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NEON Assignable Asset Program Lead

Samantha Kremidas
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Research Initiatives Lead

Assignable Assets Program Team:
- Shalane Frost
- Samantha Kremidas
- Nick Marusich
- Cory Ritz
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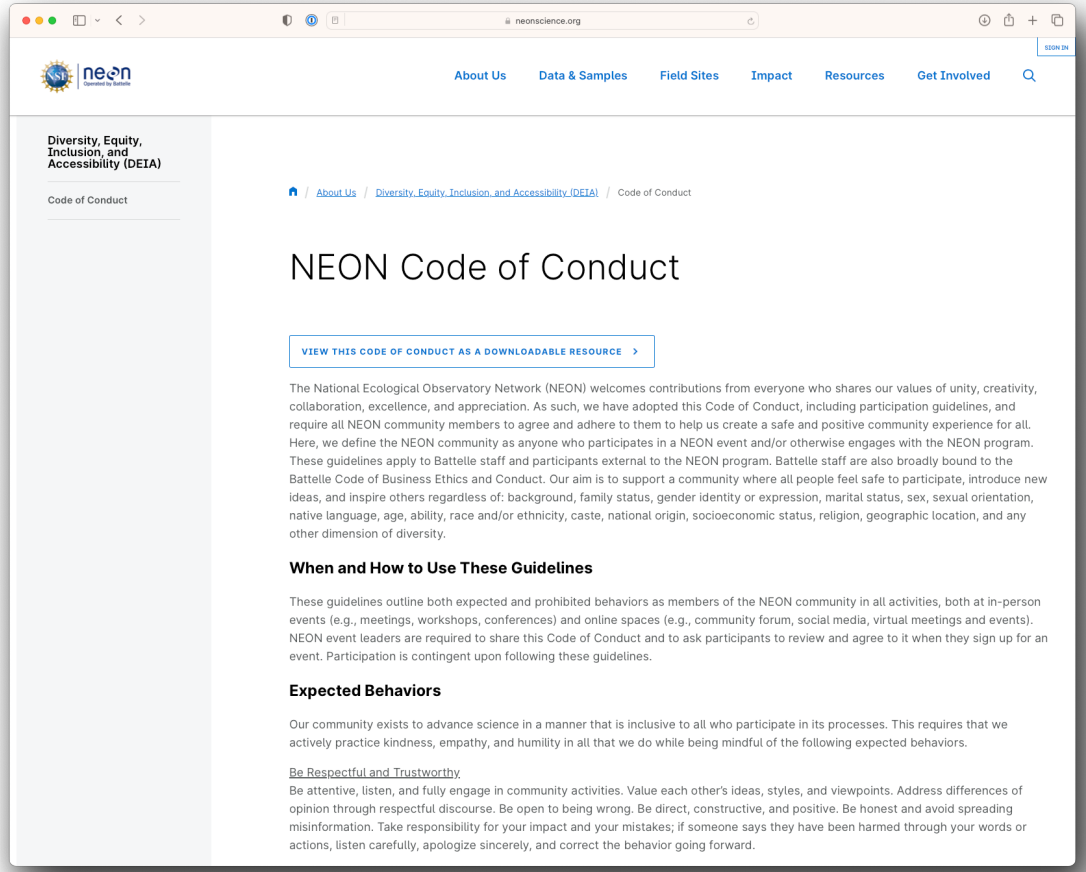
- Matt Schroeder

Webinar | September 13, 2023

NEON Assignable Assets Program

1 This material is based upon work supported by NSF's National Ecological Observatory Network which is a major facility fully funded by the National Science Foundation

NEON Code of Conduct



www.neonscience.org/neon-code-conduct

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NEON Assignable Assets Program

This material is based upon work supported by NSF's National Ecological Observatory Network which is a major facility fully funded by the National Science Foundation

Presentation Overview

- NEON Overview
- Assignable Assets Program Overview
- Assignable Assets Program Growth
- Requesting Research Support
- Request Process
- Example Projects
- Opportunities & Resources
- Q&A


MOAB (D15, Utah)

National Ecological Observatory Network (NEON) Overview

www.neonscience.org

National Ecological Observatory Network (NEON)

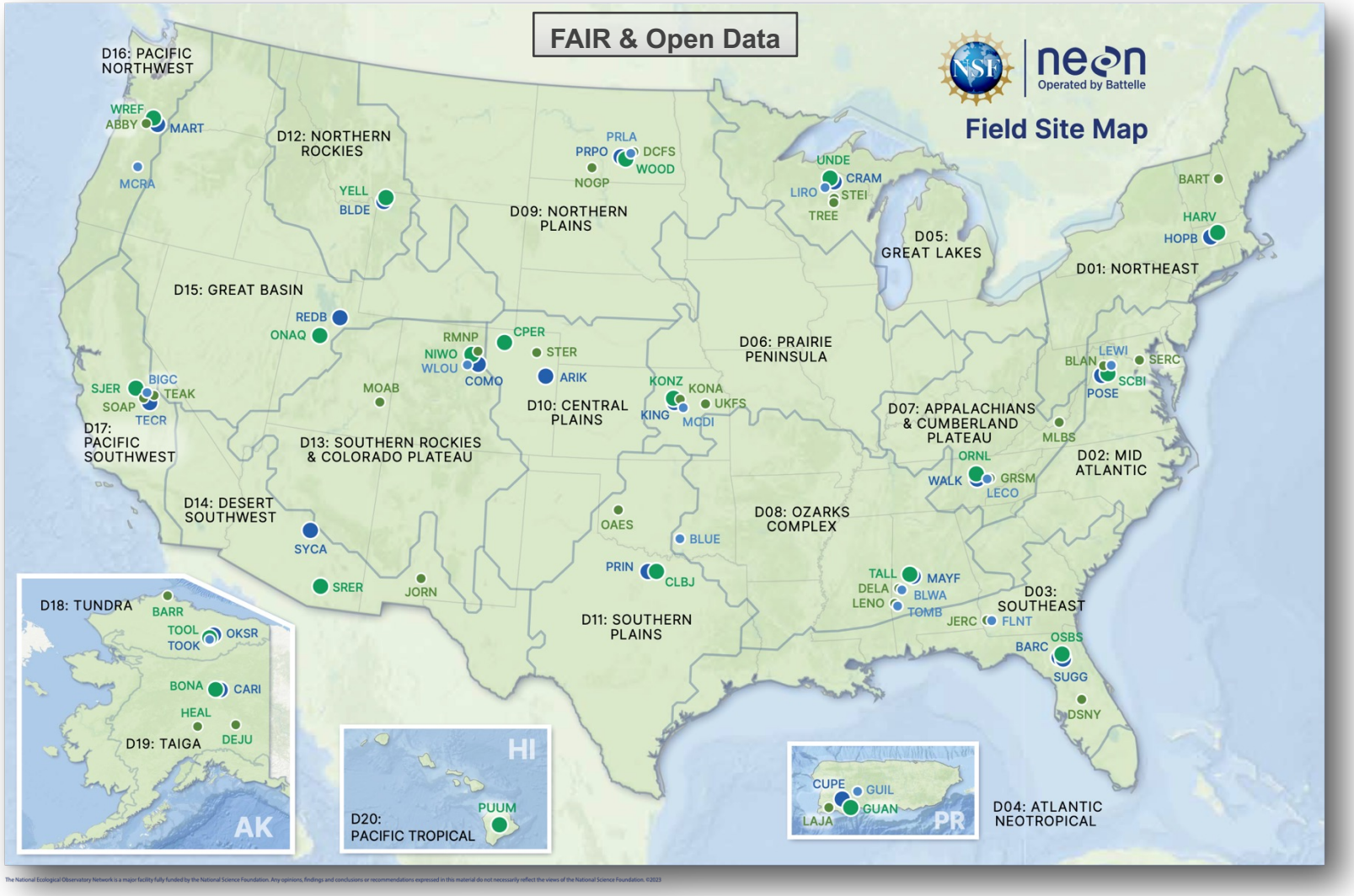
- Continental-scale
  - Long-term
    - ~30 years
  - Fully NSF funded
  - Operated by Battelle

BATTELLE

- Standardized data collection methods
  - Free and open data

www.neonscience.org

NEON is a distributed Observatory across the U.S.



