NARSTO EPA_SS_NY Air Chemistry, Particulate Matter, and Met Data

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1. Data Set Description:

PM2.5 Technology Assessment and Characterization Study in New York State (PMTACS-NY) The PMTACS-NY Supersite program provided a unique and unparalleled opportunity to enhance our understanding of ozone/PM2.5-precursor relationships and track progress in current precursor emission control programs and assess their effectiveness in achieving expected air quality responses. The impact of this research is highly significant, providing a sound scientific basis for informed effective decisions in the management of air quality in New York and significant benefit to its citizens - both environmentally and economically.

Data files from all components of the PMTACS-NY Supersite program are archived in this single data set. Time-series plots are included for all of the numeric variables in each of the data files. These plots are useful for screening for outliers and visualization of values less than the detection limit and values with other quality flags. QA plans and the final PMTACS-NY Supersite report are included as documentation.

Program Objectives

The PMTACS-NY was designed around three major objectives and addressed a series of science policy relevant questions using measurement data collected under the program.

Objective 1. Measure the temporal and spatial distribution of the PM2.5/co-Pollutant complex including: SO2, CO, VOCs/Air Toxics, NO, NO2, O3, NOy, H2CO, HNO3, HONO, PM2.5 (mass, SO4=, NO3, OC, EC, Trace Elements), single particle aerosol composition, particle size distribution and number concentration, OH and HO2 to support regulatory requirements to develop cost effective mitigation strategies for PM2.5 and its co-pollutants and to establish trends in the relevant precursor concentrations to assess the impact of recent and future emission reductions in terms of emission control effectiveness and air quality response.

Objective 2. Monitor the effectiveness of new emission control technologies [i.e. Compressed Natural Gas (CNG) bus deployment and Continuously Regenerating Technology (CRT)] introduced in New York City and their impact on ambient air quality, through mobile platform and fixed site measurements of CO2, CO, NO, H2CO, HONO, particle size distribution and number concentration, and aerosol chemical composition.

Objective 3. Test and evaluate new measurement technologies and provide techtransfer of demonstrated operationally robust technologies for network operation in support of process science and observation based analysis tools and health based exposure assessments.

Program Results

The scientific findings are reported in the EPA PM Supersite Final Report for the PM2.5 Technology Assessment and Characterization Study in New York State. The results have been organized around the three major objectives and include associated citations to papers from the research conducted within the program. This report is provided as a companion file [PMTACS-NY Final Report (PDF)].

The U.S. EPA Particulate Matter (PM) Supersites Program was an ambient air monitoring research program from 1999-2004 designed to provide information of value to the atmospheric sciences, and human health and exposure research communities. Eight geographically diverse projects were chosen to specifically address these EPA research priorities: (1) to characterize PM, its constituents, precursors, co-pollutants, atmospheric transport, and its source categories that affect the PM in any region; (2) to address the research questions and scientific uncertainties about PM source-receptor and exposure-health effects relationships; and (3) to compare and evaluate different methods of characterizing PM including testing new and emerging measurement methods. Data collected by these projects are publicly available at the NARSTO Permanent Data Archive, NASA Langley DAAC. Data users should acknowledge the U.S. EPA Particulate Matter

(PM) Supersites Program and the project investigator(s) listed below.

The data set should be cited as follows:
Demerjian, Kenneth. 2006. NARSTO EPA_SS_NY Air Chemistry, Particulate Matter, and Met Data. Available on-line via NARSTO Data and Information at the Atmospheric Science Data Center at NASA Langley Research Center, Hampton, Virginia, U.S.A.

2. Sample Data Record/Data Format:

Measurement Sites

Site Name (Name links to site Time-Series Plots)	Site ID	Site Abbr	Latitude	Longitude	Sampling Height (m)	Site Elevation (m)	Land Use	Setting	Study Comment	EPA AIRS Site ID
Intermediate School 52 (new zip file)	ES2NUSNY IS52	IS52	40.81577	-73.90182	9	17	Residential	Urban and center city	Site offline from 20010620 to 20010901 due to construction	36-005-0110
Mable Dean Bacon School	ES2NUSNY MDBS	MDBS	40.73281	-73.98478	15	11	Commercial	Urban and center city	Site terminated due to construction	36-061-0010
Pinnacle State Park (new zip file)	ES2NUSNY PSP_	PSP_	42.09071	-77.21025	5	507	Remote park	Rural	None	36-101-0003
Public School 219	ES2NUSNY P219	P219	40.7362	-73.82317	10	25	Residential	Urban and center city	Located across the park from Queens College Supersite Central	36-081-0124
Queens College (new zip file)	ES2NUSNY QCOL	QCOL	40.73602	-73.82153	-999.9	25	Residential	Urban and center city	Supersite Central - Has both Fixed and Mobile Measuring Components	36-081-0124
Queensboro Community College	ES2NUSNY QBCC	QBCC	40.7561	-73.7583	5	25	Residential	Urban and center city	Replaced by Queens College/ PS219	36-081-0097
Whiteface Mountain Lodge (new zip file)	ES2NUSNY WFML	WFML	44.39309	-73.85892			Forest	Rural	None	36-031-0003
Whiteface Mountain Summit	ES2NUSNY WFMS	WFMs	44.36608	-73.90313		1483	Remote Park	Rural	None	36-031-0002

