

## ***Interactive comment on “Impact of convectively lofted ice on the seasonal cycle of tropical lower stratospheric water vapor” by Xun Wang et al.***

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This paper builds on much prior work performed by some of the authors that is attempting to quantify the role convection plays on the water vapor budget in the stratosphere. The paper comes up with the basic conclusion that convectively lofted ice adds only a minor amount of water between 40S-10N (ie tropical tropopause temperature control can explain the measurements and detailed climate model runs) but is necessary between 10N-40N. This is not necessarily a new finding as prior references have shown. The new findings here is to use a trajectory model with a convective ice component to diagnose and quantify the contribution of convective ice to the fields and seasonal cycle of H<sub>2</sub>O in the northern subtropics. I believe the authors do a good job with this and I am satisfied that this publication is good to go.

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Just a minor query:

Since this is mostly diagnosing an output result from the GEOSCCM I don't see what the purpose of the model runs done with ERAi and MERRA-2 add to this. I think figures 1 and 2 could have been made from just using trajectories driven from GEOSCCM thus simplifying the analysis and figures. I assume that driving the trajectory model with any of these wind and temperature fields will produce similar results. I compare figure 5 to 1 and 2. Maybe I just missed something here.

On page 11 line 325 it → in.

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