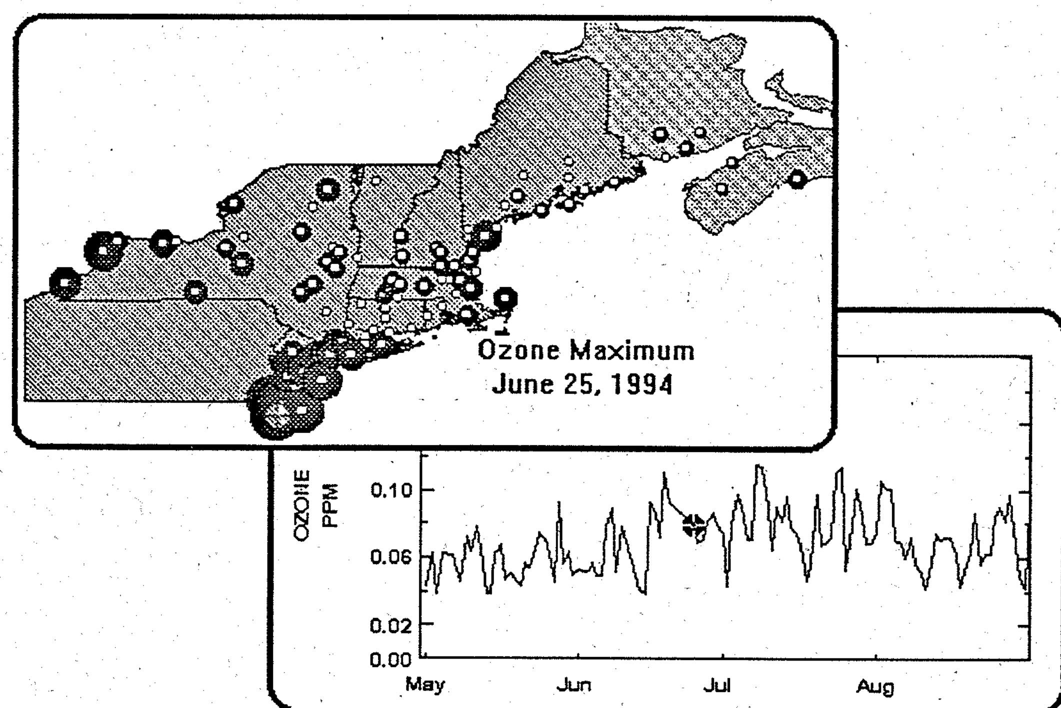
NESCAUM/VMC REGIONAL OZONE DATA NETWORK
-1993-

FINAL REPORT TO NESCAUM AND THE VERMONT MONITORING COOPERATIVE



Prepared April 8, 1994

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Vermont Monitoring Cooperative Research Report # 6

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EXECUTIVE SUMMARY

In 1990, the Northeastern States for Coordinated Air Use Management (NESCAUM), the University of Vermont School of Natural Resources (SNR), and the Vermont Monitoring Cooperative (VMC) organized the NESCAUM/VMC Ozone Data Exchange Network to provide rapid reporting of preliminary ozone data within the northeastern US. Since its inception, participation in the network has increased with the addition of state and provincial air quality programs outside the NESCAUM region, bringing the number of programs sharing data through the network to 13 in 1993. The quality of the data files submitted to the network has greatly improved over that period, the result of upgraded data submission techniques and a change in file format for 1993. This improvement in data file quality and an increased time commitment by SNR has led to a decrease in the time required for data turn-around. Data summaries and Voyager workbooks were distributed twice monthly in 1993, as compared to monthly distribution in 1992.

The NESCAUM/VMC Ozone Data Exchange Network provides an efficient and valuable mechanism for rapidly sharing data among regional air quality programs. We recommend that this program be continued in 1994. This recommendation is supported by, (a) the growth of the network since it's inception in 1990 and (b) the interest with which organizations involved in regional air quality issues are looking to this program as a model for their own regional networks. To further enhance the efficiency and usefulness of the network, SNR suggests the following for 1994:

1. That NESCAUM continue to work towards bringing an in-house computer network platform on line which is dedicated to air quality information exchange among regional air quality programs.

2. That NESCAUM undertake the task of data processing and reporting formerly performed by SNR. NESCAUM is in a better position than SNR to foster increased cooperation and feedback from those groups whom these services are designed to assist.

INTRODUCTION

A. Background

Ozone was first identified as a significant phytotoxic air pollutant over five decades ago in southern California. In the intervening years damage to human health, vegetation and materials by ozone has been clearly demonstrated in a multitude of scientific studies. The increasing occurrence of ozone in urban, rural and wilderness areas has caused air quality researchers and managers to recognize tropospheric ozone as one of the major air pollutants in many parts of the world.

Ozone is routinely monitored by state air quality programs to determine compliance with clean air standards. In addition, forest managers, scientists and health professionals frequently require current information on ozone exposures to support field studies, field observations and to elucidate health hazards. Data evaluation teams for various environmental and ecological monitoring programs benefit from access to up-to-date ozone data in their preparation of data evaluations. Forecasting efforts are enhanced by the rapid availability of data describing the ambient ozone environment. Individual states benefit from more rapid access to other states' data and regional ozone maps. Unfortunately, ozone data are typically unavailable until several months after measurement, due to the time required for complete data processing and quality assurance.

In 1990, the Northeastern States for Coordinated Air Use Management (NESCAUM), the University of Vermont School of Natural Resources (SNR), and the Vermont Monitoring Cooperative (VMC) organized the NESCAUM/VMC Ozone Data Exchange Network to provide rapid reporting of preliminary ozone data within the northeastern US and Canadian region. The foundation of this effort was started by NESCAUM in 1989. Initially the network included the NESCAUM states of CT, MA, ME, NH, NJ, NY, RI, and VT who shared data electronically. In 1991, SNR began formatting the data for convenient processing and compiling the data into monthly reports which were distributed through the network. In 1992, the first Canadian participation began, with the inclusion of Nova Scotia, and SNR expanded its monthly reports to include descriptive statistics and Voyager workbooks (compiled data files for use in the Voyager Data Exploration System, see Appendix I). At the close of the 1992 ozone monitoring season SNR distributed the first annual data summary and report. This document described the season's preliminary data graphically, through frequency distribution charts and tables, and commented on the project's strengths and weaknesses.

Based upon the recommendations of the 1992 report and the previous success of the NESCAUM/VMC ozone data exchange network, the project was continued in 1993. This report describes the efforts of the 1993 ozone season, assesses the current state of the project and makes recommendations for the future.

B. 1993 Objectives

Objectives for the NESCAUM/VMC Ozone Data Exchange Network in 1993 were directed toward decreasing the time required for data turn-around and increasing the consistency and ease of submitting data to the computer network. Specific objectives were:

1. Continue downloading, compiling and formatting of daily ozone maximum data into Voyager workbooks to be distributed monthly through NESCAUM's central office and electronically through the network.

2. Construct weekly data reports summarizing the ambient ozone environment of the preceding week to be distributed through NESCAUM's central office and through the network.

3. Post compiled Voyager workbooks, monthly and weekly reports to the central computer system of the network to ensure that the products of this program are available to all potential user groups.

4. Assist cooperators in data transfer by developing and providing software to simplify and standardize data uploading to the network.

METHODS

A. Data Processing, Compilation and Reporting

The NESCAUM/VMC Ozone Data Exchange Network utilizes DELPHI, a commercial VAX mainframe located in Boston, MA, as a data transfer platform. Daily ozone maximum and time of occurance data from monitoring stations were submitted to the network by the following states and provinces in Table 1, below.

State or Province	Network Code
Connecticut	(CTDEP)
Massachusetts	(MADEQE, EPAREGI)
New Brunswick	(NEWBRUN)
New Hampshire	(NHDES)
New Jersey	(NJDEP)
New York	(NYDEC)
Nova Scotia	(NOVASCO, AESCAN)
Pennsylvania	(PADER)
Rhode Island	(RIDEM)
Vermont	(VTAEC)

Table 1. States and Canadian Provinces participating in the NESCAUM/VMC Regional Ozone Data Network (see Figure 1).

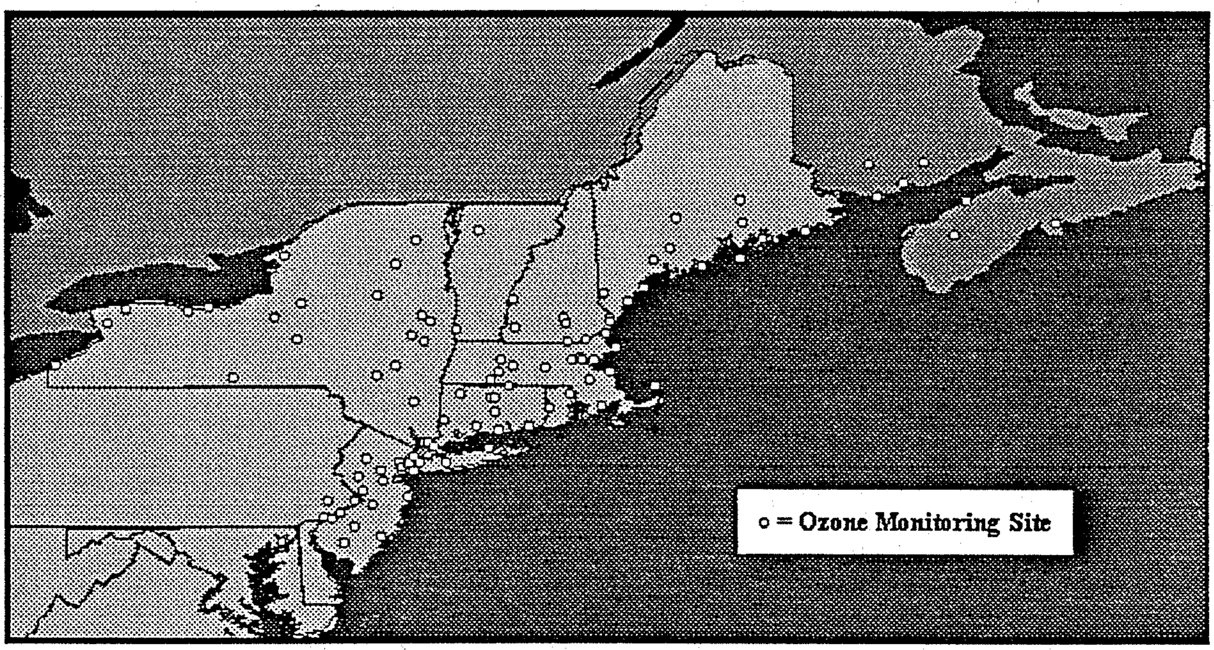


Figure 1: NESCAUM / VMC Ozone Data Exchange Network 1993 Ozone Monitoring Sites

Raw data submittal was made by air quality personnel either weekly or daily from April 1 through October 31. The raw data files submitted to DELPHI were (concatenated weekly into ASCII text files) downloaded to SNR either by direct modem connection or via electronic mail to the University's VAX mainframe. At SNR the weekly data files were run through two data reformatting programs (Pascal programs developed by SNR), the first to extract data lines from data submited in the correct format and the second to reformat the submissions of states submitting data incorrectly. The "cleaned" data files were imported to a Microsoft Excel (Version 4.0) spreadsheet and scanned for errors. Submissions often required editing to correct keypunch errors (see section on data transfer assistance below). Cleaned and edited data files were combined to create a master data file containing all data submitted up to that time. This master file was used both for compilation into the Voyager Data Exploration System and to generate descriptive statistics. Using SAS 604, the following descriptive statistics were calculated for location, month and region:

1. sample size
2. mean daily maximum ozone
3. median daily maximum ozone
4. mode of daily maximum ozone
5. minimum reported daily maximum ozone
6. maximum reported daily maximum ozone
7. first quartile (Q1) daily maximum ozone
8. third quartile (Q3) daily maximum ozone

The master data file, descriptive statistics, and Voyager workbook were distributed through DELPHI twice monthly.

B. Data Transfer Assistance

SNR attempted to increase the speed and efficiency of network data transfer by two means. First, prior to the 1993 ozone season SNR proposed that the format of data submittal to the network be modified. The proposed format, a fixed-column-width ASCII file as opposed to the previous comma delineated format, was suggested as a means of both enhancing the readability of raw data files submitted to the network and speeding data processing. The format change was accepted by NESCAUM and all network cooperators were notified of the changes before the start of the 1993 ozone season. The fixed-column-width format is described in Table 2, below.

VARIABLE	COLUMN WIDTH	NULL
Location	25 Characters	""
Airs ID Number	15 Characters	""
Year (ie. 92, 93)	6 Numbers	""
Month (ie. 04,05)	6 Numbers	""
Day (ie. 01,02)	6 Numbers	""
Ozone Maximum (ppm)	10 Numbers	""
Time of Maximum (0 - 2300)	8 Numbers	9999

Table 2. Description of the fixed-column-width ASCII format proposed for 1993 by SNR for data submittal to the NESCAUM/VMC Ozone Data Exchange Network. Symbol "" indicates no entry necessary to signify a NULL.

Second, in March of 1993 SNR surveyed all NESCAUM/VMC network participants to learn what methods were being employed to submit ozone data to the network. From this survey we determined that data submissions were accomplished in one of three ways:

> Automated Submission: Automated data management systems are utilized to compile and upload ASCII data files to DELPHI (e.g., CTDEP, NYDEC).
>
> Preformatted Submission: ASCII data files are compiled either by automated data management systems or by air quality personnel. Files are uploaded manually to DELPHI.
>
> Manual Submission: ASCII files are created by air quality personnel using the text editor on DELPHI.

Automated submission and preformatted submission were regarded as the preferred means of data submittal. Agencies using these methods were not considered to be in need of assistance from SNR in updating their data transfer methods. However, modification of data submittal format to conform with the new standard is desirable. Manual submission was regarded as time consuming and more likely to produce data errors. Agencies which used manual submission techniques were targeted for assistance and two approaches were developed to accomplish this.

Air quality personnel responsible for data submissions were contacted directly and supplied with information on how to use spreadsheet programs (e.g., Lotus 1-2-3, Quattro Pro, Excel) to prepare preformatted data files for submission to the network. SNR also constructed a Pascal program designed to output preformatted data files for agencies lacking spreadsheet programs. Personnel at SNR were available by telephone and e-mail throughout the ozone season to answer questions and provide technical assistance to these agencies.

RESULTS

A. Data Summaries and Voyager Workbooks

In 1993, 8 states and 2 Canadian provinces submitted daily ozone maximum data to the NESCAUM/VMC Ozone Data Exchange Network. These data were submitted from April 1 through October 31, 1993. Reporting consistency varied considerably among air quality programs. For example, data coverage for NJDEP averaged over 75% for individual monitoring sites while data coverage for CTDEP was less than 25%. Data summaries and Voyager workbooks were generated from these data and redistributed through the network.

A series of 12 data summaries and 10 Voyager workbooks containing preliminary daily maximum ozone and time of occurrence data were compiled and distributed through the course of the 1993 ozone season. Data summaries included an edited fixed-column-width ASCII data file containing all data submitted to the NESCAUM/VMC Ozone Data Exchange Network and the descriptive statistics generated from the data (see Appendix III). The Voyager workbooks were designed to provide air quality personnel with time trend and ozone event frequency information. Each workbook was accompanied by a text file describing the methods for downloading and running the workbook in the Voyager software (see Appendix II for more information on the Voyager Data Exploration System).

Each Voyager workbook was comprised of four or five sections. The first section displayed a brief introduction to the workbook, provided details on the data contained in the workbook (ie. dates of coverage), requested information required for data processing (ie. the geographical location of new monitoring sites), and listed contacts for questions and/or comments. The remaining sections, described below, allowed for user defined explorations of the data.

Section 2: Daily ozone maximum time trends are displayed by providing both 10 day and 30 day running averages for monitoring sites. The user can control which location to use in generating the running averages by selecting a monitoring location in the map view.

