Characteristics of the Petroleum System of Southeastern Mexico

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ABSTRACT

The integration of geochemical data from source rocks, seeps, and petroleum fluids has allowed the establishment and characterization of four petroleum systems (!) in southeastern Mexico. Their age corresponds to the Oxfordian, Tithonian, Early Cretaceous, and Early Miocene. A wide range of types of hydrocarbons such as extra heavy, heavy, and light oil, as well as condensate, wet gas, and dry gas occurs in this area according to several factors: the type, quality, and thermal evolution of organic matter, and secondary process effects (e.g., segregation and biodegradation) join all together with the geological history of the area, leading to each of the petroleum systems identified. The identification and delimitation of these petroleum systems allowed extrapolating them into new areas where they had been previously classified as hypothetical systems. This represents an important fact in the exploratory process that allows validating the geographic and stratigraphic extension of the petroleum system. On the other hand, the use of basin modeling has provided the analysis of timing of the petroleum system events and has also supported the prediction of the quality and type of the feasible hydrocarbons to be found in the basin. The systematic petroleum system analysis is essential to support and lead the petroleum exploration strategies as it was shown in this basin where was able to find new areas incorporating petroleum reserves in both short and medium terms.

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