Welcome to the ASP website!

The Department of Energy's Atmospheric Science Program has as its long-term goal developing comprehensive understanding of the atmospheric processes that control the transport, transformation, and fate of energy related trace chemicals and particulate matter. ***The current focus of the program is aerosol radiative forcing of climate***: aerosol formation and evolution and aerosol properties that affect direct and indirect influences on climate and climate change.

WHAT'S NEW

Olfert wins Friedlander Award [2007-10-09]

ASP investigator Jason Olfert, who is working with Jay Wang at Brookhaven on the Fast Integrated Mobility Spectrometer was awarded the Sheldon K. Friedlander Award at the September 2007 meeting of the American Association for Aerosol Research. This award recognizes an outstanding dissertation by an individual who has earned a doctoral degree in a field of aerosol science and technology in the prior three years. Jason's thesis (University of Cambridge, 2006), "On New Methods of Ultra-Fine Particle Mass Classification," described a new instrument called the Couette Centrifugal Particle Mass Analyzer. This instrument, in conjunction with particle size data, can be used to accurately determine effective particle densities, fractal dimensions, and dynamic shape factors.

Initial results from CHAPS [2007-10-09]

Initial results are coming in from the ASP CHAPS (Cumulus Humilis Aerosol Processing Study) field project, which was conducted in the vicinity of Oklahoma City, OK, June 4-25, 2007. The project was conducted in close coordination with the Cloud and Land Surface Interaction Campaign (CLASIC) project conducted by the DOE Atmospheric Radiation Measurement (ARM) Program. The principal objective of CHAPS was to examine the influence of anthropogenic aerosols from a mid-size urban area on the microphysics of cumuliform clouds, and the effects of these clouds on urban aerosols that pass through fields of fair weather cumulus.

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Prior Program Components

The DOE Gulfstream-1 Research Aircraft made in-situ measurements of particle and gas-phase composition and aerosol and cloud microphysics (12 research flights; 33 hours of flight time). Key instruments included time-of-flight aerosol mass spectrometer (AMS) and proton transfer mass spectrometer. A counterflow virtual impactor (CVI) allowed sampling of cloud droplets and examination of the composition of the residual dried particles. Coordination of G-1 flights with overpasses of the CALIPSO satellite permits use of in-situ measurements to assess the satellite aerosol and cloud retrievals.

The AMS was successfully applied for the first time to determine the composition of cloud-droplet residuals, as sampled with the CVI. A very short integration time of 3 seconds was employed; this short integration time is essential to be compatible with the dimensions of cumulus clouds given the G-1 speed of 100 m s^{-1}. The AMS could be applied either to clear-air aerosol or to cloud-droplet residuals, permitting examination of differences in composition. (L. M. Alexander, Y.-N. Lee).

The NASA Langley B200 King Air collected 66 flight hours of data over 20 science flights during CHAPS. Primary instruments on the King Air included the High Spectral Resolution Lidar (HSRL), the Langley Airborne A-band Spectrometer (LAABS), and digital camera. Portions of at least B200 eight flights were coordinated with the G-1 flights so that the HSRL and G-1 measurements were coincident and colocated. Figure 1 shows an example of a flight on June 24 around the northern part of the Oklahoma City region and shows how the HSRL measurements provide vertical context for the G-1 measurements. Note the increase in AOT northeast of OKC suggesting the possible location of the OKC plume. The B200 flights were also designed to provide aerosol and cloud data for use by investigators from the DOE ARM CLASIC campaign, which was conducted simultaneously with CHAPS. Twelve of the B200 flights included segments over the DOE ARM SGP CRF, and four B200 flights were coordinated with the CIRPAS Twin Otter aircraft deployed during CLASIC. The combination of HSRL measurements and digital camera images, along with the in situ data collected by the G-1 and CIRPAS Twin Otter aircraft, provide a unique dataset to examine the variability of aerosols near clouds.

