

## Upcoming Training Events:

- CMAQ –  
Jan. 26-27, 2004
- SMOKE –  
Jan. 28-30, 2004
- Intro to MIMS –  
Jan. 27 or 28, 2004
- Advanced MIMS –  
Jan. 27-28, 2004
- CMAQ –  
Apr. 19-20, 2004
- SMOKE –  
Apr. 21-23, 2004
- Intro to MIMS –  
Apr. 20 or 21, 2004
- Advanced MIMS –  
Apr. 20-21, 2004

Can't come to us for training? Have the same courses taught on-site at your office location by the same experienced trainers. Contact [cmas@unc.edu](mailto:cmas@unc.edu) for more information.



## Recent and Upcoming Model Releases:

- CMAQ 4.3 – Sept. '03
- SMOKE 2.0 – Sept '03
- SMOKE 2.1 – Early '04



## Credits:

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## Workshop Brings Together a Community

In October, 160 people attended the second annual CMAS Models-3 User's Workshop in Research Triangle Park, NC. The workshop's theme was "One Atmosphere, One Community, One Modeling System: Models-3."

The workshop began with a keynote address by Judith Katz, Regional Air Director for EPA Region 3, who spoke on the important regulatory issues relevant to our community and issued some challenges for the future of air quality modeling.

Over the next two days, both students and professionals gave presentations on all aspects of the modeling community.

Longer talks occurred over lunch on Monday and Tuesday. John Bachmann, Associate Director for Science/Policy and New Programs for EPA/OAQPS, and Larry Cupitt, Associate Director for Health at EPA/NERL, offered their thoughts on the key issues facing our community, and provided insight into developing partnerships to assist with air quality modeling.

On Tuesday evening, a poster session and reception gave attendees an opportunity to interact with each other and discuss the events of the workshop, as well as to review the work of the poster presenters.

The final session of the conference had a variety of panelists addressing multiple issues, including computational efficiency, Regional Planning Organizations (RPOs), and CMAS priorities.

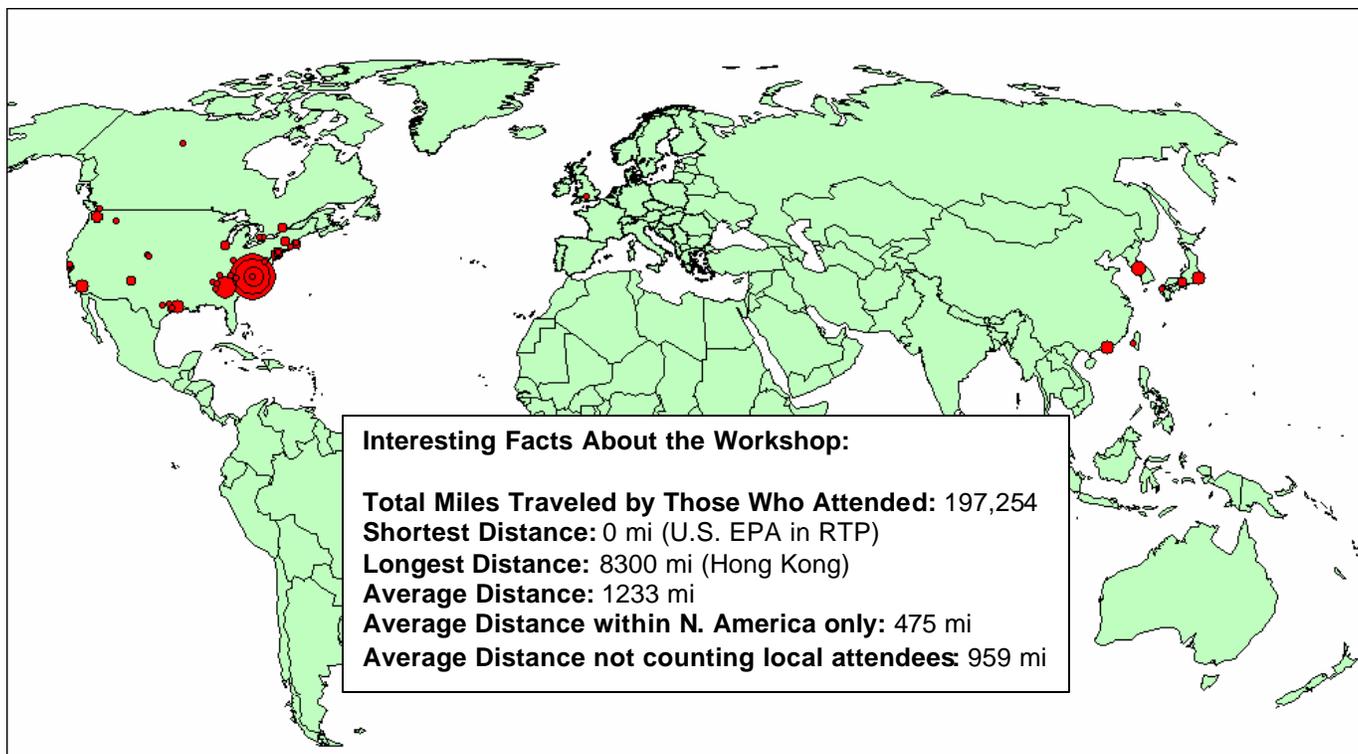
The conference concluded with a discussion on how to improve upon the existing model for CMAS and how to revise the workshop format for next year. Following the workshop, the CMAS External Advisory Committee met to further discuss the issues addressed by participants during the panel discussions.

