National Aeronautics and Space Administration

Earth Action & Atmospheres

Laura Judd, NASA Langley, APM Health & Air Quality

Ian Brosnan, PM Wildfires

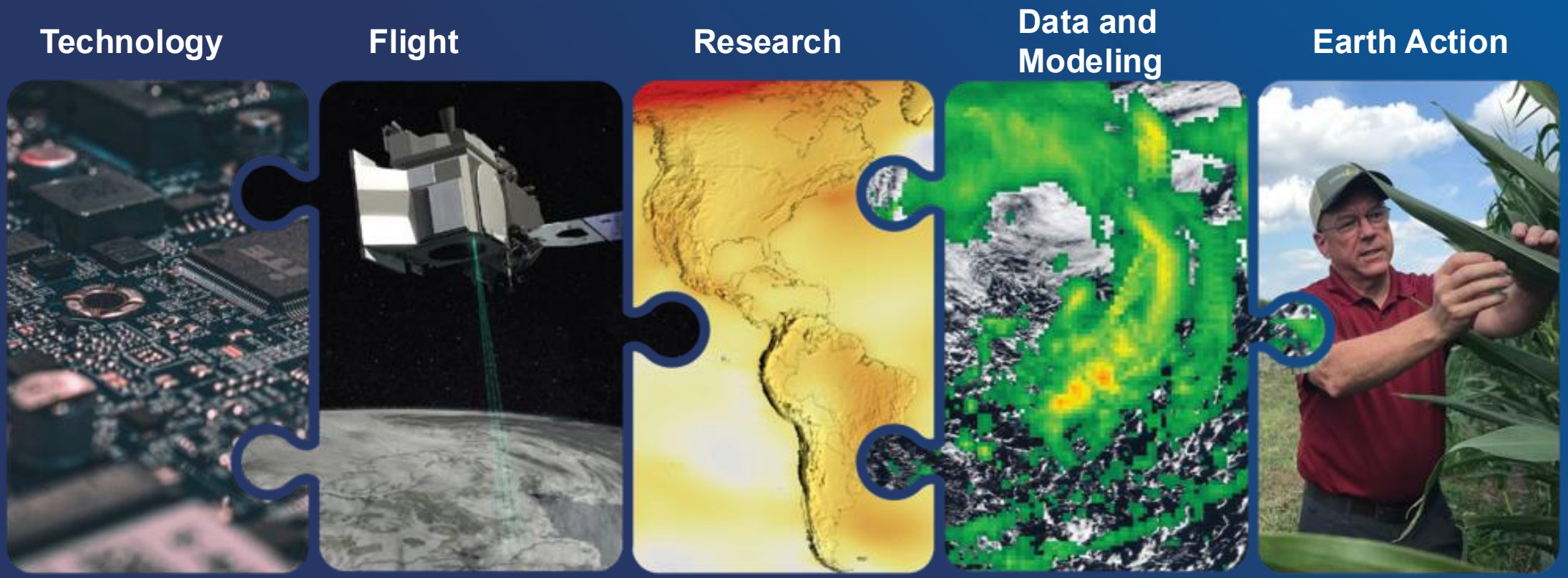
Natasha Sadoff, NASA HQ, PM Interagency Satellite Observation Needs/EarthRISE

Melanie Follette-Cook, NASA GSFC, PS ARSET

Shanna Combley, NASA HQ, PM Energy & Infrastructure

April 22, 2026

NASA Earth Science Division



NASA Earth Action accelerates the use of satellite observations of our Earth for practical decision-making. The program provides funding, technical expertise, and partnerships to empower end users to apply Earth data to challenges related to agriculture, disasters, ecological conservation, health and air quality, energy and infrastructure, water, and wildfires.

Earth Action

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1. **Scaling: Maximizes impact by leveraging past investments and extending proven solutions and successful applications to new users, new geographies, and new thematic areas. NASA Earth Action builds on proven successes to extend their impact to more people.**

2. **User-centered science: Puts partners and their needs at the center of projects and engages them fully in concept, development, and implementation. This ensures that applications are used and maintained, and have a measurable impact.**

3. **Building Bridges: Connects NASA technology, missions, research, and data with end users to ensure that scientific innovations deliver societal benefit. This occurs internally across the Earth Science Division and externally through collaboration, matchmaking, and multidisciplinary work.**

