FLUVIO-GEOMORPHOLOGY OF THE RIVER BHOGDOI, ASSAM, INDIA

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ABSTRACT

Bhogdoi is one of the south bank sub-tributaries of mighty river Brahmaputra. Bhogdoi, known in its upper part as Disoi originates at Long Samtang of Mukokchung district of Naga Hills. Near the source, the river is known as Tsujenyong Nala. Until the last part of the nineteenth century Bhogdoi river was an active tributary of Brahmaputra. It had its mouth to Brahmaputra at a place north west of present Badulipara of Golaghat district. Following the great earthquake of 1897, Bhogdoi lost its direct link with the main stream as there developed a system of wetlands in between these two rivers. For such circumstances, the Bhogdoi River became sub-tributary of the great Brahmaputra in place of its earlier identity. The river collects water from an area measuring 945.88 sq. km to pour at its mouth to Kakadonga River of Golaghat district, Assam.

In this paper, an attempt is taken to study the river Bhogdoi- its basin, geographical history, river course, channel and flow characteristics. Moreover, attempt is taken to understand the flood situation of the river based on data collected from both authentic primary and secondary sources. The main objective of this study is to understand the fluvio-geomorphology of the river in brief.

Keywords: Bhogdoi River, sub-tributary, river basin, channel and flow characteristics, Flood.

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Introduction

Bhogdoi has its source at a geographical location of 26°29'6" N latitude and 94°27'23" E longitude. The river Bhogdoi known in its upper part as Disoi originates at Long Samtang of Mokokchung region at the Naga Hills. Its source is located at an elevation of more than 1200 metre above the mean sea level. The total length of the channel of Bhogdoi is 162.5 km. The first 100 km of the channel from the source is in the hills and it constitutes 61.50% of the total length of the channel. Remaining 38.50% of the channel lies in the plains. The river collects water from an area measuring 945.88 sq. km to pour at its mouth to Kakadonga River. The width of the river is about 55 and its average depth is 2m. The sediment yield is 639 tons/ km^2/year.

Until the last part of the 19th century Bhogdoi river was an active tributary of Brahmaputra. It had its mouth to Brahmaputra at a place north west of present Badulipara of Golaghat district. The rising water of Brahmaputra washed away an extensive area in its southern bank following the great earthquake of 1897. Records say that the Kilakuti embankment, located to the east of Kokilamukh was completely washed away by the rising water of the Brahmaputra. Several beels or wetlands were developed in the lower Bhogdoi basin. In due course, most of these beels became interconnected. The channel of Bhogdoi lost its identity in the system of these wetlands.

Objectives

The main objectives of this research work are:

1. To delineate the basin boundary of the river Bhogdoi with a brief introduction of the same.
2. To analyse the drainage system and different fluvio-geomorphic characteristics of the Bhogdoi river of Assam.
3. To study the flow characteristics of the Bhogdoi river by analyzing the various hydrological data to understand the flood situation of the basin area.