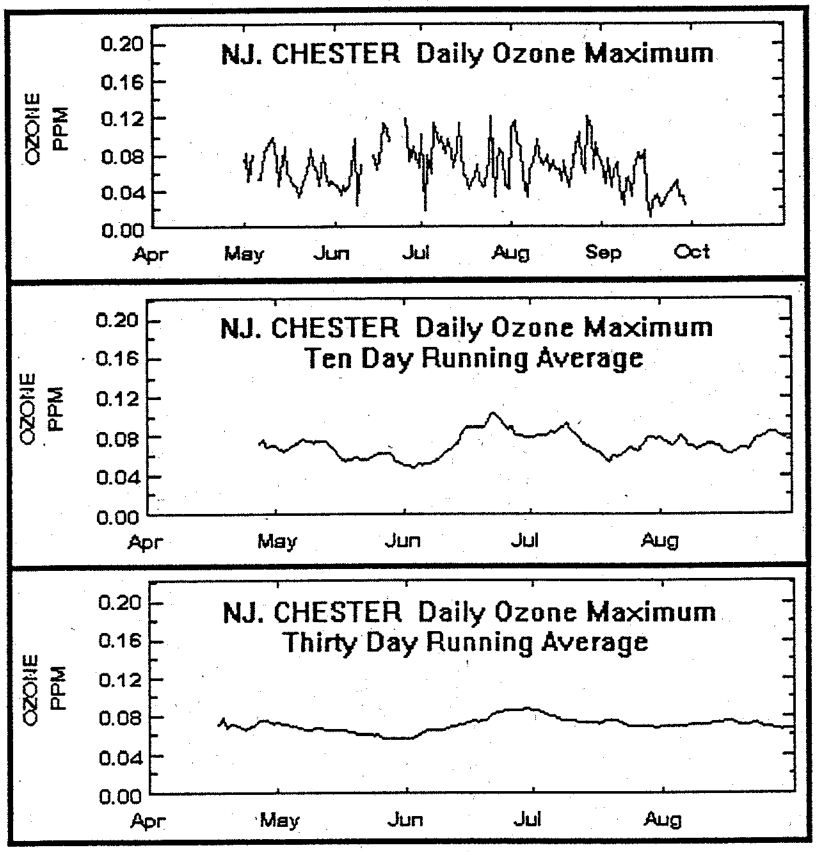


Figure 2. 1993 daily ozone maximum, ten-day running averages and thirty-day running averages from preliminary data reported by NJ. CHESTER to the NESCAUM/VMC Ozone Data Exchange Network. From the OZONE93J Voyager workbook.

Section 3: Frequency tables are generated for user-specified locations. The table displays the frequency with which daily ozone maximums exceed values of 0.06, 0.08, 0.10 and 0.12 ppm for the selected location. The table also shows the total number of data points and null points, the number of days between 4/1/93 and 10/31/93 for which data is either available or not. The time view displays only daily ozone maximum values that exceed national air quality standards. The user can control which location to use in generating the frequency table by selecting a monitoring location in the map view.

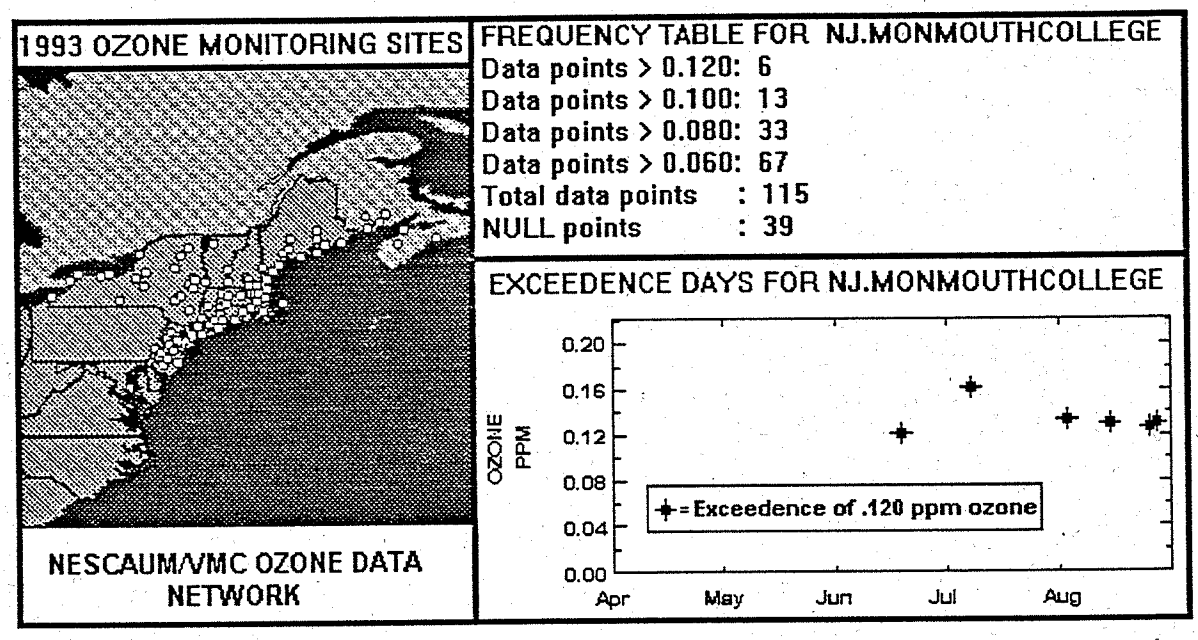


Figure 3. Frequency table of daily ozone maximum events and time view of national ambient air quality standard (NAAQS) exceedences from preliminary data reported to the NESCAUM/VMC Ozone Data Exchange Network by NJ. MONMOUTH COLLEGE. From the OZONE93J Voyager workbook.

Section 4: Frequency tables are generated for user-specified dates. The table displays the frequency with which daily ozone maximums exceed values of 0.06, 0.08, 0.10 and 0.12 ppm for the selected date. The table also shows the total number of data points and null points, the number of monitoring stations either reporting data or not on the selected date. This map view highlights locations where daily ozone maximum values exceed NAAQS. The user can control which date to use in generating the frequency table by selecting a specific date in the time view.

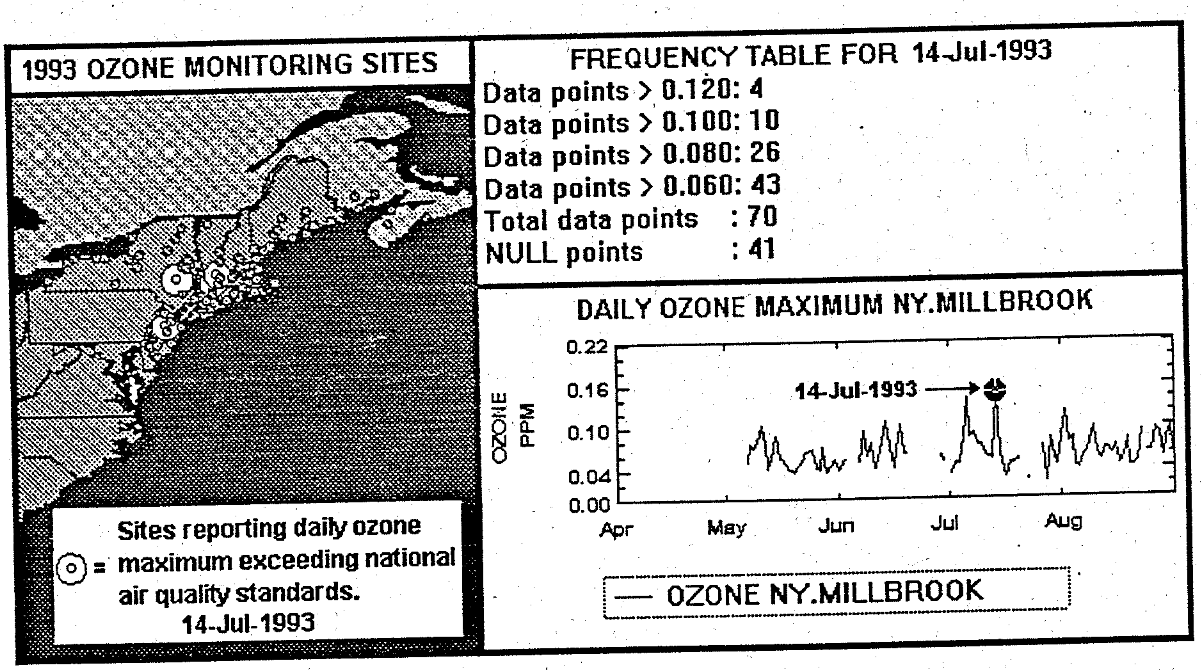


Figure 4. Map view and frequency table of exceedences of NAAQS on July 14, 1993. Preliminary data reported to the NESCAUM/VMC Ozone Data Exchange Network. From the OZONE93J Voyager workbook.

Section 5: A scatter plot of daily ozone maximum and time of occurrence is displayed for a user-specified region or time-frame. This allows the user to examine relationships between ozone maximums and the time at which they occur, and to isolate outliers and extreme events.

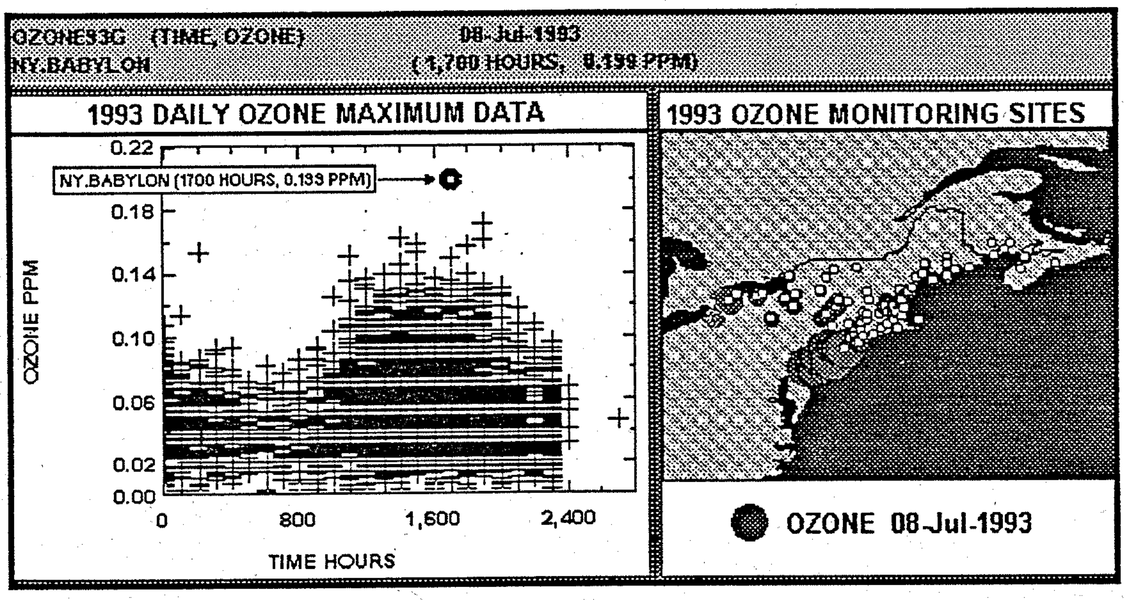


Figure 5. Scatter plot of daily ozone maximum in relation to time of occurance for the entire 1993 ozone season. The map to the right displays daily ozone maximum data from the date of the selected point in the scatter plot (black circle in upper right of plot). The information displayed in the gray area above the scatter plot describes the data from the selected point. From the OZONE93J Voyager workbook.

B. Data Transfer Assistance

The proposed modification of data submitted to the network from a comma delineated to a fixed-column-width ASCII format met with varied success. 9 of the 12 reporting agencies conformed to the fixed-column-width ASCII format proposed by SNR for the 1993 season, but 3 agencies, CTDEP, NYDEC and RIDEM, continued to submit data in the comma delineated format, used in 1992, through the entire 1993 season. This inconsistency in the format of submitted data between agencies hampered efforts by SNR to automate data processing and consequently increased the time required for preparing and distributing reports.

SNR's efforts to assist air quality personnel in improving data uploading techniques resulted in all but one agency using either automated or preformatted submissions to the network by the close of the 1993 ozone season. All upgrades from manual submission to preformatted submissions were achieved either before the onset of the 1993 ozone season or within the first two months of data submittal. The sole exception was RIDEM which continued to use manual submission techniques throughout the 1993 season. Upgrades were primarily the result of agency initiative following initial prompting by SNR. In most cases upgrades were accomplished with little or no technical assistance from SNR. No agencies utilized the pascal program constructed by SNR to output preformatted data files for submission to the network. The upgrading of uploading techniques resulted in data submissions which contained far fewer keystroke and format errors than were experienced in 1992. This allowed for a decrease in the time of data turnaround by reducing the amount of data editing by SNR personnel.

DISCUSSION

The 1993 ozone season brought a combination of successes as well as unmet objectives for the NESCAUM/VMC Ozone Data Exchange Network. Participation in the network increased with the addition of NEWBRUN and PADER, bringing the number of state and provincial air quality programs sharing data through the network to 13 in 1993. The quality of the data files submitted to the network was greatly improved over that of 1992. Very few submissions contained keystroke or format errors, the result of upgraded data submission techniques and a change in file format for 1993. This improvement in data file quality and an increased time commitment by SNR led to a decrease in the time required for data turn-around. Data summaries and Voyager workbooks were distributed bimonthly in 1993, as compared to monthly distribution in 1992.

Attempts to increase coverage in data reporting by air quality programs participating in the network were not completely successful in 1993. Overall, data coverage has decreased from a high of 75% in 1991 to 55% in 1992 and under 50% in 1993. This decrease may in part be attributed to two extenuating circumstances. At the initiation of the ozone season on April 1st, NESCAUM was seeking to bring on line an in-house computer network platform dedicated to air quality information exchange among NESCAUM cooperators. Many of the states participating in the ozone data exchange network were postponing data submittal until the new network was established. The new platform did not became available to the network in 1993. As a result, one to two months of data went unreported, the only significant break in consistent data coverage by some programs (NYDEC, NJDEP, NHDES, NEWBRUN, and NOVASCO). AESCAN also reported periodic electronic mail failure when attempting to distribute data on DELPHI. It is unknown to what extent this electronic mail failure affected data submittal. Attempts to isolate the problem by DELPHI staff were unsuccessful. These mitigating circumstances, however, do not satisfactorily explain the poor data coverage - well under 50% - submitted to the network by CTDEP, PADER, EPAREG1, RIDEM, and NHDES. It may be that local difficulties contributed to the low degree of participation by these air quality programs in the network.

In framing the 1993 objectives for the network, SNR had anticipated the preparation of weekly reports summarizing the ambient ozone environment of the preceding week. Although data turn-around time was cut in half in 1993 compared to 1992, SNR was not completely successful in meeting this objective, for several reasons. First, not all participating programs conformed to the new data reporting format for 1993 (see methods). This increased the time needed by SNR for data editing and processing. Secondly, the inconsistent data coverage of some programs made summaries of the preceding weeks data incomplete or statistically irrelevant. Finally, we underestimated the actual costs in time and personnel necessary to realize a weekly data turnaround.

FUTURE RECOMMENDATIONS

The NESCAUM/VMC Ozone Data Exchange Network provides an efficient and valuable mechanism for rapidly sharing data among regional air quality programs. We recommend that this program be continued in 1994. This recommendation is supported by, (a) the growth of the network since it's inception in 1990 and (b) the interest with which organizations involved in regional air quality issues are looking to this program as a model for their own regional networks. Clearly, however, there are several issues that need to be addressed, as well as specific changes for 1994 that would enhance the efficiency and usefulness of the network.

