



# American Association for Aerosol Research

## PARTICULARS

Spring 2010

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## Briefing from the Editor

Max Zhang

First, I would like to thank Pradmod Kulkarni and Brit Holmen, for their past leaderships on *Particulars*, when I was serving in the newsletter committee for the past two years. I am glad to have Sherri Hunt and Satoshi Takahama, two experienced newsletter editors, working with me in the coming year.

Ever since I went to my first AAAR conference in 2000 (St. Louis), I have felt fortunate to be part of the field of aerosol science and technology. All of these areas have been well represented in the last annual conference in Minneapolis. I would like to thank the conference organizers, staff, and students assistants for their hard work in making a great conference!

Speaking of student assistants, I am proud of holding the record, if nobody is challenging me on it, of serving as an AAAR student assistant consecutively for four conferences (2000-2003). Deanna has not officially certified my record yet!

## President's Message

Paul J. Ziemann

This being my first column in Particulars and the beginning of my term as president of AAAR, I would first like to say how honored I am to be leading this outstanding organization this year. Last year was a financial challenge for everyone, including AAAR, and we were fortunate to have Spyros Pandis as our president during that time. Spyros brought years of experience in AAAR governance and exceptional leadership skills to the office at a critical time, and the organization has come through well as a result. I also want to thank Sheryl Ehrman, our Secretary, and outgoing members of the Board of Directors, Jeff Collett, Andrea Ferro, and Jamie Schauer, for their service to AAAR over the past three years. We have, of course, an excellent group of new Board members, Ann Dillner, Jay Turner, and Doug Worsnop, and a new Treasurer-elect, Murray Johnston, and we welcome them. I also want to thank the many new members and chairs of committees who recently accepted my invitation to

serve. I am excited by the amount of new talent and enthusiasm these individuals bring to the task of keeping our society not only running but prospering.