Study area map of the Bhogdoi river basin of Assam

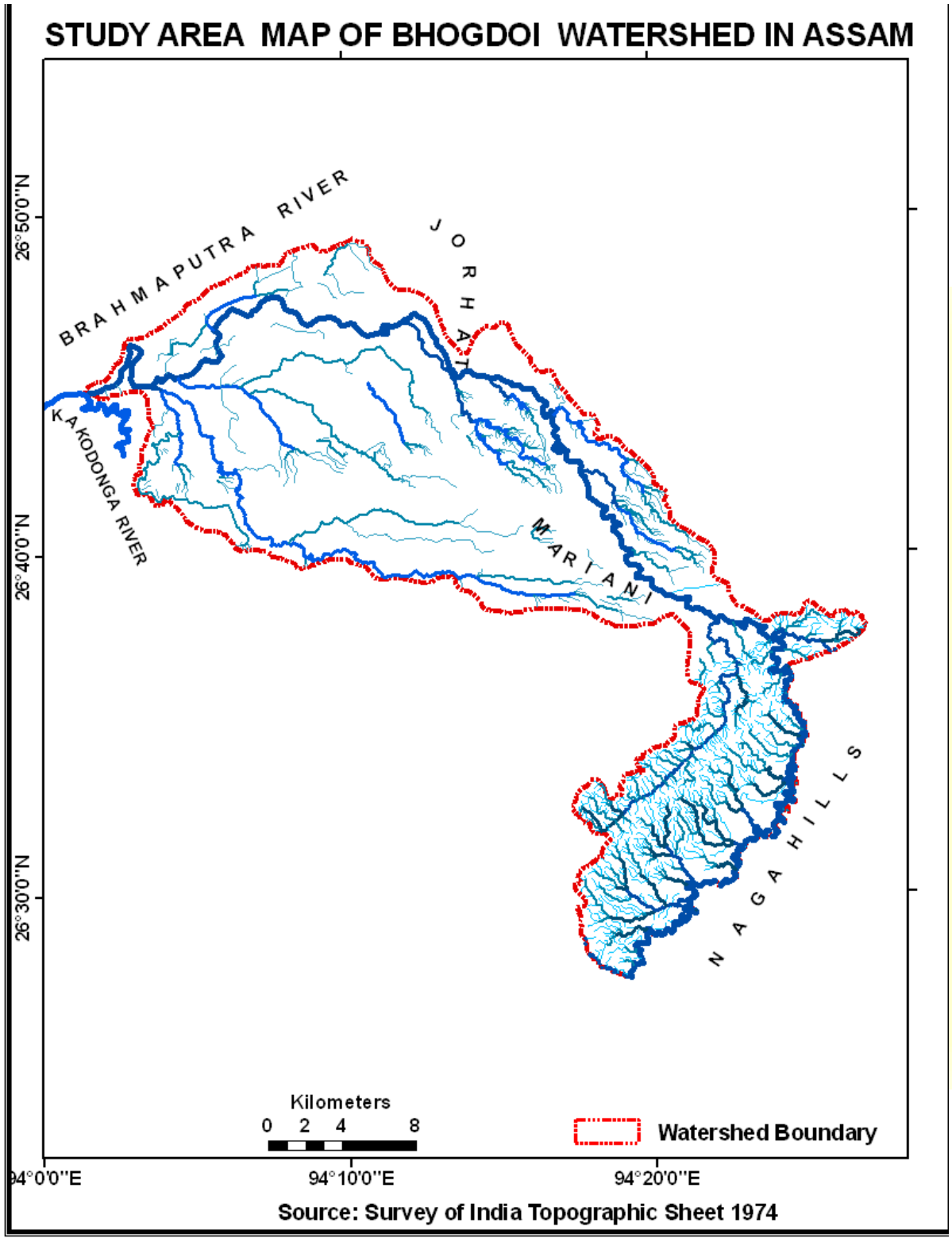

Figure 1. Bhogdoi river basin of Assam, India.

The Bhogdoi River and its basin

The river basin lies at a geographical extension between 26°17'17" N to 26°49'22" N latitude and 94°1'30" E to 94°29'2" E lines of longitude. The river collects water from an area measuring 945.88 sq. km to pour at its mouth to Kakadonga River. Bhogdoi basin lies between river Janji on the east and river Kakodonga on the west. There is the mighty Brahmaputra on its north and Mukokchung district of Naga Hills on the south. Of the total basin area of 945.88 sq. km, the Nagaland hill tracts cover 401.90 sq. km and plains of Assam covers 543.98 sq. km of area. The basin includes the geographical territories of both Assam and Nagaland. The part in Nagaland is formed by low hills not exceeding 1400 m above msl while the part in Assam is topographically plain. As a geographic entity the basin links two important physiographic divisions of North-East India-

1. The tertiary hills of the Naga- Patkai Range on the south and
2. The floodplains of Brahmaputra on the North.

It is really a highland-lowland interacting system representing the most dynamic and sensitive linkage among the elements of ecological units within the hills and the plains. Any change in the highland environment brings proportionate change to the lowland environment (Bora, 1998)

The course of the Bhogdoi River

For the first 25 km, Bhogdoi is known as Tswing River. After taking a hairpin bend towards north, east it is known as Tsurong and flows down for 12 km into the Disoi reserve forest of Assam and enters Jorhat district. In this interstate boundary between Assam and Nagaland, Pukalu Ghoki sub-tributary falls at Tsurong River from north-west direction. Tsurong renamed as Disoi from this specific region.

