

Community, health, local observers, and the role of tribes in planning for climate change

Brownsfield Workshop

Mike Brubaker

Director, Center for Climate and Health

Alaska Native Tribal Health Consortium

March 19, 2014

Google us: “LEO Network”









Total Change in Mean Annual Temperature (°F), 1949 - 2009

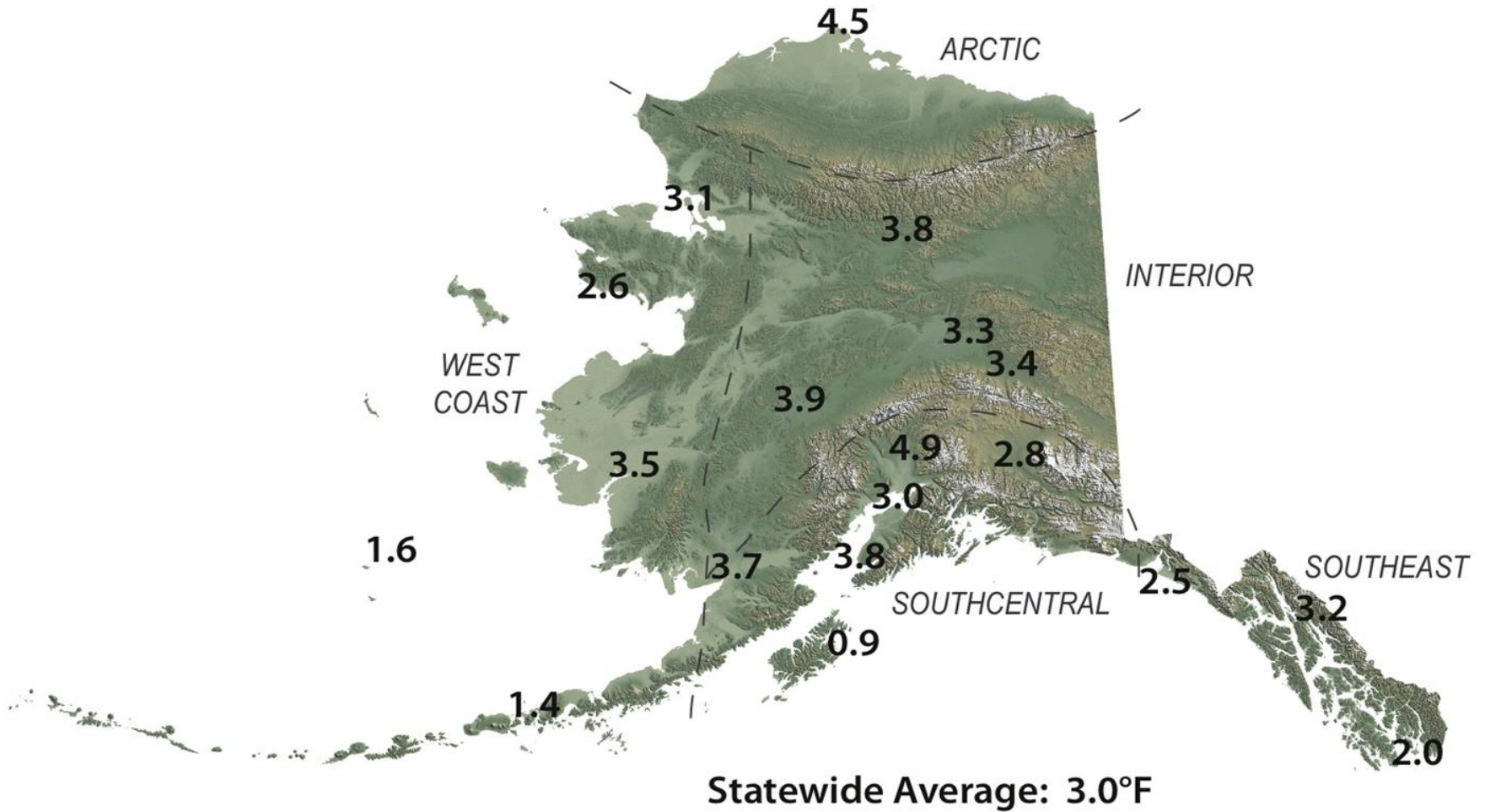




Photo by Ben Jones



Selawik Alaska, M. Brubaker



Noatak River, by Ryan Brubaker



Center for Climate and Health

To assist the tribal health system in understanding effect, raise awareness and encourage strategies and responses that protect public health.

How can we minimize risk and maximize benefit?

The Health Effects (positive and negative)



Disease



Injury



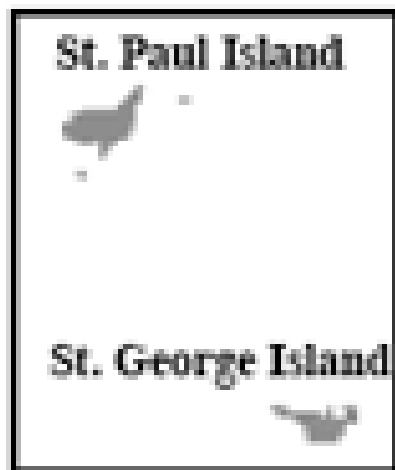
Mental Health



Food Security

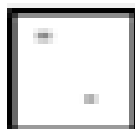


Water Security



BERING SEA

Pribilof Islands



ALEUTIAN ISLANDS

ANCHORAGE

KODIAK

750 Air miles from Anchorage

Pacific Ocean

Aaron Merculief, LEO
St. George, Alaska



St. George, Alaska





Bank where you are.



To Register
Log on To
www.AlaskaPacificBank.com



43°
Overcast

[MORE WEATHER](#)



HOME > LOCAL

Comment



Follow This Article

Four stricken by toxic shellfish

Paralytic shellfish poisoning hot in Juneau area bi-valves

Posted: April 13, 2012 - 6:58pm | Updated: April 15, 2012 - 12:08am



By **RUSSELL STIGALL**

JUNEAU EMPIRE

A Juneau man has fallen ill with paralytic shellfish poisoning from clams collected from Shelter Island. This is the fourth case reported near Juneau.

