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Atmospheric Measurement Techniques Discussions
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Interactive comment on "Methods to homogenize ECC ozonesonde measurements across changes in sensing solution concentration or ozonesonde manufacturer" *by* Terry Deshler et al.

Anonymous Referee #1

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General comments

By analyzing a suit of laboratory and field measurements comparing two ECC ozonesonde types with two different sensing solution concentrations and UV reference standards the authors derived simple transfer functions between the possible combinations. The study builds on former studies with limited data sets. The new study merges those data sets and adds unpublished supplementary data. That enables them to conclude simple transfer functions to be usable in most practical cases in order to homogenize the international ozonesonde data record. Since there is an urgent requirement for a homogenized ozonesonde data record the authors can be congratulated for their efforts. I strongly recommend the publication of the manuscript

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Discussion paper

after some minor revisions.

Specific comments

1. From the description of the data and the way they are used it seems that there is some implemented redundancy not resolved correctly in the BESOS and Laramie data. This should affect the statistical errors. In both cases a set of three ozonesondes with an equal type/sensor combination are compared to another set of three ozonesondes with another type/sensor combination. In the BESOS case each ozonesonde of the first group is compared to each ozonesonde of the second group leading to 9 individual comparisons (line 348, Table 1). In the Laramie case "only" 6 individual comparisons are listed for unknown reasons (Table 1). In any case the 9 or 6 comparisons cannot be seen as independent. There can only be 3 independent comparisons. Each ozonesonde can only be used once or one has to deal with covariance matrices in the error analysis.

2. At least Wallops Island used some SP 5A sondes. One should mention that those sondes had no explicit hole for the pump temperature sensor. Can you see any differences in the behaviour?

3. The paragraph (lines 114-125) can be misinterpreted that no other sensing solution concentrations than 0.5% and 1.0% had been used. I recommend adding that few other concentrations, i.e. 2.0%, had been used, too.

4. The effect of different pH buffers have been mentioned twice (sections 2.4 and 5.) Which buffers had been used in the measurements? Had the same buffer been used everywhere?

Technical corrections

1. Please find a way to mention at least once that the pressure p in log10(p) has to be used in the unit hPa.

2. Line 348-349: Table 1 instead?

3. Line 1063: Delete one parenthesis after d.

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