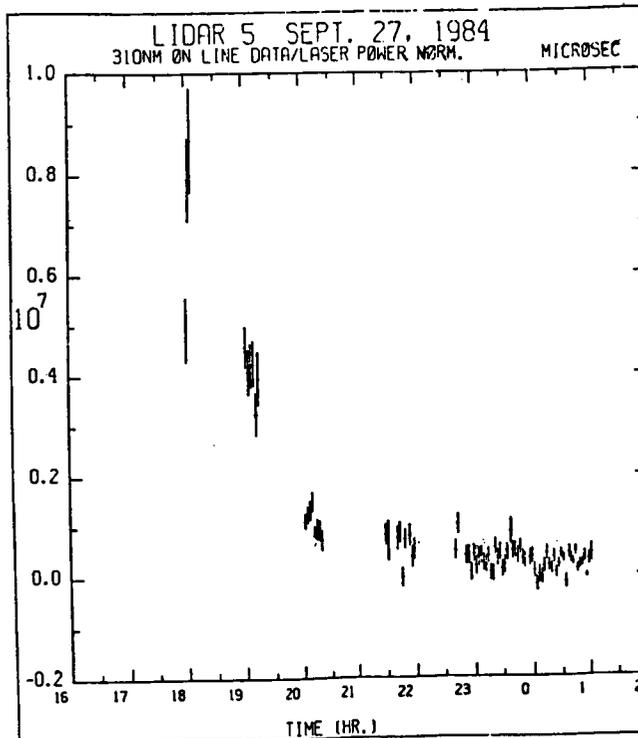


IMPROVEMENTS IN THE GODDARD BALLOON-BORNE LIDAR

William S. Heaps, Laboratory for Atmospheres, NASA Goddard Space Flight Center Greenbelt, Maryland, U.S.A.

The Goddard balloon-borne lidar system for the measurement of stratospheric ozone and the hydroxyl radical has made three additional flights since the last laser radar conference. On September 27, 1984 a flight was made from Palestine, Texas obtaining a measurement of hydroxyl diurnal variation at 36 km. These data are presented on the plot which shows hydroxyl concentration as a function of GMT for the range cell closest to the instrument. Local noon corresponds to 18 hours on the plot. The rapid drop in concentration after noon is not predicted by models of stratospheric chemistry. It may represent the effects of contamination of the sample volume by hydrocarbons outgassed from the balloon.



The more recent flights on June 30, 1985 and December 6, 1985 focussed on measurements of concentration in the lower stratosphere (<30 km). The June flight succeeded in obtaining an average concentration measurement ($1.8 \pm 1.8 \times 10^6$ molecules/cm³) over the altitude range 21-26 km. The December flight obtained measurements down to 24 km with a better SNR than that obtained in June. Prospects for further improvement in sensitivity and absolute calibration will be discussed.