The case, reported to the Alaska Department of Health & Human Services on Friday, was reportedly caused by pink neck clams, also known as surf clams. The department plans to test the frozen suspect clams.

Health & Human Services reported eight cases of PSP during the summer of 2011, two of which ended up in intensive care. The toxin paralyzes its victim, starting with numbness and tingling in the mouth and tongue, progressing into the extremities.

DHSS Public Information Officer Greg Wilkinson said shellfish eaters who are experiencing these symptoms should seek medical help immediately. Once the toxin has moved into the trunk of the body, lungs can become paralyzed leading to death. Paralytic shellfish poisoning victims can be saved by a hospital's respirator.

The poison comes from a type of algae that turns toxic in the clam's system. Clams filter algae out of the water for food. The toxin leaves no visible traces.



[Click Here to View This Weeks Listings of Homes in Juneau](#)

Latest Updates

Most Viewed

Most Commented

- Man facing felony charges for striking Juneau bartender with glass of beer
- Police chase, arrest Juneau man wanted for escaping halfway house 12:40am
- Mallott: Being governor 'isn't about me'
- Police calls for Oct. 16, 2013
- Juneau School Board to reconsider travel ban



Saint George, Harbor, September 14, 2012 The community members who work around the harbor noticed the redness in the harbor as the water doesn't get disturbed too much from the weather like the waters around the island. The community members who brought this to my attention said they haven't seen anything like this. It appears the red goo was only on the surface of the water and no more that 1 to 1.5 feet deep. This raises concern about food safety on St. George. Aaron Mercurief, LEO

Get directions

My places



LEO - September 2012

This map provides a monthly record of extreme, unusual or noteworthy events. The purpose is to increase communication and understanding about our changing environment and to encourage healthy ways to adapt in Northern communities. Reports are provided through the network of Local Environmental Observers (LEO) located in tribal organizations across Alaska. For more information visit our site at the Alaska Native Tribal Health Consortium, Center for Climate and Health.

Public · 2 Collaborators · 5,684 views

Created on Sep 4, 2012 · By [mbrubaker](#) · Updated 5 hours ago

[Rate this map](#) · [Write a comment](#) · [KML](#) ·



- Heat lightning observed in far western Aleutians**
Near Koska Island, September 1, 2012 (weather) Heat lightning reported by an experienced fisheries observer, who had never seen heat lightning in the Aleutians region before. New weather phenomena will...
- Windfall devastation in Anchorage**
Ryan and Carter Brubaker survey windfall. Anchorage, East of Cheney Lake, September 5, 2012 (trees) The windstorm that hit Anchorage on the night of Tuesday September 4th and morning Wednesday ...
- Windfall creates flood hazard**
Photos by Mike Brubaker Anchorage, Chester Creek culvert at Baxter Road, September 5, 2012 (river) The wind storm that hit Anchorage on Tuesday night brought down a lot of trees and branches. These a...
- Spruce bark beetle infestation (video)**
Fort Yukon area, September 7, 2012 (insects) Some of the trees in the area of Fort Yukon are infested with spruce bark beetles. They have been increasing in the last few years. Spruce trees are an important...
- Unusual fish found on Arctic beach**
Photo by Clara Kilous, Barrow area, September 13, 2012 (sea animal) Unusual fish 'sting ray' found along the beach of Barrow. I don't know we got sting rays this far north. Glnugan Roddy, LEO ...
- Red colored water observed in harbor (video)**
Photos by Aaron Merculief Saint George, Harbor, September 2012 (environmental/food security/marine) The community members who work around the harbor noticed the redness in the harbor the water d...
- Unusual polar bear sighting**



Red colored water observed in harbor (video) X

Last Updated by [Moses](#) on Oct 8

Saint George, Harbor, September 14, 2012 (environmental/food security/marine) The community member who work around the harbor noticed the redness in the harbor as the water doesn't get disturbed to much from the weather like the waters around the Island (St. George). The community members who brought this to my attention said they haven't seen anything like this. It appears the red goo was only on the surface of the water and no more that 1 to 1.5 feet deep. The raises concern about food safety on St. George.
Aaron Merculief, LEO



[Directions](#) [Search nearby](#) [Save to map](#) [more...](#)

Barrow
Seward

Bering Sea

Gulf of Alaska

Contact: Dr. Dean Stockwell,
Institute of Marine Science, UAF





My First Lab™
DUO-SCOPE

Two Microscopes in One!
Model MFL-06

NEW!
Dual
Lights

View Slides
LIGHT SHINES UP
FROM BELOW

View Solid objects
LIGHT SHINES DOWN
ON SPECIMEN

Includes over 50 pieces
of Accessories for hours
of Scientific Research!

CE







Contact: Dr. Matthew Johnson

Research Interests: The ecophysiology of marine protists with a focus on grazing, symbiosis, and competitive interactions.



LEO marine observation



*Mystery solved: the red color was an unusual bloom but caused by a non-toxic ciliate, *Mesodinium rubrum*. It was not considered a food safety risk.*

RUSSIA

**Alaska
(US)**

Bering Strait

St. Lawrence I.

Nunivak I.

International Date Line

Bering Sea

*PRIBILOF
IS.*

Unimak

Unalaska

Umnak

FOX IS.

ALASKA PENINSULA

Attu

Agattu

Kiska

RAT IS.

Amchitka

Tanaga

Kanaga

Adak

Atka

Amlia

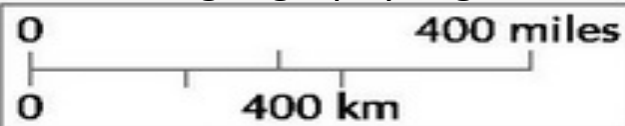
ANDREANOF IS.

*NEAR
IS.*

ALEUTIAN ISLANDS

PACIFIC OCEAN

worldgeography.org



Arctic change

Temperatures are warmer

The warm season is longer

More extreme warm days and fewer extreme cold days

More rain and less snow

Extreme weather is more frequent

Sea level is changing

The marine environment is becoming more acidic

Everything is changing ... really fast!

