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Office of Air Quality
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REGIONAL OZONE MODELING FOR NORTHEAST TRANSPORT (ROMNET)

Appendices

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REGIONAL OZONE MODELING FOR NORTHEAST TRANSPORT (ROMNET)

APPENDICES

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PROJECT PROTOCOL
REGIONAL OZONE MODELING FOR NORTHEAST TRANSPORT
(ROMNET)

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A.1 INTRODUCTION

A.1.1 Purpose

Control strategies to attain ozone National Ambient Air Quality Standards (NAAQS) are complicated by the impact of ozone and ozone precursors transported from one urban area to another. The problem of pollutant transport is especially acute where several urban areas are in close proximity to one another, as in the Northeastern U.S. The U.S. Environmental Protection Agency (EPA) together with states in the Northeast are undertaking a program to quantify the concentrations of transported ozone and precursor pollutants as part of the effort to reach attainment of the NAAQS in a timely manner. The program will employ the Regional Oxidant Model (ROM) which was developed for this purpose. The effort is entitled "Regional Ozone Modeling for Northeast Transport (ROMNET)." ROMNET is designed to: (1) provide air pollution control agencies in the Northeast with information on ozone and precursor transport between urban areas; (2) assess the impact of regional strategies on ozone concentration and interurban transport;[1] and (3) provide guidance for incorporating ozone and precursor pollutant transport in future State Implementation Plan (SIP) development activities.

The primary purpose of this document is to provide a clear statement of the objectives and the technical, managerial, and resource aspects of ROMNET. This includes the project goals, outputs (i.e., results and interpretation), and basic program assumptions. Important to understanding the program is a comprehension of SIP related activities that are clearly beyond the scope of ROMNET. This particular aspect is further amplified in Section A.5.

Major factors in successful completion of ROMNET are the organizational structure and participation by the respective States. The accomplishment of ROMNET goals requires that participants (see Section A.2) include those organizations that have a major interest and/or stake in the outcome and results of this program. The management structure for the program is designed to lead to efficient conduct of the study. This structure ensures that the participants have an input to the basic decision and analysis process.

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1. This assessment will be designed such that the findings will be useful for subsequent ozone policy planning by EPA, States, and/or other political/ institutional organizations including the Transport Advisory Group identified in the EPA's proposed post-1987 ozone policy.

This protocol also serves as the focal point for the initiation, conduct, and interpretation of the study. It presents the technical program that must be accomplished and the schedules that must be met in order to complete the study successfully. However, it does not present intimate details of each technical task. A complete description of the technical activities relies upon the specific results of analyses performed during the study. For example, decisions by the various program committees will affect the final path of ROMNET. In this regard, the protocol will be supplemented periodically by technical committee reports as specific tasks are completed.

A.1.2 Need for Regional Scale Modeling

Ozone and ozone precursors are transported beyond the political borders of the source areas and impact air quality at considerable distances from the area of those emissions. This fact has been well documented by the scientific community and has been recognized by decision-makers. As a consequence, EPA has established a policy for considering ozone and precursor transport in the development of strategies for meeting the ozone NAAQS. In this policy it is assumed that ozone concentrations at an area's upwind boundary do not exceed the ambient air quality standards. However, on some occasions, transport may be a major factor leading to observed ozone levels greater than 0.12 ppm. It is argued that previous programs which focussed solely on urban scale modeling analyses, have failed to account properly for the effect and magnitude of ozone and precursor transport.

The consideration of ozone and precursor transport is of particular importance in the Northeast due to several factors. Along the Northeast Corridor there are five major urban areas in close proximity: Washington, D.C.; Baltimore, MD; Philadelphia, PA; New York, NY; and Boston, MA. In addition, there are several medium-size cities including Wilmington, DE; Trenton, NJ; Allentown, PA; Hartford, CT; and Providence, RI. Also, the suburban areas surrounding each of these metropolitan centers nearly overlap to provide an almost continuous corridor of sources emitting ozone precursors. Aside from these source areas, emissions in other less populated areas of the Northeast and/or Cities such as Pittsburgh, PA; Buffalo, NY; Cleveland, OH; Detroit, MI; and Toronto, ON may at times contribute to the ozone problem along the Corridor. A compounding factor is the meteorological conditions that exist frequently in the Northeast during the summer. In particular, the wind flow often favors ozone and precursor transport both between urban areas in the Corridor and into the Corridor from other parts of the Northeast. The result can be multiday episodes of high ozone concentrations across broad areas of this region.

There have been a number of modeling studies which indicate the sensitivity of emissions controls to assumptions about the transport of ozone and precursor pollutants. Urban scale modeling with the Empirical Kinetic Modeling Approach (EKMA) and the Urban Airshed Model (UAM) have demonstrated the critical role of pollutant concentrations advected into the modeling area. These boundary conditions, which represent pollutant transport into the urban area are important to estimating the impact of emissions changes on ozone concentrations within the modeling domain.

The specification of representative boundary conditions for photochemical modeling analyses using EKMA or UAM is not simple. The difficulties arise in part because of a lack of spatial resolution at the surface and aloft of ozone and precursor pollutant measurements. Such measurements are necessary for estimating concentrations for each simulated time step along the modeling domain boundary. This is further complicated by the need for future year boundary conditions in estimating the necessary emissions controls in a given area. The future year conditions account for the effects of 1) anticipated changes in emissions between the base year and the attainment date due to factors such as population growth and control programs already mandated, but not fully implemented, and 2) strategies applied in upwind areas.

The regional scale model applications performed in ROMNET will provide realistic estimates of transported pollutant concentrations for a number of regional emissions scenarios. In this regard, the modeling results will provide data for estimating urban scale boundary conditions for both base year and possible future year emissions scenarios.

In addition, the modeling results will be used to evaluate the relative effectiveness of selected regional emissions strategies for reducing ozone concentrations to levels at or below 0.12 ppm. However, regional modeling alone is insufficient for attainment demonstrations. The relatively coarse spatial scale of ROM grids (18-1/2 x 18-1/2 km), compared to the sharp gradients of ozone observed in urban plumes, tends to smooth out and thus, underestimate peak l-hour concentrations. As discussed below, it is intended that the results from regional modeling will be used by States to support subsequent urban scale modeling analyses to demonstrate attainment.

A.1.3 ROMNET Overview

The two primary objectives of ROMNET are 1) to provide estimates of ozone and precursor concentrations at the urban area boundaries for use in SIP planning, and 2) to evaluate the relative impact of regional controls on ozone in the Northeast. These will be accomplished through the application of ROM for several multiday episodes using various emissions scenarios which collectively reflect base case, projection year, and potential combined regional and urban control strategies. It should be noted that emissions strategies selected for testing are not necessarily endorsed for implementation by any agency involved in the program.

The ROM predictions will be presented in a manner that permits boundary conditions to be specified for subsequent modeling with either EKMA or UAM. Is this sense, ROMNET will facilitate State evaluation of urban control strategies that realistically consider pollutant transport for a number of regional emissions scenarios. The program will also include an interpretation of predictions to consider relative effects of the regional strategies. In this regard, the results of ROMNET are also intended to be used by EPA, States, and/or other political/institutional organizations in formulating policy decisions on the relative merits of implementing various regional strategies.[2] The framework for making such decisions is beyond the scope of ROMNET since it is dependent upon a number of factors which are presently undefined or unknown such as the final shape and form of the Agency's post '87 ozone policy and to some extent the actual findings from ROMNET.

The program design includes three major tasks: (1) emissions inventory development; (2) strategy development; and (3) ROM simulations. Through this protocol the interaction of these elements is structured logically from both a management and technical perspective to accomplish the basic purpose of the program. The first task includes the acquisition of the base year emissions inventories of hydrocarbons (HC), oxides of nitrogen (NO_x), and carbon monoxide (CO). This task also includes development of inventories for a selected future year(s) and for emissions reduction strategies. The development and selection of strategies to be simulated by ROM will be conducted in the second task. The ROM will be applied using the base year, projection year(s), and strategy emissions as part of the third task. This final task will also include the compilation of model predictions of ozone and precursor

2. For example, the Transport Advisory Group identified in EPA's proposal post '87 policy would be one of the groups which will use ROMNET results in formulating policy on transport.

concentrations into a format for use by States in estimating urban scale boundary conditions. In addition, these data will be analyzed and interpreted to discern the impact of the simulated strategies on interurban transport and the magnitude of ozone relative to the level of the ozone NAAQS.

The remainder of this protocol is structured to address the Participants (Section A.2), the Project Organization (Section A.3), the Technical Program (Section A.4), Special Considerations (Section A.5), and the Program Schedule and Resources (Section A.6). Section A.5 also includes a discussion of the necessary limitations of ROMNET and how these considerations relate to the goals of the program.

A.2 PROGRAM PARTICIPANTS

As can be seen from Figure A-1, the domain of the modeling region extends across a major portion of the Mid-Atlantic and New England States and also includes Ohio and part of Michigan. This area encompasses 16 States and Washington, D.C. across five different EPA Regional Offices. A principal component of this program is the involvement of as many of the State agencies as possible at each level within ROMNET. It is anticipated that the States in EPA Regions I, II, and III will be the prime contributors to this program, with an appropriate commitment by each of the respective Regional Offices. In addition, it will be important for Ohio, Michigan, and Region V to participate. Emissions from these areas may have a significant impact on ozone and precursor concentrations, particularly in the western portion of the modeling domain. Finally, participation by Kentucky, and consequently Region IV, will be sought to ensure an accurate representation of the conditions existing in the southwestern edge of the program area.

Full participation by the above organizations will be critical, particularly in the emission inventory/projection phase of ROMNET. In this regard, each State will be requested to (1) confirm the appropriateness of techniques used to project/allocate growth and emissions controls, and (2) indicate any limitations that apply to the NAPAP emissions data base as they relate to the specific goals of ROMNET. Aside from the emissions activities, it is anticipated that many of the States will be concerned about the selection of meteorological episodes in the modeling phase of ROMNET. The task of developing control strategies is also expected to be of high interest. Finally, a Management Review Committee (see Section A.3) will be established with participation from senior level individuals of each State and Regional Office.

In addition to participation by the EPA Regional Offices, there will be several EPA units involved in various aspects of ROMNET. Specifically, participation by the Office of Air Quality Planning and Standards (OAQPS), the Office of Research and Development (ORD), the Office of Policy Analysis and Review (OPAR), and the Office of Policy, Planning and Evaluation (OPPE) will be necessary to complete this program successfully. As discussed in Section A.3, all participants will be provided an opportunity to participate in or comment on major Program decisions and will be advised of the completion of major activities.

A.3 PROJECT ORGANIZATION

The organization of the study relies on a multilayered or tiered management structure. This management concept is designed to accomplish two purposes. First, it involves as many of the interested agencies as possible. Second, this management structure allows individual expertise from both States and EPA to be brought into the appropriate committee and phase of work. The basic program will be directed by an EPA manager in OAQPS who will serve to guide the project to a successful completion. This individual, identified as the Program Director (see Figure A-2), will be the liaison between the Management Review Committee and the technical program elements. The Program Director will be assisted by the Technical Coordinator who will ensure that the various technical tasks are properly designed and integrated among the technical committees.

A.3.1 Technical Committees

The technical program is subdivided along the three basic performance areas: (1) emissions inventory; (2) modeling; and (3) strategy development. Each of these areas will have a committee responsible for identifying and resolving technical problems and accomplishing the appropriate activities. The specific responsibilities are identified below. Each committee will be directed by an OAQPS staff member. The committee chairmen will be responsible for organizing the activities and interfacing with the Technical Coordinator. Additionally, the chairman of each committee will be responsible for developing a work plan in concert with the Technical Coordinator, monitoring the progress of work underway, and notifying the Technical Coordinator of problems or program delays.

The Emissions Committee is responsible for the development of the regional scale inventories associated with both projection and control strategy scenarios in a form and format consistent with ROM. A major portion of the projection inventory will be performed by a contractor under the direction of EPA with review by the appropriate States. The Committee will also be responsible for ensuring the compatibility between control strategy design and the ability of the emissions inventory system to resolve emissions in the desired manner. A third responsibility of this Committee will be the transmittal of the emissions inventories to the Atmospheric Sciences Research Laboratory (ASRL) for use in ROM simulations. The documentation of all inventory-related activities including the application of projection techniques and emissions calculations for alternative control strategies is also a major responsibility of this Committee. The Committee will be composed of senior technical individuals from the organizations represented. Members should have broad experience in the development and application of emissions inventories and projection methodologies for use in air quality dispersion modeling.

As an adjunct to the committee activity, States will need to provide technical information to the EPA contractor on emissions growth factors and other aspects of the future-year and control strategy inventories. With this close cooperation, States will be able to ensure that the basic information which has been previously verified as part of NAPAP, is properly applied by the contractor in the process of applying projection factors and imposing control strategies.

ASRL will conduct the regional scale modeling analyses, including base year, projection years(s), and control strategy simulations. The Modeling Committee will oversee ASRL which will require that members of the Committee review the development and selection of meteorological episodes. In addition, this committee has a major responsibility for designing and conducting the analysis of ROM predictions. The development of guidance on the use of the ROM results in future urban scale modeling efforts, is also a responsibility of this committee. The Committee will be responsible for establishing procedures to interface the ROM results with currently recommended urban scale modeling techniques (UAM and EKMA). This procedure is a major output of the study and will be presented in guidance documents so that future users will have a complete understanding of techniques for applying ROMNET results to various meteorological scenarios under differing regional control strategies.

State experts in modeling and meteorological assessment may desire to participate at the working level of the Modeling Committee. They will provide assistance in selection of meteorological episodes that lead to the transport conditions of concern within ROMNET. In addition, these individuals will likely be the end users of the data produced by ROMNET. They should ensure, either by review or participation, that the data and guidance will be useful in future urban scale modeling efforts.

The final technical committee is the Strategy Committee. The responsibility of this Committee will be development of control scenarios that include regional/urban scale strategies. The Committee will prioritize the strategies developed for simulation with the ROM. These strategies will need to represent a coordinated approach to the problem of regional transport but need not be endorsed as strategies to be adopted as part of the ozone implementation program. The results of this activity will be a report on the basis of each strategy and justification for strategy selection. In addition, the committee will interpret the model predictions relative to the consequences of implementing the simulated strategies. This activity will be conducted in association with results of analyses by the Modeling Committee in order to provide a regional assessment of the effectiveness of these strategies.

It is intended that this Committee be staffed by senior staff individuals from each participating agency with sufficient background in SIP development and implementation to understand and address the major issues in control strategy selection. State participation in the Strategy Committee will be necessary to ensure appropriate consideration of each State's current implementation program. In addition, States will be able to comment on the feasibility of certain emission control strategy elements considered to be based upon the currently active programs within the specific States. Through knowledge of specific programs currently anticipated to be implemented as well as the extent of application of such measures, ROMNET will be able to assess more accurately future transport conditions.

A.3.2 Management Review Committee

The Management Review Committee will be formed as part of ROMNET and will be composed of senior level agency personnel from each participating agency and chaired by OAQPS. The Management Review Committee will provide a forum to ensure that the focus of ROMNET is maintained within the interests of the multiple agencies involved. This committee will be more concerned with the basic goals and objectives of ROMNET than with the technical details of program accomplishments. Moreover, one of the responsibilities of the MRC is to ensure that the program activities are directed such that the results of simulating regional strategies will be useful in subsequent policy decisions beyond ROMNET.

A.3.3 Program Management

There will be two individuals who will manage the many different aspects of the ROMNET activities on a day-to-day basis. The lead responsibility for this program will be assumed by the Program Director, who will be assisted by the Technical Coordinator. Responsibilities will include the overall technical adequacy of the program, as well as guiding and reviewing the work of the technical committees. This will require coordinating the activities between technical committees and ensuring that each committee is provided with all relevant information from other associated activities. In addition, the Program Director will keep the Management Review Committee abreast of the technical committees' progress and ensure that consensus recommendations/findings of the Management Review Committee are integrated into the committees' work.

An Advisory Council will be established to assist the Program Director in formulating decisions relative to the conduct of the program. In this sense the Council will advise the Program Director on major or controversial issues involving resources, schedules, cooperation, technical activities and program direction toward achieving ROMNET objectives. The Advisory Council will consist of 3 representatives from the States and one each from Region-I, II, and III. It is intended that these individuals, as mid-level management, will maintain a perspective broader than the individual technical committees concerning technical program accomplishments and direction. The Advisory Council will address issues of program management, resources, cooperation, and direction toward achieving ROMNET objectives. In addition, the Advisory Council will be consulted for input on decisions necessary to ensure timely completion of the technical program.

A.3.4 Committee Decision-Making Process

Technical committee decisions and recommendations will reflect a consensus of the committee membership. This consensus will generally be sought after the committee chair makes straw man proposals. However, other members of the committee are also free to make such proposals. If a consensus can not be reached then decisions will be made by majority rule. EPA and its contractors will then attempt to implement resulting decisions. If unanticipated technical issues arise, these will be identified and alternative solutions proposed. If the solution is obvious or if it is agreed beforehand that time is of the essence, the alternative will be implemented and the committee members advised soon after the fact. If neither of these two conditions exist, committee members will be asked to react to proposed alternatives.

The technical committee chairmen and Technical Coordinator are responsible for informing the Program Director of the consensus decisions as well as any counter arguments or recommendations posed by committee members. The Program Director is then responsible for providing this information to the Advisory Council. The Program Director will consider the advice of the Council in formulating a decision on the issue in question. With three exceptions, agreement between the Program Director and at lease two-thirds of the Council is sufficient for implementing the decision. These exceptions include issues involving resources, schedules, and the selection of strategies. For these issues and in cases when there is not an agreement between the Program Director and the Council, the Program Director will seek consensus approval from the management Review Committee chairman.

A.3.5 Committee Communications

Communications within the committees and between the committees, their chairmen, the Technical Coordinator, Project Director, Advisory Council, and Management Review Committee will proceed as follows. It is anticipated that the committees will meet 3 to 4 times per year. The first technical committee meetings will be held soon after the MRC approves the final protocol. The frequency and need for subsequent meetings will be at the discretion of the individual committees. However, it is anticipated that, at a minimum, meeting will be held on a quarterly basis. Given the close proximity of the technical committee chairmen, Technical Coordinator, and Program Director, joint meetings among these persons will be held frequently. The use of conference calls for committee meetings will be made as warranted. Also, there will be more frequent contact (e.g., daily/ weekly) between technical committee chairmen and individual committee members on specific issues during the course of the program.

Written summaries of the committee meetings will be prepared by each chairman. Copies will be distributed to the members, the other committee chairmen, Technical coordinator, and Advisory Council.

Written descriptions of major decisions or proposed decisions on controversial topics will be prepared for the Advisory Council, as events warrant. Copies will be sent to the chairman of the Management Review Committee. In addition, quarterly reports will be prepared and sent to all committee/council members beginning April 15, 1988. These reports will include key accomplishments during the past quarter, comparison with the Protocol's schedule, anticipated activities for the next quarter, and problems resolved or needing resolution.

A.4 TECHNICAL PROGRAM

The following discussion presents the basic technical approach to be used in performing the tasks necessary to produce ozone and precursor concentration estimates for the various control strategy scenarios. The specific activities of each task are identified along with the group responsible for ensuring completion of the activity.

A.4.1 Emissions Inventory Development

The activities associated with this task are intended to provide the emissions inventories which will serve as the basis for simulating ozone and precursor concentrations for selected emissions scenarios. Three types of emissions scenarios will be examined in ROMNET: (1) base year; (2) projection year(s); and (3) regional/urban control strategies.

Base Year

The base year emissions necessary for ROM simulations will include the 1985 NAPAP HC and NO_x inventories for point, area, and mobile source categories. This data base is complete for purposes of ROMNET and will not require a major effort in this program. The Air and Energy Engineering Research Laboratory (AEERL) and OAQPS are currently responsible for overseeing the development and quality assurance of these inventories under the NAPAP. This includes acquisition of raw emissions data from the United States and Canada, the performance of spatial, temporal, and seasonal allocations, and the specification of HC into the Carbon Bond Mechanism Version (CBM-4) classification. The weekday and weekend summer season versions of these inventories will be provided to ASRL by AEERL. ASRL will then perform the necessary processing and screening prior to using these data for ROM simulations. An inventory for HC emissions from biogenic sources will be developed by ASRL and included with anthropogenic emissions in the model simulations. Oversight of this activity, including an assessment of the uncertainty in biogenic emissions, will be performed by the Emissions Committee. Finally, a 1985 CO emissions inventory for the modeling domain will be extracted from the National Emissions Data System (NEDS) by an EPA contractor.

Projection Year

The selection of a projection year will be critical because of the impact of source growth and expansion on the base inventory. Additionally, certain control programs, e.g., Federal Motor Vehicle Control Program (FMVCP), begin to have a reduced effectiveness in later years. Recommendations on the projection year will be the responsibility of the Emissions Committee. The recommendations and basis for selection will be documented in a technical memorandum to the Program Director. In considering the choice of a projection year, the Committee should consider such factors as reasonable time to implement controls, effect of population growth, the Agency's policy for attainment of the ozone NAAQS, etc.

The development of the projection year inventory will be conducted primarily via contract. State assistance and cooperation will be necessary to advise the contractor on State specific items so that the projection techniques are properly applied to the inventory data base. The first step in constructing these inventories will be the preparation of a set of consistent procedures for generating growth factors for areas in the modeling domain. The actual growth factors for urban and rural areas need not be the same. However, the underlying technical basis must be sound. Once these factors have been documented and approved by the Emissions Committee, the factors will be applied to the base year inventories by an EPA contractor using the Flexible Regional Emissions Data System (FREDS) inventory management system to develop the projection year inventories.

Strategy Inventories

Emissions inventories for HC, NO and CO will be developed for each of the alternative control strategies to be examined in ROMNET. This activity will be conducted primarily via contract and will require the translation of the strategy scenarios specified by the Strategy Committee into emissions changes by county. This information will be processed by the contractor to generate HC, NO_x, and CO anthropogenic inventories for each strategy-scenario. A report documenting these activities as well as the change in emissions attributable to these strategies will be prepared by the contractor in a format specified by the Emissions Committee. The application of the selected strategiês to the inventory will be reviewed by both the Strategy and Emissions Committees.

Quality Assurance

A major concern that continues to be expressed about all aspects of photochemical modeling is the quality of the emissions data base used to drive the calculation of air quality concentrations. The 1985 NAPAP data bases will have been previously reviewed by the States involved and should require no additional quality assurance verification. The major responsibility for quality assurance of the other emissions data bases (e.g., CO, biogenics) will be with the Emissions Committee. The Committee will oversee the interpolation and compilation by a contractor of quality assurance information produced by AEERL, their contractors, or other groups involved in NAPAP. The Committee will be responsible for preparing a technical memorandum discussing (1) any identified deficiencies in the inventory base, (2) the consequence of such deficiencies on the projection and strategy inventories, (3) the potential effect of such deficiencies on the prediction of ozone and precursor concentrations, and (4) recommendations on changes to the inventories to correct deficiencies.

A.4.2 Strategy Development

This activity may be the most complex in the ROMNET program. Control strategy development will require an understanding not only of the emission inventory specifications, but also the technical feasibility of specific control options. Effects of the spatial variation of emissions on ozone and precursor transport should also be understood. Development of the control scenarios must take into account the utility of the ROMNET results in SIP related analyses and in future policy planning concerning implementation of regional strategies.

The Strategy Committee will develop a menu of proposed regional/urban strategies. This menu will likely include a matrix of strategies which consists of variations in (1) the level of control, (2) the source types controlled, and (3) the spatial application of controls. For example, possible strategies may include one or more of the following: (1) presently mandated control programs; (2) expanding the application of present programs to other areas within the region; (3) increasing the stringency of present programs; (4) placing additional "across-the-board" controls (i.e., on all source categories) in various sectors of the region; and (5) placing additional source-specific controls in various sectors of the region (e.g., fuel switching, controls on architectural coatings, etc.). In the development of these strategies, consideration will be given to identifying those controls which are likely to result in ROM predictions of ozone below the level of the NAAQS. It is anticipated that sufficient resources are available to consider 10 strategies.

The Strategy Committee will prepare recommendations on the proposed strategies for review by the Management Review Committee. Included in this proposal will be a description of each strategy in terms of the extent to which the specific control option is currently in place in urban and/or rural areas, limits on applicability and spatial extent. This description should also assess the extent to which the emission reductions achieved may be used to represent other potential strategies. The development of strategies will be coordinated with the Emissions Committee to ensure that the inventory is capable of adequately reflecting/differentiating the controls specified by the strategy.

The Strategy Committee will prepare a report prioritizing the proposed strategies. This report will include the basis of each strategy and the method used in prioritizing the alternatives for presentation to the Management Review Committee. The Management Review Committee will in turn consider the prioritization and make recommendations on implementation to the Program Director.

A.4.3 Regional Modeling

The focus of the regional modeling task is the application of ROM for the various prescribed emissions scenarios and the transmittal of results in a usable form. The activities included in this task are as follows:

1. acquisition and quality assurance processing of meteorological observations and air quality measurements;
2. selection of meteorological episodes for simulation;
3. preparation of ROM input files and model simulations;
4. evaluation of ROM predictions;

5. development of procedures for ROM-UAM/EKMA compatibility and preparation of guidance for using ROM predictions to estimate urban scale modeling boundary conditions; and

6. analysis and interpretation of model predictions to assess the impact of simulated strategies on a) urban boundary conditions, b) regional ozone concentrations, and c) the consequences of implementing these strategies.

A description of each of these activities is given below:

Meteorological and Air Quality Data Bases

Applications of the ROM require meteorological inputs for preprocessors which in part drive the horizontal transport, vertical fluxes, and photochemistry inside the modeling domain. Meteorological data are also used in the generation of the biogenics emissions data sets. All of the meteorological parameters needed for ROM simulations are obtained from routine National Weather Service surface observations and upper-air soundings at stations within the domain.

Air quality measurements are used to establish pollutant concentrations along the lateral boundaries of the modeling domain. To the extent possible these boundary conditions rely upon ozone measurements in SAROAD. However, there is a lack of 3-dimensional measurements of all chemical species which require specification. Thus, algorithms based on empirical data are used for estimating pollutant concentrations where measurements are not available. In addition, each episode simulated is selected to start with a regionally "low" ozone day so that the initial pollutant species concentrations may be estimated from background levels reported in the literature. ASRL will have responsibility for the acquisition of meteorological and air quality data bases required for simulating selected meteorological episodes. This effort will be overviewed by the Modeling Committee with a concern toward overall program integrity.

Meteorological Episodes

Modeling each day of the ozone season for the years of potential interest would require resources and time well beyond those available for ROMNET. Thus, accomplishment of this program will require the selection of discrete episodes for application with ROM. Episodes will be selected which represent meteorological conditions that reflect typical transport patterns of ozone and precursors throughout the

Northeast during periods of high ambient ozone levels. Also, an important consideration in selecting will be to ensure the future applicability of the ROMNET results to urban scale analyses which may include days not specifically simulated in ROMNET.

Although the emissions data base is designated for 1985, meteorological conditions during the period 1983 through 1987 will be considered in selecting episodes. The task of assembling the meteorological and air quality data to be used in the episode selection process will be the responsibility of ASRL. Also, ASRL will prepare data summary information, data displays, and trajectory analyses necessary for identifying episodes as specified by the Modeling Committee. Interpretation of this information and the preparation of recommendations on specific episodes will be the responsibility of the Modeling Committee.

Available resources may permit simulations for 30-45 high ozone days. However, the number of days simulated will depend upon the length of the episodes and the number of episodes necessary to adequately represent the various transport regimes of interest. Ultimately, the length and number of simulations will be determined by the availability of computer resources and program schedule constraints.

The analyses to choose episodes will proceed in two steps. The first step will include a review of ambient ozone measurements to identify an initial set of candidate episodes. Criteria used in this first stage will include the magnitude and regional distribution of ozone concentrations. The second stage will focus on ozone concentrations in the vicinity of corridor urban areas and the use of trajectory analyses to infer the extent that meteorological conditions favor interurban and intraregional transport. This two-stage effort will allow ASRL to begin as early as possible the lengthy task of processing meteorological data likely to be simulated by ROM. The Modeling Committee will prepare a report on the selection meteorological episodes, including a full description of each episode selected and any caveats on the use of the episode in future urban scale analyses.

ROM Simulations

During the task of selecting episodes, air quality and meteorological data sets for candidate episodes will be processed by ASRL (and/or by a contractor under the supervision of ASRL) to develop the inputs and preprocessor files necessary for exercising ROM. As previously indicated, the emissions inventories for the base, projection, and strategy scenarios will be provided to ASRL by AEERL and/or the appropriate contractor responsible for formulating these inventories.

Once input data sets become available, ASRL with contractor assistance will perform the ROM simulations beginning with the base year inventories and progressing to the projection and strategy scenarios. ASRL will advise the Modeling Committee Chairman of the status of the modeling on a frequent basis (e.g., weekly) so that the Technical Coordinator can ensure the integrity of project schedules and the Program Director can inform the Management Review Committee of any delays.

To the extent possible, strategies will be simulated serially. It will be the responsibility of the three technical Committees to review the results for each strategy. Based upon this review, it may be appropriate to reevaluate the proposed application of a specific strategy and/or design additional strategies.

ROM Evaluation

The primary evaluation of the ROM by ASRL is in progress. This effort is scheduled to be completed by mid-1988. Thus, the results will be available before initiation of the modeling phase of ROMNET. However, it is good modeling practice to perform a limited evaluation of the model's predictions for the specific episodes to be used in ROMNET. The purpose of this limited evaluation is to determine if conditions exist that affect the applicability of the model to the specific circumstances under investigation. In this regard, the Modeling Committee will select specific 1985 ROMNET episodes to be analyzed for comparison of observed and predicted ozone concentrations. The comparisons will be performed by ASRL, using procedures approved by the Modeling Committee. A report on this task will be submitted to this Committee for review and concurrence.

Regional-Urban Model Compatibility

The purpose of this activity is to design procedures which will permit the output of ROM to interface properly with input specifications of UAM and EKMA. This activity is a major part of ROMNET and will be conducted by ASRL with oversight by the Modeling Committee. Depending upon available resources and existing technical capability, the assistance of a contractor may be solicited to assist in various tasks associated with development of the guidance. This includes consideration of possible differences in chemical mechanisms as well as the physical structure of the models. For example, ROM contains 3 prognostic layers in the vertical, the depth of which vary in time and space depending upon various meteorological conditions. The horizontal grid spacing is fixed at 1/6° latitude by 1/4° longitude (approximately 18.5 x 18.5 km). In contrast, UAM, as typically configured, includes a mixed layer containing multiple levels, a layer aloft above the mixing height, and a reservoir of pollutants across the top boundary. Also, UAM grids are specified on a fixed rectangular coordinate system usually within the range of 1-10 km for individual applications. EKMA is a moving box with lateral dimensions determined by the size of the urban area and a vertical depth set equal to the mixing height at each time step. Like UAM, EKMA has the provision for a reservoir of pollutants aloft which are entrained into the box as the mixing height rises. However, transport in UAM is considered by the flux of pollutants into the lateral boundaries as well as from the top, whereas transport in EKMA occurs only through the top of the box. These differences must be addressed by the Modeling Committee in considering regional/urban scale compatibility.

As part of ROMNET, algorithms will be developed and a users guide prepared which will allow State agencies to derive boundary conditions for ozone and precursors from the predictions made by ROM. The Modeling Committee will prepare the guidance document describing how States should apply these procedures.

Interpretation of ROM Predictions

The ozone and precursor concentrations which result from the ROM simulations will be analyzed by the Modeling and Strategy Committees. This analysis will consist of two parts. The first is an examination of the model predictions to describe the impact of the simulated strategies on ozone and precursor concentrations transported into the Northeast Corridor and between urban areas along the Corridor. The intent is to evaluate the effectiveness of the strategies relative to the level of the NAAQS and also to support the development of guidance on preparing boundary conditions necessary for urban scale modeling. The second part of the analysis will consider consequences of implementing difference components of the various strategies. This might include examination and description of items such as:

1. the effects of regional control measures placed outside of urban areas versus those predominantly within urban areas;

2. the availability of control technologies to meet the reductions specified in the strategies;

3. the time to implement these controls; and

4. the need for a regional planning/implementation structure or organization to address the implementation issues.

This analysis will be oriented toward preparing findings which would be useful in subsequent ozone policy planning regarding regional strategies.

A.4.4 Program Outputs

It is important to define clearly the anticipated outputs at the start of any program and this is particularly crucial for large multiyear, multiparticipant efforts like ROMNET. In this regard, the following are the major ROMNET outputs:

1. A technical work plan which describes the proposed activities of the Committees including a schedule of milestones and dates for making key program decisions;

2. Emissions inventory reports documenting (a) the development of inventories for CO and for biogenic emissions, (b) the development and application of emissions growth factors in generating the projection year inventory, (c) the translation of specific strategies into emissions scenarios, and (d) the results of quality assurance procedures applied to the various emissions data sets;

3. Reports documenting the strategies selected for simulation;

4. Reports documenting the meteorological episodes selected for simulation;

5. Reports documenting findings of the analysis and interpretation of ROM predictions relative to a) the impacts of the strategies on pollutant concentrations, and b) the consequences of implementing the simulated strategies;

6. Hourly concentrations of ozone, NO/NO_2 and VOC species for horizontal grid and vertical cells in ROM within the modeling domain shown in Figure 1. Sets of these data will be available by episode for each emissions scenario simulated (i.e., base year, projection year, and strategy

scenarios). The data in each set will be in a machine-readable format (i.e., on tape, not in hard copy listings or reports) prepared by ASRL according to specifications developed by the Modeling Committee in consideration of the needs and ADP capabilities of the States; and

7. A guidance document designed for use by State agencies (or their contractors) which will describe how to translate the ROM predictions provided in output #6 into boundary conditions for UAM or EKMA analyses to be performed by the States.

The contents of the technical reports listed above should include discussions of the following: assumptions, limitations to the interpretation of findings, references to ongoing SIP related activities, and EPA modeling/emissions inventory programs.

A.5 SPECIAL PROGRAM CONSIDERATIONS

ROMNET is a complex technical program using the most sophisticated analytical tools available to assess ozone and precursors on a regional basis. The scope of ROMNET is narrowly defined in an effort to:

1. establish a manageable program;
2. maintain a clearly defined technical focus; and
3. produce results as expeditiously as possible.

ROMNET will provide information on the relative impact of various regional strategies on ozone concentrations in the Northeast. Although urban scale modeling is outside the scope of ROMNET, urban strategies will be considered in the ROM grids corresponding to MSA's/CMSA's subject to SIP controls prescribed for urban areas. As previously indicated, the greatest utility of ROM is to define the magnitude of ozone and precursor transport on a regional scale. The relatively large grid size in ROM limits the ability of the model to predict peak concentrations in urban plumes where most exceedences are typically measured. In this sense, ROM is not designed to predict the level and spatial mix of HC and NO_x controls that will result in attainment in specific grids or at individual monitoring sites. Thus, ROM is not appropriate for use, as are urban scale models such as EKMA or UAM, to define the percent control necessary for attainment.

There will, as part of the overall ozone attainment program, be a substantial number of political decisions on equitable applications of controls and the significance of impacts. ROMNET is designed such that the program's findings can be incorporated with the urban scale analyses to be performed by States to provide valuable input to such decisions. However, it is beyond the scope of ROMNET to decide the best combination of cost, affected population, and lifestyle impacts.

A.6 PROGRAM SCHEDULE AND RESOURCES

The completion of the ROMNET activities is anticipated to take 3 years to accomplish. However, the program will be conducted as expeditiously as possible in order to provide results to States at the earliest date. The basic program functions and overall timetable are presented in Figure A-3. As noted in the previous sections, there are many intermediate products, reports, and decisions which will be an integral part of the program. These products and results are crucial to the usefulness of the data for future urban scale photochemical analyses. Each committee will be responsible for refining the critical milestones and major intermediate products early in the process identified in Figure A-3. To accomplish this will require that each committee be established and specific individuals from participating agencies be identified by January 1, 1988. Each of the three technical committees (Strategy, Modeling, and Emissions), will meet early in 1988.

The first meeting of each committee will focus not only on the organization of the committee, but identification of milestones, major intermediate products, and responsibilities of committee members. Each committee will be required to submit to the Technical Coordinator a report detailing the above in early 1988. The Technical Coordinator will present a set of coordinated schedules to the Management Review Committee shortly after these schedules are prepared and reviewed. In order to inform potential participants of the program's objectives and solicit input on the basic protocol, a meeting of the Management Review Committee will be held at the earliest opportunity.

It is important to note that several activities must be initiated during the first and second quarters of fiscal 1988 in order to complete the program on schedule. It will be the responsibility of the chairman of each committee in consultation with the Technical Coordinator to take charge of these activities. In some cases action will be required even prior to the first meeting of the appropriate committee to ensure that proper tasks are initiated. It will be the responsibility of the committee chairman to report to the appropriate technical committee on the progress of these activities at the first committee meeting. The Environmental Protection Agency is committing a significant amount of resources to the accomplishment of ROMNET. In addition to 3.0 FTE each year of the program and $250K in extramural funding provided by the Office of Air Quality Planning and Standards, the Office of Research and Development is committing 1.5 FTE and $250K in extramural funding for each year in support of the program. The Agency is also allocating ADP resources and Regional Office personnel (2.5 FTE) to the successful accomplishment of ROMNET. As discussed previously there are a number of significant tasks for which the Agency is assuming final responsibility. The Agency resources will be allocated to: (1) developing emission inventories for input to ROM; (2) processing meteorological and air quality data; (3) ROM simulations; (4) ROM evaluation; (5) analyses of results; and (6) overall program management and coordination.

The resources allocated to the management and review of the program will be directed to chairing each of the technical committees, the function of the Technical Coordinator, and the Program Director. Each of these positions will be staffed by members of OAQPS. Extramural resources provided by OAQPS will primarily be used for (1) development of techniques for projecting inventories, (2) development of techniques and guidance on future use of the ROMNET results, and (3) data manipulation for input to the ROM. This will occur in the tasks associated with projection and strategy inventory development and review and analysis of meteorological data for selection of episodes. The resources allocated by ORD will be directed toward data reduction and model simulations including both ORD personnel and contractor assistance.

As noted in Section A.2, participation by the States encompassed by the study boundaries is critical to the ultimate utility of the ROMNET results. The States involved are being requested to provide input to the three technical committees by attending meetings, reviewing reports and contractor results. States will also be requested to participate in the Management Review Committee, providing comment on the program direction, selection of control strategies, and general program overview. States will also interact with the various contractor efforts as questions arise regarding various tasks. Such tasks might include: (1) procedures and basis used in developing emissions data for the 1985 NAPAP inventory; (2) the use of projection techniques to apply growth to the base inventory; and (3) the extent to which certain controls may have been partially or fully implemented within the State in an effort to develop strategy inventories. As the individual States will be most familiar with the base inventory, close cooperation between the States and the contractor will be essential. In addition, States will be heavily involved in episode and strategy selection and in the interpretation of model results.

Participation by the States in ROMNET is a natural part of the SIP planning and development process in the post 1987 nonattainment era. As a result, the Agency anticipates that the effort, both allocation of people and travel funds as appropriate, will come from the resources within the current State program designated to ozone implementation plan development. The Agency intends for FY-89 and FY-90 to specifically identify, through the grant and program negotiation process, participation in ROMNET as part of the ozone SIP development activities. However, States will need to participate in ROMNET during FY-88, even though such participation may not be currently identified within the State program, in order to ensure successful accomplishment of the ROMNET objectives.

A.7 SUMMARY

The organization of the ROMNET program is designed to allow for decisions to be made at the level of highest competency, i.e., technical decisions are made by technical experts while allowing significant program issues to be raised to higher levels of program management whenever necessary. In order to provide a focal point for policy and technical direction, the position of Program Director has been established.

The scope of the program is clearly defined and the limits established. By following through the individual tasks set forth in this protocol, and the subtasks to be identified by the various Committees, the program should generate sufficient information for future urban scale analyses to account properly for transport of ozone and precursors into the urban area. Moreover, results will be available for subsequent use in ozone policy planning by EPA, States and other organizations. By including affected parties in potential source areas as well as impact areas, this program will ensure the utility of the results to the States in the Northeast.

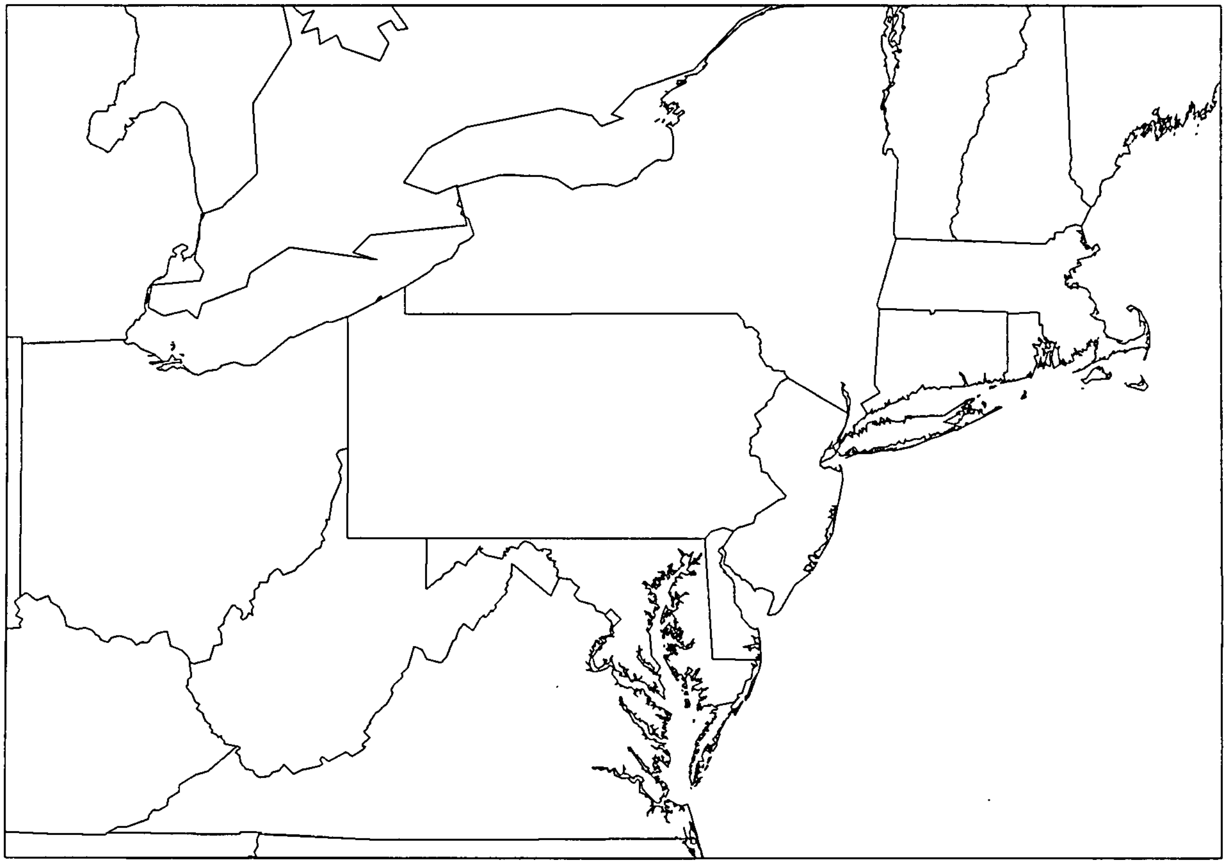

Figure A-1. The ROMNET Region

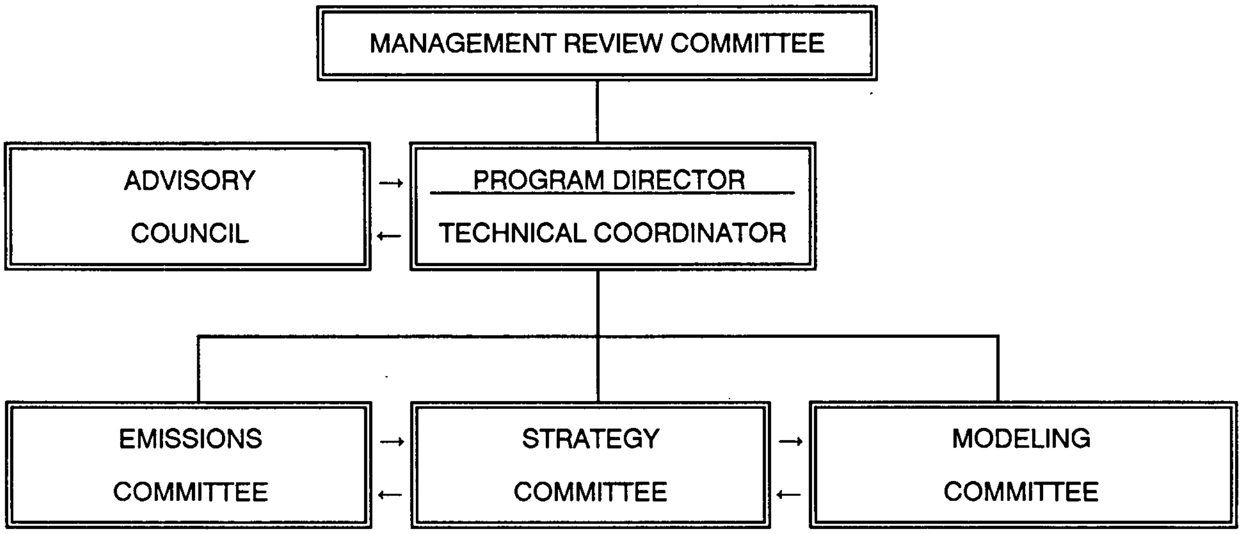

Figure A-2. ROMNET Management Structure.

```
                1987    1988                      1989                       1990
Activity  month O N D    J F M A M J J A S O N D   J F M A M J J A S O N D   J F M A M J J A S O N D

MODELING
Episodes                    |-------------|
ROM inputs                  |-----------------|
Base case runs                                     |---|
Obs. vs. pred.                                           |---|
Projection runs                                          |---|
Strategy runs                                                 |----------    ----------|
Review output                                                 |----------    --------------|
ROM/UAM interface                         |----    ---------------|
Analysis                                                      |----------    ------------------|
B.C. guidance                                            |--------------|
Transmit output                                                     |----    ------------------|

STRATEGIES                                              revisions/updates
Strategy design             |-------------|            |-----------------    --|

EMISSIONS
NAPAP E/I       |----   ------------------|
CO E/I                          |---|
Biogenics E/I                     |---------|
ROMNET base E/I                 |-------------|
Projection year             |---|
Growth factors                |-----------|
Projection E/I                              |-    ----|
Strategy E/I                                           |------------------   ----|
E/I QA          |----   ------------------------   -----------------------   ----|
```

Note: E/I = emissions inventory; QA = quality assurance.

Figure A-3. ROMNET Program Milestones.

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APPENDIX B

ROMNET COMMITTEE MEMBERS

AND

CONTRACTOR TEAMS

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ROMNET MANAGEMENT REVIEW COMMITTEE MEMBERS AND THEIR AFFILIATION

D. Tyler, Chairman	EPA Office of Air Quality Planning & Standards
E. Meyer, Project Manager	EPA Office of Air Quality Planning & Standards
F. Schiermeier	EPA Atmospheric Research & Exposure Assessment Laboratory
J. Beale	EPA Office of Policy Analysis & Review
K. Kaufman	EPA Office of Policy Analysis & Review
J. Chamberlin	EPA Office of Policy, Planning & Evaluation
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C. Simon	EPA Region II
T. Maslany	EPA Region III
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K. Hines	Kentucky Department of Environmental Protection
S. Simon	Massachusetts Department of Environmental Quality Control
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G. Ferreiri	Maryland Office of Environmental Programs
R. Miller	Michigan Department of Natural Resources
D. Lunderville	New Hampshire Air Resources Agency
J. Elston	New Jersey Department of Environmental Protection
T. Allen	New York State Department of Environmental Conservation
G. Triplett	Pennsylvania Department of Environmental Resources
R. Ostrowski	Pennsylvania Department of Public Health
J. Snydor	Virginia State Air Pollution Control Board
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G. Bernier	Maine Department of Environmental Protection
M. Joquero	Maryland Office of Environmental Programs
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G. Cooper	New Jersey Department of Environmental Protection
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B. Goodrich

S. Hallyburton

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L. Milich

C. Maxwell

A. Murthy

D. Olerud

W. Schwede

R-T. Tang

A. Van Meter

R. Wayland

J. Young

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APPENDIX C

FUNCTIONS OF THE

ROM2.1 PROCESSORS

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TABLE C-1. FUNCTIONAL DESCRIPTIONS OF THE ROM2.1 INPUT PROCESSORS

Stage	Meteorology processor functions
1	Prepares surface meteorology data (e.g., mixing ratio, virtual temperature, and wind speed) for use in higher-stage processors; processor P03G
1	Interpolates between rawinsonde observations to produce hourly upper-air profiles at 25-mb resolution; processor P16G
1	Computes hourly gridded values of fractional sky coverage at the terrain surface for all cloud types combined; processor P19G
2	Interpolates profiles of upper-air meteorological parameters at intervals of 50 m from hourly rawinsonde vertical profiles; processor P01G
2	Computes gridded surface roughness, and hourly gridded Monin-Obukhov length, surface heat flux, friction velocity, surface temperature, surface relative humidity, and surface wind speed; processor P04G
2	Uses surface observations to compute hourly gridded values for the fraction of sky covered by cumulus clouds, and also calculates cumulus cloud-top heights; processor P05G
3	Computes hourly gridded wind fields in the cold layer, hourly gridded terrain penetration fractions, hourly gridded cold layer growth rates, and hourly gridded thicknesses for layer 1; processor P07G
4	Computes hourly gridded cell thicknesses for layers 2 and 3, and various parameters used to specify volume fluxes between these two layers; processor P08G
5	Computes hourly gridded atmospheric density, temperature, cloud cover, solar zenith angle, and water vapor concentration; processor P09G
5	Computes hourly gridded horizontal winds for each layer, using rawinsonde vertical profiles and surface-station wind observations; processor P11G
5	Calculates hourly gridded horizontal eddy diffusivities for layers 1, 2, and 3, and also produces parameter fields needed to compute interfacial volume fluxes across layer boundaries; processor P32G
6	Computes hourly gridded volume fluxes through all model layer boundaries, and cumulus cloud vertical flux parameters; processor P12G
6	Computes hourly gridded effective deposition velocities for a set of representative species; processor P15G
6	Computes hourly gridded 30-min backtrack (advection) cell locations and horizontal diffusivities for each layer simulated by the core model; processor P29G
7	Reads the backtrack and diffusivity hourly gridded MF files and computes the BTRK file parameters for each advection time step simulated by the core model; processor P38G
7	Reads all meteorology hourly gridded MF files *except* the backtrack and diffusivity files read by P38G and computes the intermediate meteorology (IMET) file parameters for each advection time step simulated by the core model; processor P39G
8	Reads the intermediate meteorology (IMET) file and the emissions sources hourly gridded MF files and computes the BMAT parameters for each advection time step simulated by the core model; processor P40G

(continued)

TABLE C-1 (CONTINUED)

Stage	Emissions processor functions
0	Computes the total length of all line emissions sources (highways and railroads) within each grid cell; processor P13G
0	Allocates annual point-source emissions data between a weekday-emissions file, a Saturday-emissions file, and a Sunday-emissions file; processor P31G
0	Converts all point-, area-, and mobile-source data files from GMT to LST; processor P34G
0	Applies NO_x and VOC emission controls at the county level for area- and mobile-source emissions data; processor P36G
0	Applies NO_x and VOC emission controls to point-source emissions data, at a state, county, point, or individual-boiler level; processor P41G
1	Computes hourly gridded mobile-source VOC, NO_x, and CO emissions parameters, adjusted for daily average temperature; processor P26G
2	Prepares files containing hourly emissions values and stack descriptions for all major point sources, and combined hourly gridded emissions values for minor point sources, area sources, and mobile sources; processor P14G
6	Prepares hourly gridded biogenic emission rates for isoprene, paraffin, olefin, high molecular weight aldehydes (RCHO, R > H), nonreactive hydrocarbons, NO, and NO_2; processor P27G
6	Generates hourly gridded locations and strengths of constant-source emitters for a tracer emissions species; processor P33G
7	Computes hourly gridded emissions source functions in layers 1 and 2 for combined anthropogenic and biogenic sources; processor P10G

(continued)

TABLE C-1 (CONCLUDED)

Stage	Initial/boundary conditions processor functions
0	Computes daytime and nighttime tropospheric background (clean-air) concentrations in each layer for each chemical species; processor P21G
1	Writes to the file ICON the gridded initial-condition concentrations for each layer and species simulated by the core model, using P21G's clean-air concentrations as initial-condition concentrations; processor P02G
1	Computes hourly gridded upper-boundary-condition concentrations (C-infinity) for a set of representative species; processor P23G
1	Equilibrates background concentrations of all modeled chemical species with averaged observed ozone concentrations on the north, south, east, and west boundaries, for both daytime and nighttime conditions in each layer; processor P24G
2	Computes and writes to the file BCON the gridded boundary-condition concentrations for each species, layer, and advection time step simulated by the core model, for the north, south, east, and west boundaries; processor P22G

Stage	Land use processor function
0	Computes the fraction of each grid cell in each land use category recognized by the model; processor P25G

Stage	Terrain and elevation processor functions
0	Computes the smoothed terrain elevation for each 10′ latitude by 15′ longitude ROM domain grid cell, and also for a larger domain that extends three grid cells beyond the ROM domain. In addition, it computes average terrain elevations in a finer-resolution domain (cells 5′ latitude by 5′ longitude) for the terrain penetration calculation. Finally, it computes the north-south and east-west components of the terrain elevation gradient (slope); processor P06G
5	Computes hourly gridded elevations (above MSL) for the tops of layers 1, 2, and 3, and local time derivatives of these elevations; processor P17G

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APPENDIX D

EPISODE METEOROLOGICAL CONDITIONS

AND OBSERVED OZONE CONCENTRATIONS

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D.1 INTRODUCTION

This Appendix contains a description of the synoptic-scale meteorological conditions over the Eastern US during the four episodes selected for ROM simulations: June 1983; July 1985; August 1985; and July 1988. For each episode, information is provided on the position and movement of upper-level (500 mb) and surface weather systems, as well as observed cloud cover, precipitation, surface wind flow, and surface air temperature. Back trajectories, created from ROM layer 1 wind fields, are included for selected high-ozone days to illustrate low-level flow patterns along the Northeast Corridor. Also included is a discussion of the ambient ozone levels across the region and figures showing episode maximum concentrations. Ambient ozone concentrations used as ROM boundary-conditions are provided in Table D-1 for each episode. Daily meteorological observation summaries and synoptic-scale trajectories are provided in Appendices E and F respectively.

D.2 June 8 - 20, 1983

On the 7th, a weak trough at 500 mb was over eastern North America. This trough slowly retrogressed on the 8th and 9th, then rapidly progressed starting on the 10th. By 7 a.m. on the 11th, the upper-air trough was replaced by a ridge of high pressure that remained stationary, strengthened, and pushed northward until the 15th. The ridge progressed rapidly late on the 15th, and was replaced by a trough reaching south to the Yucatan Peninsula of Mexico by 7 a.m. on the 18th. The synoptic situation was dynamically unstable, however, and by the 20th there were several cut-off lows and highs across the southern US and northern Mexico. Farther north on the 20th, another cut-off low was forming over the western part of the ROMNET domain. Winds at 500 mb were generally westerly, rarely exceeded 30 kt in the ridge, and from the 12th to 14th were light and variable over most of the domain. However, the exception to this generality was the extreme northeast part of the domain, where jet stream winds exceeding 40 kt were commonplace during the episode.

The surface weather was dominated by the high pressure that followed the passage of a cold front through the domain on the 7th. Early on the 8th, the high was centered over the Michigan peninsula, while post-frontal rain showers were falling on the coast from southern Delaware to central North Carolina. The high pressure progressed and was centered over western Connecticut on the 9th. Domain winds on the 8th and 9th were mostly light and variable under generally clear skies. High pressure built across the eastern US starting on the 9th, dominating the domain until late on the 16th. Except for isolated thunderstorms, no rain fell across the domain during this period. Moderate surface winds (~ 10 mph) winds in the Corridor ranged from northeasterly to southerly on the 9th and 10th. Light and variable winds occurred through the 16th in the Corridor; the highest recorded wind was southwesterly at 14 mph at Bridgeport, CT, on the afternoon of the 12th. Winds in the remainder of the domain were generally light and variable. Skies were mostly clear throughout the entire domain until early on the 16th; clouds, if present, consisted of thin, high cirrus.

A very slow-moving front first entered the far west of the domain early on the 16th, remnants of which persisted until the end of the episode on the 20th. A band of light to moderate rain, oriented southwest-northeast, slowly progressed through the domain starting on the 16th. The front generating this rain became oriented in an east-west axis along the southern Pennsylvanian border by 7 a.m. on the 19th, and moved slowly southward. However, no rain fell in the Corridor until the 18th, after which date rain persisted in the Corridor until the end of the episode. The southern portion of the Corridor had the heaviest rainfall. Washington, DC reported a little over 3" of rain over 72 hours ending at 7 a.m. on the 21st, while Richmond, VA, reported almost 3" of rain in the 24 hours ending at that same time. Skies over much of the domain from the 17th to the end of the episode were frequently overcast. Winds in the domain, including the Corridor, were light and variable during this period. La Guardia, NY, reported the Corridor's highest wind speed from the 16th - 20th: southeasterly at 14 mph Corridor winds became northerly to northeasterly at 10 mph or less behind the front early on the 20th.

The time-series of Northeast Corridor daily maximum and minimum temperatures for June 7 - 21, 1983, is shown in Figure D-1. Horizontal lines are the monthly average maximum (upper) and minimum (lower) temperatures, averaged over 1941 - 1970. Daily extreme temperatures were averaged for the southern and northern portions of the Corridor (Richmond, Washington, and Baltimore for the south;[1] Philadelphia, New York, and Hartford, CT, for the north), then averaged for the entire Corridor. The figure shows that the averaged extreme temperatures were above the climatological mean temperatures from the 11th until the 19th, one day prior to end of the episode.

Widespread exceedances of ozone occurred across the domain on June 9 - 12 and June 14. Exceedances of ozone were observed along the Corridor on June 9 - 19. Peak hourly concentrations are listed below.

1. Richmond, VA, although outside of the Corridor, was chosen to represent inland temperatures at the southern boundary of the Corridor.

June 9	274 ppb in northeastern New Jersey
June 10	142 ppb near Washington, DC
June 11	152 ppb near Washington, DC
June 12	144 ppb near Baltimore
June 13	161 ppb near Stamford, CT
June 14	210 ppb in central New Jersey
June 15	268 ppb near Stamford
June 16	274 ppb in northeastern New Jersey
June 17	169 ppb near Philadelphia
June 18	169 ppb in northeastern New Jersey
June 19	153 ppb near Stamford

Ozone concentrations outside of the Northeast Corridor were in the 60 - 80 ppb range in many rural areas. Peak episode concentrations exceeded 125 ppb in many urban and near-urban areas. The maximum value occurred on the 11th, when a peak hourly concentration of 169 ppb was reported near Detroit. Episode maximum concentrations are shown in Figure D-10. Figure D-2 shows 72-hour back trajectories near the surface for the 9th, 14th, 15th, and the 16th, when ozone within the Corridor exceeded 200 ppb for at least one point.[2] The trajectories are plotted from 1500 LST, since ozone maxima typically occur around mid-afternoon. Note that all days show evidence of recirculating flow.

D.3 July 7 - 22, 1985

Two distinct synoptic surface patterns characterized this period, occurring on July 7-15 and July 16-22. From the 7th to the 12th, the upper-air synoptic pattern at 500 mb consisted of a strong ridge over the western US and a deep trough over the eastern half of the country. On the 12th, the planetary-scale upper-air flow began to change, with the ridge collapsing and the trough filling. This situation was short-lived, however, for by the 14th an upper-air trough had reestablished over the central US. Consequently, frontal systems travelling with the jet stream obtained energy from the upper-air troughs over the eastern half of the US, resulting in the prevalence of surface troughs and frontal boundaries in the modeling domain from the 7th to the 15th. From the 8th to the 10th, a surface trough persisted along the coast from southern New England to the Delmarva area and then westward to a front along the Ohio Valley. The moderate daytime winds (~10 mph) during this period were generally south to southwesterly. From the 11th to the 13th, an east-to-west frontal boundary was located along the Virginia/North Carolina border westward to the Ohio Valley. Weak high pressure was located over New York

2. The 9th shows only a 24-hour back trajectory.

with a weak ridge extending from New England to Pennsylvania. Winds during this period were generally light, and backed from a westerly flow on the 11th to a southeasterly flow on the 18th. On the 14th, a frontal boundary preceded by a squall line approached the Northeast Corridor from the west, and set up a moderate (10 - 15 mph) southwesterly flow along the Corridor. Low to mid-level cloudiness was widespread throughout the domain on the 10th. Scattered to broken high cirrus clouds prevailed on the 9th and from the 11th - 14th. Rain was observed in the domain from the 8th - 10th and the 12th - 15th. Some rain fell in parts of the Northeast Corridor these periods, and was heavy at times: 1.27" and 0.83" in Washington, DC, on the 8th and 12th, respectively; 0.77" in Hartford, CT, on the 14th; 1.07" in Philadelphia, and 1.51" in New York on the 15th.

During the second portion of this episode (July 16-22), southwesterly flow and maximum temperatures in the mid- to upper-80's predominated. Surface high pressure was able to build over the eastern half of the US due to the filling of the upper-air trough located over the central US starting on the 16th. The jet stream remained north of the ROMNET domain until the 21st, and thus frontal systems bypassed the domain. On the 16th, a cold front was located along the east coast but moved offshore by the 17th. The weak winds along the Northeast Corridor were southerly ahead of the front on the 16th. The high pressure over the Great Lakes produced a southeasterly flow on the 17th. The high progressed southeastward on the 18th and gradually weakened as it moved into Virginia and North Carolina on the 19th and 20th. Moderate daytime southwesterly flow was observed along the Corridor on the 19th and 20th. By the 21st, a surface trough was located along the east coast while a cold front approached the domain from the west. High temperatures around 90°F were observed along the east coast on the 21st, and daytime winds were southwesterly at ~10 mph The cold front swept through the Northeast Corridor on the 22nd. The entire domain remained generally cloud-free until the 21st. No days were entirely free of rain during this period. However, both the spatial extent and amount of precipitation were less than the first portion of the episode. The greatest rainfall from the 16th to the 22nd was 1.00" at Hartford on the 21st. Only trace amounts or localized moderate convective rainfall fell during this latter period of the episode.

The time-series of Northeast Corridor daily maximum and minimum temperatures for July 6 - 23, 1985, is shown in Figure D-3. Horizontal lines are the monthly average maximum (upper) and minimum (lower) temperatures, averaged over 1941 - 1970. Daily extreme temperatures were averaged for the southern and northern portions of the Corridor as described previously. The figure shows two periods with slightly above-normal average maximum temperatures: July 14 - 15, and July 19 - 21. Other days were near to, or below, normal.

Exceedances of ozone were observed along the Corridor on the 9th, 10th, 13th, 19th, and the 20th. Peak hourly concentrations are listed below. Isolated exceedances were observed in the New York City metropolitan area on the 10th and 21st and near Philadelphia on the 16th. The episode maximum concentrations for cities along the Corridor were; 137 ppb in Washington; 186 ppb in Baltimore; 189 ppb in Philadelphia; 218 ppb in New York City; and 151 ppb along coastal Maine.

July 9	165 ppb in central New Jersey
July 10	167 ppb in southern Connecticut
July 13	218 ppb in New York City
July 19	163 ppb in northern New Jersey
July 20	152 ppb in southern Connecticut

Ozone concentrations outside of the Northeast Corridor were quite low during the episode. Highest values in rural areas were mostly 80 - 100 ppb, with concentrations near urban areas generally in the 110 - 115 ppb range. The maximum value occurred on the 13th, when Pittsburgh, PA, reported a peak hourly concentration of 128 ppb. Episode maximum concentrations are shown in Figure D-10. Figure D-4 shows 72-hour back trajectories near the surface for the 9th, 10th, 13th, 19th, and the 20th, when ozone within the Corridor exceeded 150 ppb for at least one point. The trajectories are plotted from 1500 LST, since ozone maxima typically occur around mid-afternoon. Note that all days show, at minimum, a 24-hour history of southwesterly (along-Corridor) flow.

D.4 August 7 - 16, 1985

An upper-air trough was positioned over the Great Lakes on the 7th, and progressed eastward on the 8th. The trough was replaced by a ridge of high pressure by the 9th, which flattened by the 11th as an upper-level low pressure system passed over it. August 9th and 10th are characterized by stagnant conditions at 500 mb. A high pressure system at 500 mb characterizes the remainder of the episode, with predominantly southwesterly flow. At the surface, the ROMNET region on the 7th was characterized by a high pressure system centered over the Gulf of Maine. A low pressure system was located over Hudson Bay, supported by the trough aloft. A cold front from this system extended south through Lake Michigan into Missouri. This front moved eastward into the domain on the 8th, preceded by rain, locally heavy at times, along the entire Corridor. Richmond, in the 48 hours preceding 7 a.m. on the 9th, received 5.07" of rain; Philadelphia received 1.7" of rain. Winds on the 7th and 8th were southeasterly to southerly at speeds of 10 - 15 mph on the 7th and 5 - 10 mph on the 8th; cloudy skies prevailed. The front passed through the domain in the early hours of the 9th, leaving a high pressure system centered over Pennsylvania. Skies cleared throughout the day, and winds were light and variable. The high pressure system moved south and was centered over eastern West Virginia on the 10th, with light southeasterly flow under partly-cloudy skies. However, at 500 mb, a low pressure system had dropped into the upper-air trough just to the west of the high-pressure ridge. On the surface, a low-pressure system was centered over Lake Superior, trailing a cold front that extended to New Mexico. This front entered the domain on the 11th, moving offshore by 7 a.m. on the 12th. Rainfall from this front was restricted mostly to New England (Hartford received 1.73"). Winds during the 11th and 12th were southerly at 6 - 8 mph ahead of the front, and west to northwest at 6 - 8 mph behind it, with clear skies after frontal passage. High pressure moved southeastward from north of the Great Lakes on the 12th, setting up a ridge along the east coast on the 13th. However, yet another low-pressure system was centered over Lake Winnipeg on the 13th, supported by the upper-level trough over the western US, and trailed a slow-moving cold front as far as New Mexico. Winds on the 13th were light and southerly under mostly clear skies. On the 14th high pressure, centered over North Carolina, extended from the East Coast into the southeastern U.S. Weak but relatively well-defined southwesterly flow developed along the east coast. Skies were overcast in the north of the domain ahead of the approaching cold front, and partly cloudy over the Corridor south to the Pennsylvania-Maryland border; clear skies dominated in most of the remainder of the domain. The slow-moving cold front finally entered the domain in the early hours of the 15th. Hurricane Danny made landfall at Lake Charles, LA, pumping warm, moist air into the upper atmosphere over the eastern U.S. Light rain fell ahead of the cold front over the western portions of the domain, but not over the Corridor. Moderate (8 - 11 mph) southwesterly or southerly winds occurred throughout the Corridor under partly-cloudy skies. On the 16th, the remnants of Danny moved northeastward, pushing warm, moist air up over the cold front, which was still passing through the domain from southwestern OH to northeastern MA. Widespread moderate rainfall occurred over the domain, but avoided the Corridor. Winds on the 16th were light and northwesterly behind the front.

The time-series of Northeast Corridor daily maximum and minimum temperatures for August 6 - 17, 1985, is shown in Figure D-5. Horizontal lines are the monthly average maximum (upper) and minimum (lower) temperatures, averaged over 1941 - 1970. Daily extreme temperatures were averaged as described earlier. The figure shows a three-day period of above-normal temperatures from the 14th to the 16th. Otherwise, near-normal maximum and above normal minimum temperatures occurred.

Widespread exceedances of ozone were first observed on the 9th, extending from Wilmington, DE, to New York City. Exceedances were observed from New York City to Washington, DC, on the 13th and throughout the Corridor on the 14th and 15th. On other days, only scattered exceedances were observed along the Corridor. On the 9th, peak concentrations ranged from 160 ppb in Wilmington to

164 ppb in New York City. On the 13th, a peak concentration of 201 ppb was observed near New Brunswick, NJ, with values greater than 150 ppb in Baltimore, Trenton, NJ, and New York City. Peak concentrations on the 14th included 187 ppb in Baltimore, 184 ppb in New York City, and 169 ppb near Portland, ME. On the 15th, peak values ranged from 188 ppb to 219 ppb in southern and central CT, and concentrations along the Maine coast were above 150 ppb. Ozone concentrations outside of the Northeast Corridor were generally less than 100 ppb; the highest concentration occurred on the 9th, when Pittsburgh reported a peak hourly concentration of 129 ppb. Episode maximum concentrations are shown in Figure D-10. Figure D-6 shows 72-hour back trajectories near the surface for the 9th, 13th, 14th, and the 15th, when ozone within the Corridor exceeded 150 ppb for at least one point. The trajectories are plotted from 1500 LST, since ozone maxima typically occur around mid-afternoon. Note that all days except the 13th show predominantly southwesterly (along-Corridor) flow. The 13th shows evidence of recirculating air at the surface, leading to localized build-ups of ozone.

D.5 July 2 - 17, 1988

A ridge of high pressure at 500 mb centered over the Great Lakes started to build on the 4th, strengthened on the 5th, and persisted until the 10th. A cut-off low off Cape Hatteras, NC, had formed by 7 a.m. on the 8th. Winds at 500 mb were relatively light, not exceeding 35 mph over the ROMNET domain until the 11th. The upper-air ridge collapsed by 7 a.m. on the 11th, and was replaced by a trough through the 13th. Another ridge formed over the southeastern US and began to make its presence felt by the 14th, forcing upper-air lows far to the north. The ridge began to subside on the 17th.

At the surface, a high pressure system over the ROMNET domain started to form on the 2nd. The high pressure system began to strengthen by early on the 3rd, and was centered off the Outer Banks of North Carolina. This strengthening persisted through midnight of the 5th. By noon of the 5th, the high pressure system was centered over the Shenandoah Valley, VA. Although the center of the high pressure tended to migrate, this high-pressure situation continued until the evening of the 8th. A surface trough, associated with the cut-off low at 500 mb, brought showers and light rain to New England on the 6th; to coastal areas of the Corridor on the 7th; and to New England and central VA on the 9th. Surface winds were light to moderate from the 2nd - 12th, ranging in direction from south to southeasterly on the 4th - 7th, becoming south to southwesterly on the 8th and 9th, and southwesterly from the 10th - 12th. Clear skies dominated on the 2nd - 6th, but skies became partly cloudy, especially ahead of the surface trough, by the 7th, remaining overcast or partly cloudy through the 12th. The 9th saw moderate rain over the Corridor (1.5″ outside of the Corridor at Richmond), decreasing northward. The western areas of the domain experienced light rainfall on the 10th.

On the 11th, with the collapse of the upper-air ridge, a surface trough swept through the domain, closely followed by a cold front. By 7 a.m. on the 13th, the cold front was over the Atlantic, but a warm front stretched across the domain from Baltimore through central Ohio. Winds were southwesterly ahead of the front, and northwesterly behind it. Skies were clear on the 13th north of the warm front and overcast to the front's south. A light rain fell across most of the domain, including the Corridor, on the 12th.

A low pressure system was centered over Hudson Bay on the 14th, and weakly influenced the domain's surface weather that day. Winds over the entire domain were mostly southerly, with speeds during the afternoon of 10 - 20 mph Skies were partly cloudy. Rainfall was limited to New England, New York state, and Pennsylvania (0.6" at Hartford) and northern West Virginia. This low-pressure system was one of several that were carried along by the jet stream during this period. These systems in succession effected the weather over the domain through the end of the episode. With the exception of northerly flow during the 15th after the passage of a cold front, winds were mostly from the southwest. Midlevel clouds were observed over the northern half of the Corridor on the 16th and 17th; otherwise, skies were partly cloudy across the domain. Light rain fell over the Canadian portion of the domain, and extended south into Ohio, Pennsylvania, and east into New York on the 15th and 16th. Heavier rain fell over the northern portions of the Corridor on the 16th and 17th, with Hartford receiving 1.3" on the 17th.

The time-series of Northeast Corridor daily maximum and minimum temperatures for July 3 - 19, 1988, is shown in Figure D-7. Horizontal lines are the monthly average maximum (upper) and minimum (lower) temperatures, averaged over 1941 - 1970. Daily extreme temperatures were averaged as previously described. The figure shows that the average temperatures were well above normal during much of the episode. Average maximum temperatures were above 90°F on 10 of the 15 days. On the 16th, at least ten stations within the domain reported maximum temperatures of 100°F or greater.

Observed ozone levels began to rise on the 5th, exceeding 120 ppb near several Corridor cities as well as Cleveland and Detroit. Ozone continued to build over the next four days (6th - 9th), with concentrations close to or above 200 ppb at times near Washington, DC, Philadelphia, and New York City. One monitor in New York City reported 278 ppb on the 8th. Near Boston and along coastal New England, ozone exceeded 120 ppb on three of these days, peaking at 184 ppb at Portsmouth, NH, on the 8th. Exceedances also occurred across much of the western part of the domain, with peak values from 150 to 175 ppb. On the 10th and 11th, concentrations in most areas of the western domain dropped below 120 ppb, but concentrations above 200 ppb continued to be reported from Washington, DC to New York City. Episode maximum concentrations are shown in Figure D-10. Figure D-8 shows 72-hour back trajectories near the surface for the 6th - 11th, when ozone within the Corridor exceeded 200 ppb for at least one point. The trajectories are plotted from 1500 LST, since ozone maxima typically occur around mid-afternoon. Note that all days except the 10th and 11th show predominantly southwesterly (along-Corridor) or recirculating flow at the surface. The 10th shows southwesterly flow in the northern part of the Corridor, and the 11th has more of a westerly component to the flow.

Observed ozone concentrations were low to moderate on the 12th, following the passage of the surface trough and cold front, with most areas reporting well below 100 ppb. Concentrations increased to peak values from 140 to 160 ppb near major Corridor cities by the 14th. Ozone concentrations again dropped to low levels behind the cold front on the 15th, but started to rise as the winds changed to southwesterly on the 16th; within the Corridor, ozone concentrations ranged between 170 and 180 ppb. In contrast to the July 2 - 11 period, concentrations in the western part of the domain remained generally lower than 100 ppb. Ozone declined to below 120 ppb over most of the domain on the 17th. Figure D-9 shows 72-hour back trajectories near the surface for the 13th, 14th, and 16th, when ozone measured by at least one monitor within the Corridor exceeded 150 ppb. The trajectories are plotted from 1500 LST, since ozone maxima typically occur around mid-afternoon.

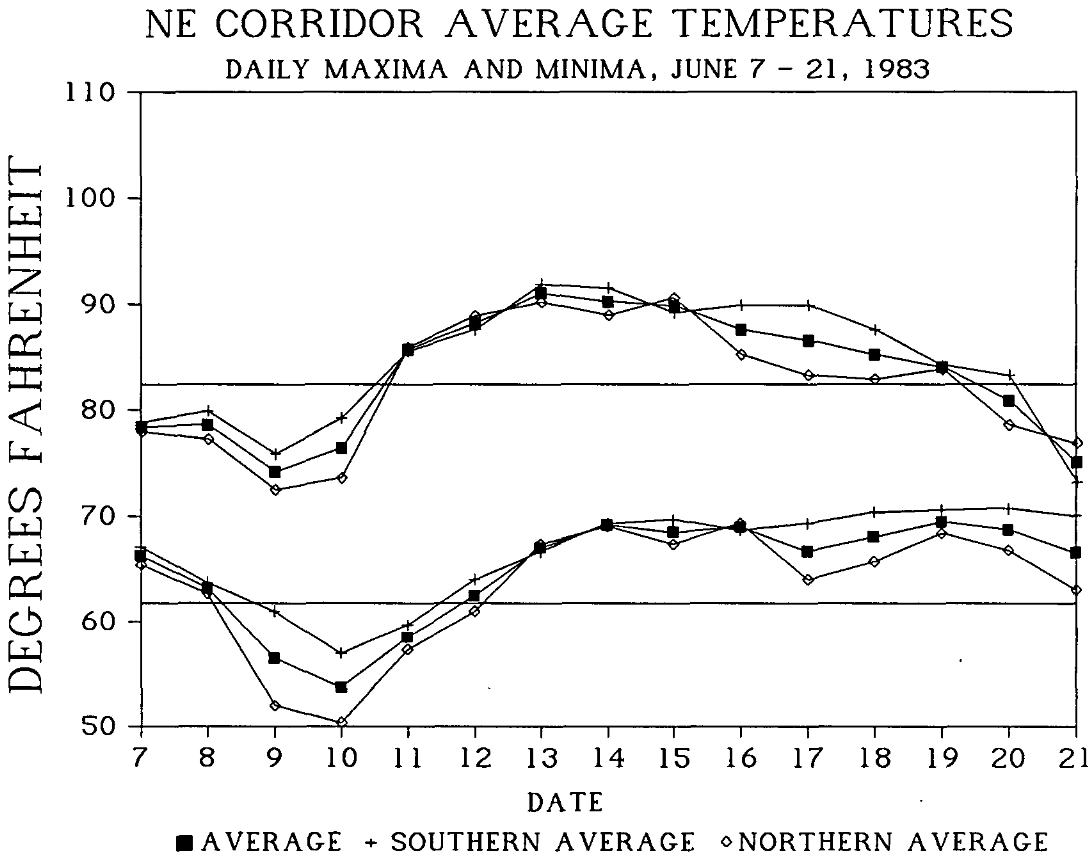
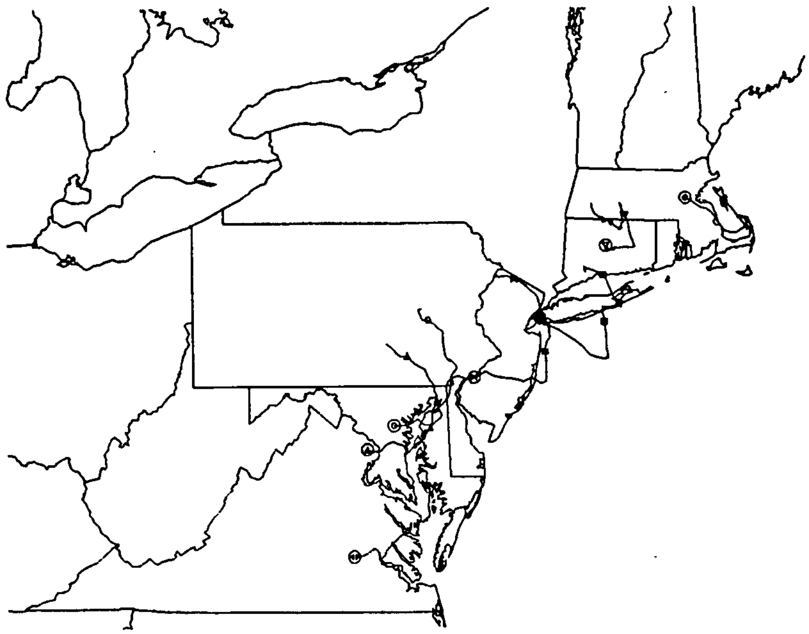


Figure D-1. Averaged extreme temperatures in the Northeast Corridor, June 7 - 21, 1983.

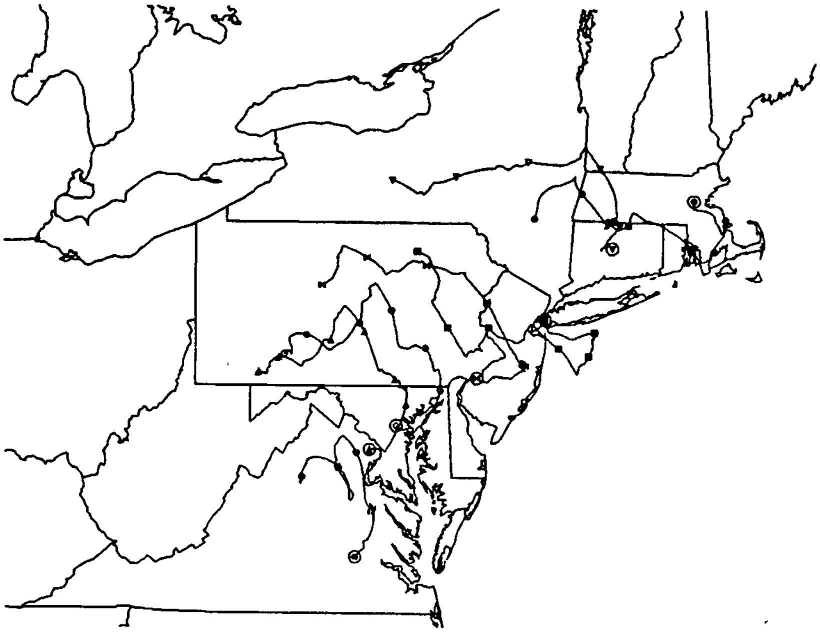


(a) 9th

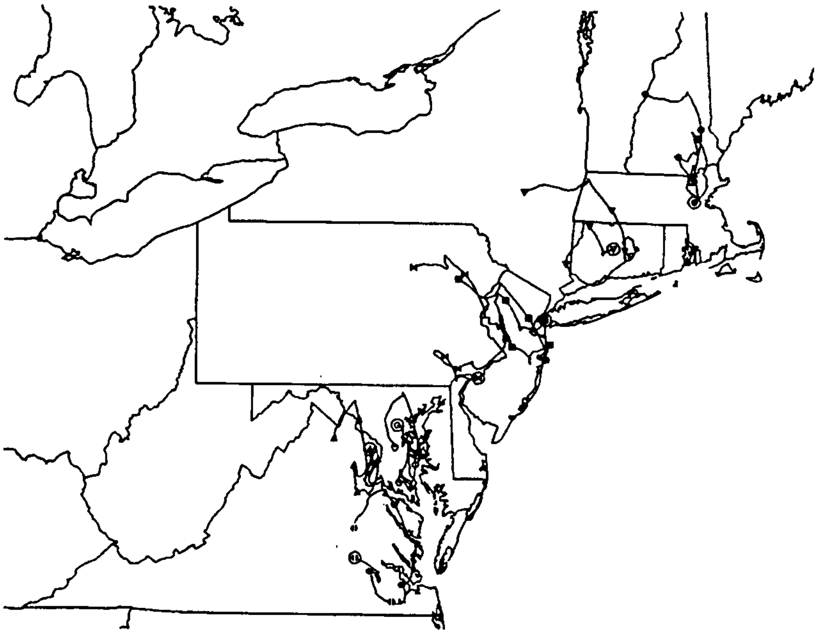
MARKER KEY

- ● Richmond, VA
- ▲ Washington, DC
- ○ Baltimore, MD
- ⧓ Philadelphia, PA
- ■ New York, NY
- ▽ Hartford, CT
- ● Boston, MA
- ◯ Receptor marker

Figure D-2. Near-surface back trajectories for June 9, 14, 15, and 16, 1983. Markers are every 12 hours. (Page 1 of 3)

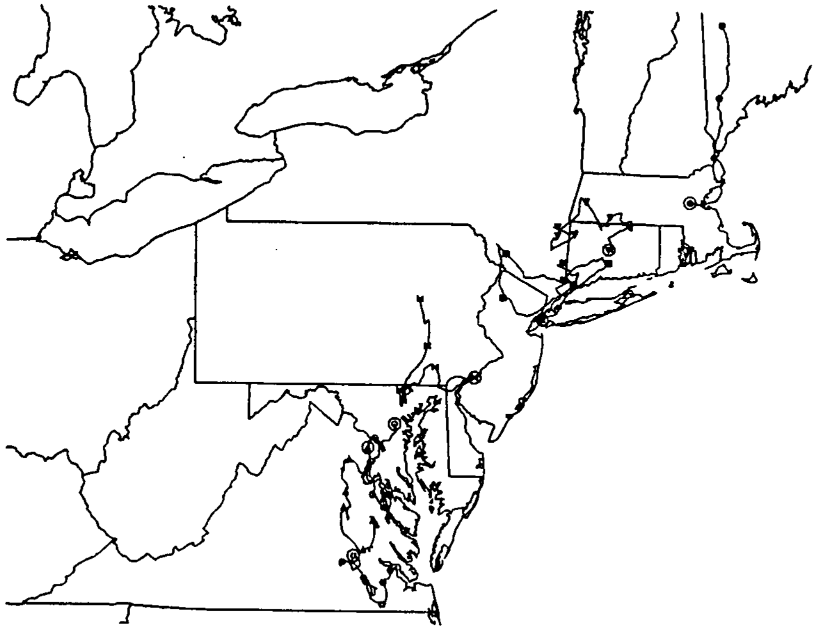


(b) 14th



(c) 15th

Figure D-2 (page 2 of 3)



(d) 16th

Figure D-2 (page 3 of 3)

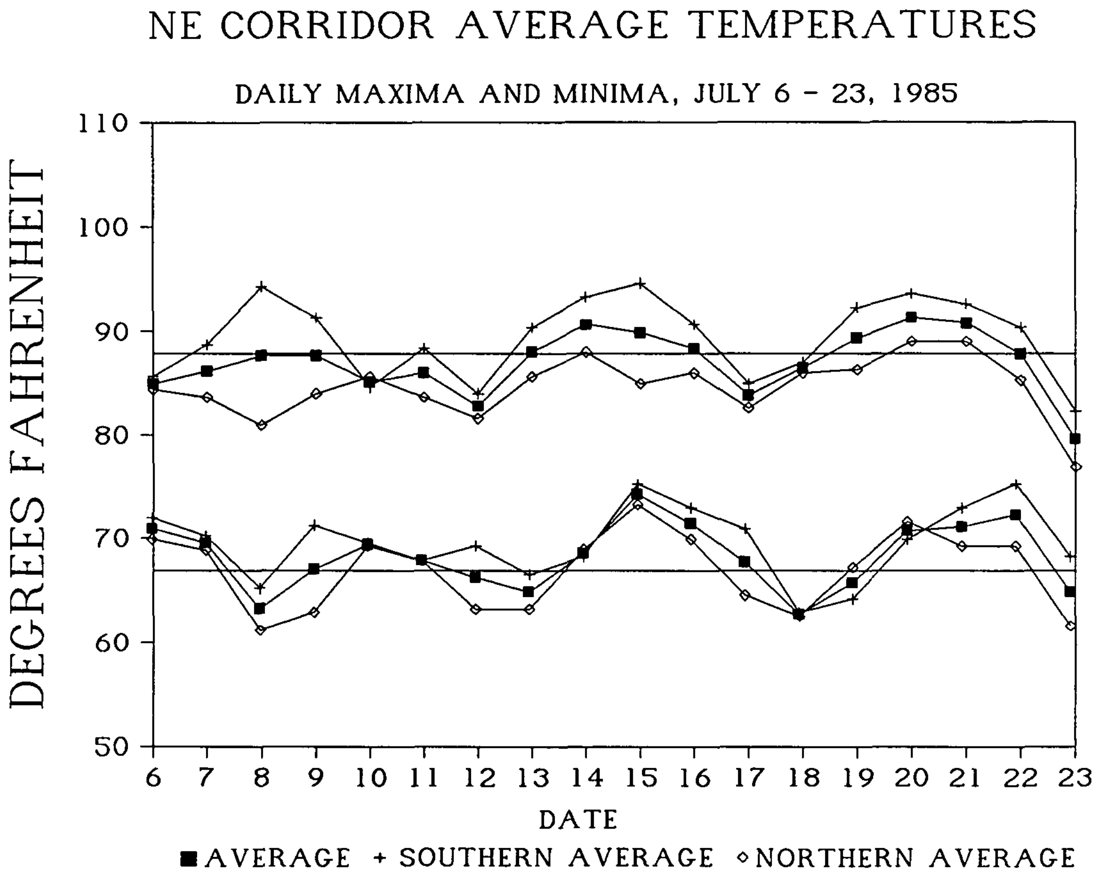
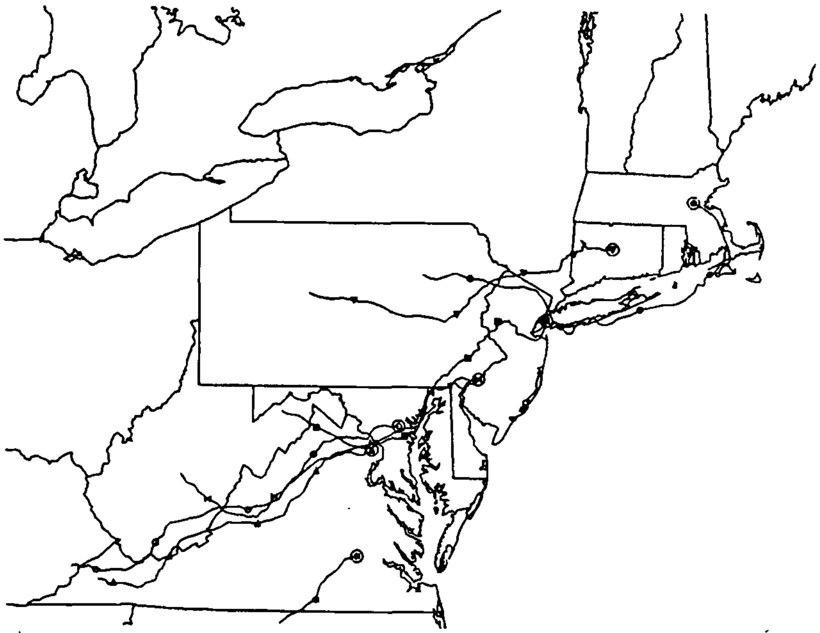
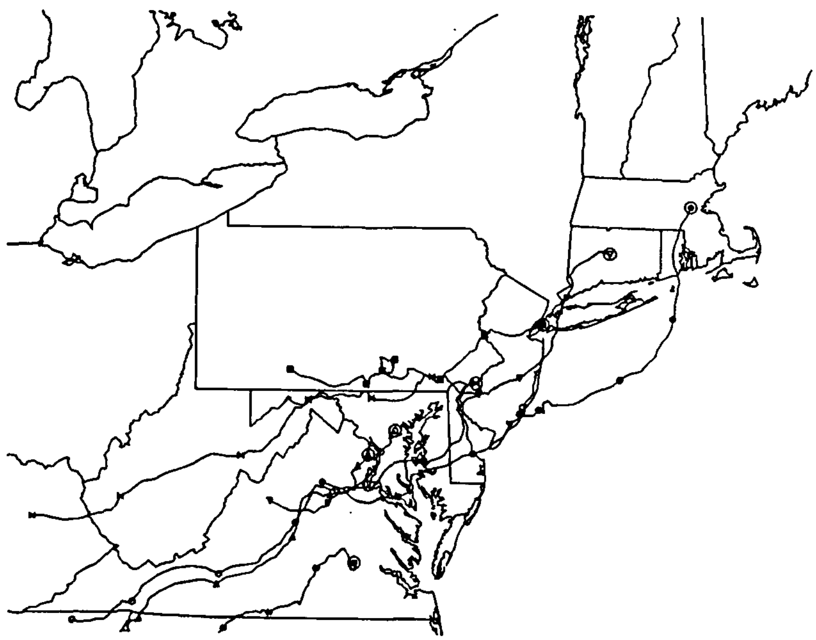


Figure D-3. Averaged extreme temperatures in the Northeast Corridor, July 6 - 23, 1985.

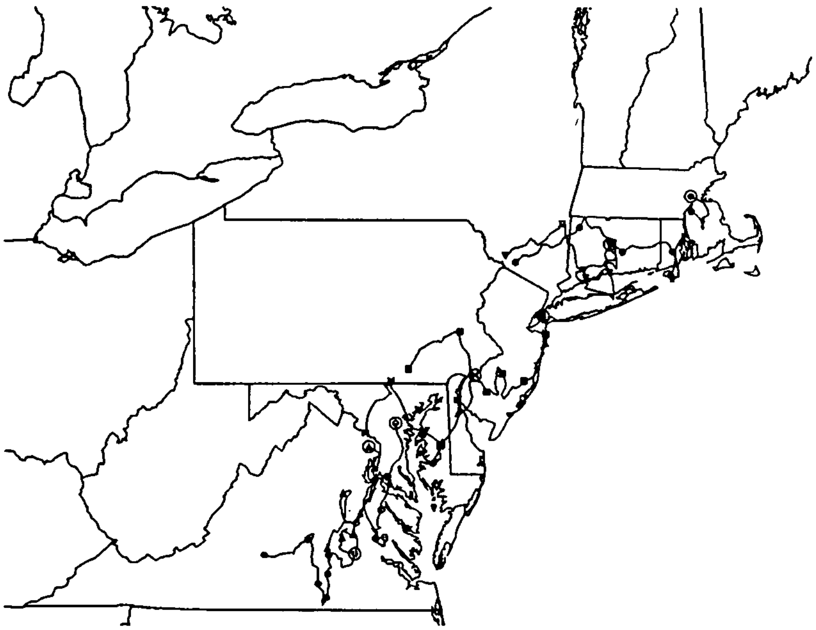


(a) 9th

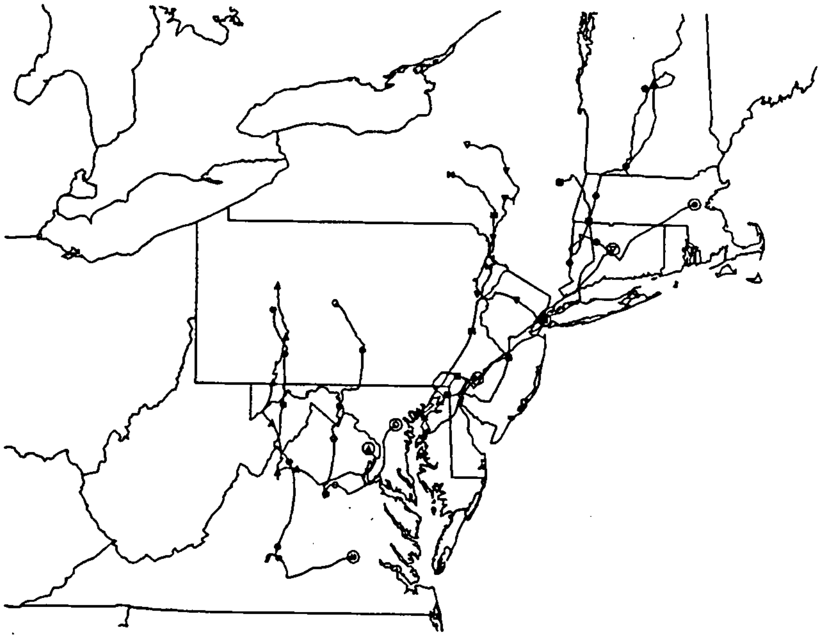


(b) 10th

Figure D-4. Near-surface back trajectories for July 9, 10, 13, 19, and 20, 1985, with marker key as in Figure D-2 above. Markers are every 12 hours. (Page 1 of 3)

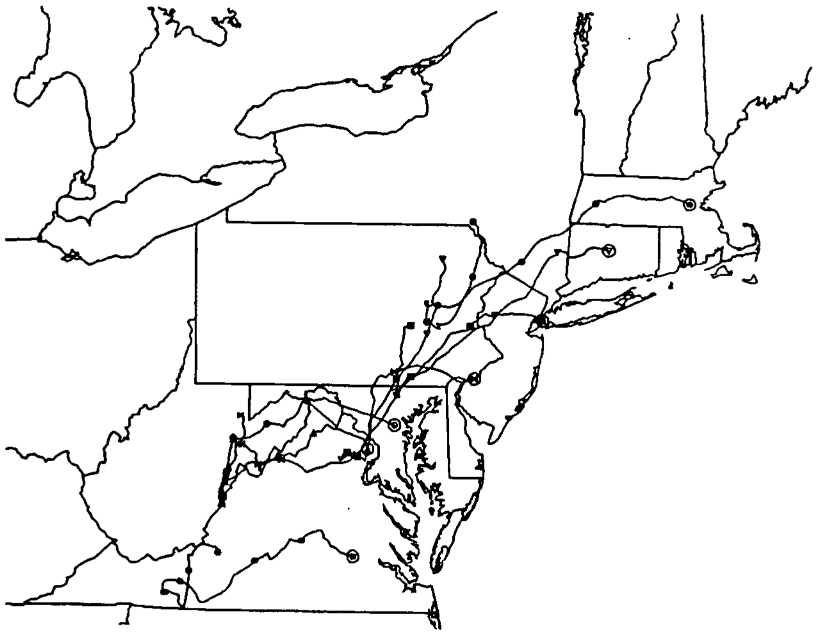


(c) 13th



(d) 19th

Figure D-4 (Page 2 of 3)



(e) 20th

Figure D-4 (Page 3 of 3)

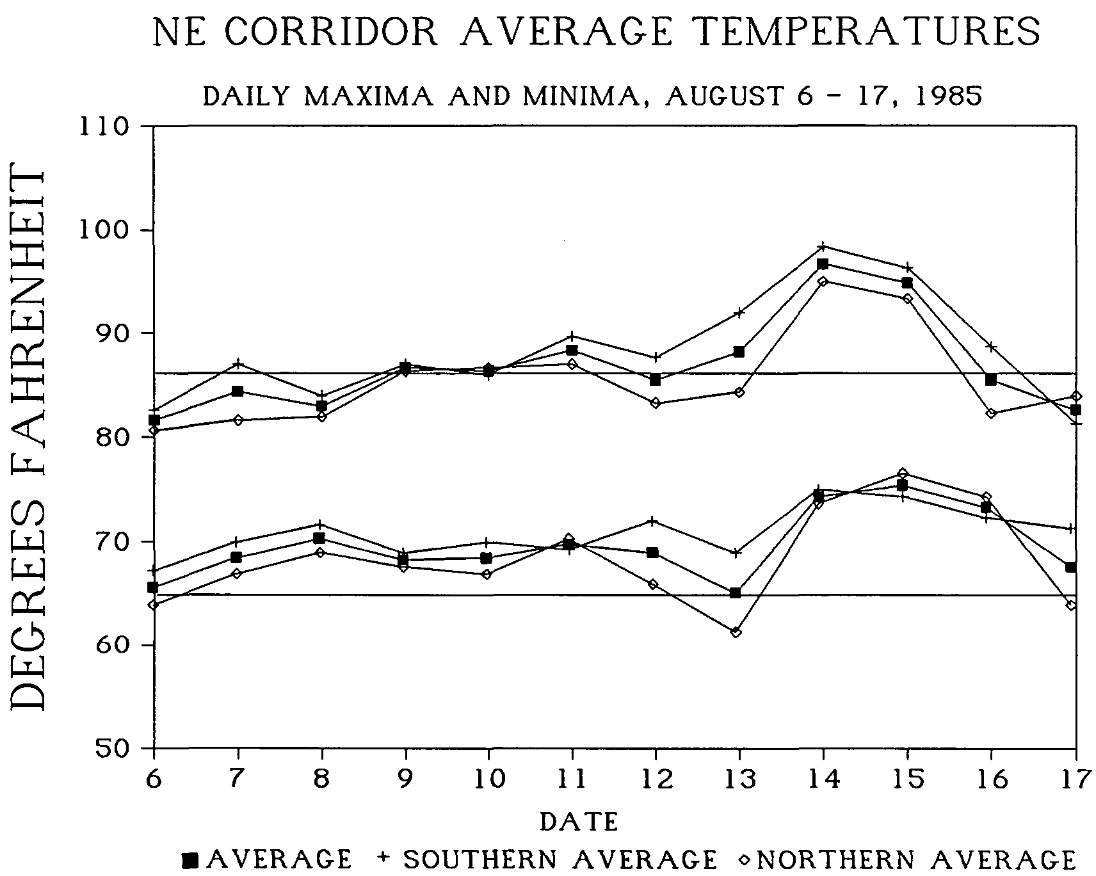
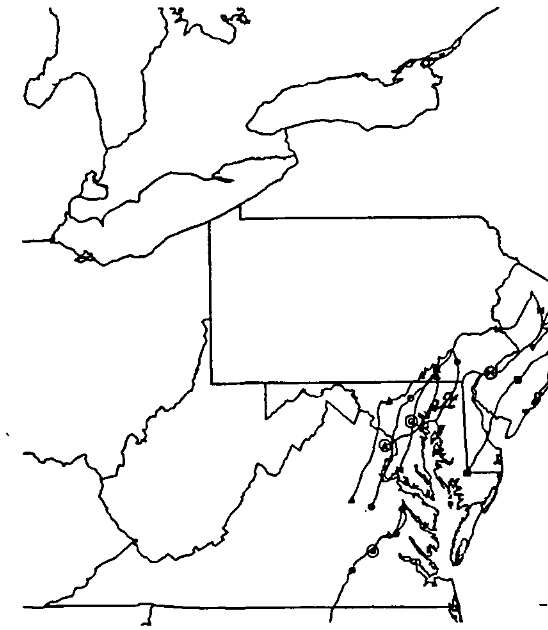
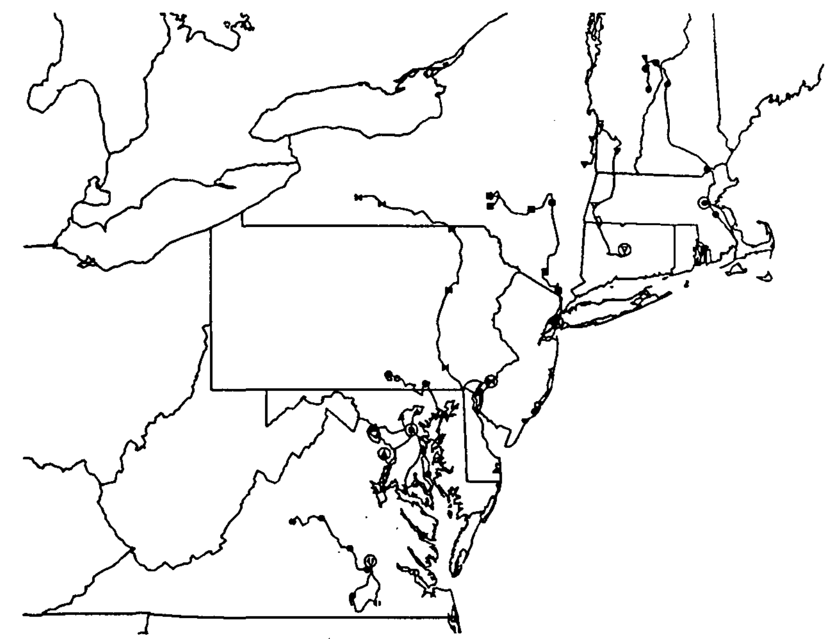


Figure D-5. Averaged extreme temperatures in the Northeast Corridor, August 6 - 17, 1985.

