ReSource

NEWSLETTER JUNE 2011

NATIONAL CENTRE FOR
GROUNDWATER RESEARCH AND TRAINING
sustaining a vital water resource

SCHOOL KIDS VISIT WELLINGTON

COLLABORATING IN WILLUNGA

SCHOLARSHIP WINNERS

THIS EDITION OF RESOURCE HIGHLIGHTS THE CENTRES' OUTREACH EFFORTS AS WE TAKE A GROUP OF SCHOOL STUDENTS ON A HANDS-ON TOUR OF THE WELLINGTON SUPERSCIENCE SITE. WE PROFILE THE WORK OF CENTRE RESERACH ASSOCIATE DR NIKKI HARRINGTON AND PHD STUDENT RACHEL BLAKERS WHO ARE WORKING ON A CRUCIAL MODELLING PROJECT IN THE WILLUNGA BASIN, SA. WE ALSO INTRODUCE YOU TO OUR TWO TALENTED ABORIGINAL GROUNDWATER SCHOLARSHIP WINNERS, LAUREN AND TAHNAE.

FROM THE DIRECTOR

Welcome to the latest edition of ReSource, the quarterly newsletter that updates on you the latest news and events at the National Groundwater Centre. We are already halfway through what is turning out to be an exceptionally full and exciting year.

As mentioned in our last edition we have recruited several new members to the Centre management team (who you can read about in the Announcements section), and on behalf of the Centre I would like to welcome them all into the fold. On this note, I would like to extend a formal welcome to, Laki Kondylas who will fill the Strategic Development Manager role in August. Laki will be vital in moving the Centre forward with strategic thinking and alignment and we look forward to working with him on some ambitious projects.

On another note, we take some time to farewell Ian Acworth from his position as Program 1 Leader and thank him for the commitment and dedication he has shown throughout his leadership. Ian is stepping down as Program Leader to concentrate full time on his role as Director of the Groundwater Super Science Project. The Centre leadership team will continue working with Ian on this important project. In his place we welcome Andy Baker who we are confident can fill the shoes left by Ian and carry on the important work undertaken by members of Program 1.

Reviews of Research Program 1 and 3 have been completed. I would especially like to thank the students for the significant effort they invested in preparing presentations for the independent review team. The review findings have been presented to Program Leaders who are currently developing detailed plans outlining how they will respond to the invaluable insights that the review team provided.

The Centre has entered into a new research collaboration with the Queensland Department for Environment and Resource Management, to examine groundwater discharge in the Burdekin Delta. We are finalising a new research collaboration with the University of Texas which involves work on developing a new Australian-first decision support model that will support our Super Science research in the Willunga Basin.

Arrangements for the next meeting of our International Scientific and Advisory Committee (ISAC) are well advancced and we are looking forward to updating committee members on our progress in Adelaide at the end of this year.

At the time this Newsletter goes to press a large number of our Chief Investigators and students are busy finalising papers and presentations for the Cairns Conference. Perhaps we can mention that the Centre has contributed to the delivery of the conference process and it provides a wonderful opportunity for our researchers to showcase their new work.

The adverts promotiing our next call for PhD candidates will be advertised shortly with applications closing on 31 August 2011. Please contact Kay Brown (kay.brown@groundwater.com.au) for further information.

Best wishes,

Craig T. Simmons

CRAIG SIMMONS

CENTRE HIGHLIGHTS

'the students were encouraged to measure the water level in a groundwater piezometer…'

WELLINGTON FIELD TRIP

On Tuesday May 10, eighteen year 10 students from the Wellington Christian School undertook a field trip to the University of New South Wales Wellington Field station. The students were studying water and groundwater systems as a resource as part of the year 10 science curriculum and were supervised by their science teacher Lukas Butler. Peter Graham, NCGRT PhD researcher and the manager of the Wellington Field Station provided demonstrations and training for the students.

The training included explanation of the groundwater system at Wellington and a simple conceptual model of water flow and recharge. Students were then encouraged to measure the water level in a groundwater piezometer at the site. Following this, a demonstration of the Superscience funded Geoprobe drill rig was undertaken, including collection of a soil profile using the push tube system.

