

Modelling Groundwater in the Urban Environment - Processes and Problems

13 May 9.30am - 4.00pm, Priory Rooms, 40 Bull St, Birmingham B4 6AF
(10 min walk from New Street Station)

The UK Groundwater Modellers' Forum is holding its 13th workshop on new issues and applications in groundwater modelling in the UK.

The Groundwater Modellers' Forum was established following the realisation of the need for bringing together the different scientific communities to enhance the understanding of groundwater modelling and all its interdependent aspects. It also aimed at establishing better links between such communities to enable sharing of knowledge and experience. Over the years, the Forum has proved beneficial to many through establishment of useful contacts and through providing the opportunity to share one's own experience with others.

This year's workshop explores the role of groundwater modelling in the urban environment, in particular the understanding of, and managing issues related, to:

- (1) Contaminant transport
- (2) Water resources and groundwater control measures
- (3) Groundwater flooding.

During the morning session, keynote speakers will introduce these topics by outlining current modelling approaches and issues, as well as through the presentation of recent case studies. These topics will be further explored during the afternoon session which will consist of,

- The Modellers' Fair – Back after the 1st Fair in 2014, and now improved, to showcase new approaches in urban groundwater modelling and
- A group-based decision making game to stimulate discussions and build on the topics presented in the morning.

If you require more information about the workshop please contact one of the meeting convenors:

- Corinna Abesser (BGS): cabe@bgs.ac.uk
- Alastair Black (GW Science) a.black@gwscience.co.uk
- Paul Daily (ESI) PaulDaily@esinternational.com
- Jan van Wonderen (Independent Consultant): jan_van_wonderen@hotmail.com

PROGRAMME	
Morning	0930 – 1000 Coffee
	<p>1000 Contaminant Transport: Urban groundwater pollution modelling - from studies to tools <i>Peter Schätzl (DHI-WASY) – 40 min</i></p> <p>As other groundwater modelling sectors, the simulation of groundwater pollution in urban areas currently undergoes a severe transition process. Rather than being developed and applied within one-time studies, groundwater models are increasingly used as multiple-purpose tools that are available and applied to answer different questions over a longer time period. While opening up completely new ways of model application and stakeholder cooperation, this process also poses a number of challenges for modelling software, modelling approach and even business models. With a number of application examples, it will be shown how the current development may change the way groundwater pollution models are developed, used, and maintained, and how the trend can lead to more efficiency and safety in groundwater quality management.</p>
	<p>1040 Water resources and groundwater control measures: Title tbc <i>Michael Jones (Thames Water) and Charles Jones (Mott MacDonald)– 40 min</i></p>
	<p>1120 Groundwater flooding: Groundwater-induced sewer flooding: from modelling to decision making <i>Chris Jackson (BGS) and Ana Mijic (Imperial College London) – 20 min</i></p> <p>Rising groundwater levels pose serious threats to urban environments. Groundwater infiltration into the sewer network can result in restricted toilet use and the overflow of diluted, but untreated, sewage to road surfaces, rivers and water courses. Increased sewer flows reaching waste water treatment plants then cause overflows and the contamination of the receiving surface water. However, understanding complex interactions between groundwater and urban infrastructure is not a trivial task. In this talk we will present a coupled regional-urban groundwater modelling approach to quantify groundwater inflows into the sewer system. We will discuss how the results can be made useful for water companies, and translated into understanding the future risk of urban groundwater flooding and the development of infiltration reduction plans.</p>
	<p>1140 Groundwater flooding: Modelling groundwater flooding in urban areas <i>Geoff Parkin (Newcastle University) – 20 min</i></p> <p>Persistent groundwater flooding problems in urban areas are often influenced by built infrastructure as well as complex near-surface geology. Recent work is presented on use of 3D geological modelling with an integrated groundwater – surface water model including the influence of anthropogenic features. Limitations of existing modelling for addressing different types of urban groundwater flood problems and possible future directions for model development are discussed.</p>
	1200 Questions + Instructions for the Modellers' Fair + for the game – 20 min
LUNCH	1220 Lunch (buffet lunch provided)
AFTERNOON	<p>1250 Modellers' Fair – 110 min (including 10 min break)</p> <p>A collection of stands, posters and demonstrations around which you can circulate after lunchtime.</p> <ul style="list-style-type: none"> • MODFLOW and MT3D acceleration using graphics cards/ Development of Source Protection Zones and associated streamlined tools, <i>Alastair Black (GW Science)</i> • Coupled simulation for the management of groundwater flooding, <i>Peter Schätzl (DHI-WASY)</i> • Case Study: Use of Groundwater flow and Contaminant Transport Modelling to aid in Determining Down gradient off-site Monitoring Locations for a PCE plume within a Chalk Aquifer, <i>Sean Needham (AECOM)</i> • Groundwater Flooding in Kimpton – integrating groundwater and surface water models

for mitigation options appraisal, Paul Daily (ESI)

- **A cost/benefit approach for determining tracer utility in groundwater investigations, Aidan Foley, Rob Low (Water Tracing UK)**
- **On-Demand Modelling, Andrew Kingdon, Lei Wang (BGS)**
- **Assessing the effects of construction and site operation on groundwater flow and quality, Simon Quinn (Amec)**

1440 Contaminant Transport ‘Game’ – 60 min (including Coffee break)

The game is based on a pollution scenario set around a factory on the unconfined Chalk which has been discharging an organic nasty to a soakaway lagoon for 30 years without consent. Participant will work in groups to design a scheme that will reduce the risk of contamination to other water users and prevents the closure of the plant. Each group will have a limited budget and will be given a limited amount of site-specific information (e.g., GW head contours, potential receptor locations and concentration values in on-site BHs) based on which they have to determine the ‘best’ solution to the problem. The game is intended to highlight the importance of interaction and thinking through the problem quickly, and to demonstrate how models can be used to trial different conceptual models and treatment options.

1540 Questions and closing remarks – 20 min

1600 End



BOOKING

This meeting is expected to be very well attended so it is recommended that you register early to avoid disappointment. **Places are limited to 80 participants (including 5 student places)** which will be allocated on a first come-first served basis.

Costs for the meeting are **£87 (non-members), £67 (members + retired) and £27 (students)**, which includes lunch and the Geological Society's online booking fee of £7.

Registration and payment for this event must be made in advance. The deadline is **30 April 2015**.

For details on how to register and pay, please visit the Hydrogeological Group's web page for this event at <http://www.geolsoc.org.uk/Modelling-Groundwater-in-the-Urban-Environment>.

All payments must be made through the Geological Society.

If you require more information about booking please contact Laura Griffiths (Email: laura.griffiths@geolsoc.org.uk / phone: 020-74320983).