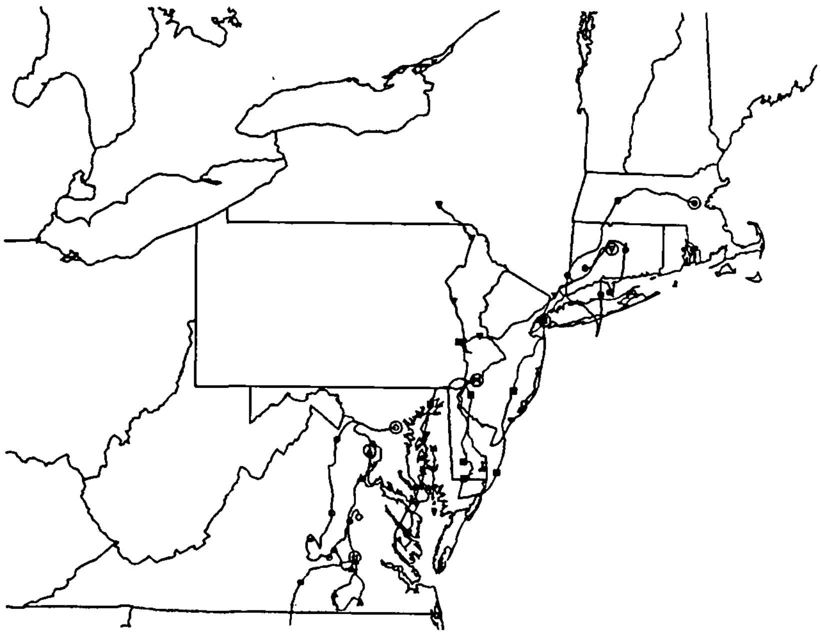


(a) 9th

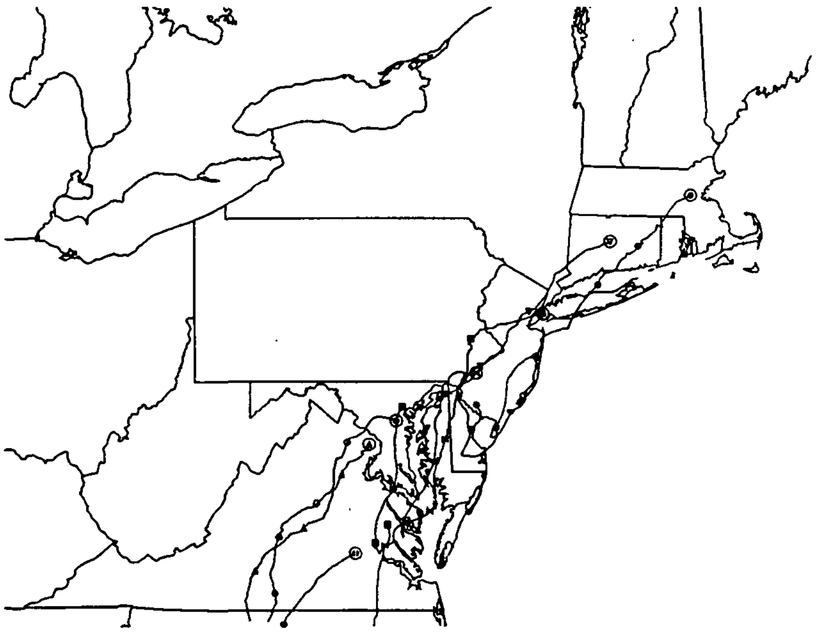


(b) 13th

Figure D-6. Near-surface back trajectories for August 9, 13, 14, and 15, 1985, with markers as in Figure D-2 above. Markers are every 12 hours. (Page 1 of 2)



(c) 14th



(d) 15th

Figure D-6 (Page 2 of 2)

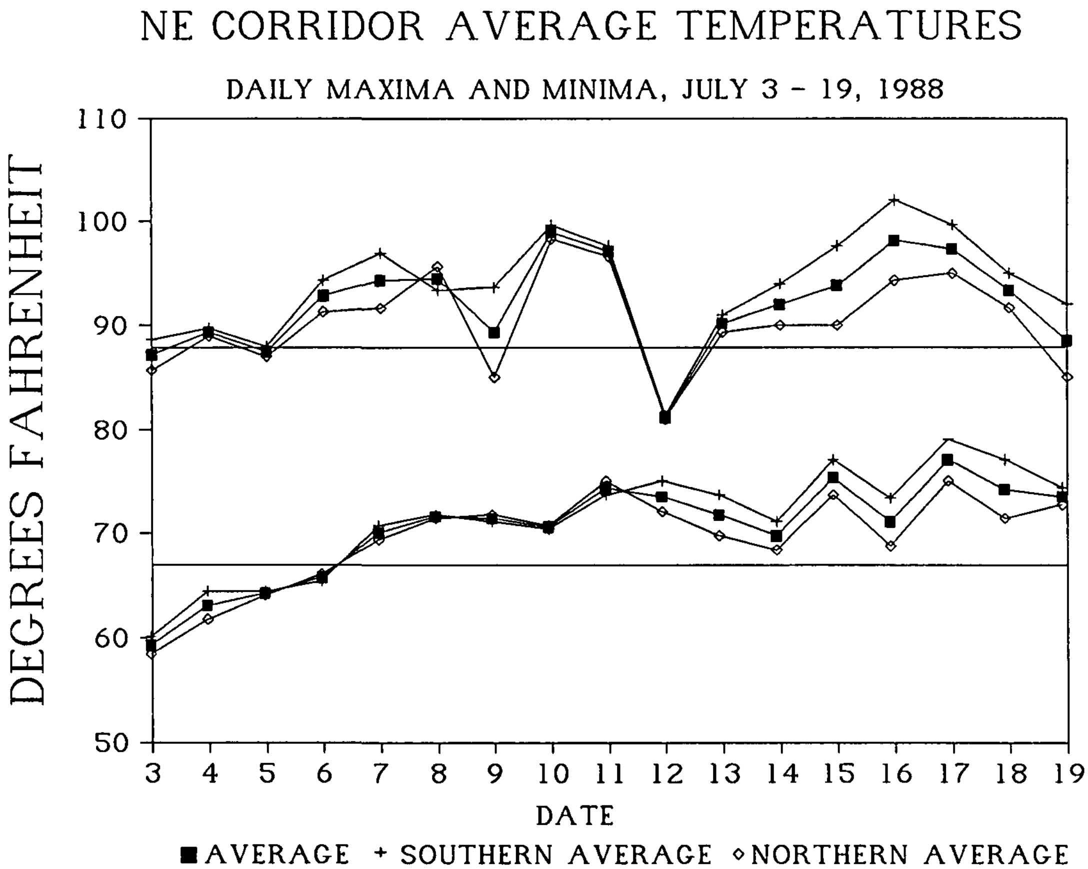
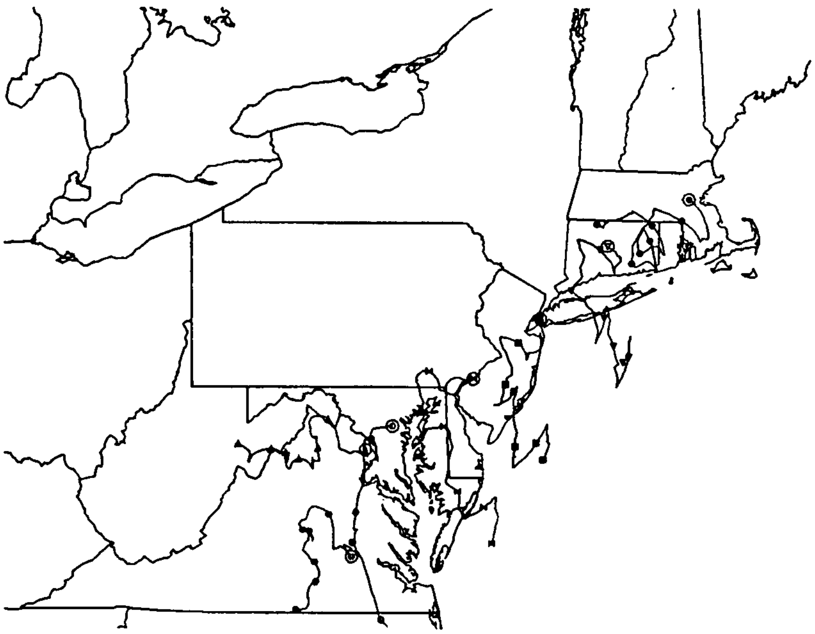
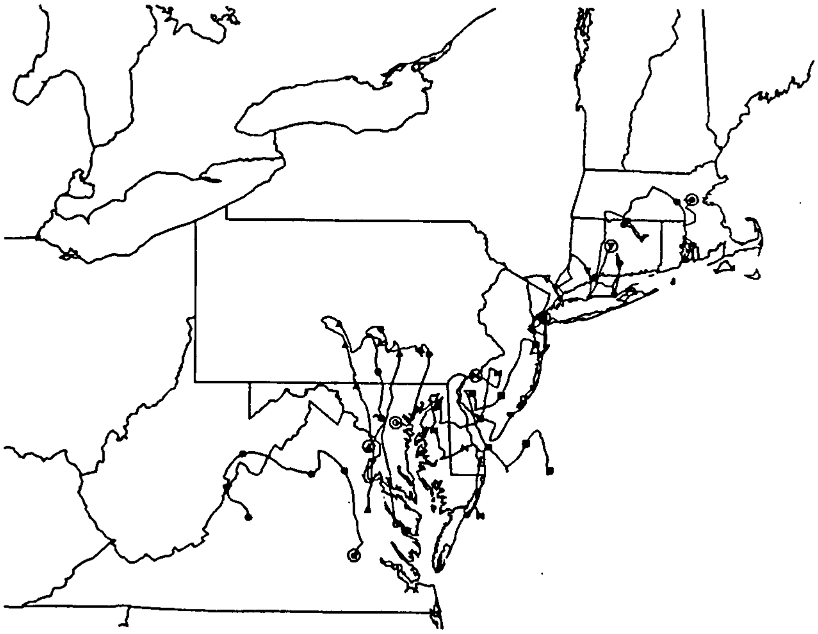


Figure D-7. Averaged extreme temperatures in the Northeast Corridor, July 3 - 19, 1988.

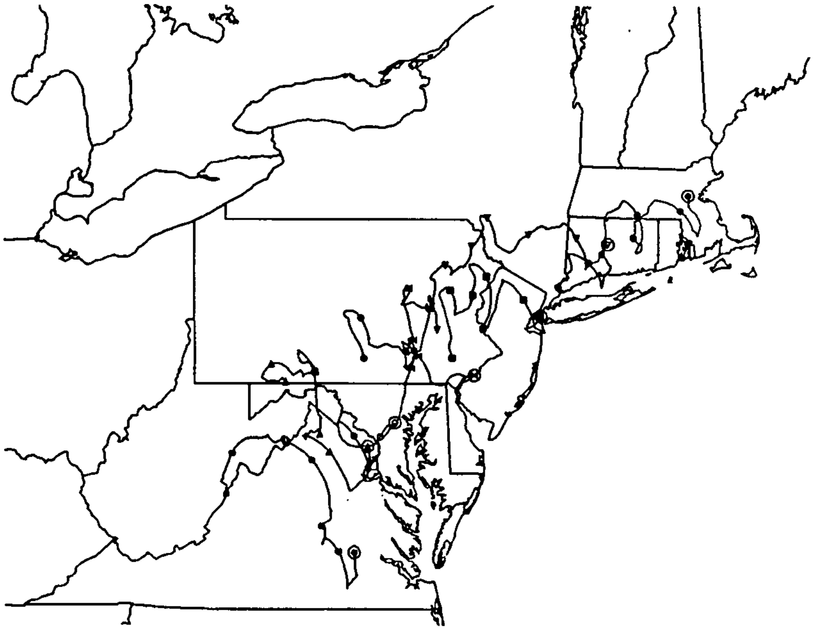


(a) 6th

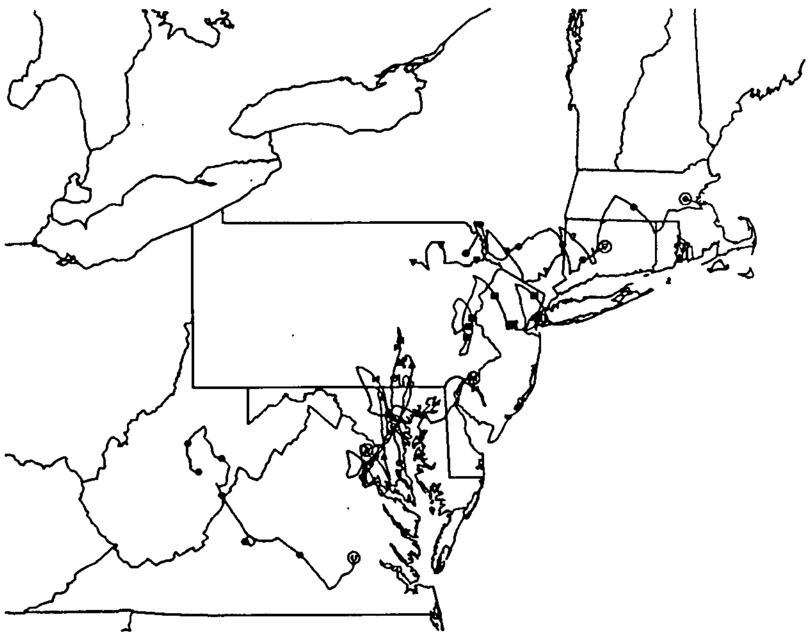


(b) 7th

Figure D-8. Near-surface back trajectories for July 6 - 11, 1988, with marker key as in Figure D-2 above. Markers are every 12 hours. (Page 1 of 3)

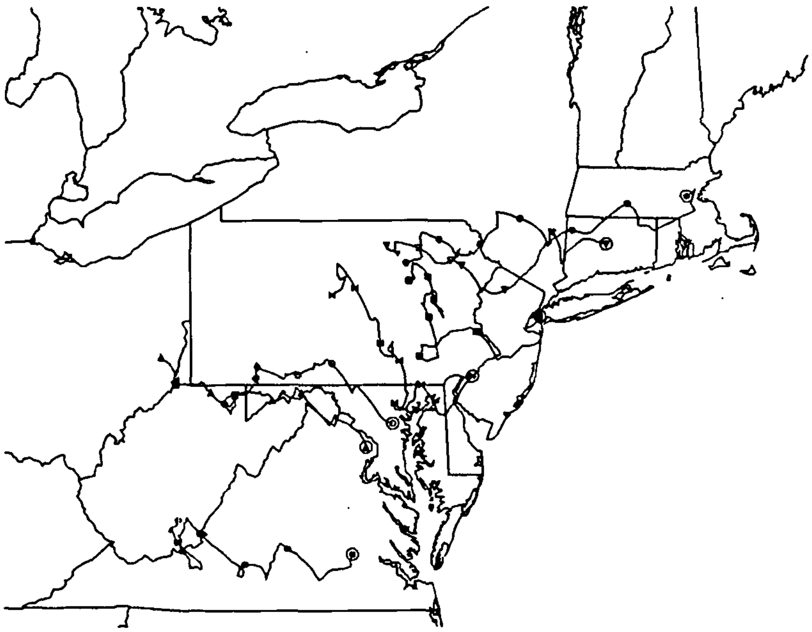


(c) 8th

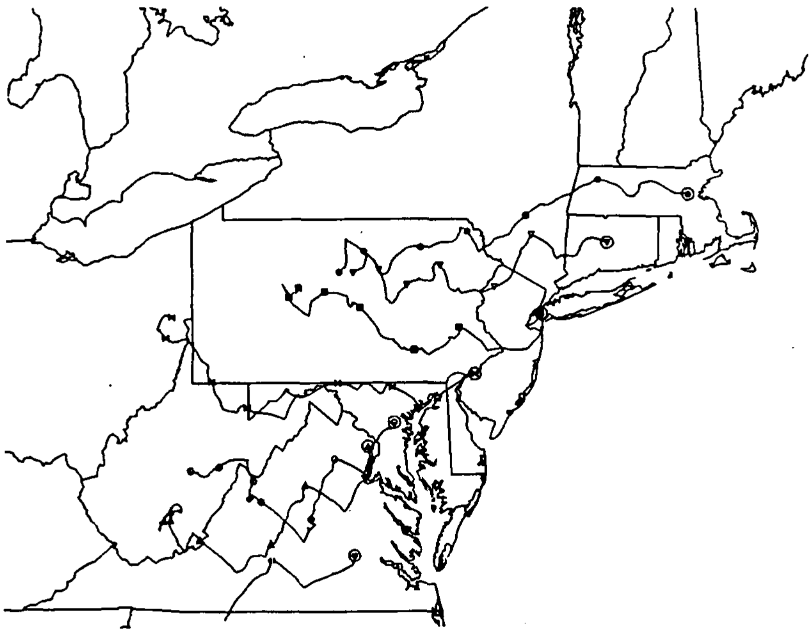


(d) 9th

Figure D-8 (Page 2 of 3)

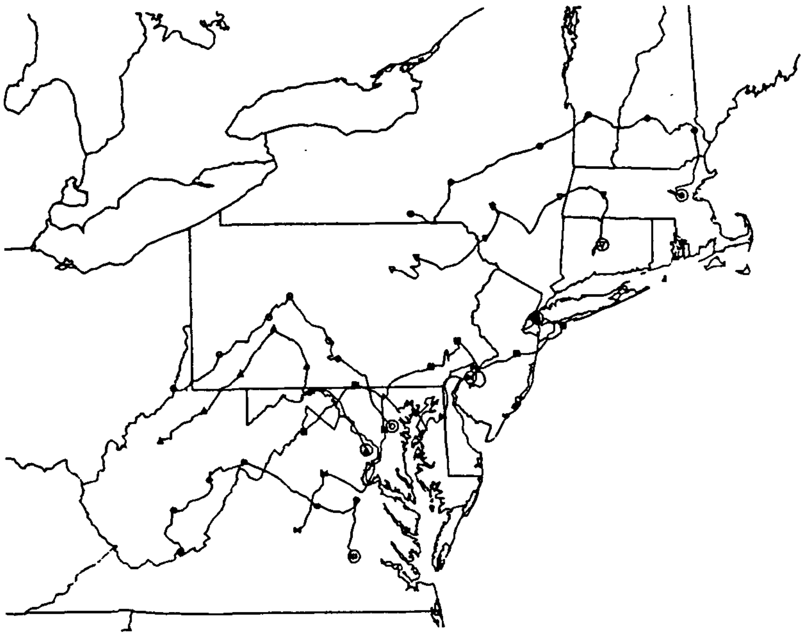


(e) 10th

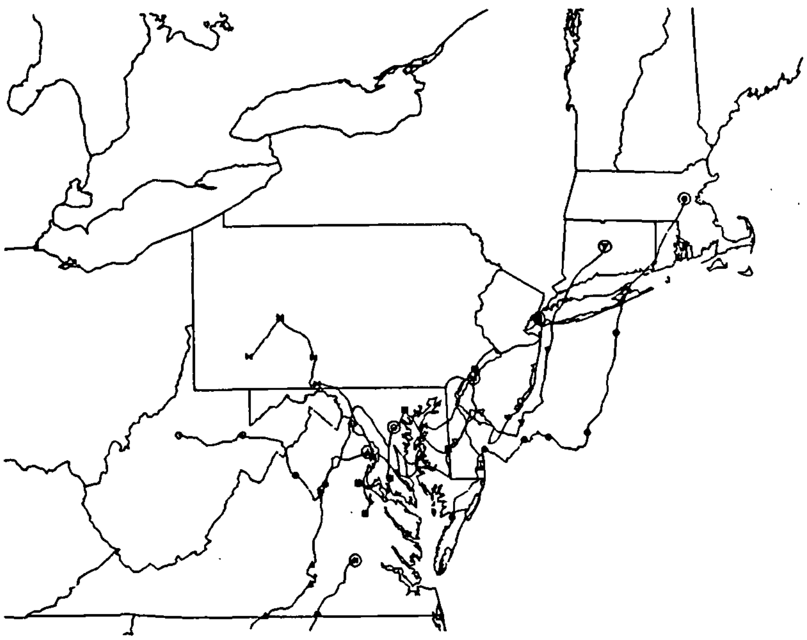


(d) 11th

Figure D-8 (Page 3 of 3)

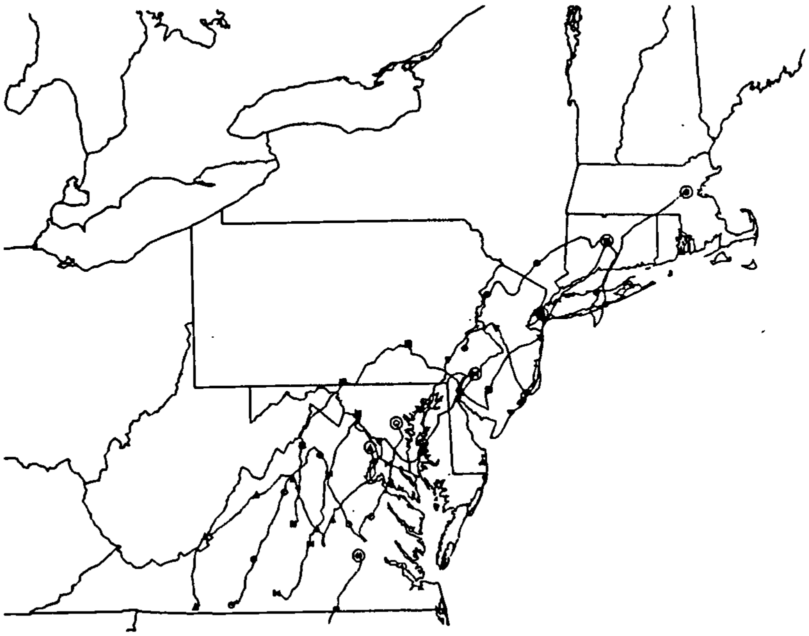


(a) 13th



(b) 14th

Figure D-9. Near-surface back trajectories for July 13, 14, and 16, 1988, with marker key as in Figure D-2 above. Markers are every 12 hours. (Page 1 of 2)



(c) 16th

Figure D-9 (Page 2 of 2)

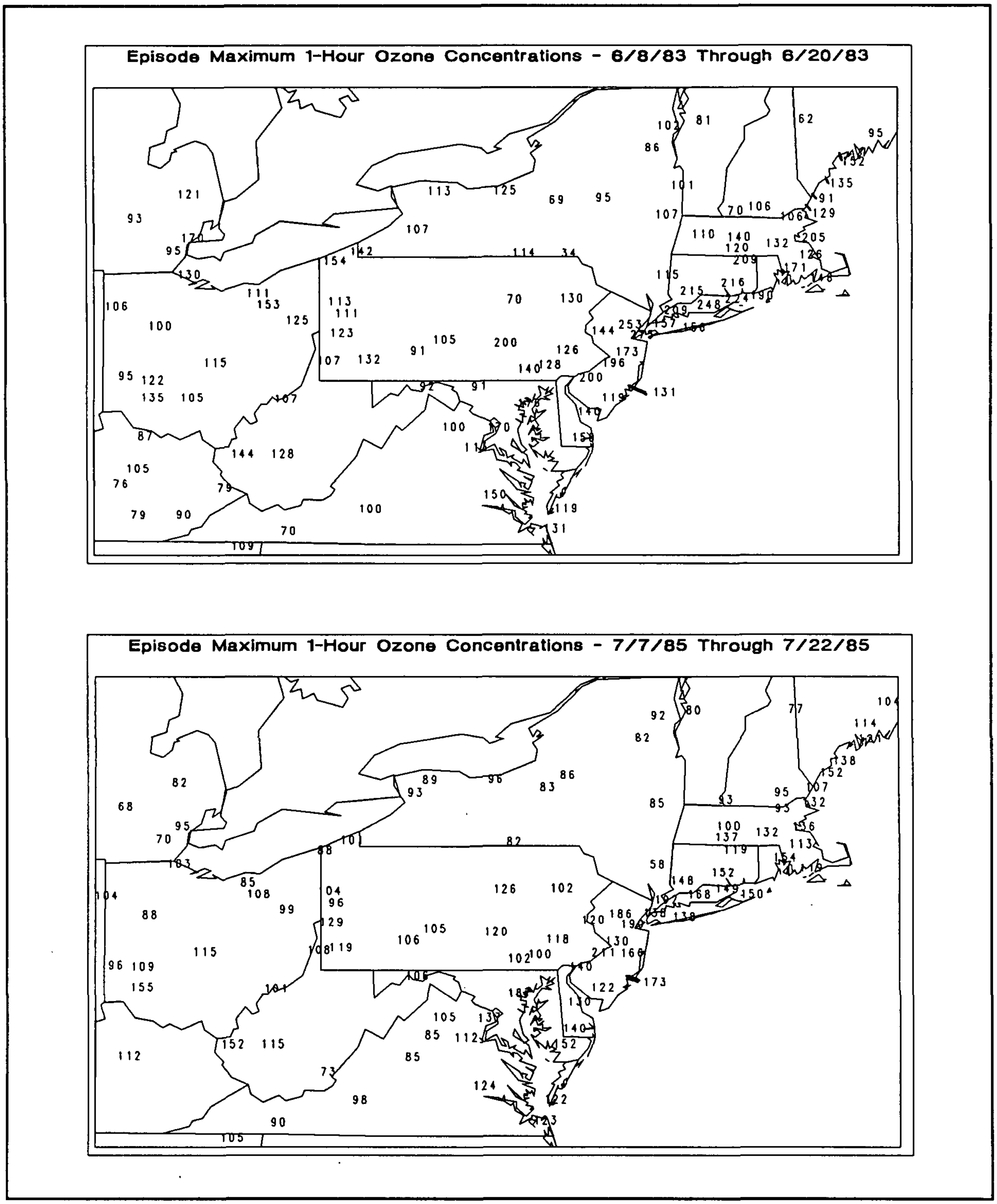
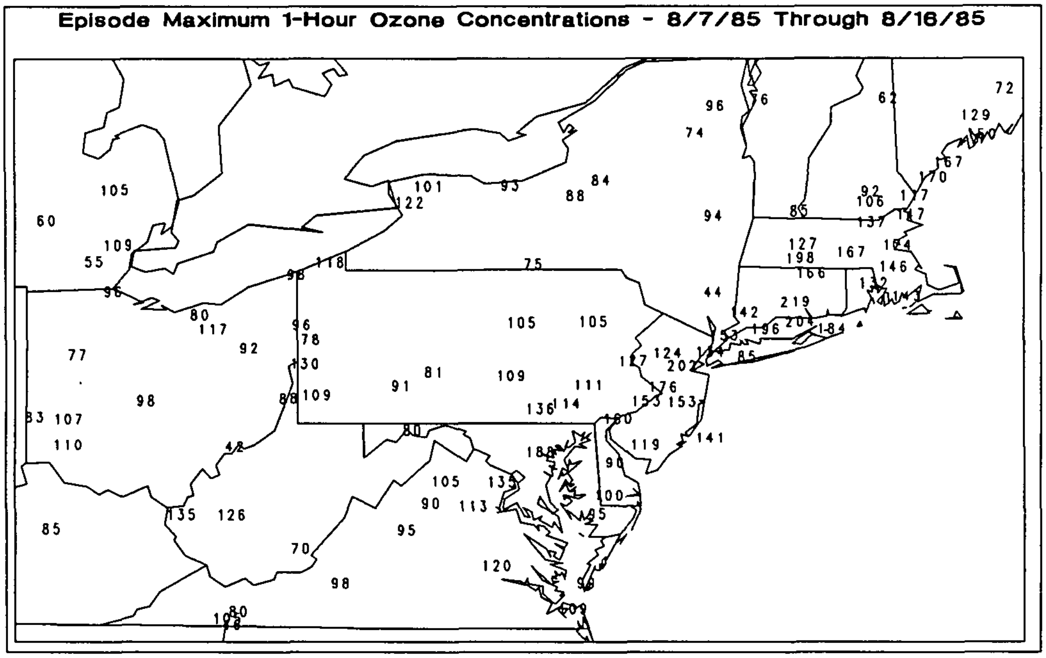


Figure D-10. Observed episode maximum ozone concentrations (ppb): June 11 - 23, 1983; July 7 - 22, 1985; August 7 - 16, 1985; and July 2 - 17, 1988. (Page 1 of 2)



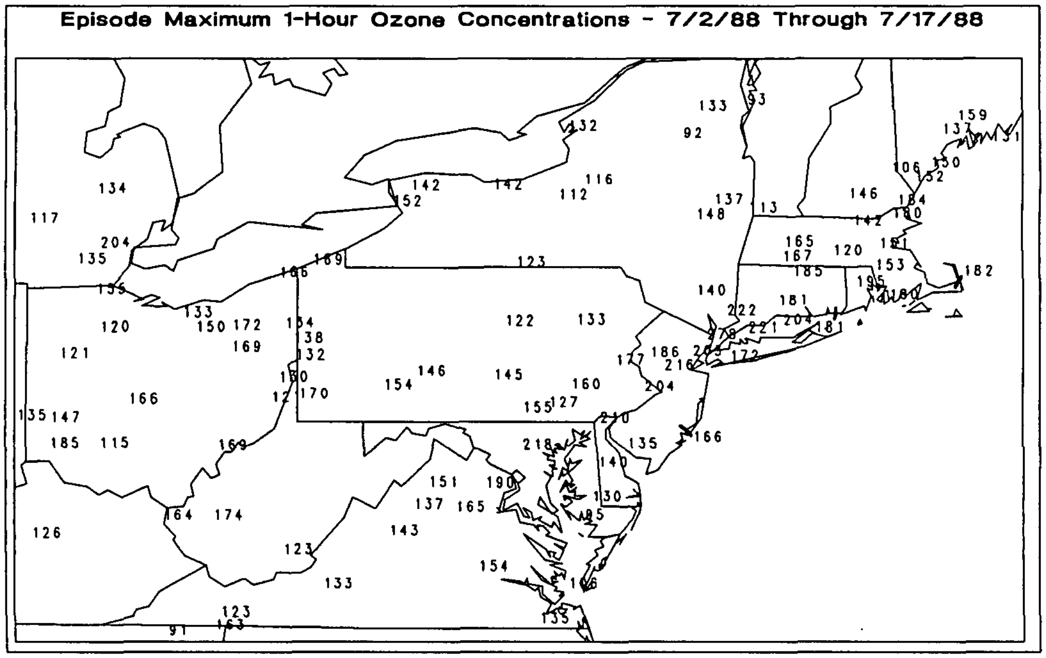


Figure D-10 (Page 2 of 2)

TABLE D-1. SURFACE DAYTIME AND NIGHTTIME OZONE CONCENTRATIONS (ppb) AT THE BOUNDARIES OF THE ROMNET MODELING DOMAIN FOR THE 1983, 1985, AND 1988 EPISODES

	Daytime (1000 LST)				Nighttime (2200 LST)			
	Boundary†				Boundary			
Date	N	S	E	W	N	S	E	W
				A. JUNE 1983				
June 8	53	55	53	53	33	33	33	33
June 9	64	64	64	66	45	45	45	45
June 10	66	66	66	71	39	39	39	39
June 11	71	71	71	76	37	37	37	37
June 12	67	67	67	76	36	36	36	36
June 13	74	74	74	74	38	38	38	38
June 14	72	76	72	72	37	37	37	37
June 15	44	60	44	44	28	28	28	28
June 16	55	55	55	55	30	30	30	30
June 17	50	50	50	57	29	29	29	29
June 18	42	42	42	47	31	31	31	31
June 19	40	40	40	43	27	27	27	27
June 20	40	40	40	54				

† N: northern boundary; S: southern boundary; E: eastern boundary; W: western boundary

(continued)

TABLE D-1 (CONTINUED)

Date	Daytime (1000 LST)				Nighttime (2200 LST)			
	Boundary†				Boundary			
	N	S	E	W	N	S	E	W
B. JULY 1985								
July 7	47	49	47	47	39	39	39	39
July 8	56	56	56	61	43	43	43	43
July 9	56	61	56	56	36	36	36	36
July 10	51	64	51	51	33	33	33	33
July 11	47	58	47	47	27	27	27	27
July 12	72	72	72	75	34	34	34	34
July 13	55	59	55	55	40	40	40	40
July 14	57	59	57	57	34	34	34	34
July 15	51	62	51	51	27	27	27	27
July 16	46	51	46	46	38	38	38	38
July 17	58	61	58	58	34	34	34	34
July 18	74	79	74	74	39	39	39	39
July 19	76	79	76	76	43	43	43	43
July 20	59	72	59	59	37	37	37	37
July 21	57	68	57	57	35	35	35	35
July 22	47	63	47	47				

† N: northern boundary; S: southern boundary; E: eastern boundary; W: western boundary

(continued)

TABLE D-1 (CONTINUED)

Date	Daytime (1000 LST) Boundary† N	S	E	W	Nighttime (2200 LST) Boundary N	S	E	W
C. AUGUST 1985								
August 7	34	34	34	43	22	22	22	22
August 8	38	38	38	51	31	31	31	31
August 9	42	42	42	61	39	39	39	39
August 10	50	50	50	55	27	27	27	27
August 11	50	56	50	50	31	31	31	31
August 12	52	68	52	52	36	36	36	36
August 13	55	65	55	55	34	34	34	34
August 14	53	65	53	53	34	34	34	34
August 15	34	50	34	34	28	28	28	28
August 16	37	43	37	37				

† N: northern boundary; S: southern boundary; E: eastern boundary; W: western boundary

(continued)

TABLE D-1 (CONCLUDED)

Date	Daytime (1000 LST) Boundary†				Nighttime (2200 LST) Boundary			
	N	S	E	W	N	S	E	W
D. JULY 1988								
July 2	54	57	54	54	41	41	41	41
July 3	64	64	64	68	43	43	43	43
July 4	53	53	53	76	46	46	46	46
July 5	53	53	53	80	42	42	42	42
July 6	72	72	72	86	43	43	43	43
July 7	93	93	93	93	51	51	51	51
July 8	95	95	95	97	50	50	50	50
July 9	97	97	97	98	49	49	49	49
July 10	78	78	78	81	42	42	42	42
July 11	49	54	49	49	34	34	34	34
July 12	30	30	30	45	37	37	37	37
July 13	44	53	44	44	38	38	38	38
July 14	51	51	51	55	36	36	36	36
July 15	66	71	66	66	45	45	45	45
July 16	68	78	68	68	39	39	39	39
July 17	59	66	59	59				

† N: northern boundary; S: southern boundary; E: eastern boundary; W: western boundary

APPENDIX E

EPISODE METEOROLOGICAL DATA SUMMARIES

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CODES USED IN THE DATA SUMMARIES

PWM	Portland, ME
BOS	Boston, MA
ORH	Worcester, MA
BDL	Hartford, CT
BDR	Bridgeport, CT
LGA	La Guardia, NY
NEW	Newark, NJ
ACY	Atlantic City, NJ
PHL	Philadelphia, PA
ABE	Allentown, PA
CXY	Harrisburg, PA
BWI	Baltimore/Washington International, MD
DCA	Washington National, DC
EKN	Elkin, WV
IPT	Williamsport, PA
DTW	Detroit, MI
BUF	Buffalo, NY
SYR	Syracuse, NY
CLE	Cleveland, OH
PIT	Pittsburgh, PA
RIC	Richmond, VA
UL	Unlimited, no clouds observed

TABLE E-1. JUNE 9 - JUNE 20, 1983

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
09 JUNE 1983															
1	PWM	170	10.3	177	18.8	0	UL	UL	UL	7	UL	UL	UL	61.0	62.0
2	BOS	120	11.9	123	19.6	3	UL	UL	UL	43	UL	250	UL	61.0	65.0
	ORH	170	5.4	150	4.2	0	UL	UL	UL	15	UL	UL		59.0	68.0
3	BDL	27	5.8	203	6.6	0	UL	UL	UL	23	UL	UL	UL	61.0	72.0
4	BDR	137	13.4	127	14.6	0	UL	UL	UL	27	UL	UL	UL	59.0	64.0
	LGA	40	15.0	87	11.5	0	UL	UL	UL	30	UL	UL	UL	61.0	68.0
	NEW	50	9.2	57	9.9	13	UL	UL	UL	50	UL		UL	72.0	80.0
5	ACY	63	15.7	73	15.7	10	UL	UL	UL	27	UL	UL	UL	65.0	66.0
	PHL	90	11.9	93	10.3	13	UL	UL	UL	10	UL	UL	UL	66.0	76.0
6	ABE	93	10.3	150	8.1	0	UL	UL	UL	0	UL	UL	UL	60.0	70.0
	CXY	110	8.1	120	9.2	10	UL	UL	UL	10	UL	UL	UL	61.0	71.0
7	BWI	73	13.4	90	9.2	3	UL	UL	UL	27	UL	UL	UL	65.0	72.0
	DCA	57	8.1	67	7.7	17	UL	UL	UL	57	UL	40	42	68.0	76.0
8	EKN	327	3.4	220	5.0	17	UL	UL	UL	70	250		250	61.0	74.0
	IPT	107	7.7	167	11.1	0	UL	UL	UL	0	UL	UL	UL	53.0	68.0
9	DTW	180	10.7	230	15.0	47	250	UL	UL	10	UL	UL	UL	62.0	79.0
10	BUF	177	7.7	177	10.4	0	UL	UL	UL	7	UL	UL	UL	62.0	76.0
	SYR	93	9.2	150	10.4	0	UL	UL	UL	0	UL	UL	UL	60.0	75.0
11	CLE	173	13.1	200	9.9	0	UL	UL	UL	0	UL	UL	UL	65.0	79.0
	PIT	90	7.7	183	7.7	17	UL	UL	UL	3	UL	UL	UL	59.0	77.0
12	RIC	137	8.4	130	12.2	0	UL	UL	UL	7	UL	UL	UL	66.0	68.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							10 JUNE 1983								
1	PWM	107	8.8	97	10.7	90	250	250	250	53	250	250	UL	58.0	61.0
2	BOS	80	11.9	77	9.9	93	200	200	200	37	200	UL	UL	59.0	62.0
	ORH	80	5.0	173	3.1					17	UL	UL	UL	57.0	67.0
3	BDL	153	3.8	210	4.7	40	250		UL	7	UL	UL	UL	55.0	73.0
4	BDR	170	12.7	117	13.1	40	200	UL	UL	13	UL	UL	UL	59.0	65.0
	LGA	47	13.5	50	11.9	23	UL	UL	UL	30	UL	UL		62.0	73.0
	NEW	153	6.9	123	7.7	0	UL	UL	UL	0	UL	UL	UL	70.0	81.0
5	ACY	50	8.8	93	12.7	50		230	UL	33	UL	UL	UL	66.0	72.0
	PHL	177	6.2	170	4.7	30	UL		UL	13	UL	UL	UL	67.0	75.0
6	ABE	57	5.8	187	6.6	17	UL	UL	UL	0	UL	UL	UL	61.0	76.0
	CXY	83	8.1	73	6.9	0	UL	UL	UL	0	UL	UL	UL	62.0	75.0
7	BWI	147	6.2	197	5.4	0	UL	UL	UL	0	UL	UL	UL	63.0	77.0
	DCA	60	1.9	110	3.8	0	UL	UL	UL	0	UL	UL	UL	66.0	79.0
8	EKN	200	4.6	337	6.2	0	UL	UL	UL	30	UL	UL	UL	62.0	76.0
	IPT	103	8.4	160	6.9	0	UL	UL	UL	23	UL	UL	40	60.0	74.0
9	DTW	243	5.0	270	5.3	7	UL	UL	UL	53	UL	UL	50	71.0	84.0
10	BUF	233	13.9	250	18.5	47	70	UL	240	30	140	UL	UL	69.0	79.0
	SYR	163	6.2	200	10.3	0	UL	UL	UL	30	UL	250	UL	69.0	81.0
11	CLE	247	6.2	253	8.8	27	UL	UL	UL	33	UL	UL	UL	72.0	84.0
	PIT	247	9.2	253	5.7	0	UL	UL	UL	60	100	100	100	71.0	80.0
12	RIC	77	7.3	103	9.6	13	UL	UL	UL	10	UL	UL	UL	66.0	74.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							11 JUNE 1983								
1	PWM	207	4.3	160	13.4	0	UL	UL	UL	17	UL	UL	UL	70.0	76.0
2	BOS	243	8.4	277	13.1	0	UL	UL	UL	3	UL	UL	UL	73.0	86.0
	ORH	293	10.7	293	9.9	0	UL	UL	UL	10	UL	UL	UL	72.0	80.0
3	BDL	127	3.8	297	8.8	7	UL	UL	UL	33	UL	UL	UL	69.0	87.0
4	BDR	233	15.4	223	11.1	0	UL	UL	UL	3	UL	UL	UL	65.0	79.0
	LGA	160	5.0	200	10.0	0	UL	UL	UL	7	UL	UL	UL	71.0	86.0
	NEW	150	5.8	160	8.8	0	UL	UL	UL	0	UL	UL	UL	74.0	85.0
5	ACY	223	6.6	210	12.3	0	UL	UL	UL	13	UL	UL	UL	74.0	85.0
	PHL	253	5.8	240	8.8	0	UL	UL	UL	10	UL	UL	UL	70.0	85.0
6	ABE	253	8.1	263	12.6	0	UL	UL	UL	7	UL	UL	UL	71.0	85.0
	CXY	273	7.7	247	7.3	13	UL	UL	UL	33	UL	UL	UL	72.0	85.0
7	BWI	227	6.6	247	5.8	0	UL	UL	UL	23	UL	UL	UL	73.0	86.0
	DCA	157	5.4	167	8.8	0	UL	UL	UL	20	UL	UL	UL	72.0	85.0
8	EKN	87	1.1	120	5.0	0	UL	UL	UL	17	UL	UL	UL	62.0	79.0
	IPT	247	7.7	247	10.4	13	UL	UL	UL	0	UL	UL	UL	60.0	85.0
9	DTW	0	0.0	207	7.7	0	UL	UL	UL	13	UL	UL	UL	75.0	85.0
10	BUF	230	7.7	267	7.3	20	UL	UL	UL	20	UL	UL	UL	70.0	81.0
	SYR	280	8.4	277	10.7	23	UL	UL	UL	23	UL	UL	UL	71.0	78.0
11	CLE	223	2.7	360	8.4	0	UL	UL	UL	7	UL	UL	UL	75.0	85.0
	PIT	183	4.3	263	8.4	0	UL	UL	UL	47	UL	UL	45	73.0	83.0
12	RIC	213	8.4	217	14.6	0	UL	UL	UL	43	UL	40	40	72.0	88.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
12 JUNE 1983															
1	PWM	233	9.9	227	10.3	50	UL	UL	100	13	UL	UL	UL	76.0	87.0
2	BOS	110	5.4	270	8.4	30	UL	UL	UL	55	UL	200		75.0	86.0
	ORH	297	6.9	290	8.8	27	UL	UL	UL	57	UL	250	250	74.0	83.0
3	BDL	220	2.6	320	9.2	17	UL	UL	UL	17	UL	UL	UL	74.0	90.0
4	BDR	270	9.2	223	14.2	10	UL	UL	UL	10	UL	UL	UL	80.0	87.0
	LGA	327	9.6	317	8.4	0	UL	UL	UL	20	UL	UL	UL	78.0	89.0
	NEW	133	2.2	197	6.6	0	UL	UL	UL	10	UL	UL	UL	79.0	88.0
5	ACY	80	3.8	190	11.5	0	UL	UL	UL	13	UL	UL	UL	83.0	89.0
	PHL	167	5.4	260	6.2	33	UL	UL	UL	0	UL	UL	UL	75.0	88.0
6	ABE	260	6.2	273	7.2	20	120	UL	UL	13	UL	UL	UL	75.0	89.0
	CXY	307	6.6	340	7.3	0	UL	UL	UL	3	UL	UL	UL	76.0	87.0
7	BWI	250	3.8	237	6.5	0	UL	UL	UL	40	UL	UL	UL	76.0	88.0
	DCA	143	3.4	167	7.7	3	UL	UL	UL	30	UL		UL	76.0	87.0
8	EKN	180	3.8	197	4.2	7	UL	UL	UL	80	50	55	60	66.0	78.0
	IPT	267	8.1	277	5.1	0	UL	UL	UL	53	50	UL	50	66.0	86.0
9	DTW	143	2.7	197	5.4	0	UL	UL	UL	47	UL	UL	UL	76.0	86.0
10	BUF	237	8.8	240	12.3	0	UL	UL	UL	0	UL	UL	UL	77.0	83.0
	SYR	280	8.8	290	13.8	10	UL	UL	UL	0	UL	UL	UL	75.0	87.0
11	CLE	217	5.8	283	8.8	0	UL	UL	UL	20	UL	UL	UL	78.0	87.0
	PIT	30	1.1	10	1.1	0	UL	UL	UL	40	UL	UL	UL	75.0	85.0
12	RIC	267	8.5	290	12.6	0	UL	UL	UL	17	UL	UL	UL	81.0	91.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
13 JUNE 1983															
1	PWM	110	9.2	100	11.1	37	160	UL	UL	10	UL	UL		83.0	72.0
2	BOS	260	6.1	100	11.4	0	UL	UL	UL	7	UL	UL	UL	87.0	86.0
	ORH	243	4.3	253	3.8	0	UL	UL	UL	13	UL	UL	UL	84.0	89.0
3	BDL	7	3.5	173	5.4	0	UL	UL	UL	0	UL	UL	UL	81.0	92.0
4	BDR	290	8.8	220	12.3	7	UL	UL	UL	0	UL	UL	UL	82.0	82.0
	LGA	317	8.4	333	8.4	0	UL	UL	UL	0	UL	UL	UL	81.0	90.0
	NEW	317	6.2	153	6.6	0	UL	UL	UL	27	UL	UL	UL	84.0	92.0
5	ACY	333	6.9	323	11.6	0	UL	UL	UL	0	UL	UL	UL	86.0	94.0
	PHL	230	7.3	327	8.8	0	UL	UL	UL	0	UL	UL	UL	81.0	89.0
6	ABE	337	10.7	330	10.7	0	UL	UL	UL	0	UL	UL	UL	82.0	91.0
	CXY	290	6.6	307	8.1	0	UL	UL	UL	0	UL	UL	UL	80.0	88.0
7	BWI	167	6.9	243	6.6	3	UL	UL	UL	27	UL	UL	UL	84.0	91.0
	DCA	227	3.4	257	6.1	0	UL	UL	UL	63	50	50	55	84.0	88.0
8	EKN	110	1.6	257	9.5	0	UL	UL	UL	53	45	UL	UL	63.0	82.0
	IPT	263	9.5	337	8.8	0	UL	UL	UL	20	UL	UL	UL	72.0	88.0
9	DTW	190	4.3	177	5.1	0	UL	UL	UL	53	UL	50	50	77.0	88.0
10	BUF	237	7.3	237	9.2	0	UL	UL	UL	17	UL	UL	UL	77.0	86.0
	SYR	277	9.9	300	10.7	0	UL	UL	UL	0	UL	UL	UL	78.0	87.0
11	CLE	217	5.8	353	9.9	0	UL	UL	UL	23	UL	UL	UL	81.0	86.0
	PIT	60	2.7	33	2.2	0	UL	UL	UL	40	UL	UL	55	75.0	84.0
12	RIC	323	10.4	243	9.2	0	UL	UL	UL	13	UL	UL	UL	86.0	94.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							14 JUNE 1983								
1	PWM	153	6.9	167	9.5	27	UL	UL	UL	33	UL	UL	UL	65.0	70.0
2	BOS	133	7.3	97	12.3	0	UL	UL	UL	0	UL	UL	UL	69.0	72.0
	ORH	100	2.2	147	3.8	23	UL	UL	UL	13	UL	UL	UL	72.0	86.0
3	BDL	27	3.1	250	6.9	17	UL	UL	UL	33	UL	UL	250	76.0	89.0
4	BDR	103	14.2	80	9.9	37	UL	UL	UL	30	UL	UL	UL	71.0	73.0
	LGA	57	13.1	123	12.7	17	UL	UL	UL	13	UL	UL	UL	76.0	87.0
	NEW	330	5.4	150	7.3	0	UL	UL	UL	47	UL	UL	UL	85.0	92.0
5	ACY	140	8.1	150	8.8	0	UL	UL	UL	0	UL	UL	UL	84.0	87.0
	PHL	117	5.4	77	3.9	0	UL	UL	UL	13	UL	UL	UL	81.0	91.0
6	ABE	113	4.3	150	7.7	10	UL	UL	UL	17	UL	UL	UL	80.0	90.0
	CXY	307	6.6	210	4.6	20	UL	UL	UL	23	UL	UL	UL	79.0	89.0
7	BWI	73	6.9	127	7.7	0	UL	UL	UL	7	UL	UL	UL	83.0	91.0
	DCA	147	2.6	70	5.4	0	UL	UL	UL	30	UL	UL	UL	84.0	92.0
8	EKN	197	4.3	247	4.6	7	UL	UL	UL	87	40	40	15	64.0	80.0
	IPT	270	8.8	113	6.6	0	UL	UL	UL	0	UL	UL	UL	69.0	87.0
9	DTW	167	4.7	140	12.3	0	UL	UL	UL	10	UL	UL	UL	78.0	87.0
10	BUF	140	5.8	150	5.4	0	UL	UL	UL	13	UL	UL	UL	80.0	88.0
	SYR	287	5.8	310	8.4	27	UL	UL	UL	27	UL	UL	UL	77.0	90.0
11	CLE	223	4.6	240	8.8	0	UL	UL	UL	53	40	40	UL	81.0	86.0
	PIT	87	2.2	97	5.0	7	UL	UL	UL	77	40	50	50	74.0	84.0
12	RIC	83	8.8	133	11.0	20	UL	UL	UL	10	UL	UL	UL	85.0	90.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							15 JUNE 1983								
1	PWM	153	4.6	100	11.5	55	80		UL	23	UL	UL	UL	68.0	79.0
2	BOS	107	5.7	80	7.3	20	UL	UL	UL	0	UL	UL	UL	85.0	84.0
	ORH	160	2.3	233	1.9	37	UL	UL	UL	77	35	35	35	83.0	87.0
3	BDL	70	3.8	267	10.0	40	UL	UL	UL	40	UL	UL	250	80.0	92.0
4	BDR	233	12.3	203	12.7	40	UL	UL	UL	30	UL	UL	UL	76.0	88.0
	LGA	267	5.4	210	15.0	0	UL	UL	UL	0	UL	UL	UL	86.0	91.0
	NEW	143	5.8	113	10.7	0	UL	UL	UL	20	UL	UL	UL	82.0	90.0
5	ACY	227	5.4	153	9.2	3	UL	UL	UL	0	UL	UL	UL	86.0	90.0
	PHL	240	5.8	267	6.6	50	UL	UL	UL	20	UL	UL	UL	77.0	89.0
6	ABE	177	3.1	153	6.6	0	UL	UL	UL	13	UL	UL	UL	79.0	90.0
	CXY	0	0.0	127	6.9	0	UL	UL	UL	27	UL	UL	UL	75.0	87.0
7	BWI	160	3.4	157	6.9	0	UL	UL	UL	20	UL	UL	UL	79.0	88.0
	DCA	177	4.3	180	6.2	0	UL	UL	UL	30	UL	UL	UL	80.0	90.0
8	EKN	117	1.1	117	4.2	33	3	UL	UL	47	UL	UL	55	60.0	81.0
	IPT	180	4.3	273	6.2	0	UL	UL	UL	20	UL	UL	UL	68.0	87.0
9	DTW	270	5.0	277	7.7	30	UL	UL	UL	93	38	50	50	76.0	77.0
10	BUF	233	12.2	247	9.9	0	UL	UL	UL	0	UL	UL	UL	81.0	89.0
	SYR	177	3.8	153	7.3	17	UL	UL	UL	50	45	UL	UL	77.0	88.0
11	CLE	190	7.7	197	13.1	3	UL	UL	UL	60	55			79.0	88.0
	PIT	40	1.9	157	6.2	0	UL	UL	UL	27	UL	UL	UL	74.0	85.0
12	RIC	237	7.3	243	7.3	0	UL	UL	UL	0	UL	UL	UL	83.0	93.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
16 JUNE 1983															
1	PWM	97	6.1	103	7.7	100	4	4	7	100	13	12	10	57.0	64.0
2	BOS	73	9.2	97	10.3	100	5	6	6	100	6	6	6	63.0	66.0
	ORH	83	5.7	123	5.0	100	1	5	5	70	20			61.0	76.0
3	BDL	183	4.6	220	6.2	60			30	77	65	200	250	75.0	80.0
4	BDR	80	12.7	83	11.9	50	UL		40	43	UL	UL	UL	68.0	73.0
	LGA	47	16.5	53	12.6	0	UL	UL	UL	3	UL	UL	UL	76.0	84.0
	NEW	160	4.7	133	6.5	7	UL	UL	UL	17	UL	UL	UL	82.0	91.0
5	ACY	183	3.9	157	10.3	7	UL	UL	UL	23	UL	UL	UL	86.0	90.0
	PHL	230	6.2	237	5.1	27	UL	UL	UL	30	UL	UL	UL	79.0	90.0
6	ABE	277	6.6	253	8.1	0	UL	UL	UL	33	UL	UL	UL	81.0	91.0
	CXY	247	5.8	157	5.0	23	UL	UL	UL	33	UL	UL	UL	78.0	87.0
7	BWI	210	3.4	190	8.1	10	UL	UL	UL	27	UL	UL	UL	79.0	89.0
	DCA	160	5.1	173	7.3	7	UL	UL	UL	20	UL	UL	UL	80.0	90.0
8	EKN	203	4.2	110	6.1	13	UL	UL	UL	87	55	50	45	63.0	76.0
	IPT	250	4.3	187	8.1	0	UL	UL	UL	23	UL	UL	UL	70.0	86.0
9	DTW	230	5.8	210	8.8	0	UL	UL	UL	10	UL	UL	UL	75.0	85.0
10	BUF	253	9.5	247	11.5	0	UL	UL	UL	7	UL	UL	UL	78.0	85.0
	SYR	213	4.6	240	8.1	0	UL	UL	UL	30	UL	45	UL	78.0	86.0
11	CLE	243	5.4	350	9.9	77	95	95	UL	47	UL	40	UL	74.0	82.0
	PIT	263	6.2	253	6.6	7	UL	UL	UL	40	UL	UL	UL	74.0	84.0
12	RIC	100	7.7	140	11.5	0	UL	UL	UL	37	UL	UL	UL	86.0	88.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							17 JUNE 1983								
1	PWM	160	6.9	153	11.1	100	6	8	8	100	13	8	7	62.0	67.0
2	BOS	137	3.8	97	11.9	90	3	5	5	53	250	UL	5	61.0	70.0
	ORH	217	2.6	173	6.2	63	6	UL	UL	40	UL	UL	UL	69.0	82.0
3	BDL	180	6.2	187	9.5	90	5	10		23	UL	UL	UL	65.0	84.0
4	BDR	80	9.2	113	9.5	100	1	4	5	63	7	UL	UL	61.0	68.0
	LGA	50	11.5	123	14.2	0	UL	UL	UL	0	UL	UL	UL	71.0	79.0
	NEW	193	3.4	127	8.1	7	UL	UL	UL	30	UL	UL	UL	83.0	91.0
5	ACY	47	4.6	120	9.9	27	UL	UL	UL	17	UL	UL	UL	77.0	82.0
	PHL	113	5.8	133	5.7	47	9	UL	UL	20	UL	UL	UL	73.0	87.0
6	ABE	123	7.7	153	7.3	40	UL	UL	UL	30	UL	UL	UL	74.0	85.0
	CXY	110	6.9	147	8.9	3	UL	UL	UL	63	45	40	40	76.0	86.0
7	BWI	147	4.3	140	9.2	10	UL	UL	UL	23	UL	UL	UL	80.0	89.0
	DCA	163	3.1	167	6.9	7	UL	UL	UL	27	UL	UL	UL	81.0	90.0
8	EKN	83	3.1	77	5.4	57	90	UL	35	100	30	32	45	65.0	67.0
	IPT	117	6.2	210	8.4	30	5	UL	UL	63	100	100	UL	65.0	83.0
9	DTW	20	7.7	317	6.9	27	UL	UL	UL	10	UL	UL	UL	69.0	81.0
10	BUF	280	3.8	200	6.2	57	UL	220	200	97	45	50	150	78.0	79.0
	SYR	73	6.2	123	7.3	60	70	70		50	50		UL	74.0	84.0
11	CLE	353	7.3	347	8.1	77	120	120	120	77	120	250	250	74.0	77.0
	PIT	273	4.2	333	11.1	97	110	110	80	63	200	200	200	73.0	78.0
12	RIC	127	6.2	137	8.4	40	UL	UL	UL	27	UL	UL	UL	74.0	78.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
18 JUNE 1983															
1	PWM	80	5.4	140	8.8	90	3	6	6	60		UL	100	63.0	72.0
2	BOS	197	10.7	197	8.1	75		100	100	65	100	100		73.0	84.0
	ORH	250	5.0	247	5.8	67	200	200	UL	47	UL	UL	UL	75.0	82.0
3	BDL	180	5.0	150	6.6	80	6	8	UL	57	UL	UL	80	67.0	83.0
4	BDR	263	8.1	223	10.7	97	2	9	9	70	9	100	100	66.0	74.0
	LGA	97	6.6	127	6.9	80	3	7	UL	63	UL	250	80	69.0	82.0
	NEW	157	4.7	143	8.8	3	UL	UL	UL	27	UL	UL	UL	80.0	90.0
5	ACY	163	4.7	153	8.4	25		UL	UL	67	UL	UL	250	80.0	85.0
	PHL	97	3.5	273	6.2	67	5	9	UL	67	250	200	UL	70.0	82.0
6	ABE	100	1.6	240	6.2	97	80	80	100	93	45	45	80	74.0	76.0
	CXY	147	3.5	137	6.6	100	40	35	100	87	40	40	40	69.0	80.0
7	BWI	190	6.2	97	7.7	43	UL	UL	UL	55	120	UL		79.0	86.0
	DCA	167	3.4	177	6.2	13	UL	UL	UL	60			100	80.0	88.0
8	EKN	7	1.6	140	7.3	100	75	75	75	100	90	22	45	62.0	74.0
	IPT	73	6.2	130	5.7	60	9	UL	UL	73	30	40	40	65.0	77.0
9	DTW	20	7.3	77	5.7	0	UL	UL	UL	0	UL	UL	UL	70.0	80.0
10	BUF	160	5.4	153	6.9	10	UL	UL	UL	7	UL	UL	UL	72.0	82.0
	SYR	73	1.1	303	6.2	60	30	70	70	60	30	35	45	71.0	81.0
11	CLE	70	8.9	243	13.1	40	120	UL	UL	33	UL	UL	UL	74.0	79.0
	PIT	167	3.4	240	7.7	67	UL	100	120	100	80	80	70	69.0	77.0
12	RIC	170	5.4	130	8.1	100	9	12	250	97	250	250	250	70.0	82.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
19 JUNE 1983															
1	PWM	240	8.4	180	10.7	3	UL	UL	UL	13	UL	UL	UL	78.0	83.0
2	BOS	267	6.9	120	9.9	70	100	100	100	35		UL	UL	81.0	84.0
	ORH	143	5.4	287	4.3	27	UL	UL	UL	37	UL	UL	UL	76.0	84.0
3	BDL	47	3.0	240	5.0	93	65	85	85	90	85	80	80	75.0	83.0
4	BDR	230	7.3	217	7.7	97	1	80	80	80	80	100	100	68.0	82.0
	LGA	0	0.0	250	6.6	93	100	100	100	80	80	25	25	74.0	85.0
	NEW	160	5.0	223	10.0	83	250	200	200	100	20	20	25	80.0	86.0
5	ACY	233	5.1	170	5.4	83	13	90	40	100	90	90	21	78.0	77.0
	PHL	277	5.4	187	7.3	93	100	100	100	97	100	30	30	76.0	84.0
6	ABE	177	5.1	140	3.4	100	100	120	120	60	140	140	140	72.0	82.0
	CXY	17	1.9	187	5.4	100	60	50	50	90	80	80	80	71.0	78.0
7	BWI	160	6.2	127	8.8	77	130	150	35	87	35	250	250	78.0	82.0
	DCA	143	2.6	170	6.6	87	65	55	55	70	200	40	40	77.0	84.0
8	EKN	80	1.1	93	4.3	97	80	90	90	100	45	40	45	65.0	74.0
	IPT	257	4.7	193	2.7	97	80	80	40	100	100	100	100	69.0	75.0
9	DTW	73	7.3	113	6.2	57	220	220	UL	80	250	140	140	67.0	75.0
10	BUF	87	9.2	70	11.4	3	UL	UL	UL	53	UL	200	190	76.0	83.0
	SYR	257	4.6	113	5.8	17	UL	UL	UL	27	UL	UL	UL	74.0	84.0
11	CLE	157	5.8	237	4.3	100	130	120	35	100	32	30	30	72.0	70.0
	PIT	110	2.2	183	6.9	97	6	8	10	100	20	29	28	69.0	76.0
12	RIC	220	5.7	277	5.8	100	120	120	120	87	120	120	43	75.0	85.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
20 JUNE 1983															
1	PWM	340	8.1	180	8.8	37	UL	UL	UL	40	UL	UL	250	78.0	85.0
2	BOS	67	9.2	137	10.7	73	120	120	120	23	UL	UL	UL	80.0	82.0
	ORH	57	5.8	103	1.9	83	250	250	250	50	250	UL	UL	73.0	80.0
3	BDL	27	6.6	53	7.3	30	UL			53	UL	UL	250	76.0	86.0
4	BDR	23	10.4	187	6.9	100	40	110	200	100	150	150	150	70.0	77.0
	LGA	47	9.5	37	6.9	100	45	45	45	100	80	50	50	72.0	74.0
	NEW	160	3.4	80	7.3	100	100	100	100	90	100	20	100	78.0	87.0
5	ACY	160	5.4	90	7.3	100	9	10	14	100	13	14	16	75.0	76.0
	PHL	73	7.3	107	6.9	100	20	25	15	100	25	28	28	70.0	75.0
6	ABE	83	6.6	47	6.2	100	19	33	19	100	19	19	38	71.0	70.0
	CXY	110	6.6	70	7.3	100	8	8	6	100	10	7	7	70.0	70.0
7	BWI	277	5.4	123	7.7	100	9	5	8	87	19	17	17	71.0	79.0
	DCA	43	3.8	43	3.4	90	10	20	22	77	40	40	40	77.0	84.0
8	EKN	60	1.6	320	6.0	100	70	70	70	100	22	22	30	65.0	76.0
	IPT	153	5.1	117	6.1	100	28	17	11	100	4	4	4	67.0	65.0
9	DTW	77	7.3	137	5.1	0	UL	UL	UL	17	UL	UL	UL	74.0	83.0
10	BUF	67	8.4	97	9.9	77	130	130	130	70	160	140	160	75.0	82.0
	SYR	60	8.1	57	5.0	97	120	120	120	97	120	100	100	70.0	79.0
11	CLE	47	10.4	13	13.8	60		UL	25	27	UL	30	UL	73.0	80.0
	PIT	310	5.0	230	9.9	100	4	6	15	100	33	14	25	67.0	72.0
12	RIC	127	8.4	70	6.9	100	70	70	60	100	110	90	70	74.0	76.0

TABLE E-2. JULY 7 - JULY 23, 1985

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							07 JULY 1985								
1	PWM	217	9.9	227	16.5	55	110		UL	50	UL	UL	40	73.0	84.0
2	BOS	257	11.1	260	13.5	77	40	24	29	57	29	29	UL	76.0	85.0
	ORH	260	8.8	240	8.8	63	18	23	UL	50	UL	UL	50	72.0	78.0
3	BDL	247	6.9	280	13.9	37	UL	UL	UL	43	UL	UL	UL	75.0	83.0
4	BDR	260	15.0	240	17.2	17	UL	UL	UL	60	40	45	UL	79.0	83.0
	LGA	307	12.7	297	16.5	33	UL	UL	UL	57	UL	40	40	78.0	83.0
5	ACY	287	13.1	280	17.3	40	UL	UL	UL	53	UL	32	UL	83.0	89.0
	PHL	297	13.4	290	15.7	20	UL	UL	UL	37	UL	UL	UL	77.0	85.0
6	ABE	290	13.1	287	15.4	37	UL	UL	UL	67	UL	45	46	74.0	79.0
	CXY	290	13.9	267	13.4	50	UL	UL	35	50		UL	UL	72.0	79.0
7	BWI	303	16.5	280	14.9	23	UL	UL	UL	23	UL	UL	UL	80.0	86.0
	DCA	300	10.4	293	11.1	43	UL	45	45	33	UL	UL	UL	81.0	88.0
8	EKN	293	9.9	293	10.7	37	22	UL	UL	80	30	35	40	67.0	74.0
	IPT	283	15.7	283	18.4	77	UL	55	55	57	60	UL	UL	71.0	78.0
9	DTW	320	11.0	270	11.4	40	13	UL	UL	20	UL			58.0	77.0
10	BUF	263	17.7	267	18.4	97	14	18	21	100	22	20	28	64.0	64.0
	SYR	263	13.4	277	13.9	97	30	32	19	100	19	16	19	68.0	65.0
11	CLE	297	13.1	310	11.9	33	UL	UL	UL	0	UL	UL	UL	67.0	75.0
	PIT	287	16.9	290	18.8	7	UL	UL	UL	10	UL	UL	UL	68.0	78.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
08 JULY 1985															
1	PWM	133	7.7	150	6.9	53	UL	UL	35	93	35	55	55	74.0	71.0
2	BOS	273	12.2	277	14.2	57	UL	30	30	83	38	38	46	73.0	80.0
	ORH	257	13.4	267	10.4	35	UL	UL		23	UL	UL	UL	68.0	77.0
3	BDL	277	11.5	260	8.1	30	UL	UL		25		UL	UL	74.0	82.0
4	BDR	263	14.6	233	15.4	53	UL	90	90	87	90	75	250	74.0	77.0
	LGA	297	11.1	260	15.7	70	250	250	200	100	50	50	44	72.0	78.0
5	ACY	270	8.5	220	12.2	37	UL	UL	UL	67	200	50	25	79.0	87.0
	PHL	223	8.1	300	8.4	57	UL	120	250	97	100	40	35	75.0	81.0
6	ABE	177	6.6	233	7.3	100	220	220	90	100	19	28	25	68.0	69.0
	CXY	90	1.9	160	5.1	100	40	40	40	83	UL	40	40	63.0	77.0
7	BWI	253	9.6	240	17.6	20		UL	UL	27	UL	UL	UL	77.0	92.0
	DCA	257	10.4	240	14.6	15		UL	UL	27	UL	UL	UL	79.0	94.0
8	EKN	253	15.3	260	14.2	90		55	35	57	34	UL	UL	74.0	82.0
	IPT	97	6.2	97	3.1	100	15	15	7	100	23	100	17	57.0	66.0
9	DTW	280	12.6	280	18.8	7	UL	UL	UL	47	50	UL	UL	77.0	90.0
10	BUF	220	9.9	230	10.3	57	UL	15	20	73	25	32	30	66.0	77.0
	SYR	273	6.9	233	6.1	27	UL	UL	UL	7	UL	UL	UL	69.0	80.0
11	CLE	257	15.7	267	19.2	17	UL	UL	UL	30	UL	UL	UL	80.0	91.0
	PIT	230	18.8	250	12.7	30	50	UL	UL	80	30	30	30	72.0	83.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							09 JULY 1985								
1	PWM	93	10.7	167	13.1	7	UL	UL	UL	20	UL	UL	UL	74.0	79.0
2	BOS	127	8.1	117	15.4	10	UL	UL	UL	17	UL	UL	UL	74.0	79.0
	ORH	193	3.8	203	6.6	30	UL	UL	UL	23	UL	UL	UL	74.0	81.0
3	BDL	97	3.4	197	7.3	17	UL	UL	UL	37	UL	UL	UL	76.0	85.0
4	BDR	133	7.7	103	10.3	0			UL	0	UL	UL	UL	74.0	77.0
	LGA	150	7.3	183	15.0	33	UL	UL	UL	37	UL	UL	UL	77.0	83.0
5	ACY	187	9.2	167	11.5	20	UL	UL	UL	23	UL	UL	UL	80.0	91.0
	PHL	263	6.5	230	6.6	60	UL	120	120	40	UL	UL	250	74.0	86.0
6	ABE	283	5.4	223	7.7	80	12	80		30	UL		UL	72.0	85.0
	CXY	177	5.4	253	6.6	53	80	UL	250	25		UL	UL	72.0	85.0
7	BWI	230	9.9	253	11.9	63	UL	250	250	40	UL	UL	UL	82.0	89.0
	DCA	183	6.1	207	8.8	83	230	230	210	50	230	230	UL	79.0	89.0
8	EKN	223	5.7	283	11.0	100	14	17	22	40	UL	UL		66.0	84.0
	IPT	287	7.7	273	10.0	40	UL	UL	UL	70	UL	250	100	73.0	86.0
9	DTW	317	13.3	300	13.1	7	UL	UL	UL	60	UL		250	73.0	81.0
10	BUF	210	15.0	230	16.1	17	UL	UL	UL	70	120	33	39	75.0	81.0
	SYR	273	6.6	237	5.8	17	UL	UL	UL	77	30	35	100	78.0	85.0
11	CLE	300	12.2	303	12.2	27	UL	UL	UL	37	UL	UL	UL	78.0	84.0
	PIT	200	9.5	273	15.0	73	13	13	30	57	35	35	UL	72.0	85.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
10 JULY 1985															
1	PWM	173	11.1	173	10.7	100	4	4	5	100	9	9	40	68.0	73.0
2	BOS	220	10.7	200	17.7	83	11	11	35	37	UL	UL	UL	75.0	86.0
	ORH	213	6.6	217	12.3	93	5	8	11	73	UL	23	23	71.0	81.0
8	BDL	180	4.6	250	12.2	83	14	14	250	70			250	73.0	87.0
4	BDR	183	7.7	203	12.2	63	UL	UL	80	70	80	80	80	76.0	83.0
	LGA	317	9.2	267	14.2	33	UL	UL	250	80	100	100	100	83.0	87.0
S	ACY	283	8.8	230	11.9	10	UL	UL	UL	93	30	25	25	88.0	88.0
	PHL	273	6.9	177	6.6	80			80	87	70	70	120	82.0	71.0
6	ABE	277	4.2	207	8.1	100	250	100	100	93	40	40	250	76.0	79.0
	CXY	287	10.8	203	10.7	100	6	50	50	70	100	100	UL	66.0	78.0
7	BWI	147	7.7	157	7.6	93	200	38	37	87	250	80	50	83.0	77.0
	DCA	233	6.9	107	6.2	87	230	90	80	77	230	110	80	81.0	81.0
8	EKN	143	5.0	173	9.2	100	18	18	28	100	45	45	45	61.0	72.0
	IPT	127	5.7	117	6.1	100	5	80	12	57	90	UL	33	65.0	76.0
9	DTW	140	13.0	243	10.7	30	UL	UL	50	60	45	45	UL	70.0	77.0
	BUF	230	8.9	290	12.3	90	100	80	65	93	50	50	50	70.0	72.0
	SYR	243	6.9	140	7.3	90	200	80	80	77	75	75	75	72.0	76.0
11	CLE	267	7.7	360	12.7	100	11	12	14	67	UL	40	17	70.0	77.0
	PIT	170	13.9	270	11.0	80	30	45	UL	67	25	25	UL	66.0	77.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
11 JULY 1985															
1	PWM	273	11.5	293	13.8	27	UL	UL	UL	20	UL	UL	UL	74.0	81.0
2	BOS	270	13.5	280	12.7	0	UL	UL	UL	20	UL	UL	UL	77.0	84.0
	ORH	267	13.1	283	9.6	10	UL	UL	UL	3	UL	UL	UL	72.0	78.0
3	BDL	323	8.1	317	7.7	3	UL	UL	UL	10	UL	UL	UL	75.0	82.0
4	BDR	293	12.3	263	11.1	0	UL	UL	UL	3	UL	UL	UL	76.0	83.0
	LGA	333	12.2	237	9.9	13	UL	UL	UL	17	UL	UL	UL	77.0	84.0
5	ACY	243	9.2	150	8.4	33	UL	UL	UL	27	UL	UL	UL	80.0	89.0
	PHL	343	9.2	323	9.5	20	UL	UL	UL	7	UL	UL	UL	75.0	85.0
6	ABE	327	11.1	327	12.3	17	UL	UL	UL	37	UL	UL	UL	73.0	84.0
	CXY	320	6.9	323	8.4	7	UL	UL	UL	30	UL	UL	UL	73.0	81.0
7	BWI	243	9.2	337	10.1	10	UL	UL	UL	3	UL	UL	UL	77.0	87.0
	DCA	350	6.9	237	6.9	10	UL	UL	UL	7	UL	UL	UL	79.0	89.0
8	EKN	243	4.3	217	6.9	63	30	30	UL	27	UL	UL	UL	70.0	80.0
	IPT	257	8.8	273	10.7	37	UL	50	UL	40	UL	45	UL	67.0	80.0
9	DTW	137	4.7	187	9.5	83	50	50	50	80	100	80	55	62.0	72.0
10	BUF	303	11.1	313	11.1	20	UL	UL	UL	7	UL	UL	UL	63.0	72.0
	SYR	263	13.5	273	15.0	37	55	UL	UL	3	UL	UL	UL	66.0	73.0
11	CLE	163	4.6	237	7.3	37	UL	UL	UL	30	UL	UL	UL	68.0	75.0
	PIT	270	11.5	270	9.5	10	UL	UL	UL	50	40	UL	UL	71.0	80.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
12 JULY 1985															
1	PWM	83	6.9	147	11.9	3	UL	UL	UL	33	UL	UL	100	70.0	76.0
2	BOS	260	8.8	127	12.7	0	UL	UL	UL	13	UL	UL	UL	77.0	79.0
	ORH	283	3.4	193	6.9	27	UL	UL	UL	30	UL		UL	71.0	79.0
3	BDL	20	1.9	210	10.0	27	UL	UL	UL	83	80	80	80	73.0	81.0
4	BDR	103	10.3	110	10.3	30	UL	UL		67	250	250	250	72.0	79.0
	LGA	63	9.5	187	16.9	70		250	250	73	250	250	100	71.0	82.0
5	ACY	113	5.7	167	13.1	80	120	250	250	87	120	80	120	83.0	84.0
	PHL	203	6.6	223	8.4	93	100	80	80	85	100	70		75.0	82.0
6	ABE	143	6.9	200	13.9	77	250	150	200	25		UL	UL	73.0	81.0
	CXY	210	7.7	203	10.7	70	100	100	UL	33	UL	UL	UL	72.0	79.0
7	BWI	237	8.8	173	8.1	100	80	40	110	70	45	85	UL	71.0	80.0
	DCA	200	5.4	150	6.9	97	40	150	150	43	70	UL	UL	70.0	82.0
8	EKN	183	5.4	277	8.1	65	UL		45	43	UL	UL	UL	73.0	83.0
	IPT	93	7.7	227	10.3	53	80	100	UL	60	UL	40	UL	68.0	81.0
9	DTW	223	9.5	287	7.3	0	UL	UL	UL	37	UL	UL	UL	72.0	82.0
10	BUF	103	7.7	343	9.2	73	50	120	UL	45	UL	80		60.0	76.0
	SYR	70	5.8	73	8.8	100	46	45	38	60	45	100	UL	54.0	76.0
11	CLE	273	8.1	343	8.8	0	UL	UL	UL	7	UL	UL	UL	76.0	81.0
	PIT	260	5.7	283	9.2	53	UL	55	55	60	45	50	UL	75.0	82.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
								13 JULY 1985							
1	PWM	160	5.4	147	8.4	17	UL	UL	UL	23	UL	UL	UL	72.0	78.0
2	BOS	253	6.9	157	11.9	20	UL	UL	UL	50	UL	UL	UL	75.0	81.0
	ORH	300	4.2	257	5.8	87	12	18	20	33	UL	UL	UL	69.0	78.0
3	BDL	123	4.3	247	5.0	63	23	UL	30	43	UL	UL	UL	71.0	82.0
4	BDR	153	9.2	193	10.3	23	UL	UL	UL	10	UL	UL	UL	75.0	81.0
	LGA	167	4.6	190	7.7	27	UL	UL	UL	37	UL	UL	UL	75.0	86.0
5	ACY	107	3.1	153	11.1	33	UL	UL	UL	17	UL	UL	UL	84.0	88.0
	PHL	100	6.2	197	5.8	7	UL	UL	UL	30	UL	UL	UL	77.0	88.0
6	ABE	57	4.2	100	4.2	43	25	UL	UL	20	UL	UL	UL	72.0	83.0
	CXY	40	1.1	117	5.4	20	UL	UL	UL	30	UL	UL	UL	71.0	83.0
7	BWI	220	6.9	140	7.7	0	UL	UL	UL	20	UL	UL	UL	78.0	88.0
	DCA	57	3.8	133	6.1	3	UL	UL	UL	33	UL	UL	UL	77.0	89.0
8	EKN	237	3.4	290	6.6	33	UL	UL	UL	90	100	40	40	73.0	84.0
	IPT	223	5.4	150	7.3	43	7	UL	UL	0	UL	UL	UL	65.0	82.0
9	DTW	203	12.3	187	18.9	23	UL	UL	70	0	UL	UL	UL	75.0	85.0
10	BUF	180	6.6	217	10.4	0	UL	UL	UL	20	UL	UL	UL	74.0	88.0
	SYR	110	5.1	63	7.7	17	UL	UL	UL	0	UL	UL	UL	68.0	85.0
11	CLE	197	11.4	210	13.1	17	UL	UL	UL	23	UL	UL	UL	78.0	88.0
	PIT	117	6.2	187	7.7	0	UL	UL	UL	27	UL	UL	UL	74.0	87.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
14 JULY 1985															
1	PWM	190	14.2	180	17.6	43	UL	UL	250	77	250	250	UL	77.0	78.0
2	BOS	207	18.0	190	20.0	3	UL	UL	UL	50	UL	250		80.0	85.0
	ORH	210	12.7	207	13.1	63	UL	250	18	70	250	250	250	72.0	82.0
3	BDL	203	11.5	203	13.9	97	13	11	15	93	30	30	32	75.0	83.0
4	BDR	213	11.9	197	16.9	83	3	8	UL	80	200	150	150	75.0	84.0
	LGA	233	14.2	233	16.1	67	250	200	25	70	25	25	200	83.0	90.0
5	ACY	233	13.7	227	17.7	37	UL	UL	UL	45	23		UL	86.0	94.0
	PHL	237	10.7	233	14.2	27	UL	UL	UL	43	200	UL	UL	81.0	89.0
6	ABE	237	9.5	233	11.4	25	UL		UL	67	UL	100	120	78.0	86.0
	CXY	210	5.4	250	9.6	47	UL	150	80	87	80	100	60	75.0	84.0
7	BWI	230	11.9	213	14.2	50	250	250	UL	20	UL	UL	UL	81.0	93.0
	DCA	167	7.3	183	11.9	37	UL	UL	UL	23	UL	UL	UL	80.0	93.0
8	EKN	197	6.2	150	5.0	93	40	40	32	73	200	200	UL	73.0	86.0
	IPT	210	5.8	253	8.8	63	80	250	UL	100	33	33	33	73.0	83.0
9	DTW	237	13.9	267	15.4	90	30	200	90	87	90	80	65	70.0	84.0
10	BUF	230	19.6	230	19.5	97	85	28	17	77	65	80	UL	76.0	81.0
	SYR	223	11.5	213	12.7	100	70	70	55	97	45	50	80	80.0	77.0
11	CLE	257	12.7	213	11.1	100	14	15	90	87	140	140	160	74.0	83.0
	PIT	147	8.4	227	8.1	100	20	25	50	90	45	80	80	71.0	82.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
15 JULY 1985															
1	PWM	180	10.0	180	17.3	40		UL		57	UL	UL	90	78.0	83.0
2	BOS	237	15.4	220	12.2	53	70	70	UL	80	24	80	35	76.0	84.0
	ORH	220	12.2	213	10.7	97	6	10	12	100	100	100	100	72.0	80.0
3	BDL	203	9.2	203	8.1	100	15	15	16	100	100	100	23	75.0	82.0
4	BDR	223	9.9	193	14.5	77	250	250	250	97	38	75	110	79.0	81.0
	LGA	233	13.4	190	12.6	100	100	80	80	100	70	20	20	81.0	83.0
5	ACY	203	12.3	183	15.4	100	80	80	80	67	80	250	UL	85.0	88.0
	PHL	223	8.8	220	11.5	97	80	80	100	63	25	100	UL	79.0	89.0
6	ABE	250	4.6	230	11.1	100	80	80	80	60	120	250	UL	74.0	86.0
	CXY	90	1.6	220	8.8	100	80	80	80	77	100	100	100	72.0	83.0
7	BWI	187	8.4	190	9.9	80	80	80	80	87	80	80	80	83.0	93.0
	DCA	167	8.8	180	10.7	50	250	UL	UL	33	UL	UL	90	82.0	94.0
8	EKN	200	7.3	243	11.0	93	30	100	100	40	UL	UL	UL	73.0	86.0
	IPT	50	3.5	187	6.1	100	25	23	28	83	28	28	UL	71.0	82.0
9	DTW	257	9.5	303	13.1	100	30	30		40	27	UL	UL	72.0	81.0
10	BUF	217	13.8	253	15.7	100	16	13	7	90	50	35	120	75.0	76.0
	SYR	88	5.1	180	14.6	97	23	23	23	97	25	100	30	78.0	82.0
11	CLE	230	10.3	273	10.4	100	190	110	19	77	17	250	250	73.0	83.0
	PIT	213	11.5	243	14.5	85	90	90		67	25	45	UL	72.0	83.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							16 JULY 1985								
1	PWM	237	9.2	177	12.3	47	100	UL	UL	33	UL	UL	UL	76.0	85.0
2	BOS	227	9.9	197	11.9	100	100	120	60	63	80	100	UL	76.0	80.0
	ORH	230	5.7	200	6.9	100	100	100	100	90	20	80		70.0	80.0
3	BDL	123	2.7	193	7.7	100	110	110	15	60	75		UL	73.0	84.0
4	BDR	133	3.9	107	11.9	100	100	100	100	57	16	UL	UL	73.0	80.0
	LGA	103	5.4	147	7.6	100	100	100	100	67	100	UL	80	77.0	88.0
5	ACY	203	4.6	230	4.2	87	70	70	17	100	17	17	70	83.0	85.0
	PHL	260	4.7	217	6.2	97	70	60	60	63	70	80	UL	76.0	86.0
6	ABE	203	2.7	287	9.2	43	120	UL	UL	30	UL	UL	UL	76.0	87.0
	CXY	340	7.3	337	6.5	30	UL	UL		60	150	200	UL	79.0	85.0
7	BWI	283	6.6	290	11.1	90	80	120	95	35	UL	UL		79.0	90.0
	DCA	337	7.7	223	8.4	77	110	110	110	23	UL	UL	UL	79.0	90.0
8	EKN	220	7.3	330	10.0	70	30	30		37	UL	UL	UL	71.0	78.0
	IPT	270	7.7	233	11.9	20	UL	UL	UL	20	UL	UL	UL	76.0	86.0
9	DTW	327	13.5	323	11.9	17	UL	UL	UL	27	UL	UL	UL	69.0	77.0
10	BUF	253	10.0	280	11.5	63	50	UL	40	80	45	50	70	69.0	72.0
	SYR	257	11.1	313	17.7	0	UL			20		UL	UL	74.0	78.0
11	CLE	297	11.5	350	11.5	0	UL	UL	UL	7	UL	UL	UL	72.0	75.0
	PIT	340	13.0	293	11.5	13	UL	UL	UL	43	UL	UL	UL	71.0	78.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							17 JULY 1985								
1	PWM	230	10.3	167	6.9	15		UL	UL	23	UL	UL	UL	71.0	80.0
2	BOS	140	9.5	113	12.2	30	250	UL	UL	13	UL	UL	UL	71.0	74.0
	ORH	130	7.3	143	5.1	17	UL	UL	UL	23	UL	UL	UL	67.0	77.0
3	BDL	140	9.5	40	8.8	3	UL	UL	UL	10	UL	UL	UL	71.0	81.0
4	BDR	260	13.8	140	10.7	10	UL	UL	UL	20	UL	UL	UL	73.0	81.0
	LGA	63	15.0	67	10.7	23	UL	UL	UL	30	UL	UL	UL	75.0	83.0
5	ACY	37	13.4	83	11.5	3	UL	UL	UL	20	UL	UL	UL	77.0	84.0
	PHL	50	9.5	150	6.6	17	UL	UL	UL	13	UL	UL	UL	74.0	83.0
6	ABE	63	8.4	47	7.7	0	UL	UL	UL	10	UL	UL	UL	71.0	81.0
	CXY	227	6.6	327	8.8	0	UL	UL	UL	7	UL	UL	UL	70.0	80.0
7	BWI	57	9.2	247	10.0	0	UL	UL	UL	30	UL	UL	UL	75.0	84.0
	DCA	20	7.3	17	6.6	0	UL	UL	UL	40	UL	UL	60	76.0	84.0
8	EKN	313	4.6	220	6.6	33	4	UL	UL	27	UL	UL	UL	59.0	78.0
	IPT	327	7.3	153	10.4	10	UL	UL	UL	10	UL	UL	UL	68.0	80.0
9	DTW	53	7.7	190	9.2	3	UL	UL	UL	27	UL	UL	UL	69.0	77.0
10	BUF	157	4.3	153	7.3	37	UL	UL	33	57	38	UL	42	68.0	78.0
	SYR	333	6.9	240	9.6	20	UL	UL	UL	23	UL	UL	UL	70.0	79.0
11	CLE	50	8.8	357	11.9	40		UL	UL	7	UL	UL	UL	69.0	75.0
	PIT	47	11.9	37	9.9	13	UL	UL	UL	13	UL	UL	UL	65.0	76.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
								18 JULY 1985							
1	PWM	13	15.0	100	12.7	7	UL	UL	UL	20	UL	UL	UL	78.0	84.0
2	BOS	50	11.0	107	12.7	13	UL	UL	UL	17	UL	UL	UL	76.0	77.0
	ORH	20	8.4	37	6.9	17	UL	UL	UL	30	UL	UL	UL	75.0	80.0
3	BDL	53	7.3	240	4.9	3	UL	UL	UL	27	UL	UL	UL	75.0	86.0
4	BDR	143	8.4	230	13.1	33	UL	UL	UL	20	UL	UL	UL	77.0	81.0
	LGA	73	6.9	60	8.1	10	UL	UL	UL	50	45	UL	UL	79.0	87.0
5	ACY	50	6.6	103	11.4	10	UL	UL	UL	23	UL	UL	UL	82.0	86.0
	PHL	103	8.4	103	7.3	13	UL	UL	UL	30	UL	UL	UL	77.0	85.0
6	ABE	53	7.3	43	8.1	7	UL	UL	UL	30	UL	UL	UL	75.0	83.0
	CXY	120	2.3	73	3.5	0	UL	UL		53	50	UL	UL	72.0	83.0
7	BWI	33	10.4	103	10.7	20	UL	UL	UL	37	UL	UL	UL	80.0	85.0
	DCA	130	7.7	93	7.3	17	UL	UL	UL	60	45	50	65	79.0	87.0
8	EKN	270	3.4	327	7.3	37	UL	UL	UL	47	250	UL	UL	63.0	81.0
	IPT	167	3.5	160	6.9	3	UL	UL	UL	30	UL	UL	UL	70.0	83.0
9	DTW	157	8.1	203	9.2	30	UL	UL	UL	13	UL	UL	UL	71.0	81.0
10	BUF	123	6.6	240	6.6	3	UL	UL	UL	17	UL	UL	UL	72.0	81.0
	SYR	240	6.6	227	5.8	3	UL	UL	UL	13	UL	UL	UL	73.0	83.0
11	CLE	130	3.4	337	10.0	7	UL	UL	UL	37	UL	UL	UL	74.0	80.0
	PIT	100	5.4	57	4.6	13	UL	UL	UL	13	UL	UL	UL	71.0	82.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
								19 JULY 1985							
1	PWM	187	10.4	190	15.7	55	UL	100		30	UL	UL	UL	78.0	88.0
2	BOS	247	13.5	240	15.0	23	UL	UL	UL	63	50	50	50	81.0	87.0
	ORH	240	10.7	240	13.4	10	UL	UL	UL	33	UL	UL	UL	73.0	81.0
3	BDL	233	6.2	240	11.9	23	UL	UL	UL	27	UL	UL	UL	78.0	88.0
4	BDR	233	15.4	223	13.4	10	UL	UL	UL	10	UL	UL	UL	75.0	85.0
	LGA	240	12.6	230	18.0	10	UL	UL	UL	50	UL	40	UL	80.0	86.0
5	ACY	263	5.0	173	14.6	13	UL	UL	UL	17	UL	UL	UL	82.0	88.0
	PHL	230	8.4	220	9.9	7	UL	UL	UL	20	UL	UL	UL	78.0	86.0
6	ABE	233	8.8	230	11.1	0	UL	UL	UL	33	UL	UL	UL	76.0	85.0
	CXY	180	6.1	223	8.1	7	UL	UL	UL	47	UL	UL	UL	72.0	85.0
7	BWI	223	10.7	210	9.2	33	UL	80	UL	33	UL	UL	UL	81.0	90.0
	DCA	190	8.4	160	9.5	15	UL		UL	20	UL	UL	UL	80.0	90.0
8	EKN	177	3.5	257	8.1	0	UL	UL	UL	30	UL	UL	UL	70.0	83.0
	IPT	163	4.6	203	5.4	0	UL	UL	UL	0	UL	UL	UL	70.0	88.0
9	DTW	247	13.1	237	14.6	20	UL	UL	UL	45	UL		120	76.0	85.0
10	BUF	240	22.7	243	21.9	55	UL		120	83	65	140	80	78.0	82.0
	SYR	240	12.2	240	13.1	53	120	120	UL	60	UL		80	79.0	86.0
11	CLE	233	9.9	237	13.7	13	UL	UL	UL	27	UL	UL	UL	75.0	85.0
	PIT	247	8.1	253	11.1	3	UL	UL	UL	33	UL	UL	UL	74.0	85.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							20 JULY 1985								
1	PWM	287	12.8	307	11.5	7	UL	UL	UL	43	UL	UL	60	82.0	88.0
2	BOS	280	13.4	283	12.6	3	UL	UL	UL	33	UL	UL	UL	82.0	91.0
	ORH	263	14.2	267	11.9	3	UL	UL	UL	30	UL	UL	UL	76.0	86.0
3	BDL	320	7.7	300	8.9	33	UL	UL	UL	27	UL	UL	UL	81.0	89.0
4	BDR	227	12.3	223	16.1	65	120		55	40		UL	UL	77.0	85.0
	LGA	277	7.7	297	13.4	87	120	120	120	87	120	120	120	81.0	89.0
5	ACY	260	8.8	270	11.4	17	UL	UL	UL	30			UL	86.0	93.0
	PHL	257	8.1	267	9.2	73	200	150	150	27	UL	UL	UL	81.0	89.0
6	ABE	260	8.4	280	10.8	67	120	UL	UL	50	UL	UL	UL	75.0	88.0
	CXY	283	10.3	303	9.6	67	120	120	120	67	120	120	120	75.0	88.0
7	BWI	280	10.7	280	11.5	87	100	100	100	33	UL	UL	UL	82.0	92.0
	DCA	240	8.4	323	9.5	30	UL			13	UL	UL	UL	85.0	93.0
8	EKN	80	2.3	320	10.7	83	120	40	37	87	37	37	40	73.0	79.0
	IPT	253	10.3	280	9.6	43	110	UL	UL	47	UL	UL	UL	78.0	90.0
9	DTW	267	6.5	267	9.2	87	15	20	20	43	UL	UL	150	75.0	83.0
10	BUF	240	12.7	230	16.9	67	21	21	21	67	UL	120	50	75.0	79.0
	SYR	290	9.2	303	13.9	90	17	19	25	60	28	28	UL	73.0	83.0
11	CLE	217	3.9	190	9.2	93	16	18	20	53	27	29	UL	75.0	84.0
	PIT	270	6.9	243	8.8	90	100	55	50	90	50	50	55	72.0	80.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							21 JULY 1985								
1	PWM	287	8.8	160	12.6	20	UL	UL	UL	27	UL	UL	UL	79.0	83.0
2	BOS	50	6.9	123	15.4	20	UL	UL	UL					81.0	80.0
	ORH	273	4.3	250	8.8	10	UL	UL	UL	13	UL	UL	UL	75.0	82.0
3	BDL	303	4.6	287	6.9	3	UL	UL	UL	23	UL	UL	UL	80.0	87.0
4	BDR	230	12.2	200	13.1	0	UL	UL	UL	10	UL	UL	UL	81.0	87.0
	LGA	70	6.9	150	13.1	0	UL	UL	UL	27	UL	UL	UL	84.0	90.0
5	ACY	83	10.7	110	8.1	3	UL	UL	UL	30	UL	UL	UL	85.0	89.0
	PHL	100	6.9	237	8.8	0	UL	UL	UL	30	UL		UL	81.0	90.0
6	ABE	100	4.6	217	9.2	13	UL	UL	UL	50	UL	40	40	79.0	88.0
	CXY	123	4.6	237	6.9	33	UL	UL	40	67	80	80	80	77.0	84.0
7	BWI	143	6.2	277	11.4	20	UL	UL	UL	80	80	80		82.0	91.0
	DCA	193	5.4	213	9.9	47	UL	UL	100	80	80		100	84.0	92.0
8	EKN	207	5.0	223	7.7	100	40	40	40	93	100	40	50	69.0	82.0
	IPT	123	5.1	197	6.9	37	UL	UL	UL	90		40	40	74.0	84.0
9	DTW	213	10.7	247	14.6	97	100	100	100	87	100	140	140	77.0	82.0
10	BUF	210	7.3	233	9.2	83	100	110	110	75	120	200		69.0	82.0
	SYR	247	5.4	120	6.2	57	120	120	UL	80	80	80	80	73.0	81.0
11	CLE	217	10.3	230	9.2	47	UL	UL	90	97	28	29	29	77.0	83.0
	PIT	180	10.4	200	9.6	90	100	30	28	97	45	18	18	74.0	78.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
22 JULY 1985															
1	PWM	190	13.4	227	13.5	83	120	250	250	37	UL	UL	UL	72.0	87.0
2	BOS	267	11.5	277	13.4	50	70	UL	UL	33	UL	UL	UL	73.0	86.0
	ORH	250	12.7	257	9.9	70	80	250	250	50	UL	UL	80	67.0	80.0
3	BDL	307	9.2	263	11.9	80	250		250	77	250	250	250	76.0	85.0
4	BDR	263	13.1	263	15.0	63	100	100	100	87	100	250	250	77.0	84.0
	LGA	323	13.8	283	11.1	80	100	100	100	70	100	100	250	79.0	85.0
5	ACY	283	12.2	287	12.2	55	70		UL	30	UL		UL	84.0	92.0
	PHL	303	11.6	293	10.3	40	UL	UL	UL	63	UL	250	250	79.0	86.0
6	ABE	290	11.5	260	13.0	60	200		UL	50	UL	UL	UL	76.0	85.0
	CXY	273	6.9	273	6.9	73	40	40	40	83	40	40	40	74.0	83.0
7	BWI	310	12.3	263	12.3	70	UL	200	50	57	120	120	UL	82.0	86.0
	DCA	307	11.9	297	7.3	83	250	100	80	53	80	UL	UL	84.0	88.0
8	EKN	263	7.7	260	9.9	100	19	22	23	90	25	28	27	71.0	76.0
	IPT	263	12.7	290	13.8	37	UL	38	UL	60	40	45	UL	77.0	84.0
9	DTW	113	8.1	293	11.9	3	UL	UL	UL	0	UL	UL	UL	67.0	76.0
10	BUF	267	15.7	237	21.9	20	UL	UL	UL	10	UL	UL	UL	65.0	72.0
	SYR	270	16.2	287	16.9	30	UL	UL	UL	0	UL	UL	UL	70.0	77.0
11	CLE	33	9.2	330	10.7	85	34	39		3	UL	UL	UL	67.0	73.0
	PIT	237	8.1	340	11.5	77	25	30	UL	90	30		45	71.0	74.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
23 JULY 1985															
1	PWM	333	12.3	317	15.4	47	UL	45	UL	30	UL	UL	UL	71.0	77.0
2	BOS	310	12.7	310	12.3	30	UL	UL	UL	27	UL	UL	UL	71.0	77.0
	ORH	297	11.5	307	9.5	20	UL	UL	UL	37	UL	UL	UL	63.0	72.0
3	BDL	223	10.4	210	8.9	30	UL	UL	UL	30	UL	UL	UL	69.0	76.0
4	BDR	330	21.1	340	15.0	10	UL	UL	UL	20	UL	UL	UL	69.0	76.0
	LGA	233	8.8	133	10.7	20	UL	UL	UL	40	UL	UL		72.0	78.0
5	ACY	240	8.8	313	9.2	13	UL	UL	UL	23	UL	UL	UL	75.0	82.0
	PHL	247	11.9	130	6.9	0	UL	UL	UL	13	UL	UL	UL	70.0	78.0
6	ABE	340	12.6	360	12.7	20	UL	UL	UL	33	UL	UL	UL	67.0	76.0
	CXY	340	8.8	327	6.2	0	UL	UL	UL	30	UL	UL	UL	67.0	74.0
7	BWI	27	11.6	33	9.2	7	UL	UL	UL	7	UL	UL	UL	72.0	79.0
	DCA	23	8.8	243	8.1	20	UL	UL	UL	13	UL	UL	UL	73.0	81.0
8	EKN	343	7.3	347	8.1	0	UL	UL	UL	0	UL	UL	UL	65.0	76.0
	IPT	333	13.0	223	8.1	37	UL	40	UL	17	UL	UL	UL	64.0	75.0
9	DTW	117	9.2	133	10.3	0	UL	UL	UL	13	UL	UL	UL	66.0	73.0
10	BUF	143	11.5	120	8.8	40	25	UL	UL	10	UL	UL	UL	64.0	73.0
	SYR	323	11.5	297	11.9	20	UL	UL	UL	0	UL	UL	UL	64.0	73.0
11	CLE	77	7.7	150	14.2	20	UL	UL	UL	10	UL	UL	UL	65.0	73.0
	PIT	23	6.6	37	7.3	10	UL	UL	UL	0	UL	UL	UL	61.0	73.0

