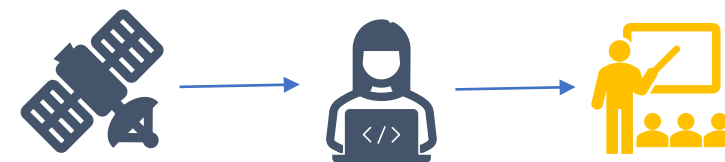National Aeronautics and Space Administration

Resources   - Learn More

NASA Applied Remote Sensing Training Program (ARSET)

SXSW EDU 2024

ARSET

Applied Remote Sensing Training Program

Online Resource Guide

- **Fundamentals of Remote Sensing**

- **Introduction to NASA Resources for Climate Change Applications**

- **Fundamentals of Machine Learning for Earth Science**

- **Satellite Remote Sensing for Measuring Urban Heat Islands and Constructing Heat Vulnerability Indices**

- **Earth Observations for Disaster Risk Assessment and Resilience**

- **Satellite Data for Air Quality Environmental Justice and Equity Applications**

EARTH SCIENCE
APPLIED SCIENCES
NASA

Applied Remote Sensing Training
(ARSET) Program

Online Resource Guide
2015-2023

TOPS

Transform to Open Science

ACCELERATE
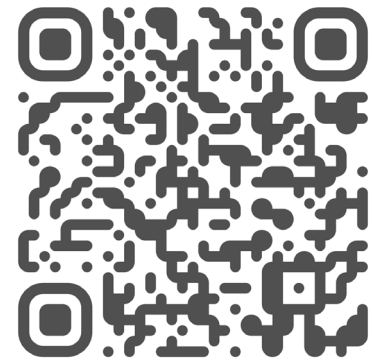
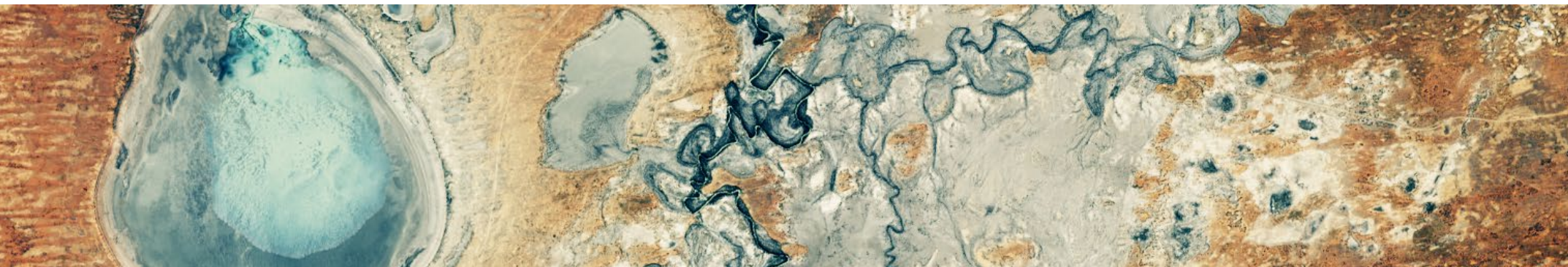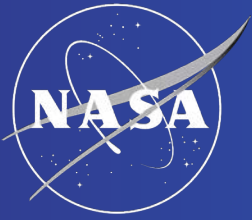Accelerate major scientific discoveries

BROADEN

Broaden participation by historically excluded communities

UNDERSTAND AND ADOPT

Increase understanding and adoption of open science principles and techniques

EARTH**DATA** Offers
The Air Quality Data Pathfinder
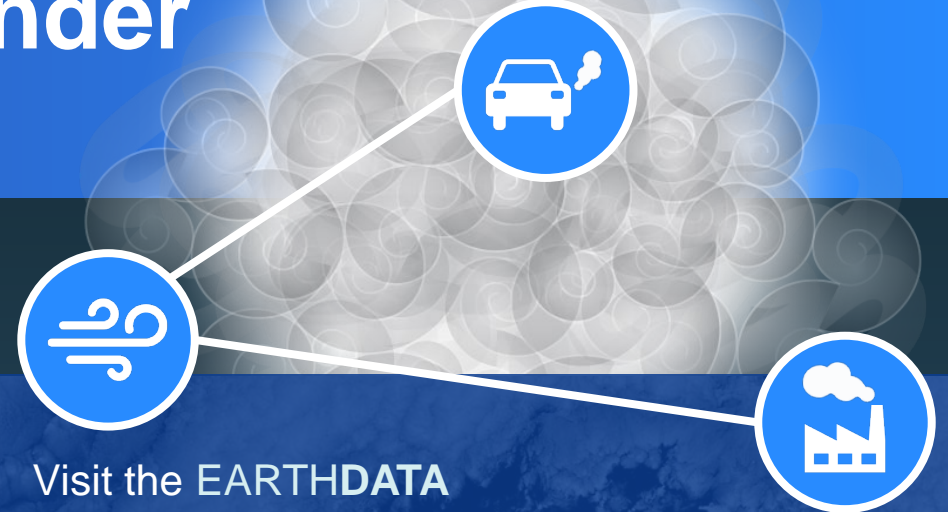## for Your Research & Applications

