

# Aerosol Measurement Science Group (AMSG)

Gannet Hallar, University of Utah, AMSG Co-Chair

Tim Onasch, Aerodyne Research Inc., AMSG Co-Chair

DOE ARM/ASR Meeting 2023


ABOUT > CONSTITUENT GROUPS

# AEROSOL MEASUREMENT SCIENCE GROUP

The ARM Aerosol Measurement Science Group (AMSG) coordinates Atmospheric Radiation Measurement (ARM) user facility observations of aerosols and atmospheric trace gases with user needs to ensure advanced, well-characterized observational measurements and data products—at the spatial and temporal scales necessary—for improving climate science and model forecasts.

[READ THE AMSG CHARTER](#) 

[READ THE LATEST AMSG STRATEGIC PLANNING WORKSHOP REPORT](#) 

[View the 2017 AMSG Strategic Planning Workshop report](#) 

## ORGANIZATIONAL STRUCTURE

The AMSG reports to the ARM Technical Director and is made up of experts from across ARM and the atmospheric science community.

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Current AMSG members include:

- Gannet Hallar, AMSG Co-Chair
- Tim Onasch, AMSG Co-Chair
- Jerome Fast, Science Representative
- Chongai Kuang, ARM Instrument Mentor
- Olga Mayol-Bracero, Science Representative
- Allison McComiskey, Science Representative
- Rich Moore, Science Representative
- Markus Petters, Atmospheric System Research (ASR) Aerosol Processes Working Group Co-Chair
- Nicole Riemer, Atmospheric System Research (ASR) Aerosol Processes Working Group Co-Chair
- Lynn Russell, Science Representative
- John Shilling, ARM Aerosol Data Translator
- Jim Smith, Science Representative
- Alyssa Sockol, ARM Data Quality Office
- Adam Theisen, ARM Instrument Operations Manager
- Damao Zhang, ARM Instrument Mentor

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ARM Technical Director: Jim Mather

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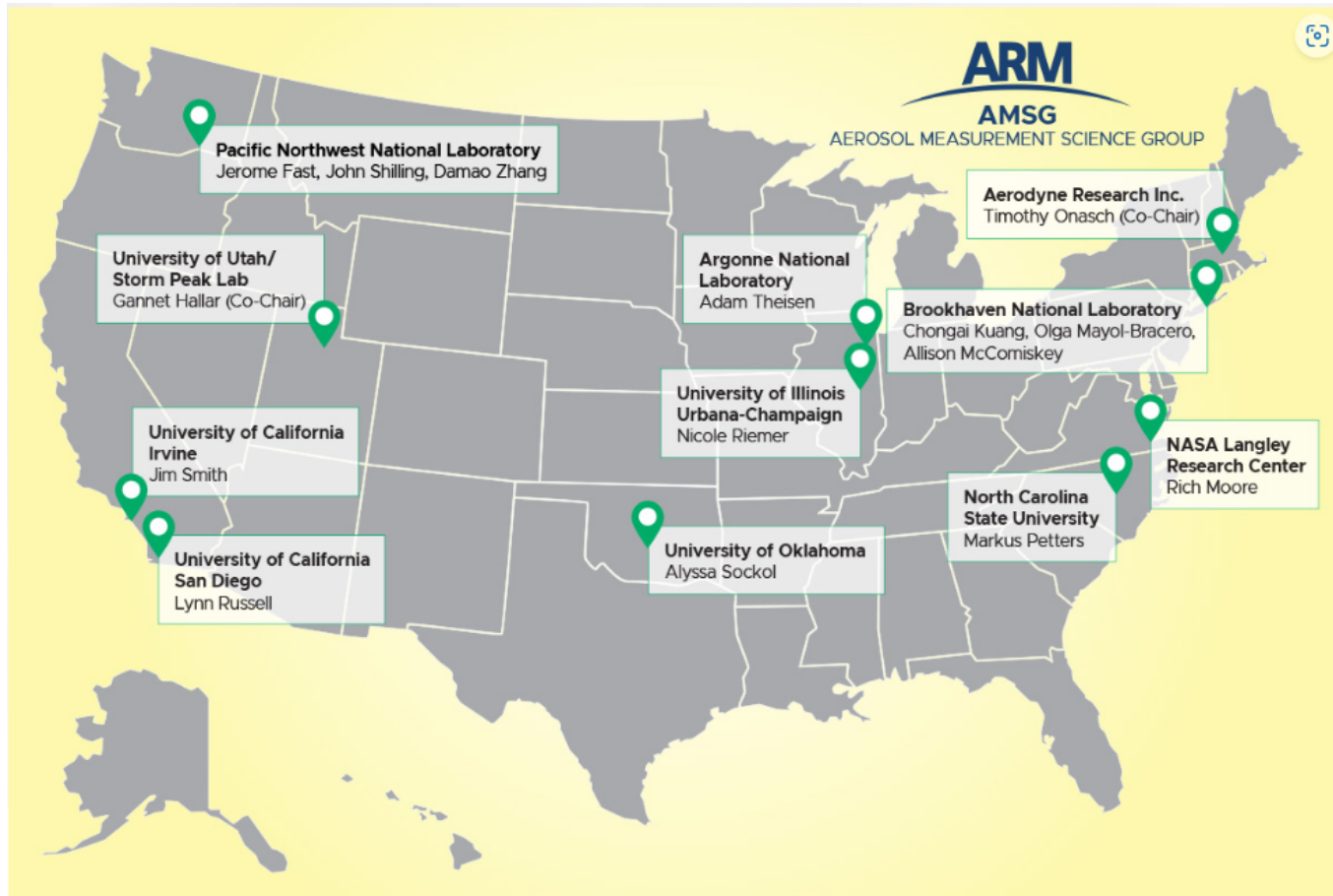
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- Tim Onasch, AMSG Co-Chair
- Jerome Fast, Science Review Panel Chair
- Chongai Kuang, ARM Instrumentation Working Group Co-Chair
- Olga Mayol-Bracero, Science Review Panel Member
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# Aerosol Measurement Science Group (AMSG)



