



Active folding in the Indo-Burman ranges: a case study along the Raghunandan hill, northeast Bengal basin (Bangladesh)

Aktarul Ahsan (1,2), Jerome van der Woerd (1), Elise Kali (1), Aurelie Coudurier-Curveur (3), Paul Tapponnier (3), Khorshed Alam (2), Sorvigenaleon Ildefonso (3), Paramesh Banerjee (3), and Catherine Dorbath (1)

(1) Institut de Physique du Globe de Strasbourg CNRS/Université de Strasbourg UMR7516, Seismology, Strasbourg, France (jeromev@unistra.fr), (2) Geological Survey of Bangladesh, Segunbagicha, Dhaka1000, Bangladesh, (3) Earth Observatory of Singapore, Nanyang Technological University, Singapore 639798

The Bengal basin, where India, Eurasia and Burma converge, is known for some of the largest M8 intra-continental earthquakes of the last 500 years, like the 1548 Bengal, 1762 Arakan, 1897 Shillong or 1950 Assam events. The source faults of these events and whether these large earthquakes occurred on faults that reached the surface or reminded blind remain controversial. Here, we focus on the Raghunandan anticline, in the northeast Bengal basin, a broad, asymmetric, growing ramp anticline, with a steep west-facing front. We document the precise height and shape of the 12-15 m-high scarp and survey a set of uplifted alluvial terraces located along the Shahapur river upstream of the scarp. Among the alluvial terraces hanging 3 to 19 m above river-bed, the lowest ones, T1 and T2, have the best-preserved threads on both river sides. Combined ^{14}C dates and a ^{10}Be depth profile constrains the emplacement of T1 at about 3.5 ka. Given the 3 m vertical offset of T2 with respect to the flood plain a loosely constrained vertical uplift rate of 0.7 to 2.5 mm/yr is determined. Taking into account similar anticlines across the Indo-Burman ranges, these results imply total EW shortening of about 15 to 20 mm/yr distributed across the fold-and-thrust belt in agreement with geodesy. If this strain is released seismically, the morphology of these anticlines, the uplift amounts and rates may imply the occurrence of large magnitude 7-8 earthquakes under the eastern Bengal basin.