

2022 COOPERATIVE SUMMER FELLOWSHIP PROGRAM – PROJECT PROPOSAL

APPLICANT TYPE: ANY;

PROJECT TITLE: WETLANDS AS CARBON SINKS: IMPACTS OF CLIMATE AND LAND-USE CHANGE ON WETLAND CARBON STORAGE

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Discipline: Climate Science;General Geology;Paleontology;

PROJECT DESCRIPTION

BACKGROUND

Wetlands store more than one-third of the global soil carbon, cooling the climate over millennial timescales. Rates of carbon sequestration are influenced by local and regional hydroclimate, temperature, degree of inundation (including sea-level rise), and the presence or absence of permafrost. Human land-use change can intensify these changes. This project explores influence of these factors on carbon accumulation and loss from decadal to millennial timescales using cores taken from wetlands using a multiproxy approach.

INTERN TASKS

The intern's role will primarily be lab based, with the possibility for some local field work. In the event of lab access limitations due to the covid-19 pandemic, the intern's tasks will be computer based, including learning data analysis of sediment core datasets and/or GIS-based work, depending on the intern's interest and experience.

The intern will sample wetland cores from across North America, measuring physical parameters (bulk density, loss-on-ignition, carbon, nitrogen content) and in conjunction with other parameters measured in the lab (radiocarbon chronology, plant macrofossils, pollen, stable isotopes, X-Ray Fluorescence (XRF), charcoal), begin to elucidate patterns that influence change in carbon storage. The intern will also learn fundamental calculations and methods behind the quantification of rates of change and carbon storage and loss.

BENEFITS TO INTERN

The intern will gain experience working in a federally funded laboratory and will be exposed to a broad range of sediment core analyses. Collaborations with other members in the science center (ranging from paleoclimate to wetland biogeochemistry to stratigraphic mapping) will further introduce the intern to the range of science questions being explored at the USGS.

MENTORING PLAN

The intern will work in the lab under the immediate supervision of the lab manager but will meet weekly with the project chief to discuss progress, answer project-based questions, and address questions and strategies for promoting the intern's career goals.

ADDITIONAL DETAILS

STUDENT SKILLS AND INTERESTS

The intern should be interested in or have prior experience working in a lab. Attention to detail and willingness to learn new skills are key. Interest in wetlands, paleoclimate, and/or the carbon cycle are recommended.

LOCATION: Reston, VA

ACTIVITY LEVEL:

Level 8-2: The work requires some physical exertion such as long periods of standing, walking over rough, uneven, or rocky surfaces; recurring bending, crouching, stooping, stretching, reaching, or similar activities; or recurring lifting of moderately heavy items. The work may require specific, but common, physical characteristics and abilities such as above-average agility and dexterity.

FIELD WORK	0-25%	VIRTUAL?	No
LAB WORK	75-100%		
OFFICE WORK	0-25%		
OTHER	None		

PROJECTED START DATE	5/30/2022
EXPECTED DURATION	12 weeks