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Seismic Evidence for a Low-stand Toca Carbonate Unit, Malongo West Field Area, Cabinda, Offshore Angola

The Cretaceous in Block 0, Cabinda, offshore Angola is separated into a Pre-Salt lacustrine and a Post-Salt marine dominated section. A thick marine derived evaporite, the Aptian Loeme Salt, separates the two systems.

The Pre-Salt section is further divided into lacustrine shales and carbonates. The Bucomazi organic shale is a world class source rock, at times exceeding 10% TOC. The carbonate section is known as the Toca and forms important hydrocarbon reservoirs.

The lithology of the Toca is variable but it typically contains algal, pelecypod and gastropod coquinas, oolitic grainstones and hydrothermally-altered dolomites. The Toca carbonates are thought to have been deposited on top of or fringing basement-involved paleotopographic highs. Coeval to the carbonates in deeper water fine-grained shales and marlstones were deposited. Rapid fluctuations in lake levels were instrumental in the formation of several carbonate units. Each carbonate succession is specific to an individual lake system

The prolific Malongo West Field produces from several Toca carbonate units. A 3D seismic dataset has been used to identify a discrete carbonate unit downslope from the field edge. Biostratigraphic data suggests that the downslope carbonate unit is older than most of the carbonates found in the Malongo West Field.

This carbonate unit is interpreted to represent deposition during a lake lowstand event. Subsequent rise in lake level flooded the shelf causing carbonate deposition to shift westward into the location of the present day Malongo West Field. Shales deposited during the flooding event should provide vertical and lateral seals to the carbonate units.