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Chapter  
NSW Branch  
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**Student Night**  
**Tuesday 14 October 2014**  
5:30 pm for 6 pm start  
**Parsons Brinckerhoff offices**  
Ernst & Young Centre  
Level 26, 680 George Street, Sydney CBD

**\*\*For late arrivals, please phone Ellen Kwantes on 0434 996 372 for access\*\***

IAH NSW proudly presents the **2014 Student Night** with presentations by

***Sarah Taylor, PhD student from the University of Sydney, will present a talk titled 'A hydrogeochemical study of shallow saline groundwater in south west Sydney'***

Shallow saline groundwater occurs throughout western Sydney and is associated with the Wianamatta Shales. The salinity is frequently attributed to the marine environment in which the shale was deposited, though it has also been suggested that a modern oceanic source is more likely. This study in the Mt Annan area of south west Sydney aimed to identify the source and extent of shallow saline groundwater. Physicochemical results indicate that local recharge is important, but also indicate a possible regional saline groundwater input. Ion-chloride ratios and stable isotope results indicate evaporative enrichment of rainfall, and oceanic aerosols are the most likely source of salt in the groundwater. Understanding the source of, and mechanisms by which groundwater salinity occurs in the region is essential for developing appropriate management options.

***Juan Carlos Castilla, PhD student from UNSW, will present a talk titled 'Simulating complex human-aquifer interactions in managed groundwater systems using agent-based models'***

Humans interact with groundwater in complex ways, which lead to conflicts over its appropriation and the health of groundwater-dependent ecosystems. These conflicts are usually long-lasting and can be difficult to settle. These complex interactions also pose several challenges for developing meaningful tools (e.g. groundwater models) for decision-support and basin-scale aquifer management. The purpose of this talk is to explore three of the most important challenges and to present a new modelling paradigm/tool that addresses them. In the context of human-aquifer interactions, these challenges are:

- representing the decision-making of a diversity of actors/stakeholders having different motivations, adaptive behaviours and not always following 'rational' principles;
- incorporating the dynamic feedbacks between human decisions and groundwater responses; and
- capturing the essential attributes of system behaviour that we often classify as 'complex' (i.e. nonlinearities, thresholds, tipping points, etc.).

The author will also discuss the potentiality of agent-based models (ABMs) in participatory simulations, groundwater law and education. The final part of the talk will show two example applications of ABMs in the study of groundwater system complexity.

**Please RSVP to:**

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