

Improved Mixing Height Estimates from Atmospheric LiDAR Measurements

The mixing height, sometimes also referred to as the mixing layer height, the atmospheric boundary layer (ABL) height or the planetary boundary layer (PBL) height, is one of the meteorological parameters that affect particulate matter concentrations on the surface. Its accurate estimation is therefore necessary. In this study, an improvement in the estimation of the mixing height is carried out by introducing a time-dependent maximum and minimum PBL altitude (TDMMPA) in the Haar wavelet covariance transform (WCT) technique applied to atmospheric LiDAR measurements generally used in PBL height estimations. Results showed that this method is robust during the nighttime and in the presence of clouds, when the mixing height is normally over-estimated. Further work is still necessary, however, especially in coming up with monthly TDMMPAs in order for the method to be incorporated to operational use.

Author: MACATANGAY, Ronald

Co-authors: Mr THONGSAME, Worapop (University of Colorado); Dr SUPASRI, Titaporn (National Astronomical Research Institute of Thailand); Mr NOISAPUNG, Jirasak (National Astronomical Research Institute of Thailand); Dr SOLANKI, Raman (Chinese Academy of Sciences)

Presenter: MACATANGAY, Ronald

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