

Welcome to a Special Live Event!

with Michelle Brown from
McMurdo Station, Antarctica

Antarctica Day Celebration!

1 December 2015

Blackboard collaborate

Sides will be shown here

Exit the presentation

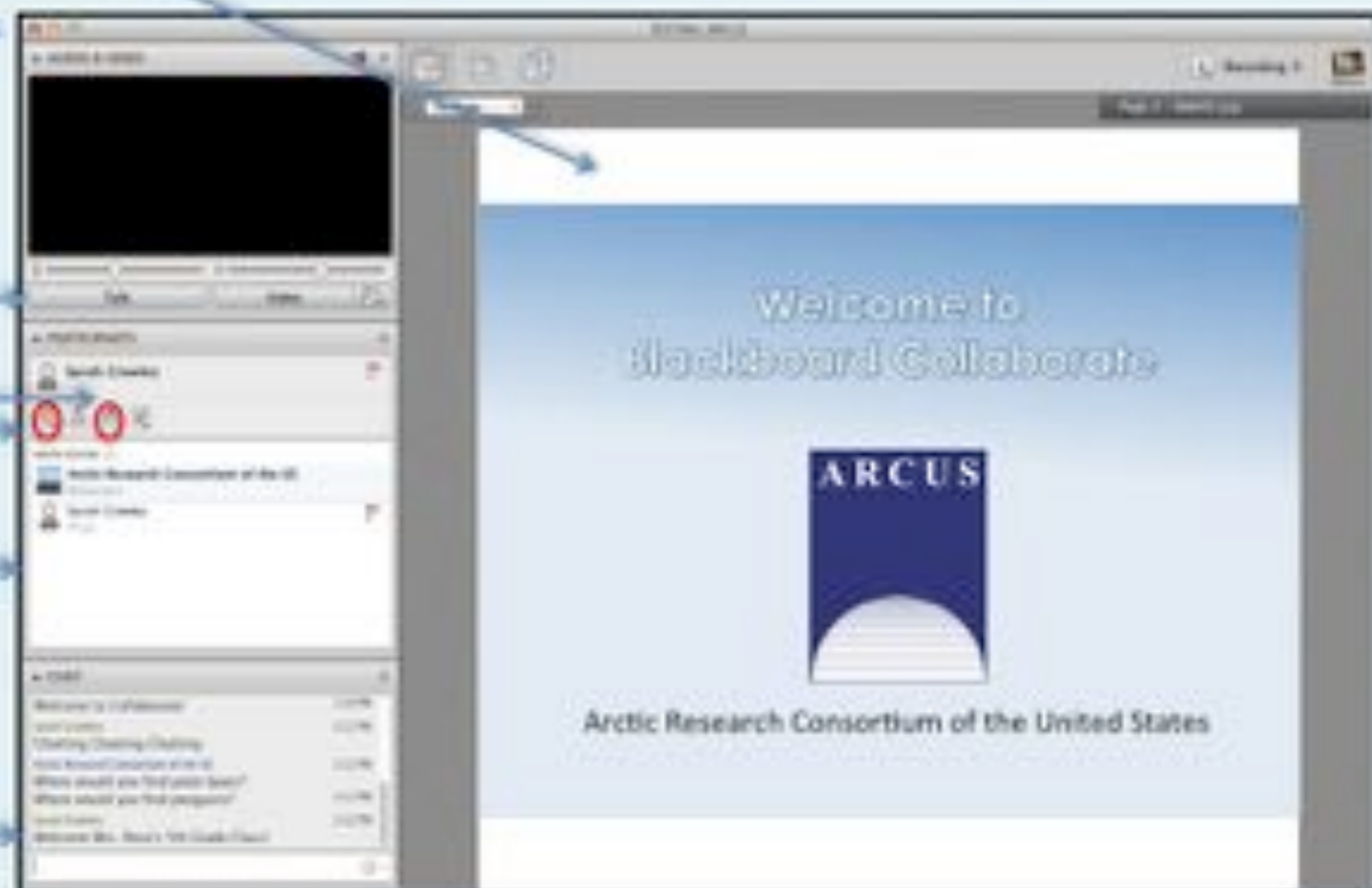
Click to Talk,
Unclick to finish talking

Raise your hand to ask a question

Share with emoticons

List of all participants

Chat with one person or the entire group



The screenshot displays the Blackboard Collaborate interface. On the left is a sidebar with several sections: a video feed (currently black), a toolbar with icons for exit, talk, and hand-raising, a 'Participants' list showing 'Sarah Crocker' with a red hand icon, a 'Messages' section for the 'Arctic Research Consortium of the US', and a 'Chat' window with a list of messages. On the right is the main presentation area showing a slide with the text 'Welcome to Blackboard Collaborate' and the 'ARCUS Arctic Research Consortium of the United States' logo.

Please Note:

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

Participant Introductions

Please type in the chat box:

- ✓ Name
- ✓ Affiliation (School, Institution, Etc.)
- ✓ The number of students and adults participating with you in the same location

What is PolarTREC?

PolarTREC is a professional development experience in which K-12 teachers are paired with researchers for 2-6 week research experiences in the polar regions.

Teachers from around the United States will join scientists in the Arctic and Antarctica to learn about science, the polar regions, and to share what they have learned with their students and communities.

Questions

During the Presentation:

- Type your question in the text chat box

At the End of the Presentation:

- Raise your hand with the “hand button”.
- PolarTREC staff will call on you.
- Speak loud and clear and directly into the phone to ask your question.

Click on the Talk button to speak.

Unclick when you are done.

Antarctica Day

How humans are impacting and protecting
the last pristine continent on Earth

Environmental Monitoring Team, B-518M December 1, 2015



Support for this research has been provided by

Environmental, Safety and Health Section Office of Polar Programs, National Science Foundation

