



Urban atmospheric boundary layer height in Seoul Metropolitan Area, KOREA

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Atmospheric boundary-layer height (ABLH) is important parameter in meteorological model for weather forecasting and it's used to model verification. In this study, temporal and spatial variations of ABLH obtained by aerosol lidars and ceilometers deployed at urban commercial area (Gwanghwamun, urban center) and urban residential area (Jungnang, eastern part) of Seoul Metropolitan Area in 2014 are analyzed. The ABLH is determined as the height corresponding to a minimum vertical gradient of backscattered signals observed by an aerosol lidar (532 nm) and a ceilometer (910 nm), respectively. It is found that the ABLH determined by an aerosol lidar shows nearly the same seasonal and diurnal variation as that by a ceilometer. But the ABLH observed at downwind (Jungnang) station is generally higher than that observed at urban center (Gwanghwamun) station. The stable boundary layer (SBL) height in nighttime ranges 10~500 m, and a residual layer is often located over the top of SBL. The unstable boundary layer height grows during the daytime and shows a daily maximum in late afternoon. The daily maximum ABLH has a higher value in spring and a lower value in winter according to surface sensible heat flux, cloud, and precipitation.