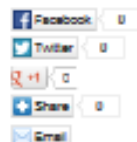
Troublesome beetles spotted close to Yukon border

Mountain Pine Beetle has been ravaging B.C. forests for years

CBC News | Posted: May 22, 2012 2:04 PM CT | Last Updated: May 22, 2012 2:27 PM CT



A Mountain Pine beetle or bark beetle is seen on the tip of forester Cal Westcott's knife during the examination of trees in the White River National Forest near Vail, Colo., in this July 5, 2005 file photo. The beetle has also ravaged forests in B.C., and has been spotted close to the Yukon border. (Ed Andriess/UP Photo)



Related stories

- Yukon beetle infestation slowing
- The Current: Mountain Pine Beetles wreck environmental peace

The Yukon Government continues to monitor the Mountain Pine Beetle as it moves north through B.C.

The beetle has been spotted as close as 50 kilometres from the border, putting Yukon's pine forest at risk.

Territorial officials will soon host a meeting on the issue as the government prepares for the infestation.

"It's inevitable that at some point they will be here," said Rob Legare, who looks after the forest health program for the territorial government.

He said it's uncertain what the beetle's impact will look like when it does arrive, but he says the northern B.C. border shows some possible results.

"You don't get that wide swath of grey trees everywhere, it's more spotty," said Legare.

In B.C., one big concern is timber. But in Yukon, the wood industry is small.

Legare said the Yukon government is examining other concerns.

"There's caribou, there's hydrology, there's fire risk, traditional uses," he said.

Stay Connected with CBC News



ADVERTISING

Latest North News Headlines

- Northern food costs remain sky high
- Yellowknife teachers ratify 3-year agreement
- Yeti might be undiscovered polar bear hybrid, scientist says
- Norway returns Inuit artifacts to Gjoa Haven
- Hay River teen sentenced to 5 months

Must Watch



North Late Night - October 16, 2013

2:42

Late Night TV News from Canada's North



No moose die-off in Yukon

2:14

Parts of the U.S. and elsewhere in Canada are seeing large drops in the



Dettah elder Michel Payer dies

2:27

The Yellowknife was known for his generous spirit



Giant moose shot in Yukon

1:02

A hunter in Dawson City has shot and killed what may be a world record

[Get directions](#)[My places](#)

Circumpolar Climate Events - August 2013

This map provides an overview of climate-related or potentially climate-related events occurring in the circumpolar north. The map is hosted by the Alaska Native Tribal Health Consortium (ANTHC), Center for Climate and Health and is based on published reports, articles in the press, and local observations. To receive updates or to be included in our weekly Climate and Health E-News, visit our website. You can

Google us at "Center for Climate and Health".

Public · 2 Collaborators · 7,070 views

Created on Jul 31 · By [mjrubaker](#) · Updated Sep 4

[Rate this map](#) · [Write a comment](#) · [KML](#) · [Share](#)

[R+1](#) · [0](#)

Birds deaths in West (Canada)

Watson Lake YT, August 2, 2013 (bird) Three sick ravens we found recently near Watson Lake, Yukon, weak and unable to fly. Last month in Dawson Creek, B.C., around 30 ravens were found with a mystery...

Fairbanks breaks hot weather record (Alaska)

Fairbanks Alaska, August 2, 2013 (weather) July wasn't quite as dry as June, but it was still hot and dry. The average temp for July was 64.3 degrees at Fairbanks International Airport, ...

Warm weather causing more drownings (Sweden)

Stockholm Sweden, August 4, 2013, (water) The hot weather summer has led to more drowning accidents, according to the Swedish Lifesavers Association. Four people died this week alone, one ...

Poor walrus harvest (Alaska)

Seavoonga, August 5, 2013, (walrus). Two native villages on a remote St. Lawrence Island are reporting their smallest walrus harvest in memory. People are hurting not just in the lack of walrus ...

Thunder storms create havoc (Norway)

Stavanger Norway, August 5, 2013 (weather) Strong winds, lightning and heavy rain created havoc several places in South Norway on Saturday. Several fires were started by lightning, 1 property damaged...

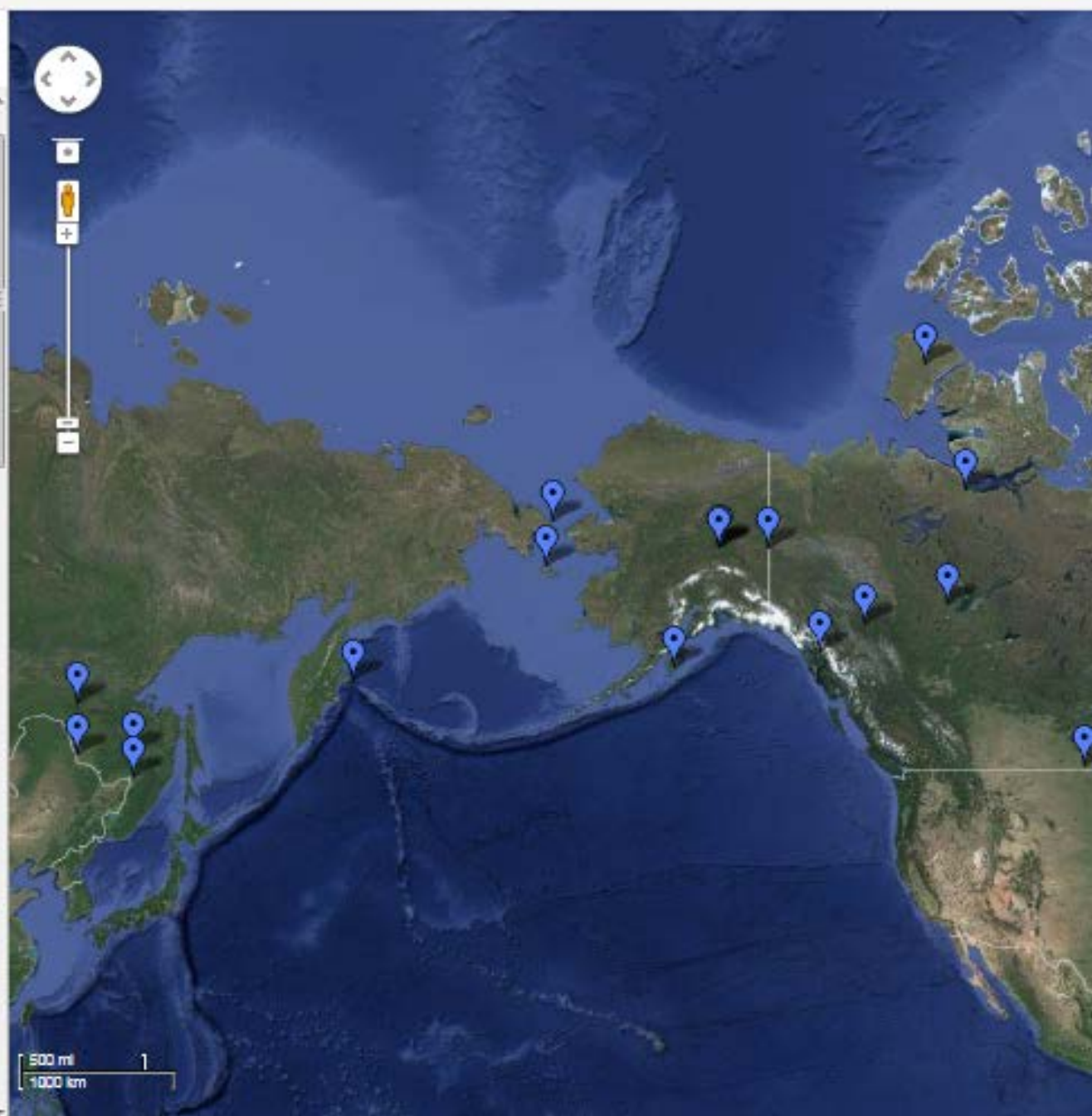
Algal blooms (Canada)