81 Field Sites
47 terrestrial
34 aquatic

>180 Data Products

30 Years of Data

How we collect data and samples

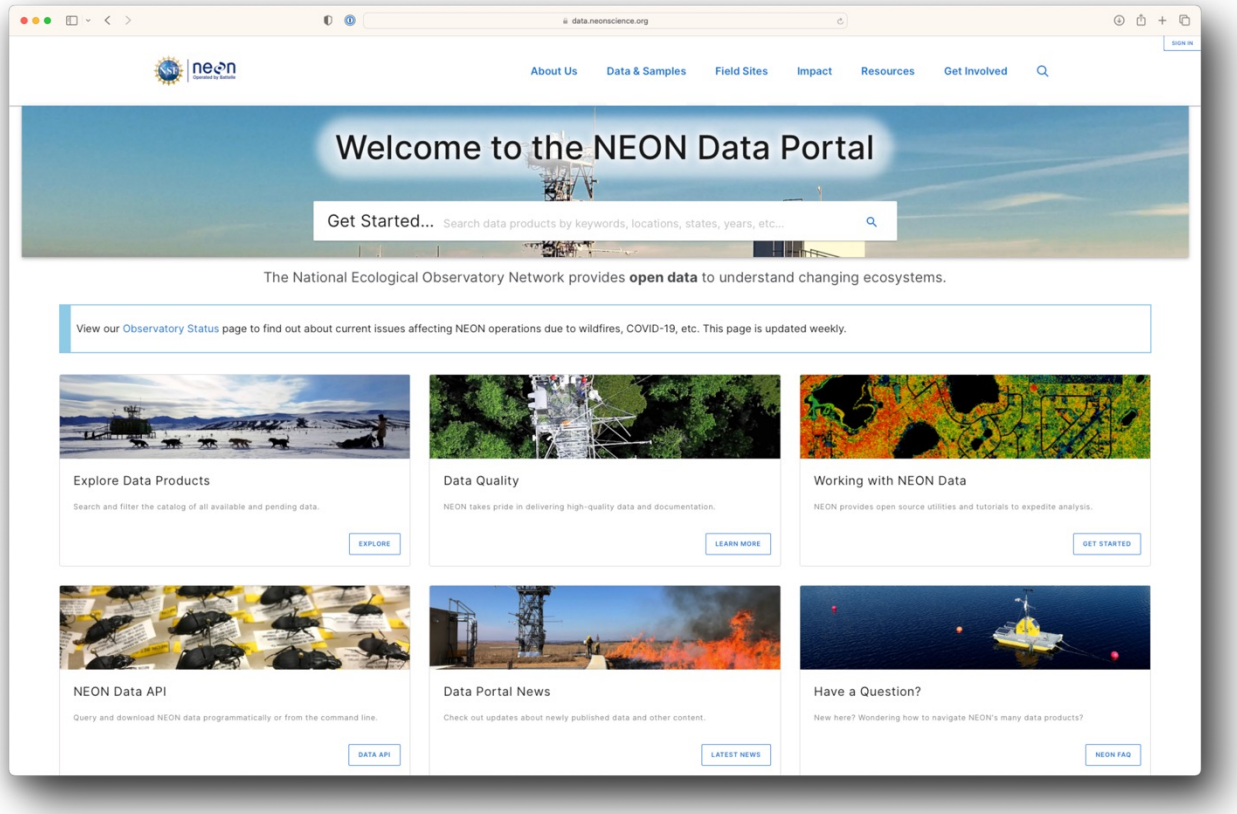
Automated instrument systems

Observational sampling

Airborne Observation Platform

NEON Data Portal: data.neonscience.org

- Explore and download data
- Access via
  - Data Portal
  - Application Programming Interface (API)
  - Partner organizations
- Also access to
  - Data product user guides, detailed protocols, other important documents
- Data updates and news



National Ecological Observatory Network

BY THE NUMBERS

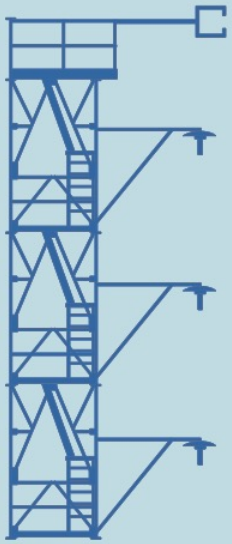
PEOPLE

~600 total staff

320+ full time

250-290 SEASONAL Domain techs

PHYSICAL INFRASTRUCTURE



airborne observation platforms	3
mobile deployment platforms (mdp)	5
flux towers	47
water quality stations	57
meteorological stations	89
groundwater wells	197
soil sensor arrays	235

