

# Program

Australian Groundwater School – Adelaide  
 Flinders Uni, Victoria Square  
 Monday 3 April 2017 - Room 2 (Level 1)



NATIONAL CENTRE FOR  
**GROUNDWATER**  
 RESEARCH AND TRAINING

TIME		THEME/TOPIC	PRESENTERS
8.30am		<b>Registrations and Coffee</b>	
8.45am		<b>Welcome and Introduction</b>	
9.00am	1	<b>The Importance of Groundwater In Australia</b> <ul style="list-style-type: none"> <li>• What is groundwater</li> <li>• Where is groundwater found?</li> <li>• The hydrologic cycle</li> <li>• What is hydrogeology and its history?</li> <li>• Australian groundwater facts and figures</li> <li>• Australian aquifer map. sedimentary basin/fractured province, inset on map</li> </ul>	<b>Prof. Okke Batelaan</b> <i>Dean, School of Environment,            Flinders University</i>
10.00am	2	<b>Introduction to Hydrogeology</b> <ul style="list-style-type: none"> <li>• Factors affecting groundwater</li> <li>• Introduction and examples of aquifer types</li> <li>• Water table and capillary zone</li> <li>• Aquifers &amp; aquitards</li> </ul>	<b>Prof. Okke Batelaan</b> <i>Dean, School of Environment,            Flinders University</i>
11.30am		<b>Morning Tea</b>	
11.45am	3	<b>Introduction to Groundwater Hydraulics</b> <ul style="list-style-type: none"> <li>• Groundwater flow systems</li> <li>• Storage in aquifers</li> <li>• Hydraulic Head</li> <li>• Physical &amp; hydraulic parameters</li> </ul>	<b>Dr Dylan Irvine</b> <i>Lecturer, School of Environment,            Flinders University</i>
12.45pm		<b>Lunch</b>	
1.45pm	4	<b>Surface Water – Groundwater Interactions</b> <ul style="list-style-type: none"> <li>• Introduction to surface water hydrology</li> <li>• Locations and modes of interaction between surface water and groundwater</li> <li>• Water balance</li> <li>• Human impacts</li> <li>• Recharge/discharge definitions and estimation</li> </ul>	<b>Dr Dylan Irvine</b> <i>Lecturer, School of Environment,            Flinders University</i>
2.45pm		<b>Afternoon Tea</b>	
3.00pm	5	<b>Groundwater Dependent Ecosystems</b> <ul style="list-style-type: none"> <li>• Introduction and definition</li> <li>• Types of GDEs</li> <li>• Hydrogeological framework</li> <li>• Methods and indicators used in the determination of GDEs</li> <li>• Level of dependency</li> </ul>	<b>Dr Dylan Irvine</b> <i>Lecturer, School of Environment,            Flinders University</i>
4.30pm		<b>Overview session</b>	<b>Dr Dylan Irvine</b>
5.00pm		<b>End Day 1</b>	

Australian Groundwater School – Adelaide (Flinders Uni Vic Square)  
 Tuesday 4 April 2017 – Room 10.3

