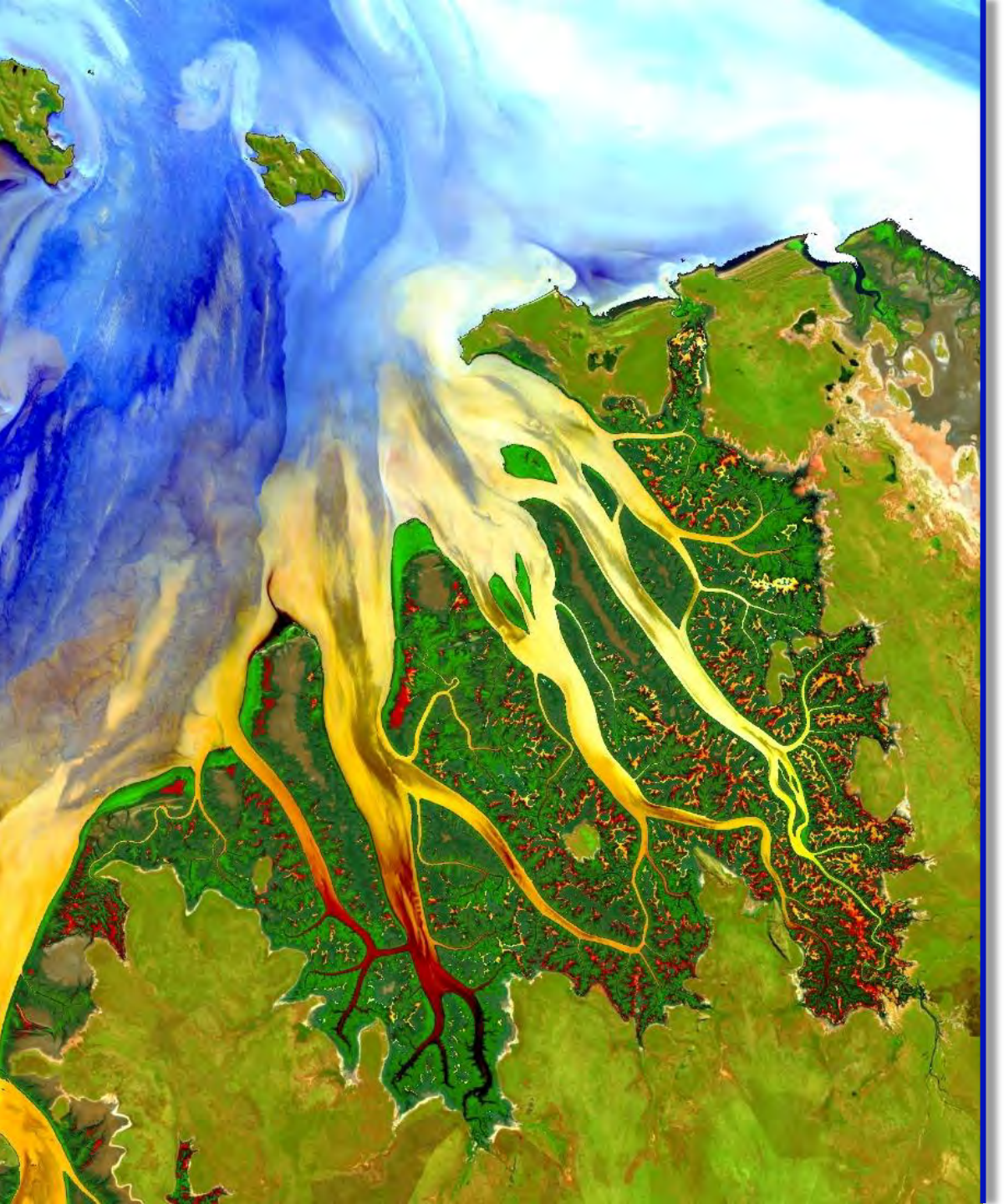


National Aeronautics and
Space Administration

Applied Sciences' Capacity Building

DEVELOP

Program Background & Project Applications

Georgia Planning Association – 2019 Fall Conference

Austin Stone – ahs11982@uga.edu

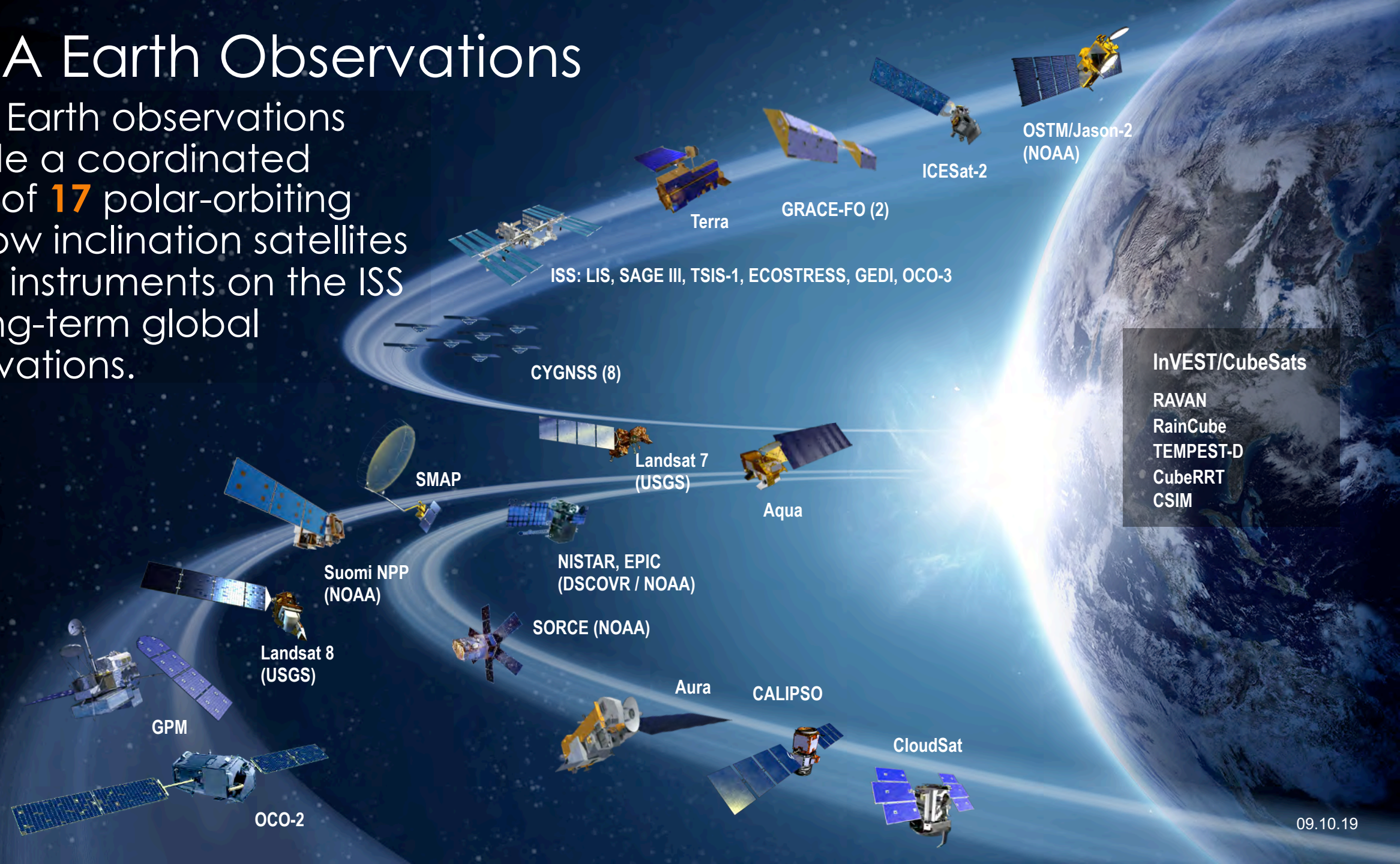
NASA Earth Science

Advancing understanding of the Earth and developing technologies to improve the quality of life on our home planet.

Earth is a complex, dynamic system we do not yet fully understand. The purpose of NASA's Earth science program is to develop a scientific understanding of Earth's system and its response to natural and human-induced changes, and to improve prediction of climate, weather, and natural hazards.

NASA Earth Observations

NASA Earth observations include a coordinated series of **17** polar-orbiting and low inclination satellites and **6** instruments on the ISS for long-term global observations.



09.10.19

NASA Applied Sciences

Discovering Innovative & Practical Applications of NASA Earth Science

- ***Partner*** *with public and private organizations*
- ***Discover*** *innovative NASA Earth science applications*
- ***Support*** *environmental decision-making activities*
- ***Demonstrate*** *practical benefits of NASA Earth science*
- ***Help*** *improve the quality of life and strengthen the economy*

Thematic Application Areas