Check out updated website:

<https://www.arm.gov/about/constituent-groups/amsg>

# What are the goals of AMSG?

- Strategic Planning for next Five Years
  - Future needs of ARM data users
  - Sunsetting to provide resources for new directions
- Currently preparing for the 2024 workshop to produce strategic plan



We need **your engagement** – topics of discussion are driven by your input!

**ARM Aerosol Measurement Science Group  
Strategic Planning Workshop 2017**

A McComiskey | D Sisterson

January 2018



## AMSG input opportunities this week

Monday August 7

12:45 pm – 2:00 pm Working  
Lunch & Poster Viewing

Introduction to ARM  
Constituency Groups

Adam Theisen, Jennifer  
Delamere, Gannet Hallar,  
Tim Onasch, Christine Chiu

Wednesday August 9

4:15 pm – 6:15 pm Breakout  
Session 6

Aerosol Measurement Science  
Group (AMSG)

Gannet Hallar, Olga Mayol-  
Bracero, Allison McComiskey,  
Chongai Kuang

Thursday, August 10

9:45 AM-12:00 PM  
Glen Echo

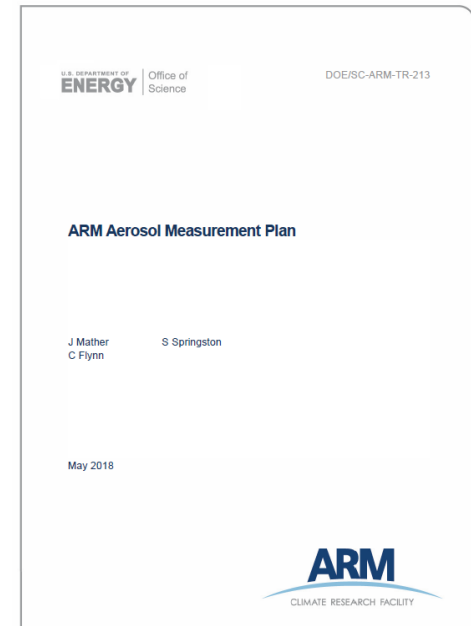
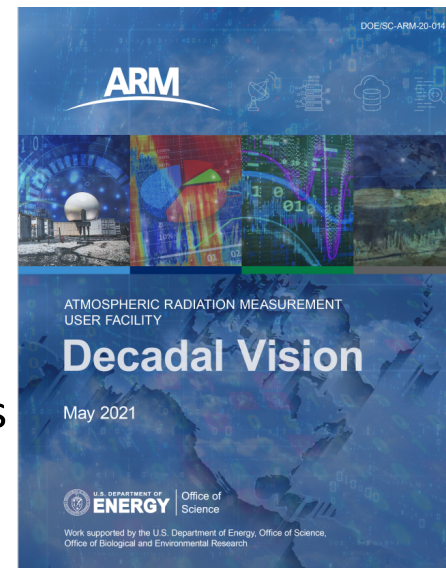
Aerosol Processes Working  
Group

