TEACHERS AND RESEARCHERS EXPLORING AND COLLABORATING

POLAR TREC

Polar Professional Development
ED 593: Applied Life Science Concepts for Educators

Where Adventure Meets Seal Science: Weddell Seals in the Ross Sea

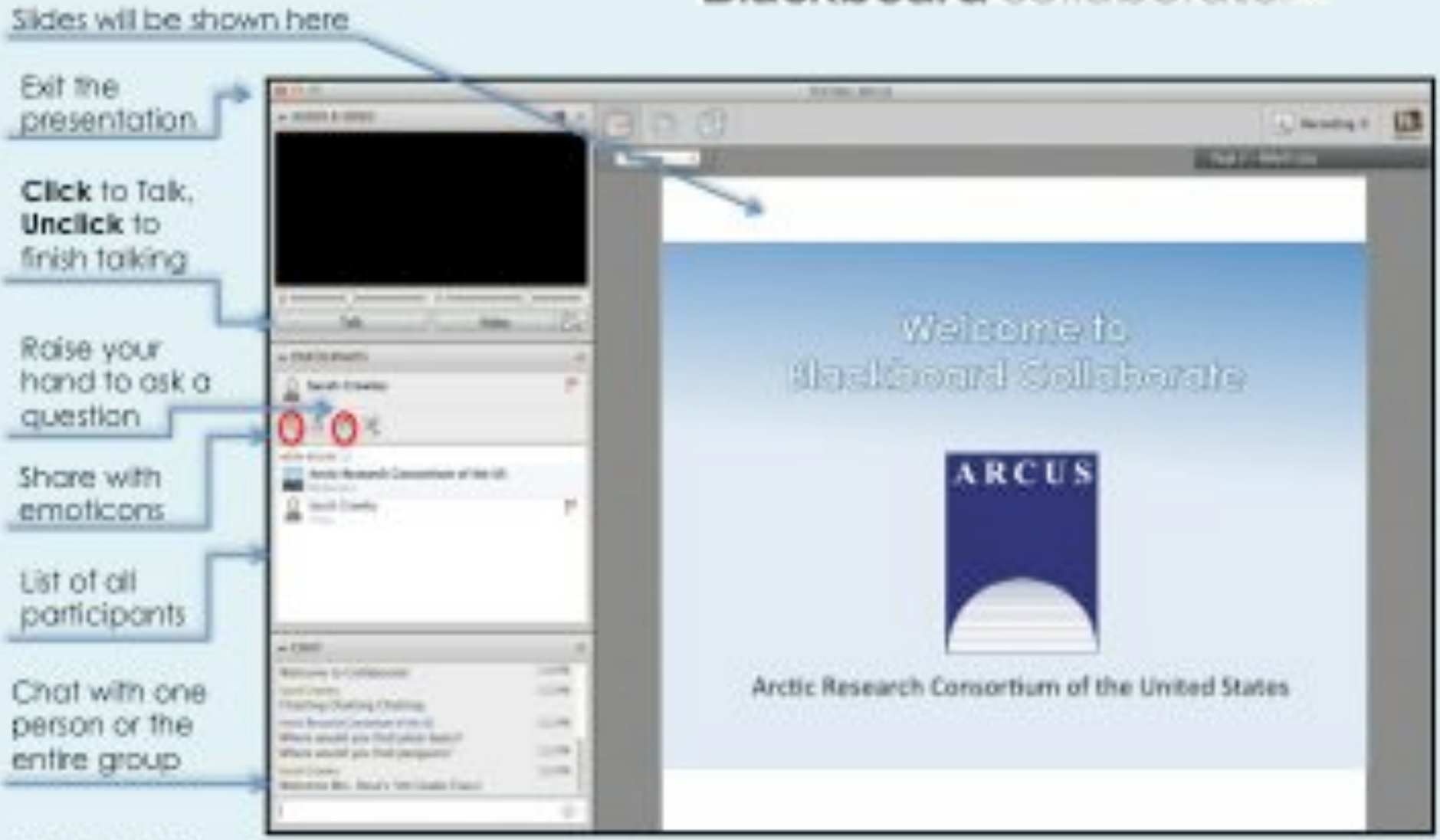
Dr. Jennifer Burns
University of Alaska Anchorage

In conjunction with

Alex Eilers
Pink Palace Museum, Tennessee

1 November 2012

Blackboard collaborate



Please Note:

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

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.

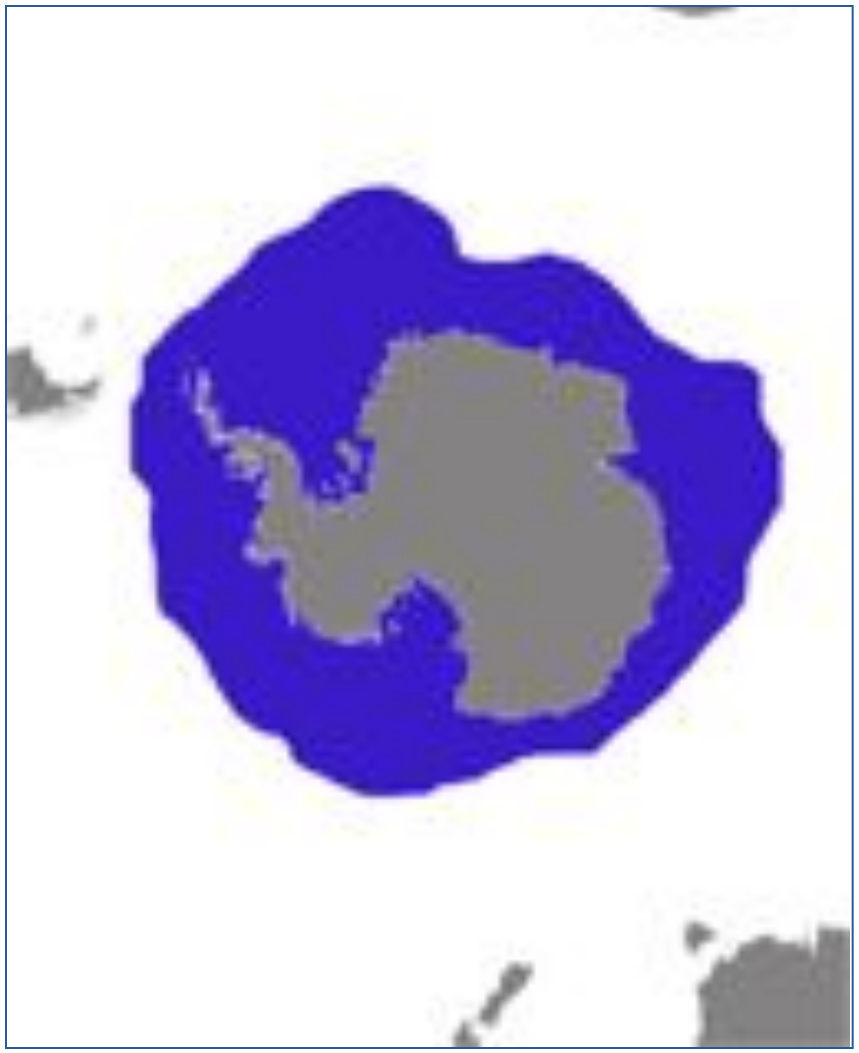
Unclick when you are done.

Participant Introductions

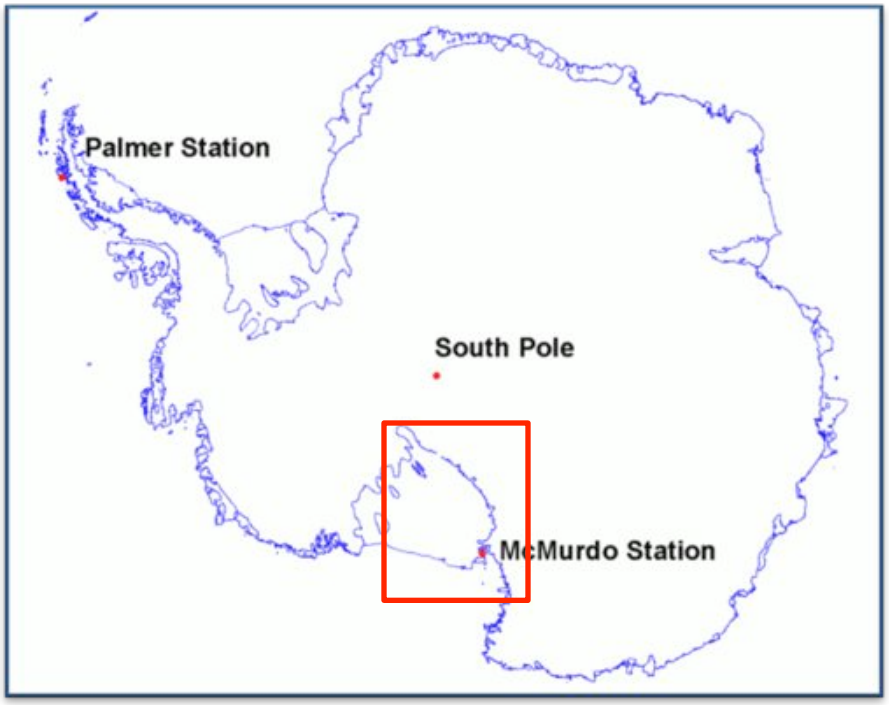
Please type in the chat box:

