

Earth Syst. Sci. Data Discuss., referee comment RC2
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Comment on **essd-2020-395**

Anonymous Referee #2

Referee comment on "Intercomparisons, error assessments, and technical information on historical upper-air measurements" by Noemi Imfeld et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-395-RC2>, 2021

- L93 on GRUAN can include "Bodeker et al. (2016). (see the list of GRUAN publications on <https://www.gruan.org/documentation/articles>).
- L95-L100: Dirksen et al. (2014 for RS92) includes all those methods and should be mentioned.
- L11 & L23: "climate" should be added here too.
- L29: Those two references should be mentioned.

Zhou, C., J. Wang, A. Dai and P. Thorne, 2021: A New Approach to Homogenize Global Twice-daily Radiosonde Temperature Data from 1958 to 2018. *J. Climate*, pp.1-64.

Dai, A., J. Wang, P. W. Thorne, D. E. Parker, L. Haimberger, and X. L. Wang, 2011: A new approach to homogenize daily radiosonde humidity data *J. Climate*, 24, 965-991.

5. In term of how reliable the error assessment is, it would be good to explain some of outliers in Figure 6, such as two in Fig. 6d.

6. This is a really nice archive of results from early radiosonde intercomparison campaigns. However, I think that the main application of the study is to help adjust errors in early radiosonde data, so the data can be part of homogenized radiosonde data for climate studies, esp trend analysis. A lot of prior work including those from the second author have devoted to homogenize global radiosonde temperature data. It would be good to provide some examples on whether the adjustments made from prior homogenization efforts are consistent with the errors archived by this work. If not, how does it affect the conclusions made by those studies? This would greatly highlight the usefulness of this archive.

7. The examples given in the manuscript are all temperature data. Is it also true in your database? If so, it should be clarified.