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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Signatures of the two day wave and sudden stratospheric warmings in Arctic water vapour observed by ground-based microwave radiometry" *by* B. Tschanz and N. Kämpfer

Anonymous Referee #1

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The paper clearly describes the potential of ground-based microwave remote sensing of the middle atmosphere. Continuous observations of the vertical distribution of water vapour can give information of the dynamics in the middle atmosphere due to the fairly long chemical lifetime of water vapour in this altitude region.

The authors successfully use microwave observations of the water vapour emission at 22 GHz to estimate the vertical movement of middle atmospheric air in conjunction with sudden stratospheric warmings, SSW.

In the introduction it is said that is important to understand the dynamically variable Arctic atmosphere to be able to improve atmospheric models. I think the authors have to expand upon this. Why is the Arctic atmosphere important to study? Can there for example be a connection between the dynamics in the Arctic middle atmosphere and the increased melting of the Arctic ice? Why are SSW crucial events?

The descent rates of middle atmospheric air, after the observed SSW's, are discussed in the paper. I think the authors have to expand upon this as-well. For example, which is the normal descent of Arctic air in the wintertime due to the meridional circulation?

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