

Center for Oldest Ice Exploration



- NSF Science and Technology Center
- Headquartered at Oregon State University
- Funded 2021-2026.
- Phase 2 proposal would extend to 2031
- 14-institution collaboration in research, education, diversity/equity/inclusion and technology



COLDEX MISSION



- The COLDEX mission is to explain the evolution of Earth's climate over the last 5 million years.
- To do this we want very old ice from Antarctica.
- The challenge is that the oldest ice is rarely preserved, and can be difficult to interpret.



MEETING THE OLD ICE CHALLENGE

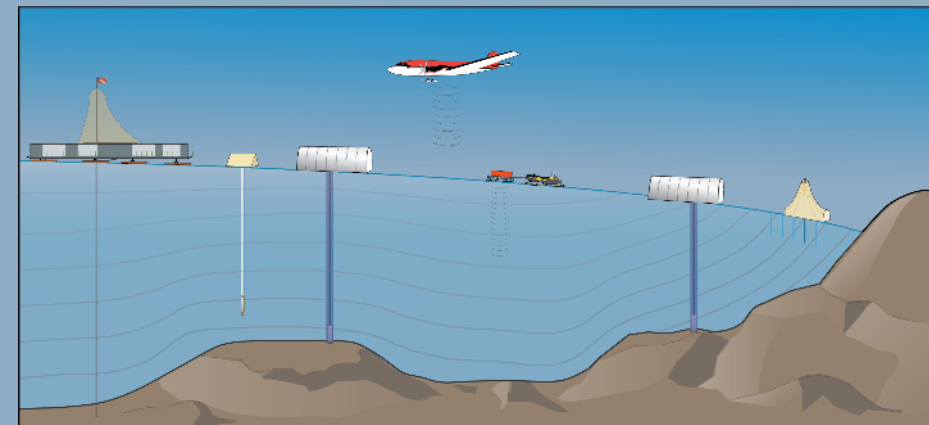
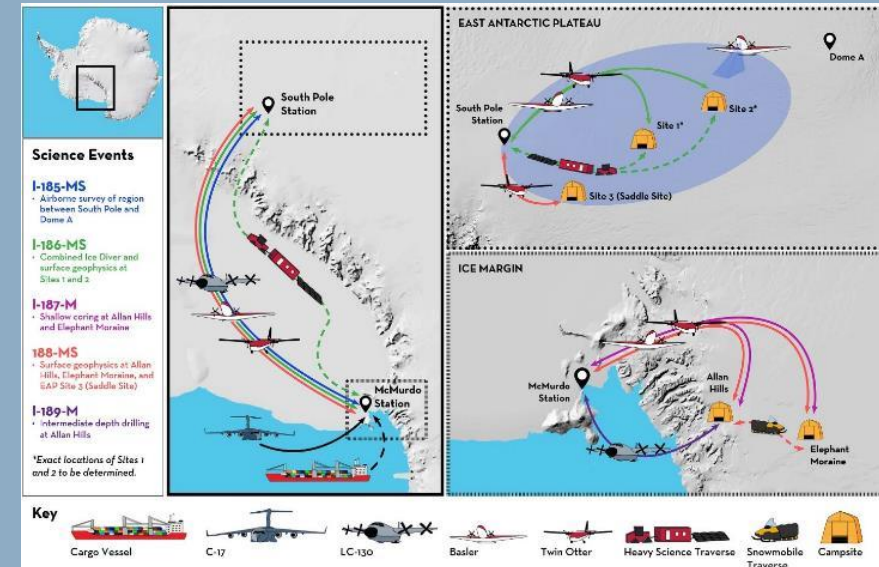


- **Exploration and Ice Sheet Modeling**

- Find site for 1.5 million year ice core
 - Airborne and surface radar echo-sounding
 - Novel thermal melt probes
 - Modeling age vs. depth along ice flow lines

