

# Program

Australian Groundwater School – Adelaide  
 Flinders Uni, Victoria Square Campus  
 Monday 16 April 2018 - Room 2.1 (Level 2)



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> <li>• GDE's</li> </ul>	<b>Dr Saskia Noorduijn</b> <i>Postdoctoral Fellow,            College of Science and            Engineering,            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>Dr Saskia Noorduijn</b> <i>Postdoctoral Fellow,            College of Science and            Engineering,            Flinders University</i>
11.45am		<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, College of            Science and            Engineering,            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, College of            Science and            Engineering,            Flinders University</i>
2.45pm		<b>Afternoon Tea</b>	
3.00pm	5	<b>Practical session</b>	<b>Dr Dylan Irvine</b> <i>Lecturer, College of            Science and            Engineering,            Flinders University</i>
5.15pm		<b>Networking Drinks – Treasury: 2 Flinders St, Adelaide SA 5000</b>	
6.15pm		<b>End Day 1</b>	

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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>Prof Peter Cook</b> <i>Professional Research</i> <i>Fellow, College of</i> <i>Science and</i> <i>Engineering,</i> <i>Flinders University</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>Mr Don Armstrong</b> <i>Consultant, Wallbridge</i> <i>Gilbert Aztec</i>
5.15pm		<b>End Day 2</b>	

Australian Groundwater School – Adelaide  
 Wednesday 18 April 2018 - Room 2.1 (Level 2)

FIELD TRIP

TIME	THEME/TOPIC	PRESENTERS
8.45am	Depart from 182 Victoria Square, Adelaide Field trip location - Brukunga Mine Office	<b>Dr Saskia Noorduijn</b> <i>Postdoctoral Fellow, College of Science and Engineering, Flinders University</i>
10:00 am	Sign in at Brukunga Mine Office (Nairne)	
10:00 am	<b>Short presentation by Department of Sate Development:</b> <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>	<b>Department of Sate Development</b>
11.00am	<b>Site tour:</b> <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>	<b>Department of Sate Development</b>
12.30pm	<b>Sign out &amp; departure</b>	
12:45pm	<b>Lunch – Millie’s bakery (Nairne)</b>	
1.45pm	Field site in the Adelaide Hills	<b>Dr Saskia Noorduijn</b> <i>Postdoctoral Fellow, College of Science and Engineering, Flinders University</i>
3.15pm	Bus departs back to Flinders University Victoria Square	
4.30pm	Bus to arrive back in Adelaide	

Australian Groundwater School – Adelaide (Flinders Uni Vic Square)  
 Thursday 19 April 2018 - Room 2.1 (Level 2)

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,            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,            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>Dr Ilka Wallis,</b> <i>Lecturer, College of            Science and            Engineering,            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>Dr Ilka Wallis,</b> <i>Lecturer, College of            Science and            Engineering,            Flinders University</i>
1.15pm		<b>Lunch</b>	
2.00pm	13	<b>Groundwater Chemistry / Isotopes</b> <ul style="list-style-type: none"> <li>• Practical session</li> </ul>	<b>Dr Ilka Wallis,</b> <i>Lecturer, College of            Science and            Engineering,            Flinders University</i>
3.00pm		<b>Afternoon Tea</b>	
3.15pm	14	<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            Flinders University</i>
4.15pm	15	<b>Groundwater Contamination and Remediation</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            Flinders University</i>
5.00pm		<b>End Day 3</b>	

Australian Groundwater School – Adelaide (Flinders Uni Vic Square)  
 Friday 20 April 2018 - Room 2.1 (Level 2)

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>Mr Adrian Costar</b> <i>Hydrogeologist/Geophysicist</i> <i>Department of Environment, Water and Natural Resources</i>
10.00am	17	<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 Declan Page</b> <i>Group Leader – Environmental Contaminant Mitigation and Biotechnology</i> <i>CSIRO</i>
11.00am		<b>Morning Tea</b>	
11.15am	18	<b>Managed Aquifer Recharge</b> <ul style="list-style-type: none"> <li>The Australian Guidelines for Water Recycling: Managed Aquifer Recharge</li> <li>Risk-based water quality assessment of MAR schemes</li> <li>Managing human health and Environmental risks</li> <li>Worked examples and practical session</li> </ul>	<b>Dr Declan Page</b> <i>Group Leader – Environmental Contaminant Mitigation and Biotechnology</i> <i>CSIRO</i>
12.15pm	19	<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>Mr Steve Barnett</b> <i>Principal Hydrogeologist,</i> <i>The Department of Environment, Water and Natural Resources</i>
1.15pm		<b>Lunch</b>	
2.00pm	19	<b>Groundwater Governance – Water Law</b> <ul style="list-style-type: none"> <li>Case studies / practical session</li> </ul>	<b>Mr Steve Barnett</b> <i>Principal Hydrogeologist,</i> <i>The Department of Environment, Water and Natural Resources</i>
3.00pm		<b>Afternoon Tea</b>	
4.15pm	20	<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> <li>Salinity issues</li> </ul>	<b>Mr Steve Barnett</b> <i>Principal Hydrogeologist,</i> <i>The Department of Environment, Water and Natural Resources</i>
4.20pm		<b>Wrap-up</b>	
4.30pm		<b>End Day 4</b>	