

Multi-Surface Visualization of Fused Hydrocarbon Microseep and Reservoir Data

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Abstract

Hydrocarbon Microseepage (HM) refers to the active vertical migration of analytically detectable hydrocarbon molecules through microscopic fractures, pore spaces and along mineral grain boundaries from subsurface reservoirs to the earth's surface [1]. Measuring and mapping these microseeps is relatively low-risk, low-cost and complement and support existing seismic and geological methods. HM surveys give no information about reservoir depth, thickness or permeability, but are able to define spatially the size, shape and location of petroleum reserves.

It is important that computational and visualization tools are created to properly integrate the microseep data with existing geophysical and geological data sets. The major challenge of this project involves taking multi-modal and multi-scale data from a variety of disciplines – such as geophysics, geology, geochemistry, GIS – and allowing interactive exploratory analysis. We are investigating and developing novel software solutions deployed for a variety of input/output technologies to achieve this goal, including tablets, multitouch tabletops and touch enabled wall displays. Using these tools we hope to develop generalizable strategies to integrate multi-scale, heterogeneous datasets from surface geochemistry data and subsurface data from geology and geophysics.