PARTICULARS

the E-Newsletter of the American Association for Aerosol Research

Summer 2015

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Letter From the Editor

Hello Dear Readers!

Welcome to the Summer 2015 edition of the AAAR News letter, "Particulars"! This also happens to be the last newsletter before the annual conference (eek?! Is it time already?!!). The deadline for registration is approaching fast; soon the heat of summer will transition to the cool breezes of a Midwestern Fall and the annual conference will be here. Inside this newsletter you will find the conference update brimming with important information that will help you navigate a successful and productive conference. The president message reiterates and highlights important business items. Also in this issue we have included a special Aerosol Scientist in the Spotlight. In our 2nd installment, we continue with our theme for readers to know the aerosol people behind the aerosol research. Of course, no newsletter is complete without "Aerosols in the Spotlight" and "In Case you Missed it", written by a wonderful, expedient, and witty editorial staff.

As you will read in this issue, the organization is seeking volunteers for the numerous roles that keep our organization together (Presidents message). I highly encourage all readers to participate in the online member profile survey. 3 years ago, I was asked to join the newsletter staff. My first reaction was, "Who me?!! I've got a backlog of papers to write! Lab Reports to grade! And a pile of journal papers to read!" I went ahead and accepted the position anyway and I have enjoyed my 3 years as an editorial staff member in Particulars immensely. From each newsletter, I have learned so much from past, current, and future editors of the newsletter. It has been a pleasure working with such professional AAAR members and staff. I especially thank the readership who sent encouraging emails and invigorated me earlier on to discuss the novel, weird, and exciting aerosol topics. I still have a pile of journal papers I need to read but overall, my small contribution in service on the newsletter has returned large rewards socially and professionally. Indeed, I feel closer to the AAAR community as a participating member of the organization. I highly encourage others to participate as well.

In conclusion, take the time to enjoy the summer months and the diverse sections of this newsletter. I look forward to seeing you all in Minne-soo-tah

Akua Asa-Awuku, Editor

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2015 Annual Conference Update

Dear AAAR Colleagues,

The 34th AAAR Annual Conference will take place in Minneapolis, Minnesota, on October 12 to October 16, 2015. The program will include tutorial sessions on Monday, which you are especially encouraged to register for and attend, a proposal-writing panel sponsored by the Young Investigators Committee on Monday night, an exhibition from Tuesday through Thursday, and poster and platform presentations taking place from Tuesday morning through Friday noon.

The technical program promises to be very exciting. The plenary speakers this year will be, in order of presentation: Mark Utell (University of Rochester Medical Center), Linsey Marr (Virginia Tech), Philip Hopke (Clarkson University), and Veerabhadran Ramanathan (Scripps Institute, UCSD). In addition to a full slate of aerosol-related research topics, we will have four special symposia this year designed to bridge multiple topical areas and promote cross-disciplinary interaction: (a) Primary and Secondary Aerosols from Agricultural Operations; (b) The Role of Water in Aerosol Chemistry; (c) Environmental Fate of Infectious Aerosols; and (d) Haze in China: Sources, Formation Mechanisms, and Current Challenges.

A new initiative this year is the Historical Aerosol Instrumentation Exhibition led by Peter McMurry and Gilmore Sem. Historically important instruments will be on display during the Thursday poster session in the exhibit hall, and many of the developers of these instruments will be available for discussion during this time slot. We also will be engaged in a video project during the week to record interviews with the instrument developers. The Historical Aerosol Instrumentation Exhibition will be introduced to the conference attendees during the Tuesday morning plenary session.

Those of you who submitted your conference abstracts before the May 1 deadline should already have a poster or platform assignment for your presentation listed in the preliminary technical program. Abstracts submitted between April 3 and the extended late breaking poster submission deadline of July 24 will be added to the conference program in early August. If for any reason you cannot present your paper, please contact us immediately via e-mail at support@aaarabstracts.com. This will minimize the number of corrections to the program once it goes into print.

I highly encourage you to stay in the conference hotel, the Hyatt Regency in Minneapolis, as well as to arrange your hotel stay in advance. AAAR has arranged for a block of rooms at the Hyatt Regency at a reduced rate. The block of rooms reserved for the AAAR attendees is expected to fill quickly, so please do not wait until the last moment to make your reservations. Information about hotel reservations is available at the AAAR conference web site.

