

## What's happening in water research at the University of Adelaide

The Water Research Cluster seeks opportunities to develop partnerships for research projects in water-related fields, and to promote knowledge of current water issues. A summary of current activities and news items is presented in this Newsletter, with water receiving more attention than ever in the current drought conditions.



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*Signs of recovery at Clarks Floodplain after three waterings since June 2005, with regrowth on mature trees and dense new seedlings (photo: Anne Jensen)*

## Visit by Chinese Academy of Sciences to SA

This month, a delegation of 17 Professors and young researchers visited South Australia to identify opportunities for collaboration. The Deputy Vice Chancellor, Professor Alan Johnson, hosted a special forum at the University of Adelaide to welcome the delegation and to re-sign a Memorandum of Understanding between the University of Adelaide and the Research Centre for Eco-Environmental Science, which is an Institute of the Chinese Academy of Science. Professors Sally Smith and Andrew Smith who were instrumental in arranging for the original MoU were also present at the signing ceremony.

Three speakers from the University of Adelaide gave presentations on their research: Dr Fred Recknagel, Prof. Angus Simpson and Dr. David Lewis. There was considerable interest in developing research projects and in encouraging exchanges of early career researchers between the two organisations. Some opportunities for funding Australia–China interactions are provided in [Water Research Links](#).

The Water Research Cluster would like to thank Sandy McConachy, Iris Liu and Professor Alan Johnson for their assistance in organising the event, and Professor Min Yang, Dongyao Wang and the delegation for their cooperation.

## Water Cluster Travel Fund

The Water Research Cluster aims to foster international research cooperation by providing funding support for international travel for academics within the Cluster and for international visitors to travel to Adelaide University. Support is provided primarily to supplement other funding and so at least 50% of the travel costs must be met from other sources.

Priority will be given to travel missions that:

- are designed to develop collaboration that is cross-disciplinary in nature;
- involve more than one member of the Cluster;
- support an early career researcher within the Cluster to develop international linkages;
- will result in the submission of applications for funding for postgraduate scholarships, post-doctoral fellows, ARC Linkage or other research grants, new research centres and/or other collaborative research activities;
- have high scientific merit.

A maximum of \$2,500 is available per applicant (i.e. an application to support travel of two Cluster members can request \$5,000).

Applications will be assessed on a monthly basis by the Water Research Cluster Leadership Panel. An assessment form for applications can be downloaded from the Cluster website. The membership of the Panel is listed at the end of this newsletter. An application form can be downloaded from the Water Research Cluster website or requested from Paul Dalby: [paul.dalby@adelaide.edu.au](mailto:paul.dalby@adelaide.edu.au)

## ARC Success

Dr David Lewis from the University of Adelaide was recently successful in being awarded an ARC Linkage grant for a collaboration with SA Oyster Hatcheries. Currently the preferred food-source for aquaculture hatcheries is concentrated micro-algae, which is expensive to produce. This new project will investigate a novel method for the mass culturing of micro-algae used in aquaculture. Traditionally micro-algae are grown in either open ponds or photo-fermenters, which produce low yields mainly due to the difficulty in controlling the light growth requirements. The growth of micro-algae without light (heterotrophic growth) offers a cost effective and higher yield alternative to traditional photo-systems. Micro-algal species that grow hetero-trophically will be identified and the resultant bio-composition optimised to produce commercially viable micro-algal concentrates for the aquaculture industry. The funding from the grant will be used to support a PhD student to work on the project. The development of the application for this project was supported by the Water Research Cluster.



Professor Qu, the Director of RCEES and Professor Allan Johnson, DVCR University of Adelaide, signing a five year Memorandum of Understanding between the University and RCEES.

## National Water Commission News

### National Water Commission's first full year of operation

The National Water Commission's Annual Report for 2005-06 highlights a year of intense activity by the Commission with a number of milestones reached. Dr John Radcliffe, who is chair of the Advisory Board to the Water Research Cluster, is one of 7 national water commissioners.

To date, funding under the Water Smart Australia Programme has supported 37 projects across Australia with \$476 million towards investments of more than \$1.25 billion to protect and conserve our national water resources.

One of the projects funded under Water Smart Australia during the year was the Remote Reading of Irrigation Water Meters project in the Riverland region of South Australia which will introduce innovative irrigation metering technology and data systems, leading to more precise irrigation schedules, better crop productivity and water savings.

Other achievements for the National Water Commission in 2005 - 06 include:

- reporting to the Council of Australian Governments (COAG) on progress against the NWI, detailing achievements, and listing priorities for reform in June 2006
- guiding the states and territories on the development of National Water Initiative (NWI) implementation plans
- undertaking the baseline assessment of Australia's water resources (Australian Water Resources 2005).

The National Water Commission's Annual Report is available from the publications section of its website [www.nwc.gov.au](http://www.nwc.gov.au)

### Water trading market should include non-users

Source: ABC Online 23/10/06

A National Water Initiative study on water trading has recommended the market be opened up to non-users. The report suggests that those who do not use water should still be able to buy and sell entitlements, because this would make the market more efficient. The initiative's Water Reform Group general manager, Malcolm Thompson, says the report also recommends further transparency for water brokers including price disclosure.

