# About ARSET

Cindy Schmidt

Biodiversity and Ecological Forecasting Team Meeting
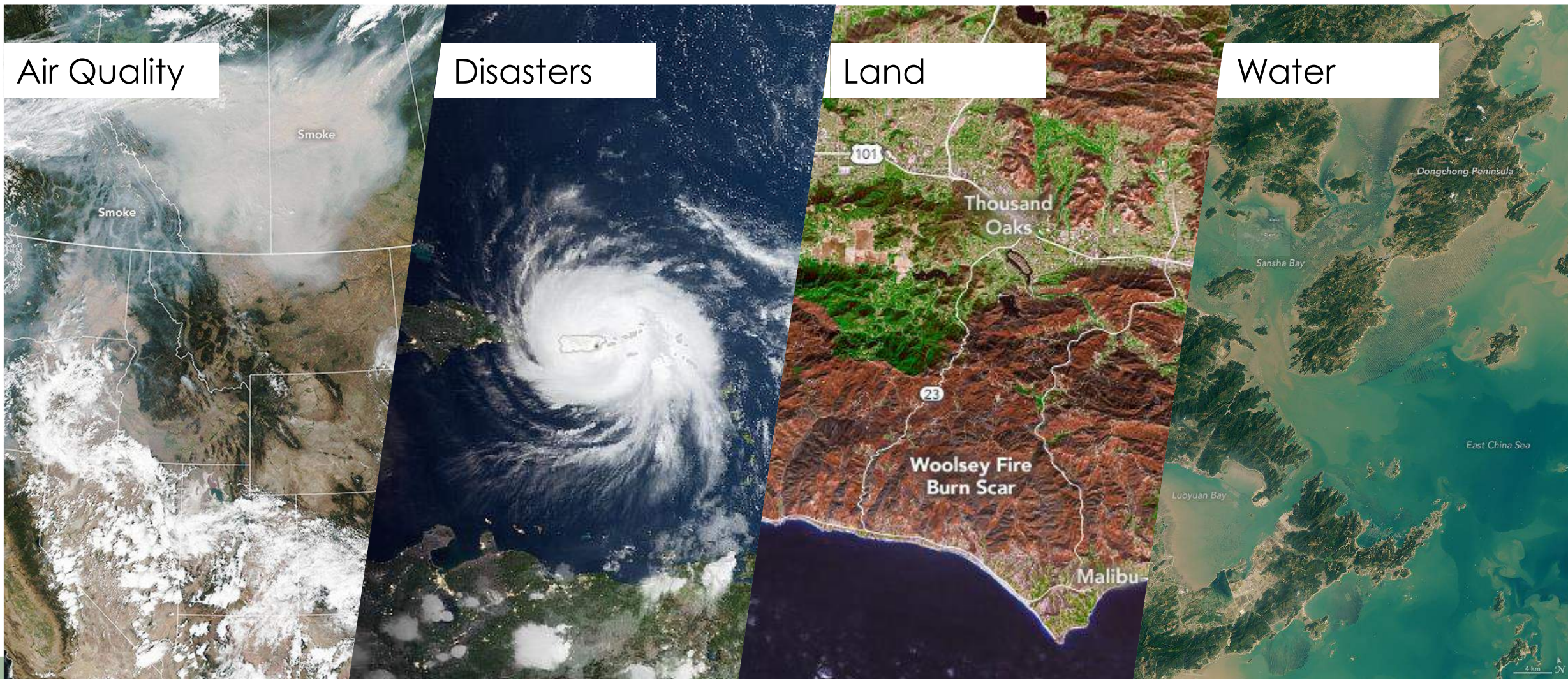
May 21, 2019

# Capacity Building Program

- Expands the Earth-observations user base in the U.S. and developing world
- Increases the awareness with non-traditional audiences of NASA Earth observations, data, and products
- Three programs exist within the larger Capacity Building Program:

# ARSET Training Focus Areas



Air Quality

Disasters

Land

Water

# ARSET Training Formats

## Online

Offered through the internet

1-5 weeks long

1-6 hours a week

Available at all levels

Live & recorded

Free

Materials available in English & Spanish
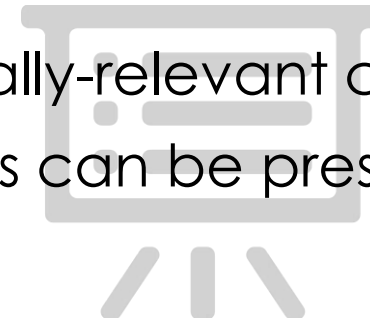
## In-Person

Hosted with a partner

Typically in a computer lab

2-7 days long

Focus on locally-relevant case studies

Certain topics can be presented in Spanish

# ARSET Training Levels

**Advanced (Level 2)**
Requires level 1 training or equivalent knowledge
In-depth and highly focused topics
*Advanced Webinar: SAR Image and Data Processing*

**Basic (Level 1)**
Requires level 0 training or equivalent knowledge
Covers specific applications
*Introduction to Synthetic Aperture Radar*

**Fundamentals (Level 0)**
Assumes no prior knowledge of remote sensing
*Fundamentals of Remote Sensing*

# ARSET Trainings

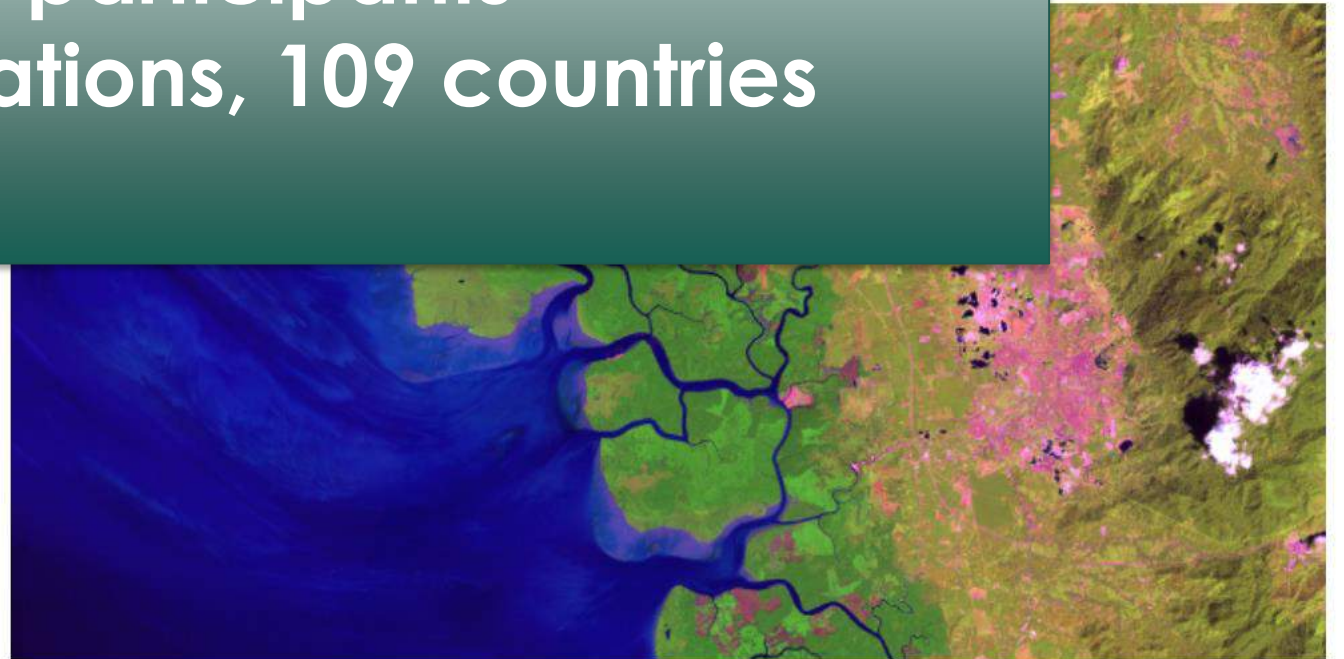110+ trainings    19,400+ participants    160+ countries    5,000+ organizations
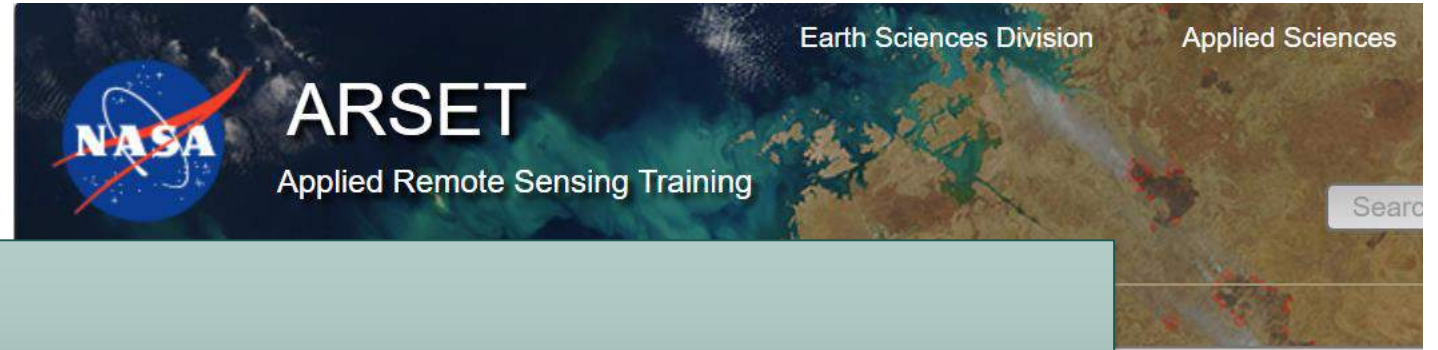


