



Welcome to Live from IPY!

Reporting from 78°North!

With Missy Holzer, Svalbard REU Students, and the High Arctic Change '08 Team in Svalbard, Norway

August 6, 2008

10:00 AM Alaska Daylight Time [8:00 AM HDT, 11:00 AM PDT, 12:00 PM MDT, 1:00 PM CST, 2:00 PM EDT]





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 36 teachers from around the United States will join scientists in the Arctic and Antarctic in celebration of the International Polar Year!

www.polartrac.com

The PolarTREC Team



Wendy Warnick

PolarTREC PI
Executive Director



Helen Wiggins

Program Coordinator



Janet Warburton

PolarTREC
Project Manager



Kristin Timm

PolarTREC
Project Manager



Ronnie Owens

Web Developer



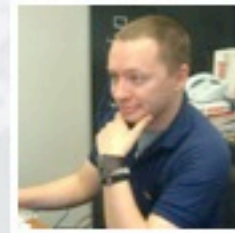
Ben Wade

Web Developer



Tina Buxbaum

Electronic Media
Project Manager



Zeb Polly

Systems Administrator



Joed Polly

Video Production

...with help from the
entire staff at ARCUS



International Polar Year (IPY)

2007-2009



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

Where is Ms. Holzer & the Team?



High Arctic Change '08

Dates: July 8 – August 16, 2008

Location: Svalbard, Norway

The team will travel to Svalbard, Norway, located in the High Arctic, to investigate how high latitude glaciers, melt-water streams, and sedimentation in lakes and fjords respond to climate change.

The Svalbard region has been marked by the retreat of glaciers, reductions in sea ice, and measurable warming throughout the Holocene period, and more specifically during the last 90 years. The Svalbard archipelago has preserved geologic records of climate change since the last ice age and into the 20th century, which makes it an ideal location for this study.



Who we are talking with today:



Missy Holzer

PolarTREC Teacher

Chatham High School
Chatham, New Jersey

Who we are talking with today:

Mike Retelle, PhD
Bates College
Lewiston, ME



Al Werner, PhD
Mt. Holyoke College
South Hadley, MA

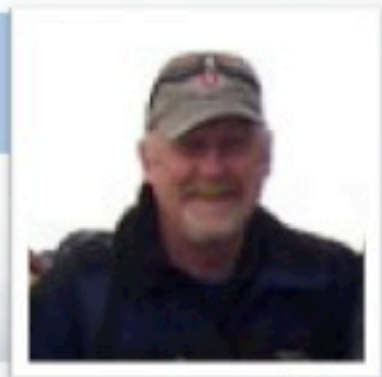
And REU Students:

Anthony Novak - Oregon State University
Emily Mortazavi - University of Arizona
Jesse Burrows - Northern Arizona University
Steve Bate - UNIS, home country is England
Antoine Cousot - UNIS, home country is France

Kristen Mitchell - Albion College, Michigan
Maya Wei-Haas - Smith College,
Massachusetts
Megan Arnold - Bates College, Maine
David Pompeani - University of Pittsburgh
Leo Sold - UNIS, home country is Germany

High Arctic Change '08

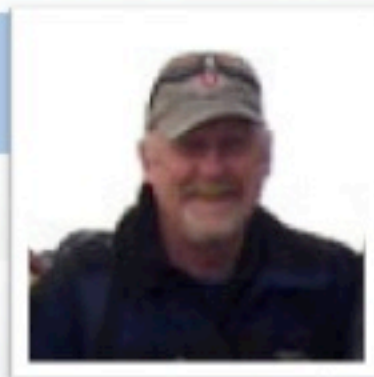
Svalbard REU



- What is Svalbard REU?
 - Research Experience for Undergraduates
 - Experience with field research in the Arctic
 - Develop & carry out original research projects
 - Thesis projects at home academic institutions
 - Collaboration with UNIS (University Centre in Svalbard)

High Arctic Change 08

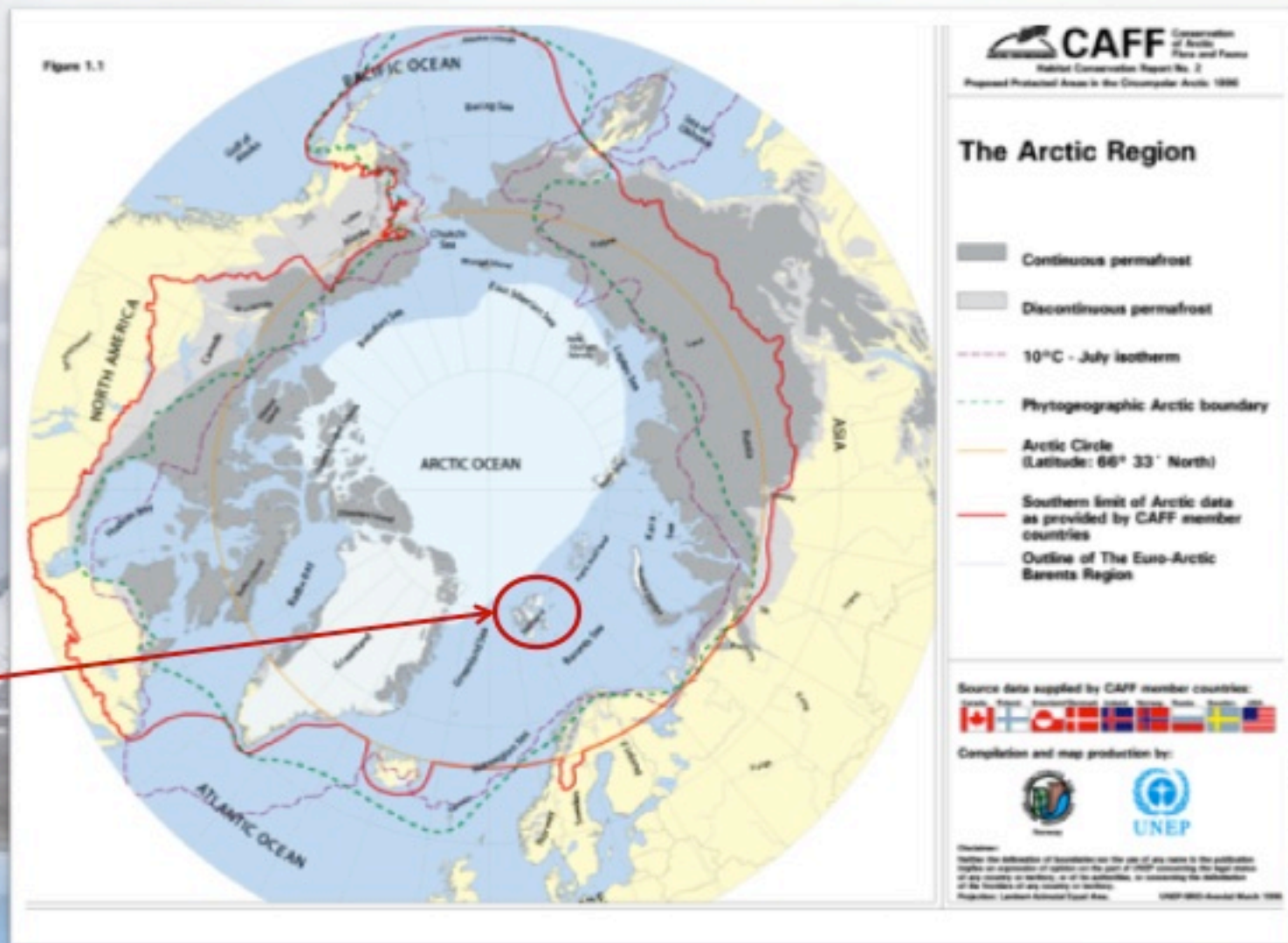
Svalbard REU



Research Questions:

1. What are the links in environmental processes between climate, glacial, fluvial lacustrine and fjord systems?
2. How are measured environmental changes expressed in the sediment records of the fjord and lacustrine systems?
3. Can relationships be derived from the current sedimentation and meteorological observations that will allow for the historic sedimentation record to be better interpreted?

