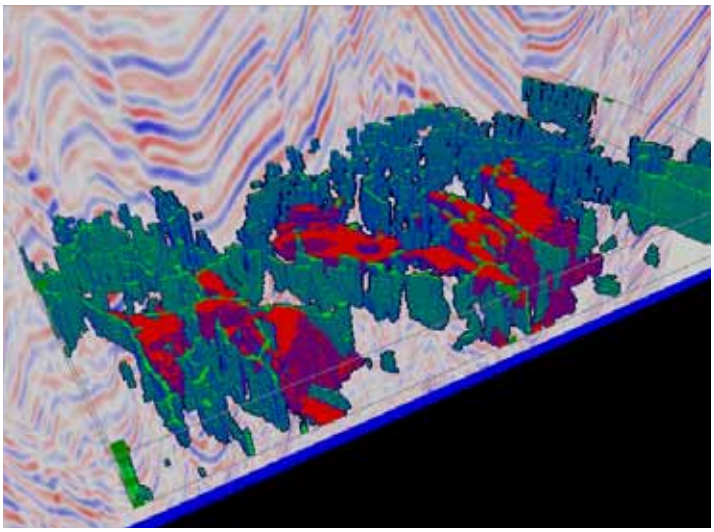
**Society of Exploration Geophysicists Annual Conference and Exhibition**
**New Orleans, October 2006**



*Faults and amplitudes from ffA's SVI Pro*[1]

The message from the SEG Forum was pretty much the same as that coming from the SPE ATCE (TW 0617) that took place the week before the New Orleans SEG. The Forum's focus was 'Energy's Future' and the discussion turned around non conventional reserves, renewables and all that. While this is a great subject, the geophysical content of non conventional is limited. The geophysical audience wanted to know what was in it for them. Not much apparently. One speaker suggested that geophysicists 'could re-train as environmentalists.' All of which contrasted somewhat with what was going on elsewhere in the conference and exhibition – which can be summed up with one word, 'Jack.'

OK there were big discoveries before Jack, but talk of a new sub-salt Gulf of Mexico play 'that could boost the nation's reserves by more than 50 percent,' has moved conventional oil and seismic prospecting back into the limelight. Suddenly all the fancy new imaging technologies, and there are many, have found their justification and more. Acquisition fold and data volumes are rising constantly, shooting patterns are getting exotic, for instance with WesternGeco's wide/rich azimuth surveys and a proposed return to 'over and under' shooting.

The picture is the same on the processing front with under funded R&D programs into seismic wave equation migration getting more attention (see our report from Ebb Pye's Visualization Theatre Academic Session. Pre stack wave equation migration on huge data volumes stress compute resources leading to more esoteric technologies like processing data on GPUs. And computing resources are being re-evaluated along the lines of, as BP's John Etgen says 'processing these data volumes involves buying whatever [hardware] it takes.' Dodd's stuff on Exabyte scale. Also the SEG modeling project is getting some (but likely not enough) attention.

A seismic processing moves from its 'embarrassingly parallel' mode that was well suited to cluster based processing to jobs that require more and more memory, the seismic processor's needs are now similar to the reservoir engineer's. Users clamor for bigger 'traditional' large memory systems that expose a robust, bug-free compiler (any language will do so long as it's Fortran). But such systems are almost a thing of the past. Instead, the IT industry offers vast arrays of clusters exposing complex, dispersed memory, storage and interconnects. All of which is addressed through a proliferation of optimization tools and more or less shaky compilers!

The situation at the workstation is slightly out of sync with this upscaling of acquisition and processing. While acquisition hardware is moving to the 'petascale' cluster, interpretation has downsized to the PC (albeit with the possibility of adding on some rather fancy visualization hardware). Interpretation methods are likewise being tested to the limit. On the one hand, there is the realization that seismic contains a huge amount of information about fractures, fluids and more. On the other hand, there is no accepted way of managing and working with the new volumes. This can cause serious problems as one major company was reported to have no less than 1200 different versions of the same seismic data cube! Many companies are offering more or less domain-savvy storage and archival solutions to manage the exploding data volumes. Tackling the problem earlier on in the food chain is also a possibility for instance, as Paradigm's marketing material has it, 'Why not routinely convert seismic cubes into meaningful reservoir property volumes?'

[1] *Image courtesy Foster Findlay Associates.*

Geophysics has an unlimited appetite for science and particularly for scientific computing. High oil prices and the discovery of huge oilfields on the industry's doorstep in a technically challenging environment has put the industry onto a war footing.

**Highlights**

'Academic Session' on Algorithms and Computer Technology

De Groot-Bril OpendTect Seismic Stratigraphy Interpretation System

SEG Advanced Modeling Consortium

EarthVision CoViz vendor-independent data browser

Petrel Plug-ins from Ikon and FineTooth

Landmark's ezModel

Petris Semantic Designer

WesternGeco Rich/Wide Azimuth Seismics**Highlights**

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