

CHAPTER II

GEOGRAPHICAL BACKGROUND OF THE STUDY AREA

INTRODUCTION

Jalpaiguri Municipality an administrative headquarters of the district is situated on the west bank of river Tista at $26^{\circ}32' N$ and $88^{\circ} 43' E$ in West Bengal. It is oldest and famous town of the district. Jalpaiguri town is limited on the south, west and north by Kharia Mauza (J.L. No 7) of Jalpaiguri Police Station in Jalpaiguri district, and by river Tista to the east. Jalpaiguri has immense importance as border town, locating at most sensitive area near Bhutan, Bangladesh and Nepal. So the study of this town is necessary from national point of view.

2.1 PHYSIOGRAPHY

Physiographically the district may be divided into three regions a) the hilly area, b) The rugged area c) The southern plain. Jalpaiguri town is a part of this southern plain of the district, and characterized by flatness. Besides the hilly areas and the rugged terrain area, the southern portion of the district, where the town located is almost plain. The slopes gradually fall from north towards the south. The maximum elevation of the town's surface level is 84.35 metre, while the minimum surface altitude has been measured to be 77.60 metre. Thus, the difference of altitude the town's surface level is 6.75 metre. Field survey reveals that, some depressions or basins are found near old Masjid, NewTown, Bose Para, Adar Para, Sen Para, Raikat Para and Hospital Para area (Fig. 2.1).

2.2 GEOLOGY AND SOIL

Geologically, Jalpaiguri town is covered with alluvial deposits, as it is situated on the Tista flood plain. Alluvium is the most widespread geological formation in the area. Along the bank of river Tista silty loam and sandy clay predominate. Stratification is common, which is the result of different mode of deposition. Post Pleistocene deposits are marked by a number of Holocene deposits near the Tista bed. The thickness of the sediments varies from 250metres to 300metres. The succession of recent to sub recent deposition is as follows – Alluvium & hill