TABLE E-3. AUGUST 6 - AUGUST 16, 1985

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							06 AUGUST 1985								
1	PWM	110	6.5	147	13.3	33	2	UL	UL	0	UL	UL	UL	64.0	75.0
2	BOS	213	11.4	180	11.9	17	UL	UL	UL	47	UL	UL	UL	75.0	81.0
	ORH	237	9.9	190	6.9	23	UL	UL	UL	27	UL	UL	UL	69.0	79.0
3	BDL	197	8.4	200	10.4	13	UL	UL	UL	23	UL	UL	UL	74.0	82.0
4	BDR	210	9.2	130	12.7	20	UL	UL	UL	17	UL	UL	UL	75.0	79.0
	LGA	193	12.3	193	13.8	40	UL	UL	UL	30	UL	UL	UL	76.0	80.0
5	ACY	133	8.1	143	10.7	60	160	260		30	UL	UL	UL	78.0	81.0
	PHL	133	7.7	180	8.8	70	140	120		30	UL	UL	UL	74.0	81.0
6	ABE	163	7.3	170	11.1	90	220	220	220	73	220	220	220	72.0	80.0
	CXY	113	6.9	120	7.7	83	100	100	100	70	45	45		68.0	75.0
7	BWI	140	7.7	147	10.4	73	120	28	60	63	70	40	42	74.0	81.0
	DCA	163	8.4	150	10.7	63	55	120	110	77	40	50	50	75.0	82.0
8	EKN	197	8.1	193	7.7	90	100	100	55	100	55	50	35	68.0	73.0
	IPT	163	16.1	160	13.1	83	110	110	110	67	110	110	80	68.0	78.0
9	DTW	210	16.9	197	14.6	100	12	12	15	97	14	14	14	70.0	77.0
10	BUF	187	16.9	213	16.2	40		UL		73	120	120	120	75.0	83.0
	SYR	170	13.8	157	15.4	47	UL	UL	UL	45		UL	UL	75.0	83.0
11	CLE	190	16.1	190	17.3	57	UL	UL	24	83	24	25	39	72.0	77.0
	PIT	207	13.0	193	13.9	73	40	UL	35	90	25	25	25	69.0	76.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							07 AUGUST 1985								
1	PWM	183	11.9	173	18.0	13	UL	UL	UL	13	UL	UL	UL	71.0	75.0
2	BOS	167	10.3	197	14.6	40	UL	UL	35	70	35	38	100	73.0	80.0
	ORH	197	8.1	180	11.6	93	9	12	23	73	23	23	90	67.0	74.0
3	BDL	167	6.9	173	11.9	100	6	16	17	90	31	42	39	71.0	78.0
4	BDR	180	13.9	177	13.1	65	30	UL		83	35	200	200	75.0	81.0
	LGA	193	15.3	183	17.3	90	18	20	20	57	100	100	UL	78.0	80.0
5	ACY	190	10.7	173	18.4	80	32	30	UL	23	UL	UL	UL	80.0	84.0
	PHL	210	10.3	203	10.7	45		250	UL	40		UL	UL	78.0	86.0
6	ABE	197	8.1	207	10.4	100	25	25	25	83	100	100	200	74.0	83.0
	CXY	140	3.9	170	9.2	50	100	UL		70	15			73.0	82.0
7	BWI	223	11.9	200	16.5	13	UL	UL	UL	67	35	40	40	78.0	86.0
	DCA	180	13.4	203	17.2	33	UL	UL	UL	63	38	38	40	78.0	86.0
8	EKN	110	4.6	223	10.7	10	UL	UL		100	35	30	18	71.0	75.0
	IPT	103	4.6	153	5.8	83	23	28	UL	93	250	250	80	68.0	80.0
9	DTW	270	9.2	223	14.2	37	UL	UL	100	50		100	UL	72.0	85.0
10	BUF	217	13.1	223	17.7	100	19	17	18	97	16	21	33	72.0	76.0
	SYR	183	11.9	190	14.6	100	55	40	55	90	100	38	45	75.0	79.0
11	CLE	193	8.8	207	10.7	100	95	27	110	87	110	110	250	71.0	76.0
	PIT	207	14.2	213	12.3	47	UL	UL	35	83	35	40	250	75.0	83.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							08 AUGUST 1985								
1	PWM	227	9.2	177	10.7	100	60	60	60	93	60	60	60	73.0	73.0
2	BOS	217	7.3	93	7.7	100	40	43	35	87	16	12	100	71.0	71.0
	ORH	167	2.6	247	5.8	100	12	15	15	65	8		UL	68.0	76.0
3	BDL	150	3.4	233	5.4	100	4	11	16	70	21	30	35	69.0	82.0
4	BDR	243	20.0	233	16.1	100	6	6	20	30	UL	UL	UL	73.0	80.0
	LGA	247	13.9	243	8.8	100	40	40	16	67	120	150	UL	73.0	83.0
5	ACY	103	4.6	193	10.7	100	25	60	50	83	70	10	18	70.0	81.0
	PHL	193	6.6	170	6.6	90	45	60	70	40	250	UL	UL	71.0	81.0
6	ABE	240	5.8	257	6.2	83	7	11	21	27	UL	UL	UL	71.0	83.0
	CXY	163	3.9	190	4.6	63	20	20	20	63	20	30	UL	72.0	81.0
7	BWI	133	4.3	160	5.4	97	23	60	12	67	25	80	UL	72.0	82.0
	DCA	127	4.6	70	5.1	97	14	25	14	70	70	100	100	74.0	82.0
8	EKN	243	5.1	343	5.4	100	9	26	23	80	37	40	40	69.0	79.0
	IPT	197	3.9	233	6.9	73	10	12	UL	43	30	UL	UL	69.0	85.0
9	DTW	327	6.9	200	7.3	10	UL	UL	UL	27	UL	UL	UL	74.0	85.0
10	BUF	333	8.8	330	10.3	3	UL	UL	UL	7	UL	UL	UL	74.0	82.0
	SYR	277	11.6	303	15.7	70	17	19	23	7	UL	UL	UL	76.0	83.0
11	CLE	223	5.8	137	9.5	47	11	19	UL	10	UL	UL	UL	73.0	81.0
	PIT	253	5.0	260	6.2	97	20	12	15	40	UL	UL	UL	68.0	83.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
09 AUGUST 1985															
1	PWM	350	8.1	183	14.2	3	UL	UL	UL	50	UL	50	50	79.0	80.0
2	BOS	90	8.4	110	10.3	0	UL	UL	UL	3	UL	UL	UL	79.0	78.0
	OBH	37	6.9	207	1.9	3	UL	UL	UL	17	UL	UL	UL	77.0	83.0
3	BDL	127	5.0	307	4.6	0	UL	UL	UL	23	UL	UL	UL	76.0	87.0
4	BDR	100	11.0	100	9.2	13	UL	UL	UL	10	UL	UL	UL	77.0	82.0
	LGA	60	13.1	73	13.9	13	UL	UL	UL	33	UL	UL	UL	79.0	85.0
5	ACY	63	7.7	93	10.7	20	UL			40	UL	UL	UL	82.0	85.0
	PHL	63	6.9	117	6.9	27	UL	UL	UL	20	UL	UL	UL	79.0	87.0
6	ABE	47	6.9	50	6.6	13	UL	UL	UL	10	UL	UL	UL	77.0	86.0
	CXY	27	3.9	100	5.8	30	UL	UL	UL	47	UL	250	UL	74.0	81.0
7	BWI	153	7.7	80	11.0	30	UL	UL	250	23	UL	UL	UL	79.0	87.0
	DCA	37	6.6	60	9.9	30		UL		35		UL	UL	79.0	87.0
8	EKN	190	3.1	17	6.2	40	4	UL	UL	30	UL	UL	UL	65.0	83.0
	IPT	187	3.9	203	5.4	10	UL	UL	UL	10	UL	UL	UL	71.0	86.0
9	DTW	120	3.8	180	10.7	0	UL	UL	UL	0	UL	UL	UL	78.0	84.0
10	BUF	140	5.4	250	11.9	20	UL	UL	UL	30	UL	UL	UL	74.0	85.0
	SYR	147	4.6	87	6.9	10	UL	UL	UL	20	UL	UL	UL	76.0	88.0
11	CLE	120	9.2	163	8.1	23	UL	UL	UL	0	UL	UL	UL	78.0	86.0
	PIT	70	5.4	127	6.6	45	220		UL	37	UL	UL	UL	70.0	85.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
10 AUGUST 1985															
1	PWM	83	5.8	177	12.7	10	UL	UL	UL	7	UL	UL	UL	76.0	80.0
2	BOS	73	6.2	83	10.3	73	60	60	UL	3	UL	UL	UL	73.0	78.0
	ORH	50	2.2	163	5.4	50	50	UL	UL	30	UL	UL	UL	75.0	82.0
3	BDL	113	4.3	183	7.7	10	UL	UL	UL	17	UL	UL	UL	73.0	88.0
4	BDR	147	4.3	117	8.8	93	2	4	10	20	UL	UL	UL	72.0	83.0
	LGA	47	8.4	157	12.7	40	UL	UL	UL	27	UL	UL	UL	77.0	86.0
5	ACY	57	8.8	110	11.1	37	UL	UL	UL	40	UL	UL	UL	83.0	84.0
	PHL	97	7.7	143	5.0	50	UL	25	UL	33	UL	UL	40	78.0	86.0
6	ABE	87	4.6	147	5.0	73	9	23	UL	27	UL	UL	UL	71.0	84.0
	CXY	77	5.8	110	8.4	87	15	15	15	30		UL	UL	72.0	80.0
7	BWI	70	9.2	70	7.7	60	25	UL	UL	53	UL	46	UL	75.0	85.0
	DCA	37	7.3	80	6.6	57	25	25	UL	50	35	UL	UL	76.0	86.0
8	EKN	233	3.8	233	5.4	7	UL	UL	UL	37	45	UL	UL	72.0	84.0
	IPT	140	5.8	180	12.6	0	UL	UL	UL	47	UL	UL	100	71.0	84.0
9	DTW	193	14.2	243	15.0	77	200	200	200	87	200	200	200	74.0	85.0
10	BUF	197	8.1	243	13.1	20	UL	UL	UL	40	70	UL	UL	77.0	87.0
	SYR	97	5.1	240	12.2	3	UL	UL	UL	40	UL	UL	UL	76.0	90.0
11	CLE	210	10.7	227	11.2	33	UL	UL	UL	37	UL	UL	UL	76.0	86.0
	PIT	220	8.1	270	7.7	10	UL	UL	UL	40	UL	UL	UL	74.0	85.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
11 AUGUST 1985															
1	PWM	110	6.6	197	9.2	30	UL	UL	UL	80	UL	120	60	75.0	84.0
2	BOS	220	9.9	230	13.3	30	80	UL	UL	50	UL		65	77.0	86.0
	ORH	243	7.7	230	5.8	37	40	UL	UL	77	UL	70	70	74.0	83.0
3	BDL	197	6.9	223	8.1	23	UL	UL	UL	80	250	250	45	77.0	87.0
4	BDR	203	9.2	170	11.1	73	8	10	UL	30	UL	UL	UL	75.0	83.0
	LGA	240	5.0	130	13.5	33	UL	UL	UL	80	20	20	20	80.0	88.0
5	ACY	257	4.6	133	9.2	50	UL	UL	UL	33	UL	UL	UL	85.0	86.0
	PHL	253	6.2	213	7.7	70	11	25	UL	47	UL	UL	100	75.0	86.0
6	ABE	243	4.9	240	5.4	77	13	150	200	100	120	100	80	76.0	83.0
	CXY	167	3.5	247	5.1	73	UL	50	45	100	45	45	60	76.0	81.0
7	BWI	253	5.8	223	8.9	17	UL	UL	UL	87	45	45	39	79.0	88.0
	DCA	153	6.9	173	7.3	3	UL	UL	UL	77	40	40	40	79.0	90.0
8	EKN	243	3.4	313	7.3	67	37	UL	90	73	90	90	UL	66.0	82.0
	IPT	277	5.4	287	5.8	63	UL	80	80	60	100	UL	55	71.0	85.0
9	DTW	23	11.0	247	9.9	0	UL	UL	UL	0	UL	UL	UL	67.0	79.0
10	BUF	233	9.9	320	10.7	50	24	UL	UL	3	UL	UL	UL	68.0	77.0
	SYR	263	13.3	303	14.9	90	19	20	19	33	UL	UL	UL	70.0	79.0
11	CLE	143	10.3	127	10.7	40	UL	UL	UL	17	UL	UL	UL	70.0	73.0
	PIT	323	9.9	320	11.5	90	7	55	55	47	UL	90	UL	70.0	83.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
12 AUGUST 1985															
1	PWM	353	15.4	317	14.5	0	UL	UL	UL	10	UL	UL	UL	71.0	79.0
2	BOS	283	9.9	120	10.7	33	60	UL	UL	17	UL	UL	UL	73.0	73.0
	ORH	217	4.6	320	8.4	27	35	UL	UL	30	UL	UL	UL	69.0	77.0
3	BDL	33	8.4	43	5.8	3	UL	UL	UL	30	UL	UL	UL	71.0	81.0
4	BDR	347	16.5	190	12.2	3	UL	UL	UL	7	UL	UL	UL	75.0	81.0
	LGA	257	12.3	120	13.1	13	UL	UL	UL	13	UL	UL	UL	76.0	84.0
5	ACY	227	8.4	280	7.3	10	UL	UL	UL	10	UL	UL	UL	80.0	88.0
	PHL	243	10.7	330	8.1	0	UL	UL	UL	0	UL	UL	UL	74.0	84.0
6	ABE	33	9.6	237	4.6	0	UL	UL	UL	0	UL	UL	UL	72.0	83.0
	CXY	330	6.2	303	5.8	0	UL	UL	UL	0	UL	UL	UL	71.0	80.0
7	BWI	140	10.7	227	6.6	0	UL	UL	UL	0	UL	UL	UL	76.0	87.0
	DCA	143	9.2	20	7.7	3	UL	UL	UL	10	UL	UL	UL	77.0	87.0
8	EKN	220	4.2	217	6.6	80	9	30	UL	50	34	UL	UL	66.0	83.0
	IPT	280	8.4	217	10.0	40	21	UL	UL	0	UL	UL	UL	64.0	80.0
9	DTW	127	6.9	180	9.2	3	UL	UL	UL	20	UL	UL	UL	66.0	77.0
10	BUF	90	9.2	93	8.8	70		22	28	17	UL	UL	UL	66.0	77.0
	SYR	300	5.8	310	10.7	10	UL	UL	UL	7	UL	UL	UL	66.0	77.0
11	CLE	103	5.0	120	9.2	13	UL	UL	UL	17	UL	UL	UL	71.0	80.0
	PIT	100	7.3	197	6.9	10	UL	UL	UL	10	UL	UL	UL	68.0	84.0

13 AUGUST 1985

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
1	PWM	133	7.3	163	15.0	7	UL	UL	UL	7	UL	UL	UL	67.0	72.0
2	BOS	103	8.8	110	11.9	0	UL	UL	UL	3	UL	UL	UL	70.0	72.0
	ORH	210	3.8	250	8.8	0	UL	UL	UL	3	UL	UL	UL	69.0	76.0
3	BDL	237	3.4	200	8.8	7	UL	UL	UL	10	UL	UL	UL	70.0	85.0
4	BDR	107	12.3	117	9.2	0	UL	UL	UL	3	UL	UL	UL	71.0	78.0
	LGA	63	11.9	177	14.2	20	UL	UL	UL	20	UL	UL	UL	74.0	83.0
5	ACY	80	1.6	183	12.3	0	UL	UL	UL	27	UL	UL	UL	84.0	87.0
	PHL	270	5.7	213	9.2	7	UL	UL	UL	10	UL	UL	UL	75.0	85.0
6	ABE	130	6.6	247	8.4	30	80	UL	UL	0	UL	UL	UL	71.0	84.0
	CXY	53	4.3	180	5.8	57	40	UL	UL	43	UL	UL	UL	67.0	82.0
7	BWI	187	6.6	160	10.3	17	UL	UL	UL	53	UL	42	UL	78.0	91.0
	DCA	157	8.8	160	9.2	7	UL	UL	UL	47	UL	UL	UL	80.0	93.0
8	EKN	53	1.1	307	6.1	15		UL	UL	30	UL	UL	UL	68.0	89.0
	IPT	117	8.8	123	7.7	7	UL	UL	UL	43	UL	250	UL	72.0	82.0
9	DTW	230	15.0	240	16.9	100	100	100	100	65	200		150	74.0	88.0
10	BUF	200	11.1	247	23.0	90	39	31	140	40	250	UL	UL	73.0	86.0
	SYR	53	6.6	187	10.7	30	UL	UL	UL	90	250	250	250	71.0	88.0
11	CLE	227	13.1	230	11.5	30	UL	UL	UL	67	130	UL	130	79.0	86.0
	PIT	213	11.5	253	11.9	63	250	250	250	60	UL	UL	35	80.0	92.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							14 AUGUST 1985								
1	PWM	77	1.1	173	9.9	37	100	UL	UL	13	UL	UL	UL	70.0	88.0
2	BOS	267	11.5	307	9.9	0	UL	UL	UL	40	UL		40	81.0	90.0
	ORH	273	13.1	293	12.7	23	UL	UL	UL	30	UL	UL	UL	78.0	89.0
3	BDL	173	5.1	317	5.0	40	UL	UL	55	60	60	UL	60	83.0	97.0
4	BDR	223	13.1	220	12.2	50	120	UL	UL	40	UL	UL	UL	78.0	90.0
	LGA	307	7.7	260	11.5	40	UL	UL	UL	40	UL	UL	UL	83.0	95.0
5	ACY	267	5.4	247	8.8	43	UL	UL	UL	37	UL	UL	UL	86.0	97.0
	PHL	223	7.3	220	8.1	13	UL	UL	UL	43	UL	UL	35	81.0	93.0
6	ABE	240	8.1	237	11.9	33	UL	UL	UL	40	UL	UL	UL	81.0	91.0
	CXY	253	5.8	260	5.8					90	40	40	40	78.0	86.0
7	BWI	270	7.3	260	8.1	23	UL	UL	UL	40	UL	UL	UL	88.0	98.0
	DCA	180	6.9	120	5.4	10	UL	UL	UL	43	UL	UL	50	86.0	97.0
8	EKN	213	3.8	177	5.0	43	UL	UL	UL	53	UL	UL	40	75.0	87.0
	IPT	233	5.1	250	9.5	0	UL	UL	UL	27	UL	UL	UL	76.0	94.0
9	DTW	243	7.3	227	8.1	87	5	38	80	50	UL	UL	200	72.0	83.0
10	BUF	233	11.6	223	14.6	100	9	8	11	50	60		UL	76.0	83.0
	SYR	277	5.1	193	6.6	73	14	19	50	43	UL	UL	250	79.0	88.0
11	CLE	233	5.8	227	9.9	70	250		40	90	110	95	95	77.0	85.0
	PIT	247	11.1	253	10.3	30	UL	UL	UL	87	80	40	35	79.0	88.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
								15 AUGUST 1985							
1	PWM	253	9.9	193	11.1	67	UL	120	120	7	UL	UL	UL	82.0	90.0
2	BOS	170	5.0	223	14.6	25	UL	UL		43	UL	UL	UL	87.0	93.0
	ORH	253	5.4	207	9.2	57	80	UL	UL	57	30	30	UL	81.0	89.0
3	BDL	207	5.1	233	7.7	97	100	100	300	23	UL	UL	UL	84.0	93.0
4	BDR	227	12.7	233	14.5					80		35		81.0	92.0
	LGA	227	10.0	233	15.4	30	UL	UL	UL	33	UL	UL	UL	87.0	95.0
5	ACY	247	9.6	223	18.4	40	UL	UL	UL	7	UL	UL	UL	88.0	95.0
	PHL	243	8.1	223	12.8	10	UL	UL	UL	17	UL	UL	UL	85.0	92.0
6	ABE	240	8.8	233	13.4	63	210	210	210	30	UL	UL	UL	81.0	90.0
	CXY	167	3.9	257	5.8	33	UL	UL	UL	17	UL	UL	UL	78.0	89.0
7	BWI	257	8.8	270	8.4	30	UL	UL	UL	33	UL	UL	UL	86.0	96.0
	DCA	190	10.7	163	9.9	17	UL	UL	UL	37	UL	40	UL	86.0	96.0
8	EKN	200	6.2	220	9.9	70	45	UL	37	30	UL	UL	UL	73.0	86.0
	IPT	40	1.6	233	8.4	7	UL	UL	UL	63	UL	45	45	77.0	90.0
9	DTW	140	8.8	243	8.1	100	7	7	3	100	4	6	40	66.0	68.0
10	BUF	233	19.6	277	20.0	93	60	19	22	80	75	70	100	79.0	82.0
	SYR	270	6.5	250	13.4	47	80	UL	UL	80	45	45	40	77.0	88.0
11	CLE	217	12.3	233	12.3	67	95	60	UL	90	50	250	50	74.0	83.0
	PIT	203	12.7	187	9.2	40	UL	UL	UL	77	80	80	80	78.0	79.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
16 AUGUST 1985															
1	PWM	310	7.7	333	8.1	100	75	80	80	83	120	200	250	71.0	75.0
2	BOS	337	13.8	313	10.7	60			45	80	80	120	80	79.0	76.0
	ORH	317	7.3	287	6.5	90	80	80	55	100	90	90	200	72.0	72.0
3	BDL	347	6.9	313	7.3	100	90	30	25	100	70	90	100	79.0	78.0
4	BDR	347	12.6	337	13.4	37	UL	UL	75	100	55	100	100	82.0	73.0
	LGA	340	11.9	37	13.4	63	UL	100	100	100	30	50	35	83.0	79.0
5	ACY	297	6.2	320	9.2	17	UL	UL	UL	93	25	25	120	84.0	87.0
	PHL	313	8.1	313	8.4	30	UL	UL	80	87	40	80	120	81.0	82.0
6	ABE	250	10.7	150	7.3	100	23	80	10	100	28	21	38	77.0	74.0
	CXY	260	8.8	323	6.9	100	50	100	100	100	40	40	20	73.0	72.0
7	BWI	300	8.4	297	9.9	93	100	60	55	87	100	100	100	83.0	83.0
	DCA	323	9.2	330	9.5	93	100	100	100	80	100	70	70	83.0	86.0
8	EKN	197	4.7	253	5.4	100	13	28	16	100	16	23	16	68.0	73.0
	IPT	320	6.2	330	6.6	100	23	55	23	90	80	80	80	67.0	75.0
9	DTW	67	7.7	90	8.1	0	UL	UL	UL	3	UL	UL	UL	68.0	77.0
10	BUF	23	7.7	310	8.1	10	UL	UL	UL	7	UL	UL	UL	68.0	80.0
	SYR	300	9.9	303	11.5	27	UL	UL	UL	23	UL	UL	UL	68.0	78.0
11	CLE	57	7.7	23	10.3					35		UL	UL	70.0	75.0
	PIT	40	8.8	60	5.0	100	3	3	5	97	15	20	22	67.0	72.0

TABLE E-4. JULY 4 - JULY 18, 1988

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							04 JULY 1988								
1	PWM	177	8.4	150	13.5	3	UL	UL	UL	20	UL	UL	UL	78.0	79.0
2	BOS	137	9.5	137	17.2	7	UL	UL	UL	40			UL	76.0	82.0
	ORH	247	7.7	227	6.6	17	UL	UL	UL	33	UL	UL	UL	77.0	83.0
3	BDL	173	2.7	213	9.9	7	UL	UL	UL	40	UL	UL	UL	75.0	89.0
4	BDR	130	9.2	110	13.1	3	UL	UL	UL	17	UL	UL	UL	71.0	76.0
	LGA	63	8.1	147	12.3	10	UL	UL	UL	17	UL	UL	UL	76.0	86.0
	NEW	230	5.8	157	10.3	23	UL	UL	UL	60	65	65	UL	79.0	88.0
5	ACY	187	6.2	173	9.2	10	UL	UL	UL	80		50	45	80.0	86.0
	PHL	207	5.1	257	8.1	0	UL	UL	UL	20	UL	UL	UL	79.0	92.0
6	ABE	107	4.2	157	6.6	20	UL	UL	UL	20	UL	UL	UL	76.0	89.0
	CXY	47	3.9	187	11.4	0	UL	UL	UL	57	UL	60	60	76.0	92.0
7	BWI	97	8.4	167	12.7	0	UL	UL	UL	30	UL	UL	UL	80.0	90.0
	DCA	163	11.1	173	12.6	0	UL	UL	UL	40	UL	UL	UL	77.0	90.0
8	EKN	167	5.4	167	6.2	7	UL	UL	UL	40	UL	UL	UL	71.0	88.0
	IPT	73	2.2	110	6.9	0	UL	UL	UL	20	UL	UL	UL	73.0	91.0
9	DTW	137	8.8	173	10.3	0	UL	UL	UL	20	UL	UL	UL	79.0	91.0
10	BUF	213	5.1	157	9.2	0	UL	UL	UL	0	UL	UL	UL	78.0	89.0
	SYR	80	3.4	130	3.5	0	UL	UL	UL	0	UL	UL	UL	73.0	87.0
11	CLE	250	4.5	33	11.9	0	UL	UL	UL	13	UL	UL	UL	82.0	88.0
	PIT	150	4.3	173	6.9	0	UL	UL	UL	17	UL	UL	UL	76.0	91.0
12	RIC	120	6.9	137	12.7	7	UL	UL	UL	43	UL	UL	50	77.0	86.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							05 JULY 1988								
1	PWM	183	8.8	177	15.7	0	UL	UL	UL	5	UL	UL		77.0	79.0
2	BOS	130	10.7	120	15.0	0	UL	UL	UL	20	UL	UL	UL	72.0	83.0
	ORH	213	5.7	203	7.7	0	UL	UL	UL	23	UL	UL	UL	76.0	84.0
3	BDL	193	6.6	187	10.7	47	5	UL	UL	60	UL		230	69.0	86.0
4	BDR	93	11.9	117	12.3	27	UL	UL	UL	47	UL	250	250	66.0	78.0
	LGA	53	9.5	150	11.9	30	UL	UL	UL	40	UL	UL	UL	76.0	82.0
	NEW	243	5.4	120	10.7	0	UL	UL	UL	17	UL	UL	UL	77.0	86.0
5	ACY	187	4.2	153	9.5	0	UL	UL	UL	33	UL	UL	45	79.0	83.0
	PHL	200	6.1	217	7.3	0	UL	UL	UL	37	UL	UL	UL	81.0	93.0
6	ABE	257	5.8	153	4.3	0	UL	UL	UL	70	45	50	250	78.0	90.0
	CXY	0	0.0	203	5.8	0	UL	UL	UL	30	UL	UL	UL	80.0	92.0
7	BWI	240	6.6	150	10.4	0	UL	UL	UL	23	UL	UL	UL	80.0	89.0
	DCA	157	7.3	170	12.2	0	UL	UL	UL	37	UL	UL	UL	78.0	89.0
8	EKN	150	6.1	223	3.9	7	UL	UL	UL	30	UL	UL	UL	74.0	88.0
	IPT	220	3.8	137	7.3	0	UL	UL	UL	17	UL	UL	UL	77.0	93.0
9	DTW	187	6.9	160	11.9	0	UL	UL	UL	0	UL	UL	UL	81.0	95.0
10	BUF	87	4.6	177	7.3	3	UL	UL	UL	3	UL	UL	UL	81.0	93.0
	SYR	83	3.8	333	4.7	7	UL	UL	UL	3	UL	UL	UL	79.0	90.0
11	CLE	110	1.9	20	9.2	0	UL	UL	UL	0	UL	UL	UL	83.0	92.0
	PIT	177	6.9	140	5.8	0	UL	UL	UL	40	UL	UL	UL	79.0	93.0
12	RIC	130	7.7	137	12.3	37	UL	UL	UL	43	UL	UL	250	79.0	85.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
06 JULY 1988															
1	PWM	173	5.4	173	11.1	23	UL	UL	UL	55	120	UL		83.0	84.0
2	BOS	213	9.6	140	11.9	17	UL	UL	UL	40	200	UL	UL	81.0	86.0
	ORH	280	6.6	310	6.1	3	UL	UL	UL	40	UL	UL	UL	76.0	88.0
3	BDL	113	5.0	160	8.9	20	UL	UL	UL	43	UL	UL	UL	75.0	90.0
4	BDR	233	9.2	120	10.7	10	UL	UL	UL	37	UL	UL	250	74.0	83.0
	LGA	117	5.8	163	9.9	53	UL	UL	140	40	UL	UL	UL	78.0	85.0
	NEW	207	4.6	227	6.9	0	UL	UL	UL	0	UL	UL	UL	80.0	93.0
5	ACY	253	5.8	190	7.3	7	UL	UL	UL	10	UL	UL	UL	80.0	89.0
	PHL	240	8.1	230	8.8	7	UL	UL	UL	20	UL	UL	UL	80.0	97.0
6	ABE	277	6.9	180	6.5	3	UL	UL	UL	20	UL	UL	UL	79.0	96.0
	CXY	280	7.7	323	7.3	23	UL	UL	UL	33	UL	UL	UL	82.0	97.0
7	BWI	247	6.6	257	7.3	10	UL	UL	UL	10	UL	UL	UL	82.0	96.0
	DCA	143	7.3	250	8.4	7	UL	UL	UL	10	UL	UL	UL	79.0	96.0
8	EKN	130	4.3	240	6.5	7	UL	UL	UL	13	UL	UL	UL	73.0	89.0
	IPT	263	7.7	273	7.3	0	UL	UL	UL	0	UL	UL	UL	78.0	100.0
9	DTW	273	5.8	217	10.7	0	UL	UL	UL	0	UL	UL	UL	86.0	100.0
10	BUF	233	5.8	223	10.3	0	UL	UL	UL	0	UL	UL	UL	83.0	96.0
	SYR	177	3.1	303	5.4	0	UL	UL	UL	0	UL	UL	UL	78.0	92.0
11	CLE	290	7.3	123	9.5	0	UL	UL	UL	7	UL	UL	UL	83.0	97.0
	PIT	253	6.9	200	5.7	0	UL	UL	UL	13	UL	UL	UL	80.0	96.0
12	RIC	297	4.2	127	9.9	13	UL	UL	UL	43	UL	UL	UL	80.0	89.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							07 JULY 1988								
1	PWM	73	7.3	143	11.5	13	UL	UL	UL	30	UL	UL		83.0	85.0
2	BOS	237	9.2	90	15.0	50	100	100	UL	20	UL	UL	UL	85.0	83.0
	ORH	153	4.5	280	7.3	67	85	85	UL	47	UL	90	UL	79.0	90.0
3	BDL	117	5.8	183	10.4	77	100	100	100	3	UL	UL	UL	79.0	94.0
4	BDR	213	9.5	210	15.4	87	110	110	110	57	UL	120	120	76.0	84.0
	LGA	183	5.4	167	12.3	93	140	140	140	63	UL	190	190	78.0	86.0
	NEW	227	5.4	137	7.7	23	UL	UL	UL	10	UL	UL	UL	86.0	98.0
5	ACY	187	6.9	180	7.3	80	120	100	100	75	100		100	85.0	82.0
	PHL	100	7.3	130	5.7	80	100	120	120	30		UL		80.0	95.0
6	ABE	60	6.6	93	4.3	60	120	120	UL	33	120	UL	UL	80.0	97.0
	CXY	207	4.6	123	8.1	27	UL	UL	UL	20	UL	UL	UL	83.0	100.0
7	BWI	43	8.8	80	9.5	53	UL	160	160	10	UL	UL	UL	85.0	96.0
	DCA	130	8.4	53	14.2	33	UL	UL	UL	17	UL	UL	UL	89.0	98.0
8	EKN	267	4.6	313	5.4	27	UL	UL	UL	13	UL	UL	UL	73.0	92.0
	IPT	257	9.2	323	12.7	7	UL	UL	UL	27	UL	UL	UL	81.0	100.0
9	DTW	137	5.4	243	6.9	13	UL	UL	UL	20	UL	UL	UL	91.0	100.0
10	BUF	240	13.5	240	12.3	30	UL	UL	UL	20	UL	UL	UL	83.0	93.0
	SYR	273	4.5	197	3.1	37	150	UL	UL	63	250	250	UL	81.0	91.0
11	CLE	267	3.4	240	9.2	13	UL	UL	UL	23	UL	UL	UL	87.0	98.0
	PIT	157	4.3	113	5.8	23	UL	UL	UL	30	UL	UL	UL	85.0	99.0
12	RIC	100	5.1	160	7.7	87	110	120	110	40	UL	UL	UL	79.0	91.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							08 JULY 1988								
1	PWM	250	5.4	173	11.9	97	80	100	100	13	UL	UL	UL	83.0	89.0
2	BOS	230	9.2	150	13.5	23	UL	UL	UL	13	UL	UL	UL	83.0	93.0
	ORH	240	7.7	233	6.2	10	UL	UL	UL	17	UL	UL	UL	82.0	93.0
3	BDL	170	4.6	180	6.2	33	150	UL	UL	27	UL	UL	UL	81.0	96.0
4	BDR	213	10.7	177	10.7	37	UL	UL	110	47	UL	UL	UL	76.0	87.0
	LGA	133	5.1	80	8.1	67	130	UL	130	50	170	UL	UL	82.0	94.0
	NEW	170	7.7	160	11.9	27	UL	UL	UL	17	UL	UL	UL	81.0	92.0
5	ACY	247	8.1	183	11.1	20	UL	UL	UL	50	250	250	UL	83.0	83.0
	PHL	233	9.5	233	9.2	17	UL	UL	UL	20			UL	85.0	97.0
6	ABE	223	7.3	137	9.5	73	120	120	UL	97	120	45	120	80.0	92.0
	CXY	107	1.6	347	6.9	30	UL	UL		70		100	100	83.0	100.0
7	BWI	257	6.9	220	10.0	7	UL	UL	UL	70	100	100	UL	84.0	96.0
	DCA	200	12.3	170	14.2	10	UL	UL	UL	80			140	85.0	93.0
8	EKN	277	4.6	327	10.0	30	UL	UL	UL	30	UL	UL	UL	74.0	93.0
	IPT	227	8.8	230	10.7	3	UL	UL	UL	17	UL	UL	UL	83.0	101.0
9	DTW	350	8.8	290	11.0	0	UL	UL	UL	10	UL	UL	UL	89.0	98.0
10	BUF	230	11.1	237	15.4	13	UL	UL	UL	7	UL	UL	UL	83.0	95.0
	SYR	277	4.6	307	5.8	0	UL	UL	UL	17	UL	UL	UL	84.0	95.0
11	CLE	310	4.3	233	10.3	0	UL	UL	UL	10	UL	UL	UL	87.0	95.0
	PIT	123	7.3	47	8.8	20	UL	UL	UL	47	UL	UL	UL	84.0	97.0
12	RIC	163	6.2	127	8.9	37	UL	UL	90	65		90	90	85.0	94.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							09 JULY 1988								
1	PWM	247	8.8	170	11.9	80	80	80	80	47	80	UL	UL	83.0	92.0
2	BOS	263	10.3	177	11.0	93	90	90	90	27	UL	UL	UL	80.0	90.0
	ORH	293	8.8	257	6.9	97	40	80	80	60	90	90	UL	69.0	85.0
3	BDL	157	2.7	257	7.3	100	80	80	80	83	200	250	250	73.0	87.0
4	BDR	240	6.9	277	8.8	100	75	120	120	57	200	UL	UL	70.0	82.0
	LGA	67	6.6	183	4.2	100	65	65	65	93	210	210	210	75.0	86.0
	NEW	163	13.0	200	9.5	30	UL	UL	UL	37	UL	UL	UL	78.0	94.0
5	ACY	240	6.9	170	3.4	80	250	50	10	87	10	10	7	82.0	74.0
	PHL	180	7.7	170	8.1	100	50	50	50	83	100	100	50	76.0	82.0
6	ABE	110	5.8	140	11.5	100	70	70	70	40	100	UL	UL	74.0	87.0
	CXY	0	0.0	160	9.5	43	120	UL	UL	70	120	120	80	84.0	93.0
7	BWI	83	3.5	117	10.0	20	UL	UL	UL	37	UL	UL	85	81.0	91.0
	DCA	160	5.8	43	6.9	25		UL	UL	57	UL	UL	40	82.0	96.0
8	EKN	350	4.2	213	10.0	70		100	100	67	100	100	UL	74.0	92.0
	IPT	287	7.7	243	9.5	33	UL	UL	UL	70		150	150	81.0	95.0
9	DTW	290	11.9	283	15.7	13	UL	UL	UL	50	UL	250		85.0	97.0
10	BUF	220	10.7	243	18.0	17	UL	UL	UL	7	UL	UL	UL	83.0	91.0
	SYR	270	3.8	270	6.9	0	UL	UL	UL	0	UL	UL	UL	84.0	96.0
11	CLE	283	8.8	343	11.0	0	UL	UL	UL	7	UL	UL	UL	88.0	96.0
	PIT	280	8.1	293	15.0	23	UL	UL	UL	43	50	UL	UL	86.0	96.0
12	RIC	107	5.8	190	7.3	100	90	70	90	100	250	250	250	77.0	86.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							10 JULY 1988								
1	PWM	187	5.8	170	7.3	100	130	120	120	15		UL	UL	77.0	85.0
2	BOS	233	10.7	130	11.6	63	250	UL	100	17	UL	UL	UL	79.0	90.0
	ORH	277	8.1	290	8.8	30		UL	UL	7	UL	UL	UL	75.0	91.0
3	BDL	180	8.1	270	8.8	20		UL	UL	23	UL	UL	UL	83.0	97.0
4	BDR	203	8.1	217	10.7	40	UL	UL	UL	40	UL	UL	UL	77.0	91.0
	LGA	237	5.4	173	13.0	40	UL	UL	UL	57	UL	UL	70	83.0	97.0
	NEW	230	7.7	177	6.1	10	UL	UL	UL	3	UL	UL	UL	81.0	96.0
5	ACY	243	7.3	217	6.9	27	UL	UL	UL	27	UL	UL	UL	81.0	93.0
	PHL	237	7.7	223	8.1					27	UL	UL	UL	82.0	99.0
6	ABE	280	6.2	297	8.4	0	UL	UL	UL	33	UL	UL	UL	85.0	100.0
	CXY	207	5.0	323	10.7	20	UL	UL	UL	50	UL	250	UL	85.0	101.0
7	BWI	307	6.2	287	9.5	23	UL	UL	UL	23	UL	UL	UL	88.0	100.0
	DCA	63	8.1	340	11.1	37	UL	UL	UL	37	UL	UL	UL	82.0	101.0
8	EKN	213	5.1	260	13.1	63	UL	230	230	83	100	100	55	75.0	93.0
	IPT	270	9.5	260	9.2	20	UL	UL	UL	63	250	250	UL	84.0	100.0
9	DTW	273	15.4	240	17.7	93	130	130	130	100	130	130	130	83.0	87.0
10	BUF	233	16.1	250	18.0	10	UL	UL	UL	33	UL	UL	250	83.0	94.0
	SYR	253	4.3	283	6.6	0	UL	UL	UL	23	UL	UL	UL	86.0	95.0
11	CLE	280	13.0	243	10.0	83	220	220	220	93	220	220	220	85.0	91.0
	PIT	187	7.7	260	17.7	73	250	250	250	90	250	250	220	82.0	94.0
12	RIC	197	6.9	167	15.0	3	UL	UL	UL	23	UL	UL	UL	84.0	99.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
								11 JULY 1988							
1	PWM	230	8.1	183	10.3	0	UL	UL	UL	10	UL	UL	UL	87.0	92.0
2	BOS	167	11.5	277	15.0	0	UL	UL	UL	40	120	UL	UL	89.0	97.0
	ORH	237	10.4	300	7.7	60	UL		150	65		150	150	86.0	89.0
3	BDL	233	8.1	307	9.9	100	250	90	100	93	100	100	100	85.0	93.0
4	BDR	233	13.4	220	15.0	95	150		120	90	120	120	200	78.0	93.0
	LGA	270	8.1	200	13.4	60	UL	160	160	90	180	160		88.0	98.0
	NEW	207	11.0	210	11.1	40	UL	UL	UL	50	UL	UL	UL	83.0	96.0
5	ACY	223	7.7	200	11.5	27	UL	UL	UL	30	UL	UL	UL	88.0	95.0
	PHL	233	7.7	230	9.9	30	UL	UL	UL	63	UL	250	250	88.0	99.0
6	ABE	280	8.4	220	13.9	53	120	UL	250	30	250	UL	UL	86.0	97.0
	CXY	270	7.7	243	9.5	47	UL	UL	UL	63	UL	200	200	82.0	96.0
7	BWI	260	7.7	220	9.5	30	UL	UL	UL	43	UL	UL	UL	84.0	99.0
	DCA	167	9.9	173	13.1	23	UL	UL	UL	33	UL	UL	UL	83.0	98.0
8	EKN	227	10.4	300	14.2	40	UL	UL	UL	73	40	45	45	80.0	87.0
	IPT	247	4.6	270	11.0	65	150	150		80	150	150	60	79.0	96.0
9	DTW	293	9.9	280	15.4	13	UL	UL	UL	53	UL	250	UL	78.0	87.0
10	BUF	247	21.9	237	23.8	67	UL	22	25	27	UL	UL	UL	78.0	81.0
	SYR	200	5.7	243	6.6	93	50	100	100	93	100	100	32	73.0	87.0
11	CLE	290	8.4	287	8.4	93	16	20	24	73	UL	34	250	76.0	85.0
	PIT	243	15.4	233	17.6	80	120	120	250	57	250	120	UL	78.0	89.0
12	RIC	250	7.3	230	11.9	47	UL	UL	UL	80	100	100	100	88.0	100.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							12 JULY 1988								
1	PWM	263	8.1	250	13.8	17	UL	UL	UL	17	UL	UL	UL	81.0	92.0
2	BOS	237	14.2	227	16.9	93	100	100	100	73	250	150	200	74.0	84.0
	ORH	273	10.3	243	10.3	80	80	80		77	80	80	250	69.0	80.0
3	BDL	217	7.7	217	10.4	100	50	70	70	87	20	22	22	73.0	82.0
4	BDR	197	9.2	233	10.4	100	30	30	30	100	30	12	30	73.0	77.0
	LGA	167	8.8	180	10.7	100	9	9	80	100	22	22	22	75.0	80.0
	NEW	210	13.9	233	10.0	100	55	28	28	100	28	28	28	80.0	76.0
5	ACY	57	2.3	120	3.1	100	80	80	80	100	5	11	11	75.0	75.0
	PHL	213	8.1	223	8.8	97	50	50	80	100	50	50	60	76.0	80.0
6	ABE	247	6.6	233	10.3	100	80	80	14	83	220	220	UL	74.0	83.0
	CXY	250	5.8	147	5.4	100	100	20	100	93	100	100	100	73.0	84.0
7	BWI	197	5.4	290	5.0	93	120	120	65	100	60	100	30	76.0	83.0
	DCA	227	6.9	170	8.4	97	31	30	32	97	17	19	25	75.0	79.0
8	EKN	113	2.2	207	7.3	100	22	25	25	87	25	28	27	70.0	82.0
	IPT	253	4.2	217	8.4	37	13	UL	UL	50	UL	UL	70	77.0	94.0
9	DTW	127	6.9	217	9.2	17	UL	UL	UL	40	UL	UL	UL	75.0	86.0
10	BUF	57	4.2	327	8.4	40	UL	UL	35	53	39	80	UL	75.0	83.0
	SYR	297	3.4	340	5.4	27	UL	UL	UL	55	55		UL	77.0	85.0
11	CLE	227	8.8.	350	7.3	43	UL	UL	UL	75	250	250		77.0	80.0
	PIT	303	9.2	280	9.5	63	UL	250	30	83	35	39	40	81.0	89.0
12	RIC	187	8.1	217	10.7	100	50	8	70	100	20	22	22	76.0	82.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							13 JULY 1988								
1	PWM	240	9.5	250	9.2	17	UL	UL	UL	10	UL	UL	UL	78.0	86.0
2	BOS	160	11.9	113	14.6	7	UL	UL	UL	0	UL	UL	UL	81.0	79.0
	ORH	140	7.3	293	6.9	0	UL	UL	UL	10	UL	UL	UL	75.0	81.0
3	BDL	130	10.7	290	12.7	0	UL	UL	UL	3	UL	UL	UL	78.0	88.0
4	BDR	70	8.1	213	9.9	20	UL	UL	UL	23	UL	UL	UL	79.0	85.0
	LGA	50	8.1	90	8.9	60	80	75	UL	30	UL	UL	UL	79.0	87.0
	NEW	123	9.6	323	5.0	73	100	100	100	80	100	100	100	78.0	88.0
5	ACY	50	6.6	90	7.3	40	UL	25	UL	10	UL	UL	UL	82.0	84.0
	PHL	63	9.5	240	6.9	27	UL	UL	30	40	40	UL	UL	85.0	93.0
6	ABE	40	6.9	143	9.6	23	UL	UL	UL	23	UL	UL	UL	78.0	89.0
	CXY	313	9.2	297	6.2	7	UL	UL	UL	27	UL	UL	UL	79.0	91.0
7	BWI	297	12.3	307	9.9	7	UL	UL	UL	13	UL	UL	UL	83.0	91.0
	DCA	327	13.0	327	12.7	17	UL	UL	UL	20	UL	UL	UL	84.0	93.0
8	EKN	133	5.4	113	4.2	90	15	15	25	67	26	UL	41	72.0	82.0
	IPT	260	7.7	280	6.9	10	UL	UL	UL	7	UL	UL	UL	77.0	92.0
9	DTW	177	12.2	173	15.0	0	UL	UL	UL	27	UL	UL	UL	79.0	90.0
10	BUF	250	9.9	243	10.7	3	UL	UL	UL	7	UL	UL	UL	74.0	85.0
	SYR	50	3.4	77	4.2	0	UL	UL	UL	10	UL	UL	UL	76.0	84.0
11	CLE	193	13.8	220	7.7	0	UL	UL	UL	70	50	50	65	78.0	88.0
	PIT	153	6.1	237	10.4	7	UL	UL	UL	80		45	40	77.0	89.0
12	RIC	30	10.4	137	8.1	77	50	50	50	60	70	UL	50	80.0	89.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							14 JULY 1988								
1	PWM	167	15.0	183	18.8	10	UL	UL	UL	70	UL	100	100	74.0	77.0
2	BOS	200	18.4	197	22.7	17	UL	UL	UL	25		UL	UL	80.0	86.0
	ORH	230	11.9	227	14.2	13	UL	UL	UL	40	UL	UL	UL	75.0	86.0
3	BDL	180	13.4	180	18.4	43	UL	UL	250	53	250	UL	UL	78.0	88.0
4	BDR	237	9.2	203	15.0	77	7	7	UL	30	200	UL	UL	73.0	83.0
	LGA	207	9.2	167	16.9	53	UL	UL	130	50			UL	82.0	85.0
	NEW	290	8.1	217	8.8	10	UL	UL	UL	67	40	45	UL	82.0	93.0
5	ACY	217	9.2	187	13.1	20	UL	UL	UL	20	UL	UL	UL	84.0	89.0
	PHL	250	8.1	243	11.5	7	UL	UL	UL	10	UL	UL	UL	83.0	96.0
6	ABE	210	6.2	223	16.5	0	UL	UL	UL	43	UL	UL	UL	79.0	93.0
	CXY	230	6.2	210	11.5	17	UL	UL	UL	57	UL	60	60	82.0	95.0
7	BWI	300	9.5	240	11.1	7	UL	UL	UL	27	UL	UL	UL	84.0	95.0
	DCA	353	9.5	293	6.9	3	UL	UL	UL	43	UL	UL	55	86.0	95.0
8	EKN	280	5.4	283	9.2	97	15	18	37	63	37	UL	34	73.0	86.0
	IPT	237	6.9	253	9.9	40	100	UL	UL	27	UL	UL	UL	80.0	97.0
9	DTW	257	20.8	290	21.5	0	UL	UL	UL	7	UL	UL	UL	86.0	97.0
10	BUF	243	24.2	243	21.8	100	45	50	50	93	37	85	250	78.0	83.0
	SYR	237	9.2	260	4.3	100	80	80	80	100	45	32	40	80.0	79.0
11	CLE	240	14.9	240	17.7	50	UL	UL	55	47	120	UL	UL	83.0	94.0
	PIT	237	13.0	217	14.2	67	14	16	18	35	UL	UL		79.0	91.0
12	RIC	193	9.2	150	11.1	50	100	UL	100	45	100		UL	79.0	93.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
							15 JULY 1988								
1	PWM	337	10.4	340	9.5	20	UL	UL	UL	13	UL	UL	UL	71.0	81.0
2	BOS	97	11.9	100	15.7	33	UL	UL	UL	23	UL	UL	UL	76.0	73.0
	ORH	230	8.4	323	11.2	0	UL	UL	UL	23	UL	UL	UL	72.0	79.0
3	BDL	17	7.3	320	13.9	40	UL	UL	UL	23	UL	UL	UL	76.0	86.0
4	BDR	180	11.0	200	12.2	47	UL	UL	25	20	UL	UL	UL	80.0	89.0
	LGA	243	9.5	143	7.7	13	UL	UL	UL	20	UL	UL	UL	77.0	89.0
	NEW	250	9.2	303	10.7	20	UL	UL	UL	47	UL	UL	UL	89.0	96.0
5	ACY	130	6.9	250	8.4	27	120	UL	UL	10	UL	UL	UL	84.0	94.0
	PHL	347	14.2	327	11.9	0	UL	UL	UL	0	UL	UL	UL	88.0	95.0
6	ABE	227	13.4	340	11.9	17	UL	UL	UL	37	UL	UL	UL	79.0	88.0
	CXY	330	9.9	333	9.5	0	UL	UL	UL	13	UL	UL	UL	83.0	95.0
7	BWI	137	6.9	310	13.4	0	UL	UL	UL	7	UL	UL	UL	89.0	97.0
	DCA	137	9.5	337	11.1	0	UL	UL	UL	17	UL	UL	UL	89.0	100.0
8	EKN	297	8.1	240	7.3	23	UL	UL	UL	27	UL	UL	UL	81.0	92.0
	IPT	240	6.9	343	6.6	13	UL	UL	UL	17	UL	UL	UL	77.0	91.0
9	DTW	173	9.9	217	5.8	53	UL	UL	270	63	260	UL	UL	81.0	91.0
10	BUF	90	6.6	123	6.9	3	UL	UL	UL	30	UL	UL	UL	73.0	83.0
	SYR	243	5.0	320	10.0	3	UL	UL	UL	17	UL	UL	UL	71.0	78.0
11	CLE	103	4.3	120	9.9	27	UL	UL	UL	27	UL	UL	UL	84.0	90.0
	PIT	147	5.0	313	8.4	23	UL	UL	UL	30	UL	UL	UL	79.0	91.0
12	RIC	123	11.9	133	11.5	13	UL	UL	UL	53	UL	40	45	83.0	91.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
16 JULY 1988															
1	PWM	143	11.2	183	8.4	87	120	120	110	87	130	140	140	72.0	77.0
2	BOS	233	20.4	233	18.9	30	UL		UL	80			120	80.0	92.0
	ORH	253	14.6	247	11.6	40	UL			83	90	80	80	76.0	86.0
3	BDL	200	12.2	203	11.9	63	100	UL	200	93	100	150	150	79.0	90.0
4	BDR	233	10.7	203	16.9	57	80	UL	UL	50	UL	UL	120	77.0	86.0
	LGA	213	11.1	170	18.8	47	120	UL	UL	67	UL	130	130	82.0	89.0
	NEW	213	7.7	183	8.4	20	UL	UL	UL	20	UL	UL	UL	89.0	100.0
5	ACY	220	7.7	177	11.1	17	UL	UL	UL	0	UL	UL	UL	86.0	89.0
	PHL	223	9.2	230	12.6	17	UL	UL	UL	0	UL	UL	UL	87.0	101.0
6	ABE	233	10.0	223	15.4	7	UL	UL	UL	3	UL	UL	UL	84.0	100.0
	CXY	283	6.6	153	6.1	30	UL	UL	UL	33	UL	UL	UL	85.0	102.0
7	BWI	233	10.7	190	12.3	30	120	UL	UL	7	UL	UL	UL	86.0	103.0
	DCA	167	11.9	163	15.0	23	UL	UL	UL	17	UL	UL	UL	87.0	101.0
8	EKN	130	4.5	263	8.9	37	UL	UL	UL	30	UL	UL	UL	78.0	98.0
	IPT	207	5.0	163	7.6	33	140	UL	UL	27	120	UL	UL	79.0	101.0
9	DTW	243	14.2	227	22.2	37	UL	UL	UL	53	270	270	UL	87.0	102.0
10	BUF	193	16.5	247	22.3	43	UL	UL	120	17	UL	UL	UL	74.0	92.0
	SYR	223	9.6	253	8.1	57	70	UL	UL	33	UL	UL	UL	74.0	97.0
11	CLE	237	12.2	237	13.9	25	UL	UL		70	250	250	250	89.0	98.0
	PIT	243	11.1	230	15.0	20	UL	UL	UL	37	UL	UL	UL	87.0	101.0
12	RIC	217	12.6	183	11.5	23	UL	UL	UL	13	UL	UL	UL	85.0	100.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
								17 JULY 1988							
1	PWM	67	6.9	90	9.5	100	70	70	100	100	80	110	50	74.0	73.0
2	BOS	210	11.1	170	13.4	63	110	UL	80	53	UL	UL	110	83.0	91.0
	ORH	223	8.4	207	9.9	87	200	80	200	63	200	120	200	78.0	87.0
3	BDL	197	9.2	177	16.1	93	150	180	180	87	200	200	200	84.0	93.0
4	BDR	217	11.0	190	10.7	77	120	200	200	60	150	UL	UL	79.0	87.0
	LGA	53	9.2	150	13.9	73	140	140	140	50	UL	UL	UL	82.0	90.0
	NEW	203	10.7	230	15.7	17	UL	UL	UL	7	UL	UL	UL	88.0	99.0
5	ACY	180	11.0	193	13.9	60	4	7	UL	0	UL	UL	UL	78.0	91.0
	PHL	177	9.9	223	16.9	23	UL	UL	UL	27	UL	UL	UL	88.0	101.0
6	ABE	207	8.9	220	13.4	97	140	250	250	97	250	250	250	80.0	95.0
	CXY	187	5.8	210	11.9	40	UL	UL	UL	70	UL	70	45	82.0	97.0
7	BWI	170	9.5	203	15.4	27	UL	UL	UL	23	UL	UL	UL	88.0	101.0
	DCA	177	12.3	203	15.0	57	UL	250	250	37	UL	UL	UL	87.0	100.0
8	EKN	230	10.3	280	13.9	70	250	UL	30	63	32	34	UL	80.0	92.0
	IPT	103	11.5	170	8.9	55	75	UL		90	140	50	140	81.0	89.0
9	DTW	230	7.3	297	9.5	83	UL	22	21	50	45	UL	UL	77.0	86.0
10	BUF	127	7.7	280	10.7	100	13	15	6	73	15	21	UL	68.0	80.0
	SYR	110	3.8	270	9.2	100	46	40	40	80	60	10	30	75.0	78.0
11	CLE	357	12.2	360	11.9	97	8	8	13	80	28	29	29	73.0	82.0
	PIT	250	22.3	260	17.3	60	30	30	35	100	35	35	30	85.0	83.0
12	RIC	290	7.7	203	16.6	80	100	100	100	33	UL	UL	UL	82.0	98.0

REGION	SFC STN	AM WIND DIR	AM WIND SPEED (MPH)	PM WIND DIR	PM WIND SPEED (MPH)	AM CLD COVER (%)	9 AM CL HGT (FTx100)	10 AM CL HGT (FTx100)	11 AM CL HGT (FTx100)	PM CLD COVER (%)	1 PM CL HGT (FTx100)	2 PM CL HGT (FTx100)	3 PM CL HGT (FTx100)	9 AM TEMP (DEG F)	MAX PM TEMP (DEG F)
18 JULY 1988															
1	PWM	303	13.1	200	10.3	47	UL	UL	250	60		250		80.0	85.0
2	BOS	283	10.4	120	13.0	60		250						81.0	83.0
	ORH	340	5.4	300	7.7	13	UL	UL	UL	27	UL	UL	UL	77.0	85.0
3	BDL	333	6.9	330	6.2	23	UL	UL	UL	30	UL	UL	UL	80.0	89.0
4	BDR	240	9.2	240	11.9	23	UL	UL	UL	13	UL	UL	UL	81.0	86.0
	LGA	327	5.4	233	4.6	10	UL	UL	UL	3	UL	UL	UL	79.0	92.0
	NEW	120	9.5	177	8.1	27	UL	UL	UL	60	40	40	40	85.0	96.0
5	ACY	323	6.2	157	11.0	13	UL	UL	UL	10	UL	UL	UL	83.0	88.0
	PHL	77	5.4	213	7.3	10	UL	UL	UL	0	UL	UL	UL	85.0	93.0
6	ABE	297	6.2	223	5.7	23	UL	UL	UL	17	UL	UL	UL	79.0	94.0
	CXY	0	0.0	20	2.7	23	UL	UL	UL	20	UL	UL	UL	83.0	94.0
7	BWI	87	8.1	167	7.3	20	UL	UL	UL	47	UL	55	50	86.0	95.0
	DCA	107	6.9	157	8.8	30		UL		20	UL	UL	UL	83.0	92.0
8	EKN	270	4.6	140	6.9	23	UL	UL	UL	80	45	45	60	75.0	89.0
	IPT	163	5.7	113	7.3	7	UL	UL	UL	10	UL	UL	UL	79.0	92.0
9	DTW	157	10.3	127	8.1	77	150	150	140	100	140	140	140	81.0	83.0
10	BUF	233	10.7	263	7.7	33	UL	UL	UL	50		UL	120	76.0	87.0
	SYR	267	3.4	240	4.7	20	UL	UL	UL	10	UL	UL	UL	77.0	90.0
11	CLE	193	9.2	183	8.4	23	UL	UL	UL	90	120	120	60	82.0	91.0
	PIT	167	7.7	183	6.9	33	UL	UL	UL	33	UL	UL	UL	81.0	96.0
12	RIC	233	8.1	187	10.4	30	UL	UL	UL	17	UL	UL	UL	82.0	95.0

APPENDIX F

FORWARD AND BACK TRAJECTORIES FOR ROMNET EPISODES:

JUNE 1983
AUGUST 1985
JULY 1988

Note: trajectories were not generated for the July 1985 episode since it was not among the ten top-ranked episodes.

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JUNE 1983

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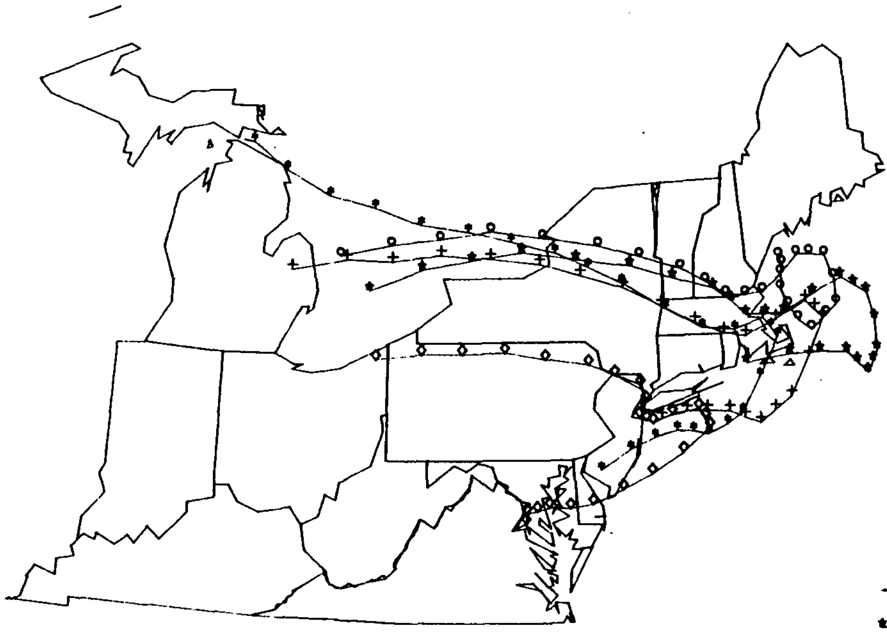
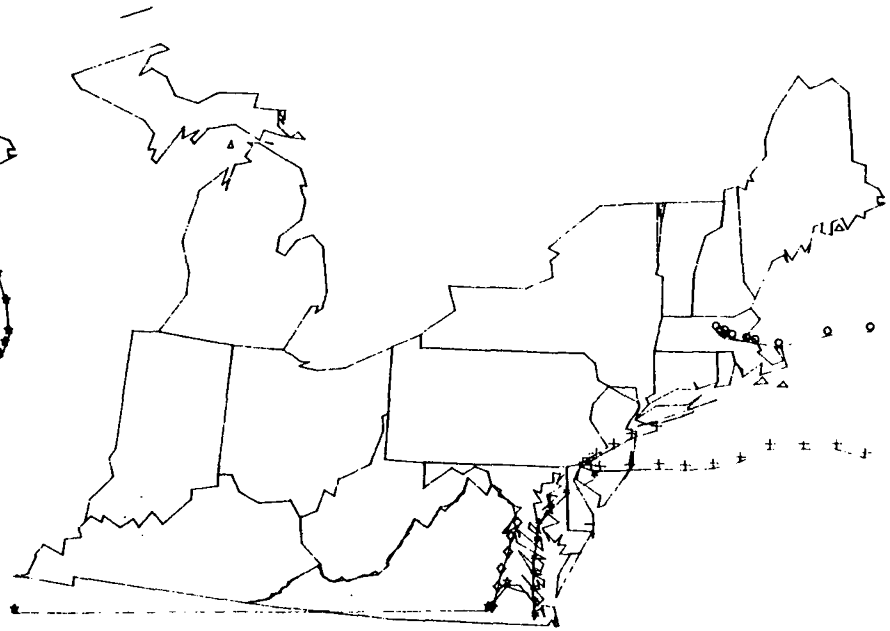
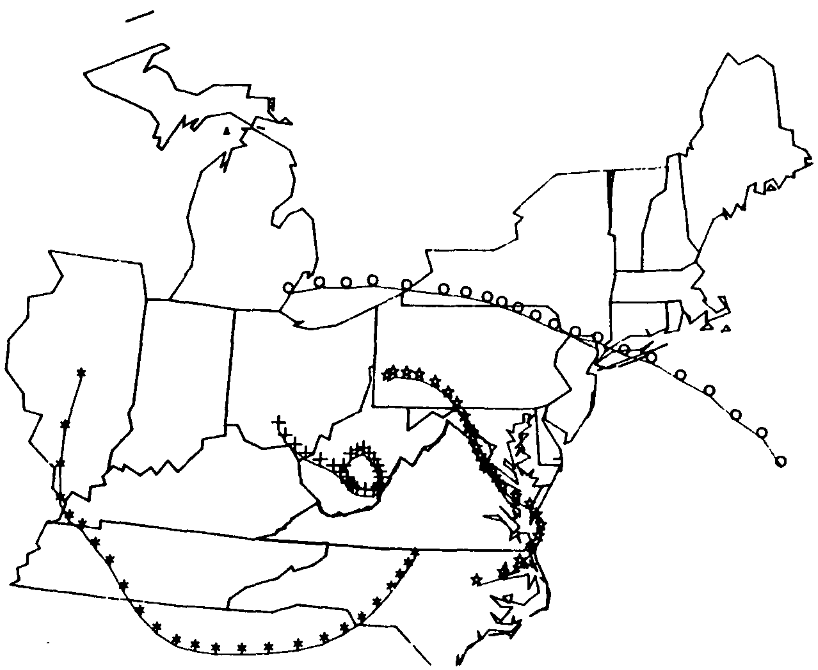
Back Trajectory for 10 JUN 83
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (*), DCA (◇)



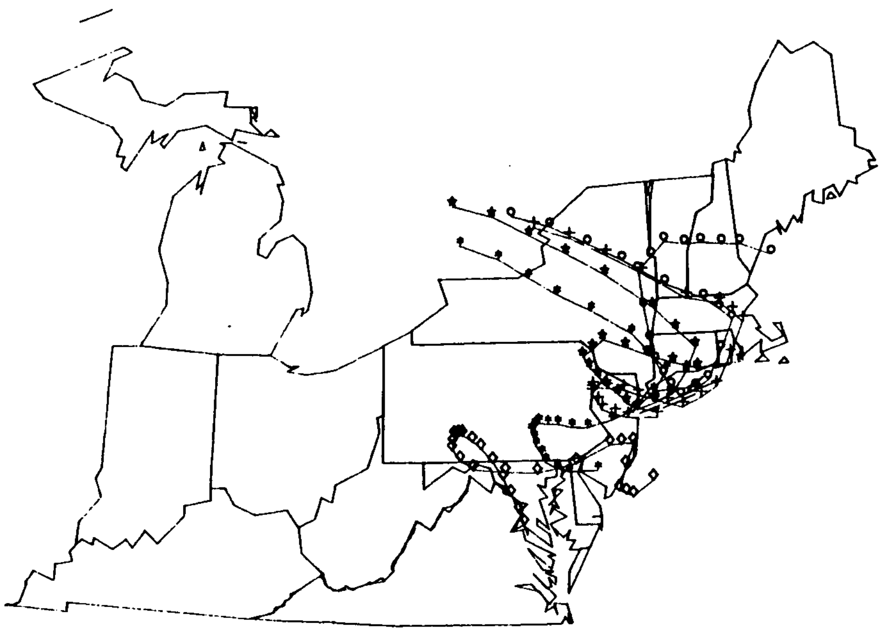
Forward Trajectory for 10 JUN 83
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (*), RIC (*)



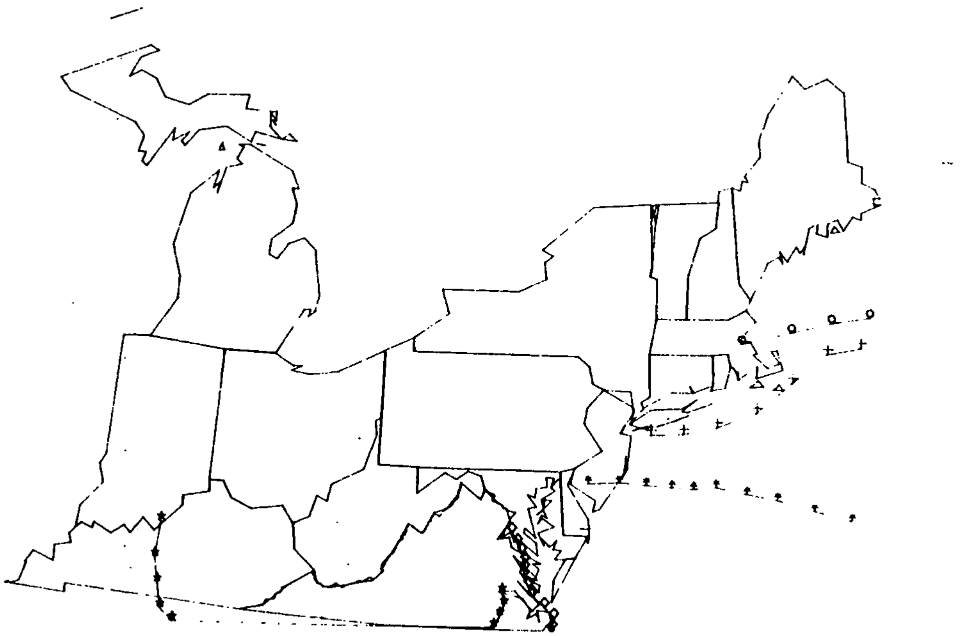
Forward Trajectory for 10 JUN 83
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (*)



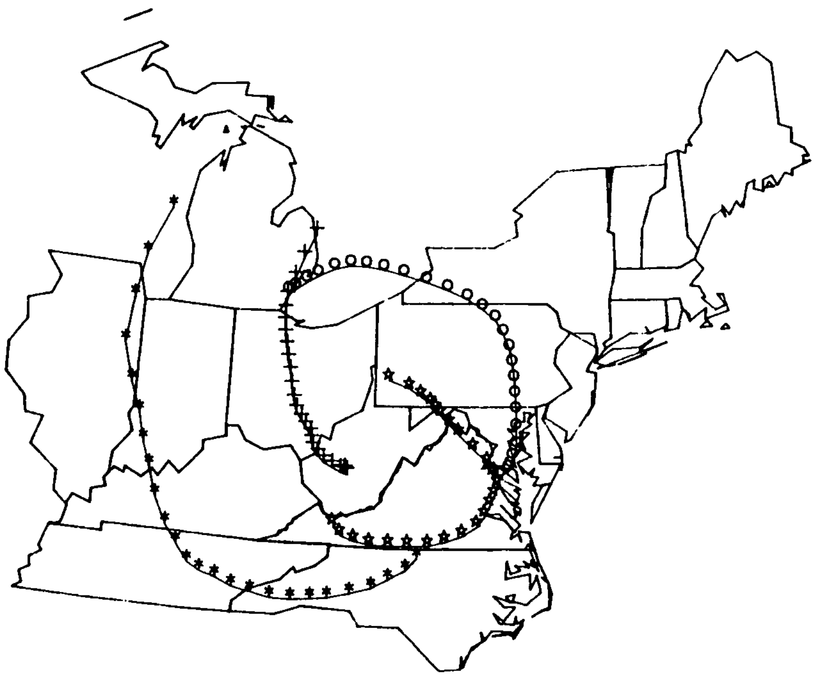
Back Trajectory for 11 JUN 83
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◊)



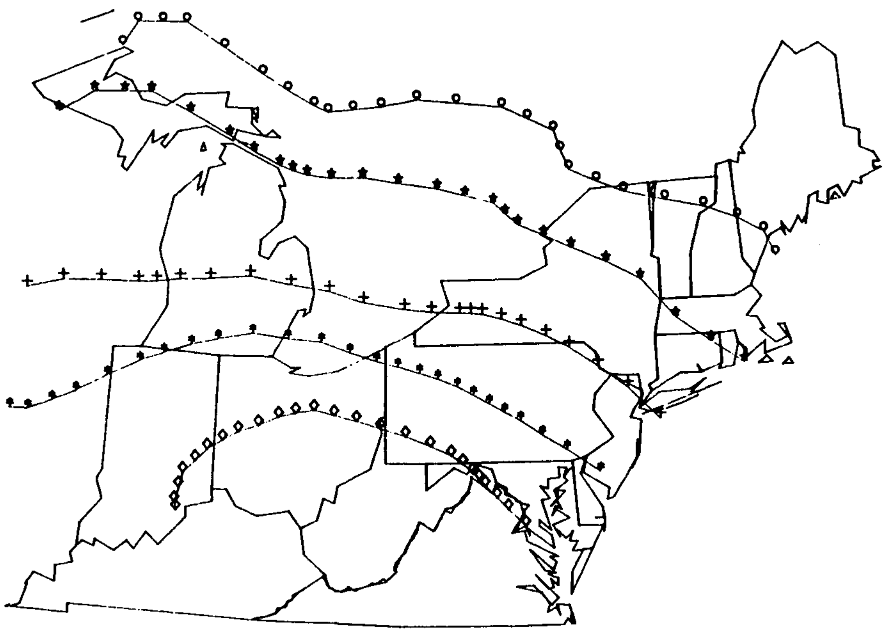
Forward Trajectory for 11 JUN 83
Beginning at 12Z
BOS (o), DCA (o), NYC (+), PHL (•), RIC (*)



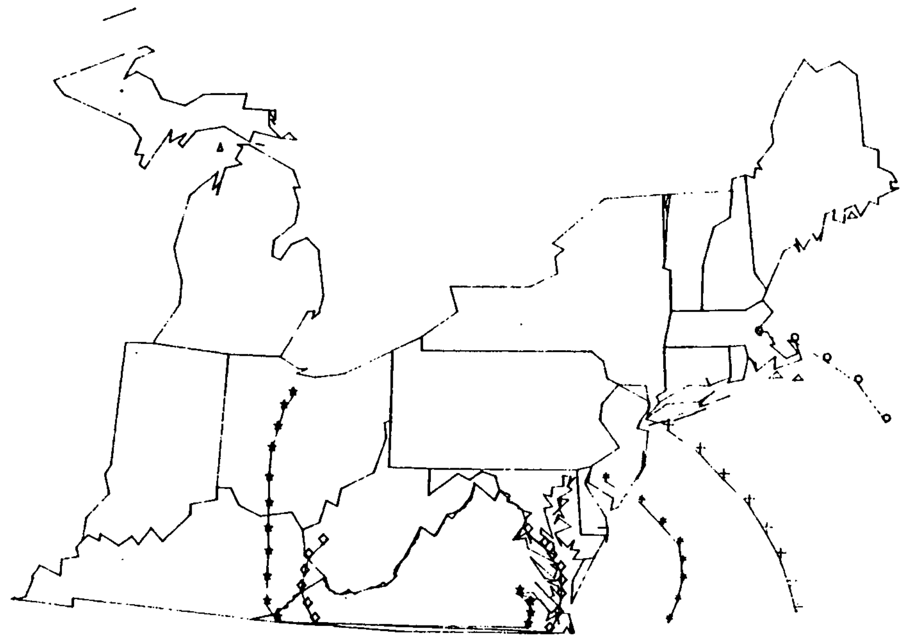
Forward Trajectory for 11 JUN 83
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (*)



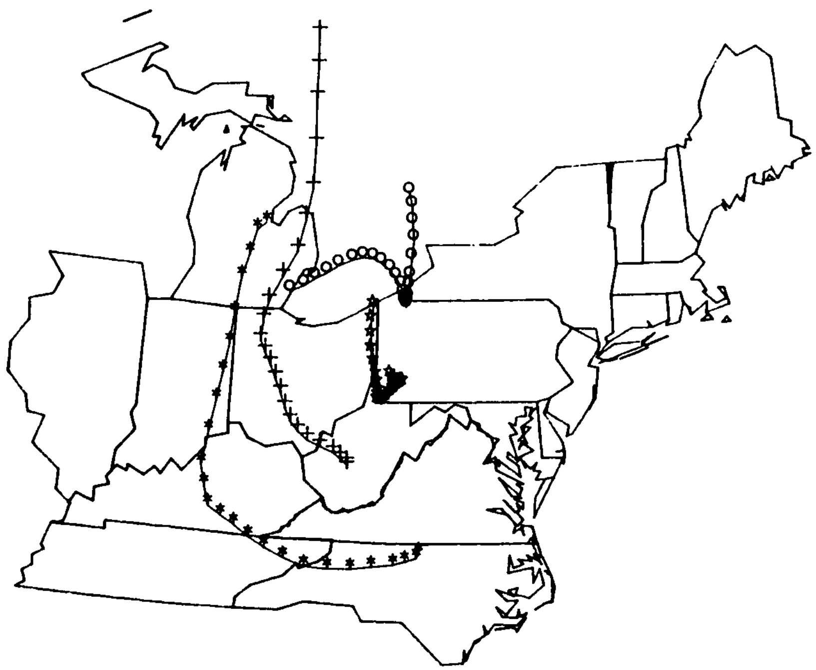
Back Trajectory for 12 JUN 83
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (*), DCA (◇)



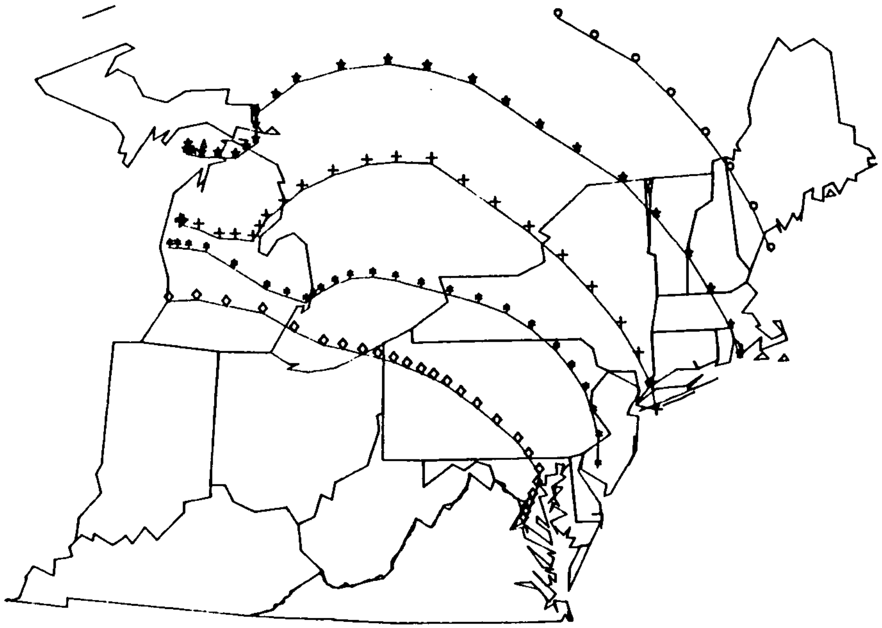
Forward Trajectory for 12 JUN 83
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (*), RIC (*)



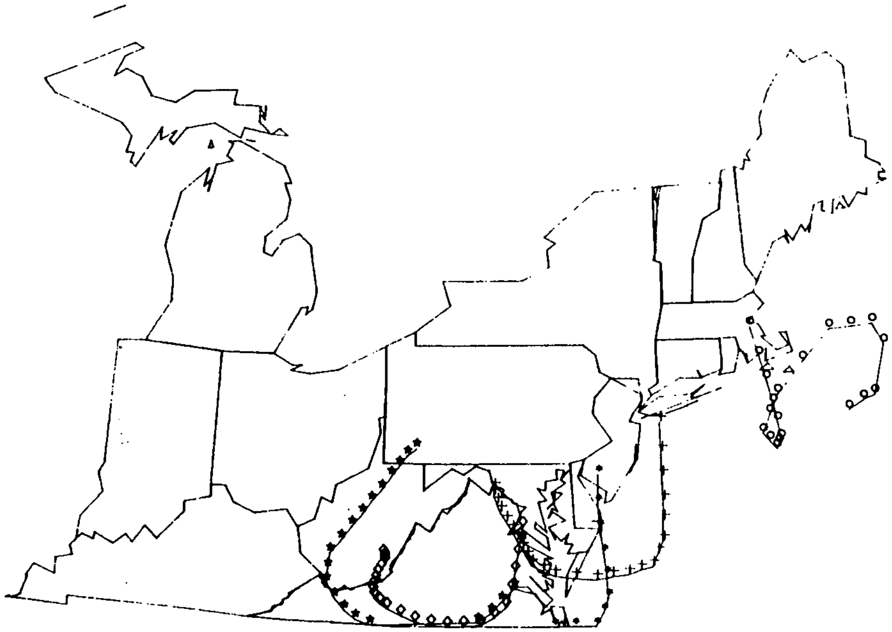
Forward Trajectory for 12 JUN 83
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (*)



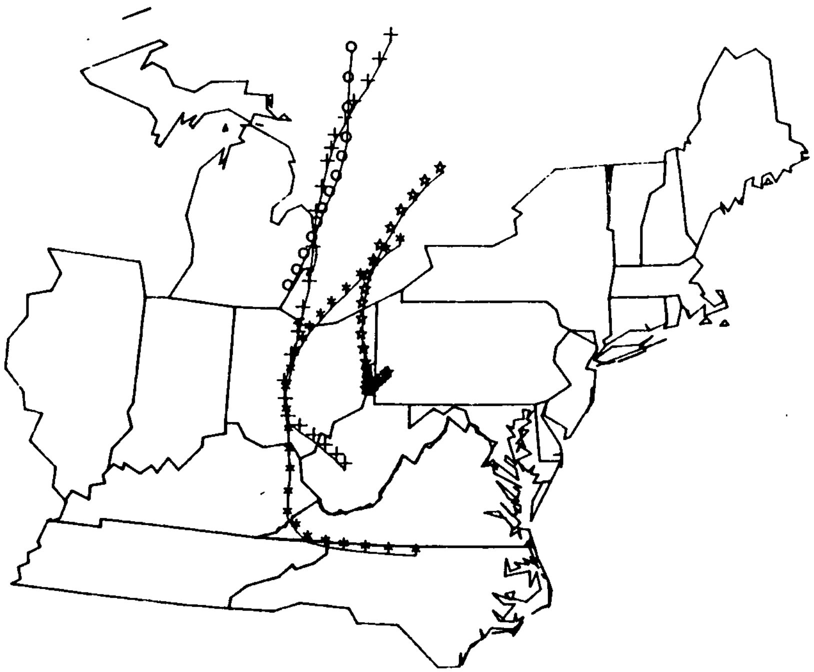
Back Trajectory for 13 JUN 83
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◇)



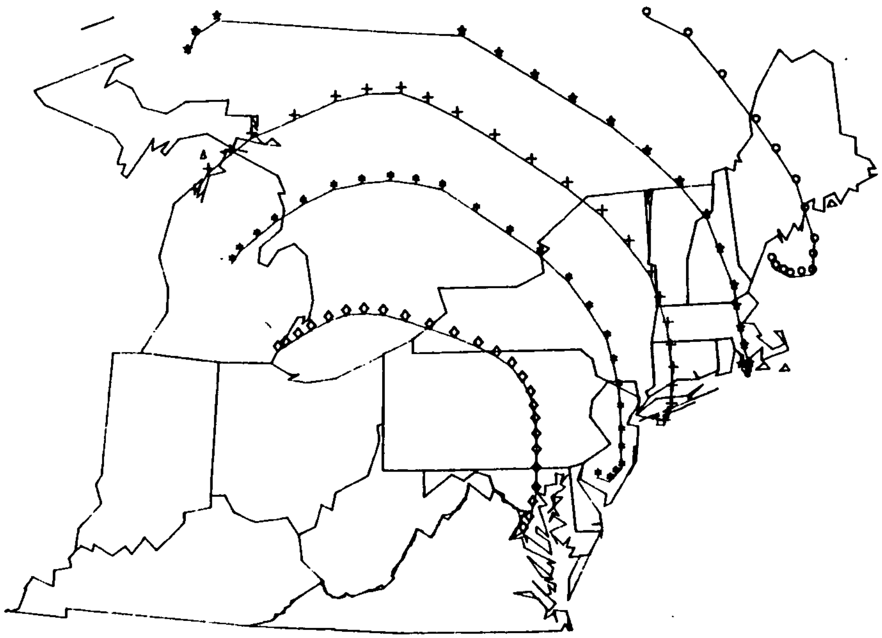
Forward Trajectory for 13 JUN 83
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (•), RIC (*)



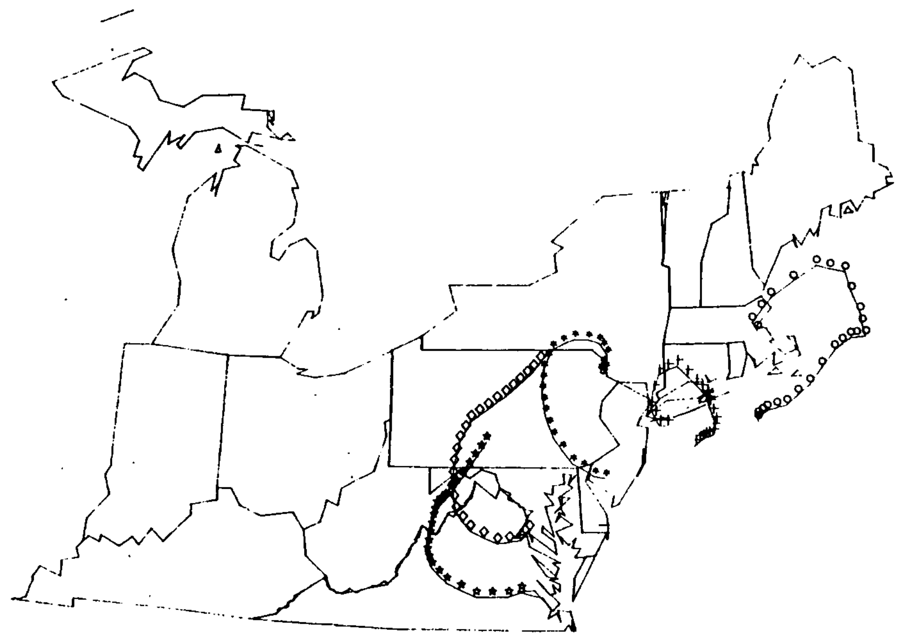
Forward Trajectory for 13 JUN 83
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (•)



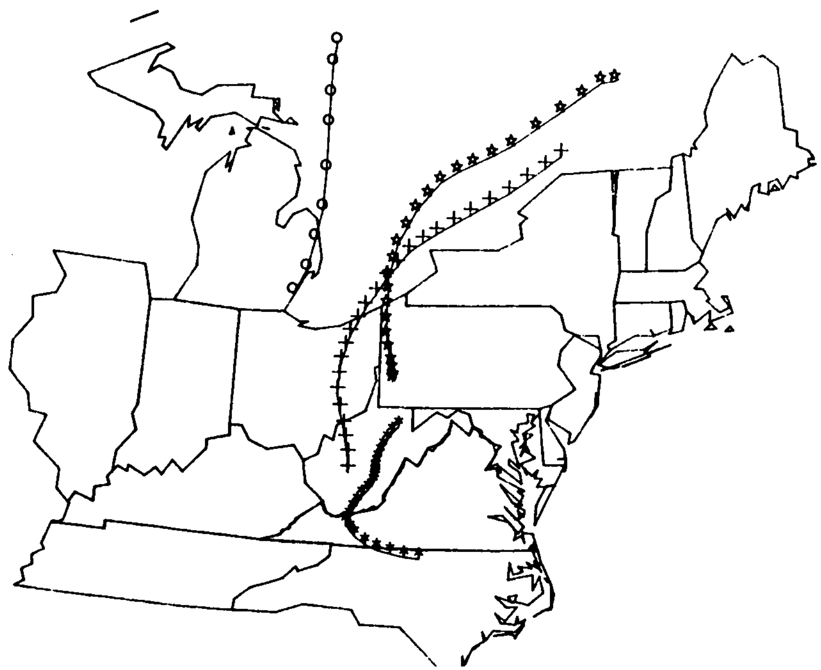
Back Trajectory for 14 JUN 83
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◊)



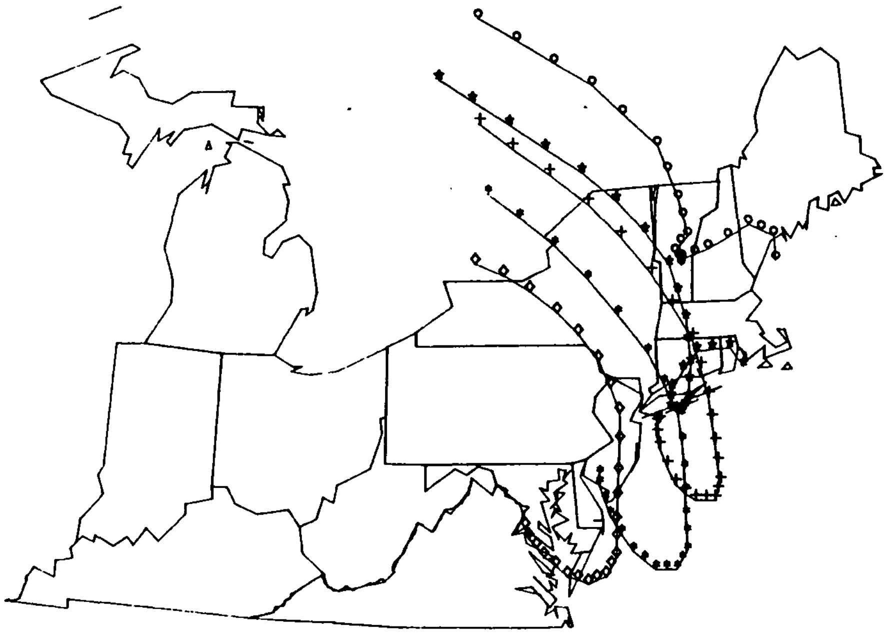
Forward Trajectory for 14 JUN 83
Beginning at 12Z
BOS (o), DCA (◊), NYC (+), PHL (•), RIC (*)



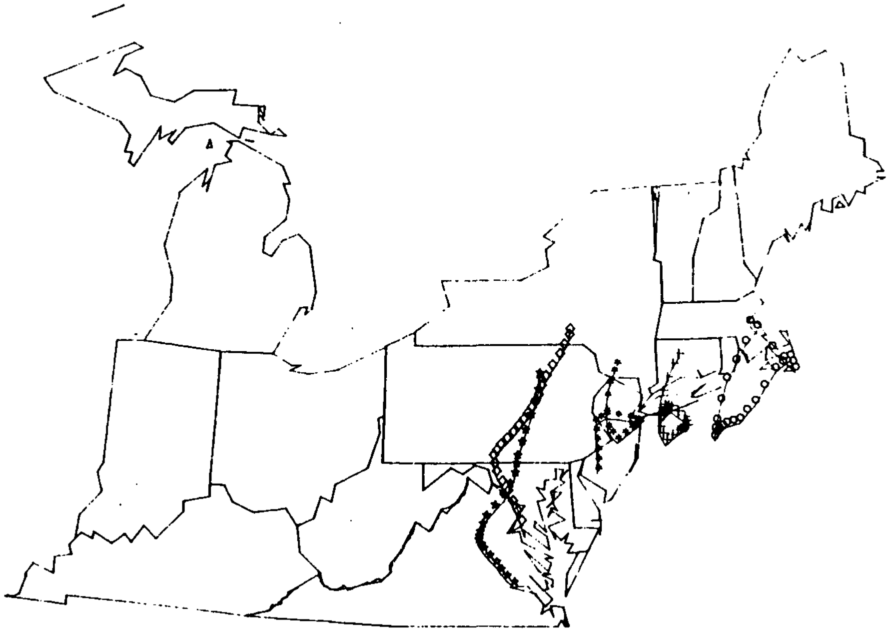
Forward Trajectory for 14 JUN 83
Beginning at 12Z
DET (o), PIT (☆), CRW (+), DAN (*)



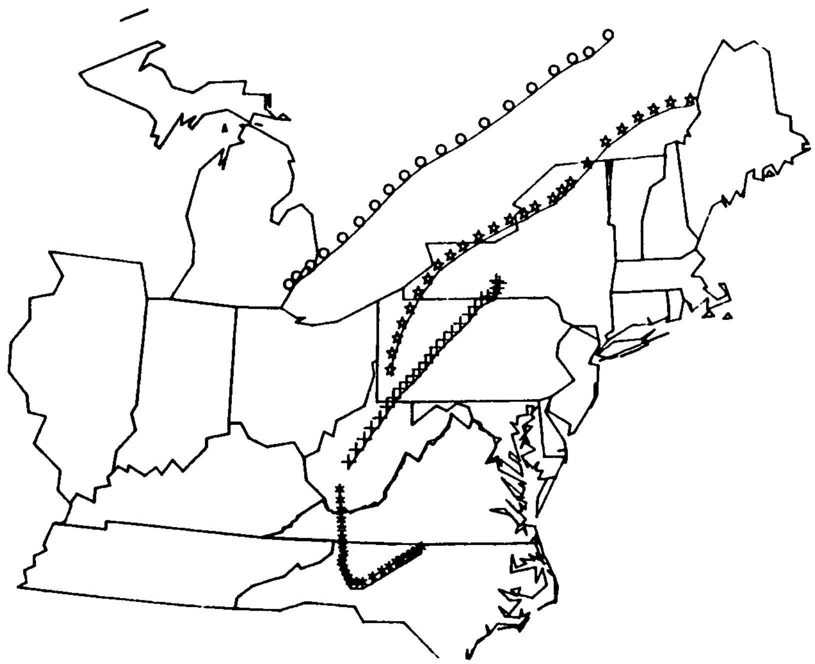
Back Trajectory for 15 JUN 83
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (*), DCA (◇)