NASA earth ACTION

Agriculture

EarthRISE

Energy & Infrastructure

Water Resources

Disasters

Ecological Conservation

Health & Air Quality

Wildland Fires

Earth Information Center

Interagency Satellite Observation Needs

Private Sector Engagement

Commercial Satellite Data Acquisition

National Aeronautics and Space Administration

Health & Air Quality

Presented by Laura Judd, APM Health and Air Quality

John Haynes, PM Health and Air Quality

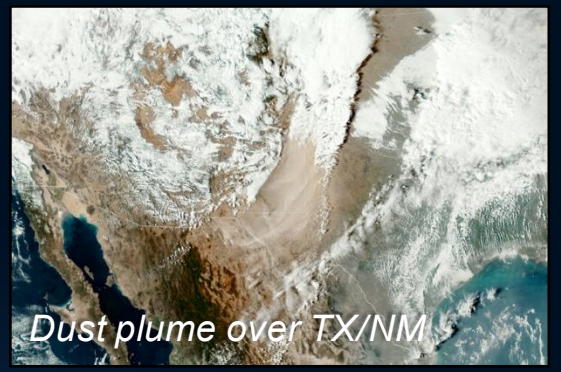
April 20, 2026

Health and Air Quality Applications (HAQ)

We support the use of Earth observation data in air quality management and public health applications to protect and enhance health, security, and the economy in the areas of:

- Infectious diseases and environmental health
- Toxic and pathogenic exposures and health-related hazards
- Implementation of air quality standards, policies, and regulations
- Effects of climate change on public health and air quality

Major Partners include International (e.g., GEO, UNICEF), Federal (e.g., CDC, EPA, NIH, NOAA), State (e.g., South Dakota, California, Texas), and Private sectors (e.g., Google, Moore Foundation).



John Haynes
Program Manager for Health and Air Quality
Earth Action representative to ESSR Atmosphere
Jhaynes@nasa.gov

ROSES 3-yr HAQ Portfolio

- →Wildfire Smoke Transport forecasting
- →Meteorological modeling
- →Satellite/LCS/model data fusion for air quality forecasting
- →Droughts/Air Quality connections
- →Heat impacts planning
- →Health response to extreme weather
- →Cholera Risk Response
- →Malaria Risk Response
- →Infectious Disease forecasting

- →Air Quality Epidemiology at the hourly scale (TEMPO)
- →Smoke exposure for veterans
- →Satellite→ PM2.5 for public health
- →Ozone impacts from smoke transport
- →Pollen Forecasting
- →Cholera Risk Response
- →Malaria Forecasting
- →Dengue Forecasting
- →Infectious Disease in Africa

TBD

HAQ2021 HAQ2024 HAQ2027

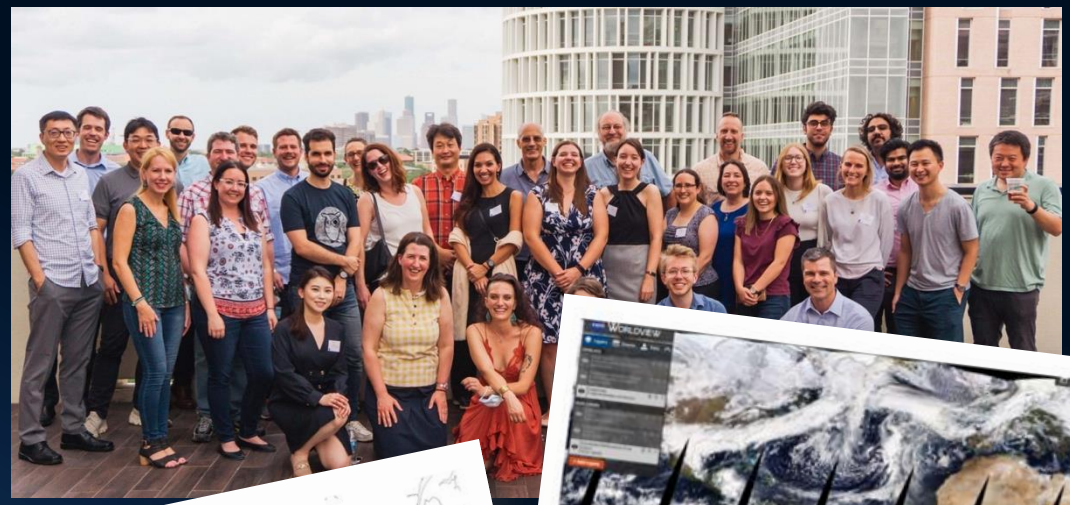
2021 2022 2023 2024 2025 2026 2027 2028 2029

Health and Air Quality Applied Sciences Team

Connecting NASA science with air quality and health applications

- 4th generation (AQAST 2011-2016 , HAQAST2 2016-2020, HAQAST3 2021-2025, HAQAST4 2025-present)
- 14 members, 60+ co-investigators, 22 ambassadors, 100s of stakeholders
- Three types of work – scaled to different needs
  - Member projects
  - Tiger Teams
  - Outreach, engagement, rapid response
- Next meeting May 13-14 in Madison, WI

