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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Relating observations of contrail persistence to numerical weather analysis output" *by* D. P. Duda et al.

Anonymous Referee #1

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This paper analyses two datasets of contrail and cirrus occurrence, based on satellite and surface observations, against meteorological variables from analysis and forecast systems. It is shown that the upper troposphere humidity is the main variable that controls the occurrence of cirrus and contrails. However, the skill at predicting contrail occurrence remains rather low, a likely explanation of which is a dry bias in the models.

The paper is clear and well written. The conclusions are well in line with the results. The study can be of use to those who want to include contrail formation in meteorological and climate models (to warn them of the difficulty of this task…)

The paper can be published with very little changes. I make a few comments that the authors should consider: • Although the last sentence of the abstract does

make sense, it is a speculation and not a result of the work. As such, it could be removed. • I am surprised that the occurrence of flight is not accounted for in the contrail occurrence prediction. Do the authors assume that, because the locations are highly populated, flight occurrence is not a limiting factor ? If so, it should be more clearly stated. • Towards the en of section 3, it is said “As expected, the cirrus occurrence forecasts were much better than the contrail occurrence”. Why “as expected” ? • I am very surprised by the very last sentence of section 3. “The higher cirrus skill scores confirm that the model analyses do much better representing moisture where cirrus appears than where persistent contrails appear”. I do not see the logic here. There may be other hypothesis than the humidity representation to explain a lack of skill in predicting contrails. • Figure 1: Please give units for the cumulative flight length.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 18385, 2008.

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Interactive Comment