

The RAL Seminar Series



NCAR

Member Selection for a Convective Scale Ensemble at the UK Met Office

by

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Foothills Lab Building 2, Room 1022
11:00 a.m.**

Abstract:

The UK Met Office is developing an ensemble at the convective scale by embedding the new 1.5km model over the UK within selected members of the regional scale ensemble MOGREPS-R (~18km covering the North Atlantic and Western Europe). The objective is to improve our forecasting capability of high-impact local weather with a 12 to 36 hours lead time.

This seminar will describe the potential benefits of a convective-scale ensemble and similar systems under development at other institutions. However, the main focus will be the discussion of some of the difficulties that need to be overcome. One issue we face is that computational constraints will limit the number of convective scale members we can run in an operational context to fewer than six, whilst MOGREPS-R provides 24 possible initial and lateral boundary conditions. This means there is a need to select a subset of members from the MOGREPS-R ensemble that best represents the full 24 members at the scales of interest.

Results from case studies of convective events, some of which flood-producing storms will be used to demonstrate the potential value of a convective-scale ensemble. The MOGREPS-R regional-scale members provide different environments for the storms to form and develop and their differences have been investigated at different scales using the Fractions Skill Score of Roberts and Lean (2008) and in a more object-based way using the SAL method of Wernli et al (2008). Both have been applied to a variety of dynamical/thermodynamical variables such as potential vorticity and wet-bulb potential temperature. The differences can then be linked to the formation, development and intensity of the flood producing storms in the equivalent high resolution (1.5km) precipitation forecasts at the lead time of choice and this information used to inform the approach needed to choose appropriate MOGREPS-R members in which to run the 1.5km forecasts.