Eight of the B200 flights were also coordinated with overpasses of the CALIPSO and CloudSat satellites in order to acquire HSRL data for validation of the CALIOP lidar. The G-1 and CLASIC aircraft were also coordinated with the CALIPSO overpasses on some of these validation flights; the in situ measurements will be used to provide a detailed characterization of aerosol and cloud properties to assess the satellite aerosol and cloud retrievals. Preliminary HSRL data and images for all the CHAPS/CLASIC flights are available to the CHAPS/CLASIC investigators via the ARM IOP archive.

Other participating aircraft included the CIRPAS Twin Otter (Center for Interdisciplinary Remotely Piloted Aircraft Studies) and a Cessna aircraft that makes systematic measurements of aerosol light scattering and absorption above the ARM (DOE Atmospheric Radiation Measurement Program) site at the Southern Great Plains (SGP) site in north central

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Oklahoma.

Meteorological and aerosol measurements were also made at a surface site just north of Oklahoma City.

Some key initial results from CHAPS are as follows:

* AMS measurements (L. M. Alexander, Y.-N. Lee) include the following:

o Composition of clear-air aerosol immediately downwind of Oklahoma City was dominated by organics and sulfate. Nitrate concentrations were very low, at or below limit of detection, with nitrate to sulfate mass ratio less than 5%.

o Ammonium in clear-air aerosol in some instances was less than required for complete neutralization of sulfate. The low ammonium to sulfate ratio is consistent with the very low aerosol nitrate concentrations in cloud-free air.

o Composition of cloud-droplet residuals, like the clear air-aerosol, was dominated by organics and sulfate, but cloud-droplet residuals contained significant nitrate (nitrate to sulfate mass ratio up to 25%). The most likely pathway for incorporating nitrate into cloud droplets is dissolution of gaseous HNO3. The ratio of ammonium to sulfate in cloud residuals was similar to that in cloud-free air.

o Organic to sulfate ratios in cloud droplet residuals were lower than in aerosol particles in nearby cloud-free air, demonstrating that the pre-cloud aerosols were externally mixed in the near-source region examined in this study and suggesting selective activation of sulfate-dominated particles relative to organic-dominated.

- Concentrations of isoprene and several related species greatly exceeded values that would be expected from biogenic sources. As concentrations of other biogenic compounds were much lower, these observations suggest a previously unrecognized anthropogenic source of isoprene that may serve as a precursor of secondary aerosol formation. (L. M. Alexander)

- Aerosol optical thickness as determined by HSRL commonly exhibited considerable (>20%) small scale (~30 km) variability in the Oklahoma City and SGP regions (R. A. Ferrare).

- Determination of heights of planetary boundary layer and entrainment zone by remote sensing with the HSRL lidar (R. A. Ferrare, C. A. Hostetler)

- Ambient aerosol extinction (550 nm) derived from in situ measurements on the on G-1, CIRPAS Twin Otter, and ARM IAP Cessna aircraft agreed closely (10%) with values obtained by remote sensing with the HSRL (E. Andrews, J. A. Ogren).

- Aerosol size distributions by measured by three different instruments using different physical principles (optical, mobility) showed remarkable agreement especially for diameter above 200 nm (J. Olfert).

The following abstracts have been submitted for presentation at the Fall 2007 meeting of the American Geophysical Union, Session A38: Cloud Effects on Aerosols.

- Alexander, L.M., Newburn, M., Hubbe, J., Berg, L., Berkowitz C.M., Springston, S.R., Senum, G.I. Lee, Y-N., Andrews, E., Measurement of the VOC Environment from an Aircraft Platform during an Aerosol-Cloud Interaction Study Near Oklahoma City

- Andrews, E., Lee, Y-N., Alexander, L., Ogren, J.A., Hubbe, J.M., Aerosol optical and chemical properties within and without clouds during an airborne field campaign in central Oklahoma

- Berkowitz, C. M., Berg, L.K., Ogren, J.A, Hostetler, C.A., Ferrare, R., Hubbe, J., An Overview of the Cumulus Humilis Aerosol Processing Study

