



SEAPEX Exploration Conference 2007  
Orchard Hotel, Singapore  
24<sup>th</sup> – 26<sup>th</sup> April 2007

**Day: Thursday 26<sup>th</sup> April**  
**Session: New Technical Methods Session**  
**Time: 1230 – 1300 hrs**

## **Contribution of Remote Sensing Data to Exploration Success with Examples from Africa and Asia**

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Oil exploration companies have long been using remote sensing and potential fields data for the purposes of exploration. Traditionally, limited data availability and expense coupled with the specific skill set required to harness these resources has often restricted the scope of interpretation projects as well as the user base. However, while expensive proprietary data vendors and interpretation specialists will always have their place within the industry, the continuing evolution of modern computer systems, improved software, high speed internet connections and a proliferation of data sources is steadily opening up this valuable resource to the wider geoscientific community.

Presently, an increasing variety of regionally available remote sensing datasets are accessible to the geoscientist, often provided through the benevolence of large governmental, scientific and education institutions. Many of these datasets are freely available over the internet for little or no cost, including global satellite marine gravity data, marine bathymetry data, high resolution digital elevation data and high resolution Landsat imagery. The applications of such data are extremely versatile, including the full gambit from regional basin screening studies to detailed reservoir and structural investigations. Specific applications include studies of the following:

- surface outcrop geology;
- regional structural lineaments;
- structural landforms and analogues (e.g. fold belts, rift basins, volcanic terraines);
- modern drainage and depositional systems (e.g. catchment areas, alluvial systems, deltaic and shoreline architecture);

- sand provenance and sand input;
- ocean bathymetry, morphology, plate tectonics;
- and more.

One of the most exciting applications for geoscientists is the ability to target selected regions of the earth's surface for "virtual armchair field trips", including the ability to observe and measure analogue geological systems at high resolutions and in 3-D.

Data processing techniques are often fairly straight forward and can be carried out using freeware or nominally priced software available on the internet, in addition to more conventional oil industry mapping and GIS software. Presentation of the processed results is software dependant but can include both 2-D (maps, sections) and 3-D (stereo anaglyphs, block diagrams) representations with appropriate graticule information. It is also possible to overlay ancillary GIS data and annotation.

The presentation will be illustrated by several example applications of the aforementioned techniques from Santos' exploration efforts in Africa and South East Asia. References and hyperlinks to several of the more useful datasets and appropriate software tools will also be included. The user is reminded that while access to and use of these data and software are often free, this is often subject to license agreements of one sort or another.