E-ISSN: 3048-6041 | Volume-1, Issue-10 | October 2024

# Physical Division of South Chhotanagpur Region

Dr. Chandraprabha [1], Dr. Aruna Kumari [2]
[1] Assistant Professor, Department of Geography, VSSD PG College, Kanpur
[2] Professor, Department of Geography, VSSD PG College, Kanpur

**Abstract:**

Natural characteristics of the Earth's surface, such as landforms belies of water, climate zones, and vegetation. These features are part of the natural environment and are often used to describe the landscape of the region. If we want to know about any area of the earth, we must study its physical features and characteristics. Since times immemorial, land has played an important role in shaping the lives of human beings. Every area of the land has a specific physical, cultural, social, economic, and political feature. These specific features played an important role in the development of these regions and their civilization. Nature of rocks, types of rocks, and characteristics of rock decided the shape of physical features of land**:** Sedimentary rocks record changes in temperature, rainfall, and ocean current through their composition and fossil content. For the development of any region, the government has to make a plan for it. On the way of making and implementing a plan for any region, it is compulsory to know about the region. For studying about any region, its relief and physiography are studied first. So I had tried to study the physiography of south Chhota Nagpur according to my vision. In which it has been divided into so many subregions so that it can be studied nicely. The planner can understand its physical property as well as drawbacks nicely.

**Key words:** physical features, climate zone, characteristics of rocks, fossils, physiography

**Introduction:** The Chhotanagpur Plateau as a whole is made up of igneous rocks. Which is now dissected by many small and big rivers. So it has been dissected at many places having very complicated relief features. There is much uneven terrain with rolling hills and many valleys. This uneven topography of the Chota Nagpur has a profound impact on the region's drainage system. Most of the mineral resources of India are found in the Chota Nagpur regions. Mainly founded minerals in these regions are coal, mica, copper, limestone, and iron ore. Uranium is also found in this region. for This specific nature of the Chota Nagpur plateau is called the storehouse of minerals of India. The slope of the whole area is towards the south and east. There are some high peaks in the plateau area also. Plateau can be differentiated along river basins. The Chota Nagpur Plateau region has great physiographical and topographical significance because of its long tectonic evolutionary origin history.

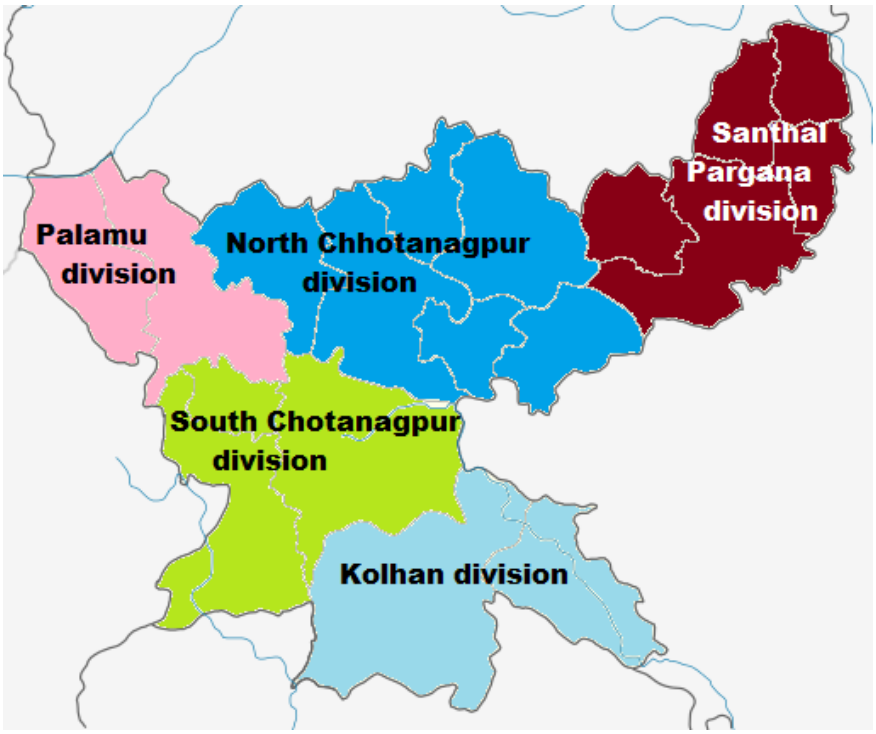
**Objective:**

1. To classify the Chota Nagpur Plateau region into micro topographical and Geomorphological units.
2. To understanding terrain surface characteristics of study area.
3. To represent the topographical variations or relief at different scale of study area.
4. To know about mineral resources which are found in study area.