34 AQUATIC

47 TERRESTRIAL

81 FIELD SITES

20 ecoclimate Domains

24 states +1 territory

DATA PRODUCTS 180+

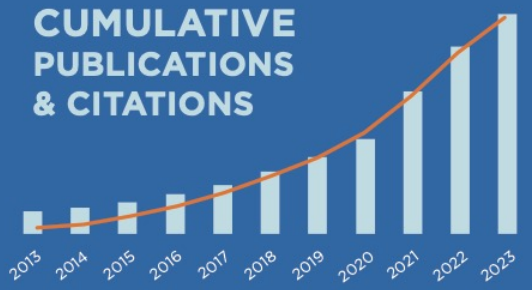
400,000+ SAMPLES TO DATE

100,000+ SAMPLES ADDED PER YEAR

600+ PUBS

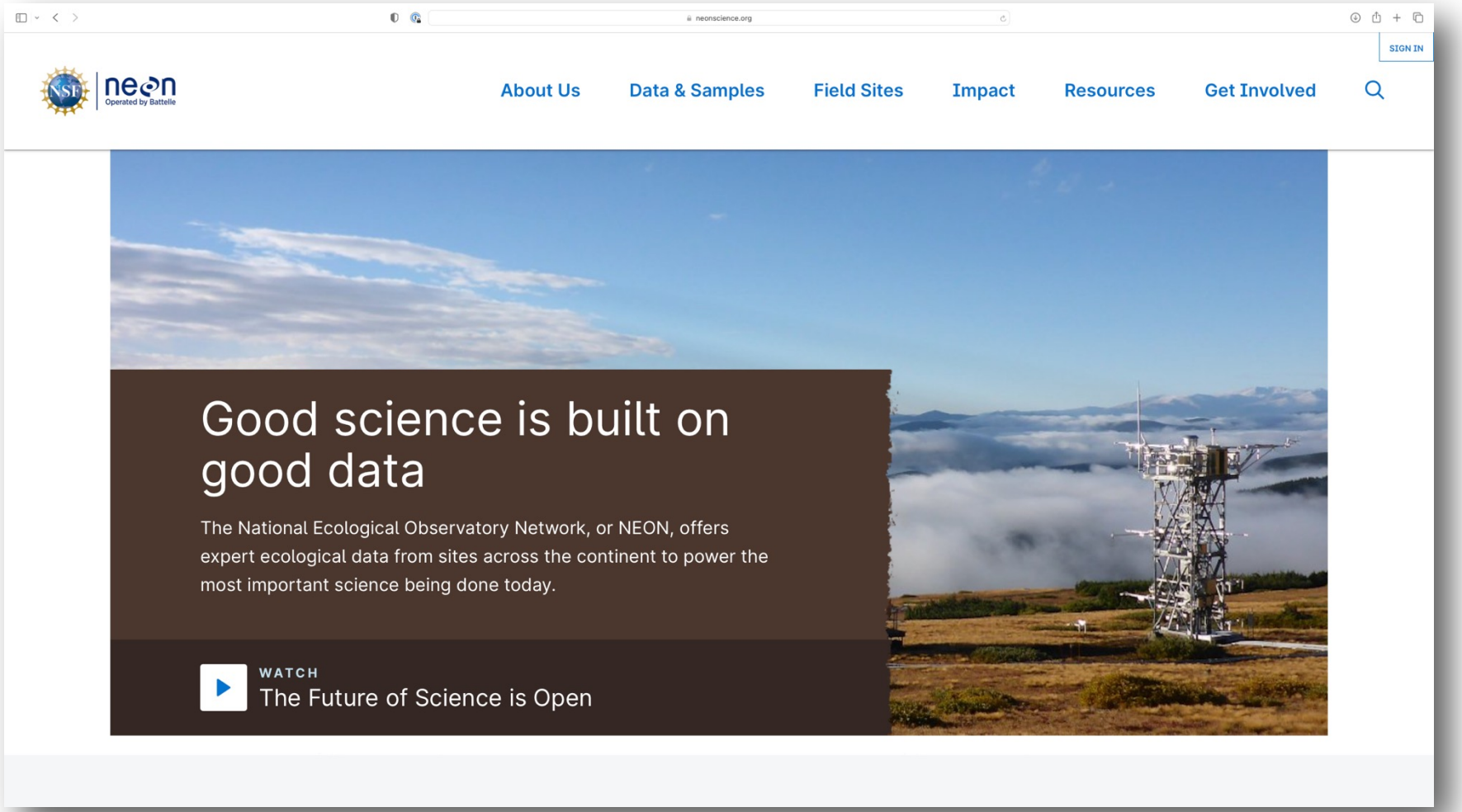
USING NEON DATA OR RESOURCES

CUMULATIVE PUBLICATIONS & CITATIONS

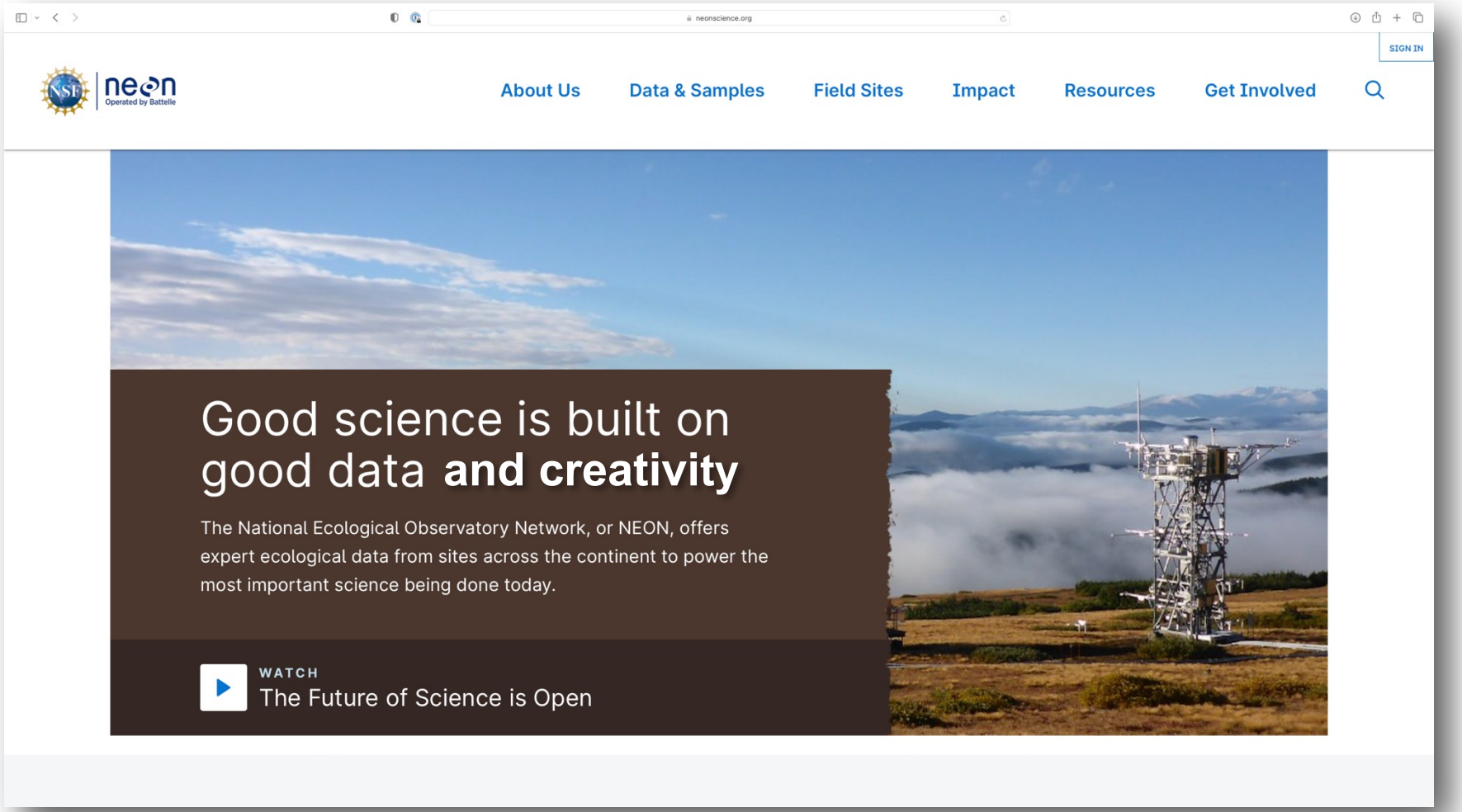


NSF | neon Operated by Battelle

Good science is built on good data



, . . . and creativity

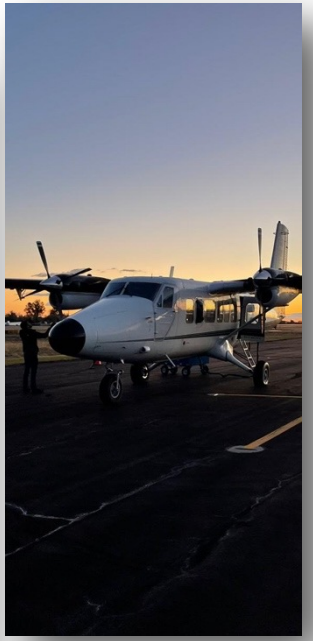


NEON Assignable Assets Program Overview

www.neonscience.org/resources/research-support

NEON Assignable Assets Program

Makes available certain components of NEON's infrastructure, scientists, engineers, field ecologists and technicians to members of the community to support their own research or other activities

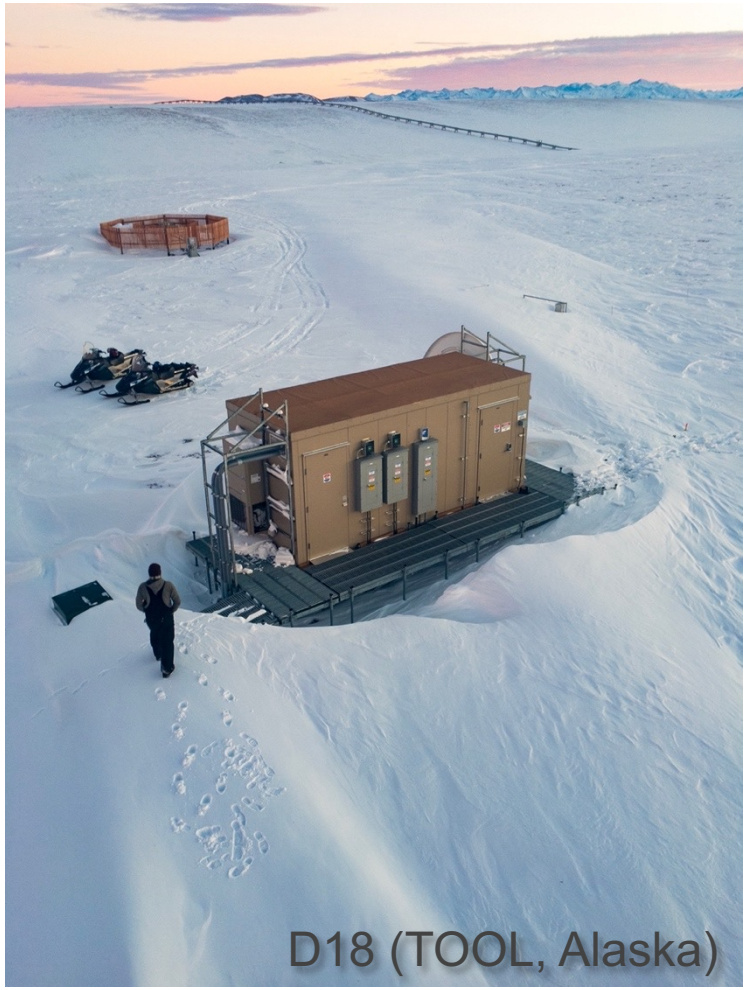


NEON Assignable Assets Program – Guiding Principles

- Leverage NEON infrastructure for community engagement
- Avoid conflicts with NEON's mission and scope
- Avoid interference with current NEON measurements
- Project support on a cost-recoverable basis*

  *NSF's funding model for NEON and external research; other NSF research infrastructure have different funding models

- Process of Evaluating and Implementing Requests:
  - Feasibility and Technical Review
  - Cost analysis and pricing of project
  - Contract / Work Agreement

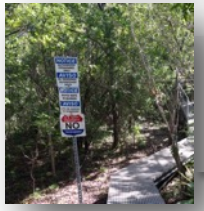

D18 (TOOL, Alaska)

NEON Assignable Assets Program – Services

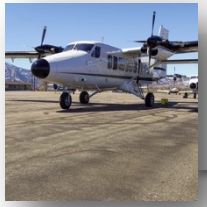
Observational Sampling Infrastructure (OSI)

Excess Samples Requests (ESR)

Sensor Infrastructure (SI)



Field Site Coordination (FSC)



Airborne Observation Platform (AOP)

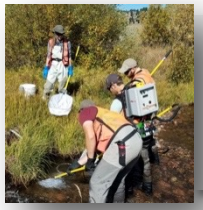
Subject Matter Expertise (SME)

Mobile Deployment Platform (MDP)

Letters of Support / Collaboration (LoS / LoC)

www.neonscience.org/resources/research-support

NEON Assignable Assets Program – Services



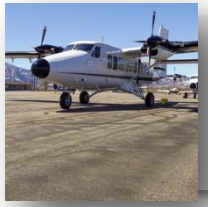
Observational Sampling Infrastructure (OSI)

- Access to our field sampling and observational plots
- Trained field ecologists for additional sampling or data collection

Sensor Infrastructure (SI)

- Access to the physical infrastructure at the sites
- Tower, instrument hut, power and communications, soil arrays, aquatics

NEON Assignable Assets Program – Services



Airborne Observation Platform (AOP)

- Access to flight surveys using the NEON Twin Otter aircraft and remote sensing platform
- Three instrument payloads

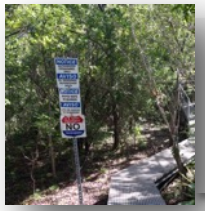
Mobile Deployment Platform (MDP)

- Mobile tower infrastructure and subset of NEON terrestrial and aquatic sensors
- Deployable to remote location to collect NEON-like data

NEON Assignable Assets Program - Services

Excess Samples Requests (ESR)

- Observational sampling generates an excess of samples than are needed for archiving or analysis
- Researchers can request access to the excess before they are destroyed



Field Site Coordination (FSC)

- Occurs when researchers want to do research at or adjacent to NEON sites
- Does not require access to plots, infrastructure or require any labor or field support

NEON Assignable Assets Program – Services

Subject Matter Expertise (SME)

- Professional, trained field ecologists in NEON protocols and equipment and local ecosystems
- Access to NEON scientists, data scientists, and engineers

Letters of Support / Collaboration (LoS / LoC)

- Letters of Support or Collaboration for proposals or other needs
- Handled via the Assignable Assets

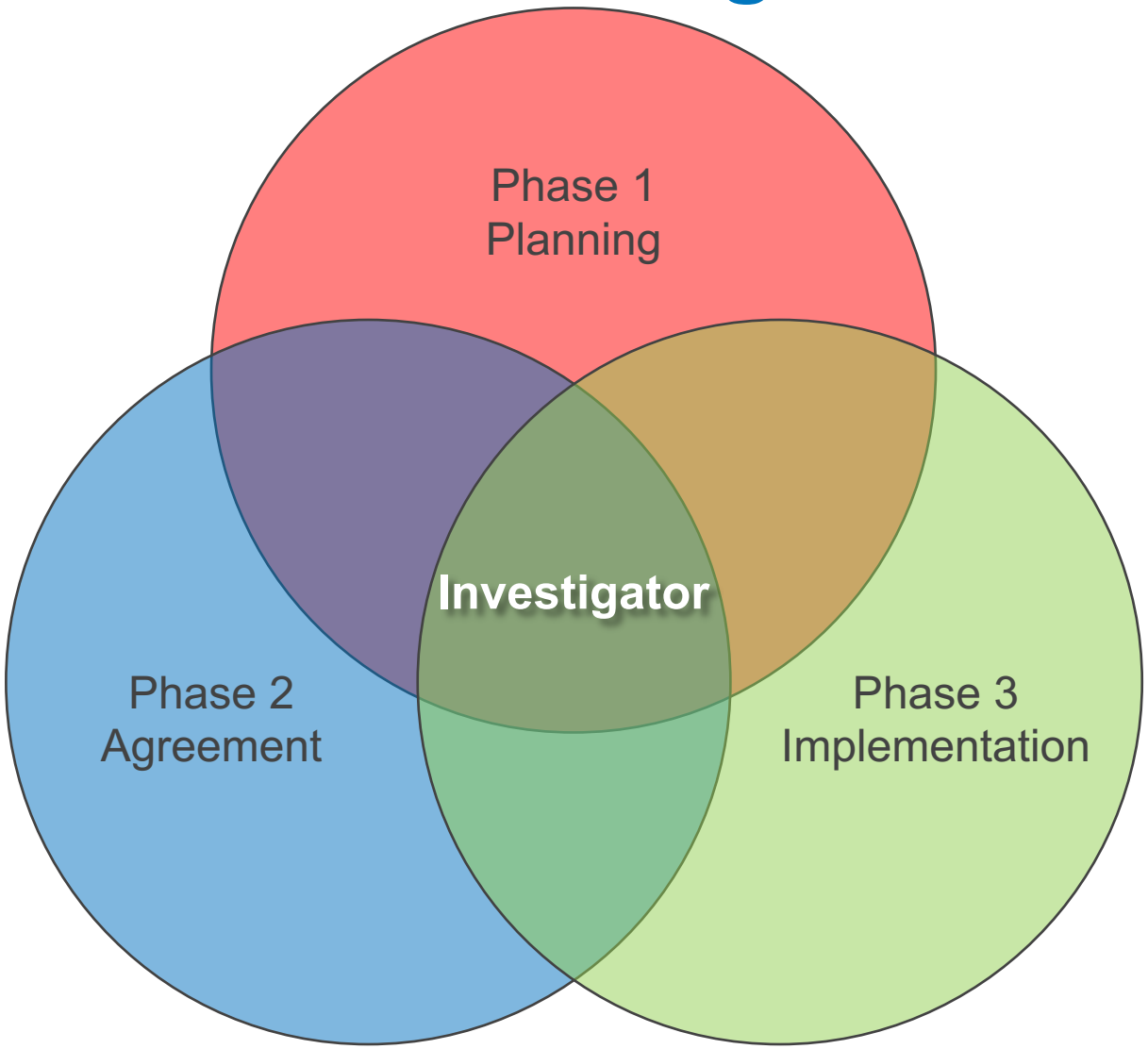
Associated Unique NEON Resources & Services

