NARSTO EPA_SS_LOS_ANGELES Size-Fractionated PM Composition Data (MOUDI)

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1. Data Set Description:

Data are available for samples collected using MOUDI Model No. 110 samplers between late 2000 and late 2003 variously from sites at Downey, Claremont, Riverside, Rubidoux, and the University of Southern California (USC). Samples were typically collected for a one-day period, but in some cases duration was less than or more than one day. Element/metals, carbon, nitrate/sulfate ion, and mass concentration data were obtained.

The MOUDI is a multiple stage inertial cascade impactor. At each stage, particles larger than the cut point of the stage are collected on the impaction plate while smaller particles pass through to the next stage. This continues through the cascade impactor until the smallest particles are collected on the after filter. At Downey, a size range of 10um to 0um was collected (10.0-2.5um, 2.5-1.0um, 1.0-0.32um, 0.32-0um). Most of the 10.0-2.5um size range samples were eliminated at Claremont, Riverside, Rubidoux, and USC because this size range was collected using the Partisol sampler. All samples were analyzed using X-ray florescence and mass concentration analysis at an independent laboratory.

The overall objective of the **Southern California Supersite (SCS)** was to conduct research and monitoring that contributes to a better understanding of the measurement, sources, size distribution, chemical composition, physical state, spatial and temporal variability, and health effects of suspended particulate matter (PM) in the Los Angeles Basin (LAB). Intensive aerosol measurements, well beyond the traditional PM2.5 mass, sulfate and nitrate concentrations, were conducted in several areas of the LAB. These included particle number concentrations, size distributions, and detailed PM chemical composition as a function of particle size. Sampling locations were chosen to provide wide geographical and seasonal coverage, including urban "source" sites and downwind ";receptor" sites. The primary sampling facility, a mobile Particle Instrumentation Unit (PIU), was deployed to several locations to conduct a wide range of PM measurements. Sampling in each site lasted for 6-12 months. Intensive PM measurements were also conducted up and downwind of several freeways of the LAB, to characterize near-roadway exposure environments and to support several in vivo and in vitro health studies. The monitoring activities of the SCS were linked with toxicology studies in the LAB using a mobile PM Concentrator facility to investigate health effects associated with exposures to ultrafine, fine and coarse particles. Finally, the PIU facility was successfully used as a platform to develop, test, and evaluate numerous PM measurement instruments and sampling technologies, including several monitors for semi-continuous size fractionated mass and chemistry, personal PM exposure monitors, particle concentration technologies, and particle counting devices.

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 Atmospheric Science Data Center. 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:
Sioutas, Constantinos, Rong Chun (RC) Yu. 2010. NARSTO EPA_SS_LOS_ANGELES Size-Fractionated PM Composition Data (MOUDI). Available on-line from NARSTO Data and Information at the Atmospheric Science Data Center at NASA Langley Research Center, Hampton, Virginia, U.S.A.

More information can be found at the Southern California Particle Center site.

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.

Data Usage Notes

- **Data Filename Date Issue:**
    - For NARSTO_EPA_SS_LA_DWNY_MOUDI_IONS_2001116_20010201_V1.csv the filename does not accurately represent the date range of the content. This file contains data from samples with starting dates from November 16, 2000 through February 01, 2001.
    - For NARSTO_EPA_SS_LA_RVSD_MOUDI_IONS_20000302_20000607_V1.csv the filename does not accurately represent the date range of the content. This file contains data from samples with starting dates from March 01, 2001 through June 06, 2001.
- **IONS and MASS Data Files Row Totals:**
    - Please note that some data rows in the MOUDI IONS and MASS files present results that are totals of results in other rows. Check the columns named "Particles: lower diameter bound" and "Particles: upper diameter bound" to understand this reporting convention.

3. References:

TBD

4. Contact Information:

Investigator(s) Name and Title:

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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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URL: http://eosweb.larc.nasa.gov

5. Acknowledgement:

When data from the Langley Atmospheric Sciences 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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