The Health and Air Quality Applied Sciences Team

Tracey Holloway, Ph.D. – Team Lead

Jenny Bratburd, Ph.D. – HAQAST Outreach Coordinator

University of Wisconsin—Madison

https://haqast.org/

HAQAST

NASA HEALTH AND AIR QUALITY APPLIED SCIENCES TEAM

Connecting NASA Data and Tools with Health and Air Quality Stakeholders

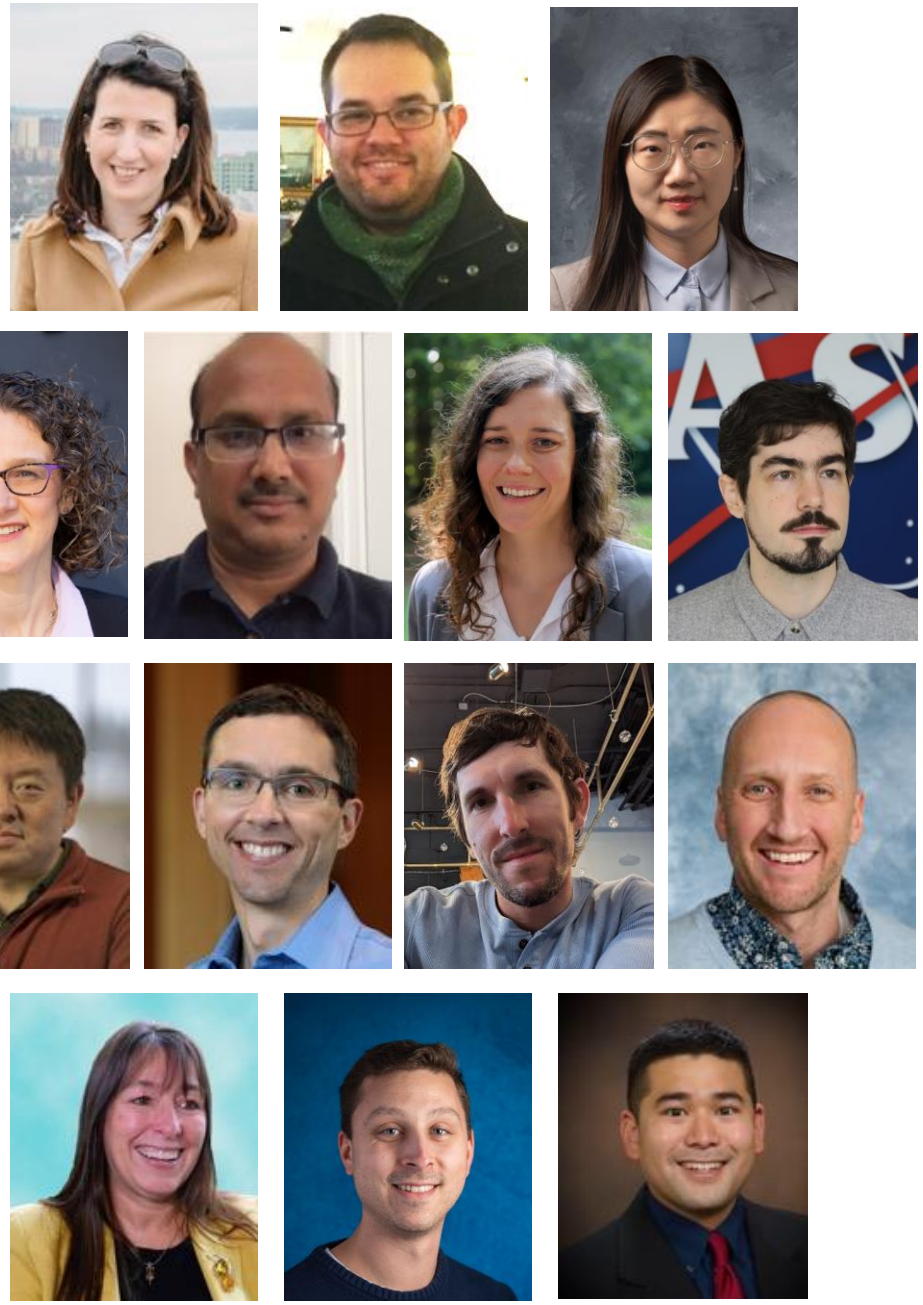
Search

2011-2016

2016-2020

2021-2025

2021-2025



NASA Health and Air Quality Applied Sciences Team Members (HAQAST) 2025-2029

Tracey Holloway (Team Lead, UW-Madison)
Daniel Anderson (University of Maryland Baltimore County)
Xi Chen (University of Iowa)
Arlene Fiore (Massachusetts Institute of Technology)
Pawan Gupta (NASA Goddard)
Jennifer Kaiser (Georgia Tech)
Carl Malings (Morgan State University)
Jingqiu Mao (University of Alaska, Fairbanks)
Randall Martin (Washington University)
Aaron Naeger (NASA Marshall)
Jeffrey Pierce (Colorado State University)
Amber Soja (National Institute of Aerospace)
Travis Toth (NASA Langley)
Christopher Uejio (Florida State University)

haqast.org

NASA

HAQAST

https://haqast.org/haqast-pi/

Pawan Gupta

NASA Goddard Space Flight Center

Integrating NASA satellite data, model outputs and research into U.S. State Department's Environmental Diplomacy Efforts in Africa

Pawan's project will develop a one-stop online platform supporting African air quality monitoring and forecasting powered by NASA data and research.

