

# AAOKH NEWS



## Issue 3, Spring 2020

Alaska Arctic Observatory and Knowledge Hub

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### AAOKH history

AAOKH is part of the UAF Troth Yeddha' Campus, on the traditional lands of the Tanana Dene People. We are part of the International Arctic Research Center. AAOKH is made possible through Community Service Payments made by a corporate defendant that was convicted of federal environmental and maritime crimes in 2014.

## Welcome

Welcome to the third AAOKH news! Over the next few pages we'll share how local observers in coastal Arctic Alaska help us understand the rapid changes in our ecosystems. Explore how this winter compared to past winters, visualize AAOKH activities, hear from observers, learn how coronavirus is impacting AAOKH and find ways to get involved.

## What is AAOKH?

The Alaska Arctic Observatory and Knowledge Hub is a resource for northern Alaska coastal communities. AAOKH (pronounced A-OK) provides tools, resources and scientific information to share local expertise and observations of environmental change. Community-based observations focus on changes in sea ice, wildlife and coastal waters.

Also a knowledge hub for sharing data, AAOKH has three main goals:

- Share and document community observations about changes to the seasonal cycle
- Make wildlife, ocean data and information from scientists accessible to communities
- Provide resources for education and outreach

## What's new at AAOKH?

Even as sea ice rapidly declines and Arctic ecosystems shift, there is little information about impacts to ice-associated seals. AAOKH science lead, Donna Hauser, and Andy Von Duyke (North Slope Borough Dept. Wildlife Management) recently got Coastal Marine Institute funding to test the use of game cameras and small quad-copter style Unmanned Aircraft Systems (commonly known as drones) to study terrestrial seal haulouts (land-based sites where seals leave the water during the open water season). During 2020 (contingent on the coronavirus situation) and 2021 they will study the seasonal presence, behavior and numbers of ice seals at summer-fall coastal haulouts near Utqiagvik. The project will pair AAOKH observations with data collected at seal haulouts. Alaska Native hunters are included as project assistants and will be trained as drone pilots.



Andy Von Duyke



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# What do the observations say?

AAOKH observations focus on sea ice, wildlife and coastal waters. They contribute to, and are stored in, a National Science Foundation-funded Exchange for Local Observations & Knowledge of the Arctic database ([eloka-arctic.org/sizonet](http://eloka-arctic.org/sizonet)). Since 2016, AAOXH observers have contributed nearly 3,000 community-based observations. These are combined with the historic Seasonal Ice Zone Observing Network database (2006–2016) for a total of over 7,500 local observations.

## Fall themes

+🌡️ Warm air & ocean

🌊 Late freeze-up

🌊 Open water, big waves

🌪️ Strong winds

🏖️ Shoreline erosion

🐋 Longer whaling

## Winter themes

-🌡️ Cold temperatures

🏠 Thick sea ice

🗨️ Low quality ice

Wainwright



## Wainwright

**October–November** “Late fall freeze-up of ocean, warm weather and strong swells.”

**November 25, 2019** “Early fall weather in November and slush on ocean.”

*Steven Patkotak, AAOXH observer*

Point Hope



## Point Hope

**October 4, 2019** “40°F. Rain all night and morning. Here’s a picture from 2011 on today’s date. I had my net under the ice. Look like the ice was almost 4 inches. From that date till now freeze-up is later and later.”



**October 25, 2019** “North beach swells 15–20 feet... Past two years the waves took two ice cellars.”

**November 26, 2019** “Strong winds last night, wind gust to 60+ mph. Old buildings blowing away, peoples roofing blew off last night. South side beach filled with slush.”

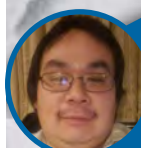
**January 30, 2020** “19°F, north 15–20 mph. Clear skies 10 mile visibility. North side [ice] almost 2 feet thick. South side thicker in most places because more ice layer build up.”  
*Guy Omnik, AAOXH observer*

## Wales

**March 21, 2020** “Breezy southerly winds at about 15 mph at about 10–15°F... the ice grew substantially from my last pictures in February. The ice froze, broken off, refrozen to have this jagged ice edge with over flow recently where the ice meets the land.”

