Atmos. Chem. Phys. Discuss., 5, S2298–S2299, 2005
www.atmos-chem-phys.org/acpd/5/S2298/
European Geosciences Union

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Effects of column density on I_2 spectroscopy and a determination of I_2 absorption cross section at 500 nm" *by* P. Spietz et al.

P. Spietz et al.

Received and published: 30 August 2005

We agree that in the submitted manuscript with "apparent optical density", "equivalent optical density", and "normalised apparent differential optical density" too many different types of "optical density" were around. As this might contribute more to confusion than to clarity we will replace "equivalent optical density" (which was a measure for column density anyhow) by column density. "Normalised apparent differential optical density" will be replaced by "apparent differential cross section", both being quantities commonly used in the context of spectroscopy and DOAS. At the same time this avoids the lengthy explanation, what "equivalent OD" is and why it is equivalent and so on. The reviewer points out correctly that in applications of remote sensing the

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uncertainties due to the unknown distribution of sources and the consequently inhomogeneous distribution of I2 in the troposphere are dominant. If in comparison to that the corrections, which could be achieved by consideration of the discussed spectroscopic effects were of the order of only a few percent, it would be questionable, why one should bother about them at all. However, a systematic error of up to 13% for spectroscopic reasons - as found in the study under discussion - is sufficiently substantial that it should be considered, wherever this could be done with reasonable efforts. Only then it is ensured that the basis for any subsequent conclusions, including those on the inhomogeneous I2 distribution itself, is reasonable and sound.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 5183, 2005.