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FLUVIAL PROCESS AND MORPHOLOGY OF THE BRAHMAPUTRA RIVER IN ASSAM, INDIA

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The Brahmaputra plains, Assam, India, receives about 300 cm mean annual rainfall, 66%-85% of which occurs from June through September. The Brahmaputra receives 68.37 percent of its discharge from its tributaries. Mean annual discharge at the downstran sation Jogighopa for 1955-1977 is 17030.27 m3s-1. Average monthly discharge is highest in July (19%) and lowest in February (2%). Most hydrographs of the river exhibit multiple flood peaks occurring at different times from June to September. The stage-discharge relationships show a large-scale scattering of points in the middle part of the graph and convergence at both low and high stages. The mean annual suspended sediment load of the Brahmaputra is 402 million tons. The average monthly sediment discharge is highest in June (19.05%) and lowest in January (1.02%). The bed load is found to be 5-15 percent of the total load of the river.

The Brahmaputra plains possess depositional, denudational and structural geomorphic units. The depositional unit is of fluvial origin, which includes floodplain deposits, younger alluvial plain, older alluvial plains, piedmont and valley-fill areas. The river bed of the Brahmaputra shows four topographic levels with increasing height and vegetation. The channels of the Brahmaputra can be divided into three types. The single first order primary channels of this braided river split into two or more smaller second order channels separated by bars and islands. The second order channels are of three kinds. The third order channels are observed on the top of large mid-channel bars at high stage. The Brahmaputra channel is characterised by mid-channel bars, side bars, tributary mouth bars and unit bars. The meandering rivers possess point bar, point bar island, natural levee, ox-bow lake, crevasse-splay, deferred tributary and flood basins. Several paleochannels within some interfluves infer role of neotectonic activity. The channel of the Brahmaputra River has been migrating because of channel widening and avulsion.