EMS7/ECAM8 Abstracts,
Vol. 4, EMS2007-A-00596, 2007
7th EMS Annual Meeting / 8th ECAM


# Analysis of the synoptic conditions leading to Iberian Mesoscale Convective Systems

**S. Queralt** (1), E. Hernández (1), P. Lorente (1), D. Gallego (2)

1. Dept. Física de la Tierra II, Facultad de Ciencias Físicas, Universidad Complutense de Madrid, Spain (queralt@fis.ucm.es)
2. Dept. Física de la Tierra, Facultad de Ciencias Ambientales, Universidad Pablo de Olavide, Sevilla, Spain

Torrential rainfall episodes are a climatic feature of the western Mediterranean basin. Mesoscale Convective Systems (MCSs) occuring over Iberian Peninsula have a special interest due to usual flood damages and even fatalities that they have caused. The severity of a given MCS depends on together synoptic conditions, humidity sources availability and atmospheric instability degree. Synoptic situations at 500 hPa level were analyzed in order to classify Iberian MCSs and inherent instability characteristics. The aim of this work is to identify the suitable synoptic features involved in the very intense Iberian MCSs, and to evaluate the capability of the associated dynamical process in troposphere-stratosphere exchanging.

The exchange estructures are previously identified as deep positive potential vorticity (PV) anomalies at 330 K isentropic surface, occurred during those MCSs developed under a cutoff low. Afterwards, cross sections of PV anomalies were represented to assess the thickness of the atmosphere affected. Those MCSs developed under the influence of the trough portion of a blocking episode have a weak dynamic signal. Hence, under blocking synoptic signatures, exchange structures are unlikely found.

Moisture sources availability and transport across the dynamic tropopause were attained by computing backward trajectories of the air masses involved in MCSs. A lagrangian particle dispersion model (FLEXPART6.2) was performed to exhibit the evolution of the moist and paths prior to these severe weather episodes.