

GSI^{3D} Research Consortium Newsletter

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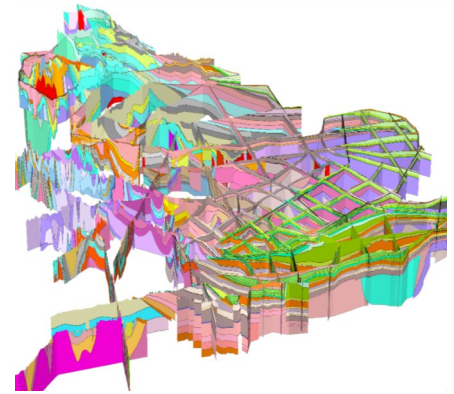
The GSI3D Team

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June 2011

Welcome!

Welcome to the GSI3D Research Consortium newsletter where we hope to share information and developments about the GSI3D software, exciting applications and research using GSI3D; plus news from within the user community and useful knowledge about the GSI3D Consortium team here at the British Geological Survey (BGS).



News and Information

Holger Kessler was invited by the Swiss Geological Survey (Swisstopo) to give a lecture on the Future of Geological Modelling. The presentation (partly in German) can be viewed here

<http://www.swisstopo.admin.ch/internet/swisstopo/de/home/docu/Kolloquien/110304.html>

GSI3D Training Week

We are holding a series of training courses in the last week of September here at Nottingham. If anyone is interested in attending please contact us at:

enquiries@bgs.ac.uk

<http://www.gsi3d.org.uk/training.html>

Model Fusion Conference 2011

Call for papers

<http://www.model-fusion.org/>

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Steve Mathers and Ricky Terrington carried out some training in Helsinki for GTK (the Finnish Geological Survey). GTK are deploying the software to model a series of Quaternary sedimentary environments across Finland.



GSI3D; a significant contribution to the digital revolution in geo-archaeology.

Hans De Beer

Geological Survey of Norway

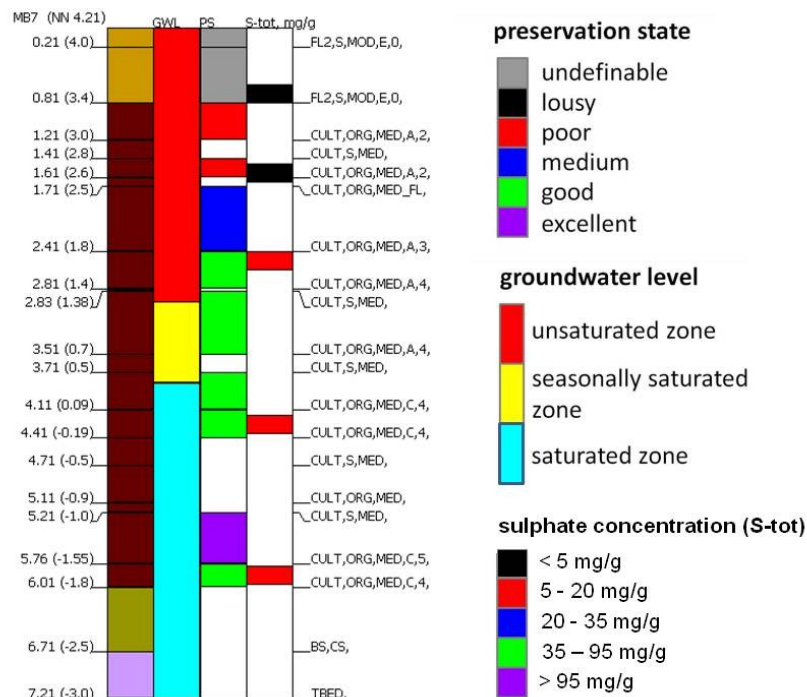
Since 2010, the Geological Survey of Norway (NGU) has been using GSI3D as a 3D modelling and visualisation tool for multidisciplinary subsurface data. In this newsletter, we would like to present the visualisation of intra-formational data of subsurface archaeological deposits and hydrogeological features within a geological framework. This work is done in close cooperation with the Directorate for Cultural Heritage in Norway, Riksantikvaren.