Air pollution is one of the largest global environmental and health threats. NASA provides data resources to better understand the movement of pollutants and the impact of events leading to poor air quality. This Pathfinder helps you access, and leverage data acquired from NASA's satellite, airborne, and ground-based missions and campaigns.

Available Data Types:

- Aerosols
- Trace Gases (e.g., Nitrogen Dioxide, Sulfur Dioxide, Carbon Monoxide, etc.)
- Weather (e.g., Air Temperature, Clouds, Precipitation, etc.)
- Land Surface (e.g., Soil Moisture, Surface Reflectance, Topography, etc.)
- Human Dimensions

## Data are from satellites, airborne and ground-based platforms, and models, including:

- AIRS
- AMSR2
- GPM
- MODIS
- OLI/TIRS
- OMI
- OMPS
- SMAP
- TROPOMI
- VIIRS
- GEOS
- MERRA-2

Visit the EARTH**DATA**
Air Quality Data Pathfinder
for more information**:**

- Commonly Used Datasets for Air Quality Research and Applications
- Tools for Using Data
- Resources for Applying and Connecting NASA Data
- GIS Resources
- Tips for Getting Help and Connecting with NASA experts
- Tutorials and more!
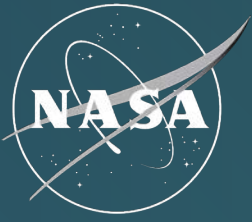
EARTH**DATA** Offers
Data Pathfinders
for Your Research & Applications

Data Pathfinders guide users through selecting topic-specific Earth science data resources like datasets, visualizations, and tools. Pathfinders leverage NASA's data holdings across satellite, airborne, and ground-based missions and campaigns.

Pathfinders are designed to help users:

- **Reduce barriers** for getting started with NASA Earth science data

- Identify **commonly-used datasets** and resources

- Locate **parameter-specific websites, applications, and projects** to help users explore data about popular topics

- Access **tutorials and trainings** for just-in-time learning or a deep dive about a specific tool or dataset

- Find **tools and services** for data search, retrieval, and manipulation

Data Pathfinders are organized in the following themes:

- Agriculture and Water Resources Management
- Biological Diversity and Ecological Conservation
- Disasters: Wildfires, Volcanoes and Earthquakes, Tropical Cyclones, Extreme Heat, Floods, Landslides
- Diseases
- Geographic Information Systems (GIS)
- Greenhouse Gases
- Air Quality
- Sea Level Change
- Water Quality
- Coming Soon: Renewable Energy Resources
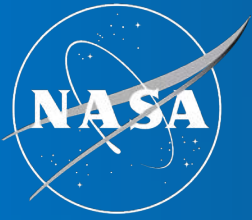
EARTH**DATA** Offers
The Greenhouse Gases Data Pathfinder
for Your Research & Applications

Greenhouse gases (GHG) contributed to 2022 being the sixth warmest year on record. Earthdata provides remotely sensed GHG data for modeling the sources and sinks of these gases and other climate change research.

Available Data Types:

- Carbon Dioxide
- Methane
- Nitrous Oxide
- Ozone
- Chlorofluorocarbons
- Water Vapor
- Environmental Impacts
- Socioeconomic Factors

Data are from satellite, airborne, and ground-based platforms. Satellite and space-based sensors include:

- Aura
- Aqua
- OCO-2
- International Space Station
- Sentinel-5P
- Suomi NPP

Visit the EARTH**DATA** Greenhouse Gases Data Pathfinder for more information:

- Data Use Cases
- How to Find Data
- Tools for Data Access and Visualization
- Common Measurements of GHGs
- Benefits and Limitations of the Data
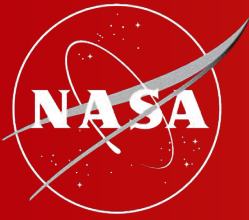
EARTH**DATA** Offers

The Disasters Data Pathfinder
for Your Research & Applications

For emergency managers, decision makers, and anyone interested in using NASA data to understand the vulnerability and exposure of a community to a disaster, this Pathfinder series directs users to NASA datasets that can aid in monitoring contributing factors, measuring and mitigating risk, and assessing post-event impacts.

