

# IDP Education and Public Outreach

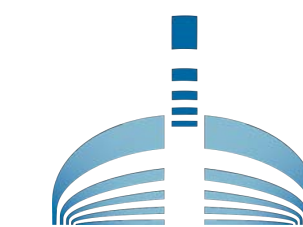
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[william.f.grosser@dartmouth.edu](mailto:william.f.grosser@dartmouth.edu)







# IDP Education and Public Outreach Program

1. Professional Development for Educators—  
in collaboration with scientists



2. Public Outreach-to museums  
and community organizations

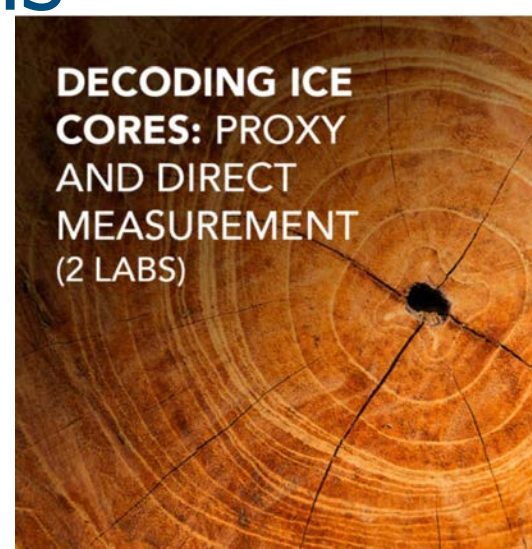


3. Development of Resources Based on Research Results

- Hands-on Labs for Classrooms
- Virtual Field Labs

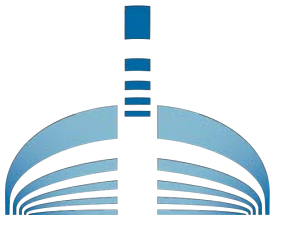


[icedrill-education.org](https://icedrill-education.org)



4. Scientist Broader Impacts  
<https://icedrill.org/outreach-support>  
[louise.t.huffman@dartmouth.edu](mailto:louise.t.huffman@dartmouth.edu)





# Professional Development K-12



**Golden Apple  
Foundation-Chicago**



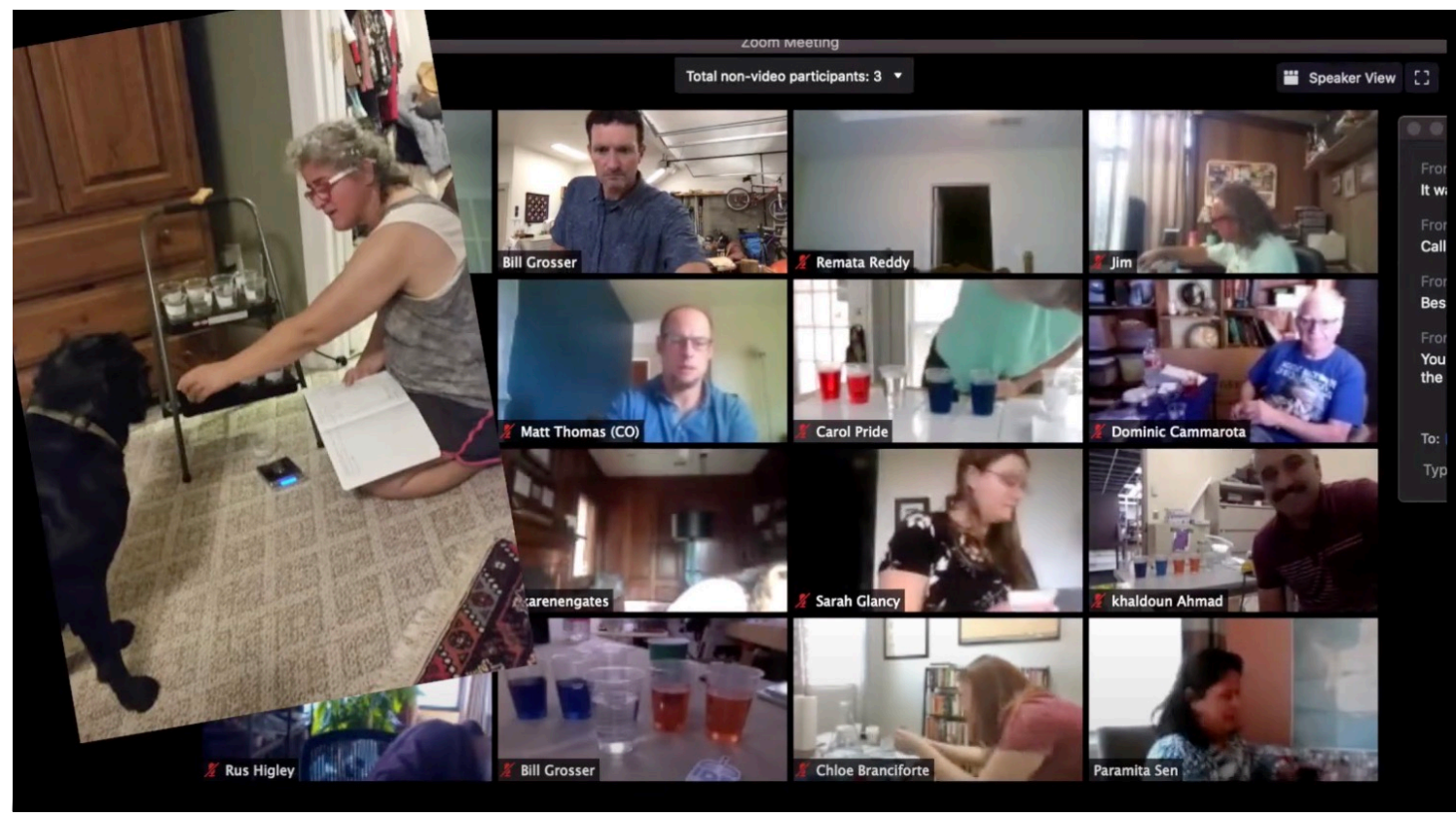
**National Science  
Teaching Association  
(NSTA)**

