NEON Code of Conduct

The National Ecological Observatory Network (NEON) welcomes contributions from everyone who shares our values of unity, creativity, collaboration, excellence, and appreciation. As such, we have adopted this Code of Conduct, including participation guidelines, and require all NEON community members to agree and adhere to them to help create a safe and positive community environment for all.

Here, we define the NEON community as anyone who participates in a NEON event and/or otherwise engages with the NEON program. These guidelines apply to all NEON events and are broadly based on the NEON Code of Business Ethics and Conduct. Our aim is to support a community where all people feel safe to participate, introduce new ideas, and inspire others regardless of background, family status, gender identity or expression, marital status, sex, sexual orientation, native language, age, ability, race and/or ethnicity, caste, national origin, socioeconomic status, religion, geographic location, and any other dimension of diversity.

When and How to Use These Guidelines

These guidelines outline both expected and prohibited behaviors as members of the NEON community in all activities, both at in-person events (e.g., meetups, workshops, conferences) and online spaces (e.g., community forum, social media, virtual meetings and events). NEON event attendees are required to adhere to this Code of Conduct and to ask participants to review and agree to it when they sign up for an event. Participation is contingent upon following these guidelines.

Expected Behaviors

Our community exists to advance science in a manner that is inclusive to all who participate in its processes. This requires that we actively practice tolerance, empathy, and humility in all that we do while being mindful of the following expected behaviors.

Be Respectful and Engaging.

Be attentive, listen, and help engage in community activities. Value each other’s ideas, styles, and viewpoints. Address differences of opinion through respectful discourse. Be open to being wrong. Be direct, constructive, and positive. Be honest and avoid spreading misinformation. Take responsibility for your impact and your mistakes if someone says they have been harmed through your words or actions, listen carefully, apologize sincerely, and correct the behavior going forward.

www.neonscience.org/neon-code-conduct
Presentation Overview

- NEON Overview
- Assignable Assets Program Overview
- Assignable Assets Program Growth
- Requesting Research Support
- Request Process
- Example Projects
- Opportunities & Resources
- Q&A
National Ecological Observatory Network (NEON) Overview

OAES (D11, Oklahoma)

www.neonscience.org
National Ecological Observatory Network (NEON)

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

BATTLENE

- 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

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 field sites
47 terrestrial field sites
81 total field sites

Data products: 180+
400,000+ samples to date
100,000+ samples added per year

600+ pubs using Neon data or resources
Cumulative publications & citations
Good science is built on good data

The National Ecological Observatory Network, or NEON, offers expert ecological data from sites across the continent to power the most important science being done today.

WATCH
The Future of Science is Open
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)
- Sensor Infrastructure (SI)
- Airborne Observation Platform (AOP)
- Mobile Deployment Platform (MDP)

- Excess Samples Requests (ESR)
- Field Site Coordination (FSC)
- Subject Matter Expertise (SME)
- 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

Phase 1 Planning

Phase 2 Agreement

Phase 3 Implementation

Investigator
Positive Community Response - NEON Assignable Assets Program Growth
## Assignable Asset Project Requests and Services

### Project Requests

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSF</td>
<td>192</td>
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<tr>
<td>NASA</td>
<td>34</td>
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<tr>
<td>University</td>
<td>31</td>
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<tr>
<td>Private</td>
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<tr>
<td>Not Specified</td>
<td>15</td>
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<tr>
<td>DOE</td>
<td>13</td>
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<tr>
<td>Other – Federal Agency</td>
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<tr>
<td>Mixed – Federal Agencies</td>
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<tr>
<td>DOD</td>
<td>5</td>
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<tr>
<td>State Govt. Agency</td>
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<tr>
<td>Foreign Govt. Agency</td>
<td>4</td>
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<tr>
<td>USDA</td>
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<td>USGS</td>
<td>3</td>
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<tr>
<td>NOAA</td>
<td>1</td>
</tr>
<tr>
<td>Mixed Sources</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>350</strong></td>
</tr>
</tbody>
</table>

### Services Requested

<table>
<thead>
<tr>
<th>Requested Service(s)*</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observational Sampling Infra</td>
<td>115</td>
</tr>
<tr>
<td>Sensor Infra</td>
<td>111</td>
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<tr>
<td>Field Site Coordination</td>
<td>78</td>
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<tr>
<td>Airborne Observation Platform</td>
<td>35</td>
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<tr>
<td>Mobile Deployment Platform</td>
<td>13</td>
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<tr>
<td>Excess Sample Request</td>
<td>3</td>
</tr>
<tr>
<td>Subject Matter Expertise</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>357</strong></td>
</tr>
</tbody>
</table>

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

### Total Project Requests (AY16-Present)

| Total Project Requests (AY16-Present) | 350 |

### Total Service Requests (AY16-Present)

| Total Service Requests (AY16-Present) | 357 |
NEON Assignable Asset Project Requests

NEON Assignable Asset Requests

* AY23 is still active, and requests continue coming in

* 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](http://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.
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

CRAM (D05, Wisconsin)
Simplified AA Request Process
Seeking Funding

1. PI Submits Request Form
2. NEON Feasibility Review and Budget Estimate
3. PI Reviews Results, Accepts Budget
4. Funding Agency
5. PI Receives Funding Results
6. NEON Review, Work Defined, Budget, Contract
7. NEON Field Implementation
Simplified AA Request Process
Funding Secured

1. PI Submits Request Form
2. NEON Feasibility Review and Budget Estimate
3. PI Reviews Results, Accepts Budget
4. NEON Review, Work Defined, Budget, Contract
5. NEON Field Implementation
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.
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
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)

Bird Conservation in the Pu‘u Maka‘ala NAR

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

Alex Wong 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 Hawaii Natural Area Reserve System (NAR) and is employed through the Pacific Cooperative Studies Unit (PCSU) of the University of Hawai‘i. His team conducts an annual bird survey at eight reserves, including Pu‘u Maka‘ala, to track the population size and range of endangered species.

Currently, much of this research focuses on the ‘i‘iwi, a tiny honeycreeper with a distinctive specialized bill. Sometimes called the “Tweety Army Knife Bird,” the ‘i‘iwi has a short lower mandible that allows them to forage into trees like woodpeckers and a long, curved upper mandible to scoop out insects. Their numbers are critically endangered and found only in the low and “HIVA” 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-DOWR 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-DOWR has replanted thousands of oak 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 ‘i‘iwi 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 ‘i‘iwi with radiotelemetry. 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.

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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

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

NEON Blog Post Weblink
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

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

Prescribed burn @ Konza Biological Station HQ
Deployment: March 28 – May 22, 2022

Prescribed burn: April 15, 2022

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

Critical Wildfire Monitoring Utilizing the NEON MDP with Edge-Computing Cyberinfrastructure

Q: Can edge computing and real-time data acquisition effectively guide sensor placement and human observational sampling during and immediately following disturbance?

Couple the MDP with high-performance computing resources to enable responsive and real-time, data-driven soil sample collection during and immediately following wildfire activity.

Phase 1: Testing & Installation
Test and integrate EDGE state, side bucket, heat bucket, thermal imaging camera, and live mentor with NEON MDP.

Phase 2: Deployment in Serengeti
Deploy the MDP with deployment plan that includes a mobile wildfire in a controlled burn of a grassland during the 2021 fire year.

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

WREF (D16, Washington)
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?