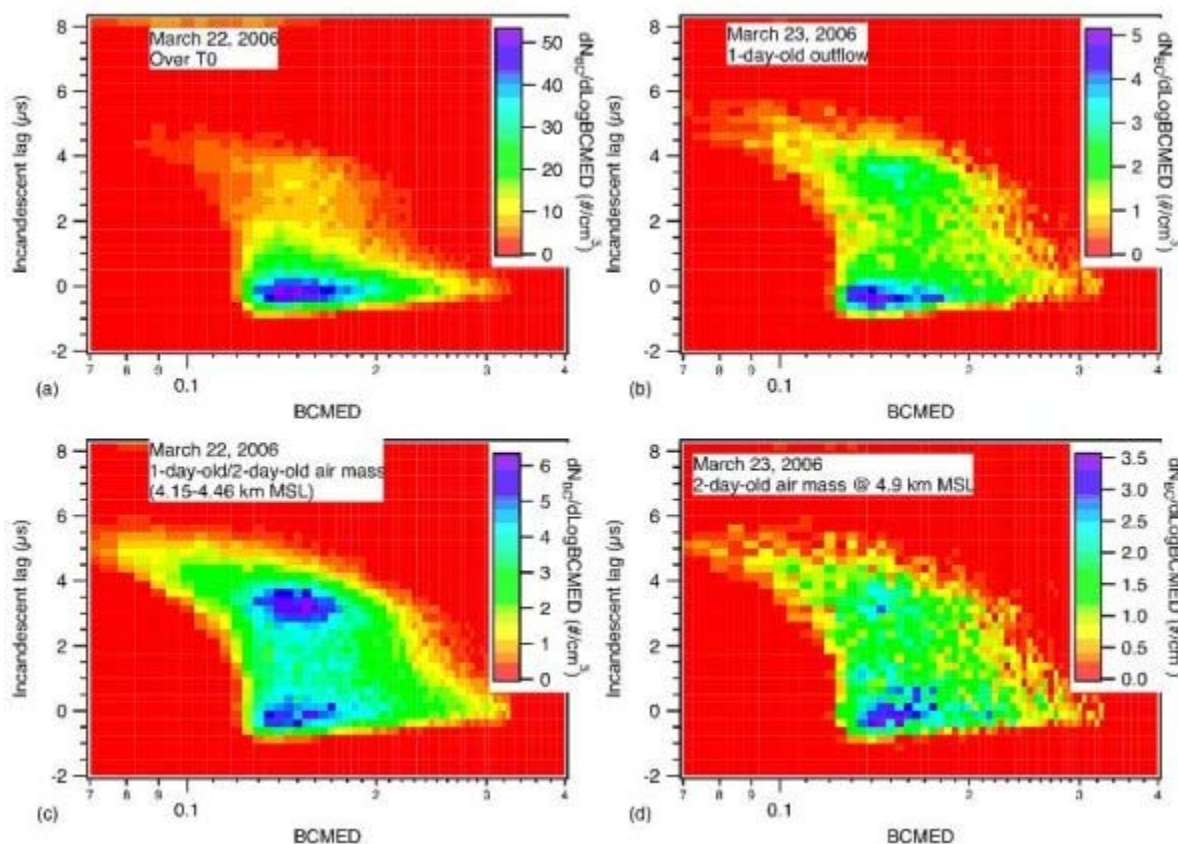
As you will see when you read the article by Chang-Yu Wu, chair of the 28th Annual Conference, the recent meeting in Minneapolis was a great success in all ways, breaking records in attendance and abstracts, and also resulting in a profit for AAAR. We appreciate the efforts of Chang-Yu, the members of the conference organizing committee, and, at Association Headquarters, Melissa Baldwin, Deanna Bright, and Ann Mitchell, in making this conference a success. I would also like to note two landmark events from this conference. First, the inaugural Friedlander Plenary Lecture given by Pratim Biswas and inspired by Dr. Sheldon Friedlander's vision of "aerosol science and technology as an enabling discipline". This lecture was made possible by a generous gift from Mrs. Marjorie Friedlander, Sheldon's wife, who has established an endowment to support this annual lecture. We were fortunate that Mrs. Friedlander and her daughter, Zoe, were present for this event. Second, I want to note that for the first time in 27 years, Bill Hinds not did present his tutorials on aerosol mechanics. Bill is now semi-retired from UCLA, and has passed on the torch to Rick Flagan, who did not miss a beat in giving two well-attended tutorials on this topic. Bill has been a mainstay of the tutorial program, and AAAR and all those who have attended his tutorials thank him. It is fitting that this year Bill was recognized for his contributions to aerosol science and technology as the recipient of the Sinclair Award.

We now look to this year, when we go to Portland, OR for the first time in our 9-year Orlando-Minneapolis-Portland cycle of conference sites. Cynthia Twohy, the chair for the 29th Annual Conference, and her committee are busy working to make this another outstanding event. So mark your calendar.

And lastly, I want to note that Aerosol Research Letters, the new submission option initiated by Peter McMurry, Editor-in-Chief of Aerosol Science & Technology, is now open. You are encouraged to submit your best research there for rapid publication of high-impact articles.

## Aerosols in the Spotlight

Subramanian et al. (2009) observed the change in black carbon mixing states during the MILAGRO campaign over Mexico (2006). Shown are the lag times between the scattering and incandescence signal peaks, indicating coating thickness of scattering species on individual black carbon particles, and black carbon mass-equivalent diameter (BCMED) as measured by their Droplet Measurement Technologies Single Particle Soot Photometer (DMT SP2) instrument for different air mass ages.



R. Subramanian, G. L. Kok, D. Baumgardner, A. Clarke, Y. Shinozuka, T. L. Campos, C. G. Heizer, and B. B. Stephens (2009). Black carbon over Mexico: the effect of atmospheric transport on mixing state, mass absorption cross-section, and BC/CO ratios. *Atmospheric Chemistry and Physics*, 10, 219-237, 2010

## "In Case You Missed It"

It seems like everyone is thinking about climate change these days. As we await the outcomes of the climate change conference in Copenhagen, here is a sampling of some of the latest science on climate change.