Pelican Lake, Manitoba, August 5, 2013 (Canada) Water officials are advising against swimming in Pelican Lake this weekend. Manitoba Conservation and Water Stewardship said it found algal blooms are present...

Gypsy moth infestation (Canada)

Sudbury ON, August 5, 2013 (insect) Sudbury trees are experiencing severe defoliation this summer and there's one culprit, according to the Ministry of Natural Resources. The gypsy moth is an invasive species...

Warm summer pushes harvest forward (Finland)

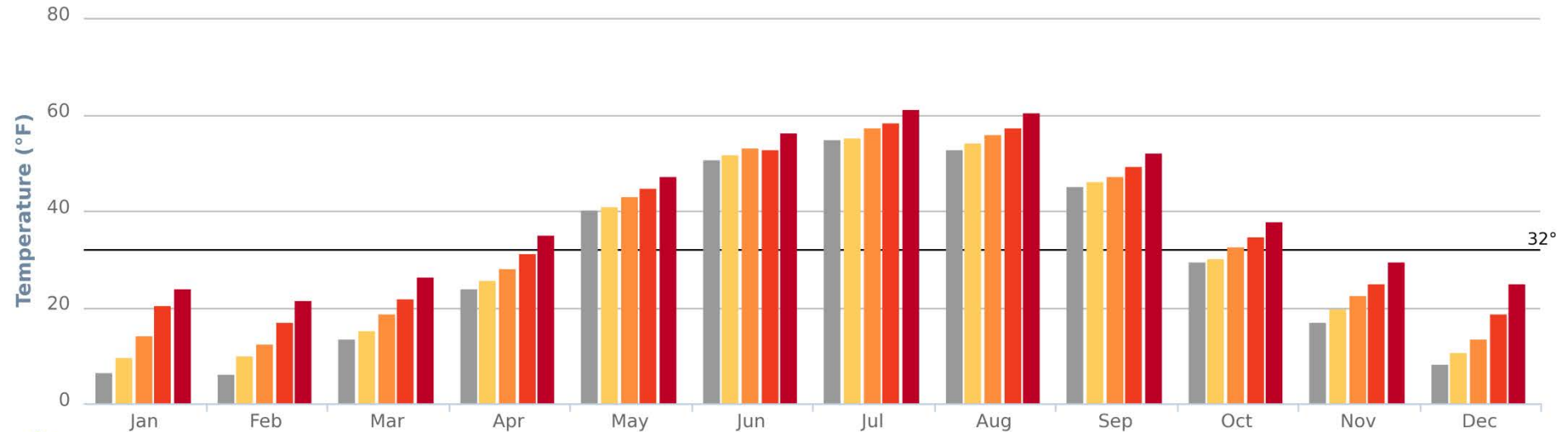




Average Monthly Temperature for Bethel, Alaska

Historical PRISM and 5-Model Projected Average, Mid-Range Emissions (A1B)

