

DISCUSSION

GEOPHYSICAL AND SEISMOLOGICAL INVESTIGATIONS FOR THE HIDDEN OLDHAM FAULT IN THE SHILLONG PLATEAU AND ASSAM VALLEY OF NORTHEAST INDIA by D.K. Saha, D.C. Naskar, P.M. Bhattacharya and J.R. Kayal. *Jour. Geol. Soc. India*, v.69(2), 2007, pp.359-372.

V. Srinivasan, Geological Survey of India, Op TNPK, Chennai, comments

In the major part of this paper, the authors maintain that their geophysical data do not support the existence of Oldham fault deep below the surface level. But, just based on one figure (N-S cross-section of earthquakes – Fig 10b), they interpret the existence of this fault and in turn support the pop-up model of Bilham and England (2001) for Shillong plateau.

Is it not possible to interpret this figure (Fig 10b) in terms of horst structure for Shillong plateau bounded by normal faults in the north and south? Srinivasan (2005) proved convincingly that the Dauki fault (at least its eastern extension) is a normal fault with strike slip component and definitely not a thrust. Srinivasan (2003) questioned the existence of Oldham fault and proposed a model of differential uplift for Shillong plateau along the south bounding normal fault (i.e. Dauki fault). The authors could have consulted many more existing literatures on this area (such as Evans, 1964, Nag et al. 2001) before attempting interpretation of their scanty geophysical data.

D.K. Saha, D.C. Naskar, P.M. Bhattacharya and J.R. Kayal, Geological Survey of India, Kolkata reply

The results of microseismic studies in Fig.10b was based

on the earthquakes which were (1) initially located by 1-D velocity model of the earth and then (2) relocated by 3-D velocity model of the earth. A careful observation of the N-S depth section along 90° 8' E, cutting across the Shillong plateau and Assam valley indicates a cluster of events between 25° 5' N to 26° N. The distribution of hypocentres normally indicates southward trending envelopes (tectonic slivers) all through the section from north to south, with increased locations of hypocentres contained between the hypothesized Oldham and Dauki Fault (Disang thrust). We have only plotted the proposed Oldham fault as hypothesized by Bilham and England (2001). But neither the gravity nor the aeromagnetic, MT and DC resistivity results support this contention. The intense activity below the Shillong plateau certainly cannot be attributed conclusively to the pop-up tectonics. On the contrary, we are thankful to your field observation that the Dauki fault is a south dipping normal fault with strike slip component. The seismogenic activity under the Shillong plateau is due to differential uplift of the massif vis-a-vis the Brahmaputra valley in the north and Bengal basin to the south. Moreover, Evans (1964) postulated major dextral strike-slip movement along the Dauki fault primarily to account for the sedimentation pattern across the fault zone that substantiates a large scale vertical movement along the fault.

References

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