### The Human Health Impact of Air Pollution in Warmer Climate

Tagaris and coworkers used a series of global and regional climate and air quality models to estimate the concentrations of particulate matter and ozone in a projected 2050 climate. From those results, they determined that the climate-induced increase in air pollution in the US may cause an increase of nearly 4,000 premature deaths from particulate matter and nearly 300 from ozone. This research suggests the need for region-specific rather than one size fits all strategies for dealing with air quality and climate change.

(E. Tagaris et al., *Environ. Sci. Technol.*, 2009, 43 (13), 4979-4988)

<http://pubs.acs.org/doi/abs/10.1021/es803650w>

### Observations of the Impact of Climate Change

Bloomer and colleagues analyzed over 20 years of ozone and temperature data from rural monitoring locations along with almost a decade of nitrogen oxide emissions reported from power plants. Nitrogen oxide emissions were reduced by 43% after 2002 as a result of air pollution control programs. The data show that prior to 2002, the ozone-temperature relationship was stronger, with ozone increasing by an average of 3.2 ppb/oC; after 2002 the ozone response decreased to 2.2

ppb/oC as a results of the NO<sub>x</sub> emissions reductions.. This analysis suggests that under a changing climate further NO<sub>x</sub> reductions are needed to offset the increase in ozone due to increasing temperatures.

(B. Bloomer et al., *Geophys. Res. Lett.*, 36, L09803, doi:10.1029/2009GL037308.)

<http://www.agu.org/pubs/crossref/2009/2009GL037308.shtml>

### **Health Implications of Short-lived Greenhouse Pollutants**

As part of a series of articles on public health benefits of strategies to reduce greenhouse-gas emissions, Kirk Smith and an international team of researchers reviewed the health effects of black carbon, ozone, and sulfates. They note that since the toxicology of sulphate and black carbon does not adequately indicate their health effects in ambient conditions, their epidemiological effects should be interpreted as representing mixtures. However, their analysis of a 66-city, 18-year nationwide US cohort provides estimates of the mortality effects of long-term exposure to elemental carbon, the best available measure of black carbon. This analysis shows stronger effects for elemental carbon than for undifferentiated fine particles (PM<sub>2.5</sub>).

(K.R. Smith, et al., *The Lancet*, 374(9707): 2091-2103, doi:10.1016/S0140-6736(09)61716-5.)

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(09\)61716-5/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(09)61716-5/fulltext)

### **Aerosols Increase the Global Warming Potential of Gases**

Drew Shindell and his colleagues at NASA Goddard recently used a series of models to show that gas-aerosol interactions substantially alter the relative global warming impact of individual emissions. Their work suggests that methane has a greater global warming potential when the direct radiative effects of the aerosol responses and the aerosol-cloud responses are included. Consequently, multipollutant strategies to access and mitigate climate change are likely to be most useful and the gas-aerosol interactions cannot be neglected.

(D.T. Shindell, et al., *Science*, 326(5953), 716 - 718, doi:10.1126/science.1174760.)

<http://www.sciencemag.org/cgi/content/full/326/5953/716>

### **U.S. EPA Moves Toward Action on Greenhouse Gases**

On December 7, 2009, the Environmental Protection Agency (EPA) Administrator Lisa Jackson signed both the "Endangerment Finding," which states that greenhouse gases (GHGs) threaten public health and welfare and the "Cause or Contribute Finding" stating that motor vehicles contribute to GHGs. These actions respond to the 2007 U.S. Supreme Court decision that GHGs fit within the Clean Air Act definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but rather allow EPA to finalize the GHG standards proposed earlier this year for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.

<http://www.epa.gov/climatechange/endangerment.html>

## 2009 Annual Conference

Chang-Yu Wu, Conference Chair of the 28th Annual Conference

The Association's 28th annual conference on October 26-30 in Minneapolis was an extremely successful one. There was a record number of 809 registered attendees, including 234 students and 164 international guests from 26 countries. There were 267 platform presentations and 465 poster presentations. 197 people registered for one or more of the 16 tutorials which had an accumulative attendance of 472. The strong technical program of our tradition was the magnet attracting the crowds and the conference provided opportunities for veterans and newcomers alike to advance their understanding of our ever evolving field.

