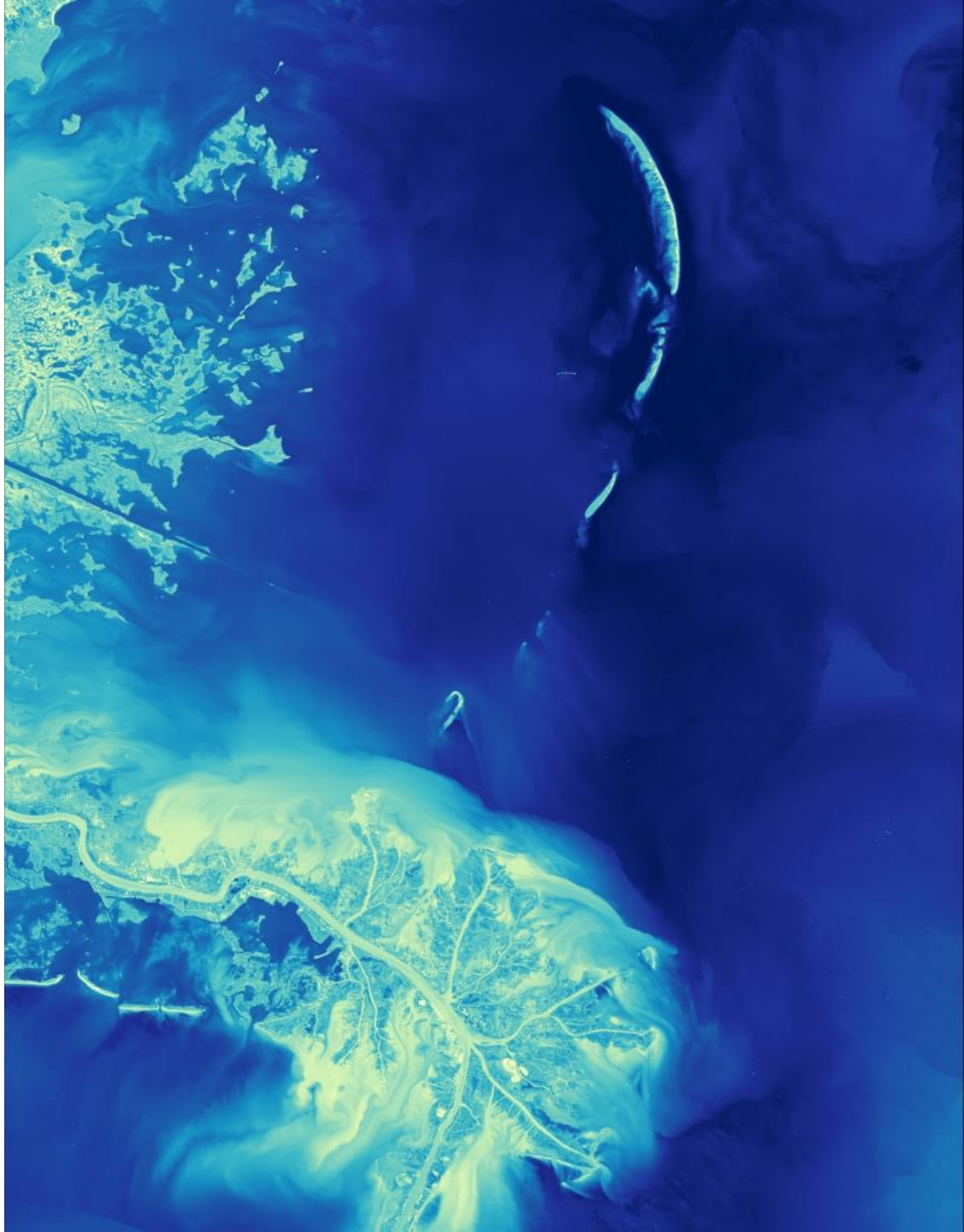
EARTH SCIENCE
APPLIED SCIENCES

Applied Sciences' Capacity Building

DEVELOP

January 1st, 2023

We will begin shortly, please make sure to mute your microphone and keep video off

