	4.7	4.1	5.1	6.1	5.5	6.9
		10th	2.5	2.8	3.6	4.2	4.8	5.0
		90th	5.9	4.8	5.9	8.3	6.6	8.3
2050	SON	Mean	5.1	4.9	5.7	7.1	7.1	7.8
		Median	4.9	4.7	6.0	7.2	6.3	8.1
		10th	3.7	3.8	4.6	5.3	5.7	6.3

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	6.5	6.2	6.4	9.1	9.3	9.1
2050	Annual	Mean	4.0	3.8	4.4	5.8	5.2	6.6
		Median	3.8	3.7	4.4	5.3	5.0	6.7
		10th	2.7	3.0	3.2	4.1	3.9	5.0
		90th	5.2	4.6	5.7	7.8	6.7	8.2
2070	DJF	Mean	4.1	3.3	5.0	6.9	5.4	8.7
		Median	4.1	3.2	4.4	6.2	5.1	7.4
		10th	2.5	2.2	4.1	4.7	3.8	6.5
		90th	5.1	4.6	6.7	9.8	7.3	12.3
2070	MAM	Mean	4.7	4.9	4.2	8.2	7.9	8.7
		Median	4.9	4.8	4.1	8.3	7.9	8.8
		10th	2.8	3.9	2.3	6.2	6.3	5.4
		90th	6.5	6.0	6.4	10.1	9.4	12.0
2070	JJA	Mean	5.4	4.9	5.9	8.8	7.7	10.0
		Median	5.6	4.9	6.1	8.1	7.5	10.1
		10th	3.5	4.0	4.6	5.8	6.4	7.6
		90th	7.0	5.9	7.1	11.7	9.3	12.4
2070	SON	Mean	6.2	5.7	7.3	10.0	9.7	11.3
		Median	5.9	5.7	7.5	9.6	9.2	12.2
		10th	4.7	4.4	6.3	7.0	7.6	8.8
		90th	8.1	7.2	8.1	13.0	12.4	13.0
2070	Annual	Mean	5.0	4.5	5.6	8.2	7.4	9.6
		Median	4.6	4.3	5.6	7.5	6.8	9.3
		10th	3.8	3.8	4.5	6.0	6.1	7.2
		90th	6.2	5.5	6.8	10.9	9.3	12.3
2090	DJF	Mean	4.6	3.5	5.7	9.1	7.4	11.5
		Median	4.5	3.7	5.2	8.7	6.7	9.6
		10th	3.4	1.9	4.7	6.2	5.8	8.8
		90th	5.6	5.1	7.2	12.9	9.8	16.2
2090	MAM	Mean	5.6	5.8	5.3	10.9	10.4	12.3
		Median	5.8	5.6	5.2	10.6	10.1	12.8
		10th	3.5	4.7	3.1	7.3	8.2	8.0
		90th	7.8	7.3	7.6	13.2	12.9	16.2
2090	JJA	Mean	6.2	5.7	6.9	11.8	10.6	13.7
		Median	6.4	5.5	7.1	11.7	10.1	13.7
		10th	4.5	5.1	5.4	7.4	8.4	9.9
		90th	7.8	6.4	8.1	15.2	13.3	17.4

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	7.1	6.4	8.5	13.1	12.9	15.1
		Median	6.9	6.1	8.7	13.2	13.2	15.9
		10th	5.2	4.9	7.4	8.4	9.7	11.2
		90th	9.4	8.3	9.4	18.3	15.8	18.3
2090	Annual	Mean	5.7	5.1	6.5	10.9	9.9	13.0
		Median	5.3	5.0	6.6	10.8	9.3	12.4
		10th	4.3	3.8	5.4	7.6	8.0	9.7
		90th	7.3	6.4	7.6	14.7	12.5	16.9

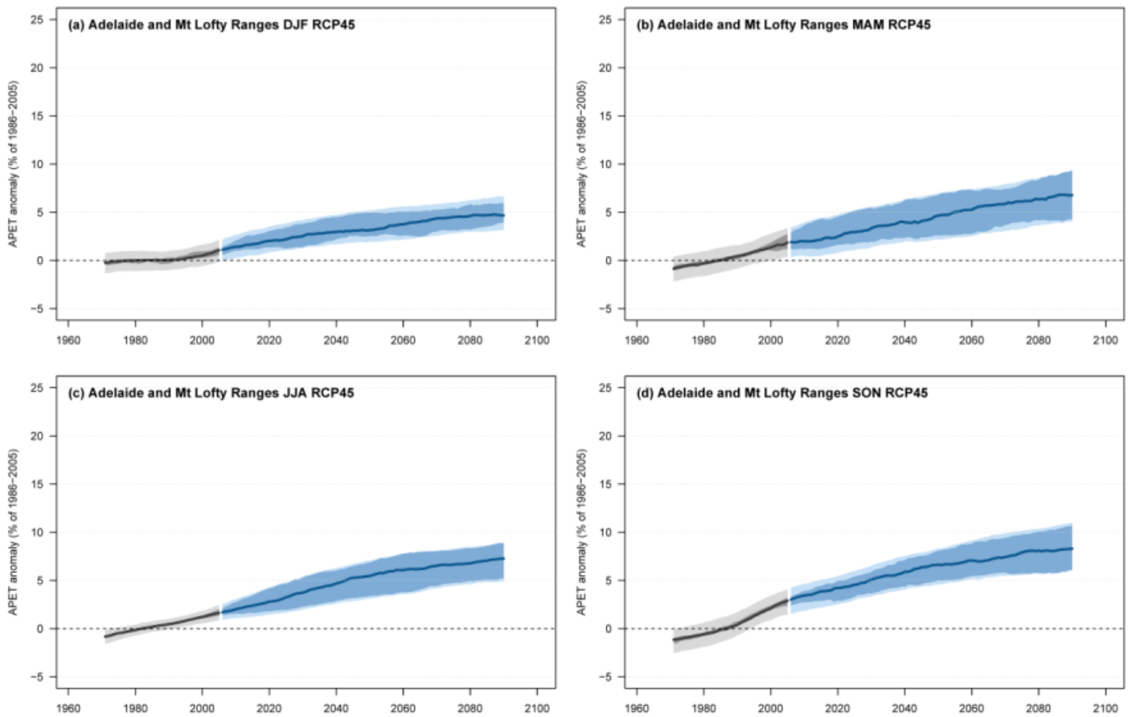

Figure 2.18 Adelaide and Mount Lofty Ranges NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

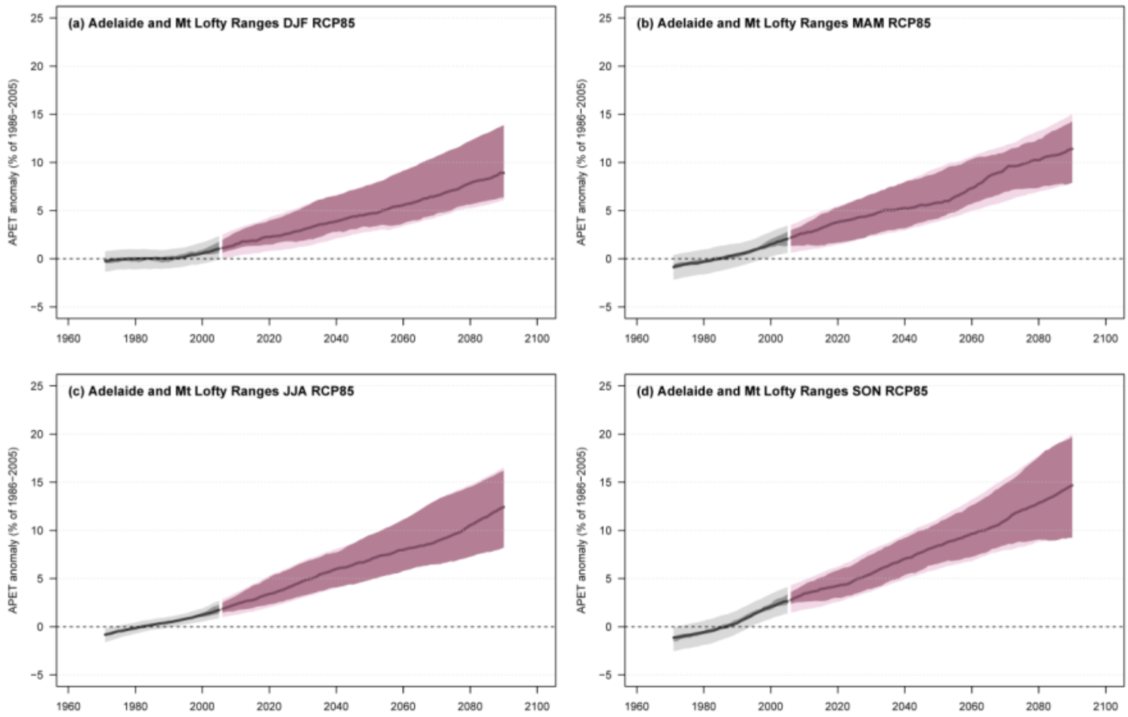

Figure 2.19 Adelaide and Mount Lofty Ranges NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

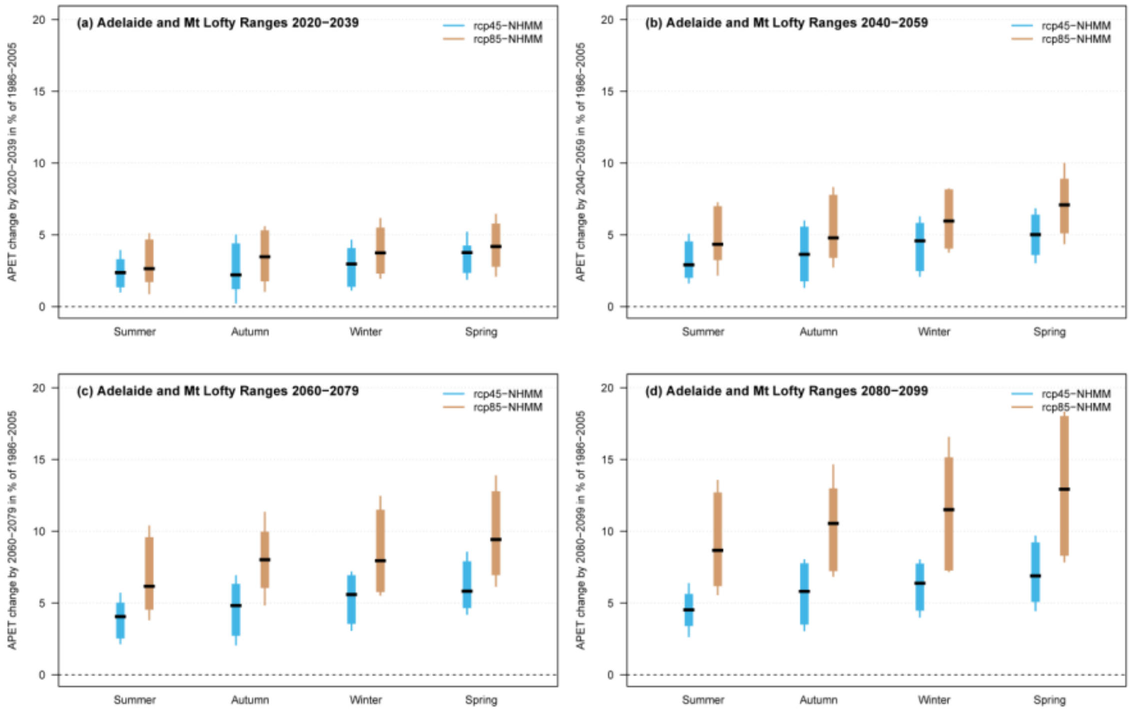

Figure 2.20 Adelaide and Mount Lofty Ranges NRM NHMM-downscaled projected seasonal potential evapotranspiration changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean potential evapotranspiration (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean potential evapotranspiration.

2.4 Summary

Decreases in precipitation are projected for all seasons, and hence annual precipitation also, with the greatest relative decreases in spring for both RCP4.5 and RCP8.5. For the second half of the century the scenarios diverge, with larger decreases from RCP8.5. Daily temperatures (maximum and minimum) are projected to increase for all seasons. For maximum temperature there are slightly larger increases for the spring season corresponding to its increased drying relative to the other seasons. For both maximum and minimum daily temperatures, the increases for RCP8.5 are larger than RCP4.5 from mid-century onwards. Solar radiation also increases for all seasons, with larger relative increases in winter and spring, which is physically consistent with an assumed reduction in cloud cover given the projected reduction in rainfall. VPD also increases in all seasons, notably much more for RCP8.5 than for RCP4.5 with double the end of the century relative changes. APET also increases in all seasons, and again the projected changes for RCP8.5 are larger than for RCP4.5. Overall, for all variables and both RCPs, the changes projected from a subset of six better performing GCMs are smaller than the changes projected by a subset of six poorer performing GCMs. The downscaled projections for each AMLR station, provided as 100 stochastic replicates of daily time-series for each GCM and RCP, represent ‘added value’ over direct GCM output as they provide realistic station-scale input series suitable for probabilistic impacts and adaptation investigations. Bates et al. (2010), in a report focussing on climate change and water allocation, provide a useful summary on the appropriate application of projections in such investigations. CSIRO and Bureau of

Meteorology (2014) provides a detailed overview of climate change science from an Australian perspective with recommendations on understanding and utilising projections.

3 Projections for Eyre Peninsula

3.1 Overview

The Eyre Peninsula NRM region, adjacent to the western Spencer Gulf, encompasses the southern boundaries of the Gawler Ranges, to Port Lincoln in the south and from Ceduna to the edge of the Nullarbor Plain in the west. The region is dependent on groundwater resources within the Southern Basins and the Musgrave Prescribed Wells Area, as well as other localised groundwater sources and the Tod River surface water catchment. The Region experiences a Mediterranean semi-arid type climate transitioning from a milder, moist maritime climate in the south and southwest to a hotter and drier semi-arid climate as you move northwards inland (EPNRMB, 2009).

Twenty eight weather stations were selected for the statistical downscaling model calibration. Their mean rainfall characteristics are summarised in Table 3.1, in terms of seasonal mean number of wet-days and rainfall totals for the 1986-2005 baseline (representing current climate, this is the period that projections are compared to in later results). Annual rainfall totals vary between stations by a factor of two, ranging from approximately 260 mm (Ceduna, in the northwest) to 540 mm (Port Lincoln, the most southerly of the 28 stations).

The selected downscaling models, for the four seasons, are summarised in Table 3.2. Each season has at least one SLP predictor, 'east minus west' SLP difference over the region for summer, winter and spring and 'north minus south' SLP difference for autumn and spring. All seasons have a DTD predictor for the 850 hPa level and three (summer, autumn and spring) also have DTD for the 700 hPa level. Summer also has the easterly wind speed component (U-wind) at the 850 hPa level, autumn has the northerly wind speed component (V-wind) at the 700 hPa level, and winter has both 700 and 850 hPa level U-wind predictors. The mean rainfall characteristics associated with the weather states for each of the four seasonal NHMMs are presented in Appendix A, Table A.5 to Table A.8.

Table 3.1 Eyre Peninsula NRM Climate Stations for NHMM-Downscaling

BoM ID	Name	Latitude	Longitude	Rain days (# days)				Rain amount (mm)			
				DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
18005	YEELANA (BRIMPTON LAKE)	34.06	135.50	7 0.09	13 0.18	36 0.49	18 0.24	50 0.12	72 0.17	205 0.49	94 0.22
18007	YEELANA (BROOKER)	34.10	135.84	7 0.10	12 0.18	32 0.47	17 0.25	47 0.13	63 0.17	162 0.45	89 0.25
18012	CEDUNA AMO	32.13	133.70	7 0.14	9 0.18	22 0.44	12 0.24	46 0.18	39 0.15	103 0.39	73 0.28
18024	DARKE PEAK	33.47	136.21	8 0.12	12 0.18	30 0.45	17 0.25	55 0.16	62 0.18	133 0.39	91 0.27
18033	CEDUNA (GOODE)	31.97	133.77	7 0.14	9 0.18	22 0.43	13 0.25	49 0.18	39 0.14	108 0.40	76 0.28
18036	KARCULTABY	32.74	134.97	6 0.11	9 0.16	26 0.47	14 0.25	38 0.14	42 0.16	118 0.44	71 0.26
18044	KYANCUTTA	33.13	135.56	7 0.12	10 0.18	25 0.45	14 0.25	52 0.19	45 0.16	108 0.39	73 0.26
18047	CEDUNA (MALTEE)	32.09	133.91	6 0.13	9 0.19	21 0.45	11 0.23	46 0.17	39 0.14	106 0.39	80 0.30
18049	BUTLER TANKS (NORTH PARNDA)	34.12	136.16	7 0.11	12 0.20	27 0.44	15 0.25	53 0.16	59 0.18	129 0.40	83 0.26
18056	MT WEDGE (MOUNT WEDGE)	33.48	135.16	7 0.10	12 0.17	34 0.48	18 0.25	52 0.13	59 0.15	183 0.47	95 0.24
18060	NUNDROO	31.78	132.20	7 0.12	12 0.21	24 0.42	14 0.25	44 0.14	56 0.18	138 0.44	76 0.24
18069	ELLISTON	33.65	134.89	8 0.11	14 0.19	36 0.48	17 0.23	46 0.12	66 0.17	181 0.47	89 0.23
18079	STREAKY BAY	32.80	134.21	7 0.10	12 0.18	32 0.48	16 0.24	47 0.13	53 0.15	170 0.48	82 0.23
18090	WARRAMBOO	33.24	135.60	7 0.11	11 0.17	29 0.46	16 0.25	49 0.15	53 0.16	137 0.42	85 0.26

18091	TUMBY BAY (WARRATTA VALE)	34.26	136.21	8 0.13	12 0.20	26 0.43	15 0.25	47 0.16	55 0.19	106 0.37	78 0.27
18096	CLEVE (PINEVIEW)	33.68	136.68	8 0.12	14 0.22	27 0.42	16 0.25	58 0.19	65 0.21	104 0.33	85 0.27
18101	KOONGAWA (RETAWON)	33.17	135.91	7 0.11	11 0.17	29 0.45	17 0.27	53 0.17	54 0.17	130 0.41	83 0.26
18104	CUMMINS (GLENREATH)	34.34	135.87	9 0.11	16 0.19	39 0.46	20 0.24	60 0.12	88 0.18	224 0.46	110 0.23
18137	PORT LINCOLN (WESTMERE)	34.83	135.70	10 0.10	20 0.20	46 0.46	24 0.24	49 0.09	109 0.20	260 0.49	118 0.22
18164	MURDINGA (MUNGALA)	33.70	135.92	7 0.11	11 0.18	28 0.45	16 0.26	46 0.15	54 0.17	132 0.42	85 0.27
18166	WIRRULLA (PIMBENA)	32.28	134.47	6 0.12	9 0.18	23 0.45	13 0.25	42 0.16	41 0.16	104 0.40	76 0.29
18172	BUCKLEBOO (HI-VIEW)	32.92	136.00	7 0.11	11 0.18	28 0.46	15 0.25	59 0.19	52 0.16	117 0.37	89 0.28
18175	BUTLER (MOODY VALE)	34.04	136.01	8 0.12	13 0.19	31 0.45	17 0.25	56 0.16	63 0.17	153 0.42	89 0.25
18176	COWELL (WINTER SPRINGS)	33.34	136.75	9 0.14	12 0.19	27 0.42	16 0.25	67 0.21	58 0.18	112 0.35	85 0.26
18177	KIMBA (MELALEUCA)	33.08	136.09	8 0.13	11 0.18	26 0.43	15 0.25	54 0.18	55 0.18	112 0.37	85 0.28
18182	CEDUNA (UWORRA)	31.97	133.33	8 0.14	11 0.19	26 0.44	14 0.24	48 0.16	45 0.15	117 0.40	82 0.28
18184	CLEVE (NINGANA)	33.61	136.37	8 0.11	15 0.20	33 0.43	20 0.26	62 0.16	76 0.19	154 0.39	107 0.27
18193	KIMBA (CORTLINYE)	33.03	136.32	8 0.13	11 0.17	28 0.44	16 0.25	58 0.18	54 0.17	114 0.36	91 0.29

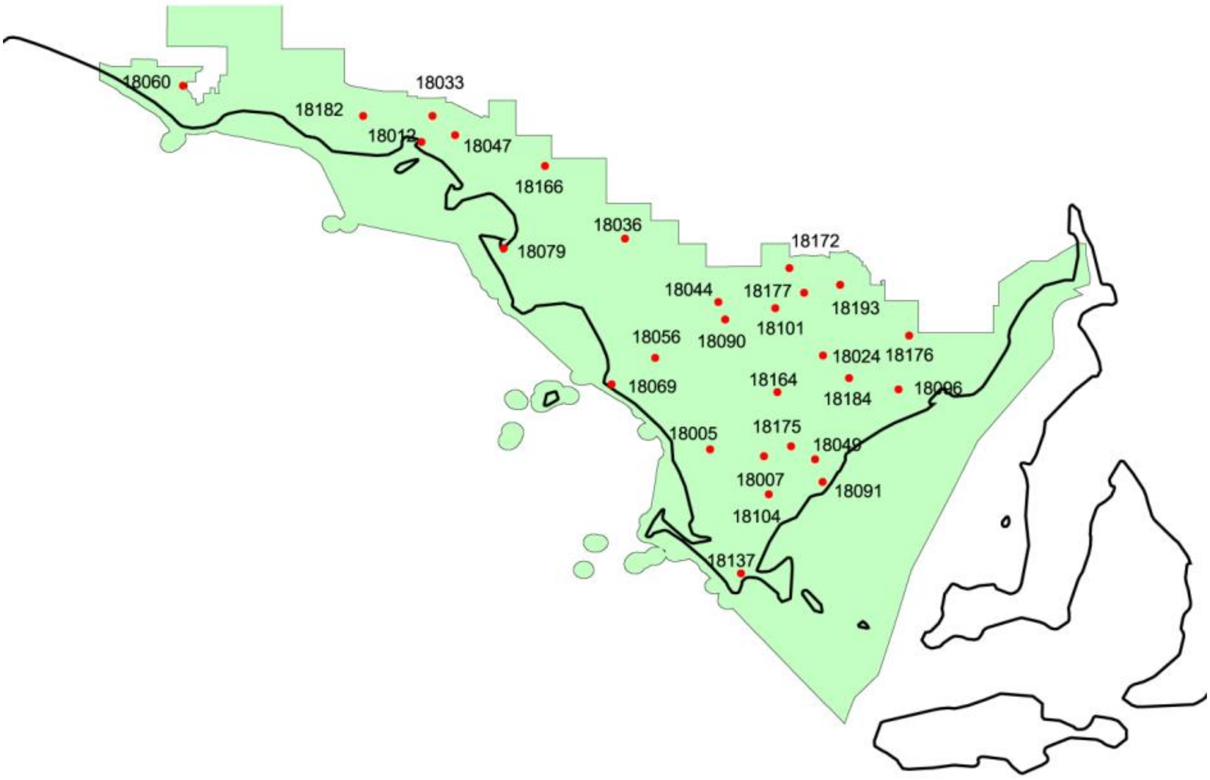

Figure 3.1 Location of Eyre Peninsula stations in Table 3.1 and NRM region boundary

Table 3.2 Selected NHMMs (number of weather states and predictor combinations) for Eyre Peninsula

DJF	MAM	JJA	SON
3 states	4 states	4States	5 States
East – West SLP DTD at 700 hPa DTD at 850 hPa U-wind at 850 hPa	North – South SLP DTD at 700 hPa DTD at 850 hPa V-wind at 700 hPa	East – West SLP DTD at 850 hPa U-wind at 700 hPa U-wind at 850 hPa	East – West SLP North – South SLP DTD at 700 hPa DTD at 850 hPa

3.2 Precipitation

The precipitation changes (mean, median and 10th to 90th percentile range, across stations and GCMs) presented in Table 3.3 indicate a tendency for projected decreases across all seasons for both RCPs, with larger decreases for RCP8.5 relative to RCP4.5. The range and relative strength of these projected seasonal changes are evident from the corresponding time-series plots (Figure 3.2 and Figure 3.3). By the end of the century there are considerable differences between the declines in downscaled precipitation under RCP4.5 and 8.5. Relative to the precipitation changes projected by the GCM directly, the downscaled simulations have larger declines for summer, autumn and spring and smaller declines for winter (Figure 3.4). The precipitation declines from downscaling the subset of six poorer performing GCMs are larger than those from the six better performing GCMs (Figure 3.5).

The mean, median and range of changes presented in Table 3.3 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.13 for RCP4.5 and

Table B.14 for RCP8.5.

Table 3.3 Eyre Peninsula NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	-11.8	-9.0	-12.3	-7.8	0.0	-11.4
		Median	-17.9	-12.9	-16.0	-8.9	-0.9	-9.3
		10th	-26.3	-24.7	-26.2	-21.0	-14.1	-20.1
		90th	10.8	10.7	5.3	4.6	15.0	-4.9
2030	MAM	Mean	-7.5	-6.8	-8.2	-8.7	-9.7	-8.3
		Median	-7.2	-6.1	-11.7	-8.1	-8.4	-7.3
		10th	-24.6	-17.3	-24.0	-23.5	-17.6	-21.0
		90th	3.8	2.9	11.1	1.2	-3.3	3.5
2030	JJA	Mean	-2.0	0.8	-5.7	-4.4	-3.0	-5.4
		Median	-2.5	2.8	-5.9	-4.0	-2.3	-6.0
		10th	-8.4	-6.5	-8.3	-9.8	-7.4	-8.8
		90th	5.5	6.1	-2.8	0.6	0.7	-1.4
2030	SON	Mean	-14.1	-18.8	-11.9	-17.8	-16.3	-19.6
		Median	-13.7	-15.5	-12.5	-17.5	-16.4	-21.0
		10th	-26.4	-31.9	-20.0	-26.7	-30.3	-25.8
		90th	-4.2	-9.0	-3.3	-8.9	-2.3	-12.0
2030	Annual	Mean	-7.6	-7.0	-8.8	-9.1	-7.5	-10.4
		Median	-8.0	-5.0	-10.1	-7.5	-7.3	-10.0
		10th	-13.3	-13.9	-12.9	-14.6	-12.7	-15.4
		90th	-1.6	-2.3	-3.5	-3.8	-2.4	-5.7
2050	DJF	Mean	-14.1	-9.0	-18.2	-16.8	-9.6	-20.2
		Median	-11.4	-10.5	-13.2	-18.6	-7.3	-22.8
		10th	-31.2	-18.1	-36.3	-34.2	-26.0	-30.4
		90th	-3.4	1.7	-5.2	-2.9	4.4	-7.6
2050	MAM	Mean	-9.2	-8.3	-10.4	-13.0	-9.9	-14.8
		Median	-12.0	-11.6	-15.5	-14.7	-11.7	-15.1
		10th	-21.8	-18.2	-23.7	-25.2	-20.9	-31.6
		90th	8.2	4.9	8.0	3.1	2.9	2.1
2050	JJA	Mean	-4.6	-4.1	-4.9	-5.8	-3.6	-6.1
		Median	-4.8	-4.0	-5.4	-5.3	-3.1	-6.8
		10th	-9.0	-9.5	-8.2	-12.5	-8.4	-10.6
		90th	1.2	1.3	-1.0	0.7	0.7	-0.8
2050	SON	Mean	-19.2	-20.9	-21.1	-24.6	-27.9	-24.0
		Median	-17.4	-18.8	-19.9	-22.2	-26.8	-25.9
		10th	-33.0	-32.9	-29.0	-41.1	-45.2	-32.9

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	-10.6	-10.9	-14.4	-11.3	-11.7	-13.3
2050	Annual	Mean	-10.4	-9.8	-11.8	-13.5	-11.8	-14.3
		Median	-9.7	-9.5	-12.1	-13.5	-10.1	-13.6
		10th	-16.2	-14.5	-17.9	-19.4	-19.4	-20.4
		90th	-5.1	-5.4	-5.6	-5.9	-6.0	-9.1
2070	DJF	Mean	-15.4	-9.8	-20.5	-23.1	-13.6	-30.9
		Median	-18.4	-11.4	-20.9	-22.9	-15.0	-33.1
		10th	-27.8	-23.2	-29.3	-43.1	-29.6	-44.6
		90th	-0.9	5.3	-11.4	-7.0	3.8	-15.0
2070	MAM	Mean	-14.4	-11.6	-15.6	-18.9	-12.8	-22.5
		Median	-15.7	-9.5	-18.9	-18.0	-12.0	-30.3
		10th	-24.8	-20.4	-31.5	-35.5	-26.8	-34.7
		90th	0.5	-4.9	3.8	-0.8	0.4	-2.5
2070	JJA	Mean	-4.8	-3.8	-5.9	-10.4	-7.8	-12.7
		Median	-6.0	-2.7	-7.4	-9.7	-6.6	-13.4
		10th	-11.5	-10.8	-14.3	-20.0	-13.6	-21.5
		90th	5.3	2.2	4.0	-2.0	-3.2	-3.3
2070	SON	Mean	-24.3	-23.4	-27.9	-34.0	-33.5	-36.8
		Median	-25.6	-20.0	-28.0	-32.3	-30.0	-36.5
		10th	-38.5	-40.0	-34.0	-45.0	-53.4	-44.5
		90th	-11.8	-10.2	-21.8	-18.8	-17.3	-29.6
2070	Annual	Mean	-13.1	-11.1	-15.4	-19.7	-16.1	-23.2
		Median	-14.5	-9.2	-15.1	-21.4	-14.1	-22.4
		10th	-19.4	-18.5	-20.2	-30.2	-26.2	-31.0
		90th	-7.3	-5.6	-10.9	-9.4	-8.0	-16.2
2090	DJF	Mean	-17.1	-8.2	-22.2	-28.6	-18.5	-42.3
		Median	-20.5	-8.6	-21.2	-28.0	-25.9	-45.7
		10th	-31.7	-25.4	-31.7	-52.3	-34.9	-55.7
		90th	2.2	9.4	-13.8	-5.5	5.3	-25.6
2090	MAM	Mean	-12.7	-9.1	-18.0	-23.2	-16.6	-32.6
		Median	-13.4	-12.3	-16.9	-17.1	-13.1	-34.3
		10th	-25.1	-18.0	-28.4	-46.3	-30.7	-53.4
		90th	-0.8	3.1	-8.8	-4.6	-6.0	-10.0
2090	JJA	Mean	-4.9	-2.1	-7.3	-14.0	-10.4	-19.5
		Median	-5.1	-0.7	-7.9	-13.6	-10.0	-21.3
		10th	-12.0	-7.7	-14.0	-27.3	-17.1	-28.7
		90th	2.5	2.3	-0.1	-4.5	-4.3	-8.4

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	-24.6	-24.8	-27.0	-43.6	-43.2	-50.1
		Median	-23.6	-23.6	-28.5	-38.8	-36.2	-53.8
		10th	-34.2	-34.5	-34.2	-61.1	-62.2	-58.0
		90th	-15.7	-16.4	-18.2	-30.9	-31.1	-38.5
2090	Annual	Mean	-13.1	-10.0	-16.5	-25.2	-20.9	-32.8
		Median	-11.6	-9.1	-15.6	-26.7	-19.2	-32.5
		10th	-17.7	-14.2	-20.9	-37.7	-30.8	-42.6
		90th	-7.3	-6.9	-13.1	-13.0	-12.8	-23.4

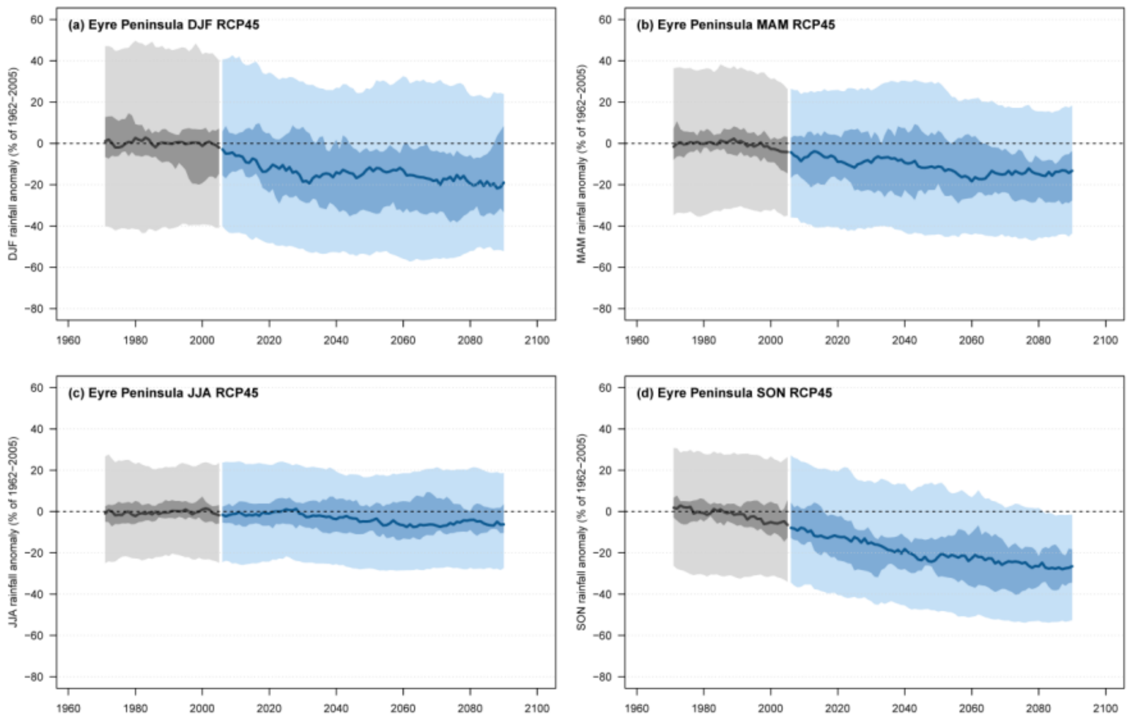

Figure 3.2 Eyre Peninsula NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

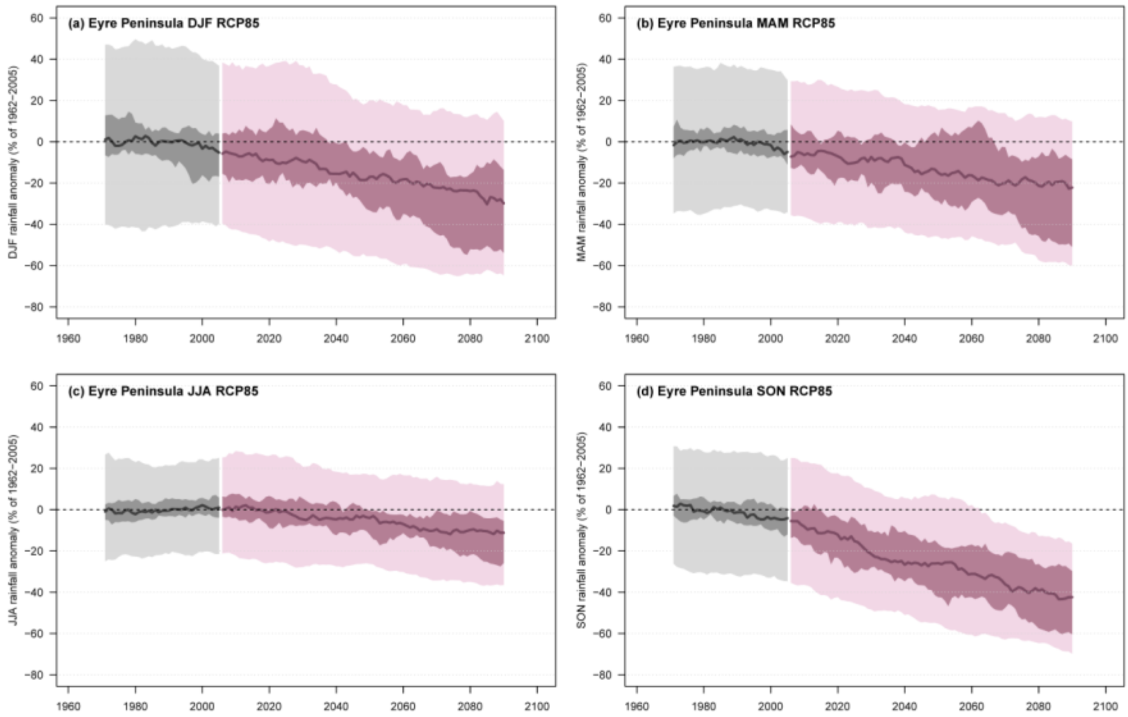

Figure 3.3 Eyre Peninsula NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

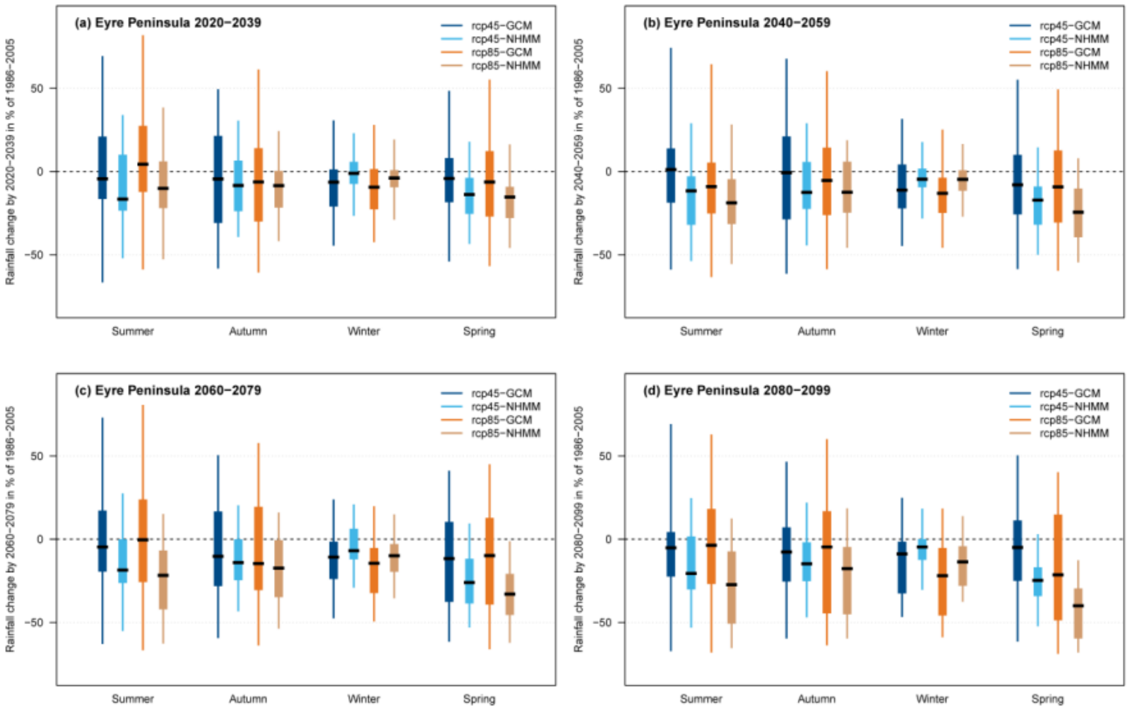

Figure 3.4 Eyre Peninsula NRM CMIP5 GCM and NHMM-downscaled projected seasonal precipitation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall.

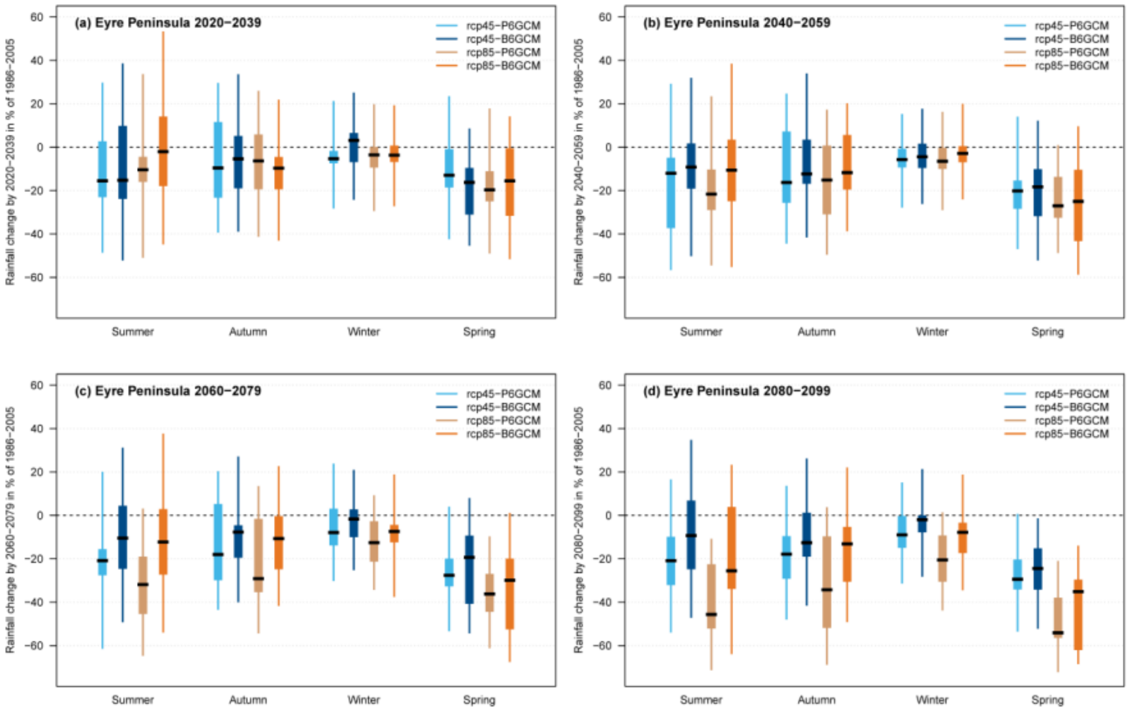

Figure 3.5 Eyre Peninsula NRM NHMM-downscaled projected seasonal precipitation changes from six better (B6GCM) and six poorer (P6GCM) performing CMIP5 GCMs for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall. Selection of better and poorer performing GCMs according to Cai et al. (2014a) and Cai et al. (2014b).

3.3 Non-precipitation variables

The downscaled projected changes in daily maximum temperature are summarised in Table 3.4, with corresponding seasonal time-series trends plotted in Figure 3.6 and Figure 3.7 (for RCP4.5 and RCP8.5, respectively). The RCP8.5 mean end-of-century changes are almost double those from RCP4.5 (1.8°C compared to 3.4°C, annually averaged). Figure 3.8 shows the downscaled changes have similar median changes to those obtained from the GCM grid-scale output directly. Table 3.4 also highlights the differences in projected changes obtained from the subsets of better and poorer GCMs, with larger changes projected from the poorer GCMs.

The mean, median, and range of changes presented in Table 3.4 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.15 for RCP4.5 and Table B.16 for RCP8.5.

Table 3.4 Eyre Peninsula NRM downscaled projected changes in seasonal maximum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.9	0.8	1.0	1.1	0.9	1.3
		Median	0.7	0.7	0.7	0.9	0.8	1.0
		10th	0.6	0.5	0.7	0.6	0.6	0.9
		90th	1.3	1.1	1.7	1.6	1.3	2.0
2030	MAM	Mean	0.8	0.9	0.6	1.0	1.1	0.9
		Median	0.8	0.9	0.6	1.0	1.1	0.9
		10th	0.5	0.8	0.3	0.7	0.9	0.5
		90th	1.1	1.0	0.9	0.7	1.2	1.4
2030	JJA	Mean	0.8	0.7	0.8	1.0	0.9	1.0
		Median	0.8	0.8	0.8	0.9	0.9	1.0
		10th	0.5	0.6	0.6	0.8	0.8	0.7
		90th	0.9	0.8	0.9	1.2	1.1	1.2
2030	SON	Mean	1.0	1.1	1.0	1.2	1.2	1.3
		Median	1.0	1.1	1.0	1.2	1.2	1.4
		10th	0.7	0.9	0.7	0.9	1.0	1.0
		90th	1.2	1.2	1.2	1.7	1.5	1.7
2030	Annual	Mean	0.8	0.8	0.8	1.1	1.0	1.1
		Median	0.8	0.8	0.8	0.9	1.0	1.1
		10th	0.6	0.7	0.6	0.8	0.9	0.8
		90th	1.1	1.0	1.1	1.5	1.3	1.5
2050	DJF	Mean	1.3	1.1	1.5	1.8	1.5	2.1
		Median	1.1	1.1	1.1	1.6	1.4	1.7
		10th	0.8	0.9	1.0	1.2	1.2	1.5
		90th	1.7	1.5	2.3	2.5	2.1	3.1
2050	MAM	Mean	1.1	1.2	1.0	1.7	1.7	1.6
		Median	1.2	1.2	0.9	1.6	1.6	1.6
		10th	0.8	1.1	0.7	1.3	1.5	1.0
		90th	1.5	1.4	1.4	2.1	2.0	2.2
2050	JJA	Mean	1.1	1.1	1.2	1.6	1.5	1.7
		Median	1.1	1.1	1.2	1.5	1.4	1.7
		10th	0.8	0.9	1.0	1.3	1.3	1.4
		90th	1.4	1.2	1.4	2.1	1.8	2.1
2050	SON	Mean	1.4	1.4	1.5	2.0	2.0	2.2
		Median	1.4	1.5	1.6	2.0	2.0	2.3
		10th	1.1	1.2	1.2	1.5	1.7	1.6

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.7	1.6	1.8	2.7	2.4	2.7
2050	Annual	Mean	1.2	1.2	1.3	1.8	1.7	1.9
		Median	1.2	1.2	1.3	1.6	1.6	1.8
		10th	0.9	1.0	1.0	1.4	1.5	1.5
		90th	1.5	1.4	1.6	2.3	2.1	2.5
2070	DJF	Mean	1.6	1.4	1.8	2.5	2.3	2.9
		Median	1.4	1.4	1.5	2.2	2.0	2.3
		10th	1.1	1.1	1.3	1.8	1.8	2.1
		90th	2.1	1.8	2.6	3.6	3.0	4.4
2070	MAM	Mean	1.4	1.5	1.3	2.4	2.4	2.5
		Median	1.3	1.6	1.2	2.4	2.3	2.4
		10th	1.1	1.3	1.0	2.0	2.1	1.8
		90th	1.7	1.7	1.9	2.9	2.9	3.2
2070	JJA	Mean	1.4	1.3	1.5	2.4	2.3	2.6
		Median	1.3	1.3	1.6	2.4	2.2	2.6
		10th	1.1	1.2	1.3	1.9	1.9	2.2
		90th	1.8	1.6	1.8	3.1	2.7	3.1
2070	SON	Mean	1.8	1.8	2.0	2.9	2.9	3.2
		Median	1.6	1.8	2.1	2.8	2.8	3.4
		10th	1.4	1.5	1.6	2.2	2.4	2.3
		90th	2.2	2.0	2.2	3.8	3.5	3.9
2070	Annual	Mean	1.5	1.5	1.6	2.6	2.4	2.8
		Median	1.5	1.5	1.6	2.3	2.3	2.6
		10th	1.2	1.3	1.4	2.0	2.1	2.2
		90th	1.8	1.7	2.0	3.2	3.0	3.6
2090	DJF	Mean	1.8	1.6	2.1	3.3	3.0	3.8
		Median	1.7	1.6	1.8	2.9	2.7	3.1
		10th	1.3	1.1	1.5	2.4	2.3	2.7
		90th	2.4	2.1	3.0	4.6	3.9	5.7
2090	MAM	Mean	1.7	1.9	1.7	3.2	3.3	3.4
		Median	1.6	2.0	1.5	3.2	3.2	3.3
		10th	1.4	1.5	1.2	2.5	2.7	2.7
		90th	2.2	2.1	2.3	3.9	3.9	4.3
2090	JJA	Mean	1.7	1.5	1.9	3.3	3.1	3.6
		Median	1.6	1.5	1.9	3.3	3.0	3.5
		10th	1.3	1.3	1.6	2.6	2.6	3.1
		90th	2.2	1.8	2.3	3.9	3.7	4.2

PERIOD	SEASON		RCP4.5 15 GCMS	RCP4.5 BETTER 6 GCMS	RCP4.5 POORER 6 GCMS	RCP8.5 15 GCMS	RCP8.5 BETTER 6 GCMS	RCP8.5 POORER 6 GCMS
2090	SON	Mean	2.1	2.0	2.3	3.8	3.8	4.2
		Median	2.0	2.1	2.5	3.7	3.7	4.5
		10th	1.7	1.7	1.9	2.8	3.1	3.0
		90th	2.5	2.4	2.5	4.9	4.6	5.3
2090	Annual	Mean	1.8	1.8	2.0	3.4	3.3	3.8
		Median	1.8	1.7	1.9	3.2	3.1	3.5
		10th	1.4	1.5	1.7	2.6	2.7	2.9
		90th	2.2	2.1	2.4	4.2	4.0	4.9

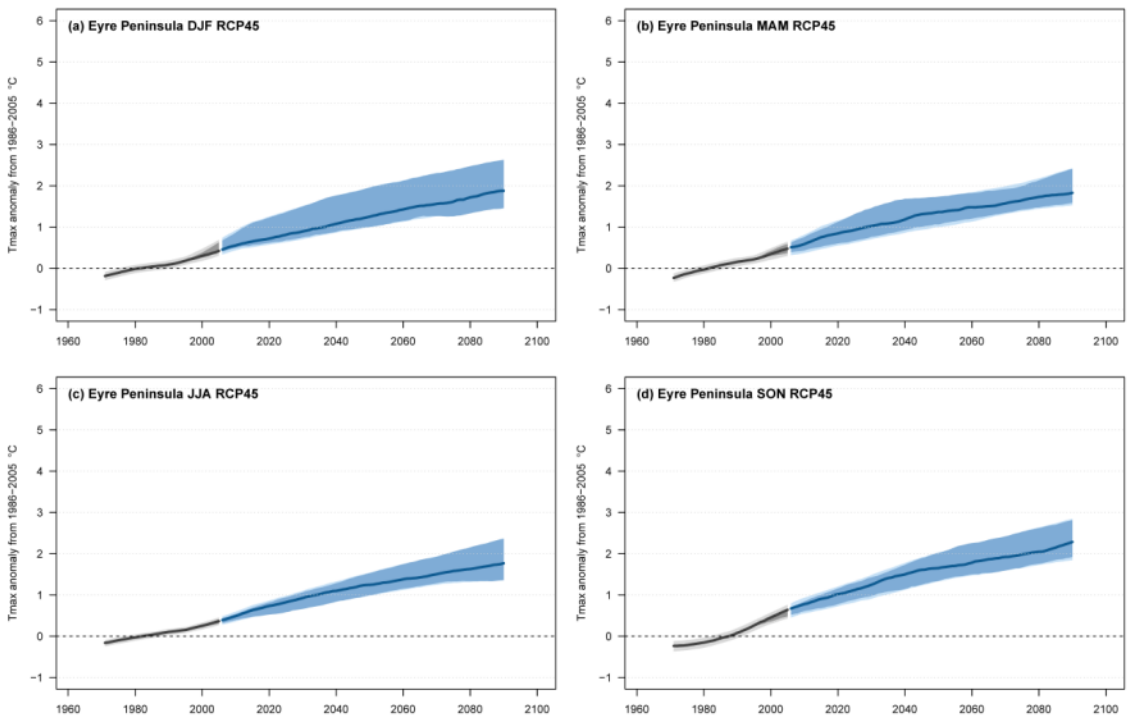

Figure 3.6 Eyre Peninsula NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

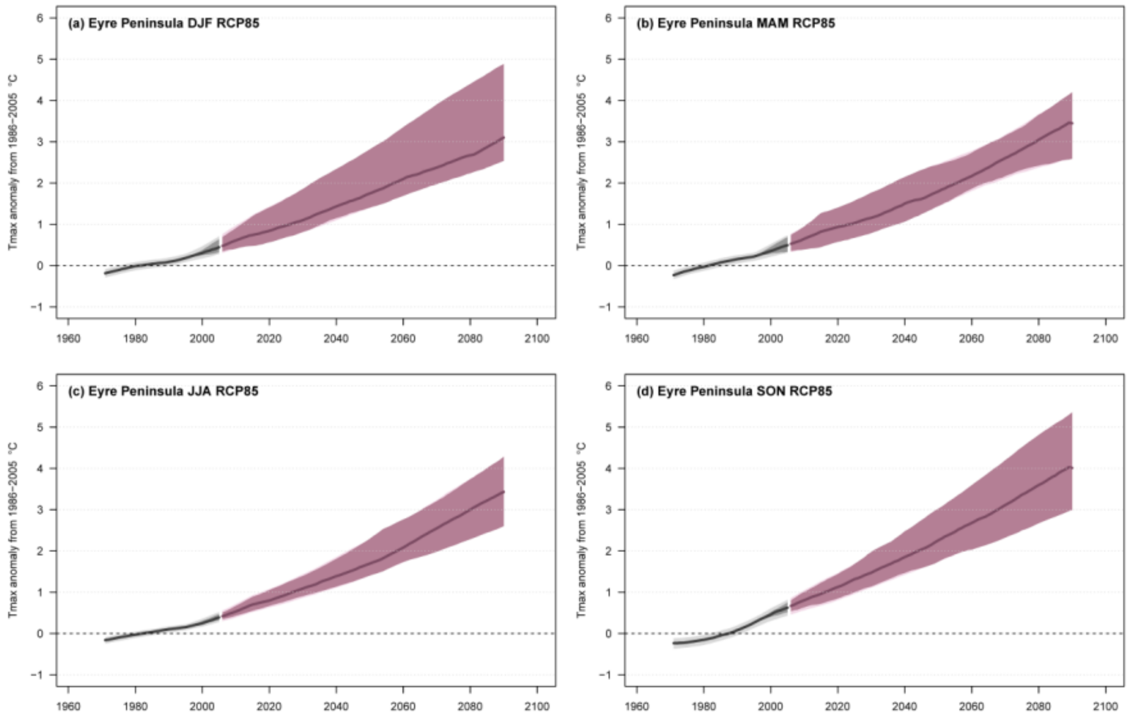

Figure 3.7 Eyre Peninsula NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

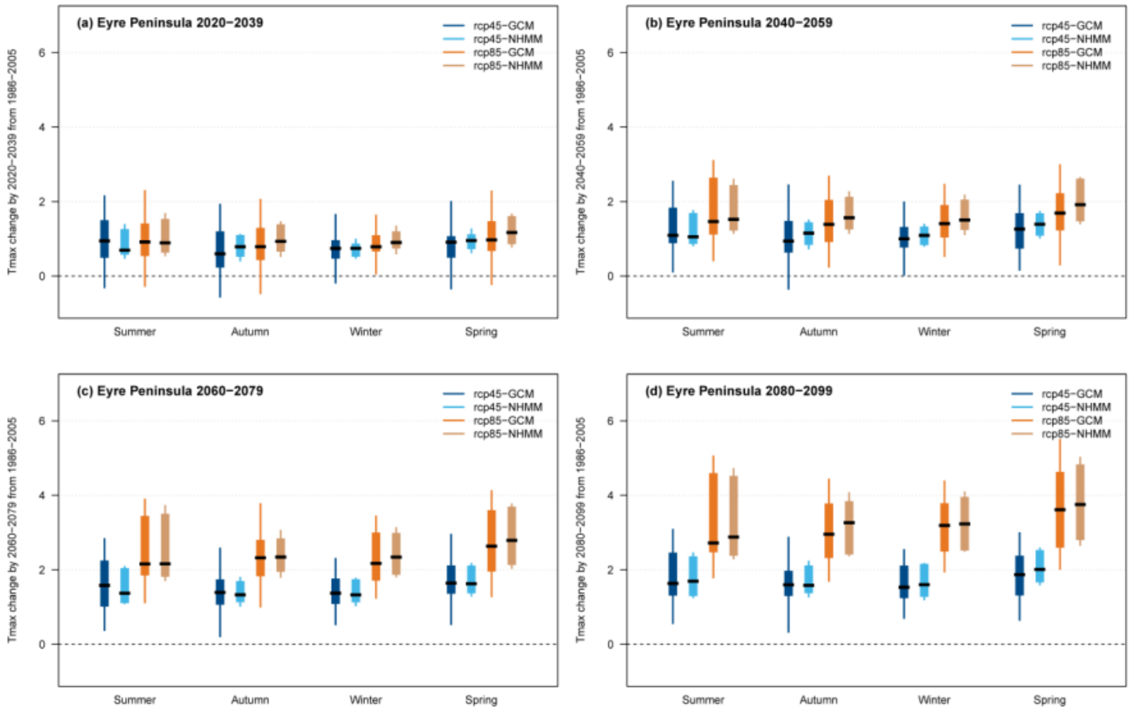

Figure 3.8 Eyre Peninsula NRM CMIP5 GCM and NHMM-downscaled projected seasonal maximum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean maximum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean maximum daily temperature.

Downscaled minimum daily temperature changes are presented in Table 3.5, and together with Figure 3.9 and Figure 3.10 these show the differences in relative changes for the seasons from RCP4.5 and RCP8.5, as projected throughout the century. The RCP8.5 changes are double the RCP4.5 changes by the end of century (1.4°C compared to 2.8°C, annually averaged). In all cases the subset of poorer GCMs produces larger or equal increases than the better GCMs. Direct GCM and downscaled changes are similar (Figure 3.11).

The mean, median and range of changes presented in Table 3.5 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.17 for RCP4.5 and Table B.18 for RCP8.5.

Table 3.5 Eyre Peninsula NRM downscaled projected changes in seasonal minimum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.7	0.6	0.8	0.9	0.8	1.1
		Median	0.7	0.7	0.8	0.9	0.8	1.0
		10th	0.4	0.4	0.6	0.5	0.5	0.8
		90th	1.1	0.9	1.2	1.4	1.2	1.5
2030	MAM	Mean	0.8	0.8	0.8	1.0	1.0	1.0
		Median	0.7	0.8	0.8	0.9	0.9	1.0
		10th	0.5	0.6	0.5	0.7	0.7	0.7
		90th	1.1	0.9	1.1	0.7	1.3	1.4
2030	JJA	Mean	0.6	0.6	0.6	0.8	0.7	0.8
		Median	0.6	0.6	0.6	0.7	0.7	0.8
		10th	0.4	0.5	0.5	0.5	0.6	0.6
		90th	0.9	0.7	0.9	1.1	0.8	1.1
2030	SON	Mean	0.6	0.7	0.7	0.9	0.9	0.9
		Median	0.7	0.6	0.8	1.0	0.9	1.0
		10th	0.4	0.6	0.5	0.7	0.7	0.8
		90th	0.9	0.8	0.9	1.0	1.0	1.0
2030	Annual	Mean	0.7	0.7	0.7	0.9	0.9	1.0
		Median	0.6	0.7	0.7	0.9	0.8	0.9
		10th	0.5	0.5	0.6	0.7	0.7	0.8
		90th	0.9	0.8	1.0	1.2	1.1	1.2
2050	DJF	Mean	1.0	0.9	1.2	1.5	1.4	1.8
		Median	1.0	0.9	1.1	1.4	1.3	1.7
		10th	0.6	0.6	0.8	0.9	1.0	1.3
		90th	1.6	1.3	1.6	2.2	2.0	2.4
2050	MAM	Mean	1.1	1.1	1.1	1.6	1.6	1.7
		Median	1.0	1.1	1.2	1.5	1.5	1.7
		10th	0.8	0.9	0.8	1.2	1.2	1.2
		90th	1.3	1.3	1.4	2.1	2.1	2.2
2050	JJA	Mean	0.9	0.8	1.0	1.3	1.2	1.4
		Median	0.9	0.9	1.0	1.2	1.2	1.4
		10th	0.6	0.7	0.7	1.0	1.0	1.1
		90th	1.2	1.0	1.2	1.7	1.4	1.7
2050	SON	Mean	1.0	1.0	1.0	1.5	1.5	1.5
		Median	1.0	1.0	1.1	1.6	1.5	1.7
		10th	0.6	0.8	0.8	1.2	1.3	1.3

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.2	1.2	1.2	1.7	1.8	1.7
2050	Annual	Mean	1.0	1.0	1.0	1.5	1.4	1.6
		Median	0.9	1.0	1.0	1.4	1.3	1.5
		10th	0.7	0.8	0.9	1.1	1.1	1.4
		90th	1.3	1.2	1.3	1.9	1.8	2.0
2070	DJF	Mean	1.3	1.2	1.5	2.2	2.1	2.5
		Median	1.2	1.1	1.4	2.1	1.9	2.5
		10th	0.7	0.8	1.1	1.4	1.5	1.8
		90th	2.0	1.8	2.0	3.1	2.8	3.3
2070	MAM	Mean	1.3	1.3	1.3	2.3	2.3	2.4
		Median	1.3	1.3	1.4	2.1	2.2	2.4
		10th	0.9	1.1	1.0	1.7	1.8	1.9
		90th	1.7	1.7	1.7	3.0	3.0	3.0
2070	JJA	Mean	1.1	1.0	1.2	1.9	1.8	2.0
		Median	1.2	1.1	1.3	2.0	1.8	2.1
		10th	0.7	0.8	0.8	1.5	1.6	1.7
		90th	1.5	1.3	1.5	2.3	2.2	2.4
2070	SON	Mean	1.2	1.3	1.3	2.1	2.1	2.2
		Median	1.2	1.2	1.4	2.1	2.0	2.3
		10th	0.8	1.0	1.0	1.8	1.9	1.9
		90th	1.5	1.6	1.5	2.5	2.6	2.5
2070	Annual	Mean	1.2	1.2	1.3	2.1	2.1	2.3
		Median	1.2	1.2	1.3	2.0	1.9	2.1
		10th	0.9	0.9	1.1	1.7	1.7	2.0
		90th	1.6	1.6	1.7	2.8	2.7	2.8
2090	DJF	Mean	1.5	1.4	1.7	2.9	2.7	3.2
		Median	1.3	1.2	1.8	2.7	2.6	3.2
		10th	0.8	0.9	1.2	1.9	1.9	2.3
		90th	2.2	2.2	2.3	4.1	3.7	4.2
2090	MAM	Mean	1.5	1.6	1.6	3.0	3.1	3.3
		Median	1.5	1.5	1.6	2.9	2.9	3.3
		10th	1.1	1.2	1.3	2.3	2.4	2.6
		90th	2.0	2.0	1.9	4.0	4.0	3.9
2090	JJA	Mean	1.3	1.3	1.4	2.6	2.5	2.7
		Median	1.4	1.3	1.6	2.7	2.4	2.8
		10th	0.9	1.1	0.9	2.0	2.3	2.2
		90th	1.7	1.6	1.7	3.1	3.0	3.1

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	1.5	1.5	1.6	2.8	2.9	2.9
		Median	1.4	1.4	1.6	2.7	2.7	3.1
		10^{th}	1.1	1.2	1.3	2.3	2.5	2.5
		90^{th}	1.9	2.0	1.9	3.4	3.5	3.3
2090	Annual	Mean	1.4	1.4	1.6	2.8	2.8	3.0
		Median	1.4	1.4	1.6	2.6	2.6	2.9
		10^{th}	1.0	1.1	1.3	2.3	2.4	2.6
		90^{th}	1.9	1.9	1.9	3.6	3.5	3.6

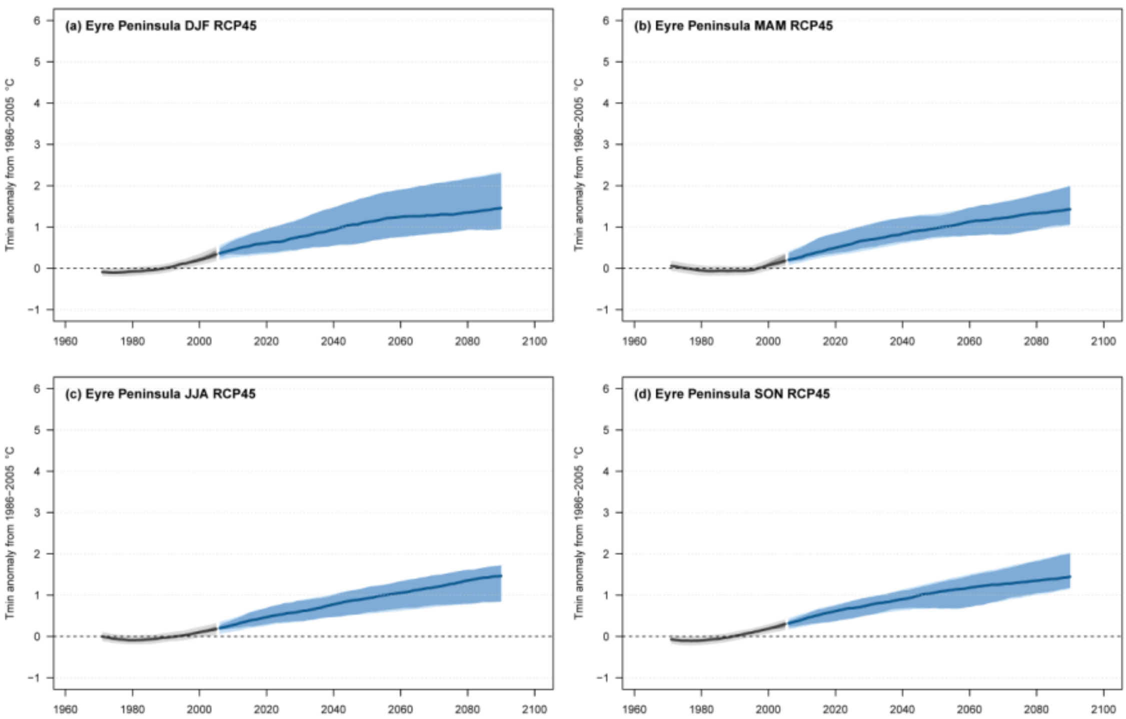

Figure 3.9 Eyre Peninsula NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

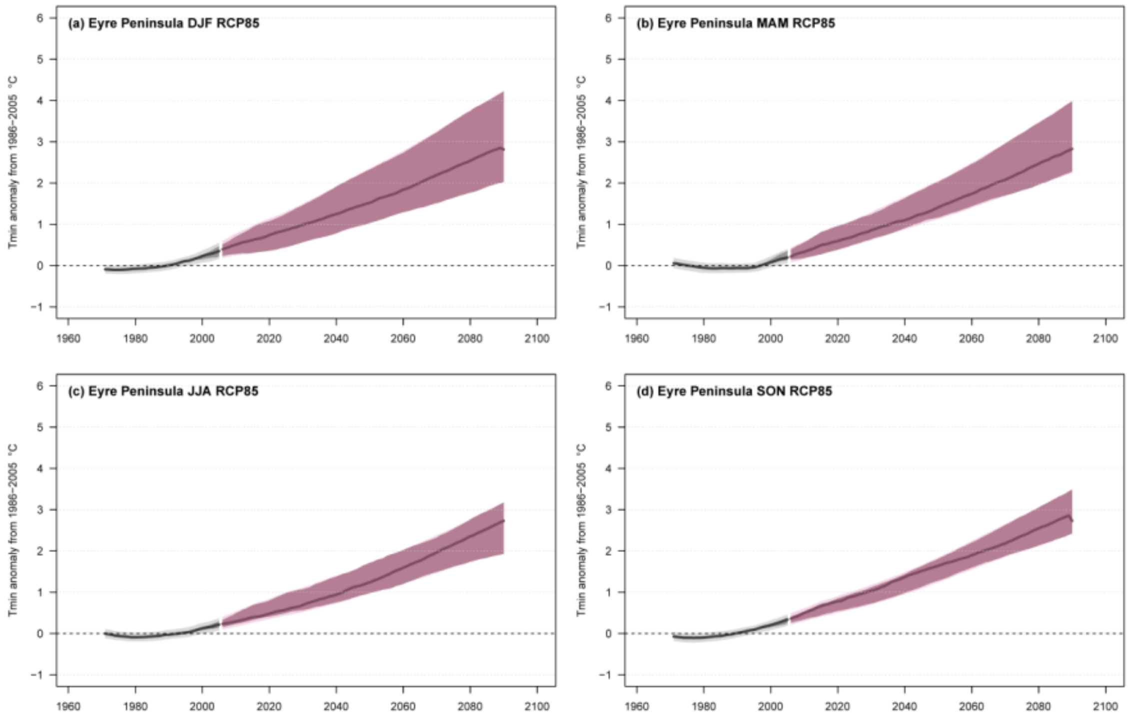

Figure 3.10 Eyre Peninsula NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

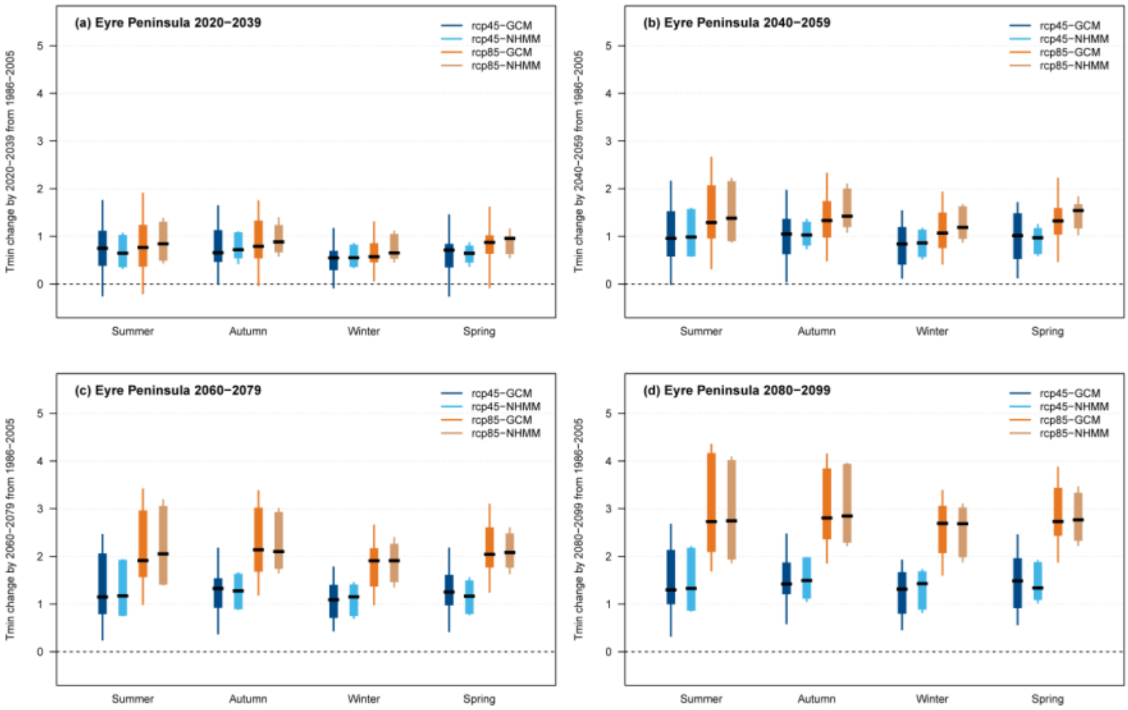

Figure 3.11 Eyre Peninsula NRM CMIP5 GCM and NHMM-downscaled projected seasonal minimum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean minimum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean minimum daily temperature.

The solar radiation changes projected for the Eyre Peninsula are summarised in Table 3.6. The associated ranges and temporal trends are plotted in Figure 3.12, for RCP4.5, and in Figure 3.13, for RCP8.5. The subset of six better GCMs produces smaller changes than the six poorer GCMs. The main driver of increased solar radiation is increased number of dry days. The downscaled changes are generally consistent with those simulated by the GCMs directly, however the larger downscaled changes for spring in the second half of the century (Figure 3.14) are likely related to a larger increase in the frequency of dry days in the downscaled projections compared to the GCMs directly.

The mean, median and range of changes presented in Table 3.6 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in

Table B.19 for RCP4.5 and

Table B.20 for RCP8.5.

Table 3.6 Eyre Peninsula NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six ‘better’ and six ‘poorer’ GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.6	0.6	0.8	0.6	-0.1	1.2
		Median	0.3	0.1	0.9	0.8	-0.2	1.3
		10th	-0.3	-0.3	0.1	-0.5	-1.1	0.5
		90th	1.8	2.0	1.5	1.5	0.9	1.9
2030	MAM	Mean	0.6	0.9	0.1	0.7	0.8	0.7
		Median	0.3	0.2	0.2	0.3	0.1	1.0
		10th	-1.3	-1.0	-1.9	-0.6	-0.5	-1.4
		90th	2.4	3.6	2.1	-0.6	2.7	2.6
2030	JJA	Mean	1.9	1.6	2.1	2.3	1.9	2.4
		Median	1.7	1.4	1.7	1.5	1.5	2.4
		10th	0.4	0.4	0.9	0.7	0.8	0.7
		90th	3.9	2.9	3.7	4.2	3.5	4.2
2030	SON	Mean	1.7	1.9	1.7	2.0	1.8	2.3
		Median	1.7	1.3	1.7	1.8	1.2	2.3
		10th	0.8	0.8	1.0	0.7	0.8	1.4
		90th	3.3	3.6	2.5	3.2	3.4	3.2
2030	Annual	Mean	1.1	1.2	1.1	1.3	0.9	1.6
		Median	1.1	0.8	1.3	1.2	0.6	1.9
		10th	0.3	0.3	0.2	0.2	0.0	0.5
		90th	1.9	2.4	1.9	2.4	2.1	2.4
2050	DJF	Mean	0.8	0.6	1.1	0.9	0.0	1.7
		Median	0.5	0.3	1.1	1.0	0.1	1.9
		10th	-0.2	-0.2	0.3	-0.1	-1.0	0.7
		90th	2.0	1.7	2.0	2.0	1.0	2.5
2050	MAM	Mean	0.9	1.0	0.6	1.1	0.6	1.3
		Median	0.5	0.4	0.7	1.0	0.1	1.5
		10th	-1.9	-1.3	-2.0	-1.5	-1.4	-1.5
		90th	3.1	3.8	3.0	3.9	3.1	3.9
2050	JJA	Mean	2.8	2.4	3.1	3.5	2.8	3.9
		Median	2.4	2.2	2.8	3.0	2.4	3.5
		10th	0.9	1.0	1.7	1.4	1.2	1.9
		90th	5.1	4.1	4.7	5.7	4.7	6.3
2050	SON	Mean	2.3	2.2	2.7	2.9	2.8	3.2
		Median	2.5	1.5	3.0	2.3	2.1	3.2
		10th	1.1	0.8	1.9	1.3	1.4	2.2

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	3.6	4.3	3.2	4.6	5.0	4.4
2050	Annual	Mean	1.5	1.4	1.7	1.9	1.3	2.3
		Median	1.2	0.9	1.9	1.8	0.8	2.6
		10th	0.6	0.6	0.6	0.4	0.4	0.8
		90th	2.7	2.7	2.7	3.5	2.8	3.6
2070	DJF	Mean	0.8	0.3	1.3	1.1	0.1	2.2
		Median	0.7	-0.1	1.1	0.9	0.1	2.4
		10th	-0.2	-0.4	0.4	-0.6	-1.1	0.7
		90th	2.0	1.3	2.3	2.6	1.2	3.5
2070	MAM	Mean	1.2	1.0	1.1	1.3	0.3	2.1
		Median	0.8	0.4	1.0	1.2	-1.0	2.3
		10th	-1.2	-0.6	-1.5	-1.8	-1.8	-1.3
		90th	3.9	3.2	3.7	5.2	3.6	5.2
2070	JJA	Mean	3.3	2.7	3.8	4.8	4.0	5.4
		Median	3.2	2.6	3.9	5.2	3.9	5.4
		10th	1.3	1.3	1.9	2.2	1.7	2.6
		90th	5.4	4.3	5.6	7.0	6.4	8.4
2070	SON	Mean	2.7	2.1	3.5	3.7	3.5	4.4
		Median	2.7	1.4	3.7	4.1	3.1	4.6
		10th	1.1	0.9	2.6	1.5	1.5	2.9
		90th	4.1	4.0	4.3	5.9	6.0	5.6
2070	Annual	Mean	1.8	1.3	2.2	2.4	1.7	3.2
		Median	1.7	1.0	2.4	2.0	1.0	3.6
		10th	0.8	0.6	1.0	0.7	0.7	1.2
		90th	3.2	2.4	3.3	4.3	3.3	4.9
2090	DJF	Mean	0.8	-0.2	1.4	1.3	0.3	2.8
		Median	1.0	-0.2	1.3	1.0	0.6	2.9
		10th	-0.8	-1.8	0.7	-1.3	-1.3	1.0
		90th	2.4	1.4	2.3	3.4	1.5	4.5
2090	MAM	Mean	1.4	1.0	1.4	1.5	0.0	3.0
		Median	1.1	0.7	1.3	1.3	-0.9	3.6
		10th	-0.6	-0.7	-0.6	-2.4	-2.3	-1.6
		90th	3.5	3.2	3.5	5.9	3.3	7.0
2090	JJA	Mean	3.7	3.0	4.4	6.0	5.0	7.3
		Median	3.9	3.4	4.4	6.0	4.9	7.6
		10th	1.3	1.2	2.1	2.9	2.0	3.5
		90th	5.8	4.5	6.8	8.5	8.2	10.9

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	3.0	1.9	4.1	4.6	4.6	5.7
		Median	2.9	1.4	4.2	4.7	5.0	6.1
		10^{th}	0.9	0.8	2.8	1.5	1.6	3.7
		90^{th}	4.7	3.7	5.3	7.4	7.4	7.4
2090	Annual	Mean	1.9	1.1	2.6	2.9	2.1	4.3
		Median	1.9	1.3	2.7	2.1	1.8	4.8
		10^{th}	0.7	0.3	1.4	1.0	0.7	1.6
		90^{th}	3.6	1.9	3.7	5.7	4.0	6.6

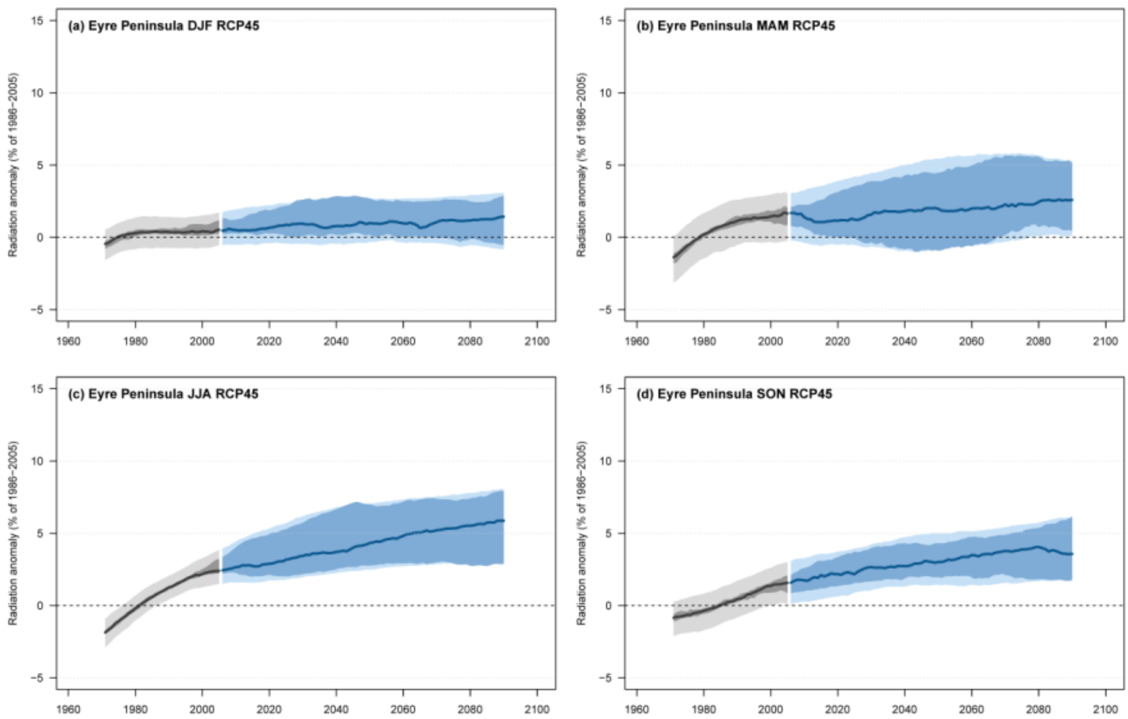

Figure 3.12 Eyre Peninsula NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

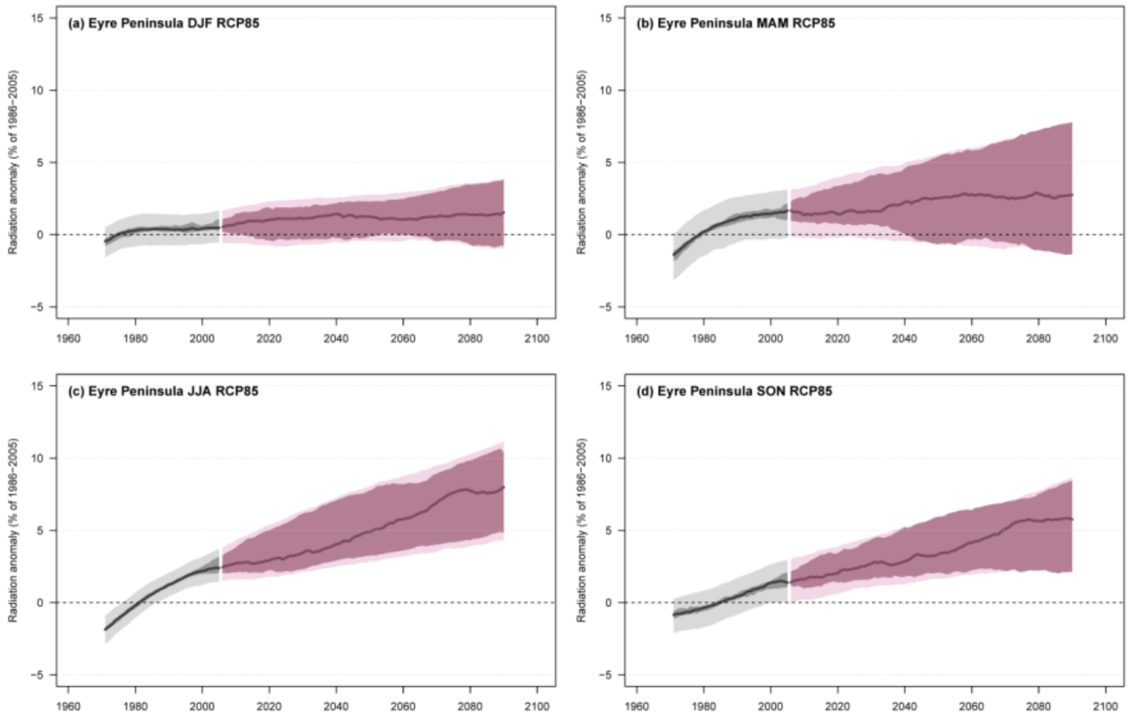

Figure 3.13 Eyre Peninsula NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

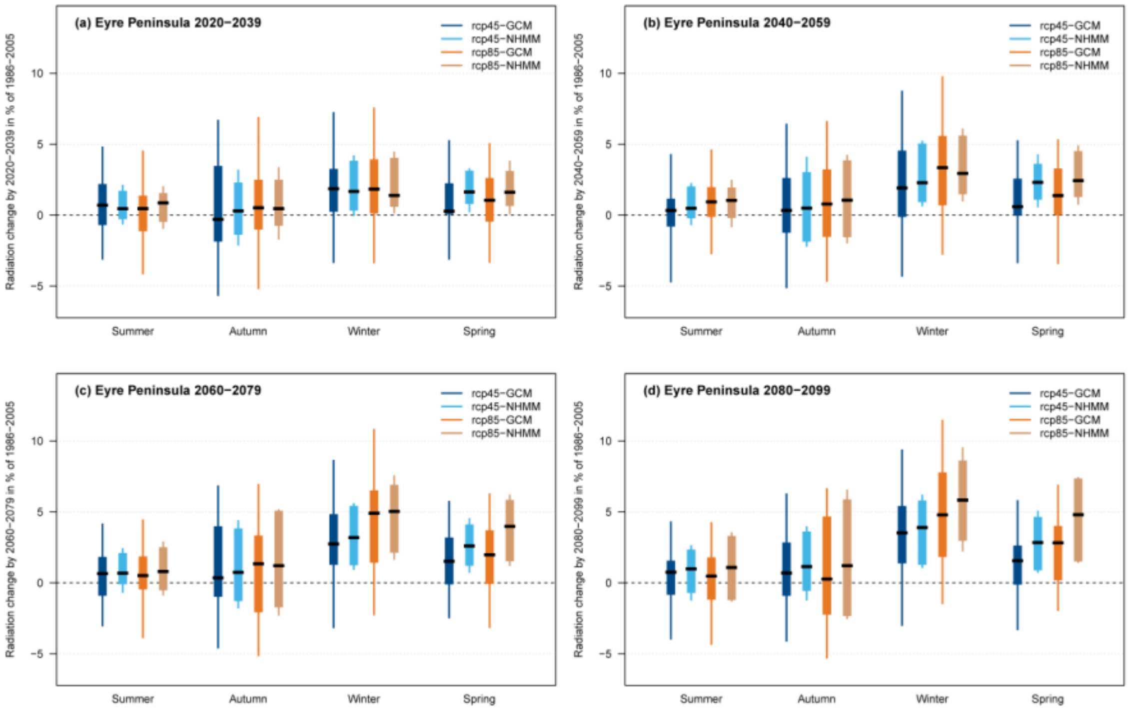

Figure 3.14 Eyre Peninsula NRM CMIP5 GCM and NHMM-downscaled projected seasonal solar radiation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean solar radiation (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean solar radiation.

There are large relative changes in VPD projected for the region, particularly for RCP8.5 by the end of the century (Table 3.7 and time-series in Figure 3.15 and Figure 3.16, for RCP4.5 and RCP8.5 respectively). These large relative changes result from the projected combined drying and warming.

The mean, median and range of changes presented in Table 3.7 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.21 for RCP4.5 and Table B.22 for RCP8.5.

Table 3.7 Eyre Peninsula NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	6.3	6.4	7.1	8.1	6.6	9.7
		Median	5.2	6.3	5.2	7.5	6.3	8.3
		10th	3.1	4.7	3.5	4.1	3.9	5.9
		90th	10.1	8.1	12.6	12.5	9.8	15.0
2030	MAM	Mean	7.4	9.8	4.2	9.3	10.3	7.0
		Median	7.2	10.0	2.9	7.9	11.1	6.5
		10th	2.0	5.2	1.3	4.2	7.2	2.2
		90th	13.7	14.3	8.4	4.2	12.7	12.5
2030	JJA	Mean	9.0	9.5	8.0	11.6	11.5	10.7
		Median	9.3	7.8	7.9	11.2	11.6	10.9
		10th	4.6	4.6	5.0	7.7	7.8	6.3
		90th	12.2	16.2	11.2	16.3	15.3	14.9
2030	SON	Mean	10.0	11.8	8.5	12.2	13.2	11.8
		Median	9.2	10.7	7.9	11.1	12.2	11.5
		10th	7.4	8.5	6.9	8.7	9.5	9.7
		90th	12.4	16.1	10.7	16.0	17.9	14.3
2030	Annual	Mean	7.8	8.9	6.9	9.8	9.8	9.7
		Median	7.7	8.4	6.3	9.5	9.7	8.9
		10th	4.7	6.2	4.7	7.2	7.9	7.2
		90th	11.3	12.3	9.8	13.5	11.7	13.2
2050	DJF	Mean	9.1	9.1	10.2	13.2	11.8	15.7
		Median	8.5	8.9	7.7	12.2	10.5	13.7
		10th	5.5	7.5	5.7	8.9	9.5	9.7
		90th	13.3	10.9	17.2	19.6	15.5	23.9
2050	MAM	Mean	10.3	13.1	6.8	14.8	16.2	12.6
		Median	10.2	13.1	5.7	13.0	17.3	11.1
		10th	3.5	8.5	2.8	8.4	10.7	6.8
		90th	16.1	17.7	11.8	22.9	20.6	19.9
2050	JJA	Mean	12.6	13.3	11.8	18.5	18.2	17.8
		Median	13.6	11.7	11.6	18.6	18.3	17.8
		10th	7.1	7.9	5.9	11.5	11.7	10.5
		90th	18.1	20.4	17.8	26.6	24.7	25.2
2050	SON	Mean	14.0	15.6	13.2	19.7	21.4	19.0
		Median	12.8	14.6	13.2	19.3	20.4	18.3
		10th	11.2	11.6	11.0	14.1	15.6	15.2

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	16.8	20.7	15.5	25.0	28.2	23.4
2050	Annual	Mean	11.1	12.2	10.3	15.9	16.1	16.1
		Median	10.6	11.7	9.4	14.9	15.8	15.1
		10th	8.1	9.3	7.9	11.8	12.8	12.0
		90th	15.0	15.7	13.7	20.2	19.8	21.3
2070	DJF	Mean	11.2	10.6	12.7	19.0	17.9	22.1
		Median	9.7	10.1	11.0	16.7	16.9	19.4
		10th	7.9	9.3	7.0	12.5	14.1	12.7
		90th	15.0	12.3	20.1	28.6	22.8	34.2
2070	MAM	Mean	12.8	15.1	9.5	21.0	22.9	19.3
		Median	12.0	16.8	8.3	17.6	24.1	16.8
		10th	5.3	10.7	5.0	12.8	14.2	12.8
		90th	18.2	17.9	15.3	30.8	30.4	28.3
2070	JJA	Mean	15.3	15.1	15.6	27.0	26.9	27.0
		Median	16.7	14.6	15.1	25.1	26.5	26.8
		10th	9.6	9.9	7.8	16.1	16.5	17.9
		90th	23.1	20.8	23.8	37.1	37.7	36.3
2070	SON	Mean	16.7	17.7	16.8	28.2	30.6	27.8
		Median	15.4	17.4	17.2	28.1	30.6	28.4
		10th	13.5	13.2	14.1	18.6	21.9	21.6
		90th	20.0	22.5	19.2	34.4	39.5	33.6
2070	Annual	Mean	13.5	14.0	13.3	22.8	23.4	23.5
		Median	13.4	14.1	12.3	21.7	23.5	21.8
		10th	10.8	11.4	10.7	16.2	17.5	17.8
		90th	16.8	16.7	17.0	29.4	29.4	30.9
2090	DJF	Mean	12.8	11.6	14.6	24.9	24.2	28.8
		Median	12.2	11.9	14.4	22.5	24.3	25.7
		10th	6.9	7.8	7.1	14.6	18.4	16.5
		90th	18.1	15.3	22.4	36.5	29.9	44.2
2090	MAM	Mean	15.0	17.4	11.8	27.4	30.2	27.0
		Median	15.0	17.6	10.0	23.7	30.0	23.5
		10th	7.1	14.4	7.0	17.4	17.4	19.1
		90th	20.3	20.1	18.4	43.3	43.2	38.5
2090	JJA	Mean	17.8	16.4	19.5	35.6	36.3	36.3
		Median	17.4	15.5	17.9	34.1	35.1	36.1
		10th	10.8	11.4	10.4	20.9	21.8	25.0
		90th	26.5	22.2	30.1	48.2	52.0	48.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	19.4	19.4	20.3	37.1	40.5	37.5
		Median	18.7	19.8	20.9	37.2	41.4	39.1
		10^{th}	15.8	14.7	16.8	22.2	27.9	28.2
		90^{th}	23.3	23.8	23.2	45.8	52.2	45.2
2090	Annual	Mean	15.6	15.6	16.0	29.9	31.2	31.5
		Median	15.8	15.6	15.4	27.8	31.4	29.5
		10^{th}	13.2	13.5	13.2	19.3	22.4	23.9
		90^{th}	17.8	17.7	19.4	40.2	40.0	41.2

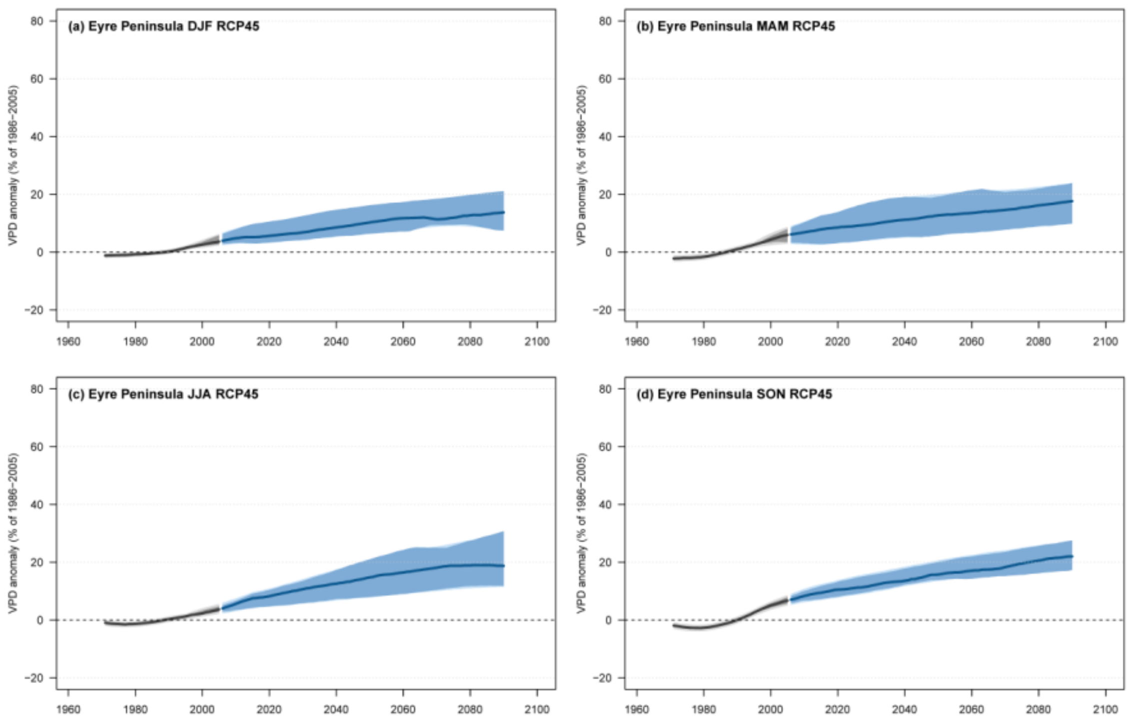

Figure 3.15 Eyre Peninsula NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

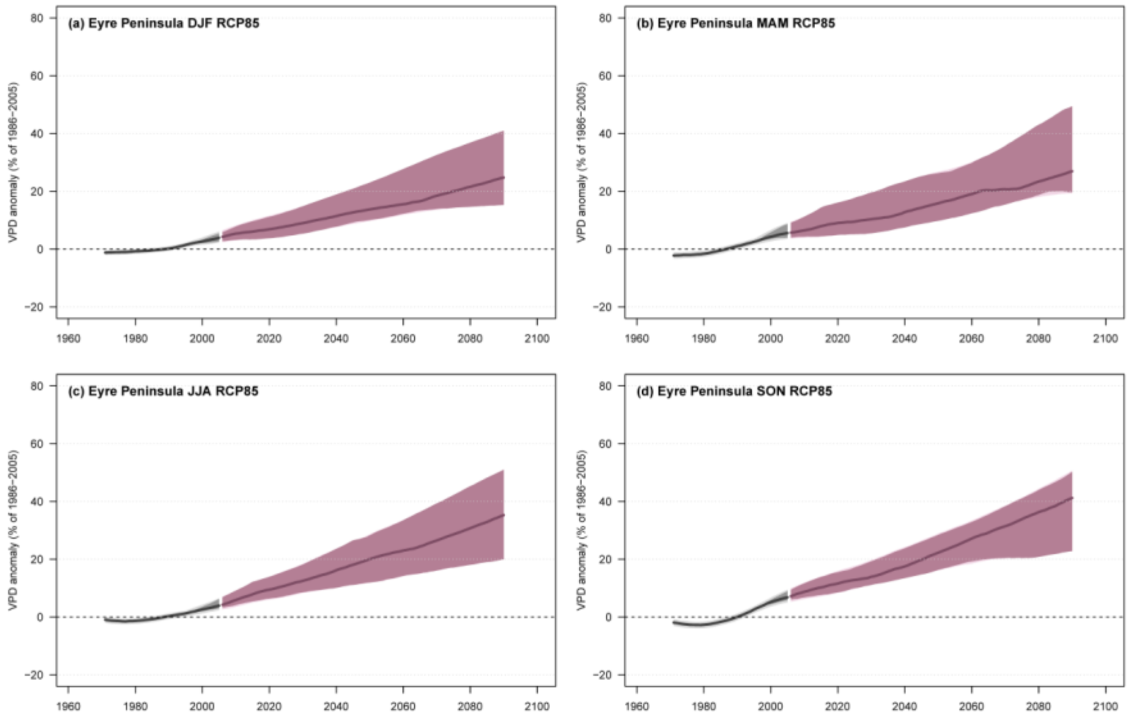

Figure 3.16 Eyre Peninsula NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

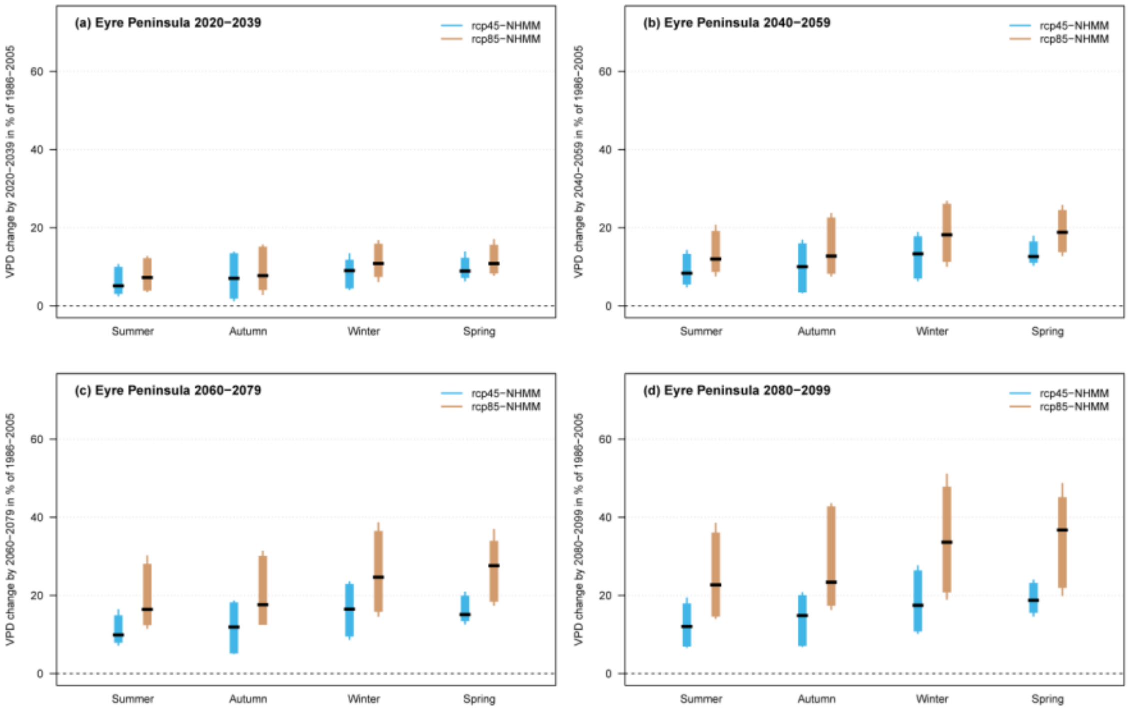

Figure 3.17 Eyre Peninsula NRM NHMM-downscaled projected seasonal vapour pressure deficit changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean vapour pressure deficit (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean vapour pressure deficit.

Changes in APET, driven by the changes in the downscaled variables above, are summarised in Table 3.8. Figure 3.18 and Figure 3.19 present the time-series progressions, and together with the comparison in Figure 3.20 these show that much larger changes are projected by the RCP8.5 , when compared to the RCP4.5, by the end of the century.

The mean, median and range of changes presented in Table 3.8 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.23 for RCP4.5 and Table B.24 for RCP8.5.

Table 3.8 Eyre Peninsula NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	2.2	2.0	2.7	2.7	1.8	3.6
		Median	2.1	2.1	2.3	2.8	2.0	3.0
		10th	1.3	1.4	1.7	1.8	0.9	2.6
		90th	3.4	2.4	4.1	4.4	2.5	5.4
2030	MAM	Mean	2.4	2.7	1.9	3.1	3.2	3.0
		Median	2.2	2.3	1.8	3.3	3.1	2.9
		10th	1.1	1.7	0.7	1.6	2.2	1.2
		90th	4.1	4.3	3.2	1.6	4.3	4.8
2030	JJA	Mean	2.7	2.5	2.8	3.5	3.1	3.6
		Median	2.7	2.5	2.8	3.2	3.2	3.6
		10th	1.5	1.8	1.8	2.0	2.4	2.2
		90th	3.7	3.2	3.8	5.1	3.9	5.1
2030	SON	Mean	3.1	3.3	3.2	3.8	3.6	4.4
		Median	2.9	3.1	3.2	3.6	3.2	4.3
		10th	2.1	2.3	2.3	2.6	2.7	3.5
		90th	4.2	4.4	4.2	5.4	5.0	5.4
2030	Annual	Mean	2.6	2.5	2.7	3.2	2.7	3.7
		Median	2.4	2.3	2.6	2.8	2.6	3.8
		10th	1.9	2.0	1.7	2.1	2.0	2.5
		90th	3.6	3.3	3.8	4.5	3.7	4.8
2050	DJF	Mean	3.2	2.7	3.8	4.5	3.3	5.7
		Median	2.7	2.6	3.4	4.0	3.3	4.8
		10th	2.2	2.3	2.7	3.0	2.1	4.2
		90th	4.3	3.4	5.5	6.6	4.6	8.1
2050	MAM	Mean	3.5	3.8	3.0	5.1	4.8	5.2
		Median	3.5	3.6	3.0	5.0	4.9	5.3
		10th	1.7	2.5	1.4	3.0	3.3	2.8
		90th	5.5	5.3	4.8	6.7	6.3	7.7
2050	JJA	Mean	4.0	3.7	4.5	6.0	5.3	6.4
		Median	4.0	3.6	4.7	5.8	5.3	6.5
		10th	2.6	2.8	3.0	3.9	4.1	4.4
		90th	5.4	4.7	5.7	8.1	6.6	8.4
2050	SON	Mean	4.5	4.4	5.0	6.2	6.1	6.9
		Median	4.1	4.3	5.4	6.1	5.6	7.0
		10th	3.3	3.1	3.8	4.6	4.7	5.6

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	5.9	5.8	5.9	8.3	8.1	8.2
2050	Annual	Mean	3.7	3.5	4.1	5.3	4.6	6.0
		Median	3.4	3.3	4.2	4.8	4.4	6.1
		10th	2.6	2.9	2.8	3.7	3.6	4.3
		90th	4.5	4.5	5.2	6.9	5.9	7.7
2070	DJF	Mean	3.8	3.1	4.7	6.3	4.9	8.0
		Median	3.5	3.1	4.1	5.8	4.4	6.5
		10th	2.7	2.4	3.6	4.0	3.7	5.9
		90th	5.0	4.0	6.6	9.1	6.7	11.6
2070	MAM	Mean	4.5	4.7	4.2	7.3	6.7	8.0
		Median	4.9	4.6	4.1	7.4	6.9	7.9
		10th	2.9	3.6	2.4	4.9	4.9	5.0
		90th	6.0	5.8	6.1	9.0	8.3	11.0
2070	JJA	Mean	5.2	4.7	5.8	8.9	8.2	9.7
		Median	5.2	4.5	6.1	8.7	8.3	9.9
		10th	3.5	3.8	4.0	6.0	6.4	7.0
		90th	7.2	5.8	7.4	11.3	9.9	12.1
2070	SON	Mean	5.5	5.0	6.5	8.9	8.6	10.0
		Median	5.1	5.0	6.8	8.9	8.4	10.3
		10th	3.9	3.7	5.4	6.2	6.2	7.9
		90th	7.4	6.4	7.5	11.7	11.2	11.7
2070	Annual	Mean	4.6	4.2	5.2	7.5	6.7	8.7
		Median	4.2	4.0	5.4	7.0	6.4	8.5
		10th	3.5	3.6	3.9	5.4	5.4	6.4
		90th	5.6	4.9	6.5	9.8	8.4	11.3
2090	DJF	Mean	4.3	3.2	5.5	8.2	6.7	10.5
		Median	4.4	3.7	4.7	7.6	5.8	8.5
		10th	3.0	1.5	4.3	5.1	5.1	8.0
		90th	5.9	4.6	7.5	11.9	9.2	15.1
2090	MAM	Mean	5.3	5.5	5.2	9.7	8.9	11.1
		Median	5.5	5.4	5.2	10.1	9.0	11.6
		10th	3.5	4.5	3.2	6.3	6.8	7.2
		90th	7.3	6.8	7.3	12.2	10.9	14.7
2090	JJA	Mean	6.2	5.6	7.0	11.9	11.1	13.3
		Median	5.9	5.4	7.3	11.1	11.1	13.4
		10th	4.4	4.7	5.0	7.8	8.4	9.5
		90th	8.5	6.7	8.8	15.2	13.8	17.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	6.4	5.6	7.9	11.7	11.6	13.3
		Median	5.8	5.4	8.2	11.9	12.0	13.9
		10th	4.2	4.1	6.5	7.7	8.1	10.1
		90th	8.9	7.3	8.9	16.2	14.7	16.1
2090	Annual	Mean	5.3	4.6	6.3	9.9	9.0	11.8
		Median	4.7	4.4	6.5	9.4	8.7	11.3
		10th	4.1	3.7	4.9	6.8	7.0	8.7
		90th	6.9	5.9	7.5	13.1	11.5	15.4

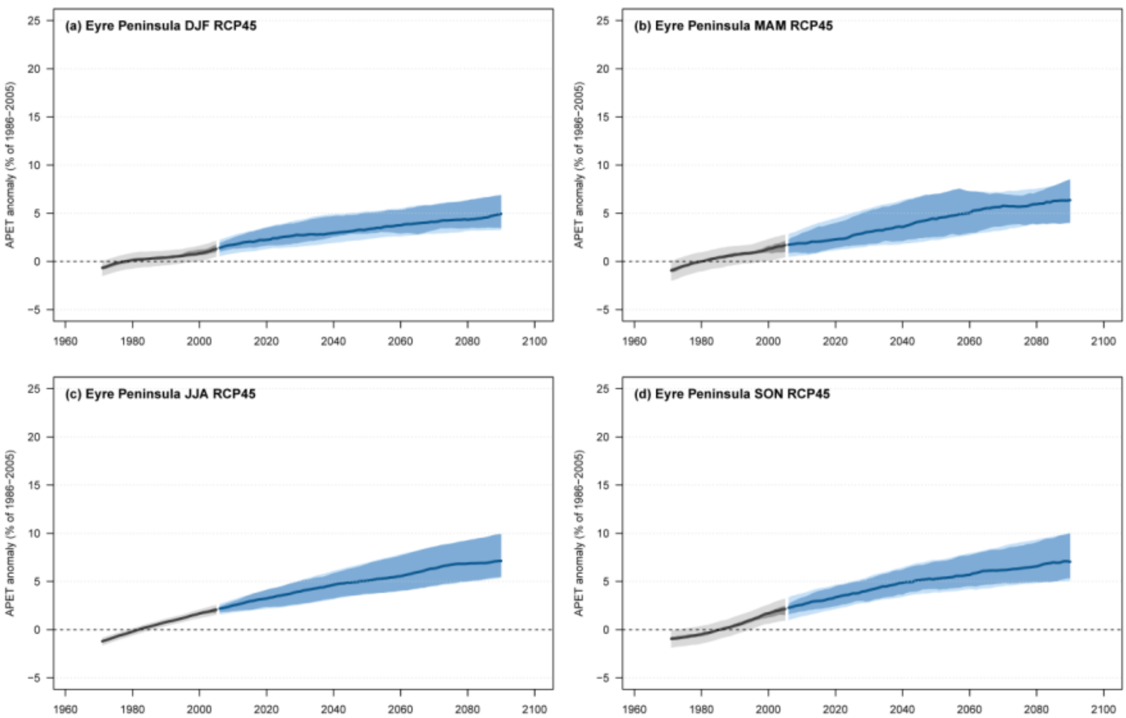

Figure 3.18 Eyre Peninsula NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

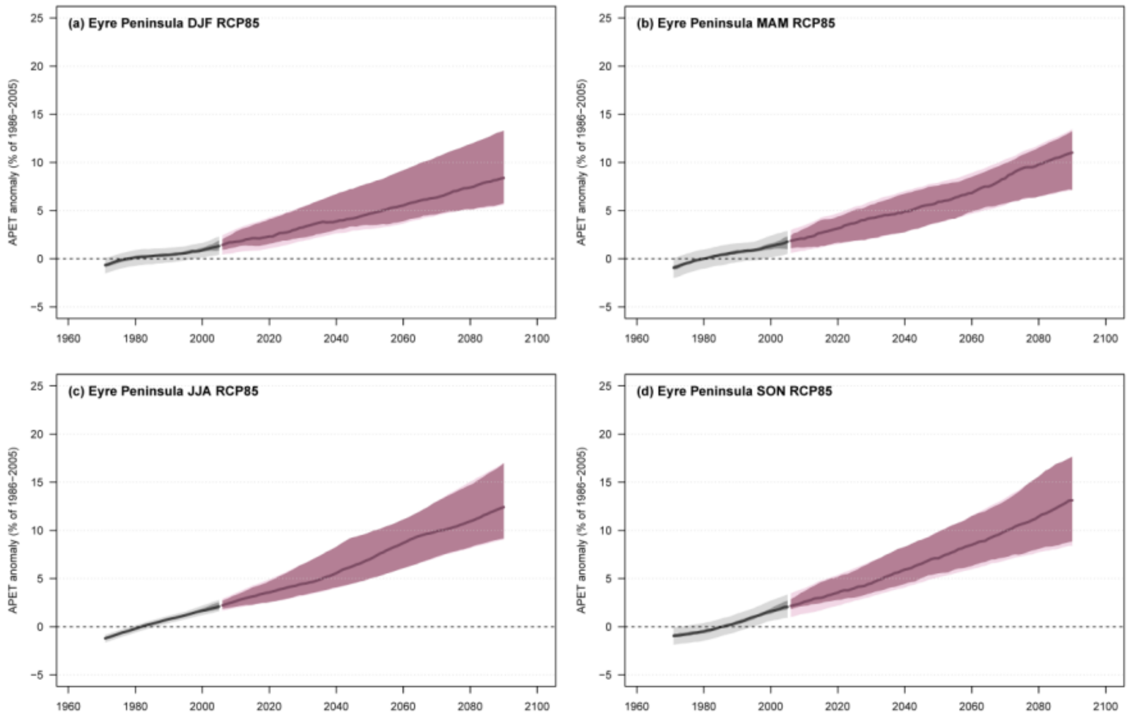

Figure 3.19 Eyre Peninsula NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

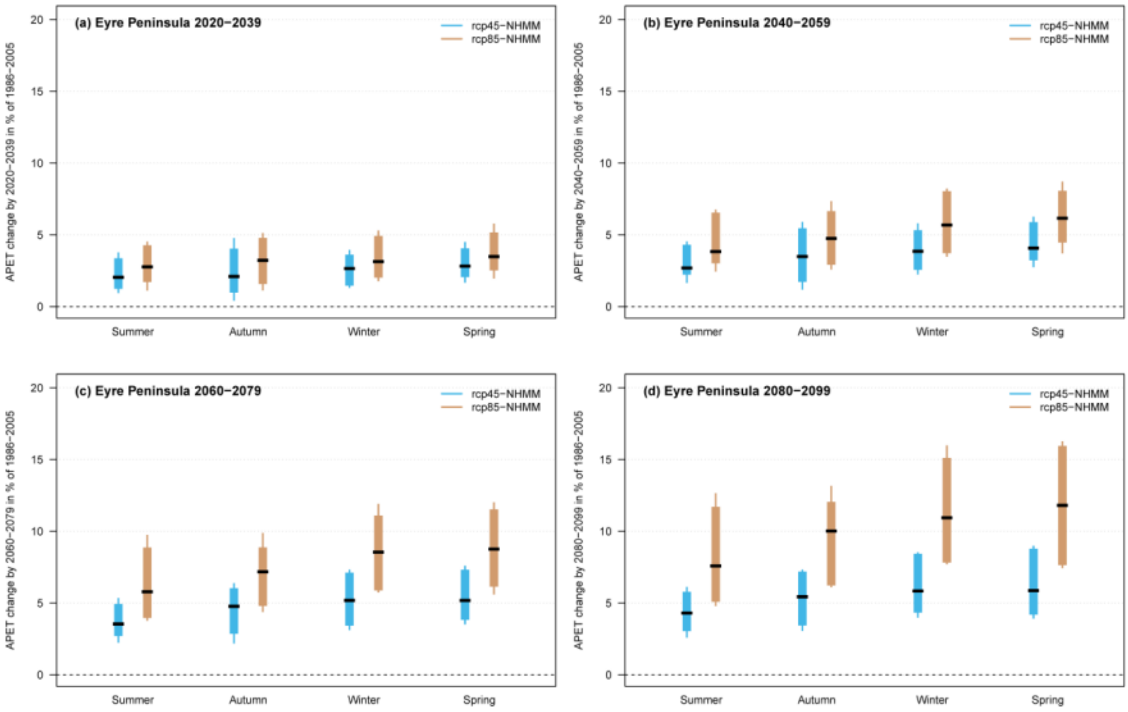

Figure 3.20 Eyre Peninsula NRM NHMM-downscaled projected seasonal potential evapotranspiration changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean potential evapotranspiration (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean potential evapotranspiration.

3.4 Summary

Decreases in precipitation are projected for all seasons, and hence annual precipitation also, with the greatest relative decreases in spring, followed by summer, for both RCP4.5 and RCP8.5. For the second half of the century the scenarios diverge, with larger decreases from RCP8.5. Daily temperatures (maximum and minimum) are projected to increase for all seasons. For maximum temperature there are slightly larger increases for the spring season corresponding to its increased drying relative to the other seasons. For both maximum and minimum daily temperatures, the increases for RCP8.5 are larger than RCP4.5 from mid-century onwards. Solar radiation also increases for all seasons, with larger relative increases in winter and spring, corresponding to a reduction in clouds given their drying trends. VPD also increases in all seasons, notably much more for RCP8.5 than for RCP4.5 with double the end of the century relative changes. APET also increases in all seasons, with relative increases greater in winter and spring, and again the projected changes for RCP8.5 are larger than for RCP4.5. Overall, for all variables and both RCPs, the changes projected from a subset of six better performing GCMs are smaller than the changes projected by a subset of six poorer performing GCMs. The downscaled projections for each Eyre Peninsula station, provided as 100 stochastic replicates of daily time-series for each GCM and RCP, represent 'added value' over direct GCM output as they provide realistic station-scale input series suitable for probabilistic impacts and adaptation investigations. Bates et al. (2010), in a report focussing on climate change and water allocation, provide a useful summary on the appropriate application of projections in such investigations. CSIRO and Bureau of Meteorology (2014) provides a detailed overview of climate change science from an Australian perspective with recommendations on understanding and utilising projections.

4 Projections for Kangaroo Island

4.1 Overview

The Kangaroo Island NRM Region has a temperate climate with most rainfall falling in winter. Annual rainfall is higher to the northwest, up to 1000 mm in areas of the Gosse Plateau, and around 400 mm around the Kingscote area in the northeast (KINRMB, 2009).

Ten weather stations were selected for the statistical downscaling model calibration. Their mean rainfall characteristics are summarised in Table 4.1, in terms of seasonal mean number of wet-days and rainfall totals for the 1986-2005 baseline (representing current climate, this is the period that projections are compared to in later results). Annual rainfall totals vary between stations by almost a factor of two, ranging from approximately 460 mm (Smith Bay, in the north) to 790 mm (Rocky River, in the west).

The selected downscaling models, for the four seasons, are summarised in Table 4.2. Both 'east minus west' SLP difference and 'north minus south' SLP difference over the region are selected predictors for summer, winter and spring. For autumn, 'north minus south' SLP difference is a selected predictor. DTD at the 700 hPa level is selected for all seasons except spring. DTD at the 850 level is likewise selected for all seasons except winter. An easterly wind speed predictor (U-wind) is selected for autumn and winter, at the 850 and 500 hPa levels respectively. For spring, the fourth predictor is northerly wind speed at the 850 hPa level. The mean rainfall characteristics associated with the weather states for each of the four seasonal NHMMs are presented in Appendix A, Table A.9 to Table A.12.

Table 4.1 Kangaroo Island NRM Climate Stations for NHMM-Downscaling

BoM ID	Name	Latitude	Longitude	Rain days (# days)				Rain amount (mm)			
				DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
				10	20	43	23	49	107	241	127
22800	AMERICAN RIVER	35.77	137.78	0.10	0.21	0.45	0.24	0.09	0.20	0.46	0.24
				10	19	42	23	47	104	236	128
22803	CAPE WILLOUGHBY	35.84	138.13	0.11	0.20	0.45	0.24	0.09	0.20	0.46	0.25
				10	21	42	23	56	110	238	123
22806	MURRAYS LAGOON (BAYSIDE)	35.92	137.30	0.10	0.22	0.44	0.24	0.11	0.21	0.45	0.23
				6	17	31	16	44	103	208	103
22808	KINGSCOTE (KARINGA)	35.82	137.53	0.09	0.24	0.44	0.23	0.10	0.22	0.45	0.22
				7	15	35	19	46	85	221	104
22811	SMITH BAY (SMITHS BAY)	35.60	137.44	0.09	0.20	0.46	0.25	0.10	0.19	0.48	0.23
				10	18	42	23	54	115	299	129
22815	PARNDANA (PIONEER BEND)	35.73	137.26	0.11	0.19	0.45	0.25	0.09	0.19	0.50	0.22
				11	23	48	26	62	149	349	153
22817	FLINDERS CHASE (ROCKY RIVER)	35.95	136.74	0.10	0.21	0.44	0.24	0.09	0.21	0.49	0.21
				12	26	50	29	73	162	379	175
22820	ROCKY RIVER (BROOKLAND PARK)	35.89	136.86	0.10	0.22	0.43	0.25	0.09	0.21	0.48	0.22
				9	19	40	21	53	110	230	117
22822	MURRAYS LAGOON (HAWKS NEST)	35.90	137.45	0.10	0.21	0.45	0.24	0.10	0.22	0.45	0.23
				11	21	47	25	55	136	357	150
22835	PARNDANA (TURKEY LANE)	35.73	137.12	0.11	0.20	0.45	0.24	0.08	0.19	0.51	0.21

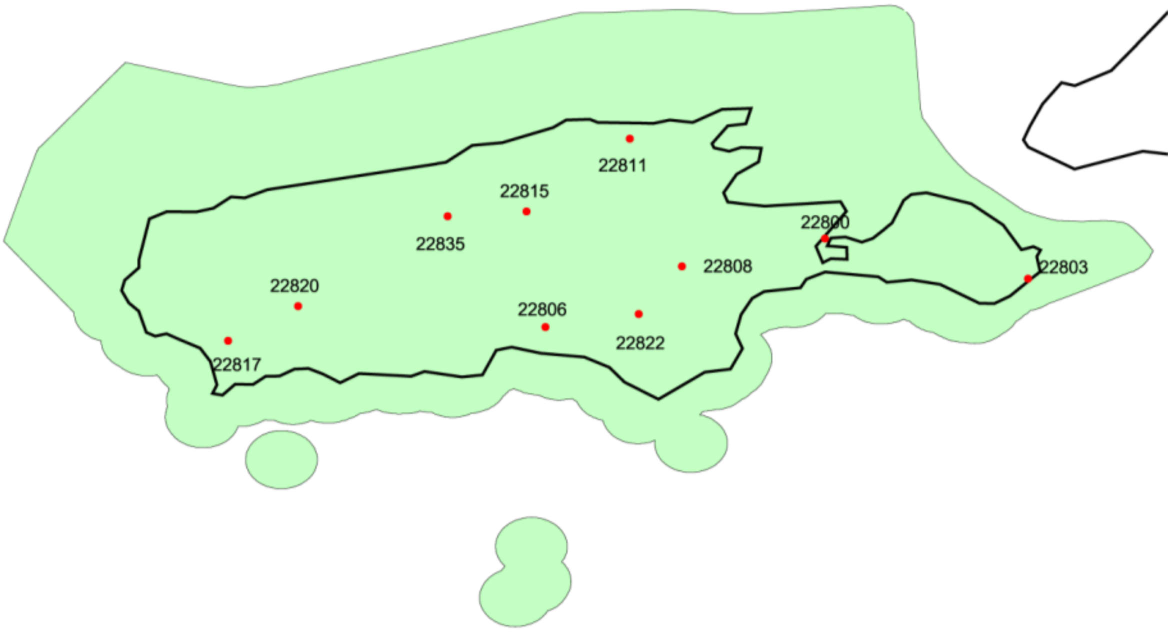

Figure 4.1 Location of Kangaroo Island stations in Table 4.1 and NRM region boundary

Table 4.2 Selected NHMMs (number of weather states and predictor combinations) for Kangaroo Island

DJF	MAM	JJA	SON
4 states	5 states	5 States	5 States
East – West SLP	North – South SLP	East – West SLP	East – West SLP
North – South SLP	DTD at 700 hPa	North – South SLP	North – South SLP
DTD at 700 hPa	DTD at 850 hPa	DTD at 700 hPa	DTD at 850 hPa
DTD at 850 hPa	U-wind at 850 hPa	U-wind at 500 hPa	V-wind at 850 hPa

4.2 Precipitation

The downscaled projected seasonal changes in precipitation (averaged across the Kangaroo Island stations and GCM ensembles) are presented in Table 4.3. The corresponding time-series trends are shown in Figure 4.2 and Figure 4.3, for RCP4.5 and RCP8.5 respectively, showing much stronger trends for RCP8.5. Figure 4.4 shows that overall the downscaled precipitation changes are consistent with the mean changes from the GCM grid-scale precipitation. When comparing downscaled changes from the subset of six better and six poorer rated GCMs, there is a general tendency for less change for the projections from the better GCM ensemble (Table 4.3 and Figure 4.5).