## Who is the Water Cluster?

The Water Research Cluster coordinates water research across the University of Adelaide. The Water Research Cluster has a strong culture of collaboration and support of teams, and has a particular focus on supporting early career researchers.

The Water Research Cluster has specific strengths in the following fields of research:

- Integrated Catchment Management
- Managing Water in Arid Areas
- Managing Wetlands and Rivers
- Sustainable Irrigation
- Wastewater Treatment and Management
- Water Management in Urban Areas.

### Leadership Panel

A Panel of academics from across the disciplines and schools of the University provide strategic direction and management of the Cluster.

Current members of the Leadership Panel are:

- Graeme Dandy (Civil and Environmental Engineering) - Champion
- David Chittleborough (Geology and Geophysics) - Champion
- Angus Simpson (Civil and Environmental Engineering)
- Marcus Lane (Geography)
- David Jones (Architecture)
- Peng Bi (Health)
- David Lewis (Chemical Engineering)
- Mike Geddes (Environmental Biology)
- Justin Brookes (Environmental Biology)
- Mike Young (Environmental Biology)
- Peter Gell (Geography and Environmental Studies)
- Don McMaster (Research Branch).

### Advisory Board

- Dr John Radcliffe (Chair), National Water Commissioner; Chair, Centre for Natural Resource Management
- Mr John Johnson, Managing Director, SA Murray Darling Basin Integrated Natural Resource Management Board
- Mr Fraser McLeod, Director, Knowledge and Information, Department of Water, Land and Biodiversity Conservation
- Mr Tony Smith, Board Member, Water Industry Alliance
- Mr John Ringham, Chief Operations Officer, SA Water
- Dr Wayne Meyer, Chief Scientist, CRC Irrigation Futures
- Mr Tony Lines, Business Development Manager, United Water

### Cluster Coordinator

Dr Paul Dalby

## Post Graduate Corner

### Water Research Cluster Postgraduates Present Results

Two postgraduate students of the Water Research Cluster, Fiona Little of the Environmental Geography group, and Anne Jensen of the River Laboratory, recently had a chance to present their research findings to wetland managers. They were invited presenters at the Murrumbidgee Wetlands Forum in Leeton in the Riverina on 23-24 November. The Murrumbidgee Catchment Management Authority, the Fivebough and Tuckerbil Wetlands Trust and Leeton Tourism sponsored their attendance at the Wetlands Forum.

Fiona presented the results of her palaeo-limnological analyses of sediment cores from 10 Murrumbidgee wetlands to determine their water quality status before European settlement. The project aims to provide a historical context to assess present levels of degradation and to set priorities for rehabilitation management actions. Fiona's presentation generated much interest from the audience, particularly in the potential for wider application of this technique to other sites.

Anne gave a presentation on her study of lignum and results to date, again raising much interest in this little-known plant which is widespread on the floodplains of the Lowbidgee. Anne was able to provide essential information about the characteristics of lignum and its responses to water, and a trial is now proposed in both the Murrumbidgee and Murray valleys next spring on the basis of her observations and hypotheses.

The Murrumbidgee Wetlands Forum was held as part of the five-day Fivebough and Tuckerbil Birding Fair, the first held in Australia. Dr Gillian Gilbert of the Royal Society for the Protection of Birds travelled from the UK to make a special presentation on wetland management for bitterns. She will participate in joint research on the endangered Australasian bittern, which is the symbol for the Ramsar-listed Fivebough and Tuckerbil site. Organisers hoped to attract 800 people to the Birding Fair for workshops, trade stalls and expert presentations, as well as a chance to view the 25-30,000 birds currently visiting the wetlands.



*Fivebough Swamp marsh habitat supports thousands of waterbirds (Photo: Anne Jensen)*

## Next Water Research Cluster Postgraduate Forum

### *Solving the Water Crisis*

Wednesday 6 December 3:30 – 6:00pm

Mystery Venue, City of Adelaide

A thinktank by the Water Research Cluster's finest postgraduate brains, on how to shortcut to practical solutions to the National Water Crisis, while the politicians and managers talk on.

Participants will have the opportunity to propose priority actions to address the water crisis. These could include reducing demand, increasing available resources, re-using resources, and innovation.

Paul Dalby will be the facilitator and will guide discussion based on the proposals. The aim is to develop three proposals for action which could be forwarded to appropriate authorities in government agencies for consideration.

The discussion session will be followed by Christmas drinks sponsored by the Water Research Cluster. All Water Research Cluster postgraduates and other interested parties welcome.

Bookings essential to ensure a seat and catering and for the venue location!

RSVP Paul Dalby – [paul.dalby@adelaide.edu.au](mailto:paul.dalby@adelaide.edu.au)

## The Living Murray

The environmental watering projects which are under contention in the drought crisis are part of the Living Murray Program First Step, which aims to improve the environment at six icon sites across the River Murray system. These sites are:

- Barmah-Millewa Forest
- Gunbower-Koondrook-Perricoota Forests
- Hattah Lakes
- Chowilla Floodplain and Lindsay-Walpolla Islands
- Murray Mouth, Coorong and Lower Lakes
- River Murray Channel.

