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ADDNET Notebook:

Documentation of the Acid Deposition Data Network (ADDNET) Data Base Supporting the National Acid Precipitation Assessment Program

R. J. Olson
L. J. Allison
I. L. McCollough

Environmental Sciences Division

Publication No. 2755

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ORNL/TM-10086

ENVIRONMENTAL SCIENCES DIVISION

ADDNET NOTEBOOK:

DOCUMENTATION OF THE ACID DEPOSITION DATA NETWORK (ADDNET) DATA BASE SUPPORTING THE NATIONAL ACID PRECIPITATION ASSESSMENT PROGRAM[1]

R. J. Olson, L. J. Allison,[2] and I. L. McCollough[3]

Environmental Sciences Division
Publication No. 2755

---

[1]Research sponsored as part of the National Acid Precipitation Assessment Program by the Office of Energy Research and the Office of Environmental Analysis, U.S. Department of Energy, and by the Office of Research and Development, U.S. Environmental Protection Agency.

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DISCLAIMER

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PREFACE

The Interagency Task Force on Acid Precipitation was established by the Acid Precipitation Act of 1980 to plan and manage the National Acid Precipitation Assessment Program (NAPAP). The purpose of NAPAP is to reduce the scientific uncertainty associated with acidic deposition issues so that rational control strategies can be achieved. In 1982, the Task Force established ten working-level task groups (listed below), one for each of NAPAP's nine research areas and one for international activities. These task groups are responsible for detailed planning and work in their respective areas. In November 1983, the Acid Deposition Assessment Staff of Task Group I established the Acid Deposition Data Network (ADDNET), to help ensure the timely exchange of accurate data among NAPAP Task Groups and between NAPAP and other data sources.

Task group	Title
A	Natural Sources
B	Man-Made Sources
C	Atmospheric Processes
D	Deposition Monitoring
E	Aquatic Effects
F	Terrestrial Effects
G	Effects on Materials and Cultural Resources
H	Control Technologies
I	Assessments
J	International Affairs

CONTENTS

	Page
LIST OF FIGURES	vii
LIST OF TABLES	ix
ACKNOWLEDGMENTS	xi
ABSTRACT	xiii
1. INTRODUCTION	1
1.1 SCOPE OF THE ADDNET NOTEBOOK	4
1.2 HOW ADDNET WORKS	4
2. DATA COORDINATION	8
2.1 DATA NEEDS INVENTORY	9
2.2 DATA SOURCES INVENTORY	11
2.3 SUBMITTING DATA TO ADDNET	12
2.4 REQUESTING DATA FROM ADDNET	17
2.5 CONTACT NETWORK	20
3. SPATIAL AND TEMPORAL CONSIDERATIONS	21
3.1 SPATIAL UNITS	21
3.2 TEMPORAL UNITS	26
4. DATA BASE ADMINISTRATION	27
4.1 CENTRAL DATA REPOSITORY	27
4.2 DATA BASE MANAGEMENT	28
4.2.1 SAS Software System	28
4.2.2 Graphics Display Programs	31
4.3 DATA BASE CONVENTIONS	35
4.3.1 Units of Measure	35
4.3.2 Variable Names and Labels	35
4.3.3 Data Set Characteristics	35
4.3.4 Special Output Formats	38
4.4 PROCESSING NEW DATA	39
4.5 QUALITY ASSURANCE	43
4.6 DATA EXCHANGE FORMATS	45
4.6.1 Documentation	46
4.6.2 Tape Format.	46
4.6.3 File Structure	47
4.6.4 File Contents	47

Page

4.7 DATA SECURITY 47

4.7.1 Protection from Data Corruption or Loss 47

4.7.2 Prevention of Illegal Access 48

5. DATA BASE CONTENTS 49

5.1 AGRICULTURE (A) 49

5.2 BASE DATA (B) 49

5.3 CLIMATE (C). 52

5.4 VEGETATION (D) 52

5.5 FORESTRY (F) 52

5.6 GENERAL (G) 52

5.7 INTEGRATED ANALYSES (I) 53

5.8 AIR QUALITY (K) 53

5.9 LAND USE/LAND COVER (L) 53

5.10 POPULATION (P) 53

5.11 AQUATIC BIOTA/WATER QUALITY (Q) 54

5.12 TERRAIN (T) 54

6. USING THE ADDNET DATA BASE -- EXAMPLES 55

6.1 DATA SET CONTENTS 56

6.2 MERGING DATA SETS 56

6.3 REPORT GENERATION 60

6.4 STATISTICAL ANALYSIS 61

6.5 GRAPHICS 63

6.6 CARTOGRAPHICS 65

6.7 DATA EXCHANGE 67

7. ACRONYMS 68

8. REFERENCES 70

APPENDIX A. ADDNET DATA BASE: DATA SET DOCUMENTATION A-1

APPENDIX B. INDEX OF DATA SET VARIABLES B-1

APPENDIX C. ADDNET CONTACT NETWORK C-1

APPENDIX D. ADDNET NOTES D-1

APPENDIX E. FEEDBACK FORM E-1

LIST OF FIGURES

Figure		Page
1	NAPAP Data Needs Inventory Form	10
2	NAPAP Data Base Description Form	13
3	NAPAP Data Base Descriptor Fields	15
4	Number of ADDNET data requests by request type	19
5	Number of ADDNET data requests by task group	19
6	Number of ADDNET data requests by month	19
7	How SAS is used within the ADDNET Data Base	29
8	Flow of new data into the ADDNET Data Base	41
9	ADDNET data set processing form	42
10	Example 1 output: Displaying the directory of the online ADDNET Data Base	57
11	Example 1 output: Displaying the contents of individual ADDNET data sets	58
12	Examples 2 and 3 output: Integrating three data sets and generating a county-level report	62
13	Example 4 output: Calculating a summary table using a SAS statistical procedure	63
14	Example 5 output: Producing an X-Y plot using PROC GPLOT	64
15	Example 6 output: A map produced using PROC GMAP . . .	66

LIST OF TABLES

Table		Page
1	Contents of the ADDNET Data Base by subject matter: Data set numbers (DSN) and titles of certified data sets, October 1985	2
2	FIPS state and province codes used in the ADDNET Data Base	23
3	Counties containing aggregated data from associated independent cities within the ADDNET Data Base	24
4	County units causing confusion as the result of historical changes	25
5	Data set DSETS: Reference year(s), geographic coverage, spatial units, and status of data sets within the ADDNET Data Base	32
6	Units of measure and abbreviations used in the ADDNET Data Base	36
7	Common SAS variable name extension conventions.	37
8	ADDNET Data Base sectors and the number of data sets which had been certified or were being edited as of September 30, 1985	50
9	Data sets within the geoecology data base	51

ACKNOWLEDGMENTS

The Acid Deposition Data Network (ADDNET) Data Base is a collection of extant data sets created by investigators or agencies and contributed to ADDNET. We have identified these data sources in Appendix A as part of each data set's description. The authors acknowledge the willingness of these individuals to share their data through ADDNET and to provide the necessary documentation. We encourage data users to credit these primary data sources when a specific data set is used. Users of the files have helped check for errors and have provided useful suggestions for expanding and improving the ADDNET Data Base. The Task Group I Acid Deposition Assessment Staff, especially project officers Richard Ball (U.S. Department of Energy) and David Bennett (U.S. Environmental Protection Agency), have also provided guidance, encouragement, and funding. The authors express appreciation to Paul Kanciruk of the Environmental Sciences Division (ESD) at Oak Ridge National Laboratory, for his guidance in developing the section on data base administration. We especially thank Lana McDonald of the ESD for her assistance in preparing this document and also appreciate the work of other ORNL support staff, including D. S. Barnes, editor, S. G. Lawson, and D. D. Rhew and G. R. Carter of the ESD Word Processing Center. The ADDNET Data Base is the product of numerous named (see Appendix A) and unnamed individuals; however, the ADDNET staff assumes responsibility for errors, omissions, and inconsistencies in this report.

Other individuals associated with the contents and development of the ADDNET Data Base include, but are not limited to, the following:

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ABSTRACT

OLSON, R. J., L. J. ALLISON, and I. L. MCCOLLOUGH. 1987. ADDNET Notebook: Documentation of the Acid Deposition Data Network (ADDNET) Data Base Supporting the National Acid Precipitation Assessment Program. ORNL/TM-10086. Oak Ridge National Laboratory, Oak Ridge, Tennessee. 356 pp.

The Acid Deposition Data Network (ADDNET) project compiles extant data into a central data base for use in acidic deposition assessments and analyses. The ADDNET Data Base supports the integrated assessments conducted by Task Group I of the National Acid Precipitation Assessment Program (NAPAP). It was established at Oak Ridge National Laboratory (ORNL) in FY 1984 by the Task Group I Acid Deposition Assessment Staff, to provide accurate and usable data in a timely manner for both Task Group I and other NAPAP components.

The ADDNET project includes a data coordination component, which deals with the expanding data needs of the program and with varied data sources, and a data base administration component, which creates the data base and distributes data to requesters. The ADDNET Notebook describes the contents and source of each data set. It also explains the conventions, processing, and quality assurance procedures used to create certified data sets. Examples of SAS programs for using the ADDNET Data Base are provided.

The ADDNET Data Base uses the SAS computer software system for data storage, retrieval, analysis, and display. The data base is accessed by the ADDNET staff in both batch and interactive modes, using the ORNL IBM computer system; in addition, data sets can be transferred

to other SAS systems. Data can also be exchanged as EBCDIC- or ASCII-formatted files. At the end of the second year of operation, the expanding ADDNET Data Base contained over 50 data sets, with over 900 variables, including deposition, emissions, air quality, water chemistry, forestry, aquatic resources, and other data required for the 1985 NAPAP Assessment.

1. INTRODUCTION

Acidic deposition integrated assessments require information on emissions, deposition, air quality, agriculture, forests, man-made materials, aquatic resources, and other data with common spatial and temporal attributes, to allow efficient statistical analyses, modeling, and display. The Acid Deposition Assessment Staff (ADAS) of Task Group I established the Acid Deposition Data Network (ADDNET) at Oak Ridge National Laboratory (ORNL) at the beginning of FY 1984, to provide accurate and reliable data to support assessments and policy analyses for the National Acid Precipitation Assessment Program (NAPAP) and to help ensure the timely exchange of accurate, usable data among NAPAP components and between NAPAP and other data sources.

The primary objective of ADDNET is to provide to Task Group I the data needed to conduct assessments and policy analyses for NAPAP. Although specific projects and task groups within NAPAP are responsible for collecting raw data and analyzing individual data files, ADDNET assembles selected files, verifies their contents, conducts quality assurance (QA), maintains documentation, and makes data available to the NAPAP community at large. ADDNET maintains a directory of the data sets relevant to acidic deposition and of individuals who can be contacted to acquire such data, thus establishing a network of data producers and users. ADDNET also acts as a clearinghouse for data resources; that is, if individuals need specific data not already available in ADDNET, ADDNET assists them in locating and acquiring the data.

The ADDNET Data Base contains 55 data sets that have been certified to ensure consistency across all areas of the assessment (Table 1).

Table 1. Contents of the ADDNET Data Base by subject matter:
Data set numbers (DSN) and titles of certified data sets, October 1985

Agriculture

A06 1978 Crop Areas and Yields, Ag Land Use

Base Data

B01 County Codes, Names and Centroids
B07 Federal & State Land Ownership by Agency

Climate

C07 Monthly Average Temperatures by County
C08 Monthly Average Precipitation by County

Vegetation

D03 Pot. & Adj. Vegetation National Stats.

Forestry

F01 Forest Area by Major Types
F06 Tree Species Growing Stock Volumes
F08 Forest Area, Volume, and Growth

General

G01 Data Set Titles and Characteristics
G02 Data Set Variables and Labels

Air Quality

K82 SO2 Monthly Emissions Inventory
K83 Alkalinity, Lake Area, and Deposition for NE States
K85 ASTRAP Wet/Dry Deposition for Cells
K86 ASTRAP Wet/Dry Deposition for States
K88 Historical Emissions of SOX and NOX
K90 NAPAP Emissions Inventory-Major Point Sources
K91 NAPAP Emissions Inventory-Detailed Point Sources
K92 NAPAP Emissions Inventory-Area Sources
K93 A.D.S.-Annual Station Deposition
K94 A.D.S.-Seasonal Deposition Means
K95 A.D.S.-Annual Gridded Deposition
K97 Ambient Ozone Concentrations: County Level Estimates
K99 Ambient Ozone Concentrations: Gridded Estimates

Land Use/Land Cover

L07 Land Use (CNI Aggregated)
L08 Land Areas (Rural,Urban,Roads,Water,Fed)

Population

P03 1970 and 1980 Population and Housing Census

Aquatic Biota/Water Quality

Q67 FIN-Chemistry Analysis
Q68 FIN-Population Evaluations
Q71 FIN-General Station Comments
Q72 FIN-Additional Water Chemistry Data
Q73 FIN-Water Chemistry
Q74 FIN-Fisheries Management Procedures
Q75 FIN-Species Caught: Clumped between Gear Types
Q76 FIN-Species Caught: Data Clumped w/in a Gear Type
Q77 FIN-Species Caught: by Indiv. Sampling Gear
Q78 FIN-Gear Description
Q79 FIN-Species Present: Composite
Q80 FIN-Stocking Records
Q81 FIN-Lake Demographics
Q82 FIN-Station Demographics
Q85 ACID-Sttnflag
Q86 ACID-Id Codes
Q87 ACID-Hydrology
Q88 ACID-Other
Q89 ACID-Physical
Q90 ACID-Other Chemistry
Q91 ACID-Ions
Q92 ACID-Acidity
Q93 ACID-Storet Identification
Q94 ACID-Lake Morphometry
Q95 ACID-Stream Morphometry
Q96 ACID-Hydrological Unit
Q97 ACID-Station

Terrain

T03 Soils at Map Unit Level

Appendix A provides detailed information on each of these data sets. To certify each data set, the ADDNET staff reviews the data set contents and verifies the data formats, then sends listings and descriptions back to the data sources for verification of contents. These reviewed data sets become the certified data within ADDNET.

It is anticipated that the standards and conventions (units of measure, spatial and temporal resolution, coding conventions, missing value conventions, etc.) adopted for the assessment data will be universally used in NAPAP data activities. ADDNET has emphasized the development of data quality control and documentation criteria for use throughout NAPAP.

ADDNET Notes, the periodic progress reports of ADDNET, are distributed to individuals concerned with the analysis of acidic deposition data to help coordinate data activities within NAPAP. These reports are also used to communicate data needs and the availability of data bases. ADDNET Notes are distributed approximately semi-annually or as needed. Appendix D provides a space for filing present and future copies of ADDNET Notes within this notebook.

A Contact Network List has been developed to enhance communications within the NAPAP community. The mailing list for ADDNET Notes is generated from this computerized file. The list of over 675 names includes NAPAP principal investigators, other interested researchers, and NAPAP and ADAS staff members (see Sect. 2.5 and Appendix C). Data producers and users thus become part of the ADDNET network serving to facilitate the exchange of information and data.

1.1 SCOPE OF THE ADDNET NOTEBOOK

The ADDNET Notebook is a concise description of data resources for NAPAP. It explains the relationship of ADDNET to NAPAP and describes the overall development of the ADDNET Data Base. Information on contributing data to and requesting data from ADDNET (Sect. 2) and on using the computer files (Sects. 4 and 6) is also presented. General information concerning the documentation of individual data sets is summarized in Sect. 5. Detailed documentation of each of the data sets is presented in Appendix A, and an alphabetical list of variables is presented in Appendix B. Section 7 lists and defines acronyms associated with the data base activities.

We anticipate adding data set descriptions as new data are added to the ADDNET Data Base, as well as updating other sections of this report as necessary, hence the notebook format.

1.2 HOW ADDNET WORKS

Compiling a data base to support integrated assessments requires the cooperation and coordination of researchers throughout NAPAP. Individuals typically collect data or conduct research according to well-planned protocols. Then, either they independently analyze their data or submit them to a data center for subsequent analysis. Projects such as NCLAN and FORAST and monitoring networks such as the National Atmospheric Deposition Program (NADP) and MAP3S represent studies that entail coordinated data gathering and analysis. These project teams usually include individuals with an in-depth knowledge of the subject matter, statistical experience, and computer capabilities who perform error checking, analysis, and interpretation to create a summary data

base for the overall project. Because investigators are funded by a central project, there are incentives to contribute data for the combined analyses and data base creation. ADDNET thus deals with many types of data to create the integrated assessment data base.

Creating a centralized, integrated data base of selected data is necessary to ensure that separate files can be combined (e.g., defining or establishing common spatial and temporal attributes) and to provide rapid access to the data for the analysis. The ADDNET project includes data coordination (Sect. 2) and data base administration (Sect. 4) components to facilitate these processes. As a secondary data user, Task Group I is not directly responsible (i.e., doesn't provide funds) for generating data for the assessment. Therefore, the initial data coordination and administration tasks are to define the data needs, locate sources of data, and initiate the flow of data to ADDNET.

The dispersed files must be acquired from researchers in a usable form and within the assessment time frame. Individual schedules often require data before researchers have had sufficient time to analyze and publish their results. While researchers may endorse the need for an integrated assessment, experience indicates that many factors can hamper their ability to submit documented data to a central data base on time. The flow of research results thus needs to be continually monitored and encouraged by task group data focal points and the NAPAP Data Coordinator.

The substantive contents of the files, including variables reported, geographic and temporal coverage, and levels of aggregation, and QA procedures (see Sect. 4) must be defined for new data sets

acquired by ADDNET. The NAPAP Data Coordinator works with the data producers and secondary data users to reach a consensus on these issues. Most often a task group or a specific project (e.g., the NADP) is responsible for checking and massaging raw data to provide ADDNET with an appropriate summary file (e.g., county-level, seasonal averages, etc.). If necessary, ADDNET staff can provide data analysis support; however, we feel the primary data checking, documentation, and analysis should be done by those most familiar with the data.

Once data files are submitted to ADDNET, the ADDNET staff checks the data for consistency, reviews the documentation for completeness, and enters the data into the ADDNET Data Base (see Sects. 4.4 and 4.5). The design of the data base and the processing procedures are patterned on the experience gained from developing the Geoecology Data Base (Olson et al. 1980). The SAS[1] software system (SAS 1982, 1985a) is used for data management, editing, and analysis of the ADDNET Data Base. Typically, a new file is maintained as a unique SAS data set within the data base. However, data sets may be partitioned or combined for the most efficient and logical representation of the data. Variables are assigned unique names and labels (Table B.1, Appendix B). Files are edited as necessary, such as converting to standard FIPS codes, specific date formats, standard missing value codes, metric units of measure, and latitude/longitude decimal degrees. Thematic maps may be generated to check for inconsistent

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[1]SAS is the registered trademark of the SAS Institute, Inc., Cary, North Carolina.

patterns and for errors. Similar data sets may also be used to check for inconsistencies (e.g., new files with county areas are compared with existing files containing county areas). ADDNET's goal is to develop accurate, well-documented, consistent data sets that can be readily integrated for assessment needs.

These data sets become the certified data sets. They provide a common set of data that includes deposition, air quality, atmospheric transport modeling outputs, and land use (see Sect. 5) for use in analyses. The certification process involves investigators and task groups verifying substantive contents and documentation, with ADDNET staff reviewing the data set contents and verifying formats. ADDNET provides copies of the data files on magnetic tape to NAPAP-sponsored researchers, provides online access to the ADDNET Data Base for DOE- and EPA-approved users, and provides data analysis support. Data are formatted either as SAS files or selectively as ASCII or EBCDIC files. Section 6 presents an example of how SAS is used to access, subset, combine, analyze, and display the ADDNET data. Documentation accompanies the files, including references to associated published reports and an appropriate reference citation that will allow secondary users of the data to acknowledge the primary source.

In summary, the ADDNET project works to ensure an efficient, timely flow of information and data among data producers and users, as is required by NAPAP.

2. DATA COORDINATION

ADDNET's approach to providing data resources is to define data needs, gather data sets, create the data base, provide access to the data, provide data analysis support, and communicate both the unfulfilled needs and the availability of resources to the NAPAP community. This approach involves data coordination to (1) define needed and available data, including variables to be measured, geographic and temporal coverage, minimum level of disaggregation, and QA procedures and (2) define technical issues, including documentation standards, data access techniques, and transfer formats.

An initial tabulation of data needs for each task group was compiled from the FY 1983 Program Component Descriptors (PCDs) described by Benkovitz and Farrell (1983). This summary indicated a broad range of common data needs shared by several task groups. However, this list did not address specific parameters, priorities, or spatial and temporal characteristics. The identification and clarification of data needs and an evaluation of analysis methods are stated as specific tasks within most of the FY 1984 PCDs. An initial data coordination task for ADDNET, therefore, was to coordinate the anticipated outputs of the task groups with the assessment needs of Task Group I.

The inventory of data needs for the 1985 Assessment was based on direct interaction between the NAPAP Data Coordinator and the principal investigators, since task group data focal points were not yet identified; the appropriate task group chairman was cognizant of these discussions. Data necessary for the 1985 Assessment were also

identified by the assessment framework developed by ADAS. Data needs were documented, using the NAPAP Data Needs Inventory form (Fig. 1) developed by ADDNET.

Currently, an individual has been appointed as a "focal point" for data coordination within each of Task Groups A through H. Task Group I Acid Deposition Assessment Staff (ADAS) provide the lead in communicating with these task group data focal points, to coordinate research output with assessment requirements. The task group data focal points provide a centralized source of information about ongoing data activities in their task groups. They are responsible for the timely release to ADDNET of accurate, documented data sets and coordinate data collection, aggregation, and interpretation activities within their task groups. The data focal points are knowledgeable about data activities within their task groups and are able to refer specific problems or questions to the appropriate data sources within their task groups. Task group data focal points are also responsible for interfacing data coordination activities between task groups. At the data coordination workshop held on June 6, 1985, the data focal points reviewed NAPAP data activities relative to the 1985 Assessment, initiated planning for the 1987 Assessment data requirements, and identified several available data sets (see ADDNET Notes No. 4).

2.1 DATA NEEDS INVENTORY

A Data Needs Inventory survey form (Fig. 1) was included in the initial issue of ADDNET Notes, with the request that data users document the data they needed to develop the 1985 Assessment. An

NAPAP Data Needs Inventory Form.

Information on this form will be used to compile an inventory to coordinate the data needs for the National Acid Precipitation Assessment Program.

Data Base Title _____

Task Group _____ NAPAP Code _____ Date _____

Priority 1984 Research ___; 1985 Assessment ___; Post 1984 Research ___

Post 1985 Assessment ___; Date Needed _____

Other Task Groups that may need similar data _____

_____

Description of Data and Application _____

_____

_____

_____

_____

_____

_____

_____

Variables and Units _____

_____

_____

Geographic Coverage _____ Spatial Resolution _____

Period of Record _____ Temporal Resolution _____

Potential Sources of Data _____

_____

Comments _____

_____

_____

Name _____

Group _____

Agency _____

Street _____

City _____ St ___ Zip _____

Phone (__) _____ FTS _____

Return form to:

R. J. Olson, Data Coordinator

Oak Ridge National Laboratory

P.O. Box X, Building 1505

Oak Ridge, TN 37831

(615) 574-7819; (FTS) 624-7819

Fig. 1. NAPAP Data Needs Inventory form.

inventory of data needs was compiled from responses to this survey. The majority of the responses were submitted by NAPAP Task Group I. The Data Needs Inventory, which has been expanded to reflect data needs for the 1987 Assessment, identifies researchers who have requested data from ADDNET for both assessments and gives the dates the data were needed and the dates the data were sent to the requester. Where no requester is listed, the data sets have been identified by ADDNET as being relevant to the assessment tasks. Data sets are listed more than once if requested by several individuals or projects. The Data Needs Inventory is expanded and updated as needed.

Fulfilling the data needs of researchers requires the cooperation of the data suppliers and data focal points in sending documented data to ADDNET in a timely manner. Data requesters must realize that we depend on data sources to supply us with the needed data and that it takes from one week to one month to process a typical data tape. When several data sets arrive simultaneously, ADDNET is unable to process all the tapes immediately and send out all the data sets to the data requesters. The 1985 Assessment required many data sets, with the dates when data were needed and available grouped toward the end of 1984. With the cooperation of the data suppliers and the understanding of the data requesters, we were able to meet most of the deadlines for the 1985 Assessment.

2.2 DATA SOURCES INVENTORY

The survey form included in the January 1984 issue of ADDNET Notes to document information for the Data Needs Inventory also included a

field that identified potential sources of data. ADDNET contacted these data sources to determine if and when they could provide the requested data. Other sources, such as those listed in Olson (1984), were also contacted. Follow-up letters officially requested the data sets and provided a NAPAP Data Base Description form (Fig. 2) and an explanation of the form (Fig. 3) for the researchers to use in describing their data sets or data bases. If the data were not received on schedule, the data sources were contacted by telephone to determine the status of the data and to revise the dates that the data sets would be sent to ADDNET. In general, for the 1985 Assessment, data sets were two to four months late.

The data sources inventory has also been updated to reflect new data needs and includes the data sets identified as being needed for the 1985 and 1987 Assessments, the data sources, and the dates when the data are predicted to be available to ADDNET. This data base is updated regularly to reflect changes in the status of the availability of the data.

2.3 SUBMITTING DATA TO ADDNET

Data sets are sent to ADDNET in a variety of formats. The most acceptable tape format to use when submitting a data set to ADDNET is 1600 or 6250 bpi, nine-track, standard labeled (or nonlabeled), and EBCDIC or ASCII format. SAS data sets (with labeled and formatted variables) are preferred, but card-image or other formats (e.g., SIR export files) can be accommodated if properly documented. Binary files are to be avoided as they are time-consuming to reformat.

NAPAP Data Base Description Form.

Data Base Title _____

_____ Acronym _____

NAPAP Task Group _____ NAPAP Code _____ Date _____

Primary Data Source(s):

Name _____ Name _____

Group _____ Group _____

Agency _____ Agency _____

Street _____ Street _____

City _____ St ___ Zip _____ City _____ St ___ Zip _____

Phone (___) _____ FTS _____ Phone (___) _____ FTS _____

Sponsoring Agency _____

Status: Under Development _____ Completed _____ Computerized _____

Availability: NAPAP ADDNET Database _____ Other _____

Appropriate Reference Citation _____

_____

Description _____

_____

_____

_____

_____

Keywords _____

_____

Data Uses _____

_____

Data Importance _____

_____

_____

Variables and Units _____

_____

_____

Sampling Methods _____

_____

_____

Fig. 2. NAPAP Data Base Description form.

Uncertainty/Reliability _____

_____

_____

Data Type (raw, summarized, derived) _____

Number of Records _____

Geographic Coverage _____

Spatial Resolution _____

Period of Record _____

Temporal Resolution _____

References or Supporting Documents (please give complete citations):

Return form to: R. J. Olson, Data Coordinator
Oak Ridge National Laboratory
P.O. Box X, Building 1505, MS 3
Oak Ridge, TN 37831
(615) 574-7819; (FTS) 624-7819

Fig. 2. (Continued)

NAPAP Data Base Descriptor Fields.

1. Data Base Title - Enter the title associated with a numeric data base.

2. Acronym - Some data bases may more commonly be known by acronyms (e.g., ACID, FIN); include these acronyms as part of the naming convention.

3. NAPAP Task Group - Indicate the Task Group associated with compiling the data base.

4. NAPAP Code - Indicate, if appropriate, the budget code associated with the specific project compiling the data base.

5. Date - Enter the date that this form is being completed or updated.

6. Primary Data Source - Indicate the original source of the data and subsequent secondary sources. Individual researchers are generally the primary collectors of the data, while governmental agencies or other agencies are indicated if they serve as the repository of the data. This information is associated with the goal of establishing "audit trails" to the original source as a part of the quality control and assurance process.

7. Sponsoring Agency - Enter the primary agency responsible for maintaining and updating the data base or the agency funding the research project.

8. Status - Indicate whether a data base is being generated by ongoing research or is already available.

9. Availability - Indicate whether these data are included in the NAPAP/ADDNET data base at the present time. If the data are not in a computerized format, the current form of the data (tabular listings from the literature, graphic display formats, etc.) in the data base should be indicated.

10. Description - Provide a concise overview of the data base.

11. Appropriate Reference Citation - Provide a complete citation to be used for the data base.

12. Keywords - List significant words describing the data set that can be used as an index to content. An index of keywords will be compiled to facilitate use of the data resources.

13. Data Uses - Describe the analysis and interpretation of the data as reported in published documents or as anticipated in the assessment.

Fig. 3. NAPAP Data Base descriptor fields.

14. Data Importance - Indicate the uniqueness or special importance of these data for application to the NAPAP research program.

15. Variables (Units) - Indicate the parameters and associated units of measurement included in the data file.

16. Sampling Methods - Indicate the experimental technique(s) used to obtain the data.

17. Uncertainty/Reliability Estimates - Provide a statement by the researcher of the precision and accuracy of the data, including any known biases. In many cases, this information is not included in the publication or only a very general qualitative statement is made. Estimates of the reliability or uncertainty of the data are an important part of the evaluation process for making the data available to secondary users.

18. Data Type - Provide information on the structure of the data set (e.g., experimental, summarized, derived, or point station observations).

19. Number of Records - Give the total number of records in the data set. For example, data sets having single records per county should have 3071 records for the United States.

20. Geographic Coverage - Indicate the geographic area covered by the data.

21. Spatial Resolution - Indicate the smallest geographic coverage unit of the data (i.e., grid cell, point, region, global).

22. Period of Record - Give the year or years in which the data were collected, i.e., the time series for the data collection (e.g., 1984; 1941-1970).

23. Temporal Resolution - Indicate the sampling times or periods in the data collection process. Aggregation of the data into averages (e.g., monthly, seasonal, annual) should also be indicated in this field. Leave this field blank for those data sets which reflect contemporary environmental conditions, such as elevation.

24. References - List citations of documents that describe the data and/or in which the data have been used in scientific analyses and which provide additional descriptive information.

Fig. 3. (Continued)

A major requirement for a data set is that it be well documented. Complete documentation should be provided, using the detailed documentation form (Fig. 2) sent to data suppliers when requesting their data sets. The form requests the following information: (1) brief description of the data set; (2) geographic coverage and spatial resolution; (3) period of record and temporal resolution; (4) variable names, definitions, units of measure, and formats (position in the record, continuation codes, etc., if applicable); (5) missing value codes; (6) variable ranges and uncertainty/reliability estimates; and (7) name, address, and telephone number of a technical contact who can resolve questions on format or content. The specific fields on the form are defined in Fig. 3.

Data sent to ADDNET are entered into a SAS working data set on the IBM 3033 computers at ORNL and are subjected to ADDNET's QA procedures (see Sect. 4.5). Each data set is scanned and summarized to ensure that it matches the data supplier's description, with missing values identified and variable names and labels assigned, and that the data in general are consistent with existing ADDNET data sets. A data package that includes a sample listing of the data, ADDNET's assigned variable names and labels, summary statistics, and documentation is sent to the data supplier for review. When a data set is validated, it is moved to the permanent ADDNET Data Base and becomes available for distribution.

2.4 REQUESTING DATA FROM ADDNET

Data sets that have been entered into the ADDNET Data Base may be requested by NAPAP researchers. ADDNET staff have responded to 131 of the 178 requests for data tapes or for output products that use the

ADDNET Data Base, such as printed reports, maps, or slides (Fig. 4). The majority of these requests have been from Task Group I for use in developing the 1985 NAPAP Assessment (Fig. 5). The average number of responses per month has doubled from 4.3 in 1984 to 8.4 in 1985 (Fig. 6). We are processing an additional 14 requests but have deferred 33 other requests. Many requests have not been filled because the data sets needed are not yet available from the data sources, because the data do not exist, or because of funding priorities. In the first instance, dates when the data were to be available have often had to be revised because of problems in processing or analyzing the data (e.g., the dates of availability for the 1980 Base Year Emissions data and deposition projections were revised several times). As soon as requested data sets are received and processed by ADDNET (see Sect. 4.4), they are mailed to the data requesters.

Although the primary objective of ADDNET is to provide data to Task Group I to meet their assessment and analysis needs, ADDNET also provides a mechanism for distributing data to other NAPAP task groups and to non-NAPAP requesters. Data sets can be sent to requesters as SAS data sets or card-image tape files, 1600 or 6250 bpi, nonlabeled or standard labeled, nine-track, EBCDIC or ASCII tapes. Written requests for ADDNET data sets should be addressed to R. J. Olson, NAPAP Data Coordinator, Acid Deposition Data Network, Oak Ridge National Laboratory, P.O. Box X, Building 1505, Oak Ridge, Tennessee 37831-6038. We would appreciate receiving blank tapes for data exchange.

ORNL/DWG-87-1341

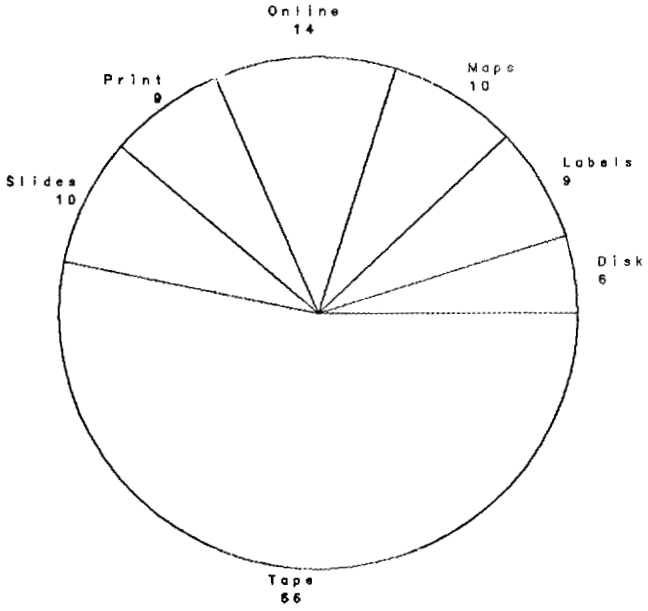
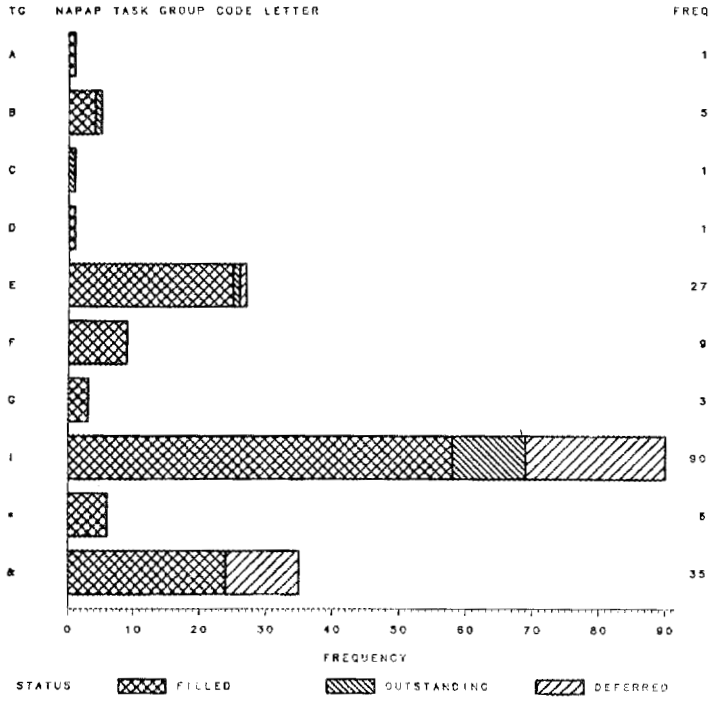


Fig. 4. Number of ADDNET data requests by request type

ORNL/DWG 87-1342



TG=*-NAPAP Staff, TG=&-Non-NAPAP requests

Fig. 5. Number of ADDNET data requests by task group

ORNL/DWG 87-1343

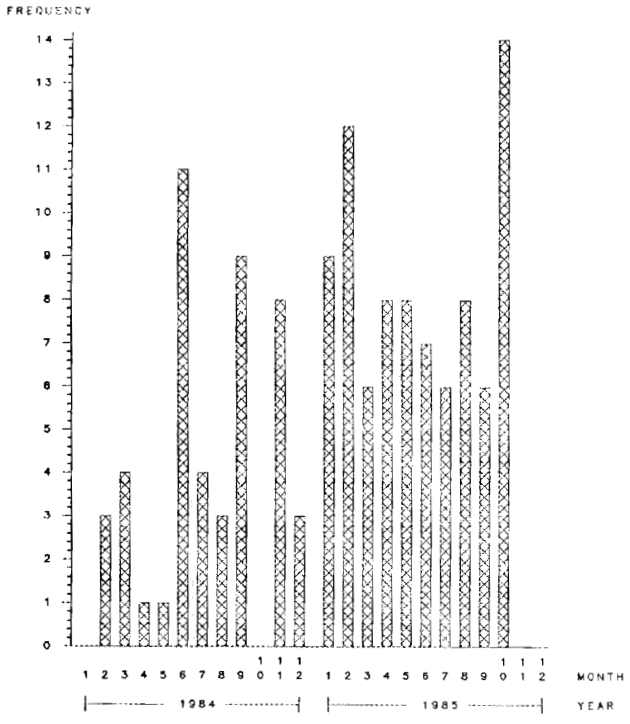


Fig. 6. Number of ADDNET data requests by month

2.5 CONTACT NETWORK

The ADDNET Contact Network is a computerized file developed and maintained by ADDNET for the exchange of information on data compilations relevant to acidic deposition. The file contains names of all NAPAP principal investigators (PIs), NAPAP and ADAS staff members, other data contacts, and interested persons involved in acidic deposition research.

The original Contact Network list was developed from the FY 1984 PCDs file maintained by G. Caton (Caton et al. 1984) and was listed in the first issue of ADDNET Notes. As additional researchers in the acidic deposition field were recognized and new PIs and projects identified, their names, addresses, and affiliations were added to the file. Task Group chairmen were contacted in FY 1984 and requested to correct and update a list of the PIs for their respective task groups. These and other corrections and updates have been incorporated into the file, and updated versions of the Contact Network were listed in ADDNET Notes Nos. 2 and 3. The SAS file is updated as necessary.

The Contact Network is used to generate mailing labels for ADDNET Notes. In addition, lists and mailing labels have been generated and sent to NAPAP, several task group chairmen, and outside organizations (e.g., the Acid Rain Information Clearinghouse).

The Contact Network is given in Appendix C. Table C.1 lists the NAPAP affiliates sorted by task group, name and affiliation. A complete alphabetical listing of all names in the Contact Network, including affiliations, addresses, and telephone numbers, is presented in Table C.2.

3. SPATIAL AND TEMPORAL CONSIDERATIONS

The study and assessment of potential acidic deposition impacts encompasses a wide range of spatial and temporal scales. Characterizing atmospheric processes, including pollutant emissions to the atmosphere, long-range transport, transformation, and deposition, involves large, multistate areas. Atmospheric models typically use 100-km x 100-km grid cell sizes. However, evaluations of the responses of receptors such as lakes and forests require the use of much smaller spatial units. The assessment of aquatic impacts requires data on the distribution of individual lakes, especially small lakes (<20 ha), according to watershed characteristics and atmospheric loadings. Similarly, there is a need to have data on temporal scales ranging from annual averages to short-term episodic events, such as spring snowmelt. The ADDNET Data Base is designed to accommodate various spatial and temporal scales and to provide a method of relating data at different scales. However, standard spatial and temporal units have been selected for consistency within NAPAP and are described below.

Most often raw data are processed or aggregated to provide values for the desired spatial and temporal units within the ADDNET Data Base. However, the detailed raw data are maintained, usually on tapes, to allow aggregating to different units if needed.

3.1 SPATIAL UNITS

States and counties are consistently identified by Federal Information Processing Standards (FIPS) codes (USDC 1979) to help in merging files for analysis and display. A two-digit FIPS state code is

assigned to each of the 50 states and the District of Columbia (01 to 56); additional two-digit "state" codes have been assigned to the Canadian provinces (Table 2). A three-digit FIPS county code, primarily odd numbers, is assigned to counties arranged in alphabetical sequence within each state (001, 003, 005, etc.). A standard set of 3071 county units was defined for the conterminous United States, using the 1972 County and City Data Book (USDC 1973a) and the FIPS Codes book (USDC 1973b). Most independent cities, such as Baltimore City, St. Louis City, and 34 of the 39 Virginia independent cities, were combined with appropriate county units because environmental data are normally not available for these smaller urban areas (Olson et al. 1980). Counties containing aggregated data from associated independent cities are listed in Table 3. Table 4 lists counties that we have found may be treated differently in the various county-level source files. In creating our standard data sets, we have estimated or aggregated data to obtain observations for all county units.

County units can be easily aggregated by various regional designations stored in the ADDNET Data Base. Crop Reporting Districts, State Climatic Divisions, Land Resource Regions, Air Quality Control Regions (AQCR), Aggregated Sub-Areas, Standard Metropolitan Statistical Areas (SMSA), Bureau of Economic Analysis areas (BEA), and states all represent areas defined in terms of aggregates of county cells.

Other spatial units used within the ADDNET Data Base include points, grid cells, and polygons. Rectangular cells provide a system that facilitates relating many types of data, based on the X-Y coordinates of each cell. This matrix approach is especially useful

Table 2. FIPS state and province codes used in the ADDNET Data Base

FIPS codes for the states and territories of the United States

01 = Alabama
02 = Alaska
04 = Arizona
05 = Arkansas
06 = California
08 = Colorado
09 = Connecticut
10 = Delaware
11 = District of Columbia
12 = Florida
13 = Georgia
15 = Hawaii
16 = Idaho
17 = Illinois
18 = Indiana
19 = Iowa
20 = Kansas
21 = Kentucky
22 = Louisiana
23 = Maine
24 = Maryland
25 = Massachusetts
26 = Michigan
27 = Minnesota
28 = Mississippi
29 = Missouri
30 = Montana
31 = Nebraska
32 = Nevada
33 = New Hampshire
34 = New Jersey
35 = New Mexico
36 = New York
37 = North Carolina
38 = North Dakota
39 = Ohio
40 = Oklahoma
41 = Oregon
42 = Pennsylvania
44 = Rhode Island
45 = South Carolina
46 = South Dakota
47 = Tennessee
48 = Texas
49 = Utah
50 = Vermont
51 = Virginia
53 = Washington
54 = West Virginia
55 = Wisconsin
56 = Wyoming
60 = American Samoa
66 = Guam
69 = Northern Mariana Island
72 = Puerto Rico
75 = Trust Territory of the Pacific Island
78 = Virgin Islands

ADDNET Extensions of FIPS codes for Canadian Provinces

80 = Alberta, Canada
81 = British Columbia, Canada
82 = Manitoba, Canada
83 = New Brunswick, Canada
84 = Newfoundland, Canada
85 = Northwest Territories, Canada
86 = Nova Scotia, Canada
87 = Ontario, Canada
88 = Prince Edward Island, Canada
89 = Quebec, Canada
90 = Saskatchewan, Canada
91 = Yukon Territory, Canada

Table 3. Counties containing aggregated data from associated independent cities within the ADDNET Data Base

State	County	FIPS code State	FIPS code County	Associated independent city	FIPS code
Md.	Baltimore	24	005	Baltimore City	510
Mo.	St. Louis	29	189	St. Louis City	510
Mont.	Park	30	067	Yellowstone National Park - Part	113
Va.	Albermarle	51	003	Charlottesville	540
Va.	Alleghany	51	005	Clifton Forge	560
Va.	Alleghany	51	005	Covington	580
Va.	Arlington	51	013	Alexandria	510
Va.	Augusta	51	015	Staunton	790
Va.	Augusta	51	015	Waynesboro	820
Va.	Bedford	51	019	Bedford	515
Va.	Campbell	51	031	Lynchburg	680
Va.	Carroll	51	035	Galax	640
Va.	Dinwiddle	51	053	Colonial Heights	570
Va.	Dinwiddle	51	053	Petersburg	730
Va.	Fairfax	51	059	Fairfax	600
Va.	Fairfax	51	059	Falls Church	610
Va.	Fredrick	51	069	Winchester	840
Va.	Greensville	51	081	Emporia	595
Va.	Halifax	51	083	South Boston	780
Va.	Henrico	51	087	Richmond	760
Va.	Henry	51	089	Martinsville	690
Va.	James City	51	095	Williamsburg	830
Va.	Montgomery	51	121	Radford	750
Va.	Pittsylvania	51	143	Danville	590
Va.	Prince George	51	149	Hopewell	670
Va.	Roanoke	51	161	Roanoke	770
Va.	Roanoke	51	161	Salem	775
Va.	Rockbridge	51	163	Buena Vista	530
Va.	Rockbridge	51	163	Lexington	678
Va.	Rockingham	51	165	Harrisonburg	660
Va.	Southampton	51	175	Franklin	620
Va.	Spotsylvania	51	177	Fredericksburg	630
Va.	Washington	51	191	Bristol	520
Va.	Wise	51	195	Norton	720
Va.	Chesapeake	51	550	Chesapeake	550
Va.	Chesapeake	51	550	Norfolk	710
Va.	Chesapeake	51	550	Portsmouth	740
Va.	Hampton[a]	51	650	Hampton	650
Va.	Newport News[a]	51	700	Newport News	700
Va.	Suffolk	51	800	Suffolk	800
Va.	Suffolk	51	800	Nansemond	695
Va.	Virginia Beach[a]	51	810	Virginia Beach	810

[a]Independent cities that are treated as unique county units.

Table 4. County units causing confusion as the result of historical changes

State	County	FIPS code State	FIPS code County	Comments
Ga.	Columbus	13	510	Formerly Muscogee County (13215)
Nev.	Carson City	32	510	Formerly Ormsby County (32025)
Wis.	Menominee	55	078	Formerly Menominee Indian Reservation
Wyo.	Park (6959 sq mi)	56	029	Formerly Yellowstone National Park, now assigned to these two counties
	Teton (4000 sq mi)	56	039	
Idaho	Fremont	16	043	Contains part of Yellowstone National Park

for modeling and other integrated assessment tasks. The size of grid cells can be defined according to the needs of the application. Most atmospheric models use rectangular grid systems; however, polygonal data structures generally provide a more efficient way to represent the natural patterns of environmental parameters. These polygonal structures require a geographic information system (GIS) to provide the capability to manipulate (input, edit, overlay, transform, display) the data. Currently, the ADDNET project uses the GIS developed by the Geographic Data Systems Group at ORNL (Durfee et al. in press) to process polygonal data. The system is used either to create grid representations or to extract county values from polygons stored as SAS files.

3.2 TEMPORAL UNITS

The ADDNET project attempts to obtain the most currently available data and any subsequent updates. Key base years have been designated by NAPAP, to provide a common reference point for the assessments. The years 1980 and 1985 were selected based on available data for use in the development of detailed emission inventories to be used in atmospheric models for predicting atmospheric loading and assessing potential effects. In addition, historical data are included in the data base to examine trend patterns. Typically, the data are aggregated to annual values, although receptors such as crops and forests require seasonal deposition or dose values to estimate impacts on growth.

4. DATA BASE ADMINISTRATION

The ADDNET Data Base Administrator designs and implements the data management support facilities that provide the data access needed to carry out integrated assessments. Data management must address the need to store, retrieve, analyze, and display data gathered by different projects at a common level of aggregation and using compatible spatial and temporal scales. By incorporating these activities within ADDNET, individual task groups have the option of sharing resources and expertise needed by, but perhaps not available within, each task group.

4.1 CENTRAL DATA REPOSITORY

A central data repository is necessary (1) to ensure that separate files from varied sources can be combined and (2) to provide rapid access to the data for analysis and assessment needs. The ADDNET Data Base contains selected data required by Task Group I to conduct its assessments. The data base contents were determined primarily by the Data Needs Inventory (see Sect. 2); however, in some cases, additional files have been included to provide archival storage of the raw data used to generate aggregated files for analysis or of other data related to acidic deposition research but not used in the assessment itself. Some data may be used exclusively by a single project, and other data may be aggregated (e.g., annual averages) before being sent to ADDNET; at present there is no need to centralize these types of data in ADDNET. Instead, selected data are entered into the ADDNET Data Base

and "data paths" are established to other sources of data. The NAPAP Data Base Description form (Figs. 2 and 3) is used to document files both within ADDNET and at selected other data sources and to compile a directory of these files. This form is available upon request.

The ADDNET project ensures, to the highest degree possible, the correctness, completeness, and compatibility of data in the ADDNET Data Base for use in assessments and analyses.

4.2 DATA BASE MANAGEMENT

4.2.1 SAS Software System

As previously mentioned, the SAS software system (SAS 1982, 1985a) is used for data editing, management, and analysis (Fig. 7). SAS provides a user-oriented file management system with extensive statistical capabilities. The system also allows user-written programs (FORTRAN, PL/I, etc.) to be interfaced directly with the data base and other SAS programs. SAS operates in both batch and interactive modes. Types of output include tabular reports, data retrieval, statistical analysis, and graphical display. Formatted files from SAS are used as input to other computer programs for graphic and cartographic display. The SAS data sets are stored on mass storage volumes at ORNL. In addition, several larger files are stored offline at ORNL as SAS data sets on tape.

The SAS data base system was selected because it has extensive data manipulation, graphics, and statistical capabilities in a single system; uses a relational approach to data base design, which is probably best for scientific data sets; and is extensively implemented (over 5000 installations worldwide). SAS can be installed on IBM

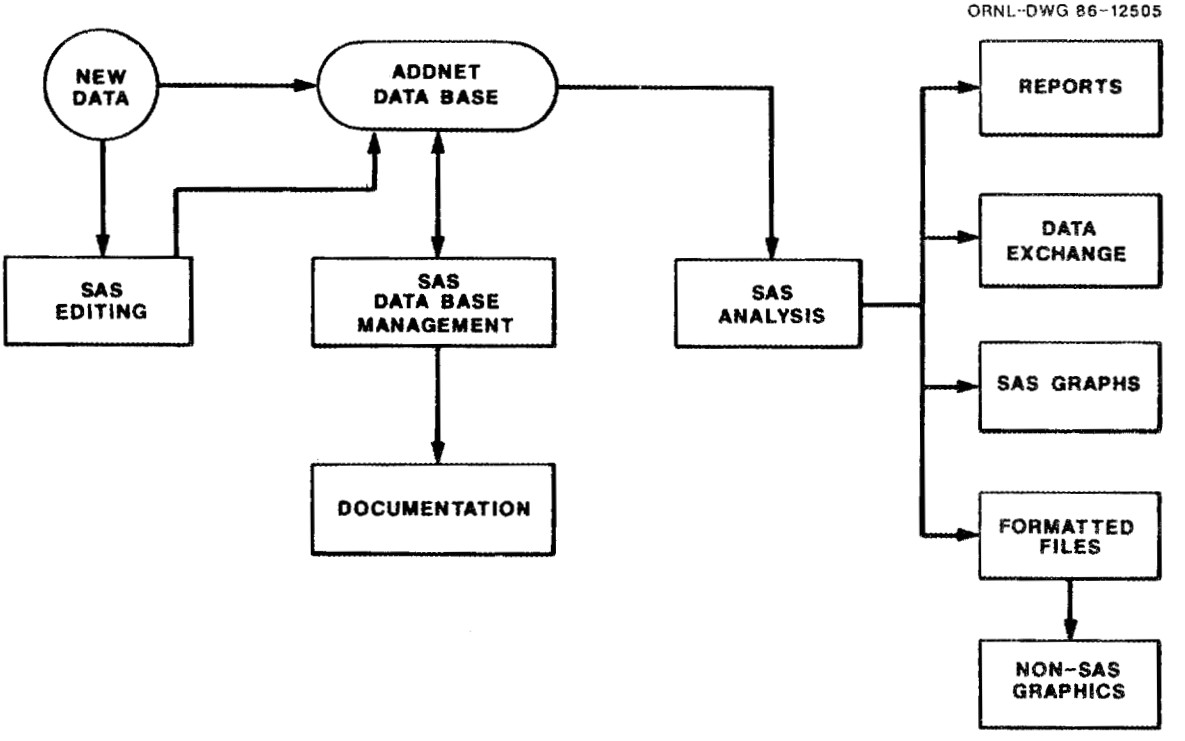


Fig. 7. How SAS is used within the ADDNET Data Base.

mainframes and microcomputers (PCs), and on DEC, VAX, and Data General minicomputers, among others.

Data sets are assigned a permanent three-character name used as the second-level data set name within the SAS data base. The name consists of a letter representing thematic sectors within the data base (e.g., A = Agriculture, C = Climate, etc.) and a two-digit number assigned sequentially to new data sets within a sector. In the Geoecology Data Base, the numbers were assigned in ascending order; in the ADDNET Data Base, the numbers are assigned in descending order starting at 99. States and counties are identified using FIPS codes stored in the variables STATE and COUNTY in the ADDNET Data Base. Reference years (YEAR) are stored when observations from several years are included in a data set; YEAR is a four-digit variable (e.g., 1986). Dates (DATE) are stored in the SAS format of "DATE7." and printed as "01JAN84." Latitude (LAT_DEC) and longitude (LON_DEC) are stored as decimal degrees. Both are stored with four significant decimal digits, to accommodate the conversion of minutes and seconds to decimal degrees.

Data sets may have single or multiple observations for each county or other spatial unit. With single observations, each computer record contains all the variables for a spatial unit. In addition, some data sets are data dictionaries that provide English translations of codes used in the system, while other data sets are index files that define regions in which individual county units are located. The index files allow county data to be easily aggregated into regions.

A significant facet of the ADDNET project is the maintaining of up-to-date and adequate documentation. Meaningful mnemonic variable names and 40-character labels containing units-of-measure designations are used throughout the ADDNET Data Base. Online documentation is available for the casual user via the SAS CONTENTS procedure. The data set DSETS (Table 5) contains the title, temporal and spatial characteristics, date compiled, compilers, and other relevant information for existing and planned data sets. Pertinent information from DSETS for each data set is included in the individual data set descriptions (Appendix A). In addition, a separate dictionary data set, LABELS (Appendix B, Table B.1), contains SAS variable names, labels, and formats extracted from the ADDNET Data Base. These dictionary data sets are updated as new data are added so that users can list them to obtain the most up-to-date descriptions.

4.2.2 Graphics Display Programs

SAS is used in conjunction with display programs to provide needed graphics. Cartographic display is used for both editing and displaying analytical results. SAS provides cartographic capabilities with country, state, and county boundaries compiled as library SAS data sets. State and county data can be mapped directly in SAS, with output directed to the CRT screen, black and white paper output, color paper output, color 35 mm slides, or 8 x 10 color glossy prints. More complex mapping can be done using specialized hardware and software systems developed at ORNL in the Geographic Data Systems Group. Input to non-SAS mapping programs is usually a system tape or disk file that is created as a formatted output file by SAS.