Aaron Naeger

NASA Marshall Space Flight Center

Supporting the Health and Air Quality Management Communities by Advancing Satellite-based Fine Particulate Matter Estimates for Applications across Multiple Scales

Aaron's project aims to advance air quality monitoring and forecasting tools for wildland fire smoke with special attention on TEMPO data products, especially near real-time products and prescribed burns in the southeast U.S.

Travis Toth

NASA Langley Research Center

Improving PM2.5 Prediction and Analysis using Lidar Observations

Travis's project will improve the prediction and analysis of PM2.5 pollution using spaceborne lidar observations.

Amber Soja

NASA Langley Research Center

Aligning Wildland Fire Emissions Data and Information to Answer Specific Health Questions to Inform Public Action: Answers may lie in the detail

This project will prepare data and information to inform wildland fire, smoke, air quality, and health communities to enable enhanced decisions to mitigate and manage fire regimes and to inform public health outcomes.

John Haynes

Program Manager

NASA Headquarters

Laura Judd

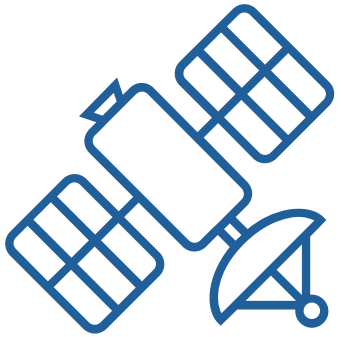
Associate

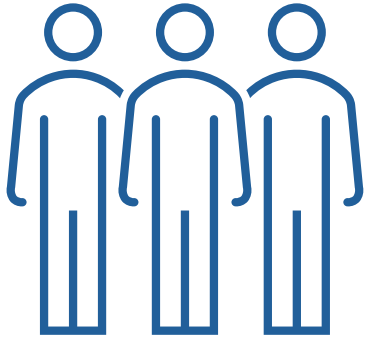
NASA Langley Research Center

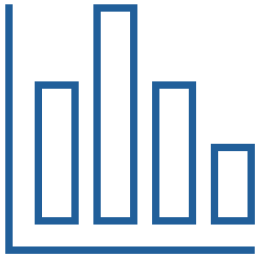
Helena Chapman

Associate

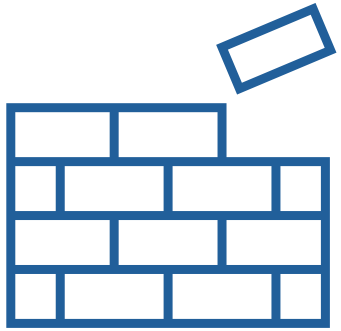
NASA Headquarters/BAH

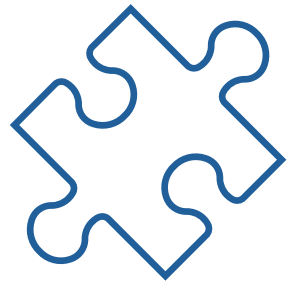






HAQAST





Stakeholders / Data Users

- Federal agencies, state agencies, regional planning organizations, and city/county government
- Non-profits, community groups, and citizens
- For-profit commercial data companies, industries

HAQAST Ambassadors

Zac Adelman
Lake Michigan Air Directors Consortium

Temilayo Adeyeye
New York State Department of Health

Doug Boyer
Texas Commission on Environmental Air Quality

Eric Choi
GHGSat

Kelly Crawford
Washington DC Department of Energy

Barron Henderson
US EPA

Tabassum Insaf
New York State Department of Health

Alex Karambelas
NESCAUM

Byeong-Uk Kim
Georgia Environmental Protection Division

Maeve MacMurdo
Cleveland Clinic

Libby Mohr
Environmental Defense Fund

Amirhosein Mousavi
Google, University of Southern California

Leticia Nogueira
American Cancer Society

Pallavi Pant
Health Effects Institute

Allison Patton
Health Effects Institute

Nathan Pavlovic
Sonoma Technology

Mary Tran
University of Chicago EPIC Air Quality Fund

Mary Uhl
WESTAR

U.S. Chamber of Commerce

Observing Earth, Powering Growth and Innovation

Cyber, Space, and National Security Policy Division

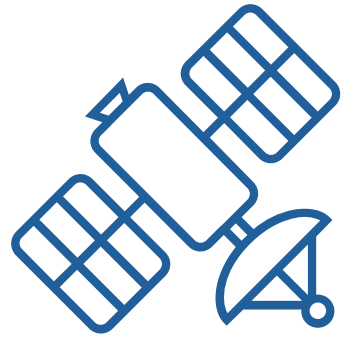
NASA Earth Science & Industry Summit

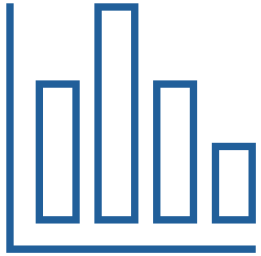
December 8, 2025, 9 a.m. - 5 p.m.

