

National Aeronautics and
Space Administration

NASA
earth

A Brief Update from the Capacity Building Program

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NASA's Capacity Building Program

The Capacity Building Program provides individuals and institutions with workforce development, training activities, and collaborative projects to strengthen understanding of Earth observations and expand their use around the world.

→ ARSE

ARSET provides cost-free, often multilingual training on remote sensing topics. Through online trainings designed for all skill levels, the program teaches basic to advanced remote sensing skills to a worldwide audience using freely available resources.

→ DEVELO

DEVELOP addresses environmental and policy issues through interdisciplinary feasibility projects that apply NASA data to community concerns. These projects provide experiential learning for both participants and partners to use geospatial data and to inform decisions.

→ SERVIR

SERVIR is a joint initiative of NASA, USAID, and leading geospatial organizations in Asia, Africa, and Latin America, that partners with organizations in these regions to address critical challenges like climate change, food and water security, land use, and air quality.

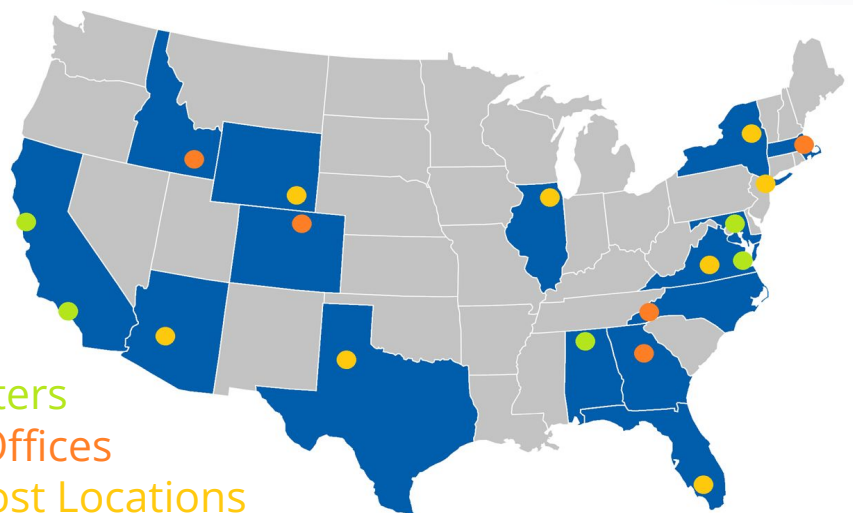
Indigenous Peoples Initiative

IPI co-develop place-based trainings and projects with Indigenous communities that use EO to inform decisions, centered around community engagement.

DEVELOP National Program

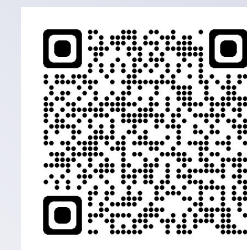
Dual capacity building experience

- 10-week paid opportunity
- Three terms each 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.



Anai, second from right, with her **FIRE Foundry** cohort—a group that assists individuals interested in fire-related careers in Marin County.

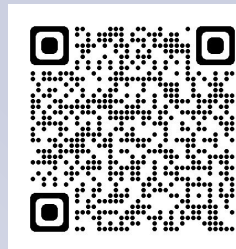
Have a project idea?
Submit a project request form here



