

A Geographical Overview of Sundarban: The Largest Mangrove Forest of Bangladesh

Tanjia Binte Zafar¹, Ghulam Murtaza Khan²

¹School of Earth Environment Science, Lanzhou University,
222 Tian Shui South Road,
Cheng Guan District, Lanzhou City,
Gansu Province, P. R. China 730000

²School of Information Science and Engineering, Lanzhou University,
222 Tian Shui South Road,
Cheng Guan District, Lanzhou City,
Gansu Province, P. R. China 730000

Abstract: Sundarban is the largest mangrove forest of Bangladesh. It is located at the coastal region of Bangladesh and considered as one of the natural wonders. This study is based on the physiographical and geographical overview of Bangladesh. The physiography of Sundarban is dominated by deltaic formations that include innumerable drainage lines associated with surface and subaqueous levees, splays and tidal flats. The soils of Sundarban are fertile owing to continuous silt deposits. The biggest mangrove forest contains diverse bio-diversity. It is also the home of Royal Bengal Tiger.

Keywords: Forest, Mangrove Forest, Geography, and Environment.

1. Introduction

Sundarban is the world's largest mangrove forest which is located in the south western part of Bangladesh. The forest covers 10,000 km² of which about 6,000 are in Bangladesh. The forest lies under two forest divisions, and four administrative ranges Chandpai, Khulna, Sarankhola, and Burigoalini, Satkhira and has sixteen forest stations. It is also divided into fifty-five compartments and nine blocks. The Absolute location of this place is

Latitude : 21°27'30"N to 22°30'00"N

Longitude: 89°02'00"E to 90°00'00"E

It lies on the Ganges-Brahmaputra Delta at the point where it merges with the Bay of Bengal. Baleswar River bounded by the East side and to the West with West Bengal.

2. Physiography

The physiography of Sundarban is dominated by deltaic formations that include innumerable drainage lines associated with surface and subaqueous levees, splays and tidal flats. There are also marginal marshes above mean tide level, tidal sandbars, and islands with their networks of tidal channels, subaqueous distal bars and proto-delta clays and silt sediments.

2.1 Landscape Characteristics

- The tract of the Sundarbans is of recent origin, raised by the deposition of sediments formed due to soil erosion in the Himalayas.
- Geologists have detected a southeastern slope and tilting of the Bengal basin during the Tertiary.
- The process has been accelerated by tides from the sea face.
- The substratum consists mainly of Quaternary Era sediments, sand, and silt mixed with marine salt deposits and clay.

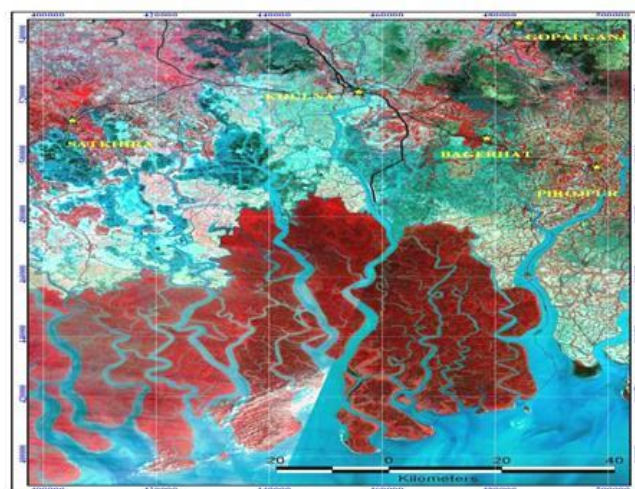


Figure 1: Land sat TM image of Sundarban (Source: SPARSSO)

2.2 River:

Sundarban has so many rivers and canals. But the main streams of Sundarban are:

Shibsha, Passur, Shilagad, Mairata, Arpangachia, Harinbhanga, Raimangal, Kalindi, and Baleswar. These rivers are full of diverse aqua life.

