HAQAST Highlights:
What Works and What Doesn’t in Linking NASA Data with Health and Air Quality Communities

Dr. Tracey Holloway, NASA HAQAST Team Lead
Dr. Daegnan Miller, NASA HAQAST Communications
Our mission is to bring the power of NASA science down to earth and deliver it into your hands.

HAQAST is a collaborative team that works in partnership with public health and air quality agencies to use NASA data and tools for the public benefit. Here you can learn about our team, partnerships, and newsworthy achievements. You can also find short tutorials for NASA's open-access satellite tools.
What is “hay-kast”?  

- Health and Air Quality Applied Sciences Team  
- NASA-funded Applied Sciences Team  
- 3 4-year funded project (thru summer ’19–‘20)  
- 13 Members and 70+ co-investigators  
- Mission: Connect NASA science with air quality and health applications  
- ~ $15 Million Total Cost  
- Three types of work:  
  - Member projects  
  - Tiger team projects (collaborative)  
  - Outreach, engagement, rapid response
13 NASA Health and Air Quality Applied Sciences Team Members (HAQAST)

• Tracey Holloway (Team Lead, UW-Madison)
• Bryan Duncan (NASA GSFC)
• Arlene Fiore (Columbia University)
• Minghui Diao (San Jose State University)
• Daven Henze (University of Colorado, Boulder)
• Jeremy Hess (University of Washington, Seattle)
• Yang Liu (Emory University)
• Jessica Neu (NASA Jet Propulsion Laboratory)
• Susan O’Neill (USDA Forest Service)
• Ted Russell (Georgia Tech)
• Daniel Tong (George Mason University)
• Jason West (UNC-Chapel Hill)
• Mark Zondlo (Princeton University)

haqast.org
The team structure fundamentally changes outcomes.

- Increased visibility of work and resources to end-users
- Culture to support and promote collaborations and synergies
- Growth of two-way dialogue
- Increased collaborations to meet stakeholder needs
- Rapid spin-up of high-value activities
Major Accomplishments

• Steady increase in output metrics: Publications, stakeholders engaged, meeting attendees, meeting satisfaction, social media followers, etc.

• Team Meetings every 6 months + sessions at conferences – Webinars Feb/Mar 2020

• High-profile successes

• Active collaborations in team

• Engagement with related NASA initiatives

![Bar chart showing HAQAST publications by calendar year]

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<tr>
<th>Year</th>
<th>Multiple PIs involved</th>
<th>Single PI involved</th>
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Multiple PIs involved; single PI involved
FIORE FINDS LOWER AIR POLLUTION IN NEW YORK STATE IS SAVING LIVES

Columbia University highlights Arlene Fiore’s study on how reduced PM2.5 in New York State led to a decrease in mortality between 2002 and 2012.

HAQAST’S WORK INCLUDED IN THE 2018 EPA AIR TRENDS REPORT

Our team’s work, especially that of Bryan Duncan, is included in the 2018 EPA Air Trends Report. New this year are animations of SO2 from satellite data.

Methods, availability, and applications of PM$_{2.5}$ exposure estimates derived from ground measurements, satellite, and atmospheric models

Works:
Meeting users where they are

Awareness
Skepticism
Curiosity
Interest
Utilization
Potential Monitoring Site Purposes

1. To Determine Compliance with National Ambient Air Quality Standards (NAAQS)
2. To Develop Regional Pollution Trends in Urban and Rural Areas
3. To Evaluate the Effects of Population, Land Use and Transportation on Air Quality
4. To Evaluate Air Dispersion Models
5. To Provide Air Quality Information to the Public

A Role for Remote Sensing?

- Not Now
- Yes
- Yes
- Yes
- Yes

Adapted from a slide of Bart Sponseller, WI DNR (remote sensing added)
Meeting Users Where They Are

• Meeting location
• Travel $
• Streaming + Webinars
• Phone meetings

• Priorities of orgs/people
• Political realities
• Asking questions
• Data formats

HAQAST2
HAQAST4
HAQAST5
HAQAST6
HAQAST7
HAQAST1
HAQAST2020
ZONDLO SHOWS HOW AGRICULTURE BREATHES

Mark Zondlo’s work on the seasonal rhythm of NH₃ profiled by NASA’s Image of the Day.

TONG COMMENTS ON MASSIVE DUST STORMS

Daniel Tong’s commentary on the health impacts of massive dust storms in Arizona featured in Sierra magazine.

NASA WORLDVIEW VIDEO TUTORIAL NOW AVAILABLE

Watch HAQAST’s NASA Worldview video tutorial, produced by the NASA HAQAST Communications Team.
1. USING SATELLITE REMOTE SENSING TO DERIVE GLOBAL CLIMATE AND AIR POLLUTION INDICATORS

**Team Lead:** HAQAST investigator Susan Anenberg

**Partners:** Lancet Commission on Pollution and Health, University College London/Lancet Countdown, and the Health Effects Institute/State of Global Air

**HAQAST Members and Collaborators:** Jeremy Hess, Bryan Duncan, Arlene Fiore, Daven Henze.

**Works:**

Tiger Teams (funded in-team collaborations)
Innovative Tiger Team Structure

How to promote collaboration among the team and allocate resources to top problems... ... while structuring a competitive process to ensure rigorous vetting of ideas?
HAQAST Supports 2 Types of Projects: Individual & Tiger Team

13 HAQAST Members’ Proposed Initiatives with stakeholders & Co-I collaborators

Year 1 “Tiger Teams”
4 larger collaborations
Focused, stakeholder-based, short-term

Year 2 “Tiger Teams”

Tiger Team Supplements
SUSAN O’NEILL PRODUCED A VIDEO PRESENTATION OUTLINING SMOKE TOOLS AND INFORMATION FOR USE DURING WILDFIRES

Watch O’Neill’s video on tools and information for use during wildfires

NY TIMES HIGHLIGHTS DUNCAN & WEST’S WORK


NASA’s Applied Sciences Program (ASP) sponsors a number of efforts to facilitate the use of NASA satellite data and computer models by the various stakeholder communities, such as air quality, health, disasters, and food security. One of these efforts is the Health & Air Quality Applied Sciences Team (HAQAST), which has enabled many projects. Here we list just a few projects that have been enabled, at least in part, by HAQAST members. Visit the HAQAST website to learn of many other projects.
Works:
Meetings structured for dialogue
Designing Meetings to Engage Stakeholders

- 75% 5-minute talks
- 25% 15-minute talks
- 1/3 time for Q&A
- Lots of networking
- High proportion of stakeholder/scientist talks.
- Funded stakeholders to attend the meeting.
High Levels of Audience Satisfaction

“ding” on 15-min talks

Some: Hungry for more!

Most: Happy!

HAQAST5, January 2019, Phoenix, AZ
Doesn’t work very well

Expecting partners to embrace the unknown
→ First, build excitement, easy wins; then, invite deeper engagement.

Presenting research for research’s sake
→ Focus on relevance to audience(s) and issues they care about; avoid jargon

Cold-calling new partners
→ Build relationships with meetings (phone, in-person) and one-on-one conversations
Tutorials and webinars can be found here.