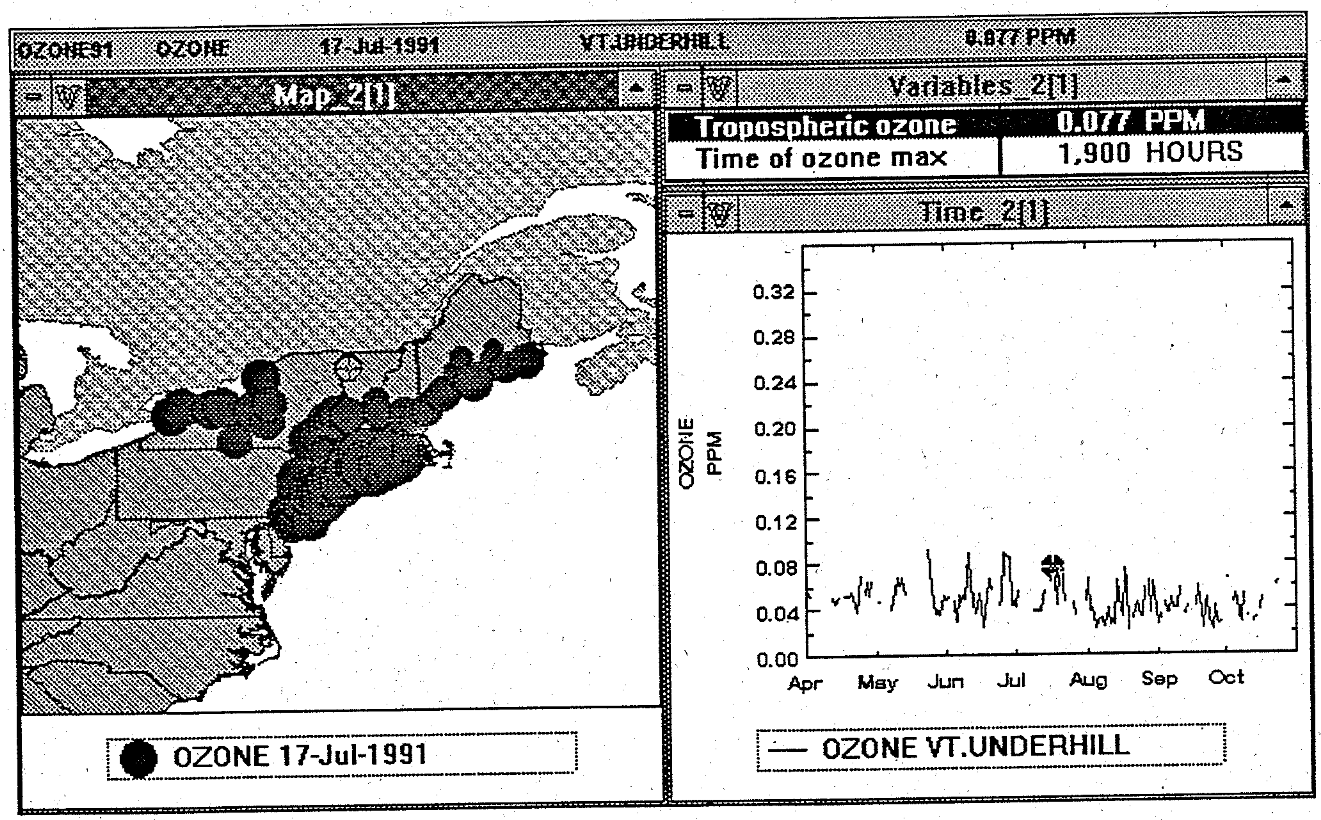
We recommend that NESCAUM continue to work towards bringing an in-house computer network platform on line which is dedicated to air quality information exchange among regional air quality programs. The ability of NESCAUM to modify the current network platform, DELPHI, to conform to it's own needs and requirements is limited. By establishing its own network platform, NESCAUM can set the specifications for a more user-friendly environment that is tailored to the specific demands of network participants. In instituting this change, however, NESCAUM should recognize that DELPHI does offer two advantages which may not be immediately available with an in-house network platform. These are access to the Internet and the support of file transfer protocol (FTP), both of which could be increasingly valuable to NESCAUM's networking efforts. Internet access greatly increases the range of electronic mail communications and makes the prodigious amount of information lodged on the Internet available. FTP allows for almost instantaneous transfers of large amounts of information, such as the large data sets generated by air quality monitoring and assessment programs. If, however, the new NESCAUM computer platform is accessed with high speed communication lines of software, this would be less of an issue.

It is also recommended that NESCAUM undertake the task of data processing and reporting formerly performed by SNR. Providing periodic data summaries and other data products, such as Voyager workbooks, is an important service to air quality programs participating in the network. It is these data products which make the network more than simply a means for exchanging raw data. Instead, the network assumes the additional role of disseminating processed information, a much more valuable commodity. SNR has endeavored to provide useful data products to network participants and has demonstrated that this service can be rendered with only a modest expenditure of time and money. We believe, however, that this service could be more effectively provided in the future by NESCAUM for several reasons.

1. SNR's primary contribution to this project has been technical expertise in the methods of data processing (ie. Voyager compilation) and electronic distribution. This expertise is no longer a necessary component for continuation of the network, it's expansion, or improved efficiency. We believe NESCAUM could now readily perform these tasks.

2. NESCAUM is in a better position than SNR to foster increased cooperation and feedback from those groups whom these services are designed to assist. Augmented cooperation and feedback will be necessary in 1994 to both improve the efficiency and enhance the usefulness of the network for all participants.

APPENDIX I. VOYAGER WORKBOOKS



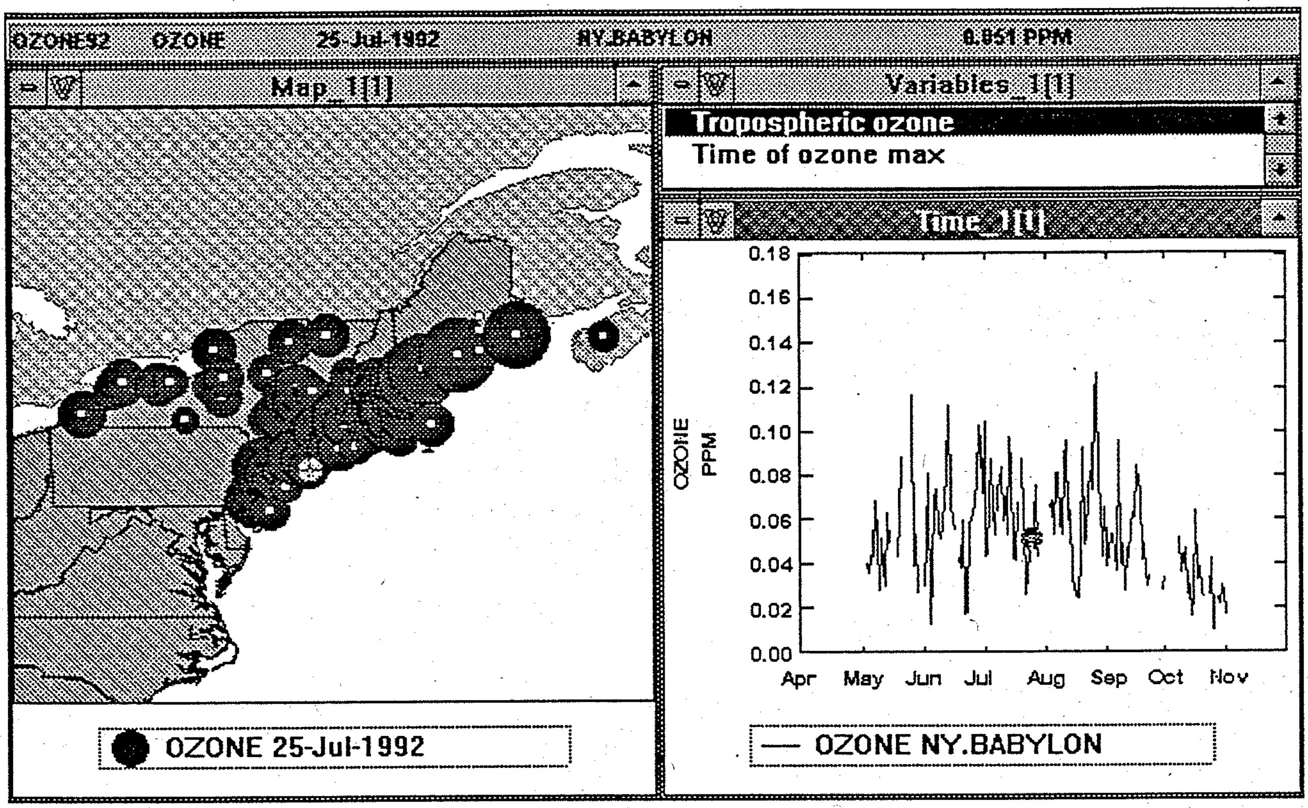
NESCAUM DAILY OZONE MAXIMUMS AND TIMES OF OCCURANCE, 1991.
PRELIMINARY DATA.

Contributors: Northeastern States for Coordinated Air Use Management
Compiled: May 5, 1992 by Ian Martin

This data set contains preliminary daily ozone maximum values (ppm) and first recorded time of occurance (hours) reported by NESCAUM cooperators from April 1, 1991 - October 31, 1991. The data covers 97 monitoring stations in CT, ME, MA, NH, NY, RI, and VT. The data set is also available in weekly ASCII or Lotus files (complete set approx. 925 kB).

Variables: Daily maximum ozone (ppm), hour of occurance (hours)

Workbook Name: OZONE91.WKB
Required Files: OZONE91.VOY , NAM.MAP, US.LAY
Package Size: 70 kB
Related Files: OZONE92.VOY, NEOZ8792.VOY, NEOZAGDA.VOY, NEOZMOAG.VOY, NEOZPERC.VOY



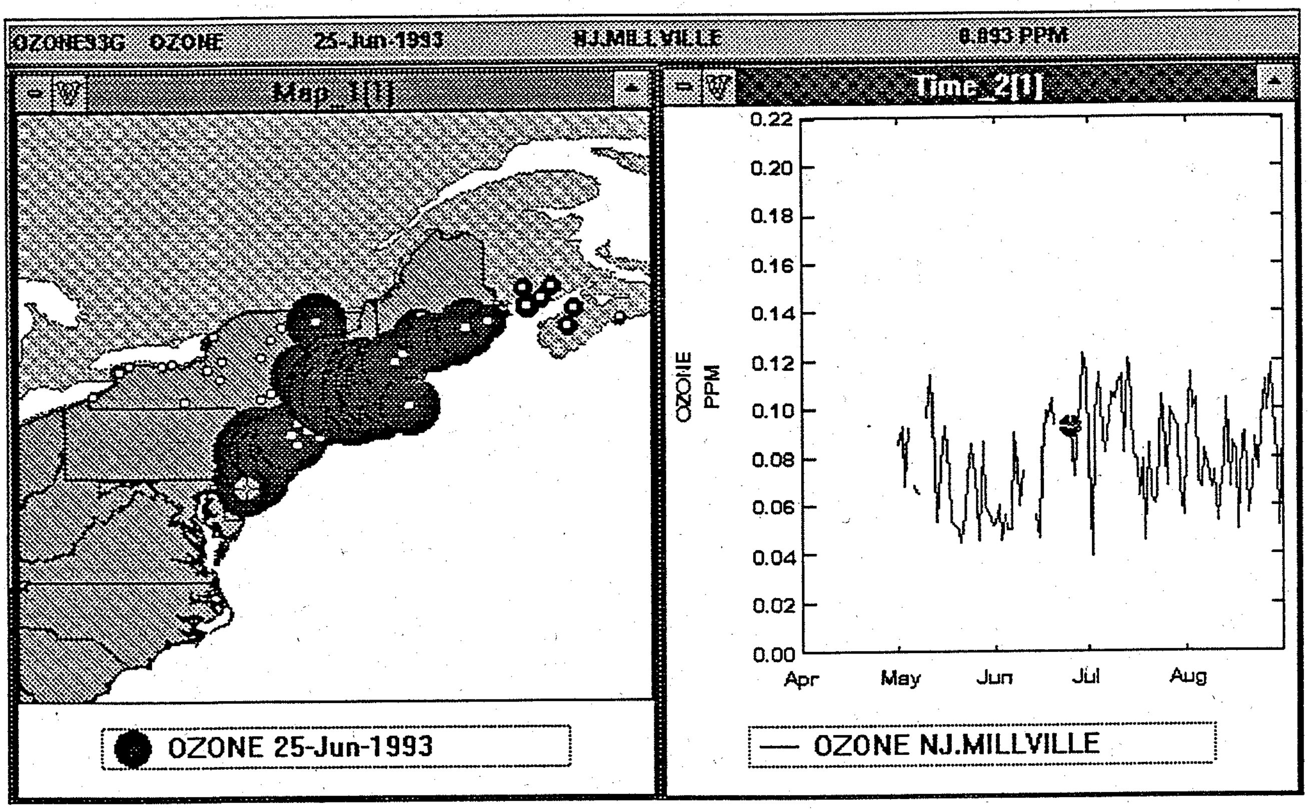
NESCAUM DAILY OZONE MAXIMUMS AND TIMES OF OCCURANCE , 1992. PRELIMINARY DATA

Contributors: Northeastern States for Coordinated Air Use Management
Compiled: February 25, 1993 by Ian Martin

This data set contains preliminary daily ozone maximum values (ppm) and first recorded time of occurance (hours) reported by NESCAUM cooperators from April 1, 1992 - October 31, 1992. The data covers 81 monitoring stations in CT, ME, MA, NH, NY, Nova Scotia (Can), RI, and VT. The data set is also available in weekly ASCII or Lotus files (complete set approx. 1.2 MB).

Variables: Daily maximum ozone (ppm), hour of occurance (hours)

Workbook Name:	OZONE92.WKB
Required Files:	OZONE92.VOY, NAM.MAP, US.LAY
Package Size:	80 kB
Related Files:	OZONE91.VOY, NEOZ8792.VOY, NEOZAGDA.VOY, NEOZMOAG.VOY, NEOZPERC.VOY



NESCAUM DAILY OZONE MAXIMUMS AND TIMES OF OCCURANCE, 1993.
PRELIMINARY DATA

Contributors: Northeastern States for Coordinated Air Use Management
Compiled: December 10, 1993 by Ian Martin

Ozone93j.wkb is the sixth in a series of workbooks constructed for NESCAUM cooperators in 1993. This final edition contains data submited to the NESCAUM ozone network between the dates April 1, 1993 and November 30, 1993. The data covers 93 monitoring stations in CT, ME, MA, New Brunswick (Can), NH, NY, Nova Scotia (Can), RI, and VT. This data set is also available in ASCII (800 kB) or EXCEL files (1.3 MB).

Variables: Daily ozone maximum (ppm), Hour of occurance (hours)

Workbook Name: OZONE93J.WKB
Required Files: OZONE93G.VOY, NAM.MAP, US.LAY
Package Size: 163 kB
Related Files: OZONE92.VOY, OZONE91.VOY, NEOZAGDA.VOY, NEOZMOAG.VOY, NEOZPERC.VOY

The Voyager Data Browser

The main PC program that facilitates the convenient display and exploration of AIRS data is the Voyager data exploration software developed by Lantern Corporation in St. Louis. Voyager is a general purpose browser for spatial and temporal databases as illustrated in Figure 1. The Voyager software can also be viewed as a data integrator and transmission system as illustrated in Figure 2. Additional information and description of application to AIRS is given in the references listed below.

Voyager can be applied to specific applications using its programmable features. Multiple data views can be placed on multiple pages of electronic workbooks. The graphic layout of a workbook is accomplished by interactive graphic programming techniques, including clicking, dragging, zooming, and dialog boxes. The behavior of Voyager can be further modified by its built-in event driven script language.

