

ABSTRACT

Air pollution is a major risk factor for death worldwide and is attributed to a significant count of mortalities in the Philippines. The most recent environmental statistics from the DENR-EMB Central Office revealed sites in the Ilocos Region in the list with the highest mean pollutant concentrations thus, gaining a merit of interest for investigation and analysis in conjunction with the episodic events reported from scholarly works. Furthermore, the pollutants of interest ($PM_{2.5}$, PM_{10} , O_3 , NO_2 , and SO_2) are of significant concern as they pose the highest risk to public health and environment. Concentrations are being influenced by meteorology wherein certain conditions are conducive to pollutant formation, dispersal, build-up, or long-range transport. The influence of tropical cyclones (TCs) on air pollution has been the subject of increasing attention as concentrations undergo modest to drastic changes during the events. Furthermore, nearby countries revealed strong significance between TC and pollutant variability, and their potential to be an emission source during transboundary pollution. Therefore, these and the frequent TC activity in the Western North Pacific Basin, an analysis and understanding of the variation of pollutant levels during a TC is a must. Moreover, to date, there is limited information available concerning the influence of TCs in air pollution in the country. In this research, days with and without TC influence on wind defined as TC and non-TC days will be identified. Characterization of the spatio-temporal variability of pollutant concentrations using ground-based measurements will commence afterwards. The influence of TC will be elucidated, and analysis of potential emission sources will proceed when a sudden shift in the wind flow is observed during TC days influencing the pollutant concentration. The present study hopes to have an understanding of the variability of the pollutant levels in the Ilocos Region as influenced by TC and provide public information that may aid in crafting awareness and control strategies.