

Determination of Hydrocarbon Path Migration from Gravity Data Analysis (Ghadames Basin, Southern Tunisia, North Africa)

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Abstract : The migration of hydrocarbons is a fairly complicated process that depends on several parameters, both structural and sedimentological. In this study, we will try to determine secondary migration paths which convey hydrocarbon from their main source rock to the largest reservoir of the Paleozoic petroleum system of the Tunisian part of Ghadames basin. In fact, The Silurian source rock is the main source rock of the Paleozoic petroleum system of the Ghadames basin. However, the most solicited reservoir in this area is the Triassic reservoir TAGI (Trias Argilo-Gréseux Inférieur). Several geochemical studies have confirmed that oil products TAGI come mainly from the Tannezuft Silurian source rock. That being said that secondary migration occurs through the fault system which affects the post-Silurian series. Our study is based on analysis and interpretation of gravity data. The gravity modeling was conducted in the northern part of Ghadames basin and the Telemzane uplift. We noted that there is a close relationship between the location of producing oil fields and gravity gradients which separate the positive and negative gravity anomalies. In fact, the analysis and transformation of the Bouguer anomaly map, and the residual gravity map allowed as understanding the architecture of the Precambrian in the study area, thereafter gravimetric models were established allowed to determine the probable migration path.

Keywords : basement, Ghadames, gravity, hydrocarbon, migration path

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