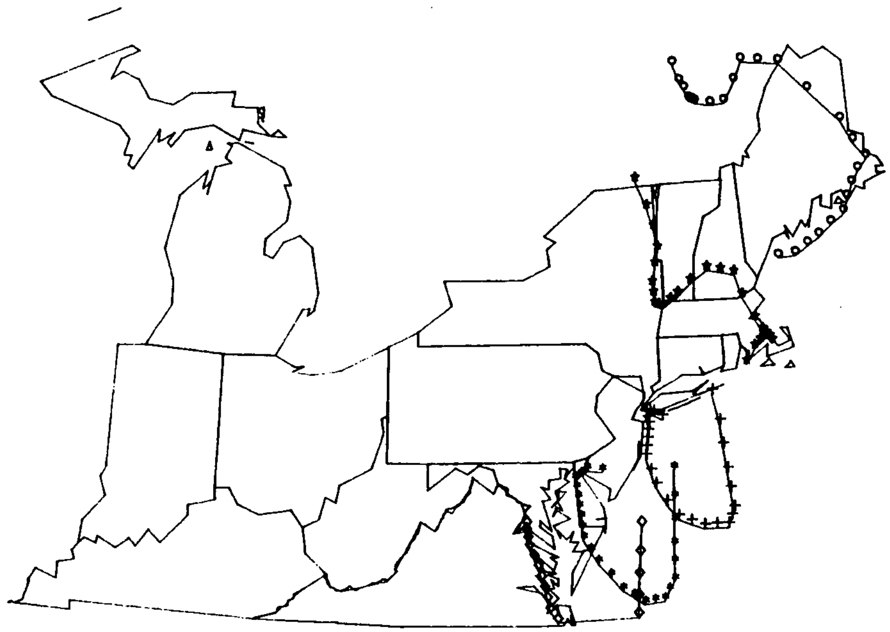
Forward Trajectory for 15 JUN 83
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (*), RIC (*)



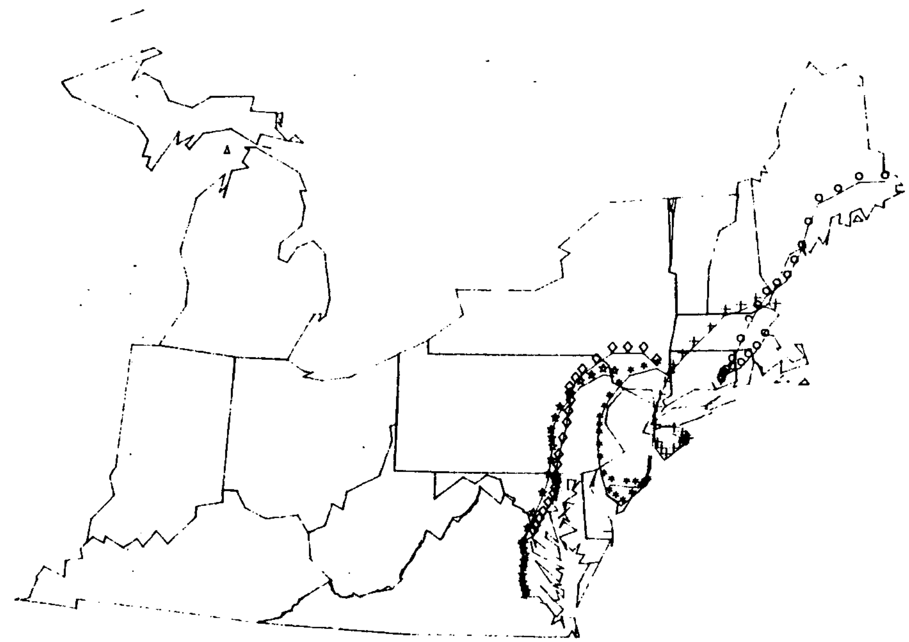
Forward Trajectory for 15 JUN 83
Beginning at 12Z
DET (o), PIT (☆), CRW (+), DAN (*)



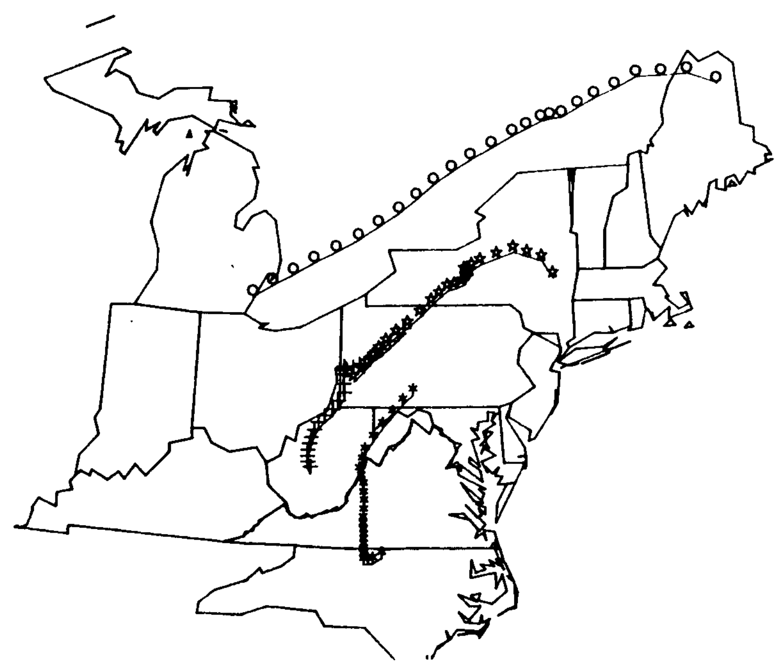
Back Trajectory for 16 JUN 83
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (*), DCA (◇)



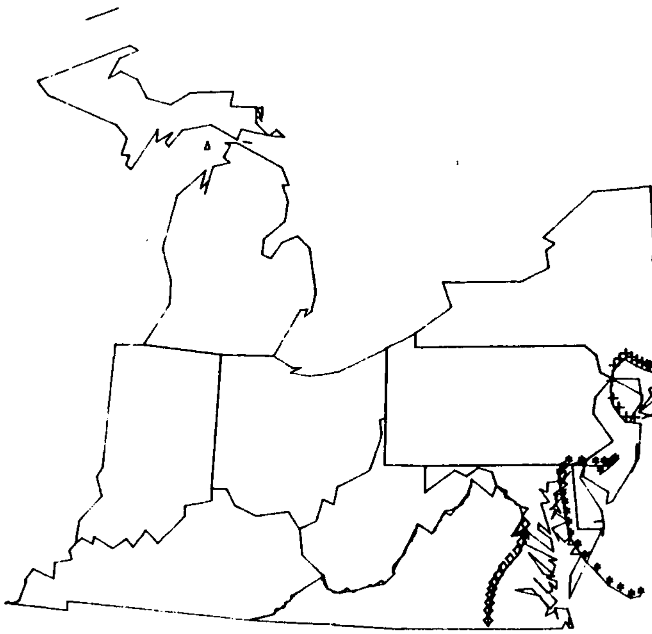
Forward Trajectory for 16 JUN 83
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (*), RIC (*)



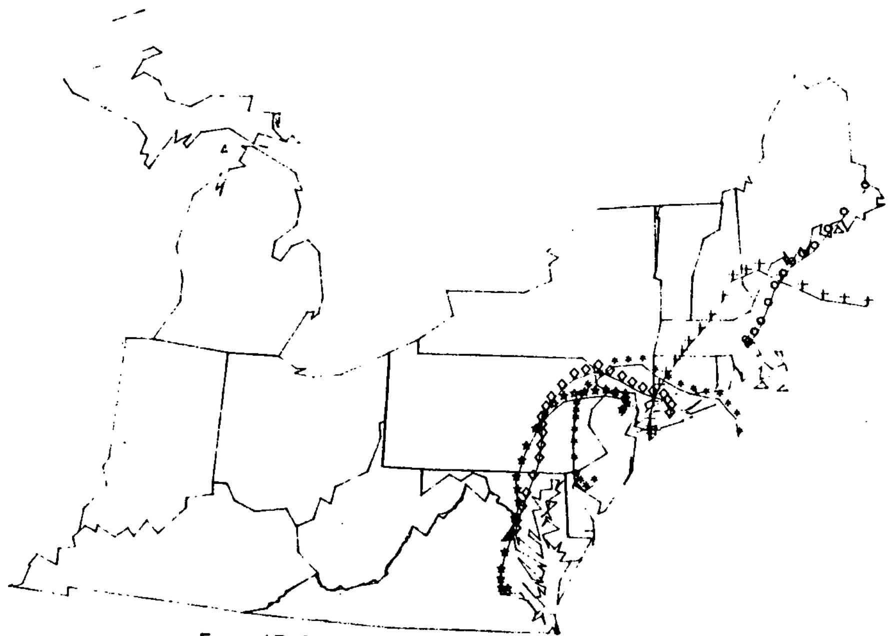
Forward Trajectory for 16 JUN 83
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (*)



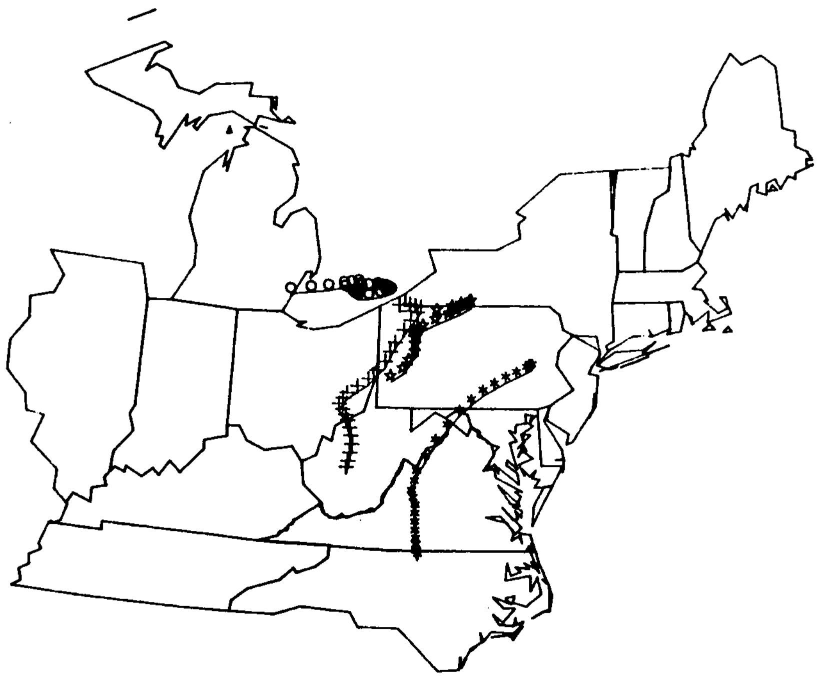
Back Trajectory for 17 JUN 83
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◇)



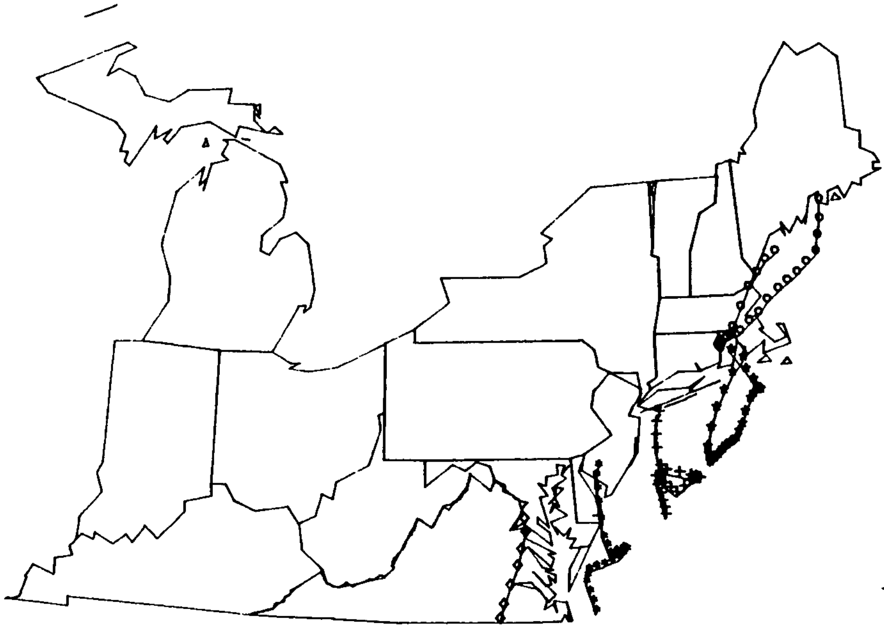
Forward Trajectory for 17 JUN 83
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (•), RIC (*)



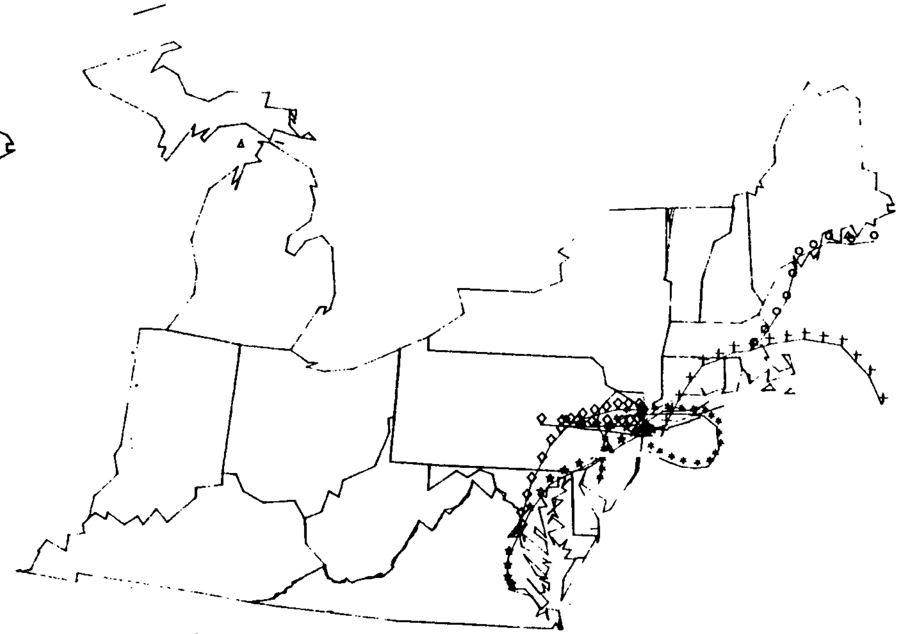
Forward Trajectory for 17 JUN 83
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (•)



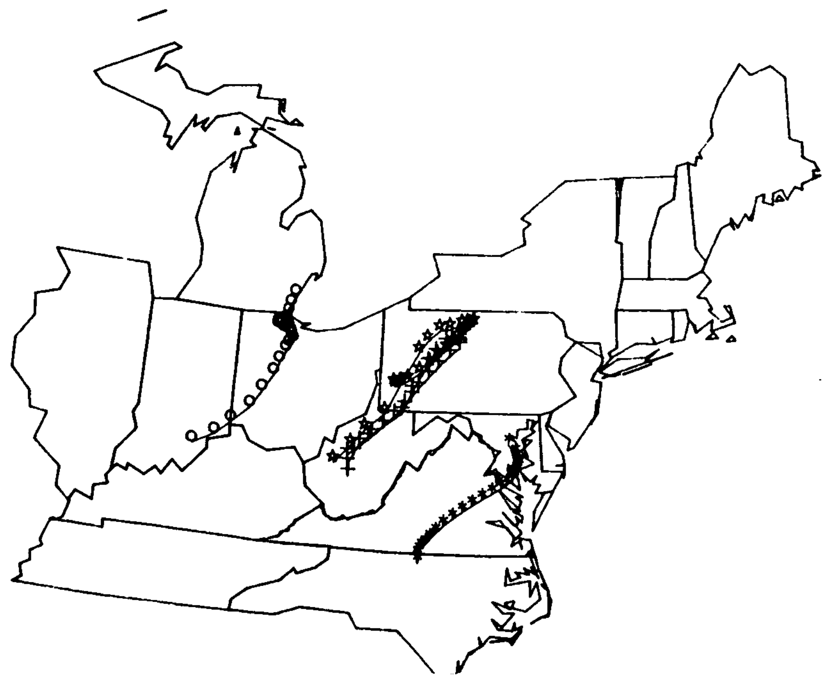
Back Trajectory for 18 JUN 83
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (*), DCA (◇)



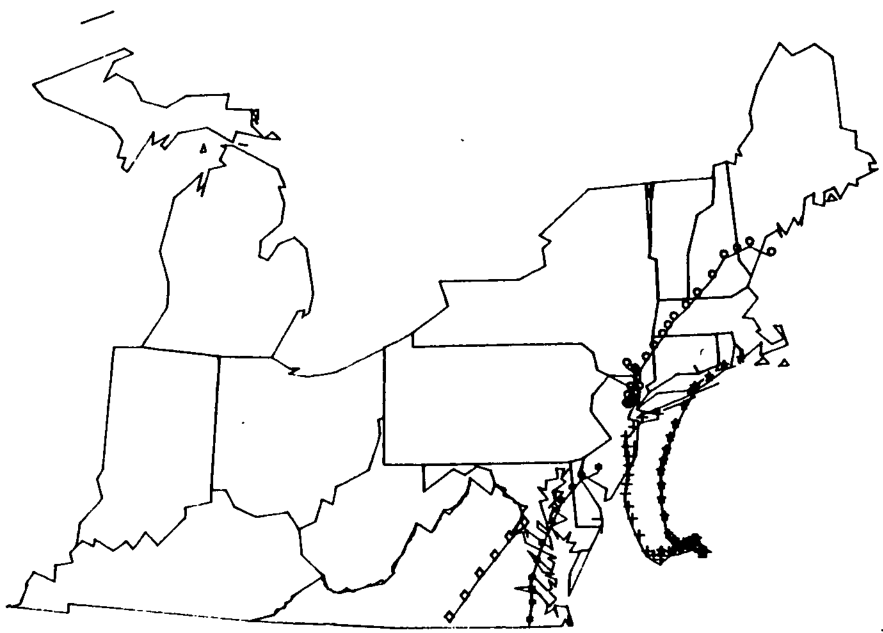
Forward Trajectory for 18 JUN 83
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (*), RIC (*)



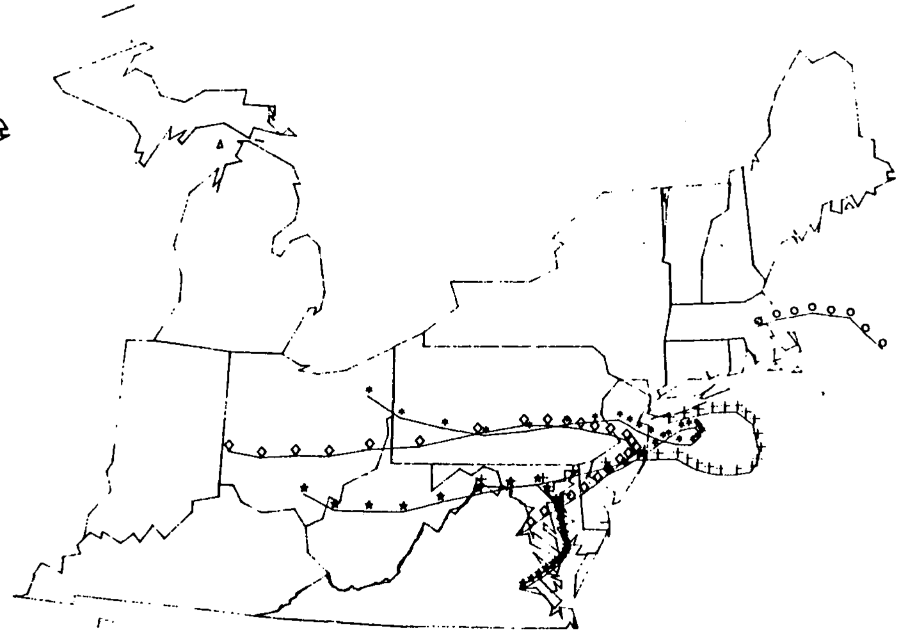
Forward Trajectory for 18 JUN 83
Beginning at 12Z
DET (o), PIT (☆), CRW (+), DAN (*)



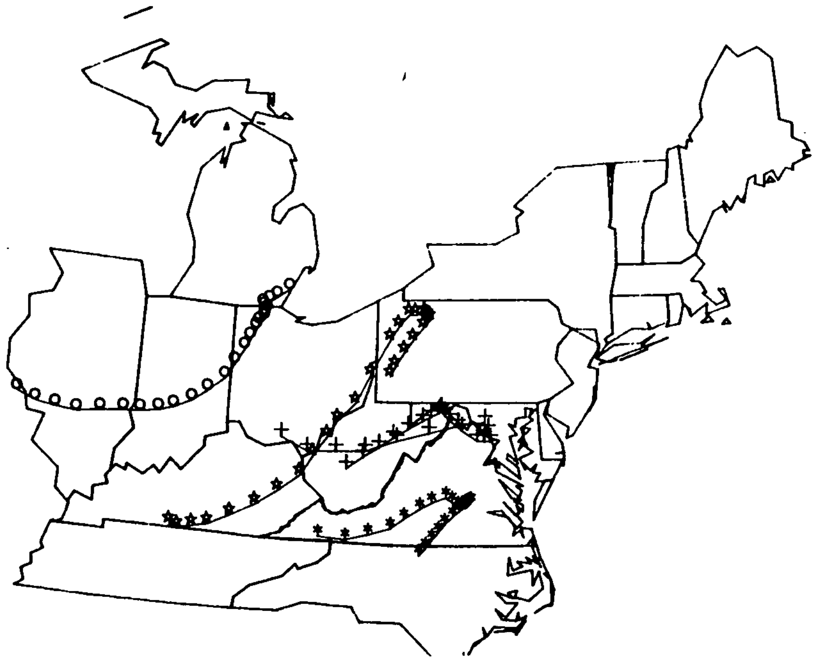
Back Trajectory for 19 JUN 83
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◇)



Forward Trajectory for 19 JUN 83
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (•), RIC (*)



Forward Trajectory for 19 JUN 83
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (•)



AUGUST 1985

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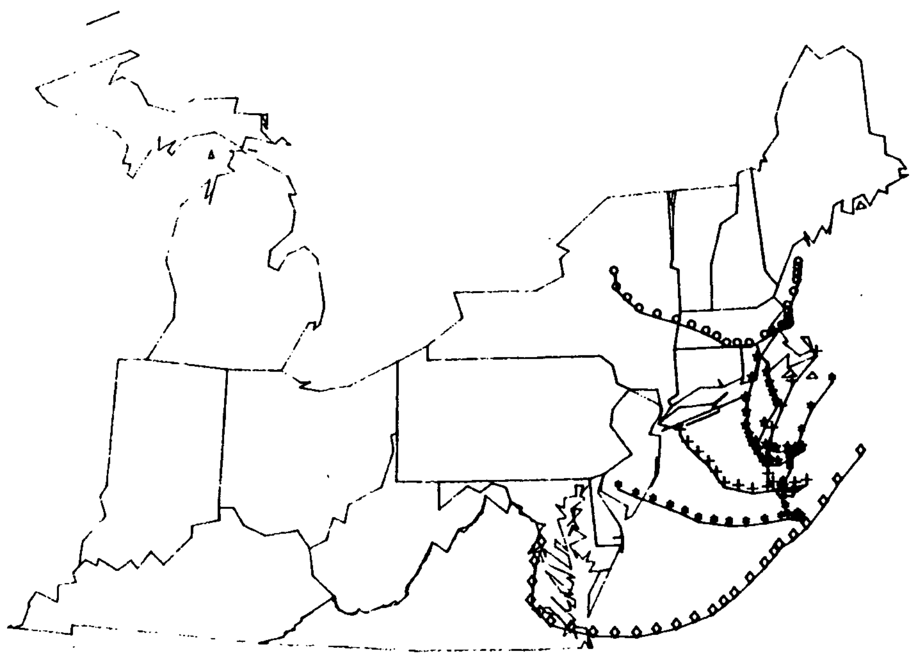
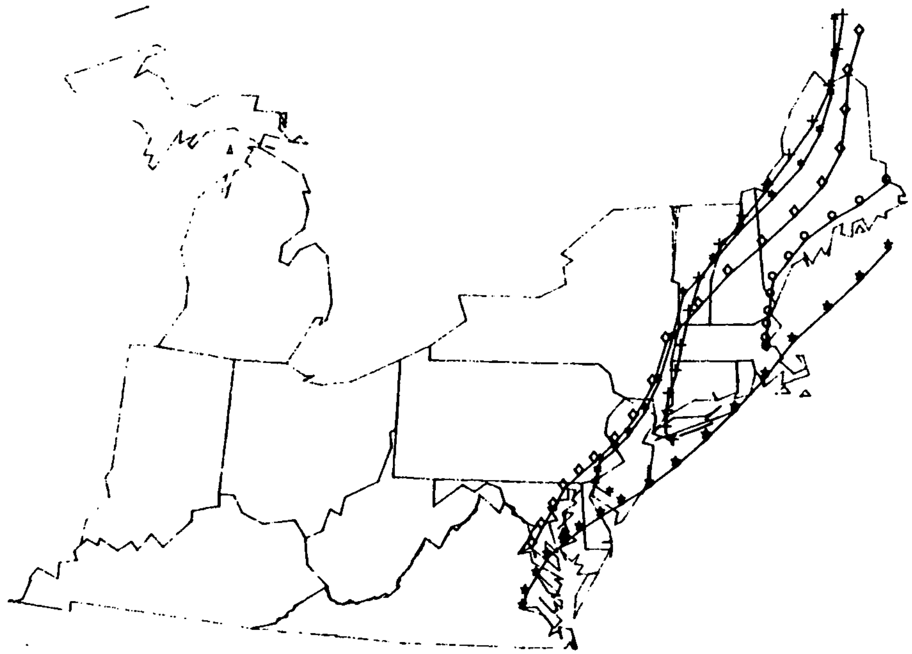
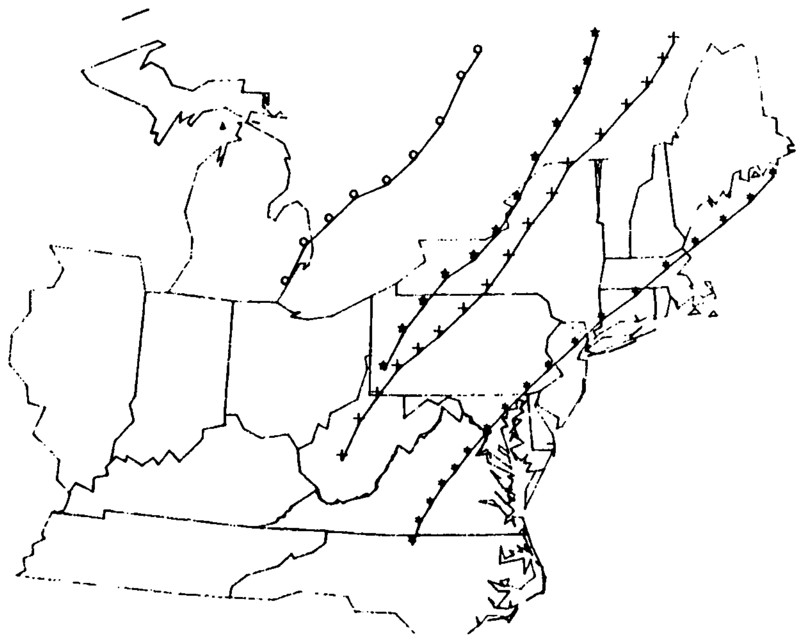
Back Trajectory for 6 AUG 85
Ending at 12Z
PWM (○), PVD (⋆), NYC (+), PHL (•), DCA (◇)



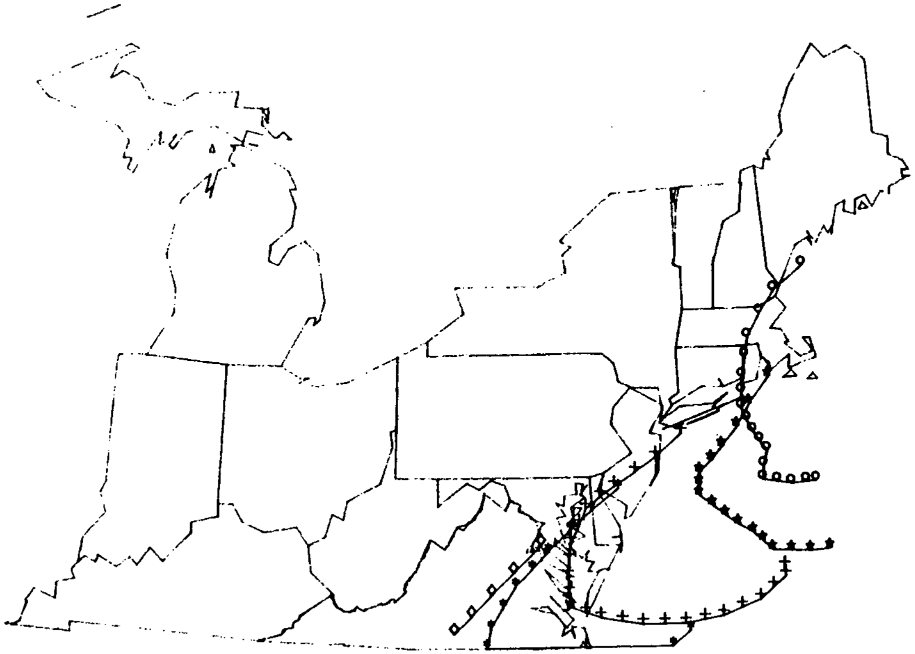
Forward Trajectory for 6 AUG 85
Beginning at 12Z
BOS (○), DCA (◇), NYC (+), PHL (•), RIC (⋆)



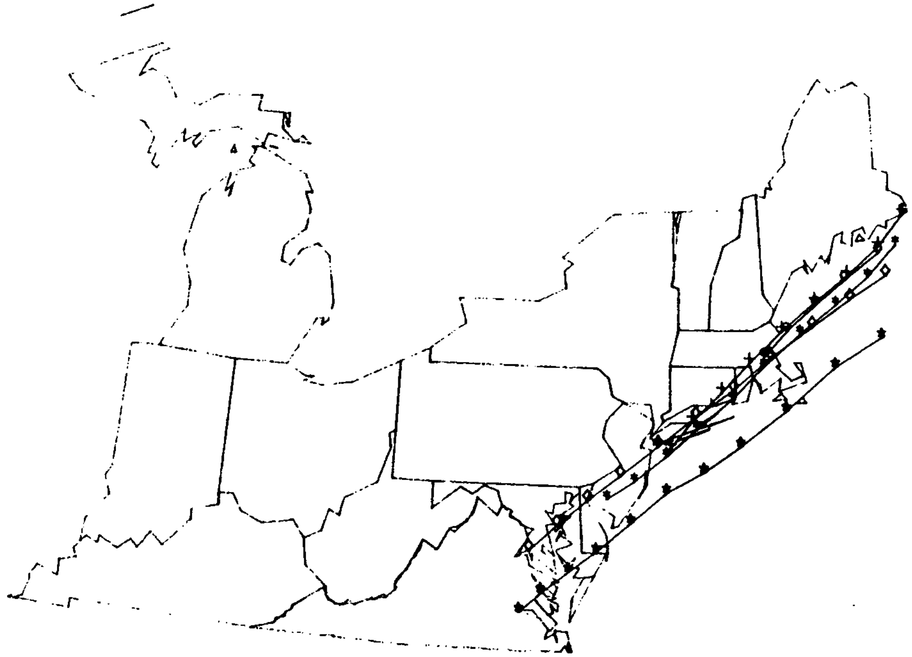
Forward Trajectory for 6 AUG 85
Beginning at 12Z
DET (○), PIT (⋆), CRW (+), DAN (•)



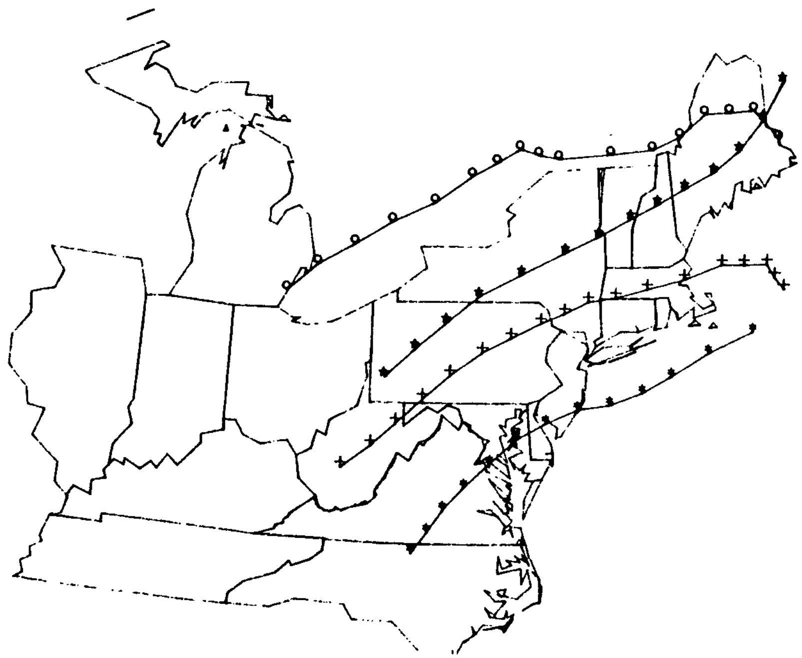
Back Trajectory for 7 AUG 85
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◇)



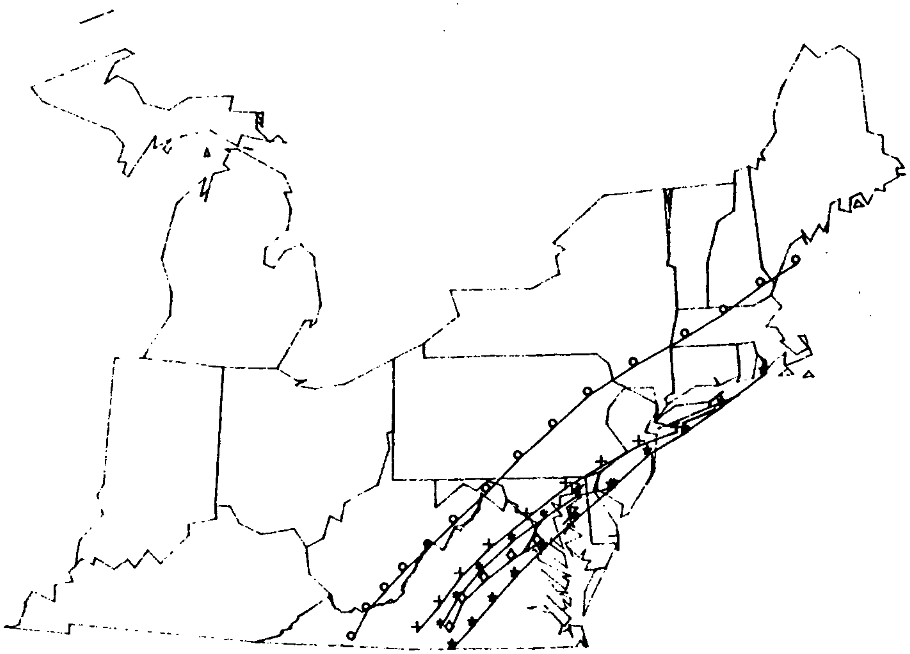
Forward Trajectory for 7 AUG 85
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (•), RIC (*)



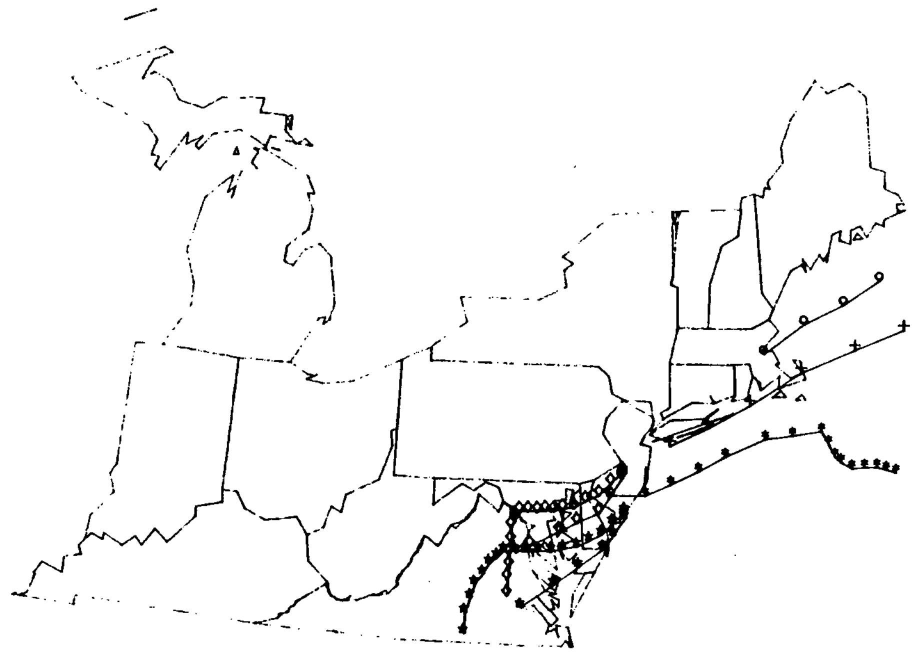
Forward Trajectory for 7 AUG 85
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (•)



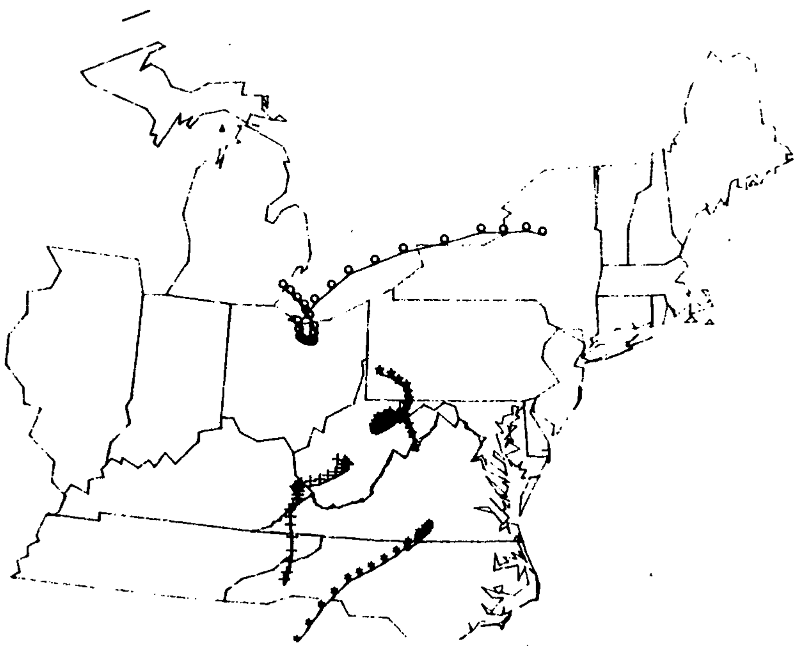
Back Trajectory for 8 AUG 85
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◇)



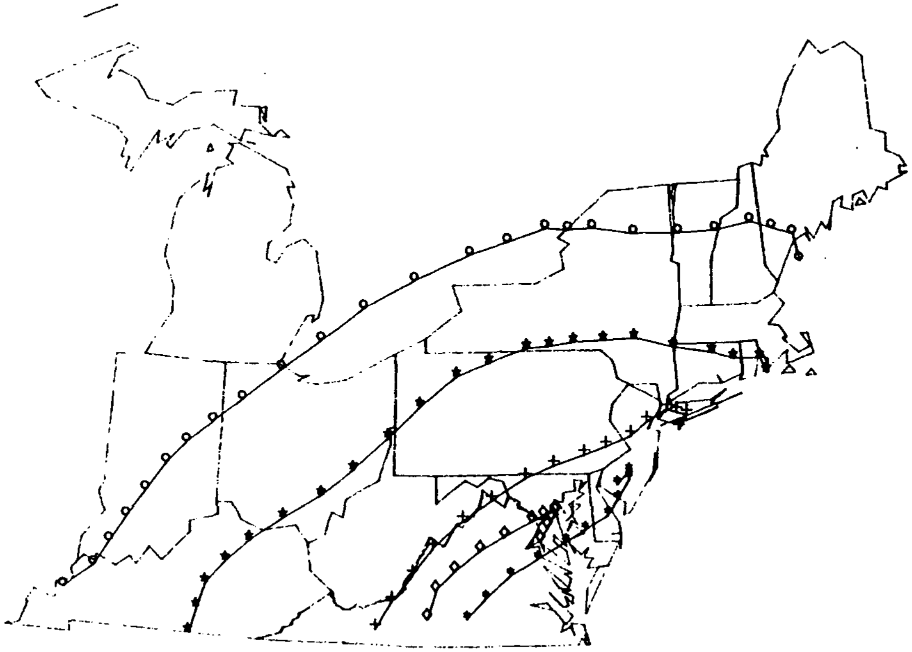
Forward Trajectory for 8 AUG 85
Beginning at 12Z
BOS (o), DCA (◆), NYC (+), PHL (•), RIC (*)



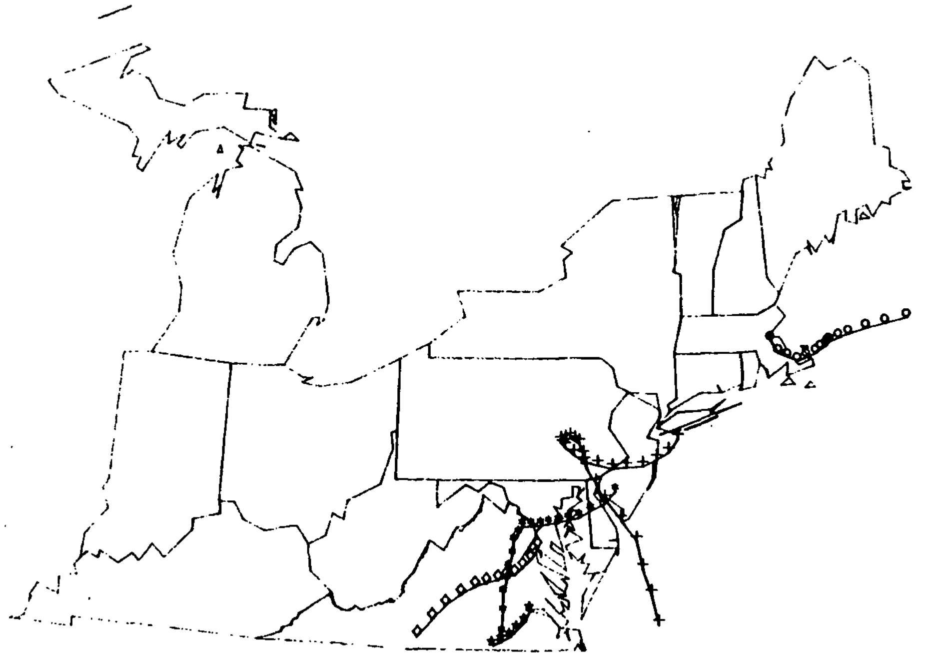
Forward Trajectory for 8 AUG 85
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (•)



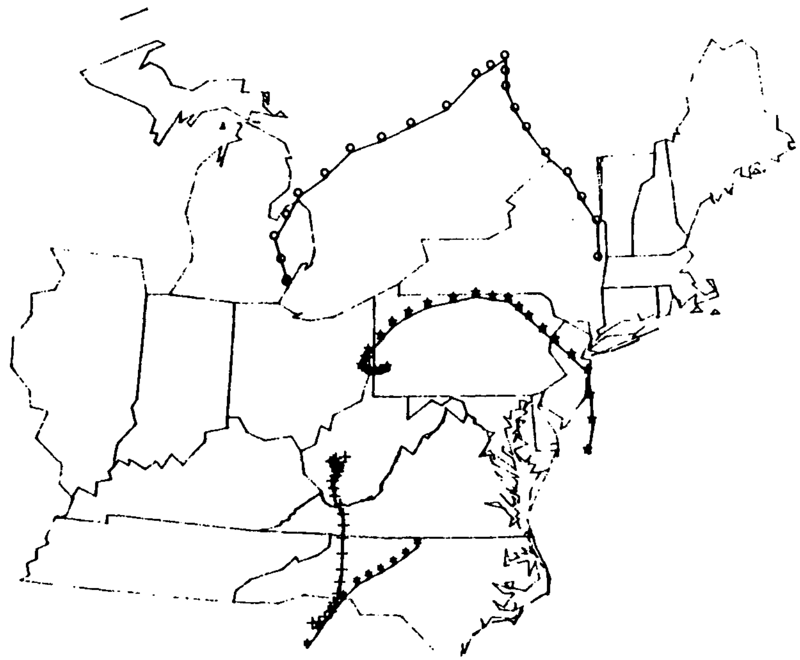
Back Trajectory for 9 AUG 86
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◇)



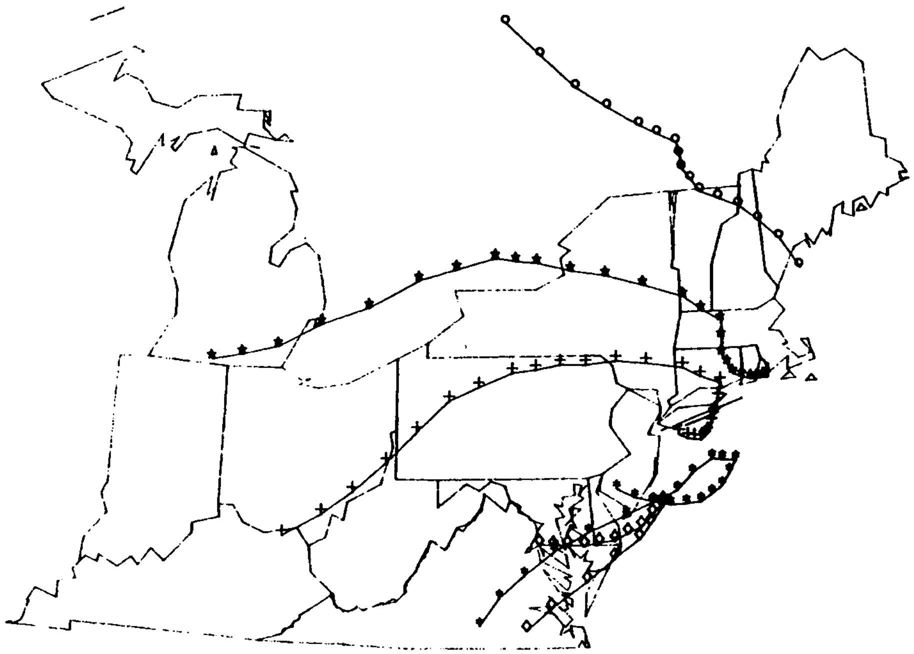
Forward Trajectory for 9 AUG 86
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (•), RIC (*)



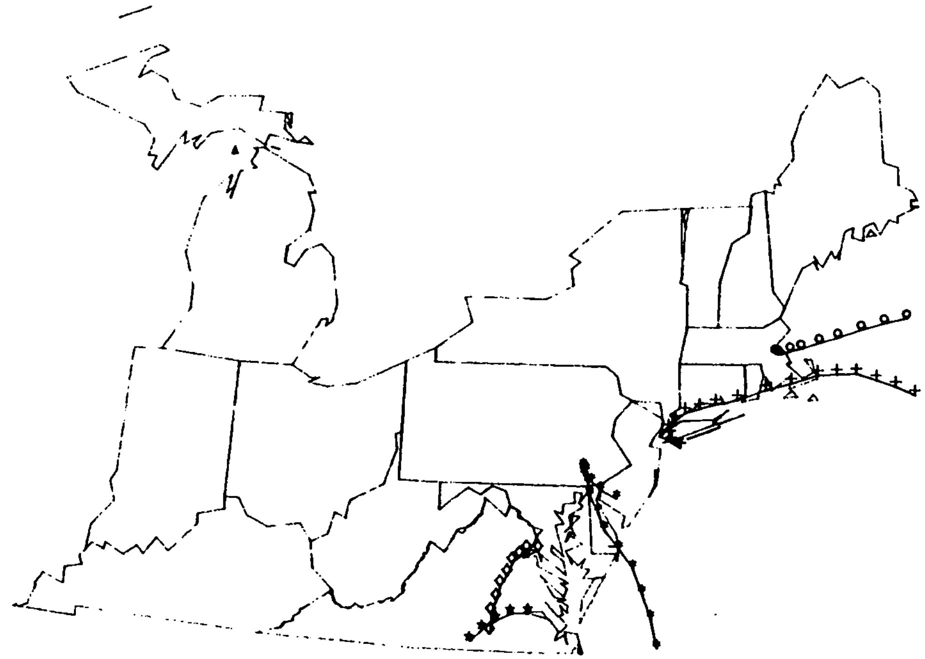
Forward Trajectory for 9 AUG 86
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (•)



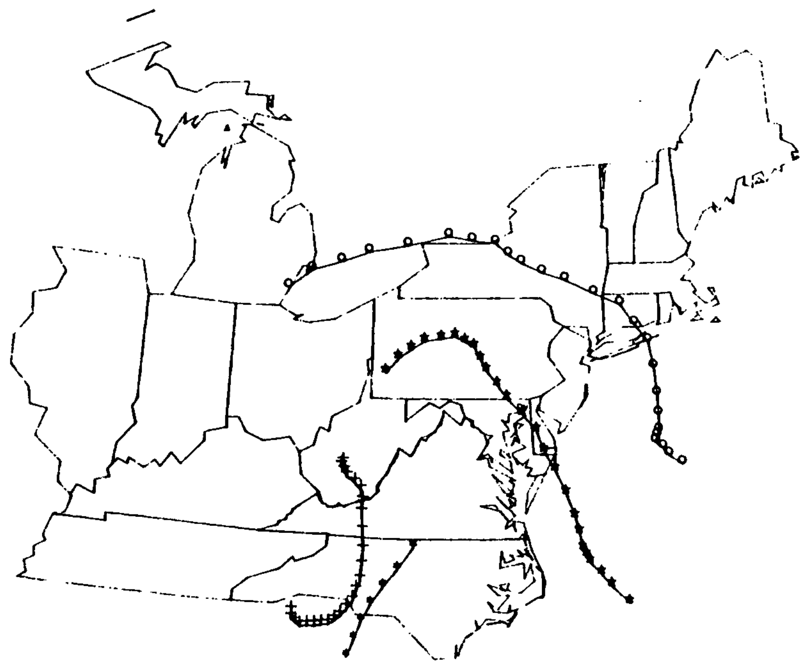
Back Trajectory for 10 AUG 85
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◇)



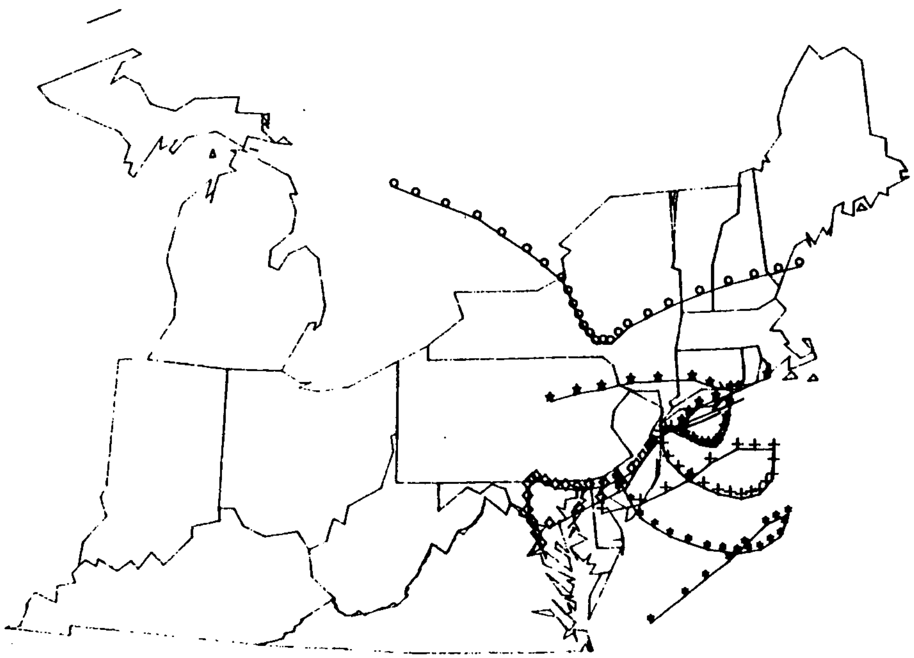
Forward Trajectory for 10 AUG 85
Beginning at 12Z
BOS (*), DCA (◇), NYC (+), PHL (•), RIC (*)



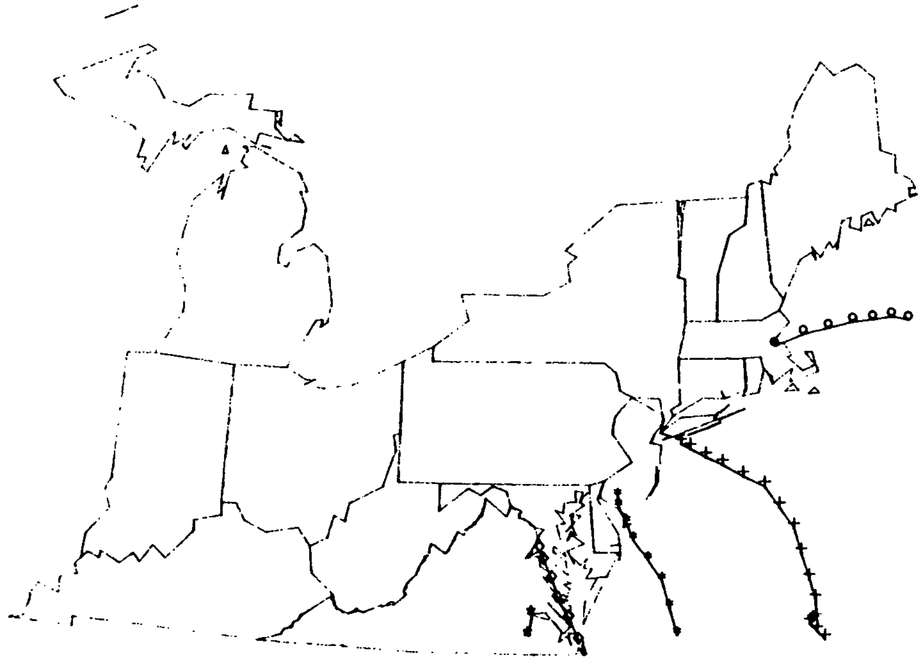
Forward Trajectory for 10 AUG 85
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (•)



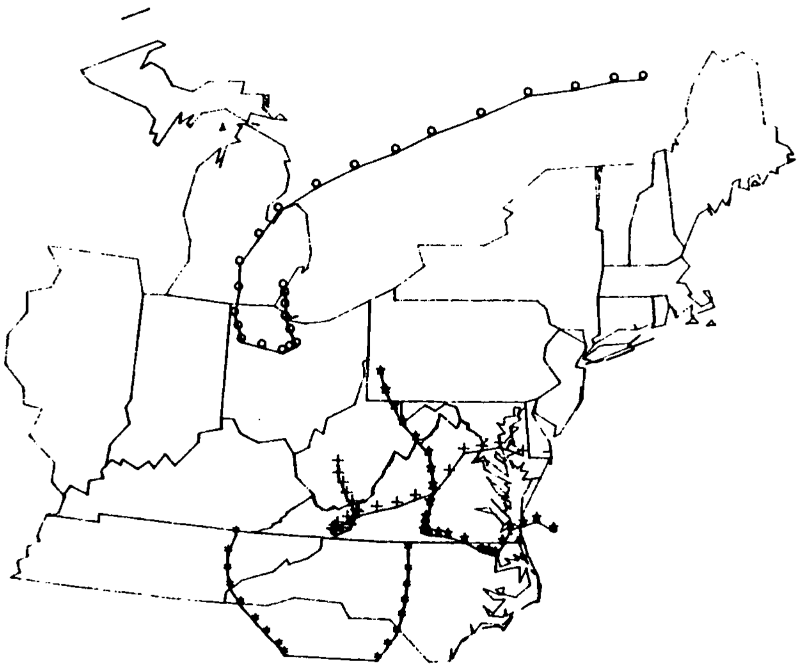
Back Trajectory for 11 AUG 85
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (*), DCA (◊)



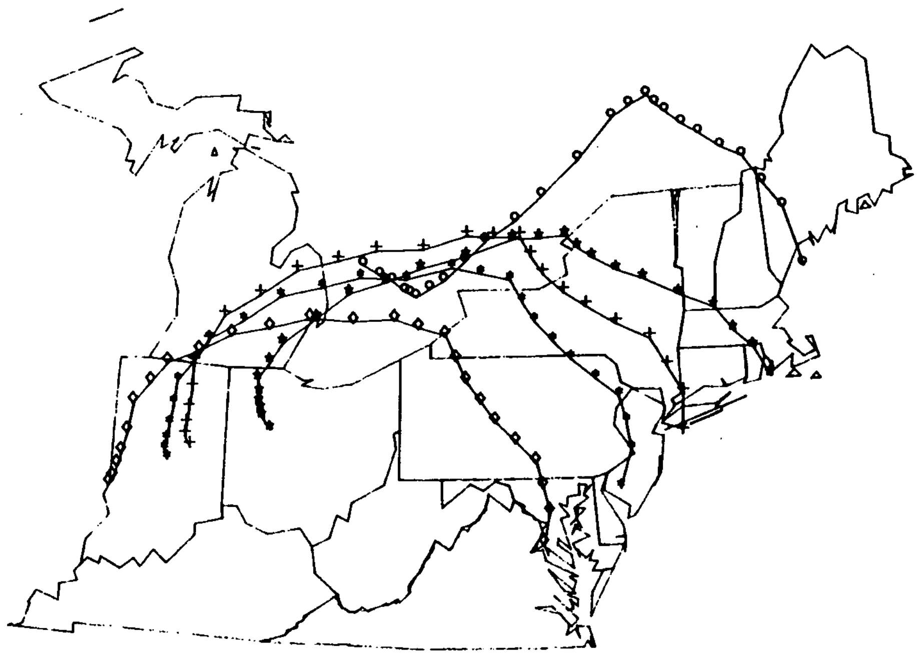
Forward Trajectory for 11 AUG 85
Beginning at 12Z
BOS (o), DCA (◊), NYC (+), PHL (*), RIC (*)



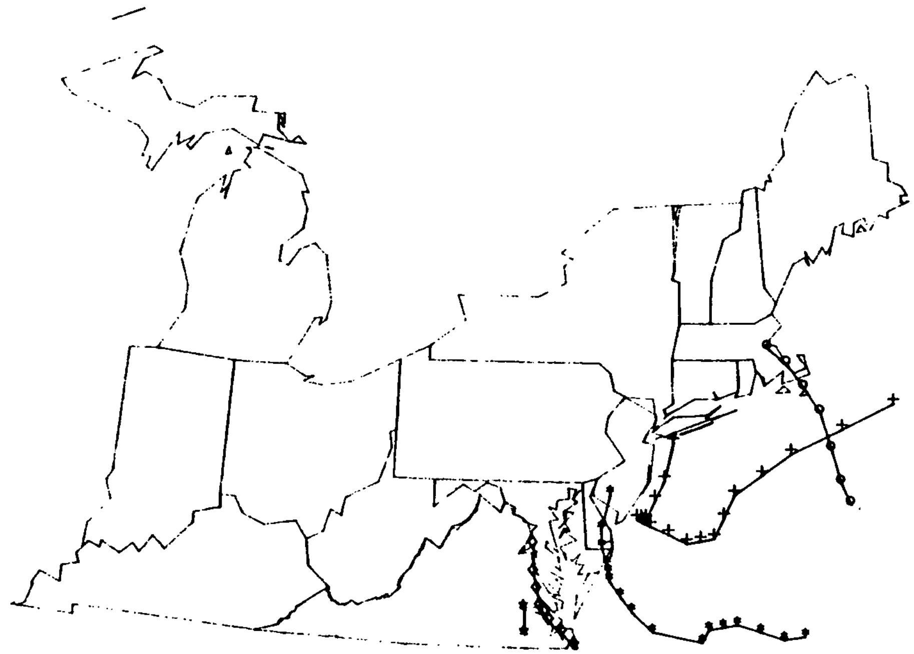
Forward Trajectory for 11 AUG 85
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (*)



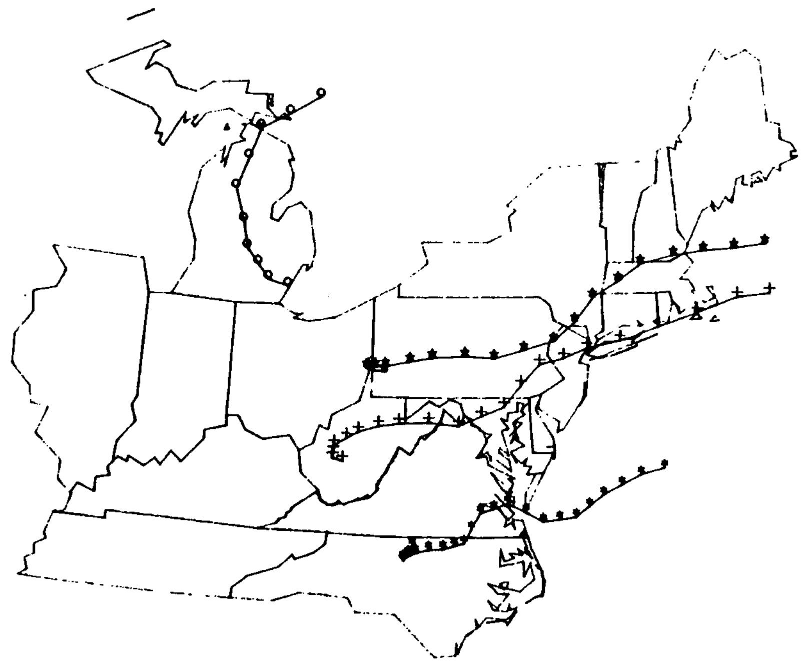
Back Trajectory for 12 AUG 85
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◊)



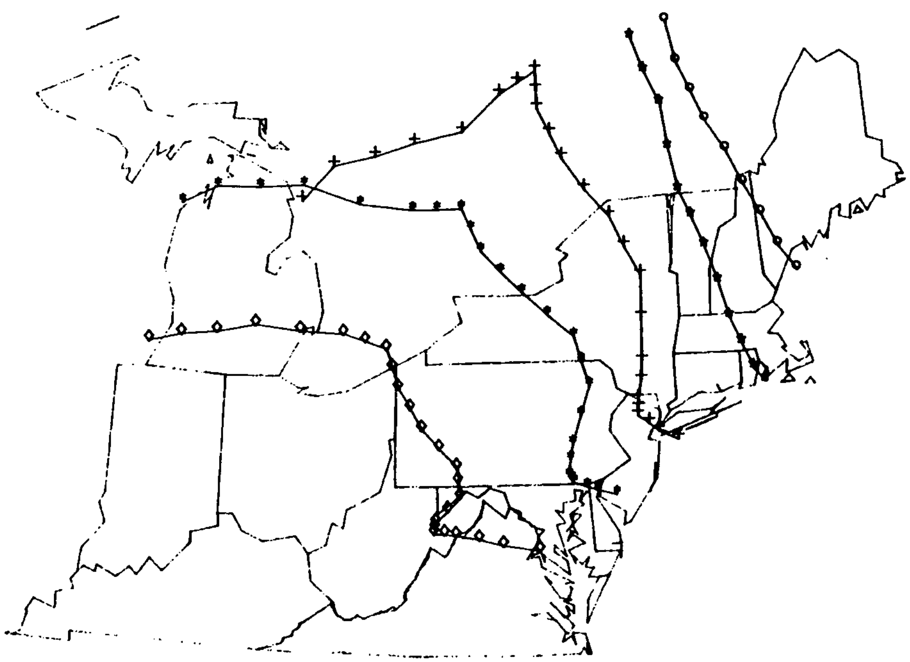
Forward Trajectory for 12 AUG 85
Beginning at 12Z
BOS (o), DCA (◊), NYC (+), PHL (•), RIC (*)



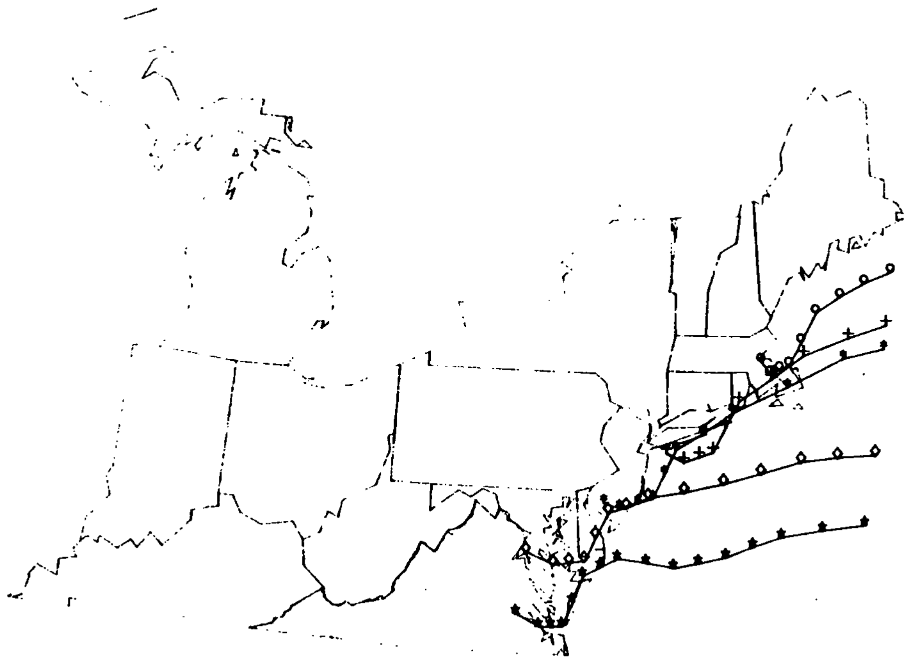
Forward Trajectory for 12 AUG 85
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (•)



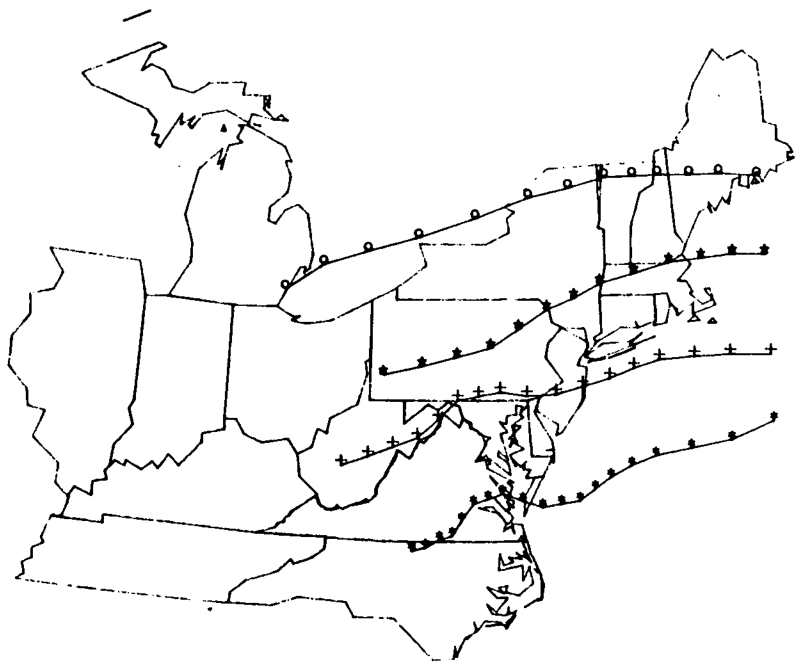
Back Trajectory for 13 AUG 85
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◊)



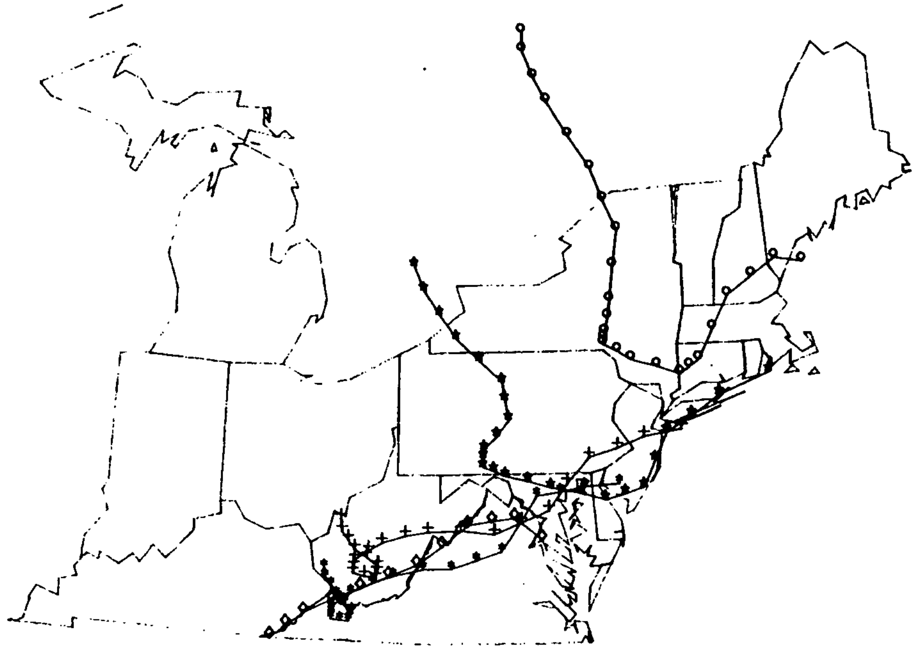
Forward Trajectory for 13 AUG 85
Beginning at 12Z
BOS (o), DCA (◊), NYC (+), PHL (•), RIC (*)



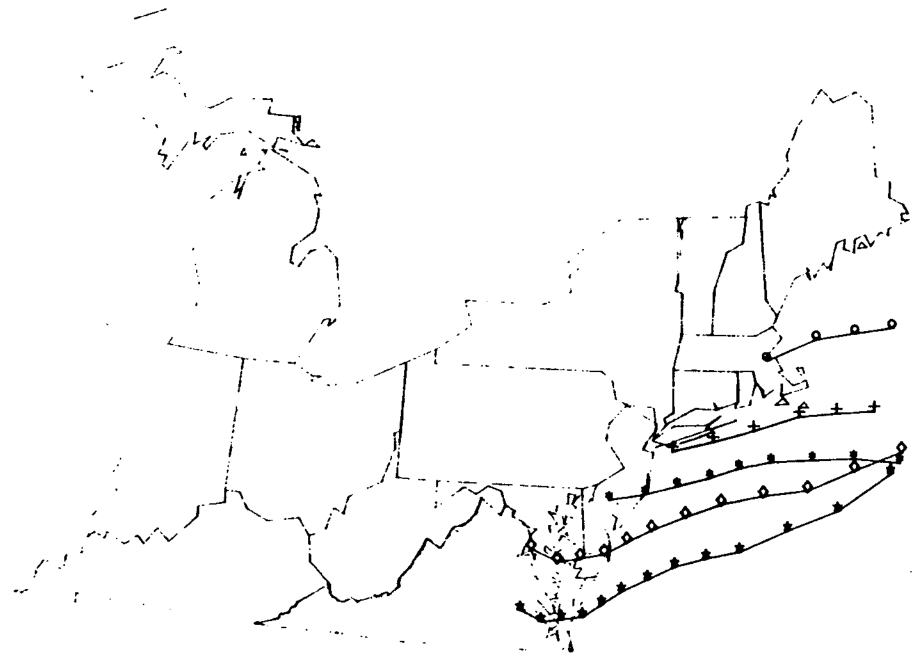
Forward Trajectory for 13 AUG 85
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (•)



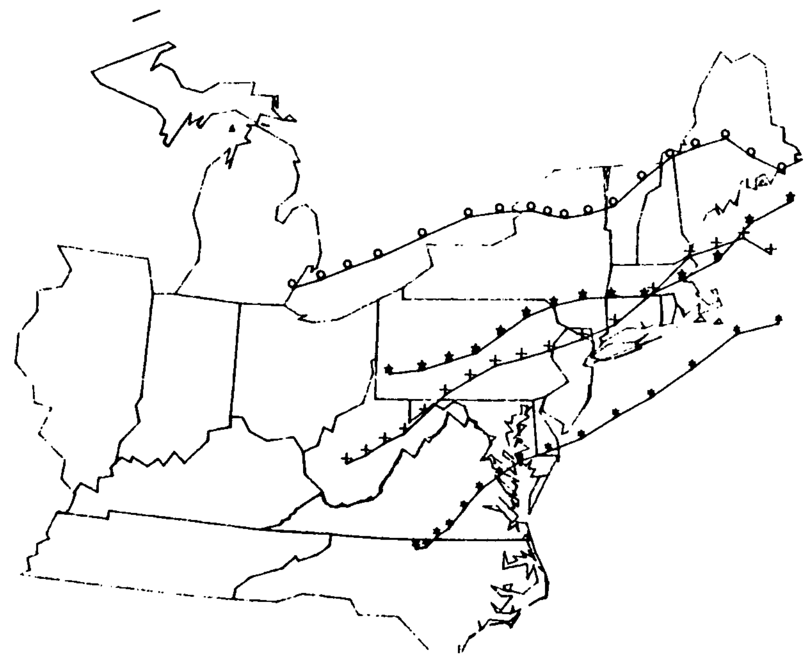
Back Trajectory for 14 AUG 85
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◊)



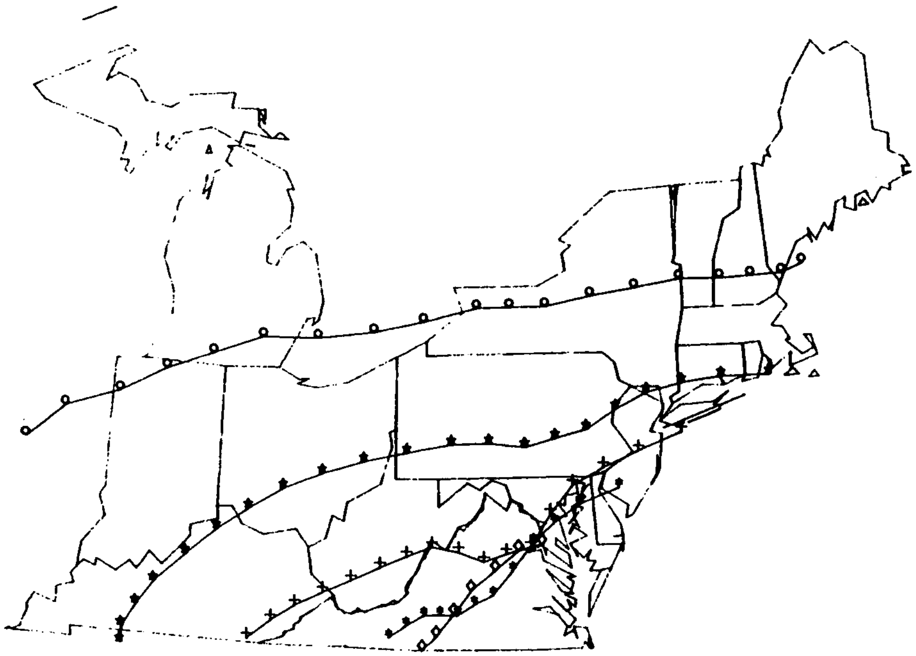
Forward Trajectory for 14 AUG 85
Beginning at 12Z
BOS (o), DCA (◊), NYC (+), PHL (•), RIC (*)



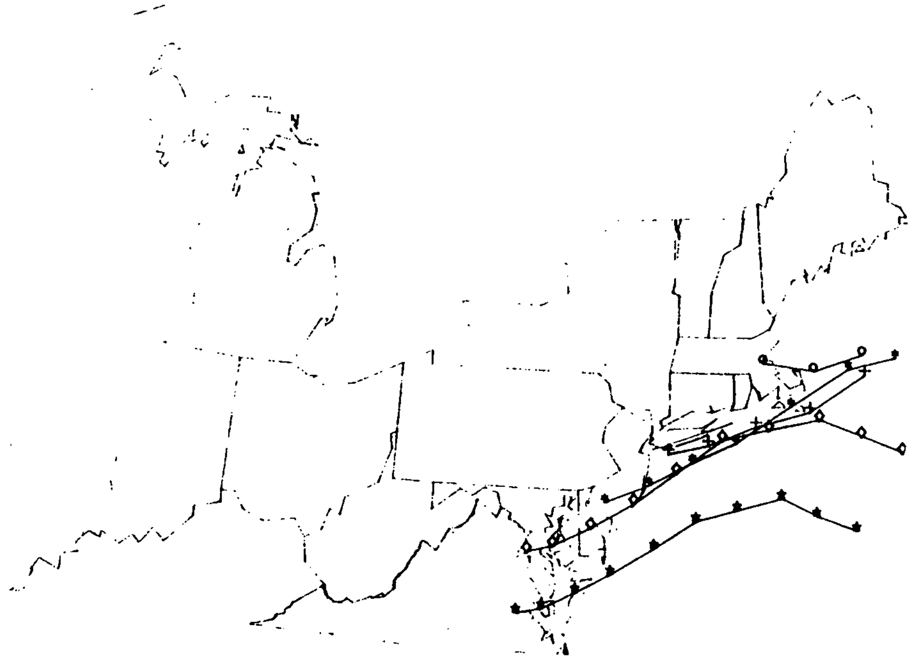
Forward Trajectory for 14 AUG 85
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (•)



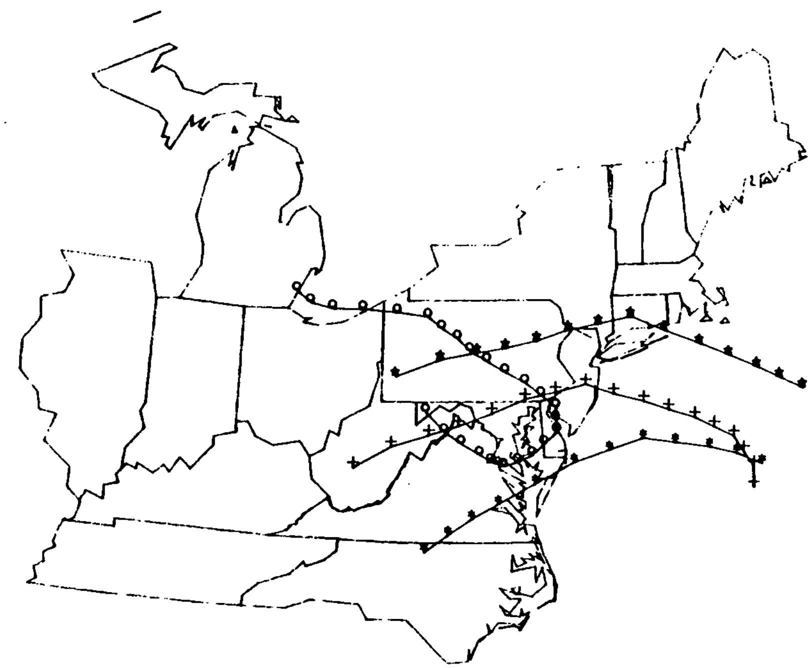
Back Trajectory for 15 AUG 85
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (•), DCA (◇)

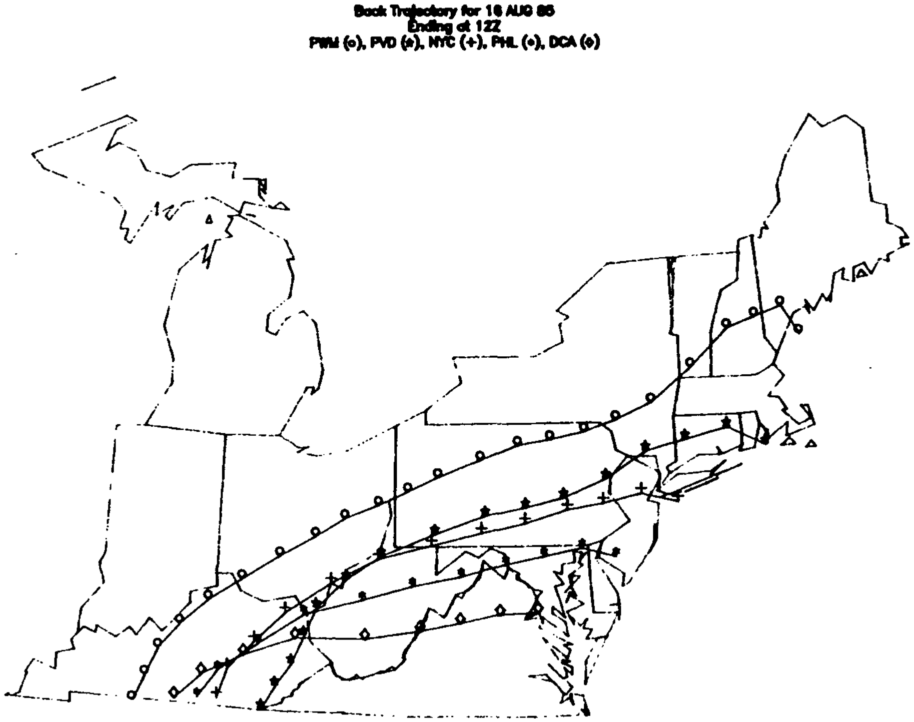


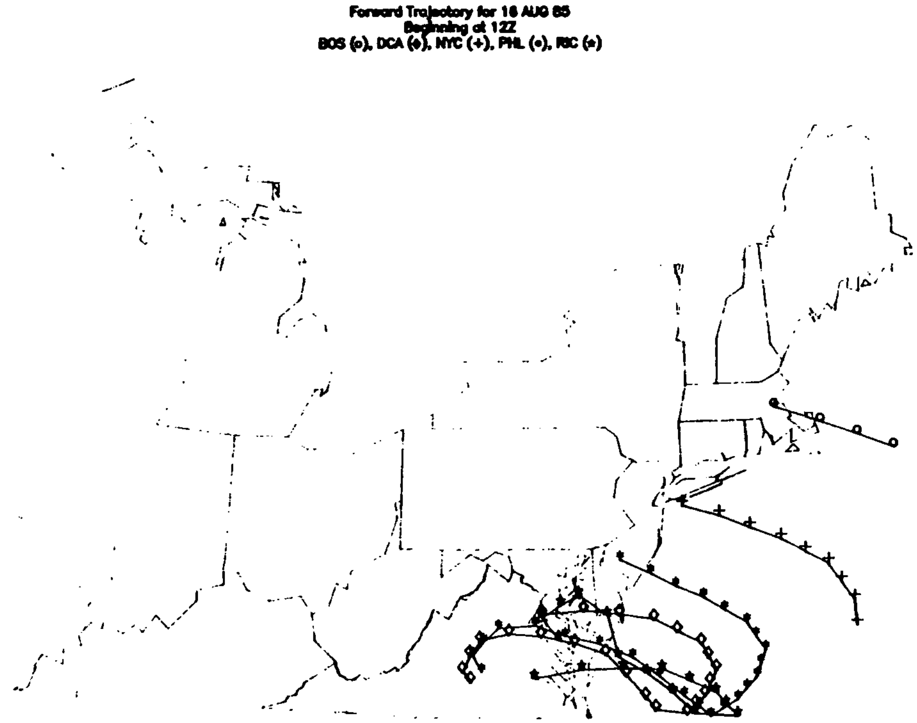
Forward Trajectory for 15 AUG 85
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (•), RIC (*)

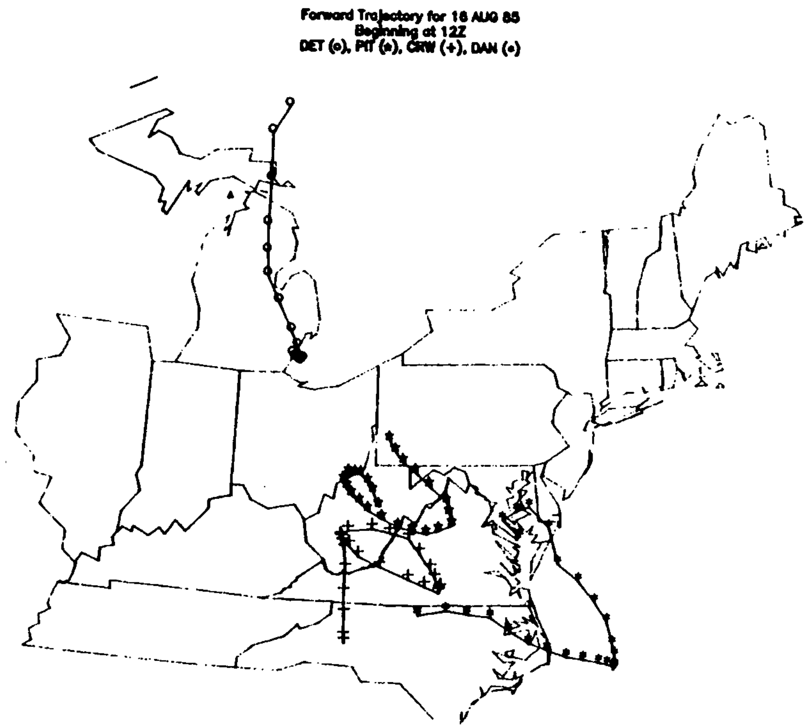


Forward Trajectory for 15 AUG 85
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (•)




Back Trajectory for 16 AUG 85
Ending at 12Z
PWM (o), PVD (*), NYC (+), PHL (*), DCA (◇)


Forward Trajectory for 16 AUG 85
Beginning at 12Z
BOS (o), DCA (◇), NYC (+), PHL (*), RIC (*)


Forward Trajectory for 16 AUG 85
Beginning at 12Z
DET (o), PIT (*), CRW (+), DAN (*)

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JULY 1988

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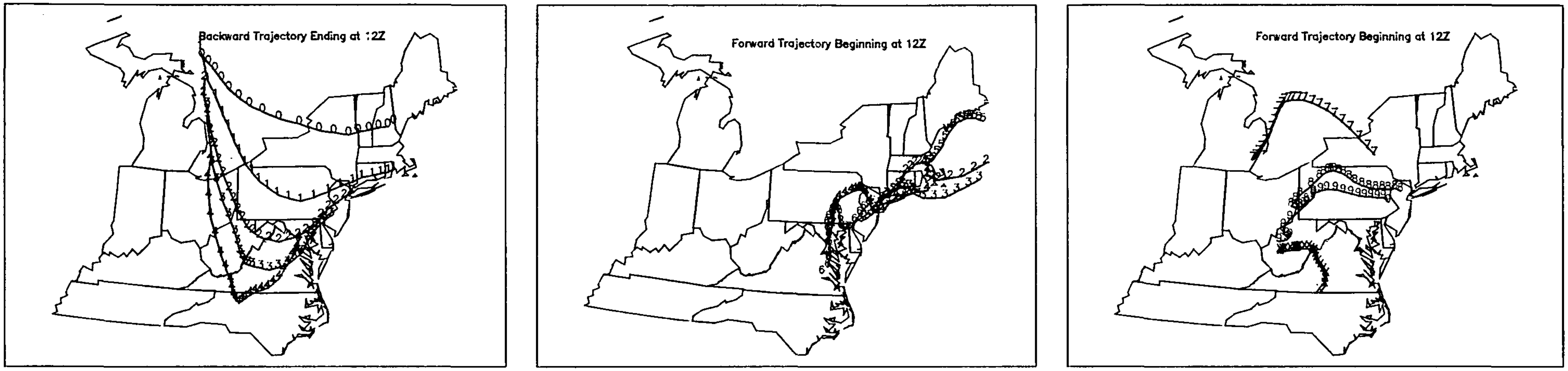
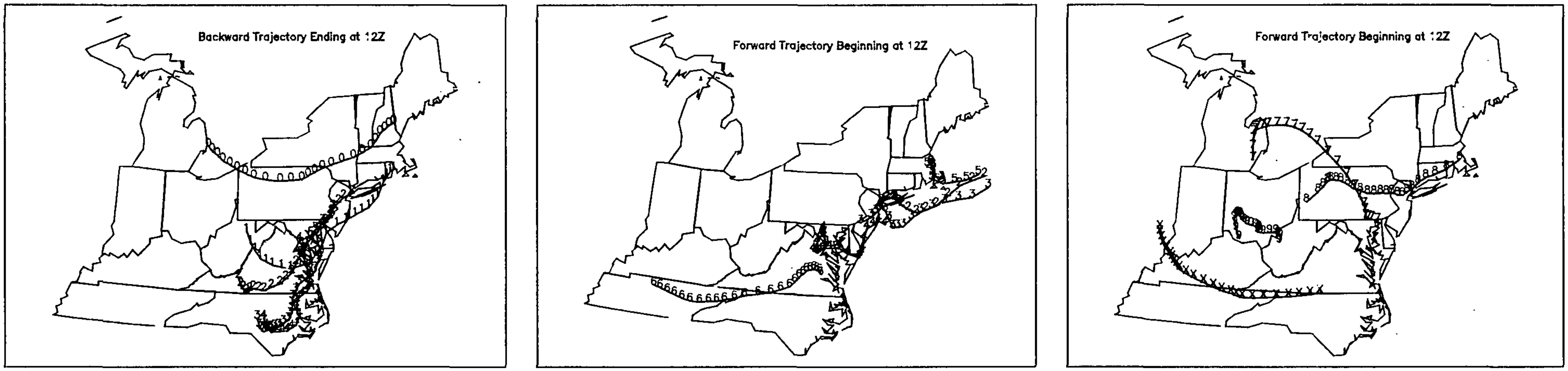
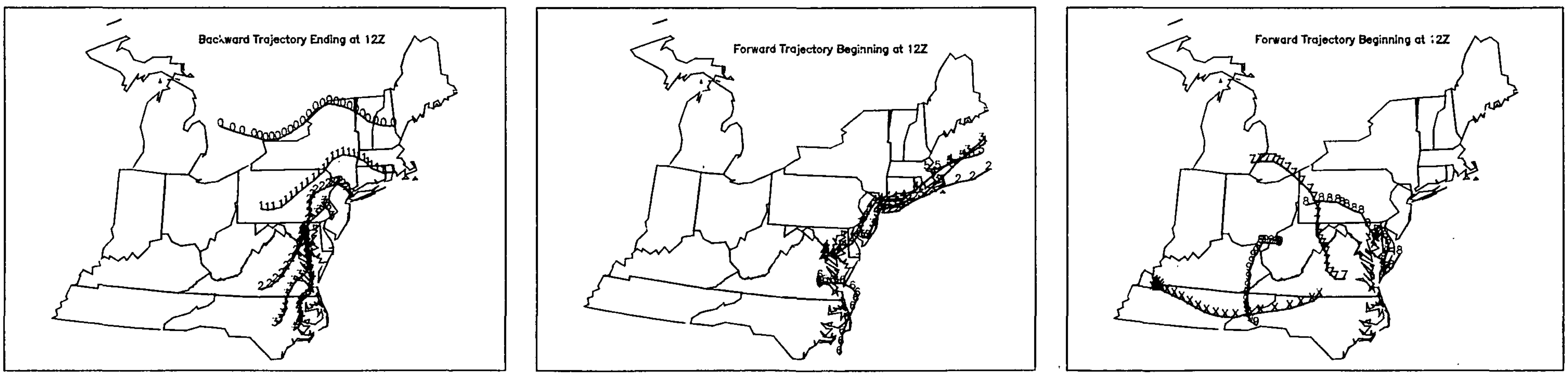
4 JUL 88



5 JUL 88



6 JUL 88



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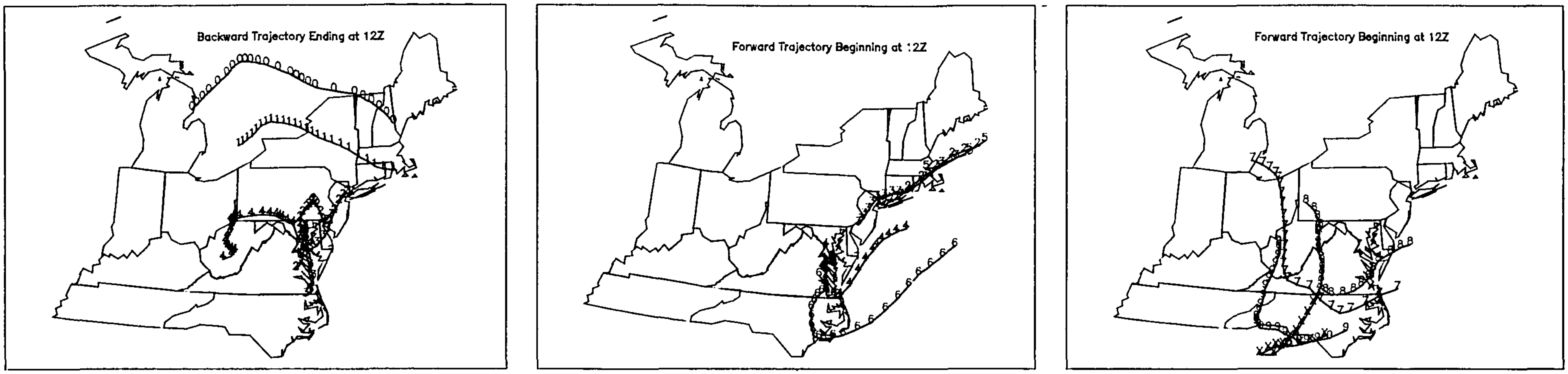

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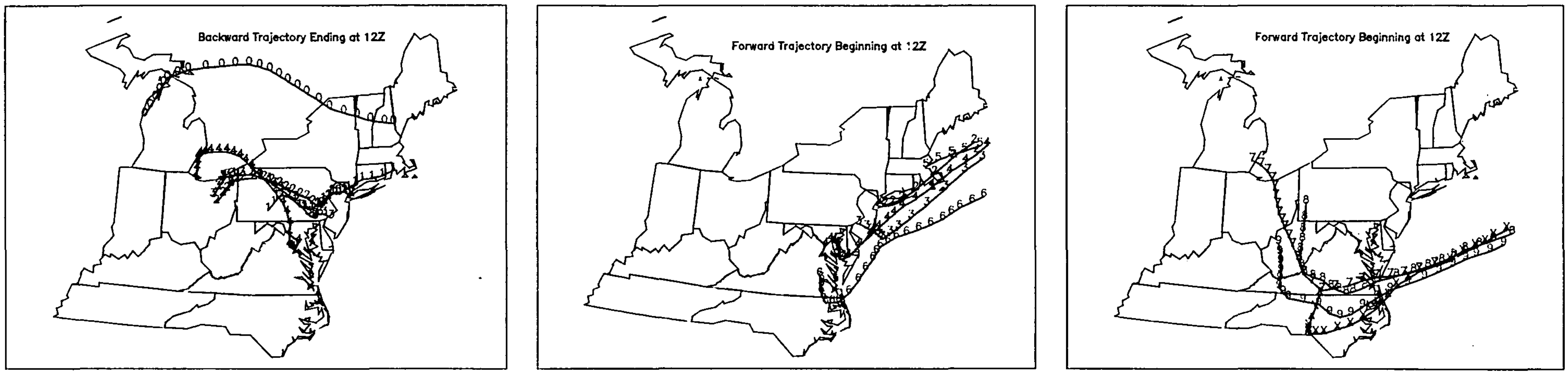

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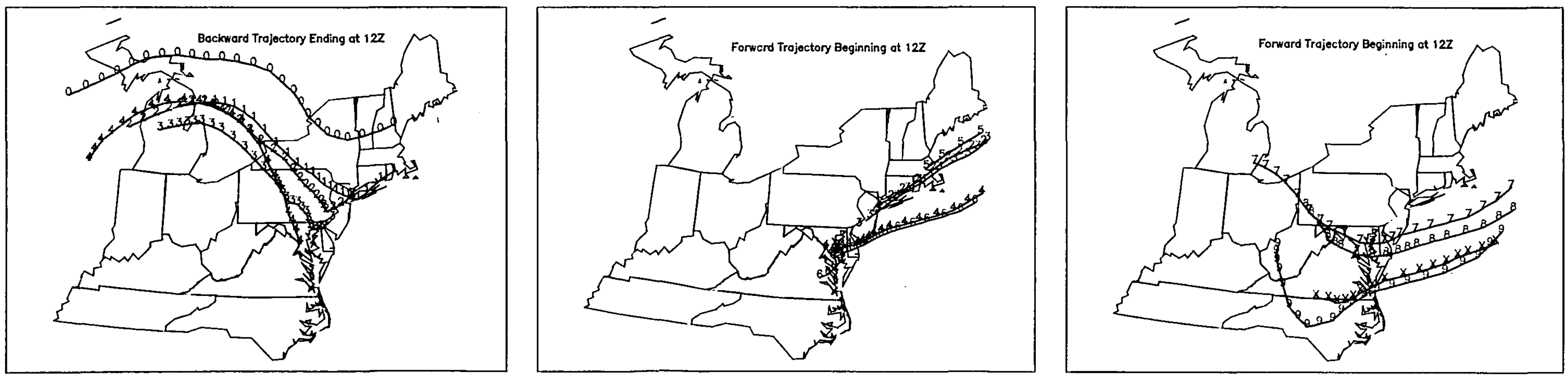

