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Subsalt Play Concepts Developed in Haha-Essaouira Basin of Morocco

The geological evolution of the Haha-Essaouira Basin was influenced by three major tectonic events. The Paleozoic strata were first gently deformed by the Hercynian orogeny then subsequently deeply buried. During Triassic-Early Liassic time Haha-Essaouira basin was affected by extensional movements with faulted and tilted blocks associated with the deposition of thick sequence of red beds and lagoonal sediments. The Mesozoic section was later deformed by the Tertiary Atlasic orogeny.

The Early Mesozoic succession consists of two thick evaporitic successions followed by relatively thick dolerite flows. Jurassic and Cretaceous sediments were deposited in passive margin setting. This structural evolution during the late Mesozoic was marked by the salt tectonics which generated a variety of petroleum exploration traps.

The main attractive exploration target is constituted by the sandstone series at the base of the Upper Triassic sequence deposited in half grabens. The Triassic reservoir is the best objective in the basin both for its success in Essaouira basin and the potentially larger volume of hydrocarbons yet to be discovered in Haha Basin. In fact seismic interpretation has identified paleo-highs where Triassic sandstones are setting on top of Paleozoic paleorelief, which are analogs of the producing Meskala gas field in Essaouira basin. The second subsalt concept is formed by the Upper Paleozoic tilted blocks sealed by Triassic salt.