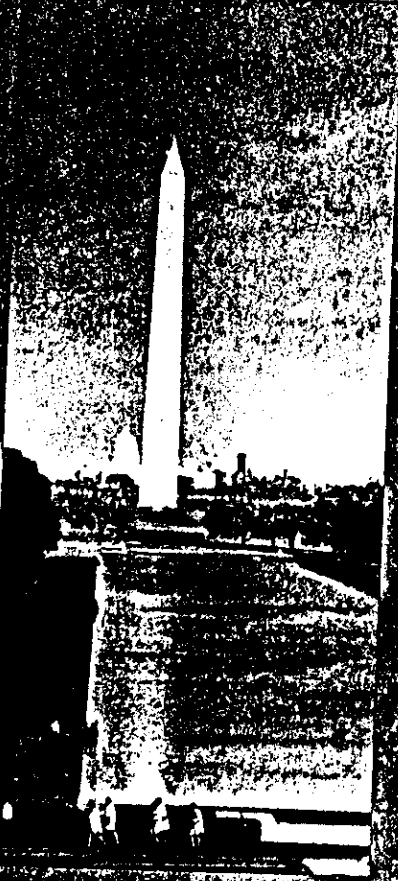
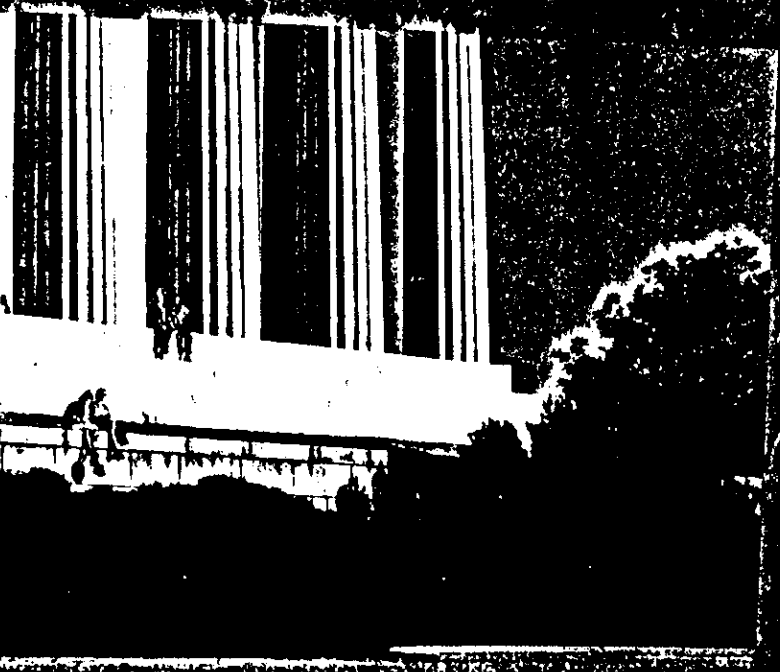


20 APR 1977

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52ND ANNUAL MEETING

WASHINGTON, D.C.
APRIL 12-16

horizontal and vertical exchange in the urban boundary layer is discussed in relation to a two-level transport model.

Measure
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METEOROLOGICAL MEASUREMENT TECHNIQUES (M)

Dover Room

Thursday 0830h

Chairman: MORTON BARAD (Air Force Cambridge Research Labs, Bedford, Mass.)

25 min
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arch,
80302

Measurement of Cloud Backscatter Polarization Using a Pulsed Ruby Lidar. Measurements of the polarization of the backscattered energy from various types of clouds have been made using a horizontally-polarized, Q-switched ruby Lidar. The measurements were made at selected elevation angles and fields of view. The Stokes parameters describing the return polarization state were uniquely determined. The notable feature of the return polarization is the significant change in state for all but the thinnest clouds. In addition, the Stokes parameters each have a similar time development and indicate a significant degree of depolarization. These observations are compared with the predictions of various theories.

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Stratospheric and Mesospheric Winds Measured with the Jicamarca Radar. A radar technique has been implemented at the Jicamarca Radar Observatory to measure winds in the upper atmosphere. Backscattered echoes of sufficient strength are received from stratospheric heights in the 20 to 30 km region and from mesospheric heights in the 70 to 85 km. Doppler shift measurements are taken every minute in two different directions. A two dimensional velocity vector projection of the neutral wind is derived, either in the vertical N-S plane or in the vertical E-W plane. The time resolution is sufficient to resolve gravity wave periods, as well as tidal waves and prevailing winds components. The tidal component is found to be much lower than the magnitude predicted by Lindzen. The future potential of the technique is discussed.

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720

Preliminary Results of Utilizing the High Resolution - FM Radar as a Boundary Layer Probe. Comparison of meteorological tower measurements with a high resolution CW-FM radar indicates that the radar system is applicable to studies of structure of temperature inversions, stable and unstable waves upon such inversions, thermal plumes and convective processes within the boundary layer. The radar also appears to follow the transport of insects by such processes.

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Jolo.

On-Board Divergence Computer and Display System. For meso scale research purposes a near real-time determination of the flow into or out of a storm system at certain levels is of great importance. By flying at a constant level around the system and feeding wind and location into an on-board minicomputer it is possible to obtain the information at the moment the computer determines that the flight loop is closed.

Parallel to the computation, points of the flight path with wind vectors and properly oriented radar returns are presented on a cathode ray screen to enable an optimization of the flight path.

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Chem. Lab
r. Colo.

Three possible coordinate systems: ground oriented, moving with the mean wind, and moving with the mean storm motion will be weighed as to their merit and shortcomings.

Weickmann

A graph of the divergence error for errors in ground speed, air speed, drift and heading provides the confidence level for the method used.

Geological
Columbia
s, N. Y.

Automated Shipboard Sampling System for Continental Source Particulate Air Pollutants. Attempts to collect filter samples of air pollutants transported from the continents over the world's oceans gives rise to many problems. Sample contamination, a serious problem, may result from: 1) the ship's stacks; 2) local wind eddies; 3) sea salt spray; and 4) the pump used for sample collection. To circumvent such contamination a special collection system has been designed and installed on the R/V TRIDENT. To remove the filter from contamination an 8 meter high A-frame tower has been attached to the bow of the ship. The tower can be raised and lowered by a winch to change samples. The filter holder is attached to the top of the tower three meters above the pump. A wind operated selected sector activator controls the pump such that samples are collected only when the wind direction ensures that no material emanating from the ship will be collected. When the wind is from a direction permitting contamination, the pump is automatically shut off and a door on the filter holder is closed to protect the filter. A recording condensation nucleus counter with inlet next to the filter, is used to indicate if ship produced contamination occurs during sample collection. Relative wind speed and direction are also recorded during collection. Preliminary results indicate this to be a reliable method for the collection of uncontaminated samples.

M65
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