



TEACHERS AND RESEARCHERS
EXPLORING AND COLLABORATING

Welcome to *PolarConnect*

With Nell Herrmann and the Seafloor
Organisms and Changing Ocean
Conditions PolarTREC Expedition

Friday 2 March 2012

10:00 a.m. AKST

(11:00 am PST, 12:00 pm MST, 1:00 pm CST, 2:00 pm EST)

Blackboard collaborate

Slides will be shown here

Exit the presentation

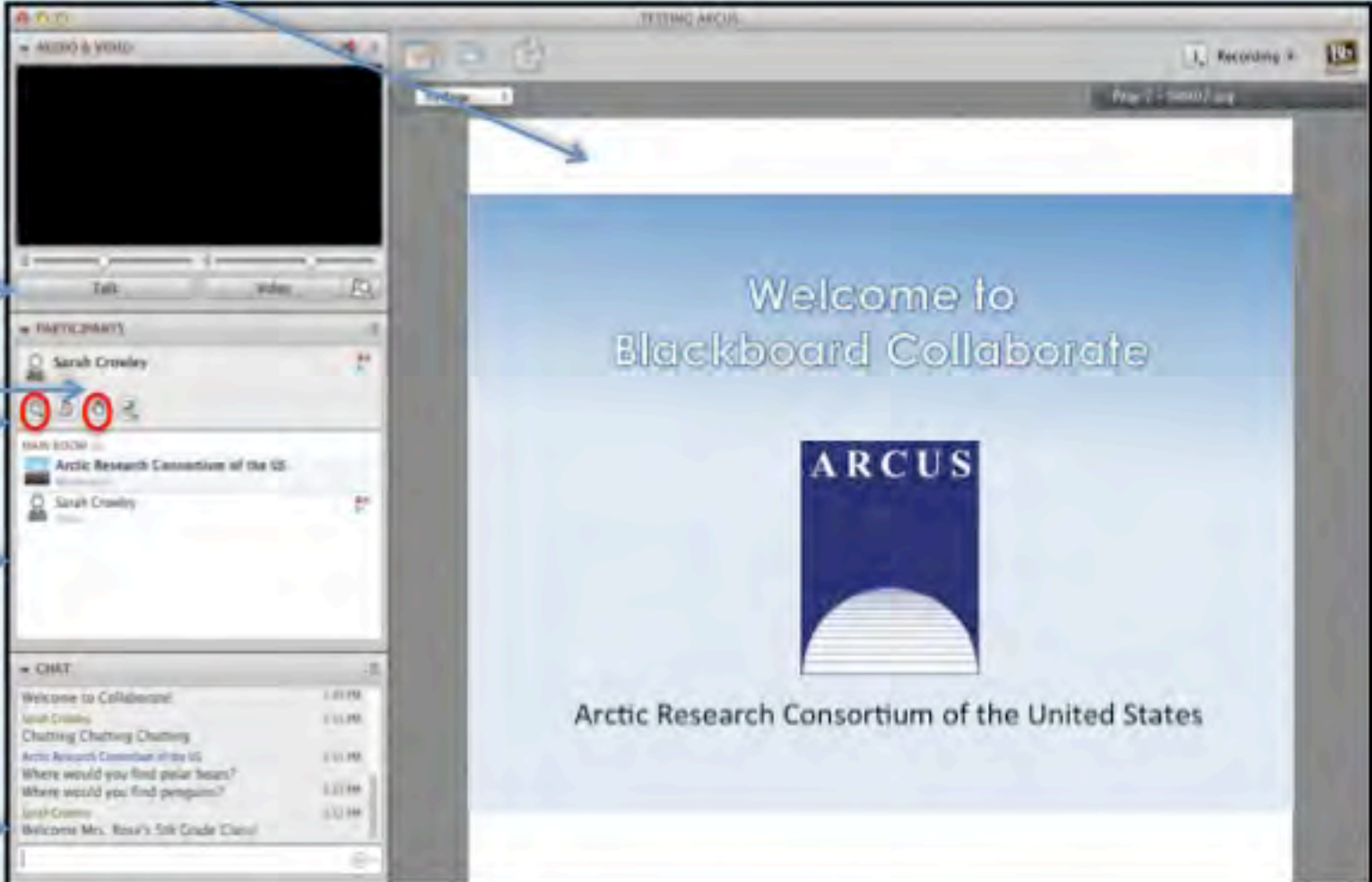
Click to Talk,
Unclick to finish talking

Raise your hand to ask a question

Share with emoticons

List of all participants

Chat with one person or the entire group



The screenshot shows the Blackboard Collaborate interface. The main area displays a presentation slide titled "Welcome to Blackboard Collaborate" with the ARCUS logo and the text "Arctic Research Consortium of the United States". The left sidebar contains several panels: a "Talk" panel with a microphone icon, a "PARTICIPANTS" panel listing "Sarah Crowley" with a hand icon, a "CHAT ROOM" panel with a list of messages, and a "CHAT" panel with a list of messages. The top of the interface shows the "TESTING ARCUS" title and a "Recording" indicator.

Please Note:

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



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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.

From 2010-2013, nearly 50 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.



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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.

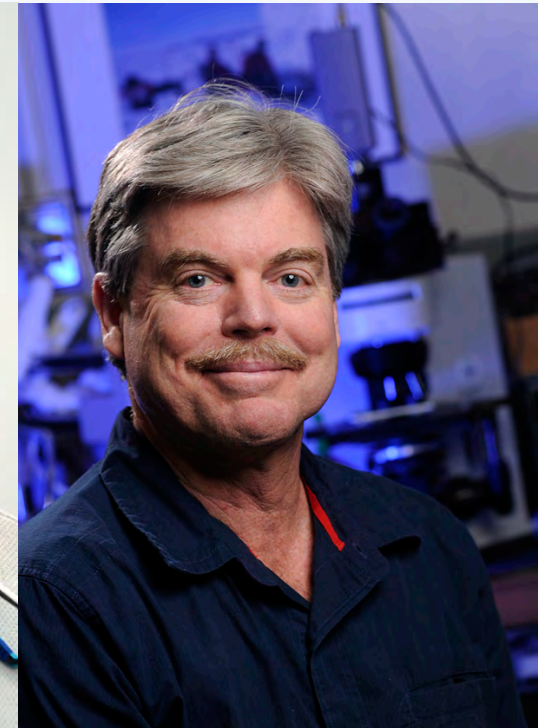


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The TEAM



PolarTREC Teacher
Nell Herrmann



Dr. Charles Amsler & Dr. Jim McClintock

Julie and Kate (Graduate Students)