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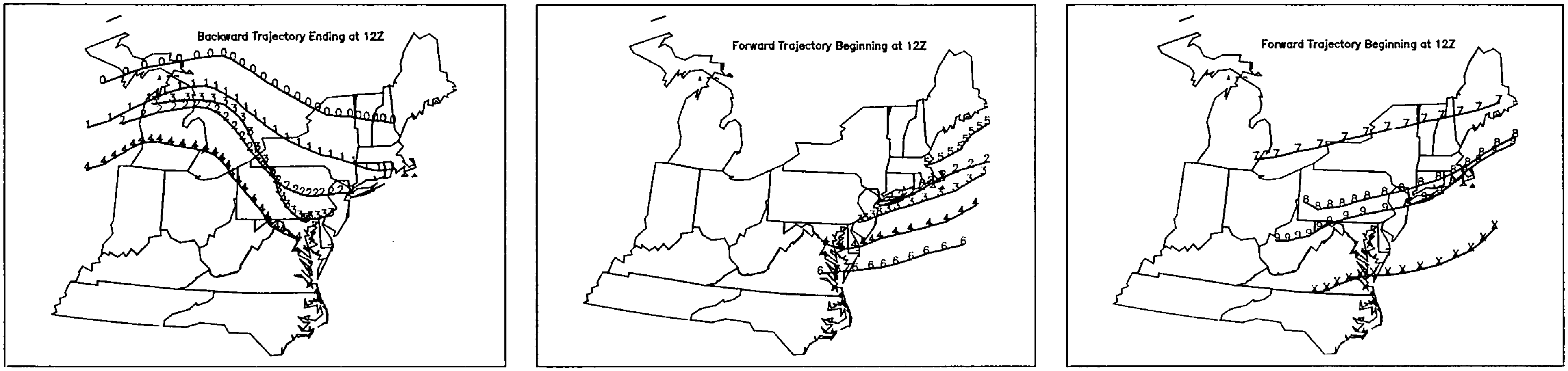

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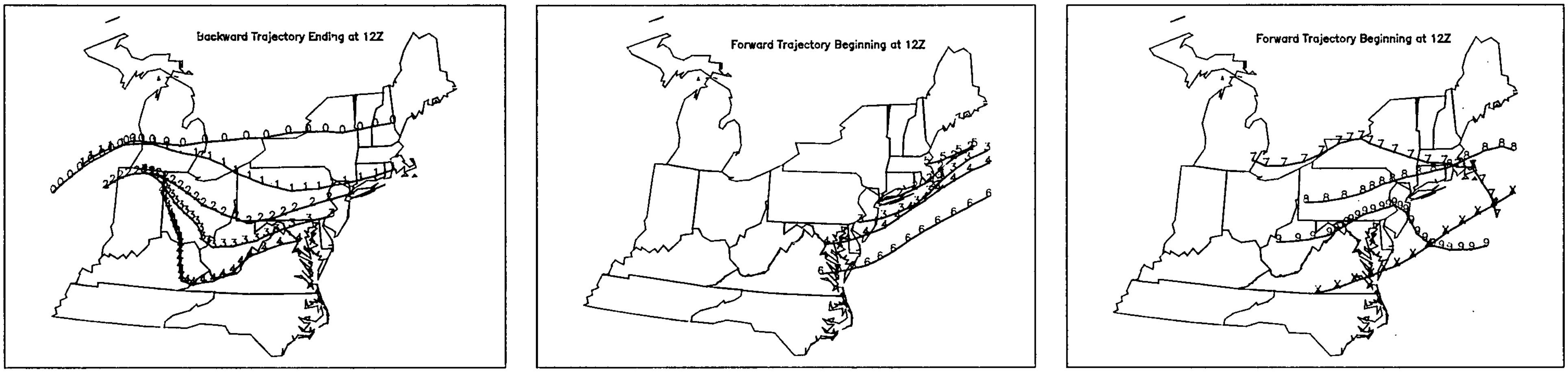

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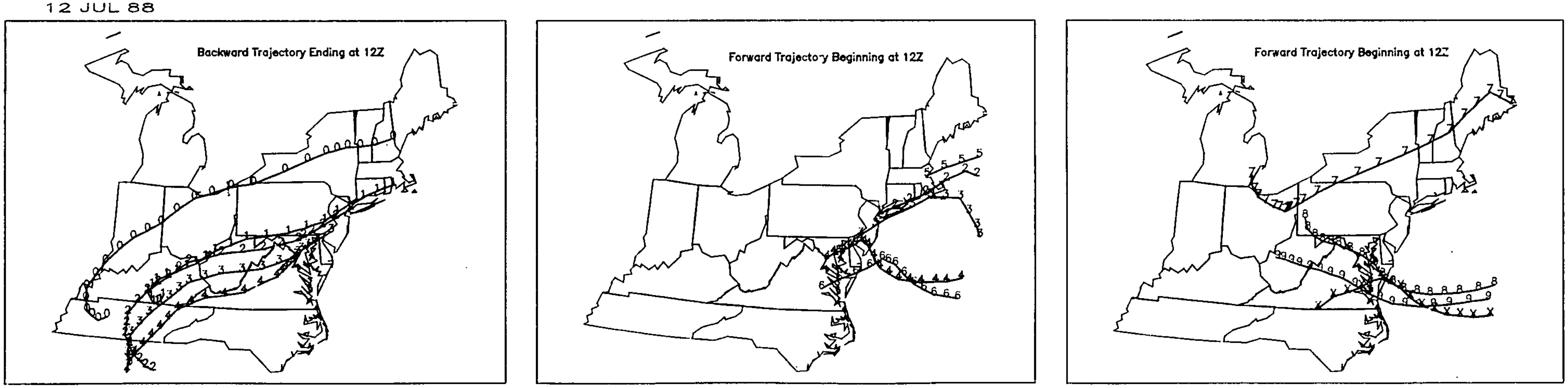

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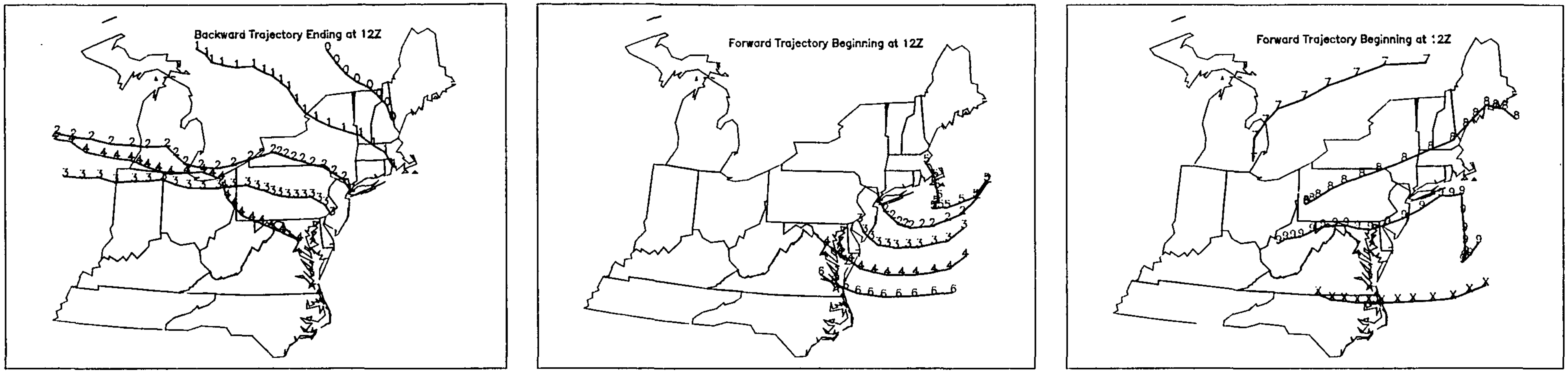

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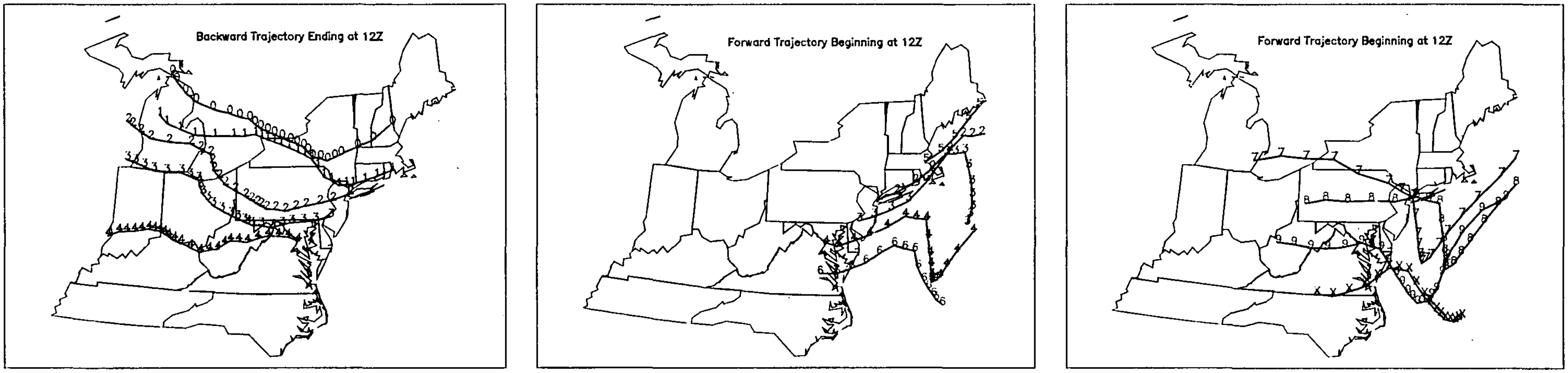

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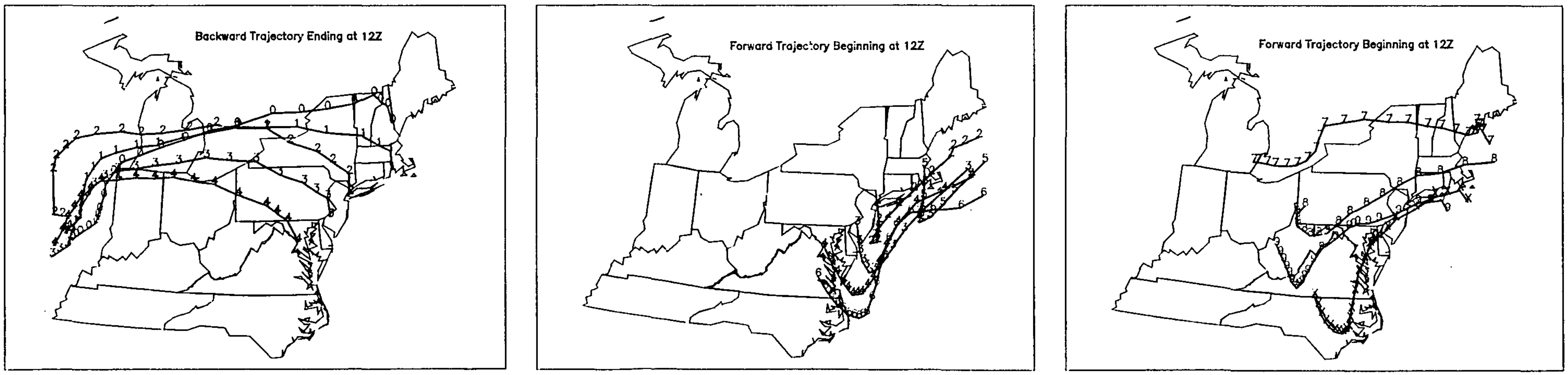

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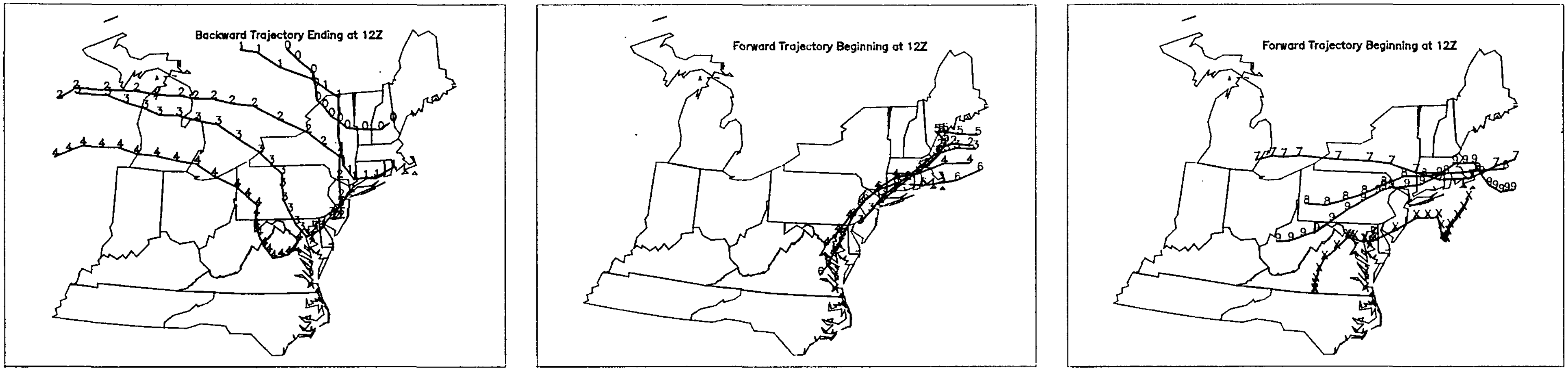

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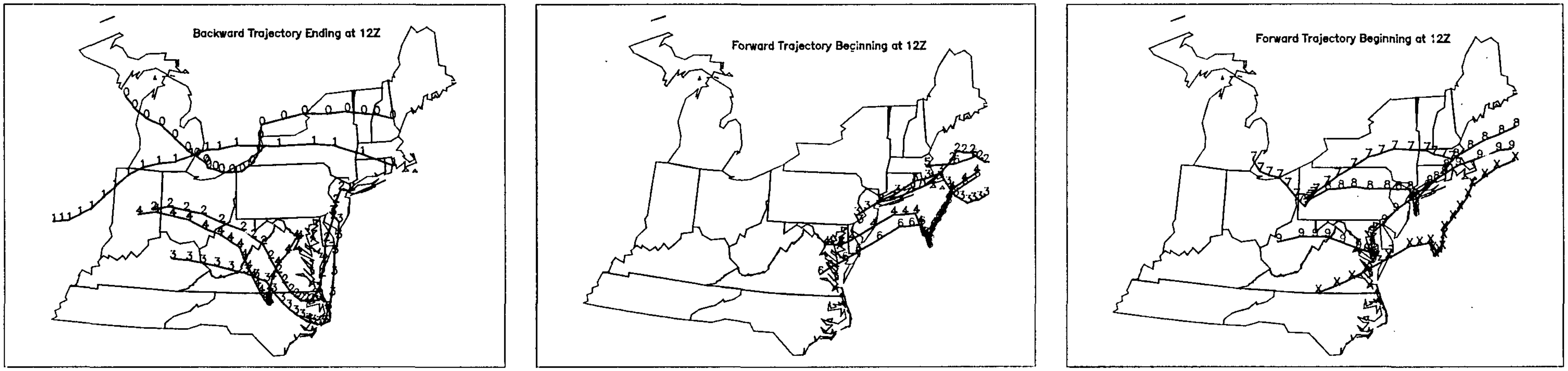

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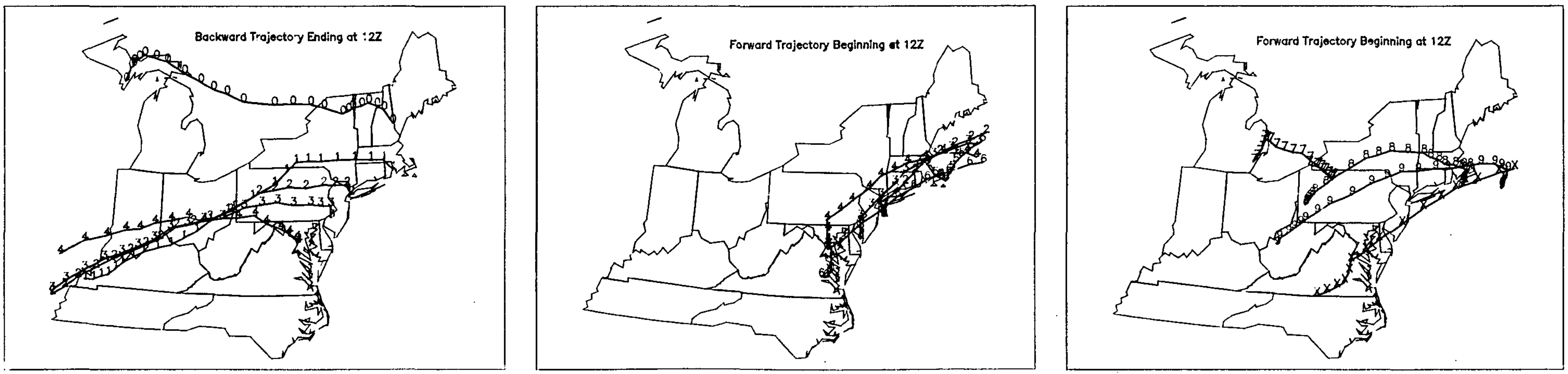

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APPENDIX G

MOBILE4 EMISSION FACTOR TEMPERATURE ADJUSTMENTS

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TABLE G-1. COMPOSITE MOBILE4 EMISSION FACTORS FOR DIFFERENT TEMPERATURES [NO INSPECTION/MAINTENANCE (I/M) PROGRAM]

	Mean temperature (°F)		Emission factor (g/mile)					
			VOC					
Year	Daily	Range	Total	Evapo-rative	Gas exhaust	Diesel exhaust	NO_x	CO
1985	40	0	2.863	0.533	2.252	0.078	4.029	27.711
1985	40	10	2.931	0.676	2.177	0.078	3.987	26.947
1985	40	20	3.124	0.902	2.144	0.078	3.968	26.602
1985	40	30	3.297	1.103	2.116	0.078	3.951	26.312
1985	40	40	3.474	1.300	2.096	0.078	3.939	26.097
1985	45	0	2.914	0.706	2.130	0.078	3.960	26.456
1985	45	10	3.036	0.896	2.062	0.078	3.919	25.745
1985	45	20	3.230	1.124	2.028	0.078	3.898	25.378
1985	45	30	3.453	1.374	2.001	0.078	3.880	25.086
1985	45	40	3.679	1.620	1.981	0.078	3.867	24.864
1985	50	0	3.020	0.922	2.020	0.078	3.892	25.288
1985	50	10	3.153	1.116	1.959	0.078	3.853	24.625
1985	50	20	3.359	1.355	1.926	0.078	3.830	24.261
1985	50	30	3.594	1.617	1.899	0.078	3.813	23.968
1985	50	40	3.861	1.906	1.877	0.078	3.797	23.721
1985	55	0	3.135	1.137	1.920	0.078	3.826	24.198
1985	55	10	3.285	1.342	1.865	0.078	3.788	23.578
1985	55	20	3.501	1.590	1.833	0.078	3.766	23.218
1985	55	30	3.752	1.868	1.806	0.078	3.746	22.905
1985	55	40	4.066	2.203	1.785	0.078	3.730	22.656
1985	60	0	3.262	1.354	1.830	0.078	3.763	23.179
1985	60	10	3.430	1.572	1.780	0.078	3.726	22.599
1985	60	20	3.664	1.838	1.748	0.078	3.702	22.224
1985	60	30	3.988	2.187	1.723	0.078	3.683	21.932
1985	60	40	4.397	2.622	1.697	0.078	3.665	21.572
1985	65	0	3.395	1.569	1.748	0.078	3.702	22.224
1985	65	10	3.585	1.806	1.701	0.078	3.665	21.663
1985	65	20	3.923	2.174	1.671	0.078	3.642	21.293
1985	65	30	4.301	2.581	1.642	0.078	3.622	20.889
1985	65	40	4.818	3.122	1.618	0.078	3.605	20.533

(continued)

TABLE G-1 (concluded)

	Mean temperature (°F)		Emission factor (g/mile)					
			VOC					
Year	Daily	Range	Total	Evapo-rative	Gas exhaust	Diesel exhaust	NO_x	CO
1985	70	0	3.538	1.786	1.673	0.078	3.643	21.330
1985	70	10	3.865	2.159	1.628	0.078	3.608	20.743
1985	70	20	4.226	2.546	1.602	0.078	3.582	20.403
1985	70	30	4.788	3.089	1.621	0.078	3.530	20.962
1985	70	40	5.670	3.954	1.638	0.078	3.486	21.491
1985	75	0	3.833	2.153	1.601	0.078	3.587	20.385
1985	75	10	4.219	2.505	1.636	0.078	3.503	21.393
1985	75	20	4.849	3.108	1.663	0.078	3.444	22.217
1985	75	30	5.687	3.923	1.686	0.078	3.394	22.987
1985	75	40	6.952	5.167	1.707	0.078	3.351	23.716
1985	80	0	4.198	2.461	1.659	0.078	3.454	22.103
1985	80	10	4.920	3.143	1.699	0.078	3.377	23.372
1985	80	20	5.768	3.959	1.731	0.078	3.320	24.467
1985	80	30	6.971	5.133	1.760	0.078	3.272	25.494
1985	80	40	8.260	6.394	1.788	0.078	3.228	26.543
1985	85	0	4.979	3.175	1.726	0.078	3.331	24.264
1985	85	10	5.927	4.078	1.771	0.078	3.261	25.845
1985	85	20	7.021	5.133	1.809	0.078	3.206	27.272
1985	85	30	8.192	6.268	1.846	0.078	-3.158	28.697
1985	85	40	9.564	7.608	1.878	0.078	3.118	30.016
1985	90	0	6.020	4.141	1.801	0.078	3.218	26.950
1985	90	10	7.036	5.106	1.852	0.078	3.153	28.904
1985	90	20	8.086	6.110	1.898	0.078	3.101	30.726
1985	90	30	9.360	7.344	1.937	0.078	3.055	32.506
1985	90	40	11.236	9.182	1.976	0.078	3.014	34.270
1985	95	0	6.970	5.005	1.887	0.078	3.115	30.265
1985	95	10	7.872	5.854	1.940	0.078	3.055	32.562
1985	95	20	9.060	6.990	1.992	0.078	3.003	34.930
1985	95	30	10.975	8.856	2.041	0.078	2.958	37.258
1985	95	40	14.777	12.610	2.089	0.078	2.919	39.586

APPENDIX H

STATE SUMMARIES OF 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY*

* Categories with emissions ≤ 0.005 tons/day are denoted as 0.00, but are included in category totals.

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TABLE H-1. CONNECTICUT 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.27	0.02
	Commercial/institutional--distillate oil	0.08	2.58	0.65
	Commercial/institutional--natural gas	0.05	1.96	0.39
	Commercial/institutional--residual oil	0.03	0.92	0.08
	Industrial fuel--bituminous coal	0.00	0.31	0.04
	Industrial fuel--distillate oil	0.14	2.08	0.49
	Industrial fuel--natural gas	0.05	4.83	1.10
	On-site incineration--comm./inst.	0.00	0.01	0.03
	On-site incineration--residential	2.09	0.12	31.93
	Open burning--residential	6.26	1.19	19.87
	Residential fuel--anthracite	0.00	0.00	0.03
	Residential fuel--distillate oil	0.03	0.42	0.12
	Residential fuel--natural gas	0.00	0.20	0.04
	Residential fuel--wood	2.40	0.13	11.05
	ALL	**11.13**	**15.01**	**65.83**
Fires	Structural fires	1.96	0.25	10.65
	ALL	**1.96**	**0.25**	**10.65**
Gas marketing	Bulk gasoline terminals/plants	15.17	0.00	0.00
	Gasoline marketing	53.40	0.00	0.00
	ALL	**68.56**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.83	0.29	14.90
	Aircraft landings/takeoffs--commercial	1.90	2.45	6.69
	Aircraft landings/takeoffs--military	0.28	0.11	0.53
	Off-highway diesels	0.55	3.40	1.03
	Off-highway gasoline vehicles	16.92	5.19	148.47
	Railroad locomotives	0.25	1.20	0.36
	Vessels--coal	6.06	0.28	21.59
	Vessels--diesel	0.07	0.27	0.09
	ALL	**26.86**	**13.00**	**193.67**
Other	Bakeries	1.33	0.00	0.00
	Cutback asphalt paving	5.42	0.00	0.00
	Oil/gas production fields	2.69	0.00	0.00
	Pharmaceuticals manufacture	1.08	0.00	0.00
	Publicly-owned treatment works	0.41	0.00	0.00
	Synthetic fibers manufacturing	0.26	0.00	0.00
	SOCMI fugitives	7.31	0.00	0.00
	ALL	**18.49**	**0.00**	**0.00**
Solvent use	Architectural coating	43.76	0.00	0.00
	Auto body repair	7.49	0.00	0.00
	Degreasing	37.95	0.00	0.00
	Dry cleaning	14.23	0.00	0.00
	Electrical equipment mfg.--coating	1.03	0.00	0.00
	Fabricated metals--coating	8.02	0.00	0.00
	Flat wood product coating	0.50	0.00	0.00
	Furniture mfg.--coating	3.44	0.00	0.00
	Graphic arts and printing	11.54	0.00	0.00
	Machinery manufacturing--coating	3.43	0.00	0.00
	Miscellaneous industrial mfg.--coating	49.07	0.00	0.00
	Miscellaneous nonindustrial solvents	97.52	0.00	0.00
	Motor vehicle manufacturing--coating	1.01	0.00	0.00
	Other transportation equipment coating	0.89	0.00	0.00

(continued)

TABLE H-1. (concluded)

Source Category		Emissions, tons/day VOC	NO_x	CO
	Paper coating	14.89	0.00	0.00
	Rubber and plastics mfg.--solvent	25.08	0.00	0.00
	Ship coating	1.73	0.00	0.00
	ALL	**321.55**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	17.07	0.00	0.00
	ALL	**17.07**	**0.00**	**0.00**
	ALL AREA SOURCES	**465.62**	**28.25**	**270.15**
MOBILE SOURCES:				
	Diesel	4.45	--	--
	Evaporative	356.77	--	--
	Exhaust	121.61	--	--
	ALL MOBILE SOURCES	**482.83**	**201.36**	**1666.20**
POINT SOURCES:				
Chem. Proc.	Polyethylene manufacturing	0.40	0.00	0.00
	Rubber tire manufacturing	0.74	0.00	0.00
	Styrene-butadine rubber mfg.	0.12	0.00	0.00
	ALL	**1.26**	**0.00**	**0.00**
Ind./Inst.	Commercial/institutional--gas	0.00	0.44	0.10
	Commercial/institutional--oil	0.04	1.76	0.16
	Industrial ext. comb. -gas- <100 MMBTU	0.00	0.49	0.07
	Industrial ext. comb. -gas- general	0.00	0.06	0.02
	Industrial ext. comb. -oil- general	0.04	6.18	0.58
	Industrial ext. comb. -nonfossil	0.00	0.12	0.00
	Industrial gas reciprocating engines	0.00	0.00	0.00
	Industrial gas turbines	0.00	0.00	0.00
	Industrial in-process fuel	0.65	0.13	0.03
	Industrial process heat	0.00	0.00	0.00
	ALL	**0.73**	**9.19**	**0.96**
Other	Internal combustion--aircraft	0.37	3.75	0.64
	Miscellaneous noncombustion sources	4.09	0.32	2.80
	Waste disposal--multichamber	0.08	0.99	9.51
	ALL	**4.54**	**5.06**	**12.94**
Solvent use	Printing and publishing	0.08	0.00	0.00
	Solvent metal cleaning	0.40	0.00	0.00
	ALL	**0.48**	**0.00**	**0.00**
Storage tanks	Bulk gas terminals--not balanced	0.44	0.00	0.00
	External floating roof tanks--gasoline	1.14	0.00	0.00
	ALL	**1.58**	**0.00**	**0.00**
Surface coating	Automobile surface coating	0.97	0.00	0.00
	Beverage can surface coating	1.15	0.00	0.00
	Miscellaneous surface coating	1.59	0.00	0.00
	ALL	**3.70**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	0.03	7.25	0.24
	Utility external combustion--gas	0.00	0.62	0.09
	Utility external combustion--oil	1.19	46.62	5.12
	Utility oil reciprocating engines	0.00	0.03	0.01
	Utility oil turbines	0.00	0.02	0.00
	ALL	**1.22**	**54.54**	**5.46**
	ALL POINT SOURCES	**13.52**	**68.80**	**19.36**

TABLE H-2. DELAWARE 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.01	0.00
	Commercial/institutional--bituminous	0.00	0.03	0.02
	Commercial/institutional--distillate oil	0.01	0.24	0.06
	Commercial/institutional--natural gas	0.01	0.27	0.05
	Industrial fuel--bituminous coal	0.00	0.45	0.06
	Industrial fuel--distillate oil	0.01	0.17	0.04
	Industrial fuel--natural gas	0.03	3.23	0.80
	On-site incineration--comm./inst.	0.02	0.07	0.20
	On-site incineration--industrial	0.01	0.01	0.05
	On-site incineration--residential	0.05	0.00	0.77
	Open burning--residential	2.40	0.46	7.62
	Residential fuel--anthracite	0.00	0.00	0.00
	Residential fuel--distillate oil	0.01	0.07	0.02
	Residential fuel--natural gas	0.00	0.05	0.01
	Residential fuel--wood	0.53	0.03	2.43
	ALL	**3.07**	**5.07**	**12.14**
Fires	Field burning	0.00	0.00	0.00
	Prescribed forest burning	0.00	0.00	0.00
	Structural fires	0.34	0.04	1.84
	ALL	**0.34**	**0.04**	**1.84**
Gas marketing	Bulk gasoline terminals/plants	4.53	0.00	0.00
	Gasoline marketing	12.45	0.00	0.00
	ALL	**16.98**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.22	0.07	3.86
	Aircraft landings/takeoffs--commercial	0.06	0.07	0.20
	Aircraft landings/takeoffs--military	1.23	0.49	2.31
	Off-highway diesels	0.90	5.51	1.68
	Off-highway gasoline vehicles	5.08	1.56	44.55
	Railroad locomotives	0.05	0.19	0.07
	Vessels--coal	4.53	0.31	16.13
	Vessels--diesel	0.03	0.10	0.04
	ALL	**12.08**	**8.31**	**68.83**
Other	Bakeries	0.35	0.00	0.00
	Cutback asphalt paving	2.76	0.00	0.00
	Oil/gas production fields	0.14	0.00	0.00
	Petroleum refinery fugitives	20.38	0.00	0.00
	Pharmaceuticals manufacture	0.71	0.00	0.00
	Publicly-owned treatment works	0.24	0.00	0.00
	Synthetic fibers manufacturing	25.95	0.00	0.00
	SOCMI fugitives	6.40	0.00	0.00
	ALL	**56.93**	**0.00**	**0.00**
Solvent use	Architectural coating	7.29	0.00	0.00
	Auto body repair	2.39	0.00	0.00
	Degreasing	1.69	0.00	0.00
	Dry cleaning	2.03	0.00	0.00
	Electrical equipment mfg.--coating	0.00	0.00	0.00
	Fabricated metals--coating	0.25	0.00	0.00
	Flat wood product coating	0.06	0.00	0.00
	Furniture mfg.--coating	0.38	0.00	0.00
	Graphic arts and printing	1.53	0.00	0.00
	Machinery manufacturing--coating	0.07	0.00	0.00

(continued)

TABLE H-2. (concluded)

	Source Category	Emissions, tons/day VOC	NO$_x$	CO
	Miscellaneous industrial mfg.--coating	7.08	0.00	0.00
	Miscellaneous nonindustrial solvents	17.27	0.00	0.00
	Paper coating	4.55	0.00	0.00
	Rubber and plastics mfg.--solvent	5.23	0.00	0.00
	Ship coating	0.01	0.00	0.00
	ALL	**49.83**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	0.24	0.00	0.00
	ALL	**0.24**	**0.00**	**0.00**
	ALL AREA SOURCES	**139.47**	**13.43**	**82.80**
MOBILE SOURCES:				
	Diesel	1.29	--	--
	Evaporative	86.21	--	--
	Exhaust	30.70	--	--
	ALL MOBILE SOURCES	**118.20**	**53.58**	**520.16**
POINT SOURCES:				
Chem. Proc.	Petroleum refinery fugitives	3.07	0.00	0.00
	Refinery vacuum distillation	0.19	2.75	7.01
	Styrene-butadine rubber mfg.	0.68	0.00	0.00
	ALL	**3.95**	**2.75**	**7.01**
Ind./Inst.	Commercial/institutional--gas	0.00	0.09	0.01
	Commercial/institutional--oil	0.04	0.58	0.03
	Industrial ext. comb. -gas- <100 MMBTU	0.00	0.28	0.04
	Industrial ext. comb. -gas- general	0.02	1.65	0.36
	Industrial ext. comb. -oil- <100 MMBTU	0.08	1.07	0.07
	Industrial ext. comb. -oil- general	0.04	2.90	0.25
	Industrial ext. comb. -coal	0.03	7.48	0.28
	Industrial in-process fuel	0.00	0.04	0.00
	Industrial process heat	0.05	15.93	0.91
	ALL	**0.26**	**30.03**	**1.97**
Other	Miscellaneous noncombustion sources	2.23	2.65	31.29
	ALL	**2.23**	**2.65**	**31.29**
Surface coating	Automobile surface coating	14.76	0.00	0.00
	ALL	**14.76**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	0.29	85.53	2.44
	Utility external combustion--gas	0.00	1.52	0.11
	Utility external combustion--oil	0.21	11.84	0.91
	ALL	**0.50**	**98.89**	**3.47**
	ALL POINT SOURCES	**21.69**	**134.31**	**43.73**

TABLE H-3. DISTRICT OF COLUMBIA 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

Source Category		Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--bituminous	0.01	0.20	0.12
	Commercial/institutional--distillate oil	0.01	0.39	0.10
	Commercial/institutional--natural gas	0.02	0.92	0.18
	Commercial/institutional--residual oil	0.01	0.30	0.03
	Industrial fuel--natural gas	0.02	1.70	0.23
	Industrial fuel--residual oil	0.00	0.00	0.00
	On-site incineration--comm./inst.	0.16	0.65	1.89
	On-site incineration--residential	0.07	0.00	1.07
	Residential fuel--bituminous coal	0.02	0.00	0.14
	Residential fuel--distillate oil	0.00	0.02	0.01
	Residential fuel--natural gas	0.00	0.09	0.02
	Residential fuel--wood	0.05	0.00	0.22
	ALL	**0.36**	**4.29**	**4.00**
Fires	Structural fires	0.47	0.06	2.54
	ALL	**0.47**	**0.06**	**2.54**
Gas marketing	Bulk gasoline terminals/plants	1.59	0.00	0.00
	Gasoline marketing	10.01	0.00	0.00
	ALL	**11.59**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.07	0.02	1.28
	Aircraft landings/takeoffs--commercial	2.53	3.26	8.92
	Aircraft landings/takeoffs--military	0.05	0.02	0.09
	Off-highway diesels	1.02	6.30	1.92
	Off-highway gasoline vehicles	12.44	3.82	109.18
	Railroad locomotives	0.99	4.06	1.43
	Vessels--coal	0.36	0.02	1.30
	ALL	**17.47**	**17.51**	**124.11**
Other	Bakeries	0.56	0.00	0.00
	SOCMI fugitives	0.01	0.00	0.00
	ALL	**0.58**	**0.00**	**0.00**
Solvent use	Architectural coating	7.34	0.00	0.00
	Degreasing	0.17	0.00	0.00
	Dry cleaning	4.87	0.00	0.00
	Electrical equipment mfg.--coating	0.00	0.00	0.00
	Fabricated metals--coating	0.10	0.00	0.00
	Flat wood product coating	0.01	0.00	0.00
	Furniture mfg.--coating	0.11	0.00	0.00
	Graphic arts and printing	5.76	0.00	0.00
	Machinery manufacturing--coating	0.01	0.00	0.00
	Miscellaneous industrial mfg.--coating	2.31	0.00	0.00
	Miscellaneous nonindustrial solvents	13.88	0.00	0.00
	Paper coating	0.58	0.00	0.00
	ALL	**35.13**	**0.00**	**0.00**
	ALL AREA SOURCES	**65.60**	**21.86**	**130.65**

(continued)

TABLE H-3. (concluded)

	Source Category	Emissions, tons/day VOC	NO_x	CO
MOBILE SOURCES:				
	Diesel	0.53	--	--
	Evaporative	50.16	--	--
	Exhaust	17.36	--	--
	ALL MOBILE SOURCES	**68.05**	**26.78**	**236.01**
POINT SOURCES:				
Ind./Inst.	Commercial/institutional--coal	0.01	1.17	0.08
	Commercial/institutional--gas	0.00	0.14	0.03
	Commercial/institutional--oil	0.04	1.27	0.15
	Industrial ext. comb. -oil- general	0.00	0.00	0.00
	ALL	**0.05**	**2.59**	**0.26**
Other	Miscellaneous noncombustion sources	0.03	0.00	0.00
	Waste disposal--multichamber	0.05	0.48	5.63
	ALL	**0.07**	**0.48**	**5.63**
Solvent use	Printing and publishing	1.73	0.01	0.00
	ALL	**1.73**	**0.01**	**0.00**
Utilities	Utility external combustion--oil	0.01	0.57	0.05
	ALL	**0.01**	**0.57**	**0.05**
	ALL POINT SOURCES	**1.87**	**3.65**	**5.94**

TABLE H-4. INDIANA 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--bituminous	0.00	0.03	0.02
	Commercial/institutional--distillate oil	0.00	0.07	0.02
	Commercial/institutional--natural gas	0.00	0.15	0.03
	Commercial/institutional--residual oil	0.00	0.03	0.00
	Industrial fuel--bituminous coal	0.01	2.96	0.38
	Industrial fuel--distillate oil	0.02	0.23	0.05
	Industrial fuel--natural gas	0.01	0.96	0.24
	On-site incineration--comm./inst.	0.01	0.04	0.11
	On-site incineration--industrial	0.00	0.00	0.01
	On-site incineration--residential	0.26	0.01	4.01
	Open burning--commercial/institutional	0.00	0.00	0.01
	Open burning--industrial	0.04	0.01	0.12
	Open burning--residential	1.03	0.19	3.25
	Residential fuel--anthracite	0.00	0.00	0.00
	Residential fuel--bituminous coal	0.01	0.00	0.05
	Residential fuel--distillate oil	0.00	0.01	0.00
	Residential fuel--natural gas	0.00	0.03	0.01
	Residential fuel--wood	0.38	0.02	1.77
	ALL	**1.77**	**4.74**	**10.09**
Fires	Structural fires	0.11	0.01	0.62
	ALL	**0.11**	**0.01**	**0.62**
Gas marketing	Bulk gasoline terminals/plants	1.60	0.00	0.00
	Gasoline marketing	3.29	0.00	0.00
	ALL	**4.90**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.06	0.02	1.00
	Aircraft landings/takeoffs--commercial	0.01	0.02	0.04
	Aircraft landings/takeoffs--military	0.01	0.00	0.01
	Off-highway diesels	0.46	2.84	0.87
	Off-highway gasoline vehicles	2.68	0.82	23.48
	Railroad locomotives	0.76	3.11	1.09
	Vessels--coal	0.84	0.04	3.00
	ALL	**4.81**	**6.85**	**29.49**
Other	Bakeries	0.11	0.00	0.00
	Cutback asphalt paving	0.19	0.00	0.00
	Oil/gas production fields	0.02	0.00	0.00
	Publicly-owned treatment works	0.04	0.00	0.00
	ALL	**0.35**	**0.00**	**0.00**
Solvent use	Architectural coating	2.31	0.00	0.00
	Auto body repair	0.48	0.00	0.00
	Degreasing	1.57	0.00	0.00
	Dry cleaning	0.53	0.00	0.00
	Electrical equipment mfg.--coating	0.05	0.00	0.00
	Fabricated metals--coating	0.44	0.00	0.00
	Flat wood product coating	0.21	0.00	0.00
	Furniture mfg.--coating	0.40	0.00	0.00
	Graphic arts and printing	0.42	0.00	0.00
	Machinery manufacturing--coating	0.15	0.00	0.00
	Miscellaneous industrial mfg.--coating	2.27	0.00	0.00
	Miscellaneous nonindustrial solvents	5.50	0.00	0.00
	Motor vehicle manufacturing--coating	0.65	0.00	0.00

(continued)

TABLE H-4. (concluded)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Paper coating	0.51	0.00	0.00
	Rubber and plastics mfg.--solvent	2.97	0.00	0.00
	Ship coating	0.00	0.00	0.00
	ALL	**18.46**	**0.00**	**0.00**
	ALL AREA SOURCES	**30.41**	**11.61**	**40.21**
MOBILE SOURCES:				
	Diesel	0.75	--	--
	Evaporative	31.21	--	--
	Exhaust	10.72	--	--
	ALL MOBILE SOURCES	**42.68**	**24.09**	**161.19**
POINT SOURCES:				
Chem. Proc.	Rubber tire manufacturing	0.00	0.00	0.00
	Vegetable oil processing	0.04	0.00	0.00
	ALL	**0.04**	**0.00**	**0.00**
Ind./Inst.	Commercial/institutional--coal	0.00	0.03	0.00
	Commercial/institutional--oil	0.00	0.01	0.00
	Industrial ext. comb. -gas- <100 MMBTU	0.00	0.36	0.05
	Industrial ext. comb. -gas- general	0.00	0.07	0.01
	Industrial ext. comb. -oil- general	0.00	0.06	0.01
	Industrial ext. comb. -coal	0.01	4.22	0.42
	Industrial ext. comb. -nonfossil	0.00	0.00	0.00
	Industrial gas reciprocating engines	0.00	0.84	0.11
	ALL	**0.02**	**5.59**	**0.61**
Other	Miscellaneous noncombustion sources	10.35	2.78	2.81
	Waste disposal--multichamber	0.00	0.02	0.07
	ALL	**10.36**	**2.80**	**2.88**
Solvent use	Printing and publishing	0.09	0.00	0.00
	Solvent metal cleaning	3.48	0.00	0.00
	ALL	**3.57**	**0.00**	**0.00**
Surface coating	Automobile surface coating	8.29	0.00	0.00
	Beverage can surface coating	1.50	0.00	0.00
	Miscellaneous surface coating	2.21	0.00	0.00
	ALL	**12.01**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	0.18	79.95	1.51
	Utility external combustion--oil	0.00	0.06	0.01
	ALL	**0.18**	**80.01**	**1.52**
	ALL POINT SOURCES	**26.18**	**88.40**	**5.00**

TABLE H-5. KENTUCKY 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

Source Category		Emissions, tons/day VOC	NO$_x$	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.07	0.00
	Commercial/institutional--bituminous	0.01	0.25	0.15
	Commercial/institutional--distillate oil	0.02	0.55	0.14
	Commercial/institutional--natural gas	0.03	1.22	0.24
	Industrial fuel--bituminous coal	0.05	14.43	1.86
	Industrial fuel--distillate oil	0.22	3.35	0.79
	Industrial fuel--natural gas	0.54	45.83	6.64
	On-site incineration--comm./inst.	0.01	0.06	0.18
	On-site incineration--industrial	0.02	0.02	0.13
	On-site incineration--residential	0.15	0.01	2.29
	Open burning--commercial/institutional	0.01	0.00	0.02
	Open burning--industrial	0.19	0.04	0.68
	Open burning--residential	11.09	2.10	35.18
	Residential fuel--anthracite	0.00	0.00	0.02
	Residential fuel--bituminous coal	0.01	0.00	0.10
	Residential fuel--distillate oil	0.00	0.02	0.00
	Residential fuel--natural gas	0.00	0.05	0.01
	Residential fuel--wood	0.64	0.04	2.94
	ALL	**12.99**	**68.02**	**51.39**
Fires	Forest wildfires	0.51	0.11	3.68
	Structural fires	0.90	0.11	4.88
	ALL	**1.40**	**0.22**	**8.56**
Gas marketing	Bulk gasoline terminals/plants	11.02	0.00	0.00
	Gasoline marketing	27.30	0.00	0.00
	ALL	**38.32**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.40	0.14	7.15
	Aircraft landings/takeoffs--commercial	1.76	2.27	6.21
	Aircraft landings/takeoffs--military	0.03	0.01	0.06
	Off-highway diesels	2.96	18.21	5.54
	Off-highway gasoline vehicles	10.65	3.27	93.40
	Railroad locomotives	6.14	25.28	8.88
	Vessels--coal	2.10	0.10	7.48
	Vessels--diesel	1.15	4.61	1.61
	ALL	**25.19**	**53.88**	**130.55**
Other	Bakeries	0.61	0.00	0.00
	Cutback asphalt paving	4.25	0.00	0.00
	Oil/gas production fields	5.89	0.00	0.00
	Petroleum refinery fugitives	31.87	0.00	0.00
	Publicly-owned treatment works	0.09	0.00	0.00
	SOCMI fugitives	0.05	0.00	0.00
	ALL	**42.76**	**0.00**	**0.00**
Solvent use	Architectural coating	20.96	0.00	0.00
	Auto body repair	4.60	0.00	0.00
	Degreasing	3.77	0.00	0.00
	Dry cleaning	5.02	0.00	0.00
	Electrical equipment mfg.--coating	0.09	0.00	0.00
	Fabricated metals--coating	1.08	0.00	0.00
	Flat wood product coating	0.30	0.00	0.00
	Furniture mfg.--coating	0.81	0.00	0.00
	Graphic arts and printing	2.37	0.00	0.00
	Machinery manufacturing--coating	0.48	0.00	0.00
	Miscellaneous industrial mfg.--coating	8.15	0.00	0.00

(continued)

TABLE H-5. (concluded)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Miscellaneous nonindustrial solvents	40.79	0.00	0.00
	Motor vehicle manufacturing--coating	0.38	0.00	0.00
	Other transportation equipment coating	0.01	0.00	0.00
	Paper coating	3.28	0.00	0.00
	Rubber and plastics mfg.--solvent	4.99	0.00	0.00
	Ship coating	0.04	0.00	0.00
	ALL	**97.12**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	0.15	0.00	0.00
	ALL	**0.15**	**0.00**	**0.00**
	ALL AREA SOURCES	**217.93**	**122.13**	**190.30**
MOBILE SOURCES:				
	Diesel	3.77	--	--
	Evaporative	233.08	--	--
	Exhaust	85.31	--	--
	ALL MOBILE SOURCES	**322.16**	**151.03**	**1250.68**
POINT SOURCES:				
Chem. Proc.	Petroleum refinery fugitives	1.22	0.00	0.00
	Polyethylene manufacturing	1.75	0.00	0.00
	Refinery vacuum distillation	1.13	3.59	20.75
	Refinery wastewater treatment	0.59	0.00	0.00
	ALL	**4.69**	**3.59**	**20.75**
Ind./Inst.	Commercial/institutional--coal	0.05	0.69	0.33
	Industrial ext. comb. -gas- <100 MMBTU	0.00	0.56	0.04
	Industrial ext. comb. -gas- general	0.01	2.48	1.21
	Industrial ext. comb. -oil- general	0.00	0.56	0.05
	Industrial ext. comb. -coal	0.01	0.20	0.15
	Industrial ext. comb. -nonfossil	0.00	0.65	0.03
	Industrial in-process fuel	0.56	2.61	0.36
	Industrial process heat	0.08	2.81	0.55
	ALL	**0.70**	**10.56**	**2.73**
Other	Coke oven by-products plants	0.05	0.00	0.05
	Iron/steel/blast furnace/sintering	0.00	0.00	0.00
	Marine vessel loading	6.19	0.00	0.05
	Miscellaneous noncombustion sources	25.89	16.42	11.45
	ALL	**32.11**	**16.42**	**11.50**
Solvent use	Printing and publishing	0.38	0.00	0.00
	Solvent metal cleaning	0.08	0.00	0.00
	ALL	**0.46**	**0.00**	**0.00**
Storage tanks	Bulk gas terminals--not balanced	2.30	0.00	0.00
	External floating roof tanks--crude	0.63	0.00	0.00
	External floating roof tanks--gasoline	0.47	0.00	0.00
	Fixed roof tanks--crude oil	0.20	0.00	0.00
	ALL	**3.59**	**0.00**	**0.00**
Surface coating	Automobile surface coating	6.70	0.00	0.00
	Beverage can surface coating	0.17	0.00	0.00
	Miscellaneous surface coating	3.54	0.00	0.00
	ALL	**10.40**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	0.78	199.84	6.82
	ALL	**0.78**	**199.84**	**6.82**
	ALL POINT SOURCES	**52.74**	**230.41**	**41.80**

TABLE H-6. MAINE 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day VOC	NO$_x$	CO
AREA SOURCES:				
Combustion	Commercial/institutional--bituminous	0.00	0.01	0.00
	Commercial/institutional--distillate oil	0.02	0.56	0.14
	Commercial/institutional--natural gas	0.00	0.08	0.02
	Commercial/institutional--residual oil	0.03	0.92	0.08
	Industrial fuel--anthracite	0.00	0.02	0.00
	Industrial fuel--coke	0.00	0.01	0.01
	Industrial fuel--distillate oil	0.02	0.29	0.07
	Industrial fuel--natural gas	0.00	0.23	0.05
	On-site incineration--comm./inst.	0.03	0.13	0.37
	On-site incineration--industrial	0.00	0.00	0.03
	On-site incineration--residential	0.83	0.05	12.78
	Open burning--commercial/incineration	0.01	0.00	0.03
	Open burning--industrial	0.07	0.01	0.25
	Open burning--residential	5.44	1.03	17.27
	Residential fuel--anthracite	0.01	0.00	0.13
	Residential fuel--bituminous coal	0.00	0.00	0.02
	Residential fuel--distillate oil	0.05	0.61	0.17
	Residential fuel--natural gas	0.00	0.03	0.01
	Residential fuel--wood	6.19	0.34	28.42
	ALL	**12.71**	**4.35**	**59.85**
Fires	Agricultural field burning	0.00	0.00	0.00
	Structural fires	0.42	0.05	2.31
	ALL	**0.42**	**0.05**	**2.31**
Gas marketing	Bulk gasoline terminals/plants	6.20	0.00	0.00
	Gasoline marketing	16.03	0.00	0.00
	ALL	**22.23**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.37	0.13	6.71
	Aircraft landings/takeoffs--commercial	0.41	0.53	1.56
	Aircraft landings/takeoffs--military	0.66	0.26	1.25
	Off-highway diesels	0.71	4.35	1.32
	Off-highway gasoline vehicles	10.68	3.28	93.71
	Railroad locomotives	0.76	3.12	1.10
	Vessels--coal	3.50	0.17	12.48
	Vessels--diesel	0.13	0.53	0.19
	ALL	**17.23**	**12.38**	**118.22**
Other	Bakeries	1.18	0.00	0.00
	Cutback asphalt paving	1.59	0.00	0.00
	Publicly-owned treatment works	0.10	0.00	0.00
	ALL	**2.87**	**0.00**	**0.00**
Solvent use	Architectural coating	13.88	0.00	0.00
	Auto body repair	3.02	0.00	0.00
	Degreasing	3.55	0.00	0.00
	Dry cleaning	2.48	0.00	0.00
	Electrical equipment mfg.--coating	0.10	0.00	0.00
	Fabricated metals--coating	0.46	0.00	0.00
	Flat wood product coating	0.20	0.00	0.00
	Furniture mfg.--coating	0.69	0.00	0.00
	Graphic arts and printing	2.57	0.00	0.00
	Machinery manufacturing--coating	0.33	0.00	0.00
	Miscellaneous industrial mfg.--coating	8.41	0.00	0.00
	Miscellaneous nonindustrial solvents	22.47	0.00	0.00
	Motor vehicle manufacturing--coating	0.05	0.00	0.00

(continued)

TABLE H-6. (concluded)

	Source Category	Emissions, tons/day		
		VOC	NO_x	CO
	Other transportation equipment coating	0.03	0.00	0.00
	Paper coating	5.92	0.00	0.00
	Rubber and plastics mfg.--solvent	7.44	0.00	0.00
	Ship coating	1.19	0.00	0.00
	ALL	**72.80**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	0.23	0.00	0.00
	ALL	**0.23**	**0.00**	**0.00**
	ALL AREA SOURCES	**128.50**	**16.79**	**180.37**
MOBILE SOURCES:				
	Diesel	1.80	--	--
	Evaporative	88.77	--	--
	Exhaust	31.35	--	--
	ALL MOBILE SOURCES	**121.92**	**58.88**	**450.09**
POINT SOURCES:				
Ind./Inst.	Commercial/institutional--oil	0.00	0.17	0.01
	Commercial/institutional--other	0.00	0.00	0.01
	Industrial ext. comb. -gas- general	0.00	0.11	0.02
	Industrial ext. comb. -oil- general	1.52	8.41	5.58
	Industrial ext. comb. -coal	0.01	2.45	0.07
	Industrial ext. comb. -nonfossil	1.81	5.87	8.39
	Industrial in-process fuel	0.00	0.00	0.00
	ALL	**3.35**	**17.00**	**14.08**
Other	Miscellaneous noncombustion sources	0.00	0.00	0.00
	Pulp/paper manufacturing	1.02	0.67	10.34
	Waste disposal--multichamber	0.00	0.00	0.00
	ALL	**1.03**	**0.67**	**10.34**
Storage tanks	External floating roof tanks--gasoline	0.88	0.00	0.00
	Fixed roof tanks--crude oil	0.01	0.00	0.00
	ALL	**0.88**	**0.00**	**0.00**
Utilities	Utility external combustion--oil	0.12	6.65	0.50
	ALL	**0.12**	**6.65**	**0.50**
	ALL POINT SOURCES	**5.38**	**24.32**	**24.92**

TABLE H-7. MARYLAND 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

Source Category		Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.00	0.00
	Commercial/institutional--bituminous	0.01	0.15	0.09
	Commercial/institutional--distillate oil	0.07	2.28	0.57
	Commercial/institutional--natural gas	0.04	1.43	0.29
	Commercial/institutional--residual oil	0.05	1.50	0.14
	Industrial fuel--anthracite	0.00	0.00	0.00
	Industrial fuel--bituminous coal	0.00	0.31	0.04
	Industrial fuel--distillate oil	0.40	6.14	1.45
	Industrial fuel--natural gas	0.15	13.63	2.51
	Industrial fuel--residual oil	0.02	1.97	0.18
	Industrial fuel--wood	0.06	0.18	0.29
	On-site incineration--commercial/inst.	0.23	0.95	2.74
	On-site incineration--industrial	0.52	0.58	3.91
	On-site incineration--residential	0.04	0.00	0.68
	Open burning--residential	0.73	0.14	2.31
	Residential fuel--anthracite	0.21	0.06	1.92
	Residential fuel--bituminous coal	0.13	0.04	1.20
	Residential fuel--distillate oil	0.16	2.15	0.60
	Residential fuel--natural gas	0.00	1.69	0.34
	Residential fuel--residual oil	0.00	0.03	0.01
	Residential fuel--wood	2.07	0.11	9.51
	ALL	**4.89**	**33.34**	**28.78**
Fires	Agricultural field burning	0.00	0.00	0.00
	Forest wildfires	10.67	2.22	77.83
	Structural fires	2.42	0.31	13.16
	ALL	**13.09**	**2.53**	**90.99**
Gas marketing	Bulk gasoline terminals/plants	17.02	0.00	0.00
	Gasoline marketing	84.63	0.00	0.00
	ALL	**101.64**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	1.11	0.38	19.89
	Aircraft landings/takeoffs--commercial	2.19	2.83	7.72
	Aircraft landings/takeoffs--military	5.52	2.21	10.39
	Off-highway diesels	19.91	122.44	37.27
	Off-highway gasoline vehicles	40.76	12.51	357.66
	Railroad locomotives	3.16	12.99	4.57
	Vessels--coal	12.60	4.84	43.67
	Vessels--diesel	0.22	0.86	0.30
	ALL	**85.46**	**159.05**	**481.46**
Other	Bakeries	2.13	0.00	0.00
	Cutback asphalt paving	15.45	0.00	0.00
	Oil/gas production fields	0.54	0.00	0.00
	Pharmaceuticals manufacture	0.40	0.00	0.00
	Publicly-owned treatment works	0.37	0.00	0.00
	Synthetic fibers manufacturing	0.26	0.00	0.00
	SOCMI fugitives	2.22	0.00	0.00
	ALL	**21.36**	**0.00**	**0.00**
Solvent use	Architectural coating	51.49	0.00	0.00
	Auto body repair	18.09	0.00	0.00
	Degreasing	14.76	0.00	0.00
	Dry cleaning	17.70	0.00	0.00
	Electrical equipment mfg.--coating	0.95	0.00	0.00
	Fabricated metals--coating	2.05	0.00	0.00

(continued)

TABLE H-7. (continued)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Flat wood product coating	0.51	0.00	0.00
	Furniture mfg.--coating	3.94	0.00	0.00
	Graphic arts and printing	11.14	0.00	0.00
	Machinery manufacturing--coating	2.30	0.00	0.00
	Miscellaneous industrial mfg.--coating	26.73	0.00	0.00
	Miscellaneous nonindustrial solvents	105.04	0.00	0.00
	Motor vehicle manufacturing--coating	0.21	0.00	0.00
	Other transportation equipment coating	0.08	0.00	0.00
	Paper coating	13.32	0.00	0.00
	Rubber and plastics mfg.--solvent	17.23	0.00	0.00
	Ship coating	0.15	0.00	0.00
	ALL	**285.70**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	1.58	0.00	0.00
	ALL	**1.58**	**0.00**	**0.00**
	ALL AREA SOURCES	**513.72**	**194.93**	**601.23**
MOBILE SOURCES:				
	Diesel	7.58	--	--
	Evaporative	503.91	--	--
	Exhaust	164.75	--	--
	ALL MOBILE SOURCES	**676.24**	**307.15**	**2488.46**
POINT SOURCES:				
Chem. Proc.	Paint and varnish manufacturing	2.38	0.00	0.00
	Polyethylene manufacturing	0.98	0.01	0.00
	Rubber tire manufacturing	0.00	0.00	0.00
	SOCMI reactors	0.01	0.00	0.00
	ALL	**3.37**	**0.01**	**0.00**
Ind./Inst.	Commercial/institutional--coal	0.01	0.13	0.07
	Commercial/institutional--gas	0.00	0.03	0.00
	Commercial/institutional--oil	0.04	2.74	0.24
	Industrial ext. comb. -gas- <100 MMBTU	0.02	5.80	0.32
	Industrial ext. comb. -gas- general	0.01	9.32	0.45
	Industrial ext. comb. -oil- general	0.07	3.09	0.26
	Industrial ext. comb. -coal	0.10	9.89	0.29
	Industrial ext. comb. -nonfossil	0.26	1.91	2.57
	Industrial in-process fuel	0.25	7.07	1.51
	Industrial process heat	0.00	0.06	0.01
	ALL	**0.75**	**40.02**	**5.71**
Other	Coke oven by-products plants	0.87	1.57	0.38
	Iron/steel/blast furnace/sintering	0.00	5.09	0.27
	Miscellaneous noncombustion sources	10.33	22.93	32.10
	Pulp/paper manufacturing	0.00	0.13	10.89
	Waste disposal--multichamber	0.06	3.44	8.61
	ALL	**11.26**	**33.16**	**52.26**
Solvent use	Printing and publishing	11.75	0.00	0.00
	Solvent metal cleaning	0.16	0.00	0.00
	ALL	**11.91**	**0.00**	**0.00**
Storage tanks	External floating roof tanks--crude	0.01	0.00	0.00
	External floating roof tanks--gasoline	5.95	0.00	0.00

(continued)

TABLE H-7. (concluded)

Source Category		Emissions, tons/day VOC	NO_x	CO
	Fixed roof tanks--gasoline	0.22	0.00	0.00
	ALL	**6.18**	**0.00**	**0.00**
Surface coating	Automobile surface coating	1.08	0.00	0.00
	Beverage can surface coating	11.00	0.12	0.00
	Miscellaneous surface coating	2.11	0.00	0.00
	Paper surface coating	0.04	0.00	0.00
	ALL	**14.23**	**0.12**	**0.00**
Utilities	Utility external combustion--coal	0.82	202.97	6.73
	Utility external combustion--gas	0.00	5.21	0.44
	Utility external combustion--oil	0.37	21.14	1.77
	Utility gas reciprocating engines	0.01	1.18	0.16
	Utility gas turbines	0.00	0.03	0.01
	Utility oil reciprocating engines	0.04	1.03	0.25
	Utility oil turbines	0.00	0.88	0.20
	ALL	**1.25**	**232.45**	**9.56**
	ALL POINT SOURCES	**48.94**	**305.76**	**67.54**

TABLE H-8. MASSACHUSETTS 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day		
		VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.44	0.03
	Commercial/institutional--distillate oil	0.12	4.12	1.03
	Commercial/institutional--natural gas	0.08	3.34	0.67
	Commercial/institutional--residual oil	0.15	4.92	0.45
	Industrial fuel--bituminous coal	0.03	7.54	0.97
	Industrial fuel--coke	0.00	0.10	0.05
	Industrial fuel--distillate oil	0.01	0.21	0.05
	Industrial fuel--natural gas	0.11	10.35	2.09
	Industrial fuel--residual oil	0.08	9.93	0.90
	On-site incineration--commercial/inst.	0.13	0.54	1.57
	On-site incineration--industrial	0.01	0.01	0.08
	On-site incineration--residential	6.74	0.38	103.19
	Open burning--commercial/institutional	0.01	0.00	0.04
	Open burning--industrial	0.12	0.02	0.42
	Open burning--residential	13.81	2.62	43.82
	Residential fuel--anthracite	0.04	0.01	0.33
	Residential fuel--bituminous coal	0.00	0.00	0.00
	Residential fuel--distillate oil	0.16	1.52	0.42
	Residential fuel--natural gas	0.00	1.13	0.23
	Residential fuel--wood	6.59	0.36	30.26
	ALL	**28.16**	**47.55**	**186.59**
Fires	Structural fires	3.50	0.44	19.03
	ALL	**3.50**	**0.44**	**19.03**
Gas marketing	Bulk gasoline terminals/plants	23.52	0.00	0.00
	Gasoline marketing	90.89	0.00	0.00
	ALL	**114.41**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	1.31	0.45	23.43
	Aircraft landings/takeoffs--commercial	5.99	7.73	21.11
	Aircraft landings/takeoffs--military	1.61	0.65	3.04
	Off-highway diesels	1.45	8.93	2.72
	Off-highway gasoline vehicles	41.28	12.67	362.18
	Railroad locomotives	6.53	26.90	9.45
	Vessels--coal	15.62	0.81	55.65
	Vessels--diesel	1.01	4.04	1.41
	ALL	**74.80**	**62.18**	**479.00**
Other	Bakeries	3.66	0.00	0.00
	Cutback asphalt paving	7.82	0.00	0.00
	Oil/gas production fields	0.12	0.00	0.00
	Pharmaceuticals manufacture	0.99	0.00	0.00
	Publicly-owned treatment works	1.30	0.00	0.00
	Synthetic fibers manufacturing	0.01	0.00	0.00
	SOCMI fugitives	3.73	0.00	0.00
	ALL	**17.63**	**0.00**	**0.00**
Solvent use	Architectural coating	80.29	0.00	0.00
	Auto body repair	15.65	0.00	0.00
	Degreasing	51.80	0.00	0.00
	Dry cleaning	25.41	0.00	0.00
	Electrical equipment mfg.--coating	1.86	0.00	0.00
	Fabricated metals--coating	9.44	0.00	0.00

(continued)

TABLE H-8. (continued)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Flat wood product coating	0.83	0.00	0.00
	Furniture mfg.--coating	6.32	0.00	0.00
	Graphic arts and printing	26.90	0.00	0.00
	Machinery manufacturing--coating	6.67	0.00	0.00
	Miscellaneous industrial mfg.--coating	77.72	0.00	0.00
	Miscellaneous nonindustrial solvents	169.96	0.00	0.00
	Motor vehicle manufacturing--coating	0.40	0.00	0.00
	Other transportation equipment coating	0.21	0.00	0.00
	Paper coating	44.87	0.00	0.00
	Rubber and plastics mfg.--solvent	60.86	0.00	0.00
	Ship coating	0.82	0.00	0.00
	ALL	**580.02**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	2.59	0.00	0.00
	ALL	**2.59**	**0.00**	**0.00**
	ALL AREA SOURCES	**821.11**	**110.17**	**684.62**
MOBILE SOURCES:				
	Diesel	6.31	--	--
	Evaporative	584.83	--	--
	Exhaust	195.49	--	--
	ALL MOBILE SOURCES	**786.63**	**319.92**	**2811.02**
POINT SOURCES:				
Chem. Proc.	Paint and varnish manufacturing	0.02	0.00	0.00
	Polyethylene manufacturing	0.91	0.00	0.01
	ALL	**0.94**	**0.00**	**0.01**
Ind./Inst.	Commercial/institutional--coal	0.08	0.79	0.66
	Commercial/institutional--gas	0.00	0.28	0.05
	Commercial/institutional--oil	0.04	2.33	0.18
	Commercial/institutional--other	0.01	0.01	0.04
	Industrial cogen.gas reciprocating eng.	0.00	0.43	0.05
	Industrial ext. comb. -gas- <100 MMBTU	1.44	4.22	0.32
	Industrial ext. comb. -gas- general	0.11	0.86	0.40
	Industrial ext. comb. -oil- general	2.14	15.30	1.47
	Industrial ext. comb. -coal	0.01	1.06	0.31
	Industrial ext. comb. -nonfossil	0.03	0.14	0.16
	Industrial gas reciprocating engines	0.00	0.62	0.08
	Industrial gas turbines	0.00	0.09	0.04
	Industrial in-process fuel	0.00	0.03	0.00
	Industrial oil reciprocating engines	0.01	1.44	0.30
	Industrial oil turbines	0.00	0.18	0.02
	Industrial process heat	0.01	0.00	0.00
	Industrial space heating	0.00	0.00	0.00
	ALL	**3.90**	**27.75**	**4.08**
Other	Miscellaneous noncombustion sources	22.97	1.48	3.72
	Single chamber incinerators	0.17	5.08	17.88
	Waste disposal--multichamber	0.35	0.92	5.44
	ALL	**23.50**	**7.48**	**27.04**
Solvent use	Printing and publishing	7.34	0.00	0.02
	Solvent metal cleaning	3.81	0.00	0.00
	ALL	**11.15**	**0.00**	**0.02**

(continued)

TABLE H-8. (concluded)

	Source Category	Emissions, tons/day VOC	NO_x	CO
Storage tanks	Bulk gas terminals--submerged fill	6.56	0.00	0.00
	Fixed roof tanks--crude oil	0.04	0.00	0.00
	Fixed roof tanks--gasoline	3.85	0.00	0.07
	ALL	**10.45**	**0.00**	**0.07**
Surface coating	Automobile surface coating	14.79	0.00	0.00
	Beverage can surface coating	5.47	0.00	0.08
	General wood surface coating	0.38	0.00	0.00
	Miscellaneous surface coating	16.12	0.00	0.00
	Paper surface coating	23.87	0.00	0.00
	Plastic parts coating	9.77	0.00	0.00
	Wood furniture coating	0.90	0.00	0.00
	ALL	**71.30**	**0.00**	**0.08**
Utilities	Utility external combustion--coal	0.07	14.51	0.59
	Utility external combustion--gas	0.08	46.06	4.79
	Utility external combustion--oil	1.53	77.18	6.83
	Utility gas turbines	0.04	1.26	0.78
	Utility oil reciprocating engines	0.07	1.28	0.29
	Utility oil turbines	0.21	1.66	0.63
	ALL	**2.00**	**141.96**	**13.91**
	ALL POINT SOURCES	**123.23**	**177.20**	**45.20**

TABLE H-9. MICHIGAN 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

Source Category		Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.08	0.00
	Commercial/institutional--distillate oil	0.04	1.43	0.36
	Commercial/institutional--natural gas	0.25	9.72	1.94
	Commercial/institutional--residual oil	0.01	0.44	0.04
	Industrial fuel--distillate oil	0.18	2.78	0.66
	Industrial fuel--natural gas	0.67	61.19	10.85
	Industrial fuel--residual oil	0.02	2.06	0.19
	On-site incineration--comm./inst.	0.28	1.16	3.36
	On-site incineration--industrial	0.02	0.02	0.16
	On-site incineration--residential	9.76	0.55	149.39
	Open burning--commercial/institutional	0.12	0.02	0.34
	Open burning--industrial	0.21	0.04	0.75
	Open burning--residential	28.69	5.44	91.02
	Residential fuel--anthracite	0.00	0.00	0.00
	Residential fuel--distillate oil	0.03	0.36	0.10
	Residential fuel--natural gas	0.00	3.68	0.74
	Residential fuel--wood	7.36	0.41	33.84
	ALL	**47.66**	**89.41**	**293.75**
Fires	Forest wildfires	0.13	0.03	0.97
	Prescribed forest burning	0.00	0.00	0.00
	Structural fires	2.69	0.34	14.61
	ALL	**2.82**	**0.37**	**15.59**
Gas marketing	Bulk gasoline terminals/plants	27.12	0.00	0.00
	Gasoline marketing	130.95	0.00	0.00
	ALL	**158.06**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	1.78	0.61	31.95
	Aircraft landings/takeoffs--commercial	4.27	5.52	15.07
	Aircraft landings/takeoffs--military	0.18	0.07	0.33
	Off-highway diesels	6.63	40.77	12.41
	Off-highway gasoline vehicles	55.09	16.90	483.32
	Railroad locomotives	3.80	15.63	5.49
	Vessels--coal	13.21	0.61	47.08
	Vessels--diesel	0.16	0.63	0.22
	ALL	**85.11**	**80.75**	**595.87**
Other	Bakeries	2.02	0.00	0.00
	Cutback asphalt paving	11.08	0.00	0.00
	Oil/gas production fields	4.30	0.00	0.00
	Petroleum refinery fugitives	15.88	0.00	0.00
	Pharmaceuticals manufacture	0.78	0.00	0.00
	Publicly-owned treatment works	1.43	0.00	0.00
	SOCMI fugitives	26.44	0.00	0.00
	ALL	**61.93**	**0.00**	**0.00**
Solvent use	Architectural coating	90.40	0.00	0.00
	Auto body repair	18.57	0.00	0.00
	Degreasing	64.87	0.00	0.00
	Dry cleaning	26.60	0.00	0.00
	Electrical equipment mfg.--coating	0.36	0.00	0.00
	Fabricated metals--coating	13.12	0.00	0.00
	Flat wood product coating	0.72	0.00	0.00
	Furniture mfg.--coating	2.60	0.00	0.00
	Graphic arts and printing	12.75	0.00	0.00
	Machinery manufacturing--coating	3.42	0.00	0.00

(continued)

TABLE H-9. (continued)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Miscellaneous industrial mfg.--coating	79.95	0.00	0.00
	Miscellaneous nonindustrial solvents	185.93	0.00	0.00
	Motor vehicle manufacturing--coating	27.53	0.00	0.00
	Other transportation equipment coating	0.01	0.00	0.00
	Paper coating	9.68	0.00	0.00
	Rubber and plastics mfg.--solvent	45.16	0.00	0.00
	Ship coating	0.13	0.00	0.00
	ALL	**581.80**	**0.00**	**0.00**
	ALL AREA SOURCES	**973.38**	**170.53**	**905.21**
MOBILE SOURCES:				
	Diesel	5.95	--	--
	Evaporative	717.55	--	--
	Exhaust	282.59	--	--
	ALL MOBILE SOURCES	**1006.09**	**393.35**	**4079.17**
POINT SOURCES:				
Chem. Proc.	Paint and varnish manufacturing	5.35	0.00	0.00
	Refinery vacuum distillation	7.20	1.44	66.87
	Refinery wastewater treatment	1.03	0.00	0.00
	ALL	**13.58**	**1.44**	**66.87**
Ind./Inst.	Commercial/institutional--coal	0.03	6.24	0.64
	Commercial/institutional--gas	0.00	1.59	0.23
	Commercial/institutional--oil	0.00	0.31	0.03
	Industrial ext. comb. -gas- <100 MMBTU	0.00	4.34	0.29
	Industrial ext. comb. -gas- general	0.02	10.05	0.31
	Industrial ext. comb. -oil- general	0.03	2.32	0.28
	Industrial ext. comb. -coal	0.16	41.26	5.56
	Industrial ext. comb. -nonfossil	0.00	0.93	0.07
	Industrial gas reciprocating engines	0.30	27.85	3.50
	Industrial in-process fuel	0.12	4.36	0.49
	Industrial oil reciprocating engines	0.00	0.00	0.00
	Industrial process heat	0.04	1.59	0.15
	Industrial space heating	0.00	0.00	0.00
	ALL	**0.72**	**100.83**	**11.55**
Other	Coke oven by-products plants	7.05	2.03	4.15
	Internal combustion--aircraft	5.39	3.68	142.29
	Iron/steel/blast furnace/sintering	0.00	0.00	67.61
	Miscellaneous noncombustion sources	60.30	13.25	166.26
	Single chamber incinerators	0.00	0.01	0.00
	Waste disposal--multichamber	0.79	2.35	15.52
	ALL	**73.35**	**21.32**	**395.84**
Solvent use	Solvent metal cleaning	15.11	0.09	0.79
	ALL	**15.11**	**0.09**	**0.79**
Storage tanks	Bulk gas terminals--not balanced	2.02	0.00	0.00
	External floating roof tanks--crude	1.03	0.00	0.00
	External floating roof tanks--gasoline	1.94	0.00	0.00
	Fixed roof tanks--crude oil	3.55	0.00	0.00
	Fixed roof tanks--gasoline	4.85	0.00	0.00
	ALL	**13.39**	**0.00**	**0.00**

(continued)

TABLE H-9. (concluded)

Source Category		Emissions, tons/day VOC	NO_x	CO
Surface coating	Miscellaneous surface coating	134.49	0.00	0.00
	ALL	**134.49**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	2.17	545.40	17.92
	Utility external combustion--gas	0.01	7.23	0.47
	Utility external combustion--oil	0.05	2.32	0.19
	Utility gas reciprocating engines	0.02	2.54	0.29
	ALL	**2.25**	**557.49**	**18.86**
	ALL POINT SOURCES	**253.07**	**681.19**	**493.91**

TABLE H-10. NEW HAMPSHIRE 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day		
		VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.06	0.00
	Commercial/institutional--distillate oil	0.01	0.44	0.11
	Commercial/institutional--natural gas	0.01	0.41	0.08
	Industrial fuel--anthracite	0.00	0.04	0.00
	Industrial fuel--bituminous coal	0.00	0.17	0.02
	Industrial fuel--coke	0.00	0.02	0.01
	Industrial fuel--distillate oil	0.02	0.25	0.06
	Industrial fuel--natural gas	0.04	3.27	0.44
	On-site incineration--comm./inst.	0.03	0.14	0.41
	On-site incineration--industrial	0.00	0.00	0.03
	On-site incineration--residential	0.87	0.05	13.38
	Open burning--commercial/institutional	0.01	0.00	0.02
	Open burning--residential	5.06	0.96	16.05
	Residential fuel--anthracite	0.00	0.00	0.02
	Residential fuel--distillate oil	0.03	0.45	0.13
	Residential fuel--natural gas	0.00	0.14	0.03
	Residential fuel--wood	3.91	0.22	17.96
	ALL	**10.00**	**6.63**	**48.75**
Fires	Forest wildfires	0.00	0.00	0.03
	Structural fires	0.45	0.06	2.47
	ALL	**0.45**	**0.06**	**2.49**
Gas marketing	Bulk gasoline terminals/plants	7.81	0.00	0.00
	Gasoline marketing	19.07	0.00	0.00
	ALL	**26.89**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.44	0.15	7.96
	Aircraft landings/takeoffs--commercial	0.43	0.56	1.53
	Aircraft landings/takeoffs--military	0.78	0.31	1.48
	Off-highway diesels	1.13	6.92	2.11
	Off-highway gasoline vehicles	11.25	3.45	98.66
	Railroad locomotives	0.05	0.19	0.07
	Vessels--coal	0.85	0.04	3.04
	Vessels--diesel	0.01	0.04	0.01
	ALL	**14.94**	**11.66**	**114.86**
Other	Bakeries	0.10	0.00	0.00
	Cutback asphalt paving	3.34	0.00	0.00
	Oil/gas production fields	0.02	0.00	0.00
	Pharmaceuticals manufacture	0.02	0.00	0.00
	Publicly-owned treatment works	0.13	0.00	0.00
	SOCMI fugitives	1.80	0.00	0.00
	ALL	**5.40**	**0.00**	**0.00**
Solvent use	Architectural coating	16.50	0.00	0.00
	Auto body repair	4.13	0.00	0.00
	Degreasing	8.87	0.00	0.00
	Dry cleaning	3.45	0.00	0.00
	Electrical equipment mfg.--coating	0.40	0.00	0.00
	Fabricated metals--coating	1.18	0.00	0.00
	Flat wood product coating	0.38	0.00	0.00
	Furniture mfg.--coating	1.23	0.00	0.00
	Graphic arts and printing	3.81	0.00	0.00
	Machinery manufacturing--coating	1.44	0.00	0.00
	Miscellaneous industrial mfg.--coating	12.87	0.00	0.00
	Miscellaneous nonindustrial solvents	28.78	0.00	0.00

(continued)

TABLE H-10. (concluded)

	Source Category	Emissions, tons/day		
		VOC	NO_x	CO
	Motor vehicle manufacturing--coating	0.21	0.00	0.00
	Other transportation equipment coating	0.02	0.00	0.00
	Paper coating	6.67	0.00	0.00
	Rubber and plastics mfg.--solvent	15.93	0.00	0.00
	ALL	**105.86**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	0.03	0.00	0.00
	ALL	**0.03**	**0.00**	**0.00**
	ALL AREA SOURCES	**163.58**	**18.35**	**166.10**
MOBILE SOURCES:				
	Diesel	1.10	--	--
	Evaporative	99.95	--	--
	Exhaust	34.96	--	--
	ALL MOBILE SOURCES	**136.01**	**57.02**	**510.77**
POINT SOURCES:				
Chem. Proc.	Rubber tire manufacturing	0.06	0.00	0.00
	SOCMI reactors	0.33	0.03	0.41
	ALL	**0.39**	**0.03**	**0.41**
Ind./Inst.	Commercial/institutional--gas	0.00	0.00	0.00
	Commercial/institutional--oil	0.00	0.13	0.05
	Commercial/institutional--other	0.08	0.16	6.56
	Industrial ext. comb. -gas- <100 MMBTU	0.00	0.16	0.03
	Industrial ext. comb. -gas- general	0.00	0.04	0.01
	Industrial ext. comb. -oil- <100 MMBTU	0.01	0.07	0.01
	Industrial ext. comb. -oil- general	1.27	4.01	10.19
	Industrial ext. comb. -nonfossil	0.34	0.31	8.13
	Industrial in-process fuel	0.00	0.01	0.00
	Industrial process heat	0.00	0.22	0.05
	ALL	**1.70**	**5.10**	**25.01**
Other	Miscellaneous noncombustion sources	5.15	0.34	6.34
	Pulp/paper manufacturing	0.00	0.02	5.23
	Waste disposal--multichamber	0.00	0.22	0.00
	ALL	**5.15**	**0.58**	**11.57**
Solvent use	Solvent metal cleaning	0.51	0.00	0.00
	ALL	**0.51**	**0.00**	**0.00**
Storage tanks	Fixed roof tanks--crude oil	0.26	0.00	0.00
	ALL	**0.26**	**0.00**	**0.00**
Surface coating	Automobile surface coating	3.36	0.00	0.00
	Beverage can surface coating	0.26	0.00	0.00
	Miscellaneous surface coating	0.22	0.00	0.00
	Paper surface coating	0.57	0.00	0.00
	ALL	**4.41**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	0.83	44.16	0.10
	Utility external combustion--oil	0.24	8.37	0.77
	Utility external combustion--other	0.01	0.32	0.16
	Utility gas turbine	0.00	0.00	0.00
	Utility oil turbines	0.00	0.02	0.00
	ALL	**1.08**	**52.87**	**1.03**
	ALL POINT SOURCES	**13.49**	**58.58**	**38.02**

TABLE H-11. NEW JERSEY 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day		
		VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.01	1.42	0.09
	Commercial/institutional--bituminous	0.00	0.04	0.03
	Commercial/institutional--distillate oil	0.12	4.16	1.04
	Commercial/institutional--natural gas	0.18	7.14	1.43
	Commercial/institutional--residual oil	0.11	3.63	0.33
	Industrial fuel--bituminous coal	0.04	12.33	1.59
	Industrial fuel--distillate oil	0.23	3.55	0.84
	Industrial fuel--natural gas	0.08	8.69	2.17
	On-site incineration--comm./inst.	1.65	6.91	19.95
	On-site incineration--industrial	0.03	0.04	0.24
	On-site incineration--residential	1.94	0.11	29.75
	Open burning--residential	12.48	2.37	39.61
	Residential fuel--anthracite	0.02	0.01	0.16
	Residential fuel--bituminous coal	0.01	0.00	0.09
	Residential fuel--distillate oil	0.17	2.23	0.62
	Residential fuel--natural gas	0.00	2.47	0.49
	Residential fuel--wood	10.71	0.59	49.22
	ALL	**27.81**	**55.69**	**147.65**
Fires	Prescribed forest burning	0.00	0.00	0.00
	Structural fires	4.42	0.56	24.06
	ALL	**4.42**	**0.56**	**24.06**
Gas marketing	Bulk gasoline terminals/plants	31.38	0.00	0.00
	Gasoline marketing	126.92	0.00	0.00
	ALL	**158.30**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	1.97	0.68	35.24
	Aircraft landings/takeoffs--commercial	4.50	5.81	15.85
	Aircraft landings/takeoffs--military	2.40	0.96	4.52
	Off-highway diesels	3.94	24.25	7.38
	Off-highway gasoline vehicles	48.43	14.86	424.90
	Railroad locomotives	6.73	27.72	9.74
	Vessels--coal	13.59	5.32	47.05
	Vessels--diesel	3.18	12.74	4.46
	ALL	**84.74**	**92.33**	**549.15**
Other	Bakeries	5.75	0.00	0.00
	Cutback asphalt paving	10.53	0.00	0.00
	Oil/gas production fields	0.37	0.00	0.00
	Petroleum refinery fugitives	42.23	0.00	0.00
	Pharmaceuticals manufacture	12.33	0.00	0.00
	Publicly-owned treatment works	1.37	0.00	0.00
	Synthetic fibers manufacturing	0.05	0.00	0.00
	SOCMI fugitives	48.02	0.00	0.00
	ALL	**120.64**	**0.00**	**0.00**
Solvent use	Architectural coating	88.67	0.00	0.00
	Auto body repair	25.31	0.00	0.00
	Degreasing	40.34	0.00	0.00
	Dry cleaning	30.07	0.00	0.00
	Electrical equipment mfg.--coating	1.67	0.00	0.00
	Fabricated metals--coating	8.96	0.00	0.00

(continued)

TABLE H-11. (continued)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Flat wood product coating	1.01	0.00	0.00
	Furniture mfg.--coating	10.42	0.00	0.00
	Graphic arts and printing	31.55	0.00	0.00
	Machinery manufacturing--coating	4.82	0.00	0.00
	Miscellaneous industrial mfg.--coating	87.79	0.00	0.00
	Miscellaneous nonindustrial solvents	211.21	0.00	0.00
	Motor vehicle manufacturing--coating	1.47	0.00	0.00
	Other transportation equipment coating	0.09	0.00	0.00
	Paper coating	45.45	0.00	0.00
	Rubber and plastics mfg.--solvent	80.05	0.00	0.00
	Ship coating	0.40	0.00	0.00
	ALL	**669.28**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	112.48	0.00	0.00
	ALL	**112.48**	**0.00**	**0.00**
	ALL AREA SOURCES	**1177.68**	**148.58**	**720.85**
MOBILE SOURCES:				
	Diesel	12.33	--	--
	Evaporative	847.72	--	--
	Exhaust	317.62	--	--
	ALL MOBILE SOURCES	**1177.67**	**478.80**	**4370.59**
POINT SOURCES:				
Chem. Proc.	Cellulose acetate manufacturing	0.03	0.00	0.00
	Ethylene manufacturing	0.09	0.00	0.00
	Paint and varnish manufacturing	0.20	0.00	0.00
	Petroleum refinery fugitives	0.07	0.07	0.01
	Polyethylene manufacturing	0.41	12.61	0.00
	Propylene manufacturing	0.22	0.01	0.00
	Refinery vacuum distillation	0.38	0.55	0.74
	Refinery wastewater treatment	3.87	0.00	0.00
	Rubber tire manufacturing	0.06	0.00	0.00
	SOCMI fugitives	1.44	0.00	0.00
	SOCMI reactors	0.97	0.03	0.00
	ALL	**7.74**	**13.26**	**0.75**
Ind./Inst.	Commercial/institutional--gas	0.00	0.01	0.00
	Commercial/institutional--oil	0.01	1.89	0.27
	Industrial ext. comb. -gas- <100 MMBTU	0.05	6.47	0.48
	Industrial ext. comb. -gas- general	0.02	3.57	0.29
	Industrial ext. comb. -oil- <100 MMBTU	0.03	16.04	1.03
	Industrial ext. comb. -oil- general	0.07	10.27	0.92
	Industrial ext. comb. -coal	0.01	1.58	0.19
	Industrial ext. comb. -nonfossil	0.01	0.25	0.03
	Industrial gas turbines	0.21	31.02	1.69
	Industrial in-process fuel	0.20	1.16	0.03
	Industrial oil reciprocating engines	0.00	7.04	0.12
	Industrial process heat	0.04	3.41	0.37
	Industrial space heating	0.97	0.05	3.57
	ALL	**1.61**	**82.76**	**9.00**

(continued)

TABLE H-11. (concluded)

	Source Category	Emissions, tons/day		
		VOC	NO_x	CO
Other	Internal combustion--aircraft	0.00	0.11	0.01
	Marine vessel loading	1.11	0.00	0.00
	Miscellaneous noncombustion sources	44.56	30.99	7.46
	Waste disposal--multichamber	0.00	1.26	0.25
	ALL	**45.67**	**32.36**	**7.73**
Solvent use	Printing and publishing	6.91	0.00	0.00
	Solvent metal cleaning	0.06	0.00	0.00
	ALL	**6.98**	**0.00**	**0.00**
Storage tanks	External floating roof tanks--crude oil	1.30	0.00	0.00
	External floating roof tanks--gasoline	7.79	0.00	0.00
	Fixed roof tanks--crude oil	1.90	0.00	0.00
	Fixed roof roof tanks--gasoline	10.10	0.00	0.00
	Service stations --stage 1	1.17	0.00	0.00
	ALL	**22.26**	**0.00**	**0.00**
Surface coating	Automobile surface coating	5.14	0.00	0.00
	Beverage can surface coating	7.20	0.00	0.00
	General wood surface coating	2.79	0.00	0.00
	Miscellaneous surface coating	11.81	0.00	0.00
	Paper surface coating	0.03	0.00	0.00
	Plastic parts coating	0.20	0.00	0.00
	ALL	**27.18**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	0.85	137.93	4.67
	Utility external combustion--gas	0.00	0.00	0.00
	Utility external combustion--oil	0.75	77.10	4.31
	Utility gas turbines	0.08	2.58	0.69
	Utility oil reciprocating engines	0.00	0.02	0.00
	Utility oil turbines	0.64	7.53	1.93
	ALL	**2.32**	**225.17**	**11.60**
	ALL POINT SOURCES	**113.76**	**353.56**	**29.11**

TABLE H-12. NEW YORK 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.01	2.00	0.12
	Commercial/institutional--bituminous	0.02	0.37	0.22
	Commercial/institutional--distillate oil	0.27	9.30	2.33
	Commercial/institutional--natural gas	0.31	12.20	2.44
	Commercial/institutional--residual oil	0.54	17.59	1.60
	Industrial fuel--anthracite	0.00	0.03	0.00
	Industrial fuel--bituminous coal	0.04	10.11	1.30
	Industrial fuel--distillate oil	0.16	2.41	0.57
	Industrial fuel--natural gas	0.41	38.26	7.17
	On-site incineration--commercial/inst.	0.65	2.73	7.89
	On-site incineration--industrial	0.07	0.07	0.50
	On-site incineration--residential	4.55	0.26	69.72
	Open burning--commercial/institutional	0.19	0.04	0.53
	Open burning--industrial	1.26	0.24	4.41
	Open burning--residential	41.22	7.82	130.77
	Residential fuel--anthracite	0.06	0.02	0.56
	Residential fuel--bituminous coal	0.09	0.03	0.80
	Residential fuel--distillate oil	0.31	4.05	1.13
	Residential fuel--natural gas	0.00	5.53	1.11
	Residential fuel--wood	29.42	1.62	135.15
	ALL	**79.57**	**114.68**	**368.29**
Fires	Structural fires	11.05	1.39	60.12
	ALL	**11.05**	**1.39**	**60.12**
Gas marketing	Bulk gasoline terminals/plants	62.43	0.00	0.00
	Gasoline marketing	230.84	0.00	0.00
	ALL	**293.26**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	2.80	0.97	50.23
	Aircraft landings/takeoffs--commercial	11.24	14.51	39.63
	Aircraft landings/takeoffs--military	3.39	1.36	6.39
	Off-highway diesels	7.55	46.46	14.14
	Off-highway gasoline vehicles	96.74	29.69	848.80
	Railroad locomotives	5.40	22.22	7.81
	Vessels--coal	27.83	1.57	99.13
	Vessels--diesel	0.30	1.20	0.42
	ALL	**155.26**	**117.97**	**1066.56**
Other	Bakeries	8.84	0.00	0.00
	Cutback asphalt paving	17.72	0.00	0.00
	Oil/gas production fields	9.98	0.00	0.00
	Pharmaceuticals manufacture	13.27	0.00	0.00
	Publicly-owned treatment works	1.47	0.00	0.00
	Synthetic fibers manufacturing	0.30	0.00	0.00
	SOCMI fugitives	12.74	0.00	0.00
	ALL	**64.32**	**0.00**	**0.00**
Solvent use	Architectural coating	245.22	0.00	0.00
	Auto body repair	37.98	0.00	0.00
	Degreasing	88.18	0.00	0.00
	Dry cleaning	61.23	0.00	0.00

(continued)

TABLE H-12. (continued)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Electrical equipment mfg.--coating	3.40	0.00	0.00
	Fabricated metals--coating	13.99	0.00	0.00
	Flat wood product coating	2.07	0.00	0.00
	Furniture mfg.--coating	19.73	0.00	0.00
	Graphic arts and printing	78.66	0.00	0.00
	Machinery manufacturing--coating	10.17	0.00	0.00
	Miscellaneous industrial mfg.--coating	160.84	0.00	0.00
	Miscellaneous nonindustrial solvents	463.54	0.00	0.00
	Motor vehicle manufacturing--coating	4.75	0.00	0.00
	Other transportation equipment coating	0.47	0.00	0.00
	Paper coating	61.50	0.00	0.00
	Rubber and plastics mfg.--solvent	66.27	0.00	0.00
	Ship coating	0.58	0.00	0.00
	ALL	**1318.56**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	14.77	0.00	0.00
	ALL	**14.77**	**0.00**	**0.00**
	ALL AREA SOURCES	**1936.81**	**234.04**	**1494.97**
MOBILE SOURCES:				
	Diesel	14.57	--	--
	Evaporative	1544.37	--	--
	Exhaust	551.41	--	--
	ALL MOBILE SOURCES	**2110.35**	**826.06**	**7791.02**
POINT SOURCES:				
Chem. Proc.	Ethylene manufacturing	0.05	0.00	0.00
	Paint and varnish manufacturing	0.26	0.00	0.00
	Polyethylene manufacturing	7.13	0.01	0.00
	SOCMI reactors	1.30	0.00	0.02
	ALL	**8.75**	**0.01**	**0.02**
Ind./Inst.	Commercial/institutional--coal	0.06	1.86	0.21
	Commercial/institutional--gas	0.04	4.53	0.34
	Commercial/institutional--oil	1.31	15.06	1.47
	Commercial/institutional--other	0.03	0.13	0.14
	Industrial ext. comb. -gas- <100 MMBTU	0.41	4.95	1.98
	Industrial ext. comb. -gas- general	2.16	4.29	0.75
	Industrial ext. comb. -oil- general	6.36	33.09	2.22
	Industrial ext. comb. -coal	0.73	45.50	2.41
	Industrial ext. comb. -nonfossil	0.99	6.16	1.32
	Industrial in-process fuel	9.57	28.36	14.97
	ALL	**21.66**	**143.92**	**25.81**
Other	Coke oven by-products plants	0.05	4.27	0.00
	Miscellaneous noncombustion sources	81.61	7.27	60.96
	Pulp/paper manufacturing	0.00	0.99	0.00
	Single chamber incinerators	0.56	6.64	4.04
	Waste disposal--multichamber	0.22	1.97	7.50
	ALL	**82.44**	**21.14**	**72.51**

(continued)

TABLE H-12. (concluded)

Source Category		Emissions, tons/day VOC	NO_x	CO
Solvent use	Printing and publishing	6.35	0.00	0.00
	Solvent metal cleaning	0.25	0.00	0.00
	ALL	**6.59**	**0.00**	**0.00**
Storage tanks	External floating roof tanks--gasoline	5.99	0.00	0.00
	ALL	**5.99**	**0.00**	**0.00**
Surface coating	Automobile surface coating	9.31	0.00	0.00
	Beverage can surface coating	0.97	0.00	0.00
	Miscellaneous surface coating	8.06	0.00	0.00
	Paper surface coating	4.09	0.00	0.00
	ALL	**22.42**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	2.59	158.68	9.20
	Utility external combustion--gas	0.25	106.72	8.10
	Utility external combustion--oil	4.29	115.67	13.37
	ALL	**7.13**	**381.07**	**30.67**
	ALL POINT SOURCES	**154.99**	**546.15**	**129.01**

TABLE H-13. NORTH CAROLINA 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.00	0.00
	Commercial/institutional--bituminous	0.00	0.01	0.01
	Commercial/institutional--distillate oil	0.00	0.07	0.02
	Commercial/institutional--natural gas	0.00	0.04	0.01
	Commercial/institutional--wood	0.00	0.00	0.00
	Industrial fuel--bituminous coal	0.00	0.88	0.11
	Industrial fuel--distillate oil	0.01	0.17	0.04
	Industrial fuel--natural gas	0.02	1.83	0.34
	Industrial fuel--wood	0.01	0.04	0.06
	On-site incineration--commercial/inst.	0.02	0.07	0.20
	On-site incineration--industrial	0.00	0.00	0.03
	On-site incineration--residential	0.02	0.00	0.26
	Open burning--commercial/institutional	0.00	0.00	0.01
	Open burning--industrial	0.07	0.01	0.24
	Open burning--residential	3.81	0.72	12.09
	Residential fuel--bituminous coal	0.00	0.00	0.00
	Residential fuel--distillate oil	0.00	0.00	0.00
	Residential fuel--natural gas	0.00	0.00	0.00
	Residential fuel--wood	0.00	0.00	0.00
	ALL	**3.97**	**3.85**	**13.42**
Fires	Agricultural field burning	0.00	0.00	0.00
	Forest wildfires	0.16	0.03	1.17
	Prescribed forest burning	0.00	0.00	0.00
	Structural fires	0.18	0.02	1.00
	ALL	**0.34**	**0.06**	**2.17**
Gas marketing	Bulk gasoline terminals/plants	4.92	0.00	0.00
	Gasoline marketing	4.85	0.00	0.00
	ALL	**9.77**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.09	0.03	1.67
	Off-highway diesels	0.77	4.76	1.45
	Off-highway gasoline vehicles	2.67	0.82	23.44
	Railroad locomotives	0.23	0.94	0.33
	Vessels--coal	0.97	0.04	3.45
	Vessels--diesel	0.06	0.23	0.08
	ALL	**4.79**	**6.83**	**30.43**
Other	Bakeries	0.00	0.00	0.00
	Cutback asphalt paving	0.63	0.00	0.00
	Publicly-owned treatment works	0.06	0.00	0.00
	Synthetic fibers manufacturing	0.86	0.00	0.00
	ALL	**1.56**	**0.00**	**0.00**
Solvent use	Architectural coating	4.02	0.00	0.00
	Auto body repair	0.25	0.00	0.00
	Degreasing	0.62	0.00	0.00
	Dry cleaning	1.13	0.00	0.00
	Electrical equipment mfg.--coating	0.03	0.00	0.00
	Fabricated metals--coating	0.16	0.00	0.00
	Flat wood product coating	0.11	0.00	0.00
	Furniture mfg.--coating	1.18	0.00	0.00

(continued)

TABLE H-13. (concluded)

