

# SPATIAL STUDY OF MAHANANDA BASIN IN THE GEO - HISTORICAL PERSPECTIVE

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Karatoa tathatreyyee Louhityascha Mahanandah,  
Shalmali Gomati chaiba Sandhya Trlsrota sa tatha'

(Mhabharat,sabhaparba,Ch.9/22-23)

Mahananda has been a notable river since the ancient period . At present there are so many literary and archaeological evidence available like in Mahabharata, Acharang sutra, Kalpsutra etc. . It is a tributary of the mighty river Ganga, Mahananda river rises from springs in the Dow Hills forest also known as Mahanadi in the Darjeeling hills originating from the Mahaldiram range Hill near Chimli, east of Kurseong in Darjeeling district at an elevation of 2,100 meters (6,900 ft). Actually Mahanadi and Balasan are the two rivers that meet together to form Mahananda river in the plain of Siliguri sub-division. There is a confusion about the source of Mahananda. Among the two above mentioned rivers, the Balasan has been originated from Lepcha Jagat ( 2360.6m ) and Mahanadi from Mahaldiram ( 2250m). From the stand point of elevation Balasan has been flowing from higher elevation than that of the Mahanadi. That's why Balasan should be the source river of Mahananda. And Mahanadi is its tributary.

Actually the Mahananda River is a trans-boundary river which originates in the Himalayas. It flows through the Indian states of West Bengal, Bihar, and Bangladesh. Its right bank tributary -- the Mechi River forms part of Nepal's eastern boundary with West Bengal while the Kankai flows out of Nepal. The total length of the Mahananda river is 360 km. out of which 324 km. is in India and 36 km is in Bangladesh.



Mahananda river acts as the boundary between the police station of Itahar in the district of North - Dinajpur and that of Chanchal in the district of Malda. The actual entry is made at the tri-junction point of the police stations of Chanchal, Ratua and Gazole. It acts as the

boundary between the police station of Ratua and Gazole and flows along the towns of Englishbazar and Old-Malda keeping the town of Old Malda slightly to the north until it is joined by the Tangan at Aiho. The length of the river in this district is 55 miles (88.6 Km).

Mahananda river divides into two channels at Barsoi in Bihar, one flow through Bihar by the name Fulhar and the other flows through West Bengal as Mahananda which runs a zigzag course through Malda district into the Padma in Bangladesh. It enters Bangladesh near Tentulia in Panchagarh District, flows for 3 kilometres (1.9 mi) after Tentulia and returns to India. It joins the Ganges at Godagiri in Nawabganj district in Bangladesh.

The river Mahananda divides their catchment regions into two parts—

The Eastern Region – This region consisting mainly of old alluvial and relatively infertile soil is commonly known as Barind (Barendrabhumi).

The Western Region - This region which is further subdivided by the river Kalindri into two areas --

The Northern area is known as "Tal"(north portion above river Kalindri). It is low-lying and vulnerable to inundation during rainy season. The Tal region is situated to the west of Mahananda River and north of Kalindri River. It is a low-lying area subjected to inundation with the rise of water level in the Ganges, Mahananda and Kalindri. The construction of flood protection measures has however eased the situation to some extent. The Tal area gradually slopes down towards the south and west and gradually merges with the Diara region. Ratua, Chanchal and Harishchandrapur P.S. are within this region. The total area under Tal tract is 1, 14,100 hectares.

The southern area consists of very fertile land and is thickly populated, being commonly known as "Diara"(southern portion below river Kalindri and Barind eastern part of river Mahananda). Its formation is the result of centuries of fluvial action by the Ganges, the old channels of which can still be traced, beginning from the present course of the Bhagirathi River beside Gaur and extending westwards by successive stages.

## Soil

The Mahananda originates and have catchments in Himalayan region, which are not calcareous but rich in acidic minerals. Due to excessive presence of acidic minerals the soils of this zone are non calcareous. Accumulation of sodium salts and sodium absorption has taken place in areas where the drainage is poor.

The Soils of Tal region are clay loam to sandy loam in texture. These soils are light loam called 'Do-ash'. It is a later alluvial formation and consists of an admixture of clay and sand. Wheat, paddy, jute, pulses and oil seeds are abundantly grown in this area.