https://haqast.org/



National Aeronautics and Space Administration

Wildland Fires

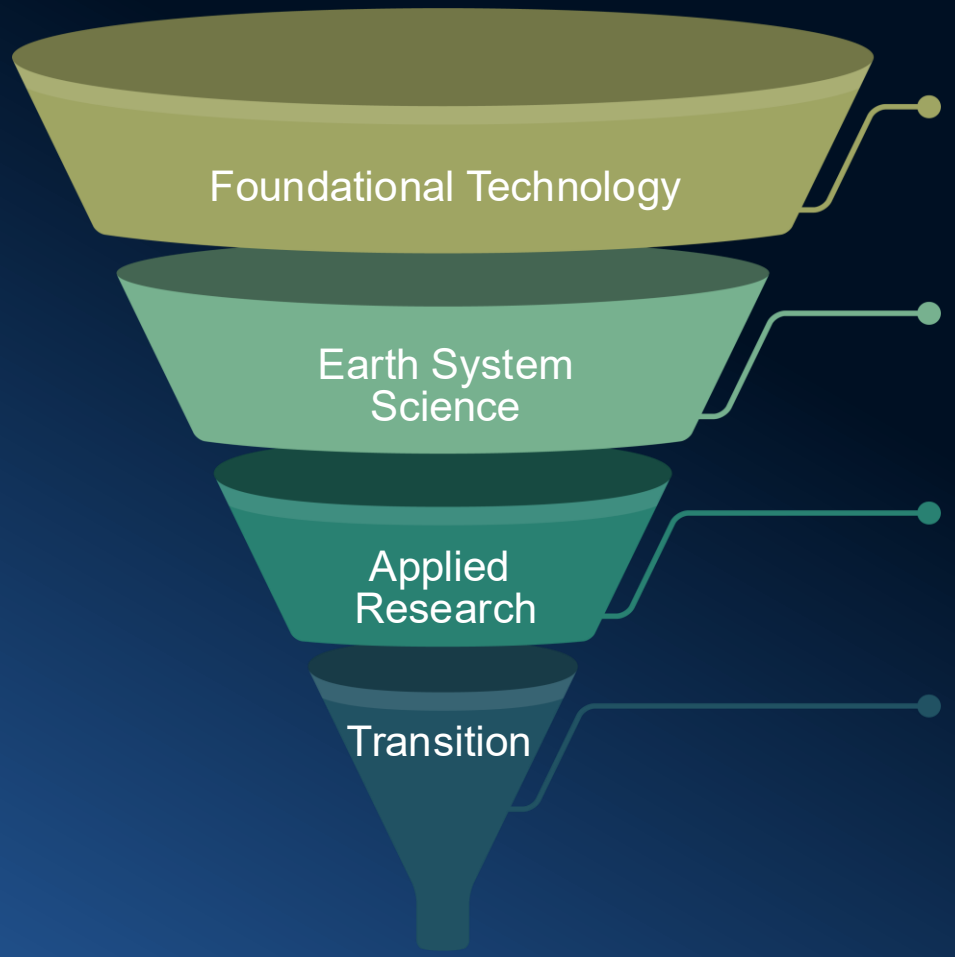
Ian Brosnan

PM Wildland Fires

Wildland Fires Program

The NASA Wildland Fires program develops technology, research, and applications that improve the end-to-end management of wildland fires, ultimately reducing the impact that fires have on communities and the economy.

The program works closely with wildland fire management agencies, researchers, and technologists in government agencies, academic institutions, and the private sector within the United States and abroad.



Continue to develop foundational Earth Observation and modelling technology for measuring aspects of wildland fire across the entire fire life cycle (pre-, active, & post-fire)

Leverage Earth Observation in use-inspired research to advance our understanding of the role that wildland fire plays in the Earth System

Co-develop and incubate applications that leverage Earth Observation data to support decision makers in wildland fire management

Deliver mature technological capabilities to operational fire management agencies to address key challenges in wildland fire management (e.g., FireSense Project)

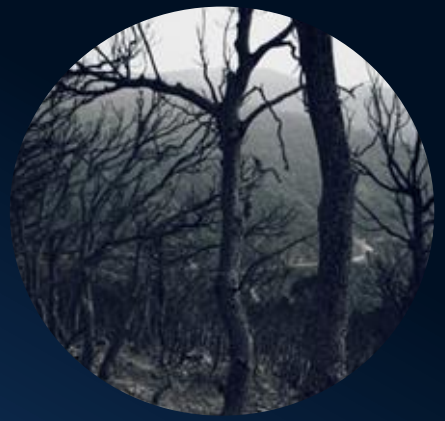
Wildland Fires Focus Areas

Pre-fire: Collect and visualize near real-time risks based on fuel characteristics, soil moisture, surface temperature, and humidity.

Improved assessment of pre-fire (fuel, weather, etc.) conditions to enable more prescribed fire.

Active Fire: Tracking for resource allocation with higher spatial resolution and update frequency - toward 24/7 fire prioritization and monitoring.

Development of new, innovative sensors and models for precisely characterizing fires, fuels conditions, and smoke.



Post-Fire: Improved maps of burn severity for post-fire rehabilitation efforts.

Improved predictions of post fire hazards and impacts.

