

# **Influence of the Kuroshio Current Variability on Northeast Monsoon Precipitation over Eastern Luzon**

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## **ABSTRACT**

Kuroshio Current (KC), the northward flowing branch from the bifurcation of the North Equatorial Current (NEC) east of the Philippines, has been established to be of great importance on the distribution of warm water from the equatorial region to higher latitudes. Its temperature, frontal dynamics, meandering, and lateral shift have been shown to affect rainfall in Southern China, Korea, and Japan. The nascent Kuroshio at its origin near the Philippines is known to vary its proportion of source waters as the NEC bifurcation shifts from its northern to southern range ( $11^{\circ}$  to  $14.5^{\circ}$ N) across seasons and years, and this may influence the precipitation pattern of the nearby Luzon island. Most of the studies on KC variability and its climatic impacts, however, are concentrated on the mid-latitude region and the Kuroshio Extension. This study, thus, aims to characterize variability of the KC brought about by the shifting of the bifurcation latitude and correlate it with precipitation patterns of Eastern Luzon Region during northeast monsoon season. Here, the possible effect of the shifting bifurcation latitude will be analysed and correlated to rainfall of Luzon from Tropical Rainfall Measuring Mission for the months of December-February (DJF) from 1999-2018. Years with known El Nino Southern Oscillation (ENSO) events will be removed and analysed separately for the bifurcation influence. The bifurcation latitude will be estimated from sea surface height using multi-mission altimeter data from Copernicus Marine Services, while SST will be from the Optimum Interpolation Sea Surface Temperature (OISST) dataset. The sea-air interaction will be investigated by examining the characteristics of Kuroshio current and the atmospheric variables such as moisture budget and heat fluxes from ERA-5 global atmospheric datasets.