**AAPG International Conference
Barcelona, Spain
September 21-24, 2003**

Jeremy J. Willson[1], Ru Smith[2], Irene Espejo[1] (1) Shell International Exploration and Production Inc, Houston, TX (2) Shell, Rijswijk ZH, Netherlands

3-Dimensional Architecture of a Submarine Slope Channel Complex: Interpreting Stratal Architecture from Outcrops with the Aid of 3D Laser Scanning

The architecture of a multistorey slope channel complex has been reconstructed from excellent exposures in the Tabernas Basin of SE Spain. High-resolution spatial data gathered using land-based laser-scanning technology (ILRIS) and field observations capture a 3-dimensional architecture useful for constructing quantitative reservoir models.

Channel-fill complexes developed on mud-rich submarine slopes such as the West African continental margin host large volumes of hydrocarbons. A concern in realistically assessing hydrocarbon reserves and designing optimal development plans is the degree of dynamic reservoir connectivity. Since many of the barriers and baffles affecting fluid flow through such reservoirs lie below seismic resolution a profitable source of information can be provided by analogues. The subject of this contribution is a small-scale partial analogue, of Miocene age, exposed at outcrop in southeastern Spain.

One difficulty with using outcrops as sources of insight for subsurface reservoirs is that interpretations of the outcrops themselves can be highly uncertain. This is particularly true when the exposed analogue has suffered tectonic deformation and curved outcrop faces intersect with structurally rotated surfaces. A common interpretation error that results is that rotated onlaps are mistaken for downlaps. In the Miocene outcrop from Spain the 3-dimensional capture of exposed sediment architectures enables removal of tectonic rotation and viewing of stratal geometries relative to palaeo-horizontal. Significant modifications to previous interpretations result and new insights into stratal architectures of submarine slope channel complexes are yielded.