In 2005-2006 over 36,000 ha or 10% of the icon sites were watered. Very positive environmental responses are reported. However, no new water was available because of dry conditions, so large areas of stressed floodplain remain within the icon sites that need environmental water.

The Living Murray Program has a Community Reference Group of 35 members who represent a range of interests and regions relating to the River Murray. They meet three times a year, and provide advice to the Community Advisory Committee and through them to The Living Murray Committee. For further information, go to [www.thelivingmurray.mdbc.gov.au](http://www.thelivingmurray.mdbc.gov.au)



*Pilby Creek overflowing onto lignum floodplains during recent Living Murray watering.*

## National Water Summit

The historic national water summit of the Prime Minister and selected State Premiers on 7 November generated multiple media items about the water crisis. It was notable that Queensland had to ask to be included in a meeting that focused on the Murray-Darling Basin. A number of controversial issues were raised, including suggestions that environmental flows should be reduced or stopped in favour of consumptive uses.

Most media reported the dramatic statement by SA Premier Mike Rann that the Murray-Darling Basin was facing a one-in-a-thousand year drought. Later more detailed reports indicated that the information provided to the Premiers was in fact that inflows to storages were so low that it was a 1 in 1,000 year event. A good summary of the various points of advice given to the politicians is contained in the article by Asa Wahlquist in 'The Australian', summarized below and given in full on the Water Research Cluster website.

The Prime Minister announced that the Commonwealth would speedily process the projects presented by the States for assessment under the National Water Fund (a process which has already been underway for more than a year). It was also announced at the summit that water trading would begin between NSW and Victoria by the end of the same week and all the eastern States by January 2007. This action had been strongly advocated by the Wentworth group as a critical first step.

Premier Mike Rann said the SA government would immediately begin planning work on a weir at Wellington, although it was hoped that would never need to be used. This announcement caused some consternation locally and raised many questions, and appears since to have been given lower priority at a press briefing by Minister for the Murray Karlene Maywald.

Options for transferring water from northern New South Wales rivers into southern Queensland are also being investigated, amid concerns about inter-catchment transfers from scientists, politicians and local user groups and communities. Other options being considered include pulsing water to reduce evaporation, and even blocking off water flows to wetlands. The Prime Minister said he would support draining wetlands if it meant securing water for communities. This brought protests from the Greens senators.

The Prime Minister announced that contingency plans are being drawn up to secure water supplies during the current drought. A working group will report back by 15 December on plans to secure water supplies during the 2007-08 water year. John Howard said water and climate change issues were already on the agenda for the next Council of Australian Governments meeting in April 2007.

This drought presents some very difficult political problems. There is a sense of urgency and public alarm that requires some immediate action.

## River Has Seen Worse Droughts in 1000 Years

By Asa Wahlquist

The Australian, Nov 11, 2006

The Murray-Darling basin is in the midst of a long-term drought similar to that experienced at Federation - not the worst in 1,000 years. River and climate experts disagree with the one-in-1,000-years call by South Australian Premier Mike Rann this week.

Murray-Darling Basin Commission general manager David Dreverman told the water summit hosted by John Howard on Tuesday that the inflow into the Murray last month was so low as to be classed as a one-in-1,000-year event.

eWater Co-operative Research Centre chief executive Gary Jones said drought was part of the natural cycle of the river. He said wetlands

and billabongs were important drought refuges for native fish, plants and animals, and there would be severe consequences if, as the Prime Minister suggested at the summit, they were drained.

Basin commission chief executive Wendy Craik said the Murray had record low inflows this year. "The long-term average inflow into the Murray is about 11,200 Gigalitres (GL). Our previous minimum-inflow year to date was 1,000 GL and this year, it has been 550 GL."

## Wentworth Group Report

The Wentworth Group of Concerned Scientists has released a report entitled 'Australia's Climate is Changing Australia'. The paper outlines the extent of changes, particularly in relation to reducing water resources, and calls for a major acceleration in the adoption of the National Water Initiative.

The report contains telling graphs of changes in rainfall, temperature and run-off. It concludes with five recommendations:

- buy water for the environment
- regulate to offset further losses from changing land management
- build national water accounting system
- apply same pricing mechanisms to all users, so all pay the full price
- accept desalination, recycling, re-use and urban-rural trade as options for coastal cities.

The report can be read at [http://www.wentworthgroup.org/docs/Wentworth\\_Group\\_On\\_Water\\_Reform.pdf](http://www.wentworthgroup.org/docs/Wentworth_Group_On_Water_Reform.pdf)

Since the release of their report, the Wentworth group has been gathering information from user groups along the rivers of the Murray-Darling Basin. Prof Mike Young reports a consensus among farmers that the rivers are in trouble, no matter who is using the water, and how much is taken. This provides an opportunity for constructive action to manage the system as one unit, which will require some very difficult processes of adjustment.