Food Security & Agriculture

Eco Forecasting

Water Resources

Energy

Urban Development

Transportation & Infrastructure

Health & Air Quality

Disasters

Capacity Building

APPLIED REMOTE SENSING TRAINING PROGRAM
TRAIN - EMPOWER - ADVANCE

DEVELOP

SERVIR GLOBAL
CONNECTING SPACE TO VILLAGE

What is DEVELOP?

Measurements & Predictions

NASA DEVELOP

Communities

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 that face society.

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

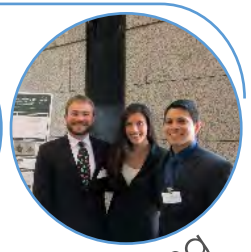
Who Participates in DEVELOP?

Participants

Recent Graduates

Military Personnel

Students



Transitioning Professionals

Advisors

NASA Researchers

Partner Organizations

Decision Makers

State & Local Govt.

Federal Agencies

NGOs

International

Participant Opportunities

Common Majors

- Geography
- Environmental Science
- Computer Science
- Remote Sensing
- GIS
- Biology
- Engineering
- Chemistry
- Meteorology
- Physics
- Accounting
- Economics
- Mathematics
- Public Policy
- Communications
- Planning

Note: open to all majors!

Common Software and Programming Languages

- ESRI ArcGIS
- ERDAS IMAGINE
- ENVI/ IDL
- Python
- MATLAB
- R
- Microsoft Office Suite
- Google Earth Engine

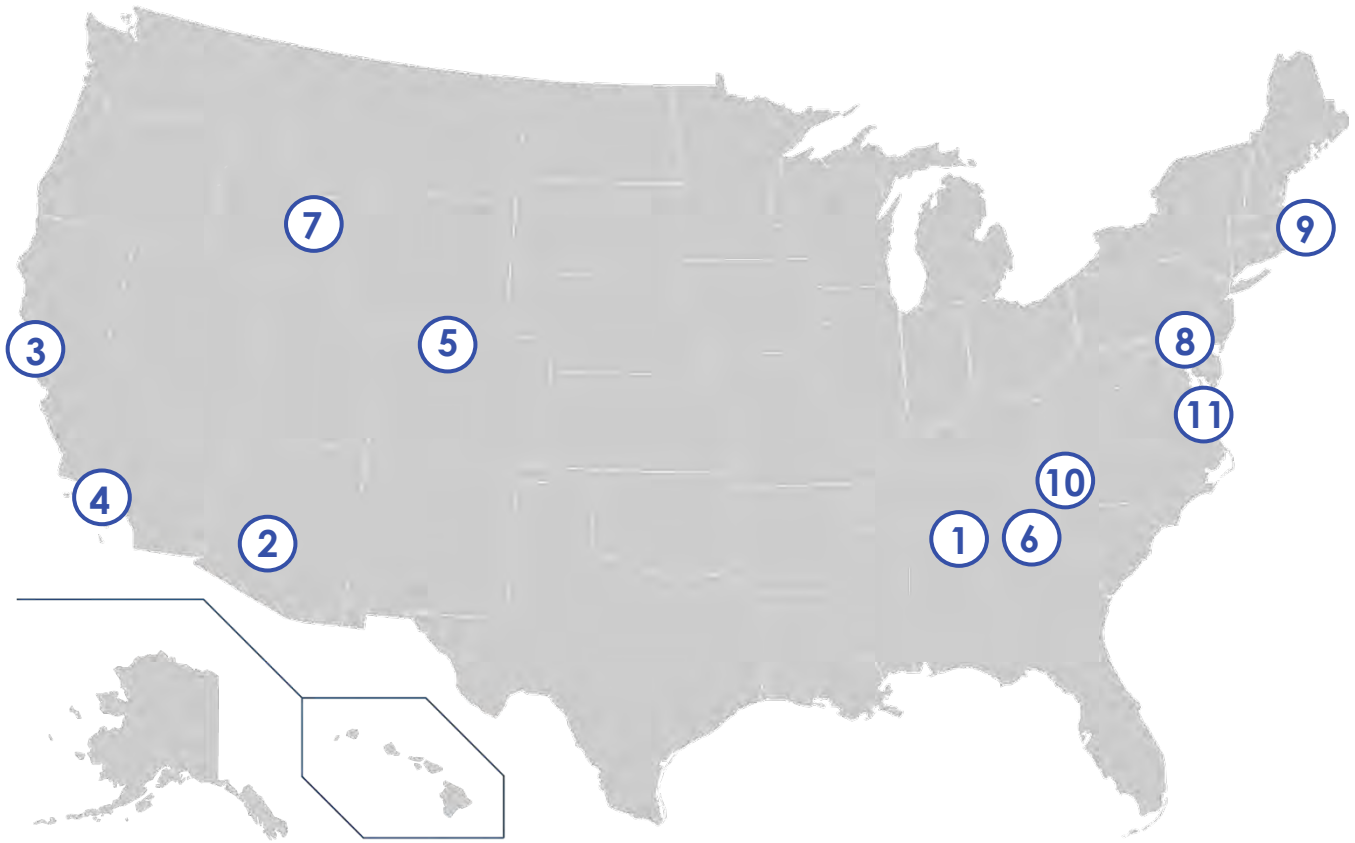
Note: no previous experience with these programs is required, but an eagerness and ability to learn quickly is a necessity.