The mean, median and range of changes presented in Table 4.3 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.25 for RCP4.5 and

Table B.26 for RCP8.5.

Table 4.3 Kangaroo Island NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	-13.1	-8.9	-14.7	-10.4	-1.8	-14.9
		Median	-15.3	-5.3	-17.9	-12.5	-3.7	-15.0
		10th	-24.7	-23.2	-23.8	-21.8	-15.0	-20.7
		90th	2.1	1.8	-2.3	-0.3	13.3	-9.0
2030	MAM	Mean	-4.4	-3.0	-5.5	-4.7	-4.9	-5.9
		Median	-2.6	-1.5	-5.7	-2.6	-6.3	-1.9
		10th	-18.4	-14.5	-19.9	-16.2	-12.1	-20.2
		90th	7.3	6.9	9.0	5.2	3.8	4.4
2030	JJA	Mean	-3.3	-0.4	-6.5	-5.2	-4.0	-5.7
		Median	-2.6	0.3	-6.5	-5.2	-4.4	-5.0
		10th	-9.3	-5.6	-11.8	-8.6	-8.2	-8.6
		90th	2.6	4.1	-1.3	-1.3	0.6	-3.7
2030	SON	Mean	-9.6	-14.5	-8.1	-13.5	-12.5	-15.9
		Median	-10.7	-12.6	-9.6	-14.6	-13.5	-16.2
		10th	-19.5	-20.6	-18.2	-22.4	-20.7	-22.8
		90th	0.6	-10.4	3.5	-4.3	-3.2	-8.7
2030	Annual	Mean	-5.8	-4.7	-7.5	-7.3	-5.9	-8.7
		Median	-4.6	-3.6	-9.1	-6.8	-5.9	-7.5
		10th	-10.7	-8.3	-12.3	-12.7	-8.8	-14.0
		90th	-2.2	-2.3	-1.0	-3.6	-3.1	-4.7
2050	DJF	Mean	-13.1	-5.5	-18.8	-17.6	-8.8	-23.5
		Median	-10.8	-8.3	-15.3	-18.2	-12.3	-27.7
		10th	-32.1	-18.1	-35.8	-33.0	-27.4	-31.9
		90th	-1.4	9.8	-5.4	-1.7	13.1	-11.0
2050	MAM	Mean	-6.7	-4.8	-7.6	-8.6	-6.3	-11.9
		Median	-8.6	-5.2	-7.5	-9.1	-8.3	-10.6
		10th	-13.3	-13.0	-21.0	-22.6	-14.6	-29.0
		90th	4.5	3.9	5.5	4.3	4.0	3.9
2050	JJA	Mean	-6.4	-5.5	-6.7	-7.6	-4.5	-8.4
		Median	-7.0	-4.7	-7.4	-6.6	-5.1	-9.3
		10th	-11.7	-10.6	-12.3	-14.2	-7.5	-13.1
		90th	0.1	-1.2	-0.4	-0.6	-0.9	-2.8
2050	SON	Mean	-13.8	-15.0	-16.5	-18.5	-21.1	-19.6
		Median	-12.1	-13.9	-15.2	-17.8	-23.8	-20.0
		10th	-24.4	-23.7	-25.4	-32.1	-31.9	-32.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	-6.2	-7.6	-8.8	-7.2	-7.6	-6.8
2050	Annual	Mean	-8.7	-7.4	-10.0	-11.1	-8.9	-13.0
		Median	-8.5	-7.5	-10.6	-11.7	-8.9	-14.4
		10th	-13.3	-10.2	-15.1	-16.0	-13.9	-19.0
		90th	-4.5	-4.5	-4.5	-5.0	-3.8	-5.6
2070	DJF	Mean	-15.4	-7.8	-21.4	-25.1	-16.5	-32.2
		Median	-16.5	-9.9	-21.9	-21.6	-17.3	-35.0
		10th	-28.1	-20.0	-29.3	-44.3	-30.5	-47.3
		90th	-5.5	6.4	-13.1	-5.7	-1.8	-14.2
2070	MAM	Mean	-10.8	-8.6	-12.3	-16.3	-10.9	-21.3
		Median	-10.0	-7.5	-11.0	-16.0	-13.7	-22.3
		10th	-23.6	-18.9	-26.1	-26.9	-19.2	-35.1
		90th	0.6	0.6	0.1	-0.6	0.2	-6.5
2070	JJA	Mean	-7.1	-5.0	-8.8	-13.6	-10.5	-16.2
		Median	-8.9	-6.0	-9.4	-13.0	-10.1	-16.0
		10th	-16.0	-9.3	-17.7	-23.7	-15.9	-26.4
		90th	2.6	0.4	0.7	-5.4	-5.5	-6.2
2070	SON	Mean	-18.2	-19.1	-20.0	-26.8	-27.8	-29.3
		Median	-16.8	-17.3	-23.0	-23.8	-23.7	-25.6
		10th	-28.7	-28.3	-28.4	-41.7	-43.2	-41.3
		90th	-10.0	-11.6	-8.8	-15.2	-16.7	-21.1
2070	Annual	Mean	-11.0	-9.1	-13.0	-18.0	-14.8	-21.5
		Median	-13.1	-7.9	-14.5	-14.6	-12.5	-23.7
		10th	-15.3	-13.2	-19.5	-26.4	-22.2	-28.5
		90th	-6.0	-6.2	-5.2	-10.3	-9.7	-12.4
2090	DJF	Mean	-16.8	-6.6	-23.1	-30.5	-20.2	-42.6
		Median	-19.4	-6.9	-20.5	-29.8	-27.1	-44.8
		10th	-33.9	-22.7	-33.9	-51.3	-33.9	-55.3
		90th	3.0	9.8	-15.0	-10.3	0.4	-27.6
2090	MAM	Mean	-8.2	-7.3	-11.5	-20.5	-15.0	-28.8
		Median	-6.0	-8.2	-11.9	-23.1	-11.8	-26.5
		10th	-16.8	-15.0	-21.7	-38.9	-29.4	-48.7
		90th	2.3	1.2	-1.0	-3.9	-3.9	-11.2
2090	JJA	Mean	-6.5	-3.8	-7.9	-17.8	-13.3	-22.5
		Median	-6.9	-5.0	-7.4	-16.8	-14.3	-26.6
		10th	-14.5	-8.3	-17.2	-31.0	-20.0	-31.3
		90th	2.3	1.8	0.8	-6.5	-5.5	-9.6

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	-19.1	-19.5	-21.8	-34.3	-34.8	-40.3
		Median	-18.6	-17.8	-25.8	-30.6	-29.9	-38.5
		10th	-27.5	-26.3	-27.4	-52.1	-48.7	-55.3
		90th	-10.1	-14.4	-12.3	-24.3	-25.9	-27.3
2090	Annual	Mean	-10.5	-8.2	-13.0	-23.0	-18.8	-29.5
		Median	-8.9	-8.0	-12.6	-18.7	-16.9	-32.4
		10th	-17.1	-11.3	-19.8	-36.3	-26.4	-39.8
		90th	-5.4	-5.4	-6.7	-13.7	-13.3	-16.3

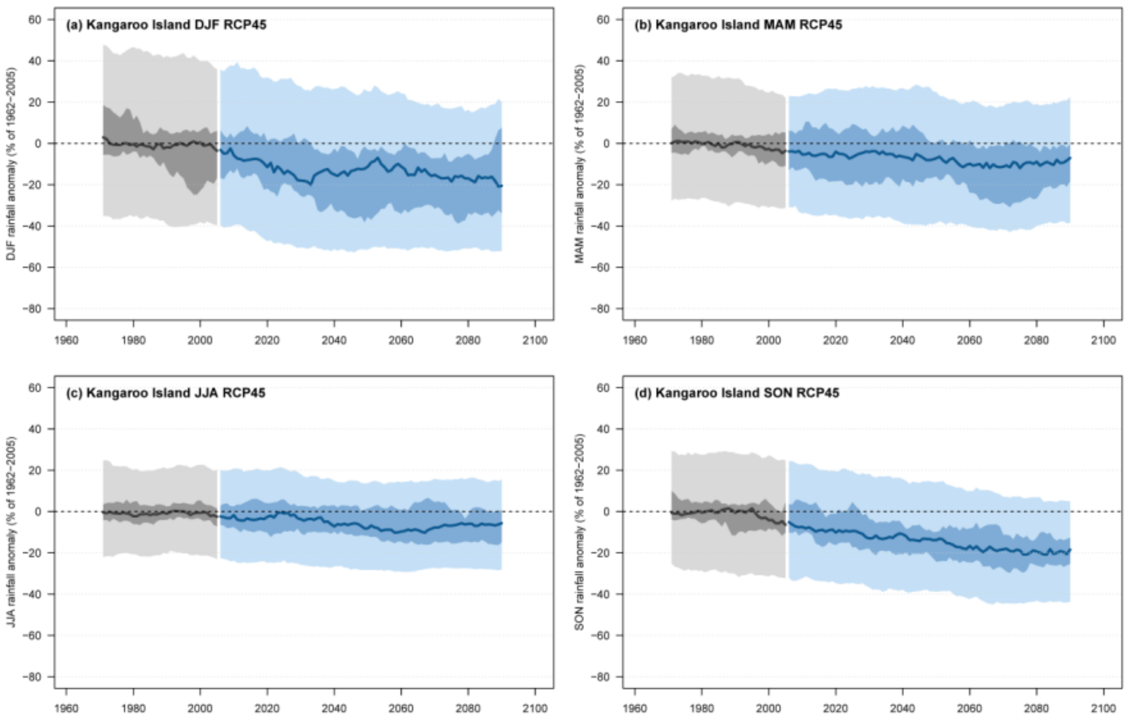

Figure 4.2 Kangaroo Island NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

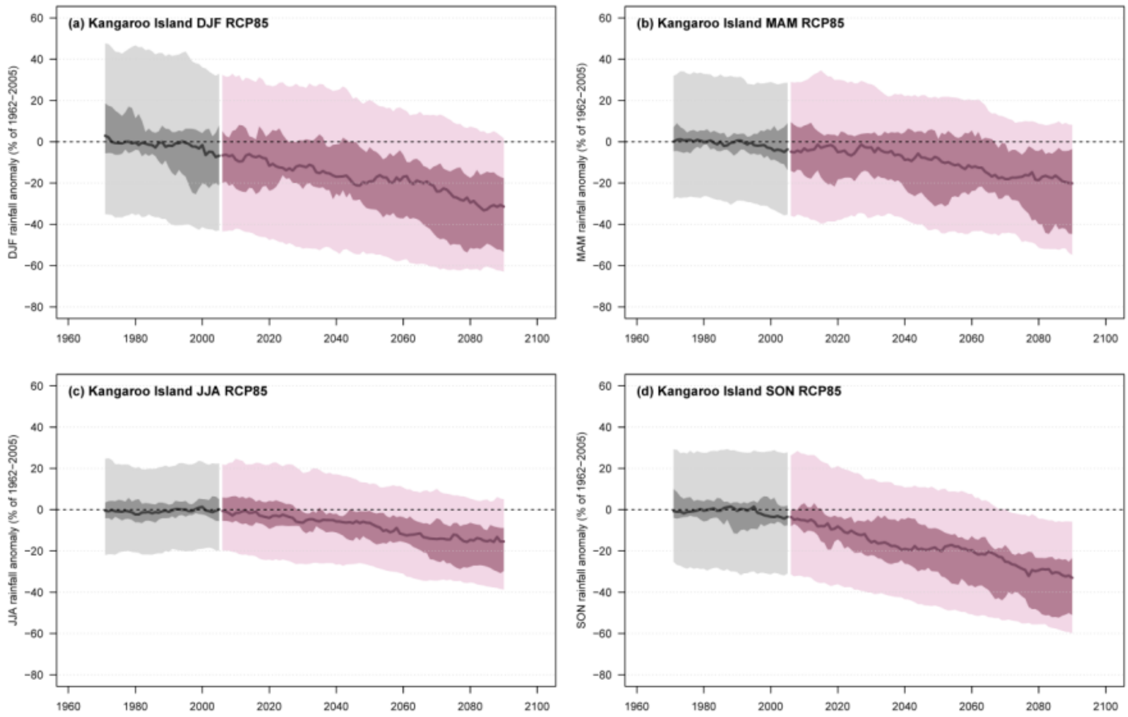

Figure 4.3 Kangaroo Island NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

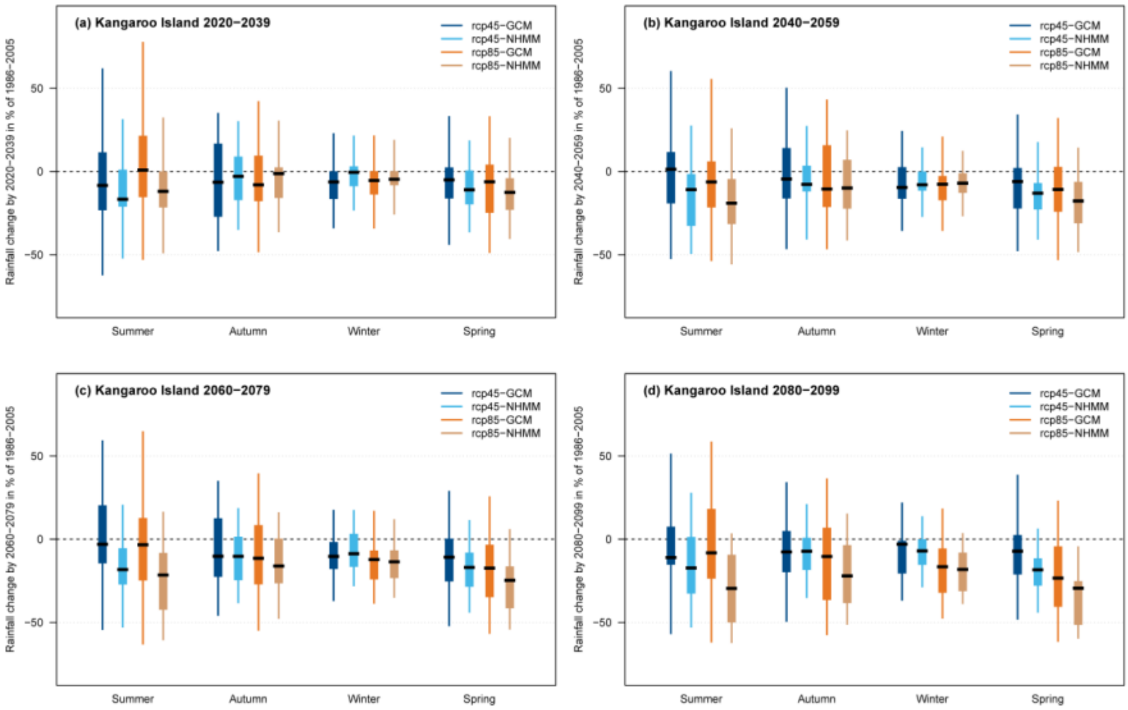

Figure 4.4 Kangaroo Island NRM CMIP5 GCM and NHMM-downscaled projected seasonal precipitation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall.

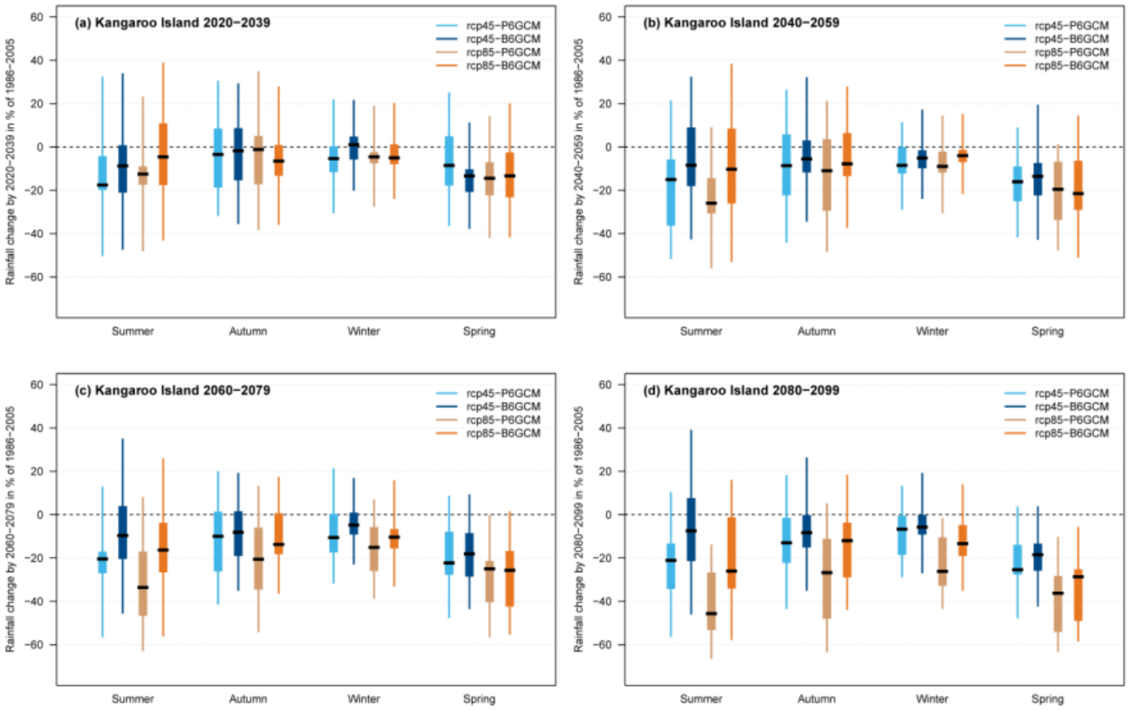

Figure 4.5 Kangaroo Island NRM NHMM-downscaled projected seasonal precipitation changes from six better (B6GCM) and six poorer (P6GCM) performing CMIP5 GCMs for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall. Selection of better and poorer performing GCMs according to Cai et al. (2014a) and Cai et al. (2014b).

4.3 Non-precipitation variables

The projected changes in daily maximum temperature are summarised in Table 4.4, highlighting the larger change from RCP8.5 by the end of the century, compared to RCP4.5. These scenario differences can be contrasted by comparing the time-series trends for RCP4.5 (Figure 4.6) and RCP8.5 (Figure 4.7). Table 4.4 also shows that the ensemble mean of the six better rated GCMs is smaller than that of the six poorer ranked GCMs. Figure 4.8 compares the downscaled changes with changes obtained from GCM grid-scale output directly, showing that the downscaled results are consistent with the forcing GCMs.

The mean, median and range of changes presented in Table 4.4 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.27 for RCP4.5 and Table B.28 for RCP8.5.

Table 4.4 Kangaroo Island NRM downscaled projected changes in seasonal maximum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.7	0.7	0.8	0.9	0.7	1.1
		Median	0.6	0.6	0.6	0.8	0.7	0.8
		10th	0.4	0.4	0.5	0.4	0.4	0.7
		90th	1.0	1.0	1.5	1.4	1.1	1.7
2030	MAM	Mean	0.6	0.7	0.6	0.8	0.8	0.8
		Median	0.6	0.7	0.5	0.7	0.8	0.7
		10th	0.4	0.6	0.3	0.6	0.7	0.5
		90th	0.9	0.7	0.9	0.6	1.0	1.3
2030	JJA	Mean	0.6	0.6	0.6	0.8	0.7	0.8
		Median	0.6	0.7	0.6	0.7	0.7	0.8
		10th	0.4	0.4	0.5	0.5	0.6	0.6
		90th	0.8	0.7	0.8	1.1	1.0	1.1
2030	SON	Mean	0.8	0.8	0.7	1.0	1.0	1.0
		Median	0.8	0.8	0.7	0.9	0.9	1.0
		10th	0.5	0.8	0.6	0.7	0.8	0.8
		90th	1.0	1.0	1.0	1.3	1.2	1.4
2030	Annual	Mean	0.7	0.7	0.7	0.9	0.8	0.9
		Median	0.6	0.7	0.6	0.8	0.8	0.8
		10th	0.5	0.6	0.5	0.6	0.6	0.6
		90th	0.9	0.8	1.0	1.2	1.1	1.4
2050	DJF	Mean	1.0	1.0	1.2	1.4	1.3	1.7
		Median	0.9	1.0	0.9	1.3	1.2	1.3
		10th	0.6	0.6	0.8	0.9	0.9	1.0
		90th	1.5	1.4	2.1	2.3	1.9	2.8
2050	MAM	Mean	0.9	1.0	0.9	1.4	1.3	1.5
		Median	0.8	1.0	0.8	1.2	1.2	1.2
		10th	0.7	0.8	0.6	1.0	1.1	1.1
		90th	1.2	1.1	1.2	1.9	1.8	2.2
2050	JJA	Mean	0.9	0.9	1.0	1.3	1.3	1.4
		Median	0.9	0.9	1.0	1.3	1.3	1.4
		10th	0.6	0.7	0.8	1.0	1.0	1.1
		90th	1.2	1.1	1.1	1.8	1.6	1.9
2050	SON	Mean	1.1	1.2	1.2	1.6	1.7	1.7
		Median	1.1	1.2	1.1	1.5	1.5	1.5
		10th	0.8	1.1	1.0	1.2	1.4	1.3

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.4	1.4	1.5	2.3	2.1	2.4
2050	Annual	Mean	1.0	1.0	1.0	1.4	1.4	1.6
		Median	0.9	1.1	0.9	1.3	1.3	1.3
		10th	0.7	0.8	0.8	1.1	1.1	1.2
		90th	1.3	1.2	1.5	2.1	1.8	2.3
2070	DJF	Mean	1.3	1.2	1.5	2.1	1.9	2.5
		Median	1.2	1.3	1.2	1.8	1.8	1.9
		10th	0.7	0.7	0.9	1.4	1.4	1.5
		90th	1.8	1.6	2.5	3.3	2.6	4.2
2070	MAM	Mean	1.2	1.2	1.2	2.0	2.0	2.2
		Median	1.1	1.2	1.1	1.8	1.9	1.7
		10th	0.9	1.0	0.9	1.6	1.6	1.7
		90th	1.5	1.5	1.6	2.7	2.6	3.1
2070	JJA	Mean	1.2	1.1	1.3	2.0	1.9	2.2
		Median	1.2	1.1	1.3	2.0	1.8	2.1
		10th	0.9	0.9	1.1	1.6	1.6	1.7
		90th	1.4	1.4	1.5	2.6	2.4	2.8
2070	SON	Mean	1.4	1.4	1.5	2.3	2.4	2.5
		Median	1.3	1.4	1.4	2.2	2.3	2.2
		10th	1.1	1.2	1.2	1.8	2.0	1.8
		90th	1.8	1.7	1.9	3.2	2.9	3.5
2070	Annual	Mean	1.2	1.2	1.3	2.1	2.1	2.3
		Median	1.1	1.2	1.2	1.9	1.9	1.9
		10th	0.9	1.0	1.1	1.6	1.7	1.7
		90th	1.6	1.5	1.8	3.0	2.6	3.4
2090	DJF	Mean	1.4	1.3	1.7	2.8	2.6	3.3
		Median	1.3	1.3	1.5	2.4	2.5	2.5
		10th	0.9	0.8	1.0	1.8	1.9	1.9
		90th	2.1	1.9	2.8	4.4	3.5	5.6
2090	MAM	Mean	1.4	1.4	1.5	2.7	2.8	2.9
		Median	1.4	1.5	1.4	2.4	2.7	2.4
		10th	1.0	1.1	1.1	2.1	2.2	2.3
		90th	1.8	1.8	1.9	3.7	3.6	4.2
2090	JJA	Mean	1.4	1.3	1.6	2.7	2.6	3.0
		Median	1.4	1.3	1.5	2.6	2.5	2.8
		10th	1.0	1.1	1.4	2.2	2.2	2.4
		90th	1.7	1.7	1.9	3.5	3.3	3.8

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	1.6	1.7	1.7	3.1	3.1	3.3
		Median	1.6	1.7	1.7	2.8	3.0	2.9
		10^{th}	1.3	1.4	1.5	2.3	2.6	2.4
		90^{th}	2.1	2.0	2.1	4.3	3.9	4.8
2090	Annual	Mean	1.5	1.5	1.6	2.9	2.8	3.2
		Median	1.4	1.4	1.5	2.5	2.6	2.6
		10^{th}	1.1	1.1	1.4	2.2	2.3	2.4
		90^{th}	1.9	1.9	2.1	4.0	3.6	4.6

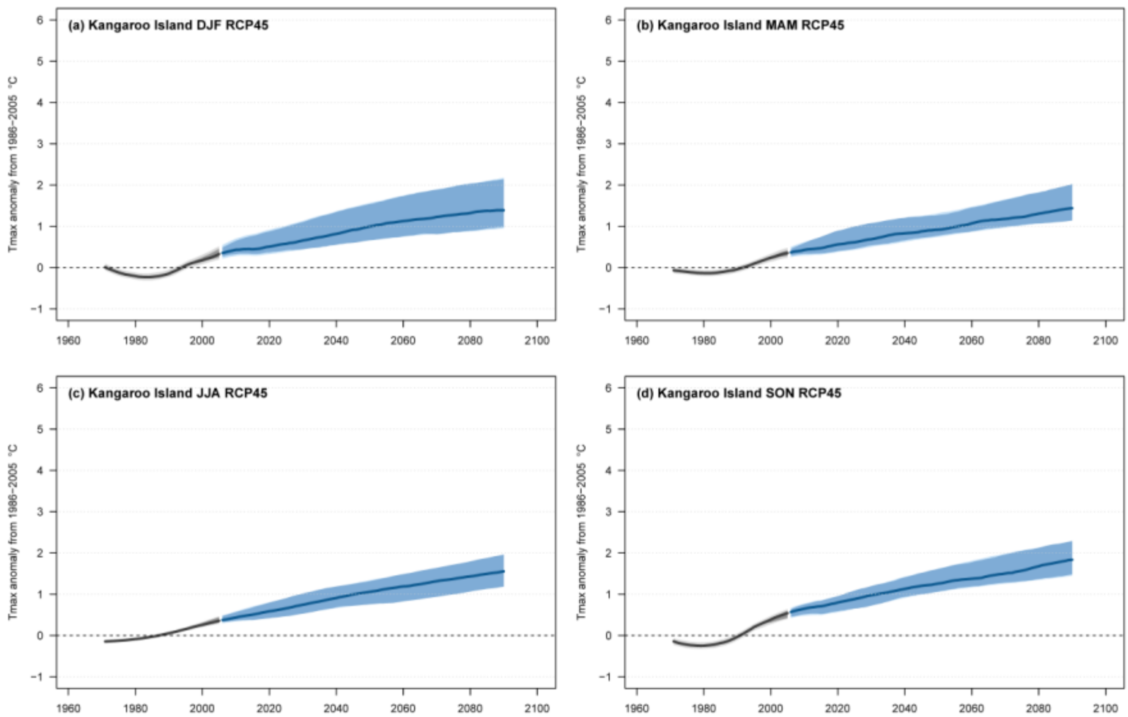

Figure 4.6 Kangaroo Island NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

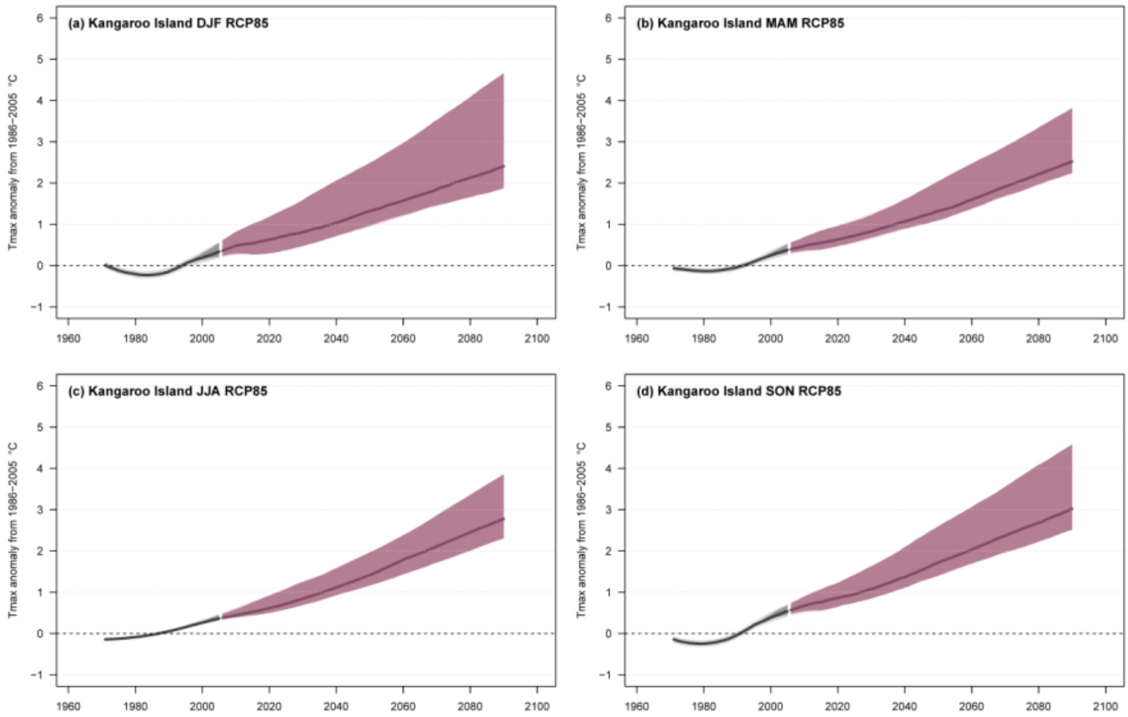

Figure 4.7 Kangaroo Island NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

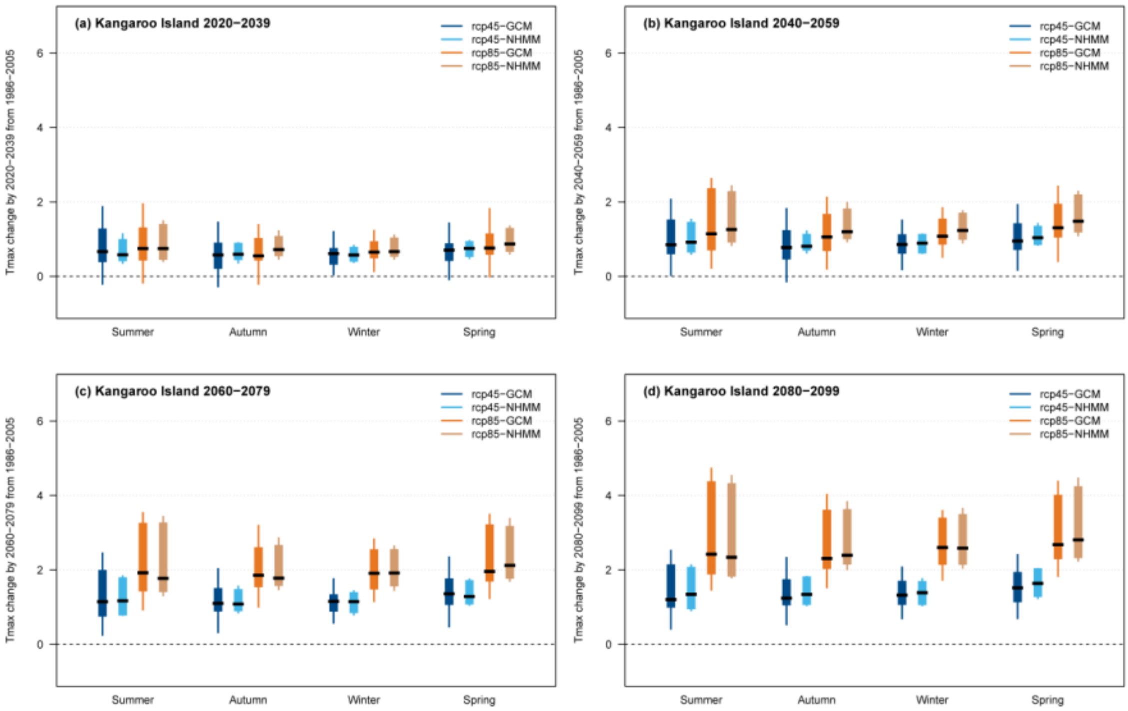

Figure 4.8 Kangaroo Island NRM CMIP5 GCM and NHMM-downscaled projected seasonal maximum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean maximum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean maximum daily temperature.

The downscaled minimum daily temperature changes are summarised in Table 4.5, with trends plotted in Figure 4.9 and Figure 4.10, showing larger increases with RCP8.5 compared to RCP4.5. The downscaled changes are consistent with the GCM grid-scale changes (Figure 4.11). The ensemble mean for the six better rated GCMs is consistently smaller than that of the six poorer rated GCMs (Table 4.5).

The mean, median and range of changes presented in Table 4.5 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.29 for RCP4.5 and Table B.30 for RCP8.5.

Table 4.5 Kangaroo Island NRM downscaled projected changes in seasonal minimum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.6	0.5	0.7	0.8	0.7	1.0
		Median	0.6	0.6	0.7	0.7	0.6	0.9
		10th	0.3	0.3	0.5	0.4	0.4	0.6
		90th	1.0	0.8	1.1	1.3	1.0	1.4
2030	MAM	Mean	0.6	0.6	0.7	0.8	0.7	0.9
		Median	0.6	0.6	0.6	0.7	0.7	0.9
		10th	0.4	0.4	0.5	0.6	0.6	0.6
		90th	0.9	0.7	1.0	0.6	1.0	1.2
2030	JJA	Mean	0.5	0.5	0.6	0.7	0.6	0.8
		Median	0.5	0.5	0.6	0.6	0.6	0.8
		10th	0.3	0.4	0.5	0.5	0.5	0.6
		90th	0.7	0.7	0.7	0.9	0.8	0.9
2030	SON	Mean	0.5	0.5	0.6	0.7	0.7	0.7
		Median	0.6	0.6	0.6	0.7	0.8	0.7
		10th	0.3	0.4	0.4	0.5	0.6	0.6
		90th	0.7	0.6	0.7	0.9	0.8	0.9
2030	Annual	Mean	0.6	0.5	0.6	0.7	0.7	0.8
		Median	0.6	0.6	0.6	0.7	0.7	0.8
		10th	0.4	0.4	0.5	0.5	0.5	0.7
		90th	0.8	0.7	0.8	1.1	0.9	1.1
2050	DJF	Mean	0.9	0.8	1.1	1.3	1.2	1.5
		Median	0.9	0.9	1.0	1.2	1.1	1.4
		10th	0.4	0.5	0.7	0.8	0.8	1.0
		90th	1.4	1.2	1.5	2.1	1.7	2.3
2050	MAM	Mean	0.9	0.9	1.0	1.3	1.3	1.5
		Median	0.8	0.9	0.9	1.2	1.2	1.5
		10th	0.6	0.7	0.7	1.0	0.9	1.1
		90th	1.2	1.1	1.3	1.9	1.7	1.9
2050	JJA	Mean	0.8	0.7	0.8	1.2	1.1	1.3
		Median	0.8	0.7	0.9	1.1	1.0	1.3
		10th	0.5	0.6	0.8	0.8	0.9	1.1
		90th	0.9	0.9	0.9	1.5	1.4	1.5
2050	SON	Mean	0.8	0.8	0.8	1.2	1.2	1.3
		Median	0.8	0.9	0.9	1.2	1.2	1.2
		10th	0.4	0.6	0.6	0.9	1.0	1.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.0	1.0	1.0	1.5	1.4	1.6
2050	Annual	Mean	0.8	0.8	0.9	1.3	1.2	1.4
		Median	0.8	0.8	0.9	1.2	1.1	1.3
		10th	0.5	0.6	0.8	0.9	0.9	1.1
		90th	1.1	1.1	1.2	1.8	1.6	1.8
2070	DJF	Mean	1.1	1.0	1.3	1.9	1.8	2.2
		Median	1.0	1.0	1.3	1.8	1.6	2.1
		10th	0.6	0.7	0.9	1.3	1.3	1.4
		90th	1.8	1.5	1.8	3.0	2.5	3.2
2070	MAM	Mean	1.1	1.1	1.2	2.0	1.9	2.2
		Median	1.0	1.1	1.2	1.7	1.8	2.1
		10th	0.8	0.8	0.9	1.5	1.5	1.6
		90th	1.5	1.5	1.5	2.8	2.6	2.9
2070	JJA	Mean	1.0	0.9	1.1	1.7	1.6	1.9
		Median	1.1	0.9	1.1	1.6	1.5	1.9
		10th	0.7	0.7	0.9	1.3	1.4	1.6
		90th	1.2	1.2	1.2	2.1	2.1	2.2
2070	SON	Mean	1.0	1.0	1.1	1.8	1.8	1.9
		Median	1.0	1.1	1.1	1.7	1.8	1.8
		10th	0.6	0.8	0.9	1.4	1.4	1.5
		90th	1.3	1.3	1.3	2.3	2.2	2.4
2070	Annual	Mean	1.0	1.0	1.2	1.9	1.8	2.0
		Median	1.0	1.0	1.1	1.7	1.6	1.9
		10th	0.7	0.7	1.0	1.4	1.5	1.6
		90th	1.4	1.4	1.5	2.6	2.3	2.7
2090	DJF	Mean	1.3	1.2	1.5	2.6	2.4	3.0
		Median	1.2	1.2	1.6	2.4	2.2	2.8
		10th	0.7	0.8	1.0	1.7	1.7	1.9
		90th	2.0	1.8	2.0	4.0	3.3	4.3
2090	MAM	Mean	1.3	1.3	1.5	2.7	2.7	3.0
		Median	1.3	1.3	1.5	2.3	2.5	2.9
		10th	0.9	0.9	1.2	2.0	2.0	2.2
		90th	1.8	1.8	1.8	3.8	3.5	3.8
2090	JJA	Mean	1.2	1.1	1.3	2.3	2.2	2.5
		Median	1.3	1.1	1.4	2.2	2.1	2.6
		10th	0.7	0.9	1.0	1.8	1.9	2.1
		90th	1.5	1.5	1.5	2.8	2.7	2.9

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	1.2	1.3	1.3	2.4	2.4	2.5
		Median	1.2	1.3	1.3	2.3	2.3	2.4
		10th	0.9	1.0	1.1	1.9	1.9	2.1
		90th	1.6	1.6	1.6	3.1	2.9	3.2
2090	Annual	Mean	1.2	1.2	1.4	2.5	2.4	2.7
		Median	1.2	1.2	1.3	2.3	2.2	2.5
		10th	0.8	0.9	1.2	1.9	2.0	2.2
		90th	1.7	1.7	1.7	3.5	3.1	3.5

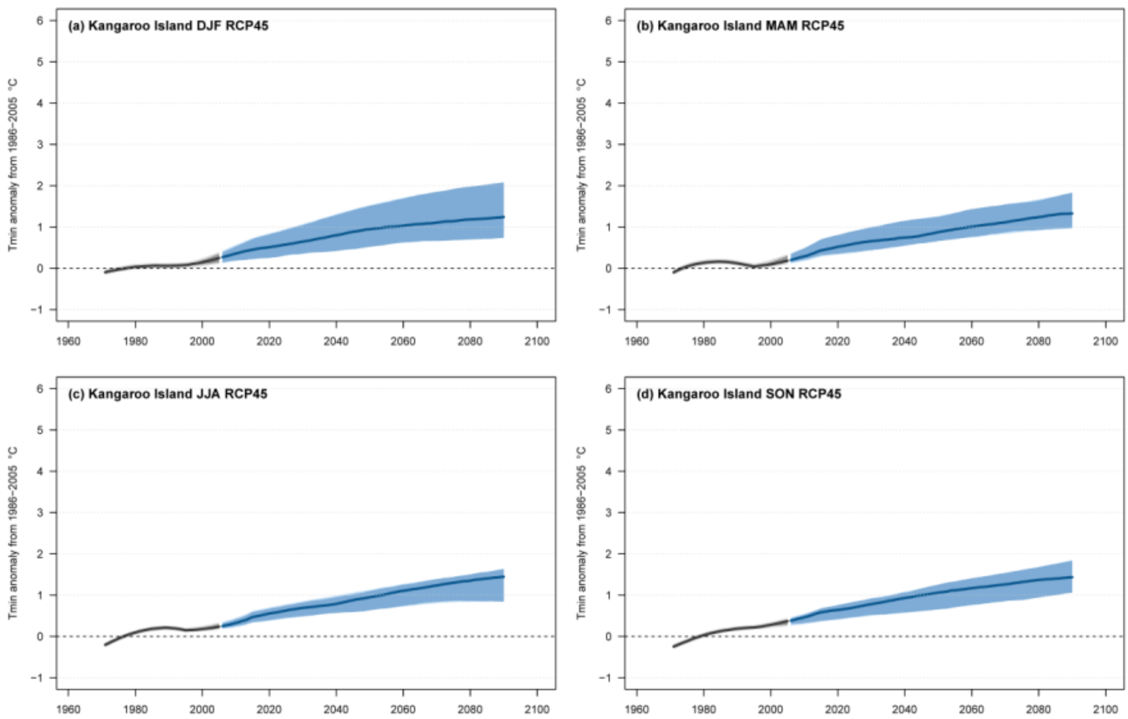

Figure 4.9 Kangaroo Island NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

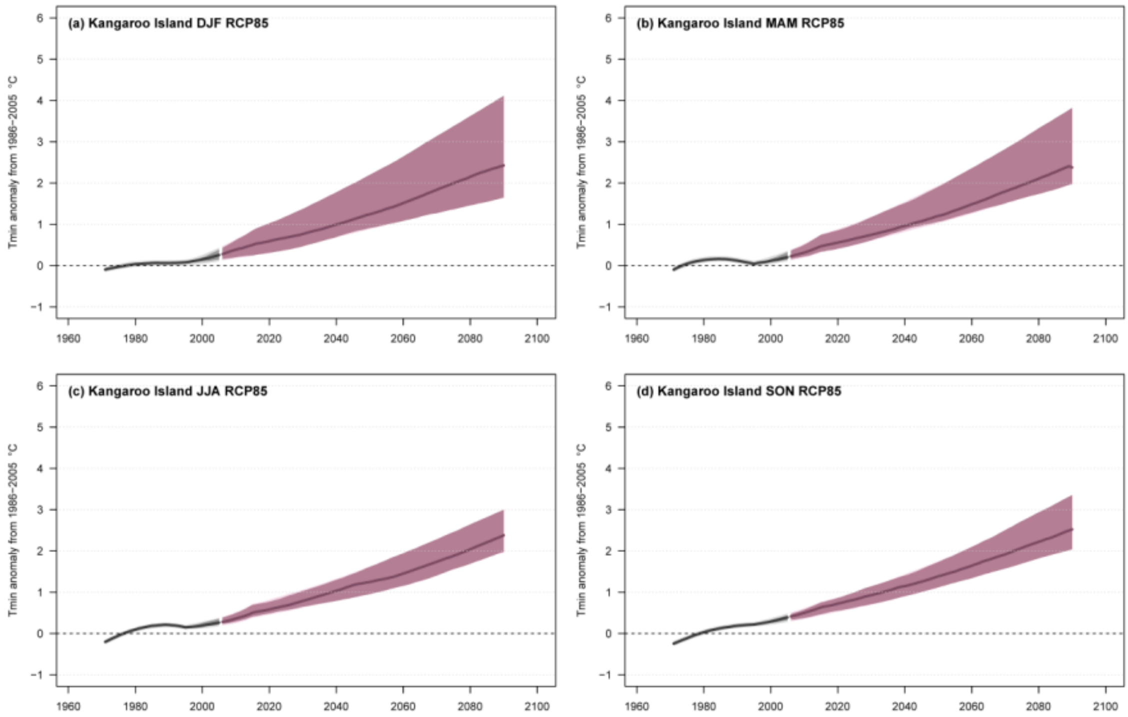

Figure 4.10 Kangaroo Island NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

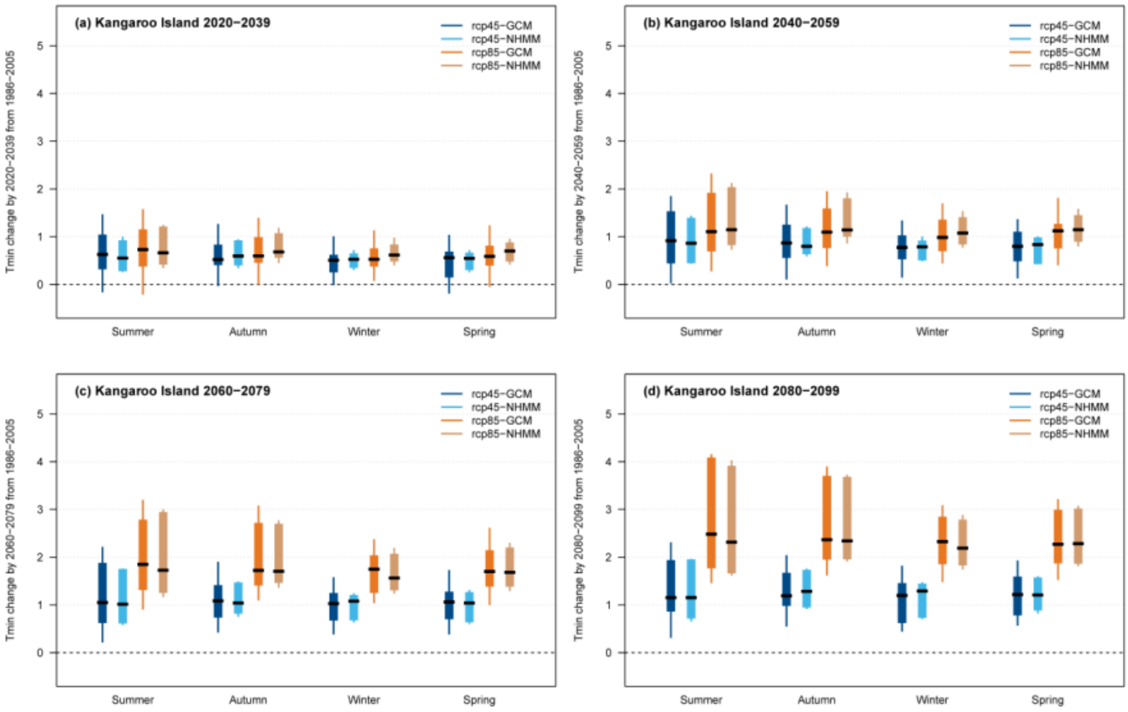

Figure 4.11 Kangaroo Island NRM CMIP5 GCM and NHMM-downscaled projected seasonal minimum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean minimum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean minimum daily temperature.

Table 4.6 summarises the downscaled changes projected for solar radiation. There is a steady progression of increasing solar radiation, consistent with the drying trends shown earlier, with stronger changes for RCP8.5 (Figure 4.13) compared to RCP4.5 (Figure 4.12). The ensemble mean of the six better rated GCMs is constantly lower than that of the six poorer rated GCMs. There is general consistency between downscaled and direct GCM grid-scale changes (Figure 4.14).

The mean, median and range of changes presented in Table 4.6 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in

Table B.31 for RCP4.5 and

Table B.32 for RCP8.5.

Table 4.6 Kangaroo Island NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.4	0.4	0.7	0.6	-0.4	1.3
		Median	0.2	0.2	0.5	0.6	0.1	0.7
		10th	-0.5	-0.5	-0.2	-0.1	-1.6	0.3
		90th	1.5	1.3	1.7	1.9	0.4	2.9
2030	MAM	Mean	0.6	0.9	0.0	0.9	1.2	0.8
		Median	0.4	0.2	-0.2	0.4	0.8	0.8
		10th	-1.1	-1.1	-1.8	-0.7	0.0	-1.6
		90th	2.5	3.7	2.0	-0.7	2.7	3.3
2030	JJA	Mean	1.4	0.8	1.9	1.9	1.4	2.2
		Median	1.5	1.3	2.3	1.4	1.3	2.1
		10th	-0.5	-0.5	0.0	0.1	0.3	0.5
		90th	3.3	1.7	3.5	3.2	2.6	4.0
2030	SON	Mean	1.9	2.2	1.9	2.2	2.3	2.6
		Median	1.7	1.9	1.7	1.9	1.8	2.4
		10th	1.3	1.4	1.5	1.1	1.2	2.0
		90th	3.2	3.5	2.5	3.9	3.9	3.6
2030	Annual	Mean	1.1	1.1	1.1	1.3	1.0	1.7
		Median	0.9	0.8	1.2	0.9	0.8	1.8
		10th	0.4	0.5	0.1	0.3	0.1	0.5
		90th	2.2	2.1	2.1	2.2	2.1	3.0
2050	DJF	Mean	0.5	0.3	0.8	0.9	-0.3	1.8
		Median	0.3	0.4	0.4	0.7	0.4	1.0
		10th	-0.5	-0.7	-0.3	-0.2	-1.8	0.4
		90th	1.5	1.2	2.3	2.4	0.7	3.9
2050	MAM	Mean	1.0	1.2	0.4	1.4	1.4	1.6
		Median	1.0	1.0	0.1	1.4	1.5	1.8
		10th	-1.5	-1.0	-1.7	-0.9	-0.8	-1.5
		90th	3.5	3.7	2.9	4.4	3.4	4.5
2050	JJA	Mean	2.2	1.8	2.7	2.9	2.1	3.6
		Median	2.5	2.3	3.2	2.7	2.1	3.4
		10th	0.2	0.4	0.7	0.2	0.7	1.2
		90th	3.7	2.7	4.3	4.6	3.6	6.2
2050	SON	Mean	2.6	2.7	3.1	3.4	3.7	3.9
		Median	2.4	2.2	3.0	2.7	2.7	3.7
		10th	1.5	1.6	2.3	2.2	2.5	2.9

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	4.0	4.4	3.9	5.4	5.8	5.1
2050	Annual	Mean	1.5	1.4	1.7	2.0	1.6	2.6
		Median	1.2	1.2	1.7	1.6	1.2	2.6
		10th	0.4	0.7	0.4	0.6	0.6	1.0
		90th	2.5	2.4	3.0	3.2	2.9	4.4
2070	DJF	Mean	0.5	0.1	0.9	1.0	0.1	2.1
		Median	0.5	0.2	0.5	0.8	0.5	1.0
		10th	-0.7	-1.0	-0.1	-0.4	-1.3	0.1
		90th	1.3	1.0	2.3	2.7	1.0	5.3
2070	MAM	Mean	1.5	1.6	1.1	1.9	1.4	2.6
		Median	1.6	1.4	1.1	1.4	1.2	2.7
		10th	-0.9	-0.1	-1.5	-0.4	-0.3	-1.4
		90th	3.8	3.6	3.8	4.9	3.3	6.5
2070	JJA	Mean	2.7	2.1	3.4	4.2	2.9	5.5
		Median	3.1	2.3	3.7	4.2	2.8	4.9
		10th	0.5	0.9	1.5	0.9	0.7	2.5
		90th	4.4	3.3	5.1	6.4	5.1	9.3
2070	SON	Mean	3.2	2.9	3.8	4.6	4.8	5.4
		Median	2.8	2.5	3.8	4.4	4.2	5.1
		10th	1.8	1.7	2.9	2.5	3.1	3.8
		90th	4.8	4.6	4.8	7.3	7.2	7.3
2070	Annual	Mean	1.8	1.5	2.2	2.7	2.1	3.7
		Median	1.6	1.1	2.2	1.8	1.7	3.4
		10th	0.9	1.0	0.9	1.1	1.1	1.3
		90th	2.6	2.4	3.5	4.4	3.7	6.5
2090	DJF	Mean	0.5	-0.2	0.8	1.3	0.5	2.7
		Median	0.5	0.1	0.3	0.9	1.0	1.4
		10th	-0.4	-1.7	-0.1	-0.5	-0.9	0.1
		90th	2.3	0.9	2.3	3.2	1.4	6.6
2090	MAM	Mean	1.7	1.9	1.4	2.4	1.5	3.7
		Median	2.2	2.3	1.9	2.0	1.6	4.5
		10th	-0.9	0.0	-1.3	-1.2	-0.4	-1.8
		90th	3.6	3.5	3.7	6.0	3.5	8.4
2090	JJA	Mean	3.2	2.4	4.0	5.3	3.6	7.4
		Median	3.3	2.7	4.5	4.8	3.7	6.1
		10th	0.9	0.9	1.7	1.7	0.5	3.4
		90th	5.6	3.7	5.9	9.0	6.7	12.7

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	3.3	2.8	4.4	5.8	6.2	7.0
		Median	3.2	2.7	4.6	5.5	6.3	6.1
		10th	1.7	1.4	3.5	2.8	3.8	4.7
		90th	5.3	4.4	5.2	9.5	8.5	10.2
2090	Annual	Mean	2.0	1.5	2.5	3.4	2.8	4.8
		Median	1.8	1.3	2.5	2.8	2.6	4.3
		10th	0.9	0.8	1.2	1.3	1.5	1.7
		90th	3.2	2.4	3.8	5.7	4.4	8.6

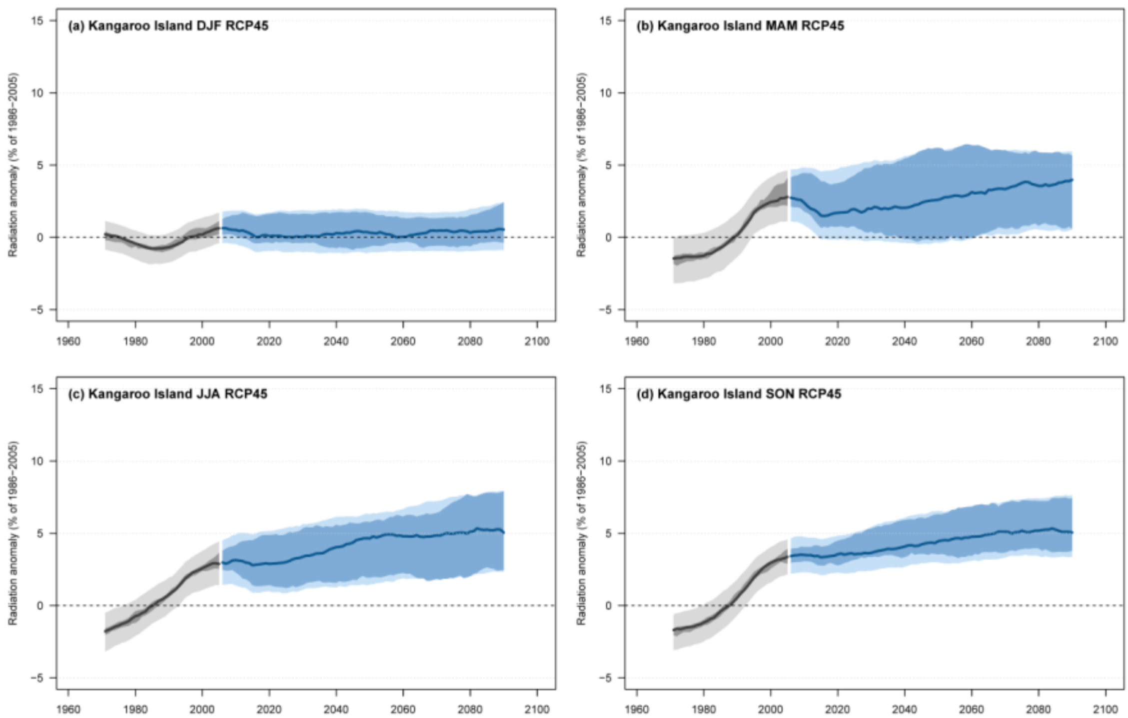

Figure 4.12 Kangaroo Island NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

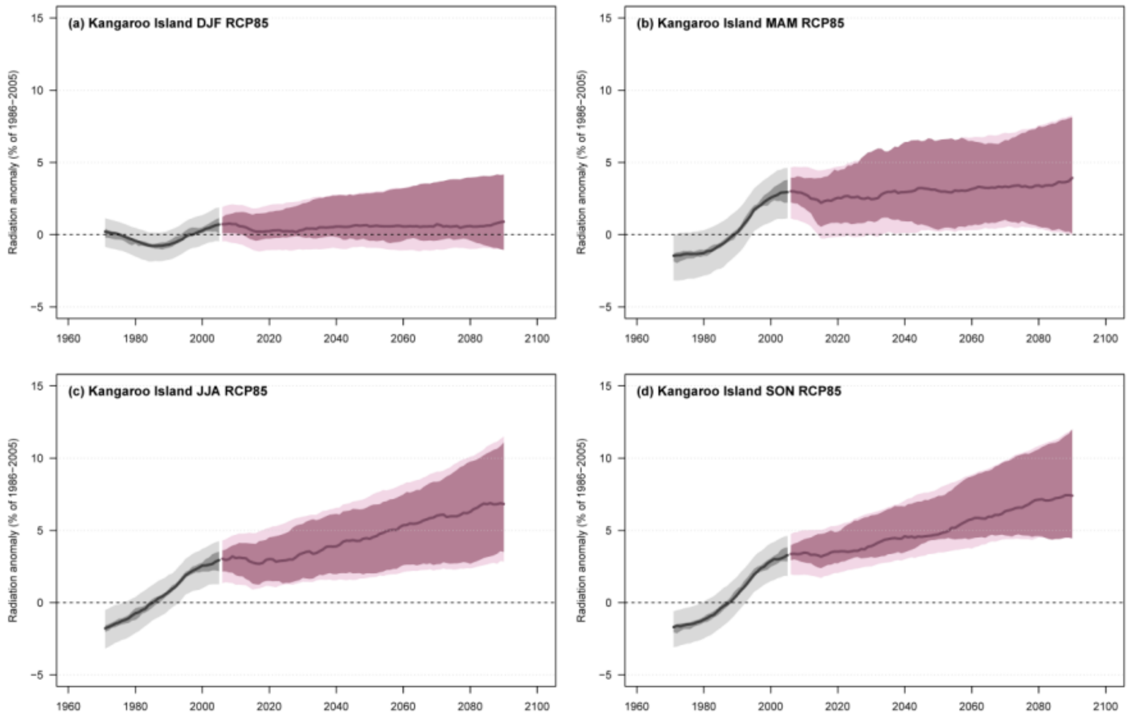

Figure 4.13 Kangaroo Island NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

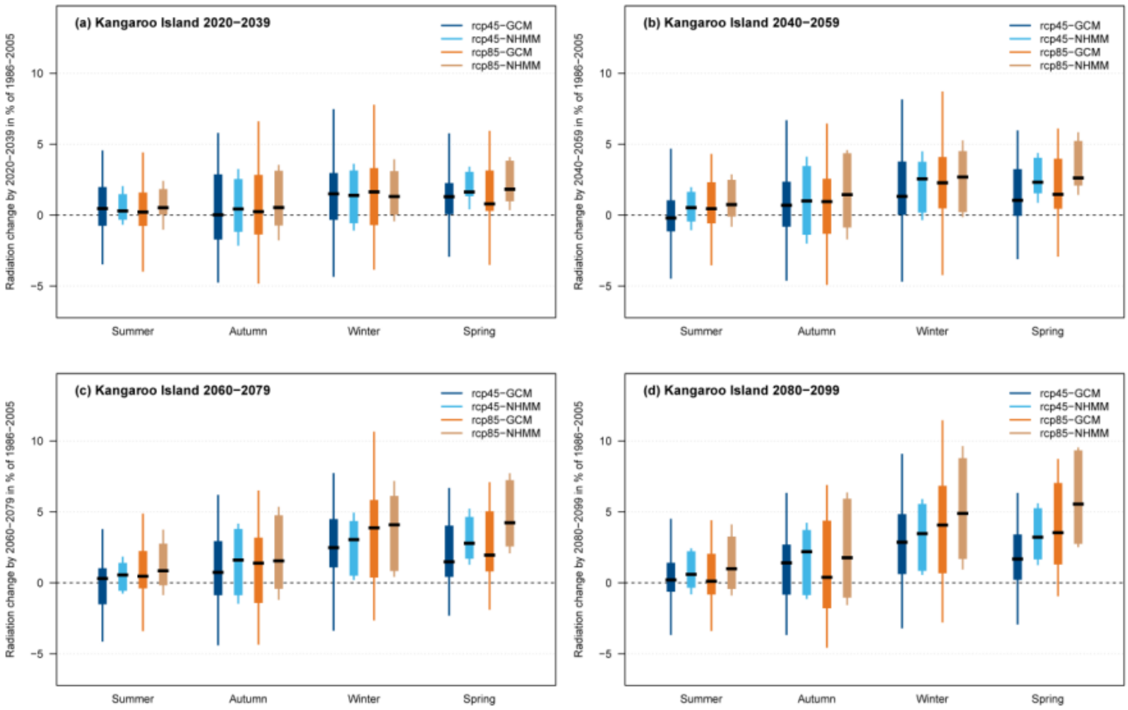

Figure 4.14 Kangaroo Island NRM CMIP5 GCM and NHMM-downscaled projected seasonal solar radiation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean solar radiation (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean solar radiation.

The changes to VPD are summarised in Table 4.7, showing smaller increases for RCP4.5 compared to RCP8.5 (Figure 4.15, Figure 4.16 and Figure 4.17). The mean, median and range of changes presented in Table 4.7 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.33 for RCP4.5 and Table B.34 for RCP8.5.

Table 4.7 Kangaroo Island NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	4.6	4.7	5.5	5.3	3.6	7.3
		Median	3.3	3.6	3.7	3.5	2.3	5.5
		10th	1.2	2.4	1.4	0.4	-0.1	1.9
		90th	8.6	8.1	11.5	12.2	8.7	14.6
2030	MAM	Mean	4.5	5.8	2.7	6.0	6.5	5.4
		Median	3.7	5.2	1.2	6.3	6.7	3.5
		10th	0.6	3.6	0.3	2.3	5.1	2.2
		90th	9.7	8.6	6.7	2.3	7.8	10.6
2030	JJA	Mean	5.3	5.9	3.9	7.3	7.7	6.0
		Median	4.7	4.1	3.7	7.4	7.3	6.4
		10th	2.5	3.0	2.1	3.8	5.2	2.9
		90th	9.2	10.6	6.0	10.5	10.5	8.7
2030	SON	Mean	7.8	9.9	5.9	9.4	10.9	8.3
		Median	7.4	8.9	6.3	9.9	11.4	8.3
		10th	4.4	6.8	3.5	5.5	5.7	4.6
		90th	10.6	13.9	8.1	13.1	15.5	11.9
2030	Annual	Mean	5.4	6.4	4.7	6.7	6.7	6.9
		Median	5.4	6.2	3.9	6.1	6.8	5.6
		10th	3.0	4.6	2.1	4.1	4.9	3.1
		90th	8.5	8.5	8.1	10.0	8.4	12.1
2050	DJF	Mean	6.3	6.3	7.7	9.4	7.9	12.1
		Median	4.2	5.1	5.3	6.2	6.1	8.9
		10th	1.9	4.0	2.1	3.7	3.7	3.2
		90th	12.0	9.9	15.6	20.1	13.9	24.3
2050	MAM	Mean	6.8	8.3	4.5	10.2	11.2	9.6
		Median	7.0	7.9	2.9	10.8	11.9	7.4
		10th	2.1	6.2	1.2	4.9	8.1	3.7
		90th	12.0	10.9	9.5	13.9	13.6	17.7
2050	JJA	Mean	7.9	9.0	6.2	12.7	13.2	10.9
		Median	7.0	6.7	6.1	12.5	12.0	11.6
		10th	3.9	5.7	2.8	7.0	9.2	5.8
		90th	12.8	14.6	9.7	18.6	18.5	15.4
2050	SON	Mean	11.1	13.5	9.3	15.5	18.3	13.7
		Median	11.1	12.5	9.5	15.3	19.2	12.9
		10th	6.8	9.3	5.7	8.7	10.8	7.4

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	14.6	18.7	12.9	22.3	25.0	20.9
2050	Annual	Mean	7.8	8.9	7.1	11.5	12.0	11.7
		Median	7.0	9.7	6.3	10.9	12.6	9.5
		10th	4.9	6.3	3.7	6.8	8.7	5.2
		90th	10.9	10.8	11.3	16.9	14.7	20.4
2070	DJF	Mean	7.6	7.3	9.1	14.0	12.8	17.5
		Median	5.4	6.5	6.9	11.0	11.2	12.3
		10th	3.2	3.8	2.6	6.2	7.9	4.2
		90th	14.3	11.6	17.9	29.7	19.3	36.2
2070	MAM	Mean	8.5	9.8	6.6	15.3	16.9	14.3
		Median	8.5	9.6	5.3	15.6	16.8	11.5
		10th	3.8	7.2	2.9	7.5	11.6	5.6
		90th	13.4	12.7	11.7	22.7	22.5	25.8
2070	JJA	Mean	9.6	10.5	8.3	19.2	20.2	17.3
		Median	8.4	8.3	8.2	18.8	18.0	18.7
		10th	5.6	7.7	4.3	11.5	13.6	9.7
		90th	14.3	15.5	12.4	28.2	29.2	23.7
2070	SON	Mean	13.2	15.4	11.7	22.5	26.0	20.6
		Median	13.2	14.6	12.1	21.8	26.6	18.0
		10th	8.0	10.7	6.8	12.3	16.8	11.4
		90th	18.2	21.0	16.3	32.6	34.7	32.4
2070	Annual	Mean	9.5	10.3	9.0	17.1	18.1	17.5
		Median	9.6	11.0	8.3	16.5	20.6	13.9
		10th	6.3	7.4	4.9	9.6	12.6	7.7
		90th	12.7	12.6	13.9	25.2	21.2	30.9
2090	DJF	Mean	8.8	8.1	10.3	19.1	18.5	23.6
		Median	6.8	7.2	8.7	13.1	18.3	16.2
		10th	2.7	3.2	3.1	8.0	11.8	5.4
		90th	16.4	13.9	19.3	40.2	25.3	49.2
2090	MAM	Mean	10.1	11.4	8.0	20.5	23.3	19.5
		Median	9.7	11.6	7.1	19.5	22.6	16.8
		10th	6.0	8.5	4.2	8.7	13.8	6.9
		90th	14.6	14.2	12.8	33.9	33.5	34.8
2090	JJA	Mean	11.7	12.1	11.0	26.1	28.0	24.2
		Median	10.3	10.2	10.6	25.3	24.6	25.9
		10th	7.2	9.9	7.3	16.5	18.8	13.9
		90th	16.2	16.2	15.2	39.5	40.6	32.9

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	15.1	16.9	13.9	29.7	34.1	28.2
		Median	15.0	16.5	14.3	29.3	35.4	24.0
		10th	9.1	11.3	8.6	14.9	21.6	14.5
		90th	21.4	23.1	19.0	46.0	45.2	46.0
2090	Annual	Mean	11.1	11.6	10.7	23.0	24.8	23.8
		Median	10.6	11.8	10.3	21.0	28.4	19.0
		10th	7.6	8.7	6.0	12.3	16.2	9.8
		90th	14.6	14.4	16.0	35.5	29.8	42.5

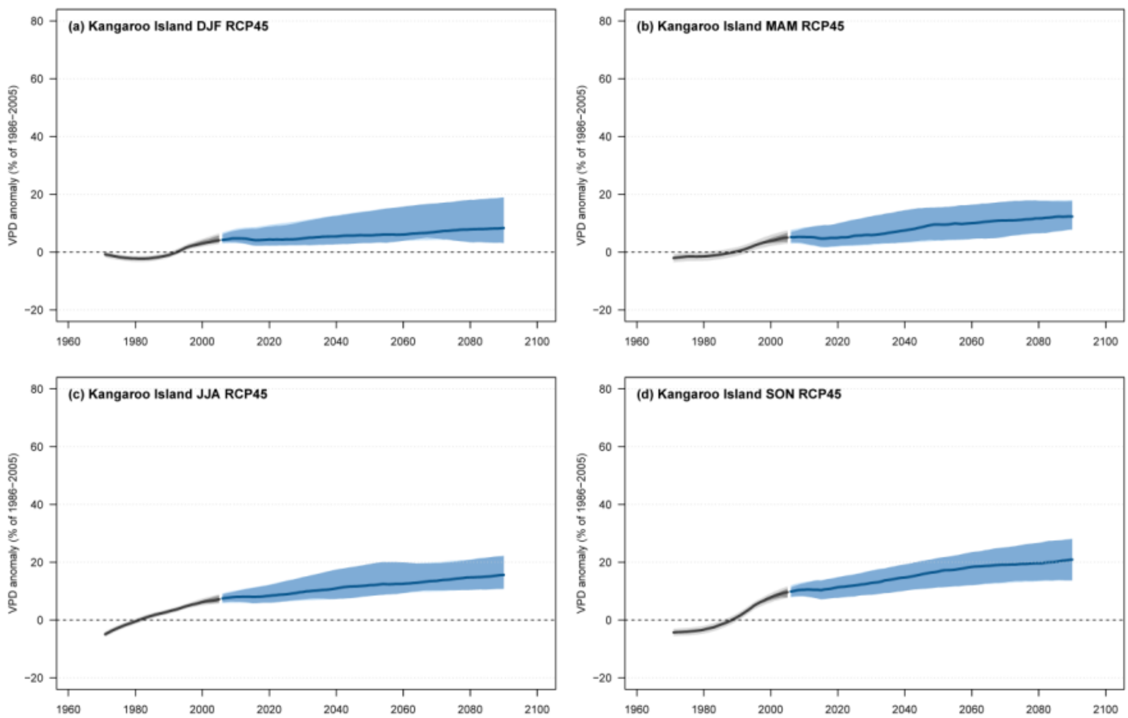

Figure 4.15 Kangaroo Island NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

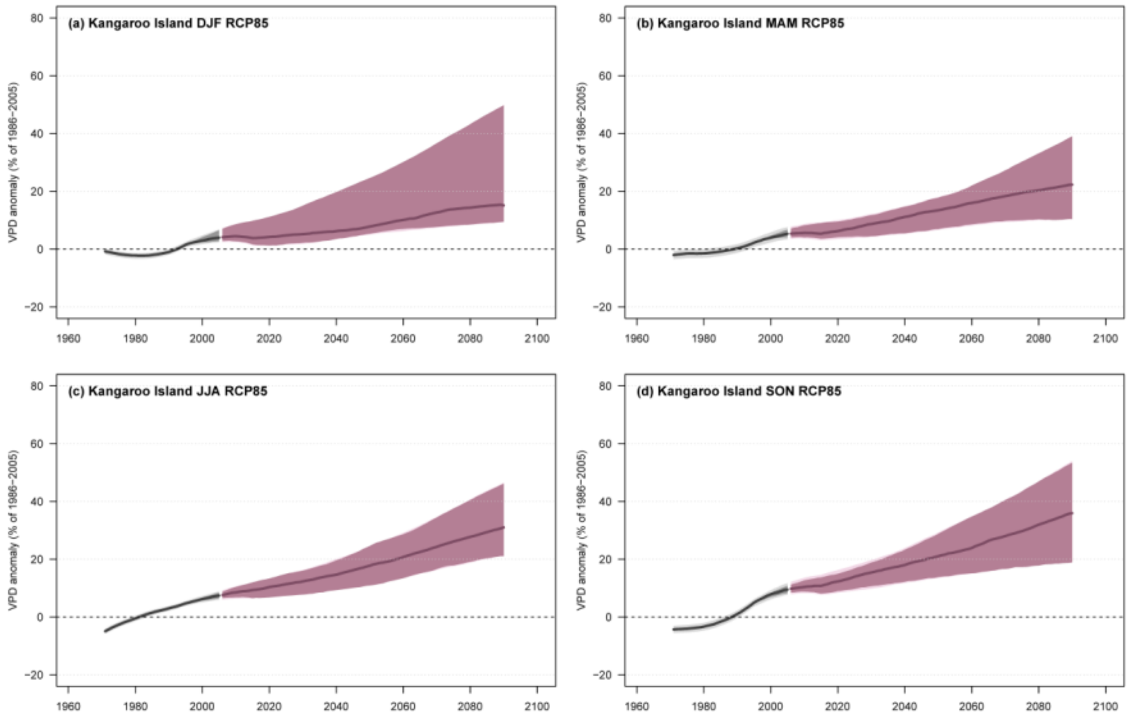

Figure 4.16 Kangaroo Island NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

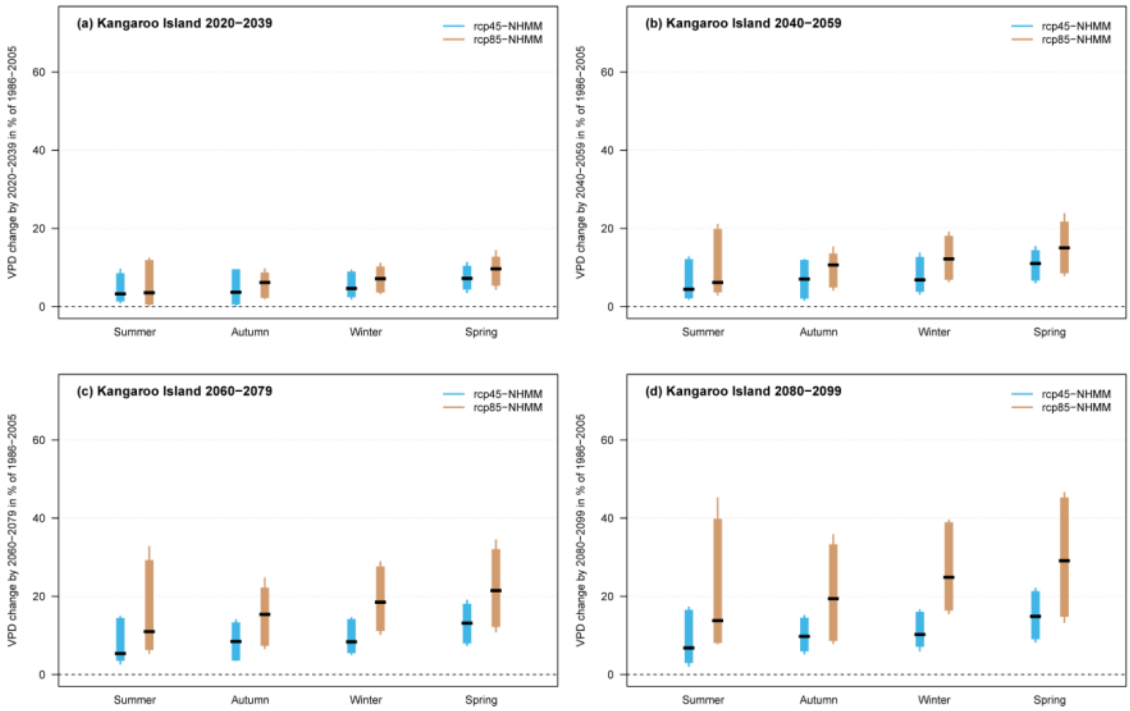

Figure 4.17 Kangaroo Island NRM NHMM-downscaled projected seasonal vapour pressure deficit changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean vapour pressure deficit (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean vapour pressure deficit.

APET changes are summarised in Table 4.8, with progressive increases consistent with the changes of the input variables used to calculate APET (i.e. temperature, solar radiation and VPD). The progressions of these trends are shown in Figure 4.18 and Figure 4.19 and the range of changes in Figure 4.20. There are smaller changes from the ensemble of better GCMs compared to the poorer rated GCMs (Table 4.8).

The mean, median and range of changes presented in Table 4.8 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.35 for RCP4.5 and Table B.36 for RCP8.5.

Table 4.8 Kangaroo Island NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	1.9	1.7	2.3	2.4	1.4	3.3
		Median	1.5	1.5	1.7	2.0	1.6	2.1
		10th	1.0	1.2	1.2	0.9	-0.2	2.0
		90th	3.0	2.3	4.1	4.5	2.6	5.8
2030	MAM	Mean	2.0	2.3	1.5	2.6	2.8	2.6
		Median	1.7	1.9	1.1	2.6	2.6	2.7
		10th	0.5	1.2	0.3	0.9	1.9	0.8
		90th	4.0	3.7	3.0	0.9	3.9	4.4
2030	JJA	Mean	1.7	1.6	1.8	2.1	1.9	2.3
		Median	1.6	1.6	1.9	1.8	2.0	2.1
		10th	1.0	1.2	1.3	1.4	1.4	1.6
		90th	2.3	2.0	2.4	3.0	2.4	3.2
2030	SON	Mean	2.9	3.1	3.0	3.6	3.5	4.1
		Median	2.7	3.1	2.7	3.2	3.2	3.7
		10th	2.0	2.5	2.4	2.3	2.6	3.2
		90th	4.0	3.9	4.0	5.5	4.8	5.5
2030	Annual	Mean	2.2	2.2	2.3	2.7	2.4	3.3
		Median	2.0	2.0	1.9	2.3	2.3	2.6
		10th	1.4	1.8	1.4	1.8	1.5	2.1
		90th	2.9	2.8	3.6	4.3	3.3	5.1
2050	DJF	Mean	2.7	2.3	3.3	4.0	2.7	5.2
		Median	2.4	2.4	2.4	3.4	2.8	3.5
		10th	1.2	1.3	1.9	1.8	0.7	3.3
		90th	3.8	3.2	5.7	6.8	4.7	8.9
2050	MAM	Mean	3.0	3.3	2.5	4.5	4.5	4.8
		Median	3.0	3.5	2.1	4.5	4.4	4.7
		10th	1.2	2.1	1.1	2.4	3.0	2.4
		90th	4.6	4.5	4.3	6.1	6.0	7.3
2050	JJA	Mean	2.4	2.3	2.6	3.9	3.3	4.5
		Median	2.3	2.1	2.5	3.5	3.0	4.3
		10th	1.7	1.9	2.1	1.9	2.2	2.7
		90th	3.2	3.0	3.4	6.1	4.8	6.5
2050	SON	Mean	4.2	4.3	4.7	5.8	6.0	6.5
		Median	3.9	4.1	4.6	5.3	5.3	6.0
		10th	3.0	3.4	3.7	4.3	4.9	5.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	5.9	5.4	5.9	8.6	7.8	8.6
2050	Annual	Mean	3.1	3.1	3.5	4.6	4.1	5.4
		Median	2.8	2.9	3.0	4.0	3.7	4.4
		10th	2.2	2.5	2.3	3.1	2.9	3.7
		90th	4.2	3.8	5.1	7.0	5.7	8.2
2070	DJF	Mean	3.2	2.7	4.0	5.7	4.4	7.3
		Median	2.8	2.8	3.0	4.5	4.1	4.9
		10th	1.9	1.3	2.4	3.4	2.6	4.2
		90th	4.7	4.0	6.6	9.6	6.7	12.9
2070	MAM	Mean	4.0	4.3	3.7	6.6	6.4	7.3
		Median	4.1	4.7	3.6	6.0	6.5	6.5
		10th	2.1	2.8	2.0	4.4	5.0	4.2
		90th	5.4	5.4	5.5	8.6	7.8	11.4
2070	JJA	Mean	3.2	2.8	3.7	6.6	5.8	7.7
		Median	2.7	2.6	3.7	6.6	5.8	7.4
		10th	2.1	2.2	2.5	3.5	3.9	5.3
		90th	4.3	3.7	5.0	8.7	7.8	10.5
2070	SON	Mean	5.1	5.0	6.0	8.4	8.4	9.5
		Median	4.9	4.7	5.7	7.9	8.1	8.5
		10th	3.6	3.8	4.9	6.0	6.6	7.2
		90th	7.4	6.4	7.4	12.8	10.7	12.8
2070	Annual	Mean	3.9	3.7	4.5	6.8	6.2	8.0
		Median	3.5	3.5	3.9	5.8	5.4	6.3
		10th	2.9	2.8	3.3	4.9	5.0	5.5
		90th	5.5	4.8	6.3	10.2	8.2	12.3
2090	DJF	Mean	3.7	2.9	4.5	7.5	6.3	9.7
		Median	3.6	3.2	3.9	5.9	5.8	6.8
		10th	2.4	1.0	2.5	4.6	4.3	5.3
		90th	5.4	4.6	7.2	12.5	8.8	17.1
2090	MAM	Mean	4.7	5.1	4.5	8.8	8.6	10.0
		Median	4.9	5.2	4.6	8.3	8.7	9.0
		10th	2.6	3.6	2.7	5.7	6.4	5.8
		90th	6.5	6.4	6.4	11.8	10.8	15.4
2090	JJA	Mean	4.2	3.6	5.1	9.1	8.4	10.5
		Median	3.7	3.2	5.6	8.4	8.2	9.3
		10th	2.5	2.8	3.1	6.1	6.2	7.6
		90th	6.4	4.7	6.7	12.3	10.8	14.8

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	5.9	5.5	7.1	11.0	11.3	12.6
		Median	5.9	5.3	7.1	10.7	11.2	11.1
		10th	3.7	3.9	6.0	7.3	8.6	9.1
		90th	8.2	7.4	8.1	16.8	14.0	17.8
2090	Annual	Mean	4.6	4.2	5.3	9.0	8.4	10.7
		Median	4.3	4.2	4.7	7.6	7.6	8.1
		10th	3.2	2.7	4.2	6.5	6.8	7.4
		90th	6.6	5.7	7.2	13.6	11.0	16.6

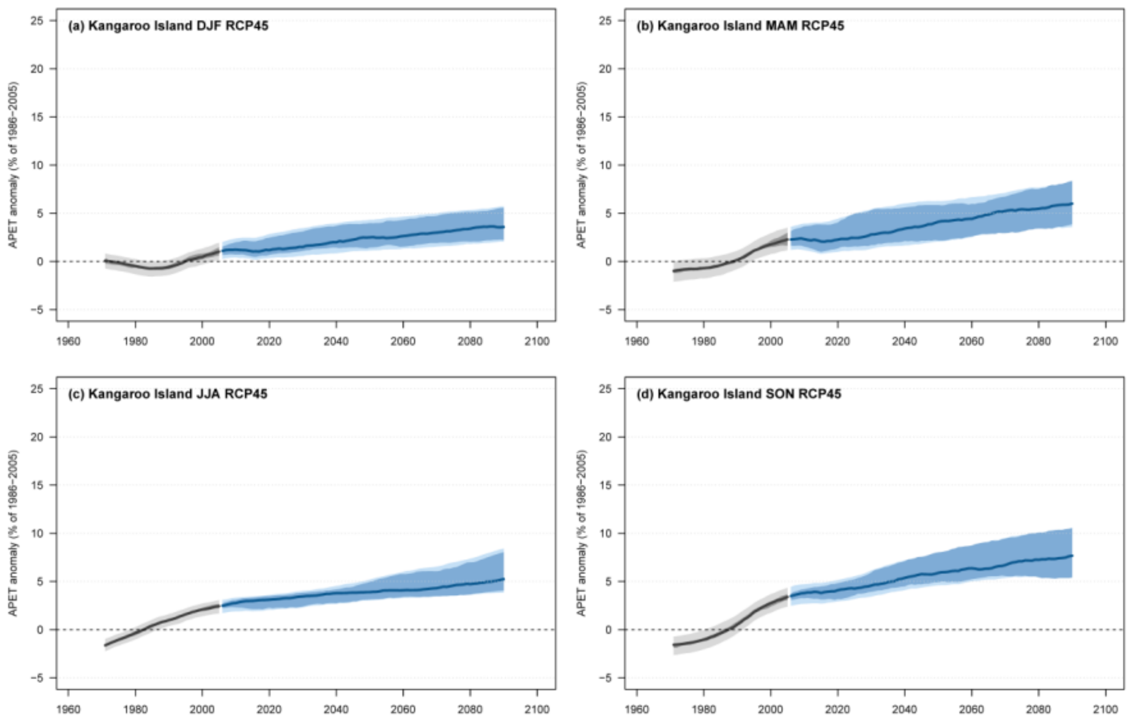

Figure 4.18 Kangaroo Island NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

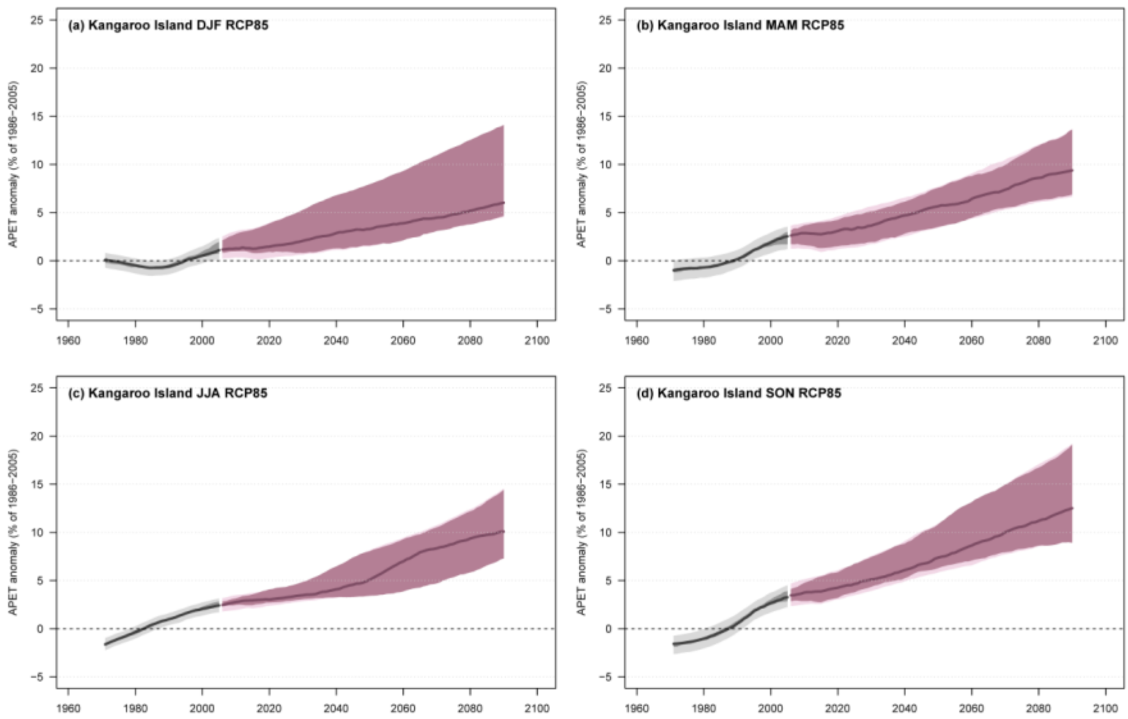

Figure 4.19 Kangaroo Island NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

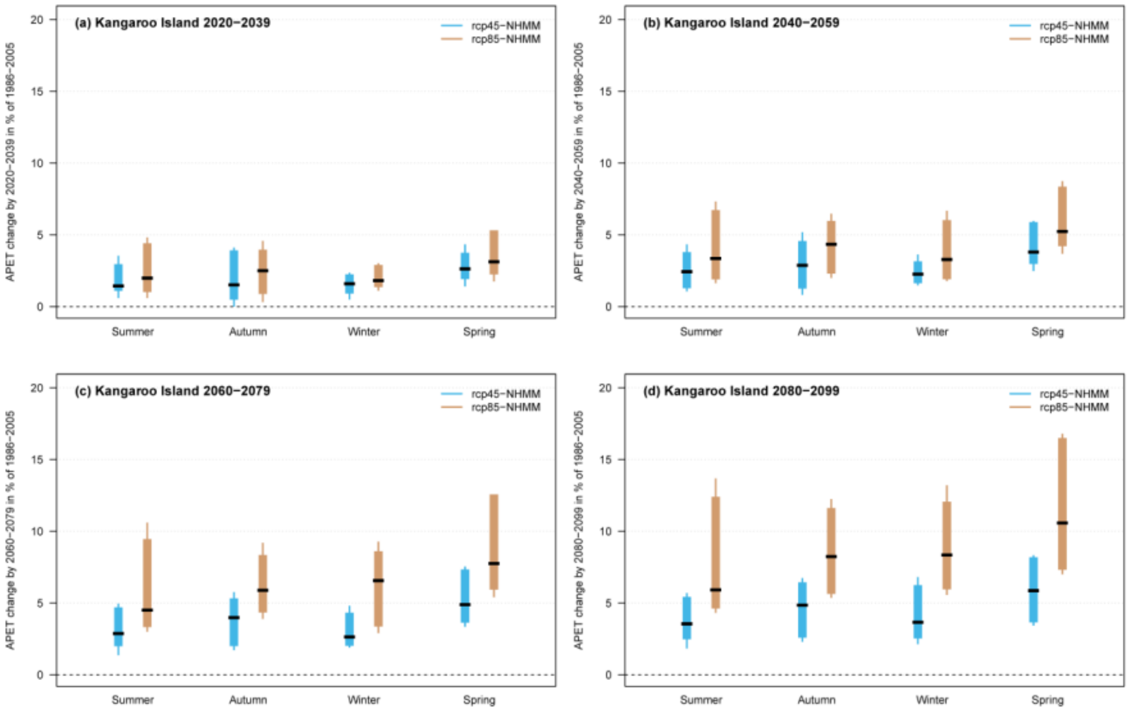

Figure 4.20 Kangaroo Island NRM NHMM-downscaled projected seasonal potential evapotranspiration changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean potential evapotranspiration (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean potential evapotranspiration.

4.4 Summary

Decreases in precipitation are projected for all seasons, and hence annual precipitation also, with the greatest relative decreases in spring, followed by summer, for both RCP4.5 and RCP8.5. For the second half of the century the scenarios diverge, with larger decreases from RCP8.5. Daily temperatures (maximum and minimum) are projected to increase for all seasons. For maximum temperature there are slightly larger increases for the spring season corresponding to its increased drying relative to the other seasons. For both maximum and minimum daily temperatures, the increases for RCP8.5 are larger than RCP4.5 from mid-century onwards. Solar radiation also increases for all seasons, with larger relative increases in winter and spring, corresponding to a reduction in clouds given their drying trends. VPD also increases in all seasons, notably much more for RCP8.5 than for RCP4.5 with double the end of the century relative changes. APET also increases in all seasons, with relative increases greater in spring, and the projected changes for RCP8.5 are also double those for RCP4.5 by the end of the century. Overall, for all variables and both RCPs, the changes projected from a subset of six better performing GCMs are smaller than the changes projected by a subset of six poorer performing GCMs. The downscaled projections for each Kangaroo Island station, provided as 100 stochastic replicates of daily time-series for each GCM and RCP, represent ‘added value’ over direct GCM output as they provide realistic station-scale input series suitable for probabilistic impacts and adaptation investigations. Bates et al. (2010), in a report focussing on climate change and water allocation, provide a useful summary on the appropriate application of projections in such investigations. CSIRO and Bureau of Meteorology (2014) provides a detailed overview of climate change science from an Australian perspective with recommendations on understanding and utilising projections.

5 Projections for Northern and Yorke

5.1 Overview

The Northern and Yorke (NY) NRM region includes the Yorke Peninsula, the northern Mount Lofty Ranges, the Clare Valley and the southern Flinders Ranges. These land areas are adjacent to the Spencer Gulf and the Gulf of St Vincent. The region experiences mild winters and hot summers, with the majority of annual precipitation falling in winter. It is an important agricultural area, producing 25% of the state's agricultural earnings including the major wine growing area of the Clare Valley (NYNRMB, 2009).

Twenty eight weather stations were selected for the statistical downscaling model calibration. Their mean rainfall characteristics are summarised in Table 5.1, in terms of seasonal mean number of wet-days and rainfall totals for the 1986-2005 baseline (representing current climate, this is the period that projections are compared to in later results). Annual rainfall totals vary between stations by more than a factor of two, ranging from approximately 250 mm (Belton) to 620 mm (Clare).

The selected downscaling models, for the four seasons, are summarised in Table 5.2. Two seasons, autumn and winter, include both a 'east minus west' and a 'north minus south' SLP difference predictor. Summer includes 'north minus south' SLP difference and spring uses 'east minus west' SLP difference. All seasons use both 700 and 850 hPa level DTD predictors. Summer also uses northerly wind speed (V-wind) at the 850 hPa level and spring uses easterly wind speed (U-wind) at the 700 hPa level. The mean rainfall characteristics associated with the weather states for each of the four seasonal NHMMs are presented in Appendix A, Table A.13 to Table A.16.

Table 5.1 Northern and Yorke NRM Climate Stations for NHMM-Downscaling

BoM ID	Name	Latitude	Longitude	Rain days (# days) DJF	MAM	JJA	SON	Rain amount (mm) DJF	MAM	JJA	SON
19004	BELTON (SHADOW VALE)	32.24	138.71	7 0.21	6 0.18	12 0.35	9 0.26	63 0.25	48 0.19	70 0.28	71 0.28
19025	MORCHARD (THE ROCKS)	32.77	138.51	7 0.13	10 0.18	23 0.42	15 0.27	69 0.19	65 0.18	125 0.34	105 0.29
19042	MELROSE (PARA GUMS)	32.85	138.21	8 0.12	12 0.19	27 0.42	17 0.27	65 0.15	74 0.17	168 0.39	126 0.29
19050	HAWKER (WILSON)	31.99	138.34	8 0.17	8 0.17	18 0.39	12 0.26	76 0.23	64 0.20	99 0.30	87 0.27
19061	CRADOCK (YEDNALUE)	32.05	138.64	8 0.18	7 0.16	17 0.39	12 0.27	68 0.22	64 0.21	88 0.29	86 0.28
19062	YONGALA	33.03	138.75	9 0.15	10 0.17	24 0.41	16 0.27	69 0.20	60 0.17	116 0.34	101 0.29
19098	CARRIETON (GLENROY ESTATE)	32.26	138.64	8 0.17	8 0.17	19 0.40	13 0.27	71 0.22	62 0.19	99 0.30	93 0.29
21010	BRINKWORTH (BUNGAREE)	33.75	138.56	10 0.12	14 0.18	34 0.42	22 0.28	80 0.14	90 0.16	230 0.41	161 0.29
21015	SNOWTOWN (CONDOWIE)	33.70	138.29	7 0.12	10 0.17	25 0.43	16 0.28	59 0.18	55 0.17	118 0.36	95 0.29
21025	CLARE (HILL RIVER)	33.83	138.65	11 0.13	15 0.18	36 0.42	23 0.27	79 0.13	100 0.16	260 0.42	185 0.30
21029	KOOLUNGA	33.59	138.33	8 0.12	12 0.18	29 0.43	18 0.27	60 0.15	66 0.17	153 0.39	114 0.29
21035	MOUNT TEMPLETON (GLENALBYN)	34.03	138.32	8 0.12	12 0.18	27 0.42	18 0.28	54 0.16	57 0.17	129 0.38	103 0.30
21043	PORT PIRIE ZINIFEX	33.17	138.01	8 0.14	11 0.19	23 0.40	15 0.26	61 0.18	63 0.19	112 0.33	100 0.30
21062	HALLETT (OLD CANOWIE)	33.30	138.76	9 0.12	13 0.17	32 0.43	21 0.28	75 0.15	84 0.16	205 0.40	148 0.29

21072	HUDDLESTON (WILLOW PONDS)	33.33	138.32	8 0.12	12 0.18	29 0.43	18 0.27	58 0.14	75 0.18	159 0.38	122 0.29
21075	CLARE (CALCANNIA)	33.75	138.61	9 0.12	13 0.17	34 0.44	22 0.28	71 0.13	83 0.16	221 0.42	155 0.29
21076	MANOORA (COOINDA)	33.93	138.81	9 0.12	14 0.18	33 0.43	21 0.27	70 0.15	77 0.16	188 0.40	138 0.29
21101	SNOWTOWN (BANYULA)	33.70	138.10	7 0.11	12 0.18	28 0.43	18 0.28	52 0.14	69 0.18	150 0.39	111 0.29
21102	CRYSTAL BROOK SECTION 299	33.35	138.10	7 0.12	11 0.19	24 0.41	16 0.28	59 0.17	65 0.18	123 0.35	108 0.30
21104	BALAKLAVA (WANAPPE)	33.99	138.45	9 0.13	12 0.17	29 0.42	19 0.28	57 0.15	63 0.17	139 0.37	113 0.30
21106	BOOWILLIA	33.95	138.39	8 0.12	11 0.17	27 0.42	18 0.28	55 0.16	60 0.17	129 0.37	107 0.30
21121	APOINGA (WILIVERE)	33.96	138.93	9 0.12	14 0.18	32 0.42	21 0.28	78 0.16	75 0.16	184 0.39	137 0.29
22008	MAITLAND	34.37	137.67	10 0.12	15 0.18	35 0.43	22 0.27	62 0.13	86 0.18	197 0.42	128 0.27
22019	MAITLAND (WEETULTA)	34.24	137.59	8 0.11	13 0.19	30 0.43	19 0.27	45 0.12	70 0.19	153 0.41	104 0.28
22021	ARDROSSAN (WINULTA)	34.28	137.86	8 0.11	14 0.19	32 0.44	19 0.26	56 0.14	71 0.17	167 0.41	112 0.28
22039	ARTHURTON (LOWANDALE)	34.30	137.71	9 0.11	15 0.19	34 0.42	22 0.28	54 0.12	86 0.18	198 0.42	130 0.28
23355	RIVERTON (LEAWARD)	34.21	138.79	10 0.12	15 0.19	34 0.42	22 0.27	77 0.15	83 0.17	193 0.38	150 0.30
24555	EUDUNDA (MOONDAH)	34.26	139.09	10 0.13	14 0.18	32 0.41	22 0.28	78 0.17	76 0.17	170 0.37	136 0.30

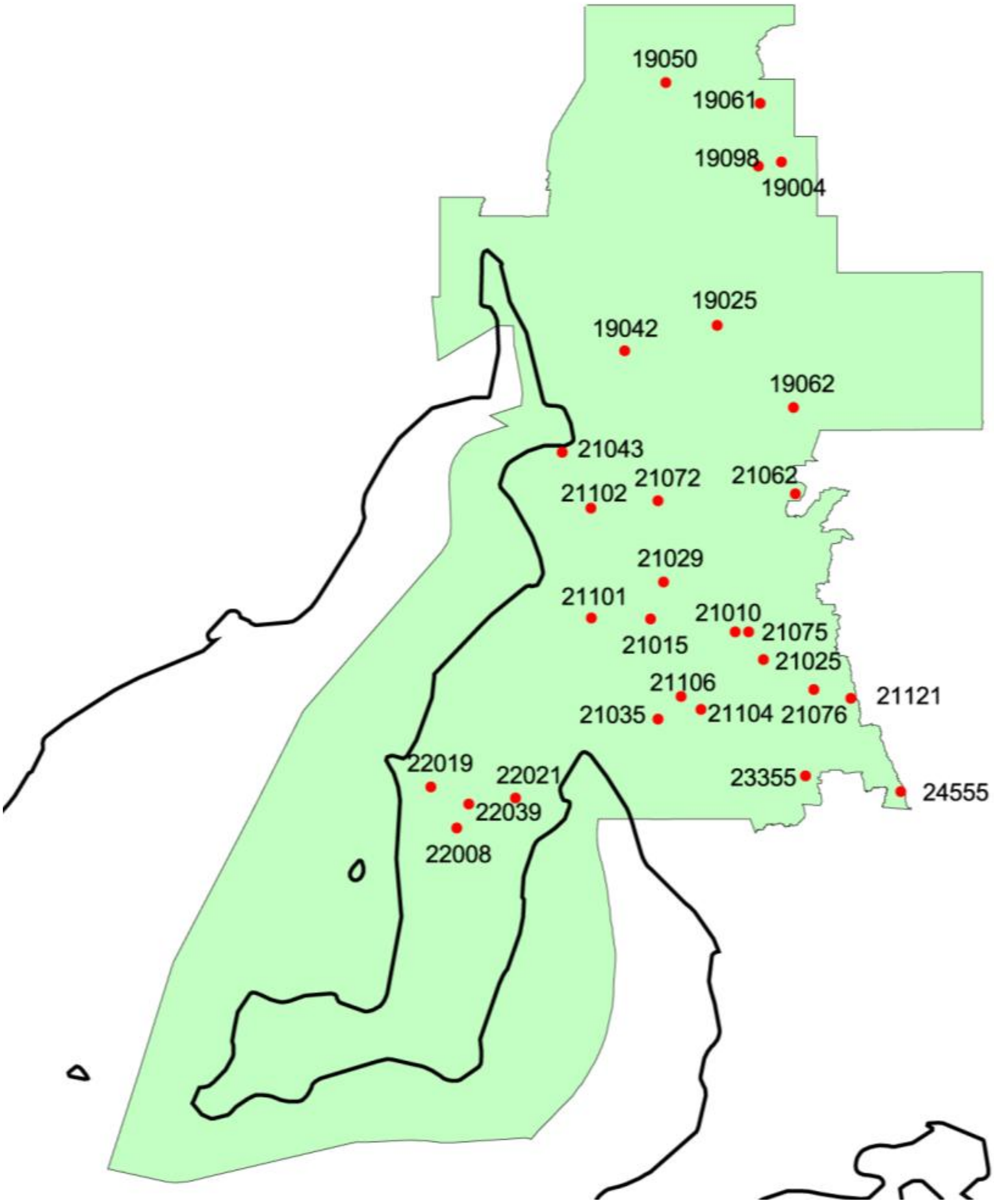

Figure 5.1 Location of Northern and Yorke stations in Table 5.1 and NRM region boundary

Table 5.2 Selected NHMMs (number of weather states and predictor combinations) for Northern and Yorke

DJF	MAM	JJA	SON
4 states	5 states	5 States	4 States
North – South SLP	East – West SLP	East – West SLP	East – West SLP
DTD at 700 hPa	North – South SLP	North – South SLP	DTD at 700 hPa
DTD at 850 hPa	DTD at 700 hPa	DTD at 700 hPa	DTD at 850 hPa
V-wind at 850 hPa	DTD at 850 hPa	DTD at 850 hPa	U-wind at 700 hPa

5.2 Precipitation

The changes in precipitation from downscaling the GCMs are summarised on a seasonal basis for future periods in Table 5.3. Also on a seasonal basis, Figure 5.2 shows the consistently decreasing progression of projected precipitation for RCP4.5, and similarly Figure 5.3 for RCP8.5. The RCP8.5 downscaled projections are of considerably larger magnitude than those of RCP4.5, with summer and spring producing the largest relative decreases. Figure 5.4 compares the range and median changes from the GCM direct output to those obtained from downscaling, showing that in most cases the downscaling produces median decreases that are larger than from the GCMs directly. Figure 5.5, and Table 5.3, highlight that the mean and median changes from the ensemble of six better rated GCMs are smaller than the changes from the six poorer rated GCMs.

The mean, median and range of changes presented in Table 5.3 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.37 for RCP4.5 and

Table B.38 for RCP8.5.

Table 5.3 Northern and Yorke NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	-12.4	-8.3	-15.2	-8.7	-0.2	-14.1
		Median	-13.9	-9.2	-18.6	-10.7	-0.1	-15.1
		10th	-27.9	-23.9	-27.8	-21.8	-12.7	-21.2
		90th	8.2	8.2	0.6	3.8	12.3	-5.9
2030	MAM	Mean	-8.0	-7.3	-8.3	-8.4	-8.4	-8.6
		Median	-9.2	-7.1	-12.2	-6.1	-4.7	-8.7
		10th	-23.5	-17.7	-23.7	-21.6	-19.2	-21.4
		90th	3.9	3.0	11.0	-0.4	-1.2	4.5
2030	JJA	Mean	-8.3	-5.8	-11.4	-9.6	-8.2	-11.2
		Median	-7.6	-4.3	-11.5	-8.6	-8.6	-10.1
		10th	-12.4	-11.6	-16.9	-14.7	-10.5	-16.2
		90th	-2.1	-1.5	-5.8	-7.2	-5.6	-7.4
2030	SON	Mean	-10.2	-15.6	-8.2	-15.4	-14.4	-16.4
		Median	-10.7	-14.2	-9.8	-14.3	-15.8	-16.8
		10th	-19.5	-25.1	-14.9	-21.5	-24.8	-20.8
		90th	0.3	-7.5	0.2	-9.1	-2.7	-11.8
2030	Annual	Mean	-9.5	-9.4	-10.5	-11.0	-9.0	-12.6
		Median	-8.5	-6.5	-11.0	-13.1	-9.6	-14.4
		10th	-15.9	-16.7	-15.8	-16.0	-14.3	-16.7
		90th	-4.0	-5.1	-4.6	-4.4	-3.0	-6.9
2050	DJF	Mean	-13.7	-7.9	-18.4	-18.5	-11.1	-23.1
		Median	-11.1	-9.9	-15.5	-19.0	-12.8	-25.0
		10th	-33.1	-16.5	-39.7	-32.1	-24.0	-31.8
		90th	0.8	2.7	0.0	-9.7	3.4	-12.5
2050	MAM	Mean	-9.7	-7.7	-10.7	-12.5	-9.7	-13.3
		Median	-11.5	-12.5	-15.0	-13.6	-12.8	-14.3
		10th	-19.4	-17.0	-23.4	-22.7	-20.2	-30.1
		90th	7.6	6.4	6.3	4.9	3.8	4.5
2050	JJA	Mean	-11.6	-9.7	-12.2	-13.8	-12.2	-13.7
		Median	-12.7	-9.1	-13.1	-13.5	-12.4	-13.0
		10th	-18.1	-13.3	-17.0	-21.0	-20.0	-17.9
		90th	-6.6	-6.7	-6.6	-6.6	-4.2	-10.3
2050	SON	Mean	-15.8	-17.4	-17.7	-20.4	-23.5	-20.3
		Median	-14.7	-16.1	-17.6	-20.9	-24.0	-23.4
		10th	-27.0	-27.0	-25.9	-32.3	-36.9	-28.4

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	-8.7	-9.3	-9.7	-9.0	-9.5	-9.1
2050	Annual	Mean	-12.8	-11.4	-14.4	-16.2	-15.0	-16.9
		Median	-13.6	-12.0	-14.7	-17.8	-13.5	-17.9
		10th	-18.6	-17.5	-20.6	-24.2	-24.2	-22.5
		90th	-4.5	-4.7	-7.9	-7.5	-7.3	-10.4
2070	DJF	Mean	-17.8	-10.6	-23.2	-24.7	-15.6	-31.9
		Median	-21.4	-14.7	-22.0	-25.2	-18.8	-32.1
		10th	-29.1	-22.6	-34.1	-45.6	-29.6	-52.1
		90th	-3.7	5.6	-13.5	-6.7	1.5	-11.5
2070	MAM	Mean	-14.0	-11.0	-15.0	-19.8	-15.5	-21.5
		Median	-15.7	-9.3	-17.8	-20.7	-14.9	-27.6
		10th	-23.7	-22.5	-29.7	-35.1	-27.6	-35.8
		90th	0.5	-1.2	2.5	-2.5	-4.0	-1.3
2070	JJA	Mean	-12.9	-10.3	-14.9	-21.7	-19.0	-23.9
		Median	-11.4	-10.7	-12.2	-18.9	-16.7	-24.0
		10th	-22.1	-14.2	-25.3	-30.6	-25.5	-31.5
		90th	-5.9	-6.1	-7.2	-15.6	-14.9	-16.4
2070	SON	Mean	-20.4	-19.3	-23.3	-29.4	-29.5	-31.5
		Median	-22.4	-16.9	-23.6	-28.6	-24.5	-31.4
		10th	-30.7	-33.4	-30.5	-38.5	-47.6	-38.0
		90th	-9.5	-7.6	-15.9	-17.3	-16.6	-25.2
2070	Annual	Mean	-16.1	-13.2	-18.5	-24.0	-20.9	-26.8
		Median	-17.3	-10.8	-18.2	-25.0	-18.4	-28.2
		10th	-22.2	-21.0	-22.6	-33.1	-31.6	-33.8
		90th	-9.1	-7.7	-14.8	-13.0	-12.8	-18.4
2090	DJF	Mean	-18.4	-9.3	-24.1	-31.0	-21.7	-44.9
		Median	-22.6	-10.2	-23.2	-28.7	-29.5	-46.5
		10th	-31.8	-23.0	-36.9	-56.8	-36.7	-62.1
		90th	-0.9	5.4	-12.2	-7.3	1.2	-26.2
2090	MAM	Mean	-12.7	-10.9	-16.3	-24.5	-18.3	-32.6
		Median	-13.5	-14.6	-16.9	-20.6	-17.6	-34.7
		10th	-22.9	-19.2	-26.4	-42.8	-32.7	-51.0
		90th	0.6	1.1	-5.7	-7.0	-4.7	-12.0
2090	JJA	Mean	-13.4	-11.4	-15.8	-27.8	-24.2	-32.9
		Median	-13.2	-12.4	-12.8	-25.9	-25.4	-35.3
		10th	-21.1	-15.7	-24.3	-42.4	-30.0	-43.3
		90th	-8.5	-6.1	-10.2	-17.2	-17.2	-20.2

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	-21.1	-21.9	-23.2	-38.8	-38.5	-44.2
		Median	-21.0	-21.7	-22.4	-31.3	-31.3	-47.2
		10th	-29.7	-29.6	-29.6	-54.1	-55.6	-52.7
		90th	-13.6	-14.4	-17.5	-27.1	-28.5	-32.8
2090	Annual	Mean	-16.3	-14.1	-19.3	-30.8	-26.9	-37.8
		Median	-14.3	-14.1	-19.9	-30.1	-23.6	-38.7
		10th	-22.7	-18.6	-24.3	-43.0	-36.8	-46.6
		90th	-11.2	-9.6	-13.7	-19.4	-20.3	-28.1

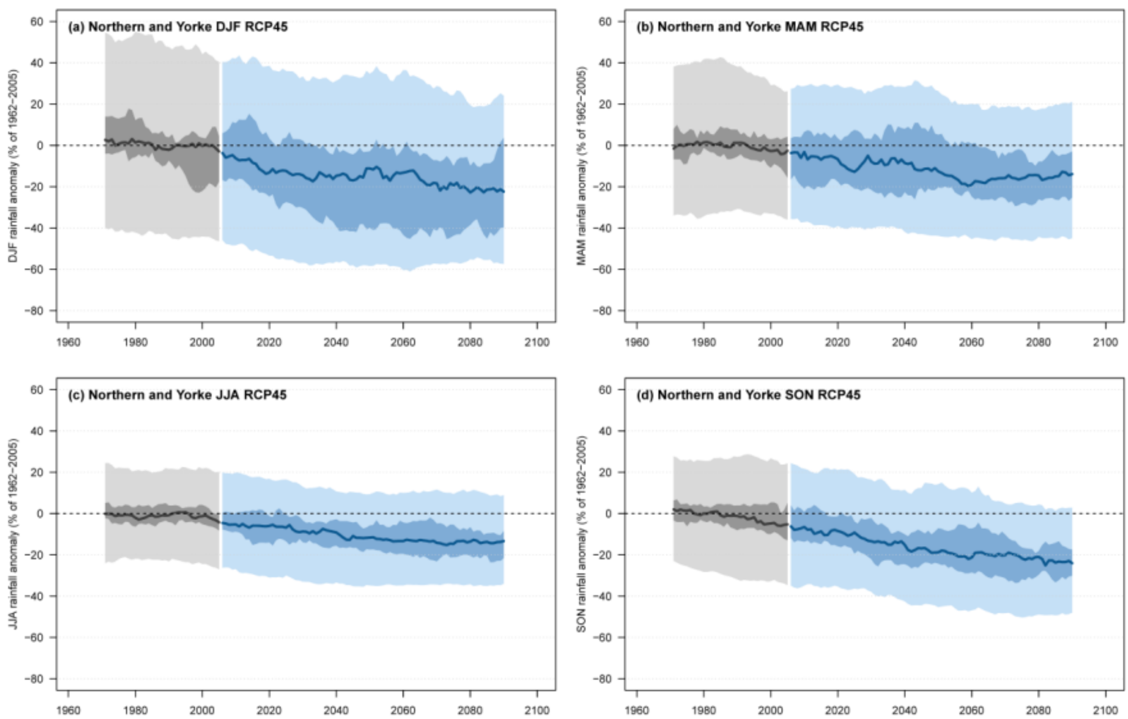

Figure 5.2 Northern and Yorke NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

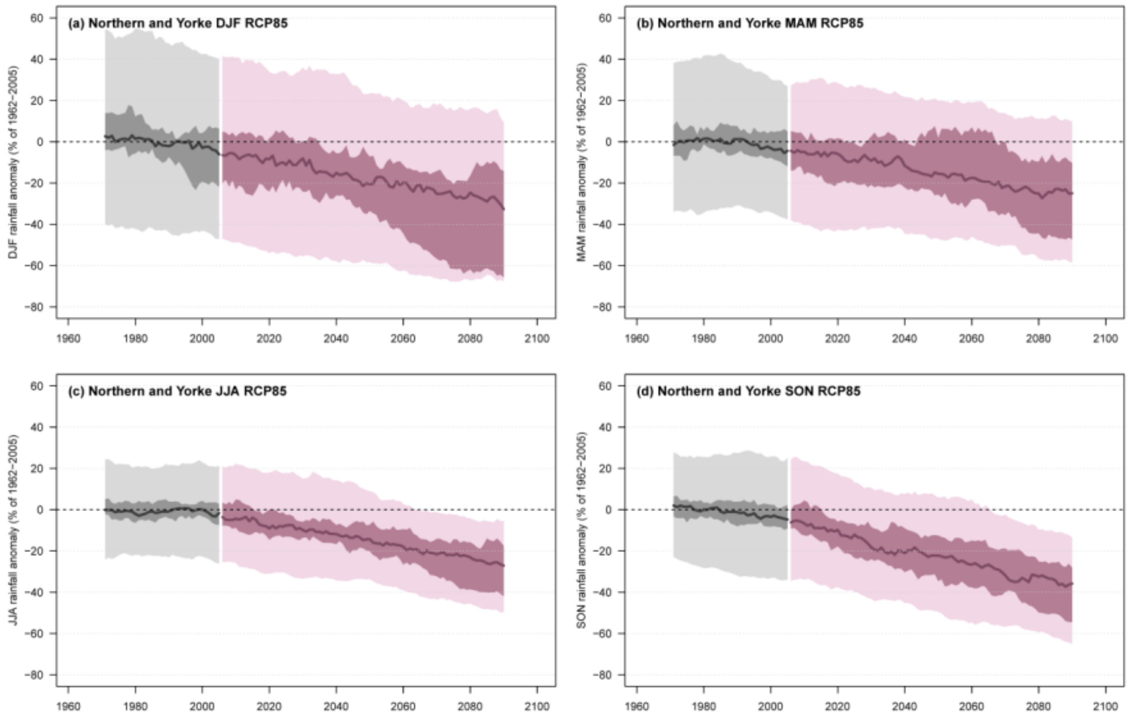

Figure 5.3 Northern and Yorke NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

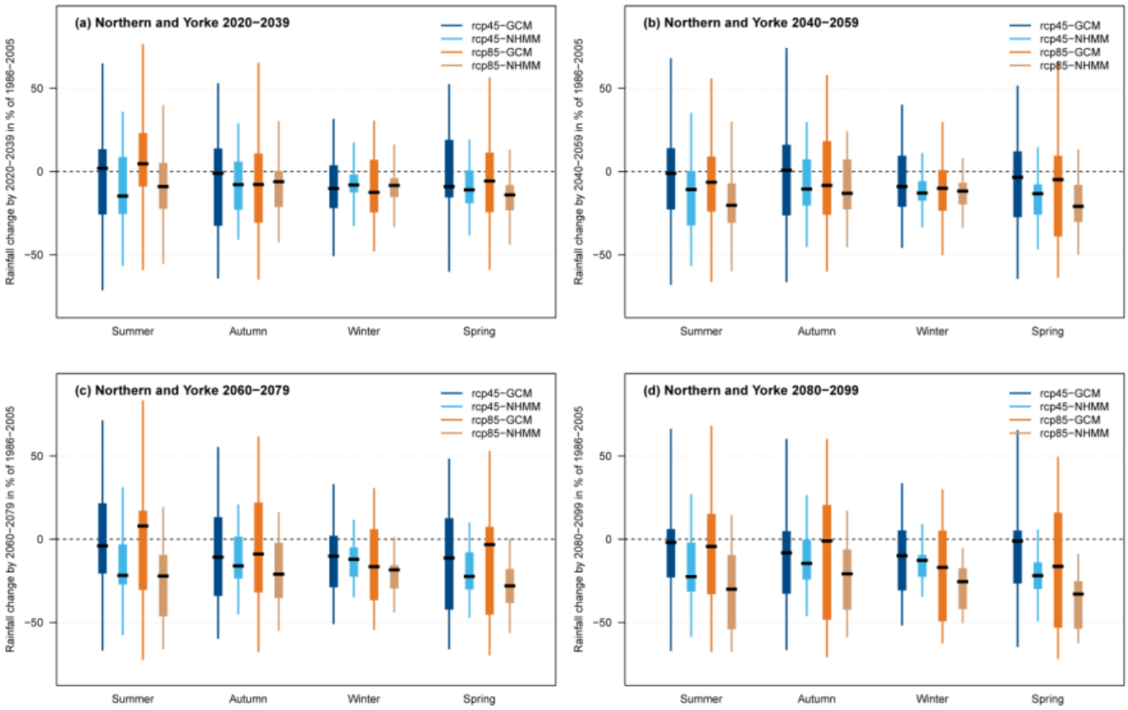

Figure 5.4 Northern and Yorke NRM CMIP5 GCM and NHMM-downscaled projected seasonal precipitation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall.

