**Stacking pattern analysis constrained by ichnofabrics**

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Detailed core description including physical and biogenic sedimentary structures is mandatory to achieve comprehensive facies analysis of reservoirs in exploration projects complemented by the integration of all sorts of data at different scales.

Identification of ichnotaxa and their grouping into ichnofabrics coupled with the analysis of physical sedimentary structures supports the recognition of half regressive and half transgressive cycles (Gérard and Bromley, 2008). Identification of the cyclicity from bed scale to bedset scale to parasequence scale (Campbell, 1967) is essential to identify the geologically significant surfaces bounding flow units at reservoir scale and sequences at the basin scale.

Correlations of depositional cycles and bounding surfaces are key to decipher reservoir architecture and more importantly predict changes in reservoir architecture and reservoir quality in response to lateral facies changes as proposed by the Walther´s law.

Two formations from a lower cretaceous section taken from an intraplate basin is presented to exemplify the importance of combining physical sedimentary structures and the upward change in ichnotaxa and bioturbation intensity to reconstruct the morphology of shallow marine shelfs. The first formation shows recurring ichnofabrics from coarsening-upward cycles (1-5m) in a classical prograding low energy storm-dominated shelf whilst the second example deals with fining-upward cycles (1-5m) infilling incisions across river-dominated deltas controlled by floods where ichnofauna is sensitive to freshwater input.

Recognition of the contrasted cyclicity in each formation was essential to define the architectural elements and their correlation between wells, supported by seismic stratigraphy study results.

*References*

Campbell, C.V. (1967): Lamina, laminaset, bed and bedset. Sedimentology, 8, 7-26.

Gérard, J.R.F. and Bromley, R.G.B. (2008): Ichnofabrics in Clastic Sediments. Madrid, 100 pp.