

Interactive comment on “Observation of unusual chlorine activation by ground-based infrared and microwave spectroscopy in the late Arctic winter 2000/01” by T. Blumenstock et al.

Anonymous Referee #3

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This study primarily focuses on the ClO enhancement during mid-March on basis of remote sensing observations.

In my previous review I have argued my objections. I regret that they have not been addressed. The main problem I have with this study is limited observational evidence for the striking observations during mid-March, as they were qualified on page 10000, lines 16-18. There are basically only two measurement points that form the basis of the paper and moreover they do not agree with the FTIR observations. Hence I do not agree with the conclusion given on page 10001, lines 1-2. In general the agreement

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may be reasonable, but for the very particular event on which this manuscript is fully based, namely the observations on March 16-17, the agreement between the two instruments is very poor. Hence, to my opinion, the observational basis for this paper is too weak. I'm not sure if this can be improved by a more thorough discussion on the particular observations from both instruments. I'm afraid one has to deal with the available information.

I like the subject, which is scientifically very interesting to my opinion. I also understand the eager to discuss potential chlorine activation outside the well-known PSC related physical conditions, but this can of course never be an argument for publication.

I therefore do regret to conclude that this manuscript is not suitable for publication in ACP. This also implies that a more detailed discussion of the paper at this stage is not meaningful, with the exception of Figure 6. This figure shows a vertical profile of the MIRA observations. It is important that the authors keep in mind (1) the limited vertical resolution (about 10 km) and the uncertainty of the observations (0.5 ppbv). These limitations have been mentioned in the manuscript, but will mask the differences between the February 16 and March 17 observations as well as the discrimination of the two peaks shown. When re-submitting the paper I recommend the authors to address these issues more carefully.

I encourage the authors to continue their work on this subject and to provide stronger observational evidence, which hopefully will lead to a re-submission. mission.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 9993, 2005.

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