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

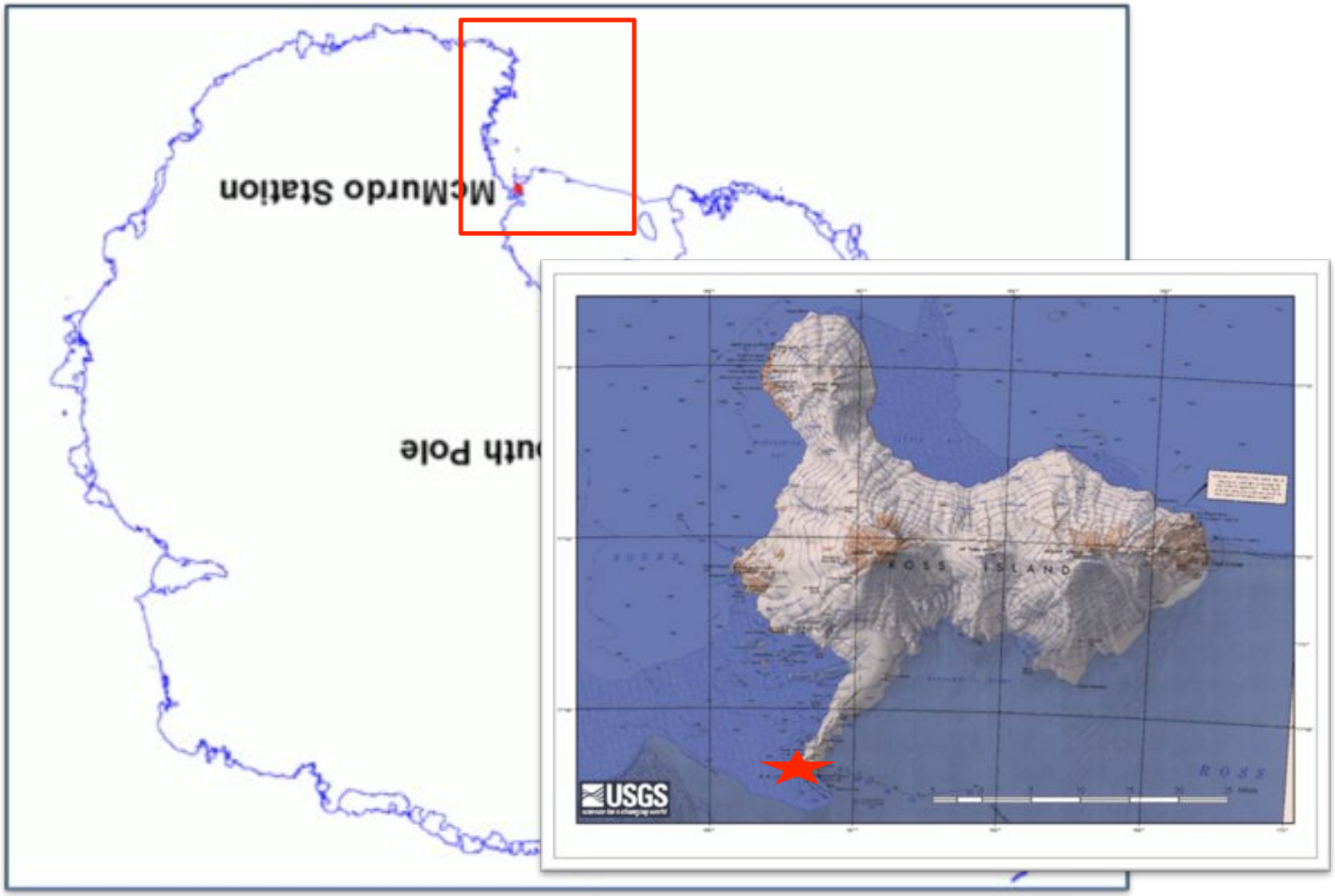
Location: Antarctica



Location: Ross Sea



Location: Ross Island



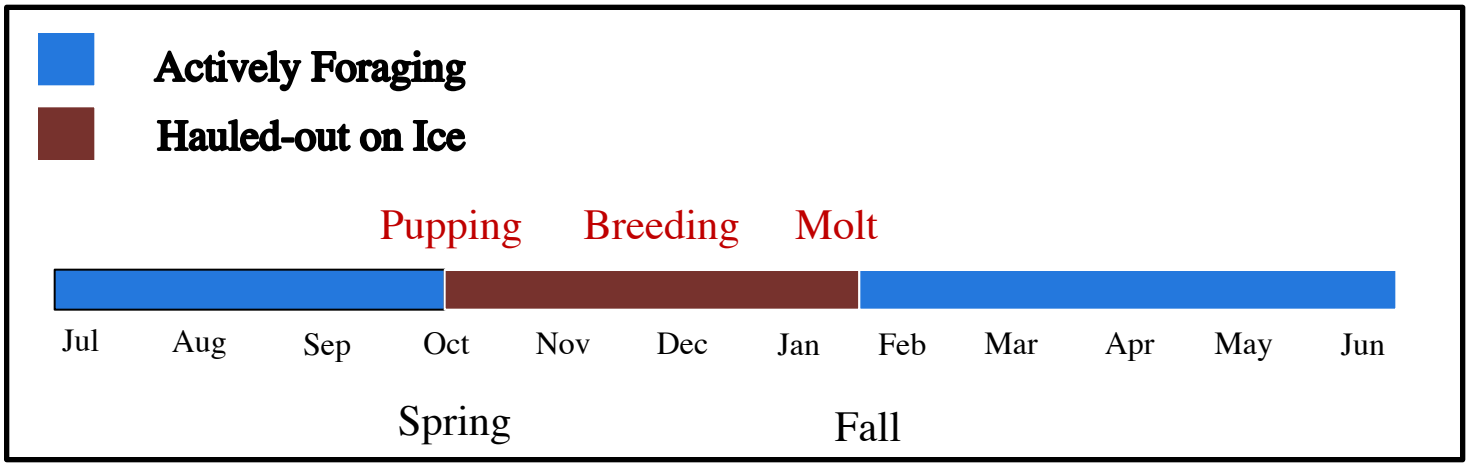
What do we know about Weddell seals?