DuPage Co. Professional Development Day  
PEI (Polar Educators International)  
ASSW (Arctic Science Summit Week)  
NAAEE (North American Association of Environmental  
Education)



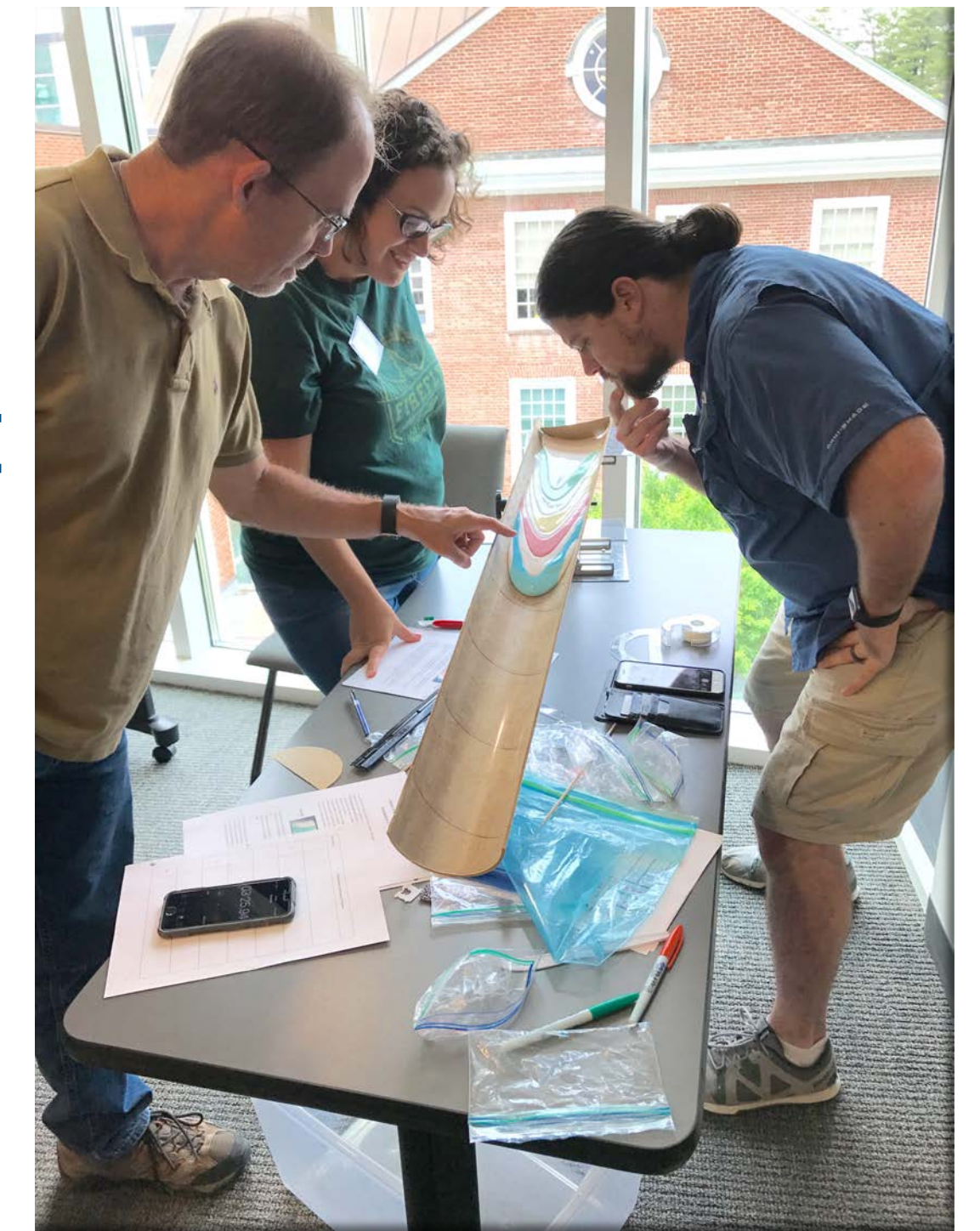
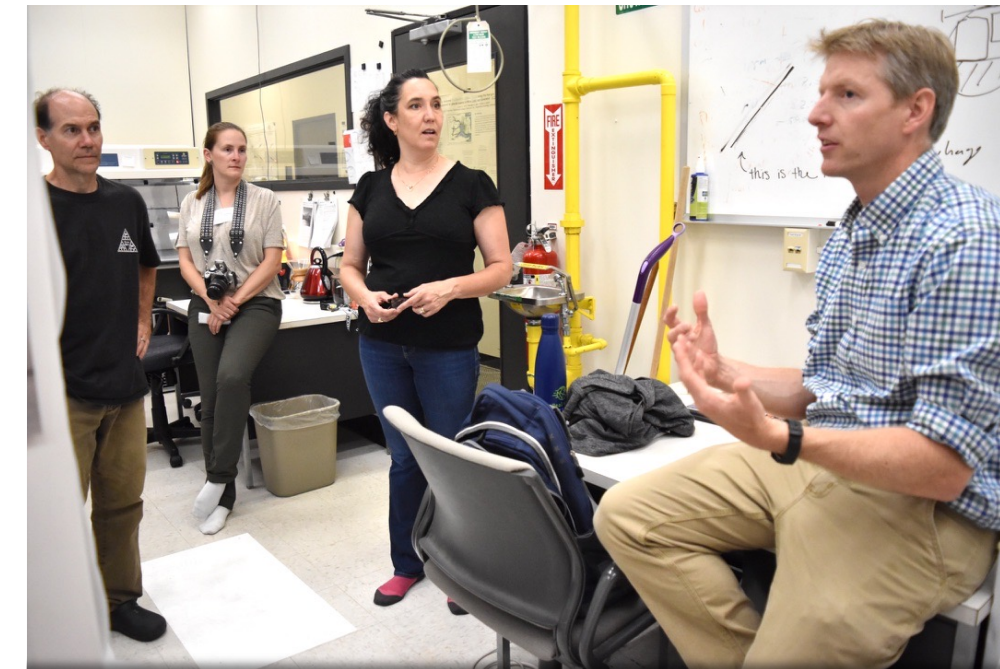
**AGU-Geophysical  
Information For  
Teachers (GIFT)**