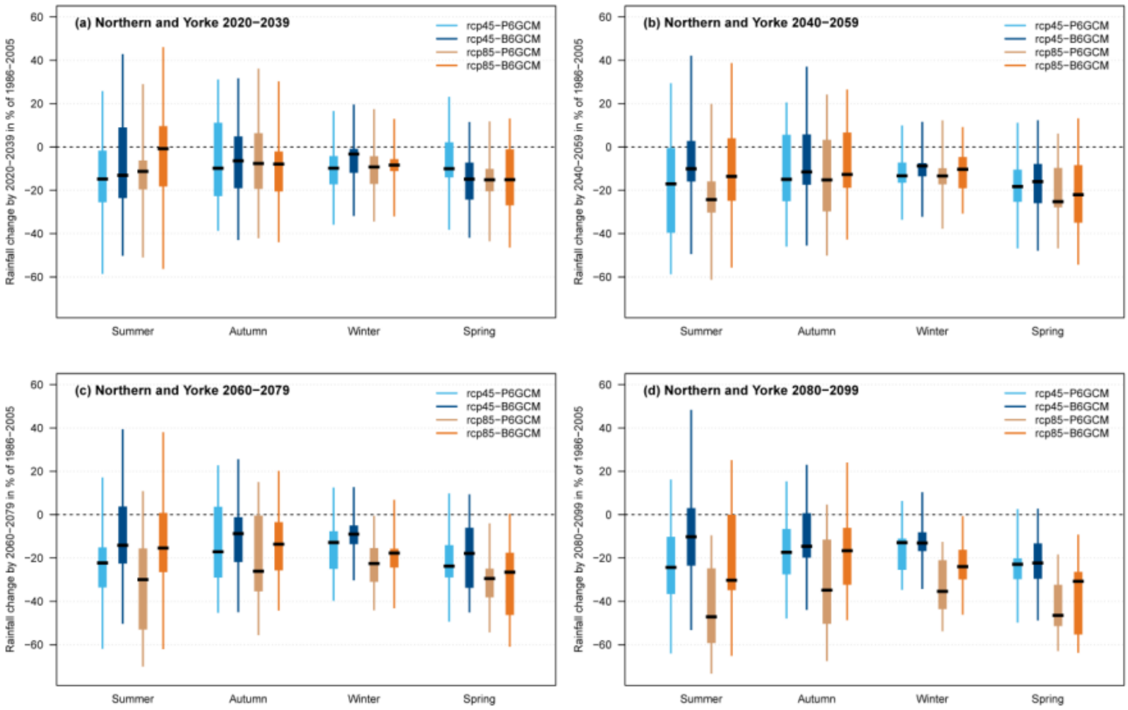

Figure 5.5 Northern and Yorke NRM NHMM-downscaled projected seasonal precipitation changes from six better (B6GCM) and six poorer (P6GCM) performing CMIP5 GCMs for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall. Selection of better and poorer performing GCMs according to Cai et al. (2014a) and Cai et al. (2014b).

5.3 Non-precipitation variables

The projected changes in maximum daily temperature are summarised in Table 5.4, highlighting the stronger warming from RCP8.5 (Figure 5.7) compared to RCP4.5 (Figure 5.6), particularly for the second half of the century, and the smaller changes from the better GCM ensemble compared to the poorer GCM ensemble. Figure 5.8 shows that the downscaled projections are in close agreement with the changes projected at the GCM grid-scale.

The mean, median and range of changes presented in Table 5.4 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.39 for RCP4.5 and Table B.40 for RCP8.5.

Table 5.4 Northern and Yorke NRM downscaled projected changes in seasonal maximum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	1.1	1.0	1.2	1.3	1.1	1.5
		Median	1.0	1.0	1.1	1.2	1.0	1.4
		10th	0.7	0.7	0.9	0.9	0.8	1.2
		90th	1.5	1.3	1.6	1.9	1.6	2.0
2030	MAM	Mean	0.9	0.9	0.7	1.2	1.2	1.1
		Median	0.9	0.9	0.7	1.1	1.1	1.2
		10th	0.6	0.9	0.5	0.8	1.0	0.6
		90th	1.2	1.0	1.0	0.8	1.4	1.6
2030	JJA	Mean	0.8	0.8	0.9	1.1	1.0	1.2
		Median	0.9	0.9	1.0	1.1	1.0	1.2
		10th	0.5	0.6	0.7	0.8	0.8	0.9
		90th	1.0	0.9	1.0	1.5	1.3	1.4
2030	SON	Mean	1.1	1.2	1.1	1.4	1.4	1.5
		Median	1.1	1.2	1.1	1.3	1.3	1.5
		10th	0.9	1.0	0.9	1.0	1.1	1.2
		90th	1.4	1.4	1.3	1.8	1.8	1.8
2030	Annual	Mean	1.0	1.0	1.0	1.2	1.2	1.3
		Median	0.9	1.0	1.0	1.1	1.1	1.3
		10th	0.7	0.8	0.7	0.9	1.0	1.0
		90th	1.2	1.1	1.2	1.8	1.5	1.7
2050	DJF	Mean	1.5	1.4	1.7	2.1	1.8	2.4
		Median	1.4	1.4	1.5	1.9	1.6	2.2
		10th	1.0	1.0	1.3	1.5	1.4	1.9
		90th	2.0	1.8	2.3	2.9	2.5	3.2
2050	MAM	Mean	1.3	1.3	1.1	1.9	1.9	1.9
		Median	1.2	1.4	1.1	1.7	1.7	1.9
		10th	0.9	1.2	0.7	1.5	1.6	1.2
		90th	1.7	1.5	1.5	2.6	2.4	2.5
2050	JJA	Mean	1.2	1.2	1.3	1.8	1.7	1.9
		Median	1.2	1.3	1.3	1.7	1.6	2.0
		10th	0.8	1.0	1.1	1.4	1.4	1.5
		90th	1.6	1.4	1.6	2.3	2.1	2.3
2050	SON	Mean	1.6	1.6	1.7	2.3	2.3	2.4
		Median	1.6	1.7	1.7	2.3	2.2	2.5
		10th	1.2	1.4	1.4	1.7	1.9	1.9

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.9	1.9	1.9	2.9	3.0	2.9
2050	Annual	Mean	1.4	1.4	1.5	2.0	1.9	2.2
		Median	1.4	1.4	1.5	2.0	1.7	2.2
		10th	1.1	1.2	1.2	1.6	1.6	1.7
		90th	1.8	1.6	1.8	2.7	2.5	2.7
2070	DJF	Mean	1.8	1.7	2.0	3.0	2.6	3.4
		Median	1.7	1.7	1.9	2.8	2.3	3.0
		10th	1.5	1.4	1.6	2.1	2.1	2.7
		90th	2.3	2.1	2.7	4.1	3.5	4.5
2070	MAM	Mean	1.6	1.6	1.5	2.7	2.7	2.8
		Median	1.5	1.6	1.4	2.6	2.6	2.9
		10th	1.2	1.5	1.0	2.2	2.3	2.1
		90th	2.0	1.9	2.1	3.4	3.3	3.5
2070	JJA	Mean	1.5	1.4	1.7	2.7	2.5	3.0
		Median	1.4	1.4	1.7	2.7	2.4	3.0
		10th	1.1	1.2	1.3	2.0	2.1	2.5
		90th	2.1	1.7	2.1	3.5	3.1	3.5
2070	SON	Mean	2.0	2.0	2.2	3.3	3.3	3.6
		Median	2.0	2.0	2.3	3.4	3.1	3.8
		10th	1.6	1.6	1.9	2.4	2.6	2.7
		90th	2.4	2.3	2.5	4.3	4.1	4.3
2070	Annual	Mean	1.7	1.7	1.9	2.9	2.8	3.2
		Median	1.7	1.6	1.8	3.0	2.6	3.2
		10th	1.4	1.5	1.6	2.2	2.3	2.6
		90th	2.1	2.0	2.2	3.7	3.5	3.9
2090	DJF	Mean	2.1	1.9	2.4	3.8	3.5	4.4
		Median	2.0	1.9	2.2	3.5	3.1	3.8
		10th	1.6	1.5	1.9	2.8	2.9	3.5
		90th	2.6	2.4	3.0	5.4	4.6	6.0
2090	MAM	Mean	1.9	2.0	1.9	3.6	3.6	3.9
		Median	1.8	2.0	1.8	3.6	3.3	4.1
		10th	1.5	1.8	1.3	2.7	3.0	3.0
		90th	2.6	2.4	2.7	4.5	4.5	4.7
2090	JJA	Mean	1.8	1.6	2.1	3.6	3.4	4.0
		Median	1.7	1.7	2.1	3.7	3.2	4.0
		10th	1.3	1.4	1.7	2.7	2.8	3.5
		90th	2.6	1.9	2.6	4.5	4.2	4.6

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	2.4	2.3	2.6	4.4	4.3	4.8
		Median	2.3	2.3	2.7	4.5	4.2	5.2
		10th	1.9	1.9	2.3	3.1	3.4	3.6
		90th	2.9	2.7	3.0	5.8	5.4	5.7
2090	Annual	Mean	2.1	2.0	2.3	3.9	3.7	4.3
		Median	2.1	1.9	2.2	3.9	3.4	4.3
		10th	1.7	1.7	2.0	2.9	3.0	3.5
		90th	2.5	2.4	2.6	4.9	4.7	5.2

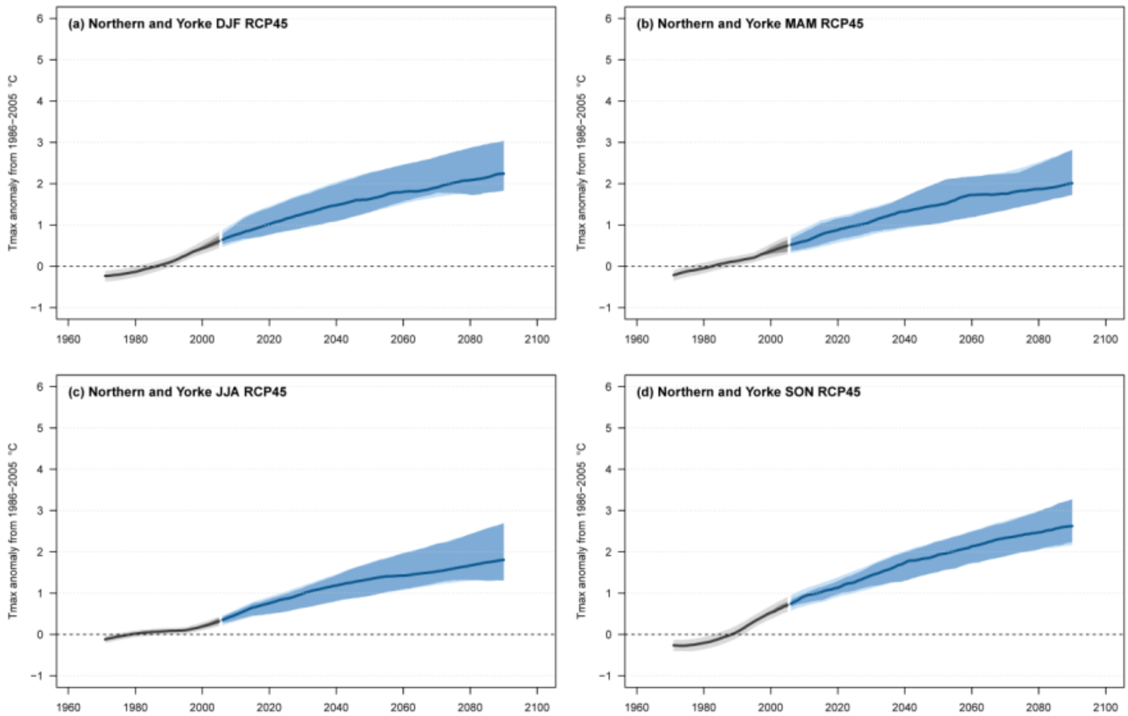

Figure 5.6 Northern and Yorke NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

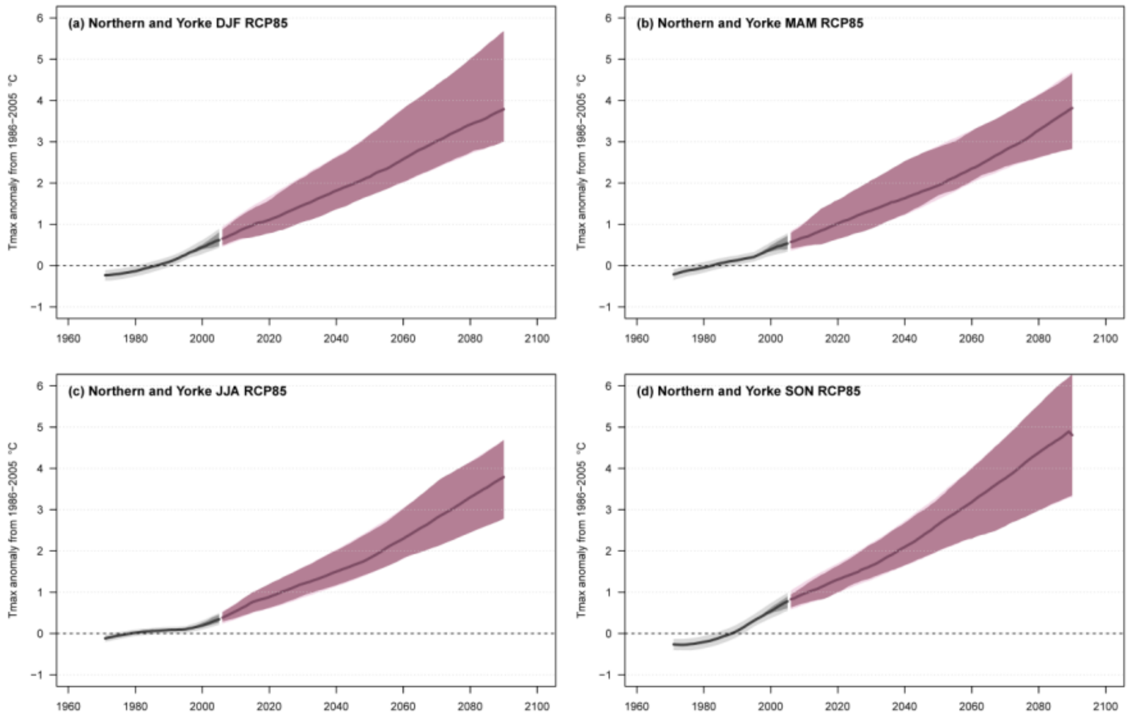

Figure 5.7 Northern and Yorke NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

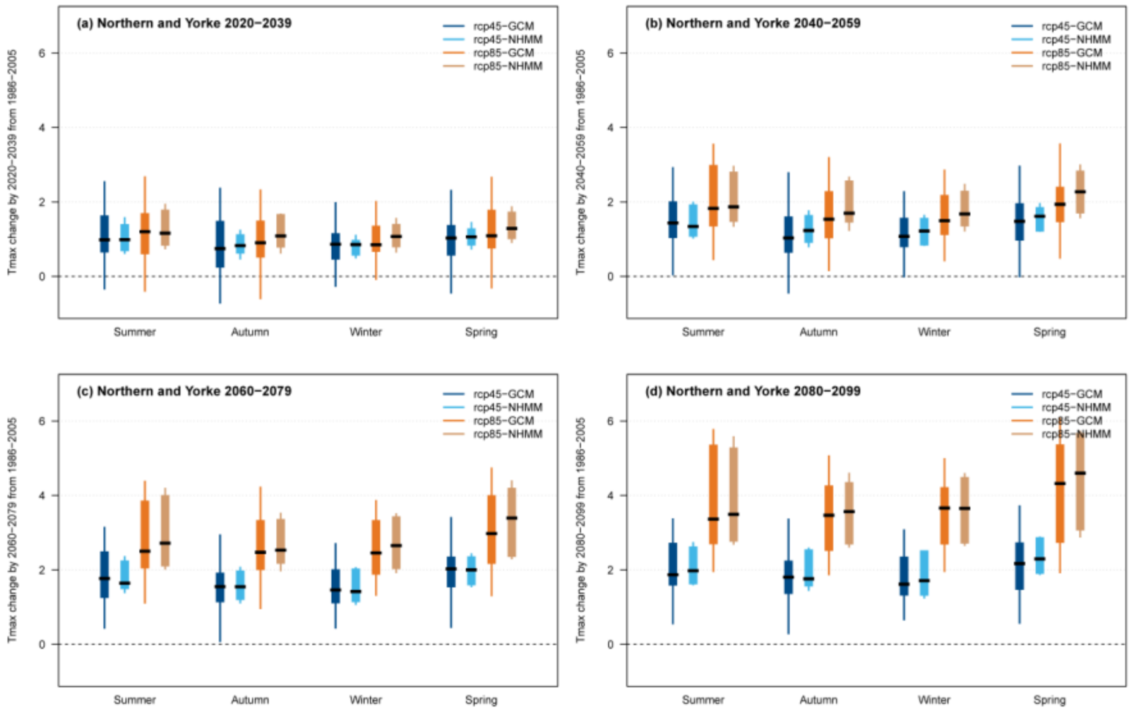

Figure 5.8 Northern and Yorke NRM CMIP5 GCM and NHMM-downscaled projected seasonal maximum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean maximum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean maximum daily temperature.

The corresponding changes in minimum daily temperature are summarised in Table 5.5, highlighting the stronger warming from RCP8.5 (Figure 5.10) compared to RCP4.5 (Figure 5.9), particularly for the second half of the century, and the smaller changes from the better GCM ensemble compared to the poorer GCM ensemble. Figure 5.11 shows that the downscaled projections are in close agreement with the changes projected at the GCM grid-scale.

The mean, median and range of changes presented in Table 5.5 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.41 for RCP4.5 and Table B.42 for RCP8.5.

Table 5.5 Northern and Yorke NRM downscaled projected changes in seasonal minimum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.8	0.8	1.0	1.1	1.0	1.3
		Median	0.8	0.8	1.0	1.1	0.9	1.3
		10th	0.5	0.5	0.7	0.7	0.7	1.1
		90th	1.2	1.1	1.3	1.6	1.5	1.7
2030	MAM	Mean	0.9	0.8	0.9	1.1	1.1	1.2
		Median	0.8	0.9	0.8	1.0	1.1	1.1
		10th	0.5	0.6	0.6	0.8	0.8	0.9
		90th	1.3	1.0	1.3	0.8	1.4	1.6
2030	JJA	Mean	0.6	0.5	0.6	0.8	0.7	0.9
		Median	0.6	0.5	0.6	0.8	0.8	0.9
		10th	0.3	0.4	0.5	0.5	0.5	0.7
		90th	0.8	0.7	0.8	1.1	0.9	1.1
2030	SON	Mean	0.7	0.8	0.8	1.0	1.0	1.0
		Median	0.8	0.8	0.9	1.0	1.0	1.1
		10th	0.6	0.7	0.5	0.7	0.8	0.9
		90th	0.9	0.9	1.0	1.2	1.3	1.2
2030	Annual	Mean	0.7	0.7	0.8	1.0	1.0	1.1
		Median	0.7	0.8	0.8	1.0	1.0	1.1
		10th	0.5	0.6	0.7	0.7	0.7	1.0
		90th	1.0	0.9	1.0	1.3	1.2	1.3
2050	DJF	Mean	1.2	1.1	1.4	1.8	1.7	2.1
		Median	1.1	1.0	1.5	1.6	1.5	2.1
		10th	0.8	0.8	1.0	1.2	1.2	1.6
		90th	1.8	1.6	1.8	2.7	2.4	2.7
2050	MAM	Mean	1.2	1.2	1.2	1.8	1.8	1.9
		Median	1.1	1.2	1.2	1.7	1.8	1.9
		10th	0.8	1.0	0.9	1.3	1.3	1.5
		90th	1.5	1.4	1.5	2.3	2.3	2.4
2050	JJA	Mean	0.9	0.8	1.0	1.3	1.2	1.5
		Median	0.9	0.8	1.0	1.3	1.2	1.5
		10th	0.6	0.6	0.8	0.9	1.0	1.2
		90th	1.1	1.0	1.1	1.7	1.5	1.7
2050	SON	Mean	1.1	1.1	1.1	1.6	1.7	1.7
		Median	1.1	1.1	1.2	1.5	1.7	1.8
		10th	0.7	0.9	0.7	1.3	1.4	1.4

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.4	1.4	1.4	1.9	2.0	1.9
2050	Annual	Mean	1.1	1.1	1.2	1.6	1.6	1.8
		Median	1.1	1.1	1.2	1.6	1.5	1.7
		10th	0.8	0.9	1.0	1.3	1.3	1.6
		90th	1.4	1.3	1.4	2.1	2.0	2.1
2070	DJF	Mean	1.4	1.4	1.7	2.6	2.5	3.0
		Median	1.3	1.3	1.7	2.3	2.3	3.1
		10th	0.9	1.0	1.3	1.8	1.8	2.3
		90th	2.1	2.1	2.1	3.7	3.4	3.7
2070	MAM	Mean	1.4	1.5	1.5	2.6	2.6	2.8
		Median	1.4	1.4	1.6	2.5	2.5	2.8
		10th	0.9	1.2	1.2	1.9	2.0	2.3
		90th	1.8	1.9	1.8	3.4	3.4	3.4
2070	JJA	Mean	1.1	1.0	1.2	2.0	1.9	2.1
		Median	1.2	1.0	1.3	2.0	1.9	2.1
		10th	0.6	0.7	0.9	1.4	1.6	1.8
		90th	1.4	1.3	1.4	2.4	2.2	2.4
2070	SON	Mean	1.3	1.4	1.4	2.4	2.5	2.5
		Median	1.3	1.4	1.5	2.3	2.5	2.6
		10th	0.8	1.2	1.0	1.9	2.1	2.1
		90th	1.7	1.7	1.7	2.8	2.9	2.8
2070	Annual	Mean	1.3	1.3	1.4	2.4	2.4	2.6
		Median	1.3	1.3	1.5	2.3	2.3	2.5
		10th	1.0	1.0	1.2	1.9	2.0	2.3
		90th	1.7	1.8	1.6	3.1	2.9	3.1
2090	DJF	Mean	1.7	1.6	1.9	3.4	3.3	3.9
		Median	1.5	1.4	2.0	3.0	3.1	4.0
		10th	1.0	1.1	1.4	2.4	2.5	2.8
		90th	2.4	2.5	2.4	5.0	4.4	5.0
2090	MAM	Mean	1.7	1.7	1.8	3.5	3.6	3.8
		Median	1.7	1.7	1.8	3.5	3.4	3.8
		10th	1.2	1.2	1.5	2.7	2.8	3.1
		90th	2.2	2.3	2.0	4.5	4.6	4.5
2090	JJA	Mean	1.3	1.2	1.4	2.6	2.6	2.8
		Median	1.5	1.3	1.6	2.7	2.6	2.9
		10th	0.8	0.9	1.0	1.9	2.3	2.3
		90th	1.7	1.6	1.8	3.2	3.0	3.3

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	1.6	1.6	1.7	3.1	3.3	3.3
		Median	1.5	1.6	1.8	3.1	3.3	3.5
		10th	1.0	1.3	1.3	2.5	2.8	2.8
		90th	2.0	2.0	2.0	3.8	3.8	3.7
2090	Annual	Mean	1.5	1.6	1.7	3.2	3.2	3.4
		Median	1.5	1.5	1.8	3.1	3.1	3.3
		10th	1.1	1.2	1.4	2.5	2.6	3.0
		90th	2.0	2.1	2.0	4.1	3.9	4.1

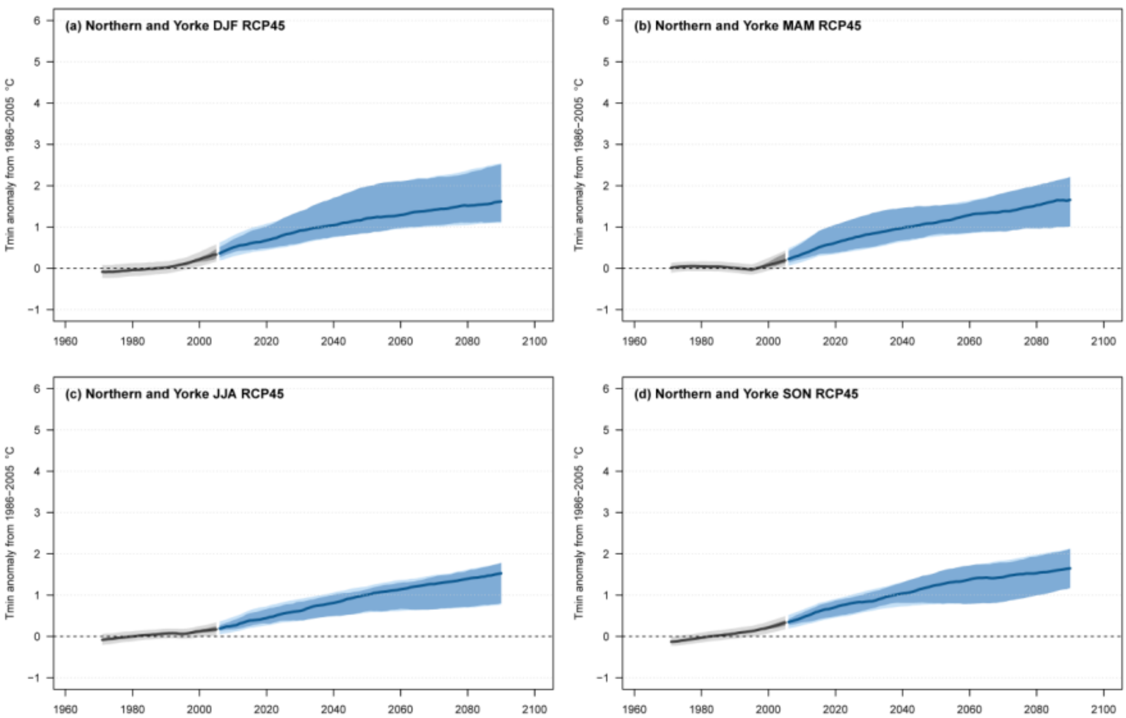

Figure 5.9 Northern and Yorke NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

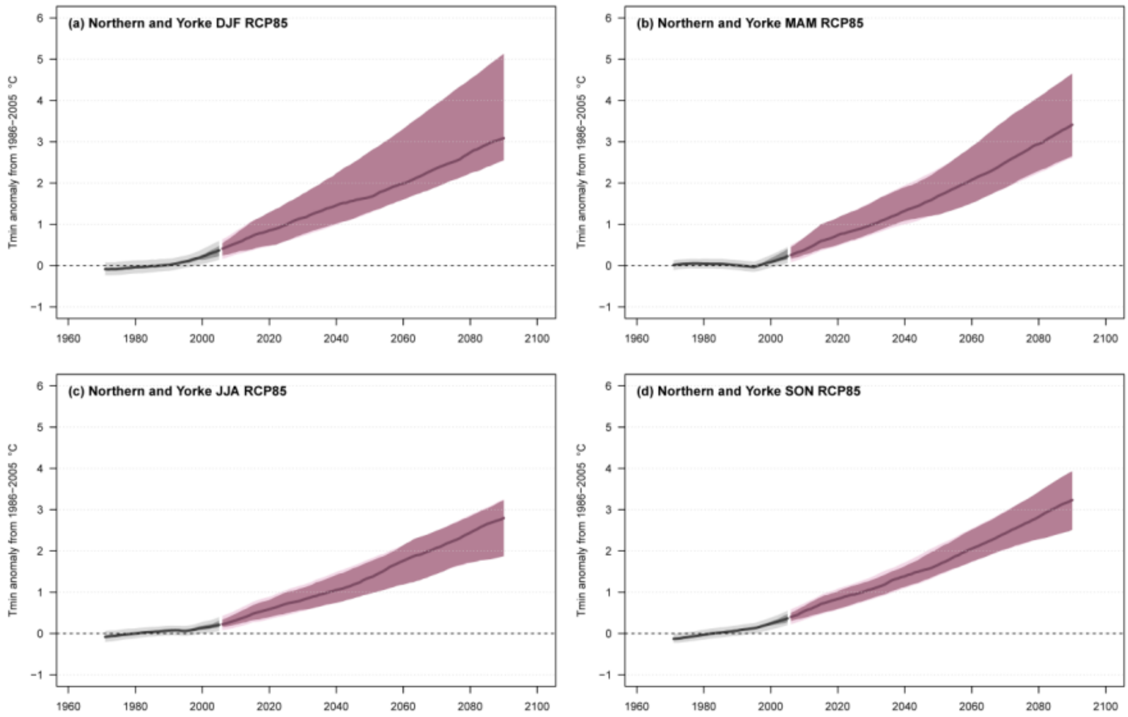

Figure 5.10 Northern and Yorke NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

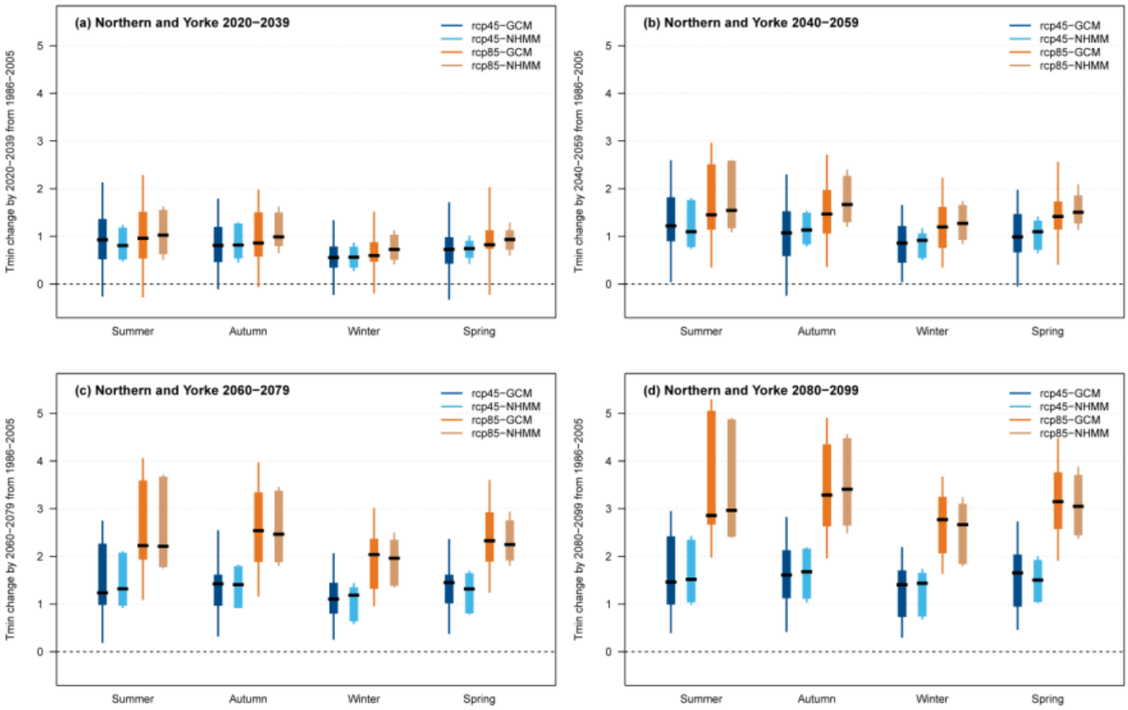

Figure 5.11 Northern and Yorke NRM CMIP5 GCM and NHMM-downscaled projected seasonal minimum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean minimum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean minimum daily temperature.

Changes in solar radiation projected by the downscaled GCMs are shown in Table 5.6, with the corresponding time-series of the changes plotted in Figure 5.12 and Figure 5.13, for RCP4.5 and RCP8.5 respectively. Larger changes are produced by RCP8.5, consistent with the greater rainfall decreases and thus clearer atmospheric conditions indicated. Table 5.6 also shows that the ensemble means from the six better GCMs are smaller changes than from the six poorer GCMs. Figure 5.14 compares GCM grid-scale changes with downscaled changes, which are consistent in most cases.

The mean, median and range of changes presented in Table 5.6 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in

Table B.43 for RCP4.5 and

Table B.44 for RCP8.5.

Table 5.6 Northern and Yorke NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.8	0.8	1.0	0.8	0.1	1.3
		Median	0.8	0.4	1.0	1.1	0.1	1.5
		10th	-0.3	-0.4	0.1	-0.5	-1.0	0.5
		90th	2.1	2.3	1.9	1.6	1.2	2.1
2030	MAM	Mean	0.7	1.1	0.3	1.0	1.2	0.9
		Median	0.6	0.6	0.0	0.7	0.5	1.2
		10th	-1.3	-1.0	-1.8	-0.6	-0.2	-1.5
		90th	2.7	3.6	2.6	-0.6	3.2	2.9
2030	JJA	Mean	2.7	2.1	2.9	3.4	2.6	3.4
		Median	2.4	1.9	3.1	2.9	2.3	3.7
		10th	0.8	0.7	1.3	1.5	1.5	1.2
		90th	4.9	3.7	4.4	5.7	4.0	5.4
2030	SON	Mean	2.1	2.3	2.0	2.5	2.4	2.6
		Median	2.2	2.0	2.1	2.3	2.0	2.8
		10th	1.2	1.1	1.3	1.4	1.5	1.7
		90th	3.3	3.8	2.7	3.6	3.8	3.5
2030	Annual	Mean	1.4	1.4	1.4	1.6	1.3	1.8
		Median	1.2	1.0	1.6	1.5	1.1	2.1
		10th	0.5	0.7	0.2	0.5	0.5	0.6
		90th	2.3	2.6	2.3	2.9	2.2	2.9
2050	DJF	Mean	1.0	0.7	1.3	1.2	0.2	1.9
		Median	0.7	0.4	1.3	1.1	0.2	1.9
		10th	-0.1	-0.3	0.1	-0.3	-0.9	0.9
		90th	2.4	2.0	2.7	2.5	1.5	3.0
2050	MAM	Mean	1.1	1.2	0.6	1.4	1.1	1.4
		Median	1.3	1.0	0.7	1.3	0.5	1.8
		10th	-2.1	-1.2	-2.1	-1.4	-1.0	-1.9
		90th	3.3	3.8	3.3	4.4	3.7	4.3
2050	JJA	Mean	3.8	3.2	4.0	5.0	3.9	5.4
		Median	2.9	2.6	4.1	3.9	3.5	5.6
		10th	1.5	1.9	2.2	2.1	2.2	2.6
		90th	6.3	5.2	5.8	8.0	6.0	8.0
2050	SON	Mean	2.8	2.7	3.1	3.4	3.5	3.7
		Median	2.7	2.3	3.4	3.0	2.9	3.7
		10th	1.5	1.2	2.0	1.9	2.1	2.3

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	4.1	4.7	4.0	5.2	5.5	5.2
2050	Annual	Mean	1.9	1.7	2.0	2.3	1.8	2.7
		Median	1.4	1.3	2.1	2.1	1.4	3.0
		10th	0.7	1.0	0.6	0.9	0.9	1.0
		90th	3.3	2.8	3.3	4.0	3.0	4.3
2070	DJF	Mean	1.1	0.5	1.6	1.4	0.4	2.5
		Median	1.0	0.5	1.5	1.3	-0.1	2.4
		10th	-0.2	-0.6	0.4	-0.5	-0.6	0.8
		90th	2.7	1.7	3.0	3.7	1.9	4.4
2070	MAM	Mean	1.4	1.1	1.2	1.6	0.9	2.2
		Median	1.3	1.0	1.1	1.0	-0.4	2.5
		10th	-1.4	-0.8	-1.7	-1.0	-1.0	-1.7
		90th	4.3	3.2	4.1	5.4	3.9	5.7
2070	JJA	Mean	4.3	3.5	4.6	6.4	5.1	7.1
		Median	3.0	2.9	4.2	6.3	4.6	7.7
		10th	2.0	2.1	2.5	2.9	3.0	3.4
		90th	7.1	5.5	7.2	10.4	7.8	10.3
2070	SON	Mean	3.3	2.7	4.0	4.4	4.4	5.0
		Median	3.3	2.5	4.1	4.8	4.3	5.1
		10th	1.6	1.1	2.8	2.0	2.1	3.3
		90th	4.7	4.5	5.2	6.6	6.7	6.6
2070	Annual	Mean	2.1	1.6	2.6	2.9	2.2	3.7
		Median	1.6	1.4	2.6	2.5	1.8	4.1
		10th	1.0	0.9	1.1	1.2	1.2	1.3
		90th	3.8	2.5	4.0	5.5	3.6	5.6
2090	DJF	Mean	1.1	0.1	1.7	1.6	0.5	3.3
		Median	1.1	-0.2	1.8	1.5	0.1	2.9
		10th	-0.8	-1.2	0.5	-0.8	-0.8	1.3
		90th	2.7	1.7	2.9	4.8	2.3	5.6
2090	MAM	Mean	1.6	1.4	1.3	1.8	0.5	3.2
		Median	1.9	1.3	1.1	0.9	0.5	3.5
		10th	-1.0	-0.6	-1.2	-2.4	-2.3	-1.5
		90th	4.1	3.5	3.9	6.1	3.4	7.6
2090	JJA	Mean	4.8	3.8	5.4	7.7	6.2	9.1
		Median	4.0	3.7	4.6	7.1	5.3	10.0
		10th	2.7	2.1	3.1	3.5	3.7	4.2
		90th	8.1	5.7	8.5	12.2	9.8	13.1

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	3.5	2.4	4.6	5.5	5.6	6.7
		Median	3.4	2.3	4.4	6.1	6.3	7.3
		10th	1.4	1.0	3.2	2.0	2.4	4.4
		90th	5.0	3.9	6.3	8.3	8.3	8.3
2090	Annual	Mean	2.3	1.5	2.9	3.5	2.6	4.9
		Median	2.1	1.7	2.7	2.6	2.4	5.4
		10th	1.1	0.7	1.3	1.1	1.3	1.9
		90th	4.1	2.1	4.7	7.1	4.2	7.5

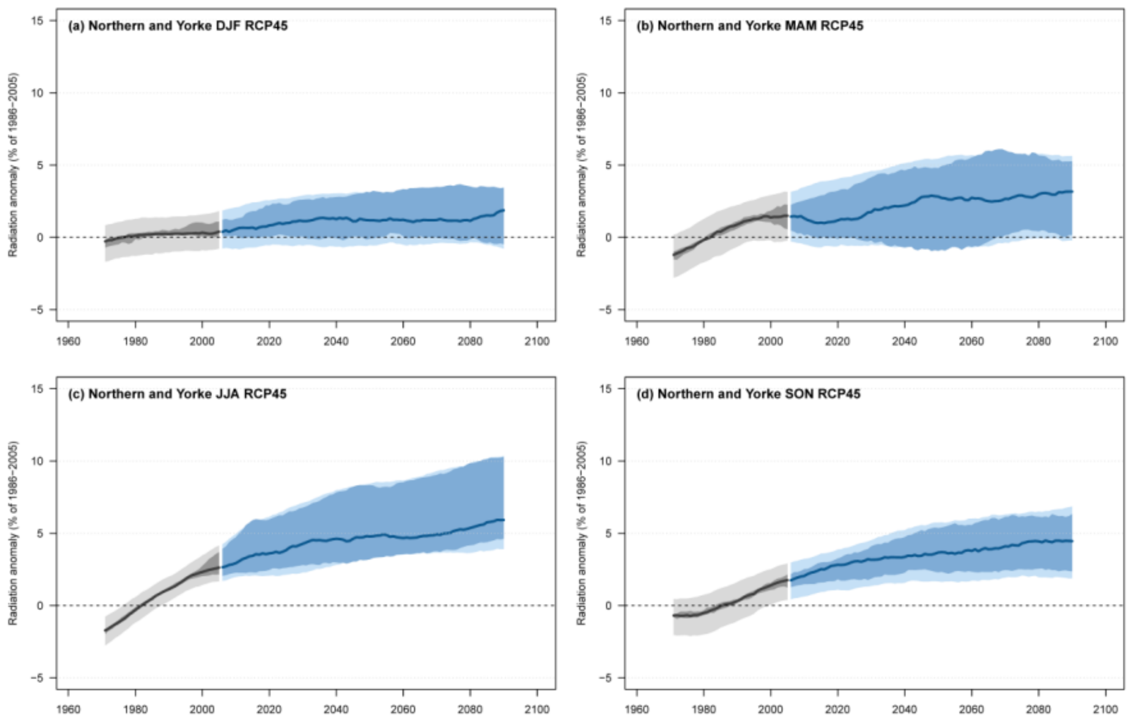

Figure 5.12 Northern and Yorke NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

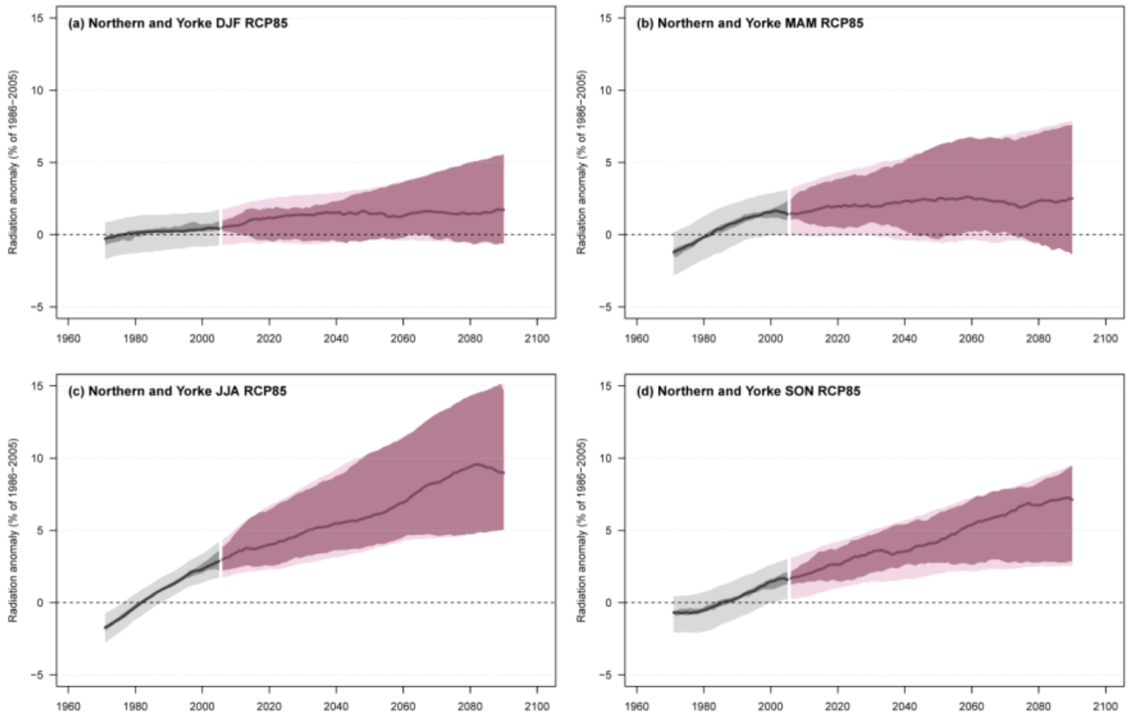

Figure 5.13 Northern and Yorke NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

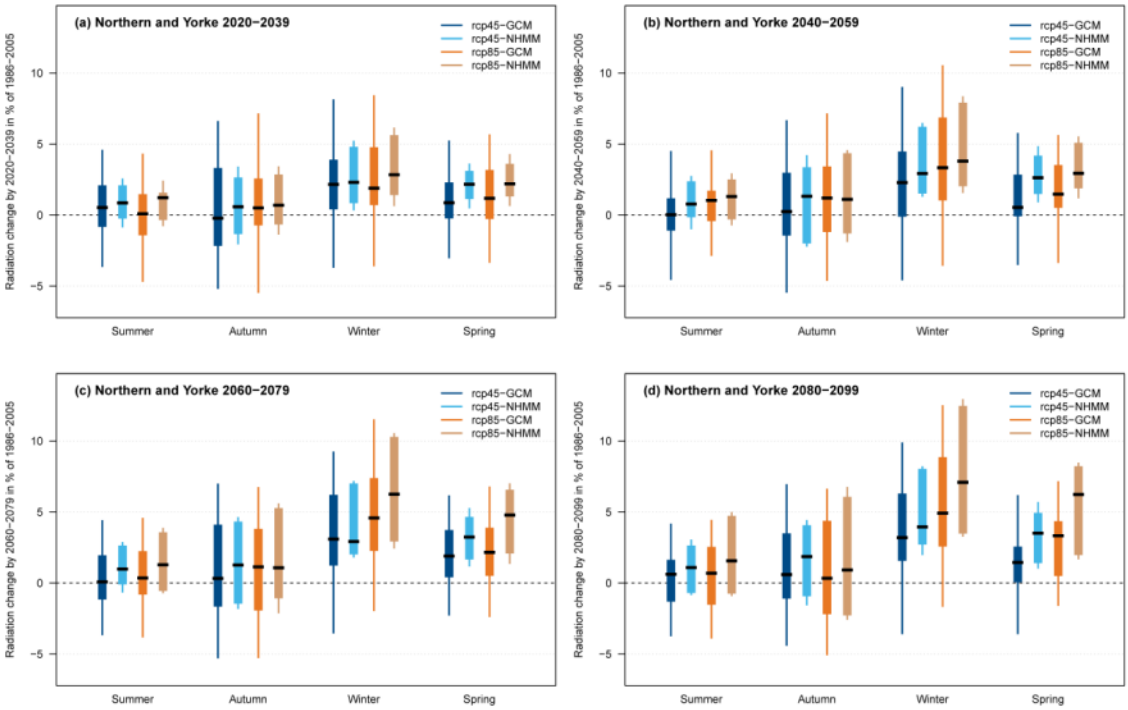

Figure 5.14 Northern and Yorke NRM CMIP5 GCM and NHMM-downscaled projected seasonal solar radiation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean solar radiation (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean solar radiation.

Consistent with the drying and warming trends presented above, Table 5.7, Figure 5.15, Figure 5.16 and Figure 5.17 show the increased VPD projections obtained from the downscaling. The increases are much larger for RCP8.5 compared to RCP4.5.

The mean, median and range of changes presented in Table 5.7 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.45 for RCP4.5 and Table B.46 for RCP8.5.

Table 5.7 Northern and Yorke NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	9.1	9.1	9.8	11.3	9.7	13.9
		Median	8.6	8.5	9.0	11.2	9.7	13.1
		10th	6.1	6.5	6.8	7.1	6.8	11.0
		90th	12.9	12.5	13.5	14.5	12.6	17.8
2030	MAM	Mean	10.1	12.6	6.5	13.0	13.8	10.9
		Median	10.2	11.5	5.3	13.3	14.3	9.8
		10th	3.4	7.9	2.7	6.1	11.1	4.3
		90th	18.5	18.4	11.4	6.1	16.1	18.6
2030	JJA	Mean	11.7	11.5	11.4	15.8	14.4	15.8
		Median	10.3	7.6	10.6	14.5	14.0	15.2
		10th	6.0	6.4	5.2	10.5	10.6	8.2
		90th	18.4	20.6	18.4	24.1	18.6	23.9
2030	SON	Mean	13.7	15.4	12.3	16.9	18.0	17.0
		Median	12.4	13.2	11.4	16.9	16.9	17.2
		10th	10.3	11.6	9.0	12.0	12.8	13.2
		90th	17.3	21.3	16.6	23.5	24.4	20.6
2030	Annual	Mean	10.6	11.6	9.7	13.4	13.0	14.1
		Median	9.5	9.7	9.2	13.3	13.4	13.7
		10th	7.6	9.0	6.7	10.0	10.7	10.2
		90th	14.5	16.2	13.4	17.7	15.0	18.4
2050	DJF	Mean	12.6	12.5	13.8	18.4	16.3	22.5
		Median	11.8	11.5	12.2	18.1	16.0	20.9
		10th	9.2	9.9	10.6	12.7	13.3	17.2
		90th	16.6	16.1	18.8	23.8	19.7	29.3
2050	MAM	Mean	14.1	17.0	10.0	20.6	21.8	19.0
		Median	14.2	16.1	10.4	21.4	23.3	18.0
		10th	6.5	12.1	3.6	13.3	16.2	10.2
		90th	22.3	22.8	16.0	29.9	25.8	28.9
2050	JJA	Mean	16.8	17.0	16.4	25.9	23.6	27.1
		Median	14.7	14.0	14.6	23.2	23.3	26.6
		10th	7.0	9.9	5.1	15.9	16.2	15.0
		90th	29.6	27.2	29.6	38.5	31.4	39.7
2050	SON	Mean	19.4	20.8	19.1	27.9	29.8	28.4
		Median	17.4	18.8	18.1	27.1	29.0	28.9
		10th	14.7	15.5	15.6	18.0	21.2	21.5

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	24.0	28.1	23.8	37.5	39.3	34.7
2050	Annual	Mean	14.9	15.9	14.4	21.8	21.4	23.5
		Median	13.5	14.1	14.5	22.0	21.8	23.1
		10th	10.9	13.1	10.2	15.0	17.4	17.3
		90th	19.4	20.6	18.5	27.1	25.2	30.1
2070	DJF	Mean	15.2	14.6	17.0	26.6	24.4	32.0
		Median	14.3	14.2	15.6	26.3	24.6	28.2
		10th	13.3	13.7	13.8	19.1	20.1	25.1
		90th	16.6	16.1	21.7	34.4	28.5	42.6
2070	MAM	Mean	17.1	19.2	13.9	29.4	30.9	29.1
		Median	18.4	19.3	13.4	31.2	34.1	27.8
		10th	8.9	15.9	5.9	19.1	20.3	18.3
		90th	23.6	22.6	22.5	39.2	38.3	41.1
2070	JJA	Mean	20.1	18.8	21.5	38.1	35.8	40.9
		Median	19.6	18.3	18.1	36.2	34.6	42.0
		10th	8.6	11.4	6.8	22.0	22.5	25.2
		90th	36.0	26.7	39.6	55.2	50.3	55.6
2070	SON	Mean	23.5	23.7	24.7	40.3	42.5	42.7
		Median	22.5	21.9	23.8	41.6	41.9	43.8
		10th	18.5	18.2	20.9	24.0	30.0	33.5
		90th	29.7	30.9	29.4	52.3	55.6	51.0
2070	Annual	Mean	18.0	18.2	18.5	31.5	31.2	34.7
		Median	17.2	17.5	18.6	33.5	31.7	34.7
		10th	13.5	16.2	13.5	20.1	24.2	26.4
		90th	22.8	20.9	23.4	39.1	37.7	42.9
2090	DJF	Mean	17.1	16.1	19.4	35.0	33.3	41.9
		Median	16.7	16.6	18.3	34.1	35.5	36.1
		10th	11.9	12.8	15.6	25.4	26.6	32.7
		90th	19.9	18.8	24.3	46.4	37.8	56.9
2090	MAM	Mean	20.1	21.8	17.3	38.8	40.8	41.3
		Median	22.0	22.3	16.5	37.1	42.6	40.4
		10th	10.8	19.6	7.5	21.3	24.7	27.1
		90th	27.8	23.5	28.0	55.4	55.2	56.4
2090	JJA	Mean	23.9	20.7	26.8	50.4	48.9	55.4
		Median	22.0	21.7	20.6	49.2	46.8	57.7
		10th	11.1	12.5	10.4	27.5	29.3	35.6
		90th	41.9	27.8	49.6	73.1	70.5	73.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	27.2	25.7	29.6	53.6	56.7	58.5
		Median	25.7	24.6	29.7	55.2	57.0	61.1
		10^{th}	22.7	21.2	24.5	31.0	38.6	45.0
		90^{th}	33.4	31.3	34.7	70.0	74.4	69.5
2090	Annual	Mean	20.8	20.1	22.0	41.7	42.0	46.9
		Median	20.7	20.1	22.4	43.3	43.3	47.4
		10^{th}	17.0	19.2	17.0	25.9	30.8	36.0
		90^{th}	25.4	20.9	26.6	52.9	51.8	57.3

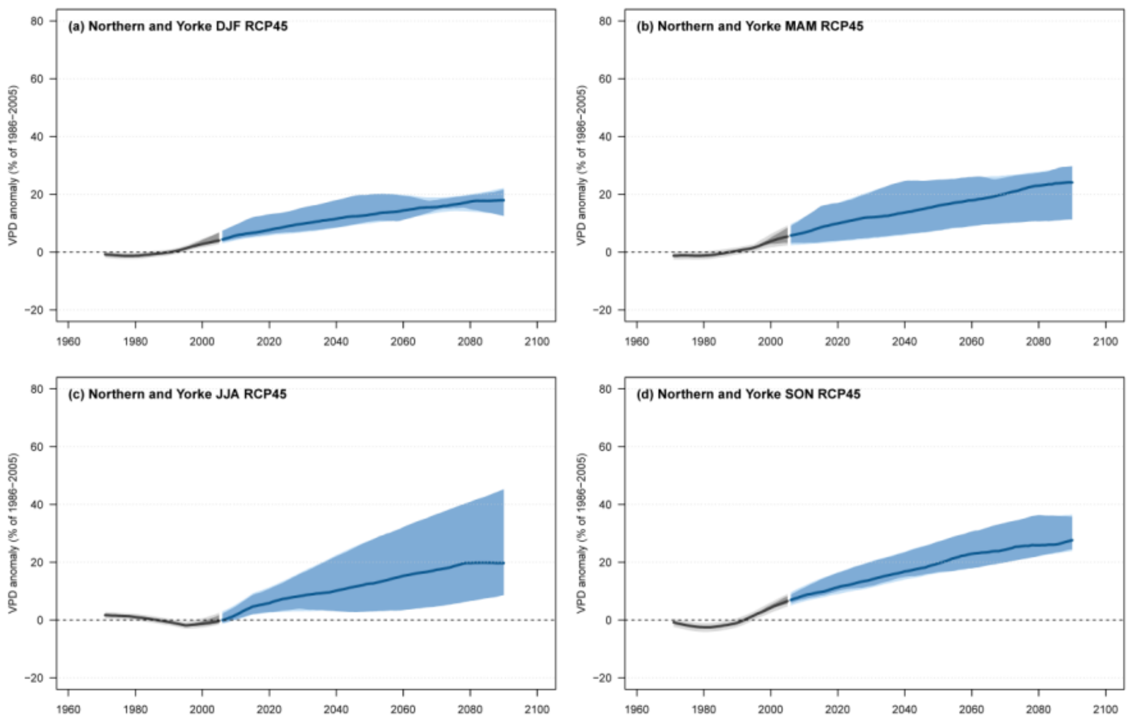

Figure 5.15 Northern and Yorke NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

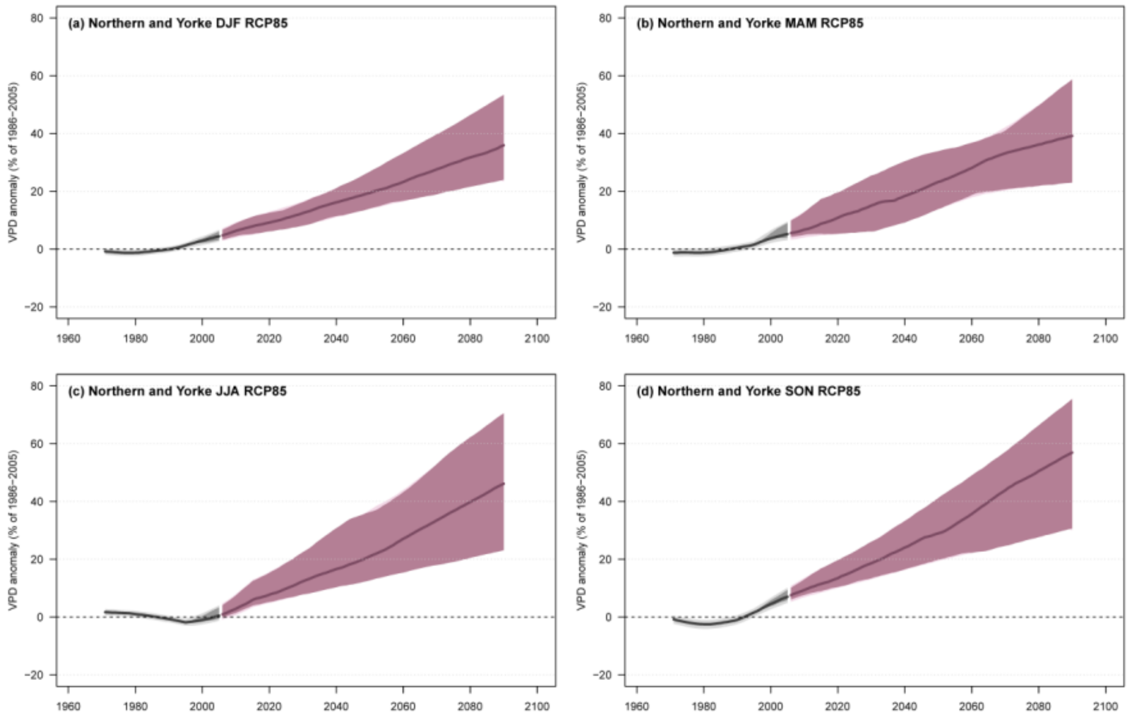

Figure 5.16 Northern and Yorke NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

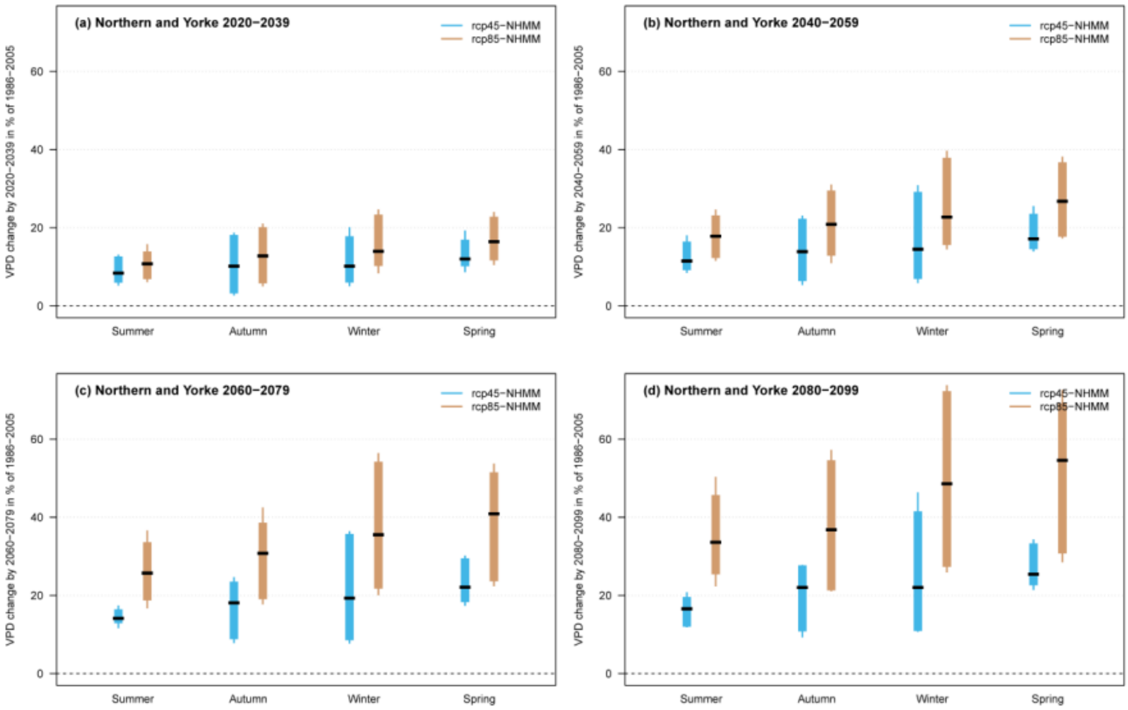

Figure 5.17 Northern and Yorke NRM NHMM-downscaled projected seasonal vapour pressure deficit changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean vapour pressure deficit (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean vapour pressure deficit.

The resulting APET changes (Table 5.8) show increases progressing throughout the century (Figure 5.18 and Figure 5.19, for RCP4.5 and RCP8.5 respectively). They are much larger for RCP8.5 compared to RCP4.5 (Figure 5.20). Overall the subset of better rated GCMs produces smaller changes than the poorer rated ensemble (Table 5.8).

The mean, median and range of changes presented in Table 5.8 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.47 for RCP4.5 and Table B.48 for RCP8.5.

Table 5.8 Northern and Yorke NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	2.7	2.4	3.1	3.2	2.3	4.0
		Median	2.7	2.6	3.0	3.1	2.4	3.6
		10th	1.5	1.6	2.2	2.3	1.6	3.1
		90th	3.3	2.9	4.1	4.4	3.1	5.5
2030	MAM	Mean	2.8	3.1	2.2	3.7	3.7	3.5
		Median	2.5	2.8	1.9	3.8	3.8	3.5
		10th	1.4	2.0	1.0	1.9	2.6	1.5
		90th	4.6	4.5	3.8	1.9	4.8	5.4
2030	JJA	Mean	3.8	3.3	3.8	4.8	4.1	4.9
		Median	3.8	2.9	4.2	4.3	4.2	5.0
		10th	2.2	2.4	2.5	3.1	3.2	3.3
		90th	5.4	4.5	4.9	6.5	4.9	6.5
2030	SON	Mean	3.8	3.9	3.7	4.6	4.6	5.0
		Median	3.8	4.0	4.1	4.7	4.5	5.0
		10th	2.7	2.8	2.7	3.2	3.3	4.0
		90th	4.7	5.0	4.5	6.1	6.0	6.0
2030	Annual	Mean	3.1	3.0	3.1	3.8	3.4	4.3
		Median	3.1	2.8	3.3	3.5	3.2	4.5
		10th	2.4	2.5	2.1	2.6	2.6	3.0
		90th	4.1	3.8	4.1	5.1	4.4	5.3
2050	DJF	Mean	3.7	3.2	4.3	5.1	4.0	6.3
		Median	3.4	3.2	3.9	4.6	3.9	5.8
		10th	2.6	2.7	3.2	3.6	2.8	5.1
		90th	4.6	3.8	5.8	6.8	5.3	8.2
2050	MAM	Mean	3.9	4.2	3.4	5.9	5.7	5.9
		Median	4.2	4.2	3.4	5.5	5.8	6.1
		10th	1.6	2.9	1.5	3.7	3.8	3.3
		90th	6.0	5.5	5.3	7.9	7.5	8.5
2050	JJA	Mean	5.3	4.9	5.6	7.6	6.5	8.2
		Median	5.1	4.8	5.7	7.5	6.3	8.4
		10th	3.3	3.8	4.1	4.7	5.3	5.5
		90th	7.1	6.0	7.1	10.8	8.0	10.8
2050	SON	Mean	5.3	5.2	5.7	7.3	7.4	7.8
		Median	5.3	5.4	6.4	7.3	7.2	8.2
		10th	3.6	3.6	4.2	5.2	5.5	6.1

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	6.5	6.7	6.5	9.2	9.6	9.2
2050	Annual	Mean	4.3	4.1	4.6	6.1	5.5	6.8
		Median	3.9	3.8	4.6	5.8	5.1	7.1
		10th	3.3	3.5	3.3	4.4	4.5	5.0
		90th	5.3	5.1	5.9	8.0	7.1	8.4
2070	DJF	Mean	4.4	3.7	5.3	7.2	5.9	8.9
		Median	4.3	3.5	4.7	6.8	5.6	8.1
		10th	3.2	3.2	4.3	4.9	4.3	7.1
		90th	5.5	4.5	7.0	9.6	7.7	11.6
2070	MAM	Mean	4.9	5.1	4.6	8.3	7.9	9.0
		Median	5.1	5.1	4.5	7.8	8.2	9.1
		10th	2.8	3.8	2.5	6.0	6.0	5.7
		90th	6.4	6.4	6.9	10.4	9.5	12.2
2070	JJA	Mean	6.4	5.6	7.0	10.8	9.6	11.8
		Median	6.1	5.6	6.7	10.9	9.1	12.3
		10th	4.0	4.7	4.8	6.9	7.9	8.2
		90th	9.4	6.6	9.5	15.0	11.7	15.0
2070	SON	Mean	6.5	6.0	7.4	10.2	10.3	11.2
		Median	6.4	6.4	8.0	10.8	10.3	11.9
		10th	4.8	4.2	5.9	7.0	7.3	8.9
		90th	8.3	7.5	8.3	12.9	13.2	12.9
2070	Annual	Mean	5.3	4.8	5.9	8.6	7.9	9.9
		Median	4.9	4.6	5.8	8.3	7.5	10.3
		10th	4.1	4.2	4.5	6.3	6.3	7.4
		90th	6.7	5.7	7.4	10.9	9.8	12.0
2090	DJF	Mean	4.9	4.0	6.0	9.3	7.8	11.8
		Median	4.8	4.1	5.6	8.5	7.3	10.5
		10th	3.9	2.7	5.1	6.0	5.9	9.6
		90th	6.0	5.2	7.4	12.7	10.4	15.3
2090	MAM	Mean	6.0	6.1	5.7	11.0	10.4	12.6
		Median	6.1	6.0	5.3	11.6	10.3	13.3
		10th	3.8	4.7	3.4	7.0	8.1	8.3
		90th	8.3	7.7	8.3	14.6	12.9	16.4
2090	JJA	Mean	7.5	6.5	8.4	14.2	12.9	15.9
		Median	7.3	6.7	7.8	13.6	12.7	16.7
		10th	5.0	5.1	5.8	9.2	10.4	11.0
		90th	11.3	7.6	11.7	18.4	15.8	20.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	7.4	6.4	8.8	13.5	13.6	15.3
		Median	6.9	6.4	8.8	14.5	14.4	16.1
		10th	5.4	4.6	7.4	8.6	9.5	11.9
		90th	9.7	8.3	10.2	18.0	17.0	18.0
2090	Annual	Mean	6.1	5.4	6.9	11.3	10.5	13.4
		Median	5.5	5.1	6.8	11.5	10.3	13.7
		10th	4.8	4.6	5.6	7.8	8.1	10.1
		90th	8.1	6.5	8.4	14.5	13.0	16.4

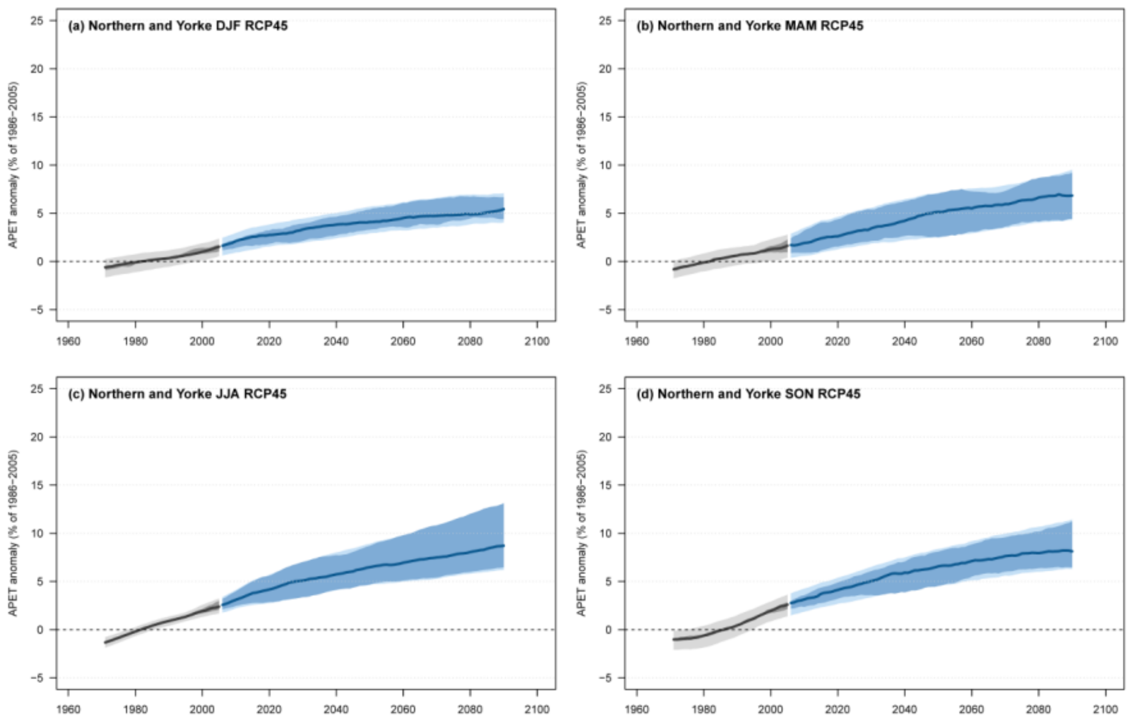

Figure 5.18 Northern and Yorke NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

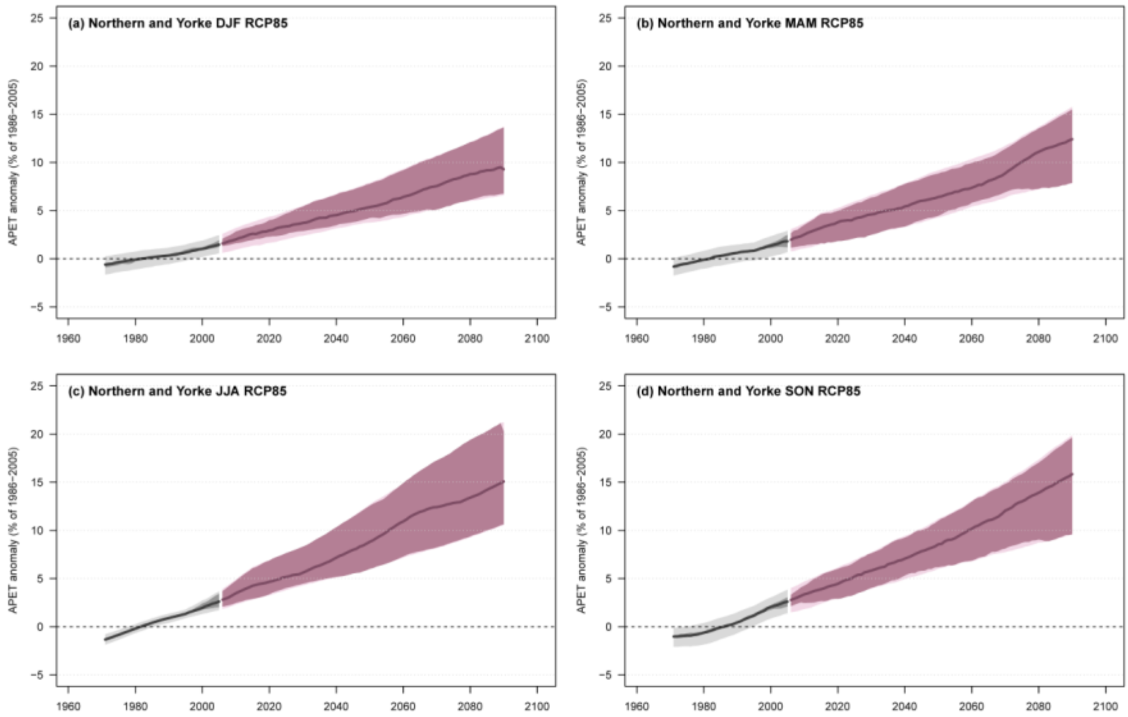

Figure 5.19 Northern and Yorke NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

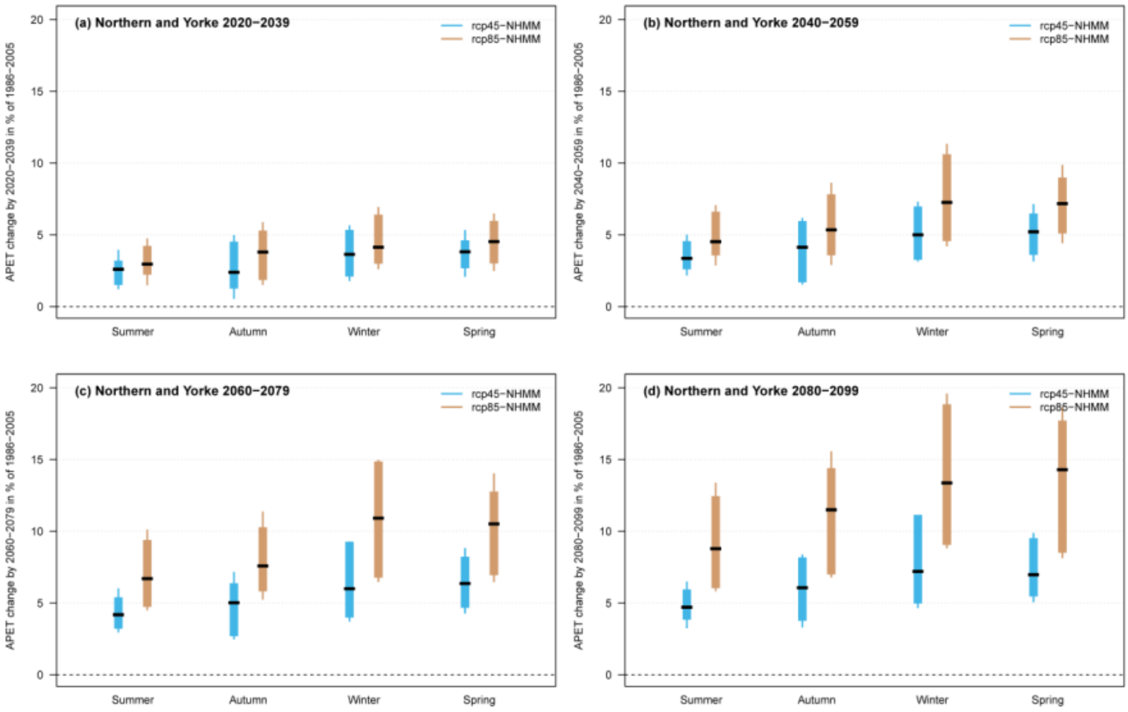

Figure 5.20 Northern and Yorke NRM NHMM-downscaled projected seasonal potential evapotranspiration changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean potential evapotranspiration (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean potential evapotranspiration.

5.4 Summary

Decreases in precipitation are projected for all seasons, and hence annual precipitation also, with the greatest relative decreases in spring, followed by summer, for both RCP4.5 and RCP8.5. For the second half of the century the scenarios diverge, with larger decreases from RCP8.5. The range of change, and hence uncertainty, is much larger for summer. Daily temperatures (maximum and minimum) are projected to increase for all seasons. For maximum temperature there are slightly larger increases for the spring season corresponding to its increased drying relative to the other seasons. Minimum temperatures increase the least for winter. For both maximum and minimum daily temperatures, the increases for RCP8.5 are larger than RCP4.5 from mid-century onwards. Solar radiation also increases for all seasons, with larger relative increases in winter and spring, corresponding to a reduction in clouds given their drying trends. VPD also increases in all seasons, notably much more for RCP8.5 than for RCP4.5 with more than double relative changes for winter and spring. APET also increases in all seasons, with relative increases greater in winter and spring, and again the projected changes for RCP8.5 are larger than for RCP4.5. Overall, i.e. for all variables and both RCPs, the changes projected from a subset of six better performing GCMs are smaller than the changes projected by a subset of six poorer performing GCMs. The downscaled projections for each Northern and Yorke station, provided as 100 stochastic replicates of daily time-series for each GCM and RCP, represent 'added value' over direct GCM output as they provide realistic station-scale input series suitable for probabilistic impacts and adaptation investigations. Bates et al. (2010), in a report focussing on climate change and water allocation, provide a useful summary on the appropriate application of projections in such investigations. CSIRO and Bureau of Meteorology

(2014) provides a detailed overview of climate change science from an Australian perspective with recommendations on understanding and utilising projections.

6 Projections for SA Arid Lands

6.1 Overview

The South Australian Arid Lands NRM has a low and highly variable rainfall climate. Drought is common and when rainfall does occur it can be localised and intense (SAALNRMB, 2010).

Thirty one weather stations were selected for the statistical downscaling model calibration. Their mean rainfall characteristics are summarised in Table 6.1, in terms of seasonal mean number of wet-days and rainfall totals for the 1986-2005 baseline (representing current climate, this is the period that projections are compared to in later results). Annual rainfall totals vary between stations by a factor of two, ranging from approximately 150 mm (Oodnadatta) to 300 mm (Hawker).

The selected downscaling models, for the four seasons, are summarised in Table 6.2. Summer, winter and spring use ‘east minus west’ SLP difference as a predictor. Autumn uses the mean SLP over the region, as opposed to a SLP difference across the region as selected in the other seasons. All seasons select DTD at the 700 hPa level, autumn and spring also select DTD at the 850 hPa level. Northerly wind speed (V-wind) is selected at both 700 and 850 hPa levels for summer, at 700 hPa for autumn, and at 850 hPa for both winter and spring. Winter additionally selects easterly wind speed at 700 hPa. The mean rainfall characteristics associated with the weather states for each of the four seasonal NHMMs are presented in Appendix A, Table A.17 to Table A.20.

Table 6.1 SA Arid Lands NRM Climate Stations for NHMM-Downscaling

BoM ID	Name	Latitude	Longitude	Rain days (# days)				Rain amount (mm)			
				DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
16001	WOOMERA AERODROME	31.16	136.81	6 0.21	5 0.17	9 0.31	9 0.31	43 0.26	38 0.23	43 0.26	42 0.25
16007	COOBER PEDY	29.01	134.76	7 0.27	5 0.19	6 0.23	8 0.31	62 0.36	35 0.21	36 0.21	37 0.22
16009	GLENDAMBO (COONDAMBO)	31.06	135.87	6 0.20	5 0.17	10 0.33	9 0.30	55 0.30	37 0.20	44 0.24	49 0.26
16022	KONDOOLKA	32.00	134.88	6 0.13	8 0.17	20 0.43	12 0.26	46 0.17	38 0.14	103 0.39	77 0.29
16025	WOOMERA (MAHANEWO)	31.73	136.44	6 0.18	6 0.18	12 0.36	9 0.27	57 0.28	35 0.17	54 0.26	60 0.29
16031	TARCOOLA (MULGATHING)	30.24	133.99	8 0.24	6 0.18	9 0.27	10 0.30	59 0.32	33 0.18	44 0.24	51 0.27
16032	NONNING	32.52	136.49	7 0.15	8 0.17	19 0.40	13 0.28	53 0.21	39 0.15	84 0.33	76 0.30
16035	ROXBY DOWNS (PARAKYLIA STATION)	30.40	136.39	6 0.29	3 0.14	6 0.29	6 0.29	62 0.36	34 0.20	37 0.22	39 0.23
16043	WOOMERA (SOUTH GAP STN)	31.63	137.62	6 0.2	5 0.17	11 0.37	8 0.27	52 0.26	45 0.23	51 0.26	49 0.25
16047	TODMORDEN	27.14	134.76	7 0.32	4 0.18	5 0.23	6 0.27	81 0.41	41 0.21	34 0.17	41 0.21
16048	THE TWINS STATION	30.00	135.39	6 0.26	4 0.17	7 0.30	6 0.26	60 0.36	32 0.19	40 0.24	34 0.20
16055	YARDEA	32.38	135.52	7 0.14	8 0.16	22 0.44	13 0.26	49 0.18	42 0.15	102 0.38	79 0.29
16065	ANDAMOOKA	30.45	137.17	6 0.22	5 0.19	8 0.30	8 0.30	55 0.30	40 0.22	38 0.21	51 0.28
17024	MARREE (FARINA)	30.07	138.27	6 0.25	4 0.17	7 0.29	7 0.29	49 0.30	40 0.25	35 0.21	39 0.24

				4	4	4	4	74	37	34	34
17028	INNAMINCKA STATION	27.73	140.76	0.25	0.25	0.25	0.25	0.41	0.21	0.19	0.19
				6	3	4	5	66	34	33	30
17030	OODNADATTA (MACUMBA)	27.25	135.65	0.33	0.17	0.22	0.28	0.40	0.21	0.20	0.18
				6	4	6	7	55	36	36	38
17031	MARREE	29.65	138.06	0.26	0.17	0.26	0.30	0.33	0.22	0.22	0.23
				5	3	5	5	54	29	36	31
17037	MULOORINA STATION (MULOORINA HOMESTEAD)	29.24	137.90	0.28	0.17	0.28	0.28	0.36	0.19	0.24	0.21
				8	6	11	10	72	60	51	59
17041	BLINMAN (NARRINA)	30.94	138.89	0.23	0.17	0.31	0.29	0.30	0.25	0.21	0.24
				7	6	11	8	62	52	56	54
17098	PARACHILNA (MOTPENA)	31.19	138.28	0.22	0.19	0.34	0.25	0.28	0.23	0.25	0.24
				8	6	8	8	80	64	45	55
17099	ARKAROOLA	30.31	139.34	0.27	0.20	0.27	0.27	0.33	0.26	0.18	0.23
				6	7	14	10	52	42	67	63
18074	ROOPENA	32.73	137.40	0.16	0.19	0.38	0.27	0.23	0.19	0.30	0.28
				9	9	11	10	67	50	51	55
18114	MARALINGA	30.16	131.58	0.23	0.23	0.28	0.26	0.30	0.22	0.23	0.25
				8	10	21	13	63	46	80	83
18117	WHYALLA (MOOLA)	33.11	137.17	0.15	0.19	0.40	0.25	0.23	0.17	0.29	0.31
				8	7	15	12	78	61	79	78
19018	HAWKER (HOLOWILENA)	31.88	138.84	0.19	0.17	0.36	0.29	0.26	0.21	0.27	0.26
				7	6	8	7	59	44	37	53
20005	ERUDINA	31.48	139.39	0.25	0.21	0.29	0.25	0.31	0.23	0.19	0.27
				9	7	11	9	90	46	53	65
20013	MANNA HILL	32.43	139.99	0.25	0.19	0.31	0.25	0.35	0.18	0.21	0.26
				7	6	10	9	76	50	53	63
20017	MUTOOROO	32.45	140.92	0.22	0.19	0.31	0.28	0.31	0.21	0.22	0.26
				7	7	12	10	80	44	58	68
20021	YUNTA (PARATOO)	32.73	139.40	0.19	0.19	0.33	0.28	0.32	0.18	0.23	0.27
				6	6	9	8	57	42	45	53
20049	MOOLEULOOLOO	31.64	140.51	0.21	0.21	0.31	0.28	0.29	0.21	0.23	0.27

38002	BIRDSVILLE POLICE STATION	25.90	139.35	7 0.32	5 0.23	4 0.18	6 0.27	67 0.39	38 0.22	30 0.17	38 0.22

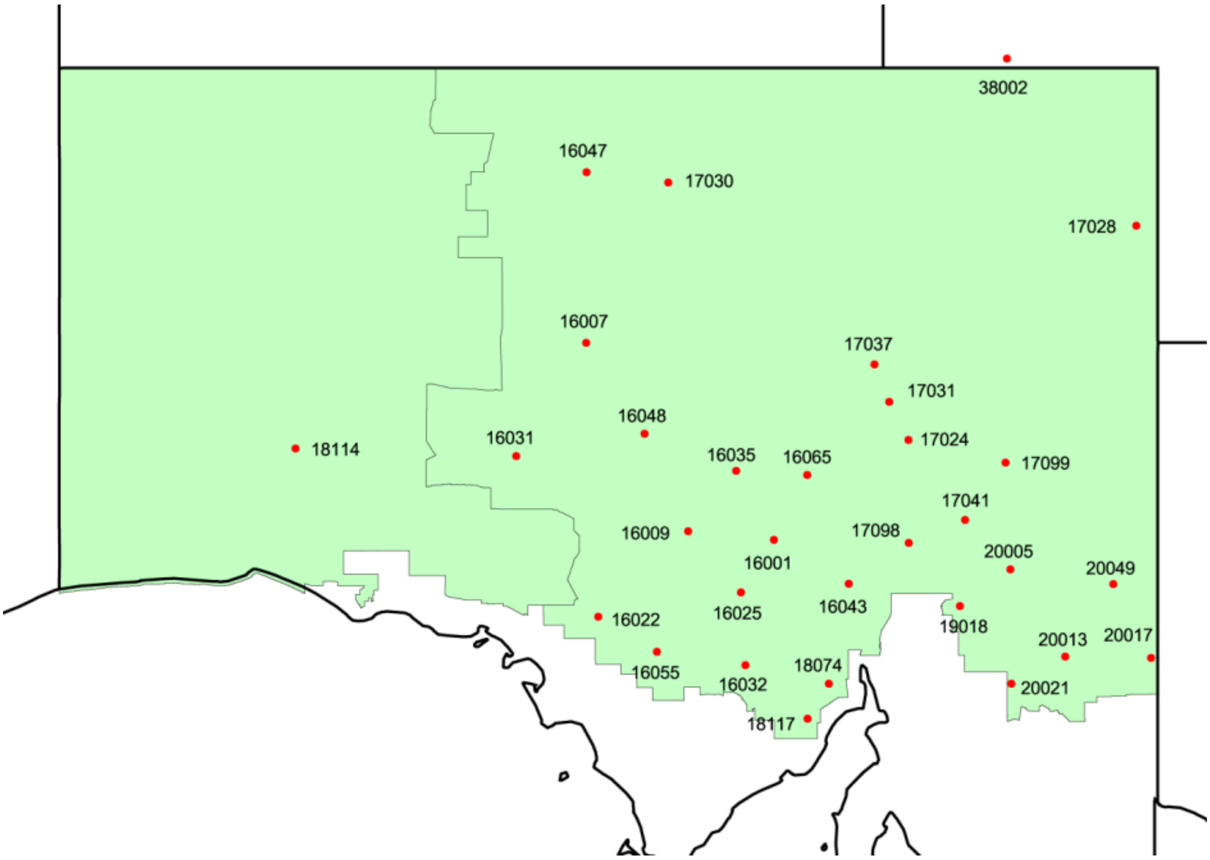

Figure 6.1 Location of SA Arid Lands stations in Table 6.1 and NRM region boundary (including Alinytjara Wilurara NRM boundary, with station 18114 included with SA Arid Lands for reporting)

Table 6.2 Selected NHMMs (number of weather states and predictor combinations) for SA Arid Lands

DJF	MAM	JJA	SON
3 states	3 states	4 States	4 States
East – West SLP DTD at 700 hPa V-wind at 700 hPa V-wind at 850 hPa	MSLP DTD at 700 hPa DTD at 850 hPa V-wind at 700 hPa	East – West SLP DTD at 700 hPa U-wind at 700 hPa V-wind at 850 hPa	East – West SLP DTD at 700 hPa DTD at 850 hPa V-wind at 850 hPa

6.2 Precipitation

The downscaled changes projected for precipitation are summarised in Table 6.3. Together with the time-series seasonal plots (Figure 6.2 for RCP4.5 and Figure 6.3 for RCP8.5) and the boxplots showing the range and median of projected changes (Figure 6.4), these results indicate projected drying to be stronger in the second half of the century, particularly for RCP8.5. The downscaled projected changes are consistently more negative (i.e. stronger decreases) than the changes obtained from the GCM grid-scale precipitation directly (Figure 6.4). The subset of six better rated GCMs show smaller changes than from the six poorer GCM subset (Figure 6.5).

The mean, median and range of changes presented in Table 6.3 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.49 for RCP4.5 and

Table B.50 for RCP8.5.

Table 6.3 SA Arid Lands NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	-4.7	-3.1	-8.7	0.7	2.3	0.4
		Median	-5.2	-3.9	-11.3	-3.1	0.7	-0.5
		10th	-19.8	-18.1	-21.4	-6.9	-4.6	-5.7
		90th	13.6	12.6	6.5	11.4	11.0	7.4
2030	MAM	Mean	-8.8	-9.1	-8.9	-8.3	-12.0	-4.1
		Median	-9.0	-5.3	-11.1	-10.4	-10.8	-5.2
		10th	-28.0	-30.7	-27.2	-24.6	-19.8	-20.2
		90th	10.8	8.7	11.6	7.6	-5.4	13.2
2030	JJA	Mean	-6.7	-6.8	-8.9	-6.2	-3.1	-10.2
		Median	-5.9	-5.6	-8.5	-5.3	-3.6	-10.0
		10th	-13.3	-13.1	-12.6	-12.5	-7.2	-16.0
		90th	-0.6	-1.8	-5.7	1.1	1.4	-4.7
2030	SON	Mean	-8.3	-14.6	-6.0	-10.6	-8.0	-10.2
		Median	-5.8	-9.8	-8.2	-12.3	-8.9	-11.4
		10th	-31.5	-35.8	-23.5	-23.0	-24.2	-22.6
		90th	8.6	1.7	13.7	4.9	9.0	3.5
2030	Annual	Mean	-7.5	-8.8	-8.8	-6.0	-5.2	-5.9
		Median	-7.0	-4.9	-9.8	-4.9	-4.1	-5.2
		10th	-15.0	-20.9	-13.7	-12.6	-13.4	-10.7
		90th	0.7	-0.5	-2.8	-1.4	1.7	-2.0
2050	DJF	Mean	-6.6	-7.9	-10.7	-5.5	-3.1	-7.7
		Median	-4.4	-7.7	-3.9	-4.7	-4.6	-7.7
		10th	-21.0	-15.8	-29.1	-17.9	-10.4	-23.6
		90th	5.4	-0.3	0.9	10.5	5.6	8.2
2050	MAM	Mean	-9.4	-10.8	-11.5	-11.9	-8.1	-11.8
		Median	-10.9	-10.5	-16.3	-18.1	-5.4	-18.3
		10th	-29.2	-25.4	-28.6	-25.0	-24.6	-27.6
		90th	10.8	3.5	10.5	7.0	5.6	10.4
2050	JJA	Mean	-9.2	-6.7	-10.9	-11.4	-11.8	-13.1
		Median	-10.5	-8.7	-11.3	-10.4	-11.3	-12.2
		10th	-15.7	-10.9	-16.2	-18.6	-17.9	-18.5
		90th	-2.0	-0.6	-5.1	-6.0	-6.2	-8.7
2050	SON	Mean	-13.5	-14.1	-15.1	-15.6	-18.4	-17.1
		Median	-12.7	-13.5	-11.8	-11.2	-9.9	-15.3
		10th	-33.1	-32.8	-31.3	-42.9	-43.5	-33.7

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.6	3.9	-2.3	-1.6	-1.8	-2.5
2050	Annual	Mean	-9.9	-10.3	-12.4	-11.3	-10.6	-12.7
		Median	-8.0	-12.1	-9.0	-9.3	-7.6	-8.2
		10th	-18.8	-16.9	-24.2	-23.7	-23.7	-25.0
		90th	-1.8	-1.9	-4.2	-3.5	-0.6	-5.1
2070	DJF	Mean	-8.7	-6.0	-15.0	-9.5	-3.1	-16.6
		Median	-7.3	-3.0	-11.8	-7.3	-6.4	-9.9
		10th	-27.0	-26.5	-28.9	-21.2	-15.7	-39.6
		90th	6.6	11.5	-4.5	8.2	12.7	-0.2
2070	MAM	Mean	-15.1	-13.1	-14.0	-16.7	-8.7	-22.0
		Median	-16.2	-9.2	-16.9	-18.9	-6.0	-25.6
		10th	-29.6	-26.3	-36.7	-39.3	-28.9	-43.5
		90th	3.7	-3.9	11.7	7.4	8.9	3.0
2070	JJA	Mean	-8.2	-5.2	-12.6	-13.8	-10.7	-17.2
		Median	-10.6	-8.4	-13.3	-11.7	-9.8	-17.5
		10th	-14.5	-12.4	-18.6	-23.8	-18.2	-26.8
		90th	0.6	5.2	-5.8	-4.0	-4.2	-7.5
2070	SON	Mean	-17.8	-14.2	-22.4	-23.5	-21.8	-27.3
		Median	-20.0	-6.2	-27.8	-22.4	-15.9	-26.6
		10th	-41.1	-42.9	-36.2	-44.5	-51.5	-39.4
		90th	6.5	6.4	-3.2	-4.5	2.1	-16.0
2070	Annual	Mean	-12.7	-9.9	-16.6	-16.1	-11.5	-21.1
		Median	-10.8	-8.1	-14.3	-12.7	-7.3	-16.3
		10th	-25.0	-21.5	-25.3	-31.3	-28.1	-37.4
		90th	-3.2	-0.3	-10.1	-4.4	0.9	-9.7
2090	DJF	Mean	-8.2	-4.0	-13.3	-16.6	-13.1	-26.8
		Median	-8.1	-3.8	-10.1	-13.6	-16.7	-20.6
		10th	-20.4	-19.9	-27.7	-31.8	-28.1	-49.4
		90th	6.1	11.6	-2.2	6.1	5.5	-10.4
2090	MAM	Mean	-11.0	-4.1	-18.2	-19.6	-11.3	-30.6
		Median	-10.2	-3.0	-20.5	-15.2	-12.3	-33.4
		10th	-25.1	-20.9	-29.9	-45.5	-31.5	-56.2
		90th	7.1	11.6	-4.2	5.9	9.9	-2.3
2090	JJA	Mean	-8.4	-7.0	-12.0	-16.5	-12.7	-22.4
		Median	-9.2	-9.2	-11.2	-13.5	-10.9	-18.5
		10th	-15.5	-11.4	-19.0	-33.2	-21.2	-35.8
		90th	-0.3	-0.4	-6.0	-4.6	-6.2	-13.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	-15.7	-12.5	-20.7	-32.9	-31.6	-43.2
		Median	-14.8	-13.7	-23.1	-32.7	-25.5	-42.7
		10th	-29.9	-28.4	-36.1	-59.2	-59.1	-54.4
		90th	2.4	4.7	-2.9	-9.7	-10.2	-32.7
2090	Annual	Mean	-11.1	-7.3	-16.4	-21.8	-17.9	-31.3
		Median	-11.7	-9.9	-14.8	-16.0	-13.8	-29.0
		10th	-17.7	-14.2	-25.4	-41.3	-31.5	-46.2
		90th	-3.3	2.1	-9.0	-8.4	-8.5	-18.8

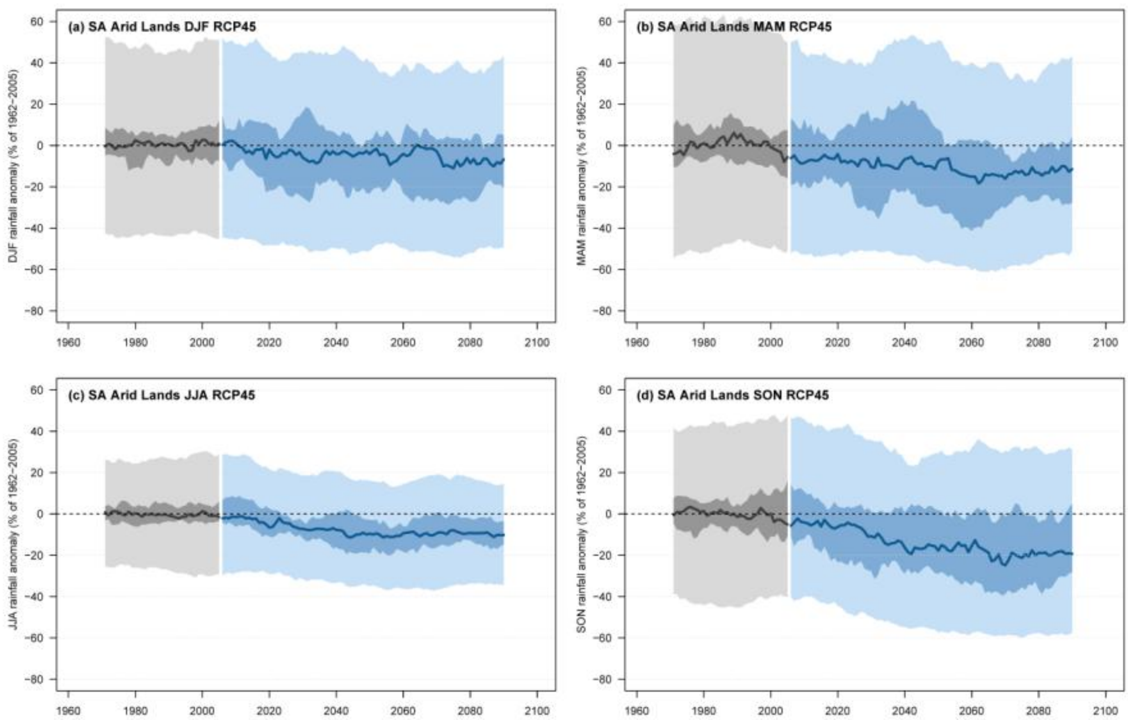

Figure 6.2 SA Arid Lands NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

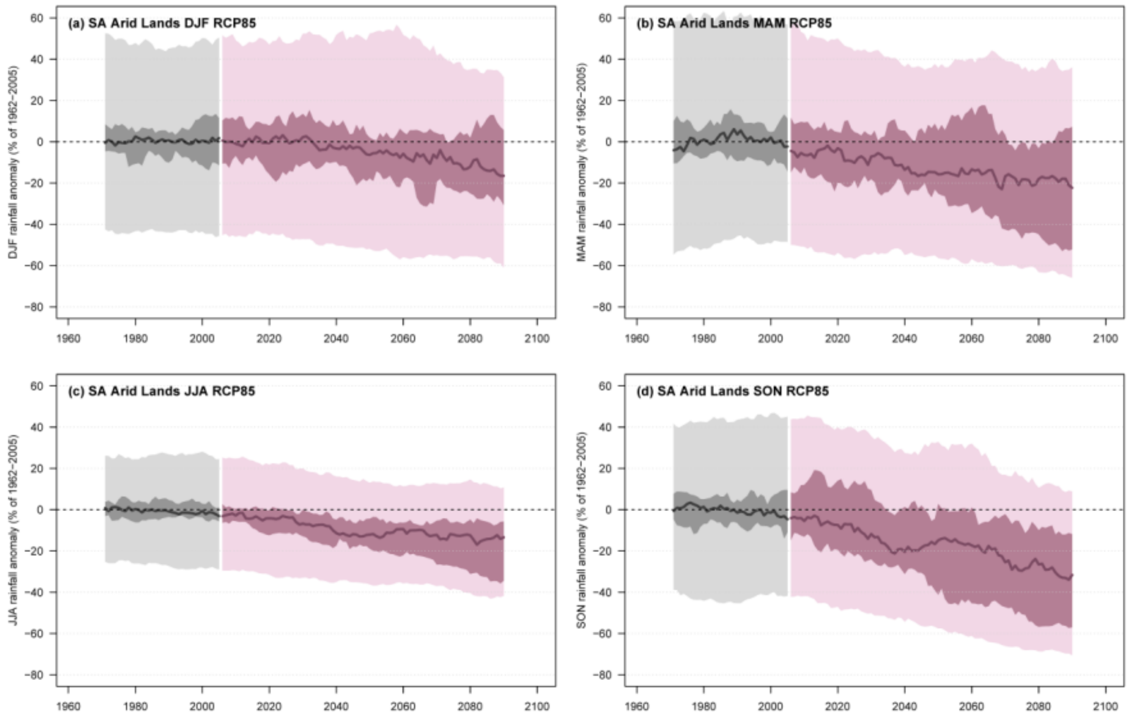

Figure 6.3 SA Arid Lands NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

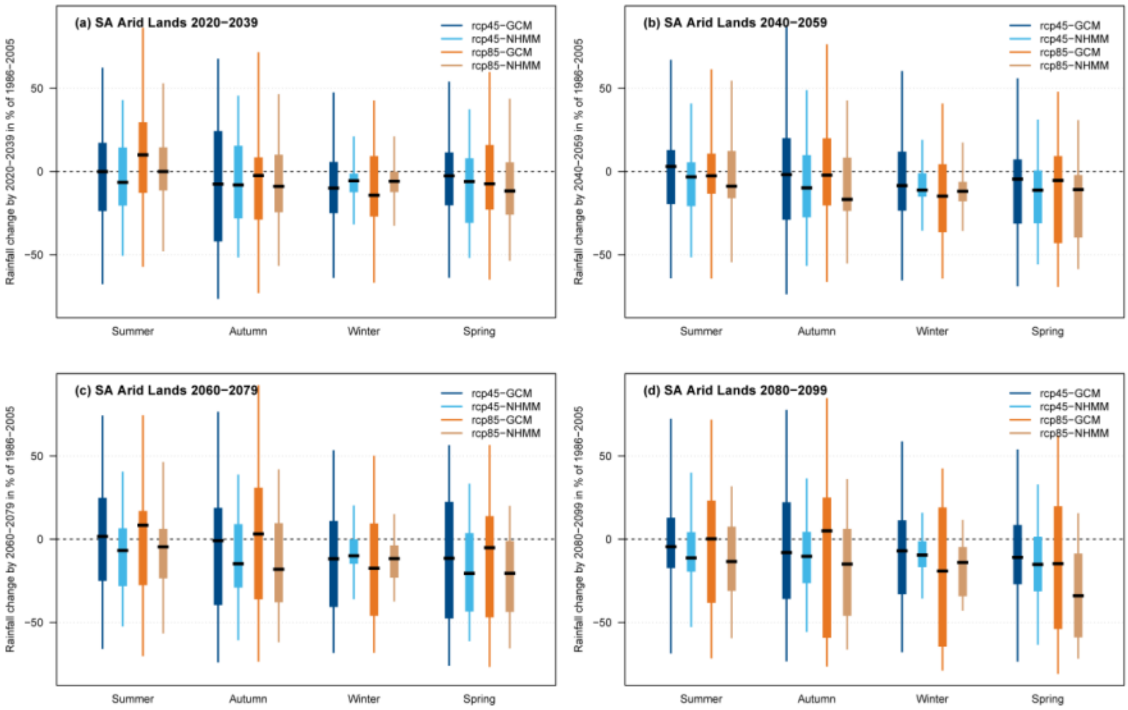

Figure 6.4 SA Arid Lands NRM CMIP5 GCM and NHMM-downscaled projected seasonal precipitation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall.

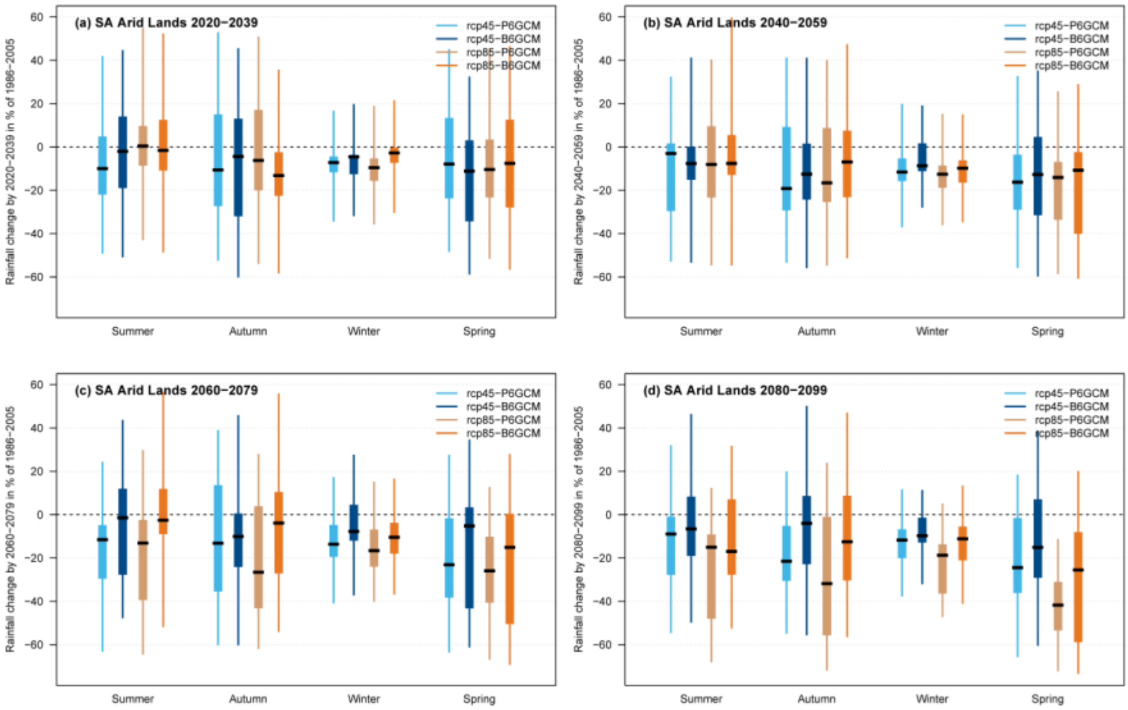

Figure 6.5 SA Arid Lands NRM NHMM-downscaled projected seasonal precipitation changes from six better (B6GCM) and six poorer (P6GCM) performing CMIP5 GCMs for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall. Selection of better and poorer performing GCMs according to Cai et al. (2014a) and Cai et al. (2014b).

6.3 Non-precipitation variables

The downscaled changes for daily maximum temperature are summarised in Table 6.4. By the end of the century the increases in maximum temperature are projected to be much larger for RCP8.5 compared to RCP4.5 (4.2°C compared to 2.2°C, annually averaged). This is evident from the time-series progressions shown in Figure 6.6 and Figure 6.7. Figure 6.8 shows that the median downscaled changes are consistent with the grid-scale changes from the GCMs directly. Table 6.4 also shows that the ensemble means of the six better performing GCMs are consistently lower (i.e. less change) than the six poorer rated GCMs.

The mean, median and range of changes presented in Table 6.4 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.51 for RCP4.5 and Table B.52 for RCP8.5.

Table 6.4 SA Arid Lands NRM downscaled projected changes in seasonal maximum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	1.1	0.9	1.2	1.4	1.2	1.6
		Median	1.2	1.0	1.3	1.3	1.2	1.5
		10th	0.6	0.6	0.9	0.9	0.8	1.3
		90th	1.4	1.3	1.6	1.7	1.6	2.0
2030	MAM	Mean	0.9	1.0	0.8	1.3	1.3	1.2
		Median	1.0	1.0	0.8	1.2	1.3	1.2
		10th	0.7	0.8	0.6	0.8	1.1	0.7
		90th	1.2	1.2	1.1	0.8	1.5	1.7
2030	JJA	Mean	1.0	0.9	1.0	1.3	1.2	1.3
		Median	1.0	1.0	1.1	1.2	1.2	1.3
		10th	0.6	0.7	0.7	0.9	1.0	0.9
		90th	1.2	1.2	1.2	1.6	1.4	1.6
2030	SON	Mean	1.1	1.1	1.1	1.5	1.4	1.6
		Median	1.1	1.1	1.1	1.4	1.4	1.6
		10th	0.8	0.9	0.9	1.0	1.1	1.2
		90th	1.4	1.4	1.5	2.0	1.9	2.0
2030	Annual	Mean	1.0	1.0	1.1	1.3	1.3	1.4
		Median	1.0	1.0	1.1	1.3	1.3	1.4
		10th	0.7	0.8	0.8	1.0	1.0	1.1
		90th	1.3	1.2	1.3	1.9	1.6	1.8
2050	DJF	Mean	1.6	1.4	1.8	2.3	2.0	2.6
		Median	1.6	1.4	1.8	2.1	2.1	2.6
		10th	1.0	1.0	1.4	1.6	1.5	2.1
		90th	2.0	1.9	2.3	2.9	2.6	3.2
2050	MAM	Mean	1.4	1.4	1.3	2.1	2.1	2.1
		Median	1.4	1.5	1.2	1.9	2.0	2.0
		10th	1.0	1.3	0.9	1.6	1.8	1.4
		90th	1.7	1.6	1.7	2.8	2.5	2.8
2050	JJA	Mean	1.4	1.3	1.4	2.0	1.9	2.1
		Median	1.3	1.3	1.5	1.9	1.8	2.2
		10th	0.9	1.1	1.1	1.5	1.6	1.7
		90th	1.8	1.5	1.8	2.6	2.3	2.6
2050	SON	Mean	1.7	1.6	1.8	2.4	2.4	2.6
		Median	1.7	1.6	1.8	2.3	2.2	2.7
		10th	1.2	1.3	1.5	1.7	1.8	2.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	2.1	2.0	2.2	3.2	3.2	3.2
2050	Annual	Mean	1.5	1.4	1.6	2.2	2.1	2.3
		Median	1.5	1.5	1.7	2.1	2.1	2.3
		10th	1.1	1.2	1.2	1.6	1.7	1.8
		90th	1.9	1.7	1.9	3.0	2.6	2.9
2070	DJF	Mean	2.0	1.8	2.2	3.2	3.0	3.6
		Median	1.9	1.7	2.2	3.1	2.9	3.6
		10th	1.5	1.4	1.8	2.3	2.2	2.9
		90th	2.5	2.2	2.8	4.2	3.8	4.5
2070	MAM	Mean	1.7	1.8	1.7	3.0	3.0	3.1
		Median	1.7	1.8	1.6	2.8	2.9	3.1
		10th	1.2	1.6	1.2	2.3	2.5	2.3
		90th	2.3	2.0	2.4	3.8	3.5	4.0
2070	JJA	Mean	1.7	1.6	1.9	3.0	2.7	3.2
		Median	1.6	1.5	1.9	2.8	2.8	3.4
		10th	1.3	1.4	1.4	2.2	2.2	2.7
		90th	2.4	1.8	2.4	3.8	3.3	3.7
2070	SON	Mean	2.1	2.0	2.4	3.5	3.4	3.9
		Median	2.1	2.0	2.4	3.5	3.3	4.1
		10th	1.6	1.6	1.9	2.3	2.6	2.9
		90th	2.7	2.4	2.8	4.7	4.5	4.7
2070	Annual	Mean	1.9	1.8	2.0	3.2	3.0	3.5
		Median	1.8	1.8	2.1	3.2	3.0	3.5
		10th	1.4	1.5	1.6	2.3	2.4	2.8
		90th	2.4	2.1	2.5	4.0	3.7	4.1
2090	DJF	Mean	2.3	2.0	2.6	4.2	3.9	4.8
		Median	2.2	1.9	2.6	4.1	3.8	4.7
		10th	1.7	1.7	2.2	3.0	3.0	3.9
		90th	2.8	2.5	3.2	5.4	4.9	5.8
2090	MAM	Mean	2.1	2.2	2.1	3.9	3.9	4.3
		Median	2.0	2.2	1.9	3.9	3.9	4.4
		10th	1.4	1.9	1.5	2.9	3.3	3.2
		90th	2.8	2.5	3.1	5.1	4.7	5.3
2090	JJA	Mean	2.0	1.8	2.3	4.0	3.7	4.4
		Median	1.9	1.8	2.3	3.8	3.7	4.5
		10th	1.4	1.5	1.8	3.0	3.0	3.7
		90th	2.8	2.1	3.0	5.1	4.4	5.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	2.5	2.3	2.8	4.6	4.5	5.2
		Median	2.4	2.2	2.9	4.8	4.4	5.6
		10th	1.9	1.9	2.4	3.0	3.3	3.9
		90th	3.3	2.9	3.3	6.2	5.8	6.2
2090	Annual	Mean	2.2	2.1	2.5	4.2	4.0	4.7
		Median	2.1	2.0	2.5	4.3	4.0	4.7
		10th	1.8	1.9	2.1	3.1	3.2	3.9
		90th	2.9	2.5	2.9	5.3	4.9	5.5

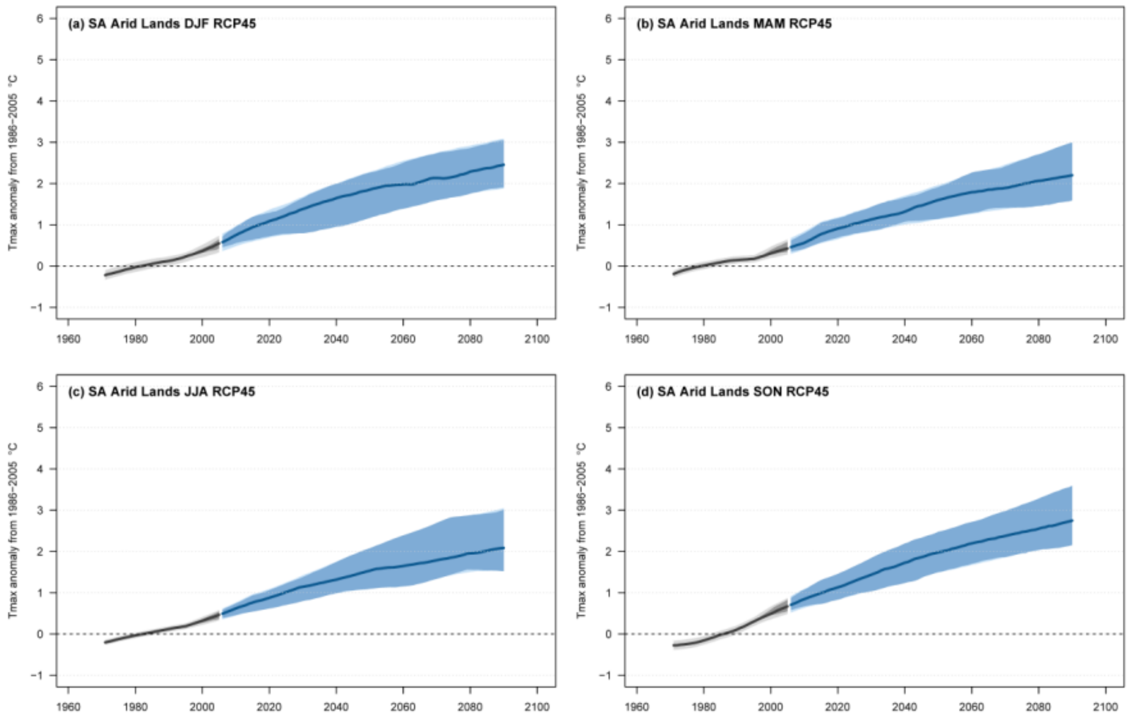

Figure 6.6 SA Arid Lands NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

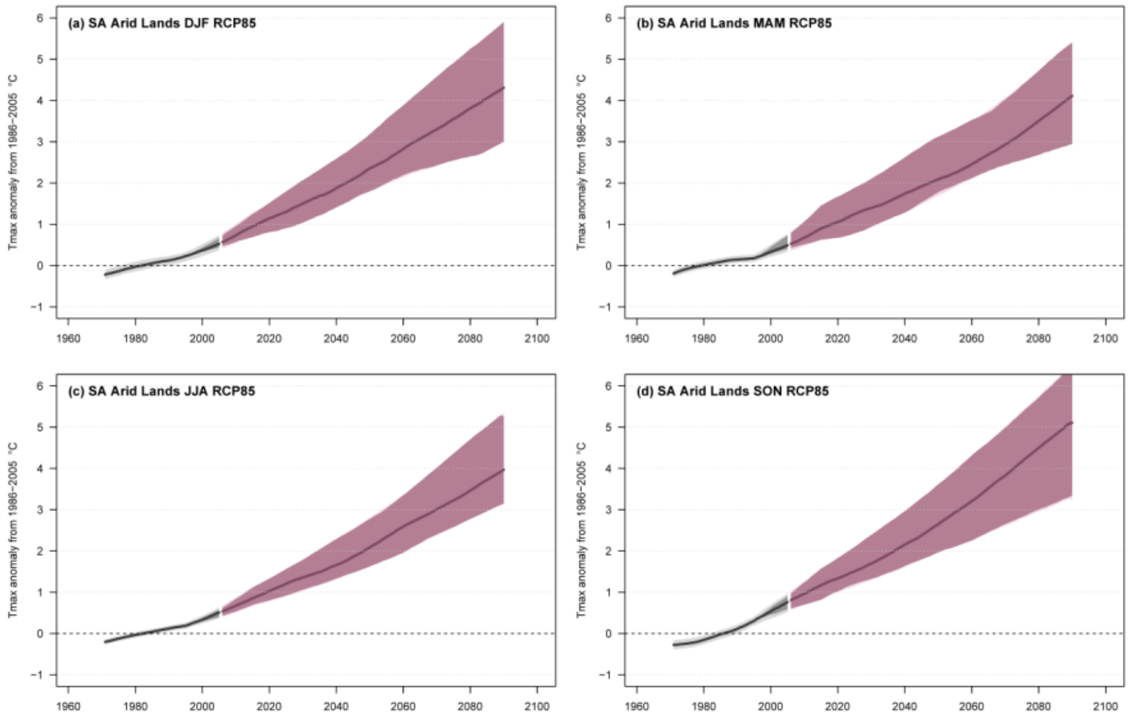

Figure 6.7 SA Arid Lands NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

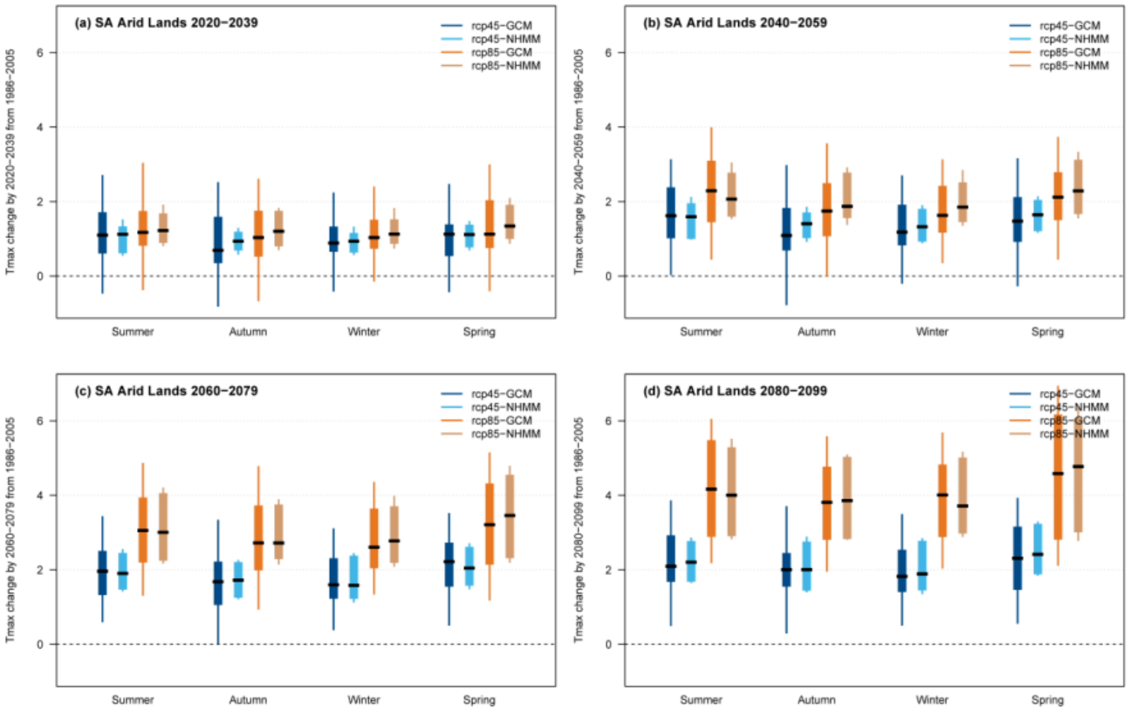

Figure 6.8 SA Arid Lands NRM CMIP5 GCM and NHMM-downscaled projected seasonal maximum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean maximum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean maximum daily temperature.

The downscaled changes for daily minimum temperature are summarised in Table 6.5. By the end of the century the increases in minimum temperature are projected to be much larger for RCP8.5 compared to RCP4.5 (3.6°C compared to 1.8°C, annually averaged). This is evident from the time-series progressions shown in Figure 6.9 and Figure 6.10. Figure 6.11 shows that the median downscaled changes are consistent with the grid-scale changes from the GCMs directly. Table 6.5 also shows that the ensemble means of the six better performing GCMs are consistently lower (i.e. less change) than the six poorer rated GCMs.

The mean, median and range of changes presented in Table 6.5 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.53 for RCP4.5 and Table B.54 for RCP8.5.

