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FLOW, SEDIMENT TRANSPORT AND CHANNEL CHARACTERISTIC OF THE BRAHMAPUTRA RIVER (ASSAM, INDIA) : SOME OBSERVATION

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The Brahmaputra is a major international river with a drainage area of 580,000 km² spread over China , India, Bangladesh and Bhutan. Its basin represents a unique physiographic setting vis – a – vis the eastern Himalayas, a powerful monsoon regime under wet humid conditions, a fragile geologic base and active seismicity.

The Brahmaputra ranks fourth among the large rivers of the world carrying on average annual discharge of 19,830 m³s⁻¹ at its mouth. Its discharge per unit drainage area is among the highest in the world. The maximum flood discharge recorded in the river at Pandu (Assam) was of the order of 72,748 m³s⁻¹ (1962) which was nearly 25 times the minimum flow observed that year.

Besides, the Brahmaputra is one of the major sediment transporting large rivers of the world carrying on annual sediment load of 400 million metric tons at Pandu with an average daily rate of 2.12 million metric tons during the monsoon season, May through October.

The Brahmaputra river is characterised by extremely dynamic fluvial processes dominated by intense braiding, drastic channel changes, rapid bank line migration and accelerated aggradation of the bed. In this study an attempt is made to present a comprehensive account of the flow, sediment transport and channel processes of the river in Assam against the backdrop of its unique basin environment, based on a number of case studies carried out on the river.

Results of analysis of observed conventional data on flow and sediment load and remotely sensed data on channel configuration and bankline migration are presented. The need for an integrated basin plan for the river to harness its tremendous water resources potential and to mitigate the hazards of flood and erosion is highlighted.