* size of circle corresponds to number of participants

# Webinar: Conservation and Biodiversity (Jan 2019)

- Two one-hour sessions
- Featuring Ecological Forecasting projects
- Session 1:
- Session 2:
  - GEO BON

**1511 participants
980 organizations, 109 countries**

http://arset.gsfc.nasa.gov/

# Indigenous Peoples Pilot Program

- Build the capacity of Indigenous communities to use satellite Earth observations for natural and cultural resource management

- Recognize the importance of Indigenous territories to global conservation and biodiversity

- Activities:
  - Trainings
  - Workshops
  - Outreach
  - Collaborations
  - Projects

# What is DEVELOP?
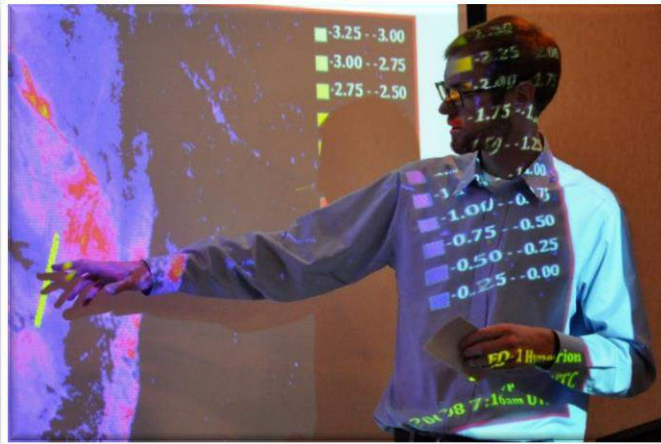


**NASA DEVELOP**

*Data*

*Decision Makers*

***DEVELOP bridges the gap between NASA Earth Science and society***, building capacity in both its participants and end-user organizations to better prepare them to handle the environmental challenges