Forming the interstate boundary of Nagaland and Assam, the river flows for 24 km, where numerous tributories and sub-tributaries join the main stream. They are Aaj kheki and Ghoki , (left bank tributaries) Tangtanklong, (right bank tributaries), Alulifa ghoki (sub-tributary Longba river), Pongkhong Kung khong ,Khureng Litsmochung and Lingrek (sub-tributaries left bank),

Alsi chu (right bank) Kurali (left bank), Nonka chu (right bank), Watichung and Amangmen (left bank), Chamra chu (right bank)

Then again this boundary forming river marched towards north-east direction and finally Disoi enters fully into Jorhat district northerly almost all sub-tributaries from Disoi Valley Reserve forest .From the boundary river flows for two and half km along Disoi forest and then meets with river Tekhong in right and flows along the direction river Tekhong or west north direction. Flowing for 2 km in the same direction the river reach at the western boundary of the Disoi reserve forest.

In the south of Disoi tea garden, river Junka joins the main stream. Through the Disoi Valley forest in the in the north eastern way Junka falls into the Disoi river. There is a waterfall in this spot of the river. About 15 km in the same direction the Disoi alongwith Junka river crosses the railway line in the east of Mariani and from Mariani the Disoi river is known as Bhogdoi flowing for 6 km from Mariani onwards it enters Kaliapani tea estate and takes Kaliapanijan (tributary) in its right by advancing three and half km onwards Chenijan and Rangajan tributaries in Mout Gaon joins the river Bhogdoi as its right bank tributary.

After flowing for 5 km in north east directional it enters Jorhat city in the north of Duliagaon. The river crosses the 37 no. national highway flowing 1 km more from Duliagaon region and advancing half km again it crosses the railway bridge towards Nimati. About 2 km from Railway Bridge, Bhogdoi flows towards west at the east of Gualgaon. North westerly flowing Toklai is at half km from there.

Advancing 3 km from there it crosses the water of Tarajan (streams) in left and 8 km more at Bormergaon north of Botalikhusa bil in the west it takes south west direction by dividing itself into two sub branches among them northern branches is known as Rowriah jan where Onwanajan falls from north east. It comes alongwith Alengmorajan from Borghuli bil south westerly which is situated at east of Alengmora gaon. A wet land named as Ghotakubua falls in this beel. This wetland connects theTengamora beel, Dubariyani beel, Potiasaral beel and Gararmajor beel in east Rangajan. From south Rangajan falls into North Gararmajor beel near Lahdoigorh. Rangajan becomes Jakharia in Upper North and it flows alongside of Jorhat-Nimati

railway line. Moreover Rangdoijan also falls in Gararmajor beel flowing towards Dubapukhuri. For all these reason Onwanajan streams carries lots of water.

Southern sub-branch of Bhogdoi is Dholi noi. Flowing from the Jorhat town, Tarajan which is known as Sarucharai in its south falls into Dholi noi alongwith Rowriaya Jan from Rowraiya-south of Jorhat. Flowing for 4 km, each branch falls at Khalihamari beel.

Delesori noi also falls at Khalihamari beel which is created by Saru-Dholi (small Dholi stream) and Bor- Dholi(Big Dholi streams). The name Bhogdoi is replaced by Delesori from here. Flowing for 5 km in south-western direction Delesori River takes Kakodonga River at Darikamari beel and finally falls at Gelabil in Golaghat district.

Bhogdoi-the nomenclature

In Ahom reign it was necessary for the country that a river must flow nearby the royal, palace. Desoibahar, the temporary rest place of King Gaurinath Singha was not placed as near as to the Desoi river. To overcome of such a serious problem, a new channel was dug up from Disoi River to Kaliani river or Kaliani jan by Purnananda Burhagohain, the then prime minister of Ahom king Sworgodeo Kamaleswar Singha (1769-1810). The digging of this new channel as an attempt to bring communal harmony among the various groups of people residing in the kingdom as it is described by the historian Padmanath Gohain Baruah in his book, Sachitra Asomar Buranji. The communal harmony and fraternity among these various groups of people was slackened following a long rebellion by the Moamaria, Kachari, Moran and Singphow tribes of Upper Assam. It can be assumed that the digging of the new channel took place during the first decade of the 19th century or few years after the third Moamaria rebellion (Nath, 2010).

Historian Hiteswar Barbaruah describes in his Ahomar Din (The Days of Ahom) that in 1795, the administrative capital of the kingdom was temporarily shifted from Rongpur (Charaideo, Sivsagar) to Jorhat. This was the time of the Moamaria rebellion and the shifting was done in view of the socio-political unrest prevailing in the kingdom. Prime Minister Purnananda Burhagohain had wished to shift the capital back to Rongpur but it could not be materialised for certain reasons. As such, he devoted himself to develop the Jorhat as the new capital of the Ahom kingdom. In order to solve the problem of drinking water several tanks were

dug in and around Jorhat and the river Disoi was diverted to flow near the Disoi Rajabahar (royal rest palace) at Jorhat.