Long Term Tagging Study

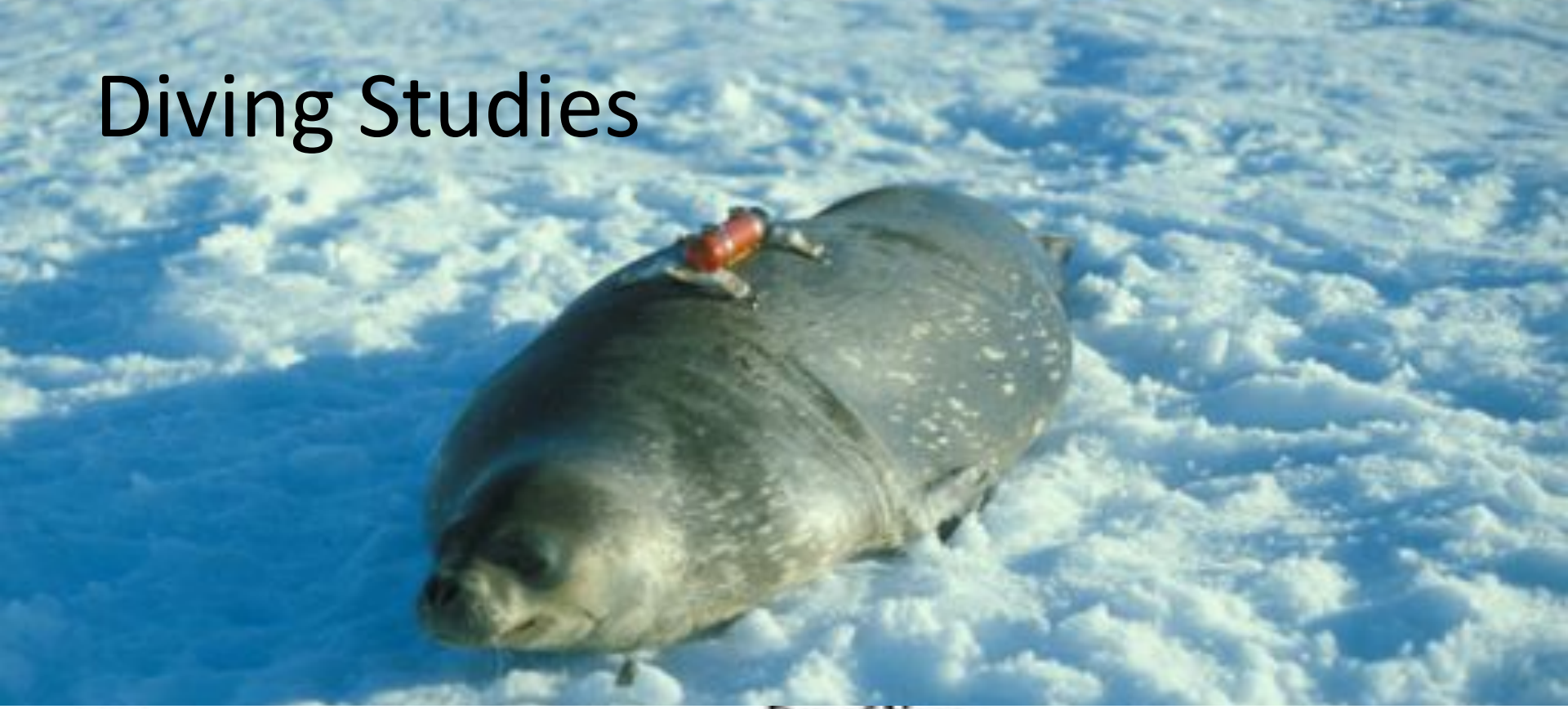
The Basics

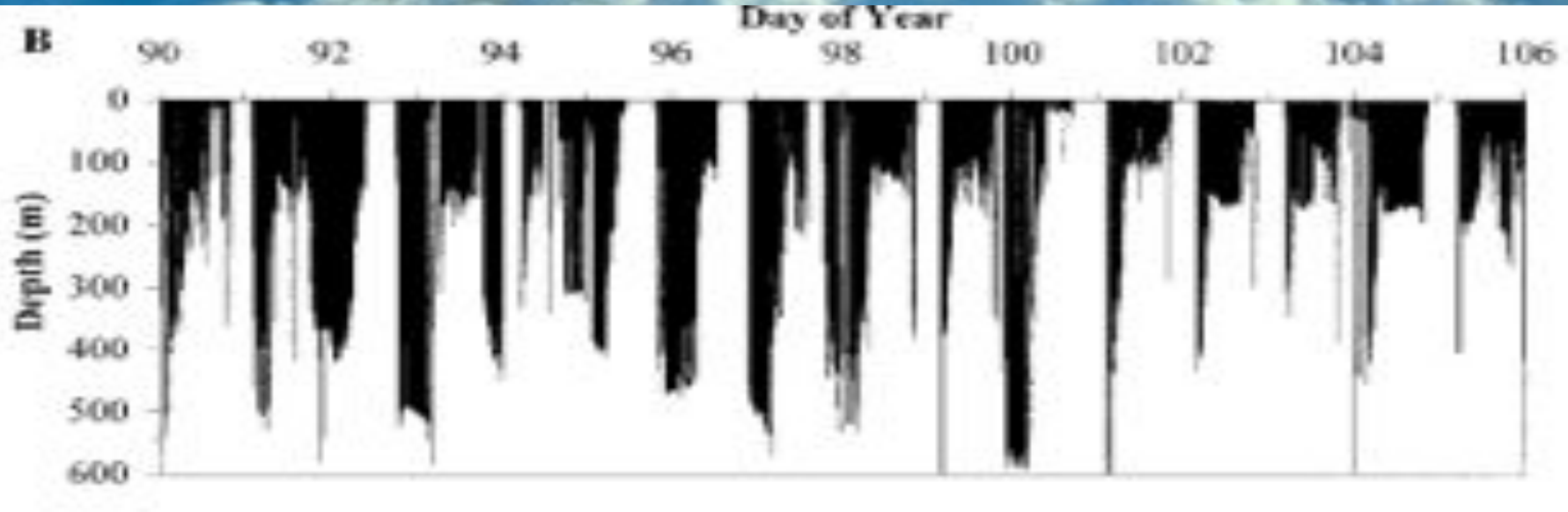
Weddell Seal Ecology



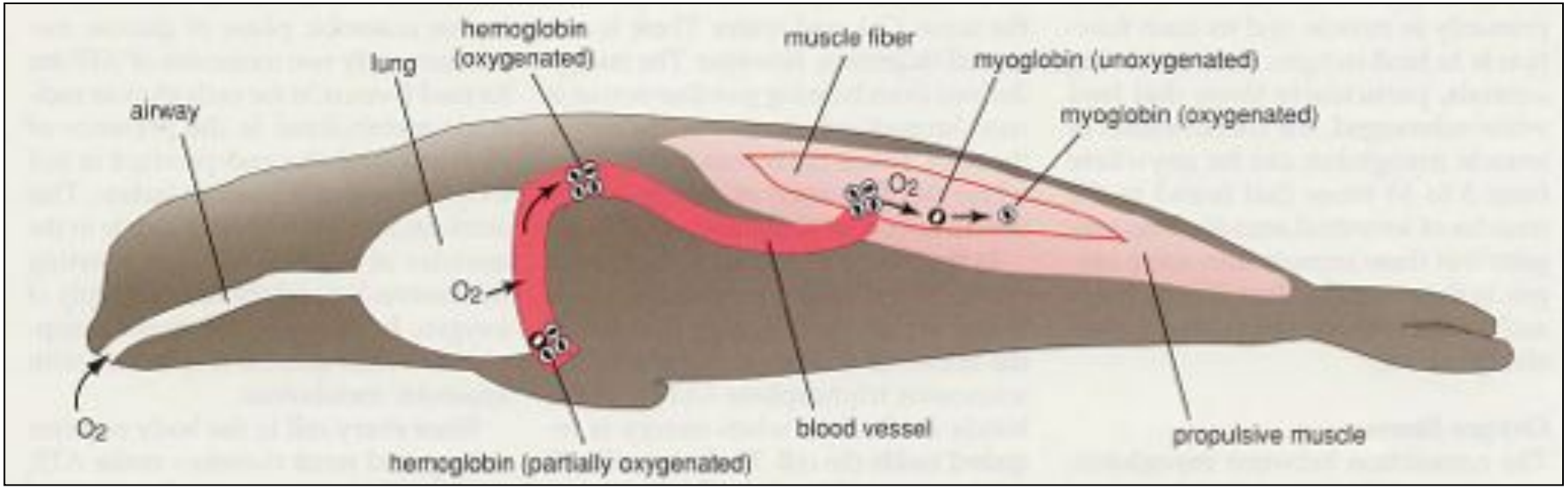
Diving Studies



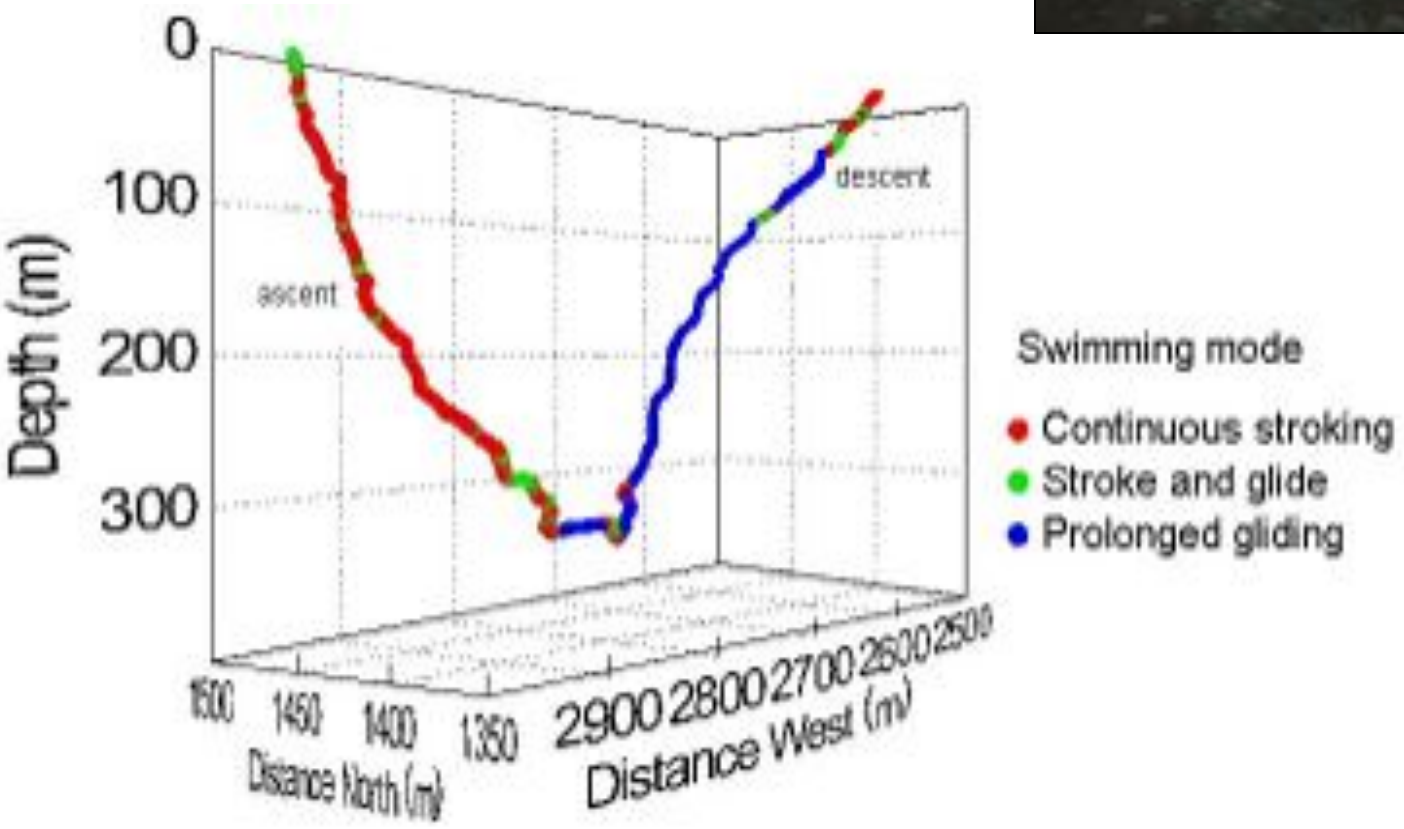


Diving Physiology

Large Oxygen Stores



Oxygen Saving



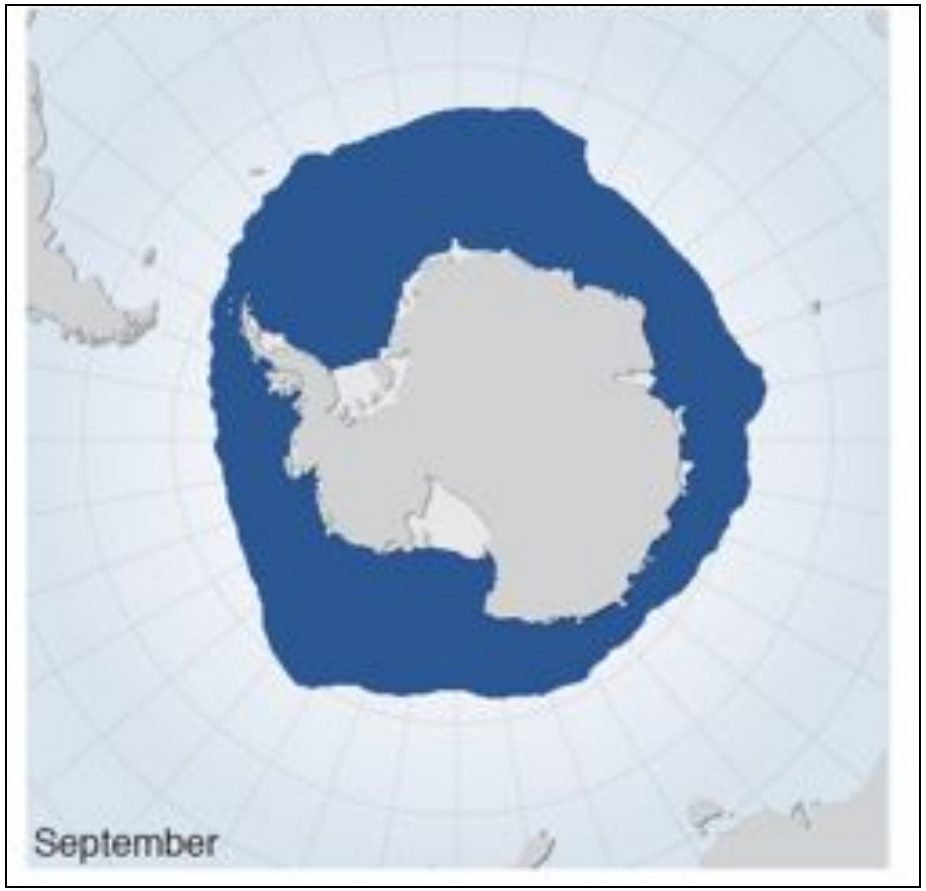
Williams et al. 2004

Diet Studies

What we don’t know

How seals make a living during the long, dark, Antarctic winter

Natural Changes: Summer vs. Winter



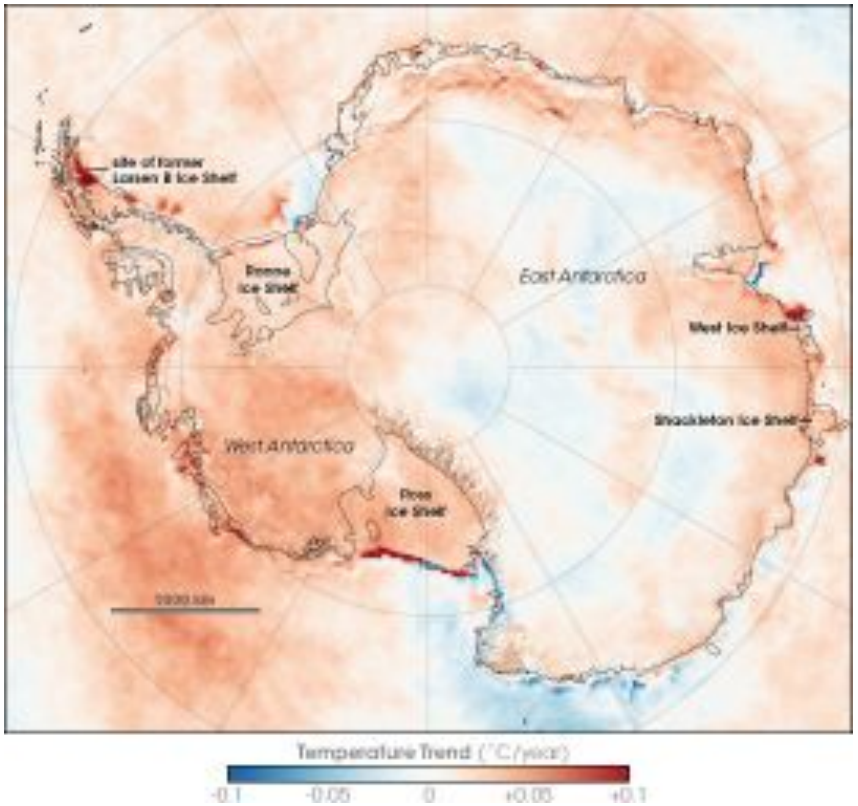
Summer: Open Water

Early Fall: Freezing Up

Late Fall: Frozen Over