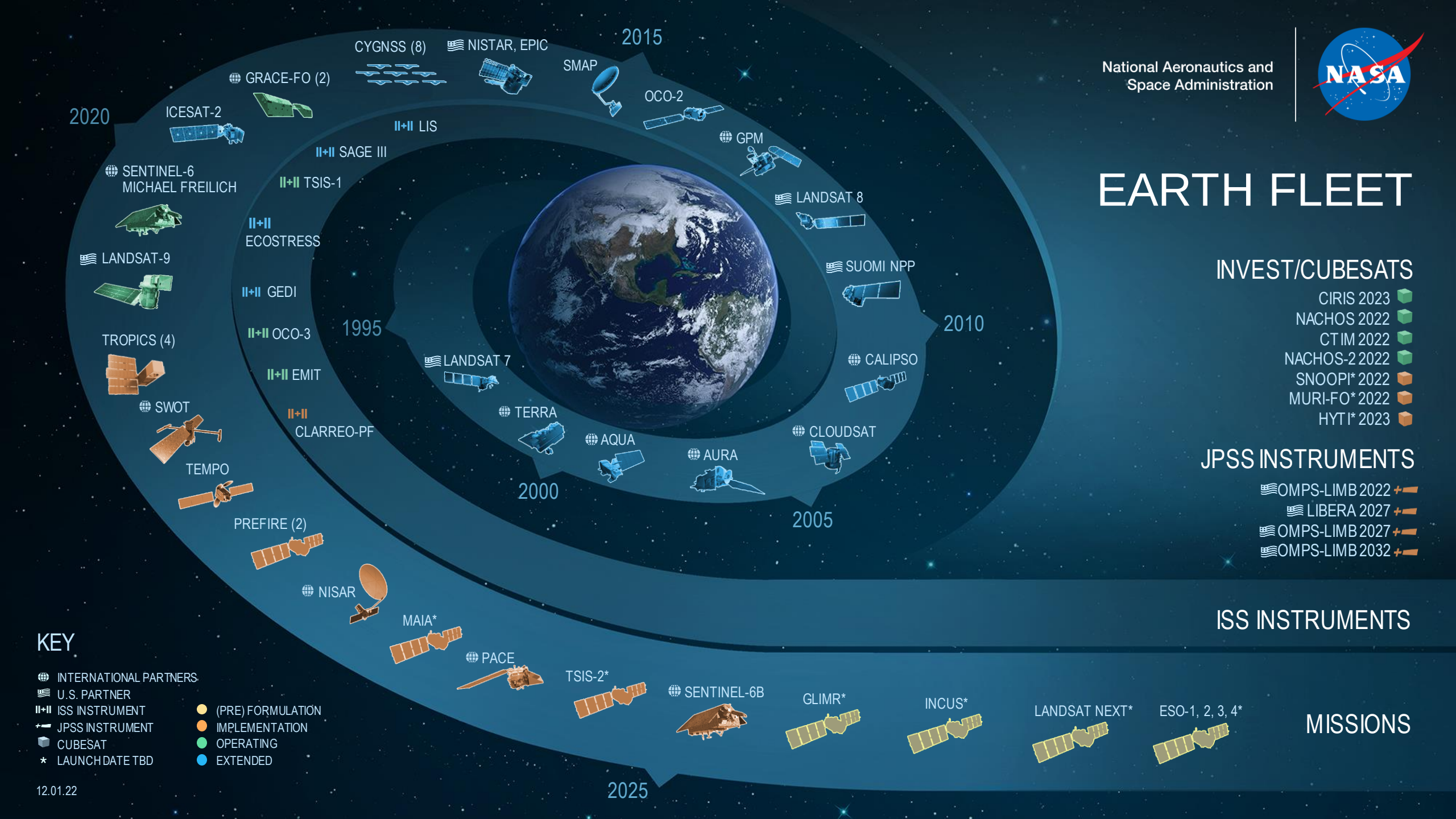


Earth Science Division

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

Using the global vantage point of space, ESD builds fundamental, scientific knowledge about Earth and how it is changing. ESD advances understanding of Earth as an integrated system and develops and tests applications that deliver direct societal benefit. It has five lines of business:

- Technology
- Flight
- Research & Analysis
- Data & Computation
- Applications


National Aeronautics and Space Administration
NASA
EARTH FLEET
2015
2020
1995
2010
2000
2005
2025
CYGNSS (8)
NISTAR, EPIC
SMAP
OCO-2
GRACE-FO (2)
ICESAT-2
LIS
GPM
SAGE III
SENTINEL-6 MICHAEL FREILICH
TSIS-1
LANDSAT 8
ECOSTRESS
LANDSAT-9
SUOMI NPP
GEDI
TROPICS (4)
OCO-3
LANDSAT 7
CALIPSO
EMIT
SWOT
TERRA
CLOUDSAT
CLARREO-PF
AQUA
AURA
TEMPO
PREFIRE (2)
NISAR
MAIA*
PACE
TSIS-2*
SENTINEL-6B
GLIMR*
INCUS*
LANDSAT NEXT*
ESO-1, 2, 3, 4*
INVEST/CUBESATS
CIRIS 2023
NACHOS 2022
CTIM 2022
NACHOS-2 2022
SNOOPI* 2022
MURI-FO* 2022
HYTI* 2023
JPSS INSTRUMENTS
OMPS-LIMB 2022
LIBERA 2027
OMPS-LIMB 2027
OMPS-LIMB 2032
ISS INSTRUMENTS
MISSIONS
KEY
INTERNATIONAL PARTNERS
U.S. PARTNER
ISS INSTRUMENT
JPSS INSTRUMENT
CUBESAT
LAUNCH DATE TBD
(PRE) FORMULATION
IMPLEMENTATION
OPERATING
EXTENDED
12.01.22

Harnessing Earth observations to find solutions to Earth's greatest challenges.