It is evident from the above two historical sources that a new channel was dug up under the patronage of the then prime minister of the Ahom kingdom.after the Moamoria rebellion. Both the sources say that the people engaged in the digging operation were offered Bhog or religious meal by the Gohain-Mahanta-Adhikaris. The king, the Burhagohain, Barbaruah and the Borgohain-the honoured persons of kingship also offered meals to the workers engaged in the digging works. It was for that auspicious reason of offering Bhog, the newly created river channel was named as Bhogdoi. This way Disoi became Bhogdoi. At the foot of the Naga Hills, where the river enters into the plains of Assam, people use to call it as Disoi. According to historical records, Bhogdoi is a gently flowing river and was not known to cause devastation in the past. This could be flow very close to the rajabahar or royal rest house.

Channel Characteristics of the river

The basin of the river Bhogdoi includes the geographical territories of Assam and Nagaland. The portion of the basin in Nagaland is formed by low hills not exceeding 1400 m above msl while the part in Assam is plain topography

The shape of the basin is very peculiar. Its central portion is highly squeezed and twisted giving it the shape of the letter 'V" with its pointed tip eastward. Here the basin has a width of only 4 km. This width gradually increases towards north. A general westward slope, which exists in the south western part of Jorhat district, compels several streams of the area to flow westward to meet Kakodonga. This pushes the water divide between Bhogdoi and Kakodonga towards east. The Janji basin on the east also protrudes into Bhogdoi basin from the basin. Thus, the central portion of the basin becomes very narrow. Away from this point, the width gradually increases towards north and south.

The basin is an elongated one in its shape. The Bhogdoi basin encloses a geographical area of 945.88 sq. km with a basin perimeter of 232 km thus its circulatory ratio measures to be 0.2452.

Considering the whole basin, the total length of all the streams including the main channel is 2043.50 km. The drainage density is estimated at 2.16 km per sq. km. The hilly portion of the basin shows a denser network of streams than its counterpart in the plains. The drainage density of the hilly part is 3.14 km per sq. km while the plain section has the drainage density of 0.87 km per sq. km.

The lower reach of the river channel flows through the plains of Brahmaputra and the elevation of this section is below 140 metre. This channel section shows a concave profile and its segment above 100 metre has a gradient of 114.28 cm per km and the section below has a gradient of 47.05 cm per km. The fall of the gradient in the plain course is due to the large scale deposition of sediments on the river bed causing bed aggradations.

River Bhogdoi shows a concave upward curve which indicates that the basin attains the peneplain stage. The hypsometric integral of Bhogdoi also indicates the same that it is fully stabilized basin showing monadnock or old stage of basin development.

River Bhogdoi shows a concave hypsometric curve. The concave curve indicates that the denudation processes in the river basin have been continuing for long time and much of the earth materials of the basin have already been eroded down. The curve shows that the lower part of the hypsometric curve runs nearly parallel to the base. It implies that the area near its mouth attains the peneplain stage and the last few kilometres of the channel of the river approaches the local base level.

Flow Characteristics of the River Bhogdoi

To understand the varying nature of the flow characteristics of the river, some hydrological parameters are considered here and analyse the collected data from secondary sources to understand the existing realities.

Yearly mean discharge and stage hydrographs:

To examine the flow discharge and stage relationship of the Bhogdoi River, the yearly discharge and water level data are analysed. As an illustration, the data for the year of 2001 to 2010 are plotted and it shows that the water discharge and water level are invariably high in the month of May to October. Highest amount of means water discharge is 155.4 cumecs in the year

2010. On the other hand, highest mean water level is in the 2004 which is 89.63 meter. Likewise mean water discharge is lowest in the year 2008 and it is only 42.11 cumecs. In the same way lowest mean water level is measured in the year 2008 and the level is 88.73 metre.

Table 1:-Mean Discharge and Stage Hydrograph of Bhogdoi River at A.T. Road crossing (2001-2010)

Year	Average stage in metre	average discharge in cumecs
2001	88.92	40.45
2002	89.1	101.17
2003	88.89	69.51
2004	89.63	184
2005	88.95	58.7
2006	88.88	94.16
2007	88.96	106.05
2008	88.73	42.11
2009	88.82	126.91
2010	89.41	155.4

Source: Compiled from the data collected from Water Resouce dept. Rajabari, Jorhat, Assam.