## South Australian Allocations Progressively Decreased

Source: Indaily 28 Sept, 24 Oct, 2 Nov 2006

The allocation to South Australian irrigators has been reduced from 80% to 70% to 60% because of the drought, in a series of announcements from the Minister for the River Murray, Karlene Maywald. She said that, in the past five years, inflows into the River Murray had been the lowest since records began in 1891. In September 2006, inflows of 112 GL were recorded, compared to the average September inflow of 1,558 GL. 'South Australia will not receive its entitlement flow of 1,850 GL from interstate, so our water supply from the Murray is under enormous stress,' Ms Maywald said. Murray Darling Basin storages were 36 per cent full, compared with the September average of 75 per cent.

In October, Minister Maywald said all environmental programs along the River Murray in the state are being reassessed because of the drought. Ms Maywald told a budget estimates hearing that South Australia does not have the water to spare for Living Murray projects in the Riverland and Lower Murray lakes. 'We've reduced our flow into South Australia by 500 Megalitres a day at the moment to bank some water for January, February and March next year to ensure that we can supply our maximum irrigation requirement.'

There is also pressure from irrigation users and community representatives to stop environmental flows to stressed areas of the Chowilla floodplain and Hattah Lakes, while irrigators' allocations are being cut (Source: ABC Online, Nov 8, 23, 2006).

Reductions to SA irrigators have potential for significant economic loss, as SA plantings are permanent crops based on high security water licences, and these crops cannot be sustained without watering. In contrast, no cotton crops and very few rice crops have received water this season, as these are annual crops with lower security water licences. Suggestions that environmental flows be cut need to take into account the stressed state of the sites being watered, with potential loss of trees hundreds of years old, and detrimental impacts of cutting off a watering cycle before it is completed.

## Sustainable Rivers Audit (SRA)

The state of health of the Murray-Darling Basin is being reviewed in the Sustainable Rivers Audit. A progress report is available from the Independent Sustainable Rivers Audit Group on results and progress during 2004-2005. Assoc Prof Keith Walker of the Water Research Cluster is a member of ISRAG. Substantial reductions in native fish diversity, distribution and relative abundance were recorded. For further information, go to [www.mdbc.gov.au/sra](http://www.mdbc.gov.au/sra)

## SA Signs Watershed Agreement

Source: Indaily 1 Nov 2006

South Australia and New South Wales have signed an agreement to allow permanent trading of water entitlements from the Murray and Murrumbidgee rivers. The deal will allow South Australian irrigators to buy a NSW water licence for permanent use.

## Conference & Seminar Diary

Sources include EnviroInfo Newsletter

### 6th International Symposium on Ecohydraulics

18-23 Feb 2007, Christchurch Convention Centre, New Zealand

The sixth Symposium will focus on bridging the knowledge gap between hydraulics and biology. Specifically, papers are encouraged which address latest understandings on the performance of biota as a function of hydraulic habitats and flow regimes, and how these dependencies can be better modelled.

<http://www.conference.co.nz/index.cfm/eco hydraulics2007>

### Australasian Rivers Workshop: New Frontiers in River Research

6-8 Feb 2007, Canberra and NSW South Coast

This workshop organised by the Australia and New Zealand Geomorphology Group will highlight new frontiers in river research in Australia, New Zealand and the broader region. Specific sessions run by researchers from CSIRO and various universities will cover a number of key emerging river research areas, including:

- Optical dating of river sediments
- Designing successful river rehabilitation experiments
- Use of LiDAR data to study floodplains
- Fallout Plutonium as a time marker

More information: [www.anzgg.org](http://www.anzgg.org)

### Australian rivers: making a difference - 5th Australian Stream Management Conference

22 - 25 May 2007 in Albury-Wodonga

The 5th Australian Stream Management Conference is being convened by Charles Sturt University's Institute of Land, Water and Society. Sponsors include Land and Water Australia, EarthTech, Murrumbidgee Darling Basin Commission and Water for Rivers.

<http://www.csu.edu.au/research/ilws/news/conference.html>

### Eco Summit 2007

Beijing International Conference Centre, Beijing, PR China. 22-27 May 2007

Visit the Eco Summit website at [www.ecosummit2007.elsevier.com](http://www.ecosummit2007.elsevier.com) to learn more, and sign up for Eco Summit Alerts.

### Australian Society of Limnology and NZ Freshwater Sciences Society

Preliminary notice of joint meeting 3-7 December 2007, Queenstown, New Zealand

Updates: <http://limsoc.rsnz.org/>

### 'Water Down Under 2008'

The 'Water Down Under 2008' Conference will be held in Adelaide, South Australia, from 15-17 April 2008, co-hosted by ICE WaRM and Engineers Australia. All professionals with an interest in Hydrology, Water Resources and the Environment are invited to attend, with proposed conference themes including:

- Climate, Rainfall and Surface Variability
- Groundwater Systems
- Hydrological Modelling, Data and Forecasting
- Water Management and Sustainability
- National and International Water Issues and Case Studies.