DEVELOP National Program

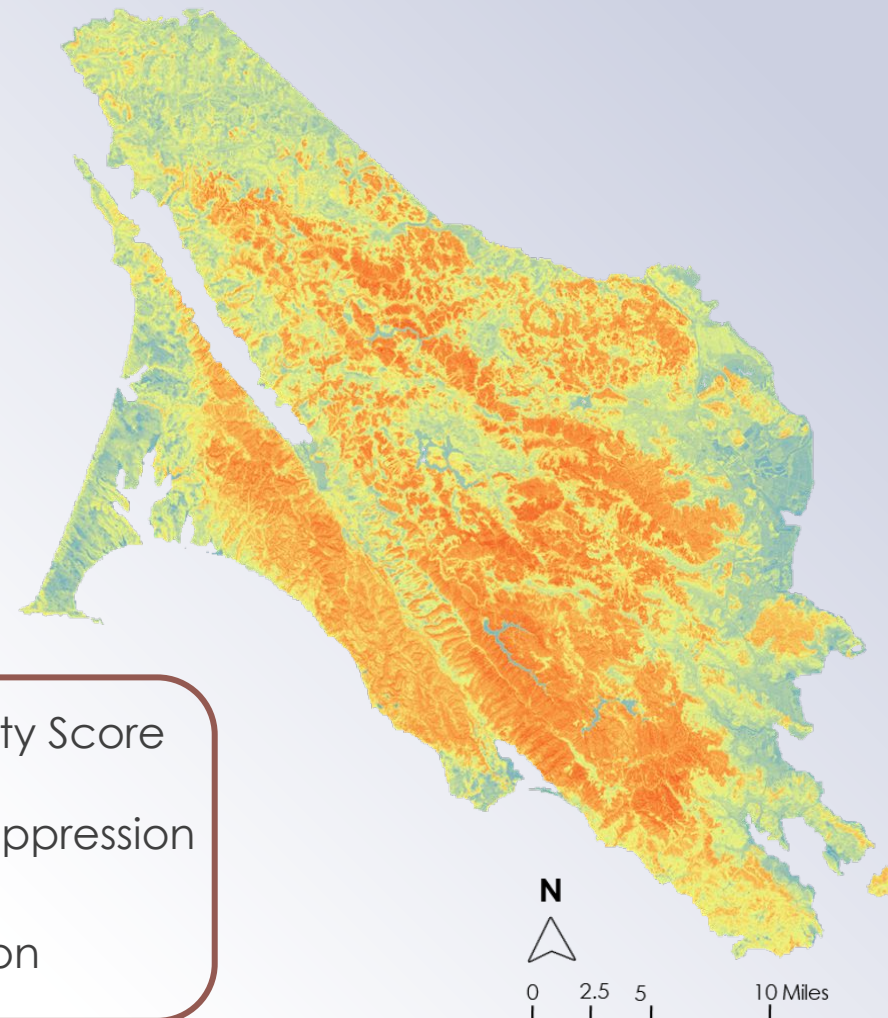
Dual capacity building experience

Have a project idea?
Submit a project
request form here



Anai's team used Landsat 7 & 8, Sentinel-2, ECOSTRESS, and LiDAR data to assess Marin County, CA's fire suppression index and develop environmental justice indicators to inform evacuation efforts of at-risk communities. The figure on the right shows fire suppression difficulty, which will inform firefighters' response to wildland fire county-wide.

The team held a remote sensing workshop for the Marin County Fire Department to enable them to recreate and update the Fire Suppression scores for the entire county.



Indigenous Peoples Initiative (IPI)

Collaborative Trainings



Karuk Department of Natural Resources remote sensing data and tools training for a variety of natural resource management applications including **wildfires, climate, vegetation health, drought, and more.**



Nihimá Nahasdzáán: The Art of Mother Earth was a Navajo Nation community Earth Observation event and included a **dialogue & needs assessment session.**



Virtual training: NASA and Indigenous Communities: Fostering Earth Action, hosted by the Native American Fish and Wildlife Society (NAFWS).



Fire and Climate Change: Adaptation Planning for Tribes

This workshop was hosted by the Institute for Tribal Environmental Professionals (ITEP) Tribes & Climate Change Program (TCCP), Stewardship Pathways Program, and Climate Science Alliance. the University of California Cooperative Extension, the Amah Mutsun Relearning Program, and the University of California Santa Cruz Conservation Science and Solutions Lab.



NASA Applied Remote Sensing Training (ARSET)

<https://appliedsciences.nasa.gov/arset>

Empowering the global community
through remote sensing training.

ARSET delivers cost-free training on the use
of Earth Observations for decision making.

