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Study of the morning transition of the atmospheric boundary layer

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In this work it will be analyzed the main physical processes related to the transition of the Atmospheric Boundary Layer (ABL) that takes place from the last hours of the night until the first hours of the morning. In order to achieve that, it will be used data from field campaigns which took place in the Research Centre for the Lower Atmosphere (CIBA), especially those gathered in the campaign carried out in June, 2008 where information was obtained from a 10m height mast provided with temperature, wind speed and direction, and moisture sensors at several levels. Also a sonic anemometer (20 Hz sampling rate) at 10m was available. The database is complemented by a triangle of microbarometers installed next to the surface, and another two microbarometers placed in a 100m meteorological tower at 50 and 100m respectively. A GRIMM particle monitor (MODEL 365), which can be used to continuously measure each six seconds simultaneously the PM10, PM2.5 and PM1 values, was also available to evaluate the degree of mixing taking place near the surface. The thermodynamic characteristics of the first hundreds of meters remain registered from information obtained with a tethered balloon and with a RASS-SODAR.
The main turbulent and stability parameters, as well as coherent structures present in the Nocturnal Boundary Layer are studied in connection to their influence in the developing of the next Convective Boundary Layer.