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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Suppression of chlorine activation on aviation-produced volatile particles" *by* S. K. Meilinger et al.

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The comments below only contain those aspects that have been raised in an earlier review.

In the introduction you give the impression that the highest aircraft-induced chemical ozone depletion in 3D global models is coupled to the lowest temperatures at high latitudes. I think this is somewhat misleading. The highest ozone depletion area is a combination of transport and chemistry. The chemistry mainly occurs at mid-latitudes and is then transported to high latitudes and accumulates. Note that in most global models heterogeneous chemistry on aerosols at mid-latitudes is mainly driven by N2O5 and BrONO2 hydrolysis only.

My earlier remark about the impression that the large enhancement of background

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aerosol at low temperatures was coupled to scavenging of small exhaust aerosols is now clearly clarified by the statements that they grow by HNO3 uptake. However, I still would like to know what the consequences are for the long-term background aerosol enhancement by aircraft exhaust. Are the conclusions from Kaercher and Meilinger (1998) still valid, namely and enhancement up to 20%? This is somewhat unclear in the text.

The last point I raised concerned heterogeneous chemistry on ice particles. I understand that your conclusions hold for temperatures below the ice frost point (which is about 207 K at cruising altitudes). I think it is important that the recommendation for global modellers should also contain a statement about the uptake process on ice surfaces. If it beyond the scope of this work, you could at least warn the modellers that on this aspect there is very large uncertainty. Or even that the current understanding is so poor that modellers are forced to treat this process similar as under PSC conditions for the time being.

Interactive comment on Atmos. Chem. Phys. Discuss., 2, 983, 2002.