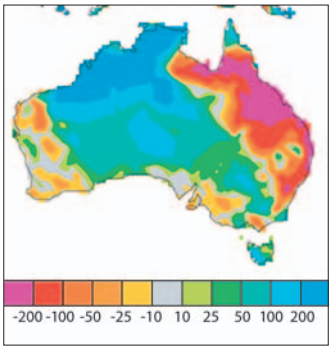
‘Asian haze’ impact on Australian rainfall

Elevated particle emissions resulting from increased economic activity in Asia may have increased Australia’s tropical rainfall, according to new research into the way pollution influences our climate.

‘Until now, there has been ample evidence that these particles have important effects on climate in the Northern Hemisphere but little such evidence in the Southern Hemisphere,’ says CSIRO Marine and Atmospheric Research scientist, Dr Leon Rotstayn.

‘What we have seen in our latest climate simulations is that the “Asian haze” is having an effect on the Australian hydrological cycle and generated increasing rainfall and cloudiness since 1950, especially over north-west and central Australia.



This image shows summer (December–February) rainfall trends in mm per century during 1951–1996. Red colours show where areas have been getting drier, and blue and green colours show where they have been getting wetter. CSIRO

‘The effect occurs because the haze cools the Asian continent and nearby oceans, and thereby alters the delicate balance of temperature and winds between Asia and Australia. It has nothing to do with Asian pollution being transported directly over Australia.’

Dr Rotstayn says this implies that decreasing pollution in Asia later this century could reverse this effect and lead to an increase in Australian drying trends.

‘This is potentially serious, because the north-west and centre are the only parts of Australia where rainfall has been increasing in recent decades.’

Dr Rotstayn says that one of the biggest challenges facing climate scientists is that of representing aerosols – a haze of particles in the atmosphere – in climate models and understanding their influence on cloud formation and rainfall.

‘Because the cooling effect of aerosol pollution is possibly comparable to the warming effect of increased levels of carbon dioxide, the message from this research is that aerosols are an essential inclusion if we are to accurately describe present and future Australian climate.’

Nationwide study of reef that is ‘loved to death’

Western Australia’s unique Ningaloo Reef is to become the focus of a $12 million collaboration between marine experts from eight Australian research organisations.

Led by Dr Neil Loneragan from Murdoch University, the four-year research collaboration will focus on the reef’s biodiversity, habitats, human uses and impact on regional tourism.

Dr Loneragan says Ningaloo is in danger of being ‘loved to death’.

‘The easy accessibility of the reef makes it a lot more vulnerable than somewhere like the Great Barrier Reef, where people need boats for access.

‘The CSIRO team involved is leading the world in its approach to understanding how to manage multiple-use areas like Ningaloo.’

Scientists from Murdoch, Curtin and Edith Cowan universities will work with the University of Western Australia, the University of Queensland and the Australian National University as well as the CRC for Sustainable Tourism and CSIRO’s Wealth from Oceans National Research Flagship.

The first project is a precision aerial survey that captured the 3400 km² of Ningaloo Marine Park in fine detail. The survey will provide data for oceanographic models of the region and the basis for a better understanding of the impact of tourism of the reef.

The collaborative study will comprehensively audit human influence on Ningaloo Reef. Jez Gunnell

The team will survey camping, fishing, snorkelling and diving activities in the area to inform future planning.

‘Another priority is getting an understanding of the biodiversity in some of the zoning regions of the reef,’ says Dr Loneragan. ‘We are focusing on soft corals, sponges and macro algae, which will complement other work being done on fish and invertebrates.’

A team of oceanographers, led by UWA Professor Chari Pattiaratchi, has also begun a pioneering study of the wave, tide and wind-driven hydrodynamics of the reef, lagoon and shelf of Ningaloo.

More information:
Wealth from Oceans Flagship:
www.csiro.au/csiro/content/standard/ps2i5.html