**Study Area:**

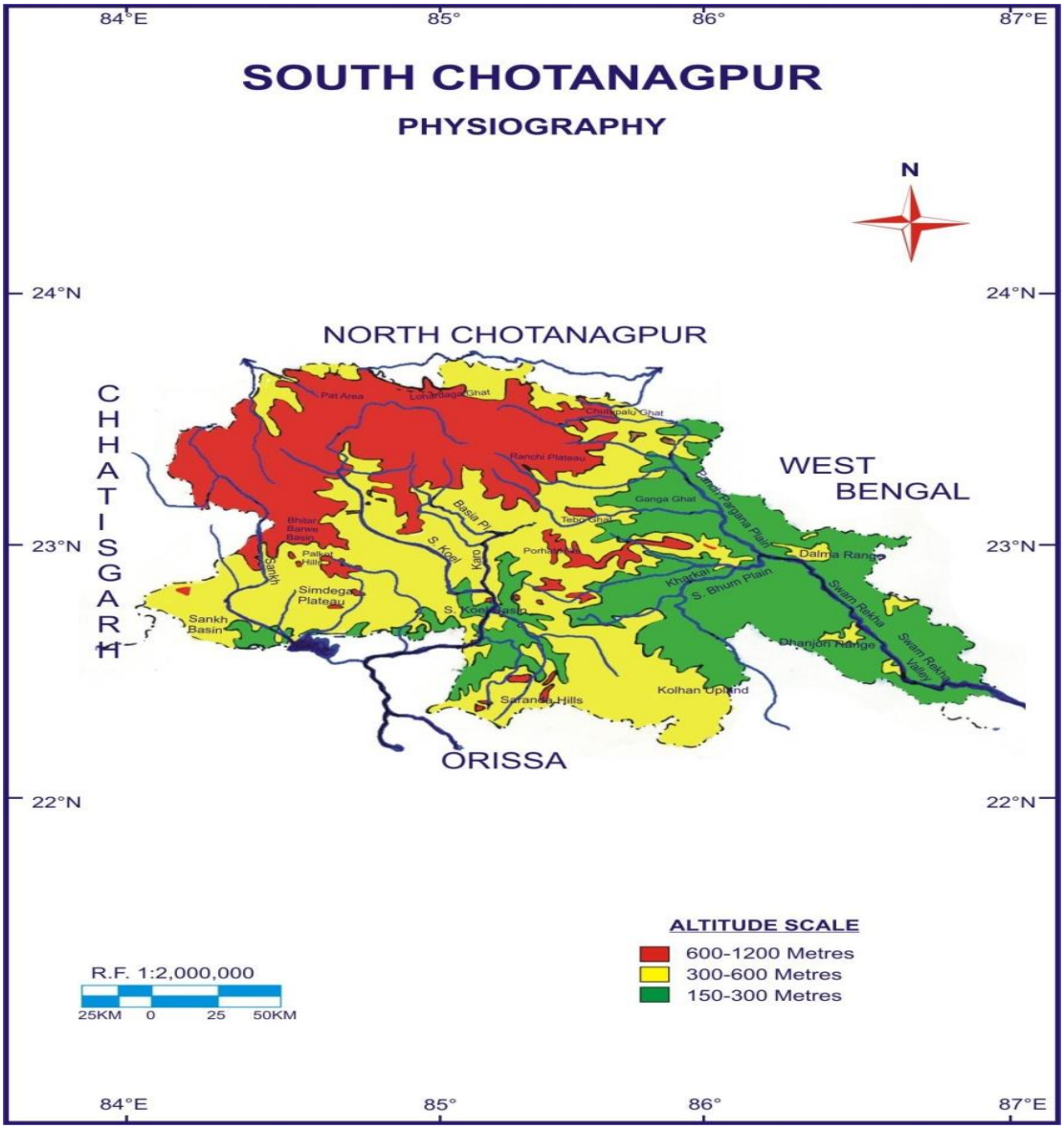
The Chhotanagpur is situated in the estern part of the eastern Indian Chota Nagpur, which covers much of Jharkhand state and an adjacent part of Odisha, West Bengal, Chhattisgarh, and Bihar. The total area of the Chota Nagpur region is 130000 sq km. The southern part of this region is encompassed by the river basin of Mahanadi, and this region is bounded by the Indo-Gangetic plain on its east and north sides. Precambrian rocks, around 540 million years old, are dominant in the Hazaribagh, Ranchi, and Kodarma regions. Several rivers have dissected the hill into the peneplain and isolated hills. The study area's average amount of annual rainfall is about 1400 mm. The mean temperatures during the summer and winter months are 38°C and 23°C, respectively.