Air Quality: Enhanced tracking and analysis of smoke plumes, composition, and transport.

Improved forecasts of air quality impacts to natural and human systems as well as operations.

Wildland Fires Funded Project Areas

16 Wildland Fire Technology Projects (FireSense Tech)
- Developing transformational technologies that support wildland fire management (pre-, active, and post-fire)

7 Wildland Fire Science Projects (IDS)
- Interdisciplinary studies to understand wildfire impacts on terrestrial ecosystems, feedbacks to the atmosphere and consequences to human communities

11 Wildland Fire Applied Sciences Projects (Earth Action – Wildland Fire (A.47)
- Earth science applications to support decision making in pre-, active, and post-fire environments

31 FireSense Transition projects/team members (A.65)
- Selected principal investigators became members of the FireSense Implementation

9 FireSense Co-Development Projects
- Project teams comprise FireSense Implementation Team members and interagency and private sector stakeholders/partners

*PIs and Collaborators include individuals from Academia (87), Industry (28), NGOs (18), NASA (17) and other Federal Agencies (13), as well as State and Local Agencies (2)

National Aeronautics and Space Administration

Satellite Needs Portfolio:

NASA's contributions to the Satellite Needs Working Group (SNWG)

EarthRISE

Natasha Sadoff
Satellite Needs Program Manager

The Satellite Needs Working Group

- An interagency, coordinated approach to **identify and communicate Federal satellite Earth observation needs** through a biannual survey and **develop solutions** to help federal agencies use Earth-observing satellite data products in their decision-making
- Tasked with surveying the satellite needs of civil agencies every two years, as approved by the U.S. Group on Earth Observations (USGEO)
- There have been five biennial cycles with **over 500 surveys submitted**!

NASA's Satellite Needs Working Group Implementation TEam (NSITE)

Addresses federal agency Earth observation needs by:

Leading the assessment of survey responses from over 30 agencies

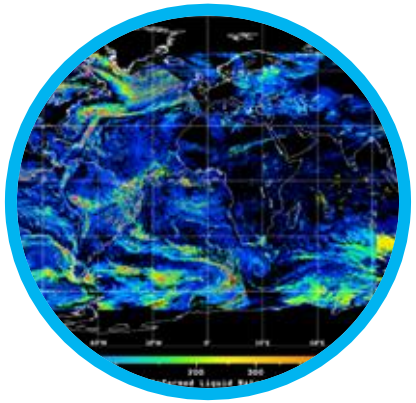
Formulating, prioritizing, and proposing solutions

Managing the implementation of over 30 solutions

Co-designing solutions with agencies to ensure impact

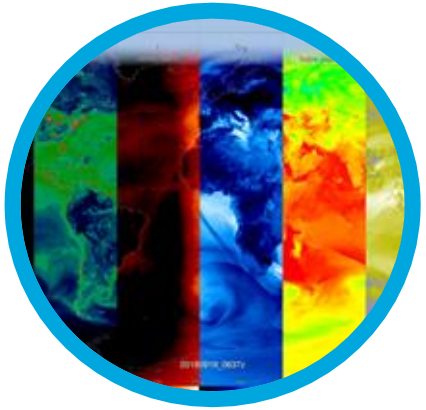
Information gathered during this process influences NASA's decisions on new data products, new research or applications tools or priorities, and new data delivery strategies

Atmosphere Solutions



Global Cloud Composites from SatCORPS

- Hourly, 3 km global cloud composite datasets (from mid-2023)
- Includes brightness temperatures, cloud bottom height, cloud effective particle size, among other paramaters

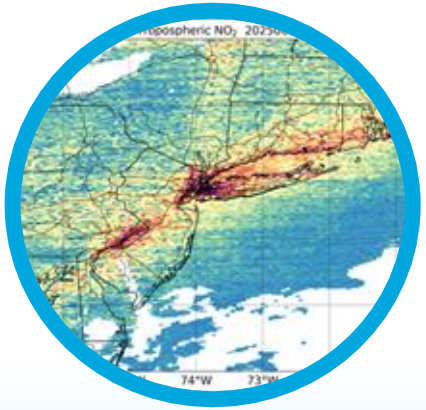


GEOS Atmospheric Composition Reanalysis

- Enabled aerosol and trace gas concentrations to be assimilated into the GEOS model for 2008-2018

Air Quality Sensors and Forecasts

- Expands in situ sensor networks in rural U.S and for U.S. embassies and consulates
- GMAO integrates new sensors into GEOS-CF model for localized air quality forecasts, PM2.5, NO2, available now, O3 coming soon



TEMPO Near Real-Time

- Hourly, NRT Air Quality Products – NO_2, HCHO, O_2-O_2 available now, *SO_2 coming soon*
- 7 additional science quality trace gas measurements *coming soon (SO_2, UVAOD, aerosol height, H_2O, UVB, CHOCHO, BrO)*

