Fifty Shades of Green? - Challenges of Meaningful Data Visualisation for the 300m London Model

Anke Finnenkoetter

Met Office, Exeter, United Kingdom (anke.finnenkoetter@metoffice.gov.uk)

The Met Office is running a 300m horizontal resolution NWP model over the Greater London area. The London Model (LM) has been running twice a day since 2014, thus providing a long term data source for research and verification. Running in real time, the output from the research model is made available to forecasters, supplementing existing operational forecasting tools and providing additional local detail. In return, the real time usage presents an opportunity to gather first-hand user feedback regarding model performance and usability.

Very high resolution models are numerically expensive and the LM domain only covers an area of approximately 120km x 140km. The low density of observation data relative to the grid length poses challenges on the scientific evaluation of high resolution NWP models. However, the dialogue with forecasters using the LM has also highlighted issues regarding the data visualisation. Variables like temperature typically exhibit a relatively small range across the domain. Colour scales used for coarser resolution models are designed to show large scale features and are not necessarily well suited to capture variability at local scale. Hence visualisation tools need to be adapted to efficiently convey those benefits that justify the expense of running a 300m model in the first place.

In close collaboration with forecasters, we have made improvements to a number of colour scales. The requests addressed include easy readability of actual data values from 2D plots, step size in colour changes reflecting set data intervals, local variability being distinguishable, and basing categorised colour scales on common customer thresholds. To further assist forecasters digest the volume of available information in a time critical working environment, timeline output has been added for selected points of interest, offering a location-based summary of the model evolution over the forecast range.