	Source Category	Emissions, tons/day		
		VOC	NO_x	CO
	Graphic arts and printing	0.25	0.00	0.00
	Machinery manufacturing--coating	0.07	0.00	0.00
	Miscellaneous industrial mfg.--coating	5.02	0.00	0.00
	Miscellaneous nonindustrial solvents	10.32	0.00	0.00
	Motor vehicle manufacturing--coating	0.12	0.00	0.00
	Paper coating	0.16	0.00	0.00
	Rubber and plastics mfg.--solvent	2.88	0.00	0.00
	ALL	**26.32**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	0.00	0.00	0.00
	ALL	**0.00**	**0.00**	**0.00**
	ALL AREA SOURCES	**46.77**	**10.74**	**46.02**
MOBILE SOURCES:				
	Diesel	0.62	--	--
	Evaporative	56.51	--	--
	Exhaust	19.26	--	--
	ALL MOBILE SOURCES	**76.39**	**31.31**	**293.26**
POINT SOURCES:				
Ind./Inst.	Industrial ext. comb. -oil- <100 MMBTU	0.00	0.64	0.05
	Industrial ext. comb. -oil- general	0.00	0.89	0.86
	Industrial ext. comb. -coal	0.01	3.39	0.04
	Industrial ext. comb. -nonfossil	0.10	0.92	0.24
	ALL	**0.10**	**5.83**	**1.19**
Other	Miscellaneous noncombustion sources	0.10	0.47	7.96
	Pulp/paper manufacturing	0.00	0.36	11.07
	ALL	**0.10**	**0.83**	**19.03**
Solvent use	Printing and publishing	0.50	0.00	0.00
	Solvent metal cleaning	0.62	0.00	0.00
	ALL	**1.12**	**0.00**	**0.00**
Surface coating	Beverage can surface coating	0.84	0.00	0.00
	ALL	**0.84**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	0.76	215.99	7.80
	Utility external combustion--oil	0.00	0.14	0.05
	Utility oil turbines	0.00	0.00	0.00
	ALL	**0.76**	**216.12**	**7.85**
	ALL POINT SOURCES	**2.92**	**222.78**	**28.08**

TABLE H-14. OHIO 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.58	0.04
	Commercial/institutional--bituminous	0.03	0.71	0.43
	Commercial/institutional--distillate oil	0.06	2.04	0.51
	Commercial/institutional--natural gas	0.30	11.83	2.37
	Industrial fuel--bituminous coal	0.14	37.89	4.88
	Industrial fuel--distillate oil	0.52	7.85	1.86
	Industrial fuel--natural gas	0.77	68.27	11.08
	Industrial fuel--residual oil	0.03	3.40	0.31
	On-site incineration--commercial/inst.	0.52	2.18	6.31
	On-site incineration--industrial	0.11	0.13	0.85
	On-site incineration--residential	14.85	0.84	227.30
	Open burning--commercial/institutional	0.25	0.05	0.70
	Open burning--industrial	2.14	0.41	7.50
	Open burning--residential	41.34	7.84	131.16
	Residential fuel--anthracite	0.00	0.00	0.01
	Residential fuel--bituminous coal	0.11	0.03	1.03
	Residential fuel--distillate oil	0.04	0.49	0.14
	Residential fuel--natural gas	0.00	3.82	0.76
	Residential fuel--wood	16.78	0.93	77.11
	ALL	**78.00**	**149.30**	**474.35**
Fires	Forest wildfires	0.44	0.09	3.22
	Structural fires	6.57	0.83	35.73
	ALL	**7.01**	**0.92**	**38.95**
Gas marketing	Bulk gasoline terminals/plants	47.15	0.00	0.00
	Gasoline marketing	174.15	0.00	0.00
	ALL	**221.30**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	3.04	1.04	54.36
	Aircraft landings/takeoffs--commercial	4.33	5.59	15.27
	Aircraft landings/takeoffs--military	3.24	1.30	6.11
	Off-highway diesels	14.99	92.17	28.06
	Off-highway gasoline vehicles	80.42	24.68	705.61
	Railroad locomotives	14.38	59.21	20.80
	Vessels--coal	23.75	1.49	93.46
	Vessels--diesel	0.04	0.14	0.05
	ALL	**144.19**	**185.63**	**923.72**
Other	Bakeries	5.90	0.00	0.00
	Cutback asphalt paving	11.70	0.00	0.00
	Oil/gas production fields	26.02	0.00	0.00
	Petroleum refinery fugitives	75.82	0.00	0.00
	Pharmaceuticals manufacture	2.49	0.00	0.00
	Publicly-owned treatment works	1.74	0.00	0.00
	Synthetic fibers manufacturing	0.07	0.00	0.00
	SOCMI fugitives	15.19	0.00	0.00
	ALL	**138.93**	**0.00**	**0.00**
Solvent use	Architectural coating	126.05	0.00	0.00
	Auto body repair	29.15	0.00	0.00
	Degreasing	79.81	0.00	0.00
	Dry cleaning	46.07	0.00	0.00

(continued)

TABLE H-14. (continued)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Electrical equipment mfg.--coating	1.44	0.00	0.00
	Fabricated metals--coating	23.07	0.00	0.00
	Flat wood product coating	2.73	0.00	0.00
	Furniture mfg.--coating	12.47	0.00	0.00
	Graphic arts and printing	31.09	0.00	0.00
	Machinery manufacturing--coating	7.25	0.00	0.00
	Miscellaneous industrial mfg.--coating	122.81	0.00	0.00
	Miscellaneous nonindustrial solvents	298.88	0.00	0.00
	Motor vehicle manufacturing--coating	13.81	0.00	0.00
	Other transportation equipment coating	0.80	0.00	0.00
	Paper coating	42.49	0.00	0.00
	Rubber and plastics mfg.--solvent	146.74	0.00	0.00
	Ship coating	0.08	0.00	0.00
	ALL	**984.74**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	259.97	0.00	0.00
	ALL	**259.97**	**0.00**	**0.00**
	ALL AREA SOURCES	**1834.13**	**335.86**	**1437.02**
MOBILE SOURCES:				
	Diesel	20.04	--	--
	Evaporative	1295.97	--	--
	Exhaust	520.94	--	--
	ALL MOBILE SOURCES	**1836.95**	**802.53**	**7741.13**
POINT SOURCES:				
Chem. Proc.	Acrylonitrile manufacturing	0.03	0.00	0.04
	Paint and varnish manufacturing	6.38	0.15	0.00
	Petroleum refinery fugitives	0.52	0.00	0.00
	Polyethylene manufacturing	6.20	0.00	0.00
	Refinery vacuum distillation	3.76	4.97	174.80
	Refinery wastewater treatment	0.46	0.00	0.00
	Rubber tire manufacturing	0.47	0.00	0.00
	Styrene-butadine rubber manufacturing	3.08	0.00	0.00
	SOCMI fugitives	0.06	0.00	0.00
	SOCMI reactors	2.56	0.01	0.41
	ALL	**23.52**	**5.12**	**175.24**
Ind./Inst.	Commercial/institutional--coal	0.21	5.35	3.29
	Commercial/institutional--gas	0.01	1.16	0.26
	Commercial/institutional--oil	0.02	0.37	0.03
	Commercial/institutional--other	0.14	0.33	0.01
	Industrial ext. comb. -gas- <100 MMBTU	0.05	6.35	0.92
	Industrial ext. comb. -gas- general	0.11	13.22	5.99
	Industrial ext. comb. -oil- <100 MMBTU	0.02	0.10	0.02
	Industrial ext. comb. -oil- general	0.46	5.01	0.33
	Industrial ext. comb. -coal	0.84	80.69	12.69
	Industrial ext. comb. -nonfossil	0.67	1.73	1.88
	Industrial gas reciprocating engines	0.23	30.48	3.84
	Industrial in-process fuel	0.07	2.38	0.96
	Industrial process heat	0.63	8.97	2.08
	Industrial space heating	0.00	0.01	0.01
	ALL	**3.47**	**156.16**	**32.31**

(continued)

TABLE H-14. (concluded)

	Source Category	Emissions, tons/day VOC	NO_x	CO
Other	Coke oven by-products plants	2.07	0.67	2.40
	Ferrosilicon production	0.00	0.00	0.00
	Iron/steel/blast furnace/sintering	0.49	0.40	59.53
	Marine vessel loading	1.61	0.00	0.00
	Miscellaneous noncombustion sources	85.33	42.50	493.83
	Waste disposal--multichamber	0.21	3.02	19.64
	ALL	**89.72**	**46.59**	**575.40**
Solvent use	Printing and publishing	19.97	0.00	0.00
	Solvent metal cleaning	3.28	0.00	0.00
	ALL	**23.25**	**0.00**	**0.00**
Storage tanks	Bulk gas terminals--not balanced	0.52	0.00	0.00
	Bulk gas terminals--submerged fill	0.44	0.00	0.00
	External floating roof tanks--crude oil	0.22	0.00	0.00
	External floating roof tanks--gasoline	0.71	0.00	0.00
	Fixed roof tanks--crude oil	0.10	0.00	0.00
	Fixed roof tanks--gasoline	0.06	0.00	0.00
	ALL	**2.04**	**0.00**	**0.00**
Surface coating	Automobile surface coating	16.12	0.00	0.00
	Beverage can surface coating	11.84	0.00	0.00
	General wood surface coating	0.40	0.00	0.00
	Miscellaneous surface coating	124.53	0.00	0.00
	Paper surface coating	6.80	0.00	0.00
	Plastic parts coating	1.05	0.00	0.00
	Wood furniture coating	0.49	0.00	0.00
	ALL	**161.23**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	4.69	1430.07	43.14
	Utility external combustion--gas	0.00	0.16	0.02
	Utility external combustion--oil	0.10	0.73	0.12
	Utility external combustion--other	0.00	0.90	0.00
	Utility gas turbines	0.00	0.01	0.01
	Utility oil turbines	0.05	0.13	0.05
	ALL	**4.84**	**1432.00**	**43.34**
	ALL POINT SOURCES	**308.06**	**1639.88**	**826.29**

TABLE H-15. PENNSYLVANIA 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.02	3.27	0.20
	Commercial/institutional--bituminous	0.05	1.03	0.61
	Commercial/institutional--distillate oil	0.11	3.92	0.98
	Commercial/institutional--natural gas	0.25	9.72	1.94
	Commercial/institutional--residual oil	0.06	1.95	0.18
	Industrial fuel--distillate oil	0.54	8.19	1.94
	Industrial fuel--natural gas	1.49	134.04	23.14
	On-site incineration--commercial/inst.	0.07	0.27	0.79
	On-site incineration--industrial	0.03	0.03	0.22
	On-site incineration--residential	1.08	0.06	16.50
	Open burning--residential	52.92	10.04	167.89
	Residential fuel--anthracite	0.18	0.05	1.63
	Residential fuel--bituminous coal	0.08	0.02	0.74
	Residential fuel--distillate oil	0.07	0.95	0.27
	Residential fuel--natural gas	0.00	1.40	0.28
	Residential fuel--wood	10.96	0.60	50.33
	ALL	**67.90**	**175.57**	**267.62**
Fires	Structural fires	7.27	0.92	39.57
	ALL	**7.27**	**0.92**	**39.57**
Gas marketing	Bulk gasoline terminals/plants	77.71	0.00	0.00
	Gasoline marketing	163.19	0.00	0.00
	ALL	**240.90**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	2.84	0.98	50.78
	Aircraft landings/takeoffs--commercial	7.47	9.65	26.36
	Aircraft landings/takeoffs--military	2.66	1.07	5.01
	Off-highway diesels	9.05	55.69	16.95
	Off-highway gasoline vehicles	94.09	28.87	825.55
	Railroad locomotives	8.87	36.52	12.83
	Vessels--coal	16.56	1.66	58.77
	Vessels--diesel	0.43	1.74	0.61
	ALL	**141.98**	**136.17**	**996.86**
Other	Bakeries	10.60	0.00	0.00
	Cutback asphalt paving	18.72	0.00	0.00
	Oil/gas production fields	8.26	0.00	0.00
	Petroleum refinery fugitives	104.54	0.00	0.00
	Pharmaceuticals manufacture	10.77	0.00	0.00
	Publicly-owned treatment works	1.36	0.00	0.00
	Synthetic fibers manufacturing	5.18	0.00	0.00
	SOCMI fugitives	18.06	0.00	0.00
	ALL	**177.50**	**0.00**	**0.00**
Solvent use	Architectural coating	138.99	0.00	0.00
	Auto body repair	30.48	0.00	0.00
	Degreasing	59.30	0.00	0.00
	Dry cleaning	38.83	0.00	0.00
	Electrical equipment mfg.--coating	1.79	0.00	0.00
	Fabricated metals--coating	16.26	0.00	0.00
	Flat wood product coating	2.50	0.00	0.00
	Furniture mfg.--coating	11.71	0.00	0.00

(continued)

TABLE H-15. (continued)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Graphic arts and printing	38.96	0.00	0.00
	Machinery manufacturing--coating	6.47	0.00	0.00
	Miscellaneous industrial mfg.--coating	122.87	0.00	0.00
	Miscellaneous nonindustrial solvents	320.44	0.00	0.00
	Motor vehicle manufacturing--coating	4.80	0.00	0.00
	Other transportation equipment coating	0.44	0.00	0.00
	Paper coating	55.30	0.00	0.00
	Rubber and plastics mfg.--solvent	69.79	0.00	0.00
	Ship coating	0.16	0.00	0.00
	ALL	**919.08**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	72.98	0.00	0.00
	ALL	**72.98**	**0.00**	**0.00**
	ALL AREA SOURCES	**1627.63**	**312.66**	**1304.05**
MOBILE SOURCES:				
	Diesel	21.13	--	--
	Evaporative	1174.02	--	--
	Exhaust	413.30	--	--
	ALL MOBILE SOURCES	**1608.45**	**726.45**	**6053.07**
POINT SOURCES:				
Chem. Proc.	Paint and varnish manufacturing	2.74	0.00	0.00
	Petroleum refinery fugitives	10.60	0.00	0.00
	Polyethylene manufacturing	6.06	0.00	0.00
	Refinery vacuum distillation	2.64	4.63	16.26
	Refinery wastewater treatment	1.88	0.00	0.00
	Styrene-butadine rubber manufacturing	0.00	0.00	0.00
	SOCMI distillation	0.00	0.00	0.00
	SOCMI fugitives	0.00	0.00	0.02
	SOCMI reactors	0.60	0.00	3.11
	ALL	**24.51**	**4.63**	**19.39**
Ind./Inst.	Commercial/institutional--coal	0.29	4.43	3.72
	Commercial/institutional--gas	0.00	0.50	0.09
	Commercial/institutional--oil	0.01	0.16	0.01
	Commercial/institutional--other	0.06	0.01	0.02
	Industrial ext. comb. -gas- <100 MMBTU	0.02	5.27	0.63
	Industrial ext. comb. -gas- general	0.10	9.24	4.21
	Industrial ext. comb. -oil- general	0.11	8.89	0.77
	Industrial ext. comb. -coal	0.31	54.81	7.99
	Industrial ext. comb. -nonfossil	0.23	1.22	0.78
	Industrial gas reciprocating engines	0.29	48.24	6.10
	Industrial gas turbines	0.02	2.24	0.89
	Industrial in-process fuel	0.00	0.69	0.12
	Industrial process heat	0.09	13.14	2.25
	Industrial space heating	0.00	0.01	0.00
	ALL	**1.53**	**148.86**	**27.58**
Other	Charcoal manufacturing	0.20	0.15	0.45
	Coke oven by-products plants	6.76	2.80	8.13
	Internal combustion aircraft	0.13	2.05	0.45

(continued)

TABLE H-15. (concluded)

	Source Category	Emissions, tons/day		
		VOC	NO_x	CO
	Iron/steel/blast furnace/sintering	2.57	0.85	111.19
	Marine vessel loading	8.20	0.00	0.00
	Miscellaneous noncombustion sources	38.61	71.26	747.65
	Pulp/paper manufacturing	0.80	0.22	8.63
	Waste disposal--multichamber	0.34	4.07	34.85
	ALL	**57.61**	**81.40**	**911.36**
Solvent use	Printing and publishing	35.21	0.00	0.00
	Solvent metal cleaning	3.29	0.00	0.00
	ALL	**38.51**	**0.00**	**0.00**
Storage tanks	Bulk gas terminals--not balanced	0.35	0.00	0.00
	Bulk gas terminals--splash fill	0.05	0.00	0.00
	Bulk gas terminals--submerged fill	0.66	0.00	0.00
	External floating roof tanks--crude oil	2.91	0.00	0.00
	External floating roof tanks--gasoline	2.45	0.00	0.00
	Fixed roof tanks--gasoline	0.00	0.00	0.00
	Fixed roof tanks--crude oil	0.23	0.00	0.00
	ALL	**6.66**	**0.00**	**0.00**
Surface coating	Automobile surface coating	23.05	0.00	0.00
	Beverage can surface coating	7.28	6.46	0.00
	General wood surface coating	7.39	0.00	0.00
	Miscellaneous surface coating	13.26	0.00	0.00
	Paper surface coating	45.66	0.00	0.00
	Plastic parts coating	2.42	0.00	0.00
	Wood furniture coating	0.13	0.00	0.00
	ALL	**99.19**	**6.46**	**0.00**
Utilities	Utility external combustion--coal	4.48	1384.88	38.30
	Utility external combustion--gas	0.00	0.58	0.04
	Utility external combustion--oil	0.78	40.14	3.41
	Utility external combustion--other	0.00	2.01	0.06
	Utility gas turbines	0.00	0.02	0.01
	Utility oil turbines	0.05	1.15	0.25
	ALL	**5.31**	**1428.77**	**42.06**
	ALL POINT SOURCES	**233.31**	**1670.13**	**1000.39**

TABLE H-16. RHODE ISLAND 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.03	0.00
	Commercial/institutional--distillate oil	0.01	0.32	0.08
	Commercial/institutional--natural gas	0.02	0.59	0.12
	Industrial fuel--bituminous coal	0.00	0.24	0.03
	Industrial fuel--distillate oil	0.03	0.42	0.10
	Industrial fuel--natural gas	0.02	1.88	0.39
	Industrial fuel--residual oil	0.02	2.26	0.21
	On-site incineration--commercial/inst.	0.01	0.02	0.07
	On-site incineration--industrial	0.00	0.00	0.01
	On-site incineration--residential	1.13	0.06	17.25
	Open burning--commercial/institutional	0.02	0.00	0.06
	Open burning--industrial	0.10	0.02	0.34
	Open burning--residential	1.90	0.36	6.02
	Residential fuel--anthracite	0.00	0.00	0.01
	Residential fuel--distillate oil	0.01	0.14	0.04
	Residential fuel--natural gas	0.00	0.09	0.02
	Residential fuel--wood	0.43	0.02	1.97
	ALL	**3.68**	**6.48**	**26.72**
Fires	Structural fires	0.58	0.07	3.18
	ALL	**0.58**	**0.07**	**3.18**
Gas marketing	Bulk gasoline terminals/plants	5.74	0.00	0.00
	Gasoline marketing	14.99	0.00	0.00
	ALL	**20.72**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.31	0.11	5.64
	Aircraft landings/takeoffs--commercial	0.39	0.51	1.38
	Aircraft landings/takeoffs--military	0.10	0.04	0.19
	Off-highway diesels	0.36	2.22	0.68
	Off-highway gasoline vehicles	7.79	2.39	68.38
	Railroad locomotives	0.07	0.28	0.10
	Vessels--coal	2.53	0.12	9.03
	Vessels--diesel	0.07	0.26	0.09
	ALL	**11.63**	**5.92**	**85.49**
Other	Bakeries	0.33	0.00	0.00
	Cutback asphalt paving	0.77	0.00	0.00
	Publicly-owned treatment works	0.27	0.00	0.00
	Synthetic fibers manufacturing	0.61	0.00	0.00
	SOCMI fugitives	1.78	0.00	0.00
	ALL	**3.76**	**0.00**	**0.00**
Solvent use	Architectural coating	13.34	0.00	0.00
	Auto body repair	2.39	0.00	0.00
	Degreasing	11.20	0.00	0.00
	Dry cleaning	3.38	0.00	0.00
	Electrical equipment mfg.--coating	0.22	0.00	0.00
	Fabricated metals--coating	3.46	0.00	0.00
	Flat wood product coating	0.18	0.00	0.00
	Furniture mfg.--coating	1.22	0.00	0.00
	Graphic arts and printing	3.06	0.00	0.00
	Machinery manufacturing--coating	0.61	0.00	0.00

(continued)

TABLE H-16. (concluded)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Miscellaneous industrial mfg.--coating	14.26	0.00	0.00
	Miscellaneous nonindustrial solvents	29.24	0.00	0.00
	Motor vehicle manufacturing--coating	0.29	0.00	0.00
	Other transportation equipment coating	0.00	0.00	0.00
	Paper coating	4.13	0.00	0.00
	Rubber and plastics mfg.--solvent	10.31	0.00	0.00
	Ship coating	0.40	0.00	0.00
	ALL	**97.70**	**0.00**	**0.00**
	ALL AREA SOURCES	**138.07**	**12.48**	**115.38**
MOBILE SOURCES:				
	Diesel	0.87	--	--
	Evaporative	106.78	--	--
	Exhaust	32.42	--	--
	ALL MOBILE SOURCES	**140.07**	**53.91**	**470.90**
POINT SOURCES:				
Ind./Inst.	Commercial/institutional--gas	0.00	0.27	0.02
	Commercial/institutional--oil	0.01	0.36	0.02
	Industrial ext. comb. -oil-cogeneration	0.01	0.31	0.03
	Industrial ext. comb. -oil- general	0.01	0.16	0.01
	ALL	**0.03**	**1.10**	**0.08**
Other	Miscellaneous noncombustion sources	2.94	0.83	0.02
	ALL	**2.94**	**0.83**	**0.02**
Solvent use	Dry cleaning	0.01	0.00	0.00
	Printing and publishing	3.67	0.01	0.00
	Solvent metal cleaning	0.04	0.00	0.00
	ALL	**3.71**	**0.01**	**0.00**
Storage tanks	Bulk gas terminals--splash fill	0.16	0.00	0.00
	External floating roof tanks--gasoline	0.08	0.00	0.00
	Service stations--Stage 1	0.01	0.00	0.00
	ALL	**0.25**	**0.00**	**0.00**
Surface coating	Automobile surface coating	0.75	0.00	0.00
	Beverage can surface coating	2.08	0.00	0.00
	Miscellaneous surface coating	4.79	0.00	0.00
	Paper surface coating	3.88	0.00	0.00
	ALL	**11.51**	**0.00**	**0.00**
Utilities	Utility external combustion--gas	0.01	6.37	0.47
	Utility external combustion--oil	0.02	1.32	0.10
	ALL	**0.03**	**7.69**	**0.57**
	ALL POINT SOURCES	**18.47**	**9.64**	**0.67**

TABLE H-17. TENNESSEE 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

Source Category		Emissions, tons/day		
		VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.01	0.00
	Commercial/institutional--bituminous	0.00	0.04	0.02
	Commercial/institutional--distillate oil	0.00	0.12	0.03
	Commercial/institutional--natural gas	0.00	0.16	0.03
	Commercial/institutional--residual oil	0.00	0.01	0.00
	Industrial fuel--bituminous coal	0.00	0.47	0.00
	Industrial fuel--distillate oil	0.00	0.02	0.01
	Industrial fuel--process gas	0.00	0.01	0.00
	On-site incineration--residential	0.34	0.02	5.23
	Open burning--commercial/institutional	0.06	0.01	0.18
	Open burning--industrial	0.04	0.01	0.13
	Open burning--residential	3.05	0.58	9.67
	Residential fuel--bituminous coal	0.00	0.00	0.00
	Residential fuel--distillate oil	0.00	0.00	0.00
	Residential fuel--natural gas	0.00	0.00	0.00
	Residential fuel--wood	0.00	0.00	0.00
	ALL	**3.50**	**1.47**	**15.36**
Fires	Forest wildfires	0.05	0.01	0.36
	Prescribed forest burning	0.00	0.00	0.00
	Structural fires	0.18	0.02	0.97
	ALL	**0.23**	**0.03**	**1.33**
Gas marketing	Bulk gasoline terminals/plants	2.03	0.00	0.00
	Gasoline marketing	2.73	0.00	0.00
	ALL	**4.76**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.12	0.04	2.10
	Aircraft landings/takeoffs--commercial	0.23	0.29	0.80
	Aircraft landings/takeoffs--military	0.01	0.00	0.02
	Off-highway diesels	0.95	5.86	1.78
	Off-highway gasoline vehicles	3.05	0.94	26.79
	Railroad locomotives	0.79	3.27	1.15
	Vessels--coal	0.98	0.04	3.48
	Vessels--diesel	0.04	0.14	0.05
	ALL	**6.16**	**10.58**	**36.17**
Other	Bakeries	0.09	0.00	0.00
	Cutback asphalt paving	0.34	0.00	0.00
	Oil/gas production fields	0.01	0.00	0.00
	Pharmaceuticals manufacture	0.58	0.00	0.00
	Publicly-owned treatment works	0.02	0.00	0.00
	Synthetic fibers manufacturing	4.00	0.00	0.00
	SOCMI fugitives	7.50	0.00	0.00
	ALL	**12.54**	**0.00**	**0.00**
Solvent use	Architectural coating	4.15	0.00	0.00
	Auto body repair	1.49	0.00	0.00
	Degreasing	1.19	0.00	0.00
	Dry cleaning	1.52	0.00	0.00

(continued)

TABLE H-17. (continued)

	Source Category	Emissions, tons/day		
		VOC	NO_x	CO
	Electrical equipment mfg.--coating	0.05	0.00	0.00
	Fabricated metals--coating	0.17	0.00	0.00
	Flat wood product coating	0.06	0.00	0.00
	Furniture mfg.--coating	0.75	0.00	0.00
	Graphic arts and printing	1.17	0.00	0.00
	Machinery manufacturing--coating	0.17	0.00	0.00
	Miscellaneous industrial mfg.--coating	1.59	0.00	0.00
	Miscellaneous nonindustrial solvents	8.07	0.00	0.00
	Motor vehicle manufacturing--coating	0.32	0.00	0.00
	Paper coating	1.53	0.00	0.00
	Rubber and plastics mfg.--solvent	1.33	0.00	0.00
	ALL	**23.54**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	0.00	0.00	0.00
	ALL	**0.00**	**0.00**	**0.00**
	ALL AREA SOURCES	**50.74**	**12.08**	**52.86**
MOBILE SOURCES:				
	Diesel	0.68	--	--
	Evaporative	61.43	--	--
	Exhaust	18.32	--	--
	ALL MOBILE SOURCES	**80.43**	**34.24**	**284.08**
POINT SOURCES:				
Chem. Proc.	Cellulose acetate manufacturing	24.19	0.00	0.00
	Ethylene manufacturing	0.06	0.00	0.00
	Polyethylene manufacturing	0.15	0.00	0.00
	Propylene manufacturing	0.14	30.26	0.00
	SOCMI distillation	9.36	0.00	0.00
	SOCMI fugitives	1.35	0.00	0.30
	SOCMI reactors	1.57	0.00	0.64
	ALL	**36.82**	**30.26**	**0.95**
Ind./Inst.	Commercial/institutional--coal	0.02	0.29	0.04
	Industrial ext. comb. -gas- general	0.05	0.21	0.12
	Industrial ext. comb. -oil- <100 MMBTU	0.08	0.19	0.05
	Industrial ext. comb. -oil- general	0.07	0.22	0.02
	Industrial ext. comb. -coal	1.22	46.71	7.89
	Industrial ext. comb. -nonfossil	0.64	0.33	0.94
	Industrial gas reciprocating engines	0.00	1.35	0.03
	Industrial gas turbines	0.00	0.06	0.01
	Industrial in-process fuel	0.01	0.09	0.02
	Industrial process heat	0.00	0.00	0.00
	Industrial space heating	0.00	0.00	0.00
	ALL	**2.08**	**49.46**	**9.13**
Other	Miscellaneous noncombustion sources	60.98	5.65	21.46
	Pulp/paper manufacturing	0.00	0.45	1.78
	Waste disposal--multichamber	0.01	0.18	0.20
	ALL	**60.99**	**6.27**	**23.44**

(continued)

TABLE H-17. (concluded)

Source Category		Emissions, tons/day VOC	NO_x	CO
Solvent use	Printing and publishing	0.65	0.01	0.00
	ALL	**0.65**	**0.01**	**0.00**
Storage tanks	Fixed roof tanks--crude oil	0.02	0.00	0.00
	Fixed roof tanks--gasoline	0.00	0.00	0.00
	ALL	**0.02**	**0.00**	**0.00**
Surface coating	Automobile surface coating	0.12	0.00	0.00
	Beverage can surface coating	0.26	0.01	0.00
	Miscellaneous surface coating	4.93	0.00	0.00
	ALL	**5.32**	**0.01**	**0.00**
Utilities	Utility external combustion--coal	0.18	40.34	1.62
	ALL	**0.18**	**40.34**	**1.62**
	ALL POINT SOURCES	**106.06**	**126.36**	**35.14**

TABLE H-18. VERMONT 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.08	0.00
	Commercial/institutional--bituminous	0.02	0.35	0.21
	Commercial/institutional--distillate oil	0.01	0.41	0.10
	Commercial/institutional--natural gas	0.00	0.13	0.03
	Industrial fuel--anthracite	0.00	0.08	0.00
	Industrial fuel--bituminous coal	0.00	0.32	0.04
	Industrial fuel--coke	0.00	0.05	0.02
	Industrial fuel--distillate oil	0.03	0.53	0.13
	Industrial fuel--natural gas	0.00	0.24	0.06
	On-site incineration--commercial/inst.	0.02	0.08	0.22
	On-site incineration--industrial	0.00	0.00	0.02
	On-site incineration--residential	0.52	0.03	8.00
	Open burning--residential	4.75	0.90	15.06
	Residential fuel--anthracite	0.00	0.00	0.02
	Residential fuel--distillate oil	0.02	0.20	0.06
	Residential fuel--natural gas	0.00	0.05	0.01
	Residential fuel--wood	2.10	0.12	9.66
	ALL	**7.48**	**3.57**	**33.64**
Fires	Agricultural field burning	0.00	0.00	0.00
	Forest wildfires	0.01	0.00	0.08
	Structural fires	0.27	0.03	1.48
	ALL	**0.28**	**0.04**	**1.57**
Gas marketing	Bulk gasoline terminals/plants	4.60	0.00	0.00
	Gasoline marketing	10.57	0.00	0.00
	ALL	**15.17**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.30	0.10	5.33
	Aircraft landings/takeoffs--commercial	0.40	0.52	1.41
	Aircraft landings/takeoffs--military	0.19	0.08	0.36
	Off-highway diesels	1.13	6.94	2.11
	Off-highway gasoline vehicles	7.05	2.16	61.87
	Railroad locomotives	0.18	0.74	0.26
	Vessels--coal	2.75	0.13	9.80
	Vessels--diesel	0.02	0.06	0.02
	ALL	**12.01**	**10.72**	**81.16**
Other	Bakeries	0.19	0.00	0.00
	Cutback asphalt paving	0.57	0.00	0.00
	Pharmaceuticals manufacture	0.01	0.00	0.00
	Publicly-owned treatment works	0.03	0.00	0.00
	ALL	**0.79**	**0.00**	**0.00**
Solvent use	Architectural coating	8.83	0.00	0.00
	Auto body repair	1.65	0.00	0.00
	Degreasing	3.81	0.00	0.00
	Dry cleaning	1.39	0.00	0.00
	Electrical equipment mfg.--coating	0.19	0.00	0.00
	Fabricated metals--coating	0.95	0.00	0.00
	Flat wood product coating	0.17	0.00	0.00
	Furniture mfg.--coating	0.82	0.00	0.00
	Graphic arts and printing	2.06	0.00	0.00
	Machinery manufacturing--coating	0.51	0.00	0.00
	Miscellaneous industrial mfg.--coating	5.35	0.00	0.00

(continued)

TABLE H-18. (concluded)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Miscellaneous nonindustrial solvents	14.30	0.00	0.00
	Motor vehicle manufacturing--coating	0.07	0.00	0.00
	Other transportation equipment coating	0.03	0.00	0.00
	Paper coating	3.02	0.00	0.00
	Rubber and plastics mfg.--solvent	3.55	0.00	0.00
	Ship coating	0.01	0.00	0.00
	ALL	**46.71**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	0.04	0.00	0.00
	ALL	**0.04**	**0.00**	**0.00**
	ALL AREA SOURCES	**82.49**	**14.33**	**116.37**
MOBILE SOURCES:				
	Diesel	1.01	--	--
	Evaporative	69.00	--	--
	Exhaust	24.40	--	--
	ALL MOBILE SOURCES	**94.41**	**43.61**	**357.92**
POINT SOURCES:				
Chem. Proc.	Rubber tire manufacturing	0.00	0.00	0.00
	ALL	**0.00**	**0.00**	**0.00**
Ind./Inst.	Commercial/institutional--gas	0.00	0.01	0.00
	Commercial/institutional--oil	0.00	0.03	0.00
	Industrial ext. comb. -oil- general	0.00	0.49	0.04
	Industrial ext. comb. -coal	0.00	0.00	0.00
	Industrial ext. comb. -nonfossil	0.00	0.01	0.02
	Industrial process heat	0.08	0.27	0.39
	ALL	**0.09**	**0.82**	**0.46**
Other	Miscellaneous noncombustion sources	0.00	0.00	0.00
	ALL	**0.00**	**0.00**	**0.00**
Solvent use	Printing and publishing	2.11	0.00	0.00
	Solvent metal cleaning	0.12	0.00	0.00
	ALL	**2.23**	**0.00**	**0.00**
Surface coating	Automobile surface coating	0.09	0.00	0.00
	General wood surface coating	0.92	0.00	0.00
	Paper surface coating	0.03	0.00	0.00
	Wood furniture coating	0.81	0.00	0.00
	ALL	**1.84**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	0.00	0.37	0.13
	Utility external combustion--gas	0.00	0.10	0.01
	Utility external combustion--oil	0.00	0.03	0.01
	Utility external combustion--other	1.05	3.41	4.88
	Utility oil turbines	0.00	0.01	0.00
	ALL	**1.05**	**3.93**	**5.02**
	ALL POINT SOURCES	**5.21**	**4.74**	**5.48**

TABLE H-19. VIRGINIA 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

	Source Category	Emissions, tons/day		
		VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.04	0.00
	Commercial/institutional--bituminous	0.03	0.55	0.33
	Commercial/institutional--distillate oil	0.04	1.41	0.35
	Commercial/institutional--natural gas	0.07	2.82	0.56
	Commercial/institutional--residual oil	0.03	0.95	0.09
	Industrial fuel--bituminous coal	0.08	21.85	2.82
	Industrial fuel--distillate oil	0.13	2.00	0.47
	Industrial fuel--natural gas	0.28	25.05	4.17
	On-site incineration--commercial/inst.	0.09	0.36	1.03
	On-site incineration--industrial	0.05	0.06	0.38
	On-site incineration--residential	0.44	0.02	6.74
	Open burning--industrial	0.22	0.04	0.77
	Open burning--residential	26.58	5.04	84.32
	Residential fuel--anthracite	0.00	0.00	0.04
	Residential fuel--bituminous coal	0.09	0.03	0.80
	Residential fuel--distillate oil	0.04	0.57	0.16
	Residential fuel--natural gas	0.00	0.62	0.12
	Residential fuel--wood	14.45	0.80	66.37
	ALL	**42.61**	**62.22**	**169.52**
Fires	Forest wildfires	0.39	0.08	2.88
	Prescribed forest burning	0.00	0.00	0.00
	Structural fires	2.52	0.32	13.69
	ALL	**2.91**	**0.40**	**16.57**
Gas marketing	Bulk gasoline terminals/plants	42.29	0.00	0.00
	Gasoline marketing	96.35	0.00	0.00
	ALL	**138.64**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	1.82	0.63	32.62
	Aircraft landings/takeoffs--commercial	2.92	3.77	10.28
	Aircraft landings/takeoffs--military	3.73	1.49	7.02
	Off-highway diesels	8.28	50.93	15.50
	Off-highway gasoline vehicles	36.79	11.29	322.76
	Railroad locomotives	16.18	66.64	23.41
	Vessels--coal	11.46	1.72	40.51
	Vessels--diesel	1.53	6.12	2.14
	ALL	**82.71**	**142.58**	**454.25**
Other	Bakeries	3.07	0.00	0.00
	Cutback asphalt paving	14.74	0.00	0.00
	Oil/gas production fields	0.81	0.00	0.00
	Petroleum refinery fugitives	7.85	0.00	0.00
	Pharmaceuticals manufacture	1.69	0.00	0.00
	Publicly-owned treatment works	0.48	0.00	0.00
	Synthetic fibers manufacturing	55.83	0.00	0.00
	SOCMI fugitives	12.27	0.00	0.00
	ALL	**96.74**	**0.00**	**0.00**
Solvent use	Architectural coating	67.42	0.00	0.00
	Auto body repair	17.24	0.00	0.00
	Degreasing	19.02	0.00	0.00
	Dry cleaning	28.25	0.00	0.00
	Electrical equipment mfg.--coating	0.78	0.00	0.00
	Fabricated metals--coating	2.66	0.00	0.00
	Flat wood product coating	1.83	0.00	0.00
	Furniture mfg.--coating	10.05	0.00	0.00

(continued)

TABLE H-19. (continued)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Graphic arts and printing	12.54	0.00	0.00
	Machinery manufacturing--coating	1.94	0.00	0.00
	Miscellaneous industrial mfg.--coating	43.80	0.00	0.00
	Miscellaneous nonindustrial solvents	143.95	0.00	0.00
	Motor vehicle manufacturing--coating	1.35	0.00	0.00
	Other transportation equipment coating	0.02	0.00	0.00
	Paper coating	20.25	0.00	0.00
	Rubber and plastics mfg.--solvent	20.03	0.00	0.00
	Ship coating	5.02	0.00	0.00
	ALL	**396.14**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	7.47	0.00	0.00
	ALL	**7.47**	**0.00**	**0.00**
	ALL AREA SOURCES	**767.23**	**205.19**	**640.34**
MOBILE SOURCES:				
	Diesel	11.67	--	--
	Evaporative	760.39	--	--
	Exhaust	269.65	--	--
	ALL MOBILE SOURCES	**1041.71**	**458.99**	**4061.91**
POINT SOURCES:				
Chem. Proc.	Cellulose acetate manufacturing	5.83	0.00	0.00
	Green tire spray	1.43	0.00	0.00
	Paint and varnish manufacturing	1.31	0.00	0.00
	Polyethylene manufacturing	0.19	0.00	0.00
	Refinery vacuum distillation	2.27	0.87	2.54
	Rubber tire manufacturing	8.09	0.00	0.00
	Vegetable oil processing	2.28	0.00	0.00
	ALL	**21.39**	**0.87**	**2.54**
Ind./Inst.	Commercial/institutional--coal	0.01	1.21	0.54
	Commercial/institutional--gas	0.00	0.06	0.01
	Commercial/institutional--oil	0.05	2.19	0.28
	Commercial/institutional--other	0.01	0.04	0.40
	Industrial ext. comb. -gas- <100 MMBTU	0.00	3.51	0.26
	Industrial ext. comb. -gas- general	0.00	1.83	0.36
	Industrial ext. comb. -oil- general	0.03	8.11	0.80
	Industrial ext. comb. -coal	0.31	79.70	6.07
	Industrial ext. comb. -nonfossil	2.27	7.41	10.55
	Industrial in-process fuel	0.00	0.06	0.01
	Industrial oil reciprocating engines	0.00	0.00	0.00
	Industrial process heat	0.01	0.73	0.18
	Industrial space heating	0.00	0.00	0.00
	ALL	**2.70**	**104.85**	**19.47**
Other	Charcoal manufacturing	4.79	0.00	5.25
	Coke oven by-products plants	0.26	0.04	0.73
	Marine vessel loading	1.21	0.00	0.00
	Miscellaneous noncombustion sources	135.25	49.05	60.96

(continued)

TABLE H-19. (concluded)

	Source Category	Emissions, tons/day VOC	NO_x	CO
	Pulp/paper manufacturing	0.08	2.73	30.03
	Single chamber incinerators	0.28	0.19	1.90
	Waste disposal--multichamber	0.07	0.72	0.41
	ALL	**141.94**	**52.73**	**99.28**
Solvent use	Dry cleaning	0.18	0.00	0.00
	Printing and publishing	34.31	0.00	0.00
	Solvent metal cleaning	3.11	0.00	0.00
	ALL	**37.60**	**0.00**	**0.00**
Storage tanks	Bulk gas terminals--not balanced	3.35	0.00	0.00
	Bulk gas terminals--submerged fill	2.03	0.00	0.00
	External floating roof tanks--crude oil	0.11	0.00	0.00
	External floating roof tanks--gasoline	4.94	0.00	0.00
	Fixed roof tanks--crude oil	0.79	0.00	0.00
	Fixed roof tanks--gasoline	0.06	0.00	0.00
	Service stations--Stage 1	0.05	0.00	0.00
	ALL	**11.32**	**0.00**	**0.00**
Surface coating	Automobile surface coating	33.57	0.00	0.00
	Beverage can surface coating	10.79	0.00	0.00
	General wood surface coating	4.29	0.00	0.00
	Miscellaneous surface coating	0.60	0.00	0.00
	Wood furniture coating	8.62	0.00	0.00
	ALL	**57.87**	**0.00**	**0.00**
Utilities	Utility external combustion--coal	0.67	230.15	6.49
	Utility external combustion--gas	0.00	1.06	0.14
	Utility external combustion--oil	0.09	3.50	0.44
	Utility gas turbines	0.00	0.10	0.03
	Utility oil turbines	0.00	0.10	0.02
	ALL	**0.77**	**234.90**	**7.12**
	ALL POINT SOURCES	**273.59**	**393.36**	**128.42**

TABLE H-20. WEST VIRGINIA 1985 BASE CASE EMISSIONS BY SOURCE CATEGORY

Source Category		Emissions, tons/day VOC	NO_x	CO
AREA SOURCES:				
Combustion	Commercial/institutional--anthracite	0.00	0.09	0.01
	Commercial/institutional--distillate oil	0.01	0.48	0.12
	Commercial/institutional--natural gas	0.04	1.43	0.29
	Commercial/institutional--residual oil	0.00	0.01	0.00
	Industrial fuel--bituminous coal	0.00	0.48	0.06
	Industrial fuel--distillate oil	0.22	3.31	0.79
	Industrial fuel--natural gas	0.19	16.29	2.22
	On-site incineration--residential	0.18	0.01	2.69
	Open burning--industrial	0.08	0.02	0.27
	Open burning--residential	16.75	3.18	53.14
	Residential fuel--bituminous coal	0.03	0.01	0.23
	Residential fuel--distillate oil	0.00	0.05	0.01
	Residential fuel--natural gas	0.00	0.42	0.08
	Residential fuel--wood	6.03	0.33	27.69
	ALL	**23.53**	**26.10**	**87.59**
Fires	Forest wildfires	0.03	0.01	0.21
	Structural fires	1.14	0.14	6.20
	ALL	**1.17**	**0.15**	**6.41**
Gas marketing	Bulk gasoline terminals/plants	11.60	0.00	0.00
	Gasoline marketing	25.55	0.00	0.00
	ALL	**37.15**	**0.00**	**0.00**
Off highway	Aircraft landings/takeoffs--civil	0.64	0.22	11.38
	Aircraft landings/takeoffs--commercial	0.57	0.73	2.00
	Aircraft landings/takeoffs--military	0.63	0.25	1.19
	Off-highway diesels	2.28	14.02	4.27
	Off-highway gasoline vehicles	12.41	3.81	108.85
	Railroad locomotives	3.02	12.43	4.37
	Vessels--coal	3.27	0.15	11.67
	Vessels--diesel	5.90	23.61	8.26
	ALL	**28.72**	**55.22**	**152.00**
Other	Bakeries	0.96	0.00	0.00
	Cutback asphalt paving	2.83	0.00	0.00
	Oil/gas production fields	10.63	0.00	0.00
	Petroleum refinery fugitives	2.42	0.00	0.00
	Pharmaceuticals manufacture	0.16	0.00	0.00
	Publicly-owned treatment works	0.10	0.00	0.00
	SOCMI fugitives	31.57	0.00	0.00
	ALL	**48.68**	**0.00**	**0.00**
Solvent use	Architectural coating	22.70	0.00	0.00
	Auto body repair	1.94	0.00	0.00
	Degreasing	2.70	0.00	0.00
	Dry cleaning	4.97	0.00	0.00
	Electrical equipment mfg.--coating	0.06	0.00	0.00
	Fabricated metals--coating	1.01	0.00	0.00
	Flat wood product coating	0.26	0.00	0.00
	Furniture mfg.--coating	0.82	0.00	0.00
	Graphic arts and printing	2.00	0.00	0.00
	Machinery manufacturing--coating	0.28	0.00	0.00
	Miscellaneous industrial mfg.--coating	7.82	0.00	0.00

(continued)

TABLE H-20. (continued)

	Source Category	Emissions, tons/day		
		VOC	NO_x	CO
	Miscellaneous nonindustrial solvents	43.40	0.00	0.00
	Motor vehicle manufacturing--coating	0.21	0.00	0.00
	Other transportation equipment coating	0.02	0.00	0.00
	Paper coating	1.44	0.00	0.00
	Rubber and plastics mfg.--solvent	4.61	0.00	0.00
	Ship coating	0.01	0.00	0.00
	ALL	**94.23**	**0.00**	**0.00**
TSDFs	Hazardous waste TSDF	297.10	0.00	0.00
	ALL	**297.10**	**0.00**	**0.00**
	ALL AREA SOURCES	**530.58**	**81.47**	**246.01**
MOBILE SOURCES:				
	Diesel	2.90	--	--
	Evaporative	204.67	--	--
	Exhaust	71.85	--	--
	ALL MOBILE SOURCES	**279.42**	**127.24**	**1082.05**
POINT SOURCES:				
Chem. Proc.	Carbon black manufacturing	2.37	0.04	147.93
	Paint and varnish manufacturing	0.00	0.00	0.00
	Petroleum refinery fugitives	0.65	0.00	0.00
	Polyethylene manufacturing	6.00	0.24	0.00
	Refinery wastewater treatment	1.42	0.00	0.00
	SOCMI fugitives	5.69	0.00	0.00
	SOCMI reactors	16.67	0.00	26.35
	ALL	**32.80**	**0.27**	**174.28**
Ind./Inst.	Commercial/institutional--coal	0.00	0.24	0.21
	Commercial/institutional--gas	0.00	0.12	0.03
	Commercial/institutional--other	0.01	0.01	0.04
	Industrial ext. comb. -gas- <100 MMBTU	0.02	7.38	1.07
	Industrial ext. comb. -gas- general	0.00	1.82	0.74
	Industrial ext. comb. -oil- general	0.02	3.00	0.27
	Industrial ext. comb. -coal	0.19	51.69	3.73
	Industrial ext. comb. -nonfossil	0.00	0.19	0.00
	Industrial gas reciprocating engines	0.24	37.70	5.32
	Industrial gas turbines	0.02	1.34	0.60
	Industrial in-process fuel	0.20	0.12	0.00
	Industrial process heat	4.02	32.03	0.15
	ALL	**4.71**	**135.63**	**12.17**
Other	Coke oven by-products plants	3.47	0.12	1.12
	Ferrosilicon production	3.87	0.01	0.00
	Iron/steel/blast furnace/sintering	7.46	0.97	128.42
	Miscellaneous noncombustion sources	42.57	31.11	97.28
	Waste disposal--multichamber	0.00	0.01	0.02
	ALL	**57.38**	**32.21**	**226.84**

(continued)

TABLE H-20. (concluded)

	Source Category	Emissions, tons/day VOC	NO_x	CO
Storage tanks	Bulk gas terminals--not balanced	0.21	0.00	0.00
	External floating roof tanks--crude oil	0.01	0.00	0.00
	External floating roof tanks--gasoline	0.15	0.00	0.00
	Fixed roof tanks--crude oil	1.06	0.00	0.00
	Fixed roof tanks--gasoline	0.53	0.00	0.00
	ALL	**1.96**	**0.00**	**0.00**
Surface coating	Aircraft coating	39.36	0.00	0.14
	Automobile surface coating	2.07	0.00	0.00
	Beverage can surface coating	3.09	0.01	0.00
	Miscellaneous surface coating	1.82	0.00	0.00
	Wood furniture coating	2.97	0.00	0.00
	ALL	**49.30**	**0.01**	**0.14**
Utilities	Utility external combustion--coal	3.25	943.17	27.89
	Utility external combustion--oil	0.01	0.37	0.08
	Utility external combustion--other	0.06	0.18	0.26
	ALL	**3.31**	**943.72**	**28.23**
	ALL POINT SOURCES	**149.47**	**1111.85**	**441.67**

APPENDIX I

PERCENT CHANGE IN REGIONAL EMISSIONS FOR PHASE I SCENARIOS

AND

PERCENT CHANGE IN EMISSIONS FOR SELECTED URBAN AREAS FOR PHASE I AND PHASE II SCENARIOS

(ALL ANTHROPOGENIC SOURCES)

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PERCENT CHANGE IN REGIONAL EMISSIONS FOR PHASE I SCENARIOS

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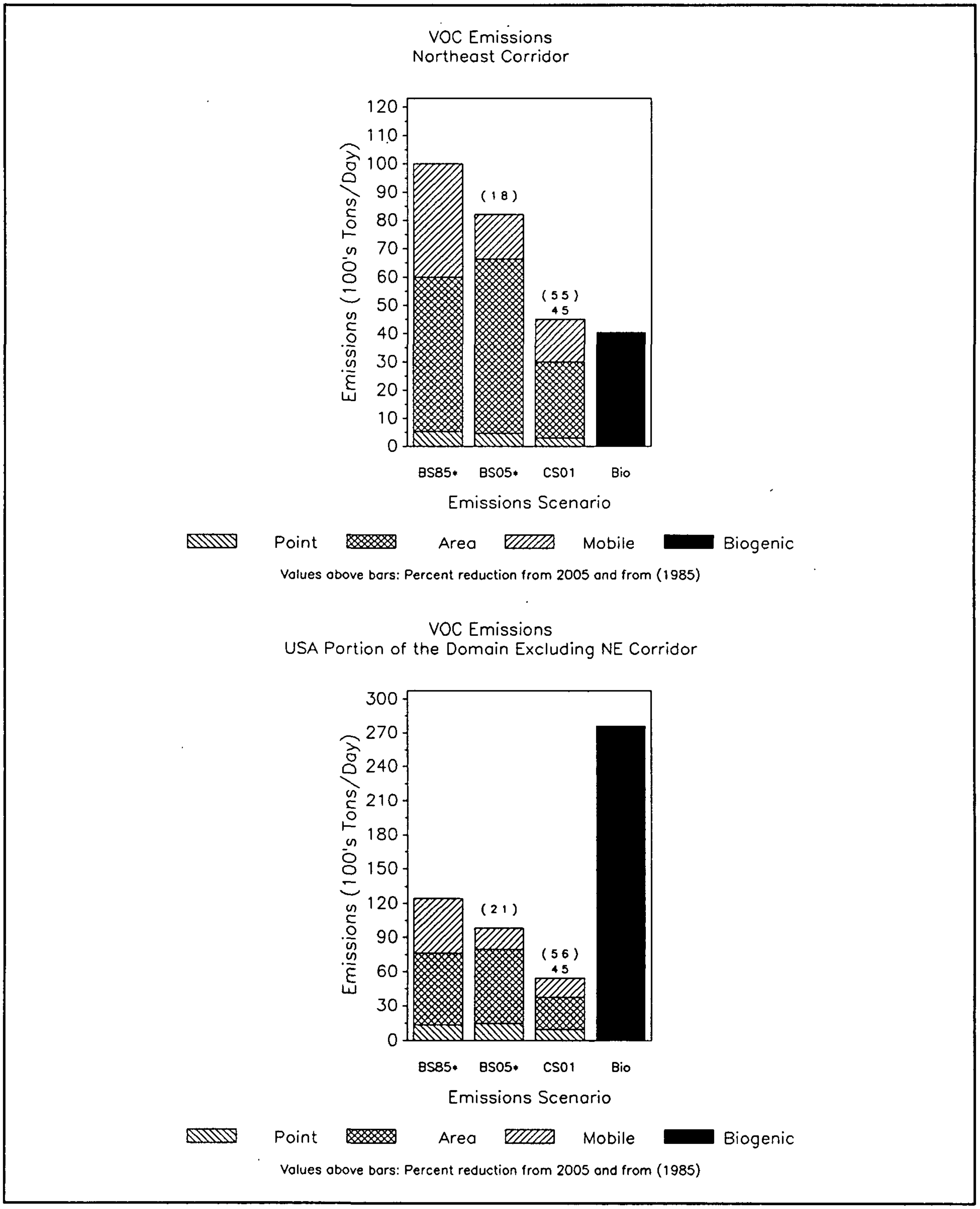

Figure I-1. Regional VOC emissions for Phase I scenarios: the Northeast Corridor and the U.S. portion of the ROMNET domain.

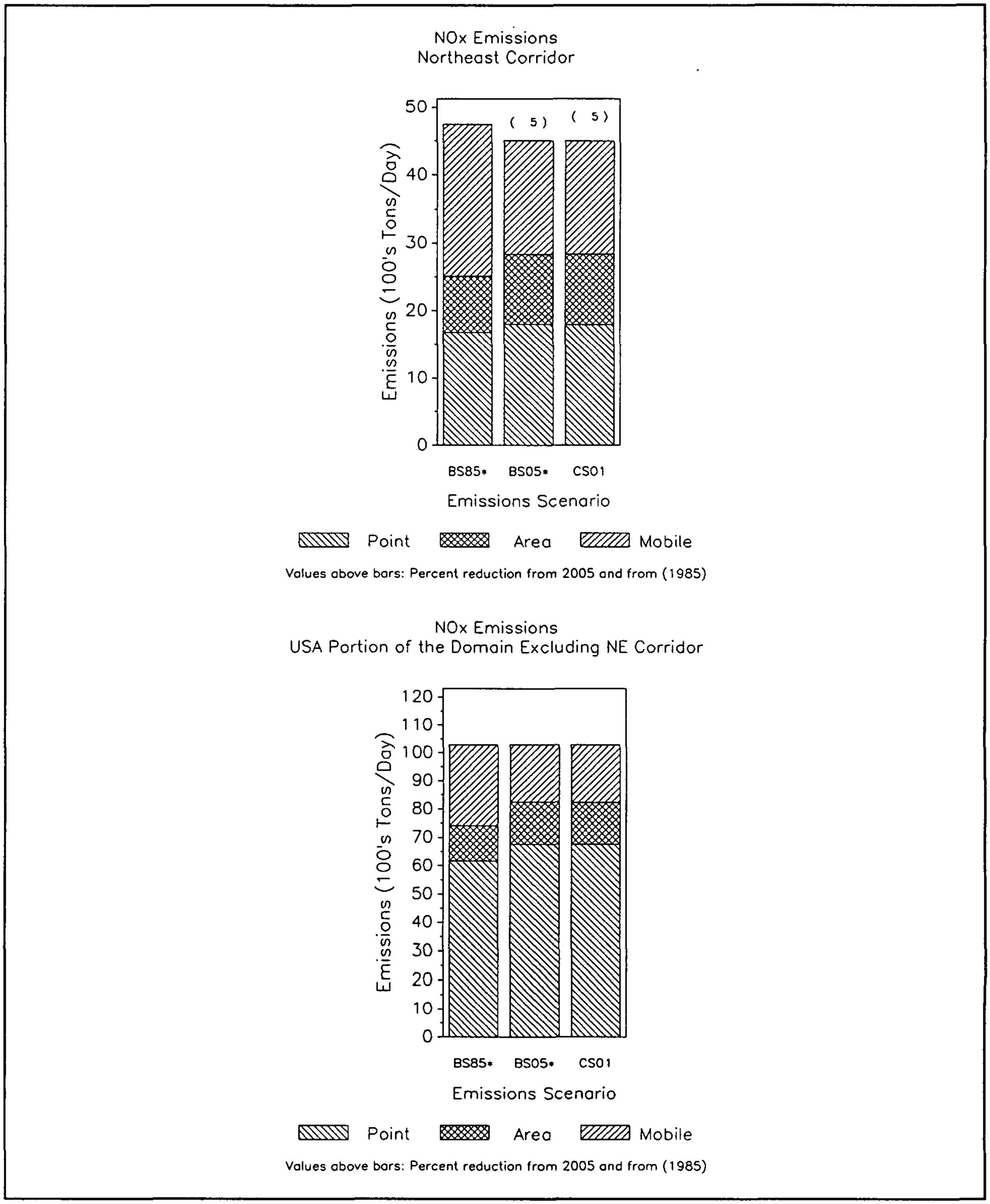

Figure I-2. Regional NO_x emissions for Phase I scenarios: the Northeast Corridor and the U.S. portion of the ROMNET domain.

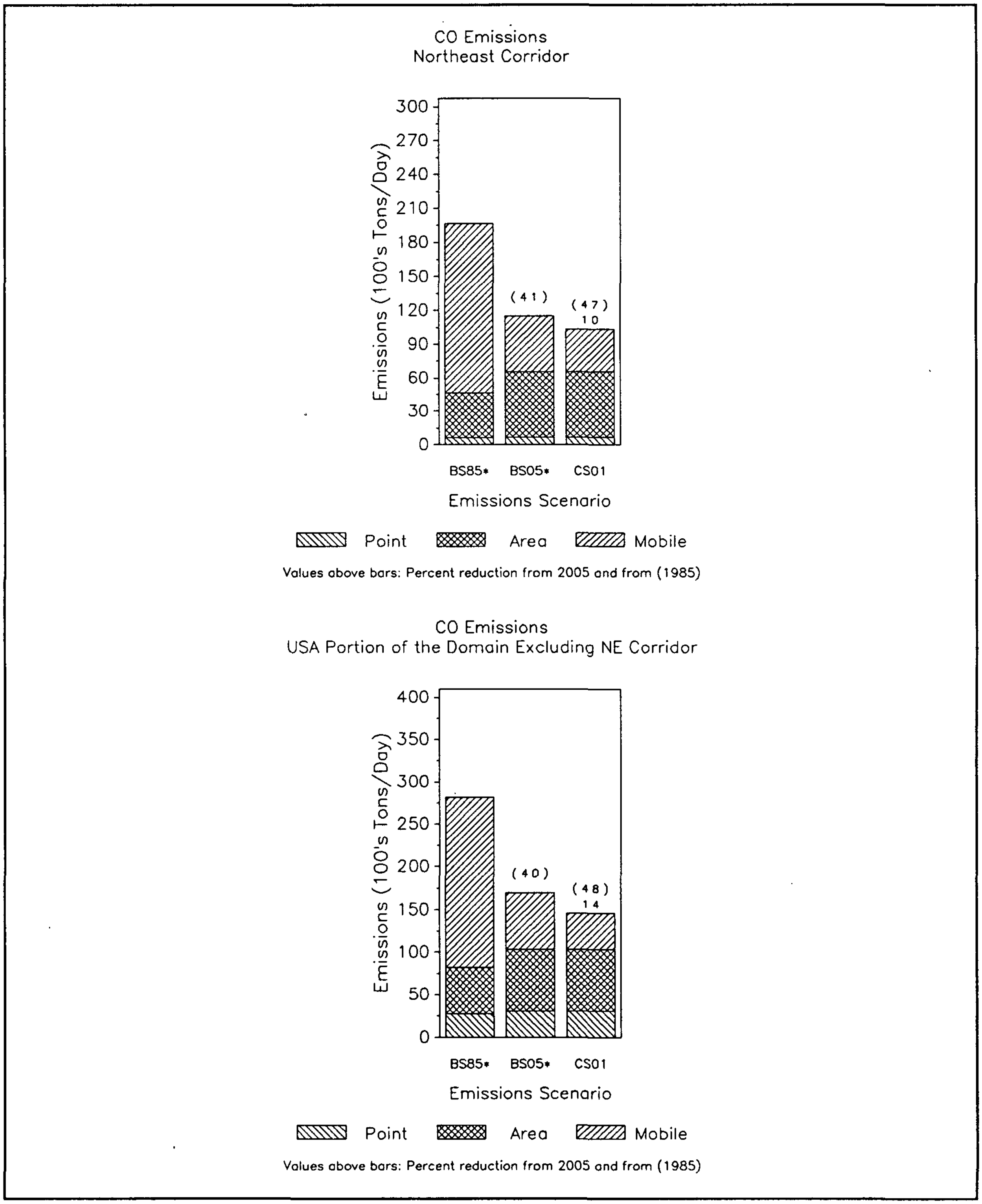

Figure I-3. Regional CO emissions for Phase I scenarios: the Northeast Corridor and the U.S. portion of the ROMNET domain.

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PERCENT CHANGE IN EMISSIONS FOR SELECTED URBAN AREAS FOR PHASE I AND PHASE II SCENARIOS

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TABLE I-1.

Percent change from 1985				BALTIMORE/WASHINGTON, DC	Percent change from 2005		
Phase I *	VOC	NO_x	CO	Phase I *	VOC	NO_x	CO
BS05	-29	-1	-44				
CS01	-55	-1	-51	CS01	-36	0	-11
CS02	-55	-1	-51	CS02	-36	0	-11
CS03	-55	-1	-51	CS03	-36	0	-11
Phase II				Phase II			
BS05	-42	29	-46				
CS05	-65	-29	-52	CS05	-39	-45	-11
CS10	-75	-45	-55	CS10	-56	-57	-17
CS11	-42	-45	-46	CS11	0	-57	0
CS12	-75	29	-55	CS12	-56	0	-17
CS13	-75	-26	-55	CS13	-56	-42	-17
CS14	-75	20	-55	CS14	-56	-7	-17
CS15	-75	-45	-56	CS15	-57	-57	-17
CS16	-88	-45	-55	CS16	-80	-57	-17
CS18	-89	-45	-56	CS18	-80	-57	-17
CS19	-89	10	-56	CS19	-80	-15	-17
CS20	-51	29	-44	CS20	-14	0	4
CS23	-79	16	-53	CS23	-64	-10	-13

* Mobile3.9 values used

TABLE I-2.

Percent change from 1985				PHILADELPHIA	Percent change from 2005		
Phase I *	VOC	NO_x	CO	Phase I *	VOC	NO_x	CO
BS05	-31	-9	-46				
CS01	-64	-9	-50	CS01	-48	0	-7
CS02	-64	-9	-50	CS02	-48	0	-7
CS03	-64	-9	-50	CS03	-48	0	-7
Phase II				Phase II			
BS05	-37	-16	-49				
CS05	-60	-32	-53	CS05	-37	-20	-8
CS10	-77	-56	-57	CS10	-63	-48	-16
CS11	-37	-56	-49	CS11	0	-48	0
CS12	-77	-16	-57	CS12	-63	0	-16
CS13	-77	-43	-57	CS13	-63	-32	-16
CS14	-77	-25	-57	CS14	-63	-11	-16
CS15	-77	-56	-58	CS15	-64	-48	-17
CS16	-77	-56	-57	CS16	-63	-48	-16
CS18	-77	-56	-58	CS18	-64	-48	-17
CS19	-77	-56	-58	CS19	-64	-48	-17
CS20	-42	-16	-45	CS20	-8	0	8
CS23	-60	-46	-54	CS23	-37	-36	-11

* Mobile3.9 values used

TABLE I-3.

Percent change from 1985				NEW YORK CITY	Percent change from 2005		
Phase I *	VOC	NO_x	CO	Phase I *	VOC	NO_x	CO
BS05	-19	-8	-44				
CS01	-55	-8	-50	CS01	-45	0	-11
CS02	-55	-8	-50	CS02	-45	0	-11
CS03	-55	-8	-50	CS03	-45	0	-11
Phase II				Phase II			
BS05	-37	-18	-48				
CS05	-70	-30	-54	CS05	-51	-14	-11
CS10	-74	-58	-59	CS10	-58	-48	-20
CS11	-37	-58	-48	CS11	0	-48	0
CS12	-74	-18	-59	CS12	-58	0	-20
CS13	-74	-40	-59	CS13	-58	-27	-20
CS14	-74	-32	-59	CS14	-58	-17	-20
CS15	-74	-58	-59	CS15	-59	-48	-21
CS16	-91	-32	-59	CS16	-85	-17	-20
CS18	-91	-36	-59	CS18	-85	-22	-21
CS19	-91	-36	-59	CS19	-85	-22	-21
CS20	-45	-18	-44	CS20	-11	1	8
CS23	-80	-31	-56	CS23	-69	-15	-15

* Mobile3.9 values used

TABLE I-4.

Percent change from 1985				BOSTON	Percent change from 2005		
Phase I *	VOC	NO_x	CO	Phase I *	VOC	NO_x	CO
BS05	6	-6	-35				
CS01	-47	-7	-41	CS01	-50	0	-10
CS02	-47	-7	-41	CS02	-50	0	-10
CS03	-47	-7	-41	CS03	-50	0	-10
Phase II				Phase II			
BS05	-16	2	-39				
CS05	-57	-29	-45	CS05	-49	-31	-10
CS10	-66	-51	-50	CS10	-60	-52	-18
CS11	-16	-51	-39	CS11	0	-52	0
CS12	-66	2	-50	CS12	-60	0	-18
CS13	-66	-32	-50	CS13	-60	-34	-18
CS14	-66	-13	-50	CS14	-60	-15	-18
CS15	-66	-51	-50	CS15	-60	-52	-18
CS16	-66	-51	-50	CS16	-60	-52	-18
CS18	-66	-51	-50	CS18	-60	-52	-18
CS19	-66	-51	-50	CS19	-60	-52	-18
CS20	-24	3	-35	CS20	-9	0	6
CS23	-49	-38	-47	CS23	-39	-39	-13

* Mobile3.9 values used

TABLE I-5.

Percent change from 1985			PITTSBURGH	Percent change from 2005			
Phase I *	VOC	NO_x	CO	Phase I *	VOC	NO_x	CO
BS05	-34	2	-46				
CS01	-60	2	-50	CS01	-39	0	-7
CS02	-34	2	-46	CS02	0	0	0
CS03	-60	2	-50	CS03	-39	0	-7
Phase II				Phase II			
BS05	-43	-5	-48				
CS05	-56	-38	-45	CS05	-23	-34	5
CS10	-76	-64	-56	CS10	-58	-62	-16
CS11	-43	-64	-48	CS11	0	-62	0
CS12	-76	-5	-56	CS12	-58	0	-16
CS13	-76	-57	-56	CS13	-58	-55	-16
CS14	-76	-11	-56	CS14	-58	-6	-16
CS15	-76	-64	-56	CS15	-58	-62	-17
CS16	-76	-64	-56	CS16	-58	-62	-16
CS18	-76	-64	-56	CS18	-58	-62	-17
CS19	-76	-64	-56	CS19	-58	-62	-17
CS20	-42	-5	-45	CS20	1	0	5
CS23	-64	-51	-54	CS23	-37	-49	-12

* Mobile3.9 values used

TABLE I-6.

Percent change from 1985				CLEVELAND	Percent change from 2005		
Phase I *	VOC	NO_x	CO	Phase I *	VOC	NO_x	CO
BS05	-24	-10	-47				
CS01	-62	-10	-56	CS01	-50	0	-17
CS02	-24	-10	-47	CS02	0	0	0
CS03	-62	-10	-56	CS03	-50	0	-17
Phase II				Phase II			
BS05	-38	-20	-52				
CS05	-55	-35	-55	CS05	-27	-19	-8
CS10	-77	-57	-63	CS10	-64	-47	-24
CS11	-38	-57	-52	CS11	0	-47	0
CS12	-77	-20	-63	CS12	-64	0	-24
CS13	-77	-42	-63	CS13	-64	-27	-24
CS14	-77	-31	-63	CS14	-64	-14	-24
CS15	-77	-57	-63	CS15	-64	-47	-23
CS16	-77	-57	-63	CS16	-64	-47	-24
CS18	-77	-57	-63	CS18	-64	-47	-23
CS19	-77	-57	-63	CS19	-64	-47	-23
CS20	-37	-20	-51	CS20	1	0	1
CS23	-64	-48	-60	CS23	-42	-35	-18

* Mobile3.9 values used

TABLE I-7.

Percent change from 1985			DETROIT	Percent change from 2005			
Phase I *	VOC	NO_x	CO	Phase I *	VOC	NO_x	CO
BS05	-11	3	-37				
CS01	-55	3	-45	CS01	-49	0	-13
CS02	-11	3	-37	CS02	0	0	0
CS03	-55	3	-45	CS03	-49	0	-13
Phase II				Phase II			
BS05	-30	-2	-43				
CS05	-50	-33	-45	CS05	-29	-32	-3
CS10	-74	-60	-54	CS10	-63	-60	-20
CS11	-30	-60	-43	CS11	0	-60	0
CS12	-74	-2	-54	CS12	-63	0	-20
CS13	-74	-51	-54	CS13	-63	-51	-20
CS14	-74	-8	-54	CS14	-63	-6	-20
CS15	-74	-60	-54	CS15	-63	-60	-19
CS16	-74	-60	-54	CS16	-63	-60	-20
CS18	-74	-60	-54	CS18	-63	-60	-19
CS19	-74	-60	-54	CS19	-63	-60	-19
CS20	-30	-1	-42	CS20	1	0	1
CS23	-59	-47	-51	CS23	-41	-46	-14

* Mobile3.9 values used

TABLE I-8.

Percent change from 1985				CHARLESTON, WV	Percent change from 2005		
Phase I *	VOC	NO_x	CO	Phase I *	VOC	NO_x	CO
BS05	-43	-21	-44				
CS01	-79	-21	-53	CS01	-62	0	-16
CS02	-43	-21	-44	CS02	0	0	0
CS03	-79	-21	-53	CS03	-62	0	-16
Phase II				Phase II			
BS05	-5	-25	-49				
CS05	-78	-54	-52	CS05	-77	-38	-7
CS10	-85	-78	-61	CS10	-84	-71	-25
CS11	-5	-78	-49	CS11	0	-71	0
CS12	-85	-25	-61	CS12	-84	0	-25
CS13	-85	-75	-61	CS13	-84	-67	-25
CS14	-85	-27	-61	CS14	-84	-2	-25
CS15	-85	-78	-64	CS15	-84	-71	-29
CS16	-85	-78	-61	CS16	-84	-71	-25
CS18	-85	-78	-64	CS18	-84	-71	-29
CS19	-85	-78	-64	CS19	-84	-71	-29
CS20	-6	-25	-52	CS20	0	-1	-7
CS23	-68	-67	-61	CS23	-66	-56	-24

* Mobile3.9 values used

APPENDIX J

PROJECTION AND CONTROL METHODOLOGIES

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J.1 INTRODUCTION

This Appendix provides the methodologies used for applying growth factors and controls in developing emissions inventories for the 2005 baseline scenario and the ROMNET strategies. Included are the algorithms and procedures for handling point, area, and mobile sources. Also, described is the approach adopted for acquisition of growth rates used to project the 1985 emissions to 2005.

J.2 POINT AND AREA SOURCES

The methodology used in ROMNET for computing projection/strategy point- and area-source emissions is shown in Table J-1. Equation 1 depicts the basic algorithm, employed for a given emissions category where the ROMNET control strategy supersedes the applicable New Source Performance Standard (NSPS) or where no NSPS exists. Calculation of future emissions is more complicated (Equation 4) if an NSPS exceeds the applicable ROMNET strategy, because the NSPS requirements apply only to new, modified, and reconstructed emissions sources.

Projection and control factors were applied to annual emissions. Typical summer weekday, Saturday, and Sunday emissions were calculated from the future annual emissions using allocation factors and procedures described in Section 4.

The algorithms in Table J-1 were implemented at the finest level of detail allowed by the point and area source inventories, with Equation 1 or Equation 4 applied to each emissions entry. In the point source inventory, growth and control factors were applied to each individual source. For area sources, the factors were applied at the county and emissions category level. In this way, growth in an emission category was spread equally among all of the individual sources in the category.

Growth rates (r in Table J-1) used in the projection algorithm vary by State and Canadian Province, and also vary for the different industrial categories within each State. Growth factors were the same for all pollutants emitted by a given source, because the growth factor represents an increase or decrease in the basic activity that causes emissions. In general, each point source was assigned a growth rate based on its two-digit Standard Industrial Classification (SIC) code. For utilities and industrial cogeneration, growth factors were applied on a more detailed level, based on the fuel burned and the combustion method. Industrial area source categories were also assigned to two-digit SIC groups for projection purposes. Future emissions from nonindustrial area sources were projected based on population growth. The development of growth factors used to project the 1985 base case to 2005 is discussed in Section J.4.

ROMNET control strategy efficiencies (Eff_{2005} in Table J-1) were applied for the entire region, for the Northeast Corridor, or at the State, Metropolitan Statistical area (MSA), or county level. The degree of spatial resolution depended on the specific control scenario. NSPS efficiencies (Eff_{NSPS}) were applied regionwide, and existing control efficiencies for 1985 (Eff_{1985}) were applied at the State or county level. All three of these efficiencies naturally depend on the emissions category.

Growth factors, control strategy efficiencies, NSPS control efficiencies, and existing control efficiencies were applied by emissions "pod" for point sources. Each area-source category was treated separately for the purpose of applying growth factors and controls.

The 80 point-source emissions pods are listed in Table J-2. Roughly half of the pods represent industrial VOC emissions, while the remainder represent combustion sources, which were of concern mainly because of their NO_x emissions. The ROMNET area-source inventory was divided into the 64 separate categories listed in Table J-3. These categories were derived from the 109 NAPAP and NEDS categories but excluding highway vehicles (which were treated separately from other area sources) and particulate emissions categories. Some of the 109 original source categories were eliminated because they do not emit VOC, NO_x, or CO. Of the 64 area source categories, about half represent VOC emissions, while the remainder represent area source combustion emissions. The ROMNET highway mobile source inventory was based on the twelve original NEDS categories. It consists of four vehicle types (light duty gasoline vehicles, light duty gasoline trucks, heavy duty gasoline vehicles and heavy duty diesel vehicles), each allocated to three road type/speed classes (limited access, rural, and urban).

Control efficiencies also depend on the pollutant being controlled, although measures designed to control one pollutant often control the other two as well. NO_x controls were assumed to apply equally to NO and NO_2. Likewise, a VOC control measure was assumed to apply uniformly to all VOC species, unless it was designed to reduce VOC reactivity by changing the species mix.

J.3 MOBILE SOURCES

The general algorithm used to estimate projection/strategy mobile-source emissions is illustrated in Table J-4. Because of the temperature sensitivity of mobile source emissions, the mobile projection algorithm was designed so that day-specific inventories could be generated to reflect temperatures at the grid level. The projected mobile inventory for a given ROMNET strategy comprises three separate data sets. The first data set includes "uncontrolled" emissions for 2005, evaluated at an 85°F daily mean temperature and a diurnal variation of 75°F - 95°F. Emissions entries in this data set correspond to the U_{2005} variable in Table J-4. These were projections of the emissions that would occur in 2005, neglecting local inspection and maintenance (I/M) programs and assuming that tailpipe and evaporative emissions remain at 1985 levels on a per mile basis. The 2005 uncontrolled emissions data set is generated from 1985 emissions (see Equations 2 and 3 in Table J-4) using State-specific growth rates for vehicle miles travelled (VMT). Emissions were recorded at the grid and county level for VOC, NO_X, and CO species. In addition, separate entries were included for evaporative, gasoline exhaust, and diesel VOC emissions. The separation of mobile source VOC into these components allows for later adjustments to VOC speciation to account for temperature variations and differential control efficiencies, as described in Section 4.

The second data set is a table of 2005/strategy emission factors for different combinations of mean daily temperatures and diurnal temperature range. The table covers mean temperatures from 40°F to 95°F and diurnal variations from 0°F to 40°F. Emission factors were tabulated for total VOC, NO_X, CO, and three VOC components: evaporative, gasoline exhaust, and diesel exhaust. The 2005/strategy emission factor table is specific to the projection/strategy being studied, and generally takes into account all region-wide control measures such as gasoline Reid vapor pressure (RVP) standards and Federal tailpipe standards. The 2005/strategy emission factor table is used in conjunction with 1985 emission factors to calculate regional control adjustment factors (CF_{reg}, Equation 4). The 1985 factors in this calculation were for a daily mean temperature of 85°F and a diurnal range of 20°F, matching the temperature basis of the "uncontrolled" emissions data set. Factors for 2005/strategy scenarios were selected on a grid-specific basis to correspond with grid-level temperature profiles. These control factors represent the change in vehicle emission factors over time due to the vehicle tailpipe standards under consideration in a particular scenario and turnover of the vehicle fleet, as well as any additional controls applied across the entire domain.

The third data set contains county-level control efficiencies (Eff_{co}) for VOC, NO_X, CO and the three mobile-source VOC components (evaporative, gasoline exhaust, and diesel exhaust). These efficiencies cover control measures that were not already taken into account in the regional adjustment, such as I/M programs applied at the MSA level. They may also be adjusted for temperature, depending on their temperature-sensitivity. These were converted to county-level emissions adjustment factors (CF_{co}, Equation 5).

To create the final day-specific inventory, regional and county-level control factors were applied to the 2005 uncontrolled emissions data set at the grid level (Equation 1). The factors were applied to total VOC, NO_X, CO, and the three mobile-source VOC components. Because the three mobile-source VOC components have different species breakdowns and different responses to temperature and controls, the final VOC speciation may differ considerably from that recorded in the 2005 uncontrolled emissions data set. Thus, the overall VOC species breakdown was recalculated for the final inventory (Equation 6). The final speciation is day-specific and also varies from grid-to-grid, depending on grid-level daily temperature profiles.

J.4 GROWTH FACTORS

Growth rates for the U.S. portion of the ROMNET domain were developed in an interactive process involving State representatives. First, national projection data bases were used to compile a preliminary set of State- and category-specific growth rates. The preliminary growth rates for each State were then forwarded to the State's Emissions Committee representative for review. If State-developed projections were available, these were used in place of the preliminary estimates.

Preliminary growth rates for most emissions categories were taken from projections made by the U.S. Department of Commerce Bureau of Economic Analysis (BEA, 1986). The BEA develops State-specific estimates of increases or decreases in employment in about 80 different industrial categories that correspond closely to 2-digit SIC groups. BEA employment projections for the year 2005 assume an overall growth in Gross National Product (GNP) of about 2.4 percent per year from 1985. For ROMNET projections, industrial activity and, by extension, uncontrolled emissions, were assumed to be proportional to employment in a given industrial category. BEA population projections were used to estimate growth in nonindustrial categories such as consumer solvent use.

Growth rates for mobile sources were taken from the Faucett model (Faucett, 1988) for forecasting vehicle miles travelled (VMT). A single growth rate was used for all highway vehicles in a given State, and the growth in emissions was assumed to be proportional to the growth in VMT.

Projections generated by the Advanced Utility Simulation Model (AUSM) were used for utility fuel combustion.[1] The ROMNET growth rates for utility combustion were derived from the latest available AUSM simulation, known as the 1987 Interim Base Case. AUSM predicts emissions increases for NO_x, SO_2, and particulate matter. In ROMNET, growth rates for utility VOC and CO emissions were assumed to be equal to the NO_x growth rate.

In many of the Northeast States, the strong demand for electricity is expected to promote construction of new industrial cogeneration units. The BEA growth rates for industrial combustion categories were augmented to reflect predicted increases in industrial cogeneration. Under the assumption that employment is a surrogate for industrial activity, however, the BEA projections should account for fuel

1. Computerized data provided by Chris Peterson, SAIC, to Alliance Technologies Corporation. December 8, 1988.

needed in the industrial process, but not for any fuel used to produce electricity in an industrial cogeneration unit. State-level cogeneration increases for the final industrial fuel calculations were obtained from an intermediate AUSM output.

As noted earlier, all of the growth rates for the U.S. portion of the domain were subject to review by State Emissions Committee representatives. Only a few States replaced the preliminary State-level growth estimates with their own projections. Most of the State projections that were submitted pertained to utility emissions or cogeneration emissions. Two States provided detailed projections of industrial activity. No changes were received for the VMT growth estimates.

General growth rates by State and SIC are given in Table J-5. Table J-6 gives growth rates for utilities, industrial combustion, and mobile sources. All growth rates for Ontario were provided by Environment Canada.[2]

2. Memo from Arthur Sheffield, Socioeconomic Analysis Division, Environment Canada, to Roger Cawkwell. Informetrica Forecast Growth Rates for Ontario in 2005. January 4, 1989.

TABLE J-1. EQUATIONS USED TO PREDICT FUTURE POINT- AND AREA-SOURCE EMISSIONS

- For emissions that were not affected by the New Source Performance Standards (NSPS) or where the applied ROMNET control strategy supersedes the NSPS:

$$E_{2005} = E_{1985} \times GF \times (1 - RF) \quad (1)$$

$$GF = \left(1 + \frac{r}{100}\right)^{20} \quad (2)$$

$$RF = 1 - \frac{100 - Eff_{2005}}{100 - Eff_{1985}} \quad (3)$$

- For cases where an NSPS has a higher efficiency than the applied ROMNET control strategy:

$$E_{2005} = E_{1985} \times GF \times [(New \times (1 - NSPS)) \times ((1 - New) \times (1 - GF))] \quad (4)$$

$$New = GF - 1 + 0.6 \quad (5)$$

$$NSPS = 1 - \frac{100 - Eff_{NSPS}}{100 - Eff_{1985}} \quad (6)$$

Variable definitions:

E_{2005}	estimated emissions in 2005 baseline or strategy (tons/year)
E_{1985}	1985 emissions (tons/year)
GF	growth factor from 1985 to 2005 in the activity causing emissions (dimensionless)
RF	control reduction factor (dimensionless)
r	growth rate (percent/year)
Eff_{2005}	control efficiency for the 2005 baseline or strategy inventory (percent)
Eff_{1985}	control efficiency in the initial 1985 inventory (percent)
New	the fraction of current emissions that will be covered by the NSPS in 2005, including new growth and construction to replace retiring existing sources (dimensionless)
0.6	reconstruction and modification factor between 1985 and 2005 (3 percent/year)
NSPS	reduction factor for the NSPS (dimensionless)
Eff_{NSPS}	NSPS control efficiency (percent)

TABLE J-2. POINT-SOURCE CONTROL PODS

Pod	VOC sources	Pod	Combustion sources of VOC, NO_x, and CO
1	Solvent metal cleaning	50	Utility external combustion - coal
2	Printing and publishing	51	Utility external combustion - oil
3	Dry cleaning	52	Utility external combustion - gas
4	Fixed roof tanks - crude oil	53	Utility external combustion - other
5	Fixed roof tanks - gasoline		
6	External floating roof tanks - crude	74	Utility oil turbines
7	External floating roof tanks - gasoline	75	Utility oil reciprocating engines
8	Bulk gas terminals - splash fill	76	Utility gas turbines
9	Bulk gas terminals - submerged fill	77	Utility gas reciprocating engines
10	Bulk gas terminals - not balanced		
11	Service stations - stage I	54	Industrial in-process fuel
15	Ethylene oxide manufacturing	55	Industrial process heat
16	Phenol manufacturing	56	Industrial space heating
17	Terephthalic acid manufacturing	57	Industrial external combustion - nonfossil fuel
18	Acrylonitrile manufacturing		
19	SOCMI fugitives	70	Industrial oil turbines
20	Petroleum refinery fugitives	71	Industrial oil reciprocating engines
21	Cellulose acetate manufacturing	72	Industrial gas turbines
22	Styrene-butadiene rubber manuf.	73	Industrial gas reciprocating engines
23	Propylene manufacturing		
24	Polyethylene manufacturing	81	Industrial cogen. - gas reciprocating engines
25	Ethylene manufacturing	84	Industrial external combustion - coal
26	Refinery wastewater treatment	85	Industrial ext. comb. - oil - < 100 MMBTU/hr
27	Refinery vacuum distillation	86	Industrial ext. comb. - oil - cogeneration
28	Vegetable oil processing	87	Industrial ext. comb. - oil - general
29	Paint and varnish manufacturing	88	Industrial ext. comb. - gas - < 100 MMBTU/hr
30	Rubber tire manufacturing	89	Industrial ext. comb. - gas - cogeneration
31	Green tire spray	90	Industrial ext. comb. - gas - general
32	Carbon black manufacturing		
33	Automobile surface coating	58	Commercial/institutional - coal
34	Beverage can surface coating	59	Commercial/institutional - oil
35	General wood surface coating	60	Commercial/institutional - gas
36	Paper surface coating	61	Commercial/institutional - other
37	Miscellaneous surface coating		
38	Food/agricultural starch manufacturing	63	Internal combustion - aircraft
39	Coke oven by-product plants	64	Waste disposal - multichamber
40	Ferrosilicon production		
41	Iron/steel blast furnace/sintering		
42	Pulp/paper manufacturing		
43	Marine vessel loading		
44	Single chamber incinerators		
46	Charcoal manufacturing		
47	Fermentation/whiskey production		
48	Plastics parts coating		
49	Wood furniture coating		
95	Aircraft coating		
96	SOCMI reactors		
97	SOCMI distillation		
98	Furniture manufacturing		
99	Miscellaneous noncombustion sources		

TABLE J-3. AREA-SOURCE CATEGORIES IN THE ROMNET INVENTORY

SCC	VOC sources	SCC	Combustion sources of VOC, NO_x, and CO
54	Gasoline marketing	1	Residential fuel - anthracite
		2	Residential fuel - bituminous coal
		3	Residential fuel - distillate oil
	Solvent use	4	Residential fuel - residual oil
78	Degreasing	5	Residential fuel - natural gas
79	Dry cleaning	6	Residential fuel - wood
80	Graphic arts and printing	7	Commercial/institutional - anthracite
81	Rubber/plastics mfg. - solvent use	8	Commercial/institutional - bituminous
82	Architectural coating	9	Commercial/institutional - distillate oil
83	Auto body repair	10	Commercial/institutional - residual oil
84	Motor vehicle manufacturing - coating	11	Commercial/institutional - natural gas
85	Paper coating	12	Commercial/institutional - wood
86	Fabricated metals coating	13	Industrial fuel - anthracite
87	Machinery manufacturing - coating	14	Industrial fuel - bituminous coal
88	Furniture manufacturing - coating	15	Industrial fuel - coke
89	Flat wood product coating	16	Industrial fuel - distillate oil
90	Other transportation equipment coating	17	Industrial fuel - residual oil
91	Electrical equipment mfg. - coating	18	Industrial fuel - natural gas
92	Ship coating	19	Industrial fuel - wood
93	Miscellaneous industrial mfg. - coating	20	Industrial fuel - process gas
94	Miscellaneous industrial solvent use	21	On-site incineration - residential
95	Miscellaneous nonindustrial solvents	22	On-site incineration - industrial
		23	On-site incineration - comm./institutional
		24	Open burning - residential
	New categories created for NAPAP	25	Open burning - industrial
100	Publicly-owned treatment works	26	Open burning - commercial/institutional
101	Cutback asphalt paving	39	Off-highway gasoline vehicles
102	SOCMI fugitives	44	Off-highway diesel vehicles
103	Bulk gasoline terminals/plants	45	Railroad locomotives
104	Petroleum refinery fugitives	46	Aircraft landings/takeoffs - military
105	Bakeries	47	Aircraft landings/takeoffs - civil
106	Pharmaceuticals manufacture	48	Aircraft landings/takeoffs - commercial
107	Synthetic fibers manufacturing	49	Vessels - coal
108	Oil/gas production fields	50	Vessels - diesel
109	Hazardous waste TSDF	51	Vessels - residual oil
		52	Vessels - gasoline
		60	Forest wildfires
		61	Prescribed forest burning
		62	Agricultural field burning
		63	Orchard heaters
		64	Structural fires

TABLE J-4. EQUATIONS USED TO PREDICT FUTURE MOBILE-SOURCE EMISSIONS

General projection and control calculations (executed for total VOC, evaporative VOC, gasoline exhaust VOC, diesel VOC, total NO_x, and CO):

$$E_{2005} = U_{2005} \times CF_{reg} \times CF_{co} \quad (1)$$

$$U_{2005} = E_{1985}^{noI/M} \times GF \quad (2)$$

$$GF = \left(1 + \frac{r}{100}\right)^{20} \quad (3)$$

$$CF_{reg} = \frac{EF_{2005}}{EF_{1985}} \quad (4)$$

$$CF_{co} = 1 - \frac{Eff_{co}}{100} \quad (5)$$

Respeciation of VOC emissions:

$$S_i = (SF_{i_{evp}} \times E_{2005_{evp}}) + (SF_{i_{gas}} \times E_{2005_{gas}}) + (SF_{i_{diesel}} \times E_{2005_{diesel}}) \quad (6)$$

Variable definitions:

- E_{2005} estimated emissions in 2005 (tons/year); additional subscripts evp, gas, and diesel in equation 6 refer to evaporative VOC, VOC in gasoline exhaust, and diesel VOC emissions
- U_{2005} projected emissions in 2005 at 85°F (tons), neglecting local inspection and maintenance (I/M) programs and assuming that tailpipe and evaporative emissions remain at 1985 levels on a per-mile basis
- $E_{1985}^{noI/M}$ estimated 1985 emissions (tons) at 85°F with no I/M
- GF growth factor for vehicle miles travelled (VMT) from 1985 to 2005 (dimensionless)
- r growth rate (percent/year) in VMT
- CF_{reg} regional control factor
- CF_{co} county-level control factor
- EF_{2005} predicted emission factor for 2005, based on temperature-dependent region-wide controls
- EF_{1985} 1985 emission factor used to develop $E_{1985}^{noI/M}$
- Eff_{co} county-level percent efficiency for any controls that were above and beyond those applied regionally (may be temperature-dependent)
- S_i final 2005 molar emissions for VOC species i
- SF_i speciation factor for species i (moles/ton); additional subscripts evp, gas, and diesel refer to evaporative VOC, VOC in gasoline exhaust, and diesel VOC emissions

