Deep-marine Reservoir Heterogeneity in Steep-Sided Minibasins – Influence Of Basin Physiography on Sedimentological Processes and Basin-Fill Character.

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ABSTRACT

Deep-water siliciclastic systems are often affected by seafloor topography. This results in reservoirs with significant heterogeneities and variable stratigraphic trapping potential. A greater understanding of these systems and their depositional processes can therefore aid in reservoir quality predictions and stratigraphic trap risking. Understanding of these systems also enables more refined paleogeographical and structural reconstructions in both exposed and subsurface sedimentary basins. The Eo-Oligocene Grès d'Annot of the western Alpine foreland basin, SE France is an example of a basin that has been structurally reconstructed using its exhumed deep-marine sequence. The sequence was deposited within a suite of well-exposed, syn-depositionally deforming and confined basins. The eastern margin of one of these basins, the Annot basin, remains poorly understood and forms the basis of this study. The sedimentological and structural characteristics of the margin are investigated by extensive facies correlation, detailed geological mapping and petrographic analysis. The results of this fieldwork will then be compared with seismic, well and core analysis of the analogous, salt diapir deformed Paleocene deep-marine sequences within the North Sea basin. By integrating seismic and field data from bathymetrically and depositionally analogous basins this project aims to synthesise a model for deep-marine deposition that applies across multiple scales, from millimetre grain-scale to kilometre basin-scale. This study will also provide a refined paleogeographical understanding of the Alpine foreland basin and the North Sea basin, which will provide insights relevant to hydrocarbon exploration in fold-thrust belts, salt-deformed basins and post-rift settings globally.

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