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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Ultra-violet absorption cross sections of isotopically substituted nitrous oxide species: $^{14}N^{14}NO$, $^{15}N^{14}NO$, $^{14}N^{15}NO$ and $^{15}N^{15}NO$" *by* P. von Hessberg et al.

P. von Hessberg et al.

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We thank the referee D. Griffith for his careful reading of our manuscript and his valuable comments. Overall, we agree with the comments of the referee. In this paper we present experimental measurements of the photolysis cross sections for 14N14NO, 15N14NO, 14N15NO and 15N15NO for the wavelength range 181 to 218 nm at 233 and 283 K. These spectrally resolved data and the actinic flux are the information needed for an accurate calculation of isotopic enrichment due to photolysis.

Specific comments:

3.4.1 Comparison with previous experiments (p2348, line 4): We agree with the referee that the FTIR measurements (taking into account the stated error of the measurements) are not in mutual disagreement, or inconsistent with a negative de/dl.

3.4.2 The reference will be changed to the published Morgan et al. paper

4. Modeling We agree that there is no reason to discriminate against the FTIR measurements in our comparison of CTM results and stratospheric measurements. The FTIR data were actually included in the comparison and the calculation of the mean RMS difference between stratospheric measurements and model values presented in Figure 7. By mistake, the figure caption did not reflect that. We are curious to know what the reason for the discrepancy between the consistently more negative e from the FTIR measurements and the IRMS measurements may be. Our model results generally lie between the IRMS and FTIR data.

We do not understand the disagreement between the Kaiser et al. (2003) data and the Yoshida and Toyoda (2000) measurements of d values for tropospheric 14N15N16O and 15N14N16O. Different calibration techniques were used for the two mass spectrometric studies.

The detailed technical comments will be taken into account in a final version of this paper.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 2333, 2004.