PolarTREC

Special thanks to Polly Penhale for her support over the years



Meet the Research Team

Terry

Carl

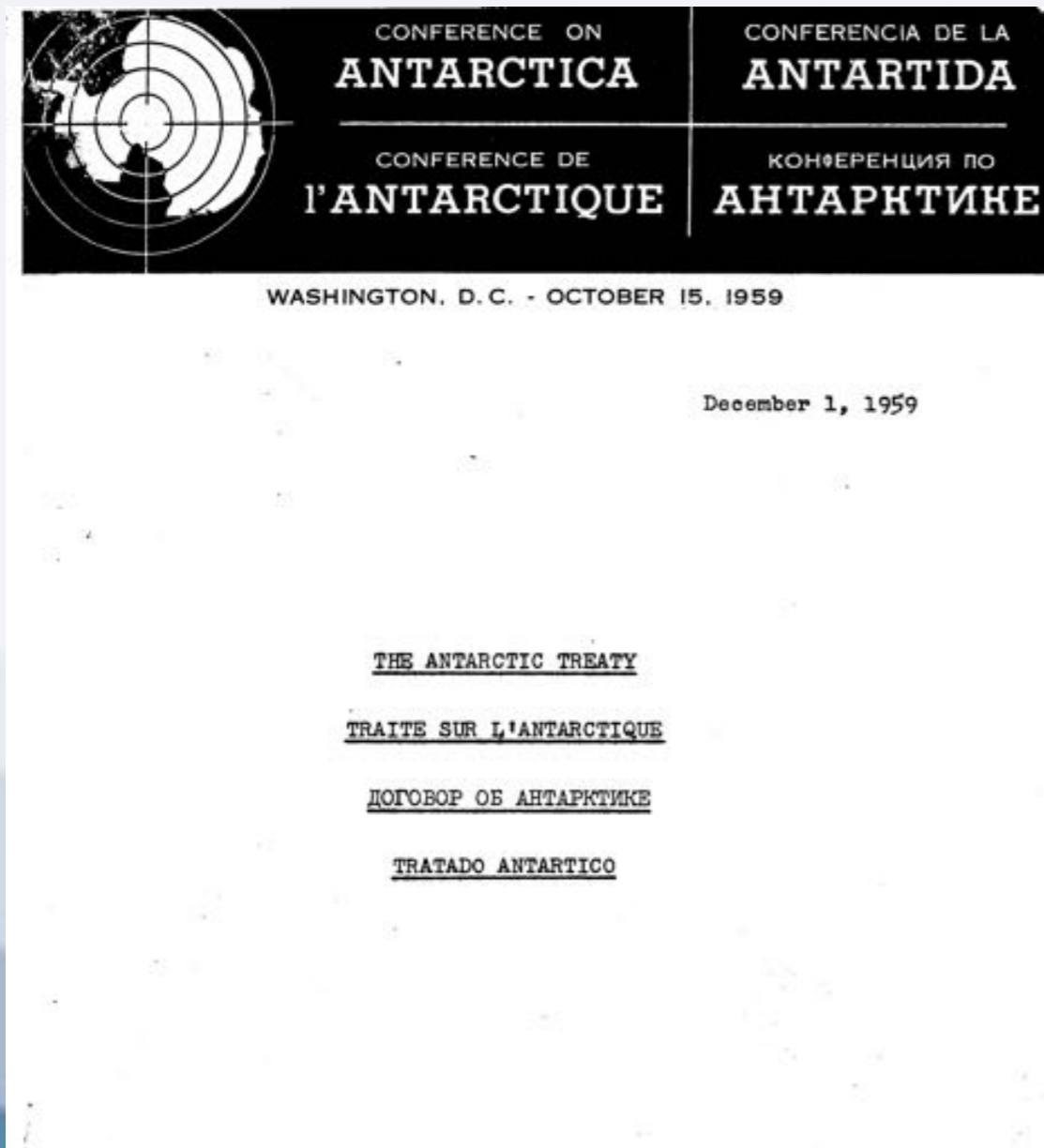
Steve

Andrew

Michelle



The Antarctic Treaty



1959 - Antarctic Treaty

1972 - Conservation of
Antarctic Seals

1980 - Conservation of
Antarctic Marine Living
Resources

1991 - Protocol on
Environmental Protection



Map courtesy of astro.uchicago.edu/cara/vtour



Map courtesy of USGS



History of McMurdo Station



Photograph by R. Skelton, Discovery Expedition, 1904

McMurdo Station, 1955-1956



Photo courtesy of David Grisez

McMurdo Station's Polluted Past



McMurdo Station's Polluted Past



<http://www.southpolestation.com/env/env1.html>



Kvittek, Bretz and Lampietro (1998)

The Roots of our Research: Bahia Paraiso



Photo courtesy of <http://www.histarmar.com.ar>



Photo courtesy of <http://www.histarmar.com.ar>



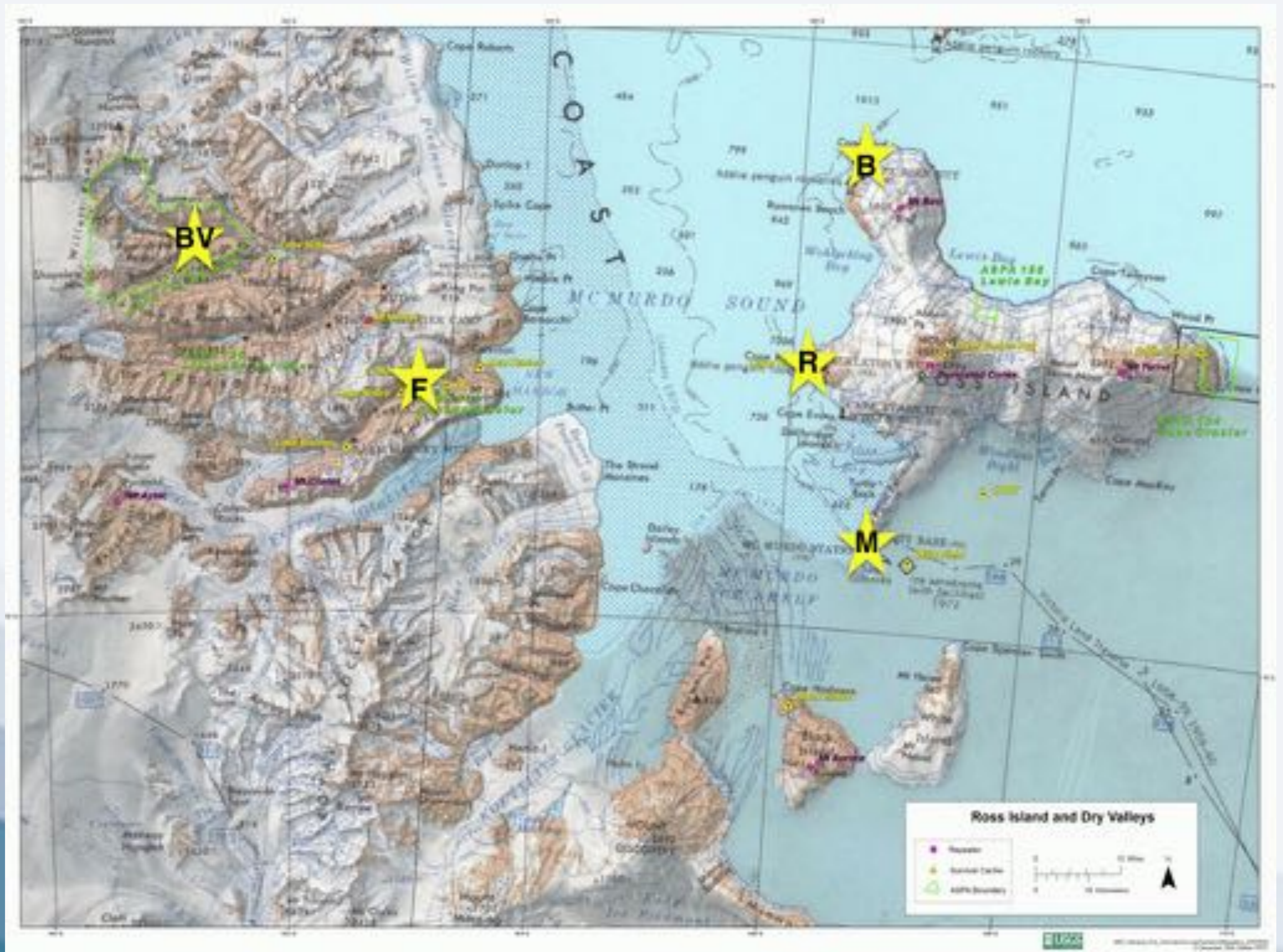
Photo courtesy of <http://www.histarmar.com.ar>



