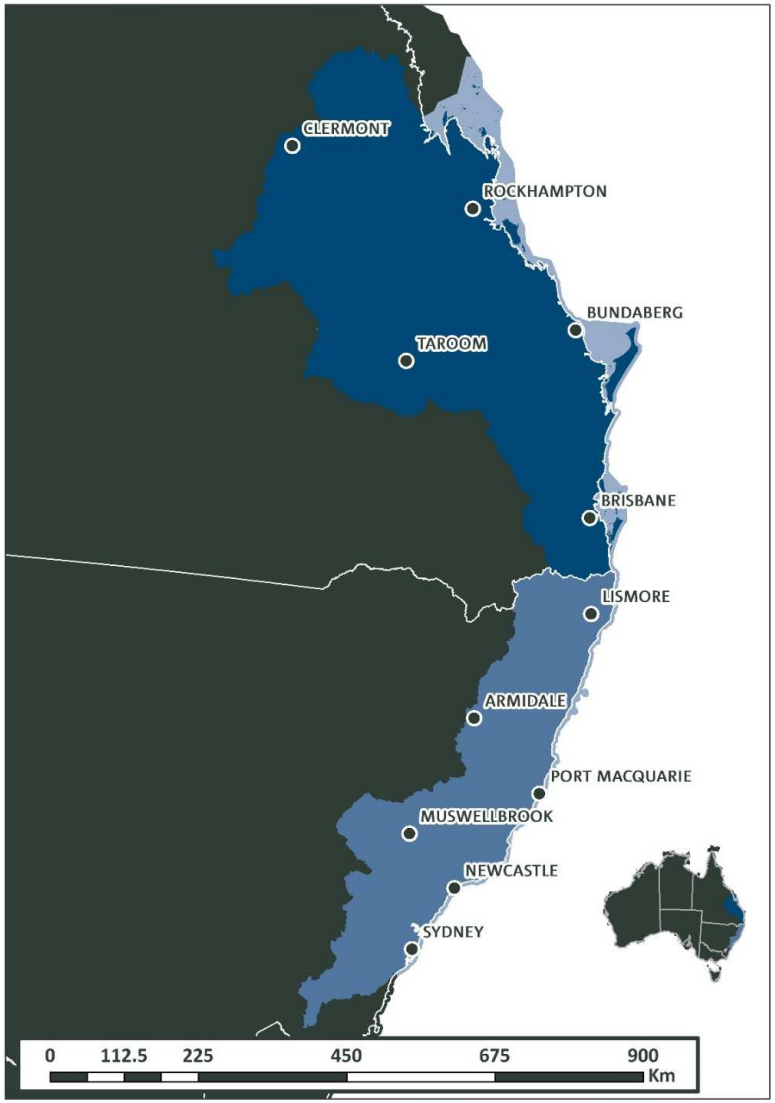
Climate projections for East Coast



The following climate projections are for the East Coast cluster, comprising NRM regions in the central part of the eastern seaboard of Australia. The area encompasses important headwater catchments for a high proportion of Australia's population.

The cluster area has a predominantly sub-tropical climate, with regional variations such as some tropical influences in the north (darker blue in the map) and some temperate influences in the south (lighter blue in the map). Ocean regions of the cluster are shaded even paler blue.

Some of the content for this Pamphlet drawn from Gerbing, C. Webb, L. and Dowdy, A. 2015 East Coast Cluster brochure, CSIRO and BoM.