Table 5. Data Set DSETS: Reference year(s), geographic coverage, spatial units, and status of data sets within the ADDNET Data Base

ADDNET Data Base Contents: Verified data sets, October 1985

SECTOR=A THEME=AGRICULTURE

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
A06	1978 CROP AREAS AND YIELDS, AG LAND USE	U. S.	COUNTY	1978	ANNUAL	EVERY 5 YEARS

SECTOR=B THEME=BASE DATA

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
B01	COUNTY CODES, NAMES AND CENTROIDS	U. S.	COUNTY	1970	ANNUAL	NOT ANTICIPATED
B07	FEDERAL & STATE LAND OWNERSHIP BY AGENCY	U. S.	COUNTY	1979	CURRENT	NOT ANTICIPATED

SECTOR=C THEME=CLIMATE

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
C07	MONTHLY AVERAGE TEMPERATURES BY COUNTY	EAST	COUNTY	1941-1970	NORMALS	NOT ANTICIPATED
C08	MONTHLY AVERAGE PRECIPITATION BY COUNTY	EAST	COUNTY	1941-1970	NORMALS	NOT ANTICIPATED

SECTOR=D THEME=VEGETATION

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
D03	POT. & ADJ. VEGETATION NATIONAL STATS	U. S.	COUNTY	1966-1967	HISTORIC	NOT ANTICIPATED

SECTOR=F THEME=FORESTRY

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
F01	FOREST AREA BY MAJOR TYPES	EAST	COUNTY	1965-1982	ANNUAL	EVERY 10 YEARS
F06	TREE SPECIES GROWING STOCK VOLUMES	EAST	COUNTY	1965-1978	ANNUAL	EVERY 10 YEARS
F08	FOREST AREA, VOLUME, AND GROWTH	U. S.	COUNTY	1965-1980	ANNUAL	AS NEEDED

SECTOR=K THEME=AIR QUALITY

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
K82	SO2 MONTHLY EMISSIONS INVENTORY	U. S.	STATE	1975-1983	MONTHLY	AS AVAILABLE
K83	ALKALINITY, LAKE AREA, AND DEPOSITION FOR N.E. STATES	N. E.	CELLS	1980-1981	ANNUAL	AS AVAILABLE
K85	ASTRAP WET/DRY DEPOSITION FOR CELLS	U.S./CAN	CELLS	1980-1981	U. S.	NOV. 1985
K86	ASTRAP WET/DRY DEPOSITION FOR STATES	U.S./CAN	STATES	1980-1981	U. S.	NOV. 1985
K88	HISTORICAL EMISSIONS OF SOX AND NOX	U. S.	STATE	1900-1980	ANNUAL	AS AVAILABLE
K90	NAPAP EMISSIONS INVENTORY - MAJOR POINT SOURCES	U. S.	COUNTY	1980	ANNUAL	DEC. 1985
K91	NAPAP EMISSIONS INVENTORY - DETAILED POINT SOURCES	U. S.	POINT	1980	ANNUAL	DEC. 1985
K92	NAPAP EMISSIONS INVENTORY - AREA SOURCES	U. S.	COUNTY	1980	ANNUAL	DEC. 1985
K93	A.D.S. - ANNUAL STATION DEPOSITION	U. S.	STATION	1980-1982	ANNUAL	FEB. 1986
K94	A.D.S. - SEASONAL DEPOSITION MEANS	U. S.	STATION	1980-1982	QUARTERLY	FEB. 1986
K95	A.D.S. - ANNUAL GRIDDED DEPOSITION	U. S.	CELLS	1980-1982	ANNUAL	FEB. 1986
K97	AMBIENT OZONE CONCENTRATIONS: COUNTY LEVEL ESTIMATES	U. S.	COUNTY	1978-1982	SEASONAL	AS AVAILABLE
K99	AMBIENT OZONE CONCENTRATIONS: GRIDDED ESTIMATES	U. S.	CELLS	1978-1982	SEASONAL	AS AVAILABLE

SECTOR=L THEME=LAND

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
L07	LAND USE (CNI AGGREGATED)	U. S.	COUNTY	1967	ANNUAL	AS AVAILABLE
L08	LAND AREAS (RURAL,URBAN,ROADS,WATER,FED)	U. S.	COUNTY	1979	ANNUAL	AS AVAILABLE

SECTOR=P THEME=POPULATION

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
P03	1970 AND 1980 POPULATION AND HOUSING CENSUS	U. S.	COUNTY	1980,1970	ANNUAL	EVERY 10 YEARS

SECTOR=Q THEME=WATER QUALITY

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
Q67	FIN - CHEMISTRY ANALYSIS	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q68	FIN - POPULATION EVALUATIONS	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q71	FIN - GENERAL STATION COMMENTS	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q72	FIN - ADDITIONAL WATER CHEMISTRY DATA	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q73	FIN - WATER CHEMISTRY	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q74	FIN - FISHERIES MANAGEMENT PROCEDURES	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q75	FIN - SPECIES CAUGHT: CLUMPED BETWEEN GEAR TYPES	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q76	FIN - SPECIES CAUGHT: DATA CLUMPED W/IN A GEAR TYPE	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q77	FIN - SPECIES CAUGHT: BY INDIV. SAMPLING GEAR	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q78	FIN - GEAR DESCRIPTION	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q79	FIN - SPECIES PRESENT: COMPOSITE	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE

Table 5. (Continued)

ADONET Data Base Contents: Verified data sets, October 1985

SECTOR=Q THEME=WATER QUALITY

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
Q80	FIN - STOCKING RECORDS	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q81	FIN - LAKE DEMOGRAPHICS	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q82	FIN - STATION DEMOGRAPHICS	ADIRON	POINT	1900-1982	POINT	AS AVAILABLE
Q85	ACID - STTNFLAG	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q86	ACID - ID CODES	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q87	ACID - HYDROLOGY	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q88	ACID - OTHER	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q89	ACID - PHYSICAL	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q90	ACID - OTHER CHEMISTRY	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q91	ACID - IONS	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q92	ACID - ACIDITY	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q93	ACID - STORET IDENTIFICATION	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q94	ACID - LAKE MORPHOMETRY	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q95	ACID - STREAM MORPHOMETRY	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q96	ACID - HYDROLOGICAL UNIT	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q97	ACID - STATION	U. S.	POINT	1900-1980	POINT	AS AVAILABLE

SECTOR=T THEME=TERRAIN

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
T03	SOILS AT MAP UNIT LEVEL	U. S.	COUNTY	1967	HISTORIC	INFREQUENTLY

ADONET Data Base Contents: Data sets being edited, October 1985

SECTOR=C THEME=CLIMATE

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
C98	UPPER AIR METEOROLOGICAL DATA	U. S.	STATION	1976-1981		AS AVAILABLE
C99	RAW PRECIPITATION DATA	U. S.	STATION	1976-1981		AS AVAILABLE

SECTOR=F THEME=FORESTRY

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
F97	FORESTRY PLOT SUMMARY VOLUMES, AREAS	N. E.	POINT	1978-1983		JAN. 1986
F98	FOREST PLOT TYPES AND AREAS	N. E.	POINT	1978-1983		JAN. 1986
F99	FOREST PLOT, DETAILED REMEASUREMENTS	N. E.	POINT	1978-1983		JAN. 1986

SECTOR=I THEME=INGETRATED ANALYSES

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
I00	INTEGRATED LIST OF LAKES IN ADIRONDACKS	ADIRON	LAKE	1984		
I01	PHYSICAL ATTRIBUTES OF LAKES	ADIRON	WATERSHED	1975-1984		
I02A	WATERSHED AREA BY FOREST TYPE	ADIRON	WATERSHED	1948-1949		
I02B	WATERSHED AREA BY DISTURBANCE TYPE	ADIRON	WATERSHED	1916		
I02C	NUMBER OF CABINS	ADIRON	WATERSHED	1945,1978		
I03	WATERSHED AREA BY LAND COVER TYPE	ADIRON	WATERSHED	1978		
I04	SOIL MAPPING UNIT AREAS	ADIRON	WATERSHED	1974		
I05A	SOILS - A/E HORIZON VALUES	ADIRON	WATERSHED	1974		
I05B	SOILS - MEAN OF A/E & B HORIZON VALUES	ADIRON	WATERSHED	1974		
I05C	SOILS - MEAN OF A/E, B, C HORIZON VALUES	ADIRON	WATERSHED	1974		
I05D	SOILS - VALUES DEPEND ON RUNOFF CLASS	ADIRON	WATERSHED	1974		
I06A	SOILS - A/E HORIZON VALUES	ADIRON	WATERSHED	1974		
I06B	SOILS - MEAN OF A/E & B HORIZON VALUES	ADIRON	WATERSHED	1974		
I06C	SOILS - MEAN OF A/E, B, C HORIZON VALUES	ADIRON	WATERSHED	1974		
I06D	SOILS - VALUES DEPEND ON RUNOFF CLASS	ADIRON	WATERSHED	1974		
I07	SOIL CHEMISTRY BY SOIL MAPPING UNIT	ADIRON		1974		
I08	NATIONAL WETLANDS INVENTORY COVER TYPES	ADIRON	WATERSHED	1984		
I09	WETLANDS - ACIDIFICATION CLASSES	ADIRON	WATERSHED	1985		
I10	WETLANDS - DESCRIPTION OF NWI CODES	U.S.		1979		
I11	BEAVERS - DAMS AND LODGES	ADIRON	WATERSHED	1948-1981	ANNUAL	
I12	BEAVERS - AGGREGATED BY WATERSHED	ADIRON	WATERSHED	1968,1978		
I13	WATERSHED AREA BY SLOPE CLASS	ADIRON	WATERSHED			
I14	WATERSHED AREA BY ASPECT CLASS	ADIRON	WATERSHED			
I15	WATERSHED AREA BY ELEVATION CLASS	ADIRON	WATERSHED			
I16	ANNUAL WET DEPOSITION - H+, NO3, SO4	ADIRON	WATERSHED	1980-1982		
I17	WATERSHED AREA BY BEDROCK CLASS	ADIRON	WATERSHED			
I18	WATER CHEMISTRY - SCHOFIELD LAKES	ADIRON	LAKE	1975	POINT	
I19	WATER CHEMISTRY - FIN LAKES	ADIRON	LAKE	1975-1984	MEAN	
I20	WATER CHEMISTRY - NSWS LAKES	ADIRON	LAKE	1984	POINT	
I21	CROSS-REFERENCE FILE TO OTHER DATA BASES	ADIRON	LAKE			
I22	COMMENTS ON LAKE HISTORY	ADIRON	LAKE			
I23	INTEGRATED ANALYSIS FILE	ADIRON	WATERSHED			
I24	SOIL-RELATED WATERSHED CHARACTERISTICS	ADIRON	WATERSHED			
I25	ANNUAL RUNOFF	ADIRON	WATERSHED			

Table 5. (Continued)

ADDNET Data Base Contents: Data sets being edited, October 1985

SECTOR=K THEME=AIR QUALITY

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
K06	AMBIENT AIR QUALITY ESTIMATES	U. S.	COUNTY	1974-1976	ANNUAL	NOT ANTICIPATED
K87	ASTRAP WET/DRY DEPOSITION FOR RECEPTOR AREAS	U.S./CAN	REGIONS	1980-1981	U. S.	NOV. 1985

SECTOR=P THEME=POPULATION

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
P98	ERCI ANGLER SURVEY	U. S.	COUNTY			AS AVAILABLE

SECTOR=Q THEME=WATER QUALITY

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
NSWS	NATIONAL SURFACE WATER SURVEY, PHASE I (VALIDATED)	EAST	POINT		1984	PHASE II 1987
Q63	LAKE CHEMISTRY AND WATERSHED DATA, UPPER MIDWEST	WI, MN	LAKE		HISTORIC	
Q64	LAKE CHEMISTRY AND WATERSHED DATA, BIRGE AND JUDAY	U. S.	STATE	1920-1930	POINT	AS AVAILABLE
Q69	STATE INVENTORY OF LAKES	WI, MN	LAKE	VARIES	HISTORIC	AS AVAILABLE
Q70	INVENTORY OF WATERBODIES, USGS/GNIS	U. S.	LAKE	1984		AS AVAILABLE
Q83	LAKE CHEMISTRY AND WATERSHED DATA, WISCONSIN	WI	LAKE	1980	WEEKLY	AS AVAILABLE
Q84	ACID - COASTAL	U. S.	POINT	1900-1980	POINT	AS AVAILABLE
Q84AD	ACID - COASTAL	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q85AD	ACID - STTNFLAG	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q86AD	ACID - ID CODES	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q87AD	ACID - HYDROLOGY	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q88AD	ACID - OTHER	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q89AD	ACID - PHYSICAL	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q90AD	ACID - OTHER CHEMISTRY	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q91AD	ACID - IONS	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q92AD	ACID - ACIDITY	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q93AD	ACID - STORET IDENTIFICATION	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q94AD	ACID - LAKE MORPHOMETRY	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q95AD	ACID - STREAM MORPHOMETRY	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q96AD	ACID - HYDROLOGICAL UNIT	ADIRON	POINT	1900-1980	POINT	NOV. 1985
Q97AD	ACID - STATION	ADIRON	POINT	1900-1980	POINT	NOV. 1985

SECTOR=T THEME=TERRAIN

DSN	TITLE	GEOCOVER	GEOUNIT	YEARS	TEMPORAL	UPDATES
T91	SCS NATIONAL RESOURCE INVENTORY CODES					
T92	SCS NATIONAL RESOURCE INVENTORY CODES					
T93	SCS SOILS-5 CODES					
T94	SCS SOIL CLASSIFICATION DATA					
T95	SOIL MAP UNITS FOR THE NORTHEAST	N. E.	CELL	1984		AS AVAILABLE
T96	SCS PEDON CLASSIFICATION DATA	U. S.	POINT	1970-1982		AS AVAILABLE
T96PA	PENNSYLVANIA PEDON DATA					
T97	EPA PILOT SOIL SURVEY DATA	ME, VA	POINT	1984		AS AVAILABLE
T98	SCS 1982 NATIONAL RESOURCE INVENTORY DATA					
T99	SCS SOILS-5 DATA	U. S.		1982		AS AVAILABLE

4.3 DATA BASE CONVENTIONS

4.3.1 Units of Measure

The ADDNET Data Base is designed to be SI-metric compatible (ASTM 1976), and all data are converted to these units. Land area measurements are expressed in hectares (HA), weights in kilograms (KG), and volumes as cubic meters (M3). Centimeters (CM) and degrees Celsius (C) are used in the climatic sector. Table 6 provides a complete list of the units of measure and their abbreviations as used in the ADDNET Data Base.

4.3.2 Variable Names and Labels

SAS variable names are assigned to be as meaningful and unique as possible within the ADDNET Data Base. Often names end with a single letter indicating the variable type. Many names contain an underscore ("_") to improve readability. Table 7 lists the SAS variable name extension conventions used in the ADDNET Data Base. Several standard SAS names that are used in many of the ADDNET data sets are STATE (FIPS state code), COUNTY (FIPS county code), ST (two-letter state abbreviation), and YEAR (reference year, indicated by last two digits, e.g., 1980 = 80). Table B.1 is an alphabetical list of all variable names, labels, and data set associations currently in the ADDNET Data Base.

4.3.3 Data Set Characteristics

Data sets are assigned a permanent three-character data set name. Files with state and county identifiers are stored sorted by STATE and

Table 6. Units of measure and abbreviations used in the ADDNET Data Base

Attribute	Unit	Abbreviation or format
Length	millimeter	MM
	centimeter	CM
	meter	M
	kilometer	KM
Area	square meter	M2
	hectare	HA
	square kilometer	KM2
Volume	cubic meter	M3
	liter	L
Mass	milligram	MG
	gram	G
	kilogram	KG
	ton, metric	KG*E6
Density	gram/square meter	G/M2
	kilogram/hectare	KG/HA
Concentration	micro equivalents/liter	UEQ/L
	milli equivalents/liter	MEQ/L
	microgram/liter	UG/L
	milligram/liter	MG/L
	milligram/cubic meter	MG/M3
	parts per billion	PPB
	parts per million	PPM
	parts per hundred	%
Locations	latitude (decimal degrees)	DD.DDDD
	longitude (decimal degrees)	DDD.DDDD
	latitude (degrees-minutes-seconds)	DD-MM'SS"
	longitude (degrees-minutes-seconds)	DDD-MM'SS"
Time	dates (SAS)	DDMMMYY
	year	19YY
	duration	DAYS

Table 7. Common SAS variable name extension conventions[a]

Variable suffix	Meaning of suffix
_A	Area
_C	Code, class
_D	Descriptor
_F	Flag
_L	Length
_N	Number or count
_P	Proportion or percent
_T	Tag
_V	Volume

[a]ADDNET variable names are created to end in an underscore and a single character that indicates the type of data.

COUNTY codes. Dictionary data sets are sorted by the code variable. Identifier variables and numeric code variables may be stored as SAS character variables. Character variables are not used in numerical analysis and are usually defined with leading zeros (e.g., "001"). To conserve space on the disk file, most numeric variables are stored with a length of four or fewer bytes. Lengths were selected to accommodate the largest value occurring in the data and should not influence calculation accuracy, since SAS performs statistical manipulations using double-precision arithmetic.

4.3.4 Special Output Formats

The SAS FORMAT procedure allows the user to define output formats, giving label values to variable values (SAS 1982, 1985a). In relation to the ADDNET Data Base, we have created a library of stored labels for state and county codes, ecoregion codes, and vegetation codes. To substitute English labels for codes, the user program must (1) include the job control language (JCL) for the cataloged format load module library, (2) construct a variable from the code variable to be used for the label, and (3) include an appropriate FORMAT statement. An alternative but slower method would be to merge files with dictionaries. The cataloged data set containing the library is ENVSCI.RJX24249.ADDLIB. Statements that can be used to print state names for FIPS codes are given below:

```
// EXEC SAS
//SASLIB DD DSN=ENVSCI.RJX24249.ADDLIB,DISP=SHR
//ADDDAT DD DSN=ENVSCI.RJX24249.ADDNET,DISP=SHR
DATA LIB; SET ADDNET.A06;
  STATE_NM=STATE;
  COUNTYNM=STATE*1000+COUNTY;
```

```
PROC PRINT; BY STATE_NM STATE;
  FORMAT STATE_NM STATES. COUNTYNM COUNTIES.;
  VAR COUNTYNM COUNTY CROP_A;
```

The second JCL statement refers to the data set containing format load modules created and cataloged by procedure FORMAT. The statements "STATE_NM=STATE;" and "COUNTYNM=STATE*1000+COUNTY;" define variables that temporarily contain state and county names. The FORMAT statement uses the "STATES." load module to associate state names based on the FIPS code with the variable STATE_NM for the duration of the program step. The output report contains state FIPS codes (STATE), state names (STATE_NM), county FIPS codes (COUNTY), county names (COUNTYNM), and crop areas (CROP_A).

Names of the available format load modules within the ADDNET Data Base are listed below. Additional library members may be added. The SAS variables within the data base (e.g., STATE, ECO_C, VEG_C) to be used with FORMAT statements are given in parentheses. To obtain county names, the state and county FIPS codes must be concatenated as shown above to provide a unique code.

STATES.	State and region names (STATE)
COUNTIES.	County names (STATE and COUNTY)
$ECOCODES.	Ecoregion names (ECO_C)
$VEGCODES.	Vegetation names (VEG_C)

4.4 PROCESSING NEW DATA

New data sets received by ADDNET go through a series of steps (Fig. 8) involving file copying, reformatting, and QA procedures to produce "certified" data sets. Figure 9 is the worksheet used to keep track of a data set as it progresses through the steps shown in Fig. 8.

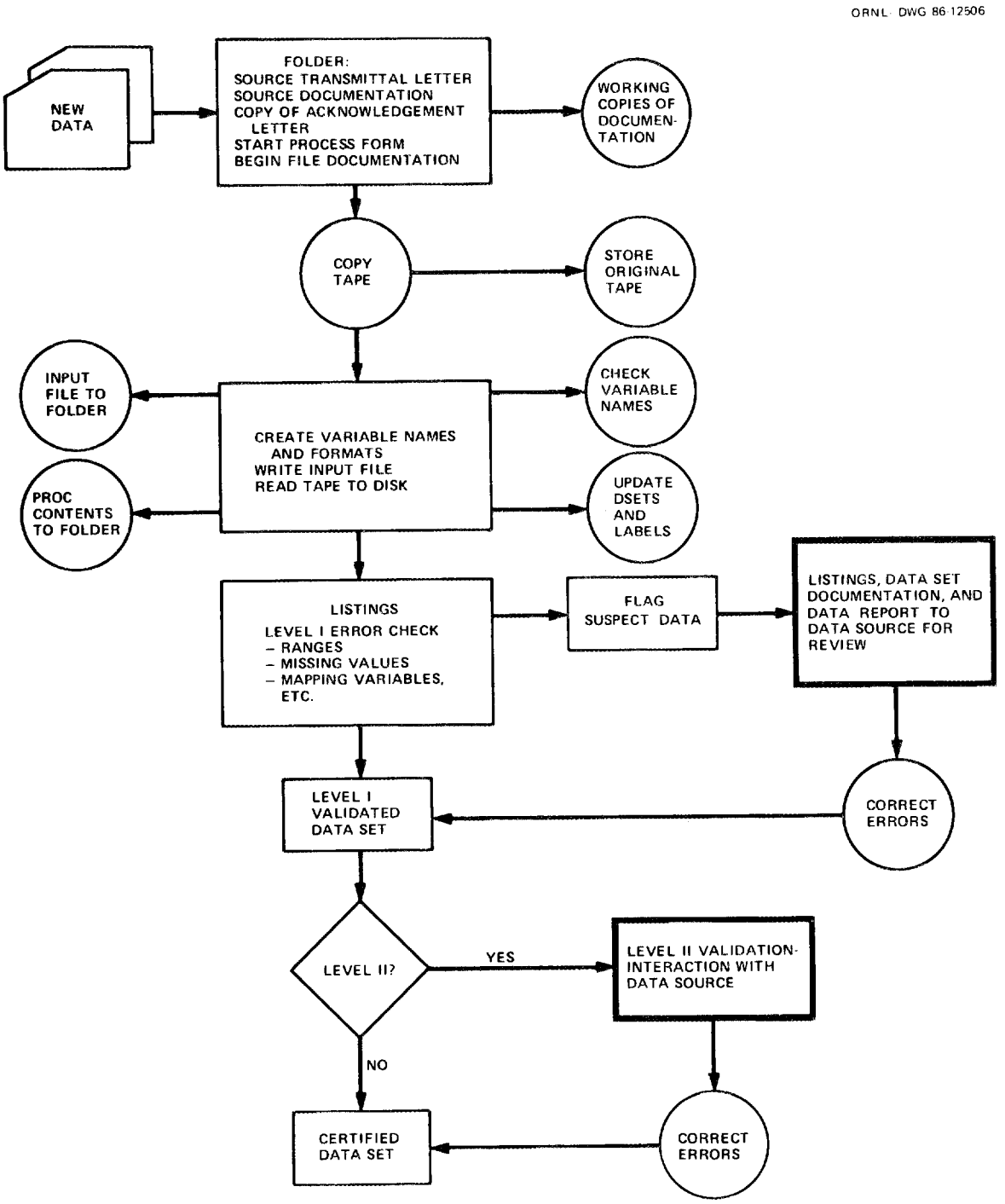


Fig. 8. Flow of new data into the ADDNET Data Base.

ADDNET Data Set Processing Form.

Data Set Name _____

_____ DSN _____

Source _____ Phone _____

Data Received ___/___/___

Documentation ___/___/___

Acknowledgement ___/___/___

Copied to ORNL Tape ___/___/___ "X" Tape _____

Source Tape Stored ___/___/___ ESD Tape _____

Assign Variable Names, Labels, Formats ___/___/___

Update DSETS and LABELS ___/___/___

Create ADDNETW File ___/___/___

Level I Error Checking ___/___/___

Date	Problem	Resolution

Validated Data Set ___/___/___

Create ADDNET File ___/___/___

Complete Folder: Documentation _____ Contents _____

Sample List _____ Summary _____ Map/Graph _____

Acknowledgement and Summary to Source ___/___/___

Estimate of Effort Required to Process the File _____ days

Fig. 9. ADDNET data set processing form.

Depending on the format, size, complexity, and problems encountered, the process may take from 1 to 4 weeks.

The initial processing step is to assign a data set number (DSN) and create a file folder of all documentation and processing records. The original tape is copied to an ORNL 6250 bpi, standard label, EBCDIC tape that becomes the ADDNET working copy. The original tape is then stored. The documentation is reviewed, and a letter is sent to the supplier of the data acknowledging receipt of the data, indicating any problems in copying the tape, and requesting additional documentation if necessary.

The second phase of processing consists of converting the data to a SAS file. SAS variable names, labels, lengths, and formats are assigned to each variable. The names and labels are assigned based on the user-supplied documentation; however, the new variable names are compared with existing ADDNET variable names to ensure uniqueness and overall consistency. The new variable names and labels are added to the ADDNET dictionary (LABELS) (Table B.1, Appendix B). An entry is made in the DSETS data set that defines the title, geographic and temporal characteristics, and status of each data set.

A SAS input program is written to read in the data using the assigned variable names. The program converts units of measure to metric units if necessary and generates listings of the data, frequencies of codes, and statistics to assist in error checking. The SAS "working" data set is stored on an online mass storage device with access limited to the ADDNET staff.

A second letter, containing SAS output lists and the ADDNET data set description, is sent to the data supplier for review. Any problems that need resolving are highlighted. Errors are then corrected on the ADDNET file. This process may be repeated as needed to obtain the certified data set. This data set is then transferred to a disk area with less restricted access. At this point, the file is available for distribution to other users.

ADDNET staff next make sure that the data set folder includes records of the intermediate and final processing steps and contains the complete documentation. Finally, the written description of the data set and the list of labels and variables are entered into Appendix A of the ADDNET Notebook.

4.5 QUALITY ASSURANCE

Our experience with extant data has emphasized the need for extensive data checking. The first step in data QA (see Fig. 8) is to document the data source fully, noting any constraints on the interpretation of the data, collection methods, etc. Variable names are checked for uniqueness and clarity and changed if ambiguous or inconsistent. Units of measurement are converted to SI metric units if necessary.

Level I error checking (Fig. 8) uses relatively simple procedures to verify that the data set represents what is described in the documentation. Missing data and outliers are highlighted, as are blatantly miscoded data (e.g., grossly inaccurate latitude/longitude values). Data problems encountered include erroneous data, missing

data, wrong county identifiers, and inconsistent county identifiers for independent cities and other areas. (For example, plotting point locations revealed points outside the states in which they were supposed to be located.) The most fruitful ways of determining errors are to (1) use the data, (2) generate thematic maps, (3) search sorted lists, (4) calculate univariate statistics, and (5) associate two or more independent files. Although users of a data set may eventually discover errors, we have found that a preliminary thematic map of a variable quickly displays possible inconsistencies through irregularities in the spatial pattern.

More sophisticated and time-consuming QA methods (Level II, Fig. 8) can be used on selected data sets where necessary. These include graphical displays and statistical testing to identify suspected outliers. One useful approach is to compare new data files against older or similar files for consistency (e.g., compare updated land-use statistics against earlier survey data). If potential problems are discovered with these checks, the data supplier is contacted to help resolve any errors.

Another QA method, one of the most thorough for ensuring quality control, is to combine two independent files by county and check for inconsistencies. For example, based on ecological relationships, tree species occurrences can be compared with potential vegetation types within a county. Ecologically, many tree species do not normally occur in areas classified as prairie. If a county is found to have such an inconsistency, both data sources are checked. If an error is found,

each file is checked for errors in digitizing, transcribing, and entering data. Appropriate corrections are made using the SAS edit procedures. Another example of cross-file checking compares county areas. Most files which contain an estimate of total county area do not agree with the 1970 Census values used as our base county statistic. Some of these differences stem from the classification of small and large water bodies in an inventory or from real changes in county boundaries. However, in other cases, it has been exceedingly difficult to resolve differences in the elementary statistic of county size.

Suspicious data values are brought to the source researcher's attention for possible correction. Corrected data sets can then be combined, divided, or summarized into logical relational sets, depending on their content and intended use. Despite our continuing efforts toward quality control in the ADDNET Data Base, it would be presumptuous to imply that the data base is error free. Errors are corrected when found. Individuals obtaining copies of the data base must share the responsibility of informing us of possible errors discovered in the data. Users should also periodically request information on updates or request an updated copy of a particular file.

4.6 DATA EXCHANGE FORMATS

Access to data sets in ADDNET can be either online using the computer system at ORNL (ADDNET staff) or, more frequently, through data tapes provided to individual users. The ADDNET Data Base has been designed using the SAS software (SAS 1982, 1985a, 1985b) for data management and analyses on the ORNL tandem IBM 3033 computer system.

SAS files can be transferred to other computers either as SAS tape files or as formatted EBCDIC or ASCII tape files. The SAS files contain all the dictionary information necessary for an installation with SAS to establish the data base. Formatted files require creating a format for each data set, using SAS "PUT" statements to write the tape file, and writing a computer program for the new user to read and process the tape. The following conventions are used in providing data files.

4.6.1 Documentation

Data exchange requires that adequate documentation accompany data files, because it is unreasonable to expect that all files can be created in a uniform, standard manner. ADDNET has established guidelines designed to promote consistency and to simplify file transfer. The contents of data bases should be described using a NAPAP Data Base Description form (Fig. 2). We encourage contributors to identify additional published supporting documentation, including examples of applications. In addition to describing the data, the form identifies the appropriate reference citation to be used by secondary users of the data set in acknowledging the primary source.

4.6.2 Tape Format

Data sets can be sent as SAS data sets or card-image tape files, either 1600 or 6250 bpi density, nonlabeled or standard labeled, nine-track, EBCDIC or ASCII magnetic tapes.

4.6.3 File Structure

Data are structured as relational files for simplicity of structure and flexibility of inquiry.

4.6.4 File Contents

The following conventions are preferred within files:

- SI metric units of measure;
- FIPS state and county codes;
- coordinates given as latitude/longitude (decimal representations);
- missing values as SAS "." code;
- dates in SAS DATE7. format (e.g., 01JAN84); and times in 24-h (4-digit) notation.

4.7 DATA SECURITY

Data security for ADDNET data sets involves two aspects: protection from data corruption or loss and prevention of illegal access.

4.7.1 Protection from Data Corruption or Loss

Data tapes received from researchers are first copied. ADDNET works only with the copy; the original tape is placed in a data storage area for future reference, if necessary. Data sets are transferred from tape to mass storage devices, which themselves are backed up weekly on a two-tape-rotation basis. In addition, working programs manipulating the data are kept in a disk area that is backed up daily. Corrupted or destroyed data can be easily restored from these sources.

4.7.2 Prevention of Illegal Access

Online access to ORNL's computer system requires the use of an authorized password. These passwords are secret information and are not divulged to unauthorized users. A legal user (with a different computer account or password) who tries to access ADDNET data sets will be prevented from doing so by the existence of the IBM ACF2 data security system. Even if an ADDNET password is obtained, writing to an ADDNET data set requires an additional access password. Therefore, the possibility of illegal access to an ADDNET data set is greatly reduced, while the chance of accidental damage that cannot be rectified is essentially eliminated.

5. DATA BASE CONTENTS

Thematic sectors in the ADDNET Data Base group data sets into similar subject areas. Table 8 lists the sector designation letter, theme title, and number of data sets applicable to each theme in the ADDNET Data Base. Titles, temporal and spatial characteristics, and the status of data sets within each sector are given in Table 5. Although individual data sets within a sector may be replaced by updated files, each sector represents an aspect of the environment important for regional studies. Each sector, identified by its letter (Table 8), is described below. Several of these data sets have been transferred from the archived Geoecology Data Base files (Olson et al. 1980). The complete list of Geoecology data sets is given in Table 9; these files could be added to the ADDNET Data Base if needed.

5.1 AGRICULTURE (A)

The Agricultural Sector contains area and yield statistics for selected crops from national inventories. Data for more crops and crops grown under irrigation are available on tapes.

5.2 BASE DATA (B)

Base data about the size and location of counties plus various index files (e.g., ownership category) are contained in the B Sector. Data set B01 defines the standard set of 3071 county units. These files can be merged with other data sets to aggregate counties into various regions for analysis.

Table 8. ADDNET Data Base sectors and the number of data sets which had been certified or were being edited as of September 30, 1985

Sector	Theme	Number of data sets
A	Agriculture	1
B	Base Data	2
C	Climate	4
D	Vegetation	1
F	Forestry	6
G	General	2
I	Integrated	31
K	Air Quality	14
L	Land Use/Land Cover	2
P	Population	2
Q	Aquatic Biota/Water Quality	47
T	Terrain	11
		123

Table 9. Data sets within the geoecology data base

-- SECTOR CODE LETTER=A THEMATIC SECTOR TITLE=AGRICULTURE --

DSN[a]	TITLE
A01	CROP AREAS AND YIELDS, AG LAND USE
A02	LIVESTOCK AND POULTRY INVENTORY/SALES
A03	CROP AREAS AND YIELDS (SOUTHERN CROPS)
A04	CROP PLANTED-HARVESTED AREAS AND YIELDS
A05	CROP REPORTING DISTRICT INDEX

--- SECTOR CODE LETTER=B THEMATIC SECTOR TITLE=BASE DATA ---

DSN	TITLE
B01	COUNTY CODES, NAMES AND CENTROIDS
B02	STATE NAMES AND INDICES (EPA, BBS, NOAA)
B03	AIR(AQCR) AND WATER(WRC-SA) INDICES
B05	REGIONAL DESIGNATIONS
B06	EPA AQCR INDICES
B07	FEDERAL & STATE LAND OWNERSHIP BY AGENCY

---- SECTOR CODE LETTER=C THEMATIC SECTOR TITLE=CLIMATE ----

DSN	TITLE
C07	MONTHLY AVERAGE TEMPERATURES BY COUNTY
C08	MONTHLY AVERAGE PRECIPITATION BY COUNTY
C09	MONTHLY POTENTIAL EVAPORATION BY COUNTY
C10	MONTHLY MOISTURE INDEX BY COUNTY
C11	MONTHLY AVERAGE TEMPERATURES BY DIVISION
C12	MONTHLY MAXIMUM TEMPERATURES BY DIVISION
C13	MONTHLY MINIMUM TEMPERATURES BY DIVISION
C14	MONTHLY AVERAGE PRECIPITATION BY DIVISN
C15	MONTHLY MAXIMUM PRECIPITATION BY DIVISN
C16	MONTHLY MINIMUM PRECIPITATION BY DIVISN
C17	CLIMATIC DIVISION INDEX
C18	GROWING SEASON LENGTH, FIRST/LAST FROST
C19	STATE CLIMATIC DIVISION NAMES/WEIGHTS
C20	RAINFALL PH & H ION LOADINGS

-- SECTOR CODE LETTER=D THEMATIC SECTOR TITLE=VEGETATION ---

DSN	TITLE
D01	TREE SPECIES CODES DICTIONARY
D02	TREE SPECIES RANGES (LITTLE)
D03	POT. & ADJ. VEGETATION NATIONAL STATS
D04	POT. & ADJ. VEGETATION
D05	VEGETATION-LAND USE CHANGE PROBABILITIES
D06	VEGETATION REPLACEMENT BY URBAN AREAS
D07	POT. & ADJ. ECOREGION NATIONAL STATS
D08	POT. & ADJ. ECOREGION AREAS
D09	POT. & ADJ. VEGETATION-ECOREGION STATS
D10	POT. & ADJ. VEGETATION WITHIN ECOREGIONS
D11	ECOREGION CODES DICTIONARY
D12	VEGETATION WITHIN WESTERN ECOREGIONS
D13	VEGETATION SENSITIVITY TO SO2

--- SECTOR CODE LETTER=F THEMATIC SECTOR TITLE=FORESTRY ----

DSN	TITLE
F01	FOREST AREA BY MAJOR TYPES
F02	FOREST GROWING STOCK VOLUMES
F03	FOREST SAWTIMBER VOLUMES
F04	FOREST SURVEY UNIT INDEX
F05	TREE SPECIES CODES DICTIONARY
F06	TREE SPECIES GROWING STOCK VOLUMES
F07	FOREST AREA & GROWING STOCK VOLUME

---- SECTOR CODE LETTER=G THEMATIC SECTOR TITLE=GENERAL ----

DSN	TITLE
G01	DATA SET TITLES AND CHARACTERISTICS
G02	DATA SET VARIABLES AND LABELS
G03	SOURCE & SUPPORTING DATA FILES (TAPES)
G04	GEOECOLOGY-GENERATED GRAPHICS INDEX
G05	SOURCE & SUPPORTING MAPS

-- SECTOR CODE LETTER=K THEMATIC SECTOR TITLE=AIR QUALITY --

DSN	TITLE
K01	AMBIENT AIR QUALITY (SAROAD)
K02	PROJECTED EMISSIONS (SEAS)
K03	PROJECTED AMBIENT SO2,TSP (SEAS)
K04	AIR QUALITY NONATTAINMENT AREAS (EPA)
K05	PROJECTED AMBIENT SO2,SULFATE (NCUA)
K06	AMBIENT AIR QUALITY ESTIMATES

------ SECTOR CODE LETTER=L THEMATIC SECTOR TITLE=LAND ---------

DSN	TITLE
L01	LAND USE (CNI DETAILED)
L02	LAND CAPABILITY CLASSES (CNI)
L03	LAND USE BY LAND CAPABILITY CLASS (CNI)
L04	SEISMIC RISK RATINGS
L05	LAND SURFACE MINING
L06	LAND RESOURCE REGION INDEX
L07	LAND USE (CNI AGGREGATED)
L08	LAND AREAS (RURAL,URBAN,ROADS,WATER,FED)

-- SECTOR CODE LETTER=N THEMATIC SECTOR TITLE=NATURAL AREAS ----

DSN	TITLE
N01	RARE II TRACTS
N02	NATIONAL PARK SERVICE AREAS
N03	WILDERNESS AREAS
N04	RARE II TRACTS BY COUNTY
N05	RARE II TRACTS BY ECOREGION & VEG.
N06	RARE II TRACTS ORNL RANKS
N07	RARE II TRACTS USFS DATA
N08	RARE II TRACTS ENERGY RESOURCES
N09	CRITICAL NATURAL AREAS

---- SECTOR CODE LETTER=P THEMATIC SECTOR TITLE=POPULATION ------

DSN	TITLE
P01	POPULATION BY SEX AND 5 YEAR AGE CLASSES
P02	PROJECTED POPULATION FOR 1985,2000

-- SECTOR CODE LETTER=Q THEMATIC SECTOR TITLE=WATER RESOURCES ---

DSN	TITLE
Q01	WATER QUALITY (NASQAN)

------ SECTOR CODE LETTER=T THEMATIC SECTOR TITLE=TERRAIN -------

DSN	TITLE
T01	LAND SURFACE FORM
T02	BEDROCK LITHOLOGY
T03	SOILS AT MAP UNIT LEVEL
T04	GLACIAL GEOLOGY
T05	KARST TERRAIN
T06	ELEVATION (BROAD CLASSES)
T07	SOIL ORDER, SUBORDER, MAP UNIT DICTIONRY
T08	GREAT SOIL GROUPS CHARACTERISTICS
T09	GREAT SOIL GROUPS WITHIN MAP UNITS
T10	SOIL MAP UNIT CHEMICAL CHARACTERISTICS
T11	UNIQUE LAND SURFACE COVER (SAND & SWAMP)
T12	SOILS AVERAGE CHEMICAL CHARACTERISTICS
T13	SOILS AT SOIL ORDER LEVEL
T14	PHYSICAL REGIONS
T15	PHYSICAL REGIONS DICTIONARY

---- SECTOR CODE LETTER=W THEMATIC SECTOR TITLE=WILDLIFE -------

DSN	TITLE
W01	BBS ROUTES (BREEDING BIRD SURVEY)
W02	BBS PHYSIOGRAPHIC STRATA DICTIONARY
W03	BBS BIRD CODES DICTIONARY
W04	BBS BIRD NATIONAL & REGIONAL STATS
W05	BBS BIRD-ECOREGION STATS
W06	BBS BIRD COUNTS WITHIN STRATA
W08	BBS BIRD COUNTS FOR ROUTES
W09	ENDANGERED SPECIES CODES DICTIONARY
W10	ENDANGERED SPECIES (BNL FILE)
W11	ENDANGERED SPECIES (ORNL MODIFIED)
W12	MAMMAL CODES DICTIONARY
W13	MAMMAL NATIONAL & REGIONAL STATS
W14	MAMMAL-ECOREGION STATS
W15	MAMMAL SPECIES RANGES
W16	MAMMAL SPECIES RANGES (RARE SPECIES)

[a]DSN = data set number

5.3 CLIMATE (C)

Climatic data in Sector C consist of monthly values of temperature, precipitation, and other climatic parameters for stations, counties, and state climatic divisions. In addition, detailed synoptic data files in the sector contain precipitation and upper air wind data for use in atmospheric models.

5.4 VEGETATION (D)

The Vegetation Sector contains estimates of areas of potential natural vegetation (Küchler 1964) as digitized from Küchler's map (USDI 1970) and as adjusted for current land-use practices (Klopatek et al. 1979).

5.5 FORESTRY (F)

Data sets in the Forestry Sector were developed by compiling, editing, and reformatting county-level tree species growing-stock volume data from a variety of data sources (personal communication from H. R. Delcourt, D. C. West, and L. J. Allison to R. J. Olson, 1980). Data include forest stand volumes and biomass estimates for major forest species and forest areas by major forest types.

5.6 GENERAL (G)

The General Sector includes information on the contents of the other data sets and on a library of analysis and display materials generated from the data sets. G01 or DSETS (Table 5) provides characteristics of data sets and G02 or LABELS (Table B.1) contains variables and labels extracted from the individual data set

directories. Data set G03 or TAPES (not included) is an internal inventory of tape files associated with the ADDNET project.

5.7 INTEGRATED ANALYSES (I)

This sector contains environmental data from diverse sources for a particular region, to facilitate a detailed regional analysis. Current data include forest type, land cover, soils, wetlands, beaver activity, water chemistry, elevation, lake characteristics, and lake names for the Adirondack region.

5.8 AIR QUALITY (K)

This sector includes ambient air quality measurements, emission inventories, and atmospheric deposition data. The deposition data represent aggregated summary statistics based on combined data from several monitoring networks. This synthesis was performed under Task Group B within the Acid Deposition System (ADS) at Pacific Northwest Laboratory (PNL).

5.9 LAND USE/LAND COVER (L)

The Land Sector includes several data sets related to land use, land capability, and land-use restrictions.

5.10 POPULATION (P)

Human population and housing statistics derived from U.S. census data for 1970 and 1980 are stored in data sets included this sector.

5.11 AQUATIC BIOTA/WATER QUALITY (Q)

Water quality and aquatic data include the Acidification Chemistry Information Data Base (ACID) from Brookhaven National Laboratory (BNL), the Fish Information Network Data Base (FIN) from North Carolina State University (NCSU), and the National Surface Water Survey (NSWS) data from the U.S. EPA. These data bases are compiled specifically to address acidic deposition impacts on aquatic resources.

5.12 TERRAIN (T)

Various aspects of the terrain of the United States are characterized as part of the Terrain Sector. A set of National Atlas maps including land form, elevation, soils, lithology, karst terrain, and glacial areas was digitized for the East by C. A. Roswell, Jr. (1976); several have been expanded to cover the West. Characterization data are being developed for the chemical, physical, and land-use properties of the soils file. The 1982 Soil Conservation Service (SCS) National Resource Inventory (NRI) is being added to the data base.

6. USING THE ADDNET DATA BASE -- EXAMPLES

As was described earlier, files in the ADDNET Data Base are stored as SAS data sets on the ORNL IBM 3033 computer system, and SAS is used for data retrieval and analysis. We anticipate that the majority of users will request magnetic tape copies of selected files to be sent for analysis on their own computers. If these users have SAS, then they can easily load the files for immediate analysis.

Examples 1-6 included in this section are from a sample SAS program. These examples demonstrate a typical analysis involving the SAS operations of (1) checking the contents, (2) merging files, (3) generating reports, (4) performing statistical analysis, (5) producing X-Y plots, and (6) producing maps. Specifically, a file of crop production (A06) is combined with a file of ambient ozone concentrations on a county level (K97), to portray potential areas of ozone-soybean impacts. A third file (B01) is used to provide statistics on the size of each county included.

In the examples, a statement enclosed with an asterisk ("*") and a semicolon (";") is a SAS comment that documents the purpose or explains a portion of the program. Because typical applications tend to generate large amounts of printed output, we routinely submit batch jobs. However, SAS has interactive capabilities for entering, editing, retrieving, analyzing, and displaying of data. The SAS program statements used in these examples could either be submitted as a batch job or entered interactively.

6.1 DATA SET CONTENTS

In the first step (SAS Example 1), the SAS procedure PROC CONTENTS is used to list the data set names of the files currently stored online (Fig. 10). The use of 'NODS' suppresses the printing of the contents of the individual data sets when '_ALL_' is specified in the 'DATA=' option; only the SAS data library directory will be printed (SAS 1982). The ADDNET Data Base is stored on the disk file designated as ADDNET, which must be referenced by JCL or allocated within the interactive session. In SAS Example 1, PROC CONTENTS is also used to list the variables and labels within B01, A06, and K97 (Fig. 11). In these statements 'NOSOURCE' suppresses the printing of the SAS statements used to create a SAS data set (SAS 1982).

```
*************************************************************;
*    SAS EXAMPLE 1;
*;
*    USE OF PROC CONTENTS TO LIST DATA SET CONTENTS;
*;
*;
     PROC CONTENTS DATA=ADDNET._ALL_ NODS;
       TITLE 'CONTENTS OF THE ONLINE ADDNET DATA BASE';
*;
*    CONTENTS OF SPECIFIC FILES;
*;
     PROC CONTENTS DATA=ADDNET.A06 NOSOURCE;
*;
     PROC CONTENTS DATA=ADDNET.B01 NOSOURCE;
*;
     PROC CONTENTS DATA=ADDNET.K97 NOSOURCE;
*;
*************************************************************;
```

6.2 MERGING DATA SETS

The second step involves merging the data sets and calculating a crop yield value (SAS Example 2). The resulting data set is used to print a report, perform a statistical analysis, produce an X-Y graph, and generate a map. The combined set, called FIVE, could be stored on

CONTENTS OF THE ONLINE ADDNET DATA BASE

CONTENTS PROCEDURE
PHYSICAL CHARACTERISTICS OF THE OS DATA SET

DSNAME= ENVSCI.BJK24249.ADDNET UNIT=DISK VOL=SER=WADDNT. DISP=SHR DEVICE=3330 DISK MAX BLKSIZE=13030 BYTES
CREATED ON MAY 29, 1986 4000 TRACKS ALLOCATED IN 1 EXTENT(S)

SAS DATA LIBRARY DIRECTORY

NAME	MEMTYPE	#OBS	TRACKS	EXTENTS
A06	DATA	3053	45	2
B01	DATA	3071	13	1
B07	DATA	3071	15	2
C07	DATA	2660	14	2
C08	DATA	2660	14	2
C17	DATA	3431	7	2
DS3	DATA	1922	388	3
DS4	DATA	1798	202	1
D03	DATA	106	3	2
F01	DATA	2566	20	2
F04	DATA	2842	5	2
F06	DATA	29781	63	2
F08	DATA	2271	9	2
G01	DATA	132	5	2
G01_AWD	DATA	37	9	1
G02	DATA	905	10	1
G02_AWD	DATA	903	9	1
G03_AWD	DATA	659	5	1
I00	DATA	3831	49	1
I01	DATA	463	10	1
I02A	DATA	463	4	1
I02B	DATA	463	4	1
I02C	DATA	463	2	1
I03	DATA	463	4	1
I04	DATA	1751	4	1
I05A	DATA	463	5	1
I05B	DATA	463	5	1
I05C	DATA	463	5	1
I05D	DATA	463	5	1
I06A	DATA	463	6	1
I06B	DATA	463	6	1
I06C	DATA	463	6	1
I06D	DATA	463	6	1
I07	DATA	336	14	1
I08	DATA	3435	11	1
I09	DATA	463	5	1
I10	DATA	100	3	1
I11	DATA	2797	10	1
I12	DATA	463	8	1
I13	DATA	463	9	1
I14	DATA	463	3	1
I15	DATA	463	17	1
I16	DATA	463	3	1
I17	DATA	463	3	1
I18	DATA	121	3	1
I19	DATA	256	5	1
I20	DATA	49	3	1
I21	DATA	5053	48	1
I22	DATA	1981	14	1
I23	DATA	463	61	2
I24	DATA	463	9	1
I25	DATA	463	2	1
K82	DATA	3088	17	1
K83	DATA	12064	79	2
K85	DATA	4590	36	2
K86	DATA	60	2	2
K88	DATA	3969	7	2
K90	DATA	25256	164	3
K91	DATA	1891	11	2
K92	DATA	3102	17	2
K93	DATA	684	10	2
K94	DATA	10309	122	2
K95	DATA	7200	19	2
K97	DATA	15535	41	2
K99	DATA	64635	181	2
L07	DATA	3071	12	2
L08	DATA	3070	26	2
P03	DATA	3137	8	2
Q67	DATA	1189	7	1
Q68	DATA	3451	82	2
Q71	DATA	2680	21	2
Q72	DATA	525	5	2
Q73	DATA	13016	99	2
Q74	DATA	9868	73	2
Q75	DATA	299	4	2
Q76	DATA	1104	9	2
Q77	DATA	27825	201	2
Q78	DATA	11300	81	2
Q79	DATA	1861	16	2
Q80	DATA	26854	203	2
Q81	DATA	3391	22	2
Q82	DATA	3483	31	2
Q84NE	DATA	35	8	2
Q85NE	DATA	501	9	2
Q86NE	DATA	9513	37	2
Q87NE	DATA	0	2	1
Q88NE	DATA	18556	43	2
Q89NE	DATA	61836	246	2
Q90NE	DATA	23073	122	2
Q91NE	DATA	60762	335	2
Q92NE	DATA	76979	251	2
Q93NE	DATA	9521	37	2
Q94NE	DATA	0	9	1
Q95NE	DATA	1339	12	2
Q96NE	DATA	2613	15	2
Q97NE	DATA	8639	53	2
T03	DATA	6695	11	2

TOTAL TRACKS USED = 3983
d1G8 TRACKS USED = 3983

Fig. 10. Example 1 output: Displaying the directory of the online ADDNET Data Base.

CONTENTS OF THE ONLINE ADDNET DATA BASE

CONTENTS PROCEDURE
CONTENTS OF SAS MEMBER ADDNET.A06

CREATED BY OS JOB RJXMOVE ON CPUID 00-3033-020530 AT 12:42 THURSDAY, MAY 29, 1986 BY SAS RELEASE 5.08
DSNAME=ENVSCI.RJX24249.ADDNET OBSERVATIONS PER TRACK =70 BLKSIZE=12954 LRECL=185 GENERATED BY PROC COPY
DATA SET LABEL: 1978 CROP AREAS AND YIELDS, AG LAND USE NUMBER OF OBSERVATIONS: 3053 NUMBER OF VARIABLES: 46
MEMTYPE: DATA

----ALPHABETIC LIST OF VARIABLES AND ATTRIBUTES-----

#	VARIABLE	TYPE	LENGTH	POSITION	FORMAT	INFORMAT	LABEL	
37	ALFAL_A	NUM	4	148	F8.		ALFALFA	HA
38	ALFAL_Y	NUM	4	152	F8.		ALFALFA YIELD	KG
4	B_FARM_A	NUM	4	16	F8.		SIZE OF BIG FARMS	HA
2	B_FARM_N	NUM	4	8	F8.		NUMBER OF BIG FARMS	
21	BARLEY_A	NUM	4	84	F8.		BARLEY	HA
22	BARLEY_Y	NUM	4	88	F8.		BARLEY YIELD	KG
13	CORN_G_A	NUM	4	52	F8.		CORN FOR GRAIN	HA
14	CORN_G_Y	NUM	4	56	F8.		CORN FOR GRAIN YIELD	KG
15	CORN_S_A	NUM	4	60	F8.		CORN FOR SILAGE OR GRAZING	HA
16	CORN_S_Y	NUM	4	64	F8.		CORN FOR SILAGE YIELD	KG
29	COTTON_A	NUM	4	116	F8.		COTTON	HA
30	COTTON_Y	NUM	4	120	F8.		COTTON YIELD	KG
46	COUNTY	NUM	3	182	Z3.		FIPS COUNTY NUMBER	
5	CROP_A	NUM	4	20	F8.		CROPLAND	HA
8	CRP_MS_A	NUM	4	32	F8.		MISCELLANEOUS CROPS	HA
3	FARM_A	NUM	4	12	F8.		FARMLAND	HA
1	FARM_N	NUM	4	4	F8.		NUMBER OF FARMS	
6	HARV_A	NUM	4	24	F8.		HARVESTED CROPLAND	HA
35	HAY_A	NUM	4	140	F8.		HAY OR GRASS SILAGE	HA
36	HAY_Y	NUM	4	144	F8.		HAY OR GRASS SILAGE YIELD	KG
12	IRR_LAND	NUM	4	48	F8.		IRRIGATED LAND	HA
11	LND_MS_A	NUM	4	44	F8.		OTHER LAND, PASTURED OR NOT	HA
19	OATS_A	NUM	4	76	F8.		OATS	HA
20	OATS_Y	NUM	4	80	F8.		OAT YIELD	KG
7	PASTR_A	NUM	4	28	F8.		CROPLAND USED FOR PASTURE/GRAZING	HA
39	PEANUT_A	NUM	4	156	F8.		PEANUTS FOR NUTS	HA
40	PEANUT_Y	NUM	4	160	F8.		PEANUTS FOR NUTS YIELD	KG
33	POTAT_A	NUM	4	132	F8.		POTATOES	HA
34	POTAT_Y	NUM	4	136	F8.		POTATO YIELD	KG
10	RANGE_A	NUM	4	40	F8.		RANGE AREA	HA
41	RICE_A	NUM	4	164	F8.		RICE	HA
42	RICE_Y	NUM	4	168	F8.		RICE YIELD	KG
43	RYE_A	NUM	4	172	F8.		RYE	HA
44	RYE_Y	NUM	4	176	F8.		RYE YIELD	KG
23	SORG_G_A	NUM	4	92	F8.		SORGHUM FOR GRAIN	HA
24	SORG_G_Y	NUM	4	96	F8.		SORGHUM FOR GRAIN YIELD	KG
25	SORG_S_A	NUM	4	100	F8.		SORGHUM FOR SILAGE OR GRAZING	HA
26	SORG_S_Y	NUM	4	104	F8.		SORGHUM FOR SILAGE YIELD	KG
27	SOYBN_A	NUM	4	108	F8.		SOYBEANS FOR BEANS	HA
28	SOYBN_Y	NUM	4	112	F8.		SOYBEANS FOR BEANS YIELD	KG
45	STATE	NUM	2	180	Z2.		FIPS STATE NUMBER	
31	TOBAC_A	NUM	4	124	F8.		TOBACCO	HA
32	TOBAC_Y	NUM	4	128	F8.		TOBACCO YIELD	KG
17	WHEAT_A	NUM	4	68	F8.		WHEAT	HA
18	WHEAT_Y	NUM	4	72	F8.		WHEAT YIELD	KG
9	WOODY_A	NUM	4	36	F8.		WOODLAND PASTURED OR NOT	HA

CONTENTS OF THE ONLINE ADDNET DATA BASE

CONTENTS PROCEDURE
CONTENTS OF SAS MEMBER ADDNET.B01

CREATED BY TSO USERID LJA ON CPUID 00-3033-020596 AT 14:42 TUESDAY, JUNE 3, 1986 BY SAS RELEASE 82.4
DSNAME=ENVSCI.RJX24249.ADDNET OBSERVATIONS PER TRACK =252 BLKSIZE=4204 LRECL=50 GENERATED BY DATA
NUMBER OF OBSERVATIONS: 3071 NUMBER OF VARIABLES: 9
MEMTYPE: DATA

----ALPHABETIC LIST OF VARIABLES AND ATTRIBUTES-----

#	VARIABLE	TYPE	LENGTH	POSITION	FORMAT	INFORMAT	LABEL	
6	CNTY_A	NUM	4	38	F7.		AREA OF COUNTY EXCLUDING >16HA LAKES	HA
1	CO_C	CHAR	4	4	4.		COUNTY MNEMONIC CODE	
9	COUNTY	NUM	3	47	Z3.		FIPS COUNTY NUMBER	
3	COUNTYNM	CHAR	20	10	20.		COUNTY NAME	
4	LAT_DEC	NUM	4	30	F8.4		LATITUDE	DD.DDDD
5	LON_DEC	NUM	4	34	F8.4		LONGITUDE	DDD.DDDD
7	NCAN	NUM	3	42	F4.		NATIONAL COUNTY ALPHABETIC NUMBER	
2	ST	CHAR	2	8	2.		STATE CODE LETTERS	
8	STATE	NUM	2	45	Z2.		FIPS STATE NUMBER	

CONTENTS OF THE ONLINE ADDNET DATA BASE

CONTENTS PROCEDURE
CONTENTS OF SAS MEMBER ADDNET.K97

CREATED BY OS JOB RJXMOVE ON CPUID 00-3033-020530 AT 8:56 THURSDAY, MAY 29, 1986 BY SAS RELEASE 5.08
DSNAME=ENVSCI.RJX24249.ADDNET OBSERVATIONS PER TRACK =394 BLKSIZE=13006 LRECL=33 GENERATED BY PROC COPY
DATA SET LABEL: AMBIENT OZONE CONC.: COUNTY LEVEL EST. NUMBER OF OBSERVATIONS: 15535 NUMBER OF VARIABLES: 8
MEMTYPE: DATA

----ALPHABETIC LIST OF VARIABLES AND ATTRIBUTES-----

#	VARIABLE	TYPE	LENGTH	POSITION	FORMAT	INFORMAT	LABEL	
1	COUNTY	NUM	3	4	Z3.		FIPS COUNTY NUMBER	
3	OZ_1	NUM	4	9	F6.2		OZONE 7-H AVERAGE (APR-JUN)	PPB
4	OZ_2	NUM	4	13	F6.2		OZONE 7-H AVERAGE (APR-MAY)	PPB
5	OZ_3	NUM	4	17	F6.2		OZONE 7-H AVERAGE (JUN-OCT)	PPB
6	OZ_4	NUM	4	21	F6.2		OZONE 7-H AVERAGE (JUN-SEP)	PPB
7	OZ_5	NUM	4	25	F6.2		OZONE 7-H AVERAGE (MAY-SEP)	PPB
2	STATE	NUM	2	7	Z2.		FIPS STATE NUMBER	
8	YEAR	NUM	4	29	F4.		YEAR	

Figure 11. Example 1 output: Displaying the contents of individual ADDNET data sets.