**Location Map of South Chhotanagpur Region**



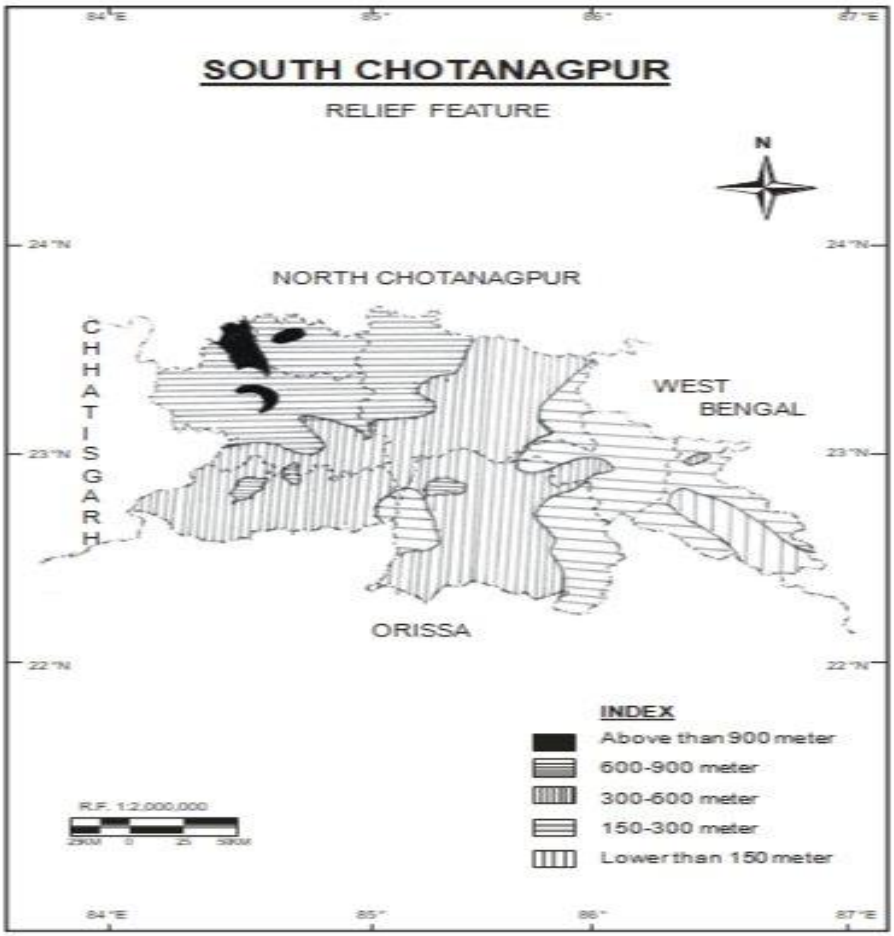

Source: Wikipedia

E-ISSN: 3048-6041 | Volume-1, Issue-10 | October 2024




| South Chhotanagpur can be divided in following parts on the basis of it's relief features. | | |
|---|---|---|
| Pat area | Basia plateau | Singhbhum plain |
| Bhitar barwe basin | Tebo ghat | Dhanjori range |
| Lohar daga ghat | Ganga ghat | Kolhan upland |
| Palkot hills | Panch pargana plain | Saranda hills |
| Simdega plateau | Porhat hills | Swarnrekha valley |
| Chutupalu ghat | Dalma range | South Koel valley |
| Ranchi plateau | Dhalbhum upland | Sankh basin |