- **Ice coring and analysis**

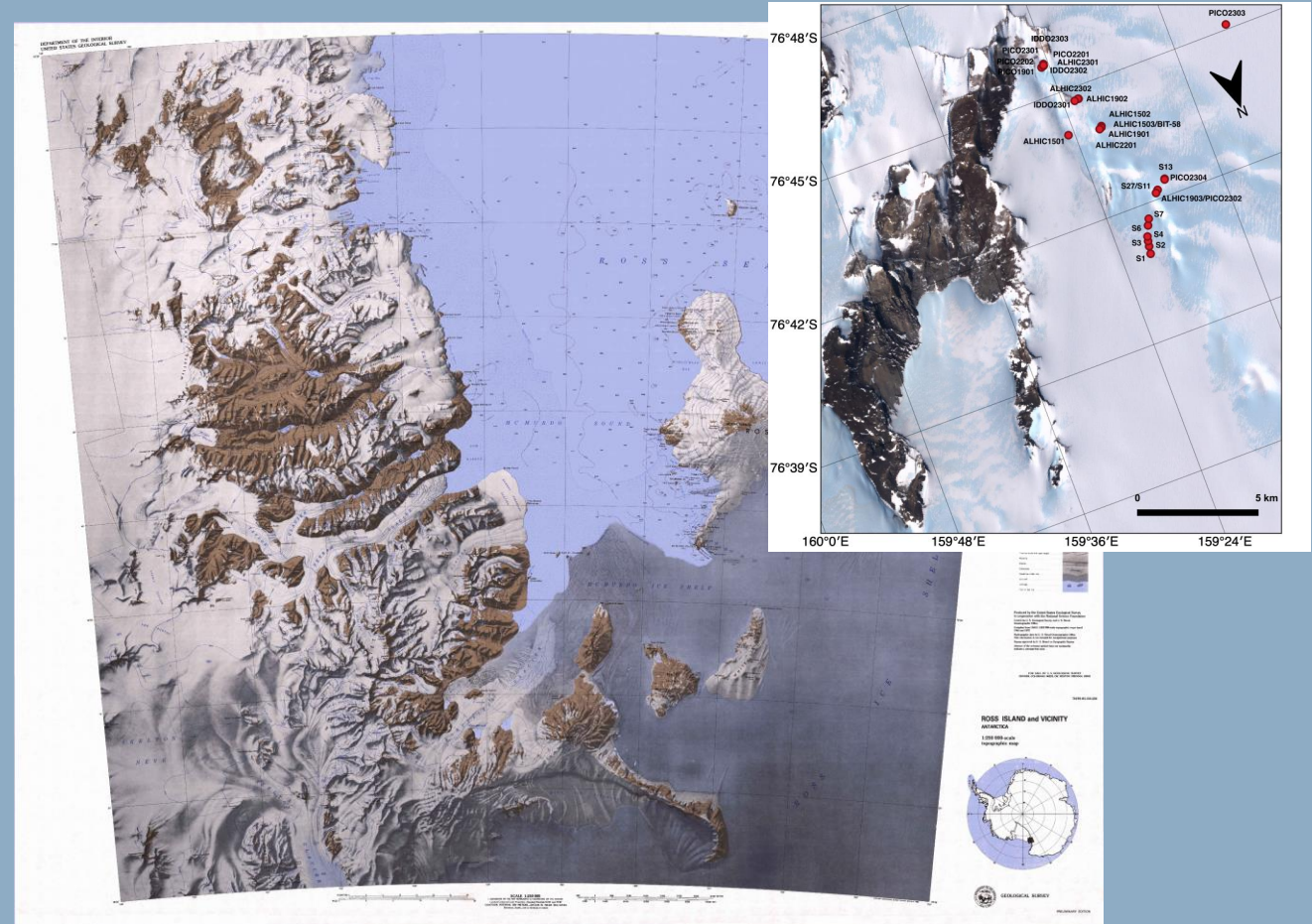
- Ice coring on ice margin and (eventually) interior
- Centralized laboratory at OSU
- Improving age and other analyses
- Advanced ice imaging