NEON Megapit and Distributed Initial Characterization Soil Archives

NEON Biorepository

https://biorepo.neonscience.org/portal/

NEON Assignable Assets Program – Customer Focused



Positive Community Response - NEON Assignable Assets Program Growth

Assignable Asset Project Requests and Services

Project Requests

Funding Source	Number
NSF	**192**
NASA	34
University	31
Private	26
Not Specified	15
DOE	13
Other – Federal Agency	11
Mixed – Federal Agencies	6
DOD	5
State Govt. Agency	5
Foreign Govt. Agency	4
USDA	3
USGS	3
NOAA	1
Mixed Sources	1
TOTAL	**350**

Services Requested

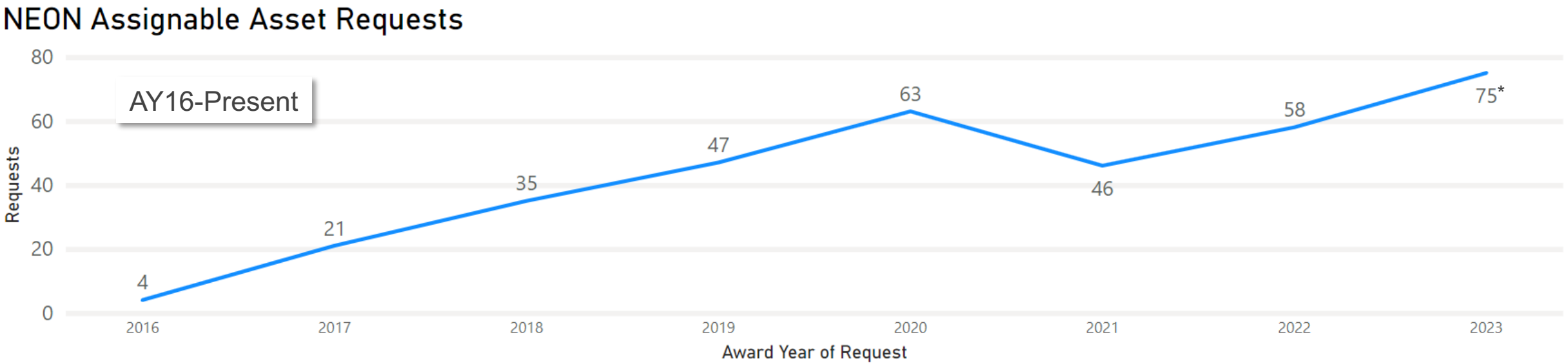
Requested Service(s)*	Number
Observational Sampling Infrastructure (OSI)	115
Sensor Infrastructure (SI)	111
Field Site Coordination (FSC)	78
Airborne Observation Platform (AOP)	35
Mobile Deployment Platform (MDP)	13
Excess Sample Request (ESR)	3
Subject Matter Expertise (SME)	2
TOTAL	**357**

** More than one type of service can be requested on a single project request*

Total Project Requests (AY16-Present)	Total Service Requests (AY16-Present)
350	**357**

AY16 - AY23 (9/12/2023)

NEON Assignable Asset Project Requests



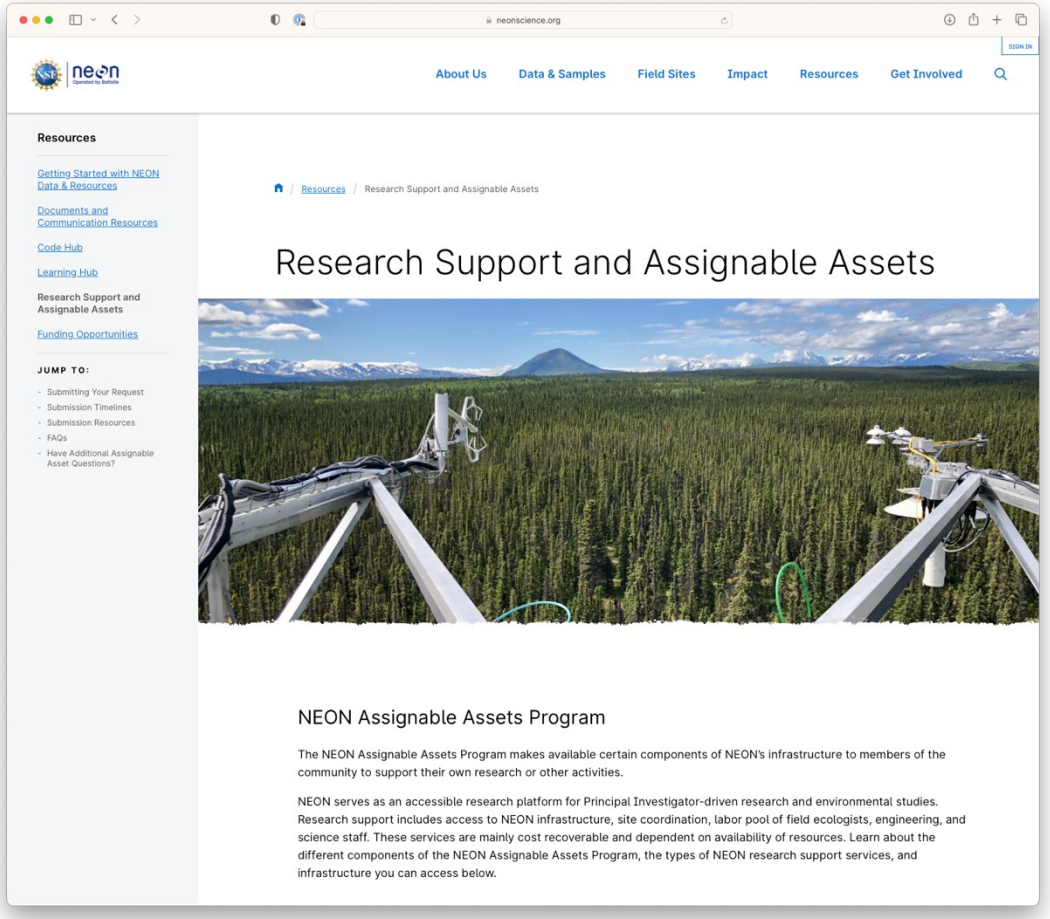
* AY23 is still active, and requests continue coming in

Requesting Research Support

AOP Calibration (D13, Colorado)

Assignable Asset Request Form Location(s)

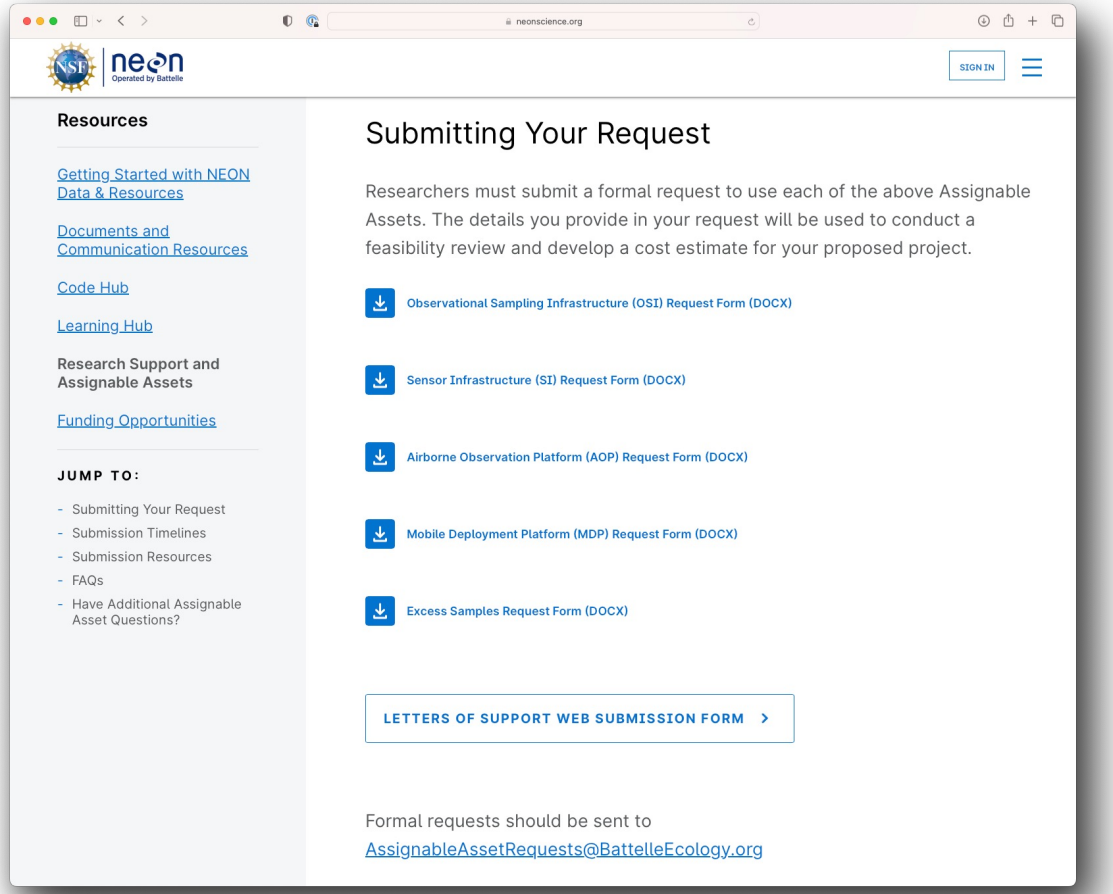
- NEON website
  - Research Support and Assignable Assets web page
    - www.neonscience.org/resources/research-support



