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Scour and Amalgamation in Turbidite Sand-Bodies of the Grès d'Annot (Tertiary, Southeast France): The Influence of Confining Slopes

The thick, sand-rich turbidite systems of the Eocene-Oligocene Grès d'Annot (Annot Sandstones) record heterogeneous deposition from predominantly high-volume sediment gravity flows in a basin with significant sea-floor topography. The diverse and extensive Grès d'Annot exposures include several spectacular sections where the onlap of the basin-fill against intrabasinal confining slopes is preserved. The Grès d'Annot turbidites thus infilled a complex basin-floor which was compartmentalized by steep, high-amplitude, variably oriented slopes. Growth of basin-floor topography continued during sediment accumulation, but at a rate which was slow compared with the rapid sediment accumulation. Flow volumes were generally high and the potential scale of the turbidite depositional systems was generally much wider than the receiving sub-basins. In base-of-slope settings, the resulting depositional architecture is dominated by stacked sheet-like, laterally extensive, amalgamated turbidite packages or sand-bodies. These composite sand-bodies are 10-60 m thick, with simple external tabular geometries but high internal complexity. Mesoscopic erosion surfaces, with scour depths of up to a few meters, are a ubiquitous feature of the sand-bodies that locally puncture intervening heterolithic packages, remove correlation markers and form subtle lateral sand-on-sand heterogeneities. Surveyed sections and photomontages catalogue a range of scour geometries, spacings and infill characteristics. This study examines the spatial variability of these erosive features in terms of position relative to confining slopes and explores implications for continuity and prediction in confined high-net:gross turbidite reservoirs.