

Interactive comment on “Characteristics of water-vapour inversions observed over the Arctic by Atmospheric Infrared Sounder (AIRS) and radiosondes” by A. Devasthale et al.

Anonymous Referee #2

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The paper "Characteristics of water-vapour inversions observed over the Arctic by Atmospheric Infrared Sounder (AIRS) and radiosondes" by Devasthale et al. deals with water-vapour inversions. It is already a good paper, but the authors should consider the following comments and remarks.

1. At first I totally agree with the first referee comment about suggestion to analyze also the temperature inversions.
2. The water-vapour inversion should be clearly defined in the beginning. From Figure 3 it seems that there is inversion even if the increase in the MR is very small. What is the accuracy of AIRS and radiosonde MR? If the increase is smaller than the accuracy,

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you shouldn't say that there is humidity inversion.

3. Figures 6 and 7: add colour bars
4. Page 15803 line 24: waver → water
5. Page 15804 line 11: attitude → latitude

Next comment is for following papers I hope you will prepare.

6. You suggest this work for models validation, but have you considered to do identical analysis for the AIRS period using some reanalysis model? If you do it for both clear-sky conditions and all days, you will see if the AIRS clear-sky limitation limits its statistics usability in all days conditions.

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