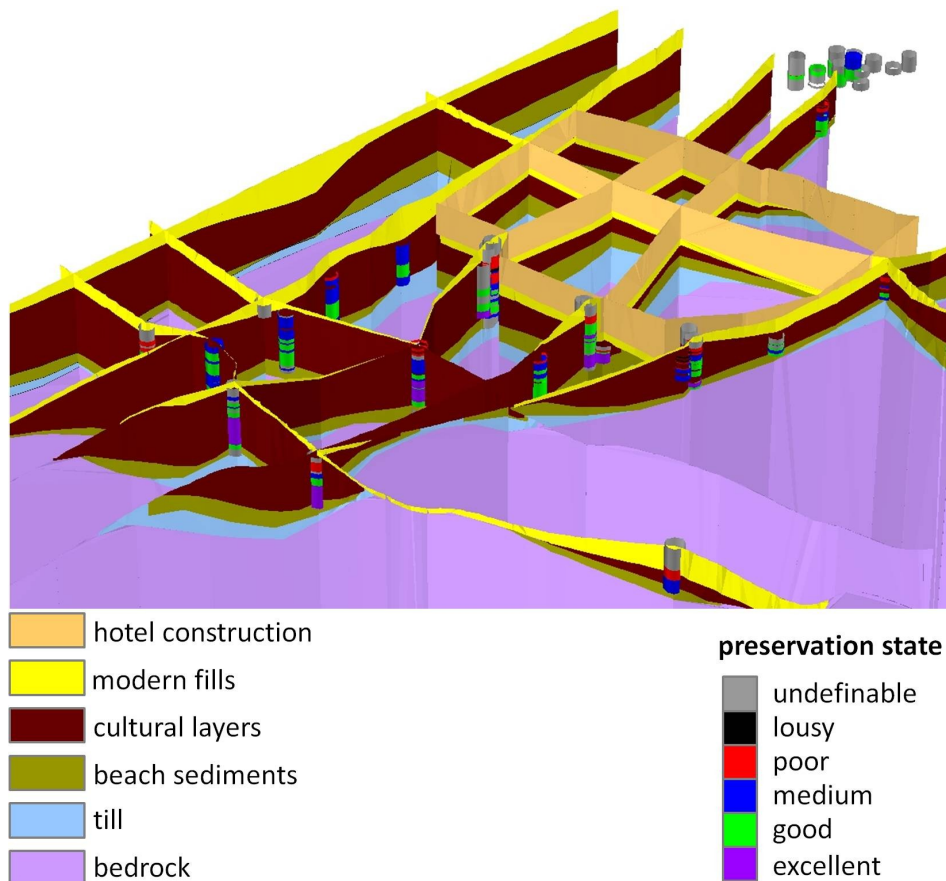
Many historic events are preserved in the archaeological record as soil deposits, cuts (pits, ditches), skeletons, coffins, masonry, timber and individual artefacts. In modern archaeology, in-situ preservation is preferred over excavation and storage in museums (Malta Convention, 1992). This poses a challenge for cultural heritage authorities when it comes to monitoring and management of subsurface archaeological heritage in a continuously changing urban environment. Archaeological deposits are embedded in their natural or anthropogenic environment, and their preservation potential is strongly affected by physical and chemical processes going on in the subsurface. This is particularly the case for organic deposits. Risk assessment of archaeological degradation potential thus requires any site to be placed within the context of its wider surroundings, and include an assessment of hydrological- and geochemical processes (Holden et al., 2006, 2009). In addition, the initial preservation state and conditions that have been recorded in drillings or excavated sections, should be integrated in this holistic assessment.

The Directorate for Cultural Heritage in Norway has recently developed a standard for monitoring of archaeological deposits (NS 9451:2009). This standard includes a categorisation of preservation state of the deposits and for the preservation conditions in the burial environment. Five categories, from lousy to excellent, are used to assess preservation potential within one site and between multiple sites. In GSI3D we can visualise these categories together with other parameters such as e.g. stratigraphy, chemical analyses and groundwater variation, through borehole-logs (fig. 1).