Peter explained to the students the soil profile formation process and students were able to feel the texture change within the soil profile.

The last part of the field trip included measurement of water characteristics in the Macquarie River. Measurements of pH, DO and EC were collected and Peter explained to the students how these parameters influence water quality and what environmental factors may influence variations in the parameters.

SUMMER SCHOOL

The School will be held in Adelaide over five days, 28 Nov - 2 Dec 2011 and will be attended by our PhD and Postdoctoral students. The program will consist of lectures, professional development, motivational speeches, scientific information sessions, networking and social gatherings including a dinner. Invited guests to include visiting international guests, the Minister for Sustainability and Urban Water, Hon. Don Farrell., members of the Centre Advisory Board, Industry Liaison Advisory Committee, Centre Partners, Centre Staff and Chief Investigators. More details regarding this event will be sent out shortly, please ensure it is in your calendars. *All PhD and Postdoctoral students are strongly encouraged to attend this event.*

RESEARCH AMBASSADORS PROGRAM

The NCGRT Research Ambassadors Program is a major innovation of the Centre and represents a commitment to go beyond the exploration of the science of groundwater to produce great science communicators advancing the translation of our research into effective policy and practice. The Program is regarded as a professional development opportunity to increase the skills and exposure of the students in places of influence and have a positive effect on their careers. Thirteen nominated NCGRT Phd and Postdoctoral students participated in this three day intensive program held in Adelaide on 1-3 June 2011. The program was designed by Mark Douglas of Ethos Australia, with the media training being conducted by award winning BBC reporter Sharon Mascall and the advanced presentation skills presented by acclaimed presentation coach and dramatist David Griggs.

BRAND WORKSHOP

The Centre is embarking on a project to explore our core values and messages at a Brand Workshop, being conducted by our advertising agency Showpony. We hope to gain some insights into what the Centre is at its core and what our audience and stakeholders perceive we are. This will allow us to move forward in our communications in a consistent approach and with professionalism, and engage with our stakeholders in a more meaningful way. Outcomes from this workshop will be publicised Centre-wide and we will provide an update on the process in our next newsletter.

RESEARCH HIGHLIGHTS

STATE-OF-THE ART IN GROUNDWATER FLOW MODELLING TO BE DEMONSTRATED AT THE WILLUNGA SUPER SCIENCE SITE

The Willunga Basin, South Australia, has been chosen as the field site for a project to demonstate the innovative applications of groundwater models to address water management issues. A model is currently being constructed to simulate groundwater flow in the aquifer systems in the Willunga Basin, and this will be integrated into models incorporating economic and social issues for use in water planning to examine trade-offs and improve overall social, economic and environmental outcomes. As well as analysing uncertainties associated with future changes in groundwater levels, the hydrological model will allow evaluation of how additional data will reduce these uncertainties.

A number of research projects are already in progress at the NCGRT's Willunga Super Science Site, including investigations of surface water – groundwater interactions in the creek systems, modelling of the seawater interface and a major drilling program and environmental tracer investigation to better understand the regional flow system and inter-aquifer leakage processes. The development of a numerical groundwater flow model, in parallel with these and other planned research projects, is considered to be crucial to maximising their outcomes. Additionally, such a model will provide a basis for some of the NCGRT's Program 2 (Hydrodynamics and Modelling of Complex Groundwater Systems) and Program 5 (Integrating Socioeconomics, Policy and Decision Support) research projects.

A MODFLOW model of the McLaren Vale Prescribed Wells Area (encompassing the Willunga Basin) was developed in 2006 by Resource and Environmental Management Pty Ltd and Aquaterra Simulations Pty Ltd for the Adelaide and Mount Lofty Ranges NRM Board, to assist with water resources management. The model includes a rigorous conceptualisation of the groundwater resource based on the data available and the knowledge of the system at that time and hence provides an ideal foundation for NCGRT's modelling work in the Basin.

