

## In Brief

# Sea levels are rising while storms intensify

A study has confirmed that, under enhanced greenhouse conditions, the sea level in the Australian region is rising at rates that will have a significant impact over decades to come. Higher seas and changes to cyclone intensity are likely to pose a considerable increase in risk to coastal property and infrastructure.

Speaking at the March *Coast to Coast 04* conference in Hobart, Dr John Church, of CSIRO and the Antarctic Climate and Ecosystems CRC, said an analysis for Cairns showed the north Queensland city would be subject to impacts such as storm surges and severe wave conditions.

'The perception is that the main impact is going to be flooding through a combination of longer-term sea-level rise and high tides,' Dr Church said.

'Our analysis is that infrastructure and resource managers in coastal communities need to also factor in a third component likely under global warming – more intense storms.'

Dr Church, who was a lead author on sea-level rise for the Third Assessment Report of the

Intergovernmental Panel on Climate Change (IPCC) released in 2000, conducted this latest research with Dr John Hunter, Dr Kathleen McInnes and Dr Neil White, scientists at CSIRO and the Hobart-based Antarctic Climate and Ecosystems Cooperative Research Centre.

In their study of impacts on Australian coastal communities from climate change, the researchers analysed Australian sea-level records for the period 1920 to 2000.

They drew their basic data from records obtained from tide gauges at Fremantle, Sydney and other locations. These indicated a minimum in the rate of sea-level rise from the mid-1970s to the mid-

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1990s. An assessment for the period 1950 to 2000 showed that sea-level rise around Australia was less than the global average, a result of the trend to more frequent, persist-



Robert Kerron/Science Image Online

**Global warming: an increase in the intensity and frequency of storms and cyclones is expected .**

ent and intense El Niño-Southern Oscillation (ENSO) events since the mid-1970s. During ENSO events, sea level rises in the eastern Pacific Ocean and falls in the western Pacific Ocean and the eastern Indian Ocean. This lower rate of sea-level rise around Australia is not likely to continue indefinitely.

Dr Church pointed out that the 2000 IPCC Third Assessment Report had concluded that it was very likely that the 20th century's warming has contributed significantly to the observed sea-level rise through thermal expansion of sea water and widespread loss of land ice.

'Sea-level rise has the potential to affect millions of people living in low lying coastal regions, particularly the inhabitants of mega-cities developing on coasts around the world and those living on deltas of major rivers and small island nations,' he said.

'For the 21st century, thermal expansion of the oceans is likely to make the largest contribution to sea-level rise.'

## Leading wave energy plant begins construction

Australian company Energetech says its innovative wave energy plant at Port Kembla is on track for start-up at the end of the year, claiming it will put Australia at the forefront of the burgeoning wave energy industry.

The system employs the oscillating water column (OWC) concept, the subject of considerable research over the past two decades, and the most developed type of wave energy device in the world.

The Port Kembla plant has the capacity to light up to 1000 homes, or a football stadium, with savings up to 10 000 tonnes of carbon dioxide each year at full capacity.

The plant will be selling energy into the local grid via Integral Energy.

Three European groups invested US\$3.75 million in 2002 for Energetech's international wave plant development, while the Australian Greenhouse Office recently awarded the leading Port Kembla project a \$750 000 grant.

'This is the first plant in the world to make wave energy commercially viable,' said Tom Denniss, founder-CEO of Energetech. 'It will be one of the most eagerly awaited projects of its kind in the world.'

Over AUS \$1 trillion dollars is expected to be spent globally on wave energy by 2025.



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**A computer-generated image of Energetech's Wave Energy Plant, Port Kembla.**