We hope everyone enjoyed the workshop and look forward to seeing you again next year.



*Conference attendees JoEllen Brandmeyer, Byeong-Uk Kim, Carey Jang, Harvey Jeffries, Gail Tonnesen, Gerry Gipson, and Zac Adelman take a break between sessions.*

## CMAS Community Expands Across the Globe



### New Director Tapped to Lead CMAS into Year 3

Adel Hanna, the former CMAS Outreach Director, has been named the new Director of the CMAS for 2003-2004. Hanna replaces Bob Imhoff, who served during the first two years. "We hope to continue the success that Bob instilled with the CMAS and build upon his vision of CMAS." The new Outreach Director is Ken Galluppi. Uma Shankar and Sarav Arunachalam have been named co-Software Development Coordinators, and Kim Hanisak will serve as Events Coordinator.

*Map showing the distribution of workshop attendees (above). The size of the red dots is scaled based on the number of attendees from each location.*

The 2003 CMAS Models-3 User's Workshop was certainly an international affair, with attendees coming from Japan, Korea, China, Taiwan, Canada, and throughout the United States. In addition to the 160 individuals participating in the workshop, 10 more made the trip especially for the multiple training classes offered in conjunction with the workshop.

Of the 160, 88 were from outside of the Research Triangle Park vicinity (Research Triangle Park, Raleigh, Durham, or Chapel Hill, NC). The

larger contingents came from Georgia Institute of Technology, University of California – Riverside, Princeton University, Hong Kong University of Science and Technology, and of

course local residents from the U.S. EPA, Carolina Environmental Program, and the North Carolina Department of Environment and Natural Resources (NCDENR).

### CMAS Recognizes Members

Three CMAS community members were honored at the workshop for their contributions to the community modeling paradigm: Christian Hogrefe (University at Albany, SUNY), Elizabeth Bailey (TVA), and Eric Giroux (National Research Council of Canada). Each was awarded a plaque inscribed "To recognize your outstanding achievements in advancing and promoting the ideals of the community modeling paradigm, the Community Modeling and Analysis System presents this award of appreciation." At each annual workshop, the CMAS staff will recognize similar achievements.

## CMAS Functions Debated, Prioritized

One of the panel discussions at the workshop addressed a list of functions (see below) that were part of the original CMAS proposal and noted which of these should have the focus for the coming year. Of these, most attendees and panelists agreed that two should have the highest priority: developing funding and creating a more defined vision and outreach for the CMAS.

- Develop Funding
- Facilitate Contributions
- Hardware Resources
- Information Exchange
- Research and Development
- Software Maintenance
- Staff Resources
- Technology Transfer
- Testing
- Tools
- Training
- User Support
- Vision/Outreach

We at the CMAS recognize that it belongs to the entire community. We want to hear from you regarding what you think our primary responsibilities should be and how we can better work together to serve the air quality modeling community.

The first two years of the CMAS centered on the training, user support, and basic structure building aspects of the organization. We feel that there is a good model in place to build upon for the rest of the proposed CMAS functions.

We cannot do it alone, however. We need and would appreciate your support and knowledge. Please send your comments to [cmas@unc.edu](mailto:cmas@unc.edu) or complete the CMAS user survey online at [www.cmascenter.org](http://www.cmascenter.org).