a user's disk area for subsequent access. In this series of examples, it is assumed that all steps will be run as one job and that data set FIVE will be held as a temporary data set by SAS. Files B01 and A06 are merged by STATE and COUNTY. YIELD is calculated as the amount of soybeans produced within the county divided by the county area (kg/ha). This resulting data set is merged with K97 by STATE and COUNTY. Because data sets are stored sorted by STATE and COUNTY, they do not need to be sorted prior to the merging. Reduction in soybean yield based on ozone concentrations is calculated by using an equation developed by the National Crop Loss Assessment Network (Shriner et al. 1982). Soybean production (kg/ha) is adjusted for the size of the county, yield variability, and number of hectares harvested by dividing soybean production by total county area. Codes for mapping (MAPCODE) are assigned to each observation (COUNTY), based on soybean yield lost (kg/ha) per total county area. Criteria for the codes were based on prior knowledge of ozone impacts on soybeans.

```
*********************************************************************;
*    SAS EXAMPLE 2;
*;
*    USE OF SUBSETTING AND MERGING TO PRODUCE DESIRED DATA SET;
*;
*    GET TOTAL COUNTY AREA FOR ILLINOIS FROM FILE ADDNET.B01;
*;
     DATA ONE; SET ADDNET.B01;
       KEEP STATE COUNTY CNTY_A;
       IF STATE=17;
*;
*    GET SOYBEAN PRODUCTION (KG) FOR ILLINOIS FROM FILE ADDNET.A06;
*;
     DATA TWO; SET ADDNET.A06;
       KEEP STATE COUNTY SOYBN_Y;
       IF STATE=17;
       IF SOYBN_Y=. THEN SOYBN_Y=0;
*;
*********************************************************************
*    A SOYBEAN YIELD VALUE IS CALCULATED BY DIVIDING                *
*    SOYBEAN PRODUCTION BY THE TOTAL COUNTY AREA.                   *
*********************************************************************
```

```
;
     DATA THREE; MERGE ONE(IN=A) TWO(IN=B);
       BY STATE COUNTY;
       KEEP STATE COUNTY YIELD CNTY_A SOYBN_Y;
       YIELD=SOYBN_Y/CNTY_A;
       IF A AND B;
*;
*********************************************************************
*    GET AMBIENT AIR QUALITY DATA FOR ILLINOIS FOR JUNE             *
*    TO SEPT 1981 FROM FILE ADDNET.K97.                             *
*********************************************************************
;
     DATA FOUR; SET ADDNET.K97;
       KEEP STATE COUNTY OZ_4;
       IF YEAR=1981 AND STATE=17;
*;
*    MERGE SOYBEAN DATA AND OZONE CONCENTRATION DATA;
*    CALCULATE SOYBEAN YIELD REDUCTION(%) = -11.798 + (0.472 * OZ_4);
*    CALCULATE POTENTIAL KG OF SOYBEANS LOST BY COUNTY;
*    ASSIGN MAP CODES BASED ON SOYBEAN YIELD LOST;
*;
     DATA FIVE; MERGE THREE FOUR;
       BY STATE COUNTY;
       YIELD_R = -11.798 + (0.472 * OZ_4);
       YIELD_L = YIELD_R * SOYBN_Y/100;
       IF YIELD_L LT 20 THEN MAPCODE = 1;
       IF YIELD_L GE 20 AND YIELD_L LT 30 THEN MAPCODE = 2;
       IF YIELD_L GE 30 AND YIELD_L LT 40 THEN MAPCODE = 3;
       IF YIELD_L GE 40 AND YIELD_L LT 60 THEN MAPCODE = 4;
       IF YIELD_L GE 60 THEN MAPCODE=5;
*;
       LABEL MAPCODE=Yield (kg);
*;
*********************************************************************
*    SET UP VARIABLES TO TRANSLATE FIPS CODES TO THEIR              *
*    APPROPRIATE STATE AND COUNTY NAMES.                            *
*********************************************************************
;
       STATE_NM=STATE;
       COUNTYNM=STATE*1000+COUNTY;
*;
*********************************************************************;
```

6.3 REPORT GENERATION

Frequently only a segment of a data file is of interest, so the capability to subset a file prior to generating a report is important. In this step, county values for Illinois are obtained by using a simple

subsetting "IF" statement (SAS Example 2). The data set is sorted by YIELD_R and OZ_4 prior to printing, to allow easy identification of counties having potential ozone impacts (SAS Example 3). The resulting report is given as Fig. 12.

```
*********************************************************************;
*    SAS EXAMPLE 3;
*;
*********************************************************************
*    USE OF PROC PRINT TO GENERATE A COUNTY-LEVEL REPORT OF         *
*    SOYBEAN YIELD, PERCENT REDUCTION, AND OZONE LEVEL              *
*    FOR 50 ILLINOIS COUNTIES.                                      *
*********************************************************************
;
     DATA SIX; SET FIVE;
       IF STATE=17;
*;
*    SORT DATA BY YIELD REDUCTION AND OZONE LEVEL;
*;
     PROC SORTT; BY YIELD_R OZ_4;
*;
*    GENERATE THE REPORT;
*    USE 'FORMAT' TO PRINT STATE AND COUNTY NAMES;
*;
     PROC PRINT DATA = SIX(OBS=50);
       BY STATE_NM STATE;
       FORMAT STATE_NM STATES.;
       ID COUNTYNM;
       FORMAT COUNTYNM COUNTIES.;
       VAR COUNTY CNTY_A YIELD YIELD_R OZ_4;
       FORMAT YIELD_R 3.1;
       FORMAT CNTY_A COMMA7.;
       FORMAT YIELD COMMA 7.2;
       TITLE 'SOYBEAN YIELD (KG),';
       TITLE2 'POTENTIAL PERCENT YIELD REDUCTION, AND OZONE LEVEL';
       TITLE3 'FOR ILLINOIS COUNTIES';
*********************************************************************;
```

6.4 STATISTICAL ANALYSIS

The generation of summary statistics is also an important aspect of data analysis. Although SAS Example 4 uses PROC MEANS, the ADDNET data sets can be used easily in connection with any of the other SAS statistical procedures. This example demonstrates the creation of a table of state totals for soybean production, yield, and potential

SOYBEAN YIELD (KG),
POTENTIAL PERCENT YIELD REDUCTION, AND OZONE LEVEL
FOR ILLINOIS COUNTIES

---------- STATE_NM=ILLINOIS FIPS STATE NUMBER=17 ----------

COUNTYNM	COUNTY	CNTY_A	YIELD	YIELD_R	OZ_4
STEPHENSON	177	147,099	107.59	5.0	35.55
COOK	031	247,097	57.18	5.1	35.81
WABASH	185	57,493	539.48	5.2	36.03
MACON	115	149,701	980.16	5.3	36.12
DU PAGE	043	85,700	134.88	5.3	36.22
JO DAVIESS	085	156,998	34.50	5.3	36.28
EDWARDS	047	58,299	486.83	5.3	36.29
CARROLL	015	118,099	71.76	5.3	36.30
ROCK ISLAND	161	109,799	194.00	5.4	36.51
MERCER	131	143,999	310.30	5.5	36.58
LAWRENCE	101	96,898	336.66	5.6	36.88
LOGAN	107	161,097	847.17	5.6	36.89
RICHLAND	159	94,300	579.45	5.6	36.94
MOULTRIE	139	84,401	994.67	5.6	36.96
WHITESIDE	195	177,900	310.72	5.7	36.97
KANE	089	134,700	462.50	5.7	37.01
CHRISTIAN	021	183,598	935.47	5.7	37.11
WHITE	193	130,001	448.84	5.7	37.13
DE WITT	039	103,300	871.07	5.8	37.22
DE KALB	037	164,699	655.30	5.8	37.25
HENDERSON	071	97,400	412.87	5.8	37.27
WARREN	187	140,098	472.44	5.8	37.38
OGLE	141	196,301	337.18	5.9	37.41
LEE	103	188,600	525.00	5.9	37.44
KENDALL	093	82,900	587.82	5.9	37.45
SHELBY	173	194,799	746.74	5.9	37.52
LAKE	097	118,399	150.50	5.9	37.56
WINNEBAGO	201	134,400	198.10	5.9	37.58
HENRY	073	213,901	378.17	6.0	37.63
ALEXANDER	003	59,299	674.91	6.0	37.65
PIATT	147	113,199	1059.22	6.0	37.66
SANGAMON	167	227,700	867.68	6.0	37.69
BUREAU	011	224,297	517.32	6.0	37.76
KNOX	095	188,600	420.61	6.0	37.78
MCDONOUGH	109	150,701	737.45	6.0	37.78
STARK	175	75,401	509.52	6.1	37.92
TAZEWELL	179	163,900	533.71	6.1	37.94
MENARD	129	80,800	895.31	6.1	37.96
UNION	181	107,699	226.53	6.1	37.96
MASON	125	140,098	624.74	6.1	38.00
WAYNE	191	185,200	508.43	6.2	38.12
WILL	197	219,400	466.92	6.2	38.13
FULTON	057	227,097	398.68	6.2	38.15
PEORIA	143	161,401	386.44	6.2	38.18
SCHUYLER	169	112,401	431.97	6.2	38.20
JACKSON	077	156,698	374.30	6.2	38.22
MORGAN	137	145,298	785.41	6.2	38.22
CALHOUN	013	64,001	251.23	6.3	38.24
CASS	017	96,101	691.38	6.3	38.24
PUTNAM	155	41,399	503.50	6.3	38.25

Fig. 12. Examples 2 and 3 output: Integrating three data sets and generating a county-level report.

yield reduction for Illinois, using PROC MEANS. The OUTPUT option is used to allow reformatting of the printed table. The variable STATE_NM, created in SAS Example 2, is used to print the state name. The final output is given in Fig. 13.

```
*************************************************************************;
*    SAS EXAMPLE 4;
*;
*    USE OF PROC MEANS TO CALCULATE STATE STATISTICS;
*;
     PROC MEANS SUM NOPRINT DATA=FIVE;
       BY STATE_NM STATE NOTSORTED;
       VAR SOYBN_Y YIELD YIELD_L;
       OUTPUT OUT=SEVEN SUM=SOYBN_Y YIELD YIELD_L;
     PROC PRINT;
       ID STATE_NM;
       FORMAT STATE_NM STATES.;
       VAR STATE SOYBN_Y YIELD YIELD_L;
       FORMAT SOYBN_Y COMMA13.;
       FORMAT YIELD_L COMMA12.;
       FORMAT YIELD COMMA7.;
       TITLE 'SOYBEAN PRODUCTION, YIELD, AND POTENTIAL YIELD REDUCTION (KG)';
       TITLE2 'FOR ILLINOIS';
       TITLE3;
*************************************************************************;
```

SOYBEAN PRODUCTION, YIELD, AND POTENTIAL YIELD REDUCTION (KG)
FOR ILLINOIS

STATE_NM	STATE	SOYBEAN_Y	YIELD	YIELD__L
ILLINOIS	17	8,190,347,480	55,003	3,620

Figure 13. Example 4 Output: Calculating a summary table using a SAS statistical procedure.

6.5 GRAPHICS

An X-Y graph of soybeans and ozone levels was produced using PROC GPLOT (Fig. 14). The data are sorted by ozone level, and a symbol (*) for the plot points is chosen.

ORNL-DWG 86-12522

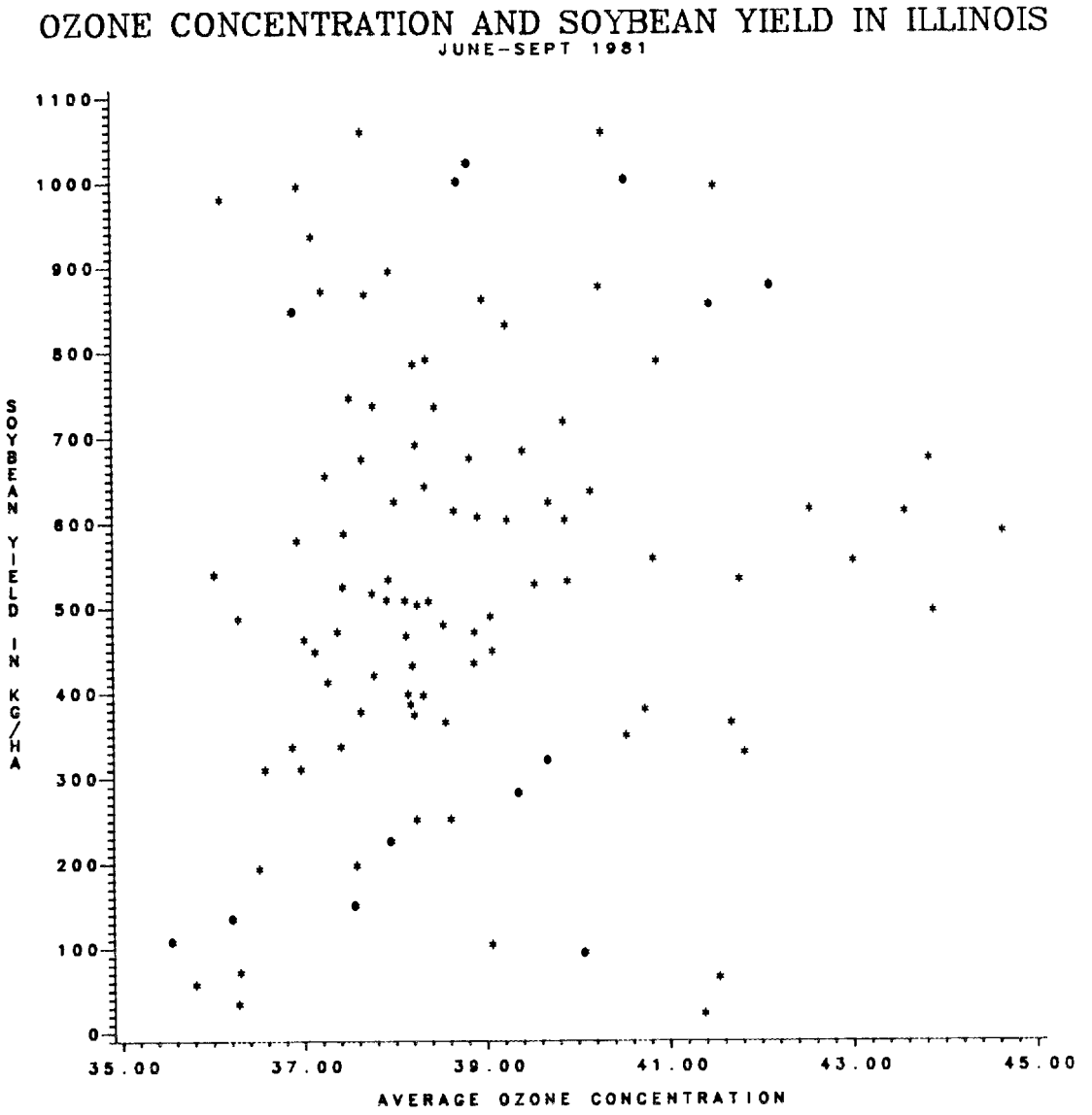


Fig. 14. Example 5 output: Producing an X-Y plot using PROC GPLOT.

```
*********************************************************************;
*    SAS EXAMPLE 5;
*;
*    USE OF PROC GPLOT TO GENERATE AN X-Y PLOT OF SOYBEAN YIELD;
*;
*    DATA SIXA; SET SIX;
       PROC SORTT; BY OZ_4;
*;
       SYMBOL1 C=RED V=STAR;

     PROC GPLOT;
       PLOT YIELD*OZ_4=1;
     TITLE 'OZONE CONCENTRATION AND SOYBEAN YIELD IN ILLINOIS';
     TITLE2 'JUNE-SEPT 1981';
     TITLE3;
     LABEL YIELD='SOYBEAN YIELD IN KG/HA';
     LABEL OZ_4='AVERAGE OZONE CONCENTRATION';
*********************************************************************;
```

6.6 CARTOGRAPHICS

In many of the applications of the ADDNET Data Base, maps are used to show regional patterns and to generally aid in editing and interpreting large amounts of spatial data. SAS is used to assemble the data to be mapped. The mapping program used to produce Fig. 15 is a SAS procedure called GMAP (SAS 1981, 1985b).

```
*********************************************************************;
*    SAS EXAMPLE 6;
*;
*    CREATE A MAP OF POTENTIAL OZONE IMPACTS;
*;
     PROC FORMAT PRINT;
       VALUE MCODES 1='1-19'
                    2='20-29'
                    3='30-39'
                    4='40-59'
                    5='60-79';
*;
     DATA ILMAP; SET MAPDD.COUNTIES;
       IF STATE=17;
       IF DENSITY LE 3;
*;
     PROC GPROJECT DATA=ILMAP OUT=ILMAP2;
       ID STATE COUNTY;
```

ORNL-DWG 86-12523

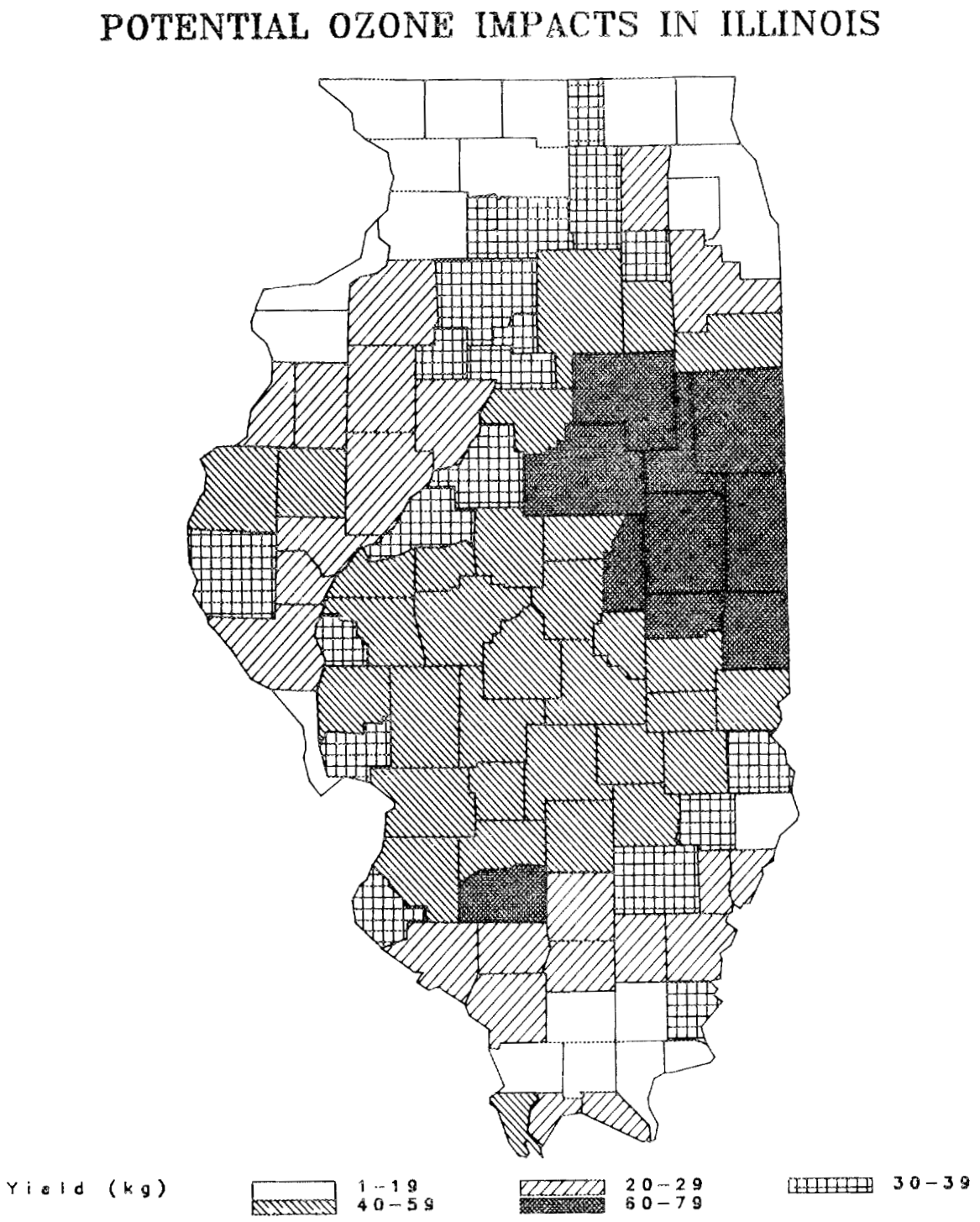


Fig. 15. Example 6 Output: A map produced using PROC GMAP.

```
*;
     PROC GMAP DATA=FIVE MAP=ILMAP2 ALL;
       ID STATE COUNTY;
       CHORO MAPCODE/DISCRETE;
       FORMAT MAPCODE MCODES.;
       PATTERN1 V=E C=GREEN;
       PATTERN2 V=M2R45 C=GREEN;
       PATTERN3 V=M1X C=RED;
       PATTERN4 V=M4L135 C=BLUE;
       PATTERN5 V=M5X45 C=BLUE;
     TITLE .F=TRIPLEX 'POTENTIAL OZONE IMPACTS IN ILLINOIS';
*;
*******************************************************************;
```

6.7 DATA EXCHANGE

SAS files can be transferred to other computers either as SAS tape files or as formatted EBCDIC tape files. The SAS files would contain all the directory information necessary to allow an installation with SAS to establish the data base. Formatted files require creating a format for each data set, using SAS PUT statements to write the tape file, and writing a computer program which the new user can use to read and process the tape.

This sequence of examples from the ADDNET Data Base was selected to demonstrate the elementary operations of accessing, merging, subsetting, printing, analyzing, and displaying data. If the ADDNET Data Base contains data applicable to a project, then the capability to use the data base is limited only by users' knowledge of SAS, understanding of the data, and imagination.

7. ACRONYMS

ACID	Acidification Chemistry Information Data Base (BNL)
ADAM	Acid Deposition Assessment Model (C-MU)
ADAS	Acid Deposition Assessment Staff (EPA)
ADDNET	Acid Deposition Data Network (ORNL)
ADPS	Acid Deposition Planning Staff (EPA)
ADS	Acid Deposition System (PNL)
ALAPCO	Association of Local Air Pollution Control Officials
ANL	Argonne National Laboratory
APIOS	Acid Precipitation in Ontario Study
APN	Canadian Air and Precipitation Monitoring Network
AQCR	Air Quality Control Region
ARIC	Acid Rain Information Clearinghouse
ASCII	American Standard Code for Information Interchange
ASTRAP	Advanced Statistical Trajectory Regional Air Pollution model (ANL)
AWDB	Adirondack Watershed Data Base (EPA)
BNL	Brookhaven National Laboratory
bpi	bits per inch
CANSAP	Canadian Network for Sampling Precipitation
CAPMON	Canadian Air and Precipitation Monitoring Network
CEQ	Council on Environmental Quality
C-MU	Carnegie-Mellon University
CNI	Conservation Needs Inventory (USDA)
CODATA	Committee on Data for Science and Technology
COMPEX	Comprehensive Experiment (EPA)
DMA	Defense Mapping Agency
DNR	Department of Natural Resources
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
EBCDIC	Extended Binary Coded Decimal Interchange Code
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
EROS	Earth Resources Observation System (Data Center)
ESEERCO	Empire State Electric Energy Research Corporation
FIA	Forest Inventory and Analysis (USFS)
FIN	Fish Information Network (NCSU)
FIPS	Federal Information Processing Standards
FORAST	Forest Responses to Anthropogenic Stress (ORNL)
FORET	Forests of East Tennessee (model)
GIS	Geographic Information System
GLAD	Great Lakes Atmospheric Deposition Network (EPA)
GNIS	Geographic Names Information System (USGS)
ILWAS	Integrated Lake Watershed Acidification Study (EPRI)
LAMP	Lake Acidification Mitigation Project (EPRI)
LTER	Long-Term Ecological Research (NSF)
LUDA	Land Use Data (USGS)
MAP3S	Multi-State Atmospheric Power Production Pollution Study (EPA;DOE)
MAP3S/PCN	Map3S/Precipitation Chemistry Network (EPA; DOE)
MATEX	Massive Aerometric Tracer Experiment

NADP	National Atmospheric Deposition Program (USDA)
NAPAP	National Acid Precipitation Assessment Program
NASA	National Aeronautics and Space Administration
NASQAN	National Stream Quality Accounting Network (USGS)
NBS	National Bureau of Standards
NCAN	National County Alphabetic Numbers
NCAR	National Center for Atmospheric Research (NOAA)
NCDC	National Climatic Data Center (NOAA)
NCIC	National Cartographic Information Center (USGS)
NCLAN	National Crop Loss Assessment Network (USDA)
NCSU	North Carolina State University
NEDRES	National Environmental Data Referral Service (NOAA)
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRI	National Resource Inventory (USDA, SCS)
NSS	National Stream Survey (EPA)
NSSL	National Soil Survey Laboratory
NSWS	National Surface Water Survey (EPA)
NTN	National Trends Network (USGS; NOAA)
NURE	National Uranium Resource Evaluation (DOE)
NYSDEC	New York State Department of Environmental Conservation
ORNL	Oak Ridge National Laboratory
PCD	Program Component Descriptor
PNL	Pacific Northwest Laboratory
RILWAS	Regional Integrated Lake-Watershed Acidification Study (EPRI)
SAF	Society of American Foresters
SAROAD	Storage and Retrieval of Aerometric Data (EPA)
SAS	SAS System Software
SCS	U.S. Soil Conservation Service
SIR	Scientific Information Retrieval system
SMSA	Standard Metropolitan Statistical Area
STAPPA	State and Territorial Air Pollution Program Administrators
STORET	Water Storage and Retrieval System (EPA)
SURE	Sulfate Regional Experiment (EPRI)
TAMM	Timber Assessment Market Model
TOPOCOM	Topographic Characteristics Data (DMA)
TRIM	Timber Resource Inventory Model
TVA	Tennessee Valley Authority
UAPSP	Utility Acid Precipitation Study Program
USACE	U.S. Army Corps of Engineers
USBLM	U.S. Bureau of Land Management
USBR	U.S. Bureau of Reclamation
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VCN	Visual Continuity Numbers
WATSTORE	Water Data Storage System (USGS)
WRC	Water Resources Council

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APPENDIX A
ADDNET Data Base Data Set Documentation

APPENDIX A. DATA SET DOCUMENTATION

Appendix A documents the individual ADDNET Data Base data sets listed in Table 1. The Appendix is divided into ten thematic sectors. Where appropriate, sectors contain an overview section that describes relationships between the data sets within the sector, such as common data sources, or that provides background information for the data. Each data set description includes the basic information identified on the NAPAP Data Base Description Form (Fig. 2) for that particular data set. The "Data Source(s) Contributing Data to ADDNET" field identifies the individual or organization that contributed the data set and appropriate documentation to ADDNET. Data collectors and government or other agencies that serve as repositories of large data bases (e.g., MAP3S, NADP) are mentioned in the "Description" field. Data set descriptors from data set DSETS and variable names, labels with units of measure, and variable type, length, and format from data set LABELS are listed as part of each data set description. In addition, basic statistics are listed for each data set, to indicate the overall range of values for each numeric variable. Several data set descriptions also include illustrative maps, graphs, or tables that have been selected to demonstrate applications of the data or display techniques. Dictionary tables are included in several data sets, to provide reference lists of values for variables that are codes (e.g., AGESTK_C in FIN).

The three-character data set number (DSN), given in parentheses at the end of the data set title, consists of a letter representing one of the thematic sectors within the data base and a two-digit number assigned

sequentially within each sector (see Sect. 4.2). The DSN is used in numbering pages, tables, and figures, to easily associate all materials within a data set. This numbering scheme will also facilitate updates and additions to the ADDNET Notebook.

AGRICULTURE (A) SECTOR

Subject: Agriculture Date: September 30, 1985

Data Base Title: 1978 Crop Areas and Yields, Ag Land Use (A06)

Date Obtained: January 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

Richard J. Olson
Environmental Sciences Division
Oak Ridge National Laboratory
P.O. Box X, Building 1505
Oak Ridge, TN 37831-6038
(615) 574-7819; FTS 624-7819

NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J. 1982. A06 - 1978 Crop Areas and Yields, Ag Land Use. Addendum to R. J. Olson, C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, Tenn.

Description: Major crop areas, yields for selected crops, and major farmland-use statistics were obtained from the 1978 Census of Agriculture. Hectares of land harvested and kilograms yielded were included for corn, sorghum, wheat, rye, barley, rice, alfalfa, hay, potatoes, soybeans, peanuts, cotton, and tobacco. Data tapes are available, with approximately 500 crop and livestock types per county, for 1949, 1954, 1959, 1964, and 1969. The 1978 tape also contains updated statistics for 1974. An additional tape for 1978 is available that has more detailed statistics.

Data Uses: Crop yield data are used in conjunction with ozone and deposition data for estimating atmospheric impacts on crops from ozone and acid precipitation.

Data Importance:

Uncertainty/Reliability: Data do not always accurately reflect county totals: information is withheld to maintain privacy; corporate farm holdings may be reported with the headquarters county and not the county in which the crops are located; and totals may not be properly corrected for nonrespondents to the mail questionnaire.

Data Type:

Number of Records: 3053

Geographic Coverage: United States

Spatial Resolution: County

Period of Record: 1978

Temporal Resolution: Annual

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

CONTENTS

Year(s): 1978
Geocoverage: U. S.
Number of Records: 3053
Created/Updated: JUNE 1981
Date Released: 30SEP85
Compiler(s): RJ OLSON

Temporal Resolution: ANNUAL
Spatial Resolution: COUNTY
Variables per Record: 46
Data Set Type: SINGLE
Update dates: EVERY 5 YEARS

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
FARM_N	NUMBER OF FARMS		NUM	4	8.
B_FARM_N	NUMBER OF BIG FARMS		NUM	4	8.
FARM_A	FARMLAND	HA	NUM	4	8.
B_FARM_A	SIZE OF BIG FARMS	HA	NUM	4	8.
CROP_A	CROPLAND	HA	NUM	4	8.
HARV_A	HARVESTED CROPLAND	HA	NUM	4	8.
PASTR_A	CROPLAND USED FOR PASTURE/GRAZING	HA	NUM	4	8.
CRP_MS_A	MISCELLANEOUS CROPS	HA	NUM	4	8.
WOODY_A	WOODLAND PASTURED OR NOT	HA	NUM	4	8.
RANGE_A	RANGE AREA	HA	NUM	4	8.
LND_MS_A	OTHER LAND, PASTURED OR NOT	HA	NUM	4	8.
IRR_LAND	IRRIGATED LAND	HA	NUM	4	8.
CORN_G_A	CORN FOR GRAIN	HA	NUM	4	8.
CORN_G_Y	CORN FOR GRAIN YIELD	KG	NUM	4	8.
CORN_S_A	CORN FOR SILAGE OR GRAZING	HA	NUM	4	8.
CORN_S_Y	CORN FOR SILAGE YIELD	KG	NUM	4	8.
WHEAT_A	WHEAT	HA	NUM	4	8.
WHEAT_Y	WHEAT YIELD	KG	NUM	4	8.
OATS_A	OATS	HA	NUM	4	8.
OATS_Y	OAT YIELD	KG	NUM	4	8.
BARLEY_A	BARLEY	HA	NUM	4	8.
BARLEY_Y	BARLEY YIELD	KG	NUM	4	8.
SORG_G_A	SORGHUM FOR GRAIN	HA	NUM	4	8.

CONTENTS (Continued)

Variable	Label		Type	Len.	Format
SORG_G_Y	SORGHUM FOR GRAIN YIELD	KG	NUM	4	8.
SORG_S_A	SORGHUM FOR SILAGE OR GRAZING	HA	NUM	4	8.
SORG_S_Y	SORGHUM FOR SILAGE YIELD	KG	NUM	4	8.
SOYBN_A	SOYBEANS FOR BEANS	HA	NUM	4	8.
SOYBN_Y	SOYBEANS FOR BEANS YIELD	KG	NUM	4	8.
COTTON_A	COTTON	HA	NUM	4	8.
COTTON_Y	COTTON YIELD	KG	NUM	4	8.
TOBAC_A	TOBACCO	HA	NUM	4	8.
TOBAC_Y	TOBACCO YIELD	KG	NUM	4	8.
POTAT_A	POTATOES	HA	NUM	4	8.
POTAT_Y	POTATO YIELD	KG	NUM	4	8.
HAY_A	HAY OR GRASS SILAGE	HA	NUM	4	8.
HAY_Y	HAY OR GRASS SILAGE YIELD	KG	NUM	4	8.
ALFAL_A	ALFALFA	HA	NUM	4	8.
ALFAL_Y	ALFALFA YIELD	KG	NUM	4	8.
PEANUT_A	PEANUTS FOR NUTS	HA	NUM	4	8.
PEANUT_Y	PEANUTS FOR NUTS YIELD	KG	NUM	4	8.
RICE_A	RICE	HA	NUM	4	8.
RICE_Y	RICE YIELD	KG	NUM	4	8.
RYE_A	RYE	HA	NUM	4	8.
RYE_Y	RYE YIELD	KG	NUM	4	8.

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
FARM_N	3053	0	740	538	10	6936
B_FARM_N	3053	0	588	457	3	5820
FARM_A	3053	0	134644	177100	11	2976855
B_FARM_A	3053	0	121740	145490	0	1495099
CROP_A	3053	0	60226	59841	0	512263
HARV_A	3053	0	42056	45643	0	456172
PASTR_A	3053	0	9701	9020	0	59141
CRP_MS_A	3053	0	8442	18438	0	244306
WOODY_A	3053	0	11941	22345	0	777438
RANGE_A	3053	0	57262	149178	0	2053529
LND_MS_A	3053	0	4476	5265	0	124859
IRR_LAND	3053	0	6630	21511	0	466426
CORN_G_A	3053	0	9263	17095	0	157079
CORN_G_Y	3053	0	56441937	116577687	0	1170331392
CORN_S_A	3053	0	1042	2047	0	39774
CORN_S_Y	3053	0	30954691	64922819	0	1789359360

STATISTICS (Continued)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
WHEAT_A	3053	0	7171	19568	0	201599
WHEAT_Y	3053	0	14303939	41899063	0	795344640
OATS_A	3053	0	1306	3328	0	45631
OATS_Y	3053	0	2377308	6060909	0	83806720
BARLEY_A	3053	0	1158	5237	0	81978
BARLEY_Y	3053	0	2992644	14021339	0	218243808
SORG_G_A	3053	0	1695	6162	0	92445
SORG_G_Y	3053	0	5432654	20591634	0	310755840
SORG_S_A	3053	0	67	299	0	4310
SORG_S_Y	3053	0	1587783	7178315	0	103746288
SOYBN_A	3053	0	8140	15669	0	150409
SOYBN_Y	3053	0	15356928	32077061	0	335379456
COTTON_A	3053	0	1681	9660	0	160533
COTTON_Y	3053	0	762981	5074179	0	125692688
TOBAC_A	3053	0	126	599	0	10080
TOBAC_Y	3053	0	280759	1360869	0	22399680
POTAT_A	3053	0	156	1362	0	42795
POTAT_Y	3053	0	4467527	39555849	0	1050844160
HAY_A	3053	0	7988	9803	0	151258
HAY_Y	3053	0	38860951	53848273	0	774919936
ALFAL_A	3053	0	3430	5910	0	51388
ALFAL_Y	3053	0	22226560	43780056	0	736799488
PEANUT_A	3053	0	186	1118	0	18972
PEANUT_Y	3053	0	526706	3332301	0	47681728
RICE_A	3053	0	393	3130	0	52315
RICE_Y	3053	0	1966173	15962128	0	271011328
RYE_A	3053	0	35	261	0	5445
RYE_Y	3053	0	61799	497070	0	11346409

BASE DATA (B) SECTOR

Subject: Base Data Date: September 30, 1985

Data Base Title: County Codes, Names, and Centroids (B01)

Date Obtained: January 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

Richard J. Olson
Environmental Sciences Division
Oak Ridge National Laboratory
P.O. Box X, Building 1505
Oak Ridge, TN 37831-6038
(615) 574-7819; FTS 624-7819

NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

Description: The primary 3071 county units for the 48 conterminous states used in the Geoecology Data Base are defined. Included are FIPS codes, county names, land area, and latitude/longitude location of the geographic centroid of each county. Names and land areas were obtained for 1970 from the 1972 County and City Data Book (USDC 1973b). Land area includes 'census water,' defined as lakes smaller than 16 ha and small streams. Centroids were calculated by averaging the latitude/longitude coordinates of the county outline obtained from Department of Transportation data. The county mnemonic codes are unique, four-character codes derived from the county name.

Data Uses: Provides base county data--county name, FIPS code, latitude/longitude location of the county centroid, land area, Visual Continuity Numbers (VCN), and National County Alphabetic Numbers (NCAN)--for each of the 3071 county units in the 48 conterminous United States.

Data Importance: Computerized compilation of base county data.

Uncertainty/Reliability:

Data Type:

Number of Records: 3071

Geographic Coverage: United States

Spatial Resolution: County

Period of Record: 1970

Temporal Resolution:

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

U.S. Department of Commerce. 1973b. Counties and county equivalents of the States of the United States. FIPS Publ. 6-2. U.S. Department of Commerce, Bureau of Standards, Washington, DC.

CONTENTS

Year(s): 1970 Temporal Resolution: ANNUAL
Geocoverage: U. S. Spatial Resolution: COUNTY
Number of Records: 3071 Variables per Record: 11
Created/Updated: MAR. 1980 Data Set Type: SINGLE
Date Released: 30SEP85 Update dates: NOT ANTICIPATED
Compiler(s): RJ OLSON, RL STEPHENSON

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
LAT_DEC	LATITUDE	DD.DDDD	NUM	4	8.4
LON_DEC	LONGITUDE	DDD.DDDD	NUM	4	8.4
CO_CODE	COUNTY MNEMONIC CODE		CHAR	4	4.
ST	STATE CODE LETTERS		CHAR	2	2.
COUNTYNM	COUNTY NAME		CHAR	20	20.
CNTY_A	AREA OF COUNTY EXCLUDING >16HA LAKES	HA	NUM	4	7.
NCAN	NATIONAL COUNTY ALPHABETIC NUMBER		NUM	3	4.

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
LAT_DEC	3071	0	38	5	26	49
LON_DEC	3071	0	92	11	68	124
CNTY_A	3071	0	249985	340160	6001	5210275
NCAN	3069	2	1535	886	1	3069

Subject: Base Data Date: September 30, 1985

Data Base Title: Federal and State Land Ownership by Agency (B07)

Date Obtained: January 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

Richard J. Olson
Environmental Sciences Division
Oak Ridge National Laboratory
P.O. Box X, Building 1505
Oak Ridge, TN 37831-6038
(615) 574-7819; FTS 624-7819

NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

Description: The U.S. Forest Service (USFS) has compiled a county-level inventory of land managed by six federal agencies. The agencies include the USFS, U.S. Bureau of Land Management (USBLM), U.S. Fish and Wildlife Service (USFWS), the National Park Service (NPS), U.S. Army Corps of Engineers (USACE), and U.S. Bureau of Reclamation (USBR). The data were obtained primarily from "payment in-lieu-of-taxes" records, except for the USFWS areas, which were based on the Revenue Sharing Act data file. Land and water statistics are included. Also included are the areas of state natural area lands and state school lands. The natural area lands consist of a combined total area for fish and wildlife refuges, parks, and forests managed by states.

Data Uses: Integrated data analysis.

Data Importance:

Uncertainty/Reliability:

Data Type:

Number of Records: 3071

Geographic Coverage: United States

Spatial Resolution: County

Period of Record: 1979

Temporal Resolution: Current

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

CONTENTS

ADDNET Contents for Data Set: B07
Year(s): 1979 Temporal Resolution: CURRENT
Geocoverage: U. S. Spatial Resolution: COUNTY
Number of Records: 3071 Variables per Record: 15
Created/Updated: MAR. 1980 Data Set Type: SINGLE
Date Released: 30SEP85 Update dates: NOT ANTICIPATED
Compiler(s): RJ OLSON

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
FS_RGN	FOREST SERVICE REGION NUMBER		CHAR	2	2
ARBA	ARBA GUIDE NUMBER		CHAR	2	2
CNTY_A	COUNTY AREA FROM FOREST SERVICE	HA	NUM	4	8.
LANDFS_A	COUNTY LAND AREA FROM FOREST SERVICE	HA	NUM	4	8.
WATER_A	COUNTY WATER AREA FROM FOREST SERVICE	HA	NUM	4	8.
STATE_A	STATE OWNED AREA	HA	NUM	4	8.
SCHOOL_A	STATE SCHOOL AREA	HA	NUM	4	8.
BLM_A	BUREAU OF LAND MANAGEMENT AREA	HA	NUM	4	8.
CE_A	CORP OF ENGINEERS AREA	HA	NUM	4	8.
FS_A	FOREST SERVICE AREA	HA	NUM	4	8.
BR_A	BUREAU OF RECLAMATION AREA	HA	NUM	4	8.
NPS_A	NATIONAL PARKS SERVICE AREA	HA	NUM	4	8.
FWS_A	FISH AND WILDLIFE SERVICE AREA	HA	NUM	4	8.

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
CNTY_A	2988	83	256504	347066	0	5220016
LANDFS_A	2988	83	251540	344216	0	5210226
WATER_A	2988	83	4964	13843	0	288913
STATE_A	2994	77	4421	18413	0	442155

STATISTICS (Continued)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
SCHOOL_A	2995	76	2983	12737	0	197891
BLM_A	3062	9	21259	148284	0	2825003
CE_A	3055	16	1028	4003	0	96459
FS_A	3055	16	18490	81788	0	1792438
BR_A	3055	16	1305	18198	0	606813
NPS_A	3055	16	1986	23886	0	737702
FWS_A	2988	83	2628	65270	0	3418438

CLIMATE (C) SECTOR

Subject: Climate Date: September 30, 1985

Data Base Title: Monthly Average Temperatures by County (C07)

Date Obtained: January 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

Richard J. Olson
Environmental Sciences Division
Oak Ridge National Laboratory
P.O. Box X, Building 1505
Oak Ridge, TN 37831-6038
(615) 574-7819; FTS 624-7819

NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

Description: Monthly average temperatures were estimated for the geographic centroid of each county in the eastern United States. The data were derived from the 1941-1980 monthly climatic norms for weather stations. Using the SYMAP program, station values were interpolated to determine county values for temperatures, because many counties are without weather stations. The algorithm to produce contour maps was used to estimate values for points on a grid using the irregularly spaced weather station data. County values were then obtained from the grid surface. Because no correction was made for elevation, caution is recommended when using data for mountainous areas. The resolution is adequate for regional studies.

Data Uses: Model input data; supporting data for verification and comparison of temperature trends; mapping.

Data Importance: Long-term series of temperature data can be used in analysis of regional temperature trends.

Uncertainty/Reliability: The estimation procedure did not adjust for elevation, so caution should be used with data for mountainous areas.

Data Type: Derived

Number of Records: 2660

Geographic Coverage: Eastern United States

Spatial Resolution: County

Period of Record: 1941-1970

Temporal Resolution: Normals

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

CONTENTS

Year(s): 1941-1970
Geocoverage: EAST
Number of Records: 2660
Created/Updated: MAR. 1980
Date Released: 30SEP85
Compiler(s): T WEBB, III

Temporal Resolution: NORMALS
Spatial Resolution: COUNTY
Variables per Record: 15
Data Set Type: SINGLE
Update dates: NOT ANTICIPATED

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
TEMP_JAN	JANUARY AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_FEB	FEBRUARY AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_MAR	MARCH AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_APR	APRIL AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_MAY	MAY AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_JUN	JUNE AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_JUL	JULY AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_AUG	AUGUST AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_SEP	SEPTEMBER AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_OCT	OCTOBER AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_NOV	NOVEMBER AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_DEC	DECEMBER AVERAGE TEMPERATURE	C	NUM	4	5.1
TEMP_ANN	ANNUAL AVERAGE TEMPERATURE	C	NUM	4	5.1

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
TEMP_JAN	2660	0	0.7	6.8	-17.2	19.1
TEMP_FEB	2660	0	2.4	6.6	-14.6	19.6
TEMP_MAR	2660	0	6.7	5.8	-7.1	21.2
TEMP_APR	2660	0	13.3	4.6	1.8	24.7
TEMP_MAY	2660	0	18.3	3.7	8.0	27.3
TEMP_JUN	2660	0	22.7	3.0	12.0	29.8
TEMP_JUL	2660	0	24.8	2.6	15.7	30.9
TEMP_AUG	2660	0	24.2	2.8	15.3	30.8
TEMP_SEP	2660	0	20.3	3.5	11.4	28.2
TEMP_OCT	2660	0	14.7	3.7	6.0	25.5
TEMP_NOV	2660	0	7.7	4.7	-4.4	22.3
TEMP_DEC	2660	0	2.3	6.0	-12.9	19.7
TEMP_ANN	2660	0	13.2	4.4	2.6	23.8

Subject: Climate Date: September 30, 1985

Data Base Title: Monthly Average Precipitation by County (C08)

Date Obtained: January 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

Richard J. Olson
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P.O. Box X, Building 1505
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(615) 574-7819; FTS 624-7819

NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

Description: Monthly average rainfall totals were estimated for the geographic centroid of each county in the eastern United States. The data were derived from the 1941-1970 monthly climatic norms for weather stations. Using the SYMAP program, station values were interpolated to determine county values for rainfall, because many counties are without weather stations. The algorithm to produce contour maps was used to estimate values for points on a grid using the irregularly spaced weather station data. County values were then obtained from the grid surface. Because no correction was made for elevation, caution is recommended when using data for mountainous areas. The resolution is adequate for regional studies.

Data Uses: Model input; supporting data for verification and comparison of temperature trends; mapping.

Data Importance: Long-term series of precipitation data can be used in analysis of regional precipitation patterns.

Uncertainty/Reliability: The estimation procedure did not adjust for elevation, so caution should be used with data for mountainous areas.

Data Type: Derived

Number of Records: 2660

Geographic Coverage: Eastern United States

Spatial Resolution: County

Period of Record: 1941-1970

Temporal Resolution: Monthly normals

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

CONTENTS

Year(s): 1941-1970
Geocoverage: EAST
Number of Records: 2660
Created/Updated: MAR. 1980
Date Released: 30SEP85
Compiler(s): T WEBB, III

Temporal Resolution: NORMALS
Spatial Resolution: COUNTY
Variables per Record: 15
Data Set Type: SINGLE
Update dates: NOT ANTICIPATED

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
PPT_JAN	JANUARY PRECIPITATION	CM	NUM	4	5.2
PPT_FEB	FEBRUARY PRECIPITATION	CM	NUM	4	5.2
PPT_MAR	MARCH PRECIPITATION	CM	NUM	4	5.2
PPT_APR	APRIL PRECIPITATION	CM	NUM	4	5.2
PPT_MAY	MAY PRECIPITATION	CM	NUM	4	5.2
PPT_JUN	JUNE PRECIPITATION	CM	NUM	4	5.2
PPT_JUL	JULY PRECIPITATION	CM	NUM	4	5.2
PPT_AUG	AUGUST PRECIPITATION	CM	NUM	4	5.2
PPT_SEP	SEPTEMBER PRECIPITATION	CM	NUM	4	5.2
PPT_OCT	OCTOBER PRECIPITATION	CM	NUM	4	5.2
PPT_NOV	NOVEMBER PRECIPITATION	CM	NUM	4	5.2
PPT_DEC	DECEMBER PRECIPITATION	CM	NUM	4	5.2
PPT_ANN	ANNUAL PRECIPITATION	CM	NUM	4	7.3

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
PPT_JAN	2660	0	6.6	3.8	0.7	15.4
PPT_FEB	2660	0	6.7	3.9	0.6	16.0
PPT_MAR	2660	0	8.5	4.2	0.6	18.5
PPT_APR	2660	0	8.9	2.7	0.6	15.6
PPT_MAY	2660	0	10.0	2.0	0.7	17.2
PPT_JUN	2660	0	10.4	2.3	1.5	25.1
PPT_JUL	2660	0	10.4	3.4	2.3	26.0
PPT_AUG	2660	0	9.1	2.9	2.5	24.6
PPT_SEP	2660	0	8.8	2.6	2.8	24.3
PPT_OCT	2660	0	6.6	1.8	1.4	22.1
PPT_NOV	2660	0	6.6	3.0	0.8	14.6
PPT_DEC	2660	0	6.9	3.9	0.6	16.3
PPT_ANN	2660	0	99.3	28.4	19.1	176.8

VEGETATION (D) SECTOR OVERVIEW

The Vegetation Sector is based primarily on two interrelated maps of ecoregions and potential natural vegetation. Ecoregions (Bailey 1976, 1978) represent a hierarchical landscape classification scheme based on climate, soils, and vegetation. There are 54 ecoregions at the section level in the conterminous United States. The vegetation aspect of the classification scheme is based on potential natural vegetation (Küchler 1964). We have used Küchler's 1966 map (USDI 1970, sheets 89 and 90) to define the county occurrences. However, the larger-scale 1964 map (Küchler 1964) was used to help locate the vegetation boundaries. There are 106 vegetation types in the conterminous United States. The ecoregion and vegetation boundaries were aligned and the proportion of each ecoregion/vegetation combination within a county was estimated, to create a data set describing potential and adjacent vegetation within ecoregions (D10 in Olson et al. 1980). Vegetation file D03 was derived from this data set.

The natural vegetation and ecoregion maps reflect potential climax conditions which might occur if man's impacts could be removed. Limitations of the Küchler map have been recognized (Klopatek et al. 1979). To have the data reflect current conditions, the potential natural vegetation types were adjusted for current land-use practices occurring within counties. Each vegetation type was assigned a probability of being converted by man to agriculture, pasture, or inundation. Vegetation types were then proportionally reduced within a county for these and for urban build-up changes.

Subject: Vegetation Date: September 30, 1985

Data Base Title: Potential and Adjusted Vegetation National Statistics (D03)

Date Obtained: January 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

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NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

Description: National and regional summary statistics for potential and land-use-adjusted natural vegetation were calculated from the respective areas of each type of natural vegetation occurring within a county. (See the Vegetation Overview for additional information on vegetation data and regions.) Areal extent, fraction of the total, and county occurrence frequencies are given for each vegetation type for the eastern forest, central plains, and western mountains regions, and for the nation. Names are given for the 106 Küchler vegetation codes.

Data Uses:

Data Importance:

Uncertainty/Reliability:

Data Type: Summarized

Number of Records: 106

Geographic Coverage: United States

Spatial Resolution: United States

Period of Record: 1966-1967

Temporal Resolution:

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

CONTENTS

Year(s): 1966-1967
Geocoverage: U. S.
Number of Records: 106
Created/Updated: MAR. 1980
Date Released: 30SEP85
Compiler(s): RJ OLSON

Temporal Resolution: HISTORIC
Spatial Resolution: COUNTY
Variables per Record: 26
Data Set Type: DICTNRY
Update dates: NOT ANTICIPATED

Variable	Label		Type	Len.	Format
VEG_C	VEGETATION CODE, 1966 KUCHLER, 001-106		CHAR	3	3
VEG_DSCP	VEGETATION DESCRIPTION		CHAR	40	40
VEGP_N_A	POT. VEGETATION NATIONAL AREA	HA	NUM	5	8.
VEGA_N_A	ADJ. VEGETATION NATIONAL AREA	HA	NUM	5	8.
VEGP_N_N	POT. VEGETATION NATIONAL NO. COUNTIES		NUM	3	8.
VEGA_N_N	ADJ. VEGETATION NATIONAL NO. COUNTIES		NUM	3	8.
VEGP_N_P	FRACTION OF POT. VEGETATION IN NATION		NUM	4	8.4
VEGA_N_P	FRACTION OF ADJ. VEGETATION IN NATION		NUM	4	8.4
VEGP_E_A	POT. VEGETATION EASTERN AREA	HA	NUM	5	8.
VEGA_E_A	ADJ. VEGETATION EASTERN AREA	HA	NUM	5	8.
VEGP_E_N	POT. VEGETATION NO. COUNTIES IN EAST		NUM	3	8.
VEGA_E_N	ADJ. VEGETATION NO. COUNTIES IN EAST		NUM	3	8.
VEGP_E_P	FRACTION OF POT. VEGETATION IN EAST		NUM	4	8.4
VEGA_E_P	FRACTION OF ADJ. VEGETATION IN EAST		NUM	4	8.4
VEGP_C_A	POT. VEGETATION CENTRAL AREA	HA	NUM	5	8.
VEGA_C_A	ADJ. VEGETATION CENTRAL AREA	HA	NUM	5	8.
VEGP_C_N	POT. VEGETATION NO. COUNTIES IN CENTRAL		NUM	3	8.
VEGA_C_N	ADJ. VEGETATION NO. COUNTIES IN CENTRAL		NUM	3	8.
VEGP_C_P	FRACTION OF POT. VEGETATION IN CENTRAL		NUM	4	8.4
VEGA_C_P	FRACTION OF ADJ. VEGETATION IN CENTRAL		NUM	4	8.4
VEGP_W_A	POT. VEGETATION WESTERN AREA	HA	NUM	5	8.
VEGA_W_A	ADJ. VEGETATION WESTERN AREA	HA	NUM	5	8.
VEGP_W_N	POT. VEGETATION NO. COUNTIES IN WEST		NUM	3	8.
VEGA_W_N	ADJ. VEGETATION NO. COUNTIES IN WEST		NUM	3	8.
VEGP_W_P	FRACTION OF POT. VEGETATION IN WEST		NUM	4	8.4
VEGA_W_P	FRACTION OF ADJ. VEGETATION IN WEST		NUM	4	8.4

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
VEGP_N_A	106	0	7242483	10416601	41449	61423191
VEGA_N_A	106	0	4747994	6991786	23620	46445243
VEGP_N_N	106	0	72	119	2	781
VEGA_N_N	106	0	65	99	1	649
VEGP_N_P	106	0	0.009	0.0	0.0001	0.1
VEGA_N_P	106	0	0.009	0.0	0.0000	0.1
VEGP_E_A	40	66	8004156	13348162	13176	61423191
VEGA_E_A	39	67	4306383	8232186	16650	46445243
VEGP_E_N	40	66	110	170	1	731
VEGA_E_N	40	66	95	143	0	649
VEGP_E_P	40	66	0.025	0.0	0.0000	0.2
VEGA_E_P	39	67	0.026	0.0	0.0001	0.3
VEGP_C_A	33	73	5877318	8232933	15066	30676733
VEGA_C_A	33	73	3339688	4643880	10803	17041678
VEGP_C_N	33	73	43	55	2	216
VEGA_C_N	33	73	39	52	2	204
VEGP_C_P	33	73	0.030	0.0	0.0001	0.2
VEGA_C_P	33	73	0.030	0.0	0.0001	0.2
VEGP_W_A	52	54	4876644	7012394	10952	38064518
VEGA_W_A	52	54	4329399	6415095	7358	32362559
VEGP_W_N	52	54	34	37	1	154
VEGA_W_N	52	54	33	37	1	154
VEGP_W_P	52	54	0.019	0.0	0.0000	0.2
VEGA_W_P	52	54	0.019	0.0	0.0000	0.1

FOREST (F) SECTOR OVERVIEW

The Forest Sector is based primarily on data produced by the U.S. Forest Service's (USFS) Forest Inventory and Analysis (FIA) program. This program conducts timber surveys on permanently established plots at approximately ten-year intervals. States are sampled on a staggered schedule. The sampling intensity is defined to produce statistical estimates within a specified level of sampling error for forest survey units. Forest survey units are aggregates of counties. County estimates have higher sampling errors and often are not published if forestland is very sparse. County-level statistics are not readily available as a national file in either printed or computer-readable forms. State inventories vary in format depending on the region of the country. The list of publications used to compile the forest data sets is presented in Table F.1. The compilation of county-level forestry statistics represents a significant effort in producing a uniform data set for the eastern United States.

SOURCES: See Table F.1. The data for the forest data sets have been extracted from a variety of federal, state, and province forest inventory publications. References for the forest data sets are listed by state and province in Table F.1. Complete citations can be found in the reference section of this report.