However, despite the model's strong basis, the groundwater system in the Willunga Basin is complex and the existing model has some major and well recognised limitations. These have prevented its use as a predictive tool and provide scope for additional work, integrating the outcomes of the NCGRT's research projects with a revision of the model. Knowledge gaps include characterisation and quantification of groundwater fluxes across the Willunga Fault, better characterisation of recharge and aquifer properties, groundwater interactions with creeks and groundwater outflows at the coast. It is anticipated that integration of the modelling work with the technical research projects at the Super Science site will provide an example of best practice in using models to add value to research, as well as providing a better product to the model stakeholders that can be applied to improve knowledge and practical water planning and policy outcomes.

The Willunga Groundwater Flow Modelling Project is being led at Flinders University by NCGRT Researcher Dr Nikki Harrington and will bring together work from across the NCGRT's research programs, as well as involving staff and students from various partner organisations. Rachel Blakers (PhD student, ANU) will apply some model uncertainty analysis techniques to the model and Ty Watson (PhD student, Flinders University) will include it in his project looking at simplicity versus complexity in groundwater modelling. The model will form a component of an integrated model being developed for the Willunga Basin by Program 5 researchers at ANU (Joseph Guillaume, Dr Sondoss El Sawah) and CSU (Dr Michael Mitchell) that could be used to improve water planning and generate discussion among stakeholders about plausible futures for groundwater management in the basin.

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PROFILE

'Geophysics is a powerful tool set which if used wisely can substantially improve our understanding of the hidden world beneath our feet…'

ANNA GREVE, UNIVERSITY OF NEW SOUTH WALES

WHAT IS YOUR ROLE AT THE NCGRT?
I am a Post Doctoral student in program 1B, which aims at Aquitard characterisation. In this role I use different geotechnical techniques (electrical resistivity, micro gravity and seismic refraction) to investigate storage and flow processes in the saturated and unsaturated zone.

WHAT DO YOU HOPE TO ACHIEVE DURING YOUR TIME AT THE NCGRT?
I would love to improve our understanding of flow processes in cracking clays and answer questions like: How deep are soil cracks, how do they change over time, how can we best measure them, how do they influence water infiltration and contaminant transport, how can we predict these processes, and how can geophysics help us to do so…?

WHAT WOULD YOU LIKE TO CONTRIBUTE TO THE FIELD OF GROUNDWATER RESEARCH?
Geophysics is a powerful tool set, which if used wisely can substantially improve our understanding of the hidden world underneath our feet. I would like to contribute to an effective integration of geophysics into groundwater research.

WHAT WOULD YOU LIKE TO SEE ACHIEVED 'BIG PICTURE' IN GROUNDWATER RESEARCH IN 2011?
For the remainder of 2011 I would like to see groundwater research to continue to gain momentum and continue to cross interdisciplinary boundaries.

HOW LONG HAVE YOU BEEN IN YOUR ROLE?
Since March 2010.

WHERE DO YOU SEE YOURSELF IN 5 YEARS?
In a role that offers variety, challenges and freedom to explore.

WHAT DO YOU ENJOY DOING IN YOUR LEISURE TIME?
I love being outside and being active, I like the wind and the weather, love kite surfing, running and spending time in good company.

national ground water association®

NGWA SPECIALTY COURSES

The NCGRT Industry Training team is co-presenting some of our specialty courses with the National Ground Water Association as part of the 2011 program. The NGWA, based in the USA, is the hallmark organization for anyone affiliated with the groundwater industry. A non-profit organisation the NGWA is comprised of more than 12,000 US and International groundwater professionals and its purpose is to provide guidance to members, Government representatives, and the public for the sound management of the world's groundwater resources. The NGWA offer specialty courses in various groundwater related topics and Centre is lucky enough to be collaborating with them to present two courses in Well Design to be held in October.