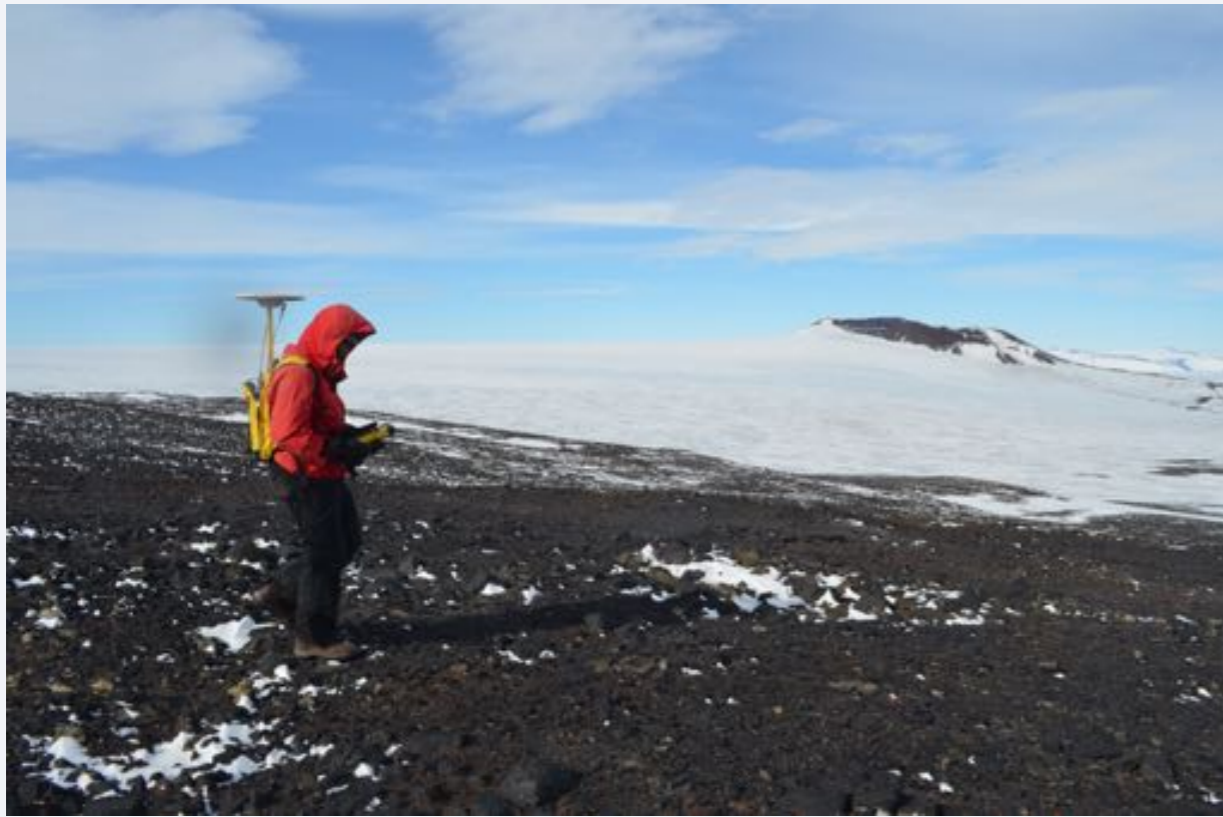
Research Goals

- Establish a physical and chemical “footprint” of McMurdo Station
- Monitor pollutant levels in heavily impacted areas over time.