Table 6.5 SA Arid Lands NRM downscaled projected changes in seasonal minimum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	1.0	0.9	1.1	1.3	1.2	1.5
		Median	1.0	0.9	1.1	1.3	1.0	1.5
		10th	0.8	0.6	1.0	0.9	0.9	1.3
		90th	1.4	1.3	1.4	1.7	1.7	1.7
2030	MAM	Mean	0.9	0.9	0.9	1.2	1.1	1.2
		Median	0.9	0.9	1.0	1.1	1.1	1.3
		10th	0.7	0.8	0.7	0.9	0.9	1.0
		90th	1.2	1.0	1.2	0.9	1.5	1.5
2030	JJA	Mean	0.7	0.7	0.7	0.9	0.8	0.9
		Median	0.7	0.7	0.7	0.8	0.9	1.0
		10th	0.4	0.5	0.5	0.6	0.7	0.7
		90th	1.0	0.9	0.9	1.2	1.0	1.2
2030	SON	Mean	0.9	0.9	0.9	1.1	1.2	1.2
		Median	0.9	0.9	1.0	1.1	1.2	1.2
		10th	0.6	0.8	0.4	0.8	1.0	0.9
		90th	1.2	1.0	1.3	1.5	1.4	1.6
2030	Annual	Mean	0.9	0.8	0.9	1.1	1.1	1.2
		Median	0.9	0.8	0.9	1.1	1.0	1.2
		10th	0.7	0.7	0.8	0.9	0.9	1.1
		90th	1.1	1.0	1.0	1.5	1.4	1.4
2050	DJF	Mean	1.4	1.3	1.6	2.1	2.0	2.4
		Median	1.4	1.3	1.5	2.0	1.8	2.4
		10th	1.0	0.9	1.3	1.5	1.5	2.0
		90th	1.9	1.8	1.9	2.7	2.7	2.7
2050	MAM	Mean	1.3	1.3	1.3	2.0	2.0	2.1
		Median	1.3	1.4	1.3	2.0	1.9	2.2
		10th	0.9	1.2	1.0	1.5	1.6	1.7
		90th	1.6	1.5	1.5	2.5	2.6	2.3
2050	JJA	Mean	1.0	1.0	1.1	1.5	1.4	1.6
		Median	1.0	1.0	1.1	1.4	1.4	1.6
		10th	0.6	0.7	0.8	1.1	1.2	1.3
		90th	1.4	1.3	1.3	2.0	1.8	1.9
2050	SON	Mean	1.3	1.3	1.3	1.9	2.0	2.0
		Median	1.3	1.4	1.4	1.9	1.9	2.0
		10th	0.8	1.1	0.6	1.4	1.7	1.4

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.7	1.6	1.9	2.5	2.4	2.5
2050	Annual	Mean	1.2	1.2	1.3	1.9	1.8	2.0
		Median	1.3	1.2	1.3	1.9	1.6	2.1
		10th	0.9	1.1	1.1	1.5	1.6	1.8
		90th	1.5	1.5	1.5	2.2	2.3	2.2
2070	DJF	Mean	1.7	1.7	1.9	3.0	2.9	3.3
		Median	1.6	1.5	2.0	2.9	2.5	3.3
		10th	1.3	1.2	1.6	2.2	2.3	2.9
		90th	2.2	2.3	2.2	3.8	3.8	3.8
2070	MAM	Mean	1.6	1.7	1.6	2.9	2.9	3.1
		Median	1.6	1.7	1.7	2.9	2.7	3.2
		10th	1.1	1.4	1.3	2.4	2.4	2.7
		90th	1.9	2.0	1.9	3.4	3.7	3.3
2070	JJA	Mean	1.2	1.2	1.3	2.3	2.2	2.4
		Median	1.3	1.2	1.5	2.2	2.1	2.5
		10th	0.8	1.0	1.0	1.7	1.9	2.0
		90th	1.7	1.5	1.6	2.9	2.6	2.7
2070	SON	Mean	1.6	1.7	1.6	2.8	2.9	2.9
		Median	1.5	1.7	1.8	2.8	2.7	2.9
		10th	0.9	1.5	0.9	2.2	2.6	2.2
		90th	2.2	2.1	2.2	3.5	3.5	3.5
2070	Annual	Mean	1.5	1.6	1.6	2.7	2.7	2.9
		Median	1.6	1.5	1.7	2.8	2.4	3.0
		10th	1.2	1.3	1.4	2.3	2.4	2.7
		90th	1.8	2.0	1.8	3.1	3.4	3.1
2090	DJF	Mean	2.0	2.0	2.2	3.9	3.8	4.3
		Median	1.8	1.7	2.3	3.6	3.3	4.4
		10th	1.4	1.4	1.8	3.0	3.1	3.7
		90th	2.6	2.8	2.6	4.9	4.9	4.9
2090	MAM	Mean	1.9	2.0	1.9	3.9	4.0	4.1
		Median	2.0	2.1	2.0	3.9	3.8	4.2
		10th	1.4	1.6	1.6	3.2	3.3	3.8
		90th	2.5	2.5	2.3	4.5	5.0	4.4
2090	JJA	Mean	1.5	1.5	1.6	3.1	3.0	3.2
		Median	1.7	1.4	1.8	3.0	2.9	3.4
		10th	0.9	1.2	1.1	2.2	2.6	2.6
		90th	1.9	1.9	1.9	3.7	3.6	3.6

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	1.9	2.0	2.0	3.7	3.8	3.8
		Median	1.9	1.9	2.1	3.6	3.6	3.9
		10th	1.3	1.7	1.3	2.8	3.4	3.0
		90th	2.5	2.5	2.6	4.7	4.6	4.7
2090	Annual	Mean	1.8	1.9	1.9	3.6	3.7	3.9
		Median	1.9	1.8	2.0	3.6	3.3	3.9
		10th	1.3	1.5	1.6	3.0	3.2	3.6
		90th	2.3	2.4	2.2	4.1	4.5	4.1

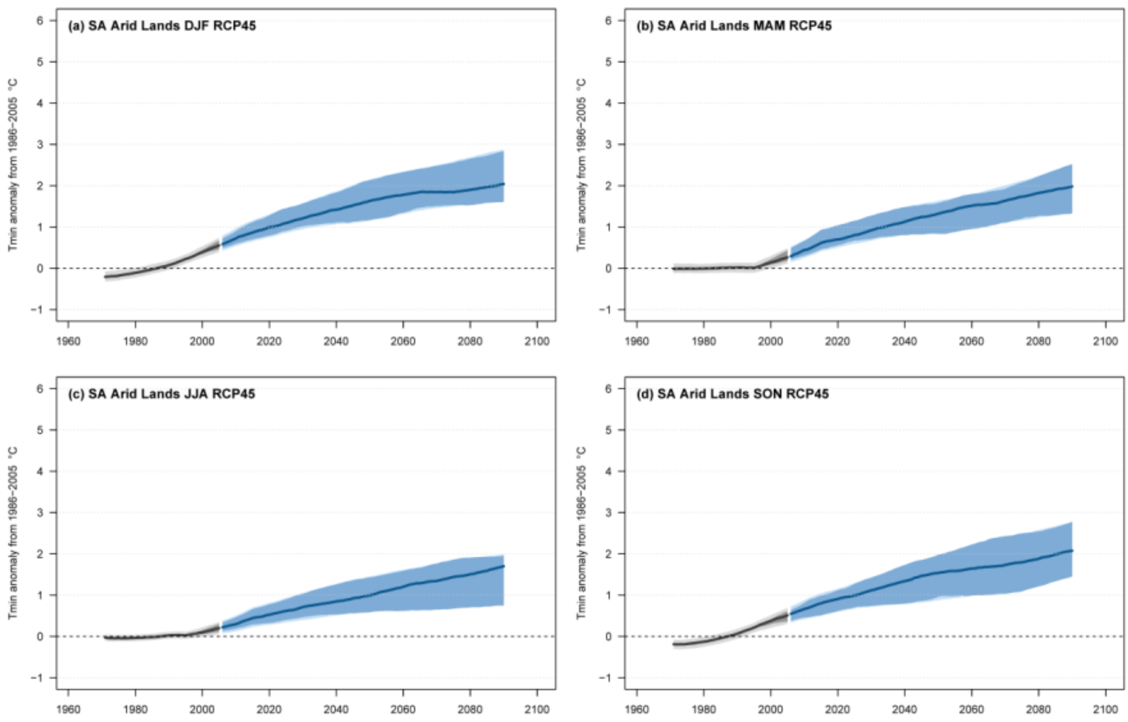

Figure 6.9 SA Arid Lands NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

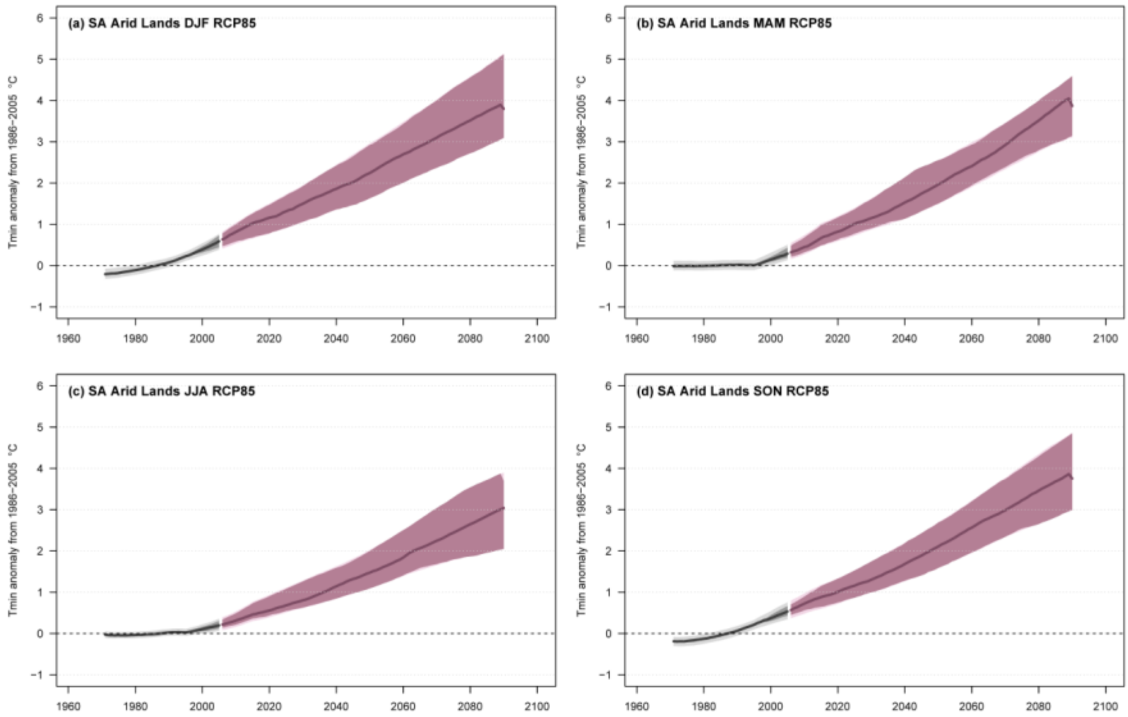

Figure 6.10 SA Arid Lands NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

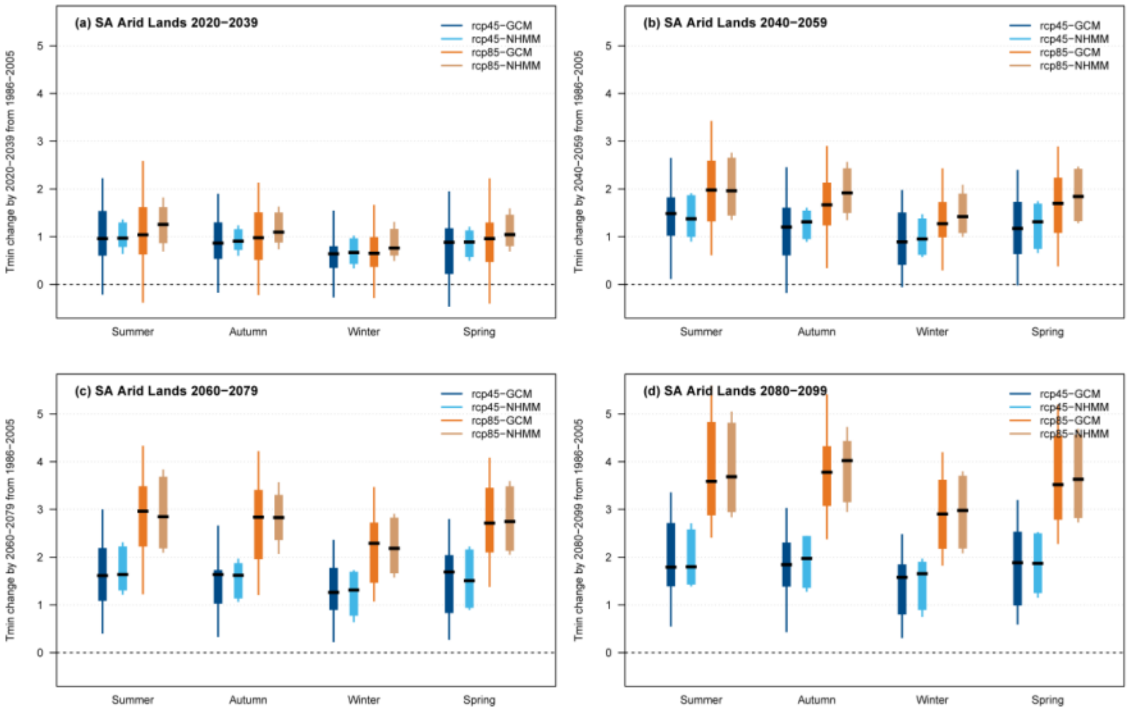

Figure 6.11 SA Arid Lands NRM CMIP5 GCM and NHMM-downscaled projected seasonal minimum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean minimum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean minimum daily temperature.

Table 6.6, Figure 6.12 (RCP4.5) and Figure 6.13 (RCP8.5) show the downscaled changes projected for solar radiation. There are small changes for summer and autumn and larger changes for winter and spring, corresponding to the increased relative drying projected for these seasons. Figure 6.14 shows that, overall, the downscaled and direct GCM changes are in agreement. Table 6.6 also shows that smaller changes come from the ensemble of better performing GCMs, compared to the poorer performing ensemble.

The mean, median and range of changes presented in Table 6.6 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in

Table B.55 for RCP4.5 and

Table B.56 for RCP8.5.

Table 6.6 SA Arid Lands NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.3	0.3	0.5	0.1	-0.2	0.2
		Median	0.1	0.1	0.2	0.1	-0.6	0.3
		10th	-0.6	-1.0	-0.2	-0.8	-0.9	-0.5
		90th	1.7	1.7	1.4	0.9	0.9	0.8
2030	MAM	Mean	0.6	0.9	0.4	0.5	0.5	0.5
		Median	0.6	0.5	0.4	0.3	0.1	0.6
		10th	-1.4	-1.2	-1.3	-1.1	-0.5	-1.4
		90th	2.3	3.4	2.2	-1.1	2.0	2.2
2030	JJA	Mean	1.9	1.5	2.0	2.5	1.7	2.7
		Median	1.3	0.9	1.8	2.0	1.5	2.7
		10th	0.4	-0.1	0.8	0.7	0.6	0.8
		90th	4.2	3.5	3.3	4.7	3.0	4.6
2030	SON	Mean	1.1	1.2	1.0	1.1	1.0	1.2
		Median	1.1	0.6	1.2	1.4	0.5	1.5
		10th	0.1	0.1	0.1	0.1	0.2	0.0
		90th	2.3	3.0	1.6	2.3	2.3	2.0
2030	Annual	Mean	0.8	0.9	0.8	0.8	0.6	0.9
		Median	0.4	0.4	0.8	0.5	0.4	0.8
		10th	0.1	0.1	0.1	-0.1	-0.1	0.0
		90th	1.6	2.1	1.6	1.9	1.5	1.9
2050	DJF	Mean	0.4	0.4	0.7	0.2	-0.2	0.6
		Median	0.5	0.2	0.7	0.3	-0.7	0.5
		10th	-0.7	-0.8	-0.4	-1.0	-1.1	-0.4
		90th	1.6	1.6	1.8	1.2	1.0	1.7
2050	MAM	Mean	0.7	0.9	0.6	0.6	0.2	0.9
		Median	0.4	0.3	0.4	-0.2	-0.2	0.6
		10th	-1.7	-1.1	-1.7	-1.7	-1.7	-1.7
		90th	3.4	3.4	3.2	3.6	2.5	3.7
2050	JJA	Mean	2.6	2.0	2.7	3.5	2.5	3.8
		Median	1.6	1.2	2.2	2.6	1.9	3.4
		10th	0.5	0.4	1.1	1.4	1.3	1.5
		90th	5.3	4.4	4.9	6.8	4.3	6.6
2050	SON	Mean	1.5	1.3	1.6	1.6	1.4	1.7
		Median	1.6	0.6	1.8	1.4	0.7	1.7
		10th	-0.1	-0.1	0.5	0.1	0.2	0.5

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	2.6	3.3	2.6	3.3	3.5	3.1
2050	Annual	Mean	1.1	0.9	1.2	1.2	0.7	1.5
		Median	0.6	0.5	1.2	0.7	0.3	1.0
		10th	0.1	0.2	-0.1	0.0	-0.1	0.2
		90th	2.5	2.1	2.5	3.1	2.0	3.2
2070	DJF	Mean	0.4	0.1	0.9	0.3	-0.3	1.0
		Median	0.4	-0.2	0.9	-0.3	-0.7	0.9
		10th	-0.9	-1.1	-0.6	-1.0	-1.4	-0.7
		90th	1.7	1.5	2.3	1.7	1.2	2.8
2070	MAM	Mean	0.9	0.6	0.9	0.6	-0.3	1.2
		Median	0.6	0.4	0.4	-0.6	-1.2	0.6
		10th	-1.4	-1.1	-1.6	-2.2	-2.4	-2.0
		90th	3.9	2.6	3.9	4.2	2.8	4.9
2070	JJA	Mean	3.0	2.1	3.4	4.3	3.1	4.9
		Median	2.3	1.3	2.7	3.1	2.2	4.0
		10th	0.7	0.6	1.2	1.8	1.6	2.6
		90th	6.2	4.5	6.3	8.5	5.5	8.0
2070	SON	Mean	1.7	1.1	2.1	1.9	1.8	2.3
		Median	1.9	0.5	2.4	1.8	1.3	1.9
		10th	0.1	-0.2	0.9	0.3	-0.2	1.1
		90th	3.2	3.1	3.2	4.1	4.4	3.8
2070	Annual	Mean	1.3	0.8	1.6	1.4	0.8	2.0
		Median	1.1	0.4	1.6	0.5	0.2	1.3
		10th	0.0	0.0	0.1	0.0	-0.2	0.3
		90th	3.0	2.0	3.2	4.0	2.4	4.3
2090	DJF	Mean	0.4	-0.2	1.0	0.3	-0.3	1.5
		Median	0.0	-0.8	0.8	-0.3	-0.7	1.1
		10th	-1.0	-1.2	-0.4	-1.6	-1.6	-0.7
		90th	1.9	1.3	2.7	2.3	1.4	4.0
2090	MAM	Mean	0.8	0.4	1.0	0.4	-0.8	1.8
		Median	0.6	-0.4	0.8	0.2	-1.4	0.9
		10th	-1.2	-1.2	-1.5	-3.3	-3.5	-1.9
		90th	3.4	2.6	3.8	4.5	2.4	6.5
2090	JJA	Mean	3.4	2.2	3.9	5.1	4.0	5.9
		Median	2.6	1.8	3.0	3.9	2.9	5.7
		10th	1.0	0.4	1.4	2.4	2.2	2.9
		90th	7.0	4.4	7.4	9.8	7.1	9.3

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	1.7	0.8	2.4	2.4	2.4	3.1
		Median	2.1	0.2	2.4	2.6	2.2	2.8
		10th	-0.1	-0.3	1.2	-0.3	-0.4	1.9
		90th	2.9	2.4	3.7	4.8	5.5	4.8
2090	Annual	Mean	1.3	0.6	1.8	1.6	1.0	2.7
		Median	1.6	0.6	1.8	0.8	0.5	1.9
		10th	-0.2	-0.3	0.2	-0.1	-0.3	0.6
		90th	2.5	1.4	3.6	5.0	2.8	5.5

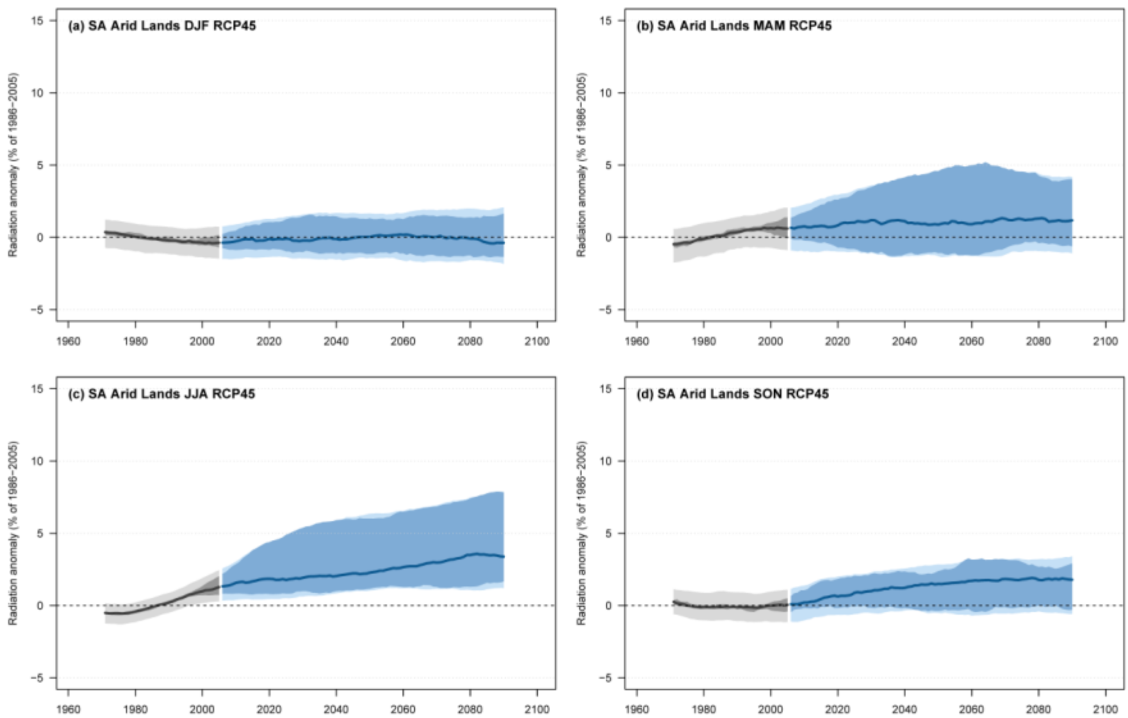

Figure 6.12 SA Arid Lands NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

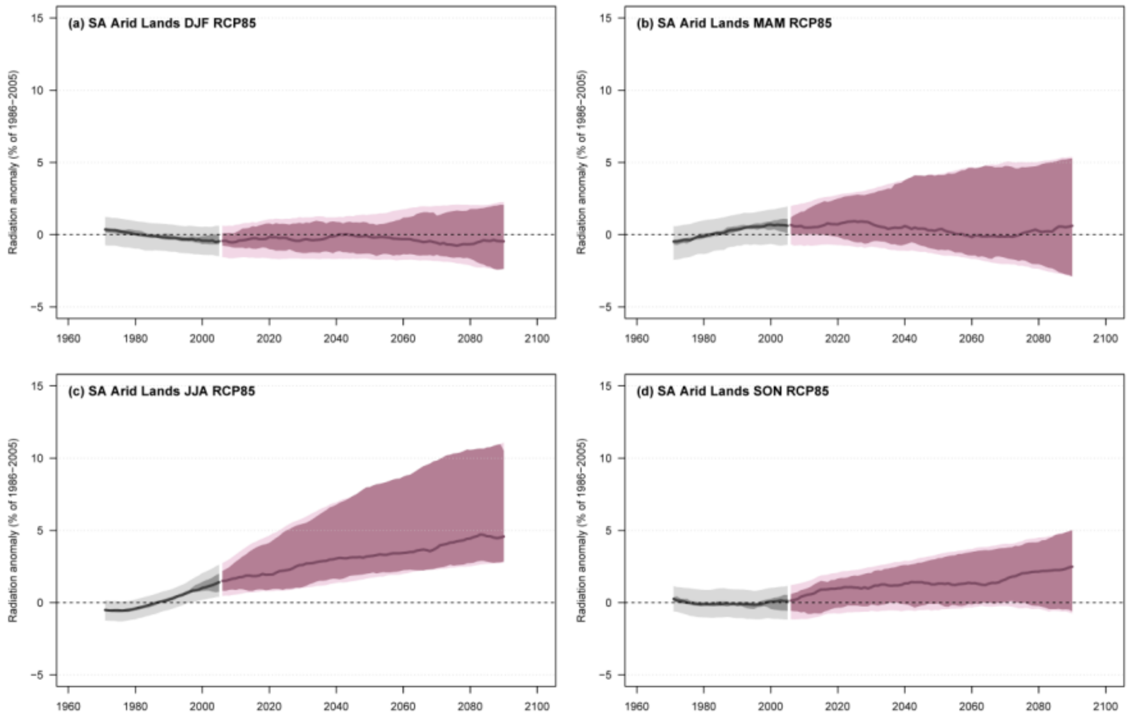

Figure 6.13 SA Arid Lands NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

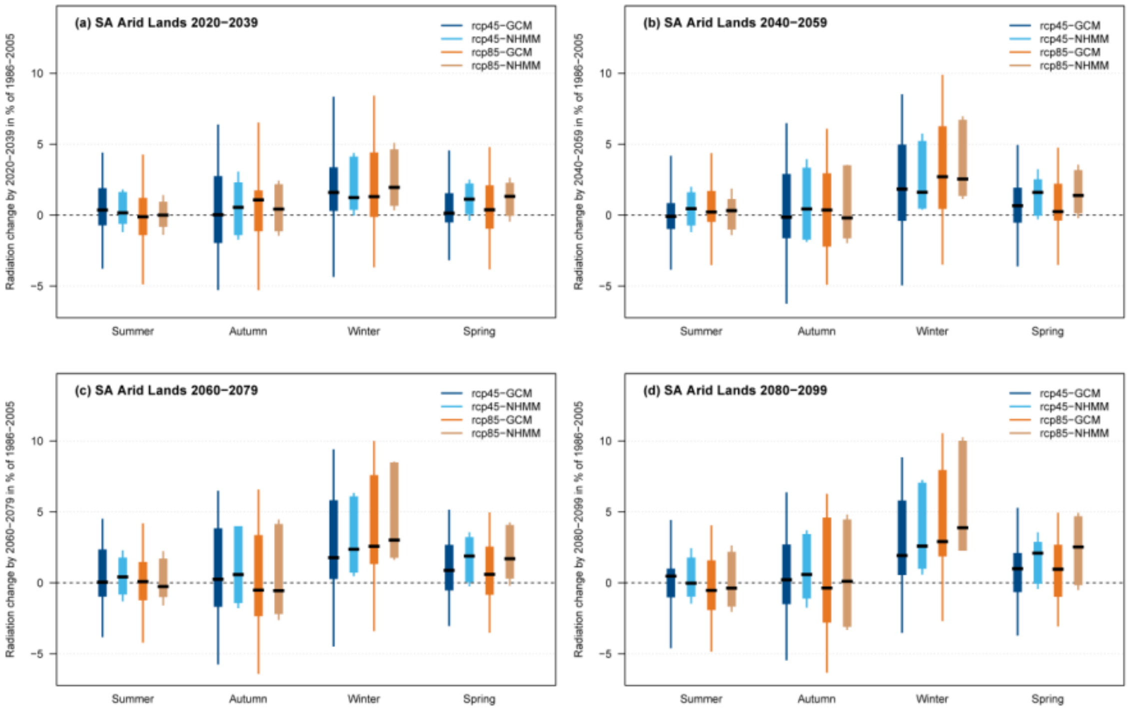

Figure 6.14 SA Arid Lands NRM CMIP5 GCM and NHMM-downscaled projected seasonal solar radiation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean solar radiation (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean solar radiation.

Table 6.7 summarises the projected VPD changes, which are particularly large for RCP8.5 by the end of century (Figure 6.17). The projected time-series are shown in Figure 6.15 and Figure 6.16 for RCP4.5 and RCP8.5, respectively. In most chases the ensemble mean obtained from the subset of six better rated GCMs represent smaller changes than those from the six poorer rated GCMs.

The mean, median and range of changes presented in Table 6.7 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.57 for RCP4.5 and Table B.58 for RCP8.5.

Table 6.7 SA Arid Lands NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	8.3	7.5	9.4	10.2	9.4	11.8
		Median	7.9	6.7	9.3	10.2	9.8	10.9
		10th	4.6	3.4	6.0	7.2	6.6	9.5
		90th	13.1	12.4	12.9	13.6	11.9	15.1
2030	MAM	Mean	9.3	10.9	7.4	11.6	12.0	10.2
		Median	8.3	10.0	6.7	10.7	12.2	8.5
		10th	4.6	6.5	4.8	5.9	9.5	5.4
		90th	16.7	16.2	10.7	5.9	14.3	16.8
2030	JJA	Mean	10.3	10.7	9.3	13.5	12.9	12.6
		Median	9.5	9.2	8.6	13.2	14.2	12.6
		10th	5.1	5.2	4.5	7.1	7.7	6.3
		90th	16.0	17.7	14.8	19.1	16.7	19.0
2030	SON	Mean	9.7	10.3	9.1	12.6	13.0	12.9
		Median	9.5	9.7	8.1	12.8	14.0	12.6
		10th	6.6	7.0	6.0	8.2	8.5	8.5
		90th	13.7	14.3	13.4	17.1	16.5	17.6
2030	Annual	Mean	9.1	9.3	8.9	11.5	11.2	11.8
		Median	8.1	7.9	9.0	11.3	11.6	11.9
		10th	5.8	5.9	5.9	8.3	8.4	8.4
		90th	12.5	14.2	11.7	15.2	13.8	15.2
2050	DJF	Mean	12.0	10.8	13.6	17.1	15.8	20.3
		Median	11.0	9.8	13.5	16.7	16.1	19.7
		10th	8.4	6.9	9.6	10.8	12.1	16.1
		90th	17.9	15.7	17.9	22.9	19.1	25.2
2050	MAM	Mean	12.7	14.8	10.7	18.7	19.3	17.9
		Median	12.1	14.0	10.9	19.2	19.5	17.0
		10th	7.2	10.2	5.6	10.6	14.5	10.0
		90th	20.1	20.4	15.7	26.8	23.8	26.8
2050	JJA	Mean	14.3	14.7	13.6	21.6	20.3	21.8
		Median	13.0	13.4	11.9	21.8	21.9	21.5
		10th	7.5	8.3	5.4	11.4	12.0	11.6
		90th	24.1	22.4	23.6	32.4	27.0	32.4
2050	SON	Mean	14.3	14.6	14.7	21.1	21.7	22.1
		Median	14.3	14.0	14.1	21.9	22.7	22.3
		10th	9.5	10.0	10.5	12.3	14.3	14.8

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	19.8	19.7	19.7	28.9	28.1	29.3
2050	Annual	Mean	13.0	13.0	13.3	18.9	18.5	20.4
		Median	10.9	11.6	12.9	18.2	18.8	21.3
		10th	9.0	9.3	9.5	12.5	14.0	14.2
		90th	17.8	18.2	17.4	25.2	22.8	25.7
2070	DJF	Mean	14.7	13.3	17.0	24.7	23.3	29.4
		Median	14.0	13.0	15.7	25.4	24.1	29.3
		10th	10.9	10.8	13.1	15.0	17.8	24.0
		90th	19.9	16.0	22.4	33.0	28.2	34.9
2070	MAM	Mean	15.6	17.1	14.5	26.9	27.8	27.5
		Median	15.6	17.3	13.9	26.3	29.0	29.2
		10th	9.4	12.9	7.6	15.6	19.1	15.7
		90th	23.6	21.1	22.2	38.3	35.3	37.8
2070	JJA	Mean	17.5	16.5	18.4	31.4	29.6	33.5
		Median	17.0	15.5	15.6	29.3	29.9	32.6
		10th	8.8	10.2	8.0	17.0	17.6	20.4
		90th	28.4	23.8	31.8	48.0	41.3	47.5
2070	SON	Mean	17.9	17.4	19.5	31.2	32.0	33.9
		Median	17.6	17.2	19.3	33.4	34.3	34.9
		10th	12.1	12.6	14.2	15.7	21.2	23.0
		90th	24.7	22.4	25.1	43.7	40.5	44.0
2070	Annual	Mean	16.0	15.5	17.3	27.5	27.2	30.5
		Median	14.3	15.2	16.8	28.6	27.4	32.2
		10th	11.6	12.2	12.5	16.0	20.0	21.5
		90th	20.8	19.3	22.5	37.5	34.2	37.9
2090	DJF	Mean	17.0	15.3	19.9	32.7	31.5	39.1
		Median	17.1	16.1	18.3	33.1	32.4	39.0
		10th	12.4	12.7	16.7	21.2	24.7	31.4
		90th	22.8	17.2	24.6	44.1	37.6	46.9
2090	MAM	Mean	18.7	20.2	18.1	35.7	37.2	39.1
		Median	19.6	20.8	16.7	35.9	38.9	41.4
		10th	10.0	18.2	8.9	18.8	24.0	22.1
		90th	26.2	21.7	28.9	51.4	48.8	53.9
2090	JJA	Mean	20.5	18.1	22.9	41.6	39.9	46.0
		Median	18.3	16.4	18.2	38.7	38.7	44.3
		10th	9.5	12.3	10.6	21.2	23.9	29.7
		90th	33.7	25.6	39.8	62.6	57.2	63.9

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	21.3	19.5	24.0	41.8	43.1	46.8
		Median	21.1	20.5	25.4	44.6	45.4	47.6
		10^{th}	15.8	14.8	17.5	21.0	28.2	32.7
		90^{th}	28.2	23.3	29.2	60.0	55.9	60.2
2090	Annual	Mean	18.9	17.8	20.8	36.6	36.6	41.8
		Median	18.6	18.8	20.5	38.9	36.7	44.4
		10^{th}	14.5	15.2	15.8	21.7	26.5	29.5
		90^{th}	22.7	19.3	26.2	50.7	46.8	51.5

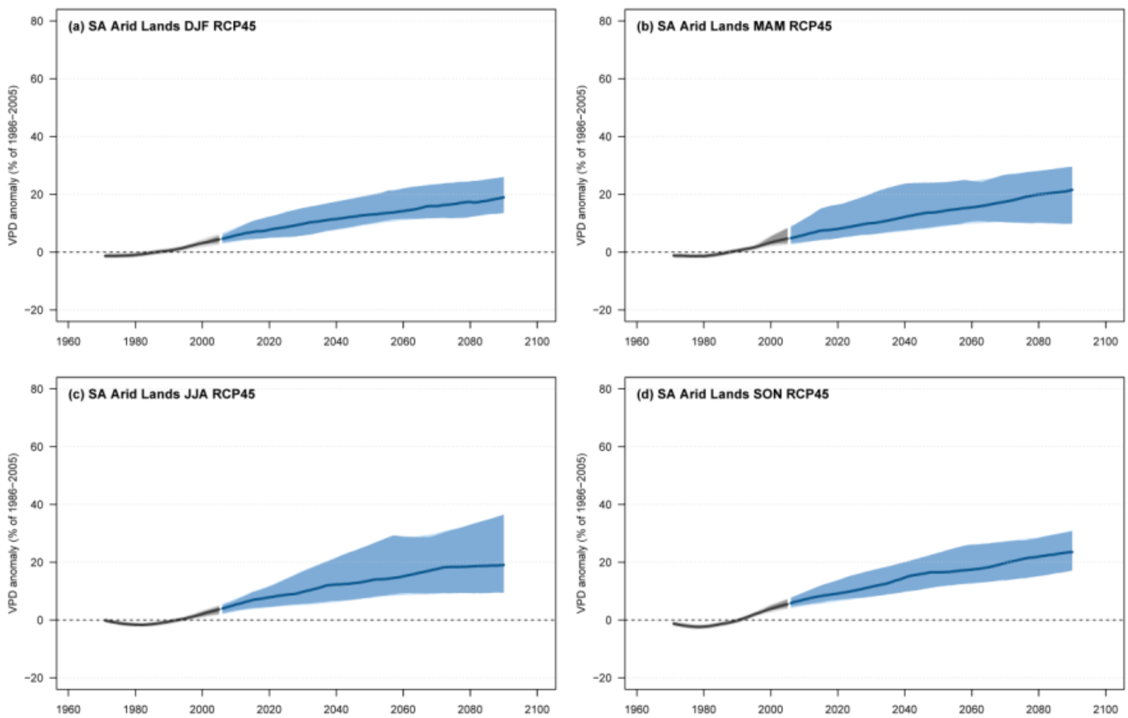

Figure 6.15 NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

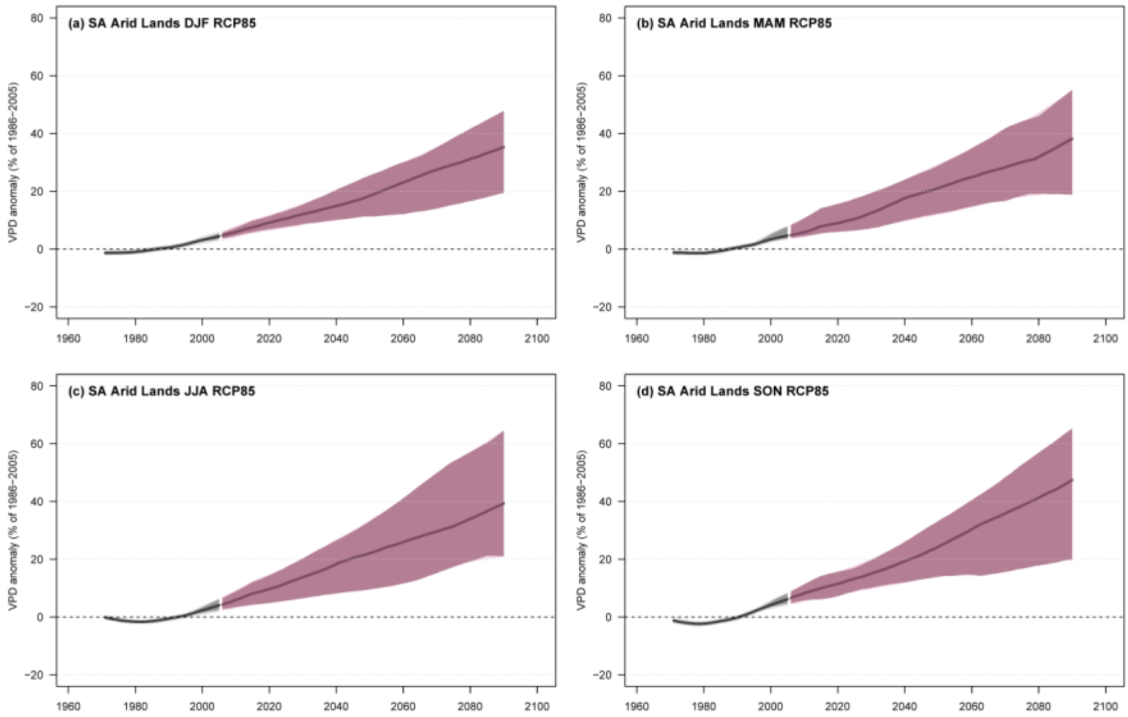

Figure 6.16 SA Arid Lands NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

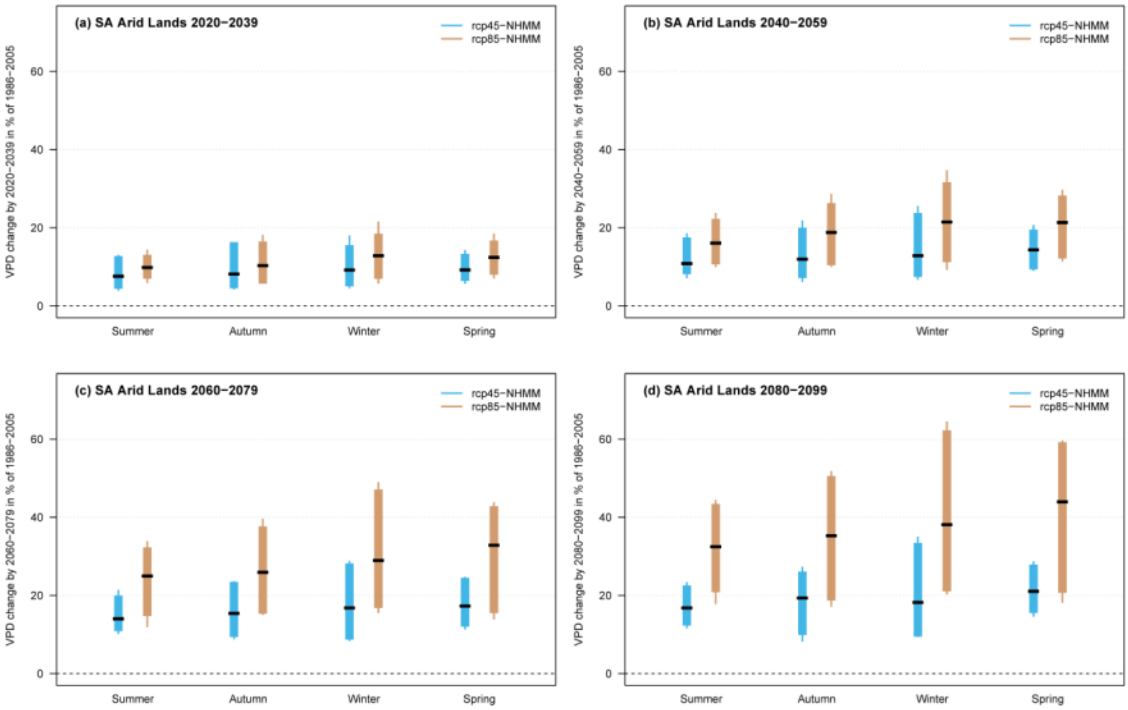

Figure 6.17 SA Arid Lands NRM NHMM-downscaled projected seasonal vapour pressure deficit changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean vapour pressure deficit (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean vapour pressure deficit.

Table 6.8 summarises the projected APET changes, with the largest changes from RCP8.5 up to double the changes from RCP4.5 by the end of century (6.2% compared to 11.6%, annually averaged). The projected time-series are shown in Figure 6.18 and Figure 6.19 for RCP4.5 and RCP8.5, respectively, with relative changes summarised as box plots in Figure 6.20. In most cases the changes from the six better rated GCMs are less than those from the six poorer rated GCMs (Table 6.8).

The mean, median and range of changes presented in Table 6.8 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.59 for RCP4.5 and Table B.60 for RCP8.5.

Table 6.8 SA Arid Lands NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5 15 GCMS	RCP4.5 BETTER 6 GCMS	RCP4.5 POORER 6 GCMS	RCP8.5 15 GCMS	RCP8.5 BETTER 6 GCMS	RCP8.5 POORER 6 GCMS
2030	DJF	Mean	2.4	2.1	2.8	2.9	2.4	3.4
		Median	2.4	2.1	2.7	2.9	2.2	3.3
		10th	1.6	1.1	1.9	2.0	1.7	2.7
		90th	3.4	3.0	3.9	3.7	3.3	4.3
2030	MAM	Mean	2.8	3.0	2.5	3.6	3.6	3.5
		Median	2.7	2.7	2.6	3.3	3.6	3.5
		10th	1.5	1.9	1.5	2.1	2.5	2.1
		90th	4.3	4.5	3.5	2.1	4.6	5.1
2030	JJA	Mean	3.7	3.3	3.6	4.8	4.0	4.9
		Median	3.1	2.9	3.9	4.1	3.8	4.9
		10th	2.3	2.6	2.3	3.1	3.3	3.4
		90th	5.4	4.4	4.7	6.6	4.9	6.5
2030	SON	Mean	3.0	3.1	3.0	3.7	3.6	4.0
		Median	2.9	2.7	3.1	3.4	3.1	3.9
		10th	2.2	2.1	2.3	2.5	2.6	3.4
		90th	3.7	4.4	3.7	5.2	5.1	4.9
2030	Annual	Mean	2.8	2.7	2.9	3.5	3.2	3.8
		Median	2.8	2.4	3.1	3.4	2.8	3.9
		10th	1.9	1.9	2.0	2.5	2.4	2.8
		90th	3.7	3.8	3.7	4.8	4.3	4.6
2050	DJF	Mean	3.5	3.0	4.1	4.9	4.2	5.8
		Median	3.4	2.9	3.9	4.6	3.8	6.0
		10th	2.5	2.2	3.1	3.6	3.3	4.6
		90th	4.9	4.0	5.3	6.4	5.5	6.8
2050	MAM	Mean	4.0	4.3	3.7	5.9	5.6	6.1
		Median	4.2	4.2	3.7	5.8	5.8	6.1
		10th	2.3	3.0	2.2	3.9	3.7	4.0
		90th	5.7	5.6	5.3	8.3	7.3	8.3
2050	JJA	Mean	5.3	4.6	5.5	7.7	6.6	8.0
		Median	4.8	4.2	5.2	7.1	5.9	8.0
		10th	3.2	3.6	3.8	5.2	5.6	5.8
		90th	7.5	6.1	7.5	10.6	8.3	10.4
2050	SON	Mean	4.3	4.2	4.7	6.1	6.0	6.5
		Median	4.2	3.9	4.9	6.0	5.2	6.5
		10th	3.4	2.9	3.8	4.2	4.2	5.4

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	5.4	5.8	5.4	8.0	8.6	7.6
2050	Annual	Mean	4.0	3.8	4.3	5.7	5.2	6.3
		Median	3.9	3.5	4.5	5.3	4.6	6.6
		10th	3.0	2.9	3.3	4.1	4.1	4.9
		90th	5.1	5.1	5.3	7.6	7.1	7.6
2070	DJF	Mean	4.3	3.7	5.1	7.0	6.1	8.4
		Median	3.8	3.6	4.7	6.6	5.6	8.4
		10th	3.4	3.0	4.0	5.1	4.5	6.7
		90th	6.0	4.5	6.7	9.7	8.1	10.1
2070	MAM	Mean	5.0	5.1	5.0	8.4	7.9	9.1
		Median	4.9	5.1	4.8	7.7	8.1	9.3
		10th	3.3	3.8	3.2	5.5	5.7	6.4
		90th	6.5	6.5	7.0	11.4	10.1	11.7
2070	JJA	Mean	6.5	5.5	7.0	10.9	9.6	11.7
		Median	5.9	5.4	6.6	10.2	8.7	12.0
		10th	4.2	4.4	4.8	7.4	8.0	8.8
		90th	9.6	6.8	9.6	14.7	12.2	14.5
2070	SON	Mean	5.4	5.0	6.2	8.7	8.6	9.5
		Median	5.4	4.8	6.4	9.3	7.8	9.7
		10th	4.0	3.4	5.1	6.1	5.9	8.0
		90th	7.0	6.8	7.0	11.0	12.1	10.9
2070	Annual	Mean	5.0	4.6	5.6	8.2	7.6	9.3
		Median	4.7	4.3	5.6	8.1	6.9	9.6
		10th	3.7	3.7	4.4	6.0	5.8	7.3
		90th	6.5	5.8	6.9	10.9	10.1	10.9
2090	DJF	Mean	4.9	4.2	6.0	9.2	8.3	11.2
		Median	4.9	4.0	5.9	8.7	7.5	10.9
		10th	3.3	2.9	4.8	6.2	6.2	9.3
		90th	6.7	5.6	7.3	13.0	11.2	13.6
2090	MAM	Mean	6.0	6.1	6.2	11.2	10.6	12.8
		Median	5.8	6.0	5.7	10.7	10.8	12.9
		10th	4.1	4.6	4.1	7.9	7.9	9.3
		90th	8.5	7.7	8.7	15.8	13.2	16.4
2090	JJA	Mean	7.6	6.4	8.5	14.4	13.2	15.8
		Median	7.3	6.7	7.5	13.4	11.9	16.6
		10th	5.0	5.0	6.0	10.2	10.7	11.8
		90th	12.0	7.5	12.0	19.4	16.9	19.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	6.3	5.6	7.4	11.6	11.6	13.0
		Median	6.1	5.2	7.8	11.9	11.0	13.7
		10th	4.4	3.9	6.0	7.5	7.7	10.6
		90th	8.5	7.7	8.5	15.1	16.0	14.9
2090	Annual	Mean	5.8	5.2	6.7	10.9	10.2	12.6
		Median	5.3	4.8	6.7	11.1	9.7	13.1
		10th	4.5	4.3	5.5	7.5	7.7	10.1
		90th	7.7	6.6	8.0	14.7	13.4	14.6

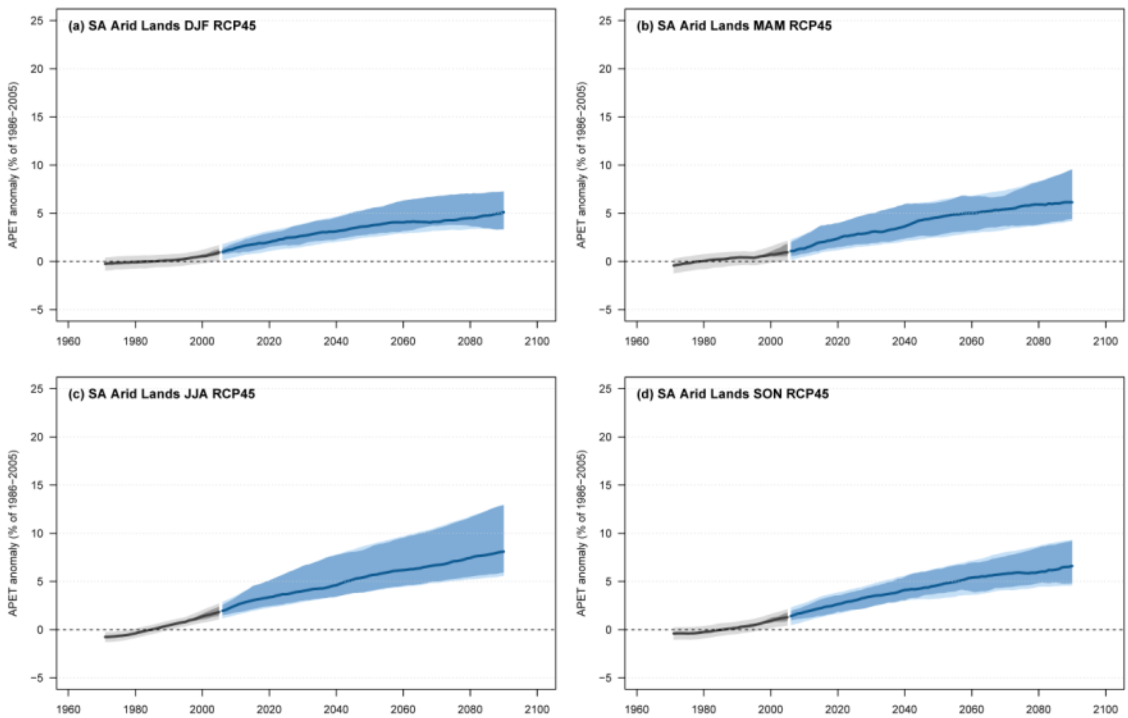

Figure 6.18 SA Arid Lands NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

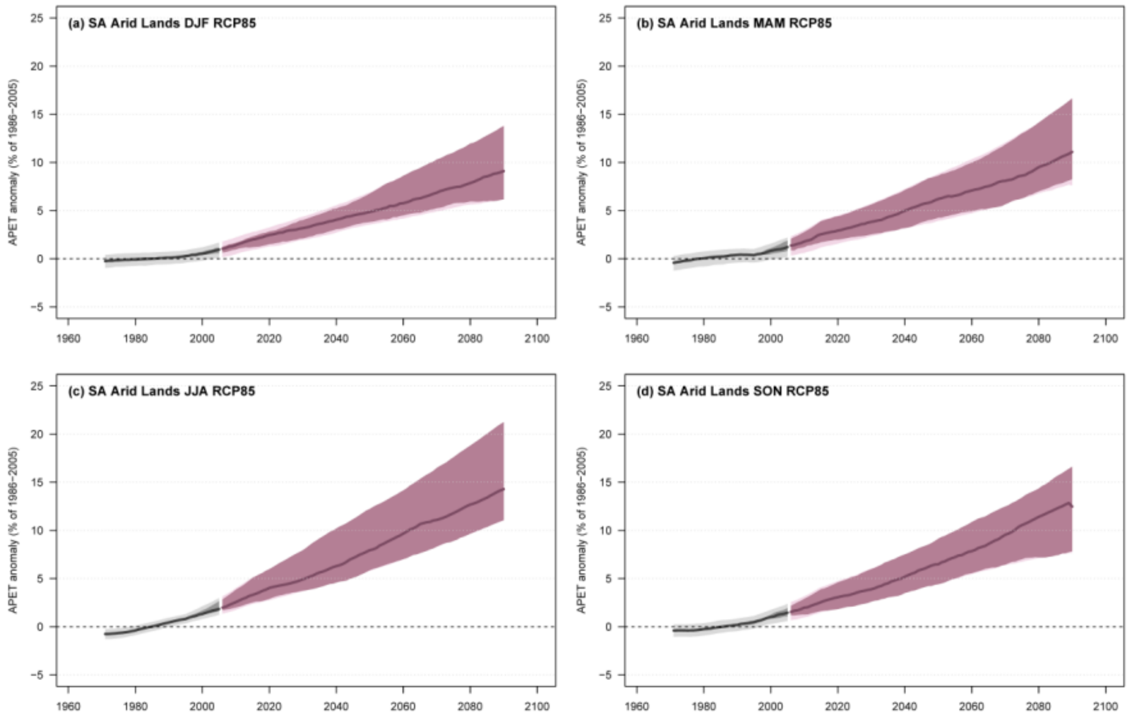

Figure 6.19 SA Arid Lands NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

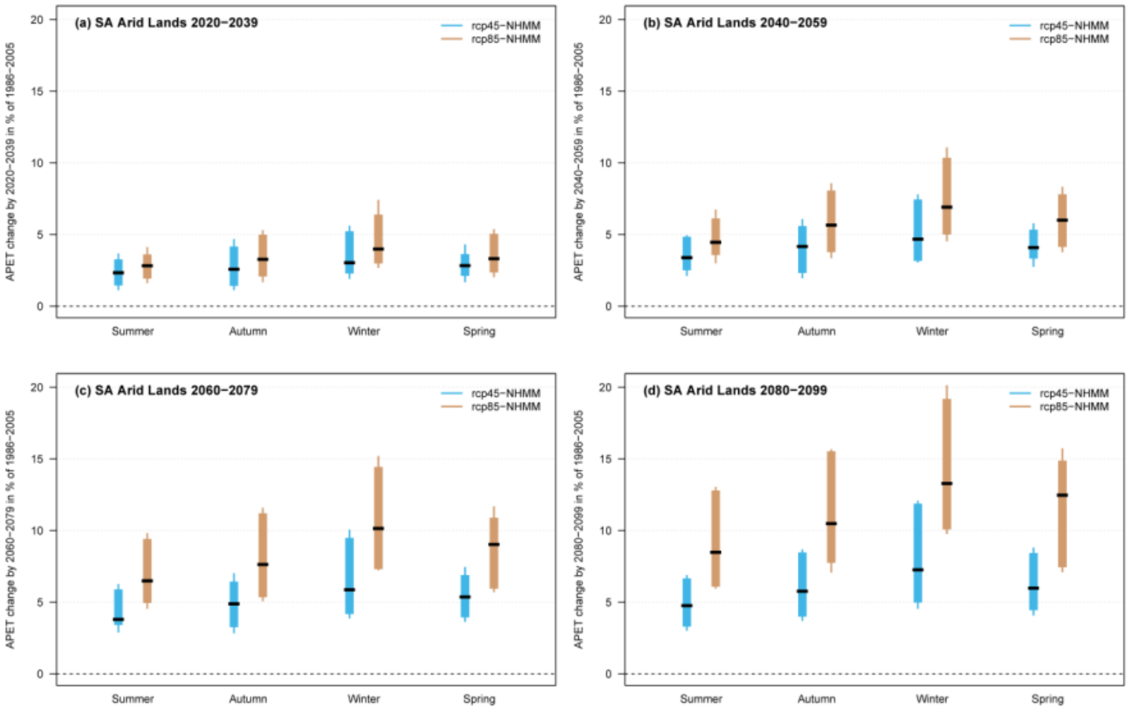

Figure 6.20 SA Arid Lands NRM NHMM-downscaled projected seasonal potential evapotranspiration changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean potential evapotranspiration (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean potential evapotranspiration.

6.4 Summary

Decreases in precipitation are projected for all seasons, and hence annual precipitation also, with the greatest relative decreases in spring, for both RCP4.5 and RCP8.5. For the second half of the century the scenarios diverge, with larger decreases from RCP8.5. Daily temperatures (maximum and minimum) are projected to increase for all seasons. For maximum temperature there are slightly larger increases for the spring season, influenced by its increased drying relative to the other seasons. For both maximum and minimum daily temperatures, the increases for RCP8.5 are larger than RCP4.5 from mid-century onwards. Solar radiation increases for most seasons, with marginal changes in summer and autumn and larger increases in winter and spring, corresponding to a reduction in clouds given their drying trends. VPD also increases in all seasons, notably much more for RCP8.5 than RCP4.5 with double the end of the century relative changes. APET also increases in all seasons, with relative increases greater in winter, and the projected changes for RCP8.5 are double those for RCP4.5. Overall, for all variables and both RCPs, the changes projected from a subset of six better performing GCMs are smaller than the changes projected by a subset of six poorer performing GCMs. The downscaled projections for each SA Arid Lands station, provided as 100 stochastic replicates of daily time-series for each GCM and RCP, represent 'added value' over direct GCM output as they provide realistic station-scale input series suitable for probabilistic impacts and adaptation investigations. Bates et al. (2010), in a report focussing on climate change and water allocation, provide a useful summary on the appropriate application of projections in such investigations. CSIRO and Bureau of Meteorology (2014) provides a detailed overview of climate change science from an Australian perspective with recommendations on understanding and utilising projections.

7 Projections for SA Murray-Darling Basin

7.1 Overview

The South Australian Murray-Darling Basin (SA MDB) NRM region encompasses the Murray-Darling catchment within South Australia, extending from the New South Wales and Victorian borders in the east to the catchment boundary along the Mount Lofty Ranges in the west, from the Rangelands in the north to the Murray River Mouth and Murray Mallee in the south (SAMDBNRMB, 2014).

Thirty weather stations were selected for the statistical downscaling model calibration. Their mean rainfall characteristics are summarised in Table 7.1, in terms of seasonal mean number of wet-days and rainfall totals for the 1986-2005 baseline (representing current climate, this is the period that projections are compared to in later results). Annual rainfall totals vary between stations by a factor of three, ranging from approximately 240 mm (Burra) to 720 mm (Mount Barker).

The selected downscaling models, for the four seasons, are summarised in Table 7.2. Two predictors are selected for all seasons, ‘east minus west’ SLP difference and DTD at the 850 hPa level over the region. Winter and spring also use ‘north minus south’ SLP difference over the region. DTD at 700 hPa is used by summer and autumn, and at 500 hPa by spring. Northerly wind speed (V-wind) at 850 hPa is used by summer and winter, and autumn uses easterly wind speed (U-wind) at the 500 hPa level. The mean rainfall characteristics associated with the weather states for each of the four seasonal NHMMs are presented in Appendix A, Table A.21 to Table A.24.

Table 7.1 SA MDB NRM Climate Stations for NHMM-Downscaling

BoM ID	Name	Latitude	Longitude	Rain days (# days)				Rain amount (mm)			
				DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
				7	8	13	11	65	43	57	72
20025	BURRA (WOOLGANGI)	33.50	139.51	0.18	0.21	0.33	0.28	0.27	0.18	0.24	0.30
				8	10	23	16	73	48	116	91
21086	BURRA (WORLDS END)	33.84	139.07	0.14	0.18	0.40	0.28	0.22	0.15	0.35	0.28
				9	11	28	18	67	67	176	126
21120	WHYTE-YARCOWIE (GUM PARK)	33.25	138.79	0.14	0.17	0.42	0.27	0.15	0.15	0.40	0.29
				11	18	37	24	78	99	252	155
23722	HARROGATE	34.93	139.01	0.12	0.20	0.41	0.27	0.13	0.17	0.43	0.27
				10	16	32	21	69	80	181	123
23724	KANMANTOO	35.07	139.00	0.13	0.20	0.41	0.27	0.15	0.18	0.40	0.27
				12	20	41	26	82	137	311	187
23733	MOUNT BARKER	35.06	138.85	0.12	0.20	0.41	0.26	0.11	0.19	0.43	0.26
				11	17	33	22	81	87	203	137
23812	ROCKLEIGH (BLACK HEATH)	34.94	139.07	0.13	0.20	0.40	0.27	0.16	0.17	0.40	0.27
				10	15	28	19	68	72	140	100
23822	HARTLEY (PINE HILL)	35.18	139.02	0.14	0.21	0.39	0.26	0.18	0.19	0.37	0.26
				7	8	17	13	52	39	77	71
24003	RENMARK IRRIGATION	34.17	140.75	0.16	0.18	0.38	0.29	0.22	0.16	0.32	0.30
				7	8	18	13	54	43	81	73
24013	LOXTON (PYAP)	34.45	140.49	0.15	0.17	0.39	0.28	0.22	0.17	0.32	0.29
				8	10	18	14	69	61	81	82
24031	DUFFIELD RAMCO	34.17	139.82	0.16	0.20	0.36	0.28	0.24	0.21	0.28	0.28
				7	9	18	13	54	45	86	79
24037	PARINGA LOCK V	34.19	140.76	0.15	0.19	0.38	0.28	0.20	0.17	0.33	0.30
				10	13	32	21	78	75	176	133
24511	EUDUNDA	34.18	139.08	0.13	0.17	0.42	0.28	0.17	0.16	0.38	0.29
				9	14	27	19	61	64	127	100
24521	MURRAY BRIDGE	35.12	139.26	0.13	0.20	0.39	0.28	0.17	0.18	0.36	0.28

				9	11	25	18	72	53	125	102
24528	ROBERTSTOWN	33.99	139.08	0.14	0.17	0.40	0.29	0.20	0.15	0.36	0.29
				8	12	25	16	60	55	123	91
24533	MURRAY BRIDGE (TEPKO)	34.97	139.19	0.13	0.20	0.41	0.26	0.18	0.17	0.37	0.28
				8	9	19	13	51	50	79	79
24547	NILDOTTIE	34.68	139.65	0.16	0.18	0.39	0.27	0.20	0.19	0.31	0.31
				10	14	29	19	61	64	134	101
24554	TAILEM BEND (RIVER DOWNS)	35.20	139.59	0.14	0.19	0.40	0.26	0.17	0.18	0.37	0.28
				9	10	20	14	61	51	81	84
24564	BLANCHETOWN LOCK 1	34.35	139.62	0.17	0.19	0.38	0.26	0.22	0.18	0.29	0.30
				10	14	29	19	59	66	136	97
24572	WELLINGTON (BRINKLEY SOUTH)	35.28	139.20	0.14	0.19	0.40	0.26	0.16	0.18	0.38	0.27
				10	16	32	20	63	69	152	107
24576	MILANG (NAVARINO)	35.35	138.98	0.13	0.21	0.41	0.26	0.16	0.18	0.39	0.27
				8	11	23	15	52	62	102	85
25002	PURNONG (CLAYPANS)	34.83	139.67	0.14	0.19	0.40	0.26	0.17	0.21	0.34	0.28
				8	11	25	17	59	56	110	92
25036	KULKAMI	35.15	140.29	0.13	0.18	0.41	0.28	0.19	0.18	0.35	0.29
				8	11	25	16	53	55	107	88
25039	LOWALDIE (CARRAWAR STUD)	35.04	139.98	0.13	0.18	0.42	0.27	0.17	0.18	0.35	0.29
				8	12	25	16	53	63	105	85
25040	BOWHILL	34.89	139.68	0.13	0.20	0.41	0.26	0.17	0.21	0.34	0.28
				7	9	20	14	54	52	83	82
25044	NEW WELL (MARFIELD)	34.46	139.89	0.14	0.18	0.40	0.28	0.20	0.19	0.31	0.30
				8	10	24	16	60	48	106	95
25046	PINNAROO (KOMBALI)	35.07	140.86	0.14	0.17	0.41	0.28	0.19	0.16	0.34	0.31
				8	10	22	15	55	45	86	85
25050	CALIPH	34.63	140.24	0.15	0.18	0.40	0.27	0.20	0.17	0.32	0.31
				9	12	29	19	64	60	132	103
25509	LAMEROO	35.33	140.52	0.13	0.17	0.42	0.28	0.18	0.17	0.37	0.29
				9	12	31	20	70	62	141	109
25542	LAMEROO (ARTLARINGA)	35.40	140.60	0.12	0.17	0.43	0.28	0.18	0.16	0.37	0.29

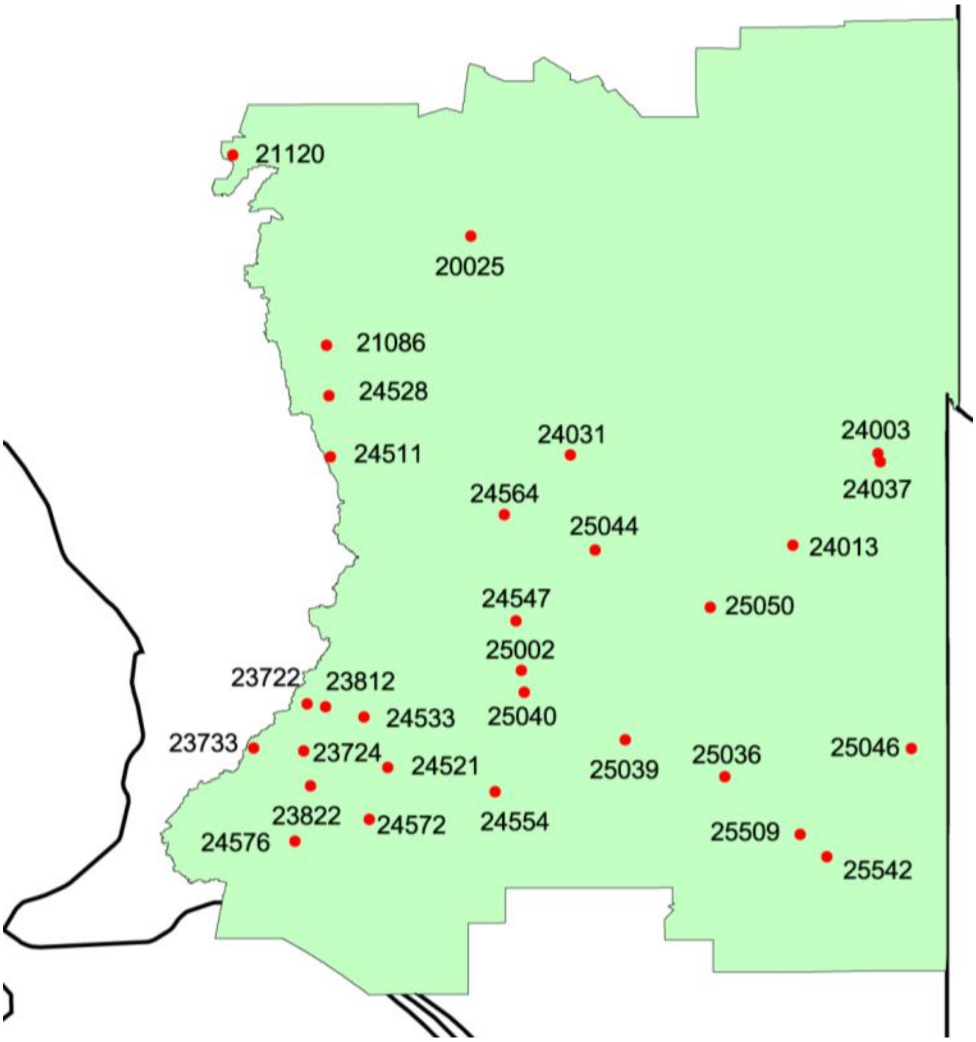

Figure 7.1 Location of SA MDB stations in Table 7.1 and NRM region boundary

Table 7.2 Selected NHMMs (number of weather states and predictor combinations) for SA MDB

DJF	MAM	JJA	SON
4 states	4 states	5 States	4 States
East – West SLP DTD at 700 hPa DTD at 850 hPa V-wind at 850 hPa	East – West SLP DTD at 700 hPa DTD at 850 hPa U-wind at 500 hPa	East – West SLP North – South SLP DTD at 850 hPa V-wind at 850 hPa	East – West SLP North – South SLP DTD at 500 hPa DTD at 850 hPa

7.2 Precipitation

The downscaled precipitation changes are summarised in Table 7.3, showing larger decreases as the century progresses, particularly for RCP8.5. The range of relative seasonal changes can be compared in Figure 7.2 and Figure 7.3 for RCP4.5 and RCP8.5, respectively. Figure 7.4 contrasts the downscaling changes with those directly from GCM grid-scale results. Figure 7.5 shows that the subset of six better performing GCMs produces less change than six poorer performing GCMs.

The mean, median and range of changes presented in Table 7.3 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.61 for RCP4.5 and Table B.62 for RCP8.5.

Table 7.3 SA MDB NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	-10.5	-6.4	-14.7	-6.3	2.3	-11.7
		Median	-9.1	-8.2	-21.2	-6.6	3.1	-14.2
		10th	-25.5	-18.8	-24.8	-19.6	-5.3	-19.6
		90th	8.0	7.8	1.8	7.3	9.1	-1.3
2030	MAM	Mean	-5.0	-3.6	-5.1	-6.6	-6.1	-6.4
		Median	-6.7	-3.4	-7.9	-6.2	-3.8	-7.9
		10th	-19.0	-14.7	-19.6	-17.4	-15.9	-20.0
		90th	7.7	7.3	12.2	3.3	1.5	8.7
2030	JJA	Mean	-4.3	-2.4	-6.6	-6.5	-6.2	-7.2
		Median	-4.6	-1.1	-6.4	-5.9	-5.3	-7.3
		10th	-10.3	-8.1	-11.7	-10.9	-9.0	-11.7
		90th	2.0	1.8	-1.9	-2.5	-4.3	-2.6
2030	SON	Mean	-12.1	-17.4	-10.2	-17.4	-17.1	-19.3
		Median	-12.5	-16.3	-12.7	-19.3	-16.1	-20.3
		10th	-19.3	-25.2	-13.7	-26.6	-26.8	-26.3
		90th	-3.2	-10.7	-4.3	-7.7	-8.3	-11.5
2030	Annual	Mean	-7.6	-7.2	-8.8	-9.4	-7.6	-11.0
		Median	-7.9	-5.9	-9.0	-9.9	-8.1	-12.4
		10th	-14.8	-12.6	-14.6	-15.4	-10.9	-16.6
		90th	-1.9	-3.2	-2.7	-3.8	-4.0	-4.1
2050	DJF	Mean	-9.0	-4.5	-13.9	-15.1	-8.5	-20.0
		Median	-7.4	-4.1	-13.0	-16.6	-10.1	-17.7
		10th	-29.4	-12.2	-38.0	-28.5	-20.3	-30.7
		90th	5.2	2.7	9.3	-4.6	4.9	-11.7
2050	MAM	Mean	-7.2	-5.3	-7.1	-9.0	-7.0	-8.8
		Median	-10.6	-8.8	-9.1	-10.0	-9.7	-8.6
		10th	-15.2	-12.5	-19.7	-22.9	-13.8	-26.4
		90th	9.0	5.4	7.5	3.9	2.6	8.6
2050	JJA	Mean	-6.7	-5.8	-7.1	-8.1	-7.1	-7.2
		Median	-6.5	-5.7	-8.5	-6.8	-6.7	-5.7
		10th	-12.4	-8.9	-11.6	-15.1	-11.5	-14.8
		90th	-0.2	-2.8	-1.1	-2.3	-3.2	-1.1
2050	SON	Mean	-18.7	-19.4	-22.0	-23.8	-27.4	-24.6
		Median	-17.8	-18.3	-18.0	-24.9	-28.0	-26.6
		10th	-31.5	-28.4	-35.0	-38.3	-37.8	-38.2

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	-9.3	-11.6	-13.1	-11.2	-16.4	-9.1
2050	Annual	Mean	-10.4	-9.1	-12.2	-13.7	-12.8	-14.5
		Median	-11.0	-10.4	-13.3	-13.2	-12.2	-14.6
		10th	-18.9	-12.5	-21.1	-18.9	-18.4	-21.6
		90th	-3.2	-4.5	-2.3	-6.8	-7.7	-7.3
2070	DJF	Mean	-13.8	-6.3	-20.2	-19.9	-11.5	-28.0
		Median	-17.2	-10.4	-21.1	-19.8	-17.1	-29.8
		10th	-24.5	-17.9	-32.4	-40.3	-21.6	-50.3
		90th	1.9	9.5	-7.0	-3.0	4.3	-4.0
2070	MAM	Mean	-11.2	-8.0	-12.5	-16.8	-12.4	-18.8
		Median	-10.4	-6.5	-11.4	-18.4	-14.2	-21.2
		10th	-20.6	-18.1	-25.9	-32.4	-19.4	-34.5
		90th	0.9	0.8	-0.1	-3.0	-3.6	-0.7
2070	JJA	Mean	-7.5	-6.0	-8.2	-12.7	-11.0	-14.1
		Median	-7.0	-6.6	-8.0	-10.6	-9.5	-13.5
		10th	-16.3	-11.3	-19.5	-22.9	-18.2	-24.1
		90th	2.2	0.0	2.9	-4.2	-5.3	-4.7
2070	SON	Mean	-24.5	-23.6	-29.4	-33.9	-34.7	-38.6
		Median	-22.9	-21.9	-29.5	-32.1	-32.2	-38.3
		10th	-35.4	-33.9	-35.1	-50.6	-48.0	-50.4
		90th	-14.6	-15.1	-23.6	-23.3	-24.0	-27.2
2070	Annual	Mean	-13.7	-11.1	-16.6	-20.2	-17.5	-23.8
		Median	-13.9	-9.9	-16.0	-18.8	-17.3	-24.5
		10th	-18.3	-16.7	-22.3	-31.3	-24.3	-33.8
		90th	-7.7	-6.8	-11.5	-10.3	-10.9	-13.1
2090	DJF	Mean	-14.4	-5.5	-22.6	-24.6	-15.3	-36.8
		Median	-13.3	-11.3	-21.8	-23.7	-21.6	-37.4
		10th	-31.8	-14.8	-36.6	-44.4	-28.8	-53.3
		90th	3.4	9.7	-9.4	-3.1	4.4	-19.9
2090	MAM	Mean	-10.1	-8.5	-12.2	-20.9	-14.6	-28.5
		Median	-10.8	-11.3	-12.1	-21.1	-14.0	-27.9
		10th	-18.1	-14.8	-22.8	-39.6	-27.0	-46.4
		90th	0.4	0.4	-1.9	-3.6	-3.0	-11.4
2090	JJA	Mean	-7.0	-5.7	-8.5	-17.2	-13.2	-23.3
		Median	-8.0	-6.5	-9.0	-18.1	-12.9	-24.0
		10th	-11.7	-10.1	-16.0	-31.3	-21.1	-34.4
		90th	0.9	-0.5	-0.4	-6.2	-5.5	-11.5

PERIOD	SEASON		RCP4.5 15 GCMS	RCP4.5 BETTER 6 GCMS	RCP4.5 POORER 6 GCMS	RCP8.5 15 GCMS	RCP8.5 BETTER 6 GCMS	RCP8.5 POORER 6 GCMS
2090	SON	Mean	-25.3	-25.5	-29.2	-42.6	-43.1	-50.5
		Median	-22.8	-23.1	-26.6	-43.5	-39.2	-53.7
		10th	-38.6	-31.8	-39.0	-59.4	-57.2	-61.0
		90th	-19.9	-21.6	-22.1	-26.5	-32.8	-36.8
2090	Annual	Mean	-13.7	-11.4	-17.1	-25.8	-21.7	-33.7
		Median	-11.4	-11.0	-18.0	-26.3	-21.5	-34.7
		10th	-19.1	-15.0	-23.0	-39.0	-29.3	-43.8
		90th	-9.3	-8.4	-10.5	-13.4	-14.4	-22.7

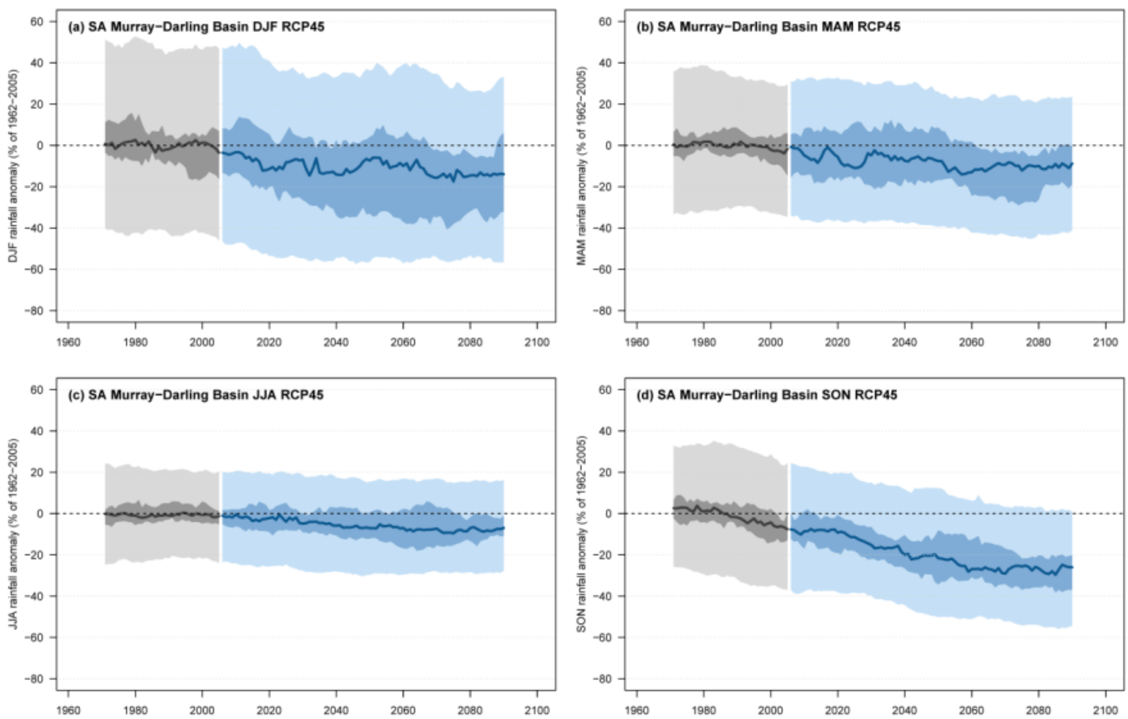

Figure 7.2 SA Murray-Darling Basin NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

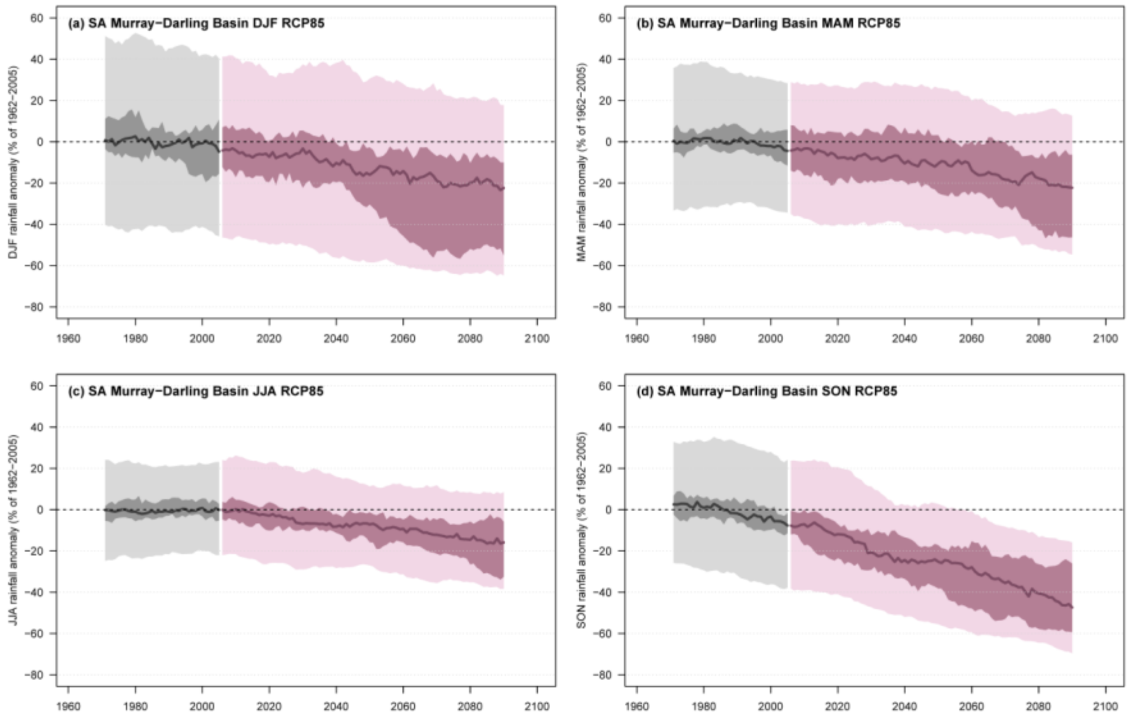

Figure 7.3 SA Murray-Darling Basin NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

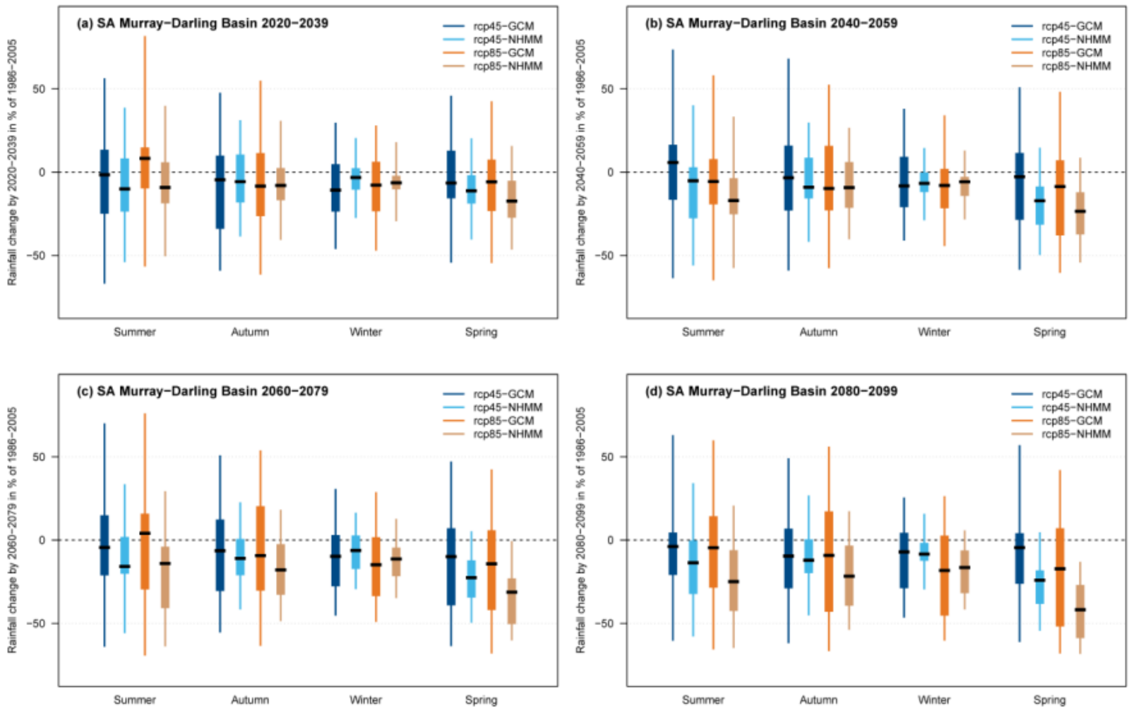

Figure 7.4 SA Murray-Darling Basin NRM CMIP5 GCM and NHMM-downscaled projected seasonal precipitation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall.

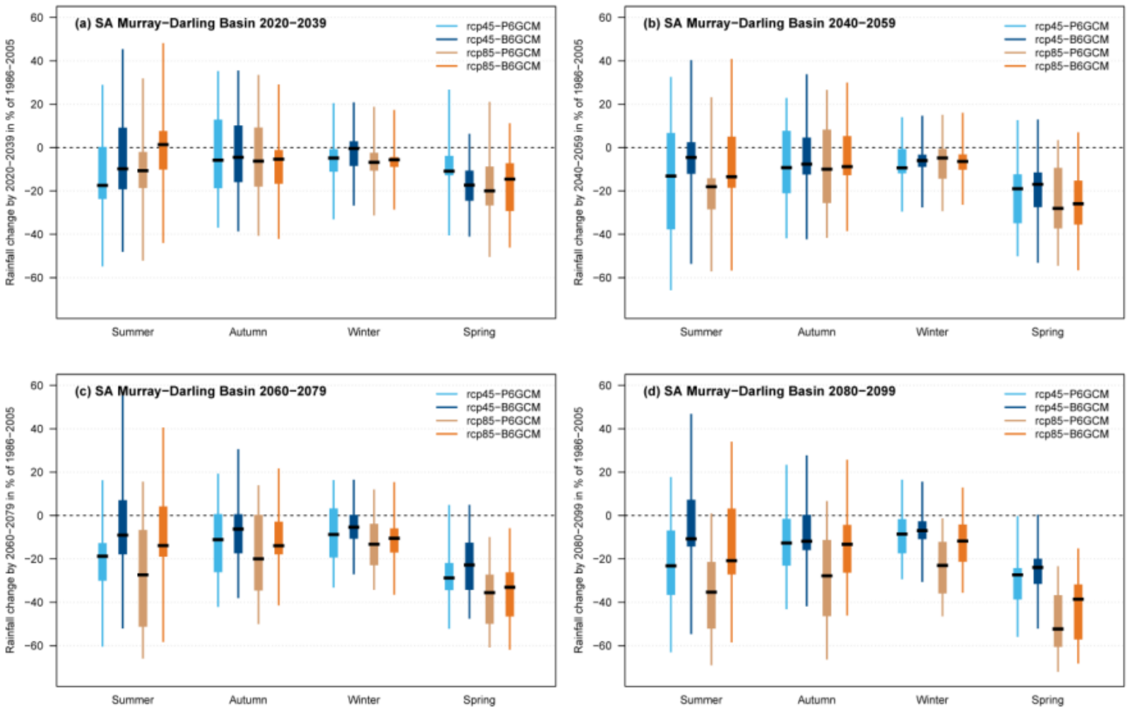

Figure 7.5 SA Murray-Darling Basin NRM NHMM-downscaled projected seasonal precipitation changes from six better (B6GCM) and six poorer (P6GCM) performing CMIP5 GCMs for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall. Selection of better and poorer performing GCMs according to Cai et al. (2014a) and Cai et al. (2014b).

7.3 Non-precipitation variables

The downscaled changes in daily maximum temperature are summarised in Table 7.4 on a seasonal and RCP basis, highlighting increasing warming as the century progresses. By the end of the century the mean warming projected by RCP8.5 is 3.8°C, compared to 2.0°C for RCP4.5. Slightly less warming is projected when just using the six better performing GCMs, with means of 3.6°C and 1.9°C for RCP8.5 and RCP4.5 respectively. The time-series of the projected changes are plotted in Figure 7.6 for RCP4.5 and Figure 7.7 for RCP8.5. Figure 7.8 uses box plots to summarise the projected changes, as well as comparing the downscaled changes to the changes simulated by the GCMs directly.

The mean, median and range of changes presented in Table 7.4 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.63 for RCP4.5 and Table B.64 for RCP8.5.

Table 7.4 SA MDB NRM downscaled projected changes in seasonal maximum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	1.0	0.9	1.1	1.3	1.1	1.5
		Median	1.0	0.9	1.0	1.2	0.9	1.4
		10th	0.7	0.7	0.9	0.7	0.7	1.2
		90th	1.5	1.3	1.6	1.8	1.6	2.0
2030	MAM	Mean	0.8	0.8	0.7	1.1	1.1	1.1
		Median	0.8	0.9	0.6	1.1	1.0	1.1
		10th	0.6	0.8	0.5	0.7	0.8	0.6
		90th	1.2	0.9	1.0	0.7	1.5	1.5
2030	JJA	Mean	0.8	0.8	0.9	1.1	1.0	1.1
		Median	0.9	0.9	0.9	1.1	1.0	1.2
		10th	0.5	0.6	0.7	0.8	0.8	0.8
		90th	1.0	0.9	1.0	1.5	1.3	1.4
2030	SON	Mean	1.1	1.1	1.1	1.4	1.4	1.5
		Median	1.1	1.2	1.1	1.2	1.2	1.6
		10th	0.8	1.0	0.8	1.0	1.1	1.1
		90th	1.3	1.3	1.4	1.8	1.8	1.8
2030	Annual	Mean	1.0	0.9	0.9	1.2	1.1	1.3
		Median	0.9	0.9	0.9	1.1	1.0	1.3
		10th	0.7	0.8	0.7	0.8	0.9	1.0
		90th	1.3	1.1	1.2	1.8	1.5	1.6
2050	DJF	Mean	1.5	1.4	1.6	2.0	1.8	2.3
		Median	1.4	1.4	1.4	1.8	1.6	2.2
		10th	1.1	1.1	1.2	1.4	1.4	1.8
		90th	2.0	1.8	2.1	2.8	2.5	3.1
2050	MAM	Mean	1.2	1.3	1.1	1.8	1.8	1.9
		Median	1.1	1.3	1.1	1.7	1.7	1.9
		10th	0.9	1.1	0.7	1.3	1.4	1.2
		90th	1.7	1.5	1.5	2.6	2.4	2.5
2050	JJA	Mean	1.2	1.2	1.3	1.8	1.6	1.9
		Median	1.2	1.2	1.3	1.7	1.6	2.0
		10th	0.8	1.0	1.0	1.3	1.4	1.5
		90th	1.6	1.4	1.6	2.3	2.0	2.3
2050	SON	Mean	1.6	1.6	1.7	2.2	2.2	2.4
		Median	1.6	1.6	1.6	2.2	2.1	2.5
		10th	1.2	1.3	1.4	1.7	1.9	1.8

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.9	1.9	2.0	2.9	2.8	2.9
2050	Annual	Mean	1.4	1.3	1.4	2.0	1.9	2.1
		Median	1.3	1.3	1.4	1.9	1.7	2.2
		10th	1.0	1.2	1.1	1.5	1.6	1.7
		90th	1.8	1.6	1.7	2.7	2.4	2.6
2070	DJF	Mean	1.8	1.7	2.0	2.9	2.6	3.3
		Median	1.6	1.6	1.8	2.6	2.3	2.9
		10th	1.4	1.4	1.6	2.2	2.2	2.6
		90th	2.2	2.0	2.6	4.0	3.5	4.5
2070	MAM	Mean	1.6	1.6	1.5	2.7	2.6	2.8
		Median	1.5	1.5	1.4	2.5	2.4	2.8
		10th	1.2	1.4	1.1	2.1	2.2	2.1
		90th	2.1	1.9	2.1	3.4	3.3	3.5
2070	JJA	Mean	1.5	1.4	1.7	2.6	2.4	2.9
		Median	1.4	1.3	1.7	2.6	2.3	2.9
		10th	1.1	1.2	1.3	2.0	2.1	2.5
		90th	2.0	1.7	2.0	3.4	3.0	3.3
2070	SON	Mean	1.9	1.9	2.1	3.2	3.1	3.5
		Median	1.9	1.9	2.1	3.2	3.0	3.8
		10th	1.5	1.7	1.8	2.4	2.6	2.7
		90th	2.4	2.2	2.5	4.2	3.9	4.2
2070	Annual	Mean	1.7	1.6	1.8	2.9	2.7	3.1
		Median	1.7	1.6	1.8	2.8	2.5	3.1
		10th	1.3	1.4	1.5	2.2	2.3	2.5
		90th	2.1	1.9	2.2	3.7	3.4	3.8
2090	DJF	Mean	2.0	1.9	2.3	3.8	3.4	4.3
		Median	1.9	1.8	2.1	3.3	3.0	3.7
		10th	1.6	1.5	1.8	2.8	2.9	3.3
		90th	2.5	2.4	3.0	5.3	4.5	6.0
2090	MAM	Mean	1.9	1.9	1.9	3.6	3.5	3.9
		Median	1.7	1.9	1.7	3.6	3.2	3.9
		10th	1.5	1.6	1.4	2.7	3.0	3.0
		90th	2.5	2.3	2.6	4.5	4.5	4.7
2090	JJA	Mean	1.8	1.6	2.1	3.5	3.3	3.9
		Median	1.7	1.6	2.1	3.5	3.1	4.0
		10th	1.3	1.4	1.6	2.7	2.7	3.3
		90th	2.5	1.9	2.5	4.4	4.0	4.5

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	2.3	2.2	2.5	4.2	4.1	4.7
		Median	2.2	2.2	2.5	4.3	3.9	5.1
		10th	1.9	2.0	2.3	3.1	3.4	3.4
		90th	2.8	2.5	2.9	5.5	5.1	5.6
2090	Annual	Mean	2.0	1.9	2.2	3.8	3.6	4.2
		Median	2.0	1.8	2.2	3.7	3.3	4.2
		10th	1.6	1.6	1.9	2.9	3.0	3.3
		90th	2.4	2.3	2.5	4.8	4.5	5.2

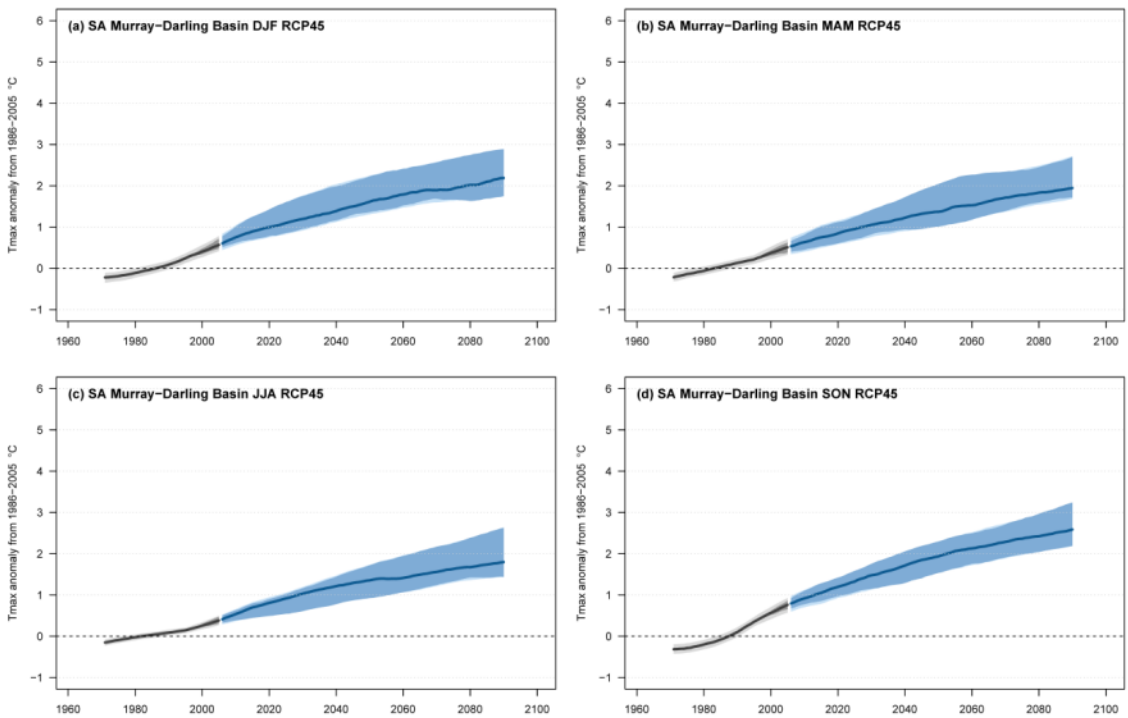

Figure 7.6 SA Murray-Darling Basin NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

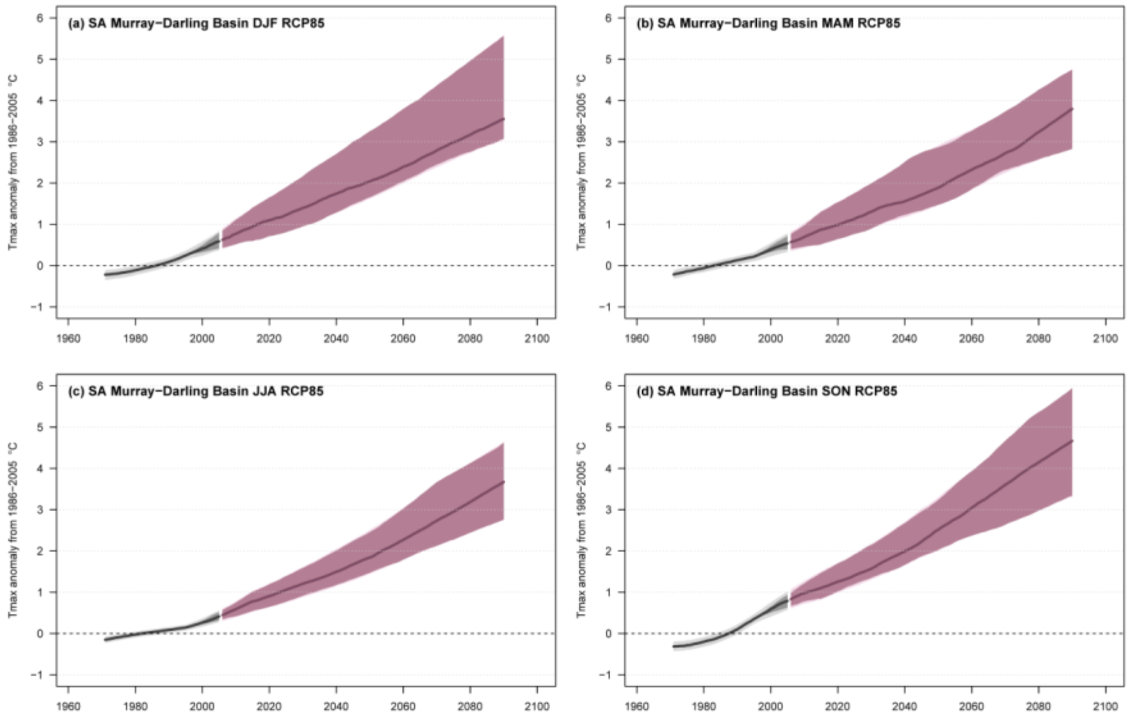

Figure 7.7 SA Murray-Darling Basin NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

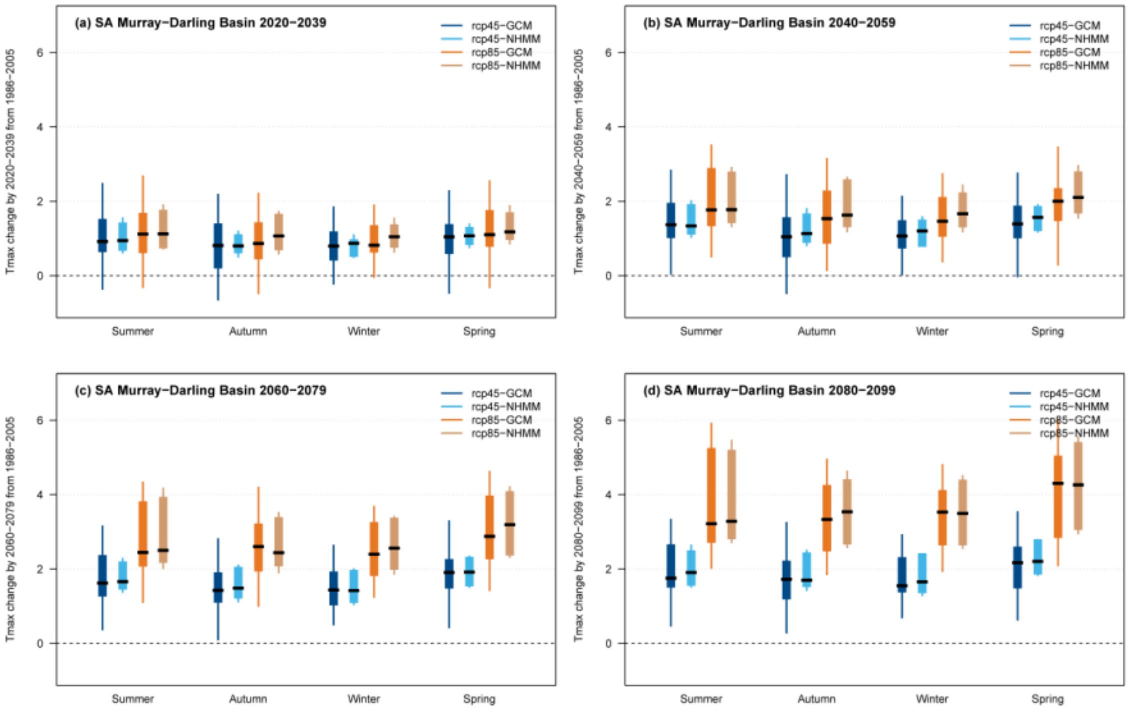

Figure 7.8 SA Murray-Darling Basin NRM CMIP5 GCM and NHMM-downscaled projected seasonal maximum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean maximum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean maximum daily temperature.

The projected changes in minimum daily temperature also highlight the larger increases from the RCP8.5, an annual mean increase of 3.1°C by the end of the century compared to 1.5°C from RCP4.5. The better six GCM ensemble annual mean is the same in this case (Table 7.5). The time-series and box-plot representations of these changes are shown in Figure 7.9, Figure 7.10 and Figure 7.11.

The mean, median and range of changes presented in Table 7.5 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in

Table B.65 for RCP4.5 and

Table B.66 for RCP8.5.

Table 7.5 SA MDB NRM downscaled projected changes in seasonal minimum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.8	0.7	1.0	1.1	0.9	1.3
		Median	0.8	0.7	1.0	1.0	0.8	1.3
		10th	0.5	0.5	0.7	0.6	0.6	1.0
		90th	1.2	1.1	1.3	1.6	1.4	1.6
2030	MAM	Mean	0.8	0.8	0.9	1.1	1.0	1.1
		Median	0.8	0.9	0.8	1.0	1.0	1.1
		10th	0.5	0.6	0.6	0.8	0.7	0.8
		90th	1.2	0.9	1.3	0.8	1.3	1.5
2030	JJA	Mean	0.6	0.6	0.6	0.8	0.7	0.9
		Median	0.6	0.6	0.7	0.8	0.8	0.9
		10th	0.4	0.4	0.6	0.5	0.6	0.7
		90th	0.7	0.7	0.7	1.0	0.9	1.0
2030	SON	Mean	0.7	0.7	0.7	0.9	0.9	0.9
		Median	0.8	0.8	0.8	0.9	0.9	1.0
		10th	0.5	0.6	0.5	0.7	0.7	0.8
		90th	0.9	0.9	0.9	1.1	1.2	1.1
2030	Annual	Mean	0.7	0.7	0.8	0.9	0.9	1.0
		Median	0.7	0.7	0.8	0.9	0.9	1.0
		10th	0.5	0.6	0.7	0.7	0.7	0.9
		90th	1.0	0.9	0.9	1.3	1.1	1.3
2050	DJF	Mean	1.2	1.1	1.3	1.7	1.6	2.0
		Median	1.1	1.0	1.3	1.6	1.4	2.0
		10th	0.7	0.8	1.0	1.1	1.2	1.6
		90th	1.7	1.6	1.8	2.6	2.3	2.6
2050	MAM	Mean	1.1	1.1	1.2	1.8	1.7	1.9
		Median	1.1	1.1	1.1	1.6	1.6	1.9
		10th	0.8	0.9	0.9	1.3	1.3	1.5
		90th	1.5	1.4	1.5	2.3	2.2	2.4
2050	JJA	Mean	0.9	0.8	0.9	1.3	1.3	1.4
		Median	0.9	0.9	1.0	1.3	1.3	1.5
		10th	0.6	0.7	0.9	1.0	1.1	1.3
		90th	1.0	1.0	1.0	1.6	1.5	1.6
2050	SON	Mean	1.0	1.1	1.0	1.5	1.6	1.6
		Median	1.1	1.1	1.1	1.5	1.6	1.6
		10th	0.7	0.9	0.8	1.2	1.3	1.3

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.2	1.3	1.2	1.8	1.9	1.8
2050	Annual	Mean	1.0	1.0	1.1	1.6	1.5	1.7
		Median	1.1	1.0	1.2	1.5	1.5	1.7
		10th	0.8	0.9	1.0	1.2	1.2	1.5
		90th	1.3	1.3	1.3	2.0	1.9	2.1
2070	DJF	Mean	1.4	1.4	1.6	2.5	2.4	2.9
		Median	1.3	1.2	1.7	2.2	2.1	2.9
		10th	0.9	1.0	1.2	1.8	1.8	2.1
		90th	2.1	2.0	2.1	3.7	3.3	3.7
2070	MAM	Mean	1.4	1.4	1.4	2.5	2.6	2.7
		Median	1.3	1.3	1.5	2.4	2.4	2.8
		10th	0.9	1.1	1.1	1.9	2.0	2.1
		90th	1.8	1.8	1.7	3.3	3.3	3.3
2070	JJA	Mean	1.1	1.0	1.2	1.9	1.9	2.1
		Median	1.2	1.1	1.3	2.0	2.0	2.2
		10th	0.7	0.8	0.9	1.5	1.7	1.8
		90th	1.4	1.2	1.4	2.3	2.1	2.4
2070	SON	Mean	1.2	1.3	1.3	2.2	2.3	2.3
		Median	1.3	1.3	1.4	2.2	2.3	2.3
		10th	0.8	1.1	1.0	1.8	2.0	1.9
		90th	1.5	1.6	1.5	2.7	2.7	2.7
2070	Annual	Mean	1.3	1.3	1.4	2.3	2.3	2.5
		Median	1.3	1.2	1.5	2.2	2.2	2.4
		10th	0.9	1.0	1.2	1.8	1.9	2.2
		90th	1.6	1.6	1.6	3.0	2.8	3.0
2090	DJF	Mean	1.6	1.5	1.8	3.3	3.2	3.8
		Median	1.4	1.3	2.0	2.9	2.9	3.8
		10th	1.0	1.1	1.3	2.4	2.5	2.7
		90th	2.3	2.3	2.3	4.9	4.3	4.9
2090	MAM	Mean	1.6	1.6	1.7	3.4	3.5	3.7
		Median	1.6	1.5	1.7	3.3	3.3	3.8
		10th	1.1	1.2	1.5	2.6	2.8	3.0
		90th	2.1	2.2	2.0	4.4	4.5	4.4
2090	JJA	Mean	1.3	1.3	1.4	2.6	2.6	2.8
		Median	1.4	1.4	1.6	2.7	2.7	2.9
		10th	0.8	1.0	0.9	2.0	2.3	2.3
		90th	1.7	1.5	1.7	3.0	2.9	3.2

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	1.5	1.6	1.5	2.9	3.1	3.1
		Median	1.5	1.6	1.6	2.9	3.1	3.1
		10^{th}	1.0	1.3	1.2	2.3	2.6	2.6
		90^{th}	1.8	1.9	1.8	3.5	3.5	3.6
2090	Annual	Mean	1.5	1.5	1.6	3.1	3.1	3.3
		Median	1.5	1.4	1.7	2.9	3.0	3.1
		10^{th}	1.1	1.2	1.3	2.4	2.6	2.9
		90^{th}	1.9	2.0	1.9	4.0	3.7	4.0

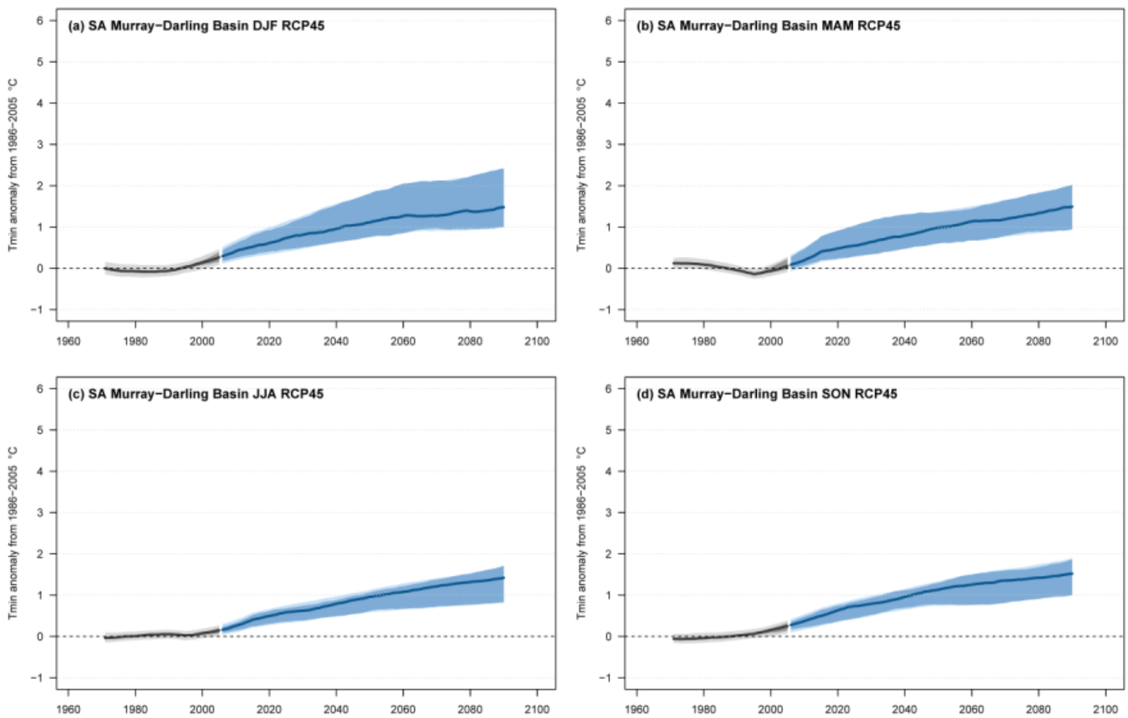

Figure 7.9 SA Murray-Darling Basin NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

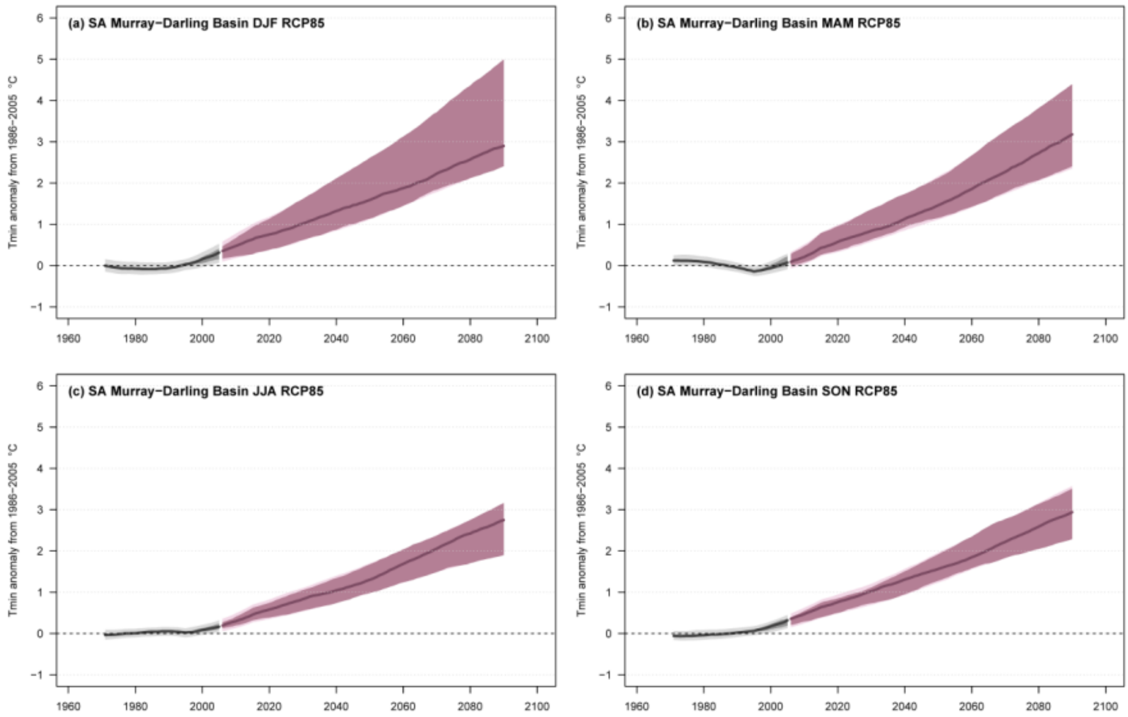

Figure 7.10 SA Murray-Darling Basin NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

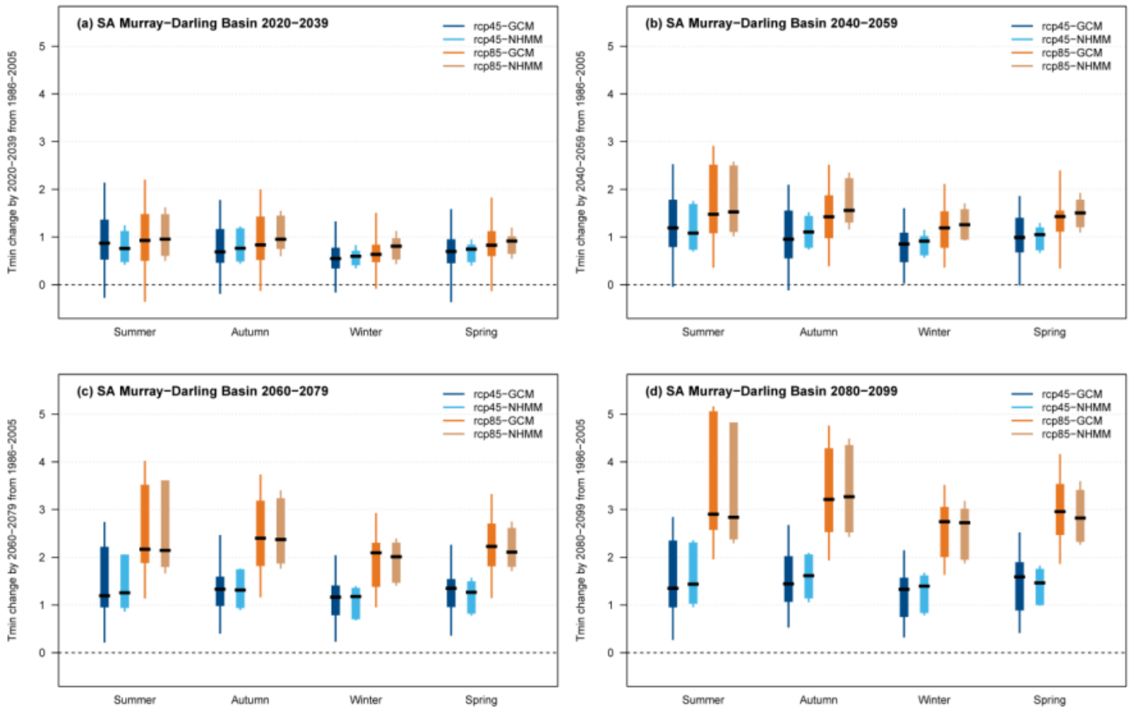

Figure 7.11 SA Murray-Darling Basin NRM CMIP5 GCM and NHMM-downscaled projected seasonal minimum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean minimum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean minimum daily temperature.

The projected changes in seasonal solar radiation are summarised in Table 7.6. The seasonal time-series corresponding to RCP4.5 and RCP8.5 downscaled projections are shown in Figure 7.12 and Figure 7.13 respectively. Figure 7.14 shows that the downscaled changes are larger than those directly from the GCM for spring and reasonably similar for the other seasons.

The mean, median and range of changes presented in Table 7.6 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in

Table B.67 for RCP4.5 and Table B.68 for RCP8.5.

