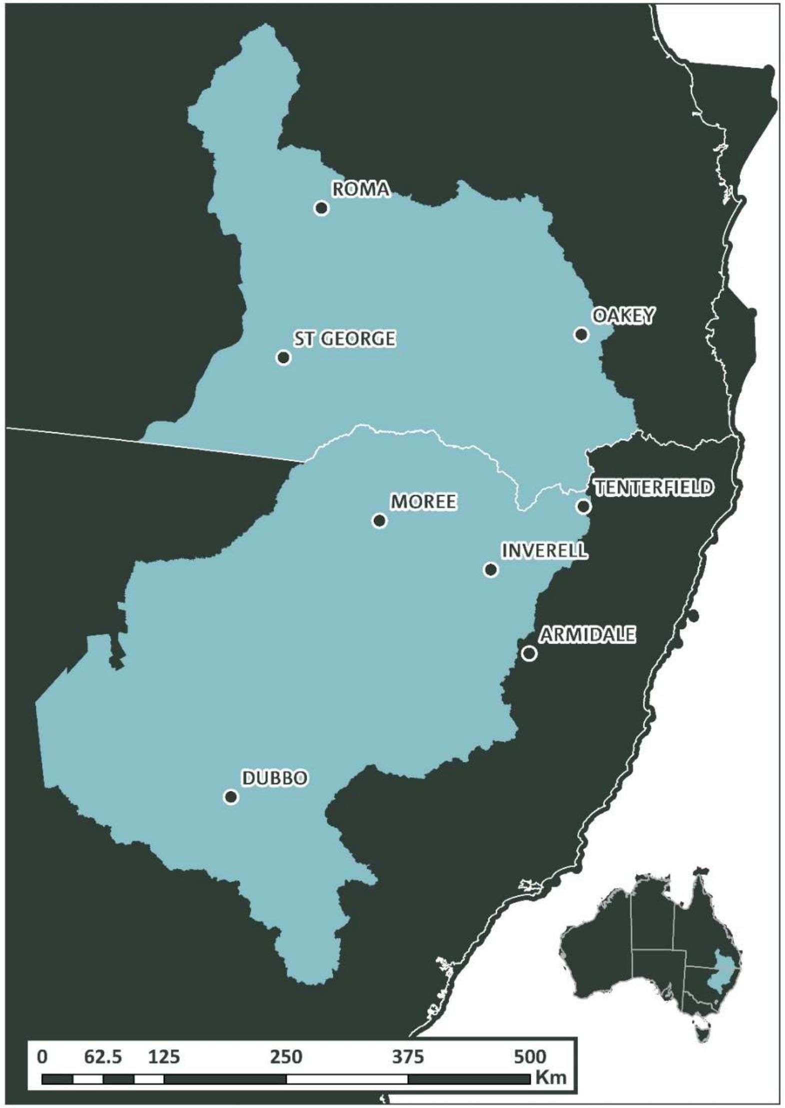
Climate projections for Central Slopes



The following projections are for the Central Slopes cluster, comprising NRM regions to the west of the Great Dividing Range from the Darling Downs in Queensland (Qld) to the central west of New South Wales (NSW).

The cluster features a number of important headwater catchments for the Murray Darling Basin, and is extensively developed for dryland and irrigated agriculture, grazing and forestry.

The cluster area has a range of climates, from sub-tropical in the north, through to temperate in the south, with a typically drier winter and wetter summer.

Some of the content for this Pamphlet drawn from Gerbing, C. Webb, L. and Ekstrom, M. 2015 Central Slopes Cluster brochure, CSIRO and BoM.

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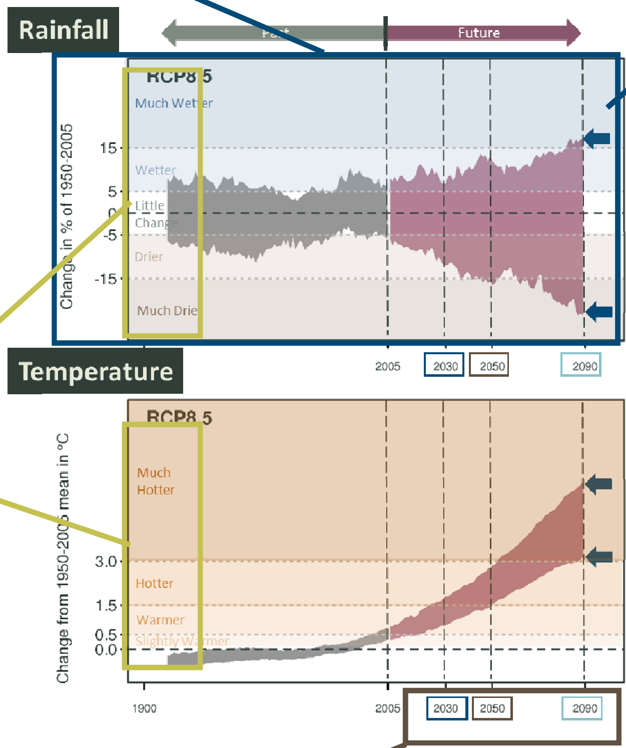
KEY TO THE PROJECTIONS SLIDES

