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A Study of Geo-Environmental Aspects of Siang River Basin in Relations to Early Migration of Adi Tribe of Arunachal Pradesh

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ABSTRACT

The early routes of human migrations were not well defined. Most of the migration was on foot taking river courses and mountain ridges. The legends and traditions of the Adi tribe of Siang River basin, how ever tell a different stories of migrations. Almost all tribes of Arunachal Pradesh trace the courses of their migrations to the present settlements to be from north. Thus, present search is a humble attempt to understand and document the role of geo-environmental aspects in the early migration of Adi tribe of Siang River Basin of Arunachal Pradesh, India.

Keywords: Migration, River course, Mountain ridge, topography and climate

1. INTRODUCTION

The study area extends from 27°32′ North to 29°20′ North latitude and 93°56′ East to 95°45′ East longitude with a total geographic area of about 19,656 sq. km. It is bounded by Assam in the south, Dibang Valley and Lower Dibang Valley districts of Arunachal Pradesh in the east. The Tibet Autonomous Council of China in the North and Southern Part of West Siang and Upper Subansiri districts of Arunachal Pradesh in the west. The Siang River with its numerous tributaries drains the region. The Siang River Basin is mostly inhabited by Adi, one of the major tribe of Arunachal Pradesh. The present work is a humble attempt to understand and document the role of geo-environmental conditions in the early migration of Adi tribe of Arunachal Pradesh, India.

2. PHYSIOGRAPHY

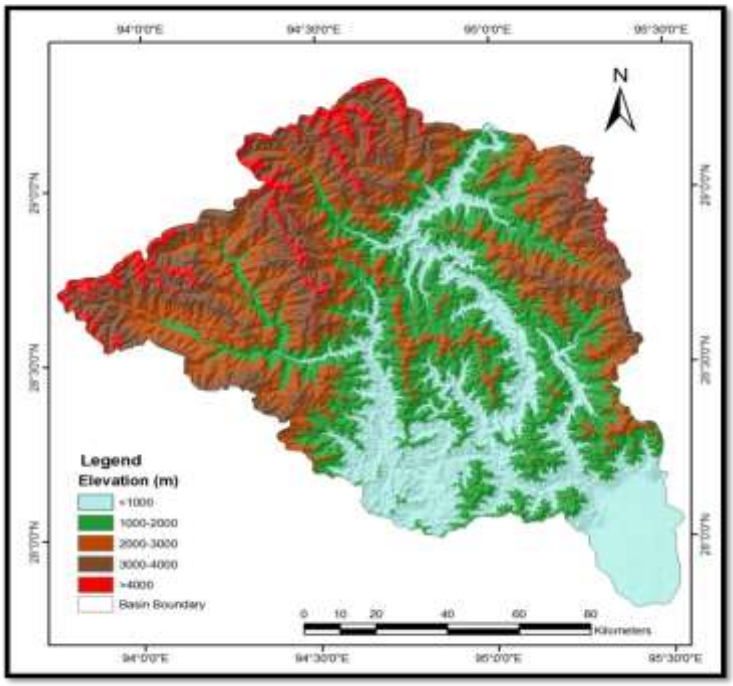
The Siang basin is endowed with various physiographic features like mountain and hill ranges, river valleys and plains. The height of the mountain increases from south to north. The northern areas are covered by hills and mountain ranges which fall under the Lesser Himalayas and Siwalik range of the Eastern Himalayan system. The altitude of the study area ranges from 130 meters at foothill to 4500 meters in the north (Mc. Mohan Line) in the right bank of Siang River. The northern most mountain remains covered with snow most part of the year which forms the perennial source of many rivers. The ranges of hills and mountains throw series of spur and towering to majestic height which is almost covered with snow. These are the most imposing topographic features of the Siang Basin. Some of the mountain ranges in the northern part are Peri, Kepangla, Tamjen, Kamje Liling, Luyor, Midak, Kongun,

and Takuk with their peaks covered with snow during winter season. The hills to the right bank of the Siang River are generally lower in elevation than that of the left bank.