Intra-formational multidisciplinary data can be placed and plotted in a 3D geological framework model (fig. 2), improving site understanding. The visualisation methodology has been introduced at the first international conference on landscape archaeology in 2010 (LAC2010) and results were presented during the international conference on in-situ preservation in Copenhagen in May 2011 (PARIS4). A case study for the World Heritage Site Bryggen in Bergen is given in De Beer, et al. (2011).

'a relatively simple and straightforward modelling tool, that offers easy integration of different types of depth-related data. Visualisation and assessment of complex multidisciplinary subsurface data becomes understandable and attractive for professionals of different disciplines'





Currently, systematic digitisation and interpretation of archaeological, geological and hydrogeological information in four medieval cities in Norway (Oslo, Trondheim, Bergen and Tønsberg) is taking place integrated through the use of GSI3D. We would like to recognise the particular strength of GSI3D by being a relatively simple and straightforward modelling tool, that offers easy integration of different types of depth-related data. Visualisation and assessment of complex multidisciplinary subsurface data becomes understandable and attractive for professionals of different disciplines. This is a necessity for a sustainable management of the subsurface, including preservation of archaeological heritage, particularly in urban areas. It looks like GSI3D may well become a significant contribution to the digital revolution in archaeology.

- De Beer, J., S.J. Price and J.R. Ford, 2011: 3D modelling of geological and anthropogenic deposits at the World Heritage Site of Bryggen in Bergen, Norway. *Quaternary International*, accepted, doi: 10.1016/j.quaint.2011.06.015.
- Holden, J., West, L.J., Howard, A.J., Maxfield, E., Panter, I., Oxley, J., 2006. Hydrological controls of in situ preservation of waterlogged archaeological deposits: *Earth-Science Reviews* 78, pp. 59-83.
- Holden, J., Howard, A.J., West, L.J., Maxfield, E., Panter, I., Oxley, J., 2009. A critical review of hydrological data collection for assessing preservation risk for urban waterlogged archaeology: A case study from the City of York, UK. *Journal of Environmental Management* 90, pp. 3197-3204.
- Malta Convention, 1992. The European convention about protection of the archaeological heritage. European Treaty series no 143. Council of Europe, Valetta 16. January 1992.
- Standard Norge, 2009. Kulturminner. Krav til miljøovervåking og -undersøkelse av kulturlag. NS 9451:2009, Lysaker, Norway (in Norwegian only).

GSI3D at GSA Minneapolis

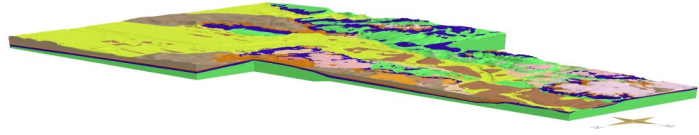
The GSI3D Consortium will be represented at the GSA Annual Meeting and Exhibition in Minneapolis 9th – 12th October 2011 www.geosociety.org/meetings/2011 at the BGS exhibition stand (Booth 302).

We would like to encourage everyone to present papers or posters at this meeting <http://www.geosociety.org/meetings/2011/techProg.htm>, in particular the following sessions might be of interest:

- T189. Geological Mapping: Key to Successful Management of Water and Land Resources,
- T192. From Maps to Apps: Moving Toward a Comprehensive, Linked-Process Modelling Approach,
- T193. Complexity in Modelling: How Much Is Too Much?

We look forward to attending this event and seeing some of you there.

Technical Update



v2011 Release

We released GSI3D v2011 on 1st April as a direct replacement for v2.6.3. So far we have had some very positive feedback regarding this version, thanks to all those consortium members who have taken the time to do so. For anyone still using v2.6.3 you are free to upgrade to v2011 at any time by downloading a copy from the website, your project files will be compatible with the new version. So far it seems no-one has found our v2011 Easter Egg game, if you spot it please let us know!

Windows 7

A quick note to users of Windows 7 installing GSI3D v2011 for the first time. Over the past few months we have had one or two issues with installations on Windows 7. Most of these can be avoided by always running the GSI3D installer as an administrator, which should be a right-click option on the GSI3D setup.exe.

