

Interactive comment on “Regional effects of atmospheric aerosols on temperature: an evaluation of an ensemble of on-line coupled models” by Rocío Baró et al.

Anonymous Referee #5

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The manuscript analyzes the performance of on-line coupled models in forecasting air temperature near the surface over Europe including the aerosol direct and indirect effects. Output fields of mean, maximum and minimum air temperatures from individual models and in ensemble are compared to observations. Overall, the manuscript is well written and can contribute to improve weather forecast models. Before acceptance, though, some questions must be addressed, as follow:

1) Since the effect on air temperature due to aerosol is rather a feedback effect, it would be interesting to evaluate the models skills in reproducing AOD and other aerosol optical properties (particularly single scattering albedo), for the direct effect and the cloud field for the aerosol-cloud-interactions. Also, under background (low AOD) and cloud-

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less sky conditions how the models output compare with the observations? Such analyses will help identify if other effects rather than those caused by aerosol interactions are of higher significance in affecting air temperature near the surface.

2) Even though Jiménez-Guerrero is one of the co-authors of the manuscript and reference to Jiménez-Guerrero et al. (2013) is given, at the validation methodology section (page 7, from line 7 and following), many parts of the text are identical to the reference, what must be avoided.

3) Could you please explain why the models performance can be different in reproducing mean, maximum and minimum air temperature, particularly considering the aerosol effects?

4) When including the aerosol feedbacks, was it possible to observe better model performance in regions of higher AOD?

Technical corrections: Page 5, line 14: please replace "grid with of 0,125deg" by "grid with 0.125deg" (notice the use of comma as decimal separator);

Page 12, line 20: please replace "intermediate representation the variability" by "intermediate representation of the variability";

Page 15, line 11: please correct Forkel et al. 2015.

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