



Welcome to Live from IPY!

With Lindsay Knippenberg in Antarctica

12 November 2009





Raise your hand to ask a question

List of all participants

Return to the lobby or exit

Slides will be shown here

If using VOIP, press and hold here to talk

Your connection strength

'Chat' with one person or the entire group

The control bar includes a connection strength indicator, a 'TALK' button, and icons for audio, video, and chat. The chat area shows a message: "You have entered the lobby. You have entered 'Arctic Research Consortium of the United States (ARCUS)'. Your media format is WimbaMedia. You say, 'I'm going to change the slide momentarily to show the one I need for my new screen shot?'". The 'To:' dropdown is set to 'Main Room'. The 'People (3)' list shows participants: Kristin_Timm, kristina_creek, and Kristin_Timm.

Please note:

- Participant using the telephone can mute/unmute by pressing *6 on the phone.
- Today's event will be recorded and archived.



Roll Call

When called, please state your:

- ✓ Name
- ✓ School / Institution
- ✓ The number of students participating with you in the same location



International Polar Year (IPY)

The International Polar Year (2007-2009) is an exciting scientific campaign focusing on the world's polar regions!

IPY is a time for discovery, science, learning, and awareness about the polar regions with activities for youth, scientists, and the public.

www.ipy.org



What is PolarTREC?

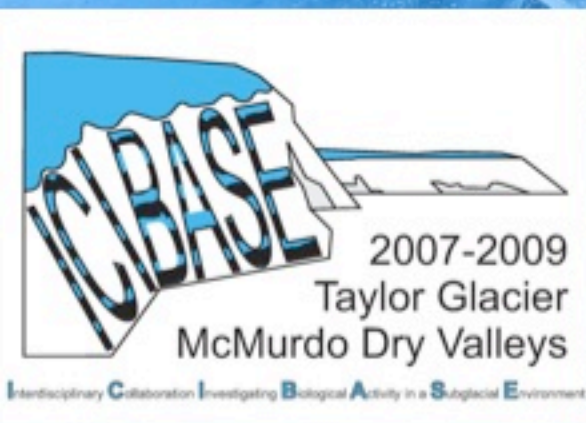
PolarTREC is a professional development experience in which K-12 teachers are paired with researchers in authentic polar research experiences.

In the next three years over 40 teachers from around the United States will join scientists in the Arctic and Antarctica in celebration of the International Polar Year!