*Robert Tokeinna Jr., Sea Ice for Walrus Outlook, an AAOXH partner organization*

Wales



Kotzebue



Utqiagvik



## Utqiagvik

**October 8, 2019** “The waves are bigger than normal and no bowheads in big numbers yet. The whalers have been trying since September 21.” [November 16, bowhead landed]

**November 18, 2019** “Shorter daylight and heavy slush is making whaling harder.”

**April 1, 2020** “Location Nunavaaq, temperature 5°F, south winds 10 mph, partly cloudy, and visibility to 8 miles. A large area ice near shore of Nunavaaq broke off.” [see SAR image right]



**April 10, 2020** “Winds are out of the west. We have not seen open water for a while. Whaling crews are busy getting ready. Crews have made some trails and snowbirds have made it to town. Crews are trying to go on the ice this year. Some of the shore fast ice are grounded, lot of the shore fast ice is 4’ and that is good.”

*Billy Adams & Joe Leavitt, AAOXH observers*

## Kaktovik

**October 2, 2019** “One section of the snow fence collapsed (this winter) due to erosion of the ground... At the other end...the fence looks like it was placed in the water. Over the past three or so years the water level has gotten high and eroded the sand beach and ground there. We used to be able to drive or walk that area but the water is so high we cannot and it has pretty much become an island of its own.”

**October 28, 2019** Prolonged polar bear presence, “bears, bears, bears.” [11 bears in photo to right]

**November 11, 2019** Late fall freeze-up.

*Carla SimsKayotuk, AAOXH observer*



## Kotzebue

**September 7, 2019** “My sister’s birthday. We all remember that we would go skating back in the day. She mentioned it, and we got a kick out of it, as the temperature was 61°F.”

**November 20, 2019** “Locals are ice fishing where it is safe to do so. Still avoiding channels and long distances on the ice due to warm temperatures.”

**January 29, 2020** “The ice continues to thicken as cold temperatures continue. The channel ice was 39.25 inches today. I took a ride...East of Cape Blossom and the new ice was 36 inches constant. No new snow. The constant wind has blown the tundra clear of snow. There are a lot of snow drifts on the ice with glare ice between them. Makes for rough riding on our trails.”

*Bobby & Vince Schaeffer, AAOXH observers*



\*Satellite image from April 7, 2020  
2148 UTC Suomi NPP pass

Kaktovik



# Visualize AAOKH

This visualization shows the AAOKH activities taking place throughout the year. AAOKH local observers regularly share information on sea ice and ocean conditions, weather, wildlife sightings, snowmachine and boat travel conditions, flooding and erosion. In addition to descriptive observations, AAOKH observers and partners use standardized protocols to track changes during the seasonal cycle. Some AAOKH observers also measure snow and sea ice thickness at what is known as a 'mass balance' site; track ocean temperatures, salinity and productivity using an instrument called a CTD; and monitor erosion. Near Utqiagvik, AAOKH observers continue to work with the science team to map whaling trails.