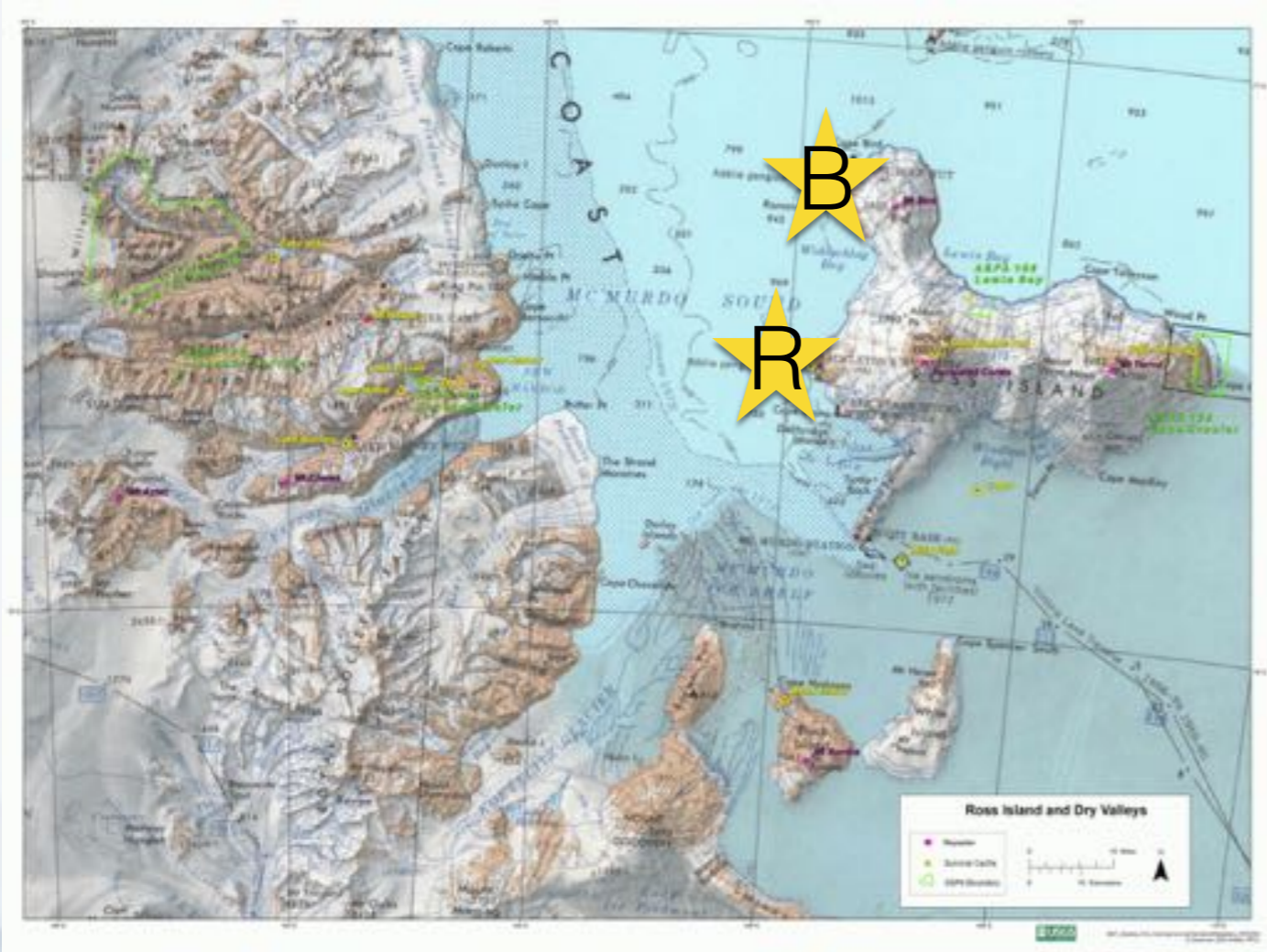
Sampling Locations on Land



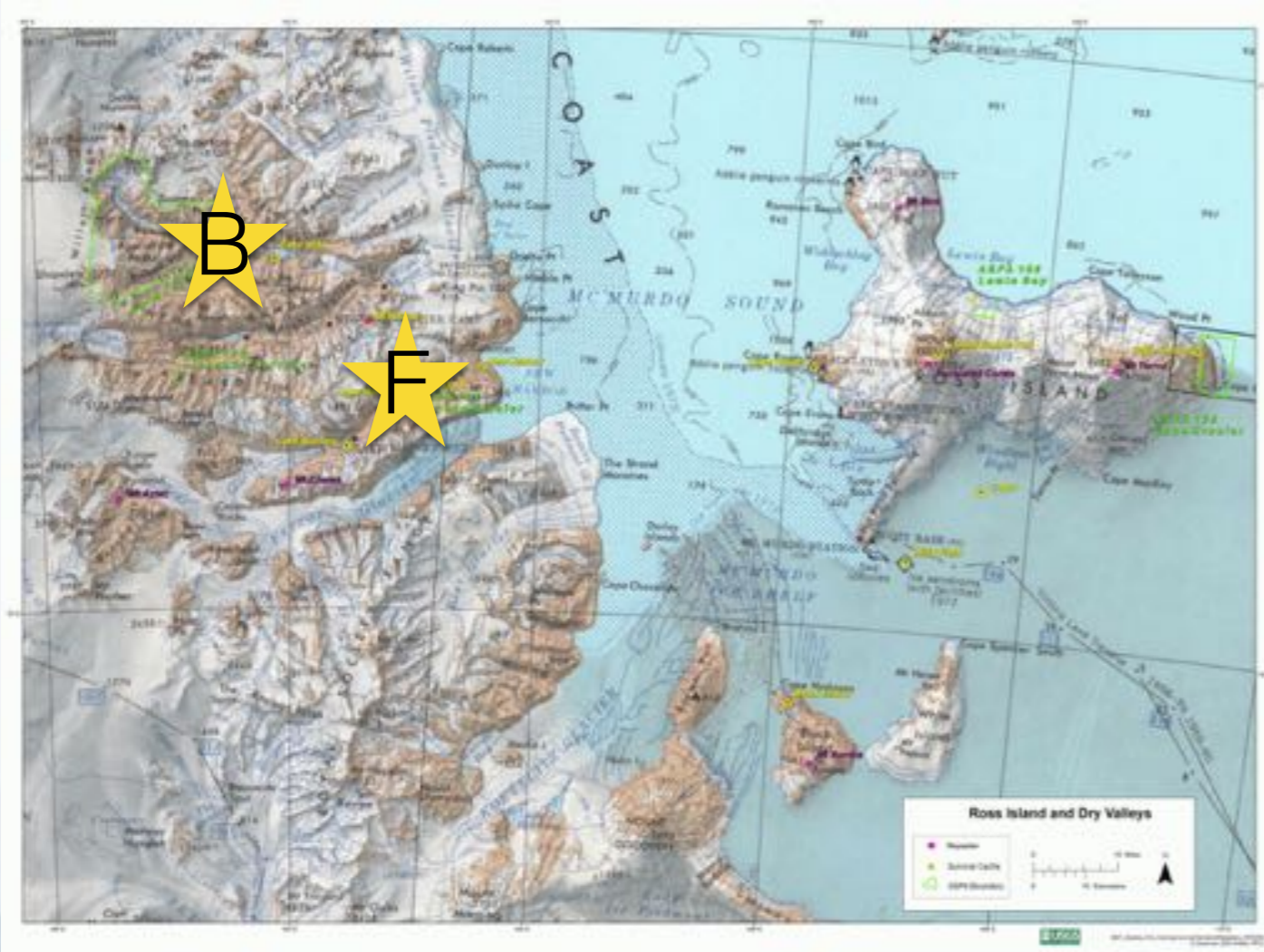
Collecting Samples on Land



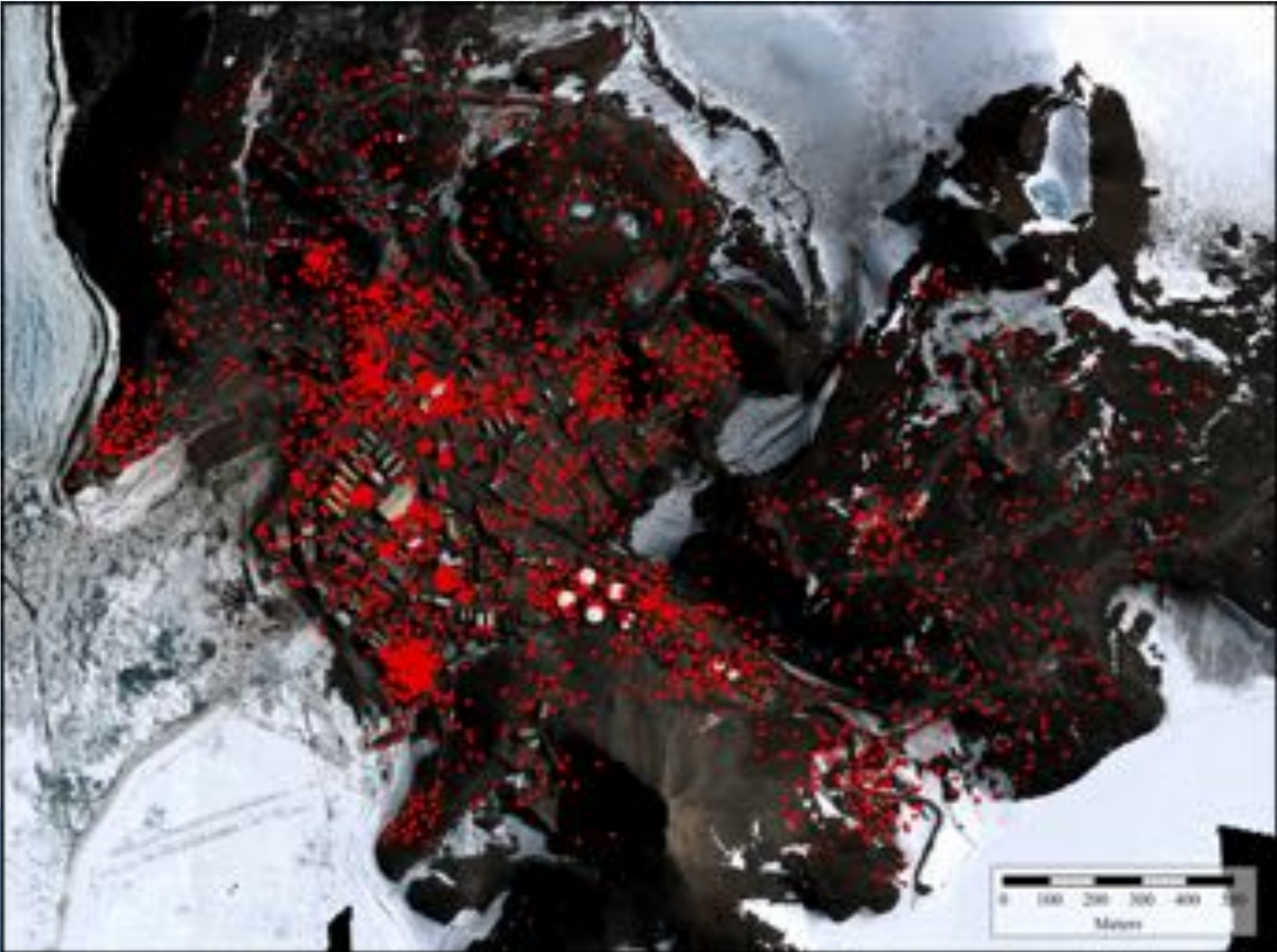
Control Samples on Land: Cape Bird & Cape Royds