ARSET Training Themes



AGRICULTURE



CLIMATE & RESILIENCE



DISASTERS



ECOLOGICAL CONSERVATION



HEALTH & AIR QUALITY



WATER RESOURCES



EARTH SCIENCE
APPLIED SCIENCES

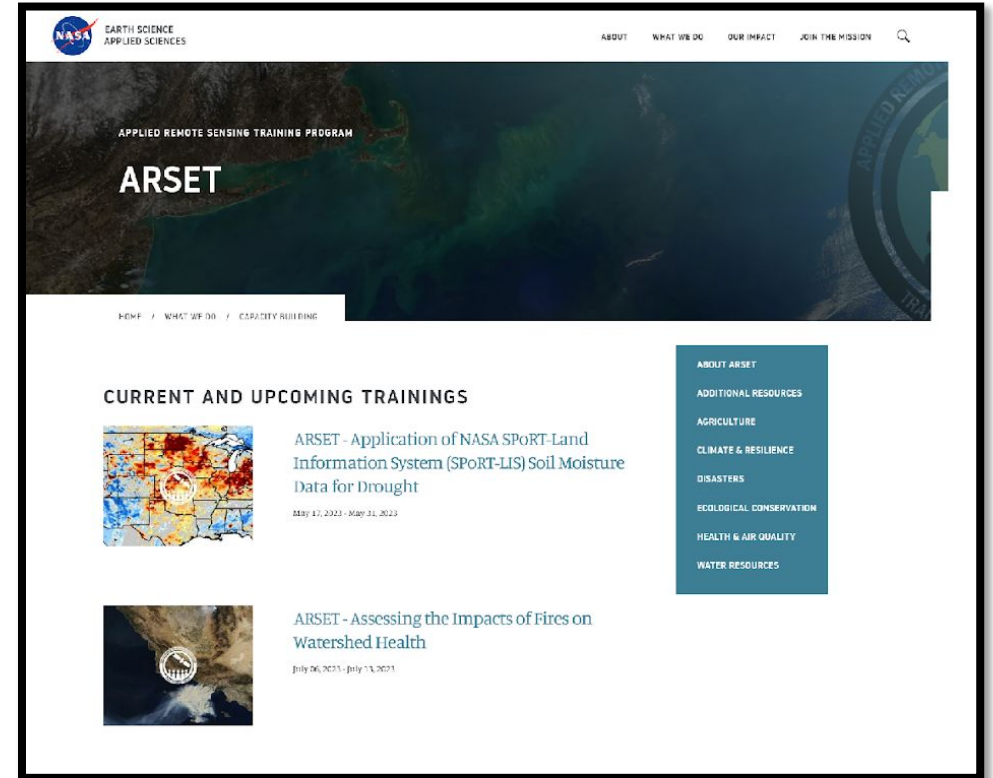


CAPACITY BUILDING



ARSET Trainings

- Our trainings are:
 - Online and in-person
 - Live and instructor-led, or self-guided
 - Online: Typically, 3 – 4 sessions, 1-1.5 h each
 - Provided at no cost, with materials and recordings available from our website
 - Often multi-lingual
 - Range in level from **introductory** to **advanced**



