

Interactive comment on “Dehydration effects from contrails in a coupled contrail–climate model” by U. Schumann et al.

Anonymous Referee #1

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General comments: This paper is an important contribution, presenting quantitative estimates of dehydration effects of contrails at flight levels and release of water after ice particle advection and sedimentation. Individual contrails are simulated by coupling a plume-scale contrail model with a global aerosol–climate model. Statistical contrail ensemble properties are as expected from present understanding and consistent with available observations. The radiative forcing from contrails and dehydration is estimated. Many results are new and important for understanding total effect on climate by aircraft. The manuscript is well written and the results are clearly presented. I recommend that this paper is published with minor revisions. There are only a few suggestions for revisions as described below.

Minor points: Figs. 3 and 4: According to the manuscript, these figures are wrongly
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interchanged.

Page 19573, line 14: Definition of “cirrus” cloud is ambiguous because many definitions are present in the literature. Particularly, it is not clear whether it includes sub-visual cirrus, thin and opaque cirrus clouds. Optical thickness range should be explained for clarity.

Page 19573, line 22: Authors describe differences of estimated contrail cover from previous estimates in detail and suggest possible reasons, but it is not clear whether the 5-times larger contrail cover a better estimate than previous ones.

Page 19578, Line 5: A typo, “variably”, should be “variability”

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 19553, 2015.