

**1235498: Lower Cretaceous Transgressive Offshore Sandstone Bodies (Mulichinco Formation, Neuquén Basin, Argentina): Outcrop Analogues for Tide-Built Sand Ridges?**

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This study integrates sedimentology, ichnology, taphonomy, and palaeoecology of Mulichinco Formation strata in central Neuquén Basin (Argentina) to describe and interpret sharp-based sandstone bodies developed in a ramp-type marine setting. These bodies are sandwiched between finer grained siliciclastics beneath and thin carbonates above. The underlying sediments comprise progradational successions (2-10 m thick) from offshore mudstones to offshore-transition muddy sandstones, occasionally grading into lower-shoreface sandstones. The surfaces capping the regressive siliciclastics are flat and regionally extensive, and are demarcated by skeletal concentrations and a *Glossifungites* Ichnofacies suite. They are also marked by cobble-size, sandstone rip-up clasts, with incrustations and borings. These surfaces are interpreted as composite discontinuities, cut during a relative sea-level fall and remodeled during initial transgression (SB/TRS). The overlying transgressive sandstone bodies are 3-7 m thick, > 4 km long and about three times longer than wider. They are composed of clean, fine- and very fine-grained sandstones with little lateral changes in grain-size. Cross-stratification and cross-lamination are common, typically with smaller-scale structures and finer grain size towards the top. Large-scale, low-angle (5-8°) inclined stratification is also common, deeping at ~ 30° with respect to body elongation and dominant currents. These sand bodies are interpreted as tide-built offshore sand ridges. Intense burrowing is typical at the top of each unit, suggesting an abandonment stage. Final deactivation favored colonization by epibenthic-dominated communities and the formation of condensed skeletal-rich limestones during the latest transgressive conditions. As partial reworking of pre-existing ridges occurred during this stage, the sandstone bodies are considered the remnants of the transgressive offshore accumulations.

The inferred tide-built offshore Mulichinco sandstone bodies have ~ 85% of net sand and they lack mud-prone facies. Their remaining volume is represented by non-reservoir cemented skeletal sandstones (sometimes occurring as internal inclined surfaces) that could produce reservoir compartmentalization. The lessons learned from these transgressive bodies could help recognizing similar units world-wide, as well as providing insights into characterization of reservoir analogues (e.g. Western Interior and offshore Java).