- Lee, Y.-N., Alexander, L., Newburn, M., Jayne, J., Hubbe, J., Springston, S., Senum, G., Andrews, E., Ogren, J., Kleinman, L., Daum, P., Berg, L. and Berkowitz, C. M., Aerosol Chemical Composition and its Effects on Cloud-Aerosol Interactions during the 2007 CHAPS Experiment

- Nussbaum, N., Dubey, M.K., Mazzoleni, C., Gramann, J., Feingold, G., Schmidt, S., Hubbe, J., Springston, S., Arnott, P., McCubbin, I., Alexander, L., Seinfeld, J. and Berkowitz, C., Aerosol Optical Properties during GoMACCS and CLASIC: Evidence of Cloud Processing and Scavenging

- Obland, M.D., Cook, A.L., Ferrare, R.A., Hair, J.W., Harper, D.B., Hostetler, C.A., Rogers, R.R., Initial High Spectral Resolution Lidar Results From the Cumulus Humilis Aerosol Processing Study (CHAPS) and Cloud and Land Surface Interaction Campaign (CLASIC)

ASP to study aerosols off Chile in 2008

DOE Program Manager for ASP, Ashley Williamson, has announced that ASP will conduct a study of aerosol chemical and microphysical properties with special reference to their ability to serve as CCN in conjunction with the planned VAMOS Ocean-Cloud- Atmospheric-Land Study (VOCALS) to be conducted under the auspices of NSF off the coast of Chile in October 2008.

The study will focus on how aerosol chemical and microphysical properties, and the ability of aerosol particles to act as CCN, differ between remote marine air-masses and marine air-masses that have been influenced to varying degrees by anthropogenic aerosols, and on how these differences in aerosol properties influence the microphysical properties of the clouds that form in these different environments. The study area is impacted to varying degree by aerosols from smelting operations.

The project will be conducted with the DOE G-1 research aircraft off the west coast of Chile in a climatologically important, but poorly understood region of the globe where extensive areas of marine clouds are prevalent (coverage ~70% during the month of October). This region is the location of one of the largest and most persistent subtropical stratocumulus cloud decks in the world. It is formed because the Andes Mountains provide a sharp barrier to the generally westerly zonal flow in the region resulting in strong winds parallel to the coasts of Chile and Peru. This causes an intense upwelling of deep water to the surface causing the sea surface temperature (SST) to be low. The low SST, in combination with warm dry air aloft, results in the formation of a persistent layer of marine stratocumulus clouds. This cloud layer helps maintain the cool SST resulting in tight couplings between the upper ocean and the atmosphere.

The data collected during this study will allow examination of the relationship between aerosol composition, size, and CCN activity; between CCN loading and activity and cloud droplet microphysics; between cloud droplet microphysics and cloud radiative properties (first indirect effect studies); and between cloud droplet microphysics and the formation of drizzle (second indirect aerosol effects studies). The data will also be used to examine the validity of recently developed parameterizations of cloud microphysical processes and properties designed for use in GCMs, and to develop the physical insight needed to develop more complete and sophisticated parameterizations of these quantities.

Other major participants in the VOCALS study will include the NSF C-130 aircraft; and the NOAA R/V Ronald H Brown (RHB). The C-130 will provide detailed in-situ measurements of cloud microphysics, gas and aerosol physicochemical properties, lower tropospheric structure, and MBL turbulence, in addition to passive and active cloud and precipitation remote sensing measurements. A major focus will be on Lagrangian experiments designed to document the lifecycle of open cell cloud structures. The RHB will provide atmospheric, oceanographic and air-sea exchange datasets. Atmospheric measurements will include in-situ surface meteorology, rawinsonde profiles, and gas/aerosol physicochemical properties. Remote sensing measurements of cloud and precipitation will be made from the RHB using active millimeter and centimeter radars, a ceilometer, and a passive microwave radiometer.

Several other platforms will provide additional important datasets especially at the land ocean boundary. A comprehensive near-coastal sampling strategy will include atmospheric thermodynamic and dynamic measurements with a Chilean Air Force Twin Otter), a Chilean research vessel, an elevated land site on the Chilean coastal range to measure cloud and aerosol microphysical properties, and enhanced meteorological observations at sites along the Chilean seaboard. A group of Peruvian researchers are proposing a set of enhanced atmospheric measurements and an oceanographic/atmospheric coastal cruise with the Peruvian research vessel.

