

Projecting local weather based on GCM outputs

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Introduction

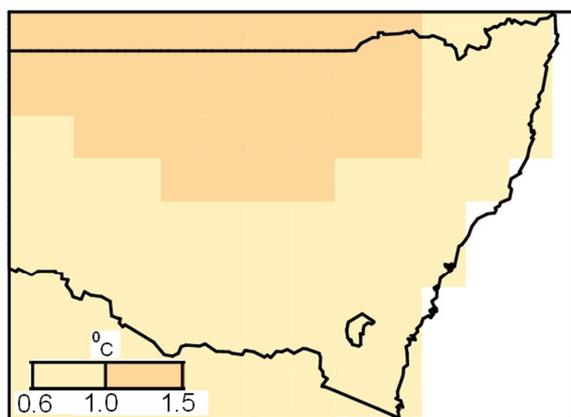
Global Climate Models are extremely powerful but require incredible computing power to run. For this reason the models run at a relatively coarse global scale indicating the likely change in climate across broad areas. The resolution of this depends on the model used but is typically around 200 km.

As computers become more and more powerful resolution is likely to become finer and models are likely to include more complex calculations and interactions

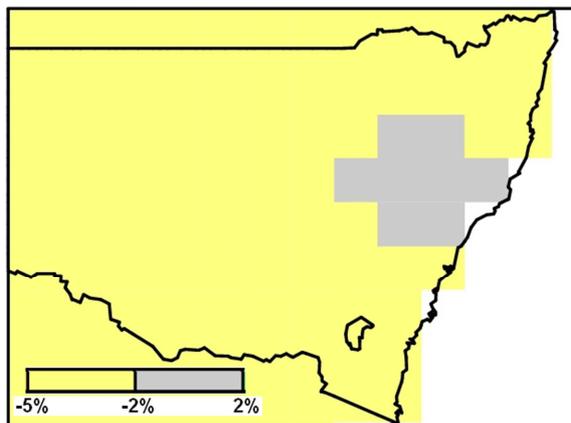
NSW Projections

CSIRO has taken results from an ensemble of the 23 global climate models used by the IPCC to produce regional projections of climate change for a range of variables including temperature and rainfall.

Likely Change in Average Temp to 2030



Likely Change in Annual Rainfall to 2030

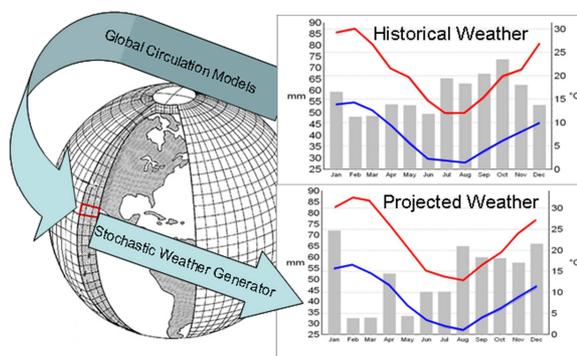


Shown above is the most likely (*ensemble median under high emissions*) temperature change for NSW by 2030. The same ensemble of model outputs indicates average annual rainfall is likely to decrease by up to 5% by 2030.

Turning projections into weather data?

Farm system modelling generally requires daily time step weather data as input to the model calculations. Running models based on historical weather is therefore easily achieved but projecting into the future requires the synthesis of projected weather data.

The weathermaker model from CSIRO uses the GCM regional monthly projections and the characteristics of historical weather data at a locality to produce projected daily weather sets. Historical weather averages and distributions are in line with the regional climate projections for particular GCM's and then a stochastic weather generator used to produce sets of weather data within these statistical boundaries



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