GSI3D License Activations

With the release of GSI3D v2011 we have dropped the use of the USB dongles (hardlocks) for all users. This is because the USB dongles are expensive to purchase and administrate and have to be sent by post which means a delay in getting started with the software. Our new fully digital license activation is a much faster solution for all users, whilst retaining the flexibility to work offline. Over the past few months we have had a few minor issues with individual activations, but in general the transition has been successful and we are able to turn most license requests around via email in 24 hours. If you have any comments on how we are issuing the licenses please get in touch.

Trial versions

With the release of v2011 back in April we now have the ability to issue short-term Trial licenses to anyone interested in taking a look at a fully functional version of the software. Trials are available for a period of 30 days to allow for evaluation of a less restricted version of the software than is offered by the default Demo license. If you are interested in accessing a 30-day trial of GSI3D please do not hesitate to get in touch.



Helpdesk Clinic

Image Size

Some of you have experienced problems when loading images into GSI3D ranging from not being able to load an image to a total crash. This is usually due to the size of the image/s being loaded. The recommended size for any image loaded into GSI3D (PNG, GIF, JPEG) is less than 500kb, anything over 1mb will usually hinder performance and will not load at all if there are many images of >1mb already loaded in your GSI3D project.

DTM Size

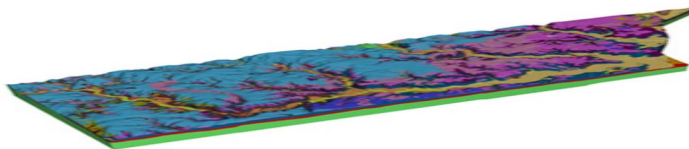
Likewise – the resolution of the DTM will directly affect the performance of GSI3D. The higher the resolution of the DTM, the worse the performance will be. Try to keep the overall size of your DTM below 5mb (for both ASCII and Tsurfs) or if a high resolution DTM is needed, split the model into workable sub-blocks which can then be then joined with the neighbouring GSI3D projects at a later date.

Data formatting services

If you are preparing input data for GSI3D modelling and need any help please get in touch with the Helpdesk. We have experts and specialist software available to help you get your data into the correct format for importing into GSI3D, and we can also help with creating export formats such as 3D shapefiles, 3D PDF and Google KML files.



Profile
Steve Mathers
Team Leader
The National Geological Model



**'GSI3D
enables
geologists to
show the
public what is
under their
feet'**

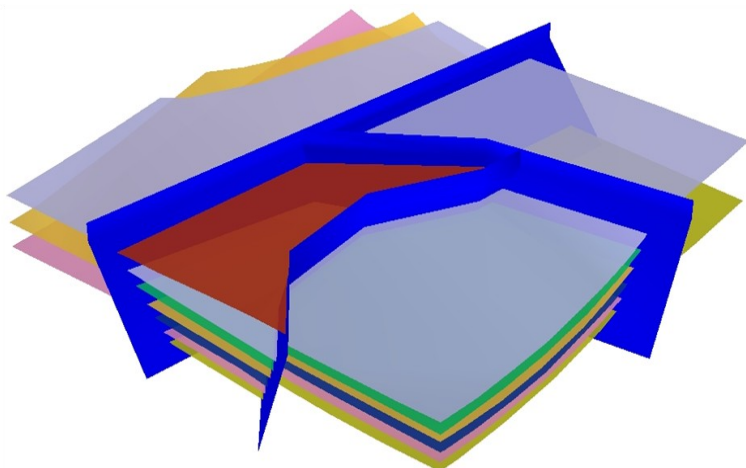
Steve has been with BGS since 1977. After reading Geology at the University of London he has progressed from being a survey geologist specialising in Southern and Eastern England to his present role as deputy Chief Geologist for England. Steve has considerable experience working in Developing Countries in the East African and Central American regions where his main focus was industrial mineral exploration. Steve has championed the 3D modelling capability within the Survey part of BGS for the last decade and represents the users of the GSI3D software on the software development and steering group.