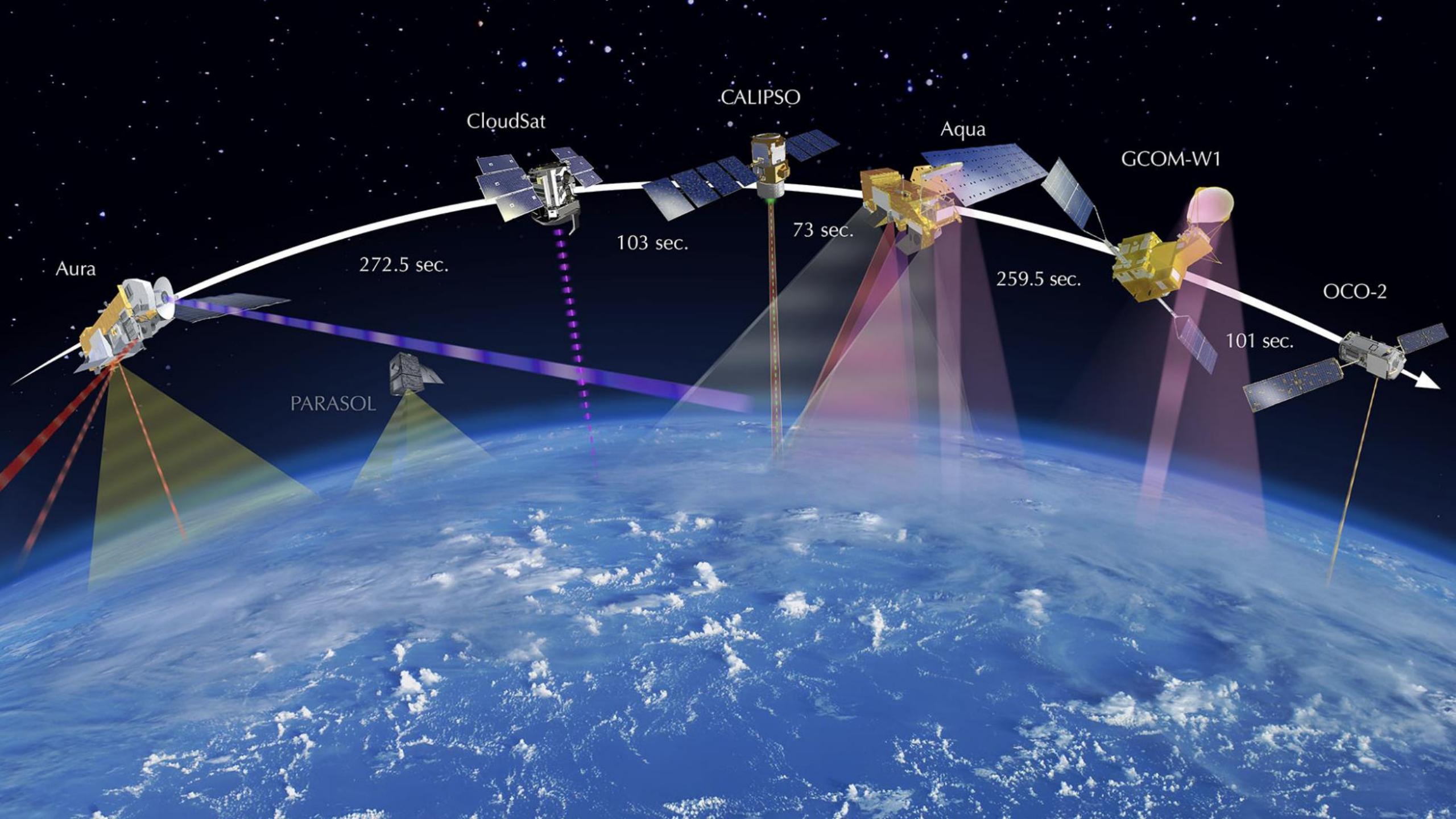
This in-person event will convene industry stakeholders who use Earth observation data to solve problems, drive economic development, and benefit society. The program will feature panel discussions highlighting how industries have used NASA satellite data and enable dialogue on the latest NASA missions and capabilities, and opportunities for partnership. While open to all industries, the summit will focus on agriculture, finance, insurance, utilities, and energy.

NASA Data and Tools

- Satellite infrastructure, airborne campaigns, models, etc.
- Scientists and engineers advancing validation, capabilities, and foundational knowledge
- Advanced data products and algorithms
- Data centers, distribution platforms, training programs, and analysis tools
- Related capabilities across agencies