The mountain ranges lying to the left bank of the Siang River has higher elevation, rising from 3,050 meter to 5,800 meter. Eko Dumbing, and Pemi Letung or Riu Telang in the Abroka ranges, Doni Lipik in the Ketak Range and Tsongo Phukpa in the Titabori ranges are the prominent peaks which exceed 4,500 meters in the elevation besides numerous peaks with elevation of around 3,500 meters such as Abroka peak, Kallang peak near Peki Modi in Abroka ranges, etc. other mountain and hill ranges in the region are Moling, Baapi, Takek, Gadi, Dirang Adi, Pameng, Pogo Adi, etc.

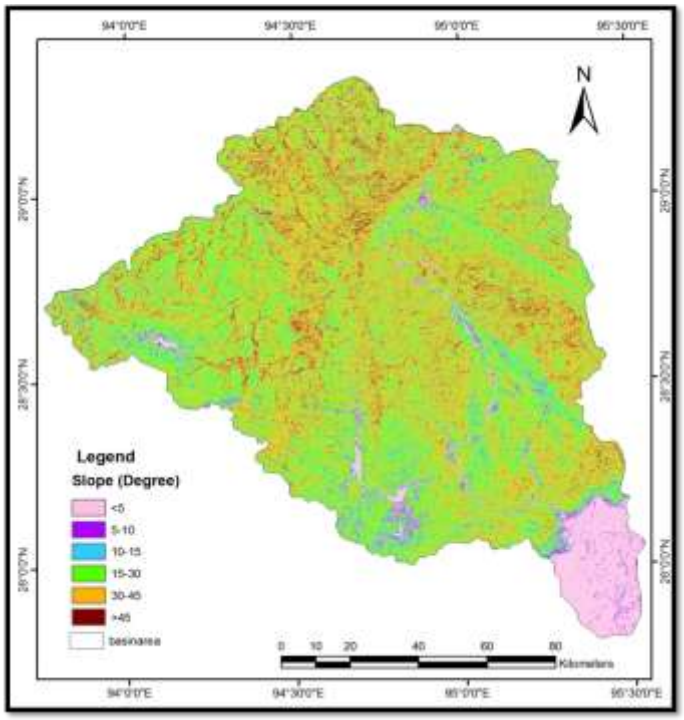
Pasighat and its adjoining area are the low lying flat lands interspersed by the numerous river systems. The region is one of the least geologically explored parts of the country, except the few accessible places. As per the report of Geological Survey of India, the region is endowed with some mineral resources like dolomite between Tarak (28°13′ N & 94°55′ E) and Pangin (28°12′ N & 94°55′ E) and along the Siang River between Pasighat (28°05′ N & 95°20′ E) and Pugging (28°45′ N & 94°57′ E), limestone deposit at Kabu Village near Aalo (28°12′ N & 94°45′ E), marble at Mechukha (28°50′ N & 95°10′ E), clay at Paying near Nyukong (28°55′ N & 94°51′ E) and sulphide at Yangsang Chu Valley near Yemlling and along Sisi Nala north of Pugging (28°45′ N & 94°57′ E), etc. (Gazetteer of India, Arunachal Pradesh, East Siang and West Siang District 1994).