Steve also takes responsibility for the international marketing of the GSI3D Research Consortium and is Director of all our GSI3D training and knowledge transfer activities. He has recently been appointed as the Team Leader for the National Geological Model here at BGS; this is a major new programme, its job is to construct British geology in 3D.

Steve is married to Anne, they live close to BGS here in Nottingham. They have two sons, Andrew and Robert who are both studying at Nottingham University, he and Anne are very keen birdwatchers and they enjoy most sports especially cricket and rugby union.

Software developments

Now that we have released v2011 we are continuing to work towards improved functionality on a number of different fronts. We have a big list of requests, some small, some large, from across the user community and will be working hard to incorporate some of these as soon as we can. At the moment however our main development effort is targeted at developing the extended fault-modelling version of GSI3D. Our challenge is to enable modelling of complex faulted bedrock geology within GSI3D without affecting the core philosophy and ease of use for the geologist. We hope to make a beta version of this capability available to the consortium as soon as we can this year.

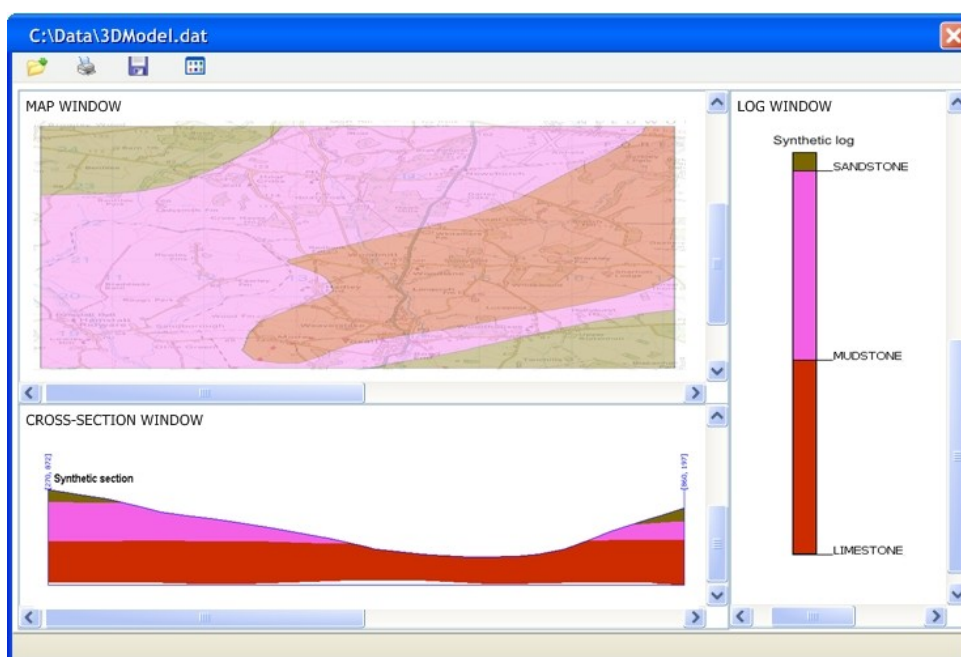


The GSI3D Research Consortium website can be found at www.gsi3d.org.uk and for any enquiries please contact our Enquiries team on enquiries@bgs.ac.uk.

If you would like to contribute to our Newsletter, or have any comments please contact the Consortium Manager eward@bgs.ac.uk.

Delivering 3D models - please tell us what you think...

GSI3D is designed for 3D geological modelling, and is also a useful tool for viewing and analysing your 3D models within your organization; but what happens if you need to send a model to a colleague or a client who does not have a license for the software? We believe that for the majority of your clients a key requirement is to be able to query a published/calculated 3D model in terms of a virtual drill log or a virtual cross-section – i.e. a core or slice through a calculated 3D model presented as a stick or section picture. These two key functions can assist in site planning and investigation and also in checking and validating models within a wider team or between organizations or internal project teams. We would like to know whether you or your 3D model clients would have a use for a simple piece of software that facilitated these types of queries against GSI3D-built models without the need for a full GSI3D license – please get in touch with us if you have an opinion on this.



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