

## **CONTRAIL COVERAGE AND RADIATIVE PROPERTIES OVER THE USA FROM AVHRR DATA**

R. Palikonda (1), P. Minnis (2), H. Mannstein (3)

(1) AS&M, Inc., Hampton, Virginia, (2) NASA Langley Research Center, (3) DLR-Institut für Physik der Atmosphäre  
r.palikonda@larc.nasa.gov/Fax 1-757-827-8659

Contrails have been recognized as a factor for potential climate change. Determining their coverage, optical properties, and radiative effects is critical for understanding their impact on climate. While several studies have quantified linear contrail coverage over the North Atlantic and Europe, the statistics of contrail coverage and radiative properties due to the heavy air traffic over the United States of America (USA) are inadequately known. This study analyzes 1-km, multispectral Advanced Very High Resolution Radiometer (AVHRR) data taken during 1992-1995 to derive the seasonal and geographical distribution of contrail coverage and mean contrail microphysical and radiative properties over the USA. Additional analyses over selected parts of the USA are performed to determine the variation in contrail coverage from 1992-1999. The analyses employ a combination of image processing techniques used to delineate European contrails and the Cloud and Earth's Radiant Energy System (CERES) project cloud property retrieval method. Contrail effective particle sizes and optical depths and contrail radiative forcing are computed from the AVHRR data. Initial results indicate greater contrail coverage and more radiative forcing than previously estimated. These results have important implications for the climatic effects of future air traffic.