Other Changes

Climate Change



Human Impacts

How do and will seals deal with these changes?

Weddell seals as autonomous sensors of the winter oceanography of the Ross Sea

Large collaborative study

1. Examine forging behavior and habitat utilization of Weddell Seals across seasons
2. Link foraging behavior and habitat selection to physiological condition at start and end of winter
3. Use ocean salinity and temperature data collected by seals to refine Ross Sea oceanographic models

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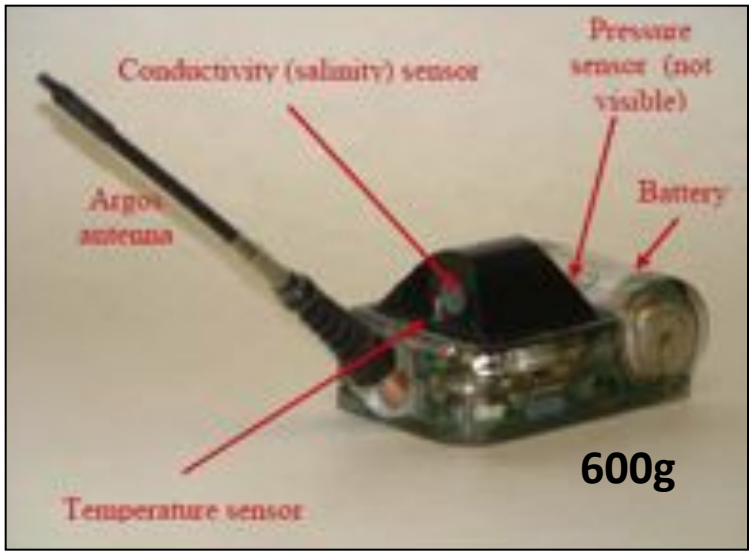
Research Approach