Table F.1. Sources for forest data, listed by state

UNITED STATES

State	Data Source
Alabama	Earles 1973
	Hedlund and Earles 1973
	USDA 1972a,b,c,d
	USDA 1973
Arkansas	Hedlund and Earles 1970
	USDA 1970a,b,c,d
	USDA 1980
California	Boslinger 1976
	Boslinger 1978
	Oswald 1979
	Wall 1978
Connecticut	Dickson and Bowers 1976
Delaware	Ferguson and Mayer 1974
Florida	Bellamy and Knight 1970
	Knight 1969
	McClure 1970
	Sheffield 1980a,b
	Snyder and Knight 1970
Georgia	Bellamy 1971
	Cathey 1972
	Knight 1971
	Knight 1972
	Knight 1973
	Knight and McClure 1974
Illinois	Essex and Gansner 1965
Indiana	Spencer 1969
Iowa	Ostrom 1974
Kansas	Chase and Strickler 1968
Kentucky	Gansner 1968
	Kingsley and Powell 1978
	USDA (Kentucky unpublished data)
Louisiana	Earles 1973
	Earles 1975
	USDA 1975a,b,c,d,e
Maine	Ferguson and Kingsley 1972
Maryland	Powell and Kinsley 1980
Massachusetts	Peters and Bowers 1977
Michigan	Chase 1966
	Chase and Pfeifer 1966
	Chase et al. 1970
	Pfeifer and Spencer 1966
	Spencer and Pfeifer 1966
Minnesota	Hahn and Smith 1980
	Jakes and Raile 1980
	Spencer and Ostrom 1979
	Vasilevsky and Hackett 1980
	USDA (Minnesota unpublished data)
Mississippi	Earles 1973
	Hedlund and Earles 1969
	USDA (Mississippi unpublished data)
	USDA 1978
Missouri	Essex and Spencer 1974
	Hahn and Vasilevsky 1975
	Ostrom and Hahn 1974
	Spencer and Ostrom 1975
	Vasilevsky and Essex 1974
Nebraska	Shasby 1977a,b,c,d
	Shasby 1978a,b
	Shasby and Jennings 1978a,b
	Shasby and Westover 1978
New Hampshire	Kingsley 1976
New Jersey	Ferguson and Mayer 1974
New York	Ferguson and Mayer 1970
North Carolina	Cost 1974
	Cost 1975
	Welch 1975
	Welch and Knight 1974
Ohio	DeBald and McCay 1969
	Kingsley and Mayer 1970

Table F.1. (Continued)

UNITED STATES

State	Data Source
Oklahoma	Earles 1976 Sternitzke and Van Sickle 1968 USDA 1977a,b
Oregon	Bassett and Choate 1974
Pennsylvania	Considine and Powell 1980 USDA 1965
Rhode Island	Peters and Bowers 1977
South Carolina	Cost 1968 Haines 1967 Sheffield 1979 Snyder 1978 Welch 1968
South Dakota	Chase 1967 Green 1978
Tennessee	Earles 1973 Hedlund and Earles 1971 USDA 1971a,b,c,d,e
Texas	Earles 1973 Earles 1976 USDA 1976a,b
Vermont	Barnard and Powers 1974 Kingsley 1977
Virginia	Cost 1976 Knight and McClure 1967 Sheffield 1976 Sheffield 1977a,b,c USDA 1966
Washington	Bassett and Choate 1973
West Virginia	Bones 1978 Ferguson 1964
Wisconsin	Spencer and Thorne 1972 Wisconsin DNR 1968a,b,c,d,e,f,g,h
General Reference	Delcourt, West, and Allison 1980

CANADA

Province	Data Source
Labrador	Newfoundland Forest Service 1975
Manitoba	Unpublished data
Newfoundland	Newfoundland Forest Service 1975
Nova Scotia	Nova Scotia DLF 1965 Nova Scotia DLF 1966 Nova Scotia DLF 1967 Nova Scotia DLF 1968 Nova Scotia DLF 1969 Nova Scotia DLF 1970 Nova Scotia DLF 1971
Ontario	Ontario DLF 1953a-p Ontario DLF 1957a,bc,d Ontario DLF 1958a,b Ontario DLF 1959
Quebec	Unpublished data

Subject: Forests Date: September 30, 1985

Data Base Title: Forest Area by Major Types (F01)

Date Obtained: January 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

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NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

Description: Forestland areas, by major forest types, were obtained from USFS state forest inventory publications. (See Forest Overview for details on data sources.) Commercial forestland is defined as land producing crops of industrial wood which has not been withdrawn from timber production. The sum of the major forest types equals the area of commercial forest.

Data Uses:

Data Importance:

Uncertainty/Reliability:

Data Type:

Number of Records: 2566

Geographic Coverage: Eastern United States

Spatial Resolution: County

Period of Record: 1965-1977

Temporal Resolution: Annual

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

CONTENTS

Year(s): 1965-1982
Geocoverage: EAST
Number of Records: 2566
Created/Updated: JAN. 1985
Date Released: 30SEP85
Compiler(s): RJ OLSON

Temporal Resolution: ANNUAL
Spatial Resolution: COUNTY
Variables per Record: 23
Data Set Type: SINGLE
Update dates: EVERY 10 YEARS

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
YEAR	YEAR		NUM	4	4.
ASPN_B_A	ASPEN-BIRCH FOREST AREA	HA	NUM	4	8.
CEDAR_A	CEDAR FOREST AREA	HA	NUM	4	8.
ELM_A_A	ELM-ASH-COTTONWOOD FOREST AREA	HA	NUM	4	8.
INDETR_A	INDETERMINATE FOREST TYPE AREA	HA	NUM	4	8.
LNGL_P_A	LONGLEAF-SLASH PINE FOREST AREA	HA	NUM	4	8.
LOBL_P_A	LOBLOLLY-SHORTLEAF PINE FOREST AREA	HA	NUM	4	8.
MAPL_B_A	MAPLE-BEECH-BIRCH FOREST AREA	HA	NUM	4	8.
NSTOCK_A	NONSTOCKED FOREST AREA	HA	NUM	4	8.
N_HARD_A	NORTHERN HARDWOOD FOREST TYPES AREA	HA	NUM	4	8.
OAK_A	OAK FOREST TYPES AREA	HA	NUM	4	8.
OAK_G_A	OAK-GUM-CYPRESS FOREST AREA	HA	NUM	4	8.
OAK_H_A	OAK-HICKORY FOREST AREA	HA	NUM	4	8.
OAK_P_A	OAK-PINE FOREST AREA	HA	NUM	4	8.
SP_FIR_A	SPRUCE-FIR FOREST AREA	HA	NUM	4	8.
WP_HEM_A	WHITE PINE-HEMLOCK FOREST AREA	HA	NUM	4	8.
WPINE_A	WHITE PINE FOREST AREA	HA	NUM	4	8.
FOREST_A	FOREST LAND - COMMERCIAL AREA	HA	NUM	4	8.
FS_TOT_A	TOTAL COMMERCIAL FOREST AREA	HA	NUM	4	8.
HARDWD_A	HARDWOOD FOREST AREA	HA	NUM	4	8.
SOFTWD_A	SOFTWOOD FOREST AREA	HA	NUM	4	8.

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
ASPN_B_A	2566	0	3037	17885	0	569556
CEDAR_A	2566	0	109	1123	0	27761
ELM_A_A	2566	0	2062	5258	0	81018
INDETR_A	2566	0	14	331	0	10967
LNGL_P_A	2566	0	2940	12037	0	123672
LOBL_P_A	2566	0	6892	16607	0	152566
MAPL_B_A	2566	0	2758	12651	0	160863
N_HARD_A	52	2514	71984	51736	0	204084
NSTOCK_A	2566	0	231	1002	0	14690
OAK_A	2566	0	427	3588	0	66976
OAK_G_A	2566	0	4436	10821	0	93482
OAK_H_A	2566	0	13352	22104	0	167297
OAK_P_A	2566	0	4682	10000	0	78792
SP_FIR_A	2566	0	2690	29527	0	1025397
WP_HEM_A	2566	0	29	388	0	8336
WPINE_A	2566	0	1500	7322	0	110965
FOREST_A	2566	0	53626	77354	0	1514056
FS_TOT_A	2566	0	59191	82565	0	1197060
HARDWD_A	2566	0	33310	46750	0	633495
SOFTWD_A	2566	0	12982	25532	0	349608

Subject: Forests Date: September 30, 1985

Data Base Title: Tree Species Growing Stock Volumes (F06)

Date Obtained: January 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

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NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

Description: Estimates of individual tree-species-growing-stock volumes were obtained from USFS state forest inventory publications, Canadian Province Department of Lands and Forests publications and Forest Inventory publications, unpublished tables, and data tapes (personal communication from H. R. Delcourt, D. C. West, and L. J. Allison to R. J. Olson 1980). Estimates were based on the Continuous Forest Inventory (CFI) program within the USFS. (See Forest Overview section for details on data sources.) This compilation represents a unique and significant effort in creating a single uniform file from the various sources within the USFS. Growing-stock volume is defined as the net volume in live sawtimber and poletimber trees from stump to a 1.6-cm top. Deductions were made for rot and other defects. Although most of the species are tabulated individually, when species occur at low densities they may be aggregated into genus-level groupings. Species- and genus-level grouping codes are listed with their common names in Geoecology data set F05 (Olson et al. 1980). Species-specific conversion factors were used to calculate biomass from the growing-stock volumes. In areas with low forest density, such as in the Corn Belt, forest statistics are presented for forest survey units rather than for counties.

Data Uses:

Data Importance:

Uncertainty/Reliability: Species may be aggregated or grouped in different combinations in different states and provinces. Data may only be available for forest survey units in some states and provinces (see below).

Data Type:

Number of Records: 29,781

Geographic Coverage: Eastern and Central United States and Canada

Spatial Resolution: County

Period of Record: 1965-1978

Temporal Resolution: Annual

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

CONTENTS

Year(s): 1965-1978 Temporal Resolution: ANNUAL
Geocoverage: EAST Spatial Resolution: COUNTY
Number of Records: 29781 Variables per Record: 7
Created/Updated: MAR. 1980 Data Set Type: MULTIPLE
Date Released: 30SEP85 Update dates: EVERY 10 YEARS
Compiler(s): H DELCOURT, P DELCOURT

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
USFS_UN	U.S. FOREST SERVICE SURVEY UNIT		CHAR	3	3
TREE_C	TREE SPECIES NUMERIC CODE		CHAR	3	3
TREE_GSV	TREE GROWING STOCK VOLUME	FT3*E6	NUM	4	8.
TREE_VOL	TREE VOLUME IN COMMERCIAL FOREST	M3/HA	NUM	4	8.2
TREE_BIO	COMMERCIAL FOREST TREE BIOMASS	KG*E3/HA	NUM	4	8.2

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
TREE_GSV	29781	0	159.89	2049.32	0.10	117417.88
TREE_VOL	29781	0	5.55	16.90	0.00	853.61
TREE_BIO	29780	1	4.60	14.72	0.00	360.14

CODES

Forest Survey Unit designations (USFS_UN) used in DSN F06

State	State name	USFS_UN	Latitude and longitude
17	Illinois	F01	40.7876N, 89.2103W
		F02	39.0001N, 89.0354W
		F03	37.7340N, 88.9312W
19	Iowa	F01	42.4764N, 91.8300W
		F02	41.3394N, 93.0957W
		F03	42.3824N, 95.5190W
20	Kansas	F01	39.4136N, 95.7965W
		F02	37.8644N, 96.2396W
		F03	38.4775N, 99.9104W
21	Kentucky	F01	37.2890N, 82.8840W
		F02	38.1190N, 83.0680W
		F03	37.1360N, 83.9010W
		F04	38.2890N, 84.6290W
		F05	37.4080N, 85.4590W
		F06	37.2380N, 87.0510W
		F07	36.8500N, 88.6290W
26	Michigan	F01	42.6048N, 84.3706W (The rest of the state is by county.)
27	Minnesota	F03	45.0000N, 93.5000W
		F04	46.5000N, 96.0000W (The rest of the state is by county.)
31	Nebraska	F01	41.5000N, 98.0000W (Data for east Nebraska only.)
38	North Dakota	F01	47.5000N, 100.0000W (Entire state.)
39	Ohio	F01	40.5100N, 83.9010W
		F02	41.1360N, 81.6460W
46	South Dakota	F01	44.4128N, 98.2735W (Data for east South Dakota only.)

State	Province	USFS_UN	Latitude and longitude of province subdivision
63	Manitoba (unpublished data)	FRO	50.0850N, 98.6630W (The rest of the province is subdivided into forest management units U11-U99.)
68	Ontario	AD	Algonquin District
		LD	Lindsay District
		SD	Sudbury District
		CD1	Cochrane District
		CD2	Chapleau District
		FFD	Fort Francis District
		GD1	Geraldton District
		GD2	Gogama District
		KD1	Kapuskasing District
		KD2	Kenora District
		KD3	Kemptville District
		LED	Lake Erie District
		LHD	Lake Huron District
		LSD	Lake Simcoe District
		NBD	North Bay District
		PAD	Port Arthur District
		PEA	Potentially Exploitable Area
		PSD	Parry Sound District
		SLD	Sioux Lookout District
		SSM	Sault Ste. Marie District
		TD1	Timiskaming District
		TD2	Tweed District
		WRD	White River District

Subject: Forests Date: September 30, 1985

Data Base Title: Forest Area, Volume, and Growth (F08)

Date Obtained: January 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

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NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J. 1982. F08 - Forest Area, Volume, and Growth. Addendum to R. J. Olson, C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

Description: Forest area, growing-stock volume, and net annual growth statistics were obtained from available USFS state forest inventory publications. (See Forest Overview section and data set F01 for details on data sources.) The state inventories are done on a ten-year cycle, with several states being inventoried each year. Due to changes during the cycle and other factors, the level of detail often varies between states and years. This file is based on data available in mid-1981.

Data Uses:

Data Importance:

Uncertainty/Reliability: Very few counties in the western United States have published forestry data.

Data Type:

Number of Records: 2271

Geographic Coverage: United States

Spatial Resolution: County

Period of Record: 1980

Temporal Resolution: Annual

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

CONTENTS

Year(s): 1965-1980
Geocoverage: U. S.
Number of Records: 2271
Created/Updated: SEP. 1981
Date Released: 30SEP85
Compiler(s): R KRAMER

Temporal Resolution: ANNUAL
Spatial Resolution: COUNTY
Variables per Record: 11
Data Set Type: SINGLE
Update dates: AS NEEDED

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
YEAR	YEAR		NUM	4	4.
FS_HWD_G	ANNUAL HARDWOOD FOREST GROWTH	M3*E6	NUM	4	8.
FS_HWD_V	HARDWOOD FOREST VOLUME	M3*E6	NUM	4	8.
FS_SWD_G	ANNUAL SOFTWOOD FOREST GROWTH	M3*E6	NUM	4	8.
FS_SWD_V	SOFTWOOD FOREST VOLUME	M3*E6	NUM	4	8.
FS_TOT_G	ANNUAL COMM FOREST GROWTH	M3*E6	NUM	4	8.
FS_TOT_V	TOTAL COMM FOREST VOLUME	M3*E6	NUM	4	8.
FS_TOT_A	TOTAL COMMERCIAL FOREST AREA	HA	NUM	4	8.
FS_LND_A	TOTAL USFS LAND AREA	HA	NUM	4	8.

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
FS_HWD_G	1232	1039	112441	101480	-8495	843817
FS_HWD_V	1847	424	3117890	3477719	0	36595600
FS_SWD_G	1232	1039	152474	225150	0	3460215
FS_SWD_V	1847	424	2008081	4488823	0	112479632
FS_TOT_G	1232	1039	264915	294252	0	4227579
FS_TOT_V	2184	87	6822982	17172036	0	352165888
FS_TOT_A	2270	1	71341	95035	0	1516080
FS_LND_A	2185	86	172907	168365	0	2632896

AIR QUALITY (K) SECTOR

Subject: Air Quality Date: September 30, 1985

Data Base Title: SO_2 Monthly Emissions Inventory (K82)

Date Obtained: March 26, 1985 Acronym:

Data Source(s) Contributing Data to ADDNET:

Duane A. Knudson
Argonne National Laboratory
9700 South Cass Avenue
Argonne, IL 60439
(312) 972-5102; FTS 972-5102

NAPAP Code: I1-05.2

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Description: This inventory of monthly emissions of SO_2 for 1975-1983 has been designed to reflect actual intra-annual and yearly SO_2 emissions variability. Data include state-total and source-category-specific monthly SO_2 emissions for the 48 conterminous United States. Computation of monthly emission estimates involved a portioning of total annual SO_2 emissions to monthly values through the use of several data bases. Monthly SO_2 emissions for the electric utility sector were computed using annual plant emission values in combination with monthly fuel consumption reported on Energy Information Administration (EIA) form 759. The NAPAP 1980 emissions inventory (Version 3) was used for 1980. Emissions for 1975-1979 and 1981-1982 were obtained from E. H. Pechan and Associates. The SO_2 emissions calculations for 1983 were performed by Argonne National Laboratory according to the methodology developed by Pechan and Associates.

Nonutility SO_2 emissions were estimated by portioning national level, monthly emissions to states, using the 1980 NAPAP emission inventory (Version 3) to calculate category-specific fractions for each state. National nonutility SO_2 emission estimates for 1975-1979 and 1981-1983 were obtained from national emission estimates presented in the report, "National Air Pollutant Emission Estimates: 1940-1983" (U.S. Environmental Protection Agency, EPA-450/4-83-024, 1984). Additional fuel use, emissions, and industrial activity data were used to further refine the emission estimates.

Data Uses: Model inputs; assessments requiring seasonal emissions data

Data Importance: These data provide estimates of the seasonal variability of SO_2 emissions.

Uncertainty/Reliability:

Data Type: Derived

Number of Records: 3088

Geographic Coverage: Conterminous United States

Spatial Resolution: State

Period of Record: 1975-1983

Temporal Resolution: Monthly

References or Supporting Documents:

Knudson, D. A. 1985. An Inventory of Monthly Sulfur Dioxide Emissions for the Years 1975-1983. ANL/EES-TM-277. Argonne National Laboratory, Argonne, IL. Draft.

CONTENTS

Year(s): 1975-1983
Geocoverage: U. S.
Number of Records: 3088
Created/Updated: MAR. 1985
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: MONTHLY
Spatial Resolution: STATE
Variables per Record: 16
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
YEAR	YEAR		NUM	4	4.
SRC_C	SOURCE CODE (99=ALL SOURCES)		NUM	4	4.
SO2_JAN	JANUARY SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_FEB	FEBRUARY SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_MAR	MARCH SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_APR	APRIL SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_MAY	MAY SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_JUN	JUNE SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_JUL	JULY SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_AUG	AUGUST SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_SEP	SEPTEMBER SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_OCT	OCTOBER SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_NOV	NOVEMBER SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_DEC	DECEMBER SO2 EMISSIONS	KG*E6	NUM	4	8.2
SO2_ANN	SO2 EMISSIONS, ANNUAL	KG*E6	NUM	4	8.2

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
SO2_JAN	3088	0	13.04	29.67	0.00	273.34
SO2_FEB	3088	0	11.98	26.63	0.00	252.81
SO2_MAR	3088	0	12.04	27.00	0.00	254.87
SO2_APR	3088	0	11.17	25.01	0.00	231.01
SO2_MAY	3088	0	11.24	25.47	0.00	243.35
SO2_JUN	3088	0	11.76	26.87	0.00	245.79
SO2_JUL	3088	0	12.45	28.99	0.00	270.09
SO2_AUG	3088	0	12.59	29.26	0.00	281.56
SO2_SEP	3088	0	11.63	26.56	0.00	246.76
SO2_OCT	3088	0	11.61	26.31	0.00	250.70
SO2_NOV	3088	0	11.79	26.48	0.00	260.89
SO2_DEC	3088	0	12.57	28.65	0.00	265.79
SO2_ANN	3088	0	143.50	325.83	0.00	3019.00

CODES

Source category code definitions

SRC_C	Definition
1	Utility coal
2	Utility oil
3	Miscellaneous
4	Industrial processes
9	Industrial coal combustion
10	Industrial oil combustion
99	All sources

ILLUSTRATIONS

Table K82.1 National monthly emissions of SO_2 for 1983.

National Emissions Data.

Monthly Total SO2 Emissions for 1983.

VARIABLE	LABEL		SUM
JAN	JANUARY SO2 EMISSIONS	KG*E6	3688
FEB	FEBRUARY SO2 EMISSIONS	KG*E6	3368
MAR	MARCH SO2 EMISSIONS	KG*E6	3476
APR	APRIL SO2 EMISSIONS	KG*E6	3212
MAY	MAY SO2 EMISSIONS	KG*E6	3179
JUN	JUNE SO2 EMISSIONS	KG*E6	3427
JUL	JULY SO2 EMISSIONS	KG*E6	3852
AUG	AUGUST SO2 EMISSIONS	KG*E6	4039
SEP	SEPTEMBER SO2 EMISSIONS	KG*E6	3613
OCT	OCTOBER SO2 EMISSIONS	KG*E6	3497
NOV	NOVEMBER SO2 EMISSIONS	KG*E6	3529
DEC	DECEMBER SO2 EMISSIONS	KG*E6	3946
ANN	SO2 EMISSIONS, ANNUAL	KG*E6	42695

ILLUSTRATIONS (Continued)

ORNL-DWG 87-9710

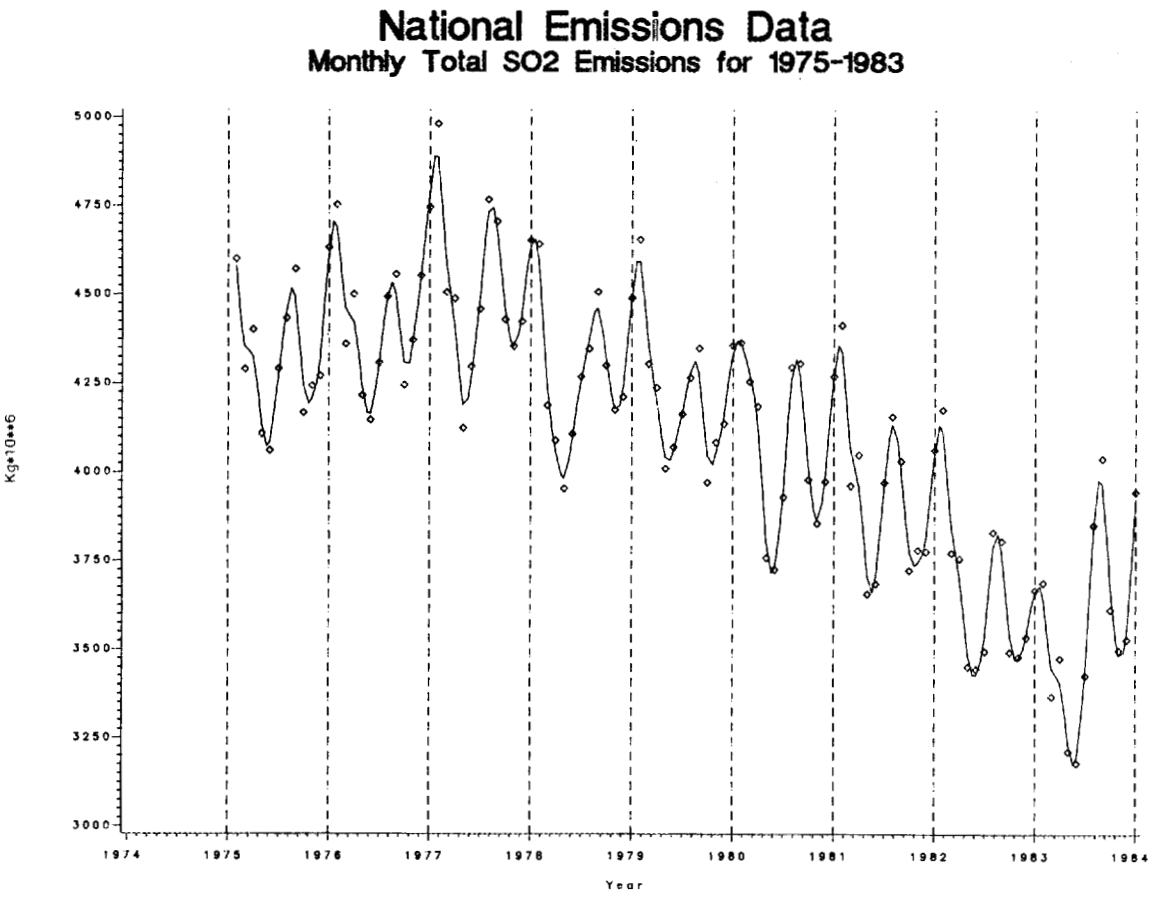

Fig. K82.1. National monthly emissions of SO_2 for 1975-1983.
Source: Knudson 1985.

Subject: Air Quality Date: September 30, 1985

Data Base Title: Alkalinity, Lake Area, and Deposition for the Northeastern United States (K83)

Date Obtained: February 1985 Acronym:

Data Source(s) Contributing Data to ADDNET:

Richard J. Olson
Environmental Sciences Division
Oak Ridge National Laboratory
P.O. Box X, Building 1505
Oak Ridge, TN 37831-6038
(615) 574-7819; FTS 624-7819

NAPAP Code: I3-02.33

Sponsoring Agency: U.S. Environmental Protection Agency

Appropriate Reference Citation for Users of the Data:

ADDNET Data Base: K83.

Description: This data base consists of estimates of surface water by lake size class, alkalinity class, and wet deposition levels for H^+, SO_4^{-2}, and NO_3^- for each of 8488 3.75-min latitude/longitude cells in the northeastern United States. Alkalinity classes of surface waters in New York and New England were estimated from a detailed northeast regional surface water alkalinity map (Omernik and Kinney 1985). This 1:3,160,000 scale map was digitized, and alkalinity classes were assigned to 3.75-min latitude/longitude cells. Alkalinity class limits are <50, 50-100, 100-200, 200-400, and >400 μeq/L. Estimates of the extent of surface waters (J. Omernik, personal communication) were derived by estimating the percentage of lakes in four size classes for 3.75-min latitude/longitude cells. Percentages were estimated by using dot grids with U.S. Geological Survey 1:250,000 scale maps. The four lake size classes are 4-20 ha, 20-100 ha, 100-200 ha, and >200 ha. Annual wet deposition values for hydrogen, sulfate, and nitrate ions were estimated from monitoring data in the Acid Deposition System (ADS) data base (K93). Deposition levels were calculated using three-year (1980-1982) mean concentration values from approximately 40 monitoring stations in the northeastern United States and Canada in conjunction with 30-year (1951-1980) annual precipitation norms (obtained from the National Climatic Data Center) for over 500 weather stations in this region. Deposition values were also estimated for cells in Pennsylvania and New Jersey.

Data Uses: Estimating the extent and pattern of sensitive surface waters at risk to acidification by deposition levels.

Data Importance: This data set provides data on alkalinity, extent of surface water, and deposition levels for common spatial units for regional assessments.

Uncertainty/Reliability: The uncertainty associated with the estimates is related to possible errors in digitizing, in assigning values to the 3.75-min cells, and in the way the contours were drawn.

Data Type: Derived

Number of Records: 12,064

Geographic Coverage: Northeastern United States

Spatial Resolution: 3.75-min latitude/longitude cells

Period of Record: 1980-1982

Temporal Resolution: Annual

References or Supporting Documents:

Omernik, J. M. and A. Kinney. 1985. Total Alkalinity of Surface Waters - A Map of the New England and New York Region. EPA-600ID-84-216. U.S. Environmental Protection Agency, Environmental Research Laboratory/Corvallis, Corvallis, OR.

CONTENTS

Year(s): 1980-1981
Geocoverage: N. E.
Number of Records: 12064
Created/Updated: MAY 1985
Date Released: 30SEP85
Compiler(s): JM COE

Temporal Resolution: ANNUAL
Spatial Resolution: CELLS
Variables per Record: 20
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
LAT_DEC	LATITUDE	DD.DDDD	NUM	4	8.4
LON_DEC	LONGITUDE	DDD.DDDD	NUM	4	8.4
ALKCLS_C	ALKALINITY CLASS CODE		NUM	4	1.
CELL_A	AREA OF THE CELL	HA	NUM	4	7.2
H_CONC	H+ ANNUAL WEIGHTED MEAN CONC.	MG/L	NUM	4	5.3
H_DEP	H+ ANNUAL WET DEPOSITION	G/M2	NUM	4	5.3
H_WET	H+ ANNUAL WET ADJ DEPOSITION	G/M2	NUM	4	5.3
LAKES_1	PERCENT AREA OF LAKES <20 HA	%	NUM	4	6.2
LAKES_2	PERCENT AREA OF LAKES FROM 20-100 HA	%	NUM	4	6.2
LAKES_3	PERCENT AREA OF LAKES FROM 100-200 HA	%	NUM	4	6.2
LAKES_4	PERCENT AREA OF LAKES >200 HA	%	NUM	4	6.2
LAKES_5	TOTAL PERCENT AREA OF LAKES	%	NUM	4	6.2

CONTENTS (Continued)

Variable	Label		Type	Len.	Format
NO3_CONC	NO3 ANNUAL WEIGHTED MEAN CONC.	MG/L	NUM	4	5.3
NO3_DEP	NO3 ANNUAL WET DEPOSITION	G/M2	NUM	4	5.3
NO3_WET	NO3 ANNUAL WET ADJ DEPOSITION	G/M2	NUM	4	5.3
PPT	TOTAL PRECIPITATION	CM	NUM	4	7.3
SO4_CONC	SO4 ANNUAL WEIGHTED MEAN CONC.	MG/L	NUM	4	6.3
SO4_DEP	SO4 ANNUAL WET DEPOSITION	G/M2	NUM	4	6.3
SO4_WET	SO4 ANNUAL WET ADJ DEPOSITION	G/M2	NUM	4	6.3

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
LAT_DEC	12064	0	42.90	1.79	40.00	47.44
LON_DEC	12064	0	74.07	3.51	67.00	80.94
ALKCLS_C	8349	3715	2.34	1.33	1.00	5.00
CELL_A	11596	468	3529.15	102.77	3262.00	3694.35
H_CONC	11820	244	0.05	0.01	0.03	0.09
H_DEP	11596	468	0.05	0.01	0.00	0.08
H_WET	11820	244	0.06	0.01	0.02	0.11
LAKES_1	11596	468	0.32	0.74	0.00	11.00
LAKES_2	11596	468	0.43	1.15	0.00	13.60
LAKES_3	11596	468	0.24	1.10	0.00	22.10
LAKES_4	11596	468	1.92	7.72	0.00	99.40
LAKES_5	11596	468	2.91	8.01	0.00	99.40
NO3_CONC	11820	244	1.59	0.44	0.72	3.70
NO3_DEP	11596	468	1.49	0.41	0.00	3.58
NO3_WET	11820	244	1.66	0.47	0.67	3.83
PPT	11820	244	105.07	11.68	71.16	180.05
SO4_CONC	11820	244	2.57	0.61	1.44	4.52
SO4_DEP	11596	468	2.43	0.55	0.00	3.96
SO4_WET	11820	244	2.69	0.66	1.45	5.09

CODES

Alkalinity class code definitions

ALKCLS_C	Alkalinity class limit (μeq/L)
1	<50
2	50-100
3	100-200
4	200-400
5	>400

ILLUSTRATIONS

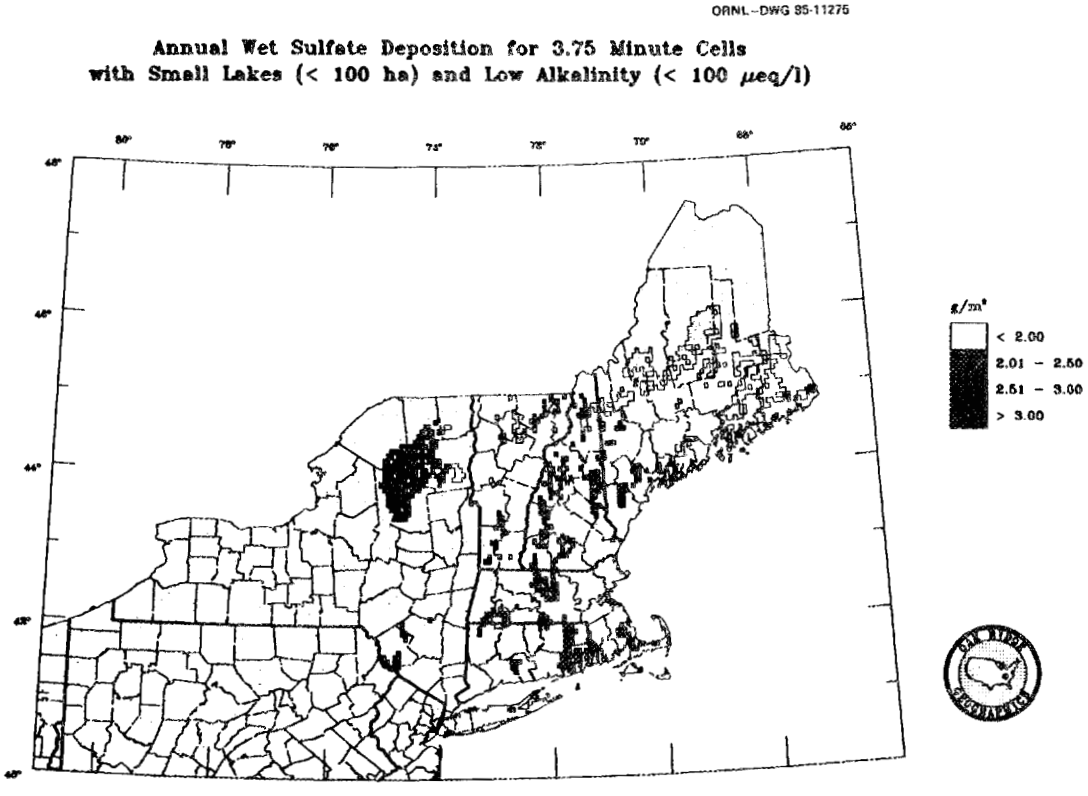

Fig. K83.1. Map of annual wet sulfate deposition for 3.75 min latitude/longitude cells in New York and New England with small lakes and low alkalinity. Prepared by the Geographic Data Systems in cooperation with Environmental Sciences Division, ORNL.

ILLUSTRATIONS (Continued)

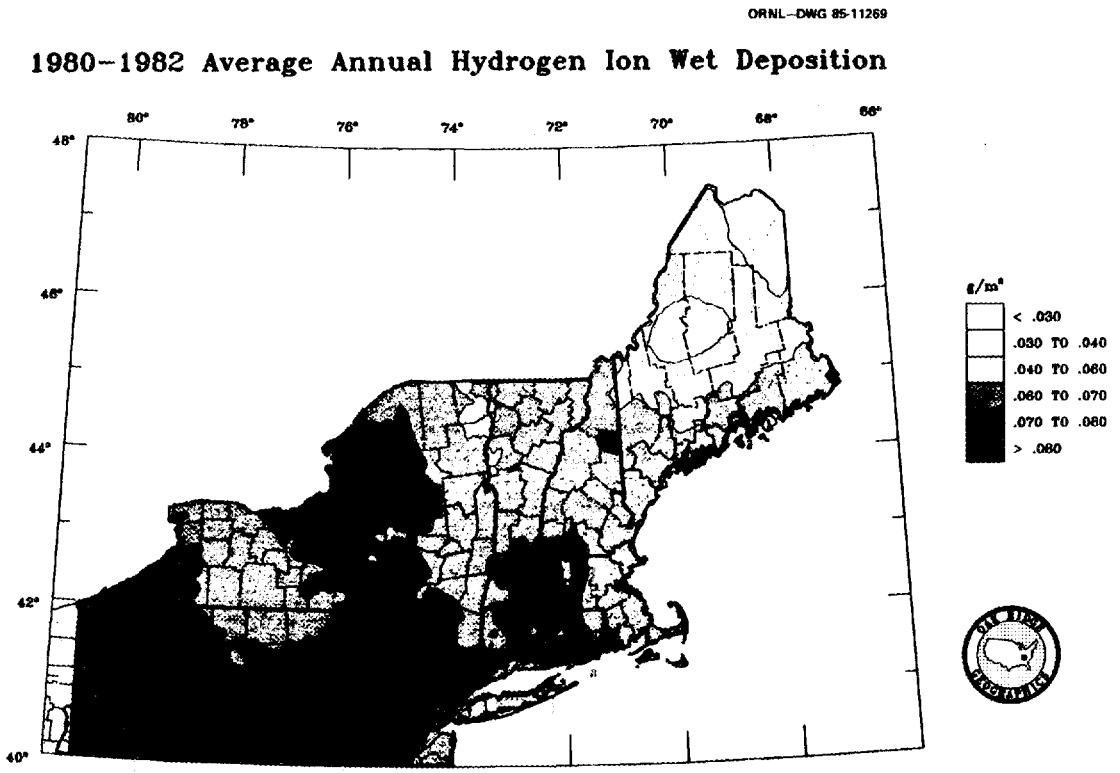

Fig. K83.2. Map of average annual hydrogen ion wet deposition for 1980-1982 for the northeastern United States. Prepared by Geographic Data Systems in cooperation with Environmental Sciences Division, ORNL.

Subject: Air Quality Date: September 30, 1985

Data Base Title: ASTRAP (Advanced Statistical Trajectory Regional Air Pollution) Model Simulations: Gridded Atmospheric Concentrations and Wet/Dry Deposition of SO_x and NO_x (K85), and State/Province Source-Receptor Matrices for Atmospheric Concentrations and Wet/Dry Deposition of SO_x and NO_x (K86)

Date Obtained: February 8, 1985 Acronym: ASTRAP

Date Updated: October 10, 1985

Data Source(s) Contributing Data to ADDNET:

Jack D. Shannon
Environmental Research Division, Bldg. 181
Argonne National Laboratory
Argonne, IL 60439
(312) 972-5807; FTS 972-5807

NAPAP Code: C5-12

Sponsoring Agency: U.S. Environmental Protection Agency

Appropriate Reference Citation for Users of the Data:

Description: The ASTRAP model, a long-term Lagrangian trajectory model, is used to estimate average atmospheric concentrations and cumulative wet and dry deposition of sulfur oxides and nitrogen oxides. ADDNET maintains ASTRAP output data sets that contain estimates of SO_2 and SO_4 atmospheric concentrations and wet/dry deposition of total sulfur for a grid across the United States and Canada (K85), and for state/province to state/province source-receptor transfer matrices (K86).

The gridded model output consists of seasonal and annual fields of size (51 x 45), where the grid increment increases with latitude, ranging from about 100 to 140 km. Calculations are omitted for portions of the grid over the open ocean. Emissions are appropriate for 1980 (NAPAP Version 2.0), while meteorological data are for 1976 through 1981. An algorithm for converting cell centroids to latitude and longitude is given below:

```
      A=6397/381
      B=3.1416
      C=57.29
      DO 1 I=1,51
      X=-11.167 + I/3
      DO 1 J=1,45
      Y=20.167 - J/3
      LAT=B -2 * ATAN (SQRT(X*X+Y*Y)/(1866*A))
      LAT= C*LAT
    1 LONG=80 - C*ATAN(X/Y)
```

The source-receptor matrices are for the seasonal and annual average atmospheric concentrations across a state or province and the integrated deposition. A deposition rate can be obtained by dividing each integrated deposition by the area of the state or province. The matrices are for 59 sources (plus a total) and 60 receptors. The sources are the 49 conterminous "states" (including the District of Columbia) alphabetically and the ten Canadian provinces alphabetically. The receptors are the 49 "states," the Great Lakes as a single receptor independent of boundaries, and the Canadian provinces. Emissions and meteorology are the same as for the gridded fields. The matrices are not normalized (i.e., they correspond to actual emissions and not unit emissions).

These files were updated in 1985. In addition to SO_x values, corresponding NO_x values were calculated. These calculations for NO/NO_2 and NO_3 (combined nitric acid and particulate nitrate) atmospheric concentrations and wet and dry deposition of total nitrogen from NO_x are provided for a grid (K85) and for source-receptor transfer matrices (K86).

Data Uses: Estimation of atmospheric loading for dose-response functions; emissions policy analysis.

Data Importance: Model simulations are the only source of dry deposition fields and source-receptor relationships; models provide more consistent estimates in data-sparse areas than do extrapolations of observed atmospheric concentrations and wet deposition.

Uncertainty/Reliability: No current method to evaluate state/province source-receptor relations exists. Model simulations of air concentrations and wet deposition reproduce gross features of analyses of observed data and explain about 70-75% of the variance of annual deposition estimates.

Data Type: Model simulations.

Number of Records: 4590 (K85); 60 (K86)

Geographic Coverage: United States and Canada

Spatial Resolution: 100-140 km for gridded fields (K85); states or provinces for source-receptor matrices (K86).

Period of Record: Period of simulation is 1976-1981 meteorology and 1980 emissions.

Temporal Resolution: Seasonal: winter (December-February); spring (March-May); summer (June-August); and fall (September-November); annual.

References or Supporting Documents:

Shannon, J. D. 1985. User's Guide for the Advanced Statistical Trajectory Regional Air Pollution (ASTRAP) Model. EPA/600/8-85/016 (in press).

CONTENTS (K85)

Year(s): 1980-1981
Geocoverage: U.S./C
Number of Records: 4590
Created/Updated: JUNE 1985
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: U. S.
Spatial Resolution: CELLS
Variables per Record: 23
Data Set Type: MULTIPLE
Update dates: NOV. 1985

Variable	Label		Type	Len.	Format
LAT_DEC	LATITUDE	DD.DDDD	NUM	4	8.4
LON_DEC	LONGITUDE	DDD.DDDD	NUM	4	8.4
YEAR	YEAR		NUM	4	4.
S_D_ANNL	SULFUR - DRY, ANNUAL	KG/HA	NUM	4	7.3
S_D_SPRG	SULFUR - DRY, SPRING	KG/HA	NUM	4	7.3
S_D_SUMR	SULFUR - DRY, SUMMER	KG/HA	NUM	4	7.3
S_D_FALL	SULFUR - DRY, FALL	KG/HA	NUM	4	7.3
S_D_WNTR	SULFUR - DRY, WINTER	KG/HA	NUM	4	7.3
S_W_ANNL	SULFUR - WET, ANNUAL	KG/HA	NUM	4	7.3
S_W_SPRG	SULFUR - WET, SPRING	KG/HA	NUM	4	7.3
S_W_SUMR	SULFUR - WET, SUMMER	KG/HA	NUM	4	7.3
S_W_FALL	SULFUR - WET, FALL	KG/HA	NUM	4	7.3
S_W_WNTR	SULFUR - WET, WINTER	KG/HA	NUM	4	7.3
SO2_ANNL	SO2 CONCENTRATION, ANNUAL	MG/M3	NUM	4	7.3
SO2_SPRG	SO2 CONCENTRATION, SPRING	MG/M3	NUM	4	7.3
SO2_SUMR	SO2 CONCENTRATION, SUMMER	MG/M3	NUM	4	7.3
SO2_FALL	SO2 CONCENTRATION, FALL	MG/M3	NUM	4	7.3
SO2_WNTR	SO2 CONCENTRATION, WINTER	MG/M3	NUM	4	7.3
SO4_ANNL	SO4 CONCENTRATION, ANNUAL	MG/M3	NUM	4	7.3
SO4_SPRG	SO4 CONCENTRATION, SPRING	MG/M3	NUM	4	7.3
SO4_SUMR	SO4 CONCENTRATION, SUMMER	MG/M3	NUM	4	7.3
SO4_FALL	SO4 CONCENTRATION, FALL	MG/M3	NUM	4	7.3
SO4_WNTR	SO4 CONCENTRATION, WINTER	MG/M3	NUM	4	7.3

STATISTICS (K85)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
LAT_DEC	4590	0	43.33	12.76	18.39	71.25
LON_DEC	4590	0	90.66	23.17	31.54	144.50

STATISTICS (K85) (Continued)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
S_D_ANNL	4590	0	2.50	5.32	0.00	58.27
S_D_SPRG	4590	0	1.43	3.68	0.00	44.79
S_D_SUMR	4590	0	1.41	4.13	0.00	56.65
S_D_FALL	4590	0	1.66	4.55	0.00	59.76
S_D_WNTR	4590	0	2.59	6.88	0.00	71.89
S_W_ANNL	4590	0	1.32	2.30	0.00	18.35
S_W_SPRG	4590	0	0.80	1.46	0.00	11.07
S_W_SUMR	4590	0	0.91	1.98	0.00	18.14
S_W_FALL	4590	0	0.89	1.78	0.00	14.50
S_W_WNTR	4590	0	0.69	1.38	0.00	9.53
SO2_ANNL	4590	0	2.53	5.43	0.00	58.25
SO2_SPRG	4590	0	1.44	3.86	0.00	46.06
SO2_SUMR	4590	0	1.41	4.08	0.00	53.32
SO2_FALL	4590	0	1.99	5.48	0.00	63.21
SO2_WNTR	4590	0	2.43	6.41	0.00	73.37
SO4_ANNL	4590	0	1.29	2.27	0.00	17.70
SO4_SPRG	4590	0	0.81	1.53	0.00	11.88
SO4_SUMR	4590	0	0.93	1.99	0.00	17.06
SO4_FALL	4590	0	0.84	1.67	0.00	12.59
SO4_WNTR	4590	0	0.65	1.32	0.00	9.59

CONTENTS (K86)

Year(s): 1980-1981
Geocoverage: U.S./C
Number of Records: 60
Created/Updated: JUNE 1985
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: U. S.
Spatial Resolution: STATES
Variables per Record: 22
Data Set Type: SINGLE
Update dates: NOV. 1985

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
ANL_ST	ARGONNE STATE CODE		NUM	4	2.
S_D_ANNL	SULFUR - DRY, ANNUAL	KG/HA	NUM	4	7.3
S_D_SPRG	SULFUR - DRY, SPRING	KG/HA	NUM	4	7.3
S_D_SUMR	SULFUR - DRY, SUMMER	KG/HA	NUM	4	7.3
S_D_FALL	SULFUR - DRY, FALL	KG/HA	NUM	4	7.3
S_D_WNTR	SULFUR - DRY, WINTER	KG/HA	NUM	4	7.3
S_W_ANNL	SULFUR - WET, ANNUAL	KG/HA	NUM	4	7.3
S_W_SPRG	SULFUR - WET, SPRING	KG/HA	NUM	4	7.3
S_W_SUMR	SULFUR - WET, SUMMER	KG/HA	NUM	4	7.3
S_W_FALL	SULFUR - WET, FALL	KG/HA	NUM	4	7.3
S_W_WNTR	SULFUR - WET, WINTER	KG/HA	NUM	4	7.3

CONTENTS (K86) (Continued)

Variable	Label		Type	Len.	Format
SO2_ANNL	SO2 CONCENTRATION, ANNUAL	MG/M3	NUM	4	7.3
SO2_SPRG	SO2 CONCENTRATION, SPRING	MG/M3	NUM	4	7.3
SO2_SUMR	SO2 CONCENTRATION, SUMMER	MG/M3	NUM	4	7.3
SO2_FALL	SO2 CONCENTRATION, FALL	MG/M3	NUM	4	7.3
SO2_WNTR	SO2 CONCENTRATION, WINTER	MG/M3	NUM	4	7.3
SO4_ANNL	SO4 CONCENTRATION, ANNUAL	MG/M3	NUM	4	7.3
SO4_SPRG	SO4 CONCENTRATION, SPRING	MG/M3	NUM	4	7.3
SO4_SUMR	SO4 CONCENTRATION, SUMMER	MG/M3	NUM	4	7.3
SO4_FALL	SO4 CONCENTRATION, FALL	MG/M3	NUM	4	7.3
SO4_WNTR	SO4 CONCENTRATION, WINTER	MG/M3	NUM	4	7.3

STATISTICS (K86)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
S_D_ANNL	60	0	81.14	72.02	0.39	294.03
S_D_SPRG	60	0	18.68	17.33	0.08	75.92
S_D_SUMR	60	0	20.63	18.92	0.11	77.33
S_D_FALL	60	0	20.02	17.77	0.09	79.01
S_D_WNTR	60	0	21.80	18.78	0.11	75.56
S_W_ANNL	60	0	55.33	64.12	0.26	382.85
S_W_SPRG	60	0	17.67	20.49	0.07	116.30
S_W_SUMR	60	0	15.53	17.78	0.09	101.43
S_W_FALL	60	0	14.14	19.14	0.06	122.69
S_W_WNTR	60	0	8.00	7.99	0.03	42.43
SO2_ANNL	60	0	11.85	11.51	0.68	40.24
SO2_SPRG	60	0	9.09	8.63	0.44	30.20
SO2_SUMR	60	0	9.15	9.51	0.35	33.60
SO2_FALL	60	0	13.45	12.90	0.63	45.40
SO2_WNTR	60	0	15.73	15.25	0.68	53.20
SO4_ANNL	60	0	4.24	3.30	0.24	11.20
SO4_SPRG	60	0	3.95	2.92	0.30	10.19
SO4_SUMR	60	0	5.10	4.36	0.14	14.73
SO4_FALL	60	0	4.44	3.32	0.25	11.32
SO4_WNTR	60	0	3.46	2.68	0.26	9.16

Subject: Air Quality Date: September 30, 1985

Data Base Title: Historical Emissions of SO_2 and NO_x (K88)

Date Obtained: February 4, 1985 Acronym:

Data Source(s) Contributing Data to ADDNET:

J. David Mobley
Air and Energy Engineering
Research Laboratory
U.S. EPA, MD-61
Research Triangle Park, NC 27711
(919) 541-2612; FTS 629-2612

Gerhard Gschwandtner
Pacific Environmental
Services, Inc.
1905 Chapel Hill Road
Durham, NC 27707
(919) 493-3536

NAPAP Task Group: B

Sponsoring Agency: U.S. Environmental Protection Agency

Appropriate Reference Citation for Users of the Data:

Gschwandtner, G., K. Gschwandtner, and K. Eldridge. 1985. Historic Emissions of Sulfur and Nitrogen Oxides in the United States from 1900 to 1980, Volume I and Volume II. EPA-600/7-85-009a and -009b, Research Triangle Park, NC.

Description: Historic anthropogenic emissions of SO_2 and NO_x were estimated by individual source category for each of the 48 conterminous United States and the District of Columbia for every year from 1900 to 1980. Source categories included power plants, industrial boilers, industrial processes, commercial and residential heat sources, natural gas pipelines, highway vehicles, off-highway diesel engines, and all other anthropogenic sources. The emissions were calculated from statistics indicative of fuel consumption or industrial output, estimates of statewide fuel properties, and estimates of emission factors specific to each source category.

Data Uses: Estimating the historic impact of emissions of SO_2 and NO_x. The emission estimates allow temporal and regional trend comparisons between SO_2 and NO_x emissions and the chemical and biological effects trends being derived in other studies. The emission estimates also provide a basis for assessing pollutant damage, for studying trends in stream chemistry and deposition monitoring, and for evaluating proposed mitigation and control strategies.

Data Importance: SO_2 and NO_x are considered the primary precursors of acid precipitation. Comprehending the historic emissions trends is important to understanding the development of acidic precipitation-related problems and the causes of observed environmental effects. This data base provides documented historic emission estimates and has been reviewed by Task Group B.

Uncertainty/Reliability: Uncertainty increases the further back in time one goes, notably prior to 1950, because assumptions were made when state-level data pertinent to the development of emission estimates could not be obtained directly. From 1950 to 1980, methodology and most data are consistent. All assumptions and calculation techniques are described in detail in Volume I and Volume II of Gschwandtner et al. for each study year and source category.

Data Type: Summarized

Number of Records: 3969

Geographic Coverage: 48 Conterminous United States and the District of Columbia

Spatial Resolution: State

Period of Record: 1900-1980

Temporal Resolution: Yearly: State totals (all categories combined) for every year from 1900 to 1980

References or Supporting Documents:

Gschwandtner, G. 1984. Historic Emissions of SO_2 and NO_x since 1900. Proceedings: First Annual Acid Deposition Emissions Inventory Symposium. EPA-600/9-85-015. Research Triangle Park, NC. May 1985.

Gschwandtner, G., K. Gschwandtner, and K. Eldridge. 1985. Historic Emissions of Sulfur and Nitrogen Oxides in the United States from 1900 to 1980, Volume I and Volume II. EPA-600/7-85-009a and -009b. Research Triangle Park, NC.

CONTENTS

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 3969
Created/Updated: MAR. 1985
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: ANNUAL
Spatial Resolution: STATE
Variables per Record: 4
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
YEAR	YEAR		NUM	4	4.
NOX	NOX EMISSIONS	KG*E6	NUM	4	4.
SO2	SO2 EMISSIONS	KG*E6	NUM	4	4.

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
NOX	3969	0	208	287	2	2730
SO2	3969	0	448	585	2	4333

ILLUSTRATIONS

ORNL-DWG 87-1344

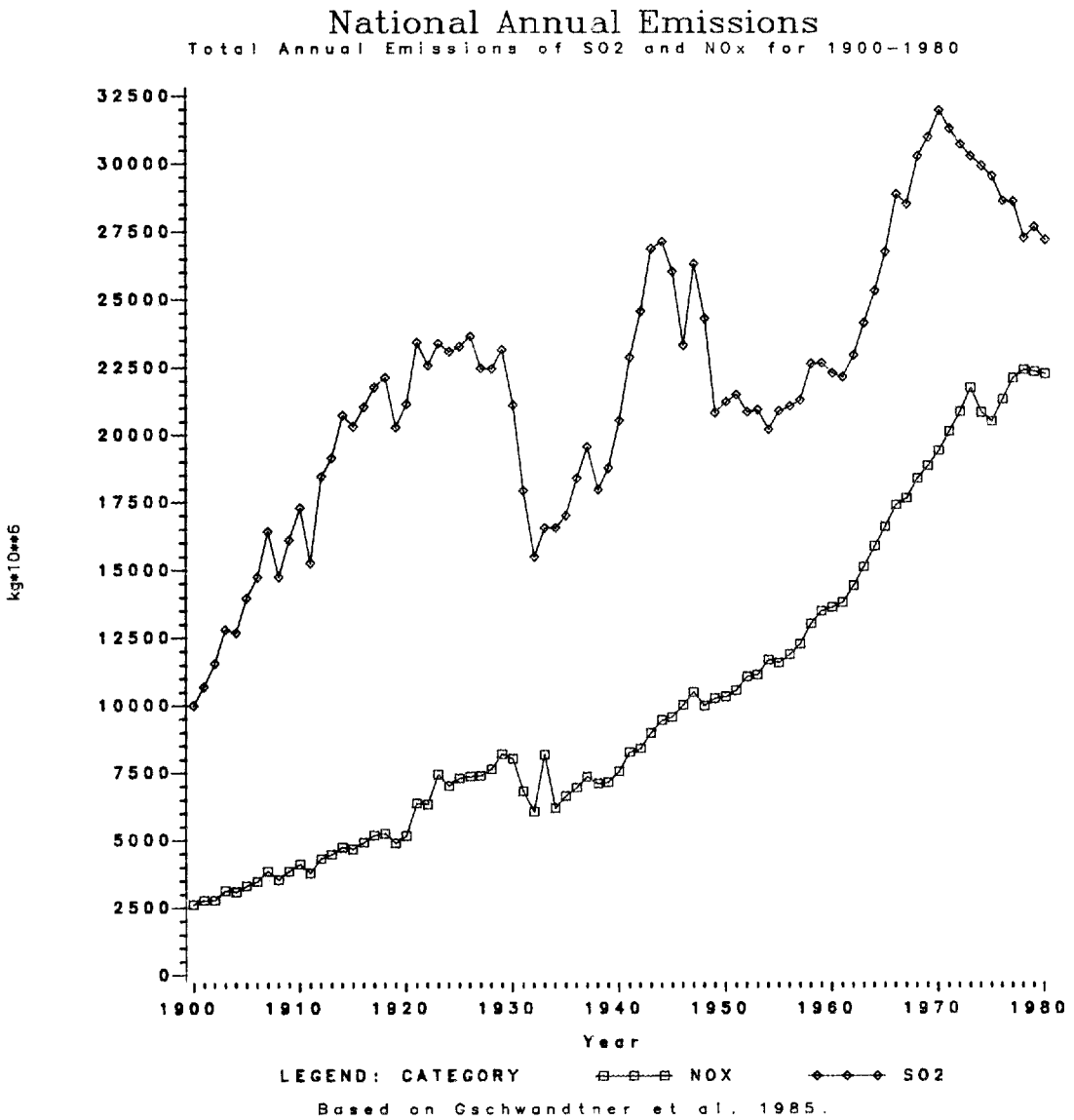

Fig. K88.1. Plot of total annual emissions of SO_2 and NO_x from 1900-1980. Source, Gschwandtner, Gschwandtner, and Eldridge 1985.

Subject: Air Quality Date: September 30, 1985

Data Base Title: NAPAP Emissions Inventory Version 4.0 for the 1980 Base Year: Major Point Sources (K90); Aggregated Major Point Sources by County (K91); Area Sources by County (K92)

Date Obtained: December 31, 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

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NAPAP Code: B1-05

Sponsoring Agency: U.S. Environmental Protection Agency

Appropriate Reference Citation for Users of the Data:

Description: Task Group B (Man-Made Emissions) provided ADDNET with a copy of Version 4.0 of the 1980 Base Year NAPAP Emission Inventory. The three emissions data sets received by ADDNET included (1) point source data for over 220,000 emission points in the conterminous United States; (2) major point source data for 25,298 emission points which account for the majority of emissions [this is a subset of file (1)]; and (3) area source data for 64 categories in each of the 3,069 counties in the conterminous United States and the District of Columbia. Emissions of SO_2, NO_x, volatile organic carbons (VOC), sulfates, ammonia, carbon monoxide (CO), and total suspended particulates (TSP) were included in each file, along with data on source category, geographic location, stack height (for point sources), and fuel type. Some seasonal data were also included.

The ADDNET project aggregated the Emissions Inventory data to create SAS data sets for each file and archived the tapes of the original data. A SAS data set was created from the major point source data set (K90). The major point source data (2) were summed for each county, resulting in a data set containing emission totals for each species and the number of point sources per county (K91). The nonpoint (area) source data (3) were also summed by county. The resultant data set contains nonpoint emission totals by species (K92).

