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An ensemble of dual polarisation QPE: highlighting the uncertainty in radar rainfall estimation.

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Here we present several methods of deriving quantitative precipitation estimates from a dual polarisation mobile X-band weather radar. Rainfall is derived from functions which operate on specific attenuation, specific differential phase shift, differential reflectivity and horizontal reflectivity corrected for attenuation to generate an ensemble of rainfall estimates derived from dual polarisation data. The results are primarily from the Convective Precipitation Experiment (COPE) from the summer of 2013 in the UK, but also include examples from mobile radar deployments in Cape Verde (ICE-D) and northern Scotland (RAINS). The results show the uncertainty of radar QPE even when implementing several dual polarisation correction techniques but also that the ensemble generated can serve as an opportunity when viewed as an input for a hydrological model.