Regional Background Sites:

Whiteface Mountain is located in the Adirondack Mountains of northern New York at an elevation of 1500 m and is forested from the base to ~ 1400 m altitude. A conifer forest region from ~ 900 m to 1400 m is made up of balsam fir mixed with an increasing percentage of red spruce with increasing elevation. The summit is ~ 90 m above the tree line. Measurement facilities are maintained at the lodge facility at 600 m, situated in clearing with a deciduous forest canopy on the eastern shoulder of the mountain and the summit facility housed in a three-story

observatory at the mountaintop. The nearest major urban centers are Montreal ~ 130 km to the north; Albany ~ 180 km to the south; Syracuse ~ 220 km to the southwest.

Pinnacle State Park in Addison, NY is located in a rural area in the New York/Pennsylvania Twin Tiers Region at an elevation of 515 m. The site is located in an open clearing on Orr Hill, which is ~ 12 m below and about 100 m east of the highest hill in the park. The closest trees are ~ 50 m away and the surrounding areas include a 50 acre pond, pastures, undeveloped state forest lands and a 9-hole golf course. The instrumentation is housed in a newly acquired Eco shelter, with a 10 m meteorological tower installed at the site. The village of Addison (pop. ~ 1,800) is 4 km to the northwest and the town of Corning (pop. ~ 12,000) is 15 km to the northeast.

Urban Core Sites:

To be provided.

Data File Format

Data files are in the NARSTO Data Exchange Standard (DES) format that is described in detail on the NARSTO Quality Systems Science Center (QSSC) web site. The files follow a tabular layout and are stored as ASCII comma-separated values files (.csv). The DES does not rely on row position to identify specific information, but uses a tag to describe the information contained in the row. The DES is a self-documenting format with three main sections: the header contains information about the contents of the file and the data originator; the middle section contains metadata tables that describe/define sites, flags, and other codified fields; and the final section is the main data table that contains key sampling and analysis information and the data values. Descriptions of the standardized metadata fields are also available on the QSSC web site.

Time-Series Plots

Time-series plots are included for all of the numeric variables in each of the PMTACS-NY Supersites' data files. These plots are useful for screening for outliers and visualization of values less than the detection limit and values with other quality flags.

Time-series plots of data collected at each measurement site can be accessed via the preceding Measurement Sites table. Each "Site Name" entry in the table has a link to a .zip file with a set of .pdf files with plots for that Site. Each data file (*.csv) has a corresponding plot file (*_PLOT.pdf) that has a plot for each reported numeric variable.

Data Quality Notes

Date Format: There is a variance from the preferred DES date format (yyyy/mm/dd) in several of the PMTACS-NY Supersites' data files.

- Several data files have dates formatted as yyyy-mm-dd.
- In addition, there **may be** double quotes (e.g., "yyyy-mm-dd") around the entire value.
    - For example: ,"ES2NUSNYP219","P","2001-08-07",00:00:00,"2001-08-08",00:00:00,"EST","2001-08-07",05:00:00,"2001-08-08",05:00:00,19.2,V0,NIE,18.80,V0,773.0,
- Users should be aware of the different date delimiter and the possibility of quotes, but generally there is no effect when opening the *.csv files in Excel.
- FORTRAN users may need to modify codes that read DES format files to deal with the double-quotes surrounding dates in metadata and main data tables.

Time-Series Plots: Time-series plots are included for all of the numeric variables in each of the PMTACS-NY Supersites' data files.

- Please note that some but not all of the plots were visually examined for possible outliers and other issues.

3. References:

See list of references and presentations in EPA PM Supersite Final Report for the PM2.5 Technology Assessment and Characterization Study in New York State (PMTACS-NY) [PMTACS-NY Final Report (PDF)].

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Data Center:

The User and Data Services Office at the Langley Atmospheric Science Data Center is involved throughout the system to monitor the quality of data on ingest, to ensure prompt replies to user questions, to verify media orders prior to filling them, and to ensure that the needs of the users are being met.

If you have a problem finding what you need, trouble accessing the system, or need an answer to a question concerning the data or how to obtain data, please contact the User and Data Services staff.

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5. Acknowledgement:

When data from the Langley Atmospheric Science Data Center are used in a publication, we request the following acknowledgment be included: "These data were obtained from the NASA Langley Research Center Atmospheric Science Data Center".

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