

Page 5220: Section 2.1 Total Ozone Normalization: Line 1: Is the total ozone normalization applied after all other corrections (i.e. pump, background, solution type, etc.) are applied?

Yes. We have added text to clarify this.

Page 5220: Section 2.1 Total Ozone Normalization: Line 1: It would be helpful to mention the altitude a balloon ozonesonde must reach before the sonde total ozone column is compared and the profile normalized to a Brewer or Dobson spectrophotometer.

Thanks for catching this oversight – appropriate text has been added.

Page 5225 Section 2.8 Radiosonde Changes: Line 16: This section presents the geopotential height errors from radiosonde pressure offsets or errors. The authors state that there is no correction applied for radiosonde errors. However, are some profiles flagged (or not used) when there is an apparent very large offset (for example balloon burst pressure is at an unrealistic height - maybe 2 hPa), and the ozone profile is skewed?

That is an interesting suggestion. Unfortunately, no, at present this is not done.

Page 5226 Section 3 Effects of the corrections: Line 8: “In the 2000s (Fig 4.) the correction for the change to En-Sci sondes. . . .” Is the reference to Deshler in Figure 4 the same as the correction for the change to En-Sci sondes given in this sentence?

Yes. Text added to make this clear.

Page 5226 Section 3 Effects of the corrections: Line 11: The sentence “The overall effect of the corrections is generally modest,...” This seems to be true for the ECC ozonesondes but the tropospheric changes listed in line 13 below mentions “up to 20% correction” applied to the Brewer Mast which is higher than a modest correction for an ozonesonde.

Indeed. Text added: “With the exception of the Brewer-Mast data in the troposphere...”

Page 5226 Section 3 Effects of the corrections: Line 15: I don’t understand the summary of the ”Stratospheric changes: decreases of up to 4% before 1980, less above and below 25 km” It sounds like a maximum decrease of 4% exactly at 25 km but less than a decrease of 4% above and below 25 km?

Yes, that’s right. We’ve altered the text to make this clear.

Page 5228 section 3. Pump calibration: The description in this uncertainty section sounds like surface pump volumetric flow rate measurement here rather than a pump calibration.

Yes, that’s right. We’ve taken the referee’s suggestion and changed the text accordingly.

Page 5228 section 3. Pump calibration: Line 6: “Torres (1981) found a 1 sigma variation in the speed of individual model 3A pumps...” maybe using speed here seems to apply more to the motor characteristics – then the sentence would be better as “speed of individual model 3a pump motors”.

Done.

Page 5229 section 10. Iodine Loss: Line 27: rather than “iodine evaporation” it may be better to stay with the section title and complete the sentence as “..., and/or iodine loss from the sensing solution.”

Done. Evaporation seems the most likely loss channel, but this remains unproven.

Page 5230 Line 24 and Figure 5 refer to “Same balloon”. If there is there another term or way to describe this would be helpful. From the definition it appears to be all the uncertainties excluding the pressure offset uncertainty.

I think we were just trying to find a shorter description than “All uncertainties excluding the pressure offset uncertainty”. We now say “All terms excluding pressure offset”.

Page 5233 Section 5 Time Series and trend analysis line 9 - Just a comment here about ground level ozonesonde trends - ozonesondes are good for trends in altitude layers but not sure of designating one of the chart layers to “Ground Level” since it seems like the most uncertainty can appear at the surface. For example, is the ground data point chosen always after the sonde measures ozone for a specific time (i.e. 2 minutes at a 1.5 meter level above the ground) or can weather, wind, time of day for launch give too much variability to make a good trend. Otherwise it is however interesting to see the plotted data.

Yes, we agree that the surface measurements are much more uncertain than the free tropospheric measurements. They are probably mostly of interest to compare with ground-based UV analyzers, as a check on how well the weekly sonde time series compare with continuous sampling. The operator is supposed to hold the sonde at ground level for 10 minutes in order to get a good reading, but sometimes poor weather makes this difficult. In addition 1.5 metres is too low; most UV analyzers have an intake at 3-5 metres above the ground, as the ozone gradient in the near-surface layer can be strong.

FIGURES: Figure 4 – Deshler reference misspelled. Figures 9 and 10 – two green color lines are a little hard to discern on computer screen but maybe okay in print. Table 3 - check spelling of “spectrophotometric”.

All fixed.