

Projection of Sea Surface Salinity using Ensemble of Selected CMIP6 GCMs of Bay-of-Bengal

Mahiuddin Alamgir, Mazlan Hashim and Shamsuddin Shahid (Malaysia)

Key words: Coastal Zone Management; Marine cadastre; "Sea surface salinity", " Bay of Bengal", "quantile mapping", "shared socioeconomic pathways", "CMIP6"

SUMMARY

Changing ocean properties threaten coastal communities and marine ecosystems global. Sea surface salinity (SSS) is a vital indicator for monitoring the hydrological cycle within the ocean system. This study projected potential future changes in SSS over the Bay of Bengal under shared socioeconomic pathways (SSPs) using Global Climate Model (GCM) data from the Coupled Model Intercomparison Project Phase 6 (CMIP6). We applied Quantile Mapping (QM) and Taylor Diagrams (TD) to downscale model outputs at the resolution of 0.5° considering the Ocean Reanalysis System 5 (ORAS5) Data as the reference. However, most of the regions exhibit an SSS increase ranging from 33 psu to 34 psu in the historical period from 1970 to 2014. The SSP370 results indicate that near-future (2020-2059) changes range from -6.22 to 26.60 PSU at the upper confidence level and -0.82 to 26.66 PSU at the lower confidence level. In contrast, far-future (2066-2099) changes range from -1.06 to 23.53 PSU at the upper confidence level and -8.45 to 23.55 PSU at the lower confidence level. Significantly, decrease in south eastern part of Bangladesh and western part of Myanmar, but low salinity (PSU) is observed east to south of Sri Lanka and Indian coastal areas compared to central part of BOB in the near future (2020–2059) and far future (2066–2099). These findings focus on robust adaptation planning to protect coastal communities and marine ecosystems from the complex challenges of climate change.

Projection of Sea Surface Salinity using Ensemble of Selected CMIP6 GCMs of Bay-of-Bengal (12939)
Mahiuddin Alamgir, Mazlan Hashim and Shamsuddin Shahid (Malaysia)

FIG Commission 5 & 7 Annual Meeting 2024
Geospatial Innovation for Sustainable Rural and Urban Development
Kuching, Sarawak, Malaysia , 24–26 September 2024