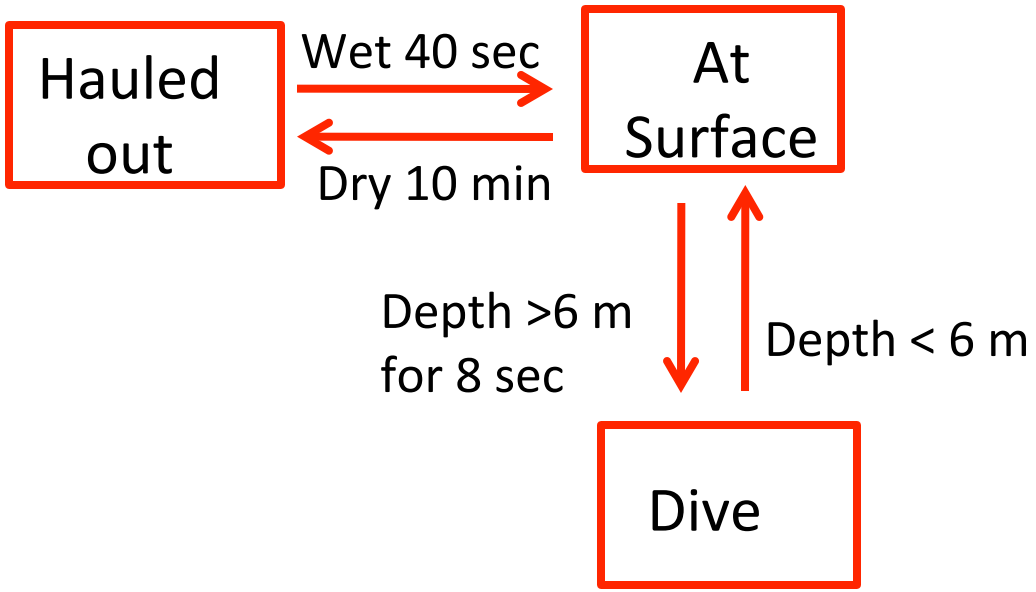
Let the animals collect the data for us

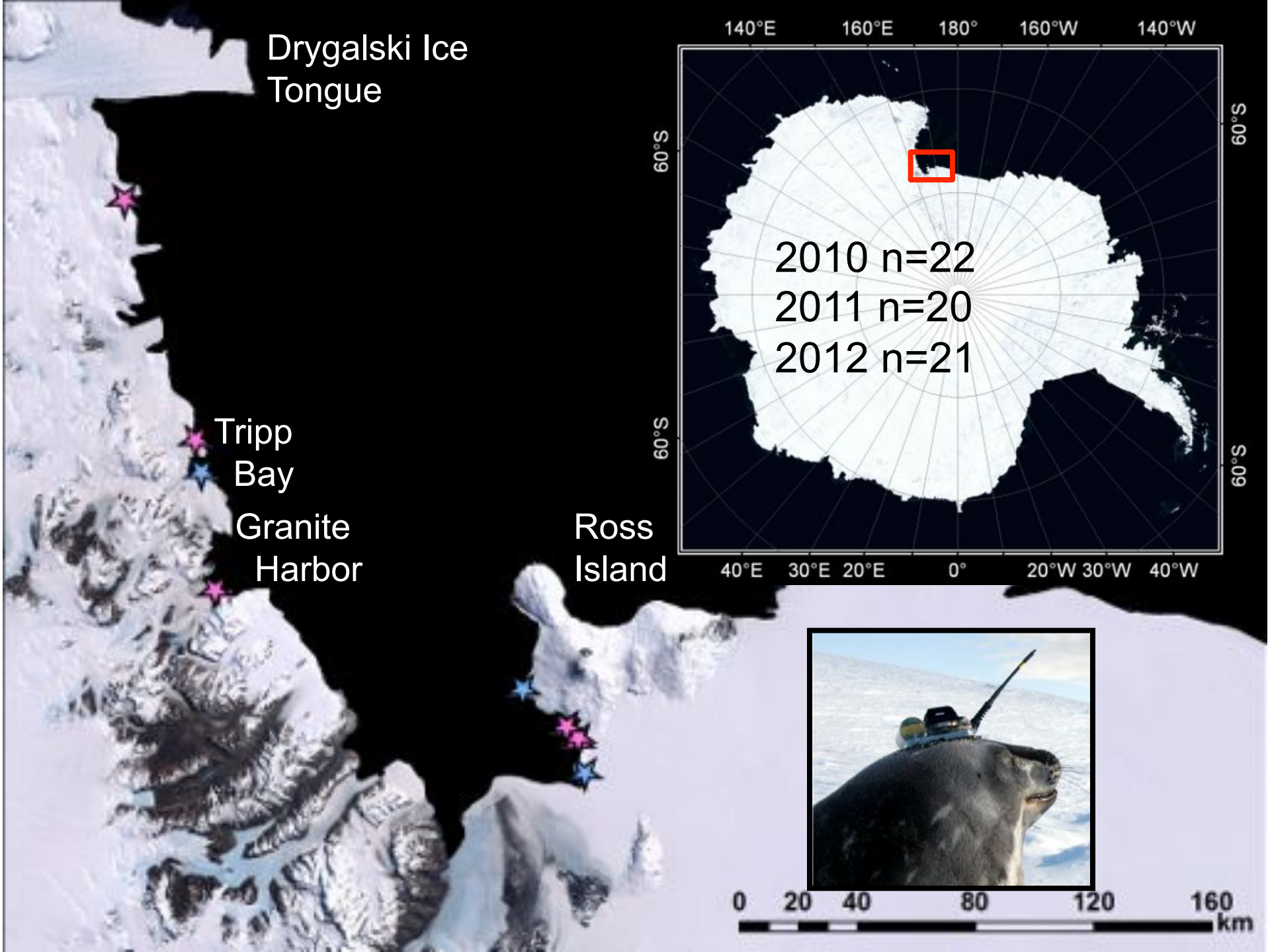
Satellite-Linked Dive Recorders



Measures environmental parameters:

- Dive Duration
- Hauled out / Diving
- Depth
- Water temperature
- Salinity




Drygalski Ice Tongue
Tripp Bay
Granite Harbor
Ross Island
140°E
160°E
180°
160°W
140°W
60°S
40°E
30°E
20°E
0°
20°W
30°W
40°W
2010 n=22
2011 n=20
2012 n=21
0
20
40
80
120
160
km