Assignable Asset Request Form Location

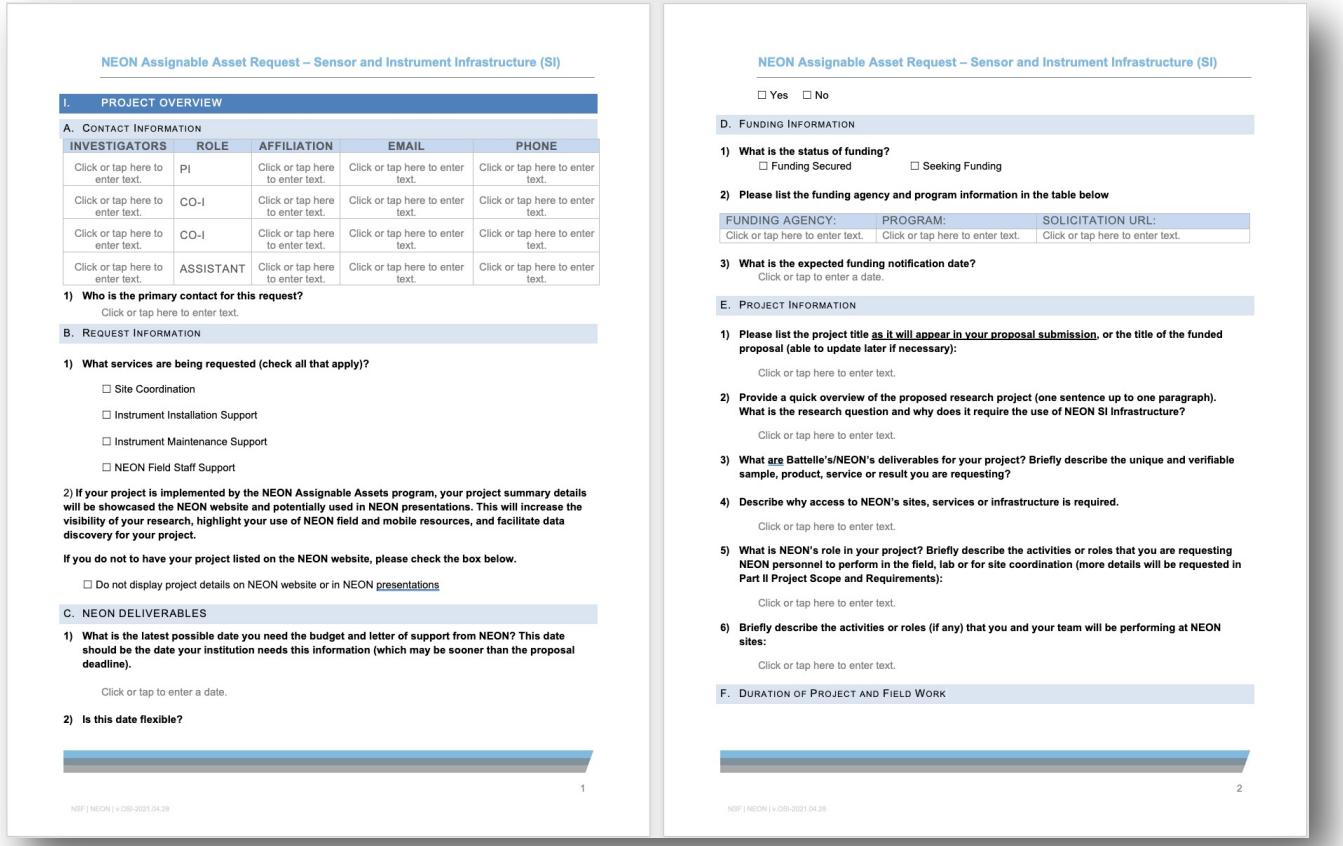
- Word-based request forms for:
  - Observational Sampling Infrastructure (OSI)
  - Sensor Infrastructure (SI)
  - Airborne Observations Platform (AOP)
  - Mobile Deployment Platform (MDP)
  - Excess Samples Request (ESR)
- Web-based forms for:
  - Field Site Coordination (FSC)
  - Letters of Support/Collaboration (LoS/LoC)

Email to: AssignableAssetRequests@BattelleEcology.org



What Information is Requested?

- Principal investigator and contact information
- Project overview
  - Project scope
  - Location
  - Dates
  - Funding status and sources
- Additional information
  - Site access
  - Power availability, etc.



NEON Assignable Asset Request – Sensor and Instrument Infrastructure (SI)

I. PROJECT OVERVIEW

A. CONTACT INFORMATION

INVESTIGATORS	ROLE	AFFILIATION	EMAIL	PHONE
Click or tap here to enter text.	PI	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	CO-I	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	CO-I	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	ASSISTANT	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

1) **Who is the primary contact for this request?**
Click or tap here to enter text.

B. REQUEST INFORMATION

1) **What services are being requested (check all that apply)?**

☐ Site Coordination

☐ Instrument Installation Support

☐ Instrument Maintenance Support

☐ NEON Field Staff Support

2) **If your project is implemented by the NEON Assignable Assets program, your project summary details will be showcased the NEON website and potentially used in NEON presentations. This will increase the visibility of your research, highlight your use of NEON field and mobile resources, and facilitate data discovery for your project.**

If you do not to have your project listed on the NEON website, please check the box below.

☐ Do not display project details on NEON website or in NEON presentations

C. NEON DELIVERABLES

1) **What is the latest possible date you need the budget and letter of support from NEON? This date should be the date your institution needs this information (which may be sooner than the proposal deadline).**

Click or tap to enter a date.

2) **Is this date flexible?**

1

NSF | NEON | v.OSI-2021.04.28

NEON Assignable Asset Request – Sensor and Instrument Infrastructure (SI)

☐ Yes ☐ No

D. FUNDING INFORMATION

1) **What is the status of funding?**
☐ Funding Secured ☐ Seeking Funding

2) **Please list the funding agency and program information in the table below**

FUNDING AGENCY:	PROGRAM:	SOLICITATION URL:
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

3) **What is the expected funding notification date?**
Click or tap to enter a date.

E. PROJECT INFORMATION

1) **Please list the project title as it will appear in your proposal submission, or the title of the funded proposal (able to update later if necessary):**

Click or tap here to enter text.

2) **Provide a quick overview of the proposed research project (one sentence up to one paragraph). What is the research question and why does it require the use of NEON SI Infrastructure?**

Click or tap here to enter text.

3) **What are Battelle's/NEON's deliverables for your project? Briefly describe the unique and verifiable sample, product, service or result you are requesting?**

4) **Describe why access to NEON's sites, services or infrastructure is required.**

Click or tap here to enter text.

5) **What is NEON's role in your project? Briefly describe the activities or roles that you are requesting NEON personnel to perform in the field, lab or for site coordination (more details will be requested in Part II Project Scope and Requirements):**

Click or tap here to enter text.

6) **Briefly describe the activities or roles (if any) that you and your team will be performing at NEON sites:**

Click or tap here to enter text.

F. DURATION OF PROJECT AND FIELD WORK

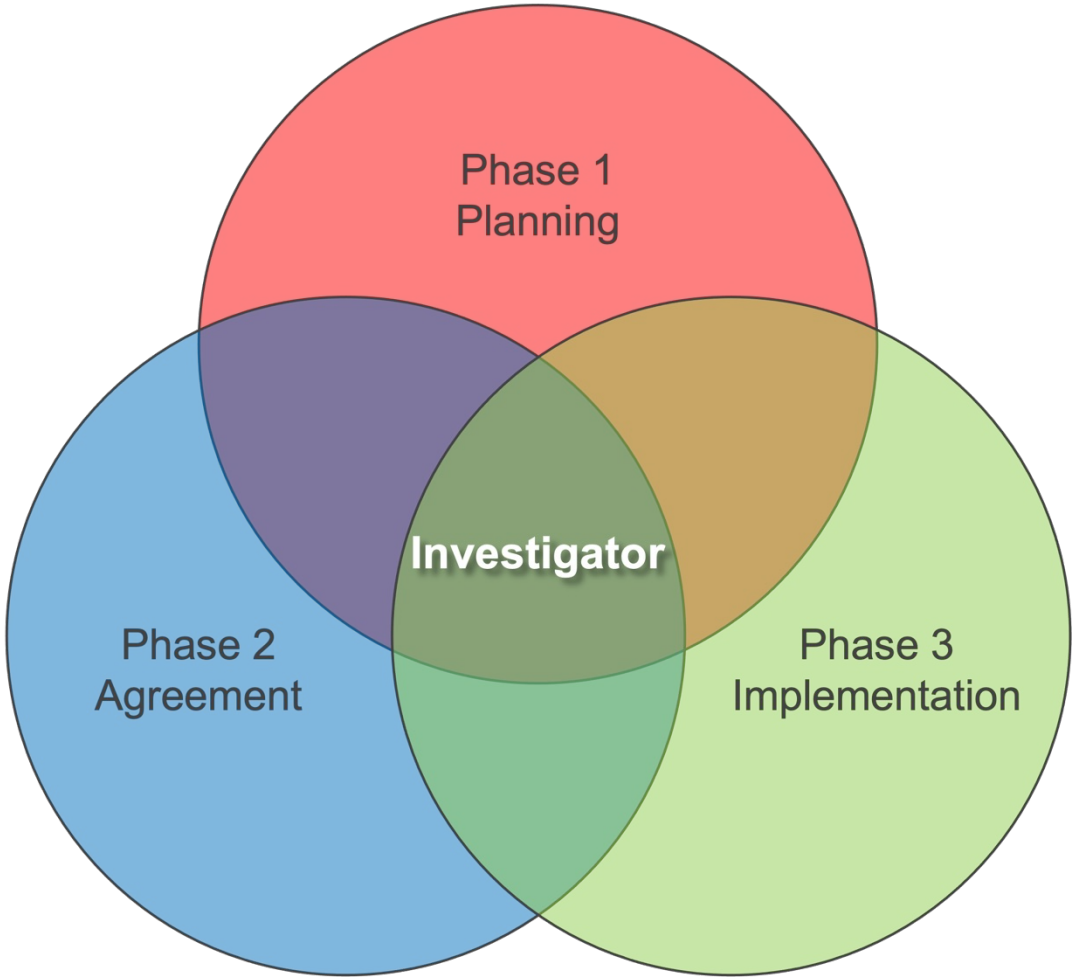
2

NSF | NEON | v.OSI-2021.04.28

What if my project details aren't solidified?

