

**A61F MCC: 102 Saturday 1020h****Transport and Effects of Anthropogenic Pollutants: ITCT 2K2, Including PEACE II (joint with GC)**

**Presiding: F Fehsenfeld**, NOAA Aeronomy Laboratory; **A H Goldstein**, University of California, Berkeley

**A61F-01 1020h****Aerosol optical properties at Trinidad Head - ITCT and beyond**

John A Ogren<sup>1</sup> (303-497-6210; john.a.ogren@noaa.gov)

Elisabeth Andrews<sup>1,2</sup> (eandrews@cmdl.noaa.gov)

Ellsworth Dutton<sup>1</sup> (edutton@cmdl.noaa.gov)

Patrick J Sheridan<sup>1</sup> (ps Sheridan@cmdl.noaa.gov)

Anne Jefferson<sup>1,2</sup> (ajefferson@cmdl.noaa.gov)

<sup>1</sup>Climate Monitoring and Diagnostics Laboratory, NOAA, 325 Broadway, Boulder, CO 80305, United States

<sup>2</sup>CIRES, University of Colorado, MB-216, Boulder, CO 80309, United States

The far northern coast of California is believed to be a good location to monitor aerosols being transported to the US from across the Pacific Ocean. In mid-April 2002, NOAA/CMDL deployed a mobile aerosol system and began a year-long effort to measure aerosol optical properties at Trinidad Head (THD), California. The start of these aerosol measurements coincided with a month-long field program for the Intercontinental Transport and Chemical Transformations (ITCT) program, which was designed to investigate how atmospheric pollutants from one continent can influence air quality and regional and global climate on other continents. Although Trinidad Head is a remote coastal site, during the first six months of deployment, it was impacted by emissions from a variety of non-marine aerosol sources. During the ITCT program in April and May 2002, several incursions of Asian dust were observed at the site, while in August 2002, smoke from forest fires in southern Oregon was detected at THD. Additionally, air mass trajectories show occasional transport to the site from urban Northern California. While background light scattering and absorption (for diameter < 10 microns) at the site are approximately  $20 \text{ Mm}^{-1}$  and  $1 \text{ Mm}^{-1}$  respectively, dust events increased the scattering and absorption to a factor of four higher than the background amount and the intense smoke events at the site resulted in both scattering and absorption values an order of magnitude higher than the background values. The single scattering albedo is 0.98 for background conditions and 0.97 and 0.94 respectively for the dust and smoke events observed at the site. Particle hygroscopicity decreased during the smoke and dust events. While the THD surface site is ideally located for investigating a variety of aerosol types, the surface-based measurements have also demonstrated the importance of measuring vertical profiles of aerosol properties. For example, during one dust event, the dust resided in a layer aloft which was detected by the column optical depth instrument but not by the in-situ instruments at the surface, while during another dust event both in-situ and column measurements indicated the presence of dust. Both events were consistent with predictions from an aerosol forecasting model (Navy Aerosol Analysis and Prediction System (NAAPS)). Long term aerosol measurements at THD will, in conjunction with radiation and chemistry measurements contribute to understanding the role of inter- and intra-continental transport of aerosol particles in climate forcing and air quality.

URL: <http://www.cmdl.noaa.gov/aero/net/thd/index.html>

**A61F-02 1035h****Measurements of the Mass of Volatile and Semi-Volatile Aerosol Components as a Function of Particle Size Using Aerodyne Aerosol Mass Spectrometers During ITCT at Trinidad Head**

James D Allan<sup>1</sup> (441612002490); Keith N Bower<sup>1</sup> (441612003952; keith.bower@umist.ac.uk); Mohammed Rami Alfarra<sup>2</sup> (441612003960; m.r.alfarra@student.umist.ac.uk); Hugh Coe<sup>1</sup> (441612003935; hugh.coe@umist.ac.uk); John T Jayne<sup>3</sup> ((978) 663-9500; jayne@aerodyne.com); Manjula R Canagaratne<sup>3</sup> ((978) 663-9500; mrcana@aerodyne.com); Hacene Boudries<sup>3</sup> ((978) 663-9500; hboudries@aerodyne.com); Doug Worsnop<sup>3</sup> ((978) 663-9500; worsnop@aerodyne.com)

<sup>1</sup>UMIST, Physics Department UMIST P. O. Box 88, Manchester, Man M60 1QD, United Kingdom

