

Interactive comment on “Validation of the ALARO-0 model within the EURO-CORDEX framework” by O. Giot et al.

Anonymous Referee #1

Received and published: 30 November 2015

Giot et al. present a short and concise work on the performance assessment of the ALARO-0 regional climate model operated according to the EURO-CORDEX experimental protocol at two horizontal resolutions of about 12.5 and 50 km and driven by the ERA-Interim reanalysis for the period 1979–2010. Model results are validated against the gridded EOBS reference and the obtained performance indicators are related to the work of Kotlarski et al. (2014) who evaluated a larger model ensemble of the EURO-CORDEX framework. The analysis indicates a reasonable performance of ALARO-0 which is comparable to the performance of most other EURO-CORDEX RCMs. Temperature biases are similar as those of the related ARPEGE model.

The presented work is of interest mainly for the ALADIN/ALARO community as it serves as a basic and rather technical reference for the performance of the newly developed

C3110

ALARO-0 model. But also the wider EURO-CORDEX community is definitely interested in this work assessing the quality of a new ensemble member. As such, I consider the manuscript as relevant for a wider scientific community and, in general, suitable for publication in GMD. The paper is concise; methods, models and data are for most parts appropriately introduced. The content and quality of the figures are mostly appropriate as well. The conclusions are well justified by the results obtained. There are no language issues. Therefore, I could recommend a publication of this work after some minor issues (listed below) have been addressed.

With kind regards.

Remaining minor issues:

p 8389, l 10: I'd not speak of “feed-backs” here. Such feedbacks wouldn't be addressed by one-way coupled downstream models.

p 8389, l 13–19: I'd suggest to mention here that also empirical-statistical downscaling is part of (EURO-)CORDEX.

p 8389, l 23: “Limited Area Models” instead of “Local Area Models”.

p 8390, l 13–14: The term “scale awareness” remains obscure here. The following sentences are somehow related to it, but don't provide a clear picture. Can the authors better specify what is meant here?

p 8390, l 27–30: Unclear. What's the meaning of “uninterrupted” here?

p 8391, l 7: “The objective of the present work” instead of “The goal of the current text”.

p 8391, l 21: “were analyzed” instead of “are performed” (K14 only analyzed the ensemble results, but didn't carry out all the simulations).

p 8392, l 8–28: The difference between ALADIN and ALARO-0 is not entirely clear to me. Please better clarify this aspect.

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p 8392, l 8-24: The treatment of SSTs is not clear. According to my understanding of the current text, SSTs are only updated monthly. Is this really true? Furthermore, the authors speak of “interrupted” simulations, while before (page 8390) the present experiments were introduced as “uninterrupted” simulations. There seems to be some mismatch. Concerning the constant monthly fields (roughness length etc.): Are these sharply changed when reaching a new month (which I guess is not the case), or are they interpolated between the centers-of-months?

p 8393, l 11: Which version of EOBS has been used?

p 8394, l 1: I'd suggest to rename this Section to “Analysis methods”.

p 8394, l 17: “for this purpose” instead of “for this end”.

p 8397, l 1-6: This results is very interesting (similar for precipitation later on). Do the authors have any explanation for the large confidence intervals for these scores?

p 8399, l 3: “bias patterns” instead of “bias pattern”.

p 8399, l 6-7: Could the these low correlations partly be explained by the comparatively large model domain of ALARO-0 (weaker control of boundary forcing)?

p 8400, l 13: “Within the framework”.

Figures 2 and 4: The caption of these figures should additionally mention that RMIB-11 is shown.

Figures 3 and 5: These figures need to be enlarged, there's a lot of detail here which is not really accessible. A legend should be introduced (meaning of markers and shadings). I'd also suggest to add a horizontal line above each “DJF” entry to better separate the individual regions from each other.

Availability of data: The authors should provide the information, if and where the ALARO-0 simulation results are available. Are they planned to be uploaded to the ESGF archive?

C3112