Table 7.6 SA MDB NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.6	0.4	0.9	0.7	-0.2	1.2
		Median	0.6	0.2	1.1	0.7	0.0	1.4
		10th	-0.4	-0.5	-0.3	-0.6	-1.2	0.2
		90th	1.7	1.6	1.8	1.7	0.6	2.2
2030	MAM	Mean	0.6	1.0	0.1	1.0	1.2	0.8
		Median	-0.1	0.5	-0.3	0.5	0.8	1.0
		10th	-0.9	-0.8	-1.9	-0.4	-0.1	-1.6
		90th	2.3	3.2	2.3	-0.4	2.8	3.0
2030	JJA	Mean	2.1	1.3	2.5	2.9	2.2	3.2
		Median	1.7	1.1	3.0	2.5	1.8	3.5
		10th	0.0	0.1	0.7	1.1	1.1	1.3
		90th	3.9	2.6	3.9	4.9	3.6	4.8
2030	SON	Mean	2.4	2.4	2.3	2.6	2.4	3.0
		Median	2.2	2.0	2.3	2.5	1.8	2.8
		10th	1.6	1.2	1.9	1.2	1.2	2.4
		90th	3.5	4.0	2.7	4.1	4.3	3.7
2030	Annual	Mean	1.3	1.2	1.3	1.5	1.1	1.8
		Median	1.0	0.9	1.5	1.6	0.9	2.1
		10th	0.4	0.6	0.1	0.3	0.3	0.5
		90th	2.2	2.1	2.2	2.8	2.0	3.0
2050	DJF	Mean	0.7	0.4	1.1	1.0	-0.1	1.8
		Median	0.5	0.3	1.0	1.1	0.2	2.1
		10th	-0.5	-0.5	-0.4	-0.5	-1.4	0.5
		90th	2.2	1.3	2.6	2.6	0.8	3.0
2050	MAM	Mean	1.0	1.1	0.5	1.3	1.3	1.3
		Median	1.0	1.0	0.3	1.3	1.0	1.5
		10th	-1.4	-0.8	-2.0	-0.7	-0.4	-1.8
		90th	3.1	3.1	3.1	4.2	3.2	4.2
2050	JJA	Mean	3.1	2.5	3.5	4.4	3.2	5.0
		Median	3.3	2.4	4.3	4.4	2.8	5.2
		10th	0.7	1.2	1.3	1.4	1.5	2.1
		90th	4.9	3.9	4.9	7.6	5.4	7.7
2050	SON	Mean	3.2	2.8	3.5	3.9	3.7	4.3
		Median	3.1	2.3	3.5	3.8	3.1	4.3
		10th	1.7	1.2	2.8	2.1	2.1	3.2

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	4.5	5.0	4.3	5.8	6.0	5.6
2050	Annual	Mean	1.7	1.5	1.9	2.3	1.6	2.8
		Median	1.4	1.2	2.1	2.3	1.3	3.1
		10th	0.5	0.8	0.4	0.8	0.8	0.9
		90th	3.2	2.5	3.2	4.1	2.9	4.4
2070	DJF	Mean	0.8	0.1	1.4	1.2	0.0	2.4
		Median	0.6	0.0	1.3	0.9	-0.4	2.5
		10th	-0.6	-0.8	0.1	-0.7	-1.0	0.3
		90th	2.4	1.2	2.8	3.6	1.3	4.4
2070	MAM	Mean	1.4	1.3	1.1	1.7	1.0	2.2
		Median	1.5	1.3	0.8	0.7	0.4	2.4
		10th	-0.7	-0.4	-1.5	-0.5	-0.5	-1.5
		90th	3.8	2.8	3.9	5.3	3.2	5.8
2070	JJA	Mean	3.6	2.8	4.2	5.7	4.1	6.8
		Median	3.6	2.9	4.5	6.5	3.4	7.4
		10th	1.1	1.2	1.9	1.9	2.1	3.0
		90th	6.1	4.3	6.3	9.7	6.8	10.0
2070	SON	Mean	3.6	2.8	4.4	5.0	4.8	5.9
		Median	4.0	2.6	4.3	5.5	4.3	6.1
		10th	2.0	1.2	3.4	2.9	3.0	4.3
		90th	4.9	4.6	5.5	7.4	7.2	7.2
2070	Annual	Mean	2.1	1.4	2.5	2.9	2.0	3.8
		Median	1.8	1.3	2.7	2.5	1.7	4.2
		10th	0.9	0.8	1.0	1.2	1.2	1.3
		90th	3.8	2.2	3.9	5.4	3.2	6.0
2090	DJF	Mean	0.9	-0.1	1.5	1.5	0.2	3.1
		Median	0.6	0.0	1.6	1.0	-0.1	3.1
		10th	-0.9	-1.6	0.3	-0.7	-1.1	0.7
		90th	2.7	1.2	2.7	4.6	1.8	5.5
2090	MAM	Mean	1.6	1.5	1.3	2.0	0.9	3.2
		Median	1.7	1.6	1.2	1.4	1.3	3.7
		10th	-0.8	-0.1	-1.2	-1.5	-1.4	-1.6
		90th	3.4	3.1	3.8	6.5	2.9	7.7
2090	JJA	Mean	4.3	3.4	4.7	7.0	5.0	8.8
		Median	4.2	3.8	4.6	6.3	4.2	8.8
		10th	1.8	1.6	2.4	2.1	2.2	3.9
		90th	7.0	4.8	7.1	12.5	8.8	13.7

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	3.9	2.8	4.9	6.2	6.1	7.5
		Median	4.0	2.9	4.6	7.6	6.2	8.0
		10^{th}	1.9	1.1	3.7	2.7	3.4	5.2
		90^{th}	5.4	4.5	6.5	8.9	8.6	9.4
2090	Annual	Mean	2.3	1.5	2.8	3.6	2.6	5.1
		Median	1.8	1.7	2.8	2.6	2.4	5.6
		10^{th}	1.2	0.7	1.3	1.2	1.5	1.8
		90^{th}	4.1	2.1	4.4	6.9	3.8	7.8

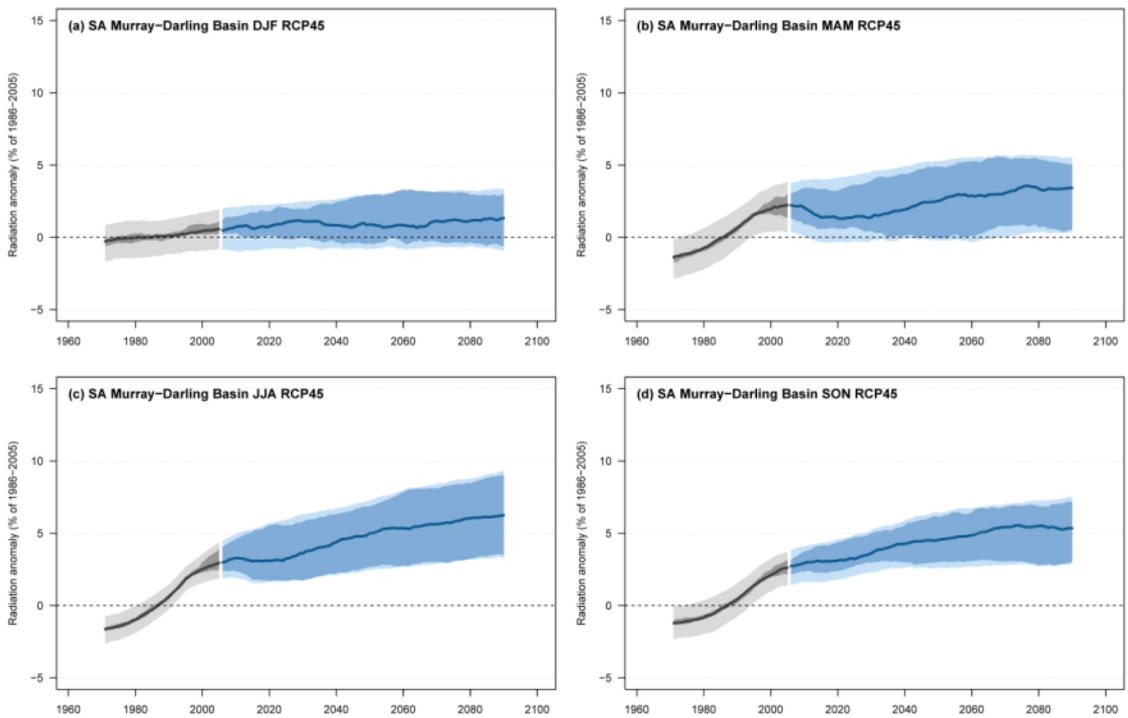

Figure 7.12 SA Murray-Darling Basin NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

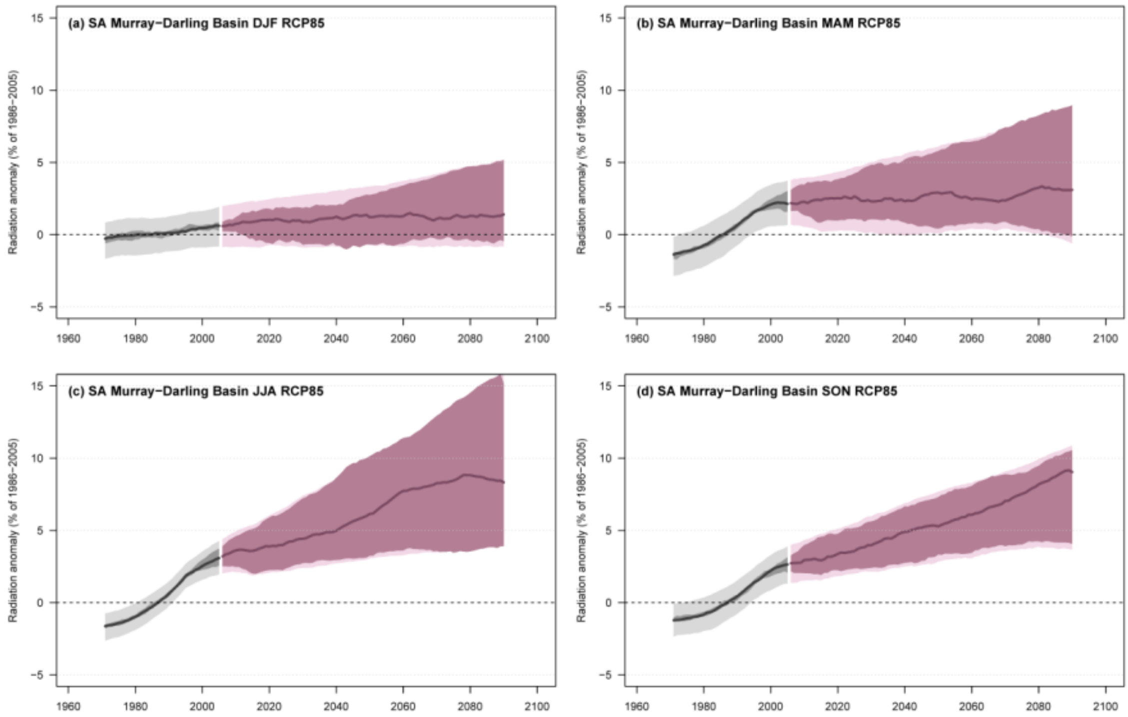

Figure 7.13 SA Murray-Darling Basin NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

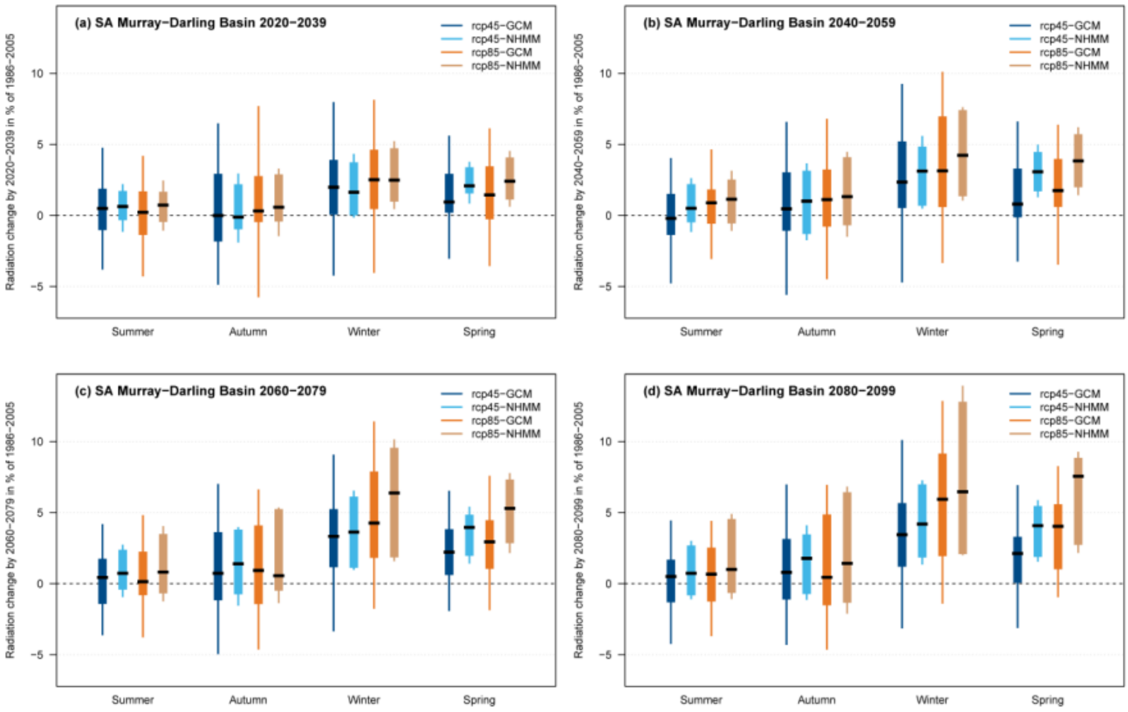

Figure 7.14 SA Murray-Darling Basin NRM CMIP5 GCM and NHMM-downscaled projected seasonal solar radiation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean solar radiation (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean solar radiation.

Large projected increases in VPD are simulated by the downscaling for the end of century, as shown in Table 7.7, Figure 7.15 and Figure 7.16. The divergence between the two RCPs in the latter half of the century is clear (Figure 7.17).

The mean, median and range of changes presented in Table 7.7 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.69 for RCP4.5 and

Table B.70 for RCP8.5.

Table 7.7 SA MDB NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	8.9	8.9	9.6	11.0	8.7	13.9
		Median	8.1	8.9	8.3	10.8	8.4	13.7
		10th	5.7	7.3	6.7	6.6	5.2	10.4
		90th	12.1	10.5	13.9	14.7	12.6	17.6
2030	MAM	Mean	9.7	11.5	6.2	12.5	13.0	10.8
		Median	9.5	11.2	5.0	12.9	13.4	10.9
		10th	3.5	7.8	2.6	5.8	10.8	4.0
		90th	15.6	15.6	11.0	5.8	14.7	17.5
2030	JJA	Mean	10.2	10.3	10.0	13.6	13.0	13.8
		Median	8.5	6.8	9.1	13.2	12.7	13.4
		10th	5.2	5.6	4.4	9.7	9.8	7.2
		90th	16.8	18.7	16.6	20.9	16.6	20.8
2030	SON	Mean	12.8	14.3	11.8	15.7	16.7	16.2
		Median	11.7	12.4	11.5	16.6	15.8	16.8
		10th	8.8	11.4	7.6	10.8	11.9	11.6
		90th	16.6	19.1	16.4	22.4	22.4	20.2
2030	Annual	Mean	10.2	10.9	9.4	12.8	12.1	13.7
		Median	9.6	9.8	9.2	12.4	12.1	13.1
		10th	6.7	8.9	5.8	9.4	10.4	9.9
		90th	14.4	14.1	13.4	17.6	13.8	18.2
2050	DJF	Mean	12.4	12.2	13.4	18.1	15.6	22.2
		Median	11.7	11.4	11.9	17.3	15.0	21.6
		10th	9.0	10.6	10.3	11.7	12.0	16.4
		90th	15.4	14.7	18.1	22.9	19.8	28.6
2050	MAM	Mean	13.5	15.8	9.5	20.0	21.1	18.6
		Median	13.2	15.8	9.5	20.7	22.4	18.0
		10th	6.7	12.0	3.6	13.0	15.8	9.9
		90th	20.2	19.6	15.4	28.3	25.0	27.8
2050	JJA	Mean	14.4	15.0	14.2	22.2	21.2	23.0
		Median	12.8	12.5	12.7	20.5	20.7	22.4
		10th	5.9	8.5	4.1	14.3	14.4	12.9
		90th	26.1	24.0	25.9	31.9	28.4	33.9
2050	SON	Mean	18.1	19.3	17.9	26.1	27.7	27.0
		Median	16.7	17.4	17.3	26.0	26.9	27.5
		10th	13.6	15.4	13.3	16.7	20.2	19.7

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	23.4	25.3	23.2	35.6	36.2	33.8
2050	Annual	Mean	14.2	15.0	13.7	20.9	20.3	22.6
		Median	13.7	14.0	14.1	20.7	20.3	21.7
		10th	9.5	12.9	8.8	14.1	17.1	16.8
		90th	18.8	18.2	18.2	26.2	23.7	29.3
2070	DJF	Mean	14.9	14.2	16.6	26.2	23.8	31.4
		Median	14.5	14.2	14.7	24.5	24.3	28.5
		10th	12.2	12.9	13.4	18.7	18.9	23.3
		90th	16.2	15.6	21.8	33.7	28.2	42.3
2070	MAM	Mean	16.2	17.8	13.2	28.7	30.4	28.2
		Median	17.8	18.7	13.0	30.8	33.5	27.3
		10th	8.3	14.9	5.7	18.4	20.4	17.7
		90th	22.2	19.9	21.0	37.9	37.4	39.6
2070	JJA	Mean	17.1	16.7	18.2	32.3	31.3	34.6
		Median	15.9	16.7	15.8	31.2	30.4	35.6
		10th	6.8	10.1	5.0	19.2	19.4	20.7
		90th	30.9	23.4	33.7	47.3	44.1	47.4
2070	SON	Mean	21.8	22.0	23.1	37.9	39.8	40.2
		Median	20.7	20.2	22.7	38.2	37.8	40.8
		10th	16.7	17.2	18.1	23.3	29.9	31.0
		90th	28.8	28.5	28.5	49.6	51.6	49.0
2070	Annual	Mean	17.1	17.2	17.6	30.2	29.9	33.1
		Median	16.8	16.8	18.5	30.9	30.4	32.7
		10th	12.1	15.5	11.9	19.3	23.7	25.2
		90th	20.9	19.2	22.4	37.0	35.6	41.5
2090	DJF	Mean	16.6	15.5	18.9	34.8	32.7	41.2
		Median	16.4	16.8	16.8	34.2	33.6	35.9
		10th	11.5	11.3	15.1	25.3	27.3	30.3
		90th	19.7	18.6	24.7	46.0	37.3	57.3
2090	MAM	Mean	19.0	20.4	16.0	38.2	40.6	39.9
		Median	19.9	20.3	14.8	38.9	42.7	38.6
		10th	9.9	18.8	7.3	20.7	25.1	27.1
		90th	26.0	22.3	25.9	54.4	54.0	54.0
2090	JJA	Mean	20.0	18.5	22.1	42.8	42.3	46.7
		Median	18.9	18.7	17.4	41.3	40.8	49.9
		10th	8.3	11.6	7.3	23.2	24.7	28.5
		90th	34.9	25.2	41.5	62.0	61.5	61.9

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	25.2	24.1	27.4	50.0	52.5	54.5
		Median	24.8	22.9	27.7	50.3	51.5	56.6
		10th	20.5	19.3	21.8	29.9	37.6	41.1
		90th	31.8	30.0	32.7	66.5	68.6	65.9
2090	Annual	Mean	19.6	19.0	20.6	40.0	40.3	44.6
		Median	19.9	18.8	21.9	41.8	41.5	44.8
		10th	15.2	18.1	15.2	24.7	30.3	34.0
		90th	23.7	20.2	24.8	50.0	49.2	55.2

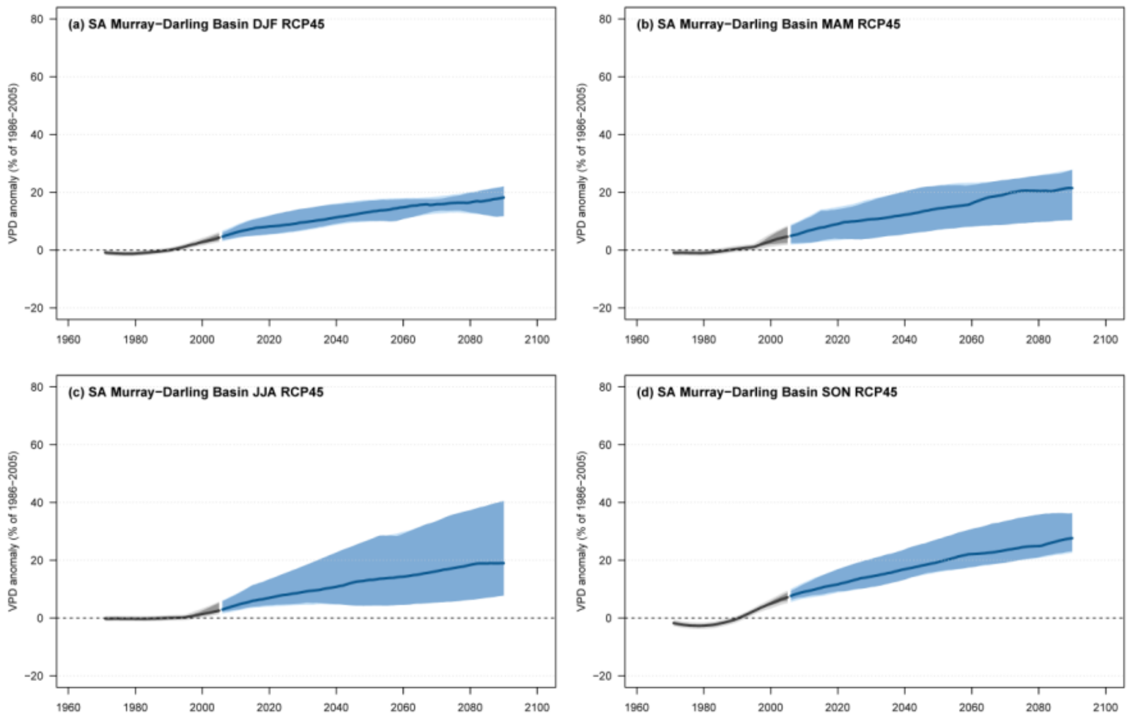

Figure 7.15 SA Murray-Darling Basin NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

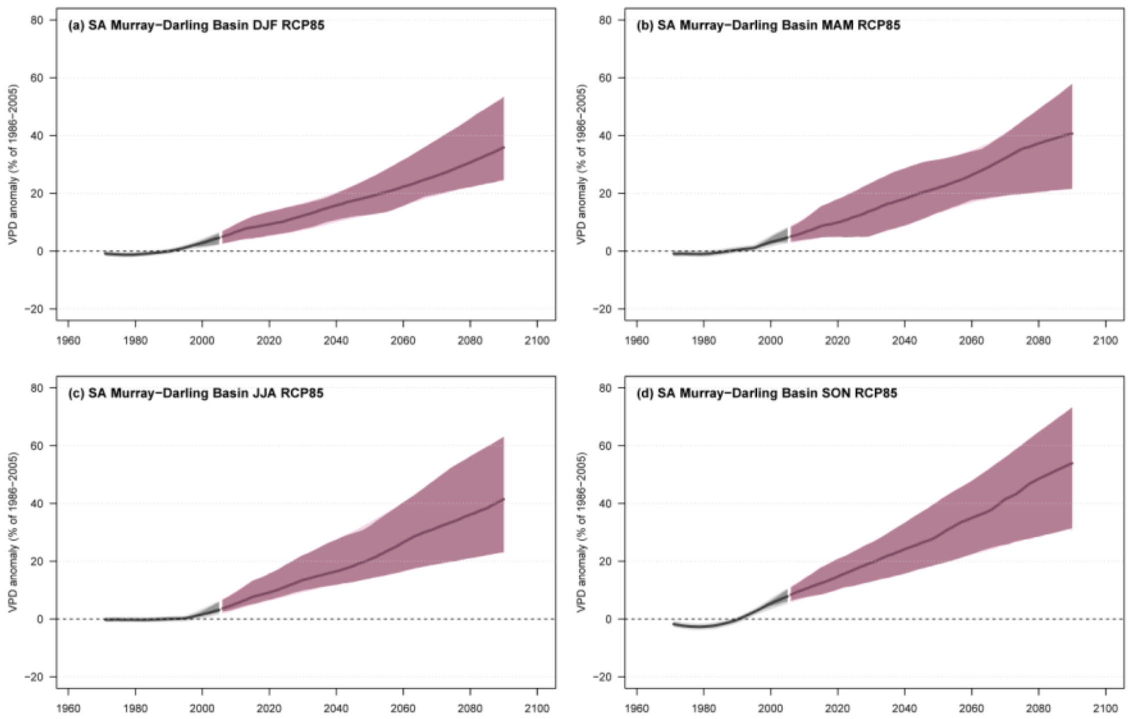

Figure 7.16 SA Murray-Darling Basin NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

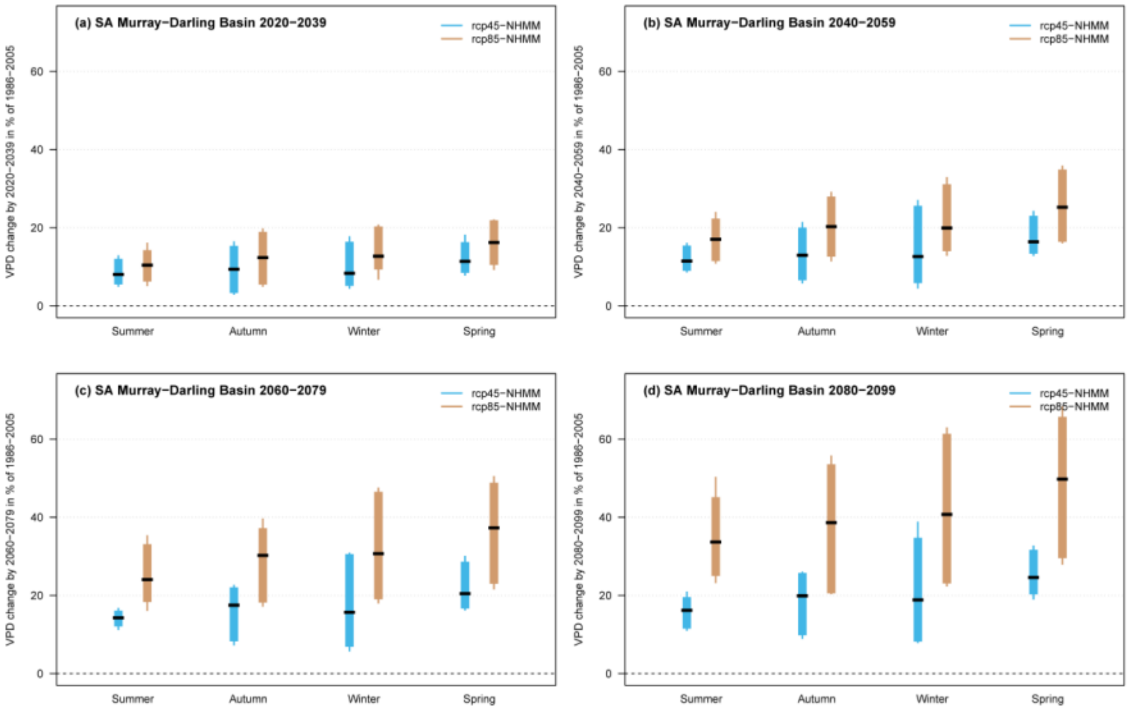

Figure 7.17 SA Murray-Darling Basin NRM NHMM-downscaled projected seasonal vapour pressure deficit changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean vapour pressure deficit (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean vapour pressure deficit.

The APET changes (Table 7.8), resulting from the changes summarised above, clearly indicate large progressive increases for RCP8.5 compared to a more stable progression from RCP4.5 (Figure 7.18 Figure 7.19 and Figure 7.20).

The mean, median and range of changes presented in Table 7.8 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.71 for RCP4.5 and Table B.72 for RCP8.5.

Table 7.8 SA MDB NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	2.5	2.1	2.9	3.0	2.0	3.9
		Median	2.5	2.2	2.8	3.0	2.0	3.5
		10th	1.4	1.6	1.9	1.9	1.1	2.8
		90th	3.2	2.6	4.1	4.4	2.9	5.5
2030	MAM	Mean	2.6	2.9	2.1	3.5	3.5	3.4
		Median	2.5	2.6	1.7	3.4	3.5	3.6
		10th	1.4	2.1	1.0	1.8	2.4	1.3
		90th	4.5	3.9	3.6	1.8	4.7	5.3
2030	JJA	Mean	3.2	2.7	3.5	4.3	3.7	4.5
		Median	3.2	2.7	4.0	3.9	3.7	4.8
		10th	1.7	1.9	2.3	2.6	3.0	3.0
		90th	4.4	3.6	4.3	5.9	4.4	5.9
2030	SON	Mean	3.9	3.9	3.9	4.7	4.5	5.1
		Median	3.8	3.8	4.1	4.9	4.0	5.2
		10th	2.8	2.9	3.2	3.1	3.2	4.4
		90th	4.7	5.2	4.4	6.3	6.2	5.8
2030	Annual	Mean	3.0	2.8	3.1	3.7	3.1	4.2
		Median	2.8	2.6	3.2	3.4	3.0	4.4
		10th	2.2	2.3	2.1	2.4	2.3	2.9
		90th	3.9	3.6	4.0	5.2	4.2	5.4
2050	DJF	Mean	3.4	2.9	4.0	4.9	3.6	6.2
		Median	3.0	2.9	3.6	4.5	3.5	5.7
		10th	2.4	2.4	2.7	3.3	2.3	4.7
		90th	4.5	3.4	5.8	6.6	5.2	8.2
2050	MAM	Mean	3.8	4.0	3.2	5.7	5.6	5.8
		Median	3.9	4.0	3.1	5.4	5.7	6.1
		10th	2.1	3.1	1.6	3.7	3.9	3.0
		90th	5.8	5.0	5.1	8.0	7.3	8.3
2050	JJA	Mean	4.7	4.3	5.0	6.9	6.0	7.7
		Median	5.2	4.2	5.5	6.5	5.7	7.9
		10th	2.7	3.4	3.4	4.2	4.9	5.2
		90th	6.3	5.3	6.3	10.0	7.4	10.0
2050	SON	Mean	5.4	5.2	5.9	7.5	7.3	8.1
		Median	5.3	4.9	6.3	7.6	6.7	8.4
		10th	4.2	3.9	4.8	5.2	5.8	6.6

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	6.7	6.8	6.7	9.6	9.6	9.4
2050	Annual	Mean	4.2	3.9	4.5	6.0	5.3	6.8
		Median	3.9	3.8	4.5	5.5	5.1	7.0
		10th	3.0	3.1	3.2	4.1	4.1	5.0
		90th	5.3	4.8	5.8	8.0	6.8	8.5
2070	DJF	Mean	4.2	3.4	5.1	7.0	5.5	8.7
		Median	4.1	3.4	4.5	6.2	5.2	7.8
		10th	2.9	2.7	4.0	4.6	4.1	6.6
		90th	5.1	4.2	6.8	9.2	7.2	11.8
2070	MAM	Mean	4.8	4.9	4.5	8.3	7.8	9.0
		Median	5.1	4.8	4.4	8.6	7.7	9.3
		10th	3.0	3.9	2.7	6.1	6.3	5.6
		90th	6.7	6.0	6.6	10.2	9.5	12.1
2070	JJA	Mean	5.7	5.0	6.4	10.0	8.8	11.2
		Median	5.7	4.9	6.6	9.4	8.4	11.7
		10th	3.5	4.2	4.3	6.3	7.4	7.8
		90th	8.4	6.0	8.3	13.8	10.5	14.1
2070	SON	Mean	6.6	6.0	7.5	10.5	10.3	11.7
		Median	6.3	5.9	7.9	10.7	10.0	12.2
		10th	5.1	4.7	6.3	7.4	8.0	9.3
		90th	8.2	7.3	8.4	13.5	12.8	13.5
2070	Annual	Mean	5.1	4.6	5.7	8.5	7.6	9.8
		Median	4.7	4.4	5.7	7.9	7.2	9.9
		10th	3.9	4.0	4.3	6.1	6.3	7.2
		90th	6.4	5.4	7.3	10.8	9.4	12.4
2090	DJF	Mean	4.7	3.7	5.8	9.1	7.4	11.6
		Median	4.8	4.0	5.3	8.6	6.9	10.1
		10th	3.7	2.4	4.9	6.1	5.8	8.9
		90th	5.6	4.8	7.2	12.4	9.7	15.8
2090	MAM	Mean	5.8	5.9	5.6	11.1	10.5	12.7
		Median	5.8	5.6	5.4	10.7	10.0	13.3
		10th	3.9	4.8	3.5	7.3	8.3	8.3
		90th	7.9	7.4	7.9	13.8	13.2	16.4
2090	JJA	Mean	6.8	6.1	7.5	13.2	11.8	15.0
		Median	6.3	6.2	7.3	12.5	11.6	15.3
		10th	4.4	4.8	5.2	8.1	9.6	10.4
		90th	9.8	7.3	10.1	17.5	14.3	19.5

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	7.5	6.6	8.8	13.7	13.5	15.6
		Median	7.3	6.5	8.7	14.4	14.0	16.3
		10^{th}	5.9	5.2	7.7	8.8	10.2	12.0
		90^{th}	9.5	8.3	10.0	18.2	16.4	18.5
2090	Annual	Mean	5.9	5.2	6.7	11.2	10.2	13.2
		Median	5.5	5.1	6.7	11.1	9.8	13.1
		10^{th}	4.6	4.3	5.5	7.8	8.2	9.7
		90^{th}	7.6	6.3	8.1	14.6	12.6	16.9

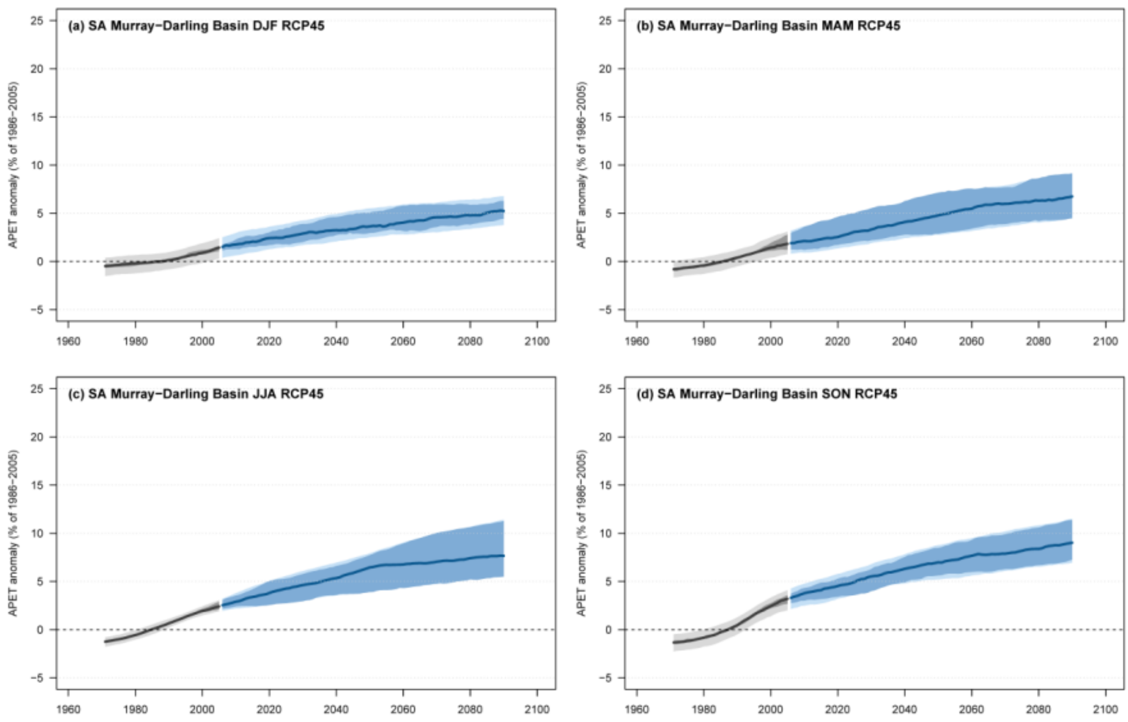

Figure 7.18 SA Murray-Darling Basin NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

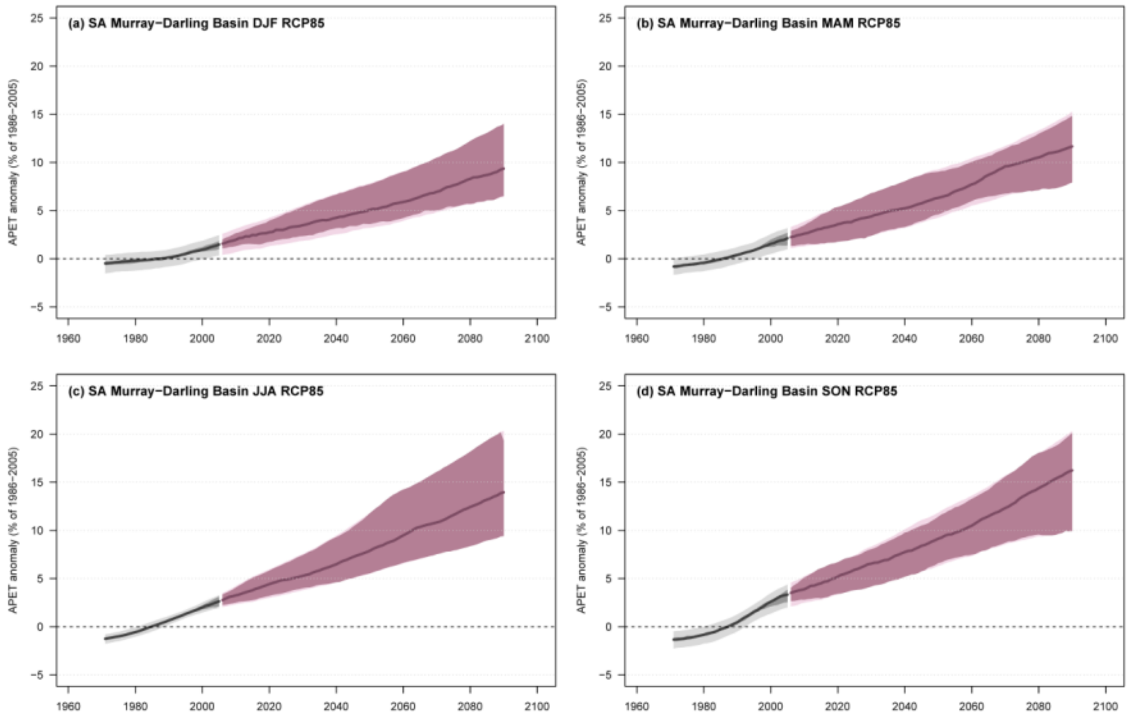

Figure 7.19 SA Murray-Darling Basin NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

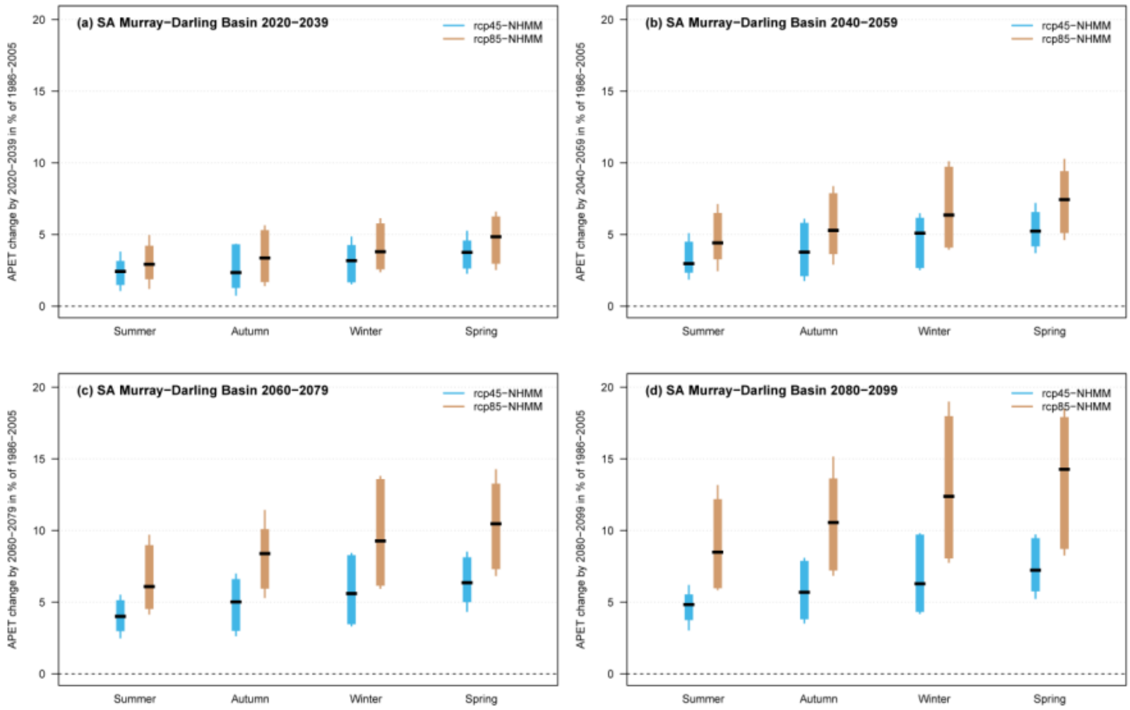

Figure 7.20 SA Murray-Darling Basin NRM NHMM-downscaled projected seasonal potential evapotranspiration changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean potential evapotranspiration (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean potential evapotranspiration.

7.4 Summary

Decreases in precipitation are projected for all seasons, and hence also annual precipitation. There are large relative decreases in spring, particularly for RCP8.5. For the second half of the century the scenarios diverge, with larger decreases from RCP8.5. Daily temperatures (maximum and minimum) are projected to increase for all seasons. For maximum temperature there are larger increases for the spring season, corresponding to its increased drying relative to the other seasons. For both maximum and minimum daily temperatures, the increases for RCP8.5 are larger than RCP4.5 from mid-century onwards. Solar radiation also increases for all seasons, with larger relative increases in winter and spring, corresponding to a reduction in clouds given their drying trends. VPD also increases in all seasons, notably much more for RCP8.5 than RCP4.5 with double the end of the century relative changes. APET also increases in all seasons, with relative increases greater in winter and spring, and the projected changes for RCP8.5 are double of those for RCP4.5. Overall, for all variables and both RCPs, the changes projected from a subset of six better performing GCMs are smaller than the changes projected by a subset of six poorer performing GCMs. The downscaled projections for each SA MDB station, provided as 100 stochastic replicates of daily time-series for each GCM and RCP, represent ‘added value’ over direct GCM output as they provide realistic station-scale input series suitable for probabilistic impacts and adaptation investigations. Bates et al. (2010), in a report focussing on climate change and water allocation, provide a useful summary on the appropriate application of projections in such investigations. CSIRO and Bureau of Meteorology (2014) provides a detailed overview of climate change science from an Australian perspective with recommendations on understanding and utilising projections.

8 Projections for South East

8.1 Overview

The South East NRM region is, as the name implies, in the south-east corner of South Australia and extends from the Coorong and Tatiara districts in the north to the coast in the south and west, and is bounded by the Victorian border in the east. A Mediterranean type climate sees wet, cool winters and dry, mild to hot summers with lowest rainfalls in the north (in the order of 450 mm/year) increasing towards the south to 850 mm/year. The southern coastal zones are particularly winter rainfall dominated, with proportionally more summer rain experienced in inland areas (SENRMB, 2010).

Twenty four weather stations were selected for the statistical downscaling model calibration. Their mean rainfall characteristics are summarised in Table 8.1, in terms of seasonal mean number of wet-days and rainfall totals for the 1986-2005 baseline (representing current climate, this is the period that projections are compared to in later results). Annual rainfall totals vary between stations by a factor of two, ranging from approximately 360 mm (Ki Ki) to 825 mm (Lake Leake).

The selected downscaling models, for the four seasons, are summarised in Table 8.2. Common predictors selected across all seasons include 'east minus west' SLP difference and DTD at the 850 hPa level. DTD at the 700 hPa level is common to three seasons (summer, autumn and spring). Additional predictors are northerly wind speed (V-wind) at 700 hPa for summer, easterly wind speed (U-wind) at 700 hPa for autumn, both easterly and northerly wind speed at 850 hPa for winter, and 'north minus south' SLP difference over the region for spring. The mean rainfall characteristics associated with the weather states for each of the four seasonal NHMMs are presented in Appendix A, Table A.25 to Table A.28.

Table 8.1 South East NRM Climate Stations for NHMM-Downscaling

BoM ID	Name	Latitude	Longitude	Rain days (# days)				Rain amount (mm)			
				DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
				10	14	34	23	59	79	177	119
25507	KEITH	36.10	140.36	0.12	0.17	0.42	0.28	0.14	0.18	0.41	0.27
				9	14	34	24	56	76	179	127
25518	WIRREGA (TAUNTON)	36.18	140.57	0.11	0.17	0.42	0.30	0.13	0.17	0.41	0.29
				9	17	38	23	59	84	201	115
25523	MENINGIE (NARANGA)	35.86	139.56	0.10	0.20	0.44	0.26	0.13	0.18	0.44	0.25
				9	14	33	23	60	78	175	123
25525	BORDERTOWN (INGLEWOOD)	36.19	140.80	0.11	0.18	0.42	0.29	0.14	0.18	0.40	0.28
				10	16	36	25	59	84	202	133
25526	TINTINARA (COLEBATCH DOWNS)	35.97	139.84	0.11	0.18	0.41	0.29	0.12	0.18	0.42	0.28
				9	15	32	20	66	74	180	115
25527	COONALPYN (ALPYN DOWNS)	35.71	139.64	0.12	0.20	0.42	0.26	0.15	0.17	0.41	0.26
				8	13	32	21	53	70	169	122
25541	KEITH (MANDURAMA)	36.04	140.58	0.11	0.18	0.43	0.28	0.13	0.17	0.41	0.29
				8	12	28	19	48	68	146	102
25543	KI KI (MOORILLA)	35.55	139.87	0.12	0.18	0.42	0.28	0.13	0.19	0.40	0.28
				10	15	36	23	61	83	198	128
25546	TINTINARA (RICHARDS)	35.99	139.97	0.12	0.18	0.43	0.27	0.13	0.18	0.42	0.27
				9	16	36	24	62	97	240	132
26010	KINGSTON SE (KEILIRA STATION)	36.71	140.16	0.11	0.19	0.42	0.28	0.12	0.18	0.45	0.25
				17	26	50	36	95	162	361	207
26014	LAKE LEAKE (KOOEEYONG)	37.61	140.58	0.13	0.20	0.39	0.28	0.12	0.20	0.44	0.25
				10	15	36	24	66	86	216	129
26017	PADTHAWAY (MARCOLLAT)	36.50	140.38	0.12	0.18	0.42	0.28	0.13	0.17	0.43	0.26
				15	24	46	32	84	136	287	175
26021	MOUNT GAMBIER AERO	37.75	140.77	0.13	0.21	0.39	0.27	0.12	0.20	0.42	0.26
				11	20	47	26	54	115	298	130
26026	ROBE	37.16	139.76	0.11	0.19	0.45	0.25	0.09	0.19	0.50	0.22

26027	TANTANOOLA	37.70	140.46	15 0.13	24 0.20	48 0.40	32 0.27	88 0.12	139 0.19	333 0.45	173 0.24
26037	BORDERTOWN (YACCA VALE)	36.58	140.73	10 0.12	15 0.17	36 0.42	25 0.29	63 0.13	81 0.17	198 0.41	142 0.29
26049	POLICEMANS POINT	36.06	139.59	9 0.10	18 0.20	40 0.44	23 0.26	52 0.11	88 0.19	216 0.46	113 0.24
26058	BORDERTOWN (BEEAMA SECTION 48)	36.61	140.71	10 0.11	16 0.18	36 0.41	26 0.30	64 0.13	83 0.16	212 0.42	148 0.29
26062	NARACOORTE (BETTWS-Y-COED)	36.92	140.58	11 0.12	17 0.18	39 0.41	27 0.29	70 0.13	94 0.18	225 0.43	137 0.26
26065	SALT CREEK (PITLOCHRY OUTSTATION 1)	36.28	139.84	9 0.11	15 0.19	36 0.44	21 0.26	48 0.10	84 0.18	215 0.47	114 0.25
26067	MOUNT SCHANK (JETHIA)	37.96	140.77	14 0.12	25 0.21	49 0.40	33 0.27	87 0.12	137 0.19	312 0.44	176 0.25
26069	LUCINDALE (GREENVALE)	36.81	140.39	9 0.11	16 0.19	36 0.42	24 0.28	59 0.12	89 0.18	210 0.43	125 0.26
26075	WRATTONBULLY (JOEVILLE)	37.14	140.95	13 0.12	20 0.19	42 0.40	30 0.29	85 0.14	105 0.17	255 0.42	157 0.26
26078	AVENUE (DOWNER)	36.94	140.24	11 0.12	18 0.19	39 0.42	25 0.27	67 0.12	107 0.19	262 0.46	138 0.24

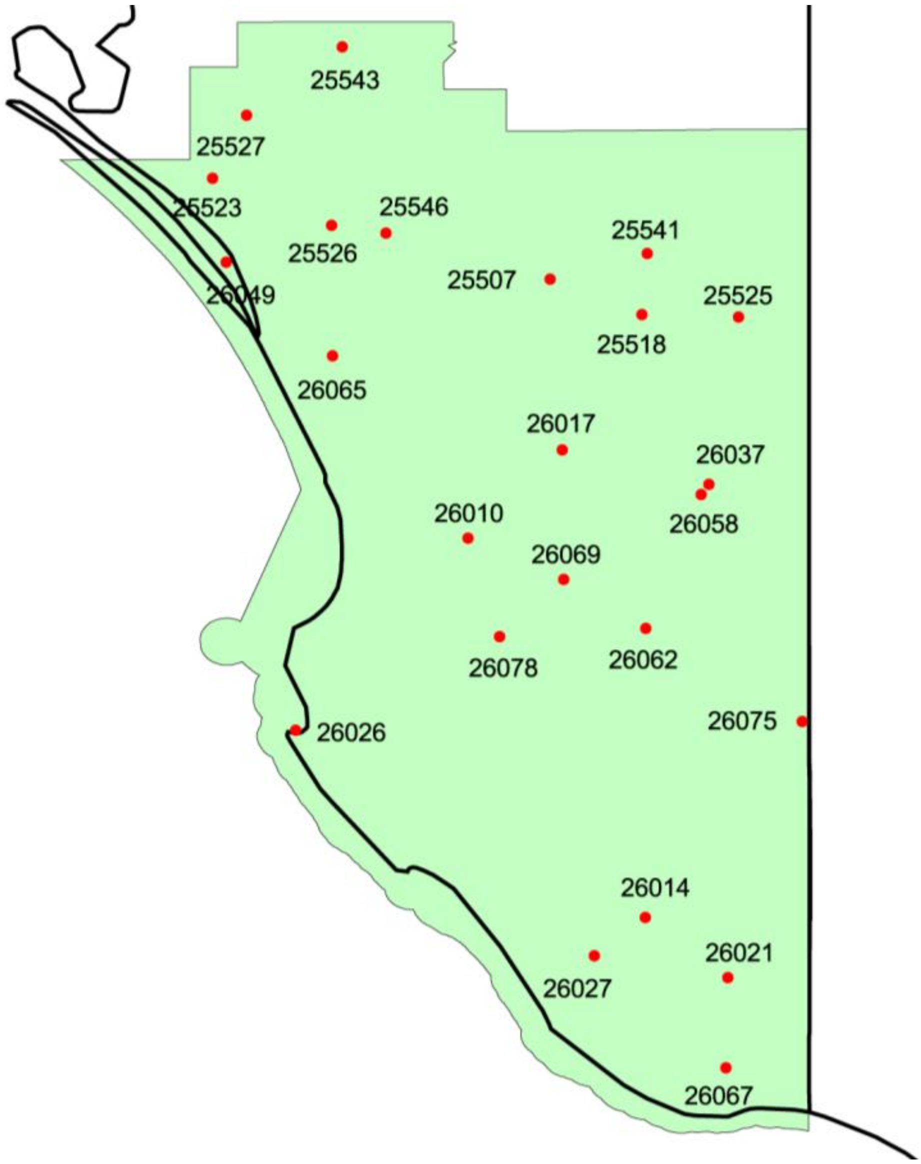

Figure 8.1 Location of South East stations in Table 8.1 and NRM region boundary

Table 8.2 Selected NHMMs (number of weather states and predictor combinations) for South East

DJF	MAM	JJA	SON
4 states	5 states	5 States	5 States
East – West SLP	East – West SLP	East – West SLP	East – West SLP
DTD at 700 hPa	DTD at 700 hPa	DTD at 850 hPa	North – South SLP
DTD at 850 hPa	DTD at 850 hPa	U-wind at 850 hPa	DTD at 700 hPa
V-wind at 700 hPa	U-wind at 700 hPa	V-wind at 850 hPa	DTD at 850 hPa

8.2 Precipitation

The projected precipitation changes obtained from the downscaling indicate large relative decreases in spring precipitation compared to the other seasons, particularly for RCP8.5 (Table 8.3, Figure 8.2, Figure 8.3 and Figure 8.4). Figure 8.4 compares the downscaled changes with those simulated by the GCMs directly; showing downscaling consistently produces drier summers than the GCMs, reasonably similar results for autumn and winter, and again drier projections from downscaling for spring. There are also very large differences between the ensemble means for the six better and six poorer performing GCMs (Table 8.3 and Figure 8.5) with large changes for the six poorer contrasting with small changes from the six better.

The mean, median and range of changes presented in Table 8.3 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.73 for RCP4.5 and Table B.74 for RCP8.5.

Table 8.3 South East NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	-11.3	-7.5	-15.4	-8.9	-0.4	-14.8
		Median	-7.8	-3.3	-18.2	-10.3	-1.5	-14.2
		10th	-23.6	-22.5	-24.1	-21.1	-12.2	-21.3
		90th	0.9	3.4	-3.9	1.6	12.5	-8.8
2030	MAM	Mean	-2.9	-1.8	-4.1	-3.1	-3.3	-4.5
		Median	-2.9	-1.3	-3.2	-2.5	-4.1	-3.2
		10th	-14.6	-12.0	-17.7	-13.5	-10.4	-18.6
		90th	8.0	8.0	8.7	6.3	4.5	8.2
2030	JJA	Mean	1.2	4.8	-3.1	-1.4	0.4	-2.5
		Median	2.0	5.8	-4.5	-1.4	0.6	-2.8
		10th	-5.9	-1.7	-5.8	-6.6	-5.6	-6.5
		90th	8.6	10.4	1.0	3.1	6.1	1.7
2030	SON	Mean	-11.9	-16.0	-11.1	-16.0	-14.4	-18.7
		Median	-12.5	-13.3	-14.1	-16.7	-14.7	-17.6
		10th	-20.3	-22.7	-17.1	-23.5	-25.1	-22.6
		90th	-3.5	-12.0	-2.2	-6.5	-3.3	-16.0
2030	Annual	Mean	-4.6	-3.5	-6.9	-6.4	-4.4	-8.6
		Median	-3.6	-3.1	-7.0	-5.0	-4.9	-7.2
		10th	-9.2	-6.3	-10.9	-12.1	-6.6	-14.0
		90th	0.3	-1.0	-3.0	-3.0	-1.8	-4.8
2050	DJF	Mean	-10.9	-3.6	-17.4	-15.6	-6.8	-21.9
		Median	-8.3	-5.7	-15.8	-17.5	-10.2	-19.6
		10th	-31.2	-15.2	-36.2	-31.4	-24.7	-30.4
		90th	3.6	10.2	-0.3	-6.3	14.6	-15.7
2050	MAM	Mean	-5.0	-3.4	-5.5	-6.0	-3.4	-8.7
		Median	-4.1	-2.6	-3.7	-5.6	-5.5	-8.4
		10th	-10.9	-10.4	-16.8	-19.2	-8.3	-25.4
		90th	2.9	2.8	3.9	3.7	3.6	7.6
2050	JJA	Mean	-1.1	0.7	-2.2	-1.3	3.2	-2.9
		Median	-1.9	0.6	-4.6	-2.6	3.2	-4.7
		10th	-7.9	-6.6	-6.0	-9.1	-2.8	-6.8
		90th	7.6	8.3	4.0	8.3	9.1	2.8
2050	SON	Mean	-17.2	-17.5	-20.5	-22.3	-24.2	-23.0
		Median	-15.2	-17.0	-22.5	-22.4	-25.1	-25.2
		10th	-26.3	-25.2	-26.9	-33.8	-36.3	-31.1

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	-10.1	-10.3	-12.0	-10.7	-11.2	-12.8
2050	Annual	Mean	-7.3	-5.4	-9.4	-9.5	-6.6	-11.7
		Median	-7.5	-4.8	-9.7	-9.0	-7.9	-11.8
		10th	-12.2	-8.4	-13.9	-14.3	-10.1	-17.0
		90th	-2.3	-3.1	-4.7	-5.6	-1.9	-6.2
2070	DJF	Mean	-13.7	-5.5	-20.9	-22.8	-14.0	-30.6
		Median	-13.5	-9.5	-22.3	-20.6	-14.8	-32.5
		10th	-27.6	-19.1	-28.9	-42.8	-27.0	-46.2
		90th	-2.6	12.2	-11.4	-4.8	-0.3	-13.2
2070	MAM	Mean	-7.8	-5.8	-9.5	-13.9	-9.2	-19.5
		Median	-5.9	-3.8	-7.2	-13.8	-12.5	-19.7
		10th	-21.0	-15.1	-20.6	-22.0	-15.1	-32.4
		90th	1.9	1.6	-0.8	1.6	-0.1	-6.4
2070	JJA	Mean	-1.0	0.3	-2.5	-4.3	-0.7	-7.7
		Median	-1.1	0.7	-5.8	-5.7	0.3	-7.3
		10th	-9.4	-5.4	-10.5	-15.5	-5.5	-17.3
		90th	11.4	5.7	8.8	5.1	3.2	1.5
2070	SON	Mean	-22.0	-21.8	-24.3	-31.7	-30.9	-34.7
		Median	-22.0	-20.5	-23.2	-29.2	-27.6	-34.4
		10th	-31.9	-32.0	-31.8	-43.3	-47.5	-42.2
		90th	-13.7	-12.9	-17.8	-18.0	-17.6	-27.6
2070	Annual	Mean	-9.4	-7.4	-11.8	-15.6	-11.9	-20.0
		Median	-9.9	-6.8	-12.7	-15.0	-11.1	-21.0
		10th	-14.2	-10.9	-17.4	-23.7	-17.2	-26.4
		90th	-3.7	-4.6	-5.4	-8.0	-7.6	-12.6
2090	DJF	Mean	-15.5	-5.6	-24.0	-28.8	-18.3	-41.1
		Median	-15.8	-4.3	-22.0	-30.0	-25.8	-41.4
		10th	-33.5	-17.7	-36.5	-52.3	-32.1	-54.5
		90th	2.5	5.2	-13.7	-9.7	3.2	-27.4
2090	MAM	Mean	-5.8	-5.4	-7.5	-17.7	-12.8	-26.1
		Median	-4.6	-5.4	-9.8	-20.5	-10.7	-23.2
		10th	-13.4	-11.2	-17.2	-34.6	-23.9	-46.1
		90th	2.4	0.3	4.4	-0.7	-3.9	-9.0
2090	JJA	Mean	-0.6	3.0	-2.6	-6.2	-1.3	-11.7
		Median	0.2	4.2	-5.1	-6.5	1.3	-14.4
		10th	-10.0	-2.8	-11.0	-18.1	-9.9	-20.2
		90th	7.9	7.5	8.1	5.0	4.7	-0.6

PERIOD	SEASON			RCP4.5			RCP8.5	
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	-23.0	-22.8	-25.8	-40.6	-40.3	-46.1
		Median	-21.3	-21.1	-25.8	-37.8	-34.4	-47.5
		10th	-30.1	-30.6	-29.5	-55.2	-54.9	-55.1
		90th	-16.6	-16.9	-22.1	-31.4	-31.6	-35.8
2090	Annual	Mean	-9.3	-6.5	-12.3	-20.2	-15.9	-27.2
		Median	-7.5	-6.8	-11.7	-19.3	-15.7	-28.8
		10th	-15.5	-9.2	-18.1	-33.2	-21.3	-36.6
		90th	-4.8	-3.5	-7.0	-10.7	-10.8	-16.2

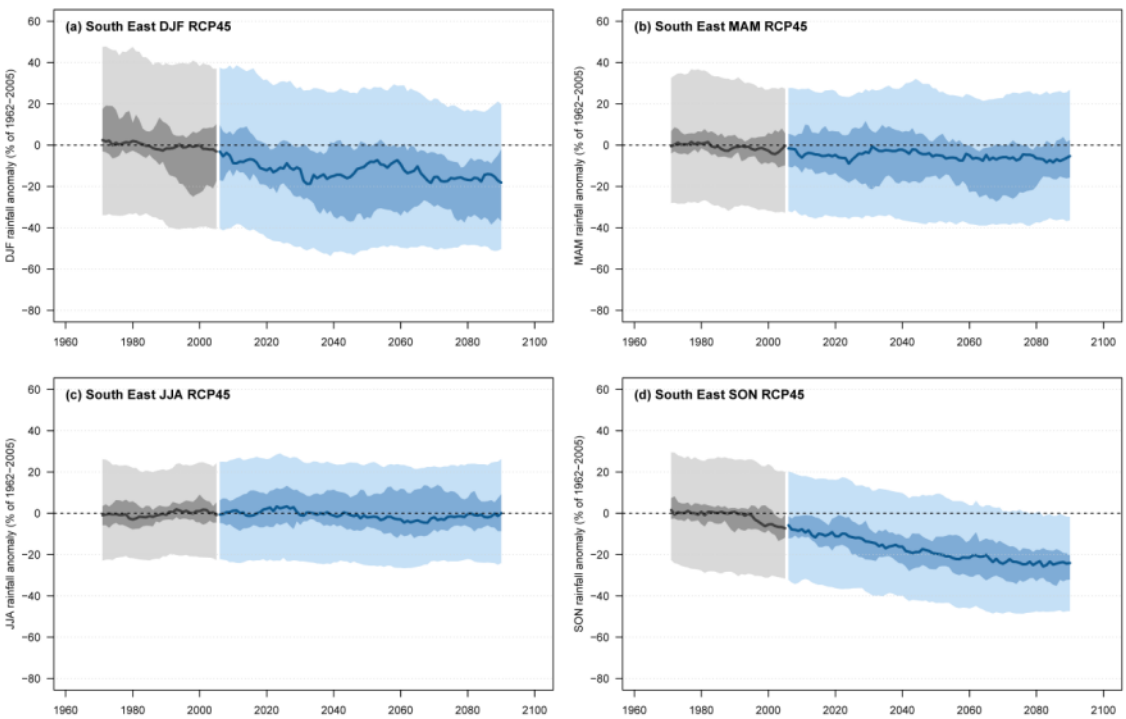

Figure 8.2 South East NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

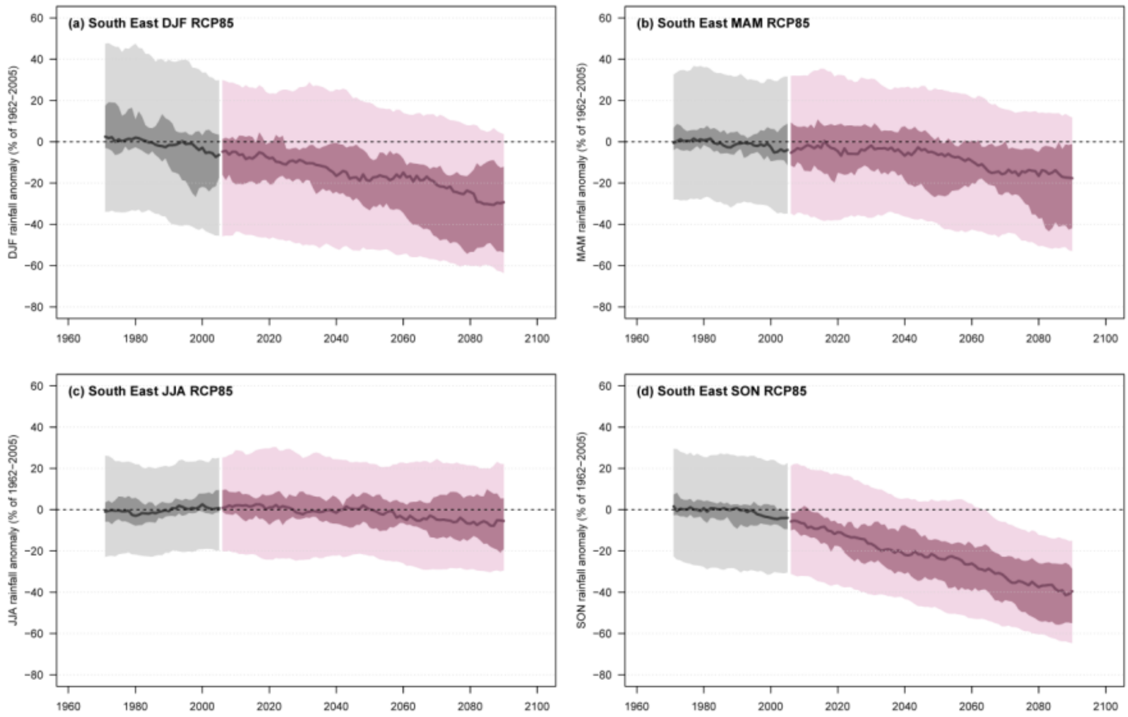

Figure 8.3 South East NRM projected change in seasonal precipitation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

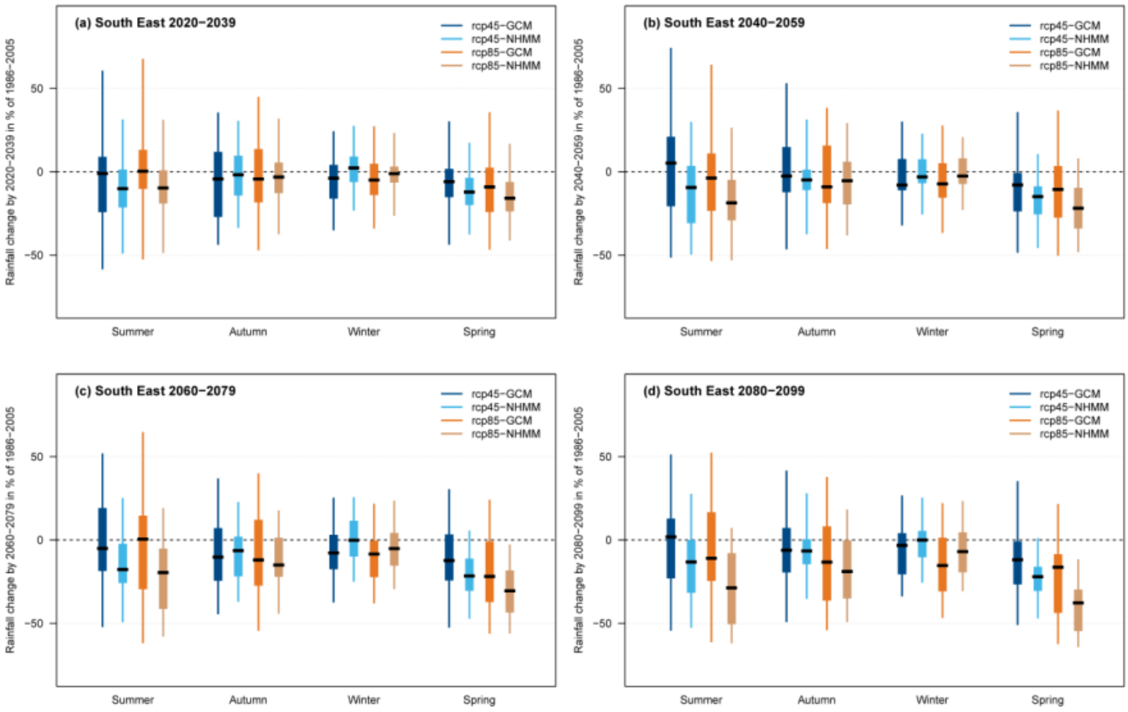

Figure 8.4 South East NRM CMIP5 GCM and NHMM-downscaled projected seasonal precipitation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall.

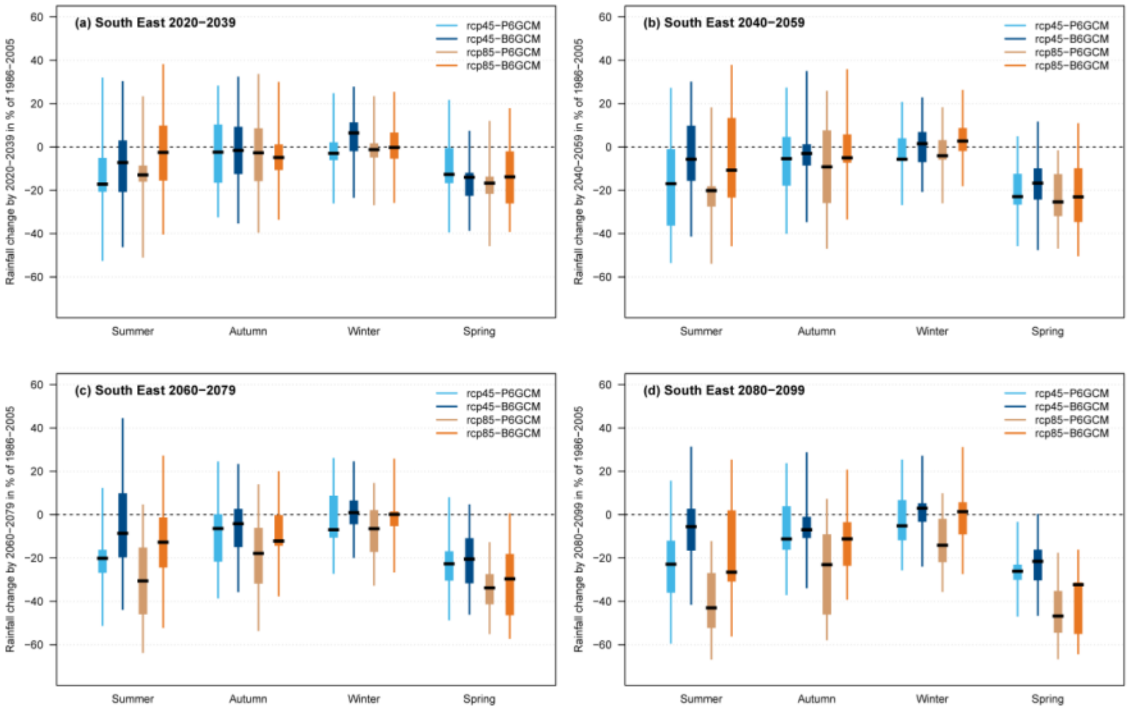

Figure 8.5 South East NRM NHMM-downscaled projected seasonal precipitation changes from six better (B6GCM) and six poorer (P6GCM) performing CMIP5 GCMs for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean rainfall (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean rainfall. Selection of better and poorer performing GCMs according to Cai et al. (2014a) and Cai et al. (2014b).

8.3 Non-precipitation variables

The downscaled changes projected for daily maximum temperature highlight progressive warming tied to the strength of the concentration pathway (Table 8.4). The time-series progressions by season are shown for RCP4.5 in Figure 8.6 and RCP8.5 in Figure 8.7. Similarity with direct GCM grid-scale output is presented in Figure 8.8. Again, the subset of six better rated GCMs produce smaller changes than the six poorer rated GCMs (Table 8.4).

The mean, median and range of changes presented in Table 8.4 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.75 for RCP4.5 and Table B.76 for RCP8.5.

Table 8.4 South East NRM downscaled projected changes in seasonal maximum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.9	0.8	1.0	1.1	0.9	1.3
		Median	0.8	0.8	0.9	1.0	0.8	1.2
		10th	0.6	0.6	0.7	0.5	0.5	1.0
		90th	1.4	1.1	1.5	1.7	1.5	1.9
2030	MAM	Mean	0.7	0.7	0.6	1.0	1.0	0.9
		Median	0.7	0.7	0.6	0.9	0.9	1.0
		10th	0.5	0.7	0.4	0.6	0.8	0.5
		90th	1.1	0.9	0.9	0.6	1.3	1.3
2030	JJA	Mean	0.7	0.7	0.7	0.9	0.8	0.9
		Median	0.8	0.7	0.8	0.9	0.8	1.0
		10th	0.4	0.5	0.5	0.6	0.6	0.7
		90th	0.9	0.8	0.9	1.2	1.1	1.2
2030	SON	Mean	0.9	1.0	1.0	1.2	1.1	1.3
		Median	0.9	1.0	1.0	1.1	1.1	1.3
		10th	0.7	0.8	0.8	0.8	0.9	1.0
		90th	1.2	1.1	1.2	1.6	1.4	1.6
2030	Annual	Mean	0.8	0.8	0.8	1.0	1.0	1.1
		Median	0.8	0.8	0.8	0.9	0.9	1.1
		10th	0.6	0.7	0.6	0.7	0.8	0.8
		90th	1.1	0.9	1.1	1.5	1.3	1.5
2050	DJF	Mean	1.3	1.2	1.4	1.8	1.5	2.1
		Median	1.1	1.1	1.2	1.6	1.3	1.8
		10th	0.9	0.9	1.0	1.1	1.0	1.5
		90th	1.8	1.5	2.1	2.7	2.3	3.1
2050	MAM	Mean	1.1	1.1	1.0	1.6	1.6	1.7
		Median	1.0	1.0	0.9	1.4	1.4	1.6
		10th	0.9	1.0	0.8	1.2	1.2	1.1
		90th	1.5	1.4	1.3	2.3	2.2	2.3
2050	JJA	Mean	1.0	1.0	1.1	1.5	1.4	1.7
		Median	1.1	1.0	1.2	1.5	1.3	1.7
		10th	0.6	0.8	0.9	1.1	1.1	1.3
		90th	1.4	1.3	1.3	2.0	1.8	2.0
2050	SON	Mean	1.4	1.4	1.5	2.0	1.9	2.1
		Median	1.4	1.4	1.5	1.8	1.8	2.2
		10th	1.1	1.2	1.3	1.6	1.6	1.7

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.7	1.6	1.7	2.6	2.3	2.6
2050	Annual	Mean	1.2	1.1	1.3	1.7	1.6	1.9
		Median	1.1	1.1	1.2	1.5	1.4	1.8
		10th	0.9	1.0	1.0	1.3	1.3	1.4
		90th	1.5	1.4	1.6	2.4	2.2	2.5
2070	DJF	Mean	1.5	1.4	1.8	2.6	2.3	3.0
		Median	1.4	1.3	1.6	2.2	2.0	2.4
		10th	1.1	1.1	1.4	1.8	1.8	2.2
		90th	2.0	1.8	2.5	3.8	3.2	4.5
2070	MAM	Mean	1.4	1.4	1.3	2.4	2.4	2.5
		Median	1.3	1.3	1.3	2.2	2.2	2.3
		10th	1.1	1.1	1.0	1.8	1.9	1.9
		90th	1.8	1.7	1.8	3.1	3.1	3.4
2070	JJA	Mean	1.3	1.2	1.4	2.3	2.1	2.5
		Median	1.3	1.2	1.5	2.3	2.0	2.5
		10th	0.9	1.0	1.1	1.7	1.8	2.1
		90th	1.6	1.5	1.7	2.9	2.6	3.0
2070	SON	Mean	1.7	1.6	1.9	2.8	2.7	3.1
		Median	1.6	1.6	2.0	2.5	2.4	3.2
		10th	1.3	1.5	1.6	2.3	2.3	2.4
		90th	2.0	1.9	2.1	3.6	3.3	3.8
2070	Annual	Mean	1.5	1.4	1.6	2.5	2.4	2.8
		Median	1.5	1.4	1.5	2.3	2.1	2.6
		10th	1.1	1.2	1.4	2.0	2.0	2.2
		90th	1.8	1.7	2.0	3.3	3.0	3.7
2090	DJF	Mean	1.8	1.6	2.1	3.4	3.1	4.0
		Median	1.7	1.6	1.9	2.8	2.7	3.1
		10th	1.3	1.1	1.4	2.5	2.5	2.8
		90th	2.3	2.1	2.9	5.1	4.1	6.2
2090	MAM	Mean	1.6	1.6	1.7	3.2	3.2	3.5
		Median	1.5	1.5	1.6	3.1	3.0	3.2
		10th	1.2	1.3	1.2	2.4	2.6	2.7
		90th	2.0	2.0	2.2	4.2	4.2	4.6
2090	JJA	Mean	1.5	1.4	1.8	3.0	2.9	3.4
		Median	1.5	1.4	1.8	3.1	2.6	3.4
		10th	1.1	1.2	1.4	2.4	2.4	2.8
		90th	1.9	1.7	2.1	3.8	3.6	4.0

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	2.0	1.9	2.2	3.7	3.5	4.2
		Median	1.9	1.9	2.3	3.4	3.3	4.2
		10th	1.5	1.6	2.0	2.9	3.0	3.1
		90th	2.4	2.2	2.4	4.7	4.4	5.2
2090	Annual	Mean	1.7	1.6	1.9	3.4	3.2	3.8
		Median	1.8	1.6	1.8	3.0	2.9	3.4
		10th	1.3	1.3	1.7	2.6	2.7	2.9
		90th	2.1	2.0	2.3	4.4	4.1	5.0

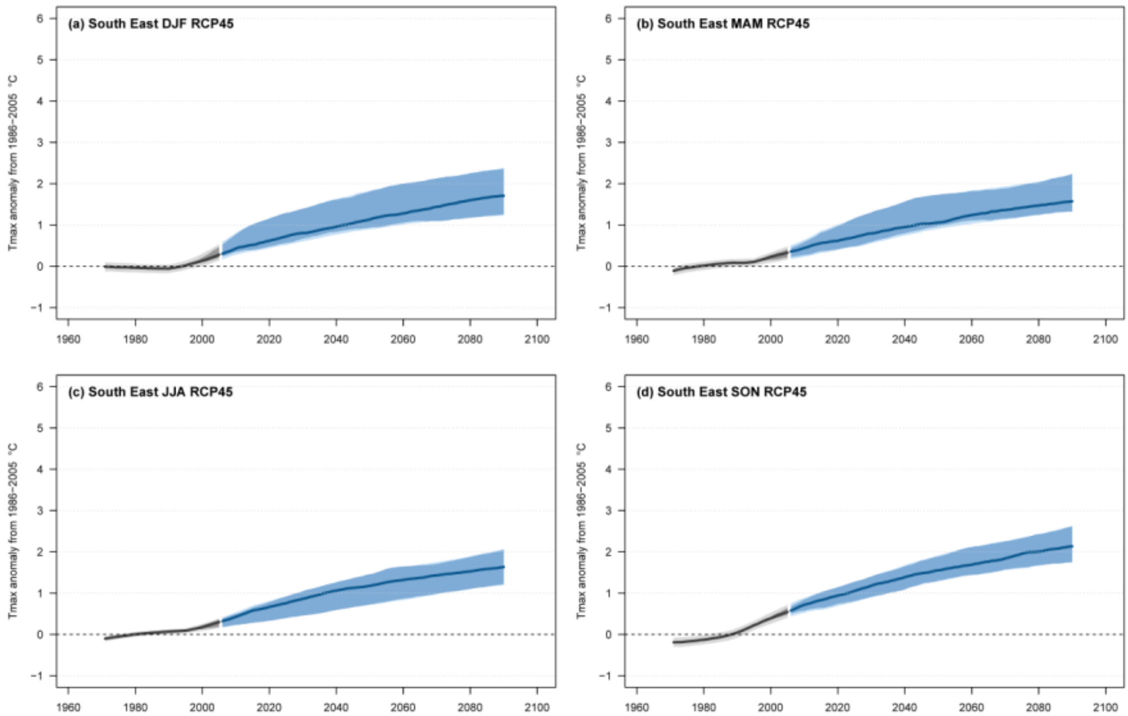

Figure 8.6 South East NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

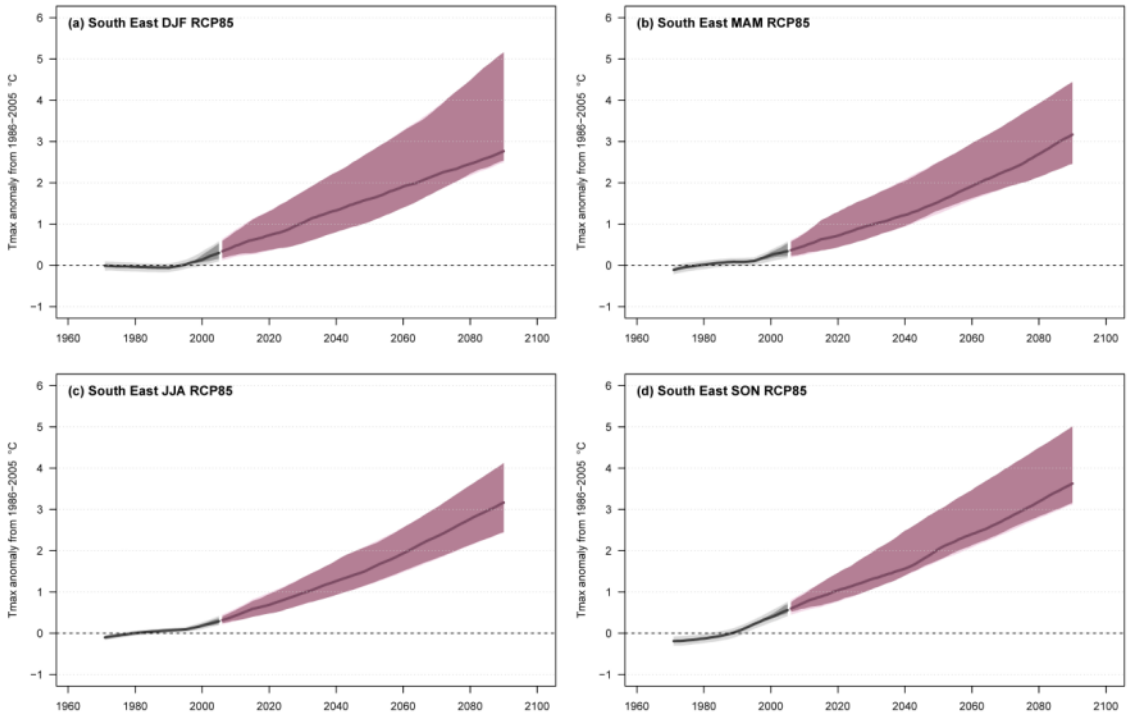

Figure 8.7 South East NRM projected change in seasonal maximum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

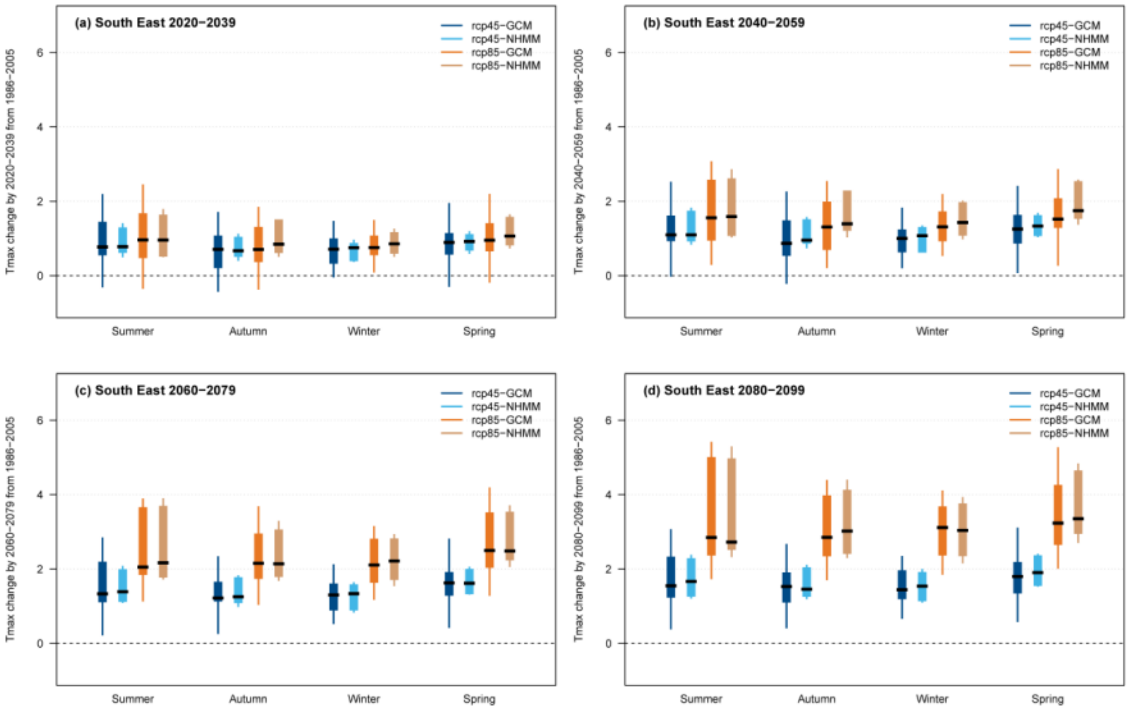

Figure 8.8 South East NRM CMIP5 GCM and NHMM-downscaled projected seasonal maximum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean maximum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean maximum daily temperature.

The downscaled changes projected for daily minimum temperature also highlight progressive warming tied to the strength of the concentration pathway (Table 8.5). The time-series progressions by season are shown for RCP4.5 in Figure 8.9 and RCP8.5 in Figure 8.10. Similarity with direct GCM grid-scale output is presented in Figure 8.11. Again, the subset of six better rated GCMs produce smaller changes than the six poorer rated GCMs (Table 8.5).

The mean, median and range of changes presented in Table 8.5 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in

Table B.77 for RCP4.5 and

Table B.78 for RCP8.5.

Table 8.5 South East NRM downscaled projected changes in seasonal minimum daily temperature (°C change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.7	0.6	0.8	0.9	0.8	1.1
		Median	0.7	0.6	0.9	0.8	0.7	1.1
		10th	0.4	0.4	0.6	0.5	0.5	0.8
		90th	1.0	0.9	1.1	1.4	1.2	1.4
2030	MAM	Mean	0.7	0.7	0.8	0.9	0.9	1.0
		Median	0.7	0.8	0.7	0.9	0.8	1.0
		10th	0.4	0.5	0.5	0.7	0.7	0.7
		90th	1.1	0.9	1.1	0.7	1.1	1.3
2030	JJA	Mean	0.6	0.6	0.6	0.8	0.7	0.8
		Median	0.5	0.6	0.6	0.8	0.7	0.8
		10th	0.4	0.4	0.5	0.5	0.6	0.7
		90th	0.8	0.8	0.7	1.0	1.0	0.9
2030	SON	Mean	0.6	0.6	0.6	0.7	0.8	0.7
		Median	0.6	0.6	0.7	0.7	0.7	0.8
		10th	0.4	0.4	0.4	0.5	0.6	0.6
		90th	0.7	0.8	0.7	1.0	1.0	0.9
2030	Annual	Mean	0.6	0.6	0.7	0.8	0.8	0.9
		Median	0.6	0.6	0.7	0.8	0.8	0.9
		10th	0.4	0.5	0.6	0.6	0.6	0.8
		90th	0.8	0.8	0.8	1.1	1.0	1.1
2050	DJF	Mean	1.0	1.0	1.2	1.5	1.4	1.7
		Median	1.0	0.9	1.3	1.2	1.2	1.7
		10th	0.7	0.7	0.8	1.0	1.0	1.2
		90th	1.5	1.4	1.5	2.3	1.9	2.3
2050	MAM	Mean	1.0	1.0	1.1	1.5	1.5	1.6
		Median	1.0	1.0	1.1	1.4	1.4	1.6
		10th	0.7	0.8	0.8	1.2	1.2	1.3
		90th	1.3	1.3	1.3	2.0	2.0	2.1
2050	JJA	Mean	0.8	0.8	0.9	1.3	1.2	1.3
		Median	0.8	0.9	0.9	1.2	1.2	1.3
		10th	0.6	0.6	0.8	1.0	1.0	1.2
		90th	1.0	1.0	1.0	1.6	1.6	1.5
2050	SON	Mean	0.8	0.9	0.8	1.2	1.3	1.2
		Median	0.8	0.8	0.9	1.2	1.2	1.2
		10th	0.5	0.7	0.6	1.1	1.1	1.1

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	1.1	1.2	1.0	1.5	1.5	1.5
2050	Annual	Mean	0.9	0.9	1.0	1.4	1.4	1.5
		Median	0.9	0.9	1.0	1.3	1.3	1.4
		10th	0.7	0.8	0.9	1.1	1.1	1.3
		90th	1.1	1.1	1.1	1.8	1.7	1.8
2070	DJF	Mean	1.2	1.2	1.5	2.2	2.1	2.5
		Median	1.1	1.1	1.6	1.9	1.8	2.5
		10th	0.8	0.8	1.0	1.5	1.6	1.7
		90th	1.8	1.7	1.8	3.2	2.9	3.2
2070	MAM	Mean	1.2	1.2	1.3	2.2	2.3	2.4
		Median	1.2	1.2	1.4	2.1	2.1	2.4
		10th	0.9	0.9	1.1	1.7	1.7	1.8
		90th	1.6	1.6	1.6	2.9	3.0	2.9
2070	JJA	Mean	1.0	1.0	1.1	1.8	1.8	1.9
		Median	1.1	1.0	1.2	1.9	1.8	2.0
		10th	0.7	0.8	0.8	1.4	1.6	1.7
		90th	1.3	1.3	1.3	2.1	2.2	2.1
2070	SON	Mean	1.0	1.1	1.1	1.8	1.9	1.8
		Median	1.0	1.0	1.2	1.8	1.8	1.8
		10th	0.7	0.9	0.7	1.5	1.6	1.5
		90th	1.4	1.5	1.3	2.2	2.2	2.2
2070	Annual	Mean	1.1	1.2	1.2	2.0	2.0	2.1
		Median	1.1	1.1	1.3	1.9	1.9	2.1
		10th	0.8	0.9	1.1	1.6	1.7	1.8
		90th	1.4	1.5	1.4	2.5	2.5	2.6
2090	DJF	Mean	1.4	1.4	1.6	2.9	2.8	3.2
		Median	1.3	1.3	1.9	2.5	2.5	3.3
		10th	0.9	0.9	1.1	2.0	2.2	2.2
		90th	2.0	2.0	2.0	4.2	3.8	4.2
2090	MAM	Mean	1.4	1.4	1.6	3.0	3.1	3.2
		Median	1.5	1.4	1.7	2.8	2.9	3.3
		10th	1.1	1.0	1.3	2.2	2.4	2.5
		90th	1.9	2.0	1.8	3.9	4.0	3.9
2090	JJA	Mean	1.2	1.3	1.3	2.4	2.5	2.5
		Median	1.3	1.3	1.4	2.5	2.4	2.6
		10th	0.8	1.0	0.9	2.0	2.2	2.1
		90th	1.6	1.6	1.6	2.9	2.9	2.9

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	1.2	1.3	1.3	2.4	2.5	2.5
		Median	1.2	1.3	1.3	2.4	2.6	2.4
		10th	0.9	1.1	0.9	2.0	2.1	2.1
		90th	1.7	1.7	1.6	2.9	2.9	2.9
2090	Annual	Mean	1.3	1.4	1.5	2.7	2.7	2.9
		Median	1.3	1.3	1.5	2.6	2.6	2.7
		10th	1.0	1.0	1.2	2.1	2.3	2.5
		90th	1.8	1.8	1.7	3.5	3.4	3.5

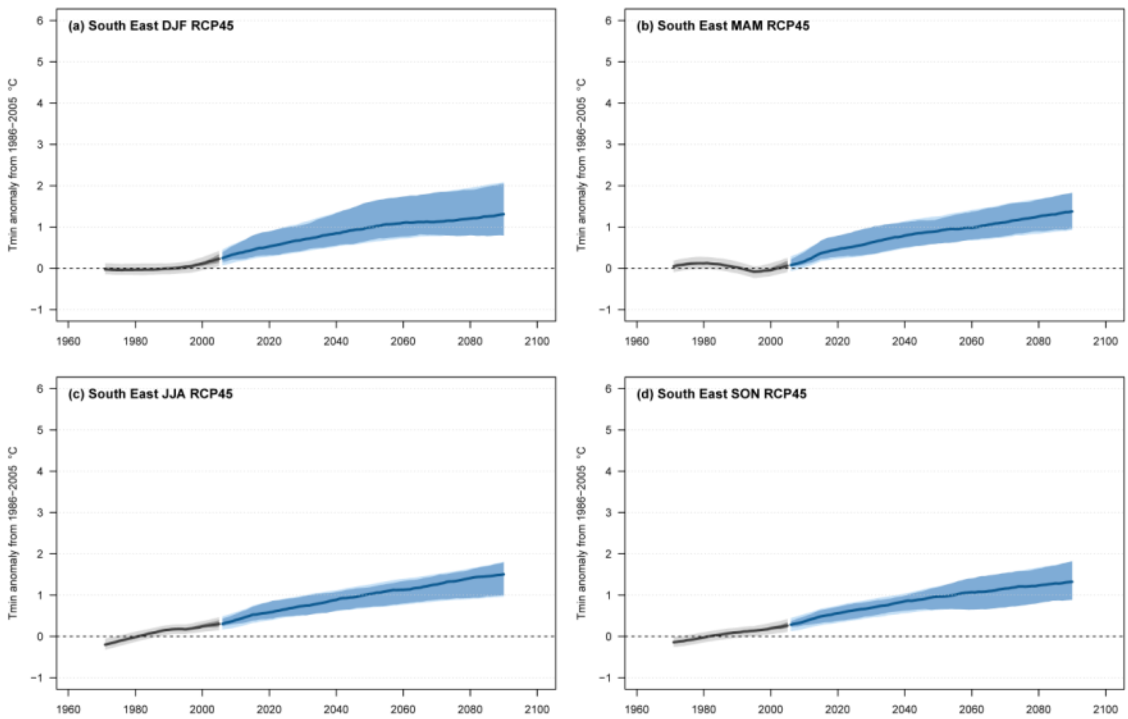

Figure 8.9 South East NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

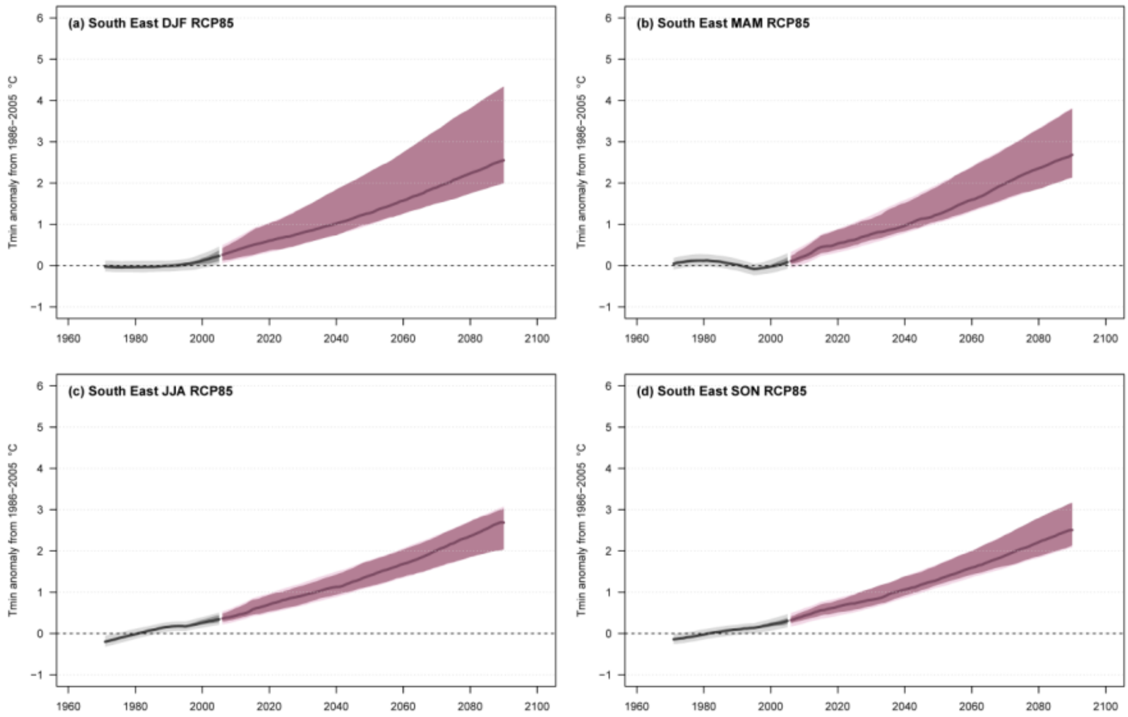

Figure 8.10 South East NRM projected change in seasonal minimum daily temperature for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

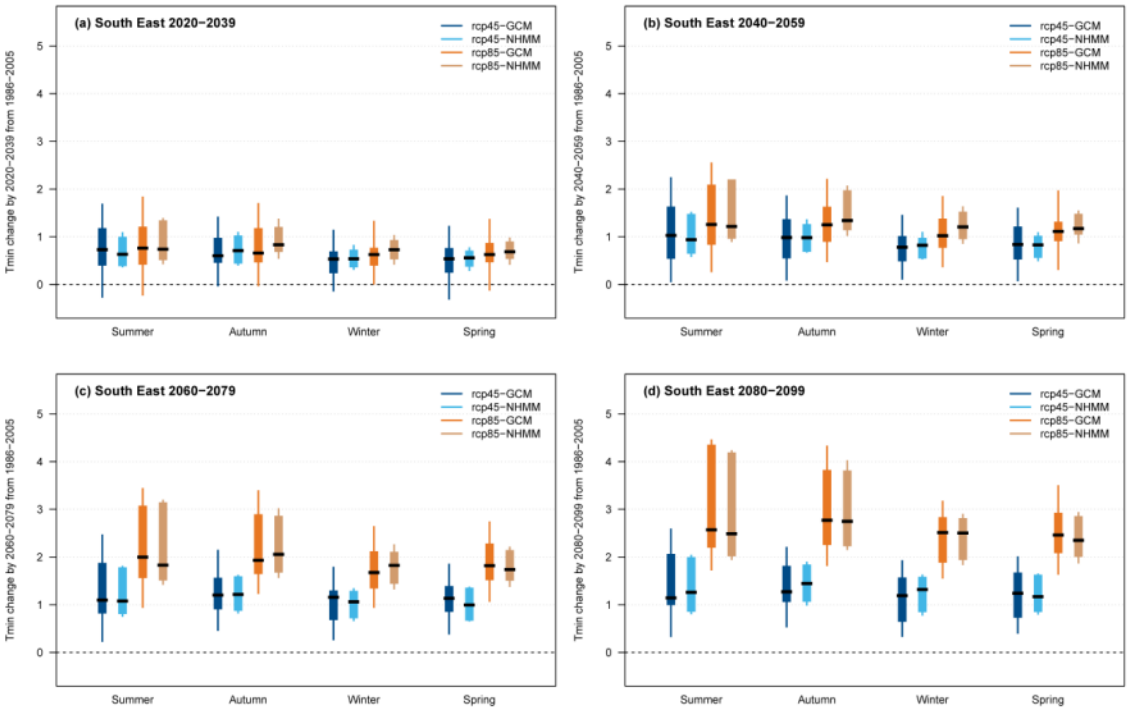

Figure 8.11 South East NRM CMIP5 GCM and NHMM-downscaled projected seasonal minimum daily temperature changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean minimum daily temperature (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean minimum daily temperature.

Downscaled changes to solar radiation are summarised in Table 8.6, showing increases that are relatively larger in spring (compared to the other seasons) and also larger for the six poorer rated GCMs (compared to the six better rated GCMs). The time-series are shown in Figure 8.12 and Figure 8.13. Figure 8.14 shows a comparison with GCM grid-scale output, showing similarity in all seasons except spring where downscaling results are higher.

The mean, median and range of changes presented in Table 8.6 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in

Table B.79 for RCP4.5 and Table B.80 for RCP8.5.

Table 8.6 South East NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	0.8	0.4	1.2	1.0	-0.3	1.9
		Median	1.0	0.4	1.5	0.7	0.3	1.8
		10th	-0.4	-0.6	-0.4	-0.3	-1.7	0.2
		90th	1.9	1.2	2.5	2.8	0.6	3.7
2030	MAM	Mean	0.8	1.2	0.2	1.1	1.6	0.9
		Median	0.3	0.6	0.1	1.4	1.5	1.3
		10th	-0.8	-0.7	-2.0	-1.1	0.5	-2.0
		90th	2.9	3.7	2.5	-1.1	2.9	3.4
2030	JJA	Mean	1.3	0.4	2.0	1.9	1.1	2.3
		Median	1.3	0.6	2.6	1.2	1.2	2.0
		10th	-0.5	-0.9	0.2	0.4	0.5	0.7
		90th	3.3	1.4	3.4	4.0	1.7	4.2
2030	SON	Mean	2.7	2.8	2.9	3.1	2.8	3.8
		Median	2.8	2.3	3.1	3.5	2.3	3.9
		10th	1.7	1.8	2.5	1.3	1.3	3.2
		90th	3.7	4.2	3.2	4.6	4.7	4.4
2030	Annual	Mean	1.4	1.2	1.6	1.8	1.2	2.3
		Median	1.2	1.0	1.8	1.4	1.2	2.6
		10th	0.6	0.7	0.3	0.4	0.3	0.7
		90th	2.6	2.0	2.7	3.2	2.1	3.6
2050	DJF	Mean	0.9	0.3	1.5	1.4	-0.2	2.6
		Median	0.7	0.5	1.5	0.8	0.6	2.6
		10th	-0.4	-0.8	-0.4	-0.1	-1.8	0.5
		90th	2.6	1.1	3.2	3.5	0.8	4.6
2050	MAM	Mean	1.2	1.6	0.6	1.7	1.8	1.8
		Median	1.1	1.3	0.4	1.6	2.0	2.1
		10th	-0.9	-0.4	-1.9	-0.5	-0.2	-1.9
		90th	3.9	3.8	3.3	4.0	3.4	5.1
2050	JJA	Mean	2.0	1.2	2.6	2.9	1.7	3.6
		Median	1.9	1.8	3.0	2.4	1.7	3.0
		10th	-0.3	-0.1	0.9	0.6	0.8	1.4
		90th	4.3	2.1	4.1	6.0	2.7	6.4
2050	SON	Mean	3.6	3.2	4.4	4.6	4.4	5.4
		Median	3.6	2.6	4.5	5.4	3.8	5.7
		10th	2.2	1.9	3.5	2.4	2.6	4.3

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	5.2	5.2	5.2	6.4	6.8	6.1
2050	Annual	Mean	1.9	1.5	2.3	2.6	1.8	3.4
		Median	1.6	1.3	2.4	2.1	1.6	3.7
		10th	0.7	0.8	0.6	0.7	0.8	1.3
		90th	3.2	2.5	3.8	4.5	3.0	5.2
2070	DJF	Mean	1.1	0.1	1.8	1.8	0.2	3.3
		Median	1.2	0.2	1.8	1.0	0.4	3.2
		10th	-0.5	-1.2	0.3	0.2	-0.9	0.4
		90th	2.7	1.4	3.4	4.1	1.0	6.4
2070	MAM	Mean	1.6	1.8	1.2	2.5	2.1	3.1
		Median	1.7	1.6	1.2	2.4	2.3	3.5
		10th	-0.6	-0.1	-1.6	0.0	0.4	-1.4
		90th	4.0	3.9	3.9	4.8	3.8	7.1
2070	JJA	Mean	2.5	1.5	3.2	4.0	2.3	5.4
		Median	2.4	1.8	3.1	3.6	2.3	4.5
		10th	0.3	0.4	1.1	0.5	0.8	2.5
		90th	5.4	2.5	5.4	7.9	3.8	9.3
2070	SON	Mean	4.3	3.6	5.2	6.2	5.7	7.5
		Median	4.5	3.6	5.3	7.4	5.4	8.0
		10th	2.7	1.9	4.3	3.2	3.4	5.6
		90th	5.9	5.5	6.1	8.7	8.3	8.9
2070	Annual	Mean	2.3	1.7	2.9	3.5	2.5	4.7
		Median	2.2	1.6	3.0	2.9	2.0	5.0
		10th	1.1	0.9	1.2	1.5	1.7	1.8
		90th	3.8	2.6	4.5	5.8	3.8	7.4
2090	DJF	Mean	1.2	-0.1	1.9	2.3	0.6	4.2
		Median	0.9	0.1	1.7	1.0	0.9	4.0
		10th	-1.0	-1.8	0.6	-0.1	-0.6	0.7
		90th	3.1	1.4	3.5	4.8	1.4	7.8
2090	MAM	Mean	2.0	2.2	1.4	3.2	2.5	4.4
		Median	2.4	2.6	2.3	2.7	2.3	4.9
		10th	-0.8	0.5	-1.7	-0.8	0.7	-1.3
		90th	3.8	3.5	3.7	6.5	4.5	9.5
2090	JJA	Mean	2.9	1.7	3.6	5.1	3.0	7.2
		Median	2.6	1.6	3.8	4.8	2.8	6.0
		10th	0.4	0.9	1.3	0.6	0.9	3.2
		90th	5.8	2.7	5.8	10.1	5.3	12.4

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	4.6	3.8	5.8	7.9	7.4	9.7
		Median	4.6	4.2	6.1	8.8	7.3	10.0
		10^{th}	2.5	1.6	4.6	4.1	5.0	6.8
		90^{th}	6.3	5.6	6.9	11.3	10.0	12.3
2090	Annual	Mean	2.6	1.7	3.2	4.5	3.3	6.2
		Median	2.5	1.7	3.6	3.8	3.0	6.5
		10^{th}	1.1	0.7	1.4	1.7	2.4	2.5
		90^{th}	4.2	2.9	4.6	7.2	4.5	9.8

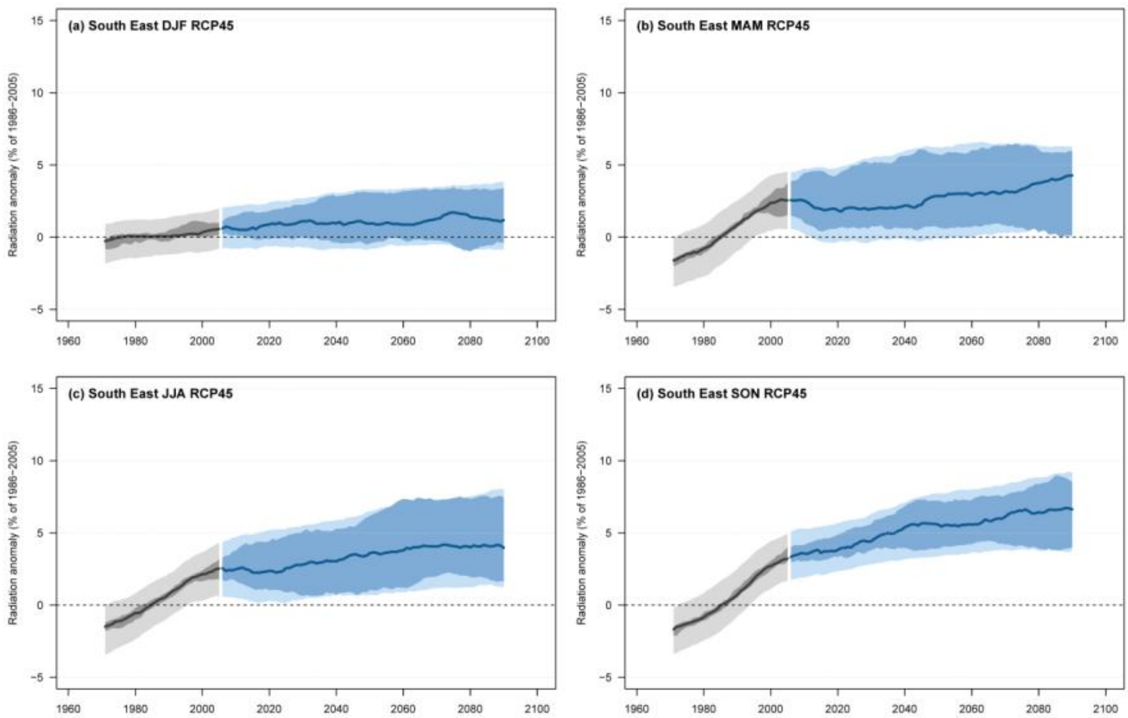

Figure 8.12 South East NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

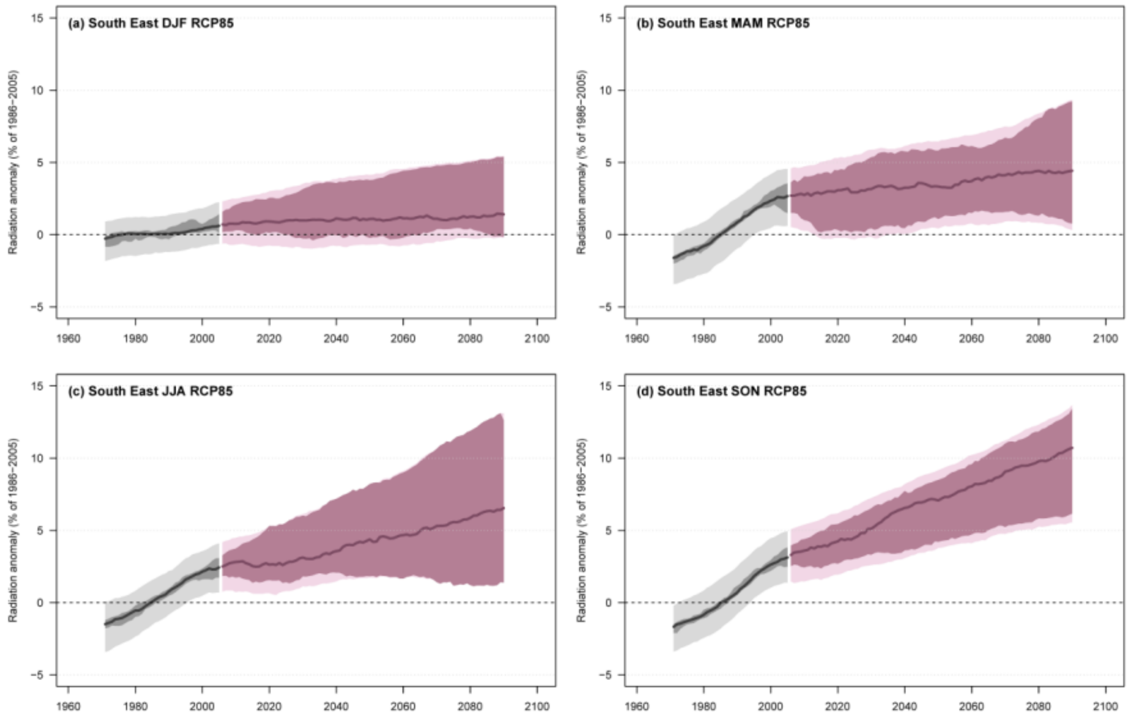

Figure 8.13 South East NRM projected change in seasonal solar radiation for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

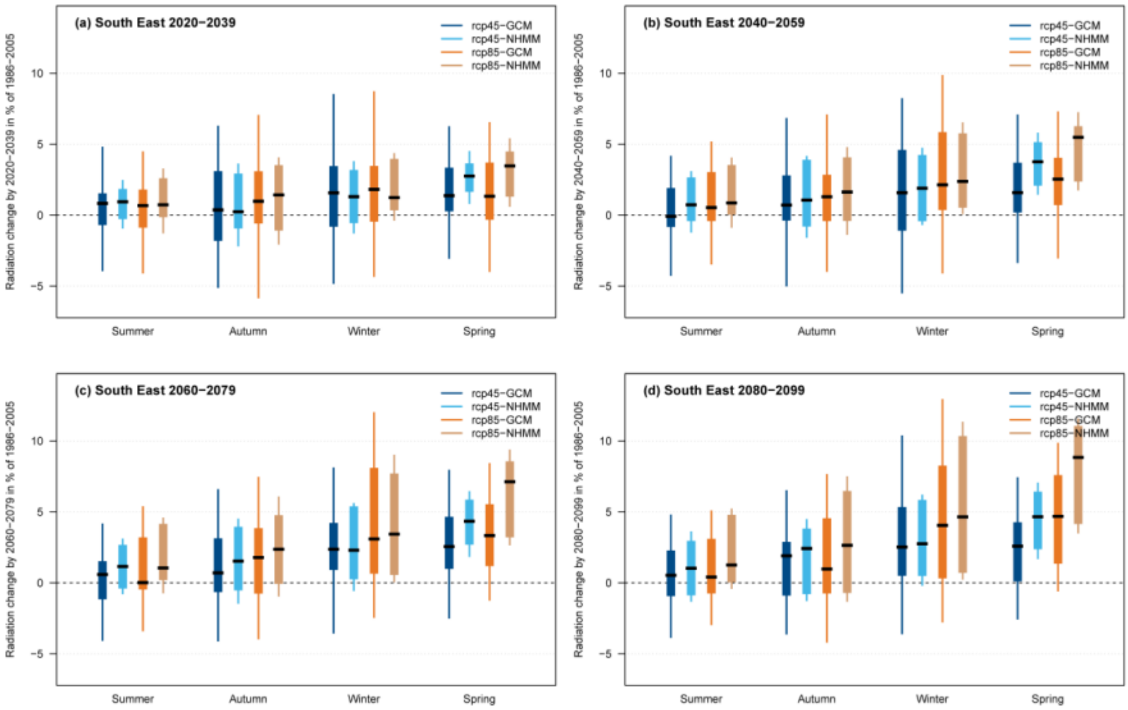

Figure 8.14 South East NRM CMIP5 GCM and NHMM-downscaled projected seasonal solar radiation changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean solar radiation (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean solar radiation.

Downscaled changes to VPD are summarised in Table 8.7, Figure 8.15, Figure 8.15 and Figure 8.15. As in other regions, there is increasing aridity as the century progresses and increasing divergence between the two RCP's downscaled projections.

The mean, median and range of changes presented in Table 8.7 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.81 for RCP4.5 and

Table B.82 for RCP8.5.

Table 8.7 South East NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	7.2	7.1	7.7	8.8	6.5	11.2
		Median	6.4	6.5	6.3	8.8	5.6	10.8
		10th	4.6	6.3	5.1	3.0	2.3	8.1
		90th	11.1	8.6	11.7	12.9	11.8	14.8
2030	MAM	Mean	7.7	9.4	4.9	10.1	11.2	8.4
		Median	7.3	9.8	3.5	10.9	11.4	8.2
		10th	2.7	6.7	2.0	4.3	9.9	3.1
		90th	11.8	11.7	9.2	4.3	12.3	14.0
2030	JJA	Mean	8.4	8.5	8.4	11.1	11.1	10.9
		Median	6.6	5.5	7.4	10.3	10.3	11.0
		10th	4.5	4.5	4.5	8.0	8.1	6.0
		90th	14.6	15.5	13.5	15.7	15.1	15.7
2030	SON	Mean	12.0	13.4	11.0	14.7	15.3	15.0
		Median	11.4	12.0	10.9	14.1	14.3	14.8
		10th	8.6	10.6	7.6	10.8	11.0	11.5
		90th	16.1	17.7	14.7	19.7	20.7	18.8
2030	Annual	Mean	8.6	9.3	7.9	10.7	10.2	11.4
		Median	8.4	9.0	7.4	10.2	10.0	10.3
		10th	5.2	7.8	4.9	7.7	8.4	8.8
		90th	12.2	11.0	11.4	14.4	12.2	15.1
2050	DJF	Mean	9.9	9.7	10.8	14.6	12.4	17.8
		Median	8.9	9.1	9.4	14.3	11.4	16.1
		10th	6.5	7.9	7.9	8.4	7.2	12.7
		90th	14.1	12.1	15.3	20.3	18.8	24.7
2050	MAM	Mean	10.9	12.8	7.8	16.5	18.3	14.8
		Median	10.3	13.5	6.9	16.7	19.1	13.9
		10th	5.1	9.8	3.9	9.7	14.1	8.3
		90th	16.0	15.3	12.7	22.8	21.7	22.2
2050	JJA	Mean	11.9	12.4	11.9	18.4	18.5	18.4
		Median	9.5	8.7	10.9	17.8	16.2	19.5
		10th	6.6	8.1	4.9	13.2	13.3	9.7
		90th	20.4	20.3	20.0	26.3	26.0	26.0
2050	SON	Mean	17.0	18.4	16.6	24.1	25.5	24.4
		Median	16.7	16.8	16.5	23.2	24.4	23.6
		10th	12.9	14.2	12.4	17.5	18.6	19.6

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	22.1	24.1	20.9	31.5	33.7	30.2
2050	Annual	Mean	12.0	12.7	11.6	17.7	17.6	18.7
		Median	11.5	12.3	11.3	17.5	18.2	17.9
		10th	8.3	10.7	8.0	12.7	14.1	14.3
		90th	15.7	15.2	15.5	21.2	20.4	24.0
2070	DJF	Mean	11.8	11.0	13.4	21.6	19.9	25.4
		Median	11.5	10.7	12.0	20.6	18.1	21.3
		10th	7.6	7.7	9.9	14.9	15.0	18.0
		90th	15.7	14.7	18.2	31.2	26.7	37.0
2070	MAM	Mean	13.3	14.8	10.6	24.0	26.8	22.7
		Median	13.8	14.0	9.8	23.1	27.9	21.1
		10th	6.9	12.7	6.6	15.5	19.1	15.3
		90th	18.8	17.7	15.4	34.0	33.5	31.7
2070	JJA	Mean	14.0	13.9	14.9	27.0	27.3	27.8
		Median	13.5	11.6	14.1	26.0	23.7	31.5
		10th	6.9	10.4	5.1	18.5	18.6	14.6
		90th	23.2	19.8	25.5	39.0	39.6	37.3
2070	SON	Mean	20.3	20.8	21.0	34.7	36.4	36.1
		Median	19.6	18.8	21.2	34.1	34.5	35.5
		10th	14.9	16.1	16.2	24.4	28.0	29.1
		90th	26.6	27.6	25.6	44.8	46.7	43.7
2070	Annual	Mean	14.4	14.5	14.7	25.8	26.2	27.5
		Median	14.3	14.7	14.3	25.7	26.3	27.5
		10th	10.9	12.8	11.0	18.1	21.4	20.7
		90th	17.1	16.0	18.7	31.2	30.9	34.3
2090	DJF	Mean	13.3	12.3	15.1	29.2	28.3	33.9
		Median	13.7	12.7	15.0	26.7	27.5	27.3
		10th	8.1	6.7	10.2	19.9	22.3	22.8
		90th	17.7	17.6	20.2	43.8	35.3	51.5
2090	MAM	Mean	15.5	16.7	12.7	32.3	36.5	31.8
		Median	16.4	16.8	11.4	31.0	36.1	29.9
		10th	8.9	15.0	8.3	19.3	24.8	22.6
		90th	20.8	18.3	18.4	47.1	48.6	43.0
2090	JJA	Mean	16.3	15.3	18.1	36.4	37.2	38.1
		Median	16.4	14.5	16.5	35.2	32.2	43.8
		10th	8.0	12.1	7.1	23.4	24.2	20.7
		90th	26.1	19.4	30.8	53.3	55.2	49.8

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	23.1	22.6	24.6	45.6	48.1	48.6
		Median	21.5	20.9	25.4	46.6	47.0	49.2
		10th	17.4	17.0	18.5	31.4	35.5	37.4
		90th	30.2	29.8	29.8	60.2	62.0	59.2
2090	Annual	Mean	16.4	16.1	17.1	34.5	35.8	37.3
		Median	16.6	15.5	16.9	34.0	36.5	37.6
		10th	13.7	15.0	14.2	23.8	28.2	27.4
		90th	18.8	17.7	20.2	43.6	42.9	46.9

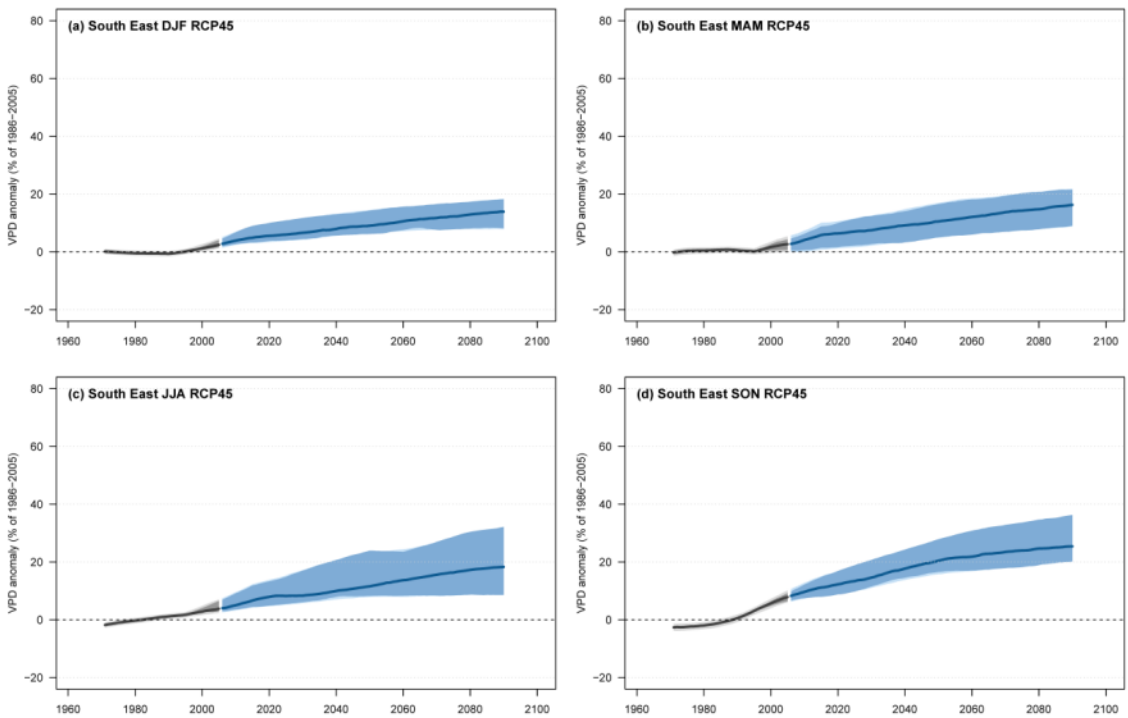

Figure 8.15 South East NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

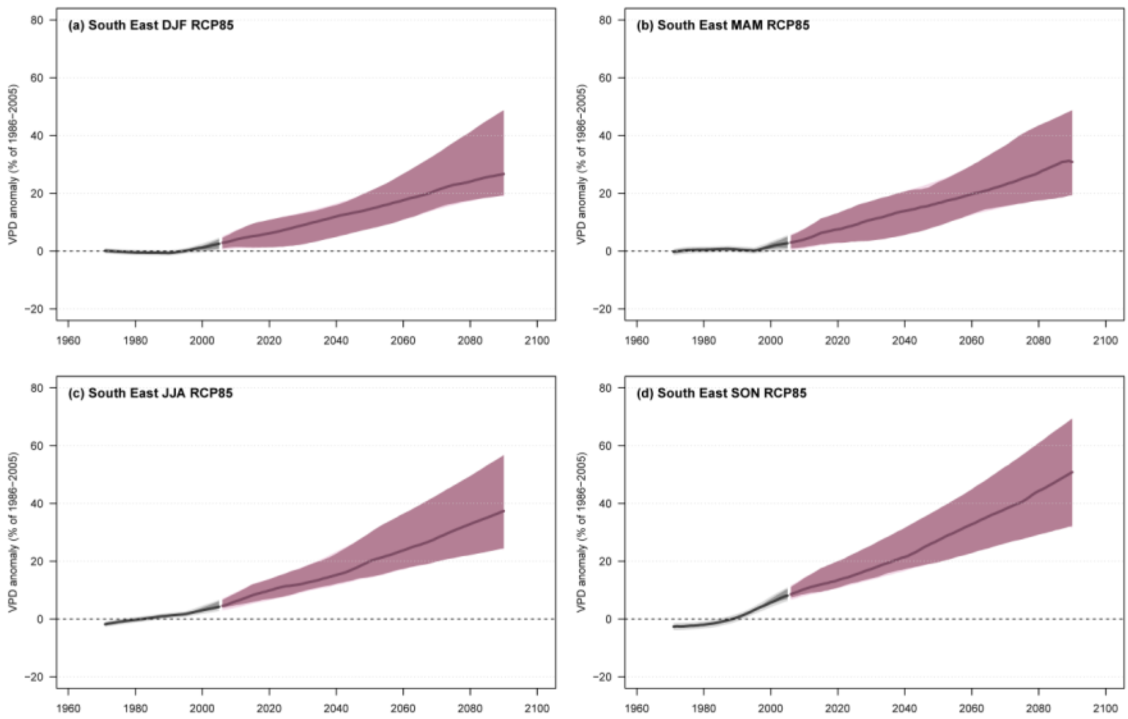

Figure 8.16 South East NRM projected change in seasonal vapour pressure deficit for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

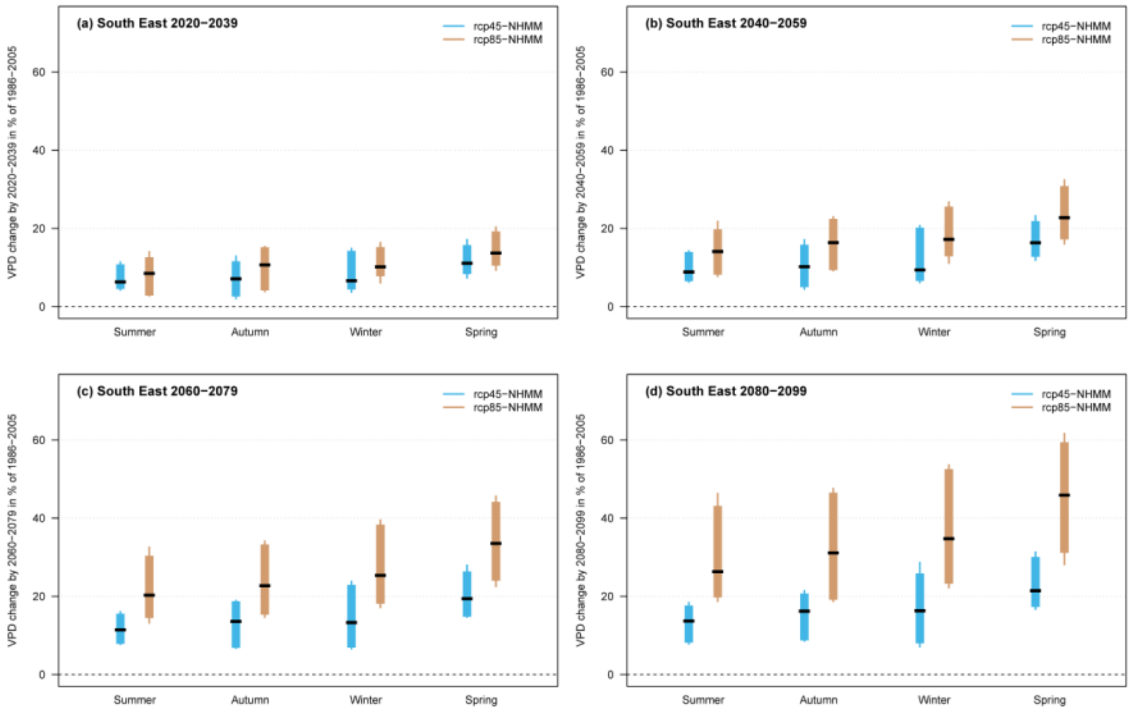

Figure 8.17 South East NRM NHMM-downscaled projected seasonal vapour pressure deficit changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean vapour pressure deficit (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean vapour pressure deficit.