<sup>2</sup>UMIST, Chemical Engineering Department UMIST P. O. Box 88, Manchester, Man M60 1QD, United Kingdom

<sup>3</sup>Aerodyne Research, Aerodyne Research Inc 45 Manning Road, Billerica, MA 01821-3976, United States

Two Aerodyne Aerosol Mass Spectrometers (AMS) were operated at Trinidad Head, CA, during the ITCT experiment in March and April 2002. The instruments deliver quantitative mass loadings of volatile and semi-volatile components of sub micron particles, including sulfate, nitrate, ammonium and the volatile organic fraction. Total mass of these components is delivered in near real time, together with mass size distributions of key components. We present preliminary data from the experiment in a range of clean air periods and show that the sub-micron aerosol particles are composed primarily of sulfate with a significant and variable contribution from organics that appear to be internally mixed. There is little nitrate in the accumulation mode aerosol measured. During the field deployment several novel modifications were made to the instruments. The heated surface, used to thermally ablate the aerosol particles in the sample beam, was operated at a significantly higher temperature in one of the instruments than is usual in order to observe sea salt particles. Sea salt aerosol were measured in a quantitative way but the heater ablation temperatures and modifications to the ablation/ionisation region resulted in the instrument response to other components being reduced and the organic fraction being considerably more fragmented. The temperature of the aerosol inlet, an aerodynamic lens, in one of the instruments was cycled throughout the experiment to both investigate the water associated with the ambient particles measured. The experiment also allowed us to investigate the effects on water on the divergence of the aerosol beam in the vacuum. The results indicate that adding significant amounts of water to the particles by cooling the lens leads to improved focussing of particles through the instrument. Lastly, a small Nd-YAG laser was used to measure the scattered light intensity of the particles in the vacuum chamber at 532 nm. This extra measurement offers a further method of sizing the particles by pulse height analysis of the scattered light. From these measurements information on the extent of internal mixing of the particles may be obtained. We will describe how these modifications were implemented and give examples to illustrate these various modes of operation.

**A61F-03 1050h****Continuous Aerosol Elemental Analysis at 5 Sites During the 2002 Intercontinental Transport and Chemical Transformation Experiment (ITCT-2K2)**

Steven S Cliff<sup>1</sup> ((530)754-8943; ssciff@ucdavis.edu)

Michael P Jimenez-Cruz<sup>1</sup> ((530)304-8253; mpjimenezcruz@ucdavis.edu)

Kevin D Perry<sup>2</sup> ((801) 581-6138; perry@met.utah.edu)

<sup>1</sup>DELTA Group-Department of Applied Science, One Shields Avenue, Davis, CA 95616, United States

<sup>2</sup>Meteorology Department, 135 S 1460 E, Rm 819, Salt Lake City, UT 84112-0110, United States

Continuously sampling 8- and 3-stage rotating drum impactors (RDI) were deployed from mid-March through late-May at 5 sites during the 2002 Intercontinental Transport and Chemical Transformation Experiment (ITCT-2K2). These sites include: Trinidad

Head, CA (8-RDI), Trinity Alps, CA (8-RDI), Lassen National Park, CA (8-RDI), Crater Lake National Park, CA (3-RDI), and the White Mountain Research Station, CA (WMRS, 3-RDI). Sampling and analysis spanned at least March 21 through May 23, 2002 at all sites. The samplers continuously collect aerosol on a lightly greased Mylar substrate in either 3 or 8 size modes representing 2.5-1.1, 1.1-0.3, 0.3-0.1 microns (3-RDI) and 10-5, 5-2.5, 2.5-1.1, 1.1-0.75, 0.75-0.56, 0.56-0.34, 0.34-0.26, 0.26-0.09 microns (8-RDI). Quantitative elemental analyses for Na-U in 3-hour periods using synchrotron source x-ray fluorescence (s-XRF) were performed on beamline 10.3.1 at the Advanced Light Source-Lawrence Berkeley National Laboratory. Shorter time intervals (to as little as 45 minutes) may be performed for some samples. In all cases samplers were co-located with other sampling and monitoring equipment to maximize information from these sites. Three sites, Lassen, Trinity, and Crater Lake, are existing Interagency Monitoring for Protected Visual Environment (IMPROVE) sampling sites with relatively long-term records (up to 10 years) for aerosol data. The Trinidad Head site was a supersite for ITCT-2K2 with a vast array of coincident gaseous and aerosol sampling and analysis instruments.

