## ABSTRACT

### CLIMATOLOGY AND VARIABILITY OF SEA SURFACE TEMPERATURE IN THE PHILIPPINE DOMAIN AND ITS RELATIONSHIP WITH ENSO, MJO, AND PDO



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Sea surface temperature (SST) is a critical parameter in the study of oceanic and atmospheric phenomena. Being the boundary between the ocean and atmosphere, it is crucial to characterize its behavior using high spatiotemporal data. More than three decades of SST data (from January 1982 to December 2014) was extracted from the National Oceanic and Atmospheric Administration (NOAA)'s ¼ degree daily Optimum Interpolated SST (OISST) product to study the SST climatology and variability in the Philippine domain. It was found that the coolest SSTs can be observed during February (boreal winter) and the warmest during June (boreal summer). Analysis of the SST time series revealed an increasing trend of 0.019°C per year in the Philippine domain (this increasing trend were observed for all the seas surrounding the country). The most dominant SST variability is a meridional pattern that follows an annual cycle. SST correlation maps revealed that out of the three climate modes (El Niño Southern Oscillation or ENSO, Madden-Julian Oscillation or MJO, and the Pacific Decadal Oscillation or PDO), ENSO impacts the SST variability the most –cooling the eastern part of domain at the same time as the core ENSO signal and warming the west portion (South China Sea) 5 months after the peak in ENSO signal. EOF analysis resulted in patterns and corresponding time series that are able to describe SST variability for the last three decades (upon removal of the annual signal). EOF mode 1 can be related but doesn't result to strong correlation to the climate modes but captures the increasing trend. EOF mode 2 and 3, on the other hand, are evidently strongly correlated to the ENSO signal.