How to tag a seal 101

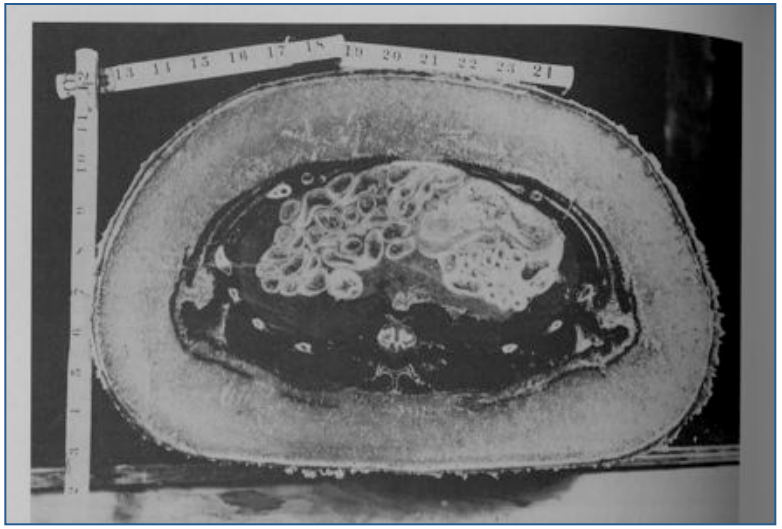
First: Locate a group of seals

Find a suitable seal

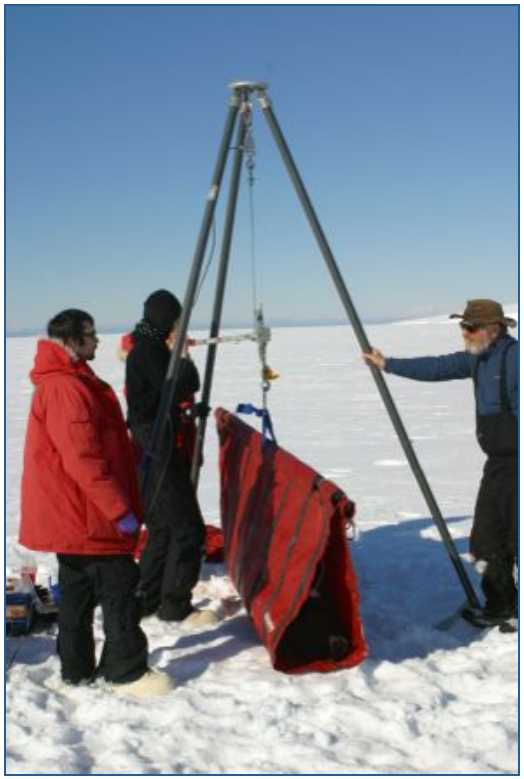
Unload and cart our gear…

Approach, drug, and capture the seal

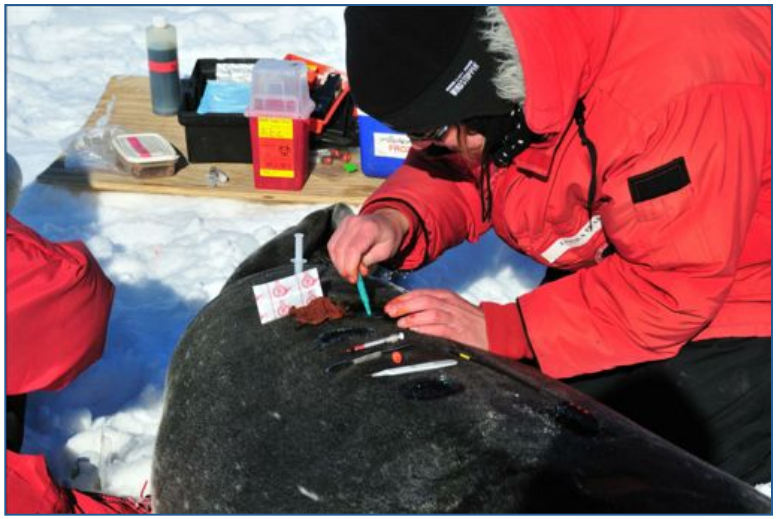
Measure the seal

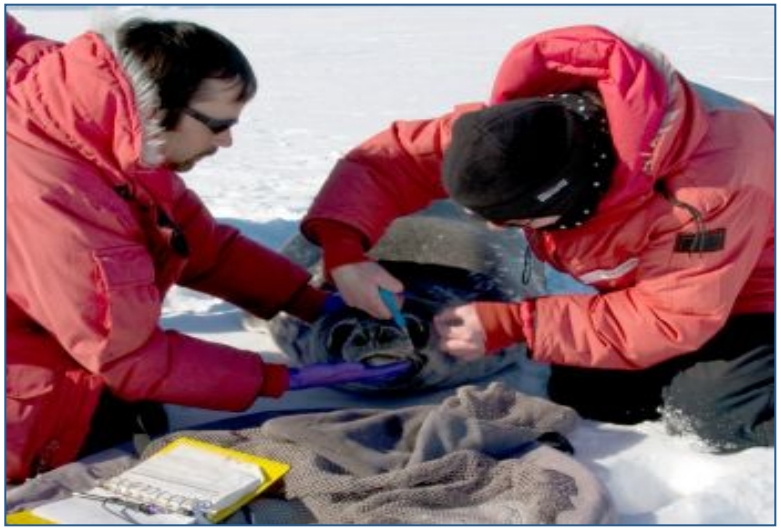


Weigh the seal



