



Performance of the GPM Dual-Frequency Precipitation Radar retrievals over Western Europe

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The launch of the Global Precipitation Measurement (GPM) mission in February 2014 provides new capabilities, particularly for the observations and estimation of precipitation in the mid-latitudes. The Precipitation Radar (PR) on the Tropical Rainfall Measuring Mission (TRMM) provided unparalleled measurements of precipitation across the Tropics; the GPM Dual-frequency Precipitation Radar (DPR) has extended the extent of the PR observations to between $66^{\circ}\text{N}/66^{\circ}\text{S}$.

This presentation compares the current DPR retrievals of surface rainfall against the surface radar data sets over Western Europe for the first two years of operation. Comparisons are carried out at the radar resolution of 5×5 km, focusing on, in particular, the sensitivity of the DPR to light precipitation. In addition, the effect of non-uniform beam filling (NUBF) is investigated through the detailed comparison of the DPR with 1 km resolution surface radar to ensure good co-location of the satellite and surface data sets. Overall the results show high correlations between the DPR and surface radar, of up to 0.9 generally, while the rain/no-rain threshold of the DPR is found to be about 0.4 mm h⁻¹ for the Ku radar. Furthermore, the cross-comparison of the satellite and surface datasets allows the identification of artefacts unique to each data product.