JALPAIGURI TOWN

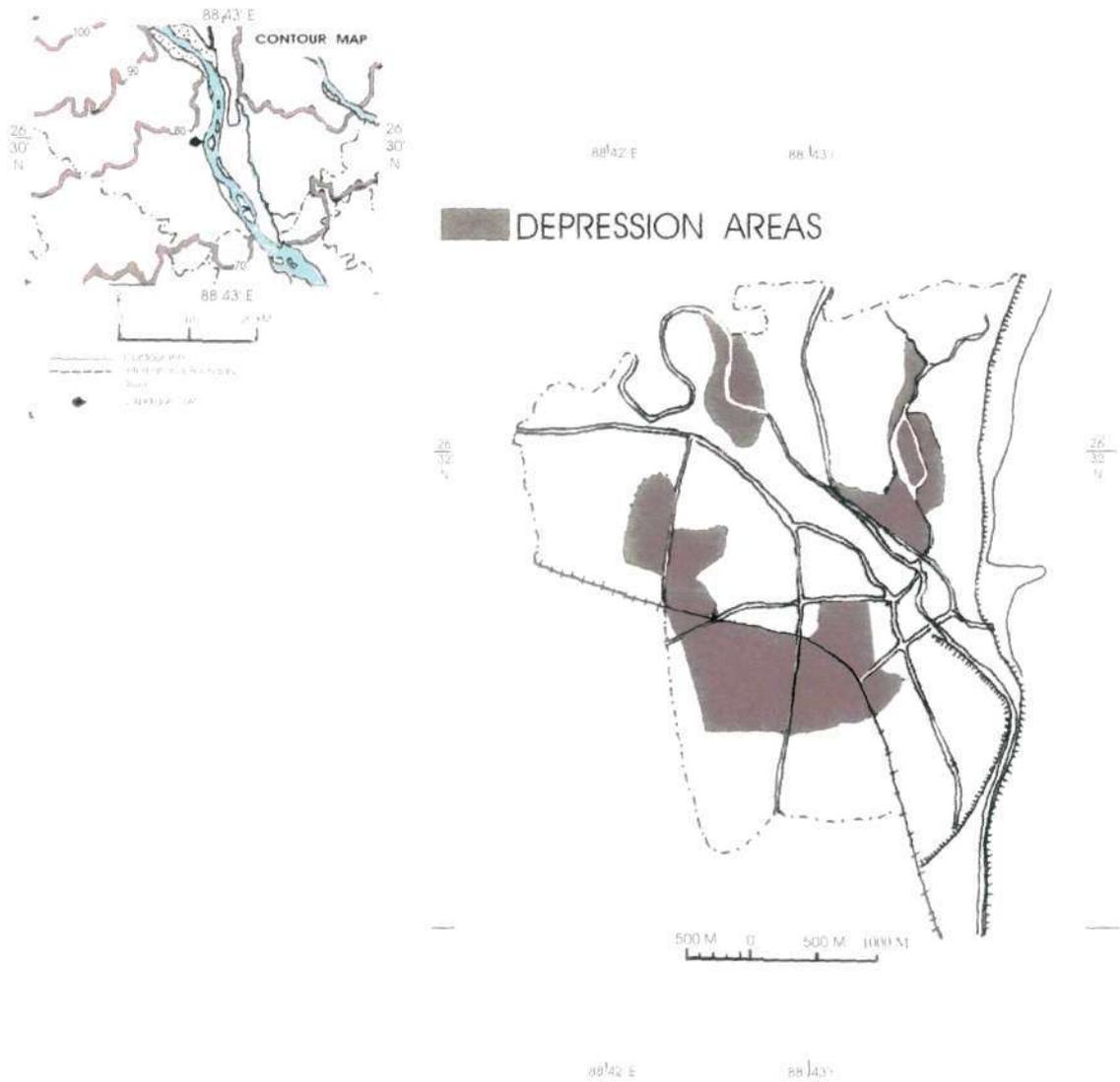


Fig - 2.1

wash material with loose sandy soil – boulders and pebble beds. The lowland contains clay materials. The soils are deficient in organic matter and are characterized by low fertility. This is because the heavy rainfall washout the natural minerals and salts, and washout the decomposed organic matters and hampers the natural process in building up soil fertility and soil structure.

2.3 CLIMATE

The speciality of the climate of Jalpaiguri district is sultry heat with high humidity and heavy precipitation. The climate of Jalpaiguri town is identical and dominated by monsoon winds. The Himalayan barrier at the north also affects the local temperature and rainfall. The climate of Jalpaiguri is dominated by two seasons, rainy season and winter. Two short spanned seasons i.e. spring and autumn are also noticed.

2.3.1 Seasons

2.3.1.i Summer

Summer season in Jalpaiguri starts from mid April. Temperature ranges up to 35⁰C at daytime. In 11 March 1932, Jalpaiguri town has experienced a high temperature of 40⁰C, which is the highest recorded temperature of the town. Nor western such as Kalbaishakhi is very common in summer.

2.3.1.ii Rainy season

Rainy season started in the starting of June and continued up to next four months. The climatic condition is the effect of the low- pressure system at the northwestern India. Rainy season is the most prolonged season in Jalpaiguri.

2.3.1.iii Autumn

The shortest season of Jalpaiguri is autumn starts from mid October and continues till mid November. This season is characterized by sunny day with clear sky and decrease of temperature.

2.3.1.iv Winter

Winter starts from mid November and continue till mid March. Mid December to mid January being the coldest period of winter. Temperature goes down to 10⁰C during the winter and some time drizzle is also found here. Fog also occurs in winter months.

2.3.1.v Spring

Spring starts from mid March and continue up to mid April or end of April. In April dry, warm wind flows from north Bihar to Jalpaiguri during this period.