Map No. 1. Elevation Map of the Study Area



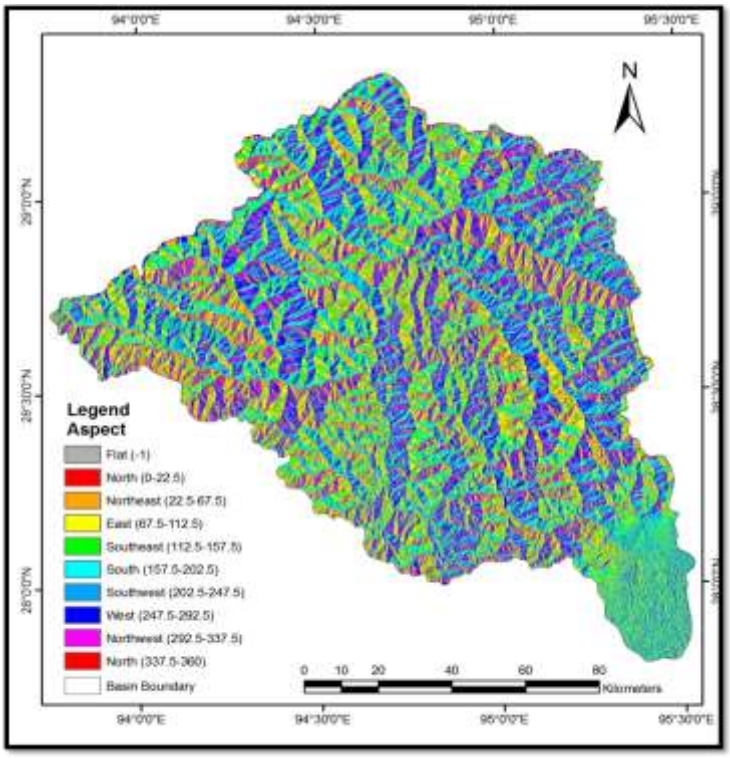
Source: Satellite Image

Map No. 2. Slope Map of the Study Area



Source: Satellite Image-

Map No 3. Aspect Map of the Study Area



Source: Satellite Image

The study area falls within Zone-V in the seismic map of India. Several earthquakes of moderate to great intensity have been experienced in past in the region. The Great Assam Earthquake of 15th August 1950

was most dreadful and is still fresh in the memories among the survivals of the disaster and remained as one of the reference points of earlier time by the people.

3. DRAINAGE SYSTEM

The hilly terrains with the high rainfall have led to the origin of numerous rivers and streams which drain the region. The river Siang which flows north-south direction constitutes the main river system. Major tributaries like Siyom, Yamne, Nyigong, Simang Rivers, etc. joins the Siang River at different location.

The Siang River originates from the Chemayungdung Mountain Ranges, nearly sixty miles south-east of Mansarovar Lake in the Mount Kailash Range in the southern Tibet Autonomous Council (Republic of China) at an elevation of 5300 meters.

A spring called Tamchok Khambab spills from the glaciers which later gather breadth and volume to become the Tsangpo, the highest river in the world. Tsangpo River flows with a length of 1625 kilometers in Tibet parallel to the main range of Himalaya before it enters India through Gelling in Arunachal Pradesh.

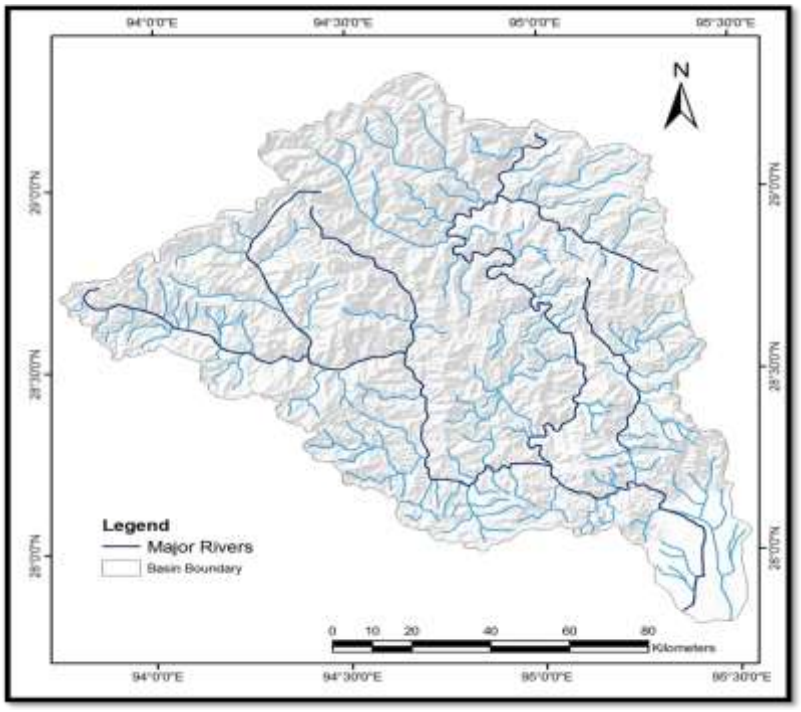
Before entering India, the river passes Pi (Pe) in Tibet and suddenly turns to the north and north-east and cuts a course through a succession of great narrow gorges between the mountain Gyala Peri and Namja Barwa (Namcha Barwa) in a series of rapids and cascades. The river then turns south and south-west and flow through a deep gorge across the eastern extremity of the Himalaya with canyons walls that extend upwards for 16,500 feet (5,000 meters) and more on each side.