The key contact person on this project is Pete Daum. Further information is available in a white paper "ASP participation in the fall 2008 VOCALS study". [2007-03-13]

ARM to conduct Indirect and Semi-Direct Aerosol Campaign in 2008

Attention is called to an intensive cloud and aerosol observing system that will be deployed to the ARM North Slope of Alaska (NSA) locale for three weeks in April 2008. This period has been chosen because it is during the International Polar Year when many ancillary observing systems will be collecting data that will be synergistic for interpreting the Indirect and Semi-Direct Aerosol Campaign (ISDAC) data. The study will include aircraft measurements of temperature, humidity, total particle number, aerosol size

distribution, aerosol hygroscopicity, cloud condensation nuclei concentration, ice nuclei concentration, optical scattering and absorption, updraft velocity, cloud liquid water and ice contents, cloud droplet and crystal size distributions, cloud particle shape, and cloud extinction. In addition to these aircraft measurements, we propose surface deployment of a spectroradiometer for retrieving cloud optical depth and effective radius.

Lead scientist for ISDAC is Steve Ghan, who is an investigator in both ASP and ARM. ASP investigators wishing further information about ISDAC are invited to contact Steve. Further information is available at http://science.arm.gov/isdac/. [2007-03-13]

ASP data policy finalized

As a DOE Program ASP adheres to the data policies of the Department of Energy and the Climate Change Science Program, one of the objectives of which is to maximize the scientific return from multi-investigator field campaigns. As such it is the policy of ASP to assure the availability and usability of data collected in ASP field campaigns. This requires timely submission of data to an archive and adherence to data formats. The goals of ASP's data policy are to provide data and supporting information to ASP investigators in readily readable files, widen the audience of potential end-users, and foster collaborations among campaign participants and with outside users. To a large extent, the success of ASP will be measured by its ability to disseminate information that is needed to address questions on global climate change. It is a shared responsibility of all participants to help achieve this goal, and the hope is that this can be done in a way that is not overly burdensome to individual investigators. To this end ASP has established a data policy that applies to measurements made during multi-investigator field campaigns. This policy applies to investigators who receive financial support from ASP or who receive in-kind support such as the use of platforms or facilities. ASP investigators and prospective collaborators are encouraged to familiarize themselves with the policy and to adhere to its guidelines. [2007-03-13]

Representing aerosol processes in global climate models

A paper entitled "Aerosol Properties and Processes: A Path from Field and Laboratory Measurements to Global Climate Models" by Steve Ghan and Steve Schwartz has been published in the *Bulletin of the American Meteorological Society*. The paper describes the DOE strategy for improving representation of the properties, processes, and effects of tropospheric aerosols in global climate models. The strategy begins with a foundation of field and laboratory measurements that provide the basis for modules describing specific aerosol properties and processes. These modules are then integrated into regional aerosol models, which are evaluated by comparing with field measurements. Issues of scale are then addressed so that the modules can be applied to global aerosol models, which are evaluated by comparing with satellite retrievals and other observations. Finally, the validated set of modules is applied in global climate models for multi-century simulations. This strategy is expected to be applied to successive generations of global climate models.

The paper may be downloaded from the BAMS website here. [2007-10-09]

ASP Field Projects

The following are quick links to the web pages of future and recent ASP Field Projects.

VOCALS - ASP Chile, October, 2008.
ASP study to be conducted in conjunction with NSF VAMOS Ocean-Cloud- Atmospheric-Land Study.

CHAPS - Cumulus Humilis Aerosol Processing Study Oklahoma, June, 2007.
ASP study to be conducted in conjunction with DOE ARM CLASIC (Cloud and Land Surface Interaction Campaign).

MAX-Tex - Megacity Aerosol eXperiment - Texas Houston, August - September, 2006.
ASP Study conducted in conjunction with TEXAQS II (Second Texas Air Quality Study) / GoMACCS (Gulf of Mexico Atmospheric Composition and Climate Study).