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OCO-2
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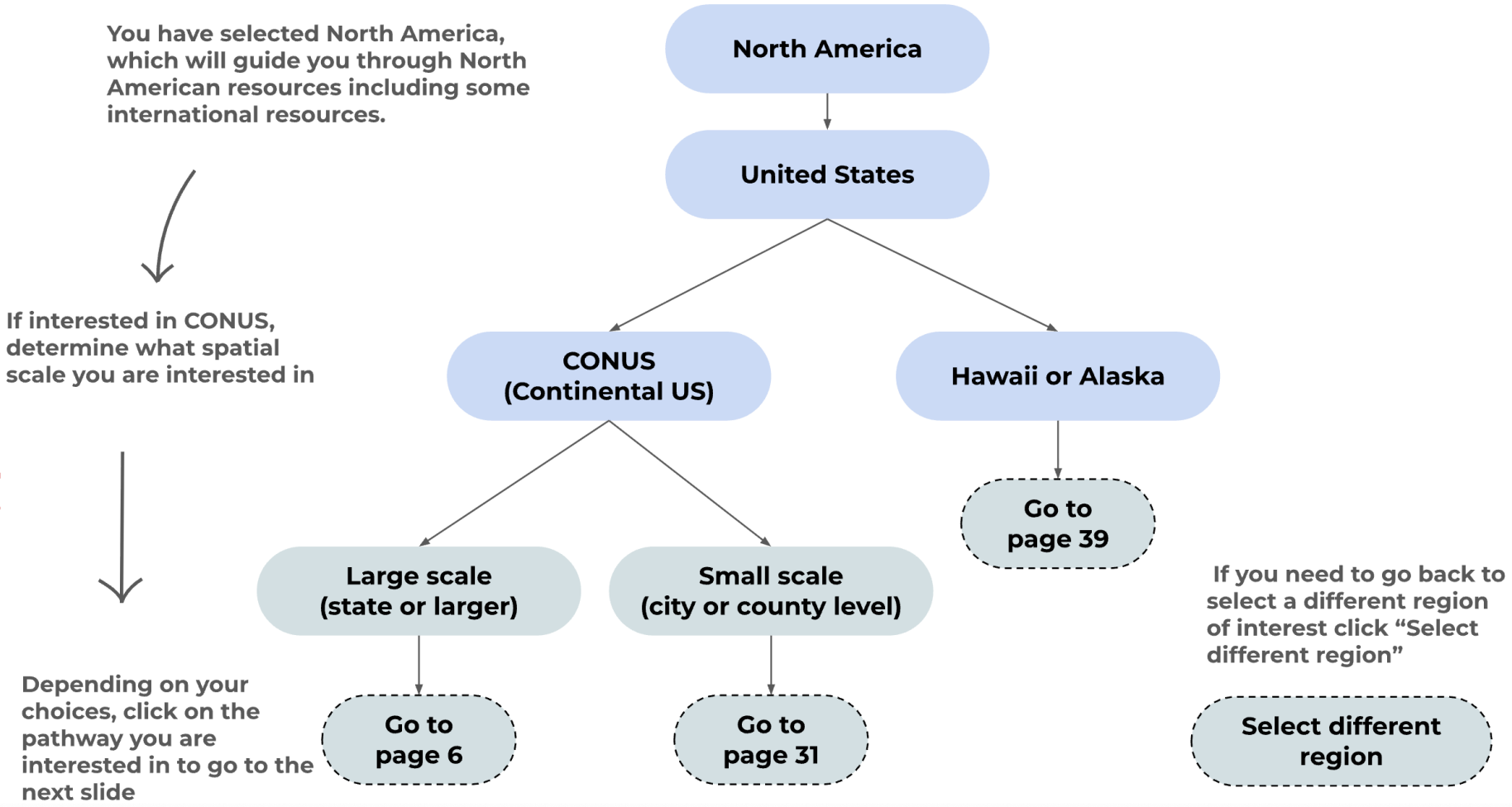
PARASOL

Flowchart of Resources and Data Products for Health and Air Quality Applications with an Emphasis on Satellite Data

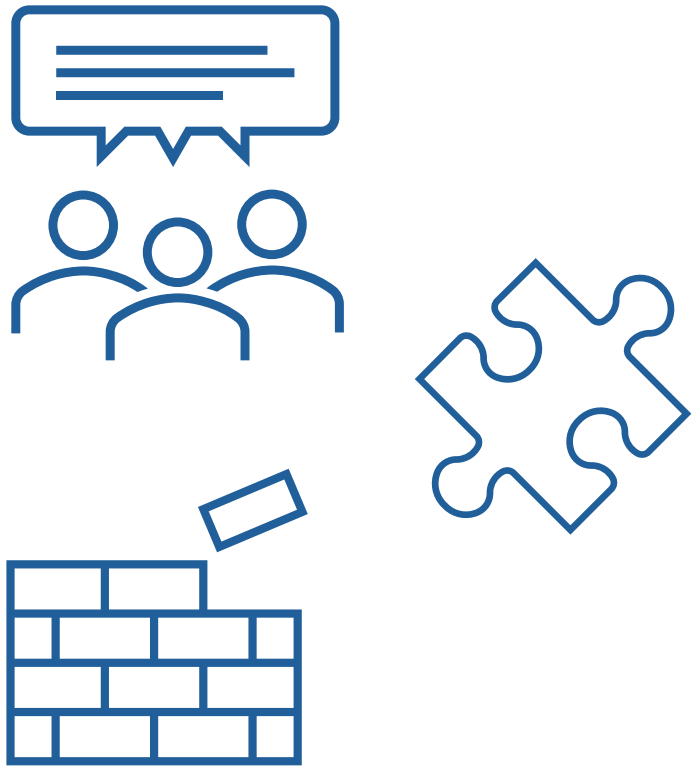
Jennifer McGinnis, Tracey Holloway, Jenny Bratburd,
Olivia Goins, Carl Malings, Aaron Naeger

