

Interactive comment on “On the relative roles of dynamics and chemistry governing the abundance and diurnal variation of low latitude thermospheric nitric oxide” by David E. Siskind et al.

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Received and published: 21 December 2018

We thank the reviewer for his/her comments. Our specific response is as follows:

1. That the overall magnitude of the NO density at the equatorial is predominantly due to solar forcing is well established from SNOE data as noted in the text on page 3 (line 19) is consistent with the near identical results from NOEM for the two January's. Nonetheless, the idea that the SW2 could change given the differing wintertime dynamics between 2010 and 2017 is important to acknowledge and we have added some discussion in Section 4 to cover that, as well as a citation to Pedatella and Liu (2013). There was an SSW in 2010 that did not occur in 2017; however, the 2010 event

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was at the end of our averaging period, so overall the two months' dynamics were unlikely to be that different. It is not something that can be easily checked in observations, particularly since SABER local times vary and it is typically only used to give 60 day averages. We also checked and mention, but do not show, for phase changes in other tidal modes (DW1 and TW3) and did not find any.

2. Regarding line plots- given the over factor of two discrepancy in absolute abundance between TIME-GCM and data, we do not feel that comparing line curves would be helpful and thus declined this suggestion.

3. The figure already gave geophysical error bars, we had just neglected to explain that in the caption; this is now added. The SOFIE curve in Figure 2 represents an average of over 400 profiles (15 x 30 days); since Table 1 of Gomez-Ramirez shows that signal profile uncertainties in the 90-120 km altitude range are no more than 25%, these random retrieval errors will be reduced to insignificant values in a monthly average. Discussion of this has been added to the text in Section 2.

4. We have added discussion about how Figure 8 was constructed.

5. We have added discussion of the purpose of the radar winds in Figure 9.

6. Regarding the daytime chemistry, we have added more discussion (Section 4) about the relative roles of dynamics and chemistry to hopefully clarify things.

7. And we have cleaned up the figures.

Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2018-112>, 2018.

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