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1. INTRODUCTION

North American Research Strategy for Tropospheric Ozone (NARSTO) data are available from the NASA Langley Atmospheric Sciences Data Center (ASDC). The NARSTO data products contain aerosol and trace gas measurements from select urban and regional environments.

The primary mission of NARSTO is to coordinate and enhance scientific research and the assessment of tropospheric ozone behavior, with the central programmatic goal of determining workable, efficient, and effective strategies for local and regional ozone management.

Currently the data from selected validation campaigns are available. Selected data from NARSTO key activities: NARSTO Northeast (NE), NARSTO Texas 2000, NARSTO Southern Oxidants Study (SOS), NARSTO Los Angeles, and NARSTO Texas Sampling and Analysis Study are available from the NASA Langley ASDC at <http://eosweb.larc.nasa.gov>.

2. NARSTO PROJECT

NARSTO is a public/private partnership, whose membership spans government, the utilities, industry, and academia throughout Mexico, the United States, and Canada. Its primary mission is to coordinate and enhance policy-relevant scientific research and the assessment of tropospheric pollution behavior; its activities provide input for science based decision-making and determination of workable, efficient, and effective strategies for local and regional air-pollution management. In accomplishing this mission, NARSTO is charged with establishing and maintaining effective communication channels between its scientific effort and its client community of

planners, decision-makers, stake-holders, and strategic analysts. It is also charged with providing a cross-organization planning process, which determines the most effective strategies for scientific investigation. Data products from several local, regional, and international monitoring and research programs are archived and documented under this umbrella organization.

The NARSTO research focus is in four broad technical program areas: Atmospheric Chemistry and Modeling Research, Emissions Research, Observations Research, and Integrated Analysis and Assessment. NARSTO limits its research activities to the measurement and analysis of atmospheric processes that occur between the source and the receptor. NARSTO coordinates information exchange and collaboration with other scientists and policy-makers (both national and international) through liaison arrangements.

Individual Program/Project Data Managers assemble their data products and provide them for archive to the NARSTO Quality Systems Science Center (QSSC). Project data management contacts are identified in the respective data set documentation. The QSSC performs documentation, data file format, and quality assurance checks and forwards the data products to the NASA Langley ASDC for archive and distribution.

3. NARSTO DATA PRODUCTS

The data products described in this section are available from the NASA Langley ASDC. These data, except for the NEXRAD images, are in the NARSTO Data Exchange Standard (DES) format that is described in detail on the NARSTO QSSC web site [<http://cdiac.ornl.gov/programs/NARSTO/>]. 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 con-

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tents 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.

The NARSTO 1998 Model-Intercomparison Study Verification Data: NARSTO-Northeast 1995 Surface Ozone, NO, and NOX (NARSTO_NE_MODEL) data set contains measurements of nitric oxide, nitrogen dioxide, nitrogen oxides, ozone, and total 'reactive' nitrogen for urban, suburban, and rural locations in the northeastern United States for May to September 1995.

The NARSTO-NE Selected NEXRAD Images for 1995 (NARSTO_NE_NEXRAD_IMAGES) data set contains selected NEXRAD weather images from the northeastern United States for the summer of 1995.

The Texas PM2.5 Sampling and Analysis Study: 1997-1998 (NARSTO_Texas_PM2.5_Sampling_and_Analysis_Study_1997-1998) data set contains measurements of aerosol particle properties, particulate matter and trace elements for Houston, Texas for March 11, 1997 to March 12, 1998.

The NARSTO EPA_SS_HOUSTON TEXAQS2000 Formaldehyde and Hydrogen Peroxide Data (NARSTO_EPA_SS_HOUSTON_TEXAQS2000_HCHO_H2O2_DATA) data set contains measurements of continuous formaldehyde (HCHO) and hydrogen peroxide (H2O2) measurements for Houston, Texas for August 12 to September 25, 2000.

The NARSTO EPA_SS_HOUSTON Ammonium Ion and Nitrate Data (NARSTO_EPA_SS_HOUSTON_NH4_NO3_DATA) data set contains measurements of ammonium ion and nitrate for Houston, Texas for September 30, 2000 to May 22, 2001.