EARTH SCIENCE
APPLIED SCIENCES



CAPACITY
BUILDING

ARSET Trains an International Audience

2009 – 2023



190+ trainings



100,000+ participants



182 countries



17,000+ organizations

Number of Participants

No Participation

0 - 5

6 - 25

26 - 50

51 - 100

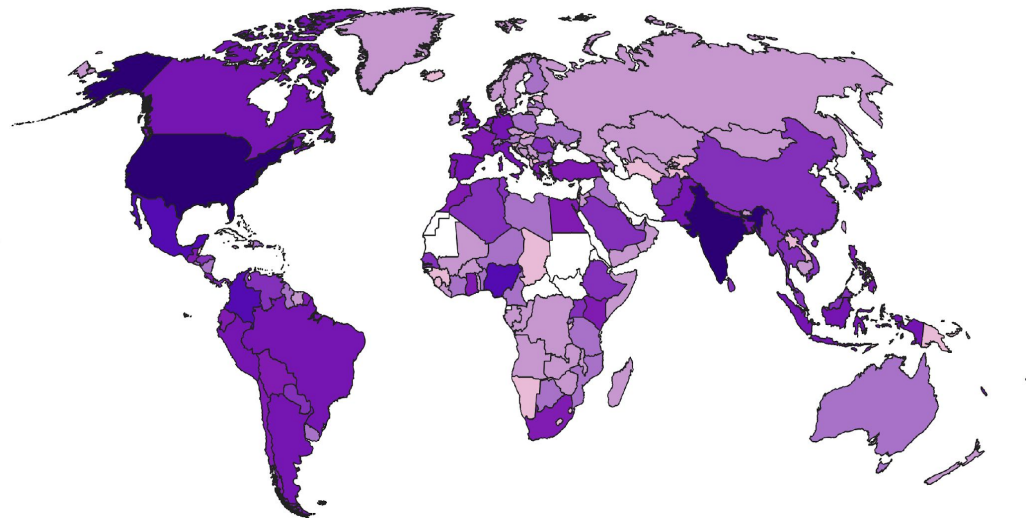
101 - 250

251 - 500

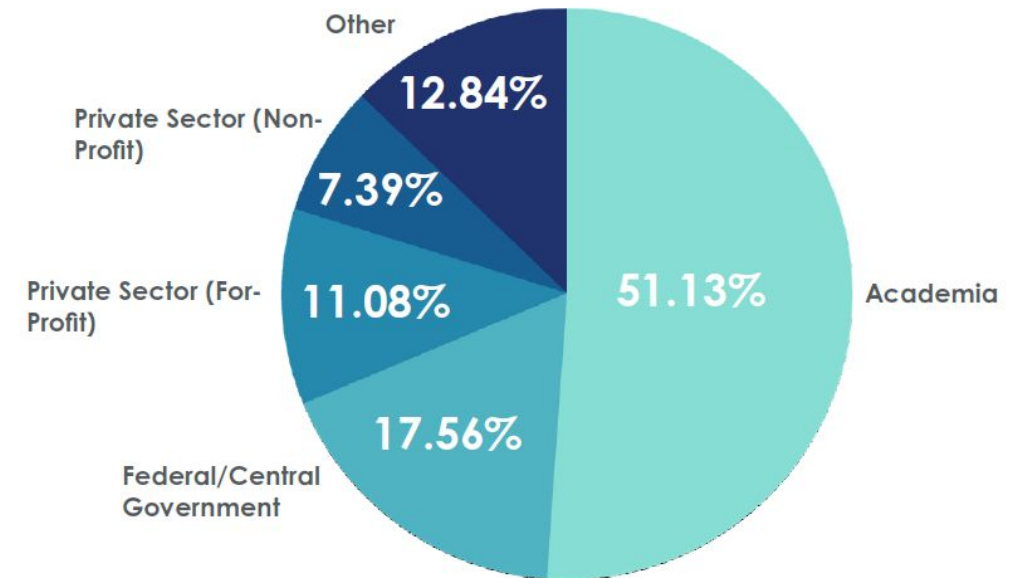
501 - 1000

1001 - 2000

2000+



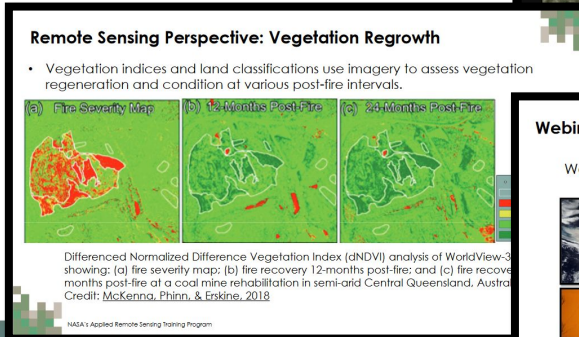
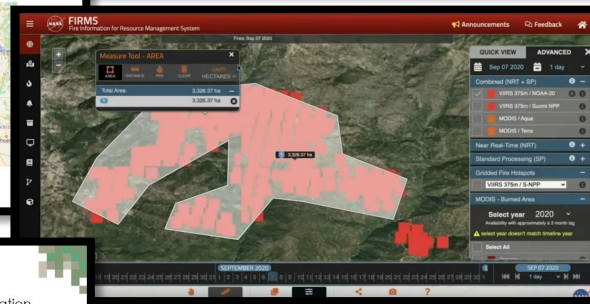
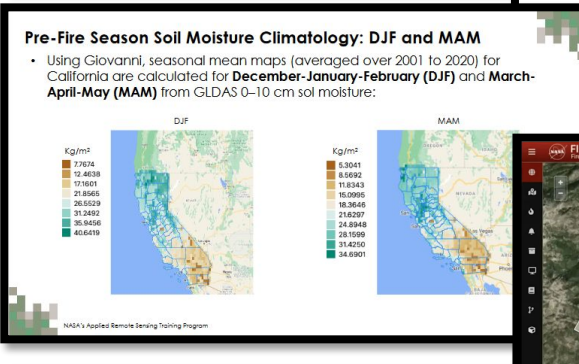
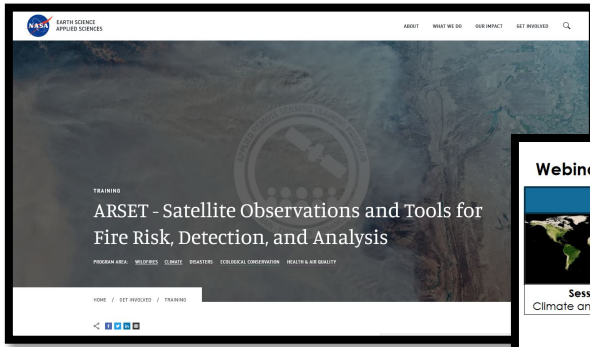
Participation by sector