*DEVELOP is a dual-capacity building program:*
**Partners & Participants**

# Where is DEVELOP?

**_Locations_**

① Alabama – Marshall (Huntsville, AL)
② Alabama – Mobile (Mobile, AL)
③ Arizona – Tempe (Tempe, AZ)
④ California – Ames  (Moffett Field, CA)
⑤ California – JPL (Pasadena, CA)
⑥ Colorado – Fort Collins (Fort Collins, CO)
⑦ Georgia – Athens (Athens, GA)
⑧ Idaho – Pocatello (Pocatello, ID)
⑨ Maryland – Goddard (Greenbelt, MD)
⑩ Massachusetts – Boston (Boston, MA)
⑪ North Carolina – NCEI (Asheville, NC)
⑫ Virginia – Langley (Hampton, VA)
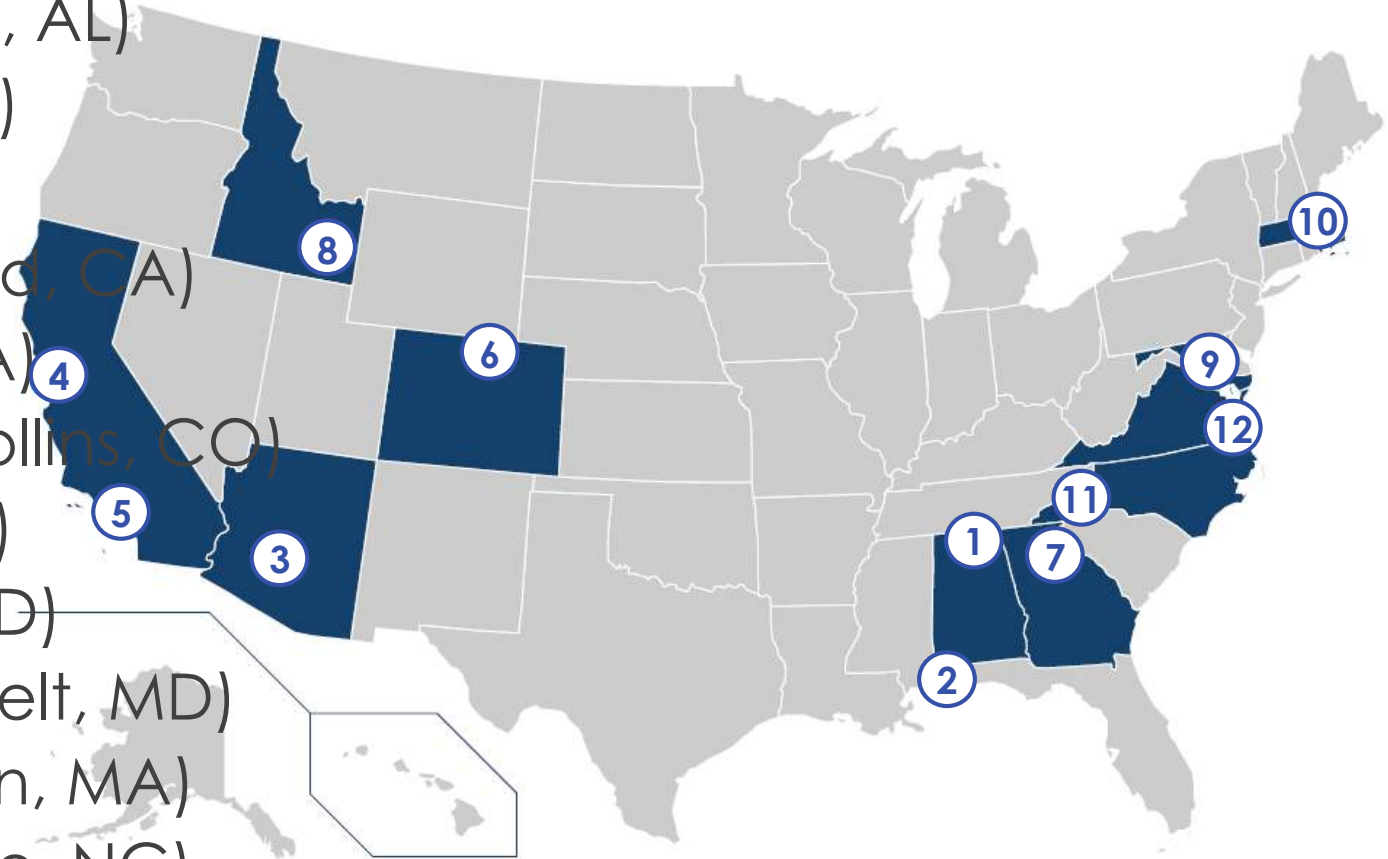
# DEVELOP Project Characteristics

