



## **Impact of Sea level rise and inundation due to tropical cyclone on West Bengal coastal area**

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Coastal regions are subject to continuous influence of ocean waves and currents. The consequences include coastal erosion, inundation, salt water intrusion (SWI) and increase in intensity of storm thus giving a major threat to the socio-economic issues. Thus, it is important to understand different factors that are effecting the coast and influencing changes in coastal area. The study needs to comprehend the role of various biological and geophysical factors in increasing or decreasing the threat of coastal erosion and inundation in order to better plan for future development.

For the case study, we considered the West Bengal region in India. West Bengal coast is comprised of three districts namely, North-24 Parganas, South-24 Parganas and West Mednipur with nearly 24 million populations, having major geomorphological features like beaches, port, a large area of Sunderban mangroves and a large riverine system. This region is highly vulnerable to extreme weather events such as storms, heavy rainfall; even a depression caused rainfall leads to significant shoreline changes coastal inundation and salt water intrusion.

Although, sea level rise (SLR) has been the most concerned threat globally, in regional level tropical cyclones induced storm surge with inundation effects were cumulating to hit the coast more severely. The Sunderbans being the largest mangroves in India are under severe stress. i.e. In terms of tropical cyclones they were protecting the coast, whereas on contrary in terms of SLR combined with storm surge are more vulnerable as there is a tendency of sunderbans converting into salt marshes.

The present study is to detect and understand the above mentioned parameters along the coast of West Bengal, India. The vulnerability risk map has been prepared for the coastal region using the sea level rise and inundation (due to tropical cyclones) impacts as primarily effecting parameters.

To asses this different inputs from tide gauge observations, water level forecast from (Advanced Circulation Model) ADCIRC and satellite data sets LANDSAT, SRTM were used.