Palmer Station



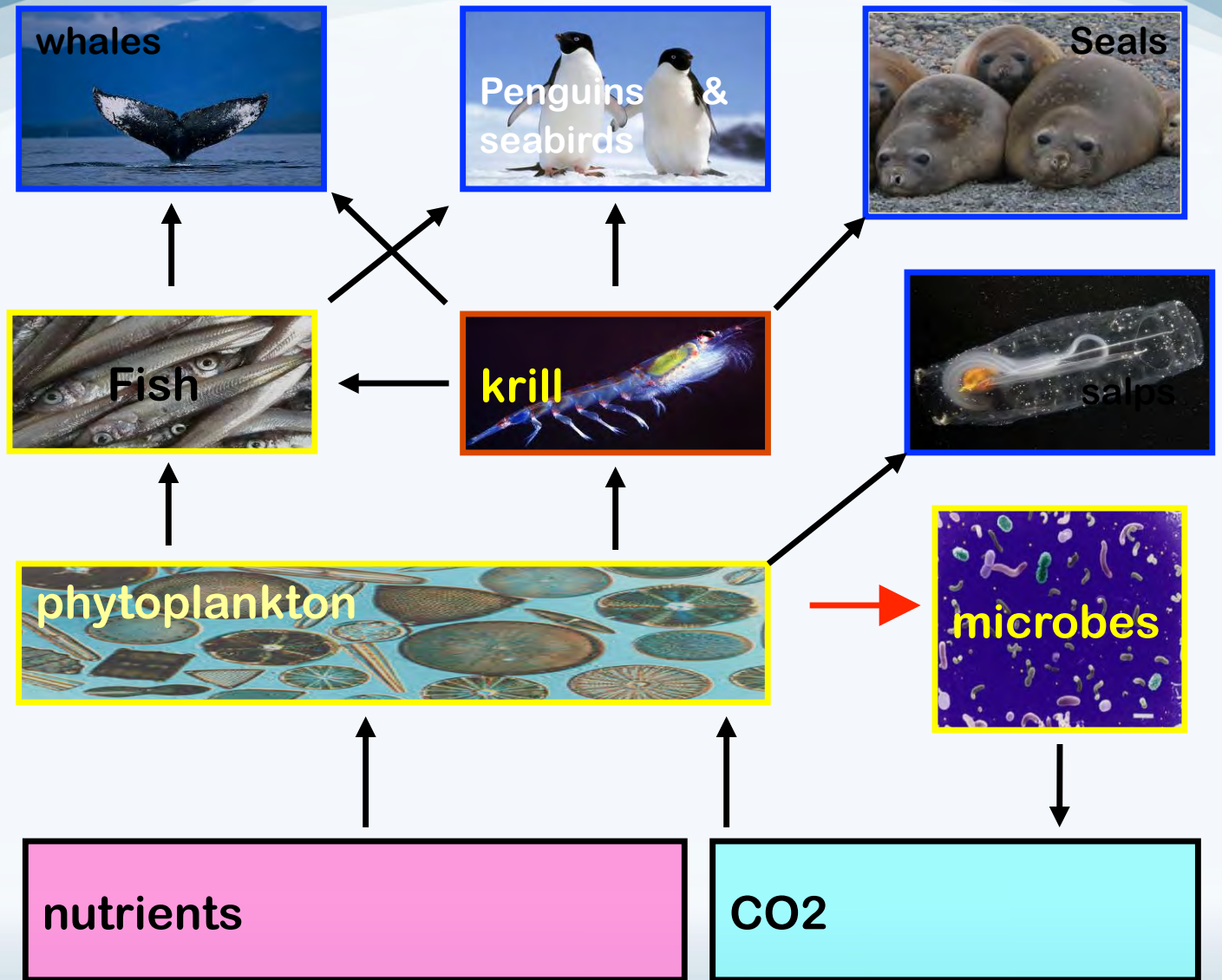


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Palmer Long Term Ecological Research



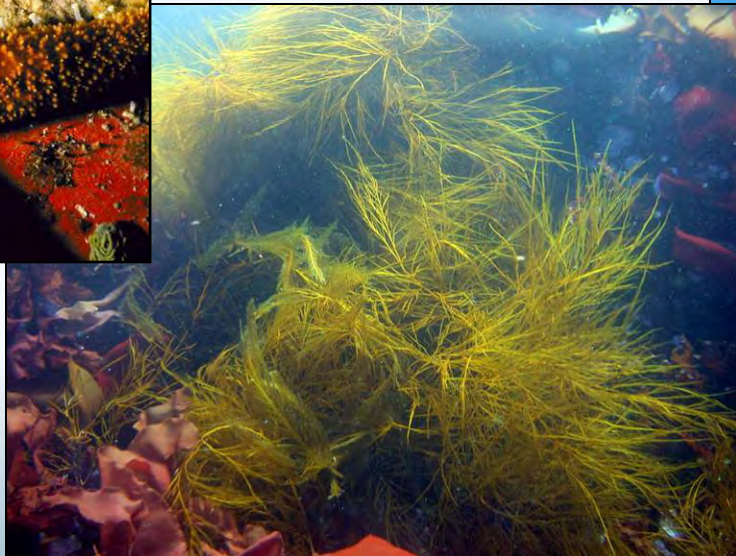
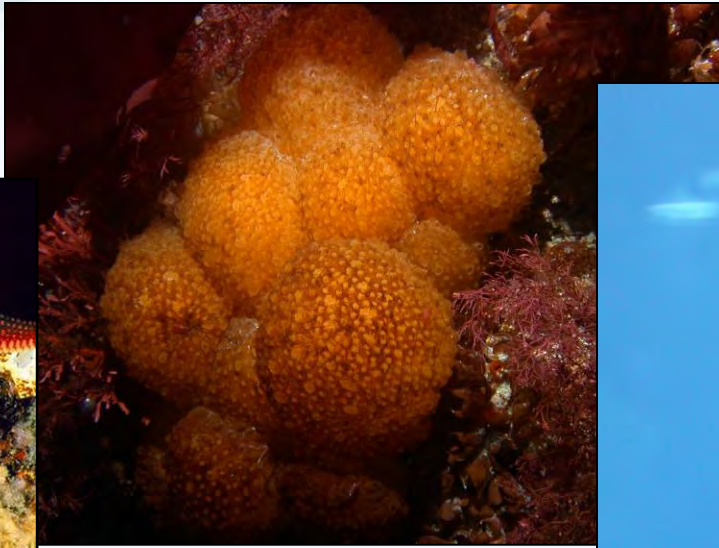
Palmer
LTER:Ecology
Study