**50-60 projects take place each year – at their core they share these characteristics:**

▸ Highlight the applications and capabilities of **NASA Earth observations**

▸ Address **community concerns** relating to decision-making for real-world environmental issues

▸ Partner with organizations who can benefit from using NASA Earth observations to **enhance decision-making** by providing decision support tools

▸ Align with at least one of the eight NASA Applied Sciences Program's thematic **Application Areas**

▸ Research is conducted by **interdisciplinary teams** under the scientific guidance of DEVELOP Science Advisors and Mentors from NASA and partner organizations

▸ Create a comprehensive set of **deliverables**
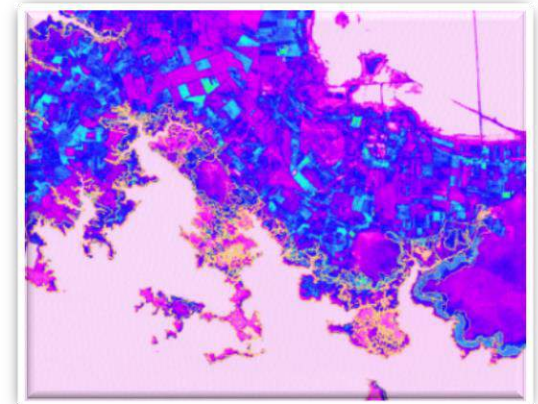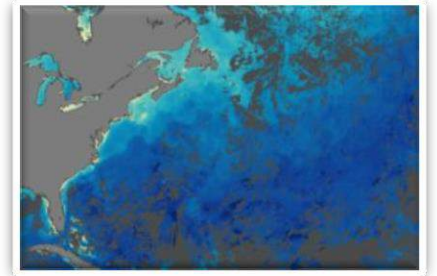
# 2019 Spring Portfolio

