A remote sensing analysis of the 25 August 2006 event in Catalonia (NE Spain).

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On the afternoon of 25 August 2006 a thunderstorm caused important damage in the small coastal village of Calella (40 km at NE of Barcelona). The intense rainfall produced a flash-flood that affected a great number of cars. The Meteorological Service of Catalonia warned about the situation some minutes before, in spite of the difficulty to determine the risk of danger of the thunderstorm. Even though the thunderstorm moved very fast (the mean speed was 46 km per hour), the features observed with remote sensing tools (especially radar and lightning detectors) allowed issuing the warning. Regarding radar reflectivity, the maximum values were elevated (Z = 54 dBZ, TOP = 14.3 km, and VIL = 28.5 mm), but typical of normal summer thunderstorms in the area. However, some other characteristics were observed in the imagery (hook echo, bounded weak echo region), which indicated the potential severity of the thunderstorm. However, it was the lightning data which confirmed the severity of the convective structure. In the 30 minutes previous to the arrival of the storm to the affected region, more than 2000 IC and near of 650 CG flashes were detected by the lightning network. The presented study is centred in the analysis of the background and the evolution of the thunderstorm from the point of view of the remote sensing tools, in order to improve the knowledge about life cycle of thunderstorms. These models will be implemented in nowcasting tools.