Geosci. Model Dev. Discuss.,
doi:10.5194/gmd-2016-23-AC1, 2016

Geoscientific Model Development Discussions

Interactive comment on "Asynchronous Communication in Spectral Element and Discontinuous Galerkin Methods for Atmospheric Dynamics" *by* B. F. Jamroz and R. Klöfkorn

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Received and published: 22 June 2016

We thank the reviewer for the helpful and constructive comments.

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Q1: typo on page 5: "eg." should be "e.g."

A: Fixed.

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Q2: typo on page 8: "a auxiliary diagnostic variables" should be "auxiliary diagnostic variables"

A: Fixed.

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Q3: First the authors state :"That is, a process sending a blocking message must wait until the message has been received." This is technically not true if you are talking about MPI_Send. The function MPI_Send only blocks until the buffer can be reused. If you are not talking specifically about MPI_Send this needs to be clarified.

A: The text has been revised accordingly.

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Q4: In is unclear how many time-steps were used to compute the numbers in Figure 5 and Tables 1 and 2. Some more detail should be added to the captions.

A: Fixed.

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Q5: In Figures 1, 5 and 6 line plots are used for discrete data. Is there a piecewise linear fit between the data? I would suggest to use only symbols where the actual data measured is.

A: We prefer to show both, the data points and the general trend (by connecting the data points).

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Q6: I believe the title needs to include the code name and version.

A: Fixed. HOMME and homme_dg_branch was added.

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Q7: A literature survey should be given to support the claims that the authors approach is new. I have rarely see this kind of detail presented in the literature, so maybe a review

of the most popular finite element methods is in order.

A: We have added a survey of both, dynamical cores for NWP, e.g. NUMA, ICON, MPAS-A, and NICAM as well as other contemporary simulation software presented for the prestigious Gordon Bell price as part of the International Conference on High Performance Computing, Networking, Storage and Analysis.

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