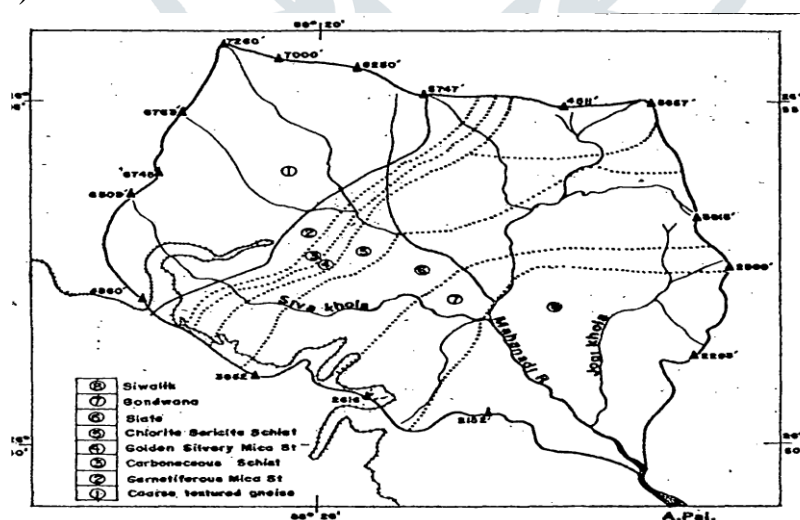
The Soils of Diara region are relatively new one and most fertile. These soils are admixture of sand and clay. The soil is of light nature with a sandy appearance. The soil of this area is extremely fertile due to regular deposition of alluvium by the Ganga. As a result the cropping pattern of this region is comparatively different from other parts of the district. A large 'area' of 'Diara' is covered with mango orchards while other crops are jute, aus, paddy, wheat, pulses etc. The water level of this region is very high.

Barind Soils are usually made up of massive argillaceous beds of a pale reddish brown colour. It is composed of stiff clay, containing iron and lime and become extremely hard in the cold weather.

Mahananda river system has a commanding role in regulating overall economy of the catchment area, namely Darjeeling, Uttar Dinajpur and Maldah districts of West Bengal and Kishanganj, Purnia and Katihar districts of Bihar in more than one ways. The most interesting facts about the Mahananda river is that forms in its upper course an important linguistic boundary between the Bengal and the Hindi speaking areas and communities.

### Geological formations of Mahananda river system

The geological formations of the Mahananda river system in the hilly area of Darjeeling district consist of unaltered sedimentary rocks confined to the hills on the north consisting of different grades of metamorphic rocks over the rest of the area. The outcrops of the various rocks form a series of bands more or less to the general line of the Himalayas, dipping one below the other into the hills. The characteristic feature of the Southern area is that the older formations rest on the younger formations, showing complete reversal of the original order of superposition. The great range was elevated during the tertiary period above the site of an ancient area that had accumulated sediments of different geological ages. The mountains are made up of folded rocks piled one over another by a series of north-south horizontal compression movements and 29 tangential thrusts which also folded the strata on the sea floor and caused their up-heaval by stages. At many places, the formations have been intruded by granites. Frequently, the strains within the range are inverted due to the overturning of the folds and their dislocation. The river flows south through a rich agricultural area in Bihar state, enters West Bengal state, flows past Ingraj Bazar, and then continues south eastward into Bangladesh to join the Ganges (Ganga) River at Godagari Ghat after a 225-mile (360-km) course.



