

## Paleoearthquake Investigations of the Mae Hong Son Fault in Mae Hong Son, northern Thailand

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The collision between Indian and Eurasian plates since the late Paleogene causes the NW-SE and NE-SW strike-slip faults and the N-S dip-slip faults in the Indochina region. In Mae Hong Son, northern Thailand, several fault lines trend in the NE-SW, NW-SE and N-S directions, and are temporally and spatially associated with Cenozoic basin. Previous remote sensing investigation reveals many lines of morphotectonic evidence along the Mae Hong Son Fault which suggest an active tectonic zone. In order to clarify tectonic activity of this region, we selected the Mae Hong Son Fault as a target (fault) for paleoearthquake investigation.

We applied remote sensing techniques and aerial photograph interpretation to a study of the Mae Hong Son Fault. The quarry with the Cenozoic strata was used for fault geometry analysis. The Mae Hong Son Fault mainly strikes N-S, with the NW-SE conjugate faults and some minor NE-SW faults. The N-S faults show a normal dip-slip, and bound the margins of the N-S elongate basins which might result from the movement of large-scale strike-slip fault in this region. The NW-SE faults show right-lateral strike-slip movement. Nevertheless, the NE-SW faults show left-lateral strike-slip movement. Essential morphotectonic landforms associated with the Mae Hong Son Fault are fault scarps, offset streams, linear valleys, shutter ridges, triangular facets, hot springs, and linear mountain fronts.

We observed the significant morphotectonic landforms along the NE-SW Mae La Noi segment of the Mae Hong Son Fault, suggesting oblique movement. We recognized two paleoearthquake events of this fault segment in the quarry using results on OSL age dating data; the older event occurred before 20,000 years ago, and the younger event occurred between 8,300 and 7,800 years ago. An average rate of the last fault movement was 0.14 mm/yr. Therefore, it is concluded that the Mae Hong Son Fault is still active till present, and the Mae La Noi segment is regarded as the active segment with the oblique movement.

Keywords: Mae Hong Son Fault, Northern Thailand, Mae La Noi, Paleoearthquake