# Radarnet IV Algorithm Development: Project Outcomes I   October 2009

The Met Office weather radar network measures the rate at which precipitation (rain, snow or hail) falls over a given area of the British Isles and surrounding waters. The data gathered from these radars are used by weather and flood forecasters to assess the severity and area of possible heavy rainfall and flooding events. The Radarnet IV algorithm development project aimed to improve the quality of the radar rainfall rate data by upgrading the way in which the radar rainfall rate is estimated.

Improved use of data with overlapping coverage

One aspect of the project was to improve the method by which data from individual radars was used to create the rainfall rate in a 1 km square grid where data from more than one radar is available. The quality of radar data is greatest at small distances from the radar. This means that the ability to observe rainfall reduces with distance from a radar. The new technique calculates the radar data available in each grid square in a more intelligent way to get higher quality data.

As a result, much more detail in the observed rainfall is visible and the estimate of rainfall rate is more accurate.
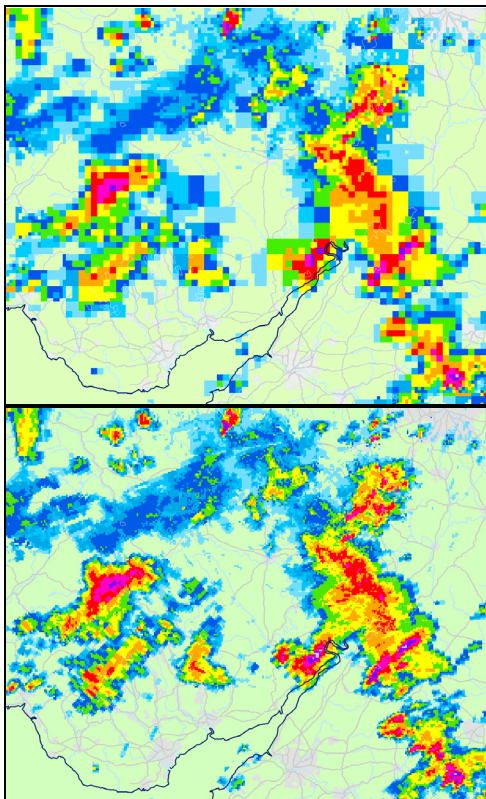

Above: Radar product used previously.
Below: Product using new polar compositing method

Improved removal of bad quality data from non-meteorological targets.

Sometimes weather radar data includes 'false data', occurring when the radar beam interacts with objects on the ground (buildings, ships or trees for example). To make the observed radar rainfall rates, forecasts and warnings provided to the Environment Agency more reliable, it is essential that the number of false alarms caused by these spurious echoes is reduced.

Satellite data has been used to remove false data from weather radar data for a number of years. Measurements of the earth's surface or clouds made by satellites can be used to produce a probability of rainfall map of the UK area. Radar echoes caused by precipitation should not exist where there is no cloud cover and hence a low probability of rainfall. The probability map allows echoes in areas with a low probability of precipitation to be removed from radar data.

Now a more diverse range of observations are made from satellites, areas with a low probability of precipitation can be identified more accurately and as a result more false echoes are removed from the weather radar data.
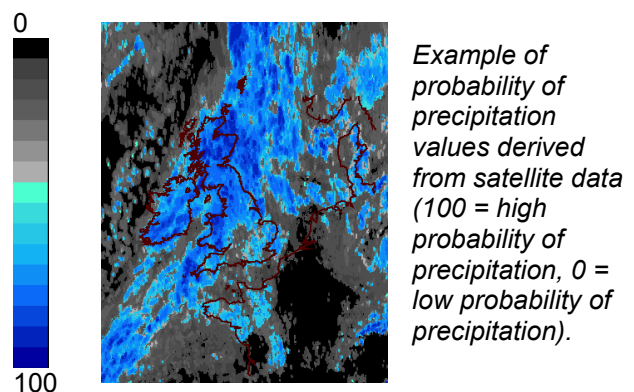
Example of probability of precipitation values derived from satellite data (100 = high probability of precipitation, 0 = low probability of precipitation).

Product code: SCHO1009BRDU-E-P

To find out more about the Met Office weather radar network visit: http://www.metoffice.gov.uk/weather/uk/radar/tech.html