Zodiac as science sampling platform



Chemical Ecology



Chemical Ecology



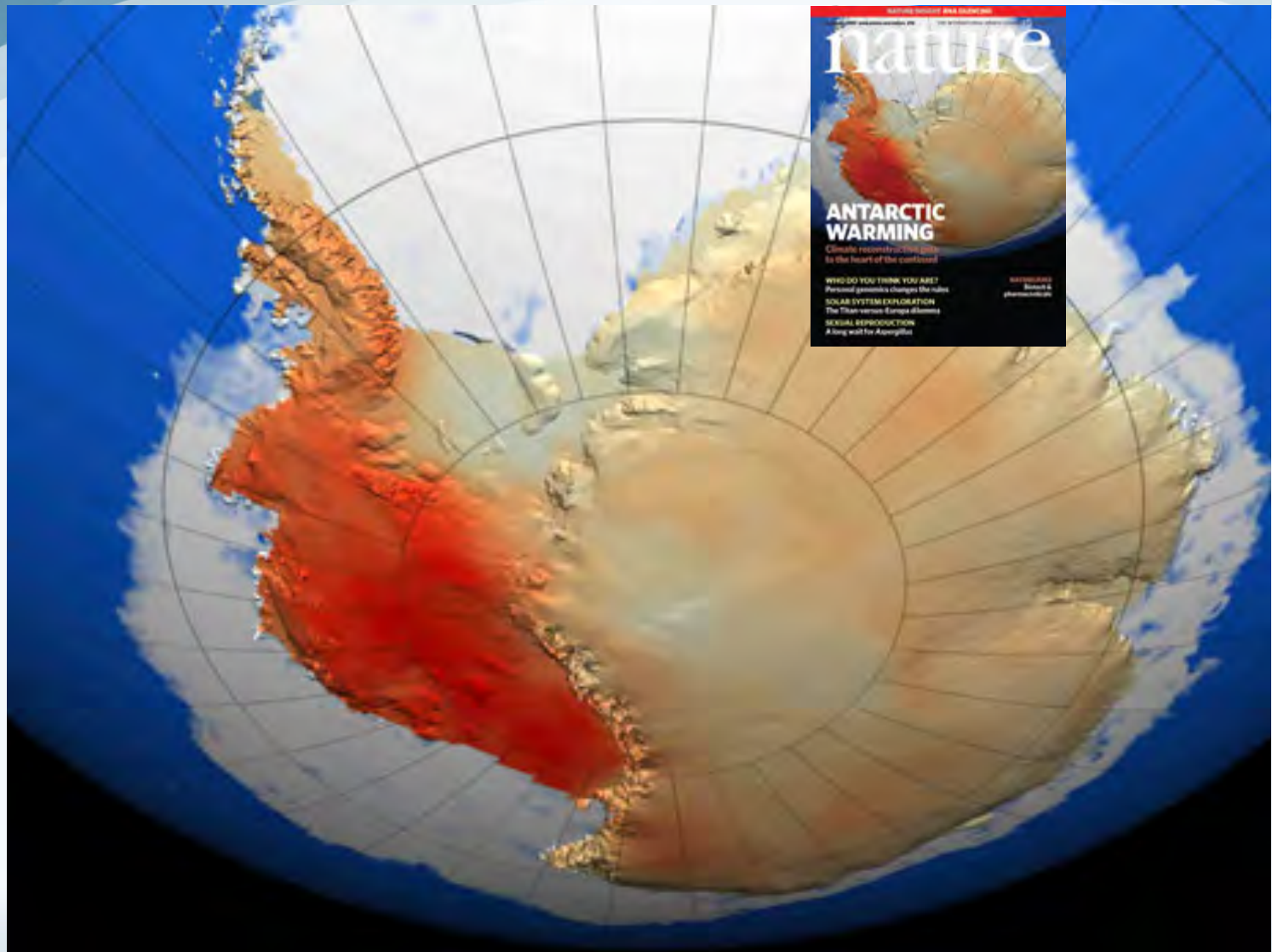
Anti-Malarial
activity