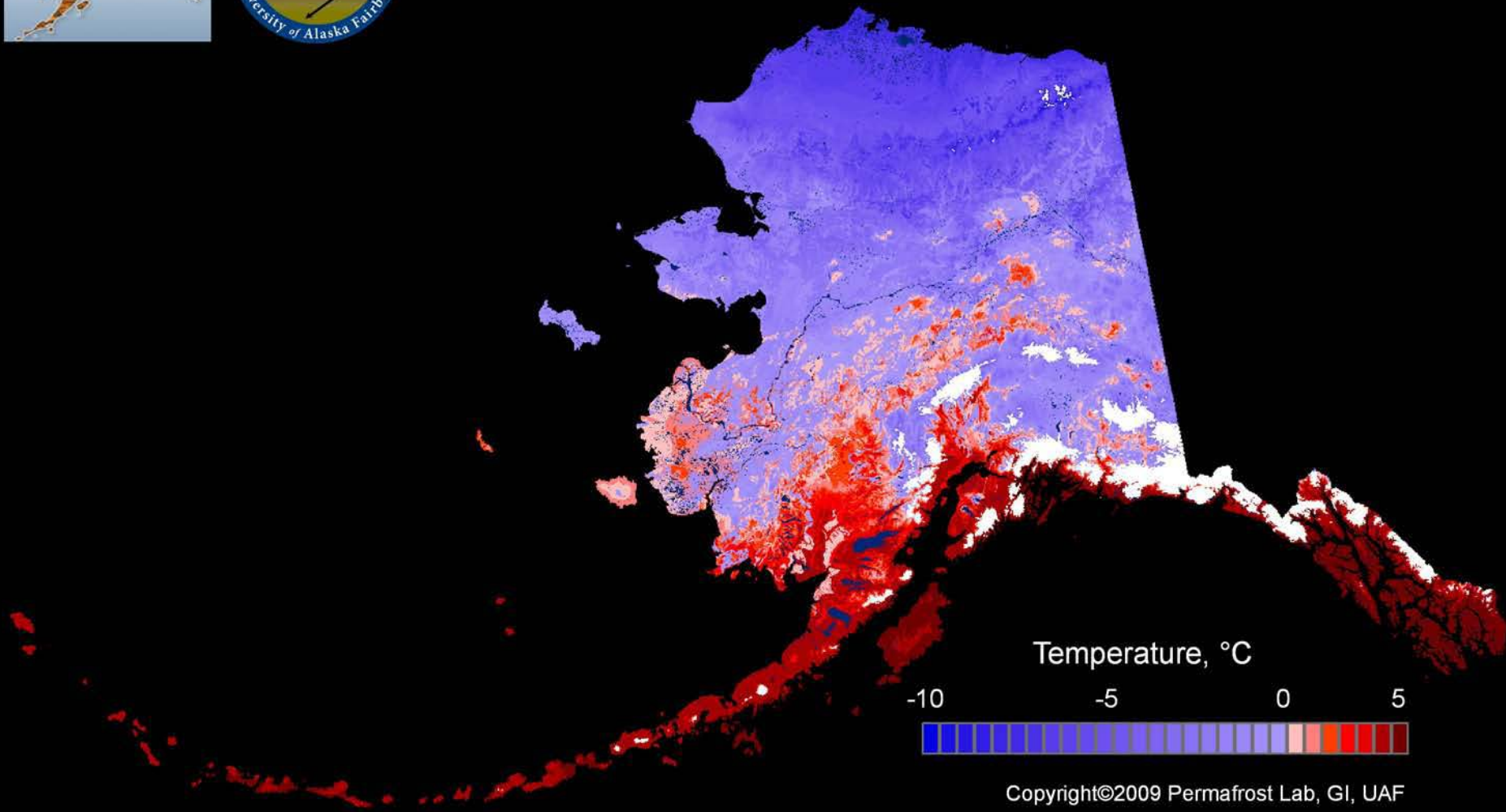
1961-1990 2010-2019 2040-2049 2060-2069 2090-2099



Due to variability among climate models and among years in a natural climate system, these graphs are useful for examining trends over time, rather than for precisely predicting monthly or yearly values. For more information on derivation, reliability, and variability among these projections, please visit www.snap.uaf.edu.



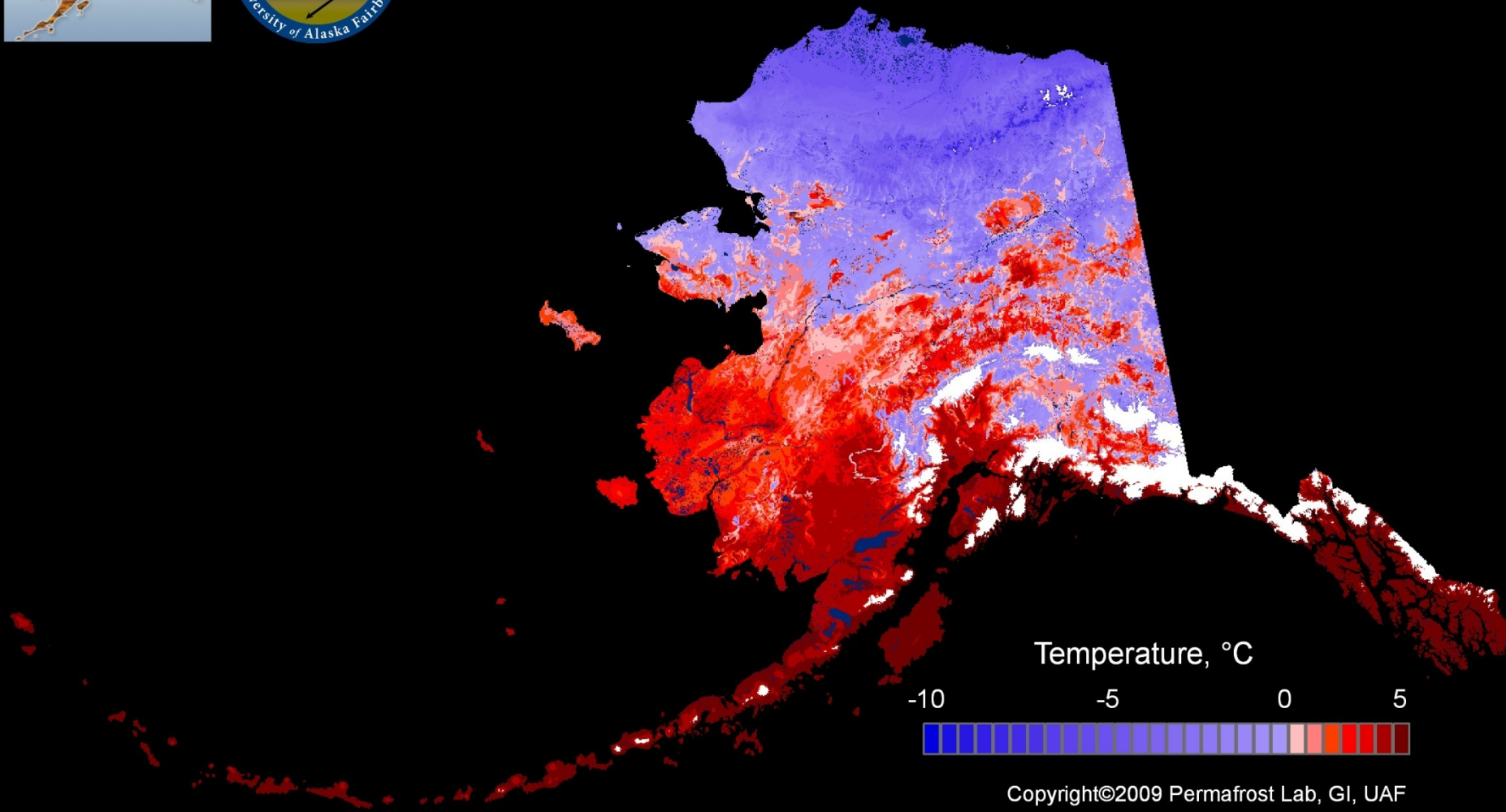
Mean Annual Soil Temperatures at 1 m Depth
ALASKA 2000-2009
GIPL1.3 Permafrost Model