We eagerly look forward to your participation at the 34th Annual Conference of the American Association for Aerosol Research in Minneapolis this fall!

Andrea Ferro, *2015 AAAR Conference Chair*

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President's Message

The year to date has been an active period for AAAR. DMG came on board as our association management organization effective January 1 and there has been considerable effort by many folks inside and outside of DMG to help us navigate the transition and settle into the day-to-day aspects of business operations. I would like to acknowledge Bill Carney – our Executive Director – and his DMG colleagues for their professionalism and enthusiasm as well as Melissa Baldwin and Ann Mitchell who have provided ongoing support towards making the transition from Association Headquarters to DMG as seamless as possible.

Andrea Ferro's message in this issue of Particulars highlights several features of the upcoming annual conference. We have a proud tradition of a strong technical program and I am particularly excited about the Historical Aerosol Instrumentation Exhibition. We hope this activity will be the foundation of a larger initiative to preserve some of the rich history of our field, and we are looking for ways to engage the student chapters in helping us to document and preserve the history.

Another new development is the inception of the AST Outstanding Publication Award. The nomination deadline is August 1 and I expect the selection committee will have the enjoyable but challenging task of identifying the award recipient among a pool of meritorious work that has been published in our journal. I encourage you to nominate a paper that has made significant impact on the field or aerosol science and technology.

Please plan to attend the AAAR business meeting at the annual conference. Among various topics we will discuss an initiative to provide incentives for new endowments.

Lastly, if you have not done so already I encourage you to log into the Members Only area of the AAAR web site and update your member profile. In particular, you can identify committees on which you would have an interest in serving. The process is underway to staff committees for the forthcoming year and this information will be used to help identify candidates.

I look forward to our gathering in Minneapolis!

Jay Turner, AAAR President

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Aerosol Scientist in the Spotlight

By Chris Hennigan

Chuck Brock is a Research Physicist in the Cloud and Aerosol Processes group of NOAA's Earth System Research Laboratory.

1. Can you give us a brief background on your professional training and career path?
In high school I knew I wanted to be a meteorologist--I think that's pretty unusual for a young student. There are not too many atmospheric science degrees offered, and I chose to go to the University of California at Davis because of the good program, and because it was a long way from my hometown in Texas. While getting my degree I became interested in air quality and accepted a graduate fellowship at the University of Washington under Peter Hobbs and Larry Radke. I took my postdoc with Chuck Wilson at the University of Denver studying the stratospheric aerosol, and eventually made my way to NOAA's Earth System Research Laboratory in Boulder, Colorado, where I've been focusing on tropospheric aerosol processes since 2000.

2. How did you first become interested in aerosol science?
At UC Davis I had the good fortune to take a student job with Tom Cahill, who at the time was developing the nascent IMPROVE aerosol monitoring network that has proven so valuable. I must have weighed the mass loadings on 5000 aerosol filters from the National Park network, and also helped do proton-induced x-ray analysis on them at the university's cyclotron proton beam. I found the results of the work fascinating, and that turned my academic attention to particles.

3. Who influenced you the most in your development as an aerosol scientist?
Undoubtedly Chuck Wilson. He really taught me to apply quantitative engineering approaches to aerosol measurement and analysis, and instilled in me a passion for the Earth's environment that I still carry. He introduced me to Pete McMurry, Mark Stolzenburg, Dan Murphy, and Rick Flagan, along with all their seminal work. He's been a great mentor through the years.

4. Can you talk about your transition from academia (University of Denver) to a government scientist position (e.g., any particular challenges or benefits)?
Moving from a somewhat isolated engineering research program to the scientific hotbed of Boulder was something of a shock. The primary benefit is being able to rub elbows on a daily basis with people who have a broad range of expertise in atmospheric chemistry and physics. I've really gotten spoiled by having experts on so many topics just down the hall. And that means it's easy to forge collaborations and bounce new ideas around. On the down side one has to deal with the federal bureaucracy, which seems to get more and more onerous. Or maybe my patience for it is just getting thinner.

