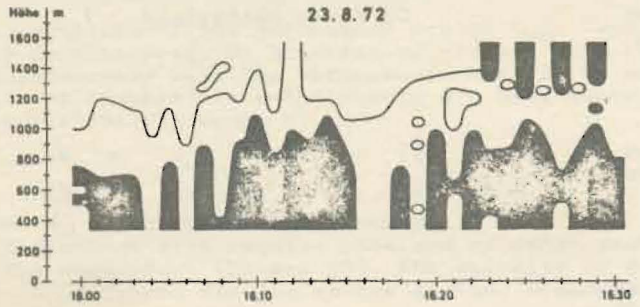
humidity variations from 75 % to 77 % aerosol particles with 1 micron radius change their radii during 5o to loo milliseconds. By lidar technique it is possible to determine this effect qualitatively. With a puls repetition rate of 1 per second we plan to investigate the thermic structure at different 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 difined 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 contineously.



Turbulence Measurements in the Atmospheric Turbulent Boundary Layer over the Open Ocean. Measurements of the three components of velocity, temperature, and humidity in the atmospheric turbulent boundary layer over the open ocean carried out from the Scripps' stable platform FLIP are described. These measurements were obtained to investigate the generation of open surface waves by the wind and possible internal-surface wave interactions. Micrometeorological instrumentation included a three component sonic anemometer, hot-film and cup anemometers, high frequency bridges with o.6 μ platinum temperature wires, quartz-thermometer probes, and Lyman-α humidiometers. Motions of FLIP were measured with a high precision (5o x 10^{-6} g and o.o1° resolution) inertial reference platform to allow for accurate correction of the velocity and wave signals for motion induced effects. Fluxes of momentum, sensible and latent heat were computed from spectra using the dissipation technique and compared to direct Reynolds flux calculations.

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Determination of the Vertical Turbulent Fluxes of Momentum and Sensible Heat from the "Spectral Density Technique" Compared with Eddy Correlation and Profile Measurements above the Sea. During the Atlantic Trade Wind Experiment (ATEX, 1969) fluctuation measurements of horizontal and vertical wind speed and temperature were performed. The sensors were mounted at a servo-stabilized mast on a nearly wave following buoy at 2.4 m height above the instantaneous water surface.

From eddy correlation method we obtain a drag coefficient $c_D = 1.4 \times 10^{-3}$, whereas the "spectral density (ϕ_{11})", technique yields a smaller value especially for those cases where the ratio between vertical and horizontal wind speed spectrum is near 4/3, indicating local isotropy. This result, which differs from most other measurements, may be due to the wave influenced wind field. In contrast the profile method reveals a greater value of c_D.
For sensible heat flux, the eddy correlation method yields rather high values showing a poor correlation with the parameter product $U\Delta\Theta$. The "spectral density technique" gives heat fluxes in agreement with direct measurements only if the corresponding Kolmogorov constant would be 2.1 instead of .8 as usual.

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