

Geosci. Model Dev. Discuss., referee comment RC3
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Comment on gmd-2022-248

Anonymous Referee #3

Referee comment on "Strategies for conservative and non-conservative monotone remapping on the sphere" by David H. Marsico and Paul A. Ullrich, Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2022-248-RC3>, 2022

This study was an inspiring and interesting paper on remapping. We wanted to experiment with some of the ideas from this paper on our system. In the process, I thought it would be nice if there were additional explanations to help understand them.

1. Many readers of this paper, including myself, will desire to compare which remapping method is the best from a monotonicity. The picture needs to be improved to help them understand intuitively. For example, it is proposed to unify the axis (y-axis in Figures 1-4, 9-11, and 12) and color range (Figures 5 and 7) for comparison between figures. In addition, in order to distinguish the dense lines in Fig. 9-11, more distinct markers should be used or a table containing actual error values $\hat{\epsilon}$ should be included (suggested to add as a supplementary material).

2. In the remapping result of the vortex case (Fig. 5), I would like to comment on the reason why a very conspicuous irregular pattern occurs around $(0^\circ, 90^\circ N)$. In particular, I wonder why these errors are weakened (Fig 5b) when a local bound is applied.

3. It could be out of purpose of this study, but it is curious about efficiency, another desirable property of the remapping operator. I wonder how long each of the remapping methods used in this study takes to calculate. Also, if possible, I would like to hear answers about whether there is a dependency on the data-type of variable.

- Additional minor typos.

L51: In the second part we, we show >> In the second part, we show
L61: a a set of discrete nodes >> a set of ...