Pay level is determined by **education level** and **DEVELOP location**

Where is DEVELOP?

Locations

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



2nd Term (2)

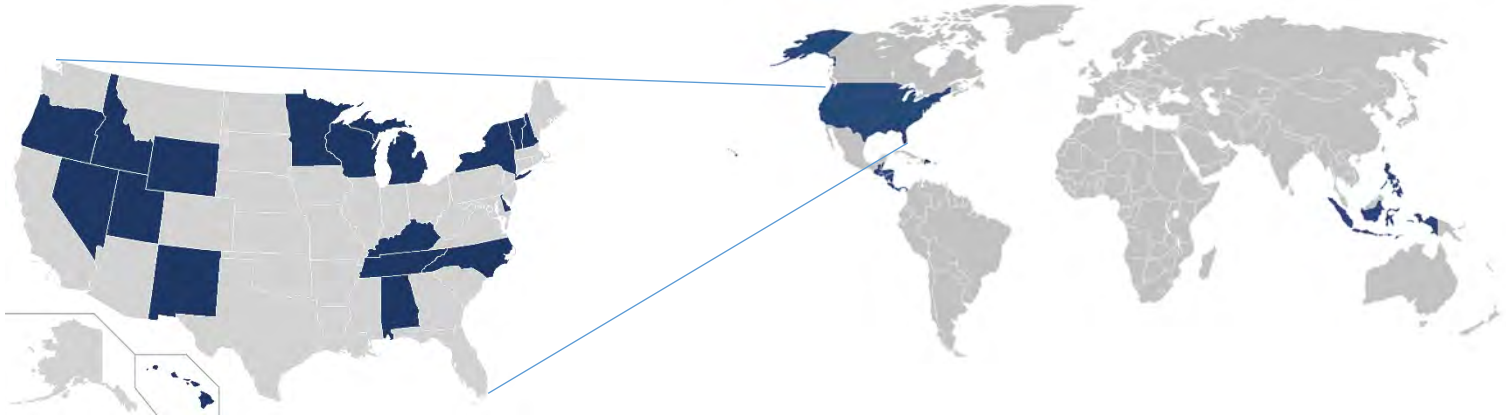
1ST Term (16)

2019 Fall Portfolio

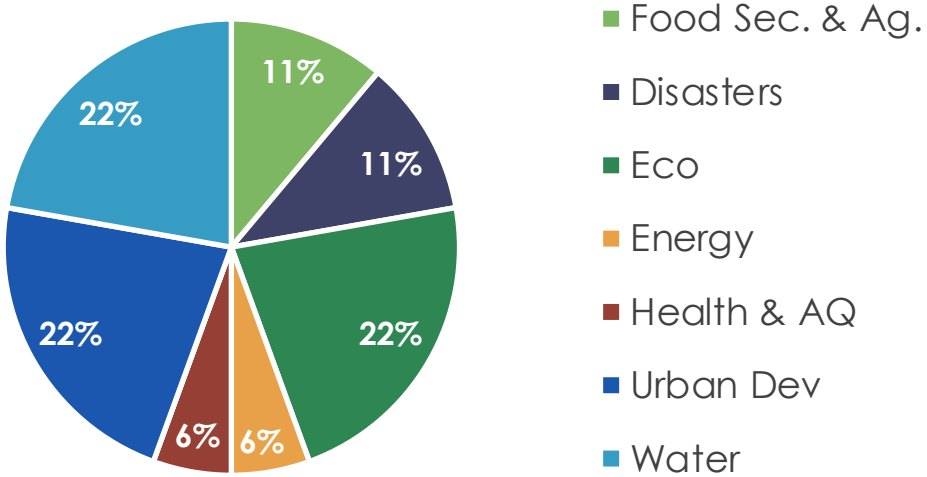
18 States & 11 Countries Impacted

72 Participants
18 Projects

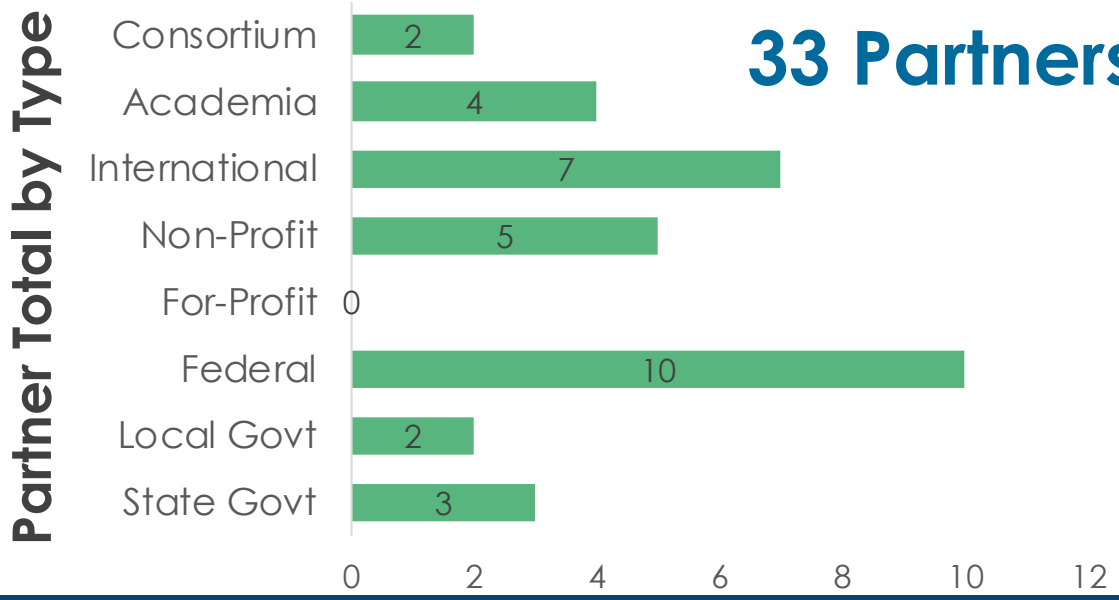
61% Domestic
39% International



Application Areas Addressed



33 Partners

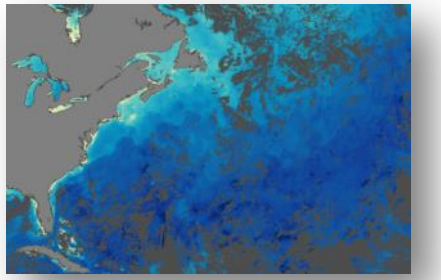


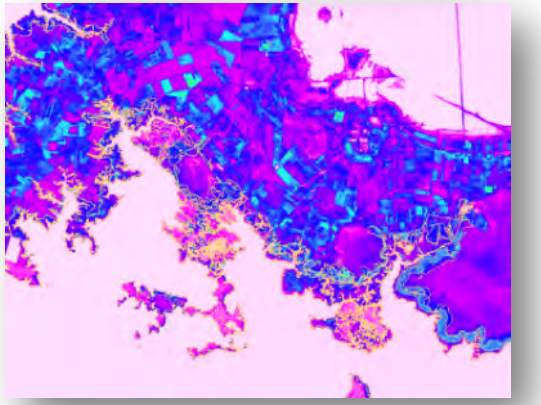
*Impacts and partners are tentative

DEVELOP Project Characteristics

55-65 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**





DEVELOP Project Deliverables

Project Deliverables:

Created by all DEVELOP teams.

