New Air Quality Model Visualization Tool

CMAS and EPA scientists are collaborating to prepare the first release of the new visualization tool named VERDI, for "Visualization Environment for Rich Data Interpretation." It will be released to the community on the CMAS web site, http://www.cmascenter.org. The release, currently planned for the first quarter of 2008, will include the installation package and accompanying documentation (installation guide, test data set, and user's guide). VERDI will also be included in the CMAS e-mail–based query system that allows users to get answers to operating questions and report any program bugs.

This new visualization tool contains most of the functionality of the Package for Analysis and Visualization of Environmental data (PAVE) as well as additional capabilities. VERDI can be used to examine CMAQ outputs as well as data from the Meteorology-Chemistry Interface Processor (MCIP) and the Weather Research and Forecasting (WRF) Model. A structured reader is included to facilitate development of capabilities for reading other data files. Plots created using VERDI can be exported in a number of formats, including BMP, JPG, TIFF, and PNG. The tool is intended to be community-based; the source code will be publicly available and user community contributions will be encouraged. An overview of the operation of VERDI was presented last month by EPA scientist Donna Schwede during Session 8, "Model Evaluation and Analysis," of the 6th Annual CMAS Conference. An extended abstract of her talk can be seen at http://www.cmascenter.org/conference/2007/abstracts/schwede_session8_2007.pdf.

Updates to the CMAQ Photolysis Module

The on-line photolysis module developed by Frank Binkowski of UNC has been improved in several areas. It now calculates a single scattering albedo (SSA) for a vertical column automatically. This feature was developed to provide for comparison with observations from the new NASA satellites. The SSA values are available for each of the seven wavelength intervals in the module. Cloud effects on photolysis are now calculated within the module rather than being "adjusted" after the fact, as was done previously. The required meteorological inputs are cloud liquid water content (LWC), grid-cell average temperature, pressure, and relative humidity. These variables are used to calculate and estimate the fractional area of cloud cover; the cloud LWC is used to calculate the cloud optical depth.

The actinic flux profile from the improved module compares very favorably with published observationally based data and with other model-derived profiles. The new module can treat multiple cloud layers in the vertical, and uses a simple algorithm from the NCAR Community Climate Model (CCM3) to account for cloud overlap.

Highlights of the 6th CMAS Conference

The 6th Annual CMAS Conference was held October 1-3, 2007, in the Friday Center of the University of North Carolina at Chapel Hill. This year's roster of more then 210 participants set a new attendance record. The number of presentations given was also the highest ever: more than 130 papers were submitted for oral and poster presentation.

External Advisory Committee Membership Changes

The CMAS External Advisory Committee (EAC) members provide guidance and recommendations to the CMAS Center to ensure that it pursues activities that are timely and important to the air quality community. The committee includes representatives from industry, academia, consulting firms, national labs, and federal and state government. Since the inception of CMAS, the EAC has contributed significantly every year to defining the CMAS Center's role and helping it provide maximum benefit to the community.

This year, several EAC members completed their terms of service: David Chock of Ford Research Laboratory, Alan Cimorelli of EPA Region 3, Harvey Jeffries of UNC-Chapel Hill, and Ken Schere of EPA/ORD. Members who served in past years included Pete Breitenbach of TCEQ, Daewon Byun of the University of Houston, Dick Derwent of rdscientific (United Kingdom), Mark Evangelista of EPA/OAQPS, Gary Foley of EPA/NCER, Alan Hansen of EPRI, Ajith Kaduwela of CARB, Mike Koerber of LADCO, and John Vimont of NPS. We at CMAS would like to extend our sincere thanks to all retiring and past members for volunteering their time and effort in supporting CMAS and the air quality community.

This year CMAS welcomes our newest EAC members: Jim Boylan, Fei Chen, Sharon Douglas, and Youn-Seo Koo. Dr. Jim Boylan is manager of the Data and Modeling Unit of the Air Protection Branch within the Georgia Department of Natural Resources. His Ph.D. work included the development and application of a "one-atmosphere" modeling system to simultaneously model ozone, particulate matter, visibility, and acid deposition as part of the Southern Appalachian Mountains Initiative. He is currently responsible for dispersion modeling activities required for PSD permit applications, and modeling to support Georgia's State Implementation Plans for ozone, $PM_{2.5}$, and regional haze. He has served as the VISTAS technical lead for emissions and air quality modeling since 2003, and has chaired the National Inter-RPO modeling workgroup for regional haze.

Dr. Fei Chen leads a team within the Land Surface–Atmosphere Interactions and Modeling Group of the Research Applications Laboratory at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado. He has led the land surface model development effort for the community mesoscale MM5 and WRF models, and currently is Co-Chair of the WRF Land Surface Modeling Working Group.

He has served on several national committees and published over 70 refereed journal articles, including 2 book chapters, and has given many invited scientific talks. His research topics include mesoscale land-atmosphere interactions and their impacts on precipitation processes, surface water, and the energy cycle; land surface and boundary layer processes and their modeling in numerical weather prediction models; the influence of urbanization on weather and air pollution; and modeling the effects of urbanization in mesoscale models.

Ms. Sharon Douglas is a Project Manager in the Air Quality Modeling Group of ICF International. The emphasis of her work has been development and application of air quality modeling tools to assist federal and state agencies and private industry in understanding the causes of air pollution and developing strategies for managing air quality. She is currently involved in the implementation of model-based source attribution tools for ozone, particulate matter, and mercury for CMAQ and other models. Outside of air quality, Sharon's interests include historic preservation and culinary arts.

Dr. Youn-Seo Koo is a Professor in the Department of Environmental Engineering at Anyang

A PDF file containing all the extended abstracts (390 pages; 30 MB) is available at http://www.cmascenter.org/conference/2007/all_extended_abstracts_2007.pdf.

The 7th Annual CMAS Conference is scheduled for October 6-8, 2008. As in previous years, the conference will be bracketed by associated trainings (SMOKE and CMAQ) immediately before and after it. The conference will again be hosted at UNC's Friday Center. Several members of the CMAS community have shown interest in hosting the CMAS conference at their regional sites outside of North Carolina. We are looking into the possibility of hosting the 2009 conference in an alternate location, perhaps on the West Coast or somewhere abroad.

University in Korea. He is also the CEO of Enitech, Ltd., in Anyang. He is chairman of the Modeling Committee of the Korean Society for Atmospheric Environment, and the General Director of the Korean Society of Odor Research and Engineering. Dr. Koo is leading a program for air quality forecasting in Korea using CMAQ.