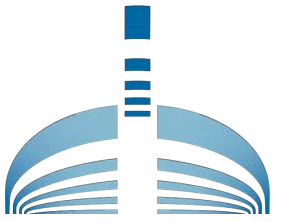


# School of Ice

## Professional Development for Faculty at Minority Serving Institutions



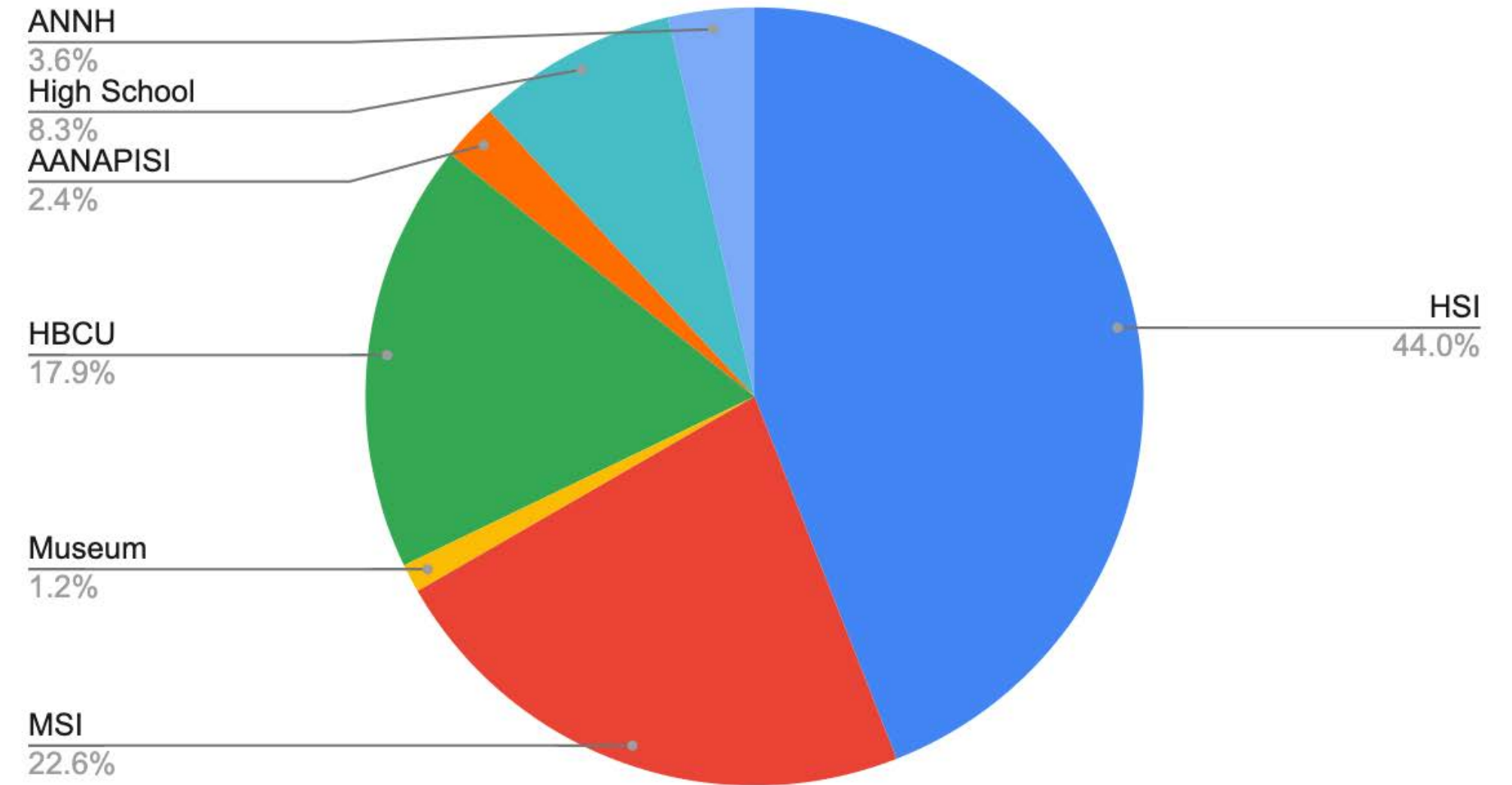




June 18-23, 2023 Dartmouth,  
Hanover, NH

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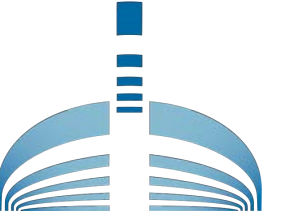
### Types of Institutions



