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# Synergies of commercial microwave links and polarimetric weather radars

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Commercial microwave links (CMLs) can be used for quantitative precipitation estimation (QPE) by exploiting the close to linear relationship between path-integrated attenuation and path-averaged rain rate. Currently, attenuation data from 3904 CMLs in Germany is obtained in real-time, with 3 years of collected data. We have carried out a first large scale analysis of a full year of countrywide CML observations. Building on top of this analysis we were able to significantly improve the robustness of our CML QPE by detecting rainfall induced attenuation patterns with a neural network approach.

In parallel we investigate the synergetic use of CMLs and weather radars. Polarimetric weather radars can estimate rainfall in a similar fashion as CMLs by relating rainfall and attenuation via the R(A) algorithm. Within RealPEP we aim to use the synergies that these two approaches offer. Weather radars estimate accumulated attenuation along the radar ray which can lead to uncertainties in areas far from the radar or behind hail cores. Our aim is to complement weather radars with in situ attenuation measurements from CMLs.

In this presentation we show our recent advancements, preliminary results and also the challenges that arise when comparing different sources of rainfall information like e.g., the spatio temporal mismatch of high resolution QPE products.

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