NCGRT INDUSTRY TRAINING COURSES

Upcoming training courses for 2011 include:

- Modelling and Management
- Groundwater for Decision Makers
- Australian Groundwater School
- FEFLOW Modelling
- Well Design
- Managed Aquifer Recharge
- Surface Water/Groundwater Interaction
- Getting to Know Surface Water/ Groundwater

For more information or to register visit our website:
www.groundwater.com.au/industrytraining

AWARDS & PRIZES

ABORIGINAL GROUNDWATER SCHOLARSHIP

The two deserving winners of the Aboriginal Groundwater Scholarship, co-funded by the SA Department for Water and the NCGRT, are:

Lauren Houthuysen, a Yamatji woman studying a Bachelor of Environmental Science, and;

Tahnae Ditton, a Murri woman studying a Bachelor of Science with a double major in Environmental Hydrology and Water Resources and Ecology, Evolution and Organismal Biology.

The scholarships are the first of their kind to be offered in Australia, which in addition to funding their study will also provide valuable mentoring and future work opportunities.

L-R: Aboriginal Groundwater Scholarship winners Lauren Houthuysen, Tahnae Ditton and Merryn Bailey from the SA Department for Water.

SA WATER HONOURS SCHOLARSHIP 2011

We are pleased to congratulate the two winners of this year's SA Water Honours Scholarship:

Mr Michael Short to undertake his project 'Submarine Groundwater Discharge from the Willunga Basin' and;

Miss Lauren Stephens for her project 'Surface water – groundwater interaction of Willochra Basin, Flinders Ranges, SA'. Both recipients will receive full tuition for their Honours year.

Notably, Centre Director Professor Craig Simmons was awarded the early career researcher Anton Hales Medal in the Earth Sciences for his work entitled 'Variable-density groundwater flow: Approaches, Challenges and Resolutions'.

3 MINUTE THESIS COMPETITION

The School of the Environment round of the 3 Minute thesis competition was held in June, and the 2nd prize went to NCGRT student Dylan Irvine for his presentation entitled: 'Heat as a Groundwater Tracer'.

Dylan now goes into the Faculty competition on the 29th July.

Professor Craig Simmons with Australian Academy of Science President, Professor Suzanne Cory accepting his Anton Hales Medal, courtesy of Mark Graham.

SCIENCE AT THE SHINEDOME 2011

Science at the Shine Dome is an annual three-day event held by the Australian Academy of Science. It incorporates the Annual General Meeting, induction of new Fellows, presentation of awards and a scientific symposium.

TRAVEL GRANT

Rachel Blakers (ANU – Program 5) has been awarded a travel grant to the 'MODFLOW and MORE' Conference in Golden, Colorado in June. Her submission was awarded the best student abstract submitted to the Conference.

FELLOW OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA

Please join us in congratulating our Centre Director, Professor Craig Simmons, on being elected as a Fellow of the Royal Society of South Australia. The Royal Society of South Australia is a Learned Society whose interest is in Science, particularly, but not only, of South Australia. The current interests of members are chiefly in the fields of botany, zoology, biochemistry, geology, geomorphology, palaeontology, geophysics, anthropology, biophysics, soil science and environmental science. The Society was founded on 10th Jan 1853, for "the diffusion and advancement of the Arts and Sciences"

IWC WATER LEADER SCHOLARSHIPS

Master of Integrated Water Management Scholarships open 1 May - 1 August 2011 (Full-time and part-time/distance)
IWC graduates receive a co-badged degree from four leading Australian Univeristies: The University of Queensland, Griffith University, Monash University and The University of Western Australia.

Every year, the International WaterCentre (IWC) awards scholarships to a small number of excellent candidates who are accepted into the IWC Master of Integrated Water Management (MIWM) and clearly demonstrate potential to become future water leaders. Scholarships are open to international and domestic applicants.
Scholarship value:

- Scholarship covers full tuition (AU$41,520) or partial tuition fees* to study IWC Master of Integrated Water Management.
- Scholarship includes health cover for international students.
- Scholarship does not cover travel, accommodation, field-work or living costs.