E-ISSN: 3048-6041 | Volume-1, Issue-10 | October 2024




**PAT AREA:** This area is on the north-western part of South Chhotanagpur. Actually, it is a Western extension of Netarhat pats. Which has been separated by the Chhechhari basin of Palamu district. Its height is above 900 up to 1030 meters. The Khernar Pat is located at the north of Lohardaga. Which is 1068 meters high. South Koel originated from this Khernar Pat and flows to the south. Whereas North Koel originated from the west of Gumla at the height of 917 meters and flows northward again to the west of this river, Son originated from here and flows southward. Sadrigagh Falls is located at a height of 1064 meters along the river Sankh. After flowing 16 meters long, it again falls at Chenikhenga Falls. On the upper part. This river is called Sen. This plateau extends in the south up to 23° N. Latitude and in the north 23° 45' North Latitude. Its eastern boundary is about 900 meters high. It lies in Gumla district, mainly in Bishunpur and Eastern Senha, and Kisko in Lohardaga.

**BHITAR BARWE BASIN:** This basin is made by the river Sankh on its upper part. On the north of this basin lie the Chheni Khenga falls of the pat area; on the east, the North Koel falls in the south-west Ghatijharia falls of the Jashpur pats of Chattishgarh. This area extends from 23° North to 23° 10' N latitude and from 84° 5' East longitude to 84° 20' E longitude. The slope of this basin is southward. The minimum height is about 750 meters and the maximum is 971 meters. In this basin, so many small tributaries join the river Sankh. This area is surrounded by Pat in the west, north, and east. The area lies in Dumri and Chainpur in Gumla district.

**LOHARDAGA GHAT:** This ghat is located along the eastern border of the pat area up to Lohardaga in the east. Which extends from 23° 10' North Latitude up to 23° 50' North Latitude and from 84° 25' East Longitude to 84° 40' E. Longitude's minimum height is 674 meters in the south, and in the middle part it is 749 meters high, and its height rises north-westward. So it's slope is from North West to South. This ghat extends from Gumla Ghaghra in Gumla to Western Senha in Lohardaga district.

**PALKOT HILLS:** This hill lies in Palkot in Gumla district, in the western part of South Chhotanagpur. It lies between 22° 45' to 22° 50' N. Latitude and from 84° 25' E. To 84° 35' is East longitude. It is surrounded by the Jashpur Pats of Chattishgarh on the West, the Bhitar Barwe basin in the N. West, the Ranchi plateau in the N. East, the Basia Plateau on the East, and the Simdega Plateau in the South. It's height ranges from 584 to 839 meters. A tributary river originates from here and flows south to join Sankh. On the northern part of it, two tributaries originate and flow north-eastward and join to Koel. Thus, here found a trellis pattern of river.

**SIMDEGA PLATEAU:** This plateau extends from 84° E. Longitude to 86° E. Longitude and from 22° 20' N. Latitude to 22° 45' N. Latitude. It covers the area of Simdega to Kurdeg, Bolba, Thathaitanger, and the southern part of Kolebira and Bano. In the western part of it lies some area of Jashpur Pats, having a height of about 661 meters. In the south-western part of it lies a mountain height of 462 meters in the west. South lies Adas Kemba, having a height of 499 meters. In the western part of it lies Chota Pahar, having a height of 575 meters.

This plateau is surrounded by Jashpur Pat in the north, Palkot Hills, and Basia Plateau in the north. River Coal lies in its eastern part, and Birmitrapur hills and Sundergarh hills lie in its south. Over this plateau, isolated hills are found here and there. River Sankh flows in the western part of it, which goes southward and flows to Orissa, where it is called Mandira and Brahmani.

This plateau is dissected by the tributary's river Sankh. Most of the river flows from North and South and joins Sankh. Which is the main river of this plateau?

The most important river in this area is Koel, which runs from the north and rises from Lohardaga Ghat and Ranchi plateau. It flows westward in the south of the plateau and joins Brahmani in Orissa. This plateau completely lies in the southern part of Gumla district.

