

## ***Interactive comment on “Evaluating the Lower Tropospheric COSMIC GPS Radio Occultation Sounding Quality over the Arctic” by Xiao Yu et al.***

**Anonymous Referee #1**

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General comments —————

I thank the authors for responding fully to my earlier points. The paper is now clearer and easier to read. The figures are generally clearer. I think it is now suitable for publication, subject to a few more clarifications.

Specific comments —————

Page 6, Line 14: The correct units of  $a_1$  are N-units K / mb.

Page 6, Line 14: The correct units of  $b_1$  are N-units  $K^2$  / mb.

Page 7, Lines 14-16: I understand that the UCAR 1dvar retrieval depends on the errors in the RO measurement and the background field. But isn't the same thing true of the

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JPL method? If I have understood Lines 1-5 of Page 7 correctly, this method amounts to using model fields to provide some of the terms in Eqn (1) so that the other fields can be deduced from it. In which case, doesn't the error on the derived T/q field depend on the error in the observation and the error in the model q/T field too? If this is not so, please explain.

Technical corrections —————

Page 13, Line 15: COSIMC → COSMIC

Page 13, Line 21: COMIC → COSMIC

Page 31, Fig 9: I cannot see the horizontal lines at 0 and 5 km on my hardcopy. (They are clearer on the screen.) Please make them bolder or darker, and check that they are visible on hardcopy.

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