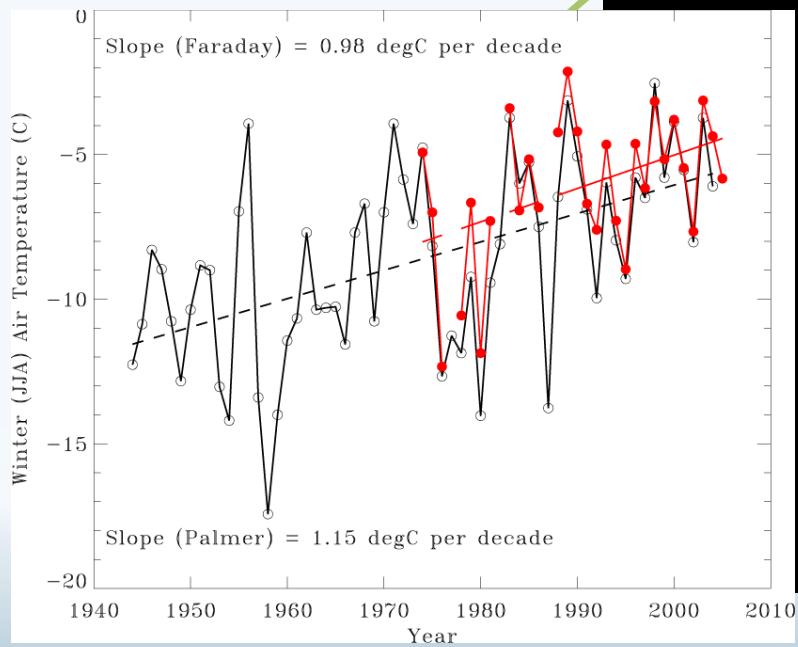
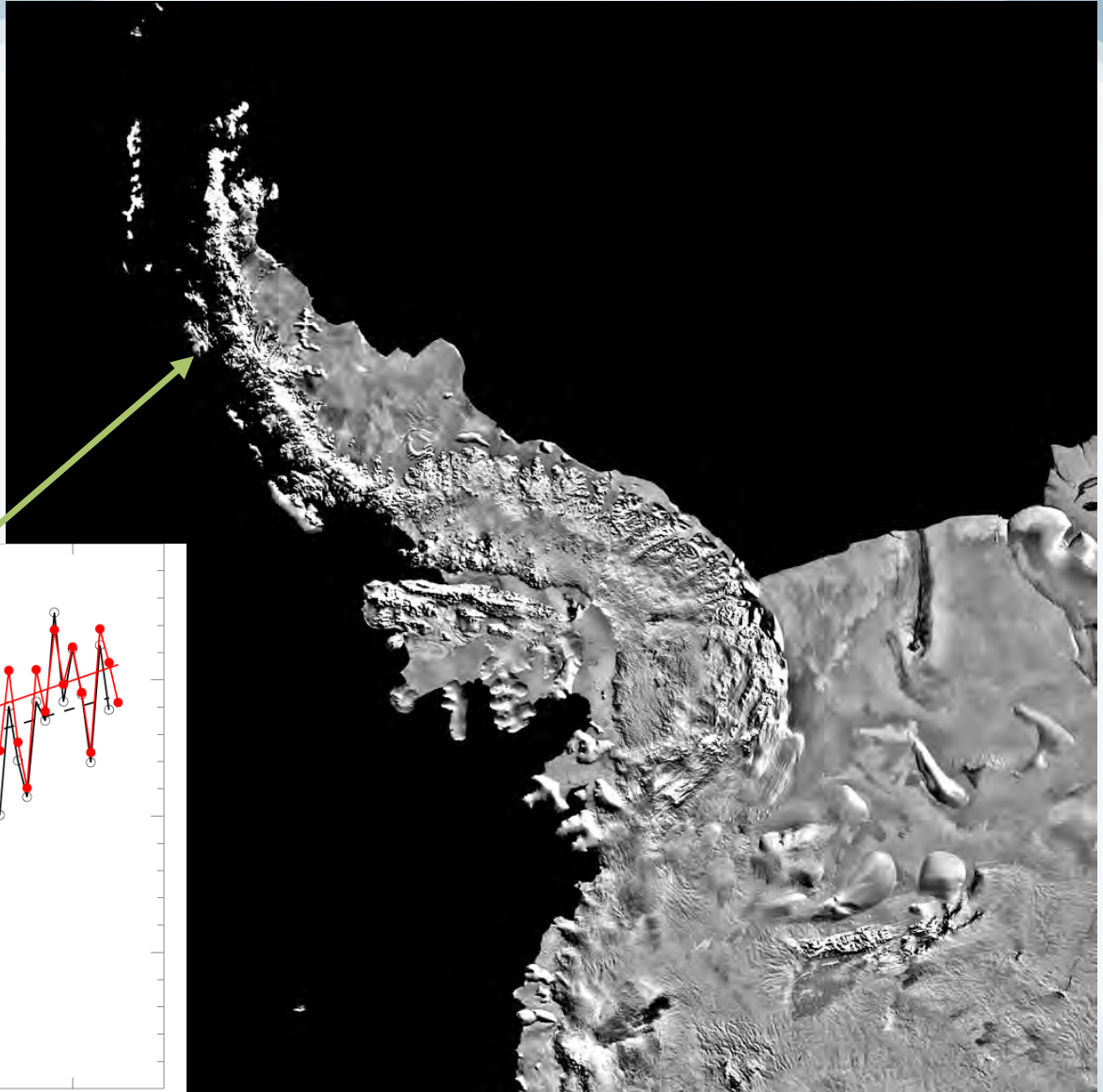
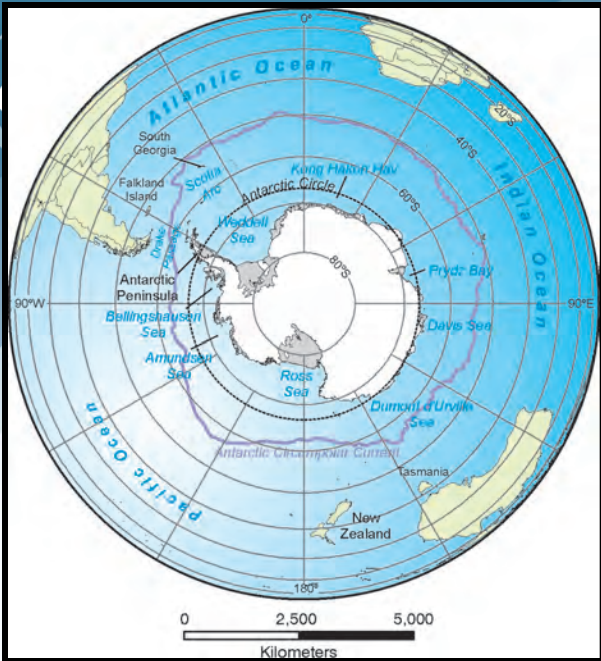
Anti-Melanoma
compounds