TABLE J-5. GENERAL 2005 GROWTH RATES BY STATE AND SIC (% per year)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
CT	Agricultural production - crops	-0.21	Auto dealers and gasoline service stations	1.73
	Agricultural production - livestock	-0.21	Apparel and accessory stores	1.73
	Metal mining	0.00	Furniture and home furnishings stores	1.73
	Anthracite mining	0.00	Eating and drinking places	1.73
	Coal mining	0.00	Miscellaneous retail	1.73
	Oil and gas extraction	0.00	Real estate	2.03
	Nonmetallic minerals except fuels	1.78	Real estate/insurance/loans/law offices	2.03
	Food and kindred products	0.33	Hotels and other lodging places	1.75
	Tobacco products	0.00	Personal services	2.51
	Textile mill products	-2.32	Business services	2.51
	Apparel and other textile products	-0.87	Auto repair, services, and parking	2.44
	Lumber and wood products	0.64	Miscellaneous repair services	2.51
	Furniture and fixtures	-1.38	Motion pictures	1.69
	Paper and allied products	1.42	Amusement and recreation services	2.85
	Printing and publishing	1.19	Health services	2.23
	Chemicals and allied products	1.76	Legal services	3.03
	Petroleum and coal products	-1.44	Educational services	1.40
	Rubber and misc. plastic products	1.41	Social services	0.52
	Leather and leather products	-3.01	Museums, botanical or zoological gardens	0.52
	Stone, glass, clay, and concrete products	0.56	Membership organizations	0.52
	Primary metals industries	-0.22	Private households	-1.92
	Fabricated metals products	1.40	Misc. services	2.54
	Industrial machinery and equipment	0.16	Government except finance	-0.07
	Electronic and other electric equipment	1.45	Justice, public order, and safety	0.04
	Transportation equipment	1.18	Public finance, taxation, and monetary policy	0.04
	Instruments and other related products	2.92	Administration of human resource programs	0.04
	Misc. manufacturing industries	-0.34	Environmental quality and housing	0.04
	Railroad transportation	-1.34	Administration of economic programs	0.04
	Local and interurban passenger transit	1.34	National security and international affairs	-0.07
	Trucking and warehousing	1.92	Motor vehicles and equipment	1.27
	Water transportation	0.74	Forest wildfires	0.00
	Air transportation	2.65	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.00	Motor vehicles	2.43
	Transportation services	3.65	Commercial/institutional fuel	1.09
	Communications	2.18	Degreasing	1.87
	Electric, gas, and sanitary services	1.52	Composite of nondurable goods	0.40
	Wholesale trade - durable goods	1.63	Industrial fuel	0.86
	Wholesale trade - nondurable goods	1.63	Residential fuel	0.69
	Building materials and garden supplies	1.73		
	General merchandise stores	1.73		
	Food stores	1.73		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
DC	Agricultural production - crops	0.00	Auto dealers and gasoline service stations	0.27
	Agricultural production - livestock	0.00	Apparel and accessory stores	0.27
	Metal mining	0.00	Furniture and home furnishings stores	0.27
	Anthracite mining	0.00	Eating and drinking places	0.27
	Coal mining	0.00	Miscellaneous retail	0.27
	Oil and gas extraction	0.00	Real estate	0.23
	Nonmetallic minerals except fuels	0.00	Real estate/insurance/loans/law offices	0.23
	Food and kindred products	-1.24	Hotels and other lodging places	0.17
	Tobacco products	0.00	Personal services	1.88
	Textile mill products	0.00	Business services	1.88
	Apparel and other textile products	0.00	Auto repair, services, and parking	0.30
	Lumber and wood products	0.00	Miscellaneous repair services	1.88
	Furniture and fixtures	0.00	Motion pictures	0.48
	Paper and allied products	0.00	Amusement and recreation services	-0.38
	Printing and publishing	0.20	Health services	1.65
	Chemicals and allied products	1.45	Legal services	2.82
	Petroleum and coal products	0.00	Educational services	1.63
	Rubber and misc. plastic products	0.00	Social services	0.50
	Leather and leather products	0.00	Museums, botanical or zoological gardens	0.50
	Stone, glass, clay, and concrete products	0.00	Membership organizations	0.50
	Primary metals industries	0.00	Private households	-2.19
	Fabricated metals products	0.00	Misc. services	2.82
	Industrial machinery and equipment	0.00	Government except finance	-0.25
	Electronic and other electric equipment	0.00	Justice, public order, and safety	0.82
	Transportation equipment	0.00	Public finance, taxation, and monetary policy	0.82
	Instruments and other related products	2.59	Administration of human resource programs	0.82
	Misc. manufacturing industries	3.53	Environmental quality and housing	0.82
	Railroad transportation	-1.21	Administration of economic programs	0.82
	Local and interurban passenger transit	0.84	National security and international affairs	-0.25
	Trucking and warehousing	0.77	Motor vehicles and equipment	0.00
	Water transportation	0.00	Forest wildfires	0.00
	Air transportation	0.00	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.00	Motor vehicles	1.85
	Transportation services	2.25	Commercial/institutional fuel	0.66
	Communications	1.16	Degreasing	1.52
	Electric, gas, and sanitary services	0.00	Composite of nondurable goods	0.18
	Wholesale trade - durable goods	-0.64	Industrial fuel	0.29
	Wholesale trade - nondurable goods	-0.64	Residential fuel	0.18
	Building materials and garden supplies	0.27		
	General merchandise stores	0.27		
	Food stores	0.27		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
DE	Agricultural production - crops	-0.30	Auto dealers and gasoline service stations	1.10
	Agricultural production - livestock	-0.30	Apparel and accessory stores	1.10
	Metal mining	0.00	Furniture and home furnishings stores	1.10
	Anthracite mining	0.00	Eating and drinking places	1.10
	Coal mining	0.00	Miscellaneous retail	1.10
	Oil and gas extraction	0.00	Real estate	1.18
	Nonmetallic minerals except fuels	3.53	Real estate/insurance/loans/law offices	1.18
	Food and kindred products	0.49	Hotels and other lodging places	1.73
	Tobacco products	0.00	Personal services	2.21
	Textile mill products	-4.17	Business services	2.21
	Apparel and other textile products	-1.30	Auto repair, services, and parking	2.03
	Lumber and wood products	1.63	Miscellaneous repair services	2.21
	Furniture and fixtures	2.11	Motion pictures	1.70
	Paper and allied products	-0.19	Amusement and recreation services	1.80
	Printing and publishing	0.99	Health services	2.18
	Chemicals and allied products	0.50	Legal services	2.54
	Petroleum and coal products	0.00	Educational services	1.40
	Rubber and misc. plastic products	0.39	Social services	0.52
	Leather and leather products	0.00	Museums, botanical or zoological gardens	0.52
	Stone, glass, clay, and concrete products	1.56	Membership organizations	0.52
	Primary metals industries	0.48	Private households	-1.92
	Fabricated metals products	1.30	Misc. services	2.54
	Industrial machinery and equipment	0.51	Government except finance	-0.07
	Electronic and other electric equipment	1.82	Justice, public order, and safety	0.04
	Transportation equipment	1.46	Public finance, taxation, and monetary policy	0.04
	Instruments and other related products	4.49	Administration of human resource programs	0.04
	Misc. manufacturing industries	2.93	Environmental quality and housing	0.04
	Railroad transportation	-1.97	Administration of economic programs	0.04
	Local and interurban passenger transit	1.01	National security and international affairs	-0.07
	Trucking and warehousing	1.47	Motor vehicles and equipment	1.27
	Water transportation	0.00	Forest wildfires	0.00
	Air transportation	1.12	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.00	Motor vehicles	2.43
	Transportation services	2.54	Commercial/institutional fuel	1.09
	Communications	1.38	Degreasing	1.87
	Electric, gas, and sanitary services	0.89	Composite of nondurable goods	0.40
	Wholesale trade - durable goods	1.36	Industrial fuel	0.86
	Wholesale trade - nondurable goods	1.36	Residential fuel	0.69
	Building materials and garden supplies	1.10		
	General merchandise stores	1.10		
	Food stores	1.10		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
IN	Agricultural production - crops	-0.71	Auto dealers and gasoline service stations	1.05
	Agricultural production - livestock	-0.71	Apparel and accessory stores	1.05
	Metal mining	0.00	Furniture and home furnishings stores	1.05
	Anthracite mining	2.81	Eating and drinking places	1.05
	Coal mining	2.81	Miscellaneous retail	1.05
	Oil and gas extraction	0.00	Real estate	1.71
	Nonmetallic minerals except fuels	0.38	Real estate/insurance/loans/law offices	1.71
	Food and kindred products	-0.53	Hotels and other lodging places	0.82
	Tobacco products	0.00	Personal services	1.72
	Textile mill products	0.48	Business services	1.72
	Apparel and other textile products	-1.16	Auto repair, services, and parking	1.84
	Lumber and wood products	1.59	Miscellaneous repair services	1.72
	Furniture and fixtures	0.43	Motion pictures	0.25
	Paper and allied products	0.32	Amusement and recreation services	2.29
	Printing and publishing	0.70	Health services	1.81
	Chemicals and allied products	0.98	Legal services	2.13
	Petroleum and coal products	-0.46	Educational services	1.29
	Rubber and misc. plastic products	1.37	Social services	0.89
	Leather and leather products	-0.61	Museums, botanical or zoological gardens	0.89
	Stone, glass, clay, and concrete products	0.41	Membership organizations	0.89
	Primary metals industries	1.21	Private households	-1.92
	Fabricated metals products	1.77	Misc. services	2.13
	Industrial machinery and equipment	1.06	Government except finance	-0.09
	Electronic and other electric equipment	0.53	Justice, public order, and safety	0.19
	Transportation equipment	0.76	Public finance, taxation, and monetary policy	0.19
	Instruments and other related products	3.58	Administration of human resource programs	0.19
	Misc. manufacturing industries	0.32	Environmental quality and housing	0.19
	Railroad transportation	-2.24	Administration of economic programs	0.19
	Local and interurban passenger transit	0.73	National security and international affairs	-0.09
	Trucking and warehousing	1.82	Motor vehicles and equipment	0.57
	Water transportation	2.71	Forest wildfires	0.00
	Air transportation	2.44	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.92	Motor vehicles	2.06
	Transportation services	2.39	Commercial/institutional fuel	0.99
	Communications	1.52	Degreasing	1.06
	Electric, gas, and sanitary services	0.44	Composite of nondurable goods	0.51
	Wholesale trade - durable goods	1.04	Industrial fuel	0.92
	Wholesale trade - nondurable goods	1.04	Residential fuel	0.30
	Building materials and garden supplies	1.05		
	General merchandise stores	1.05		
	Food stores	1.05		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
KY	Agricultural production - crops	-0.24	Auto dealers and gasoline service stations	1.23
	Agricultural production - livestock	-0.24	Apparel and accessory stores	1.23
	Metal mining	0.00	Furniture and home furnishings stores	1.23
	Anthracite mining	1.14	Eating and drinking places	1.23
	Coal mining	1.14	Miscellaneous retail	1.23
	Oil and gas extraction	0.76	Real estate	1.71
	Nonmetallic minerals except fuels	-0.89	Real estate/insurance/loans/law offices	1.71
	Food and kindred products	-0.60	Hotels and other lodging places	1.10
	Tobacco products	-1.57	Personal services	1.89
	Textile mill products	-0.68	Business services	1.89
	Apparel and other textile products	-0.33	Auto repair, services, and parking	1.77
	Lumber and wood products	0.94	Miscellaneous repair services	1.89
	Furniture and fixtures	-0.43	Motion pictures	0.17
	Paper and allied products	0.44	Amusement and recreation services	1.77
	Printing and publishing	0.66	Health services	1.74
	Chemicals and allied products	-0.09	Legal services	2.13
	Petroleum and coal products	1.59	Educational services	1.19
	Rubber and misc. plastic products	3.14	Social services	0.68
	Leather and leather products	-2.55	Museums, botanical or zoological gardens	0.68
	Stone, glass, clay, and concrete products	0.86	Membership organizations	0.68
	Primary metals industries	2.38	Private households	-1.95
	Fabricated metals products	1.18	Misc. services	2.13
	Industrial machinery and equipment	1.62	Government except finance	-0.08
	Electronic and other electric equipment	0.51	Justice, public order, and safety	0.13
	Transportation equipment	1.54	Public finance, taxation, and monetary policy	0.13
	Instruments and other related products	1.66	Administration of human resource programs	0.13
	Misc. manufacturing industries	0.73	Environmental quality and housing	0.13
	Railroad transportation	-1.37	Administration of economic programs	0.13
	Local and interurban passenger transit	-0.82	National security and international affairs	-0.08
	Trucking and warehousing	1.85	Motor vehicles and equipment	2.12
	Water transportation	0.94	Forest wildfires	0.00
	Air transportation	1.80	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.00	Motor vehicles	2.01
	Transportation services	2.75	Commercial/institutional fuel	0.98
	Communications	2.19	Degreasing	1.32
	Electric, gas, and sanitary services	0.96	Composite of nondurable goods	0.26
	Wholesale trade - durable goods	1.08	Industrial fuel	0.86
	Wholesale trade - nondurable goods	1.08	Residential fuel	0.25
	Building materials and garden supplies	1.23		
	General merchandise stores	1.23		
	Food stores	1.23		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC[a] description	Growth rate	SIC[a] description	Growth rate
MA	Agricultural production - crops	-0.28	Auto dealers and gasoline service stations	1.86
	Agricultural production - livestock	-0.28	Apparel and accessory stores	1.86
	Metal mining	0.00	Furniture and home furnishings stores	1.86
	Anthracite mining	0.00	Eating and drinking places	1.86
	Coal mining	0.00	Miscellaneous retail	1.86
	Oil and gas extraction	0.00	Real estate	2.30
	Nonmetallic minerals except fuels	2.07	Real estate/insurance/loans/law offices	2.30
	Food and kindred products	-0.25	Hotels and other lodging places	1.86
	Tobacco products	0.00	Personal services	2.99
	Textile mill products	-1.51	Business services	2.99
	Apparel and other textile products	-0.78	Auto repair, services, and parking	3.26
	Lumber and wood products	1.54	Miscellaneous repair services	2.99
	Furniture and fixtures	0.96	Motion pictures	1.36
	Paper and allied products	-0.24	Amusement and recreation services	3.21
	Printing and publishing	1.04	Health services	2.17
	Chemicals and allied products	0.21	Legal services	3.10
	Petroleum and coal products	2.27	Educational services	1.52
	Rubber and misc. plastic products	2.63	Social services	1.35
	Leather and leather products	-1.82	Museums, botanical or zoological gardens	1.35
	Stone, glass, clay, and concrete products	1.17	Membership organizations	1.35
	Primary metals industries	1.37	Private households	1.31
	Fabricated metals products	2.20	Misc. services	3.10
	Industrial machinery and equipment	4.04	Government except finance	0.19
	Electronic and other electric equipment	1.69	Justice, public order, and safety	0.25
	Transportation equipment	2.12	Public finance, taxation, and monetary policy	0.25
	Instruments and other related products	3.85	Administration of human resource programs	0.25
	Misc. manufacturing industries	0.36	Environmental quality and housing	0.25
	Railroad transportation	-1.22	Administration of economic programs	0.25
	Local and interurban passenger transit	0.96	National security and international affairs	0.19
	Trucking and warehousing	1.84	Motor vehicles and equipment	2.12
	Water transportation	-2.36	Forest wildfires	0.00
	Air transportation	1.15	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.00	Motor vehicles	2.50
	Transportation services	3.50	Commercial/institutional fuel	1.27
	Communications	2.75	Degreasing	2.51
	Electric, gas, and sanitary services	1.14	Composite of nondurable goods	0.13
	Wholesale trade - durable goods	1.78	Industrial fuel	1.46
	Wholesale trade - nondurable goods	1.78	Residential fuel	0.03
	Building materials and garden supplies	1.86		
	General merchandise stores	1.86		
	Food stores	1.86		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC[a] description	Growth rate	SIC[a] description	Growth rate
MD	Agricultural production - crops	-0.01	General merchandise stores	1.06
	Agricultural production - livestock	-0.01	Food stores	1.06
	Agricultural services	0.00	Auto dealers and gasoline service stations	1.06
	Metal mining	0.00	Apparel and accessory stores	1.06
	Anthracite mining	1.81	Furniture and home furnishings stores	1.06
	Coal mining	1.81	Eating and drinking places	1.06
	Oil and gas extraction	-0.25	Miscellaneous retail	1.06
	Nonmetallic minerals except fuels	-2.22	Real estate	0.01
	Food and kindred products	0.87	Real estate/insurance/loans/law offices	0.01
	Tobacco products	0.00	Hotels and other lodging places	0.90
	Textile mill products	-3.46	Personal services	1.29
	Apparel and other textile products	-1.26	Business services	1.29
	Lumber and wood products	1.93	Auto repair, services, and parking	1.23
	Furniture and fixtures	-1.38	Miscellaneous repair services	1.29
	Paper and allied products	0.20	Motion pictures	0.01
	Printing and publishing	1.76	Amusement and recreation services	1.23
	Chemicals and allied products	-0.12	Health services	1.69
	Petroleum and coal products	-0.50	Legal services	2.01
	Rubber and misc. plastic products	0.24	Educational services	1.68
	Leather and leather products	-2.50	Social services	1.68
	Stone, glass, clay, and concrete products	0.21	Museums, botanical or zoological gardens	1.68
	Primary metals industries	0.46	Membership organizations	1.68
	Fabricated metals products	0.32	Private households	-0.90
	Industrial machinery and equipment	1.49	Misc. services	2.01
	Electronic and other electric equipment	0.95	Government except finance	0.41
	Transportation equipment	0.63	Justice, public order, and safety	0.82
	Instruments and other related products	4.65	Public finance, taxation, and monetary policy	0.82
	Misc. manufacturing industries	0.23	Administration of human resource programs	0.82
	Railroad transportation	-1.26	Environmental quality and housing	0.82
	Local and interurban passenger transit	-0.10	Administration of economic programs	0.82
	Trucking and warehousing	1.42	National security and international affairs	0.41
	Water transportation	1.80	Motor vehicles and equipment	6.98
	Air transportation	1.41	Forest wildfires	0.00
	Pipelines, except natural gas	0.00	Aircraft landings and takeoffs - military	0.00
	Transportation services	3.29	Motor vehicles	2.24
	Communications	2.55	Commercial/institutional fuel	1.12
	Electric, gas, and sanitary services	1.29	Degreasing	0.83
	Wholesale trade - durable goods	1.34	Composite of nondurable goods	0.10
	Wholesale trade - nondurable goods	1.34	Industrial fuel	0.49
	Building materials and garden supplies	1.06	Residential fuel	0.51

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC[a] description	Growth rate	SIC[a] description	Growth rate
ME	Agricultural production - crops	-0.06	Auto dealers and gasoline service stations	1.21
	Agricultural production - livestock	-0.06	Apparel and accessory stores	1.21
	Metal mining	0.00	Furniture and home furnishings stores	1.21
	Anthracite mining	0.00	Eating and drinking places	1.21
	Coal mining	0.00	Miscellaneous retail	1.21
	Oil and gas extraction	0.00	Real estate	1.51
	Nonmetallic minerals except fuels	0.00	Real estate/insurance/loans/law offices	1.51
	Food and kindred products	-0.52	Hotels and other lodging places	1.11
	Tobacco products	0.00	Personal services	2.37
	Textile mill products	-0.90	Business services	2.37
	Apparel and other textile products	0.47	Auto repair, services, and parking	1.92
	Lumber and wood products	0.93	Miscellaneous repair services	2.37
	Furniture and fixtures	0.61	Motion pictures	0.78
	Paper and allied products	0.45	Amusement and recreation services	2.29
	Printing and publishing	1.51	Health services	1.89
	Chemicals and allied products	2.38	Legal services	2.72
	Petroleum and coal products	-3.41	Educational services	1.16
	Rubber and misc. plastic products	0.75	Social services	0.91
	Leather and leather products	-0.72	Museums, botanical or zoological gardens	0.91
	Stone, glass, clay, and concrete products	0.57	Membership organizations	0.91
	Primary metals industries	0.00	Private households	-1.89
	Fabricated metals products	2.62	Misc. services	2.72
	Industrial machinery and equipment	3.01	Government except finance	-0.11
	Electronic and other electric equipment	1.52	Justice, public order, and safety	0.17
	Transportation equipment	1.63	Public finance, taxation, and monetary policy	0.17
	Instruments and other related products	3.88	Administration of human resource programs	0.17
	Misc. manufacturing industries	0.71	Environmental quality and housing	0.17
	Railroad transportation	-1.45	Administration of economic programs	0.17
	Local and interurban passenger transit	0.66	National security and international affairs	-0.11
	Trucking and warehousing	1.65	Motor vehicles and equipment	6.12
	Water transportation	0.71	Forest wildfires	0.00
	Air transportation	2.54	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.00	Motor vehicles	2.30
	Transportation services	2.93	Commercial/institutional fuel	1.08
	Communications	1.39	Degreasing	1.62
	Electric, gas, and sanitary services	0.98	Composite of nondurable goods	0.03
	Wholesale trade - durable goods	1.15	Industrial fuel	0.73
	Wholesale trade - nondurable goods	1.15	Residential fuel	0.55
	Building materials and garden supplies	1.21		
	General merchandise stores	1.21		
	Food stores	1.21		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC[a] description	Growth rate	SIC[a] description	Growth rate
MI	Agricultural production - crops	-0.70	General merchandise stores	0.93
	Agricultural production - livestock	-0.70	Food stores	0.93
	Metal mining	1.54	Auto dealers and gasoline service stations	0.93
	Anthracite mining	0.00	Apparel and accessory stores	0.93
	Coal mining	0.00	Furniture and home furnishings stores	0.93
	Oil and gas extraction	2.17	Eating and drinking places	0.93
	Nonmetallic minerals except fuels	0.56	Miscellaneous retail	0.93
	Food and kindred products	-0.66	Real estate	1.22
	Tobacco products	0.00	Real estate/insurance/loans/law offices	1.22
	Textile mill products	-0.97	Hotels and other lodging places	0.66
	Apparel and other textile products	-0.52	Personal services	1.80
	Lumber and wood products	0.34	Business services	1.80
	Furniture and fixtures	0.83	Auto repair, services, and parking	1.90
	Paper and allied products	-0.84	Miscellaneous repair services	1.80
	Printing and publishing	0.44	Motion pictures	0.59
	Chemicals and allied products	-1.01	Amusement and recreation services	2.02
	Petroleum and coal products	-0.46	Health services	1.61
	Rubber and misc. plastic products	2.18	Legal services	1.93
	Leather and leather products	-1.92	Educational services	1.12
	Stone, glass, clay, and concrete products	0.45	Social services	0.54
	Primary metals industries	0.59	Museums, botanical or zoological gardens	0.54
	Fabricated metals products	1.16	Membership organizations	0.54
	Industrial machinery and equipment	1.06	Private households	-2.05
	Electronic and other electric equipment	0.44	Government except finance	0.19
	Transportation equipment	2.75	Justice, public order, and safety	-0.18
	Instruments and other related products	3.06	Public finance, taxation, and monetary policy	-0.18
	Misc. manufacturing industries	0.16	Administration of human resource programs	-0.18
	Railroad transportation	-1.87	Environmental quality and housing	-0.18
	Local and interurban passenger transit	-0.46	Administration of economic programs	-0.18
	Trucking and warehousing	1.11	National security and international affairs	0.19
	Water transportation	0.88	Motor vehicles and equipment	0.56
	Air transportation	1.19	Forest wildfires	0.00
	Pipelines, except natural gas	2.05	Aircraft landings and takeoffs - military	0.00
	Transportation services	2.17	Motor vehicles	1.96
	Communications	1.24	Commercial/institutional fuel	0.88
	Electric, gas, and sanitary services	0.47	Degreasing	0.87
	Wholesale trade - durable goods	0.69	Composite of nondurable goods	0.09
	Wholesale trade - nondurable goods	0.69	Industrial fuel	0.71
	Building materials and garden supplies	0.93	Residential fuel	0.15

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
NC	Agricultural production - crops	-0.25	Auto dealers and gasoline service stations	1.79
	Agricultural production - livestock	-0.25	Apparel and accessory stores	1.79
	Metal mining	0.00	Furniture and home furnishings stores	1.79
	Anthracite mining	0.00	Eating and drinking places	1.79
	Coal mining	0.00	Miscellaneous retail	1.79
	Oil and gas extraction	0.00	Real estate	1.73
	Nonmetallic minerals except fuels	0.71	Real estate/insurance/loans/law offices	1.73
	Food and kindred products	-0.35	Hotels and other lodging places	1.38
	Tobacco products	-1.60	Personal services	2.67
	Textile mill products	-0.93	Business services	2.67
	Apparel and other textile products	0.38	Auto repair, services, and parking	1.90
	Lumber and wood products	1.35	Miscellaneous repair services	2.67
	Furniture and fixtures	0.77	Motion pictures	1.11
	Paper and allied products	1.16	Amusement and recreation services	2.44
	Printing and publishing	1.35	Health services	2.54
	Chemicals and allied products	0.92	Legal services	2.93
	Petroleum and coal products	1.07	Educational services	1.43
	Rubber and misc. plastic products	2.95	Social services	1.14
	Leather and leather products	-0.42	Museums, botanical or zoological gardens	1.14
	Stone, glass, clay, and concrete products	1.85	Membership organizations	1.14
	Primary metals industries	1.74	Private households	-1.74
	Fabricated metals products	2.68	Misc. services	2.93
	Industrial machinery and equipment	2.07	Government except finance	0.29
	Electronic and other electric equipment	1.32	Justice, public order, and safety	0.36
	Transportation equipment	1.78	Public finance, taxation, and monetary policy	0.36
	Instruments and other related products	3.40	Administration of human resource programs	0.36
	Misc. manufacturing industries	0.92	Environmental quality and housing	0.36
	Railroad transportation	-1.01	Administration of economic programs	0.36
	Local and interurban passenger transit	0.54	National security and international affairs	0.29
	Trucking and warehousing	1.84	Motor vehicles and equipment	2.72
	Water transportation	-0.37	Forest wildfires	0.00
	Air transportation	2.43	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	3.53	Motor vehicles	2.52
	Transportation services	3.96	Commercial/institutional fuel	1.36
	Communications	1.90	Degreasing	1.64
	Electric, gas, and sanitary services	1.07	Composite of nondurable goods	0.03
	Wholesale trade - durable goods	1.41	Industrial fuel	0.72
	Wholesale trade - nondurable goods	1.41	Residential fuel	0.75
	Building materials and garden supplies	1.79		
	General merchandise stores	1.79		
	Food stores	1.79		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
NH	Agricultural production - crops	-0.45	Auto dealers and gasoline service stations	2.24
	Agricultural production - livestock	-0.45	Apparel and accessory stores	2.24
	Metal mining	0.00	Furniture and home furnishings stores	2.24
	Anthracite mining	0.00	Eating and drinking places	2.24
	Coal mining	0.00	Miscellaneous retail	2.24
	Oil and gas extraction	0.00	Real estate	2.67
	Nonmetallic minerals except fuels	1.72	Real estate/insurance/loans/law offices	2.67
	Food and kindred products	0.00	Hotels and other lodging places	1.46
	Tobacco products	0.00	Personal services	3.48
	Textile mill products	-1.81	Business services	3.48
	Apparel and other textile products	-0.23	Auto repair, services, and parking	2.75
	Lumber and wood products	1.52	Miscellaneous repair services	3.48
	Furniture and fixtures	-0.23	Motion pictures	1.96
	Paper and allied products	-0.09	Amusement and recreation services	2.32
	Printing and publishing	2.04	Health services	2.76
	Chemicals and allied products	0.86	Legal services	3.44
	Petroleum and coal products	0.00	Educational services	1.54
	Rubber and misc. plastic products	1.62	Social services	0.02
	Leather and leather products	-1.69	Museums, botanical or zoological gardens	0.02
	Stone, glass, clay, and concrete products	1.48	Membership organizations	0.02
	Primary metals industries	1.94	Private households	-0.88
	Fabricated metals products	2.72	Misc. services	3.44
	Industrial machinery and equipment	2.78	Government except finance	0.57
	Electronic and other electric equipment	1.45	Justice, public order, and safety	1.21
	Transportation equipment	1.43	Public finance, taxation, and monetary policy	1.21
	Instruments and other related products	3.21	Administration of human resource programs	1.21
	Misc. manufacturing industries	1.69	Environmental quality and housing	1.21
	Railroad transportation	0.01	Administration of economic programs	1.21
	Local and interurban passenger transit	1.03	National security and international affairs	0.57
	Trucking and warehousing	2.45	Motor vehicles and equipment	0.00
	Water transportation	2.93	Forest wildfires	0.00
	Air transportation	2.75	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.00	Motor vehicles	3.16
	Transportation services	4.19	Commercial/institutional fuel	2.15
	Communications	2.19	Degreasing	2.19
	Electric, gas, and sanitary services	1.86	Composite of nondurable goods	0.43
	Wholesale trade - durable goods	2.35	Industrial fuel	1.65
	Wholesale trade - nondurable goods	2.35	Residential fuel	2.36
	Building materials and garden supplies	2.24		
	General merchandise stores	2.24		
	Food stores	2.24		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC[a] description	Growth rate	SIC[a] description	Growth rate
NJ	Agricultural production - crops	-0.04	Auto dealers and gasoline service stations	1.40
	Agricultural production - livestock	-0.04	Apparel and accessory stores	1.40
	Metal mining	0.00	Furniture and home furnishings stores	1.40
	Anthracite mining	0.00	Eating and drinking places	1.40
	Coal mining	0.00	Miscellaneous retail	1.40
	Oil and gas extraction	1.03	Real estate	1.59
	Nonmetallic minerals except fuels	0.92	Real estate/insurance/loans/law offices	1.59
	Food and kindred products	-0.07	Hotels and other lodging places	2.44
	Tobacco products	-3.41	Personal services	2.94
	Textile mill products	-2.56	Business services	2.94
	Apparel and other textile products	-2.09	Auto repair, services, and parking	1.93
	Lumber and wood products	0.80	Miscellaneous repair services	2.94
	Furniture and fixtures	1.05	Motion pictures	0.26
	Paper and allied products	-0.45	Amusement and recreation services	1.60
	Printing and publishing	1.32	Health services	2.45
	Chemicals and allied products	-0.54	Legal services	2.80
	Petroleum and coal products	-1.35	Educational services	0.71
	Rubber and misc. plastic products	0.45	Social services	1.74
	Leather and leather products	-3.36	Museums, botanical or zoological gardens	1.74
	Stone, glass, clay, and concrete products	-1.05	Membership organizations	1.74
	Primary metals industries	-1.53	Private households	-1.60
	Fabricated metals products	-1.49	Misc. services	2.80
	Industrial machinery and equipment	0.18	Government except finance	0.36
	Electronic and other electric equipment	-0.07	Justice, public order, and safety	0.77
	Transportation equipment	-0.13	Public finance, taxation, and monetary policy	0.77
	Instruments and other related products	0.24	Administration of human resource programs	0.77
	Misc. manufacturing industries	-1.00	Environmental quality and housing	0.77
	Railroad transportation	-0.91	Administration of economic programs	0.77
	Local and interurban passenger transit	1.31	National security and international affairs	0.36
	Trucking and warehousing	1.38	Motor vehicles and equipment	-0.36
	Water transportation	-0.57	Forest wildfires	0.00
	Air transportation	1.52	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	-0.34	Motor vehicles	2.48
	Transportation services	1.84	Commercial/institutional fuel	1.49
	Communications	0.23	Degreasing	-0.33
	Electric, gas, and sanitary services	0.58	Composite of nondurable goods	0.22
	Wholesale trade - durable goods	1.78	Industrial fuel	-0.28
	Wholesale trade - nondurable goods	1.78	Residential fuel	0.73
	Building materials and garden supplies	1.40		
	General merchandise stores	1.40		
	Food stores	1.40		

a Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC[a] description	Growth rate	SIC[a] description	Growth rate
NY	Agricultural production - crops	0.23	Auto dealers and gasoline service stations	0.80
	Agricultural production - livestock	0.23	Apparel and accessory stores	0.80
	Metal mining	2.55	Furniture and home furnishings stores	0.80
	Anthracite mining	0.00	Eating and drinking places	0.80
	Coal mining	0.00	Miscellaneous retail	0.80
	Oil and gas extraction	2.66	Real estate	0.75
	Nonmetallic minerals except fuels	0.41	Real estate/insurance/loans/law offices	0.75
	Food and kindred products	-0.89	Hotels and other lodging places	0.71
	Tobacco products	-0.66	Personal services	1.54
	Textile mill products	-2.29	Business services	1.54
	Apparel and other textile products	-1.43	Auto repair, services, and parking	1.88
	Lumber and wood products	1.37	Miscellaneous repair services	1.54
	Furniture and fixtures	-0.47	Motion pictures	0.85
	Paper and allied products	-0.60	Amusement and recreation services	1.68
	Printing and publishing	0.28	Health services	1.63
	Chemicals and allied products	-1.39	Legal services	2.48
	Petroleum and coal products	0.45	Educational services	1.43
	Rubber and misc. plastic products	1.98	Social services	1.27
	Leather and leather products	-1.64	Museums, botanical or zoological gardens	1.27
	Stone, glass, clay, and concrete products	0.72	Membership organizations	1.27
	Primary metals industries	-0.45	Private households	-1.97
	Fabricated metals products	1.19	Misc. services	2.48
	Industrial machinery and equipment	0.63	Government except finance	-0.24
	Electronic and other electric equipment	0.65	Justice, public order, and safety	-0.15
	Transportation equipment	0.10	Public finance, taxation, and monetary policy	-0.15
	Instruments and other related products	2.17	Administration of human resource programs	-0.15
	Misc. manufacturing industries	-1.11	Environmental quality and housing	-0.15
	Railroad transportation	0.27	Administration of economic programs	-0.15
	Local and interurban passenger transit	0.14	National security and international affairs	-0.24
	Trucking and warehousing	1.70	Motor vehicles and equipment	0.96
	Water transportation	0.30	Forest wildfires	0.00
	Air transportation	1.16	Aircraft landings and takeoffs - military	0.72
	Pipelines, except natural gas	3.53	Motor vehicles	2.40
	Transportation services	1.13	Commercial/institutional fuel	0.99
	Communications	1.62	Degreasing	0.84
	Electric, gas, and sanitary services	0.99	Composite of nondurable goods	-0.54
	Wholesale trade - durable goods	1.13	Industrial fuel	0.27
	Wholesale trade - nondurable goods	1.13	Residential fuel	0.36
	Building materials and garden supplies	0.80		
	General merchandise stores	0.80		
	Food stores	0.80		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
OH	Agricultural production - crops	-0.41	General merchandise stores	0.91
	Agricultural production - livestock	-0.41	Food stores	0.91
	Metal mining	3.53	Auto dealers and gasoline service stations	0.91
	Anthracite mining	1.29	Apparel and accessory stores	0.91
	Coal mining	1.29	Furniture and home furnishings stores	0.91
	Oil and gas extraction	1.95	Eating and drinking places	0.91
	Nonmetallic minerals except fuels	0.39	Miscellaneous retail	0.91
	Food and kindred products	-0.54	Real estate	1.23
	Tobacco products	0.00	Real estate/insurance/loans/law offices	1.23
	Textile mill products	-1.55	Hotels and other lodging places	0.53
	Apparel and other textile products	-0.42	Personal services	1.81
	Lumber and wood products	1.33	Business services	1.81
	Furniture and fixtures	-0.37	Auto repair, services, and parking	1.63
	Paper and allied products	-0.46	Miscellaneous repair services	1.81
	Printing and publishing	0.51	Motion pictures	-0.36
	Chemicals and allied products	0.31	Amusement and recreation services	1.67
	Petroleum and coal products	0.92	Health services	2.05
	Rubber and misc. plastic products	0.70	Legal services	2.32
	Leather and leather products	-2.85	Educational services	0.94
	Stone, glass, clay, and concrete products	0.45	Social services	0.72
	Primary metals industries	0.12	Museums, botanical or zoological gardens	0.72
	Fabricated metals products	0.57	Membership organizations	0.72
	Industrial machinery and equipment	-0.18	Private households	-2.08
	Electronic and other electric equipment	-0.73	Misc. services	2.32
	Transportation equipment	0.58	Government except finance	-0.15
	Instruments and other related products	1.85	Justice, public order, and safety	-0.05
	Misc. manufacturing industries	-0.95	Public finance, taxation, and monetary policy	-0.05
	Railroad transportation	-2.34	Administration of human resource programs	-0.05
	Local and interurban passenger transit	-0.10	Environmental quality and housing	-0.05
	Trucking and warehousing	0.79	Administration of economic programs	-0.05
	United States Postal Service3	0.00	National security and international affairs	-0.15
	Water transportation	-1.74	Motor vehicles and equipment	0.67
	Air transportation	2.27	Forest wildfires	0.00
	Pipelines, except natural gas	0.67	Aircraft landings and takeoffs - military	0.00
	Transportation services	2.91	Motor vehicles	1.86
	Communications	1.63	Commercial/institutional fuel	0.98
	Electric, gas, and sanitary services	0.49	Degreasing	0.23
	Wholesale trade - durable goods	0.89	Composite of nondurable goods	0.16
	Wholesale trade - nondurable goods	0.89	Industrial fuel	0.21
	Building materials and garden supplies	0.91	Residential fuel	-0.14

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
PA	Agricultural production - crops	-0.36	General merchandise stores	0.75
	Agricultural production - livestock	-0.36	Food stores	0.75
	Metal mining	2.17	Auto dealers and gasoline service stations	0.75
	Anthracite mining	0.03	Apparel and accessory stores	0.75
	Coal mining	0.03	Furniture and home furnishings stores	0.75
	Oil and gas extraction	2.16	Eating and drinking places	0.75
	Nonmetallic minerals except fuels	-0.03	Miscellaneous retail	0.75
	18	0.00	Real estate	1.05
	Food and kindred products	m1.04	Real estate/insurance/loans/law offices	1.05
	Tobacco products	-3.66	Hotels and other lodging places	0.61
	Textile mill products	-2.07	Personal services	1.76
	Apparel and other textile products	-0.78	Business services	1.76
	Lumber and wood products	0.98	Auto repair, services, and parking	1.38
	Furniture and fixtures	0.48	Miscellaneous repair services	1.76
	Paper and allied products	0.20	Motion pictures	0.54
	Printing and publishing	0.35	Amusement and recreation services	1.76
	Chemicals and allied products	-0.09	Health services	1.38
	Petroleum and coal products	-0.33	Legal services	2.12
	Rubber and misc. plastic products	1.64	Educational services	1.38
	Leather and leather products	-2.14	Social services	0.62
	Stone, glass, clay, and concrete products	0.45	Museums, botanical or zoological gardens	0.62
	Primary metals industries	-0.56	Membership organizations	0.62
	Fabricated metals products	1.15	Private households	-2.25
	Industrial machinery and equipment	0.75	Misc. services	2.12
	Electronic and other electric equipment	-0.58	Government except finance	-0.31
	Transportation equipment	0.20	Justice, public order, and safety	-0.25
	Instruments and other related products	1.09	Public finance, taxation, and monetary policy	-0.25
	Misc. manufacturing industries	-0.22	Administration of human resource programs	-0.25
	Railroad transportation	-1.96	Environmental quality and housing	-0.25
	Local and interurban passenger transit	0.76	Administration of economic programs	-0.25
	Trucking and warehousing	0.91	National security and international affairs	-0.31
	Water transportation	-0.85	Motor vehicles and equipment	0.60
	Air transportation	1.43	Forest wildfires	0.00
	Pipelines, except natural gas	0.48	Aircraft landings and takeoffs - military	0.00
	Transportation services	2.29	Motor vehicles	1.77
	Communications	1.27	Commercial/institutional fuel	0.77
	Electric, gas, and sanitary services	0.78	Degreasing	0.31
	Wholesale trade - durable goods	0.64	Composite of nondurable goods	-0.35
	Wholesale trade - nondurable goods	0.64	Industrial fuel	0.04
	Building materials and garden supplies	0.75	Residential fuel	0.01

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
RI	Agricultural production - crops	0.00	Auto dealers and gasoline service stations	1.43
	Agricultural production - livestock	0.00	Apparel and accessory stores	1.43
	Metal mining	0.00	Furniture and home furnishings stores	1.43
	Anthracite mining	0.00	Eating and drinking places	1.43
	Coal mining	0.00	Miscellaneous retail	1.43
	Oil and gas extraction	0.00	Real estate	1.84
	Nonmetallic minerals except fuels	3.53	Real estate/insurance/loans/law offices	1.84
	Food and kindred products	-0.31	Hotels and other lodging places	1.18
	Tobacco products	0.00	Personal services	2.31
	Textile mill products	-0.78	Business services	2.31
	Apparel and other textile products	-0.23	Auto repair, services, and parking	2.31
	Lumber and wood products	2.66	Miscellaneous repair services	2.31
	Furniture and fixtures	1.87	Motion pictures	1.43
	Paper and allied products	0.75	Amusement and recreation services	2.35
	Printing and publishing	0.67	Health services	1.91
	Chemicals and allied products	0.68	Legal services	2.77
	Petroleum and coal products	0.00	Educational services	2.22
	Rubber and misc. plastic products	0.08	Social services	0.86
	Leather and leather products	-0.89	Museums, botanical or zoological gardens	0.86
	Stone, glass, clay, and concrete products	2.10	Membership organizations	0.86
	Primary metals industries	1.14	Private households	-1.69
	Fabricated metals products	1.42	Misc. services	2.77
	Industrial machinery and equipment	0.10	Government except finance	0.37
	Electronic and other electric equipment	1.15	Justice, public order, and safety	0.34
	Transportation equipment	1.56	Public finance, taxation, and monetary policy	0.34
	Instruments and other related products	0.94	Administration of human resource programs	0.34
	Misc. manufacturing industries	-0.07	Environmental quality and housing	0.34
	Railroad transportation	-1.43	Administration of economic programs	0.34
	Local and interurban passenger transit	0.29	National security and international affairs	0.37
	Trucking and warehousing	1.22	Motor vehicles and equipment	0.17
	Water transportation	0.59	Forest wildfires	0.00
	Air transportation	2.51	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.00	Motor vehicles	2.36
	Transportation services	2.77	Commercial/institutional fuel	1.35
	Communications	2.36	Degreasing	0.80
	Electric, gas, and sanitary services	0.26	Composite of nondurable goods	-0.05
	Wholesale trade - durable goods	1.10	Industrial fuel	0.55
	Wholesale trade - nondurable goods	1.10	Residential fuel	0.63
	Building materials and garden supplies	1.43		
	General merchandise stores	1.43		
	Food stores	1.43		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
TN	Agricultural production - crops	-0.62	Auto dealers and gasoline service stations	1.62
	Agricultural production - livestock	-0.62	Apparel and accessory stores	1.62
	Metal mining	1.43	Furniture and home furnishings stores	1.62
	Anthracite mining	0.87	Eating and drinking places	1.62
	Coal mining	0.87	Miscellaneous retail	1.62
	Oil and gas extraction	2.29	Real estate	2.02
	Nonmetallic minerals except fuels	0.23	Real estate/insurance/loans/law offices	2.02
	Food and kindred products	-0.18	Hotels and other lodging places	1.26
	Tobacco products	-3.40	Personal services	2.63
	Textile mill products	-0.65	Business services	2.63
	Apparel and other textile products	-0.28	Auto repair, services, and parking	2.23
	Lumber and wood products	0.54	Miscellaneous repair services	2.63
	Furniture and fixtures	0.37	Motion pictures	0.90
	Paper and allied products	1.02	Amusement and recreation services	2.54
	Printing and publishing	0.89	Health services	2.32
	Chemicals and allied products	0.24	Legal services	3.03
	Petroleum and coal products	0.48	Educational services	1.56
	Rubber and misc. plastic products	1.90	Social services	0.91
	Leather and leather products	-1.62	Museums, botanical or zoological gardens	0.91
	Stone, glass, clay, and concrete products	0.66	Membership organizations	0.91
	Primary metals industries	0.80	Private households	-1.69
	Fabricated metals products	1.72	Misc. services	3.03
	Industrial machinery and equipment	2.04	Government except finance	0.52
	Electronic and other electric equipment	0.96	Justice, public order, and safety	0.48
	Transportation equipment	0.65	Public finance, taxation, and monetary policy	0.48
	Instruments and other related products	4.12	Administration of human resource programs	0.48
	Misc. manufacturing industries	1.12	Environmental quality and housing	0.48
	Railroad transportation	-1.37	Administration of economic programs	0.48
	Local and interurban passenger transit	1.04	National security and international affairs	0.52
	Trucking and warehousing	1.63	Motor vehicles and equipment	2.36
	Water transportation	1.14	Forest wildfires	0.00
	Air transportation	1.48	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.00	Motor vehicles	2.41
	Transportation services	3.25	Commercial/institutional fuel	1.42
	Communications	1.81	Degreasing	1.40
	Electric, gas, and sanitary services	1.77	Composite of nondurable goods	0.19
	Wholesale trade - durable goods	1.20	Industrial fuel	0.77
	Wholesale trade - nondurable goods	1.20	Residential fuel	0.66
	Building materials and garden supplies	1.62		
	General merchandise stores	1.62		
	Food stores	1.62		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC[a] description	Growth rate	SIC[a] description	Growth rate
VA	Agricultural production - crops	0.06	Auto dealers and gasoline service stations	1.63
	Agricultural production - livestock	0.06	Apparel and accessory stores	1.63
	Metal mining	0.04	Furniture and home furnishings stores	1.63
	Anthracite mining	1.16	Eating and drinking places	1.63
	Coal mining	1.16	Miscellaneous retail	1.63
	Oil and gas extraction	3.90	Real estate	1.22
	Nonmetallic minerals except fuels	0.60	Real estate/insurance/loans/law offices	1.22
	Food and kindred products	-0.14	Hotels and other lodging places	0.98
	Tobacco products	-0.26	Personal services	2.16
	Textile mill products	-0.05	Business services	2.16
	Apparel and other textile products	-0.63	Auto repair, services, and parking	2.16
	Lumber and wood products	0.91	Miscellaneous repair services	2.16
	Furniture and fixtures	0.71	Motion pictures	1.01
	Paper and allied products	0.55	Amusement and recreation services	2.47
	Printing and publishing	1.72	Health services	2.38
	Chemicals and allied products	0.14	Legal services	2.79
	Petroleum and coal products	0.00	Educational services	1.53
	Rubber and misc. plastic products	2.66	Social services	1.19
	Leather and leather products	-1.55	Museums, botanical or zoological gardens	1.19
	Stone, glass, clay, and concrete products	1.22	Membership organizations	1.19
	Primary metals industries	1.41	Private households	-1.71
	Fabricated metals products	2.41	Misc. services	2.79
	Industrial machinery and equipment	1.57	Government except finance	0.32
	Electronic and other electric equipment	1.37	Justice, public order, and safety	0.34
	Transportation equipment	1.57	Public finance, taxation, and monetary policy	0.34
	Instruments and other related products	3.42	Administration of human resource programs	0.34
	Misc. manufacturing industries	0.89	Environmental quality and housing	0.34
	Railroad transportation	-1.65	Administration of economic programs	0.34
	Local and interurban passenger transit	0.79	National security and international affairs	0.32
	Trucking and warehousing	1.66	Motor vehicles and equipment	2.39
	Water transportation	0.48	Forest wildfires	0.00
	Air transportation	1.24	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.00	Motor vehicles	2.50
	Transportation services	2.98	Commercial/institutional fuel	1.23
	Communications	1.78	Degreasing	1.48
	Electric, gas, and sanitary services	1.50	Composite of nondurable goods	0.36
	Wholesale trade - durable goods	1.46	Industrial fuel	0.91
	Wholesale trade - nondurable goods	1.46	Residential fuel	0.75
	Building materials and garden supplies	1.63		
	General merchandise stores	1.63		
	Food stores	1.63		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (continued)

State	SIC[a] description	Growth rate	SIC[a] description	Growth rate
VT	Agricultural production - crops	-0.19	Auto dealers and gasoline service stations	1.80
	Agricultural production - livestock	-0.19	Apparel and accessory stores	1.80
	Metal mining	0.00	Furniture and home furnishings stores	1.80
	Anthracite mining	0.00	Eating and drinking places	1.80
	Coal mining	0.00	Miscellaneous retail	1.80
	Oil and gas extraction	0.00	Real estate	2.12
	Nonmetallic minerals except fuels	0.00	Real estate/insurance/loans/law offices	2.12
	Food and kindred products	0.26	Hotels and other lodging places	1.27
	Tobacco products	0.00	Personal services	2.73
	Textile mill products	-1.25	Business services	2.73
	Apparel and other textile products	0.13	Auto repair, services, and parking	2.47
	Lumber and wood products	1.95	Miscellaneous repair services	2.73
	Furniture and fixtures	1.80	Motion pictures	0.86
	Paper and allied products	1.14	Amusement and recreation services	2.56
	Printing and publishing	1.11	Health services	2.21
	Chemicals and allied products	1.43	Legal services	3.08
	Petroleum and coal products	0.00	Educational services	1.68
	Rubber and misc. plastic products	2.42	Social services	1.64
	Leather and leather products	-3.01	Museums, botanical or zoological gardens	1.64
	Stone, glass, clay, and concrete products	1.33	Membership organizations	1.64
	Primary metals industries	1.43	Private households	-1.35
	Fabricated metals products	3.19	Misc. services	3.08
	Industrial machinery and equipment	0.97	Government except finance	0.54
	Electronic and other electric equipment	1.45	Justice, public order, and safety	0.76
	Transportation equipment	2.63	Public finance, taxation, and monetary policy	0.76
	Instruments and other related products	3.77	Administration of human resource programs	0.76
	Misc. manufacturing industries	2.17	Environmental quality and housing	0.76
	Railroad transportation	0.00	Administration of economic programs	0.76
	Local and interurban passenger transit	1.61	National security and international affairs	0.54
	Trucking and warehousing	1.92	Motor vehicles and equipment	3.66
	Water transportation	0.00	Forest wildfires	0.00
	Air transportation	3.03	Aircraft landings and takeoffs - military	0.00
	Pipelines, except natural gas	0.00	Motor vehicles	2.70
	Transportation services	3.90	Commercial/institutional fuel	1.64
	Communications	0.02	Degreasing	1.91
	Electric, gas, and sanitary services	1.14	Composite of nondurable goods	0.84
	Wholesale trade - durable goods	1.96	Industrial fuel	1.63
	Wholesale trade - nondurable goods	1.96	Residential fuel	0.94
	Building materials and garden supplies	1.80		
	General merchandise stores	1.80		
	Food stores	1.80		

[a] Standard Industrial Classification code

(continued)

TABLE J-5 (concluded)

State	SIC [a] description	Growth rate	SIC [a] description	Growth rate
WV	Agricultural production - crops	-0.01	Food stores	1.14
	Agricultural production - livestock	-0.01	Auto dealers and gasoline service stations	1.14
	Metal mining	0.00	Apparel and accessory stores	1.14
	Anthracite mining	0.67	Furniture and home furnishings stores	1.14
	Coal mining	0.67	Eating and drinking places	1.14
	Oil and gas extraction	2.04	Miscellaneous retail	1.14
	Nonmetallic minerals except fuels	0.61	Real estate	1.81
	Food and kindred products	-0.20	Real estate/insurance/loans/law offices	1.81
	Tobacco products	-3.41	Hotels and other lodging places	0.76
	Textile mill products	0.48	Personal services	2.25
	Apparel and other textile products	-0.63	Business services	2.25
	Lumber and wood products	0.67	Auto repair, services, and parking	2.38
	Furniture and fixtures	0.44	Miscellaneous repair services	2.25
	Paper and allied products	-0.43	Motion pictures	0.97
	Printing and publishing	0.55	Amusement and recreation services	2.33
	Chemicals and allied products	-0.44	Health services	1.99
	Petroleum and coal products	0.48	Legal services	2.98
	Rubber and misc. plastic products	2.88	Educational services	1.14
	Leather and leather products	-0.98	Social services	0.81
	Stone, glass, clay, and concrete products	-0.28	Museums, botanical or zoological gardens	0.81
	Primary metals industries	0.80	Membership organizations	0.81
	Fabricated metals products	2.13	Private households	-1.88
	Industrial machinery and equipment	2.29	Misc. services	2.98
	Electronic and other electric equipment	-0.12	Government except finance	0.39
	Transportation equipment	2.91	Justice, public order, and safety	0.25
	Instruments and other related products	3.06	Public finance, taxation, and monetary policy	0.25
	Misc. manufacturing industries	0.38	Administration of human resource programs	0.25
	Railroad transportation	-0.80	Environmental quality and housing	0.25
	Local and interurban passenger transit	-0.42	Administration of economic programs	0.25
	Trucking and warehousing	1.26	National security and international affairs	0.39
	Water transportation	0.78	Motor vehicles and equipment	3.66
	Air transportation	5.02	Forest wildfires	0.00
	Pipelines, except natural gas	0.00	Aircraft landings and takeoffs - military	0.00
	Transportation services	4.08	Motor vehicles	1.84
	Communications	1.63	Commercial/institutional fuel	1.11
	Electric, gas, and sanitary services	0.47	Degreasing	1.01
	Wholesale trade - durable goods	1.26	Composite of nondurable goods	-0.05
	Wholesale trade - nondurable goods	1.26	Industrial fuel	0.55
	Building materials and garden supplies	1.14	Residential fuel	0.09
	General merchandise stores	1.14		

[a] Standard Industrial Classification code

TABLE J-6. 2005 GROWTH RATES FOR UTILITIES AND INDUSTRIAL COMBUSTION

State	SIC[a] description	Growth rate, % per year
CT	Utility external combustion - coal	0.00
	Utility external combustion - oil	-3.35
	Utility external combustion - gas	25.74
	Industrial gas turbines	1.82
	Industrial gas reciprocating engines	1.82
	Utility oil turbines	-3.35
	Utility oil reciprocating engines	-3.35
	Utility gas turbines	25.74
	Utility gas reciprocating engines	25.74
	Industrial external combustion - gas < 100 MMBTU/h	1.82
	Industrial external combustion - gas - general	1.82
DC	Utility external combustion - coal	0.53
	Utility external combustion - oil	1.03
	Utility external combustion - gas	4.08
	Utility oil turbines	1.03
	Utility oil reciprocating engines	1.03
	Utility gas turbines	4.08
	Utility gas reciprocating engines	4.08
DE	Utility external combustion - coal	-0.22
	Utility external combustion - oil	-8.66
	Utility external combustion - gas	3.40
	Utility oil turbines	-8.66
	Utility oil reciprocating engines	-8.66
	Utility gas turbines	3.40
	Utility gas reciprocating engines	3.40
	Industrial external combustion - gas < 100 MMBTU/h	0.44
	Industrial external combustion - gas - cogeneration	0.44
	Industrial external combustion - gas - general	0.44
IN	Utility external combustion - coal	1.79
	Utility external combustion - oil	6.62
	Utility external combustion - gas	8.57
	Industrial gas reciprocating engines	5.24
	Utility oil turbines	6.62
	Utility oil reciprocating engines	6.62
	Utility gas turbines	8.57
	Utility gas reciprocating engines	8.57
	Industrial external combustion - gas < 100 MMBTU/h	5.24
	Industrial external combustion - gas - cogeneration	5.24

[a] Standard Industrial Classification code

(continued)

TABLE J-6 (continued)

State	SIC[a] description	Growth rate, % per year
KY	Utility external combustion - coal	2.83
	Utility external combustion - oil	12.58
	Utility external combustion - gas	24.57
	Utility oil turbines	12.58
	Utility oil reciprocating engines	12.58
	Utility gas turbines	24.57
	Utility gas reciprocating engines	24.57
	Industrial external combustion - gas < 100 MMBTU/h	2.25
	Industrial external combustion - gas - general	2.25
MA	Utility external combustion - coal	0.54
	Utility external combustion - oil	-0.10
	Utility external combustion - gas	5.71
	Industrial gas turbines	1.11
	Industrial gas reciprocating engines	1.11
	Utility oil turbines	-0.10
	Utility oil reciprocating engines	-0.10
	Utility gas turbines	5.71
	Utility gas reciprocating engines	5.71
	Industrial external combustion - gas < 100 MMBTU/h	1.11
	Industrial external combustion - gas - general	1.11
MD	Utility external combustion - coal	3.55
	Utility external combustion - oil	2.24
	Utility external combustion - gas	14.39
	Utility oil turbines	2.24
	Utility oil reciprocating engines	2.24
	Utility gas turbines	14.39
	Utility gas reciprocating engines	14.39
	Industrial external combustion - gas < 100 MMBTU/h	0.65
	Industrial external combustion - gas - general	0.65
ME	Utility external combustion - coal	0.00
	Utility external combustion - oil	-0.28
	Utility external combustion - gas	21.40
	Utility oil turbines	-0.28
	Utility oil reciprocating engines	-0.28
	Utility gas turbines	21.40
	Utility gas reciprocating engines	21.40
	Industrial external combustion - gas - general	2.57

[a] Standard Industrial Classification code

(continued)

TABLE J-6 (continued)

State	SIC[a] description	Growth rate, % per year
MI	Utility external combustion - coal	1.03
	Utility external combustion - oil	-0.58
	Utility external combustion - gas	-5.68
	Industrial gas reciprocating engines	1.62
	Utility oil turbines	-0.58
	Utility oil reciprocating engines	-0.58
	Utility gas turbines	-5.68
	Utility gas reciprocating engines	-5.68
	Industrial external combustion - gas < 100 MMBTU/h	1.62
	Industrial external combustion - gas - general	1.62
NC	Utility external combustion - coal	2.76
	Utility external combustion - oil	36.90
	Utility external combustion - gas	4.43
	Utility oil turbines	36.90
	Utility oil reciprocating engines	36.90
	Utility gas turbines	4.43
	Utility gas reciprocating engines	4.43
	Industrial external combustion - gas - general	7.20
NH	Utility external combustion - coal	0.32
	Utility external combustion - oil	-1.08
	Utility external combustion - gas	1.00
	Utility oil turbines	-1.08
	Utility oil reciprocating engines	-1.08
	Utility gas turbines	0.00
	Utility gas reciprocating engines	0.00
	Industrial external combustion - oil - general	0.24
NJ	Utility external combustion - coal	1.17
	Utility external combustion - oil	4.30
	Utility external combustion - gas	1.93
	Industrial gas turbines	3.07
	Utility oil turbines	4.30
	Utility oil reciprocating engines	4.30
	Utility gas turbines	1.93
	Utility gas reciprocating engines	1.93
	Industrial external combustion - gas < 100 MMBTU/h	3.07
	Industrial external combustion - gas - general	3.07

[a] Standard Industrial Classification code

(continued)

TABLE J-6 (continued)

State	SIC [a] description	Growth rate, % per year
NY	Utility external combustion - coal	4.73
	Utility external combustion - oil	-1.77
	Utility external combustion - gas	-1.47
	Utility oil turbines	-1.77
	Utility oil reciprocating engines	-1.77
	Utility gas turbines	-1.47
	Utility gas reciprocating engines	-1.47
	Industrial external combustion - gas < 100 MMBTU/h	2.51
	Industrial external combustion - gas - general	2.51
OH	Utility external combustion - coal	0.81
	Utility external combustion - oil	-6.35
	Utility external combustion - gas	12.32
	Industrial gas reciprocating engines	0.71
	Utility oil turbines	-6.35
	Utility oil reciprocating engines	-6.35
	Utility gas turbines	12.32
	Utility gas reciprocating engines	12.32
	Industrial external combustion - gas < 100 MMBTU/h	0.71
	Industrial external combustion - gas - general	0.71
PA	Utility external combustion - coal	0.83
	Utility external combustion - oil	-1.90
	Utility external combustion - gas	10.29
	Industrial gas turbines	0.99
	Industrial gas reciprocating engines	0.99
	Utility oil turbines	-1.90
	Utility oil reciprocating engines	-1.90
	Utility gas turbines	10.29
	Utility gas reciprocating engines	10.29
	Industrial external combustion - gas < 100 MMBTU/h	0.99
	Industrial external combustion - gas - cogeneration	0.99
	Industrial external combustion - gas - general	0.99
RI	Utility external combustion - coal	24.75
	Utility external combustion - oil	-5.71
	Utility external combustion - gas	2.11
	Utility oil turbines	-5.71
	Utility oil reciprocating engines	-5.71
	Utility gas turbines	2.11
	Utility gas reciprocating engines	2.11
	Industrial external combustion - oil - cogeneration	-0.47
	Industrial external combustion - oil - general	-0.47

[a] Standard Industrial Classification code

(continued)

TABLE J-6 (concluded)

State	SIC[a] description	Growth rate, % per year
TN	Utility external combustion - coal	2.84
	Utility external combustion - oil	7.82
	Utility external combustion - gas	-1.76
	Industrial gas turbines	6.49
	Industrial gas reciprocating engines	6.49
	Utility oil turbines	7.82
	Utility oil reciprocating engines	7.82
	Utility gas turbines	-1.76
	Utility gas reciprocating engines	-1.76
	Industrial external combustion - gas - general	6.49
VT	Utility external combustion - coal	0.00
	Utility external combustion - oil	24.35
	Utility external combustion - gas	17.97
	Utility oil turbines	24.35
	Utility oil reciprocating engines	24.35
	Utility gas turbines	17.97
	Utility gas reciprocating engines	17.97
	Industrial external combustion - gas - cogeneration	1.49
	Industrial external combustion - gas - general	1.49
VA	Utility external combustion - coal	6.10
	Utility external combustion - oil	-0.53
	Utility external combustion - gas	20.89
	Industrial external combustion - nonfossil fuel	8.69
	Commercial/institutional - other	8.69
	Utility oil turbines	-0.53
	Utility oil reciprocating engines	-0.53
	Utility gas turbines	20.89
	Utility gas reciprocating engines	20.89
	Industrial external combustion - gas < 100 MMBTU/h	8.69
	Industrial external combustion - gas - cogeneration	8.69
WV	Utility external combustion - coal	-1.35
	Utility external combustion - oil	-1.50
	Utility external combustion - gas	0.00
	Industrial gas turbines	0.92
	Industrial gas reciprocating engines	0.92
	Utility oil turbines	-1.50
	Utility oil reciprocating engines	-1.50
	Utility gas turbines	0.00
	Utility gas reciprocating engines	0.00
	Industrial external combustion - gas < 100 MMBTU/h	0.92
	Industrial external combustion - gas - general	0.92

[a] Standard Industrial Classification code

APPENDIX K

2005 BASELINE AREA SOURCE STATE AND COUNTY CONTROL EFFICIENCIES

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TABLE K-1. STATEWIDE 2005 AREA-SOURCE CONTROL EFFICIENCIES

State			Source category	Control efficiency, % VOC	NO_x	CO
07[a]	Connecticut	54[b]	Gasoline Marketed	51.87	0.00	0.00
		61	Managed Burning - Prescribed	00.00	0.00	0.00
		62	Agricultural Field Burning	100.00	0.00	0.00
		101	Cutback Asphalt Paving Operations	95.00	0.00	0.00
		103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
		106	Process Emissions - Pharmaceutical Manufacturing	63.60	0.00	0.00
09	District of Columbia	54	Gasoline Marketed	51.87	0.00	0.00
		101	Cutback Asphalt Paving Operations	95.00	0.00	0.00
		103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
18	Kentucky	54	Gasoline Marketed	51.87	0.00	0.00
		101	Cutback Asphalt Paving Operations	85.62	0.00	0.00
		103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
		104	Petroleum Refinery Fugitives	51.35	0.00	0.00
		106	Process Emissions - Pharmaceutical Manufacturing	63.60	0.00	0.00
22	Massachusetts	54	Gasoline Marketed	51.87	0.00	0.00
		101	Cutback Asphalt Paving Operations	85.62	0.00	0.00
		102	Fugitives from SOCMI	33.15	0.00	0.00
		103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
23	Michigan	54	Gasoline Marketed	51.87	0.00	0.00
		101	Cutback Asphalt Paving Operations	85.62	0.00	0.00
		102	Fugitives from SOCMI	33.15	0.00	0.00
		103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
		104	Petroleum Refinery Fugitives	51.35	0.00	0.00
		106	Process Emissions - Pharmaceutical Manufacturing	63.60	0.00	0.00
30	New Hampshire	101	Cutback Asphalt Paving Operations	85.62	0.00	0.00
		103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
31	New Jersey	54	Gasoline Marketed	51.87	0.00	0.00
		61	Managed Burning - Prescribed	86.63	0.00	0.00
		62	Agricultural Field Burning	72.35	0.00	0.00
		101	Cutback Asphalt Paving Operations	85.62	0.00	0.00
		102	Fugitives from SOCMI	33.15	0.00	0.00
		103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
		104	Petroleum Refinery Fugitives	51.35	0.00	0.00
		105	Process Emissions - Bakeries	13.60	0.00	0.00
		106	Process Emissions - Pharmaceutical Manufacturing	63.60	0.00	0.00
		107	Process Emissions - Synthetic Fiber Manufacturing	54.40	0.00	0.00
		109	Hazardous Waste TSDFs	11.88	0.00	0.00
36	Ohio	54	Gasoline Marketed	51.87	0.00	0.00
		101	Cutback Asphalt Paving Operations	85.62	0.00	0.00
		103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
		104	Petroleum Refinery Fugitives	51.35	0.00	0.00
		106	Process Emissions - Pharmaceutical Manufacturing	63.60	0.00	0.00
41	Rhode Island	54	Gasoline Marketed	51.87	0.00	0.00
		103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
47	Vermont	54	Gasoline Marketed	51.87	0.00	0.00
		103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00

[a] AEROS State Code
[b] Area Source Classification Code

TABLE K-2. COUNTY-SPECIFIC 2005 AREA-SOURCE CONTROL EFFICIENCIES

State/County		Source Category	Control efficiency, % VOC	NO_x	CO
08[a] DELAWARE/					
0180[b] New Castle Co. →	54[c]	Gasoline Marketed	51.16	0.00	0.00
	101	Cutback Asphalt Paving Operations	90.25	0.00	0.00
	102	Fugitives from SOCMI	33.15	0.00	0.00
	103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
	104	Petroleum Refinery Fugitives	51.35	0.00	0.00
	106	Process Emissions - Pharmaceutical Manufacturing	85.50	0.00	0.00
20 MAINE/					
0027 Androscoggin Co.	← 103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
0277 Cumberland Co.					
0547 Kennebec Co.					
0595 Knox Co.					
0645 Lincoln Co.					
0885 Oxford Co.					
1125 Somerset Co.					
1183 Waldo Co.					
1325 York Co.					
21 MARYLAND/					
0080 Anne Arundel Co.	54	Gasoline Marketed	51.87	0.00	0.00
0120 Baltimore City	61	Managed Burning - Prescribed	86.63	0.00	0.00
0140 Baltimore Co.	62	Agricultural Field Burning	72.35	0.00	0.00
0360 Carroll Co.	→ 101	Cutback Asphalt Paving Operations	67.50	0.00	0.00
0920 Harford Co.	← 103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
0960 Howard Co.	104	Petroleum Refinery Fugitives	51.35	0.00	0.00
1160 Montgomery Co.	106	Process Emissions - Pharmaceutical Manufacturing	63.60	0.00	0.00
1300 Prince Georges					
22 MASSACHUSETTS/					
0187 Berkshire →	101	Cutback Asphalt Paving Operations	85.62	0.00	0.00
	102	Fugitives from SOCMI	33.15	0.00	0.00
	103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00

[a] AEROS State Code
[b] AEROS County Code
[c] Area Source Classification Code

(continued)

TABLE K-2. (continued)

State/County		Source Category	Control efficiency, % VOC	NO_x	CO
33 NEW YORK/					
0600 Bronx Co.	54	Gasoline Marketed	54.37	0.00	0.00
3440 Kings Co.	103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
4520 Nassau Co.	104	Petroleum Refinery Fugitives	51.35	0.00	0.00
4660 New York Co.	106	Process Emissions - Pharmaceutical Manufacturing	63.60	0.00	0.00
5660 Queens Co.					
5720 Richmond Co.					
5780 Rockland Co.					
6580 Suffolk Co.					
7320 Westchester Co.					
39 PENNSYLVANIA/					
0100 Allegheny Co.	54	Gasoline Marketed	51.87	0.00	0.00
0260 Armstrong Co.	101	Cutback Asphalt Paving Operations	85.62	0.00	0.00
0560 Beaver Co.	103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
1200 Bucks Co.	104	Petroleum Refinery Fugitives	51.35	0.00	0.00
1260 Butler Co.	106	Process Emissions - Pharmaceutical Manufacturing	63.60	0.00	0.00
1660 Chester Co.					
2180 Cumberland Co.					
2340 Dauphin Co.					
2360 Delaware Co.					
4640 Lackawanna Co.					
4940 Lehigh Co.					
5220 Luzerne Co.					
6000 Montgomery Co.					
6580 Northampton Co.					
7120 Perry Co.					
7160 Philadelphia Co.					
9200 Washington Co.					
9330 Westmoreland Co.					
9560 York Co.					

(continued)

TABLE K-2. (concluded)

County	SCC		Control efficiency, % VOC	NO_x	CO
48 VIRGINIA/					
0080 Alexandria	54	Gasoline Marketed	51.87	0.00	0.00
0200 Arlington Co.	101	Cutback Asphalt Paving Operations	98.01	0.00	0.00
0710 Chesapeake	103	Bulk Terminals and Bulk Plants	65.10	0.00	0.00
1040 Fairfax	104	Petroleum Refinery Fugitives	51.35	0.00	0.00
1060 Fairfax Co.	106	Process Emissions - Pharmaceutical Manufacturing	63.60	0.00	0.00
1080 Falls Church					
1440 Hampton					
1500 Henrico Co.					
1760 Loudoun Co.					
1880 Manassas					
1900 Martinsville					
2120 Newport News					
2140 Norfolk					
2440 Portsmouth					
2520 Prince William					
2660 Richmond					
3040 Stafford Co.					
3080 Suffolk					
3240 Virginia Beach					

APPENDIX L

MOBILE4 INPUT RECORDS FOR ROMNET SCENARIOS

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TABLE L-1. MOBILE4 INPUTS: 1985 BASE CASE, NO I/M PROGRAMS

```
1          PROMPT - vertical flag input, no prompting>>TCLEAN version 08/03/
ROMNET no I/M     -  MOBILE 4  (TCLEAN version 08/03/89)
1          TAMFLG - default tampering rates
1          SPDFLG - one speed per scenario for all IV
3          VMFLAG - REWEIGHTED vmt mix
1          MYMRFG - default registration and mileage accrual rates
1          NEWFLG - default exhaust emission rates
1          IMFLAG - BASIC I/M program
1          ALHFLG - no additional correction factor inputs
1          ATPFLG - NO anti-tampering program
1          RLFLAG - no refueling losses
1          LOCFLG - read in local area parameters as 2nd req sc rec
1          TEMFLG - calculate exhaust temperatures
3          OUTFMT--
4          PRTFLG - print exhaust HC, CO and NOx emission factor results
1          IDLFLG - do not print idle emissions results
2          NMHFLG - print NMHC
2 1 1      HCFLAG,ISCEN,METH - print HC components
.726.130.088.016.000.000.040.000
1 85 19.6 40.0 20.6 27.3 20.6
ROMNET          C  35.  45. 11.5  9.0 89
1 85 45.0 40.0 20.6 27.3 20.6
ROMNET          C  35.  45. 11.5  9.0 89
1 85 50.0 40.0 20.6 27.3 20.6
ROMNET          C  35.  45. 11.5  9.0 89
1 85 19.6 40.0 20.6 27.3 20.6
```

TABLE L-2. MOBILE4 INPUTS: 1985 BASE CASE, BASIC I/M PROGRAM

```
1          PROMPT - vertical flag input, no prompting>>TCLEAN version 08/03/
Basic ROMNET I/M  -  MOBILE 4  (TCLEAN version 08/03/89)
1          TAMFLG - default tampering rates
1          SPDFLG - one speed per scenario for all IV
3          VMFLAG - REWEIGHTED vmt mix
1          MYMRFG - default registration and mileage accrual rates
1          NEWFLG - default exhaust emission rates
2          IMFLAG - BASIC I/M program
1          ALHFLG - no additional correction factor inputs
1          ATPFLG - NO anti-tampering program
1          RLFLAG - no refueling losses
1          LOCFLG - read in local area parameters as 2nd req sc rec
1          TEMFLG - calculate exhaust temperatures
8          OUTFMT -
4          PRTFLG - print exhaust HC, CO and NOx emission factor results
1          IDLFLG - do not print idle emissions results
2          NMHFLG - print NMHC
2 1 1      HCFLAG,ISCEN,METH - print HC components
.726.130.088.016.000.000.040.000
83 20 68 20 5 5 100 1 1 2221 1 11
1 85 19.6 85.0 20.6 27.3 20.6
ROMNET           C  75.  95. 11.5  9.0 89
1 85 45.0 85.0 20.6 27.3 20.6
ROMNET           C  75.  95. 11.5  9.0 89
1 85 50.0 85.0 20.6 27.3 20.6
ROMNET     C  75.  95. 11.5  9.0 89
```

TABLE L-3. MOBILE4 INPUTS: 2005 BASELINE, NO I/M PROGRAMS

```
1          PROMPT - no prompting  <<>>  85 degrees mean temp, 20 degree rang
ROMNET 2005 Base Case  -  No I/M  -  MOBILE 4  (TCLEAN version 08/03/89)
1          TAMFLG - default tampering rates
1          SPDFLG - one speed per scenario for all IV
3          VMFLAG - REWEIGHTED vmt mix
1          MYMRFG - default registration and mileage accrual rates
1          NEWFLG - default exhaust emission rates
1          IMFLAG - NO I/M program
1          ALHFLG - no additional correction factor inputs
1          ATPFLG - NO anti-tampering program
1          RLFLAG - no refueling losses
1          LOCFLG - read in local area parameters as 2nd req sc rec
1          TEMFLG - calculate exhaust temperatures
3          OUTFMT -
4          PRTFLG - print exhaust HC, CO and NOx emission factor results
1          IDLFLG - do not print idle emissions results
2          NMHFLG - print NMHC
2 2 1      HCFLAG,ISCEN,METH - print HC components
.357.357.710 93   OMS GENERAL-PURPOSE EVAP STANDARD REDUCTION ESTIMATES
.740.122.091.016.000.000.031.000
1  5 19.6 85.0 20.6 27.3 20.6
ROMNET          C  75.  95. 11.5  9.0 89
1  5 45.0 85.0 20.6 27.3 20.6
ROMNET          C  75.  95. 11.5  9.0 89
1  5 50.0 85.0 20.6 27.3 20.6
ROMNET     C  75.  95. 11.5  9.0 89
```

TABLE L-4. MOBILE4 INPUTS: 2005 BASELINE, BASIC I/M PROGRAMS

```
1          PROMPT - no prompting  <<>>  85 degree mean temp, 20 degree range
ROMNET 2005 Base Case  -  Basic I/M  -  MOBILE 4  (TCLEAN version 08/03/89)
1          TAMFLG - default tampering rates
1          SPDFLG - one speed per scenario for all IV
3          VMFLAG - REWEIGHTED vmt mix
1          MYMRFG - default registration and mileage accrual rates
1          NEWFLG - default exhaust emission rates
2          IMFLAG - BASIC I/M program
1          ALHFLG - no additional correction factor inputs
1          ATPFLG - NO anti-tampering program
1          RLFLAG - no refueling losses
1          LOCFLG - read in local area parameters as 2nd req sc rec
1          TEMFLG - calculate exhaust temperatures
3          OUTFMT--
4          PRTFLG - print exhaust HC, CO and NOx emission factor results
1          IDLFLG - do not print idle emissions results
2          NMHFLG - print NMHC
2 2 1      HCFLAG,ISCEN,METH - print HC components
.357.357.710 93   OMS GENERAL-PURPOSE EVAP STANDARD REDUCTION ESTIMATES
.740.122.091.016.000.000.031.000
83 20 68 20  5  5 100 1 1 2221 1 11
1  5 19.6 85.0 20.6 27.3 20.6
ROMNET          C  75.  95. 11.5  9.0 89
1  5 45.0 85.0 20.6 27.3 20.6
ROMNET          C  75.  95. 11.5  9.0 89
1  5 50.0 85.0 20.6 27.3 20.6
ROMNET    C  75.  95. 11.5  9.o 89
```

TABLE L-5. MOBILE4 INPUTS: MAXIMUM TECHNOLOGY STRATEGY

```
1          PROMPT - vertical flag input, no prompting>>TCLEAN version 08/03/
"MAXOUT" MAX MOBILE CONTROLS -- ENH I/M, Evap+Ph 2 @full pen, no C.F.s 2/16/
1          TAMFLG - default tampering rates
1          SPDFLG - one speed per scenario for all IV
3          VMFLAG - ROMNET vmt mix (LDD and MC reallocated)
1          MYMRFG - default registration and mileage accrual rates
2          NEWFLG - PREZBILL exhaust emission rates
2          IMFLAG - MAX ENHANCED I/M program
1          ALHFLG - no additional correction factor inputs
2          ATPFLG - FOUR-ITEM anti-tampering program
5          RLFLAG - ZERO OUT refueling losses
1          LOCFLG - read in local area parameters as 2nd req sc rec
1          TEMFLG - calculate exhaust temperatures (l-use max,min; 2-use amb
3          OUTFMT - 3 gives MOBILE4 112 column descriptive output, 1 gives n
4          PRTFLG - print exhaust HC, CO and NOX emission factor results
1          IDLFLG - do not print idle emissions results
2          NMHFLG - print NMHC
2 2 1      HCFLAG,ISCEN,METH - print HC components
.357.357.710 93   OMS GENERAL--PURPOSE EVAP STANDARD REDUCTION ESTIMATES
.740.122.091.016.000.000.031.990   ROMNET/NEDS REALLOCATION OF MOBILE VMT
9        reduced set of emission stds for full penetration....
1 1 1 95 20    .085    .028     .028   -- for 10 yr useful life
1 1 3 95 20    .127    .017
1 2 1 95 20     .14     .05
1 2 3 95 20     .35     .03
1 3 1 95 20     .22     .08
1 3 3 95 20     .64     .04
1 5 1 95 20     .21     .03            note: NEDS/ROMNET has no LDDV or LDDT (5,6
1 6 1 95 20     .27     .04
1 7 3 95 20    3.11     .0
83 20 68 20    5 5 100 1 1 2222 3 11
91 68 20 2222 11 100. 22221111
1 20 19.6 86.0 20.6 27.3 20.6
ROMNET TCLEAN    C  75.  95. 11.5  7.0 89
1 20 45.0 86.0 20.6 27.3 20.6
ROMNET TCLEAN    C  75.  95. 11.5  7.0 89
1 20 50.0 86.0 20.6 27.3 20.6
ROMNET TCLEAN    C  75.    95. 11.5   7.0 89
```

TABLE L-6. MOBILE4 INPUTS: CLEAN AIR ACT STRATEGY

```
1          PROMPT - vertical flag input, no prompting>>TCLEAN version 08/03/89
CROMEIM -- ENHANCED I/M,HC+NOx STDS ROMNET PREZBILL TCLEAN---- NO C.F.s>>10/4/89
1          TAMFLG - default tampering rates
1          SPDFLG - one speed per scenario for all IV
1          VMFLAG - default vmt mix
1          MYMRFG - default registration and mileage accrual rates
2          NEWFLG - PREZBILL exhaust emission rates
2          IMFLAG - ENHANCED I/M program
1          ALHFLG - no additional correction factor inputs
2          ATPFLG - FOUR-ITEM anti-tampering program
1          RLFLAG - no refueling losses
1          LOCFLG - read in local area parameters as 2nd req sc rec
1          TEMFLG - calculate exhaust temperatures
3          OUTFMT - MOBILE4 112 column descriptive output format
4          PRTFLG - print exhaust HC, CO and NOx emission factor results
1          IDLFLG - do not print idle emissions results
2          NMHFLG - print NMHC
2 2 1      HCFLAG,ISCEN,METH - print HC components
.350.350.710 93
31
1 1 1 93 93    .27    .06    .08
1 1 1 94 94    .26    .06    .08
1 1 1 95 95    .23    .06    .08
1 1 1 96 96    .21    .06    .08
1 1 1 97 20    .20    .06    .08
1 1 3 94 94    .48    .03
1 1 3 95 20    .25    .03
1 2 1 94 94    .34    .08
1 2 1 95 95    .32    .08
1 2 1 96 96    .26    .08
1 2 1 97 97    .22    .08
1 2 1 98 20    .20    .08
1 2 3 95 95    .56    .03
1 2 3 96 20    .34    .03
1 3 1 94 94    .35    .08
1 3 1 95 95    .34    .08
1 3 1 96 96    .29    .08
1 3 1 97 97    .25    .08
1 3 1 98 20    .22    .08
1 3 3 95 95    .65    .04
1 3 3 96 20    .46    .04
1 5 1 93 93    .28    .03
1 5 1 94 94    .27    .03
1 5 1 95 95    .24    .03
1 5 1 96 96    .22    .03
1 5 1 97 20    .21    .03
1 6 1 94 94    .42    .04
1 6 1 95 95    .41    .04
1 6 1 96 96    .35    .04
1 6 1 97 97    .30    .04
1 6 1 98 20    .27    .04
83 20 68 20 5 5 100 1 2 2222 1 11
91 68 20 2222 12 100. 22221111
1 05 19.6 86.0 20.6 27.3 20.6
ROMNET TCLEAN    D  75.  95. 11.5  9.0 89
1 05 45.0 86.0 20.6 27.3 20.6
ROMNET TCLEAN    D  75.  95. 11.5  9.0 89
1 05 50.0 86.0 20.6 27.3 20.6
ROMNET TCLEAN    D  75.   95. 11.5  9.0 89
```

APPENDIX M

LAYER 1 EPISODE MAXIMUM OZONE CONCENTRATIONS

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JUNE 1983

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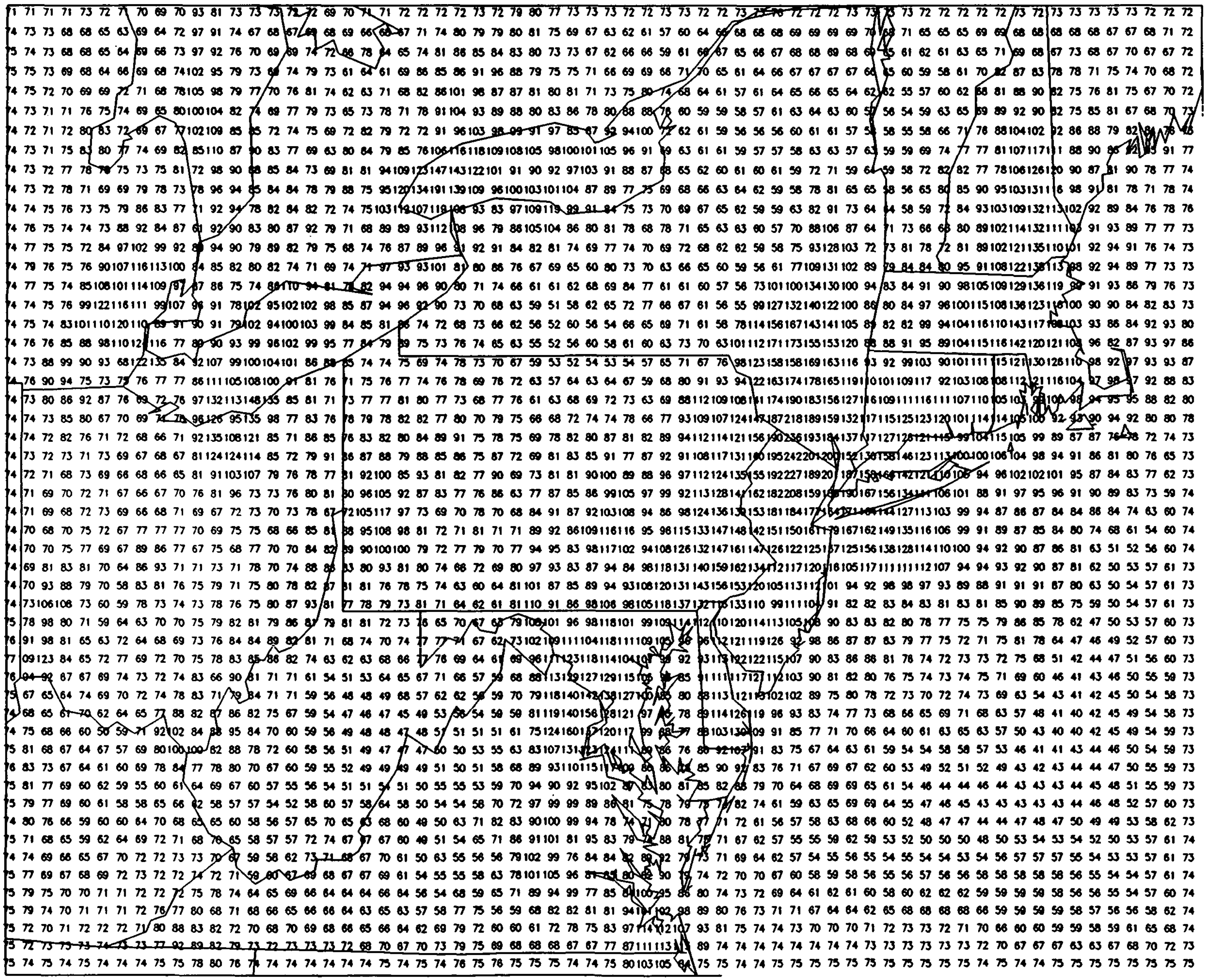
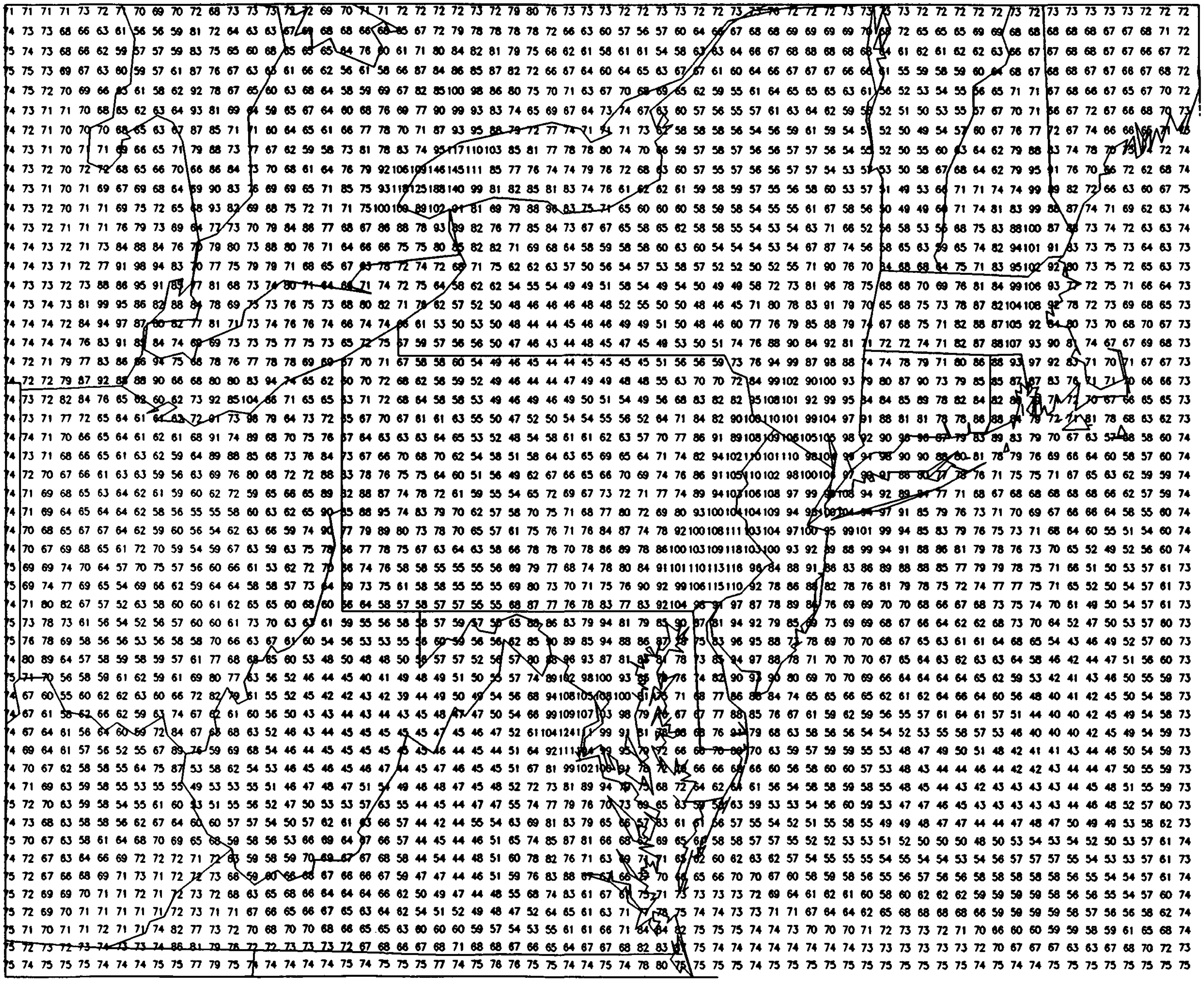
Episode Maximum Ozone(ppb) Layer 1 for JUNE 8, 1983 – JUNE 20, 1983

Creation date= 21SEP90   Scenario= 2005 BASE CASE



Episode Maximum Ozone(ppb) Layer 1 for JUNE 8, 1983 – JUNE 20, 1983

Creation date= 21SEP90 Scenario= 2005 CONTROL 19



JULY 1985

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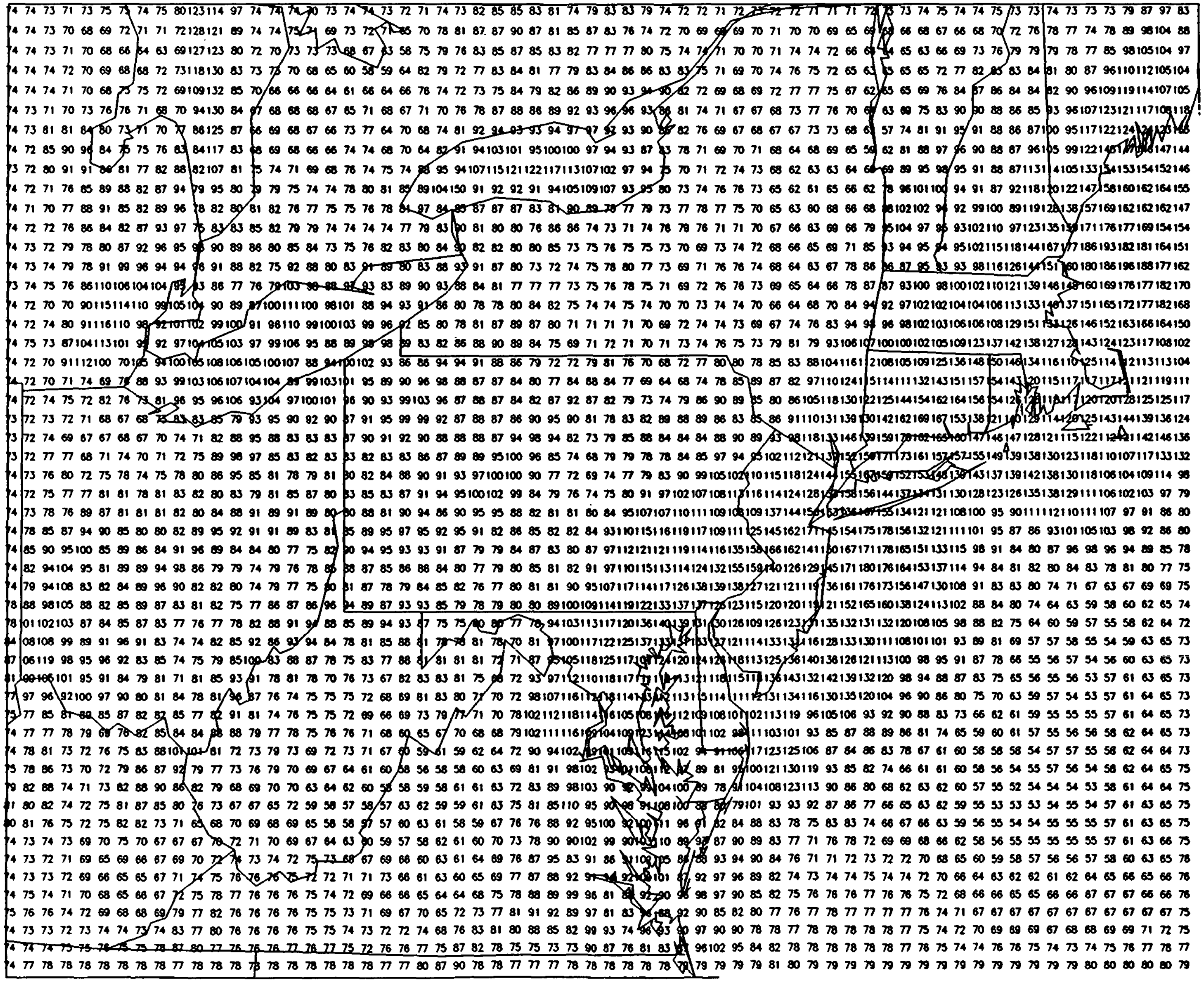
Episode Maximum Ozone(ppb) Layer 1 for JULY 7, 1985 – JULY 22, 1985

Creation date= 26OCT90   Scenario= 1985 BASE CASE



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AUGUST 1985

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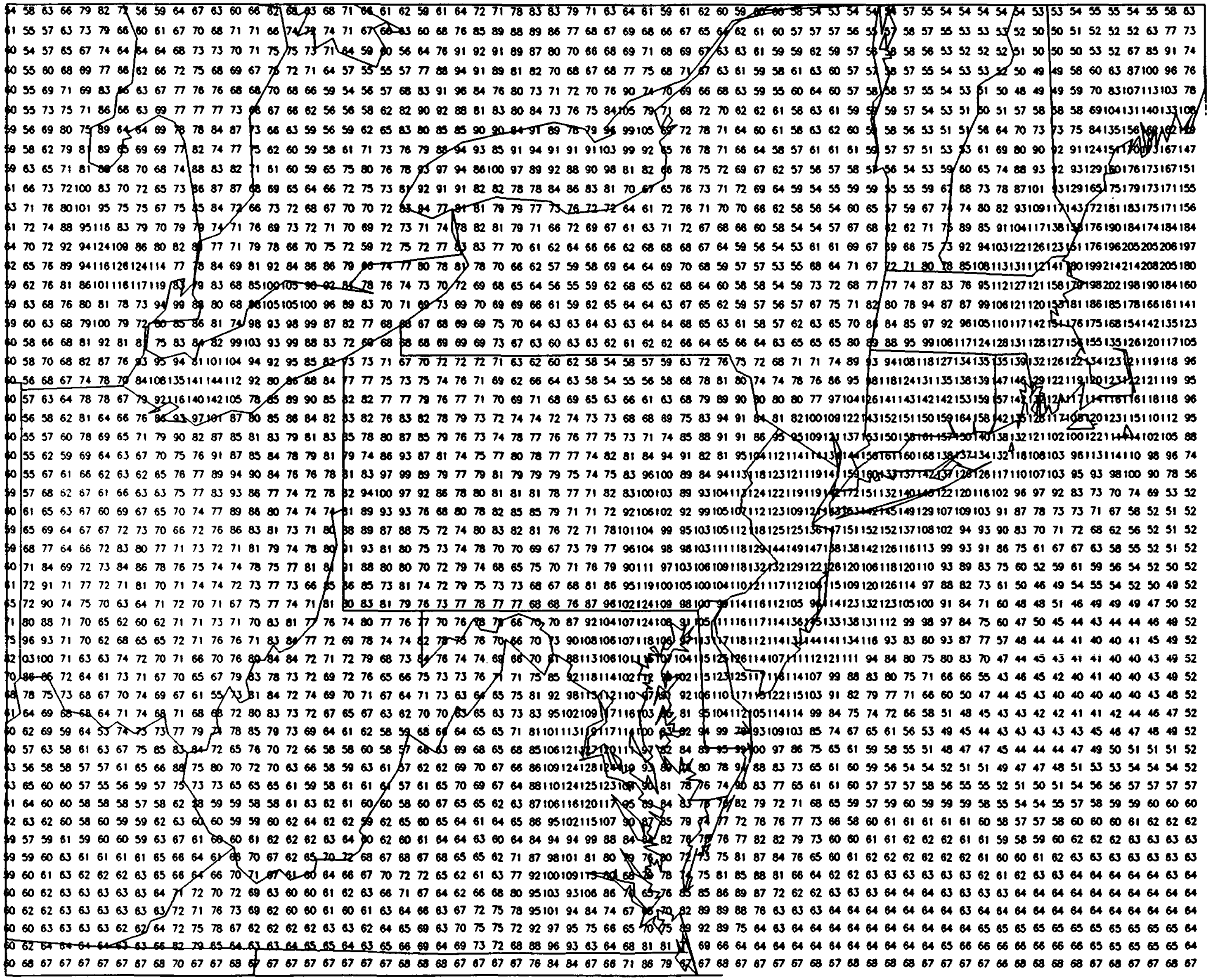
Episode Maximum Ozone(ppb) Layer 1 for AUGUST 7, 1985 – AUGUST 16, 1985

Creation date= 26OCT90 Scenario= 1985 BASE CASE



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JULY 1988

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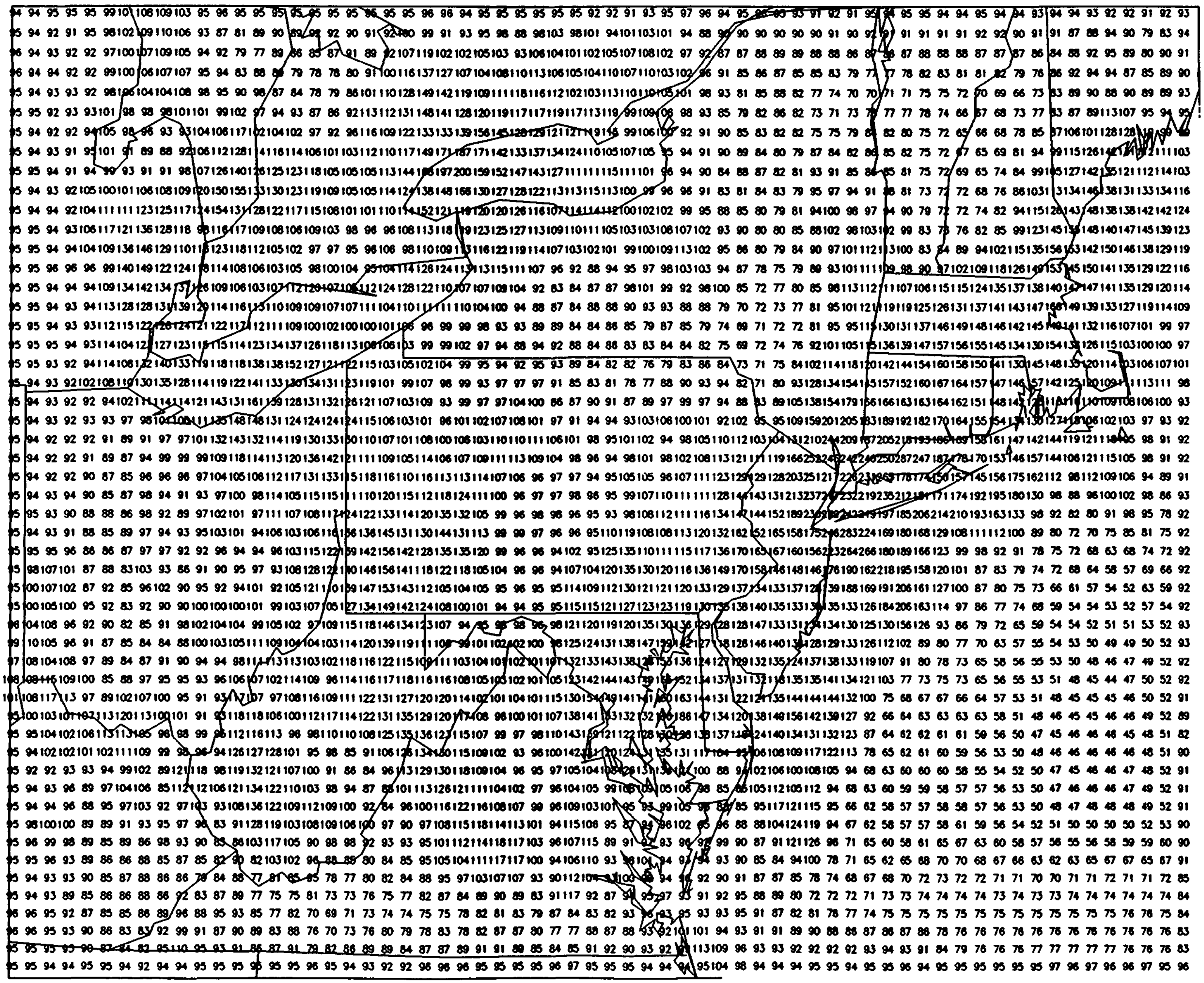
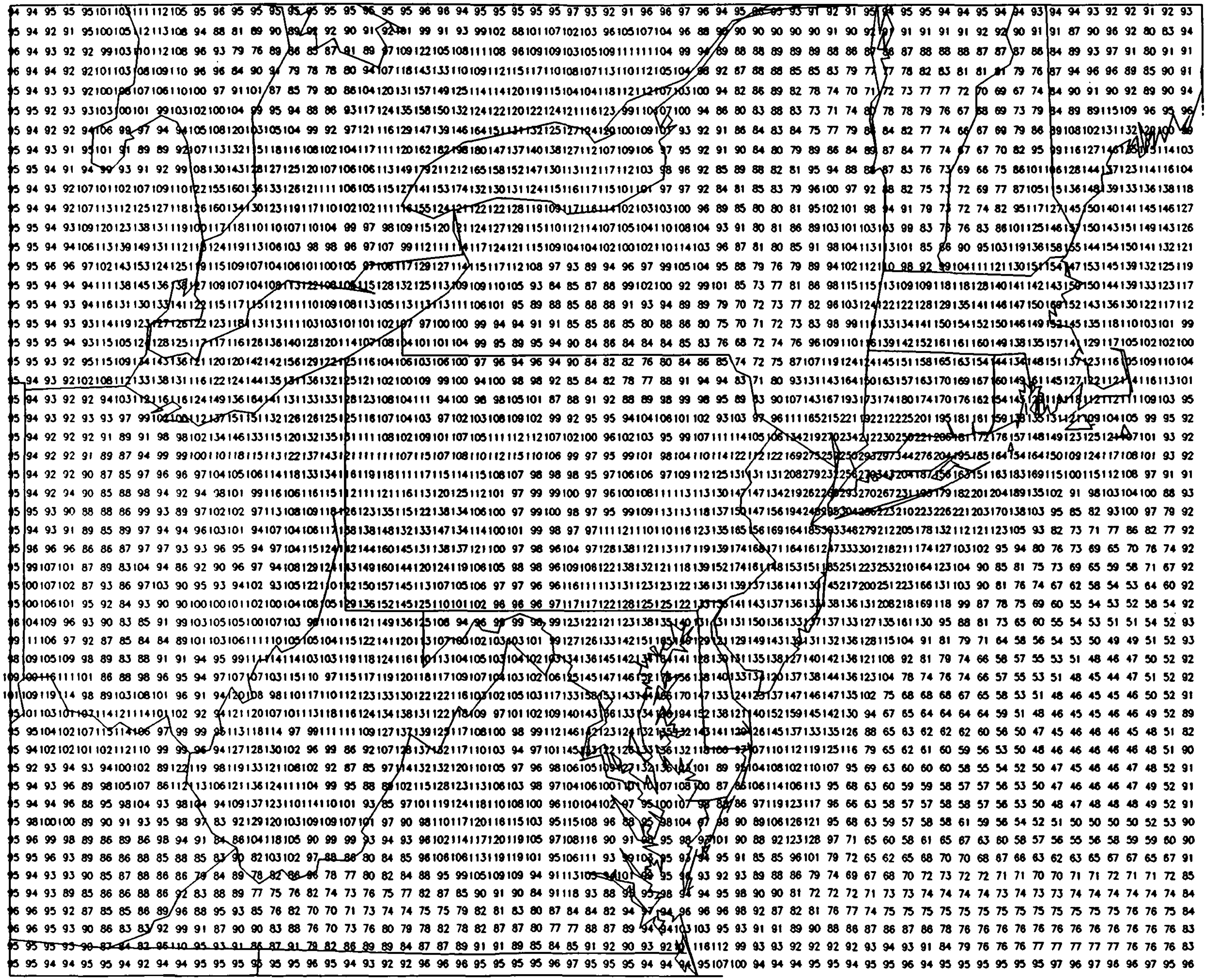
Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 - JULY 17, 1988