Annual maximum and minimum flow variability:

The study of annual maximum and minimum variability in flow has great signification in determining the hydrological characteristics of a river, which provides important information to engineers, hydrologists and others who an engaged in water resources development and management programs. Flood has great impact on the human occupancy of the floodplain. Therefore the study of maximum flood flow of a river is helpful in assessing flood hazard in the floodplain. The knowledge of peak flow may help in designing bridges, culverts, flood channels, embankments, dykes, etc. to save the floodplain and its occupancy from the flood ravages. Similarly the study of mean low flow of a river helps in designing storage of water of irrigation and water supply in towns.

Table 2.:- Variation of Annual Maximum and Minimum Flows of the Bhogdoi River at A.T. Road Crossing, Jorhat (1971-2010)

Year	Max. Disch x	$(x-\bar{x})$	$(x-\bar{x})^2$	Min. Dich x^1	$(x^1-\bar{x}^1)$	$(x^1-\bar{x}^1)^2$
1971	258.17	46.92	2201.48	1.76	0.17	0.0289
1972	381.64	170.39	29032.8	1.66	0.07	0.0049
1973	236.37	25.12	631.01	1.54	-0.05	0.0025
1974	153.97	-57.28	3280.99	1.09	-0.5	0.25
1975	76.13	-135.12	18257.4	0.54	-1.05	1.1025
1976	323.45	112.2	12588.8	1.44	-0.15	0.0225
1977	401.98	190.73	36377.9	0.8	-0.79	0.6241
1978	369.93	158.68	25179.3	0.6	-0.99	0.9801
1979	55.32	-154.93	24003.3	0.68	-0.91	0.8281
1980	297.06	85.81	7363.35	0.74	-0.85	0.7225
1981	183.17	-28.08	788.48	0.31	-1.28	1.6384
1982	239.95	28.74	826.27	0.11	-1.48	2.1904
1983	346.81	135.56	18376.5	0.71	-0.88	0.7744
1984	101.71	-109.54	11999	0.8	-0.79	0.6241
1985	239.17	27.92	779.52	0.69	-0.9	0.81
1986	99.72	-111.53	12438.9	0.71	-0.88	0.7744
1987	221.34	10.09	101.8	0.97	-0.62	0.3844
1988	115.17	-96.08	9231.36	1.96	0.37	0.1369
1989	298.56	87.31	7623.03	1.96	0.37	0.1369
1990	146.72	-64.53	4164.12	1.06	-0.53	0.2809
1991	116.84	-94.41	8913.24	1.57	-0.02	0.0004
1992	134.99	-76.26	5815.58	2.83	1.24	1.5376
1993	292.4	81.15	6585.32	1.35	-0.24	0.0576
1994	126.64	-84.61	7158.85	1.22	-0.37	0.1369
1995	278.88	67.63	4573.81	2.08	0.49	0.2401
1996	410.98	199.73	39892.1	3.1	1.51	2.2801
1997	168.04	-43.21	1867.1	1.97	0.38	0.1444
1998	248.1	36.85	1357.92	2.46	0.87	0.7569

1999	95.05	-116.2	13502.4	0.64	-0.95	0.9025
2000	98.66	-112.59	12676.5	0.91	-0.68	0.4624
2001	80.29	-130.96	17150.5	0.6	-0.99	0.9801
2002	201.75	-9.5	90.25	0.59	-1.0	1.0000
2003	136.41	-84.84	7197.82	2.61	1.02	1.0404
2004	365.5	154.25	23793.1	2.5	0.91	0.8281
2005	113.08	-98.17	9637.34	4.3	2.71	7.3441
2006	186.5	-24.75	612.56	1.83	0.24	0.0576
2007	210.32	-0.93	0.86	1.77	0.18	0.0324
2008	79.61	-131.64	17329.1	4.61	3.02	4.1204
2009	250.2	38.95	1517.10	3.64	2.05	4.2025
2010	308.3	97.05	9418.7	2.5	0.91	0.8281

$$\bar{x} = \frac{\Sigma \bar{x}}{n} = \frac{8449.88}{40} = 211.247 = 211.25$$

$$S.D = \Sigma\sqrt{\frac{(\bar{x} - x)^2}{n}} = \sqrt{\frac{41433.5.56}{40}} \quad 101.77$$

