

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2022-584

Anonymous Referee #2

Referee comment on "Long-term upper-troposphere climatology of potential contrail occurrence over the Paris area derived from radiosonde observations" by Kevin Wolf et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-584-RC2>, 2022

This study investigates the presence of conditions favorable to the occurrence of persistent and non-persistent contrails. Radiosonde ascents in the vicinity of Paris, which are combined with flight altitudes of aircraft in this area, serve as the basis for this investigation. In this way, for example, a common probability can be estimated that an aircraft flies through an area that fulfills the conditions for the formation of condensation trails.

This is a conscientiously conducted study with interesting results that fit very well into the scope of ACP. I recommend publication with minor revisions.

Comments

- Is there a reason that for the calculations of the saturation water vapor pressure over liquid water the equation after Sonntag (1994) is used? Wouldn't it be more consistent to use the Murphy and Koop (2005) method also for `e_sat_liq` (as it is already done for `sat_ice`)?
- In order to help readers better understand the results, a rough quantitative estimate of the possible disadvantages of higher / lower altitudes would be helpful.
- The illustrations are very clear and meaningful. Nevertheless, an indication of the percentiles for the tropopause (Fig. 5) and jet stream height (Fig. 6) would be desirable in order to gain an impression of their variability.
- P11L258: „Profiles for which the temperature inversion was weak and the TT altitude was not clearly identifiable are removed from the analysis.“ What exactly do you mean with „weak“? How do you define this „weakness“?
- P14L332: "The smallest distances are identified in March and November with the jet stream at the same altitude as for R2." For me it seems that the distance in April is smaller than the distance in March. Typo?
- P12 L278 "similarly to R2-PC conditions" - you mean R1-NPC? Typo?
- P14L331: "Similarly Fig 6b..." you mean Fig 6c?

Misc.

- P12 L273. R1-NOC should be R1-NPC
- Sometimes R2 is used, other times R2-PC (same for R1 and R1-NPC). Please use consistent labeling in the text and graphics.