

## **Geochemical Exploration Strategies for Myanmar and Other Geologically Complex Areas: Opportunities for Surface Geochemical and Non-Seismic Hydrocarbon Detection Methods**

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### **ABSTRACT**

The petroleum potential of geologically complex areas - such as highly faulted and folded terranes - is often poorly known due to technical challenges affecting seismic acquisition and imaging. When these areas occur in jungles and highlands, the logistical challenges only add to the difficulty of evaluating the petroleum potential of such regions. For such areas, surface geochemical and non-seismic hydrocarbon detection methods provide an opportunity to reliably detect and map the elevated hydrocarbon concentrations and hydrocarbon-induced changes commonly associated with undiscovered oil and gas accumulations. It has long been established that (1) all petroleum basins exhibit some type of near- surface hydrocarbon leakage, and more importantly (2) that the majority of petroleum accumulations have a surface geochemical expression. Hydrocarbon seepage can be active or passive, and it can be visible (macro-seepage) or only detectable analytically (microseepage). The surface and near-surface expressions of hydrocarbon migration and seepage can take many forms ranging from elevated hydrocarbon concentrations in soils and shallow sediments, to complex mineralogic, microbial, and geophysical changes. While such hydrocarbon microseepage does not require significant faulting and fracturing, the common presence of faults and fractures in structurally complex and tectonically active terranes provides additional migration pathways for hydrocarbon seepage and microseepage.