Data Uses: Assessment of man-made emission sources, dispersion modeling, mapping, and policy analyses.

Data Importance: Considered the best detailed inventory to date of emissions on a national scale; these data are being subjected to extensive review by Task Group B. Further improvements will be made as necessary.

Uncertainty/Reliability: The accuracy of emission inventory data cannot readily be determined because there are no true emission values against which calculated data values can be compared. Continuous emission monitoring (CEM) results are the closest thing to true emission values available; however, these data are not available to any great extent. Emission inventories are created by merging fuel use or other activity statistics for point or area sources with appropriate emission factors that estimate the amount of emitted chemicals. The uncertainty of the estimated emissions relates to errors in either the fuel use or other activity statistics, emission factor values, or control efficiency. Task Group B is preparing estimates of the uncertainty of emissions values in the 1980 inventory, based on judgments of the uncertainty of each parameter involved in the emission estimation process.

Data Type: Raw (K91); Aggregated (K90, K92)

Number of Records: Major Point Sources (K90): 25,256; Aggregated Point Sources (K91): 1,891; Area Sources (K92): 3,102

Geographic Coverage: United States

Spatial Resolution: Point (K90); County (K91, K92)

Period of Record: 1980

Temporal Resolution: Annual and seasonal

References or Supporting Documents:

Toothman, D. A., J. C. Yates, and E. J. Sabo. 1984. Status Report on the Development of the NAPAP Emission Inventory for the 1980 Base Year and Summary of Preliminary Data. EPA-600/7-84-091. U.S. Environmental Protection Agency, Research Triangle Park, NC.

CONTENTS (K90)

Year(s): 1980	Temporal Resolution: ANNUAL
Geocoverage: U. S.	Spatial Resolution: COUNTY
Number of Records: 25,256	Variables per Record: 22
Created/Updated: JAN. 1985	Data Set Type: MULTIPLE
Date Released: 30SEP85	Update dates: DEC. 1985
Compiler(s): IL MCCOLLOUGH	

CONTENTS (K90) (Continued)

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
LAT_DEC	LATITUDE	DD.DDDD	NUM	4	8.4
LON_DEC	LONGITUDE	DDD.DDDD	NUM	4	8.4
DATE	DATE		NUM	4	DATE7.
AQCR	AIR QUALITY CONTROL REGION		NUM	4	3.
PLANT_ID	SOURCE PLANT WITHIN A COUNTY		CHAR	4	4
SIC_C	STANDARD INDUSTRIAL CLASSIFICATION CODE		NUM	4	4.
UTM_H_CO	HORIZONTAL COORDINATE FOR UTM MEAS.		NUM	4	8.
UTM_V_CO	VERTICAL COORDINATE FOR UTM MEAS.		NUM	4	8.
STACK_HT	STACK HEIGHT	M	NUM	4	5.
IPP_C	IMPLEMENTATION PLANNING PROG. PROCESS		NUM	4	2.
SOURCE_N	NUMBER OF SOURCES WITHIN THE COUNTY		NUM	4	3.
CO	CARBON MONOXIDE EMISSIONS	KG*E3	NUM	4	8.
NH3	NH3 EMISSIONS	KG*E3	NUM	4	8.
NOX	NOX EMISSIONS	KG*E3	NUM	4	8.
SO2	SO2 EMISSIONS	KG*E3	NUM	4	8.
SO4	SO4 EMISSIONS	KG*E3	NUM	4	8.
TSP	TOTAL SUSPENDED PARTICULATES	KG*E3	NUM	4	8.
VOC	VOC EMISSIONS	KG*E3	NUM	4	8.

STATISTICS (K90)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
STACK_HT	21817	3439	94	127	0	3652
IPP_C	9381	15875	24	36	0	99
LAT_DEC	25256	0	37	5	26	67
LON_DEC	25256	0	91	14	66	186
SIC_C	24994	262	3557	1646	0	9999
SOURCE_N	25256	0	6	1	1	7
CO	23335	1921	330	3308	0	153212
NH3	4038	21218	209	605	0	8294
NOX	23468	1788	479	2185	0	65500
SO2	23419	1837	1048	6312	0	205500
SO4	13089	12167	55	210	0	4781
TSP	23486	1770	96	697	0	39469
VOC	24411	845	187	853	0	66500

CONTENTS (K91)

Year(s): 1980
Geocoverage: U. S.
Number of Records: 1891
Created/Updated: FEB. 1985
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: ANNUAL
Spatial Resolution: POINT
Variables per Record: 16
Data Set Type: SINGLE
Update dates: DEC. 1985

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
CO	CARBON MONOXIDE EMISSIONS	KG*E3	NUM	4	8.
CO_N	CARBON MONOXIDE, NUMBER OF SOURCES		NUM	4	3.
NH3	NH3 EMISSIONS	KG*E3	NUM	4	8.
NH3_N	NH3, NUMBER OF SOURCES		NUM	4	3.
NOX	NOX EMISSIONS	KG*E3	NUM	4	8.
NOX_N	NOX, NUMBER OF SOURCES		NUM	4	3.
SO2	SO2 EMISSIONS	KG*E3	NUM	4	8.
SO2_N	SO2, NUMBER OF SOURCES		NUM	4	3.
SO4	SO4 EMISSIONS	KG*E3	NUM	4	8.
SO4_N	SO4, NUMBER OF SOURCES		NUM	4	3.
TSP	TOTAL SUSPENDED PARTICULATES	KG*E3	NUM	4	8.
TSP_N	TSP, NUMBER OF SOURCES		NUM	4	3.
VOC	VOC EMISSIONS	KG*E3	NUM	4	8.
VOC_N	VOC, NUMBER OF SOURCES		NUM	4	3.

STATISTICS (K91)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
CO	1865	26	3749	20653	0	456003
CO_N	1891	0	12	35	0	786
NH3	813	1078	944	1986	0	17671
NH3_N	1891	0	2	5	0	68
NOX	1869	22	5476	12621	0	116124
NOX_N	1891	0	7	18	0	424
SO2	1853	38	12099	35076	0	525777
SO2_N	1891	0	12	35	0	779
SO4	1579	312	416	935	0	11969
SO4_N	1891	0	12	35	0	790
TSP	1866	25	1094	3365	0	49290
TSP_N	1891	0	12	34	0	759
VOC	1880	11	2199	7306	0	128603
VOC_N	1891	0	13	36	0	819

CONTENTS (K92)

Year(s): 1980
Geocoverage: U. S.
Number of Records: 3102
Created/Updated: FEB. 1985
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: ANNUAL
Spatial Resolution: COUNTY
Variables per Record: 16
Data Set Type: SINGLE
Update dates: DEC. 1985

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
CO	CARBON MONOXIDE EMISSIONS	KG*E3	NUM	4	8.
CO_N	CARBON MONOXIDE, NUMBER OF SOURCES		NUM	4	3.
NH3	NH3 EMISSIONS	KG*E3	NUM	4	8.
NH3_N	NH3, NUMBER OF SOURCES		NUM	4	3.
NOX	NOX EMISSIONS	KG*E3	NUM	4	8.
NOX_N	NOX, NUMBER OF SOURCES		NUM	4	3.
SO2	SO2 EMISSIONS	KG*E3	NUM	4	8.
SO2_N	SO2, NUMBER OF SOURCES		NUM	4	3.
SO4	SO4 EMISSIONS	KG*E3	NUM	4	8.
SO4_N	SO4, NUMBER OF SOURCES		NUM	4	3.
TSP	TOTAL SUSPENDED PARTICULATES	KG*E3	NUM	4	8.
TSP_N	TSP, NUMBER OF SOURCES		NUM	4	3.
VOC	VOC EMISSIONS	KG*E3	NUM	4	8.
VOC_N	VOC, NUMBER OF SOURCES		NUM	4	3.

STATISTICS (K92)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
CO	3102	0	24258	58585	0	1084698
CO_N	3102	0	64	0	64	64
NH3	3069	33	1006	940	0	17765
NH3_N	3102	0	13	1	0	13
NOX	3102	0	3544	10266	0	304158
NOX_N	3102	0	63	7	0	64
SO2	3102	0	618	2064	0	43407
SO2_N	3102	0	64	0	64	64
SO4	3069	33	45	144	0	2765
SO4_N	3102	0	64	0	64	64
TSP	3102	0	10743	20093	0	533874
TSP_N	3102	0	64	0	64	64
VOC	3102	0	5361	14862	0	393114
VOC_N	3102	0	64	0	64	64

Subject: Air Quality Date: September 30, 1985

Data Base Title: Acid Deposition System for Statistical Reporting: ADS-Annual Station Deposition (K93); ADS-Annual Gridded Deposition (K95); ADS-Seasonal Deposition Means (K94)

Date Obtained: August 20, 1984 Acronym: ADS

Data Source(s) Contributing Data to ADDNET:

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NAPAP Code: D1-13

Sponsoring Agency: U.S. Environmental Protection Agency

Appropriate Reference Citation for Users of the Data:

Watson, C. R. and A. R. Olsen. 1984. Acid Deposition System (ADS) for Statistical Reporting: System Design and User's Code Manual. EPA-600/8-84-023. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Description: The ADS was established by EPA at PNL to develop and manage a centralized data base for all North American wet deposition precipitation chemistry data collected by organizations operating quality-assured monitoring networks. ADS contains data from the NADP, CANSAP, APIOS, MAP3S/PCN, EPRI-SURE, UAPSP, and APN monitoring networks. Flags are included to indicate which sites and data meet ADS screening criteria. ADDNET maintains a subset (annual averages for individual sites) of the ADS data base for 1980, 1981, and 1982 (K93). ADDNET also includes a file of gridded H^+ data (0.5° cells) for 1980-1982, based on sites that met the screening criteria (K95), and a file of "quarterly means" for individual sites (K94). Twelve quarterly means are calculated per year so that three-month values associated with crops or other seasonal effects can be estimated.

Data Uses: Definition of spatial patterns and trends of wet deposition in North America for assessments.

Data Importance: This data base of quality-assured wet deposition data for North America for 1980-1982 provides easily accessed data for statistical analysis and modeling activities related to the 1985 Assessment. The combined data and site criteria have been reviewed and "certified" by Task Group D.

Uncertainty/Reliability: Varies among sites and networks. Data have been screened according to ADS collection efficiency criteria.

Data Type: Summarized

Number of Records: Annual Summaries (K93): 684; Quarterly Summaries (K94): 10,309; H^+ Grid (K95): 7200

Geographic Coverage: United States, Canada, and American Samoa

Spatial Resolution: Point (site); Grid (0.5° latitude by 0.5° longitude)

Period of Record: 1980-1982

Temporal Resolution: Quarterly (K94); Yearly (K93, K95)

References or Supporting Documents:

Watson, C. R. and A. R. Olsen. 1984. Acid Deposition System (ADS) for Statistical Reporting: System Design and User's Code Manual. EPA-600/8-84-023. U.S. Environmental Protection Agency, Research Triangle Park, NC.

CONTENTS (K93)

Year(s): 1980-1982
Geocoverage: U. S.
Number of Records: 684
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): JM COE

Temporal Resolution: ANNUAL
Spatial Resolution: STATION
Variables per Record: 31
Data Set Type: SINGLE
Update dates: FEB. 1986

Variable	Label		Type	Len.	Format
LAT_DEC	LATITUDE	DD.DDDD	NUM	4	8.4
LON_DEC	LONGITUDE	DDD.DDDD	NUM	4	8.4
ADS_C	ADS NETWORK CODE		CHAR	2	2
ADS_ID	ADS SITE IDENTIFICATION		NUM	4	5.1
YEAR	YEAR		NUM	4	4.
FLAG_S	SITE CRITERIA NOT MET		CHAR	6	6
H_CONC	H+ ANNUAL WEIGHTED MEAN CONC.	MG/L	NUM	4	5.3
H_DEP	H+ ANNUAL WET DEPOSITION	G/M2	NUM	4	5.3
H_FLAG	H+ CRITERIA NOT MET		CHAR	7	7
H_PCE	H+ PERCENT COLLECTION EFFICIENCY	%	NUM	4	6.2
H_PPT	H+ PERCENT TOTAL PRECIPITATION	%	NUM	4	6.2
H_PVSL	H+ PERCENT VALID SAMPLE LENGTH	%	NUM	4	6.2
NO3_CONC	NO3 ANNUAL WEIGHTED MEAN CONC.	MG/L	NUM	4	5.3
NO3_DEP	NO3 ANNUAL WET DEPOSITION	G/M2	NUM	4	5.3
NO3_FLAG	NO3 CRITERIA NOT MET		CHAR	7	7
NO3_PCE	NO3 PERCENT COLLECTION EFFICIENCY	%	NUM	4	6.2
NO3_PPT	NO3 PERCENT TOTAL PRECIPITATION	%	NUM	4	6.2
NO3_PVSL	NO3 PERCENT VALID SAMPLE LENGTH	%	NUM	4	6.2
PH_FLAG	PH CRITERIA NOT MET		CHAR	7	7

CONTENTS (K93) (Continued)

Variable	Label		Type	Len.	Format
PH_PCE	PH PERCENT COLLECTION EFFICIENCY	%	NUM	4	6.2
PH_PPT	PH PERCENT TOTAL PRECIPITATION	%	NUM	4	6.2
PH_PVSL	PH PERCENT VALID SAMPLE LENGTH	%	NUM	4	6.2
PH_WT	PH ANNUAL WEIGHTED MEAN		NUM	4	4.2
PPT	TOTAL PRECIPITATION	CM	NUM	4	7.3
SITE_PPT	PERCENT SITE PRECIP. COVERAGE LENGTH	%	NUM	4	6.2
SO4_CONC	SO4 ANNUAL WEIGHTED MEAN CONC.	MG/L	NUM	4	6.3
SO4_DEP	SO4 ANNUAL WET DEPOSITION	G/M2	NUM	4	6.3
SO4_FLAG	SO4 CRITERIA NOT MET		CHAR	7	7
SO4_PCE	SO4 PERCENT COLLECTION EFFICIENCY	%	NUM	4	6.2
SO4_PPT	SO4 PERCENT TOTAL PRECIPITATION	%	NUM	4	6.2
SO4_PVSL	SO4 PERCENT VALID SAMPLE LENGTH	%	NUM	4	6.2

STATISTICS (K93)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
LAT_DEC	684	0	43.89	7.40	14.25	76.23
LON_DEC	684	0	89.79	18.53	54.57	170.56
H_CONC	660	24	0.04	0.13	0.00	3.32
H_DEP	660	24	0.03	0.03	0.00	0.25
H_PCE	659	25	84.33	16.47	19.03	122.10
H_PPT	684	0	85.35	24.01	0.00	100.00
H_PVSL	684	0	70.55	28.27	0.00	100.00
NO3_CONC	674	10	1.34	0.81	0.06	4.45
NO3_DEP	674	10	0.99	0.77	0.01	4.31
NO3_PCE	673	11	84.26	16.33	19.03	122.10
NO3_PPT	684	0	89.56	18.69	0.00	100.00
NO3_PVSL	684	0	71.86	27.94	0.00	100.00
PH_PCE	659	25	84.33	16.47	19.03	122.10
PH_PPT	684	0	85.35	24.01	0.00	100.00
PH_PVSL	684	0	70.55	28.27	0.00	100.00
PH_WT	660	24	4.72	0.59	3.31	7.42
PPT	684	0	75.85	45.52	2.06	366.46
SITE_PPT	684	0	81.36	27.10	3.87	100.00
SO4_CONC	674	10	2.23	1.17	0.18	7.22
SO4_DEP	674	10	1.70	1.27	0.03	7.61
SO4_PCE	673	11	84.23	16.36	19.03	122.10
SO4_PPT	684	0	89.59	18.80	0.00	100.00
SO4_PVSL	684	0	72.12	28.06	0.00	100.00

CODES (K93)

ADS Network code definitions

ADS_C	Network name
01	NADP
02	NTN
03	NTN+ (both NTN and NADP)
04	CAPMON
05	CANSAP
06	MAP3S/PCN
07	APIOS-D (daily)
08	UAPSP
09	APN
10	EPRI-SURE
11	WMO
12	APIOS-C (cumulative)
13	EPA-IV
14	GLAD

ILLUSTRATIONS (K93)

ORNL-DWG 85-7719

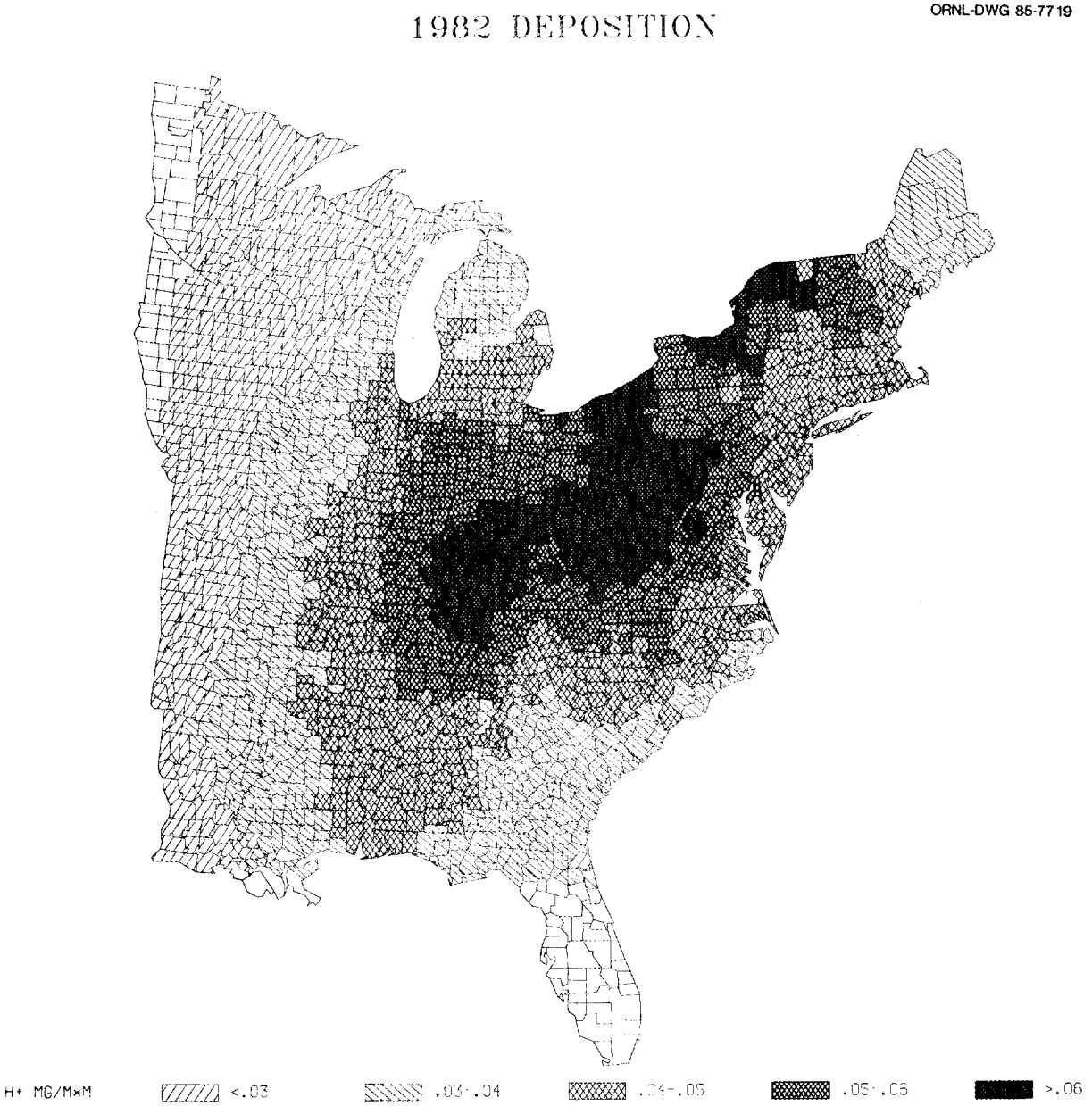

Fig. K93.1. Map of average annual hydrogen ion wet deposition for 1982 for the eastern United States.

CONTENTS (K94)

Year(s): 1980-1982
Geocoverage: U. S.
Number of Records: 10309
Created/Updated: JAN. 1985
Date Released: 30SEP85
Compiler(s): JM COE

Temporal Resolution: QUARTERLY
Spatial Resolution: STATION
Variables per Record: 35
Data Set Type: MULTIPLE
Update dates: FEB. 1986

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
LAT_DEC	LATITUDE	DD.DDDD	NUM	4	8.4
LON_DEC	LONGITUDE	DDD.DDDD	NUM	4	8.4
ADS_C	ADS NETWORK CODE		CHAR	2	2
ADS_ID	ADS SITE IDENTIFICATION		CHAR	4	4
ADS_SITE	ADS SITE NAME		CHAR	18	18
DATE	STARTING DATE OF QUARTER		NUM	4	DATE7.
SAMPLPER	SAMPLING PERIOD	MONTHS	NUM	4	2.
H_CONC	H+ ANNUAL WEIGHTED MEAN CONC.	MG/L	NUM	4	5.3
H_DEP	H+ ANNUAL WET DEPOSITION	G/M2	NUM	4	5.3
H_PCE	H+ PERCENT COLLECTION EFFICIENCY	%	NUM	4	6.2
H_PPT	H+ PERCENT TOTAL PRECIPITATION	%	NUM	4	6.2
H_PVC	PERCENT SAMPLES WITH H+ VALUES	%	NUM	4	6.2
NH4_CONC	NH4 ANNUAL WEIGHTED MEAN CONC.	MG/L	NUM	4	5.3
NH4_DEP	NH4 ANNUAL WET DEPOSITION	G/M2	NUM	4	5.3
NH4_PCE	NH4 PERCENT COLLECTION EFFICIENCY	%	NUM	4	6.2
NH4_PPT	NH4 PERCENT TOTAL PRECIPITATION	%	NUM	4	6.2
NH4_PVC	PERCENT SAMPLES WITH NH4 VALUES	%	NUM	4	6.2
NO3_CONC	NO3 ANNUAL WEIGHTED MEAN CONC.	MG/L	NUM	4	5.3
NO3_DEP	NO3 ANNUAL WET DEPOSITION	G/M2	NUM	4	5.3
NO3_PCE	NO3 PERCENT COLLECTION EFFICIENCY	%	NUM	4	6.2
NO3_PPT	NO3 PERCENT TOTAL PRECIPITATION	%	NUM	4	6.2
NO3_PVC	PERCENT SAMPLES WITH NO3 VALUES	%	NUM	4	6.2
PH_PCE	PH PERCENT COLLECTION EFFICIENCY	%	NUM	4	6.2
PH_PPT	PH PERCENT TOTAL PRECIPITATION	%	NUM	4	6.2
PH_PVC	SAMPLES WITH PH VALUES	%	NUM	4	6.2
PH_WT	PH ANNUAL WEIGHTED MEAN		NUM	4	4.2
PPT	TOTAL PRECIPITATION	CM	NUM	4	7.3
SITE_PPT	PERCENT SITE PRECIP. COVERAGE LENGTH	%	NUM	4	6.2
SO4_CONC	SO4 ANNUAL WEIGHTED MEAN CONC.	MG/L	NUM	4	6.3
SO4_DEP	SO4 ANNUAL WET DEPOSITION	G/M2	NUM	4	6.3
SO4_PCE	SO4 PERCENT COLLECTION EFFICIENCY	%	NUM	4	6.2
SO4_PPT	SO4 PERCENT TOTAL PRECIPITATION	%	NUM	4	6.2
SO4_PVC	PERCENT SAMPLES WITH SO4 VALUES	%	NUM	4	6.2
SUMTYP	ALWAYS 1 THIS TIME		CHAR	1	1

STATISTICS (K94)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
LAT_DEC	10309	0	44.85	7.73	14.25	76.23
LON_DEC	10309	0	89.72	19.13	54.57	170.56
H_CONC	9706	603	0.03	0.03	0.00	0.34
H_DEP	9706	603	0.01	0.01	0.00	0.06
H_PCE	9608	701	80.28	26.72	4.44	800.00
H_PPT	10031	278	89.34	23.64	0.00	100.00
H_PVC	10308	1	76.77	28.18	0.00	100.00
NH4_CONC	9792	517	0.31	0.30	0.00	5.63
NH4_DEP	9792	517	0.06	0.06	0.00	0.65
NH4_PCE	9701	608	80.43	26.61	4.44	800.00
NH4_PPT	10031	278	90.09	21.92	0.00	100.00
NH4_PVC	10308	1	76.40	27.87	0.00	100.00
NO3_CONC	9811	498	1.48	1.43	0.00	61.14
NO3_DEP	9811	498	0.28	0.26	0.00	7.28
NO3_PCE	9719	590	80.29	26.67	4.44	800.00
NO3_PPT	10031	278	90.75	21.28	0.00	100.00
NO3_PVC	10308	1	76.97	27.72	0.00	100.00
PH_PCE	9608	701	80.28	26.72	4.44	800.00
PH_PPT	10031	278	89.34	23.64	0.00	100.00
PH_PVC	10308	1	76.77	28.18	0.00	100.00
PH_WT	9706	603	4.82	0.73	3.46	7.84
PPT	10309	0	20.39	14.20	0.00	189.00
SAMPLPER	10309	0	3.00	0.00	3.00	3.00
SITE_PPT	10309	0	85.63	25.34	0.00	100.00
SO4_CONC	9816	493	2.49	1.81	0.05	25.55
SO4_DEP	9816	493	0.50	0.44	0.00	5.32
SO4_PCE	9724	585	80.22	26.72	4.44	800.00
SO4_PPT	10031	278	2671.66	2978.52	0.00	9100.00
SO4_PVC	10308	1	77.19	27.76	0.00	100.00

CODES (K94)

ADS Network code definitions

ADS_C	Network name
01	NADP
02	NTN
03	NTN+ (both NTN and NADP)
04	CAPMON
05	CANSAP
06	MAP3S/PCN
07	APIOS-D (daily)
08	UAPSP
09	APN
10	EPRI-SURE
11	WMO
12	APIOS-C (cumulative)
13	EPA-IV
14	GLAD

ILLUSTRATIONS (K94)

Table K94.1. Acid deposition system monitoring sites

STATE	STATE NAME	ADS SITE	LATITUDE	LONGITUDE
01	Alabama	Selma	32.4740	87.0840
		Selma-2	32.4740	87.0840
02	Alaska	Mt. Mckinley Park	63.7240	148.9650
04	Arizona	Grand Canyon	36.0720	112.1530
		Oliver Knoll	33.0710	109.8650
		Organ Pipe Mon.	31.9510	112.8000
		Tombstone	31.7080	110.0570
05	Arkansas	Buffalo River	36.0830	92.5500
		Fayetteville	36.1010	94.1730
		Warren 2WSW	33.6040	92.1010
06	California	Bishop	37.3710	118.3660
		Channel Islands	34.0160	119.3620
		Davis	38.5350	121.7750
		Hopland (Ukiah)	39.0050	123.0850
		Sequoia Nat. Park	36.5690	118.7780
		Tanbark Flat	34.2080	117.7610
		Yosemite	37.7970	119.8580
08	Colorado	Alamosa	37.4430	105.8650
		Manitou	39.1010	105.0920
		Mesa Verde	37.1990	108.4910
		Pawnee	40.8060	104.7540
		Rocky Mt. Nat. Park	40.3640	105.5600
		Sand Spring	40.5080	107.7020
		Yampa	40.1670	106.9170
10	Delaware	Indian River	38.5810	75.2460
		Indian River-2	38.5810	75.2460
		Lewes	38.7670	75.0000
12	Florida	Austin-Cary Forest	29.7600	82.1990
		Bradford Forest	29.9750	82.1980
		Everglades Nat. Pa.	25.3940	80.6960
13	Georgia	Georgia Station	33.1780	84.4060
		Uvalda	32.0550	82.4740
15	Hawaii	Mauna Loa	19.5390	155.5790
16	Idaho	Craters of Moon	43.4630	113.5590
		Headquarters	47.6280	115.8190
17	Illinois	Argonne	41.7010	87.9950
		Bondville	40.0530	88.3720
		Dixon Springs	37.4360	88.6720
		Illinois	40.0530	88.3720
		NIARC	41.8410	88.8510
		Salem	38.6430	88.9670
		Southern Ill. U.	37.7100	89.2690
18	Indiana	Fort Wayne	41.0440	85.3190
		Fort Wayne-2	41.0440	85.3190
		Indiana Dunes	41.6320	87.0880
		Purdue U. Ag Farm	40.4710	85.9880
		Rockport	37.8810	87.1300
		Rockport-2	37.8810	87.1300
20	Kansas	Konza Prairie	39.1020	96.6090
		Lancaster	39.5690	95.3050
21	Kentucky	Morehead	38.1360	83.4550
22	Louisiana	Iberia	29.9300	91.7150
		N La Hill Farm	32.7510	93.0510
23	Maine	Acadia < 11/81	44.4080	68.2450
		Acadia > 11/81	44.3740	68.2610
		Bridgton	44.1080	70.7290
		Caribou	46.8690	68.0150
		Greenville Station	45.4900	69.6640
		Winterport	44.6180	68.9750
25	Massachusetts	Cadwell	42.3610	72.3910
		East	42.3840	71.2150
		Montague	42.5330	72.5360
		Montague-2	42.5330	72.5360
		NACL	41.9730	70.0200
		Turners Falls	42.5970	72.5490

ILLUSTRATIONS (K94) (Continued)

STATE	STATE NAME	ADS SITE	LATITUDE	LONGITUDE
26	Michigan	Douglas Lake	45.5610	84.6780
		Gaylord	44.9490	84.6420
		Houghton	47.2260	88.6310
		Isle Royal Park	47.9120	89.1530
		Kellogg	42.4100	85.3930
		Wellston	44.2240	85.8190
27	Minnesota	Fernberg	47.9460	91.4950
		Lamberton	44.2370	95.3010
		Marcell	47.5310	93.4690
28	Mississippi	Clinton	32.3520	90.2870
		Meridian	32.3340	88.7450
29	Missouri	Ashland	38.7540	92.1990
		University Forest	36.9110	90.3180
30	Montana	Give Out Morgan	48.4780	105.1940
		Glacier Nat. Park	48.5100	113.9960
31	Nebraska	Mead	41.1530	96.4930
33	New Hampshire	Hubbard Brook	43.9430	71.7030
34	New Jersey	Princeton	40.3150	74.8550
		Washington Xing	40.3150	74.8550
35	New Mexico	Bandelier	35.7820	106.2680
		CUBA	36.0410	106.9710
36	New York	Aurora	42.7340	76.6600
		Bennett Bridge	43.5260	75.9470
		Big Moose	43.8170	74.9020
		Brookhaven	40.8670	72.8830
		Chautauqua	42.2990	79.3960
		Huntington	43.9720	74.2240
		Ithaca	42.4010	76.6530
		Jasper	42.1060	77.5360
		Knobit	42.3780	73.5030
		Stilwell Lake	41.3500	74.0390
		Whiteface	44.3910	73.8590
37	North Carolina	Clinton Station	35.0240	78.2790
		Coweeta	35.0610	83.4310
		Finley (A)	35.7290	78.6810
		Finley (B)	35.7290	78.6810
		Lewiston	36.1280	77.1750
		Piedmont Station	35.6970	80.6230
		R. Triangle Inst.	35.9030	78.8700
		R. Triangle Park	35.8960	78.8610
		Raleigh	35.7290	78.6800
		Raleigh-2	35.7290	78.6800
38	North Dakota	Teddy Roosevelt NP	47.6030	103.2650
39	Ohio	Caldwell	39.7930	81.5310
		Delaware	40.3550	83.0660
		McArthur	39.2350	82.4780
		Oxford	39.5310	84.7240
		Wooster	40.7800	81.9250
		Zanesville	39.9840	82.0180
		Zanesville-2	39.9840	82.0180
41	Oregon	Alsea	44.3870	123.6230
		Bull Run	45.4500	122.1470
		H.J. Andrews	44.2230	122.2420
		Lost Creek	42.6680	122.6830
		Pendleton	45.6900	118.8380
		Schmidt Farm	44.6260	123.2140
		Vines Hill	43.8990	117.4270
42	Pennsylvania	Kane	41.5980	78.7680
		Leading Ridge	40.6590	77.9360
		Penn State	40.7880	77.9460
		Scranton	41.5750	75.9940
		Scranton-2	41.5750	75.9940
45	South Carolina	Clemson	34.6740	82.8360
46	South Dakota	Brookings	44.3320	96.8290
		Brookings-2	44.3320	96.8290
		Huron	44.3840	98.2210

ILLUSTRATIONS (K94) (Continued)

STATE	STATE NAME	ADS SITE	LATITUDE	LONGITUDE
47	Tennessee	Alamo	35.7920	89.1340
		Elkmont	35.6640	83.5900
		Giles County	35.2850	86.9030
		Giles County-2	35.2850	86.9030
		Walker Branch	35.9610	84.2870
48	Texas	Forest Seed Ctr	31.5610	94.8610
		K-Bar	29.3020	103.1770
		Longview	32.3810	94.7140
		Marshall	32.6660	94.4180
		Victoria	28.8450	96.9200
49	Utah	Cedar Mt	39.1710	110.6180
50	Vermont	Bennington	42.8760	73.1630
		Underhill Center	44.5280	72.8690
51	Virginia	Big Meadows	38.5140	78.4290
		Horton Station	37.3350	80.5580
		Virginia	38.0400	78.5420
53	Washington	Olympic Nat. Park	47.8600	123.9330
54	West Virginia	Lewisburg	37.8470	80.4170
		Lewisburg-2	37.8470	80.4170
		Parsons	39.0900	79.6620
55	Wisconsin	Lake Dubay	44.6650	89.6520
		Spooner	45.8220	91.8750
		Trout Lake	46.0530	89.6530
56	Wyoming	Newcastle	43.8730	104.1920
		Pinedale	42.9290	109.7870
		Yellowstone	44.9170	110.4200
60	American Samoa	American Samoa	14.2520	170.5630
80	Alberta	Cononation	52.0670	111.4500
		Edson	53.5830	116.4500
		Fort McMurray	56.6500	111.2170
		Lethbridge	49.6370	112.7880
		Rocky Mtn House	52.3830	114.9170
81	British Columbia	Fort Nelson	58.8330	122.6000
		Fort St. John	56.2330	120.7330
		Kelowna	49.9670	119.3830
		Port Hardy	50.6830	127.3670
		Prince George	53.8830	122.6670
		Puntzi Mountain	52.1170	124.0830
		Revelstoke	50.9670	118.1830
		Terrace	54.4670	128.5830
		Vancouver	49.1830	123.1670
82	Manitoba	Bissett	51.0330	95.6670
		Churchill	58.7500	94.0670
		Dauphin	51.1000	100.0500
		The Pas	53.9670	101.1000
83	New Brunswick	Acadia Fes	46.0000	66.3670
		Charlo	48.0000	66.3330
		St. John	45.3170	65.8830
84	Newfoundland	Baie d'Espoir	47.9830	55.8000
		Gancer	48.9500	54.5670
		Goose	53.3170	60.4170
		Stephenville	48.5330	58.5500
85	Northwest Territories	Fort Reliance	62.7170	109.1670
		Fort Simpson	61.7500	121.2330
		Hay River	60.8330	115.7830
		Inuvik	68.3000	133.4830
		Mould Bay	76.2330	119.3330
86	Nova Scotia	Kejimkujik	44.4330	65.2060
		Sable Island	43.9330	60.0170
		Shelburne	43.7170	65.2500
		Truro	45.3670	63.2670

ILLUSTRATIONS (K94) (Continued)

Table K94.1. (Continued)

STATE	STATE NAME	ADS SITE	LATITUDE	LONGITUDE
87	Ontario	Algoma	47.1000	84.1000
		Alvinston	42.8270	81.8340
		Armstrong	50.2830	88.9000
		Atikokan	48.7500	91.6170
		Attawapiskat	52.9330	82.4000
		Balsam Lake	44.6260	78.8560
		Bear Island	46.9730	80.0780
		Campbellford	44.2910	77.7920
		Chalk River	46.1000	77.4000
		Charleston Lake	44.4980	76.0420
		Colchester	41.9870	82.9280
		Coldwater	44.6250	79.5360
		Dalhousie Mills	45.3170	74.4700
		Dorion	48.8420	88.6130
		Dorset	45.2170	78.9330
		Ear Falls	50.6420	93.2200
		Experimental Lake	49.6560	93.7240
		ELA	49.6670	83.7170
		Forbes Twsp.	49.5830	89.6490
		Golden Lake	45.6130	77.2010
		Gowganda	47.6510	80.7760
		Graham Lake	44.5890	75.8620
		Harrow	42.0330	82.9000
		Huron Park	43.2910	81.5010
		Kaladar	44.6920	77.1550
		Kapuskasing	49.4000	82.4330
		Killarney	45.9910	81.4880
		Kingston	44.2170	76.6000
		Lac La Croix	48.3540	92.2090
		Long Point	43.0000	80.8330
		Longwoods	42.8830	81 4830
		Mattawa	46.2790	78.8220
		McKellar	45.5160	79.9220
		Melborne	42.7870	81.5560
		Merlin	42.2460	82.2250
		Milton	43.5180	79.9320
		Moonbeam	49.3210	82.1460
		Moosonee	51.2670	80.6500
		Mount Forest	43.9910	80.7460
		Nakina	50.1770	86.7110
		Nithgrove	45.2000	79.0710
		North Easthope	43.4060	80.8930
		Palmerson	43.8050	80.9030
		Peterborough	44.2330	78.3500
		Pickle Lake	51.4670	90.2000
		Port Stanley	42.6730	81.1650
		Quetico Centre	48.4120	91.2020
		Railton	44.3760	76.5920
		Ramsey	47.4420	82.3370
		Raven Lake	44.6110	78.9120
		Shallow Lake	44.5820	81.0900
		Simcoe	42.8500	80.2670
		Smith's Falls	44.9450	75.9630
		Uxbridge	44.2130	79.2110
		Waterloo	43.4770	80.5860
		Wawa	47.9670	84.7830
		Wellesly	43.4700	80.7600
		Whitman Creek	44.4850	76.8220
		Whitney	45.5390	78.2600
		Wilberforce	45.0150	78.2160
		Wilkesport	42.7030	82.3540
		Windsor	42.2670	82.9670
		Winisk	55.2000	85.1330
89	Quebec	Chibougamau	49.8170	74.4170
		Fort Chimo	58.1000	68.4170
		Maniwaki	46.3830	75.9670
		Montmorency	47.3170	71.1500
		Nitchequon	53.2000	70.9000
		Quebec City	46.8000	71.4000
		Sept Isles	50.2170	66.2500
		St. Hubert	45.5170	73.4170
90	Saskatchewan	Cree Lake	57.3500	107.1330
		Kindersley	51.4670	109.1670
		Wynyard	51.7670	104.2000
91	Yukon Territory	Whitehorse	60.7170	135.0670

CONTENTS (K95)

Year(s): 1980-1982
Geocoverage: U. S.
Number of Records: 7200
Created/Updated: AUG. 1985
Date Released: 30SEP85
Compiler(s): JM COE

Temporal Resolution: ANNUAL
Spatial Resolution: CELLS
Variables per Record: 6
Data Set Type: SINGLE
Update dates: FEB. 1986

Variable	Label		Type	Len.	Format
LAT_DEC	LATITUDE	DD.DDDD	NUM	4	8.4
LON_DEC	LONGITUDE	DDD.DDDD	NUM	4	8.4
YEAR	YEAR		NUM	4	4.
FLAG_S	SITE CRITERIA NOT MET		CHAR	7	7
H_DEP	H+ ANNUAL WET DEPOSITION	G/M2	NUM	4	5.3
H_SE	STANDARD ERROR OF H+ DEPOSITION		NUM	4	5.3

STATISTICS (K95)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
LAT_DEC	7200	0	39.75	5.77	30.00	49.50
LON_DEC	7200	0	80.25	8.66	65.50	95.00
H_DEP	7200	0	0.04	0.01	0.00	0.10
H_SE	7200	0	0.01	0.01	0.00	0.02

Subject: Air Quality Date: September 30, 1985

Data Base Title: Ambient Ozone Concentrations: County-Level Estimates (K97); Gridded Estimates (K99)

Date Obtained: August 20, 1984 (K97); February 2, 1984 (K99) Acronym:

Data Source(s) Contributing Data to ADDNET:

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NAPAP Code: I1-02.11

Sponsoring Agency: U.S. Environmental Protection Agency

Appropriate Reference Citation for Users of the Data:

Coveney, E. A. and N. L. Oden. 1984. The Preparation of County-Level Seasonal Ozone Concentration Estimates. Biomedical and Environmental Assessment Division Report No. 23. Brookhaven National Laboratory, Upton, NY (K97).

Reagan, J. A. 1984. Air quality data interpretation. pp. 198-219. IN W. W. Heck et al., National Crop Loss Assessment Network (NCLAN) 1982 Annual Report. EPA-600/3-84-049, NTIS PB84-169358. National Technical Information Service, Springfield, VA (K99).

Description: ADDNET maintains two ozone data sets: (1) ozone concentration levels by county for the continental United States (K97), and (2) ozone concentration levels for a 0.5° by 0.5° latitude/longitude grid across the continental United States (K99). Both data sets contain estimates of seven-hour average ozone concentrations for the hours 0900-1559 local standard time for the time periods April-May, April-June, May-September, June-September, and June-October for each year from 1978-1982 (except June-October 1982). The gridded data values were estimated by extrapolating from monitoring stations selected to minimize urban influences. The extrapolation used a kriging algorithm. The county values were estimated from the gridded data.

Data Uses: Seasonal ozone concentrations in the continental United States are used in estimating atmospheric impacts to crops and forests from ozone and acid precipitation.

Data Importance: Ozone data are crucial to the assessment of the effects of acid deposition on forests and crops. High ozone levels have been shown to decrease production of sensitive crops and may also be involved in forest damage and decline. Estimates of the ozone levels to which crops are exposed in different regions of the United States are used in economic assessment of the potential ozone-related agricultural losses of sensitive crops.

Uncertainty/Reliability: Varies by site. The gridded data (K99) contain an estimate of error associated with the extrapolation. The greatest uncertainty is the extrapolation of data from an urban-oriented monitoring effort to rural, agricultural areas.

Data Type: Summarized

Number of Records: County (K97): 15,535; Grid (K99): 64,635

Geographic Coverage: 48 Conterminous United States

Spatial Resolution: County; Grid (0.5° latitude by 0.5° longitude)

Period of Record: 1978-1982

Temporal Resolution: Seasonal (Spring-Summer Crop Seasons)

References or Supporting Documents:

Coveney, E. A. and N. L. Oden. 1984. The Preparation of County-Level Seasonal Ozone Concentration Estimates. Biomedical and Environmental Assessment Division Report No. 23. Brookhaven National Laboratory, Upton, NY (K97).

Reagan, J. A. 1984. Air quality data interpretation. pp. 198-219. IN W. W. Heck et al., National Crop Loss Assessment Network (NCLAN) 1982 Annual Report. EPA-600/3-84-049; NTIS PB84-169358. National Technical Information Service, Springfield, VA (K99).

CONTENTS (K97)

Year(s): 1978-1982
Geocoverage: U. S.
Number of Records: 15535
Created/Updated: OCT. 1985
Date Released: 30SEP85
Compiler(s): JM COE

Temporal Resolution: SEASONAL
Spatial Resolution: COUNTY
Variables per Record: 8
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
YEAR	YEAR	NUM	4	4.

CONTENTS (K97) (Continued)

Variable	Label	Type	Len.	Format
OZ_1	OZONE 7-H AVERAGE (APR-JUN) PPB	NUM	4	6.2
OZ_2	OZONE 7-H AVERAGE (APR-MAY) PPB	NUM	4	6.2
OZ_3	OZONE 7-H AVERAGE (JUN-OCT) PPB	NUM	4	6.2
OZ_4	OZONE 7-H AVERAGE (JUN-SEP) PPB	NUM	4	6.2
OZ_5	OZONE 7-H AVERAGE (MAY-SEP) PPB	NUM	4	6.2

STATISTICS (K97)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
OZ_1	15535	0	40.89	13.19	0.00	69.99
OZ_2	15535	0	38.86	12.59	0.00	62.36
OZ_3	12428	3107	38.60	12.65	0.00	68.27
OZ_4	15535	0	40.62	13.16	0.00	74.14
OZ_5	15535	0	40.99	13.36	0.00	74.44

ILLUSTRATIONS (K97)

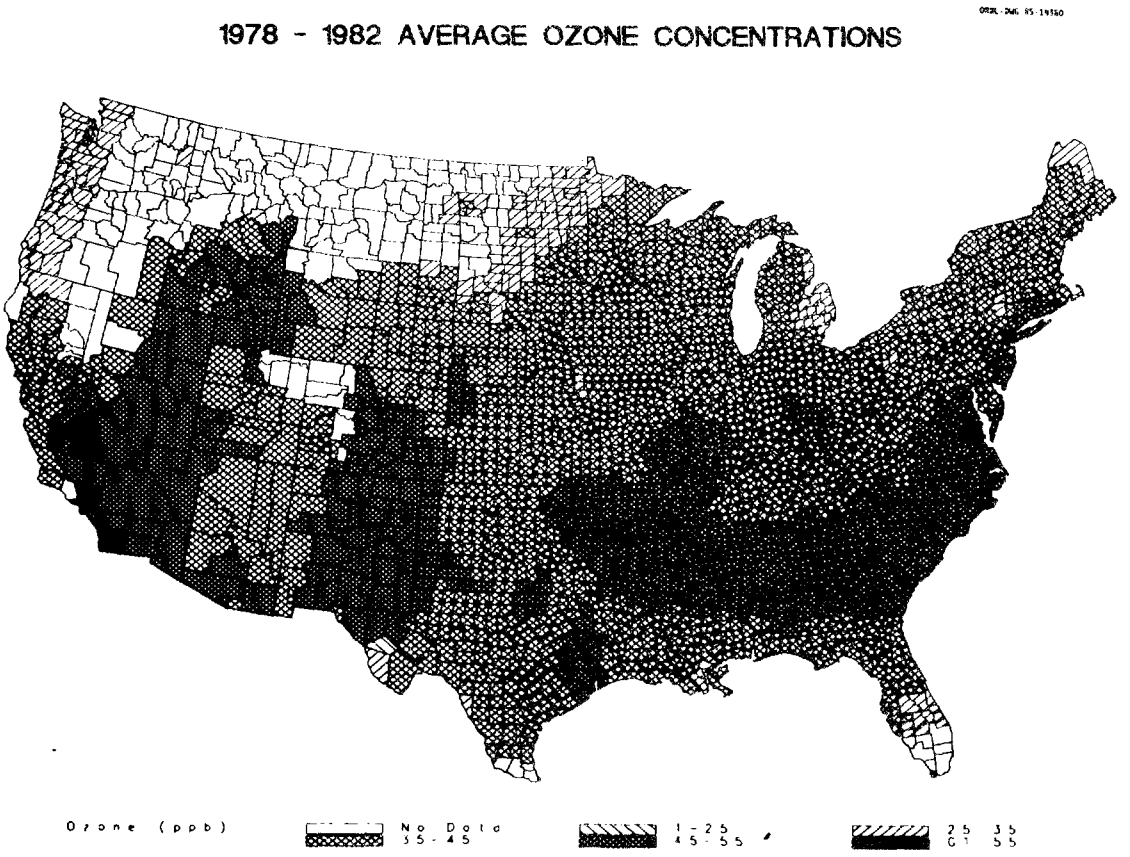

Fig. K97.1. Average ozone concentrations for the United States for 1978-1982. Source: data from Coveney and Oden 1984.

CONTENTS (K99)

Year(s): 1978-1982
Geocoverage: U. S.
Number of Records: 64635
Created/Updated: MAR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: SEASONAL
Spatial Resolution: CELLS
Variables per Record: 6
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
LAT_DEC	LATITUDE	DD.DDDD	NUM	4	8.4
LON_DEC	LONGITUDE	DDD.DDDD	NUM	4	8.4
YEAR	YEAR		NUM	4	4.
SEASON	SEASON IN WHICH OZONE READINGS TAKEN		CHAR	12	12
OZONE	OZONE 7-H AVERAGE	PPB	NUM	4	7.2
OZONE_E	OZONE 7-H AVERAGE ESTIMATION ERROR	PPB	NUM	4	7.2

STATISTICS (K99)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
LAT_DEC	64635	0	38.28	4.91	27.25	48.75
LON_DEC	64635	0	96.17	13.37	67.25	124.25
OZONE	64635	0	43.51	7.16	15.60	77.55
OZONE_E	62230	2405	9.18	2.62	4.88	76.90

ILLUSTRATIONS (K99)

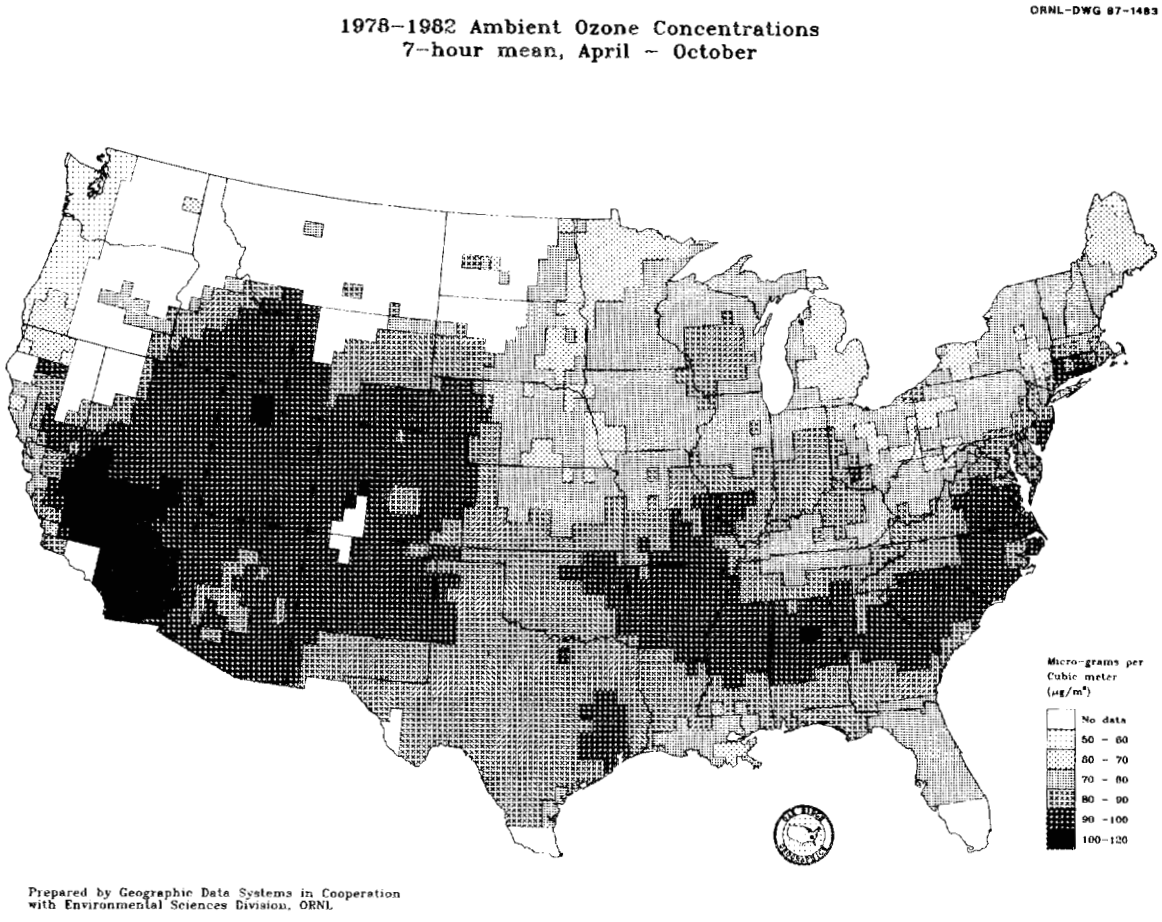

Fig. K99.1. Gridded 1978–1982 average 7-hour mean ambient ozone concentrations for the period April-October. Source: data from Reagan 1984. Prepared by Geographic Data Systems in cooperation with Environmental Sciences Division, ORNL.

LAND USE/LAND COVER (L) SECTOR

Subject: Land Use/Land Cover Date: September 30, 1985

Data Base Title: Land Use (CNI Aggregated) (L07)

Date Obtained: Acronym:

Data Source(s) Contributing Data to ADDNET:

Richard J. Olson
Environmental Sciences Division
Oak Ridge National Laboratory
P.O. Box X, Building 1505
Oak Ridge, TN 37831-6038
(615) 574-7819; FTS 624-7819

NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

Description: Land-use statistics were summarized from a Geoecology (Olson et al. 1980) data set (L01) that contains land-use statistics for 25 categories on the 1967 Conservation Needs Inventory (CNI). For L07, land-use categories were aggregated and areas were standardized so that the county totals equal the 1970 Census county areas (see B01).

Data Uses:

Data Importance:

Uncertainty/Reliability: The 1967 CNI is both out-of-date and subject to relatively high statistical sampling errors for individual counties. The CNI is also restricted to nonfederal land.

Data Type: Summarized

Number of Records: 3071

Geographic Coverage: United States

Spatial Resolution: County

Period of Record: 1967

Temporal Resolution: Annual

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

CONTENTS

Year(s): 1967
Geocoverage: U. S.
Number of Records: 3071
Created/Updated: MAR. 1980
Date Released: 30SEP85
Compiler(s): RJ OLSON

Temporal Resolution: ANNUAL
Spatial Resolution: COUNTY
Variables per Record: 11
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
TOTAL_A	TOTAL AREA EXCLUDING >16HA LAKES	HA	NUM	4	8.
LAND_F	FEDERALLY OWNED LAND	HA	NUM	4	8.
URB_LAND	URBAN LAND AREAS	HA	NUM	4	8.
SML_LAKE	SMALL LAKES <16HA AND RIVERS	HA	NUM	4	8.
PAST_LND	PASTURELAND MANAGED FOR FORAGE	HA	NUM	4	8.
RANG_LND	RANGELAND WITH NATURAL FORAGE	HA	NUM	4	8.
CROPLAND	TOTAL OF ALL TYPES OF CROP LAND	HA	NUM	4	8.
FOREST	TOTAL OF ALL FOREST LAND	HA	NUM	4	8.
OTHRLAND	OTHER LAND-HOUSES, SWAMPS, ETC	HA	NUM	4	8.

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
TOTAL_A	3071	0	249985	340160	6001	5210274
LAND_F	3071	0	52551	232849	0	4590898
URB_LAND	3071	0	8058	12105	0	277430
SML_LAKE	3071	0	929	1408	0	24133
PAST_LND	3071	0	13295	15124	0	139439
RANG_LND	3071	0	50044	138288	0	1991479
CROPLAND	3071	0	57546	58944	0	477105
FOREST	3071	0	60348	85771	0	1552865
OTHRLAND	3071	0	7213	23084	0	897640

Subject: Land Use/Land Cover Date: September 30, 1985

Data Base Title: Land Areas (Rural, Urban, Roads, Federal) (L08)

Date Obtained: January 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

Richard J. Olson
Environmental Sciences Division
Oak Ridge National Laboratory
P.O. Box X, Building 1505
Oak Ridge, TN 37831-6038
(615) 574-7819; FTS 624-7819

NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

Description: Counties were inventoried by the USDA for urban, rural, water, and transportation rights-of-way areas. Transportation land included road, highway, interstate, and railroad rights-of-way areas. Roads were divided into dirt roads, gravel roads, paved roads, state highways, and interstates. All categories were subdivided into federal and nonfederal land. This data set contains updated information which can be combined with the 1967 CNI data set (L07).

Data Uses:

Data Importance:

Uncertainty/Reliability: Since county officials were required to verify the figures, the file is probably accurate.