Preliminary results indicate long-range aerosol impact at several sites during ITCT-2K2 as evidenced by soil and trace species data. The lack of local soil events at several sites due to precipitation and/or snow covered ground during much of the sampling period aids differentiation between local and long-range (e.g. Asian source) derived impact. Results from our analyses (more than 15,000 samples) in conjunction with back-trajectory data will be presented.

**A61F-04 1105h****Lagrangian Transport Model Forecasts as Useful Support of the Flight Planning During the Intercontinental Transport and Chemical Transformation 2002 (ITCT 2k2) Measurement Campaign**

Caroline Forster<sup>1</sup> (49-8161-714748;

forster@forst.tu-muenchen.de); Owen Cooper<sup>2</sup> (1-303-497-3599; ocooper@al.noaa.gov); Andreas Stohl<sup>1</sup> (stohl@forst.tu-muenchen.de); Sabine Eckhardt<sup>1</sup> (eckhardt@forst.tu-muenchen.de); Paul James<sup>1</sup> (james@forst.tu-muenchen.de); Ed Dunlea<sup>3</sup> (dunlea@post.harvard.edu); Dennis K. Nicks<sup>3</sup> (dnicks@al.noaa.gov); John S. Holloway<sup>3</sup> (holloway@al.noaa.gov); Gerd Hübler<sup>3</sup> (gerd@al.noaa.gov); David D. Parrish<sup>3</sup> (dparrish@al.noaa.gov); Tom B. Ryerson<sup>3</sup> (tryerson@al.noaa.gov); Michael Traener<sup>3</sup> (mtraener@al.noaa.gov)

<sup>1</sup>Department of Ecology, Technical University of Munich, Am Hochanger 13, Freising 85354, Germany

<sup>2</sup>Cooperative Institute for Research in Environmental Sciences (CIRES) University of Colorado/NOAA Aeronomy Laboratory, 325 Broadway, Boulder, CO 80305, United States

<sup>3</sup>NOAA Aeronomy Laboratory, 325 Broadway R/AL7, Boulder, CO 80305-3328, United States

In this study, the Lagrangian tracer transport model FLEXPART is shown to be a useful forecasting tool for the flight planning during the ITCT 2k2 (Intercontinental Transport and Chemical Transformation 2002) aircraft measurement campaign. The advantages of this model are that it requires only a short computation time, has a finer spatial resolution and does not suffer numerical diffusion compared to chemistry transport models (CTMs). It is a compromise between simple trajectory calculations and complex CTMs that makes best use of available computer hardware. During the campaign FLEXPART provided three-day forecasts for four different anthropogenic CO tracers: Asian, North American, Japanese, and European. The forecasts were based on data from the Aviation model (AVN) of the National Center for Environmental Prediction (NCEP) and relied on the EDGAR emission inventory for the base year 1990. In two case studies, the forecast abilities of FLEXPART are analysed and discussed by comparing the forecasts with measurement data, results from the post analysis modelling, infrared satellite images, and backward trajectories calculated with two different Lagrangian trajectory models. It is shown that intercontinental transport and dispersion of pollution plumes were qualitatively well predicted, and the aircraft could successfully be directed into the polluted air masses.

A61F-05 1120h

### Regional-Scale Modeling and Emissions Analyses in Support of the IGAC Spring 2002 ITCT Field Experiment in the Eastern Pacific and Western US

Gregory R Carmichael<sup>1</sup> (319-335-3332; gcarmich@engineering.uiowa.edu); Youhua Tang<sup>1</sup> (319-335-0264; ytang@cgrer.uiowa.edu); David Streets<sup>2</sup> (630-252-3448; dstreets@anl.gov); Itsushi Uno<sup>1</sup> (81-92-583-7771); Jung-Hun Woo<sup>1</sup> (319-335-2063); Hiram Levy<sup>3</sup> (609-452-6581; hl@gfdl.gov); Larry Horowitz<sup>3</sup>

<sup>1</sup>The University of Iowa, CGRER 424 IATL, Iowa City, IA 52242, United States

<sup>2</sup>Argonne National Laboratory, 9700 S Cass Ave, Argonne, IL 60439, United States

