

We thank the reviewers and Dr. Šácha again for their attention and commitment throughout the review process, which we agree was demanding but constructive. Please see our responses to Dr. Šácha's requested corrections below.

The corrections I ask for concern the captions of Figs. 1 and 9 and the related discussion of results, where you should indicate that you newly incorporate also the uncertainty.

Figure 1:

Caption: We have amended the Fig. 1 caption, **“Figure 1: Detrended seasonal cycles in N₂O mixing ratio (ppb) modeled by GEOSCCM and compared to NOAA surface station data at 9 surface sites, with uncertainty estimated using a bootstrap method.**

Text: We have added a second sentence to the presentation of Fig. 1 in Section 3.1: **“Figure 1 shows that the GEOSCCM N₂O mean seasonal cycle at surface sites is dominated by stratospheric air depleted in N₂O that is transported to the surface, rather than by the influence of surface sources. This dominance holds within the uncertainty of the seasonal cycles, as estimated using a bootstrap method.”**

As before, the bootstrap method is explained in Section 2.3. “Mean seasonal cycles for NOAA surface N₂O observations and GEOSCCM N₂O tracers were estimated using a bootstrap method in which 20% of the timeseries was randomly removed and the remaining 80% was fit to a 3rd order polynomial plus first 4 harmonics. These steps were repeated over 500 iterations to estimate the range of uncertainty in the harmonic components of the fit.”

Figure 9:

Caption: We have revised the Fig. 9a caption **Top row shows a) mean seasonal cycles in N₂O for NOAA surface station observations (Obs) and GEOSCCM surface total N₂O (N₂O_{tot}) and stratospheric N₂O (N₂O_{ST}), with uncertainty estimated using a bootstrap method”**

Text: Revised to read, **“Figure 9a shows that the mean seasonal cycles in SH surface N₂O for NOAA and GEOSCCM total N₂O (N₂O_{tot}) and stratospheric N₂O (N₂O_{ST}), as illustrated at South Pole (SPO), all have similar autumn seasonal minimum, within the range of uncertainty as estimated using a bootstrap method.** Figure 9b shows that PLST from the previous spring is significantly anticorrelated to NOAA SPO N₂O monthly anomalies in February, when N₂O is descending into its minimum. This correlation is observed in both January and February at SPO as well as several extratropical southern NOAA sites including Cape Grim, Tasmania and Palmer Station, Antarctica.”