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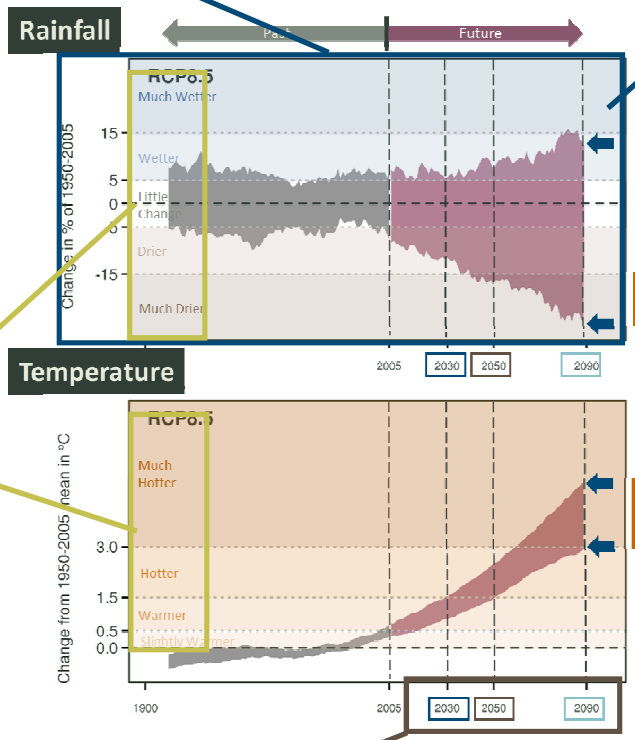
KEY TO THE PROJECTIONS SLIDES

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)

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.

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 little change in rainfall or a drier climate.

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

2090: Much hotter with most models indicating drier or much drier climate, although a chance of little change or wetter exists.

*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.

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

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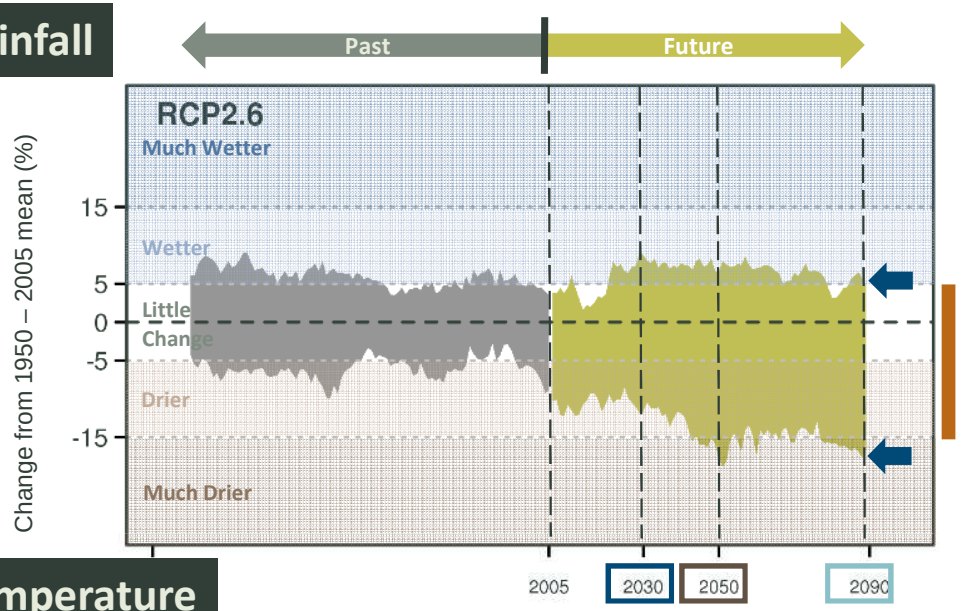
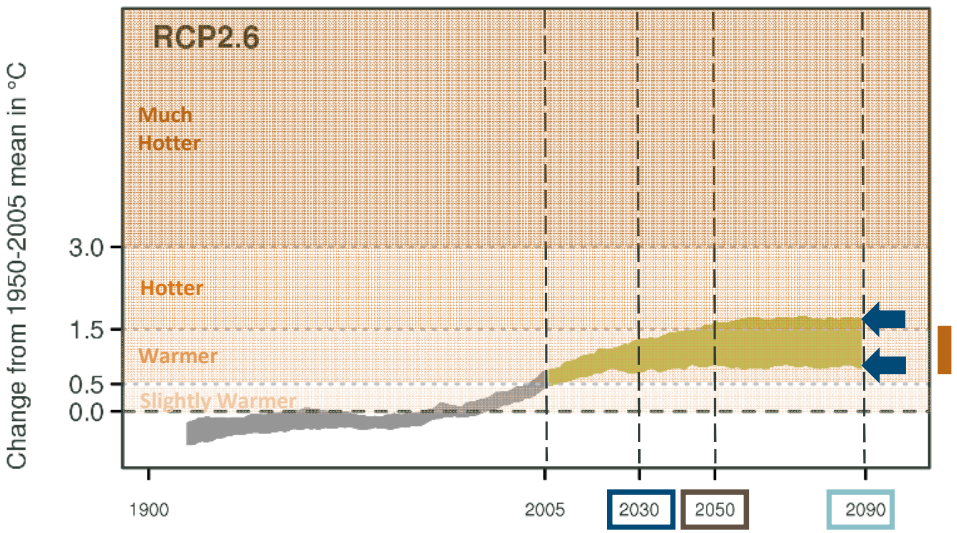
Climate projections for East Coast (annual*) : Low emissions

