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# Teaching the geological subsurface with 3D models

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3D geological models have great potential as a resource when teaching geological concepts as it allows the student to visualise and interrogate UK geology. They are especially useful when dealing with the conversion of 2D field, map and GIS outputs into three dimensional geological units, which is a common problem for many students.
Today's earth science students use a variety of skills and processes during their learning experience including spatial thinking, image construction, detecting patterns, making predictions and deducing the orientation of themselves. 3D geological models can reinforce spatial thinking strategies and encourage students to think about processes and properties, in turn helping the student to recognise pre-learnt geological principles in the field and to convert what they see at the surface into a picture of what is going on at depth.
The British Geological Survey (BGS) has been producing digital 3D geological models for over 10 years. The models produced are revolutionising the working practices, data standards and products of the BGS. Sharing our geoscience information with academia is highlighted throughout the BGS strategy as is instilling practical skills in future geoscience professionals, such as model building and interpretation. In 2009 a project was launched to investigate the potential of the models as a teaching resource. The study included justifying if and how the models help students to learn, how models have been used historically, and how other forms of modelling are being used today.
BGS now produce 3D geological models for use by anyone teaching or learning geoscience. They incorporate educational strategies that will develop geospatial skills and alleviate potential problems that some students experience. They are contained within contemporary case studies and show standard geological concepts, structures, sedimentary rocks, cross sections and field techniques. 3D geological models of the Isle of Wight and Ingleborough along with accompanying education material and a video tutorial guide are currently available to the public on our website www.bgs.ac.uk. 2014 will see the launch of a further 5-6 models, each illustrating different geological locations, rock types and complexities.
This poster aims to show the methodology and techniques for generating a 3D geological model. It will provide background information on the project and how these models can be used as a teaching resource, either in a formal classroom setting or as a distance learning tool. The model allows the student to take part in virtual fieldwork, by viewing the landscape in association with the geological structures and processes that have shaped it.