Geographic Overview of Svalbard



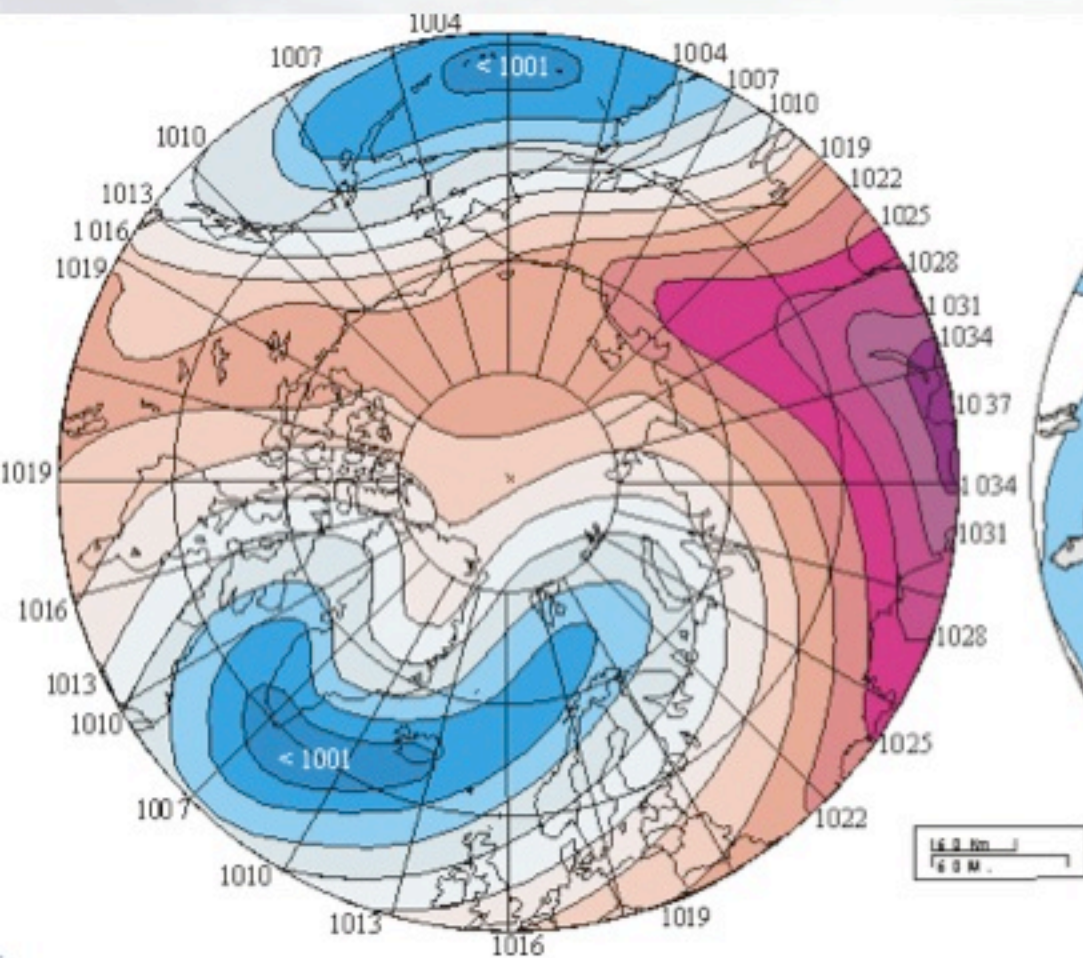
Svalbard

Geographic Overview of Svalbard

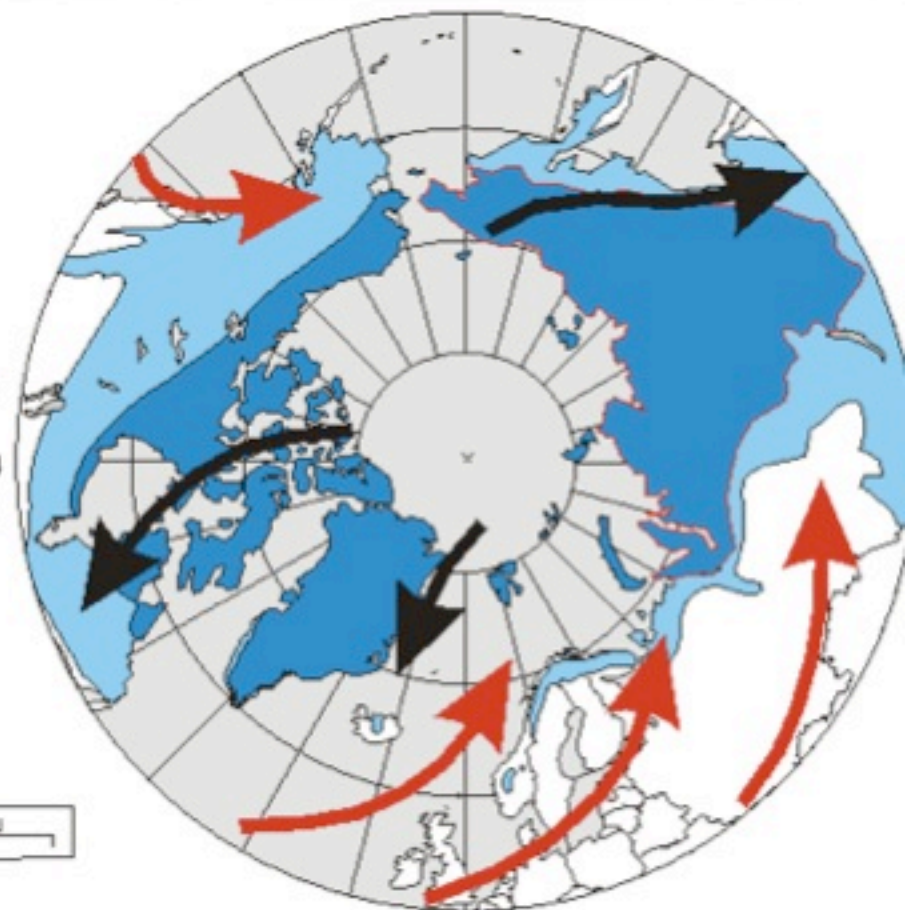


Svalbard

Geographic Overview of Svalbard

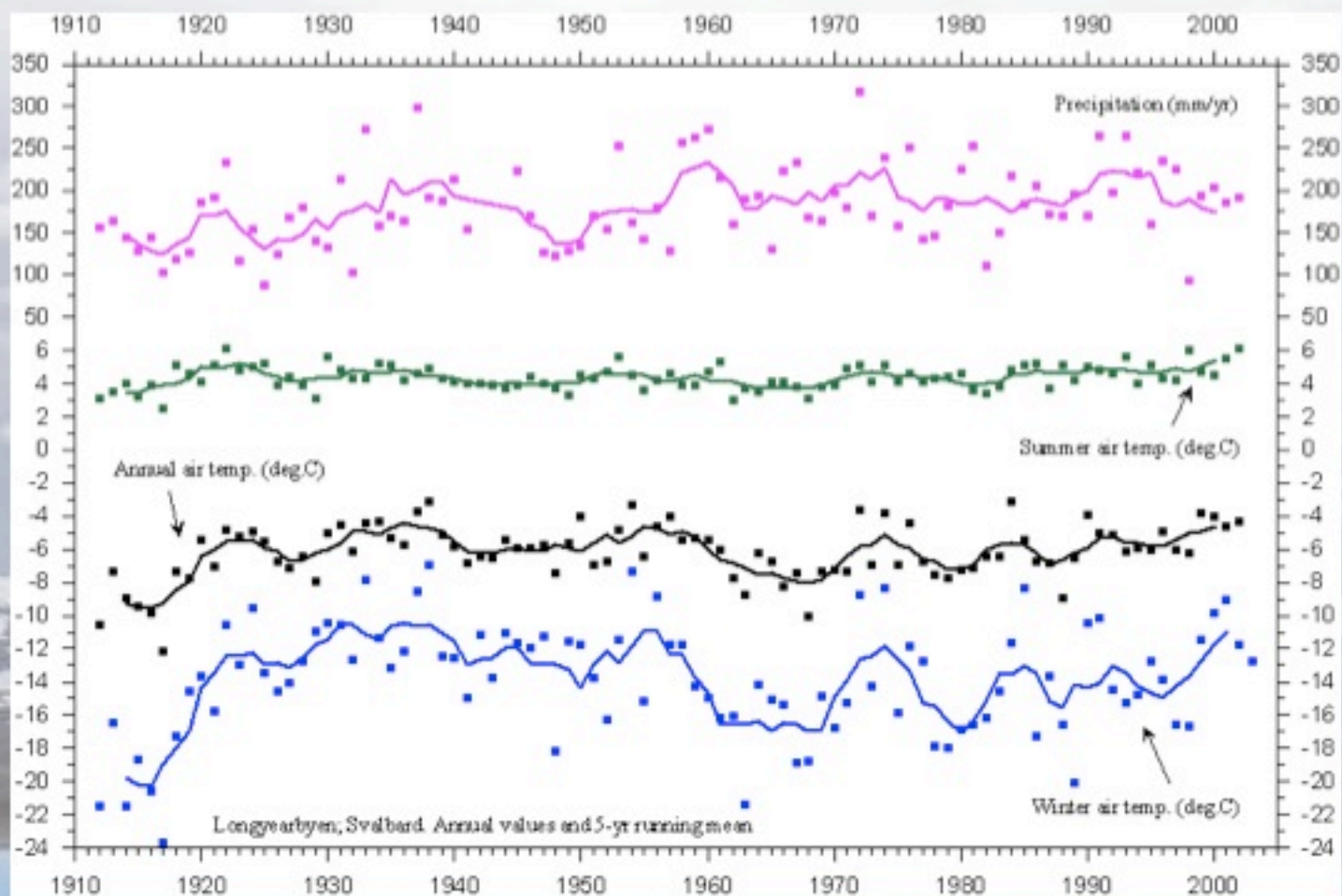


Avg. Dec/Jan/Feb sea level pressures



Winter permafrost & surface air flow

Geographic Overview of Svalbard



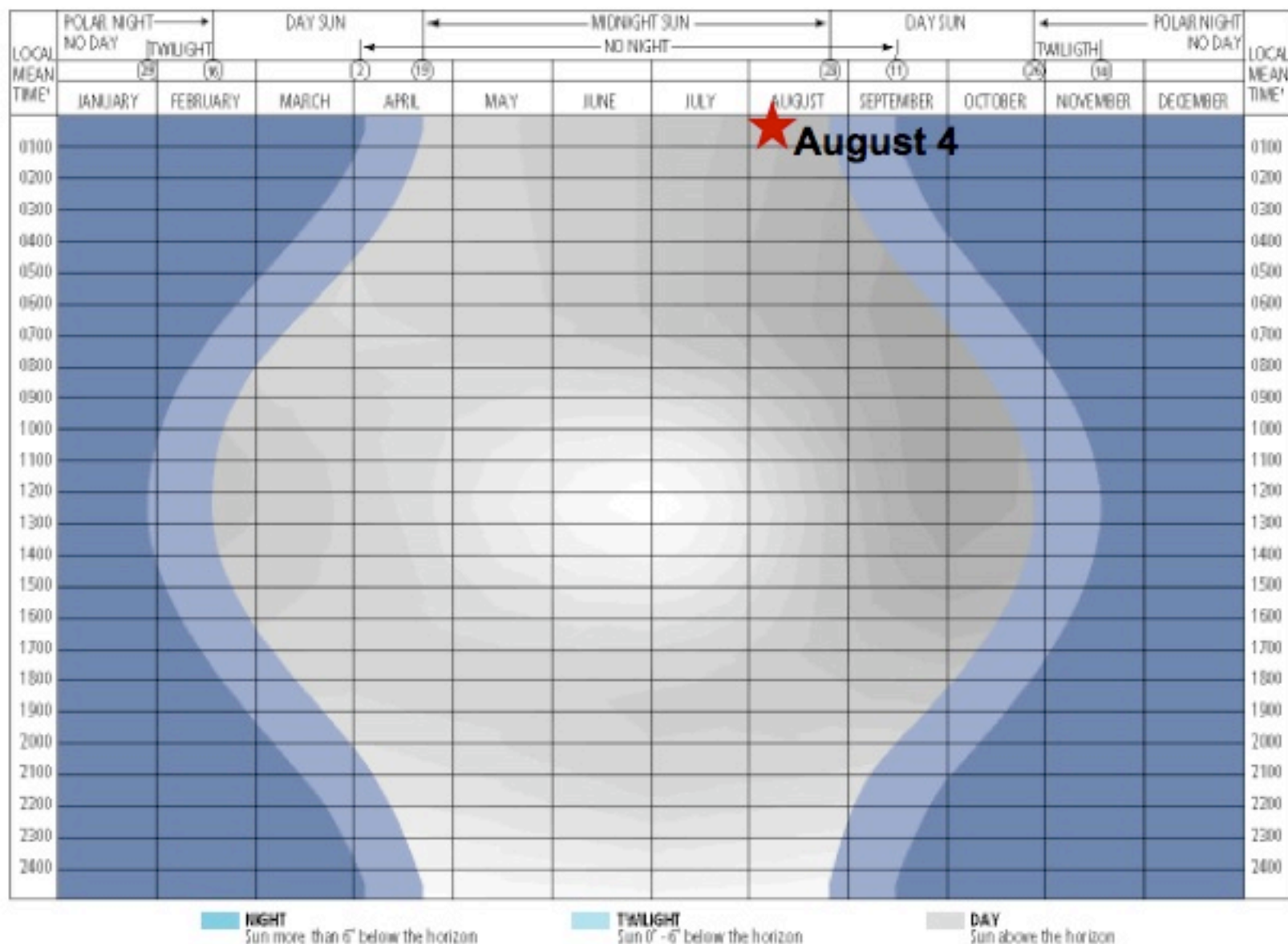
Geographic Overview of Svalbard

April



October

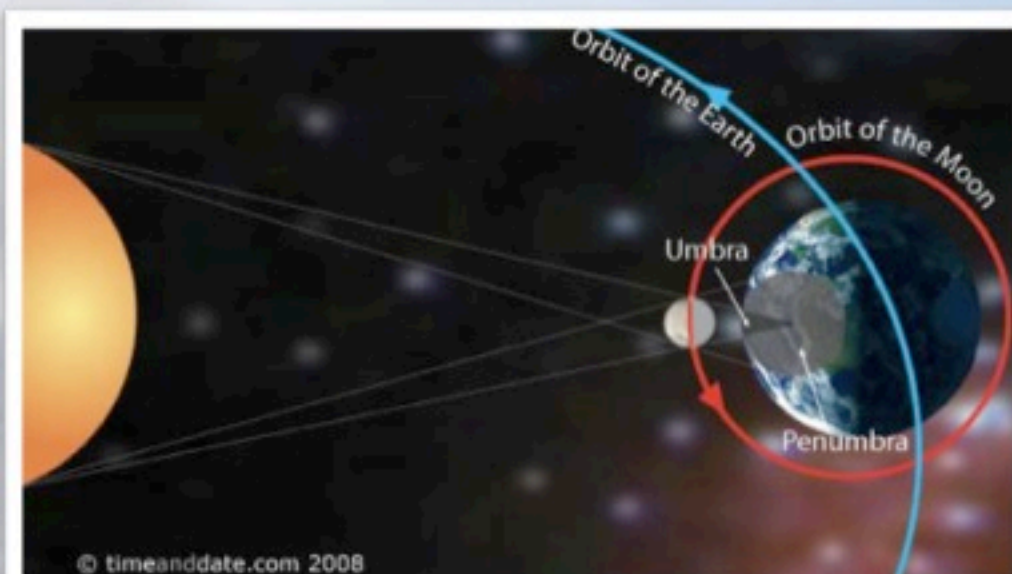




¹ Not adjusted for summer time.

Geographic Overview of Svalbard

August 1, 2008 Solar Eclipse Path



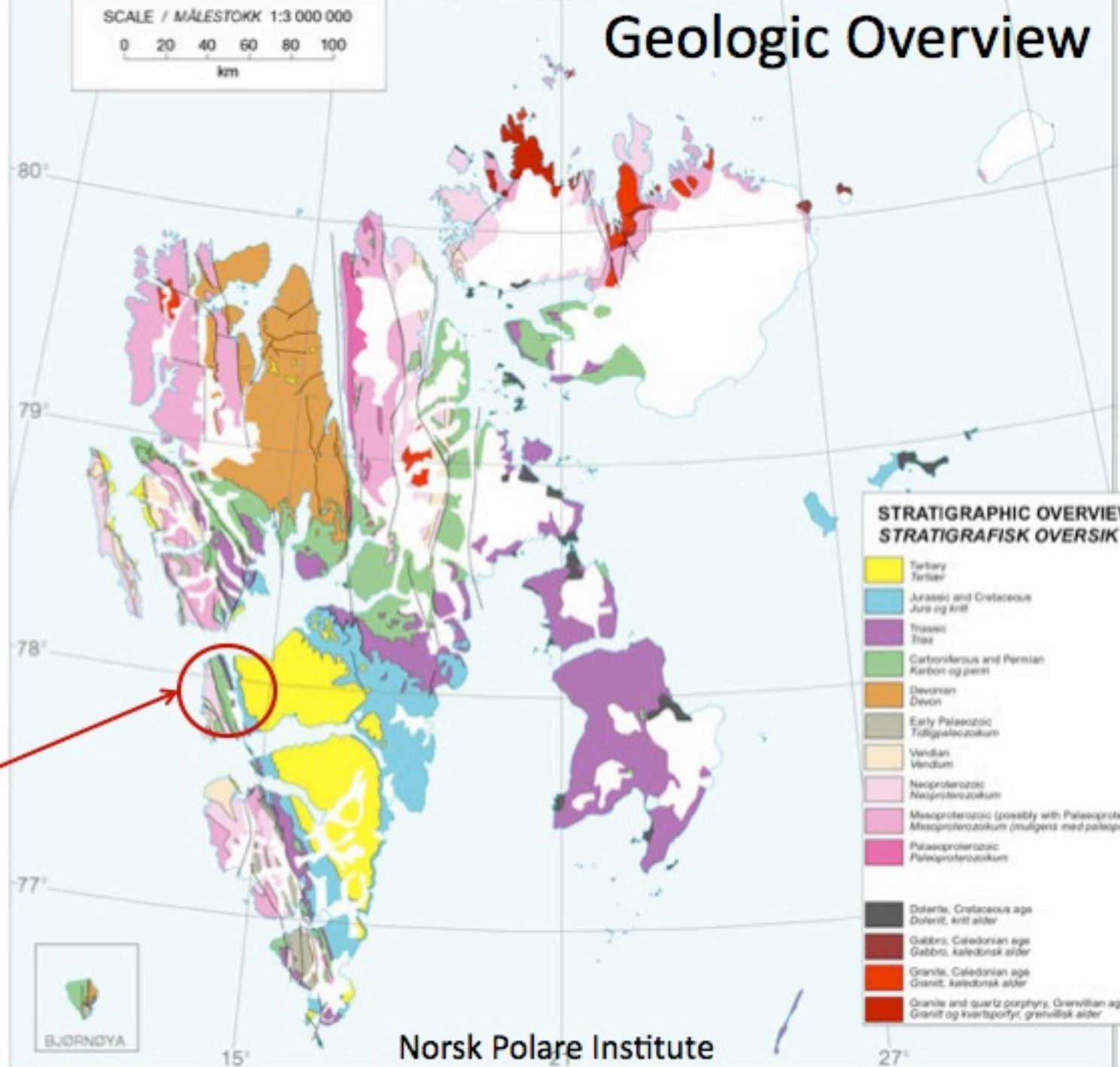
www.timeanddate.com



www.hermit.org



Geologic Overview



STRATIGRAPHIC OVERVIEW STRATIGRAFISK OVERSIKT

- Tertiary
Tertiær
- Jurassic and Cretaceous
Jura og Kritt
- Triassic
Trias
- Carboniferous and Permian
Karbon og perm
- Devonian
Devon
- Early Palaeozoic
Tidligpalaeozokum
- Vendian
Vendium
- Neoproterozoic
Neoproterozokum
- Mesoproterozoic (possibly with Palaeoproterozoic)
Mesoproterozokum (mulgens med paleoproteroz.)
- Palaeoproterozoic
Paleoproterozokum
- Dolerite, Cretaceous age
Doleritt, Kritt alder
- Gabbro, Caledonian age
Gabbro, kaledonisk alder
- Granite, Caledonian age
Granitt, kaledonisk alder
- Granite and quartz porphyry, Grenvillian age
Granitt og kvartsporfyr, grenvillisk alder