PBL Temperature, Water Vapor, and Height – *coming soon*

- Merged hyperspectral infrared and microwave sounder data with the Global Navigation Satellite Systems – Radio Occultation for improved weather forecasting

Airborne Data Management Group

- Catalog of Archived Suborbital Earth Science Investigations
- Enabling efficient discovery and access to airborne and field Earth science observations

Opportunities for the Atmosphere Community

Participate in the SNWG 2026 Assessment as a NASA Subject Matter Expert (SME)

NASA SMEs, along with NOAA and USGS representatives, are tasked with assessing the SNWG survey responses submitted by agencies and proposing potential solutions to address their expressed needs. If you are a NASA Civil Servant or contractor and are interested in serving as a NASA SME for the upcoming 2026 assessment starting in January 2027, please contact us at info@snwg-impact.net!

Utilize information on user needs gathered from the SNWG survey

Coming Soon! SNWG will produce publicly available Aggregate Statistics Reports that highlight common themes and trends in satellite data needs across the federal government. This information can benefit the broader community by informing research, applications, tool and data product development, and other related work. They will be shared on the USGEO website.

Access, apply, and promote SNWG solutions for you and your community's work

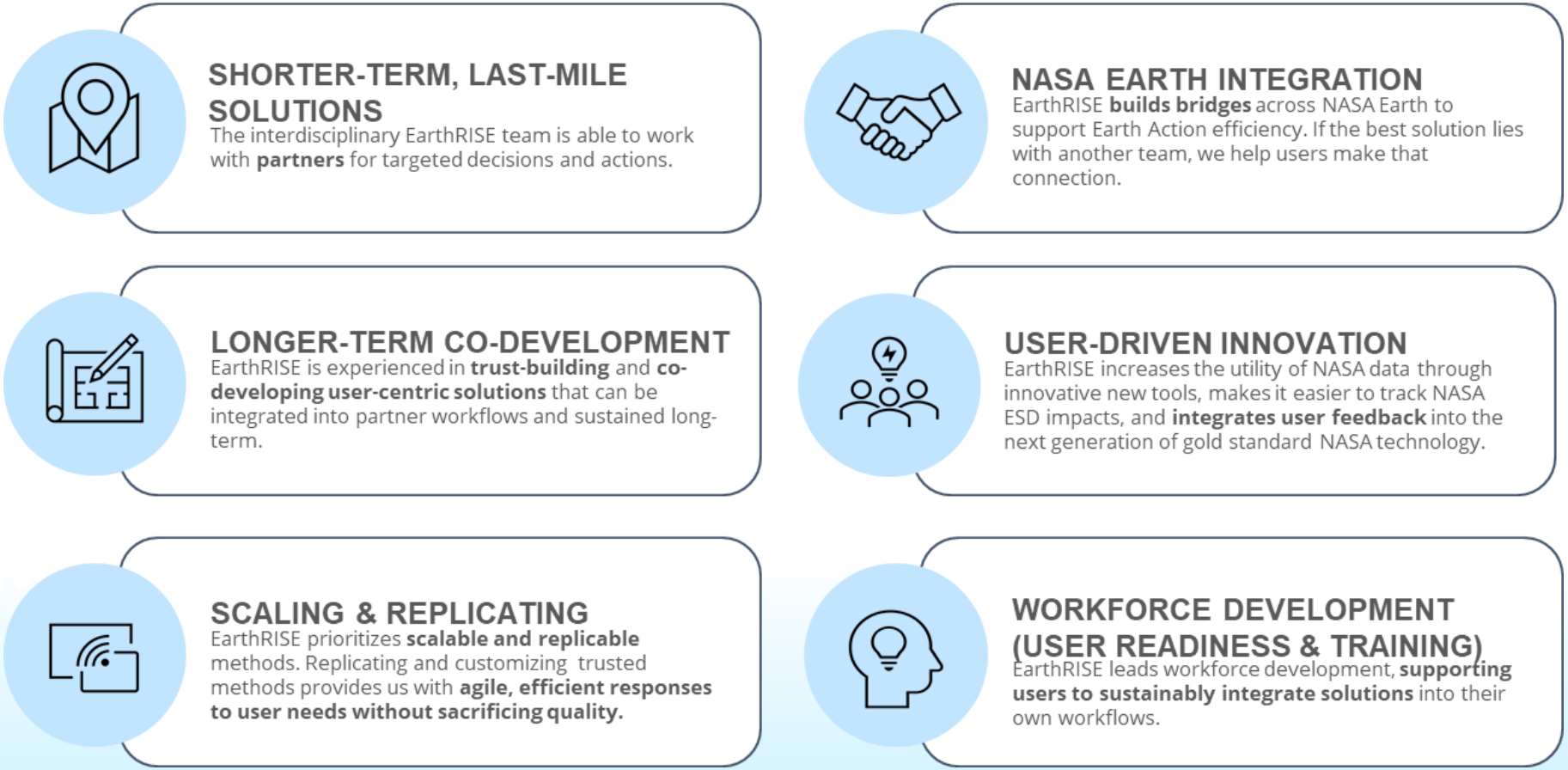
SNWG is eager to see the use and benefit of its solutions. Please explore and keep NSITE posted!

