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Research Triangle Park NC 27711

Research and Development

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Project Summary

Analysis of Acid Precipitation Samples Collected by State Agengies—Sampling Period January 1993–December 1993

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This report presents analytical data from the 29 acid precipitation collection sites in the State-Operated Network that were operational in 1993. Samples are collected weekly in plastic bag liners and shipped in 500 mL polyethylene bottles to Global Geochemistry Corporation (the central laboratory for the network). This report contains maps showing the location of each site, plots of analytical data, tables of all field and analytical data, plots comparing field and laboratory pH and conductivity, and information on data quality. Samples are analyzed for pH, strong acid, conductivity, fluoride, chloride, nitrite, phosphate, bromide, nitrate, sulfate, ammonium, sodium, potassium, calcium, and magnesium. The central laboratory renders technical assistance to the collection sites on problems concerning pH and conductivity. Each of the ten participating state agencies receives analytical reports for the samples analyzed the previous month. Analyte concentration data are put on tape for later inclusion in a national acid deposition data base.

This Project Summary was developed by EPA's National Exposure Research Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

The main report presents analytical data from the 29 acid precipitation collection sites in the State-Operated Network for the year 1993. Samples are collected weekly in plastic bags inserted in buckets and shipped in 500 mL polyethylene bottles to Global Geochemistry Corporation (the central laboratory for the network). Global Geochemistry analyzes the samples and monthly sends a report of the analytical results to each site. Global Geochemistry also summarizes these results on magnetic tape for inclusion in a national acid deposition data base. Individuals concerned with the collection and interpretation of acid precipitation sample results will find this report of interest.

Overview of Network Operation and Sample Analysis

The central laboratory analyzes weekly acid precipitation samples for pH, strong acid, conductivity, fluoride, chloride, bromide, nitrate, nitrite, sulfate, phosphate, ammonium, sodium, potassium, calcium, and magnesium. The methods indicated in Table I are used for these analytes.

The State-Operated Network collects weekly samples using a wet/dry bucket collector. Samples are collected in a plastic bag inserted in the bucket; an aliquot of the collected sample is sent to the central laboratory in a 500 mL polyethylene bottle at ambient temperature (except for one site that ships samples in a cooler). The locations of the network sites are shown in Figure 1.

The central laboratory provides plastic bucket liners, 500 mL sample bottles, field data sheets, pH and conductivity solutions, and other supplies incidental to collecting and shipping a collected rain sample. The central laboratory also pro-

Table 1. *Method Used for Selected Analytes*

Analyte	*Analytical Method*	*Methodology*
pH	*EPA Method 150.1*	*pH Electrode*
Conductivity	*EPA Method 120.1*	*Conductivity*
Acidity	*Gran Titration*	*Titration*
Cl, $P0_4$, $S0_4$ $N0_3$, F, Br, $N0_2$	*EPA Method 300. 0*	*Ion Chromatograph*
NH_4	*EPA Method 350.1*	*Colorimetric*
Na, K, Ca, Mg	*EPA Methods 273. 1, 258.1, 215.1, 242.1*	*Atomic absorption for Ca, Mg, Flame Emission for Na, K*

vides technical assistance whenever it is requested by a field site. This assistance consists mostly of field pH and conductivity measurement procedures and equipment.

Monthly, the central laboratory sends a report to each state agency describing the analytical results for all samples analyzed from that agency's sites for the last month. The central laboratory also summarizes the analytical results for all the sites on magnetic tape.

Report Contents

The report contains a table showing the latitude and longitude of each of the sites. It also contains plots of analytical data for each site during the time period, tables of all field and analytical data, a comparison of analyte concentrations at all sites (frequency of occurrence), precipitation weighted data for each site, plots comparing field and laboratory pH and conductivity, and quality control tables and plots.

