

CMAS ENVIRONMENT

NEWSLETTER OF THE COMMUNITY MODELING AND ANALYSIS SYSTEM

UPCOMING EVENTS

CMAS Conference

13TH ANNUAL CMAS CONFERENCE

OCTOBER 27-29, 2014

2014 Trainings

CMAQ: OCTOBER 30-31

SMOKE: OCTOBER 22-24

New location! Our trainings are now held in the Europa Center at 100 Europa Drive, Chapel Hill, North Carolina, U.S.A.

Can't come to us for trainings?

Have CMAS training courses taught on-site at your location. See <http://www.cmascenter.org/training/classes.cfm> or email cmas@unc.edu for more information.

The CMAS Center to Begin Offering Online Trainings

On August 25, 2014 the CMAS Center entered the world of online education by offering a pilot web-based version of our Introduction to SMOKE training class. Zac Adelman, the CMAS Training and Support Coordinator, is excited about the addition of the online courses to the CMAS training program: "We've been hearing from the community about the need for online course options. Supplementing our existing training program with these online courses will meet a demand from modelers who need training but don't have the resources to attend in-class courses."

Nineteen modelers from the North Carolina Department of Environment and Natural Resources (NCDENR) and the International Center for Integrated Mountain Development (ICIMOD) participated in the week-long SMOKE training that included recorded lectures, hands-on exercises, and interactive live sessions with CMAS trainers. Developed and run by CMAS staff members Liz Adams, Zac Adelman, and B.H. Baek, the SMOKE web training uses the Sakai content management system to serve lecture materials, an online version of the training manual, and access to interactive forums and instant messaging resources.

Linux images pre-configured with the SMOKE training materials and analysis software are provided through the Amazon Web Services (AWS) cloud computing platform. Each student accesses their own AWS

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Thank you Jeanne Eichinger!

Jeanne Eichinger, the CMAS technical editor for the past fourteen years, has decided to pursue early retirement by the end of September 2014. "We at CMAS will always be appreciative of Jeanne's efforts, dedication, and commitment to serving the center and the environmental modeling community and wish her the best in her endeavor" said Adel Hanna, director of CMAS.

Online Trainings, continued from page 1

image to practice configuring and running the SMOKE software. The CMAS trainers can also access each of the student images to help answer questions about the training exercises. Daily virtual office hours feature a live audio/video chat session in which the course participants may interact live with the CMAS trainers.

We are integrating feedback from the pilot course to improve the online SMOKE training materials and develop an online version of the Introduction to CMAQ course. We plan to offer both the online SMOKE and CMAQ classes in early 2015. While we will continue to offer our classroom version of the Introduction to SMOKE and CMAQ courses each April and October, we plan to offer the online courses in January and July. Keep an eye on the CMAS email listservs for an announcement about the January 2015 classes.

CMAS Conference 2014: Best Poster Awards

This year, CMAS will recognize the best two posters presented in the conference during the two poster sessions (October 27 and October 28). Members of the External Advisory Committee (EAC) will visit all the posters presented each day. At that time, the poster presenter will give a brief four to five minute synopsis of the poster. EAC members will make the final decision on the best two posters according to criteria that include originality, clarity, and significance. Winners will be announced at the beginning of the afternoon sessions on October 29. The lead author of each winning poster will be offered free registration in the next CMAS conference (October 5-7, 2015).

Carter reviews development of Gas-Phase Atmospheric Chemical Mechanisms during CMAS conference

CMAS invited Professor Bill Carter of the University of California, Riverside, to present and discuss the state of the science and future developments of chemical mechanisms. He will present during the opening session of the 2014 CMAS conference.

Atmospheric chemical mechanisms are the portions of air quality models used to predict the formation of secondary pollutants due to chemical reactions. Predictive capability is a priority for regulatory or forecast modeling, so mechanism predictions must be evaluated against experimental data. Consistency with accepted scientific data is also important, if only because it reduces chances of giving incorrect predictions when applied to conditions beyond those where it was evaluated, which is usually the case. Unfortunately, there are cases where predictive capability and accepted scientific data and theories appear to be in conflict. Appropriate condensation for the modeling application is important because much condensation reduces both predictive accuracy and scientific validity, while too much detail wastes resources and does not necessarily increase accuracy if the details are uncertain.

