Turbidite Modelling: Importance for North Africa

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Current understanding of the transport and deposition of turbidite sediments is typically limited by the information contained in borehole, outcrop and well data, which do not provide accurate criteria for the predictive modelling of turbidite sedimentation. A new approach uses forward modelling to predict the deposition patterns of turbidity currents on a reconstructed geological palaeosurface.

The benefits of using this approach are manifold. Grain-size distributions, palaeotopography and chosen sediment input locations allow the direction of flow of the turbidity current to be calculated and the resulting deposit mapped. Flows can be repeated to build up a picture of the stacking of turbidite deposits over time. This can be easily compared to and correlated with known deposits, and incorporated into geological modelling to investigate the effects of subsequent deformation on the integrity of the deposit.

This approach has many applications. It can be used in the identification and modelling of aquifers, hydrocarbon reservoirs and alluvial ore deposits. When used in conjunction with flow and fracture modelling, the optimum locations for wells can be narrowed down. It can also be applied to hazard assessment for mining.

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