https://haqast.org/data-and-tools/



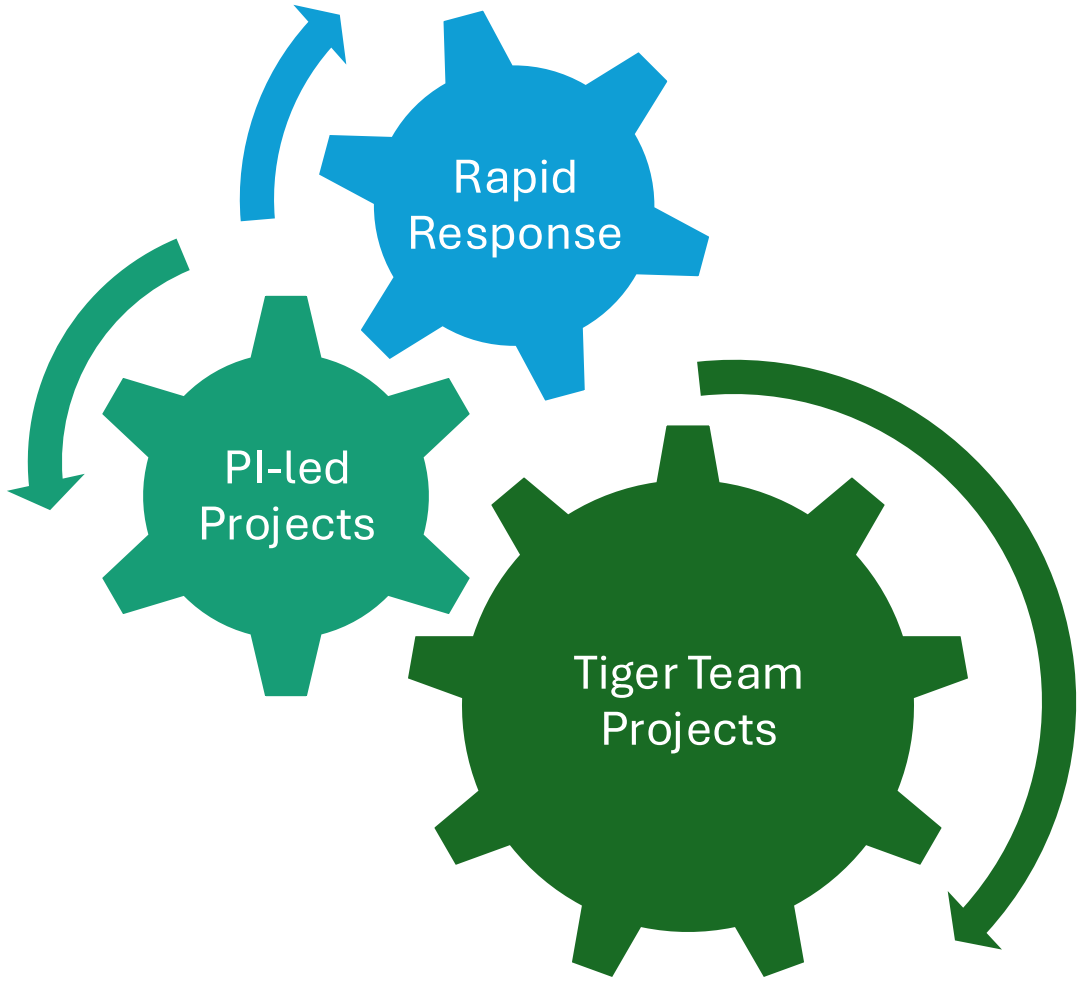
The HAQAST Approach

- Build stakeholder partnerships
- Listen to information needs
- Collaborate to design use-inspired research to meet needs
- Scale up successes as a team
- New applications of NASA data activate new audiences and highlight new opportunities

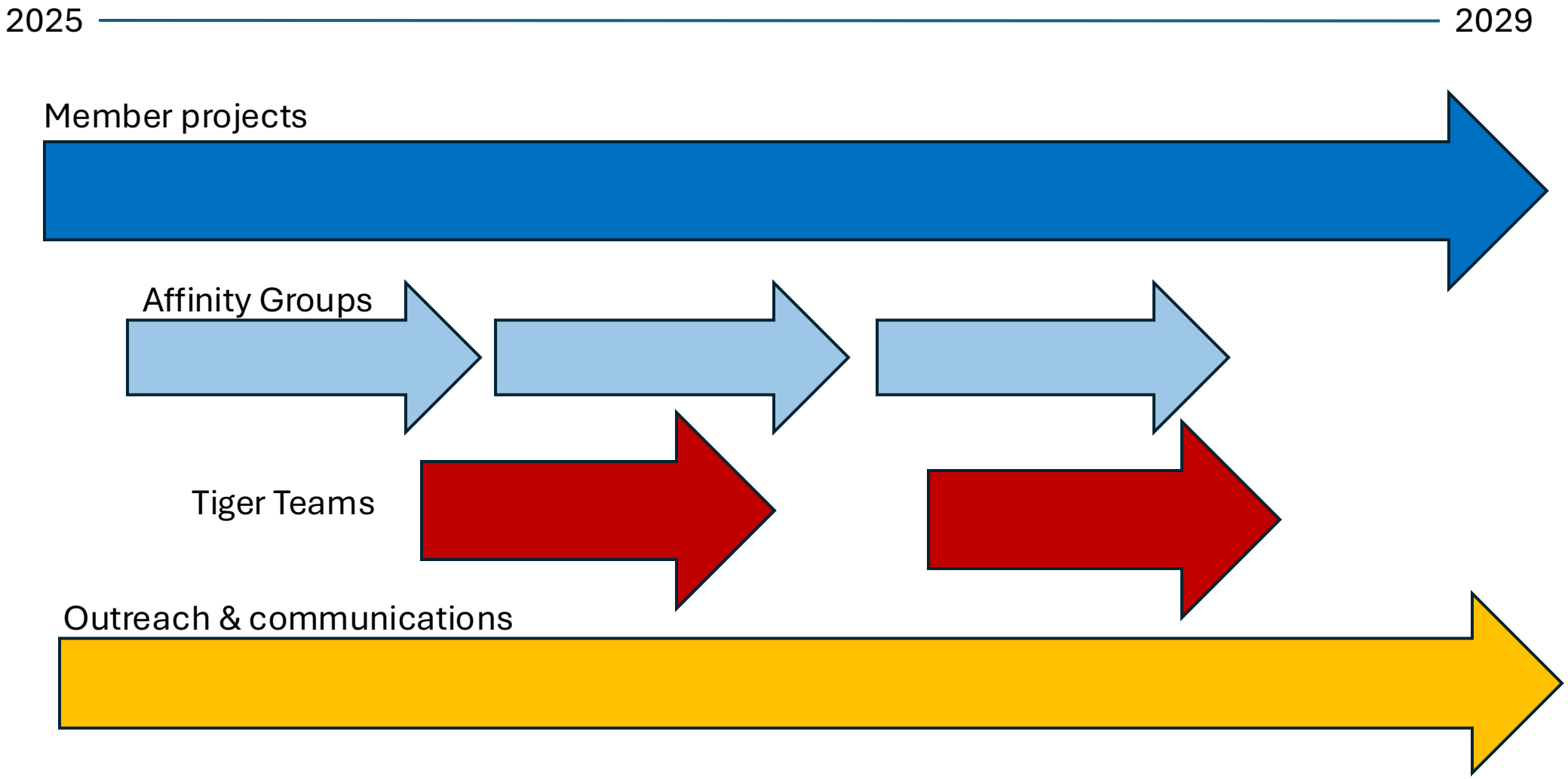


The Work of the Team

- **Research** moves from questions to answers
- **We create** new data products, analysis methods, toolboxes, and insights
- **Expedited ”Time to Market”** as applications advance with innovation
- **Successful approaches** inform stakeholders and scientists with less than 6-month lag