Sign up for the NSITE newsletter

Visit the NSITE website to learn more about all solutions

What more general information? Contact Natasha Sadoff, natasha.sadoff@nasa.gov

EarthRISE: New Earth Action surge capacity to co-develop new solutions, build the science workforce, and increase NASA efficiency in meeting cross-cutting user needs



Atmosphere Community: EarthRISE is an internal function and does not provide funding. Connect (through Natasha) to find linkages or synergies between your work and other Earth Action activities, opportunities for advising or partnership, or connections to state, local, Tribal, territorial, or private sectors.

EarthRISE Developers Academy

EarthRISE Developers Academy builds the emerging generation of Earth science leaders through hands-on projects working directly with partners to apply NASA's cutting-edge satellite data to real-world challenges.

- Builds on the 25+ year legacy of the DEVELOP Program
- Geospatial **workforce development** for students, recent graduates, & early career professionals
- Demonstrates EO capabilities and solutions for **informing action** for state, local, tribal, territorial, & private sector partners
- 10 to 14-week **immersive** Earth science opportunities in-person at a NASA center or virtually

Get Involved!

- Propose an applied project to enhance your research idea, reach new or additional end users, or extend or scale methodology to a new geography
- Serve as a project advisor or subject matter expert for an early career team

Contact: Amanda Clayton (amanda.l.clayton@nasa.gov) or NASA-DL-ERDA@mail.nasa.gov

National Aeronautics and Space Administration

ARSET

Melanie Follette-Cook

NASA GSFC, PS ARSET

Applied Remote Sensing Training (ARSET) Program

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

Cost-free training on the use of Earth Observations for decision making

Our trainings are:

- Online and in-person
- Live and instructor-led, or self-guided
- Provided at **no cost**, with materials and recordings available from our website
- Often **multi-lingual**
- Range in level from **introductory** to **advanced**

AGRICULTURE

DISASTERS

ECOLOGICAL CONSERVATION

HEALTH & AIR QUALITY

WATER RESOURCES

WILDLAND FIRES

ARSET Trainings for Atmospheres

Topics

- Monitoring smoke, dust, and gaseous pollutants
- Greenhouse gas monitoring
- Precipitation monitoring
- Forecasting and reanalysis

Recent Trainings

- Introduction to Lightning Observations and Applications
- Methane Observations for Large Emission Event Detection and Monitoring (En Español)
- NASA Atmospheric Composition Ground Networks Supporting Air Quality and Climate Applications
- Geostationary Remote Sensing of Trace Gases for Air Quality Applications in North America
- Advanced NASA Earth Observations and Tools for Active Fire, Smoke, and Post-Fire Monitoring (En Español)
- Lidar Profiling Satellite Observations for Air Quality Applications

ARSET Onsite Training

Recent Trainings

- EPA (2023)
- Western US AQ Managers (2025)
- 4th International Smoke Symposium (2026)

Coming Soon…

- **Estimating Surface $PM_{2.5}$ Using Satellite Data and Other Information Sources (opening soon)**
- **Fundamentals of Remote Sensing for Air Quality Applications**
  - Current Fundamentals of Remote Sensing course has 15,000+ registered
- **Earth Science Applications Guidebook**
  - Focus: Practical guidance to empower action on NASA EA applications
  - ES2A/Earth Action overview
  - Developing proposals
  - Managing EA projects
  - Audiences: Established and early career Earth scientists

