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Interactive comment on “Characterization of In Band Stray Light in SBUV/2 Instruments” by L.-K. Huang et al.

Anonymous Referee #1

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Review of Characterization of In Band Stray Light in SBUV/2 Instruments L.-K. Huang et al

A reasonably good paper that addresses the problem of in band stray light and how it affects the wavelength dependent albedo used to retrieve ozone profiles. Heavy going when discussing time dependence and goniometric variations. Notation gets confusing (SZA vs SCSEA), but understand the need to s/c centered coordinates.

Specific comments: 7912/5 abstract. The authors should include a sentence or two describing why it is important to understand inband stray light. What are the effects of inband stray light error on the data produced by SBUV?

/24 you reference Frederick in 1986 but list to the present day???

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7913/11 what is a 2% change in “profile”? Does this mean a shift in the entire profile in mixing ratio? Or an area? Or a part of the profile shifts? It is not clear what this means

/14 the authors should mention where the calibration of the SBUV instrument comes from and that an absolute calibration is not needed due to the ratio. Is the solar irradiance measured each orbit, or once a day, or what?

/18 you might want to comment on the relative importance of OBSL and IBSL and why you are focusing on IBSL

/21 analysis of stray light is indeed important in sensor characterization, but point out that it is important in scientific interpretation of the data – it adds a term to the numerator and denominator of the spectral ratio that obviously affects the value of the ratio

/24 what is the physical size of the ground footprint in km x km?

7914/4 same day AND same location on earth surface?

7914/24 you will use 19 as an example. Why not use 19 in Fig 2 for consistency?

7915/1 is the extinction at 10^{-6} ? Was it measured? You say “ideally”

/2 does the FWHM vary with wavelength – it should – so what is the variation from one end to the other

/6 Fig 1 says a scan takes 168 sec and here says 32sec

/11 concerning of a grating spectrometer which acts as an analyzer.

/15 assuming the diffuser does not degrade between measurements – which brings up the freq of measurement using the diffuser – please specify

/24 FLIGHT baffle plates

7916/27 how familiar it sounds to not have an opportunity to fully measure things – just an aside!

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7917/2 does the use of “includes” mean that correction has been made for the the properties listed, or not? Please clarify. I assume not.

7917/14 TEMPERATURE dependent ozone absorption . . .

7917/17 remind the reader why 17 does not contain the error – you use flight model numbers on the previous page. In fact looking at flight model numbers, pg 7914 says FM5=14, FM6=17, FM7=18 and FM8=19. Pg 7916 says FM5 – FM8 have the large air gaps and hence will have the large IBSL. Thus, 17 has IBSL as stated in line 23. So now you say N17 is not contaminated with IBSL and N19 is. I am confused?????? N17 is clean because of the selection of SZA? Please explain this, it is not at all clear. I will assume in reading the rest that N17 does not contain IBSL, but not clear it does not.

/15 Fig 5 would be easier to read if you plotted the difference rather than the real numbers

heavy going the next few pages getting used to SCSEA and AA and what it means – any wording to help the reader through these few pages would be worthwhile – choice of SCSEA values seems appropriate, but you have to think about them and look at the first graphs to really see why they were chosen (18 deg, 6, -10, etc)

Figs 11 and 13 need wavelengths in the caption

7923/28 reference please for s/c contamination

7926 statements as to the scientific implications of the derived correction would be valuable.

7926/8 please give SZA here as folks often read abstract and conclusions and no one doing that will realize that SCSEA means

Typo/trivial comments 7912/15 monitoring atmospheric ozone profiles

7915/22 literature not plural

there are lots of English grammar errors which can be easily fixed, and should be. Too many for me to list them all.

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AMTD

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