THE LAGOON EXCHANGE:
KAKTOVIK COMMUNITY INFORMATION 8TH BIANNUAL NEWSLETTER – WINTER 2024

Beaufort Lagoon Ecosystems (BLE) Long-Term Ecological Research (LTER)

Connecting with an Arctic coastal ecosystem in transition

https://ble.lternet.edu

M. Kayotuk

FEBRUARY VISIT TO HAROLD KAVEOLOOK SCHOOL

Science education activities continued this February. Students experimented with sea ice and freshwater ice, dissected fish, calculated how much water is in the snow, and learned about animal adaptations!

KAKTOVIK OCEANOGRAPHY PROGRAM

In August 2023, we continued our 3-day Kaktovik Oceanography Program. In preparation for the first day of school, BLE scientists held fun science related activities for kids 5 and up. Students measured temperature, salinity, and oxygen levels in nearby tundra ponds and Pipsuk lagoon (see page 2 to learn more about the importance of oxygen in the lagoons). Students also practiced seine netting, trawling, and identifying invertebrates.

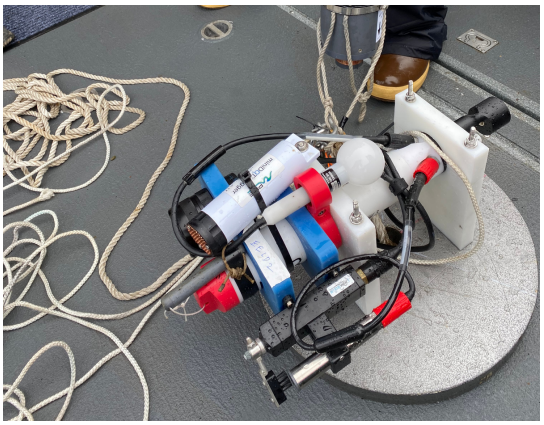
BLE LTER PLANS FOR 2024

Our group plans to continue seasonal yearly sampling in 2024. We expect to work on Jago and Kaktovik Lagoons in April, June, and August. We hope to host more activities for students this April and another Kaktovik Oceanography Program at the end of August 2024.

WHY WAS THERE A FISH KILL IN KAKTOVIK AND JAGO LAGOONS?

In late June of 2023, local residents noticed dead fish washing up along the shores of Barter Island. After we reviewed our data, we noticed that oxygen levels on the bottom of Jago and Kaktovik lagoon were extremely low during the time the dead fish started to appear (red point on Figure 1). With oxygen levels falling below 2%, the deep water of Jago Lagoon qualified as “hypoxic”. When water becomes hypoxic, living things like fish struggle to survive.

Water becomes hypoxic when bacteria have lots of food to eat and can grow rapidly. For bacteria, things like mud and old plant matter make a delicious meal. As coastal bluffs and permafrost continue to enter the water, bacteria in the lagoons can grow rapidly consuming a majority of the oxygen available in the water. Water near the bottom is more prone to hypoxic events, because strong winds are needed to mix air from the surface to the seafloor.



Our BLE LTER Mooring.
These instruments spend a year underwater collecting data about the health of the lagoon. This mooring contains oxygen, temperature, salinity, light, and pH sensors.

The BLE LTER research group measures oxygen and other important features of lagoon water in two different ways. The first is through year-long mooring deployments (left). Our moorings measure various characteristics of the water all year long on the bottom of the lagoon. Researchers also measure characteristics of the water in different sections of the lagoons each time we visit. This helps us understand how seasonal patterns affect the organisms living in the lagoons.

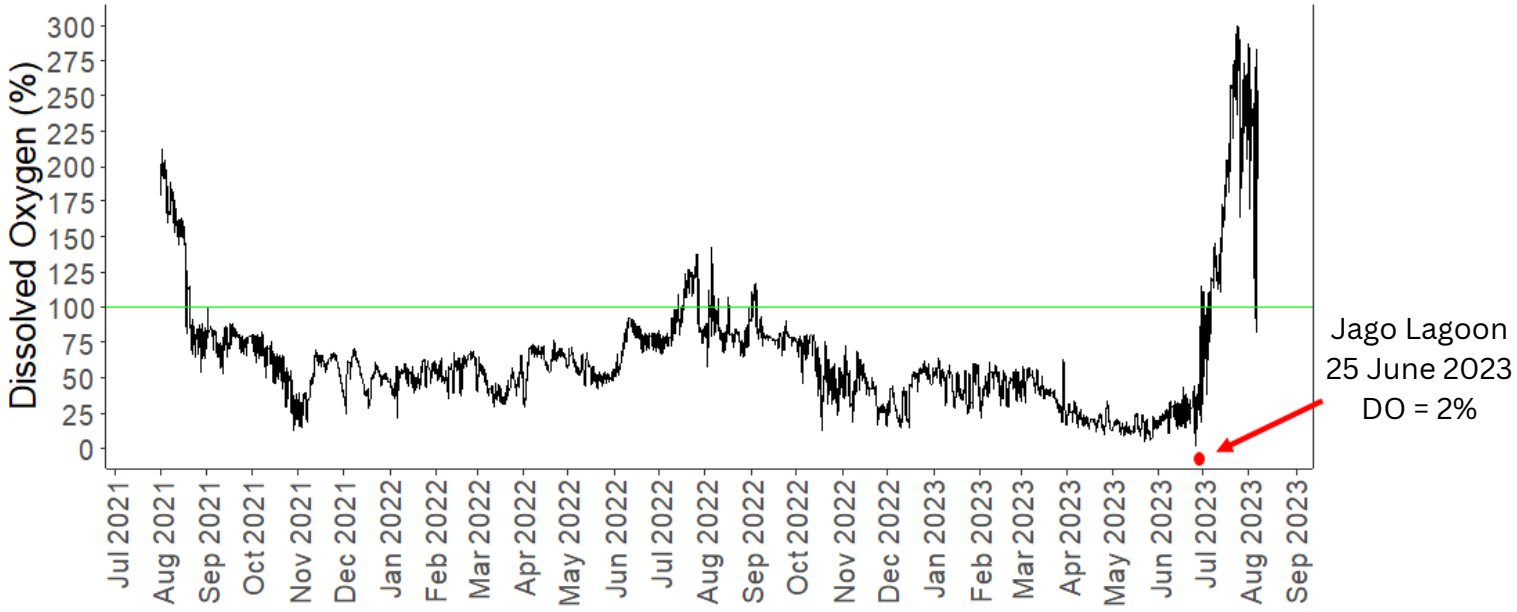


Figure 1: The changes in dissolved oxygen on the bottom of Kaktovik Lagoon from June 2021 to August 2023

We extend our thanks to the Kaktovik Iñupiat Corporation (KIC) for their assistance with logistics during our field campaigns. We are working in cooperation with the Kaktovik Traditional Knowledge Panel, KIC, Ukpeaġvik Iñupiat Corporation (UIC), the North Slope Borough School District (NSBSD), the US Geological Survey (USGS), the Bureau of Ocean Energy Management (BOEM), and the US Fish and Wildlife Service (USFWS). The National Science Foundation (NSF) funds our research which includes scientists from seven universities. For questions contact Ken Dunton (ken.dunton@utexas.edu) or Kaylie Plumb (kaylie.plumb@austin.utexas.edu. For more information, scan the QR code with your phone´s camera to be directed to our website.

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