- Poster
- Presentation
- Technical Report
- Shapefiles

Additional products:

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

- Tutorial
- Code
- Brochure
- Project Video

Application Areas

Urban Development

Disasters

Energy

Transportation & Infrastructure

Water Resources

Food Security & Agriculture

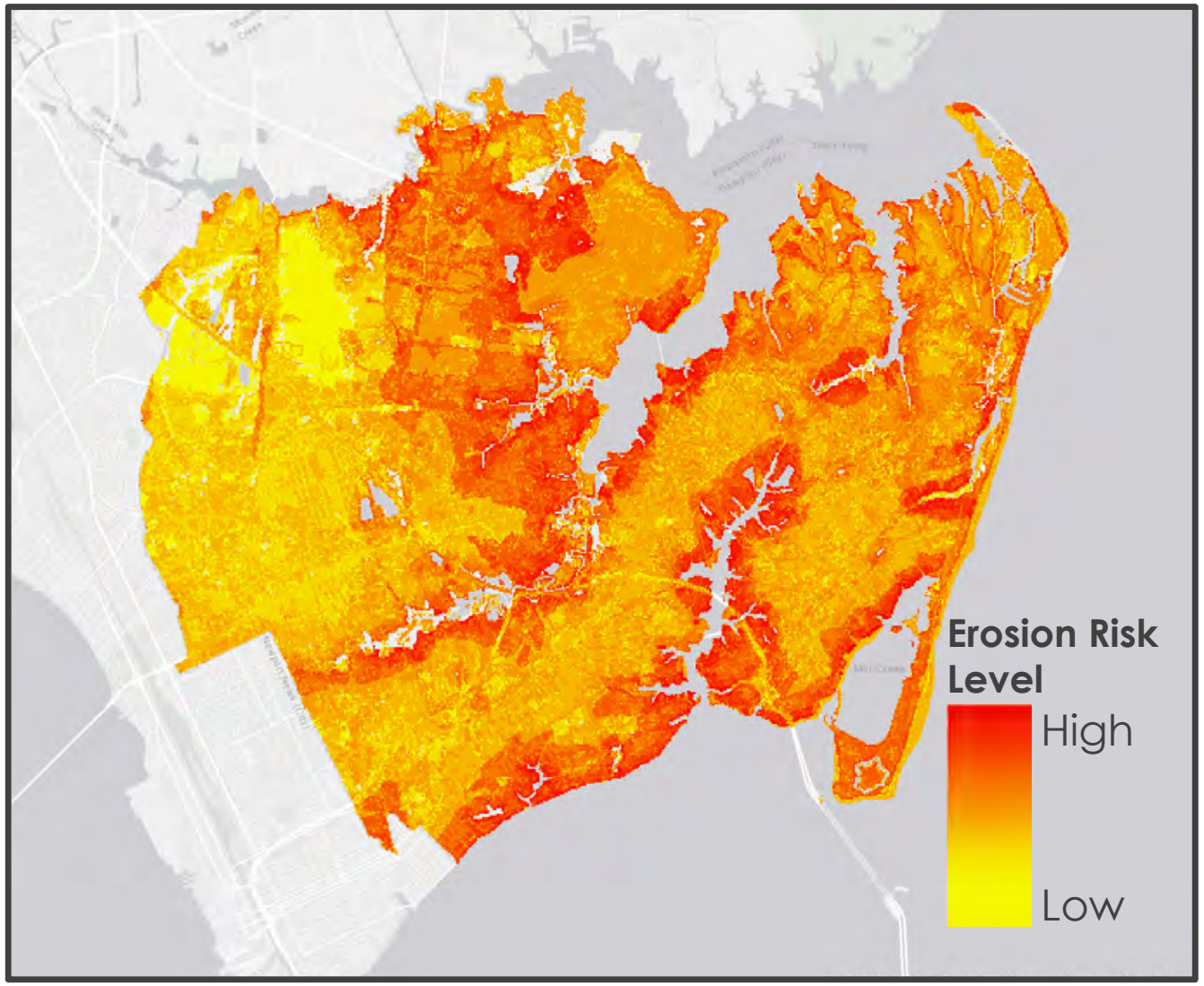
Health & Air Quality

Eco Forecasting

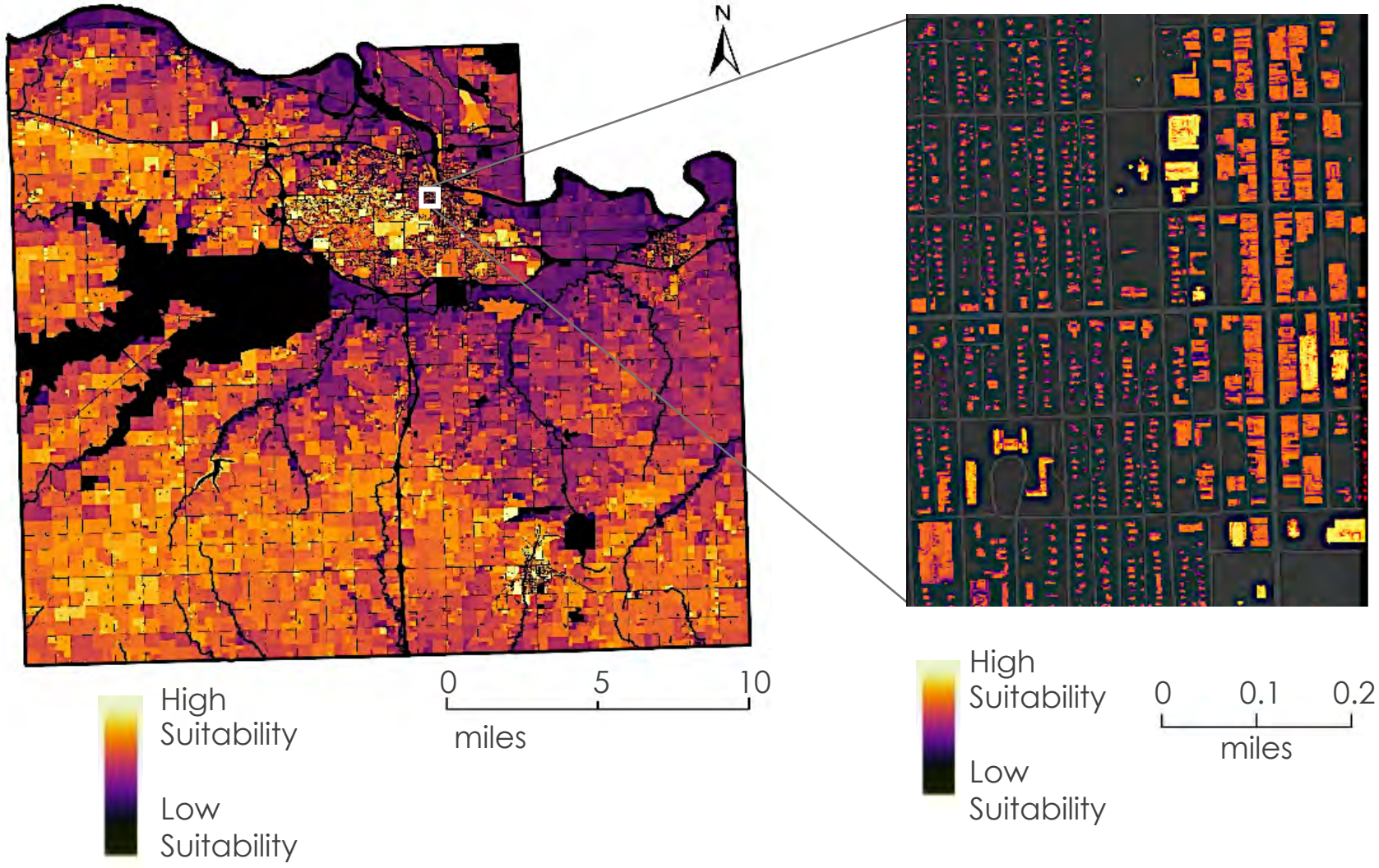
Urban Development

Hampton Roads

