Boundary Layer Late Afternoon and Sunset Turbulence: the BLLAST 2011 experiment

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The BLLAST (Boundary-Layer Late Afternoon and Sunset Turbulence) project was designed to investigate the PBL transition that occurs in late afternoon. This poorly understood, but crucial time period lays in between the diurnal mixed convective boundary layer and the newly stably-stratified surface layer regime capped by the residual layer in the late afternoon. This project focuses on two core questions: the role of surface heterogeneity, and the evolution and complexity of the vertical structure during this phase.

An international group of research scientists are working together on these issues to increase our understanding of the late afternoon turbulence processes and improve the representation of the diurnal cycle in numerical weather prediction and global models. The BLLAST project has lead to an intensive observation campaign between the 14th June and 8th July 2011 in southern France to study the afternoon transition. It was unique by combining measurements from aircrafts, Unmanned Aerial Systems, remote sensing instruments, radiosoundings, tethered balloons as well as several eddy correlation stations and instrumented masts and a 60 m tower; and due to the large density of observations within less than 10 km scale. The instrumentation was deployed over different vegetated surfaces. This allows to simultaneously document the time and spatial evolution according to the surface.

In this presentation, preliminary results from the observations will be shown. Additionally, some of the first results from mixed layer, Large Eddy and mesoscale simulations performed to understand the processes will be presented.