Geoscientific
Model Development
Discussions

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Interactive comment on "A scale-dependent blending scheme for WRFDA: impact on regional weather forecasting" *by* H. Wang et al.

Anonymous Referee #1

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Review of the manuscript

A scale-dependent blending scheme for WRFDA: impact on regional weather forecasting by H. Wang, X.-Y. Huang, D. Xu and J. Liu

General comment

The mauscript describes the utilization of large scale information from global numerical weather prediction (NWP) models in regional NWP models. Regional NWP models has difficulties to handle the large scale information in a proper way, partly due to use of observations within the regional model domain only and partly due to the effects on non-perfect lateral boundary conditions (on the lateral boundaries of the regional model domain). This is a problem that is well known to the NWP community applying

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regional high resolution models operationally for short range weather forecasting. Various "blending" schemes to mix in large scale information from global NWP models have been invented and are also applied successfully for operational forecasting. These "operational" blending schemes are hardly described in the scientific literature. The blending scheme of the current manuscript by Wang et al. is, for example, very similar to the blending scheme of Yang that has been operationally applied in the HIRLAM forecasting system for many years but only described in a HIRLAM Newsletter article. For this reason, I think that it is worth while to publish the current manuscript by Wang et al. since it also has merits by itself with a thourough comparision between "no blending data assimilation", "background blending", "analysis blending" and "downscaling (no data assimilation)".

Detailed comments

Page 2464, lines 28-29: The ECMWF reanalysis data set seems to me to be on a too large scale for verification of WRF forecasts produced by a model with 15 km grid resolution. Preferrably, observation verification scores should also be provided for u, v, T and q. In the verification of precipitation forecasts, it seems that observations were used, indeed. Please provide a short description of the precipitation observations (Stage IV) that were used.

Language and editorial comments

Page 2457, line 9: .....when a forecast error .....

Page 2457, line 28: .....study of such a method

Page 2458, line 9: ..... took a slightly different ......

Page 2458, line 25: I would prefer "in order to reduce spin-up effects" rather than "this can reduce spin-up issue".

Page 2459, line 3: I would prefer "The component of a field x at length scale" rather than "A field x whose component at length scale".

Page 2460, line 13: ...... maintained at the National ....

Page 2461, line 2: .... when the wave length is equal to the .....

Page 2462, line 17-18: ..... WRF forecast compared to that .....

Page 2463, line 14: Before performing the blending experiments ....

Page 2464, line 1: ...... to generate a forecast difference ensemble to model the background ....

Page 2464, lne 7: ..... from the Global .....

Page 2464, line 24: ..... that were initiated from ......

Page 2468, line 6: .... in the first few hours .....

Page 2468, line 15-16: .... Compared to the GFS.....

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