



Exceptional Rainfall over Nottinghamshire, 23 July 2013 - An Operational Meteorologist's Perspective

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The end of the United Kingdom's most notable heat wave since July 2006 was marked by a series of thunderstorms during the 22/23 July 2013. One of these storms led to exceptional rainfall accumulations over parts of Nottinghamshire, England on 23 July 2013 when radar-derived rainfall accumulations in excess of 100mm were recorded in a 60 to 75 minute period in the Southwell area. These rainfall totals were corroborated by unofficial, but reliable rain-gauge data, located close to where the most intense rainfall occurred, and are comparable with existing UK short-period duration rainfall records. Among the impacts of this storm were flooding of homes and businesses in a number of urban areas and disruption to the road and public transport network during the evening rush hour.

This presentation investigates the synoptic setting and forecasting of this exceptional rainfall event. In the medium range, a probabilistic approach identifying broadscale environments conducive to an outbreak severe weather was initially adopted. Several days before the event Met Office high-resolution, convection-permitting model output then signalled the threat of storms producing rainfall accumulations close to the observed magnitude, allowing operational meteorologists to gain more confidence that severe weather would occur.

In the shorter term innovative use of high-resolution convection-permitting output, both deterministic and ensemble, and nowcasting techniques were used to both pinpoint where storms would occur and assess potential storm mode. From a communication perspective, and bearing in mind that the UK National Severe Weather Warning Service is an impacts- rather than threshold-based service, operational meteorologists also drew on input from Met Office personnel working closely with, for example, emergency responders and hydrometeorologists at the Flood Forecasting Centre to gain some sense of the extent of potential impacts and feed this into warnings.

Finally, with rainfall accumulations over parts of Nottinghamshire comparable to existing records - for example the current official UK record for 60 minute rainfall accumulation stands at 92mm in Maidenhead on 12 July 1901 - Met Office data archives are drawn upon in order to attempt to place this event into some sort of climatological context.