Kapp Linne

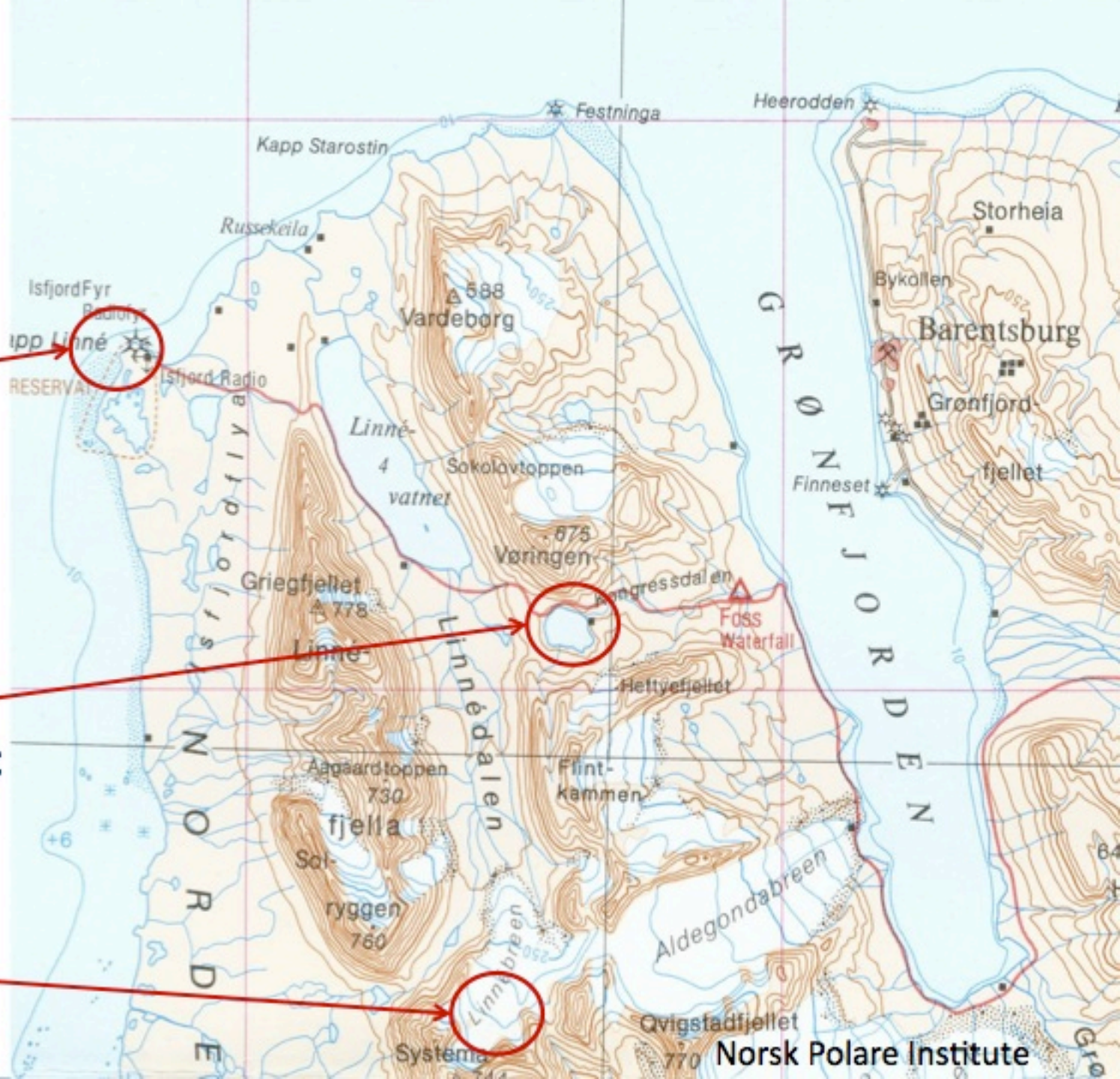


BJØRNØYA

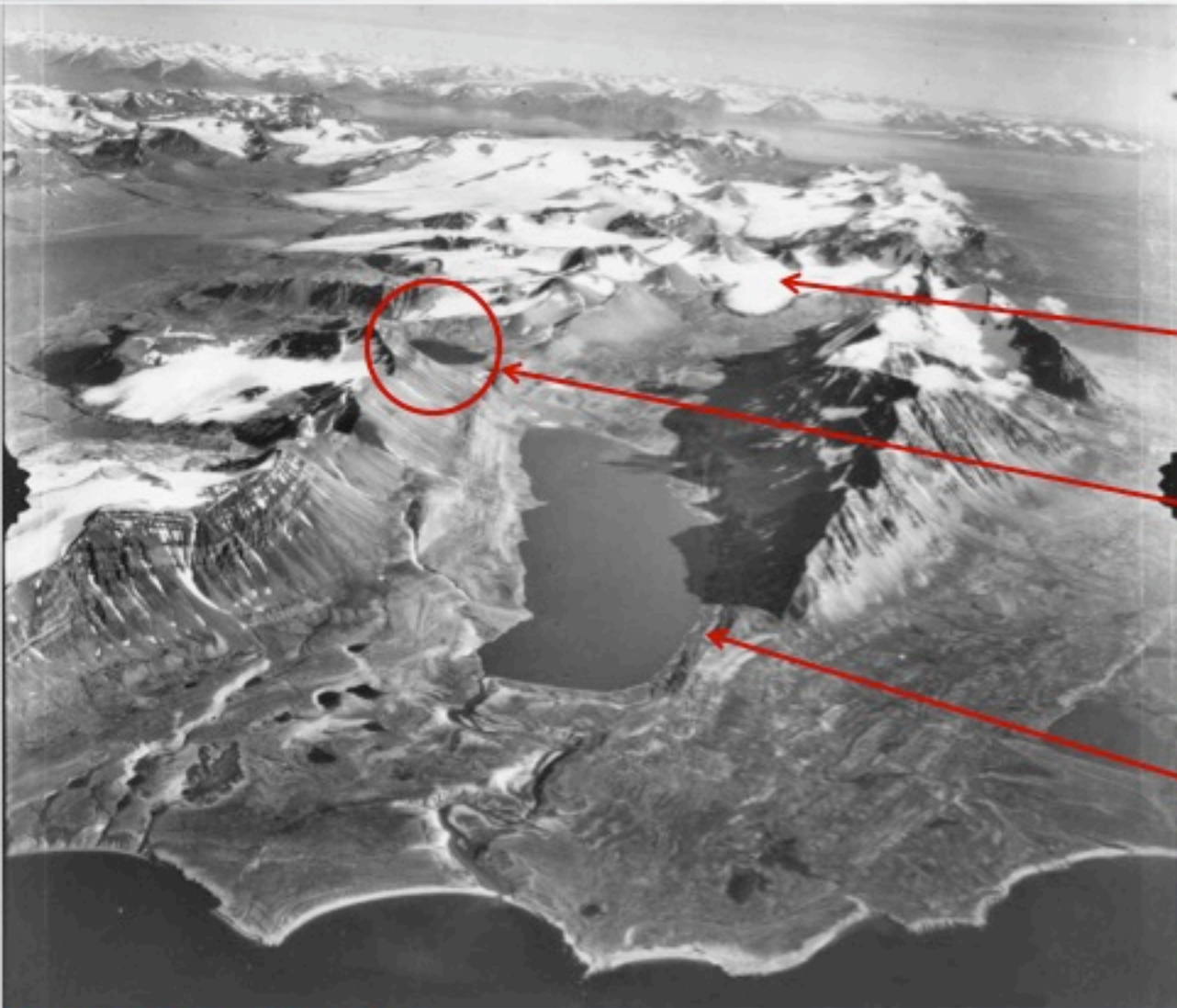
**Isfjord Radio
(our station)**

Kongressvatnet

Linnebreen



Geologic Overview



Aerial View of the
Linnedalen
looking South

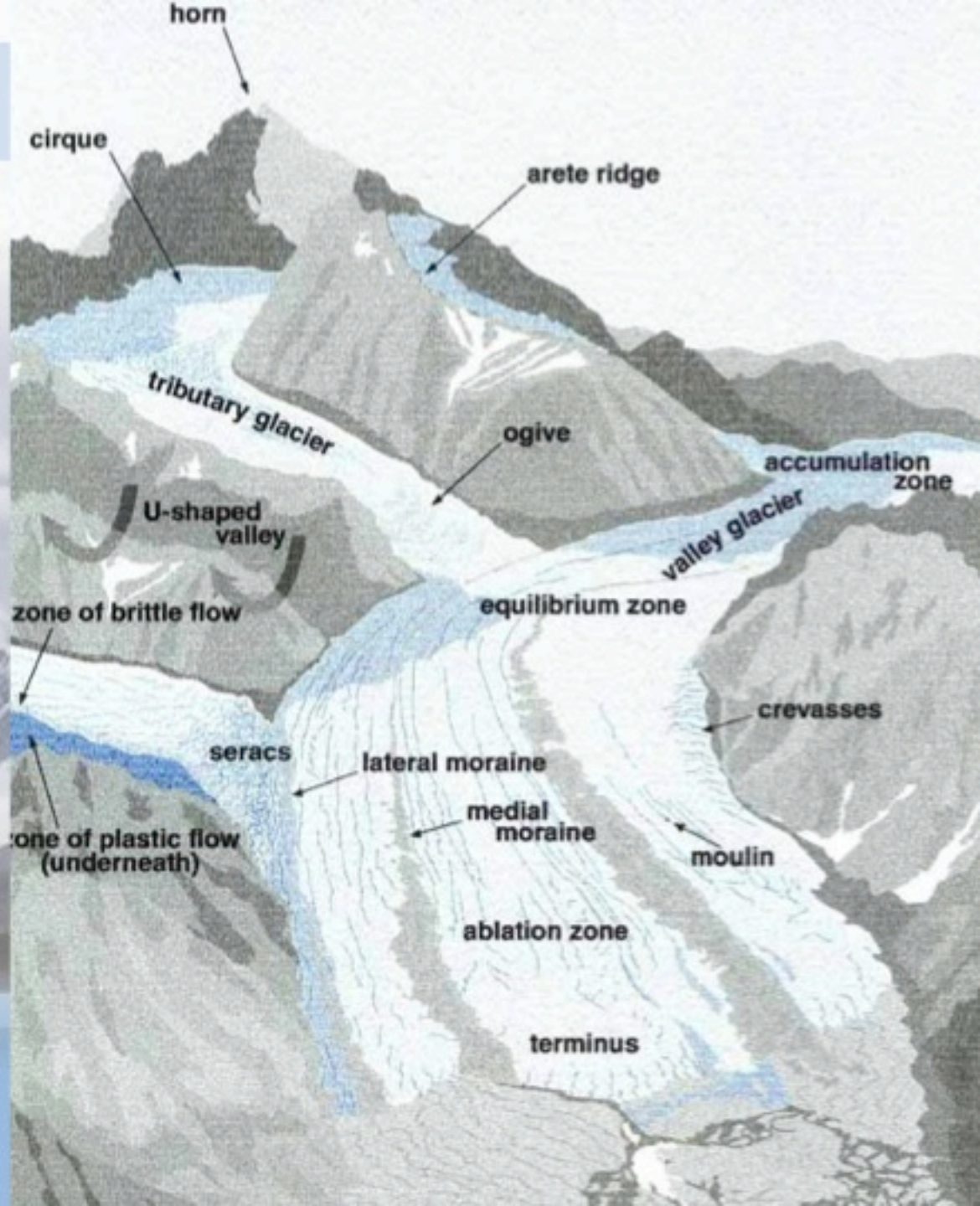
Linnebreen

Kongressvatnet

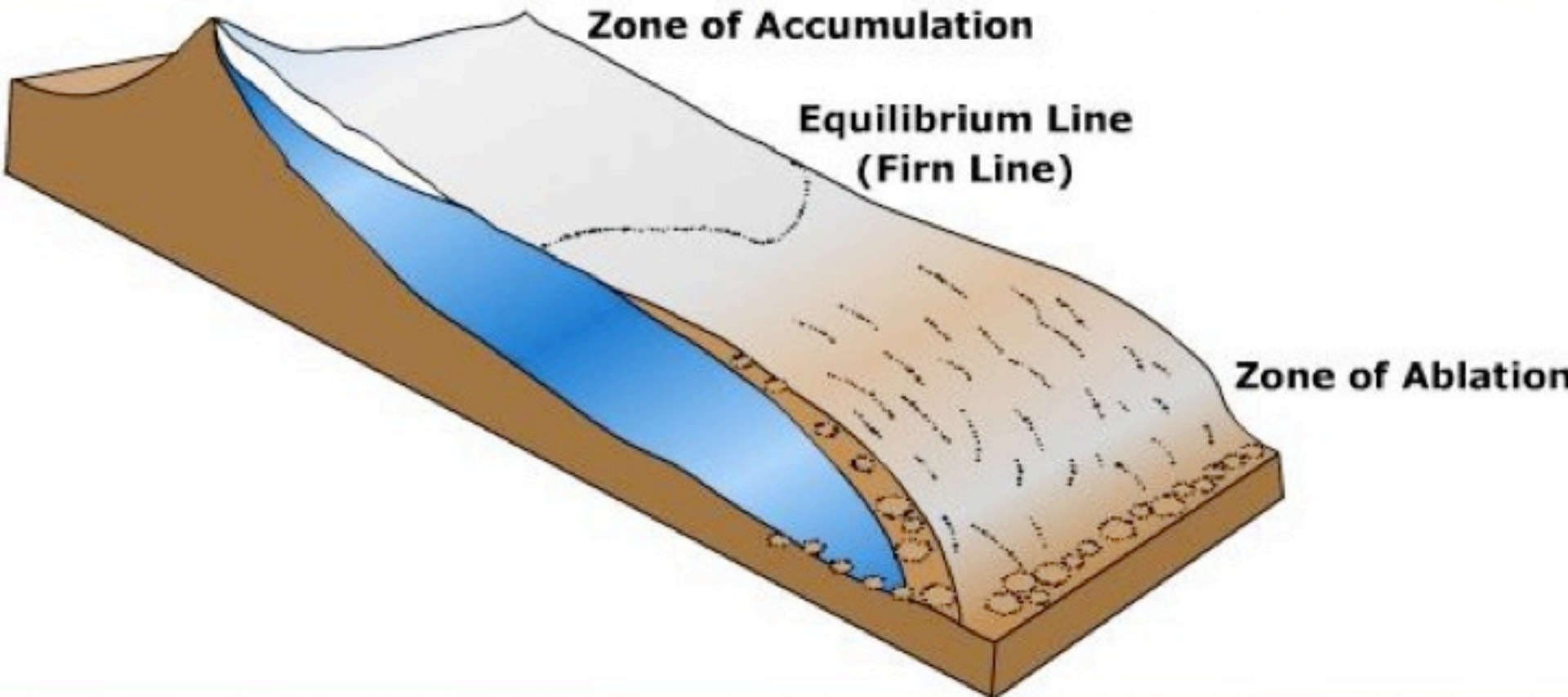
Linnevatnet


High Arctic Change '08
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Anatomy of a Glacier



