

Answer to Referee #2

Specific comments

Title and abstract: I think it is uncommon to add a bibliographic reference in the title of a paper. It is also not recommended to add references in the abstract of a paper (e.g. Day and Gastel, Cambridge, 2006). The abstract should be self-contained so that it can be published on its own, for example in a literature database. Therefore I would recommend to remove the reference to Bogumil et al. from the title and the abstract of the paper. I was also wondering why "sciamachy" is spelled in lower case letters in the title.

Done

p2451, l6: I noticed that in some parts of the paper additional information is presented in brackets rather than full sentences. In this case the text reads "Ozone ... shields the damaging UV radiation in the stratosphere (protects life)". I would recommend to replace these brackets "(protects life)" by a full sentence or remove them, in case the additional information is not too important.

Done

p2451, l3: see comment to p2451, l6

Done

p2454, l9-14: It is stated that a spectrally continuous absorption cross-section was obtained by "gluing" the "useful parts" of different absorption measurements together. This is referred to as a "new" concatenation. It would be nice if some specific details could be provided. How are the overlapping regions defined? How large are the differences in the overlapping regions? Is the data in between the overlapping regions interpolated to compensate for differences in the overlapping regions? As this is referred to as a "new" concatenation, how does it differ from earlier analyses?

Done

p2455, l1-2: It is stated that the revised cross-section spectra preserve the correct temperature dependence and that they are in good agreement with published data. However, at this point that might not be clear to the reader. The temperature-dependency and the comparison

with literature data are discussed later, in section 3 of the paper. At this point I was just wondering which "published data" you are referring to. This information is found later, on p2456, l7-17, but I think this is an issue of a forward reference which should be resolved.

Done

p2457, l2: It is stated that the comparison for the Huggins band exhibits excellent agreement. However, I noticed in Table 1-3 that the discrepancies between the different data sets are larger in the Huggins band than in Hartley and Chappuis bands. Could you please comment on that?

The scatter of the integrated cross-sections in the Huggins band indicates systematic differences between the available data. The integrated cross-sections of the revised data agree well with the high resolution data (BMD and Bass Paur) and within 2% with the exception of the 203K profile.

p2457, l12-19: The meaning of the parameter "a0" in Eq. (2) is not discussed. As it is a multiplicative factor to "a1" and "a2", according to Eq. (2), I was wondering if it is reasonable to compare "a1" and "a2" to other data sets, if differences in "a0" are not considered?

a0 comparisons will be included

p2458, l3-5: It seems the largest difference between the temperature fit according to Eq. (2) and the measured data occur for the new, revised cross-section data set. Could you please comment on that?

Although the differences for the revised data are larger but still within an acceptable range of 2%.

p2459, l2-5: This sentence (or two sentences?) need to be rewritten and clarified.

Done

p2459, l11-12: Here the WFDOAS acronym is introduced, but it is already used earlier in the paper, for example in the caption of Fig. 7. I also noticed that the acronyms DOAS, ESA, and GOME are used, but not defined.

Done

p2460, I11-18: It is illustrated that the revised cross-sections improve the retrieval accuracy for selected orbits on 24 September 2008 and 20 March 2009. However, to make a general statement, more cases need to be examined. What about summer and winter conditions or other years?

Retrieval for season conditions as well as for other years will be included.

Table 1: An error must have occurred when calculating the mean values of the literature data. For example, at 203K the mean of 3.54, 3.56, and 3.56 is 3.55 and not 3.53? Also, I would like to ask you to clarify if you included the new SCIA revised values in the mean values?

The mean values are the values reported in ESA study (Orphal, 2002) and not the mean of the values listed in the table. The mean values do not include the revised values.

Table 4: The unit for "shift" is missing.

Done

Fig. 5: The acronym "BMD" in the Figure caption was not introduced before.

Done

Fig. 6: The curves in both plots look very similar. Perhaps it would be more reasonable to plot the differences between them?

The plot shows the temperature dependence in the Chappuis band for both Original and revised data. The temperature dependence of the revised data agrees with literature data, the differences will be included.

Fig. 8: The x-axis labels for the inset plot are missing.

Done

Fig. 9 and 10: The x- and y-axes labels are missing. I would suggest to scale the residuals and retrieved baseline polynomial by a factor 10 to illustrate if there is a

spectral dependence.

Done

Technical Corrections

p2451, l8: "radiations" -> "radiation"

Done

p2451, l8: "by Earth" -> "by the Earth" (or "the Earth's atmosphere"?)

Done

p2451, l10: "to Montreal Protocol" -> "to the Montreal Protocol"

Done

p2451, l19: "MetOp B and C" -> "MetOp-B and -C"

Done

p2451, l 28: "FM (flight model)" -> "flight model (FM)"

Done

p2455, l1: "and in good agreement" -> "and are in good agreement"

Done

p2456, l8: "tha" -> "the"

Done

p2456, l15: "changes" -> "change"

Done

p2456, l19: "tool" -> "measure" (?)

Done

p2457, l3: "fit to within" -> "fit within" (?)

Done

p2457, l6: "agrees" -> "agree"

Done

p2457, l8: "shows" -> "show"

Done

p2457, l13: "temperatures" -> "temperature"

Done

p2458, l8: "in the Huggins" -> "in the Huggins band"

Done

p2459, l19: "for GOME ozone retrieval" -> "for the GOME ozone retrieval"

Done

p2459, l21: remove "elaborate"

Done

p2459, l23: suggest to split sentence, ", an agreement" -> ". An agreement"

Done

p2459, l26: "a relative differences to within 1%" -> "relative differences within 1%" (?)

Done

p2463, l14: "240-790,nm" -> "240-790 nm"

Done

p2468, caption: "indicated are the one that" -> "presented here" (?)

Done

p2471, caption: "Huggins Chappuis" -> "Huggins, Chappuis"

Done

p2473, caption: "sub-panels" -> "sub-panel"

Done