Co-efficient of variation for Max. Flow = $\frac{S.D.}{\bar{X}}$

$$= \frac{101.77}{211.25}$$

$$= 0.48\%$$

For Minimum Flow-

$\bar{x} = 1.589 = 1.59$

$$S.D = \sqrt{\frac{44.516}{40}} = \sqrt{1.1129} = 1.0549$$

$$C.V. = \frac{S.D}{} = \frac{1.0549}{} = 0.6638$$

$\bar{x}$ 1.59

= 0.66 %

To study the characteristics of maximum and minimum discharge of the Bhogdoi river during the period 1971 though 2010, graphs are drawn to show the viabilities of annual maximum and minimum flows of the river. The mean annual maximum discharge is estimated at 211.25 cumecs. During the study period, the positive variation of flows ranges from 94.55 percent in 1996 to 4.78 percent in 1987 similarly the negative of flows varies from -73.33 percent in 1979 to -0.43 percent 2007(Table 4.-). Again in case of low flow the mean annual minimum discharge is estimated at 1.58 cumecs and during the period the positive variation of flow ranges between 191.77 percent in 2008 to 5.06 percent in 1972 and the negative variation from -93.67 percent in 2000 to -0.63 percent in 1991.

The coefficients of variation for maximum and minimum discharges are 0.48 percent and 0.66.percent respectively. The values are almost same.

Flood in the basin

Flooding of the plains and valleys during the rainy season is a common hazard in North-East India. It causes immense destruction of crops, property and even of life in the region. The first written account of flood in the Brahmaputra valley reveals that there was flood in 1241 in its upper parts which caused The Ahoms to leave Majuli and to settle in the between Burhi Dihing and river. Heavy flood are also occurred in 1570 during the Ahom king of Sukapha.

The Great earthquake of 1897 (magnitude 8.7m the Richter scale) was the most severe quake in the history of the Brahmaputra basin which caused tremendous changes in the fluvial regime of the valley by suddenly raising the channel beds. After this earthquake there are records of devastating floods that occurred in 1898, 1905, 1907, 1916, 1921, and 1931. In 1950 another great earthquake of magnitude 8.6 on the Richer Scale occurred resulting in extensive silting in the beds of the Brahmaputra and its tributaries and consequently, the frequency of floods used to increase. During the last few decades there were heavy flood in Assam in almost every alternate year, especially in 1954, 1957, 1962, 1966, 1968, 1987, 1990, 1991 and 1998.

In Assam, among various tributaries and sub tributaries of Brahmaputra, the Bhogdoi is also prone to cause floods. The catchment of this river lies in the Naga Hills, but mostly in the

Jorhat district with only a very small portion in the Golaghat district of Assam. The middle and lower most part of the basin is most seriously affected by flood, bank erosion, sand deposition and channel migration. People of this region are trying to solve the problem created by flood. It is common experience that despite all such effort, every year the amount of losses and ravages of flood have gone up at accelerated rate in this region. The flood effected region of the study area falls under the Jorhat west revenue circle. Various parts of the circle have been affected by flood since time immemorial. Different parts of the circle have been affected by flood due to breaching of embankments.

As stated earlier flood intensity of the study region has close relationship with the tectonic activities of the whole region. Thus the flood of this region is somewhat of tectono-climatogenic origin. Following the great earthquake of 12th June, 1987, the rising water of Brahmaputra washed away an extensive area in its southern bank. Several beels or wetlands were developed in the Lower Bhogdoi basin. Most of these beels along the southern bank of Brahmaputra in Upper Assam have their genesis this way. Moreover, it is an established fact that flood in the state took the form of a disaster after the great earthquake of 1950 only. Most of the embankments along the Brahmaputra and its tributaries came into existence only after this earthquake. Records say that the Kilakuti embankment, located to the east of Kokilamukh, Jorhat, was washed away by the rising water of Brahmaputra following the great earthquake of 1987.

