# LIDAR MEASUREMENTS OF THE VERTICAL DISTRIBUTION OF OPTICAL DEPTH AND AEROSOL BACKSCATTER IN THE TROPOSPHERE

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ABSTRACT

The vertical distributions of optical depth and aerosol backscatter can be determined directly from multiple slant path lidar returns. The technique assumes horizontal and temporal homogeneity. Experimentally, the technique depends critically upon the accuracy with which backscatter returns may be acquired.

The University of Arizona digital monostatic lidar system is capable of obtaining slant path measurements which yield useful data to a maximum height of about 5 km. The partial optical depths thus obtained have been used in conjunction with total optical depth measurements determined with the University of Arizona solar radiometer By assuming a functional form of the aerosol-height profile above the maximum height of the lidar returns, a complete aerosol-height profile may thus be obtained. Results of the above technique are presented, and compared with standard profiles proposed by Elterman.