The NARSTO EPA_SS_HOUSTON TEXAQS2000 Particulate Matter FTIR Composition (NARSTO_EPA_SS_HOUSTON_TEXAQS2000_PM_FTIR) data set contains measurements of nitrate particles, sulfate particles, organic particles, and particulate matter for Houston, Texas for August 5 to September 13, 2000.

The NARSTO EPA_SS_LOS_ANGELES Aerodynamic Particle Size Data (NARSTO_EPA_SS_LOS_ANGELES_APS_DATA) data set contains measurements of aerosol particle properties, and particulate matter for Los Angeles, California for December 8, 2000 to September 8, 2001.

The NARSTO SOS99NASH DOE G-1 Air Chemistry Data (NARSTO_SOS99NASH_G-1_AIR_CHEMISTRY_DATA) data set contains measurements of carbon monoxide, ultra violet radiation, atmospheric pressure, atmospheric temperature, dew point, upper level winds, barometric altitude, potential temperature, land surface temperature, nitrogen oxides, ozone, aerosol extinction, sulfur, dioxide, aerosol backscatter, and particulate matter for Nashville, Tennessee for June 26, 1999.

The NARSTO SOS99NASH TVA Surface Meteorology and Chemistry Data (NARSTO_SOS99NASH_SURFACE_MET_CHEM_DATA) data set contains measurements of carbon monoxide, nitrogen oxides, sulfur dioxide, ozone, solar radiation, humidity, surface winds, and air temperature for Nashville, Tennessee for June 15 to July 16, 1999.

The NARSTO SOS99NASH Wind Profiler Data (NARSTO_SOS99_WIND_PROFILER_DATA) data set contains measurements of planetary boundary layer height and upper level winds for Nashville, Tennessee for May 19 to August 4, 1999.

NARSTO SOS99NASH NOAA WP-3D Orion Air Chemistry Data (NARSTO_SOS99NASH_WP3D_CHEMISTRY_DATA) data set contains measurements of nitric oxide, nitrogen dioxide, nitrogen oxides, ozone, total 'reactive' nitrogen Nashville, Tennessee for June 26 to July 19, 1999.

4. NARSTO ACTIVITIES

Information about these NARSTO activities is available by selecting the geographic region from the NARSTO web site, <http://www.cgenv.com/Narsto/>.

The Central California Air Quality Studies (CCAQS) comprise two studies, the California Regional Particulate Air Quality Study (CRPAQS) and the Central California Ozone Study (CCOS). CRPAQS is a multi-year effort of meteorological and PM10/PM2.5 air quality monitoring, emission inventory development, data analysis, and air quality simulation modeling.

The NARSTO-CE (Canada East) activity comprises four ozone field studies that took place during the summer of 1996. The four field studies are: The Southern Ontario Oxidants Study (SONTOS), Montreal-Area Oxidants Study (MAOS), Montreal Experiment on Regional Mixing and Ozone (MERMOS), and Surface and upper air measurements in southern Quebec and Nova Scotia will be made by the Air Quality Research Branch of the Meteorological Service of Canada (Environment Canada).

The North East - Oxidant and Particle Study was conducted in Philadelphia, PA to investigate the factors determining the occurrence of ozone and fine particles in the Northeastern United States.

The Program for Research on Oxidants: Photochemistry, Emissions and Transport (PROPHET) activity investigates the relationships between atmospheric odd nitrogen, ozone, and forest-atmosphere interactions.

The Pacific 2001 study's objective is to provide a better understanding of, and reduce the uncertainty of the sources, formation and distribution of particulate matter and ozone in the Lower Fraser Valley of British Columbia.

The Pacific Northwest 2001 (PNW2001) study was a field study of air quality in the Seattle/Puget Sound Region.

The 1997 Southern California Ozone Study (SCOS97)-NARSTO meteorological network and most of the air quality network collected data from June 16 through October 15, 1997. During intensive operational periods, emission data and additional meteorological and air quality data were captured for five different types of multi-day ozone episodes.

The SouthEastern Aerosol Research and Characterization (SEARCH) study was conducted at select sites in Alabama, Georgia, Florida, and Mississippi.

5. CONCLUSION

The NARSTO data products provide data from a variety of research studies. Information about these data studies are available from the NASA Langley ASDC, <http://eosweb.larc.nasa.gov>, and NARSTO project, <http://www.cgenv.com/Narsto/>, web sites.