



For Details, Contact:

M. Gaya

Centre Meteorologic de Balears
Instituto Nacional de Meteorologia
Palma de Mallorca. Spain

dfscrn0@ps.uib.es

Conference on European Tornadoes and Severe Storms

A synoptic and mesoscale study of a tornado outbreak in the Balearic Islands

M. Gaya, Centre Meteorologic de Balears. Instituto Nacional de Meteorologia. Palma de Mallorca. Spain

V. Homar and C. Ramis, Grup de Meteorologia. Departament de Fisica. Universitat de les Illes Balears. Palma de Mallorca. Spain

On 11-12 September 1996 a tornado outbreak occurred in the Balearic Islands. A total of 6 tornadoes developed in less than 12 hours. Most of the tornadoes was estimated of F2 intensity and damage was important on industrial and populated areas.

A description of the synoptic meteorological situation as well as a diagnostic study of the dynamical forcings are presented. The synoptic pattern reveals a low at 500 hPa over the Iberian peninsula that produce South-west winds over the western Mediterranean. A jet streak is well defined to the south of the region at 300 hPa. A deep tropopause fold can be identified over Spain from the structure of the Potential Vorticity field.

A mesoscale study shows that thunderstorms developed over a convergence line crossing the Balearic islands north-eastward. This convergence line moved in phase with the jet streak in such a way that low level convergence interacted with the forcing for ascent motion associated with the jet streak. The vertical structure of the atmosphere over the Balearic islands during the outbreak shows a significant latent instability, notable values of Storm Relative Helicity and a dry layer at levels about 800 hPa.