Helping the local government of Hampton, VA understand impacts of coastal erosion and sea level rise. And creating maps to identify highest areas of risk.



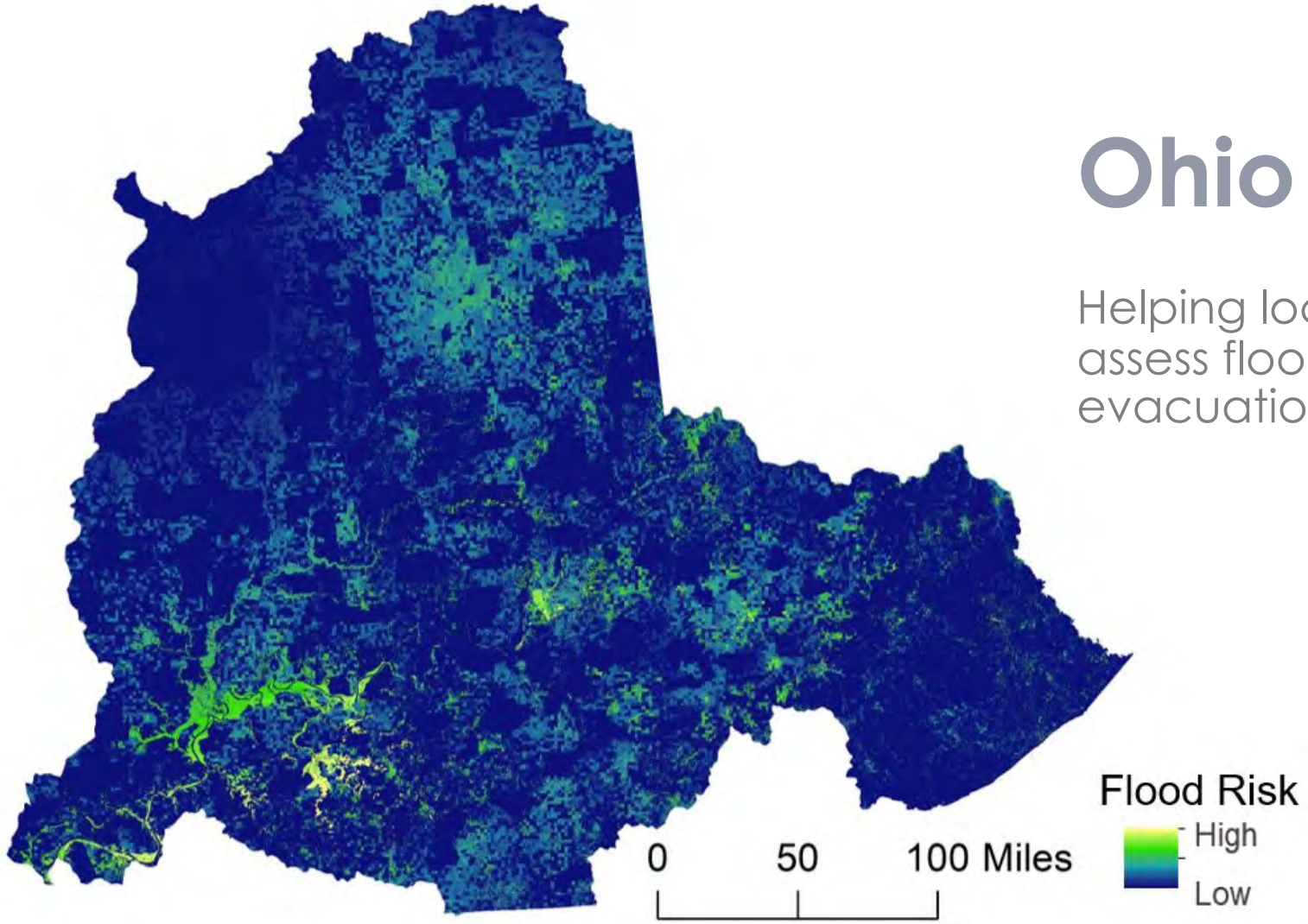
Energy



Lawrence

Working with the City of Lawrence in Kansas to map out the potential for residential and commercial rooftop solar using POWER tools.

Transportation & Infrastructure



Ohio River Valley

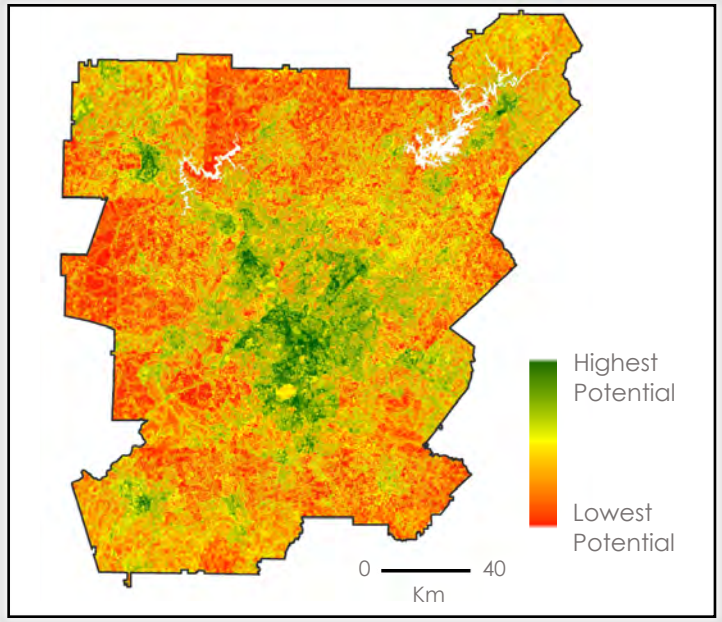
Helping local management agencies assess flood risk to maximize efficient evacuation plans.