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5. How many different aircraft campaigns have you been involved with throughout your career?
My first day of graduate school I was put to work installing instruments on the "new" Convair C-130 at the University of Washington. I've been doing this kind of work ever since. I have been on 21 separate airborne projects by my count, and probably around 600 hours on research airplanes. I still enjoy every minute of it. I'm looking forward to our group's next big project, NASA's Atmospheric Tomography (ATom) experiment, which will involve global flights from the Arctic to the Antarctic, profiling from 200m to 12 km the whole way to map out spatial distribution of new particle formation.

6. Which was the most memorable, and why?
My first project as an impressionable young grad student was truly eye-opening. We flew the Convair (a large, twin-radial-engined aircraft built in the 1950s) from Washington up to Alaska, across the Canadian Archipelago, and to Greenland while studying summertime Arctic haze (which does exist; it's mostly from forest fires). The scenery was spectacularly beautiful, and I felt I had an important role trying to understand man's influence on this amazing natural environment.

Aerosols in the Spotlight

By Jeff Pierce

Determining Aerosol Volatility Parameters Using a "Dual Thermodenuder" System: Application to Laboratory-Generated Organic Aerosols

P. K. Saha, A. Khlystov & A. P. Grieshop, Aerosol Science and Technology, Vol. 49, 620-632, 2015.

The volatility of organic vapor and particle-phase compounds is important as it determines the mass concentrations of organic aerosol. In addition, the volatility affects how the organic molecules are distributed across particle sizes, and thus may greatly affect the climate impacts of organic aerosol. Thus, much effort over the past two decades has gone into determining the distribution of volatility of primary and secondary organic aerosols. Thermodenuder systems, where particle species are evaporated through heating, have become a common technique to probe aerosol volatility over the past decade. However, a shortcoming of tradition thermodenuder techniques is that it is difficult to decouple the volatility of organic species from any limitations in evaporation mass transfer in the thermodenuder (commonly represented by an effective accommodation coefficient). For example, it is difficult to discriminate between higher volatility organic species with a lower effective accommodation coefficient from lower volatility organic species with a high effective accommodation coefficient.

The authors in this manuscript develop and test a dual thermodenuder approach to simultaneously determine volatility and mass transfer limitations. One of the two thermodenuders steps through different temperatures using a fixed residence time in the thermodenuder while the other thermodenuder uses a fixed temperature while varying the residence time. This two-dimensional view of particle evaporation provides information to simultaneously constrain both organic volatility and any mass-transfer limitations, and may be extremely useful for characterizing organic-aerosol volatility in both the lab and field.

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In Case You Missed It…

By Chris Hennigan

Aerosols and Brain Health: Aerosols impart numerous deleterious effects on human health. New research in the Annals of Neurology extends our understanding of these impacts. Researchers found a connection between chronic exposures to ambient PM levels and the quantities of white matter (normal) and gray matter in the brains of a cohort of elderly women.

http://onlinelibrary.wiley.com/doi/10.1002/ana.24460/abstract

New Global Aerosol Monitoring Network: The SPARTAN network has established ground-based monitoring sites throughout the world to measure ground-level PM mass as well as aerosol optical depth (AOD). The network has plans for additional ground sites to pursue an overall goal of linking satellite retrievals of AOD with surface air quality.

http://www.spartan-network.org/

http://www.atmos-meas-tech.net/8/505/2015/amt-8-505-2015.html

Air Pollution and the Supreme Court: The U.S. Supreme Court blocked the EPA's implementation of its Mercury and Air Toxics Standards. The regulation was designed to reduce emissions of hazardous air pollutants (mainly mercury and arsenic) from coal- and oil-fired power plants. A 5-4 decision was handed down in favor of the state of Michigan and electric utilities in the Michigan v. EPA case.

http://thehill.com/policy/energy-environment/246423-supreme-court-overturns-epa-air-pollution-rule

Aerosols in the Mainstream Media: A recent severe air pollution event in Santiago, Chile resulted in the country declaring a state of environmental emergency. The country reacted by dramatically reducing motor vehicle operations and industrial emissions for the duration of the event.

http://time.com/3930737/santiago-air-pollution-emergency/

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