Time series of rainfall (top) and temperature (below) for the historical period (1900 to 2005; grey) and projected period (2005 to 2099; purple) showing the 10th to 90th percentile of the 20-year running mean from 40 CMIP5 models.

Projected period colour code:
Purple: high emissions (RCP8.5)
Blue: intermediate emissions (RCP4.5)
Green: low emissions (RCP2.6)

For adaptation planning, consider top and bottom of the range of plausible change, indicated by the blue arrows.



Descriptions of what could be expected given model representation (40 CMIP5 models) in the various future periods:

2030: Warmer with most models indicating little change in rainfall, but a chance of wetter or drier occurs.

2050: Hotter with most models indicating little change or drier (e.g. – 15 %), with the chance of a wetter climate (e.g. + 10 %).

2090: Much hotter, with most models indicating little change in rainfall through to much drier, although a chance of a wetter climate also occurs.

*Seasonal projections may differ from annual. Seasonal detail shown later.
Maximum model consensus by 2090, if it exists, is indicated by orange bar.
For adaptation planning, consider top and bottom of the range of plausible change. The 2090 range is indicated by the blue arrows.

Categories of warming and rainfall changes are indicated by colour shading on the graph as described in the table:

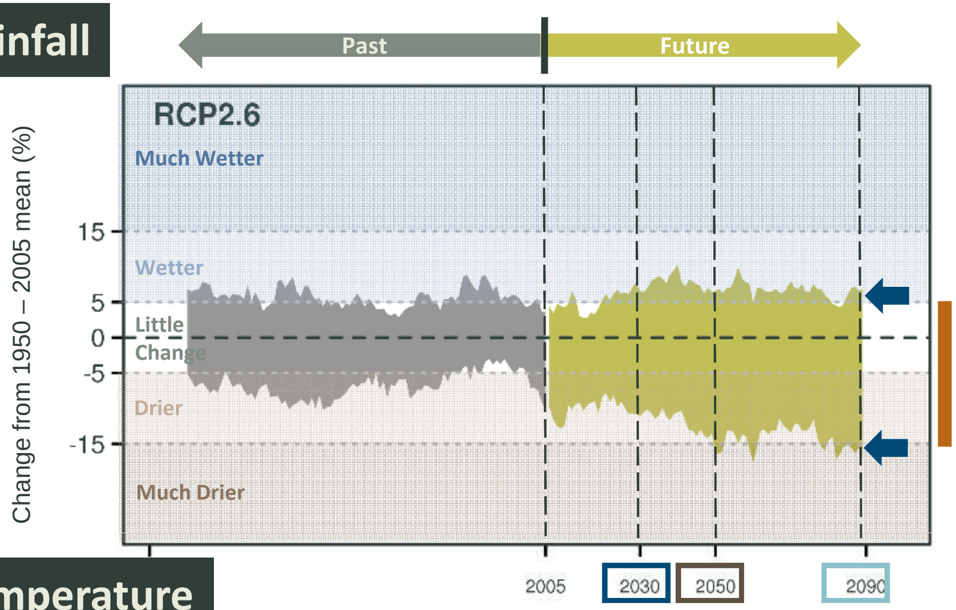
Rainfall (% change relative to 1950 - 2005)	Temperature (degrees Celsius change from 1950-2005)
Much Wetter (> 15 %)	Much Hotter (> 3.0)
Wetter (5 to 15 %)	Hotter (1.5 to 3.0)
Little change (-5 to +5 %)	Warmer (0.5 to 1.5)
Drier (-5 to -10 %)	Slightly Warmer (0 – 0.5)
Much Drier (> -15%)	

Outlook periods explored are 20 year periods centred on 2030, 2050, 2090.

