



Pre-frontal hailstorm episodes in the Iberian Peninsula: identification, analysis and prediction.

Andrés Merino, Eduardo García-Ortega, Laura López, and José Luis Sánchez
Atmospheric Physics Group. University of León. E-mail: amers@unileon.es

On the 21st of July and 1st of August 2010, a series of strong hailstorms occurred in the south of the province of Aragón, Spain, causing major damage in the district of Calanda (in the NE of the Iberian Peninsula). The atmospheric situation that gave rise to these hailstorms was very similar: the presence of a trough to the west of the Iberian Peninsula, accompanied by a cold nucleus at 500hPa, which quickly moved from west to east. At the same time, the lower layers of the atmosphere were dominated by a mass of warm, humid air from the Mediterranean, reaching temperatures in excess of 35°C.

From midday onwards a group of pre-frontal convective cells were formed, which developed very quickly, as within 15 minutes of forming they began to discharge hail, which in some cases reached a diameter of 7cm and 40mm of precipitation. As a result, significant damage was caused to crops and infrastructures in districts such as Calanda.

The Atmospheric Physics Group (GFA) of the University of León, Spain, has carried out a series of simulations using the WRF mesoscale model, using different parametrization schemes with the aim of improving the forecasting of pre-frontal storms.

Finally, in order to identify and monitor the events, both the MSG satellite and C-band weather radar owned by the GFA have been used (López 2009; PRAPRO, 2009).

References

López L. and Sánchez J.L., 2009: Discriminant methods for radar detection of hail. *Atmos. Res.*, 93, 358-368.
PRAPRO S. L., 2010: Software Nubes. www.prapro.com

Acknowledgements

The authors would like to thank the Regional Government of Castile-León for its financial support through the project LE003B09.