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ABSTRACT BOOK

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Remote Sensing approach to evaluate changes in shoreline in the coastal stretch of Bakkhali, Sunderban, and its impact on tourism, West Bengal, India

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Abstract

The Sundarban, located in the southern part of Bengal, is a major ecological hotspot, attracts a significant number of tourists every year. Sunderban's erosion rate exceeds its accretion rate, making it a retrograding delta, often attributed to Holocene tilt, and the subsequent lack of fresh water outflow and sediment intake capacity. However, Bakkhali, a popular coastal destination, presents a contrasting case of accretion along its 1.2 km stretch of coastline. The study uses the Remote sensing technique to understand the dynamics of the shoreline and its subsequent impact on tourism. Our primary analysis reveals that the deposition along the coastline of the Bakkhali sea beach has formed a parallel sandbar. Ground verification of that sand bar also estimates the elevation reaching up to 2—3 meters, while compared with satellite data, the rate of accretion is around 0.17 sq.km. Combined with the other ocean dynamics of bathymetry and ocean wave energy, showing a negative correlation of -0.04753, although higher wave energy exists in this area, due to relatively low depth, nevertheless, accretion is prominent. Other factors, including tidal asymmetry, helps in the consolidation of sediments, with this change, the primary consequence is the extension of the shoreline from the beach to the sea. Ground surveys show that, number of tourists is decreasing, due to marine regression, and high unwillingness among them to cross the path. Therefore, the study reveals that the morphodynamic changes along the coastline can impact the tourism of that place negatively.