**65 Participants**

**16 Projects**

75% Domestic
25% International

**11 States &**
**5 Countries Impacted**
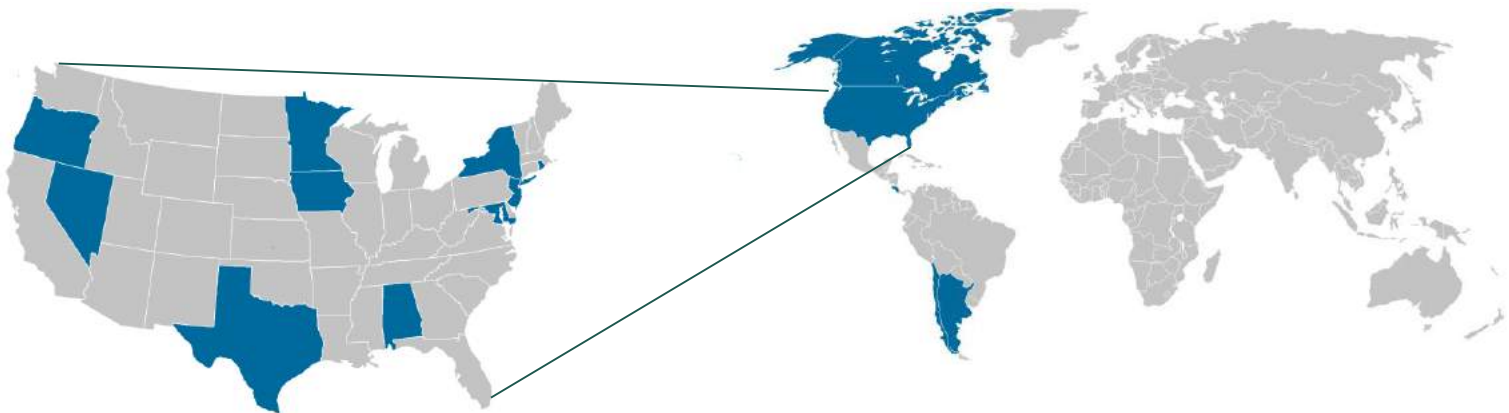
## Application Areas Addressed



- Ag & Food Sec.
- Disasters
- Eco
- Energy (0)
- Health & AQ (0)
- Trans. & Infra. (0)
- Urban Dev
- Water

19%

19%

19%

6%

37%

**Partner Total by Type**

| Type | Value |
|------|-------|
| Consortium | 5 |
| Academia | 4 |
| International | 5 |
| Non-Profit | 3 |
| For-Profit | 0 |
| Federal | 14 |
| Local Govt | 1 |
| State Govt | 7 |

0   5   10   15
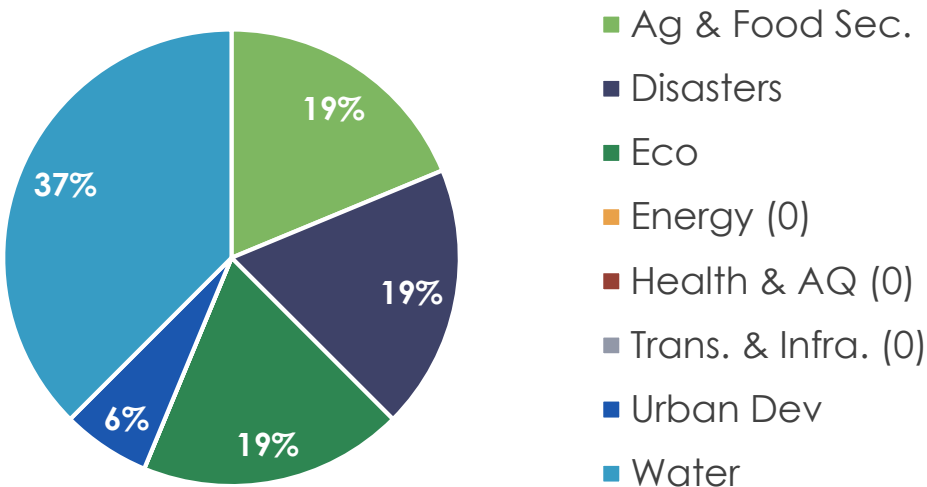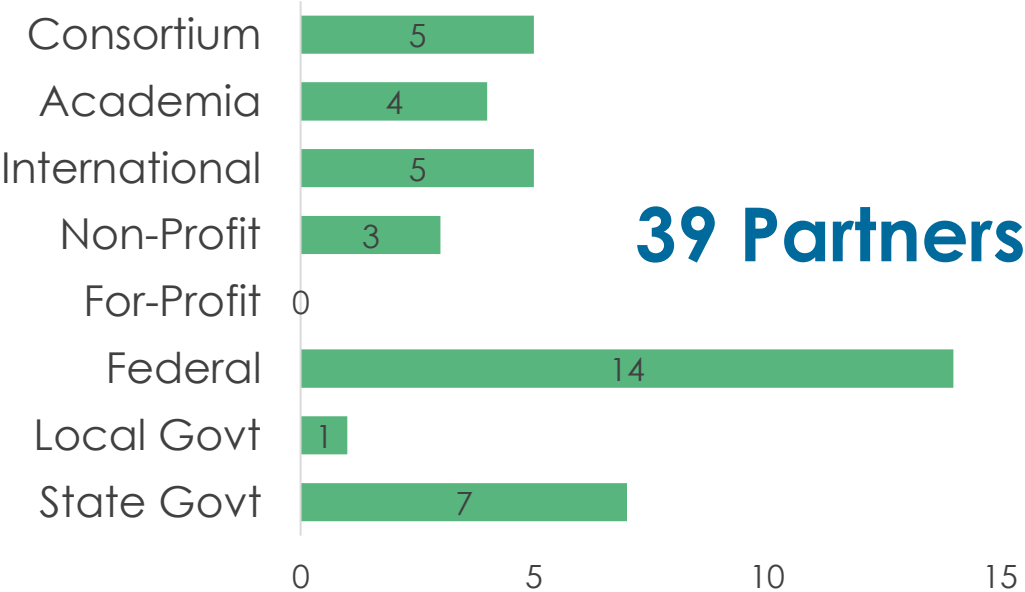
**39 Partners**