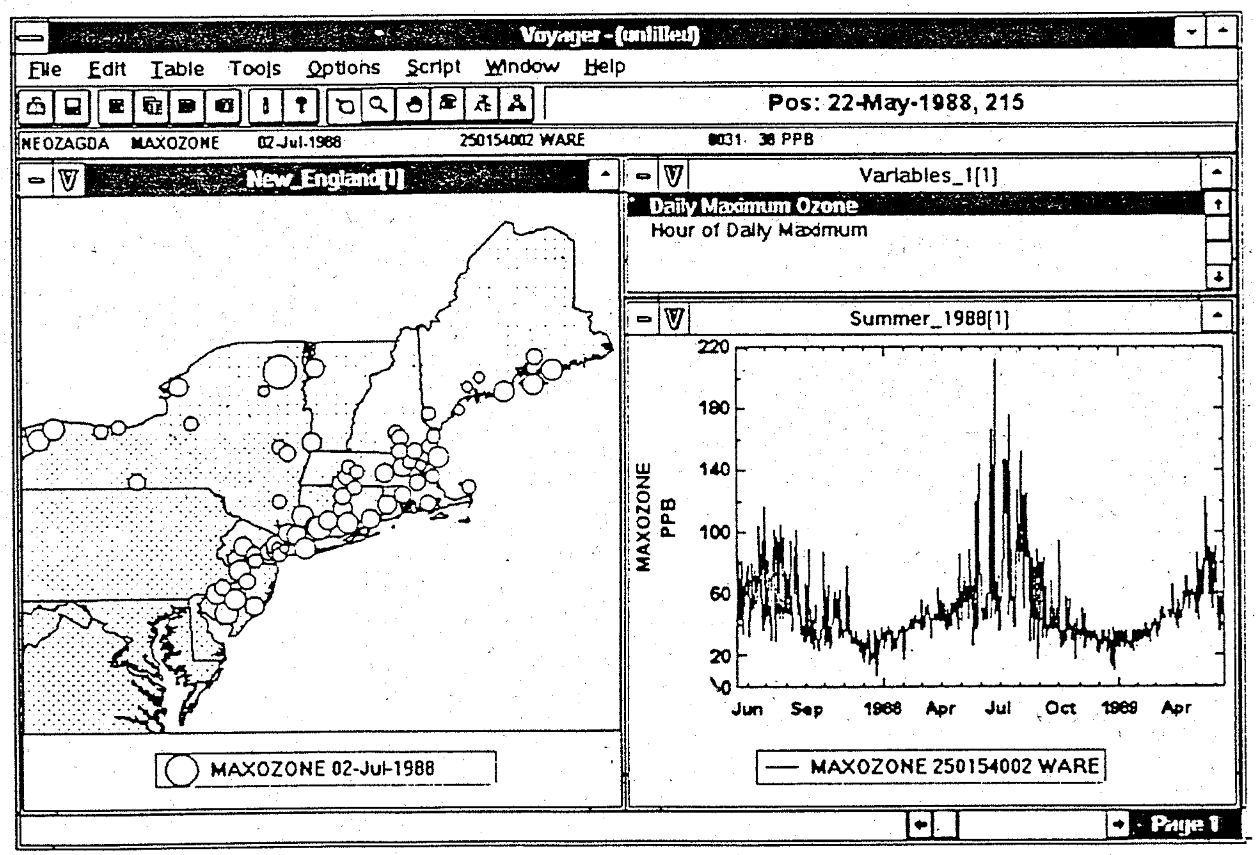


Figure 1. Voyager's workspace showing the Map, Time, and Variables views of an ozone database. Data Browsing is accomplished by point-and-click query: Selecting and displaying the time history for a monitoring site is accomplished by clicking on the site location in the map view

Data Views: Voyager's workspace is divided into several areas called data views. representing the dimensions of the data space: locations, time and variables. The upper right view displays the available variables in the database. Clicking on a variable such as ozone selects it as the variable displayed in the other views. The left area is a map view. In this example, ozone concentration is displayed as circles for each site. The lower right area is a time view for a particular station . Here the ozone concentration is displayed as a trend over a selected period of time. Each data view has two purposes, one to display data and second to provide a selection surface for its linked views.

Linkages and Navigation: All of these views are linked to each other. Selecting a new time, location, or variable in their respective views simultaneously changes all of the other views. One can change the current variable displayed in the map and time views by clicking on the desired variable.

Zooming and Overlays: Voyager also provides a facility to zoom in on a specific region or time domain. Voyager can also overlay several databases at a time. Each of the views can contain a number of data sets, either from the same database or from another database.

Scatter view: The scatter view is used to explore relationships among two or more variables. The range of times and locations for data in the scatter plot is controlled by the zoom range of the time and map views. Since the scatter view is also linked to other views, outlying data points can be easily isolated. Clicking on an outlier in the scatter view, reveals the data point's location and time in map and time views.

Graphic Database Query: The point-and-click selection of display items combined with the linked views is an implementation of a Graphic Query Language (GQL). It is closely related to the Structured Query Language (SQL) used to access data from relational databases. Every click causes the execution of a database command or query compatible with SQL.

Data Manipulation: Voyager has an event-driven built-in script language for data manipulation. One can create new variables from algebraic and logical combinations of existing variables, write data filtering or extraction functions or modify the behavior of Voyager by user written scripts.

Workbook: The metaphor of the Voyager workspace is a picture book. Each page may contain several figures and text windows. A collection of pages is a dynamic workbook that can be saved and retrieved as a disk file. The author of the workbook may organize and display a story as a pictorial summary report. The workbook contains a portion of the author's knowledge that can be transmitted as a file or presented as a slide show of live pictures. A well authored workbook, along with the hypertext documentation facility effectively turns a database into a knowledge base.

Database Documentation: Conventionally, the textual documentation such as the data source, history and data collection methodology is usually contained in hard copy reports. Voyager provides a context-sensitive on-line documentation facility to its databases. One can attach text to a database in general or to a specific variable, location, or time. This is accomplished by a general purpose hypertext Help facility that is dynamically linked to Voyager.

Data Import and Export: High speed browsing and data manipulation is facilitated by a highly indexed binary file format. Prior to usage in Voyager, spatial-temporal data are converted to the internal Voyager format by the Voyager Data Compiler supplied with the software. The compiler accepts as inputs tables containing the data and data dictionaries. Voyager software can extract subsets of data from compiled Voyager data sets and export those to other programs. In this sense, the Voyager data browser can be viewed as a distributor gateway for transferring AIRS data to other PC applications such as spreadsheets, database managers, paint programs, and word processors.

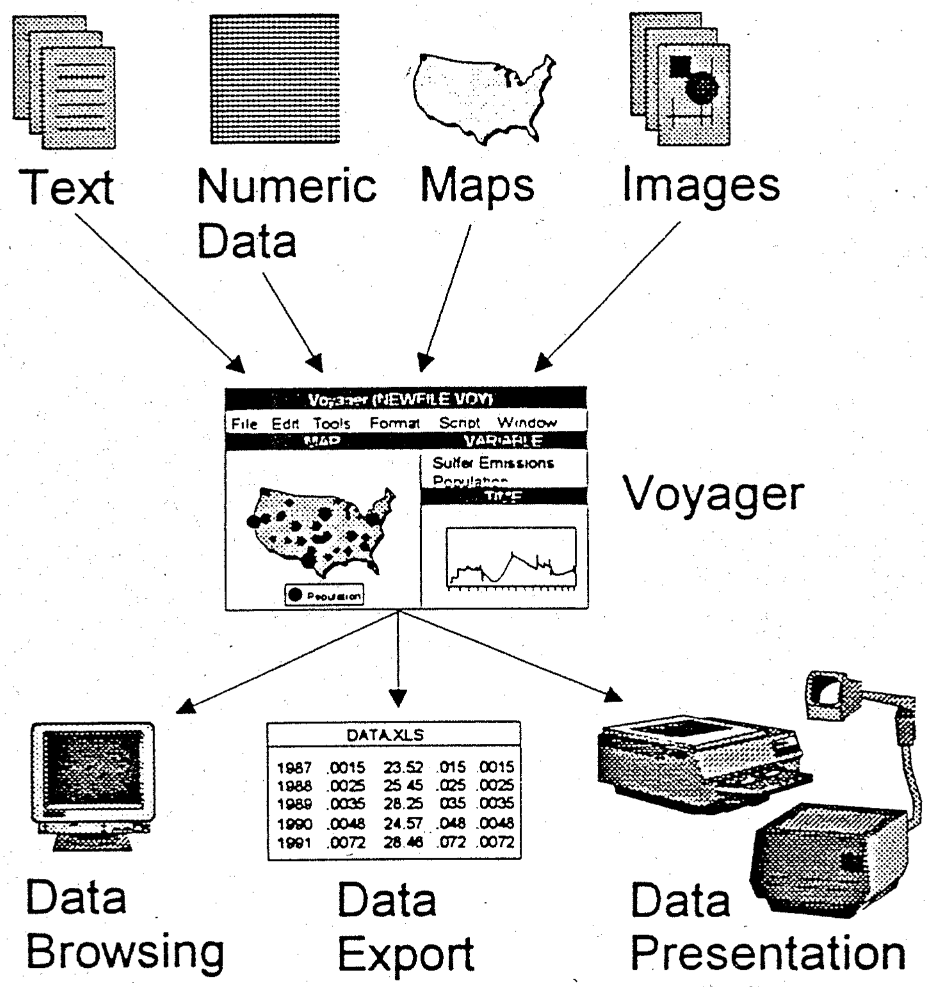


Figure 2. The role of Voyager as data integrator/distributor.

APPENDIX III. DATA SUMMARY

ection 1. Data Summary by Location for each Month of Data Submittal

OBS	LOC	MM	N	MEAN	MEDIAN	MODE	MIN	MAX	Q1	Q3
1	CT.BRIDGEPORT	APRIL	5	0.036000	0.0370	0.03900	0.03000	0.039	0.0350	0.0390
2	CT.BRIDGEPORT	MAY	7	0.041857	0.0360	0.02700	0.02700	0.057	0.0320	0.0540
3	CT.BRIDGEPORT	JUNE	8	0.043375	0.0380	0.02000	0.02000	0.084	0.0325	0.0510
4	CT.BRIDGEPORT	JULY	7	0.061286	0.0560	0.03000	0.03000	0.095	0.0350	0.0880
5	CT.BRIDGEPORT	AUGUST	8	0.062250	0.0450	0.04500	0.03000	0.128	0.0365	0.0885
6	CT.BRIDGEPORT	SEPTEMBER	3	0.028333	0.0190	0.01100	0.01100	0.055	0.0110	0.0550
7	CT.BRIDGEPORT	OCTOBER	5	0.024000	0.0250	0.01700	0.01700	0.028	0.0230	0.0270
8	CT.DANBURY	APRIL	5	0.048400	0.0470	0.03400	0.03400	0.059	0.0440	0.0580
9	CT.DANBURY	MAY	8	0.052875	0.0545	0.02200	0.02200	0.074	0.0415	0.0675
10	CT.DANBURY	JUNE	8	0.060250	0.0510	0.04100	0.03900	0.109	0.0410	0.0750
11	CT.DANBURY	JULY	7	0.054857	0.0560	0.03500	0.03500	0.080	0.0400	0.0670
12	CT.DANBURY	AUGUST	9	0.068333	0.0630	0.02100	0.02100	0.112	0.0460	0.0980
13	CT.DANBURY	SEPTEMBER	3	0.032667	0.0240	0.01500	0.01500	0.059	0.0150	0.0590
14	CT.DANBURY	OCTOBER	5	0.031800	0.0300	0.03000	0.02800	0.036	0.0300	0.0350
15	CT.EASTHARTFORD	APRIL	7	0.046714	0.0520	0.01700	0.01700	0.064	0.0380	0.0550
16	CT.EASTHARTFORD	MAY	6	0.043500	0.0435	0.01600	0.01600	0.067	0.0260	0.0650
17	CT.EASTHARTFORD	JUNE	6	0.045333	0.0405	0.03300	0.03300	0.071	0.0370	0.0500
18	CT.EASTHARTFORD	JULY	7	0.048429	0.0500	0.05000	0.03300	0.072	0.0340	0.0550
19	CT.EASTHARTFORD	AUGUST	9	0.075111	0.0700	0.10600	0.04000	0.111	0.0580	0.1060
20	CT.EASTHARTFORD	SEPTEMBER	2	0.042000	0.0420	0.02100	0.02100	0.063	0.0210	0.0630
21	CT.EASTHARTFORD	OCTOBER	5	0.030600	0.0300	0.02900	0.02900	0.034	0.0290	0.0310
22	CT.GREENWICH	APRIL	1	0.049000	0.0490	0.04900	0.04900	0.049	0.0490	0.0490
23	CT.GREENWICH	MAY	7	0.050429	0.0480	0.03200	0.03200	0.071	0.0420	0.0600
24	CT.GREENWICH	JUNE	5	0.054400	0.0460	0.04100	0.04100	0.097	0.0410	0.0470
25	CT.GREENWICH	JULY	7	0.066000	0.0620	0.03800	0.03800	0.098	0.0420	0.0950
26	CT.GREENWICH	AUGUST	7	0.079857	0.0660	0.03500	0.03500	0.152	0.0610	0.1090
27	CT.GREENWICH	SEPTEMBER	2	0.029000	0.0290	0.02300	0.02300	0.035	0.0230	0.0350
28	CT.GREENWICH	OCTOBER	5	0.034000	0.0330	0.03800	0.03000	0.038	0.0310	0.0380
29	CT.GROTON	APRIL	6	0.041167	0.0420	0.03600	0.02400	0.054	0.0360	0.0490
30	CT.GROTON	MAY	7	0.060429	0.0540	0.04400	0.04400	0.088	0.0500	0.0770
31	CT.GROTON	JUNE	6	0.058167	0.0570	0.04800	0.04800	0.071	0.0520	0.0640
32	CT.GROTON	JULY	7	0.087143	0.0890	0.05500	0.05500	0.139	0.0680	0.0940
33	CT.GROTON	AUGUST	9	0.069111	0.0610	0.03600	0.03600	0.121	0.0580	0.0800
34	CT.GROTON	SEPTEMBER	3	0.045333	0.0520	0.02500	0.02500	0.059	0.0250	0.0590
35	CT.GROTON	OCTOBER	5	0.032200	0.0400	0.04000	0.00300	0.046	0.0320	0.0400
36	CT.MADISON	APRIL	7	0.044571	0.0450	0.04500	0.02400	0.057	0.0360	0.0570
37	CT.MADISON	MAY	7	0.059286	0.0530	0.04000	0.04000	0.095	0.0510	0.0680
38	CT.MADISON	JUNE	5	0.060200	0.0570	0.04500	0.04500	0.084	0.0520	0.0630
39	CT.MADISON	JULY	7	0.078286	0.0920	0.01700	0.01700	0.126	0.0540	0.1050
40	CT.MADISON	AUGUST	9	0.069778	0.0670	0.00300	0.00300	0.138	0.0520	0.0890
41	CT.MADISON	SEPTEMBER	3	0.042667	0.0520	0.02300	0.02300	0.053	0.0230	0.0530
42	CT.MADISON	OCTOBER	5	0.039200	0.0360	0.03600	0.03200	0.050	0.0360	0.0420
43	CT.MIDDLETOWN	APRIL	7	0.044571	0.0450	0.02500	0.02500	0.059	0.0370	0.0520
44	CT.MIDDLETOWN	MAY	7	0.054571	0.0510	0.03100	0.03100	0.103	0.0380	0.0630
45	CT.MIDDLETOWN	JUNE	6	0.055333	0.0415	0.03900	0.03900	0.103	0.0400	0.0670
46	CT.MIDDLETOWN	JULY	7	0.060429	0.0570	0.03200	0.03200	0.099	0.0370	0.0890
47	CT.MIDDLETOWN	AUGUST	10	0.080500	0.0705	0.03500	0.03500	0.139	0.0490	0.1290
48	CT.MIDDLETOWN	SEPTEMBER	3	0.043333	0.0370	0.02200	0.02200	0.071	0.0220	0.0710
49	CT.MIDDLETOWN	OCTOBER	5	0.034000	0.0340	0.02900	0.02900	0.038	0.0320	0.0370
50	CT.NEWHAVEN	APRIL	7	0.030143	0.0310	0.01600	0.01600	0.044	0.0250	0.0350
51	CT.NEWHAVEN	MAY	8	0.043875	0.0435	0.02200	0.02200	0.071	0.0300	0.0555
52	CT.NEWHAVEN	JUNE	8	0.042625	0.0395	0.02400	0.02400	0.079	0.0290	0.0505
53	CT.NEWHAVEN	JULY	7	0.059286	0.0470	0.03200	0.03200	0.100	0.0350	0.0890
54	CT.NEWHAVEN	AUGUST	9	0.068000	0.0500	0.02300	0.02300	0.153	0.0410	0.0950
55	CT.NEWHAVEN	SEPTEMBER	3	0.030333	0.0220	0.00700	0.00700	0.062	0.0070	0.0620

Section 1 Continued...

