

Different precipitation-type in a snow event in Catalonia. A mesoscale analysis

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On the 28th and 29th of January, 2006, Catalonia (NE of Iberian peninsula) experienced a snow event that caused circulatory problems on 100 roads and highways, 5 stretches of railways, power cuts and damage to thousands of trees. During the event, in some places, the thickness of the snow reached up to 60 cm between altitudes of 500 and 1000 m and 35 cm below 500 m. The most important accumulations occurred between midnight and noon on the 28th. The aim of this work is to characterize situations like the above and to improve the forecast of the snow level at medium latitudes. It were used Meteosat images, radar images, radiosounding data and the operative mesoscale models run by the Meteorological Service of Catalonia, MASS and MM5, as well as the LOKAL model. Considering the synoptic reanalysis, a relative low pressure was observed in front of Catalanian coast at levels below 850 hPa during the 28th. This low caused warm advection in the NE of Catalonia and cold advection in the southern edge and in the inner part of the region. Over this level, there was a hot and humid advection led by a jet stream proceeding from the south which was observed in the 300 hPa analysis and in the WV and IR images. This clash of air masses and the complex orography favoured the formation of different types of precipitation (snow, sleet, rain and freezing rain). In order to determine the type of precipitation using rawinsonde data some indexes have been applied to Barcelona radiosounding data (Ramer, Bourgouin and thickness). On the other hand, the radar images have not provided much information due to the fact that the snow level was situated in many cases near of the sea level and that the radar network is located over 500 meters. Finally, the outputs of MASS and MM5 models were analyzed. Above 925 hPa, the outputs of the models were adjusted to reality. Nevertheless, below this level they were not capable of predicting the formation of a relative low pressure at the first part of the 28th. Consequently, the importance of having a conceptual model of these events is very helpful and necessary for the forecaster in order to estimate an accurate snow level.