

# GRAMPIANS

## CLIMATE PROJECTIONS DATA SHEET



Climate projections for the Grampians region are based on sophisticated global climate models.

The models use different possible future emissions scenarios (or representative concentration pathways, RCPs) to generate plausible future climates. These projections describe a lower emissions future (using RCP4.5) and a high emissions future (using RCP8.5). For the

past 10 years we've tracked along the high emissions pathway.

The projections are given for 20-year periods centred on 2030 (2020–2039) and 2070 (2060–2079). Changes are relative to the period 1986–2005.

The projections are presented as a middle value (median) and a range that excludes the lower and upper 10% of results.

For example, in 2070 under a high emissions scenario, annual average temperature is projected to rise by 2.48°C (1.90 to 3.13°C). In this case, the middle temperature rise determined by all the models is 2.48°C; 90% of model results indicated a rise of at least 1.90°C and 90% of the model results indicated a rise of 3.13°C or less.

	2030 LOWER	2030 HIGH	2070 LOWER	2070 HIGH	
<b>ANNUAL</b>	Average temperature (°C)	0.76 (0.57 to 0.99)	0.95 (0.59 to 1.25)	1.43 (1.05 to 1.90)	2.48 (1.90 to 3.13)
	Average rainfall (%)	-2.76 (-11.25 to 3.25)	-3.69 (-14.52 to 2.37)	-5.59 (-18.73 to 4.61)	-6.69 (-28.09 to 2.51)
	Evaporation (%)	2.66 (1.50 to 4.89)	3.36 (1.94 to 6.07)	5.17 (3.60 to 9.25)	9.09 (5.97 to 14.11)
	Wind speed (%)	-0.48 (-2.54 to 1.42)	0.15 (-1.45 to 3.33)	-0.51 (-5.95 to 1.61)	0.13 (-5.16 to 3.87)
	Relative humidity (% absolute)	-0.72 (-1.47 to 0.20)	-0.92 (-2.30 to -0.31)	-1.07 (-3.21 to 0.36)	-2.17 (-4.48 to -0.64)
	Solar radiation (%)	1.26 (0.58 to 2.79)	1.71 (0.14 to 2.93)	2.27 (0.52 to 4.00)	2.79 (1.00 to 5.66)
	Soil moisture (%)	-1.43 (-4.84 to 0.56)	-3.07 (-5.84 to 0.78)	-2.03 (-7.30 to 0.24)	-4.41 (-8.98 to -2.26)
<b>SPRING</b>	Average temperature (°C)	0.78 (0.38 to 1.09)	0.97 (0.55 to 1.21)	1.53 (1.02 to 1.94)	2.48 (1.96 to 3.13)
	Average rainfall (%)	-5.31 (-11.26 to 4.26)	-7.82 (-17.53 to 4.62)	-10.35 (-32.70 to 3.24)	-20.27 (-40.61 to 3.11)
	Evaporation (%)	2.86 (1.07 to 5.78)	3.38 (0.90 to 7.01)	5.99 (3.11 to 9.89)	8.97 (4.28 to 14.42)
	Wind speed (%)	-1.37 (-4.99 to 1.71)	0.41 (-3.02 to 4.65)	-0.68 (-7.31 to 2.44)	0.16 (-6.97 to 4.43)
	Relative humidity (% absolute)	-1.13 (-2.76 to 0.42)	-1.53 (-3.10 to -0.04)	-2.06 (-5.28 to 0.45)	-3.76 (-7.28 to -1.02)
	Solar radiation (%)	1.57 (0.04 to 4.03)	1.83 (-0.18 to 4.59)	3.14 (0.90 to 6.10)	4.14 (1.28 to 7.96)
	Soil moisture (%)	-3.67 (-7.51 to -1.11)	-3.77 (-9.40 to 0.10)	-4.51 (-10.06 to -0.30)	-10.02 (-14.24 to -4.82)
<b>SUMMER</b>	Average temperature (°C)	0.89 (0.42 to 1.34)	0.99 (0.41 to 1.77)	1.69 (0.91 to 2.54)	2.54 (1.92 to 3.65)
	Average rainfall (%)	-1.42 (-19.87 to 16.53)	-1.50 (-27.81 to 16.01)	-1.29 (-25.18 to 18.42)	-1.20 (-34.07 to 19.05)
	Evaporation (%)	2.54 (0.83 to 4.41)	2.99 (0.73 to 5.09)	4.06 (2.23 to 8.75)	7.52 (4.06 to 12.85)
	Wind speed (%)	-0.36 (-2.38 to 1.04)	-0.29 (-1.11 to 3.88)	-0.49 (-4.03 to 1.32)	-0.09 (-4.32 to 4.86)
	Relative humidity (% absolute)	-0.50 (-1.67 to 0.54)	-0.72 (-3.23 to 0.71)	-1.08 (-3.24 to 0.56)	-1.35 (-4.24 to 0.35)
	Solar radiation (%)	0.94 (-0.84 to 1.97)	0.61 (-0.72 to 2.47)	1.14 (-0.61 to 3.00)	0.85 (-0.94 to 4.06)
	Soil moisture (%)	-0.54 (-3.08 to 0.68)	-0.86 (-4.13 to 0.23)	-0.99 (-4.05 to 1.09)	-1.23 (-5.35 to 0.81)