OBS	LOC	MM	N	MEAN	MEDIAN	MODE	MIN	MAX	Q1	Q3
56	CT.NEWHAVEN	OCTOBER	5	0.023200	0.0230	0.02000	0.02000	0.028	0.0210	0.0240
57	CT.STAFFORD	APRIL	7	0.047571	0.0490	0.02300	0.02300	0.070	0.0360	0.0570
58	CT.STAFFORD	MAY	7	0.053000	0.0470	0.03300	0.03300	0.079	0.0390	0.0690
59	CT.STAFFORD	JUNE	6	0.053667	0.0440	0.03500	0.03500	0.104	0.0370	0.0580
60	CT.STAFFORD	JULY	7	0.053000	0.0510	0.03600	0.03600	0.078	0.0400	0.0600
61	CT.STAFFORD	AUGUST	8	0.083750	0.0715	0.12000	0.04700	0.123	0.0585	0.1200
62	CT.STAFFORD	SEPTEMBER	3	0.022000	0.0240	0.01200	0.01200	0.030	0.0120	0.0300
63	CT.STAFFORD	OCTOBER	5	0.037400	0.0360	0.03400	0.03400	0.045	0.0350	0.0370
64	CT.STRATFORD	APRIL	7	0.042000	0.0450	0.04500	0.01900	0.058	0.0350	0.0500
65	CT.STRATFORD	MAY	8	0.058250	0.0505	0.03700	0.03700	0.099	0.0485	0.0660
66	CT.STRATFORD	JUNE	8	0.053500	0.0505	0.04700	0.04700	0.072	0.0485	0.0555
67	CT.STRATFORD	JULY	7	0.072143	0.0630	0.04100	0.04100	0.110	0.0520	0.1010
68	CT.STRATFORD	AUGUST	8	0.076875	0.0590	0.04500	0.04200	0.146	0.0450	0.1095
69	CT.STRATFORD	SEPTEMBER	2	0.032500	0.0325	0.01900	0.01900	0.046	0.0190	0.0460
70	CT.STRATFORD	OCTOBER	5	0.036800	0.0380	0.03000	0.03000	0.042	0.0350	0.0390
71	CT.TORRINGTON	APRIL	7	0.048714	0.0500	0.02000	0.02000	0.067	0.0410	0.0580
72	CT.TORRINGTON	MAY	7	0.052857	0.0550	0.03000	0.03000	0.080	0.0390	0.0620
73	CT.TORRINGTON	JUNE	6	0.059167	0.0490	0.03200	0.03200	0.113	0.0400	0.0720
74	CT.TORRINGTON	JULY	7	0.050286	0.0500	0.03700	0.03700	0.070	0.0390	0.0580
75	CT.TORRINGTON	AUGUST	9	0.058333	0.0500	0.03500	0.03500	0.098	0.0430	0.0800
76	CT.TORRINGTON	SEPTEMBER	3	0.037000	0.0310	0.02600	0.02600	0.054	0.0260	0.0540
77	CT.TORRINGTON	OCTOBER	5	0.036800	0.0360	0.03400	0.03400	0.042	0.0340	0.0380
78	MA.ADAMS	MAY	1	0.045000	0.0450	0.04500	0.04500	0.045	0.0450	0.0450
79	MA.ADAMS	JUNE	10	0.064800	0.0615	0.03200	0.03200	0.112	0.0530	0.0780
80	MA.ADAMS	JULY	17	0.058118	0.0550	0.04000	0.04000	0.113	0.0470	0.0600
81	MA.ADAMS	AUGUST	5	0.056000	0.0620	0.06200	0.03600	0.063	0.0570	0.0620
82	MA.AGAWAM	MAY	1	0.044000	0.0440	0.04400	0.04400	0.044	0.0440	0.0440
83	MA.AGAWAM	JUNE	11	0.074364	0.0680	0.08100	0.04700	0.111	0.0540	0.0870
84	MA.AGAWAM	JULY	18	0.066611	0.0600	0.05000	0.02200	0.161	0.0450	0.0680
85	MA.AGAWAM	AUGUST	5	0.087600	0.0880	0.04300	0.04300	0.125	0.0790	0.1030
86	MA.AMHERST	MAY	1	0.051000	0.0510	0.05100	0.05100	0.051	0.0510	0.0510
87	MA.AMHERST	JUNE	12	0.080667	0.0800	0.08400	0.04500	0.129	0.0615	0.0975
88	MA.AMHERST	JULY	14	0.074357	0.0655	0.04100	0.04100	0.130	0.0510	0.0800
89	MA.AMHERST	AUGUST	5	0.082800	0.0790	0.05700	0.05700	0.108	0.0730	0.0970
90	MA.CHELSEA	MAY	1	0.062000	0.0620	0.06200	0.06200	0.062	0.0620	0.0620
91	MA.CHELSEA	JUNE	11	0.066909	0.0590	0.05900	0.03600	0.115	0.0540	0.0870
92	MA.CHELSEA	JULY	18	0.045000	0.0450	0.02200	0.01900	0.075	0.0320	0.0600
93	MA.CHELSEA	AUGUST	5	0.062200	0.0590	0.04300	0.04300	0.087	0.0470	0.0750
94	MA.CHICOPEE	MAY	1	0.045000	0.0450	0.04500	0.04500	0.045	0.0450	0.0450
95	MA.CHICOPEE	JUNE	10	0.074800	0.0740	0.07400	0.04300	0.114	0.0550	0.0960
96	MA.CHICOPEE	JULY	17	0.060471	0.0550	0.05100	0.01900	0.122	0.0440	0.0630
97	MA.FAIRHAVEN	MAY	1	0.060000	0.0600	0.06000	0.06000	0.060	0.0600	0.0600
98	MA.FAIRHAVEN	JUNE	11	0.048455	0.0500	0.05000	0.01700	0.076	0.0310	0.0640
99	MA.FAIRHAVEN	JULY	16	0.045250	0.0490	0.02100	0.02100	0.083	0.0285	0.0580
100	MA.FAIRHAVEN	AUGUST	3	0.059667	0.0500	0.04800	0.04800	0.081	0.0480	0.0810
101	MA.LAWRENCE	JUNE	27	0.056185	0.0510	0.04400	0.02500	0.125	0.0410	0.0650
104	MA.LAWRENCE	SEPTEMBER	18	0.039500	0.0365	0.03700	0.01000	0.086	0.0190	0.0560
105	MA.LYNN	JULY	12	0.045833	0.0470	0.01700	0.01700	0.079	0.0280	0.0600
106	MA.LYNN	AUGUST	2	0.052500	0.0525	0.04600	0.04600	0.059	0.0460	0.0590
107	MA.NEWBURYPORT	MAY	1	0.044000	0.0440	0.04400	0.04400	0.044	0.0440	0.0440
108	MA.NEWBURYPORT	JUNE	10	0.066000	0.0600	0.02200	0.02200	0.119	0.0470	0.1020
109	MA.NEWBURYPORT	JULY	18	0.058056	0.0575	0.04500	0.03000	0.098	0.0400	0.0710
110	MA.NEWBURYPORT	AUGUST	5	0.080800	0.0840	0.05100	0.05100	0.107	0.0700	0.0920
111	MA.NORTH EASTON	JUNE	11	0.068000	0.0620	0.05800	0.03900	0.110	0.0580	0.0800
112	MA.NORTH EASTON	JULY	13	0.056538	0.0520	0.03700	0.03700	0.106	0.0390	0.0720
113	MA.NORTH EASTON	AUGUST	4	0.072250	0.0695	0.05900	0.05900	0.091	0.0625	0.0820
114	MA.SCITUATE	JUNE	12	0.063417	0.0645	0.05300	0.03200	0.087	0.0500	0.0820

ction 1 Continued...

OBS	LOC	MM	N	MEAN	MEDIAN	MODE	MIN	MAX	Q1	Q3
115	MA.SCITUATE	JULY	11	0.047545	0.0460	0.02700	0.02700	0.079	0.0310	0.0620
116	MA.SCITUATE	AUGUST	4	0.059500	0.0590	0.05100	0.05100	0.069	0.0545	0.0645
117	MA.SUDBURY	JUNE	12	0.074417	0.0655	0.06500	0.03400	0.131	0.0590	0.0930
118	MA.SUDBURY	JULY	12	0.058583	0.0530	0.05300	0.02700	0.100	0.0495	0.0600
119	MA.SUDBURY	AUGUST	4	0.071500	0.0735	0.04800	0.04800	0.091	0.0575	0.0855
120	MA.TRURO	MAY	1	0.067000	0.0670	0.06700	0.06700	0.067	0.0670	0.0670
121	MA.TRURO	JUNE	12	0.052833	0.0555	0.03400	0.02100	0.098	0.0340	0.0655
122	MA.TRURO	JULY	18	0.050944	0.0515	0.02800	0.02200	0.093	0.0330	0.0640
123	MA.TRURO	AUGUST	5	0.068000	0.0630	0.05800	0.05800	0.092	0.0590	0.0680
124	MA.WARE/QUABBIN	JUNE	12	0.075500	0.0720	0.04700	0.03900	0.140	0.0515	0.0945
125	MA.WARE/QUABBIN	JULY	7	0.063143	0.0570	0.03100	0.03100	0.109	0.0380	0.0980
126	MA.WARE/QUABBIN	AUGUST	1	0.088000	0.0880	0.08800	0.08800	0.088	0.0880	0.0880
127	MA.WORCESTER AIRPORT	MAY	1	0.059000	0.0590	0.05900	0.05900	0.059	0.0590	0.0590
128	MA.WORCESTER AIRPORT	JUNE	12	0.080250	0.0665	0.06000	0.04900	0.157	0.0590	0.0955
129	MA.WORCESTER AIRPORT	JULY	18	0.064833	0.0625	0.05700	0.03700	0.097	0.0570	0.0740
130	MA.WORCESTER AIRPORT	AUGUST	2	0.090000	0.0900	0.08600	0.08600	0.094	0.0860	0.0940
131	ME.ACADIANATIONALPARK	APRIL	19	0.045947	0.0460	0.04700	0.03800	0.067	0.0420	0.0470
132	ME.ACADIANATIONALPARK	MAY	29	0.045414	0.0440	0.03700	0.03300	0.079	0.0380	0.0500
133	ME.ACADIANATIONALPARK	JUNE	23	0.048087	0.0390	0.03300	0.03100	0.094	0.0360	0.0530
134	ME.ACADIANATIONALPARK	JULY	31	0.043290	0.0360	0.06200	0.01800	0.093	0.0290	0.0570
135	ME.ACADIANATIONALPARK	AUGUST	14	0.050429	0.0425	0.04000	0.03100	0.083	0.0400	0.0640
136	ME.CAPEELIZABETH	APRIL	29	0.046621	0.0440	0.04300	0.03300	0.066	0.0410	0.0530
137	ME.CAPEELIZABETH	MAY	29	0.045517	0.0430	0.03600	0.02700	0.087	0.0380	0.0510
138	ME.CAPEELIZABETH	JUNE	15	0.059400	0.0570	0.03800	0.03700	0.102	0.0400	0.0680
139	ME.CAPEELIZABETH	JULY	25	0.055080	0.0430	0.02400	0.02400	0.122	0.0310	0.0710
140	ME.CAPEELIZABETH	AUGUST	15	0.047467	0.0370	0.02900	0.01200	0.103	0.0290	0.0710
141	ME.GARDINER	APRIL	29	0.045690	0.0440	0.04300	0.03400	0.062	0.0410	0.0500
142	ME.GARDINER	MAY	30	0.044433	0.0445	0.03700	0.02600	0.067	0.0370	0.0500
143	ME.GARDINER	JUNE	22	0.047227	0.0390	0.03900	0.03000	0.098	0.0350	0.0490
144	ME.GARDINER	JULY	30	0.042833	0.0395	0.02900	0.01700	0.096	0.0290	0.0520
145	ME.GARDINER	AUGUST	15	0.051933	0.0470	0.03700	0.02500	0.087	0.0370	0.0710
146	ME.HOLDEN	MAY	12	0.046667	0.0425	0.03400	0.03400	0.084	0.0390	0.0520
147	ME.HOLDEN	JUNE	22	0.051500	0.0440	0.03400	0.03300	0.097	0.0370	0.0590
148	ME.HOLDEN	JULY	31	0.043516	0.0400	0.04800	0.02300	0.083	0.0310	0.0540
149	ME.HOLDEN	AUGUST	15	0.054667	0.0450	0.04400	0.03100	0.104	0.0440	0.0660
150	ME.HOWLAND	JULY	8	0.035500	0.0305	0.02400	0.02400	0.054	0.0275	0.0450
151	ME.HOWLAND	AUGUST	12	0.053000	0.0465	0.03600	0.03300	0.098	0.0360	0.0690
152	ME.ISLEAUHAUT	APRIL	18	0.049667	0.0505	0.05700	0.03300	0.068	0.0390	0.0570
153	ME.ISLEAUHAUT	MAY	31	0.046484	0.0440	0.04400	0.03200	0.074	0.0370	0.0520
154	ME.ISLEAUHAUT	JUNE	23	0.053913	0.0510	0.05900	0.03200	0.088	0.0380	0.0620
155	ME.ISLEAUHAUT	JULY	31	0.048645	0.0430	0.02600	0.02400	0.111	0.0330	0.0610
156	ME.ISLEAUHAUT	AUGUST	15	0.047000	0.0480	0.02800	0.02800	0.079	0.0340	0.0510
157	ME.JONESPORT	APRIL	30	0.044300	0.0455	0.05000	0.01700	0.064	0.0360	0.0500
158	ME.JONESPORT	MAY	30	0.041200	0.0375	0.03400	0.03100	0.066	0.0340	0.0450
159	ME.JONESPORT	JUNE	22	0.044864	0.0470	0.02600	0.02600	0.070	0.0320	0.0560
160	ME.JONESPORT	JULY	31	0.035806	0.0310	0.02300	0.01500	0.089	0.0250	0.0490
161	ME.JONESPORT	AUGUST	15	0.039267	0.0370	0.03200	0.02700	0.056	0.0320	0.0500
162	ME.KENNEBUNKPORT	APRIL	14	0.051143	0.0510	0.04300	0.03700	0.070	0.0430	0.0550
163	ME.KENNEBUNKPORT	MAY	30	0.048567	0.0465	0.03800	0.02600	0.095	0.0390	0.0540
164	ME.KENNEBUNKPORT	JUNE	23	0.057130	0.0520	0.04400	0.03400	0.110	0.0430	0.0620
165	ME.KENNEBUNKPORT	JULY	31	0.057968	0.0520	0.04200	0.02500	0.134	0.0320	0.0700
166	ME.KENNEBUNKPORT	AUGUST	15	0.060800	0.0540	0.03300	0.03200	0.109	0.0400	0.0830
167	ME.LOVELL	APRIL	30	0.040900	0.0430	0.04700	0.01900	0.066	0.0340	0.0490
168	ME.LOVELL	MAY	30	0.042433	0.0410	0.04000	0.02400	0.079	0.0370	0.0460
169	ME.LOVELL	JUNE	18	0.037944	0.0370	0.03700	0.01600	0.068	0.0330	0.0410
170	ME.LOVELL	JULY	30	0.040733	0.0400	0.02800	0.02700	0.071	0.0310	0.0470

Section 1 Continued...