Professor Graeme Dandy of the Water Research Cluster is Organising Committee Chair. Partners include ICE WaRM, Engineers Australia, SA Water, The University of Adelaide, the University of South Australia, Flinders University, Adelaide City Council, Tonkin Consulting and the Bureau of Meteorology.

Abstract submissions for the conference are now being accepted, with the closing date for submissions being 29 June 2007. For further information, please visit the conference website: [www.waterdownunder2008.com](http://www.waterdownunder2008.com)

## Water Organisation Links

The International Centre of Excellence in Water Resources Management produces the **ICE WaRM eNewsletter**. You can subscribe at <http://www.icewarm.com.au/mailman/listinfo/eneews>

### Land & Water Australia

Land & Water Australia provide significant sources of water-related research information and funding for projects. You can order their 'Mostly Free' Publication Catalogue or go to [www.lwa.gov.au/catalogue](http://www.lwa.gov.au/catalogue)

### Australian Water Association

AWA has a national coordinating committee under way now, to help in the areas of professional development, training and tertiary education for water. Visit <http://www.awa.asn.au/> and view the calendar and weekly newsletter there.

# Water Research Cluster Activities

## Frontiers in Water Policy: The New Stormwater Bill

Stormwater is both a potential threat to infrastructure (through flooding) and a source of water for industry, the environment and communities. South Australia is leading the way in developing new systems and approaches to managing stormwater, which are extracting greater value from this resource through schemes like the Salisbury wetlands and other aquifer storage and recovery mechanisms.

Stormwater management is about to change in South Australia with the drafting of the Local Government (Stormwater Management) Amendment Bill, which will establish a new Stormwater Management Authority to ensure effective coordination and functioning of the State's stormwater management system. The Authority will develop guidelines for and require drafting of Stormwater Management Plans by local councils.

The Water Research Cluster hosted an open seminar on the new Stormwater Management Bill and how it could be used to create the greatest benefits for the state. Speakers included:

- Mr Nicholas Newland, Urban Stormwater Initiative, SA Water
  - Prof Mike Young, University of Adelaide
  - Mr Colin Pitman, Salisbury Council
  - Mr Michael Barry, Local Government Association
  - Ms Sybella Blencowe, Natural Resources Management Council
  - Mr Alan Ockenden, Adelaide & Mt Lofty Ranges NRM Board
- Mr Rod Hook from DTEI kindly chaired the Seminar.
- About 40 people attended the event and participated vigorously in a discussion following the presentations.

## Water Droplets Series Commenced

Over the next few years, Prof Mike Young and Jim McColl plan to continue their highly productive collaboration on water management issues and will produce a regular series of **Droplets**. Each **Droplet** will scope out an opportunity to improve water use and management in Australia. Comments are welcome. The aim is to encourage people to think differently about water management.

**Droplet** No. 1 explores alternative ways to reduce the cost of stormwater management. It introduces ideas such as:

- a stormwater impact offset system
- a tradeable stormwater credit system.

These systems would be designed to encourage private investors to regard stormwater as a resource which could be managed for benefits while reducing its impacts.

**Droplet** No. 2 looks to the accounting profession for insight into better ways to manage water resources. Economic accounting theory suggests that some of the procedures used in water accounting may be 'back to front'. It is suggested that standard accounting procedures such as double entry accounting (matching debits and credits) and account consolidation (to prevent double counting) should be applied to water accounting. The application of the concept of solvency would be a useful way of assessing whether water allocations were sustainable. Water targets would be expressed in terms of delivering downstream targets, rather than upstream releases. These ideas could be used to build a National Water Accounting Framework.

If you would like to subscribe to the **Droplet** list, send an email to [Cathy.Abrahamson@adelaide.edu.au](mailto:Cathy.Abrahamson@adelaide.edu.au) or go to the website at [www.myoung.net.au](http://www.myoung.net.au)

Mike Young is Professor of Water Economics and Management School of Earth & Environmental Sciences, University of Adelaide and CSIRO Water for a Healthy Country Flagship

## Coorong Lower Lakes and Murray Mouth (CLLAMM) Project Update

CLLAMMecology has established sampling sites for a detailed study of the Coorong, the Lower Lakes and the Murray Mouth ecosystems to examine hydrology, aquatic, bird and fish ecology, and social sciences. The postdoctoral positions for the four linked research projects have been appointed and two have already commenced work.

**Dr Daniel Rogers** is the Postdoctoral Fellow for the Key Species Responses (Bird Ecology) project, working with Assoc Prof David Paton. His project experience has included research on the acoustic signals of birds and frogs, including Coorong species. He has worked with waterbirds and terrestrial birds in several habitats and locations, including a postdoctoral position at Lund University in Sweden, where he studies foraging behaviour of White Storks.

**Dr Alec Rolston** is the Postdoctoral Fellow for Key Species Response (Invertebrates), also working with David Paton. Alec graduated from Exeter University and the National University of Ireland. His studies and subsequent postdoctoral research have focused on insect-killing nematodes, prior to his move to Adelaide in October 2006 to join CLLAMMecology.

