Precipitation forecast evaluation by polarimetric radar

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A good representation of clouds and precipitation in Numerical Weather Prediction
(NWP) models is essential for an accurate direct prediction of local weather elements.
In order to improve the quality of precipitation forecasts it is necessary to evaluate
and better parameterise these processes determining the amount of precipitation at the
ground. This has to be done through verification against observations. Polarimetric
radar systems give information on the temporal and spatial distribution of hydrom-
eteors in the atmosphere and are able, in contrast to conventional radar, to classify
the hydrometeors such as rain, hail, graupel, and snow. Therefore they are especially
suited for the verification of the microphysical parameterisation of high resolution
models particularly in strong convective systems. In order to make the polarimetric
information usable for the model verification, the polarimetric radar forward opera-
tor SynPolRad (Synthetic polarimetric Radar) is used to create synthetic polarimetric
radar images out of the predicted model fields. These can be directly compared to the
actual radar measurement and show remarkable differences.