Oden Antarctic Expedition

The Sea Ice System in Antarctic Summer

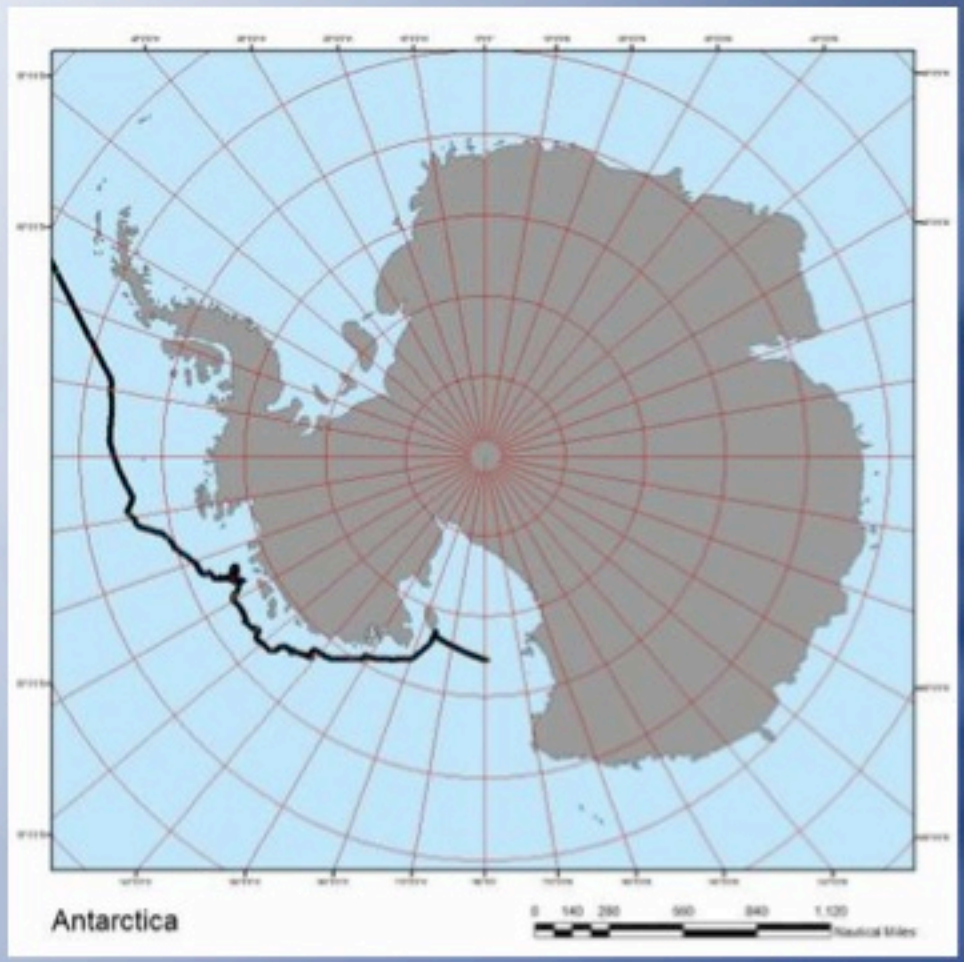
Anne Marie Wotkyns- PolarTREC Teacher

Blake Weissling – Univ. Texas San Antonio

Brent Stewart –Hubbs-SeaWorld Research Inst.

David Prado – Univ. Texas San Antonio

Our Cruise Track



D. Prado

We are currently in McMurdo Sound, the waters outside of McMurdo Station. However, those waters are frozen year round, so the Oden is contracted to break a channel in the ice to allow other ships to come into the station.

On the "Fast Ice"

"Fast ice" is ice that is attached or held "fast" to the continent, instead of free floating ice floes that we have been working on. Fast ice is generally flatter and smoother than ice floes.

Antarctica's Sea Ice

Summer Sea Ice

Winter Sea Ice

Antarctica has about 1.5 million sq. miles of sea ice in the summer (Dec-Feb) and about 7.3 million sq. miles of sea ice in the winter (June-Aug)

Ross Ice Shelf

The Ross Ice Shelf covers about 200,000 sq. miles. The average ice thickness is 1200 feet. When pieces of the shelf break off, it makes the flat, tabular icebergs we have seen from the Oden.

Bay of Whales

The Bay of Whales is a very famous place in Antarctica's history. In October of 1911, Norwegian explorer Roald Admundsen left from this place on his expedition to be the first man to reach the South Pole, which he did on December 14, 1911, 99 years ago!

