

**JULY  
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:**

- July 20-22, 2009
- October 14-16, 2009
- January 25-27, 2010

### **CMAQ Training:**

- July 23-24, 2009
- October 22-23, 2009
- January 28-29, 2010

### **BenMAP Training:**

- October 26-28, 2009
- January 20-22, 2010

### **Satellite/AQ Training:**

- October 14-16, 2009
- February 1-3, 2010

**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](mailto:cmas@unc.edu).



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## **The CMAS Center: A New Era of Support to the Air Quality Modeling Community**

The University of North Carolina at Chapel Hill has been awarded a new EPA contract to continue the operation of the CMAS Center for the next seven years. We are very excited about this opportunity to continue supporting the CMAS community. The "CMAS experience" is a success story that has fulfilled many of the needs of local, national, and international air quality community members. Just as the community has grown over the years, the contributions of the CMAS Center have increased as well. The open-source modeling and analysis systems we support—CMAQ, SMOKE, MCIP, PAVE, BenMAP, AMET, VERDI, and Spatial Allocator—are being utilized for many kinds of air quality applications around the world; scientists from almost 100 countries are registered members of CMAS. Through the CMAS Help Desk and user forums, users can easily stay up-to-date on these modeling systems, and can share their own knowledge in a timely manner. CMAS has facilitated the participation of users at all levels of experience, from those who are just beginning their careers through those who have become experts in their fields.

The dynamic CMAS training program is always ready to respond to users' needs. Besides the CMAQ, SMOKE, and BenMAP training programs held quarterly at UNC, CMAS scientists have traveled to various parts of the world to conduct these training sessions on site at users' locations. Upon request, we have also presented training on meteorological drivers, such as WRF. Over the past year, CMAS trainers have traveled to various locations in the U.S. and to Brazil and Colombia. As an additional method of offering training and consultation, CMAS has established a visiting scientists program for individuals or small groups who want to visit the CMAS headquarters in Chapel Hill to work with CMAS scientists on specific air quality topics that are relevant to their applications. Last year we hosted scientists from India, and this fall a group of Chinese scientists will be spending three weeks at the CMAS Center for training and consultation on various air quality modeling and analysis tools.

CMAS is developing new, more advanced courses that will provide follow-up training for those who have taken the basic courses on

SMOKE and CMAQ. Also, last spring we introduced a new course, in collaboration with NASA and EPA, on the use of satellite data in air quality modeling. The course was given to a selected group of scientists as a beta test, to get feedback from participants on possible refinements before opening it to the community at large. The satellite training class will help users take advantage of the wide variety of air quality datasets that can be derived from satellite data to evaluate and fill data gaps for air quality modeling applications. A training class will be offered to all community members on October 14-16, 2009.

With the help of its External Advisory Committee (EAC), CMAS communicates the needs of users to the developers of various modeling platforms, especially CMAQ. To take advantage of the large gathering of community members at the annual CMAS conferences, we have organized ad hoc meetings between users and developers so that they can exchange ideas. During this year's conference in October, we are considering having the users/developers meeting in conjunction with the EAC meeting on Thursday,

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[www.cmascenter.org](http://www.cmascenter.org)

October 22, immediately following the conference. We expect that many EPA scientists will participate, as well as some of the European CMAQ users. Dedicating a full day to the ad hoc meeting will allow more time to discuss future CMAQ developments as well as CMAS priorities and resources. Please watch the CMAS web site for more information on this meeting.

The 8<sup>th</sup> Annual CMAS Conference will be held October 19-21, 2009. This year we once again received a record number of papers (138 for oral and poster presentations). The CMAS conference is a major event for community members, who come to meet peers, to learn, and to present new advances in air quality modeling. We strive to make each conference reflect the state of science, and to bring new avenues to the community's attention. For instance, last year's session on satellite data for air quality modeling prompted CMAS, NASA, and EPA to work together to develop a new course (discussed above) on the use of satellite data for air quality applications. That conference session also caught the interest of many community members, as shown by the increased number of papers we received on the same topic for this year's conference.

This year we are introducing a new conference session, "Instrumented Photochemical Modeling,"

that is devoted to research papers on tools used to examine source contributions to ozone, PM<sub>2.5</sub>, and air toxics. Among these tools are the decoupled direct method (DDM), source apportionment, adjoint modeling, and traditional brute-force emissions adjustments. These techniques are useful to the policy community as potential tools for assessing source culpability or the sensitivity of pollutants to source controls, so that this information can then be used to mitigate the pollutants' impacts (for example, the effect of regional haze on human and ecosystem health).

While the discussion above focused on the operational aspects of CMAS, research and development is another critical function that is facilitated by the CMAS Center to support the modeling community. In cooperation with EPA, CMAS scientists have pursued many research avenues, including new developments in hemispheric modeling, sea salt modeling, variable grid techniques, hybrid modeling approaches, integrated chemistry-meteorology modeling, direct and indirect effects of aerosols, remote sensing of land surface radiation, and development of urban databases for meteorology and air quality.

The future for the CMAS Center and the community it serves looks very promising. Working with you, we intend to explore

## Please Share Your Ideas with CMAS Peers and CMAS Center

To enhance communication among CMAQ model developers and users, CMAS launched a wiki site, <http://cmas.wikidot.com/>, that allows members to post their suggestions and ideas. We created this site based on an excellent suggestion made in the ad hoc model developers meeting held during the 7<sup>th</sup> Annual CMAS Conference last fall; EAC members also thought very favorably of the concept. The site gives step-by-step instructions on how to join the CMAS wiki, post comments, and participate in discussions. Please contact the CMAS Applications and Training Coordinator, Zac Adelman ([zac@unc.edu](mailto:zac@unc.edu)), if you have any questions.

As we approach our annual fall meeting, we strongly encourage you to post your thoughts on the wiki site. These will be helpful to us in setting the agenda for the next ad hoc developers/users meeting, allowing us to better tailor it to the needs of the community.

new directions for extending CMAS services and capabilities. For example, we intend to

- develop online educational materials for community members to use in educating graduate students and novice modelers about the strengths and weaknesses of the meteorology, emissions, and air quality modeling systems;
- implement a code browser for the CMAS-supported products to help developers understand the structure and functionality of the codes, starting with a CMAQ code browser and later expanding to SMOKE and other products (if requested by the community);

- expand the utility of the CMAS model output archive to a broader community by developing file format converters to reformat CMAQ output data to native netCDF, HDF, Shapefile, and ASCII formats; and
- use data subsetting functions to allow the extraction of specific variables, subdomains, and/or layer ranges from the available datasets.

We at the CMAS Center would like to take this opportunity to thank you, the CMAS users and also the current and past members of the EAC, for your support and contributions toward our goals during the past eight years. We look forward to continuing our work with all of you.