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

National Aeronautics and Space Administration

SPoRT & POWER

Shanna Combley

NASA HQ, PM Energy & Infrastructure

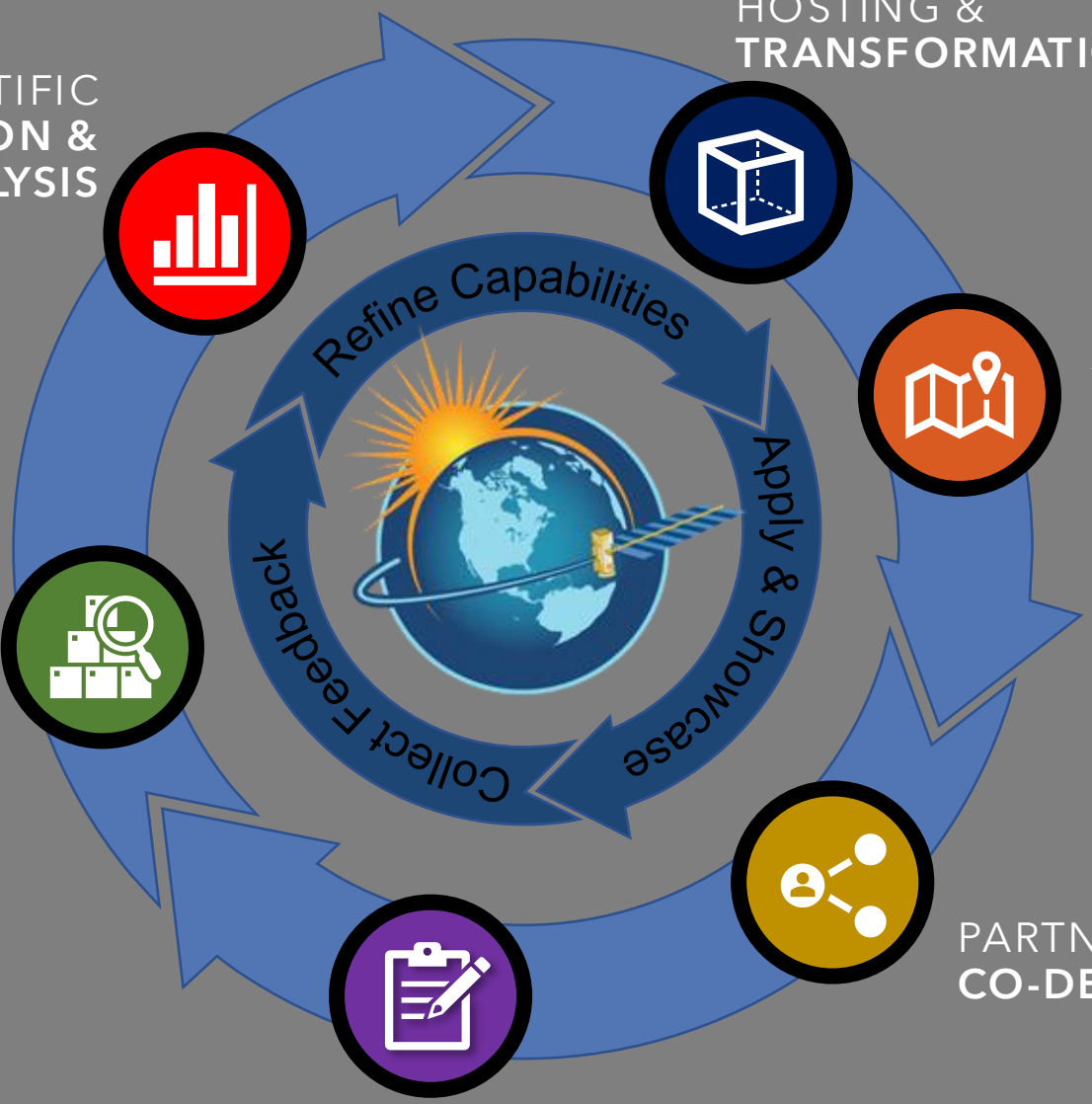
The Prediction of Worldwide Energy Resources (POWER) Project

Research to Action: POWER improves the capability to integrate NASA Earth observations and model data specific to **surface solar irradiance and meteorological parameters** into decision processes related to energy, buildings, and agriculture.

Benefit Sector Relationships: Long-term partnerships, collaborations, and user interaction within targeted sectors provides critical feedback on needs.

Accessibility of Validated Parameters: Processing and validating key user parameters, then developing IT infrastructure to provide information according to user requirements.

POWER's Interactive Process



User Tools & Services

Scientific Foundation

User Collaboration and Interaction

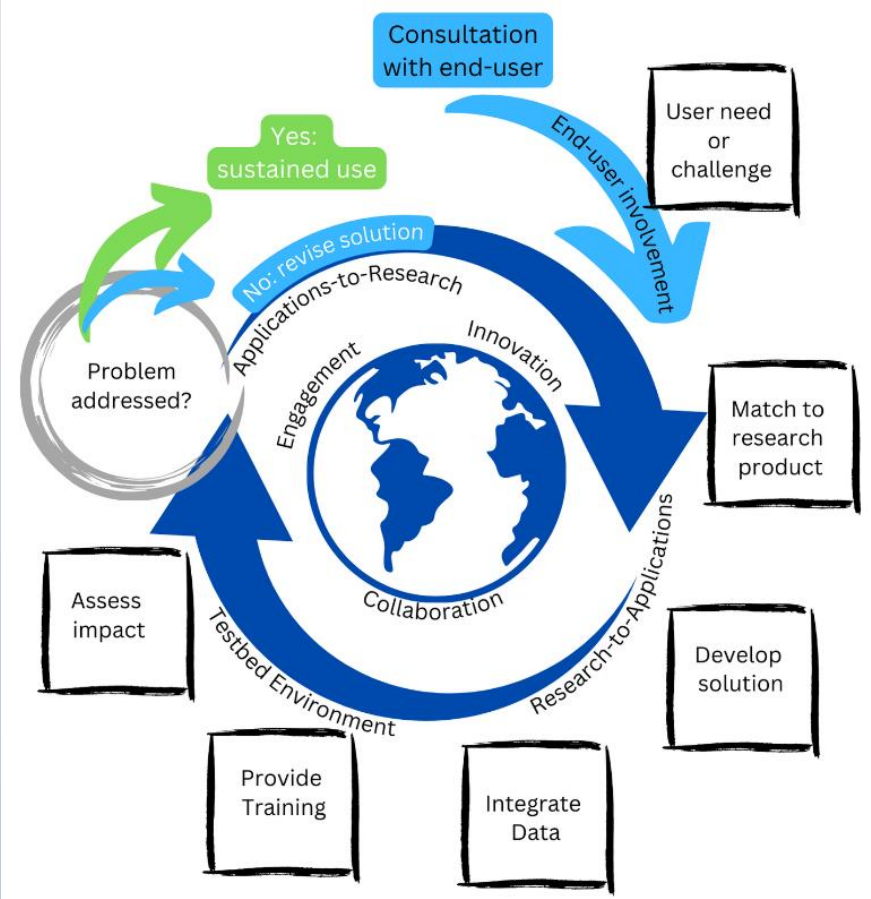
SPoRT: An Earth Science to Action Innovation Hub

