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Tools for nowcasting severe convection with satellite and radar data

Arnold Tafferner and Caroline Forster
Institute of Atmospheric Physics, DLR - Bavaria

Within the project Distributed Research Infrastructure for Hydro-Meteorology (DRIHM) DLR is involved with its nowcasting tools Cb-TRAM and Rad-TRAM.
Cb-TRAM (thunderstorm Tracking And Monitoring) is a fully automated tracking and nowcasting algorithm. Intense convective cells are detected, tracked and discriminated with respect to onset, rapid development, and mature phase. In addition, short range forecasts are provided. The detection is based on Meteosat SEVIRI data by combining four selected channels. Areas of convection initiation, of rapid vertical development, and mature thunderstorm cells are identified. The tracking is based on geographical overlap between current detections and first guess patterns of cells detected in preceding time steps. Based on a so-called pyramid matcher also nowcasts of motion and development of detected areas are provided.
In contrast to Cb-TRAM, the tool Rad-TRAM (Radar Tracking And Monitoring) operates with radar data (regional or composite) with the aim to detect areas of heavy precipitation. Both trackers can be run both on observed and model generated (synthetic) data.
Examples of tracking and nowcasting of severe convection are presented, including the Genoa flood of 4 November 2011.