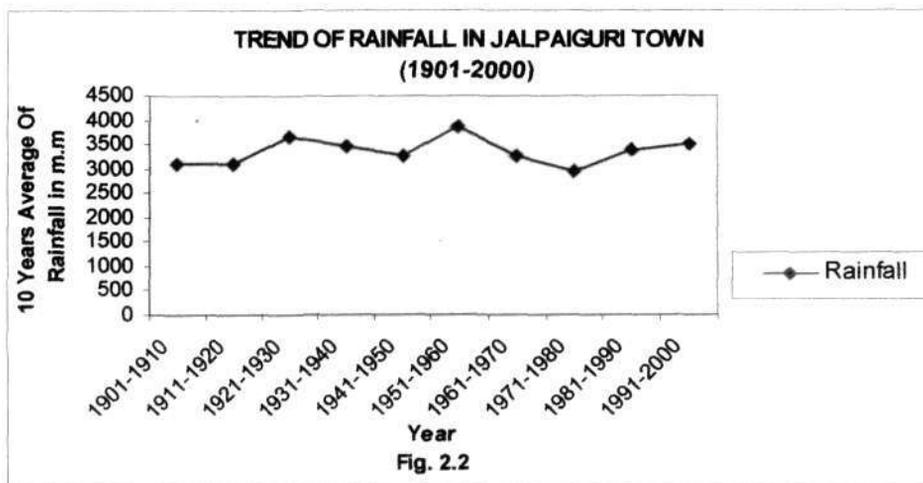
2.3.2 Rainfall

The rainfall is much heavier in Jalpaiguri. The mean annual rainfall of Jalpaiguri town is 3319.1mm. The rains are usually very heavy during July to September, which account 85% of the total rainfall of the year. July is the rainiest month, when the rainfall account to about a 50% of the annual total. In 1892, on the 8th July, the total amount of rainfall was recorded to be 403.3mm with in a period of 24 hours. In Jalpaiguri town 116 rainy days (average) with 2.5 mm. or more is found in rainy season.

Table 2.1 TREND OF RAINFALL IN JALPAIGURI TOWN (FROM 1901 TO 2000)

Year	10 Year Average of Rainfall in m.m
1901-1910	3102.0
1911-1920	3096.0
1921-1930	3672.0
1931-1940	3457.0
1941-1950	3277.0
1951-1960	3867.0
1961-1970	3282.0
1971-1980	2960.0
1981-1990	3371.0
1991-2000	3514.9

Table 2.1 & Fig-2.2 shows the trend of rainfall, which reveals that rainfall period is high during 1920-30 and 1950-60 in the town. And low rainfall period is found during 1970 to 1980. Up to 1930 the amount of total rainfall increased, but decreased during 1970 to 1990. Fig. 2.3 shows monthly distribution of temperature & rainfall in Jalpaiguri Town



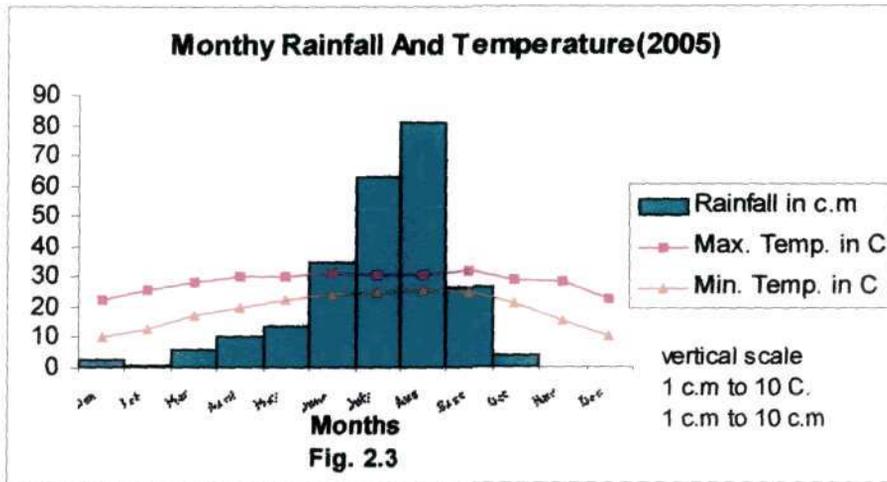
2.3.3 Temperature

During summer May is the hottest month when mean maximum and minimum temperature ranges between 31°C to 23°C respectively. During the rainy months temperature fluctuation is recorded to be 6°C . With the returning of southwest monsoon the temperature decreases and weather becomes cooler. In the month of January the daily average maximum and minimum temperature ranges between 10°C to 23°C . The lowest temperature was recorded on the 3rd Feb. 1905, which was 2.2°C .

Table 2.2 MONTHLY AMOUNT OF RAINFALL AND TEMPERATURE & AVERAGE HUMIDITY IN JALPAIGURI TOWN(2005)

Month	Rainfall in m.m	No. of Rainy Days	Temperature in $^{\circ}\text{C}$		Avg. humidity in %
			Max.	Min.	
January	25.1	3	22.7	10.4	73.3
February	6.1	1	25.5	13.0	69.25
March	57.3	3	28.6	17.4	72.85
April	105.4	9	30.2	20.2	72.25
May	136.2	10	29.9	22.2	75.4
June	345.8	16	31.5	24.4	83.1
July	627.4	20	30.8	25.3	85.5
August	811.7	19	30.7	25.5	88.05
September	265.6	7	32.4	25.0	82.35
October	398.0	9	28.7	21.0	82.80
November	0.0	-	28.3	15.4	82.80
December	0.0	-	22.6	10.6	52.55
Total -	2778.6 m.m	97 days			

Source- Indian Meteorological Department, Jalpaiguri



2.3.4 Humidity

The atmosphere is highly humid through out the year in Jalpaiguri town. During the monsoon months humidity is found very high (85-90%) throughout the day, where as the humidity is low (45%-55%) during the winter seasons. ,

2.3.5 Cloudiness

In the monsoon season, sky is heavily clouded or over casted. From October to April, the sky generally remains clear or lightly clouded, which increases from May onwards.

