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Preliminary analysis of the Nocturnal Atmospheric Boundary Layer during the experimental campaign CIBA 2008

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An Atmospheric Boundary Layer campaign was developed in Spain along June 2008 at the CIBA (Research Centre for the Lower Atmosphere) site which is placed on a fairly homogeneous terrain in the centre of an extensive plateau (41º49' N, 4º56' W). Different instrumentation at several levels was available on a new 10m meteorological mast, including temperature and humidity sensors, wind vanes and cup anemometers, as well as one sonic anemometer. Besides, two quartz-based microbarometers were installed at 50 and 100m on the main permanent 100m tower placed at CIBA. Three additional microbarometers were deployed on the surface on a triangular array of approximately 200 m side, and a tethered balloon was used in order to record vertical profiles of temperature, wind and humidity up to 1000m. Finally, 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 deployed at 1.5m.

This work will show some preliminary results from the campaign CIBA 2008, analysing the main physical processes present in the atmospheric Nocturnal Boundary Layer (NBL), the different stability periods observed and the corresponding turbulent parameters, as well as the coherent structures detected. The pressure perturbations measured from the surface and tower levels make possible to study the main wave parameters from wavelet transform, and compared the structures detected by the microbarometers with those detected in the wind and particles records.