

Interactive comment on “Atmospheric forcing by ALADIN/MFSTEP and MFSTEP oriented tunings” by R. Brožková et al.

Anonymous Referee #1

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General comments:

The paper gives a very nice overview of all the changes that have been made to the Aladin model to give the best possible forcing fields for the models that are driven by the atmospheric forcing over the Mediterranean area.

All the adjustments are described in a very clear manner and for most of them the impact of the changes is shown clearly also.

More specific comments:

The blending technique that is described on pager 321 and 322 have one problem. If the shorter length scales in Aladin are in the wrong place (small scale systems) then this procedure will result in erroneous forecasts and forcings. This cannot be corrected

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anywhere, as long as the ARPEGE analysis is taken completely (clean start every run, without the smaller scales initially) or through the analysis of the smaller scales within ALADIN itself, but mesoscale analysis is still under development.

Is the horizontal diffusion coefficient (page 323, lines 8-12) large in strongly deformed flow or small? If it is large, then the development of small scale systems is damped (strongly) by the horizontal diffusion, while these are the systems that you want to reproduce with a mesoscale model.

It is a little bit worrying that the dynamic behaviour of the model (depth of a mesoscale cyclone) is determined so strongly by the horizontal diffusion parameterization that is applied in the model. One would expect that this is a physics deficiency (not enough Ekman pumping, too large sensible and latent heat fluxes, SST problems?).

The roughness lengths for heat and moisture are changed, as is the roughness length for momentum due to the addition of the gustiness parameterization. This impacts the evaporation and sensible heating of the atmosphere changing the available energy for the development of cyclones. The changes in the roughness for momentum will also impact the ageostrophic flow and the development of cyclones. Can you give an indication of the impact of these changes on the development of the cyclone that you present in figure 2?

The conclusions are a bit short. I would like to see a small overview of the changes and their impact there also.

Technical comments:

Throughout the paper: when using acronyms for the first time, please give its full meaning (e.g. MFSTEP, IFS/ARPEGE, ECMWF, TOGA-COARE)

Page 320, line 4: remove "A"

Page 320, line 14/15: replace "vertical resolution of" by "it has"

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Page 320, line 16-18: why is there a 5-day production run made once a week? This leaves a gap of 2 days!

Page 322, line 14: Replace "on" by "in"

Page 323, line 15: You probably mean "Vana" instead of "Vaa"?

Page 324, Line 2: add "the": in the introduction

Page 324. Line 2: add "a": leading to a better description

Interactive comment on Ocean Sci. Discuss., 3, 319, 2006.

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