

# Water-conservation research wins praise

**S**carcity of water could be the issue that triggers our next 'world' war, scientists at CSIRO's Division of Water Resources at Perth have warned.

Water conservation issues have caused continuing conflict in the past between the United States and Mexico, and dramatic rises in per capita water consumption in Arabian Gulf nations have made efficient water use and distribution vital to the development of countries in the region.

Better methods of allocating water and other limited natural resources must be found, says Dr Geoff Syme, head of the division's Social Science Research Group.

Dr Syme and his team are pioneers in this field of study. Their work, together with dry-land salinity research led by division chief, Dr Graham Allison, has earned an Australian award and a nomination for an international prize.

The Australian Water and Wastewater Association's Peter Hughes Award recognises the researchers' contribution to water conservation and means automatic nomination for the Stockholm Water Prize, to be awarded later this year.

Dr Allison says conservation of the world's water supplies is a great challenge requiring research across many disciplines. To create a suitable mix of development and water conservation, research into equitable water use in communities must develop hand in hand with the technical study of water behaviour.

The division has produced research of international importance in both areas. Dr Allison and his colleagues have devised a suite of techniques for estimating groundwater recharge using natural and bomb-produced isotopes.

By using these it was established that, even in very dry areas, changing from native vegetation to pasture increases groundwater recharge up to two orders of magnitude. This has serious consequences when water rises up through the salt storage zone in the soil, leading to environmental degradation.



The same techniques also led to a theory accounting for the natural movement of groundwater, culminating in computer models which allow accurate prediction of salt-loadings in Australia's major river system, the Murray-Darling. Various pumping strategies have now been established to ameliorate the worst effects, and buy sufficient time to implement long-term land use changes.

The division's research into groundwater recharge has proved significant internationally as well as in Australia. Some of their simple techniques are economic and easily carried out in basically-equipped laboratories; a boon for underdeveloped countries in the arid and semi-arid zones. Their research is being applied and extended in various sites across Africa, Israel, China and Saudi Arabia. The detailed knowledge of low rates of underground water movement generated by Dr Allison and his team is also relevant to nuclear waste disposal.

Dr Syme's research, conducted with colleague Ms Blair Nancarrow, evaluated perceptions of fairness and social justice in water allocation. One of five regions studied during the project was a water catchment covering 12% of north-east Tasmania. The people surveyed were concerned about water quality, forestry, land clearing, irrigation and the allocation of water by authorities.

A preliminary 'fairness' evaluation model for assessing decision-making procedures at local levels has been developed as a result of the study. Dr Syme plans to apply the model to five catchments across Australia that experience salinity problems.

Bryony Bennett

Dr Geoff Syme with the Peter Hughes Award.

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