Collect blood and tissue samples





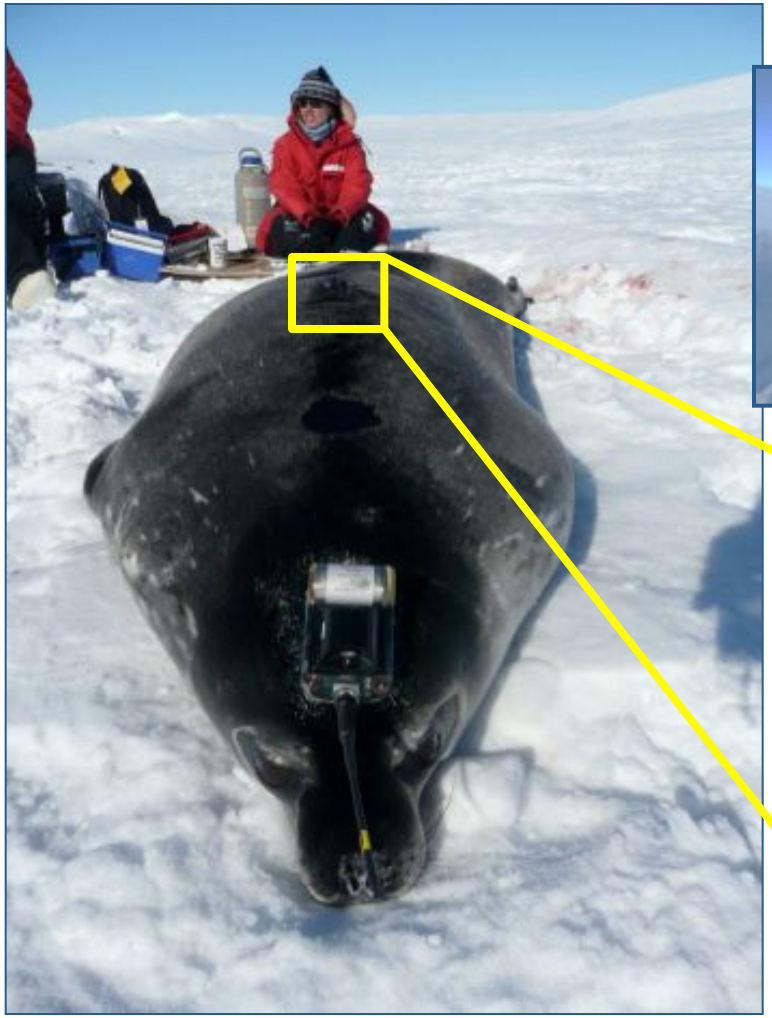
Attach the satellite tag

Double check the data book

Release the seal

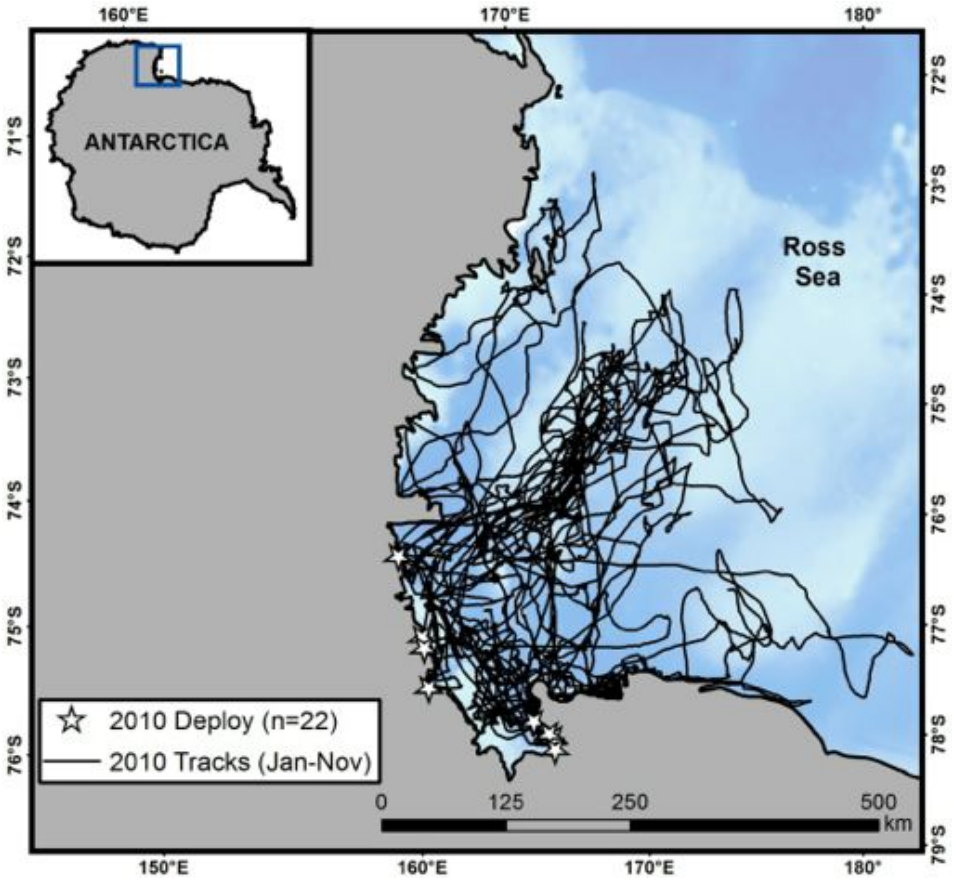
Pack up and go home

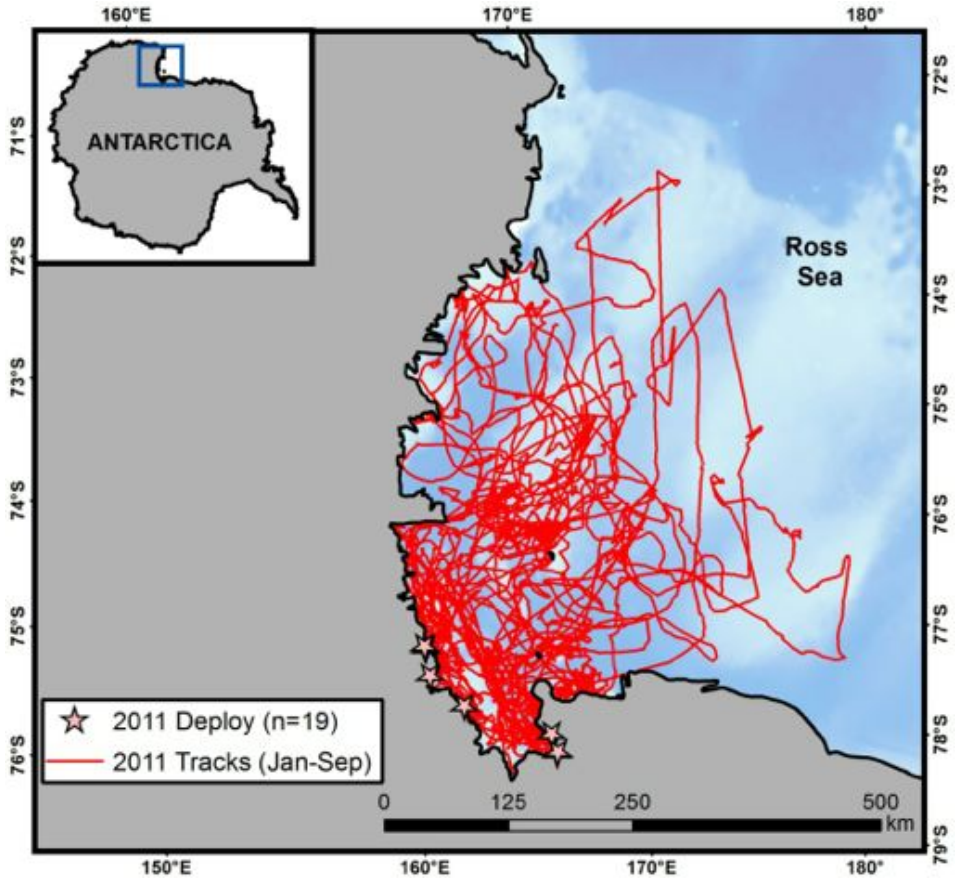
Relocate the seal 9 months later



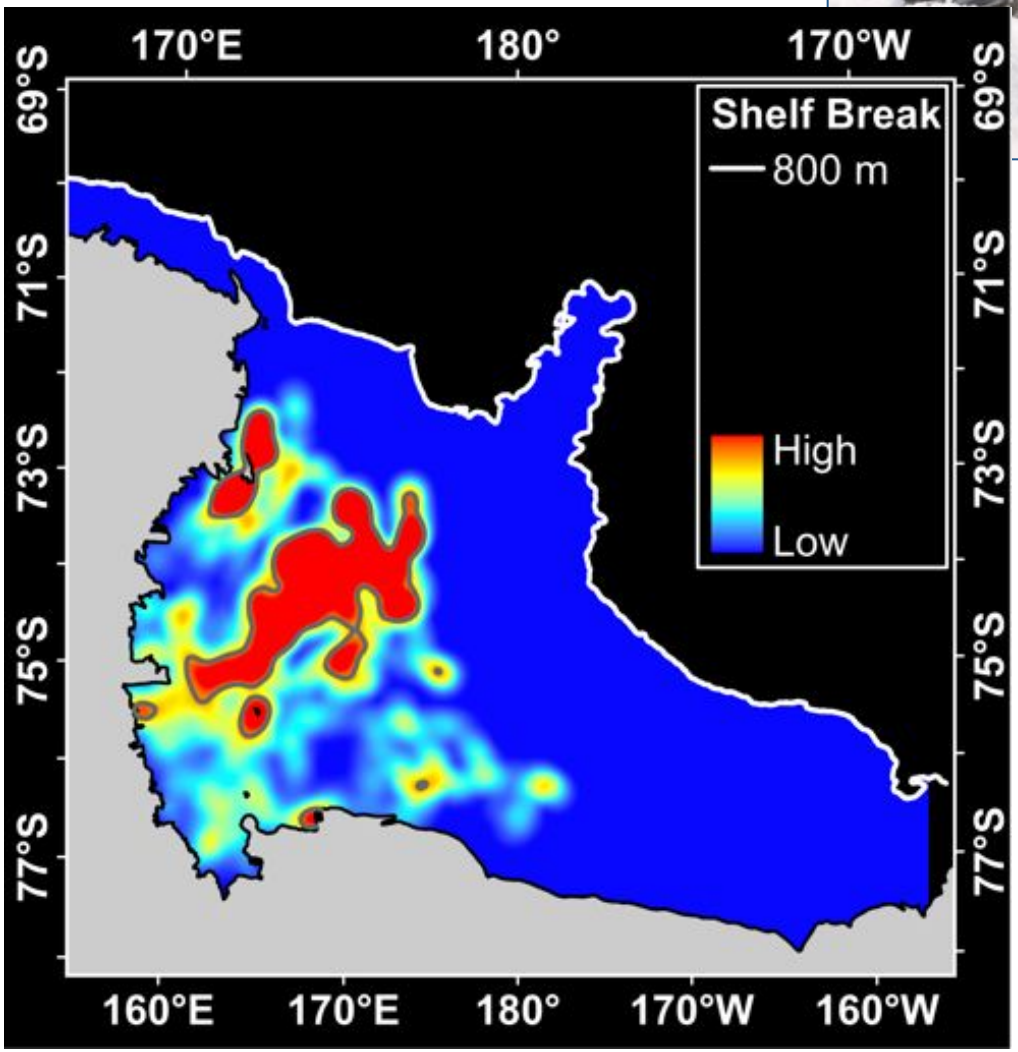
What Happened?