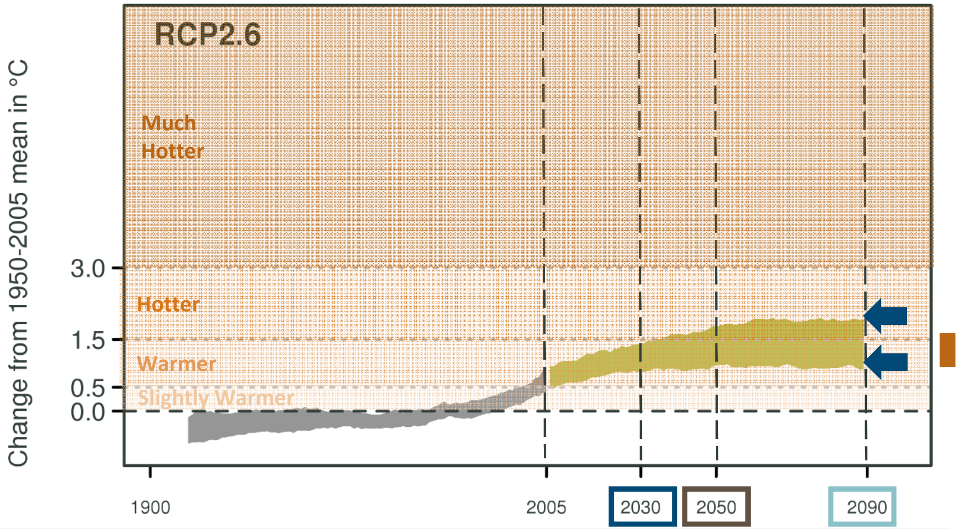
Maximum consensus (at least 33% of models) indicated by orange box. In this example, the maximum consensus future by 2090 could be described as 'much hotter and drier to much drier'.

Climate projections for Central Slopes (annual*) : Low emissions

Rainfall



Temperature



2030: Warmer with most models showing little change in rainfall, although a change in either wetter or drier occurs.

2050: Warmer to hotter, with many models indicating little change in rainfall, although a chance of wetter or drier occurs (e.g. + 10 to - 15 %).

2090: Warmer to hotter with a chance of either wetter to drier or much drier (e.g. + 10 to - 20 %).

***Seasonal projections may differ from annual. Seasonal detail shown later.**

Maximum model consensus by 2090, if it exists, is indicated by orange bar.

For adaptation planning, consider top and bottom of the range of plausible change. The 2090 range is indicated by the blue arrows.

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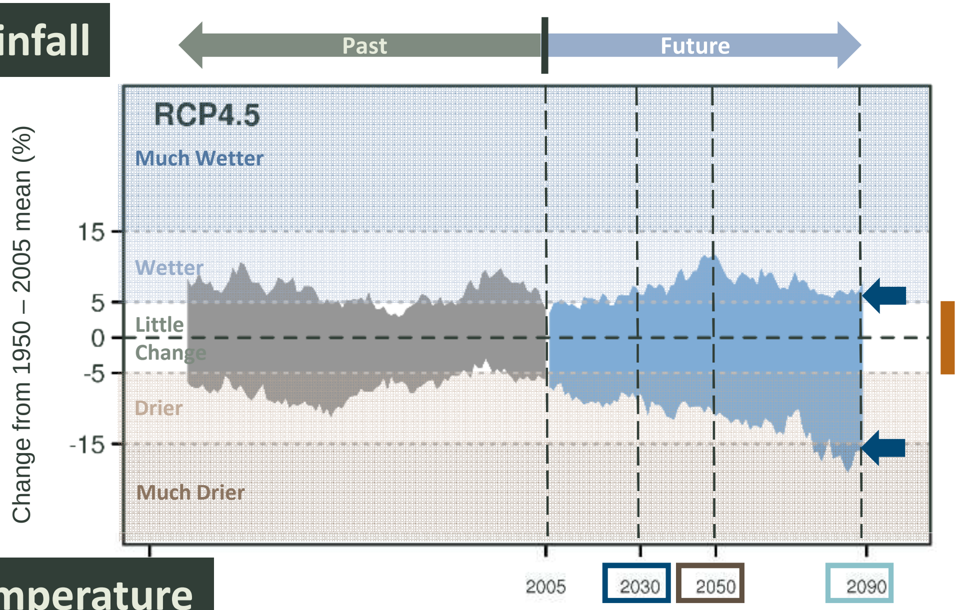
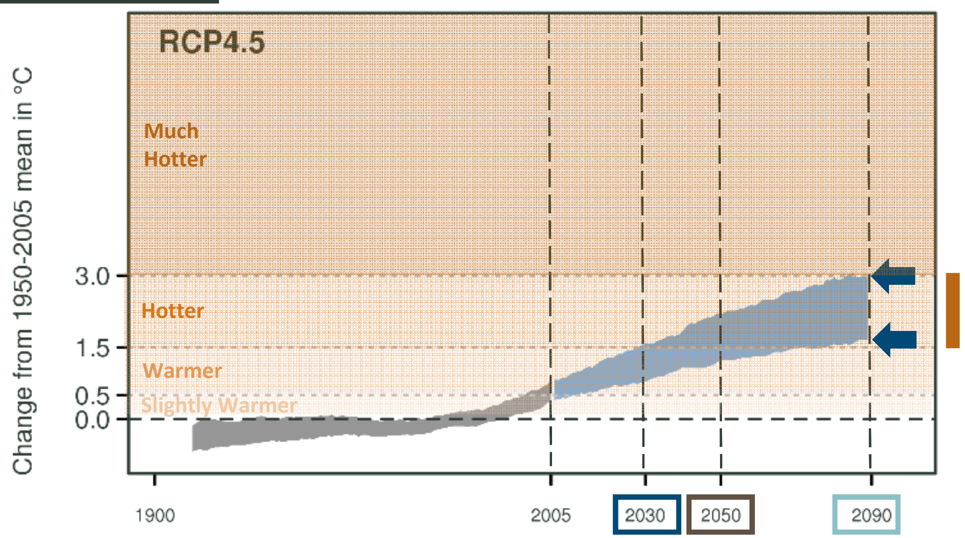
Climate projections for Central Slopes (annual*) : Intermediate emissions

