Sea Level Rise Projections for the Tamil Nadu Coast: An Analysis of Present and Future Trends

Variations in global mean sea level are a key indicator of global climate change. Measuring sea level provides critical information on its impact on coastal populations and land use. Human-induced greenhouse gases have directly contributed to the rise in mean sea level worldwide. Satellite-based measurements are essential for determining if sea levels are rising and for assessing the vulnerability of coastlines to this increase. Altimeter measurements, available globally, enable the identification of sea level trends in specific regions. This study aims to assess the current and future SLR and its potential inundation impact on the coastal districts of Tamil Nadu, India. For the current scenario, sea level variations and trends along the Tamil Nadu coast were identified using data from multiple satellite altimeter missions over a 23-year period, from 1993 to 2018 and these were extracted from three altimeter missions: TOPEX, Jason-1, and Jason-2. Projections for future SLR were generated under different Shared Socio-economic Pathways (SSP) scenarios (SSP245 and SSP585) using the site-specific SLR scenario generator tool in SimCLIM. The results indicate that the mean sea level along the Tamil Nadu coast is projected to rise by 0.15 meters by 2050 and 0.5 meters by 2100 under SSP245, while under SSP585, it is projected to rise by 0.17 meters by 2050 and 0.72 meters by 2100. The observed MSL trend shows an increase of 0.07 meters since 1993.

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