

**Geophysical Signature within the Northern Nile Delta, Egypt,** Ahmad Muhammad Sobhy Helaly, Ain Shams University, Abbassia, Cairo, Egypt, 11566, Ahmad.Helaly@geologist.com

Nile River Delta, Egypt, is of great importance for hydrocarbon accumulation, as well as many near-surface targets of economic interest. Gravimetric data along a number of profiles within the area at the northern part of the Nile Delta were processed and interpreted to evaluate the regional structural setting, to delineate the sedimentary basins' distribution, and mapping the local structures, which are possible prospects, within these basins. That is through the separation of the regional anomalies which are related to great basement depth that can be correlated to sedimentary basins. A low-pass filter, represented by upward continuation, was applied to the available gravity data to delineate the regional anomalies. Filtering of high frequency anomalies related to shallow structures of interest were delineated using residual and specific high-pass filters, represented by the second vertical derivative technique. Depth to basement was calculated to determine the thickness of the sediments within each defined basin in the study area. The second vertical derivative results showed significant shallow anomaly sources, while the upward continuation revealed the deeper basins' distribution. Integration of processed profiles, maps, and geologic knowledge revealed the structural setting of the study area.