<sup>3</sup>Princeton University, Geophysical Fluid Dynamics Lab PO Box 308, Princeton, NJ 08542, United States

<sup>4</sup>Kyushu University, Research Institute for Applied Mechanics Kasuga-Kouen 6-1 Kasuga 816-8580, Fukuoka 816-8580, Japan

The Chemical weather FORcasting System (CFORS) was used in support of the IGAC Intercontinental Chemical Transport (ICTC) field experiment conducted in the Eastern Pacific during Spring 2002. CFORS consists of 3 major components: 1) 3D mesoscale calculations of meteorological fields using the RAMS model with on-line air-mass and emission markers; 2) detailed 3-dimensional photochemical calculations using the STEM chemical/transport model (CTM); and 3) an emissions module that intimately links emitted amounts and activities to the transport and chemistry analysis. During the intensive field campaign period, the model was run in forecast-mode and we provided a large suite of forecast products to support the execution of the field experiment (both the aircraft and ground measurements). Details of the emissions work can be found on: [http://www.cgrer.uiowa.edu/people/woojh21/data\\_itct\\_emission.htm](http://www.cgrer.uiowa.edu/people/woojh21/data_itct_emission.htm).

In this paper we will describe the modeling system used and the products produced, and we will present an analysis of the modeling results. Specifically we present a comparison of forecasted results with observations taken on the NOAA P3 aircraft and at the Trinidad Head surface site. Meteorological and chemical data will be compared. In addition the model results will be used to provide an assessment of the relative importance of Asia vs North America influences. Results from hind-cast simulations using analyzed meteorological inputs will also be presented, and used to discuss how model performance improves with better input information.

URL: <http://www.cgrer.uiowa.edu/people/ytang/>

A61F-06 1135h

### Interpretation of Ground-based and Airborne Observations of Long-Range Transport in the Pacific Northwest During Spring 2002 Using the GEOS-CHEM Global Chemical Transport Model

Lyatt Jaegle<sup>1</sup> (206-685-2679; jaegle@atmos.washington.edu); Qing Liang<sup>1</sup> (qing@atmos.washington.edu); Dan Jaffe<sup>2</sup> (djaffe@u.washington.edu); Peter Weiss<sup>2</sup> (pweiss@bothell.washington.edu); Anna McClintick<sup>2</sup> (amcclintick@u.washington.edu); Heather Price<sup>2</sup> (hprice@u.washington.edu); Isaac Bertschi<sup>2</sup> (isaacpb@u.washington.edu); James Dennison<sup>2</sup> (dennison@u.washington.edu); Julie Snow<sup>2</sup> (jsnow@u.washington.edu); Daniel J Jacob<sup>3</sup> (dj@sol.harvard.edu)

<sup>1</sup>Department of Atmospheric Sciences, University of Washington, BOX 351640, Seattle, WA 98195-1640, United States

<sup>2</sup>Interdisciplinary Arts and Sciences, University of Washington-Bothell, 18115 Campus Way NE, Bothell, WA 98011-8246, United States

<sup>3</sup>Harvard University, 29 Oxford Street, Cambridge, MA 02138, United States

Observations of CO and ozone were obtained at a ground site on the western tip of Washington State (Cheeka Peak Observatory, 48.3°N; 124.6°W) from March 11 to May 31 2002. These observations were complemented by thirteen flights providing profiles of CO and ozone up to 6 km altitude. Both ground-based and airborne measurements were part of PHOBEA-II (Photochemical Ozone Budget of the Eastern North Pacific Atmosphere-II) taking place at the same time as the NOAA ITCT (Intercontinental Transport and

Chemical Transformations) 2002 mission. Here we will interpret these observations using the GEOS-CHEM global chemical transport model driven by assimilated meteorology corresponding to the time of observations. Our analysis will focus on four elements: (1) validating the GEOS-CHEM model through detailed comparisons with the PHOBEA-II observations; (2) examining the origin of CO and ozone in the Northeastern Pacific by using 'tagged' tracers of source regions; (3) investigating rapid long-range transport events of Asian and European emissions identified by the model; (4) placing spring 2002 in the context of ground-based and airborne observations obtained during PHOBEA and PHOBEA-II over four previous years (1997, 1998, 2000, 2001).

