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NSF Ice Core Facility
Science Management Office Update

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U.S. National Science Foundation Ice Core Facility (NSF-ICF)

- Facility for storing, curating, and studying meteoric ice cores.
- Located within the Denver Federal Center, Lakewood, CO.
- Provides scientists with the capability to conduct examinations and measurements on ice cores, and it preserves the integrity of these ice cores in a long-term repository for future investigations.
- Over 25,000 meters of ice core collected from various locations in Antarctica, Greenland, and North America.
- Funded by the National Science Foundation (NSF) Office of Polar Programs and operated by the U.S. Geological Survey (USGS).
- Scientific management provided by the University of New Hampshire through a subaward from the USGS.

People

National Science Foundation, NSF

- Kelly Brunt, Program Director

NSF-Ice Core Facility (NSF-ICF), USGS

- Lindsay Powers, Technical Director
- *Curt La Bombard, Curator
- *Richard Nunn, Assistant Curator
- *Theo Carr, Science Technician

Science Management Office (SMO), UNH

- Joe Souney, SMO Director
- Mark Twickler (a couple hrs/wk)

*Full time NSF-ICF employees

Services Provided

https://icecores.org/services

1) Storage of Cores

2) Use of Facility

3) Sample Requests

Storage of Cores

https://icecores.org/services

- Ice cores obtained through NSF-funded programs may be accepted for storage at the NSF-ICF. **Do not send cores from the field to the NSF-ICF without prior approval.**
- Investigators must contact the Science Management Office (nsf.icf.smo@unh.edu) during **planning stages of a project**, prior to proposal submission, for possible permission to store new ice cores.
- Storage space is an issue, so we are selective regarding which new shallow cores are accepted into storage.
- Dry ice is not allowed at the NSF-ICF; core boxes packed with dry ice will not be accepted.
- We only store meteoric cores; we do not accept sea ice cores or debris-rich firn/ice cores.
- Questions? Send the SMO an email at nsf.icf.smo@unh.edu and we'll set-up a call with you to discuss your needs.

Use of Facility

https://icecores.org/services

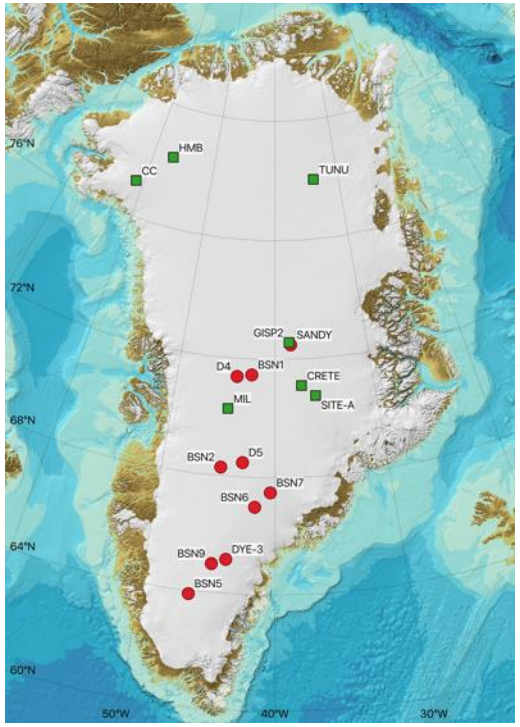
- You can use the facility to sample your ice core and ship your samples and all remaining core to your home institution(s) under two conditions:
  - Contact the SMO (nsf.icf.smo@unh.edu) prior to proposal submission
  - All core material removed from ICF within 12 months of core arrival

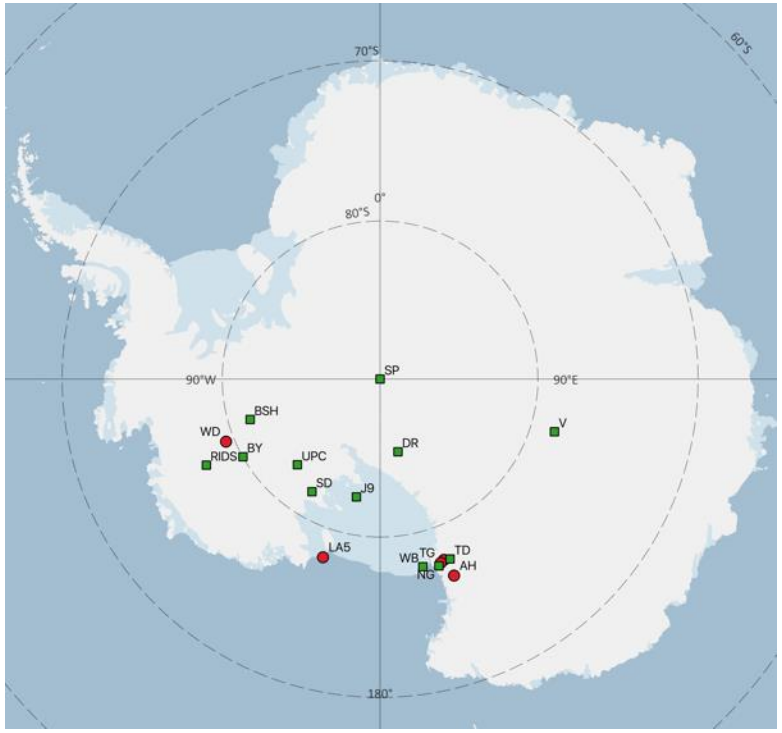
- 12,000 ft3 (340 m3) exam room held at -24°C.
- Variety of different types of saws that can cut different types of sample configurations out of ice cores.
- Saws and tables are all modular and can be reconfigured based on project specific needs.
- Electrical properties instrument, hyperspectral imaging system, optical line-scanning camera, thin sectioning equipment, and a dark booth for visual inspection of cores are available for use with additional training.