Training highlight – Satellite Observations and Tools for Fire Risk, Detection, and Analysis

Intermediate training, six sessions

- Satellites and sensors used in conducting fire science
- Fire risk and fuels mapping
- Active fire and smoke detection, and fire emissions
- Post-fire impacts and burn severity mapping
- Tools for active fires, emissions, and burned areas
- Exercises using FIRMS, Giovanni, Climate Earth Engine
- Case study examples: Western US, Sub-Saharan Africa, Southern Mexico



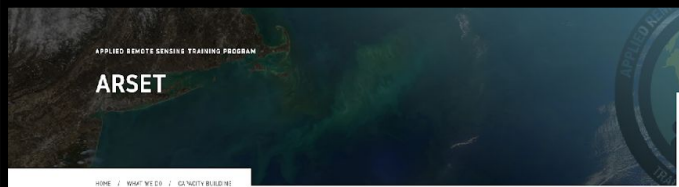
Other training topics of interest

- Land cover mapping, change detections, and vegetation indices
- SAR for flood detection, crop classification, and disaster assessment
- Water quality, evapotranspiration, drought
- Air quality monitoring, reanalysis, and forecasting
- Machine learning



Online
Resource
Guide





Visit our website:
<https://appliedsciences.nasa.gov/arset>

APPLIED REMOTE SENSING TRAINING PROGRAM
ARSET

HOME / WHAT WE DO / CONTACT BUILDING

CURRENT AND UPCOMING TRAININGS

ARSET - Overview of SeaWiFS R4.1 for the Processing, Analysis and Visualization of Optical Remote Sensing Data for Water Quality Monitoring
 February 21, 2024

ARSET - Large Scale Applications of Machine Learning using Remote Sensing for Building Agriculture Solutions
 March 26, 2024 - March 28, 2024

ABOUT ARSET
 ADDITIONAL RESOURCES
 FUNDAMENTALS
 APPLICATIONS
 CLIMATE & RESILIENCE
 DISASTERS
 ECOLOGICAL CONSERVATION
 HEALTH & AIR QUALITY
 WATER RESOURCES

PREVIOUS TRAININGS or download our **ARSET ONLINE RESOURCE GUIDE** for a detailed catalog of trainings with links.

OUR TRAINING OPPORTUNITIES

ARSET offers online and in-person trainings for beginners and advanced practitioners alike. Trainings cover a range of data sets, processing tools and their application to air quality, agriculture, disaster, land, and water resources management. Since 2006, the program has served over 50,000 participants from 175 countries and 6,500 organizations worldwide.

If you use the methods and data presented in ARSET trainings, please acknowledge the NASA Applied Remote Sensing Training (ARSET) Program.

- Register for developing sustainable Earth Science Applications, our new online, self-paced training. This training offers a flexible learning experience, allowing participants to choose the applications relevant to their needs, the time constraints that are most relevant to them, the early career scientist, the partner new to remote sensing, and the experienced researcher.
- New to remote sensing and Earth observations? Check out our online, self-guided Fundamentals of Remote Sensing training series to start today.

