JANUARY 2009

CMAS Quarterly

The Quarterly Newsletter of the Community Modeling and Analysis System

Upcoming Events

(All are at UNC unless otherwise indicated)

8th Annual CMAS Conference:

- October 19-21, 2009

SMOKE Training:

- January 26-28, 2009
- April 20-22, 2009

BenMAP Training:

- January 26-28, 2009
- April 27-29, 2009

CMAQ Training:

- January 29-30, 2009
- April 23-24, 2009

Can't come to us for training? Have the same courses taught on-site at your location. Visit http://www.cmascenter.org/training/ classes.cfm or e-mail cmas@unc.edu.

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Credits

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CMAQ Developers Meetings

For the past two years, the CMAS Center has coordinated ad hoc meetings between CMAQ model developers from EPA and those from the community who are actively participating in examining the application of CMAQ and evaluating its performance. The meetings have focused on how CMAS can improve communication within the model development community. They have taken place during the annual CMAS conferences in order to benefit from the presence of the conference attendees, especially those who travel from far away.

At the 7th Annual CMAS Conference last October, about 25 developers attended the developers meeting with CMAS and EPA-CMAQ scientists. Afterward, CMAS launched a trial wiki site for the participating developers to use for contributing their ideas and suggestions. After the trial period is over, CMAS will announce this site to the CMAS community at large.

The CMAS External Advisory Committee (EAC) has expressed support for the developers meeting concept. CMAS is working with EPA to determine whether to hold a broader developers meeting following the 8th Annual CMAS Conference to be held October 19-21, 2009. As you are aware, CMAQ undergoes an extensive review process by selected experts from the community every couple of years, to assess and update various functions of the model in terms of its science and relevance to decision making. It is important to note that the developers meetings do not replace this peer review process, but instead allow a broader spectrum of users to exchange ideas on model development and on potential targets for emerging applications.

CMAS Launches Training Program on Use of Satellite Data for Air Quality Modeling and Data Analysis

Space-based remote sensing instruments are rapidly emerging as powerful tools for detecting and monitoring air pollution events over large regions for extended periods of time. Some of these systems, such as the Total Ozone Mapping Spectrometer (TOMS), have been in orbit on several different spacecraft and transmitting global data for decades. Others, like the Moderate Resolution Imaging Spectroradiometer (MODIS), were launched in the past three to six years; their reliability is now being proven via comparisons of their satellite-derived products with observations from collocated ground stations.

During the annual CMAS conference in October 2008, a special session on "Air Quality Measurements and Observational Studies" was devoted to presenting state-of-the-science applications of remote sensing and conventional measurements of air quality parameters. The session, which drew many conference attendees, included presentations made by NASA and EPA scientists and by other community members working on remote sensing for air quality modeling and data analyses.

CMAS is working with NASA and EPA to develop a new training course on the use of remote sensing data for air quality modeling applications. We expect to hold a preliminary version of the course during the spring of 2009; it will be attended by a limited number of experts on air quality modeling and remote sensing. After revising the course based on input from the attendees, CMAS will announce the training to the community at large.

(article continued on p. 2)

CMAS Launches Training Program (cont'd.)