Translating Earth Science Research to Real-time Decisions

The Short-term Prediction Research and Transition (SPoRT) center translates NASA Earth Science research, satellite observations, and models into real-time solutions that increase resilience for societal benefit.

For over 20 years, SPoRT has refined a collaborative co approach to translate research to real-time products and capabilities that support stakeholder decision-making.

With key expertise in weather, air quality, and water resources SPoRT meets users at the intersection of challenges, gaps, needs, and opportunities to build trusted, sustainable products serving stakeholders across federal agencies, state/local agencies, academia, and the private sector.



SPoRT Paradigm

How SPoRT Works…

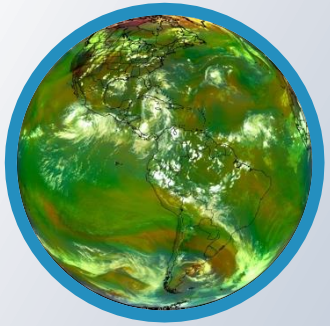
User-Driven Innovation
- *Applied research*
- *NWP, AI/ML development*
- *Product development*

Bridge Science and Applications
- *Translate ARL 2-3 capabilities to higher ARL*
- *Product prototyping and testing*
- *Real-time product processing and delivery*
- *Data formats and visualization*

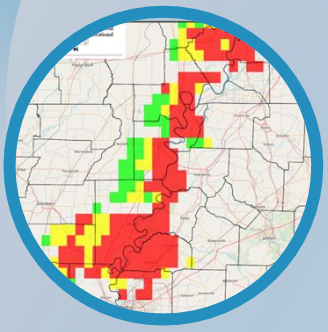
Training, Assessment, User Engagement
- *Short training materials*
- *Product use assessments*
- *User feedback, virtuous cycle*
- *User impact stories*

Example SPoRT Products

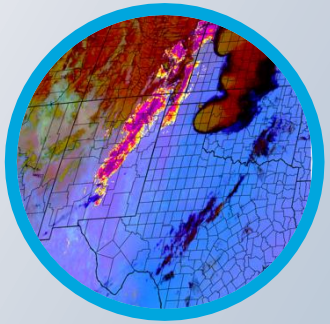
Product Catalog



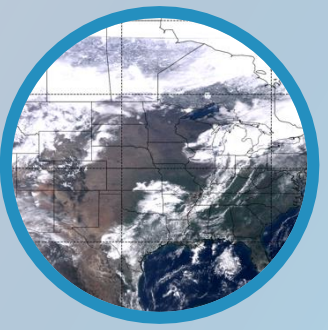
GOES-R Multispectral Imagery



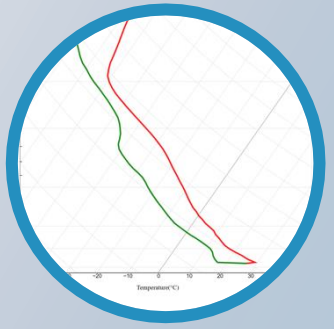
SPoRT Lightning-AI & Stoplight Product



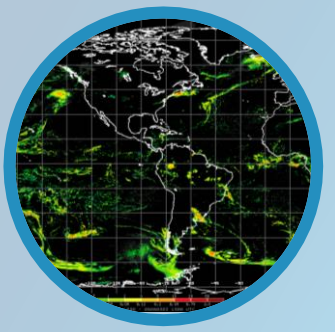
SPoRT DustTracker-AI



Near-real-time TEMPO Multispectral Composites



Interactive Satellite Sounding Viewer



GPM IMERG Accumulated Precipitation

National Aeronautics and Space Administration

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