TIME		THEME/TOPIC	PRESENTERS
9.00am	6	<b>Groundwater Hydraulics</b> <ul style="list-style-type: none"> <li>• Groundwater flow equations</li> <li>• Borehole pumping tests</li> <li>• Single borehole test</li> <li>• Lab measurements of hydraulic conductivity</li> </ul>	<b>Dr. Michael Teubner,</b> <i>Consultant,</i> <i>MD Teubner Consulting</i>
11.00am		<b>Morning Tea</b>	
11.15am	7	<b>Tutorial</b> <ul style="list-style-type: none"> <li>• Pumping to test an aquifer- a simple example</li> <li>• Groundwater Budget</li> </ul>	<b>Dr. Michael Teubner,</b> <i>Consultant,</i> <i>MD Teubner Consulting</i>
1.15am		<b>Lunch</b>	
1.45pm	7	<b>Tutorial</b> <ul style="list-style-type: none"> <li>• Unconfined groundwater contours</li> </ul>	<b>Dr. Michael Teubner,</b> <i>Consultant,</i> <i>MD Teubner Consulting</i>
3.00pm		<b>Afternoon Tea</b>	
3.15pm	8	<b>Fractured Rock Aquifers</b> <ul style="list-style-type: none"> <li>• Fractured rock provinces in Australia</li> <li>• Classification</li> <li>• Basic Characteristics</li> <li>• Groundwater flow</li> <li>• Locating and mapping fractures</li> </ul>	<b>Dr. Doug Weatherill</b> <i>Senior Groundwater</i> <i>Modeller, Jacobs Group</i> <i>Australia</i>
4.15pm	9	<b>Mining Hydrogeology</b> <ul style="list-style-type: none"> <li>• Mine Dewatering</li> <li>• Dewatering Methods</li> <li>• Impacts of dewatering</li> <li>• Design of dewatering system</li> </ul>	<b>Rohan Baird</b> <i>Senior Hydrogeologist</i> <i>Department of</i> <i>Environment, Water and</i> <i>Natural Resources</i>
5.15pm		<b>Networking Drinks – Treasury: 2 Flinders St, Adelaide SA 5000</b>	
6.15pm		<b>End Day 2</b>	

Australian Groundwater School – Adelaide (Flinders Uni Vic Square)  
 Wednesday 5 April 2017 – Room 10.3

TIME		THEME/TOPIC	PRESENTERS
9.00am	10	<b>Groundwater Modelling</b> <ul style="list-style-type: none"> <li>• What is a model and what is its purpose?</li> <li>• Modelling groundwater flow</li> <li>• Modelling process</li> <li>• Groundwater modeling codes</li> </ul>	<b>Dr. Michael Teubner,</b> <i>Consultant,</i> <i>MD Teubner Consulting</i>
10.00am	10	<b>Groundwater Modelling Application</b> <ul style="list-style-type: none"> <li>• Modelling guidelines</li> <li>• Limitations and pitfalls in modelling</li> <li>• Modelling case study</li> <li>• Management, regulatory issues</li> </ul>	<b>Dr. Michael Teubner,</b> <i>Consultant,</i> <i>MD Teubner Consulting</i>
11.00am		<b>Morning Tea</b>	
11.15am	11	<b>Groundwater Chemistry</b> <ul style="list-style-type: none"> <li>• Why study groundwater chemistry?</li> <li>• Physical and chemical composition of GW</li> <li>• Origin of solutes, evolution in groundwater</li> <li>• Field parameters</li> </ul>	<b>Prof. Andrew Herczeg</b> <i>Director, Geochemical Solutions) and</i> <i>Professor, School of the Environment, Flinders University</i>
12.15pm	12	<b>Environmental Isotopes in Groundwater</b> <ul style="list-style-type: none"> <li>• What are isotopes and their use?</li> <li>• Types of isotopes</li> <li>• Australian examples</li> </ul>	<b>Prof. Andrew Herczeg</b> <i>Director, Geochemical Solutions) and</i> <i>Professor, School of the Environment, Flinders University</i>
1.15pm		<b>Lunch</b>	
2.00pm	13	<b>Groundwater Microbiology</b> <ul style="list-style-type: none"> <li>• Introduction to microbiology</li> <li>• Pathogens in groundwater</li> <li>• Microbial metabolism in groundwater</li> <li>• Bioremediation</li> </ul>	<b>Prof. Howard Fallowfield,</b> <i>Professor</i> <i>Flinders University</i>
3.00pm		<b>Afternoon Tea</b>	
3.15pm	14	<b>Groundwater Contamination</b> <ul style="list-style-type: none"> <li>• Introduction and definitions</li> <li>• Sources of contamination</li> <li>• Fate of contaminants in the sub surface</li> <li>• Groundwater remediation</li> </ul>	<b>Prof. Howard Fallowfield,</b> <i>Professor</i> <i>Flinders University</i>
4.15pm	15	<b>Salinity and Water Logging</b> <ul style="list-style-type: none"> <li>• What is salinity and why is it a groundwater issue</li> <li>• Primary and secondary salinity &amp; its sources</li> <li>• Dryland and Irrigation salinity, water logging</li> <li>• Impacts and management of salinity</li> </ul>	<b>Steve Barnett</b> <i>Principal Hydrogeologist,</i> <i>The Department of Environment, Water and Natural Resources</i>
5.00pm		<b>End Day 3</b>	