Anatomy of a Glacier

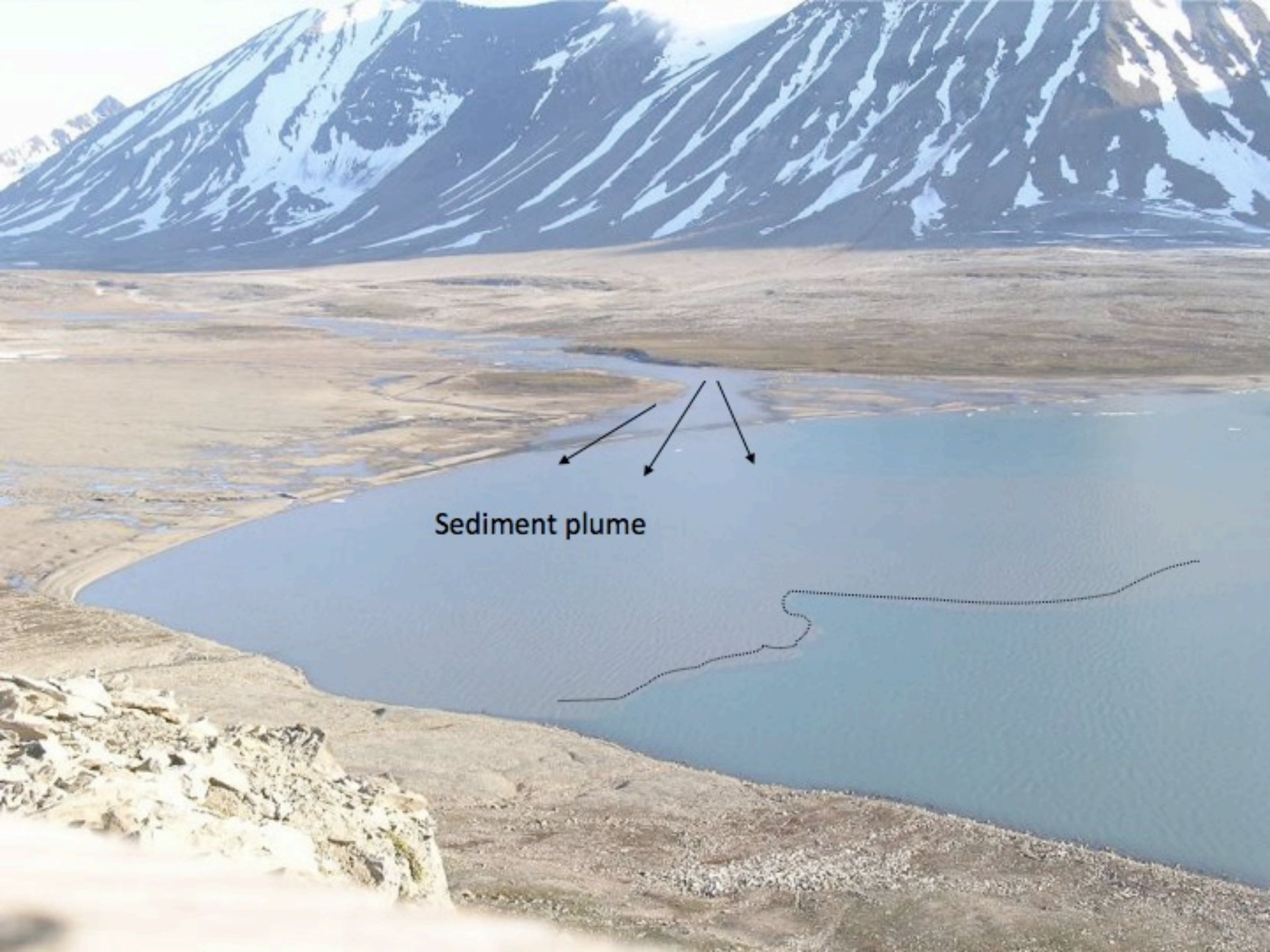




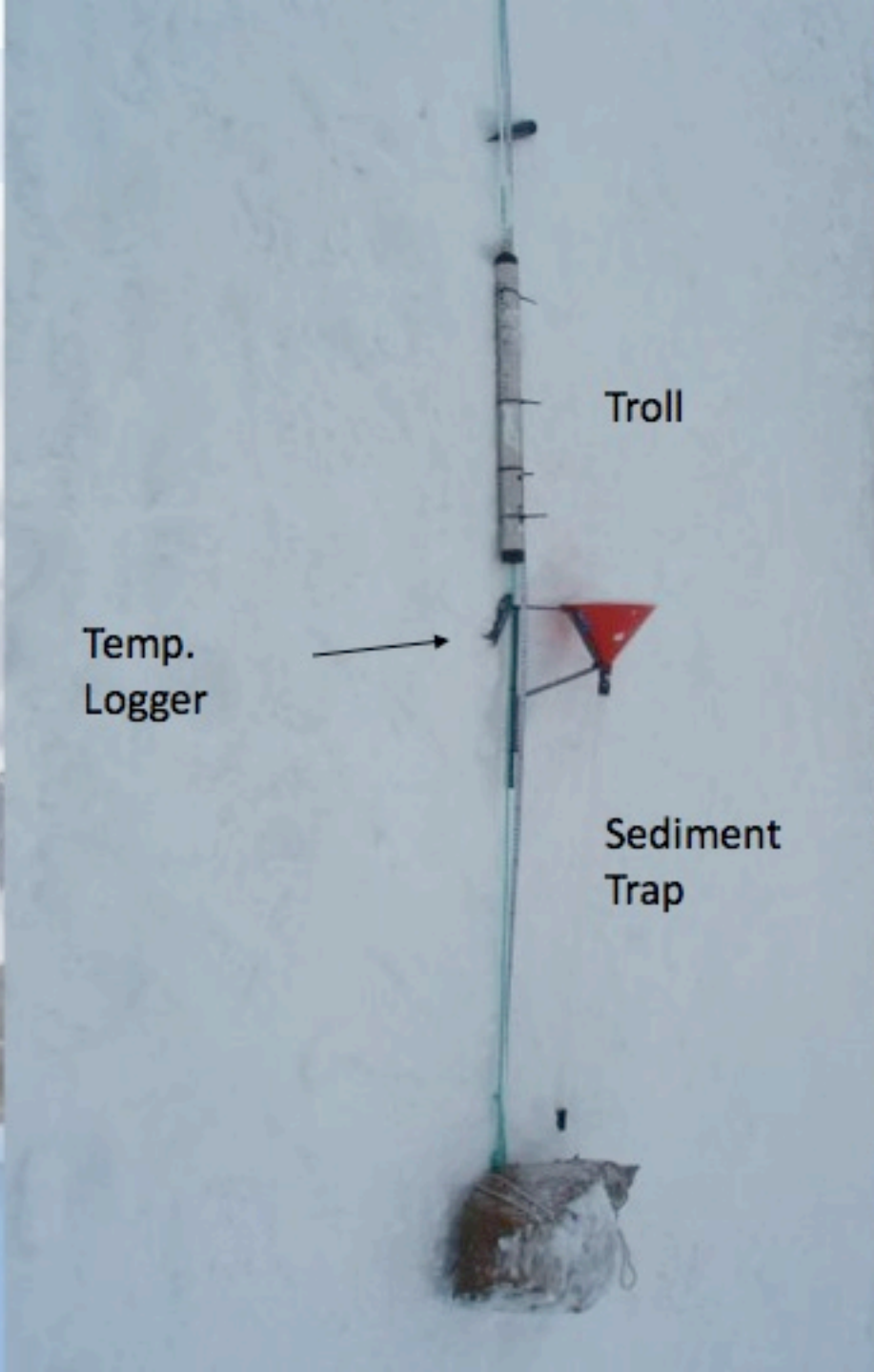
What are we doing here?

