# IMPROVER – The new Met Office integrated post-processing and verification system

## Jonathan Flowerdew1 (Verification Lead), representing the Post-Processing and Verification teams1

*1Weather Science, Met Office, Exeter, UK*

*Jonathan.Flowerdew@metoffice.gov.uk*

Post-processing systems face a number of challenges. The development of ensemble systems and convection-permitting forecasts changes the nature of the data processed and the type of corrections that need to be made. Automated products need to be of high quality, frequently updated, and consistent across diverse communication formats. The Met Office is building a new post-processing system to address these challenges and provide a modern, efficient platform for future development. The core processing operates on gridded probabilistic information, with consistent spot forecasts extracted at the end. Prototype chains have been developed for the main surface variables, including science developments such as topographic neighbourhood processing and estimation of whether snow would melt before reaching the actual ground level as opposed to model orography. The system is designed to provide both automated forecasts of ordinary weather for the public and “heads-up” warnings of severe weather for operational meteorologists.

The new system integrates verification at each stage, to assess the impact of each component on a broad range of metrics. Probability and percentile forecasts are converted back to ensemble members, allowing the full range of ensemble verification scores to be applied. The same configuration that will run operationally can also be run in historic trials, allowing new developments to be evaluated and tuned in advance, as is common practice for Numerical Weather Prediction (NWP) systems. This statistical feedback is particularly important given the focus on probabilistic predictions, whose full assessment requires a corresponding distribution of outcomes assembled over many cases. The IMPROVER verification infrastructure thus helps to improve the robustness and efficiency of the scientific development process. This will be illustrated using the results of some early trials and tuning experiments.