**Dr Andrew Munro** will commence shortly as the Postdoctoral Fellow

## Global Lake Ecological Observation Network (GLEON) Dr Justin Brookes

<http://gleon.org/> The Water Research Cluster supported Dr Justin Brookes to attend the third GLEON meeting in Taiwan, 30 Sept-4 Oct 2006

"GLEON has the aims of facilitating the remote sensing of lakes around the globe, sharing knowledge and information and provide the tools necessary for analysis and interpretation of data. GLEON is still in its infancy but has support from supercomputing facilities and limnologists, making it a powerful collaboration. The sponsors for GLEON include the Moore Foundation (Gordon and Betty Moore were the founders of INTEL), Taiwanese National Super Computing Centre, Silicon Graphics Inc and Sun Microsystems.

There were about 20 members at our GLEON meeting including Dr. Bill Wang, NSF Director based in Beijing, Prof Hen-biau King, Director of the International LTER program (Long Term Ecological Research); Prof Peter Arzberger, Dean Super Computing Centre UCSD; Prof Tim Kratz, and Dr Paul Hanson, Trout Lake Research Centre Wisconsin; Prof David Hamilton, Waikato University, NZ and a number from the super computing centres in San Diego and Taiwan.

There was considerable discussion on large networks, data warehousing, standard language, data retrieval and architecture but mainly the discussion focused on ecology, interesting lake observations and strategies for building the network. In addition to the sensors network, GLEON is also building a scientific network.

An outcome of this meeting will be a publication on diel oxygen dynamics with data from 17 lakes around the world, due for submission by March 2007. The next publication is on discriminating the roles of physics and biology in determining the oxygen concentrations and variability in lakes. The group is also planning a funding application to the National Science Fund and the Moore Foundation to further build the network.

The next meeting is in Finland in March, and then in Montreal in August 2007, where we have a special session on Lake Sensing at the International Limnology Conference. We will promote GLEON at this event and seek strategic alliances with research groups whose skills and lakes will help build GLEON".

for Key Species Responses (Fish Ecology) with David Paton. Andrew is currently completing an ARC Postdoctoral position with Marine Biology at the University of Adelaide, studying the impacts of fish stocking on native fish populations in the Murray-Darling Basin. His PhD was completed in Montana USA, also in the field of fish and wildlife biology.

**Mr Brian Deegan**, currently completing his PhD at the University of Adelaide, will shortly commence as the Postdoctoral Fellow for Trophodynamics and Productivity, working with Dr Justin Brookes. Brian holds a Masters Degree from the University of Limerick, where he focused on the ecology and distribution of a rare aquatic club-rush, leading to re-introduction into its original habitats.

Each of the projects has developed a Research Plan for 2006-2007. The Key Species Project will be making three ecological surveys of the Murray Mouth and Coorong in November, January and March. On each occasion plants, invertebrates, fish and birds will be sampled. A special focus will be on the distribution of the key food plant *Ruppia* during November.

For information contact: [mike.geddes@adelaide.edu.au](mailto:mike.geddes@adelaide.edu.au)

## Other Water News Items

### Future Design of NRM Delivery Review Released

Source: *EnviroInfo* 29 Sept 2006

A review on the future design of natural resource management programmes has been released, calling on the Federal Government to announce its intentions for NRM delivery post-2008 as soon as possible.

The Review found that there was overwhelming support for the regional delivery of NRM across Australia under the Natural Heritage Trust and National Action Plan for Salinity and Water Quality. Stakeholders emphasised the need for governments, including the Australian Government, to maintain their commitment to natural resource management. They also emphasised the need for an early announcement of the Australian Government's intention with regards to NRM programmes to ensure a smooth transition between the current programmes and any future arrangements. An early announcement would also help to maintain the momentum and goodwill that has been built amongst NRM stakeholders as a result of the regional delivery of NAP and the Trust, particularly within the past two years.

### Shading the Reef

Source: *Indaily* 3 Nov 2006

Vast areas of shadecloth could soon cover parts of the Great Barrier Reef to prevent the future bleaching of coral. The shadecloth is one option being developed by marine researchers in Queensland, who say the cloth would be held in place by floating pontoons. Another option to protect important areas of coral is to spray the water's surface, breaking the surface tension of the water thus increasing the protection of the coral beneath from the sun. Tourism Minister Fran Bailey has welcomed the shadecloth idea today, saying it would help protect some of the most vulnerable areas of the reef. "We're very concerned because this is a \$5.8 billion tourist industry on the reef employing 33,000 people," Bailey said. Opposition environment spokesman Anthony Albanese said the idea was absurd. "There are 2,900 reefs altogether. They go for 2,300 km down the Queensland coast and cover an area larger than the UK and Ireland combined, so that's a lot of shadecloth," he said.



