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ABSTRACT BOOK
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A bleak future, dichotomy between climate change and geomorphic inequilibrium: Insights into Indian Sundarban

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Abstract
The ongoing unprecedented increase in global temperature casting its effects on the global climatic system is termed climate change. In a broader perspective, it includes the long-term changes in Earth's climate which had been experienced previously. Since the mid-1800s this current warming trend has been common largely due to anthropogenic activities. This current change in warming is proceeding at an alarming rate, roughly ten times faster than the average rate of warming after an ice age. The Indian part of Sundarban, a portion of the retrograding Western Ganga Brahmaputra delta is facing increased vulnerabilities in this scenario of climate extremities. Tropical cyclones Aila (2009), Bulbul (2019), Amphan (2020), Yaas (2021) and Remal (2024) have left the riparian communities in jeopardy. Satellite altimetry with the use of multi satellite data observed general positive trends of sea level change in Bay of Bengal (3.11 ± 0.44 mm/yr) during 1993-2010. There was a gradual increase of surface water temperature in the deltaic complex of Indian Sundarbans from 1980 to 2007 at a rate of 0.5 °C per decade and this rate is much higher than the globally observed warming rate of 0.06°C per decade (Mitra et al., 2009). Number of cyclones having landfalls in Sundarbans is on an increase within the time frame of 1951 to 2010. This increasing frequency of cyclones is brought about by an increase in sea surface temperature (Mahadevia and Vikas, 2012). However, the frequent problem of inundation cannot be attributed to climate change alone. The inherent geomorphic character of the Ganga Brahmaputra delta is another factor in play, the effects of which are accentuated by anthropogenic interference and ensuing climate extremities. This paper inquiries into the multiple factors behind the vulnerabilities of Indian Sundarban using quantitative approaches of sea level estimates using satellite altimetry and tide gauges, erosion accretion behaviour using Survey of India toposheets and satellite images and qualitative approaches in field visits.