2.3.6 Wind

Wind is generally light, except for short spells during thunder- storms in the period from March to May, when they are stronger. In the pre monsoon months from March to May, winds blow mainly from northeast or easterly directions. In the monsoon months, the winds are mainly blow from south. Some of the cyclonic storms affect the town causing widespread heavy rainfall.

2.4 DRAINAGE SYSTEM

Jalpaiguri town is situated on the west bank of river Tista and the entire town area is drained by the Tista and its tributaries i.e, Karala, Dhardhara, Rukruka, Chukchuka and Gadadhar, the last one is the tributary to the river Panga. The characteristics of the major river system of Jalpaiguri town are discussed in this chapter (Fig. 2.5).

**DRAINAGE
OF
JALPAIGURI TOWN**

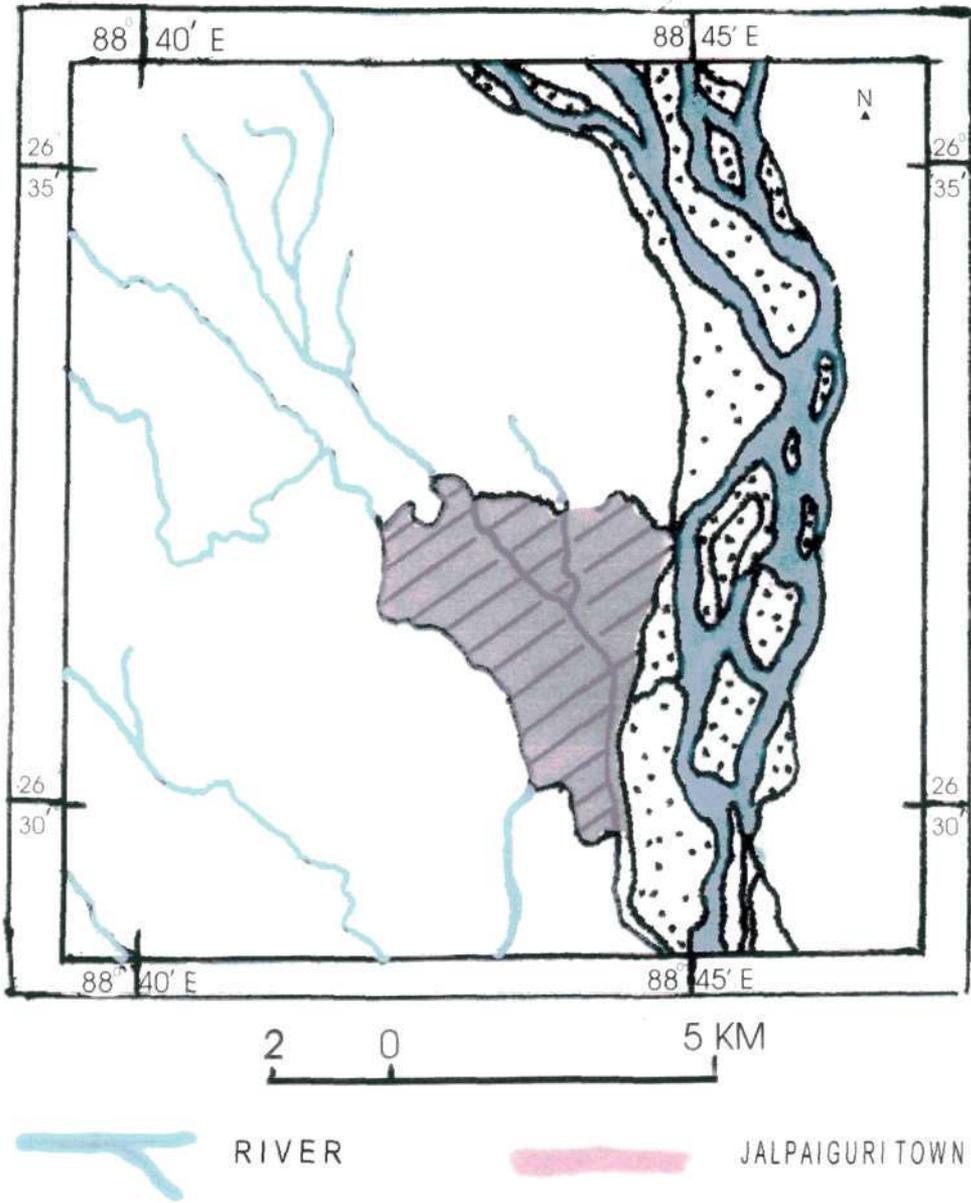


Fig - 2.4

Tista

The Tista, the largest river of North Bengal flows through the east of the town. According to Buchnon-Hamilton (1810), Rennel (1770), Furgusson (1770-1979) the river Tista and Karotoya were the same river that flowed through the Atrayee-Punarbhaba into the Ganga. Due to tectonic activities river course shifted again and again and as a result the Tista migrated eastwards bifurcating the river Karatoya. In the successive years the Tista shifted towards east and communicates with Meghna in Bangladesh. Till 1960's the river was the most important drainage channel for Jalpaiguri. The flood of 1968 caused the huge deposition in the river-bed of Tista intensified the problem of Jalpaiguri's drainage.

Karala

River Karala is one of the tributaries of river Tista on its right bank. It originate from the Baikunthapur forest in Rajgang police station and flows down to the Tista at kings Ghat in Jalpaiguri town. In the last three km, the river flows through the town dividing it into two halves. Now the river meets Tista through an artificial waterway near Kadobari, 4 km south of the town. Deforestation and rapid land use changes during the twentieth century have accelerated the processes of deterioration of the river Karala.

Other Rivers

A number of small rivers, those are the tributaries of either river Karala or river Panga are flowing through the town. Among those, Dhardhara, Gadadhar, Chukchuka, Rukruka are most important.

Dhardhara

The river Dhardhara flows from north to south through the eastern part of the town having a catchment area of 13.8 km² falls into Karala with in Jalpaiguri town near hospital. It acts as a natural drainage for considerable parts of Sen Para, Hospital Para and Raikat Para.

Gadadhar

