

# RADIOCARBON COLLABORATIVE

{ From The Soil  
To The Accelerator  
To The Policy Maker }

## Who we are

The Radiocarbon Collaborative is jointly supported by the **US Forest Service**, the **Center for Accelerator Mass Spectrometry** at Lawrence Livermore National Lab (CAMS, LLNL), and **Michigan Technological University** (MTU). Our organization is dedicated to advancing **climate change** and **carbon cycle science** through the use of leading-edge scientific technology and effective information delivery. We make radiocarbon analysis accessible to earth system scientists, and assist in data interpretation and manuscript preparation. Data produced by the Radiocarbon Collaborative is made publically available through the **International Soil Carbon Network**, with an online database dedicated to fostering greater collaboration among researchers.

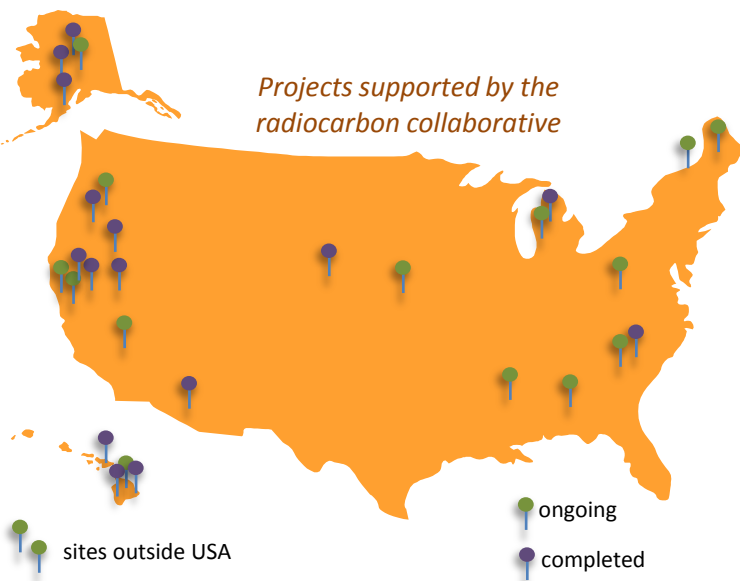


## What we do

- 1) Approved projects are matched with Radiocarbon Collaborator "mentors" who are interested in providing guidance and working on proposed projects
- 3) Samples are graphitized at the Carbon, Water & Soils Lab (FS and MTU sponsored)
- 5) Mentors assist in data interpretation and preparation of manuscripts as active collaborators on projects

- 2) Samples are collected from field sites, processed, and small sub-samples are sent to the Carbon, Water & Soils Lab in Houghton, Michigan
- 4) Radiocarbon measurements are conducted at CAMS and reports are sent to sample submitters
- 6) The data sets are entered into the ISCN database

Projects supported by the radiocarbon collaborative



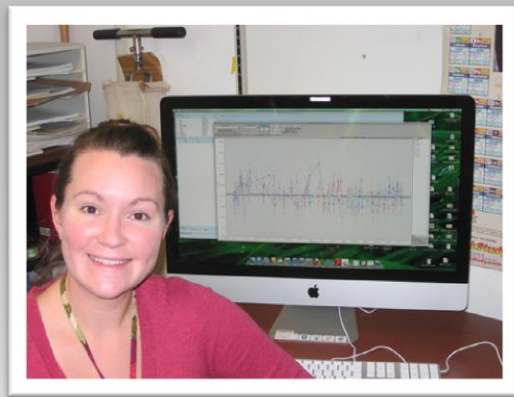
## Research Sites

Research sponsored by the Radiocarbon Collaborative covers 18 unique ecosystem types:

- |                                |                                |
|--------------------------------|--------------------------------|
| Alaskan boreal peatlands       | NW American evergreen forest   |
| Hawaiian tropical wet forest   | Northern American aspen forest |
| Hawaiian dry forest            | Western American pine forests  |
| Juniper forest                 | Northern California grassland  |
| North American boreal forest   | North Carolina Piedmont forest |
| Northern hardwoods             | Sierra alpine                  |
| Subalpine (paleo) pine forests | Tropical peatland              |
| California wetlands            | Mangrove swamp                 |
| Sub-boreal peatlands           | Cypress swamp                  |

# The US Forest Service & Lawrence Livermore National Lab: A winning team

The USFS currently has one postdoctoral scientist hosted by LLNL: Dr. Kate Heckman. Dr. Heckman's primary role as a postdoctoral researcher for the Forest Service is to pursue innovative carbon and climate science, while also serving as a link between researchers from the Forest Service and Lawrence Livermore National Lab. Dr. Heckman aids in the collection, analysis, and interpretation of radiocarbon data, providing both organizations with access to each others' unique tools and expertise while fostering scientific partnership and creativity.



USFS postdoc, Kate Heckman, analyzes radiocarbon data at the Center for AMS

## What we've accomplished so far

Since 2011...

**1,000 SAMPLES ANALYZED** –  
over 1,500 targets produced

**25 PARTICIPATING ORGANIZATIONS** –  
from agencies and universities across the United States

**33 DIFFERENT RESEARCH PROJECTS** –  
addressing climate change and carbon cycle science



## The Core Team

**Dr. Chris Swanston:** USFS, Houghton, MI.  
[cswanston@fs.fed.us](mailto:cswanston@fs.fed.us)

**Dr. Kate Heckman:** USFS/LLNL, Livermore, CA.  
[kaheckman@fs.fed.us](mailto:kaheckman@fs.fed.us)

**Dr. Luke Nave:** NIACS/University of Michigan Biological Station, Pellston, MI. [lukenave@umich.edu](mailto:lukenave@umich.edu)

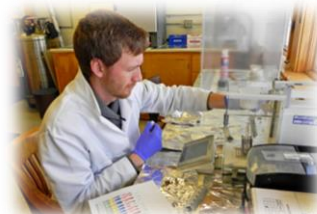
**Tim Veverica:** NIACS, Houghton, MI. [tjveveri@mtu.edu](mailto:tjveveri@mtu.edu)



**INTERNATIONAL  
SOIL CARBON NETWORK**

## Carbon, Water & Soils Laboratory:

Sample processing and conversion to graphite happens in the Carbon, Water & Soils Laboratory which is jointly funded by the USFS Northern Research Station and Michigan Technological University. The Carbon, Water & Soils Laboratory is managed by research scientist, Tim Veverica, and is located at the USDA Forestry Sciences Laboratory in Houghton, MI. Graphitized samples are sent to CAMS at Lawrence Livermore National Lab for measurement.



Lab manager, Tim Veverica, processing samples

## Science applications of radiocarbon

**analysis:** Participants in the Collaborative are presently conducting studies in soil carbon cycling, permafrost dynamics, fire frequency, dendrochronology, paleoecology, paleoclimate, and source partitioning of organismal carbon sources and ecosystem CO<sub>2</sub> fluxes.

## Agency and University Participation

US Forest Service R&D:  
NRS, PSW, RMRS, SRS  
US Geological Survey  
CSIC-IRNAS  
Baylor University  
Carnegie Institute of Science  
Los Alamos National Laboratory  
University of Michigan  
Biological Station  
San Diego State University  
University of Alaska Fairbanks

University of Hawaii at Manoa  
Columbia University  
University of Maryland  
Oregon State University  
Duke University  
University of Guelph, Canada  
University of California, Davis  
University of Arizona  
Stanford University  
University of California Berkeley  
University of Wisconsin Madison

## Sponsors

