

Proposed Studentship



Collision and Extension in Buton, Sulawesi, Indonesia

Supervisors: Robert Hall, Lloyd White

Project Description:

The Buton-Tukang Besi region of Sulawesi has long been recognised to be a microcontinental block (or blocks) of Australian origin. Buton has been interpreted to record one or more collisions of microcontinents with the Sundaland margin in the Cenozoic. Deformed metamorphic, ophiolitic and Mesozoic sedimentary rocks are overlain by deep water Neogene sediments, and there are asphalt deposits and oil and gas seeps probably generated from Triassic source rocks.

New regional models suggest that there was a collision in the Late Oligocene-Early Miocene but that Neogene deformation was primarily extensional, which could account for the observed deformation in a different way from earlier interpretations. Instead of slicing of several microcontinents from New Guinea and multiple collisions it is suggested that there was a single early collision followed by crustal extension of an upper plate probably driven by subduction rollback in the Banda Arc. Offshore multibeam and seismic data offer support to extensional models but field work on Buton and Muna is required to test earlier and new suggestions by re-examining stratigraphic and structural relationships, constructing accurate cross-sections, and determining timing and character of tectonic events.

The project will involve extensive and challenging fieldwork in Buton, image interpretation, cross-section reconstruction, structural modelling, biostratigraphic dating, and thermochronology work at Royal Holloway and elsewhere. The student will join a large and active research group working in SE Asia based at Royal Holloway which includes several PhD and MSc students working on a wide range of field-based projects.

This project is one of several PhD studentships open to UK/EC students proposed for funding in 2014. The exact number of studentships to be supported is not yet certain but those selected will be fully funded, including fieldwork costs, by the SE Asia Research Group (<http://searg.rhul.ac.uk/>).

References:

- Davidson, J.W., 1991. The geology and prospectivity of Buton Island, Southeast Sulawesi, Indonesia. Indonesian Petroleum Association, Proceedings 20th Annual Convention, 209-234.
- Fortuin, A.R., de Smet, M.E.M., Hadiwasastra, S., van Marle, L.J., Troelstra, S.R., Tjokrosapoetro, S., 1990. Late Cenozoic sedimentary and tectonic history of south Buton, Indonesia. *Journal of Southeast Asian Earth Sciences* 4, 107-124.
- Smith, R.B., Silver, E.A., 1991. Geology of a Miocene collision complex, Buton, eastern Indonesia. *Geological Society of America Bulletin* 103, 660-678.
- Spakman, W. & Hall, R. 2010. Surface deformation and slab-mantle interaction during Banda Arc subduction rollback. *Nature Geoscience*, 3, 562-566. doi:10.1038/ngeo917.

Please contact the Postgraduate Programmes Co-ordinator, if you have additional questions about the department or application procedures (email: pgadmin@es.rhul.ac.uk; fax: 01784-471780; tel: 01784-443581).

An application form can be found here www.rhul.ac.uk/studyhere/postgraduate/applying

Applicants are requested to send an additional copy of their CV directly to the lead supervisor of the project in which they are interested. Please also contact the supervisor if you have any questions about the project itself