Geosci. Model Dev. Discuss.,
https://doi.org/10.5194/gmd-2019-340-RC1, 2020

Geoscientific Model Development Discussions

Interactive comment on "Three-dimensional normal mode functions: Open access tools for their computation in isobaric coordinates (p-3DNMF.v1)" *by* Carlos A. F. Marques et al.

Anonymous Referee #1

Received and published: 16 March 2020

The authors present new python and Matlab software that use the normal mode function mathematical formulation to decompose three-dimensional atmospheric fields in vertical pressure coordinates into easterly and westerly propagating inertial gravity waves, and Rossby waves, for each zonal, meridional and vertical scale.

This in itself is not new and there are other codes (e.g. MODES) that do similar things in sigma coordinates. However, from this reviewer's perspective, the new and exciting contribution here is the ability to decompose the nonlinear transfers between scales directly - as opposed to inferring them from the coherence amplitude between the expansion coefficients as done in one of the cited studies.

I found the manuscript well written, that they cited all of the appropriate literature, clearly articulated the mathematical formulation, and presented an adequate cross section of the types of results one can generate using their software. The software is also clearly available for download for other researchers to reproduce their results.

In short I strongly recommend this paper for publication in its current form.

Interactive comment on Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2019-340, 2020.