

Community comments by Jo-Jo Eumerus

A few minor observations:

We appreciate Jo-Jo Eumerus for providing valuable comments on our manuscript.

* Are there any data that identify causal mechanisms e.g are the ozone and temperature changes solely due to local insolation and sea ice or are there atmospheric circulation changes (perhaps sector-dependent) that also play a role?

We expect that the signal of local temperature anomaly caused by ozone over the southern polar region would have been caused by a complex interplay of ozone chemistry and atmospheric circulation instead of a simple response to local insolation. For this reason, the exact mechanism would not be easy to identify clearly in this case, partly because the impact on climate would be very small (i.e., significant signal is limited seasonally and regionally). This is in contrast to the case of the previous study (Noda et al., 2017), which showed an ozone-climate feedback caused by the wind and sea ice responses in the MH. For a better understanding of the ozone-climate feedback in the MH and LIG, we will try to enrich our mention of the responses of stratospheric ozone and atmospheric circulation around the south pole in the MH and LIG and their differences from Noda et al. (2017).

* In Fig3, it seems like MH and LIG have opposite temperature changes in Antarctica during JJA; any indication why?

We expect that the different temperature response around Antarctica between MH and LIG would be associated with the different astronomical forcing (Figure 5). The seasonal timing of the onset of the positive insolation anomaly in the regions around the Southern Ocean is March-April in the LIG, which is much earlier than in the MH.

* Has ozone effects on climate just in Antarctica?

The changes in ozone may affect the temperature in the northern hemisphere in the MH and LIG, as can be seen in the difference between grey and red/blue lines in Figure 13. We will enrich our discussion regarding the ozone impact on the northern hemisphere in the revised manuscript.