



Interaction of the atmospheric flow with the orography during an extreme cold surge

R. Aznar (1), F. Valero (1) and J.P. Montávez (2)

(1) Departamento de Astrofísica y Ciencias de la Atmósfera, Universidad Complutense, Madrid, Spain, (2) Departamento de Física, Universidad de Murcia, Spain (raznar@fis.ucm.es)

During winter, occasional cold air surges affect the Iberian Peninsula, entailing considerable problems especially in the most remote areas. One of those episodes, known to be among the most intense in the region over the twentieth century, is analysed using both model results and observations. Model simulations are carried out with the Pennsylvania State University-National Center for Atmospheric Research numerical model MM5 in order to provide data to characterize the structure and evolution of the cold snap.

The coupling between such cold surge and the particularly complex orography of the area is studied focusing the attention on northern Iberia, which is the natural entrance region for cold air masses, and central Iberia where the cold air spreads. In that sense, the dynamics of the cold outbreak is evaluated by diagnosing the different momentum equation terms, which determine the force balance and enable to identify the different acceleration sources generated by orographic features, which in turn may explain the local wind regime related to the event.