Copyright©2009 Permafrost Lab, GI, UAF

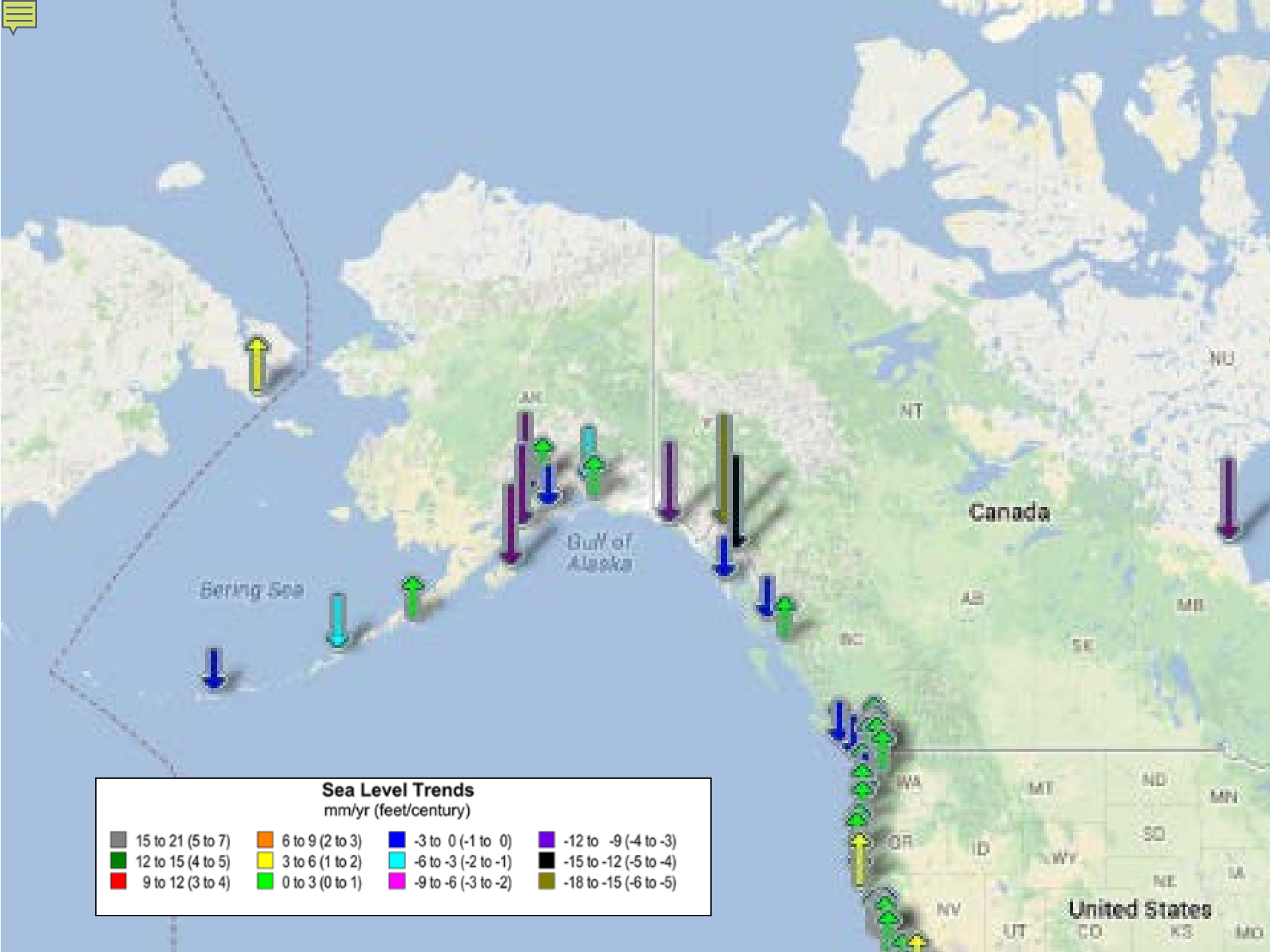


Mean Annual Soil Temperatures at 1 m Depth
ALASKA 2050-2059
GIPL1.3 Permafrost Model





11/10/2013 16:27





Seldovia, Alaska
9455500

The mean sea level trend is -9.45 mm/year with a 95% confidence interval of +/- 1.10 mm/year based on monthly mean sea level data from 1964 to 2006 which is equivalent to a change of -3.10 feet in 100 years.

-9.45
mm/year

1964 - 2006

Choose plot:

