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Comment on acp-2022-778

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Community comment on "On the Quasi-2-Day Planetary Waves in the Middle Atmosphere During Different QBO Phases" by Liang Tang et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-778-CC1>, 2022

The manuscript attempts to discuss the Q2DW amplitude as it is affected by the phase of the QBO. It uses MERRA2 model output and SABER observations.

I cannot recommend this manuscript for full review. The manuscript is badly written; several sentences are incomplete; some figures are difficult to read (especially Figure 3: impossible to read on paper, I had to blow it up to 400% digitally). The introduction is more of a QBO review, rather than a Q2DW discussion; the Q2DW comes in as an after thought. The methodology doesn't explain clearly what is done: there is some jumping between westward and eastward propagating modes, complicated by the different phases of the QBO; Q2DW events are undefined (maximum amplitude? compared to what? Are those events even statistically significant?). There is an apparent fundamental confusion between critical layers and barotropic instability. Greek (or whatever else) fonts are not rendered in the PDF document. The description of what SABER does is muddled with the satellite TIMED: for example, SABER doesn't observe anything about the ionosphere, as stated Section 2.

I recommend the authors simplify the manuscript which might have merit eventually, but certainly not now. Do not try to do a QBO review; there are already plenty of those around in the literature. Decide which mode is the focus of your study and conduct a statistical analysis of the significance of the perturbation you detect. Be specific about the Q2DW; there is too much confusion in this manuscript.