www.polartrec.com

Microorganisms in Antarctic Glacier Ice

Lindsay Knippenberg
PolarTREC 2009

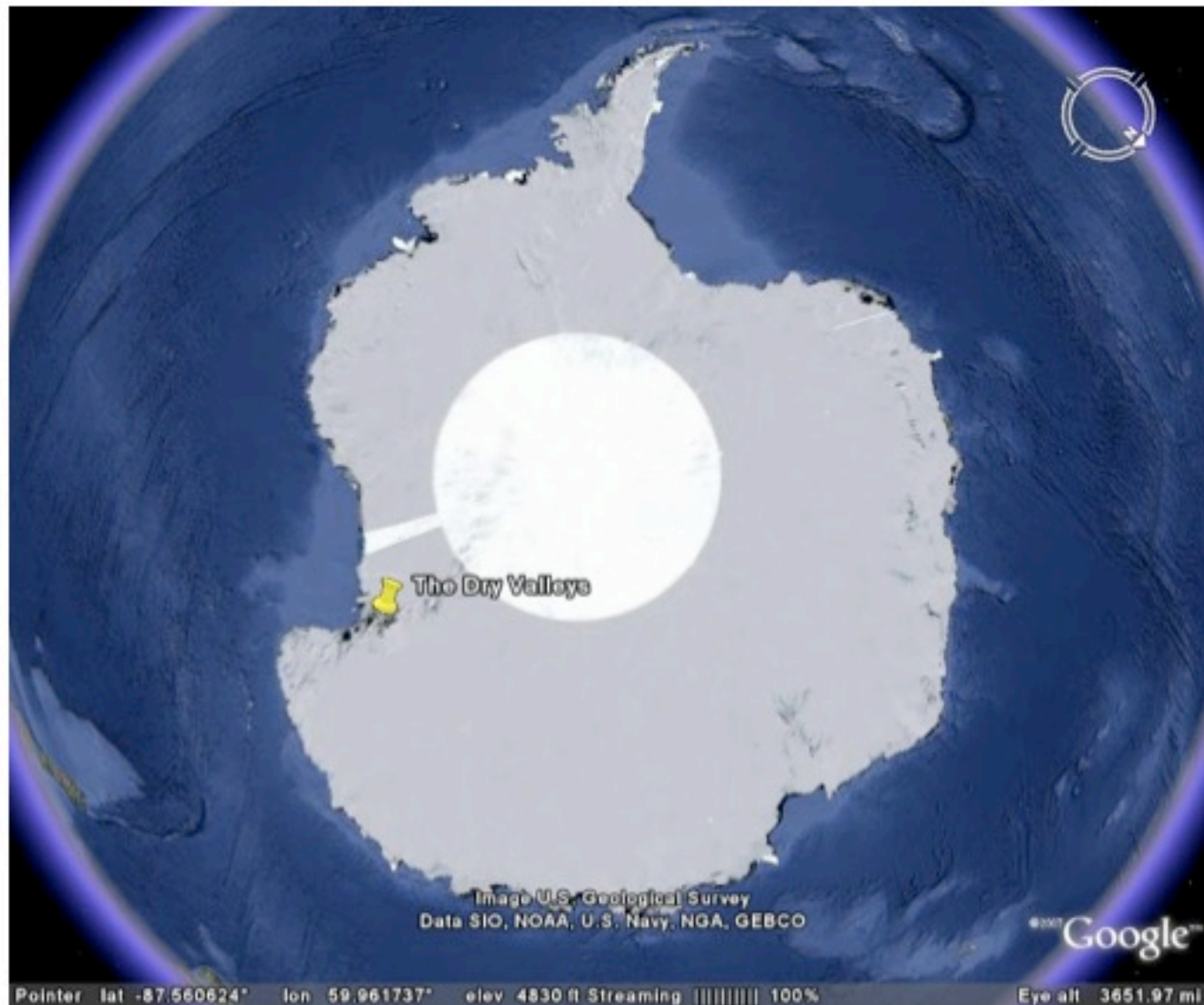


Meet My Team

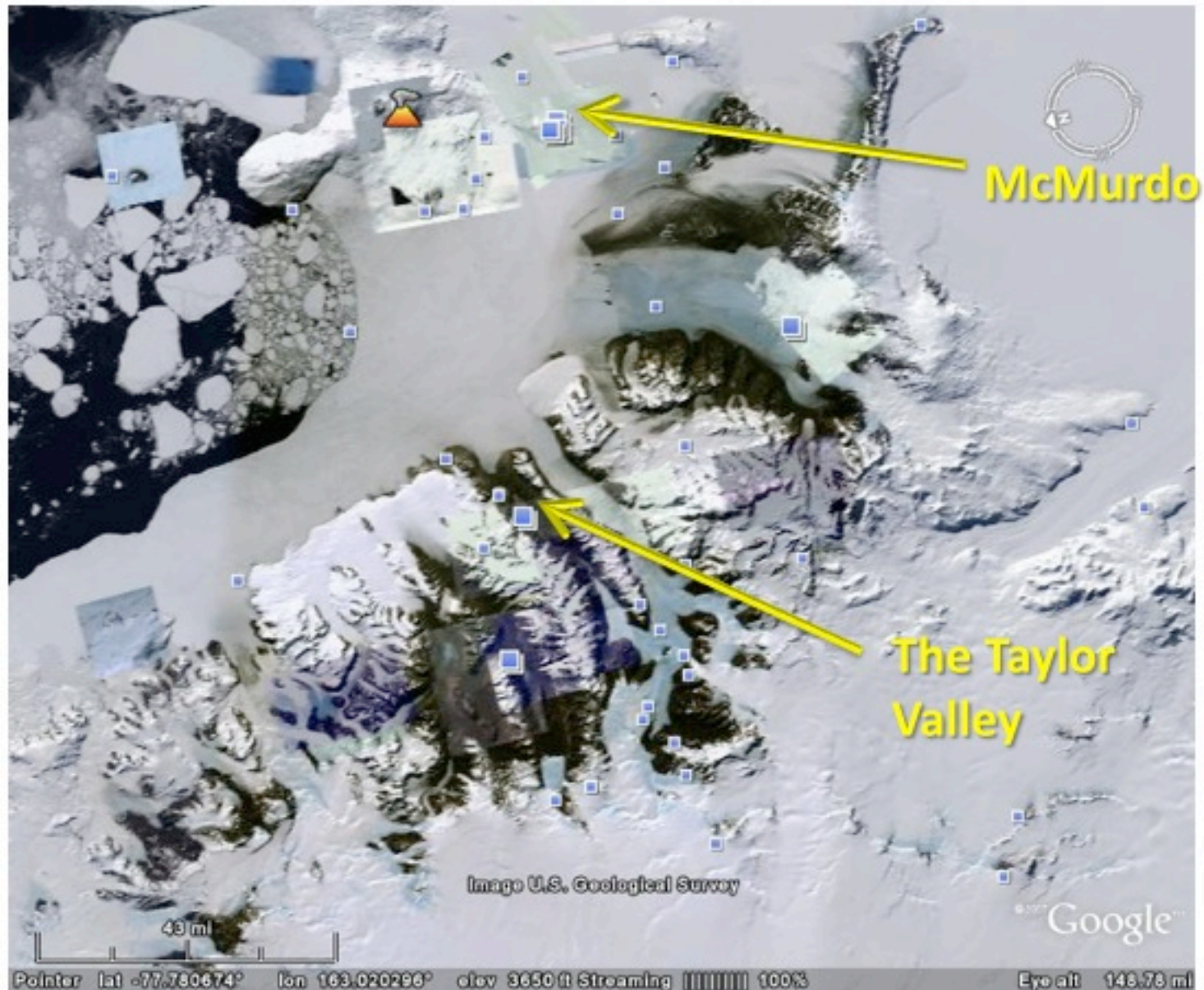


Back Row Left to Right: Scott Montross (MSU), Brent Christner (LSU), Amanda Achberger (LSU), Tim Brox (MSU). Front Row: Lindsay Knippenberg (PolarTREC), Shawn Doyle (LSU), Mark Skidmore (MSU)

Where Are We?



The Dry Valleys



The Taylor Valley



The Taylor Glacier



Scott Montross

What Are We Studying?

Are the microorganisms that we find in the ice metabolically active (breaking down food and releasing gases)?

