

# *The RAL Seminar Series*



**NCAR**

---

---

## **High-resolution time lagged ensembles: walking the resolution- predictability tightrope**

by

**Marion Mittermaier**

Mesoscale Model Development & Diagnostics,  
UK Met Office

*Wednesday, April 23, 2008  
Foothills Lab Building 2, Room 1022  
3:00 p.m.*

High-resolution precipitation forecasts can vary considerably from run to run, especially for convective events where the model flirts with predictability limits that kick in rather smartly at the smaller scales. Excessive inconsistencies are undesirable, especially for the forecaster, who seeks similarities between successive runs to gain confidence in model guidance.

The Met Office 4-km Unified Model (UK4) runs every 6 hours to t+36h. Five member time-lag ensembles are created for the most recent 6-h period to investigate run-to-run inconsistencies. Ensemble products are compared with a verifying radar accumulation. Each of the individual forecasts (ensemble members) are also evaluated and their contribution to the ensemble assessed. Objective Probability of Precipitation (PoP) charts for FLASH warning criteria (15 mm/3h) are also produced and assessed.

Results show that the high-resolution time-lag ensemble provides a more continuous integrated view of model output which also performs better. The ensemble approach ensures that the missed events (which are potentially more serious for high-impact weather) are reduced.

More recently the methodology has been expanded to create a multi-resolution "super" lagged ensembles, combining operational 12 km and UK4 forecasts to extend the forecast lead time to 30h. A number of case studies will be presented to show the diagnostic capabilities that the technique provides.