

Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2021-501

Anonymous Referee #1

Referee comment on "Case study of a moisture intrusion over the Arctic with the ICOsahedral Non-hydrostatic (ICON) model: resolution dependence of its representation" by H el ene Bresson et al., Atmos. Chem. Phys. Discuss.,
<https://doi.org/10.5194/acp-2021-501-RC1>, 2021

The paper gives an analysis of the representation of an atmospheric-river case study in the area of Ny- alesund (Svalbard) with the ICON model using different spatial resolutions. It gives both a detailed analysis of the model performance and an overview on the changes of atmospheric conditions associated with the event.

The paper is very well written and structured, I've enjoyed reading it. I recommend to accept it, after taking some minor points into account:

line 119: Absorption coefficients for in the microwave frequency range relevant atmospheric gases
--> Absorption coefficients for atmospheric gases relevant in the microwave frequency range, in particular water vapour

line 129: covers a period from 1979 and onward.
--> covers a period from 1979 onward.

line 187: a known issue by the DWD service
--> an issue known by the DWD service

line 319: the IWV values are relatively similar both at Shojna and Ny- alesund stations.
--> the IWV values are relatively similar at the Shojna and Ny- alesund station.

line 395: I don not fully understand what you mean by "negative latent heat fluxes (evaporation) dominate in association with the low pressure system over the Northern North Atlantic Ocean (Fig. 1) and the region with precipitation > 5 mm per hour." Especially the relation to precipitation is not clear to me, since it is a relatively small and scattered area in the figure (I am also not 100% sure what is inside and what outside the 5 mm/h contour line). Since precipitation is not mentioned anywhere else in the paper, nor analysed in detail, maybe just skip it. I think it is not that relevant here.

line 404: Although this study only here modestly explore
--> Although this study only modestly explores

Please check brackets of references in brackets at lines 35,114,115,116,144,154