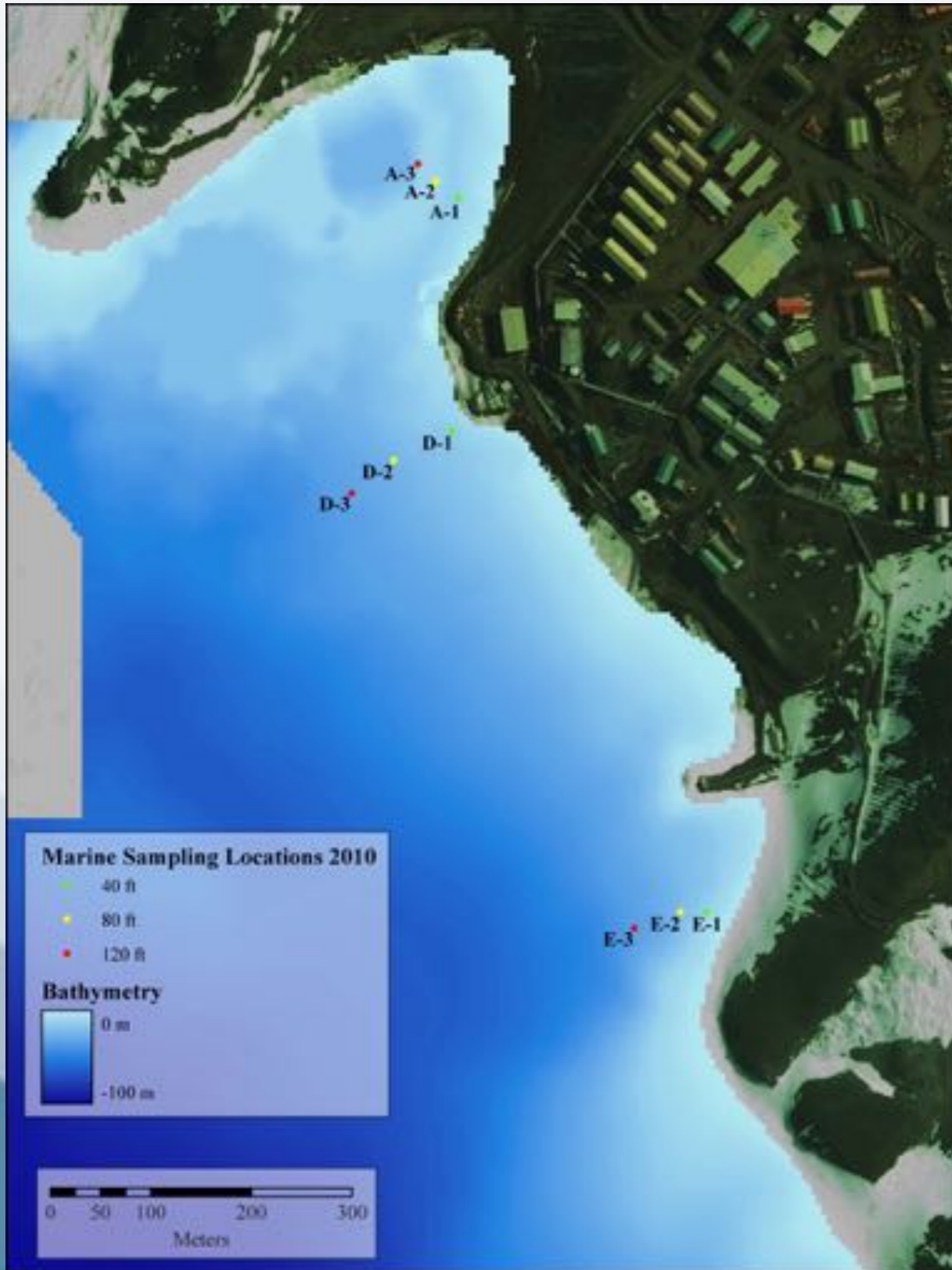
Sampling Remote Field Camps



Sediment Samples Collected on Land (1999-2011)



