



ORAL PRESENTATION

Sediment Provenance Studies in SE Asia

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The clastic sediments in SE Asian basins contain a record of significance for the hydrocarbon industry. Attention is commonly focused on physical properties of sandstones and their important practical implications. However, provenance studies can provide other valuable insights into basin development, sediment sources and pathways, as well as contributing to regional tectonic understanding. We have now undertaken many such studies across this large region and the accumulated results permit recognition of important patterns.

The widely used ternary plots of light mineral modes used to assess provenance have limited value and often mislead. They tend to reflect tropical processes in SE Asia, including weathering and diagenesis, and in many areas overlook a volcanic quartz contribution. Heavy mineral studies can also be influenced by tropical processes and may include a bias towards continental and granitic rocks, but commonly give better insights into sources. Among the heavy minerals, detrital zircons are especially useful and U-Pb dating may provide depositional ages in regions with contemporaneous magmatism and identify sediment source types and regions. The combination of heavy mineral assemblages and detrital zircon ages can be very useful and it is possible to identify distinct source regions such as continental Australia, Bird's Head of New Guinea, Borneo, Sumatra, Sundaland, Indochina and South China and see temporal changes in sources. Most of our studies have so far been undertaken on land and the value of this work would be significantly enhanced if offshore sediments could be included.