



Tracking and nowcasting convective precipitation cells at European scale for transregional warnings

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A transregional overview of the current weather situation is considered as highly valuable information to assist forecasters as well as official authorities for disaster management in their decision making processes. The development of the European-wide radar composite OPERA enables for the first time a coherent object-oriented tracking and nowcasting of intense precipitation cells in real time at continental scale and at a resolution of $2 \times 2 \text{ km}^2$ and 15 minutes.

Recently, the object-oriented cell-tracking tool A-TNT (Austrian Thunderstorm Nowcasting Tool) has been developed at ZAMG. A-TNT utilizes the method of ec-TRAM [1]. It consists of two autonomously operating routines, which identify, track and nowcast radar- and lightning-cells separately. The two independent outputs are combined to a coherent storm monitoring and nowcasting in a final step.

Within the framework of HAREN (Hazard Assessment based on Rainfall European Nowcasts), which is a project funded by the EC Directorate General for Humanitarian Aid and Civil Protection, A-TNT has been adapted to OPERA radar data. The objective of HAREN is the support of forecasters and official authorities in their decision-making processes concerning precipitation induced hazards with pan-European information.

This study will present (1) the general performance of the object-oriented approach for thunderstorm tracking and nowcasting on continental scale giving insight into its current capabilities and limitations and (2) the utilization of object-oriented cell information for automated precipitation warnings carried out within the framework of HAREN.

Data collected from April to October 2012 are used to assess the performance of cell-tracking based on radar data. Furthermore, the benefit of additional lightning information provided by the European Cooperation for Lightning Detection (EUCLID) for thunderstorm tracking and nowcasting will be summarized in selected analyses.

REFERENCES:

[1] Meyer, V. K., H. Höller, and H. D. Betz 2012: Automated thunderstorm tracking and nowcasting: utilization of three-dimensional lightning and radar data. Manuscript accepted for publication in ACPD.