

Evaluating the Response of Rainfall Patterns over the Philippines to Sea Surface Temperature of its Surrounding Basins using CHIRPS and OISSTv2

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ABSTRACT

Different sectors are highly dependent on fresh water supply for their growth and sustainability, specifically agriculture. Meanwhile, the availability of fresh water is then affected by rainfall variability. Different surface parameters affect rainfall patterns such as humidity, surface pressure, land surface temperature and sea surface temperature. In terms of seasonal prediction of rainfall, SST is regarded as an important parameter. It can be an indicator of moisture flux from the ocean towards atmosphere affecting rainfall patterns over an area. This study will aim to investigate the response of rainfall patterns over the Philippines with sea surface temperature of surrounding basins. Climate Hazard group Infra-Red Precipitation with Stations (CHIRPS) and NOAA Optimum Interpolated Sea Surface Temperature (OISSTv2) data will be used. Clustering analysis using Single Linkage Clustering and K-Means Clustering method will be employed in extracting SST time series data that will be utilized in carrying out correlation and regression analysis. Resulting correlation and regression coefficient maps between each basin and corresponding terrestrial rainfall will be used to identify the spatial and temporal extent at which this relationship holds. Then, to quantify the combined effects of surrounding SST with rainfall, statistical models will be developed using Multiple-Linear Regression. Results of this study will characterize the response of rainfall patterns over the Philippines with respect to sea surface temperature variability of its surrounding basins.

Keywords: sea surface temperature, rainfall, SST-rainfall connection, land-ocean interaction