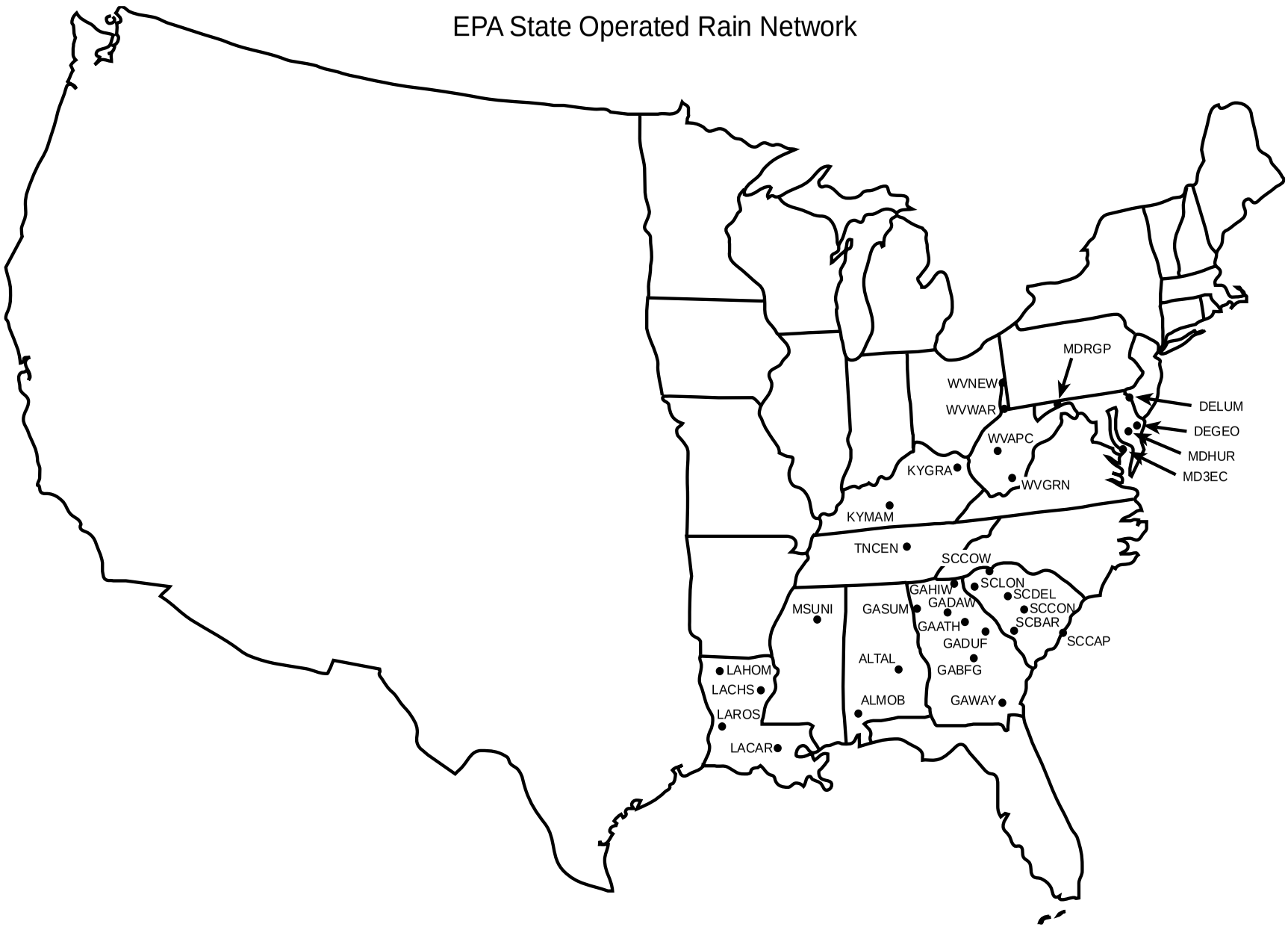

Figure 1. Location of sampling sites.

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The complete report, entitled "Analysis of Acid Precipitation Samples Collected by State Agengies—Sampling Period January 1993–December 1993," (Order No. PB96-175245; Cost: $44.00, subject to change) will be available only from
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