MAX-Mex - Megacity Aerosol eXperiment - Mexico City Mexico, March, 2006.
ASP study conducted as part of MILAGRO (Megacity Initiative: Local and Global Research Observations).
Overview Presentation (10 M PDF file)

MASE - MArine Stratus Experiment California, July, 2005.
ASP study conducted in conjunction with DOE ARM MASRAD MArine Stratus Radiation, Aerosol, and Drizzle study.

Data from prior field studies are available from the **ASP data archive**

Items of interest

ASP Publications web page. Please visit the ASP publications page. This page is intended to list all publications of research conducted under ASP support from the year 2000 forward. An innovation is that links are provided, via the DOI numbers of the publications, to the publishers' pages for the publications. This readily allows the published paper to be downloaded, provided one has, or one's institution has, an electronic subscription to the journal. [2005-09-29]

ASP Data archive. Attention is called to the ASP data archive. ASP investigators (and others) who wish to download data from previous ASP field projects are welcome to do so. The data from most prior ASP field projects may be downloaded by FTP from the ASP data server ftp://ftp.asd.bnl.gov/pub/ASP Field Programs/. Data from the 2003 ARM - ACP Aerosol IOP may be obtained from http://iop.archive.arm.gov/arm-iop/. It is strongly recommended that prospective users of these data contact the originator of the data set of interest, who will very likely be able to provide invaluable guidance to the use of the data. [2005-11-02; note change in ftp address, 2006-04-13]

Adjunct Science Team. ASP welcomes the participation in ASP activities by scientists not funded by ASP who wish, under funding from other sources, to engage in field measurements, modeling, or other collaborative activities with the Program. Scientists who participate in ASP activities in this way will constitute the Adjunct Science Team of the Program and are encouraged to attend Science Team meetings and otherwise contribute to formulation of studies to achieve ASP goals. Members of the Adjunct Science Team will be expected to share their data in accordance with ASP data policies and will likewise be entitled to access to the data of other ASP investigators in interpreting measurements and preparation of scientific papers and the like. For further information or to participate in this activity interested scientists are invited to contact Ashley Williamson or Steve Schwartz. The current Adjunct Science Team investigators and their projects have been announced and the list is available here. Several of these projects are funded by the Department of Energy through the National Institute for Climatic Change Research (NICCR) (formerly National Institute for Global Environmental Change, NIGEC). [2005-08-31]

Scientific Background for the Atmospheric Science Program

Atmospheric aerosols affect climate in multiple ways. They scatter and absorb shortwave (solar) radiation and to lesser extent longwave (thermal infrared radiation). In particular upward scattering of shortwave radiation reduces the solar energy absorbed by the earth-atmosphere system, thereby exerting a cooling effect on climate. Atmospheric aerosol particles also serve as the seed particles for

cloud droplet formation (cloud condensation nuclei, CCN). In this capacity atmospheric aerosols are essential to the Earth's climate system as we know it, exerting major influences on the hydrological cycle and associated energy flows, as well as the influences on radiative energy fluxes associated with absorption and reflection of long- and shortwave radiation by clouds.

As is well recognized, the loading, geographical distribution, and physical and chemical properties of atmospheric aerosols have changed substantially over the industrial period as a consequence of human activities including energy production and use. In recent years it has become recognized that these changes are of sufficiently great scope, globally, to exert, in the aggregate, influences on the earth's radiation budget that are comparable in magnitude to the influences of enhanced concentrations of greenhouse gases. Locally in regions of high industrial activity the radiative influences can be substantially greater than these greenhouse influences. Absorption of radiation by aerosols, while exerting a lesser influence on the top-of-atmosphere radiation budget, nonetheless exerts substantial influence on the surface radiation budget. Influences of anthropogenic aerosols on cloud radiative properties are likewise thought in the aggregate to be comparable to radiative influences of enhanced greenhouse gases. However all of these influences are considered highly uncertain, much more uncertain than the corresponding climate influences of enhanced greenhouse gases.

