

**Embargoed to 6pm Australian EST, 6 April 2007**

**Australian Science Media Centre – 6 April, 2007**

## **WATER SECURITY ISSUES WITH CLIMATE CHANGE**

As a result of reduced precipitation and increased evaporation, water security problems are projected to intensify by 2030 in southern and eastern Australia, according to the latest scientific review of water resources in Australia and detailed in the Intergovernmental Panel on Climate Change regional chapter.

In the review, authors agreed that –

- Water resources are likely to become increasingly stressed in some areas of Australia, with rising competition for water supply.
- Regional reductions in rainfall in southwest and inland Australia are likely to make agricultural activities particularly vulnerable in the south and east;
- For water, planned adaptation opportunities lie in the inclusion of risks due to climate change on both the demand and supply side.

Lead author of the regional water review, CSIRO's Dr Bryson Bates, said the impact of climate change on water security is a significant cross-cutting issue and a considerable number of new risk assessments have been undertaken since last IPCC report in 2001. Increases in water demand have placed stress on supply capacity for irrigation, cities, industry and environmental flows.

"In Australia, dryland salinity, alteration of river flows, over-allocation and inefficient use of water resources, land clearing, intensification of agriculture and fragmentation of ecosystems still pose major stresses.

"From 1985-1996, Australian water demand increased by 65%. Per capita daily water consumption is 270 litres for Australia."

Dr Bates said the Murray-Darling Basin, Australia's largest river basin, accounts for about 70% of irrigated crops and pasture.

Annual streamflow in the Murray-Darling Basin is likely to fall 10-25% by 2050 and 16-48% by 2100. Little is known about future impacts on groundwater in Australia.

Potential evaporation (or evaporative demand) is likely to increase. Projected changes in rainfall and evaporation have been applied to water balance models, indicating that reduced soil moisture and runoff are very likely over most of Australia.

Research priorities for water should include further impact assessments and exploration of adaptation strategies for projected changes in drought and floods, and analysis of implications for water security within an integrated catchment framework. This includes impacts on long term groundwater levels, water quality, environmental flows and future requirements for hydro-electricity generation, irrigation and urban supply.

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**Dr Jones is a Coordinating Lead Author of the IPCC and has worked extensively on the risk of climate change on Australia's water resources.**