

"Improving Depositional Analogues through Simulation Updating - examples from a clastic and a carbonate setting in Western Canada".

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Traditionally, sedimentologic studies use a depositional analogue to give a "best guess" depositional model that ultimately may not be entirely appropriate. The depositional model is rarely upgraded and remains a "stick man" visualisation. Advances in reservoir modelling technology are changing the way we evaluate depositional models. We are now able to understand the spatial relationships between data in wells, which allows us to simulate 3D facies distributions and the result often doesn't replicate the analogue. In this study we use the cell-based, plurigaussian simulation (PGS) method to re-evaluate the appropriateness of the "a priori" model.

Two western Canadian examples, one from a clastic estuarine setting and the other from a ramp carbonate setting are used to illustrate this PGS method. In the clastic example the depositional model was developed from a study of 135m of core in 18 wells and comparison with a modern estuarine analogue from the Oregon (US) coast.

In the carbonate example, regional and detailed core-based studies resulted in a carbonate ramp model, which used the tidal flats of the Trucial Coast (UAE), as a modern analogue. The sequence was interpreted to have prograded basinwards as a series of high order cycles. However 2D palaeogeographic maps only gave a subjective indication of the areal position of the individual cycles.

In both cases the PGS results concurred with the basic depositional model. However, the results improved understanding of the spatial evolution of the depositional system, which differed significantly from that expected from the "a priori" analogues.