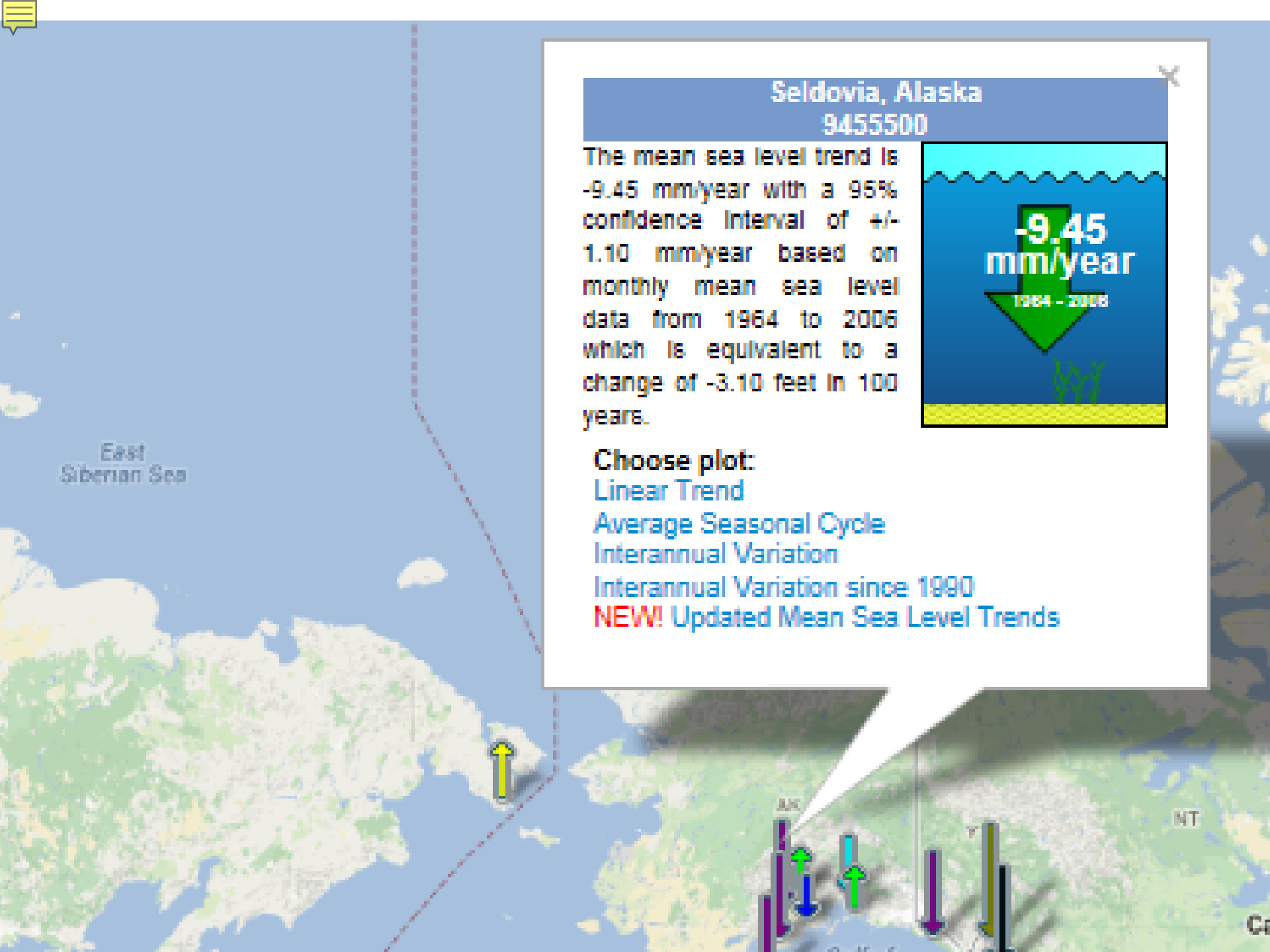
Linear Trend

Average Seasonal Cycle

Interannual Variation

Interannual Variation since 1990

NEW! Updated Mean Sea Level Trends



Providenia, Russia
030-725

The mean sea level trend is 3.30 mm/year with a 95% confidence interval of ± 1.29 mm/year based on monthly mean sea level data from 1951 to 1983 which is equivalent to a change of 1.08 feet in 100 years.



Choose plot:

[Linear Trend](#)

[Average Seasonal Cycle](#)

[Interannual Variation](#)

East
Siberian Sea

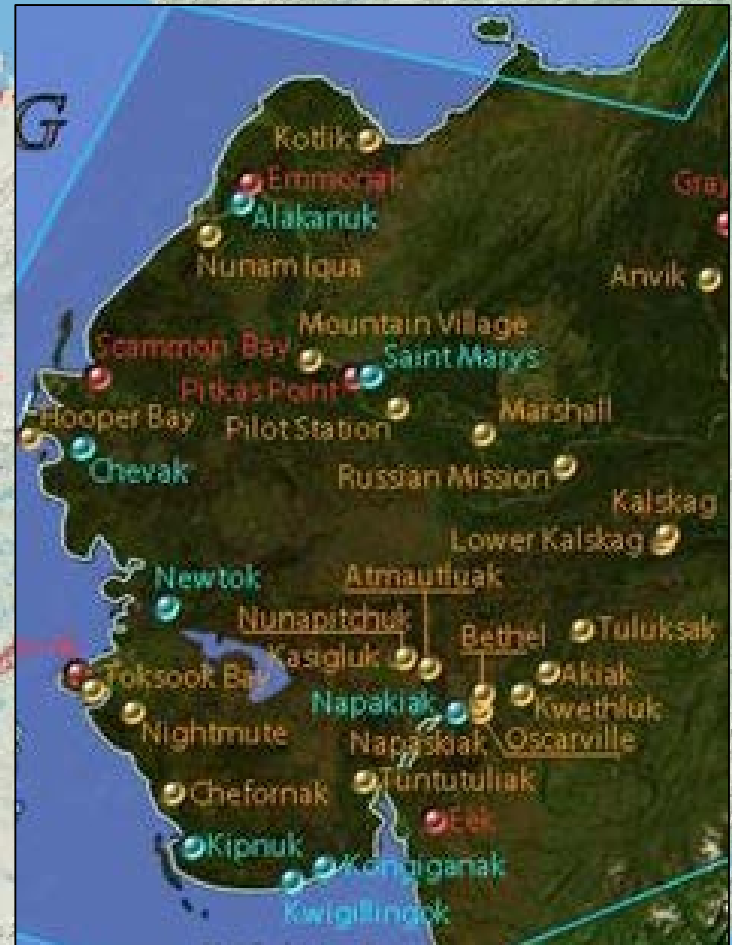


Source: Center for Remote Sensing of Ice Sheets

 Inundated Area

1 Meter Inundation







A computer generated scenario showing inundation of water from an 18' storm surge, tsunami or sea level rise event. Photo by Mike Brubaker. Simulation by Moses Tcheripanoff.

Central Alaska Peninsula 1987

Sampled Households: 17

Estimated Number of Community Households: 18

Sampled Population: 61

Estimated Community Population: 64.6

Most Representative Year: Yes

Federal Region: Bristol Bay

Map Quadrant: Ugashik

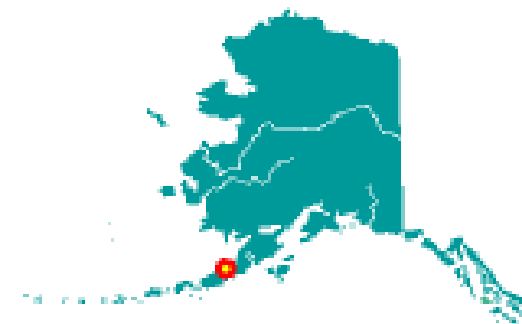
Geo-Political Region: Bristol Bay/Illamna

.

