Contrail observations over Southern and Eastern Asia in NOAA/AVHRR data and comparisons to contrail simulations in a GCM

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Abstract

For the first time the contrail cover for a region covering Thailand and surrounding regions as well as for the region of Japan and its surroundings are determined by remote sensing observations. Locally received NOAA/AVHRR satellite data are analysed by a fully automated contrail detection algorithm. For both regions approx. 400 NOAA-14 satellite scenes from four months of the year 1998 were analysed. Both regions show sufficient air traffic to produce an observable amount of contrails. Thus we are able to measure for the first time contrail frequencies in the tropics and compare it to a nearby mid latitudinal region. The annual average of the daily mean contrail cloud coverage is 0.13% for the Thailand region and about 0.25% for the Japan region. For both regions the contrail cover is largest during spring. The daily cycle shows surprisingly high contrail coverage during night in spite of lower air traffic densities during night time. The satellite observed contrail cover is compared with simulations of