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Morphotectonic study of the Brahmaputra basin using geoinformatics

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The Brahmaputra River basin occupies an area of 580,000 km2 lying in Tibet (China), Bhutan, India and Bangladesh. It is bounded on the north by the Nyen-Chen-Tanghla mountains, on the east by the Salween River basin and Patkari range of hills, on the south by Nepal Himalayas and the Naga Hills and on the west by the Ganga sub-basin. Brahmaputra river originates at an elevation of about 5150 m in south-west Tibet and flows for about 2900 km through Tibet (China), India and Bangladesh to join the Ganga..
The Brahmaputra River basin is investigated to examine the influence of active structures by applying an integrated study on geomorphology, morphotectonics, Digital Elevation Model (DEM) using topographic map, satellite data, SRTM, and seismic data. The indices for morphotectonic analysis, viz. basin elongation ratio (Re) indicated tectonically active, transverse topographic symmetry (T = 0.018-0.664) indicated asymmetric nature, asymmetric factor (AF=33) suggested tilt, valley floor width to valley height ratio (Vf = 0.0013-2.945) indicated active incision and mountain-front sinuosity (Smf = 1.11-1.68) values indicated active tectonics in the area. A great or major earthquake in the modern times, in this region may create havoc with huge loss of life and property due to high population density and rapidly developing infrastructure.

Keywords: .Morphotectonic, Brahmaputra river, earthquake