Measuring ocean temperature, salinity & productivity

Mapping whaling trails & ice thickness

Marine wildlife observations

Weather

Travel conditions

Measuring snow & sea ice thickness

K-12 education & outreach

Ocean conditions, swell & storm surge

Coastal erosion

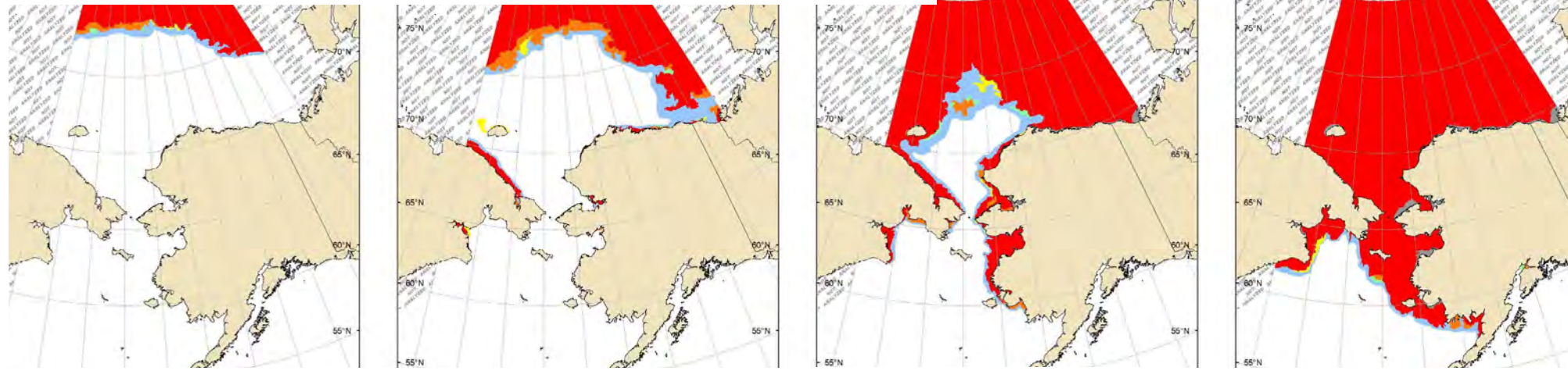
# Temperature & sea ice recap

## Sea ice progression

Summer 2019 ended with sea ice far from Alaska and ocean surface temperatures in the Chukchi and western Beaufort Sea at or near record high levels. As a result, ice was very slow to form.

2019/2020 sea ice concentration (red thicker ice, blue thin ice)

Data: NOAA/NWS Alaska Sea Ice program.



October 01, 2019

Mid-October saw significant ice development in protected bays and near river outlets on the Beaufort Sea coast.

On the Chukchi coast, the only sea ice at Halloween was found in a few protected areas and brackish waters near river outlets.

November 01, 2019

November ice closed in from the north. The Beaufort froze over on November 14, tying with 2016 for the second latest ice-over since daily satellite monitoring began in 1978.

Significant ice developed in Kotzebue Sound in early November, and late November along the western North Slope coast.

December 01, 2019

Early-December saw variable ice conditions but the turn to colder weather allowed ice to move south of the Bering Strait by Christmas. The Chukchi Sea froze over on December 22, the third latest ice-over since 1978 (only 2016 and 2017 were later).

January 01, 2020

January to March saw more stable nearshore ice. Stormy weather in March briefly pushed ice away from the northern Seward Peninsula coast, but fast ice held in Kotzebue Sound. The same stormy weather moved ice off the northwest North Slope coast and offshore Beaufort sea, but shorefast ice held.

## Air temperature

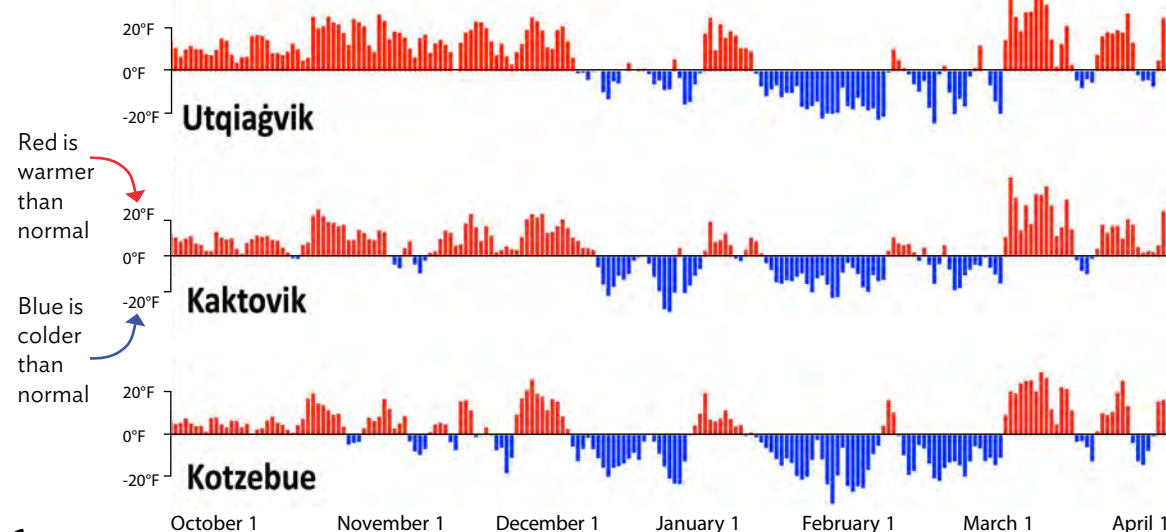
Fall 2019 was very mild. October on the North Slope was generally the second warmest on record. AAOKH observers documented open water much later than historically typical. The very mild conditions continued into mid-December. Kotzebue, though still warmer than average, saw more week-to-week variation than the North Slope. All of Alaska became colder by mid-December. However, open water and thin ice in the Chukchi slowed cooling along the northwest coast.