Anti-Viral
activity





**Antarctic warming patterns based on satellite and
ground station data**



Source- H. Ducklow – NSF LTER



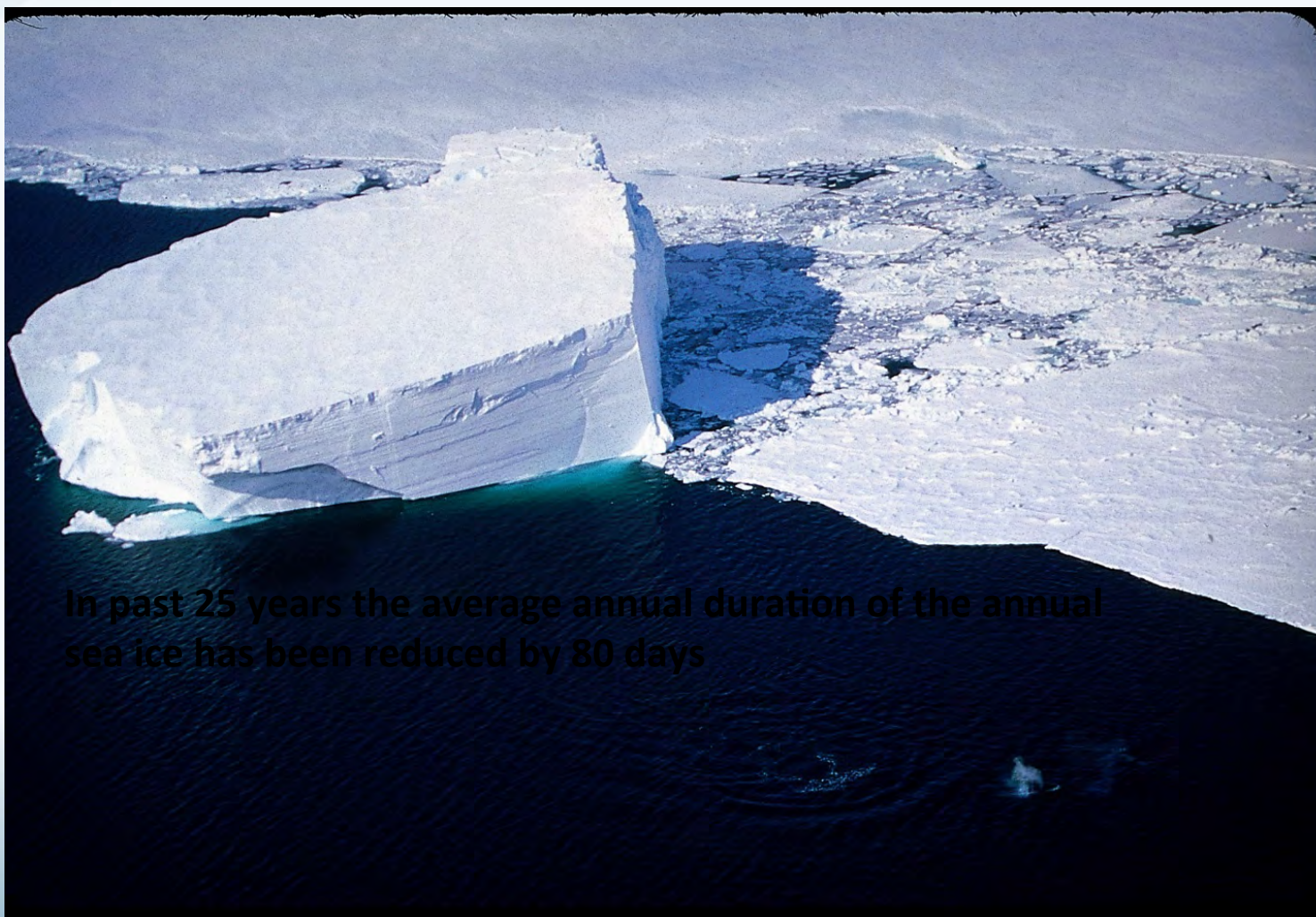


PHYSICAL IMPACTS OF CLIMATE CHANGE



Increased glacial calving – Marr Glacier, Anvers Island 2006

Climate warming over past 25 years has resulted in a 40% reduction in extent of annual sea ice cover along the western Antarctic Peninsula



In past 25 years the average annual duration of the annual sea ice has been reduced by 80 days



Photo – Dan Martin



***Euphausia superba* grazing on sea-ice associated microalgae**
- Reduction in Peninsular sea ice is correlated with reduction in krill

