# Areal rainfall depth statistics based on a 10-year reanalysis of volumetric radar observations

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Weather radars provide precipitation rate estimates at high spatial and temporal resolutions. At the Royal Meteorological Institute of Belgium, volume scans from two C-band weather radars have been archived since 2004. Using the three-dimensional observations allows a careful processing of the reflectivity measurements to derive surface rainfall. It includes the identification of non-meteorological echoes using four complementary algorithms, the extrapolation of the reflectivity at the ground using an averaged vertical profile and the use of an improved Z-R conversion. The rainfall rates available every 5 minutes are then accumulated over a given duration taking into account advection. In a final stage, rainfall depths are combined with dense raingauge measurements using mean field-bias or external drift kriging. The accuracy of the final estimates is analysed using independent rain gauge measurements over a 10-year period. This long dataset is used to compute statistics for different rainfall depth durations and different area sizes.