

Interactive comment on “Homogenizing and Estimating the Uncertainty in NOAA’s Long Term Vertical Ozone Profile Records Measured with the Electrochemical Concentration Cell Ozonesonde” by Chance W. Sterling et al.

Anonymous Referee #3

Received and published: 1 January 2018

General comments

The authors can be congratulated for this important and comprehensive study! It is a major step in the effort for a global homogenization of the ozonesonde data sets. I rate the overall quality as excellent. I recommend publication after some minor revisions.

Specific comments

1. Page 5, Line 32: “RS-80 pressure sensors are known to have degraded over time.” How is this meant? Are they aging or became production worse? Please give refer-

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ence.

2. P6L1-3: Is this part of this study? If yes, give more details. If not, give a reference.
3. P7L10-11: Don't understand this sentence.
4. P7L12-14: Figure 1 doesn't show any changes.
5. P14L22: How was it determined? Is it part of this study? Reference? Same questions for the values 0.98 and 0.94 at P15L2 and P15L7.
6. P15L9: Don't understand why 0.96 is used instead of 0.94.
7. P16L6: I assume "constant" is meant instead of "linear".

Technical corrections

1. P4L19: Delete empty space character in front of "Changes".
2. P4L24: Delete most empty spaces between "2" and "KI".
3. P6L5: Explain "SkySonde" here and not later (page 7).
4. P6L16+: Introduce variable symbols used in equations consistently in the text (when it is mentioned the first time). E.g. at this place: "... the ozone partial pressure, P_O3, is determined ...". An introduction is missing or too late at many other places, e.g. P9L25, P10L11,12, P12L12,13. Please use a consistent notation: "... , symbol, ..." or "... (symbol) ..." but not both.
5. P6L25: "cannot BE measured"
6. P7L16: First occurrence of the notion n.nx buffer solution in the main text. Please give a hint that the notion is defined in table 2.
7. P7L16+: Write "buffer solution" in a consistent way with upper or lower characters throughout the text.
8. P10L10+: Get the subscript depths right.

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9. P12,13 Equations 8-13: Add unit “K”.
10. P12L21, P17L23: “degree” is not part of the unit Kelvin. Please delete.
11. P13L1: Exchange “truest” by “best estimate of the”.
12. P16L14,17: Please use “ 10^{-6} A” instead of “microamps”.
13. P16L20: Please use “ cm^3 ” instead of “cc”.
14. P16L22: Check place of equation number.
15. P17L26,27,28: Add “estimated” before temperature, e.g. “estimated 1.0 K”.
16. P17L28: Add a space between “0.5” and “K”.
17. P20L8: Delete on “and”.
18. P20L9: Add “. . . average DIFFERENCES of the . . .”.
19. P20L23 & Figures S5-S8: I assume the captions for S5-S8 mentioning Dobson instead of SBUV are wrong.
20. P21L4: “Figures 11 and S7”
21. P21L7: “(Figure 13)” instead of “(Figures 8 & 9)”
22. Figure 1: What is the meaning of a longitude of 169 (East of West?) at a latitude of -90. Please add East and North units.
23. F1: Good place to mark the different eras graphically.
24. F2: Explain large bars at the end of histograms (A) and (B).
25. F3: Use lower case characters.
26. Table 3: Add units for second column.
27. F9-12: It would be nice to have the eras mark as in later figures.

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28. F13-15: The relation layer to panel character is somewhat hidden. Please repeat in the caption.

29. F13-15, FS1-8: Explain colour code.

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