Each day the conference started with a plenary presentation covering from reactions at aerosol interface (AEESP lecture), energy applications (Friedlander lecture), respiratory dose assessment to diesel engine emissions. The plenary was then followed by award presentations. Mrs. Marjorie Friedlander also joined the inaugural Friedlander lecture and handed the Friedlander award to this year's winner in person. In addition to the topical areas that AAAR runs every year, we had six

special symposia including nucleation, biodefense, biomass burning, energy, drug delivery and electrospray. They expanded the reach of our field and successfully attracted participation and strong sponsorship. The 21 exhibitors brought their finest stock and latest developments. The four technical tours (UMN, TSI, MSP and Donaldson), some sold out, were also very popular with 220 guests.

A few new initiatives were explored this year, including aerosol history slide shows before the plenaries and walking tours of historical downtown Minneapolis. It was also the first time AAAR had the abstracts on-line (sorted by topical area or by name) before the conference. There was also the first-ever gathering for the women of aerosol science: Aero-Dols. This year we also had a very successful sponsorship campaign. The total sponsorship was over \$60K and \$34K was used to support student travel.

The success of the conference came from the contribution of many. I gratefully acknowledge the efforts of the Abstract Committee, Conference Committee, Working Group chairs, symposia conveners, session chairs, student poster judges and our Association Headquarters (AH) staff. We are also indebted to our conference sponsors including AEESP, Aerodyne Research, AFRL, ARO,

ARL, CIRA, DOE, ECBC, JFSP, NRL, NSF, UMN's Particle Technology Lab and TSI.

## Important Announcements

### **Working Group Leaders to be Elected by All AAAR Members**

William Nazaroff, AAAR Vice-President Elect

The Technical Program Committee (TPC) is responsible for organizing the technical content of AAAR's Annual Conference.

The Chairs of the Working Groups (see List) constitute most of the TPC membership. By tradition, the selection of these leaders has been carried out each year at the annual conference, during at WG meetings. The model has been that a new Vice-Chair is selected from among the attendees at each WG meeting. A two-year rotation is intended, with the newly elected Vice-Chair becoming Chair at the next conference and then serving on the TPC that plans the conference for the subsequent year. So, in Minneapolis last October, we selected Vice-Chairs of WGs who will rotate into the TPC that plans the 2011 Annual Conference (Orlando, 3-7 October 2011).

List. Nine AAAR Working Groups.

- Control Technology
- Combustion and Material Synthesis
- Aerosol Physics
- Indoor Aerosols and Aerosol Exposure
- Atmospheric Aerosols
- Aerosol Chemistry
- History of Aerosol Science
- Health-Related Aerosols
- Instrumentation

The AAAR Board has been discussing measures to increase the level of engagement of AAAR members in WG activities. As one step, at the March 2010 meeting in San Diego, the Board decided to change the selection process for WG leaders. Starting this year, the Vice-Chairs of the WGs will be elected in the same membership-wide process by which we choose directors and officers. As before, these leaders will be selected for a 2-y rotation, serving as WG Vice-Chair for the first year

and then becoming WG Chair and TPC member for the second year.

WGs will continue to meet at the Annual Conference to develop suggestions for special symposia, plenary speakers, and tutorial lectures. The WG Chair will preside over this meeting and then, as a member of the TPC, work with the conference chair to review abstracts, organize sessions, recruit session chairs and cochairs, and recruit judges for the poster competition. The Vice-Chair will be responsible for working with Association Headquarters to update the WG records and to assist the Chair as necessary. Participating in the WGs will remain a good way to become engaged in AAAR!

### **AAAR Allows Members Electronic-Only Access to AS&T Journal**

If you do not wish to receive a paper copy of "Aerosol Science & Technology", please email Deanna Bright at AAAR Headquarters - [dbright@ahint.com](mailto:dbright@ahint.com)). At this time, there is no formal "electronic-only" option for membership, but Deanna can remove your name from the monthly journal list if you only read journal articles online. To access the journal electronically, log in to the AAAR Members area and choose "Access AS&T Issues Online"

### **2010 Specialty Conference "Bridging the Gap From Sources to Health Outcomes" a Great Success**

Look for the meeting recap in next month's issue of "Particulars"

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