

Geological and Hydrogeological Models in the Environment Agency

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The Environment Agency

The Environment Agency is the environmental regulator for England and Wales. Part of our remit is the qualitative and quantitative protection of groundwater resources and their licensing for abstraction. In order to accomplish this, we have been making increasing use of digital geological and hydrogeological modelling technology.

BGS Lithoframe Viewer

The Lithoframe Viewer is a 3d geology viewer developed by the British Geological Survey. It allows drift and solid geological models to be viewed in 1, 2 and 3d. Within the Environment Agency, the Lithoframe Viewer has been used as a platform to commission 3d drift models in areas where glacial or fluvial deposits make a good understanding of the geology of a specific location difficult to achieve (for example, the East Yorkshire 3d drift model, top right). The understanding gained has usually been directly fed back into the regional groundwater models. The models are also used by operational staff, for example, to understand the sensitivity of groundwater to contamination as part of development proposals.



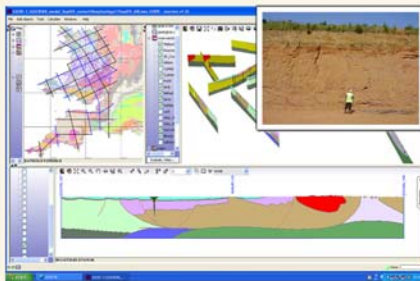
The National Groundwater Modelling System (NGMS)

This is a tool to enable groundwater models to be run in a safe environment so that appropriately trained hydrogeologists can use the system even if they are not specialist groundwater modellers. This enables regional scale Modflow models to be used for day to day regulatory purposes rather than just for strategic purposes as in the past (for example, centre right; the East Hampshire Chichester groundwater model showing modelled groundwater contours over geology).



Development and Integration

Development and integration of new systems is costly and time consuming. There is considerable overlap between functionality within NGMS, our GIS systems and the Lithoframe Viewer. Future development, such as the planned National fence diagram project with BGS (right) will seek to further integrate our systems where appropriate but without compromising the most important priority; system performance. Functional development is only constructive as long as the system remains useable and effective.



NGMS - The National Groundwater Modelling System for England and Wales. Rolf Farrell, Mark Whiteman and Peter Gijbbers in: Calibration and Reliability in Groundwater Modelling, Proceedings of ModelCARE 2007 Conference IAHS Publication 320, 2008. P95

Lithoframe Viewer - Extended Abstracts of the 2nd International GSI3d Conference, Various Authors - see BGS.ac.uk/downloads