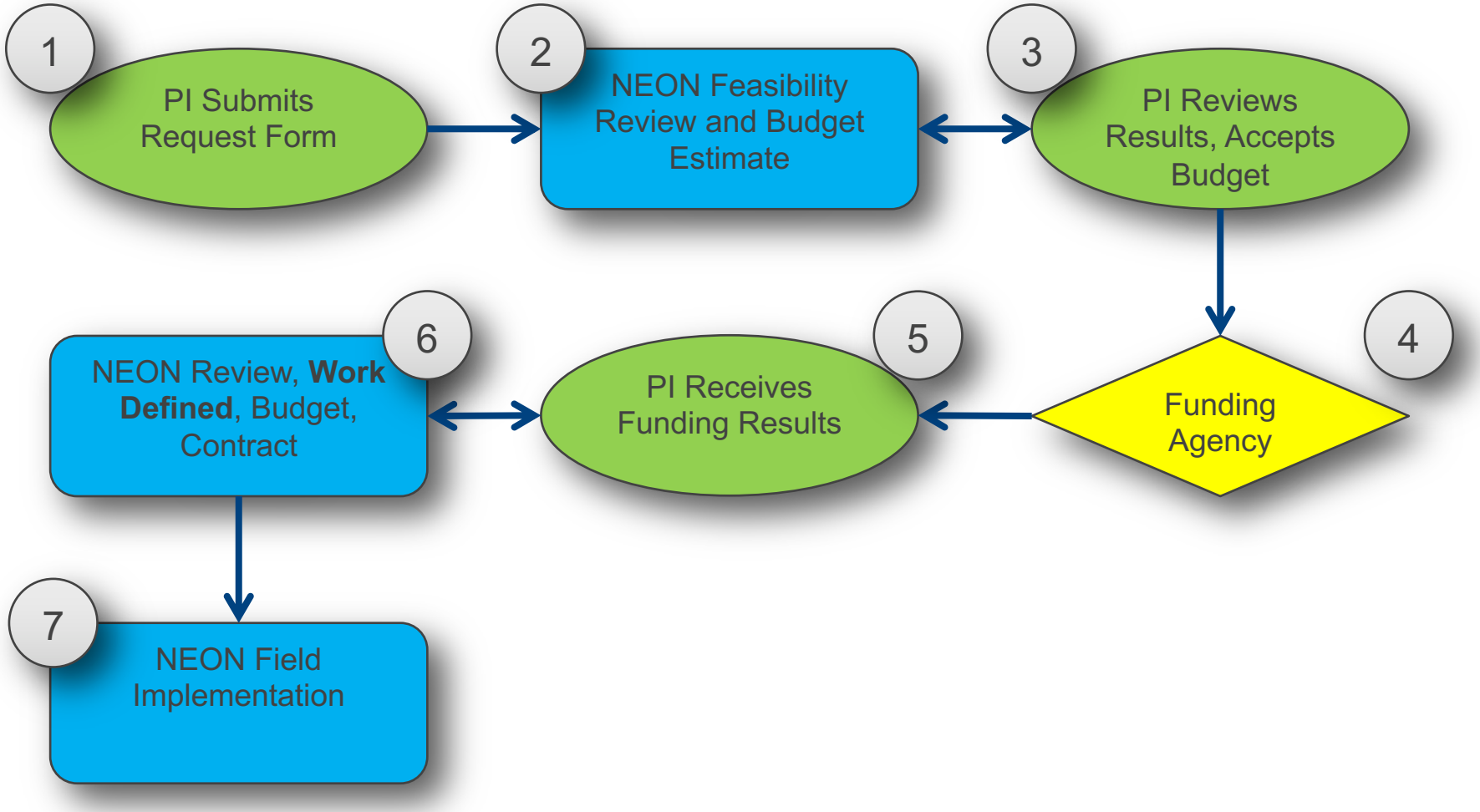
- Conversation and collaboration with the is expected
- Contact us early
- Complete the form as accurately as possible
  - Project goals and requirements
  - Where there is flexibility

Email to: AssignableAssetRequests@BattelleEcology.org

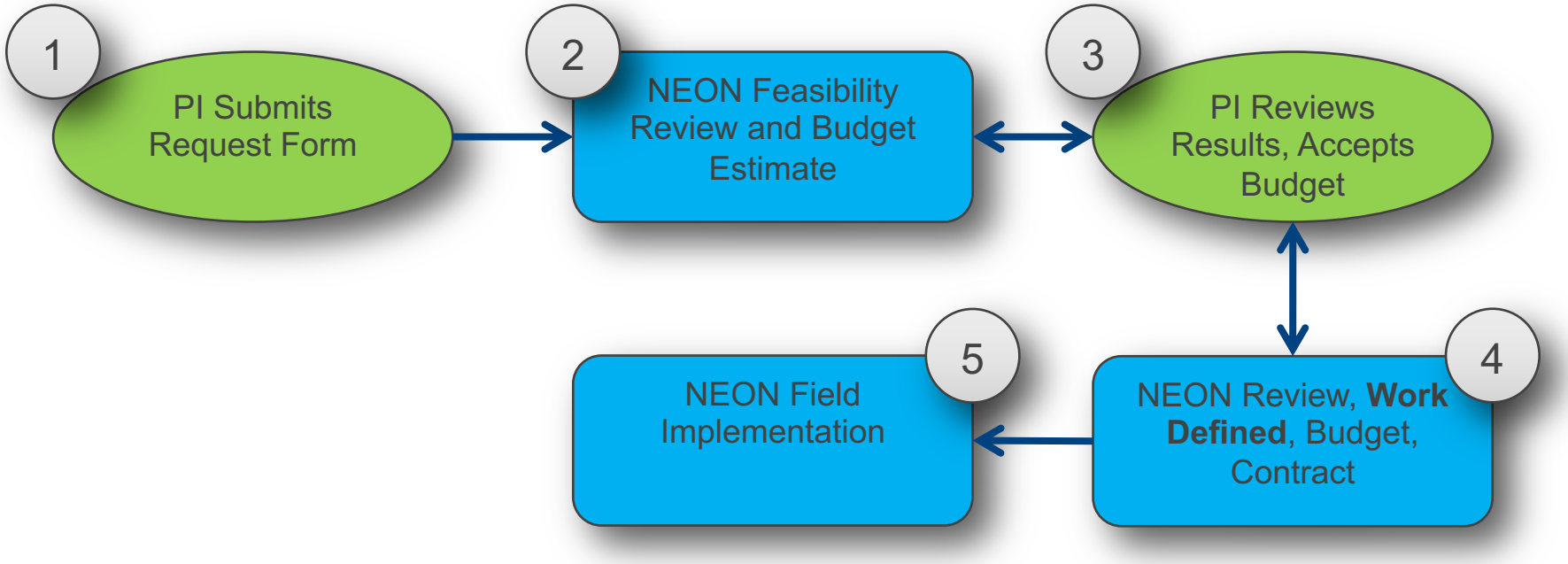


Request Process

Simplified AA Request Process Seeking Funding



Simplified AA Request Process
Funding Secured



Timelines for an Assignable Asset Request

- **Seeking Funding**
  - Submit request at least 6-weeks prior to proposal submission deadlines

- Funding Secured
  - Submit request at least 8-weeks prior to proposed start of data collection*

* This assumes prior contact with NEON Assignable Assets Program, locations finalized and permits acquired.

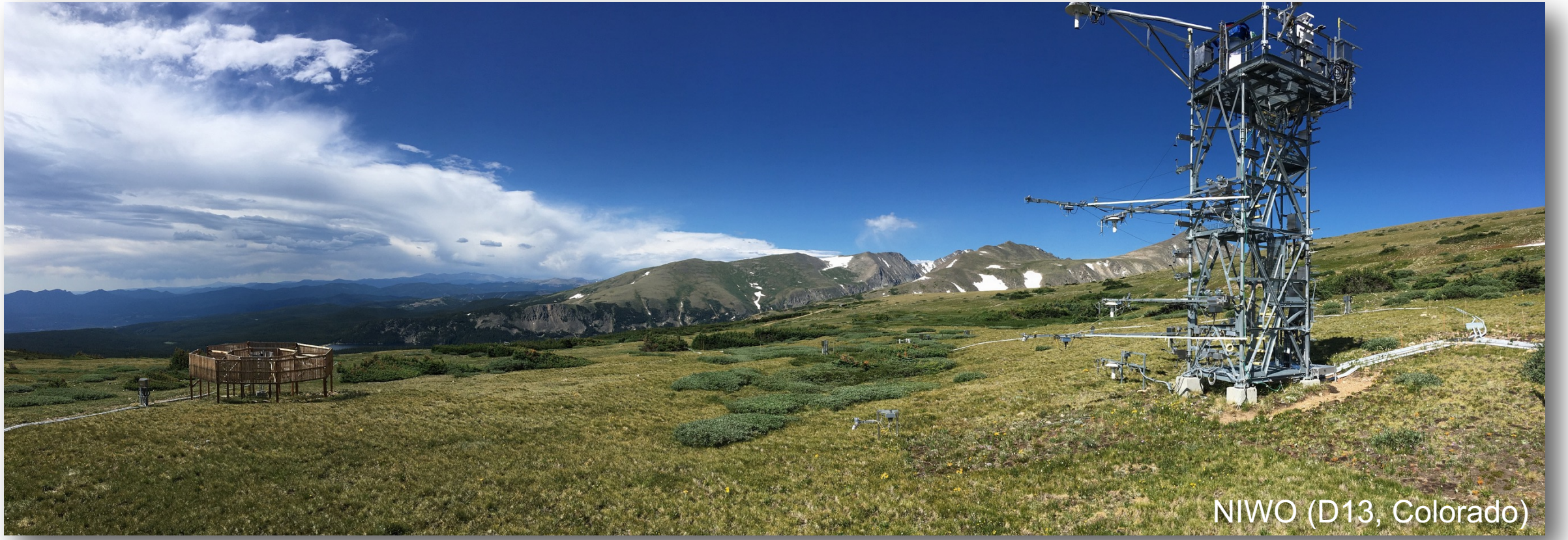

BLWA (D08, Alabama)