Australian Groundwater School – Adelaide (Flinders Uni Vic Square)  
 Thursday 6 April 2017 – Room 10.3

TIME		THEME/TOPIC	PRESENTERS
9.00am	16	<b>Drilling Methods and Bore Design</b> <ul style="list-style-type: none"> <li>Types and purposes of various bores</li> <li>Drilling methods</li> <li>Databases in Australia</li> <li>Methods, variability &amp; limitations of data collection</li> </ul>	<b>Adrian Costar</b> <i>Hydrogeologist/Geophysicist</i> <i>Department of Environment, Water and Natural Resources</i>
10.00am	17	<b>Geophysics</b> <ul style="list-style-type: none"> <li>Surface, airborne, borehole</li> <li>Methods and data processing and interpretation</li> <li>Hydrologic properties derived from geophysics</li> </ul>	<b>Dr. Michael Teubner,</b> <i>Consultant,</i> <i>MD Teubner Consulting</i>
11.00am		<b>Morning Tea</b>	
11.15am	18	<b>Managed Aquifer Recharge</b> <ul style="list-style-type: none"> <li>What is MAR and what is it for?</li> <li>MAR structure types</li> <li>Water sources to MAR</li> </ul>	<b>Dr. Joanne Vanderzalm</b> <i>Research Scientist</i> <i>CSIRO</i>
12.15pm	19	<b>Groundwater Management</b> <ul style="list-style-type: none"> <li>What, why, when and how we manage GW?</li> <li>Principles</li> <li>Tools for groundwater management</li> <li>Management issues</li> <li>Climate change</li> </ul>	<b>Steve Barnett</b> <i>Principal Hydrogeologist,</i> <i>The Department of Environment, Water and Natural Resources</i>
1.15pm		<b>Lunch</b>	
2.00pm	20	<b>Groundwater Governance – Water Law</b> <ul style="list-style-type: none"> <li>Development of water resources law in Australia</li> <li>Essential aspects of the current legal framework</li> <li>Groundwater and water trading</li> </ul>	<b>Prof. Jennifer McKay</b> <i>Professor of Business Law,</i> <i>University of SA</i>
3.00pm		<b>Afternoon Tea</b>	
3.15pm	20	<b>Groundwater Governance – Case Studies</b>	<b>Prof. Jennifer McKay</b> <i>Professor of Business Law,</i> <i>University of SA</i>
4.15pm		<b>Wrap-up</b>	
4.30pm		<b>End Day 4</b>	

Australian Groundwater School – Adelaide  
 Friday 7 April 2017

FIELD TRIP

TIME	THEME/TOPIC	PRESENTERS
8.45am	Depart from 182 Victoria Square, Adelaide Field trip location - Brukunga Mine Office	Dr. Ilka Wallis, Lecturer, (Flinders Uni)
10:00 am	Sign in at Brukunga Mine Office (Nairne)	
10:00 am	Short presentation by Department of Sate Development: <ul style="list-style-type: none"> <li>• History,</li> <li>• Current Acid WTP operation, AMD &amp; WQ monitoring,</li> <li>• Water diversion &amp; Rehabilitation,</li> <li>• Site map &amp; handouts</li> </ul>	Department of Sate Development
11.00am	Site tour: <ul style="list-style-type: none"> <li>• Acid WTP, Tailings Storage Facility, acid &amp; clarifying ponds,</li> <li>• North &amp; South open pits &amp; Waste Rock Dumps,</li> <li>• Retention dam, Diversion channel/pipe, Creeks &amp; Water monitoring wells</li> </ul>	Department of Sate Development
12.30pm	Sign out & departure	
12:45pm	Lunch – Millie’s bakery (Nairne)	
1.45pm	Field site in the Adelaide Hills	Dr. Ilka Wallis, Lecturer, (Flinders Uni)
3.15pm	Bus departs back to Flinders University Victoria Square	
4.30pm	Bus to arrive back in Adelaide	