**BASIA PLATEAU:** This plateau lies in between 22° 35' to 23° 10' N. Latitude and from 84° 35' to 85° 25' East Longitude. It lies in the eastern part of Palkot, Basia Konbir Bano, and Northern Kolebira in Gumla district, and some parts also lie in Lapung and Torpa in Ranch district. Its height is between 450 and 600 meters high. There are some isolated peaks of height 629, 660, 771, and 669 that can be found here and there.

On it's west lies Palkot hills; in the north lies Ranchi plateau in the east; Tebo Ghat and Poraghat hills; in the south lies Simdega plateau. The main river that runs over this plateau from north to south is the river Koel. The main river lies in its western part, and its main tributary river flows in its eastern part. This plateau is dissected by tributaries of the Koel and Koel Rivers. The pattern of Koel is dendritic.

**RANCHI PLATEAU:** This plateau lies in between 23° 35’ N to 23° 55’ N. Latitude and 84° 40’ E. To 85° 30’ E. Longitude. This plateau covers the area of the eastern part of Senha and Lohardaga of Lohardaga district, Sisai and some parts of Basia of Gumla district, and the eastern part of Burmu, the whole Mandar. Bero, Ratu, Kanke, Ormanjhi, Hatia, some mid-western parts of Angara, and some northern parts of Karra of Ranchi district Its height ranges from 600 meters and goes up to more than 900 meters. In it’s northeastern tip lies the Ichadag mountain, which has a height of 1050 meters. It is like a tableland with an escarpment boundary. There are some places having a height of 692 meters.

The rivers radiate here from all sides. So the slope is on all sides. In it’s middle part. 961-meter-high mountain can be seen. Isolated hills are here and there. The river Swarnrekha originates from the northeastern part of the Ranchi plateau. The Koel originates from its northwestern part. Except it, there are so many small rivers that originate from here, which join the two main rivers later on. In the southeast part of Ranchi. A small river named Karhari originates, which joins Swarnrekha after flowing eastward. Small rivers that originate in the southern part of the Ranchi plateau generally join the River Koel.

Physically, it is surrounded by Lohardaga Ghat in the west, Chutupalu Ghat in the north, Gangaghat in the east, Tebo Ghat in the south-east, and the Basia plateau and Palkot hills in the south.

**CHUTUPALU GHAT:** Chutupalu Ghat is on the north of the Ranchi plateau, parallel to the tropic of Cancer. Its average height is 450 to 660 meters. Its slope is generally northward. So, all small rivers that originate from here flow to the northward and join the river Damodar. It extends roughly 85° E. To 85° 35’ E. Longitude and 23° 35’ N. To 23° 40’ N latitude. In it’s north lies the Karnpura Basin; in the east is the Purulia Upland; and in the south and west lies the Ranchi Plateau. Hundru Falls on the river Swarnrekha lies in this part, which falls from a height of 74 meters. Muri is located in its eastern parts, having a height of 450 meters.

**GANGA GHAT:** This ghat runs in a north-south direction on the midpoint of Ranchi Plateau and Panch Pargana Plain. It is crossed by the river Kanchi and other tributaries of the Swarnrekha River. It roughly extends from 23° N. to 23° 20’ N. Latitude and from 85° 25’ East to 85° 40’ E. Longitude. It’s slope is eastward. It’s height ranges from 300 to 450 meters.

It is surrounded by Ranchi Plateau in the west, Chutupalu Ghat in the north, Panch Pargana in the east, and Tebo Ghat in the south. There is a waterfall on the Kanchi River in this ghat. Which falls from the height of 40 meters in the south, and there is another falls in the north. Which falls from the height of 26 meters.

**TEBO GHAT:** Tebo Ghat roughly runs in the middle part of the South Chhotanagpur Plateau from south-west to north-east. It’s height is not more than 600 meters. This is an area of height 771 meters in its west and 846 meters in the east. A subtributary of Karhari, which is a tributary of the river Swarnrekha, arises here from the north and flows north-eastward. While a tributary of Koel originates from it’s south-westward.