*Impacts and partners are tentative

# DEVELOP Ecological Forecasting Projects (last 12 months)

| Project | Study Area | Node | Term | Partner |
|---|---|---|---|---|
| Monitoring and Predicting the Spread of Roseau Cane Die-offs Connected to the Invasive Mealy Bug ("Nipponaclerda biwakoensis") and Other Contributing Factors in the Mississippi River Delta | Louisiana | VA | Summer 2018 | National Wildlife Federation (NWF) |
| Monitoring the Spread of Invasive Grasses in South Dakota Using NASA Earth Observations and NOAA Climate Data Records | South Dakota | NC | Summer 2018 | Department of Interior (DOI |
| Using NASA Earth Observations to Prioritize Locations for the Further Monitoring and Management of Cultural Resources in Glen Canyon National Recreation Area | Glen Canyon National Recreation Area | LaRC | Summer 2018 | National Park Service (NPS) |
| Utilizing NASA Earth Observations to Develop a Forest Change Detection Tool for Land Conservation in Honduras | Honduras | GA | Summer 2018 | Instituto de Conservaciõn Forestal (ICF) |
| Validating the Effectiveness of the NASA Open Data Cube on Augmenting Deforestation Analysis in Colombia | Colombia | LaRC | Summer 2018 | Institute of Hydrology Meteorology and Environmental Studies (IDEAM) |
| Monitoring Bighorn Sheep Habitat by Assessing Vegetation, Topography, and Soil Moisture | Mojave Desert | JPL | Fall 2018 | National Park Service (NPS), Sierra Nevada Bighorn Sheep Foundation, California Department of Fish and Wildlife |
| Determining Habitat Suitability to Establish a Jaguar Corridor between the Talamanca Mountains and the Osa Peninsula in Costa Rica | Talamanca-Osa | GA | Spring 2019 | Arizona Center for Nature Conservation, Osa Conservation |
| Employing NASA Earth Observations to Create Enhanced Bare Ground Layers for Invasive Species Habitat Suitability Modeling | Nevada & Oregon | CO | Spring 2019 | National Park Service (NPS) |
| Semi-Automated Mapping of Alaskan Wetland Inundation by Integrating Synthetic Aperture Radar and Optical Satellite Imagery | Alaska | JPL | Fall 2018, Spring 2019 | US Fish and Wildlife Service (FWS) |

# *Opportunities to Engage with DEVELOP*

▸ *Interested in working on a project?*

 ▸ Visit https://develop.larc.nasa.gov for more information and eligibility requirements.

 ▸ Apply to be a **Participant** – applications are accepted three times a year through the program's online application system.

▸ *Interested in working with a DEVELOP team?*

 ▸ **Project Partner** –submit a project request form, found at https://develop.larc.nasa.gov/projects.php. Email to NASA-DL-DEVELOP@mail.nasa.gov.

 ▸ **Volunteer Advisor** –email DEVELOP at NASA-DL-DEVELOP@mail.nasa.gov to learn about projects within your area of expertise and be connected to a DEVELOP project team.

# DEVELOP Back-Up Slides

# Who Participates in DEVELOP?

## Participants



Recent Graduates

Military Personnel

Students

Transitioning Professionals

## Advisors

NASA Researchers

Partner Organizations

## Decision Makers

State & Local Govt.