The foregoing considerations are now recognized to limit the ability to quantify human influences on climate change over the industrial period, in turn limiting the ability to evaluate the performance of climate models over this period or to infer climate sensitivity empirically from observed temperature changes together with the total radiative forcing over the industrial period. [2004-11-12]

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Science News

ASP investigators wishing to propose additional candidate field projects are invited to prepare a similar description and forward it to Steve Schwartz or Ashley Williamson for posting and discussion.

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Research Highlights

ASP investigators are invited to submit copies of or links to recent publications or preprints of their work in ASP to be highlighted here.

Presentations

ASP investigators are invited to submit copies of or links to recent presentations of their work in ASP to be highlighted here.

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Program News

ASP Deliverables. One of the most important descriptors of a program within the DOE Climate Change Research Division or, more broadly, within the US Climate Change Science Program is the list of deliverables that the program may be expected to produce. These deliverables are distinguished into two categories:

Science Deliverables are specific advances that form the scientific basis for program deliverables. Science deliverables range from data sets (from field and laboratory studies) comprising the primary results of these studies, to scientific papers published in the peer-reviewed literature that document the findings on which ASP models and parameterizations are based and the associated uncertainties. These science deliverables will generally be completed in a given funding cycle; the current funding cycle extends over FY 2005-FY 2007.

Program Deliverables are the products that will be delivered by the program as a whole. These program deliverables incorporating these advances in science will generally be completed in following three-year funding cycle, i.e., during FY 2008-FY 2010.

A statement of ASP deliverables is being prepared, and a draft of this statement is available for examination. ASP investigators are encouraged to review this document to ascertain whether it adequately sets out the deliverables of their projects and to advise Steve Schwartz and Peter Lunn of any suggested additions or corrections. Additionally investigators are requested to review the Program Deliverables and propose any modifications. [2005-05-05]

ASP Science Steering Committee. Membership of the ASP Science Steering Committee is as follows:

Peter H. Daum	BNL
J. Christopher Doran	PNNL
Jeffrey S. Gaffney	ANL
Steven J. Ghan	PNNL
Chris A. Hostetler	NASA Langley
Sasha Madronich	NCAR
Luisa T. Molina	MIT
John H. Seinfeld	Caltech

For more information see the ASP Website Archive. [2005-03-02]

ASP Topical Working Groups. Based on identification of major classes of research interest, several topical working groups have been organized within ASP. These working groups will server as informal meeting grounds (often virtual) for ASP participants to exchange ideas and findings. Also these working groups can help to identify and focus measurement needs for field projects in support of mutual objectives, and other common science support requirements. The topical working groups and their chairs are as follows:

New Particle Formation	Peter McMurry
Gas-particle Interactions	Rahul Zaveri

Optical Properties	Jim Barnard
Cloud-aerosol Interactions	Peter Daum
Modeling	Jerome Fast

ASP investigators, members of the ASP Adjunct Science Team, and others with interest in these areas of investigation are invited to contact the pertinent working group chair. [2005-10-06]

Program News Archive

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Science Projects

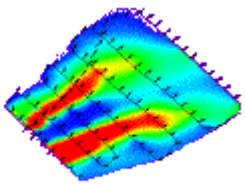
Thirty two science projects are supported by ASP. Project titles and names of participating investigators are listed here together with links to project abstracts. [2006-05-26]

Science Support

Five Science Support projects are supported by ASP, mainly in support of field activities to be conducted in this program. Project titles and principal investigator names are listed below together with links to descriptions of the projects.


Research Aircraft Facility

The DOE Research Aircraft Facility at the Pacific Northwest National Laboratory (PNNL) consists of an advanced sampling platform, the PNNL Grumman Gulfstream I (G-1) and associated flight crew, technical and engineering support staff, and state-of-the-art instrumentation, available for support of missions in the DOE Atmospheric Science Program.