Water Resources

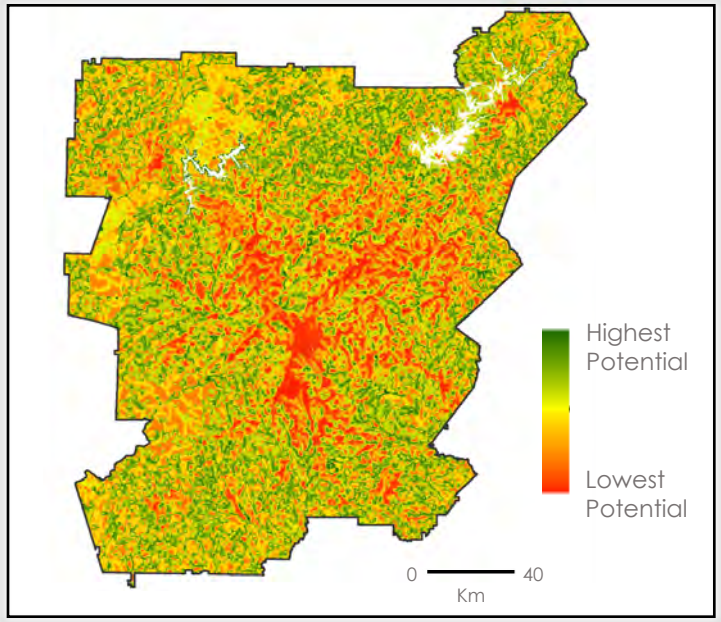
Atlanta

Working with the City of Atlanta and the Nature Conservancy to understand stormwater runoff and what that means for it's surrounding communities, and how green infrastructure can aid in mitigating runoff.

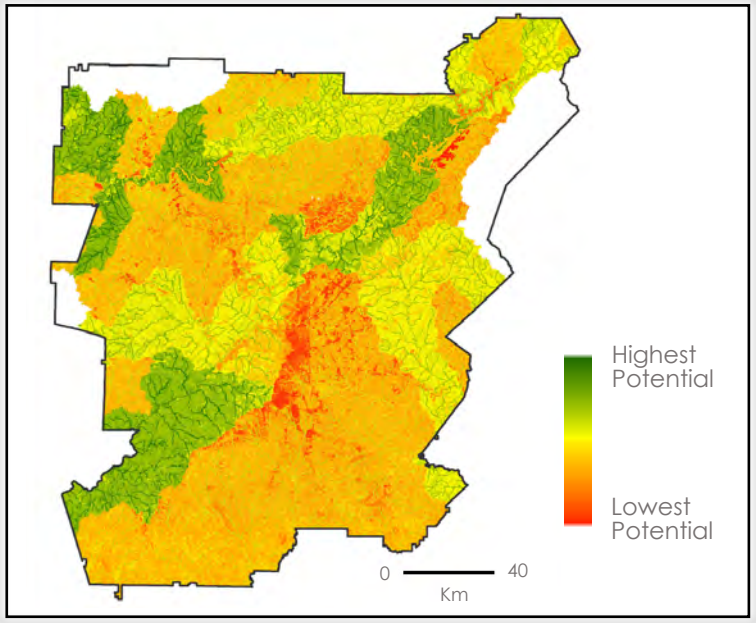
Minimizing Untreated Stormwater Flow From Impervious Surfaces



Protecting Existing Green Infrastructure and Identify Reforestation Opportunities



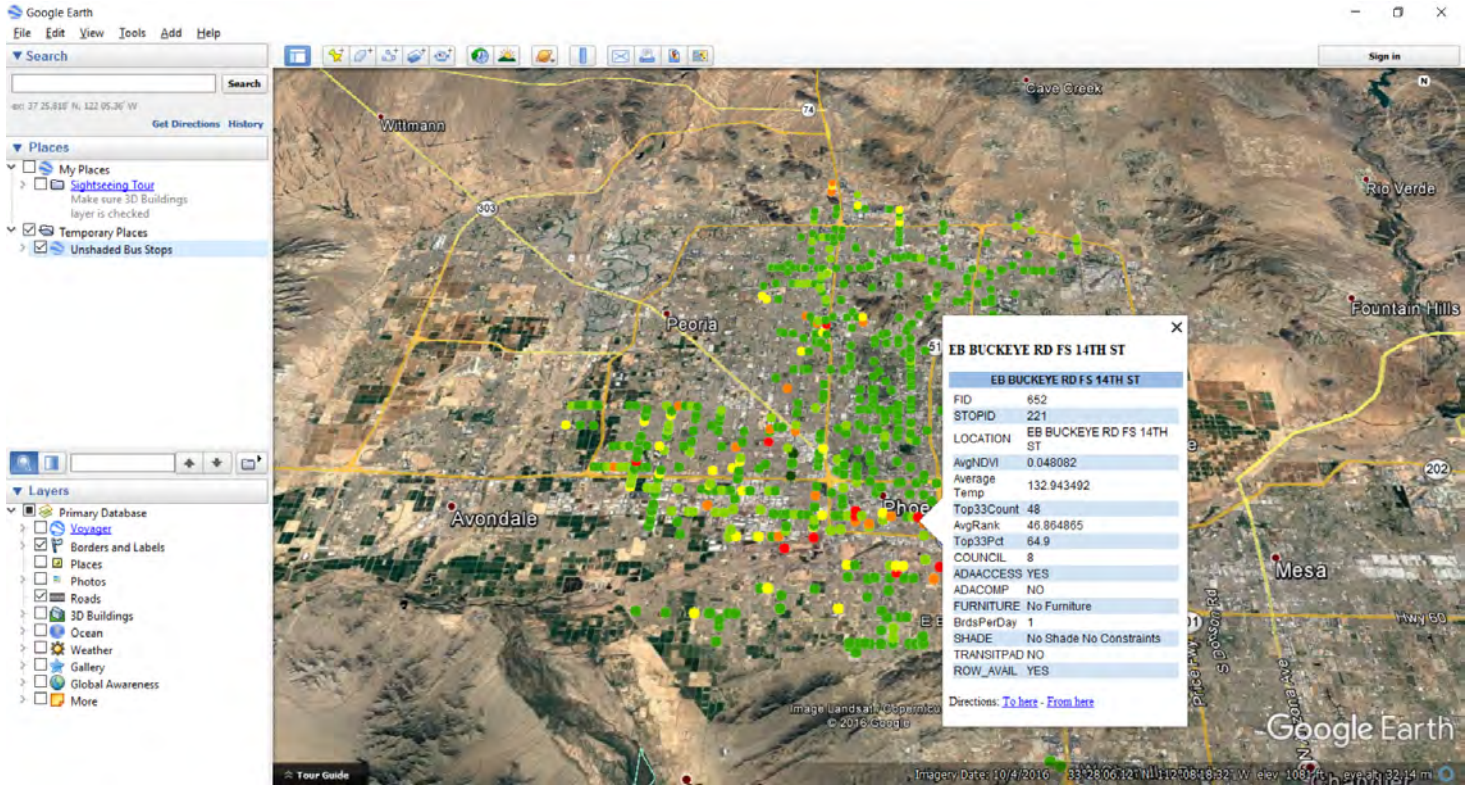
Identifying Managed Lands with a High Potential to Impact Local Water Quality