Creation date= 2NOV90 Scenario= PHASE I 1985 BASE CASE



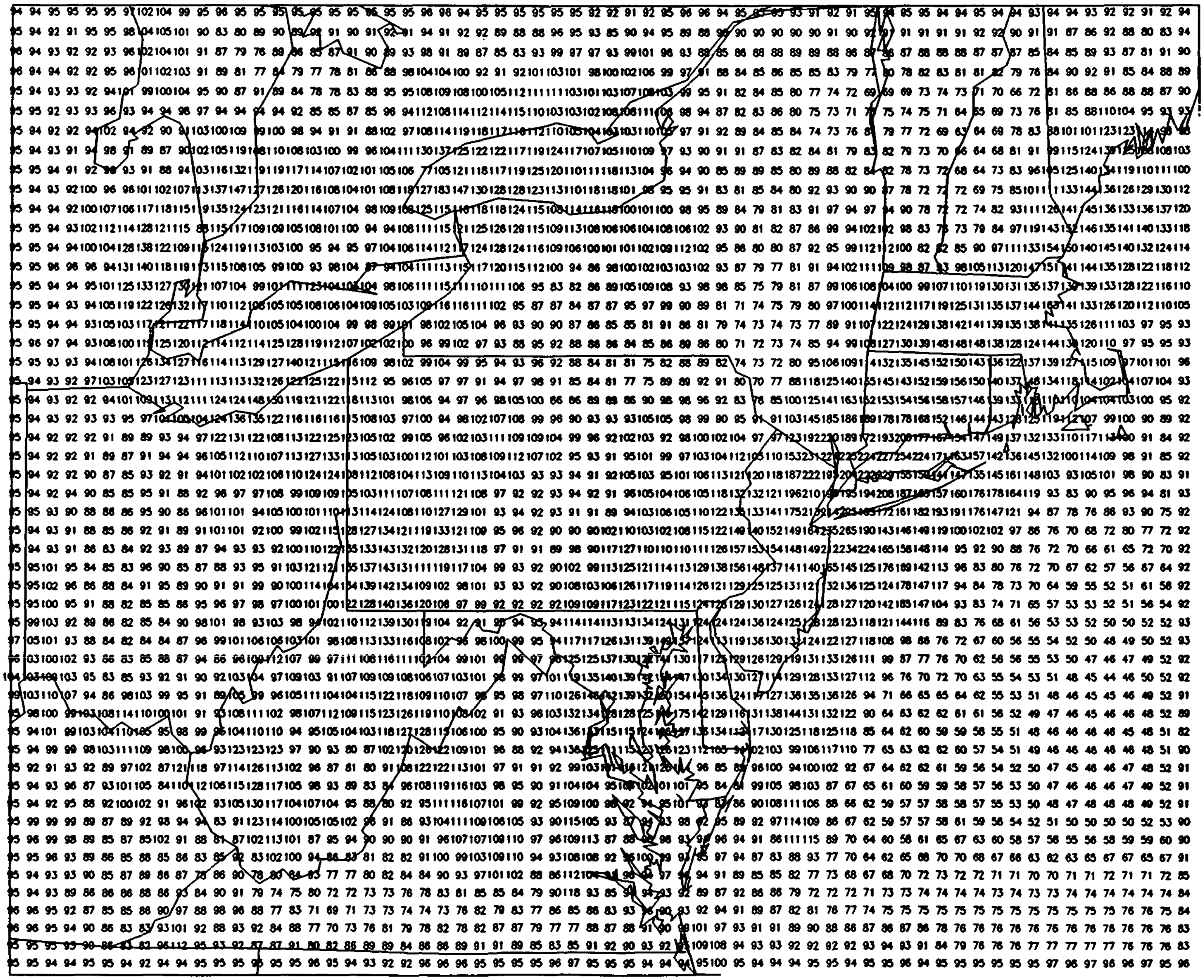
Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 26OCT90 Scenario= 1985 BASE CASE



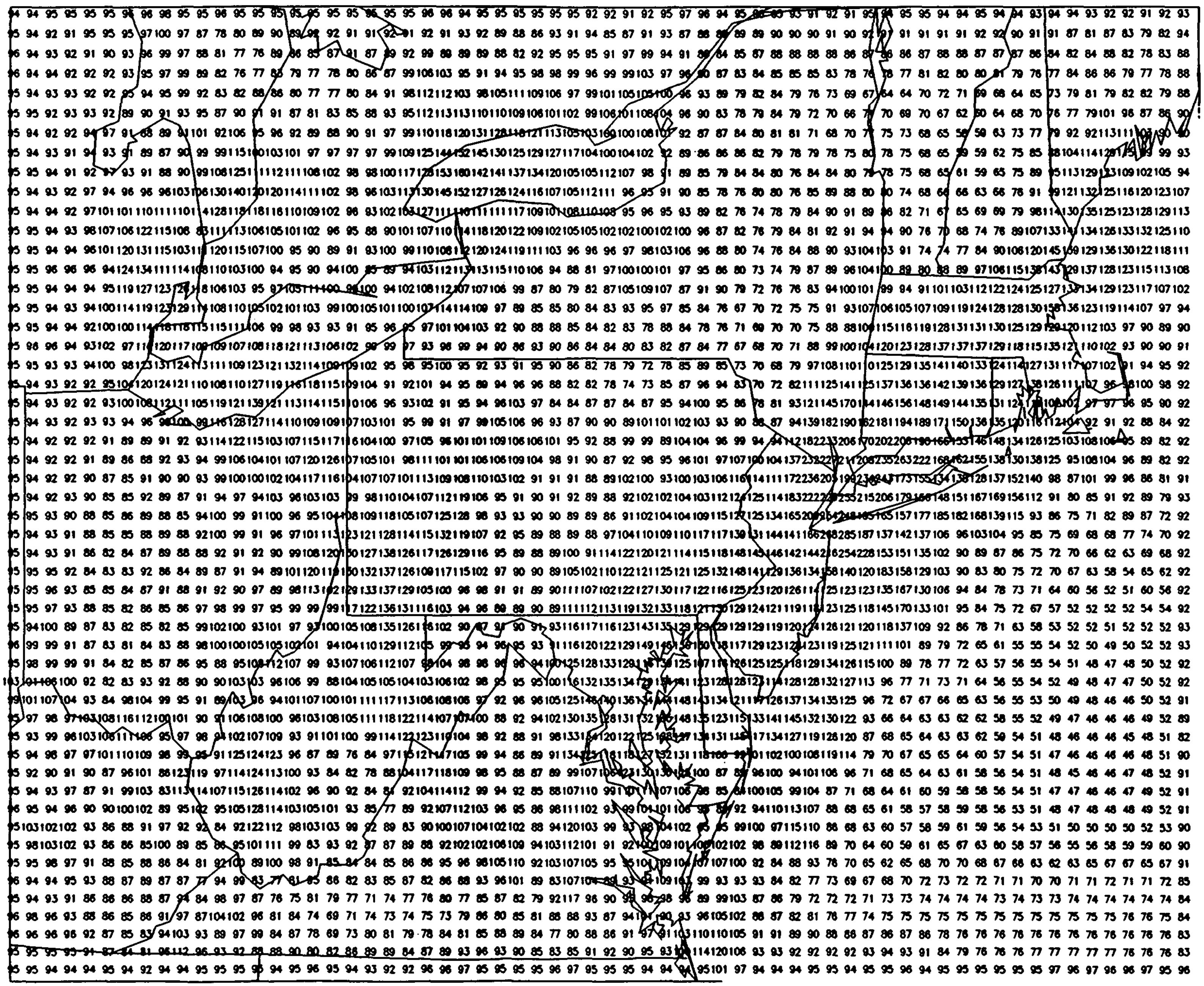
Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 2NOV90 Scenario= PHASE I 2005 BASELINE



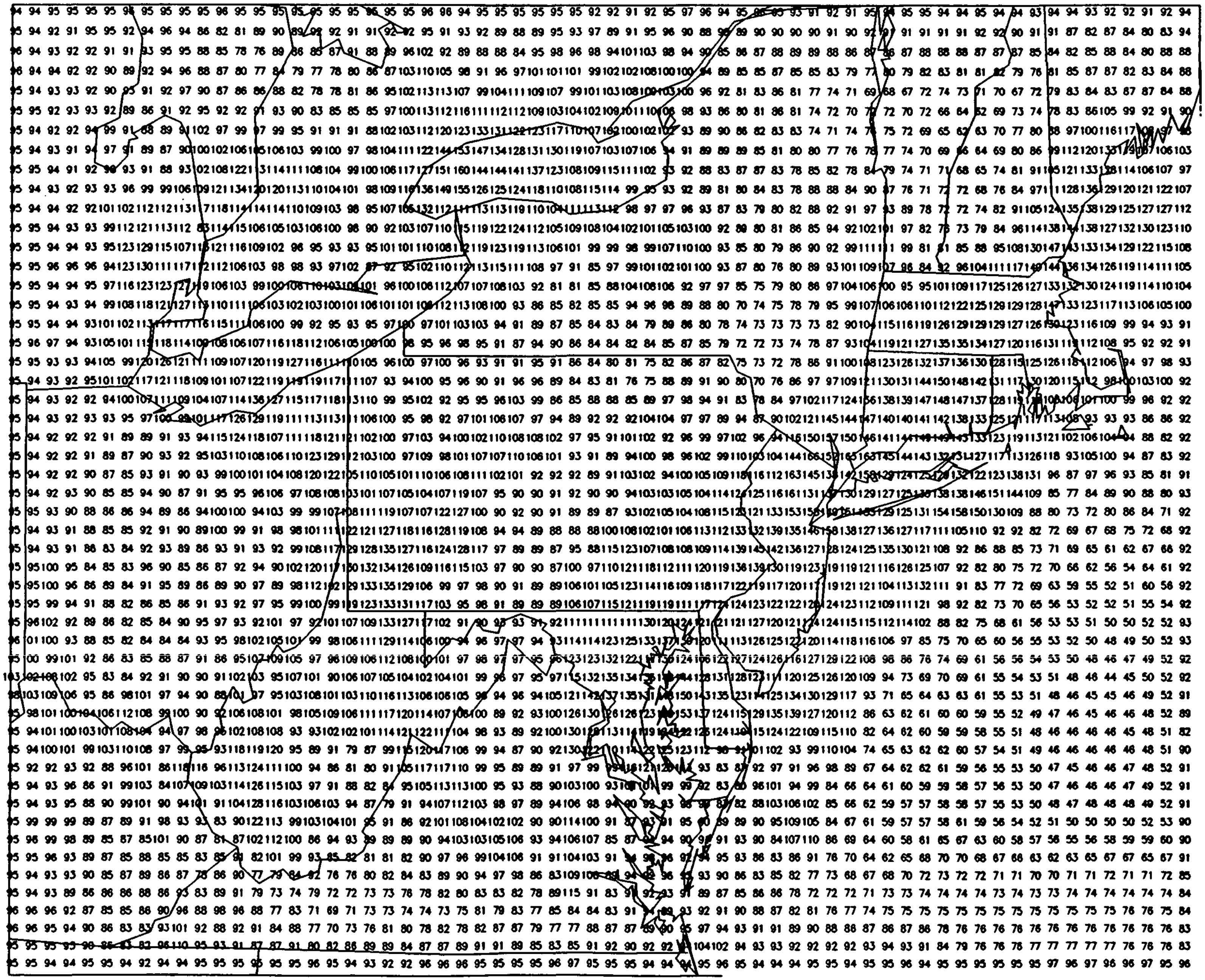
Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 2NOV90   Scenario= PHASE II 2005 BASELINE



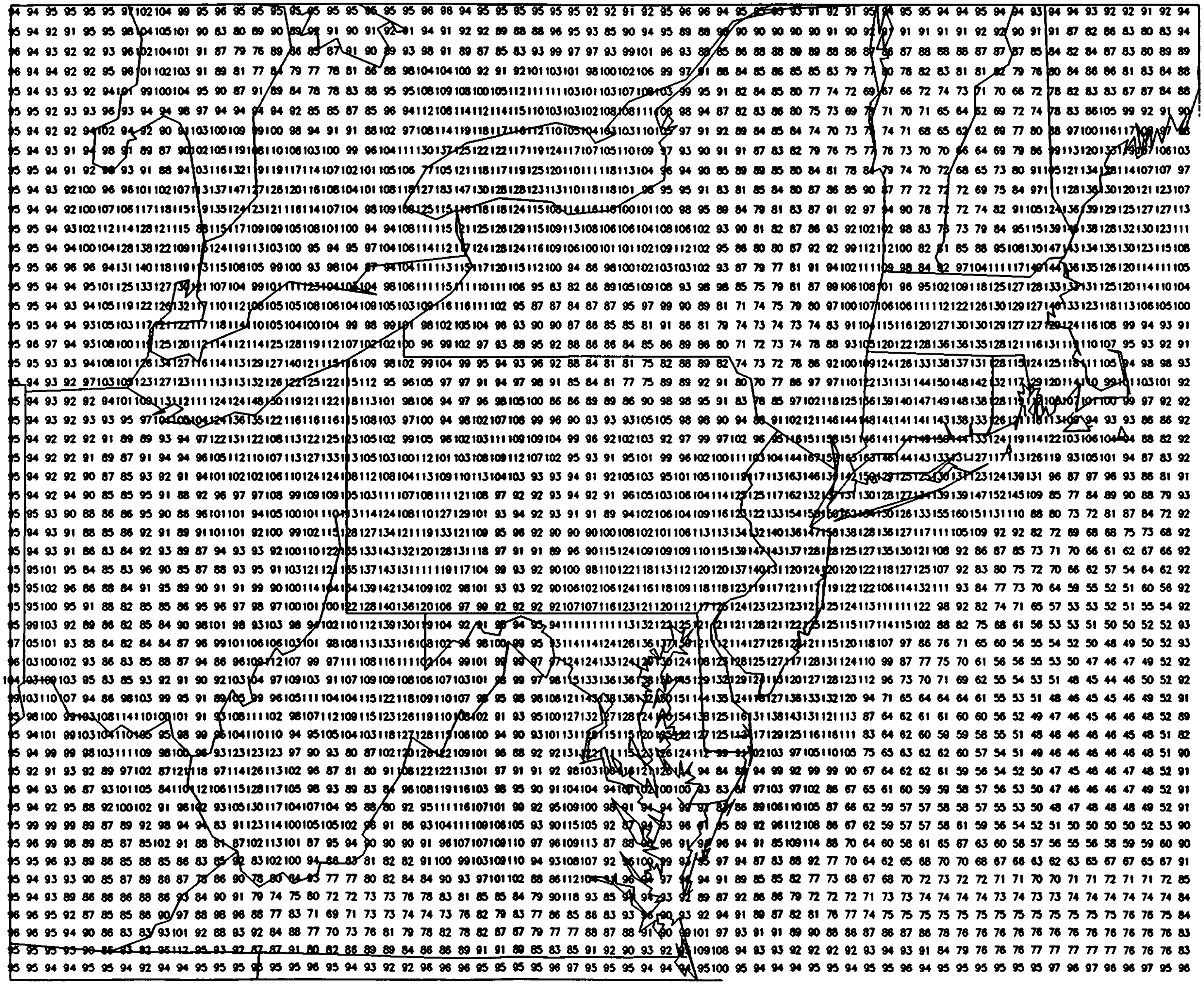
Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 - JULY 17, 1988

Creation date= 2NOV90 Scenario= 2005 CONTROL 1



Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 - JULY 17, 1988

Creation date= 2NOV90 Scenario= 2005 CONTROL 2

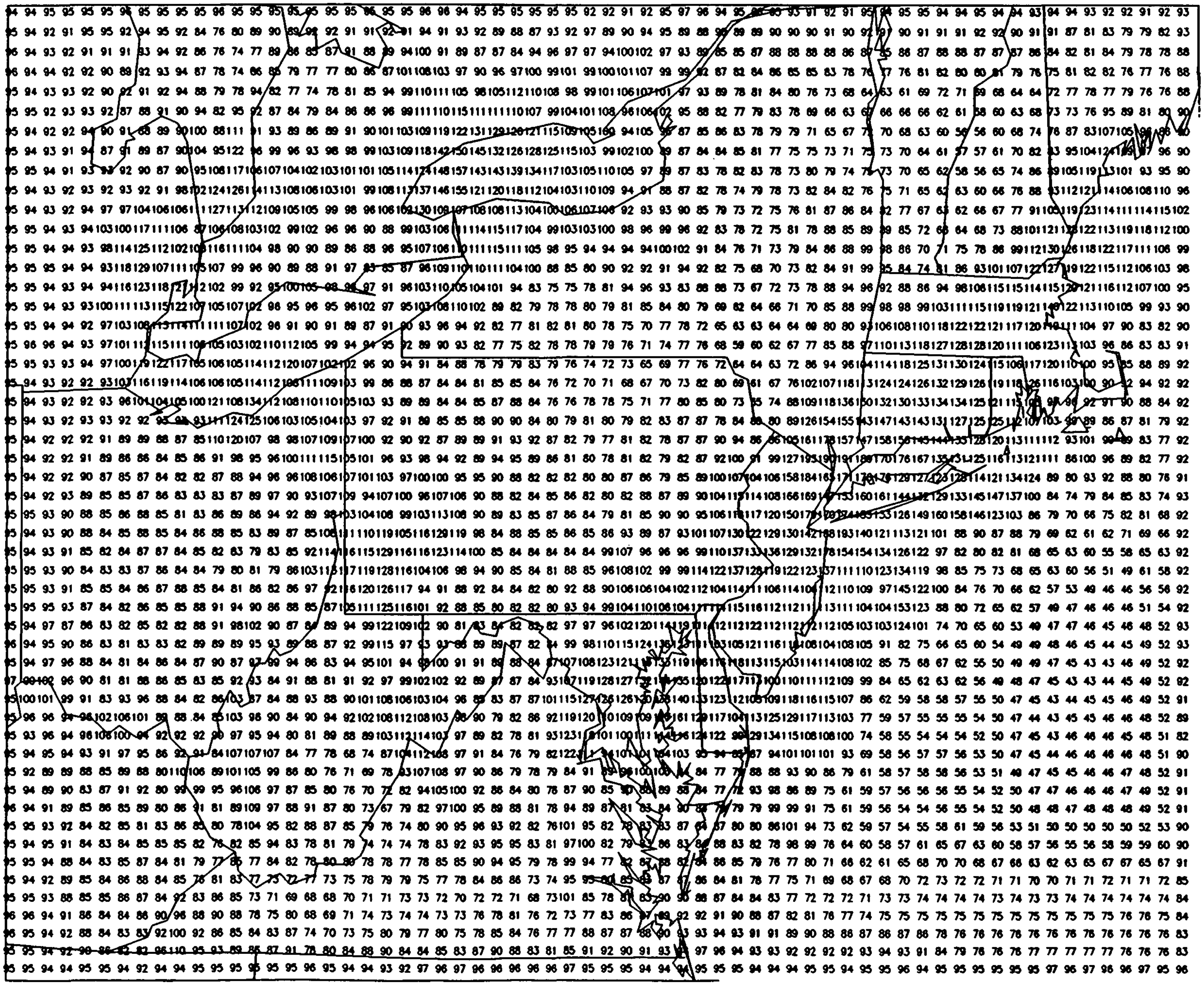


Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 2NOV90 Scenario= 2005 CONTROL 3

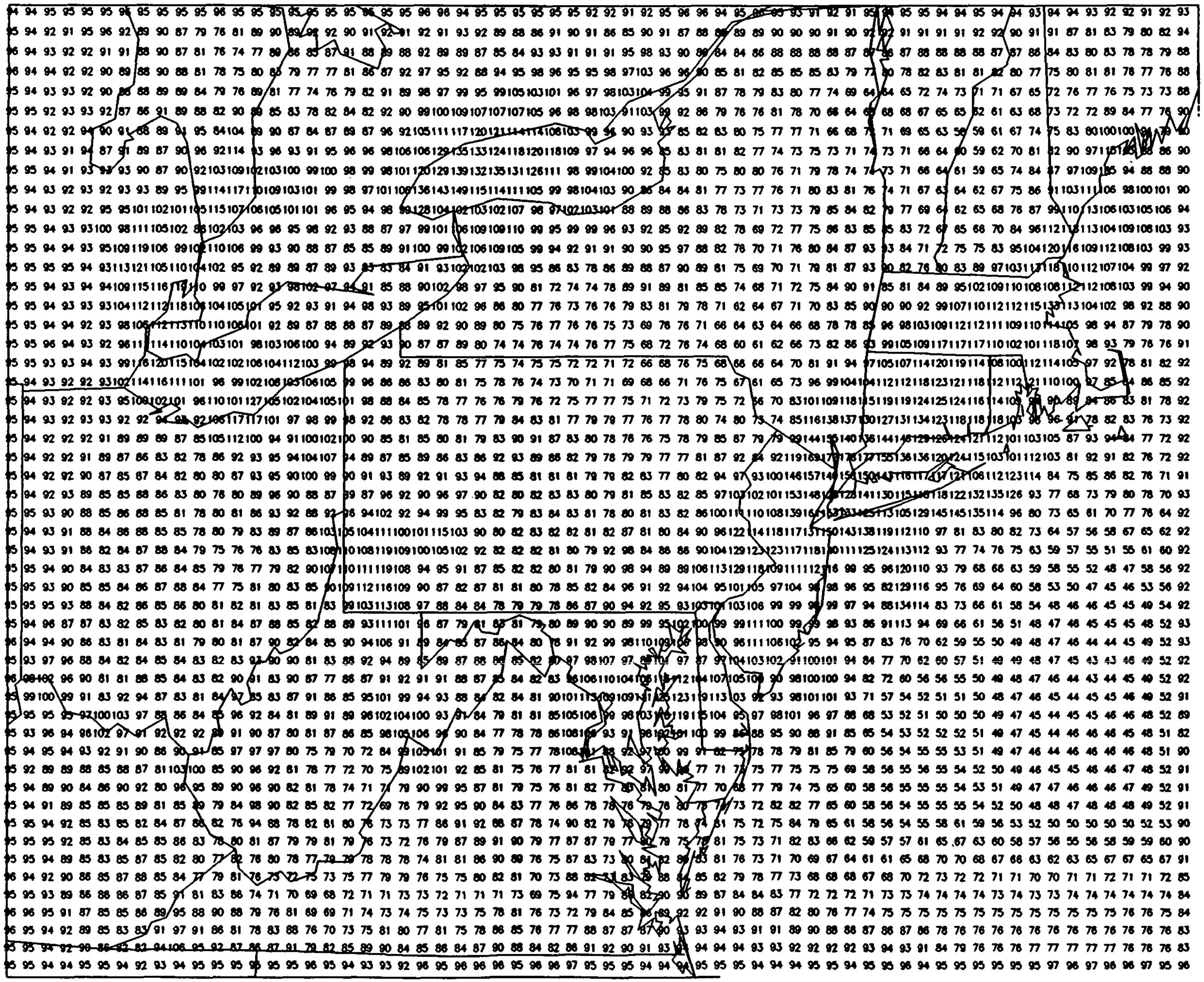
Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 2NOV90 Scenario= 2005 CONTROL 5



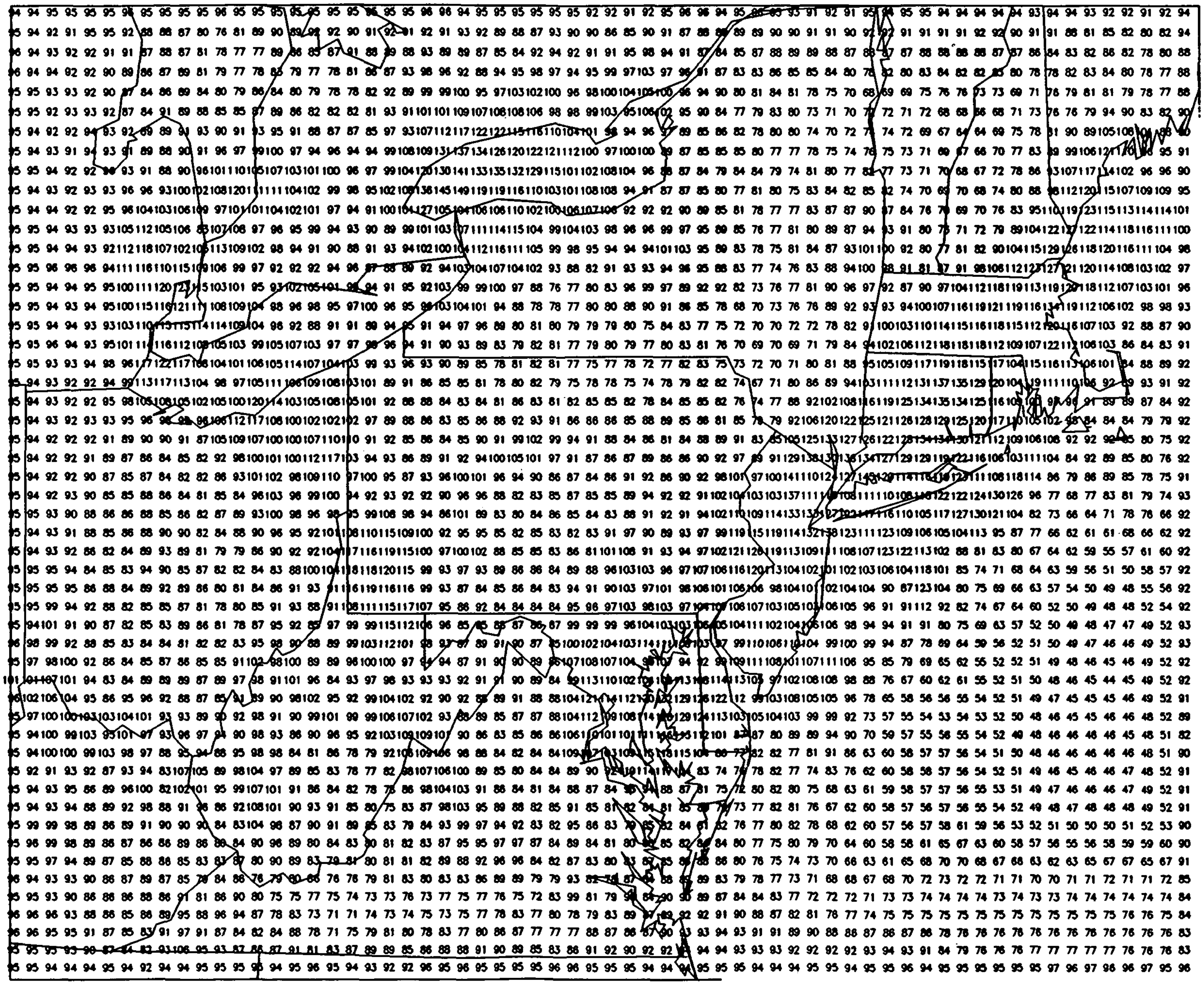
Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 2NOV90 Scenario= 2005 CONTROL 6



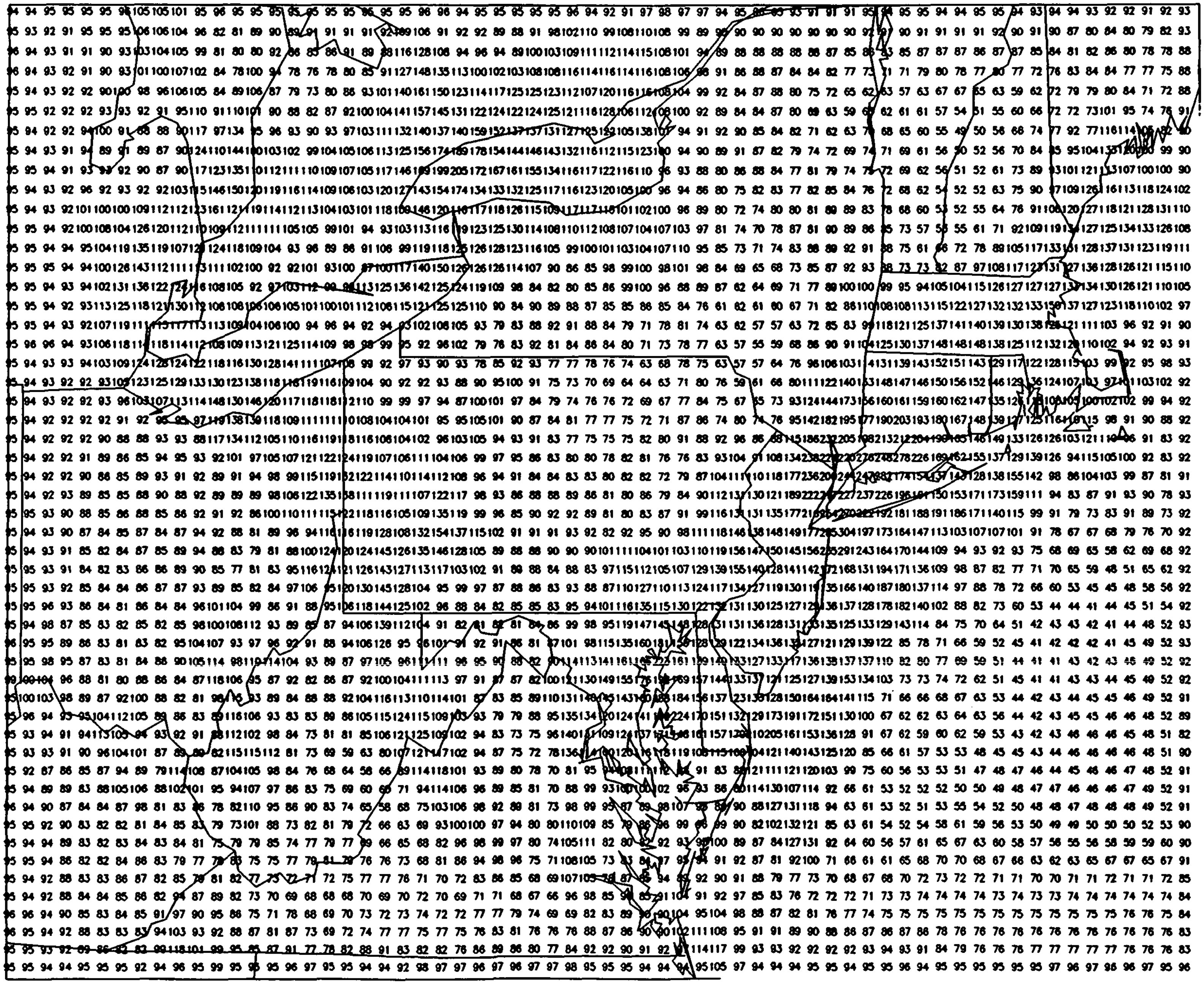
Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 2NOV90 Scenario= 2005 CONTROL 7



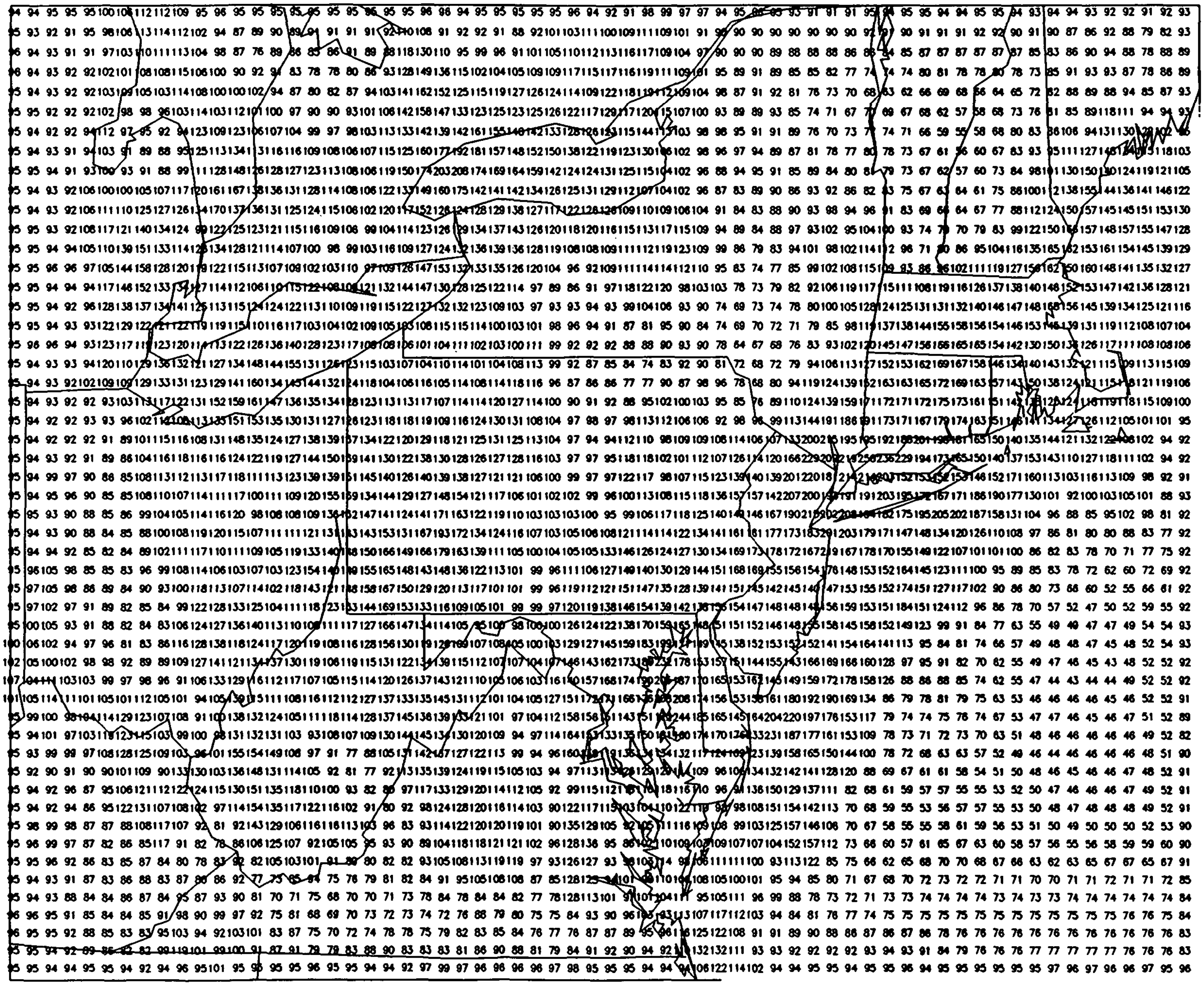
Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 2NOV90   Scenario= 2005 CONTROL 8



Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 - JULY 17, 1988

Creation date= 2NOV90 Scenario= 2005 CONTROL 9



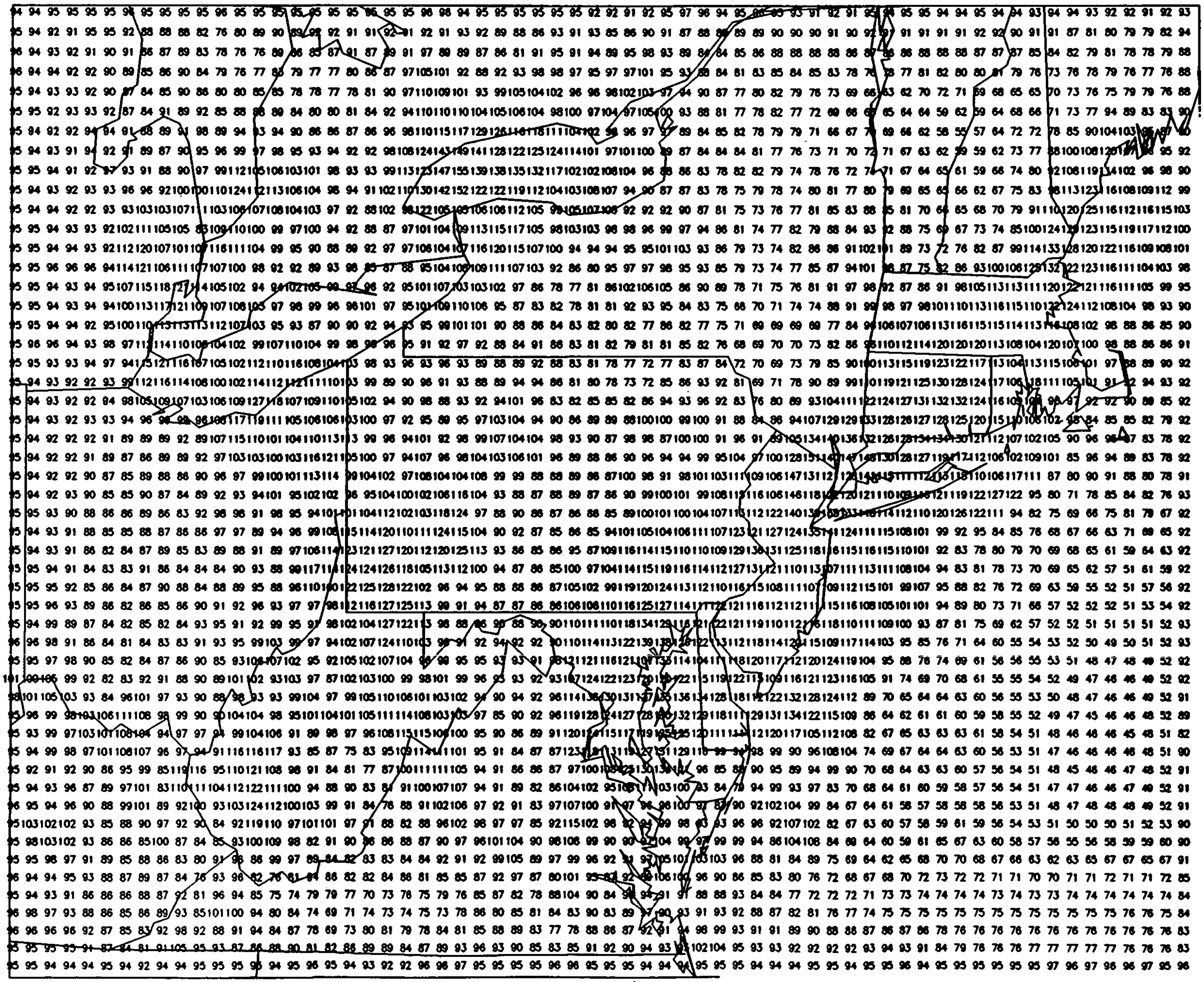
Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 - JULY 17, 1988
Creation date= 8MAY90 Scenario= 2005 CONTROL 10

Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 - JULY 17, 1988

Creation date= 8MAY90 Scenario= 2005 CONTROL 11

Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 8MAY90 Scenario= 2005 CONTROL 12

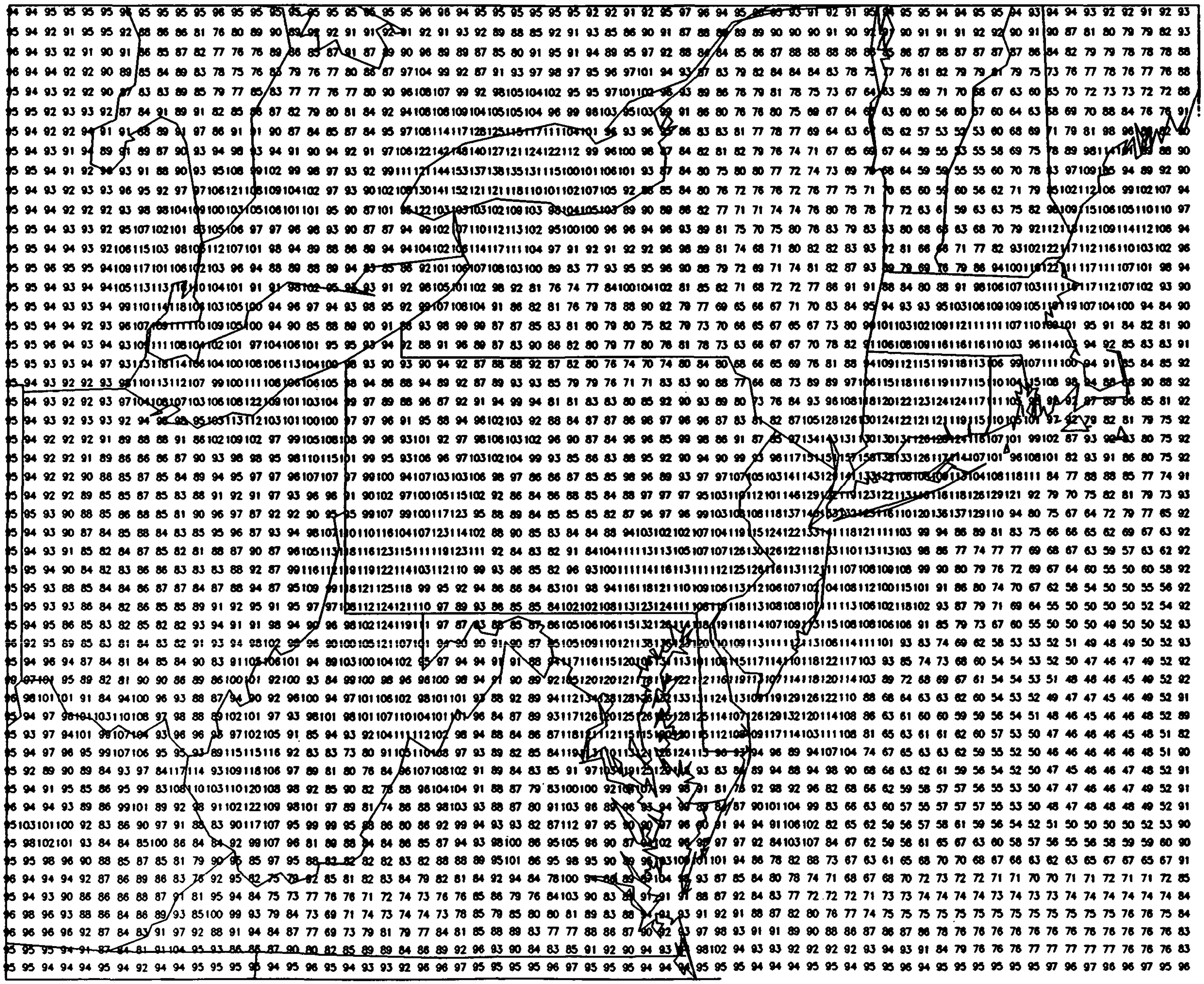


Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 8MAY90 Scenario= 2005 CONTROL 13

Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 8MAY90   Scenario= 2005 CONTROL 14



Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 8MAY90 Scenario= 2005 CONTROL 15

Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 20SEP90 Scenario= 2005 CONTROL 16

Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 - JULY 17, 1988

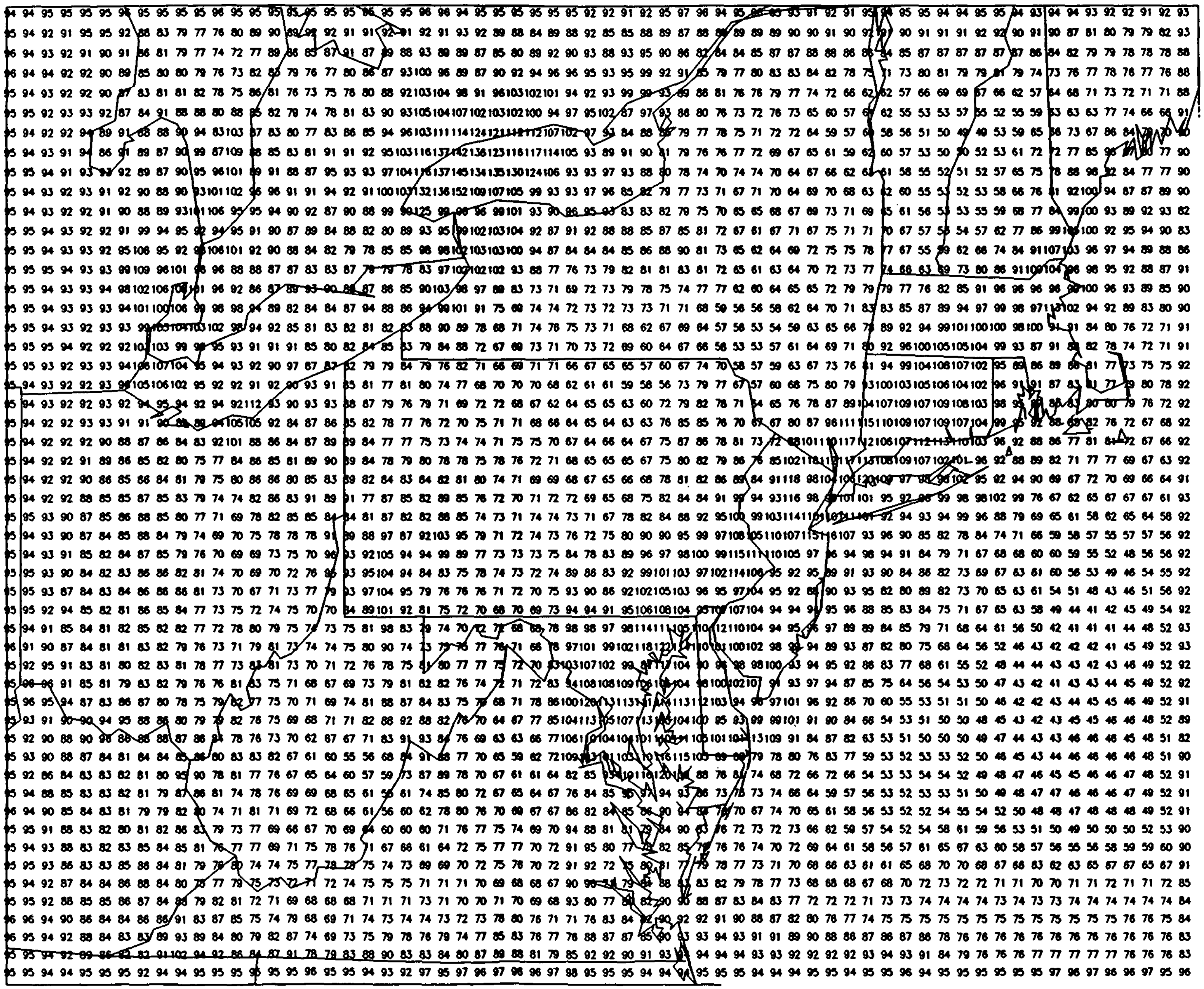
Creation date= 25SEP90 Scenario= 2005 CONTROL 17

Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 - JULY 17, 1988

Creation date= 25SEP90   Scenario= 2005 CONTROL 18

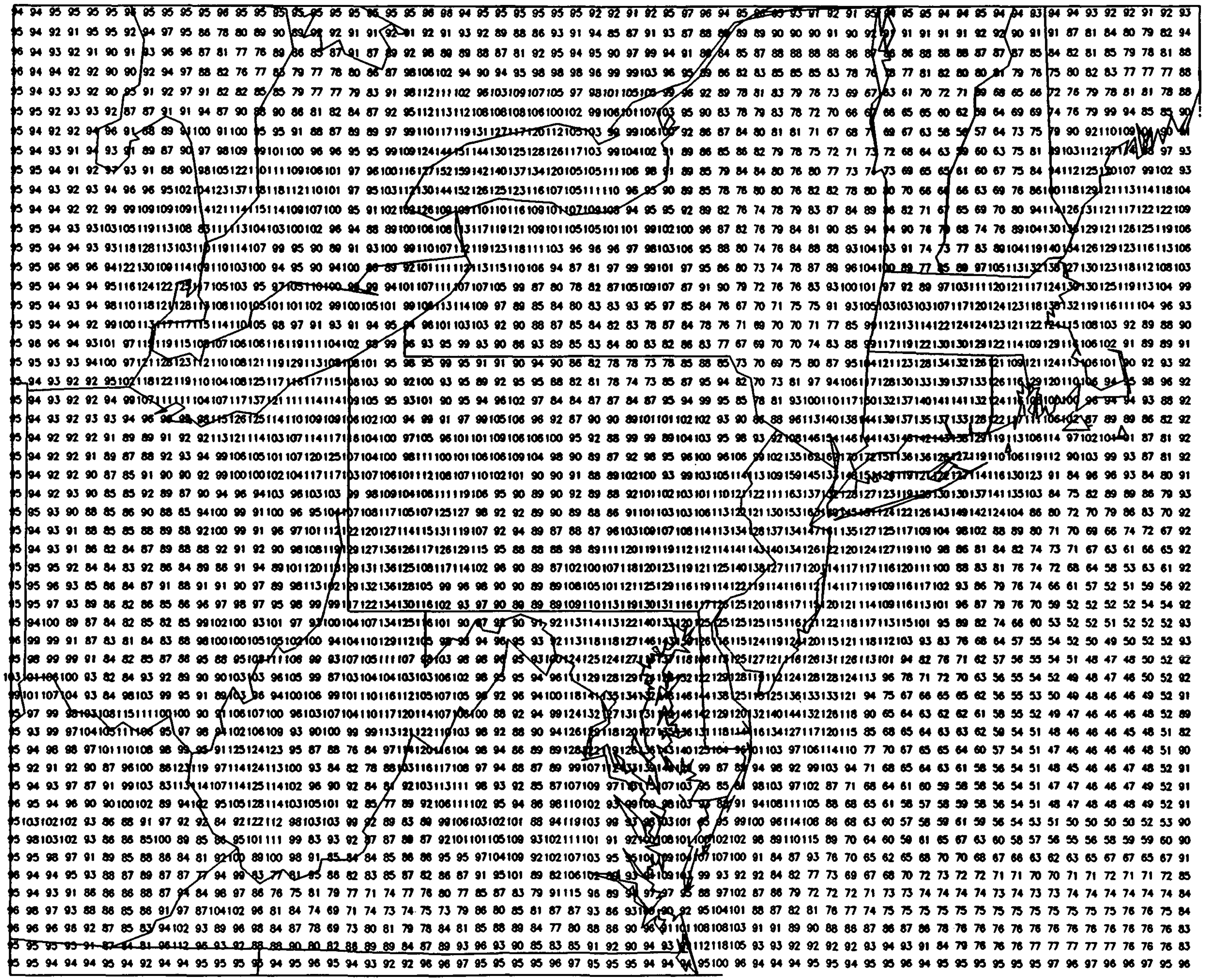
Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 - JULY 17, 1988

Creation date= 25SEP90 Scenario= 2005 CONTROL 19



Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 20SEP90   Scenario= 2005 CONTROL 20



Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 25SEP90 Scenario= 2005 CONTROL 21

Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 25SEP90 Scenario= 2005 CONTROL 22

Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 - JULY 17, 1988

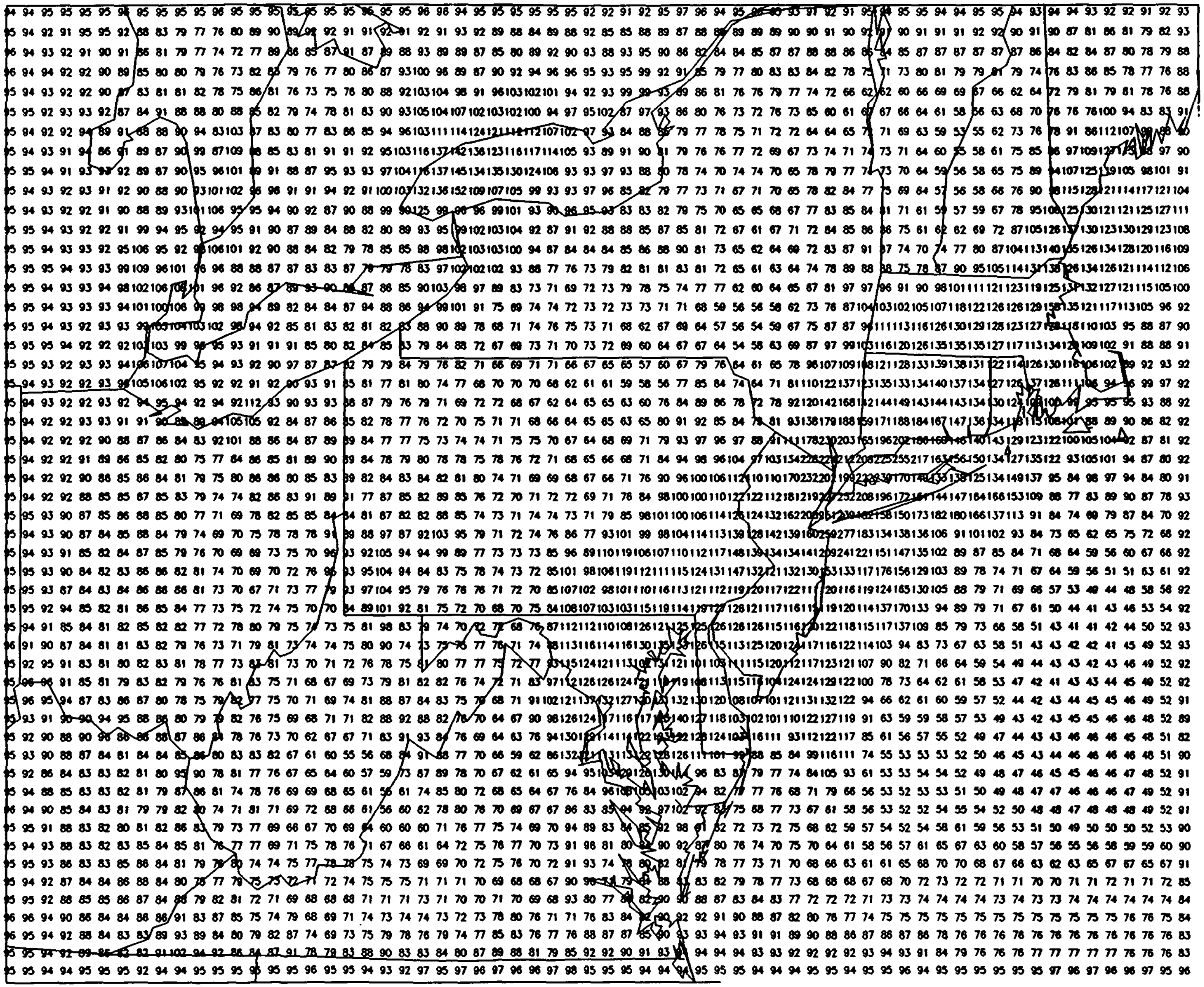
Creation date= 21SEP90 Scenario= 2005 CONTROL 23

Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 - JULY 17, 1988

Creation date= 21SEP90 Scenario= 2005 CONTROL 24

Episode Maximum Ozone(ppb) Layer 1 for JULY 2, 1988 – JULY 17, 1988

Creation date= 21SEP90 Scenario= 2005 CONTROL 25



APPENDIX N

TECHNICAL APPROACHES TO INTERFACE THE ROM WITH UAM PROCESSORS

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N.1 ATTRIBUTES OF THE REGIONAL AND URBAN MODELS RELEVANT TO INTERFACING

Although both models are Eulerian grid models, differences in the framework of their three-dimensional grids have to be addressed prior to the development of approaches for interfacing the ROM system data with the UAM components. Fortunately, interfacing in the time dimension was straightforward since both model systems have a 1-hour time resolution in common. Output results from the ROM and processors contained in the retrieved data files are available at hourly intervals, which is the time interval required of input data for the UAM preprocessor and model programs. The time period of the ROM results in the retrieved data files will also span a full 24-h period beginning at midnight of the day being simulated by the UAM, or two consecutive 24-h periods if a 2-day UAM simulation is planned.

Notable differences in the horizontal and vertical grid dimensions exist between these models that had to be reconciled to properly interface the ROM results with the UAM system components. In the horizontal dimension, the UAM is applied with a finer-mesh grid spacing and over a substantially smaller domain than that of the ROM. As described in Section 2.2, the horizontal framework of the ROM is based on the latitude-longitude system. Columns are north-south along longitude lines and rows are oriented in an east-west direction along latitude lines with the horizontal resolution set at $^1/_4$ degree of longitude by $^1/_6$ degree of latitude. These specifications translate into a horizontal grid spacing of about 18.5 km in mid-latitudes. The ROM grid for the ROMNET region, as depicted in Figure 2-1, consists of 64 columns by 52 rows. Each grid point shown is situated at the lower left corner of a grid cell. In contrast, the horizontal grid framework of the UAM is based on the Cartesian coordinate system. Horizontal grid spacing is specified by the user, and has generally been defined to be from 2 km to 8 km. For a typical urban application, the spatial domain of the UAM is generally on the order of 200 km, whereas the much larger ROMNET domain spans about 1,000 km on each side. Clearly, a relatively small subregion of the ROM domain would provide sufficient overlap of a particular UAM domain.

The appropriate spatial coverage of the ROM gridded parameters in a particular UAM application is provided from information supplied by the user during the data retrieval step. Figure N-1 demonstrates how the ROM grid points overlap the UAM domain for applications with the interface programs. The data files generated for the interface programs by the GMISS retrieval system contain parameters from all ROM grid cells whose midpoints lie inside the UAM domain and in a surrounding buffer zone consisting of two grid points outside each UAM boundary. The various parameters and concentrations at the ROM grid points surrounding the UAM domain are particularly useful in the specification of boundary values for the urban model.

Differences in the vertical structure and number of vertical levels between the models also presented a challenge for interfacing several parameters. The height of the diffusion break, widely known as the mixing height, is the key reference height in the UAM system that separates the lower and upper level cells. The user specifies the number of prognostic UAM vertical levels below the diffusion break and the number of upper levels situated between the diffusion break and the model's region top height. Lower levels are of equal thickness, and each level expands or contracts according to the temporal behavior of the diffusion break. The thickness of the UAM upper level(s) is controlled by the difference between the region top and the diffusion break heights. In contrast to the UAM vertical framework, the ROM exhibits three prognostic layers which vary spatially and temporally as described in Section 2.2.1.

N.2 TREATMENT OF METEOROLOGICAL AND SURFACE PARAMETERS

N.2.1 Diffusion Break and Region Top Heights

The variation of vertical levels in the UAM is dictated by the diffusion break and region top heights. In particular, the diffusion break (Z_{DB}) is the key reference height which separates the sets of lower and upper levels in the model and it serves as the boundary between the differing stability regimes that characterize these two vertical groups of levels. Hourly values of the diffusion break are needed by several interface programs as well as a UAM preprocessor. However, as noted earlier, none of the ROM layer heights emulates the diurnally-varying diffusion break height. Consequently, interfacing of Z_{DB} values was not feasible for this version of the interface programs. Users should refer to the description of DIFFBREAK in Volume II of the UAM User's Guide (Morris *et al.*, 1990b) for a methodology to derive hourly diffusion break values. Since other interface programs require a Z_{DB} file, the development of this data file must be one of the initial tasks to be performed.

A preprocessor program contained within the interface package has been developed to generate a formatted "packet" file compatible with the input format specifications of the DFSNBK preprocessor. A set of 24 hourly diffusion break heights is needed by interface programs if the UAM will be simulating a single day. For a 2-day UAM application, hourly diffusion break values for two full days must be prepared.

The region top height (Z_T) defines the total extent of the UAM domain in the vertical dimension. The magnitude and time variation of Z_T is important in model applications since the thickness of upper level(s) is determined from the difference between Z_T and the diffusion break height for each hour.

Additionally, Z_T should be sufficiently high that elevated point source plumes remain within one of the model's vertical levels. If a point source plume rises above Z_T, its emissions are above the model domain and are not considered in the model simulation.

The interface method to derive Z_T uses the height of ROM layer 2. During the nocturnal period, ROM layer 2 height was designed to represent the vertical extent of the previous day's mixed layer. In the region top interface, a UAM domain-wide average height of layer 2 is determined from the ROM gridded values for each hour of the simulation day. The lowest average layer 2 height value (Z_{R2min}) is chosen as the initial region top height at the beginning hour of the UAM simulation, which is expected be any hour prior to sunrise on the day being modeled. The region top height is allowed to vary temporally, however; like Z_{DB}, no spatial variation has been imposed on Z_T in this version of the interface. The hourly variation of Z_T in the interface is described in equation (1).

$$Z_T(t) = Z_{R2min} + (Z_{DBmax} - Z_{R2min} + \Delta Z) \cdot [(Z_{DB}(t) - Z_{DBmin}) / (Z_{DBmax} - Z_{DBmin})] \quad (1)$$

where:

$Z_T(t)$ = region top height at hour t

$Z_{DB}(t)$ = diffusion break height at hour t

Z_{DBmin} = morning minimum diffusion break height

Z_{DBmax} = afternoon maximum diffusion break height

ΔZ = minimum upper thickness interval = $DZ_u \cdot IZU$

DZ_u = upper level minimum thickness criterion

IZU = number of upper levels

$Z_{R2min} \geq$ 1,000 m (minimum criterion)

An example of the variation of Z_T by applying equation (1) and the temporal variation of Z_{DB} are illustrated in Figure N-2. The region top height increases gradually during the post-sunrise period and reaches its highest value in the afternoon when Z_{DB} reaches a maximum. The weighting function inside the brackets in equation (1) is based on the temporal variation of Z_{DB} and it controls the behavior of Z_T. The region top height descends gradually during the evening and nocturnal hours, while Z_{DB} generally decreases much more dramatically. During the time period after the maximum Z_{DB} has been reached, equation (1) continues to specify the behavior of Z_T. However, a new minimum ROM average layer 2 height, computed from values from the next day, is substituted for Z_{R2min}. Thus, in a single day simulation, the retrieved data file of layer 2 heights must contain the ROM results from two consecutive days. It is also evident from Figure N-2 that Z_T remains above Z_{DB} with this formulation because a minimum thickness criterion (DZ_u) has also been implemented. At the time of Z_{DBmax}, Z_T is greater than Z_{DB} by at least the product of the upper level minimum thickness (DZ_u) and the number of upper levels (IZU). This requirement also ensures that the upper levels remain above Z_{DB} at all hours of the model simulation. In the test case, the value for DZ_u was set to 100 m.

The interface program for region top also requires a gridded terrain elevation file since ROM layer 2 height values have been written as altitudes above sea level. An additional input file for the region top interface includes the hourly values of Z_{DB} for a 24-h period for single day simulations. The output file created by the region top interface (IREGNTP) is in a compatible format for direct input to the REGNTP preprocessor program.

N.2.2 Meteorological Scalars

There are six parameters that must be specified on an hourly basis in an input file for the METSCL preprocessor. Table N-1 provides a list of the meteorological scalar parameters and a brief description of each variable. No spatial variation has been built into METSCL for these parameters. Five of the six parameters are specified or derived with retrieved data files from the ROM system. Atmospheric pressure (ATMOSPRESS) has not been interfaced. A default value of 1.0 atm (i.e., 1 atm = 1013.25 mb for a standard atmosphere) has been set for this parameter for each hour. However, a user may wish to substitute atmospheric pressure measurements, if available, in place of this default value in the formatted packet file (MSPACK) generated by the interface program.

The vertical temperature gradients represent layer-average values below and above the diffusion break height. Upper-air rawinsonde temperature profiles obtained twice-daily at National Weather Service sites have been interpolated at 50-m increments and to hourly intervals by a ROM processor (Young *et al.* 1989). During the data retrieval phase, the interpolated temperature profiles from upper-air site(s) located within the UAM domain are provided and the user has the ability to request one or more additional sites. However, before applying the retrieved temperature profiles in the interface, a user should examine the representativeness of the temperature profiles at a particular site for the meteorological conditions existing over the domain during the simulation period; particularly profiles from any selected site located outside the model domain.

The individual temperature gradients at 50-m intervals from the upper-air site(s) are used to compute the hourly layer-average values below and above the diffusion break. During nocturnal hours when a surface-based inversion layer often exists, positive values for TGRADBELOW can be expected. Although notable spatial variations in the nocturnal low-level temperature structure have been found within large urban areas (Godowitch *et al.* 1987), values of these variables are assumed to be spatially invariant in the current version of the METSCL. During the daytime period, values of TGRADBELOW should be close to the adiabatic lapse rate (-0.010 K/m) or even slightly super-adiabatic, while daytime values of TGRADABOVE are expected to reflect a slightly stable ($dT/dZ > -0.01$ K/m) layer or an inversion lapse rate (positive dT/dZ).

The exposure class (EXPCLASS) is a unitless index with values ranging between -2 and 3. It is intended to be an indicator of the atmospheric stability near the surface due to either solar heating or radiational cooling. The methodology applied to derive hourly EXPCLASS values is presented in Table N-2. EXPCLASS depends on the solar zenith angle and cloud cover. A retrieved ROM file of gridded fractional cloud cover values interpolated from observations (Young *et al.* 1989) is used to compute an hourly domain-wide average fractional cloud cover. The latitude-longitude of the middle of the UAM domain is adequate for the solar zenith angle calculations. Table N-2 reveals that positive EXPCLASS values occur during daytime hours and negative values are restricted to the nocturnal period. The cloud cover criteria are applied to account for the attenuation of solar insolation or reduced radiational cooling due to the presence of clouds during the day and nocturnal hours, respectively. In the midday period when solar insolation is a maximum, the highest possible EXPCLASS value of +3 is achieved if the cloud cover fraction is under 50%. This methodology is identical to the scheme employed by Morris *et al.* (1990b).

The NO_2 photolysis rate constant (RADFACTOR) is an important parameter since it impacts the photochemical reactions built into the carbon-bond chemical mechanism. A matrix of NO_2 photolysis rate constants (Demerjian *et al.*, 1980) dependent on zenith angle and altitude has been incorporated into the interface program (IMETSCL) to compute the RADFACTOR along with the date, time, diffusion break height and latitude-longitude position. In contrast to the other metscalar parameters, which are specified at the beginning of each hour, the model defines RADFACTOR values at the end of each hour and performs a linear interpolation from hourly values to individual time steps. Consequently, the RADFACTOR value is computed with the solar zenith angle at the end of each hour. In addition, a RADFACTOR value is also generated for the hour before the beginning hour of model simulation. During nocturnal hours, RADFACTOR is near zero and night-time chemistry takes place. When the RADFACTOR exceeds a threshold value of +0.011 min^{-1}, the model switches to the daytime photochemical mechanism. Clear-sky values for RADFACTOR are currently computed by this version of the interface for use in the UAM (CB-IV) model.

The concentration of water vapor (CONCWATER) in the lower atmosphere is also a metscalar parameter needed by the model. A domain-wide average value is computed for each hour with the ROM hourly gridded water vapor concentrations from layer 1.

N.2.3 Surface Air-Temperature Field

Hourly surface temperatures are needed by the TMPRTR preprocessor program. A retrieved ROM file containing hourly gridded surface air temperatures interpolated from National Weather Service sites (Young *et al.* 1989) is utilized by the ITMPRTR program to generate a formatted file for input into the TMPRTR preprocessor program. No spatial interpolation is performed in the interface program. The function of the interface program is to reformat the gridded ROM values into a compatible format for TMPRTR, which spatially interpolates temperatures to the UAM grids. The user may examine the formatted packet file produced by the interface, and quality- assured hourly temperature data from non-gridded sites if available, may be inserted into this file before processing it in the TMPRTR preprocessor.

N.2.4 Wind Fields

An accurate representation of the 3-dimensional wind flow over the domain is crucial to the model's ability to simulate the magnitudes and spatial patterns of pollutant species. Wind fields from ROM layers 1 and 2 are used in the wind interface program (IWIND).

In the ROM 2.1, the wind field for layer 1 is generated from observed surface data. Layer-average wind components for layer 2 are derived from upper-air wind data, however, surface winds are also given some weight in the determination of the gridded winds in this layer (Young *et al.* 1989). The wind field from ROM layer 3 has been excluded from consideration in this interface since layer 3 generally represents the flow above the UAM domain.

A practical methodology was developed to interface the ROM gridded wind fields into the multiple levels of the urban model for any used-defined vertical configuration. In order to capture the important diurnal variations that often occur in the wind structure, the gridded winds from ROM layers 1 and 2 are applied in the wind interface. The approach designed to match the ROM layer winds into the UAM vertical cells is outlined in Table N-3. The gridded heights of ROM layer 1 are compared to the heights of the bottom and top of each UAM level. If a UAM level is completely imbedded in ROM layer 1, then the gridded layer 1 wind components are specified for that level. For any UAM levels entirely above ROM layer 1, then ROM layer 2 winds are applied to define transport. For the condition where a UAM level overlaps both ROM layers, weighting factors based on the fractional amounts that the UAM level overlaps each layer are applied to the wind components of each ROM layer to determine the wind components.

The wind interface also applies certain methods found in the Diagnostic Wind Model (DWM) system, one of the principal program components of the UAM system. After the wind components have been matched into each UAM vertical level, an inverse distance-squared weighting technique (equation 2) is applied to spatially interpolate the wind components, still at the resolution of the ROM grid points, to the fine-mesh UAM grid points. The spatial interpolation procedure is applied to each wind component field at each vertical level.

$$(u,v)_{ij} = \sum_{n=1}^{N} (u_n, v_n) \cdot r_n^{-2} \; / \; \sum r_n^{-2} \qquad (2)$$

where

$(u,v)_{ij}$ = wind components at UAM grid point *i, j*

(u_n, v_n) = the ROM wind components at grid point *n*

N = maximum of five surrounding ROM grid point values

r = distance between UAM grid point and a ROM grid point

Using equation (2), the wind components at UAM grid point *i, j* are determined from values at the nearest surrounding ROM grid points. A default maximum radius of influence (RMAX) of 25 km has been imposed for this purpose so that only the nearby ROM grid points are included in the interpolation procedure. If RMAX was set too large, unwanted smoothing could occur in the interpolated field. Values from up to five ROM grid points may be used in the interpolation expression in equation (2). Another constraint required when applying an inverse-distance weighting method is to supply a minimum distance criterion since the distance between two grid points must always be nonzero (division by zero produces an error on many computer systems). Therefore, a minimum distance (RMIN) of 1 km is suggested between a pair of ROM and UAM grid points.

The next step is to subject the interpolated wind components to a five-point filter technique, which reduces any spatial discontinuities and dampens vertical velocities contained in the interpolated horizontal wind field. The purpose of applying the filter is also to reduce anomalous divergence as much as possible. The form of the five-point filter is given by:

$$X_{sm}(i,j) = 0.5 \cdot X(i,j) + 0.125 \cdot [X(i+1,j) + X(i-1,j) + X(i,j-1) + X(i,j+1)] \quad (3)$$

where X is either the u or v wind component, and X_{sm} is the smoothed value.

Only values at the surrounding four UAM grid points are employed in this filter technique at a given grid point (i, j). The number of times that the wind component field is subjected to the filter method is specified by the value of NSMTH. In the test case, NSMTH was set equal to 2.

Next, an initial vertical velocity field is computed at each level from the divergence derived from the smoothed horizontal wind component fields. Unrealistically large vertical velocities may still remain. Consequently, a method applied in the DWM has also been implemented in the wind interface that progressively diminishes vertical velocities toward zero at the region top (Douglas *et al.* 1990). However, the horizontal wind component fields are not mass-consistent after vertical velocities have been revised in this manner. Therefore, a final procedure is to exercise an iterative technique in order to minimize divergence which involves slight adjustments of the horizontal wind components throughout the entire grid until a minimum divergence criterion is reached (default minimum divergence = $1 \times 10^{-6}\ s^{-1}$). The final products of the wind interface are gridded fields of u,v components at each UAM level. An example of the wind field at level 1 for a UAM domain obtained from the ROM gridded winds according to these procedures is displayed in Figure N-3.

An optional feature also exists in the interface to allow the user to input a wind field file, already gridded for the UAM domain, which had been generated from another wind model. The interface can accept the wind file and create a binary wind file compatible with the UAM. The user is referred to Tang *et al.* (1990) for the input format specifications of an alternate wind file for the interface program.

An alternative to wind interfacing is the DWM system, which is a stand-alone independent package available to the user with the UAM (CB-IV) system (Douglas *et al.*, 1990). If the user elects to apply the DWM, surface and upper-air wind data must be processed in order to exercise the computer programs associated with this wind model. The DWM system has a postprocessor program which generates a binary wind file for the UAM.

N.2.5 Surface Characteristics

The two surface characteristics required by the UAM are gridded fields of surface roughness length (ROUGHNESS) and the VEGFACTOR, a measure of the relative surface uptake capability of a particular land use type compared to that of an alfalfa crop.

An interface program has been developed to directly apply the gridded ROM fields of surface roughness length (Z_0) and a land use inventory available at the resolution of the ROM grid is employed to derive grid-average vegetation factor values. Both of these surface parameters are employed to treat dry deposition processes in the UAM and Z_0 values are also applied in the derivation of vertical diffusivity in the model.

An area-weighting scheme was selected as a more appropriate approach than the distance-weighting scheme for the determination of UAM gridded values for these surface parameters from gridded ROM values. With the area-weighting technique, the fractional amounts of each UAM cell covered by different ROM cells are determined. An algorithm based on slopes and intercepts between grid cell lines accurately computes the fractional area of a UAM grid cell covered by any ROM cell. An example of the area-weighting scheme is provided by a subset of the ROM and UAM grid cells in Figure N-4. For UAM cell U1, contributions from all four ROM cells would be fractionally weighted to determine the grid-area average value. On the other hand, grid-area average value for U4 would be specified totally by R4 since U4 is completely inside ROM cell R4. The number of ROM grid cells impacting a particular UAM cell is certainly dependent on the horizontal grid cell size of the urban model. As grid cell size decreases, more UAM grid cells may be completely imbedded in a single ROM grid cell since the ROM grids remains fixed at about 19 km on a side.

The eleven land use categories contained in the ROM gridded inventory are presented in Table N-4. The fractional coverage of each land use in each ROM cell comprises the land use inventory data. For dry deposition in the UAM, a deposition factor (β) represents the relative surface uptake rate of a particular land use category compared to an alfalfa crop. Equation 4 was developed to derive an average vegetation factor for each UAM grid cell.

In equation (4), the areal contribution of each ROM cell to a UAM cell's area (A_n / A_u) is summed in order to obtain the UAM grid-area average VEGFACTOR value.

Values of ROUGHNESS are also derived for each UAM grid by applying the area-weighting technique to ROM gridded surface roughness values. The terrain interface processor (ICRETER) creates a binary file for direct input to the UAM.

$$\text{VEGFACTOR}_{ij} = \sum_{n=1}^{nn} (A_n / A_u) \cdot \alpha_n \quad (4)$$

where: $\alpha_n = \sum L_m \cdot \beta_m$ is the overall vegetative factor for ROM cell n from the fractional amounts of each land use (L_m) times deposition factor β_m for the land use types in Table N-4.

N.3 TREATMENT OF CONCENTRATIONS

The concentrations of 23 chemical species must be specified for initial conditions, lateral boundary conditions, and top boundary conditions in model applications with the CB-IV version of the UAM. A complete list of the chemical species and their alphanumeric names designated internally in the UAM system are provided in Table N-5. Complete details about the development of the carbon-bond chemical mechanism have been documented by Gery *et al.* (1988, 1989) and its adaptation into the UAM is fully described in Morris *et al.* (1990a).

Since both the regional and urban model systems include the CB-IV chemical mechanism, it is possible to interface the ROM predicted concentrations for all species (except for ETOH, which is not available from the ROM simulations). However, sensitivity test simulations were undertaken to investigate whether it is necessary to interface all chemical species. A series of model test simulations involved different sets of species interfaced with ROM concentrations while the remaining species were prescribed by a minimum default value (10^{-6} ppm). The same results for ozone were achieved by interfacing 17 species from the ROM as with the full set, while results differed when interfacing fewer species from the ROM. Limiting the number of species to be interfaced also helped to reduce the size of the concentration file generated by the retrieval program. Table N-5 also indicates the 17 species interfaced from the ROM predicted concentrations, which are employed in the derivation of initial, lateral boundary, and top boundary conditions for the UAM. Although values for the other six species are not derived by the concentration interface program, minimum default values are specified in the CHEMPARAM file which is created by the CPREP preprocessor program for the model.

The most challenging aspect of interfacing concentrations was to develop a method to match the concentrations from the three layers of the ROM into a user-specified number of UAM vertical cells and to design the scheme to be applicable over an entire diurnal period. The methodology outlined in Table N-6 has been incorporated into the concentration interface (ICONC) program. The approach presented in the table is versatile since it can accommodate any number of user-defined vertical levels and is applicable over the entire diurnal cycle. It is also a realistic approach for matching of ROM layer concentrations into multiple UAM vertical levels based on knowledge of the relationship between the diffusion break height and ROM layer heights with time. This method is applied to obtain concentrations at the various vertical UAM levels for initial and boundary conditions.

The key feature of the vertical interfacing methodology for lower levels is the weighting scheme, which is dependent upon the time variation of Z_{DB}. Concentrations of species in lower levels are derived from equation (5) in Table N-6. It shows that ROM layer 1 and 2 concentrations are applied to specify lower level values. There is a criterion that if ROM layer 1 height (Z_{R1}) is greater than Z_{DB}, ROM layer 1 concentrations are exclusively employed to define UAM lower level concentrations. This condition often exists during nocturnal or early morning hours. As the diffusion break approaches the maximum value (Z_{DBmax}), F_1 approaches zero while F_2 goes to unity in equation (8) and (9), respectively. Consequently, concentrations for lower UAM levels approach the average value of ROM layers 1 and 2. In addition, it is evident that the same concentrations are specified for all lower levels (i.e. no vertical concentration gradient). The rationale for the lack of a concentration gradient across the lower levels is that mixing is expected to be sufficiently vigorous below Z_{DB} at any hour that vertical gradients are quickly eliminated by the model.

Vertical concentration differences have been included in the derivation of values for upper levels according to equation (6) in Table N-6. Upper level concentrations are controlled by ROM layer 2 and layer 3 values since the top concentration (C_T) is dependent on ROM layer 3 values. At the beginning hour of simulation, C_T equals the ROM layer 2 concentration (C_{R2}) and no vertical concentration gradient exists across the upper levels. The rationale for this scheme follows from the specification of the height of ROM layer 2 as the initial value of Z_T. In addition, layer 2 represents a rather thick residual layer of pollutants which have been well-mixed during the previous daytime period. A strong vertical gradient may develop across the upper levels in the UAM during the day because C_T approaches ROM layer 3 concentrations. Layer 3 concentrations are generally near tropospheric background values which can be considerably lower than layer 2 concentrations in certain areas of the model domain.

The following describes the procedures in the concentration interface (ICONC) which derives initial, lateral boundary, and top boundary conditions of the pollutant species for the UAM.

N.3.1 Initial Conditions

The set of initial conditions represents the concentrations of all species in each cell of the model grid at the starting hour of simulation. Model predicted concentrations are certainly impacted by initial conditions for some time. However, the influence of initial conditions diminishes as a simulation progresses.

The procedure applied in the concentration interface (ICONC) for deriving initial concentrations at each UAM grid cell begins with the use of the vertical method already described in Table N-6. Once concentrations have been derived at each UAM vertical level, values must be spatially resolved to each UAM grid cell by applying the inverse distance-squared interpolation technique described earlier.

In applying the spatial interpolation step prescribed by equation (10), concentrations in ROM grid cells immediately surrounding each UAM grid cell are included in the interpolation procedure to preserve horizontal gradients that may exist in the ROM gridded concentration field.

$$C_m(i,j) = \sum C_{mn} \cdot r_n^{-2} / \sum r_n^{-2} \tag{10}$$

where

$C_m(i,j)$ = concentration of species m at UAM grid i, j

C_{mn} = concentration of species m at ROM grid cell n

r_n = distance between midpoints of a UAM and a ROM grid cell

Initial concentration fields are determined with the above procedure for the 17 species identified in Table N-5. The gridded arrays of initial concentrations of these pollutant species are written to a binary file for direct use in the UAM. Thus, the UAM preprocessor for initial conditions (AIRQUL) will not be exercised when applying the interface for concentrations. If a user wishes to examine the initial concentration file, a binary to ASCII conversion program has been included in the interface package (Appendix E, Tang *et al.*, 1990). This conversion program generates a formatted ASCII data file from a binary data file so that the initial conditions may be examined via any on-line editor or the ASCII formatted file can be listed on a line printer.

N.3.2 Lateral Boundary Conditions

One of the primary purposes for interfacing the ROM and UAM systems is to specify boundary concentrations for the urban model from regional model simulation results. A methodology has been designed to provide for temporally-varying concentrations of each interfaced species at each boundary cell. In the UAM, the grid cells around the outer edge of the domain at each level constitute the group of lateral boundary cells (Figure N-4). The first step is to apply the vertical method described earlier to obtain concentrations at each vertical UAM level for each ROM grid point location. The next procedure consists of spatially averaging the values from three ROM grid points: the two ROM grid points in each row (or column) exterior to the UAM domain and the ROM grid point in each row (or column) just inside the boundary. This averaging step is illustrated with the set of ROM points shown in Figure N-5. The averaging procedure is performed with each set of these ROM grid points for each ROM row and column around the entire perimeter of the UAM domain. These averaged values represent the boundary values along each side at the resolution of the ROM grid. The averaging of values over the outermost ROM grid points provides some spatial smoothing for boundary conditions. The last step is to derive boundary concentrations at each UAM grid point. Linear interpolation is employed using the averaged ROM values along each side of the UAM domain to derive boundary concentrations at each UAM grid cell. This step is repeated to determine boundary concentrations at each vertical level and the entire procedure is also performed each hour. The lateral boundary concentrations are written to a binary file (BCBIN) for use in UAM simulations.

N.3.3 Top Boundary Conditions

Boundary concentrations must also be defined at the top of the model domain. The procedures installed in the ICONC interface allow top boundary values to vary both in time and space in order to take full advantage of the ROM predicted concentration fields. Top concentrations can have a greater impact on surface concentrations in a UAM configuration where the diffusion break height and region top height become identical. However, this feature has been eliminated when interfacing is applied as discussed above. Nevertheless, top concentrations can still be gradually mixed into the lower levels even across the rather shallow upper levels. Therefore, top concentrations must be properly specified.

The derivation of the top concentration (C_T) begins with equation (7) in Table N-6. It provides for the hourly evolution of C_T values at each ROM grid point overlapping the UAM domain. As noted earlier, C_T has been designed to evolve from ROM layer 2 to layer 3 concentrations during the course of the daytime period. Then the same inverse distance-squared weighting technique described earlier is employed on C_T values at the ROM grid points to resolve concentrations at each UAM grid cell at the top of the UAM. These steps are repeated hourly to provide for temporally-varying top concentrations for the UAM. A separate binary output file is generated that contains the top boundary concentrations (TCBIN).

N.3.4 Summary of Concentration Interfacing

The specification of initial, and lateral and top boundary conditions is a primary objective of the ROM-UAM interface effort. The methodologies described in the previous sections have been designed to provide the fullest possible temporal and spatial resolution of concentrations for these key conditions in the UAM from ROM gridded concentrations. An overview of the steps undertaken to resolve initial, boundary, and top conditions in the concentration interface is given in Table N-7.

N.4 TREATMENT OF AREA BIOGENIC EMISSIONS

The hourly biogenic area emissions of six species are contained in the retrieved ROM PF144 data file and include ISOP, PAR, OLE, ALD2, NO, NO_2. The tasks performed by the biogenic emissions interface (IBIOG) are to resolve the gridded biogenic emissions to the UAM grid cells and to combine these values with the area anthropogenic emissions file supplied by the user. The technique applied to derive UAM gridded biogenic emissions from the ROM gridded values is the fractional-area weighting method. This is a similar algorithm as described earlier to resolve the surface roughness and vegetative factor to the UAM grid, except with a variation needed for its application to emissions.

The ROM gridded biogenic emissions represent emission rates over the area of each ROM grid cell. When applying the area weighting technique, the ratio of the area of a ROM grid cell contained in a UAM cell to the total area of the ROM cell (A_{Ri}/A_R) is used to scale the ROM biogenic emission rate. This factor is needed to preserve the emission density (Q/A_R). For example, in the case of a UAM cell entirely inside a ROM grid cell, the UAM cell biogenic emissions would be computed with the ratio of the total area of the UAM grid cell to the ROM cell's area multiplied by the ROM cell's biogenic emissions. In the general application, the area of each ROM cell overlapping a given UAM grid cell is scaled by the total area of the ROM grid cell (A_R). Then the biogenic emission rate for each species for a particular UAM grid cell is determined by summing the scaled contributions from every ROM grid cell that overlaps a UAM cell.

The IBIOG interface combines the biogenic emissions for the six species with the corresponding area anthropogenic emissions of these same species and generates a single binary area emissions which contains the sum from both inventories.

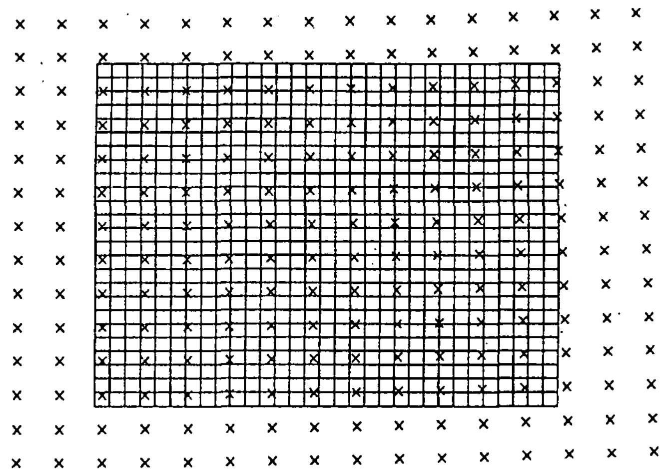


Figure N-1. Example of grid points (midpoints) of the ROM cells overlaying a UAM domain. Two ROM rows/columns extend beyond each UAM boundary.

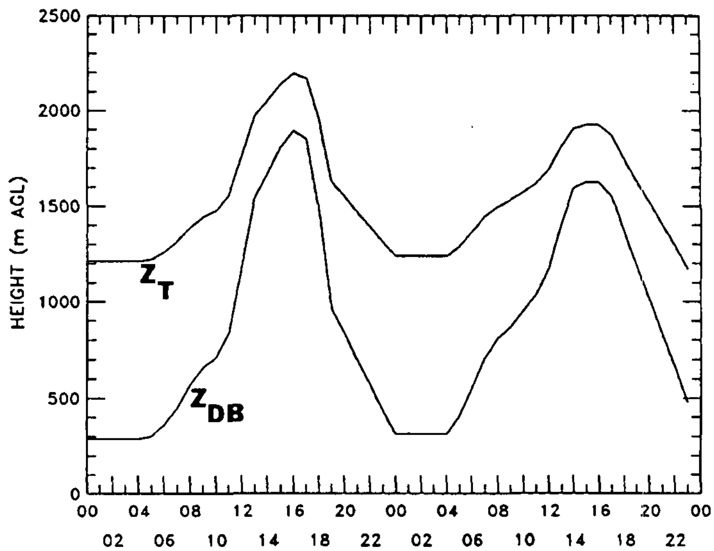


Figure N-2. Time variation of the region top and diffusion break heights over two diurnal periods.

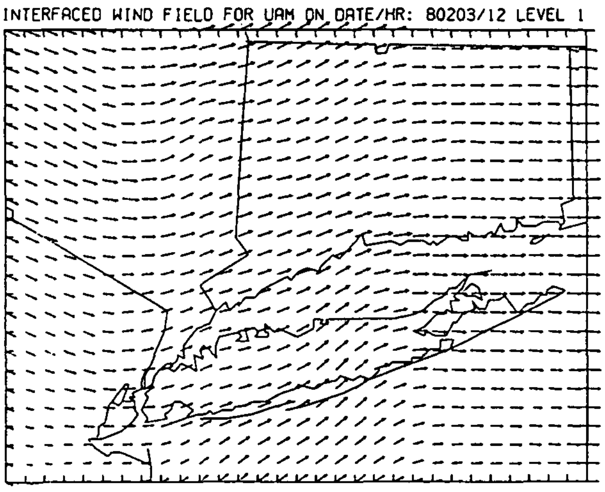


Figure N-3. Wind field derived for an example UAM grid from the ROM gridded wind components.

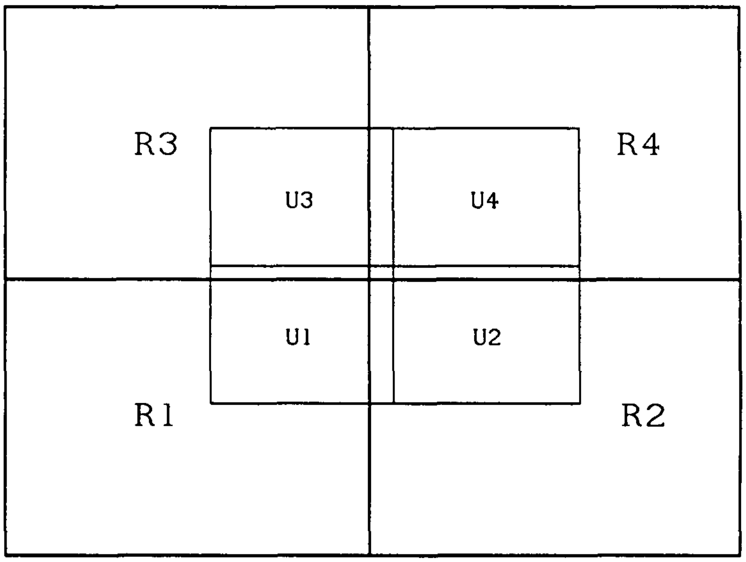


Figure N-4. Example set of ROM and UAM grid cells for the fractional area weighting method. (The ROM cells are about a factor of 4 larger than a UAM grid cell in this case.)

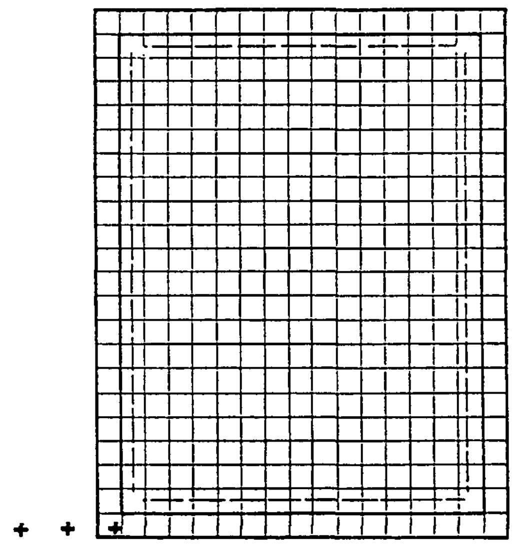


Figure N-5. Boundary grid cells in the UAM are the outer cells enclosed by bold lines. ROM grid points are shown in the lower left.

TABLE N-1. LIST OF METEOROLOGICAL SCALARS

Parameter name	Internal units	Definition
TGRADBELOW	K/m	Vertical temperature gradient (dT/dZ) from the surface to diffusion break height
TGRADABOVE	K/m	Vertical temperature gradient between diffusion break and region top heights
EXPCLASS	----	Exposure class - integer scale indicator of the near-surface atmospheric stability
RADFACTOR	min^{-1}	NO_2 photolysis rate constant, k_1
CONCWATER	ppm	Average surface water vapor concentration
ATMOSPRESS	atm	Surface atmospheric pressure

TABLE N-2. METHOD FOR DERIVING THE EXPOSURE INDEX

Solar zenith angle (degrees)	Domain average cloud cover (%)	EXPCLASS (unitless)
	NOCTURNAL HOURS	
>85	≤50	-2
>85	>50	-1
	DAYLIGHT HOURS	
≤30	≤50	3
≤30	>50	2
$30 < \theta \leq 55$	≤50	2
$30 < \theta \leq 55$	>50	1
$55 < \theta \leq 85$	≤50	1
$55 < \theta \leq 85$	>50	0

TABLE N-3. WIND INTERFACING METHOD

Criteria:

* If $Z_{Tk} \leq Z_{R1}$; use ROM layer 1 winds

* If $Z_{Bk} > Z_{R1}$; use ROM layer 2 winds

* If a UAM level overlaps both ROM layers ($Z_{Bk} < Z_{R1} \leq Z_{Tk}$); determine weighting terms (W1, W2) from:

$$W1 = (Z_{R1} - Z_{Bk}) / (Z_{Tk} - Z_{Bk})$$

$$W2 = (Z_{Tk} - Z_{R1}) / (Z_{Tk} - Z_{Bk})$$

where Z_{R1} = ROM layer 1 height
Z_{Tk} = top (T) of a UAM vertical level k
Z_{Bk} = bottom (B) of a UAM vertical level k

$$u,v = u_{R1},v_{R1} * W1 + u_{R2},v_{R2} * W_2$$

where $u_{R\#},v_{R\#}$ = ROM gridded wind components in layer 1,2

Example configuration of models around sunrise:

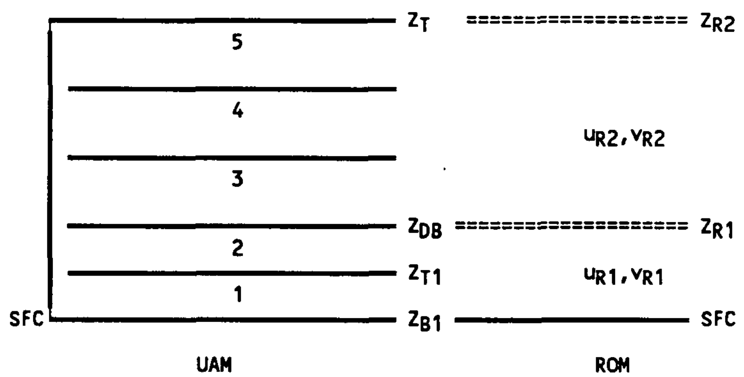


TABLE N-4. LAND USE CATEGORIES AND ASSOCIATED DEPOSITION FACTORS

	Designation	Description	Deposition factor (β)
1	URBAN	Urban, little vegetation	0.2
2	AGRI	Agricultural land; adequate water	0.5
3	RANGE	Range land, usually low soil moisture	0.4
4	DF	Deciduous forest	0.4
5	EV	Evergreen (coniferous) forest	0.3
6	MF	Mixed forest, including wetland	0.3
7	WATER	Water bodies (fresh or salt water)	0.03
8	BARREN	Barren land, mostly desert	0.2
9	NFW	Non-forested wetland	0.3
10	MIXED	Mixed agriculture and range land	0.5
11	ROCKY	Rocky areas with low shrubs-lichens	0.3

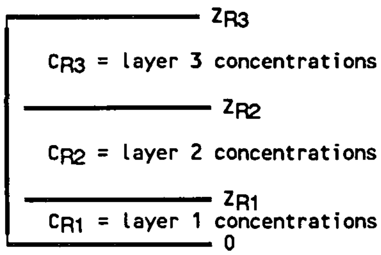
TABLE N-5. CHEMICAL SPECIES IN THE UAM (CB-IV) MODEL

Model Nomenclature		Chemical name	Interfaced (X)
1	NO	Nitric oxide	X
2	NO2	Nitrogen dioxide	X
3	O3	Ozone	X
4	OLE	Olefinic carbon bond species	X
5	PAR	Paraffinic carbon bond species	X
6	TOL	Toluene	X
7	XYL	Xylene	X
8	FORM	Formaldehyde	X
9	ALD2	Higher molecular weight aldehydes	X
10	ETH	Ethene	X
11	CRES	Cresol and higher molecular weight phenols	
12	MGLY	Methylglyoxal	
13	OPEN	Aromatic ring fragment acid	
14	PNA	Peroxynitric acid	
15	NOXY	Nitrogen species group	
16	PAN	Peroxyacetyl nitrate	X
17	CO	Carbon monoxide	X
18	HONO	Nitrous acid	X
19	H2O2	Hydrogen peroxide	X
20	HNO3	Nitric acid	X
21	MEOH	Methanol	X
22	ETOH	Ethanol	
23	ISOP	Isoprene	X

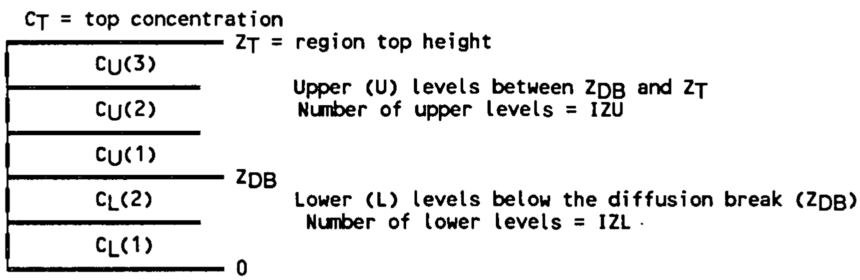
NOTE: X = concentrations of species interfaced from the ROM.
Default minimum value defined for six species not interfaced.

TABLE N-6. VERTICAL METHODOLOGY FOR INTERFACING CONCENTRATIONS[1]

ROM (R) Layers (layer thickness not to scale):



Example Configuration of UAM Vertical Levels (thicknesses not to scale):



Lower level concentrations (C_L):

$$C_L(k) = C_{R1} \cdot F_1 + [(C_{R1} + C_{R2})/2] \cdot F_2 \qquad \text{for} \quad k = 1, \text{IZL} \tag{5}$$

$$\text{If} \quad Z_{DB}(t) < Z_{R1}, \qquad C_L(k) = C_{R1}$$

Upper level concentrations (C_U):

$$C_U(kk) = C_{R2} + [(kk - 0.5)/\text{IZU} \cdot (C_T - C_{R2})] \qquad \text{for} \quad kk = 1, \text{IZU} \tag{6}$$

$$C_T = C_{R2} \cdot F_1 + C_{R3} \cdot F_2 \tag{7}$$

Weighting factors (F_1 and F_2):

$$F_1 = 1 - (Z_{DB}(t) - Z_{R1})/(Z_{DBmax} - Z_{R1}) \tag{8}$$

$$F_2 = (Z_{DB}(t) - Z_{R1})/(Z_{DBmax} - Z_{R1}) \tag{9}$$

1. This method is applied to each ROM grid point location.

TABLE N-7. CONCENTRATION INTERFACING PROCEDURES

INITIAL CONDITIONS:

Perform vertical method described in Table N-6 with ROM gridded concentrations at the starting hour to derive values at each UAM level.

Perform horizontal interpolation to obtain values at each UAM grid point using the inverse distance-squared method.

LATERAL BOUNDARY CONDITIONS:

Perform vertical method with ROM gridded concentrations to derive concentrations at each UAM level.

Average the two exterior ROM grid points and the ROM grid point located immediately inside the UAM boundary in each ROM row/column.

Perform linear interpolation to resolve UAM boundary grid values.

Iterate the above steps for each hour.

TOP CONDITIONS:

Use vertical method to determine top concentrations at each ROM grid point.

Perform horizontal interpolation to spatially resolve concentrations to each UAM grid

Iterate to perform above steps for each hour.