#### KEY

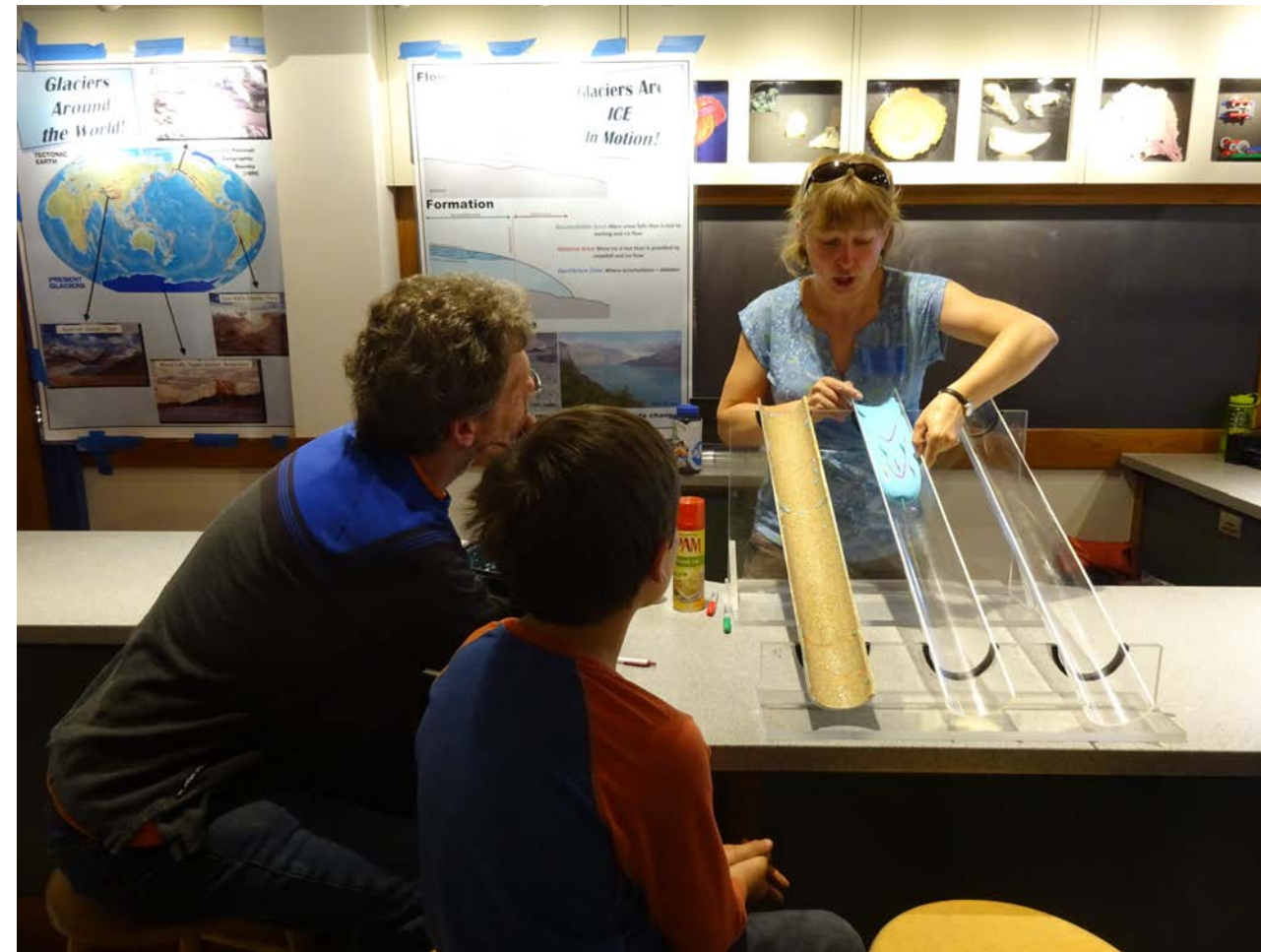
- AANAPISI** Asian American Native American Pacific Islander -Serving Institutions
- ANNH** Native Hawaiian-Serving Institutions
- HBCU** Historically Black Colleges & Universities
- HSI** Hispanic Serving Institutions
- MSI** Minority Serving Institution
- TCU** Tribal Colleges and Universities





