Spatio-temporal behaviour of medium-range ensemble forecasts

Zak Kipling (1), Cristina Primo (2), and Andrew Charlton-Perez (3)

(3) University of Reading, Department of Meteorology, Reading, United Kingdom (sws05ajc@reading.ac.uk), (1) University of Oxford, Atmospheric Oceanic and Planetary Physics, United Kingdom (kipling@atm.ox.ac.uk), (2) Deutscher Wetterdienst, Offenbach, Germany (cristina.primo@dwd.de)

Using the recently-developed mean-variance of logarithms (MVL) diagram, together with the TIGGE archive of medium-range ensemble forecasts from nine different centres, we present an analysis of the spatio-temporal dynamics of their perturbations, and show how the differences between models and perturbation techniques can explain the shape of their characteristic MVL curves.

We also consider the use of the MVL diagram to compare the growth of perturbations within the ensemble with the growth of the forecast error, showing that there is a much closer correspondence for some models than others. We conclude by looking at how the MVL technique might assist in selecting models for inclusion in a multi-model ensemble, and suggest an experiment to test its potential in this context.