Fundamentals of Remote Sensing

RESOURCES

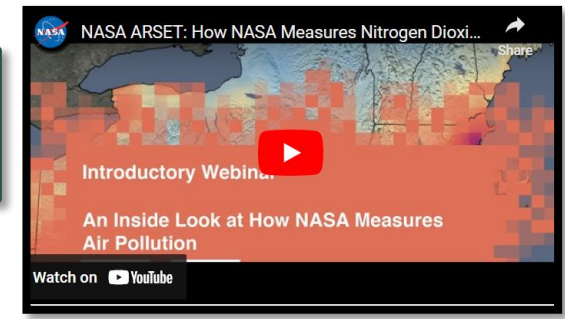
- The ARSET Online Resource Guide: This online handbook does not contain a way to navigate the full catalog organized by theme, region, date with links to training pages and descriptions.
- Follow ARSET on X (formerly Twitter): Keep up to date with the latest news and events.
- ARSET YouTube: Watch the recordings of our trainings in English or Spanish to learn more.

GET IN TOUCH

To join our mailing list and get updates on the latest trainings send us email with no subject line to arset@heliobol.com and follow the link in email.

CONTACT US

View recordings and materials from previous trainings



Register for an upcoming training

Browse our Online Resource Guide

Take our Fundamentals of Remote Sensing training

Sign up for our listserv to find out about our newest trainings

ARSET EARTH SCIENCE APPLIED SCIENCES NASA

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How to Use This Guide

The ARSET Online Resource Guide contains links and brief descriptions of ARSET trainings from 2015-2023. Each training image links to its respective training webpage, where training materials can be accessed any time.

The Guide is organized by thematic area. Within each thematic area, trainings are organized by sub-topic, then by skill level and date.

Some of our trainings are relevant to multiple application areas. These trainings are listed in the primary application area section with a small logo indicating other thematic areas to which they apply.

ARSET Website

appliedsciences.nasa.gov/arset 02



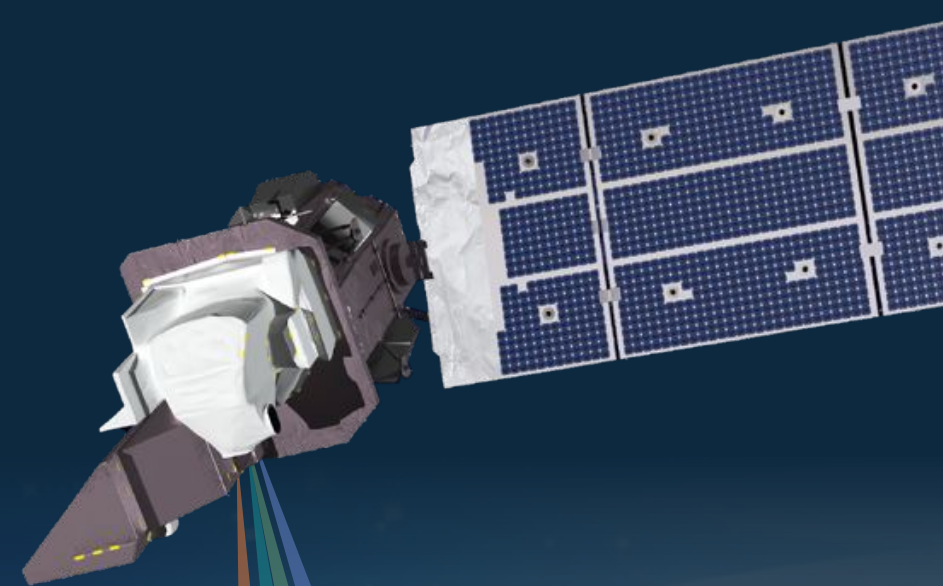
CONNECTING SPACE TO VILLAGE



Founded in 2005, SERVIR is a NASA & USAID partnership with leading geospatial organizations in Asia, Africa, and Latin America.