River Gadadhar flows just beyond the southern part of municipal boundary and falls into the river Panga near Dhapganj. The total catchment area is 10.74 km². At present the river acts as the most important drainage out let of Jalpaiguri Town.

Chukchuka

The river Chukchuka is a small river and the left hand tributary of river Karala. The catchment's area of the river is 10.98 km² and flows on the north of municipality.

Rukruka

The river Rukruka originates from southern edge of Baikunthapur forest and meets the river Karala at the north of the town near Engineering College and having a catchment area of 13.97 km².

2.5 VEGETATION

Heavy rains and hot summer are favourable for the growth of wet evergreen forest. Coconuts, Mango (*Mangifera indica*), Litchi (*Litchi Chinenis*), Papaya (*Carica Papaya*), Guava (*Psidium Guajava*), Amla (*Emblica officinalis*) etc. are common in the town. Among the other natural trees, Sissoo (*Dalbergina Sissoo*), Simul (*Bombax malabricum*), Neem (*Melia azadirachta*), Siris (*Albizzia procera*), etc are more common. Olive, was the common tree of the town, become few in number. Bamboos thrive luxuriantly all over the town in the last century which, is not found in the town in the present days. Along with wet evergreen forest, dry mixed forest is also found in the town.

CONCLUSION

Jalpaiguri Municipality is the nucleus of the district situated on the Tista flood plain, and is characterized by flatness. The slope of the town decreases towards the south with some district depressions at particular points. While the general slope of the town is from north to south, the embankments along River Tista and Karala have altered the natural slope of the town, and are responsible for many hazards particularly water logging. Alluvial deposits are common along the Tista flood plain, which consists of silty loam and sandy clay type soil. The drainage system of the town is associated with two major rivers i.e. river Tista and river Karala. River Karala flows at the heart of the town, being the most important natural drainage channel of the town. But huge flood deposits caused a rise of riverbed of Tista and Karala, which obstructs the natural disposal of storm-water, there by increases the problem of water logging in the lowlands. The climatic condition of Jalpaiguri town is of wet monsoon type, characterized by heavy rainfall and cold winter. But the total numbers of annual rainy days have decreased recently with heavy rainfall in a short period. During the last 112 years in Jalpaiguri town the temperature increased by 1.3^oC. This also affected the bio-diversity in this town as well as the whole district.