2.3 Soil:

The soils are fertile owing to continuous silt deposits. The salinity of surface soils is high during the dry season but is reduced to tolerable limits because of dilution by the leaching effects of rainwater. The salinity of the soil is determined by the amount of rainfall occurred and fresh water received from the upper catchments area and the salinity of the tidal water channels from the south. On an average, the entire area may be divided into low salinity up to 8PPT - northern part, and high salinity from 8PPT to 20PPT-southern part of Sundarban.

2.4 Soil Types of Sundarban:

The soil of the region can be classified into five groups depending on the texture of the soil. These are-

- Clay soil
- Heavy soil
- Sandy Loam
- Sandy and
- Silty Soil

3. Geology of Sundarban

The geological history of the area began probably from the early Pleistocene, and this delta formation started from the tertiary period. This delta began from near the mouth of the Ganges, and the Brahmaputra and Meghna were gradually emerged out of the sea once again, and with the extension southward the rivers adjusted their beds and continued to the sea. The enormous quantity of sand, silt and other debris depositing and are the main sources of the delta formation of this region. The Sundarban landforms have developed due to the continual deposition of the weathered materials carried by the part of the deltaic plains of three mightily river the Ganges, Brahmaputra, and Meghna.

4. Hydrologic Process

The hydrologic process of Sundarban can be divided into two sub divisions. These are-

1. Hydrological system.

2. Drainage system.

4.1 Hydrological System

During the May to October tidal inundation regulates the hydrology of the area of Sundarban. The Sundarban can be divided into four hydrological zones:

- **Area inundation - by normal high tides:** The more significant part of the Sundarban.
- **Areas inundated only -by spring high tides:** This zone includes the northern part of the Sundarban.
- **Areas inundated -by the high monsoon tides:** Levees located in the north east of the Sundarban.
- **Area inundation - by all tides:** The mouth of big rivers and along the sea coast.

4.2 Drainage system

Sundarban has a complex drainage pattern made up of inter connected rivers, cross channels, estuaries and heavy seasonal rainfall. The Sundarban have two big channels. The Passur gets it does of fresh water from the Gorai, and a minor portion of this water enters into the Sipash channel.

5. Climate of Sundarban

The Sundarban is naturally expertise a tropical warm rainy monsoon climate. The Sundarban is located at the tropic of cancer and the northern limits of the Bay of Bengal. The coldest temperature period is - December to January and the Warmest temperature period -May to June.

Season:

- The pre-monsoon season -(March to May)
- The monsoon season -(June to September)
- The post Monsoon- (October to November)
- The Dry Season -(December to February)



Figure 2: Satellite image of Sundarban (Source: SPARRSO)

6. Conclusion

The mangrove forests of Sundarban consist of a complex ecosystem. The dominant biological feature of the mangrove ecosystem in a relatively low degree of species diversity, especially plants, compared with neighboring topical communities. The salinity of the soil is determined by the amount of rainfall occurred and fresh water received from the upper catchments area and the salinity of the tidal water channels from the south. Their different point is carried a different proportion of pH value, salinity, and electric conductivity of soil and water. From north to south the proportion is slight to moderate.

References

- [1] Allison, M. A.; Kepple, E. B. "Modern sediment supply to the lower delta plain of the Ganges-Brahmaputra River in Bangladesh." *Geo-Marine Letters*. 21 (2): 66. 2001
- [2] Blasco.F, "The Mangroves of India," Institut Francis de Pondichéry, Travaux de las Section Scientifique et Technique, Tome XIV, Facicule 1. Pondicherry, India. 1975
- [3] Jalais, Annu, "Unmasking the Cosmopolitan Tiger," *Nature and Culture*, (vol. 3, no. 1), pp. 25-40. 2008

Author Profile

- Tanjia Binte Zafar, Masters Student of Earth Environment Science of Lanzhou University. Completed Bachelor and Masters Degree from Jahangirnagar University, Dhaka, Bangladesh. Currently a CSC Scholarship Holder of Lanzhou University, China.
- Ghulam Murtaza Khan, M.Phil Student of School of Information Science and Engineering, Lanzhou University. Currently a CSC Scholarship Holder of Lanzhou University, China.