Plume Cam





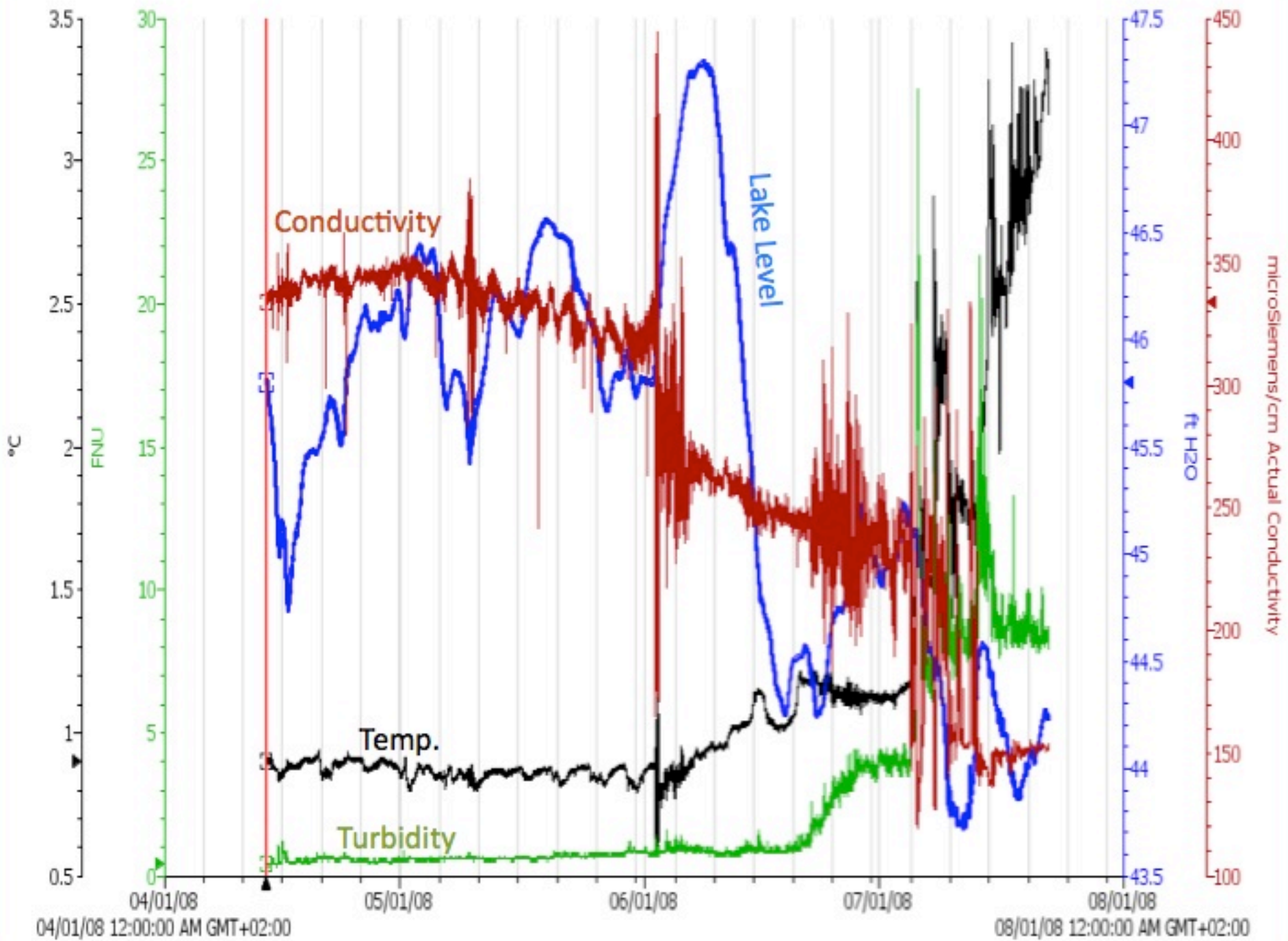
Sediment plume

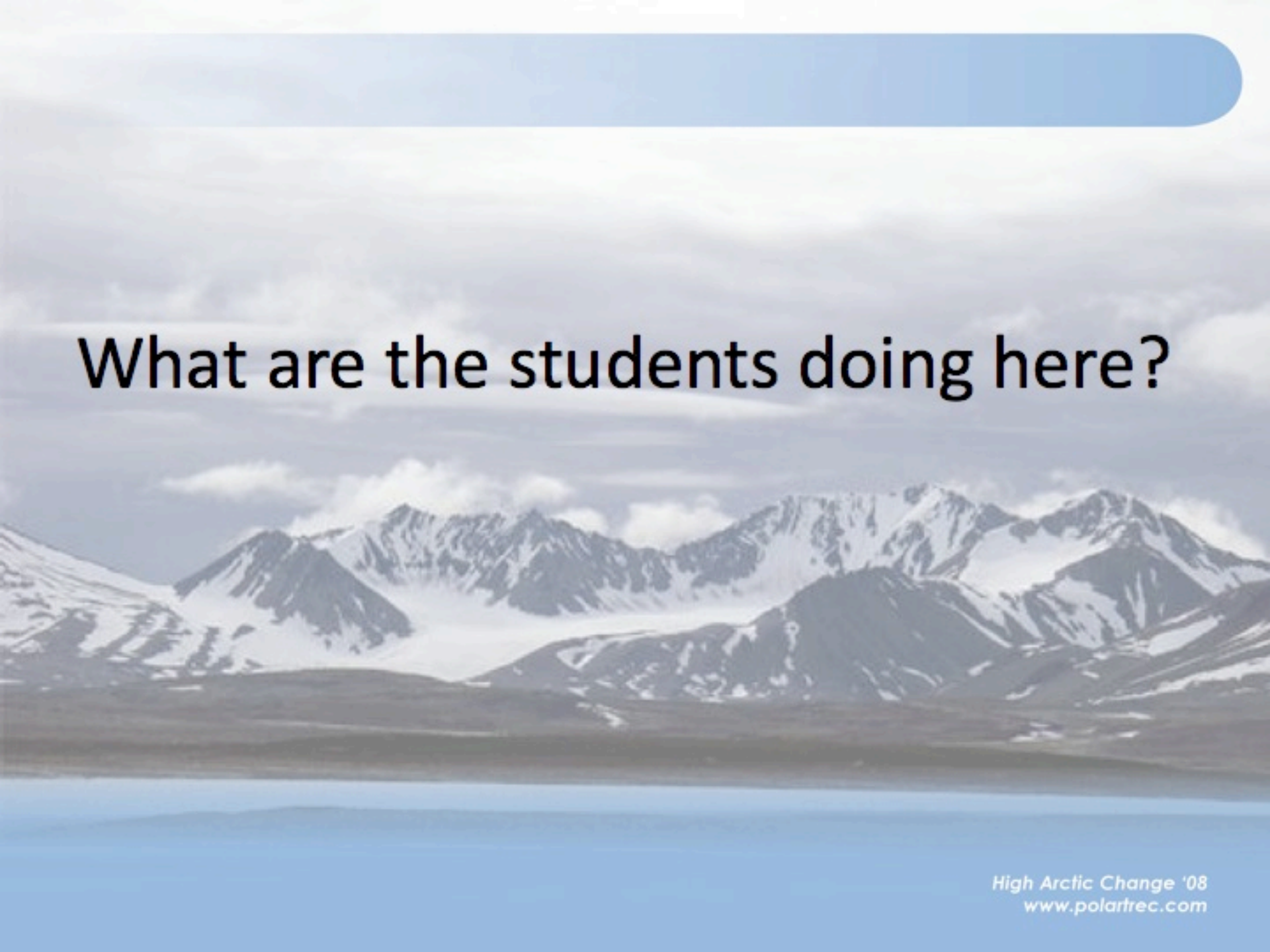


Troll

Temp.
Logger

Sediment
Trap





What are the students doing here?

Emily Mortazavi

University of Arizona



Secular Variation and Environmental Magnetic Reconstruction of Linnèvatnt and Kongressvatnt

Goal: To correlate cores
between the two lake
basins using their records
of earth's magnetic field

Jesse Burrows

Northern Arizona University

Stable isotope investigations of the Linne Glacier

Goal: Create a timeline of
stable isotopes of the
glacial ice to provide the
paleoclimatic history of
the ice

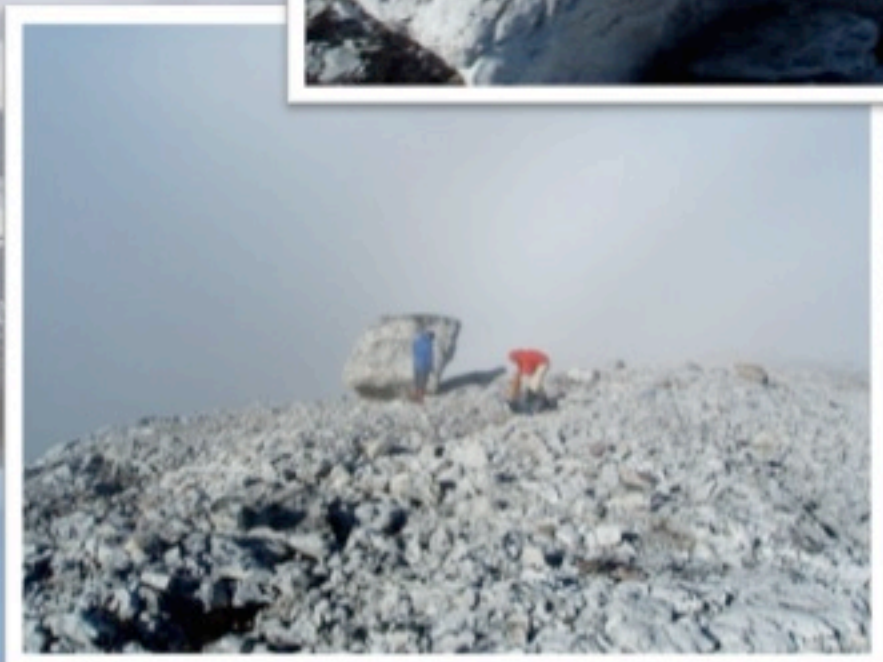


Anthony Novak

Oregon State University

Developing a ^{10}Be chronology for glacier fluctuations in Linnevatnet, Svalbard

My project goal is to better constrain the ages of older moraines in the valley, which mark deglaciation. Currently there are no ages for the older moraines, and hopefully my project will fix that. Which would show the first evidence (in the terrestrial realm) for possible glacial advances since the Last Glacial Maximum.



Influence of local weather in Linnédalen

My goal is to collect and analyse data from the weather stations situated in Linnédalen to see if there is or not an influence from the local weather conditions on the mass balance of the glacier. The analysis is performed on a five years data (2003-2008) and is related to the following relationship:

- The winter net mass balance and precipitations
- The summer ablation and MDD (melting degree days) and solar radiation
- Influence of the variation of the Environmental Lapse Rate in Linnédalen

Antoine Cousot

UNIS, Home Country: France



Stephen Bate

UNIS, Home Country: England

Reconstructing Equilibrium Line Altitudes in the Little Ice Age Glaciers of Linnédalen

Reproduce what glaciers in Linnédalen may have looked like during the Little Ice Age. Help develop an understanding of past glacial mass balance to aid in future modelling exercises.

