

## **Development of clustering techniques to reduce the ensemble size of TIGGE multi-model systems**

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In this work, a number of multi-model multi-ensemble systems from TIGGE database are generated by mixing ECMWF EPS and UMKMO MOGREPS. Different methodologies of combination are tested and the spread/skill relations of the resulting ensembles are studied.

The attention is focussed on the performance of the systems over a 3-month period (March to May 2009) as for the 96-hour forecast of geopotential height at 500 hPa over Europe.

The sensitivity of the results to the choice of the verifying analysis is also investigated and the added value of multi-model multi-ensemble systems is quantified.

As a further step, clustering techniques are presented to reduce the ensemble size of the multi-model multi-ensemble systems for dynamical downscaling purposes and the properties of the “small-size” ensembles are compared to those of the originating ones.