This region lies between 22° 45’ N. To 22° 55’ N Latitude and from 85° 15’ E to 85° 30’ E Longitude. This tebo ghat lies in the N. East block of Sonua of West Singhbhum and runs northward. In Arki Block of Ranchi District. This region is surrounded by Basia Plateau in the

west, Ganga Ghat and Punchpargana in the north, Porahat Hills in the east, and Koel Basin in the south.

**PORAHAT HILLS:** This hill roughly extends in a south-west to north-east direction, in between 22° 42’ North to 22° 55’ N. Latitude and from 84° 30’ E. to 84° 50’ East latitude. This hill lies in the blocks of Sonua Chakradharpur of West Singhbhum and extends N-Eastward in Arki and Taimara of Ranchi District. In its south-eastern tip lies Lukud Buru mountain in the border area of Chakradharpur and Sonua Block, having a height of 918 meters.

In the middle part, it’s height is 846 meters, and in the northeastern part, it’s height is about 796 meters. Thus, it’s height rises from north to south. A subtributary of Karhari arises from it’s northern part, another tributary of Karhari originates in it’s eastern parts, and in it’s southern part, a subtributary of Koel arises from here.

This hill is surrounded by Tebo Ghat in it’s west, Panch Pargana Plain in the north, the Dalma range, and Singhbhum Plain in it’s east, and in the south lies the Koel River Basin. Which separates it from Saranda Hills in the south.

**PANCH PARGANA PLAIN:** This plain lies in the north-eastern part of South Chhotanagpur, which roughly extends from 22° 55’ North to 23° 33’ N. Latitude and from 85° 30’ E. to 86° 10’ E. Longitude. It covers the area of silly Sonahatu, Bundu, Tamar of Ranchi district, Ichadag, and some part of Nimdih of West Singhbhum district.

This plain is made up by the river Swarnrekha. Kanchi and Kharkai rivers. River Swarnrekha flows in this area from a north-to South direction and comes from the Ranchi Plateau. While the river Kanchi flows from west to east. Which comes from near Serna at the height of 754 meters and crosses this plain and joins Swarnrekha. Kanchi River flows in its middle part. This river enters this plain from the west, flows in a north-east direction, and joins Swarnrekha at a height of 178 meters. While in the southern part of Panch Pargana Plain, the river Kharkai flows from west to east. Which arises near Semo from the height of 754 meters from Ranchi Plateau. It crosses Tebo Ghat and runs here, flowing eastward. It also joins Swarnrekha at 86° E. Longitude and 23° N. Latitude. The slope of this plain is generally north to south-east.

This plain is surrounded by Ganga Ghat in the West Chutupalu Ghat and Purulia upland in the North Ajodhya hills in the East and Porahat hills and Dalma range in the South.

**DALMA RANGE:** This range is supposed to be of Archean age and covered by Lava flow. It runs from the west to the south. Roughly, it extends from 85° 50’ East longitude up to 86° 30’ E. longitude and from 22° 40’ N. to 22° 55’ N. latitude. This range roughly lies in the area of the southern part of Ichadag Chandil, the eastern part of West Singhbhum, and the southern part of Jamsedpur and Ghatsila of East Singhbhum.

The maximum height of this range is 926 meters. Dalma Peak in Chandil’s minimum height is 678 meters. This range is crossed by the Swarnrekha River near Jamshedpur. There exists a peak named Ladasal having a height of 529 meters. On the west of the Swarnrekha River in the northern part of Ghatsila. This range is surrounded by Porahat hills in the west, Panch Pargana Plain in the north, and the Barbhum Plain of West Bengal in the east. And Dhalbhum upland and Singhbhum Plain in the south. The main parts of this range are Deshwar, Raisindi, Dalma, and Chadri hills, which are divided by the Swarnrekha river near Chakulia. It’s western

part is continued from Kharkai up to Swarnrekha. But in the eastern part it has been destroyed. This range makes waterpart between Kharkai, North Karo, and Sanjay rivers. There are many high and low lands that are the result of erosion for a very long time.