The **Applied Sciences Program** helps people across the world use NASA data to solve big problems right here on Earth.

- Provides support and funding to help institutions and individuals make informed decisions
- Enables the early and ongoing involvement of users throughout the lifecycle of Earth science satellite and instrument missions
- Supports improved abilities for users to ideate applications and provide unique feedback to mission teams
- Organizes work into thematic applications areas and capacity building

AGRICULTURE

WILDLAND FIRES

DISASTERS

HEALTH & AIR QUALITY

URBAN DEVELOPMENT

CAPACITY BUILDING

ENERGY

ECOLOGICAL CONSERVATION

CLIMATE

WATER RESOURCES

TRANSPORTATION & INFRASTRUCTURE

ARSET

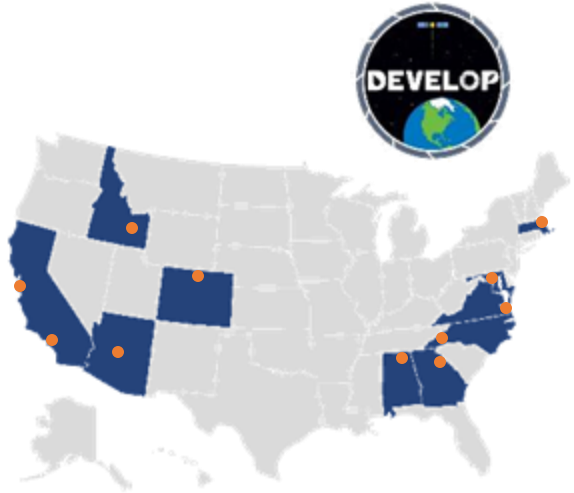
ARSET offers satellite remote sensing training that builds the skills to integrate NASA Earth Science data into decision-making activities. Through its decade of trainings, ARSET has reached over 25,000 participants from 160 countries and more than 5,000 organizations worldwide.

https://appliedsciences.nasa.gov/arset

DEVELOP

DEVELOP addresses decision-makers' needs through interdisciplinary feasibility studies that apply the lens of NASA Earth observations to environmental issues around the globe.

Projects build capacity to use Earth observations in participants and partner organizations through eight thematic areas during three terms a year.



https://appliedsciences.nasa.gov/nasadevelop

SERVIR

SERVIR connects space to village by helping developing countries use satellite data to address critical challenges in food security, water resources, weather and climate, land use, natural disasters, and air quality.

A partnership of NASA, USAID, and leading technical organizations around the world, SERVIR develops innovative solutions to improve livelihoods and foster self-reliance in Asia, Africa, and the Americas.

https://servirglobal.net

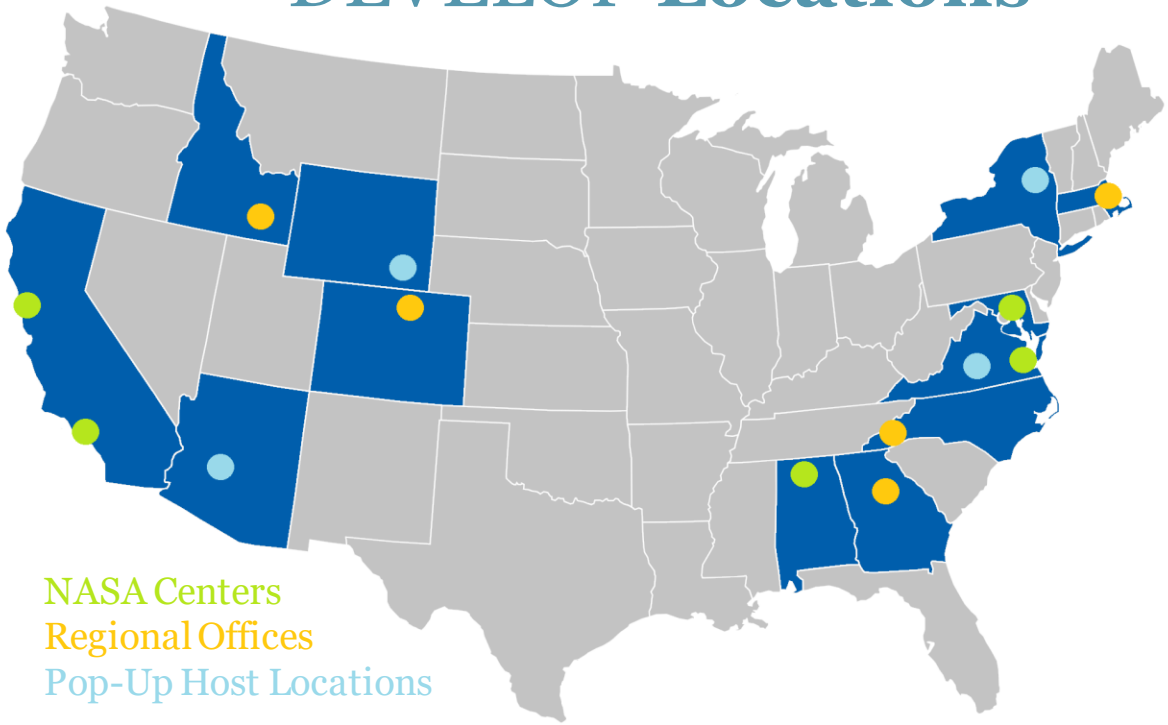
What is DEVELOP?