Disaster Data Pathfinders:

- Tropical Cyclones
- Earthquakes and Volcanoes
- Extreme Heat
- Floods
- Landslides
- Wildfires

Data are from satellites, airborne and ground-based platforms, as well as models. Satellites, space-based sensors, and models include:

- MODIS
- VIIRS
- ABI
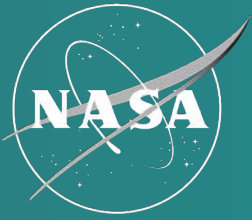- SRTM
- SMAP
- OLI/TIRS
- IMERG
- OMI
- TROPOMI…and more!

Visit the EARTH**DATA**
Disasters Data Pathfinder Series
for more information**:**

- Commonly Used Datasets for Disasters-related Research and Applications
- Tools for Using Data
- Resources for Applying and Connecting NASA Data
- Use Cases and Articles
- Tips for Getting Help and Connecting with NASA
- Tutorials and more!

EARTH**DATA** Offers
The Tropical Cyclone Data Pathfinder
for Your Research & Applications

NASA provides datasets, tools, and near real-time data for use in understanding the formation, movement, and impacts of tropical cyclonic storms.

Available Data for Pre-Storm, Post-Storm, and Near Real-Time Analysis

Parameters include:

- Precipitation
- Relative Humidity
- Sea Surface Temperature
- Wind
- Sea Level Pressure
- Flood Inundation
- Soil Moisture
- Nighttime Lights
- Socioeconomic Factors

Data are from satellites, airborne, and ground-based platforms, as well as models. Satellites, space-based sensors, and models include:

- IMERG
- GEOS-5
- AMSR2
- Daymet
- GOES
- Himawari
- MODIS
- VIIRS
- AIRS
- Landsat
- CYGNSS … and more!

Visit the EARTH**DATA**
Tropical Cyclone Data Pathfinder
for more information**:**

- Commonly Used Datasets for Tropical Cyclone Research and Applications
- Tools for Using Data
- Resources for Applying and Connecting NASA Data
- Use Cases and Articles
- Tips for Getting Help and Connecting with NASA
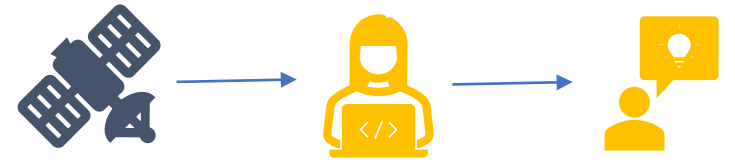- Tutorials and more!

My NASA Data

Since 2004, My NASA Data has supported students and teachers of grades 3-12 in analyzing and interpreting NASA mission data through:

- Mini Lessons

- Interactives

- Lesson Plans

- GLOBE

- STEM Career Connections

National Aeronautics and Space Administration
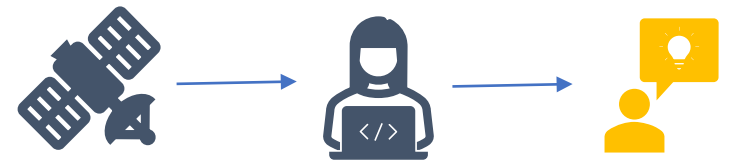
Resources   - Get Involved

NASA Applied Remote Sensing Training Program (ARSET)

SXSW EDU 2024

GLOBE

Global Citizen Science and Education

The Global Learning and Observations to Benefit the Environment (GLOBE) Program provides students and the public with the opportunity to participate in data collection and contribute meaningfully to our understanding of the Earth system and global environment

GLOBE by the Numbers

- **127** Countries
- **40,460** Schools/Informal Education Organizations
- **48,816** Educators
- **266,896** GLOBE Observers
- **247,098,776** Measurements
- **897,430** Measurements this month
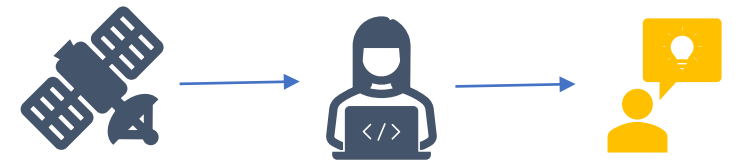
Image courtesy of GLOBE Program
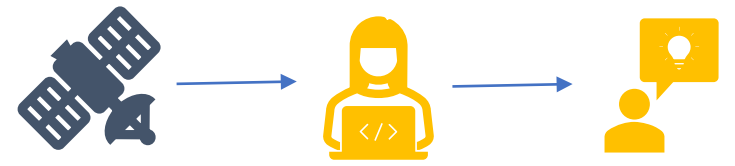
GLOBE

Global Citizen Science and Education

Resources available for:

- Teachers and formal educators
- Informal educators
- GLOBE Students
- Citizen Scientists
- STEM Professionals
- And more!

