



What can we really get out of a borehole?

Borehole v regional scale assessments

19th November 2008, 10am – 4pm, Priory Rooms, central Birmingham

The UK Groundwater Modellers' Forum is holding its 7th workshop on the subject of Borehole versus Regional Scale Assessments on the 19th November, 2008 at the Priory Rooms, Birmingham.

Background

Over the last decade the Environment Agency has made a significant investment in regional groundwater models and water companies have been standardising their approaches to the assessment of borehole yields. However, the process of transferring results/understanding between these two different scales has raised a number of issues, particularly with the recent need to assess the implications of climate change on borehole yields. Recent developments in understanding groundwater flows at the borehole scale have important implications for this process of translation. The objectives of the workshop are therefore to:

- Consider what exactly a pumped/static water level in a borehole represents;
- Groundwater behaviour around boreholes under pumped and rest conditions;
- Improved methods for representing abstraction boreholes in regional models;
- Understanding how to translate regional model results to the borehole scale;
- Make recommendations on best practice and future R&D.

Programme

Invited Presentations	
MORNING	Bridging the gap between boreholes and regional models Mike Streetly, ESI (Chair) Setting the scene for the day: issues that have arisen in using borehole scale results in regional model development and vice versa (issues that have arisen in applying regional model results to borehole yield assessments). Is this just a scale issue, or are there different processes operating at the local scale?
	What do we really know from a Chalk borehole? Dr Simon Mathias, Imperial College London Geophysical logging and pumping and tracer tests have been used to investigate groundwater flow in chalk under ambient and pumped conditions. The results show that flow can occur in a limited number of horizons, whose location and relative importance can change during pumping, and demonstrate the challenges when modelling ambient groundwater behaviour using flow and transport parameters obtained under forced conditions.
	How do you deal with radial flow in a regional model? Dr Andrew Spink, University of Birmingham This talk will examine the mechanisms that are desirable in modelling groundwater flow to boreholes and how these mechanisms can be included in a regional model. Examples of modelling pumping tests using radial flow models and regional models will be used to illustrate how this can be undertaken.
	Can groundwater models help in the estimation of source deployable output for drought planning and management? Mike Packman, Southern Water Drought period peak yields for groundwater sources are influenced by many practical considerations including the design of the borehole/well/adit/spring, the pumps, and the supply network infrastructure, as well as licensing and hydrogeological constraints. Drawdown and water quality limits will also be



	strongly influenced by factors and flow mechanisms that are very local to the source, as well as by the broader scale recharge, flow and storage mechanisms represented in most groundwater models. This talk will consider what role groundwater models might play in deployable output estimation, and the issues and techniques involved in translating model predictions to the borehole scale. One strike and you're out – One slide with one interesting issue. Chris Jackson: Use of regional model (ZOOM) for pumping tests Jane Dottridge: Translation of observation borehole near wetland Janet Riley: Modelling a large adit in a regional groundwater model Nick Rukin: Nitrates in boreholes and time of travel Geoff Parkin: Embedding wells in regional models Rob Sage: Regional models to assess climate change impacts on deployable output
LUNCH	Buffet lunch provided
AFTERNOON	Breakout group discussions, with topics of: Q1. Boreholes, wells and adits – do we understand them sufficiently to make proper use of their data (pumping test analyses, tracers, water quality sampling)? Q2. How can we improve the representation of local responses in regional scale models (e.g. up/down scaling, model calibration and uncertainty)? Q3. How can we use regional scale models to improve groundwater management (e.g. calculation of deployable output, management of wetlands)? Feedback from Breakout Groups, discussion, collation of ideas and suggestions Close

We strongly encourage attendees to share experiences (both good and bad) and knowledge of the above topics. The “one strike and you're out” session and the breakout groups after lunch provide an opportunity for this. There will be up to four breakout groups covering the three topics.

The final plenary session provides feedback of findings from the break-out sessions, and for further discussion (and agreement) on the proposals for action.

Participants & Booking

The workshop is open to all who are actively involved in groundwater modelling. We anticipate that BGS, CEH, water companies, consultants, universities and the Environment Agency would be amongst those taking part.

Places are limited to **60** participants in total which will be allocated on a first come-first served basis. Should the meeting become over-subscribed a limit of 3 people per organisation and 2 people per Agency Region will be applied.

Unfortunately there will be no ‘entry on the day’ and only pre-booked attendance can be accepted.

Cost £80 per head incl. buffet lunch. A small number of places for PhD students are available at a cost of £10 (first come, first served). There are a limited number of places available. So if you wish to book a place, please send a cheque and the attached booking form to Jeanne Thompson **before Friday 17th November 2008**. Entry will be by advance payment only.

If you book and your organisation has already made three bookings, your name will be put on a reserve list and you will be offered a place if available in the 2 weeks preceding the event.



BOOKING FORM

Borehole Scale Issues

19th November 2008, 10am - 4pm, Priory Rooms, central Birmingham

To book a place send a cheque for £80 (PhD students £10) made payable to “The Environment Agency” and the attached booking form to Jeanne Thompson, **to arrive by 17th October 2008**. Unfortunately there will be no ‘entry on the day’ and only pre-booked attendance can be accepted.

Contact: Jeanne Thompson Environment Agency Science Group, Olton Court, 10 Warwick Road, Olton, Solihull B92 7HX; Tel: 0121 708 4714; Fax: 0121 708 4637.

jeanne.thompson@environment-agency.gov.uk

Name	Organisation	email address

Please book us places on the workshop
Cheque for £80 x number of participants enclosed (up to 3 per organisation)

Please also indicate your preference for which break-out group you would like to participate in: mark your first (1) and second (2) preference. If some groups are too ‘over-subscribed’, it is possible you may have to participate in another group.

Name	Q1?	Q2?	Q3?