

How To Drill an Ice Core Lesson

Materials

2 Buckets
Good Morning America video on GISP 2 (ask Ed Waddington)
Ice and Cold Water
Thermometer
A screw and Nut
Crisco
Ziplock bags and rubber gloves
Arctic weather gear
Party Ice Cores
Projector
TV/VCR
IcySurvival worksheet/answer sheet
Optional: soda and cups

Time

1:15

Introduction

Time 10-15 minutes

Welcome Students
Introduce Icy Environments and Why they are important with Power Point Slides
Talk specifically about Greenland work and UW participation in ice core drilling. Make sure to discuss how ice cores are indicators of climate.

Video

Time 6-8 minute

Show Good Morning America video (from Ed Waddington) about drilling GISP 2
This video will reinforce the introduction. The video and introduction can be flipped if more appropriate.

Introduction to cold environments

Time 10-15 minutes

On a table lay out cold weather gear used in the arctic including Parkas, boots, gloves, etc. Set up buckets with ice water and thermometer. Put the screw and nut in the bucket. Put the temperature of the water on the board below this put the average temperature at summit -30 C/ -22 F. Let the student put there hands in the bucket and see if they can put the nut on the screw. Also allow the students to put there hand in ziplock bags full of Crisco and then in the ice water to show that the fat keeps them much warmer. The rubber gloves and be used to keep hands clean. During this time let student handle arctic gear.

Group activities

Time 10 minutes

Have student form groups of four and fill out the icy survival worksheet. Instructions: Your team of four has been assigned to drill and ice core 40 km from base camp. Everyone on the team can carry 10 items in their backpack. Everyone on the team must choose 8 basic items that everyone will carry. The additional two items in a pack will be shared by the team and can be different in each team member's pack. You must be able to survive 24 hours. Which team will survive?

Quickly discuss which teams would have survived and which didn't. The correct answers are included in this packet. Choose a few items to discuss for instance no one needed a flash light because it is light 24 hours a day and note that many of the food items will freeze and be unusable. The video introduced these concepts and is good to remind the students of the unique aspects of the Polar Regions.

Ice Cores

Time 15-20 minutes

Give each group a ice core to look out. Give the groups a few directed questions: how many years are represented in your ice core? How large are the bubble? Do you see differences in one part of the ice core compared to another? What is causing the differences in the core? Is this a direct measure of climate conditions?

Have a discussion on group answers to these questions. Let the students ask questions

Conclusion

Remaining time

Let the students ask any final questions. Remind them that if they are interested in Climate science or glaciology there are great resources at UW to learn more. Remind all students of the Polar Sciences Weekend on March 2-5 at Pacific Science Center. If you want you can let the students drink a soda with the ice core as the ice.