Empowered **Participants** + Earth Observations + Engaged **Decision Makers**

"Shaping the future by integrating Earth observations into global decision making"

DEVELOP bridges the gap between NASA Earth Science and society, building capacity in both its participants and partner organizations to better prepare them to use remote sensing to address environmental challenges. DEVELOP addresses these challenges by conducting interdisciplinary feasibility projects that apply the lens of NASA Earth observations to community concerns around the globe.

DEVELOP Locations



West Coast & Southwest


California – Ames
Est. 2003


California – JPL
Est. 2008


Arizona – Tempe
Est. 2016

Central Plains


Idaho – Pocatello
Est. 2015


Colorado – Fort Collins
Est. 2012


Pop-Up: University of Wyoming
Est. 2022

Northeast

Pop-Up: Skidmore College
Est. 2023

Massachusetts – Boston
Est. 2018

Mid-Atlantic

Maryland – Goddard
Est. 2004

Virginia – Langley
Est. 1998

Pop-Up: University of Virginia
Est. 2022

Southeast

Georgia – Athens
Est. 2013

North Carolina – NCEI
Est. 2014

Alabama – Marshall
Est. 2008

Virtual

Environmental Justice
Est. 2022

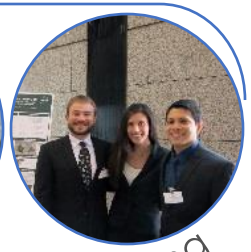
Who Participates in DEVELOP?

Participants


Recent Graduates


Military Personnel


Students


Transitioning Professionals

Advisors


NASA Scientists


University Professors


Partner Organizations

Decision Makers


State & Local Govt.


Federal Agencies


NGOs (non-profit and for-profit)


International organizations

DEVELOP's Core Values

- COLLABORATION
- SERVICE
- PASSION
- DISCOVERY

DEVELOPers are passionate about the environment and serving society!

Benefits of Participating

Scientific & Technical Skills

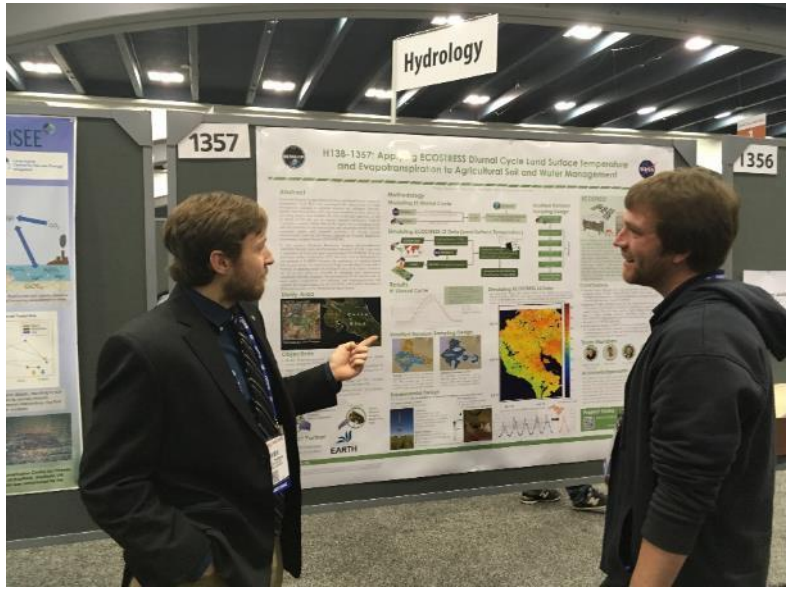
- Experience using NASA Earth observations
- GIS & remote sensing
- Project execution
- Science communication

Personal Development

- Presentation & communication skills
- Personality typing & working with diverse groups
- Confidence
- Interpersonal communication

Professional Development & Networking

- Management & leadership
- NASA scientists & managers
- Partner organizations
- Peers – teams, node, & national



Common Majors

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

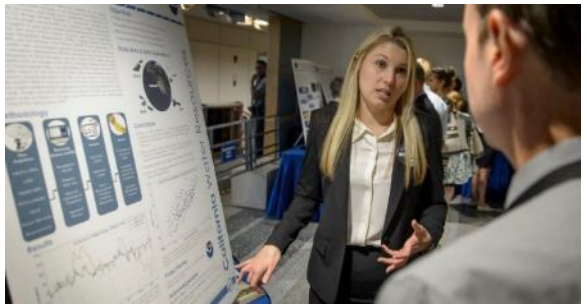
Note: open to all majors!

