



## **LES investigation of a baroclinic PBL for the sunset decay of convective turbulence**

U. Rizza (1), G.A. Degrazia (2), M.M. Miglietta (3,1)

(1) CNR-ISAC, Istituto di Scienze dell'Atmosfera e del Clima, Consiglio Nazionale delle Ricerche, Italy (u.rizza@isac.cnr.it),  
(2) ) UFSM, Laboratório de Física da Atmosfera, Universidade Federal de Santa Maria, Santa Maria, Brazil, (3) ISE-CNR,  
Istituto per lo Studio degli Ecosistemi, Consiglio Nazionale delle Ricerche, Pallanza, Italy

This study investigates the Large-Eddy Simulation (LES) technique in the diurnally varying atmospheric boundary layer in conditions of realistic environment forcing. The initial settings of meteorological fields are obtained “ingesting” into the LES domain the observed vertical profiles of wind, temperature and specific humidity provided by the CASES-99 dataset.

A methodology is developed to derive the components of the geostrophic wind profile from a meteorological simulation performed with the WRF model. This profile, which is treated as an external forcing, is utilized in LES to represent the large-scale horizontal mean pressure gradient.

Actually, most of the studies on the TKE decay have focused on very short forcing time scales. The principal aim of this work is the investigation of TKE decay at sunset with LES for the realistic forcing time scales that are observed in the atmosphere. In this context it will be demonstrated that the decay rate of the boundary layer depth averaged TKE goes from  $t-2$  to  $t-6$ , showing that the decay of turbulence starts slowly and rapidly collapse after the early evening transition.