

Geomorphic expression of the suspected active back-arc thrust fault around Jakarta, Indonesia

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Baribis-Kendeng Fault System prolongate on the northern part of Java Island as the fold-thrust belt in the back-arc platform. It runs through the important cities on Java Island from the Surabaya in the east through Jakarta in the west. The Kendeng Fault Zone in the eastern part of Java is clear as the longest fold-thrust belt on the island. On the western part of Java, The Baribis Fault Zone seems to be more segmented compared to the Kendeng Fault Zone. Previous studies based on GPS data suggest the Baribis-Kendeng Fault System is active. There is also a model mentioned that the earthquake event struck Jakarta in the 1780 sourced from the Baribis Fault Zone.

We would like to map the active fault around the Jakarta region based on the 8 meter DEM data to show the trace of the Baribis Fault Zone to the west. We also did the channel steepness index calculation to see the maturity of the river profile the truncated by the fault. According to our result, there are topographic scarps show the thrust fault runs through Cibinong region, Bogor at the southern part of Jakarta. The channel steepness index of three river profiles respectively from west to east: Cisadane River, Ciliwung River and Cikeas River suggest that the rivers are mature and concave that show the uplifted are in the hanging wall of the fault.

It is still far to mention that the thrust fault in the southern part of Jakarta is active since the lack of paleoseismology data. However, the trace could be connected with the Baribis Fault Zone. The fault might be related as well with the cluster of the earthquake event near Bogor area. Beyond the thrust fault, Jakarta region is also shaken with the earthquake sourced from these faults : subduction zone, Cimandiri Fault and also the strike-slip fault near Cikarang.

Mots-Clés : Jakarta, active fault, Baribis, back-arc, Java