Penguin population trends – Antarctic Peninsula

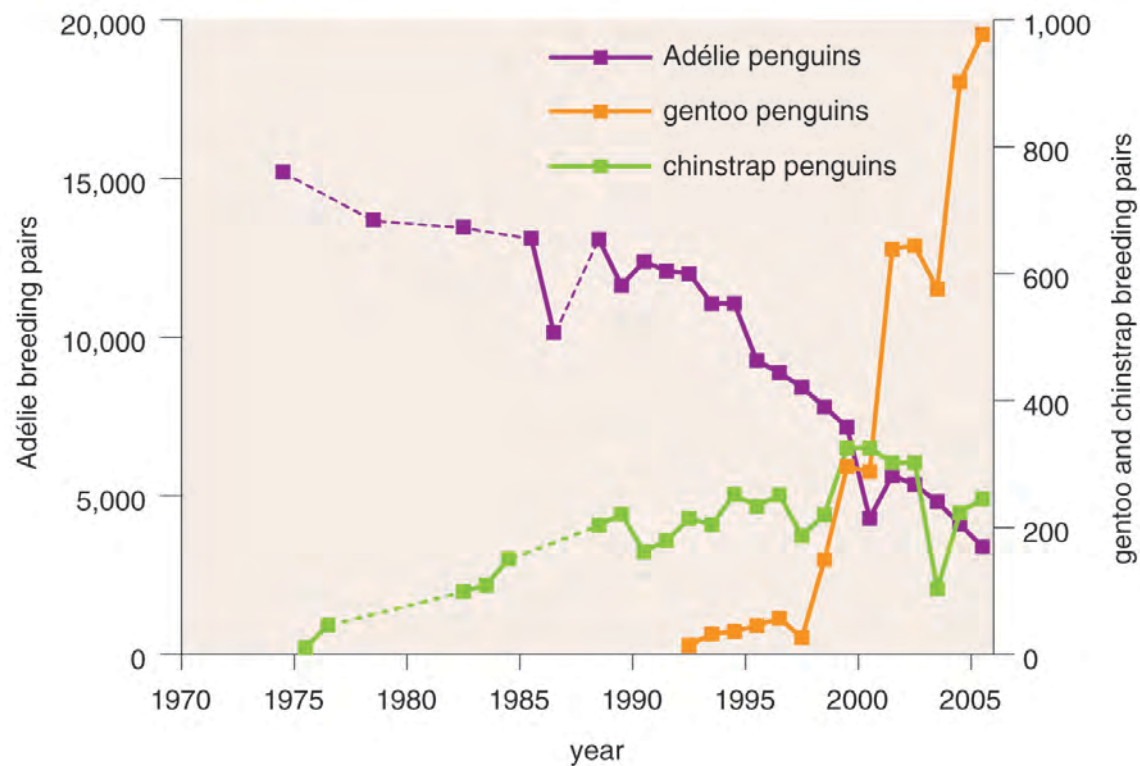




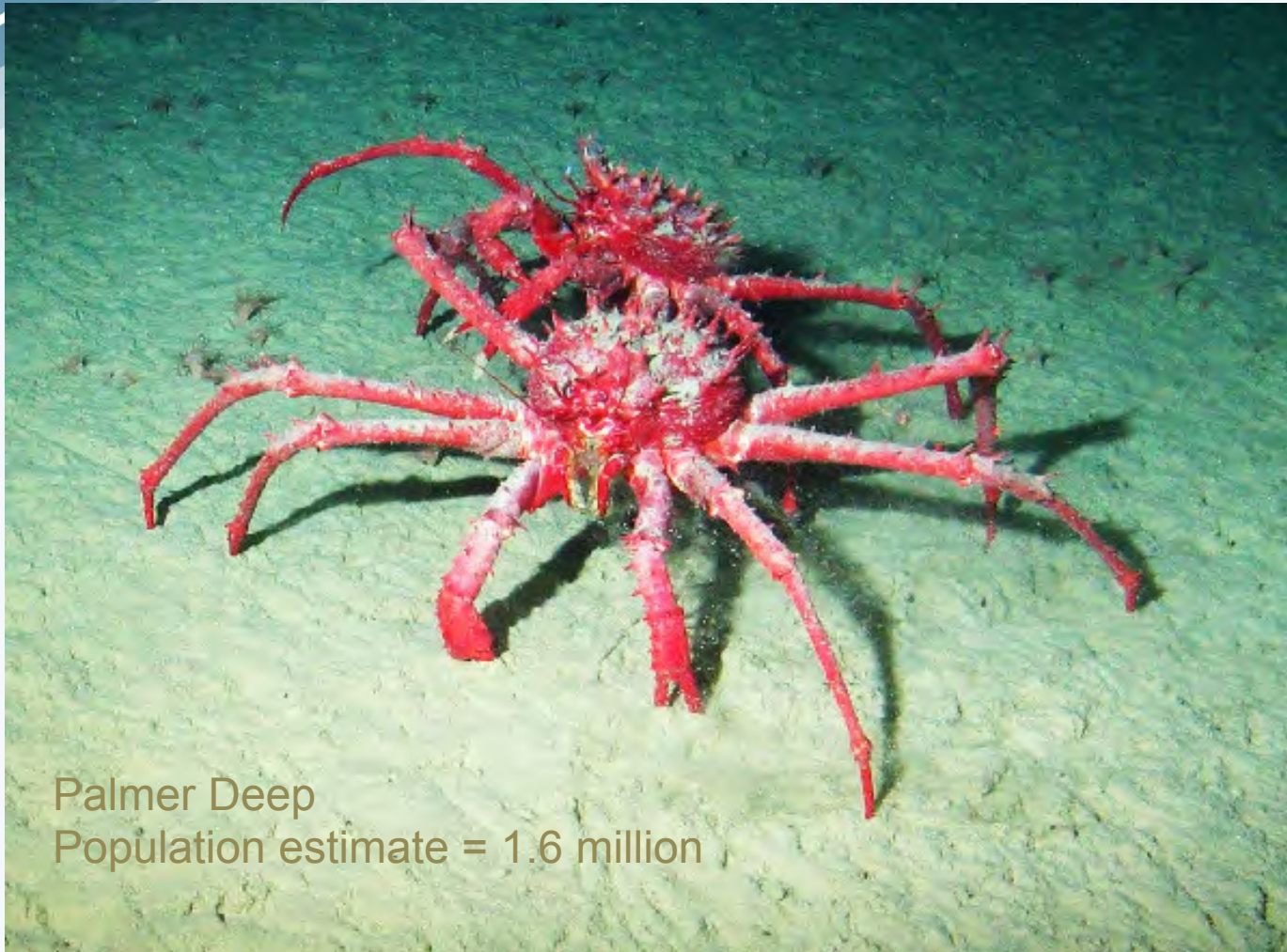
Photo – Ralph Hopkins

Reductions in numbers of Weddell Seals – postulated to be related to their ecological dependence on annual sea ice

