

Interactive comment on “An orthogonal curvilinear terrain-following coordinate for atmospheric models” by Y. Li et al.

Y. Li et al.

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We appreciate the editor's constructive comments and the suggestions. Our reply is given below.

1. On page 9, line 8 you refer to skewness. Please define skewness and say why it is relevant for advection

Response:

Yes, we will do it. We will add the definition of skewness and its relationship of advection in the revised manuscript.

2. On page 9, lines 13-14 you say that the convergence and divergence of grid lines

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could be alleviated. I don't think so. Not while retaining orthogonality using entirely hexahedral cells. It seems clear from your meshes that you either get convergence in the x direction, or in the z direction or in a combination of the two. As with the cubed sphere, you can only get an orthogonal system if you allow severe convergence and/or divergence in one or more directions.

Response:

Thanks for your comments. How about we change that sentence (at Lines 13-14 on Page 9) as follows:

Moreover, the convergence of the vertical grid lines are due to the terrain-following characteristic of the OS-coordinate which is existed in any kind of terrain-following coordinate, and the convergence of the horizontal grid lines are resulted from the orthogonality of the OS-coordinate. So, these convergence and divergence of the grid lines in the OS-coordinate can not be eliminated, but the degree of them could be adjusted by designing other kind of b.

3. On page 9, line 29 you say "the horizontal grid lines are much more distracted"

Response:

We will fix it into " the horizontal grid lines are much sparser than those in OsBr1" in the revised manuscript.

4. In the acknowledgements, please give the name of the editor you are thanking!

Response:

Yes, we will do it :)

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