Reasons to submit early

- Time required for:
  - Defining scope and requirements
  - Permitting
  - Contracting
  - Scheduling
  - Finalized contract (if funded)
- Each project is unique
  - Site-specific and project-specific challenges


GUAN (D04, Puerto Rico)

Example Assignable Asset Projects

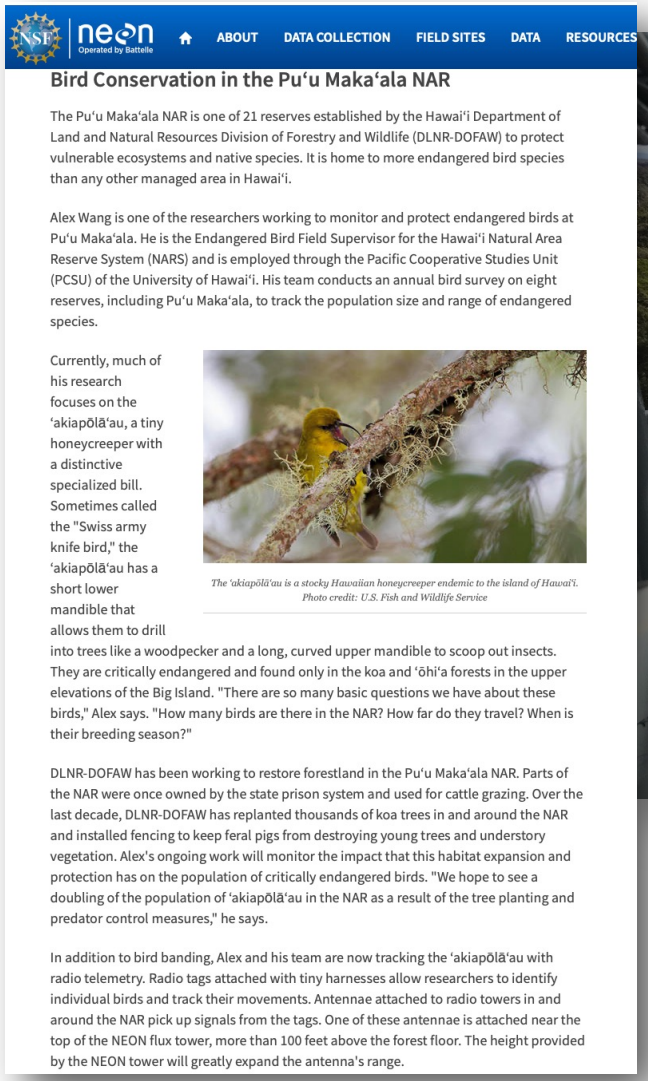


Example Assignable Asset Projects

Five examples of funded and currently implementing projects:

1. Simple support project
2. Field installation, maintenance, and sample collection
3. Multiple simultaneous services
4. Complex, extensive field labor
5. MDP deployment

Bird Tracking – PUUM (D20, Hawaii)



neon Operated by Battelle | ABOUT | DATA COLLECTION | FIELD SITES | DATA | RESOURCES

Bird Conservation in the Pu‘u Maka‘ala NAR

The Pu‘u Maka‘ala NAR is one of 21 reserves established by the Hawai‘i Department of Land and Natural Resources Division of Forestry and Wildlife (DLNR-DOFAW) to protect vulnerable ecosystems and native species. It is home to more endangered bird species than any other managed area in Hawai‘i.

Alex Wang is one of the researchers working to monitor and protect endangered birds at Pu‘u Maka‘ala. He is the Endangered Bird Field Supervisor for the Hawai‘i Natural Area Reserve System (NARS) and is employed through the Pacific Cooperative Studies Unit (PCSU) of the University of Hawai‘i. His team conducts an annual bird survey on eight reserves, including Pu‘u Maka‘ala, to track the population size and range of endangered species.

The ‘akiapōlā‘au is a stocky Hawaiian honeycreeper endemic to the island of Hawai‘i. Photo credit: U.S. Fish and Wildlife Service

Currently, much of his research focuses on the ‘akiapōlā‘au, a tiny honeycreeper with a distinctive specialized bill. Sometimes called the "Swiss army knife bird," the ‘akiapōlā‘au has a short lower mandible that allows them to drill into trees like a woodpecker and a long, curved upper mandible to scoop out insects. They are critically endangered and found only in the koa and ‘ōhi‘a forests in the upper elevations of the Big Island. "There are so many basic questions we have about these birds," Alex says. "How many birds are there in the NAR? How far do they travel? When is their breeding season?"

DLNR-DOFAW has been working to restore forestland in the Pu‘u Maka‘ala NAR. Parts of the NAR were once owned by the state prison system and used for cattle grazing. Over the last decade, DLNR-DOFAW has replanted thousands of koa trees in and around the NAR and installed fencing to keep feral pigs from destroying young trees and understory vegetation. Alex's ongoing work will monitor the impact that this habitat expansion and protection has on the population of critically endangered birds. "We hope to see a doubling of the population of ‘akiapōlā‘au in the NAR as a result of the tree planting and predator control measures," he says.

In addition to bird banding, Alex and his team are now tracking the ‘akiapōlā‘au with radio telemetry. Radio tags attached with tiny harnesses allow researchers to identify individual birds and track their movements. Antennae attached to radio towers in and around the NAR pick up signals from the tags. One of these antennae is attached near the top of the NEON flux tower, more than 100 feet above the forest floor. The height provided by the NEON tower will greatly expand the antenna's range.

One of these antennae is attached near the top of the NEON flux tower, more than 100 feet above the forest floor. The height provided by the NEON tower will greatly expand the antenna's range.

AA Project #
2018-18

Principal Investigator
Pang-Ching

Lead Institution
Hawaii Dept. of Natural Resources

Requested Services
SI

Sites
PUUM

Duration
Long-term, 5+ years

Funding Source
Hawaii Dept. of Natural Resources

NEON Support Cost
<$5K

Aerial Dispersal in Fungal Movement

NEON Blog Post Weblink

AA Project #
2018-08

Principal Investigator
Chaudhary

Lead Institution
Dartmouth College

Requested Services
SI, FSC

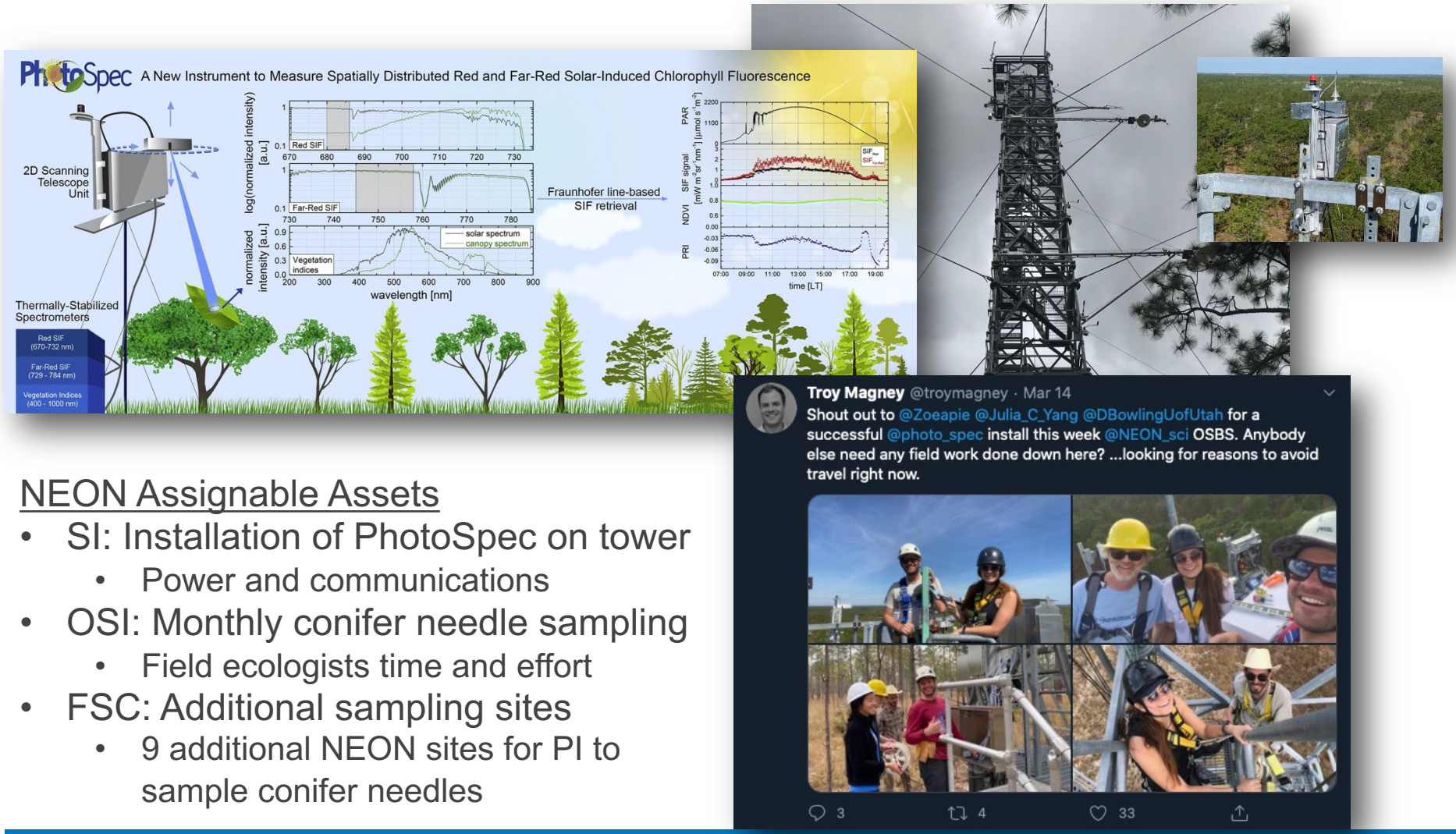
Sites
20 Terrestrial

Duration
3 years

Funding Source
NSF
CAREER
Award Abstract # 2205650

NEON Support Cost
$24K

Solar-Induced Chlorophyll Fluorescence



NEON Assignable Assets

- SI: Installation of PhotoSpec on tower
  - Power and communications
- OSI: Monthly conifer needle sampling
  - Field ecologists time and effort
- FSC: Additional sampling sites
  - 9 additional NEON sites for PI to sample conifer needles