The resulting changes to APET calculated from the above input variables are summarised in Table 8.8. This table and associated plots show seasonal differences, a large impact of the pathway (with RCP8.5 projecting much larger increases than RCP4.5), and overall smaller changes form the subset of six better GCMs compared to the six poorer (Table 8.8, Figure 8.18, Figure 8.19 and Figure 8.20).

The mean, median and range of changes presented in Table 8.8 can be compared to the range of changes shown in Appendix B, where the changes obtained from downscaling each individual GCM are presented in Table B.83 for RCP4.5 and Table B.84 for RCP8.5.

Table 8.8 South East NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) using 15 CMIP5 GCMs and subsets of six 'better' and six 'poorer' GCMs.

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2030	DJF	Mean	2.5	1.9	3.0	3.0	1.7	4.2
		Median	2.1	1.9	2.8	2.8	2.0	3.4
		10th	1.2	1.1	1.6	1.2	0.0	2.6
		90th	3.8	2.6	4.7	5.5	3.2	6.7
2030	MAM	Mean	2.4	2.7	1.9	3.2	3.4	3.0
		Median	2.1	2.3	1.6	3.2	3.2	3.4
		10th	0.9	1.8	0.6	1.1	2.7	0.8
		90th	4.2	3.9	3.4	1.1	4.5	5.0
2030	JJA	Mean	2.5	2.0	2.8	3.3	2.9	3.6
		Median	2.4	1.9	3.3	3.2	2.7	3.6
		10th	1.2	1.3	1.8	2.2	2.2	2.7
		90th	3.4	2.8	3.4	4.5	3.8	4.5
2030	SON	Mean	3.7	3.7	3.9	4.5	4.1	5.2
		Median	4.0	3.6	4.2	4.8	3.8	5.2
		10th	2.4	2.9	3.3	2.6	2.9	4.2
		90th	4.5	4.7	4.4	6.2	5.8	6.2
2030	Annual	Mean	2.8	2.5	3.0	3.5	2.9	4.2
		Median	2.4	2.3	3.1	3.0	2.9	4.0
		10th	1.9	2.1	1.9	2.3	1.9	2.8
		90th	4.0	3.2	4.1	5.3	3.9	5.9
2050	DJF	Mean	3.4	2.6	4.1	4.9	3.2	6.4
		Median	2.9	2.7	3.7	4.2	3.3	5.1
		10th	1.9	1.4	2.6	2.4	1.0	4.4
		90th	5.0	3.7	6.2	7.9	5.3	9.9
2050	MAM	Mean	3.5	3.9	2.9	5.4	5.5	5.5
		Median	3.3	4.1	2.7	5.8	5.5	5.8
		10th	1.9	2.7	1.3	3.1	4.0	2.5
		90th	5.5	4.9	4.9	7.8	7.0	8.1
2050	JJA	Mean	3.6	3.3	4.0	5.1	4.6	5.5
		Median	3.9	3.2	4.4	5.1	4.4	5.4
		10th	2.2	2.5	3.2	3.7	3.9	4.4
		90th	4.6	4.1	4.6	6.9	5.6	6.8
2050	SON	Mean	5.2	4.9	5.9	7.1	6.8	8.0
		Median	5.4	4.6	6.3	7.6	6.1	8.2
		10th	3.7	3.9	4.8	5.0	5.5	6.4

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
		90th	6.6	6.2	6.6	9.4	8.9	9.4
2050	Annual	Mean	3.9	3.6	4.4	5.6	4.8	6.6
		Median	3.6	3.6	4.4	5.1	4.6	6.1
		10th	2.7	2.8	3.0	3.9	3.6	4.7
		90th	5.3	4.4	5.8	7.8	6.4	9.0
2070	DJF	Mean	4.1	3.0	5.2	6.9	5.1	9.0
		Median	3.8	3.0	4.2	6.0	4.9	6.8
		10th	2.2	1.5	3.8	4.1	3.0	6.0
		90th	5.6	4.5	7.5	10.7	7.4	14.2
2070	MAM	Mean	4.5	4.8	4.1	7.9	7.9	8.5
		Median	4.5	4.7	4.3	7.8	7.7	8.3
		10th	2.5	3.5	2.1	5.0	6.3	4.8
		90th	6.4	6.2	6.0	10.1	9.6	12.3
2070	JJA	Mean	4.3	4.0	4.8	7.4	6.7	8.4
		Median	4.5	4.0	5.0	7.5	6.1	8.4
		10th	3.1	3.3	3.8	5.0	5.5	6.2
		90th	5.7	4.7	5.7	10.0	8.4	10.5
2070	SON	Mean	6.3	5.9	7.3	10.1	9.5	11.6
		Median	6.1	5.9	7.7	9.9	8.9	11.7
		10th	4.6	4.6	6.2	6.8	7.8	8.9
		90th	8.2	7.2	8.2	13.7	11.8	14.1
2070	Annual	Mean	4.8	4.3	5.5	8.1	7.1	9.5
		Median	4.4	4.0	5.4	7.3	6.4	8.5
		10th	3.5	3.6	4.2	5.7	5.9	6.7
		90th	6.2	5.3	7.1	11.1	9.0	13.4
2090	DJF	Mean	4.6	3.3	5.8	9.2	7.2	11.9
		Median	4.4	3.5	4.9	7.9	6.9	8.8
		10th	2.5	1.3	4.3	5.7	5.1	8.1
		90th	6.2	5.3	8.2	13.7	9.7	18.9
2090	MAM	Mean	5.4	5.7	5.1	10.7	10.6	12.0
		Median	5.4	5.7	5.4	11.0	10.2	11.5
		10th	3.1	4.2	2.7	7.0	8.2	7.4
		90th	7.6	7.2	7.3	13.8	13.3	17.1
2090	JJA	Mean	5.1	4.7	5.7	10.1	9.0	11.7
		Median	4.8	4.5	6.1	10.5	8.3	11.7
		10th	3.8	4.1	4.2	6.1	7.2	8.5
		90th	6.8	5.4	6.8	12.9	11.7	14.8

PERIOD	SEASON		RCP4.5			RCP8.5		
			15 GCMS	BETTER 6 GCMS	POORER 6 GCMS	15 GCMS	BETTER 6 GCMS	POORER 6 GCMS
2090	SON	Mean	7.1	6.5	8.5	13.3	12.8	15.4
		Median	7.2	6.2	8.5	13.3	12.9	15.2
		10^{th}	5.0	4.8	7.2	9.0	10.2	11.4
		90^{th}	9.5	8.4	9.7	18.2	15.2	19.6
2090	Annual	Mean	5.5	4.8	6.4	10.8	9.7	12.9
		Median	5.3	4.8	6.3	10.2	8.8	11.3
		10^{th}	3.9	3.4	5.0	7.4	8.2	9.1
		90^{th}	7.3	6.3	8.0	14.9	12.1	18.3

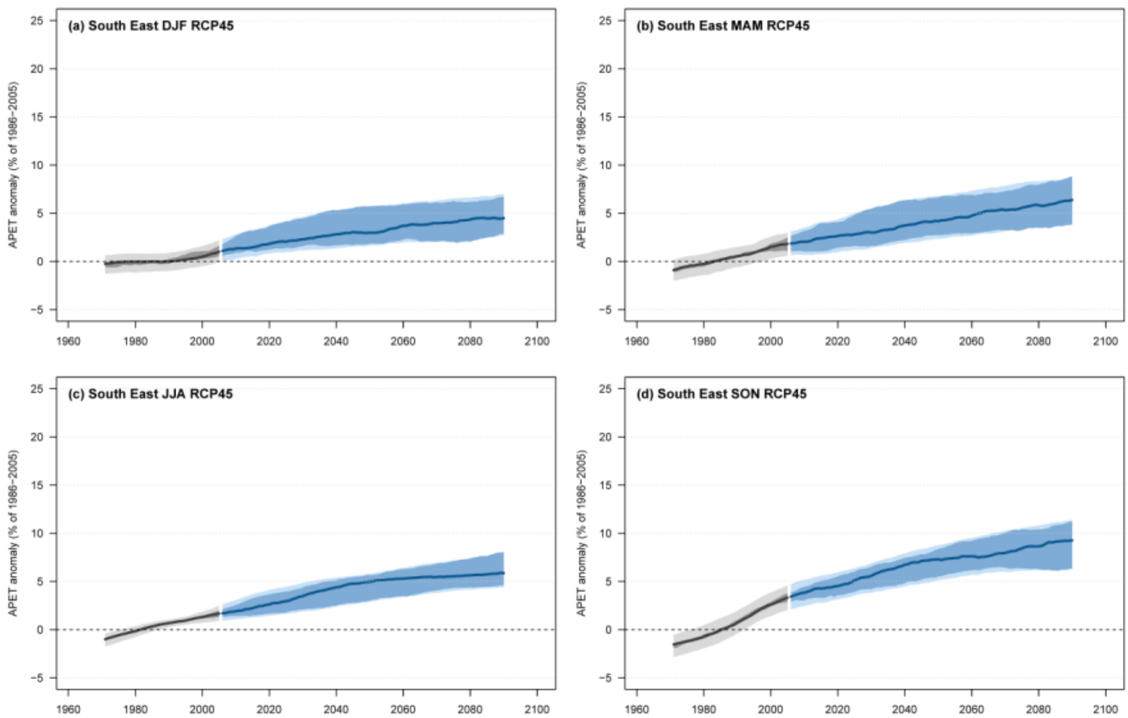

Figure 8.18 South East NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP4.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10^{th} to 90^{th} percentile, outer (light shaded) envelope is annual 10^{th} to 90^{th} percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

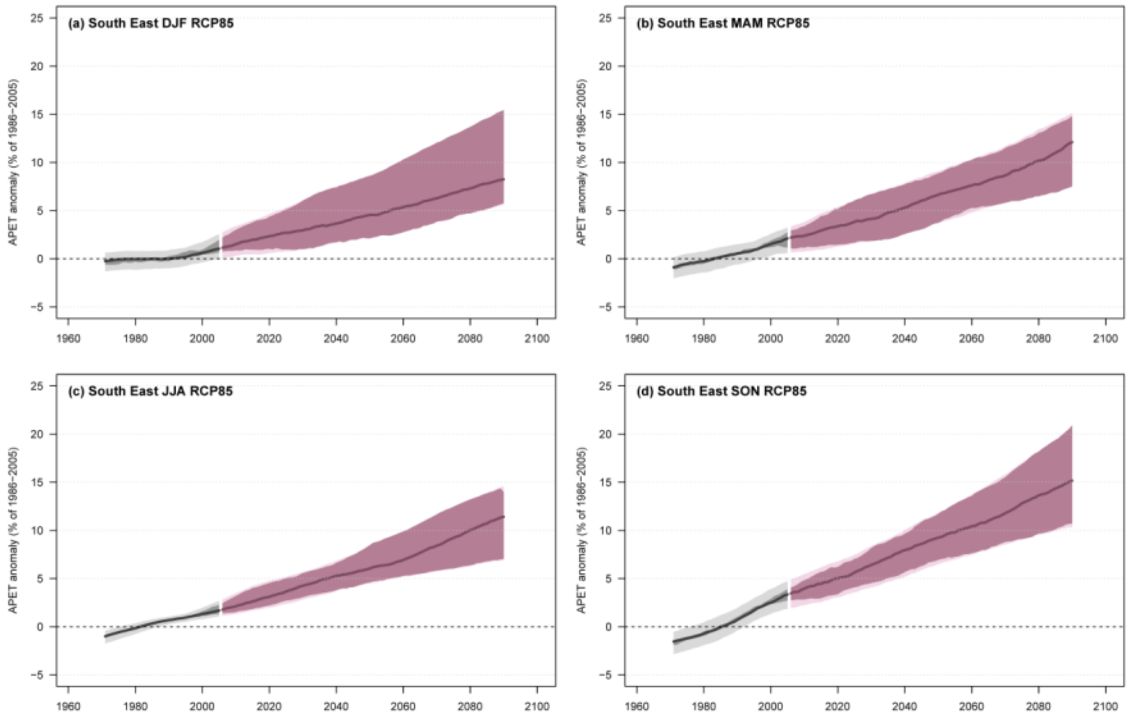

Figure 8.19 South East NRM projected change in seasonal potential evapotranspiration for 1961-2100 as downscaled from CMIP5 GCMs following RCP8.5. Solid line is median, inner (dark shaded) envelope is 20-year running mean 10th to 90th percentile, outer (light shaded) envelope is annual 10th to 90th percentile. Break and colour change between 2005 and 2006 distinguishes historical and future period.

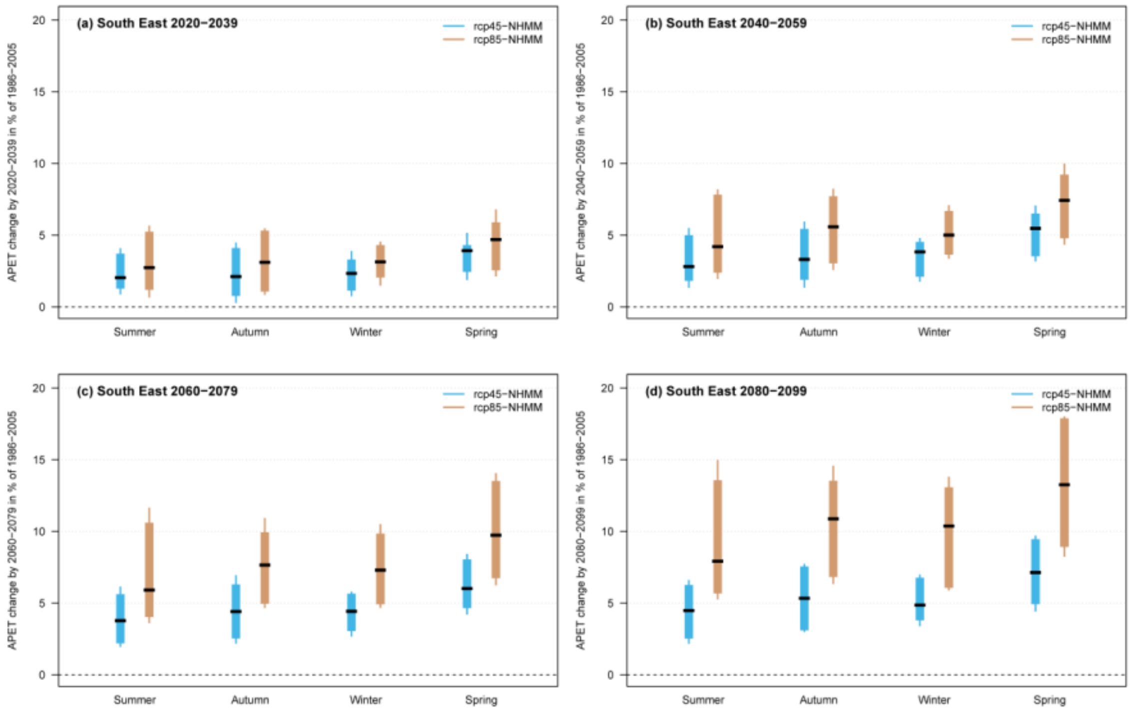

Figure 8.20 South East NRM NHMM-downscaled projected seasonal potential evapotranspiration changes for (a) 2030, (b) 2050, (c) 2070 and (d) 2090 (relative to 1986-2005) for RCP4.5 and RCP8.5. The wider bars are the range in 10th to 90th percentile 20-year mean potential evapotranspiration (with median indicated by the horizontal line) and the thin bars are the range in 10th to 90th percentile yearly mean potential evapotranspiration.

8.4 Summary

Decreases in precipitation are projected for all seasons, and hence annual precipitation also, with the greatest relative decreases in spring, followed by summer, for both RCP4.5 and RCP8.5. The decreases for winter are small relative to the other seasons, particularly for RCP4.5 where there is little change and even a slight increase for the six better GCM ensemble mean. For the second half of the century the scenarios diverge, with larger decreases from RCP8.5. Maximum daily temperatures are projected to increase similarly for all seasons, whereas minimum temperatures increase more for summer and autumn. For both maximum and minimum daily temperatures, the increases for RCP8.5 are larger than RCP4.5 from mid-century onwards. Solar radiation also increases for all seasons, with larger relative increases in winter and spring, corresponding to a reduction in clouds given their drying trends. VPD also increases in all seasons, notably double for RCP8.5 relative to RCP4.5 by the end of the century. APET also increases in all seasons, with relative increases greater for spring, and the projected changes for RCP8.5 are double those for RCP4.5. Overall, for all variables and both RCPs, the changes projected from a subset of six better performing GCMs are smaller than the changes projected by a subset of six poorer performing GCMs. The downscaled projections for each South East station, provided as 100 stochastic replicates of daily time-series for each GCM and RCP, represent 'added value' over direct GCM output as they provide realistic station-scale input series suitable for probabilistic impacts and adaptation investigations. Bates et al. (2010), in a report focussing on climate change and water allocation, provide a useful summary on the appropriate application of projections in such investigations. CSIRO and Bureau of Meteorology

(2014) provides a detailed overview of climate change science from an Australian perspective with recommendations on understanding and utilising projections.

9 Discussion and conclusions

The results of downscaling to the NRM region station networks highlight several consistencies in the projected changes for South Australia. For all variables and regions the RCP4.5 and RCP8.5 projected changes diverge in the second half of the century, with the changes from the RCP8.5 greater than those from the RCP4.5. The associated uncertainty (i.e. range of model results) is also larger for RCP8.5, and in most cases the ranges increase as the century progresses. This suggests that a reduced rate of global greenhouse gas emission growth would reduce the magnitude and rate of increasingly adverse water stress impacts across South Australia as the century progresses.

The magnitude and range of change from an ensemble of six better performing GCMs are consistently less than that from an ensemble of six poorer performing GCMs. This suggests that the selection of GCMs for downscaling based on their performance in terms of the large-scale drivers important for regional climate variability, as assessed by Task 2, has significant merit. Correspondingly, this also implies that the use of all available GCMs may produce unrealistically large uncertainties that obscure robust regional climate change signals. Given the differences between the ensembles, it is concluded that the downscaled series obtained from the six better GCMs provide more realistic inputs for impacts and adaptation assessment than those from the six poorer GCMs. However, the user also needs to be mindful that the range of possible future climate change is larger than that obtained from only using the downscaled results from the six better GCMs.

Precipitation is projected to decrease in all regions and seasons, with the largest relative decreases for spring. Overall, the ranges of change are smaller from the downscaled output than from the direct GCM grid-scale rainfall. This corroborates the findings of Hewitson and Crane (2006), who also found that statistically downscaled precipitation projections converge whereas GCM results have a large spread. This consistency is one example of the 'added value' obtained from downscaling and gives credence to the use of downscaled precipitation projections, in preference to direct GCM output, for impacts and adaptation investigations. It would be interesting to undertake a similar comparison with dynamical downscaling to ascertain whether dynamical methods also reduce uncertainty.

Maximum temperature is projected to increase in all regions and seasons, and corresponding with the projected precipitation changes the maximum increases are for the spring season (followed by summer). There is also greater increase inland and further north, predominantly reflecting the moderating effect of the oceans, in contrast to the larger continental heating. Minimum temperatures are projected to increase less than maximum temperatures, and the largest increases in minimum temperature are projected to occur in autumn. Solar radiation changes are surmised to be related to changes in cloud cover and thus highly correlated with the precipitation projections. The largest relative changes are increases in winter and spring. VPD also increases in response to the temperature increase and the reduced precipitation. These combine to increase estimated APET, with again the largest relative increases in spring.

All of the simulation files used to produce the projection results in this report are freely available, unsupported, for non-commercial use by others. They are available from a web-based data portal, with access details outlined in Appendix C. Note that the observed weather data used for the calibration of the downscaling models is not provided, because the PPD is a commercial licensed product (https://www.longpaddock.qld.gov.au/silo/ppd/index.php).

It is advisable to consider multiple sources of climate projection information, e.g. more than one downscaling technique, as different techniques have different strengths and weaknesses (Ekström et al., Accepted; Haylock et al., 2006). Additional sources of local-scale projections available for Australia are listed in Appendix D. Whether they provide projection data in a form suitable for impacts modelling has not been assessed. Guidance on the use of projections, including those from GCMs directly as well as those from downscaled sources, is provided in CSIRO and Bureau of Meteorology (2014). Methodologies for incorporating projections into adaptation planning are also outlined in Bates et al. (2010) and LGASA (2014).

The projections of Hope (2014) are of particular relevance to southern South Australia, providing a comprehensive assessment of historical and projected climate for a cluster encompassing the Adelaide and Mount Lofty Ranges, Eyre Peninsula, Kangaroo Island and Northern and Yorke NRMs, i.e. they group these four NRMs into a single 'cluster' in their assessment. Also of relevance to South Australia are corresponding studies for the Murray Basin (Timbal, 2014) and Australian rangelands (Watterson, 2014). These three report's results are also based on the latest CMIP5 projections, although they do not downscale to the individual station level. They compare GCM projections with dynamically downscaled projections from the CSIRO Conformal Cubic Atmospheric Model (CCAM) using six CMIP5 GCMs as input, and the Bureau of Meteorology analogue-based statistical downscaling to a 5 km grid using 22 CMIP5 GCMs as input for precipitation and 21 for temperature.

Regarding precipitation projections, Hope (2014) concluded that there is high confidence in decreases in winter and spring (and hence also annual) rainfall as there is strong GCM agreement and the climatological processes driving the change are well understood (i.e. the southward shift of storm systems with concurrent increased frequency of high pressure systems). They had low confidence in projected autumn changes because the changes from GCMs are unclear and there were contrasting signals from statistical and dynamical downscaling, with the former suggesting further decreases but the latter simulating more rainfall in autumn. For summer, they determined that the direction of rainfall change could not be reliably projected given the wide range of possible climate futures from wetter to drier and uncertainty in shifts in drivers such as ENSO.

One identified shortcoming of NHMM simulations of relevance to hydrological modelling, as noted by the Task 4 case study of hydrological simulation in the Onkaparinga catchment, is the underestimation of extreme multi-day precipitation events. Thus whilst the NHMM can reproduce the probability distribution of station precipitation amounts, its simulation of consecutive days of high amounts does not sufficiently reproduce the extreme multi-day event totals as seen in the observed record. Such shortcomings have also been identified in other studies, e.g. Teng et al. (2012). Efforts to improve this aspect of NHMM performance where unsuccessful, as collaboration to develop improved NHMM code unavoidably ceased once the model developer moved from academia to private enterprise and could no longer collaborate due to a restrictive employee IP agreement (Sergey Kirshner, *pers. comm.*, 2013).

The NHMM statistical downscaling technique uses the calibrated within-weather state relationship between predictand (daily precipitation) and given state for projections of the future climate. This assumes that changes to the predictand (daily precipitation) are sufficiently accounted for by changes in the frequency of the states, as opposed to changes in within-state predictand properties. This may be a limitation if the within-state characteristics of precipitation were expected to change in a future climate. Extension of the NHMM to account for such changes has been identified as a possible improvement that would better account for changes in extreme precipitation intensity (e.g. additional station-specific conditioning of within-state precipitation on atmospheric predictors). Given this limitation, the current NHMM is not recommended for projection of changes in extreme daily precipitation. This is potentially a more important issue for sub-daily precipitation changes of relevance to flash flooding and urban storm water management, given recent research indicates sub-daily extreme precipitation changes are more sensitive to a warming atmosphere (Westra et al., 2013; Westra et al., 2014). A sub-daily statistical downscaling capacity has not currently been developed. There is a recent, limited, initial research effort to begin the development of dynamical and statistical downscaling applications towards such purposes (Bates and Westra, 2013).

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Appendix A: NHMM Summaries

Table A.1 Rainfall probability and wet-day amount (mm) by weather state for AMLR DJF NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (5%)	2 (4%)	3 (78%)	4 (13%)	1 (5%)	2 (4%)	3 (78%)	4 (13%)
23013	PARAFIELD AIRPORT	0.70	1.00	0.01	0.10	5.2	9.8	6.5	1.5
23034	ADELAIDE AIRPORT	0.75	1.00	0.01	0.15	4.4	10.5	3.8	1.4
23076	PORT PARHAM	0.49	0.91	0.01	0.15	4.1	10.2	5.2	2.7
23079	ADELAIDE (DRY CREEK SALTWORKS)	0.73	0.99	0.01	0.12	5.3	9.2	2.6	2.3
23083	EDINBURGH RAAF	0.65	0.94	0.01	0.11	5.4	9.9	7.0	2.0
23090	ADELAIDE (KENT TOWN)	0.84	1.00	0.01	0.15	5.1	10.7	2.1	1.5
23096	ADELAIDE (HOPE VALLEY RESERVOIR)	0.87	1.00	0.01	0.14	5.4	11.1	3.2	2.0
23343	ROSEDALE (TURRETFIELD RESEARCH CENTRE)	0.66	0.97	0.01	0.19	4.8	10.4	13.7	2.3
23356	HAMLEY BRIDGE (LINWOOD)	0.58	0.98	0.01	0.21	5.2	10.3	9.4	2.8
23360	ST KITTS	0.58	0.84	0.01	0.18	8.7	12.4	2.6	4.7
23361	KAPUNDA (HAMILTON)	0.70	0.95	0.01	0.28	7.3	10.9	2.9	3.2
23709	CHERRY GARDENS	0.91	1.00	0.01	0.42	6.5	13.3	3.5	2.1
23721	HAPPY VALLEY RESERVOIR	0.88	1.00	0.01	0.27	5.4	11.7	7.5	1.8
23727	LONGWOOD	0.93	1.00	0.01	0.42	6.9	13.9	3.0	2.1
23731	CUDLEE CREEK (MILLBROOK)	0.92	1.00	0.01	0.23	6.2	13.0	7.1	1.8
23734	MOUNT BOLD RESERVOIR	0.93	0.99	0.01	0.35	5.9	11.6	4.8	2.1
23741	NORMANVILLE	0.61	0.94	0.01	0.19	5.1	10.4	2.6	2.5
23743	VICTOR HARBOR (RIVINGTON GRANGE)	0.77	0.92	0.02	0.39	5.6	11.0	1.7	3.1
23756	WILLIAMSTOWN (GLEN GILLIAN)	0.77	1.00	0.01	0.21	5.9	12.2	3.3	2.5
23758	KERSBROOK (MABENJO)	0.79	0.97	0.01	0.18	6.8	12.4	5.3	2.1

23761	PARAWA (SHARON)	0.77	0.92	0.03	0.47	6.4	13.9	1.9	3.5
23783	MYPONGA RESERVOIR	0.70	0.95	0.01	0.35	5.8	11.5	2.0	2.5
23806	HERMITAGE UPPER	0.77	0.97	0.01	0.17	5.3	12.3	8.8	1.7
23817	ALDGATE	0.95	0.98	0.01	0.47	7.4	15.3	2.5	2.1
23820	WILLIAMSTOWN (SOUTH PARA RESERVOIR)	0.77	1.00	0.01	0.20	5.7	12.3	8.4	2.2
23823	HINDMARSH VALLEY (FERNBROOK)	0.80	0.93	0.02	0.44	6.4	12.8	1.2	3.2
23824	HINDMARSH VALLEY (SPRINGMOUNT)	0.84	0.92	0.02	0.49	6.8	13.2	1.8	3.4

Table A.2 Rainfall probability and wet-day amount (mm) by weather state for AMLR MAM NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (9%)	2 (14%)	3 (6%)	4 (7%)	5 (64%)	1 (9%)	2 (14%)	3 (6%)	4 (7%)	5 (64%)
23013	PARAFIELD AIRPORT	0.46	0.06	0.93	0.99	0.01	2.4	1.7	3.8	11.2	11.3
23034	ADELAIDE AIRPORT	0.51	0.08	0.89	0.99	0.01	2.5	1.8	4.2	10.6	1.0
23076	PORT PARHAM	0.35	0.12	0.60	0.90	0.01	3.2	3.1	3.6	8.1	3.5
23079	ADELAIDE (DRY CREEK SALTWORKS)	0.51	0.06	0.91	0.99	0.01	2.3	1.5	4.1	10.0	9.4
23083	EDINBURGH RAAF	0.37	0.04	0.88	0.99	0.01	2.3	1.7	4.0	10.3	3.8
23090	ADELAIDE (KENT TOWN)	0.59	0.07	0.97	0.98	0.01	2.5	2.5	5.0	13.1	2.2
23096	ADELAIDE (HOPE VALLEY RESERVOIR)	0.67	0.12	0.97	0.99	0.01	2.5	1.6	5.6	13.4	3.8
23343	ROSEDALE (TURRETFIELD RESEARCH CENTRE)	0.45	0.05	0.87	0.97	0.01	2.7	2.1	4.2	11.0	3.8
23356	HAMLEY BRIDGE (LINWOOD)	0.36	0.05	0.77	0.97	0.01	3.2	3.9	3.9	10.1	3.5
23360	ST KITTS	0.32	0.06	0.70	0.86	0.02	3.0	2.5	5.1	11.1	5.4
23361	KAPUNDA (HAMILTON)	0.46	0.15	0.77	0.95	0.02	2.8	2.1	5.1	11.1	5.9
23709	CHERRY GARDENS	0.82	0.35	0.98	0.97	0.01	4.2	2.1	8.7	19.5	3.4
23721	HAPPY VALLEY RESERVOIR	0.74	0.22	0.94	1.00	0.01	3.1	1.7	6.4	15.5	2.3
23727	LONGWOOD	0.81	0.38	0.97	0.98	0.01	4.1	1.9	9.1	20.0	3.0
23731	CUDLEE CREEK (MILLBROOK)	0.75	0.13	0.98	0.99	0.01	2.9	1.5	8.1	16.8	7.8
23734	MOUNT BOLD RESERVOIR	0.83	0.31	0.95	0.99	0.02	3.6	1.7	7.0	17.1	6.0

23741	NORMANVILLE	0.51	0.31	0.79	0.95	0.01	3.6	2.2	4.6	10.7	16.5
23743	VICTOR HARBOR (RIVINGTON GRANGE)	0.64	0.51	0.86	0.98	0.02	4.0	2.6	5.9	12.2	1.6
23756	WILLIAMSTOWN (GLEN GILLIAN)	0.62	0.08	0.96	0.99	0.01	2.9	1.4	6.0	15.0	3.9
23758	KERSBROOK (MABENJO)	0.54	0.10	0.94	0.98	0.01	2.5	2.1	5.9	15.7	5.4
23761	PARAWA (SHARON)	0.71	0.67	0.89	0.98	0.04	4.9	3.2	7.8	16.8	2.7
23783	MYPONGA RESERVOIR	0.71	0.35	0.91	0.98	0.01	3.7	2.2	6.0	14.2	4.2
23806	HERMITAGE UPPER	0.59	0.11	0.95	0.98	0.01	2.4	2.2	6.1	14.9	2.5
23817	ALDGATE	0.84	0.38	0.99	1.00	0.01	4.0	1.8	10.0	21.9	2.3
23820	WILLIAMSTOWN (SOUTH PARA RESERVOIR)	0.62	0.10	0.94	0.99	0.01	3.1	1.6	5.8	14.6	2.5
23823	HINDMARSH VALLEY (FERNBROOK)	0.73	0.56	0.92	0.99	0.02	4.4	2.8	7.1	16.3	2.0
23824	HINDMARSH VALLEY (SPRINGMOUNT)	0.70	0.59	0.91	0.98	0.03	4.8	3.5	7.8	16.8	2.1

Table A.3 Rainfall probability and wet-day amount (mm) by weather state for AMLR JJA NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (40%)	2 (12%)	3 (15%)	4 (14%)	5 (19%)	1 (40%)	2 (12%)	3 (15%)	4 (14%)	5 (19%)
23013	PARAFIELD AIRPORT	0.01	0.92	0.48	1.00	0.08	1.2	3.6	1.9	9.0	1.7
23034	ADELAIDE AIRPORT	0.01	0.90	0.56	1.00	0.09	3.1	3.7	2.1	8.4	1.9
23076	PORT PARHAM	0.02	0.66	0.33	0.95	0.15	2.9	2.9	2.7	6.0	2.4
23079	ADELAIDE (DRY CREEK SALTWORKS)	0.01	0.90	0.49	1.00	0.12	4.0	3.6	2.0	8.2	1.8
23083	EDINBURGH RAAF	0.01	0.87	0.45	1.00	0.08	1.0	3.1	1.9	8.4	1.5
23090	ADELAIDE (KENT TOWN)	0.01	0.97	0.71	1.00	0.10	1.3	4.7	2.5	10.9	1.7
23096	ADELAIDE (HOPE VALLEY RESERVOIR)	0.01	0.98	0.74	1.00	0.20	4.1	5.6	2.4	11.5	1.8
23343	ROSEDALE (TURRETFIELD RESEARCH CENTRE)	0.01	0.93	0.49	1.00	0.13	1.4	3.9	2.3	8.9	2.0
23356	HAMLEY BRIDGE (LINWOOD)	0.01	0.82	0.46	1.00	0.15	1.8	4.0	2.5	8.0	2.3
23360	ST KITTS	0.03	0.73	0.39	0.88	0.15	2.8	4.7	3.5	8.8	3.8
23361	KAPUNDA (HAMILTON)	0.02	0.85	0.55	0.98	0.27	1.8	5.1	2.7	9.6	2.4
23709	CHERRY GARDENS	0.01	0.98	0.95	1.00	0.43	4.4	9.0	4.4	16.3	1.8
23721	HAPPY VALLEY RESERVOIR	0.01	0.97	0.85	1.00	0.30	10.7	6.4	3.0	12.5	2.1
23727	LONGWOOD	0.01	0.99	0.95	1.00	0.45	8.3	9.8	4.6	18.6	1.8
23731	CUDLEE CREEK (MILLBROOK)	0.01	0.99	0.83	1.00	0.33	9.1	8.7	3.4	17.3	1.7
23734	MOUNT BOLD RESERVOIR	0.01	0.98	0.94	1.00	0.40	6.0	7.8	3.8	14.9	1.9
23741	NORMANVILLE	0.06	0.83	0.74	0.98	0.37	2.5	5.3	3.5	9.3	2.5
23743	VICTOR HARBOR (RIVINGTON GRANGE)	0.05	0.85	0.81	0.99	0.47	2.6	6.8	4.5	11.5	2.9
23756	WILLIAMSTOWN (GLEN GILLIAN)	0.01	0.98	0.75	1.00	0.27	2.4	7.0	2.9	14.3	1.8
23758	KERSBROOK (MABENJO)	0.02	0.95	0.71	0.98	0.28	5.2	7.7	3.2	15.6	2.1
23761	PARAWA (SHARON)	0.09	0.92	0.88	0.99	0.60	2.8	8.3	6.8	15.5	3.7

23783	MYPONGA RESERVOIR	0.03	0.93	0.82	0.99	0.52	2.8	6.8	4.2	12.1	2.6
23806	HERMITAGE UPPER	0.01	0.98	0.75	0.99	0.21	2.1	6.3	2.6	13.8	2.3
23817	ALDGATE	0.02	0.99	0.96	1.00	0.50	2.4	10.9	5.1	20.5	2.0
23820	WILLIAMSTOWN (SOUTH PARA RESERVOIR)	0.01	0.99	0.73	1.00	0.28	2.0	6.4	2.7	13.6	1.9
23823	HINDMARSH VALLEY (FERNBROOK)	0.05	0.94	0.88	1.00	0.52	1.8	8.5	5.6	15.3	2.9
23824	HINDMARSH VALLEY (SPRINGMOUNT)	0.07	0.94	0.88	1.00	0.59	3.2	9.1	6.1	16.0	3.2

Table A.4 Rainfall probability and wet-day amount (mm) by weather state for AMLR SON NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (8%)	2 (7%)	3 (16%)	4 (9%)	5 (60%)	1 (8%)	2 (7%)	3 (16%)	4 (9%)	5 (60%)
23013	PARAFIELD AIRPORT	0.93	1.00	0.14	0.38	0.01	3.7	10.4	1.8	2.4	2.0
23034	ADELAIDE AIRPORT	0.87	1.00	0.09	0.45	0.01	3.8	10.0	1.8	2.3	1.0
23076	PORT PARHAM	0.63	0.94	0.16	0.36	0.01	3.4	9.1	2.4	3.1	2.6
23079	ADELAIDE (DRY CREEK SALTWORKS)	0.93	0.99	0.15	0.35	0.01	3.6	9.6	1.9	2.1	2.1
23083	EDINBURGH RAAF	0.88	1.00	0.12	0.37	0.01	3.9	10.1	1.7	2.1	1.0
23090	ADELAIDE (KENT TOWN)	0.96	1.00	0.15	0.55	0.01	4.8	11.7	1.9	2.3	1.0
23096	ADELAIDE (HOPE VALLEY RESERVOIR)	0.99	1.00	0.24	0.58	0.01	5.6	12.0	2.0	2.2	1.3
23343	ROSEDALE (TURRETFIELD RESEARCH CENTRE)	0.95	0.99	0.19	0.49	0.01	5.1	11.7	1.6	2.9	1.2
23356	HAMLEY BRIDGE (LINWOOD)	0.89	0.99	0.12	0.56	0.01	5.1	10.9	2.0	3.2	1.4
23360	ST KITTS	0.75	0.90	0.13	0.39	0.01	6.4	11.3	3.3	4.0	3.5
23361	KAPUNDA (HAMILTON)	0.92	0.98	0.25	0.63	0.02	6.3	12.7	2.1	4.1	1.9
23709	CHERRY GARDENS	0.98	1.00	0.47	0.89	0.02	8.6	14.6	2.1	3.9	1.5
23721	HAPPY VALLEY RESERVOIR	0.98	1.00	0.32	0.75	0.01	5.6	12.3	1.8	2.6	1.2
23727	LONGWOOD	1.00	1.00	0.45	0.82	0.02	9.0	16.2	2.1	4.3	1.9
23731	CUDLEE CREEK (MILLBROOK)	1.00	1.00	0.31	0.78	0.01	8.8	15.1	2.3	2.8	7.0
23734	MOUNT BOLD RESERVOIR	0.99	1.00	0.46	0.77	0.01	7.1	14.0	2.0	3.3	1.5
23741	NORMANVILLE	0.75	0.98	0.32	0.55	0.02	3.7	10.5	1.8	3.8	1.3
23743	VICTOR HARBOR (RIVINGTON GRANGE)	0.89	0.99	0.44	0.70	0.02	4.5	12.1	2.3	4.2	1.4
23756	WILLIAMSTOWN (GLEN GILLIAN)	0.98	1.00	0.27	0.68	0.01	6.8	14.1	2.0	2.9	5.5
23758	KERSBROOK (MABENJO)	0.96	1.00	0.23	0.70	0.01	7.6	15.0	2.1	2.7	2.2
23761	PARAWA (SHARON)	0.89	0.98	0.55	0.72	0.05	6.2	15.9	2.6	5.6	1.7
23783	MYPONGA RESERVOIR	0.87	0.99	0.39	0.71	0.02	5.1	12.6	2.1	4.0	1.5
23806	HERMITAGE UPPER	0.96	0.97	0.23	0.66	0.01	6.0	13.2	2.1	2.7	3.6
23817	ALDGATE	0.97	0.99	0.50	0.88	0.03	10.2	17.2	2.6	4.5	1.5

23820	WILLIAMSTOWN (SOUTH PARA RESERVOIR)	1.00	1.00	0.26	0.64	0.01	6.8	13.7	2.0	2.6	3.1
23823	HINDMARSH VALLEY (FERNBROOK)	0.96	1.00	0.54	0.76	0.03	6.1	14.9	2.3	4.9	1.6
23824	HINDMARSH VALLEY (SPRINGMOUNT)	0.94	0.99	0.52	0.76	0.06	6.4	14.9	2.9	5.7	2.1

Table A.5 Rainfall probability and wet-day amount (mm) by weather state for EP DJF NHMM

BoM ID	Name	State rain occurrence probability			State wet-day rain amount (mm)		
		1 (12%)	2 (5%)	3 (83%)	1 (12%)	2 (5%)	3 (83%)
18005	YEELANA (BRIMPTON LAKE)	0.26	0.84	0.01	3.0	10.1	1.6
18007	YEELANA (BROOKER)	0.30	0.85	0.01	2.6	9.7	2.2
18012	CEDUNA AMO	0.25	0.71	0.01	3.1	9.8	2.7
18024	DARKE PEAK	0.32	0.89	0.01	2.6	10.8	1.9
18033	CEDUNA (GOODE)	0.24	0.71	0.01	3.3	11.2	3.5
18036	KARCULTABY	0.23	0.74	0.01	2.9	9.1	4.3
18044	KYANCUTTA	0.26	0.88	0.01	3.6	9.7	2.2
18047	CEDUNA (MALTEE)	0.24	0.61	0.01	3.9	10.9	5.3
18049	BUTLER TANKS (NORTH PARNDA)	0.26	0.82	0.01	2.8	10.5	5.1
18056	MT WEDGE (MOUNT WEDGE)	0.21	0.88	0.01	2.8	10.0	3.7
18060	NUNDROO	0.27	0.61	0.01	4.5	10.9	4.4
18069	ELLISTON	0.30	0.88	0.01	2.7	9.2	1.0
18079	STREAKY BAY	0.29	0.80	0.01	2.8	9.6	2.3
18090	WARRAMBOO	0.25	0.87	0.01	3.4	9.7	1.5
18091	TUMBY BAY (WARRATTA VALE)	0.26	0.87	0.01	2.6	9.5	2.4
18096	CLEVE (PINEVIEW)	0.29	0.84	0.01	3.9	9.9	3.2
18101	KOONGAWA (RETAWON)	0.25	0.87	0.01	3.0	10.5	2.0
18104	CUMMINS (GLENREATH)	0.39	0.88	0.01	2.7	11.8	2.7
18137	PORT LINCOLN (WESTMERE)	0.35	0.81	0.03	3.4	8.6	1.9
18164	MURDINGA (MUNGALA)	0.23	0.89	0.01	3.9	8.5	1.4
18166	WIRRULLA (PIMBENA)	0.23	0.77	0.01	4.2	9.1	1.7
18172	BUCKLEBOO (HI-VIEW)	0.26	0.83	0.01	3.6	13.1	2.1
18175	BUTLER (MOODY VALE)	0.31	0.89	0.01	2.6	10.0	6.6

18176	COWELL (WINTER SPRINGS)	0.33	0.79	0.01	3.4	12.5	5.8
18177	KIMBA (MELALEUCA)	0.27	0.81	0.01	2.9	10.9	3.4
18182	CEDUNA (UWORRA)	0.31	0.70	0.01	3.5	10.0	3.8
18184	CLEVE (NINGANA)	0.34	0.80	0.01	3.9	11.6	3.9
18193	KIMBA (CORTLINYE)	0.27	0.81	0.01	3.4	11.1	3.1

Table A.6 Rainfall probability and wet-day amount (mm) by weather state for EP MAM NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (67%)	2 (9%)	3 (5%)	4 (19%)	1 (67%)	2 (9%)	3 (5%)	4 (19%)
18005	YEELANA (BRIMPTON LAKE)	0.01	0.72	0.89	0.25	1.7	4.9	10.8	2.2
18007	YEELANA (BROOKER)	0.01	0.69	0.90	0.24	4.2	4.7	9.8	1.9
18012	CEDUNA AMO	0.02	0.58	0.81	0.11	2.5	3.3	8.3	2.0
18024	DARKE PEAK	0.01	0.74	0.92	0.20	28.0	3.4	10.5	2.2
18033	CEDUNA (GOODE)	0.02	0.54	0.78	0.09	3.6	3.5	9.1	2.4
18036	KARCULTABY	0.01	0.60	0.94	0.08	1.0	3.3	8.6	1.7
18044	KYANCUTTA	0.01	0.62	0.97	0.10	2.6	2.7	9.2	2.3
18047	CEDUNA (MALTEE)	0.02	0.53	0.80	0.11	2.8	3.4	8.8	2.1
18049	BUTLER TANKS (NORTH PARNDA)	0.02	0.59	0.88	0.20	1.9	4.0	9.7	2.3
18056	MT WEDGE (MOUNT WEDGE)	0.01	0.68	0.88	0.22	3.3	3.7	10.3	1.8
18060	NUNDROO	0.03	0.58	0.70	0.17	5.4	4.6	9.1	3.1
18069	ELLISTON	0.01	0.75	0.90	0.30	2.4	4.2	10.7	2.2
18079	STREAKY BAY	0.01	0.78	0.88	0.20	3.3	3.7	9.8	1.9
18090	WARRAMBOO	0.01	0.70	0.97	0.13	2.8	3.0	9.6	2.5
18091	TUMBY BAY (WARRATTA VALE)	0.01	0.62	0.86	0.20	1.3	3.6	9.1	2.3
18096	CLEVE (PINEVIEW)	0.02	0.54	0.87	0.29	2.0	4.1	8.9	3.6
18101	KOONGAWA (RETAWON)	0.01	0.67	0.95	0.15	3.1	3.0	10.4	2.2
18104	CUMMINS (GLENREATH)	0.02	0.79	0.85	0.40	3.7	5.1	12.4	2.9
18137	PORT LINCOLN (WESTMERE)	0.05	0.78	0.84	0.50	2.4	6.3	12.4	3.5
18164	MURDINGA (MUNGALA)	0.01	0.65	0.95	0.13	9.8	3.3	9.8	1.9
18166	WIRRULLA (PIMBENA)	0.01	0.62	0.83	0.08	1.7	3.5	9.0	1.9
18172	BUCKLEBOO (HI-VIEW)	0.01	0.66	0.92	0.12	1.7	3.1	9.6	3.5
18175	BUTLER (MOODY VALE)	0.01	0.72	0.88	0.24	8.6	4.0	10.2	1.8
18176	COWELL (WINTER SPRINGS)	0.02	0.52	0.89	0.23	1.7	4.1	8.9	2.9

18177	KIMBA (MELALEUCA)	0.01	0.61	0.95	0.13	2.7	3.6	9.0	3.6
18182	CEDUNA (UWORRA)	0.02	0.55	0.84	0.18	4.3	3.5	8.4	2.1
18184	CLEVE (NINGANA)	0.01	0.70	0.91	0.31	2.6	3.9	11.8	2.7
18193	KIMBA (CORTLINYE)	0.01	0.60	0.93	0.19	8.6	3.9	9.0	2.2

Table A.7 Rainfall probability and wet-day amount (mm) by weather state for EP JJA NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (14%)	2 (9%)	3 (50%)	4 (27%)	1 (14%)	2 (9%)	3 (50%)	4 (27%)
18005	YEELANA (BRIMPTON LAKE)	0.88	0.97	0.07	0.50	5.8	11.1	2.4	3.4
18007	YEELANA (BROOKER)	0.90	0.96	0.05	0.43	4.6	9.3	1.9	2.7
18012	CEDUNA AMO	0.56	0.94	0.03	0.23	3.6	6.7	3.3	2.5
18024	DARKE PEAK	0.88	0.99	0.02	0.38	3.8	8.6	1.6	2.1
18033	CEDUNA (GOODE)	0.57	0.90	0.03	0.24	3.8	7.2	3.8	2.6
18036	KARCULTABY	0.77	0.98	0.02	0.25	3.5	8.0	2.2	2.4
18044	KYANCUTTA	0.82	0.99	0.01	0.23	3.2	7.1	3.3	1.8
18047	CEDUNA (MALTEE)	0.56	0.90	0.04	0.22	3.9	7.2	4.2	2.6
18049	BUTLER TANKS (NORTH PARNDA)	0.78	0.92	0.04	0.34	4.2	8.6	2.2	2.3
18056	MT WEDGE (MOUNT WEDGE)	0.91	0.94	0.04	0.49	5.2	10.1	2.1	2.5
18060	NUNDROO	0.57	0.89	0.04	0.27	5.2	8.9	3.6	3.0
18069	ELLISTON	0.91	0.99	0.06	0.52	5.2	9.8	2.2	2.8
18079	STREAKY BAY	0.85	0.99	0.04	0.41	4.9	9.9	2.9	2.7
18090	WARRAMBOO	0.90	1.00	0.01	0.33	3.9	8.4	1.6	1.8
18091	TUMBY BAY (WARRATTA VALE)	0.76	0.95	0.03	0.30	3.6	6.5	1.9	2.3
18096	CLEVE (PINEVIEW)	0.76	0.90	0.04	0.37	3.6	6.1	2.3	2.7
18101	KOONGAWA (RETAWON)	0.89	0.97	0.01	0.34	3.8	7.7	1.0	1.9
18104	CUMMINS (GLENREATH)	0.90	0.97	0.09	0.59	6.0	11.6	3.1	3.4
18137	PORT LINCOLN (WESTMERE)	0.89	0.97	0.17	0.70	6.9	11.3	3.2	4.1
18164	MURDINGA (MUNGALA)	0.91	0.96	0.01	0.31	3.8	8.3	1.0	2.1
18166	WIRRULLA (PIMBENA)	0.67	0.96	0.02	0.23	3.6	7.0	3.2	2.3
18172	BUCKLEBOO (HI-VIEW)	0.81	0.97	0.01	0.29	3.3	7.3	2.3	1.9
18175	BUTLER (MOODY VALE)	0.88	0.98	0.03	0.38	4.5	9.0	2.0	2.4

18176	COWELL (WINTER SPRINGS)	0.77	0.94	0.02	0.32	3.4	6.6	1.0	2.3
18177	KIMBA (MELALEUCA)	0.80	0.94	0.01	0.25	3.6	7.1	3.3	2.0
18182	CEDUNA (UWORRA)	0.66	0.93	0.04	0.30	3.7	7.6	3.5	2.4
18184	CLEVE (NINGANA)	0.85	0.97	0.03	0.49	4.5	9.0	2.1	2.3
18193	KIMBA (CORTLINYE)	0.83	1.00	0.01	0.32	3.7	6.9	1.8	1.7

Table A.8 Rainfall probability and wet-day amount (mm) by weather state for EP SON NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (65%)	2 (5%)	3 (5%)	4 (9%)	5 (16%)	1 (65%)	2 (5%)	3 (5%)	4 (9%)	5 (16%)
18005	YEELANA (BRIMPTON LAKE)	0.01	0.74	0.98	0.65	0.23	1.9	5.2	10.0	4.1	2.1
18007	YEELANA (BROOKER)	0.01	0.79	0.96	0.64	0.23	2.6	5.1	9.9	3.2	1.9
18012	CEDUNA AMO	0.01	0.78	0.87	0.29	0.13	3.1	5.4	8.8	2.0	3.3
18024	DARKE PEAK	0.01	0.89	1.00	0.56	0.23	1.8	4.8	10.2	3.1	1.7
18033	CEDUNA (GOODE)	0.01	0.73	0.87	0.32	0.12	2.8	6.4	8.8	2.0	4.5
18036	KARCULTABY	0.01	0.82	0.97	0.40	0.11	2.4	4.4	8.8	2.1	3.4
18044	KYANCUTTA	0.01	0.88	1.00	0.39	0.11	2.3	3.8	9.1	2.4	2.1
18047	CEDUNA (MALTEE)	0.02	0.67	0.77	0.28	0.12	5.8	6.2	10.1	2.1	5.5
18049	BUTLER TANKS (NORTH PARNDA)	0.01	0.67	0.94	0.51	0.24	1.5	4.7	10.5	3.4	2.2
18056	MT WEDGE (MOUNT WEDGE)	0.01	0.83	0.94	0.65	0.20	3.8	4.7	10.2	3.6	1.8
18060	NUNDROO	0.04	0.59	0.84	0.28	0.10	3.0	6.0	8.6	2.9	6.1
18069	ELLISTON	0.01	0.82	0.98	0.68	0.18	1.2	4.9	10.5	2.9	1.9
18079	STREAKY BAY	0.01	0.83	0.96	0.62	0.15	1.3	4.8	9.6	2.3	2.6
18090	WARRAMBOO	0.01	0.92	0.97	0.52	0.19	2.7	3.9	10.6	2.7	2.0
18091	TUMBY BAY (WARRATTA VALE)	0.01	0.74	0.99	0.49	0.22	1.5	4.0	9.5	2.7	2.1
18096	CLEVE (PINEVIEW)	0.01	0.77	0.96	0.43	0.29	1.8	5.1	9.4	3.3	2.9
18101	KOONGAWA (RETAWON)	0.01	0.85	1.00	0.51	0.16	1.7	4.3	9.7	2.6	2.5
18104	CUMMINS (GLENREATH)	0.02	0.75	0.93	0.68	0.37	2.6	6.4	11.2	4.2	2.4
18137	PORT LINCOLN (WESTMERE)	0.05	0.78	0.92	0.68	0.45	2.0	5.9	10.7	4.6	2.5
18164	MURDINGA (MUNGALA)	0.01	0.83	0.99	0.53	0.17	3.1	4.0	10.7	2.7	1.9
18166	WIRRULLA (PIMBENA)	0.01	0.81	0.95	0.40	0.10	1.9	5.4	9.0	1.9	3.6
18172	BUCKLEBOO (HI-VIEW)	0.01	0.83	0.93	0.42	0.17	2.8	5.3	10.3	3.0	2.7
18175	BUTLER (MOODY VALE)	0.01	0.79	0.98	0.64	0.23	2.0	4.7	10.1	3.2	1.9
18176	COWELL (WINTER SPRINGS)	0.01	0.76	0.98	0.49	0.22	3.2	5.5	9.7	2.6	2.7

18177	KIMBA (MELALEUCA)	0.01	0.80	0.98	0.46	0.12	2.4	5.5	9.3	2.7	2.9
18182	CEDUNA (UWORRA)	0.02	0.75	0.86	0.36	0.15	2.7	6.2	9.3	2.3	3.5
18184	CLEVE (NINGANA)	0.02	0.86	0.99	0.57	0.33	2.8	5.5	11.1	3.5	2.4
18193	KIMBA (CORTLINYE)	0.01	0.80	0.99	0.50	0.20	1.5	5.6	10.4	3.2	2.0

Table A.9 Rainfall probability and wet-day amount (mm) by weather state for KI DJF NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (12%)	2 (6%)	3 (78%)	4 (3%)	1 (12%)	2 (6%)	3 (78%)	4 (3%)
22800	AMERICAN RIVER	0.16	0.73	0.01	0.95	1.7	3.3	1.0	10.7
22803	CAPE WILLOUGHBY	0.20	0.70	0.01	0.96	1.9	3.3	1.0	10.0
22806	MURRAYS LAGOON (BAYSIDE)	0.17	0.69	0.01	0.90	1.8	3.7	3.9	11.3
22808	KINGSCOTE (KARINGA)	0.05	0.40	0.01	0.74	1.2	3.9	3.7	13.0
22811	SMITH BAY (SMITHS BAY)	0.09	0.53	0.01	0.96	2.8	3.9	1.0	9.5
22815	PARNDANA (PIONEER BEND)	0.16	0.77	0.01	0.93	1.5	3.2	3.1	11.5
22817	FLINDERS CHASE (ROCKY RIVER)	0.32	0.72	0.01	0.84	2.1	4.9	5.3	10.9
22820	ROCKY RIVER (BROOKLAND PARK)	0.43	0.82	0.01	0.90	1.9	4.8	4.8	12.5
22822	MURRAYS LAGOON (HAWKS NEST)	0.14	0.61	0.01	0.91	2.0	3.4	3.0	11.6
22835	PARNDANA (TURKEY LANE)	0.26	0.73	0.01	0.95	1.6	3.5	3.7	10.7

Table A.10 Rainfall probability and wet-day amount (mm) by weather state for KI MAM NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (61%)	2 (9%)	3 (9%)	4 (11%)	5 (10%)	1 (61%)	2 (9%)	3 (9%)	4 (11%)	5 (10%)
22800	AMERICAN RIVER	0.02	0.18	0.99	0.35	0.73	2.0	4.3	9.6	1.8	3.0
22803	CAPE WILLOUGHBY	0.02	0.15	0.99	0.42	0.69	1.7	5.3	9.6	2.0	3.4
22806	MURRAYS LAGOON (BAYSIDE)	0.03	0.14	0.97	0.45	0.76	2.2	4.1	10.1	2.2	4.0
22808	KINGSCOTE (KARINGA)	0.01	0.21	0.94	0.26	0.65	3.3	5.8	9.5	1.9	3.3
22811	SMITH BAY (SMITHS BAY)	0.01	0.20	0.95	0.11	0.60	1.6	5.4	8.4	1.0	3.3
22815	PARNDANA (PIONEER BEND)	0.01	0.10	0.99	0.30	0.78	1.2	7.1	11.4	1.8	3.5
22817	FLINDERS CHASE (ROCKY RIVER)	0.03	0.44	0.94	0.51	0.80	2.3	3.7	12.0	2.9	5.5
22820	ROCKY RIVER (BROOKLAND PARK)	0.05	0.47	0.96	0.63	0.88	1.9	3.4	14.0	2.4	5.5
22822	MURRAYS LAGOON (HAWKS NEST)	0.02	0.15	0.93	0.38	0.70	2.2	4.6	10.1	2.7	3.5
22835	PARNDANA (TURKEY LANE)	0.03	0.26	0.99	0.35	0.88	1.0	3.6	13.1	2.3	4.5

Table A.11 Rainfall probability and wet-day amount (mm) by weather state for KI JJA NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (19%)	2 (17%)	3 (24%)	4 (10%)	5 (30%)	1 (19%)	2 (17%)	3 (24%)	4 (10%)	5 (30%)
22800	AMERICAN RIVER	0.58	0.96	0.30	1.00	0.03	2.8	5.5	2.2	11.3	1.8
22803	CAPE WILLOUGHBY	0.66	0.93	0.31	0.99	0.01	3.2	5.3	2.2	11.4	2.1
22806	MURRAYS LAGOON (BAYSIDE)	0.67	0.94	0.25	0.95	0.03	3.5	5.7	2.4	11.7	2.3
22808	KINGSCOTE (KARINGA)	0.48	0.82	0.19	0.89	0.02	3.2	5.9	2.5	11.6	5.5
22811	SMITH BAY (SMITHS BAY)	0.46	0.85	0.21	1.00	0.02	3.0	5.6	3.1	10.7	1.6
22815	PARNDANA (PIONEER BEND)	0.69	0.99	0.25	1.00	0.04	3.4	6.9	2.3	14.5	1.3
22817	FLINDERS CHASE (ROCKY RIVER)	0.85	0.92	0.42	1.00	0.04	4.9	8.0	2.3	15.0	2.9
22820	ROCKY RIVER (BROOKLAND PARK)	0.90	0.98	0.45	0.99	0.03	4.6	8.5	2.1	17.1	3.1
22822	MURRAYS LAGOON (HAWKS NEST)	0.65	0.88	0.27	0.92	0.06	3.1	6.0	2.6	10.9	3.2
22835	PARNDANA (TURKEY LANE)	0.82	0.99	0.33	0.96	0.05	3.8	8.7	2.7	16.2	1.0

Table A.12 Rainfall probability and wet-day amount (mm) by weather state for KI SON NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (8%)	2 (59%)	3 (15%)	4 (5%)	5 (12%)	1 (8%)	2 (59%)	3 (15%)	4 (5%)	5 (12%)
22800	AMERICAN RIVER	0.91	0.01	0.55	0.98	0.18	4.5	1.8	2.8	12.3	1.7
22803	CAPE WILLOUGHBY	0.86	0.02	0.64	0.99	0.10	5.0	1.5	3.1	11.6	1.0
22806	MURRAYS LAGOON (BAYSIDE)	0.88	0.03	0.51	0.92	0.18	4.7	2.3	2.5	12.3	3.3
22808	KINGSCOTE (KARINGA)	0.68	0.03	0.38	0.92	0.05	4.4	4.2	3.0	12.2	1.0
22811	SMITH BAY (SMITHS BAY)	0.78	0.01	0.41	0.94	0.12	4.2	2.8	2.8	11.2	2.2
22815	PARNDANA (PIONEER BEND)	1.00	0.01	0.54	0.97	0.16	4.8	1.3	2.5	13.0	2.1
22817	FLINDERS CHASE (ROCKY RIVER)	0.91	0.02	0.61	0.90	0.36	5.5	1.9	3.1	15.1	2.8
22820	ROCKY RIVER (BROOKLAND PARK)	0.92	0.03	0.69	0.99	0.49	6.3	1.9	3.1	15.6	2.3
22822	MURRAYS LAGOON (HAWKS NEST)	0.80	0.03	0.50	0.90	0.16	4.6	2.5	2.2	11.7	5.6
22835	PARNDANA (TURKEY LANE)	0.97	0.02	0.63	0.98	0.21	5.8	1.0	2.5	14.5	2.3

Table A.13 Rainfall probability and wet-day amount (mm) by weather state for NY DJF NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (13%)	2 (4%)	3 (75%)	4 (8%)	1 (13%)	2 (4%)	3 (75%)	4 (8%)
19004	BELTON (SHADOW VALE)	0.07	0.64	0.01	0.33	3.3	14.6	7.1	8.7
19025	MORCHARD (THE ROCKS)	0.11	0.74	0.01	0.44	4.9	13.4	3.7	6.8
19042	MELROSE (PARA GUMS)	0.08	0.89	0.01	0.46	2.6	11.4	2.3	6.7
19050	HAWKER (WILSON)	0.13	0.72	0.01	0.43	4.0	13.3	6.9	8.3
19061	CRADOCK (YEDNALUE)	0.16	0.68	0.01	0.38	3.9	14.6	6.2	8.5
19062	YONGALA	0.11	0.88	0.01	0.55	2.4	10.0	10.3	6.6
19098	CARRIETON (GLENROY ESTATE)	0.11	0.73	0.01	0.44	3.4	13.6	5.6	7.7
21010	BRINKWORTH (BUNGAREE)	0.11	0.95	0.01	0.61	1.5	14.0	4.6	4.7
21015	SNOWTOWN (CONDOWIE)	0.02	0.95	0.01	0.39	1.0	11.3	9.8	4.3
21025	CLARE (HILL RIVER)	0.19	0.95	0.01	0.58	2.1	13.6	6.3	4.8
21029	KOOLUNGA	0.05	0.98	0.01	0.48	1.4	11.3	6.1	3.6
21035	MOUNT TEMPLETON (GLENALBYN)	0.08	0.91	0.01	0.43	1.8	10.5	3.0	4.2
21043	PORT PIRIE ZINIFEX	0.06	0.93	0.01	0.46	2.4	12.1	3.8	4.4
21062	HALLETT (OLD CANOWIE)	0.12	0.93	0.01	0.56	2.6	12.9	11.8	5.5
21072	HUDDLESTON (WILLOW PONDS)	0.06	0.94	0.01	0.42	1.9	11.4	15.6	4.6
21075	CLARE (CALCANNIA)	0.08	0.94	0.01	0.55	1.7	13.0	4.6	4.4
21076	MANOORA (COOINDA)	0.09	0.96	0.01	0.52	2.5	12.2	13.9	4.2
21101	SNOWTOWN (BANYULA)	0.02	0.91	0.01	0.38	1.0	11.4	5.2	4.0
21102	CRYSTAL BROOK SECTION 299	0.04	0.93	0.01	0.41	1.6	12.2	9.5	4.5
21104	BALAKLAVA (WANAPPE)	0.10	0.97	0.01	0.46	1.5	10.4	4.0	4.2
21106	BOOWILLIA	0.05	0.97	0.01	0.39	1.9	10.4	3.7	4.2
21121	APOINGA (WILIVERE)	0.12	0.92	0.01	0.48	2.1	15.1	5.4	4.7
22008	MAITLAND	0.23	0.86	0.01	0.43	2.4	10.8	2.1	4.8
22019	MAITLAND (WEETULTA)	0.11	0.83	0.01	0.36	2.5	8.9	2.5	4.1

22021	ARDROSSAN (WINULTA)	0.12	0.85	0.01	0.33	2.5	10.2	1.7	6.1
22039	ARTHURTON (LOWANDALE)	0.18	0.84	0.01	0.41	2.3	10.2	1.7	4.6
23355	RIVERTON (LEAWARD)	0.16	0.95	0.01	0.51	2.0	12.7	3.8	5.4
24555	EUDUNDA (MOONDAH)	0.18	0.96	0.01	0.52	2.3	12.5	9.7	5.2

Table A.14 Rainfall probability and wet-day amount (mm) by weather state for NY MAM NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (4%)	2 (16%)	3 (68%)	4 (7%)	5 (5%)	1 (4%)	2 (16%)	3 (68%)	4 (7%)	5 (5%)
19004	BELTON (SHADOW VALE)	0.41	0.06	0.01	0.09	0.58	9.2	3.9	23.2	6.5	7.2
19025	MORCHARD (THE ROCKS)	0.72	0.11	0.01	0.39	0.86	7.5	2.7	22.1	2.5	8.9
19042	MELROSE (PARA GUMS)	0.76	0.15	0.01	0.49	0.88	7.1	2.7	7.5	3.5	10.0
19050	HAWKER (WILSON)	0.58	0.10	0.01	0.12	0.70	6.1	4.7	28.6	4.7	9.6
19061	CRADOCK (YEDNALUE)	0.56	0.08	0.01	0.13	0.63	8.4	5.4	9.2	5.0	9.5
19062	YONGALA	0.68	0.09	0.01	0.41	0.88	5.9	2.6	5.7	2.5	8.7
19098	CARRIETON (GLENROY ESTATE)	0.60	0.08	0.01	0.19	0.73	7.8	3.5	36.3	5.1	7.7
21010	BRINKWORTH (BUNGAREE)	0.68	0.22	0.01	0.80	0.98	5.8	2.1	6.7	4.1	13.4
21015	SNOWTOWN (CONDOWIE)	0.60	0.08	0.01	0.51	0.97	4.1	2.0	15.6	2.3	9.2
21025	CLARE (HILL RIVER)	0.66	0.25	0.01	0.87	0.99	5.2	2.0	6.9	4.9	14.5
21029	KOOLUNGA	0.62	0.11	0.01	0.64	0.99	5.6	1.7	6.0	2.6	10.5
21035	MOUNT TEMPLETON (GLENALBYN)	0.51	0.14	0.01	0.72	0.97	4.5	2.1	4.1	3.0	8.4
21043	PORT PIRIE ZINIFEX	0.64	0.14	0.01	0.49	0.90	6.0	2.6	5.9	3.2	9.5
21062	HALLETT (OLD CANOWIE)	0.76	0.12	0.01	0.75	0.94	6.8	1.8	11.7	3.2	11.3
21072	HUDDLESTON (WILLOW PONDS)	0.74	0.13	0.01	0.56	0.96	6.5	2.5	21.1	3.2	11.2
21075	CLARE (CALCANNIA)	0.61	0.15	0.01	0.84	0.97	6.1	2.0	13.5	3.5	12.6
21076	MANOORA (COOINDA)	0.56	0.18	0.01	0.78	1.00	6.7	2.5	5.7	3.1	10.6
21101	SNOWTOWN (BANYULA)	0.64	0.11	0.01	0.61	0.94	5.6	1.9	4.7	2.7	11.3
21102	CRYSTAL BROOK SECTION 299	0.59	0.13	0.01	0.55	0.95	5.9	2.0	8.5	3.2	10.5
21104	BALAKLAVA (WANAPPE)	0.52	0.13	0.01	0.80	0.95	5.2	1.7	4.2	3.0	9.6
21106	BOOWILLIA	0.53	0.08	0.01	0.71	0.92	5.3	1.7	4.3	2.7	9.9
21121	APOINGA (WILIVERE)	0.67	0.18	0.01	0.70	0.98	5.7	2.3	4.3	3.5	10.3
22008	MAITLAND	0.51	0.34	0.02	0.76	0.95	5.0	3.0	1.8	5.4	11.6
22019	MAITLAND (WEETULTA)	0.46	0.26	0.01	0.66	0.95	5.3	2.6	2.6	4.3	10.1

22021	ARDROSSAN (WINULTA)	0.41	0.25	0.02	0.64	0.95	4.8	2.3	2.2	4.4	10.1
22039	ARTHURTON (LOWANDALE)	0.49	0.34	0.01	0.70	0.92	5.1	2.8	2.7	5.3	12.0
23355	RIVERTON (LEAWARD)	0.58	0.25	0.01	0.78	0.96	5.4	2.2	3.5	4.5	11.3
24555	EUDUNDA (MOONDAH)	0.57	0.25	0.01	0.75	0.99	7.5	2.0	2.7	4.2	9.8

Table A.15 Rainfall probability and wet-day amount (mm) by weather state for NY JJA NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (12%)	2 (52%)	3 (9%)	4 (18%)	5 (9%)	1 (12%)	2 (52%)	3 (9%)	4 (18%)	5 (9%)
19004	BELTON (SHADOW VALE)	0.05	0.01	0.37	0.11	0.67	2.3	2.9	5.0	4.7	7.2
19025	MORCHARD (THE ROCKS)	0.35	0.01	0.84	0.23	0.94	2.4	2.6	4.8	3.0	8.6
19042	MELROSE (PARA GUMS)	0.49	0.02	0.91	0.28	0.94	2.7	2.1	6.4	2.9	10.4
19050	HAWKER (WILSON)	0.15	0.02	0.52	0.14	0.83	2.4	3.7	4.6	4.2	7.7
19061	CRADOCK (YEDNALUE)	0.18	0.02	0.55	0.16	0.77	2.2	2.4	4.6	3.9	7.5
19062	YONGALA	0.41	0.01	0.86	0.25	0.94	2.0	3.4	4.2	2.3	7.4
19098	CARRIETON (GLENROY ESTATE)	0.22	0.01	0.65	0.18	0.85	2.1	1.7	4.6	3.4	7.7
21010	BRINKWORTH (BUNGAREE)	0.87	0.03	0.95	0.42	0.99	3.7	1.8	7.7	2.2	12.1
21015	SNOWTOWN (CONDOWIE)	0.46	0.01	0.91	0.18	1.00	2.0	2.8	3.8	1.7	7.7
21025	CLARE (HILL RIVER)	0.93	0.02	0.97	0.47	1.00	4.2	1.8	9.1	2.1	13.4
21029	KOOLUNGA	0.66	0.01	0.94	0.30	0.99	2.2	2.7	4.7	2.1	9.1
21035	MOUNT TEMPLETON (GLENALBYN)	0.65	0.01	0.86	0.21	0.97	2.2	2.2	4.5	2.3	7.9
21043	PORT PIRIE ZINIFEX	0.39	0.01	0.70	0.23	0.98	2.6	1.7	4.2	2.4	7.2
21062	HALLETT (OLD CANOWIE)	0.76	0.01	0.96	0.37	0.97	3.0	1.2	8.0	2.4	11.2
21072	HUDDLESTON (WILLOW PONDS)	0.58	0.02	0.89	0.34	0.97	2.9	5.6	5.9	2.4	8.9
21075	CLARE (CALCANNIA)	0.90	0.01	0.98	0.40	0.99	3.3	3.1	7.1	2.0	11.7
21076	MANOORA (COOINDA)	0.86	0.01	0.95	0.35	0.99	2.8	2.1	7.0	1.9	9.6
21101	SNOWTOWN (BANYULA)	0.65	0.01	0.86	0.28	1.00	2.5	5.0	4.7	2.2	9.3
21102	CRYSTAL BROOK SECTION 299	0.46	0.01	0.79	0.22	0.98	2.3	3.1	4.5	2.2	8.1
21104	BALAKLAVA (WANAPPE)	0.73	0.01	0.91	0.25	0.96	2.6	1.3	4.7	2.1	7.9
21106	BOOWILLIA	0.65	0.01	0.88	0.23	0.97	2.3	2.4	4.1	2.0	8.2
21121	APOINGA (WILIVERE)	0.81	0.02	0.93	0.32	0.97	2.9	2.0	6.9	2.3	9.6
22008	MAITLAND	0.83	0.06	0.92	0.41	0.96	3.3	2.3	6.3	3.0	10.3

22019	MAITLAND (WEETULTA)	0.64	0.04	0.89	0.34	0.95	2.8	2.3	4.8	2.9	8.4
22021	ARDROSSAN (WINULTA)	0.72	0.05	0.83	0.35	0.96	2.7	2.2	5.8	2.8	9.1
22039	ARTHURTON (LOWANDALE)	0.78	0.05	0.91	0.43	0.95	3.3	2.1	6.2	2.9	10.6
23355	RIVERTON (LEAWARD)	0.83	0.04	0.95	0.43	0.97	3.2	2.4	6.6	2.4	9.6
24555	EUDUNDA (MOONDAH)	0.75	0.04	0.91	0.38	0.96	3.0	2.0	6.5	2.3	8.7

Table A.16 Rainfall probability and wet-day amount (mm) by weather state for NY SON NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (67%)	2 (9%)	3 (17%)	4 (7%)	1 (67%)	2 (9%)	3 (17%)	4 (7%)
19004	BELTON (SHADOW VALE)	0.01	0.24	0.09	0.69	5.9	6.9	6.1	9.3
19025	MORCHARD (THE ROCKS)	0.01	0.56	0.23	0.87	2.4	5.1	3.6	11.6
19042	MELROSE (PARA GUMS)	0.01	0.70	0.27	0.94	2.5	5.4	3.6	13.5
19050	HAWKER (WILSON)	0.02	0.31	0.14	0.74	4.0	6.6	4.9	10.7
19061	CRADOCK (YEDNALUE)	0.03	0.34	0.13	0.74	4.5	6.8	4.6	10.2
19062	YONGALA	0.01	0.70	0.20	0.93	2.1	4.1	3.2	10.6
19098	CARRIETON (GLENROY ESTATE)	0.02	0.44	0.17	0.80	4.3	5.2	4.3	10.2
21010	BRINKWORTH (BUNGAREE)	0.01	0.94	0.40	1.00	2.6	6.4	2.1	13.8
21015	SNOWTOWN (CONDOWIE)	0.01	0.74	0.15	1.00	1.8	3.7	2.2	9.5
21025	CLARE (HILL RIVER)	0.02	0.94	0.44	1.00	2.3	7.6	2.2	15.2
21029	KOOLUNGA	0.01	0.80	0.24	1.00	2.2	4.2	2.1	10.7
21035	MOUNT TEMPLETON (GLENALBYN)	0.01	0.78	0.24	0.99	1.7	4.2	1.9	9.8
21043	PORT PIRIE ZINIFEX	0.01	0.63	0.21	0.94	1.6	4.3	2.7	10.4
21062	HALLETT (OLD CANOWIE)	0.02	0.87	0.35	0.97	1.8	5.5	2.9	13.8
21072	HUDDLESTON (WILLOW PONDS)	0.01	0.76	0.24	0.98	5.0	4.8	2.5	12.0
21075	CLARE (CALCANNIA)	0.01	0.94	0.35	1.00	2.2	6.1	2.0	13.6
21076	MANOORA (COOINDA)	0.01	0.91	0.37	0.99	2.0	5.6	2.3	11.4
21101	SNOWTOWN (BANYULA)	0.01	0.73	0.24	0.97	1.0	4.3	2.4	10.9
21102	CRYSTAL BROOK SECTION 299	0.01	0.66	0.23	0.97	2.4	4.4	2.7	10.7
21104	BALAKLAVA (WANAPPE)	0.01	0.86	0.28	0.99	1.9	4.5	2.0	10.3
21106	BOOWILLIA	0.01	0.78	0.23	0.96	1.7	4.5	2.0	10.4
21121	APOINGA (WILIVERE)	0.01	0.89	0.33	0.98	5.0	6.0	2.4	11.1
22008	MAITLAND	0.03	0.79	0.36	0.95	1.7	4.7	2.8	11.1
22019	MAITLAND (WEETULTA)	0.01	0.66	0.33	0.94	1.8	3.9	2.4	10.1

22021	ARDROSSAN (WINULTA)	0.02	0.69	0.29	0.90	2.0	4.1	2.6	11.0
22039	ARTHURTON (LOWANDALE)	0.03	0.79	0.38	0.95	2.1	4.5	2.7	11.4
23355	RIVERTON (LEAWARD)	0.02	0.89	0.43	0.99	1.8	6.0	2.5	12.6
24555	EUDUNDA (MOONDAH)	0.01	0.89	0.40	0.99	1.5	5.8	2.2	11.4

Table A.17 Rainfall probability and wet-day amount (mm) by weather state for SAAL DJF NHMM

BoM ID	Name	State rain occurrence probability			State wet-day rain amount (mm)		
		1 (76%)	2 (18%)	3 (6%)	1 (76%)	2 (18%)	3 (6%)
16001	WOOMERA AERODROME	0.01	0.10	0.72	1.1	3.8	8.5
16007	COOBER PEDY	0.01	0.22	0.59	3.6	5.0	12.2
16009	GLENDAMBO (COONDAMBO)	0.01	0.13	0.54	1.5	4.7	11.8
16022	KONDOOLKA	0.01	0.16	0.47	3.2	5.8	10.2
16025	WOOMERA (MAHANEWO)	0.01	0.08	0.55	2.9	5.5	13.3
16031	TARCOOLA (MULGATHING)	0.02	0.20	0.49	3.7	6.1	11.8
16032	NONNING	0.02	0.17	0.52	2.3	4.6	12.3
16035	ROXBY DOWNS (PARAKYLIA STATION)	0.01	0.11	0.52	3.6	6.5	14.5
16043	WOOMERA (SOUTH GAP STN)	0.01	0.08	0.65	5.5	5.2	10.6
16047	TODMORDEN	0.01	0.22	0.51	4.4	9.2	15.0
16048	THE TWINS STATION	0.01	0.12	0.54	3.8	5.1	14.4
16055	YARDEA	0.02	0.14	0.54	2.1	5.2	11.2
16065	ANDAMOOKA	0.01	0.15	0.70	2.2	3.0	10.6
17024	MARREE (FARINA)	0.01	0.15	0.60	12.0	4.5	10.0
17028	INNAMINCKA STATION	0.02	0.15	0.22	10.6	18.6	18.7
17030	OODNADATTA (MACUMBA)	0.01	0.17	0.36	8.7	11.5	13.9
17031	MARREE	0.01	0.18	0.61	5.8	4.8	11.7
17037	MULOORINA STATION (MULOORINA	0.01	0.15	0.45	3.5	7.4	14.5
17041	BLINMAN (NARRINA)	0.01	0.21	0.78	2.5	4.0	13.3
17098	PARACHILNA (MOTPENA)	0.01	0.14	0.69	4.5	5.6	12.1
17099	ARKAROOLA	0.01	0.24	0.66	3.1	5.9	15.1
18074	ROOPENA	0.01	0.09	0.60	2.4	4.4	12.7
18114	MARALINGA	0.05	0.22	0.32	5.1	7.8	13.0

18117	WHYALLA (MOOLA)	0.02	0.18	0.46	2.8	5.0	13.8
19018	HAWKER (HOLOWILENA)	0.01	0.16	0.81	2.8	6.6	12.6
20005	ERUDINA	0.01	0.13	0.65	3.0	6.4	11.3
20013	MANNA HILL	0.02	0.17	0.65	6.5	7.2	13.2
20017	MUTOOROO	0.02	0.15	0.50	4.4	9.1	13.6
20021	YUNTA (PARATOO)	0.01	0.14	0.65	3.7	9.0	13.8
20049	MOOLEULOOLOO	0.01	0.12	0.56	4.4	8.0	11.0
38002	BIRDSVILLE POLICE STATION	0.02	0.21	0.32	7.1	10.9	11.8

Table A.18 Rainfall probability and wet-day amount (mm) by weather state for SAAL MAM NHMM

BoM ID	Name	State rain occurrence probability			State wet-day rain amount (mm)		
		1 (18%)	2 (6%)	3 (76%)	1 (18%)	2 (6%)	3 (76%)
16001	WOOMERA AERODROME	0.12	0.68	0.01	2.4	9.1	8.4
16007	COOBER PEDY	0.13	0.51	0.01	3.2	9.6	7.2
16009	GLENDAMBO (COONDAMBO)	0.13	0.62	0.01	2.9	9.9	1.9
16022	KONDOOLKA	0.34	0.51	0.01	4.1	8.2	1.6
16025	WOOMERA (MAHANEWO)	0.17	0.49	0.01	3.1	10.6	2.8
16031	TARCOOLA (MULGATHING)	0.19	0.48	0.01	4.2	8.7	1.7
16032	NONNING	0.32	0.51	0.01	3.4	11.1	1.7
16035	ROXBY DOWNS (PARAKYLIA STATION)	0.06	0.50	0.01	3.2	11.1	10.9
16043	WOOMERA (SOUTH GAP STN)	0.15	0.61	0.01	2.9	11.4	9.7
16047	TODMORDEN	0.11	0.41	0.01	6.2	12.6	2.7
16048	THE TWINS STATION	0.08	0.48	0.01	3.8	10.0	3.6
16055	YARDEA	0.34	0.55	0.01	3.6	9.8	2.0
16065	ANDAMOOKA	0.11	0.63	0.01	2.8	10.6	10.6
17024	MARREE (FARINA)	0.08	0.52	0.01	4.0	10.8	8.1
17028	INNAMINCKA STATION	0.08	0.32	0.01	8.9	13.9	4.6
17030	OODNADATTA (MACUMBA)	0.06	0.29	0.01	5.9	13.3	6.0
17031	MARREE	0.07	0.52	0.01	4.3	9.5	3.1
17037	MULOORINA STATION (MULOORINA	0.06	0.35	0.01	4.7	10.3	2.9
17041	BLINMAN (NARRINA)	0.16	0.63	0.01	3.4	12.9	9.8
17098	PARACHILNA (MOTPENA)	0.15	0.60	0.01	3.4	13.1	5.6
17099	ARKAROOLA	0.15	0.57	0.01	4.2	13.7	16.3
18074	ROOPENA	0.24	0.49	0.01	4.1	10.5	2.8
18114	MARALINGA	0.24	0.37	0.04	6.1	8.9	4.1

18117	WHYALLA (MOOLA)	0.33	0.43	0.03	4.4	8.3	3.1
19018	HAWKER (HOLOWILENA)	0.25	0.61	0.01	3.2	13.7	4.5
20005	ERUDINA	0.13	0.59	0.01	3.1	11.3	4.3
20013	MANNA HILL	0.22	0.55	0.01	3.8	9.7	4.3
20017	MUTOOROO	0.18	0.51	0.01	4.1	11.9	11.3
20021	YUNTA (PARATOO)	0.22	0.53	0.01	3.5	10.7	4.8
20049	MOOLEULOOLOO	0.16	0.51	0.01	4.0	11.5	15.2
38002	BIRDSVILLE POLICE STATION	0.11	0.29	0.02	6.4	16.5	4.7

Table A.19 Rainfall probability and wet-day amount (mm) by weather state for SAAL JJA NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (20%)	2 (6%)	3 (70%)	4 (4%)	1 (20%)	2 (6%)	3 (70%)	4 (4%)
16001	WOOMERA AERODROME	0.13	0.82	0.01	0.49	2.2	4.5	1.5	8.1
16007	COOBER PEDY	0.06	0.38	0.01	0.49	2.0	4.6	3.2	8.8
16009	GLENDAMBO (COONDAMBO)	0.19	0.62	0.01	0.53	2.1	4.6	2.7	8.0
16022	KONDOOLKA	0.58	0.66	0.05	0.52	4.4	7.4	2.3	8.7
16025	WOOMERA (MAHANEWO)	0.24	0.66	0.01	0.46	2.5	6.1	2.3	8.9
16031	TARCOOLA (MULGATHING)	0.15	0.50	0.01	0.54	2.6	4.7	3.2	8.1
16032	NONNING	0.56	0.80	0.03	0.49	3.2	6.0	1.5	9.1
16035	ROXBY DOWNS (PARAKYLIA STATION)	0.08	0.46	0.01	0.46	2.6	5.0	1.7	9.7
16043	WOOMERA (SOUTH GAP STN)	0.22	0.75	0.01	0.38	2.5	5.8	2.9	8.9
16047	TODMORDEN	0.05	0.19	0.01	0.36	2.8	8.9	4.7	9.0
16048	THE TWINS STATION	0.06	0.41	0.01	0.54	3.0	5.0	2.9	8.8
16055	YARDEA	0.56	0.77	0.08	0.51	4.4	6.6	1.6	9.5
16065	ANDAMOOKA	0.09	0.75	0.01	0.42	1.6	4.8	1.2	8.4
17024	MARREE (FARINA)	0.06	0.62	0.01	0.37	2.7	4.7	1.6	8.9
17028	INNAMINCKA STATION	0.05	0.21	0.01	0.25	9.5	12.8	6.2	12.1
17030	OODNADATTA (MACUMBA)	0.03	0.17	0.01	0.36	3.1	8.8	6.7	9.3
17031	MARREE	0.05	0.59	0.01	0.44	2.5	5.2	1.6	8.5
17037	MULOORINA STATION (MULOORINA	0.04	0.28	0.01	0.55	3.5	7.0	2.0	8.5
17041	BLINMAN (NARRINA)	0.23	0.88	0.01	0.35	2.7	6.0	1.4	8.0
17098	PARACHILNA (MOTPENA)	0.22	0.85	0.01	0.35	2.5	6.4	1.5	8.7
17099	ARKAROOLA	0.14	0.71	0.01	0.31	3.2	6.0	2.4	9.8
18074	ROOPENA	0.42	0.70	0.03	0.35	2.8	6.2	1.8	11.7
18114	MARALINGA	0.21	0.34	0.05	0.50	3.3	4.3	3.5	8.2

18117	WHYALLA (MOOLA)	0.53	0.69	0.09	0.50	3.2	5.2	2.2	8.7
19018	HAWKER (HOLOWILENA)	0.44	0.93	0.01	0.30	3.4	7.4	1.6	9.6
20005	ERUDINA	0.12	0.79	0.01	0.25	2.0	5.6	1.4	8.1
20013	MANNA HILL	0.30	0.80	0.01	0.25	2.9	6.6	1.6	7.1
20017	MUTOOROO	0.25	0.71	0.01	0.14	3.7	7.5	2.0	5.0
20021	YUNTA (PARATOO)	0.29	0.77	0.02	0.25	3.5	6.7	2.1	8.5
20049	MOOLEULOOLOO	0.19	0.74	0.01	0.22	3.3	7.0	1.8	5.1
38002	BIRDSVILLE POLICE STATION	0.05	0.25	0.01	0.17	4.5	9.0	3.9	13.7

Table A.20 Rainfall probability and wet-day amount (mm) by weather state for SAAL SON NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (13%)	2 (23%)	3 (61%)	4 (4%)	1 (13%)	2 (23%)	3 (61%)	4 (4%)
16001	WOOMERA AERODROME	0.41	0.02	0.01	0.81	3.1	1.4	1.3	8.8
16007	COOBER PEDY	0.24	0.07	0.01	0.68	4.9	3.3	2.0	6.7
16009	GLENDAMBO (COONDAMBO)	0.33	0.07	0.01	0.73	4.1	3.0	2.6	9.8
16022	KONDOOLKA	0.39	0.17	0.02	0.69	6.4	3.6	2.5	11.1
16025	WOOMERA (MAHANEWO)	0.35	0.06	0.01	0.75	4.1	2.6	7.1	12.1
16031	TARCOOLA (MULGATHING)	0.32	0.11	0.01	0.69	4.8	2.9	3.7	10.6
16032	NONNING	0.47	0.18	0.01	0.69	5.2	2.5	2.6	13.2
16035	ROXBY DOWNS (PARAKYLIA STATION)	0.22	0.02	0.01	0.63	3.6	4.3	10.6	10.7
16043	WOOMERA (SOUTH GAP STN)	0.34	0.03	0.01	0.77	4.0	2.0	10.4	12.1
16047	TODMORDEN	0.20	0.12	0.01	0.51	6.3	4.4	9.1	10.0
16048	THE TWINS STATION	0.18	0.05	0.01	0.65	4.3	3.7	3.1	9.3
16055	YARDEA	0.46	0.17	0.01	0.66	5.9	3.2	2.0	11.2
16065	ANDAMOOKA	0.34	0.03	0.01	0.85	3.7	1.8	1.9	11.1
17024	MARREE (FARINA)	0.28	0.01	0.01	0.74	3.4	3.7	2.3	11.2
17028	INNAMINCKA STATION	0.18	0.05	0.01	0.32	8.1	8.0	6.5	12.6
17030	OODNADATTA (MACUMBA)	0.14	0.09	0.01	0.44	7.1	4.3	5.7	10.3
17031	MARREE	0.28	0.03	0.01	0.72	3.7	3.4	2.4	9.7
17037	MULOORINA STATION (MULOORINA	0.15	0.05	0.01	0.50	4.3	5.1	2.6	10.8
17041	BLINMAN (NARRINA)	0.45	0.06	0.01	0.86	4.2	2.1	2.0	11.9
17098	PARACHILNA (MOTPENA)	0.41	0.01	0.01	0.86	3.8	1.1	7.5	11.2
17099	ARKAROOLA	0.38	0.03	0.01	0.80	4.7	4.9	2.1	12.4
18074	ROOPENA	0.40	0.09	0.01	0.63	5.4	2.8	1.8	12.9
18114	MARALINGA	0.22	0.19	0.04	0.44	8.9	4.3	3.9	6.9

18117	WHYALLA (MOOLA)	0.43	0.19	0.03	0.59	6.6	3.1	2.5	13.4
19018	HAWKER (HOLOWILENA)	0.51	0.07	0.01	0.85	5.4	2.4	1.8	13.0
20005	ERUDINA	0.34	0.02	0.01	0.82	4.6	1.8	2.0	12.2
20013	MANNA HILL	0.42	0.03	0.01	0.75	6.3	1.6	2.8	12.1
20017	MUTOOROO	0.36	0.05	0.02	0.64	7.3	2.9	4.8	11.1
20021	YUNTA (PARATOO)	0.44	0.05	0.01	0.75	6.3	3.1	2.8	11.5
20049	MOOLEULOOLOO	0.38	0.04	0.01	0.72	6.1	2.8	3.7	9.4
38002	BIRDSVILLE POLICE STATION	0.17	0.07	0.01	0.44	9.3	5.4	5.9	6.6

Table A.21 Rainfall probability and wet-day amount (mm) by weather state for SA MDB DJF NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (14%)	2 (74%)	3 (9%)	4 (3%)	1 (14%)	2 (74%)	3 (9%)	4 (3%)
20025	BURRA (WOOLGANGI)	0.11	0.01	0.32	0.90	4.6	3.4	8.0	11.5
21086	BURRA (WORLDS END)	0.08	0.01	0.45	0.93	1.9	2.0	5.4	14.3
21120	WHYTE-YARCOWIE (GUM PARK)	0.12	0.01	0.43	0.94	4.3	1.6	5.7	12.2
23722	HARROGATE	0.21	0.01	0.53	0.98	1.9	3.4	4.9	14.8
23724	KANMANTOO	0.18	0.01	0.49	0.94	1.9	4.0	4.2	13.0
23733	MOUNT BARKER	0.28	0.01	0.57	0.98	2.3	3.6	5.3	13.1
23812	ROCKLEIGH (BLACK HEATH)	0.19	0.01	0.52	0.97	1.8	3.2	4.8	15.2
23822	HARTLEY (PINE HILL)	0.15	0.01	0.46	0.93	1.9	4.0	5.0	12.4
24003	RENMARK IRRIGATION	0.07	0.01	0.41	0.83	2.7	1.6	5.3	10.7
24013	LOXTON (PYAP)	0.04	0.01	0.43	0.90	1.3	2.0	5.4	10.8
24031	DUFFIELD RAMCO	0.04	0.01	0.51	0.92	3.1	1.7	4.5	12.9
24037	PARINGA LOCK V	0.05	0.01	0.43	0.83	3.5	1.6	5.5	10.9
24511	EUDUNDA	0.12	0.01	0.60	0.97	1.9	1.2	4.8	15.4
24521	MURRAY BRIDGE	0.10	0.01	0.50	1.00	1.6	2.5	4.8	10.9
24528	ROBERTSTOWN	0.10	0.01	0.45	0.97	2.5	2.2	5.0	14.6
24533	MURRAY BRIDGE (TEPKO)	0.09	0.01	0.36	0.95	2.2	2.1	5.0	12.2
24547	NILDOTTIE	0.04	0.01	0.47	0.95	2.4	1.1	3.5	10.9
24554	TAILEM BEND (RIVER DOWNS)	0.13	0.01	0.54	0.94	2.3	1.1	4.1	12.9
24564	BLANCHETOWN LOCK 1	0.04	0.01	0.53	0.93	1.5	1.0	4.4	12.4
24572	WELLINGTON (BRINKLEY SOUTH)	0.14	0.01	0.49	0.93	1.9	2.9	5.2	10.2
24576	MILANG (NAVARINO)	0.22	0.01	0.45	0.90	2.4	2.5	4.9	11.0
25002	PURNONG (CLAYPANS)	0.04	0.01	0.47	0.99	2.1	3.4	3.5	11.0
25036	KULKAMI	0.05	0.01	0.54	0.95	2.4	1.1	4.2	12.6

25039	LOWALDIE (CARRAWAR STUD)	0.07	0.01	0.51	0.97	2.1	9.0	3.6	11.3
25040	BOWHILL	0.05	0.01	0.50	0.92	2.5	4.7	3.9	10.4
25044	NEW WELL (MARFIELD)	0.03	0.01	0.43	0.91	2.1	4.7	4.6	11.5
25046	PINNAROO (KOMBALI)	0.06	0.01	0.49	0.85	2.9	2.2	5.7	11.9
25050	CALIPH	0.01	0.01	0.53	0.92	1.3	18.0	4.4	10.9
25509	LAMEROO	0.09	0.01	0.61	0.97	2.1	2.3	4.7	11.6
25542	LAMEROO (ARTLARINGA)	0.11	0.01	0.55	0.92	2.1	4.9	6.4	11.9

Table A.22 Rainfall probability and wet-day amount (mm) by weather state for SA MDB MAM NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (11%)	2 (65%)	3 (6%)	4 (18%)	1 (11%)	2 (65%)	3 (6%)	4 (18%)
20025	BURRA (WOOLGANGI)	0.27	0.00	0.74	0.07	3.8	1.4	7.1	4.0
21086	BURRA (WORLDS END)	0.43	0.00	0.92	0.08	3.1	1.1	8.6	2.2
21120	WHYTE-YARCOWIE (GUM PARK)	0.52	0.00	0.87	0.13	3.5	8.2	10.4	2.8
23722	HARROGATE	0.74	0.02	0.95	0.31	4.6	1.8	12.7	2.6
23724	KANMANTOO	0.65	0.01	0.92	0.28	4.2	3.1	10.2	2.3
23733	MOUNT BARKER	0.79	0.01	0.95	0.46	6.8	3.3	15.7	2.6
23812	ROCKLEIGH (BLACK HEATH)	0.71	0.01	0.95	0.30	4.3	3.6	10.9	2.3
23822	HARTLEY (PINE HILL)	0.60	0.01	0.92	0.25	3.8	4.3	9.4	2.3
24003	RENMARK IRRIGATION	0.36	0.00	0.81	0.05	3.4	3.2	6.7	2.6
24013	LOXTON (PYAP)	0.33	0.00	0.87	0.05	3.5	3.9	7.3	1.5
24031	DUFFIELD RAMCO	0.47	0.00	0.89	0.03	3.4	7.2	9.3	1.0
24037	PARINGA LOCK V	0.41	0.00	0.81	0.07	3.8	7.4	7.3	2.3
24511	EUDUNDA	0.66	0.00	0.96	0.18	3.7	1.5	11.1	2.2
24521	MURRAY BRIDGE	0.62	0.00	0.96	0.25	3.1	1.0	9.7	1.8
24528	ROBERTSTOWN	0.47	0.00	0.89	0.12	2.8	8.7	9.3	2.4
24533	MURRAY BRIDGE (TEPKO)	0.53	0.01	0.87	0.14	3.4	5.3	8.5	1.9
24547	NILDOTTIE	0.37	0.00	0.94	0.04	2.5	3.9	8.7	2.8
24554	TAILEM BEND (RIVER DOWNS)	0.62	0.00	0.94	0.22	3.6	1.1	9.8	1.8
24564	BLANCHETOWN LOCK 1	0.43	0.00	0.92	0.06	2.5	1.2	8.5	2.7
24572	WELLINGTON (BRINKLEY SOUTH)	0.64	0.01	0.91	0.26	3.7	6.6	9.3	1.9
24576	MILANG (NAVARINO)	0.63	0.02	0.89	0.34	4.2	1.7	9.6	2.0
25002	PURNONG (CLAYPANS)	0.50	0.00	0.98	0.08	2.6	1.0	9.9	2.1
25036	KULKAMI	0.55	0.00	0.96	0.09	3.0	7.8	9.3	2.4

25039	LOWALDIE (CARRAWAR STUD)	0.54	0.00	0.96	0.11	3.0	5.0	8.8	1.8
25040	BOWHILL	0.53	0.00	0.98	0.10	3.1	1.8	9.6	2.0
25044	NEW WELL (MARFIELD)	0.35	0.01	0.96	0.04	3.0	3.5	8.6	1.5
25046	PINNAROO (KOMBALI)	0.48	0.01	0.85	0.09	3.3	2.4	8.2	2.3
25050	CALIPH	0.44	0.00	0.98	0.04	2.8	5.7	7.1	3.1
25509	LAMEROO	0.59	0.01	0.92	0.14	3.4	3.7	9.3	1.8
25542	LAMEROO (ARTLARINGA)	0.57	0.01	0.90	0.18	3.4	2.2	9.2	2.3

Table A.23 Rainfall probability and wet-day amount (mm) by weather state for SA MDB JJA NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (48%)	2 (13%)	3 (7%)	4 (26%)	5 (6%)	1 (48%)	2 (13%)	3 (7%)	4 (26%)	5 (6%)
20025	BURRA (WOOLGANGI)	0.02	0.28	0.36	0.04	0.86	5.3	3.0	2.4	2.1	7.1
21086	BURRA (WORLDS END)	0.02	0.61	0.84	0.16	0.99	5.5	3.1	5.2	1.5	9.2
21120	WHYTE-YARCOWIE (GUM PARK)	0.03	0.75	0.90	0.26	0.97	5.2	4.5	7.8	2.3	10.9
23722	HARROGATE	0.03	0.92	0.99	0.48	0.98	2.0	5.3	12.3	2.7	13.2
23724	KANMANTOO	0.02	0.81	0.98	0.39	0.95	1.8	4.1	9.0	2.2	9.8
23733	MOUNT BARKER	0.04	0.91	0.99	0.66	0.99	1.5	7.1	15.4	3.3	13.8
23812	ROCKLEIGH (BLACK HEATH)	0.02	0.82	0.98	0.44	0.98	3.1	4.5	10.4	2.2	11.3
23822	HARTLEY (PINE HILL)	0.02	0.70	0.95	0.32	0.86	2.5	3.6	7.5	2.2	8.3
24003	RENMARK IRRIGATION	0.01	0.38	0.61	0.09	0.95	4.8	3.7	3.3	1.7	7.3
24013	LOXTON (PYAP)	0.01	0.42	0.75	0.08	0.96	3.2	3.1	2.9	1.7	8.2
24031	DUFFIELD RAMCO	0.01	0.46	0.62	0.11	0.97	4.4	3.1	2.8	1.6	8.4
24037	PARINGA LOCK V	0.01	0.42	0.67	0.12	0.95	6.2	3.8	3.3	1.7	8.2
24511	EUDUNDA	0.02	0.80	0.97	0.36	0.99	3.6	3.8	7.7	2.1	10.9
24521	MURRAY BRIDGE	0.01	0.67	0.97	0.27	0.95	1.1	3.2	5.7	1.9	8.6
24528	ROBERTSTOWN	0.03	0.66	0.89	0.18	0.96	4.0	3.3	5.6	1.7	9.4
24533	MURRAY BRIDGE (TEPKO)	0.02	0.71	0.91	0.20	0.89	3.4	3.1	6.1	1.9	8.8
24547	NILDOTTIE	0.01	0.49	0.74	0.10	1.00	2.0	2.6	3.1	1.5	7.9
24554	TAILEM BEND (RIVER DOWNS)	0.01	0.74	0.98	0.30	0.97	2.6	3.0	6.2	2.1	8.9
24564	BLANCHETOWN LOCK 1	0.01	0.49	0.70	0.11	0.99	3.2	2.6	2.9	1.4	8.1
24572	WELLINGTON (BRINKLEY SOUTH)	0.02	0.73	1.00	0.32	0.92	1.7	3.5	6.0	2.1	8.6
24576	MILANG (NAVARINO)	0.03	0.77	0.99	0.44	0.94	1.5	3.9	7.0	2.4	8.1
25002	PURNONG (CLAYPANS)	0.01	0.61	0.87	0.17	0.97	4.3	2.7	4.4	1.6	8.7
25036	KULKAMI	0.01	0.64	0.95	0.23	0.99	3.0	2.9	5.1	1.8	8.4
25039	LOWALDIE (CARRAWAR STUD)	0.01	0.67	0.95	0.22	0.99	1.8	2.6	4.7	1.8	8.0

25040	BOWHILL	0.02	0.66	0.86	0.19	0.98	2.0	2.4	4.7	1.6	8.3
25044	NEW WELL (MARFIELD)	0.02	0.49	0.76	0.11	0.94	2.4	2.7	3.1	1.7	8.8
25046	PINNAROO (KOMBALI)	0.01	0.58	0.86	0.22	0.97	2.1	3.0	4.6	1.9	8.8
25050	CALIPH	0.01	0.53	0.88	0.13	0.99	2.0	2.6	3.3	1.5	7.9
25509	LAMEROO	0.01	0.68	0.94	0.30	0.99	1.4	3.2	5.9	1.9	9.2
25542	LAMEROO (ARTLARINGA)	0.03	0.72	0.93	0.35	0.97	2.1	3.4	5.7	2.3	9.2

Table A.24 Rainfall probability and wet-day amount (mm) by weather state for SA MDB SON NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (11%)	2 (66%)	3 (17%)	4 (11%)	1 (11%)	2 (66%)	3 (17%)	4 (11%)
20025	BURRA (WOOLGANGI)	0.36	0.01	0.10	0.79	4.6	2.5	4.5	9.6
21086	BURRA (WORLDS END)	0.60	0.01	0.20	0.97	4.1	1.8	2.6	10.0
21120	WHYTE-YARCOWIE (GUM PARK)	0.69	0.02	0.28	0.94	5.3	2.7	3.7	12.4
23722	HARROGATE	0.87	0.03	0.49	0.98	5.6	1.8	2.5	13.8
23724	KANMANTOO	0.82	0.01	0.37	0.95	4.9	2.9	2.1	11.0
23733	MOUNT BARKER	0.88	0.03	0.58	0.99	7.2	1.6	3.1	13.8
23812	ROCKLEIGH (BLACK HEATH)	0.86	0.02	0.39	0.97	5.3	1.9	2.3	12.8
23822	HARTLEY (PINE HILL)	0.73	0.01	0.32	0.93	4.3	1.9	2.1	10.2
24003	RENMARK IRRIGATION	0.47	0.01	0.10	0.91	4.1	1.6	3.2	8.4
24013	LOXTON (PYAP)	0.52	0.01	0.12	0.92	3.6	2.1	2.9	8.9
24031	DUFFIELD RAMCO	0.52	0.01	0.15	0.94	3.6	2.7	2.1	9.8
24037	PARINGA LOCK V	0.51	0.02	0.10	0.91	4.1	2.2	3.3	8.8
24511	EUDUNDA	0.83	0.01	0.34	0.99	5.4	1.2	2.3	12.0
24521	MURRAY BRIDGE	0.82	0.01	0.28	0.99	3.7	1.1	2.0	10.3
24528	ROBERTSTOWN	0.68	0.01	0.23	0.95	4.7	2.0	2.6	10.2
24533	MURRAY BRIDGE (TEPKO)	0.74	0.01	0.21	0.90	3.6	4.5	1.8	10.4
24547	NILDOTTIE	0.58	0.01	0.11	0.96	3.3	4.1	2.6	9.1
24554	TAILEM BEND (RIVER DOWNS)	0.76	0.01	0.33	0.98	3.8	1.6	2.1	10.5
24564	BLANCHETOWN LOCK 1	0.60	0.01	0.14	0.98	3.5	1.7	2.8	9.7
24572	WELLINGTON (BRINKLEY SOUTH)	0.73	0.01	0.32	0.97	4.1	1.6	2.1	9.8
24576	MILANG (NAVARINO)	0.76	0.02	0.38	0.94	4.4	1.6	2.3	10.2
25002	PURNONG (CLAYPANS)	0.63	0.01	0.14	0.99	3.7	1.7	2.3	9.7
25036	KULKAMI	0.70	0.01	0.22	0.99	3.7	1.9	2.0	10.1

25039	LOWALDIE (CARRAWAR STUD)	0.75	0.01	0.16	0.99	3.4	3.9	1.6	10.0
25040	BOWHILL	0.73	0.01	0.14	0.95	3.0	3.4	2.1	9.9
25044	NEW WELL (MARFIELD)	0.55	0.01	0.12	0.96	3.4	1.7	2.5	9.8
25046	PINNAROO (KOMBALI)	0.60	0.01	0.21	0.95	4.1	2.5	2.3	10.4
25050	CALIPH	0.62	0.01	0.15	0.99	3.4	2.7	2.0	9.1
25509	LAMEROO	0.78	0.01	0.29	0.98	4.0	1.3	2.0	10.2
25542	LAMEROO (ARTLARINGA)	0.77	0.02	0.33	0.95	4.3	2.9	2.2	10.6

Table A.25 Rainfall probability and wet-day amount (mm) by weather state for SE DJF NHMM

BoM ID	Name	State rain occurrence probability				State wet-day rain amount (mm)			
		1 (5%)	2 (13%)	3 (78%)	4 (4%)	1 (5%)	2 (13%)	3 (78%)	4 (4%)
25507	KEITH	0.78	0.19	0.01	0.98	4.3	1.7	13.0	10.7
25518	WIRREGA (TAUNTON)	0.67	0.20	0.01	0.96	5.1	2.4	3.3	10.3
25523	MENINGIE (NARANGA)	0.64	0.22	0.01	0.96	6.3	2.6	3.4	10.0
25525	BORDERTOWN (INGLEWOOD)	0.62	0.22	0.01	0.96	5.1	2.5	7.7	10.2
25526	TINTINARA (COLEBATCH DOWNS)	0.74	0.18	0.01	0.91	5.0	1.7	4.0	11.8
25527	COONALPYN (ALPYN DOWNS)	0.62	0.20	0.01	0.91	6.2	2.0	11.7	11.4
25541	KEITH (MANDURAMA)	0.65	0.18	0.01	0.91	4.9	2.1	1.7	10.8
25543	KI KI (MOORILLA)	0.49	0.12	0.01	0.85	5.3	2.4	3.9	11.4
25546	TINTINARA (RICHARDS)	0.72	0.18	0.01	0.95	5.1	1.8	4.4	12.0
26010	KINGSTON SE (KEILIRA STATION)	0.51	0.25	0.01	0.84	6.6	2.7	3.6	12.1
26014	LAKE LEAKE (KOOEEYONG)	0.72	0.63	0.04	0.88	7.4	3.2	1.5	12.7
26017	PADTHAWAY (MARCOLLAT)	0.70	0.27	0.01	0.99	5.3	2.0	1.1	12.1
26021	MOUNT GAMBIER AERO	0.66	0.59	0.03	0.86	7.5	3.0	1.4	12.1
26026	ROBE	0.57	0.37	0.01	0.87	5.3	2.4	1.7	9.6
26027	TANTANOOLA	0.64	0.60	0.03	0.85	7.6	2.9	1.9	12.8
26037	BORDERTOWN (YACCA VALE)	0.65	0.27	0.01	0.98	5.5	2.3	3.7	11.2
26049	POLICEMANS POINT	0.73	0.19	0.01	0.96	4.9	1.9	1.9	10.2
26058	BORDERTOWN (BEEAMA SECTION 48)	0.68	0.31	0.01	0.94	5.2	2.4	3.4	11.8
26062	NARACOORTE (BETTWS-Y-COED)	0.67	0.36	0.01	0.95	6.9	2.1	4.6	11.9
26065	SALT CREEK (PITLOCHRY OUTSTATION 1)	0.61	0.22	0.01	0.94	5.8	2.1	2.7	9.3
26067	MOUNT SCHANK (JETHIA)	0.62	0.51	0.03	0.81	8.4	3.5	1.6	12.2
26069	LUCINDALE (GREENVALE)	0.67	0.22	0.01	0.93	5.3	2.3	4.2	11.6
26075	WRATTONBULLY (JOEVILLE)	0.73	0.46	0.01	0.93	7.0	2.9	2.3	13.3
26078	AVENUE (DOWNER)	0.66	0.32	0.01	0.91	6.7	2.8	2.4	11.7

Table A.26 Rainfall probability and wet-day amount (mm) by weather state for SE MAM NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (6%)	2 (11%)	3 (19%)	4 (5%)	5 (59%)	1 (6%)	2 (11%)	3 (19%)	4 (5%)	5 (59%)
25507	KEITH	0.97	0.43	0.07	0.90	0.01	9.2	2.0	2.8	6.6	1.6
25518	WIRREGA (TAUNTON)	0.98	0.44	0.07	0.88	0.01	9.0	2.3	2.2	5.7	1.0
25523	MENINGIE (NARANGA)	0.95	0.58	0.19	0.79	0.01	10.1	2.9	2.3	7.8	3.0
25525	BORDERTOWN (INGLEWOOD)	0.96	0.44	0.11	0.84	0.01	8.5	2.5	2.6	7.0	1.0
25526	TINTINARA (COLEBATCH DOWNS)	0.95	0.50	0.16	0.83	0.01	10.2	2.4	2.2	5.7	4.5
25527	COONALPYN (ALPYN DOWNS)	0.91	0.47	0.12	0.79	0.01	9.6	2.6	2.2	6.5	3.6
25541	KEITH (MANDURAMA)	0.96	0.33	0.07	0.82	0.01	9.1	2.1	2.7	5.8	1.0
25543	KI KI (MOORILLA)	0.90	0.30	0.10	0.74	0.01	8.6	2.5	2.7	6.9	3.0
25546	TINTINARA (RICHARDS)	0.98	0.50	0.12	0.87	0.01	10.1	2.5	2.2	6.1	9.9
26010	KINGSTON SE (KEILIRA STATION)	0.92	0.58	0.13	0.74	0.01	10.5	3.3	3.5	6.9	3.8
26014	LAKE LEAKE (KOOEEYONG)	0.96	0.91	0.41	0.82	0.04	14.2	4.7	2.0	9.0	1.5
26017	PADTHAWAY (MARCOLLAT)	0.98	0.53	0.10	0.86	0.01	10.0	2.2	2.9	7.0	1.2
26021	MOUNT GAMBIER AERO	0.96	0.89	0.38	0.80	0.01	12.5	4.0	1.9	7.7	1.2
26026	ROBE	0.96	0.75	0.24	0.81	0.01	10.8	3.8	1.9	7.9	3.2
26027	TANTANOOLA	0.93	0.88	0.38	0.81	0.03	13.6	4.4	2.0	7.7	1.8
26037	BORDERTOWN (YACCA VALE)	1.00	0.56	0.09	0.85	0.01	9.8	2.3	1.9	5.9	1.2
26049	POLICEMANS POINT	1.00	0.59	0.21	0.87	0.01	10.0	2.7	2.0	5.5	1.2
26058	BORDERTOWN (BEEAMA SECTION 48)	0.97	0.58	0.11	0.83	0.01	9.9	2.6	2.1	6.0	3.8
26062	NARACOORTE (BETTWS-Y-COED)	0.97	0.73	0.12	0.79	0.01	10.3	2.7	2.9	5.9	2.3
26065	SALT CREEK (PITLOCHRY OUTSTATION 1)	0.97	0.54	0.15	0.81	0.01	9.7	2.9	2.2	5.8	4.7
26067	MOUNT SCHANK (JETHIA)	0.94	0.87	0.40	0.76	0.03	11.8	4.3	2.3	8.2	1.9
26069	LUCINDALE (GREENVALE)	0.99	0.59	0.12	0.83	0.01	10.2	2.7	2.0	6.4	1.6
26075	WRATTONBULLY (JOEVILLE)	0.93	0.70	0.24	0.81	0.01	11.0	2.9	2.3	7.0	1.7
26078	AVENUE (DOWNER)	0.95	0.69	0.17	0.81	0.01	11.3	3.4	2.7	6.8	2.0

Table A.27 Rainfall probability and wet-day amount (mm) by weather state for SE JJA NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (13%)	2 (25%)	3 (12%)	4 (11%)	5 (39%)	1 (13%)	2 (25%)	3 (12%)	4 (11%)	5 (39%)
25507	KEITH	0.74	0.15	0.99	0.85	0.01	2.8	1.8	8.8	4.4	3.9
25518	WIRREGA (TAUNTON)	0.72	0.20	0.99	0.83	0.01	3.0	1.9	8.9	4.4	4.6
25523	MENINGIE (NARANGA)	0.73	0.30	0.95	0.80	0.05	3.6	2.7	9.7	4.9	3.1
25525	BORDERTOWN (INGLEWOOD)	0.64	0.20	0.98	0.80	0.01	3.2	1.7	8.7	4.5	2.2
25526	TINTINARA (COLEBATCH DOWNS)	0.78	0.24	0.98	0.81	0.02	3.5	1.9	9.9	4.7	3.8
25527	COONALPYN (ALPYN DOWNS)	0.66	0.23	0.97	0.67	0.03	4.2	2.3	8.7	4.7	3.2
25541	KEITH (MANDURAMA)	0.67	0.14	0.98	0.79	0.01	3.1	2.1	8.6	4.2	2.2
25543	KI KI (MOORILLA)	0.56	0.14	0.93	0.60	0.03	3.4	2.2	7.9	4.1	3.1
25546	TINTINARA (RICHARDS)	0.74	0.23	0.99	0.84	0.03	3.5	1.9	9.9	4.6	2.9
26010	KINGSTON SE (KEILIRA STATION)	0.71	0.32	0.91	0.86	0.05	3.9	3.1	10.1	6.8	4.7
26014	LAKE LEAKE (KOOEEYONG)	0.82	0.64	0.98	0.95	0.12	4.4	3.8	13.0	9.7	2.4
26017	PADTHAWAY (MARCOLLAT)	0.76	0.22	0.99	0.92	0.02	2.9	1.7	10.6	5.4	3.0
26021	MOUNT GAMBIER AERO	0.79	0.56	0.97	0.96	0.07	3.6	3.5	11.1	7.8	1.5
26026	ROBE	0.75	0.58	0.99	0.97	0.09	4.1	4.0	10.8	7.5	2.5
26027	TANTANOOLA	0.82	0.64	0.98	0.95	0.09	4.1	4.1	12.3	9.3	2.4
26037	BORDERTOWN (YACCA VALE)	0.71	0.25	0.99	0.92	0.01	2.8	1.9	9.7	4.7	4.0
26049	POLICEMANS POINT	0.81	0.35	1.00	0.91	0.03	3.8	2.2	9.7	5.1	2.3
26058	BORDERTOWN (BEEAMA SECTION 48)	0.70	0.26	0.99	0.95	0.02	3.0	1.9	10.3	5.0	3.6
26062	NARACOORTE (BETTWS-Y-COED)	0.74	0.37	0.98	0.93	0.03	3.0	2.2	10.0	6.1	1.7
26065	SALT CREEK (PITLOCHRY OUTSTATION 1)	0.77	0.28	0.94	0.85	0.03	3.4	2.5	10.1	5.8	2.5
26067	MOUNT SCHANK (JETHIA)	0.77	0.64	0.96	0.96	0.11	4.2	3.9	11.5	8.4	2.1
26069	LUCINDALE (GREENVALE)	0.73	0.27	0.99	0.96	0.01	2.9	2.1	10.2	5.3	1.6
26075	WRATTONBULLY (JOEVILLE)	0.76	0.46	0.99	0.93	0.05	3.3	2.7	10.7	6.4	3.6
26078	AVENUE (DOWNER)	0.68	0.40	0.92	0.85	0.04	3.6	3.0	11.7	7.7	5.4

