6.18 EVALUATION OF REFLECTIVITY/POLARIMETRY/RADIOMETRY-BASED C-BAND ATTENUATION CORRECTION SCHEME USING NEIGHBOURING RADARS

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A C-band weather radar beam can be attenuated by several dBs in heavy rainfall, leading to a severe underestimation of the rainfall.

This is traditionally corrected by using a gate-by-gate correction scheme, which is strongly sensitive to the reflectivity calibration of the radar, and can occasionally be unstable, yielding unphysically large corrections. If a dual polarisation radar is available, the differential phase change in rainfall can be measured. This is proportional to the specific attenuation, but unfortunately, the proportionality "constant" in this case can vary by a factor of about two.

A more recent technique is based on the principle that absorbers in thermal equilibrium will also emit electromagnetic radiation. This can be measured as an increase in the noise level at long range, which can then be converted into a path integrated attenuation An operational scheme was released in 2016 to produce improved attenuation corrections using this extra information. We present an evaluation of the benefits of the new scheme, using reflectivity measurements of overlapping radar volumes from neighbouring radars.