



POSTER PRESENTATION

Provenance of Sediments from Sumatra, Indonesia - Insights from Detrital U-Pb Zircon Geochronology, Heavy Mineral Analyses and Raman Spectroscopy

Christof Liebermann¹, Robert Hall¹, Amy Gough¹

¹*Southeast Asia Research Group, Department of Earth Sciences, Royal Holloway, University of London, UK*

Christof.Liebermann.2014@live.rhul.ac.uk

The island of Sumatra, at the southwestern margin of the Indonesian archipelago, is the sixth largest island in the world, and includes major sedimentary basins of hydrocarbon interest. This work is a multi-proxy provenance study utilizing U-Pb detrital zircon dating by LA-ICP-MS combined with optical and Raman spectroscopy-based heavy mineral analysis. It will help improve the stratigraphy of Sumatra, aid palaeogeographic reconstruction of western SE Asia, and contribute to understanding of Sumatran petroleum systems. Thin section analyses, heavy mineral assemblages, and U-Pb zircon ages, from samples acquired during two fieldwork seasons indicate a mixed provenance for Cenozoic sedimentary formations, including both local igneous sources and mature basement rocks.

Characteristic Precambrian zircon age spectra are found in all analysed Cenozoic sedimentary strata. These can be correlated with zircon age populations found in Sumatran basement rocks. The Phanerozoic age spectra of the Cenozoic formations are characterised by distinct Carboniferous, Permo-Triassic, and Jurassic-Cretaceous zircon populations. Permo-Triassic zircons are interpreted to come from granitoids in the Malay peninsula or Sumatra itself. Cenozoic zircons appear only from the Middle Miocene onwards. This change is interpreted to indicate a new contribution from a local volcanic arc and is supported by a change of both the heavy mineral signatures and light mineral modes.