- Isotope analysis of the gas molecules trapped in the ice and the analysis of the DNA and RNA of the microorganisms
- What types of microorganisms are in the ice and what are they eating?
 - Culturing the microorganisms and DNA analysis

The most common microorganism that we find in the ice is the bacteria *sporosarcina* (Tim Brox)

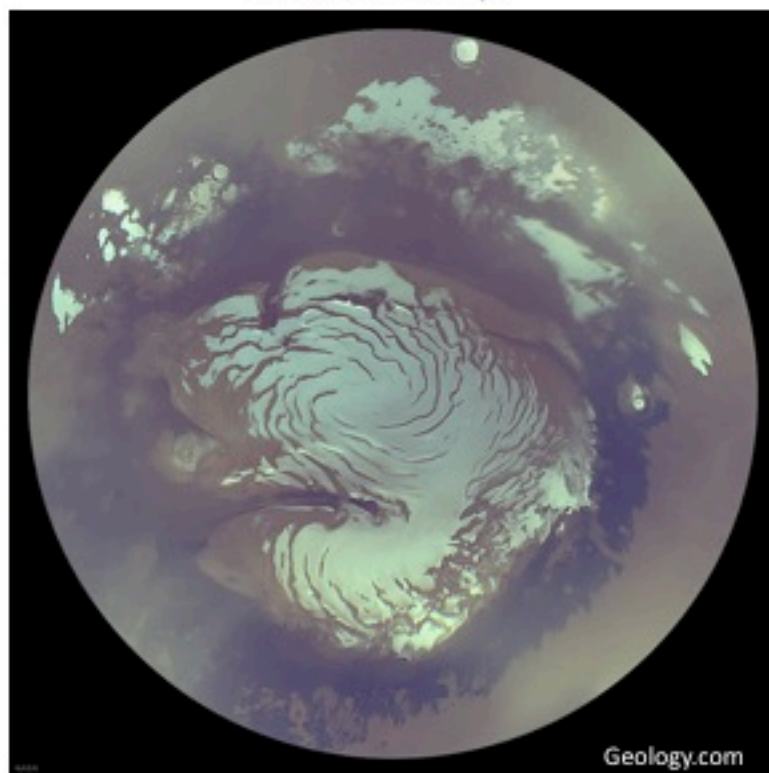


A microscope view of the veins in the ice where the microorganisms like to live (Tim Brox)

Why Does it Matter?

- Expanding our view of the biosphere and the conditions where life can exist on Earth
- Microorganisms living in the ice on Mars and other extraterrestrial objects?

