

**Detecting hydrocarbon seeps using aster remote sensing data in the
Mandawa basin, South East Tanzania**

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This study focuses on applying ASTER remote sensing data to map surface alterations caused by hydrocarbon seeps in the Mandawa onshore basin, in the South-East coast of Tanzania. The basin has been reported to contain hydrocarbon seeps, however up to now their overall distribution is not well understood. Remote sensing mapping of hydrocarbon seeps involve spectral mapping of seeps vectors such as calcite, siderite, kaolinite and vegetation. Two reported seeps in the study area have been identified by specific spectral signals reflecting the above mentioned vectors. The seep to the South of the study area is characterized by presence of siderite, lack of vegetation and altered vegetation vectors. The Northern seep is mainly characterized by lack of vegetation and presence of stressed vegetation. These observations indicate the seepage sites are characterized by different alteration minerals. Siderites, absence of vegetation and/or stressed vegetation as vectors were used to find other areas with hydrocarbon seeps in the study area. Four (4) prospective sites were identified in the study area. Geological investigations in the study area indicate seeps are controlled mainly by structures since most of the seeps occur near or along the lithological contacts or faults. Besides the above findings, this study suggest that further investigation needs to be done in the study area by employing relatively high resolution remote sensing data to better identify potential areas for finding hydrocarbon seeps in the Mandawa basin. Moreover, the appropriate remote sensing approach that works well in the tropical and humid climatic areas need to be designed for the effective mapping of hydrocarbon seep in basins such as Mandawa.