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An overview of a Mediterranean flash flood event: from the forecast to the social impact

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Between the 8^{th} and 10^{th} October 2002, some precipitation amounts greater than 120 mm in six hours were recorded in Catalonia (NE Spain) producing typical Mediterranean flash floods in the central coastal strip. First of all, a location and evaluation of produced damages has been done: affected roads, overflowing rivers, main municipal districts affected. This task has been carried out plotting the information provided by a flood geodatabase by GIS (Geographical Information System). On the other hand, and in order to analyse this case from a meteorological point of view, several methodologies have been applied: deterministic and probabilistic ones. The deterministic analysis has been started using the MM5 mesoscale model. A 48h simulation has been designed for three domains connected with two way nesting and having 54, 18, 6 km horizontal grid resolution and vertical resolution of 23 levels, and it has been initialised with the NCEP Analyses. Simultaneously, and completing the deterministic analysis, but into a shorter time scale, a tracking-nowcasting of the main convective cells, associated with heavy rainfalls have been analysed using a specific software created by GAMA group. The probabilistic point of view has been also considered. With this aim a meteorological analogous method has been implemented. This one considers the meteorological situations similar to the current one into an n-dimensional space. This space is formed by the principal components of the 850 and 1000 hPa geopotential fields at 00 UTC and 12 UTC from the NCEP/NCAR meteorological reanalyses for the period 1958-2004. The probabilistic outputs have been performed

into a 0.04ºX 0.04º pixel size. The results obtained by the MM5 and the Analogous method have been compared and validated with the surface data from more than 160 rainfall stations.

The 10^{th} October 2002 episode had in Catalonia a remarkable social impact and focused on the mass media attention in an unusual way due to the high population and the important infrastructures that can be found in the affected area. Along with this case study, a comparison with other no less important events has been done within the MEDEX project framework (Mediterranean Experiment On "Cyclones That Produce High Impact Weather in the Mediterranean"). So the October 2002 event has been compared with April 2002 one; different mass media repercussion as well as human perception have been studied.