Late January to early March was the coldest period. While cold compared to recent years, it was not a record. For example, although February (average temperature, -26.1°F) in Utqiagvik was the coldest since 1984, it did not make the top ten coldest February's in the past century. At Kotzebue, the average February temperature (-13.7°F) was more than 30 degrees colder than February 2019, but only the coldest month since January 2012.

Since mid-March generally milder than average conditions prevailed.

Winter temperature in 2019/2020 compared to normal (1981–2010)

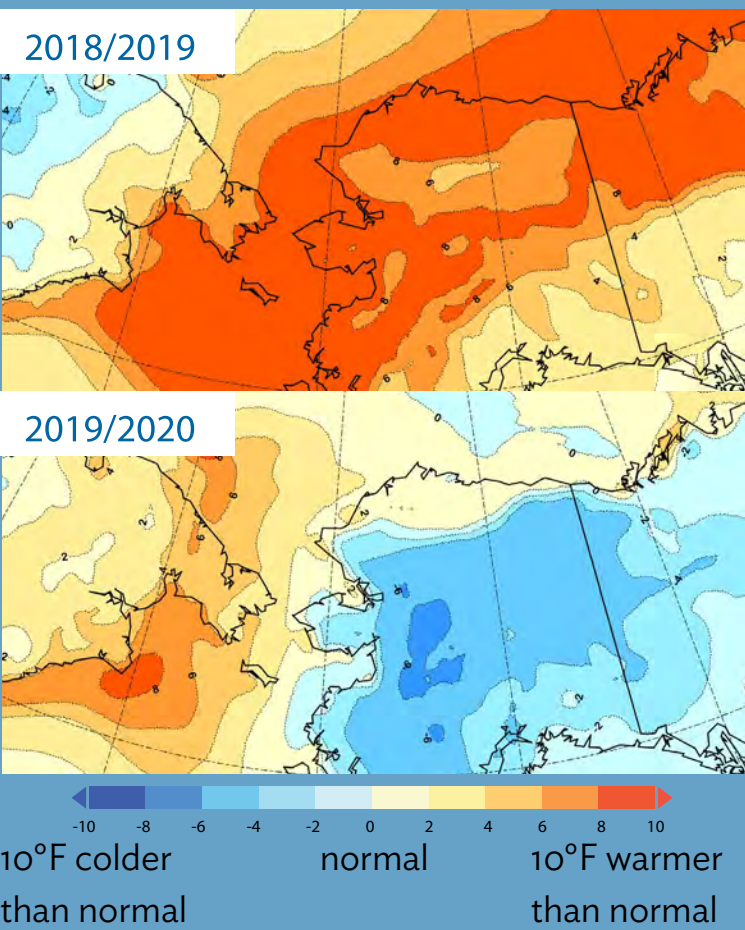
Figures, Rick Thoman; Data, FAA & NOAA/NWS.



## Comparing winters

Compare average February to March air temperature of this winter (2019/2020) to last winter (2018/2019). Red colors indicate temperatures were warmer than usual (30-year average), blue indicates colder than usual.

Figures, Rick Thoman; Data, NOAA/PSD/ESRL.



# Observer corner

I gave an overview of the many noticeable changes that I observed the past 5 years or so. From no ice in the Kotzebue Sound the past four years, to the salmon dying in the Kobuk and Noatak River systems in the summer of 2014 from water that was too warm to support life.

I also attended the sea bird die off sessions. I commented on the die-off in and around Shamisho Island, Cape Thompson, and Cape Deceit. After talking to some of our elders about the die off, we drew our conclusions as to why this is happening. When we looked at the thermal images from the satellite, it became quite clear that the waters around the rookeries were just too warm. The cod, smelt, shrimp, and other feed fish the birds needed to feed themselves and their young moved out to deeper water where the water is cooler. This deprived the birds of food therefore, there was a huge mortality rate amongst all seabirds in the Chukchi area.

Although I just touched on a few issues on the negative effects of global warming we are experiencing in the Kotzebue Sound, I hope to give more details based on our observations in the near future.