**DHALBHUM UPLANDS:** This uplands extends from North to South East with the continuity of Dalma Range and runs parallel to the River Swarnrekha in the south-eastern part of Chhotanagpur along the border of Jharkhand and Bengal. This upland lies in the area of south of Jamshedpur. Eastern part of Potka from North to South-East. Musabani and Dhalbhumgarh up to Baharagora in the south of East Singhbhum. This upland roughly ranges from 22° 17' N. to 22° 45' N latitude and from 86° 15' E. to 86° 40' E longitude. Its height ranges from 100 meters to 130 meters. It is crossed by Swarnrekha between the Ladasol and Dhanjori ranges. Thus it's maximum height is in it's northern part.

This upland is surrounded by Dalma Range in the North and East Singhbhum Plain and Dhanjori Range in the West and South.

**SINGHBHUM PLAIN:** This plain roughly ranges from 22° 5' North in Orissa up to 22° 55' N. Latitude and from 85° 25' E. to 86° 15' E. Longitude. It covers the area of Kuchai Kharsawan, Gamaharia Saraikela, Govindpur, the eastern part of Chakradharpur, Chaibasa, and some parts of Jhinkpani of West Singhbhum district.

It is surrounded by Porahat hills in the Dalma range in the north, Dhalbhum upland and Dhanjori in the east, Saranda hills and Kolhan upland in the south, and Porahat hills in the west.

Its average height is between 152 and 300 meters. This plain is the catchment area of the rivers Sanjay and Kharkai. It is dissected mostly in the North-West, South-West, and South-Western parts.

This area has been made up of the rocks of the Dharwar age. The main river here is Kharkai. Which enters here from the south and flows into the north-west part, and near Chaibasa it takes a turn to the north-east and joins Swarnrekha at Jamshedpur.

**DHANJORI RANGE:** This range roughly extends from 22° 22' N to 22° 40' N Latitude and from 86° 15' E. To 86° 35' E longitude. It covers the area of Potka, and its isolated parts are located in the southern boundary part of Dhalbhumgarh and the south-eastern part of Mushabani in East Singhbhum. The Turliga Parbat lies in its south-western part, having a height of 759 meters. It's south-eastern part has a height of 458 meters. Though it's larger part ranges between 300 and 457 meters. This range is made up of quartzite and haematite rocks.

This range is surrounded by Singhbhum Plain in the west. Dhalbhum upland and river Swarnrekha in the east, and in the south lies Baman Ghat upland of Orissa.

**KOLHAN UPLANDS:** This uplands ranges from the southern boundary of Jharkhand, i.e., 21° 58' N. To 22° 25' N. Latitude and from 85° 35' E to the eastern border of Orissa and Jharkhand, i.e., 86° E. Longitude.

It covers the area of Majhgaon, Noamundi Jhinkpani, and the south-western part of Tonto of West Singhbhum. It's height ranges from 451 to 561 meters. It's average height is about 450 meters. Some parts of it's lower than 305 meters. The river Baitarni originates in its northern

part and flows southward to join Swarnrekha. This upland is dissected very much, and its slope is towards all sides.

It is surrounded by the Saranda hills in the West Singhbhum plain in the north, the river Kharkai in the east, and the river Baitarni in the south.

**SARANDA HILLS:** This region roughly extends from Chaibasa in the north-east, Manoharpur in the west, and the southern boundary of Jharkhand up to Gua in the south.

This hill roughly ranges from 22° 2' N. to 22° 36' N. Latitude and 85° 5' E. To 85° 35' E. Longitude.

It covers the area of Manoharpur, Goilkera, and some parts of Chaibasa of West Singhbhum. Saranda Hills is surrounded by the river Koel basin in the north-west, Singhbhum Plain in the north, Kolhan upland in the east, and the Bonai hills of Orissa in the south.

It's height ranges from 300 meters to 821 meters high. Here Raljori Buru lies in it's southeast, having a height of 821 meters. While Binda Buru lies in the south-west, having a height of 754 meters. It is about 550 meters near Manoharpur. A height of 641 meters is found in it's northern part. Small, isolated hills also exist in it's northern parts. Sub-tributaries of the river Koel also originate from here. Which flows north-westward. The Karo is the main river here. Which dissects mostly these hills. The Karo rises in the southeast of these hills and runs north-westward to join Koel in the north of Manoharpur. This area is made up of Dharwar Rocks. i.e., quartzite, lava, and phylite rocks. These can be seen when the area is erroted much.

