Proposed Studentship

A country uplifted: The relationship between the uplifting Indo-Myanmar Ranges and sedimentation in the Central Myanmar Basin

Supervisor(s): Amy Gough (RHUL), Max Webb (RHUL), & Tom Dodd (BGS)

Project Description:

This project will help us answer some key outstanding questions about the tectonic history of Myanmar in SE Asia, located at the eastern limit of the Himalayan mountain chain. These questions will include: When did the Eastern Himalayan Syntaxis start uplifting in Myanmar? What does this tell us about the collision between India and Asia? How does this uplift affect sediment supply to the Central Myanmar Basin (CMB)?

Significant sedimentation into the CMB throughout the Cenozoic indicates long-lived emergent sources. Preliminary heavy mineral analysis suggests that most of this contribution came from the Indo-Myanmar Ranges (IMR) in the east. Building on previous studies in the north of the IMR, a comprehensive study into the ages of the formations of the IMR will allow for the testing of this hypothesis and help to unravel sediment sourcing and routing pathways into the CMB. Dating of the basement rocks will also help to understand the uplift history of the ranges and provide an age for when the routing of the basin-centre fluvial systems into the offshore basins in the west became shut off due to IMR uplift.

This project will take you to Myanmar for intrepid fieldwork in remote areas of the IMR. You'll use a combination of 4x4s, boats, and lots of hiking over challenging terrain to reach the outcrops. You'll work with a local counterpart to understand the geological history of the IMR. During fieldwork, you will be collecting samples that will be shipped to Royal Holloway, where you will begin analysis. This will include optical point counting of light minerals, heavy mineral identification, and the dating of detrital grains. The applicant should be comfortable doing fieldwork in tropical conditions. This includes staying in basic accommodation, long hikes, and experience of working in remote areas. The applicant should also have a good knowledge of sedimentary petrography and isotope geochronology. The analysis and fieldwork will be fully funded by the Southeast Asia Research Group.

References:

Gough, A., Hall, R. and BouDagher-Fadel, M.K., 2019. Mid-Cenozoic fluvio-deltaic to marine environments of the Salin Sub-basin, Central Myanmar. *Journal of Asian Earth Sciences*, p.104-143.

Westerweel, J., Roperch, P., Licht, A., Dupont-Nivet, G., Win, Z., Poblete, F., Ruffet, G., Swe, H.H., Thi, M.K. and Aung, D.W., 2019. Burma Terrane part of the Trans-Tethyan arc during collision with India according to palaeomagnetic data. Nature Geoscience, 12(10), pp.863-868.

Morley, C.K., Naing, T.T., Searle, M. and Robinson, S.A., 2019. Structural and tectonic development of the Indo-Burma Ranges. Earth-Science Reviews, p.102992.

Details on how to apply can be found here:
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Please contact the lead supervisor directly for further details