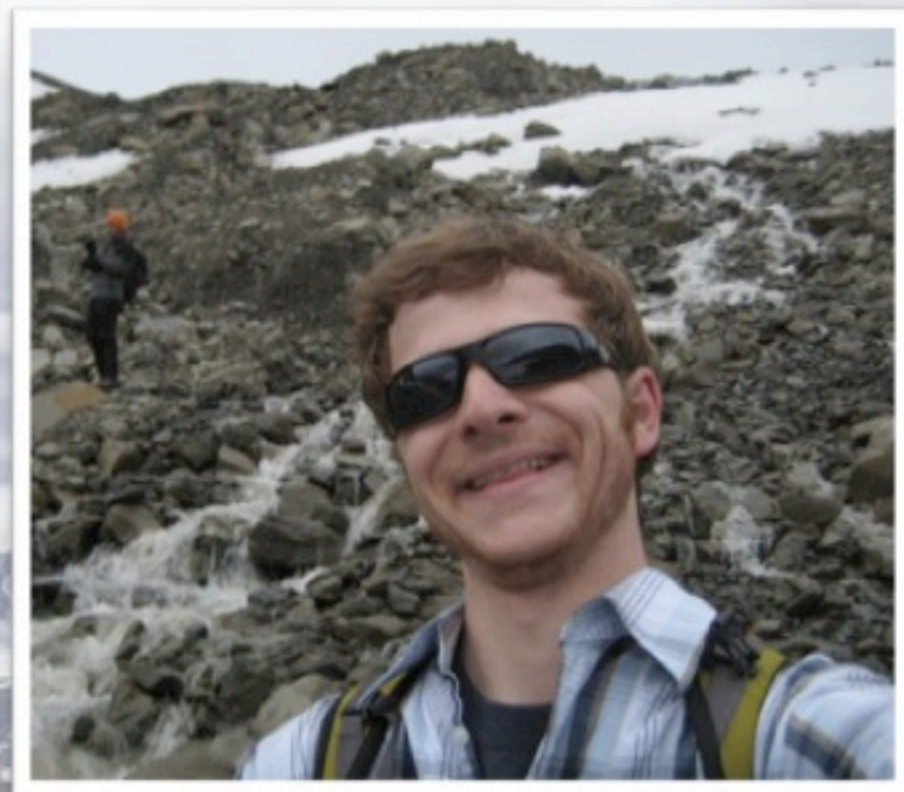


David Pompeani

University of Pittsburgh

Biochemical Changes of Lake Sediment Used as a Proxy Indicator of Climate Change during the Late Holocene in Kapp Linne', Spitsbergen

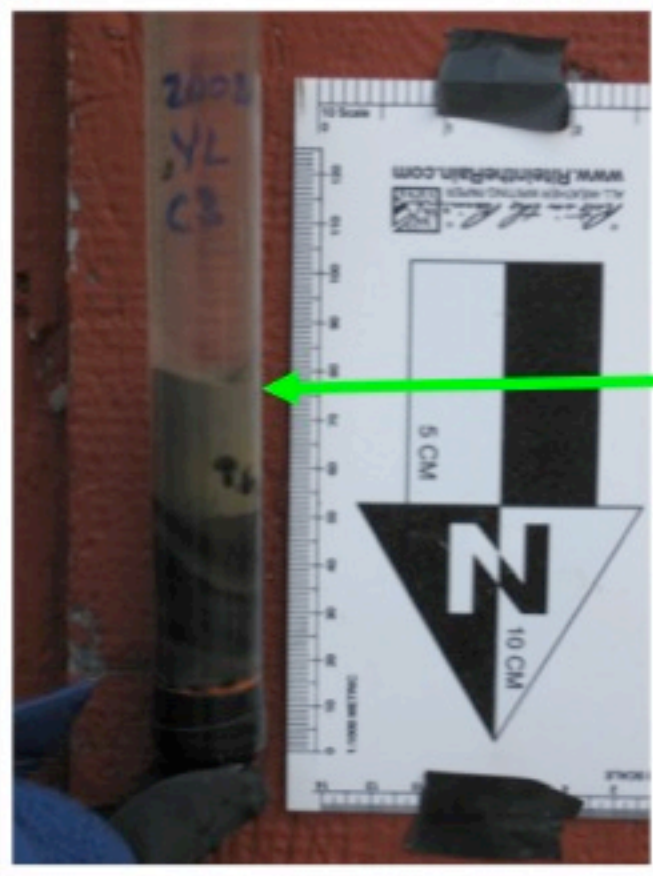
Goal: To narrow the timing of the entrance into the Little Ice Age and out of the Little Ice Age.





Megan Arnold Bates College

- Project: Five years of sedimentation in Linnévatnet, Svalbard: analysis of the influences of weather on sedimentation processes.
- Goal: Synthesize how weather has changed over the past 5 years and understand how sedimentation responded to those changes
- Methods: Analyzing sediment traps that have been collecting sediment in the Linné lake (see left)



Yearlong trap (C3 2007-2008), set close to the inlet at approximately 10.5 meters depth

**Holocene climate evolution
and sediment provenance
in Kongressdalen,
Spitsbergen, Svalbard**

Project Goals

- Determine a Chemical “fingerprint” for dominant rock units
- Compare rock chemistry to Kongressvatnet core sediments
- Apply changes in sediment provenance to Holocene glacial advance and retreat



Kristen Mitchell


Albion College



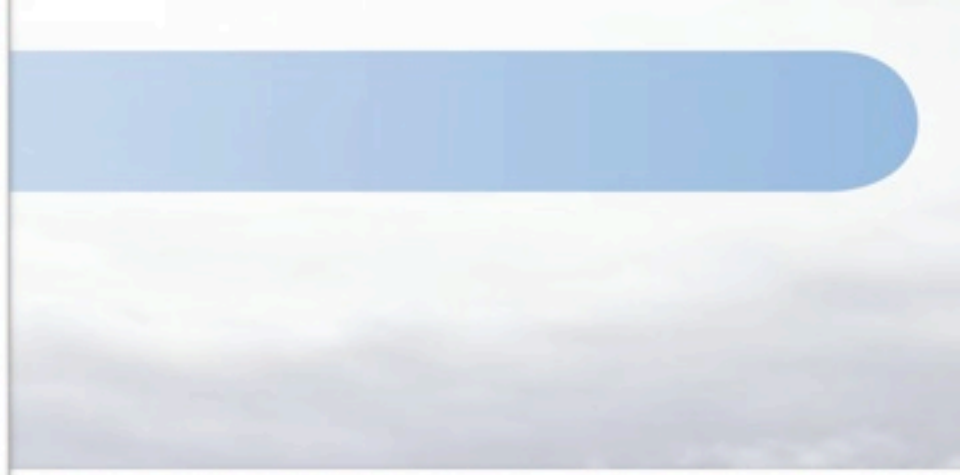
“A Comparative Study of Weather Parameters to Glacial Ablation of the Linné Glacier in Svalbard, Norwegian Arctic.”

Project Goal: To gain a better understanding of the ablation processes of the Linné Glacier and quantify how weather (and subsequently climate) affect it.

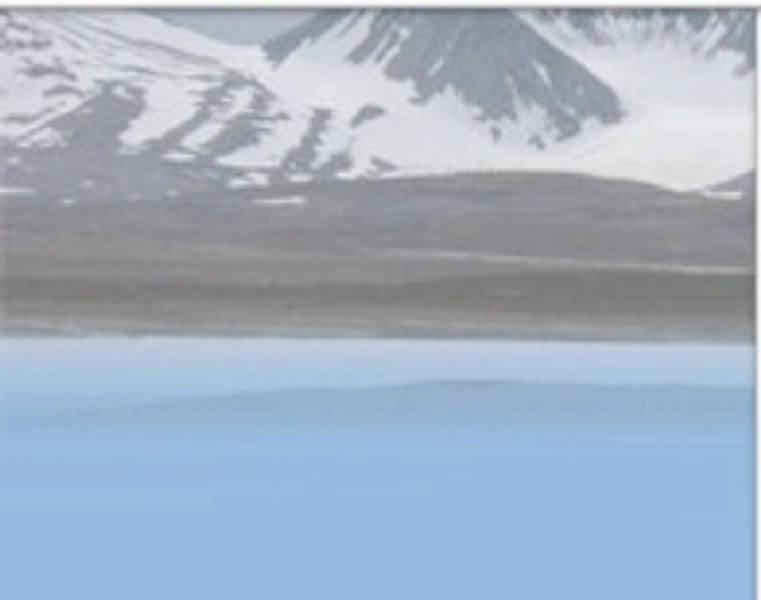
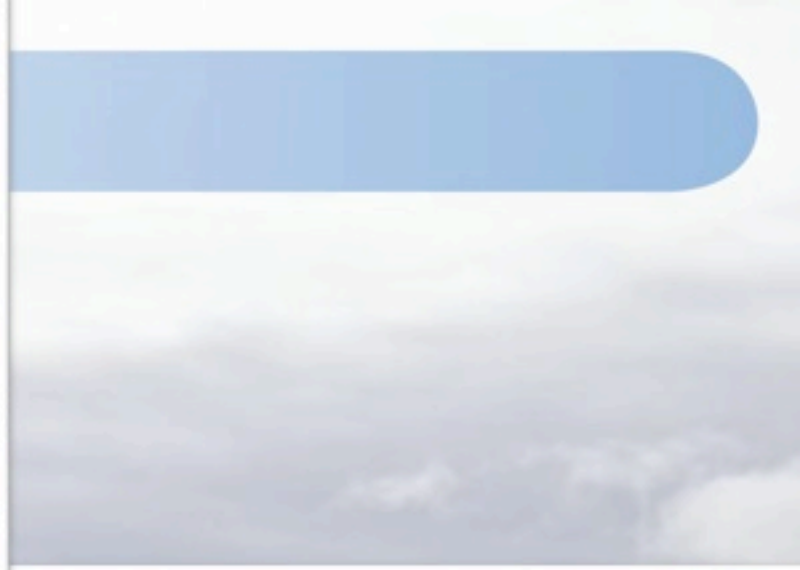


A scenic landscape of snow-capped mountains and a calm lake under a cloudy sky. The mountains are rugged and covered in patches of snow, with a large glacier visible in the valley. The lake in the foreground is still, reflecting the sky and the mountains. The sky is filled with soft, white clouds.

What's it like working in the High Arctic?