Collecting Samples on the Seafloor



Collecting Samples on the Seafloor

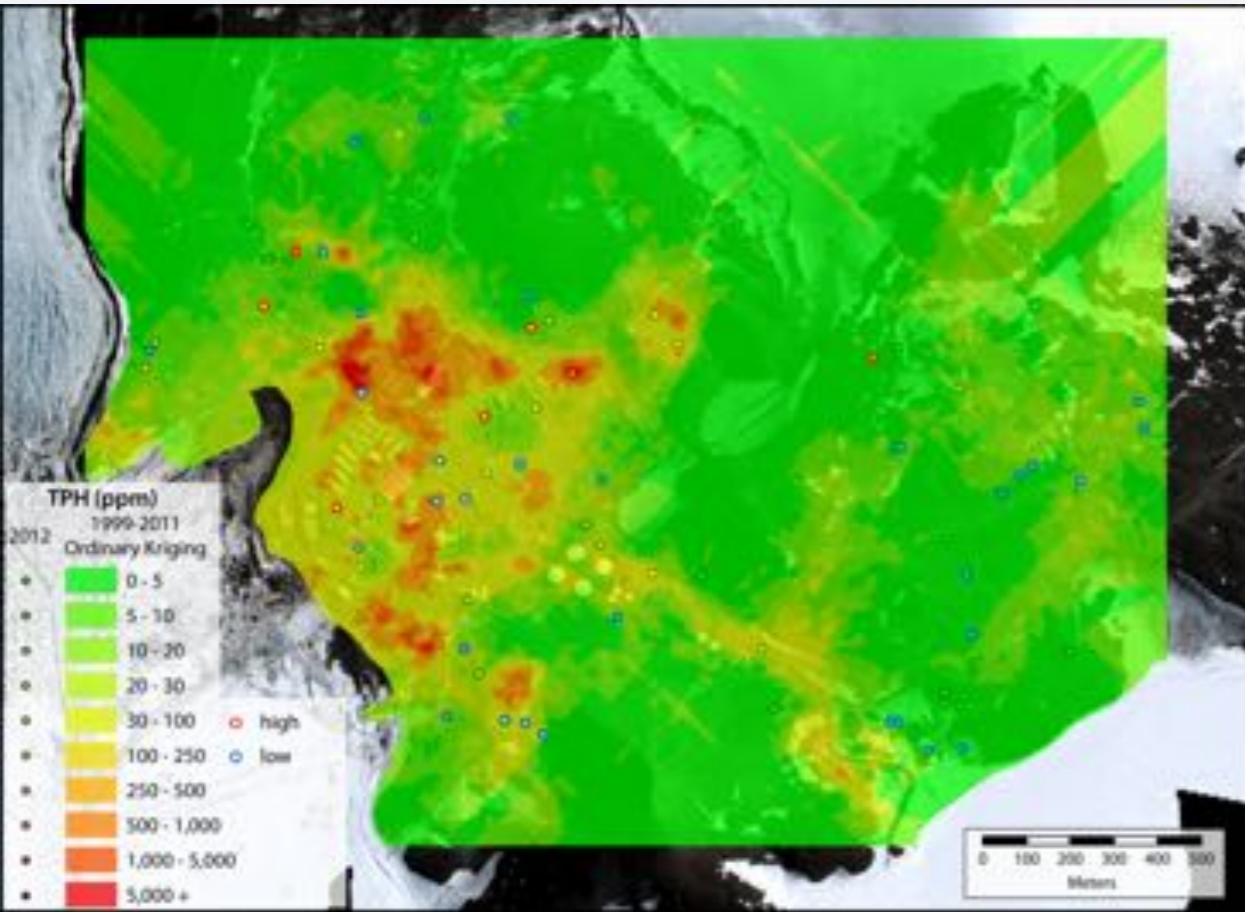


Control Sample in the Seafloor: Turtle Rock

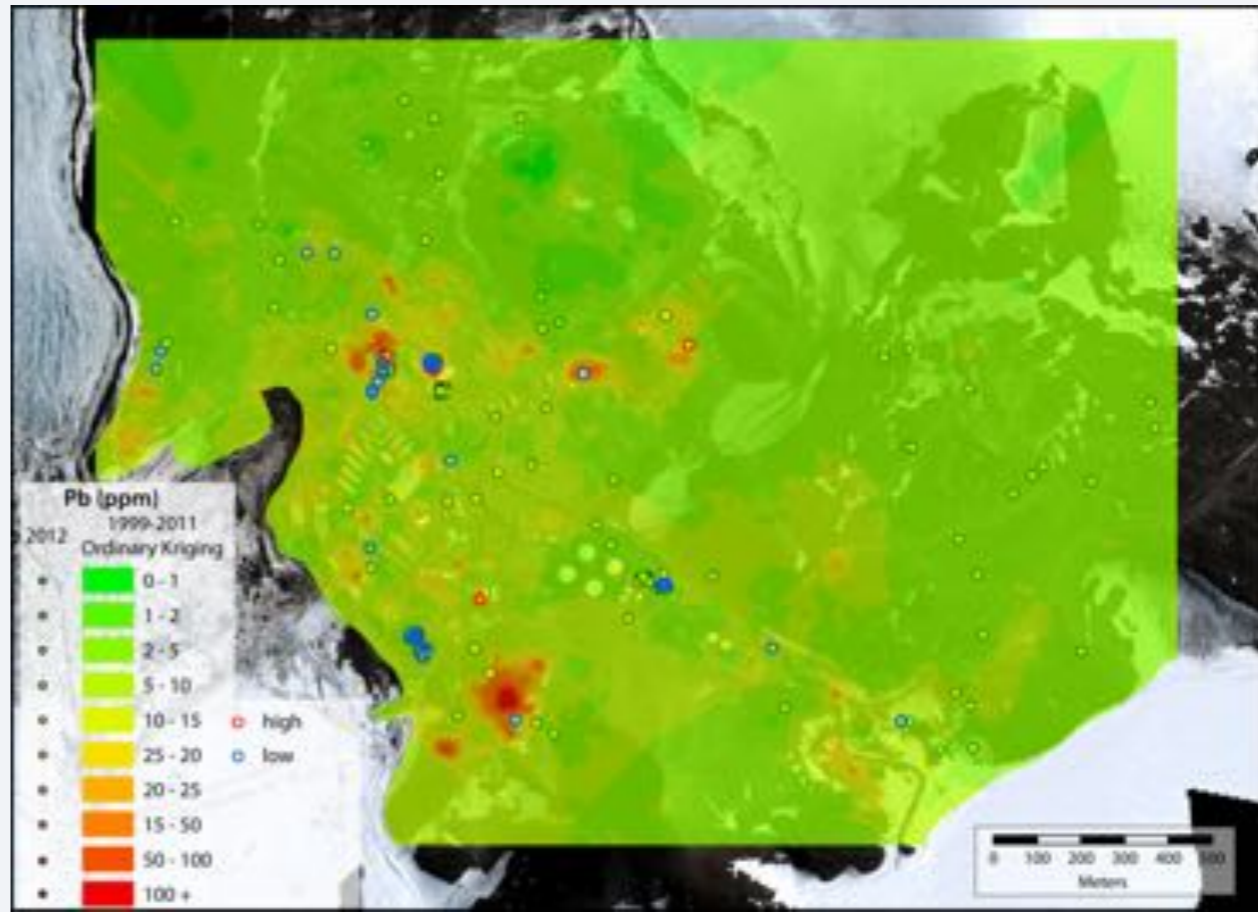


Research Results: Contamination on Land

Total Hydrocarbon Concentrations
(from gas, oil, etc.)