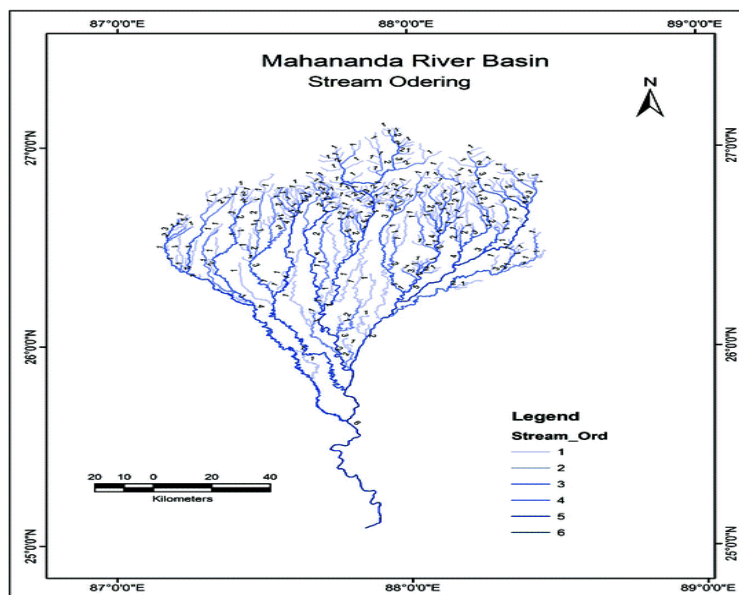
(Geological Map of Mahananda basin)

## MAHANANDA RIVER BASIN—

Mahananda river basin were deep, slightly acidic, moist, medium to heavy textured, high water table are suitable for summer paddy. The total length of the Mahananda is 360 kilometres (220 mi) out of which 324 kilometres (201 mi) are in India and 36 kilometres (22 mi) are in Bangladesh. The total drainage area of the Mahananda is 20,600 square kilometres (8,000 sq mi) out of which 11,530 square kilometres (4,450 sq mi) are in India.

**In Mahananda river basin the following regions are included.....**

Rangtong, Mahanadi, Panchanai khola, Choklong khola, Gulma khola, Ghora mara khola  
And Singh i khola



Mahananda River Basin

## Tributaries

The main tributaries of the Mahananda are Tangon river, Nagar river, Balason, Mechi, Kankai and River Kalindri. At the East of the confluence of the Kalindri and the Mahananda lies the Old Malda town. In the Siliguri area it has three tributaries called the Trinai, Ranochondi and the pair of Chokor and Dauk taken as a single tributary.

## Climate

On the basis of Rainfall, Humidity, winds and temperature variation the year related area can be divided into four well defined seasons ----

- 1) Hot- Summer Season- March to June
- 2) Monsoon Season –June to September,
- 3) Retreating Monsoon-October to November
- 4) Winter Season- November to February,

The Mahananda river system in Darjeeling district experiences varied climatic condition. Occasionally snow falls in January and February at high altitude for a few hours. During April and May there is short lived summer accompanied by summer rain, for three months from June to August and the catchment is drenched with rain. Maximum and minimum temperatures in the district hover around 22°C to 24°C during the Summer and around 4°C to

0°C during the Winter. The catchment in Jalpaiguri district experiences heavy rainfall. Its temperature is rarely excessive due to the proximity of the hills and so the catchment is always green. The Malda district is significantly under hot and humid monsoonal climate. The months from November to April are dry and fine, the normal rainfall of each being ,under one inch. The monsoon breaks normally in the middle of June, the months of heaviest rainfall being July, August and September. An oppressive summer season, plentiful rain and humid atmosphere all through the year are the main characteristics of the climate of Malda district. In kishanganj, Purnea, Katihar and Araria district experiences three different season. Summer from March to early June, Rainy from later part of June to September and Winter from November to February. Mean daily ambient temperature from Summer to Winter shoots up to 40°C to 4°C. Generally the relative humidity is above 70% in most part of the year. . Rainfall in these districts are mainly by southwest monsoon, which sets in the month of June and continues up to September. Sometimes monsoon retreats in early October.

### **Rainfall**

The average annual rainfall in Mahananda river system in India is about 2050 mm. Maximum rainfall occurs in the month of July during monsoon about 80% of the total rainfall. The usual direction of moisture laden current is generally northward. The annual rainfall in the upper catchment ranges from 100 mm to 1400 mm. As per the Bihar Statistical Hand Book-2012, Annual normal rainfalls in the districts of Araria, Purnea, Kishanganj and Katihar are between 1218 mm to 2041 mm and during monsoon the average annual rainfall is between 1067 mm to 1785 mm. The average monthly rainfall during the non-monsoon period is about 110 mm. The Minimum rainfall occurs in the month of December.

