



Searching for the 1912 Maymyo earthquake: new evidence from paleoseismic investigations along the Kyaukkyan Fault, Myanmar

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The Kyaukkyan Fault is a dextral strike-slip fault, part of a complex zone of active dextral transpression that absorbs most of the northward motion of India relative to Sundaland. While much of the strike-slip displacement is localised in western Myanmar and along the prominent Sagaing Fault, significant dextral shear also occurs across the Kyaukkyan Fault, on the Shan Plateau in the east.

The largest historic earthquake in Myanmar occurred on the Kyaukkyan Fault in 1912, near Maymyo (Mw 7.7), but the fault has generated little significant seismicity since then, and lacks clear topographic evidence related to this event.

This first paleoseismic trenching study along the Kyaukkyan Fault revealed evidence of several surface rupturing events. In the north a paleoseismic trench exposes at least two visible rupture events: an older rupture stratigraphically constrained by AMS-14C dating to between 4660 ± 30 BP and 1270 ± 30 BP, and a younger rupture formed after 1270 ± 30 BP. The presence of pottery and charcoal in the younger faulted stratigraphy demonstrates Kyaukkyan Fault activity within human times, and a possible correlation between the younger rupture and the 1912 Maymyo earthquake is not excluded. A southern paleoseismic trench, within a broad transtensional basin far from bounding faults, exposes two (undated) surface ruptures. Further study is required to correlate those ruptures to the events dated in the north.

These preliminary paleoseismological results constitute the first quantitative evidence of paleoseismic activity along the Kyaukkyan Fault, and support existing evidence that the Kyaukkyan Fault is active. However, the absence of a direct link between the Kyaukkyan Fault and the 1912 Maymyo earthquake opens different scenarios including a potential non-Kyaukkyan Fault source for the 1912 event, of which the first alternative causative fault would be the neighbouring, well-known Sagaing Fault.

We here investigate the two case-studies of SHA for the Kyaukkyan Fault and the central segment of the Sagaing Fault in light of the different attribution of the 1912 earthquake to these two faults.