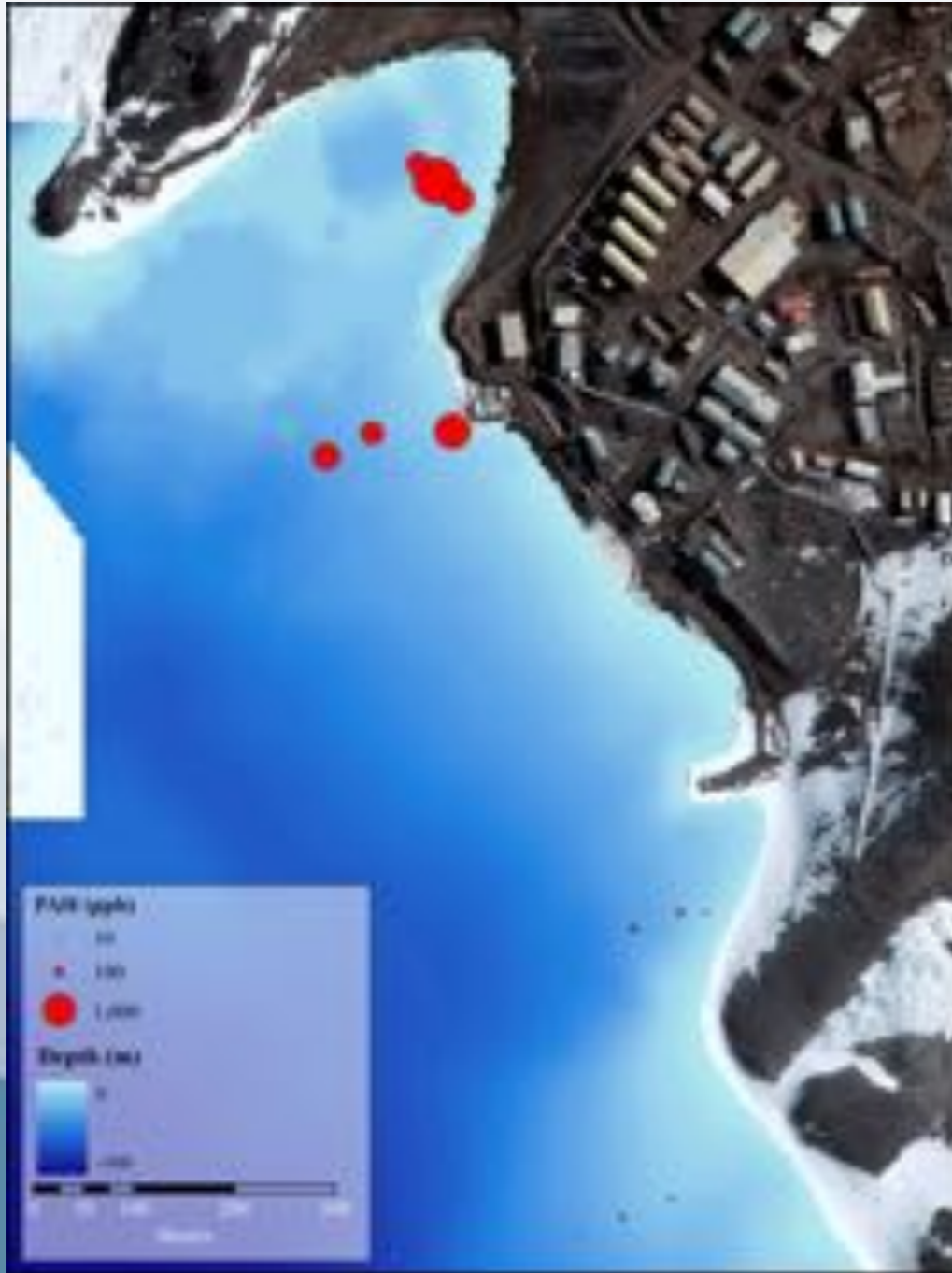


Total Lead Concentrations

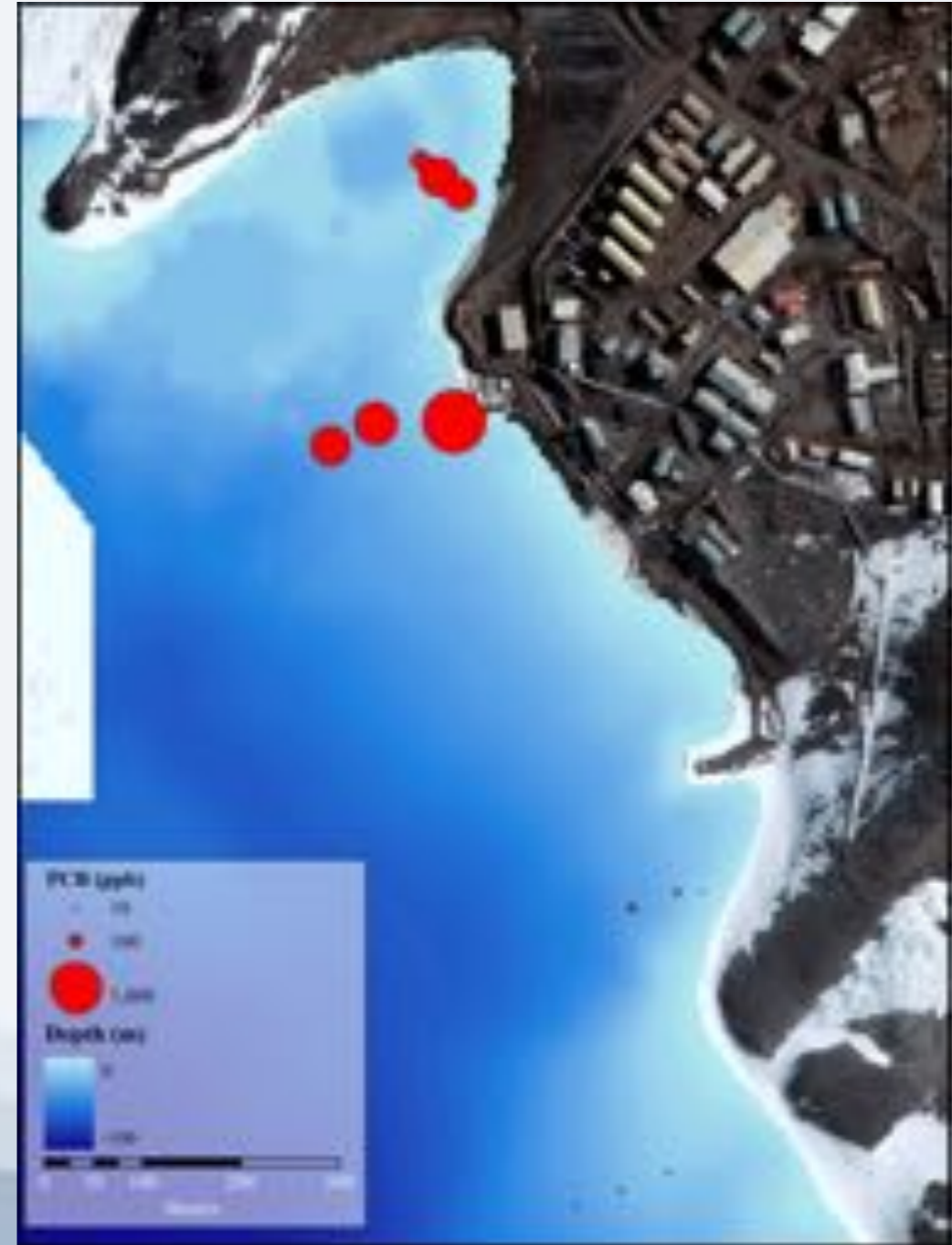


Research Results: Contamination in the Seafloor

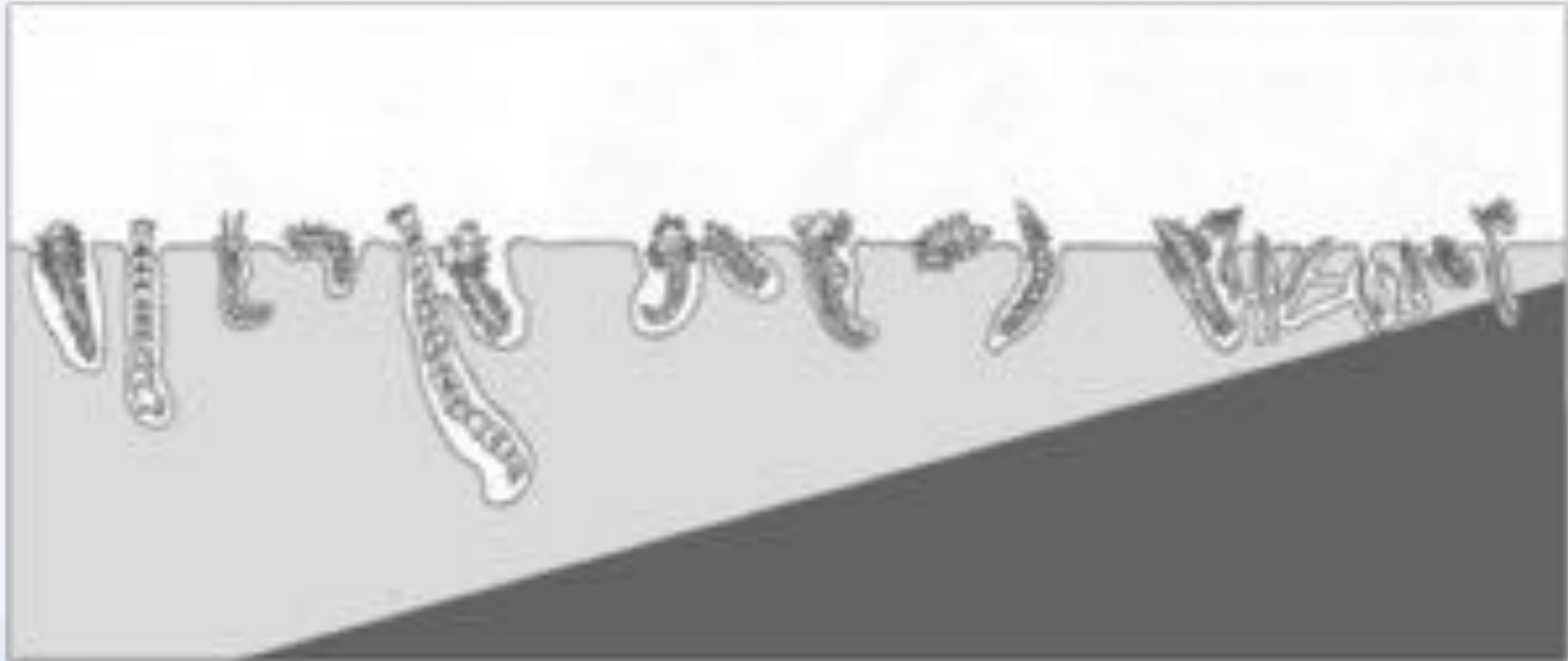
Total PAH Concentrations



Total PCB Concentrations



Impacts on Benthic Organisms



Undisturbed Zone

Axiiothella sp.

Brania rhopalophora

Spiophanes bombyx

Laonice cirrata

Sphaerosyllis hirsuta

Transitory Zone

Syllidia inermis

Lumbrineris sp.

