Geophysical Research Abstracts,
Vol. 11, EGU2009-1561-2, 2009
EGU General Assembly 2009

Thermal flows along the south-eastern Adriatic

M. Telisman Prtenjak and S Djivanovic
Faculty of Science, University of Zagreb, Department of Geophysics, Zagreb, (telisman@irb.hr)

In this study, sea-breeze dynamics along the south-eastern Adriatic is investigated in order to evaluate the basic small-scale characteristics of the thermal circulations. This coastal area is surrounded by mountains and it is characterized by the very complex wind regime, where an interaction among small-scale circulations, such as sea/land breezes, slope winds and mountain/valley winds occurs. This is an area also with several airports which are often under sea breeze influence. Therefore, the particular attention in this research is focused on the sea-breeze e.g. the sea-breeze penetration, front, intensity and depth, which can be very important information for the airports.
Rather typical anticyclonic situation was chosen (24 - 25 April 2006) when the south-eastern Adriatic lies within a region of a high pressure ridge characterized by the weak pressure gradients and undisturbed weather. This was also a period when the Etesian winds influence was negligible there.
A numerical, nonhydrostatic mesoscale meteorological WRF model was used to evaluate wind regimes, thermodynamical structure of the lower troposphere along the south-eastern Adriatic in detail, and turbulence within the local boundary layer. The results agree satisfactorily with the surface and sodar measurements.
The simulation of the chosen period reveals the significant role of the local topography on daily flow with certain local characteristics. The convergence zones (CZs), as a result of the merged sea breezes, develop near Split-airport as well as near Brač-aiport at the island of Brač. The intensity, speed and position of these CZs are examined in detail. The results also revealed a strong sea breeze channelling flow that occurs between the island of Hvar and Korčula toward Neretva river estuary. The influence of the synoptic flow on the mentioned local characteristics is relatively small. Needless to say, there is no horizontally homogeneous marine boundary layer at any time.