Rainfall



Temperature



2030: Warmer with most models indicating little change in rainfall, but a chance of wetter or drier (e.g. ± 10 %).

2050: Warmer with a chance of a hotter climate and an equal chance of little change in rainfall, a drier, or a wetter climate (e.g. + 5 % to - 15 %).

2090: Warmer with a chance of a hotter climate, and an equal chance of little change in rainfall, a drier, or a wetter climate (e.g. + 5 % to - 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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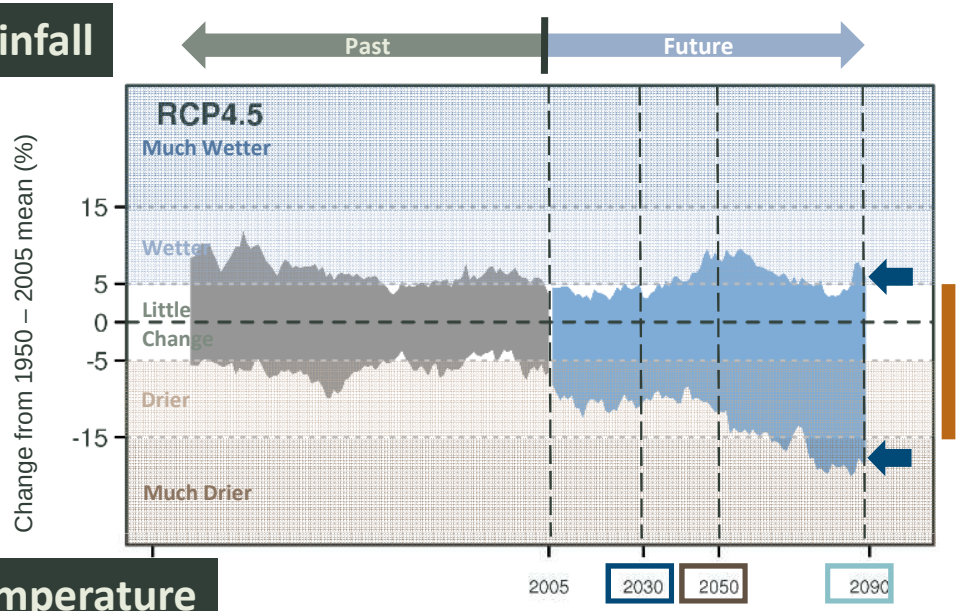
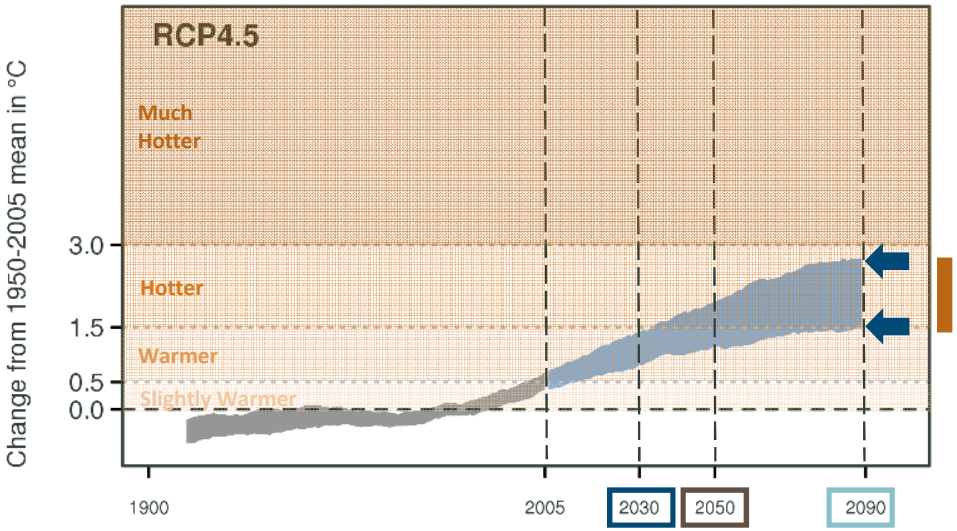
Climate projections for East Coast (annual*) : Intermediate emissions