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 **work location**



Eligibility Requirements

- Age 18+ with a minimum 3.0 GPA
- Current students, recent graduates, early career professionals, transitioning career professionals, US Military service members & veterans
- Interdisciplinary backgrounds, no experience is required but a strong interest in GIS, remote sensing, and science is important
- Available to work 20-29 hours per week during regular business hours
- US Citizens & Foreign Nationals*

** US citizenship is required to apply to DEVELOP locations at NASA & NOAA locations. Foreign nationals must be currently located in the United States and enrolled or recently graduated from 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.*

Three 10-week terms: Spring, Summer, and Fall

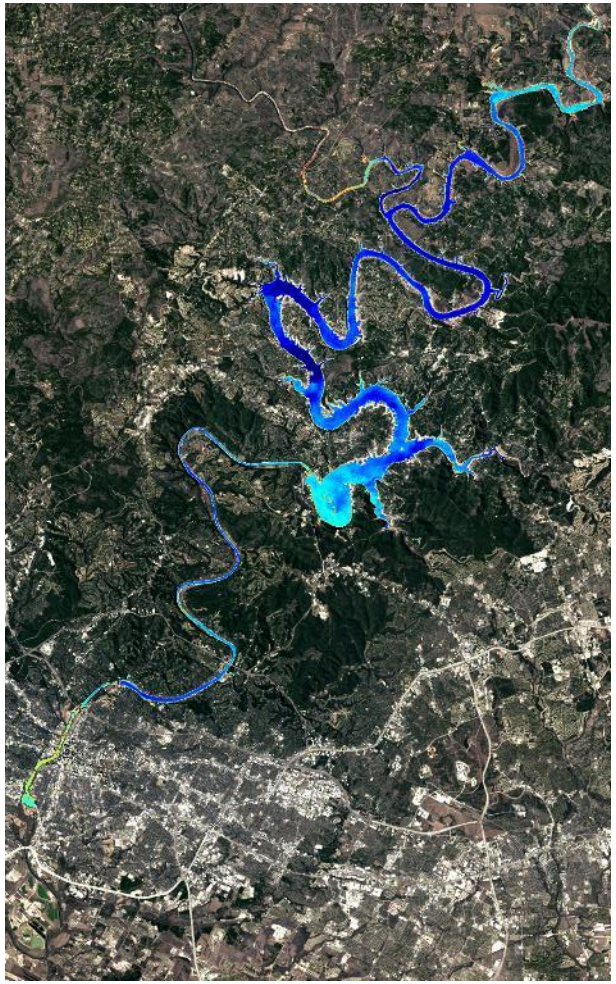
Participants must reapply each term

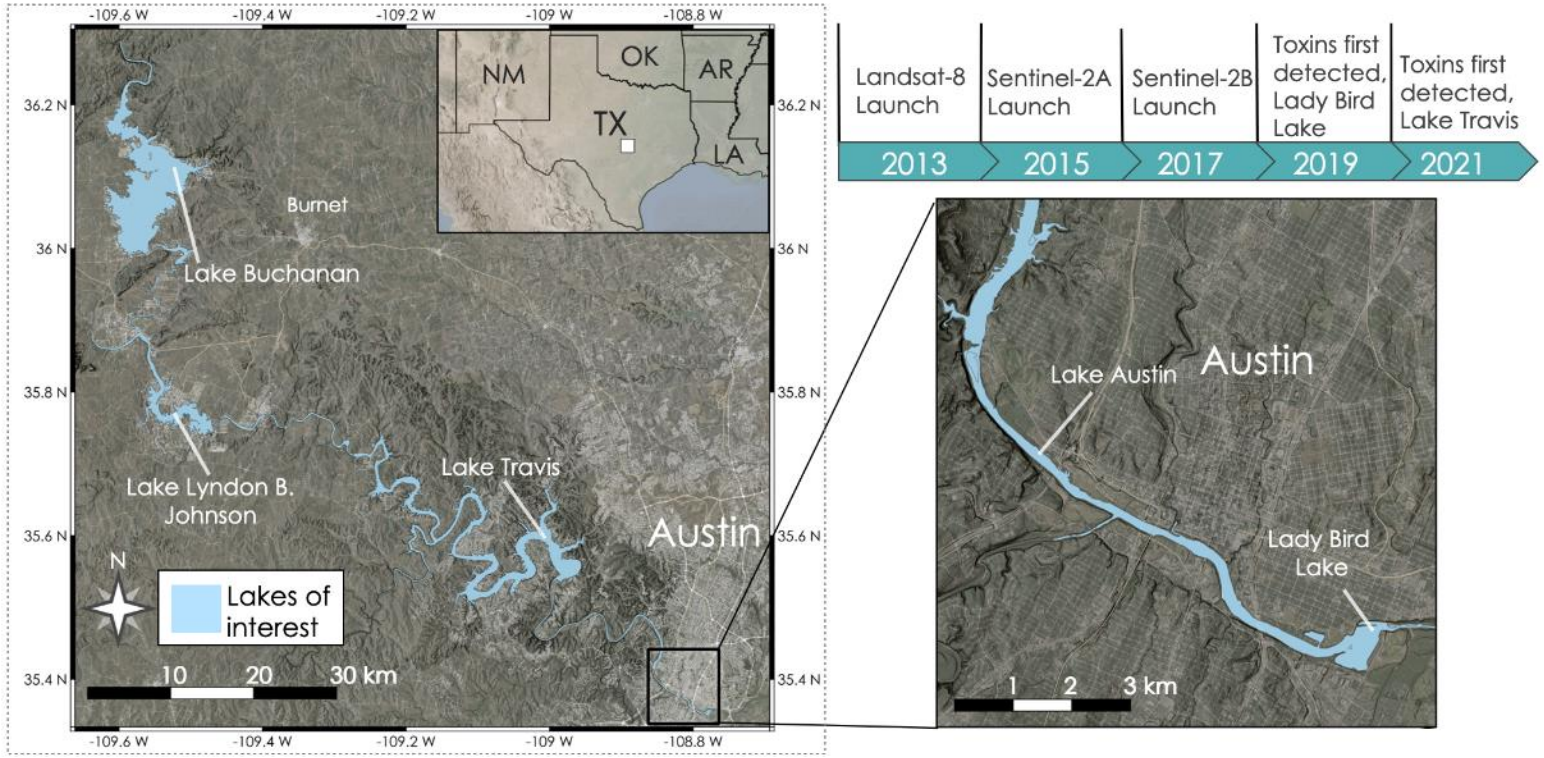
