



## A 10-year Radar-based Precipitation Reanalysis for Germany – First Steps and Future Directions

T. Winterrath, E. Weigl, A. Becker, and M. Hafer

Deutscher Wetterdienst, Department of Hydrometeorology, Offenbach a. M., Germany (tanja.winterrath@dwd.de)

The area-covering German radar network comprising 16 operational Doppler C-band systems provides a database of paramount importance for temporal and spatial high-resolution precipitation analyses for real-time and - as the archive encompasses ten years of reflectivity data by now - for climatological applications. Based on the combination of radar based precipitation estimates and comprehensive surface precipitation observations, Deutscher Wetterdienst (DWD) operationally provides high-resolution quantitative precipitation estimation (QPE) products for real-time hydrological applications in the context of flood risk management since 2005. Meanwhile, a valuable database of radar reflectivity and QPE data has accumulated, demanding its reanalysis and evaluation for climatological applications in various subject areas e.g. water engineering, climate monitoring, and climate modelling.

DWD has defined two approaches for the quality-controlled high-resolution precipitation reanalysis of the archived data:

- the post-correction of six years of operational QPE products and
- the reanalysis of ten years of radar reflectivity data.

The first short-term approach is based on the archived operational QPE composite products with a temporal resolution of one hour and a spatial grid size of one kilometre squared covering Germany. To allow for statistical analyses with a focus on extreme precipitation events a post-correction suite is applied to the data to eliminate residual false echoes and further enhance data quality. A first reanalysis has been performed focussing on the metropolitan region of Cologne.

The second long-term approach will comprise a complete reanalysis of the reflectivity data applying a consistent analysis suite. It is based on the local five-minute precipitation scans of the 16 operational weather radars of the DWD network since 2001. Furthermore, additional algorithms will be developed in order to improve the high data quality and comply with climatological standards.

At the conference, we present the first results of the post-correction approach as well as first steps toward the 10-year radar-based precipitation reanalysis.