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# Cenozoic salt-sediment interaction in the offshore Tarfaya basin, NW Africa

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## **Abstract**

Salt tectonics plays a crucial role in the evolution of passive margins and on various elements of petroleum systems. Moreover, salt structures can affect seabed topography and hence cause direct impact on deepwater depositional systems.

Through the advanced interpretation of a 3D seismic dataset from the offshore Tarfaya Basin (Moroccan Atlantic margin), this study aims to decipher the interplay between salt tectonics and sedimentation, highlighting the key events in the Cenozoic evolution of this underexplored basin. To achieve this, a workflow integrating structural and stratigraphic seismic interpretation aided by seismic attribute characterization was applied.

Two main sets of salt structures were identified: buried salt sheets forming canopies, and passive diapirs, both of which were rejuvenated by compression in the Cenozoic. The use of amplitude-based seismic attributes allowed to identify turbidites and mass-transport deposits as the main depositional systems in the study area. The paleotopographic relief caused by the salt structures in the Cenozoic had contrasting consequences on the related deepwater depositional systems, often acting as the source of the sediments, deflecting away streams or even blocking them. Some of these deposits can constitute important hydrocarbon reservoirs and open new horizons for exploration of the basin.

**Keywords:** salt tectonics, deepwater deposition, seismic interpretation, attribute analysis, seismic geomorphology, Morocco, Tarfaya basin, exploration