



Climatology of the Planetary Boundary Layer over the Korean Peninsula Using ECMWF and Sounding datasets

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The planetary boundary layer (PBL) is important for the weather forecast, climate model, air quality prediction and pollution assessment. The topography of Korea significantly differs from the other parts of the world. About 70% land of South Korea is mountainous, especially in the north and east. The east, west and south sides of South Korea are surrounded by East Sea, Yellow Sea, and the East China Sea, respectively. Thus, the weather conditions also differ from the other regions. Therefore, the present study emphasizing on the climatology of the seasonal and diurnal variability of PBL over the Korean peninsula. We derived the PBL heights from ECMWF reanalysis and sounding datasets for the period of ten years. The PBL top increases from morning to late afternoon and low during the night and replaced with the nocturnal boundary layer. The seasonal variability of PBL is significant with larger during summer, followed by spring, fall, and minimum in winter. The PBL obtained from ECMWF compared with that derived from sounding datasets. The comparison shows good agreement between these two and also shows good correlation in diurnal and seasonal patterns of PBL. This study observes the PBL pattern with respect to temperature and humidity. We also notice the PBL pattern toward with pollution/air quality index over Seoul metropolitan region.

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