Visit **globe.gov** for more information



Graphic courtesy of GLOBE program

DEVELOP

Dual Capacity Building Projects

- 10-week paid opportunity

- Three terms a year – spring, summer, fall

- Learn to access and apply satellite data to real-world environmental issues

- Engage directly with decision-making organizations

- Networking opportunities

- Open to students and non-students, all majors and backgrounds, and international students studying in the U.S.

DEVELOP Locations
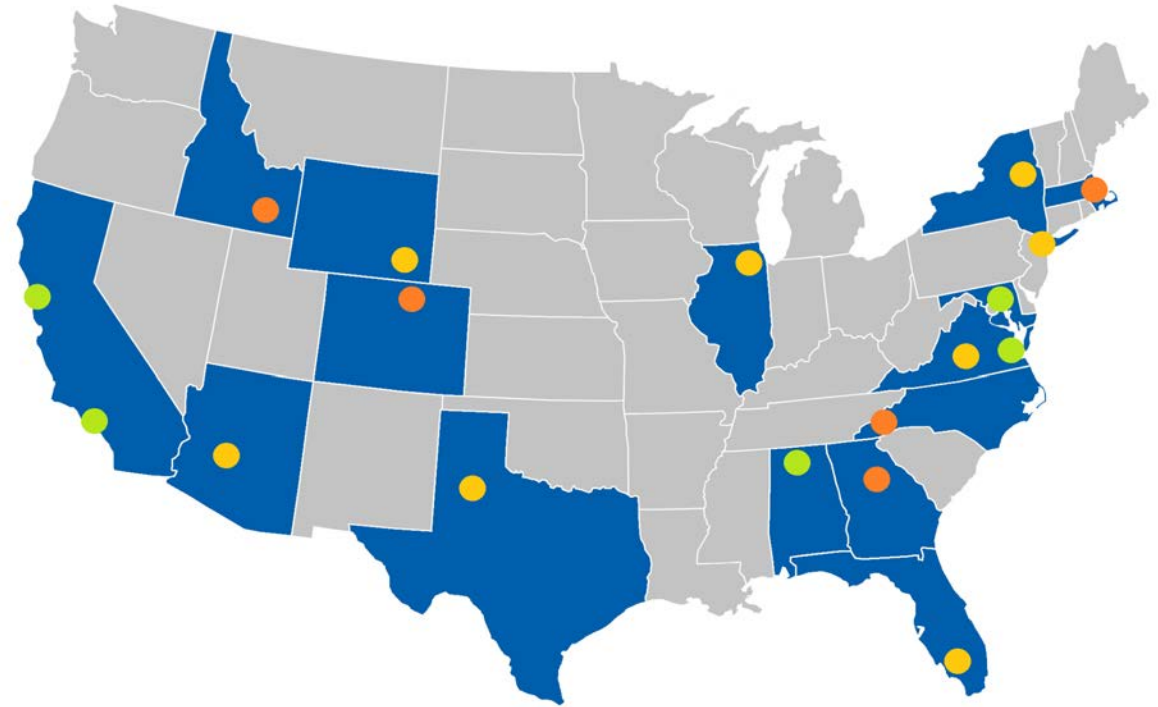
NASA Centers
Regional Offices
Pop-Up Host Locations
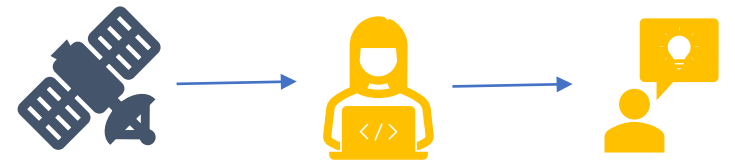
DEVELOP

Dual Capacity Building Projects

Apply to be a participant

(Next Term Application Period: May 6 - June 14)

Partner with DEVELOP

Submit a project request form

In 2023...

