



PBL climatology using IGRA radiosounding data in Mediterranean Basin

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The planetary boundary layer height (PBL) is a critical variable in many applications such as NWP, air quality and climate models. The study of the PBL involves several process and parameters: exchange of momentum, heat, water vapour and tracers from the surface to the free atmosphere therefore, PBL representation in numerical models is difficult to achieve and observation are used to improve the quality of the implemented parameterizations.

This presentation will illustrate a climatology of the height of the PBL and its trend since 1978 to present at different in the Mediterranean Basin.

The height of the PBL is calculated using the maximum vertical gradient of potential temperature (θ) obtained from radio Station belonging to the IGRA (Integrated Global Radiosonde) archive related in the Europe Region) and to GRUAN network (GCOS Reference Upper Air Network).

The IGRA consists of quality-controlled radiosonde observations of temperature, humidity, and wind at stations across all continents. The earliest year of data is 1905, and the data are updated on a daily basis. Record length, vertical extent and resolution, and availability of variables varies among stations and over time. The GRUAN is an international reference observing network of sites measuring essential climate variables above Earth's surface, designed to fill an important gap in the current global observing system. GRUAN measurements are providing long-term, high-quality climate data records from the surface, through the troposphere, and into the stratosphere.

An estimate of uncertainty will be also discussed and correlated with the recent climate changes at the global scale and in the Mediterranean Basin.