Tracking the Seals

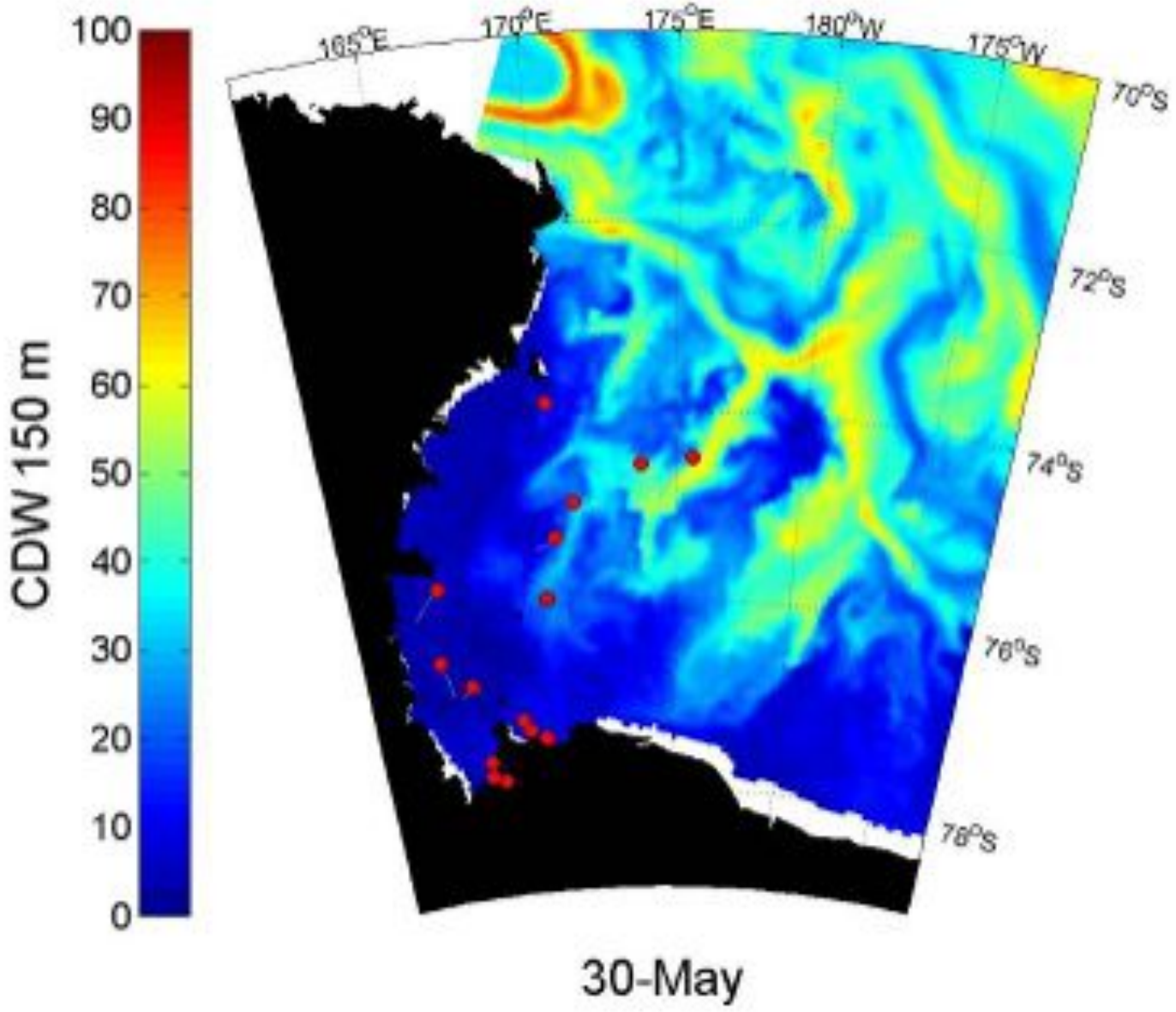




Preferred Areas

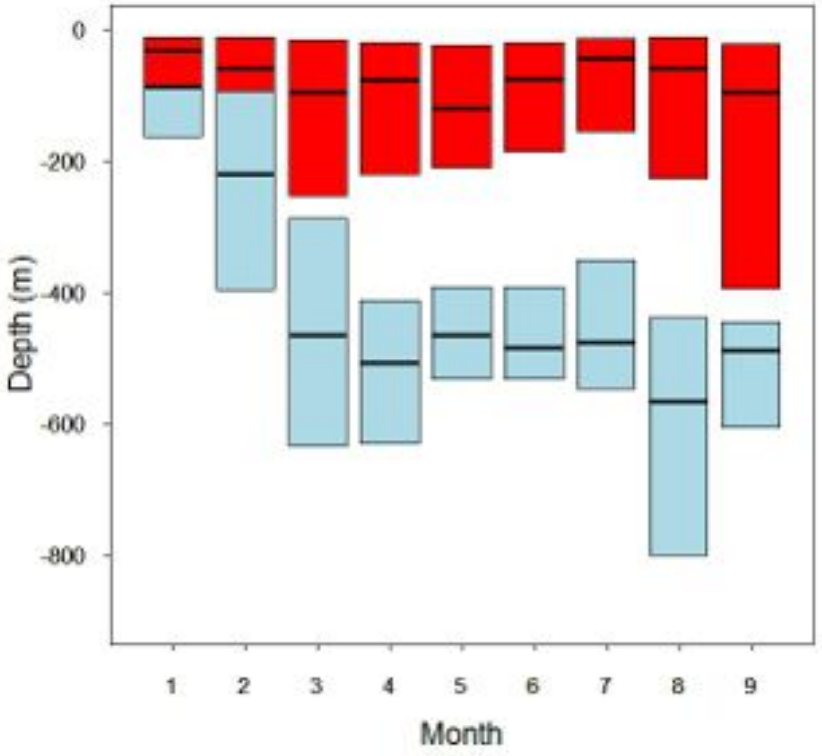


Seals & Oceanography

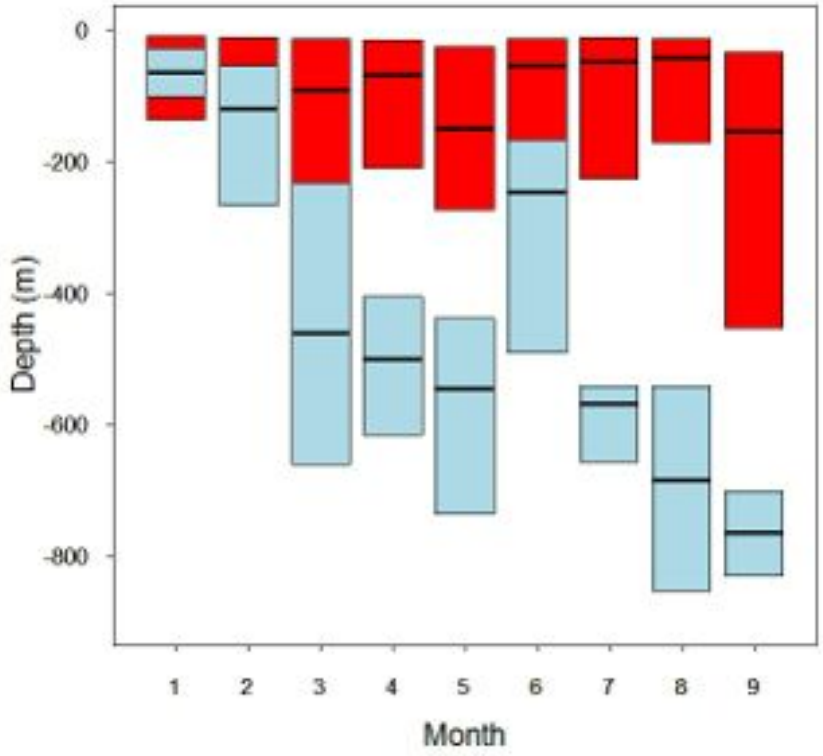


Diving Behavior

2010



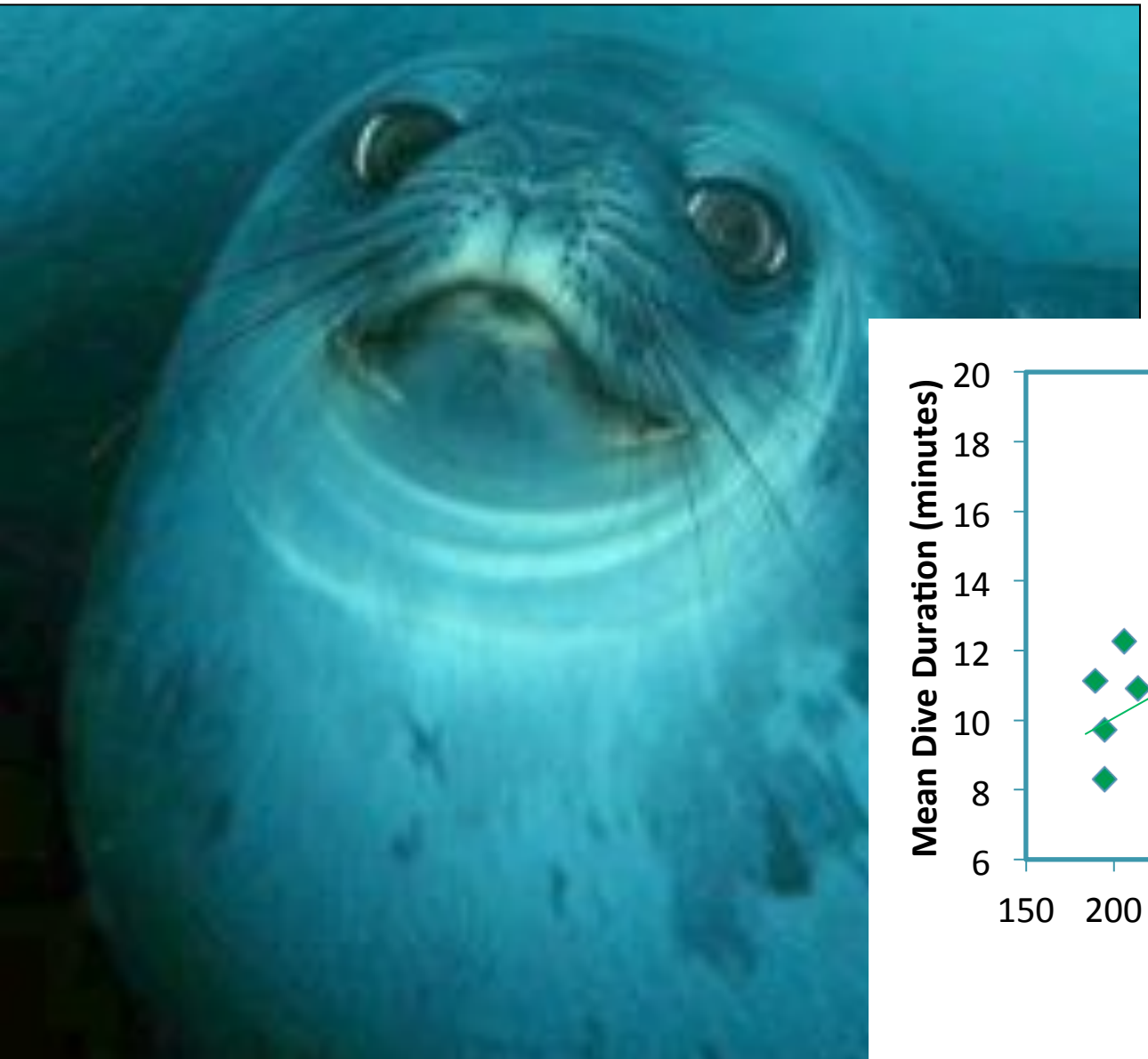
2011

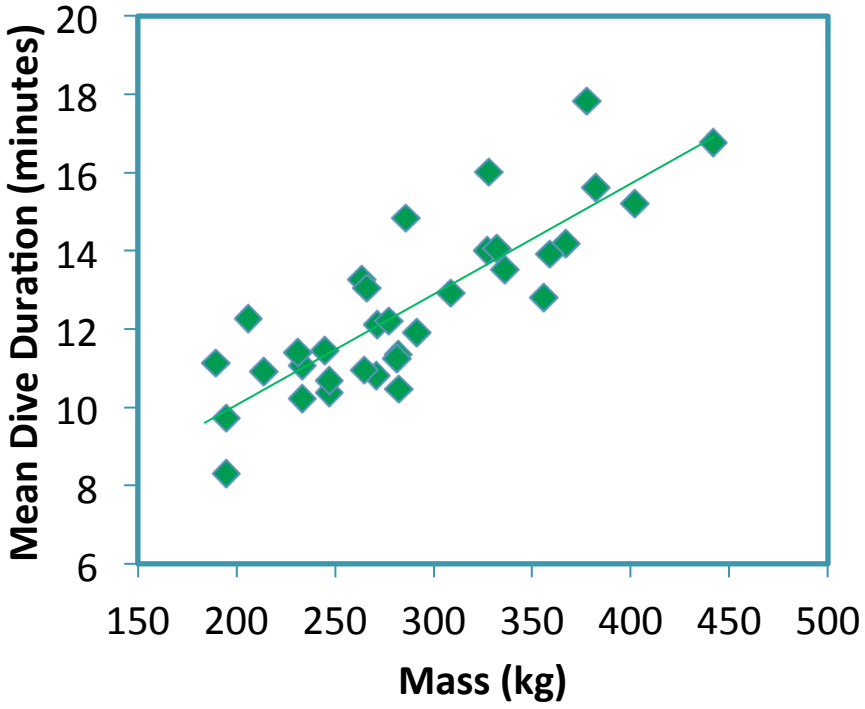


Dive Depth

Seafloor Depth

Diving Behavior





Questions?

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Thank You!

An archive of the event will be available shortly.

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