# Public Outreach

Grad students helped at Montshire Science Museum, Vermont



Public Event at Geology Museum at Rutgers

Ted X Mile High Event—Partnered with NSF ICF



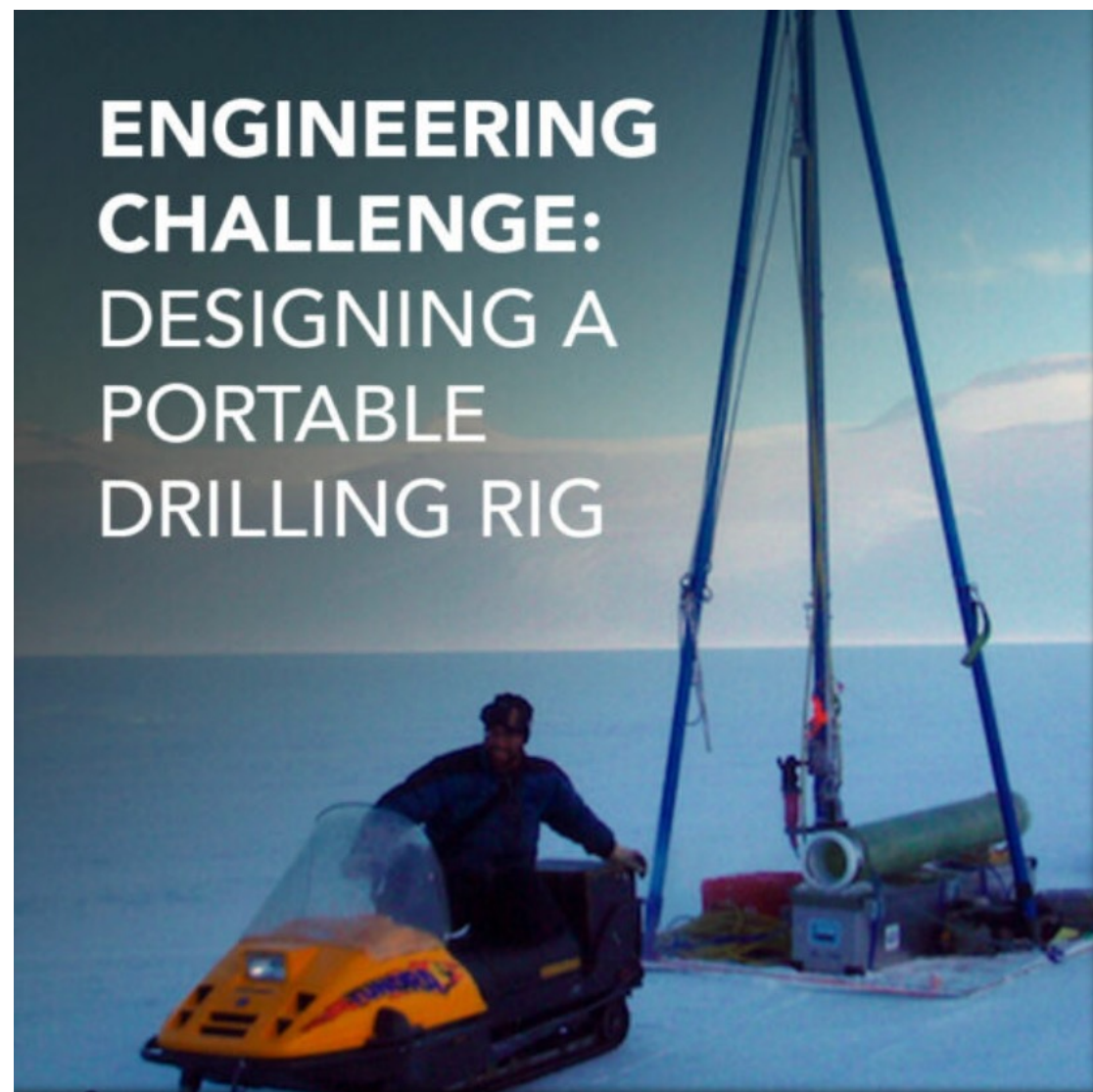
Winter Science Event at Science Museum of Orlando