Table A.28 Rainfall probability and wet-day amount (mm) by weather state for SE SON NHMM

BoM ID	Name	State rain occurrence probability					State wet-day rain amount (mm)				
		1 (7%)	2 (7%)	3 (21%)	4 (9%)	5 (55%)	1 (7%)	2 (7%)	3 (21%)	4 (9%)	5 (55%)
25507	KEITH	0.89	0.98	0.12	0.76	0.01	3.9	10.1	1.7	2.8	1.8
25518	WIRREGA (TAUNTON)	0.86	0.98	0.16	0.75	0.01	4.5	10.0	2.1	3.2	2.6
25523	MENINGIE (NARANGA)	0.74	0.95	0.24	0.63	0.01	3.8	10.1	2.4	3.1	2.8
25525	BORDERTOWN (INGLEWOOD)	0.83	0.98	0.18	0.70	0.01	4.8	9.9	2.0	3.2	2.9
25526	TINTINARA (COLEBATCH DOWNS)	0.81	0.98	0.21	0.76	0.01	4.4	10.8	1.9	3.4	2.6
25527	COONALPYN (ALPYN DOWNS)	0.67	0.94	0.20	0.59	0.01	4.1	10.1	2.5	3.9	2.5
25541	KEITH (MANDURAMA)	0.80	0.99	0.13	0.66	0.01	4.7	9.8	2.2	3.5	2.1
25543	KI KI (MOORILLA)	0.64	0.87	0.15	0.58	0.02	4.6	9.3	2.9	3.7	3.0
25546	TINTINARA (RICHARDS)	0.85	0.97	0.17	0.73	0.01	4.5	10.3	2.1	3.5	2.0
26010	KINGSTON SE (KEILIRA STATION)	0.81	0.89	0.27	0.60	0.02	5.3	11.5	2.2	3.2	4.0
26014	LAKE LEAKE (KOOEEYONG)	0.93	0.96	0.61	0.81	0.06	8.2	13.0	2.7	4.4	1.7
26017	PADTHAWAY (MARCOLLAT)	0.93	0.98	0.19	0.72	0.01	4.7	10.8	1.8	2.9	2.5
26021	MOUNT GAMBIER AERO	0.96	0.96	0.54	0.75	0.03	7.3	11.4	2.5	4.1	1.7
26026	ROBE	0.94	0.94	0.35	0.64	0.01	4.9	10.5	2.1	3.2	1.7
26027	TANTANOOLA	0.93	0.96	0.57	0.77	0.03	7.0	12.1	2.4	3.8	1.5
26037	BORDERTOWN (YACCA VALE)	0.95	0.97	0.24	0.71	0.01	5.6	10.5	2.0	3.2	8.0
26049	POLICEMANS POINT	0.83	0.98	0.23	0.68	0.01	3.6	9.6	1.9	3.4	1.3
26058	BORDERTOWN (BEEAMA SECTION 48)	0.91	0.98	0.25	0.70	0.02	5.5	10.9	2.1	3.5	3.4
26062	NARACOORTE (BETTWS-Y-COED)	0.96	0.96	0.36	0.72	0.01	5.3	11.0	2.0	3.2	2.3
26065	SALT CREEK (PITLOCHRY OUTSTATION 1)	0.71	0.95	0.22	0.60	0.01	4.1	10.6	1.8	3.2	4.9
26067	MOUNT SCHANK (JETHIA)	0.94	0.95	0.54	0.74	0.05	7.1	11.3	2.6	4.2	1.8
26069	LUCINDALE (GREENVALE)	0.96	0.96	0.23	0.63	0.01	4.7	10.8	2.2	3.1	3.1
26075	WRATTONBULLY (JOEVILLE)	0.93	0.95	0.43	0.79	0.02	6.7	11.3	2.4	3.2	2.8
26078	AVENUE (DOWNER)	0.92	0.94	0.30	0.64	0.01	5.9	11.6	2.6	2.9	2.3

Appendix B: Projected change summaries

Table B.1 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-6.9	6.0	-4.3	-5.9	-5.9	-10.1	-11.0	-9.5	-3.7	-6.4	-4.4	-3.4	-16.3	-19.5	-28.1	-21.9
ACCESS1.3	-18.2	-23.6	-18.9	-23.7	-23.2	-9.2	-28.0	-19.4	-8.2	-11.0	-19.1	-16.9	-12.6	-24.2	-21.7	-24.5
BCC-CSM1.1(m)	1.5	-15.9	-6.2	-4.3	-6.5	-11.2	-15.6	-9.2	-1.9	-12.8	-13.1	-10.7	-7.9	-5.4	-9.8	-16.6
CanESM2	-15.7	-13.4	-15.1	-11.2	3.0	-0.7	-3.1	-7.7	1.1	-6.9	-7.1	-6.6	-20.2	-23.1	-27.9	-31.2
CNRM-CM5	11.3	-2.6	11.1	-1.3	-3.8	0.9	2.5	4.0	-10.6	-12.2	-10.8	-10.9	-9.2	-8.4	-13.9	-14.6
CSIRO-Mk3.6.0	-20.0	-32.9	-23.3	-30.2	7.9	-3.8	-7.5	-6.8	-3.0	-0.3	11.1	5.2	0.0	-18.7	-11.3	-16.3
GFDL-ESM2G	-1.5	3.0	-4.7	-21.2	-10.1	-3.0	-1.5	-4.1	3.5	5.6	3.9	-0.8	1.3	-8.9	-14.7	-11.5
GFDL-ESM2M	-25.7	0.8	-12.4	7.9	-13.8	-8.0	-15.1	-11.5	-3.4	-3.5	-7.4	-7.5	-17.3	-17.7	-24.1	-13.5
INM-CM4	-1.8	-4.5	-15.5	-12.9	12.7	15.9	6.5	-0.3	1.3	1.0	-7.6	-7.4	-11.0	-10.9	-20.8	-24.2
IPSL-CM5A-LR	-10.0	-8.1	-12.4	-8.8	-8.9	-18.5	-12.5	-16.8	-5.6	-6.0	-7.0	-5.6	2.3	-9.0	-10.5	-12.3
IPSL-CM5B-LR	1.0	8.4	17.5	3.0	-6.9	-9.8	-17.5	-10.9	2.5	-3.1	-1.1	-3.8	-14.8	-8.6	-8.7	-15.9
MIROC-ESM	-16.0	-5.0	-14.3	-18.1	-2.9	6.7	4.9	-6.6	-10.3	-8.0	-11.3	-10.9	-7.3	-11.3	-23.1	-24.0
MIROC5	4.0	-7.4	-7.5	-0.3	-0.5	-11.2	-3.3	-11.8	5.6	1.4	3.1	-1.2	-9.3	-14.3	-18.8	-18.9
MRI-CGCM3	-4.1	-3.3	-11.7	-10.5	2.4	11.1	-0.8	-1.2	-0.2	-5.0	-4.8	4.6	-9.5	-9.4	-8.4	-11.6
NorESM1-M	-11.0	-0.7	-16.9	-2.9	-0.6	-7.1	-7.5	-3.9	-7.0	-11.7	-14.0	-10.2	-0.1	-4.6	-9.4	-10.0

Table B.2 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-4.5	-8.1	-6.6	-20.7	-0.3	-10.1	-21.8	-23.8	-2.2	-2.8	-9.7	-18.8	-18.1	-27.7	-35.8	-50.3
ACCESS1.3	-11.0	-22.2	-25.4	-35.0	-15.4	-28.2	-30.3	-49.2	-10.1	-13.1	-18.5	-31.5	-20.2	-28.8	-40.4	-52.4
BCC-CSM1.1(m)	-6.7	-16.9	-14.2	-22.2	-12.9	-10.0	-27.0	-25.4	-10.9	-16.4	-22.5	-22.7	-15.3	-13.7	-26.8	-31.0
CanESM2	-6.6	-25.0	-24.3	-29.9	2.2	-15.0	-10.3	-13.5	-7.3	-3.4	-8.9	-17.4	-19.9	-28.1	-47.6	-49.0
CNRM-CM5	8.6	-9.1	-0.8	-14.9	2.3	4.0	0.6	-7.8	-11.0	-10.8	-14.1	-19.6	-4.3	-8.6	-12.1	-30.8
CSIRO-Mk3.6.0	-12.2	-23.2	-37.4	-46.5	-6.2	-4.8	-17.8	-27.6	-4.3	4.0	0.1	-10.7	-9.0	-16.5	-27.3	-27.6
GFDL-ESM2G	-0.1	-13.3	-13.2	-12.9	7.0	-9.7	-6.7	-4.4	-1.9	-2.2	-2.5	-7.7	-6.4	-7.0	-15.3	-20.4
GFDL-ESM2M	-0.4	-7.3	-14.0	-22.3	-17.4	-9.6	-23.9	-27.6	-0.5	-8.0	-16.8	-15.7	-14.2	-30.4	-31.7	-40.8
INM-CM4	-11.8	-10.8	-4.4	-18.6	3.8	15.9	0.9	-3.7	-5.0	-4.6	-6.2	-9.6	-13.3	-16.6	-22.6	-29.6
IPSL-CM5A-LR	-7.1	-4.7	-27.7	-27.7	-20.4	-17.7	-29.9	-39.3	-6.8	-9.9	-21.9	-28.9	-8.2	-2.2	-19.3	-27.8
IPSL-CM5B-LR	12.1	22.9	4.2	11.3	-4.1	-11.1	-10.4	-23.9	-4.8	1.1	-6.3	-6.3	-4.1	-8.5	-18.6	-22.8
MIROC-ESM	-12.8	-15.5	-18.8	-25.2	1.1	4.7	-2.4	-11.1	0.9	-5.1	-19.1	-24.8	-15.7	-18.6	-21.9	-45.7
MIROC5	6.1	-10.1	-1.0	-5.7	-4.4	2.6	-12.8	-10.0	-4.0	-6.3	-2.8	-8.1	-12.5	-20.3	-18.9	-24.0
MRI-CGCM3	-3.5	-10.1	-14.1	-19.8	-4.2	5.8	-14.5	-2.1	-2.6	-2.3	-6.3	-3.4	-9.0	-21.6	-22.2	-23.8
NorESM1-M	-15.6	-8.2	-9.9	-7.9	-1.0	-6.7	-12.4	0.2	-5.3	-14.4	-12.8	-8.1	-10.7	-8.2	-5.3	0.2

Table B.3 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.0	1.3	1.8	2.2	0.6	1.0	1.2	1.5	0.8	1.2	1.4	1.6	1.1	1.6	2.2	2.7
ACCESS1.3	0.9	1.2	1.4	1.5	0.7	1.0	1.4	1.7	0.9	1.4	1.9	2.3	1.4	2.0	2.3	2.7
BCC-CSM1.1(m)	1.4	1.8	1.9	2.0	1.5	1.8	1.9	2.1	1.2	1.6	1.8	2.0	1.0	1.4	1.7	2.0
CanESM2	1.3	1.9	2.3	2.6	0.8	1.3	1.8	2.3	0.8	1.3	1.7	2.0	1.3	1.8	2.2	2.6
CNRM-CM5	0.6	1.0	1.4	1.8	0.9	1.3	1.7	2.0	0.9	1.2	1.4	1.6	1.1	1.6	1.9	2.1
CSIRO-Mk3.6.0	0.8	1.2	1.5	1.6	0.5	1.0	1.6	2.1	0.8	1.3	1.7	2.1	0.9	1.4	1.7	1.9
GFDL-ESM2G	0.7	1.0	1.3	1.6	1.0	1.2	1.4	1.6	0.5	0.6	0.8	1.0	1.0	1.3	1.5	1.8
GFDL-ESM2M	0.8	1.1	1.2	1.2	0.9	1.1	1.3	1.4	0.8	1.1	1.3	1.4	1.2	1.6	1.9	2.1
INM-CM4	0.7	1.1	1.5	1.8	0.2	0.5	0.8	1.1	0.4	0.8	1.1	1.5	0.7	1.2	1.7	2.3
IPSL-CM5A-LR	2.0	2.7	3.3	3.8	1.2	1.8	2.2	2.6	1.0	1.3	1.9	2.4	1.0	1.6	2.0	2.2
IPSL-CM5B-LR	1.0	1.4	1.5	1.6	0.7	1.0	1.3	1.6	0.9	1.2	1.2	1.3	1.2	1.5	1.9	2.3
MIROC-ESM	1.1	1.5	1.8	2.2	0.6	0.7	1.1	1.5	0.8	1.1	1.4	1.6	1.0	1.6	2.1	2.5
MIROC5	0.9	1.3	1.6	1.8	0.8	1.3	1.6	1.9	0.6	1.0	1.2	1.5	1.1	1.5	1.6	1.8
MRI-CGCM3	0.6	0.9	1.1	1.3	0.8	1.0	1.3	1.6	0.4	0.7	1.0	1.3	0.8	1.2	1.5	1.7
NorESM1-M	0.7	1.1	1.3	1.5	0.6	0.9	1.2	1.4	0.7	1.0	1.2	1.5	0.8	1.2	1.4	1.7

Table B.4 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.3	2.1	2.7	3.4	0.7	1.4	2.3	3.3	0.9	1.7	2.6	3.7	1.5	2.3	3.4	4.5
ACCESS1.3	1.3	1.9	2.4	3.0	1.1	1.9	2.7	3.6	1.3	2.1	2.9	3.8	1.7	2.7	3.7	4.9
BCC-CSM1.1(m)	1.7	2.5	3.3	3.9	1.7	2.4	3.0	3.4	1.6	2.3	3.2	3.8	1.5	2.3	3.2	4.0
CanESM2	1.8	2.8	3.9	5.2	1.4	2.4	3.4	4.4	1.3	2.2	3.2	4.3	1.9	3.1	4.3	5.4
CNRM-CM5	1.1	1.8	2.6	3.3	1.2	2.0	2.9	4.1	1.0	1.6	2.5	3.4	1.1	2.0	3.0	4.3
CSIRO-Mk3.6.0	1.0	1.6	2.2	2.9	0.9	1.7	2.5	3.5	0.9	1.6	2.4	3.3	1.0	1.8	2.6	3.4
GFDL-ESM2G	0.8	1.4	2.1	2.8	1.0	1.5	2.0	2.4	0.7	1.2	1.7	2.2	1.0	1.8	2.6	3.4
GFDL-ESM2M	0.7	1.3	2.0	2.6	0.9	1.4	2.2	2.9	0.7	1.3	2.0	2.8	1.4	2.2	3.1	4.2
INM-CM4	1.1	1.7	2.4	3.2	0.4	0.9	1.6	2.4	0.6	1.2	2.0	2.8	1.0	1.6	2.3	3.0
IPSL-CM5A-LR	2.1	3.5	5.1	6.8	1.8	2.9	4.0	5.3	1.2	2.2	3.4	4.8	1.7	2.8	4.3	5.9
IPSL-CM5B-LR	0.6	1.2	2.0	2.9	0.7	1.2	2.1	3.1	1.1	1.7	2.3	3.1	1.2	2.0	2.7	3.5
MIROC-ESM	1.7	2.6	3.8	5.1	1.1	1.8	2.7	3.9	1.1	1.9	2.8	3.8	1.5	2.5	3.7	5.1
MIROC5	1.0	1.6	2.1	2.7	1.0	1.5	2.1	2.7	0.8	1.3	1.9	2.5	1.1	1.8	2.4	3.0
MRI-CGCM3	0.6	1.3	1.9	2.6	0.9	1.6	2.4	3.1	0.7	1.2	1.9	2.6	0.9	1.8	2.6	3.3
NorESM1-M	0.9	1.5	2.1	2.7	0.9	1.5	2.2	2.8	0.8	1.4	2.1	2.8	0.9	1.5	2.1	2.5

Table B.5 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.0	1.4	1.8	2.1	0.7	1.0	1.2	1.5	0.6	1.0	1.3	1.6	0.6	1.0	1.3	1.6
ACCESS1.3	0.5	0.8	1.0	1.1	0.4	0.7	0.9	1.2	0.6	0.9	1.1	1.4	0.7	1.1	1.3	1.5
BCC-CSM1.1(m)	1.0	1.1	1.2	1.2	1.2	1.4	1.5	1.6	0.9	1.2	1.3	1.4	0.7	0.9	1.0	1.2
CanESM2	1.2	1.7	2.1	2.4	0.9	1.3	1.7	2.1	0.7	0.9	1.2	1.4	0.6	0.9	1.2	1.5
CNRM-CM5	0.7	1.1	1.6	2.0	0.8	1.3	1.7	2.1	0.7	0.9	1.2	1.5	0.8	1.2	1.5	1.8
CSIRO-Mk3.6.0	0.6	0.9	1.1	1.2	0.7	0.9	1.4	1.8	0.5	0.9	1.3	1.6	0.8	1.0	1.3	1.5
GFDL-ESM2G	0.4	0.6	0.6	0.6	0.7	0.8	0.9	1.0	0.4	0.5	0.6	0.7	0.5	0.6	0.7	0.8
GFDL-ESM2M	0.4	0.7	0.8	0.8	0.3	0.6	0.7	0.8	0.4	0.6	0.7	0.8	0.4	0.6	0.8	1.0
INM-CM4	0.9	1.2	1.5	1.7	1.3	1.5	1.7	1.7	0.6	0.7	0.7	0.5	0.3	0.4	0.6	1.0
IPSL-CM5A-LR	1.4	1.9	2.0	2.1	1.1	1.4	1.6	1.7	0.7	0.9	1.1	1.3	0.8	1.1	1.3	1.4
IPSL-CM5B-LR	0.6	0.8	1.0	1.1	0.8	1.0	1.2	1.3	0.5	0.6	0.7	0.9	0.7	1.2	1.4	1.6
MIROC-ESM	1.0	1.5	1.8	2.1	0.7	1.1	1.5	1.8	0.6	1.0	1.3	1.5	0.7	1.1	1.4	1.8
MIROC5	0.8	1.0	1.2	1.3	0.6	0.9	1.2	1.4	0.6	0.9	1.1	1.3	0.7	1.0	1.1	1.3
MRI-CGCM3	0.4	0.7	0.9	1.0	0.9	1.1	1.2	1.4	0.3	0.5	0.8	1.2	0.6	0.9	1.2	1.4
NorESM1-M	0.6	0.9	1.1	1.4	0.5	0.8	1.0	1.2	0.3	0.5	0.7	1.0	0.5	0.8	1.0	1.2

Table B.6 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.2	1.9	2.6	3.2	0.7	1.3	2.1	3.0	0.8	1.4	2.1	2.8	0.9	1.4	2.0	2.7
ACCESS1.3	0.9	1.3	1.8	2.4	0.8	1.2	1.8	2.3	0.9	1.5	2.1	2.6	0.9	1.5	2.2	2.9
BCC-CSM1.1(m)	1.2	1.7	2.3	2.7	1.4	1.9	2.4	2.8	1.1	1.6	2.2	2.6	0.9	1.5	2.0	2.5
CanESM2	1.5	2.4	3.5	4.7	1.2	2.2	3.3	4.4	0.8	1.4	2.1	2.7	0.9	1.6	2.4	3.2
CNRM-CM5	1.1	1.7	2.5	3.2	1.2	2.0	2.9	3.9	0.9	1.4	2.1	2.7	0.9	1.6	2.4	3.2
CSIRO-Mk3.6.0	0.8	1.4	1.8	2.4	0.8	1.4	2.1	2.9	0.6	1.2	1.9	2.6	0.8	1.3	2.0	2.6
GFDL-ESM2G	0.6	1.0	1.5	2.1	0.9	1.2	1.7	2.3	0.5	0.9	1.3	1.8	0.7	1.2	1.7	2.3
GFDL-ESM2M	0.5	1.0	1.6	2.0	0.5	1.0	1.6	2.4	0.5	0.8	1.3	1.9	0.6	1.1	1.7	2.3
INM-CM4	1.1	1.8	2.8	3.8	1.5	2.2	3.0	4.0	0.9	1.2	1.5	1.8	0.6	1.1	1.6	2.1
IPSL-CM5A-LR	1.5	2.5	3.5	4.6	1.3	2.2	3.3	4.4	0.9	1.5	2.3	3.2	1.0	1.7	2.5	3.4
IPSL-CM5B-LR	0.5	1.0	1.8	2.7	1.0	1.5	2.2	3.1	0.5	1.1	1.8	2.6	1.1	1.7	2.4	3.1
MIROC-ESM	1.6	2.6	3.7	4.9	1.2	2.0	3.0	4.0	0.9	1.6	2.2	3.0	1.0	1.8	2.7	3.6
MIROC5	0.8	1.4	2.0	2.7	0.8	1.3	1.8	2.6	0.7	1.2	1.8	2.4	0.8	1.3	1.8	2.4
MRI-CGCM3	0.5	1.1	1.7	2.3	0.9	1.5	2.3	3.0	0.6	1.1	1.7	2.4	0.7	1.3	2.0	2.6
NorESM1-M	0.7	1.3	2.0	2.7	0.8	1.4	1.9	2.6	0.5	0.9	1.5	2.3	0.6	1.2	1.7	2.2

Table B.7 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.2	-0.4	0.2	0.5	-0.9	-0.4	-0.4	-1.1	1.3	2.2	2.4	2.4	2.7	3.4	4.1	4.3
ACCESS1.3	1.6	2.0	2.0	2.1	2.3	2.6	4.6	4.4	2.5	4.7	6.7	7.4	3.2	4.6	5.4	6.4
BCC-CSM1.1(m)	1.1	1.8	1.9	2.1	1.5	2.5	3.0	2.9	2.8	4.6	5.7	6.1	2.8	3.1	3.7	4.0
CanESM2	0.2	0.0	0.0	0.1	-0.4	0.7	1.6	2.8	1.1	3.2	3.9	4.8	4.0	4.7	5.3	5.8
CNRM-CM5	-0.6	-0.1	-0.9	-0.9	-0.4	-0.1	-0.1	-0.2	2.1	2.6	2.1	1.3	2.0	2.0	2.0	1.9
CSIRO-Mk3.6.0	1.8	2.7	2.5	2.5	-0.4	0.8	2.0	2.5	3.6	4.1	3.9	5.3	1.7	4.0	5.1	6.7
GFDL-ESM2G	-0.4	-0.5	1.0	2.9	2.5	2.8	2.8	3.6	-0.5	-1.0	-0.3	0.7	1.3	2.3	3.0	2.8
GFDL-ESM2M	1.7	0.9	-0.2	-2.3	5.3	5.1	4.9	4.0	2.7	3.7	4.3	4.2	4.1	5.1	4.9	4.0
INM-CM4	0.0	0.2	0.9	1.2	-3.5	-3.8	-2.9	-1.8	-0.2	0.5	1.9	2.5	2.0	2.9	4.1	4.5
IPSL-CM5A-LR	2.0	2.7	3.1	2.9	2.1	3.6	3.7	3.8	3.9	5.0	6.1	5.9	2.5	4.1	5.0	4.9
IPSL-CM5B-LR	0.0	-0.7	-0.6	0.1	2.1	2.1	2.1	2.2	-0.7	0.2	1.4	2.7	2.4	2.4	2.9	3.7
MIROC-ESM	1.0	0.4	0.5	0.6	-0.7	-1.3	-1.1	-0.3	4.0	3.7	3.9	4.2	2.6	3.5	4.7	4.9
MIROC5	0.2	1.0	1.2	1.2	1.0	1.6	1.5	2.5	0.0	0.9	1.3	2.2	1.9	2.2	2.8	3.0
MRI-CGCM3	1.8	1.9	2.0	1.7	-1.4	-2.1	-0.9	-0.5	1.3	2.7	3.4	3.0	1.2	1.4	0.9	0.9
NorESM1-M	0.8	0.6	1.1	0.6	-0.2	0.9	1.3	1.8	4.3	5.1	5.8	6.2	2.1	3.0	3.5	4.0

Table B.8 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.8	0.9	0.7	1.4	-0.3	0.1	1.2	1.1	2.4	3.5	5.3	6.9	3.1	4.8	6.8	8.1
ACCESS1.3	1.8	2.7	3.1	4.0	3.0	4.8	6.3	9.2	4.4	5.9	7.3	9.5	4.5	6.5	8.6	11.2
BCC-CSM1.1(m)	1.7	2.2	1.8	2.0	2.7	3.0	4.1	4.3	5.1	7.4	9.9	11.7	3.9	5.3	7.0	7.6
CanESM2	-0.4	0.0	0.0	-0.1	0.8	1.9	0.6	-0.2	3.6	4.8	6.6	9.7	4.7	7.0	8.8	9.2
CNRM-CM5	-0.2	0.4	0.1	0.8	0.2	0.0	0.1	1.4	1.6	2.2	3.0	4.2	1.5	2.5	3.5	5.7
CSIRO-Mk3.6.0	1.8	2.7	3.9	5.1	2.5	3.4	4.9	6.5	3.8	4.6	6.0	7.9	2.9	4.7	6.3	7.3
GFDL-ESM2G	1.2	2.0	1.9	1.9	-0.1	1.1	0.8	-0.3	0.6	0.8	1.2	2.1	0.7	0.8	1.4	1.9
GFDL-ESM2M	0.4	0.6	0.9	1.9	4.7	5.4	5.8	5.4	2.3	4.4	6.3	7.1	3.7	5.9	6.9	9.4
INM-CM4	0.5	0.6	0.5	0.9	-2.8	-4.1	-3.6	-3.7	0.1	0.4	1.4	2.2	2.3	3.1	3.6	4.7
IPSL-CM5A-LR	2.9	3.6	5.4	6.7	3.4	4.6	6.9	8.6	5.1	8.5	12.6	16.5	2.6	3.9	6.5	9.2
IPSL-CM5B-LR	-2.1	-2.5	-1.5	-1.1	0.5	1.0	1.0	1.9	1.3	1.9	2.7	3.7	1.7	3.1	5.5	7.9
MIROC-ESM	2.0	2.2	2.7	3.0	-0.6	-0.8	0.7	2.2	1.7	4.1	7.9	11.8	3.9	5.0	6.8	9.9
MIROC5	0.5	0.8	0.2	0.2	1.6	1.6	2.5	2.1	0.4	0.9	0.5	0.9	2.2	3.1	3.6	4.2
MRI-CGCM3	0.7	1.2	1.7	1.8	-0.4	-1.6	-0.6	-1.6	1.9	2.5	3.3	3.6	1.3	2.8	3.0	3.4
NorESM1-M	1.3	1.2	0.9	-0.5	0.3	1.8	2.5	1.9	4.2	6.1	6.9	5.8	2.3	2.9	3.1	2.1

Table B.9 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	7.5	10.1	13.7	17.2	3.5	6.1	7.3	8.6	7.9	12.4	14.2	15.7	10.1	16.5	21.6	26.6
ACCESS1.3	8.1	10.2	11.5	12.1	7.7	9.9	14.0	15.7	16.1	24.9	32.2	38.5	15.9	22.9	27.8	32.0
BCC-CSM1.1(m)	11.3	13.6	13.9	13.5	18.4	20.6	22.1	23.8	13.3	18.7	23.8	27.7	11.0	14.2	16.7	19.5
CanESM2	10.3	14.3	17.1	19.4	5.0	8.8	12.7	16.7	5.0	8.3	9.9	12.0	11.4	15.9	19.1	21.4
CNRM-CM5	4.6	8.3	11.3	15.3	8.3	13.4	16.5	18.1	15.3	20.4	21.2	20.0	12.3	17.5	19.4	19.8
CSIRO-Mk3.6.0	5.1	7.7	9.8	9.1	3.5	7.9	13.2	18.6	13.4	20.7	27.7	36.1	11.6	17.1	20.5	23.5
GFDL-ESM2G	2.5	4.7	9.5	15.0	11.7	16.0	18.5	22.0	5.8	6.1	5.7	5.5	14.1	18.8	21.7	26.0
GFDL-ESM2M	8.3	11.5	10.1	6.0	12.8	16.5	15.1	15.2	18.8	24.5	23.2	22.6	24.7	32.2	33.7	33.7
INM-CM4	6.5	9.9	13.3	16.5	1.5	4.0	6.5	8.5	2.7	3.9	5.9	9.3	8.6	16.0	22.1	27.9
IPSL-CM5A-LR	18.5	24.8	28.5	30.2	12.8	18.1	21.3	23.6	8.6	12.0	16.0	19.1	10.6	16.8	20.7	21.8
IPSL-CM5B-LR	10.0	10.6	11.0	11.3	14.8	17.4	19.5	18.7	5.4	7.7	9.5	10.6	15.8	21.5	26.2	29.7
MIROC-ESM	8.6	11.7	13.8	16.3	0.7	0.3	3.0	5.3	5.2	3.6	4.1	5.9	8.9	13.8	18.5	22.2
MIROC5	6.9	10.1	13.0	14.6	7.9	11.6	14.2	18.1	5.4	10.9	14.1	18.5	10.6	14.1	15.7	16.9
MRI-CGCM3	6.5	9.1	10.9	12.8	11.4	13.4	16.2	19.1	5.4	10.8	13.5	18.3	12.2	17.2	20.8	23.6
NorESM1-M	4.9	6.7	8.0	8.9	3.2	6.4	8.9	12.0	10.3	13.8	17.1	20.6	9.1	13.5	16.6	20.0

Table B.10 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	11.7	18.0	23.2	28.7	2.8	9.2	17.1	26.2	10.7	19.8	32.3	45.1	14.9	24.4	37.2	49.2
ACCESS1.3	11.7	17.0	21.8	27.3	10.8	18.2	26.9	38.6	20.4	33.6	46.8	61.0	21.5	34.1	47.4	62.4
BCC-CSM1.1(m)	14.1	19.4	24.4	29.2	20.6	26.6	31.7	36.1	22.8	32.8	44.8	56.3	16.7	24.5	33.0	41.6
CanESM2	12.8	20.0	28.2	37.7	8.9	15.4	20.8	28.3	9.7	14.9	19.7	26.9	17.4	28.3	38.2	48.5
CNRM-CM5	10.1	16.9	24.1	31.2	12.2	21.4	33.4	48.3	16.2	25.3	40.2	56.9	11.2	21.7	35.1	51.6
CSIRO-Mk3.6.0	8.1	12.6	17.1	21.9	9.1	15.1	22.3	30.7	16.2	25.9	37.1	49.4	13.3	22.0	31.4	39.8
GFDL-ESM2G	5.4	9.6	16.2	23.4	11.8	16.0	20.3	22.4	9.3	17.4	22.0	27.4	12.5	22.8	34.7	47.0
GFDL-ESM2M	4.9	11.5	18.9	26.9	11.4	19.6	28.6	38.2	14.5	28.0	44.1	61.8	25.6	41.7	57.9	77.4
INM-CM4	10.3	16.4	23.6	31.7	3.1	7.1	13.8	20.7	2.9	5.7	11.6	18.3	12.0	19.3	27.0	36.1
IPSL-CM5A-LR	20.6	33.4	48.5	64.4	20.3	31.7	45.0	58.8	12.6	23.2	38.2	54.1	17.1	30.5	46.8	65.1
IPSL-CM5B-LR	2.2	7.4	17.3	29.9	12.8	20.1	32.9	48.7	11.0	17.7	27.3	37.7	20.3	33.3	46.4	61.4
MIROC-ESM	14.8	25.0	38.2	53.6	8.1	14.2	22.3	33.1	12.2	19.5	29.9	39.4	13.6	24.8	41.1	61.0
MIROC5	7.9	12.4	15.9	20.2	10.2	12.5	15.3	17.0	9.3	13.6	18.8	23.4	10.9	16.4	21.6	26.8
MRI-CGCM3	4.7	12.2	19.5	27.2	12.2	20.0	28.3	33.8	9.9	17.1	26.4	35.9	14.1	26.0	37.3	47.1
NorESM1-M	6.7	10.0	13.1	14.3	5.9	12.1	16.8	19.4	10.8	17.5	23.4	27.0	9.8	15.8	18.4	18.2

Table B.11 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	2.4	2.8	4.2	5.3	1.3	2.5	3.0	3.3	2.7	4.6	5.6	6.4	3.9	5.4	7.1	8.1
ACCESS1.3	2.6	3.7	4.0	4.5	2.6	3.5	5.5	6.2	3.7	6.1	7.5	8.8	4.5	6.7	8.0	9.4
BCC-CSM1.1(m)	3.5	4.6	5.0	5.2	4.6	5.9	6.6	7.1	4.6	6.5	7.2	8.0	4.1	4.9	5.9	6.6
CanESM2	2.9	4.1	5.1	5.8	2.3	4.4	6.3	8.4	2.6	4.9	6.3	7.2	5.3	6.9	8.4	9.5
CNRM-CM5	0.9	2.3	2.7	3.6	2.3	3.7	4.9	5.8	3.5	4.7	5.3	5.5	3.5	4.7	5.5	6.2
CSIRO-Mk3.6.0	3.0	4.4	5.0	5.1	1.4	3.1	5.1	6.8	3.6	5.1	6.1	7.4	3.3	5.9	7.5	9.2
GFDL-ESM2G	1.0	1.4	2.8	4.5	4.0	4.7	5.3	6.3	1.1	1.4	2.2	3.2	2.4	3.6	4.4	4.7
GFDL-ESM2M	2.4	2.5	2.0	0.5	4.8	5.3	5.6	5.4	3.0	4.5	5.4	5.6	4.2	5.5	5.9	5.9
INM-CM4	1.7	2.7	4.1	4.8	0.1	0.5	1.8	2.8	1.4	2.6	3.6	4.3	2.4	3.8	5.5	6.9
IPSL-CM5A-LR	5.2	7.1	8.3	8.9	4.2	6.3	7.3	8.3	4.4	5.6	6.7	7.3	4.0	6.1	7.5	7.8
IPSL-CM5B-LR	1.7	1.9	2.3	3.2	3.3	4.2	4.7	5.4	1.5	2.5	3.5	4.8	3.8	4.7	5.9	7.1
MIROC-ESM	3.1	3.7	4.5	5.4	1.3	1.6	2.7	4.1	4.0	5.1	6.1	6.9	4.1	6.0	8.1	9.3
MIROC5	2.0	3.3	4.1	4.3	2.7	4.0	4.7	6.1	1.8	3.6	4.5	5.4	3.3	4.4	5.3	5.9
MRI-CGCM3	2.3	2.9	3.6	3.8	1.6	1.8	3.1	3.9	1.6	3.1	4.5	5.5	2.3	3.2	3.4	3.8
NorESM1-M	2.1	2.7	3.7	3.9	1.3	2.9	3.7	4.6	3.4	4.7	5.9	6.4	2.8	4.2	5.2	6.1

Table B.12 Adelaide and Mount Lofty Ranges NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	3.4	5.1	6.7	8.7	1.6	3.6	6.5	9.2	3.9	6.4	9.3	13.2	4.9	7.9	11.4	14.6
ACCESS1.3	3.6	5.5	7.1	9.1	4.0	6.6	9.3	13.3	5.8	7.9	10.8	14.1	6.1	9.3	12.9	17.2
BCC-CSM1.1(m)	4.5	6.4	7.7	9.4	5.8	7.9	10.2	11.5	6.5	8.6	12.2	14.4	5.6	8.3	11.3	13.6
CanESM2	3.5	6.1	8.8	11.7	4.5	7.9	10.0	12.9	4.8	7.1	10.4	14.9	6.9	11.2	15.1	18.3
CNRM-CM5	2.1	4.2	5.7	7.9	3.7	5.7	8.7	12.9	3.8	6.1	8.1	11.7	3.5	6.2	8.9	13.2
CSIRO-Mk3.6.0	3.4	5.4	7.6	10.1	3.9	6.5	9.5	13.0	4.0	6.1	9.0	12.4	4.3	7.2	10.3	12.9
GFDL-ESM2G	2.5	4.2	5.5	6.9	3.0	4.9	6.2	6.9	2.3	4.0	5.6	7.0	2.3	3.8	5.8	7.7
GFDL-ESM2M	1.6	3.0	4.5	6.4	4.9	6.5	8.8	10.6	2.7	5.6	7.7	10.2	4.4	7.3	9.6	13.3
INM-CM4	2.7	4.3	6.2	8.8	1.1	2.0	4.2	6.7	2.4	3.9	6.1	7.4	3.6	5.4	7.3	9.5
IPSL-CM5A-LR	6.1	9.4	14.0	18.6	6.1	9.7	14.5	19.1	5.4	8.6	13.8	19.4	5.1	8.2	13.0	18.3
IPSL-CM5B-LR	-0.2	0.6	3.0	5.2	2.6	4.2	6.4	9.6	3.0	5.4	7.2	10.0	3.7	6.3	9.5	13.1
MIROC-ESM	5.2	7.5	10.5	13.7	2.8	4.8	8.3	12.5	4.2	7.3	10.9	15.4	5.8	8.8	13.0	18.3
MIROC5	2.4	3.9	4.9	6.5	3.6	4.8	7.0	8.6	2.5	4.4	5.6	7.4	3.9	6.0	7.9	10.0
MRI-CGCM3	1.8	3.5	5.2	6.8	2.3	3.4	6.2	7.8	2.8	5.2	7.1	9.3	2.6	5.4	7.3	9.4
NorESM1-M	2.8	4.2	5.6	6.1	2.5	4.9	7.0	8.3	3.9	6.3	7.9	9.8	3.3	5.2	6.8	7.3

Table B.13 Eyre Peninsula NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-14.0	-5.0	-9.7	-15.6	-14.0	-15.1	-19.3	-16.4	-6.6	-7.9	-6.0	-5.7	-13.6	-15.9	-30.7	-14.1
ACCESS1.3	-27.8	-36.9	-27.6	-31.2	-27.0	-20.4	-41.2	-28.4	-8.0	-8.5	-18.1	-15.2	-6.9	-22.8	-19.9	-29.3
BCC-CSM1.1(m)	-18.6	-22.7	-13.6	-22.2	-9.9	-14.4	-24.4	-10.8	1.8	-9.2	-8.7	-9.1	-14.8	-4.1	-16.1	-22.6
CanESM2	-22.0	-24.6	-24.8	-26.8	-5.5	-12.0	-4.3	-14.1	5.9	-0.6	-1.6	0.1	-33.7	-33.6	-39.4	-41.0
CNRM-CM5	9.9	-11.4	1.4	-4.5	-1.7	-1.9	-10.4	4.7	-11.8	-13.2	-12.0	-10.9	-4.3	-10.0	-11.7	-11.4
CSIRO-Mk3.6.0	-17.9	-35.6	-30.9	-32.1	-3.6	-15.8	-18.5	-17.4	-5.2	-1.3	11.9	4.9	-11.4	-35.2	-28.7	-34.2
GFDL-ESM2G	-6.8	-8.5	-7.4	-32.2	-10.0	-9.1	-12.9	-10.1	4.9	2.4	5.2	-1.2	-4.2	-20.0	-28.9	-18.3
GFDL-ESM2M	-27.4	-2.3	-21.5	12.2	-27.3	-22.7	-25.0	-20.3	-1.2	-3.2	-9.6	-1.5	-30.0	-32.2	-40.5	-28.0
INM-CM4	17.8	-5.4	-13.1	-11.9	25.7	12.9	3.8	-4.2	-2.5	-0.7	-8.8	-12.7	-20.9	-17.4	-27.3	-27.7
IPSL-CM5A-LR	-24.6	-18.0	-23.3	-20.4	-21.0	-26.9	-21.8	-28.3	-3.1	-4.1	-3.9	-5.1	0.4	-12.8	-23.6	-22.3
IPSL-CM5B-LR	-6.2	5.6	9.1	-12.6	-6.7	-11.1	-15.7	-10.5	2.9	-4.8	-1.1	-4.5	-16.0	-12.3	-8.6	-23.6
MIROC-ESM	-7.3	-8.3	-18.5	-21.9	-9.3	3.0	3.7	-13.4	-8.6	-6.6	-10.4	-10.1	-19.1	-22.4	-37.2	-34.1
MIROC5	11.4	-9.5	-4.3	6.6	-7.2	-13.7	-8.5	-15.6	6.3	3.1	5.4	1.1	-14.9	-25.3	-25.6	-23.6
MRI-CGCM3	-19.5	-11.5	-18.4	-23.9	7.5	11.7	-5.4	1.4	2.6	-5.7	-3.7	3.4	-13.7	-11.8	-14.3	-21.3
NorESM1-M	-24.1	-17.0	-27.9	-20.5	-3.0	-3.2	-15.7	-6.5	-7.2	-8.7	-10.8	-6.7	-8.9	-11.6	-12.0	-18.1

Table B.14 Eyre Peninsula NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-8.9	-25.2	-20.1	-39.8	-4.7	-18.5	-31.0	-30.8	-4.1	-7.7	-9.7	-17.2	-8.1	-21.4	-32.3	-56.1
ACCESS1.3	-17.0	-35.2	-43.2	-51.5	-17.0	-36.2	-36.3	-57.1	-10.0	-12.6	-17.0	-28.8	-24.4	-29.5	-44.9	-56.0
BCC-CSM1.1(m)	-5.1	-33.5	-36.2	-24.8	-21.4	-18.2	-34.3	-33.4	-9.5	-12.3	-18.2	-17.1	-19.6	-20.4	-42.0	-38.1
CanESM2	-16.7	-34.7	-36.2	-37.3	-8.1	-19.1	-13.6	-13.6	-1.2	1.0	-5.1	-12.1	-33.4	-45.3	-61.7	-62.4
CNRM-CM5	3.8	-6.9	-6.4	-28.4	0.8	1.9	8.0	-10.2	-10.8	-11.4	-15.0	-19.9	5.6	-10.0	-10.2	-33.6
CSIRO-Mk3.6.0	-6.9	-25.5	-42.9	-52.9	-9.8	-11.6	-29.6	-37.8	-7.5	2.2	2.4	-3.2	-25.6	-35.1	-44.0	-51.6
GFDL-ESM2G	-17.7	-20.6	-25.1	-22.4	1.5	-13.8	-18.0	-7.4	-3.6	-3.0	-3.0	-6.5	-17.0	-19.9	-31.2	-35.8
GFDL-ESM2M	-5.6	-6.3	-22.9	-23.4	-26.4	-22.7	-36.3	-41.1	1.8	-5.3	-12.2	-14.3	-27.2	-45.1	-45.0	-62.0
INM-CM4	-2.9	-0.7	-9.8	-23.1	8.1	12.0	3.5	-2.8	-5.6	-3.8	-9.0	-13.6	-17.5	-22.2	-26.8	-33.7
IPSL-CM5A-LR	-23.2	-20.3	-45.9	-58.4	-24.9	-26.9	-33.1	-49.7	-6.3	-8.5	-21.8	-28.6	-15.8	-5.2	-34.4	-43.2
IPSL-CM5B-LR	24.8	15.1	-7.9	1.7	-7.3	-15.4	-7.3	-20.3	-3.4	0.3	-7.8	-6.8	-10.2	-13.3	-28.9	-38.8
MIROC-ESM	-9.7	-14.5	-23.2	-28.0	-1.2	-7.8	-8.4	-17.1	1.4	-5.9	-21.2	-25.4	-26.0	-30.7	-38.5	-59.8
MIROC5	5.1	-7.6	13.9	8.9	-8.7	-7.9	-17.3	-12.6	-4.0	-4.1	-1.3	-7.8	-17.7	-27.0	-24.3	-30.0
MRI-CGCM3	-11.5	-17.3	-22.1	-32.5	-8.7	3.9	-10.4	-1.7	-0.5	-2.0	-5.3	-1.7	-15.0	-26.5	-31.1	-32.2
NorESM1-M	-25.4	-18.6	-19.1	-16.4	-2.9	-14.7	-18.8	-12.8	-2.7	-14.5	-11.4	-7.1	-15.5	-16.7	-15.1	-20.2

Table B.15 Eyre Peninsula NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.7	1.1	1.5	1.9	0.5	0.9	1.1	1.4	0.7	1.1	1.3	1.6	1.0	1.5	2.0	2.5
ACCESS1.3	0.7	1.0	1.2	1.4	0.5	0.8	1.2	1.5	0.9	1.4	1.8	2.2	1.3	1.8	2.2	2.5
BCC-CSM1.1(m)	1.2	1.6	1.7	1.7	1.3	1.5	1.7	1.8	1.1	1.5	1.7	1.9	1.0	1.3	1.6	1.9
CanESM2	1.1	1.6	2.0	2.3	0.7	1.2	1.6	2.2	0.8	1.3	1.7	2.0	1.2	1.7	2.1	2.5
CNRM-CM5	0.7	1.0	1.5	1.9	0.9	1.3	1.7	2.0	0.8	1.1	1.4	1.6	1.1	1.5	1.9	2.2
CSIRO-Mk3.6.0	0.7	1.1	1.4	1.5	0.6	1.0	1.6	2.1	0.8	1.3	1.7	2.1	0.8	1.3	1.6	1.8
GFDL-ESM2G	0.6	0.8	1.2	1.5	0.9	1.2	1.3	1.4	0.6	0.8	0.9	1.0	0.8	1.0	1.2	1.4
GFDL-ESM2M	0.6	0.9	1.1	0.9	0.9	1.2	1.3	1.4	0.8	1.1	1.3	1.4	1.0	1.3	1.6	1.9
INM-CM4	0.6	1.0	1.3	1.7	0.1	0.5	0.8	1.0	0.5	0.9	1.2	1.6	0.6	1.1	1.6	2.0
IPSL-CM5A-LR	2.0	2.7	3.1	3.5	1.2	1.8	2.1	2.5	0.9	1.3	1.8	2.3	1.1	1.7	2.2	2.5
IPSL-CM5B-LR	1.0	1.4	1.6	1.7	1.0	1.4	1.7	2.0	0.8	1.1	1.2	1.2	1.1	1.5	1.9	2.2
MIROC-ESM	1.3	1.8	2.1	2.4	0.6	0.8	1.2	1.5	0.8	1.1	1.4	1.7	1.0	1.6	2.1	2.5
MIROC5	0.7	1.1	1.3	1.5	0.8	1.2	1.5	1.9	0.6	1.0	1.2	1.5	1.1	1.4	1.6	1.7
MRI-CGCM3	0.4	0.8	1.0	1.3	0.8	1.0	1.3	1.6	0.5	0.8	1.1	1.4	0.8	1.1	1.4	1.7
NorESM1-M	0.7	1.1	1.3	1.5	0.6	0.9	1.2	1.4	0.7	1.0	1.3	1.6	0.7	1.1	1.4	1.7

Table B.16 Eyre Peninsula NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.0	1.7	2.3	3.0	0.6	1.2	2.1	3.0	0.8	1.5	2.4	3.3	1.3	2.2	3.3	4.4
ACCESS1.3	1.0	1.7	2.2	2.8	0.9	1.6	2.4	3.3	1.2	2.0	2.8	3.7	1.6	2.5	3.4	4.5
BCC-CSM1.1(m)	1.4	2.2	2.9	3.5	1.6	2.2	2.8	3.2	1.6	2.3	3.1	3.6	1.5	2.2	3.0	3.7
CanESM2	1.4	2.3	3.4	4.4	1.2	2.0	2.9	3.8	1.2	2.0	3.0	4.1	1.7	2.8	4.0	5.1
CNRM-CM5	1.1	1.8	2.6	3.3	1.2	2.0	2.8	4.0	1.0	1.5	2.4	3.3	1.1	2.0	3.0	4.1
CSIRO-Mk3.6.0	0.9	1.4	2.0	2.6	0.9	1.6	2.4	3.3	0.9	1.6	2.4	3.3	1.0	1.7	2.4	3.2
GFDL-ESM2G	0.9	1.4	2.0	2.6	1.1	1.5	2.0	2.4	0.8	1.3	1.8	2.4	0.9	1.5	2.4	3.3
GFDL-ESM2M	0.7	1.2	1.8	2.3	0.9	1.4	2.1	2.9	0.8	1.3	2.1	2.9	1.2	2.0	2.8	3.8
INM-CM4	0.9	1.6	2.3	3.1	0.3	0.8	1.5	2.3	0.6	1.2	2.0	2.9	1.0	1.5	2.1	2.8
IPSL-CM5A-LR	2.2	3.5	5.1	6.7	1.7	2.7	3.8	5.0	1.2	2.1	3.4	4.6	1.7	2.8	4.3	5.9
IPSL-CM5B-LR	0.6	1.3	2.1	2.9	1.1	1.6	2.4	3.4	1.0	1.5	2.2	3.0	1.2	1.9	2.7	3.5
MIROC-ESM	1.7	2.6	3.7	4.7	1.0	1.7	2.5	3.6	1.0	1.8	2.8	3.7	1.4	2.3	3.4	4.6
MIROC5	0.9	1.4	1.9	2.5	1.0	1.5	2.0	2.6	0.8	1.3	1.8	2.5	1.1	1.7	2.3	2.9
MRI-CGCM3	0.5	1.1	1.7	2.3	0.9	1.5	2.2	2.8	0.8	1.3	2.0	2.7	0.9	1.7	2.5	3.2
NorESM1-M	0.8	1.4	2.0	2.6	0.9	1.5	2.1	2.7	0.8	1.5	2.1	2.8	0.9	1.5	2.0	2.4

Table B.17 Eyre Peninsula NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.8	1.2	1.5	1.9	0.6	0.9	1.1	1.4	0.5	0.9	1.2	1.5	0.8	1.1	1.5	1.8
ACCESS1.3	0.5	0.7	1.0	1.1	0.4	0.6	0.8	1.2	0.6	0.9	1.2	1.5	0.9	1.2	1.4	1.7
BCC-CSM1.1(m)	0.9	1.1	1.2	1.2	1.1	1.3	1.4	1.6	0.9	1.2	1.3	1.4	0.7	1.0	1.1	1.3
CanESM2	1.0	1.5	1.9	2.2	0.8	1.2	1.6	2.0	0.7	1.0	1.3	1.6	0.6	1.1	1.5	1.9
CNRM-CM5	0.8	1.1	1.6	2.1	0.9	1.3	1.7	2.0	0.6	0.9	1.2	1.5	0.9	1.3	1.7	2.0
CSIRO-Mk3.6.0	0.6	0.9	1.1	1.2	0.7	1.0	1.4	1.8	0.6	1.0	1.4	1.7	0.7	1.0	1.2	1.4
GFDL-ESM2G	0.4	0.5	0.7	0.8	0.7	0.9	1.0	1.1	0.5	0.6	0.7	0.8	0.5	0.6	0.6	0.8
GFDL-ESM2M	0.4	0.7	0.8	0.8	0.5	0.8	0.8	0.9	0.6	0.8	0.8	1.0	0.5	0.7	0.8	1.1
INM-CM4	0.7	1.0	1.3	1.7	1.1	1.3	1.4	1.4	0.4	0.5	0.4	0.3	0.3	0.5	0.8	1.2
IPSL-CM5A-LR	1.1	1.6	2.0	2.2	1.1	1.4	1.6	1.8	0.9	1.2	1.5	1.7	0.7	1.0	1.3	1.5
IPSL-CM5B-LR	0.6	0.8	0.9	1.1	0.7	1.0	1.3	1.5	0.5	0.7	0.9	1.1	0.6	1.0	1.3	1.5
MIROC-ESM	1.2	1.6	2.0	2.3	0.9	1.3	1.7	2.0	0.8	1.2	1.5	1.7	0.8	1.2	1.5	1.9
MIROC5	0.7	1.0	1.2	1.3	0.7	1.0	1.3	1.5	0.6	0.9	1.2	1.3	0.7	1.0	1.1	1.3
MRI-CGCM3	0.3	0.5	0.7	0.9	0.9	1.1	1.3	1.4	0.4	0.6	0.8	1.2	0.6	0.9	1.1	1.3
NorESM1-M	0.6	0.9	1.1	1.4	0.6	0.9	1.1	1.3	0.3	0.6	0.8	1.1	0.4	0.8	1.0	1.2

Table B.18 Eyre Peninsula NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.0	1.7	2.3	2.8	0.7	1.2	2.0	2.9	0.7	1.2	2.0	2.7	1.0	1.6	2.3	3.0
ACCESS1.3	0.8	1.3	1.8	2.3	0.7	1.2	1.8	2.3	0.9	1.5	2.1	2.8	1.0	1.7	2.3	3.1
BCC-CSM1.1(m)	1.1	1.6	2.2	2.6	1.3	1.9	2.4	2.8	1.2	1.7	2.3	2.8	1.0	1.6	2.1	2.7
CanESM2	1.3	2.1	3.1	4.1	1.2	2.0	3.0	4.0	0.8	1.5	2.3	3.2	1.0	1.8	2.6	3.6
CNRM-CM5	1.1	1.8	2.5	3.2	1.3	2.1	3.0	3.9	0.8	1.3	2.0	2.7	1.0	1.7	2.5	3.4
CSIRO-Mk3.6.0	0.8	1.2	1.7	2.2	0.8	1.5	2.1	2.9	0.6	1.3	2.0	2.7	0.7	1.2	1.9	2.6
GFDL-ESM2G	0.6	0.9	1.4	1.9	1.0	1.3	1.7	2.2	0.6	1.0	1.5	1.9	0.6	1.1	1.7	2.3
GFDL-ESM2M	0.5	0.9	1.4	1.8	0.6	1.0	1.6	2.3	0.5	0.9	1.5	2.2	0.7	1.2	1.8	2.4
INM-CM4	1.0	1.7	2.6	3.6	1.3	2.0	2.8	3.7	0.5	1.0	1.3	1.6	0.8	1.3	1.9	2.4
IPSL-CM5A-LR	1.4	2.3	3.1	4.0	1.4	2.3	3.1	4.1	1.1	1.7	2.5	3.3	1.0	1.7	2.4	3.2
IPSL-CM5B-LR	0.7	1.1	1.8	2.4	0.9	1.4	2.1	2.8	0.7	1.2	1.7	2.4	1.0	1.6	2.1	2.8
MIROC-ESM	1.6	2.4	3.4	4.4	1.2	1.9	2.7	3.6	1.0	1.6	2.2	2.9	1.0	1.7	2.5	3.3
MIROC5	0.9	1.4	2.0	2.7	0.8	1.3	1.9	2.5	0.7	1.2	1.8	2.3	0.8	1.3	1.9	2.5
MRI-CGCM3	0.4	1.0	1.5	2.0	0.9	1.5	2.2	2.9	0.7	1.1	1.7	2.4	0.7	1.3	1.9	2.6
NorESM1-M	0.7	1.4	2.1	2.8	0.9	1.4	2.0	2.6	0.5	1.0	1.7	2.4	0.7	1.2	1.8	2.3

Table B.19 Eyre Peninsula NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.3	0.1	0.1	0.3	0.0	0.1	-0.1	-0.6	0.9	1.7	1.7	2.0	0.9	1.2	1.9	1.9
ACCESS1.3	1.0	1.3	1.4	1.4	2.2	3.0	4.3	3.8	1.8	3.7	5.0	6.1	2.0	3.0	3.6	4.9
BCC-CSM1.1(m)	1.2	1.5	1.7	1.9	1.1	1.4	1.8	1.8	1.7	2.8	4.0	4.2	1.7	1.7	2.3	2.5
CanESM2	0.0	0.0	-0.3	-0.1	-0.1	0.5	0.6	2.0	1.1	2.4	3.2	3.9	3.5	3.8	4.1	4.4
CNRM-CM5	-0.4	0.0	-0.5	-1.0	-0.2	-0.2	0.1	-0.5	1.7	2.0	1.5	0.6	0.8	1.3	1.1	0.7
CSIRO-Mk3.6.0	1.2	1.8	1.8	1.8	0.3	1.2	2.1	2.6	3.7	4.8	5.8	7.4	1.0	3.1	4.1	5.6
GFDL-ESM2G	-0.6	-0.4	0.8	2.6	2.5	3.1	3.3	3.0	0.0	0.4	0.5	1.0	1.1	1.9	2.4	2.6
GFDL-ESM2M	1.7	1.0	-0.1	-2.6	6.6	6.5	5.5	4.3	4.0	5.3	5.2	5.0	3.7	4.7	3.9	2.9
INM-CM4	-0.2	0.5	0.8	1.2	-3.0	-2.5	-1.9	-0.6	0.9	1.7	2.8	3.5	1.7	2.5	3.2	3.7
IPSL-CM5A-LR	1.8	2.2	2.7	2.7	2.0	2.9	3.1	3.1	3.6	4.5	5.4	5.2	1.7	2.9	3.7	4.0
IPSL-CM5B-LR	0.2	-0.4	-0.1	0.6	0.4	0.3	0.2	0.2	0.5	1.0	1.9	2.8	1.7	1.7	1.6	1.8
MIROC-ESM	0.8	0.8	0.7	1.0	-0.7	-1.4	-1.1	-0.1	1.5	1.9	2.0	2.2	2.9	3.2	4.4	4.4
MIROC5	-0.1	0.5	0.3	-0.2	0.6	1.1	0.8	1.1	0.3	0.9	1.1	1.8	0.8	1.1	1.2	1.0
MRI-CGCM3	2.3	2.4	2.2	2.1	-1.7	-2.3	-1.2	-0.9	1.7	2.9	3.4	3.9	0.7	0.5	0.7	0.8
NorESM1-M	0.1	0.2	0.1	-0.4	-0.5	-0.2	0.9	1.1	4.8	5.4	5.4	5.4	2.0	2.5	2.7	3.2

Table B.20 Eyre Peninsula NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.8	1.0	0.6	1.0	-0.3	0.0	0.3	-0.2	1.4	2.3	2.9	3.7	1.0	2.0	3.3	4.3
ACCESS1.3	1.2	2.0	2.6	3.3	2.5	4.1	5.2	7.7	3.4	4.7	5.5	7.0	3.2	4.8	6.1	7.9
BCC-CSM1.1(m)	1.3	1.9	1.5	1.0	1.9	2.1	2.9	2.9	3.9	5.5	7.1	8.4	3.1	3.9	4.7	4.7
CanESM2	-0.5	-0.2	0.2	0.6	0.4	0.6	-0.7	-1.6	3.3	4.3	5.9	8.1	3.9	5.5	6.5	7.0
CNRM-CM5	-0.4	0.0	0.0	0.5	-0.2	-0.8	-1.3	-0.2	1.4	1.8	3.0	3.8	0.8	1.5	2.1	3.8
CSIRO-Mk3.6.0	1.3	1.8	2.5	3.4	2.2	2.9	4.2	5.4	4.1	5.3	6.6	8.2	2.7	3.8	4.8	5.6
GFDL-ESM2G	1.6	1.6	1.5	1.5	0.3	1.3	1.2	-0.7	1.0	1.5	2.1	3.0	0.3	0.6	0.8	0.7
GFDL-ESM2M	0.9	0.7	0.9	1.2	4.7	5.2	5.5	5.2	3.7	5.1	6.9	8.2	2.8	4.4	5.5	7.7
INM-CM4	0.1	0.3	0.7	1.0	-2.2	-2.7	-2.9	-2.9	0.7	1.4	2.3	3.3	1.8	2.3	2.5	3.1
IPSL-CM5A-LR	2.3	2.9	4.3	5.5	2.7	3.7	5.1	6.3	4.2	7.2	10.1	13.1	1.8	2.6	4.4	6.5
IPSL-CM5B-LR	-1.7	-1.8	-1.3	-1.4	-0.4	-0.5	-1.6	-1.5	1.2	3.0	4.7	6.0	1.3	2.2	4.1	6.1
MIROC-ESM	1.4	1.9	2.2	2.5	-0.6	-0.3	0.4	1.7	0.7	2.3	5.2	8.6	3.2	3.9	5.1	6.9
MIROC5	0.1	0.1	-0.8	-1.1	0.6	1.0	1.6	1.3	0.3	0.6	0.9	1.1	0.7	1.2	1.3	1.2
MRI-CGCM3	0.8	1.3	1.5	1.7	-0.5	-2.0	-1.9	-3.0	1.5	1.8	2.4	2.9	1.1	2.0	1.7	2.0
NorESM1-M	0.4	0.3	-0.3	-1.7	0.0	1.3	2.2	1.6	4.3	5.9	6.4	5.2	1.6	2.2	2.6	2.2

Table B.21 Eyre Peninsula NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	4.3	6.7	9.7	12.7	1.8	4.2	5.6	6.9	6.1	9.6	11.7	13.7	7.3	11.4	15.4	19.9
ACCESS1.3	5.2	6.6	7.8	8.3	4.6	7.4	11.0	12.9	12.1	19.5	25.4	31.2	12.2	16.8	20.2	24.0
BCC-CSM1.1(m)	9.0	10.9	11.4	11.1	14.7	16.0	18.0	19.6	10.0	14.3	18.0	21.2	10.0	12.7	14.8	17.3
CanESM2	7.2	10.1	12.2	14.4	3.1	6.7	9.4	13.7	4.5	7.3	9.8	11.5	8.4	12.2	14.7	17.7
CNRM-CM5	5.4	8.5	12.4	16.2	9.3	13.4	17.0	19.5	12.2	15.6	17.5	17.4	11.9	16.4	19.6	21.2
CSIRO-Mk3.6.0	2.7	4.8	6.1	5.9	3.5	7.2	11.0	14.9	10.3	16.1	22.2	28.9	6.5	10.6	12.8	14.8
GFDL-ESM2G	0.9	3.0	8.6	14.6	10.5	14.4	16.8	18.8	9.0	10.3	10.5	10.5	10.9	13.2	14.6	17.3
GFDL-ESM2M	8.2	11.6	9.6	5.3	16.5	20.7	18.4	16.4	20.1	25.1	23.7	23.0	19.5	24.5	25.1	25.4
INM-CM4	5.2	8.7	12.2	16.1	0.8	3.1	5.1	7.1	3.8	4.7	6.1	8.8	7.5	13.6	17.9	22.3
IPSL-CM5A-LR	14.3	19.9	23.4	25.5	12.1	16.2	19.5	21.9	9.7	13.6	18.5	22.1	8.3	12.7	16.5	18.7
IPSL-CM5B-LR	8.0	9.3	10.6	11.5	12.1	14.6	17.3	18.8	6.3	8.4	10.0	11.3	12.6	16.8	19.8	22.1
MIROC-ESM	10.9	14.5	16.7	19.3	2.3	2.5	4.8	7.1	6.1	7.0	9.5	12.0	9.2	14.1	18.1	21.8
MIROC5	4.5	7.3	9.2	10.2	7.2	10.2	12.0	15.0	4.7	8.9	11.6	13.6	8.6	11.0	11.7	11.7
MRI-CGCM3	4.8	7.7	9.4	12.2	10.6	12.8	16.6	20.7	9.3	14.5	17.8	21.4	9.5	12.8	15.2	18.4
NorESM1-M	3.8	6.7	8.0	9.3	2.6	5.7	9.3	12.1	10.5	13.7	16.7	20.2	8.0	11.7	14.8	17.7

Table B.22 Eyre Peninsula NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	7.8	12.2	15.6	19.9	1.5	6.5	12.7	19.5	8.8	15.3	24.4	32.6	10.8	17.8	28.1	37.8
ACCESS1.3	7.5	12.3	16.0	20.4	6.4	13.0	20.7	31.2	15.5	26.7	37.6	49.1	15.8	24.9	33.9	44.8
BCC-CSM1.1(m)	11.4	15.4	19.7	22.5	16.9	23.4	28.1	31.8	18.9	26.5	36.4	44.6	15.2	21.5	28.0	33.8
CanESM2	9.2	13.9	20.4	27.0	6.4	10.9	15.9	20.5	8.2	12.8	18.2	25.1	13.5	21.0	29.3	37.0
CNRM-CM5	10.3	17.0	25.2	32.7	13.3	22.2	32.4	46.5	13.6	20.7	33.2	46.9	10.6	19.8	31.8	45.9
CSIRO-Mk3.6.0	4.3	7.1	9.8	13.0	7.2	11.7	17.0	23.3	12.8	20.3	28.6	38.1	8.6	13.9	20.0	25.9
GFDL-ESM2G	6.2	8.6	13.6	19.5	11.8	14.3	17.6	16.6	11.2	18.6	23.3	29.1	8.8	16.8	26.7	37.2
GFDL-ESM2M	5.9	11.1	16.7	23.0	10.9	18.1	26.0	33.6	16.9	28.7	42.2	57.0	19.6	31.3	44.1	58.5
INM-CM4	8.7	15.1	22.8	31.0	2.8	7.0	12.9	18.7	3.8	5.7	11.3	17.3	11.1	16.5	23.1	30.5
IPSL-CM5A-LR	16.6	26.4	37.5	49.3	17.8	26.7	35.8	45.7	14.2	23.7	35.0	46.8	12.7	21.9	33.3	45.6
IPSL-CM5B-LR	3.8	9.3	17.0	25.6	12.1	18.9	28.3	39.8	10.6	17.4	25.1	33.4	16.2	25.1	34.8	45.7
MIROC-ESM	13.3	21.3	30.8	39.0	6.5	10.5	16.5	23.7	8.9	15.2	24.9	34.1	11.8	18.8	28.6	40.3
MIROC5	6.6	9.8	12.8	16.2	7.9	10.5	12.4	14.2	7.3	10.6	14.7	18.5	8.3	11.8	15.8	19.7
MRI-CGCM3	3.9	9.6	15.3	20.5	11.2	16.5	22.1	26.3	12.5	19.1	27.9	36.8	10.8	19.3	27.9	36.0
NorESM1-M	5.5	9.5	12.3	13.6	6.5	12.2	17.0	20.3	10.8	16.9	22.1	24.6	9.9	14.5	17.6	17.7

Table B.23 Eyre Peninsula NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	2.0	2.7	3.7	4.6	1.6	2.5	3.0	3.3	1.9	3.5	4.5	5.7	2.8	4.0	5.7	6.6
ACCESS1.3	2.1	3.0	3.5	3.9	2.2	3.5	5.1	5.6	2.9	5.3	7.0	8.6	3.9	5.8	6.9	8.7
BCC-CSM1.1(m)	3.3	4.2	4.6	4.8	3.9	4.7	5.5	6.0	3.6	5.2	6.7	7.4	3.4	4.1	5.0	5.6
CanESM2	2.4	3.7	4.4	5.2	2.0	3.8	5.1	7.6	2.7	4.3	6.0	7.5	4.8	6.4	7.6	9.0
CNRM-CM5	1.3	2.4	3.0	3.7	2.2	3.4	4.9	5.5	2.8	3.8	4.5	4.8	2.9	4.4	5.1	5.6
CSIRO-Mk3.6.0	2.5	3.8	4.4	4.7	1.9	3.4	5.2	6.8	3.5	5.5	7.3	9.0	2.5	5.1	6.6	8.4
GFDL-ESM2G	0.7	1.3	2.7	4.4	3.9	4.8	5.4	5.6	1.2	1.7	2.3	3.0	2.2	3.1	3.7	4.2
GFDL-ESM2M	2.2	2.3	1.9	0.0	6.0	6.7	6.4	5.9	3.5	5.1	5.6	5.8	3.9	5.2	5.2	5.1
INM-CM4	1.3	2.6	3.6	4.6	0.0	0.9	1.8	3.0	1.6	2.5	3.4	4.3	2.1	3.5	5.0	6.4
IPSL-CM5A-LR	4.8	6.5	7.9	8.7	4.2	6.0	6.9	7.7	4.1	5.9	7.5	8.3	3.6	5.6	7.1	8.0
IPSL-CM5B-LR	1.9	2.2	2.8	3.6	2.6	3.5	4.3	5.1	2.0	2.7	3.7	4.6	3.3	4.1	4.9	5.6
MIROC-ESM	3.4	4.4	5.2	6.3	1.4	1.9	3.1	4.7	2.6	4.0	5.2	6.3	4.4	5.9	7.8	9.0
MIROC5	1.5	2.7	3.1	3.0	2.3	3.6	4.3	5.3	1.5	2.9	3.9	5.0	2.6	3.5	4.1	4.3
MRI-CGCM3	2.4	3.1	3.5	3.9	1.3	1.6	2.9	3.8	2.2	3.3	4.4	5.9	2.0	2.6	3.2	3.8
NorESM1-M	1.5	2.4	3.0	3.0	0.9	1.9	3.3	3.9	3.8	5.0	5.9	6.9	2.7	4.0	4.8	5.8

Table B.24 Eyre Peninsula NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	3.0	4.6	5.8	7.6	1.4	3.3	5.7	7.9	2.5	5.2	7.9	11.0	3.6	6.1	9.4	12.4
ACCESS1.3	3.0	4.9	6.5	8.4	3.4	5.9	8.4	12.1	4.8	7.6	10.1	13.4	5.4	8.5	11.6	15.3
BCC-CSM1.1(m)	3.8	5.8	7.1	8.0	4.9	6.8	9.0	10.5	6.0	8.5	11.7	14.2	5.1	7.4	9.8	11.5
CanESM2	2.8	5.1	7.8	10.7	3.6	6.1	8.0	10.1	4.3	7.3	10.7	15.6	6.1	9.8	13.4	16.8
CNRM-CM5	2.0	4.0	5.6	7.6	3.4	5.2	7.5	11.4	3.2	5.2	8.1	11.1	3.1	5.6	8.2	12.1
CSIRO-Mk3.6.0	2.9	4.5	6.4	8.6	3.7	6.1	9.0	12.3	4.1	6.7	9.8	13.3	4.0	6.5	9.1	11.7
GFDL-ESM2G	2.9	3.8	5.0	6.3	3.3	5.0	6.2	6.2	2.1	4.0	6.0	7.8	1.8	3.4	5.3	6.8
GFDL-ESM2M	1.9	2.8	4.1	5.4	4.9	6.5	8.5	10.4	3.5	5.8	9.0	11.9	3.8	6.4	8.9	12.5
INM-CM4	2.2	3.8	5.9	8.3	1.0	2.3	4.2	6.4	1.8	3.6	6.1	7.9	3.4	5.0	6.6	8.5
IPSL-CM5A-LR	5.9	8.9	13.1	17.4	5.8	9.2	13.0	17.1	5.3	9.2	14.0	19.4	4.6	7.5	11.8	16.7
IPSL-CM5B-LR	0.1	1.4	3.3	4.9	2.4	3.7	5.0	7.4	3.1	5.4	8.4	11.0	3.3	5.5	8.5	11.9
MIROC-ESM	4.8	7.2	10.0	12.7	2.4	4.6	7.4	11.0	3.1	6.2	10.0	14.5	5.3	7.9	11.2	15.4
MIROC5	2.1	3.3	4.0	5.2	2.7	4.5	6.3	7.8	2.0	3.8	5.7	7.4	2.8	4.5	6.1	7.8
MRI-CGCM3	1.7	3.3	4.7	6.2	2.0	2.8	4.8	6.2	2.7	4.4	7.1	9.4	2.5	4.8	6.3	8.4
NorESM1-M	2.1	3.5	4.7	5.1	2.1	4.4	6.6	8.0	3.8	6.7	8.7	10.2	2.9	4.8	6.6	7.6

Table B.25 Kangaroo Island NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-15.3	-4.5	-16.5	-18.7	-8.8	-9.7	-15.9	-8.5	-3.4	-7.8	-7.6	-3.9	-19.6	-22.8	-30.7	-27.8
ACCESS1.3	-26.0	-35.9	-27.7	-34.0	-19.5	-9.0	-29.9	-17.2	-8.6	-9.7	-18.2	-16.3	-16.8	-28.0	-26.1	-27.0
BCC-CSM1.1(m)	-17.1	-26.9	-17.5	-21.6	-2.0	-11.3	-16.9	-3.8	0.6	-11.6	-11.6	-11.8	-7.7	-6.3	-11.3	-18.6
CanESM2	-22.9	-19.9	-28.4	-25.9	4.4	0.3	0.6	-1.6	0.8	-9.8	-9.3	-8.8	-21.9	-25.4	-30.2	-32.6
CNRM-CM5	3.3	-16.2	-2.9	-10.3	9.3	0.8	0.6	3.9	-8.5	-11.4	-9.3	-7.8	-10.0	-8.4	-14.6	-15.3
CSIRO-Mk3.6.0	-21.6	-35.6	-30.8	-33.8	-1.0	-5.9	-6.1	-6.0	-5.6	-0.9	9.0	5.5	0.8	-18.0	-7.7	-14.6
GFDL-ESM2G	-12.4	-12.5	-14.8	-35.9	-11.6	-8.6	-9.6	-5.3	1.2	0.1	1.4	-4.0	0.3	-9.0	-16.8	-9.7
GFDL-ESM2M	-23.4	0.7	-11.5	12.2	-16.8	-10.6	-13.2	-12.5	-2.6	-2.9	-7.7	-6.6	-19.3	-21.9	-26.4	-18.6
INM-CM4	9.1	-6.3	-9.6	-11.3	19.0	10.0	2.2	4.0	0.9	0.1	-8.9	-6.9	-12.4	-11.4	-21.2	-25.6
IPSL-CM5A-LR	-20.5	-21.8	-22.5	-19.5	-20.3	-32.2	-22.2	-26.2	-7.3	-7.0	-9.8	-7.9	6.2	-6.1	-9.8	-10.0
IPSL-CM5B-LR	-0.6	18.8	15.7	-3.4	-12.1	-11.3	-24.6	-13.8	3.5	-3.6	-2.7	-3.4	-11.4	-6.7	-11.1	-16.9
MIROC-ESM	-13.7	-8.8	-21.3	-21.5	-2.6	1.0	-2.0	-15.3	-14.9	-14.9	-17.1	-18.0	-6.8	-12.4	-24.7	-25.9
MIROC5	0.3	-6.8	-10.3	7.3	-7.4	-14.6	-10.7	-16.2	4.7	0.5	3.4	-0.5	-10.7	-15.7	-20.0	-19.9
MRI-CGCM3	-9.9	-9.7	-9.5	-19.4	4.4	6.9	-4.2	-3.8	-0.2	-5.7	-4.3	4.1	-13.7	-12.1	-12.0	-13.4
NorESM1-M	-25.6	-10.8	-24.0	-16.3	-0.3	-6.2	-10.0	-0.1	-9.8	-11.7	-14.4	-11.7	-0.6	-3.5	-10.3	-10.2

Table B.26 Kangaroo Island NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-10.3	-29.6	-20.6	-41.9	-0.6	-10.0	-28.1	-28.2	-3.8	-6.6	-14.3	-22.2	-21.8	-32.4	-38.8	-53.1
ACCESS1.3	-18.6	-34.1	-41.8	-47.6	-15.8	-29.9	-25.1	-44.2	-8.6	-13.7	-17.6	-30.9	-23.8	-31.6	-43.7	-57.5
BCC-CSM1.1(m)	-10.8	-31.3	-35.3	-30.2	-11.8	-10.7	-25.1	-23.3	-8.3	-18.1	-21.4	-22.3	-17.4	-13.6	-31.5	-33.8
CanESM2	-17.4	-36.5	-39.4	-37.9	1.3	-7.4	-6.0	-3.7	-7.4	-4.8	-12.2	-21.1	-22.8	-29.7	-49.5	-50.5
CNRM-CM5	-3.1	-18.2	-16.0	-28.9	6.2	5.5	6.4	-4.1	-9.0	-6.4	-13.0	-16.8	-3.7	-6.2	-13.1	-30.6
CSIRO-Mk3.6.0	-13.1	-29.4	-46.0	-53.7	-2.6	-4.7	-19.4	-23.1	-5.3	1.0	-1.8	-7.9	-8.3	-14.6	-27.3	-25.6
GFDL-ESM2G	-20.4	-21.1	-31.2	-29.8	2.0	-6.3	-12.0	-7.5	-5.2	-4.9	-8.4	-13.5	-5.3	-8.8	-19.1	-25.1
GFDL-ESM2M	-4.2	1.3	-21.6	-25.2	-16.5	-14.6	-21.3	-30.9	0.2	-8.6	-18.8	-18.8	-18.5	-34.1	-36.9	-46.9
INM-CM4	-7.7	-6.2	-7.8	-22.1	9.4	12.5	3.0	0.8	-3.5	-7.4	-10.5	-11.3	-14.6	-17.8	-23.8	-30.7
IPSL-CM5A-LR	-22.8	-25.9	-48.6	-56.9	-24.5	-28.0	-42.1	-53.2	-8.5	-11.1	-25.2	-31.6	-9.0	1.0	-18.4	-28.9
IPSL-CM5B-LR	25.1	24.9	-4.3	3.9	-6.0	-14.5	-14.0	-27.8	-4.4	1.3	-5.6	-5.5	-2.7	-9.0	-20.2	-23.8
MIROC-ESM	-16.8	-15.7	-28.1	-33.1	-1.1	-11.1	-16.0	-24.7	-4.7	-12.5	-27.6	-31.0	-17.8	-22.2	-23.8	-46.2
MIROC5	1.5	-11.1	0.7	-3.1	-7.6	-9.1	-17.0	-17.7	-4.4	-5.3	-5.3	-11.8	-15.2	-22.9	-20.8	-29.1
MRI-CGCM3	-12.5	-13.4	-18.5	-29.8	-6.5	2.5	-13.3	-5.8	1.0	-3.0	-7.9	-5.5	-11.8	-24.7	-26.5	-27.9
NorESM1-M	-25.4	-17.3	-18.6	-21.2	3.6	-3.9	-13.8	-13.8	-6.4	-14.6	-14.3	-16.1	-9.5	-11.4	-8.8	-4.1

Table B.27 Kangaroo Island NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.6	0.9	1.3	1.5	0.5	0.8	1.0	1.3	0.6	0.9	1.2	1.4	0.6	1.0	1.3	1.7
ACCESS1.3	0.5	0.7	0.9	1.0	0.4	0.7	0.9	1.2	0.6	1.0	1.3	1.6	0.8	1.1	1.4	1.6
BCC-CSM1.1(m)	0.9	1.2	1.3	1.3	1.0	1.2	1.3	1.4	0.9	1.2	1.3	1.4	0.8	1.0	1.1	1.3
CanESM2	1.0	1.5	1.8	2.1	0.7	1.1	1.5	1.9	0.7	1.2	1.5	1.8	0.9	1.4	1.7	2.1
CNRM-CM5	0.6	0.9	1.3	1.6	0.7	1.1	1.5	1.7	0.7	1.0	1.3	1.5	0.8	1.2	1.5	1.8
CSIRO-Mk3.6.0	0.5	0.8	0.9	1.0	0.5	0.7	1.1	1.4	0.5	0.9	1.2	1.5	0.6	0.9	1.1	1.3
GFDL-ESM2G	0.4	0.6	0.8	1.0	0.8	1.0	1.1	1.2	0.5	0.6	0.7	0.8	0.6	0.8	1.0	1.1
GFDL-ESM2M	0.4	0.7	0.7	0.7	0.6	0.8	0.9	1.0	0.6	0.8	1.0	1.1	0.8	1.1	1.3	1.5
INM-CM4	0.5	0.9	1.1	1.4	0.2	0.5	0.8	1.0	0.4	0.7	1.0	1.3	0.5	1.0	1.3	1.7
IPSL-CM5A-LR	1.9	2.6	3.1	3.4	1.1	1.6	2.0	2.2	0.9	1.2	1.7	2.1	1.0	1.5	1.9	2.0
IPSL-CM5B-LR	0.9	1.2	1.3	1.3	0.7	1.0	1.3	1.5	0.7	1.0	1.1	1.2	1.0	1.3	1.7	1.9
MIROC-ESM	1.0	1.5	1.8	2.1	0.6	0.8	1.2	1.6	0.7	1.0	1.3	1.5	0.9	1.4	1.8	2.1
MIROC5	0.6	1.0	1.2	1.3	0.6	0.9	1.1	1.4	0.5	0.8	1.0	1.3	0.8	1.1	1.2	1.4
MRI-CGCM3	0.4	0.5	0.7	0.9	0.6	0.8	1.0	1.1	0.3	0.5	0.8	1.0	0.7	1.0	1.2	1.3
NorESM1-M	0.5	0.7	0.9	1.1	0.5	0.8	1.0	1.1	0.5	0.8	1.0	1.2	0.5	0.8	1.1	1.3

Table B.28 Kangaroo Island NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.8	1.3	1.8	2.3	0.6	1.1	1.7	2.4	0.7	1.3	2.0	2.9	0.9	1.5	2.1	2.8
ACCESS1.3	0.7	1.1	1.5	1.9	0.7	1.2	1.7	2.3	0.9	1.5	2.1	2.7	1.0	1.5	2.2	2.9
BCC-CSM1.1(m)	1.1	1.6	2.2	2.6	1.1	1.6	2.0	2.4	1.1	1.6	2.2	2.6	1.0	1.5	2.2	2.6
CanESM2	1.3	2.2	3.1	4.1	1.1	1.9	2.8	3.7	1.0	1.8	2.7	3.7	1.4	2.4	3.3	4.4
CNRM-CM5	0.9	1.5	2.1	2.8	0.9	1.6	2.4	3.4	0.8	1.4	2.0	2.8	0.9	1.5	2.4	3.3
CSIRO-Mk3.6.0	0.6	0.9	1.4	1.8	0.6	1.1	1.7	2.2	0.6	1.1	1.7	2.3	0.7	1.2	1.8	2.3
GFDL-ESM2G	0.6	1.0	1.4	1.9	0.8	1.1	1.6	2.0	0.6	1.0	1.5	2.0	0.7	1.3	1.9	2.5
GFDL-ESM2M	0.3	0.8	1.3	1.7	0.6	1.0	1.6	2.1	0.6	1.0	1.6	2.3	0.9	1.5	2.2	2.9
INM-CM4	0.8	1.3	2.0	2.7	0.4	1.0	1.6	2.3	0.5	1.0	1.7	2.4	0.8	1.3	1.8	2.4
IPSL-CM5A-LR	1.9	3.2	4.8	6.5	1.5	2.5	3.6	4.7	1.1	2.0	3.1	4.3	1.6	2.7	3.9	5.3
IPSL-CM5B-LR	0.5	1.0	1.7	2.6	0.8	1.2	2.0	2.9	0.9	1.4	2.0	2.6	1.0	1.7	2.3	3.0
MIROC-ESM	1.5	2.4	3.5	4.6	1.0	1.8	2.6	3.6	1.0	1.7	2.5	3.3	1.2	2.1	3.1	4.2
MIROC5	0.8	1.3	1.8	2.4	0.7	1.1	1.6	2.3	0.6	1.1	1.6	2.2	0.9	1.4	1.9	2.4
MRI-CGCM3	0.4	0.9	1.5	2.1	0.7	1.2	1.8	2.4	0.5	1.0	1.6	2.2	0.7	1.4	2.0	2.7
NorESM1-M	0.6	1.1	1.8	2.3	0.7	1.2	1.8	2.4	0.7	1.2	1.8	2.4	0.6	1.2	1.7	2.2

Table B.29 Kangaroo Island NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.7	1.0	1.3	1.6	0.5	0.8	1.0	1.3	0.6	0.8	1.1	1.4	0.5	0.8	1.1	1.4
ACCESS1.3	0.4	0.6	0.8	0.9	0.4	0.6	0.8	1.1	0.5	0.9	1.1	1.4	0.6	0.9	1.0	1.3
BCC-CSM1.1(m)	0.9	1.1	1.2	1.2	0.9	1.1	1.2	1.3	0.8	1.1	1.2	1.3	0.7	0.9	1.1	1.2
CanESM2	0.9	1.4	1.8	2.0	0.8	1.2	1.6	1.9	0.6	0.9	1.2	1.4	0.6	0.9	1.2	1.6
CNRM-CM5	0.6	0.9	1.2	1.6	0.6	1.0	1.4	1.7	0.7	0.9	1.2	1.5	0.6	1.0	1.3	1.6
CSIRO-Mk3.6.0	0.5	0.8	1.0	1.1	0.5	0.8	1.0	1.3	0.5	0.8	1.1	1.4	0.6	0.8	1.0	1.2
GFDL-ESM2G	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.9	0.3	0.5	0.6	0.7	0.3	0.4	0.5	0.6
GFDL-ESM2M	0.2	0.4	0.6	0.7	0.3	0.5	0.6	0.7	0.4	0.6	0.7	0.8	0.3	0.4	0.6	0.8
INM-CM4	0.7	1.0	1.2	1.5	0.9	1.2	1.4	1.6	0.5	0.7	0.7	0.7	0.2	0.4	0.7	1.0
IPSL-CM5A-LR	1.1	1.6	1.8	1.9	1.0	1.3	1.5	1.7	0.7	0.9	1.1	1.3	0.7	0.9	1.1	1.3
IPSL-CM5B-LR	0.6	0.8	0.9	1.1	0.6	0.9	1.1	1.3	0.4	0.6	0.7	0.9	0.6	0.9	1.2	1.4
MIROC-ESM	1.0	1.4	1.8	2.1	0.7	1.0	1.4	1.8	0.6	0.9	1.2	1.5	0.7	1.0	1.4	1.7
MIROC5	0.6	0.9	1.0	1.2	0.5	0.8	1.0	1.2	0.5	0.8	1.0	1.1	0.6	0.8	0.9	1.1
MRI-CGCM3	0.3	0.5	0.7	0.8	0.6	0.8	0.9	1.0	0.3	0.5	0.7	1.0	0.5	0.8	1.0	1.1
NorESM1-M	0.4	0.7	0.9	1.1	0.4	0.7	0.9	1.1	0.4	0.6	0.8	1.0	0.4	0.7	0.8	1.0

Table B.30 Kangaroo Island NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.8	1.3	1.9	2.4	0.6	1.1	1.7	2.4	0.6	1.2	1.9	2.6	0.7	1.2	1.8	2.4
ACCESS1.3	0.6	1.0	1.4	1.9	0.7	1.1	1.6	2.1	0.9	1.4	1.9	2.5	0.7	1.2	1.7	2.3
BCC-CSM1.1(m)	1.0	1.5	2.0	2.5	1.0	1.5	1.9	2.3	1.0	1.5	2.1	2.5	0.9	1.4	2.0	2.4
CanESM2	1.2	2.0	2.9	3.9	1.1	1.9	2.8	3.8	0.8	1.4	2.1	2.8	0.8	1.5	2.3	3.1
CNRM-CM5	0.8	1.4	2.0	2.6	0.9	1.5	2.3	3.2	0.8	1.3	2.0	2.6	0.8	1.3	2.0	2.7
CSIRO-Mk3.6.0	0.6	0.9	1.4	1.9	0.6	1.1	1.6	2.2	0.5	1.0	1.6	2.2	0.6	1.0	1.5	2.1
GFDL-ESM2G	0.5	0.8	1.2	1.6	0.7	1.0	1.5	1.9	0.5	0.8	1.2	1.6	0.5	0.9	1.3	1.8
GFDL-ESM2M	0.3	0.7	1.1	1.5	0.5	0.8	1.4	1.9	0.4	0.8	1.2	1.8	0.5	0.8	1.3	1.8
INM-CM4	0.9	1.5	2.3	3.1	1.1	1.8	2.5	3.4	0.8	1.1	1.5	1.9	0.5	1.0	1.5	2.0
IPSL-CM5A-LR	1.3	2.1	3.1	4.1	1.2	2.0	3.0	3.9	0.8	1.4	2.2	3.0	0.9	1.5	2.2	3.0
IPSL-CM5B-LR	0.5	0.9	1.5	2.1	0.7	1.2	1.8	2.6	0.5	1.0	1.5	2.1	0.8	1.2	1.8	2.3
MIROC-ESM	1.5	2.4	3.3	4.4	1.1	1.8	2.7	3.7	0.9	1.5	2.1	2.8	0.9	1.6	2.5	3.3
MIROC5	0.7	1.2	1.7	2.3	0.6	1.0	1.5	2.1	0.6	1.0	1.5	2.1	0.7	1.1	1.5	2.0
MRI-CGCM3	0.4	0.9	1.4	1.9	0.6	1.1	1.7	2.3	0.5	0.9	1.5	2.0	0.6	1.1	1.7	2.2
NorESM1-M	0.6	1.1	1.8	2.4	0.7	1.2	1.7	2.3	0.6	1.0	1.6	2.2	0.5	1.0	1.6	2.1

Table B.31 Kangaroo Island NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-0.1	-0.4	0.0	0.1	-0.8	-0.8	-0.5	-0.9	0.3	1.0	1.3	1.2	1.7	2.2	2.6	3.2
ACCESS1.3	0.2	0.2	-0.1	-0.1	1.3	1.7	3.4	2.7	1.5	3.1	4.3	5.5	1.7	2.7	3.5	4.3
BCC-CSM1.1(m)	1.1	1.2	1.3	1.8	1.5	1.9	2.4	2.0	1.7	3.1	3.7	4.2	1.2	1.0	1.5	1.6
CanESM2	0.5	0.6	0.7	0.8	-0.1	0.8	1.6	2.8	1.1	2.8	3.3	4.0	3.5	4.6	5.4	5.8
CNRM-CM5	-0.2	0.4	-0.3	-0.4	-0.8	-0.1	0.9	0.8	1.5	2.2	1.7	0.7	2.1	2.4	2.4	1.9
CSIRO-Mk3.6.0	0.9	1.0	0.6	0.0	0.4	1.0	2.1	2.9	3.0	3.6	4.4	6.1	1.5	3.3	4.1	5.5
GFDL-ESM2G	-0.7	-0.5	0.8	2.6	2.3	2.7	2.8	2.8	-0.7	-0.9	-0.5	0.3	1.3	1.9	2.7	2.1
GFDL-ESM2M	0.9	0.3	-1.0	-2.9	5.3	5.1	4.5	4.1	1.9	2.4	3.2	3.3	3.4	4.1	3.8	2.9
INM-CM4	-0.3	-0.1	0.4	0.7	-2.7	-2.6	-2.4	-1.7	-0.3	0.4	1.7	2.2	1.5	2.4	3.2	3.7
IPSL-CM5A-LR	2.5	3.5	4.0	3.8	2.7	4.0	4.1	4.4	3.8	4.9	5.8	5.7	2.2	3.9	4.7	4.8
IPSL-CM5B-LR	-0.7	-1.6	-1.0	-0.4	2.0	2.2	2.6	2.2	-0.6	0.6	1.7	2.8	1.4	1.6	2.2	2.8
MIROC-ESM	0.8	0.5	0.5	0.5	-0.8	-0.8	0.0	1.1	3.1	3.3	3.1	3.5	2.8	3.8	4.8	4.9
MIROC5	-0.1	0.2	0.7	0.6	0.5	1.2	1.1	2.3	-0.4	0.1	0.0	1.1	1.7	2.0	2.5	2.6
MRI-CGCM3	1.7	1.7	1.3	1.0	-1.3	-1.9	-1.1	-0.8	1.4	2.5	2.8	2.5	1.3	1.5	1.2	0.8
NorESM1-M	0.2	0.0	0.0	0.0	-0.5	0.0	0.7	1.2	3.4	3.8	4.3	4.5	1.5	2.1	2.8	3.3

Table B.32 Kangaroo Island NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.3	0.4	-0.3	0.0	-0.6	-0.2	0.2	-0.5	1.1	2.0	3.7	5.0	2.1	3.5	4.5	5.5
ACCESS1.3	0.6	0.9	0.5	0.2	1.6	3.0	3.2	5.3	2.9	3.7	4.5	5.4	2.5	3.8	5.4	6.7
BCC-CSM1.1(m)	1.5	1.8	0.8	0.2	2.2	2.2	3.0	2.7	3.1	4.6	6.3	7.5	1.8	2.4	3.6	3.9
CanESM2	0.1	0.6	0.9	1.2	1.2	1.7	1.2	0.8	3.2	4.4	6.0	8.7	4.4	6.4	8.0	8.8
CNRM-CM5	0.1	0.7	0.8	1.0	0.1	-0.1	0.1	1.4	1.0	1.8	2.4	3.1	1.7	2.7	3.9	6.0
CSIRO-Mk3.6.0	0.8	1.1	1.4	1.9	2.7	3.5	4.9	6.5	2.8	3.9	5.2	6.8	2.2	3.3	4.8	5.5
GFDL-ESM2G	1.3	1.4	1.4	1.2	-0.4	0.7	0.7	-0.1	0.5	0.1	0.7	1.7	0.9	1.1	1.9	2.3
GFDL-ESM2M	-0.2	-0.4	0.2	0.9	4.2	5.0	4.8	4.7	1.9	2.7	4.2	4.6	3.4	5.2	6.3	8.2
INM-CM4	0.2	0.4	0.5	0.8	-2.5	-2.8	-3.0	-3.1	-0.1	0.4	1.2	1.7	1.8	2.5	3.1	3.8
IPSL-CM5A-LR	3.7	5.0	7.0	9.0	3.8	5.5	8.1	10.2	5.1	8.4	12.2	16.1	2.9	4.6	7.3	10.3
IPSL-CM5B-LR	-2.9	-3.1	-2.2	-1.8	0.4	1.5	1.1	2.2	1.1	2.1	3.0	4.2	1.0	2.4	4.4	6.6
MIROC-ESM	2.1	2.8	3.6	4.1	0.0	0.5	2.1	3.7	1.4	3.1	6.4	9.2	4.2	5.5	7.3	10.0
MIROC5	0.1	0.2	-0.4	0.1	1.1	1.4	1.7	1.7	-0.5	-0.5	-1.1	-1.4	1.9	2.7	3.3	4.0
MRI-CGCM3	0.6	0.5	1.1	1.6	-0.1	-1.4	-0.7	-1.6	1.4	2.0	2.6	2.4	1.4	2.6	2.9	3.5
NorESM1-M	0.6	0.8	0.3	-0.9	-0.8	0.1	1.4	2.0	3.1	4.5	5.2	4.8	1.2	2.0	2.3	1.8

Table B.33 Kangaroo Island NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	2.1	2.8	4.2	5.3	1.5	3.4	5.7	6.7	4.5	7.5	9.1	10.8	3.8	6.3	8.0	10.3
ACCESS1.3	2.6	3.2	3.9	4.8	3.5	4.8	6.6	7.4	6.1	10.0	12.3	15.2	5.4	7.9	9.1	11.2
BCC-CSM1.1(m)	5.7	7.0	8.0	8.9	9.5	11.3	11.7	12.5	8.6	11.1	13.9	16.8	7.4	9.4	10.9	12.2
CanESM2	8.9	12.4	15.1	17.1	3.5	7.5	10.5	13.9	3.0	6.4	8.1	10.1	8.6	12.9	15.2	17.7
CNRM-CM5	3.8	6.0	8.1	10.6	3.9	8.3	11.0	12.8	9.6	14.0	16.4	17.7	7.5	10.9	13.2	14.2
CSIRO-Mk3.6.0	0.7	1.3	1.3	1.3	0.9	2.0	2.7	2.8	2.3	4.6	7.3	10.3	3.1	5.0	5.5	6.8
GFDL-ESM2G	0.0	1.0	4.1	6.8	6.7	10.0	12.0	14.7	4.8	5.4	5.4	5.8	8.6	11.5	12.9	15.0
GFDL-ESM2M	2.6	3.9	2.8	0.3	7.1	9.3	8.6	10.3	11.5	15.1	14.5	14.7	16.3	21.6	22.8	24.1
INM-CM4	4.7	7.4	9.6	12.0	-0.2	2.3	4.9	7.8	1.9	3.5	5.8	9.2	7.1	12.7	16.8	20.6
IPSL-CM5A-LR	14.8	19.7	22.6	23.3	9.8	14.1	16.7	17.8	5.9	9.3	12.5	15.2	8.7	13.0	15.8	17.3
IPSL-CM5B-LR	7.2	7.3	7.6	7.8	10.1	12.5	14.3	14.5	4.7	7.0	8.4	10.0	11.5	15.7	19.2	22.0
MIROC-ESM	8.1	11.5	13.2	15.3	0.7	0.4	3.0	5.6	2.9	2.0	2.8	5.4	7.4	11.1	15.1	17.4
MIROC5	2.2	4.0	5.4	6.5	3.7	5.4	5.9	7.2	3.4	5.6	7.3	9.8	6.0	7.6	8.1	8.3
MRI-CGCM3	3.3	4.2	4.8	6.1	6.5	7.0	8.5	9.7	2.9	5.7	8.1	10.3	9.2	12.1	14.0	15.2
NorESM1-M	2.0	2.9	3.8	5.3	0.6	3.5	6.1	8.2	7.7	11.0	12.3	14.7	5.8	8.7	11.2	13.9

Table B.34 Kangaroo Island NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	3.5	5.3	6.4	8.2	2.2	4.6	7.4	9.5	5.4	10.9	18.6	26.4	5.7	9.1	14.1	18.1
ACCESS1.3	3.1	4.7	6.1	7.9	4.5	7.3	10.2	14.9	8.3	13.7	19.4	26.5	6.6	10.4	15.0	20.1
BCC-CSM1.1(m)	7.2	9.9	11.5	13.1	8.9	12.3	16.8	20.0	12.1	19.6	27.4	34.6	11.1	15.9	21.8	26.1
CanESM2	10.6	16.3	22.6	29.5	6.5	11.6	16.5	22.9	6.6	10.8	15.7	21.9	12.9	21.4	29.3	37.6
CNRM-CM5	6.8	11.4	16.0	21.1	5.6	12.5	21.0	31.6	10.8	17.7	28.4	39.6	5.9	13.1	22.4	33.2
CSIRO-Mk3.6.0	0.7	1.7	2.3	2.9	2.2	2.8	3.7	4.2	2.8	5.5	7.9	10.0	3.5	5.7	8.7	10.8
GFDL-ESM2G	3.1	4.7	7.2	9.7	6.3	9.4	12.3	14.2	7.1	12.5	16.1	19.8	7.9	14.1	21.5	29.3
GFDL-ESM2M	-0.4	3.6	7.8	12.8	6.8	12.1	17.0	22.3	10.1	19.2	29.9	41.5	17.8	27.9	38.2	49.0
INM-CM4	7.4	12.4	18.1	24.1	2.5	7.4	12.8	18.6	2.9	6.0	11.4	17.8	9.9	15.3	21.0	27.9
IPSL-CM5A-LR	15.9	25.9	37.8	50.9	14.2	22.8	32.6	42.3	9.0	17.1	27.9	39.3	12.9	22.5	33.6	45.9
IPSL-CM5B-LR	0.2	3.8	11.4	20.7	8.8	14.7	23.9	35.4	8.0	13.1	20.2	27.3	13.2	22.0	31.1	41.4
MIROC-ESM	13.2	22.6	34.5	47.4	7.0	12.6	18.9	27.3	7.4	12.2	18.8	25.3	10.9	19.2	31.1	46.1
MIROC5	3.0	5.9	8.0	10.8	4.6	5.4	7.6	8.1	5.2	8.6	11.6	15.7	5.4	8.4	11.1	13.3
MRI-CGCM3	1.6	6.2	11.0	15.8	6.8	10.8	15.6	19.5	5.2	9.8	15.6	21.8	9.9	17.0	23.9	29.9
NorESM1-M	3.7	6.4	9.6	11.9	3.0	7.2	12.5	16.6	8.6	13.6	19.2	23.9	6.8	10.7	14.8	17.4

Table B.35 Kangaroo Island NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.5	2.1	3.1	3.9	0.6	1.4	2.3	2.7	1.4	2.3	2.6	3.6	2.7	3.9	5.0	6.1
ACCESS1.3	1.3	1.8	2.0	2.3	1.7	2.6	4.1	4.3	1.8	2.6	4.1	6.3	2.7	4.4	5.5	6.7
BCC-CSM1.1(m)	3.0	3.6	3.9	4.4	3.6	4.3	4.9	5.0	2.2	3.4	4.5	5.0	2.6	3.0	3.7	4.2
CanESM2	2.6	3.8	4.8	5.5	2.0	3.8	5.6	7.2	1.6	3.0	4.1	5.7	4.4	6.3	7.6	8.7
CNRM-CM5	1.3	2.5	2.8	3.6	1.3	3.0	4.6	5.5	2.4	3.0	3.2	3.7	3.2	4.5	5.2	5.6
CSIRO-Mk3.6.0	1.9	2.7	2.8	2.6	1.2	2.3	3.7	4.9	1.9	2.4	3.8	6.4	2.7	4.7	5.9	7.4
GFDL-ESM2G	0.4	0.9	2.1	3.6	3.3	4.1	4.5	4.9	0.5	0.8	1.1	1.7	2.0	2.8	3.6	3.4
GFDL-ESM2M	1.5	1.5	0.8	-0.6	4.3	4.8	4.7	4.9	1.6	2.1	2.6	3.2	3.3	4.3	4.5	4.5
INM-CM4	1.0	2.0	2.9	3.8	0.0	0.7	1.6	2.6	1.1	1.8	2.3	2.6	2.0	3.4	4.7	5.9
IPSL-CM5A-LR	5.3	7.5	8.7	9.1	4.3	5.9	6.9	7.8	2.6	4.0	5.9	7.0	3.8	5.8	7.1	7.5
IPSL-CM5B-LR	1.1	1.0	1.8	2.5	3.1	4.1	5.1	5.4	1.4	2.1	2.5	3.2	2.9	3.9	4.9	6.0
MIROC-ESM	2.9	3.8	4.5	5.3	1.0	1.8	3.4	4.9	2.2	2.7	3.6	4.9	4.1	5.9	7.7	8.7
MIROC5	1.4	2.4	3.1	3.5	1.8	3.1	3.7	5.0	0.9	1.6	1.9	2.5	2.7	3.8	4.4	4.9
MRI-CGCM3	2.0	2.4	2.7	2.8	1.1	1.1	1.9	2.3	1.5	2.1	2.6	3.1	2.2	3.0	3.2	3.3
NorESM1-M	1.3	1.8	2.3	2.6	0.5	1.8	2.8	3.6	2.1	2.3	2.7	4.0	2.0	3.2	4.2	5.0

Table B.36 Kangaroo Island NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	2.2	3.5	4.3	5.7	0.8	2.5	4.3	5.7	1.7	3.5	7.2	9.4	3.6	5.9	8.2	10.7
ACCESS1.3	2.0	3.3	4.0	4.8	2.5	4.5	6.0	8.4	2.5	5.1	7.6	9.1	3.8	6.1	8.7	11.4
BCC-CSM1.1(m)	3.6	5.1	5.7	6.3	4.1	5.3	7.0	8.0	3.3	6.4	8.3	9.9	3.6	5.3	7.7	9.1
CanESM2	3.1	5.4	7.9	10.5	3.9	6.4	8.5	11.2	2.4	5.7	8.5	12.4	5.8	9.4	13.0	16.2
CNRM-CM5	2.1	3.9	5.4	7.1	2.6	4.5	7.0	10.4	2.3	3.8	7.1	9.2	3.2	5.4	8.3	11.8
CSIRO-Mk3.6.0	2.0	3.2	4.6	6.1	3.1	4.9	7.0	9.6	1.8	3.3	6.5	8.4	3.2	5.3	7.9	9.9
GFDL-ESM2G	2.4	3.3	4.2	5.1	1.9	3.6	4.8	5.5	1.4	1.7	2.9	5.6	1.9	3.3	5.1	6.6
GFDL-ESM2M	0.6	1.4	3.0	4.5	3.9	5.6	6.9	8.3	1.7	2.6	5.6	8.0	3.8	6.1	8.2	11.2
INM-CM4	1.9	3.5	5.2	7.4	0.7	2.3	4.0	5.8	1.4	2.1	4.0	6.8	3.1	4.7	6.4	8.3
IPSL-CM5A-LR	6.5	10.1	15.0	20.2	5.6	9.3	14.1	18.5	3.9	7.6	12.1	17.3	5.2	8.6	13.1	18.3
IPSL-CM5B-LR	-0.9	0.0	2.1	4.1	2.3	4.3	6.0	9.0	2.2	3.3	6.0	8.3	2.7	5.1	7.9	11.2
MIROC-ESM	5.1	7.7	10.8	13.9	2.8	5.2	8.6	12.2	2.4	5.4	8.9	12.2	5.7	8.6	12.4	17.2
MIROC5	1.8	3.0	3.9	5.7	2.6	3.8	5.4	6.8	1.0	1.8	3.1	5.3	3.2	5.0	6.7	8.6
MRI-CGCM3	1.4	2.5	4.2	5.9	1.5	2.2	4.6	5.9	1.7	2.7	4.7	7.1	2.4	4.7	6.5	8.5
NorESM1-M	2.0	3.4	4.5	5.1	1.1	3.0	5.4	7.4	1.8	3.8	6.6	8.0	2.2	4.1	5.8	6.7

Table B.37 Northern and Yorke NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-10.7	4.2	-10.3	-10.1	-12.2	-18.6	-19.8	-19.4	-11.0	-12.7	-12.9	-10.4	-12.6	-17.4	-30.1	-16.8
ACCESS1.3	-27.1	-35.9	-26.2	-31.4	-27.7	-18.5	-37.6	-24.7	-12.0	-13.4	-25.6	-23.7	-3.7	-17.7	-13.7	-22.7
BCC-CSM1.1(m)	-15.0	-29.0	-23.4	-25.6	-5.0	-13.6	-21.7	-4.9	-7.6	-18.2	-17.3	-17.2	-7.1	0.4	-10.8	-18.8
CanESM2	-18.4	-20.6	-21.4	-22.6	-5.0	-11.2	-3.5	-13.5	-3.1	-10.6	-11.3	-13.5	-28.5	-27.2	-36.1	-35.2
CNRM-CM5	8.0	-12.4	-0.9	-8.6	-0.5	-4.9	-8.3	-1.3	-12.1	-12.9	-11.4	-14.1	-4.2	-8.7	-11.3	-11.8
CSIRO-Mk3.6.0	-28.4	-43.5	-41.9	-42.3	0.0	-11.5	-15.7	-13.2	-12.2	-14.6	-3.7	-10.0	-7.0	-28.7	-24.0	-29.3
GFDL-ESM2G	-4.5	-6.9	-9.7	-32.1	-16.6	-11.2	-14.5	-12.6	-1.4	-6.7	-7.4	-8.3	3.0	-14.7	-27.3	-13.1
GFDL-ESM2M	-29.4	-7.5	-22.7	6.5	-26.1	-19.9	-24.9	-18.2	-11.1	-13.7	-17.0	-17.2	-21.7	-26.7	-30.6	-23.9
INM-CM4	11.9	-6.3	-16.7	-14.2	22.0	13.2	5.5	1.8	-5.9	-4.4	-11.4	-13.9	-14.2	-10.6	-23.1	-22.1
IPSL-CM5A-LR	-24.4	-24.7	-25.8	-23.3	-19.6	-28.1	-21.8	-28.1	-5.7	-8.7	-10.6	-11.7	4.0	-8.7	-18.0	-18.2
IPSL-CM5B-LR	-4.5	9.7	12.0	-11.8	-9.2	-14.1	-20.0	-15.6	0.2	-6.5	-5.2	-8.8	-10.7	-9.8	-6.4	-21.0
MIROC-ESM	-12.7	-4.3	-18.1	-23.0	-12.1	-0.7	-0.6	-14.4	-21.5	-19.3	-24.9	-24.8	-15.5	-23.1	-30.8	-29.9
MIROC5	8.4	-12.3	-7.9	4.3	-9.2	-13.8	-10.2	-20.1	-5.1	-7.5	-6.9	-11.3	-16.2	-22.3	-22.4	-22.4
MRI-CGCM3	-13.9	-4.3	-22.5	-23.4	6.5	17.7	1.2	3.4	-3.5	-6.9	-10.0	-3.4	-12.2	-9.9	-8.7	-17.0
NorESM1-M	-25.7	-11.1	-31.1	-18.9	-5.3	-10.0	-18.5	-9.3	-12.5	-18.0	-18.0	-13.2	-6.2	-11.9	-13.1	-14.4

Table B.38 Northern and Yorke NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-1.1	-26.6	-18.2	-41.0	-6.8	-18.4	-29.3	-33.0	-8.6	-10.9	-18.9	-29.2	-11.6	-20.9	-32.7	-53.7
ACCESS1.3	-17.7	-32.2	-39.2	-51.9	-14.7	-36.5	-36.6	-56.0	-16.0	-16.8	-29.1	-41.3	-19.3	-25.9	-37.3	-50.2
BCC-CSM1.1(m)	-9.0	-32.0	-37.7	-26.8	-19.6	-18.5	-35.3	-32.4	-12.7	-20.8	-28.5	-29.4	-13.8	-12.3	-32.3	-31.1
CanESM2	-14.7	-34.1	-32.9	-34.3	-3.2	-19.1	-10.6	-12.3	-9.0	-11.2	-17.5	-25.2	-29.0	-39.4	-57.1	-56.9
CNRM-CM5	1.1	-13.6	-9.8	-28.7	-0.9	-1.8	2.6	-16.2	-8.8	-13.5	-19.3	-25.5	2.0	-6.9	-10.3	-31.3
CSIRO-Mk3.6.0	-10.7	-31.4	-54.4	-64.1	-10.6	-10.1	-25.8	-36.4	-16.3	-11.2	-16.6	-23.6	-19.4	-29.2	-38.7	-44.2
GFDL-ESM2G	-10.2	-20.6	-25.2	-20.4	-0.1	-13.5	-18.6	-14.5	-7.4	-10.4	-18.6	-26.1	-13.9	-15.6	-28.2	-31.1
GFDL-ESM2M	-1.3	-12.0	-26.3	-30.3	-23.0	-21.2	-33.2	-38.2	-8.4	-21.4	-31.6	-34.1	-20.5	-34.3	-38.1	-54.3
INM-CM4	-15.6	-12.0	-4.7	-25.1	13.0	16.7	7.6	-3.4	-7.6	-9.7	-16.1	-16.8	-11.9	-16.2	-21.8	-27.4
IPSL-CM5A-LR	-24.6	-23.3	-49.8	-60.1	-28.1	-23.7	-34.9	-45.9	-7.2	-14.7	-29.1	-43.2	-14.3	-2.0	-28.6	-38.1
IPSL-CM5B-LR	18.9	14.9	-11.4	-0.5	-6.1	-13.6	-14.0	-27.1	-7.3	-4.5	-14.4	-17.8	-7.4	-12.1	-22.8	-31.2
MIROC-ESM	-14.6	-13.0	-25.0	-27.3	-4.1	-7.7	-10.1	-20.6	-11.5	-18.9	-33.8	-43.3	-22.1	-27.5	-30.0	-51.7
MIROC5	5.6	-8.2	12.7	2.8	-15.4	-12.0	-22.0	-19.0	-12.0	-18.5	-15.4	-25.9	-18.5	-24.8	-23.6	-30.1
MRI-CGCM3	-10.7	-13.8	-26.1	-39.1	-1.5	9.4	-15.7	2.9	-3.9	-3.9	-15.9	-16.6	-13.0	-23.2	-25.3	-26.9
NorESM1-M	-26.4	-19.0	-23.0	-17.5	-5.3	-17.6	-20.7	-15.9	-7.9	-21.2	-21.0	-19.5	-18.3	-15.4	-14.3	-23.3

Table B.39 Northern and Yorke NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.9	1.4	1.8	2.3	0.6	1.0	1.3	1.6	0.8	1.2	1.5	1.7	1.1	1.7	2.4	3.0
ACCESS1.3	1.1	1.4	1.6	1.8	0.8	1.2	1.5	1.9	1.0	1.6	2.1	2.6	1.5	2.1	2.5	2.9
BCC-CSM1.1(m)	1.5	1.9	2.0	2.0	1.6	1.9	2.0	2.2	1.3	1.8	2.1	2.3	1.1	1.6	1.9	2.3
CanESM2	1.4	2.0	2.4	2.8	0.9	1.5	1.9	2.5	0.9	1.4	1.8	2.1	1.4	2.0	2.4	2.9
CNRM-CM5	0.7	1.0	1.6	2.0	0.9	1.4	1.8	2.1	0.9	1.3	1.5	1.7	1.2	1.8	2.1	2.4
CSIRO-Mk3.6.0	1.0	1.5	1.9	2.0	0.7	1.2	1.9	2.6	1.0	1.6	2.0	2.6	1.1	1.6	2.0	2.3
GFDL-ESM2G	0.7	1.1	1.5	1.9	1.1	1.4	1.6	1.7	0.6	0.8	0.9	1.2	1.1	1.4	1.7	2.0
GFDL-ESM2M	1.0	1.4	1.5	1.4	1.1	1.4	1.5	1.7	0.9	1.3	1.4	1.6	1.3	1.7	2.0	2.3
INM-CM4	0.8	1.2	1.6	2.1	0.3	0.6	0.9	1.1	0.5	0.9	1.2	1.6	0.6	1.2	1.7	2.3
IPSL-CM5A-LR	2.0	2.7	3.2	3.6	1.2	1.8	2.2	2.7	1.0	1.4	1.9	2.5	1.1	1.7	2.2	2.5
IPSL-CM5B-LR	1.2	1.6	1.8	1.8	0.9	1.2	1.5	1.8	0.9	1.2	1.2	1.2	1.2	1.6	2.0	2.3
MIROC-ESM	1.2	1.8	2.1	2.4	0.7	0.8	1.1	1.5	0.9	1.2	1.4	1.7	1.1	1.7	2.3	2.8
MIROC5	0.9	1.3	1.7	1.9	0.9	1.4	1.7	2.2	0.7	1.1	1.4	1.7	1.1	1.5	1.7	1.9
MRI-CGCM3	0.6	1.0	1.3	1.6	0.9	1.1	1.4	1.8	0.5	0.8	1.1	1.5	0.9	1.2	1.5	1.9
NorESM1-M	1.0	1.4	1.5	1.7	0.7	1.1	1.4	1.7	0.8	1.1	1.4	1.7	0.9	1.3	1.6	1.9

Table B.40 Northern and Yorke NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.3	2.2	3.0	3.9	0.7	1.5	2.5	3.6	1.0	1.7	2.8	3.8	1.5	2.5	3.8	5.1
ACCESS1.3	1.5	2.2	3.0	3.7	1.2	2.1	3.0	4.2	1.5	2.3	3.3	4.2	1.8	2.9	4.1	5.4
BCC-CSM1.1(m)	1.6	2.5	3.5	4.2	1.9	2.7	3.4	3.8	1.9	2.7	3.6	4.3	1.7	2.6	3.6	4.5
CanESM2	1.9	2.9	4.2	5.5	1.5	2.5	3.4	4.4	1.4	2.3	3.4	4.6	2.1	3.4	4.7	6.0
CNRM-CM5	1.2	2.0	2.8	3.7	1.3	2.2	3.2	4.5	1.1	1.8	2.7	3.7	1.3	2.3	3.4	4.8
CSIRO-Mk3.6.0	1.2	1.9	2.8	3.5	1.2	2.0	3.0	4.2	1.2	2.0	2.9	4.0	1.2	2.1	3.1	4.1
GFDL-ESM2G	1.0	1.6	2.5	3.4	1.2	1.6	2.2	2.6	0.8	1.4	2.0	2.6	1.1	1.9	2.9	3.9
GFDL-ESM2M	1.0	1.6	2.4	3.2	1.1	1.7	2.6	3.4	0.9	1.5	2.4	3.2	1.5	2.5	3.5	4.7
INM-CM4	1.2	1.8	2.6	3.4	0.4	0.9	1.7	2.4	0.7	1.3	2.1	3.1	1.1	1.6	2.3	3.1
IPSL-CM5A-LR	2.2	3.6	5.0	6.6	1.9	2.8	4.0	5.2	1.3	2.3	3.6	4.9	1.8	2.9	4.4	6.0
IPSL-CM5B-LR	0.8	1.4	2.1	2.9	1.0	1.5	2.3	3.2	1.1	1.7	2.4	3.2	1.3	2.1	2.8	3.6
MIROC-ESM	1.8	2.8	4.0	5.3	1.1	1.8	2.7	3.9	1.2	2.0	3.0	4.0	1.5	2.5	3.8	5.3
MIROC5	1.0	1.6	2.1	2.8	1.1	1.7	2.2	2.8	0.8	1.4	2.0	2.7	1.2	1.8	2.5	3.2
MRI-CGCM3	0.7	1.4	2.1	2.9	1.0	1.7	2.5	3.2	0.8	1.4	2.1	2.8	1.0	1.9	2.7	3.6
NorESM1-M	1.0	1.7	2.3	2.7	1.0	1.7	2.3	3.0	1.0	1.7	2.3	3.0	1.0	1.7	2.2	2.5

Table B.41 Northern and Yorke NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.1	1.6	2.0	2.4	0.8	1.1	1.4	1.7	0.6	1.0	1.3	1.7	0.9	1.3	1.6	2.0
ACCESS1.3	0.7	0.9	1.2	1.3	0.4	0.7	0.9	1.3	0.6	1.0	1.2	1.5	1.0	1.4	1.7	1.9
BCC-CSM1.1(m)	1.0	1.1	1.1	1.1	1.3	1.5	1.6	1.8	1.0	1.3	1.4	1.6	0.8	1.1	1.2	1.4
CanESM2	1.3	1.9	2.3	2.7	0.9	1.4	1.9	2.3	0.8	1.1	1.3	1.6	0.7	1.1	1.5	1.9
CNRM-CM5	0.8	1.2	1.8	2.2	0.9	1.4	1.8	2.2	0.6	0.9	1.2	1.5	0.9	1.5	1.8	2.1
CSIRO-Mk3.6.0	0.7	1.0	1.3	1.4	0.8	1.1	1.6	2.1	0.5	1.0	1.4	1.8	0.9	1.2	1.4	1.7
GFDL-ESM2G	0.5	0.7	0.8	0.9	0.7	0.9	1.0	1.1	0.4	0.6	0.6	0.8	0.6	0.7	0.7	0.9
GFDL-ESM2M	0.6	0.9	1.0	1.0	0.5	0.8	0.9	0.9	0.4	0.7	0.7	0.8	0.6	0.8	1.0	1.1
INM-CM4	0.9	1.3	1.5	1.8	1.4	1.6	1.8	1.7	0.5	0.6	0.6	0.4	0.2	0.3	0.7	1.0
IPSL-CM5A-LR	1.4	1.9	2.1	2.3	1.2	1.4	1.7	1.9	0.8	1.0	1.3	1.5	0.8	1.0	1.3	1.5
IPSL-CM5B-LR	0.7	0.9	1.1	1.2	0.9	1.1	1.4	1.5	0.4	0.6	0.7	0.9	0.8	1.3	1.5	1.7
MIROC-ESM	1.1	1.6	1.9	2.2	0.8	1.2	1.6	1.9	0.7	1.1	1.3	1.6	0.7	1.1	1.5	1.8
MIROC5	0.8	1.1	1.4	1.5	0.7	1.1	1.4	1.7	0.6	0.9	1.2	1.4	0.8	1.1	1.3	1.5
MRI-CGCM3	0.4	0.7	0.9	1.2	1.0	1.3	1.4	1.6	0.3	0.6	0.8	1.2	0.7	1.0	1.3	1.5
NorESM1-M	0.7	1.1	1.3	1.6	0.6	1.0	1.2	1.4	0.3	0.5	0.8	1.0	0.6	0.9	1.2	1.4

Table B.42 Northern and Yorke NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.4	2.2	3.1	3.8	0.9	1.5	2.5	3.5	0.8	1.4	2.1	2.9	1.2	1.8	2.5	3.3
ACCESS1.3	1.1	1.6	2.3	2.8	0.8	1.4	2.0	2.7	1.0	1.6	2.1	2.7	1.2	1.9	2.7	3.6
BCC-CSM1.1(m)	1.1	1.6	2.1	2.6	1.5	2.2	2.7	3.1	1.2	1.8	2.4	2.9	1.0	1.5	2.0	2.6
CanESM2	1.6	2.7	3.9	5.1	1.4	2.3	3.5	4.8	0.8	1.6	2.4	3.2	1.1	1.9	2.8	3.8
CNRM-CM5	1.3	2.0	2.8	3.6	1.3	2.2	3.2	4.3	0.9	1.4	2.0	2.7	1.1	1.9	2.8	3.7
CSIRO-Mk3.6.0	1.0	1.5	2.2	2.8	0.9	1.7	2.5	3.5	0.6	1.3	2.1	2.9	0.9	1.5	2.3	3.1
GFDL-ESM2G	0.7	1.1	1.8	2.4	1.0	1.3	1.8	2.3	0.5	0.9	1.3	1.8	0.7	1.3	1.9	2.6
GFDL-ESM2M	0.7	1.2	1.8	2.4	0.7	1.2	1.9	2.7	0.4	0.8	1.4	2.0	0.7	1.3	2.0	2.7
INM-CM4	1.1	1.9	3.0	4.1	1.5	2.3	3.1	4.0	0.7	1.1	1.5	1.8	0.8	1.2	1.9	2.4
IPSL-CM5A-LR	1.6	2.6	3.6	4.8	1.6	2.5	3.6	4.7	1.1	1.7	2.5	3.4	1.0	1.7	2.6	3.6
IPSL-CM5B-LR	0.8	1.4	2.2	3.2	1.1	1.7	2.5	3.5	0.6	1.2	1.9	2.8	1.4	2.1	2.9	3.7
MIROC-ESM	1.7	2.7	3.8	5.1	1.2	2.1	3.0	4.2	1.0	1.7	2.3	3.1	1.1	1.9	2.8	3.8
MIROC5	1.0	1.6	2.3	3.0	0.8	1.4	2.1	2.8	0.8	1.2	1.9	2.5	0.9	1.5	2.1	2.8
MRI-CGCM3	0.6	1.2	1.8	2.5	1.0	1.8	2.5	3.3	0.7	1.2	1.8	2.5	0.8	1.5	2.2	2.9
NorESM1-M	0.8	1.5	2.2	2.9	1.0	1.6	2.1	2.8	0.5	1.0	1.6	2.4	0.8	1.4	2.0	2.4

