The Brahmaputra - Topography, geology and climate

The Brahmaputra river system draining from the north slopes of the Central and Eastern Himalaya is one of the very braided rivers of the world, which flows through China (Tibet), India (Arunachal Pradesh and Assam) and Bangladesh (Rao, 1979). The Brahmaputra river system lies between the latitude 23°N and 32°N and longitude 80°E and 97°30′ E. It is the largest river system of Indian sub-continent and comprises 5,80,000 km² up to its confluence with the Ganga at Gualundo in Bangladesh and thus forms a major part of the Ganga-Brahmaputra-Meghna basin (Phukan, 2006). With the voluminous discharge at the mouth with the flow of 19,830 m³ sec⁻¹ Brahmaputra ranks fourth in the world in terms of average discharge (Goswami, 1985). The Tsangpo river of China, flows through the state of Arunachal, India for 278 km, where it is called Dihang or Siang, The Dihang meets its principal tributaries, the Lohit and the Dibang almost together in the Eastern part of Assam near Kobo in the west of Saikhowa ghat, Assam and from this trijunction the river is known as the Brahmaputra. The Braided River Brahmaputra flows for 640 km through the state of Assam entirely through an alluvial valley. Brahmaputra is not only regarded as a river, it becomes the lifeline for the people residing in its bank. It receives 47 tributaries on its both southern and northern banks. The river system is the principal water source of Assam and obviously, the principal source of capture fisheries in the state. Needless to say that, the river system is rich in diversity of aqua fauna. Despite of the importance of the river system, there is practically no information about the fauna of Brahmaputra, except fishes of some areas that too not in detail. The Brahmaputra valley is narrow, the average width is only about 80km from foothill to foothill and the river itself occupies 6-9km. The river is considerably fast in Tibet and Arunachal Pradesh, but between Kobo and Dibrugarh the gradient of river is reduced. After Dibrugarh the river flattened with an average gradient of 0.13m/km i.e. throughout its course of about 640km within Indian territory. The climate of the Brahmaputra basin is being governed by several dominant factors such as orography, the alternating pressure cells of NE India and Bay of Bengal, the predominant maritime tropical air mass (mT), the roving periodic western disturbances and the local mountain and valley winds (Borthakur, 2004). Hot and wet summer and mild to moderately cold dry winter are the specific characteristics of the climate of the basin. The range of temperature during summer period varies from 13.0-29.5° C (minimum) and 20.5-38.20°C (maximum). The annual average rainfall is as high as 3900 mm in the extreme northwest and extreme northeast hilly tracks of the state. The rainfall in the Brahmaputra valley from 2000 to 3900 mm (Khanikar and Deka, 2013). There is however significant seasonal variation in rainfall pattern of different parts of the basin. During winter season the rainfall varies from 90-130mm in the north-eastern part of Assam, whereas 40-60 mm in the lower part and 60-90 mm in the southern part of the state. During monsoon season, the Brahmaputra valley receives a maximum of 2500 mm in the extreme north eastern part and 3100mm in extreme western part, whereas in Central Assam the rainfall is less than 1300 mm during the season (Khanikar, 2001). However, in recent years there is considerable variation in the rainfall pattern of the state in different seasons. As such, the climate of this basin is subtropical. Nearly 80% of the rain occurs during the monsoon months (May-October). There are basically three seasons winter (November –February), summer (March-May) and monsoon (June –October). But there is no sharp demarcation between summer and monsoon.