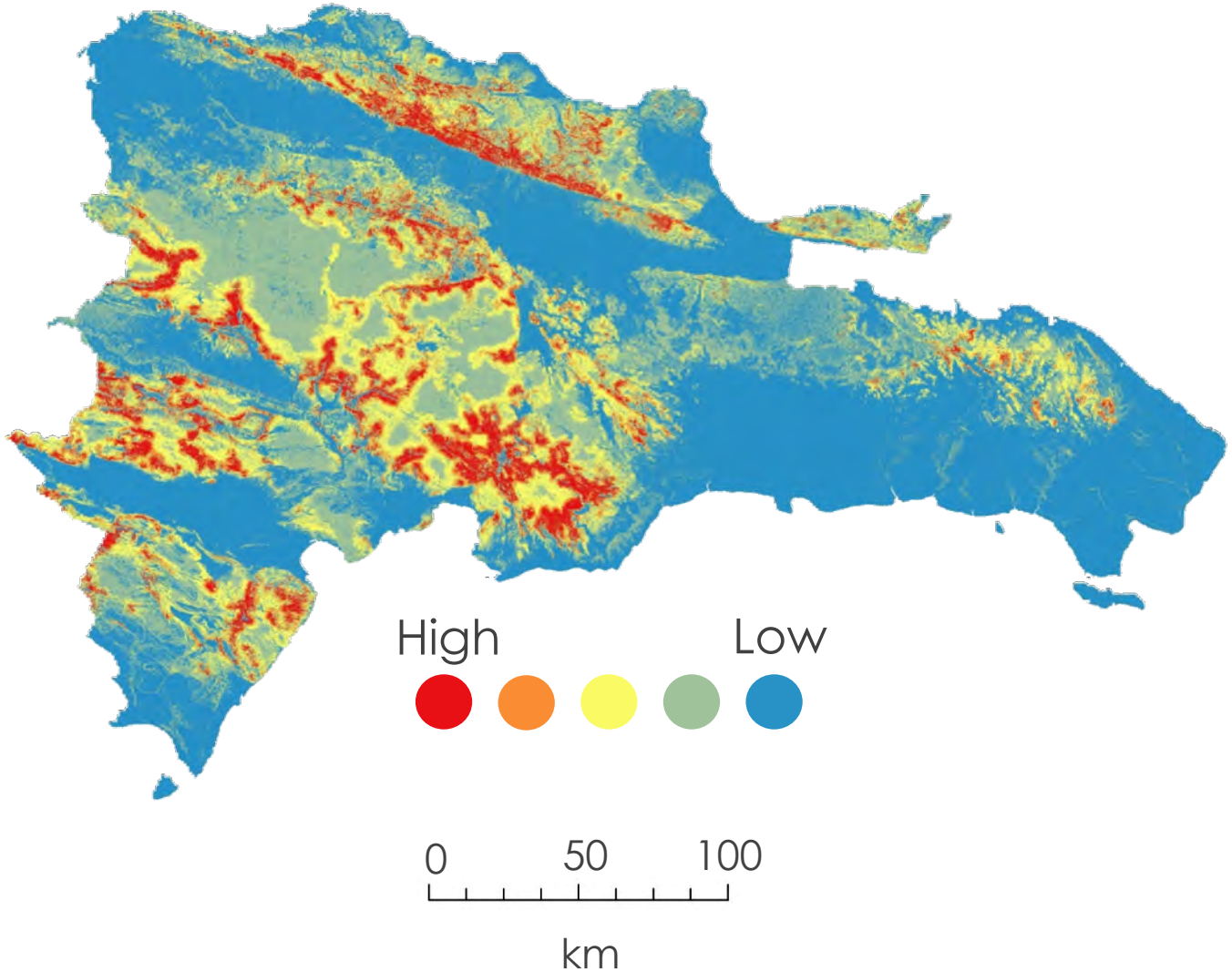
Health & Air Quality

Phoenix

Helping vulnerable neighborhoods detect extreme heat for implementing bus stop modifications to shield riders from extreme conditions.



