

The tectonostratigraphic evolution of the Inle pull-apart basin, eastern Myanmar

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Project Description:

Project background: The Inle Basin is part of a transtensional pull-apart system along the dextral Kyaukkyan Fault, in Shan State, eastern Myanmar. This enigmatic, active fault system is presently inboard of the transcurrent India-Sundaland margin, and may have originated during or prior to Eocene India-Asia collision. The fault caused the largest recorded earthquake in Myanmar in 1912, and many questions remain about its structural development and modern seismic hazard.

The basin is centred on Inle Lake, a shallow, sediment-laden waterbody that lies directly over the active Kyaukkyan fault trace. The wider basin is defined by prominent extensional bounding faults with thick alluvial fan deposits interfingering with fluvial and lacustrine deposits. The lower alluvial fan sequences are faulted below a prominent unconformity, hypothesised to represent the end of an early Quaternary period of extensional activity. Upper fan sequences are broadly undeformed, hypothesised to record the localisation of strain onto the cross-basin strike-slip system and deactivation of the bounding faults during the late Quaternary/Holocene.

Project aims and approach This project aims to test this hypothesis, and to understand the tectonostratigraphic evolution of the Inle Basin, and major strike-slip basins in general. The project will involve extensive fieldwork in the basin in collaboration with Myanmar students, focused on sedimentary mapping and logging in the syn-tectonic succession, as well as detailed structural analysis to understand the evolution of Cenozoic fault activity. Major outcomes will include a detailed facies correlation and basin chronostratigraphy built around absolute dating of key stratigraphic intervals; a model for the structural development of the basin and identification of modern seismic hazards; a general model for evolution of pull-apart basins and their syn-tectonic sedimentary fill; plus an understanding of the role of the Kyaukkyan Fault in the context of Cenozoic Indochina.

References:

- Crosetto, S., Watkinson, I. M., Soe Min, Gori, S., Falcucci, E. & Nwai Le Ngal. 2018. Evidence of Quaternary and recent activity along the Kyaukkyan Fault, Myanmar. *Journal of Asian Earth Sciences*, **156**, 207-225. <https://doi.org/10.1016/j.jseaes.2018.01.013>.
- Sloan, R. A., Elliott, J. R. Searle, M. P. & Morley, C. K. 2017. Active tectonics of Myanmar and the Andaman Sea. In: Barber, A.J. Khin Zaw & Crow, M.J. (eds.) Myanmar: Geology, Resources and Tectonics. Geological Society, London, Memoirs, 48, 19-52, <https://doi.org/10.1144/M48.2>
- Soe Min, Soe Thura Tun, Watkinson, I.M. & Win Naing. 2017. The Kyaukkyan Fault. In: Barber, A.J. Khin Zaw & Crow, M.J. (eds.) Myanmar: Geology, Resources and Tectonics. Geological Society, London, Memoirs, 48, 455-473, <https://doi.org/10.1144/M48.21>

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