

SYNOPTIC SCALE VARIABILITY IN THE DISTRIBUTION OF
STRATOSPHERIC AEROSOLS AS REVEALED BY AIRBORNE LIDAR

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ABSTRACT

During the late winter and early spring of 1973, airborne measurements of stratospheric aerosols were collected under a jointly sponsored NCAR/DOT program. Detailed analyses of a portion of the data from these experiments will be presented. They show the distribution of stratospheric aerosols to be quite variable spatially and temporally, but highly organized when compared to isentropic analyses of the corresponding meteorological data.

Earlier in-situ samples of stratospheric aerosols collected by balloon and aircraft borne instrumentation and by ground-based lidar have produced mean distributions of the concentration of aerosols within the lower stratosphere as well as indications of their seasonal and long term trends. No previous experiments, though, have been capable of recording and interpreting their synoptic scale variability

The airborne platform has allowed us to traverse synoptic scale meteorological features. Further, isentropic analysis procedures developed at NCAR have supplied both the accurate stratospheric density measurements required for the reduction of the lidar data, and the detailed meteorological analyses necessary for their correct interpretation. This paper emphasizes the importance of meteorological considerations in the analysis and interpretation of lidar measurements.

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