HAQAST 2025 - 2029



GEO GROUP ON EARTH OBSERVATIONS

"The GEO Health Community of Practice is committed to expanding the **use of Earth observations for air quality, heat, infectious disease, and other environmental health topics**.

JOHN HAYNES
NASA HEADQUARTERS

"Together, we can build global connections across scientific disciplines, strengthen stakeholder engagement, and demonstrate how **innovative data and technologies like Earth observations can help inform health decision-making** to address One Health challenges.

HELENA CHAPMAN
NASA HEADQUARTERS

GEO GROUP ON EARTH OBSERVATIONS

GROUP ON EARTH OBSERVATIONS

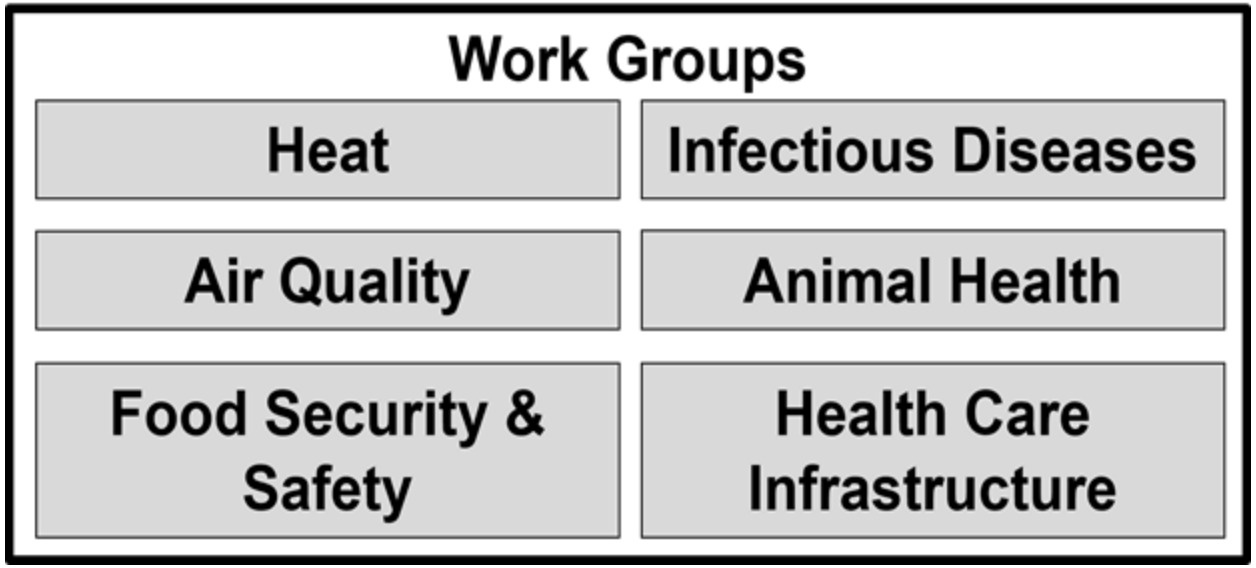
GEO HEALTH COMMUNITY OF PRACTICE

Improving Health Decision-Making Using Environmental Observations

Global network of governments, organizations, and observers, who seek to use Earth observation data to improve health decision-making at the international, regional, country, and district levels

Community Teleconferences
AGU Meeting (USA)
GEO Symposium
AmeriGEO Week

https://www.geohealthcop.org/



GEO Health Community of Practice
Air Quality, Wildfires, and Respiratory Health Work Group

The GEO Health Community of Practice is a global network of governments, organizations, and observers, which seeks to use environmental observations to improve health decision-making at the international, regional, country, and district levels.

As one of several small work groups within the GEO Health CoP, our work group aims to identify and disseminate recent advances in air quality applications of Earth observations, including geostationary satellites, small-sats, and data fusion, and the application of these tools to advance management and decision-making related to health through targeted presentations to practitioners and publicly-available reporting