OBS	LOC	MM	N	MEAN	MEDIAN	MODE	MIN	MAX	Q1	Q3
171	ME.LOVELL	AUGUST	15	0.047600	0.0450	0.03300	0.03200	0.066	0.0370	0.0620
172	ME.PHIPPSBURG	JUNE	13	0.061308	0.0580	0.06900	0.03300	0.097	0.0440	0.0690
173	ME.PHIPPSBURG	JULY	31	0.052839	0.0450	0.02900	0.02400	0.132	0.0310	0.0660
174	ME.PHIPPSBURG	AUGUST	15	0.055800	0.0480	0.04800	0.02700	0.104	0.0400	0.0680
175	ME.PORTCLYDE	APRIL	30	0.046367	0.0440	0.03900	0.03600	0.069	0.0410	0.0510
176	ME.PORTCLYDE	MAY	31	0.045226	0.0420	0.04000	0.02800	0.074	0.0390	0.0500
177	ME.PORTCLYDE	JUNE	23	0.054304	0.0520	0.05200	0.03200	0.096	0.0400	0.0640
178	ME.PORTCLYDE	JULY	31	0.050226	0.0420	0.02900	0.02300	0.131	0.0320	0.0630
179	ME.PORTCLYDE	AUGUST	15	0.052200	0.0520	0.05700	0.03000	0.092	0.0370	0.0620
180	ME.SKOWHEGAN	APRIL	29	0.044586	0.0430	0.03900	0.03300	0.061	0.0390	0.0500
181	ME.SKOWHEGAN	MAY	28	0.042071	0.0425	0.03600	0.02600	0.059	0.0360	0.0480
182	ME.SKOWHEGAN	JUNE	4	0.037500	0.0410	0.02400	0.02400	0.044	0.0315	0.0435
183	ME.SKOWHEGAN	JULY	12	0.046333	0.0450	0.05100	0.02700	0.094	0.0355	0.0510
184	ME.SKOWHEGAN	AUGUST	11	0.035364	0.0350	0.01200	0.01200	0.063	0.0230	0.0470
185	NB.BLISSVILLE	MAY	7	0.035429	0.0340	0.03000	0.03000	0.041	0.0300	0.0410
186	NB.BLISSVILLE	JUNE	24	0.043958	0.0390	0.03000	0.02700	0.086	0.0325	0.0510
187	NB.BLISSVILLE	JULY	30	0.034567	0.0335	0.02700	0.01900	0.059	0.0270	0.0420
188	NB.BLISSVILLE	AUGUST	22	0.031591	0.0305	0.03000	0.01600	0.048	0.0260	0.0380
189	NB.BLISSVILLE	SEPTEMBER	16	0.024000	0.0190	0.01400	0.00900	0.063	0.0150	0.0255
190	NB.CUSTOMS BLDG	MAY	7	0.020286	0.0190	0.01400	0.01400	0.027	0.0140	0.0270
191	NB.CUSTOMS BLDG	JUNE	26	0.026346	0.0245	0.01800	0.01700	0.043	0.0200	0.0300
192	NB.CUSTOMS BLDG	JULY	30	0.025833	0.0250	0.01900	0.01200	0.046	0.0190	0.0280
193	NB.CUSTOMS BLDG	AUGUST	29	0.034172	0.0300	0.02300	0.01800	0.083	0.0230	0.0430
194	NB.CUSTOMS BLDG	SEPTEMBER	21	0.021667	0.0200	0.01700	0.00600	0.045	0.0170	0.0240
195	NB.FOREST HILLS	MAY	7	0.031429	0.0350	0.02300	0.02300	0.036	0.0230	0.0360
196	NB.FOREST HILLS	JUNE	26	0.036423	0.0335	0.02700	0.02500	0.062	0.0290	0.0420
197	NB.FOREST HILLS	JULY	30	0.033567	0.0305	0.02000	0.01700	0.064	0.0250	0.0410
198	NB.FOREST HILLS	AUGUST	29	0.032448	0.0280	0.02400	0.01900	0.075	0.0240	0.0400
199	NB.FOREST HILLS	SEPTEMBER	22	0.028273	0.0280	0.02400	0.01900	0.038	0.0240	0.0320
200	NB.LEPREAU	MAY	6	0.044333	0.0450	0.04500	0.04300	0.045	0.0430	0.0450
201	NB.LEPREAU	JUNE	20	0.049150	0.0465	0.04500	0.02700	0.075	0.0410	0.0565
202	NB.LEPREAU	JULY	18	0.016333	0.0120	0.00800	0.00300	0.045	0.0080	0.0250
203	NB.LEPREAU	AUGUST	29	0.023379	0.0190	0.01300	0.00300	0.080	0.0120	0.0320
204	NB.LEPREAU	SEPTEMBER	20	0.018900	0.0175	0.02800	0.00700	0.047	0.0095	0.0255
205	NB.NORTON	MAY	7	0.030000	0.0320	0.03400	0.02200	0.034	0.0220	0.0340
206	NB.NORTON	JUNE	26	0.038731	0.0330	0.03300	0.02300	0.081	0.0290	0.0460
207	NB.NORTON	JULY	28	0.030500	0.0280	0.02600	0.01200	0.061	0.0230	0.0385
208	NB.NORTON	AUGUST	22	0.036818	0.0335	0.01800	0.01700	0.071	0.0240	0.0460
209	NB.NORTON	SEPTEMBER	14	0.032429	0.0330	0.03300	0.01800	0.050	0.0270	0.0370
210	NH.CLAREMONT	MAY	28	0.039857	0.0390	0.03500	0.01700	0.065	0.0345	0.0435
211	NH.CLAREMONT	JUNE	16	0.046688	0.0445	0.03200	0.02900	0.086	0.0330	0.0550
212	NH.CLAREMONT	JULY	30	0.044233	0.0395	0.03600	0.02600	0.096	0.0350	0.0500
213	NH.CLAREMONT	AUGUST	30	0.046967	0.0450	0.03500	0.02600	0.092	0.0360	0.0550
214	NH.CLAREMONT	SEPTEMBER	27	0.034148	0.0340	0.02600	0.00600	0.067	0.0230	0.0430
215	NH.CLAREMONT	OCTOBER	17	0.033471	0.0300	0.02900	0.01800	0.064	0.0250	0.0390
216	NH.CONCORD	MAY	28	0.042321	0.0400	0.03700	0.02000	0.072	0.0365	0.0465
217	NH.CONCORD	JUNE	17	0.053353	0.0460	0.03700	0.03000	0.105	0.0380	0.0610
218	NH.CONCORD	JULY	30	0.045167	0.0400	0.04700	0.02100	0.105	0.0280	0.0600
219	NH.CONCORD	AUGUST	29	0.046310	0.0450	0.03200	0.02000	0.082	0.0330	0.0570
220	NH.CONCORD	SEPTEMBER	27	0.031778	0.0310	0.01300	0.00200	0.071	0.0170	0.0420
221	NH.CONCORD	OCTOBER	18	0.025833	0.0250	0.02700	0.01500	0.046	0.0210	0.0280
222	NH.KEENE	MAY	27	0.044444	0.0450	0.04500	0.03300	0.074	0.0370	0.0480
223	NH.KEENE	JUNE	18	0.054111	0.0485	0.04200	0.03300	0.102	0.0400	0.0580
224	NH.KEENE	JULY	30	0.049300	0.0455	0.03900	0.02300	0.107	0.0380	0.0590
225	NH.KEENE	AUGUST	31	0.052258	0.0480	0.04100	0.02800	0.090	0.0410	0.0640
226	NH.KEENE	SEPTEMBER	27	0.035778	0.0330	0.02400	0.00800	0.072	0.0240	0.0490

ection 1 Continued...

OBS	LOC	MM	N	MEAN	MEDIAN	MODE	MIN	MAX	Q1	Q3
227	NH.KEENE	OCTOBER	18	0.034056	0.0300	0.03000	0.01600	0.072	0.0280	0.0370
228	NH.MANCHESTER	MAY	28	0.042250	0.0420	0.03300	0.02200	0.062	0.0350	0.0465
229	NH.MANCHESTER	JUNE	17	0.054647	0.0500	0.04200	0.03300	0.105	0.0410	0.0610
230	NH.MANCHESTER	JULY	30	0.051200	0.0485	0.04900	0.02400	0.092	0.0360	0.0640
231	NH.MANCHESTER	AUGUST	31	0.057032	0.0570	0.04400	0.03000	0.100	0.0420	0.0720
232	NH.MANCHESTER	SEPTEMBER	27	0.038148	0.0300	0.01400	0.00900	0.092	0.0240	0.0500
233	NH.MANCHESTER	OCTOBER	18	0.030000	0.0300	0.03000	0.01500	0.053	0.0250	0.0310
234	NH.NASHUA	MAY	28	0.047214	0.0445	0.03900	0.03000	0.072	0.0390	0.0535
235	NH.NASHUA	JUNE	18	0.059278	0.0490	0.03900	0.03800	0.127	0.0420	0.0670
236	NH.NASHUA	JULY	30	0.053000	0.0475	0.03100	0.02600	0.099	0.0350	0.0650
237	NH.NASHUA	AUGUST	31	0.063419	0.0620	0.04000	0.03100	0.097	0.0470	0.0830
238	NH.NASHUA	SEPTEMBER	26	0.039000	0.0350	0.03700	0.00700	0.090	0.0230	0.0470
239	NH.NASHUA	OCTOBER	18	0.033444	0.0320	0.03200	0.01800	0.075	0.0270	0.0360
240	NH.PORTSMOUTH	MAY	28	0.045607	0.0450	0.03800	0.02400	0.061	0.0390	0.0520
241	NH.PORTSMOUTH	JUNE	14	0.052000	0.0445	0.05600	0.03200	0.101	0.0390	0.0560
242	NH.PORTSMOUTH	JULY	30	0.047300	0.0430	0.02900	0.02000	0.111	0.0290	0.0620
243	NH.PORTSMOUTH	AUGUST	31	0.058194	0.0550	0.02900	0.02800	0.099	0.0350	0.0790
244	NH.PORTSMOUTH	SEPTEMBER	27	0.039630	0.0330	0.02700	0.00900	0.092	0.0270	0.0490
245	NH.PORTSMOUTH	OCTOBER	18	0.030000	0.0300	0.03300	0.02100	0.042	0.0260	0.0330
246	NH.RYE	MAY	27	0.049074	0.0460	0.04000	0.02600	0.088	0.0400	0.0550
247	NH.RYE	JUNE	16	0.062688	0.0560	0.04200	0.03200	0.107	0.0445	0.0795
248	NH.RYE	JULY	30	0.050400	0.0430	0.02100	0.02100	0.125	0.0300	0.0590
249	NH.RYE	AUGUST	31	0.055194	0.0540	0.07300	0.02500	0.095	0.0320	0.0730
250	NH.RYE	SEPTEMBER	27	0.037741	0.0310	0.02700	0.01700	0.089	0.0230	0.0420
251	NH.RYE	OCTOBER	11	0.032727	0.0310	0.02900	0.02300	0.049	0.0290	0.0360
252	NJ.ANCORA	MAY	30	0.073600	0.0715	0.08800	0.03200	0.129	0.0540	0.0890
253	NJ.ANCORA	JUNE	30	0.079733	0.0760	0.05900	0.04400	0.138	0.0630	0.0910
254	NJ.ANCORA	JULY	31	0.094387	0.0980	0.07100	0.04500	0.140	0.0730	0.1160
255	NJ.ANCORA	AUGUST	31	0.089548	0.0850	0.08000	0.05100	0.158	0.0710	0.0990
256	NJ.ANCORA	SEPTEMBER	31	0.059548	0.0620	0.07800	0.00900	0.117	0.0380	0.0780
257	NJ.BAYONNE	MAY	30	0.068833	0.0635	0.06000	0.04000	0.116	0.0550	0.0800
258	NJ.BAYONNE	JUNE	30	0.064767	0.0680	0.06300	0.02200	0.101	0.0450	0.0770
259	NJ.BAYONNE	JULY	31	0.074645	0.0770	0.07700	0.02100	0.131	0.0530	0.0870
260	NJ.BAYONNE	AUGUST	31	0.081129	0.0710	0.06300	0.02800	0.141	0.0580	0.1100
261	NJ.BAYONNE	SEPTEMBER	31	0.048935	0.0420	0.01000	0.01000	0.116	0.0260	0.0670
262	NJ.CAMDEN	MAY	30	0.062533	0.0545	0.05100	0.03000	0.108	0.0460	0.0790
263	NJ.CAMDEN	JUNE	32	0.068000	0.0680	0.07000	0.03100	0.114	0.0460	0.0915
264	NJ.CAMDEN	JULY	31	0.074290	0.0780	0.04600	0.03000	0.113	0.0590	0.0870
265	NJ.CAMDEN	AUGUST	31	0.077000	0.0800	0.08000	0.01600	0.120	0.0670	0.0870
266	NJ.CAMDEN	SEPTEMBER	31	0.040323	0.0430	0.02200	0.00200	0.093	0.0220	0.0550
267	NJ.CHESTER	MAY	30	0.064733	0.0600	0.04700	0.03200	0.100	0.0500	0.0810
268	NJ.CHESTER	JUNE	32	0.069594	0.0665	0.04800	0.02500	0.119	0.0480	0.0895
269	NJ.CHESTER	JULY	31	0.071742	0.0720	0.04100	0.01900	0.121	0.0490	0.0940
270	NJ.CHESTER	AUGUST	31	0.076194	0.0720	0.05100	0.03200	0.122	0.0630	0.0920
271	NJ.CHESTER	SEPTEMBER	31	0.045581	0.0440	0.02400	0.01100	0.084	0.0290	0.0630
272	NJ.CLARKSBORO	MAY	29	0.074241	0.0700	0.06400	0.03900	0.127	0.0510	0.0910
273	NJ.CLARKSBORO	JUNE	32	0.074844	0.0720	0.04900	0.03400	0.121	0.0525	0.1005
274	NJ.CLARKSBORO	JULY	30	0.084267	0.0875	0.06400	0.03900	0.124	0.0640	0.1010
275	NJ.CLARKSBORO	AUGUST	30	0.088833	0.0865	0.07700	0.05300	0.130	0.0750	0.1030
276	NJ.CLARKSBORO	SEPTEMBER	31	0.048258	0.0540	0.03300	0.00100	0.104	0.0300	0.0680
277	NJ.CLIFFSIDEPARK	MAY	29	0.050793	0.0480	0.04800	0.03000	0.090	0.0410	0.0590
278	NJ.CLIFFSIDEPARK	JUNE	29	0.055690	0.0540	0.02600	0.02000	0.090	0.0410	0.0650
279	NJ.CLIFFSIDEPARK	JULY	31	0.059774	0.0600	0.06000	0.01200	0.111	0.0410	0.0750
280	NJ.CLIFFSIDEPARK	AUGUST	30	0.064100	0.0605	0.04000	0.02600	0.111	0.0430	0.0870
281	NJ.CLIFFSIDEPARK	SEPTEMBER	31	0.036645	0.0310	0.01400	0.00200	0.097	0.0140	0.0490
282	NJ.COLLIERSMILLS	MAY	30	0.069700	0.0645	0.05200	0.03900	0.117	0.0520	0.0810
283	NJ.COLLIERSMILLS	JUNE	33	0.071394	0.0750	0.08100	0.04100	0.108	0.0500	0.0860

ection 1 Continued...

