Earth Syst. Dynam. Discuss., 6, C230–C231, 2015
www.earth-syst-dynam-discuss.net/6/C230/2015/


Earth System Dynamics
Discussions

# *Interactive comment on* "Ice-supersaturation and the potential for contrail formation in a changing climate" *by* E. A. Irvine and K. P. Shine

**Anonymous Referee #3**

Received and published: 6 May 2015

This manuscript addresses an important question concerning the future changes in potential contrail coverage as a result of climate change, by analysing multi-model results of the combined evolution of ice-supersaturation and temperature atmospheric fields over the twenty-first century. The relevance of this topic is related to the large relative contribution from contrails and contrail-cirrus to the total radiative forcing from aircraft, as well as to the need for improving our understanding of the feedbacks between the formation and radiative impacts of cirrus in a warming atmosphere.

The paper is clearly written, and describes a long due multi-model comparison of predicted ISS changes. The results will help the evaluation of the conclusions from previous contrail studies based on single model runs. The manuscript describes a sound methodology and provides a clear regional and seasonal analysis of its results. It



concludes that the largest ISS changes are expected in the tropics, with a 9% reduction, mainly driven by a warming in the upper troposphere, while Polar Regions in the Northern Hemisphere will show a 5% increase. More modest changes are predicted at mid-latitudes.

In my opinion the scientific contribution and the quality of the manuscript fulfills all the requirements to be published in ESD in its present version.

Minor suggestions: Section 4 line 17 "are" should be "is". The distribution of the profiles in Fig. 7 could be changed to increase their size.

---

Interactive comment on Earth Syst. Dynam. Discuss., 6, 317, 2015.