

Review of the paper: "The semi-annual oscillation (SAO) in the upper troposphere and lower stratosphere (UTLS)" written by Shanguan and Wang,

1 General comments:

- 5 Thank the authors revising the manuscript based on the comments addressed before. Most of the comments are answered properly. However, there are a few minor points that I would like to see clarified before the manuscript is published.

2 Specific comments:

- 10 – L140-L141: The UTLS SAO signal is significant in the regions of 22.5°-42.5° in both hemispheres. The results are based on the regions of 32.5°-42.5°. Some connection needs to be built before L148 "We then mainly focus on the SAO..."
- 15 – L162-L166: Figure S3 and S4 do not help to explain the strong SAO signal over Asia and Australia. Compared to the regions with strong SAO signal in Figure 2, the regions with larger water vapor and strong upwelling are shifted toward the equator, where the SAO signal is weak. Perhaps the water vapor anomaly with zonal mean removed might show better agreement.
- 20 – L267-L268: "Such reduction of than tropics." The SAO in tropics is located in the altitude between 400 hPa and 225 hPa. Figure R6 shows that the relative difference of SAO PSD in tropics (400-225 hPa) is larger than that in SHM/NHM UTLS (250-175 hPa). It might be better to change as "Such reduction of SAO PSD caused by removing SST-SAO is larger in the SHM and NHM than that in the tropics"
- 25 – L284-L285: "In October, the negative valuesreduced radiative cooling." The total heating rate is reduced only for the sensitivity simulation of rmSAO in October (Figure 9a)
- L289: In winter -> In austral winter
- L289-L290: "In April, the negative values.....reduced radiative cooling." The total heating rate is reduced only for the sensitivity simulation of rmSAO-TP in April (Figure 9b)
- 30 – L306: in summer -> in austral summer or in February
- L307-L308: "The further energy in the summer season" This conclusion applies in the NHM SAO. The peak of temperature for SHM in summer is not stronger than that in winter (Figure 3d and Figure 8b). It might be better to summarize it more precisely.
- 35 – Figure 4 caption: "The red, blue, dashed blue analysis processes, respectively." -> The red, blue, dashed blue analysis processes, dynamics, radiation, and condensation, respectively."