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Atmospheric Chemistry and Physics Discussions

Interactive comment on "UV absorption cross sections of nitrous oxide (N_2O) and carbon tetrachloride (CCl_4) between 210 and 350 K and the atmospheric implications" *by* N. Rontu Carlon et al.

Anonymous Referee #2

Received and published: 18 June 2010

This paper describes new high precision measurements of UV absorption cross sections of N_2O and CCl_4 in the wavelength range 185 to 229 nm at temperatures between 210 and 350 K. For both gases, the authors used the light of five atomic lines emitting at selected single wavelengths. In addition for CCl_4 absorption spectra were measured in the range 200-235 nm with a spectrometer provided with a diode array detector at resolution of $\sim$1 nm. The authors claim high accuracy and precision of their measurements.

For N_2O the new data are in excellent agreement with the current JPL recommen-

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dation, which need not to be revised. The reported uncertainties in the measured absorption cross section are less than 4% between 185 and 230 nm, reducing thus the uncertainty in the N_2O photolysis lifetime in the stratosphere.

For CCl_4, however, the new cross sections are a few % systematically larger and display a weaker temperature dependence that the current JPL recommendation. The new cross sections result in a 5-7% decrease in the modelled CCl_4 photolysis loss, and a slight decrease in the stratospheric lifetime.

This is an excellent study and very useful for the atmospheric modelling community.

This work seems to have been done with extreme care, the results are clearly presented. This paper should be accepted for publication after considering the minor comments raised below.

General comments.

The fonts of Table 1 (see page 11071) are too small and hardly readable. Larger fonts are needed such as in Table 2.

The Figures 2 and 3 are very small and should be enlarged. The coordinated and text with authors is not readable.

Minor typos and comments:

Page 11048, line 25: There is no reference for the Montreal Protocol (2007)

Page 11057. line 1: Correct “Mérienne”, not “Merienne”

Page 11057, line 8: The reference is “Bates and Hays”, not “Bates and Hayes”

Page 11057, line 10: Correct Selwyn et al. (1977), not Selwyn and Johnston (1977):

Page 11061, line 3: Correct Vanlaethem-Meurée et al., not Vanlaethem-Meuree et al.

Page 11061, line 11: Correct Vanlaethem-Meurée et al., not Vanlaethem et al.

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Page 11063, line 24: The reaction rate constant for the reaction $O(^1D)$ + CCl_4 should be included.

Page 11068, line 7: Use lower case in the title of this reference

Page 11069, line 8: Correct “scenarios”, not “scenarios”

Correct “Intergovernmental” not “Intergovenmental”

Page 11069, line 22: correct “Spectre”, not “Spectr”

Page 11070, line 12: Correct “Vanlaethem-Meurée”, not “Vanlaethem-Meuree”.

Page 11070, line 17 Correct $^{15}N^{15}NO$, not ^{15}NNO

Page 11075, figure caption: Correct Mérienne, “Merienne”

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 11047, 2010.