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Comment

***Interactive comment on* “Technical Note:  
Description and assessment of a nudged version  
of the new dynamics Unified Model” by  
P. J. Telford et al.**

**Anonymous Referee #3**

Received and published: 16 January 2008

The technical part of the manuscript is orderly and diligently presented, therefore worth to be reported and published. My concern is on the interpretation of what does it mean to nudge a model. If this is clear to the Authors, it does not emerge from the text. Therefore, my recommendation is to publish the manuscript, conditionally to the revision of the presentation.

What is misleading, is to use language that hint that the “nudging” technique is a way to “improve” a model. It is not. To improve a model, one has to improve the representation of both explicit and parameterized processes, and including new ones as necessarily. The nudging technique can be used to understand

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some model deficiencies. The nudging technique can also be used when the almost exact weather is desired to have represented in a model for a specific period. However, one has to keep in mind that by using the nudging technique, feedbacks are cut off. Therefore, it is not a full validation technique for a model.

Here examples of the misleading language that has to be removed:

Page 17266: Section 3 title. What this actually is, is an Assessment of the Nudging Technique; Line 16 assessment of the model performance; same as above.

Page 17268: Line 15 evidence that nudging improves evidence; this is an evidence that the nudging works; that is, it does what it is supposed to do. That is excellent, but no more than that.

Page 17269: Line 12 though nudging introduces large scale dynamics to the model that are similar to the analysis data; Hopefully, the model does have the large scale dynamics referred to, but - of course not synchronized with a particular date. This writing points to some confusion between model dynamics and nudging technique.

Page 17270: Line 13 The ability of the model to produce the same variation as the analysis data is assessed; The ability of a model to represent variability (on all scales) should be assessed in a free running mode, statistically. Here again, what the calculations show is that the nudging technique works. This is a result worth the technical note, no need to attach additional (wrong) interpretations.

And many more, the Authors may find the rest themselves.

Some additional specific comments:

Title: new dynamics; what does it means? Why new? New with respect to what? There is nothing explaining this novelty in the manuscript.

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Page 17264: Line 3-4 Data assimilated? Assimilation? What is meant? Unclear. Line 21 these disadvantages were felt to make this solution impracticable; Unclear.

Page 17265: Line 1 Assimilated?;

Page 17268: Why stopping at 20 km? Given that the nudging extends to about 40 km. another level would have been of interest.

Page 17269: Line 8-9: Maybe also differences in the sea-ice distribution. Did you look at it? Line 14-15: It is unclear what are the initial conditions used (or I have missed it). Are the initial conditions also taken from ECMWF? For all the prognostic fields? Please, add a paragraph in section 2 (or a new subsection) on initial conditions Line 17: It would be of interest to re-computed the RMSE of the surface pressure above the ocean points only.

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Interactive comment on Atmos. Chem. Phys. Discuss., 7, 17261, 2007.

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