Geophysical Research Abstracts, Vol. 8, 05425, 2006
SRef-ID: 1607-7962/gra/EGU06-A-05425


# Influence of the sea breeze circulation on the boundary layer structure during the ESCOMPTE campaign

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The ESCOMPTE campaign (Cros et al., 2004) took place between 4th of June and 16th of July 2001 in southern France around Marseilles, where pollutant concentrations are strongly influenced by complex sea breeze circulations. A large amount of data describing the structure of the planetary boundary layer (PBL) and its chemical composition was collected during four Intensive Observation Periods.

In the frame of the ESCOMPTE Modelling Exercise a non-hydrostatic meteorological model with on-line air quality module MC2-AQ (Kaminski et al. 2002, Struzewska et al. 2005, Plummer et al. 1998) was used to study the interactions between dynamical properties of the PBL and transport and transformation of pollutants. Numerical simulations were carried out over the domain covering southern France with 300x300 grid points and 3 km resolution. The analysis of chemical composition of the PBL revealed that developed sea breeze circulation has significant impact on distribution of the trace species. Further analyses will improve the understanding of the interaction mechanisms between meteorology and chemistry in coastal areas.

In this study we will present the evolution of the planetary boundary layer over the ESCOMPTE area for selected days with developed sea breeze circulation. The analyses will include the intensity and depth of the sea breeze circulation and its inland penetration. We will base our analysis on the modelled wind speed and wind direction, temperature, humidity, PBL height and mixing properties. Also, the impact of sea surface temperature and the synoptic flow on the sea breeze generation will be investigated. The modelled parameters will be compared with measurements from surface stations, wind lidar and vertical soundings.