Rare wildfires in western Greenland. Credit: NASA Earth Observatory

https://www.geohealthcop.org/workgroup/airquality

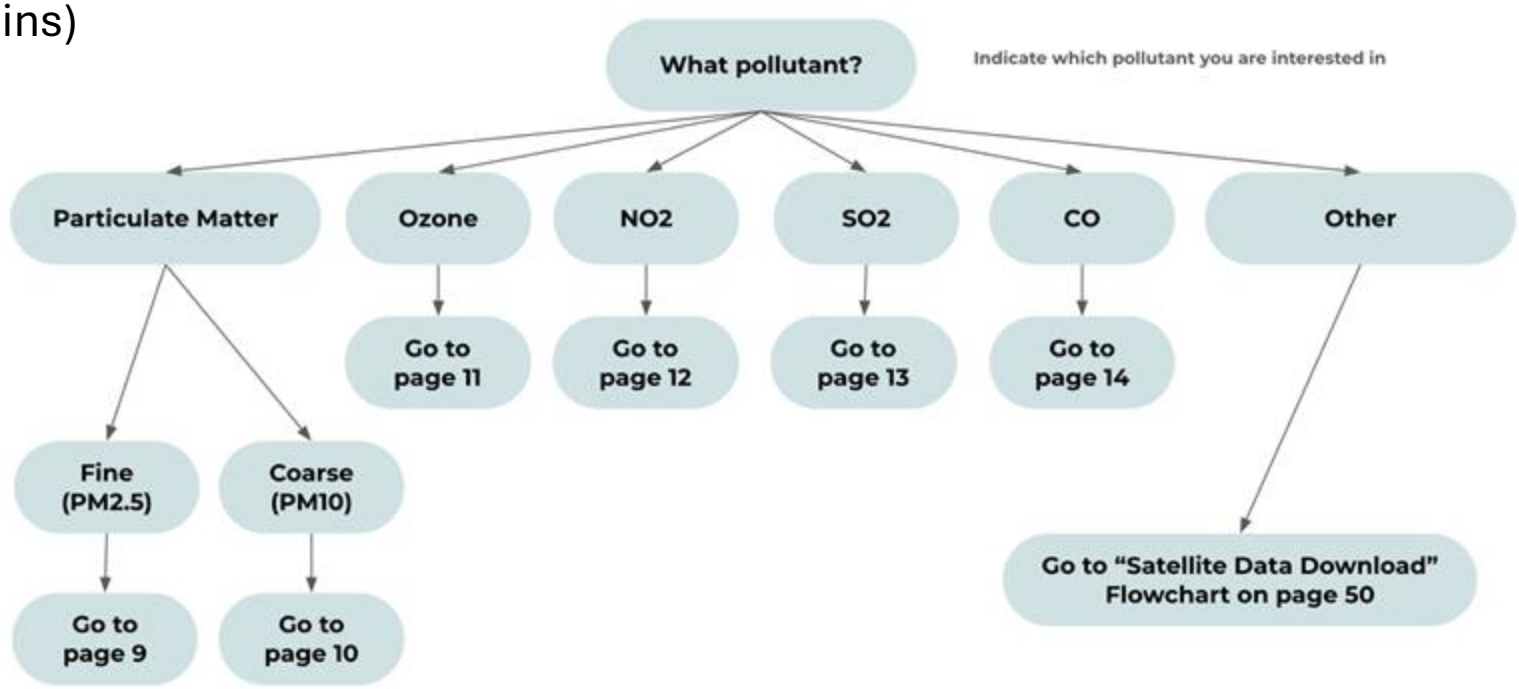
GEO HEALTH
COMMUNITY OF PRACTICE

To Join, Please Contact:

Carl Malings carl.a.malings@nasa.gov
Nathan Pavlovic npavlovic@sonomatech.com

Work Group Activity Highlight: support HAQAST flowchart

- Jenny Bratburd (University of Wisconsin-Madison/NASA HAQAST) presented to the work group on air quality data resources flowchart in development
- Group members proposed additions to the flowchart
- Additions implemented (by Olivia Goins)
- Links to recent NASA ARSET trainings
- Updated surface air quality datasets
- Towards development of a “global” resource guide



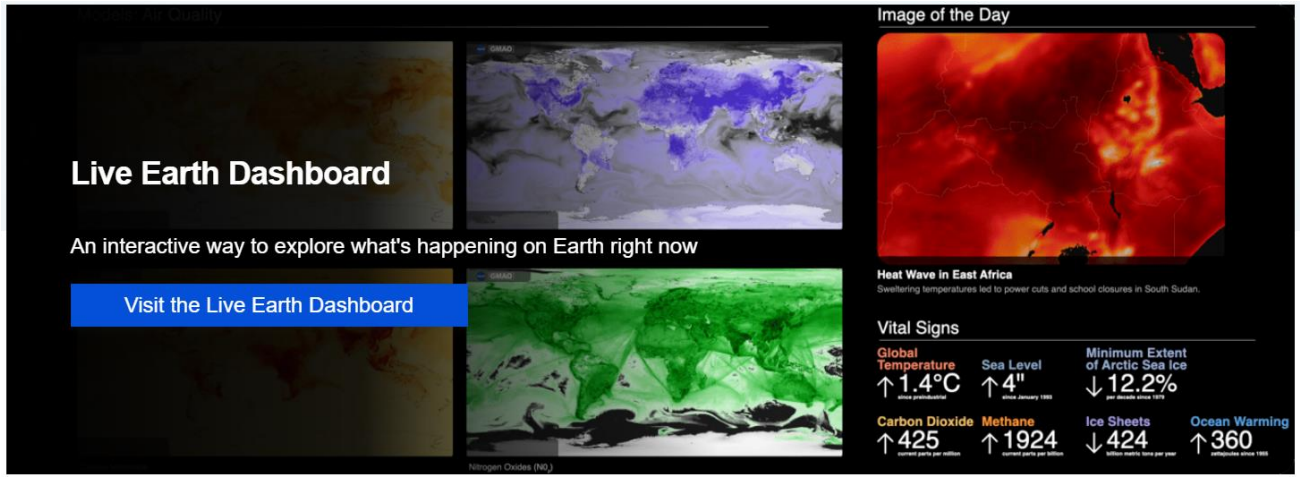
NASA Applied Remote Sensing Training Program (ARSET)

Courses with **lectures** and **hands-on guided computer exercises** on how to access, interpret, and use NASA satellite images for decision-support

https://www.earthdata.nasa.gov/data/projects/arset

Earth Information Center

Collection of **datasets**, **workflows**, **data stories**, and **visualizations** from across federal agencies to provide actionable, easy-to-use data and information about Earth's systems to the public