Rainfall



Temperature



2030: Warmer with most models showing little change in rainfall, although a change in either wetter or drier occurs.

2050: Warmer to hotter with many models showing no change in rainfall, though a chance of wetter or drier occurs (e.g. ± 10 %).

2090: Hotter with models indicating either little change in rainfall or a drier climate (e.g. - 15 %).

***Seasonal projections may differ from annual. Seasonal detail shown later.**
Maximum model consensus by 2090, if it exists, is indicated by orange bar.
For adaptation planning, consider top and bottom of the range of plausible change. The 2090 range is indicated by the blue arrows.

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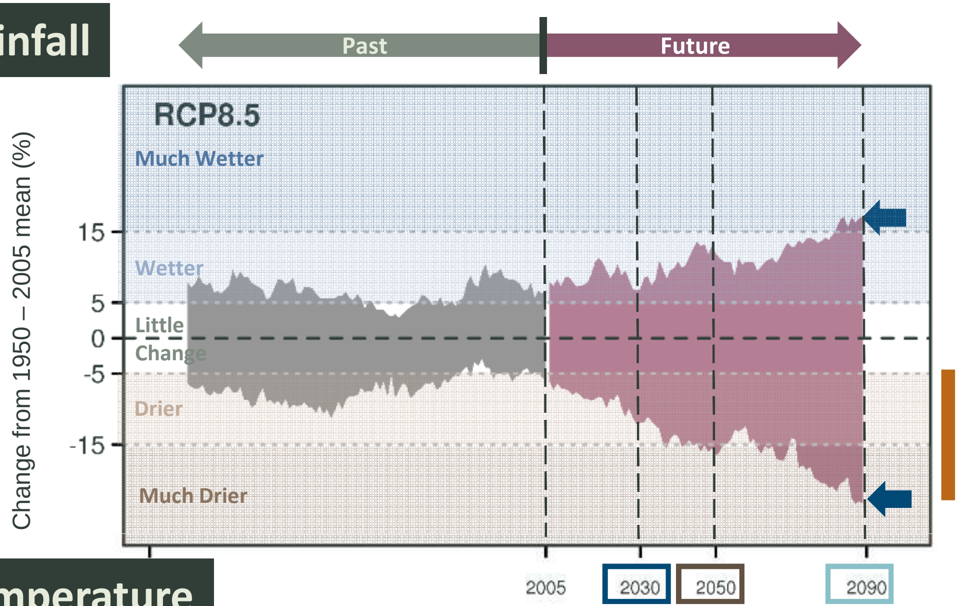
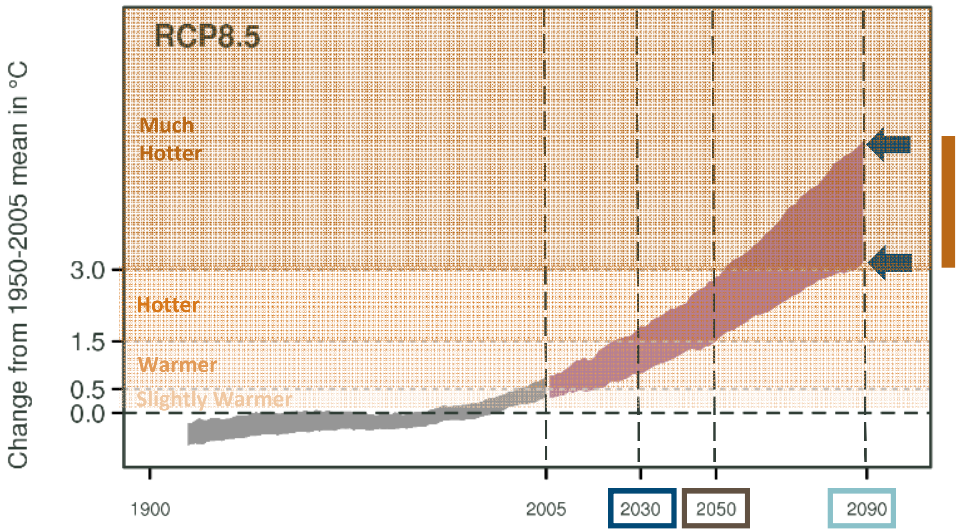
Climate projections for Central Slopes (annual*) : High emissions