**SWARNREKHA VALLEY:** This region exists in the south-eastern part of South Chhotanagpur. It extends from the south-eastern part of Ranchi district up to the south-eastern part of Simghbhum district. Roughly it runs along the boundary line between Jharkhand and Bengal. This valley is made up of ancient hard rocks. Which separates the Dalma range near Chakulia. It's average height is 152 to 457 meters in the eastern part. While 152 meters in it's lower part near Dhalbhum. It's upper area is very dissected, but the lower area is almost flat. This valley is made by the Swarnrekha and its tributaries like Kharkai. Sanjay and Kharkai rivers.

**South Koel Valley:** This valley starts from the Southern Ranchi plateau and extends southward in a large area. With its tubritaries. It makes a wide valley. They have dissected the plateau very much.

This valley is also attributed to the Karo River valley. Which is the main tributary of South Koel?

**SANKH BASN:** This river arises in Bhitar Barwe and flows in a very narrow valley. It has a steep slope on both sides. The mountain along it's height is about 610 meters. The whole valley has a length of about 48 kilometers. There are some mt. peaks in this area too, which have a height of more than 610 meters. Its upper parts are generally flat, having a steep side. The residual mountain is found on the Ranchi Plateau in its area, especially in South Chhotanagpur; the schist rocks of Dharwar age are found in a narrow stripe. The average height of Sankh Basin as a whole is less than 305 meters.

## Conclusion:

The South Chhotanagpur region falls in a complicated territory that extends from the Chhotanagpur plateau and is rich in many different geographical characteristics. Its topographic features attributed to tectonic events are composed of plateaus, hills, valleys, rivers, and basins that vary in relief and geomorphic values. The area is rich in mineral resources, including coal, mica, copper, limestone, iron ore, and uranium, which contribute to the economic importance of this region, often referred to as the "storehouse of minerals" in India.

South Chhotanagpur can be divided into sub-divisions with different geographical features: For instance, the Pat area in the northwestern region of the area is characterised by high altitudes, and occasionally, the rivers, such as the South Koel and North Koel, originate from this area. Other subregions include the Bhitar Barwe Basin, Lohardaga Ghat, and Simdega Plateau, which are characterised by the ramification of river systems that impact the physical features of the area.

Therefore, it can be summarised that the opportunities and risks are present, given that South Chhotanagpur has a diversified topography and a variety of natural resources. Plateaus, hills, valleys, and minerals are conducive for economic development, but they present characteristic features that demand efficient management for sustainable development. The finesse of the features of the region means that special attention should be paid to the planning issues since the topographical characteristics of the region are tightly interwoven with people's activities. Thus, it can be concluded that with further focusing on its natural resources and effective management of its geographical conditions, South Chhotanagpur can further enhance its importance for the further economic and social development of the region and the whole country.

**References:**

1. Chatterjee, S. C. (1945). Some aspects of the geomorphology of Ranchi Plateau. India: Geographical Society of India.
2. Ahmad, E. (1958). Geomorphic outline of Chhotanagpur: A geographical outlook. Ranchi University, 1, 24-28.
3. Verma, B. C. (1970). Physiographic features and mineral resources of Chhotanagpur Plateau. New Delhi: Geological Society of India.
4. Singh, L. R. (1985). Geology and mineral resources of Jharkhand: Chhotanagpur Plateau region. New Delhi: Geological Survey of India.
5. Mahadevan, T. M. (2002). Precambrian geology of India. New Delhi: Geological Society of India.
6. Jharkhand State Mineral Development Corporation (JSMDC). (2015). Mineral wealth and mining activities in Chhotanagpur Plateau. Ranchi: Jharkhand State Mineral Development Corporation.
7. Government of India. (1982). Topographical sheets 73E and 76A. New Delhi: Survey of India.

8. Basu, S. R., & Bhadra, P. C. (1990). Drainage systems and landform development in the Chhotanagpur Plateau, India. Journal of Geomorphology, 5(3), 247-265.
9. Geological Survey of India (GSI). (2016). Geological and mineral map of Jharkhand. Kolkata: GSI.
10. Habib, I., & Jha, V. (2004). The Cambridge economic history of India. Cambridge University Press.