Disasters



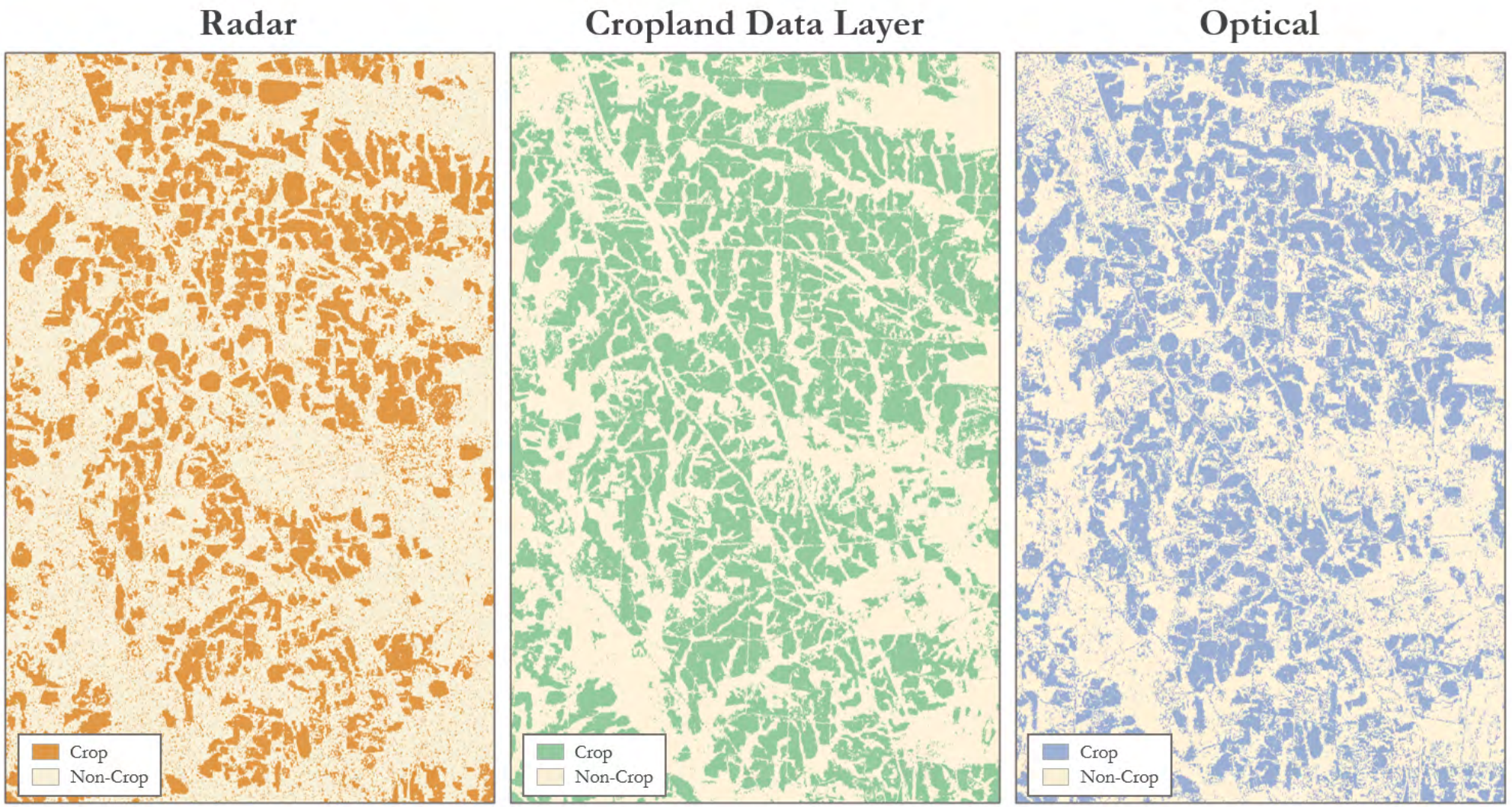
Dominican Republic

Applying NASA's Earth observations to identify susceptibility for landslides in the Dominican Republic, in hopes to better prepare communities that are at risk.

Food Security & Agriculture

North Dakota & Georgia

Helping agencies like the USDA enhance crop classification methods by incorporating radar.



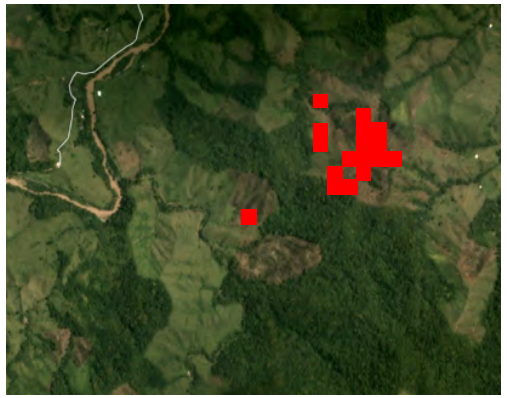
Ecological Forecasting

Honduras

Helping resources managers with millions of acres of forests identify key areas of forest loss due to deforestation.

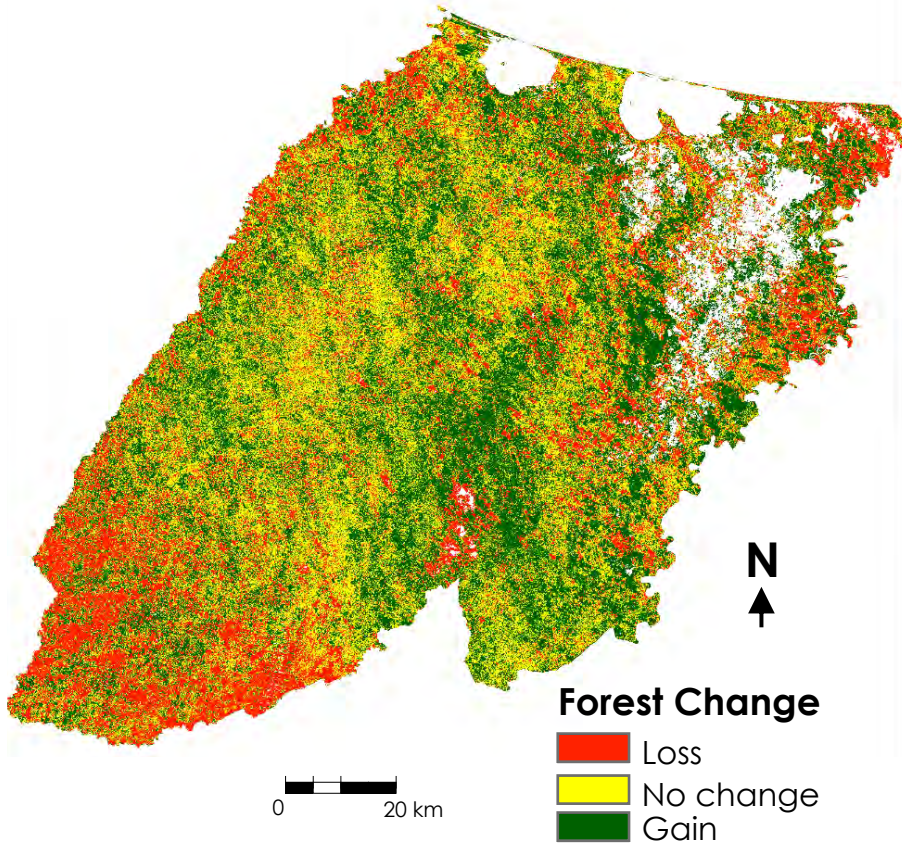
April 2018

May 2018



Forest Disturbance

NDVI Difference between 2000 and 2011 in Rio Platano Biosphere Reserve



Become a DEVELOP Project Partner!

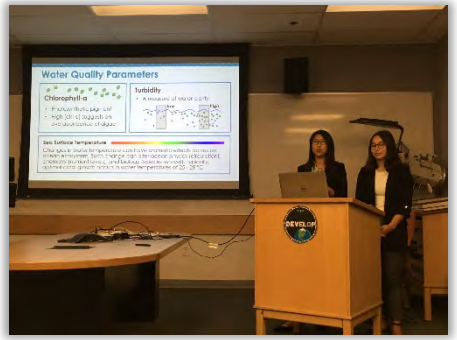
Why?

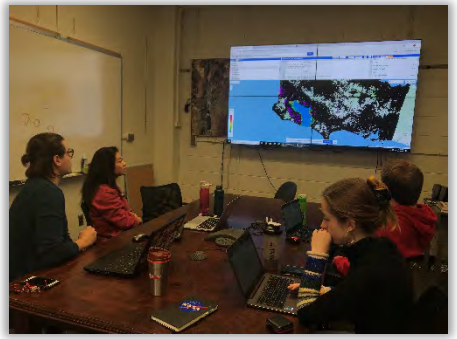
- Work with motivated aspiring Earth scientists
- Obtain real world results in 10 weeks
- Learn the power of freely available NASA data

How?

- Email – **SHELBY.INGRAM@SSAIHQ.COM**
- Submit a project idea form through our website

We would love to tap into the planning efforts in GA!





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-OR-

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