Postrift stratigraphy of Central Atlantic Margin: Evolution of Depositional Environments in the Early Cretaceous of the Essaouira-Agadir Basin, Morocco.

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Mesozoic outcrops along the Moroccan Atlantic coast are the only exposed continuous stratigraphic postrift succession along the Atlantic passive margin in NW Africa. This study analyses Early Cretaceous outcrops in the Agadir-Essaouira Basin (EAB), to address the style and evolution of depositional systems through time, and improve understanding of controls on the system.

The Early Cretaceous of the EAB was deposited on a large low-relief shelf that inherited its physiography from the broad Jurassic carbonate platforms and potential early salt diapiric movement.

Extensive mapping, sedimentary logging, and biostratigraphic analysis allow precise dating of regionally-correlatable sequence stratigraphic surfaces in Hauterivian to Aptian times. The turnover of the Hauterivian and the Barremian is recorded as a time of maximum flooding, constrained by high-resolution biostratigraphy and the development of an ammonite-polyzonal horizon. Although characterized as a mud-dominated succession, two significant intervals of coarse clastics are identified in the early Hauterivian and late Barremian to earliest Aptian. At these times, shallow-marine/fluvial successions reach close to the shelf margin (~30 Km). A strong candidate for a forced regression is recognised with onset in the uppermost part of the late Barremian *G. sartousiana* ammonite zone. The late Barremian to earliest Aptian interval offers a chance for coarse clastics delivery and feeder systems for potential associated deepwater fan deposits targeted in hydrocarbon exploration offshore. The sequence is terminated locally by fluvial deposits incising into the underlying deltaic and shoreface deposits. A subsequent abrupt transgression close to the base of the early Aptian (*D. forbesi* ammonite zone) drowned the system with a return to a mudstone dominated succession.

The results constrain timing, provenance and evolution of depositional environments in this underexplored basin and are linked to a study in the Tarfaya Basin (southern Morocco). Key candidate provenance locations are the Meseta, Massif Ancien, and the Anti-Atlas. Low-temperature geochronology studies of the hinterland, have also allowed the definition of an important paleogeographic divide to the Tethys. The source-to-sink project is a valuable analog for regions to the South (Mauretania and Senegal) and the conjugate margin of Nova Scotia, where similar sequences have been noted in the Hauterivian to Aptian.