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Atmospheric Measurement Techniques Discussions

Interactive comment on "Humidity sensor failure: a problem that should not be neglected by the numerical weather prediction community" *by* Y. Liu and N. Tang

Anonymous Referee #2

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General comments: The paper's topic is important, especially for the numerical weather prediction and climate analysis. The low relative humidity problem in the low- and middle-troposphere has seldom been paid attention, because these data are often rejected in the data quality control process of the data assimilation. However, after the authors calculated the occurrence percentage of the very low relative humidity (RH<5%) measurements based on the operational radiosonde data, they find that the phenomenon is universalïijŇand the percentage is high. The authors attribute these low relative humidity measurements to the failure of the humidity sensors. As said by the authors, the most serious problem is that these erroneous observations have been

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archived as the formal data and used widely in scientific research. It is necessary to warn the researchers to use these low relative humidity measurements carefully. Therefore, I would recommend to publish the paper with some minor revisions.

Detailed comments and suggestions are in the following: 1ïijL'The very low relative humidity data can also exist in the troposphere (lower and middle), especially in the subtropics and extratropics where this study has shown a larger percentage. The authors shall be aware that low humidity observations are the results of real atmosphere variability or humidity sensor failures. Therefore, they shall emphasize only these data meeting the criteria in the paper are wrong. I suggest the authors clarify the issues in the abstract and introduction.

2) The authors have done well in presenting the survey of low relative humidity of the operational radiosones. However, the analysis of possible causes of humidity sensor failure in the section five is a little bit redundancy. Vigorous use of a blue pencil in this section would have made it better.

3) If the title in figure 1 were changed as two typical abnormally dry profile structures of relative humidity observation of the Chinese L-band radiosonde system, it would be is better.

4) If the title in figure 2 were changed as the global distribution of the failure relative humidity observations for each operational radiosonde station during December 2008 and November 2009, it would be better.

5) If the title in figure 8 were changed as the mainly operational radiosonde sensors used in each radiosonde station, it would be better.

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