

Interactive comment on “DCMIP2016: A Review of Non-hydrostatic Dynamical Core Design and Intercomparison of Participating Models” by Paul A. Ullrich et al.

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This is an exceptionally well written paper leading to the most minor review that I have every written. The paper describes the 11 models which took part in DCMIP 2016 with clarity, consistency and the kind of insight that very few people have. This will be an extremely useful resource for those seeking to understand how any of the models work and how they compare to other models. I have a very few minor comments.

1. OLAM uses cut cells to represent smooth topography - how is the small cell problem solved.

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2. Perhaps mention the advantages of the lat-lon grid
3. In section 6.5, give a citation describing the hexagonal C-grid computational mode and either give a citation or describe the filter.
4. In section 7, you say that fully compressible non-hydrostatic models need a temporal discretisation for dealing with vertically propagating sound waves. You give the impression that using some form of approximation that filters sound waves implies that the problem goes away. It doesn't, it makes the problem elliptic rather than hyperbolic and so requires the solution of a Poisson equation rather than a Helmholtz equation. It is a common misconception that these approximations somehow make solving the equations easier. Please help to dispel this misconception.
5. Line 29 of page 28. Remove the word "basically".

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2017-108>, 2017.

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