Visit www.watercentre.org

EVENTS

11TH AUSTRALASIAN ISOTOPE CONFERENCE & 4TH AUSTRALASIAN HYDROGEOLOGY RESEARCH CONFERENCE

12-14 July 2011, Cairns
NCGRT and James Cook University proudly present this joint conference; providing a stimulating forum for the presentation of a diverse range of interdisciplinary Australasian research, spanning the earth and biological sciences.
To view the flyer click here.
To register please visit www.jcu.edu.au/AEIandAHRconferences2011

GEOLOGICAL SOCIETY OF AMERICA ANNUAL MEETING AND EXPO

9-12 October 2011, Minneapolis, USA
Archean to Anthropocene: The Past is the Key to the Future
The GSA annual meeting program offers attendees a rich array of activities including technical sessions, field trips, short courses, award ceremonies, business and social events, and special lectures. The NCGRT will be represented with a booth showcasing our activities.
Register at www.geosociety.org/meetings/2011/

NSW IAH SYMPOSIUM 2011

5-6 September 2011, Dockside Sydney
Hydrogeology in NSW – the Challenge of Uncertainty
Prompted by the huge success of the 2009 Symposium - Groundwater in Sydney Basin and a significant demand by members, the NSW Chapter of the International Association of Hydrogeologists is convening the NSW IAH Groundwater Symposium 2011, Hydrogeology in NSW – the challenge of uncertainty.

The recent focus on the precious groundwater resources of NSW and the uncertainty surrounding resource sustainability has prompted the symposium theme. Uncertainty surrounding natural systems particularly applies to groundwater as does the concepts of risk, resilience and adaptation.

Who should attend? Groundwater professionals in industry, policy makers in government, regional hydrogeologists in NSW, Coal Seam Gas industry representatives,mining industry representatives (coal and metaliferous), consultants,landholders, academics and other interested parties.
See www.3pillarsnetwork.com.au/events/iah-program-2011.pdf

MODISM 2011

12-16 December 2011, Perth Convention Centre
Understanding and living with uncertainty
Abstracts now available please see http://mssanz.org.au/modsim2011

GWFR'2012 INTERNATIONAL CONFERENCE ON GROUNDWATER IN FRACTURED ROCKS

21-24 May 2012, Prague, Czech Republic

GwFR2012 focuses on the occurrence and properties of groundwater in fractured rocks, the most dynamic developing field in hydrogeology.

CHIEF INVESTIGATORS FORUM

28 November 2011, Adelaide
The last NCGRT Chief Investigator Forum was held in Sydney on 8-9 April 2010. This year's Forum will be held in Adelaide on 28 November 2011, in conjunction with the Summer School. More details regarding this event will be sent out shortly, please ensure it is in your calendars.

ANNOUNCEMENTS

PRESENTATIONS
Professor Peter Cook flew to California at the end of May to present a seminar as part of the Lawrence Berkeley National Laboratory Earth Science Division Distinguished Science Seminar series. Professor Cook's seminar was titled 'Quantifying Surface Water – Groundwater Exchange', and discussed the different methods for estimating rates of groundwater flow to streams, particularly highlighting some of the recent work of NCGRT.

VISITORS
Jim Hendry visited the Centre in May and assisted with the Program 1 review process.

PUBLICATIONS
John Doherty, the 2011 NCGRT Distinguished Lecturer, has co-authored a United States Geological Survey fact sheet 'Using Models for the Optimization of Hydrologic Monitoring.

CONGRATULATIONS
from all of us at the Centre to Sondoss El-Sawah and her husband on the birth of their daughter, Basma. A future groundwater scientist in the making!

NEW STAFF
We are pleased to announce the arrival of the following new staff:
Laki Kondylas has accepted the role of Strategy Development Manager and will be joining us on 1st August. Laki has extensive experience in strategy development and is currently working as the Leader of Austrade's US water team based in Washington DC. He will bring a wealth of business development, project management and stakeholder engagement experience to the role.

Tamzin Bullock has accepted the role of Administration Officer and will spend most of her time supporting Peter Cook with his Deputy Director and Program Leader roles – and other support for the Centre team. Tamzin is an experienced administrator and project manager.

Anne Walsh has accepted the role of Finance Officer and will be supporting Sharon and Kay with accounts payable and receivable. She will also help out with industry training team course budgets. Anne has extensive finance experience.

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