OBS	LOC	MM	N	MEAN	MEDIAN	MODE	MIN	MAX	Q1	Q3
284	NJ.COLLIERSMILLS	JULY	31	0.078935	0.0780	0.09200	0.02900	0.142	0.0590	0.0920
285	NJ.COLLIERSMILLS	AUGUST	31	0.075516	0.0690	0.06500	0.04100	0.122	0.0610	0.0890
286	NJ.COLLIERSMILLS	SEPTEMBER	31	0.043903	0.0470	0.06800	0.00600	0.089	0.0280	0.0550
287	NJ.FLEMINGTON	MAY	30	0.065900	0.0620	0.07900	0.02900	0.106	0.0500	0.0790
288	NJ.FLEMINGTON	JUNE	32	0.071906	0.0725	0.04000	0.03100	0.118	0.0530	0.0885
289	NJ.FLEMINGTON	JULY	31	0.071839	0.0750	0.05000	0.02800	0.117	0.0500	0.0890
290	NJ.FLEMINGTON	AUGUST	31	0.073613	0.0740	0.08900	0.02900	0.117	0.0610	0.0890
291	NJ.FLEMINGTON	SEPTEMBER	31	0.043903	0.0390	0.03300	0.00600	0.089	0.0280	0.0580
292	NJ.MILLVILLE	MAY	28	0.072071	0.0685	0.09400	0.04500	0.114	0.0555	0.0870
293	NJ.MILLVILLE	JUNE	32	0.075031	0.0740	0.05100	0.04700	0.124	0.0560	0.0920
294	NJ.MILLVILLE	JULY	31	0.086355	0.0850	0.08300	0.03900	0.121	0.0670	0.1050
295	NJ.MILLVILLE	AUGUST	31	0.082710	0.0820	0.06700	0.05100	0.118	0.0670	0.0990
296	NJ.MILLVILLE	SEPTEMBER	31	0.055419	0.0540	0.10000	0.00400	0.100	0.0350	0.0730
297	NJ.MONMOUTHCOLLEGE	MAY	30	0.059433	0.0575	0.04900	0.03700	0.106	0.0490	0.0650
298	NJ.MONMOUTHCOLLEGE	JUNE	32	0.061719	0.0610	0.06400	0.03300	0.123	0.0430	0.0725
299	NJ.MONMOUTHCOLLEGE	JULY	31	0.078323	0.0800	0.05700	0.02600	0.162	0.0590	0.0920
300	NJ.MONMOUTHCOLLEGE	AUGUST	30	0.072333	0.0630	0.05900	0.03800	0.134	0.0540	0.0890
301	NJ.MONMOUTHCOLLEGE	SEPTEMBER	31	0.048226	0.0460	0.06100	0.00500	0.100	0.0310	0.0640
302	NJ.NACOTECREEK	MAY	30	0.058167	0.0595	0.06300	0.03800	0.092	0.0480	0.0660
303	NJ.NACOTECREEK	JUNE	32	0.068469	0.0700	0.04900	0.03800	0.112	0.0520	0.0815
304	NJ.NACOTECREEK	JULY	31	0.081065	0.0780	0.06700	0.04400	0.115	0.0680	0.0980
305	NJ.NACOTECREEK	AUGUST	31	0.069645	0.0680	0.06300	0.04200	0.106	0.0580	0.0820
306	NJ.NACOTECREEK	SEPTEMBER	31	0.050000	0.0510	0.00900	0.00900	0.094	0.0360	0.0650
307	NJ.NEWARK	MAY	30	0.044900	0.0420	0.02700	0.02700	0.090	0.0320	0.0540
308	NJ.NEWARK	JUNE	32	0.046938	0.0470	0.04000	0.01300	0.095	0.0330	0.0575
309	NJ.NEWARK	JULY	31	0.056258	0.0590	0.03800	0.00300	0.088	0.0450	0.0720
310	NJ.NEWARK	AUGUST	31	0.060484	0.0530	0.04700	0.00800	0.113	0.0450	0.0850
311	NJ.NEWARK	SEPTEMBER	31	0.034806	0.0270	0.00800	0.00600	0.108	0.0150	0.0450
312	NJ.NEWBRUNSWICK	MAY	30	0.060767	0.0560	0.04900	0.03200	0.099	0.0480	0.0710
313	NJ.NEWBRUNSWICK	JUNE	32	0.067344	0.0660	0.03500	0.02800	0.121	0.0470	0.0880
314	NJ.NEWBRUNSWICK	JULY	30	0.069833	0.0775	0.05100	0.02800	0.104	0.0510	0.0830
315	NJ.NEWBRUNSWICK	AUGUST	29	0.075138	0.0760	0.09000	0.03100	0.110	0.0580	0.0910
316	NJ.NEWBRUNSWICK	SEPTEMBER	31	0.046032	0.0390	0.02300	0.00400	0.105	0.0230	0.0630
317	NJ.PLAINFIELD	MAY	30	0.058933	0.0545	0.04300	0.03000	0.096	0.0430	0.0670
318	NJ.PLAINFIELD	JUNE	31	0.059710	0.0560	0.04100	0.02600	0.107	0.0410	0.0730
319	NJ.PLAINFIELD	JULY	31	0.057484	0.0580	0.04700	0.01900	0.100	0.0430	0.0700
320	NJ.PLAINFIELD	AUGUST	31	0.067226	0.0700	0.05100	0.02200	0.111	0.0510	0.0810
321	NJ.PLAINFIELD	SEPTEMBER	31	0.039484	0.0340	0.02900	0.00500	0.088	0.0210	0.0550
322	NJ.RIDERCOLLEGE	MAY	30	0.073167	0.0680	0.05600	0.03500	0.117	0.0560	0.0840
323	NJ.RIDERCOLLEGE	JUNE	30	0.080437	0.0775	0.04400	0.04400	0.135	0.0600	0.1020
324	NJ.RIDERCOLLEGE	JULY	31	0.079065	0.0850	0.08600	0.02800	0.137	0.0600	0.0940
325	NJ.RIDERCOLLEGE	AUGUST	31	0.080387	0.0810	0.06800	0.03000	0.124	0.0670	0.0960
326	NJ.RIDERCOLLEGE	SEPTEMBER	31	0.047161	0.0410	0.04100	0.00400	0.100	0.0290	0.0650
327	NS.AYLESFORD	MAY	31	0.046968	0.0440	0.04000	0.03600	0.069	0.0400	0.0510
328	NS.AYLESFORD	JUNE	24	0.046875	0.0390	0.03900	0.02800	0.085	0.0355	0.0545
329	NS.AYLESFORD	JULY	17	0.043882	0.0420	0.03400	0.02900	0.073	0.0340	0.0500
330	NS.AYLESFORD	AUGUST	30	0.044033	0.0375	0.03100	0.02300	0.090	0.0320	0.0550
331	NS.AYLESFORD	SEPTEMBER	21	0.038333	0.0380	0.02500	0.02500	0.063	0.0330	0.0430
332	NS.HALIFAX	MAY	33	0.031242	0.0320	0.03200	0.01300	0.048	0.0270	0.0370
333	NS.HALIFAX	JUNE	29	0.028621	0.0280	0.02800	0.01700	0.060	0.0230	0.0310
334	NS.HALIFAX	JULY	28	0.026893	0.0205	0.01600	0.01300	0.062	0.0170	0.0325
335	NS.HALIFAX	AUGUST	29	0.025103	0.0210	0.01800	0.01200	0.058	0.0180	0.0310
336	NS.HALIFAX	SEPTEMBER	20	0.022250	0.0220	0.02200	0.01200	0.038	0.0185	0.0245
337	NS.KEJIMKUJIK	MAY	31	0.046871	0.0440	0.04100	0.03400	0.066	0.0390	0.0550
338	NS.KEJIMKUJIK	JUNE	29	0.043241	0.0390	0.03700	0.02400	0.087	0.0340	0.0470
339	NS.KEJIMKUJIK	JULY	26	0.033385	0.0315	0.02300	0.02100	0.069	0.0250	0.0400
340	NS.KEJIMKUJIK	AUGUST	28	0.037821	0.0315	0.02900	0.02200	0.077	0.0290	0.0450

ection 1 Continued...

OBS	LOC	MM	N	MEAN	MEDIAN	MODE	MIN	MAX	Q1	Q3
341	NS.KEJIMKUJIK	SEPTEMBER	18	0.034389	0.0335	0.02600	0.02200	0.054	0.0270	0.0410
342	NY.AMHERST	MAY	20	0.049850	0.0415	0.04000	0.03000	0.153	0.0380	0.0555
343	NY.AMHERST	JUNE	19	0.048474	0.0490	0.03600	0.02400	0.083	0.0370	0.0590
344	NY.AMHERST	JULY	26	0.050885	0.0495	0.04300	0.01400	0.088	0.0430	0.0590
345	NY.AMHERST	AUGUST	29	0.056552	0.0560	0.04100	0.02500	0.086	0.0450	0.0700
346	NY.AMHERST	SEPTEMBER	16	0.042500	0.0415	0.02300	0.02300	0.074	0.0360	0.0460
347	NY.BABYLON	MAY	25	0.058200	0.0550	0.04900	0.01900	0.096	0.0510	0.0680
348	NY.BABYLON	JUNE	21	0.065857	0.0660	0.06900	0.04100	0.105	0.0550	0.0740
349	NY.BABYLON	JULY	29	0.078172	0.0760	0.05500	0.02800	0.200	0.0550	0.1020
350	NY.BABYLON	AUGUST	28	0.068607	0.0610	0.04900	0.03000	0.134	0.0490	0.0805
351	NY.BABYLON	SEPTEMBER	16	0.058750	0.0570	0.02200	0.02200	0.114	0.0335	0.0780
352	NY.BELLEAYREMOUNTAIN	MAY	25	0.062760	0.0570	0.04900	0.04000	0.089	0.0520	0.0760
353	NY.BELLEAYREMOUNTAIN	JUNE	21	0.064714	0.0610	0.05900	0.03600	0.106	0.0510	0.0840
354	NY.BELLEAYREMOUNTAIN	JULY	29	0.058862	0.0550	0.06200	0.03300	0.097	0.0490	0.0640
355	NY.BELLEAYREMOUNTAIN	AUGUST	30	0.064600	0.0615	0.06000	0.04000	0.103	0.0510	0.0730
356	NY.BELLEAYREMOUNTAIN	SEPTEMBER	16	0.053313	0.0550	0.01900	0.01900	0.084	0.0370	0.0680
357	NY.CAMDEN	MAY	25	0.046520	0.0440	0.03300	0.03200	0.071	0.0380	0.0560
358	NY.CAMDEN	JUNE	20	0.048400	0.0500	0.05000	0.02000	0.095	0.0375	0.0570
359	NY.CAMDEN	JULY	26	0.046962	0.0480	0.05500	0.01900	0.075	0.0340	0.0550
360	NY.CAMDEN	AUGUST	30	0.049100	0.0470	0.04100	0.02700	0.083	0.0400	0.0540
361	NY.CAMDEN	SEPTEMBER	16	0.041938	0.0435	0.04400	0.02000	0.075	0.0310	0.0495
362	NY.CAMPGEORGETOWN	MAY	25	0.056640	0.0520	0.04700	0.03700	0.081	0.0470	0.0650
363	NY.CAMPGEORGETOWN	JUNE	21	0.055714	0.0560	0.06000	0.03000	0.099	0.0490	0.0600
364	NY.CAMPGEORGETOWN	JULY	29	0.054483	0.0600	0.03700	0.02900	0.076	0.0420	0.0650
365	NY.CAMPGEORGETOWN	AUGUST	30	0.055233	0.0515	0.03900	0.03400	0.091	0.0450	0.0600
366	NY.CAMPGEORGETOWN	SEPTEMBER	16	0.048313	0.0495	0.05400	0.02000	0.080	0.0390	0.0545
367	NY.EASTSYRACUSE	MAY	24	0.050083	0.0530	0.05800	0.01700	0.092	0.0355	0.0640
368	NY.EASTSYRACUSE	JUNE	20	0.060100	0.0605	0.06500	0.02800	0.093	0.0460	0.0680
369	NY.EASTSYRACUSE	JULY	29	0.052759	0.0540	0.03400	0.02200	0.078	0.0400	0.0660
370	NY.EASTSYRACUSE	AUGUST	30	0.054300	0.0510	0.05000	0.02800	0.090	0.0440	0.0610
371	NY.EASTSYRACUSE	SEPTEMBER	16	0.046938	0.0505	0.05400	0.01400	0.077	0.0360	0.0550
372	NY.ELMIRA	MAY	25	0.051600	0.0470	0.03900	0.03400	0.084	0.0410	0.0640
373	NY.ELMIRA	JUNE	21	0.053810	0.0510	0.04300	0.03100	0.090	0.0430	0.0610
374	NY.ELMIRA	JULY	26	0.054500	0.0540	0.06700	0.02600	0.073	0.0490	0.0630
375	NY.ELMIRA	AUGUST	30	0.055300	0.0525	0.04900	0.03600	0.086	0.0490	0.0630
376	NY.ELMIRA	SEPTEMBER	16	0.046875	0.0480	0.04800	0.01300	0.078	0.0375	0.0565
377	NY.LOUDONVILLE	MAY	25	0.048000	0.0460	0.04300	0.02900	0.078	0.0410	0.0550
378	NY.LOUDONVILLE	JUNE	21	0.056095	0.0550	0.05500	0.02800	0.111	0.0490	0.0650
379	NY.LOUDONVILLE	JULY	29	0.051931	0.0490	0.04700	0.02400	0.081	0.0440	0.0590
380	NY.LOUDONVILLE	AUGUST	30	0.065200	0.0655	0.06800	0.03500	0.106	0.0500	0.0790
381	NY.LOUDONVILLE	SEPTEMBER	16	0.047438	0.0505	0.05400	0.01100	0.073	0.0370	0.0600
382	NY.MIDDLEPORT	MAY	25	0.051360	0.0480	0.04500	0.03600	0.088	0.0440	0.0550
383	NY.MIDDLEPORT	JUNE	21	0.055190	0.0510	0.02400	0.02400	0.088	0.0440	0.0660
384	NY.MIDDLEPORT	JULY	29	0.053138	0.0500	0.06500	0.02000	0.093	0.0430	0.0650
385	NY.MIDDLEPORT	AUGUST	30	0.056167	0.0525	0.04000	0.03100	0.090	0.0420	0.0700
386	NY.MIDDLEPORT	SEPTEMBER	16	0.047563	0.0470	0.02200	0.02200	0.087	0.0330	0.0560
387	NY.MILLBROOK	MAY	25	0.059440	0.0540	0.04200	0.03700	0.104	0.0460	0.0720
388	NY.MILLBROOK	JUNE	21	0.066095	0.0620	0.05600	0.04000	0.109	0.0520	0.0770
389	NY.MILLBROOK	JULY	26	0.063538	0.0550	0.05100	0.02300	0.150	0.0500	0.0760
390	NY.MILLBROOK	AUGUST	30	0.069333	0.0650	0.04300	0.04100	0.119	0.0540	0.0820
391	NY.MILLBROOK	SEPTEMBER	16	0.052383	0.0505	0.01113	0.01113	0.092	0.0385	0.0670
392	NY.MORRISANIAII	MAY	25	0.048600	0.0470	0.04000	0.02100	0.089	0.0400	0.0540
393	NY.MORRISANIAII	JUNE	18	0.050389	0.0505	0.07200	0.02800	0.072	0.0400	0.0560
394	NY.MORRISANIAII	JULY	29	0.059828	0.0610	0.03400	0.01500	0.126	0.0450	0.0750
395	NY.MORRISANIAII	AUGUST	30	0.055067	0.0505	0.02700	0.01500	0.104	0.0350	0.0710
396	NY.MORRISANIAII	SEPTEMBER	16	0.040125	0.0360	0.00700	0.00700	0.085	0.0195	0.0575
397	NY.MTNINHAM	AUGUST	2	0.000000	0.0000	0.00000	0.00000	0.000	0.0000	0.0000

Section 1 Continued...