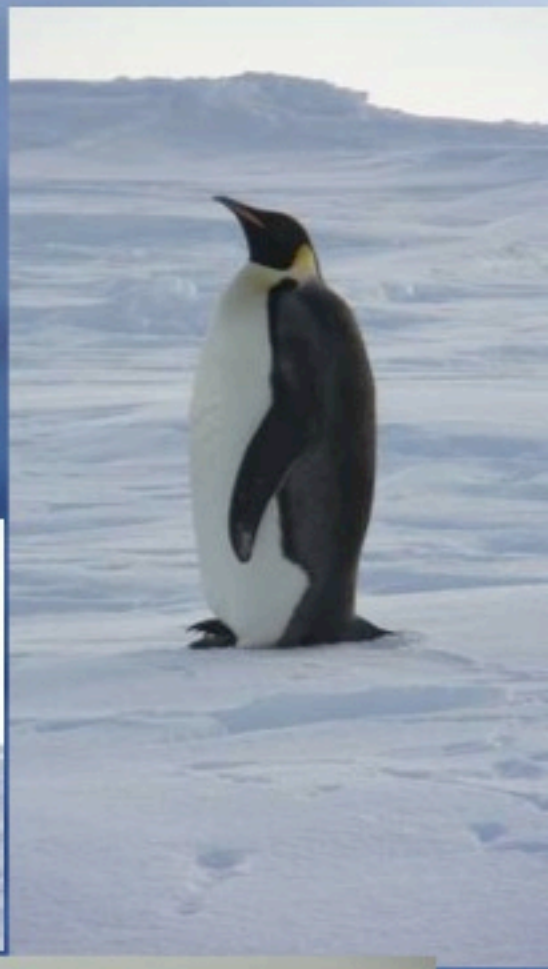
This was the farthest south the Oden has ever traveled!

78*38' South 164*17.7' West

Minke Whales

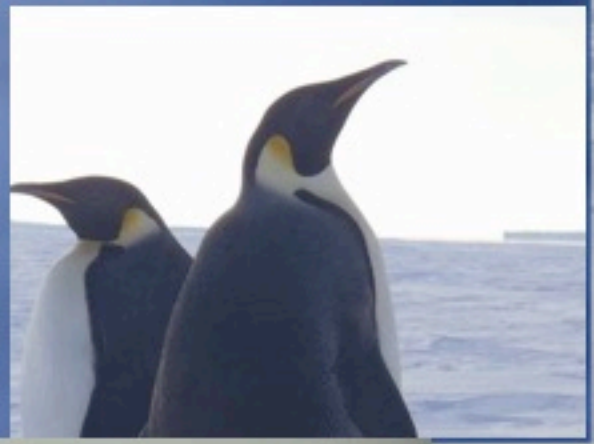
At the edge of the fast ice, we have seen several Minke Whales. They are about 30 feet long and feed on krill and small fish.

Emperor Penguins



Emperor Penguins are the largest penguins. They can be up to 3 feet tall and weigh about 70-80 pounds.

They spend their lives on the sea ice, including laying 1 egg the male carries on his feet. They eat fish, squid, and krill, and can dive for 20 minutes to depths over 1000 feet.

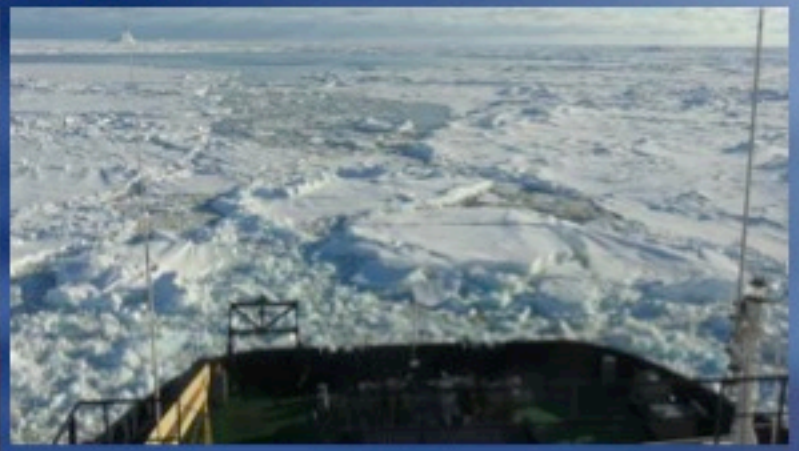


Adelie Penguins

Adelie Penguins are the most abundant animals we have seen on this expedition. They often appear in groups of 10 or more when we moor to the ice for an ice station. They are about 2 feet tall and weigh 10-12 pounds. They eat krill, fish, and squid, and we often see them “porpoising” in and out of the water, looking more like fish than birds.

