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Conference on European Tomadoes and Severe Storms

Techniques for the analysis of episodic hailstorms: application to the storms on 7th May 1999 in the Ebro Valley

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The data provided by observation systems and the methodologies allowing a quick analysis play an essential role in the case of episodic storms with heavy hailfalls that cause important damages.

On May the 7th 1999 the heaviest hailstorms in the Iberian Peninsula in the last 10 years were registered in wide areas of the Ebro Valley. In the province of Lleida the hailfalls caused damages of more than 100 million euros. More damages in other areas have to be added to this sum, although the information is less reliable and no exact amount can be mentioned.

- The material used to analyze the hailstorms was the following:
- The images provided by a C-band radar
- The images provided by Meteosat
- The European network for the detection of lightening
- A hailpad network installed in Lleida
- A network of meteorological stations

It was also possible to use the data provided by a sounding carried out almost at the same time the storms were growing. The maps and charts usually employed by the networks for meteorological information were also used.

The methodologies for the analysis of all the data and the examination of the results have provided a number of conclusions, among which the following are highlighted:

- 1. The trajectories followed by the most severe storms covered a distance of several hundred kilometers.
- 2. The energy density of the hailstones on the ground reached more than 1000 J m^{-2} . The ice mass was in some places of more than 8 kg m^{-2} .

Finally discussions and conclusions are presented in this paper.