Geoscientific
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Discussions

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Interactive comment on "Normal-mode function representation of global 3-D datasets: an open-access software for atmospheric research community" *by* N. Žagar et al.

Anonymous Referee #2

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Lacking from this paper is a presentation of the limitations of this technique, that partly explains why it has not been applied much since the early works cited, except for the many works about balanced dynamics and initialization that are not referenced. Also, the authors should be aware of software that generates and projects normal modes more consistent with the spectral truncation or polar filtering of many modern data sets.

p2 L7 change to "the majority of studies"

p2 L15 change to "linearly balanced"

p2 L25 change to "eigensolutions of the Laplace operator on the sphere."

p3 L12 change to "the primitive equations linearized about a very simple reference state, and ..."

p4 L14 NWP normal modes that used a reference state of the same constant T at all levels are 3d orthogonal with respect to the quadratic total energy norm.

p4 L26 change "contrary" to "contrast"

p17 L8 I doubt this is true, and there is evidence suggesting otherwise for the internal modes. One must be careful of citing an old work, for example limited by both vertical and horizontal resolution. Also, did Kasahara examine the projections of all the modes from the one set onto the other? How realistic was his reference state?

p9 L21 This involves an approximation to the true APE since a linearization about a non-isothermal reference state does not produce an APE that is quadratic (see Lorenz 1960 Tellus)

Interactive comment on Geosci. Model Dev. Discuss., 7, 8805, 2014.