The river enters Arunachal Pradesh near Gelling from where it is known as Siang. The total length of Siang River (within the state of Arunachal Pradesh, India) is 294 kilometers till its point of confluence with Dibang and Lohit Rivers in Assam. From this point onward it flows as Brahmaputra River in Assam and traverses a distance of about 195 kilometers upto the confluence of Subansiri River on its right bank. Further downstream it is joined by Kameng at Jamugurihat near Tezpur, after another 123 kilometers. From here it travels for another 134 kilometers up to Guwahati and then flow to Bangladesh and meets with the Bay of Bengal after it merges with Ganga River.

The elevation of Siang River Basin ranges from 90 meters to around 5800 meters. The total area of the Siang Basin from its origin to its confluence with Dibang and Lohit Rivers is 2,51,521 sq. km. Out of this 2,36,555.7 sq. km. lies in Tibet (China). The total area of Siang Basin in Indian side up to its confluence with Dibang and Lohit Rivers is 14,965.30 sq. km. (SANDRP, Feb. 2014).

Siang River after entering Indian side at Polo Yorbe near Gelling, Upper Siang district and flows south-west and south- south-east until it takes a southern turn at Pangin and afterward it bends towards south-east and runs up to Pasighat plain where it flows towards south and finally descends down into the plains of Assam. In its course through the Adi area the river is fed by numerous big and small tributaries, of which Yamne, Nyigong or Yangsangchu, Siku and Sibiya rivers with their numerous feeders of their own are the prominent tributaries on the left bank of the Siang River. On the right bank, the major rivers which merge with the Siang river are Siyom, Simang, Ringgong, Situm Burung, Sira Pate, Sipo, Sikut, Sipit, Nyitgong and Anggong River. These bigger rivers also do have numerous feeder streams of their own.

Map No.1 Drainage Map of the Study Area



Source: Satellite Images

The Siyom River is one of the largest tributaries of Siang that rises from Peri mountain range in the upper ridge of Mechukha Sub-Division of West Siang District. The Siyom River is formed due to the three prominent tributaries in the upper ridge; the Si and Yomi Rivers in Monigong and Yargyapchu which flows in the Mechukha. These rivers join at Tato and acquire the name Siyom. From Tato the river flows in eastern direction till it reaches Payum in the Bori area where it bends towards south-east and southern direction and flows through the Galo area. The river bends towards east near Aalo. Near Aalo it is called Yomgo. Finally Siyom flows towards east direction and joins with Siang River at Pangin. These rivers formed major route of Adi migration. Siyom River played important role in connecting two major communities of Tani tribes, i.e. Adi in east and Galo in west. Many Adi took Siyom as route and migrated to present West Siang District; in same way, many Galo also migrated to present East Siang District following the Siyom River. Some of the tributaries of Siyom River in the West Siang District are Tagurshit, Siyet, Sikam, Shiyek, Sike, Sido, Sirang, Hirit, Hipu/Sipu, Sirit, Gebung, Jerung Rivers, etc.

The Yamne River which originates from high snow clad mountain of Abroka Mountain ranges drains almost entire Mariyang Sub-division of Upper Siang district. The basin is inhabited by Panggi in the west, Paadam in the north and east and Pasi in the eastern side of the river. The feeder streams of the Yamne River are Sidip, Sipong and Siyat Rivers. The Yamne River flow south-west direction. Then the river curves towards the south-west and then flow southwards to meet the Siang at the place near Pongging village.