	2030 LOWER		2030 HIGH		2070 LOWER		2070 HIGH	
<b>AUTUMN</b>	Average temperature (°C)	0.78 (0.40 to 1.19)	0.91 (0.57 to 1.26)	1.37 (0.99 to 1.99)	2.52 (1.92 to 3.20)			
	Average rainfall (%)	1.05 (-23.69 to 12.27)	-4.87 (-20.14 to 16.44)	-5.67 (-22.89 to 16.12)	-7.89 (-26.30 to 11.54)			
	Evaporation (%)	3.28 (0.47 to 6.18)	5.51 (2.02 to 8.29)	7.32 (3.51 to 11.42)	12.10 (7.39 to 17.74)			
	Wind speed (%)	-0.46 (-2.96 to 2.76)	0.14 (-3.35 to 2.96)	-0.32 (-5.55 to 1.31)	-1.97 (-4.58 to 2.28)			
	Relative humidity (% absolute)	-0.22 (-2.37 to 1.19)	-0.78 (-2.45 to 1.21)	-0.49 (-3.29 to 1.51)	-1.31 (-3.83 to 0.23)			
	Solar radiation (%)	0.47 (-0.96 to 2.54)	1.29 (-0.96 to 3.04)	1.27 (-0.70 to 3.45)	1.70 (-0.93 to 5.38)			
	Soil moisture (%)	-0.66 (-3.78 to 2.33)	-1.66 (-3.23 to 3.14)	-0.49 (-5.61 to 1.79)	-2.29 (-7.22 to 0.48)			
<b>WINTER</b>	Average temperature (°C)	0.61 (0.38 to 0.86)	0.73 (0.56 to 1.01)	1.23 (0.88 to 1.50)	2.12 (1.69 to 2.59)			
	Average rainfall (%)	-3.38 (-13.30 to 8.63)	-5.10 (-12.83 to 7.65)	-5.88 (-17.15 to 3.91)	-9.19 (-21.28 to 5.67)			
	Evaporation (%)	5.94 (0.10 to 12.15)	6.94 (2.31 to 14.66)	11.93 (5.78 to 19.11)	18.13 (8.52 to 37.87)			
	Wind speed (%)	0.30 (-2.80 to 4.33)	1.42 (-1.78 to 7.03)	-0.02 (-4.97 to 4.94)	0.80 (-7.03 to 8.30)			
	Relative humidity (% absolute)	-0.51 (-1.91 to 0.56)	-0.67 (-2.83 to 0.05)	-1.15 (-3.00 to -0.02)	-2.24 (-4.79 to -0.11)			
	Solar radiation (%)	1.98 (-1.92 to 4.93)	2.41 (-0.16 to 6.15)	2.82 (-0.01 to 7.10)	5.44 (1.41 to 12.72)			
	Soil moisture (%)	-1.74 (-5.90 to 1.88)	-2.56 (-7.40 to 1.64)	-3.12 (-7.55 to 1.88)	-5.35 (-10.55 to -1.09)			

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Climate change projections in this data sheet have been generated by CSIRO on behalf of the Victorian Government, and are based on national projections released by CSIRO and the Bureau of Meteorology.

CSIRO has reviewed this publication.

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