SPECIES RANGE EXTENSIONS



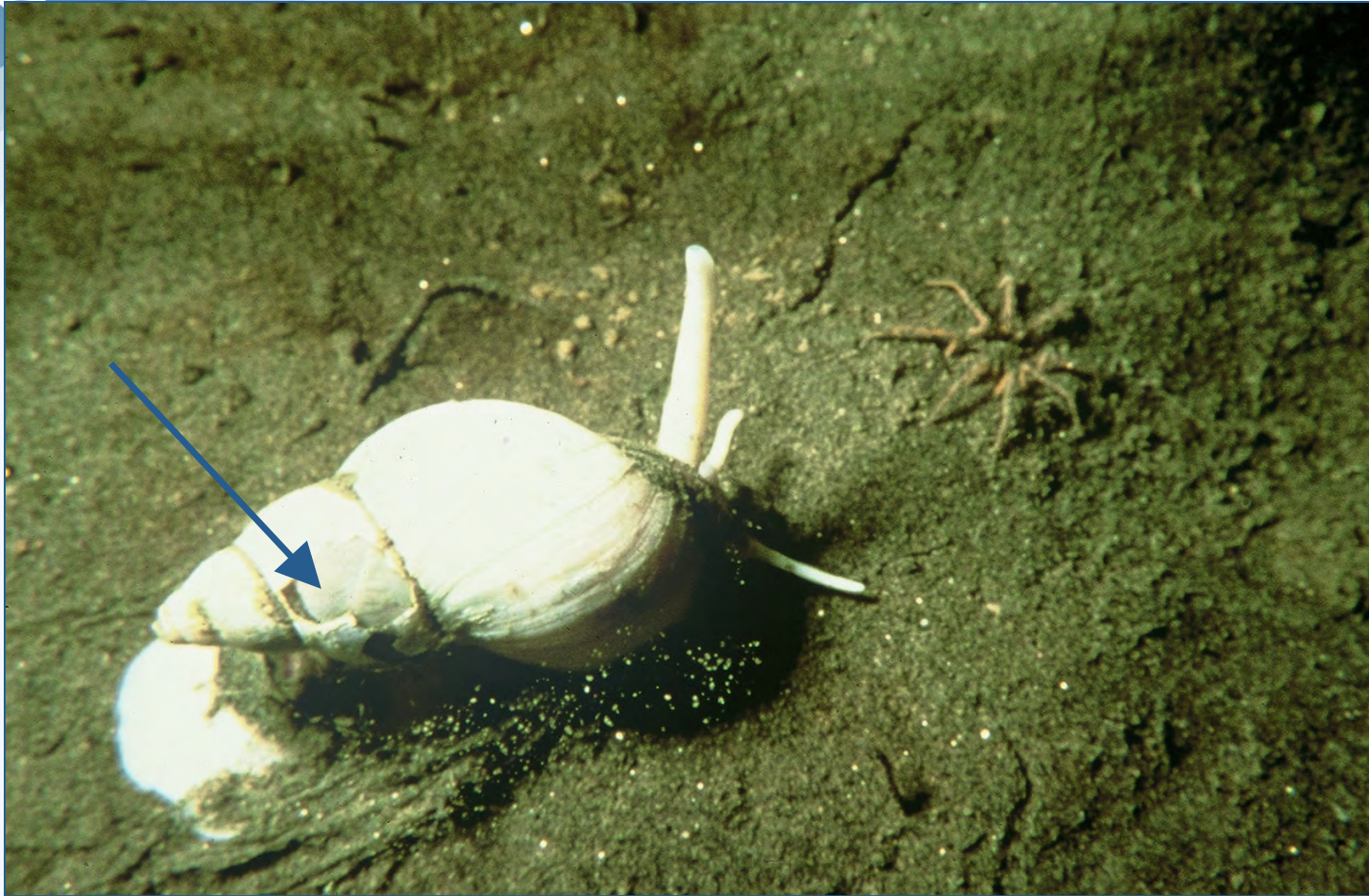
**Southern extension of Antarctic elephant and fur
seals**



Palmer Deep
Population estimate = 1.6 million

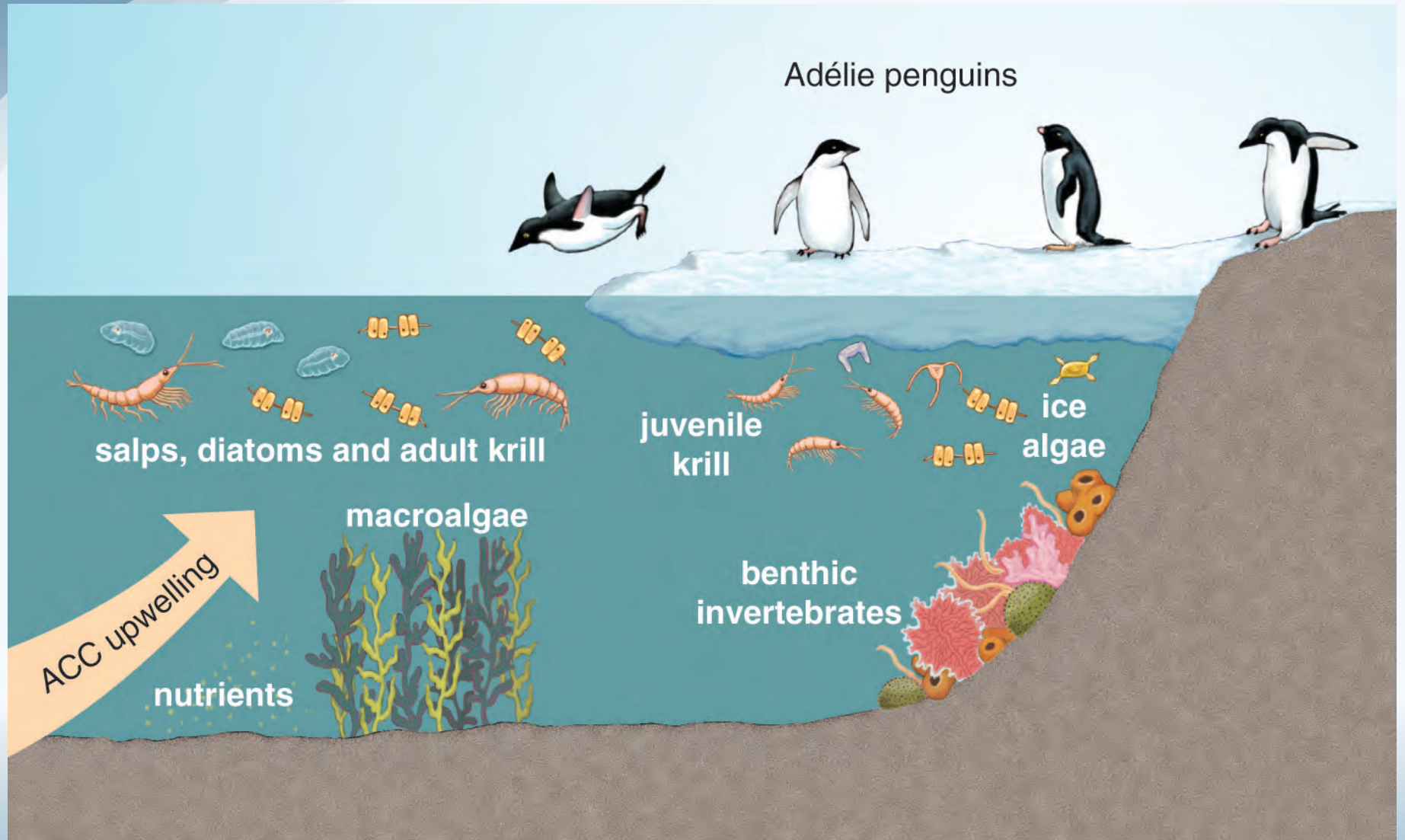
Discovery of large population of king crabs in the
Palmer Deep - *Neolithodes yaldwyni* - (Reported in 2011 by
Craig Smith et al.)