The Yamne River also plays an important role for the unification of various clans of Bomi group to form Paadum (Paadam), a sub-tribe of Adi during early period. Further, in due course of their migration, Yamne River acts as important route during the course of early migration of Adi. For example, Paadam used the Yamne River as their route of migration towards south while some section of Panggi used it as their route of migration for upwards movement in their course of migration.

The Nyigong Korong called by Adi and Yangsangchu by the Memba and Khamba is one of the tributaries of Siang River on the left bank. It originates from extreme north-eastern portion bordering Tibet in the Upper Siang District. It flows westwards and joins the Siang River near Jido Village. The prominent tributaries of the Nyigong River are Arpong, Kanden, Methon, Amma, etc. Shimong and Tangam (sub-tribes of Adi) and Kamba are the inhabitants of the Nyigong or Yangsangchu Basin. The Shimong and Tangam sub-tribes of Adi used this river course during their time of migration.

The Simang River is also one of the important tributaries of the Siang River. It originates in the Mouling mountain ranges near Mouling peak in the Karko area. It flows towards the south-eastern direction through Minyong areas and finally joins Siang River on the right bank near Dosing village under Boleng circle of East Siang district. The Subbung River is the major tributary of the Simang River. Most of the Minyong and Bori used the river course of Simang during their time of migration.

Other tributaries of the Siang River are Bombung, Mabung and Jorju, in the Pangin-Boleng Sub-Division of East Siang District. Siku, Sirum, Sibiya, Siluk, Ngopok Korong, Taro Tamak, etc. are the tributaries of Siang River in the Mebo Sub-Division. Sirki, Sibo Korong, Remi Korong, Remi, Dibu Korong, etc. are some of the river systems that flow and merge with Siang River in Pasighat Sub-division of East Siang district.

These all river systems, either major or minor played very important role in Adi tribe migration and early settlement of different tribal groups in the state of Arunachal Pradesh. The knowledge about the river systems will help us in better understanding of Adi migration. These river systems form major routes of the migration for the people of the Siang River Basin. Most of the sub-groups of Adi migrated through the course of the Siang River. The Bori, Boh (Pailibo) followed the Siang River course up to the confluence of Siang-Siyom and then migrated towards the opposite of the course of Siyom River and moved upto present locations. Shimong and Tangam used the Siang and Nyigong Korong (Yangsangchu) Rivers while Paadam, Pasi, Millang used Siang and Yamne River as their route of migration.

4. CLIMATE

The relief features of the study area have a great impact on the climate of the place. Generally the region falls under the Monsoon climatic zone. There is an altitudinal climatic variation from south to north. The lack of adequate number of meteorological centre and proper equipments, form the major constraint in getting climatic data of the area. This interpretation is only based on record of few selected locations which do not represent actual climatic condition prevailing over the area. Traditionally, a year is divided into four seasons as follows.

1. *Diigin* (Winter season) – December to February.
2. *Donggup* (Spring / Pre-Monsoon season) – March to May.
3. *Lobo* (Summer/ South-West Monsoon season) – June to September.
4. *Gaydí* (Autumn/ Post Monsoon season) – October to November.

The region receives heavy rainfall from south-west monsoon over the foothills and plain. July is the wettest month while December is driest month. During the pre-monsoon period, from March to May, the area experiences rainfall with lightning and thunderstorms. From May to August, the area experiences incessant rainfall leading to landslide, flood, and river banks erosion, etc. In the higher elevation, during the winter season, the precipitation occurs in the form of snowfall and high mountain ranges are covered with snows which give splendid view of scenic beauties. Further, in the upper ridges of High Mountain

in the extreme north, the snow remains throughout the year, especially in the Mishmi Hills to the north east of Mariyang town of Upper Siang district from where the Adi used to collect *émo* (Aconite- poison use in arrow head) before the onset of heavy snowfall in the month of November. In Adi language, the month of November is called *Disang*. So, the expedition for collection of aconite was called *Disang Saanam*. The name of the place where from the *émo* was collected is locally known as *Dimu Taya Aamong* (land of evil spirits).

