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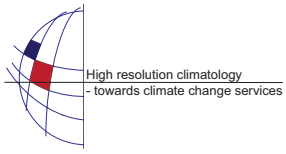

Testing stable boundary layer parameterizations against the BASE:ALFA measurements

G. Bonafè (1), F. Tampieri (2), F. Di Giuseppe (1), L. Caporaso (1,2,3)

(1) ARPA, SIMC, Bologna, Italy , (2) CNR-ISAC, Bologna, Italy (F.Tampieri@isac.cnr.it), (3) Dept.Physics, Univerity of Bologna, Bologna,Italy

The Po valley in the Northern Italy is a large plain in a semi-closed basin surrounded by complex orography; the Alps to the North and Apennines to the South-East, and closed to the east by the Adriatic sea. As a flatland basin shielded by mountains, calm wind is very frequent and strong temperature inversions are often observed near the ground, during the night and in the winter period the occurrence of a extremely stable boundary layer is common.

A complete set of surface and atmospheric measurements have been collected during a four month observational program carried out at San Pietro Capofiume meteo station, in the middle of the Po Valley. The long term dataset has been collected in the contest of the project BASE:ALFA with the main aim of creating a data pool of micro-meteorological /soil data to test and validate numerical weather prediction PBL schemes. The measurement periods span summer, winter and spring and allows to analyse a wide range of PBL stability conditions. Different parameterizations of first and second order moments of velocity and temperature are tested against the collected data. A particular focus is given to stable boundary layer and the values of its height obtained from Nieuwstadt 1984 and Zilitinkievich et al 2005 formulas will be provided and compared against radiosounding profile estimates.