



## Active faulting in Raghunandan Anticline, NE Bengal Basin, implications for future earthquake hazards

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The Bengal basin is situated in a complex tectonic zone where the Indian-Eurasian Plates and Indian-Burmese Plates are colliding. This region is known for some of the largest intra-continental seismic events of the last 500 years, the 1548 Bengal earthquake of magnitude  $M > 8$ ?, the 1762 Arakan earthquake of magnitude  $M > 8$ ?, the 1897 Shillong earthquakes of magnitude  $M_s$  8.7, the 1918 Srimangal earthquake of magnitude  $M_s$  7.6 and the 1950 Assam earthquake of magnitude  $M_w$  8.6. The source faults of these events and whether these large earthquakes occurred on faults that reached the surface or reminded blind remain controversial. The Bengal basin still needs to be better understood in terms of active faulting and seismicity. The Eastern boundary of Bengal basin is marked by numerous NS trending folds of the Indo-Burma Ranges. We focused on the Raghunandan Anticline, NE Bengal basin, a broad, asymmetric, growing ramp anticline, steep west-facing front and bounded westwards by a steep tectonic scarp truncating gently east dipping Quaternary sandstone beds. The scarp morphology is suggestive of a still preserved co-seismic free face above a colluvial wedge. We carried out more than 20 topographic profiles to document the precise height and shape of this 12-15 m high scarp (above alluvial surface) and to survey a set of uplifted alluvial terraces located along the Shahapur River behind the scarp. The analysis of the topographic profiles around the Shajibazar area reveals the presence of 5 alluvial terraces hanging 3 m to 19 m above Shahapur River bed. T1 and T2 terraces are the best-preserved terraces on both sides of the Shahapur River. C14 and Be 10 ages allow to date the lowest abandoned terrace and to estimate the uplift rate of this area.

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