

EFFECT OF CLIMATE CHANGE ON OCEAN BEHAVIOUR

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ABSTRACT

Ocean behavior is vulnerable to climate variability and change. Climate variability and change has a significant impact on wind and wave conditions as well as sea level rise. Wave heights have increased over the last few decades displaying an inter-annual variability as high as 20%.

Sea level rise will be felt most severely in response to storm driven wave and surge events, which lead to wave induced erosion of coastal landforms. Wave induced erosion is dependent on the water elevation relative to the height of the fronting beach face junction. The water level depends on the mean sea level, a tidal component, any storm surge component, and an increase in water level produced by waves, including the set-up and run-up of individual waves. Larger waves are therefore more easily able to erode the shoreline. In addition to the impacts of wave height, the rate at which beach material is redistributed along the shore is also dependent on the angle at which waves arrive in the coastal zone. Therefore, coastal morphology depends strongly on the wave climate the coast is exposed to. Changes to the wave climate, such as a shift in wave direction, or increase/decrease in wave heights, will therefore lead to erosion of the coast.

Impact assessment for sea-level rise requires careful assessment of local conditions, the magnitude and uncertainties of global sea-level rise, and the

costs and feasibility of response options. Important local conditions include coastal topography, geology, and economic and demographic factors. The areas in the Indian Coasts that are most vulnerable to sea-level rise are in the East coast because of its low-lying topography as compare to West Coast which generally at lower risk.