I do believe that environmental concerns will speed up as millions of additional tonnes of carbon and methane gas will continue to be emitted into the already damaged atmosphere. Temperatures will become hotter in the Arctic from now on and will do more damage to the environment and to our subsistence resources. Monitoring and assessing the damage will become even more important as we will use the data we collected to plan for the future. What will replace the seals and whales when they become extinct? What will replace the sea birds and their eggs when they are gone? What will replace the salmon and white fish when they succumb to the overheating water in their spawning streams? What will happen to the caribou as their summer ranges become too hot for them to survive? What will we do when our ever important berry products dry up and die in the ever increasing heat? A lot of scary questions but this may become a reality sooner than you think. Monitoring and collecting data today may allow us the opportunity to derive a plan to replace the subsistence resources we may lose to climate change.

AAOKH observer Bobby Schaeffer of Kotzebue sent this recap after presenting with AAOKH at the 2020 Alaska Forum on the Environment in Anchorage.

“Monitoring and collecting data today may allow us the opportunity to derive a plan to replace the subsistence resources we may lose to climate change.”

~Bobby Schaeffer



Sarah Betcher  
Farthest North Films

# COVID-19 & AAOKH

Many of us have rapidly seen our daily lives challenged with the distressing realities of the global coronavirus pandemic. Recognizing these challenges, we reflect—on our collective values, how we interact with each other, and ways to continue building partnerships to enhance our communities going forward. AAOKH is one place I find hope and future opportunity, and I feel fortunate for the connections we are forging together.

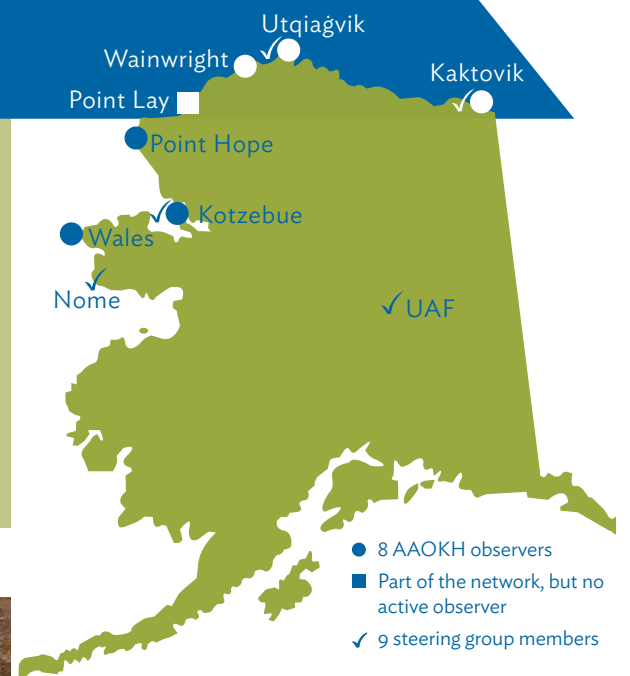
So far, AAOKH observing activities are able to continue thanks to our amazing team of local observers. Their health and safety, as well as each community's, continues to be our priority. In adherence to local and state health mandates, we modified this spring's plans for community and school visits, sea ice monitoring and our annual meeting. As much as possible, our efforts have shifted online or by phone. For example, we launched a virtual slideshow of Utqiagvik observations and satellite images at <https://arctic-aok.org/slideshow/>. We are also grateful for local partnerships allowing us to continue mapping whaling trails in Utqiagvik.

During these challenging times we hope to identify new ways to support your community. Is there research that your community would like to be involved in or questions of local interest? Contact us with your ideas.

Quyanaqpak / Taikuu aarigaa / Thanks to our AAOKH observers and regional partners!  
~Donna Hauser, AAOKH science lead

# AAOKH observers

AAOKH now has eight active local observers in six coastal Arctic Alaska communities. These individuals share their expertise related to changes in the seasonal cycle, playing an important role in understanding Arctic Alaska's changing environment. Observer and science team activities are guided by a volunteer steering group composed of local Indigenous advisors from coastal communities and University of Alaska Fairbanks scientists. The group ensures that AAOKH provides useful tools and resources for northern Alaska coastal communities.