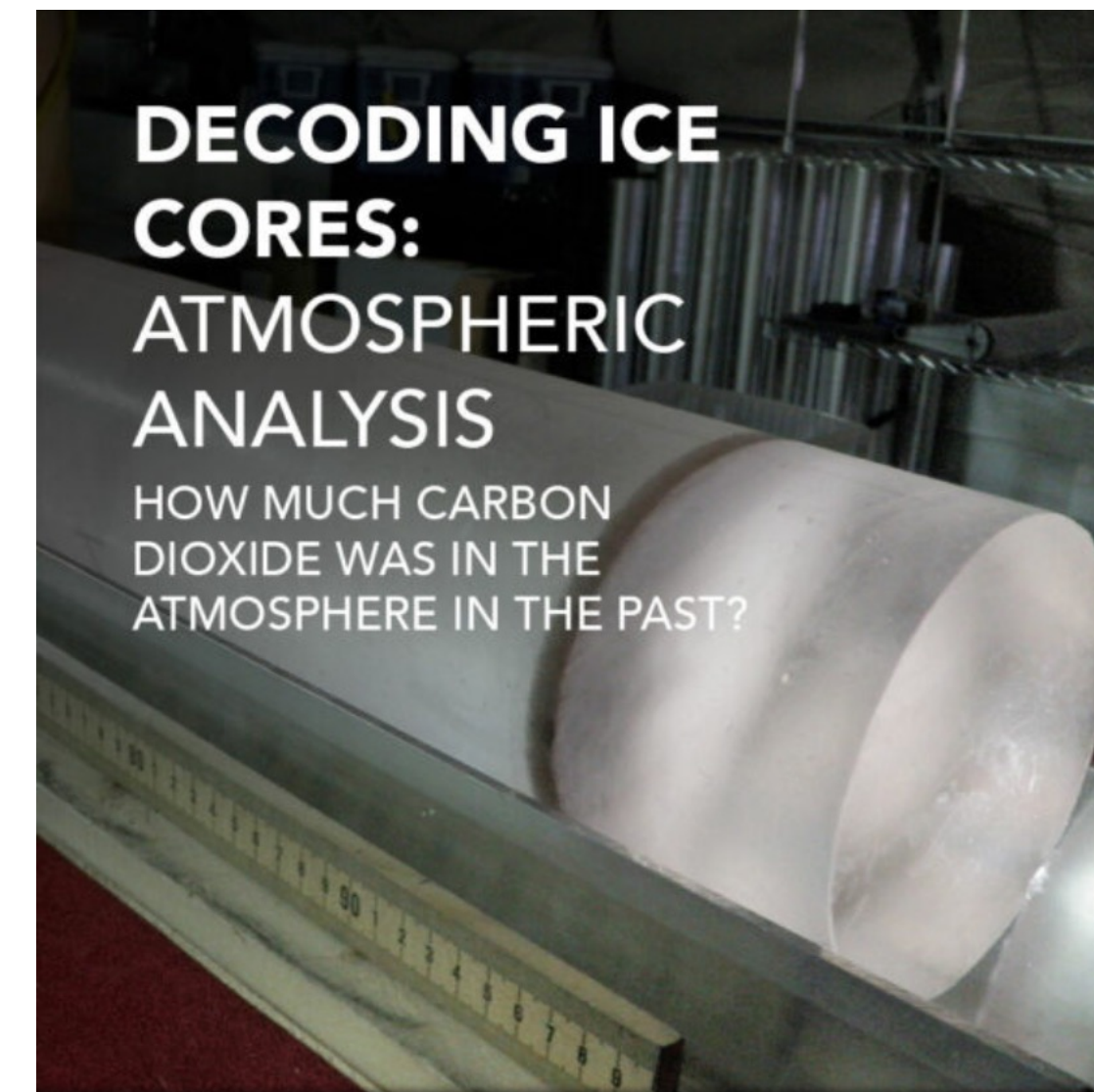


# Classroom Labs and Activities

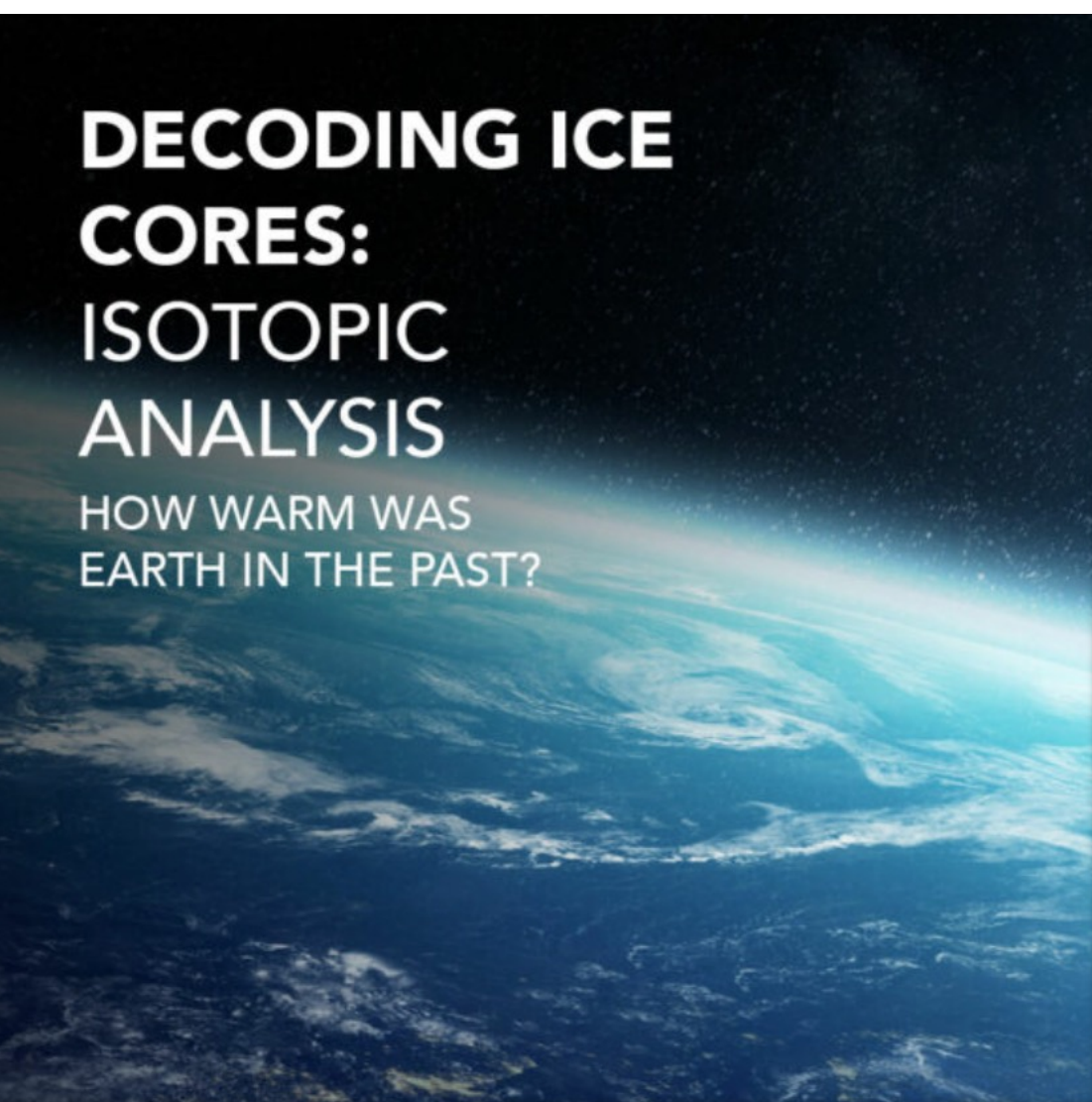
[icedrill-education.org](http://icedrill-education.org)



