NARSTO EPA_SS_BALTIMORE JHU Meteorological Data

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1. Data Set Description:

Meteorological and turbulence measurements were recorded using a diverse array of instruments by the Parlange Environmental Fluid Mechanics Group, Department of Geography & Environmental Engineering, Johns Hopkins University at the EPA Baltimore Supersite. Measurements were made at three Baltimore locations over the indicated time intervals: FMC Corporation (May 26, 2001 - June 15, 2001), Clifton Park (July 1, 2001 - September 14, 2001), and Ponca Street (February 13, 2002 - March 15, 2003). **Please note that only Ponca Street data are available at this time.**

The instruments were mounted on an 11m tall meteorological tower on the site. The instrumentation consisted of a 3d sonic anemometer-thermometer, pyranometer, wind vane, tipping bucket rain collector, 2 cup anemometers, temperature & relative humidity probe and pressure sensor. The data were collected on a continuous basis and were subsequently subjected to multiple cycles of data validation to ensure correctness and accuracy. The validated data was then averaged over a 5 minute interval to create the final data set.

For visual display on the internet, the data set has been organized so as to provide a unique data file for any given day within the operating time duration. Each file contains the variables temperature, relative humidity, mean horizontal wind speed (at 10.39m), horizontal resultant vector mean wind speed, mean horizontal wind speed (at 5.87m), mean horizontal wind angle, std deviation of the wind angle, precipitation, friction velocity, Obukhov length, sensible vertical heat flux, solar radiation, atmospheric pressure, virtual potential temperature, specific humidity and wind angle from sonic anemometer. In addition to usual meteorological variables, this data set also provides information on turbulent mixing (parameterized by the friction velocity) and atmospheric stability (parameterized by the Obukhov length).

The **Baltimore Supersite** collected high-quality ambient air quality measurements with unprecedented temporal resolution at an industrially influenced urban site from xx to xx with two intensive measurement campaigns. A data set of project results was constructed to take advantage of advanced multivariate statistical techniques. Data were collected on the sources and nature of organic aerosol for the region, and large quantities of urban particulate matter (PM) were collected for retrospective chemical, physical, and biological analyses and for toxicological testing. These data provided important information on the potential health effects of particles to support exposure and epidemiologic studies for enhanced evaluation of health outcome, pollutant, and source relationships. More information can be found at Baltimore Supersite Experiment.

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:
Kumar, V., Kleissl, J., Adam, M. and Parlange, M.B. 2003. NARSTO EPA_SS_BALTIMORE JHU Meteorological Data. Available on-line via NARSTO Data and Informaton at the Atmospheric Science Data Center at NASA Langley Research Center, Hampton, Virginia, U.S.A.

2. Sample Data Record/Data 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.

3. References:

- Weber, R.O., 1997: Estimators for the Standard Deviation of Horizontal Wind Direction. Journal of Applied Meteorology, 36, 1403-1415

- Pahlow, M., Parlange, M.B. 2001, 3-D sonic anemometer Standard Operating Procedure (SOP) for the Baltimore PM Supersite (PDF)

4. Contact Information:

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Data Center:

The User and Data Services Office at the NASA 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 NASA 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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