

# **Key Differences in Petroleum Systems across the Greater Gulf of Mexico, Challenging Some Key Assumptions and the Potential for Two New Unexplored Oil Provinces**

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## **Abstract**

The most simplistic scenario for understanding the principal petroleum system for the Greater Gulf of Mexico is to assume that the majority of oil is generated from a very widespread Late Jurassic (Tithonian) source rock with vertical migration associated by primary salt fold focus upwards into Mesozoic carbonate and then Tertiary clastic reservoir systems, entrapped along salt related structures.

Hydrocarbon migration is assumed to be relatively late so that minimal oil charge is lost prior to structuration. How true are these assumptions? Do they vary across the Greater Gulf of Mexico?

This presentation examines these questions, in particularly comparing the northern and southern flanks of the Gulf of Mexico. Not all areas have the right migration/trap timing couple and not all areas have the ubiquitous Tithonian source rock present. Like most petroleum systems, things are more complex than originally seen.

Clues to the discrepancies lie in the source rock / oil typing detail and in seismic / outcrop observations plus the influence of regional tectonics, especially across the western and southern Gulf of Mexico.

As a wrap-up, the exploration potential for two new “almost unexplored” oil provinces are discussed, geographically remote, but with evident hydrocarbon potential.