

Interactive comment on “Comparison of the GRUAN data products for Meisei RS-11G and Vaisala RS92-SGP radiosondes at Tateno (36.06° N, 140.13° E), Japan” by E. Kobayashi et al.

Anonymous Referee #1

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GENERAL COMMENTS This was an interesting, straightforward, and well written paper which I enjoyed reviewing. These sorts of papers are essential to ensuring that GRUAN's operations are based on publications in the international peer-reviewed literature. This paper will be suitable for publication in AMT once my minor comments listed below have been addressed.

SPECIFIC COMMENTS

Page 1, line 13: Why were data from only 52 of the flights analysed. Why not all 87 flights? Did the other 35 not pass the quality controls for conversion to a GRUAN data product? If that is the case, perhaps that should be stated.

C1

Page 1, line 15: Replace 'were 0.4 K' with 'were, on average, 0.4 K'. They were not always exactly 0.4 K lower right? A similar change needs to be made on the next two lines.

Page 1, lines 26-27: I don't know what you mean by 'Most night-time temperature differences for pressures of 10 hPa were in agreement..'. The differences were in agreement with what? Or do you mean that the measurements (not the differences) were in agreement (which I would then understand). And likewise for the next phrase about the relative humidity differences.

Page 1, lines 28-29: Similar to my comments above, when you say 'Around half of all daytime temperature differences at pressures of ≤ 150 hPa and relative humidity differences around the 500 hPa level were not in agreement', this is confusing. The 'differences' were not in agreement with what? I can understand the measurements not being in agreement, but a differences is one number and when you say that difference is not in agreement, it begs the question of not being in agreement with what?

Page 2, line 27: I was surprised to read that the GRUAN data product for the RS-11G was generated at Tateno. I understood that all GRUAN data processing was centralized and was done at the GRUAN Lead Centre?

Page 3, lines 24-25: You say 'and converted to create the RS-11G GRUAN data product'. Converted in what way, or converted into what? It feels like something is missing here.

Page 3, line 28: I would suggest changing 'Such errors' to 'Such external influences on the temperature measurement' since it describes more specifically what these are, and I am not sure that it is appropriate to refer to these as 'errors'. It is a correct measurement that the temperature sensor is making (there is no error), it just isn't measuring the atmospheric variable you are directly interested in i.e. the ambient air temperature.

C2

Page 3, line 30: I don't know what a 'minima-pass filter' is. Is this the same as a low-pass filter? If not, I think that you need to say more about what this filter is and/or cite a paper that describes the functioning of the filter. Similarly, it is not clear to me what you mean by 'minimum filter' on line 15 of page 4.

Page 4, line 17: But you say nothing about the functional form of the curve fitted to the data. Is it possible to cite an example of a correction curve to the data characterizing the temperature-dependence of the thin-film polymer RH sensors?

Page 7, lines 11-23: This information should be in a table rather.

Page 9, lines 15-16: YOU state that 'Temperature differences also influence pressure differences' but this is only true in cases where the pressure is derived from GPS altitude and temperature profiles right?

GRAMMAR AND TYPOGRAPHICAL ERRORS

This paper is very well written. Most of my suggested changes below should be interpreted very much as that i.e. suggestions.

Page 1, lines 14-15: Just a suggestion → Replace 'The authors then quantified differences in the performance of the radiosondes using GRUAN data products' with 'Differences in the performance of the radiosondes were then quantified using the GRUAN data products'.

Page 1, lines 19-21: Again just a suggestion to write in the third person rather than referring to 'The authors' → Replace 'The authors additionally investigated the RS-11G minus RS92-SGP difference of temperature and relative humidity based on combined uncertainties to clarify major influences behind the difference with 'Differences between the RS-11G and RS92-SGP temperature and relative humidity measurements, based on combined uncertainties, were also investigated to clarify major influences behind the differences'.

Page 1, line 22: Replace 'in RS92-SGP' with 'in the RS92-SGP'.

C3

Page 1, line 23: Replace 'source for RS-11G' with 'source of uncertainty for RS-11G'.

Page 1, line 24: Replace 'and temperature-humidity' with 'and the temperature-humidity'.

Page 2, line 3: Replace 'JMA's' with 'JMA'.

Page 2, line 5: Replace 'Upper Air' with 'Upper-Air' i.e. as you have it in the abstract.

Page 2, line 10: Replace 'height' with 'altitude'.

Page 2, lines 11-12: Replace 'temperature and RH measurement has been improved' with 'the quality of the temperature and RH measurements have been improved'.

Page 2, line 14: Replace 'GRUAN will provide' with 'GRUAN is providing'.

Page 2, line 14: Delete 'for levels'.

Page 2, line 15: Replace 'will be' with 'are'.

Page 2, line 16: Replace 'will have' with 'have'.

Page 2, line 20: I would suggest changing 'habitually' to 'regularly'.

Page 2, line 25: I would suggest changing 'elevated change' to 'heightened likelihood'.

Page 3, lines 8-9: I would suggest changing 'The former is operated with a Vaisala DigiCora Sounding System III, and the latter is operated with a Meisei MGPS2' to 'The ground-station for the RS92 was a Vaisala DigiCora Sounding System, while the ground-station for the RS-11G was a Meisei MGPS2'.

Page 3, line 20: I would suggest changing 'for SHC' to 'inside the SHC' for clarity.

Page 3, line 23: Replace 'temperature measurement values' with 'temperature values'.

Page 3, line 29: Given what is displayed in Figure 1, I would suggest changing 'may be too' to 'is too'.

C4

Page 3, line 31: Replace 'theoretically estimated' with 'estimated theoretically'.

Page 4, line 6: Replace 'measurement values' with 'measurements'. And likewise on line 29.

Page 4, line 12: Replace 'involves the use of' with 'uses the'.

Page 4, line 27: Replace 'height data' with 'altitude data'. And likewise on line 31.

Page 5, line 29: Replace 'is sufficient' with 'is sufficiently good'.

Page 6, lines 25-27: I would suggest changing this to 'Temporally simultaneous observations were compared, using the statistical approach adopted by Kobayashi et al. (2012), to evaluate differences in sensors and correction methods'.

Page 8, line 15: Replace 'a reference' with 'the reference'.

Page 9, line 20: When you say 'much larger than others' what does the 'others' refer to?

Page 9, line 30: Replace 'checking' with 'comparing'.

Page 10, line 13: Replace 'RH measurement' with 'the RH measurement'.

Page 10, line 33: 'few %RH degrees' sounds confusing. Is the 'degrees' necessary?

Page 11, line 4: Replace 'quantitated' with 'quantified'.

Page 12, line 9: Replace 'as per' with 'as for'.

Page 12, line 13: Replace 'the purpose of utilization' with 'use'.

Page 13, line 4: Replace 'generally corresponded' with 'generally agree well'.

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