THE USE OF ARL TRAJECTORIES FOR THE EVALUATION OF PRECIPITATION CHEMISTRY DATA

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ABSTRACT

One of the major problems in interpreting precipitation chemistry data is determining the possible source areas of the materials found in the precipitation. To investigate this problem, the trajectory program developed at Air Resources Laboratories (NOAA) was used to compute five-day backward air trajectories from Ithaca, New York (1).

Two types of precipitation collections were made at Ithaca, New York, during the period of study (August 1974 to January 1975). These were weekly composite samples and samples taken on an individual event basis. In the first case, we conclude that trajectories are not useful to investigate source areas for materials in composite precipitation chemistry samples because of the many trajectories that represent the air movements over a given week. This result suggests that a monitoring network would require some sampling of individual events to evaluate source areas of acid precipitation.

The trajectory program also was used to investigate individual event cases during the period. Unfortunately, there was not enough data to make a definitive conclusion. As more chemical data on individual events become available, it is hoped that a pattern of sources can be established for Ithaca.

We feel that the trajectory technique has great potential in evaluating the source areas for chemical components in precipitation.

(1) Heffter, J. L., A. D. Taylor and G. J. Ferber. 1975. A Regional-Continental Scale Trajectory, Diffusion and Deposition Model. National Oceanic and Atmospheric Administration Technical Memorandum Environmental Research Laboratories - Atmospheric Research Laboratories. (In prep.)