

Interactive comment on “Near-global climate simulation at 1 km resolution: establishing a performance baseline on 4888 GPUs with COSMO 5.0” by Oliver Fuhrer et al.

Anonymous Referee #1

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This is an excellent paper, reporting on entirely novel, world-leading, near-global simulations, performed with ~ 1 km grid spacing, using the largest supercomputer available for this type of science in Europe.

Having completed this substantial technical achievement, the authors provide a solid, compelling perspective for realistically quantifying the requirements of a global 1 km IPCC-class climate simulation. This is supported by their focus on standard (J&W 2006) tests and their analysis, physical and computational.

As such, this is a very valuable paper and I find the writing clear, as well as organised and to the point.

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The manuscript is carefully put in context, both in the introduction and discussion, provides crucially important facts that can serve as guidance to most operational centres seeking to venture into this area, as well as new and relevant metrics of actual model performance.

Unlike other examples I have seen, the case studies do have their own scientific merit and deserve further publications, which I hope the authors will consider, but what is presented here is sufficient to convince us that this is a real, representative application, and the performance statistics presented therefore of high value.

I would recommend publication as is, if it was not for two small issues:

1) Figure 2 provides no information whatsoever: either discuss in far more detail, so that readers can understand what it attempts to convey, else remove entirely, as it in fact does not feature in the rest of the manuscript, nor the discussion.

2) there are a number of issues with English, spelling etc.. I have uploaded an annotated version, which I hope shall prove useful to the authors.

Please also note the supplement to this comment:

<https://www.geosci-model-dev-discuss.net/gmd-2017-230/gmd-2017-230-RC1-supplement.pdf>

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2017-230>, 2017.

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