High vulnerability to Ocean Acidification

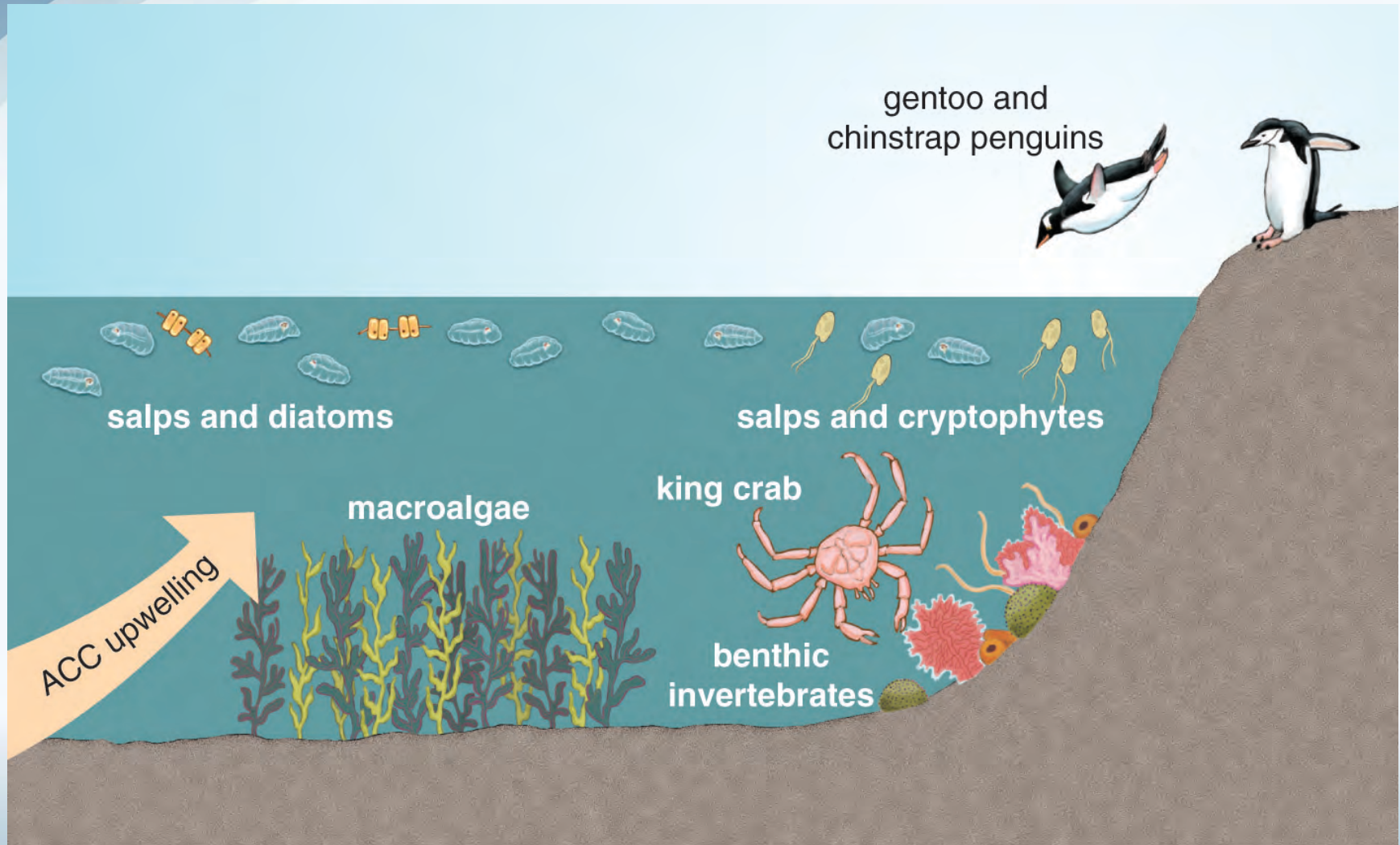


- Generally thin shells
- Southern Ocean is the greatest sink for atmospheric carbon dioxide
- Inverse relationship between decalcification and temperature
- Undersaturation of aragonite (25 yrs), calcite (50 yrs)

Pre Climate Warming



Post Climate Warming



Antarctic Peninsula and Climate Change

- Marked acceleration of glacial recession
- Coastal ice sheet break-up events
- Decreased extension of annual ice pack
- Declines in populations of annual sea ice associated Adélie Penguins, Weddell seals, and krill
- Changes in phytoplankton communities
- Possible effects on macroalgal communities
- Potential temperature impacts on larval development
- Southern extension of elephant and fur seals
- Invasive predatory species – king crabs
- High vulnerability to ocean acidification



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Teachers: Join PolarTREC!

www.polartrec.com/about/join

Every teacher can participate in different ways:

- **Following Expeditions**
- **Participate in PolarConnect Events**
- **Join the Polar Education Email List**
- **Take Online Professional Development Courses**
- **Become a PolarTREC Teacher!**



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Upcoming Events

Watch for and register for upcoming events at [www.polartrec.com!](http://www.polartrec.com)



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Thank You!

An archive of the event will be available shortly.
<http://www.polartrec.com/polar-connect/archive>