The SAPRC gas-phase atmospheric mechanisms provide examples of mechanisms developed with the approach of first developing and evaluating the most chemically detailed mechanisms possible given the available state of knowledge, and then using these as the basis for developing the more condensed mechanisms suitable for particular model applications. Detailed mechanism development requires databases of all known relevant rate constants and branching ratios, estimation methods and reaction generation protocols covering all possible reactions, and mechanism condensation protocols. Mechanism condensation methods, issues, and options are important to modelers because it determines the resource requirements and capabilities of the mechanisms when implemented in models. SAPRC-07 is the version most widely used in current models, though SAPRC-11 with an updated representation of aromatic chemistry is also available. A complete update to SAPRC-11, tentatively designated SAPRC-14, is now underway, with versions with varying levels of detail for airshed model applications being developed. The chemistry updates and condensation options that may have the largest impacts on model predictions will be discussed. General recommendations and thoughts on the future of mechanism development will also be given.

Training at the Hong Kong University of Science and Technology

With the economic boom of recent decades in Asia, air pollution problems are having greater impacts on human health and ecosystems there. Scientists, researchers, state environmental protection agencies, and consulting companies in Asian countries have realized air quality modeling systems are very useful tools for studying, mitigating, and reduction planning of air quality problems.

After over a year of preparation and collaboration with Professor Jimmy Fung, director of the Institute for the Environment at the Hong Kong University of Science and Technology (HKUST), the Community Modeling and Analysis System (CMAS) Center provided a joint training workshop on the air quality modeling system at the Hong Kong University of Science and Technology (HKUST) campus, Clear Water Bay, Kowloon, Hong Kong, on 11-15 November 2013. This training workshop is co-organized by the CMAS Center, the Division of Environment, the Institute for the Environment, and the Department of Mathematics at HKUST. The CMAS team was led by Dr. Aijun Xiu and included Dr. B.H. Baek as the SMOKE instructor and Mr. Alejandro Valencia as the CMAQ instructor.



The training workshop started by everyone briefly introducing themselves followed by Dr. Xiu introducing the CMAS Center including the research and application activities and other training classes offered by it. For the next two and half days, Dr. Baek taught students about the basics of emission data processing, the purpose of the SMOKE model, and how to generate model-ready emission inputs for air quality models, such the CMAQ model. Hands-on exercises performed by the students were guided by Dr. Baek and supported by Dr. Xiu and Mr. Valencia. The training workshop was held on the last two days and provided by Mr. Valencia. It first focused on the foundation of air quality modeling and then how user configuring the CMAQ model on different grids and for different episodes. Then, Mr. Valencia walked the students through the CMAQ hands-on lab sessions with the help of Dr. Xiu and Dr. Baek.

A total of 36 regular trainees and 15 HKUST graduate students and post-doctoral fellows attended the SMOKE/CMAQ training classes. The Hong Kong Environmental Protection Department (HKEPD) sent 17 members to the training workshop. Attendees also included several people from a variety of consulting companies in Hong Kong and two graduate students from the Hong Kong University. Attendees from Mainland China included two scientists at the Institute of Tropical and Marine Meteorology, China Meteorological Administration, Guangzhou, Guangdong Province, China. A faculty member from the School of Science and Technology, University Malaysia Sabah also attended the class. On the last day of the workshop, Professor Fung led the whole group on a tour of the beautiful HKUST campus.

New Special Issue on CMAS Conference this Year

CMAS is in discussion with the Journal of the Air & Waste Management Association for a special issue based on selected papers presented at the 13th Annual CMAS conference. Authors are encouraged to contact CMAS if they would like to submit a paper for the proposed special issue at their earliest convenience, so that we can have an estimate of the number of journal submissions. The deadline for A&WMA paper submission is expected to be December 15, 2014 to give authors ample time to revise their papers following the conference. Authors will pay publication costs according to A&WMA charges.

Important CMAS Links

- ◆ **CMAS Center** www.cmascenter.org
- ◆ **CMAQ Air quality modeling** www.cmaq-model.org
- ◆ **SMOKE Emissions processing** www.smoke-model.org
- ◆ **BenMAP Economic/health impact modeling** www.benmap-model.org
- ◆ **VERDI Visualization and graphics** www.verdi-tool.org
- ◆ **CMAS Technical support** [CMAS Help Desk](#)
- ◆ **Email for technical support** m3user@listserv.unc.edu
- ◆ **Email for announcements** m3list@listserv.unc.edu
- ◆ **Email for software development discussion** m3dev@listserv.unc.edu
- ◆ **Email for BenMAP discussion** benmap_user@listserv.unc.edu
- ◆ **Email for general inquiries** cmas@unc.edu