

Interactive comment on “A case study on the formation and evolution of ice supersaturation in the vicinity of a warm conveyor belt’s outflow region” by P. Spichtinger et al.

Anonymous Referee #3

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In this paper an unusually thick ice supersaturated region (ISSR) detected over north eastern Germany is described. To study the origin and evolution of the ISSR, data from a radiosonde sounding, trajectory calculations, ECMWF windfield data and ME-TEOSAT images were used. With the help of trajectory analysis the life cycle of the ISSR was documented and it was found, that in the northern part of the ISSR a Warm Conveyor Belt (WCB) had it's outflow region.

The link between the first analysis, where the ISSR is described along trajectories and the second analysis where the ISSR is derived from corrected windfield data is missing.

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In contrast to the supersaturated region which was derived from trajectory analysis and disappeared around 24 hours after starting date the ISSR shown in Figs. 8,9 is still covering a huge area at the same time. When estimating the vertical extension this was based on the few points of the trajectories but what about the rest of the ISSR ?

Does the WCB significantly contribute to the formation of the ISSR? I think this cannot be said just by considering one case with no further investigation of other data. As mentioned earlier in the study, the WCB is important for moisture transport. Can this somehow be seen as a difference in the region where the ISSR is WCB influenced compared to the none influenced section?

— Scientific comments

p8247:20 In which geographical regions are the ISSR typically found and how long do they persist ?

p8256:9 To get a better impression about the size of the layer, the horizontal extend should be described.

p8262:15 there was no measurement at t+18 rather an indication based on windfield data.

Figure 8 The phrasing “along the trajectory” is a bit misleading, it would be better to say something like at “the pressure levels of the according trajectory points”.

When describing the horizontal evolution of the ISSR it would be interesting to know the extend in e.g. in m^2 .

In my opinion figure 11 (referred to in the sect. 6) doesn' t really fit in. I would suggest to remove it.

— Technical Corrections

p8249:4 The abbreviation wrt should be introduced

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Figure 5 What does the open square indicate? Figure 3,6 The font in the print version is too small. Figure 8,9 The red star is in some panels hard to see. Figure 10 It would be helpful it was said in the caption to which panel in 8,9 the panels in 10 correspond.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 8245, 2004.

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