AA Project #
2019-05-06-07

Principal Investigator
Bowling

Lead Institution
Utah State University

Requested Services
SI, OSI, FSC

Sites
OSBS
+9 sites terrestrial

Duration
3 years

Funding Source
NSF
Award Abstract # 1926090

NEON Support Cost
$17K

Stem Flow and Throughfall

AA Project #
2021-070

Principal Investigator
Van Stan

Lead Institution
Cleveland State University

Requested Services
OSI

Sites
11 terrestrial sites

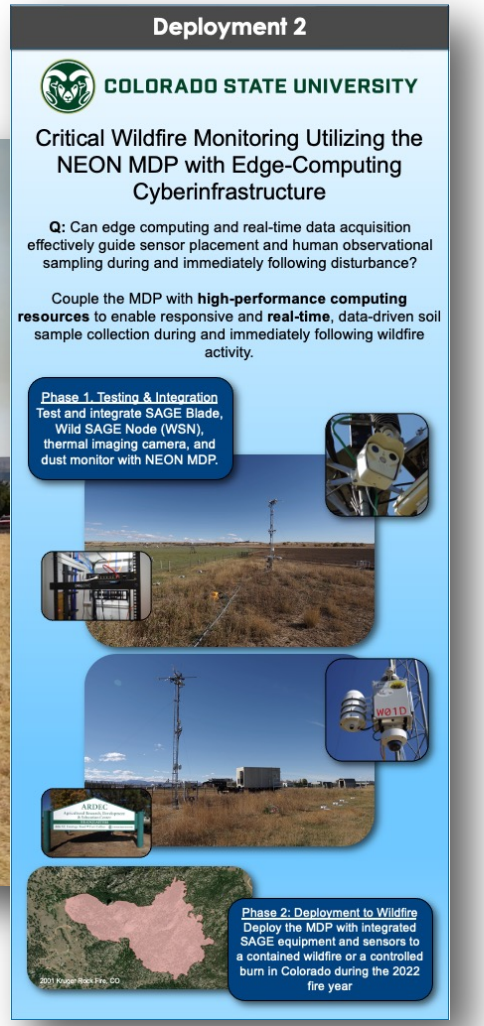
Duration
5 years

Funding Source
NSF
Abstract Award # 2213623

NEON Support Cost
$895K

Mobile Deployment Platform

Colorado State University



Phase 1 Video: youtu.be/te3cZvua_OE
Phase 2 Video: youtu.be/2FsdvPNw5sA

AA Project #
2021-048

Principal Investigator
Kelly

Lead Institution
Colorado State University

Requested Services
MDP

Sites
Non-NEON locations

Duration
2-3 Months

Funding Source
NSF
RAPID
Award Abstract # 2137769

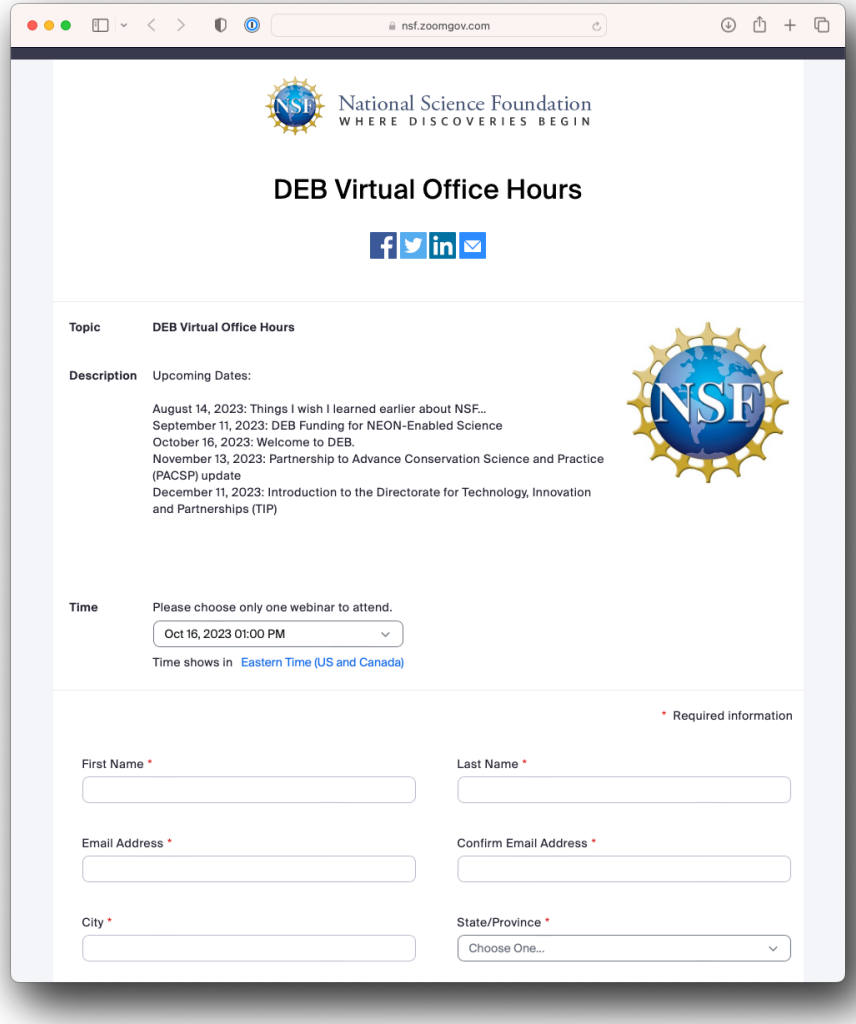
NEON Support Cost
$130K

Opportunities and Resources

Funding Opportunities for NEON-Enabled Science

- September 11, 2023
- NSF Division of Environmental Biology (DEB) Virtual Office Hours
- “DEB Funding for NEON-Enabled Science”

- Link to recorded webinar (when posted):
  - debblog.nsfbio.com/office-hours



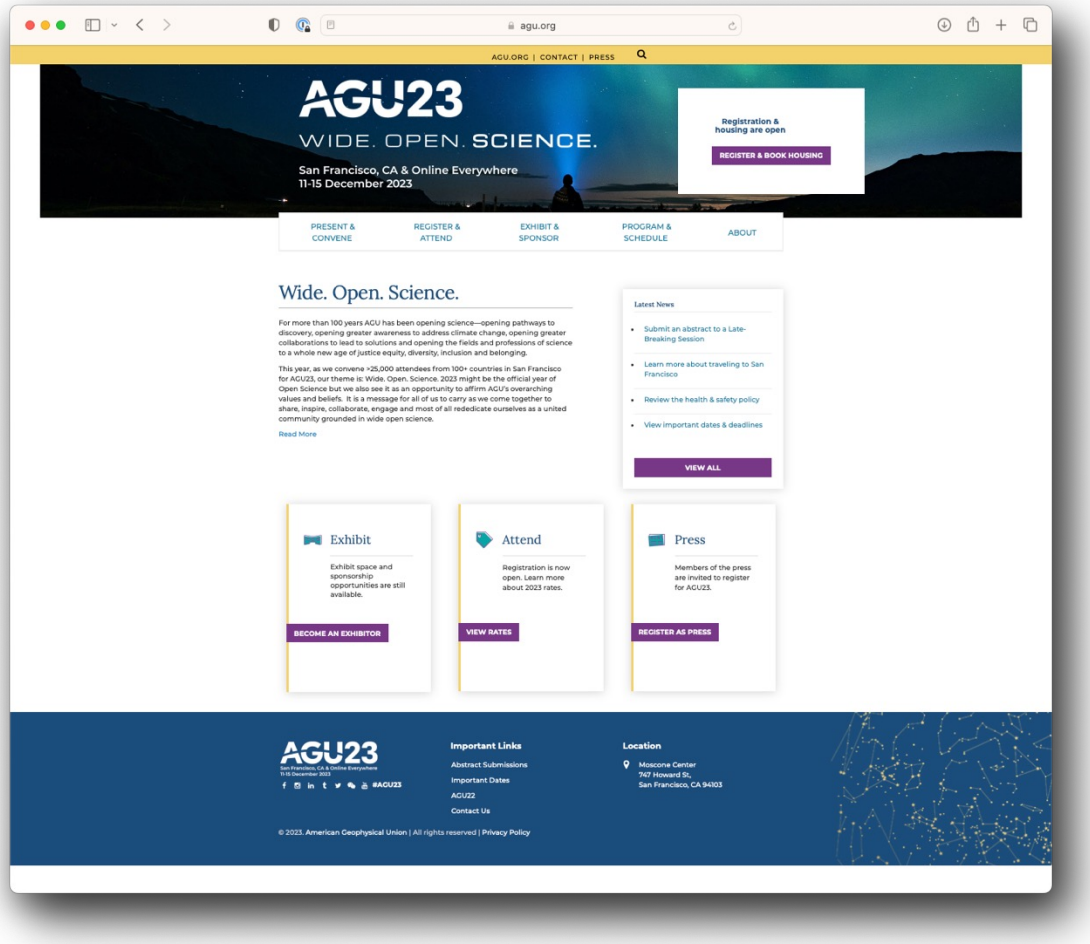
Funding Opportunity | NSF 22-504

- National Science Foundation (NSF)
  - Division of Environmental Biology (DEB)

- Macrosystems Biology and NEON-Enabled Science (MSB-NES)
  - Solicitation NSF 22-504
    - Upcoming due dates
      - November 13, 2023
        - Second Monday in November, Annually Thereafter

Town Hall | 2023 AGU Fall Meeting

- American Geophysical Union (AGU) 2023 Fall Meeting
- Date: TBD
- Town Hall title:
  - “Supporting the NEON User Community: Updates and Discussion on Using NEON Research Support and Assignable Assets”



Comments from the Panel?

Questions?


NEON MDP Deployment
Controlled Burn
Konza Prairie Biological Station

Operated by Battelle

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