Rainfall



Temperature



2030: Warmer with most models indicating little change in rainfall.

2050: Warmer with most models indicating little change in rainfall though a chance of drier is possible (e.g. - 10 %).

2090: Warmer to hotter with most models indicating drier, though a chance of little change or wetter exists (e.g + 5 % 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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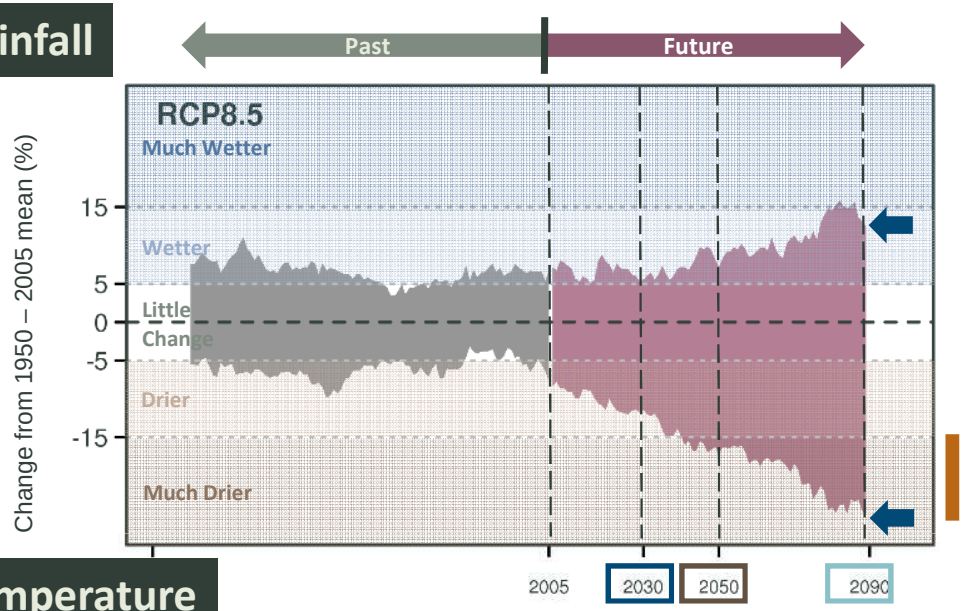
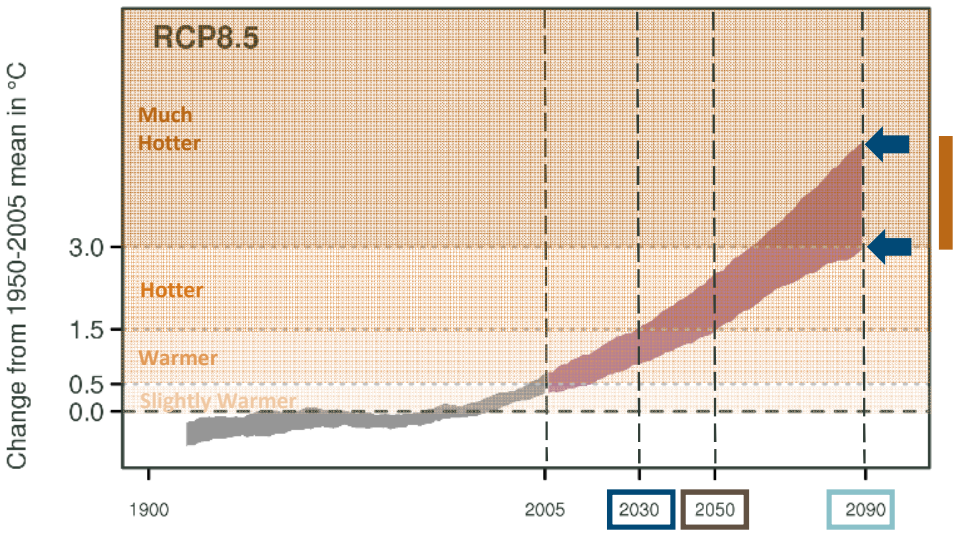
Climate projections for East Coast (annual*) : High emissions

