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The Met Office Nwp-Based Nowcasting Demonstration Project For The Summer 2012 Floods And London Olympics 2012

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The Met Office developed a high resolution (1.5km) NWP system covering southern England and Wales for nowcasting (NDP) for the London Olympics 2012 using the Unified Model and hourly cycling 4D-Var data assimilation. The system produces 6 or 12 hour forecasts every hour. The system uses latent heat nudging of radar derived rain rates provided every 15mins, direct assimilation in VAR of an hourly 3D cloud cover analysis and high time frequency subhourly radar Doppler winds (6 per hour), wind profiler and MSG SEVIRI upper tropospheric water vapour channels every 15mins as well as hourly surface synoptic reports, AMDAR reports and Eumetsat Satellite winds (AMVs).

Boundary condition updates were provided from 1.5km resolution 6hourly forecasts from a 3hourly cycling 3-km 3D-VAR for the UK region, UKV model. Observations are extracted in the observation time window T-30 mins to T+30 mins. A 45 minute data cutoff was used and forecasts were available within 1 hour of nominal analysis time ie taking 15mins for observation processing, data assimilation and forecast.

Summer 2012 was an excellent time to assess the skill of the system for flash flood prediction due to the extreme weather over the UK during that period, especially from June to August 2012. Results will be shown comparing the NDP with observations and the current UKPP/STEPS blended extrapolation/NWP nowcasts and the 6hourly UK NWP forecasts. Overall the skill of the NDP precipitation forecasts exceeded that of the longer range UKV forecasts at all forecast periods and the current UKPP from about T+2 onwards. There were a number of cases where the NDP correctly developed lines of thunderstorms missed by the UKV and UKPP. The paper will address the challenges of using this type of nowcasting system for production of warnings.