Very Old Ice at Allan Hills



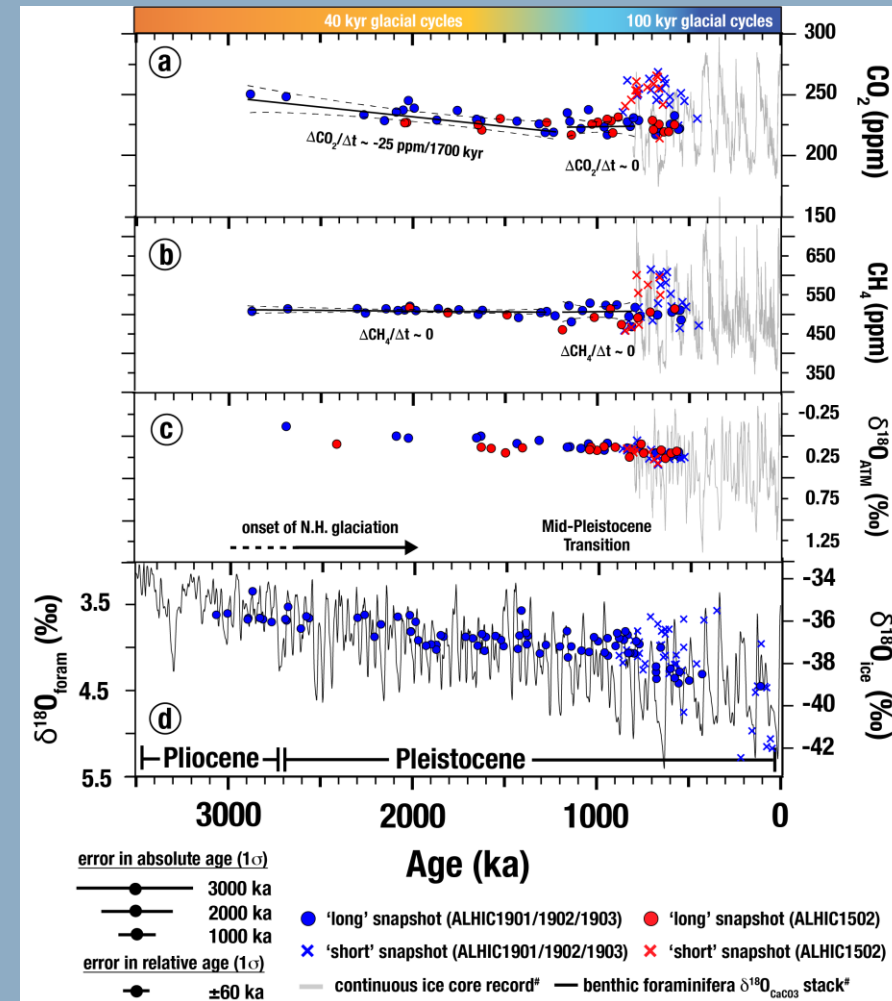
- Shallow (~100-200 m) cores
- 10 inch and 3 inch diameter cores
- Ages based on $^{40}\text{Ar}_{\text{atm}}$ chronometer
- Multiple cores with ages up to 5-6 Ma
- Stratigraphy is complex, but over 200 depth intervals have been dated
- Further drilling now and in 25-26



Extending The Ice Core Record



- Antarctic climate data back to 6 Ma (Higgins et al., C22B-05)
- Greenhouse gas and mean ocean temperature back to 3 Ma (Marks Peterson et al. C54A-01)
- Numerous (12) other presentations this week on many aspects of Allan Hills ice cores