NASA FEMA NOAA USDA USGS

https://earth.gov/

Today's Agenda

All Session A panels will be in the Knight Center, Room 200 and online in Webinar A
All Session B panels will be in the Knight Center, Room 340 and online in Webinar B

9:45 – 10:15 CT Networking Break

10:15 – 11:30 CT Session 2A and 2B

Session 2A: Improving Surface Fine Particulate Matter ($PM_{2.5}$) Estimates Using Satellite Data
Moderator: *Xi Chen* (HAQAST Member, University of Iowa)

200 / Webinar A

Randall Martin (HAQAST Member, Washington University in St. Louis)
Chi Li (Washington University in St. Louis)
Sarah Kroening (Children's Health Alliance of Wisconsin)
Eladio Knipping (Electric Power Research Institute)
Travis Toth (HAQAST Member, NASA Langley Research Center)

Session 2B: Heat and Compound Events Health Impacts
Moderator: *Jeff Pierce* (HAQAST Member, Colorado State University)

340 / Webinar B

Chris Uejio (HAQAST Member, Florida State University)
Kilan Bishop (University of Miami Rosenstiel School of Marine, Atmospheric, and Earth Science)
Adam Schlosser (Massachusetts Institute of Technology)
Xingmei Liu (Massachusetts Department of Environmental Protection) [Virtual]

11:30 Meeting Photo (Olin Business School staircase)

Today's Agenda

11:40 – 1:15 CT Lunch Break

1:15 – 2:30 CT Session 3A and 3B

Session 3A: Forecasting and Near Real Time Monitoring of Smoke and Air Quality Impacts from Wildland Fires

Moderator: *Jingqiu Mao* (HAQAST Member, University of Alaska, Fairbanks)

Xi Chen (HAQAST Member, University of Iowa)

Leif Paulson (Wyoming Department of Environmental Quality)

David Mendez-Jimenez and *Glen Roussin* (Missouri Department of Natural Resources)

Aaron Naeger (HAQAST Member, NASA Marshall Space Flight Center)

200 / Webinar A

Session 3B: Predicting Ozone Formation: Advances with TEMPO

Moderator: *Jen Kaiser* (HAQAST Member, Georgia Institute of Technology)

Arlene Fiore (HAQAST Member, Massachusetts Institute of Technology)

Amanda Fritz (Connecticut Department of Energy and Environmental Protection)

Angela Dickens (Lake Michigan Air Directors Consortium (LADCO))

Dan Anderson (HAQAST Member, University of Maryland, Baltimore County)

340 / Webinar B

2:30 – 3:00 CT Networking Break

Today's Agenda

3:00 – 4:15 CT Session 4A and 4B

Session 4A: Remote Sensing for Remote Regions: Improving Decision-Making on Dust and More

Moderator: *Carl Malings* (HAQAST Member, Morgan State University)

Jeff Pierce (HAQAST Member, Colorado State University)

Chelsea Langer (New Mexico Department of Health)

Jingqiu Mao (HAQAST Member, University of Alaska, Fairbanks)

Pat Reddy (Independent Consultant / University of Wisconsin – Madison)

200 / Webinar A

Session 4B: Improving Emissions Inventories with Satellite Data

Moderator: *Arlene Fiore* (HAQAST Member, Massachusetts Institute of Technology)

Jen Kaiser (HAQAST Member, Georgia Institute of Technology)

Byeong Kim (Georgia Department of Natural Resources)

Emily Gargulinski (National Institute of Aerospace) / *Amber Soja* (HAQAST Member, NASA Langley Research Center)

Venezia Ramirez (Norwalk Unides)

340 / Webinar B

4:20 CT – Poster Introductions – (Knight Center, Room 200)

5:00 – 7:30 CT Poster Session and Dinner (Whitaker Atrium)

Tomorrow's Agenda

8:30 – 9:00 CT Coffee and Networking

9:00 – 10:15 CT Session 5A and 5B

Session 5A: Global Air Quality Monitoring and Forecasting

Moderator: *Randall Martin* (HAQAST Member, Washington University in St. Louis)

Carl Malings (HAQAST Member, Morgan State University)

Junhyeon Seo (Morgan State University)/ *Pawan Gupta* (HAQAST Member, NASA Goddard Space Flight Center)

A. Patrick Behrer (World Bank)

Colleen Rosales (OpenAQ)

200 / Webinar A

Session 5B: Maximizing Value of Satellite Data for Environmental Consulting

Moderator: *Chris Uejio* (HAQAST Member, Florida State University)

Tracey Holloway (HAQAST Team Leader, University of Wisconsin-Madison)

Nathan Pavlovic (Sonoma Technology)

Chris Elvidge (Colorado School of Mines)

Cynthia Randles (Scepter Air Inc)

340 / Webinar B

10:15 – 10:45 CT Break

10:45 – 12:00 CT Session 6A (Knight Center, Room 200)

Session 6A: Charting a Long-Term Path for Broader Satellite Applications

1:00 – 3:00 CT - TEMPO Earthdata Hands-on Workshop (Brauer 3015, In-person only)

This hands-on workshop, led by Dr. Hazem Mahmoud and Elizabeth Joyner, will explore common NASA Earthdata tools for accessing TEMPO Air Quality data, like NASA Earthdata Search, Worldview, RSIG, and more.

End of Public Meeting

Thank **you** for being part of the next generation!

HAQAST

We appreciate NASA's ongoing support for work

HAQAST

NASA HEALTH AND AIR QUALITY APPLIED SCIENCES TEAM

Connecting NASA Data and Tools with Health and Air Quality Stakeholders

Search