

EVALUATING MEAN SEA LEVEL ANOMALIES FOR THE PHILIPPINES USING SATELLITE ALTIMETRY DATA AND GEOGRAPHIC INFORMATION SYSTEMS (GIS)

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ABSTRACT. Sea level anomalies in the South China Sea are greatly influenced by interannual fluctuations. Studies have verified that mean sea level anomalies are negative during El Niño episodes and are positive during La Niña episodes. Such relationship between the El Niño Southern Oscillation (ENSO) and sea level anomalies are highly evident in the years classified as strong El Niño and strong La Niña events.

Records of mean sea level anomalies from multiple satellite altimetry missions were downloaded from the Radar Altimetry Database (RADS) web interface. The mean sea level anomalies were computed from 2000 to 2011, both for the entire Philippines and Bolinao, Pangasinan. To further illustrate the variability of sea level anomalies for the strong El Niño and La Niña years, the prediction surfaces were generated using the Local Polynomial Interpolation method in ArcGIS. In addition, a composite distribution of sea level anomalies from 1991 to 2011 for the entire Philippines was also obtained. Furthermore, the distribution of sea level anomalies for Bolinao, Pangasinan for the strong El Niño and La Niña were generated. The sea level anomalies for Bolinao, Pangasinan were also drawn with contours of 0.02 intervals to characterize the variability in the study area. For Bolinao, the annual averages of sea level anomalies were positive from 1995 to 2011, indicating higher values of sea level rise compared to sea level fall. The highest average was recorded in 2008, with an equivalent value of 0.1238 meters. Mean sea level anomalies for selected small islands, populated areas and agricultural lands located across the archipelago were also examined to further investigate the relationship between sea level anomaly and ENSO.