Climate Change, Ocean acidification and Mangroves : A Long-term Assessment in the Sunderbans and Bay of Bengal

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The Sunderbans, a mangrove rich delta in the Bay of Bengal, stands at the forefront of climate change impacts. The poster describes the inter-relation between climate change, specifically ocean acidification, and the Sunderbans mangrove forests. As atmospheric carbon dioxide levels rise, ocean acidification emerges as a dire consequence, affecting both marine and coastal ecology. The Bay of Bengal, known for its rich biodiversity, is not immune; here, acidification disrupts vital biological process, particularly within the Sunderbans. Satellite-derived data, like the Normalized Difference Vegetation Index (NDVI) and Land Use Land Cover (LULC), paints a disconcerting picture of the Sunderbans' diminishing mangrove cover, a trend partly attributed to ocean acidification. This decreases the mangroves' resilience, threatening the ecological balance of this unique ecosystem. Urbanization along the coast further compounds the loss, upending the lives of those dependent on these mangrove forests. Furthermore, climate change-induced sea-level rise and escalating human activity hasten the erosion of the estuarine delta, exacerbating mangrove habitat loss in the Sunderbans. Reduced mangrove cover amplifies the region's vulnerability to cyclonic events, leaving coastal communities at heightened risk. Historical analyses underline the pivotal link between mangrove loss and increased susceptibility to cyclones. Real-world events, such as Cyclone Aila (2009) and Cyclone Amphan (2020), serve as poignant reminders of the tangible consequences of diminished mangrove cover in the Sunderbans. A long-term study of data collected from various sources like the World Ocean Atlas by NOAA helps visualize and assess these changes and bring forward the dire need of preserving and promoting the growth and restoration of these critical mangrove habitats.