

## Smithsonian Environmental Research Center, Edgewater MD



### Technology in Ecology Paid Internships

**Application Period:** *October 2022 until filled*

**Pay:** *A minimum of \$625/week. Higher stipend levels may be considered based on experience.*

**Contract Period:** *12-weeks of full-time funding available per student.*

At [SERC](#), the [Technology in Ecology Lab](#) designs and maintains many technologically-innovative ecological experiments. We work collaboratively with several partners on ecological research, experimental design, and data infrastructure. For example, we developed and support several ongoing climate change experiments such as [SMARTX](#), [GENX](#), and [MERIT](#), experiments at SERC's Global Change Research Wetland site. We also maintain sensor and data infrastructure for the [MarineGEO](#) program

Additionally, we have been developing open source (or "DIY") solutions for ecological research. Ongoing work includes Arduino and Xbee-based automated dataloggers and feedback controllers for ecosystem manipulation experiments as well as developing methods for DIY measurements of CO<sub>2</sub> and methane production in coastal wetland systems. We operate at the interface of ecology, engineering, and data programming.



As part of our new Pathfinder project, we are seeking to fill three internships focused on advancing CO<sub>2</sub> and CH<sub>4</sub> gas flux chamber prototypes for use in remote settings. This work is important because it will expand the spatial and temporal range for which these types of instruments can be deployed, leading to better assessments of carbon flux into and out of the atmosphere.

***With these internship positions, we are hoping to add engineering, design, and programming skills to our collaborative research group.***

We are seeking curious people who can easily adopt new skills based on project objectives. Organizational skills are also desired, as these people will be responsible for drafting documentation and protocols.

We are looking for up to three interns with some of the following skills:

- Familiarity with Autodesk Fusion 360, Eagle or similar computer design/production tools
- Familiarity with prototype fabrication and documentation
- Mechanical engineering
- Robotics or electrical engineering
- Programming in Arduino, or Python, or Xbee networks
- Environmental sensors or design
- Fabrication skills

We do not expect any candidate to be ideal, but the following is a list of skills that we also seek and train people in if they do not already have them: using GitHub to facilitate collaboration; familiarity with topics such as ecology, biodiversity, climate change, and wetland science; R-Shiny design; electronics prototype production and fabrication; use of Eagle or Autodesk: use of Campbell Scientific dataloggers; programming in CRBasic; or QAQC methods for water quality or other sensor data would all be beneficial.

Duties will include working individually on assigned tasks and working as a team to develop, produce, and test the Pathfinder flux chamber prototype. This may include: programming on Arduino platform, development and production of various electronics, sensors, and DIY platforms, providing technical support for Pathfinder project, writing protocols for all new procedures, and contributing to the overall scientific quality of the operation. Modest fieldwork will be required at the end stages of our production.

As a single PDF, please send a brief cover letter outlining how you meet the qualifications, a resume, and the names of two references to [richr@si.edu](mailto:richr@si.edu).

SERC is focused on understanding the causes and consequences of environmental change for marine, freshwater, and terrestrial ecosystems. The main campus is a 2,650-acre research site on the shores of the Chesapeake Bay in Edgewater Maryland. Nearby cities include historic Annapolis, Maryland's capital, and D.C.

**SERC DEI Statement:**

*The SERC community recognizes the value of diversity in promoting innovative science and creative solutions, and we strongly encourage candidates from all backgrounds to apply. We recognize that each applicant for this role will bring unique skills, knowledge, experiences and background to this position. The Smithsonian Institution is an equal opportunity employer, committed to a policy of non-discrimination on the basis of race/ethnicity, national origin, gender identity and expression, sexual orientation, age, religion, marital/parental/caregiver status and disability.*