### Pratt Walks Away from Water Disillusioned

By Rod Myer  
Source: *Sydney Morning Herald*, Oct 19, 2006

As water shortages, drought and climate change increasingly threaten Australia's economy and its way of life, packaging king Richard Pratt has walked away from a plan to invest \$100 million in Australia's water sector, saying government had not taken the issue seriously enough. "After spending about five years and \$5 million of his own money on public advocacy for water solutions, Mr Pratt feels he has done all he can to raise awareness," a spokesman said. "Mr Pratt put forward a lot of water-saving proposals and offers of assistance but he came to the conclusion that governments and bureaucracies do not really welcome private sector involvement in water." A study Mr Pratt commissioned on the Murrumbidgee region showed 1.3 million megalitres of water were lost or unaccounted for annually and that savings could be made with irrigation and crop reforms. Mr Pratt also teamed with ANZ to offer subsidised loans to farmers to improve irrigation methods. But the scheme was abandoned due to a lack of take-up.

### Net loss: world's fish stocks could disappear in 40 years

Source: *Indaily* 3 Nov 2006

Fish may be off the menu by 2048 if ocean species continue to be lost at the present rate, a study published today has shown. A major investigation of marine ecosystems around the world predicts their wholesale collapse in the next 40 years. At this point, commercial fishing will no longer be viable. The extent of the crisis is revealed in one of the most wide-ranging and thorough studies of marine biodiversity trends ever conducted. Almost 30 per cent of fished species populations had already reached tipping point in 2003, according to the findings reported in the journal *Science*. Fishing was only one human factor affecting marine biodiversity, said the scientists. Pollution, habitat destruction and climate change all took their toll of fish species. Loss of fish from the oceans had harmful knock-on effects, including a deterioration of water quality, less protection of shorelines, oxygen depletion, and higher numbers of toxic algal blooms.

### Federal Government to Create Office of Water Resources

Source: *EnviroInfo* 29 Sept 2006

The Federal Government is planning to create a new Office of Water Resources in an attempt to take control of the water crisis, and appears likely to create a water ministry later in the year when John Howard reconfigures his cabinet. The Office, to be headed by Dr James Horne, will be connected to the Department of Prime Minister and Cabinet, and will take control of the National Water Initiative and the rehabilitation of the Murray River. It will also co-ordinate the water measures being taken by various departments, including the Department of Agriculture, Fisheries and Forestry, the Department of Environment and Heritage, and the Department of Industry, Tourism and Resource.

### BCA Releases Water Blueprint

Source: *EnviroInfo* 29 Sept 2006

The Business Council of Australia has slammed "20 years of failure" by governments and utilities, and is demanding urgent action to speed water reforms in its new water blueprint. The blueprint, **Water Under Pressure: Australia's man-made water scarcity and how to fix it**, says there is broad understanding of the action required "but what is missing is the political will".

It has found that instead of taking hard decisions to fix the problem, Governments are supporting a flawed water system that is effectively turning sufficient supplies of water at the source into scarcity for householders and business. The blueprint urges a new round of incentive payments to the states, similar to competition policy reforms, to drive a national reform push. The report is available at <http://www.bca.com.au/content.asp?newsID=100665>

### Torrens River Symposium

Options for improving river ecology and water quality of the Torrens River and Lake were discussed at a free public forum sponsored by the Adelaide City Council on 23-24 November. Speakers included Assoc Prof George Ganf of the Water Research Cluster. The symposium concluded that goals and desired outcomes must be clearly defined, to avoid conflicting expectations. Leadership is required from state and local governments, and accountability must be required of major stakeholders. Short, medium and long term strategies are needed with measurable objectives. There was a call at the forum for greater emphasis on the inclusion of youth who would provide clearer visions and enthusiastic support for direct action. There was also concern about the need for support for hundreds of volunteers, and a clear line of reporting to the responsible managers. The forum developed a declaration to be forwarded to Adelaide City Council and the State Government.

# Water Research Links – Funding Opportunities

Note: all relevant ARC, Linkage and International grants have closed for 2006, next calls will be in early 2007

## Watch for new funding opportunities on the Research Branch website

<http://www.adelaide.edu.au/rb/funding/opps.html>

This comprehensive Grant Opportunities page on the Research Branch website provides access to all ARC and NHMRC opportunities as well as the rural and natural resources R&D corporations.

Applications should be submitted to the Research Branch before the sponsor's closing date (1 week before for Australian funds and 2 weeks before for international funds). For instructions on submitting applications, visit <http://www.adelaide.edu.au/rb/funding/>

## China Research Fellowships

The Chinese Academy of Sciences has a Fellowship scheme for International Young Researchers under 35 years with a PhD, to carry out research for 1-2 years within the host institutes of the Academy. The annual stipend is RMB100,000. Applications close on **1 March** and **30 November** each year.

## Arc Linkage: International

The ARC provides funding under Linkage International for the movement of researchers between eligible Australia based research organisations and centres of research excellence overseas, and to foster collaboration and networking between Australia-based and overseas researchers. Linkage International Awards provide funds for Australia-based researchers to participate in joint research projects with overseas researchers establishing new collaborations, strengthening ongoing collaborations and providing international research experience.

