

Interactive comment on “Assessment of vertical air motion among reanalyses and qualitative comparison with direct VHF radar measurements over the two tropical stations” by Kizhathur Narasimhan Uma et al.

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I fully agree that vertical air motion is crucial for atmospheric dynamics and underresolved in most of present numerical weather prediction products. This is true not only for the tropics but at all latitudes. I appreciate this study as a relevant contribution using interesting radar data (with which I have only little experiences).

Please let me point out that vertical wind can be measured – at least in principle – also by other instruments including research aircraft. I recently published a study (Schu-

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mann, 2019) on relationships between horizontal kinetic energy spectra of vertical wind and horizontal divergence of the divergent horizontal wind components, which can be separated from the rotational wind components by known Helmholtz decomposition methods. I compared with airborne wind measurements in the upper troposphere and lower stratosphere at mid-latitudes and compared to some available model data. In particular, I found a total of 80 % of w variance near the tropopause occurring at scales between about 0.5 and 80 km. Perhaps these findings, and some of the related literature cited in my paper are worth mentioning in your paper.

Reference:

Schumann, U., 2019: The horizontal spectrum of vertical velocities near the tropopause from global to gravity wave scales. *J. Atmos. Sci.*, 76, 3847-3862, doi: 10.1175/JAS-D-19-0160.1.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2020-18>, 2020.

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