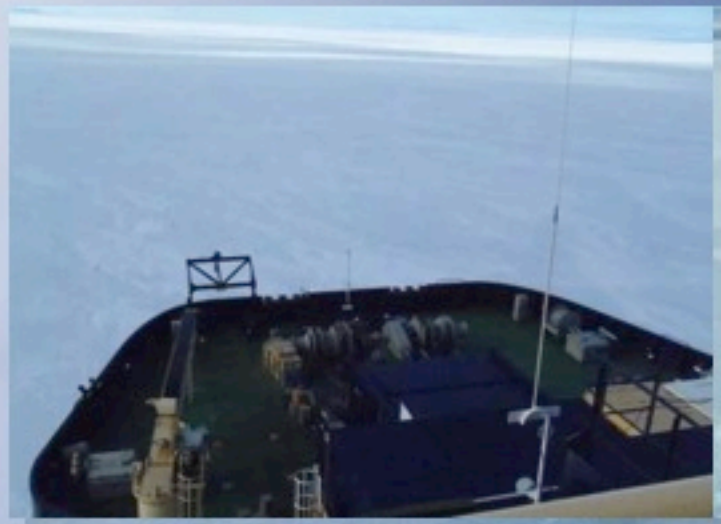
Icebreaking

The Oden is an Arctic class icebreaker, capable of breaking ice at least 2 meters thick, traveling at 3 knots. She is powered by 4 8-cylinder diesal engines which run 2 propellers that are 4.5 meters in diameter. She has a jet thruster system that sprays water under the bow, to help the ship slide over the ice and a heeling system, which uses water in tanks in the hull, pumped from tank to tank, to rock the ship from side to side, almost “climbing” up on the ice to break it.



Icebreaking

It is amazing to watch as the bow of the Oden drive over and through a solid sheet of ice. If you are outside, you can sometimes hear the ice cracking. And you can hear the ice scraping on the ship's hull as the Oden rides over it.



Mt. Erebus

Mt. Erebus is the world's most southerly active volcano. It releases steam all the time, and it has a convecting (bubbling) lava lake inside it. It is located on Ross Island, where McMurdo Station, the main US Antarctic base. This is where we will fly home from, first to Christchurch, New Zealand, then Aukland, NZ or Sydney, Australia, then to Los Angeles.

Other Science on The Oden

CTD cast from the bow of the Oden – collecting water from different depths. Science Technicians operate the giant winch to lower CTD into water.

Mini-CTD lowered through hole in ice.

Oceanography

Recovery and re-deployment of oceanographic mooring buoy equipped with data sensors. The mooring was in place for a year, then it was collected, the data was downloaded, and the instruments were redeployed for pickup next year. It collects data such as salinity, temperature, oxygen levels, and flow of water currents.

Ice Science

Other teams are collecting ice cores, water, slush and snow samples as they study biochemical cycles of halocarbons and mercury, carbon dioxide, phytoplankton, and algae growth and production.

Seal Research



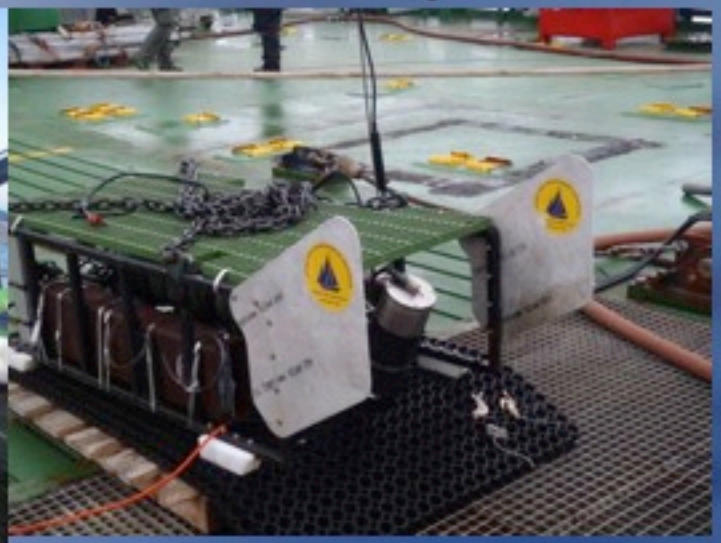
Measuring seals - Collecting blood, hair, skin samples to research diseases in seals, tagging and tracking rare Ross seals



Pollutants in the Marine Food Web

Researching how persistent organic pollutants, found in glacier meltwater, are moving through the food chain, from phytoplankton all the way up to seals, penguins, and whales.

Invasive Crab Species



The “crab cam,” .
a towed underwater sledge that video-tapes the sea floor and sends back live images

Looking for evidence of king crabs, an invasive species moving southward as ocean water had warmed dramatically over the past years.

PolarTREC.com

Thank you to Principal Investigator Dr. Steve Ackley, my sea ice team Blake, Brent, and David, Captain Mattias Peterson and the great crew on the Oden, all the scientists on board, and especially to the ARCUS/PolarTREC staff for giving me the experience of a lifetime!!

Keep following my journal at polartrec.com.

Send your questions to "Ask the Team"