The great earthquake measuring 8.7 in the Richter scale rocked Assam and the entire North East India in the eve of 15th August, 1950. Extensive landslips on the Himalayan slopes and loosening of the soil, subsidence and fissuring of ground in the valley including river beds, increased sediment load of the rivers, change in the course and configuration of the mainstream as well as tributaries were some of the outcomes of the earthquake (Dutta, 2001). The rise of the bed of Brahmaputra after the earthquake increased the intensity and frequency of flood in the plains of Assam. The recurrent floods started to occur in Brahmaputra and its tributaries only after this earthquake. Prior to 1950 earthquake, the necessity of construction of embankment along the banks of the river was seldom felt in the state. But the 1950 earthquake made it inevitable. The recurrent floods necessitated the construction of a good number of embankments at different places along Brahmaputra and its tributaries.

During the monsoon months i.e., May to October, generally floods occur in 1 to 5 waves. The floods were regular annual features in the past but these are of slightly different in nature than that of the present one because of the absence of the embankment of the river during that time. These floods however, did not remain for a longer period of time over the agricultural field.

Today, in the Bhogdoi River, deposition and aggradations of the river bed can be viewed distinctly by naked eyes in a span of 23 kilometres of Bhogdoi from Jorhat Engineering College, Gormur to Solmara In this segment, the river bed appears to stand above the agricultural fields and villages on either side of its channel. Bhogdoi is now flooding above the average level of the Jorhat municipal area. As such, Jorhat is exposed to a constant threat of submergence and flooding of Bhogdoi, especially in the event of breach of the embankments along its bank.

Flood frequency analysis:

A number of physical characteristics of floods are important in considering the impact of flooding on man, i. e, the frequency of flooding, peak flow, total flood run off volume etc. Many of these characteristics can be explained with the help of some statistical methods. Graphical plotting position method developed by E.J. Gumball is used here which is simple in procedure. The peak of maximum discharges for different years is considered to show the flood frequency curve. The peak discharges are generally called flood, whether or not they actually cause inundation. The series of one peak per one year is called the annual series and the data are then ranked in order of their magnitude and the probability "p" of each event being equalled to or exceeded (plotting position) is calculated by the potting position formula

In the table below, values of annual maximum discharge observed at A.T road crossing of the Bhogdoi River for 20 years from 1991 to 2010, are considered. These are illustrated in figure below using same log and probability graph paper Gumball style (Dury, 1969). From the graph, the statement relating to the statistical probability of flood events can be made.

Table 3. Probability in percentage (1991-2010)

Year	Maximum Annual Discharge	Rank	Discharge (m3s-1)	Recurrence Interval	Probability (P)	P in %

	(m3s-1)					
1991	116.84	21	201.75	1.95	0.51	51%
1992	134.99	22	186.5	1.86	0.53	53%
1993	292.4	23	183.17	1.78	0.56	56%
1994	126.64	24	168.04	1.7	0.58	58%
1995	278.88	25	153.97	1.64	0.6	60%
1996	410.98	26	146.72	1.57	0.63	63%
1997	168.04	27	136.41	1.51	0.65	65%
1998	248.1	28	134.99	1.46	0.68	68%
1999	95.05	29	126.64	1.41	0.7	70%
2000	98.66	30	116.84	1.36	0.73	73%
2001	80.29	31	115.17	1.32	0.75	75%
2002	201.75	32	113.08	1.28	0.78	78%
2003	136.41	33	101.71	1.24	0.8	80%
2004	365.5	34	99.72	1.2	0.82	82%
2005	113.08	35	98.66	1.17	0.85	85%
2006	186.5	36	95.05	1.13	0.87	87%
2007	210.32	37	80.29	1.1	0.9	90%
2008	79.61	38	79.61	1.07	0.92	92%
2009	250.2	39	76.13	1.05	0.95	95%
2010	308.3	40	56.32	1.02	0.97	97%

Source: Compiled from the data collected from Water Resouce dept. Rajabari, Jorhat.

Conclusion

Bhogdoi River is an important southern sub-tributary of mighty Brahmaputra with a glorious history. According to historical records, Bhogdoi is a gently flowing river and was not known to cause devastation in the past. But now-a-days, due to the accelerating rate of siltation in the river bed, the river over flows both the banks in every monsoonal months of the year i.e., May to October. This results heavy loss of both life, property and crop cultivation especially rice fields in its floodplain every year. Moreover, the channel characteristics and also the varying flow characteristics of the river make this sub-tributary very needful to study in the present day context. It is a very resourceful river provides enough scope for irrigation, habitation, cultivation, tourism potentialities within its basin. For such reason, brief study of the river, its basin and fluvio-geometry of the river etc are very relevant to the present day study.

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