Core Measurements

The ASP Core Measurements Project at Brookhaven National Laboratory (BNL) provides a set of field measurements essential to field projects in ASP examining aerosol properties and processes pertinent to radiative forcing. Research-grade instruments are operated on behalf of the program for aerosol precursors, atmospheric oxidants, aerosol microphysical properties, aerosol composition and ancillary trace gases. This equipment has been field proven and meets the unique requirements of aircraft-based sampling, primarily aboard the DOE Research Aircraft Facility. Multiple associated science support activities include providing quality assurance, aircraft installation, trained operators, 'first-look' data in the field, final-data reduction, and archival distribution of final-form results. [2005-05-05]

Instrumentation and Deployment in Support of ASP Field Studies at Argonne National Laboratory (ANL) provides ASP field projects with surface towers, SODARS, wind profilers, radiosonde launch capability, 570 nm LIDAR, multi-filter

shadowband radiometers, nephelometers, UVB radiometers and the like, to characterize horizontal and vertical transport, atmospheric stability, boundary layer dynamics and mixing height, aerosol optical depth, aerosol vertical distribution, downwelling direct and diffuse irradiance, and aerosol light scattering. [2005-06-02]


Meteorological and Aerosol Measurements

The Meteorological and Aerosol Measurements activity at Pacific Northwest National Laboratory provides measurements of the meteorological conditions and ground truth observations of selected aerosol properties during ASP field campaigns. Available Meteorological instruments include a 915 Mhz radar wind profiler, a doppler sodar, a rawinsonde system, and surface weather stations. Aerosol instruments include an optical particle counter, condensation particle counters, nephelometers, and particle soot absorption photometers. [2005-08-24]

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ASP Science Team Meetings

Brief accounts of previous ASP Science Team Meetings, including links to the presentations, are given in the ASP Website Archive.

Prior Program Components

The following research components comprised the ASP Program prior to reconfiguration of the program to focus on aerosol radiative forcing of climate change. The links provided lead to web pages which provide program descriptions, summaries of findings, lists of publications and the like. [2004-11-12]

Atmospheric Chemistry Program

Atmospheric Chemistry Program. Examining atmospheric chemistry on regional to continental scales, including aerosol genesis and the fate of tropospheric air pollutants. Laboratory studies to examine rate and equilibrium processes. Field studies conducted with aircraft and surface measurements to examine reaction chemistry, advective influences on the chemical composition of chemistry, and air-surface exchange processes. Model development to represent chemistry and dynamics on regional to global scales.

Environmental Meteorology Program

Environmental Meteorology Program. Investigating the mechanisms responsible for vertical transport and mixing in the lower atmosphere, improving ability to measure quantities required for understanding of these processes, and developing improved treatments of vertical transport and mixing for use in conceptual and numerical models.

Tropospheric Aerosol Program

Tropospheric Aerosol Program. Developing the fundamental scientific understanding required to construct tools for simulating the life cycle of tropospheric aerosols by conducting closely linked field, modeling, laboratory, and theoretical studies focused on the processes controlling formation, growth, transport, and deposition of tropospheric aerosols.

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NARSTO

NARSTO is a public/private partnership, whose membership spans government, the utilities, industry, and academe throughout Mexico, the United States, and Canada. Its primary mission is to coordinate and enhance policy-relevant scientific research and 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. ASP supports NARSTO by providing funding for the NARSTO Management Coordinator and by the ASP Program Director serving on the NARSTO Executive Steering Committee. It is the intent of ASP to make use of the NARSTO data archive and that ASP data policy conform with NARSTO policy. [2005-05-06]

ACCESS

ACCESS (Atmospheric Chemistry Colloquium for Emerging Senior Scientists) is a program for researchers within two years of receiving their Ph.D. degrees in atmospheric chemistry or a related disciplines. Held biennially, in odd numbered years, in conjunction with the Gordon Research Conference in Atmospheric Chemistry, this program consists of a three-day meeting in which the participants present their research to each other and to representatives of the leading federal agencies responsible for support of research in atmospheric chemistry. ACCESS participants also attend the Gordon Research Conference, which immediately follows. The sponsoring agencies are the U.S. Department of Energy, the U.S. Environmental Protection Agency, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, and the National Science Foundation. [2006-04-03]

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