ABSTRACT
DEVELOPMENT OF MONSOON INDICES FOR THE PHILIPPINES USING
RAINFALL AND WIND DATA: VALIDATION AND RISKK ANALYSIS

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There are two kinds of monsoon that occur in the Philippines – southwest monsoon during June to September and northeast monsoon during November to February. In these months, intense rainfall and strong prevailing winds are experienced by most provinces in the archipelago. This study aimed to measure the strength of the southwest and northeast monsoon episodes in a 31-year period (January 1983 to December 2013) with the use of existing monsoon indices. Specifically, the study intended to validate the CI2 (convection) and DU2 (differential zonal wind) monsoon indices for the Philippines using rainfall and wind station data for the 31-year period. Monthly mean outgoing longwave radiation (OLR) data averaged over the vicinity of the Philippines ($10°$-$20°$N, $115°$-$140°$E) from NOAA and monthly mean differential zonal winds at 850-hPa pressure level averaged over $5°$-$15°$N, $90°$-$130°$E and $22.5°$-$32.5°$N, $110°$-$140°$E from NCEP were used in the study to infer the strength of the monsoon. Rainfall and wind indices derived from station data were used to validate these datasets. The relationship between the monsoon indices and the standardized rainfall and wind anomaly indices were used to identify the strong monsoon episodes in the 31-yr period and their impact to specific regions in the Philippines. Moreover, a monsoon index for the Philippines is constructed based on the CI2 and DU2 monsoon indices and rainfall and wind cluster maps. Furthermore, a risk index corresponding to the result of the effect of the monsoon was developed with the aid of risk maps, which can be contributed to disaster risk management and reduction.