Table B.43 Northern and Yorke NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.1	-0.3	0.2	0.4	-0.6	-0.3	-0.5	-1.0	1.7	2.7	2.6	2.9	1.1	1.8	2.2	2.9
ACCESS1.3	1.3	1.8	1.8	1.9	3.0	3.6	5.0	4.7	3.3	5.7	7.4	8.6	2.2	3.2	3.8	5.2
BCC-CSM1.1(m)	0.8	1.4	1.6	1.7	1.3	2.0	2.3	2.5	3.8	5.1	6.6	7.1	2.2	2.7	3.1	3.4
CanESM2	-0.4	-0.6	-0.8	-0.6	-0.2	0.6	1.2	2.8	0.9	2.6	3.0	4.0	3.6	4.2	4.6	4.4
CNRM-CM5	-0.3	0.1	-0.4	-0.9	-0.3	0.0	-0.2	-0.6	2.0	2.4	2.0	1.0	1.6	1.8	2.0	1.5
CSIRO-Mk3.6.0	2.0	2.9	3.2	3.2	0.6	1.7	2.7	3.1	4.8	5.9	7.0	8.4	1.9	4.0	5.6	7.4
GFDL-ESM2G	-0.2	0.1	1.0	2.8	2.2	2.9	3.2	4.0	1.0	1.2	1.7	2.6	1.7	2.3	3.1	3.8
GFDL-ESM2M	2.2	1.6	0.8	-1.4	5.8	5.8	5.0	4.1	4.9	6.5	6.1	6.1	4.0	5.1	4.4	3.4
INM-CM4	0.1	0.7	1.2	1.7	-2.8	-2.6	-2.0	-1.3	0.8	1.7	2.4	3.4	1.4	2.2	3.3	3.4
IPSL-CM5A-LR	1.8	2.4	2.8	2.6	2.1	2.9	3.2	3.1	4.0	5.3	5.6	5.7	2.5	4.0	4.8	4.6
IPSL-CM5B-LR	0.9	0.2	0.4	1.1	1.4	1.3	0.8	0.8	0.5	1.4	2.1	3.2	2.4	2.8	2.9	3.0
MIROC-ESM	0.7	0.4	0.5	0.5	-0.7	-1.6	-1.4	-0.9	2.8	2.9	2.8	3.2	2.8	3.6	4.3	4.2
MIROC5	-0.2	0.5	0.5	0.2	1.4	1.7	1.3	1.7	1.7	2.6	2.7	3.3	1.3	1.3	1.4	1.3
MRI-CGCM3	2.4	2.4	2.5	2.3	-1.7	-2.4	-1.3	-0.5	2.4	3.9	4.8	5.2	0.9	1.0	0.7	0.6
NorESM1-M	1.2	1.0	1.1	0.5	-0.3	0.3	1.4	1.9	6.3	6.5	7.1	7.6	2.2	2.7	3.3	3.5

Table B.44 Northern and Yorke NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.3	1.1	0.8	1.5	-0.2	0.2	0.4	0.2	2.5	3.8	4.6	5.5	1.5	2.6	4.2	5.6
ACCESS1.3	1.5	2.3	3.1	4.0	3.1	5.0	6.4	9.0	5.3	7.8	9.2	11.4	3.6	5.1	6.8	9.1
BCC-CSM1.1(m)	0.9	1.5	1.3	0.9	1.8	2.5	3.3	3.4	6.7	8.6	11.2	12.7	3.6	4.6	5.6	6.1
CanESM2	-0.7	-0.5	-0.5	-0.6	0.7	0.9	-0.7	-1.8	3.4	4.9	6.3	8.5	4.3	6.3	7.4	7.8
CNRM-CM5	-0.1	0.1	0.3	0.6	0.2	-0.2	-0.2	0.9	1.5	2.3	3.3	4.2	1.6	2.4	3.0	4.8
CSIRO-Mk3.6.0	1.5	2.7	4.1	5.3	2.6	3.5	4.6	6.0	5.5	7.3	8.3	9.4	3.3	5.3	6.3	7.5
GFDL-ESM2G	1.6	2.0	2.0	2.1	0.7	1.3	1.0	-0.9	2.1	3.0	3.4	4.4	0.6	0.6	1.1	1.0
GFDL-ESM2M	1.1	1.1	1.6	2.3	4.6	5.4	5.7	5.4	4.6	7.1	9.2	11.0	3.2	4.6	6.0	8.7
INM-CM4	0.6	0.7	0.7	1.1	-2.4	-3.1	-3.2	-3.2	0.8	1.4	2.2	2.9	1.8	2.0	2.4	3.2
IPSL-CM5A-LR	2.6	3.2	4.6	5.8	2.7	3.4	4.9	6.2	4.9	8.2	11.3	14.8	2.3	3.0	4.8	7.2
IPSL-CM5B-LR	-1.3	-1.3	-0.5	-0.5	0.3	0.1	-0.5	0.0	1.6	3.2	4.5	5.5	2.3	3.4	5.6	7.7
MIROC-ESM	1.4	1.5	1.7	1.8	-0.6	-0.7	-0.2	0.9	1.5	3.9	7.0	10.6	3.3	4.3	5.3	7.3
MIROC5	0.2	0.2	-0.6	-0.9	1.8	2.0	2.1	1.4	1.5	2.0	2.7	3.1	1.6	1.8	1.8	1.8
MRI-CGCM3	1.2	1.8	2.2	2.2	-0.5	-1.8	-1.2	-2.8	2.9	3.7	4.6	5.1	1.3	2.4	2.4	3.0
NorESM1-M	1.4	1.1	0.5	-0.9	0.3	1.8	2.3	1.8	5.8	7.6	8.3	7.1	2.5	2.9	2.8	2.2

Table B.45 Northern and Yorke NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	7.3	11.0	15.0	19.3	4.5	8.3	10.2	13.3	9.4	14.4	16.0	16.4	11.6	18.7	25.1	32.6
ACCESS1.3	9.5	11.8	13.8	14.5	8.3	12.4	16.5	19.7	18.2	29.8	39.3	48.0	17.8	24.7	31.0	36.8
BCC-CSM1.1(m)	11.6	14.1	14.7	13.2	20.8	23.7	25.9	28.3	15.5	22.4	27.9	32.7	12.6	17.1	20.5	25.1
CanESM2	10.0	14.0	16.7	19.7	5.5	10.0	13.8	18.5	6.1	10.0	11.5	13.5	12.4	17.3	20.6	24.1
CNRM-CM5	6.0	9.2	14.0	17.8	11.0	16.5	20.2	22.5	15.7	21.5	22.2	22.0	14.0	20.3	23.2	25.0
CSIRO-Mk3.6.0	8.6	12.5	16.4	16.6	6.1	12.4	20.9	28.9	18.5	29.4	39.9	51.1	15.3	22.9	27.8	32.0
GFDL-ESM2G	4.0	7.5	13.2	20.0	13.2	17.9	20.6	22.9	10.3	11.7	11.3	13.1	16.1	20.4	23.6	28.8
GFDL-ESM2M	13.8	18.2	15.5	10.9	19.0	25.3	22.9	20.6	25.5	32.9	31.1	30.4	26.0	33.7	34.8	33.9
INM-CM4	6.3	10.1	13.7	17.7	3.1	5.6	8.0	9.2	4.3	5.0	6.6	10.9	7.7	14.2	19.6	25.7
IPSL-CM5A-LR	17.4	23.6	26.9	29.2	14.5	19.5	24.0	27.1	11.7	14.7	20.2	24.7	11.1	17.4	22.1	23.3
IPSL-CM5B-LR	11.1	12.2	13.9	14.7	17.8	20.3	22.2	22.0	6.7	9.8	11.2	11.4	16.6	22.5	26.9	28.6
MIROC-ESM	9.4	13.9	16.1	18.9	2.3	1.6	3.8	5.7	6.0	5.1	6.9	9.9	10.2	16.9	22.5	27.3
MIROC5	6.9	10.7	14.3	16.7	10.2	14.2	17.9	23.4	6.7	13.2	16.9	21.4	11.3	14.8	16.6	18.3
MRI-CGCM3	7.0	10.6	13.4	16.5	12.0	15.6	18.4	23.6	8.4	14.8	19.6	25.2	11.9	16.2	19.8	24.0
NorESM1-M	6.9	9.2	10.0	11.0	3.8	7.9	11.6	15.7	13.0	17.1	21.4	27.3	10.5	14.6	17.8	22.3

Table B.46 Northern and Yorke NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	12.4	20.5	28.2	36.8	4.5	12.4	22.5	34.7	12.3	22.5	36.8	49.8	16.9	28.2	44.9	61.4
ACCESS1.3	13.8	21.3	28.2	35.4	11.1	21.4	32.9	49.5	24.7	41.6	57.0	73.7	23.6	38.4	54.1	72.1
BCC-CSM1.1(m)	13.2	18.7	24.9	29.5	24.1	32.5	39.3	44.4	28.1	39.0	52.9	64.2	18.9	27.1	36.2	44.5
CanESM2	12.8	19.8	28.6	38.5	9.9	16.4	21.9	28.4	11.3	17.5	24.6	33.1	19.2	31.6	42.2	53.9
CNRM-CM5	12.3	19.6	28.3	36.8	16.0	26.1	39.0	56.4	18.1	27.1	44.7	63.9	14.5	26.3	41.6	60.1
CSIRO-Mk3.6.0	11.2	18.1	26.3	34.0	13.3	22.6	33.2	46.0	23.1	37.7	54.2	72.2	17.4	29.5	42.6	55.2
GFDL-ESM2G	7.4	12.5	21.4	30.6	13.7	16.1	21.5	21.8	12.8	23.1	29.5	35.8	12.8	24.5	37.6	51.3
GFDL-ESM2M	10.3	17.6	26.7	37.0	15.0	25.5	36.9	48.0	19.1	35.6	55.8	77.1	25.4	42.5	61.6	84.0
INM-CM4	10.7	16.2	23.9	31.4	4.1	7.9	14.1	20.1	4.1	7.4	14.2	21.9	11.8	18.1	25.9	34.7
IPSL-CM5A-LR	20.6	33.2	47.0	62.1	23.8	35.2	49.0	63.3	17.3	30.4	47.2	65.6	17.5	31.0	47.9	66.9
IPSL-CM5B-LR	6.6	13.0	22.5	34.1	16.1	24.4	37.6	54.0	13.4	23.4	35.1	48.6	23.3	36.1	49.5	64.8
MIROC-ESM	14.9	25.4	38.2	51.7	8.5	14.6	22.7	34.0	13.1	22.8	36.2	49.2	14.5	24.9	41.0	60.8
MIROC5	9.0	13.6	17.6	22.7	12.3	15.9	18.7	21.0	9.9	14.9	20.3	25.5	11.3	16.6	22.7	28.6
MRI-CGCM3	6.9	14.4	22.5	30.4	13.6	22.2	31.2	37.1	14.5	23.2	34.0	45.0	14.2	25.7	37.3	48.5
NorESM1-M	8.1	11.8	14.0	14.0	8.5	15.4	19.8	22.7	14.5	22.1	28.5	30.5	12.3	17.9	20.1	17.4

Table B.47 Northern and Yorke NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	2.4	3.1	4.3	5.5	1.5	2.6	3.0	3.7	3.2	5.1	5.7	6.6	3.3	4.9	6.5	8.2
ACCESS1.3	2.8	3.8	4.3	4.7	3.1	4.4	5.9	6.6	4.5	7.1	9.5	11.7	4.7	6.5	7.8	9.8
BCC-CSM1.1(m)	3.3	4.3	4.7	4.8	4.7	5.9	6.4	7.1	5.9	7.9	9.4	10.6	4.0	5.2	6.1	7.1
CanESM2	2.8	4.1	4.9	5.9	2.5	4.5	6.4	9.2	2.9	5.1	6.1	7.3	5.3	7.2	8.5	9.6
CNRM-CM5	1.4	2.6	3.3	4.0	2.5	3.9	5.1	5.8	3.8	4.8	5.1	5.1	3.8	5.3	6.4	6.7
CSIRO-Mk3.6.0	3.3	4.8	5.9	6.1	2.3	4.1	6.3	8.4	4.8	7.0	9.4	11.7	3.8	6.4	8.4	10.5
GFDL-ESM2G	1.3	2.1	3.1	4.8	4.0	5.0	5.6	6.5	2.4	2.9	3.3	4.2	3.2	4.1	5.0	6.2
GFDL-ESM2M	3.0	3.3	3.1	1.6	5.5	6.5	6.3	6.1	5.2	6.8	7.0	7.4	4.7	6.1	6.3	6.1
INM-CM4	1.9	3.3	4.4	5.5	0.5	1.4	2.4	3.1	1.8	3.3	3.9	5.0	2.0	3.4	5.2	6.5
IPSL-CM5A-LR	4.9	6.8	8.0	8.6	4.4	6.1	7.4	8.2	4.9	6.3	7.7	8.9	4.3	6.5	8.1	8.3
IPSL-CM5B-LR	2.5	2.7	3.3	4.1	3.4	4.2	4.4	5.1	2.0	3.3	4.2	5.1	4.2	5.4	6.4	6.9
MIROC-ESM	3.1	4.0	4.9	5.7	1.5	1.5	2.6	4.0	3.8	4.8	5.6	6.6	4.3	6.4	8.2	9.2
MIROC5	1.7	3.0	3.6	3.8	3.1	4.2	5.0	6.2	2.8	4.3	5.1	6.1	3.2	4.0	4.6	5.0
MRI-CGCM3	2.7	3.4	4.0	4.4	1.5	1.8	3.1	4.3	2.8	4.8	6.2	7.8	2.4	3.2	3.7	4.2
NorESM1-M	2.7	3.5	4.1	4.1	1.3	2.7	4.3	5.3	5.6	6.3	7.3	8.6	3.1	4.5	5.7	6.6

Table B.48 Northern and Yorke NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	3.2	5.6	7.3	9.8	1.7	4.0	6.7	9.7	4.0	6.8	10.3	13.6	4.3	7.2	10.8	14.6
ACCESS1.3	3.7	5.8	7.9	10.0	4.3	7.3	10.3	14.6	6.7	10.9	14.0	18.0	6.2	9.5	13.3	18.0
BCC-CSM1.1(m)	3.7	5.7	7.4	8.5	5.6	8.1	10.3	12.0	8.5	12.0	15.7	18.7	5.9	8.5	11.3	13.6
CanESM2	3.6	6.2	9.1	12.2	4.5	7.7	9.6	12.3	4.7	8.1	11.9	16.6	7.2	11.7	15.5	19.2
CNRM-CM5	2.5	4.4	6.3	8.5	3.9	6.0	9.1	13.4	4.1	6.0	9.1	12.6	4.2	7.0	10.0	14.2
CSIRO-Mk3.6.0	3.5	5.7	8.3	10.9	4.4	7.4	10.5	14.6	5.7	9.3	12.6	16.4	4.9	8.3	11.4	14.7
GFDL-ESM2G	3.0	4.4	6.2	7.9	3.8	5.1	6.5	6.6	3.3	5.0	6.8	9.2	2.5	4.3	6.4	8.4
GFDL-ESM2M	2.4	3.7	5.5	7.3	5.1	7.2	9.4	11.6	5.1	7.8	11.5	14.9	4.7	7.4	10.5	14.7
INM-CM4	2.9	4.6	6.8	9.3	1.3	2.5	4.6	6.8	2.5	4.1	6.1	8.3	3.7	5.0	6.9	9.2
IPSL-CM5A-LR	6.0	9.1	13.1	17.6	6.4	9.5	13.8	18.2	6.3	10.7	16.0	22.0	5.0	8.1	12.4	17.9
IPSL-CM5B-LR	0.8	1.9	4.1	6.0	2.8	4.1	5.9	8.9	3.5	6.2	9.1	12.7	4.7	7.3	10.9	14.5
MIROC-ESM	4.9	7.2	10.0	13.0	2.7	4.8	7.8	11.9	4.3	7.5	11.9	17.0	5.7	8.8	12.4	17.4
MIROC5	2.3	3.6	4.5	5.8	3.7	5.5	7.3	8.7	2.9	4.5	7.0	9.2	3.7	5.4	7.1	8.9
MRI-CGCM3	2.3	4.0	5.6	7.2	2.3	3.5	6.1	7.4	4.2	6.4	8.8	11.6	2.8	5.5	7.5	10.1
NorESM1-M	3.1	4.5	5.7	6.1	2.9	5.5	7.3	8.9	5.7	8.3	10.9	12.2	3.9	5.9	7.3	7.8

Table B.49 SA Arid Lands NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-5.2	-1.7	-1.7	-5.0	-12.3	-14.1	-16.2	-18.4	-7.1	-12.1	-2.9	-3.9	-1.5	2.8	-16.3	6.4
ACCESS1.3	-13.8	-20.2	-7.3	-13.2	-31.3	-31.4	-46.5	-33.0	-16.2	-19.4	-22.2	-17.2	25.1	-7.3	9.9	-12.2
BCC-CSM1.1(m)	6.9	8.2	5.0	3.0	-8.1	-10.9	-28.8	-14.2	-0.9	-1.6	-1.6	-4.2	-4.3	-2.3	-20.0	-14.5
CanESM2	-3.2	-8.7	-6.7	-10.4	-3.0	-18.0	-10.2	-20.2	-0.4	1.3	8.4	-0.3	-37.5	-34.7	-40.9	-32.6
CNRM-CM5	4.9	-5.8	15.2	2.9	-20.2	-4.9	-22.5	11.7	-3.1	-2.5	-6.1	-0.4	7.2	8.0	6.1	13.0
CSIRO-Mk3.6.0	-28.0	-38.0	-42.1	-40.9	-9.0	-25.8	-26.8	-22.6	-4.2	-10.5	-8.7	-12.0	-19.3	-35.5	-41.3	-46.2
GFDL-ESM2G	4.8	5.6	4.3	-14.5	-11.3	-5.6	-13.7	-10.2	-0.3	-14.9	-10.8	-10.2	9.6	-10.9	-23.9	-15.8
GFDL-ESM2M	-23.1	5.2	-23.6	14.9	-41.1	-32.7	-30.1	-21.6	-17.2	-10.8	-13.2	-9.2	-34.1	-30.8	-44.8	-24.1
INM-CM4	18.1	-3.3	-13.2	-6.9	32.2	13.3	15.1	-2.3	-8.9	-6.9	-13.7	-20.7	-27.7	-27.0	-31.0	-25.9
IPSL-CM5A-LR	-14.8	3.4	-15.6	0.6	-23.1	-18.4	-17.6	-26.8	-8.3	-13.0	-12.9	-8.1	2.3	-14.2	-29.3	-21.0
IPSL-CM5B-LR	-4.5	-21.5	7.7	-17.5	-1.6	-6.0	-3.2	0.6	-9.0	-8.1	2.0	-12.9	-13.2	-14.2	-4.4	-14.8
MIROC-ESM	-8.7	-4.4	-10.3	-14.4	-9.9	7.6	8.3	-6.0	-8.6	-3.3	-15.0	-10.3	-14.9	-9.4	-26.2	-25.2
MIROC5	20.3	-6.7	0.8	8.2	-7.5	-14.9	-8.2	-6.6	-5.9	-11.0	-10.6	-9.1	-6.4	-12.7	-8.0	-3.7
MRI-CGCM3	-13.1	-10.1	-29.3	-22.3	19.0	11.9	-4.5	11.4	-5.2	-9.3	-11.6	-9.8	-3.8	-0.2	6.7	-12.6
NorESM1-M	-10.4	-0.3	-14.3	-8.1	-5.3	9.1	-21.5	-7.5	-5.7	-16.3	-4.3	2.5	-5.8	-13.5	-3.6	-7.0

Table B.50 SA Arid Lands NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	7.0	-15.3	-3.8	-15.9	-11.7	-18.4	-27.8	-27.7	-11.5	-10.4	-2.0	-13.5	10.6	6.3	-9.5	-43.5
ACCESS1.3	7.7	-19.7	-24.0	-32.7	-4.0	-33.9	-47.3	-62.6	-18.8	-18.2	-33.6	-36.9	-7.8	-18.2	-29.3	-41.8
BCC-CSM1.1(m)	13.9	4.4	-0.8	12.7	-20.5	-18.0	-34.4	-31.2	2.2	1.2	-8.4	-4.1	-18.6	-10.7	-28.8	-24.6
CanESM2	-5.1	-12.8	-17.1	-19.8	-10.5	-22.7	-10.3	3.3	3.3	-8.7	-5.1	-10.4	-28.8	-45.9	-65.7	-57.4
CNRM-CM5	15.6	14.5	11.4	-13.6	-12.3	-1.5	12.1	-23.8	-3.4	-5.5	-9.0	-11.3	22.7	-2.4	5.3	-15.9
CSIRO-Mk3.6.0	-3.1	-27.5	-55.2	-66.1	-6.3	-21.3	-39.6	-49.7	-13.2	-14.0	-16.0	-12.5	-24.8	-44.1	-49.4	-60.4
GFDL-ESM2G	-6.2	-13.8	-9.5	-12.8	2.1	-21.6	-12.5	-2.6	-7.1	-7.5	-22.7	-30.9	-10.9	-7.4	-19.1	-13.7
GFDL-ESM2M	-4.1	-4.7	-14.2	-25.8	-27.3	-26.5	-38.9	-39.2	-9.8	-20.1	-24.6	-27.3	-19.5	-41.1	-37.2	-60.8
INM-CM4	-7.3	-0.1	3.4	-12.2	15.0	22.6	8.6	7.6	-8.4	-8.1	-18.9	-13.7	-15.0	-23.3	-23.9	-30.8
IPSL-CM5A-LR	-4.0	16.4	-12.5	-25.3	-28.6	-18.1	-23.4	-39.0	-4.1	-18.8	-19.9	-34.7	-3.6	-12.3	-29.2	-34.5
IPSL-CM5B-LR	6.3	-3.3	-5.6	2.3	-0.4	-2.9	5.6	-9.3	-4.5	-6.8	-10.5	-5.4	-12.3	-7.2	-20.8	-32.7
MIROC-ESM	2.1	-0.1	-7.3	-8.5	11.3	-1.8	-2.6	-12.1	-5.3	-9.3	-12.9	-23.2	-20.3	-11.2	-22.4	-48.3
MIROC5	4.4	-4.4	14.0	8.6	-10.4	-7.9	-18.9	-15.2	-3.8	-15.7	-11.7	-15.0	-4.8	-12.6	-1.2	-4.4
MRI-CGCM3	-3.1	-8.0	-7.1	-30.4	-11.1	12.7	-1.6	16.5	-0.6	-13.8	-3.2	-6.9	-5.4	-1.1	-11.0	-18.2
NorESM1-M	-14.3	-8.4	-13.5	-9.7	-9.6	-19.2	-20.0	-8.6	-8.2	-14.7	-7.9	-2.3	-19.8	-3.5	-10.0	-7.0

Table B.51 SA Arid Lands NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.8	1.3	1.7	2.2	0.7	1.1	1.4	1.8	0.8	1.3	1.6	1.9	1.1	1.9	2.6	3.3
ACCESS1.3	1.2	1.7	2.0	2.2	0.8	1.3	1.7	2.0	1.1	1.7	2.3	2.8	1.7	2.4	2.9	3.2
BCC-CSM1.1(m)	1.3	1.8	1.9	1.9	1.6	2.0	2.2	2.4	1.6	2.2	2.6	2.8	1.2	1.7	2.1	2.6
CanESM2	1.4	2.0	2.4	2.8	0.8	1.5	2.0	2.7	1.0	1.5	1.9	2.3	1.5	2.2	2.7	3.3
CNRM-CM5	0.7	1.1	1.7	2.1	1.0	1.5	1.9	2.3	0.9	1.2	1.5	1.8	1.1	1.7	2.1	2.4
CSIRO-Mk3.6.0	1.3	2.0	2.5	2.8	1.0	1.7	2.5	3.3	1.2	1.9	2.5	3.2	1.1	1.7	2.2	2.6
GFDL-ESM2G	1.1	1.5	2.0	2.4	1.0	1.2	1.2	1.3	0.7	0.9	1.0	1.2	1.2	1.5	1.7	2.1
GFDL-ESM2M	1.2	1.7	1.7	1.7	1.3	1.6	1.7	1.9	1.2	1.5	1.7	1.8	1.1	1.6	2.0	2.3
INM-CM4	0.9	1.4	1.8	2.3	0.5	0.8	1.1	1.4	0.6	0.8	1.2	1.6	0.6	1.2	1.6	2.2
IPSL-CM5A-LR	1.9	2.5	3.1	3.5	1.1	1.7	2.3	2.8	1.1	1.6	2.1	2.6	1.2	1.9	2.4	2.7
IPSL-CM5B-LR	1.2	1.6	2.0	2.2	1.0	1.4	1.8	2.1	1.1	1.4	1.4	1.3	1.2	1.6	1.9	2.1
MIROC-ESM	1.3	1.9	2.3	2.8	0.8	1.0	1.3	1.5	1.0	1.3	1.7	1.9	1.1	1.7	2.4	3.0
MIROC5	0.6	1.0	1.4	1.7	1.0	1.4	1.8	2.3	0.8	1.2	1.5	1.8	1.0	1.4	1.6	1.8
MRI-CGCM3	0.5	0.9	1.3	1.7	0.8	1.2	1.4	1.8	0.6	1.0	1.4	1.7	0.7	1.1	1.5	1.9
NorESM1-M	1.1	1.5	1.7	1.8	0.8	1.2	1.5	1.9	0.9	1.2	1.5	2.0	0.9	1.3	1.6	2.0

Table B.52 SA Arid Lands NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.2	2.1	3.1	4.2	0.7	1.6	2.7	3.9	1.1	1.9	3.0	4.0	1.7	2.9	4.4	5.9
ACCESS1.3	1.6	2.7	3.6	4.6	1.3	2.3	3.4	4.9	1.6	2.6	3.6	4.7	2.1	3.3	4.7	6.1
BCC-CSM1.1(m)	1.5	2.4	3.4	4.1	2.0	2.9	3.8	4.3	2.3	3.2	4.3	5.1	1.8	2.8	3.9	4.8
CanESM2	1.8	3.0	4.4	5.7	1.6	2.6	3.6	4.6	1.5	2.5	3.7	5.0	2.2	3.7	5.2	6.7
CNRM-CM5	1.2	2.1	3.1	4.1	1.4	2.3	3.3	4.7	1.2	1.8	2.8	3.8	1.4	2.3	3.5	4.8
CSIRO-Mk3.6.0	1.4	2.4	3.5	4.7	1.5	2.6	3.8	5.3	1.4	2.4	3.6	4.8	1.3	2.3	3.5	4.6
GFDL-ESM2G	1.2	2.0	2.9	3.9	1.2	1.6	2.3	2.8	0.9	1.6	2.2	3.0	1.1	2.0	3.1	4.2
GFDL-ESM2M	1.3	2.1	3.0	3.9	1.2	2.0	3.0	4.0	1.1	1.8	2.7	3.7	1.5	2.6	3.7	4.9
INM-CM4	1.3	2.0	2.7	3.6	0.6	1.2	1.9	2.7	0.7	1.4	2.3	3.3	1.0	1.6	2.3	3.1
IPSL-CM5A-LR	2.3	3.7	5.1	6.6	1.9	3.0	4.1	5.2	1.5	2.5	3.8	5.1	1.8	3.1	4.6	6.2
IPSL-CM5B-LR	1.2	2.0	2.8	3.7	1.3	1.9	2.8	3.7	1.3	2.0	2.8	3.7	1.4	2.1	3.0	3.9
MIROC-ESM	1.6	2.7	3.8	4.9	1.0	1.7	2.6	3.6	1.2	2.0	3.1	4.2	1.4	2.5	3.7	5.2
MIROC5	0.8	1.4	2.0	2.8	1.1	1.8	2.4	3.1	0.9	1.5	2.1	2.9	1.1	1.8	2.4	3.0
MRI-CGCM3	0.8	1.6	2.4	3.2	1.0	1.8	2.6	3.4	1.0	1.6	2.3	3.1	1.0	1.8	2.7	3.6
NorESM1-M	1.1	1.7	2.2	2.6	1.2	1.9	2.5	3.0	1.1	1.8	2.5	3.1	1.0	1.7	2.1	2.2

Table B.53 SA Arid Lands NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.1	1.6	2.1	2.6	0.8	1.2	1.5	1.9	0.6	1.0	1.4	1.8	1.2	1.8	2.2	2.7
ACCESS1.3	1.0	1.4	1.7	1.8	0.5	0.8	1.1	1.5	0.7	1.1	1.4	1.7	1.4	1.9	2.2	2.4
BCC-CSM1.1(m)	1.2	1.6	1.6	1.6	1.4	1.7	1.9	2.1	1.2	1.6	1.8	1.9	0.9	1.3	1.5	1.9
CanESM2	1.5	2.1	2.6	3.0	1.0	1.6	2.0	2.5	1.0	1.4	1.7	2.1	0.9	1.5	2.0	2.5
CNRM-CM5	0.9	1.4	2.0	2.5	0.9	1.4	1.9	2.4	0.7	1.0	1.3	1.7	1.1	1.6	2.1	2.5
CSIRO-Mk3.6.0	1.0	1.4	1.8	1.9	0.9	1.4	1.9	2.5	0.7	1.2	1.5	1.9	1.0	1.4	1.7	1.9
GFDL-ESM2G	0.8	1.1	1.3	1.4	0.7	0.8	0.9	0.9	0.5	0.6	0.6	0.7	0.7	0.8	0.8	1.0
GFDL-ESM2M	1.0	1.4	1.5	1.5	0.8	1.1	1.2	1.3	0.7	0.9	1.0	1.1	0.8	1.1	1.4	1.6
INM-CM4	0.9	1.2	1.5	1.7	1.3	1.6	1.7	1.6	0.3	0.5	0.5	0.4	0.3	0.3	0.7	1.2
IPSL-CM5A-LR	1.4	1.9	2.3	2.6	1.0	1.2	1.6	2.0	0.8	1.1	1.5	1.8	0.5	0.8	1.1	1.4
IPSL-CM5B-LR	0.8	1.0	1.3	1.7	0.9	1.3	1.7	2.0	0.4	0.7	1.0	1.3	0.9	1.4	1.8	2.0
MIROC-ESM	1.3	1.8	2.1	2.6	1.0	1.4	1.8	2.1	1.0	1.4	1.7	1.9	0.9	1.4	1.8	2.2
MIROC5	0.8	1.1	1.5	1.7	0.8	1.2	1.6	2.1	0.8	1.1	1.3	1.5	0.9	1.3	1.5	1.7
MRI-CGCM3	0.3	0.7	1.0	1.3	1.0	1.4	1.6	1.9	0.5	0.7	1.0	1.3	0.8	1.1	1.5	1.7
NorESM1-M	0.9	1.4	1.6	1.8	0.8	1.2	1.4	1.6	0.5	0.7	1.0	1.4	0.7	1.1	1.4	1.7

Table B.54 SA Arid Lands NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.5	2.4	3.5	4.5	0.9	1.7	2.9	4.1	0.7	1.4	2.3	3.4	1.6	2.5	3.5	4.6
ACCESS1.3	1.4	2.3	3.0	3.7	1.1	1.7	2.5	3.5	1.1	1.7	2.4	3.2	1.5	2.5	3.5	4.7
BCC-CSM1.1(m)	1.4	2.1	2.9	3.5	1.7	2.5	3.2	3.8	1.6	2.3	3.1	3.7	1.3	2.0	2.8	3.6
CanESM2	1.9	3.0	4.4	5.7	1.6	2.7	4.0	5.4	1.1	2.0	3.0	4.1	1.4	2.5	3.7	4.9
CNRM-CM5	1.4	2.3	3.2	4.1	1.4	2.4	3.4	4.6	0.9	1.5	2.2	3.0	1.4	2.2	3.2	4.3
CSIRO-Mk3.6.0	1.3	2.0	2.8	3.6	1.2	2.1	3.2	4.4	0.8	1.5	2.5	3.6	1.1	1.9	2.8	3.8
GFDL-ESM2G	0.9	1.4	2.1	2.9	1.0	1.2	1.9	2.5	0.6	1.0	1.5	2.0	0.7	1.4	2.2	3.0
GFDL-ESM2M	1.0	1.8	2.6	3.3	0.8	1.5	2.4	3.3	0.6	1.1	1.8	2.5	1.0	1.8	2.6	3.4
INM-CM4	1.2	2.0	3.1	4.3	1.5	2.3	3.3	4.2	0.6	1.2	1.6	2.0	0.9	1.4	2.1	2.7
IPSL-CM5A-LR	1.6	2.7	3.7	4.8	1.4	2.3	3.3	4.3	1.2	1.8	2.6	3.5	0.8	1.4	2.2	3.2
IPSL-CM5B-LR	1.0	1.6	2.4	3.2	0.9	1.6	2.5	3.6	0.7	1.3	1.9	2.6	1.2	1.9	2.8	3.7
MIROC-ESM	1.7	2.7	3.8	4.9	1.3	2.2	3.1	4.2	1.2	1.9	2.7	3.4	1.2	2.1	3.0	4.0
MIROC5	1.0	1.7	2.4	3.3	1.0	1.7	2.4	3.3	0.9	1.4	2.1	2.9	1.1	1.7	2.5	3.3
MRI-CGCM3	0.7	1.4	2.1	2.9	1.1	2.0	2.9	3.9	0.8	1.3	2.1	2.9	0.9	1.7	2.6	3.4
NorESM1-M	1.0	1.7	2.5	3.2	1.1	1.8	2.4	3.1	0.7	1.3	2.1	3.0	0.9	1.6	2.2	2.7

Table B.55 SA Arid Lands NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-0.4	-0.7	-0.9	-0.8	-0.6	-0.5	-0.8	-1.0	0.9	1.6	1.4	1.7	-0.3	-0.2	0.3	0.3
ACCESS1.3	0.3	0.5	0.5	0.6	2.9	4.0	4.7	4.2	3.1	5.2	6.5	7.5	0.5	1.2	1.5	2.5
BCC-CSM1.1(m)	-0.2	-0.2	0.0	-0.2	1.5	1.9	2.0	2.2	3.1	4.7	6.2	6.8	1.2	1.5	1.9	1.9
CanESM2	-0.6	-0.8	-1.4	-1.3	-0.6	0.1	0.6	1.8	-0.3	0.3	0.5	1.0	2.7	2.6	2.5	2.1
CNRM-CM5	-0.5	-0.4	-0.8	-0.9	0.8	0.4	0.2	-1.1	1.1	0.9	0.6	-0.2	0.1	0.2	0.4	0.3
CSIRO-Mk3.6.0	1.9	2.7	3.1	3.4	1.4	2.4	3.1	3.3	3.5	4.6	6.1	7.2	1.3	2.6	3.8	4.6
GFDL-ESM2G	-0.5	-0.3	0.3	1.7	0.6	0.5	0.7	0.6	0.7	1.1	1.2	1.2	1.1	1.6	2.3	3.1
GFDL-ESM2M	1.7	1.4	1.0	-0.7	5.8	5.7	4.5	3.4	5.3	6.1	5.5	4.8	3.2	3.9	3.6	2.7
INM-CM4	0.0	0.8	1.5	2.0	-1.7	-1.5	-1.2	-0.1	1.3	1.6	2.3	3.4	1.6	2.5	2.5	2.3
IPSL-CM5A-LR	0.8	0.8	1.3	1.0	1.3	1.2	1.6	1.6	2.2	2.7	3.1	2.6	1.1	1.8	2.3	2.1
IPSL-CM5B-LR	0.7	0.8	0.4	1.1	0.1	-0.2	-0.6	-1.2	0.2	0.4	1.0	1.7	0.8	0.9	0.5	0.1
MIROC-ESM	0.1	-0.1	-0.3	0.0	-0.9	-1.9	-2.0	-2.0	0.7	0.6	0.9	1.1	1.5	1.7	2.4	2.7
MIROC5	-1.3	-0.7	-0.8	-1.1	1.0	1.1	0.6	0.3	0.7	1.4	1.5	1.8	0.3	0.1	0.0	-0.2
MRI-CGCM3	1.6	1.8	1.9	1.5	-1.7	-1.9	-1.5	-1.1	1.7	2.7	3.5	3.9	0.1	-0.2	-0.4	-0.3
NorESM1-M	0.6	0.7	0.5	-0.3	-0.3	-0.3	1.0	1.5	4.7	5.3	5.3	5.9	1.7	1.8	1.8	1.9

Table B.56 SA Arid Lands NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-0.8	-0.5	-0.9	-0.5	-0.4	-0.4	-0.6	-0.6	2.5	2.9	2.9	2.5	-0.6	-0.3	0.7	1.8
ACCESS1.3	0.1	1.2	1.8	2.6	2.3	4.2	6.0	8.3	4.6	7.4	9.4	11.6	1.9	2.9	3.6	4.9
BCC-CSM1.1(m)	-0.4	-0.2	-0.3	-0.8	1.6	2.0	2.4	2.0	5.9	7.4	9.1	9.8	2.4	2.8	2.8	2.6
CanESM2	-1.0	-1.1	-1.0	-1.0	-0.1	-0.2	-1.7	-3.3	2.0	2.6	3.3	4.4	2.5	3.7	4.2	4.4
CNRM-CM5	-0.8	-1.0	-0.8	-0.3	0.3	-0.2	-0.7	0.2	1.3	1.4	2.0	3.0	0.0	0.6	0.7	1.6
CSIRO-Mk3.6.0	0.8	2.2	3.8	5.4	2.1	3.1	3.8	4.6	4.5	5.8	6.5	6.9	2.1	3.3	4.0	4.6
GFDL-ESM2G	1.0	1.0	0.6	0.4	-0.1	-0.2	-1.3	-3.2	1.1	2.1	2.7	3.9	0.2	0.2	0.4	-0.5
GFDL-ESM2M	1.1	0.9	1.0	1.3	3.0	3.9	4.5	4.3	3.9	5.9	7.7	9.7	2.0	3.3	4.6	6.5
INM-CM4	0.4	0.3	0.2	0.2	-1.4	-1.8	-2.1	-2.2	1.1	1.4	2.3	3.2	1.4	1.7	1.5	1.9
IPSL-CM5A-LR	0.7	0.7	1.5	1.9	1.5	1.6	1.8	2.4	2.8	3.9	4.9	6.1	0.7	1.2	1.8	2.6
IPSL-CM5B-LR	-0.3	-0.3	-0.6	-1.1	-0.7	-1.5	-2.4	-2.9	0.1	1.2	1.6	2.0	0.6	0.7	1.8	2.8
MIROC-ESM	-0.2	-0.2	-0.5	-0.8	-1.3	-1.6	-1.8	-1.6	0.5	1.6	3.1	5.2	1.6	1.6	2.0	2.9
MIROC5	-0.8	-1.0	-1.8	-2.1	0.9	1.1	1.1	0.5	1.1	1.5	1.6	2.3	0.3	0.1	-0.7	-1.3
MRI-CGCM3	0.7	1.1	1.3	1.5	-0.3	-1.8	-2.3	-3.7	1.6	2.2	2.4	2.7	0.3	0.2	0.3	0.5
NorESM1-M	0.7	0.3	-0.5	-2.0	0.6	1.5	1.6	0.6	4.8	5.7	5.3	3.6	1.6	1.4	1.3	0.1

Table B.57 SA Arid Lands NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	5.3	8.8	12.2	16.1	5.2	9.0	11.2	14.0	6.5	10.8	12.5	14.3	8.8	15.7	21.0	27.8
ACCESS1.3	10.1	14.0	16.3	17.5	8.1	12.7	16.6	19.3	13.5	21.9	28.8	35.7	14.7	20.6	25.9	29.9
BCC-CSM1.1(m)	10.2	13.2	14.0	13.1	18.8	22.1	24.7	27.4	15.9	22.4	27.7	30.7	10.6	15.0	18.6	23.2
CanESM2	7.9	11.0	13.1	15.5	4.7	8.4	11.8	16.7	5.0	8.0	9.0	10.6	9.5	13.4	16.2	19.8
CNRM-CM5	5.4	8.6	12.9	16.6	11.5	15.9	19.0	21.4	11.7	15.6	17.5	18.3	9.9	14.6	18.1	21.2
CSIRO-Mk3.6.0	12.1	17.7	22.9	24.9	10.4	17.2	25.0	33.3	16.1	25.3	34.7	43.8	12.1	18.7	24.2	28.4
GFDL-ESM2G	6.6	10.3	15.2	20.6	7.2	8.7	8.8	8.3	7.8	9.0	8.6	8.7	11.5	14.3	16.9	20.9
GFDL-ESM2M	15.1	19.3	17.1	13.4	18.5	23.6	21.9	20.9	23.7	29.2	27.9	26.9	16.9	22.7	25.0	25.4
INM-CM4	6.6	10.3	13.9	17.3	5.1	7.3	10.2	12.6	3.1	3.5	5.7	8.8	4.8	9.5	12.8	16.9
IPSL-CM5A-LR	13.7	18.0	21.8	24.2	11.0	14.2	19.3	24.4	10.6	13.0	18.6	22.1	7.3	11.4	15.6	18.1
IPSL-CM5B-LR	9.7	12.0	14.9	17.3	13.9	17.1	20.3	22.0	8.9	11.4	13.4	14.5	11.7	16.6	19.7	21.1
MIROC-ESM	8.4	12.9	15.0	19.1	4.4	3.8	4.9	5.2	5.9	7.2	10.2	12.4	7.1	12.4	17.6	22.9
MIROC5	2.7	5.4	9.0	11.9	8.3	12.1	15.6	20.7	5.3	8.6	11.4	13.9	6.2	8.8	10.4	11.7
MRI-CGCM3	4.1	8.3	12.6	17.1	8.5	11.9	13.9	19.6	9.5	15.3	19.7	24.2	7.8	11.2	14.7	17.8
NorESM1-M	7.0	9.6	10.0	10.4	4.5	7.2	10.8	15.1	10.7	13.2	17.0	23.0	7.2	9.6	11.6	15.0

Table B.58 SA Arid Lands NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	8.9	16.7	25.9	36.4	5.1	12.8	23.6	35.9	10.0	17.8	28.2	38.7	14.1	24.6	40.4	56.4
ACCESS1.3	13.8	23.8	32.5	41.6	10.7	21.2	34.7	52.6	18.4	32.3	46.0	61.3	20.1	32.8	47.5	63.9
BCC-CSM1.1(m)	11.5	18.2	25.4	31.0	22.1	31.6	39.6	45.2	26.9	36.7	49.4	59.0	16.4	24.4	33.4	41.9
CanESM2	10.4	16.3	24.8	33.1	9.5	15.1	20.7	26.5	9.3	14.8	21.6	29.2	15.2	25.1	35.0	45.8
CNRM-CM5	10.3	16.8	25.9	34.8	14.8	23.4	34.2	49.6	15.5	23.3	36.1	50.9	12.8	21.9	34.8	49.4
CSIRO-Mk3.6.0	11.6	21.6	33.3	45.8	15.8	26.9	39.5	55.1	19.6	32.4	49.0	66.4	15.0	25.8	38.3	50.6
GFDL-ESM2G	7.5	12.6	19.2	26.5	9.8	10.7	14.9	15.5	9.3	16.5	23.0	30.0	8.6	17.4	27.7	38.2
GFDL-ESM2M	13.3	21.4	30.4	40.3	13.8	24.1	36.4	47.9	17.9	30.7	46.4	63.4	17.6	31.0	45.9	62.4
INM-CM4	10.2	15.5	22.0	29.1	6.3	10.6	16.4	22.4	3.9	7.7	14.6	22.4	8.1	13.1	19.0	25.6
IPSL-CM5A-LR	16.4	26.5	36.5	47.9	17.7	26.7	36.0	46.8	15.2	25.1	37.0	49.9	11.1	19.9	31.4	44.6
IPSL-CM5B-LR	9.2	15.9	23.3	31.7	12.5	19.8	31.6	44.9	13.2	21.9	30.4	40.1	15.3	23.4	33.7	44.9
MIROC-ESM	10.0	17.8	26.0	33.6	5.7	9.4	15.0	21.8	8.7	15.4	26.2	37.0	8.9	16.4	26.9	39.8
MIROC5	5.2	9.0	12.2	17.7	9.5	13.9	17.4	21.5	6.1	9.2	13.6	18.6	6.6	10.0	13.5	17.9
MRI-CGCM3	7.9	15.2	23.4	31.6	11.8	19.2	26.3	32.8	15.1	21.8	29.3	37.2	10.3	18.6	28.8	38.4
NorESM1-M	7.0	9.6	10.2	9.3	9.0	14.6	16.9	17.0	12.7	18.0	20.7	20.4	8.4	11.8	11.0	6.7

Table B.59 SA Arid Lands NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	2.0	2.8	3.7	4.9	1.6	2.8	3.4	4.3	2.6	4.4	5.5	6.8	2.5	4.2	5.9	7.3
ACCESS1.3	2.4	3.5	4.2	4.7	3.4	5.1	6.3	7.0	4.6	7.7	9.6	11.8	3.7	5.6	6.9	8.2
BCC-CSM1.1(m)	2.5	3.4	3.8	3.7	4.7	5.8	6.5	7.1	6.4	9.2	11.3	12.3	3.3	4.4	5.4	6.2
CanESM2	3.1	4.5	5.2	6.2	2.4	4.6	6.5	9.2	2.9	4.8	6.0	7.6	5.1	6.7	8.0	9.3
CNRM-CM5	1.4	2.5	3.4	4.3	3.1	4.2	5.3	5.8	3.1	3.9	4.5	5.0	2.6	4.0	5.2	6.1
CSIRO-Mk3.6.0	3.6	5.2	6.5	7.0	3.3	5.5	7.7	9.9	4.8	7.3	9.6	12.1	3.3	5.2	6.9	8.3
GFDL-ESM2G	1.9	2.7	3.6	5.0	2.7	3.1	3.3	3.5	2.3	2.9	3.3	3.7	2.6	3.5	4.3	5.2
GFDL-ESM2M	2.9	3.5	3.7	2.7	5.8	6.6	6.4	6.2	5.7	7.3	7.5	7.4	3.7	4.8	5.5	5.6
INM-CM4	1.8	3.4	4.6	5.7	1.4	2.3	3.3	4.3	2.0	3.1	4.1	5.1	2.0	3.3	4.3	5.5
IPSL-CM5A-LR	4.1	5.4	6.8	7.5	3.6	4.6	6.2	7.5	4.2	5.5	7.3	8.1	2.9	4.6	5.9	6.5
IPSL-CM5B-LR	2.4	3.2	3.8	4.9	2.4	3.5	4.1	4.7	2.4	3.3	4.3	5.0	2.7	3.7	4.4	4.7
MIROC-ESM	2.9	4.2	4.8	6.0	1.8	2.1	3.0	3.9	3.5	4.8	5.8	6.8	3.6	5.1	7.0	8.7
MIROC5	0.8	1.9	2.6	3.1	3.0	4.2	4.9	6.1	2.7	4.0	4.9	6.0	2.6	3.5	3.8	4.2
MRI-CGCM3	1.8	2.6	3.5	3.7	1.4	2.4	3.4	4.5	2.9	4.3	5.9	7.3	1.6	2.2	2.9	3.6
NorESM1-M	2.7	3.8	4.1	4.0	1.6	2.7	4.3	5.3	5.0	6.3	7.5	9.0	3.0	4.0	4.7	5.7

Table B.60 SA Arid Lands NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	2.5	4.7	6.7	9.3	2.0	4.1	7.2	10.7	4.1	6.8	10.2	13.4	3.4	6.0	9.7	13.6
ACCESS1.3	3.2	5.9	8.2	10.6	4.5	7.8	11.4	16.2	7.1	11.4	15.6	20.3	5.3	8.4	11.7	15.8
BCC-CSM1.1(m)	2.9	4.8	6.7	7.9	5.7	8.3	10.8	12.3	9.8	13.6	18.0	21.0	5.0	7.4	9.8	11.9
CanESM2	3.8	6.6	10.1	13.6	4.7	7.8	10.5	13.2	5.0	8.6	12.8	18.1	6.4	10.7	14.9	19.3
CNRM-CM5	2.3	4.0	6.1	8.7	3.9	6.2	8.8	13.2	3.8	5.9	8.9	12.5	3.2	5.7	8.2	11.7
CSIRO-Mk3.6.0	3.3	6.0	9.0	12.2	4.9	8.3	12.0	16.5	5.8	9.3	13.3	17.6	4.0	6.8	9.7	12.7
GFDL-ESM2G	3.0	4.6	6.1	8.0	3.0	4.0	5.1	5.6	3.0	5.1	7.4	10.3	2.2	4.0	6.2	7.9
GFDL-ESM2M	2.8	4.4	6.0	7.9	4.5	6.8	9.6	12.2	4.8	8.0	11.6	15.7	3.7	6.4	9.3	12.7
INM-CM4	2.9	4.5	6.6	9.2	2.1	3.9	5.9	8.4	2.8	4.7	7.4	10.2	3.3	4.7	6.4	8.4
IPSL-CM5A-LR	4.9	7.6	11.1	14.9	5.3	8.2	11.4	15.1	5.6	8.9	13.0	17.6	3.7	6.2	9.6	13.7
IPSL-CM5B-LR	2.1	3.6	5.0	6.5	2.2	3.4	5.3	7.9	3.2	5.9	8.4	11.2	3.0	4.6	7.4	10.2
MIROC-ESM	3.6	6.0	8.5	11.1	2.4	4.4	6.9	10.1	4.0	7.1	10.9	15.5	4.4	6.8	10.0	14.0
MIROC5	1.5	2.9	3.9	5.8	3.3	5.3	7.3	9.3	3.3	5.3	7.5	10.2	3.0	4.5	5.7	7.2
MRI-CGCM3	1.9	3.6	5.2	7.0	2.7	3.9	6.1	7.9	3.7	5.8	8.4	11.2	2.1	3.8	6.0	8.2
NorESM1-M	2.9	4.4	5.5	6.0	3.3	5.8	7.7	8.7	5.7	8.4	10.2	11.7	3.4	5.1	6.5	6.7

Table B.61 SA MDB NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-5.8	14.4	-4.0	-8.0	-6.6	-7.5	-10.4	-9.0	-5.3	-6.5	-3.5	-3.1	-14.2	-18.1	-36.8	-24.5
ACCESS1.3	-23.0	-35.2	-25.6	-32.6	-20.9	-13.8	-31.0	-19.9	-10.7	-12.5	-22.6	-19.9	-13.1	-32.8	-29.1	-38.2
BCC-CSM1.1(m)	-1.2	-20.6	-14.5	-13.7	-3.2	-16.1	-17.2	-5.8	-2.7	-13.5	-14.0	-9.1	-11.8	-1.5	-10.6	-20.1
CanESM2	-11.4	-13.7	-17.2	-13.3	5.2	-5.0	-0.1	-9.1	-0.4	-6.2	-6.1	-7.7	-30.0	-29.5	-36.9	-38.8
CNRM-CM5	8.8	-10.7	5.5	-9.2	0.6	-5.9	-6.4	0.2	-9.7	-11.3	-11.0	-11.2	-10.5	-15.9	-20.8	-20.6
CSIRO-Mk3.6.0	-26.5	-40.7	-39.2	-40.5	2.9	-10.6	-12.4	-11.3	-4.6	-2.4	9.3	2.4	-8.9	-37.2	-33.3	-39.7
GFDL-ESM2G	-5.3	-3.4	-11.6	-30.5	-12.8	-6.6	-8.5	-10.8	2.7	2.4	2.8	-1.3	4.1	-14.6	-21.2	-11.3
GFDL-ESM2M	-26.1	-0.7	-17.4	8.3	-19.5	-13.0	-15.7	-13.4	-6.4	-4.6	-11.6	-9.0	-20.3	-27.3	-30.9	-24.8
INM-CM4	9.3	4.2	-9.9	-10.8	21.5	14.8	2.3	5.3	0.9	0.2	-6.4	-10.0	-12.5	-8.3	-22.7	-21.4
IPSL-CM5A-LR	-19.7	-18.4	-19.4	-16.4	-18.3	-25.5	-20.7	-25.7	-7.5	-10.7	-9.5	-8.0	0.4	-17.8	-24.4	-22.8
IPSL-CM5B-LR	-7.2	5.8	13.5	-13.3	-7.4	-12.0	-20.5	-14.2	-0.7	-6.5	-1.2	-5.3	-17.9	-10.7	-12.8	-22.6
MIROC-ESM	-22.7	-7.5	-22.8	-27.2	-9.1	0.2	-2.5	-12.8	-12.6	-10.4	-16.4	-12.1	-12.9	-17.9	-29.8	-28.6
MIROC5	6.7	-7.4	-3.6	11.0	-9.8	-11.7	-6.6	-15.3	4.0	-0.9	1.2	-3.6	-10.8	-20.7	-22.9	-23.6
MRI-CGCM3	-9.1	-0.4	-18.3	-16.2	9.3	15.8	1.6	0.6	-1.4	-5.2	-7.0	2.6	-14.7	-12.4	-17.4	-22.5
NorESM1-M	-24.7	-0.1	-22.0	-4.0	-6.7	-11.7	-19.4	-10.6	-9.5	-12.3	-16.1	-9.9	-8.5	-16.2	-18.3	-19.7

Table B.62 SA MDB NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	8.8	-16.4	-6.8	-23.5	1.4	-7.1	-21.2	-25.0	-3.1	-3.3	-8.5	-20.0	-19.3	-28.2	-40.1	-58.1
ACCESS1.3	-16.5	-29.5	-36.0	-43.9	-9.5	-26.1	-32.1	-47.2	-12.5	-14.6	-23.2	-35.3	-27.8	-37.6	-51.7	-63.9
BCC-CSM1.1(m)	-3.9	-27.1	-22.1	-18.7	-17.8	-13.0	-32.6	-28.3	-10.2	-15.2	-22.5	-21.3	-14.9	-19.1	-31.1	-36.8
CanESM2	-3.9	-23.9	-19.8	-18.1	0.5	-14.1	-6.5	-8.1	-7.0	-5.2	-10.6	-18.1	-32.2	-40.8	-58.4	-60.2
CNRM-CM5	3.8	-16.6	-5.8	-25.1	2.4	-4.2	-0.7	-14.1	-10.9	-11.4	-16.4	-22.1	-6.0	-16.4	-24.8	-43.5
CSIRO-Mk3.6.0	-11.8	-31.8	-57.4	-61.7	-11.1	-10.0	-21.1	-30.7	-8.0	1.2	-3.4	-12.6	-24.7	-38.7	-49.0	-54.4
GFDL-ESM2G	-10.0	-18.4	-24.6	-23.7	3.9	-9.5	-9.8	-6.5	-1.9	-4.8	-5.3	-11.3	-5.8	-10.1	-23.6	-26.0
GFDL-ESM2M	2.3	-6.8	-19.0	-25.3	-16.7	-13.5	-20.3	-28.1	-3.7	-11.5	-19.9	-20.1	-21.4	-34.8	-37.5	-54.1
INM-CM4	-11.4	-7.0	-1.1	-16.2	15.9	24.1	8.5	-1.6	-6.5	-4.6	-5.9	-10.3	-10.3	-12.8	-24.5	-27.3
IPSL-CM5A-LR	-19.3	-18.1	-43.1	-44.8	-28.8	-26.6	-36.8	-45.5	-10.8	-14.9	-25.0	-33.5	-12.7	-5.4	-36.4	-46.2
IPSL-CM5B-LR	13.2	12.9	-15.2	3.5	-4.5	-11.0	-13.1	-25.8	-5.2	-1.6	-8.3	-6.2	-10.6	-16.3	-32.2	-34.4
MIROC-ESM	-19.8	-17.2	-23.6	-30.9	-6.2	-6.9	-9.8	-21.1	-2.1	-6.8	-18.5	-28.0	-21.2	-24.9	-29.8	-53.0
MIROC5	5.0	-3.2	14.4	5.3	-15.0	-8.3	-18.4	-13.8	-4.9	-8.2	-3.3	-7.7	-19.6	-26.3	-23.1	-31.2
MRI-CGCM3	-6.6	-13.4	-23.3	-32.3	-3.1	9.3	-15.2	2.2	-5.4	-4.8	-7.2	-4.7	-12.5	-29.6	-32.1	-34.9
NorESM1-M	-24.7	-10.4	-14.6	-13.0	-10.5	-18.0	-22.3	-19.8	-5.9	-16.5	-12.3	-6.2	-21.7	-15.6	-14.1	-14.7

Table B.63 SA MDB NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.0	1.4	1.8	2.3	0.6	1.0	1.3	1.6	0.8	1.2	1.5	1.7	1.2	1.8	2.4	2.9
ACCESS1.3	1.0	1.3	1.6	1.7	0.8	1.1	1.5	1.8	1.0	1.6	2.0	2.5	1.5	2.1	2.5	2.9
BCC-CSM1.1(m)	1.5	1.9	2.1	2.0	1.6	2.0	2.1	2.3	1.3	1.8	2.0	2.3	1.1	1.5	1.9	2.3
CanESM2	1.4	2.0	2.3	2.7	0.9	1.5	2.0	2.5	0.9	1.4	1.8	2.1	1.4	2.0	2.3	2.7
CNRM-CM5	0.7	1.2	1.6	2.0	0.9	1.4	1.8	2.0	0.9	1.3	1.5	1.7	1.2	1.7	2.0	2.2
CSIRO-Mk3.6.0	1.0	1.4	1.7	1.8	0.6	1.1	1.8	2.5	0.9	1.5	1.9	2.4	1.1	1.6	1.9	2.2
GFDL-ESM2G	0.8	1.1	1.5	1.8	1.1	1.3	1.5	1.7	0.6	0.8	0.9	1.1	1.0	1.4	1.6	1.8
GFDL-ESM2M	0.9	1.3	1.4	1.4	0.9	1.2	1.4	1.5	0.9	1.2	1.3	1.5	1.2	1.6	1.9	2.2
INM-CM4	0.7	1.1	1.5	1.9	0.3	0.6	0.9	1.2	0.5	0.8	1.1	1.5	0.6	1.2	1.7	2.3
IPSL-CM5A-LR	2.0	2.7	3.3	3.7	1.2	1.8	2.3	2.6	1.0	1.4	2.0	2.5	1.0	1.6	2.1	2.3
IPSL-CM5B-LR	1.1	1.5	1.6	1.7	0.7	1.1	1.3	1.6	0.9	1.2	1.3	1.3	1.1	1.4	1.9	2.2
MIROC-ESM	1.1	1.5	1.9	2.3	0.6	0.8	1.2	1.6	0.9	1.2	1.4	1.7	1.0	1.6	2.1	2.6
MIROC5	0.9	1.4	1.7	1.9	0.8	1.3	1.6	2.0	0.7	1.1	1.3	1.6	1.1	1.6	1.8	2.0
MRI-CGCM3	0.6	1.0	1.3	1.5	0.8	1.1	1.4	1.7	0.5	0.8	1.1	1.4	0.8	1.2	1.5	1.9
NorESM1-M	0.9	1.3	1.5	1.7	0.7	1.0	1.3	1.6	0.8	1.0	1.3	1.6	0.9	1.3	1.5	1.9

Table B.64 SA MDB NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.4	2.2	3.0	3.8	0.7	1.5	2.5	3.6	1.0	1.7	2.8	3.9	1.6	2.5	3.8	5.0
ACCESS1.3	1.4	2.2	2.8	3.5	1.2	2.0	2.9	3.9	1.5	2.3	3.1	4.0	1.8	2.9	4.0	5.2
BCC-CSM1.1(m)	1.7	2.6	3.5	4.3	1.9	2.6	3.3	3.8	1.8	2.6	3.5	4.2	1.7	2.6	3.6	4.5
CanESM2	1.9	3.0	4.1	5.3	1.6	2.6	3.5	4.6	1.4	2.3	3.3	4.5	2.1	3.3	4.4	5.6
CNRM-CM5	1.2	2.0	2.8	3.6	1.3	2.1	3.1	4.3	1.1	1.7	2.6	3.5	1.2	2.2	3.2	4.6
CSIRO-Mk3.6.0	1.2	1.8	2.6	3.3	1.1	1.9	2.8	3.9	1.1	1.9	2.8	3.7	1.2	2.0	3.0	3.8
GFDL-ESM2G	0.9	1.5	2.3	3.2	1.1	1.5	2.1	2.6	0.8	1.3	1.8	2.4	1.0	1.8	2.7	3.6
GFDL-ESM2M	0.8	1.5	2.3	3.0	0.9	1.6	2.3	3.2	0.8	1.4	2.2	3.0	1.4	2.2	3.3	4.3
INM-CM4	1.1	1.7	2.5	3.2	0.4	0.9	1.7	2.4	0.6	1.3	2.1	2.9	1.0	1.6	2.3	3.0
IPSL-CM5A-LR	2.2	3.5	5.1	6.7	1.8	2.9	4.1	5.3	1.3	2.3	3.5	4.9	1.7	2.8	4.3	5.8
IPSL-CM5B-LR	0.7	1.3	2.1	2.9	0.7	1.2	2.1	3.1	1.1	1.7	2.3	3.2	1.2	1.9	2.7	3.5
MIROC-ESM	1.7	2.6	3.9	5.2	1.1	1.9	2.8	4.0	1.2	2.0	3.0	4.0	1.5	2.5	3.8	5.3
MIROC5	1.0	1.7	2.2	2.8	1.0	1.6	2.2	2.8	0.8	1.3	2.0	2.6	1.2	1.9	2.5	3.2
MRI-CGCM3	0.7	1.4	2.2	2.9	0.9	1.7	2.5	3.2	0.8	1.4	2.1	2.8	1.0	1.8	2.7	3.5
NorESM1-M	1.1	1.6	2.3	2.8	1.0	1.7	2.3	2.9	0.9	1.5	2.2	2.9	1.0	1.7	2.2	2.6

Table B.65 SA MDB NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.2	1.6	2.0	2.4	0.8	1.1	1.3	1.6	0.7	1.0	1.4	1.7	0.8	1.1	1.5	1.8
ACCESS1.3	0.6	0.9	1.1	1.2	0.4	0.7	0.9	1.3	0.6	0.9	1.2	1.5	0.8	1.2	1.5	1.6
BCC-CSM1.1(m)	1.1	1.2	1.2	1.2	1.3	1.5	1.6	1.8	1.0	1.3	1.4	1.5	0.8	1.0	1.2	1.3
CanESM2	1.2	1.8	2.2	2.4	0.9	1.4	1.8	2.2	0.7	1.0	1.2	1.4	0.6	1.0	1.3	1.6
CNRM-CM5	0.9	1.3	1.8	2.2	0.9	1.3	1.8	2.1	0.7	1.0	1.2	1.5	0.9	1.3	1.6	2.0
CSIRO-Mk3.6.0	0.7	1.0	1.3	1.3	0.7	1.1	1.5	2.0	0.5	1.0	1.4	1.7	0.9	1.1	1.4	1.5
GFDL-ESM2G	0.5	0.7	0.8	0.8	0.7	0.9	1.0	1.1	0.5	0.6	0.7	0.8	0.6	0.7	0.8	0.9
GFDL-ESM2M	0.5	0.9	1.0	1.0	0.5	0.7	0.8	0.9	0.5	0.7	0.8	0.9	0.5	0.7	0.9	1.1
INM-CM4	0.9	1.2	1.5	1.8	1.4	1.6	1.7	1.7	0.6	0.8	0.6	0.5	0.3	0.4	0.7	0.9
IPSL-CM5A-LR	1.4	1.9	2.1	2.2	1.1	1.3	1.6	1.7	0.7	0.9	1.2	1.3	0.8	1.1	1.3	1.5
IPSL-CM5B-LR	0.5	0.8	1.0	1.1	0.8	1.0	1.3	1.4	0.4	0.7	0.8	1.0	0.9	1.2	1.5	1.7
MIROC-ESM	1.0	1.4	1.8	2.1	0.8	1.1	1.5	1.9	0.7	1.0	1.3	1.6	0.7	1.1	1.4	1.8
MIROC5	0.8	1.1	1.3	1.4	0.7	1.0	1.3	1.5	0.7	1.0	1.2	1.4	0.8	1.1	1.3	1.4
MRI-CGCM3	0.5	0.7	0.9	1.1	0.9	1.2	1.3	1.5	0.4	0.6	0.9	1.3	0.7	1.0	1.3	1.5
NorESM1-M	0.6	1.1	1.3	1.6	0.6	0.9	1.1	1.2	0.3	0.5	0.7	1.0	0.5	0.8	1.0	1.3

Table B.66 SA MDB NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.4	2.1	3.0	3.7	0.8	1.5	2.3	3.3	0.8	1.4	2.2	2.9	1.0	1.6	2.2	2.9
ACCESS1.3	1.0	1.6	2.1	2.7	0.8	1.4	1.9	2.6	1.0	1.5	2.1	2.7	1.0	1.6	2.4	3.2
BCC-CSM1.1(m)	1.3	1.7	2.4	2.9	1.5	2.1	2.6	3.0	1.2	1.7	2.3	2.7	1.0	1.5	2.1	2.6
CanESM2	1.5	2.6	3.7	5.0	1.3	2.3	3.5	4.7	0.9	1.5	2.1	2.8	0.9	1.7	2.4	3.3
CNRM-CM5	1.2	1.9	2.8	3.5	1.3	2.1	3.1	4.2	0.9	1.5	2.1	2.8	1.0	1.7	2.6	3.5
CSIRO-Mk3.6.0	1.0	1.5	2.1	2.7	0.9	1.6	2.5	3.4	0.6	1.3	2.0	2.8	0.8	1.4	2.1	2.9
GFDL-ESM2G	0.7	1.1	1.7	2.4	1.0	1.3	1.9	2.4	0.6	1.0	1.5	1.9	0.7	1.3	1.9	2.5
GFDL-ESM2M	0.7	1.2	1.8	2.4	0.6	1.2	1.9	2.7	0.5	0.9	1.5	2.1	0.7	1.2	1.9	2.6
INM-CM4	1.1	1.8	2.8	3.9	1.5	2.3	3.1	4.1	0.9	1.2	1.5	1.8	0.7	1.1	1.7	2.2
IPSL-CM5A-LR	1.6	2.6	3.7	4.8	1.5	2.4	3.4	4.5	0.9	1.6	2.4	3.3	1.1	1.8	2.6	3.5
IPSL-CM5B-LR	0.6	1.2	1.9	2.8	1.0	1.5	2.4	3.3	0.6	1.3	2.0	2.9	1.3	2.0	2.7	3.4
MIROC-ESM	1.6	2.6	3.7	5.0	1.3	2.1	3.1	4.2	1.0	1.6	2.3	3.1	1.0	1.8	2.8	3.7
MIROC5	0.9	1.5	2.2	2.9	0.8	1.4	2.0	2.8	0.8	1.3	1.9	2.5	0.8	1.4	2.0	2.6
MRI-CGCM3	0.6	1.1	1.8	2.5	0.9	1.7	2.4	3.3	0.7	1.2	1.8	2.6	0.7	1.4	2.2	2.9
NorESM1-M	0.8	1.5	2.2	2.8	0.9	1.4	2.0	2.6	0.5	1.0	1.5	2.3	0.6	1.2	1.8	2.2

Table B.67 SA MDB NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-0.3	-0.8	-0.2	-0.1	-0.6	-0.4	-0.7	-1.0	1.6	1.8	2.2	2.3	1.8	2.5	3.0	3.5
ACCESS1.3	1.4	1.9	2.0	2.2	2.4	2.9	4.2	4.1	2.4	4.8	6.7	7.6	2.4	3.8	4.6	5.6
BCC-CSM1.1(m)	0.6	1.3	1.5	1.6	1.5	2.5	2.6	2.9	3.2	4.9	6.1	7.0	2.9	3.4	4.1	4.2
CanESM2	-0.5	-0.7	-0.8	-0.6	-0.4	0.6	1.5	2.8	1.2	3.3	4.1	4.8	3.9	4.5	4.7	4.9
CNRM-CM5	-0.4	0.0	-0.8	-1.1	-0.3	0.1	0.0	-0.3	1.0	1.6	1.2	0.6	1.5	1.5	1.6	1.5
CSIRO-Mk3.6.0	1.7	2.7	2.8	2.6	-0.1	1.0	2.1	2.7	3.8	4.9	5.5	6.6	2.2	4.2	5.9	7.4
GFDL-ESM2G	-0.1	-0.1	1.0	2.9	1.6	2.2	2.5	3.4	0.4	0.2	0.7	1.4	1.7	2.5	2.8	3.4
GFDL-ESM2M	1.5	1.0	0.0	-2.0	4.6	4.6	4.0	3.4	3.5	4.5	4.4	4.8	4.1	5.4	4.5	4.1
INM-CM4	-0.2	0.0	0.6	1.0	-3.1	-3.0	-2.2	-1.3	-0.2	0.8	1.5	2.4	2.0	3.1	3.8	4.0
IPSL-CM5A-LR	1.8	2.4	2.7	2.7	2.1	3.2	3.6	3.4	3.6	4.6	5.8	5.8	2.9	4.4	5.1	5.1
IPSL-CM5B-LR	0.4	-0.3	0.0	0.6	1.8	1.6	1.6	1.6	-0.5	0.7	1.1	2.6	1.9	2.1	2.6	3.3
MIROC-ESM	0.8	0.1	0.4	0.6	-0.4	-1.0	-0.6	-0.4	3.9	3.9	3.5	3.4	2.3	3.1	4.0	3.9
MIROC5	-0.1	0.5	0.6	0.6	1.2	1.3	1.1	1.5	0.7	1.8	2.1	3.3	2.0	2.4	2.5	2.5
MRI-CGCM3	1.7	1.6	1.8	1.8	-1.1	-1.6	-0.7	0.1	1.7	2.9	3.6	4.2	0.9	0.9	0.8	0.6
NorESM1-M	1.1	0.8	1.1	0.5	-0.2	0.4	1.3	1.7	4.9	5.5	6.1	7.0	2.8	3.7	4.0	4.6

Table B.68 SA MDB NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.0	0.6	0.3	0.9	-0.4	0.0	0.5	0.4	2.5	3.5	4.8	5.9	2.5	3.8	5.5	6.4
ACCESS1.3	1.7	2.6	3.2	4.1	2.8	4.3	5.9	8.1	4.5	6.6	8.0	9.4	3.9	5.8	7.6	10.0
BCC-CSM1.1(m)	0.8	1.5	1.1	1.0	2.2	2.7	3.6	3.6	5.9	8.2	10.9	13.1	4.2	5.8	7.2	7.6
CanESM2	-0.9	-0.9	-1.2	-1.5	1.0	1.3	-0.2	-1.1	3.9	5.5	7.1	9.8	4.8	6.8	7.7	8.1
CNRM-CM5	-0.1	0.4	0.0	0.6	0.2	0.3	0.2	1.4	1.3	1.4	2.3	2.7	1.2	2.1	3.2	4.8
CSIRO-Mk3.6.0	1.2	2.5	3.8	4.9	2.3	3.0	4.0	5.4	4.5	5.9	6.9	8.1	3.5	5.3	6.7	7.8
GFDL-ESM2G	1.7	2.0	2.2	2.1	-0.1	0.4	0.2	-1.1	1.2	1.5	2.1	2.3	0.5	0.7	1.4	1.4
GFDL-ESM2M	0.4	0.4	0.9	1.7	3.8	4.7	4.6	4.4	3.2	5.2	6.5	7.7	3.8	5.2	6.6	9.1
INM-CM4	0.3	0.3	0.2	0.5	-2.7	-3.5	-3.4	-3.6	0.2	0.7	1.2	1.9	2.2	2.6	3.1	3.9
IPSL-CM5A-LR	2.6	3.4	4.9	6.1	3.2	4.1	5.7	7.2	5.0	8.7	12.0	15.8	2.6	4.3	6.4	8.7
IPSL-CM5B-LR	-1.5	-1.8	-0.7	-0.7	0.5	0.7	0.5	1.1	1.2	2.6	3.2	4.3	1.7	3.3	5.3	7.6
MIROC-ESM	1.5	1.6	1.7	2.1	-0.3	-0.1	0.7	1.9	2.3	4.4	7.8	11.6	3.0	4.2	5.8	8.2
MIROC5	0.1	0.0	-0.7	-0.7	1.7	1.6	1.8	1.4	1.0	1.6	1.8	1.7	1.9	2.9	3.2	3.7
MRI-CGCM3	0.7	1.1	1.6	1.8	-0.3	-1.1	-0.7	-1.7	2.3	3.0	3.6	4.0	1.2	2.1	2.7	3.0
NorESM1-M	1.3	1.1	0.8	-0.6	0.5	1.8	2.3	2.1	4.7	6.6	7.2	6.3	2.4	3.3	3.3	2.5

Table B.69 SA MDB NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	8.5	11.9	16.0	20.5	4.8	8.1	9.7	11.2	8.5	12.5	14.1	15.0	11.7	18.5	24.4	30.2
ACCESS1.3	10.0	12.4	14.6	15.7	8.6	12.4	16.3	18.4	17.7	27.0	34.2	40.3	17.5	24.3	30.4	35.1
BCC-CSM1.1(m)	12.8	15.3	16.1	15.0	20.7	23.5	25.5	27.4	12.5	18.1	22.5	26.9	11.6	15.4	18.5	21.9
CanESM2	9.9	13.9	16.2	18.6	6.0	10.8	14.1	18.4	5.0	8.4	9.8	11.5	11.5	16.0	18.0	20.6
CNRM-CM5	6.7	10.4	14.5	18.6	10.9	16.4	19.6	21.6	15.1	19.5	19.4	18.9	12.9	18.1	19.7	20.9
CSIRO-Mk3.6.0	8.1	11.8	14.8	14.5	5.2	10.9	19.1	26.4	15.5	24.7	33.2	42.7	15.3	22.0	26.5	30.2
GFDL-ESM2G	4.2	7.5	12.4	17.6	13.7	18.9	21.2	24.8	8.5	9.8	9.3	9.3	14.5	19.4	22.2	27.2
GFDL-ESM2M	11.1	15.5	13.7	9.6	15.9	21.0	19.5	19.1	22.2	28.4	27.4	26.8	23.4	30.8	32.2	32.9
INM-CM4	5.4	9.2	12.6	16.4	2.7	5.8	7.4	9.0	3.4	3.9	4.8	7.6	7.0	14.0	19.0	25.2
IPSL-CM5A-LR	17.8	23.8	27.6	28.9	13.4	18.4	22.8	25.3	9.7	12.8	17.5	19.8	11.2	16.1	21.0	22.5
IPSL-CM5B-LR	9.8	10.7	12.0	12.9	15.2	18.2	20.1	19.9	6.1	8.6	10.4	11.7	14.8	19.7	24.7	27.1
MIROC-ESM	8.0	11.4	14.1	17.2	2.4	1.4	3.9	5.5	5.4	4.2	5.2	6.9	8.2	12.5	17.2	21.0
MIROC5	7.8	11.7	15.0	17.4	9.5	13.2	15.7	20.6	6.1	11.1	14.8	18.5	11.2	14.7	16.4	18.0
MRI-CGCM3	7.9	11.1	13.8	16.1	11.5	15.2	17.8	22.9	7.4	13.8	18.5	23.6	11.8	16.7	20.7	24.8
NorESM1-M	6.1	8.9	9.4	10.6	4.6	8.1	10.7	14.0	9.8	12.9	15.9	20.5	9.6	13.4	16.3	20.4

Table B.70 SA MDB NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	13.6	21.6	28.9	36.7	4.2	12.2	21.9	34.3	11.0	20.3	32.7	45.7	16.6	27.2	42.3	56.4
ACCESS1.3	14.3	21.5	28.1	35.1	12.9	21.4	31.6	45.8	22.0	36.0	49.2	62.8	23.4	37.4	52.3	69.1
BCC-CSM1.1(m)	14.9	21.1	28.3	34.6	23.2	30.1	36.3	41.5	21.8	31.3	42.9	53.5	16.9	25.4	35.1	43.5
CanESM2	12.5	19.7	28.0	37.7	10.3	16.5	22.7	30.0	9.9	15.1	20.2	26.5	17.4	27.7	36.7	46.5
CNRM-CM5	12.7	19.9	28.4	36.9	15.3	25.7	39.0	56.0	16.3	24.8	39.6	55.9	12.2	23.1	37.2	54.3
CSIRO-Mk3.6.0	10.8	17.3	24.5	31.9	12.9	20.7	30.8	42.9	19.5	31.8	45.6	60.9	17.0	27.8	39.3	50.3
GFDL-ESM2G	6.9	12.0	20.1	29.4	13.7	17.6	23.6	26.8	11.1	19.9	25.1	30.4	11.8	22.5	35.1	48.0
GFDL-ESM2M	7.6	15.0	24.1	34.2	13.8	24.3	34.7	46.5	16.9	32.0	48.5	67.1	23.8	39.4	57.6	77.6
INM-CM4	9.9	15.4	22.1	28.7	3.7	7.6	13.5	20.0	3.4	5.4	10.9	16.6	10.1	16.3	23.7	31.9
IPSL-CM5A-LR	20.9	33.3	47.6	62.9	22.1	34.2	47.5	62.2	13.3	24.2	38.5	54.1	16.9	30.1	45.6	62.6
IPSL-CM5B-LR	4.0	10.2	19.5	31.6	14.1	21.7	35.7	52.0	12.2	20.0	29.5	41.3	20.9	32.9	45.6	59.5
MIROC-ESM	13.7	23.8	36.9	51.6	8.8	15.3	23.7	34.2	13.4	20.5	30.5	40.3	13.0	23.1	38.2	56.7
MIROC5	9.2	13.8	18.2	23.0	11.3	15.1	18.0	20.2	9.6	13.7	18.6	22.8	11.6	17.3	23.0	28.6
MRI-CGCM3	6.4	14.9	24.4	33.0	12.9	23.1	32.2	38.9	13.2	21.4	31.2	40.2	14.2	26.0	38.4	48.7
NorESM1-M	8.3	11.5	14.2	14.3	8.2	14.1	18.9	21.4	9.8	16.1	21.2	23.8	10.2	15.6	18.0	15.7

Table B.71 SA MDB NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	2.2	2.7	4.1	5.2	1.5	2.6	3.0	3.6	3.0	4.3	5.2	6.2	3.7	5.3	6.9	8.3
ACCESS1.3	2.6	3.7	4.4	4.8	2.9	4.0	5.6	6.4	3.8	6.3	8.6	10.4	4.4	6.7	8.1	9.6
BCC-CSM1.1(m)	3.2	4.4	4.7	4.8	4.8	6.2	6.7	7.5	5.2	7.2	8.6	9.7	4.6	5.8	7.0	7.6
CanESM2	2.6	3.8	4.6	5.5	2.5	4.5	6.6	8.8	2.9	5.2	6.2	7.6	5.5	7.2	8.3	9.3
CNRM-CM5	1.4	2.6	3.1	3.9	2.4	3.9	5.1	5.9	3.2	4.5	4.6	4.8	3.5	4.8	5.6	6.3
CSIRO-Mk3.6.0	3.1	4.6	5.4	5.4	1.8	3.6	5.8	7.7	4.1	6.2	8.0	9.8	4.1	6.6	8.6	10.4
GFDL-ESM2G	1.4	1.9	3.1	4.7	3.5	4.5	5.1	6.1	1.9	2.4	2.8	3.5	3.1	4.2	4.7	5.7
GFDL-ESM2M	2.5	2.9	2.5	1.1	4.6	5.4	5.4	5.4	3.9	5.3	5.7	6.3	4.8	6.4	6.3	6.6
INM-CM4	1.5	2.6	3.8	5.0	0.4	1.2	2.3	3.3	1.5	2.5	3.3	4.1	2.6	4.2	5.7	7.0
IPSL-CM5A-LR	5.0	6.9	8.2	8.7	4.3	6.1	7.4	8.1	4.3	5.7	7.4	8.3	4.4	6.6	8.0	8.5
IPSL-CM5B-LR	2.0	2.2	2.8	3.6	3.1	4.0	4.5	5.1	1.5	3.1	3.8	4.8	3.7	4.7	6.1	7.2
MIROC-ESM	2.9	3.4	4.5	5.6	1.6	1.9	3.1	4.3	4.3	5.2	5.7	6.3	4.0	5.9	7.7	8.8
MIROC5	1.8	3.0	3.7	4.1	2.7	3.8	4.5	5.8	2.2	3.7	4.6	6.0	3.8	5.0	5.6	6.1
MRI-CGCM3	2.3	2.8	3.6	4.0	1.8	2.3	3.2	4.4	2.4	3.9	5.2	6.9	2.3	3.1	3.8	4.2
NorESM1-M	2.5	3.3	4.1	4.1	1.3	2.7	4.0	4.8	4.4	5.2	6.2	7.7	3.6	5.1	6.0	7.3

Table B.72 SA MDB NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	3.0	5.2	6.9	9.1	1.5	3.8	6.6	9.6	3.8	6.5	10.0	13.4	4.9	7.8	11.4	14.6
ACCESS1.3	3.8	5.9	7.7	9.9	4.3	6.8	9.8	13.7	6.0	9.6	12.6	15.8	6.1	9.7	13.4	17.9
BCC-CSM1.1(m)	3.8	5.9	7.5	9.0	5.9	8.1	10.4	12.0	7.6	11.0	14.6	17.7	6.5	9.5	12.7	14.9
CanESM2	3.2	5.8	8.3	11.1	4.8	7.8	9.9	12.8	4.9	8.2	11.6	16.0	7.3	11.5	14.9	18.1
CNRM-CM5	2.5	4.5	6.1	8.3	3.6	6.2	9.1	13.6	3.9	5.5	8.6	11.5	3.5	6.3	9.6	13.7
CSIRO-Mk3.6.0	3.2	5.4	7.9	10.3	4.1	6.8	10.0	13.9	4.8	8.0	11.2	14.7	5.1	8.2	11.4	14.4
GFDL-ESM2G	3.0	4.4	6.1	7.7	3.0	4.5	5.9	6.5	2.7	4.1	6.1	7.9	2.4	4.1	6.5	8.3
GFDL-ESM2M	1.9	3.2	5.0	6.8	4.5	6.8	8.6	10.7	3.9	6.5	9.4	12.5	5.1	7.6	10.7	14.7
INM-CM4	2.6	4.2	6.2	8.6	1.1	2.2	4.5	6.9	2.1	3.8	5.6	7.3	3.8	5.3	7.2	9.5
IPSL-CM5A-LR	6.1	9.3	13.7	18.2	6.3	9.8	14.2	18.9	5.7	10.3	15.5	21.6	5.2	9.0	13.6	18.7
IPSL-CM5B-LR	0.3	1.4	3.7	5.6	2.5	4.0	6.3	9.3	3.4	5.6	8.2	11.7	4.1	7.1	10.4	14.2
MIROC-ESM	4.8	7.0	9.8	13.3	3.0	5.4	8.7	12.9	4.7	7.7	12.1	17.3	5.4	8.6	12.9	18.3
MIROC5	2.1	3.4	4.4	5.9	3.4	5.1	6.8	8.6	2.6	4.3	6.6	8.4	3.9	6.3	8.1	10.3
MRI-CGCM3	1.9	3.5	5.4	6.9	2.2	3.7	6.3	8.0	3.5	5.7	8.2	10.7	2.8	5.2	7.8	10.0
NorESM1-M	3.1	4.4	5.9	6.3	2.8	5.2	7.3	8.7	4.5	7.2	9.4	11.0	3.8	6.1	7.6	8.0

Table B.73 South East NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-7.8	7.7	-9.3	-10.4	-2.9	-3.5	-8.7	-0.7	-0.1	-4.6	0.2	1.7	-19.1	-22.1	-32.4	-25.6
ACCESS1.3	-23.2	-34.2	-28.8	-35.4	-20.0	-3.8	-22.6	-12.3	-4.3	-5.5	-14.4	-11.5	-13.1	-27.1	-24.4	-26.1
BCC-CSM1.1(m)	-7.1	-26.6	-17.4	-15.8	-2.0	-11.0	-12.3	-4.0	4.3	-8.2	-6.3	-9.3	-7.4	-5.0	-12.7	-20.1
CanESM2	-21.2	-17.9	-25.7	-22.7	7.5	2.5	-1.0	-3.8	9.8	1.0	1.1	5.1	-24.3	-24.7	-34.0	-36.9
CNRM-CM5	5.2	-12.4	1.0	-8.6	8.4	-0.3	4.2	4.4	-7.0	-11.3	-9.7	-5.7	-12.5	-9.8	-15.4	-17.6
CSIRO-Mk3.6.0	-25.0	-38.1	-28.9	-37.5	-1.1	-4.8	-5.4	-7.3	-4.7	6.8	17.4	14.5	-5.7	-26.7	-16.4	-25.9
GFDL-ESM2G	-4.6	-3.9	-8.5	-30.7	-8.0	-6.5	-3.9	-3.4	6.8	8.1	12.4	3.3	-2.1	-15.2	-25.6	-15.9
GFDL-ESM2M	-23.8	-2.5	-10.9	6.3	-13.4	-4.8	-7.5	-4.6	5.6	9.7	1.5	4.7	-21.1	-25.6	-30.0	-20.8
INM-CM4	0.0	-12.0	-13.5	-16.9	18.4	9.8	3.8	9.5	2.0	1.2	-5.8	-10.4	-15.1	-12.5	-22.0	-25.3
IPSL-CM5A-LR	-18.3	-19.6	-24.3	-21.8	-15.4	-28.7	-18.6	-20.2	-5.2	-4.5	-5.7	-1.3	1.4	-11.5	-19.1	-18.8
IPSL-CM5B-LR	0.1	22.8	23.3	4.1	-10.6	-10.7	-22.6	-11.7	5.9	0.1	0.2	0.2	-11.7	-10.7	-10.4	-21.3
MIROC-ESM	-18.0	-8.3	-20.3	-22.2	-3.4	-2.0	-5.6	-14.1	-6.3	-6.4	-6.5	-8.8	-15.0	-22.9	-31.2	-32.8
MIROC5	1.5	-4.6	-8.1	0.1	-2.9	-10.0	-5.9	-10.6	11.0	6.8	9.9	3.7	-14.0	-19.8	-24.9	-24.3
MRI-CGCM3	-6.6	-6.8	-12.4	-12.7	0.4	3.1	-1.7	-6.2	3.6	-1.9	-1.1	9.8	-12.3	-14.2	-16.0	-16.1
NorESM1-M	-21.1	-7.4	-21.8	-8.5	1.5	-4.1	-8.7	-2.7	-4.1	-7.4	-8.9	-5.1	-7.0	-10.6	-15.2	-17.3

Table B.74 South East NRM downscaled projected changes in seasonal precipitation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-7.3	-17.8	-14.3	-33.4	3.5	-0.8	-21.3	-21.6	0.1	-2.6	-5.7	-11.0	-17.7	-31.2	-40.6	-54.8
ACCESS1.3	-20.9	-32.2	-37.8	-49.4	-13.0	-25.0	-21.7	-41.2	-5.9	-8.2	-8.0	-21.9	-21.3	-28.0	-43.8	-55.4
BCC-CSM1.1(m)	-13.2	-30.8	-32.4	-34.7	-10.2	-7.7	-22.2	-20.6	-5.8	-11.8	-14.3	-13.2	-16.9	-16.4	-36.3	-37.8
CanESM2	-15.2	-31.8	-33.3	-34.2	2.8	-8.1	-6.2	-3.3	0.8	9.8	3.7	-4.2	-27.1	-35.6	-52.4	-55.8
CNRM-CM5	-2.0	-17.5	-10.7	-25.5	6.1	2.8	6.0	-4.5	-8.9	-4.7	-9.3	-15.6	-3.2	-9.0	-14.6	-35.0
CSIRO-Mk3.6.0	-11.5	-28.5	-46.2	-54.2	-5.2	-6.2	-18.0	-20.5	-1.4	8.2	8.6	5.3	-16.7	-22.4	-35.6	-40.2
GFDL-ESM2G	-7.8	-17.1	-24.7	-27.4	6.4	-3.5	-2.7	1.0	-0.5	-0.1	6.0	5.2	-11.2	-16.2	-28.5	-36.0
GFDL-ESM2M	-0.9	-4.6	-18.9	-26.1	-13.9	-5.4	-13.8	-23.6	9.4	4.9	-1.6	1.3	-23.1	-37.0	-42.6	-54.0
INM-CM4	-10.3	-13.6	-12.1	-24.3	12.9	15.9	4.4	2.6	-4.2	-5.3	-6.6	-6.5	-17.5	-17.8	-25.9	-31.4
IPSL-CM5A-LR	-21.6	-19.9	-46.2	-54.8	-24.1	-25.8	-43.1	-51.0	-7.1	-5.0	-16.3	-17.7	-15.3	-7.7	-29.2	-40.2
IPSL-CM5B-LR	21.8	33.8	-0.9	12.9	-2.5	-8.5	-13.5	-24.2	-2.2	8.4	1.6	4.8	-3.4	-13.3	-20.5	-31.5
MIROC-ESM	-16.9	-19.2	-27.2	-30.4	-1.1	-10.5	-17.1	-24.8	3.3	-4.3	-18.3	-18.4	-23.8	-30.9	-33.2	-54.8
MIROC5	3.2	-8.9	0.3	-6.6	-6.8	-5.6	-16.4	-15.8	0.4	1.4	2.6	1.2	-16.5	-23.8	-26.5	-33.8
MRI-CGCM3	-9.1	-11.5	-20.6	-30.0	-5.6	4.3	-11.5	-5.6	2.7	-0.8	-1.1	4.5	-12.9	-26.4	-28.7	-31.7
NorESM1-M	-21.3	-14.7	-17.2	-14.4	3.7	-5.3	-11.5	-12.8	-1.4	-9.7	-6.3	-6.6	-13.0	-19.3	-16.4	-16.7

Table B.75 South East NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.9	1.3	1.7	2.0	0.6	0.9	1.1	1.3	0.7	1.1	1.3	1.6	1.0	1.5	2.0	2.4
ACCESS1.3	0.8	1.0	1.3	1.4	0.6	0.9	1.2	1.4	0.8	1.2	1.6	1.9	1.2	1.8	2.1	2.4
BCC-CSM1.1(m)	1.4	1.7	1.8	1.9	1.3	1.6	1.8	1.9	1.0	1.4	1.6	1.8	1.0	1.3	1.6	1.9
CanESM2	1.3	1.8	2.1	2.3	0.9	1.4	1.8	2.1	0.8	1.3	1.6	1.9	1.2	1.7	2.0	2.4
CNRM-CM5	0.6	1.1	1.4	1.8	0.8	1.3	1.6	1.9	0.8	1.2	1.4	1.5	1.0	1.4	1.7	1.9
CSIRO-Mk3.6.0	0.8	1.1	1.4	1.4	0.5	0.9	1.4	1.9	0.8	1.2	1.5	1.9	0.9	1.4	1.6	1.9
GFDL-ESM2G	0.7	0.9	1.2	1.4	0.9	1.1	1.3	1.5	0.5	0.6	0.7	0.9	0.8	1.1	1.3	1.5
GFDL-ESM2M	0.7	1.0	1.1	1.0	0.7	1.0	1.1	1.2	0.6	0.9	1.1	1.2	0.9	1.3	1.6	1.8
INM-CM4	0.6	1.0	1.4	1.8	0.2	0.6	0.9	1.1	0.3	0.6	0.9	1.2	0.6	1.2	1.6	2.1
IPSL-CM5A-LR	2.0	2.7	3.2	3.5	1.2	1.7	2.1	2.4	0.9	1.4	1.8	2.3	1.1	1.6	2.0	2.2
IPSL-CM5B-LR	0.9	1.1	1.2	1.4	0.6	1.0	1.2	1.4	0.8	1.1	1.2	1.3	0.9	1.3	1.6	1.9
MIROC-ESM	0.9	1.4	1.8	2.2	0.6	0.9	1.3	1.8	0.8	1.2	1.4	1.7	0.9	1.4	1.9	2.3
MIROC5	0.8	1.2	1.4	1.7	0.7	1.0	1.3	1.6	0.6	0.9	1.2	1.4	1.0	1.4	1.5	1.7
MRI-CGCM3	0.5	0.8	1.0	1.2	0.7	0.9	1.1	1.4	0.4	0.6	0.9	1.1	0.7	1.1	1.4	1.5
NorESM1-M	0.7	1.0	1.2	1.4	0.5	0.9	1.1	1.3	0.6	0.8	1.1	1.3	0.7	1.0	1.3	1.6

Table B.76 South East NRM downscaled projected changes in seasonal maximum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.2	1.9	2.5	3.1	0.6	1.2	2.1	3.1	0.9	1.6	2.5	3.4	1.3	2.1	3.1	4.0
ACCESS1.3	1.1	1.6	2.2	2.8	1.0	1.7	2.3	3.2	1.1	1.8	2.5	3.3	1.5	2.3	3.3	4.4
BCC-CSM1.1(m)	1.5	2.3	3.1	3.8	1.6	2.2	2.7	3.1	1.4	2.0	2.8	3.3	1.4	2.1	3.0	3.7
CanESM2	1.8	2.7	3.8	4.9	1.5	2.4	3.3	4.4	1.2	2.0	2.9	4.0	1.7	2.8	3.8	4.8
CNRM-CM5	1.1	1.8	2.6	3.3	1.1	1.9	2.8	3.9	0.9	1.6	2.3	3.2	1.0	1.8	2.8	3.9
CSIRO-Mk3.6.0	0.9	1.4	2.1	2.7	0.9	1.5	2.3	3.2	0.8	1.5	2.3	3.1	1.0	1.7	2.5	3.2
GFDL-ESM2G	0.8	1.3	1.9	2.5	0.9	1.3	1.8	2.3	0.7	1.1	1.5	2.0	0.9	1.6	2.3	3.0
GFDL-ESM2M	0.5	1.0	1.7	2.3	0.8	1.2	1.9	2.6	0.6	1.1	1.8	2.4	1.1	1.8	2.5	3.4
INM-CM4	1.0	1.6	2.3	3.1	0.4	1.0	1.7	2.3	0.6	1.1	1.8	2.4	1.0	1.6	2.3	3.0
IPSL-CM5A-LR	2.1	3.6	5.2	7.2	1.6	2.8	4.0	5.2	1.2	2.2	3.4	4.6	1.7	2.9	4.3	5.8
IPSL-CM5B-LR	0.5	1.0	1.8	2.6	0.7	1.2	2.1	3.0	0.9	1.4	2.1	2.8	1.0	1.7	2.3	3.1
MIROC-ESM	1.6	2.6	3.8	5.2	1.0	1.8	2.7	3.9	1.0	1.7	2.6	3.4	1.3	2.2	3.3	4.6
MIROC5	0.9	1.4	2.0	2.7	0.9	1.3	1.9	2.6	0.7	1.2	1.8	2.4	1.1	1.6	2.3	2.9
MRI-CGCM3	0.6	1.2	2.0	2.7	0.8	1.4	2.2	2.9	0.6	1.1	1.7	2.4	0.8	1.6	2.3	3.1
NorESM1-M	0.8	1.4	2.0	2.6	0.8	1.4	2.0	2.7	0.7	1.3	2.0	2.7	0.8	1.5	2.0	2.5

Table B.77 South East NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.9	1.4	1.7	2.0	0.7	1.0	1.2	1.5	0.7	1.0	1.3	1.6	0.5	0.9	1.2	1.5
ACCESS1.3	0.5	0.7	0.9	1.0	0.4	0.7	0.9	1.1	0.5	0.8	1.1	1.3	0.7	1.0	1.2	1.3
BCC-CSM1.1(m)	1.0	1.2	1.2	1.2	1.1	1.3	1.4	1.5	0.9	1.2	1.3	1.3	0.7	0.9	1.0	1.1
CanESM2	1.0	1.6	1.9	2.1	0.9	1.3	1.6	1.9	0.7	1.0	1.2	1.5	0.4	0.7	1.0	1.3
CNRM-CM5	0.7	1.1	1.5	1.9	0.8	1.3	1.6	2.0	0.8	1.0	1.3	1.6	0.8	1.2	1.5	1.7
CSIRO-Mk3.6.0	0.6	0.8	1.0	1.1	0.6	0.9	1.3	1.6	0.5	0.9	1.3	1.6	0.7	0.9	1.2	1.3
GFDL-ESM2G	0.4	0.5	0.6	0.6	0.6	0.8	0.9	1.1	0.5	0.6	0.7	0.8	0.5	0.5	0.6	0.8
GFDL-ESM2M	0.4	0.7	0.8	0.8	0.4	0.7	0.7	0.8	0.5	0.7	0.8	0.9	0.4	0.6	0.8	1.0
INM-CM4	0.8	1.1	1.5	1.7	1.2	1.4	1.6	1.7	0.7	0.8	0.7	0.6	0.2	0.3	0.5	0.7
IPSL-CM5A-LR	1.2	1.6	1.9	2.0	1.0	1.2	1.5	1.7	0.5	0.7	0.9	1.1	0.6	0.8	0.9	1.0
IPSL-CM5B-LR	0.5	0.8	1.0	1.2	0.7	1.0	1.2	1.4	0.4	0.6	0.7	1.0	0.7	1.1	1.4	1.6
MIROC-ESM	0.9	1.4	1.7	2.0	0.7	1.1	1.4	1.8	0.6	1.0	1.3	1.5	0.7	1.0	1.3	1.7
MIROC5	0.7	1.0	1.1	1.3	0.6	0.9	1.1	1.3	0.7	1.0	1.2	1.3	0.6	0.8	1.0	1.1
MRI-CGCM3	0.4	0.7	0.8	1.0	0.8	1.0	1.1	1.2	0.3	0.6	0.8	1.2	0.5	0.8	1.0	1.2
NorESM1-M	0.5	0.8	1.0	1.3	0.5	0.7	0.9	1.1	0.4	0.5	0.7	0.9	0.4	0.7	0.9	1.1

Table B.78 South East NRM downscaled projected changes in seasonal minimum temperature (°C change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.1	1.7	2.3	2.9	0.7	1.3	1.9	2.8	0.8	1.4	2.1	2.8	0.8	1.2	1.8	2.4
ACCESS1.3	0.7	1.2	1.7	2.1	0.7	1.2	1.7	2.2	0.8	1.4	2.0	2.5	0.8	1.3	1.9	2.6
BCC-CSM1.1(m)	1.2	1.7	2.3	2.8	1.2	1.8	2.2	2.6	1.1	1.6	2.1	2.5	0.9	1.4	1.9	2.3
CanESM2	1.4	2.2	3.3	4.5	1.1	2.0	3.1	4.2	0.9	1.6	2.2	2.9	0.7	1.3	1.9	2.7
CNRM-CM5	1.0	1.6	2.4	3.1	1.1	1.9	2.8	3.8	1.0	1.5	2.1	2.8	0.9	1.5	2.3	3.0
CSIRO-Mk3.6.0	0.8	1.2	1.7	2.2	0.7	1.3	2.0	2.7	0.7	1.2	1.9	2.6	0.7	1.2	1.7	2.3
GFDL-ESM2G	0.6	1.0	1.5	1.9	0.9	1.2	1.7	2.2	0.6	1.0	1.4	1.9	0.6	1.1	1.5	2.0
GFDL-ESM2M	0.5	1.0	1.5	2.0	0.6	1.1	1.7	2.3	0.6	1.0	1.5	2.1	0.6	1.1	1.6	2.1
INM-CM4	1.0	1.7	2.6	3.7	1.4	2.1	2.9	3.8	0.8	1.1	1.4	1.7	0.4	0.9	1.3	1.8
IPSL-CM5A-LR	1.4	2.3	3.1	4.1	1.2	2.0	2.9	3.9	0.7	1.2	1.9	2.6	0.7	1.2	1.8	2.4
IPSL-CM5B-LR	0.6	1.1	1.7	2.4	0.9	1.4	2.1	3.0	0.5	1.1	1.7	2.3	1.0	1.5	2.1	2.7
MIROC-ESM	1.4	2.3	3.3	4.3	1.2	1.9	2.8	3.8	0.9	1.5	2.1	2.9	1.0	1.6	2.4	3.2
MIROC5	0.8	1.2	1.9	2.5	0.7	1.2	1.7	2.4	0.8	1.2	1.8	2.4	0.7	1.1	1.5	2.1
MRI-CGCM3	0.5	1.0	1.6	2.3	0.7	1.4	2.1	2.8	0.6	1.0	1.6	2.3	0.6	1.1	1.7	2.4
NorESM1-M	0.7	1.2	1.9	2.5	0.8	1.3	1.8	2.3	0.5	1.0	1.5	2.1	0.5	1.1	1.6	2.1

Table B.79 South East NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	-0.3	-0.7	0.2	0.3	-0.9	-0.9	-0.8	-1.5	0.7	1.2	0.8	0.4	3.2	3.9	4.5	5.0
ACCESS1.3	1.8	2.1	2.2	2.4	2.4	2.2	3.3	2.8	2.2	3.4	5.0	5.9	3.0	4.6	5.2	6.1
BCC-CSM1.1(m)	2.0	2.8	3.0	3.1	2.4	3.1	3.5	3.6	2.8	4.6	5.7	6.9	3.2	3.6	4.5	5.0
CanESM2	0.6	0.5	0.7	0.8	0.1	1.1	1.9	3.1	-0.1	1.7	2.2	2.8	4.1	5.1	5.9	6.5
CNRM-CM5	-0.2	0.3	-0.6	-0.7	-0.6	0.0	0.0	0.2	1.3	1.8	1.3	0.5	2.2	2.0	2.3	2.1
CSIRO-Mk3.6.0	1.7	2.3	2.0	1.7	-0.1	0.7	1.7	2.7	3.1	2.9	3.1	4.1	2.8	5.0	5.9	7.7
GFDL-ESM2G	-0.1	0.0	1.1	3.0	1.5	2.1	2.1	2.4	-0.7	-1.3	-1.3	-0.3	1.7	2.9	3.5	3.0
GFDL-ESM2M	1.0	0.4	-0.4	-2.3	4.2	4.1	3.4	2.9	1.5	1.9	2.6	2.6	4.2	5.3	5.1	4.5
INM-CM4	-0.4	0.0	0.4	0.9	-3.1	-2.9	-2.4	-1.8	-0.3	0.5	1.3	2.1	2.2	3.1	4.0	4.1
IPSL-CM5A-LR	3.1	4.1	4.6	4.5	2.6	4.3	4.5	4.5	3.6	4.8	5.8	5.6	3.1	5.3	6.2	6.1
IPSL-CM5B-LR	-0.9	-1.9	-1.7	-1.2	3.1	3.5	4.3	3.9	-1.5	-0.8	0.1	1.3	2.1	2.5	3.4	4.6
MIROC-ESM	1.2	0.9	1.6	1.7	0.3	0.1	0.7	1.8	2.9	3.0	3.0	3.5	3.2	4.3	5.4	6.0
MIROC5	0.2	0.7	1.3	1.8	1.0	1.4	1.2	2.2	-0.2	0.6	0.6	1.7	2.4	2.7	3.7	3.9
MRI-CGCM3	1.4	1.5	1.4	0.9	-0.7	-0.8	-0.2	0.7	1.2	2.2	2.4	1.5	1.5	1.8	1.4	1.0
NorESM1-M	1.0	0.9	1.2	0.9	-0.6	0.4	1.2	1.9	3.4	3.9	4.5	4.9	1.7	2.4	3.3	3.7

Table B.80 South East NRM downscaled projected changes in seasonal solar radiation (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	0.3	0.7	0.5	1.0	-1.2	-0.5	0.6	0.9	1.3	2.0	3.6	4.8	3.5	5.4	7.4	9.0
ACCESS1.3	2.0	2.8	3.1	3.8	2.7	3.8	4.9	7.4	3.2	4.3	4.9	6.5	4.0	5.7	8.4	11.0
BCC-CSM1.1(m)	2.4	3.4	3.6	3.9	3.4	3.8	4.7	5.1	4.5	6.7	9.1	11.0	4.3	6.2	8.7	9.6
CanESM2	0.4	0.7	0.6	0.3	1.5	2.4	2.1	1.8	2.2	3.0	4.4	7.1	5.0	7.0	8.7	9.7
CNRM-CM5	0.2	0.5	0.3	0.8	0.3	0.2	0.5	1.8	0.9	1.3	2.0	2.7	1.2	2.3	3.3	5.8
CSIRO-Mk3.6.0	1.6	2.3	3.2	4.2	2.4	3.1	4.3	5.2	2.6	2.9	4.0	5.4	3.8	5.6	7.5	8.8
GFDL-ESM2G	1.5	2.0	2.1	2.1	-0.9	0.2	-0.2	-1.0	0.8	0.4	-0.1	0.0	1.5	1.9	3.1	4.1
GFDL-ESM2M	-0.5	-0.4	0.2	1.0	3.8	4.2	4.3	4.4	1.1	2.1	3.1	3.4	4.4	6.5	7.9	10.2
INM-CM4	0.1	0.3	0.3	0.4	-2.8	-3.3	-3.3	-3.4	0.2	0.8	1.4	1.6	2.8	3.2	3.8	4.8
IPSL-CM5A-LR	4.3	5.7	8.2	10.4	4.1	6.3	9.2	11.5	5.2	8.4	12.4	16.0	4.1	6.0	9.4	13.0
IPSL-CM5B-LR	-2.8	-3.2	-2.0	-1.5	1.9	2.6	3.2	4.5	1.2	1.2	1.6	2.2	1.6	3.4	5.8	8.6
MIROC-ESM	3.0	3.5	4.5	5.2	0.2	1.1	2.7	4.6	1.2	3.1	6.1	8.8	4.7	6.2	8.4	11.5
MIROC5	0.5	0.7	0.4	1.0	1.4	1.6	2.4	2.7	0.0	0.3	-0.1	-0.5	3.0	4.1	4.9	6.0
MRI-CGCM3	0.7	0.8	1.4	1.8	0.6	-0.5	0.3	-0.4	1.2	2.4	2.6	2.9	1.4	2.9	3.4	4.2
NorESM1-M	1.3	1.3	1.0	-0.3	-0.4	1.0	2.0	2.2	3.1	4.9	5.2	5.2	1.3	2.6	3.0	2.4

Table B.81 South East NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	7.4	10.7	13.7	16.9	3.8	6.5	7.2	7.7	8.1	12.2	14.7	16.4	11.4	17.7	22.3	27.3
ACCESS1.3	8.0	9.9	12.0	12.5	7.3	10.3	12.5	13.7	14.8	21.6	26.0	29.7	17.1	24.1	28.9	32.2
BCC-CSM1.1(m)	11.7	13.6	14.2	13.8	16.1	18.3	19.8	21.4	10.5	14.7	17.2	20.6	10.7	13.4	15.5	17.9
CanESM2	10.1	14.4	16.7	18.3	6.3	10.2	13.8	16.4	4.8	7.8	9.7	11.5	10.7	15.1	17.6	20.3
CNRM-CM5	6.2	9.7	12.6	16.8	9.2	15.5	18.0	19.5	14.3	18.7	18.9	18.4	12.3	16.8	17.9	18.0
CSIRO-Mk3.6.0	5.1	7.4	8.6	7.9	3.2	7.3	12.4	16.9	12.1	18.3	24.9	31.9	12.2	17.5	21.1	24.2
GFDL-ESM2G	3.6	5.8	9.7	13.1	11.1	16.4	19.2	24.0	6.0	6.7	6.6	6.8	14.5	19.1	22.4	25.9
GFDL-ESM2M	6.3	8.9	7.4	4.2	11.2	15.0	14.0	15.4	16.7	21.8	20.7	20.3	22.6	30.0	32.0	33.4
INM-CM4	5.1	8.8	11.9	15.6	1.0	4.7	6.7	8.8	2.5	3.2	2.9	4.2	8.5	15.4	21.2	26.6
IPSL-CM5A-LR	15.3	19.8	22.7	23.5	11.1	15.0	18.2	19.9	6.4	9.5	13.5	16.5	10.3	15.0	18.4	19.9
IPSL-CM5B-LR	7.1	7.3	8.0	9.2	12.2	14.8	17.4	17.1	6.1	8.9	11.0	12.6	12.7	18.2	23.1	26.2
MIROC-ESM	5.1	8.4	11.2	14.4	2.9	3.1	6.4	9.0	6.6	6.6	7.3	9.9	6.6	9.7	13.9	17.1
MIROC5	6.4	9.3	11.5	13.7	7.0	9.3	11.5	14.5	4.5	8.5	11.8	14.5	10.5	13.3	14.5	16.0
MRI-CGCM3	6.5	8.5	9.9	11.6	10.4	12.1	13.9	17.1	4.5	8.4	11.4	14.5	11.7	16.7	19.6	21.5
NorESM1-M	4.2	6.0	7.2	8.3	2.6	5.7	8.6	11.1	8.3	11.5	13.8	16.4	8.8	12.7	16.2	20.0

Table B.82 South East NRM downscaled projected changes in seasonal vapour pressure deficit (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	11.5	17.1	21.6	26.5	2.8	8.6	16.9	26.2	11.8	21.2	33.4	45.8	15.7	25.3	38.2	49.6
ACCESS1.3	10.5	15.1	20.6	26.7	10.1	17.1	25.5	37.4	16.8	27.9	40.1	53.8	21.8	33.9	48.2	64.4
BCC-CSM1.1(m)	13.1	18.3	23.8	28.9	17.2	22.0	26.0	29.8	15.8	23.8	33.6	43.0	15.2	23.1	32.2	39.5
CanESM2	12.7	19.6	27.3	36.4	10.9	16.7	23.1	31.0	9.0	14.2	19.0	25.7	16.1	25.6	34.1	43.0
CNRM-CM5	10.9	17.9	26.1	34.1	13.0	23.4	36.0	52.0	15.5	24.3	37.4	52.6	10.4	20.9	34.8	50.9
CSIRO-Mk3.6.0	7.4	11.1	15.3	19.1	8.9	13.6	20.3	27.3	14.6	24.1	34.5	45.8	14.1	21.9	31.0	38.7
GFDL-ESM2G	6.2	10.4	16.3	22.7	11.2	16.1	21.9	25.7	10.3	16.9	21.3	26.5	13.4	23.7	34.1	46.6
GFDL-ESM2M	2.3	7.7	14.9	23.4	11.5	19.8	27.6	37.3	14.6	27.6	41.8	57.7	24.8	39.4	53.5	70.4
INM-CM4	8.8	14.3	21.0	27.9	3.4	8.0	13.6	19.0	2.8	4.4	8.1	13.2	11.4	19.6	27.1	36.0
IPSL-CM5A-LR	18.0	28.7	40.2	54.2	17.8	27.3	37.8	48.5	9.1	17.8	29.6	41.8	15.5	26.4	39.2	53.9
IPSL-CM5B-LR	2.2	6.7	15.0	25.0	11.5	18.4	30.9	45.1	11.5	18.1	26.0	35.2	16.6	27.9	39.8	53.6
MIROC-ESM	11.1	20.7	33.8	48.8	7.5	14.2	21.8	32.4	10.2	14.9	21.1	28.1	11.5	19.5	32.8	48.8
MIROC5	7.0	10.9	15.5	21.2	8.8	11.5	15.1	18.5	8.4	12.9	18.1	22.6	11.5	16.2	22.6	28.4
MRI-CGCM3	4.1	11.8	20.6	29.9	11.3	19.9	28.2	34.8	7.8	13.6	21.3	29.1	12.4	23.2	33.4	42.5
NorESM1-M	6.1	9.4	12.3	12.9	5.7	11.4	16.0	19.7	8.7	14.7	20.4	24.7	9.4	15.1	18.8	18.1

Table B.83 South East NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP4.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	1.9	2.6	4.0	5.0	1.1	1.8	2.3	2.6	2.3	3.9	4.4	4.8	4.1	5.6	7.0	8.2
ACCESS1.3	2.7	3.5	4.0	4.4	2.5	3.3	4.6	5.0	3.2	4.5	5.8	7.0	4.2	6.3	7.5	8.7
BCC-CSM1.1(m)	4.2	5.4	5.8	5.9	4.8	5.8	6.5	7.2	4.1	5.5	6.2	7.1	4.5	5.4	6.5	7.2
CanESM2	3.1	4.3	5.2	5.8	2.5	4.4	6.2	7.9	2.4	4.0	4.7	6.0	5.0	6.8	8.2	9.4
CNRM-CM5	1.3	2.7	2.9	3.7	1.8	3.7	4.8	6.0	3.2	4.1	4.6	4.8	3.7	4.6	5.5	5.9
CSIRO-Mk3.6.0	2.9	4.0	4.3	4.2	1.4	2.8	4.5	6.5	3.4	4.4	5.2	6.3	4.0	6.4	7.8	9.6
GFDL-ESM2G	1.2	1.7	2.8	4.4	2.9	4.0	4.3	5.2	0.9	1.2	1.4	2.5	2.6	3.8	4.5	4.5
GFDL-ESM2M	1.9	2.1	1.8	0.4	4.0	4.7	4.5	4.6	2.2	3.3	4.1	4.1	4.3	5.6	6.1	6.1
INM-CM4	1.3	2.5	3.6	4.7	0.0	0.8	1.9	2.7	1.3	2.4	3.2	3.6	2.5	3.9	5.3	6.2
IPSL-CM5A-LR	6.2	8.3	9.6	10.0	4.3	6.4	7.4	8.1	3.3	4.6	5.6	6.5	4.3	6.8	8.1	8.3
IPSL-CM5B-LR	0.9	0.7	1.2	2.1	3.7	5.0	6.2	6.5	1.1	2.0	3.0	4.1	3.4	4.4	6.0	7.4
MIROC-ESM	3.1	3.9	5.4	6.4	1.8	2.5	4.1	5.7	3.3	4.3	4.8	5.8	4.4	6.3	8.3	9.8
MIROC5	1.8	3.0	3.8	4.7	2.1	3.2	4.0	5.4	1.5	3.1	3.9	4.8	3.5	4.6	5.7	6.3
MRI-CGCM3	2.1	2.7	3.1	3.2	1.8	2.2	2.9	3.8	1.6	3.0	3.6	4.2	2.4	3.3	3.6	3.7
NorESM1-M	2.2	2.9	3.7	4.0	0.7	2.0	3.3	4.2	3.0	3.9	4.5	4.9	2.2	3.6	4.8	5.7

Table B.84 South East NRM downscaled projected changes in seasonal potential evapotranspiration (% change relative to 1986-2005 baseline) for 15 CMIP5 GCMs for RCP8.5

GCM	DJF				MAM				JJA				SON			
	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090	2030	2050	2070	2090
ACCESS1.0	2.8	4.7	6.0	7.9	0.8	2.8	5.4	8.3	3.2	5.2	8.2	11.6	5.0	8.0	11.3	14.3
ACCESS1.3	3.5	5.3	6.7	8.5	3.7	5.8	8.0	11.4	4.4	6.2	8.6	11.7	5.4	8.3	12.1	16.1
BCC-CSM1.1(m)	4.8	7.2	9.1	10.8	5.9	7.6	9.5	11.4	5.2	7.6	10.6	12.7	5.8	8.8	12.4	14.7
CanESM2	3.9	6.4	8.9	11.4	4.7	7.9	10.5	13.7	4.0	6.0	9.1	12.8	6.6	10.2	13.7	17.0
CNRM-CM5	2.4	4.2	5.8	7.9	3.2	5.8	8.6	12.9	3.6	5.2	7.6	10.5	3.1	5.7	8.4	12.7
CSIRO-Mk3.6.0	3.2	4.8	6.8	9.1	3.5	5.8	8.6	11.5	3.6	5.1	7.5	11.0	4.8	7.6	10.6	13.3
GFDL-ESM2G	2.8	4.1	5.4	6.8	2.0	3.8	4.8	5.9	2.2	3.4	4.5	5.5	2.7	4.4	6.5	8.7
GFDL-ESM2M	0.8	2.0	3.7	5.6	4.2	6.0	7.8	9.4	2.3	4.1	6.0	8.3	4.9	7.6	9.9	13.4
INM-CM4	2.3	4.0	6.0	8.2	0.8	2.2	4.2	6.4	2.2	3.7	4.9	6.0	3.6	5.2	7.1	9.4
IPSL-CM5A-LR	7.4	11.3	16.5	22.5	6.2	10.3	15.4	20.4	4.5	7.4	12.0	16.7	6.0	9.5	14.5	20.2
IPSL-CM5B-LR	-0.9	0.0	2.3	4.5	3.1	5.1	7.6	11.0	2.9	4.4	5.9	8.0	3.2	6.0	9.3	13.1
MIROC-ESM	5.9	8.4	11.8	15.2	3.2	5.9	9.2	13.8	3.6	5.5	9.0	12.9	6.3	9.3	13.7	19.0
MIROC5	2.3	3.6	4.8	6.9	2.9	4.4	6.4	8.4	2.1	3.7	5.1	6.3	4.3	6.2	8.3	10.7
MRI-CGCM3	1.7	3.0	5.0	6.9	2.4	3.5	6.2	8.0	2.5	4.3	6.2	8.2	2.6	5.2	7.2	9.7
NorESM1-M	2.7	4.1	5.4	5.9	1.6	4.1	6.1	7.9	3.2	4.8	6.5	8.9	2.5	4.9	6.6	7.2

Appendix C: Obtaining downscaled datasets

All of the downscaled datasets produced by this project are freely available, for non-commercial use, from the CSIRO Data Access Portal.

The downscaled datasets, along with metadata and file format descriptions, can be accessed from the permanent link:

http://dx.doi.org/10.4225/08/54644D99C091A

Appendix D: Additional sources of climate projections for South Australian NRM regions

Climate Change in Australia including Climate Futures Tool (new projections to be released early 2015)

www.climatechangeinaustralia.gov.au

NARCLiM

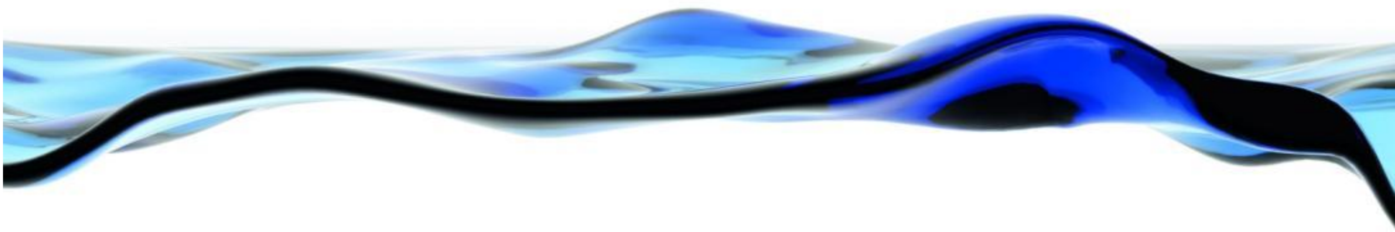
www.ccrc.unsw.edu.au/sites/default/files/NARCliM/index.html

CORDEX - Australasia

wcrp-cordex.ipsl.jussieu.fr/index.php/community/domain-australasia-cordex

Consistent Climate Scenarios Project

www.longpaddock.qld.gov.au/climateprojections/about.html



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