

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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We thank the reviewer for the helpful and constructive comments.

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Q: What can researchers expect on modern parallel computers?

A: The topic of asynchronism is widely discussed in the HPC community (cf. Exaflop/s: The why and the how, D.E.Keyes, 2011) and will definitely play an important role on future machines. Thus, we believe that implementing techniques that improve asynchronism in current simulations models will be beneficial in the future. I have added the citation to the paper.

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Q: Are the results on yellowstone typical of an average institutional machine?

A: As pointed out in the paper "Asynchronous MPI for the Masses" by Wittmann et al. (2013) "Depending on the implementation quality of the [MPI] library the overhead ranges from negligible to large". This paper gives a good overview on capabilities of different MPI library implementations in context of asynchronous communication and I have added it to the references. However, MPI implementations hopefully improve in the future and thus on-site tests using the Sandia MPI micro benchmark are recommended. In addition, the slower the network the better the scaling when employing asynchronous communication. In that sense we expect the benefits to be large at lower end parallel computers.

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Q: page 1, typo, "ocaen" -> "ocean"

A: Fixed.

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Q: page 1, line 20, add: "The SE and DG methods attain this property for arbitrary order, at the expense of a small timestep"

A: We added "..., at the expense of a smaller timestep"

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