6.17 ON THE CAPABILITIES OF THE GPM CORE OBSERVATORY OVER GREAT BRITAIN AND IRELAND

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The capabilities of the Global Precipitation Measurement Mission Core Observatory (GPM-CO) to measure surface rain rates with its dual-frequency precipitation radar (DPR) and GPM microwave imager (GMI) over Great Britain and Ireland are considered in comparison to the UK Met Office's (UKMO) ground-based radar network. Assessment is performed by comparing the GPM Version-5 DPR and CMB products to the UKMO Radarnet 4 composite product from May 2014 April 2017. The natively 1 km Radarnet product is collocated temporally and spatially to the GPM products' 5 km resolution, with quality-controlled and masked measurements used for a fair comparison. In particular, this study considers the comparison results and the impact of non-uniform beam filling upon them. Considering measurements within 75 km range of a ground-based radar, the DPR (CMB) product is found to underestimate the Radarnet product by 19% (6%) with a standard deviation and correlation of 108% (110%) and 0.56 (0.60) respectively. The large deviations are found to be partially due to the DPR (CMB) product overestimating surface rain rates below 0.8 mm h^{-1} (1.4 mm h^{-1}) and underestimating them above this rain intensity. Furthermore, the CMB product is also found to over-predict highly variable rain events though the DPR is not subject to this. The underestimations by GPM products in comparison to the Radarnet product may be due to poor clutter flagging within the algorithms.