Rainfall



Temperature



2030: Warmer with most models indicating little change in rainfall, but a chance of wetter or drier occurs.

2050: Hotter with most models indicating little change or drier (e.g. - 15 %), with the chance of a wetter climate (e.g. + 10 %).

2090: Much hotter, with most models indicating little change in rainfall through to much drier, although a chance of a wetter climate also occurs.

***Seasonal projections may differ from annual. Seasonal detail shown later.**
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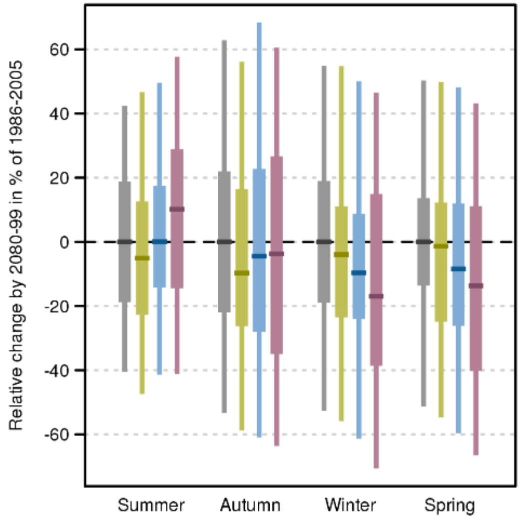
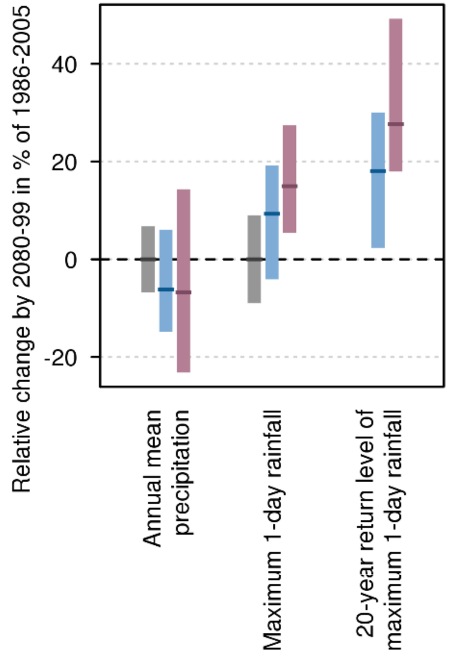
Seasonal Rainfall

Graph shows projected change in seasonal precipitation for 2090 (2080-99) in (from left) summer, autumn, winter and spring. Anomalies are given in % relative to 1995(1986-2005) under RCP2.6 (Green), RCP4.5 (blue) and RCP8.5 (purple). Natural climate variability is represented by the grey bar.



Extreme Rainfall

Modelled differences (per cent) in annual average rainfall, rainfall on the wettest day of the year, and rainfall on the wettest day in 20 years for 2080-2099 compared to 1986 to 2005 under RCP4.5 (blue) and RCP8.5 (purple). Natural climate variability is represented by the grey bar.



Average winter rainfall is projected to decrease with high confidence. There is only medium confidence in spring decrease. Changes in summer and autumn are possible but unclear. For the near future natural variability is projected to dominate any projected changes

Understanding of the physical processes that cause extreme rainfall, coupled with modelled projections (Figure 4), indicate with high confidence a future increase in the intensity of extreme rainfall events, although the magnitude of the increases cannot be confidently projected.

Time spent in drought is projected, with medium confidence, to increase over the course of the century.