**ENGINEERING  
CHALLENGE:  
DESIGNING A  
PORTABLE  
DRILLING RIG**

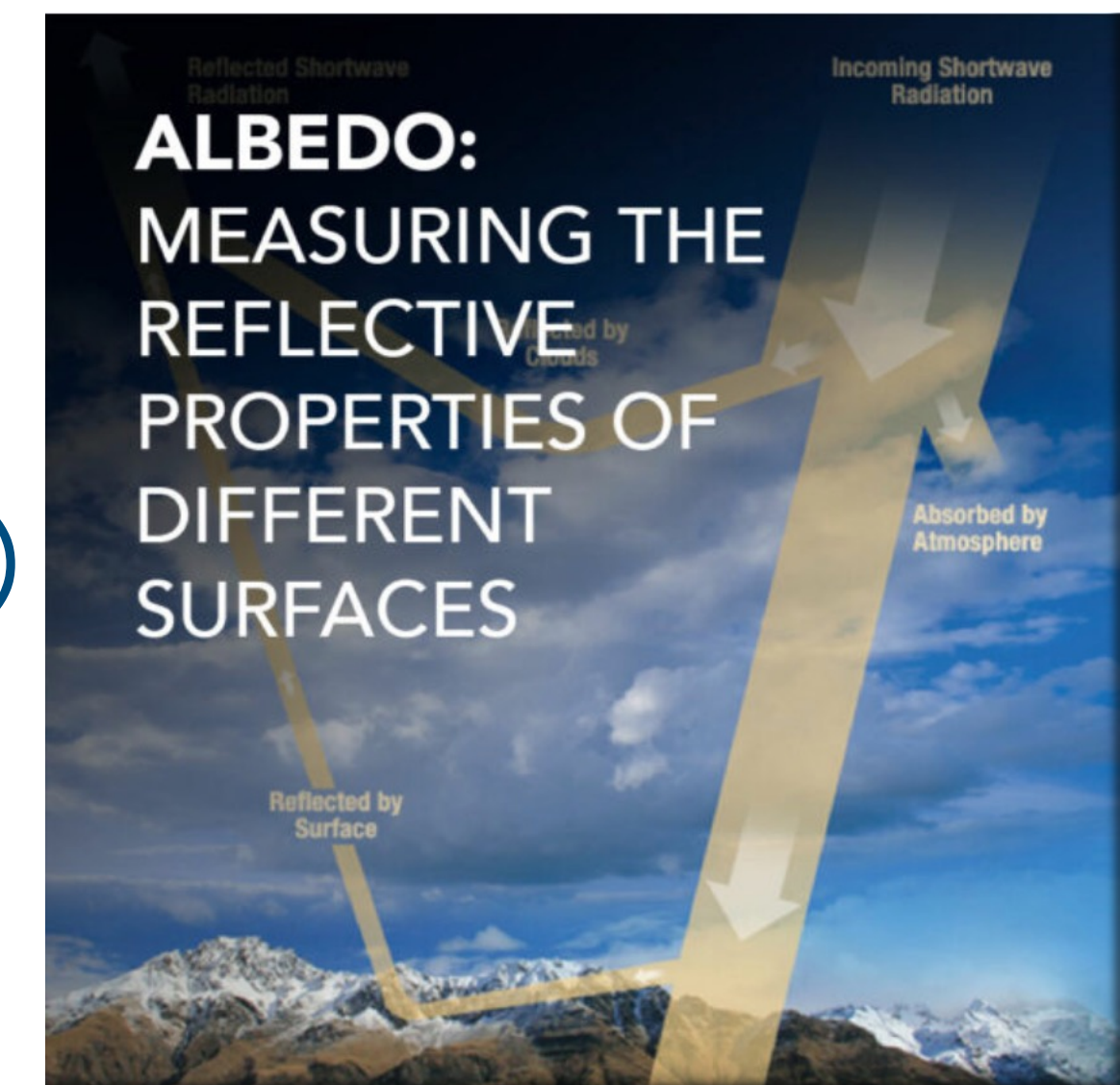


**DECODING ICE  
CORES:  
ATMOSPHERIC  
ANALYSIS**  
HOW MUCH CARBON  
DIOXIDE WAS IN THE  
ATMOSPHERE IN THE PAST?



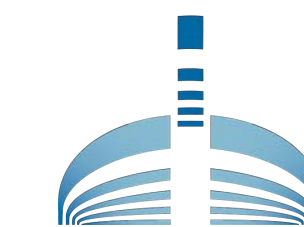
**DECODING ICE  
CORES:  
ISOTOPIC  
ANALYSIS**  
HOW WARM WAS  
EARTH IN THE PAST?