Billy Adams, Utqiagvik



Bobby Schaeffer, Kotzebue



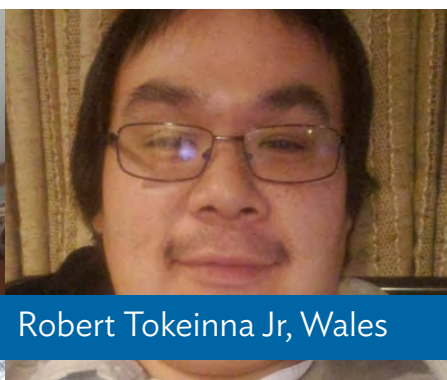
Carla SimsKayotuk, Kaktovik



Guy Omnik, Point Hope



Joe Leavitt, Utqiagvik



Robert Tokeinna Jr, Wales



Steven Patkotak, Wainwright



Vince Schaeffer, Kotzebue



AAOKH team in 2019

## AAOKH science team

- Donna Hauser, science lead
- Josh Jones, research coordinator
- Elena Sparrow, education lead
- Matthew Druckenmiller, maps whaling trails
- Roberta Jo Tuurraq Glenn, coastal erosion graduate student
- Rick Thoman, climate and weather expert
- Heather McFarland, newsletters
- Olivia Lee, former science lead

## AAOKH steering group

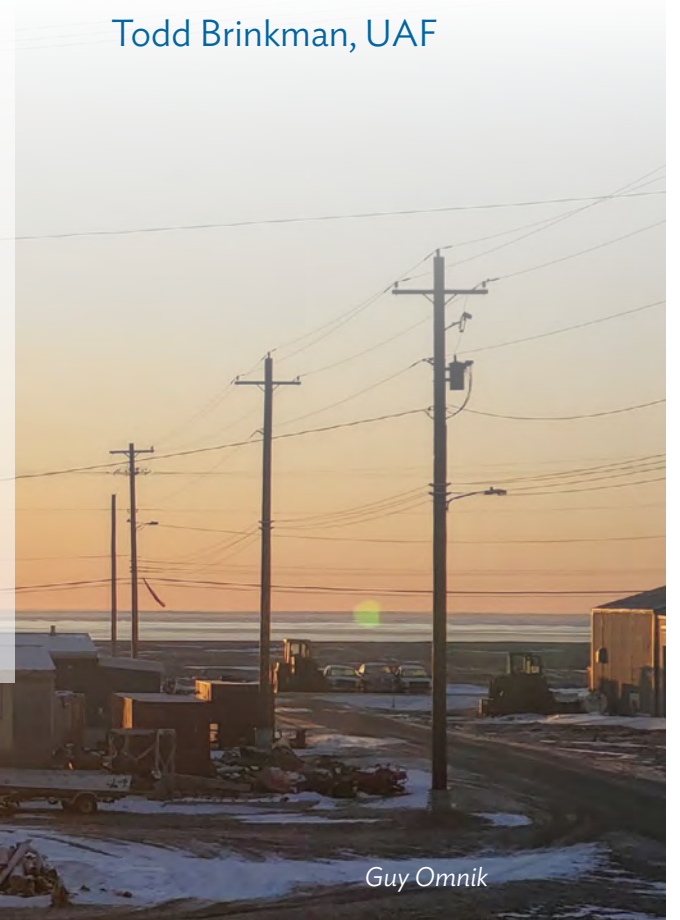
- Austin Ahmasuk, Nome
- Lee Kayotuk, Kaktovik
- Noah Naylor, Kotzebue
- Qaiyaan Harcharek, Utqiagvik
- Hajo Eicken, UAF
- Scott Rupp, UAF
- Sean Asiqtuq Topkok, UAF
- Terry Chapin, UAF
- Todd Brinkman, UAF

## Youth can get involved!

Students can get involved in AAOKH and climate change research through the Climate Change in My Community course. Teams of educators and youth learn about the impacts of a warming climate and develop a community stewardship project to address climate change in the community they live. Some youth involved in the project travel nationally and internationally to present about their work. Learn more at <https://bit.ly/2V3lBua>, applications due **May 10**.

There are many other ways to get involved in AAOKH. Whether you are a community member, local expert, teacher or student we need your help documenting the changing seasonal cycle in your community.

Keep up to speed on AAOKH observations, findings, activities and events by connecting with us online or by phone!



Guy Omnik



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