Data Type:

Number of Records: 3070

Geographic Coverage: United States

Spatial Resolution: County

Period of Record: 1979

Temporal Resolution: Annual

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

CONTENTS

Year(s): 1979
Geocoverage: U. S.
Number of Records: 3070
Created/Updated: MAR. 1980
Date Released: 30SEP85
Compiler(s): RJ OLSON

Temporal Resolution: ANNUAL
Spatial Resolution: COUNTY
Variables per Record: 26
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
CNTY_A	TOTAL SURFACE AREA - 1977	HA	NUM	4	8.
LAND_77	LAND AREA - 1977	HA	NUM	4	8.
WATER_77	CENSUS WATER AREA - 1977	HA	NUM	4	8.
FEDRL_77	TOTAL FEDERAL LAND AREA - 1977	HA	NUM	4	8.
URBAN_77	TOTAL URBAN LAND AREA - 1977	HA	NUM	4	8.
URB_F_77	URBAN-FEDERAL LAND AREA - 1977	HA	NUM	4	8.
URB_N_77	URBAN NONFEDERAL LAND AREA - 1977	HA	NUM	4	8.
RURAL_77	TOTAL RURAL LAND AREA - 1977	HA	NUM	4	8.
RUR_F_77	RURAL FEDERAL LAND AREA - 1977	HA	NUM	4	8.
RUR_N_77	RURAL NONFEDERAL LAND AREA - 1977	HA	NUM	4	8.
ROADS_77	FEDERAL AND STATE ROAD AREA - 1977	HA	NUM	4	8.
RAILR_77	TOTAL RAILROAD AREA - 1977	HA	NUM	4	8.
INTERS_N	INTERSTATES ON RURAL-NONFEDERAL	HA	NUM	4	8.
HIWAY_N	HIGHWAYS ON RURAL-NONFEDERAL	HA	NUM	4	8.
ROAD_P_N	PAVED ROADS ON RURAL-NONFEDERAL	HA	NUM	4	8.
ROAD_G_N	GRAVEL ROADS ON RURAL-NONFEDERAL	HA	NUM	4	8.
ROAD_D_N	DIRT ROADS ON RURAL-NONFEDERAL	HA	NUM	4	8.
RAILRD_N	RAILROADS ON RURAL-NONFEDERAL	HA	NUM	4	8.
INTERS_F	INTERSTATES ON RURAL-FEDERAL	HA	NUM	4	8.
HIWAY_F	HIGHWAYS ON RURAL-FEDERAL	HA	NUM	4	8.
ROAD_P_F	PAVED ROADS ON RURAL-FEDERAL	HA	NUM	4	8.
ROAD_G_F	GRAVEL ROADS ON RURAL-FEDERAL	HA	NUM	4	8.
ROAD_D_F	DIRT ROADS ON RURAL-FEDERAL	HA	NUM	4	8.
RAILRD_F	RAILROADS ON RURAL-FEDERAL	HA	NUM	4	8.

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
CNTY_A	3070	0	254965	342993	8029	5220120
LAND_77	3070	0	249938	340006	5957	5211731
WATER_77	3070	0	5027	13846	0	289043
FEDRL_77	3070	0	52974	232323	0	4556090
URBAN_77	3070	0	7767	16473	0	291355
URB_F_77	3070	0	159	721	0	14659
URB_N_77	3070	0	7608	16267	0	291355
RURAL_77	3070	0	242171	339025	0	5139878
RUR_F_77	3070	0	52815	232274	0	4555192
RUR_N_77	3070	0	189356	181404	0	2874873
ROADS_77	3070	0	3294	2509	0	43935
RAILR_77	3070	0	272	340	0	5322
INTERS_N	3070	0	165	280	0	2946
HIWAY_N	3070	0	657	657	0	12601
ROAD_P_N	3070	0	837	1020	0	24919
ROAD_G_N	3070	0	967	1162	0	12519
ROAD_D_N	3070	0	424	808	0	16658
RAILRD_N	3070	0	262	322	0	5322
INTERS_F	3070	0	12	96	0	2308
HIWAY_F	3070	0	49	267	0	6993
ROAD_P_F	3070	0	31	203	0	7510
ROAD_G_F	3070	0	66	386	0	11531
ROAD_D_F	3070	0	85	486	0	10980
RAILRD_F	3070	0	10	71	0	2020

POPULATION (P) SECTOR

Subject: Population Date: September 30, 1985

Data Base Title: Population and Housing Census (P03)

Date Obtained: September 7, 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

U.S. Department of Commerce
Bureau of the Census
Washington, DC 20233

NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

ADDNET Data Base: P03.

Description: Population and housing unit data for 1970 and 1980 from the U.S. Bureau of the Census are provided as county summary counts.

Data Uses:

Data Importance:

Uncertainty/Reliability:

Data Type: Summarized

Number of Records: 3137

Geographic Coverage: United States

Spatial Resolution: County

Period of Record: 1980

Temporal Resolution: Event

References or Supporting Documents:

CONTENTS

Year(s): 1980,1970	Temporal Resolution: ANNUAL
Geocoverage: U. S.	Spatial Resolution: COUNTY
Number of Records: 3137	Variables per Record: 6
Created/Updated: JUNE 1981	Data Set Type: SINGLE
Date Released: 30SEP85	Update dates: EVERY 10 YEARS

Compiler(s): DR ALVIC, M JOHNSON

CONTENTS (Continued)

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
POP_70	1970 POPULATION	NUM	4	8.
HSE_70	1970 HOUSING UNITS	NUM	4	8.
POP_80	1980 POPULATION	NUM	4	8.
HSE_80	1980 HOUSING UNITS	NUM	4	8.

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
POP_70	3067	70	65422	230215	164	7041980
HSE_70	3067	70	22118	79399	76	2541603
POP_80	3137	0	72217	236191	91	7477503
HSE_80	3137	0	28183	91420	50	2855578

AQUATIC BIOTA/WATER QUALITY (Q) SECTOR

Subject: Aquatic Biota Date: September 30, 1985

Data Base Title: Fish Information Network (Q82-Q71, Q68, Q67)

Date Obtained: January 31, 1985 Acronym: FIN

Data Source(s) Contributing Data to ADDNET:

Joan P. Baker
Kilkelly Environmental Associates
Water Garden, P.O. Box 31265
Raleigh, NC 27622
(919) 781-3150

NAPAP Code: E3-24

Sponsoring Agency: U.S. Environmental Protection Agency

Appropriate Reference Citation: Fish Information Network, North Carolina State University, Raleigh, NC.

Description: The Fish Information Network (FIN) data base contains data and information relating to the distribution and status of fish populations in surface waters in the Adirondack region of New York State that are sensitive to or already affected by acidic deposition. All available data on physical characteristics, fish populations, fisheries management procedures, and water chemistry for 2759 lakes in the Adirondack Ecological Zone and approximately 600 other lakes in proximity to the Adirondacks have been incorporated into FIN; efforts to compile data for other regions in the Northeast have been initiated. Most data were obtained from two major sources: the New York State Department of Environmental Conservation (NYSDEC) and Carl L. Schofield of Cornell University; additional water chemistry data were obtained from Donald F. Charles of Indiana University. Data compiled into FIN have been recorded at the most specific level of detail possible. ADDNET maintains 14 data sets that contain information on lake morphometry, station location, fish status, and water chemistry. Records in the various files are linked by unique identifiers consisting of FIPS state and county codes and station numbers, which are contained in every data set. The 14 FIN data sets are listed and defined below.

<u>(Q82) Station Demographics - Type 1</u>: Data include station type code (lentic or lotic), watershed code, individual state code for each waterbody, station landmark name, latitude and longitude, fishery type (e.g., coldwater or warmwater), landownership (public, private, etc.), and predominant land use. Data set Q82 also contains the variable POND_NO which is the lake identifier assigned by the NYSDEC. This variable provides a cross-reference to lake data such as are contained in the Adirondack Watershed Data Base (being compiled). (3483 obs.)

(Q81) Lake Demographics - Type 3: Provides data on drainage area, surface area, volume, turnover time, shoreline length, depth, lake type, predominant lake substrate at the station [the first digit of this two-digit number is the most common substrate (1-7), and the second digit is the second most common substrate (1-7)], elevation above mean sea level, quadrangle on which the station is located, accessibility, and suitability of the substrate for trout reproduction. (3391 obs.)

(Q80) Stocking Records - Type 5: This record type contains stocking records for the various sampling stations. Information includes codes for the species stocked; the strain stocked; the number of fish stocked; and the length, weight, and age of the fish when stocked. (26,854 obs.)

(Q79) Species Present: By Sampling Date - Type 6: Data on fish species sampled (by date) for all the stations in FIN are contained in this record type. Data include the date on which the fish were caught; the species code and the number of fish caught; the relative abundance, length, weight, and total weight of the fish species caught; a collection code (whether the sample was collected or reported); and the reference from which the data were obtained. (1861 obs.)

(Q78) Gear Description - Type 8: Provides information on the methods used (by fisheries personnel) to gather data on fish populations at the various stations. Data include the date on which the gear (method) was used; the gear type used; the number of replicates of a given gear type used; the time, area or length over which the gear was used; gear characteristics; the minimum and maximum depths sampled; and a comment on the gear. (11,300 obs.)

(Q77) Species Caught: Individual Sampling Gear - Type 9: This record type provides information on fish species sampled from selected stations, if the data were broken down by individual gear units. Data include the date on which the gear was used, the type of gear used, the replicate number of the given gear type, the species of fish caught, the number of fish of each species caught, the range of lengths and the weights of the fish species caught, and the total weight of the fish species caught. (27,825 obs.)

(Q76) Species Caught: Data Clumped Within a Gear Type - Type 11: This data set contains data on fish species sampled from selected stations, clumped by individual gear type. The data include the date on which the gear was used; the type of gear used; the grouping of the gear type; the species of fish caught; the number of gear units used; the number of fish of each species caught; the range of lengths and weights of each species caught; and the total weight of the species caught. (1104 obs.)

(Q75) Species Caught: Data Clumped Between Gear Types - Type 13: This record type contains data on fish species sampled from selected stations, if the data on the fish species sampled were clumped between gear types. The data include the date on which the gear was used, the gear combination used, the grouping of the gear combination, the species of fish caught, the number of each species caught, the lengths and weights of each species caught, and the total weight of the species caught. (299 obs.)

(Q74) Fisheries Management Procedures - Type 15: This data set contains information on fisheries management practices which may have influenced the presence, abundance, or distribution of fish species in the system. The management practices would include the occurrence of system fertilization (i.e., liming, which makes nutrients more available by changing pH) and reclamation. The data include a code for the management type and a comment on the fishery. (9868 obs.)

(Q73) Water Chemistry - Type 16: This record contains water chemistry data for the stations. These data include the pH, the method by which the pH was measured, the total alkalinity, the method by which the alkalinity was measured, the dissolved calcium, the water conductivity, the dissolved organic carbon, the water color as measured, the observed visual water color, the Secchi disc reading, the dissolved oxygen, the water temperature, and the reference from which the data were obtained. (13,016 obs.)

(Q72) Additional Water Chemistry Data - Type 19: This record type contains additional water chemistry data. These data include the date on which the sample was taken; the depth or location from which the sample was taken; measurements of dissolved magnesium, sodium, potassium, bicarbonate, chloride, sulfate, NO_3, iron, aluminum, zinc, and manganese; and the reference from which the data were obtained. (525 obs.)

(Q71) General Station Comments - Type 4: Contains a general comment about the station. (2,680 obs.)

(Q68) Population Evaluations - Type 20: Contains information on the evaluation of the status of selected fish species populations. Data include quantity of data; the year the last sampling was done; the confidence rating that the fish population was healthy, declining, or lost; the stocking code; and the likelihood that the population loss was due to acidification. This evaluation was made for brook trout, lake trout, rainbow trout, lake whitefish, smallmouth bass, largemouth bass, chain pickerel, and seven other species. Information on community status, community type, and the year the first sample was taken is also included. (3,451 obs.)

(Q67) Chemistry Analysis - Type 21: Contains information on analysis of pH means, slopes, T values, etc., for various sets of conditions. Data include slope of pH against time (1979 pH meter data excluded; values at all depths and averaged by day), the corresponding "T" values for the slope, the significance of the slope, the number of values (N) used for each slope, the number of years the pH values span, the date the most recent value was taken, the mean surface pH from 1974-1983 (excluding 1979), the mean summer surface pH (excluding 1979), the mean surface pH for ± two years from the date of the last fish survey, and the mean visual color (1960-present). (1,189 obs.)

Data Uses: To quantify current and potential impacts of acid deposition on fish resources; to evaluate changes in fish populations over time as a result of acidification.

Data Importance: This study was designed to determine the utility of compiling and using existing survey data on fish populations to evaluate the extent of fisheries resources at risk from acid deposition and to evaluate damages to date in certain regions.

Uncertainty/Reliability: Potential sampling bias and influences on fish populations of factors other than acidification are areas of concern, and interpretation of field survey results could affect the data. Transcription errors may also have occurred; the data base is continually being reviewed for outliers. In addition, some data that are not quality assured have been included in FIN.

Data Type: Raw

Number of Records: 106,846

Geographic Coverage: United States

Spatial Resolution: Point: Lake

Period of Record: 1900-1982

Temporal Resolution: Point

References or Supporting Documents:

Baker, J. P., T. B. Harvey, and J. P. Nicolette. 1984. Compilation of available data on the status of fish populations in regions of the northeastern United States susceptible to acidic deposition. Final report to the U.S. Environmental Protection Agency for NAPAP Project E3-24. North Carolina State University, Raleigh, NC. (in press).

Baker, J. P. and T. B. Harvey. 1984. Critique of acid lakes and fish population status in the Adirondack region of New York State. Draft final report to the U.S. Environmental Protection Agency for NAPAP Project E3-25. North Carolina State University, Raleigh, NC. (draft).

CONTENTS (Q82)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 3483
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 16
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
STATION	LAKE STATION		NUM	5	8.
STN_C	STATION CODE		NUM	4	3.
LAT_DEC	LATITUDE	DD.DDDD	NUM	4	8.4
LON_DEC	LONGITUDE	DDD.DDDD	NUM	4	8.4
ADIR_C	REGIONAL CODE FOR ADIRONDACK ECO. ZONE		NUM	4	1.
FISHRY_C	FISHERY CODE(EG, COLD WATER, WARM WATER)		NUM	4	1.
LANDUS_C	LAND USE CODE		NUM	4	1.
OWNER_C	LAND OWNERSHIP CODE		NUM	4	1.
POND_NO	UNIQUE POND IDENTIFIER, NYSDEC		CHAR	7	7
POSTING	POSTING STATUS OF THE LAND CODE		NUM	4	1.
ST	STATE CODE LETTERS		CHAR	5	5
STNNAME	STATION LANDMARK NAME		CHAR	44	44
STNTYP_C	STATION TYPE	CODE	NUM	4	1.
WTRSHD_C	WATERSHED CODE		NUM	4	1.

STATISTICS (Q82)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
LAT_DEC	1674	1809	44	0	43	45
LON_DEC	1674	1809	74	1	45	76
ADIR_C	2759	724	1	0	1	1
FISHRY_C	215	3268	1	1	0	4
LANDUS_C	1518	1965	3	2	1	9
OWNER_C	2675	808	3	0	0	3
POSTING	2410	1073	1	1	0	3
STNTYP_C	3483	0	1	0	1	2
WTRSHD_C	3483	0	4	2	2	7

CONTENTS (Q81)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 3391
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 19
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
STATION	LAKE STATION		NUM	5	8.
STN_C	STATION CODE		NUM	4	3.
ACCESS_C	ACCESS TO THE STATION CODE		NUM	4	1.
BOATAC_C	BOAT ACCESS TO THE STATION CODE		NUM	4	1.
DEPTH_MN	MEAN DEPTH OF THE LAKE	M	NUM	4	5.2
DEPTH_MX	MAXIMUM DEPTH OF THE LAKE	M	NUM	4	5.2
DISTANCE	DISTANCE TO NEAREST PUBLIC ROAD	KM	NUM	4	5.2
DRAIN_A	DRAINAGE AREA ABOVE STATION	KM2	NUM	4	7.2
ELEVATIN	ELEVATION ABOVE M.S.L.	M	NUM	4	5.
LAKE_C	LAKE TYPE CODE		NUM	4	1.
LAKE_V	VOLUME OF LAKE	M3	NUM	4	10.
QUAD	QUADRANGLE STATION IS LOCATED IN		CHAR	4	4
SHORLINE	SHORELINE LENGTH OF LAKE	M	NUM	4	5.
SPAWNHAB	SUIT. OF SUBSTRATE FOR TROUT REPROD		NUM	4	1.
SUBSTR_C	PREDOMINANT SUBSTRATE AT STATION CODE		NUM	4	2.
SURFAC_A	SURFACE AREA	KM2	NUM	4	7.3
TURNTIME	TURNOVER TIME OF THE LAKE	DAYS	NUM	4	7.2

STATISTICS (Q81)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
ACCESS_C	1487	1904	1.77	0.89	1.00	7.00
BOATAC_C	11	3380	2.09	1.81	0.00	6.00
DEPTH_MN	352	3039	3.57	3.03	0.00	22.90
DEPTH_MX	1145	2246	7.83	6.62	0.00	46.30
DISTANCE	282	3109	2.92	2.75	0.00	9.90
DRAIN_A	425	2966	26.73	192.71	0.00	2704.04
ELEVATIN	2773	618	474.98	144.88	29.00	1524.00
LAKE_C	670	2721	1.34	0.47	1.00	2.00
LAKE_V	283	3108	6899727	64525033	0.00	1068211200
SHORLINE	80	3311	3060.61	4400.16	0.00	25266.00
SPAWNHAB	4	3387	1.25	0.50	1.00	2.00
SUBSTR_C	1513	1878	48.93	10.64	1.00	92.00
SURFAC_A	2776	615	0.39	3.31	0.00	113.96
TURNTIME	133	3258	443.11	596.66	0.00	3650.00

CONTENTS (Q80)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 26854
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 17
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
STATION	LAKE STATION		NUM	5	8.
STN_C	STATION CODE		NUM	4	3.
DATE	DATE		NUM	4	DATE7.
REPLICAS	REPLICATE OF SPECIES OR STRAIN STOCKED		NUM	4	1.
AGESTK_C	AGE WHEN STOCKED CODE		NUM	4	1.
SPP_C	SPECIES STOCKED CODE		NUM	4	3.
STRAIN_C	SPECIES STRAIN STOCKED CODE		NUM	4	2.
FISHST_N	NUMBER OF FISH STOCKED		NUM	4	8.
SIZE_MAX	MAXIMUM SIZE OF FISH STOCKED	MM	NUM	4	4.
SIZE_MIN	MINIMUM SIZE OF FISH STOCKED	MM	NUM	4	4.
SIZE_MN	MEAN SIZE OF FISH STOCKED	MM	NUM	4	4.
WATERS_N	NO. OF WATERS STOCKED WITH GIVEN FISH		NUM	4	1.
WT_TOTAL	TOTAL WEIGHT OF FISH STOCKED	KG	NUM	4	8.1
COMMENTS	COMMENTS ON THE WATER OF FISH STOCKED		CHAR	31	31
RECORD	RECORD TYPE		NUM	4	2.

STATISTICS (Q80)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
AGESTK_C	1411	25443	2	1	0	6
FISHST_N	26583	271	24621	263609	0	9999999
REPLICAS	26854	0	1	0	1	8
SIZE_MAX	11	26843	301	114	71	508
SIZE_MIN	11	26843	220	88	97	406
SIZE_MN	24723	2131	114	53	0	610
SPP_C	26854	0	33	5	4	99
STRAIN_C	26854	0	93	19	1	99
WATERS_N	1545	25309	2	2	1	8
WT_TOTAL	25244	1610	58	303	0	18803

CONTENTS (Q79)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 1861
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 19
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	LAKE STATION	NUM	5	8.
STN_C	STATION CODE	NUM	4	3.
DATE	DATE	NUM	4	DATE7.
REF_C	DATA SOURCE REFERENCE CODE	NUM	4	1.
SPEC_C	SPECIES AND STRAIN OF FISH CAUGHT CODE	NUM	4	3.
FISH_N	NUMBER OF FISH CAUGHT	NUM	4	4.
ABUND_C	RELATIVE ABUNDANCE CODE	NUM	4	1.
COLL_C	A CODE IF DATA WERE COLLECTED, REPORTED	NUM	4	1.
LGTH_C	METHOD USED FOR LENGTH MEASUREMENT CODE	NUM	4	1.
LGTH_MAX	MAXIMUM LENGTH MM	NUM	4	4.
LGTH_MIN	MINIMUM LENGTH MM	NUM	4	4.
LGTH_MN	MEAN LENGTH MM	NUM	4	4.
WT_MAX	MAXIMUM WEIGHT G	NUM	4	5.
WT_MEAN	MEAN WEIGHT G	NUM	4	5.
WT_MIN	MINIMUM WEIGHT G	NUM	4	5.
WT_TOTAL	TOTAL WEIGHT KG	NUM	4	8.1
COMMENTS	COMMENTS ON THE FISH SPECIES CAUGHT	CHAR	18	18

STATISTICS (Q79)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
FISH_N	125	1736	8	16	1	150
LGTH_MAX	249	1612	311	151	33	902
LGTH_MIN	237	1624	195	124	18	673
LGTH_MN	60	1801	284	151	97	777
WT_MAX	12	1849	1757	2194	198	6464
WT_MEAN	1	1860	1417	.	1417	1417
WT_MIN	8	1853	368	475	28	1417
WT_TOTAL	1	1860	1	.	1	1

CONTENTS (Q78)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 11300
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 16
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
STATION	LAKE STATION		NUM	5	8.
STN_C	STATION CODE		NUM	4	3.
DATE	DATE		NUM	4	DATE7.
REPLICAG	REPLICATE OF A GIVEN GEAR TYPE		NUM	4	2.
DEPTH_MX	MAXIMUM DEPTH SAMPLED	M	NUM	4	4.1
DEPTHMIN	MINIMUM DEPTH SAMPLED	M	NUM	4	4.1
GEAR_C	TYPE OF GEAR EMPLOYED	CODE	NUM	4	2.
GEAREM_C	CODE FOR GEAR EMPLOYED		NUM	4	1.
GEARSIZE	SIZE, AMOUNT, OR CONC OF GEAR USED		NUM	4	4.
MESH_MAX	MAXIMUM MESH SIZE	CM	NUM	4	4.
MESH_MIN	MINIMUM MESH SIZE	CM	NUM	4	4.
MESHSZ_N	NUMBER OF MESH SIZES		NUM	4	3.
COMMENTS	COMMENTS ON THE GEAR TYPE USED		CHAR	29	29
RECORD	RECORD TYPE		NUM	4	2.

STATISTICS (Q78)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
DEPTH_MX	7983	3317	14	15	0	100
DEPTHMIN	7153	4147	2	3	0	30
GEARSIZE	7102	4198	69	137	0	5280
MESH_MAX	5911	5389	7	5	0	90
MESH_MIN	5667	5633	4	4	0	90
MESHSZ_N	5431	5869	3	2	0	10
REPLICAG	11300	0	2	4	0	99

CONTENTS (Q77)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 27825
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 19
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

CONTENTS (Q77) (Continued)

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
STATION	LAKE STATION		NUM	5	8.
STN_C	STATION CODE		NUM	4	3.
DATE	DATE		NUM	4	DATE7.
REPLICAG	REPLICATE OF A GIVEN GEAR TYPE		NUM	4	2.
SPEC_C	SPECIES AND STRAIN OF FISH CAUGHT CODE		NUM	4	3.
FISH_N	NUMBER OF FISH CAUGHT		NUM	4	4.
GEAR_C	TYPE OF GEAR EMPLOYED	CODE	NUM	4	2.
LGTH_C	METHOD USED FOR LENGTH MEASUREMENT	CODE	NUM	4	1.
LGTH_MAX	MAXIMUM LENGTH	MM	NUM	4	4.
LGTH_MIN	MINIMUM LENGTH	MM	NUM	4	4.
LGTH_MN	MEAN LENGTH	MM	NUM	4	4.
WT_MAX	MAXIMUM WEIGHT	G	NUM	4	5.
WT_MEAN	MEAN WEIGHT	G	NUM	4	5.
WT_MIN	MINIMUM WEIGHT	G	NUM	4	5.
WT_TOTAL	TOTAL WEIGHT	KG	NUM	4	8.1
COMMENTS	COMMENTS ON THE FISH SPECIES CAUGHT		CHAR	19	19
RECORD	RECORD TYPE		NUM	4	2.

STATISTICS (Q77)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
FISH_N	24662	3163	17	108	0	9999
LGTH_MAX	17774	10051	277	139	0	1245
LGTH_MIN	17650	10175	211	121	0	1245
LGTH_MN	7735	20090	252	130	0	2032
REPLICAG	27825	0	2	3	0	99
WT_MAX	2092	25733	767	1042	1	12474
WT_MEAN	828	26997	64	89	1	1134
WT_MIN	2005	25820	473	853	0	11340
WT_TOTAL	25	27800	1	2	0	10

CONTENTS (Q76)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 1104
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 18
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

CONTENTS (Q76) (Continued)

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	LAKE STATION	NUM	5	8.
STN_C	STATION CODE	NUM	4	3.
DATE	DATE	NUM	4	DATE7.
SPEC_C	SPECIES AND STRAIN OF FISH CAUGHT CODE	NUM	4	3.
GEAR_C	TYPE OF GEAR EMPLOYED CODE	NUM	4	2.
GEAR_GRP	GROUPING OF THE GEAR COMBINATION	NUM	4	2.
GEARUN_N	NUMBER OF GEAR UNITS USED	NUM	4	2.
LGTH_C	METHOD USED FOR LENGTH MEASUREMENT CODE	NUM	4	1.
LGTH_MAX	MAXIMUM LENGTH MM	NUM	4	4.
LGTH_MIN	MINIMUM LENGTH MM	NUM	4	4.
LGTH_MN	MEAN LENGTH MM	NUM	4	4.
WT_MAX	MAXIMUM WEIGHT G	NUM	4	5.
WT_MEAN	MEAN WEIGHT G	NUM	4	5.
WT_MIN	MINIMUM WEIGHT G	NUM	4	5.
WT_TOTAL	TOTAL WEIGHT KG	NUM	4	8.1
COMMENTS	COMMENTS ON THE FISH SPECIES CAUGHT	CHAR	18	18

STATISTICS (Q76)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
GEAR_GRP	1104	0	1	1	0	8
GEARUN_N	1089	15	9	21	0	99
LGTH_MAX	0	1104	.	.	.	.
LGTH_MIN	821	283	206	125	0	785
LGTH_MN	408	696	263	135	22	785
WT_MAX	81	1023	1138	1688	32	11793
WT_MEAN	87	1017	726	577	32	2977
WT_MIN	75	1029	521	636	14	2977
WT_TOTAL	14	1090	8	11	0	39

CONTENTS (Q75)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 299
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 18
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

CONTENTS (Q75) (Continued)

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
STATION	LAKE STATION		NUM	5	8.
STN_C	STATION CODE		NUM	4	3.
DATE	DATE		NUM	4	DATE7.
SPEC_C	SPECIES AND STRAIN OF FISH CAUGHT CODE		NUM	4	3.
FISH_N	NUMBER OF FISH CAUGHT		NUM	4	4.
GEAR_GRP	GROUPING OF THE GEAR COMBINATION		NUM	4	1.
GEARCOMB	GEAR COMBINATION USED	CODE	NUM	4	2.
LGTH_C	METHOD USED FOR LENGTH MEASUREMENT	CODE	NUM	4	1.
LGTH_MAX	MAXIMUM LENGTH	MM	NUM	4	4.
LGTH_MIN	MINIMUM LENGTH	MM	NUM	4	4.
LGTH_MN	MEAN LENGTH	MM	NUM	4	4.
WT_MAX	MAXIMUM WEIGHT	G	NUM	4	5.
WT_MEAN	MEAN WEIGHT	G	NUM	4	5.
WT_MIN	MINIMUM WEIGHT	G	NUM	4	5.
WT_TOTAL	TOTAL WEIGHT	KG	NUM	4	8.1
COMMENTS	COMMENTS ON THE FISH SPECIES CAUGHT		CHAR	18	18

STATISTICS (Q75)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
FISH_N	254	45	30	91	1	901
GEAR_GRP	299	0	1	1	1	4
LGTH_MAX	200	99	334	138	89	838
LGTH_MIN	199	100	221	115	46	643
LGTH_MN	64	235	307	111	102	610
WT_MAX	9	290	669	376	227	1362
WT_MEAN	38	261	356	294	62	1134
WT_MIN	10	289	546	382	57	1135

CONTENTS (Q74)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 9868
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 9
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

CONTENTS (Q74) (Continued)

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	LAKE STATION	NUM	5	8.
STN_C	STATION CODE	NUM	4	3.
DATE	DATE	NUM	4	DATE7.
LINE	LINE NUMBER OF THE COMMENT	NUM	4	2.
MGMT_C	MANAGEMENT TYPE CODE	NUM	4	1.
COMMENTS	COMMENTS ON MANAGEMENT	CHAR	60	60
RECORD	RECORD TYPE	NUM	4	2.

CONTENTS (Q73)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 13016
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 21
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	LAKE STATION	NUM	5	8.
STN_C	STATION CODE	NUM	4	3.
DATE	DATE	NUM	4	DATE7.
REPLIC_N	REPLICATE NUMBER OF MEASUREMENTS	NUM	4	2.
DEPTH_C	DEPTH FROM WHICH SAMPLE WAS TAKEN CODE	NUM	4	4.
ALK	TOTAL ALKALINITY UEQ/L	NUM	4	4.
ALK_C	ALKALINITY METHOD CODE	NUM	4	2.
CA	DISSOLVED CALCIUM UEQ/L	NUM	4	4.
COLOR	COLOR PT-CO UNITS	NUM	4	3.
COLOR_C	VISUAL COLOR CODE	NUM	4	1.
CONDUCT	CONDUCTIVITY UMHOS/CM AT 25 C	NUM	4	7.1
DO	DISSOLVED OXYGEN MG/L	NUM	4	4.1
DOC	DISSOLVED ORGANIC CARBON MG/L	NUM	4	3.
PH	PH STANDARD UNITS	NUM	4	4.2
PH_C	PH METHOD CODE	NUM	4	2.
REF_C	DATA SOURCE REFERENCE CODE	NUM	4	1.
SECCHI	SECCHI DISC READING CM	NUM	4	4.
TEMP_WTR	WATER TEMPERATURE C	NUM	4	5.2
COMMENTS	COMMENTS ON THE CHEMICAL MEASUREMENTS	CHAR	14	14

STATISTICS (Q73)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
ALK	6224	6792	187	289	-148	4720
CA	1150	11866	207	433	5	7204
COLOR	619	12397	26	32	0	250
CONDUCT	2965	10051	33	38	0	909
DO	6508	6508	5.93	3.13	0.00	46.40
DOC	3	13013	217	375	0	650
PH	10175	2841	6.05	0.87	2.00	9.99
REPLIC_N	13016	.0	1	0	0	7
SECCHI	1369	11647	388	243	15	1676
TEMP_WTR	7807	5209	16	6	-6	37

CONTENTS (Q72)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 525
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 19
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
STATION	LAKE STATION		NUM	5	4.
STN_C	STATION CODE		NUM	4	3.
DATE	DATE		NUM	4	DATE7.
REPLICAM	REPLICATE MEASUREMENT		NUM	4	2.
DEPTH_C	DEPTH FROM WHICH SAMPLE WAS TAKEN	CODE	NUM	4	4.
AL	DISSOLVED ALUMINUM AS AL	UG/L	NUM	4	4.
CL	DISSOLVED CHLORIDE	UEQ/L	NUM	4	5.
FE	DISSOLVED IRON AS FE	UG/L	NUM	4	4.
HCO3	DISSOLVED BICARBONATE	UEQ/L	NUM	4	4.
K	DISSOLVED POTASSIUM	UEQ/L	NUM	4	4.
MG	DISSOLVED MAGNESIUM	UEQ/L	NUM	4	4.
MN	DISSOLVED MANGANESE AS MN	UG/L	NUM	4	4.
NA	DISSOLVED SODIUM	UEQ/L	NUM	4	4.
NO3	DISSOLVED NO3	UEQ/L	NUM	4	4.
SO4	DISSOLVED SULFATE	UEQ/L	NUM	4	4.
ZN	DISSOLVED ZINC AS ZN	UG/L	NUM	4	4.
COMMENTS	COMMENTS ON THE CHEMICAL MEASUREMENTS		CHAR	14	14

STATISTICS (Q72)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
AL	322	203	176	193	0	1400
CL	503	22	18	28	0	224
FE	219	306	129	698	0	9300
HCO3	287	238	97	121	0	542
K	509	16	7	4	0	41
MG	506	19	46	36	7	247
MN	217	308	38	25	0	132
NA	509	16	30	29	1	313
NO3	502	23	11	13	0	55
REPLICAM	525	0	1	0	1	1
SO4	520	5	130	46	-27	792
ZN	219	306	22	28	0	400

CONTENTS (Q71)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 2680
Created/Updated: SEP. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 7
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	LAKE STATION	NUM	5	8.
STN_C	STATION CODE	NUM	4	3.
LINE	LINE NUMBER OF THE COMMENT	NUM	4	2.
COMMENTS	GENERAL COMMENT ON THE STATION	CHAR	69	69
RECORD	RECORD TYPE	NUM	4	2.

CONTENTS (Q68)

Year(s): 1900-1982 Temporal Resolution: POINT
Geocoverage: ADIRON Spatial Resolution: POINT
Number of Records: 3451 Variables per Record: 72
Created/Updated: FEB. 1984 Data Set Type: SINGLE
Date Released: 30SEP85 Update dates: AS AVAILABLE
Compiler(s): IL MCCOLLOUGH

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	LAKE STATION	NUM	5	8.
STN_C	STATION CODE	NUM	4	3.
YEAR	YEAR LAST SAMPLE WAS TAKEN	NUM	4	4.
YEAR_1	YEAR FIRST SAMPLE WAS TAKEN	NUM	4	4.
QUANTITY	NUMBER OF FISH SURVEYS PERFORMED IN LAKE	NUM	4	2.
STOK	BROOK TROUT HEALTHY	NUM	4	2.
STDECLIN	BROOK TROUT DECLINING	NUM	4	2.
STLOST	BROOK TROUT LOST	NUM	4	2.
STSTOCK	BROOK TROUT STOCKING CODE	NUM	4	2.
STPROB	BROOK TROUT LOST, PROB. ACID RAIN	NUM	4	2.
LTOK	LAKE TROUT HEALTHY	NUM	4	2.
LTDECLIN	LAKE TROUT DECLINING	NUM	4	2.
LTLOST	LAKE TROUT LOST	NUM	4	2.
LTSTOCK	LAKE TROUT STOCKING CODE	NUM	4	2.
LTPROB	LAKE TROUT LOST, PROB. ACID RAIN	NUM	4	2.
RTOK	RAINBOW TROUT HEALTHY	NUM	4	2.
RTDECLIN	RAINBOW TROUT DECLINING	NUM	4	2.
RTLOST	RAINBOW TROUT LOST	NUM	4	2.
RTSTOCK	RAINBOW TROUT STOCKING CODE	NUM	4	2.
RTPROB	RAINBOW TROUT LOST, PROB. ACID RAIN	NUM	4	2.
WFOK	WHITEFISH HEALTHY	NUM	4	2.
WFDECLIN	WHITEFISH DECLINING	NUM	4	2.
WFLOST	WHITEFISH LOST	NUM	4	2.
WFSTOCK	WHITEFISH STOCKING CODE	NUM	4	2.
WFPROB	WHITEFISH LOST, PROB. ACID RAIN	NUM	4	2.
SBOK	SMALL-MOUTH BASS HEALTHY	NUM	4	2.
SBDECLIN	SMALL-MOUTH BASS DECLINING	NUM	4	2.
SBLOST	SMALL-MOUTH BASS LOST	NUM	4	2.
SBSTOCK	SMALL-MOUTH BASS STOCKING CODE	NUM	4	2.
SBPROB	SMALL-MOUTH BASS LOST, PROB. ACID RAIN	NUM	4	2.
LBOK	LARGE-MOUTH BASS HEALTHY	NUM	4	2.
LBDECLIN	LARGE-MOUTH BASS DECLINING	NUM	4	2.
LBLOST	LARGE-MOUTH BASS LOST	NUM	4	2.
LBSTOCK	LARGE-MOUTH BASS STOCKING CODE	NUM	4	2.
LBPROB	LARGE-MOUTH BASS LOST, PROB. ACID RAIN	NUM	4	2.
CPOK	CHAIN PICKEREL HEALTHY	NUM	4	2.
CPDECLIN	CHAIN PICKEREL DECLINING	NUM	4	2.
CPLOST	CHAIN PICKEREL LOST	NUM	4	2.

CONTENTS (Q68) (Continued)

Variable	Label	Type	Len.	Format
CPSTOCK	CHAIN PICKEREL STOCKING CODE	NUM	4	2.
CPPROB	CHAIN PICKEREL LOST, PROB. ACID RAIN	NUM	4	2.
WSOK	WHITE SUCKER HEALTHY	NUM	4	2.
WSDECLIN	WHITE SUCKER DECLINING	NUM	4	2.
WSLOST	WHITE SUCKER LOST	NUM	4	2.
WSPROB	WHITE SUCKER LOST, PROB. ACID RAIN	NUM	4	2.
BHOK	BROWN BULLHEAD HEALTHY	NUM	4	2.
BHDECLIN	BROWN BULLHEAD DECLINING	NUM	4	2.
BHLOST	BROWN BULLHEAD LOST	NUM	4	2.
BHPROB	BROWN BULLHEAD LOST, PROB. ACID RAIN	NUM	4	2.
PSOK	PUMPKINSEED HEALTHY	NUM	4	2.
PSDECLIN	PUMPKINSEED DECLINING	NUM	4	2.
PSLOST	PUMPKINSEED LOST	NUM	4	2.
PSPROB	PUMPKINSEED LOST, PROB. ACID RAIN	NUM	4	2.
YPOK	YELLOW PERCH HEALTHY	NUM	4	2.
YPDECLIN	YELLOW PERCH DECLINING	NUM	4	2.
YPLOST	YELLOW PERCH LOST	NUM	4	2.
YPPROB	YELLOW PERCH LOST, PROB. ACID RAIN	NUM	4	2.
GSOK	GOLDEN SHRINER HEALTHY	NUM	4	2.
GSDECLIN	GOLDEN SHRINER DECLINING	NUM	4	2.
GSLOST	GOLDEN SHRINER LOST	NUM	4	2.
GSPROB	GOLDEN SHRINER LOST, PROB. ACID RAIN	NUM	4	2.
CCOK	CREEK CHUB HEALTHY	NUM	4	2.
CCDECLIN	CREEK CHUB DECLINING	NUM	4	2.
CCLOST	CREEK CHUB LOST	NUM	4	2.
CCPROB	CREEK CHUB LOST, PROB. ACID RAIN	NUM	4	2.
LCOK	LAKE CHUB HEALTHY	NUM	4	2.
LCDECLIN	LAKE CHUB DECLINING	NUM	4	2.
LCLOST	LAKE CHUB LOST	NUM	4	2.
LCPROB	LAKE CHUB LOST, PROB. ACID RAIN	NUM	4	2.
COMST_C	FISH COMMUNITY STATUS CODE	NUM	4	2.
COMTYP_C	FISH COMMUNITY TYPE CODE	NUM	4	2.

STATISTICS (Q68)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
QUANTITY	3442	9	1	2	0	8
STOK	749	2702	5	3	0	9
STDECLIN	750	2701	1	2	0	9
STLOST	750	2701	1	2	0	9
STSTOCK	750	2701	3	2	1	9

STATISTICS (Q68) (Continued)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
STPROB	750	2701	2	3	0	9
LTOK	115	3336	5	3	0	9
LTDECLIN	115	3336	2	3	0	9
LTLOST	115	3336	2	3	0	9
LTSTOCK	115	3336	2	2	1	9
LTPROB	115	3336	2	2	0	8
RTOK	99	3352	5	3	0	9
RTDECLIN	99	3352	2	3	0	9
RTLOST	99	3352	2	3	0	9
RTSTOCK	99	3352	3	2	1	9
RTPROB	99	3352	1	2	0	7
WFOK	54	3397	5	3	0	9
WFDECLIN	54	3397	2	3	0	8
WFLOST	54	3397	2	2	0	8
WFSTOCK	54	3397	1	1	1	9
WFPROB	54	3397	2	2	0	7
SBOK	157	3294	6	3	0	9
SBDECLIN	157	3294	1	2	0	8
SBLOST	157	3294	1	2	0	8
SBSTOCK	157	3294	1	1	1	9
SBPROB	157	3294	1	2	0	7
LBOK	76	3375	6	2	0	9
LBDECLIN	76	3375	1	2	0	8
LBLOST	76	3375	1	2	0	8
LBSTOCK	76	3375	1	1	1	9
LBPROB	76	3375	1	2	0	6
CPOK	44	3407	6	3	0	9
CPDECLIN	44	3407	1	2	0	8
CPLOST	44	3407	1	2	0	8
CPSTOCK	44	3407	1	1	1	9
CPPROB	44	3407	1	2	0	5
WSOK	459	2992	6	3	0	9
WSDECLIN	459	2992	1	2	0	9
WSLOST	459	2992	1	2	0	9
WSPROB	459	2992	1	2	0	8
BHOK	558	2893	7	3	0	9
BHDECLIN	558	2893	1	2	0	9
BHLOST	558	2893	1	2	0	9
BHPROB	558	2893	1	2	0	9
PSOK	381	3070	6	3	0	9
PSDECLIN	382	3069	2	3	0	9
PSLOST	382	3069	1	3	0	9
PSPROB	382	3069	1	2	0	9
YPOK	298	3153	6	3	0	9

STATISTICS (Q68) (Continued)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
YPDECLIN	299	3152	2	3	0	9
YPLOST	299	3152	2	3	0	9
YPPROB	299	3152	0	1	0	9
GSOK	354	3097	6	3	0	9
GSDECLIN	355	3096	2	3	0	9
GSLOST	355	3096	1	2	0	9
GSPROB	355	3096	1	2	0	9
CCOK	274	3177	5	3	0	9
CCDECLIN	273	3178	2	2	0	9
CCLOST	273	3178	1	2	0	9
CCPROB	274	3177	1	2	0	9
LCOK	17	3434	4	3	1	9
LCDECLIN	18	3433	2	2	0	7
LCLOST	18	3433	2	2	0	6
LCPROB	18	3433	2	2	0	5
COMST_C	861	2590	2	3	0	9
COMTYP_C	752	2699	4	1	1	6

CONTENTS (Q67)

Year(s): 1900-1982
Geocoverage: ADIRON
Number of Records: 1189
Created/Updated: FEB. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 14
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	LAKE STATION	NUM	5	8.
STN_C	STATION CODE	NUM	4	3.
YEARSPAN	YEARS BETWEEN FIRST AND LAST PH SAMPLE	NUM	4	4.1
DATE_LST	DATE OF LAST PH SAMPLE	NUM	4	DATE7.
PH_TREND	PH TREND, PH CHANGE/DECADE	NUM	4	5.2
PH_TRN_T	PH TREND, SLOPE T VALUE	NUM	4	5.2
PH_TRN_S	PH TREND, SLOPE SIGNIFICANCE 95%	NUM	4	5.2
PH_TRN_N	PH TREND, NUMBER OF VALUES USED	NUM	4	5.2
PH_MEAN	MEAN SURFACE PH (1974-1983)	NUM	4	5.2
PH_SMEAN	MEAN SUMMER SURFACE PH (1974-1983)	NUM	4	5.2
PH_MEAN5	MEAN SURFACE PH (2 YR EA SIDE LAST SRVY)	NUM	4	5.2
COLOR_MN	MEAN VISUAL COLOR (1960-PRESENT)	NUM	4	1.

STATISTICS (Q67)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
PH_TREND	673	516	0.01	0.29	-1.27	2.27
PH_TRN_T	413	776	0.80	5.76	-9.81	83.74
PH_TRN_S	416	773	1.37	0.97	0.00	3.00
PH_TRN_N	673	516	3.82	2.79	2.00	27.00
PH_MEAN	889	300	5.98	0.95	3.86	9.99
PH_SMEAN	705	484	6.05	1.03	4.10	9.50
PH_MEAN5	624	565	5.95	0.91	4.00	9.99
COLOR_MN	589	600	2.34	1.14	1.00	5.00

FIN DATA BASE CODES

Codes	Definitions	DSN
ABUND_C	Relative abundance 0. Absent 1. Rare 2. Common 3. Abundant	Q79
ACCESS_C	Access-to-station code 1. Road 2. Trail 3. Cross country 4. Portage 5. Private road 6. Boat 7. Other	Q81
ADIR_C	1. Regional code for Adirondack Ecological Zone	Q82
AGESTK_C	Age when stocked code 0. Eyed eggs or sac fry planted 1. Age 0+ 2. Fry 0+ 3. Fingerlings 0+ 4. Age 1+ 5. Age >2 6. Not reported	Q80

FIN DATA BASE CODES (Continued)

Codes	Definitions	DSN
ALK_C	Alkalinity method code 0. Unknown 1. Methyl orange 2. Bromo-cresolgreen-methyl red 3. Phenolphthalein red 4. Potentiometric fixed end point 5. Gran's plot/lab 6. Conductometric 7. Coulombmetric 8. Calculated 9. Gran's plot field 10. Other method 11. Methods 1 and 3 completed 12. Colorimetric (HACH) 14. Acid titration (same as #5)	Q73
BOATAC_C	Boat access code 1. Public owned-developed trailer ramp 2. Public owned-developed hand launch or beach trailer launch 3. Public owned-developed hand launch only 4. Public owned-undeveloped hand launch or beach trailer launch 5. Public owned-undeveloped hand launch only 6. Commercial-trailer ramp 7. Commercial-hand launch or beach trailer launch 8. Commercial-hand launch only	Q81
COLL_C	Collection code 0. No catch 1. Collected 2. Reported	Q79
COLOR_C	Visual color 1. Clear-white 2. Blue-green 3. Light brown-yellow brown 4. Brown 5. Dark brown-black 6. Green-yellow	Q73

FIN DATA BASE CODES (Continued)

Codes	Definitions	DSN
COMST_C	Fish community status code 0. Healthy 1. One or two species declined, not acid sensitive 2. One or two species declined, may be acid sensitive 3. Several species declined, some acid sensitive 4. Most species disappeared, remaining are acid tolerant 5. All species disappeared 7. Lake surveyed once; no fish; stocking records available 8. Lake surveyed once; acid-tolerant species caught 9. Lake surveyed once; no fish; no other information available	Q68
COMTYP_C	Fish community type code 3. Brook trout 4. Coldwater 5. Warmwater 6. Two-story	Q68
DEPTH_C	Sample depth 0 Surface measurement 9999 Unknown depth 9998 Unknown bottom depth 9997 Unknown mid-depth 9996 Unknown surface depth 9995 Outflow measurement 9994 Snow layer 9991 Lake average (samples taken at intervals of depth) 9990 Integrated water column sample	Q73,Q72
CPSTOCK	See xx STOCK	
FISHRY_C	Fishery type code 1. Coldwater 2. Coolwater 3. Warmwater 4. Coldwater and warmwater	Q82

FIN DATA BASE CODES (Continued)

Codes	Definitions	DSN
GEAR_C	Gear type code	Q78,Q77,Q76
	1. Gill net (gearsize = length of net)	
	2. Trap net (gearsize = size of car)	
	3. Seine (gearsize = length of seine)	
	4. Minnow trap	
	5. Electrofishing (gearsize = voltage capacity shocker: maxmshsz = maximum efficiency of gear, minmshsz = minimum efficiency of gear)	
	6. Rotenone	
	7. Angling (gearsize = number of rods)	
	8. Scap net	
	9. Visual observation	
	10. Reported but not collected	
	11. Fyke net	
	12. Stomach contents (gearsize = number of stomachs)	
	13. Shocked with a gun	
	14. Dynamite	
	15. Dip net	
	16. Trawl	
	18. Toxaphene	
	19. Underwater fish observation (snorkel and scuba) (gearsize = transect length)	
	20. Caught by hand	
	21. Unknown gear combination	
	22. Trolling (gearsize = number of rods, gearempl = distance)	
	99. Unknown	
GEARCOMB	Gear combination used	Q75
	1. Angling + gillnet	
	2. Gillnet + seine	
	3. Dipnet, seine, and angling	
	4. Dipnet and angling	
	5. Gillnet and angling	
	6. = 05 (do not use code 6)	
	7. Seine and minnow trap	
	8. = 07 (do not use code 8)	
	9. Gillnet, seine, and angling	
	10. Gillnet, seine, and minnow trap	
	11. Gillnet, trapnet, and seine	
	12. Gillnet, angling, and observation	
	13. Gillnet and rotenone	
	14. Shocker, gill, trapnet	

FIN DATA BASE CODES (Continued)

Codes	Definitions	DSN
	15. Combination unknown 16. Gillnet, trapnet, and angling 17. Gillnet and minnow trap 18. Trapnet and angling	
GEAREM_C	Time, area, length over which gear was employed 1. Hours 2. Area (m^2) 3. Length (m) 4. Overnight set - hours unknown 5. Minutes	Q78
LAKE_C	Lake type code 1. Drainage 2. Seepage 3. Other	Q81
LANDUS_C	Land use code 1. Wilderness/primitive/canoe area 2. Wild forest 3. Intensive recreational 4. Resource management 5. Rural/farmland 6. Low use 7. Moderate use 8. Hamlet 9. Industrial	Q82
LBSTOCK	See xx STOCK	
LGTH_C	Length method code 1. Fork length 2. Total length 3. Standard length 4. Body length	Q79,Q77,Q76,Q75
LTSTOCK	See xx STOCK	
MGMT_C	Management type code 1. Reclaimed 2. Limed	Q74

FIN DATA BASE CODES (Continued)

Codes	Definitions	DSN
OWNER_C	Land ownership code 1. Public 2. Private 3. Public-private	Q82
PH_C	pH method code 0. Unknown 1. pH paper 2. Hach kit 3. Helligekit 4. Lamotte 5. Other colorimetric 6. Field meter 7. Laboratory meter (air equilibrium) 8. Meter-field or lab unknown 9. Field-method unknown 10. Calculated 11. Other method 12. Lab meter not at equilibrium 13. Colorimetric (unspecified)	Q73
POSTING	Posting status 0. Unknown 1. Posted 2. Nonposted 3. Partly posted	Q82
REF_C	Data source reference code 1. NYSDEC 2. Schofield 3. ALC Lake survey data (Webster-Schofield) 4. Hale Creek 5. Brandon Preserve file 6. William Flick 7. PSC/EPA 8. Don Charles 9. NY State Health Department 10. APA 11. From NYSDEC tape	Q79,Q73
RTSTOCK	See xx STOCK	
SBSTOCK	See xx STOCK	

FIN DATA BASE CODES (Continued)

Codes	Definitions	DSN
SPAWNHAB	Suitability of substrate for trout reproduction code 1. Good 2. Fair 3. Poor	Q81
SPEC_C	Species caught (see NYSDEC fish species codes) 000 No fish caught 307 Salmon brown 308 Rainbow x cutthroat cross 309 Hybrid trout 333 Tiger trout 334 Salmon-trout 589 Bass 604 Panfish 999 Unknown	Q79,Q77,Q76,Q75
SPP_C	Species stocked code (strains or crosses) 326 Rainbow trout 327 Atlantic (landlocked) salmon 328 Brown trout 329 Brook trout 330 Lake trout 332 Splake 600 All species	Q80
STN_C	Station code Sixth, seventh, and eight digits of the variable "station"	All
STNTYP_C	Station type 1. Lentic 2. Lotic	Q82
STRAIN_C	Species strain stocked code (Codes are for New York species only) SPP_C 326 1. Unspecified 2. Caledonia 3. Wytheville 4. Washington steelhead 5. Finger lake wild 6. Finger lake wild hybrid	Q80

FIN DATA BASE CODES (Continued)

Codes	Definitions	DSN
	SPP_C 327 1. Unspecified 2. Little Clear 3. Gullspang	
	SPP_C 328 1. Unspecified 2. Catskill 3. Randolph 4. Rome 5. Sea run	
	SPP_C 329 1. Unspecified 2. Assinica 3. Temiscamie 4. Little Tupper Lake 5. Tunis Lake 6. Horn Lake 7. Windfall A 8. Windfall B 9. Temiscamie hybrid (F1) 10. Temiscamie hybrid (F2) 11. Assinica hybrid (F1) 12. Assinica hybrid (F2) 13. Unspecified hybrid 14. Balsam Lake 15. Dix Pond 16. Honnedaga Lake 17. Nate Pond 18. Stink Lake 19. Tamarack Pond	
	SPP_C 330 1. Unspecified 2. Adirondack 3. Finger Lake 4. Jordan River National Fish Hatchery 5. Allegheny National Fish Hatchery 6. Michigan strain	
	SPP_C 332 1. Unspecified 2. Finger Lakes lake trout cross	

FIN DATA BASE CODES (Continued)

Codes	Definitions	DSN
	SPP_C 600 1. "Domestic" 2. "Wild" 3. "Salvage"	
STSTOCK	See xx STOCK	
SUBSTR_C	Predominant substrate code 1. Rock/boulder/rubble 2. Gravel 3. Sand 4. Clay/silt/marl 5. Muck-organic 6. Peat 7. Other	Q81
WFSTOCK	See xx STOCK	
WTRSHD_C	Watershed codes for New York 01 Oswego 02 Lake Champlain 03 St. Lawrence 04 Oswegatchie/Black 05 Upper Hudson 06 Raquette 07 Mohawk Hudson 08 Ontario 09 Delaware/Susquehanna	Q82
xx STOCK	Stocking information code (for the seven game species listed in Q68 description) 1. No stocking on record. Species apparently self-sustaining. 2. Stocking sporadic. Population apparently supplemented by stocking. 3. Species stocked regularly. No prestocking information available. Uncertain whether population is maintained or only supplemented by stocking. 4. Species stocked regularly. Species not present prior to initial stocking and therefore considered to be maintained by stocking. 9. Relationship between stocking and fish population could not be adequately determined.	Q68

Subject: Water Quality Date: September 30, 1985

Data Base Title: Acidification Chemistry Information Data Base (Q97-Q84)

Date Obtained: March 30, 1984 Acronym: ACID

Data Source(s) Contributing Data to ADDNET:

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NAPAP Code: E1-08

Sponsoring Agency: U.S. Environmental Protection Agency

Appropriate Reference Citation:

Description: ACID was established for the purpose of analyzing the effect of acid deposition on surface waters of the United States, by examining historical trends at regional and national scales. ACID is a comprehensive data base that combines data from existing computerized data bases (e.g., STORET) with other data sets from a variety of sources (e.g., state agencies). Approximately 75% of the stations come from STORET. ACID currently contains data for the 48 conterminous United States from 48,692 water-quality sampling stations and 819,002 sampling dates. ACID emphasizes low alkalinity stations (alkalinity <500 μeq/L or pH <7.5), but also includes a random sample of other stations. Approximately 20% of the stations are located in New York and New England. Data in ACID include hydrology, acidity, water chemistry, limited lake and stream morphometry, BNL type, station location, and other station identifiers. ADDNET maintains 14 ACID data sets that contain selected station and water chemistry information. These data sets are divided into ten regions: Northeast (NE), South (SO), Maryland (MD), Florida (FL), North Carolina (NC), Virginia (VA), Pennsylvania (PA), Midwest (MW), Northwest (NW), and West (WE) (Fig. Q97.1). Subdivisions of the ACID Data Base have been extracted and updated for polygons covering the Adirondacks (AD), the upper midwest (MW), and the Blue Ridge (BR). Records in the various files are linked by unique station identifiers which consist of FIPS state and county codes and a station number; these codes are contained in every data set. Records containing analytical data (BNL Types 8-12) also include the date the sample was taken and potentially a replicate number within date. The several data sets in ACID are listed and defined below. The

statistics for the ACID datasets are for the Northeast region only. The number of observations in each regional data set is listed in lable Q97.1. Several data sets (Q94, Q87, and Q86) have zero observations for most or all regions; these data may be added later, as more of the regional files are processed. Definitions for selected coded variables are listed at the end of the "Contents" section. Definitions of all the coded ACID variables are available from ADDNET on request.

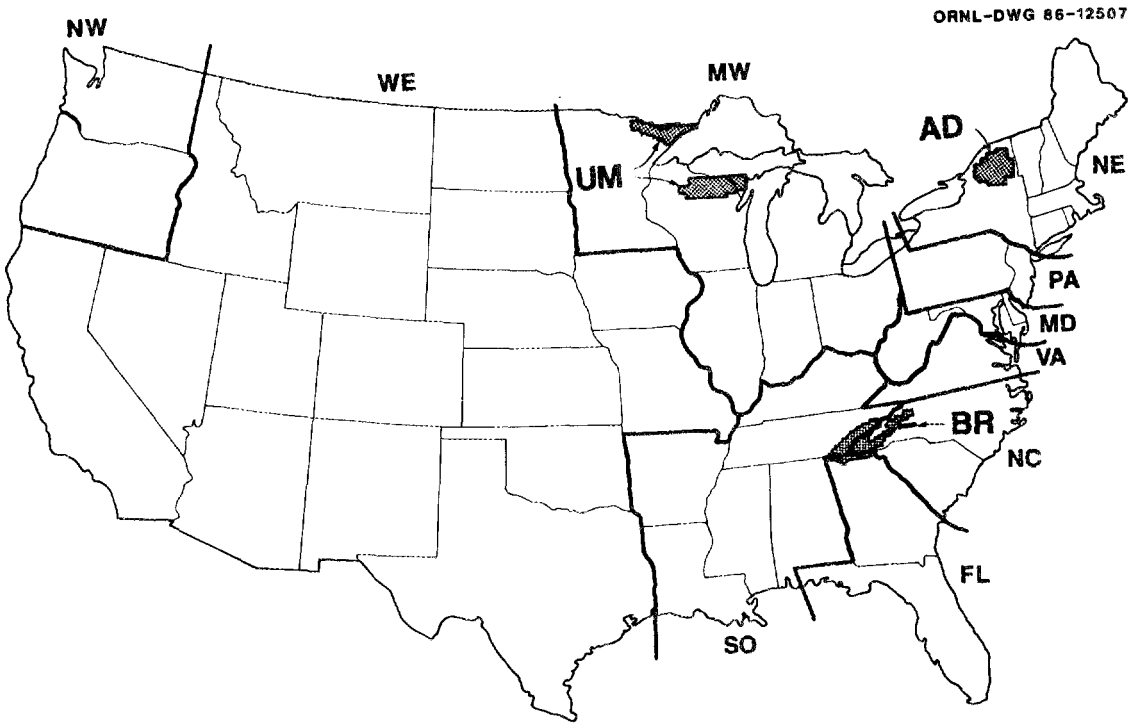

Fig. Q97.1. States within ACID sampling regions.