Hauchiella tribullata

Lysilla loveni macintoshi

Disturbed Zone

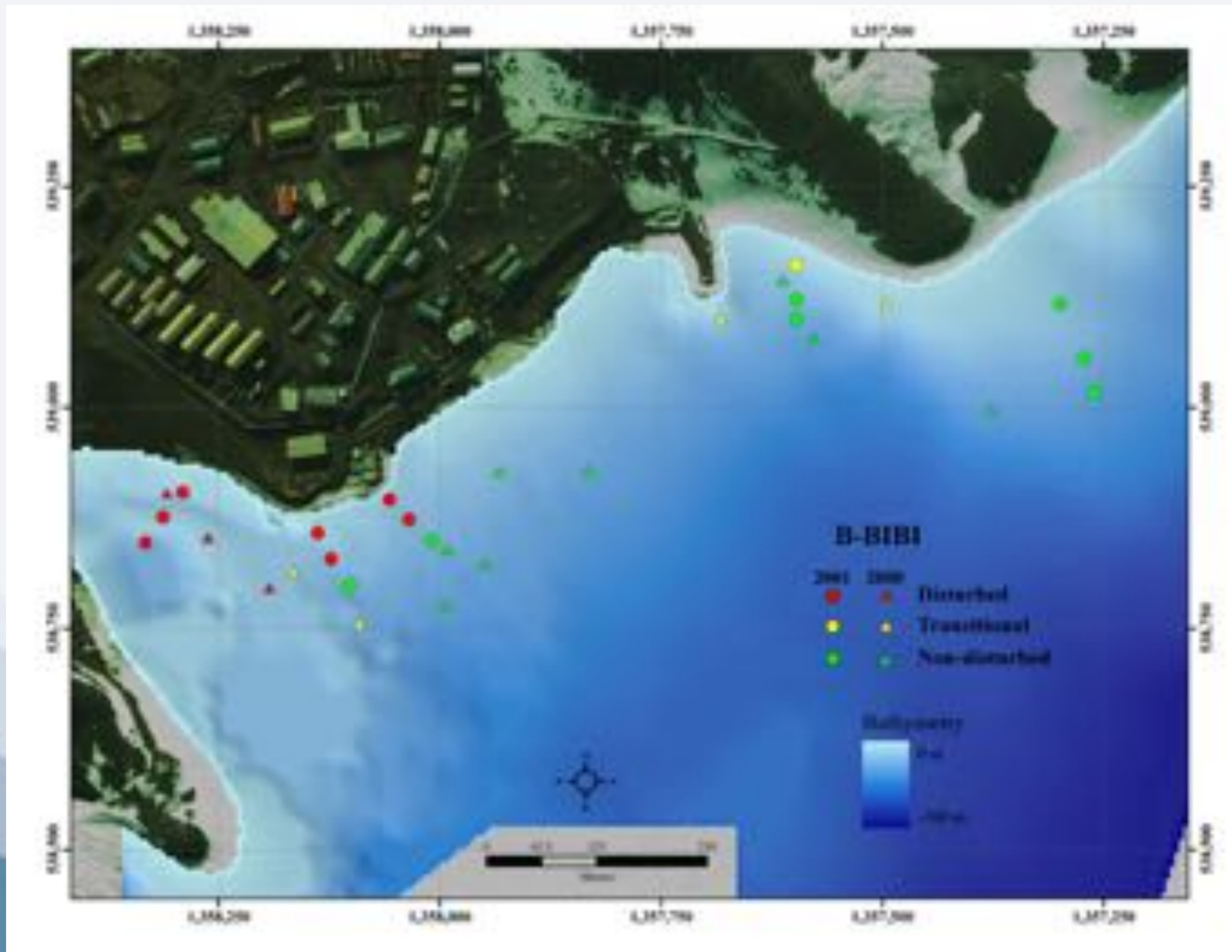
Capitella sp.

Ophyotrocha claparedii

Tharyx cincinnatus

Haploscoloplus sp

Impacts on Benthic Organisms



Then and Now

Sewage
Outflow
in 1998



Sewage Outflow in 2011



Sewage Outflow in 2015



Processing Hazard Waste at McMurdo Station



Processing Waste Water at McMurdo Station



LET'S CONSERVE!

PLEASE DO YOUR PART:

SHOWER 4 DAYS A WEEK,
instead of every day

Each month YOU could save:

- Nearly 300 gallons of water
- Approximately 2 gallons of fuel

McMurdo could save in one summer:

- 1,250,000 gallons of water
- 7,500 gallons of fuel
- \$110,000 in fuel & water costs

Processing Waste at McMurdo Station



Questions?



Teachers: Join PolarTREC!

www.polartrac.com/about/join

Every teacher can participate in different ways:

- **Following Expeditions**
- **Participate in PolarConnect Events**
- **Join the Polar Education Email List**
- **Become a PolarTREC Teacher!**

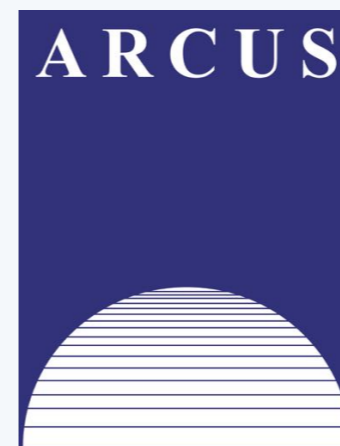
Upcoming Events

Watch for and register for upcoming events at www.polartrec.com!

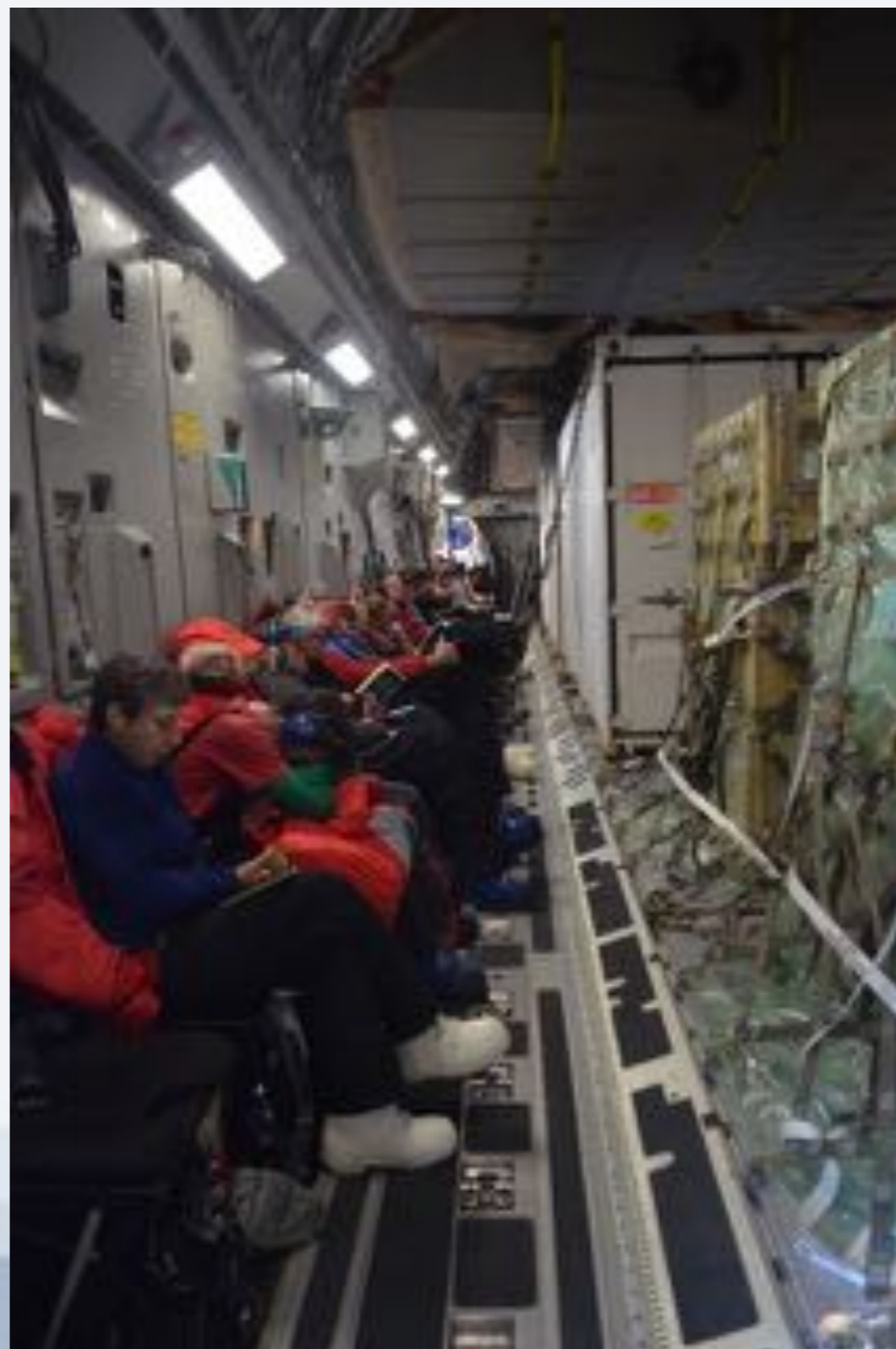
Thank You!

An archive of the event will be available shortly.

<http://www.polartrec.com/polar-connect/archive>



Life in Antarctica: Getting There



Life in Antarctica: Eating



Life in Antarctica: Around McMurdo



Life in Antarctica: Transportation



Life in Antarctica: Crary

