# BOUNDARY LAYER CLIMATOLOGY IN QUEZON CITY USING DIFFERENT INSTRUMENTS

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## ABSTRACT

A portion of the atmosphere is called the Planetary Boundary Layer (PBL) where the flow field is directly influenced by the Earth surface and is the bottommost boundary of the atmosphere that responds to surface forcing with a timescale of about an hour or less. The PBL has direct influence on all living things on Earth and links the atmosphere to the other component of the Earth's system. The structure and dynamics of the lowest layer of the atmosphere are important for the understanding of weather and climate, dispersion of pollutants, and exchange of heat, water vapor, and vertical transport of momentum, absorption and emission of radiation with the underlying surface. In this study, the PBL height were extracted from the calculation and algorithm with the use of an in-situ instrument namely the upper air radiosonde and a remote-sensing instrument the lower troposphere wind profiler. The 5-year dataset obtained from the calculation were used to investigate the diurnal, monthly, seasonal and annual variation of PBL height. For the first time, spatiotemporal variation of PBL height were examined and reveals that some local factors are affecting the growth of the PBL in the area and PBL height differs from one place to the other. The PBL height is then compared to the air quality and some other meteorological parameters dataset and it shows a weak negative correlation with PM concentration, humidity and pressure and a weak positive correlation with wind speed and surface temperature. The results are expected to lead the understanding of the variability of the long term changes in the PBL structures in terms of the diurnal, monthly, seasonal and annual variation with the mixed layer height and give us the information regarding the current state of the PBL and its relation to other parameters and to further improve our understanding in monitoring, simulate processes for future prediction which can be used for policy making and planning in terms of air quality assessment, weather and climate forecast.