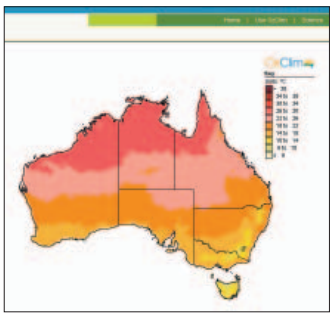
Free online tool maps climate change impacts

OzClim is an online climate scenario modelling application designed for use by those involved in assessing climate change impacts – such as government policy-makers, researchers, planners, non-government organisations and community groups.

The free tool allows users to generate climate change scenarios for the entire country or for particular regions for any date between 1990 and 2100. The scenarios can be presented as a colour map of Australia, or mapped data can be exported from the website for use in other applications. The changes are displayed as absolute values or changes relative to a baseline climate centred on 1990.



Map generated using OzClim showing one scenario for mean temperatures in 2020.

Users can select from six emission scenarios that describe the different energy combinations and economic structures that might eventuate globally, assuming different levels of technological change and clean technology take-up, population growth, 'dematerialisation' and social equity.

OzClim has a spatial resolution down to 25 km and outputs data in a range of different formats – as image files, for GIS applications, or as tab-delimited Excel files.

www.csiro.au/ozclim/home.do

***L'Astrolabe*'s 15 years of voyages from Hobart to Antarctica have yielded a wealth of valuable data on the Southern Ocean and carbon dioxide levels.** Dale Kolody CSIRO

Ocean–climate links revealed

Fifteen years of temperature and salinity readings along a Hobart–Antarctica shipping route are giving Australian, French and US scientists insights into how the ocean controls climate.

The joint data-collection program has involved volunteers aboard the 65-metre French ship, *L'Astrolabe*, on its regular 2700-kilometre voyages between Hobart and the French Antarctic base at Dumont D'Urville.

The data has already shown that the Southern Ocean is warming more rapidly than other oceans and absorbing less carbon dioxide than in the past. It is also providing a clearer picture of the Antarctic Circumpolar Current (ACC), the only current that flows completely around the globe. The ACC flows from west to east around Antarctica, keeping warm ocean waters away from the Antarctic ice sheet.

Scientists are also using the data to investigate:

- carbon dioxide absorption by the Southern Ocean's phytoplankton 'sink'
- changes in surface temperature within the ACC that may feed back to the atmosphere
- the link between sea level rise south of the polar fronts, deep subsurface warming and large-scale wind shifts.

www.csiro.au/news/Ocean-ClimateLinks.html

Pollution changing the weather

Atmospheric pollution is changing the Southern Hemisphere's oceanic circulation, which in turn is causing weather systems across Australia and in other mid-latitude regions to migrate southward, according to a paper recently published in the journal *Geophysical Research Letters*.

The paper's authors, CSIRO's Dr Wenju Cai and Tim Cowan, explain that airborne pollution particles, known as aerosols, cool the Northern Hemisphere's ocean surface, which causes an increase in the transport of heat from the Southern Hemisphere oceans to the Northern Hemisphere oceans via the south Atlantic.

'For the first time, we see that human-generated aerosols are partly responsible for intensifying features such as larger ocean gyres, causing them to shift southward,' says Dr Cai.

Until now, most studies of the impacts from human-generated aerosols have centred on Northern Hemisphere and tropical climate events, such as summertime floods and droughts in China, a weakening of the South Asian monsoon and increasing rainfall trends over north-west Australia.

www.csiro.au/news/HumanGeneratedAerosols.html

Australia, PNG partner in forest carbon initiative

Australia and Papua New Guinea (PNG) have signed an agree-ment to reduce green-house gas emissions from deforestation.

Almost two-thirds of PNG's land area is forested, a 29-million-hectare area that provides livelihoods for many human communities and habitat for seven per cent of the planet's biodiversity.

The PNG–Australia Forest Carbon Partnership will support the two countries' participation in emerging international carbon markets, generating the necessary investment required to reduce emissions significantly from deforestation and forest degradation. Using its experience in national carbon accounting and measurement, Australia will provide scientific, technical and analytical support to assist Papua New Guinea in developing its own national carbon accounting system.

Australian Conservation Foundation (ACF) Director, Don Henry, says the part-nership could position Papua New Guinea and Australia as 'strong, leading voices on climate change on the world stage'.