SERVIR works with country partners to

1. Strengthen climate adaptation through improved food security, water resource management & hydroclimatic disaster risk reduction, and air quality monitoring; and
2. Mitigate climate change through improved land use and forest management





Agriculture &
Food Security



Water Security



Ecosystem & Carbon
Management



Weather & Climate
Resilience

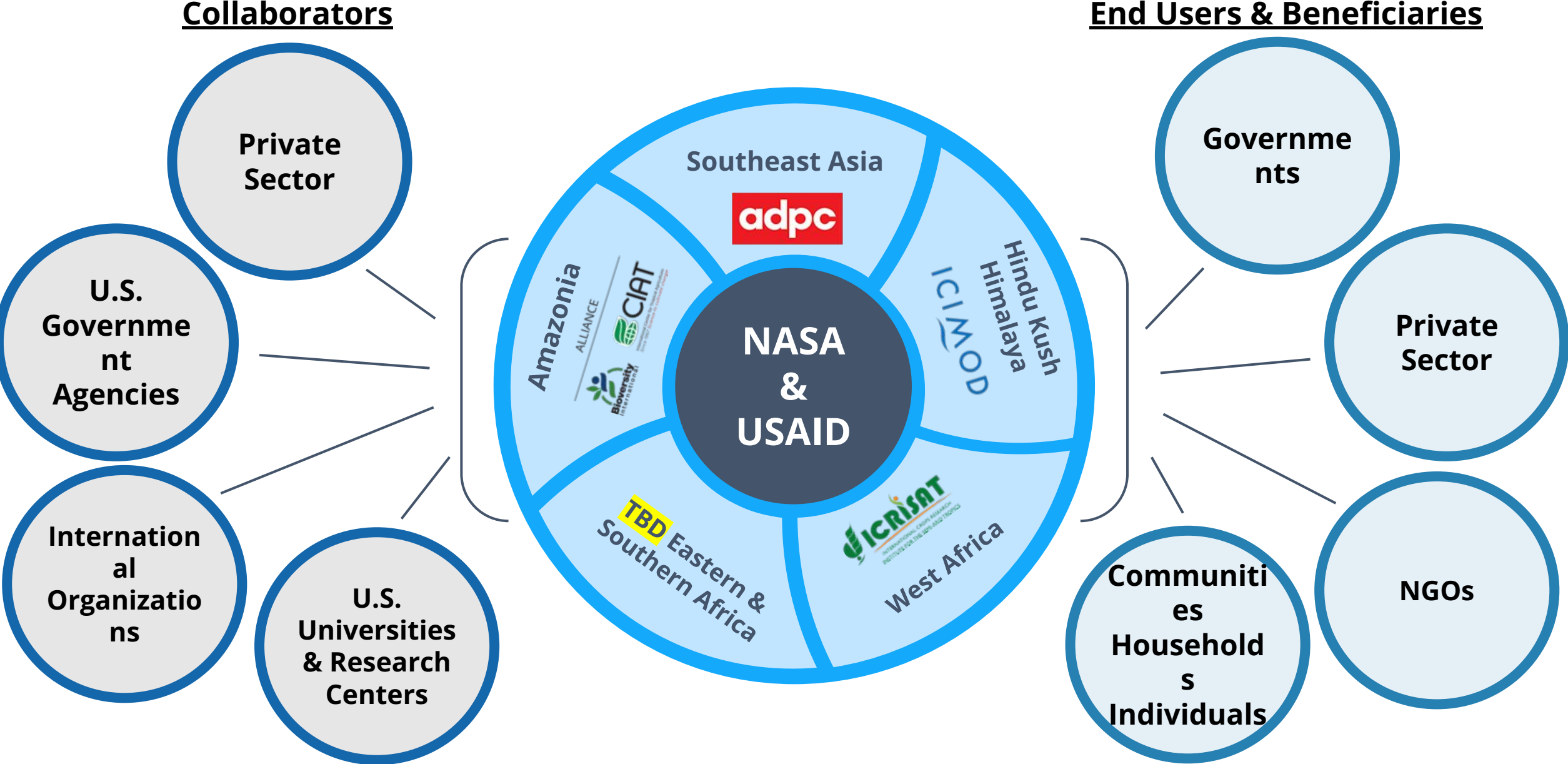
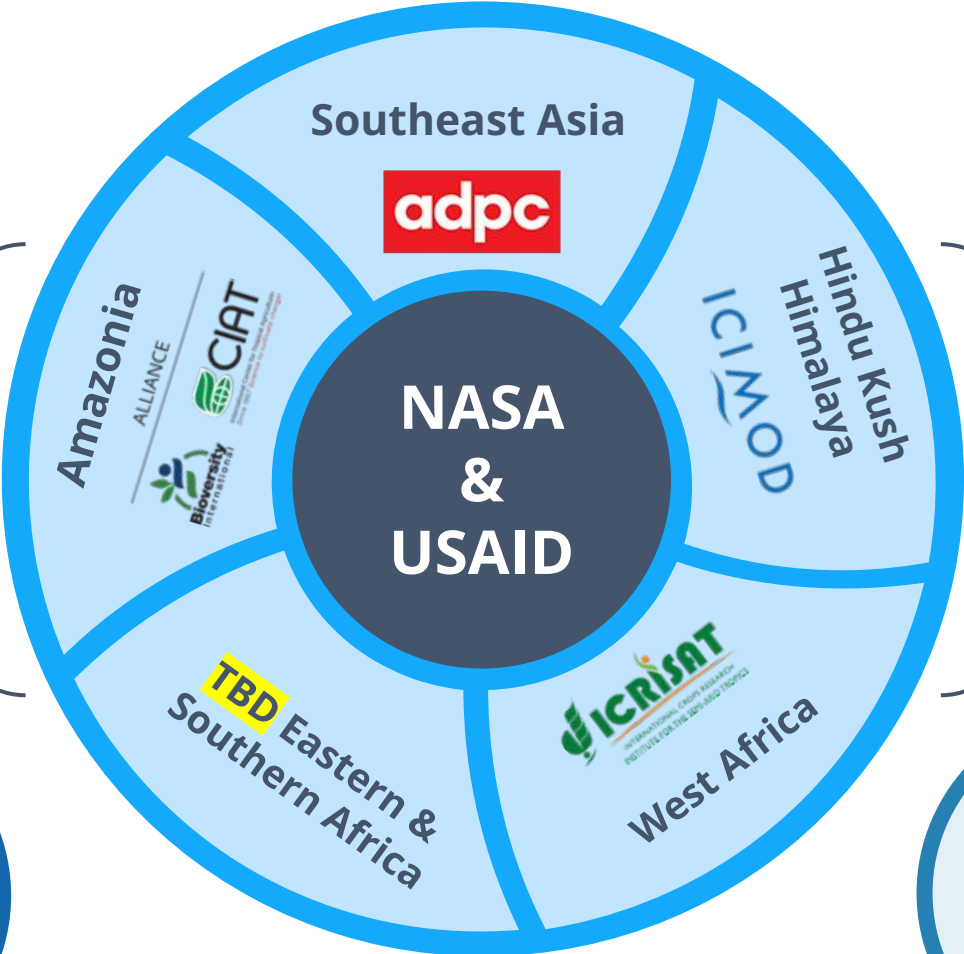
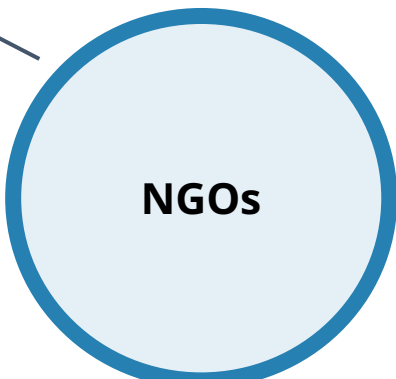


Air Quality &
Health



Collaborators

End Users & Beneficiaries



SERVIR Service Planning Toolkit



Consultation & Needs Assessment



Stakeholder Mapping



Service Design



Monitoring, Evaluation & Learning

Locally-Led Development

LESS LOCALLY LED



MORE LOCALLY LED

Open-Source Science

- SERVIR embraces open science, with a strong GitHub presence and focus on sharing data with users
- The SERVIR Applied Sciences Team ROSES21 solicitation lays out a roadmap to accomplish open & accessible science
- SERVIR continually explores new avenues of sharing data, methodologies, & results:
 - [Earth Information System](#)
 - [Earth Data Collaborative](#)
 - [Earth on AWS](#)
 - [Google Earth Engine](#)