Project Characteristics

50+ DEVELOP projects take place each year – at their core they share these characteristics:

- Highlight the applications and capabilities of NASA Earth observations
- Assess the feasibility of using Earth observation data to address community concerns relating to decision-making for real-world environmental issues
- Co-developed with partner organizations who can benefit from using NASA Earth observations to enhance decision making by providing decision support tools
- Conducted in 10-week terms (spring, summer, and fall) by small teams with diverse backgrounds
- Create a consistent set of deliverables
- Research is conducted under the guidance of Science Advisors and mentors from NASA and partner organizations
- Align with at least one of the NASA Applied Sciences Program's National Application Areas:

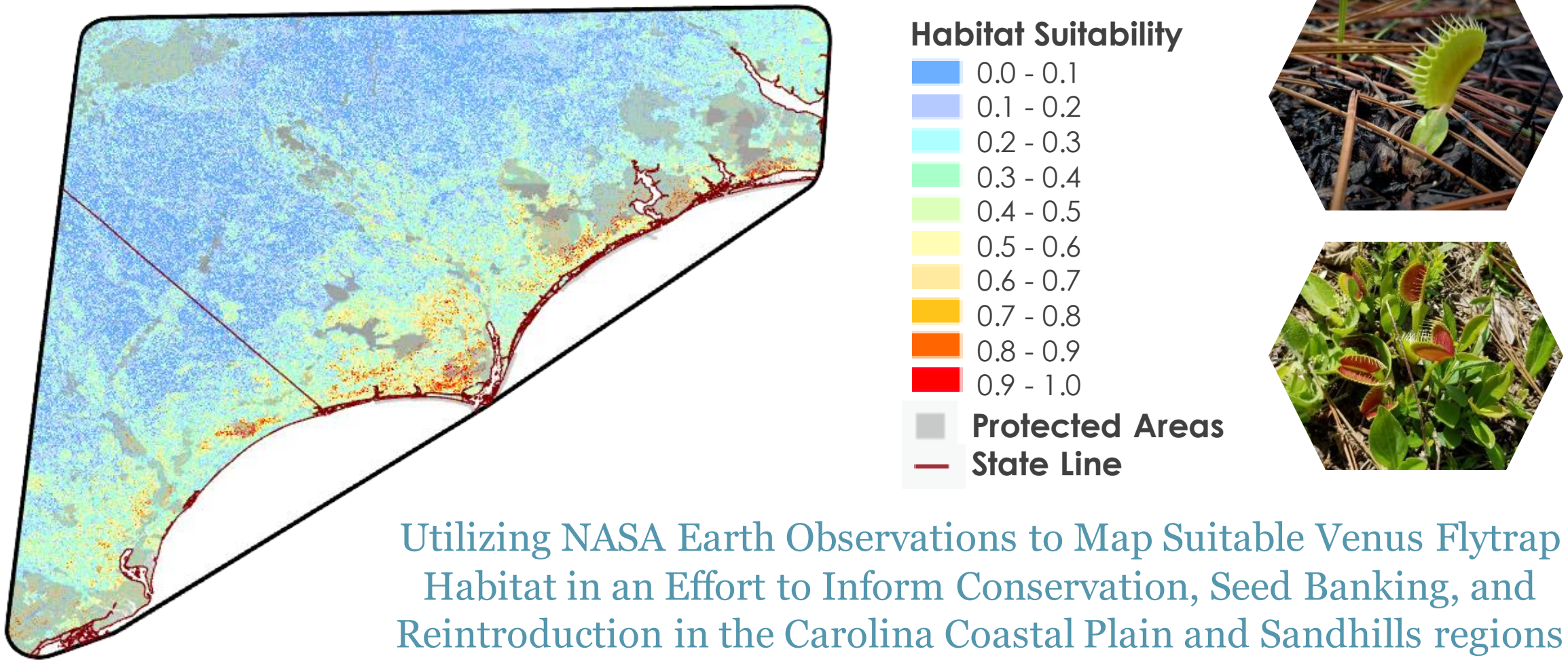
Project Example: **Highland Lakes Water Resources**





