

Local climate maps uncover species at risk

In research just published in the journal *Nature*, CSIRO and an international team of scientists have revealed global maps showing how fast and in which direction local climates are shifting. The findings point to a simpler way of looking at climatic changes and their likely effects on biodiversity.



Credit: Daniela Ceccareli

As climate change unfolds over the next century, plants and animals will need to adapt or shift locations to track their ideal climate.

‘The maps show areas where plants and animals may struggle to find a new home in a changing climate and provide crucial information for targeting conservation efforts,’ CSIRO’s Dr Elvira Poloczanska said.

The study analysed 50 years of sea surface and land temperature data (1960–2009) and also investigated two future scenarios for marine environments (‘business as usual’ and a 1.75°C temperature increase).

The new maps show where new thermal environments are being generated and where existing environments may disappear.

‘The maps show us how fast and in which direction temperatures are shifting, and where climate migrants following them may hit barriers such as coastlines,’ said the project’s ecological geographer Kristen Williams.

‘Our work shows that climate migration is far more complex than a simple shift towards the poles.

‘Across Australia, species are already experiencing warmer temperatures. In terrestrial habitats, species have started to seek relief by moving to higher elevations, or further south. However, some species of animals and plants cannot move large distances, and some not at all.’

Species migration can have important consequences for local biodiversity. For example, the dry, flat continental interior of Australia is a hot, arid region where species already exist close to the margin of their thermal tolerances.

Some species driven south from monsoonal northern Australia in the hope of cooler habitats may perish in that environment.

‘In the oceans, warming waters and a strengthening of the East Australian Current have mobilised the long-spined sea urchin (*Centrostephanus rodgersii*), previously only found as far south as southern NSW, to invade the eastern Tasmania coast,’ said Dr Poloczanska.

‘This has resulted in the decline of giant kelp forests with knock-on effects for commercially-fished rock lobsters.’

CSIRO and University of Queensland’s Anthony Richardson said the study cannot be used as a sole guide as to what to do in the face of climate change.

‘Biological factors such as a species’ capacity to adapt and disperse need to be taken into consideration,’ Professor Richardson said.

‘But in an unprecedented period of climate change, economic development and fast growing demand on an already pressured planet, we need to act fast to make sure as much of the world’s living resources survive that change.’

The [study](#) involved international researchers from Australia, Canada, Germany, Spain, UK and USA.

To see what’s happening in your backyard download the Google Earth files [here](#).

Source: [Climate Response blog](#)

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