Atmos. Chem. Phys. Discuss., 4, S2257–S2259, 2004
www.atmos-chem-phys.org/acpd/4/S2257/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Is there a trend in cirrus cloud cover due to aircraft traffic?" *by* F. Stordal et al.

Anonymous Referee #3

Received and published: 29 October 2004

General comments: The paper presents results of a satellite data analysis of global and regional cirrus coverage and its temporal trend in correlation with aircraft traffic increase since 1984. The authors use ISCCP cloud data as well as similar data from an own study together with model data of air traffic development. The results hint at a systematic increase of cirrus cloudiness in regions of strong and increasing air traffic since 1984. Studies like these represent important contributions to our knowledge of the influence of air-plane traffic on the climate system. As the detection of optically thin cirrus in satellite data is still a difficult and error prone task the conclusions of the present study cannot be expected to be too reliable. Nevertheless, the present paper adds another piece of plausible evidence that airplane traffic may have some - though fairly small - impact on cirrus cloudiness. Therefore the present manuscript is a useful contribution to the advancement of climate science and should be published

Full Screen / Esc
Print Version
Interactive Discussion
Discussion Paper

after considering the following issues:

Specific comments:

1. It does not become very clear why the second satellite analysis (introduced in ch. 2.2, p6478, l20ff) is necessary for the present study in addition to the well established ISCCP climatology. This second technique has obviously not been published before or at least no references are given. But the reader does not get enough information about the used meth-ods and the resulting data quality. Fig. 2 is (even with an acceptable graphic layout) not enough to convince the reader about the validity of deviations from the ISCCP results. On the other hand such an unvalidated data set cannot be used to support the well established ISCCP results. Differences may well be due to the very different sampling that is based on only 4 years of data from only one daily slot. So why is it at all included in the presented analysis ? One argument (p6479, l25-26) of the authors is that the NAFC could be covered only by Meteosat cloud data. Nothing is however said in this context about the problems with the large inclination angle in the western part of the NAFC in this case. The authors seem to be happy to use METEOSAT data all the way out to about 70 deg. zenith angle, which seems very dangerous for quantitative analysis.

2. p6482, l7f : Why is a forecast necessary for the data of the year 2000, why is not just the observation used as for the earlier years ?

3. Figs. 4+5: Without any indication of the significance of the plotted trends hardly any interpretation can be justified. Fig. 4: The trend signature over the subtropical North Atlantic looks very much like an artefact from undetected Sahara dust outbreaks, caused by spurious contributions from scattered sunlight.

4. Fig. 6: What does this figure tell the reader more than the figures before? Can be removed.

Technical issues:

ACPD

4, S2257–S2259, 2004

5. Figs. 1-3: Why are different major and minor lat/lon axis tick spacings and labels used? Why are odd numbers used as major tick labels, which makes it very difficult to compare anything? Why is in Fig. 2 only the data field plotted and no axis or labels at all? Why is the plot size here by about 50% larger than in Fig 1?

6. Figs. 4+5: Why are the abscissa tick spacings set to these odd values and not to e.g. 20 deg ?

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 6473, 2004.