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Atmospheric Measurement Techniques Discussions

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.

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Regarding comments of RC2, please note that in my comment SC1, I suggest that "the histogram of differences (d) in each layer ... may help".

In fact, P(|d|>2*sigma) = 0.95 is true if the differences are zero-mean Gaussian coherently with authors' lines 32-33: "Assume that m1 = m2 is true and that uncertainty follows normal distribution.". If the differences are zero mean, but non-Gaussian, for example, zero mean Student's t with 3 degrees of freedom, then the constant 2 is wrong and the corresponding Student's t percentile should be used.

So if, after subtracting the mean of d, the distribution of d at a certain pressure level is not approximately Gaussian, then the constant 2 is not the appropriate one.

Which would be the correct constant depends on the distribution of d. So my general consideration does not give the final answer but may help in understanding a step more on this issue.

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