Sample Requests

https://icecores.org/inventory
https://icecores.org/services

- See https://icecores.org/inventory for information about the cores available at the NSF-ICF.
- For any questions about the inventory or how to request samples, contact the SMO at nsf.icf.smo@unh.edu.





Sample Requests

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- Sample requests are coordinated through the Science Management Office at UNH.
- The NSF-ICF uses extreme care in preparing samples but is not equipped to provide samples free of contamination on their surfaces. If you receive samples, you will receive frozen samples from the NSF-ICF that need to be decontaminated at your laboratory.
- There are generally three types of sample requests:
    1. Proposals
    2. Pilot Studies
    3. Deaccessed Cores

Sample Requests

https://icecores.org/inventory
https://icecores.org/services

1. Proposals

- Access to the “most scientifically valuable” cores is through a **funded NSF proposal**.
- Submit a completed **Sample Request / Facility Use form** to the Science Management Office (SMO; nsf.icf.smo@unh.edu) **at least four weeks before** your proposal submittal deadline
- The SMO will provide you with a **Facility Letter** to **include in your proposal** as supplemental information
- If your proposal is funded, the SMO will notify the Sample Allocation Committee (SAC) of your funded proposal and the SAC will determine the final sample allocation.

Sample Requests

https://icecores.org/inventory
https://icecores.org/services

2. Pilot Studies

- Requests for limited samples are available to investigators for use in pilot studies.
- Submit a completed **Sample Request / Facility Use form** to the Science Management Office (SMO; nsf.icf.smo@unh.edu) that **includes**:
  - a concise statement describing the specific problem or objective of the study, the methods and procedures to be used, the samples being requested, and the names and addresses of collaborating investigators.
- The SMO summarizes the request and sends to the **Sample Allocation Committee (SAC) for review** (unless the request is for de-accessed ice; see next slide).
- The SAC will review the request and either approve it, decline it, or suggest other options.

Sample Requests

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https://icecores.org/services

3. Deaccessed Cores

- There are many cores on a de-accession list. A funded proposal, or SAC approval, is **not needed** to access cores on the de-accession list.
- The de-accessed cores sometimes have **poor dating** and **limited data available**. The cores were drilled a long time ago, and some cores do not have good core quality.
- De-accessed cores can be fantastic for **method development**.
- Contact the SMO (nsf.icf.smo@unh.edu) to determine the best deaccessed core for your research or outreach needs.
- https://icecores.org/inventory/deaccessed

Beacon/Mullins Valley Cores

https://icecores.org/inventory/beacon-and-mullins-valley

- **VERY OLD buried ice deposits from the MCM Dry Valleys**.
- Not "typical" ice cores because of their high mixed ice/sediment content.
- Mixed ice/sediment cores aren't supposed to be at the NSF Ice Core Facility (NSF-ICF). Most cores shouldn't be cut in the exam room because of their high sediment content.
- Collected by David Marchant (2004/05; G-054-M), Kate Swanger (2006/07; G-054-M), and Michael Bender (2008/09, 2009/10; G-070-M).
- Coordinates exist for some of the cores. Some info in MacKay et al. (2014) https://doi.org/10.1002/2014JF003178, Swanger (2017) https://doi.org/10.1017/S0954102016000687, and Grimm et al. (2015) https://doi.org/10.3189/2015JoG15J113
- Shipped directly from Antarctica to the NSF-ICF and have remained in the main archive freezer since then.
- The cores have remained at the NSF-ICF, with little interest from the scientific community.
- **Please tell your community members about these cores!!!** Go to https://icecores.org/inventory/beacon-and-mullins-valley and download the "**Beacon/Mullins Valley PDF document**" for more information (including pictures) about these cores.

Questions?

Send the Science Management Office (SMO) an email at nsf.icf.smo@unh.edu and we'll set-up a call with you to discuss your needs.

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