[http://www.arc.gov.au/apply\\_grants/linkage\\_international.htm](http://www.arc.gov.au/apply_grants/linkage_international.htm)

## Department of Education Science and Technology Programmes

The Australian Academy of Sciences has a Science Linkages Programme which Funds international science exchanges. This fund is currently closed. The next Expressions of Interest will be called for in April 2007.

DEST support an Australia-China Special Fund for Science and Technology Cooperation (Australia-China Fund). This fund has closed for 2006. It is likely that there will be further rounds in 2007.

<https://sciencegrants.dest.gov.au/isl/Pages/Doc.aspx?name=ChinaFund.htm>

## ICEWaRM Visits and Exchanges Programme

The ICE WaRM International Visits and Exchanges Programme provides an opportunity to industry, vocational education and training and the tertiary education sector and research communities for increased engagement at an international level in the area of water resources management education. Participants on short to medium term visits and exchanges will be able to share skills, knowledge and experiences that will benefit the individual, their home and host organisations and ICE WaRM to enhance the field of water resources management.

Applications for the first round of the International Visits and Exchanges Programme for 2007 are now open. Applications close **26 January 2007**.

<http://www.icewarm.com.au/page.php?pld=185>

## Macquarie Bank Foundation Grants

The Macquarie Bank Foundation's funding criteria are flexible and open. The Foundation welcomes applications for funding from a diverse range of initiatives that are working in innovative ways to provide long term benefits to the community. Each application is assessed on its individual merit. Funding is focused on the core areas of education, health care and research, welfare, the environment and the arts. Applications are considered quarterly. Application forms are available from the web site.

[http://www.macquarie.com.au/au/about\\_macquarie/macquarie\\_in\\_the\\_community.htm](http://www.macquarie.com.au/au/about_macquarie/macquarie_in_the_community.htm)

## Grants for Field Research -- Earthwatch

**Closing Date:** Ongoing

**Purpose:** To create an opportunity for public involvement in significant research that addresses scientific, environmental and policy problems and issues.

**Website:** <http://www.earthwatch.org/research/index.html>

**Contact Details:** Mr Jason Alexandra, Director, Earthwatch Australia  
Email: [JAlexandra@earthwatch.org.au](mailto:JAlexandra@earthwatch.org.au)  
Telephone: (03) 9682 6828

## Ian Potter Foundation

<http://www.ianpotter.org.au/>

**Closing Date:** closing dates for 2007 to be announced (check website)

**Areas of interest:** include Environment & Conservation, Science – innovative, cross-discipline projects encouraged.

## George Alexander Foundation

<http://www.gafoundation.org.au/>

**Closing Dates:** 1 Feb, 4 Jun, 1 Oct 2007

**Areas of interest:** Environment & Conservation – projects to develop partnerships with communities, government and the private sector to prevent irreversible damage to the environment and to encourage the maintenance of biodiversity.

## BHP Corporate Community Program

The BHP Billiton Corporate Community Program manages a key group of partnerships with Australian and International community and environment not-for-profit organizations. In addition to the key partnerships, a small number of national projects from not-for-profit organisations in Australia are selected for support each year. These projects generally fall in the range of \$AUD50-200,000, although a longer-term project could receive this amount annually for up to three years. Applications are considered on 1 March, 1 August and 1 November each year. Application forms are available from the web site.

<http://www.bhpbilliton.com/bbContentRepository/docs/SustainableDevelopment/Community/Guidelines.pdf>

## Herman Slade Foundation

<http://www.hermonslade.org.au/guidelines.html>

**Closing Date:** 16 March 2007

**Areas of interest:** include biological and biophysical sciences. Does not normally cover salaries and stipends.

## Water Info Links

Useful information on water-related topics can be found in the electronic sources listed below.

### EnviroInfo Newsletter

EnviroInfo is a fortnightly eNewsletter for professionals in the natural resources and environment management fields. You can obtain a subscription by sending an email to: [info@envirocentre.com.au](mailto:info@envirocentre.com.au) with the words 'Subscribe EnviroInfo' in the subject line.

EcoVoice environmental newspaper is available online at [www.ecovoice.com.au](http://www.ecovoice.com.au)

### News Splash

News Splash is a regular information email from the Water Research Cluster with a series of short articles of a few lines with links to further information. To register, send an email to [paul.dalby@adelaide.edu.au](mailto:paul.dalby@adelaide.edu.au) with the words Register News Splash in the subject heading. To Unsubscribe, enter the words Unsubscribe News Splash in the subject heading. Send any submissions for News Splash to Paul Dalby.

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The Water Research Cluster newsletter is published once every two months.

The latest version is uploaded to the Water Research Cluster website (<http://water.adelaide.edu.au>). To receive a copy of the newsletter in printed form, send an email to [paul.dalby@adelaide.edu.au](mailto:paul.dalby@adelaide.edu.au) with the words Subscribe Newsletter in the Subject heading. To receive a notification that the newsletter has been uploaded to the website, write the words Subscribe e-Newsletter in the Subject heading.