

13.26 LONG-TERM ANALYSIS OF RADAR RAINFALL MEASUREMENTS IN THE UK FOR HYDROLOGICAL APPLICATIONS

M. A. RICO-RAMIREZ¹

¹ Department of Civil Engineering, University of Bristol, Bristol, BS8 1TR, UK
m.a.rico-ramirez@bristol.ac.uk

Weather radars can provide precipitation measurements with high spatial and temporal resolutions. However, rainfall estimation using weather radars can be subject to different sources of errors such as radar echoes due non-meteorological origin, radar calibration, variations of the drop size distribution affecting the reflectivity-rainfall (Z-R) equation, radar signal attenuation, variation of the vertical profile of reflectivity, radar beam broadening with range, partial beam blocking, radar beam overshooting the shallow precipitation, etc. (Collier, 1996; Villarini and Krajewski, 2010). Different correction techniques are applied routinely by the national meteorological offices to minimise these errors so that the radar rainfall measurements agree with rainfall observations provided by rain gauge networks (Harrison et al., 2012). However, in order to use long-term spatial radar rainfall measurements for hydrological studies is necessary to ensure that the radar rainfall product has the best possible quality and there are no gaps in the rainfall records. In this paper, we analyse the quality of the weather radar rainfall measurements for the last 10 years (2006-2015) in the UK at 1km/1h spatial/temporal resolutions. We looked at some of the challenges to interpolate missing time periods as well as some of the techniques to improve the quality of the radar rainfall by using quality-controlled daily rain gauge observations.

This work has been completed as part of the Marie Curie Initial Training Network QUICS. This project has received funding from the European Unions Seventh Framework Programme for research, technological development and demonstration under Grant agreement No 607000.