A62A MCC: Hall D Saturday 1330h

### Transport and Effects of Anthropogenic Pollutants: Trace-P III Posters (joint with GC)

Presiding: J Crawford, NASA Langley Research Center; D Jacob, Harvard University

A62A-0111 1330h POSTER

#### Testing Fast Photochemical Theory During TRACE-P Based on Measurements of OH, HO<sub>2</sub>, NO<sub>2</sub>, and CH<sub>2</sub>O

Jennifer Olson<sup>1</sup> (j.r.olson@larc.nasa.gov); James Crawford<sup>1</sup> (j.h.crawford@larc.nasa.gov); Douglas Davis<sup>2</sup> (dpiyard@aol.com); Gao Chen<sup>2</sup> (gaochen@eas.gatech.edu); William Brune<sup>3</sup> (brune@essc.psu.edu); Hartwig Harder<sup>3</sup> (harder@mpch-mainz.mpg.de); Monica Martinez<sup>3</sup> (martinez@mpch-mainz.mpg.de); Fred Eisele<sup>4</sup> (eisele@ucar.edu); Lee Mauldin<sup>4</sup> (mauldin@ucar.edu); Chris Cantrell<sup>4</sup> (cantrell@ucar.edu); Alan Fried<sup>4</sup> (fried@acd.ucar.edu); Jim Walega<sup>4</sup> (walega@ucar.edu); Brian Heikes<sup>5</sup> (zagar@notos.gso.uri.edu); Yutaka Kondo<sup>6</sup> (kondo@atmos.rcast.u-tokyo.ac.jp); David Tan<sup>2</sup> (tan@easlidar.gtri.gatech.edu); Scott Sandholm<sup>2</sup> (scott.sandholm@eas.gatech.edu); Richard Shetter<sup>4</sup> (shetter@ucar.edu); Barry Lefler<sup>4</sup> (lefer@ucar.edu); Glen Sachse<sup>1</sup> (g.w.sachse@larc.nasa.gov); Melody Avery<sup>1</sup> (m.a.avery@larc.nasa.gov); John Barrick<sup>1</sup> (j.d.barrick@larc.nasa.gov); Donald Blake<sup>7</sup> (drblake@uci.edu); Hanwant Singh<sup>8</sup> (hsingh@mail.arc.nasa.gov); Frank Flocke<sup>4</sup> (ffl@acd.ucar.edu); Robert Talbot<sup>9</sup> (robert.talbot@unh.edu)

<sup>1</sup>NASA Langley Research Center, MS 483, Hampton, VA 23681

<sup>2</sup>Georgia Institute of Technology, Department of Earth and Atmospheric Sciences, Atlanta, GA 30332

<sup>3</sup>Pennsylvania State University, Department of Meteorology, University Park, PA 16802

<sup>4</sup>National Center for Atmospheric Research, Atmospheric Chemistry Division, Boulder, CO 80305

<sup>5</sup>University of Rhode Island, Graduate School of Oceanography, Narragansett, RI 02882

<sup>6</sup>University of Tokyo, Research Center for Advanced Science and Technology, Meguro-Tokyo 153-8904, Japan

<sup>7</sup>University of California-Irvine, Department of Chemistry, Irvine, CA 92717

<sup>8</sup>NASA Ames Research Center, MS 245-5, Moffett Field, CA 94035

<sup>9</sup>University of New Hampshire, Institute for the Study of Earth, Oceans, and Space, Durham, NH 03824

NASA's TRACE-P (Transport and Chemical Evolution over the Pacific) mission provided measurements of several key short-lived photochemical species from both the DC-8 and P-3B aircraft. Measurements also included the critical longer-lived constituents and physical parameters necessary to theoretically predict the concentrations of these short-lived species. Measurements of OH, HO<sub>2</sub>, and NO<sub>2</sub> were conducted on both aircraft, while CH<sub>2</sub>O was measured only from the DC-8. Measurements of these species will be compared with box model calculations to assess our understanding of fast photochemical cycling. Onboard the DC-8, additional measurements of H<sub>2</sub>O<sub>2</sub>, CH<sub>3</sub>OOH, and

oxygenated NMHCs were available. Calculations show the impact of oxygenated NMHCs on photochemical cycling to be significant only for the upper troposphere at altitudes above 8 km, thus, the examination of HO<sub>x</sub> (OH+HO<sub>2</sub>) measurements from the P-3B, which has a flight ceiling of 7 km, is not compromised by the absence of oxygenated NMHC measurements. There are some biases between model-predicted peroxides and measurements for the DC8, but a sensitivity analysis shows that magnitude of these discrepancies have minimal impact on HO<sub>x</sub> predictions. This suggests that although there are no peroxide measurements available on the P3B aircraft to use as model constraints, theoretical analysis of HO<sub>x</sub> on the P3B can still be examined with some confidence. Results will address both the broad level of model-measurement agreement as well as evidence for trends in agreement for special environments, e.g., in-cloud data, pollution plumes, and stratospheric air.