41 Projects   79 Partners   164 DEVELOPers   14 Nodes
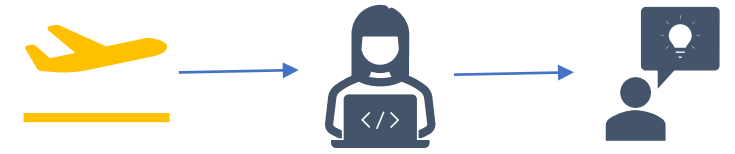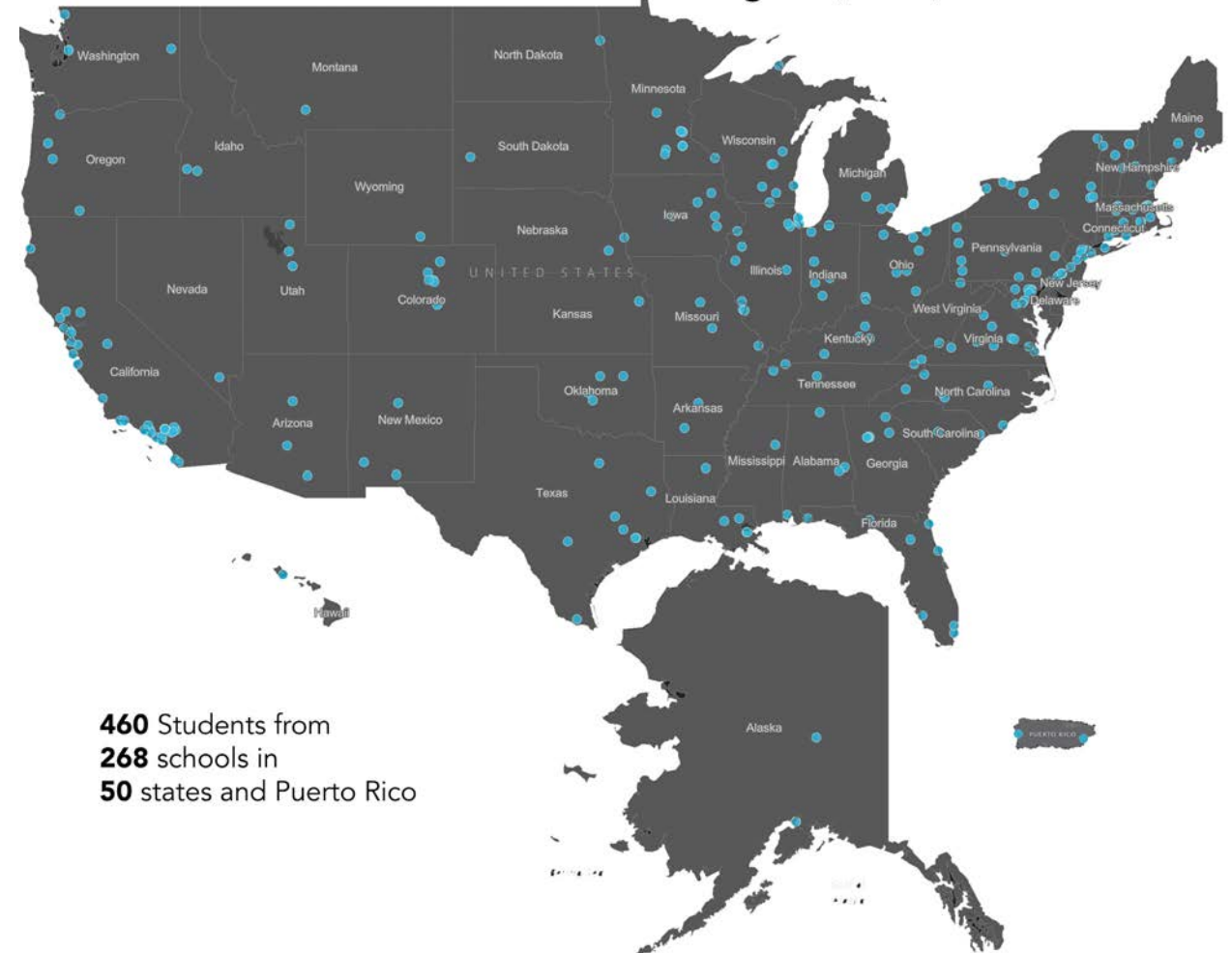
Images courtesy of NASA DEVELOP

SARP

Student Airborne Research Program

- 8-week paid opportunity

- Rising senior undergraduates

- Hands on research experience on a scientific campaign

- Participants assist in operating instruments to sample atmospheric gases or image land and water surfaces, including taking field measurements

NASA Student Airborne Research Program (SARP) 2009-2023

460 Students from
268 schools in
50 states and Puerto Rico

Thank You!