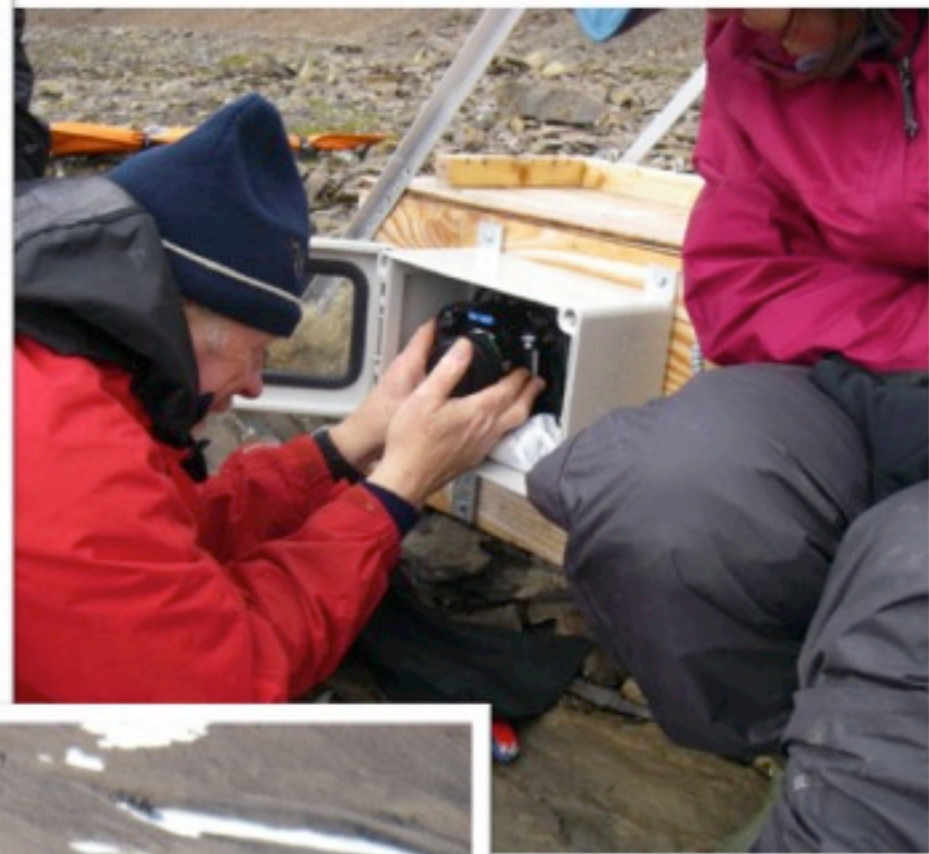


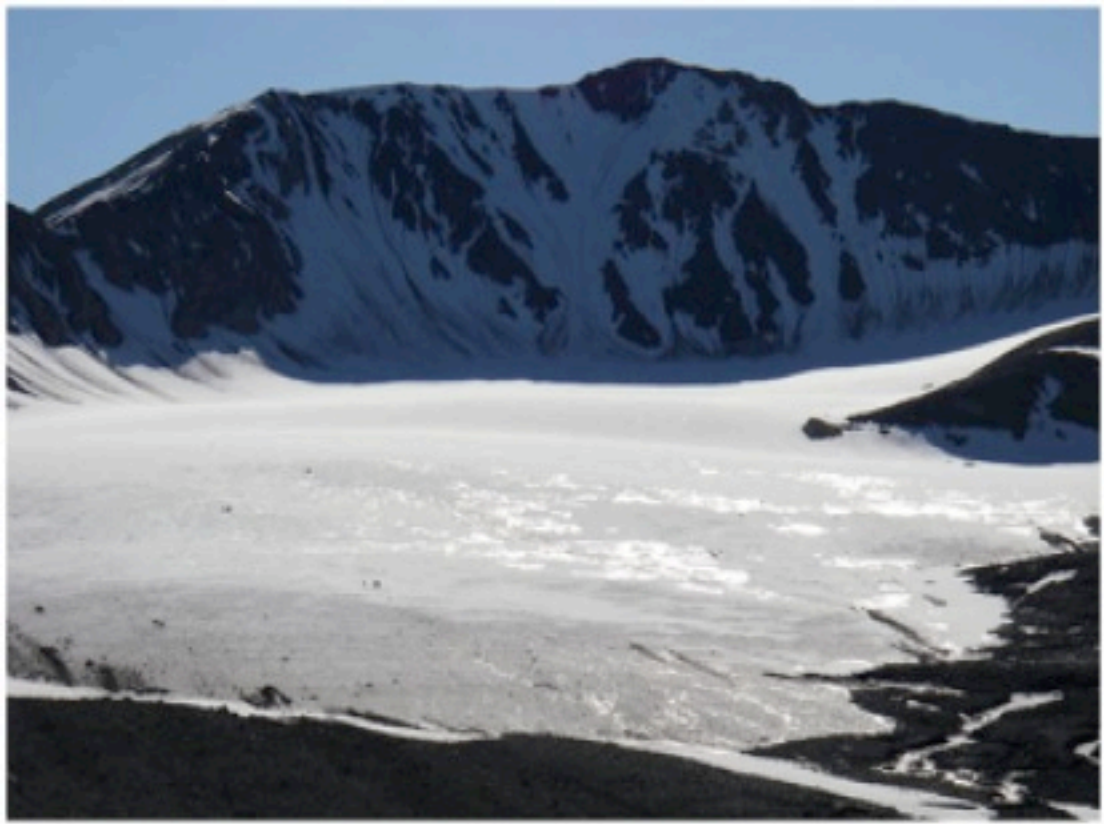




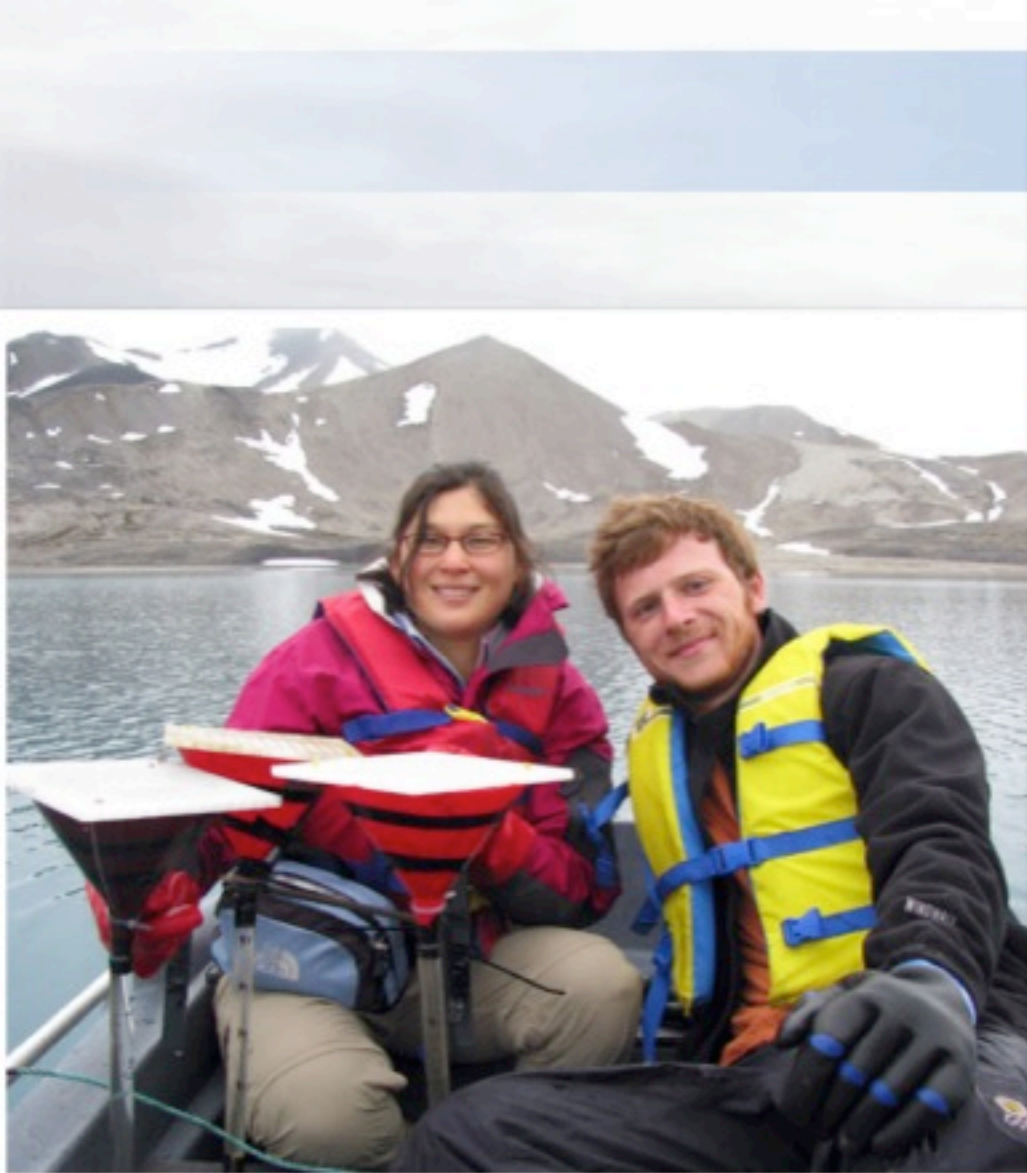


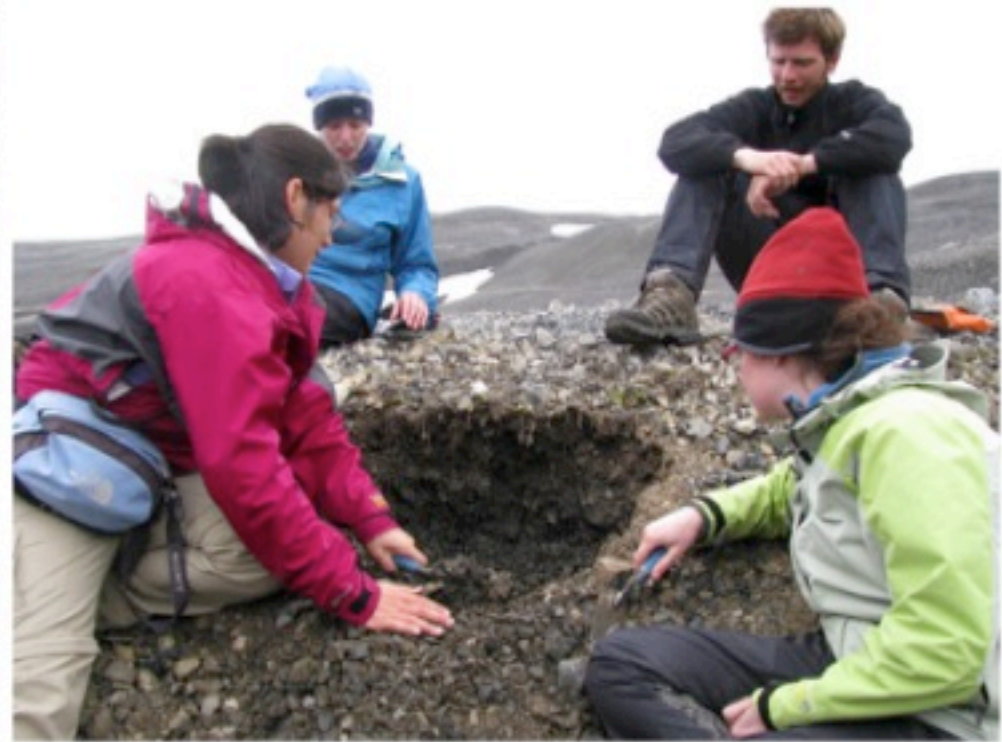












Farewell from the High Arctic

Questions?

Remember, you can also ask questions
to Missy and the team at:
www.polartrec.com!



Check out and register for upcoming events!



5 August 2008—Frank Kelley and team in Barrow, Alaska

6 August 2008—Missy Holzer and team in Svalbard, Norway

Register for these events and watch for others at www.polartrec.com!



Sound Like Fun?

- Follow the expeditions with your classroom this year!
- Participate in Live from IPY! Events
- Join the Polar Education List:
<http://www.arcus.org/Education/educationlist/index.html>
- Become a PolarTREC Teacher: Applications will be accepted for the 2009-2010 Seasons, this fall!

www.polartrec.com

Thank You!



For more information, please
visit www.polartrec.com

Or Call 907-474-1600

Email: infr@polartrec.com