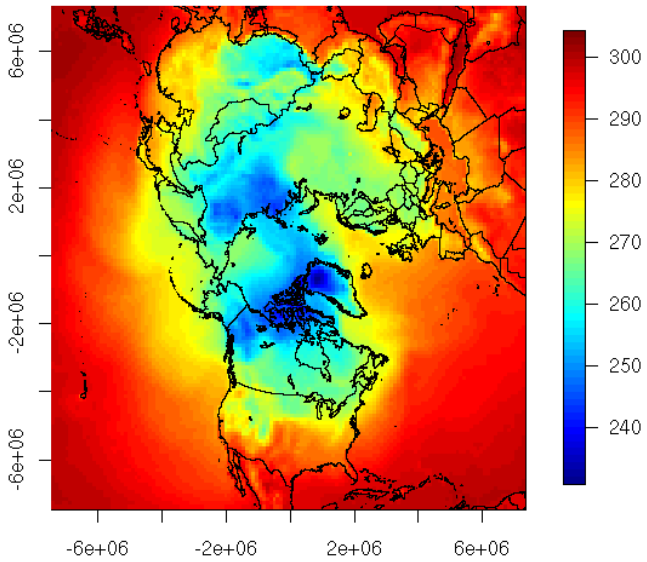
The course will begin with an introduction to the satellite products and to the "basics" for downloading and visualizing the data, including imagery interpretation. It will then cover the tools that allow comparisons and simultaneous visualizations with model data, primarily the Visibility Information Exchange Web System (VIEWS) Technical Support System (TSS). The VIEWS/TSS is a web-based, integrated, relational database system developed to support data analysis and air quality decision-making by state, tribal, local, and Federal air agencies and Federal land managers. It currently uses multiscale air quality analyses of ground-based data to support planning that is designed to meet the National Ambient Air Quality Standards (NAAQS) and reduce regional haze in Federal Class I areas. The training course will also address the use of NASA's Giovanni, another Web-based application for comparisons and simultaneous visualizations with model data, but at lower spatial resolutions. Among the parameters to be displayed and analyzed during the training are Ozone Monitoring Instrument (OMI) tropospheric NO_2 column, MODIS aerosol optical depth, and OMI aerosol index. The training will also include extensive hands-on sessions on how to use the various data sets and tools for analysis of air quality events.

Farewells and Hellos for EAC

The CMAS Center expresses deep appreciation for the service of two departing External Advisory Committee members, Mr. Bob Imhoff (BAMS) and Dr. Jeff McQueen (NOAA), who participated in the EAC during the past few years. CMAS also welcomes two new members to the committee: Dr. Alice Gilliland (EPA) and Dr. Prakash Karamchandani (AER). Both Dr. Gilliland and Dr. Karamchandani bring to the EAC extensive expertise in air quality model development, evaluation, and application. ***Prakash Karamchandani*** is a Senior Project Manager in the Air Quality Division of Atmospheric and Environmental Research, Inc. (AER) in San Ramon, CA. He has over 20 years of experience in air quality modeling, including 3-D grid modeling, reactive plume modeling, and plume-in-grid modeling. Dr. Karamchandani is an active participant in the CMAQ development community. He has developed the Advanced Plume Treatment (APT) versions of CMAQ and CMAQ-MADRID, which incorporate the SCICHEM reactive plume model for plume-in-grid treatment. He has also recently developed parallelized versions of CMAQ-APT and CMAQ-MADRID-APT to take advantage of multiprocessor workstations. ***Alice Gilliland*** is chief of the Applied Modeling Branch within ORD's Atmospheric Modeling and Analysis Division. Her areas of expertise include regional-scale air quality modeling, evaluation of airborne emissions and models, and climate and air quality interactions. Over the past five years, she has been responsible for the CMAQ model evaluation program. Dr. Gilliland's team uses both traditional and novel types of operational evaluation methods, and they have developed and released the Atmospheric Model Evaluation Toolkit to facilitate more advanced approaches for model evaluation and analysis. Also over the past five years, Dr. Gilliland has led EPA's Climate Impacts on Regional Air Quality (CIRAQ) project.

CMAQ Application on the Northern Hemisphere

CMAS Center scientists are working with EPA scientists to develop a CMAQ application on the Northern Hemisphere. This entails using a polar stereographic projection for CMAQ and the relevant meteorological and emissions processors, including the Meteorology-Chemistry Interface Processor (MCIP). The ability to use a single model on the hemisphere will alleviate many shortcomings of nesting CMAQ with a global chemistry model. It provides chemical and dynamic consistency at the various scales, and avoids the uncertainties in lateral boundary conditions that could be introduced by differences in map scale projections or vertical resolutions, or by the differences in formulations of the chemistry and meteorology between the global-scale and regional-scale models. CMAQ hemispheric modeling will be very useful in studying intercontinental pollutant transport and in climate/air quality modeling.



MCIP/WRF modeled surface temperature for 3/16/06.