Rainfall



Temperature



2030: Warmer with little change in rainfall or a drier climate.

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

2090: Much hotter with most models indicating drier or much drier climate, although a chance of little change or wetter exists.

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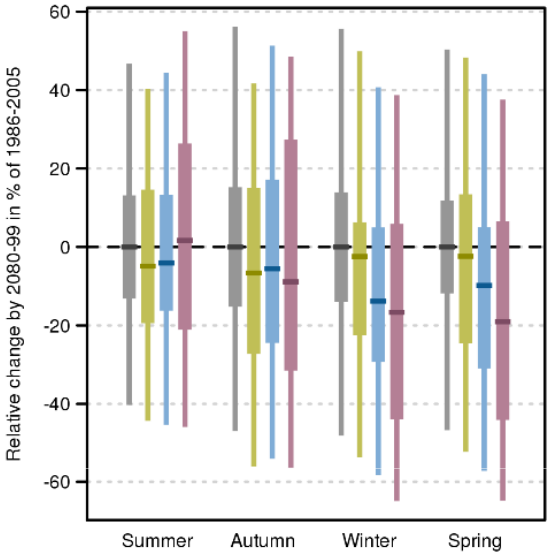
Seasonal Rainfall

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.



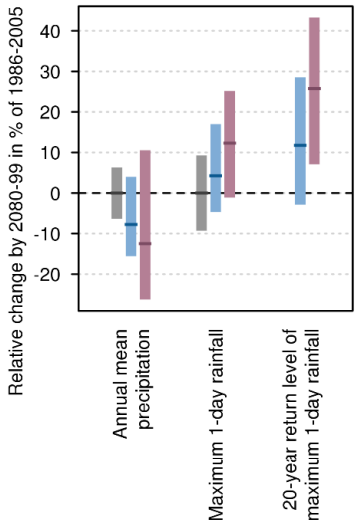
Models show a range of results, with little change or decrease being more common particularly in winter and spring.

However, taking into account uncertainty over driving processes and results from downscaling, it is only in East Coast South in winter that a rainfall decrease is projected with medium confidence.

Natural climate variability is projected to remain the major driver of rainfall changes in the next few decades. Impact assessment in this region should consider the risk of both a drier and wetter climate.

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.



Understanding of the physical processes that cause extreme rainfall, coupled with modelled projections 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.

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