

2.1 PERFORMANCE OF A NEW ALGORITHM FOR NOWCASTING ANOMALOUS TRAJECTORIES

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Severe weather is commonly associated with thunderstorms that have anomalous trajectories. We define as anomalous trajectory the one that doesn't follow a linearly constant path (split, merge, sudden change of direction, etc.). In this sense, the authors propose a new technique that optimizes the better identification of the convective cells, their tracking, and the identification of any key feature associated with an anomalous movement.

In order to test the performance of the new algorithm, several cases of severe weather (large hail, downburst, tornadoes and heavy rainfalls that produce flash floods) have been analysed. The set of events has been chosen from the database of the Meteorological Service of Catalonia (SMC) and the INUNGAMA database, and the selection has been made considering the following aspects: the season of the year, the area affected, the time of the day, the degree of organization of the convection, the duration, among others.

The first step of the evaluation has consisted in the application of the technique to the radar imagery of the SMC. The first results show how in different cases, it is observed changes at high levels within the convective cells structure, which cause also changes at low levels before the cell finally splits or merge. The results have been compared with the obtained from the current nowcasting tool of the weather service, in order to detect those issues that make the new algorithm more appropriate in those cases.