

**AAPG HEDBERG CONFERENCE
"Deepwater Fold and Thrust Belts"
October 4-9, 2009 – Tirrenia, Italy**

Using the Virtual Seismic Atlas to Aid Interpretation of Deepwater Fold-Thrust Belts

Taija Torvela¹, Rob Butler¹, Bill McCaffrey²
¹University of Aberdeen, Aberdeen, Scotland, UK
²University of Leeds, Leeds, England, UK

Utilising seismic data to solve geological problems is a common routine in petroleum exploration. However, the interpretation of the data is often subjective and multiple interpretations of the same data are possible, leading to uncertainties in the final product. This problem is compounded by many existing seismic atlases, which emphasise single interpretations rather than address the multiple possible explanations of geophysical data. Furthermore, although there is much seismic data in the public domain, they are difficult to locate when looking for analogues for comparative study. In some cases, these issues can be addressed by peer-review but with the increasing demands on experienced geoscientists, this can be hard to achieve. The Virtual Seismic Atlas (VSA; www.seismicatlas.org) offers a solution by serving as both as a resource for analogues and a dynamic picture and workbook to explore interpretational options. The VSA is an independent, freely accessible online image gallery that captures and shares the geological interpretation of seismic data globally, providing a platform for finding seismic examples and analogues, and for comparing interpretation strategies and experience. The VSA structure allows the viewing of the clean and the interpreted data together. Anyone can gain immediate benefit in the form of interpretational aid by browsing the gallery for analogues, or by uploading images onto the VSA for comments and feed-back, peer-reviews and competitive interpretations, enabling a virtual discussion about a range of possible interpretations.

There is no limit on the number of competing interpretations that can exist on the site, which means that the VSA is an ideal platform for investigating interpretational ranges. For example, the VSA has a significant coverage of deepwater fold-and-thrust belts. These include examples from CGGVeritas' multiclient surveys from deepwater Nigeria. Investigating multiple interpretations is especially important for deepwater fold-thrust structures where an array of different kinematic models have been used. An example is provided in this presentation. Before the conference, the participants are encouraged to produce their own interpretation of this single seismic line extracted from the Nigeria dataset, with the aim of collecting various interpretations from participants to demonstrate the uncertainties and variations in interpretational techniques and to stimulate debate on interpretation strategies. The VSA will continue

to host open interpretation exercises during and after the meeting. The original, high-resolution images are downloadable from the VSA web site:

<http://see-atlas.leeds.ac.uk:8080/homePages/generic.jsp?resourceId=0900006480014288> – or type ‘Hedberg’ in the search box.

The Virtual Seismic Atlas is can be “browsed anonymously” to find images and interpretations. Submission of content (including interpretations of existing images) can be achieved through the VSA management team (including the authors of this abstract) - contact us and we will set up a log-in. The VSA is a partnership between academia and industry, funded by the UK’s Natural Environment Research Council, the Petroleum Exploration Society of Great Britain, together with a consortium of companies (BG, BHPBilliton, Hess, Shell and StatoilHydro).

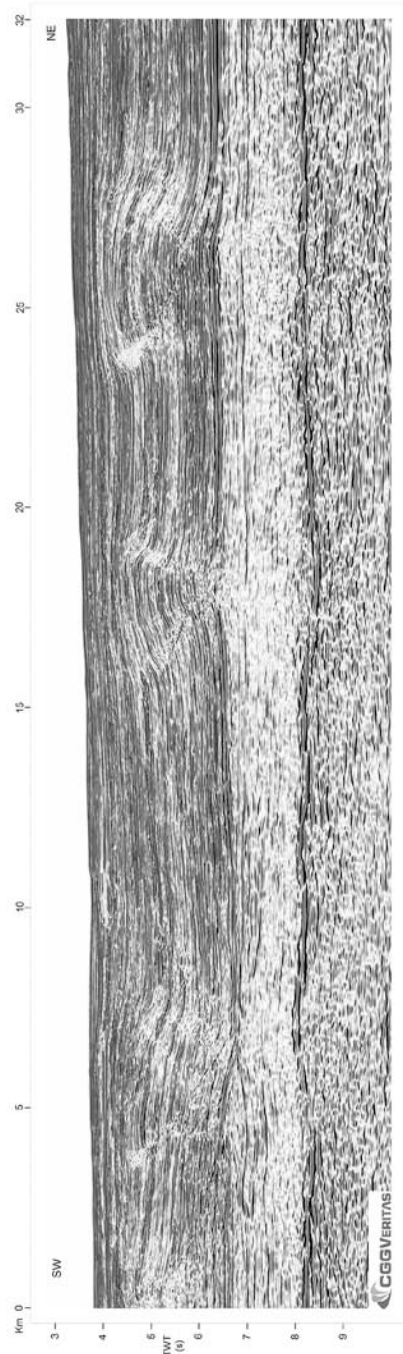


Fig. 1. A seismic reflection profile from Niger delta.