Mars Ice Cap



Dirty Ice vs. Clean Ice

A close up view of samples of clean and dirty ice



Notice the bands of dirty ice that stretch across the Taylor Glacier

How Did We Collect the Ice?

1. Chainsawed a 9 meter tunnel into the side of the glacier
2. Located a band of dirty ice within the glacier
3. Cut out blocks of ice from the dirty ice band
4. Ship the blocks back home and analyze them



Tim chainsawing the ceiling of the tunnel

Our Tunnel



The Taylor Glacier near our tunnel site

Selecting the
location of the
tunnel





TUNNEL (2007)

TUNNEL (1999)

TUNNEL (2009)

Tunneling



Building the Stairs



Chainsawing the Start of the Tunnel

Tunneling



Dumping the Sled Down the Glacier Apron

Moving Heavy Ice Blocks Out of the Tunnel



Tunneling



Extending the Length of the Tunnel



The Completed Tunnel

Sampling



Chainsawing a Grid



Cutting Out the Sample Blocks



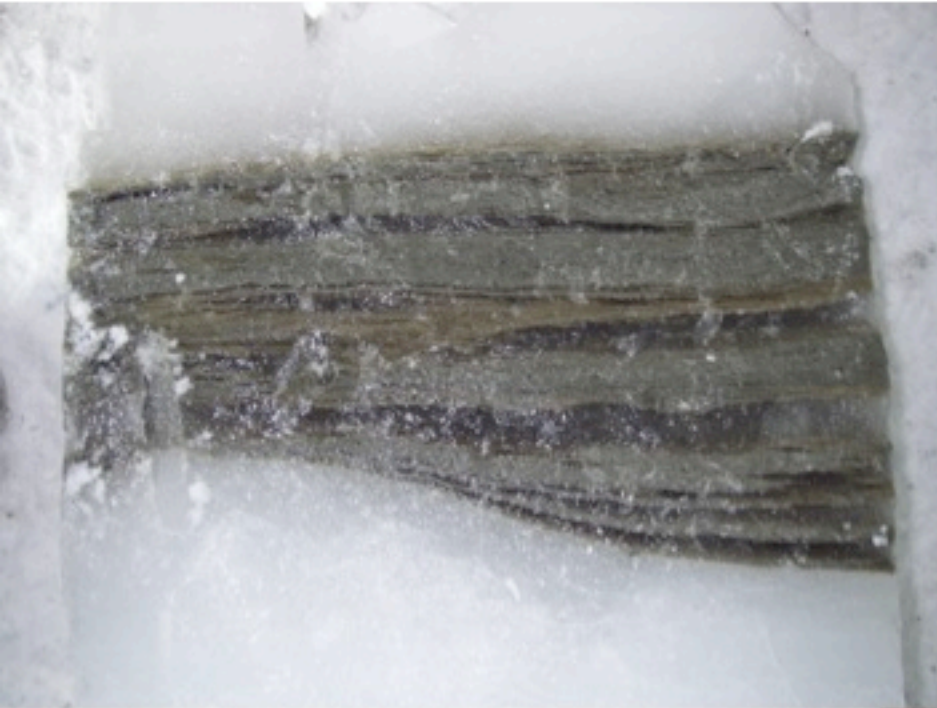
The Sampling Wall
with Dirty and
Clean Ice

Sampling



Measure twice and cut once...

Sampling



Stratified Ice (alternates between clean and dirty ice)

Bagging and Sealing the Samples



Ice Cores



Scott Holding a Nice Core



Tim Drilling a Core Out of the
Clean Ice in the Ceiling

Taking the Samples Home



The ice gets wrapped in bubble wrap then placed in freeze safes for travel



The freeze safes are then bundled together in a sling



Lastly, the helicopter comes and picks up the sling and takes it to McMurdo

Analyzing the Samples



The saw used to cut the ice into thin slices to be analyzed



The ice from 2007 stored at Montana State

Some lab work will be done here at the labs in McMurdo

Living in the Dry Valleys



Breakfast
Anyone?



A hot water
bottle to
keep me
warm at
night

Our
Outhouse



My pee
bottle and
the u-barrel
for urine
and grey
water



Any Questions?





Live from IPY!

Register for Upcoming Live Events at :
[www.polarrec.com!](http://www.polarrec.com)



Thank You!

The archive of this event will be available shortly at:

[www.polartrec.com!](http://www.polartrec.com)

If you have further questions, please contact us at:
info@polartrec.com or call 1-907-474-1500.