## Future Goals Set for CMAS Software Guidelines

On the evening of October 27, 2003, the CMAS Software Coordinators (Uma Shankar and Sarav Arunachalam) met with various members of the Models-3 developers community. The group discussed issues related to developing a software guidelines document to assist developers and users, and identified a list of action items that could be accomplished within the time frame of a few weeks to a few months. The software guidelines document will address a broad range of issues that include coding guidelines

for new modules, protocols for review of new code/modules submitted to the CMAS, and protocols for software release and level of benchmarking needed. The two priority action items that came out of this meeting were

(a) to develop a beta archive for CMAQ that will include developers' versions of new modules submitted to the CMAS so that these versions are available to the user community for further testing and evaluation in a reasonable time frame, and

(b) to provide detailed release notes on model changes to the user community. For example, to supplement the brief release notes that accompanied the September 2003 release version of CMAQ, detailed release notes are available at: [http://www.epa.gov/asmdnerl/models3/Release\\_doc\\_09\\_12\\_03.pdf](http://www.epa.gov/asmdnerl/models3/Release_doc_09_12_03.pdf).

If you have additional thoughts on the scope of the software guidelines document, please contact the CMAS Software Coordinators at [m3dev@listserv.unc.edu](mailto:m3dev@listserv.unc.edu).

### More Workshop Facts...

**Largest Group:**  
U.S. EPA

**Largest Nonlocal Group:**  
Georgia Tech

### Universities:

- Georgia Tech
- Hong Kong Univ. of Science & Technology
- Kangwon National Univ.
- Lamar Univ.
- MIT
- National Cheng Kung Univ.
- North Carolina State
- Princeton
- Rutgers
- Texas A&M
- Tokyo Univ. of Science
- Univ. of Alabama - Huntsville
- UC-Riverside
- Univ. of Chicago
- Univ. of Colorado
- Univ. of Connecticut
- Univ. of Houston
- Univ. of Maryland
- UNC-Chapel Hill
- Univ. of Washington
- Vanderbilt
- Washington State Univ.

**RPOs:**  
LADCO, VISTAS, WRAP

**U.S. States:**  
CA, CO, CT, DC, GA, IL, KY, MA, MD, NC, NJ, NM, NY, PA, TN, TX, WA,

**Countries:**  
Canada, China, England, Japan, Korea, Taiwan, United States



### **From the Help Desk CMAQ Tip:**

Annual CMAQ simulations can be expedited by running the year in quarters. Using sufficient spin up days to wash out the effects of initial conditions and then overlapping the quarterly simulations to replace the spin up periods can reduce run times by a factor of four.

### ***We're on the Web!***

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

*Training information,  
user support, model  
downloads, and more!*

*Look for the new and  
improved CMAS website to  
be launched soon!*

## **A New Climate Change Application for SMOKE, CMAQ**

SMOKE and CMAQ are often used to simulate air quality under current and historic meteorological conditions. Over the past year, Christian Hogrefe from the Atmospheric Sciences Research Center at the University at Albany, SUNY, has used SMOKE and CMAQ to study the potential effects of changes in global and regional climate as well as regional land use on ozone air quality. His work is part of the New York Climate and Health Project (NYCHP), sponsored by the U.S. EPA under STAR Grant #R-82873301 and directed by Professor Patrick Kinney at the School of Public Health at Columbia University.

The objective of NYCHP is to link models for global and regional climate, land use and cover, and air quality to examine the potential public health impacts of heat and air pollution under two different scenarios of climate change and regional land use in the 2020s, 2050s, and 2080s in the Eastern

U.S., with a special focus on the New York City metropolitan region. To accomplish this objective, NYCHP brings together researchers from Columbia University, the NASA-Goddard Institute for Space Studies, Duke University, Hunter College, the New York State Department of Environmental Conservation, and the University at Albany.

At the CMAQ workshop, Dr. Hogrefe presented results of CMAQ simulations that were performed for five consecutive summer seasons for both current and future climate scenarios. The regional climate fields for these CMAQ simulations were generated by NYCHP co-investigators by coupling the GISS global atmosphere-ocean model to the MM5. The results showed that the GCM/MM5/SMOKE/CMAQ system as implemented in NYCHP captures synoptic-scale and interannual variability of summertime temperatures and ozone in the current climate.

Even with constant anthropogenic precursor emissions, the CMAQ simulations predicted an increase in average and extreme ozone concentrations as a result of climate change. In further simulations, SMOKE was used to process increased ozone precursor emissions that are consistent with the socio-economic assumptions in the future climate scenario. When CMAQ was run with these increased precursor emissions, ozone air quality deteriorated further relative to present-day conditions, but the relative impact of climate change, changes in biogenic emissions, and changes in anthropogenic emissions on ozone air quality varied from region to region. In conclusion, it was found that the GCM/MM5/SMOKE/CMAQ modeling system could be a useful tool for studying the effects of climate change on ozone air quality.

*Send your CMAS-model application experiences to the CMAS Quarterly at [cmas@unc.edu](mailto:cmas@unc.edu).*

## **COMMUNITY MODELING AND ANALYSIS SYSTEM**

Carolina Environmental Program

CB # 6116

The University of North Carolina at Chapel Hill

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