1. Based on current science research
2. Use easily obtained materials
3. Aligned with Next Generation Science Standards (NGSS)
4. Entry level —can be used from middle school to college
5. Inquiry based/hands—on



**ALBEDO:  
MEASURING THE  
REFLECTIVE  
PROPERTIES OF  
DIFFERENT  
SURFACES**





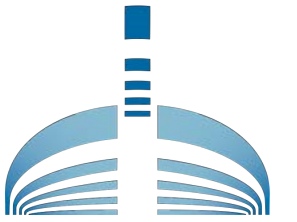
# Virtual Field Labs

3-Part Video Series Exploring Climate Questions featuring a Researcher

1. Intro/Question
2. Data Collection/analysis
3. So what? Relationship to future; words of hope





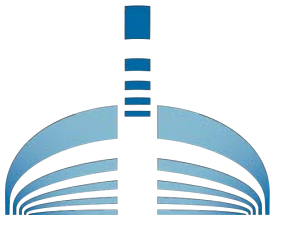


## Virtual Field Labs (VFLs) Icedrill-education.org



- **Comparing Climate Change Past and Present-Dr. Carly Peltier and Jon Edwards**
- **Climate Warnings from Alaska-Dr. Dom Winski**
- **Climate Clues from the Past-Dr. Meredith Kelly**
- **Abrupt Climate Disruptions-Dr. Erich Osterberg**
  
- **Fall 2023: Sea Level Rise and Vital Signs from Thwaites-Drs Richard and Karen Alley**
- **Fall 2023: Do Burping Cows Really Matter? The Role of Methane in our Changing Climate—Ben Riddell-Young**
- **Fall 2024: Looking for Hope in an Ocean of Climate Change—Becky Alexander**
- **2025?: Submarine groundwater discharge TBD—ASGARD (PI Doran)**
- **2025?: Albedo TBD-Alden Adolph**





# Broader Impacts

Step 1: [icedrill.org](http://icedrill.org)

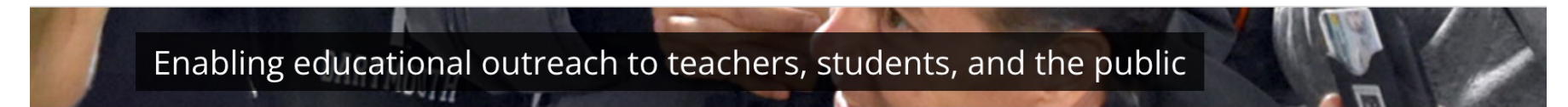
Step 2: Contact Louise early in your proposal preparation

U.S. ICE DRILLING PROGRAM

About Equipment Fieldwork Resources News Library Publications Education  Contact Us



## Discover IDP



Home / Outreach Support

## OUTREACH SUPPORT

The **Education and Outreach program** of IDP fosters diversity through its well-established *IDP School of Ice workshop* for faculty at minority-serving institutions and provides hands-on discovery activities based on ice science to middle-school and secondary school teachers. IDP outreach efforts advanced public literacy by humanizing the face of climate science by engaging community scientists in professional settings with educators through, for example, national conferences of the National Science Teacher Association.

Scientists who seek to include IDP education and outreach activities associated with U.S. ice coring or drilling science projects should contact Louise Huffman at [Louise.T.Huffman@Dartmouth.edu](mailto:Louise.T.Huffman@Dartmouth.edu) during their proposal preparation stage.

### Outreach Contact

**Louise T. Huffman**

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US Ice Drilling Program  
Thayer School of Engineering at Dartmouth  
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Hanover, NH 03755

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Website: <http://icedrill-education.org>

[IDP'S EDUCATION AND OUTREACH PROGRAM WEBSITE](http://icedrill-education.org)





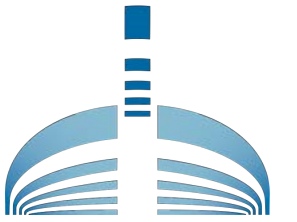


# Scientists Play Key Role in all of our EO-Example from SOI 2019



Anderson, Bob	University of CO-Boulder
Clow, Gary	University of CO-Boulder
Hargreaves, Geoff	Ice Core Facility
Holland, Marika	UCAR
Hood, Elaine	Antarctic Support Contract
Hottel, Kory	Antarctic Support Contract
Jenkins, Jessy	Polar Field Services, Inc.
Juniel, Troy	Antarctic Support Contract
Koenig, Lora	Natl Snow & Ice Data Center
MacFerrin, Mike	Colorado School of Mines
Oliver, Matt	University of Delaware
Powers, Lindsay	US Geological Survey
Rom, Lisa	National Science Foundation
Siegfried, Matt	Colorado School of Mines
Vaughn, Bruce	INSTAAR
White, Jim	University of CO-Boulder



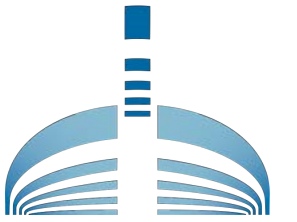


# How can IDP-EO help with your Broader Impacts?

1. Help define the needs of the non-science audience you would like to reach
2. Suggest appropriate level of information
3. Give ideas for connecting with and engaging your audience
4. Help identify your data story question and present data in an accessible way







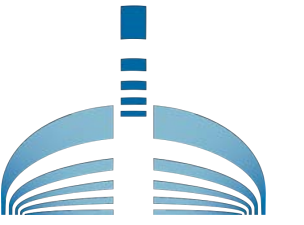
# Ideas for Broader Impacts

(Organized from simplest to more complex—roughly corresponding to time and money)

1. Work together to create presentations to non-science audiences
2. Present with IDP educators at webinars or Zoom to classrooms
3. Speak at AGU-EO sessions organized by IDP-EO
4. Speak together at national teacher conferences, public events, School of Ice
5. Design PD workshop or science events for local teachers
6. Together create hands-on labs related to your research
7. Bring an idea-create something new together
8. Virtual Field Lab based on your research







**How can the IDP-EO help you meet your broader impacts?**

**QUESTIONS?**