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Continuous country-wide rainfall observation using a large network of commercial microwave links: Challenges, solutions and applications

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Commercial microwave link (CML) networks have proven to be a valuable source for rainfall information over the last years. However, up to now, analysis of CML data was always limited to certain snapshots of data for historic periods due to limited data access. With the real-time availability of CML data in Germany (Chwala et al. 2016) this situation has improved significantly.

We are continuously acquiring and processing data from 3000 CMLs in Germany in near real-time with one minute temporal resolution. Currently the data acquisition system is extended to 10000 CMLs so that the whole of Germany is covered and a continuous country-wide rainfall product can be provided.

In this contribution we will elaborate on the challenges and solutions regarding data acquisition, data management and robust processing. We will present the details of our data acquisition system that we run operationally at the network of the CML operator Ericsson Germany to solve the problem of limited data availability. Furthermore we will explain the implementation of our data base, its web-frontend for easy data access and present our data processing algorithms. Finally we will showcase an application of our data in hydrological modeling and its potential usage to improve radar QPE.

Bibliography:

Chwala, C., Keis, F., and Kunstmann, H.: Real-time data acquisition of commercial microwave link networks for hydrometeorological applications, Atmos. Meas. Tech., 9, 991-999, doi:10.5194/amt-9-991-2016, 2016