A62A-0112 1330h POSTER

#### Three-Dimension Analysis of the TRACE-P Aircraft Observations using the STEM Regional-Scale Chemical Transport Model

Youhua Tang<sup>1</sup> (3193350264; ytang@cgrer.uiowa.edu); Gregory R Carmichael<sup>1</sup> (gcarmich@engineering.uiowa.edu); Itsushi Uno<sup>2</sup> (iuno@riam.kyushu-u.ac.jp); Jung-Hun Woo<sup>1</sup> (woojh21@cgrer.uiowa.edu); Gakuji Kurata<sup>3</sup> (kurata@eco.tut.ac.jp); Sarah K. Guttikunda<sup>1</sup> (sguttiku@cgrer.uiowa.edu); David G Street<sup>4</sup> (dstreets@anl.gov); Richard E. Shetter<sup>5</sup> (shetter@ucar.edu); Hao Huang<sup>1</sup> (huang@cgrer.uiowa.edu)

<sup>1</sup>Center for Global and Regional Environmental Research, University of Iowa, Iowa City, IA 52242, United States

<sup>2</sup>Research Institute for Applied Mechanics, Kyushu University, Kasuga Park 6-1, Fukuoka 816-8580, Japan

<sup>3</sup>Department of Ecological Engineering, Toyohashi University of Technology, Toyohashi 441-8580, Japan

<sup>4</sup>Argonne National Laboratory, DIS/900, 9700 South Cass Avenue, Argonne, IL 60439, United States

<sup>5</sup>National Center for Atmospheric Research, P.O. Box 3000, Boulder, CO 80307, United States

A three-dimensional regional-scale chemical transport model, STEM, coupled with a detailed radiation computation scheme is used to calculate the transport and chemistry of trace gases and aerosols in Asia during the TRACE-P experiment. Extensive comparison of calculated results with aircraft observations will be presented, and it is found that many of the important features observed in the behavior of trace gases and aerosols are captured by the model. Based on these results, we evaluate various factors influencing the distribution of trace gases during the TRACE-P period.

Clouds are shown to have a large impact on photolysis rates during the observation period of TRACE-P. Clouds are shown to decrease J[NO<sub>2</sub>] by 22% below clouds and enhance photolysis rates by 33% from 1 km to 10km. Clouds also exert a dominant influence on short-lived species, like OH and HO<sub>2</sub>. For example, clouds reduce OH by 23% at altitudes below 1km and increase OH by 25% above 1km. Asian aerosols contain large amounts of carbonaceous material, inorganic components such as sulfates, and mineral oxides. These aerosols significantly influence J-values and photochemical processes. When averaged over all TRACE-P DC-8 and P-3 scientific flights, the aerosol influence via affecting J-values is to reduce OH by 41% below 1km, and by 24% above 1km. Aerosols have a stronger impact on longer-lived chemical species than clouds do, because aerosols tend to be co-emitted with precursors and have a longer contact time with the polluted air masses than clouds do. The accumulated aerosol impact generally is to reduce O<sub>3</sub> concentrations by about 6ppbv in the biomass plumes emitted from Southeast Asia. In megacity plumes, aerosols can increase NO<sub>x</sub> concentration by 40% via reducing its photolytic loss, and reduce NO<sub>2</sub> concentration by a similar amount.

Biomass burning plays a very important role during March of 2001. Our simulations show that biomass emissions contributed 15% of CO and 69% of Black Carbon during the TRACE-P period. The increasing emissions from Asian megacities compose a distinguished feature in this region. Nearly all NO<sub>x</sub> peak values measured by TRACE-P aircrafts are associated with megacity plumes. Model results are used to classify megacity influences on the observations, and this information is used to test regional emission estimates. Results of this analysis are presented and discussed.