Using NASA Earth Observations to Improve Detection Systems for Harmful Algal Events in the Highland Lakes in Central Texas

Project Example: **Carolina Coastal Plain Ecological Forecasting**



Utilizing NASA Earth Observations to Map Suitable Venus Flytrap Habitat in an Effort to Inform Conservation, Seed Banking, and Reintroduction in the Carolina Coastal Plain and Sandhills regions

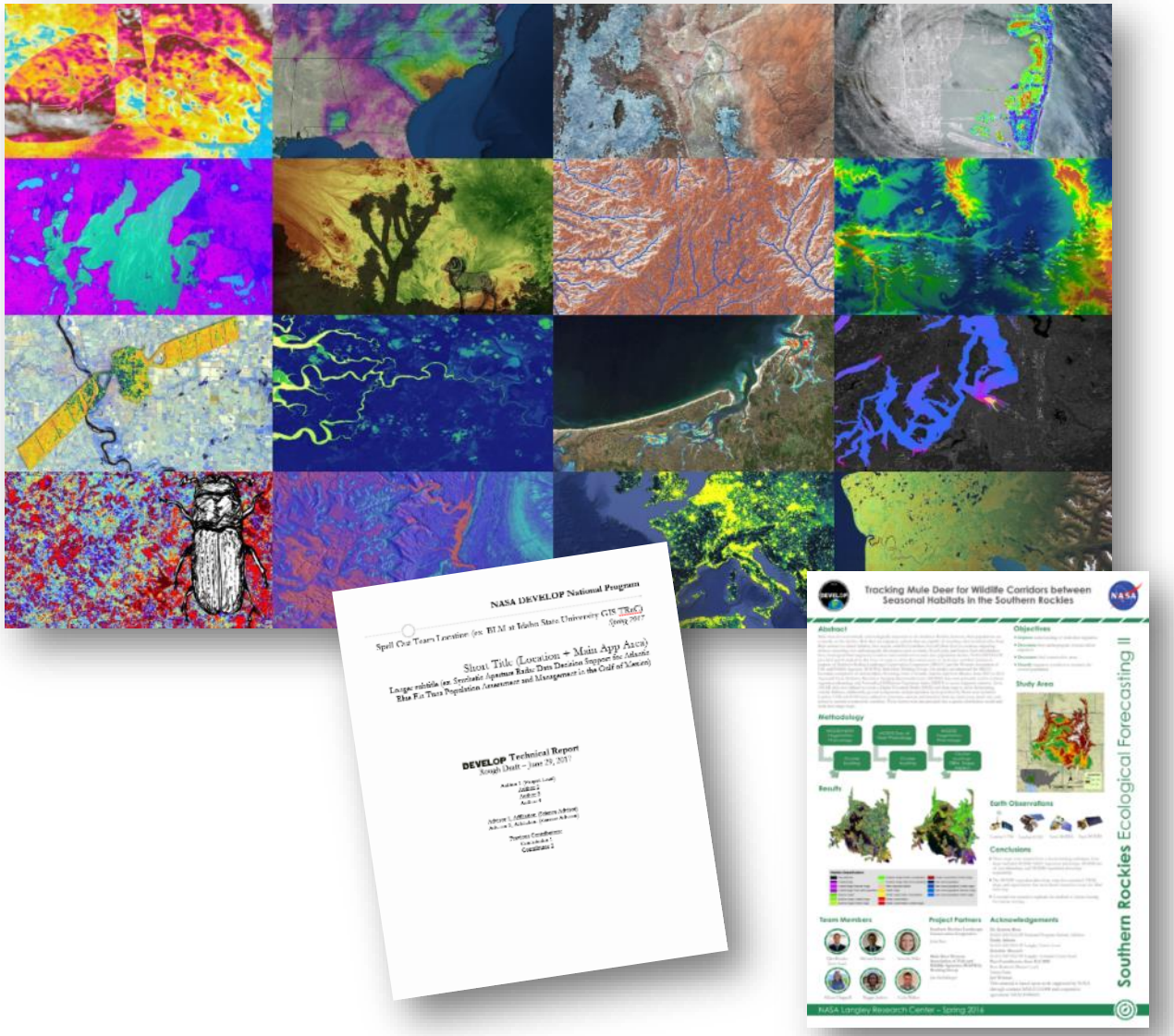
Project Deliverables

Science communication is a big focus in the DEVELOP experience. To build communication skills, all projects create…