Federal Agencies

NGOs

International
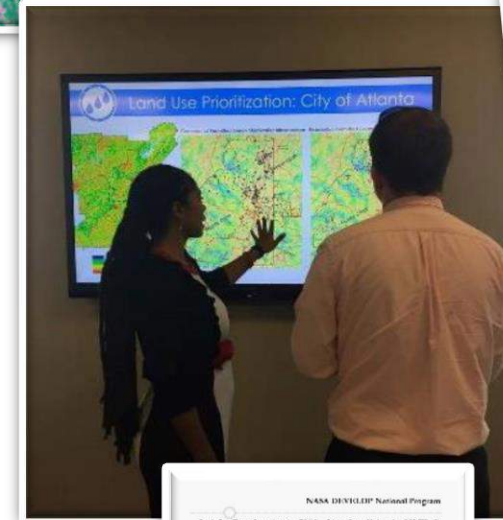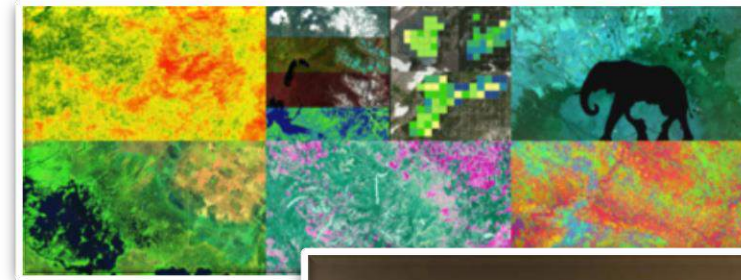
# DEVELOP Project Deliverables

**Project Deliverables:**

Created by all DEVELOP teams

- ▸ Poster
- ▸ Presentation
- ▸ Technical Report
- ▸ Video
- ▸ Shapefiles

**Additional products:**

Created by some teams based on specific partner needs and identified ahead of time with team

- ▸ Tutorial
- ▸ Code
- ▸ Brochure

# Benefits of DEVELOP

▸ **Scientific & Technical Skills**
  ▸ Experience using NASA Earth observations
  ▸ GIS & remote sensing
  ▸ Project execution
  ▸ Science communication

▸ **Personal Development**
  ▸ Presentation & communication skills
  ▸ Personality typing & working with diverse groups
  ▸ Confidence
  ▸ Interpersonal communication

▸ **Professional Development & Networking**
  ▸ Management & leadership
  ▸ NASA scientists and managers
  ▸ Partner organizations
  ▸ Peers – teams, node, & national

# Apply!

## Eligibility

- Age 18+ with a minimum 3.0 GPA

- Current students, recent graduates, early career professionals

- Interdisciplinary backgrounds (majority from STEM fields), no experience is required but a strong interest in GIS, remote sensing, and science is important

- US Citizens & Foreign Nationals*

*US citizenship required to apply to DEVELOP locations at NASA Centers. Foreign nationals must be currently enrolled or recently graduated an accredited U.S. school. Acceptances are conditional upon proof of a visa or approved CPT/OPT that will allow them to legally work within the U.S.

## Summer Term 2019

**Term Dates:**
June 3rd – August 9th

**Apply Online:**
January 21st – March 11th

**Applicant Notifications:**
April - May

## Fall Term 2019

**Term Dates:**
Sep 16th – Nov 22nd

**Apply Online:**
May 20th - June 28th

**Applicant Notifications:**
August

# DEVELOP Points of Contact

**Amanda Clayton, Projects Manager**
[Amanda.L.Clayton@nasa.gov](mailto:Amanda.L.Clayton@nasa.gov)

Dr. Kent Ross, National Science Advisor
[Kenton.W.Ross@nasa.gov](mailto:Kenton.W.Ross@nasa.gov)

[http://develop.larc.nasa.gov](http://develop.larc.nasa.gov)