The temperature varies from place to place depending on elevation, topography and exposure to the sun. The temperature is usually warm during summer season and cold in winter season. January is the coldest month when the mean daily maximum and minimum temperature in plain area are about 22^{o}C and 07^{o}C respectively. The temperature begins to rise in March. August experiences the warmest month with mean maximum and minimum temperature of 36^{o}C and 14^{o}C respectively, over the plains, where as in Mechuka valley located in the extreme north-west corner, which is surrounded by hill ranges from all side, the average maximum temperature in the month of August is 24.6^{o}C and average minimum temperature in the month of December is -1.6^{o}C. Sometimes the maximum temperature exceeds 38^{o}C when oppressive weather is experienced in the lower foothills and plain. The lower temperature prevails over the hilly and mountainous belt. Diurnal variations in temperature are large particularly in the valleys and plains during the winter. The foothills and plains in the south experiences sub-tropical to temperate as one moves from south to north.

The relative humidity in the region is high throughout the year. The winter months being slightly less humid but exceeds 60%. During winter occasional heavy fogs are witnessed in the gorges, valleys and other higher elevations which are locally called *Muksup*. In general, the entire region experiences pleasant and moderate temperature except in few months. The months of February-March and October-November are the best and pleasant months and best time to visit the region.

Climate also played very important role in human migration. For example, Bori sub-group of Adi tribe migrated from hill to a plain areas near present Pasighat of East Siang District, but they did not like it for being foggy and windy. They left the place and migrated to present Kamki of West Siang District via Siyom River. There, too, they found it to be much foggier; finally they went back to the hill where sky is rarified and clear. Likewise, most of the early migrants, in due course of their journey in search of suitable land for habitation reached foothills and plains in the present Assam. But they rejected the foothills and plains for being warm and humid, infested with malaria, etc. and finally returned to hills.

5. FLORA AND FAUNA

Warm and humid climate have made the area rich with varieties of flora and fauna. The dense forest with green vegetation in the middle and foothills areas contains various species of plant and grass. The area has mixed types of vegetation, evergreen tropical forest in the foothills, with sub-tropical evergreen type, the mixed tropical and sub-tropical deciduous forest type where some species shed their leaves during dry season. It is very difficult to differentiate the types of forest in the region because of the merging of temperate species along with sub-tropical one, along the lower slopes of the Siyom and Siang valleys irrespective of the elevation.

The main vegetative types found in the region are humid evergreen forest up to 900 metres and wet sub tropical evergreen forest up to 1500 metres which in turn gradually merges into humid sub-temperate forest over an altitude of 1800 metres.

The tropical evergreen forest can be seen along the Siyom River but due to human interference and practices of jhum cultivation these types of forests are restricted to isolated parts of the hills. Sub-tropical evergreen forest can be observed extensively around Tuting and Aalo area, Siang river valley from Migging up to Kepangla (Indo- China border); it also mixed with tropical and temperate species. According to Das A.K. (1984), "There is no much distinction between tropical evergreen forest and semi evergreen forests due to the mixture of same type of plant that are found in both the regions. The plants that shed leaves during dry season of February- April are found mixed with evergreen forest. Deciduous forest which form a part of evergreen forest during the dry season due to shedding of foliage, give an appearance of a semi evergreen forest".

Flora and fauna also form important source of reference of human migration. Plants and animals are very commonly mentioned in mythology and folksongs. For example, the source of migration of seasonal birds is mentioned to be from Tibet. There are also mentioned about origin of various crops such as paddy and millet.

Thus, the geo-environmental aspects including topography, rivers, mountains, hills, valleys, climate, flora and fauna played an important role in the early migration of Adi tribe of Arunachal Pradesh. The Adi took river courses of Siang River and its tributaries. Many also took the ridges of mountain and hills as their routes of migration. They splits from main group and migrated in different point of time and different waves. Most of the cases, they were migrated aimlessly according to the physiographic of the landscape and looking for better habitable land. Many of them again met and reunited with their separated groups in the new places. Many a time they also came back to old settlement unintentionally and accidentally from different directions. Hence, the thorough study of geo-environmental aspects of the region is requires to understand and document the early migration routes of the tribal people of Arunachal Pradesh.

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