### **Temperature**

Except in the snow bound areas and the hills of Nepal, the basin experiences both hot summer and cold winters. The month of May is the hottest with the maximum temperature upto 40°C. The winter temperature goes down to nearly 4°C in January in the plains in the lower reaches while in the hills, it is still lower. There are two hydrometeorological observatories in the Mahananda catchment one at Purnea and the other at Malda.

### **Wind Velocity**

Mean monthly wind velocity values observed at the Purnea, West Dinajpur and Darjeeling observatories show that wind blows at medium speed varying from 1.4 km/hr to 7.0 km/hr.

### **Humidity**

The relative humidity values observed at Purnea, Katihar, kishanganj, Araria, West Dinajpur and Darjeeling stations varies from 39% to 88%. As per Purnea observatory, 31 the monthly mean evaporation in the command varies between 5.18 cm to 17.87 cm. 2.3.7.

### **Few Historical Facts about Mahananda**

The Mahananda is a notable river, since the time of Mahabharata. It has also been mentioned in Mahabharata (Sabhaparba Ch.9/22-23) that the Ganga in Banga (North Bengal) has come down from the matted hair of Lord Siva in the form of 'Trisrota' (threestreams), such as - 'Karatoa tathatreyyee Louhityascha Mahanandah. It is mentioned in Mahabharata, if a man is controlled and non-violent and bathes in Purapartava. Nanda or Mahananda he goes to Nandana and served by Apsaras.

There are so many evidences are available in different text about the Holi river Mahananda. In Shiv puran a story about the the gorgeous lady Mahananda who worship the Shiva. Also in Matsya puran and Kalika puran, the Mahananda terms are used as a holi tributary of Ganga. According to 'Kalpasutra' of Jains that the Pundaric, the merchant was found near the Pundra Vardhana lorg (Near Mahananda) before the centuries of the Birth of Jesus Christ. The Acharanga Sutra (old book of the Jains) describes about the barbarism and cruelties of the then inhabitants of West Bengal. Hieun Tsang, the Chinese traveller came to Pundravardhana during his travel in India between 629 A.D. to 645 A.D. There was Ashok Stup which is assumed to be the tila of the Dhanamana situated near the Alai village on the bank of the Mahananda - short distance from Pandua of Malda district.

**Ingraj Bazar**, formerly **English Bazar**, also called **Angrezabad**, city, north-central West Bengal state, northeastern India. It lies on the west bank of the Mahananda River. The city was chosen as the site of the British East India Company's silk factories (trading stations) in 1676. The Dutch and French also had settlements there. It was constituted a municipality in 1869. A major road and rail junction, Ingraj Bazar is an important silk and agricultural trade centre. There is a sericulture station nearby. Prior to 1813 the river Mahananda formed the boundary between the districts of Purnea and Dinajpur.

### **Conclusion**

River Mahananda is an important tributary of the River Ganga. It has a commanding role in regulating overall economy of the catchment area, namely Darjeeling, Uttar Dinajpur and Maldah districts of West Bengal and Kishanganj, Purnia and Katihar districts of Bihar in more than one ways. The most interesting facts about the Mahananda river forms in its upper course an important linguistic boundary between the Bengal and the Hindi speaking areas and communities.

Mahananda River is a trans-boundary river that flows through the Indian states of West Bengal and Bihar, and Bangladesh. Right bank tributary Mechi forms part of Nepal's eastern boundary with West Bengal and the Kankai crosses out of Nepal. The Mahananda originates in the Himalayas: Mahaldiram Hill near Chimli, east of Kurseong in Darjeeling district at an elevation of 2,100 metres. It is a tributary of the mighty river Ganga, Mahananda river rises from springs in the Dow Hills forest also known as Mahanadi in the Darjeeling hills originating from the Mahaldiram range Hill near Chimli, east of Kurseong in Darjeeling district. Mahananda is a notable river since the ancient period. At present there are so many literary and archaeological evidences are available in modern time by which we can explore the importance of Holi river Mahananda.

**Key words :** Mahananda, Lepcha Jagat, Linguistic, Basin, Soil, Tal, Barind, Mahabharta, Himalayas, catchment, Economy, River

### **FOOT NOTES AND REFERENCES**

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