- Presentation
- Poster
- Technical Paper

Some Projects Also Create…

- Tutorials
- Social Media Series
- Video
- Brochure



Both in-person & virtual projects provide an opportunity to…

- Conduct a 10-week feasibility study w/guidance of DEVELOP Advisors
- Learn to apply Earth observation and geospatial data
- Collaborate closely with team members
- Engage with a decision-making partner organization
- Create of a set of deliverables that communicate the project's methods and results
- Participate in professional development opportunities & build interpersonal skills

In-person opportunities also offer…

- Access to a variety of onsite resources
- Enhanced team building and networking opportunities
- In-person tours, field trips, and meetings

Virtual opportunities also offer…

- Ability to participate when you are not geographically near a DEVELOP location
- Potential cost savings (ex. no commute)

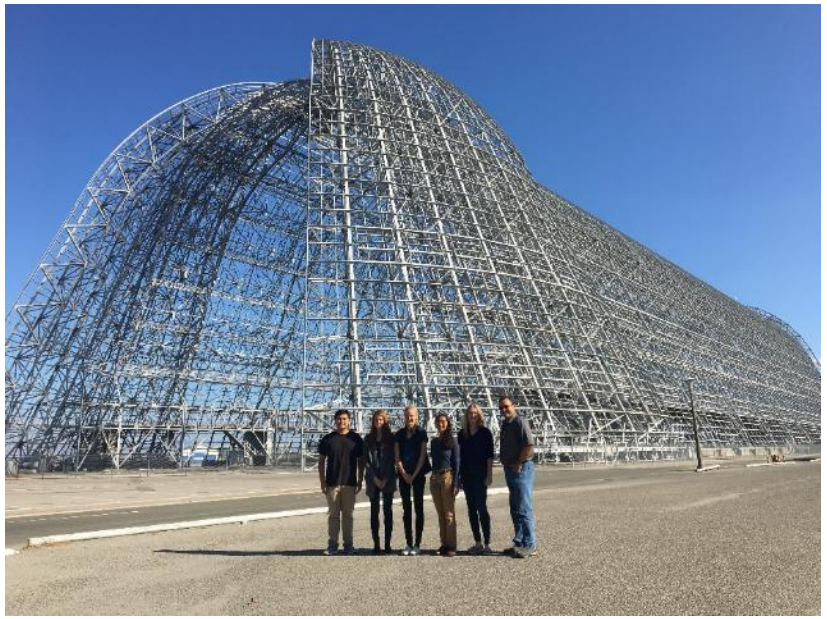
Note: Review the Apply page and the Proposed Project List to identify which projects are available in-person and which are virtual

Interested in Applying?

https://appliedsciences.nasa.gov/nasadevelop

Summer 2023 Term

- Application Window: Jan 16, 2023 – Feb 24, 2023
- Term Dates: Jun 5, 2023 – Aug 11, 2023



Find us on Social Media!

Articles & Important Events: Tweet **@NASA_DEVELOP** or **#NASADEVELOP**
http://twitter.com/#!/nasa_develop

DEVELOP National Program:
Features projects, node highlights & accomplishments, VPS announcements
www.facebook.com/developnationalprogram

NASA DEVELOP National Program:
Project and promotional videos
www.youtube.com/user/NASADEVELOP

Thank You!

Visit the DEVELOP website:
https://appliedsciences.nasa.gov/nasadevelop

Email us at:
NASA-DL-DEVELOP@MAIL.NASA.GOV

EARTH SCIENCE
APPLIED SCIENCES

FAQS

Frequently Asked Questions

"How much will I be paid?"
DEVELOP participants are paid on an hourly basis. Rates are based on your current level of education, applicant classification, and work location. If you'd like to know your specific rate, please email us at NASA-DL-DEVELOP@mail.nasa.gov.

"How much would I work per week?"
DEVELOP participants are expected to commit **20-29 hours** per week throughout the term during normal business hours (8am – 5pm local time).

"Will the Summer 2023 term be in-person?"
The spring term will offer both in-person and virtual opportunities. Make sure to pay attention to the type of opportunity you select on the application!

"Are laptops or software provided?"
In-person participants may have access to office computers. While computers are not provided to all participants, each participant is equipped with access to a virtual machine that has all necessary software for participants to conduct their projects.

"Can I participate during the school year while I am taking classes?"
Yes! Many DEVELOP participants are current students and work the required number of hours around their class schedule during normal business hours (8am – 5pm).

"How strict is the GPA requirement?"
Participants must have a 3.0 GPA (on a 4.0 scale) to apply. This GPA can be the cumulative and/or your most recent semester.

"Who should I ask for Letters of Recommendation?"
New participant applicants will need to list two recommenders, preferably one from an academic source and one from a professional source. Two academic recommendations are acceptable if necessary.

"How are teams structured?"
Teams typically range in size from three to six participants, working under the guidance of a NASA DEVELOP Fellow and science advisors.