OBS	LOC	MM	N	MEAN	MEDIAN	MODE	MIN	MAX	Q1	Q3
398	NY.NICK'SLAKE	MAY	25	0.046960	0.0450	0.04000	0.03500	0.069	0.0400	0.0510
399	NY.NICK'SLAKE	JUNE	21	0.043905	0.0460	0.04900	0.02200	0.085	0.0350	0.0500
400	NY.NICK'SLAKE	JULY	29	0.043759	0.0450	0.02800	0.02200	0.091	0.0340	0.0490
401	NY.NICK'SLAKE	AUGUST	30	0.047433	0.0450	0.04300	0.02700	0.077	0.0390	0.0540
402	NY.NICK'SLAKE	SEPTEMBER	16	0.045688	0.0430	0.04300	0.02600	0.082	0.0350	0.0495
403	NY.NYCGREENPOINT	SEPTEMBER	14	0.039071	0.0360	0.00400	0.00400	0.077	0.0220	0.0530
404	NY.NYCMABELDEAN	MAY	21	0.038762	0.0370	0.03100	0.01100	0.077	0.0320	0.0430
405	NY.NYCMABELDEAN	JUNE	18	0.040111	0.0365	0.03100	0.02300	0.069	0.0310	0.0430
406	NY.NYCQUEEN'SCOLLEGE	MAY	21	0.051000	0.0480	0.04500	0.00700	0.091	0.0410	0.0570
407	NY.NYCQUEEN'SCOLLEGE	JUNE	21	0.056381	0.0560	0.05600	0.03800	0.083	0.0440	0.0630
408	NY.NYCQUEEN'SCOLLEGE	JULY	29	0.061655	0.0590	0.06900	0.01600	0.129	0.0440	0.0710
409	NY.NYCQUEEN'SCOLLEGE	AUGUST	30	0.058700	0.0505	0.03700	0.01700	0.111	0.0370	0.0860
410	NY.NYCQUEEN'SCOLLEGE	SEPTEMBER	16	0.045813	0.0460	0.02400	0.00900	0.080	0.0250	0.0665
411	NY.NYCSUSANWAGNER	MAY	25	0.059240	0.0580	0.04900	0.03400	0.095	0.0490	0.0690
412	NY.NYCSUSANWAGNER	JUNE	18	0.065889	0.0675	0.06600	0.04300	0.087	0.0540	0.0750
413	NY.NYCSUSANWAGNER	JULY	28	0.071036	0.0705	0.02500	0.02500	0.119	0.0570	0.0825
414	NY.NYCSUSANWAGNER	AUGUST	3	0.088000	0.0870	0.08200	0.08200	0.095	0.0820	0.0950
415	NY.NYCWORLDTRADECENTER	MAY	25	0.064880	0.0630	0.05000	0.03800	0.101	0.0500	0.0750
416	NY.NYCWORLDTRADECENTER	JUNE	21	0.069333	0.0650	0.04900	0.04500	0.114	0.0500	0.0800
417	NY.NYCWORLDTRADECENTER	JULY	29	0.073862	0.0750	0.07500	0.02300	0.125	0.0600	0.0870
418	NY.NYCWORLDTRADECENTER	AUGUST	30	0.075800	0.0700	0.05400	0.03000	0.131	0.0540	0.0950
419	NY.NYCWORLDTRADECENTER	SEPTEMBER	12	0.070167	0.0735	0.01700	0.01700	0.108	0.0480	0.0950
420	NY.PERCHRIVER	MAY	25	0.049400	0.0470	0.04400	0.03400	0.076	0.0430	0.0550
421	NY.PERCHRIVER	JUNE	21	0.050190	0.0480	0.04800	0.02200	0.086	0.0380	0.0600
422	NY.PERCHRIVER	JULY	29	0.051655	0.0540	0.03100	0.02500	0.083	0.0350	0.0620
423	NY.PERCHRIVER	AUGUST	30	0.054067	0.0515	0.04300	0.02600	0.108	0.0430	0.0600
424	NY.PERCHRIVER	SEPTEMBER	16	0.045938	0.0450	0.04500	0.01800	0.081	0.0355	0.0550
425	NY.PISECOLAKE	MAY	25	0.050000	0.0480	0.04000	0.03900	0.072	0.0440	0.0540
426	NY.PISECOLAKE	JUNE	19	0.046579	0.0490	0.04900	0.02400	0.095	0.0360	0.0520
427	NY.PISECOLAKE	JULY	23	0.042870	0.0460	0.02900	0.01800	0.073	0.0320	0.0520
428	NY.PISECOLAKE	AUGUST	29	0.049552	0.0480	0.04000	0.02800	0.078	0.0400	0.0570
429	NY.PISECOLAKE	SEPTEMBER	16	0.047313	0.0475	0.05500	0.02500	0.076	0.0340	0.0550
430	NY.RIVERHEAD	MAY	25	0.055960	0.0510	0.04000	0.04000	0.096	0.0450	0.0680
431	NY.RIVERHEAD	JUNE	21	0.057095	0.0560	0.05100	0.03500	0.081	0.0510	0.0610
432	NY.RIVERHEAD	JULY	29	0.071690	0.0610	0.04100	0.02400	0.172	0.0470	0.0890
433	NY.RIVERHEAD	AUGUST	30	0.061633	0.0540	0.05000	0.02500	0.121	0.0470	0.0710
434	NY.RIVERHEAD	SEPTEMBER	16	0.054625	0.0520	0.05600	0.03000	0.091	0.0430	0.0645
435	NY.ROCHESTER	MAY	24	0.048042	0.0430	0.04300	0.02600	0.084	0.0385	0.0545
436	NY.ROCHESTER	JUNE	21	0.053619	0.0540	0.05400	0.02100	0.092	0.0450	0.0620
437	NY.ROCHESTER	JULY	29	0.054966	0.0520	0.03900	0.01600	0.086	0.0430	0.0660
438	NY.ROCHESTER	AUGUST	30	0.060033	0.0560	0.04800	0.02600	0.087	0.0480	0.0740
439	NY.ROCHESTER	SEPTEMBER	16	0.044563	0.0455	0.01900	0.01900	0.072	0.0340	0.0540
440	NY.SCHENECTADY	MAY	25	0.047080	0.0440	0.04300	0.02700	0.074	0.0420	0.0520
441	NY.SCHENECTADY	JUNE	21	0.054714	0.0530	0.04200	0.02900	0.097	0.0430	0.0630
442	NY.SCHENECTADY	JULY	28	0.048857	0.0455	0.04100	0.01900	0.091	0.0365	0.0570
443	NY.SCHENECTADY	AUGUST	29	0.055655	0.0530	0.05100	0.02800	0.093	0.0470	0.0610
444	NY.SCHENECTADY	SEPTEMBER	16	0.040250	0.0430	0.03800	0.00700	0.069	0.0285	0.0500
445	NY.STILLWATER	MAY	25	0.049000	0.0500	0.05200	0.03000	0.072	0.0410	0.0530
446	NY.STILLWATER	JUNE	20	0.052300	0.0490	0.04900	0.02700	0.087	0.0415	0.0620
447	NY.STILLWATER	JULY	28	0.043964	0.0410	0.03300	0.02200	0.093	0.0330	0.0505
448	NY.STILLWATER	AUGUST	30	0.053700	0.0525	0.04100	0.02500	0.090	0.0410	0.0640
449	NY.STILLWATER	SEPTEMBER	16	0.042875	0.0405	0.02100	0.01700	0.071	0.0330	0.0540
450	NY.SUNYPURCHASE	MAY	25	0.048000	0.0450	0.03800	0.03600	0.074	0.0400	0.0540
451	NY.SUNYPURCHASE	JUNE	20	0.055250	0.0565	0.06200	0.02800	0.085	0.0445	0.0620
452	NY.SUNYPURCHASE	JULY	29	0.062103	0.0570	0.02700	0.02700	0.120	0.0450	0.0780
453	NY.SUNYPURCHASE	AUGUST	16	0.071438	0.0705	0.07800	0.02500	0.111	0.0510	0.0960
454	NY.SUNYPURCHASE	SEPTEMBER	16	0.049313	0.0515	0.01600	0.01600	0.089	0.0335	0.0640

OBS	LOC	MM	N	MEAN	MEDIAN	MODE	MIN	MAX	Q1	Q3
455	NY.WESTFIELD	MAY	25	0.055960	0.0530	0.04200	0.03400	0.099	0.0440	0.0640
456	NY.WESTFIELD	JUNE	21	0.061619	0.0600	0.05300	0.03100	0.104	0.0530	0.0670
457	NY.WESTFIELD	JULY	29	0.055724	0.0580	0.03300	0.02200	0.086	0.0380	0.0700
458	NY.WESTFIELD	AUGUST	30	0.065233	0.0640	0.06300	0.03200	0.094	0.0580	0.0760
459	NY.WESTFIELD	SEPTEMBER	16	0.053125	0.0500	0.04300	0.01900	0.090	0.0430	0.0635
460	NY.WHITEFACEMTLODGE	MAY	14	0.051071	0.0490	0.04300	0.04200	0.063	0.0450	0.0570
461	NY.WHITEFACEMTLODGE	JUNE	21	0.048190	0.0480	0.03800	0.03100	0.093	0.0380	0.0540
462	NY.WHITEFACEMTLODGE	JULY	28	0.050750	0.0520	0.05200	0.01400	0.097	0.0340	0.0655
463	NY.WHITEFACEMTLODGE	AUGUST	30	0.048700	0.0460	0.04200	0.02800	0.092	0.0370	0.0520
464	NY.WHITEFACEMTLODGE	SEPTEMBER	16	0.044500	0.0425	0.04100	0.02100	0.078	0.0325	0.0520
465	NY.WHITEFACEMTSUMMIT	MAY	25	0.058720	0.0590	0.06400	0.04400	0.079	0.0520	0.0640
466	NY.WHITEFACEMTSUMMIT	JUNE	19	0.061632	0.0620	0.06400	0.03600	0.103	0.0430	0.0750
467	NY.WHITEFACEMTSUMMIT	JULY	27	0.056481	0.0560	0.03300	0.02400	0.082	0.0370	0.0740
468	NY.WHITEFACEMTSUMMIT	AUGUST	26	0.061038	0.0550	0.05500	0.03100	0.093	0.0520	0.0740
469	NY.WHITEFACEMTSUMMIT	SEPTEMBER	13	0.053615	0.0520	0.02700	0.02700	0.083	0.0400	0.0600
470	NY.WHITEPLAINS	MAY	25	0.039200	0.0380	0.03200	0.02100	0.072	0.0320	0.0440
471	NY.WHITEPLAINS	JUNE	21	0.047905	0.0420	0.03200	0.01900	0.108	0.0330	0.0610
472	NY.WHITEPLAINS	JULY	29	0.065897	0.0630	0.04000	0.02700	0.120	0.0500	0.0810
473	NY.WHITEPLAINS	AUGUST	4	0.099000	0.1010	0.08600	0.08600	0.108	0.0915	0.1065
474	NY.WHITEPLAINS	SEPTEMBER	14	0.052143	0.0490	0.04900	0.01600	0.109	0.0360	0.0620
475	NY.WILLIAMSON	MAY	25	0.053600	0.0530	0.04500	0.03500	0.083	0.0420	0.0590
476	NY.WILLIAMSON	JUNE	21	0.055571	0.0590	0.06300	0.02600	0.093	0.0480	0.0640
477	NY.WILLIAMSON	SEPTEMBER	14	0.051500	0.0500	0.05000	0.02300	0.091	0.0340	0.0650
478	PA.BRISTOL	MAY	56	0.061714	0.0550	0.05500	0.02300	0.101	0.0465	0.0800
479	PA.BRISTOL	JUNE	32	0.069813	0.0650	0.04500	0.04100	0.121	0.0490	0.0885
480	PA.BRISTOL	AUGUST	5	0.088000	0.0760	0.05500	0.05500	0.129	0.0590	0.1210
481	PA.BRISTOL	SEPTEMBER	26	0.045462	0.0480	0.01800	0.00200	0.087	0.0230	0.0610
482	PA.BRISTOL	OCTOBER	26	0.032192	0.0310	0.03100	0.01000	0.065	0.0250	0.0390
483	PA.CHESTER	MAY	62	0.064226	0.0600	0.05900	0.02900	0.117	0.0480	0.0760
484	PA.CHESTER	JUNE	32	0.073906	0.0680	0.05100	0.04800	0.118	0.0535	0.0925
485	PA.CHESTER	AUGUST	5	0.098200	0.1010	0.10100	0.08100	0.107	0.1010	0.1010
486	PA.CHESTER	SEPTEMBER	25	0.048600	0.0540	0.06200	0.00200	0.087	0.0360	0.0620
487	PA.CHESTER	OCTOBER	27	0.029889	0.0300	0.00800	0.00800	0.060	0.0240	0.0380
488	PA.NORRISTOWN	MAY	62	0.061387	0.0590	0.05800	0.01900	0.100	0.0480	0.0830
489	PA.NORRISTOWN	JUNE	32	0.067594	0.0650	0.05000	0.03700	0.127	0.0535	0.0740
490	PA.NORRISTOWN	AUGUST	5	0.095800	0.0990	0.07000	0.07000	0.119	0.0910	0.1000
491	PA.NORRISTOWN	SEPTEMBER	26	0.048654	0.0500	0.05300	0.00400	0.088	0.0360	0.0670
492	PA.NORRISTOWN	OCTOBER	23	0.032870	0.0330	0.03400	0.01300	0.069	0.0280	0.0380
493	RI.ALTONJONES	MAY	19	0.053474	0.0500	0.04400	0.03600	0.105	0.0440	0.0580
494	RI.ALTONJONES	JUNE	25	0.059800	0.0550	0.04800	0.03400	0.112	0.0480	0.0620
495	RI.ALTONJONES	SEPTEMBER	11	0.048727	0.0540	0.01800	0.01800	0.075	0.0280	0.0600
496	RI.BROWN	MAY	32	0.045688	0.0420	0.03300	0.02900	0.092	0.0335	0.0500
497	RI.BROWN	JUNE	25	0.055920	0.0510	0.06100	0.03300	0.101	0.0410	0.0610
498	RI.BROWN	SEPTEMBER	11	0.047000	0.0470	0.03800	0.02200	0.072	0.0380	0.0670
499	VT.BENNINGTON	APRIL	27	0.046778	0.0460	0.04600	0.02400	0.090	0.0390	0.0510
500	VT.BENNINGTON	MAY	31	0.054613	0.0540	0.05600	0.03400	0.078	0.0480	0.0620
501	VT.BENNINGTON	JUNE	28	0.054464	0.0505	0.03900	0.03400	0.112	0.0430	0.0585
502	VT.BENNINGTON	AUGUST	7	0.065429	0.0560	0.03600	0.03600	0.109	0.0460	0.0880
503	VT.BENNINGTON	SEPTEMBER	23	0.046522	0.0440	0.04000	0.01900	0.076	0.0370	0.0560
504	VT.BENNINGTON	OCTOBER	26	0.049962	0.0515	0.04000	0.02400	0.078	0.0430	0.0570
505	VT.UNDERHILL	APRIL	29	0.052103	0.0510	0.05400	0.02600	0.077	0.0460	0.0620
506	VT.UNDERHILL	MAY	31	0.051871	0.0520	0.05000	0.03300	0.092	0.0430	0.0600
507	VT.UNDERHILL	JUNE	29	0.053276	0.0490	0.04000	0.03500	0.096	0.0440	0.0570
508	VT.UNDERHILL	AUGUST	7	0.055000	0.0560	0.03700	0.03700	0.078	0.0390	0.0640
509	VT.UNDERHILL	SEPTEMBER	23	0.043435	0.0410	0.02700	0.02300	0.079	0.0320	0.0500
510	VT.UNDERHILL	OCTOBER	26	0.040462	0.0375	0.03700	0.02300	0.065	0.0330	0.0470

Section 2. Data Summary by Month.

OBS	MM	N	RANGE	MEAN	MEDIAN	MODE	MIN	MAX
1	APRIL	350	0.074	0.045777	0.046	0.047	0.016	0.090
2	MAY	2104	0.146	0.052853	0.049	0.043	0.007	0.153
3	JUNE	2016	0.144	0.057654	0.053	0.049	0.013	0.157
4	JULY	2265	0.197	0.055911	0.052	0.031	0.003	0.200
5	AUGUST	1981	0.158	0.059721	0.057	0.040	0.000	0.158
6	SEPTEMBER	1417	0.116	0.043121	0.040	0.037	0.001	0.117
7	OCTOBER	301	0.075	0.034020	0.032	0.030	0.003	0.078

Section 3. Data Summary by State and Province.

OBS	ST	N	RANGE	MEAN	MEDIAN	MODE	MIN	MAX	Q1	Q3
1	CT	474	0.150	0.053316	0.048	0.035	0.003	0.153	0.036	0.0630
2	MA	543	0.151	0.059438	0.058	0.058	0.010	0.161	0.043	0.0710
3	ME	1210	0.122	0.047201	0.044	0.037	0.012	0.134	0.036	0.0540
4	NB	516	0.083	0.031275	0.030	0.027	0.003	0.086	0.022	0.0385
5	NH	1040	0.125	0.045548	0.042	0.037	0.002	0.127	0.032	0.0550
6	NJ	2305	0.161	0.065500	0.064	0.063	0.001	0.162	0.048	0.0840
7	NS	394	0.078	0.036784	0.036	0.032	0.012	0.090	0.026	0.0430
8	NY	3098	0.200	0.054808	0.052	0.049	0.000	0.200	0.042	0.0650
9	PA	444	0.127	0.057383	0.055	0.058	0.002	0.129	0.038	0.0730
10	RI	123	0.094	0.052228	0.049	0.044	0.018	0.112	0.041	0.0600
11	VT	287	0.093	0.050202	0.049	0.040	0.019	0.112	0.040	0.0570