

# CERAMAH TEKNIK TECHNICAL TALK

## The Proto-South China Sea: Where was it and where is it?

Professor Robert Hall (SE Asia Research Group, Department of Earth Sciences, Royal Holloway, University of London)

Date: 16 November 2016

Venue: Department of Geology, University of Malaya

The talk by Professor Dr. Robert Hall was held at the Mineralogy and Petrology Lab of the Department of Geology, UM. The lab was packed by more than 100 participants from the industry and academics, as well as students from local universities. There was a lively discussion session following the presentation.

**Abstract:** The term Proto-South China Sea was originally introduced to describe oceanic crust that formerly occupied the region north of Borneo where the modern South China Sea is situated. This oceanic crust was inferred to have been Mesozoic, and to have been eliminated by subduction beneath Borneo, from Sarawak to Sabah. Subduction was interpreted to have begun in Early Cenozoic and terminated in the Miocene. Later, the term was used for inferred oceanic crust, now disappeared, of quite different age, notably that interpreted to have been subducted during the Late Cretaceous below Sarawak. More recently, some authors have considered that southeast-directed subduction beneath Sabah continued until much later in the Neogene than originally proposed, based on the supposition that the NW Borneo Trough and Palawan Trough are, or were recently, sites of subduction. Others have challenged the existence of the Proto-South China Sea, or suggested it was much smaller than envisaged when the term was introduced. There is good evidence for subduction between the Eocene and Early Miocene below Sabah, and the western limit of subduction was the West Baram Line. The subducted slab can be imaged in the lower mantle using P-wave tomography. There was no subduction between the Eocene and Early Miocene beneath Sarawak, SW of the West Baram Line, where there was terrestrial to marginal marine deposition. The present-day NW Borneo Trough and Palawan Trough are not subduction trenches and these relatively shallow features have different origins. It is suggested that the term Proto-South China Sea should be used only for the slab subducted beneath Sabah and Cagayan between the Eocene and Early Miocene. Oceanic crust subducted during earlier episodes of subduction in other areas should be named differently. Paleo-Pacific Ocean is a better term for lithosphere subducted under Borneo in the Cretaceous and earlier in the Mesozoic.