

LIDAR MEASUREMENTS OF THE THERMIC STRUCTURE IN THE TROPOSPHERE

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ABSTRACT

Lidar measurements by UTHE (1972) and similar measurements with acoustic radar by HALL (1972) have shown, that short time variations in the troposphere can be determined.

Aerosol backscatter measurements give the vertical structure. A series of such results shows the time variation of the tropospheric structure. The Figure is an example for a measuring period during half an hour in summer 1972 (1 pulse per minute). These variations were produced by humidity variations. For example, at humidity variations from 75% to 77% aerosol particles with 1 micron radius change their radii during 50 to 100 milliseconds. By lidar technique it is possible to determine this effect qualitatively. With a pulse repetition rate of 1 per second we plan to investigate the thermic structure at different weather conditions.

By simultaneous measurements of the nitrogen Raman component it would be possible to compare the short time variations by temperature and humidity. The influence of wind can be determined by scanning a defined region (region or space).

The meteorologist is interested in results of short time variations in the troposphere (microscale). By this remote sensing method he can get these values continuously.

UTHE, E. E. 1972: 4th laser radar conference, Tucson

HALL, F. F. 1972: Short Course in Remote Sensing, Boulder

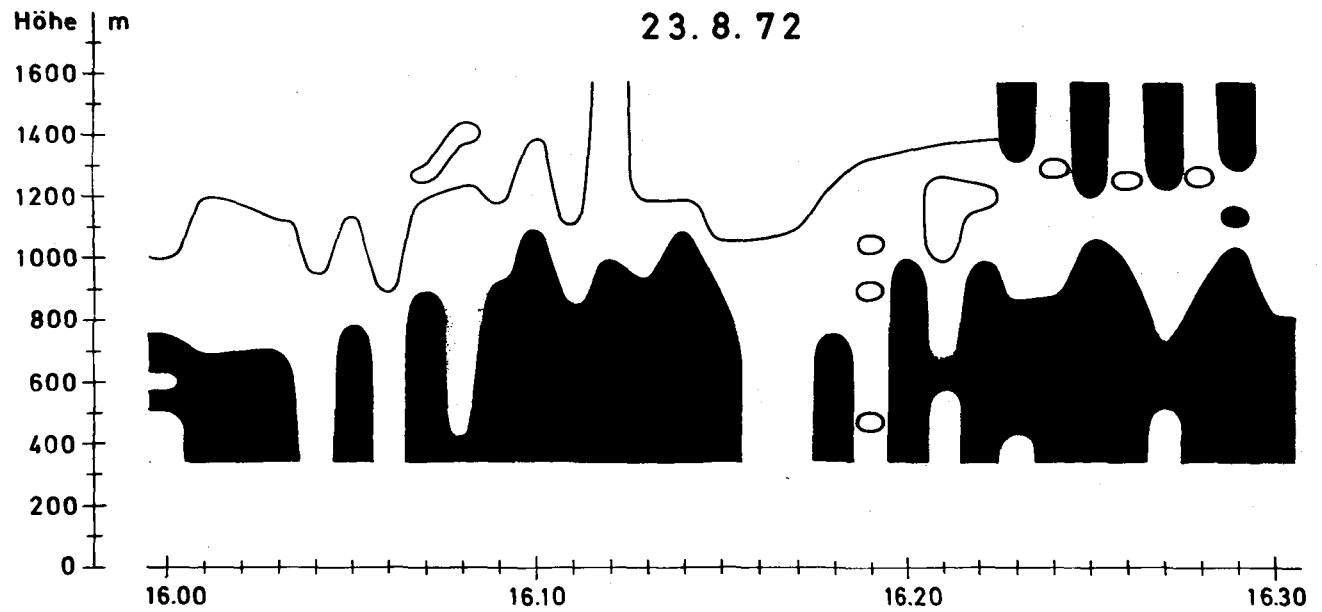


Figure : Time variation of the tropospheric structure