Table Q97.1. Number of observations per data set by region in the Acidification Chemistry Information Data Base

	Regions[a]										
DSN	NE	AD	SO	MD	FL	NC	VA	PA	MW	NW	WE
Q97	8639	1900	4443	3519	3608	5895	1724	7100	5499	3051	5220
Q96	2613	88	2391	1352	1825	2155	738	2022	2033	1200	2645
Q95	1339	68	2172	1028	731	1091	479	2735	820	960	2343
Q94	0	1647	0	0	0	0	0	0	0	0	0
Q93	9521	2460	4447	3526	3801	5924	1728	7177	5541	3064	5227
Q92	76979	7035	103148	81236	57907	130145	35353	103179	74744	89379	66932
Q91	60762	3572	67815	49493	45213	44717	14596	51724	53142	79338	59231
Q90	23073	598	22516	24850	25262	39944	25512	24285	22634	3282	25493
Q89	61836	3265	95432	64526	55370	126249	33529	64635	43531	86370	62344
Q88	18556	2522	2455	5909	3177	2538	1842	7768	4035	1205	147
Q87	0	0	0	0	0	0	0	0	0	0	0
Q86	9513	0	0	0	0	0	0	0	0	0	0
Q85	501	14	620	637	505	1632	416	421	298	476	611

[a]Regions are defined above in the general data set description.

(Q97) Station - Type 3: Provides the station identification and location data, including state and county FIPS codes, station number within county, station location by latitude and longitude, source of data code, station type (stream, lake, etc.), and station landmark name. (48,698 obs.)

(Q96) Hydrological Unit - Type 4: Provides information as to the location of stations within hydrologic units including USGS hydrologic region, subregion, accounting and cataloging units, and an EPA REACH code. (18,974 obs.)

(Q95) Stream Morphometry - Type 5: Data include drainage area above the station, elevation above mean sea level, and average flow. (13,698 obs.)

(Q94) Lake Morphometry - Type 6: Data include drainage area above the station, elevation above mean sea level, surface area of the lake, volume of the lake, turnover time of the lake, and shoreline length of the lake. (0 obs.)

(Q93) STORET Identification - Type 7: Provides EPA identifiers for those data extracted from the EPA STORET system, including BNL agency number, STORET agency code, and STORET primary station code. Also included are BNL agency codes for non-STORET sampling sources/agencies. (49,956 obs.)

(Q92) Acidity - Type 8: The pH and total alkalinity are included along with analytical method codes, sampling date, sample type, and agency number. (819,002 obs.)

(Q91) Ions - Type 9: Data include conductivity and concentrations for calcium, magnesium, sodium, potassium, bicarbonate, chloride, and sulfate ions, and also include the sampling date. (526,028 obs.)

(Q90) Other Chemistry - Type 10: Data include concentrations and sampling codes for phosphate, iron, aluminum, chlorophyll, dissolved organic carbon, ammonium, and nitrogen oxides, and also include the sampling date. (236,851 obs.)

(Q89) Physical - Type 11: Data include the date the sample was taken, replicate number within date, water temperature, water flow rate, depth of sample, color, and transparency. (693,822 obs.)

(Q88) Other - Type 12: Data include date the sample was taken, replicate number within date, and fish population status code. (47,632 obs.)

(Q87) Hydrology - Type 20: Provides an efficient way to locate stations according to USGS hydrologic codes. Type 20 records are sorted by USGS region, subregion, accounting unit, and cataloging unit, and contain the associated ACID state-county-station code. Record type 4 (Q96) was involuted (rearranged in a different hierarchical order) to obtain this record type. (0 obs.)

(Q86) ID Codes - Type 30: Provides an efficient way to locate stations having EPA STORET codes. Type 30 records are sorted by EPA agency and station codes and contain pointers to the associated ACID state-county-station code. It is an involution of record Type 7 (Q93). (9,513 obs.)

(Q85) Station Flag- Type 51: Variables include the state and county where the sample was taken, the station number within the county, and a station flag indicating that the station was used in the 1984 trends analyses (Hendrey et al. 1984). (6,117 obs.)

Data Uses: Evaluating historical patterns of acidification, estimating the degree of regional acidification, identifying sites for long-term monitoring, and developing empirical models relating acid deposition to aquatic chemistry.

Data Importance: ACID contains historical data that can be used in the analysis and modeling activities related to estimating past and present damage to aquatic ecosystems for the 1985 Assessment.

Uncertainty/Reliability: The data have been reviewed for gross errors, but users need to be aware of changes in sampling and analytical techniques over the years that may influence the interpretation of the data values.

Data Type: Raw

Number of Records: ~2,500,000

Geographic Coverage: Conterminous United States

Spatial Resolution: Point, expressed by latitude/longitude coordinate

Period of Record: 1900-1983

Temporal Resolution: Point, expressed by calendar date

References or Supporting Documents:

Hendrey, G. R., C. G. Hoogendyk, and N. F. Gmur. 1984. Analysis of Trends in the Chemistry of Surface Waters of the United States. BNL 34956. Brookhaven National Laboratory, Upton, NY.

Hendrey, G. R., C. G. Hoogendyk, and N. F. Gmur. 1983. Establishing the Acidification Chemistry Information Database (ACID). BNL 51707. Brookhaven National Laboratory, Upton, NY.

CONTENTS (Q97)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 48698
Created/Updated: MAY 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 11
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
STATION	STATION NUMBER WITHIN COUNTY		NUM	3	3.
LAT_DEC	LATITUDE	DD.DDDD	NUM	4	8.4
LON_DEC	LONGITUDE	DDD.DDDD	NUM	4	8.4
CHKLEV1	CHECK LEVEL FOR STATION DATA		CHAR	2	2
PRECSN_C	PRECISION CODE FOR LAT-LON		CHAR	2	2
SOURCE	SOURCE OF DATA		CHAR	2	2
STNNAME	STATION LANDMARK NAME		CHAR	48	48
STNTYP_C	STATION TYPE (STREAM, LAKE, ETC.)	CODE	CHAR	2	2
RECORD	RECORD TYPE		NUM	2	2.

CONTENTS (Q96)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 18974
Created/Updated: APR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 9
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	STATION NUMBER WITHIN COUNTY	NUM	3	3.
ACCOUNT	USGS HYDROLOGIC ACCOUNTING UNIT	NUM	4	2.
CATALOG	USGS HYDROLOGIC CATALOGUING UNIT	NUM	4	2.
HYDR_RGN	USGS HYDROLOGIC REGION	NUM	4	2.
HYDR_SUB	USGS HYDROLOGIC SUBREGION	NUM	4	2.
REACH_C	EPA RIVER REACH CODE	NUM	3	2.
RECORD	RECORD TYPE	NUM	2	2.

STATISTICS (Q96NE)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
ACCOUNT	2613	0	1	1	0	3
CATALOG	2613	0	3	2	0	8
HYDR_RGN	2613	0	2	1	1	6
HYDR_SUB	2613	0	7	4	1	15

CONTENTS (Q95)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 13698
Created/Updated: APR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 10
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
STATION	STATION NUMBER WITHIN COUNTY		NUM	3	3.
AVGFLOW	AVERAGE FLOW	M3/S	NUM	4	7.2
DRAIN_A	DRAINAGE AREA ABOVE STATION	KM2	NUM	4	7.2
DRAIN_C	DRAINAGE AREA METHOD CODE		CHAR	2	2
ELEVATIN	ELEVATION ABOVE M.S.L.	M	NUM	4	5.
ELEVTN_C	ELEVATION METHOD CODE		CHAR	2	2
FLOW_C	FLOW METHOD CODE		CHAR	2	2
RECORD	RECORD TYPE		NUM	2	2.

STATISTICS (Q95NE)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
AVGFLOW	1339	0	21.85	75.42	0.00	979.27
DRAIN_A	0	1339	.	.	.	.
ELEVATIN	0	1339	.	.	.	.

CONTENTS (Q94)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 0
Created/Updated: APR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 16
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
STATION	STATION NUMBER WITHIN COUNTY		NUM	3	3.
DRAIN_A	DRAINAGE AREA ABOVE STATION	KM2	NUM	4	7.2
DRAIN_C	DRAINAGE AREA METHOD CODE		CHAR	2	2
ELEVATIN	ELEVATION ABOVE M.S.L.	M	NUM	4	5.
ELEVTN_C	ELEVATION METHOD CODE		CHAR	2	2
LAKE_V	VOLUME OF LAKE	M3	NUM	4	10.
SHORE_C	SHORELINE METHOD CODE		CHAR	2	2
SHORLINE	SHORELINE LENGTH OF LAKE	M	NUM	7	5.
SURFAC_A	SURFACE AREA	KM2	NUM	4	7.3
SURFAC_C	SURFACE AREA METHOD CODE		CHAR	2	2
TURN_C	TURNOVER TIME METHOD CODE		CHAR	2	2
TURNTIME	TURNOVER TIME OF THE LAKE	DAYS	NUM	5	7.2
VOL_C	VOLUME METHOD CODE		CHAR	2	2
RECORD	RECORD TYPE		NUM	2	2.

CONTENTS (Q93)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 49956
Created/Updated: APR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 7
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	STATION NUMBER WITHIN COUNTY	NUM	3	3.
STN_C	PRIMARY STATION CODE (STORET OR BNL)	CHAR	15	15
AGENCY_C	AGENCY CODE (STORET OR BNL)	CHAR	8	8
AGENCYNO	AGENCY NUMBER FOR SAMPLE (SEE REC 7)	NUM	2	1.
RECORD	RECORD TYPE	NUM	2	2.

CONTENTS (Q92)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 819002
Created/Updated: APR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 13
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	STATION NUMBER WITHIN COUNTY	NUM	3	3.
DATE	DATE	NUM	4	DATE7.
REP	REPLICATE NUMBER WITHIN DATE	NUM	4	1.
AGENCYNO	AGENCY NUMBER FOR SAMPLE (SEE REC 7)	NUM	2	1.
ALK	TOTAL ALKALINITY UEQ/L	NUM	4	4.
ALK_C	ALKALINITY METHOD CODE	CHAR	2	2
CHKLEV2	CHECK LEVEL FOR SAMPLE DATA	CHAR	3	3
PH	PH STANDARD UNITS	NUM	4	4.2
PH_C	PH METHOD CODE	CHAR	2	2
SAMTYP_C	SAMPLE TYPE CODE	CHAR	2	2
RECORD	RECORD TYPE	NUM	2	2.

STATISTICS (Q92NE)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
AGENCYNO	76979	0	1	0	1	7
ALK	26917	50062	311	404	0	6593
PH	75278	1701	6.68	0.74	1.02	12.00

CONTENTS (Q91)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 526028
Created/Updated: APR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 22
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	STATION NUMBER WITHIN COUNTY	NUM	3	3.
DATE	DATE	NUM	4	DATE7.
REP	REPLICATE NUMBER WITHIN DATE	NUM	4	1.

CONTENTS (Q91) (Continued)

Variable	Label		Type	Len.	Format
CA	DISSOLVED CALCIUM	UEQ/L	NUM	4	4.
CA_C	CALCIUM METHOD CODE		CHAR	2	2
CL	DISSOLVED CHLORIDE	UEQ/L	NUM	4	5.
CL_C	CHLORINE METHOD CODE		CHAR	2	2
CONDUCT	CONDUCTIVITY	UMHOS/CM AT 25 C	NUM	4	7.1
CONDCT_C	CONDUCTIVITY METHOD CODE		CHAR	2	2
HCO3	DISSOLVED BICARBONATE	UEQ/L	NUM	4	4.
HCO3_C	BICARBONATE METHOD CODE		CHAR	2	2
K	DISSOLVED POTASSIUM	UEQ/L	NUM	4	4.
K_C	POTASSIUM METHOD CODE		CHAR	2	2
MG	DISSOLVED MAGNESIUM	UEQ/L	NUM	4	4.
MG_C	MAGNESIUM METHOD CODE		CHAR	2	2
NA	DISSOLVED SODIUM	UEQ/L	NUM	4	4.
NA_C	SODIUM METHOD CODE		CHAR	2	2
SO4	DISSOLVED SULFATE	UEQ/L	NUM	4	4.
SO4_C	SULFATE METHOD CODE		CHAR	2	2
RECORD	RECORD TYPE		NUM	2	2.

STATISTICS (Q91NE)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
CA	14825	45937	386	467	0	5838
CL	32657	28105	413	622	0	9999
CONDUCT	53613	7149	110	488	0	41000
HCO3	8690	52072	359	396	0	6556
K	7434	53328	31	30	0	716
MG	14156	46606	149	179	0	6830
NA	7564	53198	358	454	1	5220
SO4	18530	42232	282	296	0	9744

CONTENTS (Q90)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 236851
Created/Updated: APR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 20
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.

CONTENTS (Q90) (Continued)

Variable	Label		Type	Len.	Format
SSTATION	STATION NUMBER WITHIN COUNTY		NUM	3	3.
DATE	DATE		NUM	4	DATE7.
REP	REPLICATE NUMBER WITHIN DATE		NUM	4	1.
AL	DISSOLVED ALUMINUM AS AL	UG/L	NUM	4	4.
AL_C	ALUMINUM METHOD CODE		CHAR	2	2
CHLORP_C	METHOD CODE FOR CHLORPHYLL-A		CHAR	2	2
CHLORPHL	CHLOROPHYLL-A	UG/L	NUM	4	3.
DOC	DISSOLVED ORGANIC CARBON	MG/L	NUM	4	3.
DOC_C	METHOD CODE FOR DOC		CHAR	2	2
FE	DISSOLVED IRON AS FE	UG/L	NUM	4	4.
FE_C	IRON METHOD CODE		CHAR	2	2
NH4	DISSOLVED AMMONIUM	UEQ/L	NUM	4	4.
NH4_C	AMMONIUM METHOD CODE		CHAR	2	2
NOX_C	METHOD CODE FOR NO2 + NO3		CHAR	2	2
NOX_DIS	DISSOLVED NO2 + NO3	UEQ/L	NUM	4	4.
PO4	TOTAL PHOSPHATE AS P	UG/L	NUM	4	4.
PO4_C	PHOSPHATE METHOD CODE		CHAR	2	2
RECORD	RECORD TYPE		NUM	2	2.

STATISTICS (Q90NE)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
AL	276	22797	100	144	0	1100
CHLORPHL	2208	20865	6	15	0	272
DOC	342	22731	14	54	0	692
FE	4414	18659	249	269	0	4400
NH4	13522	9551	20	67	0	2249
NOX_DIS	3407	19666	58	102	0	1356
PO4	6703	16370	88	296	0	8642

CONTENTS (Q89)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 693822
Created/Updated: APR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 15
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.

CONTENTS (Q89) (Continued)

Variable	Label		Type	Len.	Format
STATION	STATION NUMBER WITHIN COUNTY		NUM	3	3.
DATE	DATE		NUM	4	DATE7.
REP	REPLICATE NUMBER WITHIN DATE		NUM	4	1.
COLOR	COLOR	PT-CO UNITS	NUM	4	3.
COLOR_C	COLOR METHOD CODE		CHAR	2	2
DEPTH	DEPTH OF SAMPLE	M	NUM	4	2.
FLOW	WATER FLOW RATE	M3/S	NUM	4	8.2
FLOW_C	FLOW METHOD CODE		CHAR	2	2
TEMP_C	TEMPERATURE METHOD	CODE	CHAR	2	2
TEMP_WTR	WATER TEMPERATURE	C	NUM	4	5.2
TRANSP_C	TRANSPARENCY METHOD CODE		CHAR	2	2
TRANSPAR	TRANSPARENCY, SECCHI DEPTH	M	NUM	4	2.
RECORD	RECORD TYPE		NUM	2	2.

STATISTICS (Q89NE)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
COLOR	25302	36534	28.72	27.73	0	500
DEPTH	58428	3408	0.04	0.25	0	3
FLOW	21902	39934	47.04	211.35	0.00	22605.96
TEMP_WTR	54236	7600	13.87	7.94	0	63
TRANSPAR	0	61836	.	.	.	.

CONTENTS (Q88)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 47632
Created/Updated: APR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 7
Data Set Type: MULTIPLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	STATION NUMBER WITHIN COUNTY	NUM	3	3.
DATE	DATE	NUM	4	DATE7.
REP	REPLICATE NUMBER WITHIN DATE	NUM	4	1.
FISH_C	FISH POPULATION STATUS CODE	NUM	2	1.
RECORD	RECORD TYPE	NUM	2	2.

STATISTICS (Q88NE)

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
FISH_C	18188	368	0	1	0	8

CONTENTS (Q87)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 0
Created/Updated: MAY 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 10
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
ACCOUNT	USGS HYDROLOGIC ACCOUNTING UNIT	NUM	4	2.
CATALOG	USGS HYDROLOGIC CATALOGUING UNIT	NUM	4	2.
COUNTYP	POINTER TO COUNTY STATION IS IN	NUM	4	3.
HYDR_RGN	USGS HYDROLOGIC REGION	NUM	4	2.
HYDR_SUB	USGS HYDROLOGIC SUBREGION	NUM	4	2.
STATEP	POINTER TO STATE STATION IS IN	NUM	4	2.
STATIONP	POINTER TO STATION NUMBER IN COUNTY	NUM	4	3.
STN_NO	BNL STATION NUMBER WITHIN REACH	NUM	4	8.
RECORD	RECORD TYPE	NUM	2	2.

CONTENTS (Q86)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 9513
Created/Updated: APR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 7
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTYP	POINTER TO COUNTY STATION IS IN	NUM	3	3.
STATEP	POINTER TO STATE STATION IS IN	NUM	2	2.
STATIONP	POINTER TO STATION	NUM	3	3.
STORET_C	STORET AGENCY CODE	CHAR	8	8
STOSTN_C	STORET STATION CODE	CHAR	15	15
RECORD	RECORD TYPE	NUM	2	2.

STATISTICS (Q86NE)

SUMMARY STATISTICS FOR Q86NE

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
COUNTYP	9513	0	52	165	0	999
STATEP	9513	0	30	11	9	50
STATIONP	9513	0	427	450	1	999

CONTENTS (Q85)

Year(s): 1900-1980
Geocoverage: U. S.
Number of Records: 6117
Created/Updated: APR. 1984
Date Released: 30SEP85
Compiler(s): IL MCCOLLOUGH

Temporal Resolution: POINT
Spatial Resolution: POINT
Variables per Record: 5
Data Set Type: SINGLE
Update dates: AS AVAILABLE

Variable	Label	Type	Len.	Format
STATE	FIPS STATE NUMBER	NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER	NUM	3	Z3.
STATION	STATION NUMBER WITHIN COUNTY	NUM	3	3.
FLAG	MARKS STATION USED IN 1984 TRENDS ANAL.	NUM	2	2.
RECORD	RECORD TYPE	NUM	2	2.

SELECTED ACID CODES

Codes	Definitions	DSN
ALK_C	Alkalinity method code 0. Unknown 1. Methyl orange 2. Brom-cresol green-methyl red 3. Phenolphthalein red 4. Potentiometric fixed endpoint 5. Gran's plot 6. Conductometric 7. Coulombmetric 8. Calculated 9. Other method 10. Methyl purple 11. Potentiometric (adjusted) endpoint 12. Potentiometric double endpoint 13. Colorimetric 14. Methyl orange and phenolphthalein red combined (method used by the NYSDEC)	Q92
FISH_C	Fish population status code 0. No information 1. No fish captured by survey 2. No fish captured by survey, but stocking policy in effect 3. Fish captured by survey 4. Stocked and native species captured by survey 5. Only stocked species captured by survey 6. Only native species captured by survey 7. Only native species captured by survey, but stocking policy in effect 8. Information available, but not obtained	Q88
FLOW_C	Flow method code 0. Unknown 1. STORET P61 (stream, instantaneous, cfs) 2. STORET P60 (stream, mean daily, cfs) 3. STORET P58 (flow rate, gpm) 4. STORET P59 (flow rate, instantaneous, gpm) 5. STORET P72034 (flow, instantaneous spillway discharge, cfs) 6. STORET 50051 (flow rate, instantaneous, mgd)	Q95,Q89

SELECTED ACID CODES (Continued)

Codes	Definitions	DSN
PH_C	pH method code	Q92
00	Unknown	
01	pH paper	
02	Hach colorimetric	
03	Hellige colorimetric	
04	Lamotte colorimetric	
05	Other colorimetric	
06	Meter in the field 61,71: meter using Markson probe[a]	
07	Meter in the lab 62,72: meter using Fisher probe[a]	
08	Other method	
09	Calculated	
10	STORET P400 (S.U.)	
11	STORET P403 (S.U., lab)	
12	Taylor colorimetric	
13	Quinhydrone probe	
14	Gramercy Universal Indicator	
15	Chlor-phenol red (non-STORET ref. BNL51D)	
16	Wallace-Tiernan (colorimetric)	
17	New York State Department of Environmental Conservation "Current Lab Hellige pH" recalculated to an estimated Equilibrium pH using Dr. Carl Schofield's formula: Eq. pH = (1.13 x Hellige pH) - 0.83	1979
SAMTYP_C	Sample type code	
00	Unknown	
01	Grab	
02	Spatial composite	
03	Temporal composite	
04	Combined composite	
05	More than 1 grab mixed during STORET data retrieval	
06	More than 1 composite mixed during STORET data retrieval	
07	Integrated column (vertical)[b]	
STNTYP_C	Station type (stream, lake, etc.)	Q97
0	Unknown	
1	Stream	
2	Lake	
3	Canal	
4	Reservoir (manmade impoundment)	
5	River or canal	
6	Lake or reservoir	

[a]Used in non-STORET References BNL36Z, BNL36BA.

[b]In STORET, the depth measurement associated with the column is defined as "the length of the core" and gives no indication if the core started from the surface. Must ask individual sampling agency about that.

SOILS (T) SECTOR

Subject: Soils Date: September 30, 1985

Data Base Title: Soils at Map Unit Level (T03)

Date Obtained: January 1984 Acronym:

Data Source(s) Contributing Data to ADDNET:

Richard J. Olson
Environmental Sciences Division
Oak Ridge National Laboratory
P.O. Box X, Building 1505
Oak Ridge, TN 37831-6038
(615) 574-7819; FTS 624-7819

NAPAP Code:

Sponsoring Agency: U.S. Department of Energy

Appropriate Reference Citation for Users of the Data:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

Description: Soils data were digitized from the National Atlas soils map. The soil map units are associations of great soil groups according to the seventh approximation classification. There are 327 classes on the map with 194 occurring in the East. The map was digitized by recording the proportion of soil types in each county to the nearest 10%. Characteristics of the soil map units are stored as separate data sets in the Geoecology Data Base (Olson et al. 1980) to be merged with T03 as needed: data set T07 provides codes and names for soil orders, soil suborders, and soil map units; data set T09 defines the occurrence and ranking of great soil groups within soil map units; data set T08 includes six ordinally scaled soil variables for great soil groups; and data set T10 defines five chemical properties of soil map units.

Data Uses:

Data Importance:

Uncertainty/Reliability:

Data Type:

Number of Records: 6695

Geographic Coverage: United States

Spatial Resolution: County

Period of Record: 1967

Temporal Resolution: Historical

References or Supporting Documents:

Olson, R. J., C. J. Emerson, and M. K. Nungesser. 1980. Geoecology: A County-Level Environmental Data Base for the Conterminous United States. ORNL/TM-7351. Oak Ridge National Laboratory, Oak Ridge, TN.

CONTENTS

Year(s): 1967 Temporal Resolution: HISTORIC
Geocoverage: U. S. Spatial Resolution: COUNTY
Number of Records: 6695 Variables per Record: 4
Created/Updated: APR. 1984 Data Set Type: MULTIPLE
Date Released: 30SEP85 Update dates: INFREQUENTLY
Compiler(s): RJ OLSON, MK NUNGESSER, CS TUCKER, JM KLOPATEC

Variable	Label		Type	Len.	Format
STATE	FIPS STATE NUMBER		NUM	2	Z2.
COUNTY	FIPS COUNTY NUMBER		NUM	3	Z3.
SOILS_A	AREA IN SOILS MAP UNIT	HA	NUM	4	8.
SOIL_M_C	SOILS CODE FOR MAP UNIT IN NATL ATLAS		CHAR	5	5.

STATISTICS

VARIABLE	OBS	MISS	MEAN	STD. DEV.	MINIMUM	MAXIMUM
SOILS_A	6695	0	114670	161190	1793	4244468

APPENDIX B

Index of Data Set Variables

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
ABUND_C	RELATIVE ABUNDANCE CODE		Q79
ACCESS_C	ACCESS TO THE STATION CODE		Q81
ACCOUNT	USGS HYDROLOGIC ACCOUNTING UNIT		Q87
ACCOUNT	USGS HYDROLOGIC ACCOUNTING UNIT		Q96
ADIR_C	REGIONAL CODE FOR ADIRONDACK ECO. ZONE		Q82
ADS_C	ADS NETWORK CODE		K93
ADS_C	ADS NETWORK CODE		K94
ADS_ID	ADS SITE IDENTIFICATION		K93
ADS_ID	ADS SITE IDENTIFICATION		K94
ADS_SITE	ADS SITE NAME		K94
AGENCY_C	AGENCY CODE (STORET OR BNL)		Q93
AGENCYNO	AGENCY NUMBER FOR SAMPLE (SEE REC 7)		Q92
AGENCYNO	AGENCY NUMBER FOR SAMPLE (SEE REC 7)		Q93
AGESTK_C	AGE WHEN STOCKED CODE		Q80
AL	DISSOLVED ALUMINUM AS AL	UG/L	Q72
AL	DISSOLVED ALUMINUM AS AL	UG/L	Q90
AL_C	ALUMINUM METHOD CODE		Q90
ALFAL_A	ALFALFA	HA	A06
ALFAL_Y	ALFALFA YIELD	KG	A06
ALK	TOTAL ALKALINITY	UEQ/L	Q73
ALK	TOTAL ALKALINITY	UEQ/L	Q92
ALK_C	ALKALINITY CLASS CODE		K83
ALK_C	ALKALINITY METHOD CODE		Q73
ALK_C	ALKALINITY METHOD CODE		Q92
ANL_ST	ARGONNE STATE CODE		K86
AQCR	AIR QUALITY CONTROL REGION		K90
ARBA	ARBA GUIDE NUMBER		B07
ASPN_B_A	ASPEN-BIRCH FOREST	HA	F01
AVGFLOW	AVERAGE FLOW	M3/S	Q95
B_FARM_A	SIZE OF BIG FARMS	HA	A06
B_FARM_N	NUMBER OF BIG FARMS		A06
BARLEY_A	BARLEY	HA	A06
BARLEY_Y	BARLEY YIELD	KG	A06
BHDECLIN	BROWN BULLHEAD DECLINING		Q68
BHLOST	BROWN BULLHEAD LOST		Q68
BHOK	BROWN BULLHEAD HEALTHY		Q68
BHPROB	BROWN BULLHEAD LOST, PROB. ACID RAIN		Q68
BLM_A	BUREAU OF LAND MANAGEMENT AREA	HA	B07
BOATAC_C	BOAT ACCESS TO THE STATION CODE		Q81
BR_A	BUREAU OF RECLAMATION AREA	HA	B07
CA	DISSOLVED CALCIUM	UEQ/L	Q91
CA_C	CALCIUM METHOD CODE		Q91
CALCIUM	DISSOLVED CALCIUM	UEQ/L	Q73
CATALOG	USGS HYDROLOGIC CATALOGUING UNIT		Q87
CATALOG	USGS HYDROLOGIC CATALOGUING UNIT		Q96
CCDECLIN	CREEK CHUB DECLINING		Q68
CCLOST	CREEK CHUB LOST		Q68

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
CCOK	CREEK CHUB HEALTHY		Q68
CCPROB	CREEK CHUB LOST, PROB. ACID RAIN		Q68
CE_A	CORP OF ENGINEERS AREA	HA	B07
CEDAR_A	CEDAR FOREST	HA	F01
CELL_A	AREA OF THE CELL	HA	K83
CHKLEV1	CHECK LEVEL FOR STATION DATA		Q97
CHKLEV2	CHECK LEVEL FOR SAMPLE DATA		Q92
CHLORP_C	METHOD CODE FOR CHLORPHYLL-A		Q90
CHLORPHL	CHLOROPHYLL-A	UG/L	Q90
CL	DISSOLVED CHLORIDE	UEQ/L	Q72
CL	DISSOLVED CHLORIDE	UEQ/L	Q91
CL_C	CHLORINE METHOD CODE		Q91
CNTY_A	AREA OF COUNTY EXCLUDING >16HA LAKES	HA	B01
CNTY_A	COUNTY AREA FROM FOREST SERVICE	HA	B07
CNTY_A	TOTAL SURFACE AREA - 1977	HA	L08
CO	CARBON MONOXIDE EMISSIONS	KG*E3	K90
CO	CARBON MONOXIDE EMISSIONS	KG*E3	K91
CO	CARBON MONOXIDE EMISSIONS	KG*E3	K92
CO_CODE	COUNTY MNEMONIC CODE		B01
CO_N	CARBON MONOXIDE, NUMBER OF SOURCES		K91
CO_N	CARBON MONOXIDE, NUMBER OF SOURCES		K92
COLL_C	A CODE IF DATA WERE COLLECTED, REPORTED		Q79
COLOR	COLOR	PT-CO UNITS	Q73
COLOR	COLOR	PT-CO UNITS	Q89
COLOR_C	VISUAL COLOR CODE		Q73
COLOR_C	COLOR METHOD CODE		Q89
COLOR_MN	MEAN VISUAL COLOR (1960-PRESENT)		Q67
COMMENTS	GENERAL COMMENT ON THE STATION		Q71
COMMENTS	COMMENT ON THE CHEMICAL MEASUREMENTS		Q72
COMMENTS	COMMENT ON THE CHEMICAL MEASUREMENTS		Q73
COMMENTS	COMMENTS ON MANAGEMENT		Q74
COMMENTS	COMMENTS ON THE FISH SPECIES CAUGHT		Q75
COMMENTS	COMMENTS ON THE FISH SPECIES CAUGHT		Q76
COMMENTS	COMMENTS ON THE FISH SPECIES CAUGHT		Q77
COMMENTS	COMMENT ON THE GEAR TYPE USED		Q78
COMMENTS	COMMENTS ON THE FISH SPECIES CAUGHT		Q79
COMMENTS	COMMENT ON THE WATER OF FISH STOCKED		Q80
COMST_C	FISH COMMUNITY STATUS CODE		Q68
COMTYP_C	FISH COMMUNITY TYPE CODE		Q68
CONDCT_C	CONDUCTIVITY METHOD CODE		Q91
CONDUCT	CONDUCTIVITY	UMHOS/CM AT 25 C	Q73
CONDUCT	CONDUCTIVITY	UMHOS/CM AT 25 C	Q91
CORN_G_A	CORN FOR GRAIN	HA	A06
CORN_G_Y	CORN FOR GRAIN YIELD	KG	A06
CORN_S_A	CORN FOR SILAGE OR GRAZING	HA	A06
CORN_S_Y	CORN FOR SILAGE YIELD	KG	A06
COTTON_A	COTTON	HA	A06

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
COTTON_Y	COTTON YIELD	KG	A06
COUNTY	FIPS COUNTY NUMBER		A06
COUNTY	FIPS COUNTY NUMBER		B01
COUNTY	FIPS COUNTY NUMBER		B07
COUNTY	FIPS COUNTY NUMBER		C07
COUNTY	FIPS COUNTY NUMBER		C08
COUNTY	FIPS COUNTY NUMBER		F01
COUNTY	FIPS COUNTY NUMBER		F06
COUNTY	FIPS COUNTY NUMBER		F08
COUNTY	FIPS COUNTY NUMBER		K90
COUNTY	FIPS COUNTY NUMBER		K91
COUNTY	FIPS COUNTY NUMBER		K92
COUNTY	FIPS COUNTY NUMBER		K97
COUNTY	FIPS COUNTY NUMBER		L07
COUNTY	FIPS COUNTY NUMBER		L08
COUNTY	FIPS COUNTY NUMBER		P03
COUNTY	FIPS COUNTY NUMBER		Q67
COUNTY	FIPS COUNTY NUMBER		Q68
COUNTY	FIPS COUNTY NUMBER		Q71
COUNTY	FIPS COUNTY NUMBER		Q72
COUNTY	FIPS COUNTY NUMBER		Q73
COUNTY	FIPS COUNTY NUMBER		Q74
COUNTY	FIPS COUNTY NUMBER		Q75
COUNTY	FIPS COUNTY NUMBER		Q76
COUNTY	FIPS COUNTY NUMBER		Q77
COUNTY	FIPS COUNTY NUMBER		Q78
COUNTY	FIPS COUNTY NUMBER		Q79
COUNTY	FIPS COUNTY NUMBER		Q80
COUNTY	FIPS COUNTY NUMBER		Q81
COUNTY	FIPS COUNTY NUMBER		Q82
COUNTY	FIPS COUNTY NUMBER		Q84
COUNTY	FIPS COUNTY NUMBER		Q85
COUNTY	FIPS COUNTY NUMBER		Q88
COUNTY	FIPS COUNTY NUMBER		Q89
COUNTY	FIPS COUNTY NUMBER		Q90
COUNTY	FIPS COUNTY NUMBER		Q91
COUNTY	FIPS COUNTY NUMBER		Q92
COUNTY	FIPS COUNTY NUMBER		Q93
COUNTY	FIPS COUNTY NUMBER		Q94
COUNTY	FIPS COUNTY NUMBER		Q95
COUNTY	FIPS COUNTY NUMBER		Q96
COUNTY	FIPS COUNTY NUMBER		Q97
COUNTY	FIPS COUNTY NUMBER		T03
COUNTYNM	COUNTY NAME		B01
COUNTYP	POINTER TO COUNTY STATION IS IN		Q86
COUNTYP	POINTER TO COUNTY STATION IS IN		Q87
CPDECLIN	CHAIN PICKEREL DECLINING		Q68

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
CPLOST	CHAIN PICKEREL LOST		Q68
CPOK	CHAIN PICKEREL HEALTHY		Q68
CPPROB	CHAIN PICKEREL LOST, PROB. ACID RAIN		Q68
CPSTOCK	CHAIN PICKEREL STOCKING CODE		Q68
CROP_A	CROPLAND	HA	A06
CROPLAND	TOTAL OF ALL TYPES OF CROP LAND	HA	L07
CRP_MS_A	MISCELLANEOUS CROPS	HA	A06
DATE	DATE		K90
DATE	STARTING DATE OF QUARTER		K94
DATE	DATE		Q72
DATE	DATE		Q73
DATE	DATE		Q74
DATE	DATE		Q75
DATE	DATE		Q76
DATE	DATE		Q77
DATE	DATE		Q78
DATE	DATE		Q79
DATE	DATE		Q80
DATE	DATE		Q88
DATE	DATE		Q89
DATE	DATE		Q90
DATE	DATE		Q91
DATE	DATE		Q92
DATE_LST	DATE OF LAST PH SAMPLE		Q67
DEPTH	DEPTH OF SAMPLE	M	Q89
DEPTH_C	DEPTH FROM WHICH SAMPLE WAS TAKEN	CODE	Q72
DEPTH_C	DEPTH FROM WHICH SAMPLE WAS TAKEN	CODE	Q73
DEPTH_MN	MEAN DEPTH OF THE LAKE	M	Q81
DEPTH_MX	MAXIMUM DEPTH SAMPLED	M	Q78
DEPTH_MX	MAXIMUM DEPTH OF THE LAKE	M	Q81
DEPTHMIN	MINIMUM DEPTH SAMPLED	M	Q78
DISTANCE	DISTANCE TO NEAREST PUBLIC ROAD	KM	Q81
DO	DISSOLVED OXYGEN	MG/L	Q73
DOC	DISSOLVED ORGANIC CARBON	MG/L	Q73
DOC	DISSOLVED ORGANIC CARBON	MG/L	Q90
DOC_C	METHOD CODE FOR DOC		Q90
DRAIN_A	DRAINAGE AREA ABOVE STATION	KM2	Q81
DRAIN_A	DRAINAGE AREA ABOVE STATION	KM2	Q94
DRAIN_A	DRAINAGE AREA ABOVE STATION	KM2	Q95
DRAIN_C	DRAINAGE AREA METHOD CODE		Q94
DRAIN_C	DRAINAGE AREA METHOD CODE		Q95
ELEVATIN	ELEVATION ABOVE M.S.L.	M	Q81
ELEVATIN	ELEVATION ABOVE M.S.L.	M	Q94
ELEVATIN	ELEVATION ABOVE M.S.L.	M	Q95
ELEVTN_C	ELEVATION METHOD CODE		Q94
ELEVTN_C	ELEVATION METHOD CODE		Q95
ELM_A_A	ELM-ASH-COTTONWOOD FOREST	HA	F01

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
EPA_CO	EPA COUNTY NUMBER		K90
EPA_ST	EPA STATE NUMBER		K90
FARM_A	FARMLAND	HA	A06
FARM_N	NUMBER OF FARMS		A06
FE	DISSOLVED IRON AS FE	UG/L	Q72
FE	DISSOLVED IRON AS FE	UG/L	Q90
FE_C	IRON METHOD CODE		Q90
FEDRL_77	TOTAL FEDERAL LAND AREA - 1977	HA	L08
FISH_C	FISH CODE		Q88
FISH_N	NUMBER OF FISH CAUGHT		Q75
FISH_N	NUMBER OF FISH CAUGHT		Q77
FISH_N	NUMBER OF FISH CAUGHT		Q79
FISHRY_C	FISHERY CODE		Q82
FISHST_N	NUMBER OF FISH STOCKED		Q80
FLAG	MARKS THIS STATION		Q85
FLAG_S	SITE CRITERIA NOT MET		K93
FLAG_S	SITE CRITERIA NOT MET		K95
FLOW	WATER FLOW RATE	M3/S	Q89
FLOW_C	FLOW METHOD CODE		Q89
FLOW_C	FLOW METHOD CODE		Q95
FOREST	TOTAL OF ALL FOREST LAND	HA	L07
FOREST_A	FOREST LAND - COMMERCIAL	HA	F01
FS_A	FOREST SERVICE AREA	HA	B07
FS_HWD_G	ANNUAL HARDWOOD FOREST GROWTH	M3	F08
FS_HWD_V	HARDWOOD FOREST VOLUME	M3	F08
FS_LND_A	TOTAL USFS LAND AREA	HA	F08
FS_RGN	FOREST SERVICE REGION NUMBER		B07
FS_SWD_G	ANNUAL SOFTWOOD FOREST GROWTH	M3	F08
FS_SWD_V	SOFTWOOD FOREST VOLUME	M3	F08
FS_TOT_A	TOTAL COMMERCIAL FOREST AREA	HA	F01
FS_TOT_A	TOTAL COMMERCIAL FOREST AREA	HA	F08
FS_TOT_G	ANNUAL COMM FOREST GROWTH	M3	F08
FS_TOT_V	TOTAL COMM FOREST VOLUME	M3	F08
FWS_A	FISH AND WILDLIFE SERVICE AREA	HA	B07
GEAR_C	TYPE OF GEAR EMPLOYED	CODE	Q76
GEAR_C	TYPE OF GEAR EMPLOYED	CODE	Q77
GEAR_C	TYPE OF GEAR EMPLOYED	CODE	Q78
GEAR_GRP	GROUPING OF THE GEAR COMBINATION		Q75
GEAR_RPL	REPLICATE OF A GIVEN GEAR TYPE		Q76
GEARCOMB	GEAR COMBINATION USED	CODE	Q75
GEAREM_C	CODE FOR GEAR EMPLOYED		Q78
GEARSIZE	SIZE, AMOUNT, OR CONC OF GEAR USED		Q78
GEARUN_N	NUMBER OF GEAR UNITS USED		Q76
GSDECLIN	GOLDEN SHRINER DECLINING		Q68
GSLOST	GOLDEN SHRINER LOST		Q68
GSOK	GOLDEN SHRINER HEALTHY		Q68
GSPROB	GOLDEN SHRINER LOST, PROB. ACID RAIN		Q68

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
H_CONC	H+ ANNUAL WET CONCENTRATION	MG/L	K83
H_CONC	H+ ANNUAL WEIGHTED MEAN CONC.	MG/L	K93
H_CONC	H+ ANNUAL WEIGHTED MEAN CONC.	MG/L	K94
H_DEP	H+ ANNUAL WET DEPOSITION	G/M2	K83
H_DEP	H+ ANNUAL WET DEPOSITION	G/M2	K93
H_DEP	H+ ANNUAL WET DEPOSITION	G/M2	K94
H_DEP	H+ ANNUAL WET DEPOSITION	G/M2	K95
H_FLAG	H+ CRITERIA NOT MET		K93
H_PCE	H+ PERCENT COLLECTION EFFICIENCY	%	K93
H_PCE	H+ PERCENT COLLECTION EFFICIENCY	%	K94
H_PPT	H+ PERCENT TOTAL PRECIPITATION	%	K93
H_PPT	H+ PERCENT TOTAL PRECIPITATION	%	K94
H_PVC	PERCENT SAMPLES WITH H+ VALUES	%	K94
H_PVSL	H+ PERCENT VALID SAMPLE LENGTH	%	K93
H_SE	STANDARD ERROR OF H+ DEPOSITION		K95
H_WET	H+ ANNUAL WET ADJ DEPOSITION	G/M2	K83
HARDWD_A	HARDWOOD FOREST	HA	F01
HARV_A	HARVESTED CROPLAND	HA	A06
HAY_A	HAY OR GRASS SILAGE	HA	A06
HAY_Y	HAY OR GRASS SILAGE YIELD	KG	A06
HCO3	DISSOLVED BICARBONATE	UEQ/L	Q72
HCO3	DISSOLVED BICARBONATE	UEQ/L	Q91
HCO3_C	BICARBONATE METHOD CODE		Q91
HIWAY_F	HIGHWAYS ON RURAL-FEDERAL	HA	L08
HIWAY_N	HIGHWAYS ON RURAL-NONFEDERAL	HA	L08
HSE_70	1970*HOUSING UNITS		P03
HSE_80	1980*HOUSING UNITS		P03
HYDR_RGN	USGS HYDROLOGIC REGION		Q87
HYDR_RGN	USGS HYDROLOGIC REGION		Q96
HYDR_SUB	USGS HYDROLOGIC SUBREGION		Q87
HYDR_SUB	USGS HYDROLOGIC SUBREGION		Q96
INDETR_A	INDETERMINATE	HA	F01
INTERS_F	INTERSTATES ON RURAL-FEDERAL	HA	L08
INTERS_N	INTERSTATES ON RURAL-NONFEDERAL	HA	L08
IPP_C	IMPLEMENTATION PLANNING PROG. PROCESS		K90
IRR_LAND	IRRIGATED LAND	HA	A06
K	DISSOLVED POTASSIUM	UEQ/L	Q72
K	DISSOLVED POTASSIUM	UEQ/L	Q91
K_C	POTASSIUM METHOD CODE		Q91
LAKE_C	LAKE TYPE CODE		Q81
LAKE_V	VOLUME OF LAKE	M3	Q81
LAKE_V	VOLUME OF LAKE	M3	Q94
LAKES_1	PERCENT AREA OF LAKES <20 HA	%	K83
LAKES_2	PERCENT AREA OF LAKES FROM 20-100 HA	%	K83
LAKES_3	PERCENT AREA OF LAKES FROM 100-200 HA	%	K83
LAKES_4	PERCENT AREA OF LAKES >200 HA	%	K83
LAKES_5	TOTAL PERCENT AREA OF LAKES	%	K83

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
LAND_F	FEDERALLY OWNED LAND	HA	L07
LAND_77	LAND AREA - 1977	HA	L08
LANDFS_A	COUNTY LAND AREA FROM FOREST SERVICE	HA	B07
LANDUS_C	LAND USE CODE		Q82
LAT_DEC	LATITUDE	DD.DDDD	B01
LAT_DEC	LATITUDE	DD.DDDD	K83
LAT_DEC	LATITUDE	DD.DDDD	K85
LAT_DEC	LATITUDE	DD.DDDD	K87
LAT_DEC	LATITUDE	DD.DDDD	K90
LAT_DEC	LATITUDE	DD.DDDD	K93
LAT_DEC	LATITUDE	DD.DDDD	K94
LAT_DEC	LATITUDE	DD.DDDD	K95
LAT_DEC	LATITUDE	DD.DDDD	K99
LAT_DEC	LATITUDE	DD.DDDD	Q82
LAT_DEC	LATITUDE	DD.DDDD	Q97
LAT_DEC1	SOUTHERNMOST LATITUDE	DD.DDDD	K87
LAT_DEC2	NORTHERNMOST LATITUDE	DD.DDDD	K87
LBDECLIN	LARGE-MOUTH BASS DECLINING		Q68
LBLOST	LARGE-MOUTH BASS LOST		Q68
LBOK	LARGE-MOUTH BASS HEALTHY		Q68
LBPROB	LARGE-MOUTH BASS LOST, PROB. ACID RAIN		Q68
LBSTOCK	LARGE-MOUTH BASS STOCKING CODE		Q68
LCDECLIN	LAKE CHUB DECLINING		Q68
LCLOST	LAKE CHUB LOST		Q68
LCOK	LAKE CHUB HEALTHY		Q68
LCPROB	LAKE CHUB LOST, PROB. ACID RAIN		Q68
LGTH_C	METHOD USED FOR LENGTH MEASUREMENT	CODE	Q75
LGTH_C	METHOD USED FOR LENGTH MEASUREMENT	CODE	Q76
LGTH_C	METHOD USED FOR LENGTH MEASUREMENT	CODE	Q77
LGTH_C	METHOD USED FOR LENGTH MEASUREMENT	CODE	Q79
LGTH_MAX	MAXIMUM LENGTH	MM	Q75
LGTH_MAX	MAXIMUM LENGTH	MM	Q76
LGTH_MAX	MAXIMUM LENGTH	MM	Q77
LGTH_MAX	MAXIMUM LENGTH	MM	Q79
LGTH_MIN	MINIMUM LENGTH	MM	Q75
LGTH_MIN	MINIMUM LENGTH	MM	Q76
LGTH_MIN	MINIMUM LENGTH	MM	Q77
LGTH_MIN	MINIMUM LENGTH	MM	Q79
LGTH_MN	MEAN LENGTH	MM	Q75
LGTH_MN	MEAN LENGTH	MM	Q76
LGTH_MN	MEAN LENGTH	MM	Q77
LGTH_MN	MEAN LENGTH	MM	Q79
LINE	LINE NUMBER OF THE COMMENT		Q71
LINE	LINE NUMBER OF THE COMMENT		Q74
LND_MS_A	OTHER LAND, PASTURED OR NOT	HA	A06
LNGL_P_A	LONGLEAF-SLASH PINE FOREST	HA	F01
LOBL_P_A	LOBLOLLY-SHORTLEAF PINE FOREST	HA	F01

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
LON_DEC	LONGITUDE	DDD.DDDD	B01
LON_DEC	LONGITUDE	DDD.DDDD	K83
LON_DEC	LONGITUDE	DDD.DDDD	K85
LON_DEC	LONGITUDE	DDD.DDDD	K87
LON_DEC	LONGITUDE	DDD.DDDD	K90
LON_DEC	LONGITUDE	DDD.DDDD	K93
LON_DEC	LONGITUDE	DDD.DDDD	K94
LON_DEC	LONGITUDE	DDD.DDDD	K95
LON_DEC	LONGITUDE	DDD.DDDD	K99
LON_DEC	LONGITUDE	DDD.DDDD	Q82
LON_DEC	LONGITUDE	DDD.DDDD	Q97
LON_DEC1	EASTERNMOST LONGITUDE	DDD.DDDD	K87
LON_DEC2	WESTERNMOST LONGITUDE	DDD.DDDD	K87
LTDECLIN	LAKE TROUT DECLINING		Q68
LTLOST	LAKE TROUT LOST		Q68
LTOK	LAKE TROUT HEALTHY		Q68
LTPROB	LAKE TROUT LOST, PROB. ACID RAIN		Q68
LTSTOCK	LAKE TROUT STOCKING CODE		Q68
MAPL_B_A	MAPLE-BEECH-BIRCH FOREST	HA	F01
MESH_MAX	MAXIMUM MESH SIZE	CM	Q78
MESH_MIN	MINIMUM MESH SIZE	CM	Q78
MESHSZ_N	NUMBER OF MESH SIZES		Q78
MG	DISSOLVED MAGNESIUM	UEQ/L	Q72
MG	DISSOLVED MAGNESIUM	UEQ/L	Q91
MG_C	MAGNESIUM METHOD CODE		Q91
MGMT_C	MANAGEMENT TYPE CODE		Q74
MN	DISSOLVED MANGANESE AS MN	UG/L	Q72
N_HARD_A	NORTHERN HARDWOOD FOREST TYPES	HA	F01
NA	DISSOLVED SODIUM	UEQ/L	Q72
NA	DISSOLVED SODIUM	UEQ/L	Q91
NA_C	SODIUM METHOD CODE		Q91
NCAN	NATIONAL COUNTY ALPHABETIC NUMBER		B01
NH3	NH3 EMISSIONS	KG*E3	K90
NH3	NH3 EMISSIONS	KG*E3	K91
NH3	NH3 EMISSIONS	KG*E3	K92
NH3_N	NH3, NUMBER OF SOURCES		K91
NH3_N	NH3, NUMBER OF SOURCES		K92
NH4	DISSOLVED AMMONIUM	UEQ/L	Q90
NH4_C	AMMONIUM METHOD CODE		Q90
NH4_CONC	NH4 ANNUAL WEIGHTED MEAN CONC.	MG/L	K94
NH4_DEP	NH4 ANNUAL WET DEPOSITION	G/M2	K94
NH4_PCE	NH4 PERCENT COLLECTION EFFICIENCY	%	K94
NH4_PPT	NH4 PERCENT TOTAL PRECIPITATION	%	K94
NH4_PVC	PERCENT SAMPLES WITH NH4 VALUES	%	K94
NO_SCU	NUMBER OF SUBCOUNTY UNITS		B01
NOX	NOX EMISSIONS	KG*E6	K88
NOX	NOX EMISSIONS	KG*E3	K90

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
NOX	NOX EMISSIONS	KG*E3	K91
NOX	NOX EMISSIONS	KG*E3	K92
NOX_C	METHOD CODE FOR NO2 + NO3		Q90
NOX_DIS	DISSOLVED NO2 + NO3	UEQ/L	Q90
NOX_N	NOX, NUMBER OF SOURCES		K91
NOX_N	NOX, NUMBER OF SOURCES		K92
NO3	DISSOLVED NO3	UEQ/L	Q72
NO3_CONC	NO3 ANNUAL WEIGHTED MEAN CONC.	MG/L	K83
NO3_CONC	NO3 ANNUAL WEIGHTED MEAN CONC.	MG/L	K93
NO3_CONC	NO3 ANNUAL WEIGHTED MEAN CONC.	MG/L	K94
NO3_DEP	NO3 ANNUAL WET DEPOSITION	G/M2	K83
NO3_DEP	NO3 ANNUAL WET DEPOSITION	G/M2	K93
NO3_DEP	NO3 ANNUAL WET DEPOSITION	G/M2	K94
NO3_FLAG	NO3 CRITERIA NOT MET		K93
NO3_PCE	NO3 PERCENT COLLECTION EFFICIENCY	%	K93
NO3_PCE	NO3 PERCENT COLLECTION EFFICIENCY	%	K94
NO3_PPT	NO3 PERCENT TOTAL PRECIPITATION	%	K93
NO3_PPT	NO3 PERCENT TOTAL PRECIPITATION	%	K94
NO3_PVC	PERCENT SAMPLES WITH NO3 VALUES	%	K94
NO3_PVSL	NO3 PERCENT VALID SAMPLE LENGTH	%	K93
NO3_WET	NO3 ANNUAL WET ADJ DEPOSITION	G/M2	K83
NPS_A	NATIONAL PARKS SERVICE AREA	HA	B07
NSTOCK_A	NONSTOCKED FOREST	HA	F01
OAK_A	OAK FOREST TYPES	HA	F01
OAK_G_A	OAK-GUM-CYPRESS FOREST	HA	F01
OAK_H_A	OAK-HICKORY FOREST	HA	F01
OAK_P_A	OAK-PINE FOREST	HA	F01
OATS_A	OATS	HA	A06
OATS_Y	OAT YIELD	KG	A06
OTHRLAND	OTHER LAND-HOUSES, SWAMPS, ETC	HA	L07
OWNER_C	LAND OWNERSHIP CODE		Q82
OZ_1	OZONE 7-H AVERAGE (APR-JUN)	PPB	K97
OZ_2	OZONE 7-H AVERAGE (APR-MAY)	PPB	K97
OZ_3	OZONE 7-H AVERAGE (JUN-OCT)	PPB	K97
OZ_4	OZONE 7-H AVERAGE (JUN-SEP)	PPB	K97
OZ_5	OZONE 7-H AVERAGE (MAY-SEP)	PPB	K97
OZONE	OZONE 7-H AVERAGE	PPB	K99
OZONE_E	OZONE 7-H AVERAGE ESTIMATION ERROR	PPB	K99
PAST_LND	PASTURELAND MANAGED FOR FORAGE	HA	L07
PASTR_A	CROPLAND USED FOR PASTURE/GRAZING	HA	A06
PEANUT_A	PEANUTS FOR NUTS	HA	A06
PEANUT_Y	PEANUTS FOR NUTS YIELD	KG	A06
PH	PH	STANDARD UNITS	Q73
PH	PH	STANDARD UNITS	Q92
PH_C	PH METHOD CODE		Q73
PH_C	PH METHOD CODE		Q92
PH_FLAG	PH CRITERIA NOT MET		K93

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
PH_MEAN	MEAN SURFACE PH (1974-1983)		Q67
PH_MEAN5	MEAN SURFACE PH (2 YR EA SIDE LAST SRVY)		Q67
PH_PCE	PH PERCENT COLLECTION EFFICIENCY	%	K93
PH_PCE	PH PERCENT COLLECTION EFFICIENCY	%	K94
PH_PPT	PH PERCENT TOTAL PRECIPITATION	%	K93
PH_PPT	PH PERCENT TOTAL PRECIPITATION	%	K94
PH_PVC	SAMPLES WITH PH VALUES	%	K94
PH_PVSL	PH PERCENT VALID SAMPLE LENGTH	%	K93
PH_SMEAN	MEAN SUMMER SURFACE PH (1974-1983)		Q67
PH_TREND	PH TREND, PH CHANGE/DECADE		Q67
PH_TRN_N	PH TREND, NUMBER OF VALUES USED		Q67
PH_TRN_S	PH TREND, SLOPE SIGNIFICANCE	95%	Q67
PH_TRN_T	PH TREND, SLOPE T VALUE		Q67
PH_WT	PH ANNUAL WEIGHTED MEAN		K93
PH_WT	WEIGHTED MEAN PH		K94
PLANT_ID	SOURCE PLANT WITHIN A COUNTY		K90
POND_NO	UNIQUE POND IDENTIFIER, NYDEC		Q82
POP_70	1970*POPULATION		P03
POP_80	1980*POPULATION		P03
POSTING	POSTING STATUS OF THE LAND CODE		Q82
POTAT_A	POTATOES	HA	A06
POTAT_Y	POTATO YIELD	KG	A06
PO4	TOTAL PHOSPHATE AS P	UG/L	Q90
PO4_C	PHOSPHATE METHOD CODE		Q90
PPT	TOTAL PRECIPITATION	CM	K83
PPT	TOTAL PRECIPITATION	CM	K93
PPT	TOTAL PRECIPITATION	CM	K94
PPT_ANN	ANNUAL PRECIPITATION	CM	C08
PPT_APR	APRIL PRECIPITATION	CM	C08
PPT_AUG	AUGUST PRECIPITATION	CM	C08
PPT_DEC	DECEMBER PRECIPITATION	CM	C08
PPT_FEB	FEBRUARY PRECIPITATION	CM	C08
PPT_JAN	JANUARY PRECIPITATION	CM	C08
PPT_JUL	JULY PRECIPITATION	CM	C08
PPT_JUN	JUNE PRECIPITATION	CM	C08
PPT_MAR	MARCH PRECIPITATION	CM	C08
PPT_MAY	MAY PRECIPITATION	CM	C08
PPT_NOV	NOVEMBER PRECIPITATION	CM	C08
PPT_OCT	OCTOBER PRECIPITATION	CM	C08
PPT_SEP	SEPTEMBER PRECIPITATION	CM	C08
PRECSN_C	PRECISION CODE FOR LAT-LON		Q97
PSDECLIN	PUMPKINSEED DECLINING		Q68
PSLOST	PUMPKINSEED LOST		Q68
PSOK	PUMPKINSEED HEALTHY		Q68
PSPROB	PUMPKINSEED LOST, PROB. ACID RAIN		Q68
QUAD	QUADRANGLE STATION IS LOCATED IN		Q81
QUANTITY	QUANTITY OF DATA		Q68

