

# Consistent Climate Scenarios

## Introduction

The Queensland Climate Change Centre of Excellence (QCCCE) is undertaking a project to make climate change projections data available to researchers, providing consistency across climate adaptation modelling studies and allowing comparison of model results.

The project, Consistent Climate Scenarios, is funded until June 2012 by the federal Department of Agriculture Fisheries and Forestry's (DAFF) Australia's Farming Future - Climate Change Research Program.

## Why the project is needed?

Currently, researchers studying climate change impacts on primary industries do not have access to climate change projections data in a format suitable for biophysical modelling. This project will provide them with ready-to-use projections data needed to conduct studies on climate change impacts and adaptation, and will provide modelling consistency across all DAFF (and other) projects. The project allows results to be compared and provides economies of scale by making the data widely available to scientists in Australia.

## What will the project produce?

The project will produce Australia-wide projections data for 2030 and 2050 as daily time-series in a format suitable for most biophysical models.

Biophysical models typically require daily climate input data (e.g. rainfall, evaporation, minimum and maximum temperature, solar radiation and vapour pressure deficit) for individual locations or regions. This project will make daily projections data available for these six climate variables on a 0.05 degree (approximately 5 kilometre) grid across Australia. Users will be able to download the data, in model-ready formats, for individual locations or regions.

The projections data will be based on at least 16 Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report global climate models deemed to be most reliable for the Australian region (Suppiah *et al.*, 2007; Smith and Chiew, 2009).

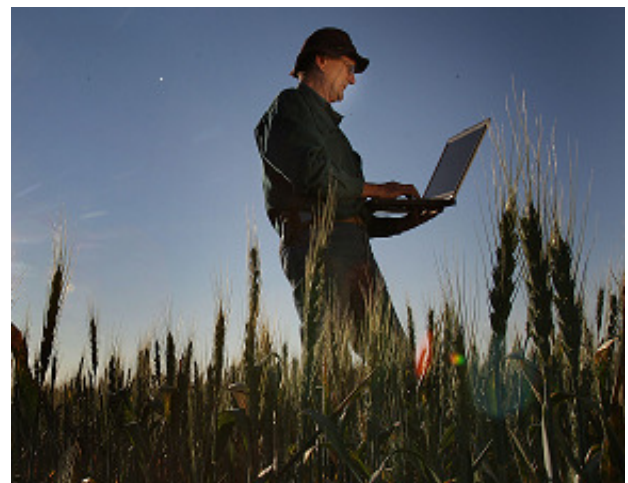
For each global climate model, projections data options will include a range of emissions scenarios and climate sensitivities.

The development of the projections data will be incremental. The initial approach will be to 'scale' historical climate data in the Specialised Information for Land Owners (SILO) database using CSIRO's OzClim 'change factors'. The project aims to distribute projections data based on this approach to DAFF's project teams as early as possible (projections from 8 models were distributed in October 2010 and projections for the remaining models will be distributed by May 2011).

More sophisticated approaches will be implemented based on recommendations from an expert review panel of climate scientists from CSIRO, the Bureau of Meteorology and QCCCE (Crimp *et al.* 2010). The project aims to distribute these projections data to DAFF project teams by December 2011.

## Who will have access to the data?

Following testing by QCCCE, the projections data will first be made available to DAFF's other Climate Change Research Program projects. This will allow modellers to further test and evaluate the data. By June 2012, QCCCE will make the data and a comprehensive User Guide more generally available via the SILO web interface.



Wheat farmer Geoff Hunt uses his computer to access climate information (John Woudstra/Fairfax photos).



## DAFF Climate Change Research Program projects

The 11 projects include:

- A national research program for climate ready cereals – performance of wheat and sorghum under current and future climates (CSIRO)
- Adaptation of a range of wheat types to elevated atmospheric CO<sub>2</sub> concentration (University of Melbourne)
- Developing climate change resilient cropping and mixed cropping/grazing businesses in Australia (CSIRO)
- Relocation of intensive crop production systems to northern Australia: Costs and opportunities (Department of Employment, Economic Development and Innovation, Queensland)
- Agriculture transforming to adapt to climate change: Peanut industry expansion in the Northern Territory as a blueprint (CSIRO)
- Development of effective management strategies to adapt production to mitigate climate change challenges in the wine industry (Grape and Wine Research and Development Corporation)
- Developing improved on-ground practices and institutional policies for managing climate variability and climate change within beef production across northern Australia (Department of Employment, Economic Development and Innovation, Queensland)
- Climate change adaptation in the southern livestock industries (Meat & Livestock Australia)
- Amelioration of thermal stress impacts on animal performance and welfare in southern Australian dairy, beef and sheep industries (University of Melbourne)

- Adaptation of fisheries and fisheries management to climate change in south-eastern Australia – a national case study (Department of Primary Industries, Victoria)
- Consistent climate scenarios (Department of Environment and Resource Management, Queensland)

## Reference

Crimp S., Kokic P., McKeon G., Smith I., Syktus J., Timbal B. and Whetton P. 2010. *A review of appropriate statistical downscaling approaches to apply as part of Phase 2 of the Consistent Climate Projections project*. CSIRO report for Department of Agriculture Fisheries and Forestry - Consistent Climate Scenarios project.

Smith I.N., and Chiew, F. 2009. *Document and assess methods for generating inputs to hydrological models and extend delivery of projections across Victoria*. Final report for South Eastern Australian Climate Initiative Phase 1 Project 2.2.5P.

Suppiah, R., K.J. Hennessy, P.H. Whetton, K. McInnes, I. Macadam, J. Bathols and J. Ricketts. 2007. Australian climate change projections derived from simulations performed for the IPCC Fourth Assessment Report. *Australian Meteorological Magazine*, 56 (3): 131-152.

## More information

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