Nicole Riemer, Markus  
Petters

[Aerosol Development Plan \(padlet.com\)](https://padlet.com)

# AMSG Workshop in summer 2024

- Focus on topics for vision (~ 3-5 years into future)
  - Mixing state (single particle) Workshop
  - Data integration for modelers
  - CAMS
  - Absorbing aerosol IOP
  - VAPS
  - ARM / ASCENT synergy
  - Large particle (coarse mode) measurements
  - Vertical Profiles
  - Remote Sensing
  - Mobile Measurements
  - Small sensors
  - Trace gases NO<sub>x</sub> / VOC's





# AMSG Subgroups (padlet.com)

- Ranked topics by number of votes

**AMSG Subgroups**  
Leading ARM into the future

<p><b>Techniques</b> (Allison *, Jim Smith, Lynn, Damao, Rich, Adam, John Shilling, Tim, Olga)</p> <p>North Slope of Alaska Aerosol Measurements (see related ARM breakout session)</p> <p>Rethinking the "gas" component of aerosols (e.g., should we be measuring NOx, VOCs?)</p> <p>Recommendation for path forward for replacing PSAP/optical absorption measurements</p> <p>Recommendation on what hyperspectral remote sensing measurements are needed.</p> <p>Targets/constraints for RH control on size distributions and scattering</p> <p>routine adjustment of aerosol size distribution that us optical methods, which assume a refractive index</p>	<p><b>Quality</b> (Nicole, Damao, Adam, Olga, Rich*, Gannet)</p> <p>Remote Sensing and integration with Insitu observations</p> <p>Challenges with RS &lt;--&gt; InSitu Aerosol hydration (ambient RS, dry InSitu) Vertical structure &amp; mixing (vertically-resolved RS, surface InSitu)</p> <p>Making the data available on WMO database to be considering in global comparisons (especially from SGP). This will improve quality, as it would increase number of users.</p> <p>Encourage technical papers on ARM inlet characterizations, ACSM quantification, PSAP filter comparisons, etc.</p> <p>don't forget to add the open white paper that Jim S and others here have led</p>	<p><b>Modeling</b> (Nicole, Jerome*, John Shilling, Adam, Lynn)</p> <p>Modeling Testbed</p> <p>Discuss ESMAC as a starting point (which is a form of testbed). It is a aerosol diagnostic package developed for E3SM, using ARM aerosol data (see GMD paper)</p> <p>Software for bundling measurements into a unified dataset already developed by ARM. This just needs to be made user accessible/friendly.</p> <p>What do models require from our measurements and are we providing this?</p> <p>creating aerosol best estimate (need to define that) that will simplify use for models</p> <p>Sector (marine vs. continental, etc.) and contamination labeling with</p>	<p><b>Sampling</b> (Jim Smith*, Allison, Adam, Olga, Jerome, Tim, John Shilling)</p> <p>IOP Sampling Strategies (see related ARM breakout session)</p> <p>AOS measurement "footprint"</p> <p>Coordinating flights and vertical profiles with in situ measurements at various sites</p> <p>Typical Aerosol Types / Properties to Inform Models, Satellite Algorithms -- Where do we have lots of data? (e.g., continental, organic-sulfate aerosol systems, biomass burning?) -- Where are we missing data? (e.g., dust, remote marine, biomass burning?) -- New instrument capabilities motivate revisiting some locations</p> <p>increase spatially distributed sampling</p>
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EXTRA SLIDES

# ARM capability request mechanism

ARM published a web form, about a year ago, that provides a mechanism to identify measurement or data product gaps to help ARM understand these needs and to establish priorities. The form is structured to collect not just the basic identification of the need but also supporting information such as science drivers, links to improving models, and suggestions for implementation. Here is a link to the “future directions page” where the “request for ARM capabilities” form is located:

<https://www.arm.gov/about/future-directions>

And to the form itself:

<https://www.arm.gov/about/future-directions/request-arm-capability>

Jim Mather hosted a webinar almost a year ago about this form. A brief summary of the “ARM community input webinar” as well as a recording are available here:

<https://www.arm.gov/data/work-with-arm-data/webinars/>