Characterization of a Mediterranean flash flood event using raingauges, radar, GIS and lightning data.

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Flash flood events are very common in Catalonia, generating hight impacts and losses nearly every year. They are produced by the overflowing of non-permanent rivers in little and steep basins close to the sea. This kind of floods are associated with very convective rainfall events reaching high rainfall intensities. The aim of the present study is to analyse the 12-14th September 2006 flash flood event within the framework of the characteristics of flood events in the Internal Basins of Catalonia (IBC). To achieve this purpose all flood events occurred between 1996 and 2005 have been analysed. Rainfall and radar data have been introduced into a GIS, and a classification of the events has been done. A distinction of episodes has been made considering the spatial coverage of cummulated rainfall in 24 hours, and the degree of the convective precipitation registered. The study case can be considered as a highly convective one, with rainfalls covering all the IBC on the 13th September. In that day 215.9mm/24h were recorded with maximum 5-minutal intensities above 130mm/h. Together with the convective precipitation, other severe phenomena were observed like two tornadoes on the 13th. A complete meteorological study of this event is also presented. In addition, as it was an episode with a high lightning activity it has been chosen to be studied into the framework of the FLASH project. Near 184000 flashes, of which 58052 were cloud-to-ground, were recorded during the whole event. In this way, a comparision between this information and raingauge data have been developed. All with the goal in mind of finding a relation between lightning density, radar echoes and amounts of precipitation. Furthermore, these studies improve our knowledge about thunderstorms systems.