



## Spatial analysis of geo-system parameters for hydrocarbon prospecting in parts of Yemen

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**Abstract:** The recent emerging geomatics technology has got vital potentials to provide a very good platform for the geoscientists. But, the same has not yet been thoroughly utilized in the fields of hydrocarbon exploration. This paper aims to understand the relationship between the surface lineaments and subsurface linearities in petroliferous basin areas of parts of Yemen in Sabatayn basin using geomatics technology. In the study area comprising Highly Dissected Carbonate Plateau with deep cut valleys in multiple directions, different methods have been used for extracting and analyzing lineaments from raw and digitally processed remote sensing satellite images (ETM+7). This study has provided a broad aspect for lineament analysis by combining the lineaments extracted from subsurface data with those on the surface. The Rock type map was used to understand the relationship between the lineaments and rocks exposed in the area. The Drainage map of the study area was compared with the lineament map and brought out its control over the drainages. Finally, this study presents a new output by establishing the relationships between the lineaments and the subsurface petroliferous trap rocks, which can be directly used to target the hidden resource in the study area.

**Keywords:** Spatial analysis, geo-system parameters, structural control