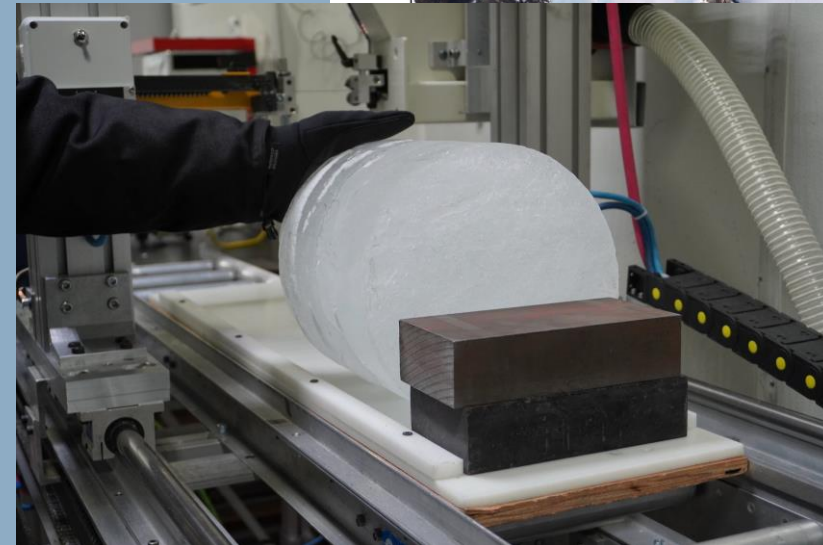
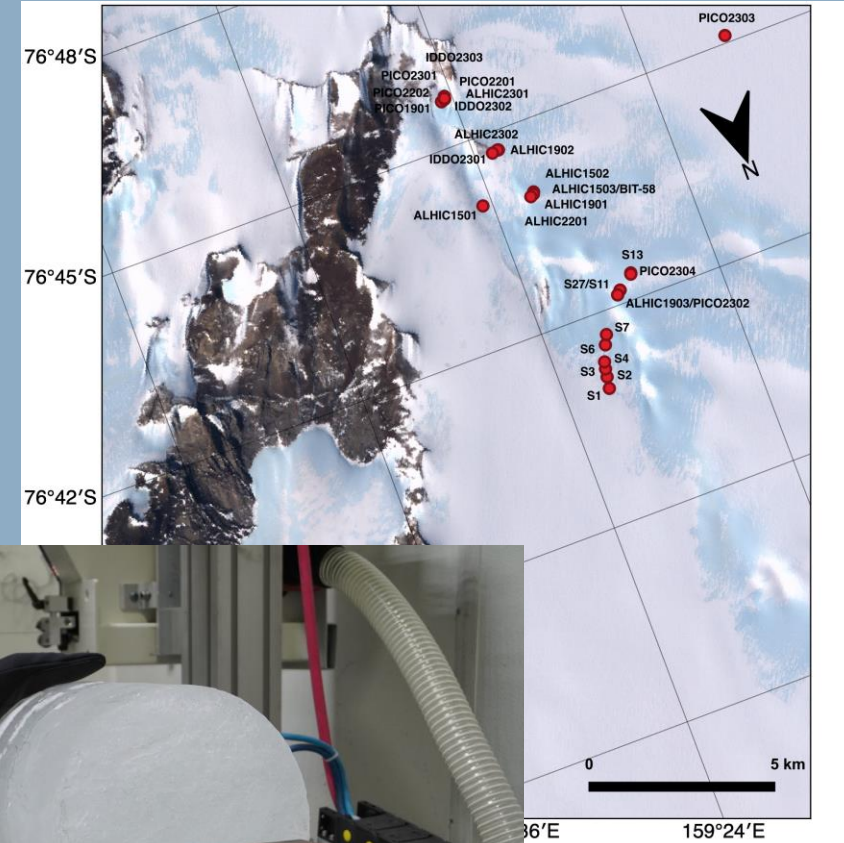


Marks Peterson et al. (submitted)

Get Involved!



- Allan Hills ice core samples are available now.
 - Sample request at www.coldex.org
 - For more information contact Ed Brook (brooke@geo.oregonstate.edu) or Jenna Epifanio (jenna.epifanio@gmail.com).
- Annual COLDEX Open Science Meetings
 - Watch web site for 2025 date
- COLDEX REU Program
 - Applications open now
 - <https://coldex.org/reu>
- Apply for a COLDEX Early Career Researcher Scholarship





IPICS 2026 in North America: Banff Center for Arts and Creativity, Banff, Canada

October 11-16 2026

Organizers (so far): Ali Criscitiello, Christo Buizert, Brad Markle, Eric Steig, Anais Orsi, Dorte Dahl Jensen, Ed Brook , [Your Name Here](#)