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## Is there a trend in cirrus cloud cover due to aircraft traffic?

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**Abstract.** Trends in cirrus cloud cover have been estimated based on 16 years of data from ISCCP (International Satellite Cloud Climatology Project). The results have been spatially correlated with aircraft density data to determine the changes in cirrus cloud cover due to aircraft traffic. The correlations are only moderate, as many other factors have also contributed to changes in cirrus. Still we regard the results to be indicative of an impact of aircraft on cirrus amount. The main emphasis of our study is on the area covered by the METEOSAT satellite to avoid trends in the ISCCP data resulting from changing satellite viewing geometry. In Europe, which is within the METEOSAT region, we find indications of a trend of about 1-2% cloud cover per decade due to aircraft, in reasonable agreement with previous studies. The positive trend in cirrus in areas of high aircraft traffic contrasts with a general negative trend in cirrus. Extrapolation in time to cover the entire period of aircraft operations and in space to cover the global scale yields a mean estimate of  $0.03 \text{ Wm}^{-2}$  (lower limit  $0.01$ , upper limit  $0.08 \text{ Wm}^{-2}$ ) for the radiative forcing due to aircraft induced cirrus. The mean is close to the value given by IPCC (1999) as an upper limit.

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