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
RAILR_77	TOTAL RAILROAD AREA - 1977	HA	L08
RAILRD_F	RAILROADS ON RURAL-FEDERAL	HA	L08
RAILRD_N	RAILROADS ON RURAL-NONFEDERAL	HA	L08
RANG_LND	RANGELAND WITH NATURAL FORAGE	HA	L07
RANGE_A	RANGE AREA	HA	A06
REACH_C	EPA RIVER REACH CODE		Q96
RECEPT_C	RECEPTOR CODE		K87
RECEPTRG	RECEPTOR REGION DESCRIPTION		K87
RECORD	RECORD TYPE		Q71
RECORD	RECORD TYPE		Q74
RECORD	RECORD TYPE		Q77
RECORD	RECORD TYPE		Q78
RECORD	RECORD TYPE		Q80
RECORD	RECORD TYPE		Q84
RECORD	RECORD TYPE		Q85
RECORD	RECORD TYPE		Q86
RECORD	RECORD TYPE		Q87
RECORD	RECORD TYPE		Q88
RECORD	RECORD TYPE		Q89
RECORD	RECORD TYPE		Q90
RECORD	RECORD TYPE		Q91
RECORD	RECORD TYPE		Q92
RECORD	RECORD TYPE		Q93
RECORD	RECORD TYPE		Q94
RECORD	RECORD TYPE		Q95
RECORD	RECORD TYPE		Q96
RECORD	RECORD TYPE		Q97
REF_C	DATA SOURCE REFERENCE CODE		Q73
REF_C	DATA SOURCE REFERENCE CODE		Q79
REP	REPLICATE NUMBER WITHIN DATE		Q88
REP	REPLICATE NUMBER WITHIN DATE		Q89
REP	REPLICATE NUMBER WITHIN DATE		Q90
REP	REPLICATE NUMBER WITHIN DATE		Q91
REP	REPLICATE NUMBER WITHIN DATE		Q92
REPLIC_N	REPLICATE NUMBER OF MEASUREMENTS		Q73
REPLICAG	REPLICATE OF A GIVEN GEAR TYPE		Q77
REPLICAG	REPLICATE OF A GIVEN GEAR TYPE		Q78
REPLICAM	REPLICATE MEASUREMENT		Q72
REPLICAS	REPLICATE OF SPECIES OR STRAIN STOCKED		Q80
RICE_A	RICE	HA	A06
RICE_Y	RICE YIELD	KG	A06
ROAD_D_F	DIRT ROADS ON RURAL-FEDERAL	HA	L08
ROAD_D_N	DIRT ROADS ON RURAL-NONFEDERAL	HA	L08
ROAD_G_F	GRAVEL ROADS ON RURAL-FEDERAL	HA	L08
ROAD_G_N	GRAVEL ROADS ON RURAL-NONFEDERAL	HA	L08
ROAD_P_F	PAVED ROADS ON RURAL-FEDERAL	HA	L08
ROAD_P_N	PAVED ROADS ON RURAL-NONFEDERAL	HA	L08

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
ROADS_77	FEDERAL AND STATE ROAD AREA - 1977	HA	L08
RTDECLIN	RAINBOW TROUT DECLINING		Q68
RTLOST	RAINBOW TROUT LOST		Q68
RTOK	RAINBOW TROUT HEALTHY		Q68
RTPROB	RAINBOW TROUT LOST, PROB. ACID RAIN		Q68
RTSTOCK	RAINBOW TROUT STOCKING CODE		Q68
RUR_F_77	RURAL FEDERAL LAND AREA - 1977	HA	L08
RUR_N_77	RURAL NONFEDERAL LAND AREA - 1977	HA	L08
RURAL_77	TOTAL RURAL LAND AREA - 1977	HA	L08
RYE_A	RYE	HA	A06
RYE_Y	RYE YIELD	KG	A06
S_D_ANNL	SULFUR - DRY, ANNUAL	KG/HA	K85
S_D_ANNL	SULFUR - DRY, ANNUAL	KG/HA	K86
S_D_ANNL	SULFUR - DRY, ANNUAL	KG/HA	K87
S_D_FALL	SULFUR - DRY, FALL	KG/HA	K85
S_D_FALL	SULFUR - DRY, FALL	KG/HA	K86
S_D_FALL	SULFUR - DRY, FALL	KG/HA	K87
S_D_SPRG	SULFUR - DRY, SPRING	KG/HA	K85
S_D_SPRG	SULFUR - DRY, SPRING	KG/HA	K86
S_D_SPRG	SULFUR - DRY, SPRING	KG/HA	K87
S_D_SUMR	SULFUR - DRY, SUMMER	KG/HA	K85
S_D_SUMR	SULFUR - DRY, SUMMER	KG/HA	K86
S_D_SUMR	SULFUR - DRY, SUMMER	KG/HA	K87
S_D_WNTR	SULFUR - DRY, WINTER	KG/HA	K85
S_D_WNTR	SULFUR - DRY, WINTER	KG/HA	K86
S_D_WNTR	SULFUR - DRY, WINTER	KG/HA	K87
S_W_ANNL	SULFUR - WET, ANNUAL	KG/HA	K85
S_W_ANNL	SULFUR - WET, ANNUAL	KG/HA	K86
S_W_ANNL	SULFUR - WET, ANNUAL	KG/HA	K87
S_W_FALL	SULFUR - WET, FALL	KG/HA	K85
S_W_FALL	SULFUR - WET, FALL	KG/HA	K86
S_W_FALL	SULFUR - WET, FALL	KG/HA	K87
S_W_SPRG	SULFUR - WET, SPRING	KG/HA	K85
S_W_SPRG	SULFUR - WET, SPRING	KG/HA	K86
S_W_SPRG	SULFUR - WET, SPRING	KG/HA	K87
S_W_SUMR	SULFUR - WET, SUMMER	KG/HA	K85
S_W_SUMR	SULFUR - WET, SUMMER	KG/HA	K86
S_W_SUMR	SULFUR - WET, SUMMER	KG/HA	K87
S_W_WNTR	SULFUR - WET, WINTER	KG/HA	K85
S_W_WNTR	SULFUR - WET, WINTER	KG/HA	K86
S_W_WNTR	SULFUR - WET, WINTER	KG/HA	K87
SAMPLPER	SAMPLING PERIOD	MONTHS	K94
SAMTYP_C	SAMPLE TYPE CODE		Q92
SBDECLIN	SMALL-MOUTH BASS DECLINING		Q68
SBLOST	SMALL-MOUTH BASS LOST		Q68
SBOK	SMALL-MOUTH BASS HEALTHY		Q68
SBPROB	SMALL-MOUTH BASS LOST, PROB. ACID RAIN		Q68

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
SBSTOCK	SMALL-MOUTH BASS STOCKING CODE		Q68
SCHOOL_A	STATE SCHOOL AREA	HA	B07
SEASON	SEASON IN WHICH OZONE READINGS TAKEN		K99
SECCHI	SECCHI DISC READING	CM	Q73
SHORE_C	SHORELINE METHOD CODE		Q94
SHORLINE	SHORELINE LENGTH OF LAKE	M	Q81
SHORLINE	SHORELINE LENGTH OF LAKE	M	Q94
SIC_C	STANDARD INDUSTRIAL CLASSIFICATION CODE		K90
SITE_PPT	PERCENT SITE PRECIP. COVERAGE LENGTH	%	K93
SITE_PPT	PERCENT SITE PRECIP. COVERAGE LENGTH	%	K94
SIZE_MAX	MAXIMUM SIZE OF FISH STOCKED	MM	Q80
SIZE_MIN	MINIMUM SIZE OF FISH STOCKED		Q80
SIZE_MN	MEAN SIZE OF FISH STOCKED	MM	Q80
SML_LAKE	SMALL LAKES <16HA AND RIVERS	HA	L07
SOFTWD_A	SOFTWOOD FOREST	HA	F01
SOIL_M_C	SOILS CODE FOR MAP UNIT IN NATL ATLAS		T03
SOILS_A	AREA IN SOILS MAP UNIT	HA	T03
SORG_G_A	SORGHUM FOR GRAIN	HA	A06
SORG_G_Y	SORGHUM FOR GRAIN YIELD	KG	A06
SORG_S_A	SORGHUM FOR SILAGE OR GRAZING	HA	A06
SORG_S_Y	SORGHUM FOR SILAGE YIELD	KG	A06
SOURCE	SOURCE OF DATA		Q97
SOURCE_N	NUMBER OF SOURCES WITHIN THE COUNTY		K90
SOYBN_A	SOYBEANS FOR BEANS	HA	A06
SOYBN_Y	SOYBEANS FOR BEANS YIELD	KG	A06
SO2	SO2 EMISSIONS	KG*E6	K88
SO2	SO2 EMISSIONS	KG*E3	K90
SO2	SO2 EMISSIONS	KG*E3	K91
SO2	SO2 EMISSIONS	KG*E3	K92
SO2_ANNL	SO2 EMISSIONS, ANNUAL	KG*E6	K82
SO2_ANNL	SO2 CONCENTRATION, ANNUAL	MG/M3	K85
SO2_ANNL	SO2 CONCENTRATION, ANNUAL	MG/M3	K86
SO2_ANNL	SO2 CONCENTRATION, ANNUAL	MG/M3	K87
SO2_APR	APRIL SO2 EMISSIONS	KG*E6	K82
SO2_AUG	AUGUST SO2 EMISSIONS	KG*E6	K82
SO2_DEC	DECEMBER SO2 EMISSIONS	KG*E6	K82
SO2_FALL	SO2 CONCENTRATION, FALL	MG/M3	K85
SO2_FALL	SO2 CONCENTRATION, FALL	MG/M3	K86
SO2_FALL	SO2 CONCENTRATION, FALL	MG/M3	K87
SO2_FEB	FEBRUARY SO2 EMISSIONS	KG*E6	K82
SO2_JAN	JANUARY SO2 EMISSIONS	KG*E6	K82
SO2_JUL	JULY SO2 EMISSIONS	KG*E6	K82
SO2_JUN	JUNE SO2 EMISSIONS	KG*E6	K82
SO2_MAR	MARCH SO2 EMISSIONS	KG*E6	K82
SO2_MAY	MAY SO2 EMISSIONS	KG*E6	K82
SO2_N	SO2, NUMBER OF SOURCES		K91
SO2_N	SO2, NUMBER OF SOURCES		K92

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
SO2_NOV	NOVEMBER SO2 EMISSIONS	KG*E6	K82
SO2_OCT	OCTOBER SO2 EMISSIONS	KG*E6	K82
SO2_SEP	SEPTEMBER SO2 EMISSIONS	KG*E6	K82
SO2_SPRG	SO2 CONCENTRATION, SPRING	MG/M3	K85
SO2_SPRG	SO2 CONCENTRATION, SPRING	MG/M3	K86
SO2_SPRG	SO2 CONCENTRATION, SPRING	MG/M3	K87
SO2_SUMR	SO2 CONCENTRATION, SUMMER	MG/M3	K85
SO2_SUMR	SO2 CONCENTRATION, SUMMER	MG/M3	K86
SO2_SUMR	SO2 CONCENTRATION, SUMMER	MG/M3	K87
SO2_WNTR	SO2 CONCENTRATION, WINTER	MG/M3	K85
SO2_WNTR	SO2 CONCENTRATION, WINTER	MG/M3	K86
SO2_WNTR	SO2 CONCENTRATION, WINTER	MG/M3	K87
SO4	SO4 EMISSIONS	KG*E3	K90
SO4	SO4 EMISSIONS	KG*E3	K91
SO4	SO4 EMISSIONS	KG*E3	K92
SO4	DISSOLVED SULFATE	UEQ/L	Q72
SO4	DISSOLVED SULFATE	UEQ/L	Q91
SO4_ANNL	SO4 CONCENTRATION, ANNUAL	MG/M3	K85
SO4_ANNL	SO4 CONCENTRATION, ANNUAL	MG/M3	K86
SO4_ANNL	SO4 CONCENTRATION, ANNUAL	MG/M3	K87
SO4_C	SULFATE METHOD CODE		Q91
SO4_CONC	SO4 ANNUAL WEIGHTED MEAN CONC.	MG/L	K83
SO4_CONC	SO4 ANNUAL WEIGHTED MEAN CONC.	MG/L	K93
SO4_CONC	SO4 ANNUAL WEIGHTED MEAN CONC.	MG/L	K94
SO4_DEP	SO4 ANNUAL WET DEPOSITION	G/M2	K83
SO4_DEP	SO4 ANNUAL WET DEPOSITION	G/M2	K93
SO4_DEP	SO4 ANNUAL WET DEPOSITION	G/M2	K94
SO4_FALL	SO4 CONCENTRATION, FALL	MG/M3	K85
SO4_FALL	SO4 CONCENTRATION, FALL	MG/M3	K86
SO4_FALL	SO4 CONCENTRATION, FALL	MG/M3	K87
SO4_FLAG	SO4 CRITERIA NOT MET		K93
SO4_N	SO4, NUMBER OF SOURCES		K91
SO4_N	SO4, NUMBER OF SOURCES		K92
SO4_PCE	SO4 PERCENT COLLECTION EFFICIENCY	%	K93
SO4_PCE	SO4 PERCENT COLLECTION EFFICIENCY	%	K94
SO4_PPT	SO4 PERCENT TOTAL PRECIPITATION	%	K93
SO4_PPT	SO4 PERCENT TOTAL PRECIPITATION	%	K94
SO4_PVC	PERCENT SAMPLES WITH SO4 VALUES	%	K94
SO4_PVSL	SO4 PERCENT VALID SAMPLE LENGTH	%	K93
SO4_SPRG	SO4 CONCENTRATION, SPRING	MG/M3	K85
SO4_SPRG	SO4 CONCENTRATION, SPRING	MG/M3	K86
SO4_SPRG	SO4 CONCENTRATION, SPRING	MG/M3	K87
SO4_SUMR	SO4 CONCENTRATION, SUMMER	MG/M3	K85
SO4_SUMR	SO4 CONCENTRATION, SUMMER	MG/M3	K86
SO4_SUMR	SO4 CONCENTRATION, SUMMER	MG/M3	K87
SO4_WET	SO4 ANNUAL WET ADJ DEPOSITION	G/M2	K83
SO4_WNTR	SO4 CONCENTRATION, WINTER	MG/M3	K85

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
SO4_WNTR	SO4 CONCENTRATION, WINTER	MG/M3	K86
SO4_WNTR	SO4 CONCENTRATION, WINTER	MG/M3	K87
SP_C	SPECIES AND STRAIN OF FISH CAUGHT	CODE	Q77
SP_FIR_A	SPRUCE-FIR FOREST	HA	F01
SP_N	SPECIES AND STRAIN OF FISH CAUGHT		Q75
SPAWNHAB	SUIT. OF SUBSTRATE FOR TROUT REPROD		Q81
SPCAUGHT	SPECIES AND STRAIN OF FISH CAUGHT		Q76
SPCAUGHT	SPECIES AND STRAIN OF FISH CAUGHT		Q79
SPP_C	SPECIES STOCKED CODE		Q80
SRC_C	SOURCE CODE (99=ALL SOURCES)		K82
ST	STATE CODE LETTERS		B01
ST	INDIVIDUAL STATE CODE		Q82
STACK_HT	STACK HEIGHT	M	K90
STATE	FIPS STATE NUMBER		A06
STATE	FIPS STATE NUMBER		B01
STATE	FIPS STATE NUMBER		B07
STATE	FIPS STATE NUMBER		C07
STATE	FIPS STATE NUMBER		C08
STATE	FIPS STATE NUMBER		F01
STATE	FIPS STATE NUMBER		F06
STATE	FIPS STATE NUMBER		F08
STATE	FIPS STATE NUMBER		K82
STATE	FIPS STATE NUMBER		K83
STATE	FIPS STATE NUMBER		K86
STATE	FIPS STATE NUMBER		K87
STATE	FIPS STATE NUMBER		K88
STATE	FIPS STATE NUMBER		K90
STATE	FIPS STATE NUMBER		K91
STATE	FIPS STATE NUMBER		K92
STATE	FIPS STATE NUMBER		K94
STATE	FIPS STATE NUMBER		K97
STATE	FIPS STATE NUMBER		L07
STATE	FIPS STATE NUMBER		L08
STATE	FIPS STATE*NUMBER		P03
STATE	FIPS STATE NUMBER		Q67
STATE	FIPS STATE NUMBER		Q68
STATE	FIPS STATE NUMBER		Q71
STATE	FIPS STATE NUMBER		Q72
STATE	FIPS STATE NUMBER		Q73
STATE	FIPS STATE NUMBER		Q74
STATE	FIPS STATE NUMBER		Q75
STATE	FIPS STATE NUMBER		Q76
STATE	FIPS STATE NUMBER		Q77
STATE	FIPS STATE NUMBER		Q78
STATE	FIPS STATE NUMBER		Q79
STATE	FIPS STATE NUMBER		Q80
STATE	FIPS STATE NUMBER		Q81

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
STATE	FIPS STATE NUMBER		Q82
STATE	FIPS STATE NUMBER		Q84
STATE	FIPS STATE NUMBER		Q85
STATE	FIPS STATE NUMBER		Q86
STATE	FIPS STATE NUMBER		Q87
STATE	FIPS STATE NUMBER		Q88
STATE	FIPS STATE NUMBER		Q89
STATE	FIPS STATE NUMBER		Q90
STATE	FIPS STATE NUMBER		Q91
STATE	FIPS STATE NUMBER		Q92
STATE	FIPS STATE NUMBER		Q93
STATE	FIPS STATE NUMBER		Q94
STATE	FIPS STATE NUMBER		Q95
STATE	FIPS STATE NUMBER		Q96
STATE	FIPS STATE NUMBER		Q97
STATE	FIPS STATE NUMBER		T03
STATE_A	STATE OWNED AREA	HA	B07
STATEP	POINTER TO STATE STATION IS IN		Q86
STATEP	POINTER TO STATE STATION IS IN		Q87
STATION	LAKE STATION		Q67
STATION	LAKE STATION		Q68
STATION	LAKE STATION		Q71
STATION	LAKE STATION		Q72
STATION	LAKE STATION		Q73
STATION	LAKE STATION		Q74
STATION	LAKE STATION		Q75
STATION	LAKE STATION		Q76
STATION	LAKE STATION		Q77
STATION	LAKE STATION		Q78
STATION	LAKE STATION		Q79
STATION	LAKE STATION		Q80
STATION	LAKE STATION		Q81
STATION	LAKE STATION		Q82
STATION	STATION NUMBER WITHIN COUNTY		Q85
STATION	STATION NUMBER WITHIN COUNTY		Q88
STATION	STATION NUMBER WITHIN COUNTY		Q89
STATION	STATION NUMBER WITHIN COUNTY		Q90
STATION	STATION NUMBER WITHIN COUNTY		Q91
STATION	STATION NUMBER WITHIN COUNTY		Q92
STATION	STATION NUMBER WITHIN COUNTY		Q93
STATION	STATION NUMBER WITHIN COUNTY		Q94
STATION	STATION NUMBER WITHIN COUNTY		Q95
STATION	STATION NUMBER WITHIN COUNTY		Q96
STATION	STATION NUMBER WITHIN COUNTY		Q97
STATIONP	POINTER TO STATION		Q86
STATIONP	POINTER TO STATION NUMBER IN COUNTY		Q87
STDECLIN	BROOK TROUT DECLINING		Q68

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
STLOST	BROOK TROUT LOST		Q68
STN_C	STATION CODE		Q67
STN_C	STATION CODE		Q68
STN_C	STATION CODE		Q71
STN_C	STATION CODE		Q72
STN_C	STATION CODE		Q73
STN_C	STATION CODE		Q74
STN_C	STATION CODE		Q75
STN_C	STATION CODE		Q76
STN_C	STATION CODE		Q77
STN_C	STATION CODE		Q78
STN_C	STATION CODE		Q79
STN_C	STATION CODE		Q80
STN_C	STATION CODE		Q81
STN_C	STATION CODE		Q82
STN_C	PRIMARY STATION CODE (STORET OR BNL)		Q93
STN_NO	BNL STATION NUMBER WITHIN REACH		Q87
STNNAME	STATION LANDMARK NAME		Q82
STNNAME	STATION LANDMARK NAME		Q97
STNTYP_C	STATION TYPE	CODE	Q82
STNTYP_C	STATION TYPE (STREAM, LAKE, ETC.)	CODE	Q97
STOK	BROOK TROUT HEALTHY		Q68
STORET_C	STORET AGENCY CODE		Q86
STOSTN_C	STORET STATION CODE		Q86
STPROB	BROOK TROUT LOST, PROB. ACID RAIN		Q68
STRAIN_C	SPECIES STRAIN STOCKED CODE		Q80
STSTOCK	BROOK TROUT STOCKING CODE		Q68
SUBSTR_C	PREDOMINANT SUBSTRATE AT STATION CODE		Q81
SUMTYP	ALWAYS 1 THIS TIME		K94
SURFAC_A	SURFACE AREA	KM2	Q81
SURFAC_A	SURFACE AREA	KM2	Q94
SURFAC_C	SURFACE AREA METHOD CODE		Q94
SVCN	STATE VISUAL CONTINUITY NUMBER		B01
TEMP_ANN	ANNUAL AVERAGE TEMPERATURE	C	C07
TEMP_APR	APRIL AVERAGE TEMPERATURE	C	C07
TEMP_AUG	AUGUST AVERAGE TEMPERATURE	C	C07
TEMP_C	TEMPERATURE METHOD	CODE	Q89
TEMP_DEC	DECEMBER AVERAGE TEMPERATURE	C	C07
TEMP_FEB	FEBRUARY AVERAGE TEMPERATURE	C	C07
TEMP_JAN	JANUARY AVERAGE TEMPERATURE	C	C07
TEMP_JUL	JULY AVERAGE TEMPERATURE	C	C07
TEMP_JUN	JUNE AVERAGE TEMPERATURE	C	C07
TEMP_MAR	MARCH AVERAGE TEMPERATURE	C	C07
TEMP_MAY	MAY AVERAGE TEMPERATURE	C	C07
TEMP_NOV	NOVEMBER AVERAGE TEMPERATURE	C	C07
TEMP_OCT	OCTOBER AVERAGE TEMPERATURE	C	C07
TEMP_SEP	SEPTEMBER AVERAGE TEMPERATURE	C	C07

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
TEMP_WTR	WATER TEMPERATURE	C	Q73
TEMP_WTR	WATER TEMPERATURE	C	Q89
TOBAC_A	TOBACCO	HA	A06
TOBAC_Y	TOBACCO YIELD	KG	A06
TOTAL_A	TOTAL AREA EXCLUDING >16HA LAKES	HA	L07
TRANSP_C	TRANSPARENCY METHOD CODE		Q89
TRANSPAR	TRANSPARENCY, SECCHI DEPTH	M	Q89
TREE_BIO	COMMERCIAL FOREST TREE BIOMASS	KG*E3/HA	F06
TREE_C	TREE SPECIES NUMERIC CODE		F06
TREE_GSV	TREE GROWING STOCK VOLUME	FT3*E6	F06
TREE_VOL	TREE VOLUME IN COMMERCIAL FOREST	M3/HA	F06
TSP	TOTAL SUSPENDED PARTICULATES	KG*E3	K90
TSP	TOTAL SUSPENDED PARTICULATES	KG*E3	K91
TSP	TOTAL SUSPENDED PARTICULATES	KG*E3	K92
TSP_N	TSP, NUMBER OF SOURCES		K91
TSP_N	TSP, NUMBER OF SOURCES		K92
TURN_C	TURNOVER TIME METHOD CODE		Q94
TURNTIME	TURNOVER TIME OF THE LAKE	DAYS	Q81
TURNTIME	TURNOVER TIME OF LAKE	DAYS	Q94
URB_F_77	URBAN-FEDERAL LAND AREA - 1977	HA	L08
URB_LAND	URBAN LAND AREAS	HA	L07
URB_N_77	URBAN NONFEDERAL LAND AREA - 1977	HA	L08
URBAN_77	TOTAL URBAN LAND AREA - 1977	HA	L08
USFS_UN			F06
UTM_H_CO	HORIZONTAL COORDINATE FOR UTM MEAS.		K90
UTM_V_CO	VERTICAL COORDINATE FOR UTM MEAS.		K90
VEG_C	VEGETATION CODE, 1966 KUCHLER, 001-106		D03
VEG_DSCP	VEGETATION DESCRIPTION		D03
VEGA_C_A	ADJ. VEGETATION CENTRAL AREA	HA	D03
VEGA_C_N	ADJ. VEGETATION NO. COUNTIES IN CENTRAL		D03
VEGA_C_P	FRACTION OF ADJ. VEGETATION IN CENTRAL		D03
VEGA_E_A	ADJ. VEGETATION EASTERN AREA	HA	D03
VEGA_E_N	ADJ. VEGETATION NO. COUNTIES IN EAST		D03
VEGA_E_P	FRACTION OF ADJ. VEGETATION IN EAST		D03
VEGA_N_A	ADJ. VEGETATION NATIONAL AREA	HA	D03
VEGA_N_N	ADJ. VEGETATION NATIONAL NO. COUNTIES		D03
VEGA_N_P	FRACTION OF ADJ. VEGETATION IN NATION		D03
VEGA_W_A	ADJ. VEGETATION WESTERN AREA	HA	D03
VEGA_W_N	ADJ. VEGETATION NO. COUNTIES IN WEST		D03
VEGA_W_P	FRACTION OF ADJ. VEGETATION IN WEST		D03
VEGP_C_A	POT. VEGETATION CENTRAL AREA	HA	D03
VEGP_C_N	POT. VEGETATION NO. COUNTIES IN CENTRAL		D03
VEGP_C_P	FRACTION OF POT. VEGETATION IN CENTRAL		D03
VEGP_E_A	POT. VEGETATION EASTERN AREA	HA	D03
VEGP_E_N	POT. VEGETATION NO. COUNTIES IN EAST		D03
VEGP_E_P	FRACTION OF POT. VEGETATION IN EAST		D03
VEGP_N_A	POT. VEGETATION NATIONAL AREA	HA	D03

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
VEGP_N_N	POT. VEGETATION NATIONAL NO. COUNTIES		D03
VEGP_N_P	FRACTION OF POT. VEGETATION IN NATION		D03
VEGP_W_A	POT. VEGETATION WESTERN AREA	HA	D03
VEGP_W_N	POT. VEGETATION NO. COUNTIES IN WEST		D03
VEGP_W_P	FRACTION OF POT. VEGETATION IN WEST		D03
VOC	VOC EMISSIONS	KG*E3	K90
VOC	VOC EMISSIONS	KG*E3	K91
VOC	VOC EMISSIONS	KG*E3	K92
VOC_N	VOC, NUMBER OF SOURCES		K91
VOC_N	VOC, NUMBER OF SOURCES		K92
VOL_C	VOLUME METHOD CODE		Q94
WATER_A	COUNTY WATER AREA FROM FOREST SERVICE	HA	B07
WATER_77	CENSUS WATER AREA - 1977	HA	L08
WATERS_N	NO. OF WATERS STOCKED WITH GIVEN FISH		Q80
WFDECLIN	WHITEFISH DECLINING		Q68
WFLOST	WHITEFISH LOST		Q68
WFOK	WHITEFISH HEALTHY		Q68
WFPROB	WHITEFISH LOST, PROB. ACID RAIN		Q68
WFSTOCK	WHITEFISH STOCKING CODE		Q68
WHEAT_A	WHEAT	HA	A06
WHEAT_Y	WHEAT YIELD	KG	A06
WOODY_A	WOODLAND PASTURED OR NOT	HA	A06
WP_HEM_A	WHITE PINE-HEMLOCK FOREST	HA	F01
WPINE_A	WHITE PINE FOREST	HA	F01
WSDECLIN	WHITE SUCKER DECLINING		Q68
WSLOST	WHITE SUCKER LOST		Q68
WSOK	WHITE SUCKER HEALTHY		Q68
WSPROB	WHITE SUCKER LOST, PROB. ACID RAIN		Q68
WT_MAX	MAXIMUM WEIGHT	G	Q75
WT_MAX	MAXIMUM WEIGHT	G	Q76
WT_MAX	MAXIMUM WEIGHT	G	Q77
WT_MAX	MAXIMUM WEIGHT	G	Q79
WT_MEAN	MEAN WEIGHT	G	Q75
WT_MEAN	MEAN WEIGHT	G	Q76
WT_MEAN	MEAN WEIGHT	G	Q77
WT_MEAN	MEAN WEIGHT	G	Q79
WT_MIN	MINIMUM WEIGHT	G	Q75
WT_MIN	MINIMUM WEIGHT	G	Q76
WT_MIN	MINIMUM WEIGHT	G	Q77
WT_MIN	MINIMUM WEIGHT	G	Q79
WT_TOTAL	TOTAL WEIGHT	KG	Q75
WT_TOTAL	TOTAL WEIGHT	KG	Q76
WT_TOTAL	TOTAL WEIGHT	KG	Q77
WT_TOTAL	TOTAL WEIGHT	KG	Q79
WT_TOTAL	TOTAL WEIGHT OF FISH STOCKED	KG	Q80
WTRSHD_C	WATERSHED CODE		Q82
YEAR	YEAR		F01

ADDNET DATA BASE VARIABLE DIRECTORY

VARIABLE	LABEL		DSN
YEAR	YEAR		F08
YEAR	YEAR		K82
YEAR	YEAR		K85
YEAR	YEAR		K88
YEAR	YEAR		K93
YEAR	YEAR		K95
YEAR	YEAR		K97
YEAR	YEAR		K99
YEAR	YEAR LAST SAMPLE WAS TAKEN		Q68
YEAR_1	YEAR FIRST SAMPLE WAS TAKEN		Q68
YEARSPAN	YEARS BETWEEN FIRST AND LAST PH SAMPLE		Q67
YPDECLIN	YELLOW PERCH DECLINING		Q68
YPLOST	YELLOW PERCH LOST		Q68
YPOK	YELLOW PERCH HEALTHY		Q68
YPPROB	YELLOW PERCH LOST, PROB. ACID RAIN		Q68
ZN	DISSOLVED ZINC AS ZN	UG/L	Q72

APPENDIX C

ADDNET Contact Network

Table C.1. NAPAP Affiliates Sorted by Task Group

TG=NAPAP Headquarters

Name	Phone	FTS	Affiliation
Bennett, K.	(203) 358-7019		Champion International Corp.
Bentley, O.	(202) 447-5923	447-5923	U.S. Department of Agriculture
Bridgewater, A.L.	(202) 357-9715	357-9715	National Science Foundation
Byrne, J.	(202) 377-3567		National Oceanic & Atmospheric Admin.
Cotner, M.	(202) 475-4868	475-4868	U.S. Department of Agriculture
Downing, R.	(202) 395-5773	395-5773	Natl Acid Precipitation Assessment Prog.
Drucker, H.	(312) 972-3804	972-3804	Argonne National Laboratory
Elkins, C.	(202) 382-7407	382-7407	U.S. Environmental Protection Agency
Fallon, W.E.	(202) 382-5739	382-5739	U.S. Environmental Protection Agency
Harmison, L.T.	(301) 333-2650	333-2650	U.S. Public Health Service
Harris III, W.F.	(202) 357-7332	357-7332	National Science Foundation
Harris, C.	(202) 477-7441	447-7441	U.S. Department of Agriculture
Hinds, W.T.	(202) 382-5738	382-5738	U.S. Environmental Protection Agency
Holden, J.D.	(202) 395-5773	395-5773	Natl Acid Precipitation Assessment Prog.
Jordy, G.Y.	(301) 353-2971	233-2971	U.S. Department of Energy
Kulp, J.L.	(202) 395-5773	395-5773	Natl Acid Precipitation Assessment Prog.
Machta, L.		427-7684	National Oceanic & Atmospheric Admin.
Maginnis, T.	(202) 377-4634	377-4634	National Oceanic & Atmospheric Admin.
Mahoney, J.	(415) 768-5893		Bechtel Corporation
Maloley, N.	(202) 343-7351	343-7351	U.S. Department of the Interior
Manowitz, B.	(516) 282-3037	666-3037	Brookhaven National Laboratory
McKetta, J.J.	(512) 471-5227		University of Texas
McNeal, R.J.	(202) 755-8566	755-8566	National Aeronautics & Space Admin.
Perhac, R.M.	(415) 855-2572		Electric Power Research Institute
Richmond, C.R.	(615) 574-4332	624-4332	Oak Ridge National Laboratory
Ringold, P.L.	(202) 395-5773	395-5773	Natl Acid Precipitation Assessment Prog.
Riordan, C.	(202) 382-5767	382-5767	U.S. Environmental Protection Agency
Schafer, J.	(202) 395-3742	395-3742	Council on Environmental Quality
Smith, M.	(202) 456-7993	456-7993	White House Office of Policy Development
Thomas, L.M.	(202) 382-4700		U.S. Environmental Protection Agency
Tilford, S.	(202) 755-8596	755-8596	National Aeronautics & Space Admin.

TG=A. Natural Sources

Name	Phone	FTS	Affiliation
Adams, D.F.	(208) 885-6387		University of Idaho
Albritton, D.L.	(303) 497-5785	320-5785	National Oceanic & Atmospheric Admin.
Charlson, R.	(206) 543-2537		University of Washington
Cline, J.	(214) 851-8813		Mobil Research and Development Corp.
Carl Jr., H.	(206) 526-6208	392-6208	National Oceanic & Atmospheric Admin.
Fahey, D.W.	(303) 497-5277	320-5277	National Oceanic & Atmospheric Admin.
Farwell, S.O.	(208) 885-6387		University of Idaho
Fehsenfeld, F.C.	(303) 497-5819	320-5819	National Oceanic & Atmospheric Admin.
Gammon, R.H.	(206) 526-6208	392-6208	National Oceanic & Atmospheric Admin.
Gillette, D.			National Oceanic & Atmospheric Admin.
Goldan, P.D.	(303) 497-3814	320-3814	National Oceanic & Atmospheric Admin.
Kuster, W.C.	(303) 497-5785	320-5785	National Oceanic & Atmospheric Admin.
Lamb, B.	(509) 335-1526		Washington State University
Piotrowicz, S.R.	(305) 361-4397	350-1397	National Oceanic & Atmospheric Admin.
Robinson, E.	(509) 335-1526		Washington State University
Westberg, H.	(509) 335-1526		Washington State University
Wilson, W.E.	(919) 541-2551	629-2551	U.S. Environmental Protection Agency

TG=B. Man-made Sources

Name	Phone	FTS	Affiliation
Beecy, D.J.	(301) 353-2782	233-2782	U.S. Department of Energy
Blaustein, B.D.	(412) 675-6076	723-6076	U.S. Department of Energy
Bosch, J.C.	(919) 541-5694	629-5694	U.S. Environmental Protection Agency
Bradow, R.L.	(919) 541-3037	629-3037	U.S. Environmental Protection Agency
Briggs, B.	(202) 252-4349	252-4349	U.S. Department of Energy
Cranford, B.	(301) 353-2773	233-2773	U.S. Department of Energy
Dye, R.	(301) 353-2613	233-2613	U.S. Department of Energy
Ekmann, J.	(412) 675-5738	723-5738	Pittsburgh Energy Technology Center
Graves, K.K.	(703) 642-1120		E.H. Pechan & Associates, Inc.
Gschwandtner, G.	(919) 383-8606		E.H. Pechan & Associates, Inc.
Hanson, D.	(312) 972-3448	972-3448	Argonne National Laboratory
Hochheiser, W.	(202) 252-9686	252-9686	U.S. Department of Energy
Homolya, J.	(919) 541-9100		Radian Corporation
Jones, L.G.	(919) 541-7716	629-7716	U.S. Environmental Protection Agency
Kelley, J.L.	(202) 252-5261	252-5261	U.S. Department of Energy
Lukow, T.		923-4069	U.S. Department of Energy
Mann, C.	(919) 541-5694	629-5694	U.S. Environmental Protection Agency
McBrien, S.V.	(703) 883-7685		The MITRE Corporation
Nobley, J.D.	(919) 541-2612	629-2612	U.S. Environmental Protection Agency
Pechan, E.H.	(703) 642-1120		E.H. Pechan & Associates, Inc.
Price, B.H.	(703) 883-7648		The MITRE Corporation
Sabo, E.J.	(703) 591-7575		Engineering Science
Siegel, J.	(301) 353-3965	233-3965	U.S. Department of Energy
Toothman, D.	(703) 591-7575		Engineering Science
Voelker, G.	(301) 353-2683	233-2683	U.S. Department of Energy
Wagner, J.	(617) 275-5444		GCA/Technology Division
Wilson, J.H.	(703) 642-1120		E.H. Pechan & Associates, Inc.

Table C.1. ADDNET Contact Network, January 1987
NAPAP Affiliates, Sorted by Task Group

TG=C. Atmospheric Processes

Name	Phone	FTS	Affiliation
Alkezweeny, A.J.	(509) 375-3897		Pacific Northwest Laboratory
Ammons, J.M.			Florida State University
Anderson, J.G.	(617) 495-5922		Harvard University
Andreae, M.O.			Florida State University
Baker, M.B.	(206) 545-3799		University of Washington
Benkovitz, C.M.	(516) 282-4135	666-4135	Brookhaven National Laboratory
Bhumralkar, C.	(301) 333-7684		National Oceanic & Atmospheric Admin.
Bowne, N.E.	(203) 289-8631		TRC Environmental Consultants, Inc.
Brune, W.H.			Harvard University
Business, K.M.	(509) 444-3818	444-3818	Pacific Northwest Laboratory
Calvert, J.G.	(393) 497-1435	320-1435	National Center for Atmospheric Research
Carmichael, G.R.	(319) 353-4193		University of Iowa
Chang, J.	(303) 497-1680	320-1680	National Center for Atmospheric Research
Church, H.W.	(505) 844-9123	844-9123	Sandia National Laboratories
Church, T.	(302) 738-2558		University of Delaware
Clark, T.L.	(919) 541-3372	629-3372	U.S. Environmental Protection Agency
Covert, D.S.	(206) 543-4383		University of Washington
Crawford, T.L.	(205) 386-2788	872-8788	Tennessee Valley Authority
Dickson, C.R.	(208) 526-2328	583-2328	National Oceanic & Atmospheric Admin.
Draxler, R.R.	(301) 333-8811	333-8811	National Oceanic & Atmospheric Admin.
Easter, R.C.	(509) 376-4690	444-4690	Pacific Northwest Laboratory
Einfeld, W.	(505) 844-2234	844-2234	Sandia National Laboratories
Erickson, K.G.			University of Washington
Ferber, G.J.	(301) 333-8811	333-8811	National Oceanic & Atmospheric Admin.
Galvin, P.J.	(518) 457-7230		New York State Dept. of Environ. Conser.
Gatz, D.F.	(217) 333-2213	957-2213	Illinois State Water Survey
Hales, J.M.	(509) 376-8447	444-8447	Pacific Northwest Laboratory
Harrison, H.	(206) 543-4596		University of Washington
Hobbs, P.V.	(206) 543-6027		University of Washington
Holt, B.D.	(312) 972-4347	972-4347	Argonne National Laboratory
Howard, C.J.	(303) 497-5820	320-5820	National Oceanic & Atmospheric Admin.
Huebert, B.J.	(303) 473-2233		Colorado College
Knap, A.H.	(804) 924-0569		University of Virginia
Kumar, R.	(312) 972-4342	972-4342	Argonne National Laboratory
Lamb, R.G.	(919) 541-4181	629-4181	U.S. Environmental Protection Agency
Larson, T.V.	(206) 543-6815		University of Washington
Laulainen, N.S.	(509) 376-8320	444-8320	Pacific Northwest Laboratory
Lee, Y.N.	(516) 282-3294	666-3294	Brookhaven National Laboratory
Lettenmaier, D.P.			University of Washington
Liu, M.K.	(415) 472-4011		Systems Applications Inc.
Liu, S.C.	(303) 497-3356	320-3356	National Oceanic & Atmospheric Admin.
McFarland, M.	(302) 772-2548		E.I. DuPont de Nemours & Company
McLaren, E.	(518) 457-8286		State University of New York/Albany
McMurry, P.H.	(612) 373-5647		University of Minnesota
Meagher, J.F.	(205) 386-2788	872-8788	Tennessee Valley Authority
Michael, P.	(516) 282-2264	666-2264	Brookhaven National Laboratory
Mohnen, V.A.	(518) 457-4604		State University of New York/Albany
Novak, J.H.	(919) 541-4545	629-4545	U.S. Environmental Protection Agency
Pagnotti, V.	(518) 457-7688		New York State Dept. of Environ. Conser.
Patrinos, A.A.N.			U.S. Department of Energy
Peters, L.K.	(606) 257-4959		University of Kentucky
Pueschel, R.F.	(303) 497-6270	320-6270	National Oceanic & Atmospheric Admin.
Rahn, K.	(401) 792-6234		University of Rhode Island
Ravishankara, A.R.	(303) 497-5821	320-5821	National Oceanic & Atmospheric Admin.
Schiermeier, F.A.	(919) 541-4541	629-4541	U.S. Environmental Protection Agency
Seliga, T.A.	(614) 422-0764		Ohio State University
Semonin, R.G.	(217) 333-4967		Illinois State Water Survey
Shipley, S.T.		928-3989	National Aeronautics & Space Admin.
Slinn, W.G.N.	(509) 376-8320	444-8320	Pacific Northwest Laboratory
Stensland, G.J.	(217) 333-2213	957-2213	Illinois State Water Survey
Tanner, R.L.	(516) 282-3578	666-3578	Brookhaven National Laboratory
Thorp, J.M.	(509) 376-3963	444-3963	Pacific Northwest Laboratory
Uthe, E.	(415) 326-4667		SRI International
Vukovich, F.	(919) 541-5813		Research Triangle Institute
Wyngaard, J.	(303) 497-8913	320-8913	National Center for Atmospheric Research
Zak, B.D.	(505) 844-7328	844-7328	Sandia National Laboratories

TG=D. Deposition Monitoring

Name	Phone	FTS	Affiliation
Artz, R.		427-7684	National Oceanic & Atmospheric Admin.
Baumgardner, R.	(919) 541-4625	629-4625	U.S. Environmental Protection Agency
Bradford, W.L.	(703) 860-6834	928-6834	U.S. Geological Survey
Caviston, K.J.	(919) 541-4624	629-4624	Northrop Services, Inc.
Daly, D.	(509) 376-4179	444-4179	Pacific Northwest Laboratory
De Pena, R.G.	(814) 865-3526		Pennsylvania State University
Durham, J.L.		629-2183	U.S. Environmental Protection Agency
Erdmann, D.	(404) 221-4806	242-4806	U.S. Geological Survey
Evans, E.G.	(919) 541-3887	629-3887	U.S. Environmental Protection Agency
Feely, H.W.	(212) 620-3625		U.S. Department of Energy
Finkelstein, P.L.	(919) 541-2347	629-2347	U.S. Environmental Protection Agency
Frisch, J.	(703) 860-6877	959-6877	U.S. Geological Survey
Gibson, J.H.	(303) 491-5571		Colorado State University
Hirsch, R.	(703) 860-6927	928-6927	U.S. Geological Survey
Hosker Jr., R.P.	(615) 576-1248	626-1248	National Oceanic & Atmospheric Admin.
Hutchison, B.A.	(615) 576-1250	626-1250	National Oceanic & Atmospheric Admin.

Table C.1. ADDNET Contact Network, January 1987
NAPAP Affiliates, Sorted by Task Group

TG=D. Deposition Monitoring

Name	Phone	FTS	Affiliation
Kadlecek, J.A.	(518)457-4604		State University of New York/Albany
Kapinos, F.P.	(703)648-6876	959-6876	U.S. Geological Survey
Koch, W.	(301)921-2883	921-2883	National Bureau of Standards
Lewis, R.G.	(919)541-3065	629-3065	U.S. Environmental Protection Agency
Likens, G.	(914)677-5343		Institute of Ecosystems Studies
Lindberg, S.E.	(615)574-7857	624-7857	Oak Ridge National Laboratory
Lochmuller, C.H.	(919)684-2774	629-4625	Duke University
Miller, J.M.		427-7684	National Oceanic & Atmospheric Admin.
Moses, H.	(301)353-5572	233-5572	U.S. Department of Energy
Norton, R.B.	(303)497-3878	320-3878	National Oceanic & Atmospheric Admin.
Olsen, A.R.	(509)376-4265	444-4265	Pacific Northwest Laboratory
Paur, R.J.	(919)541-3131	629-3131	U.S. Environmental Protection Agency
Peden, M.E.	(217)333-8325		Illinois State Water Survey
Pickering, R.J.	(703)860-6834	928-6834	U.S. Geological Survey
Rinella, J.F.	(503)231-2292	429-2292	U.S. Geological Survey
Rothert, J.E.	(509)376-8341	376-8341	Pacific Northwest Laboratory
Schroder, L.J.	(303)236-3605	236-3605	U.S. Geological Survey
Seilkop, S.			Analytical Sciences, Inc.
Spiller, L.	(919)541-2127	629-2127	U.S. Environmental Protection Agency
Stevens, R.K.	(919)541-3156	629-3156	U.S. Environmental Protection Agency
Switzer, P.			Stanford University
Thomson, D.W.	(814)863-1585		Pennsylvania State University
Topol, L.E.	(805)498-6771		Rockwell International
Wesely, M.L.	(312)972-5827	972-5827	Argonne National Laboratory

TG=E. Aquatic Effects

Name	Phone	FTS	Affiliation
Albers, P.H.	(301)498-0285	937-7285	U.S. Fish and Wildlife Service
Allum, M.O.	(503)757-4739	420-4739	U.S. Environmental Protection Agency
April, R.	(315)824-1000		Colgate University
Ariss, C.	(801)750-3155		Utah State University
Baker, J.	(702)736-9307		Lockhead-EMSCO
Baker, J.P.	(919)781-3150		Kilkelly Environmental Associates
Barker, J.		590-3862	U.S. Geological Survey
Blick, J.	(503)757-4310	420-4310	U.S. Environmental Protection Agency
Bowman, M.L.	(301)383-6226		Maryland Energy Administration
Boylen, C.	(518)270-6392		Rensselaer Polytechnic Institute
Brakke, D.F.	(206)676-3136		Western Washington University
Brezonik, P.L.	(612)373-2514		University of Minnesota
Charles, D.	(812)335-3091		Indiana University
Church, M.R.	(503)757-4791	420-4791	U.S. Environmental Protection Agency
Coe, J.M.	(615)574-7261	624-7261	Oak Ridge National Laboratory
Colquhoun, J.R.	(518)457-6178		New York State Dept. of Environ. Conser.
Cook, R.	(615)574-7319	624-7319	Oak Ridge National Laboratory
Coon, N.	(301)776-4880	937-7239	U.S. Fish and Wildlife Service
Cosby, B.J.	(804)924-7761		University of Virginia
Crawford, K.	(919)755-4510	672-4110	U.S. Geological Survey
Crown, R. E.	(702)798-2235	545-2235	U.S. Environmental Protection Agency
Curtis, L.R.	(503)754-3503		Oregon State University
Davis, G.	(503)757-4666	420-4666	Northrop Services, Inc.
Driscoll, C.T.	(315)423-3434		Syracuse University
Dunson, W.A.	(814)865-2461		Pennsylvania State University
Eaton, J.G.		783-9557	U.S. Environmental Protection Agency
Eilers, J.M.	(503)757-4724	420-4724	U.S. Environmental Protection Agency
Eshleman, K.	(503)757-4329	420-4329	U.S. Environmental Protection Agency
Freda, J.	(814)865-2461		Pennsylvania State University
Frost, T.M.	(608)263-2567		University of Wisconsin
Funk, D.			U.S. Forest Service
Galloway, J.N.	(804)924-0569		University of Virginia
Germann, P.			University of Virginia
Gherini, S.A.	(415)283-3771		Tetra Tech, Inc.
Glass, G.		727-5526	Environmental Research Laboratory
Gloss, S.P.		882-4251	Cornell University
Gmur, N.F.	(516)282-2490	666-2490	Brookhaven National Laboratory
Griffith, G.	(503)757-4643	420-4643	U.S. Environmental Protection Agency
Hahl, D.		562-2824	U.S. Geological Survey
Haines, T.A.	(207)581-2578		U.S. Fish and Wildlife Service
Hamilton, S.J.	(314)875-5399	276-5399	U.S. Fish and Wildlife Service
Haramis, G.M.	(301)498-0239	937-7239	U.S. Fish and Wildlife Service
Heit, M.	(212)620-3625	660-3625	U.S. Department of Energy
Holdren, G.R.	(503)757-4355	420-4355	Northrop Services, Inc.
Hook, L.	(615)574-7977	624-7977	Oak Ridge National Laboratory
Hornberger, G.M.	(804)924-0560		University of Virginia
Hudy, M.	(404)546-2234	250-2234	U.S. Fish and Wildlife Service
Hunn, J.	(314)875-5399	276-5399	U.S. Fish and Wildlife Service
Hunter Jr., M.L.	(207)581-2865		University of Maine
Jones, H.C.	(205)386-2341	872-8341	Tennessee Valley Authority
Kinney, A.	(503)753-6221	757-4666	Northrop Services, Inc.
Kratz, T.K.	(715)385-2750		University of Wisconsin
Lammers, D.			U.S. Environmental Protection Agency
Landers, D.H.	(503)757-4695	420-4695	U.S. Environmental Protection Agency
Langdon, R.			Agency of Environmental Conservation
Lasier, P.			U.S. Fish and Wildlife Service
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Table C.1. ADDNET Contact Network, January 1987
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TG=E. Aquatic Effects

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Magnuson, J.J.	(608)262-3014		University of Wisconsin
McCord, R.A.	(615)574-7827	624-7827	Oak Ridge National Laboratory
McLean, W.	(802)823-2761		Vermont State Government
Mehrle, P.	(314)875-5399	276-5399	U.S. Fish and Wildlife Service
Meier, E.	(702)798-2534	545-2534	U.S. Environmental Protection Agency
Messer, J.	(503)757-4329	420-4329	U.S. Environmental Protection Agency
Mitch, M.	(503)757-4813	420-4813	U.S. Environmental Protection Agency
Murdoch, P.	(518)472-2824	562-2824	U.S. Geological Survey
Newton, R.M.	(413)584-3946		Smith College
Nix, J.			Ouachita Baptist University
Norton, S.A.	(207)581-1954		University of Maine
Olem, H.	(615)751-7322	858-7322	Tennessee Valley Authority
Omernik, J.M.	(503)757-4613	420-4613	U.S. Environmental Protection Agency
Overton, W.S.	(503)754-3366		Oregon State University
Pagenkopf, G.K.	(406)994-4801		Montana State University
Parsons, D.J.	(209)565-3341		National Park Service
Perry, J.			University of Minnesota
Pierett, S.	(702)736-9309		Lockheed-EMSCO
Powers, C.F.	(503)757-4310	420-4310	U.S. Environmental Protection Agency
Rambo, D.L.	(503)757-4832	420-4832	U.S. Environmental Protection Agency
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Ritter, J.R.		590-3423	U.S. Geological Survey
Rose, W.J.	(608)262-2488		U.S. Geological Survey
Sale, M.J.	(615)574-7305	626-7305	Oak Ridge National Laboratory
Schnoor, J.L.	(319)335-5649		University of Iowa
Schofield, C.L.		882-4251	Cornell University
Schonbrod, R.	(702)798-2229	545-2229	U.S. Environmental Protection Agency
Schreck, C.	(503)754-4531	425-4531	U.S. Fish and Wildlife Service
Schreiber, R.K.	(304)725-2061	925-5354	U.S. Fish and Wildlife Service
Shaffer, P.		420-4665	Northrop Services, Inc.
Shoemaker, C.A.	(607)256-4897		Cornell University
Singer, R.	(518)266-6757		Rensselaer Polytechnic Institute
Stromberg, K.	(301)498-0233	937-7233	U.S. Fish and Wildlife Service
Sutherland, J.W.	(518)457-7470		New York State Dept. of Environ. Conser.
Swenson, W.A.	(715)394-8410		University of Wisconsin-Superior
Taylor, F.	(617)329-9676		New England Water Works Association
Thornton, K.W.	(501)225-7779		Ford, Thornton, Norton and Associates
Tuschall, J.	(919)549-0611	629-2577	Northrop Services, Inc.
Uttormark, P.D.	(207)581-1490		University of Maine
Van den Avyle, M.	(404)546-2234	250-2234	U.S. Fish and Wildlife Service
Watras, C.			Wisconsin Dept of Natural Resources
Watts, J.A.	(615)574-7314	624-7314	Oak Ridge National Laboratory
Webster, K.	(715)362-7616		Wisconsin Dept of Natural Resources
Wiener, J.	(608)783-6451	364-3212	U.S. Fish and Wildlife Service
Winger, P.	(404)546-2146	250-2146	U.S. Fish and Wildlife Service
Wright, J.	(804)924-0560		University of Virginia
Wright, R.F.	472 23 52 80		Norwegian Institute for Water Research
Young, R.C.	(205)386-2067	872-8067	Tennessee Valley Authority

TG=F. Terrestrial Effects

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Barnes, J.M.	(202)447-5742	447-5742	U.S. Department of Agriculture
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Brocke, R.	(315)470-6798		State University of New York/Syracuse
Bruck, R.I.	(919)737-2721		North Carolina State University
Chevone, B.I.	(703)961-6530		Virginia Polytechnic Inst. & State Univ.
Cowling, E.	(919)737-2883		NCSU Acid Precipitation Program
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DeSteigeur, E.	(704)259-0337	672-0337	U.S. Forest Service
Dochinger, L.S.	(614)369-4475	975-9207	U.S. Forest Service
Douglass, J.E.	(704)524-2128		U.S. Forest Service
Dunn, P.H.	(714)351-6555	796-6555	U.S. Forest Service
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Table C.1. ADDNET Contact Network, January 1987
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McLaughlin, S.B.	(615) 574-7358	624-7358	Oak Ridge National Laboratory
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Table C.1. ADDNET Contact Network, January 1987
NAPAP Affiliates, Sorted by Task Group

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Jones, J.	(919) 541-2489	629-2489	U.S. Environmental Protection Agency
Laseke Jr., B.A.	(513) 782-4718		PEI Associates, Inc.
Martin, G.B.	(919) 541-7504	629-7504	U.S. Environmental Protection Agency
Maxwell, M.A.	(919) 541-3091	629-3091	U.S. Environmental Protection Agency
Perlsweig, M.	(301) 353-4399	233-4399	U.S. Department of Energy
Singh, S.	(615) 574-6639	624-6639	Oak Ridge National Laboratory
Williams, J.	(412) 675-5727	723-5727	Pittsburgh Energy Technology Center

TG=I. Assessments and Policy Analysis

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Christensen, S.W.	(615) 574-7394	624-7394	Oak Ridge National Laboratory
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Foley, G.J.	(202) 382-7445	382-7445	U.S. Environmental Protection Agency
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Hildebrand, S.G.	(615) 574-7329	624-7329	Oak Ridge National Laboratory
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Knudson, D.A.	(312) 972-5102	972-5102	Argonne National Laboratory
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Larson, C.	(703) 860-6913	928-6913	U.S. Geological Survey
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Marmorek, D.R.	(604) 689-2912		ESSA Ltd.
Matheny, R.	(202) 382-5718	382-5718	U.S. Environmental Protection Agency
McCollough, I.L.	(615) 574-6661	624-6661	Oak Ridge National Laboratory
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Moskowitz, P.D.	(516) 282-2017	666-2017	Brookhaven National Laboratory
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Placet, M.L.		235-3776	Argonne National Laboratory
Princiotta, F.T.	(919) 541-2821	629-2821	U.S. Environmental Protection Agency
Rae, D.	(617) 266-0500		Charles River Associates
Reagan, J.A.	(919) 541-4486	629-4486	U.S. Environmental Protection Agency
Reeb, D.	(518) 457-7917		State University of New York/Albany
Renne, D.S.	(509) 376-5063	444-5063	Pacific Northwest Laboratory
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Rosen, A.E.	(615) 574-7161	624-7161	Oak Ridge National Laboratory
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Table C.1. ADDNET Contact Network, January 1987
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Stukel, J.	(217)333-8861		University of Illinois - Urbana
Tirpak, D.A.	(202)475-8825	475-8825	U.S. Environmental Protection Agency
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Winters, D.			U.S. Environmental Protection Agency
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Table C.2. ADDNET Contact Network, January 1987

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APPENDIX D

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APPENDIX E

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