Technical Paper: [158 - tp158.pdf \(PDF\)](#)

Technical Paper: [114 - tp114.pdf \(PDF\)](#)

[Go to the Department of Commerce site for more information on this community](#)

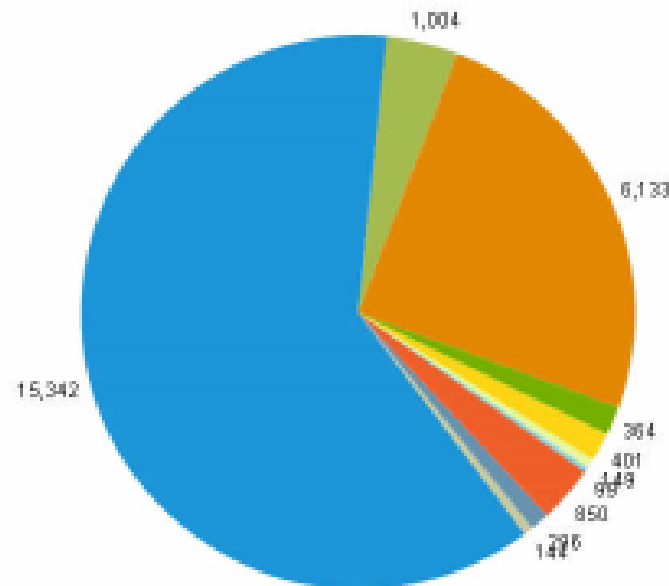


Map courtesy of AK Dept. of Commerce

Project Name: Central Alaska Peninsula 1987 Baseline Harvest Profile

Pounds Harvested

Salmon Non-Salmon Fish Large Land Mammals Small Land Mammals Marine Mammals
Migratory Birds Other Birds Bird Eggs Marine Invertebrates Plants and Berries





Climate Change in **Nondalton**, Alaska

Strategies for Community Health



ANTHC Center for Climate and Health

Environmental Impacts

Glaciers are melting.

Ice is thinner and a shorter ice season.

Wildfires are more frequent.

The permafrost is thawing and decreasing.

Shorelines are diminishing because of erosion and storms.

Tundra lakes are becoming smaller and warmer.

Rivers are becoming shallower, warmer, wider and dirtier.

Arctic flora and fauna is giving way to more temperate species.

Wildlife behavior is changing in unusual ways.

*Landscapes which were mostly cold and quite resilient,
are becoming increasingly warm and fragile.*

Health Effects of Climate Change in Alaska

Allergic reactions



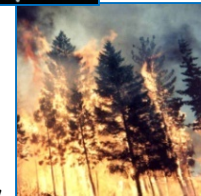
Dangerous travel



Poor Water Quality



Respirator Illness



Ice hazard injury



Food security



Drought and Infestation



Unsafe food



Snow hazards



Allergies



Dangerous seas



Wildlife disease



Infrastructure damage



Food Spoilage



Explain climate change to health connections



Source Drinking Water Challenges Changes to an Arctic Tundra Lake

Center for Climate and Health

Michael Brubaker, Alicia Rolin, Jacob Bell, John Warren
CCH Bulletin No. 2, October 19, 2009

This paper reports on a special health concern identified in Point Hope, Alaska during a recent Climate and Health Assessment: disruption of drinking water treatment influenced by temperature driven increases in organic material in an Arctic tundra lake. Blooms of organic material have been observed in the past in the source water lake in Point Hope, but conditions have been extreme over the last two years. If warm temperatures continue, organic blooms will become a reoccurring problem for Point Hope and other communities that depend on tundra lakes for their water supply. Analysis of source water chemistry and biology is recommended, as is an analysis of possible adaptive operational procedures or design modifications that could improve water system efficiency.

Introduction

In May of 2009, the Alaska Native Tribal Health Consortium (ANTHC) performed a Climate and Health Assessment in Point Hope, Alaska. It was performed by ANTHC's Center for Climate and Health in partnership with Maniilaq Association, the regional tribal health consortium for Northwest Alaska, and the North Slope Borough. The purpose of the assessment was to record local observations related to climate change and to explore adaptive strategies for community health. The purpose of this paper is to identify vulnerabilities and raise awareness about an emerging environmental health issue, and to identify potential adaptation strategies.

Background

Point Hope is an Inupiat community of about 700 residents. It is located on a gravel spit extending out into the Chukchi Sea. It is the furthest point west in the Northwest Arctic, roughly half way between Kotzebue and Barrow on the Northwest Arctic Coast. The climate is arctic and annual temperature ranges from -49°F to 78°F. Precipitation is light, 10 inches annually, with a cumulative annual snowfall of about 36 inches. The Chukchi Sea is ice-free from late June until mid September (AK Division of Community Advocacy, 2009).

Raise awareness – community meetings and working groups



Adaptive strategy – improve design



Improve data collection and monitoring



Photo courtesy Vladimir Romanovsky, UAF



3 m
5 m
10 m
15 m
20 m
25 m
30 m

120 m

increase community resilience

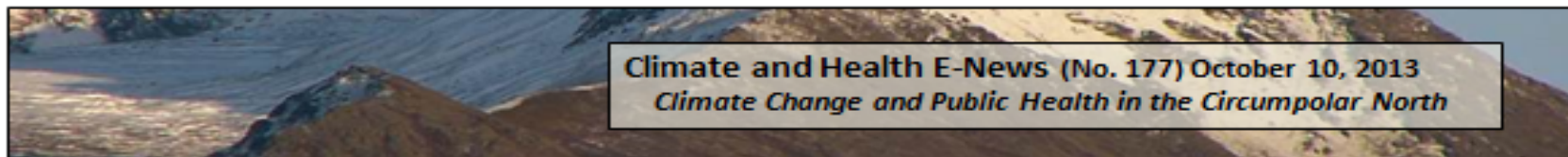


begin phase relocation to better areas





stay informed on climate events



Local Environmental Observer (LEO) Network Map – LEO welcomes our new network members from the [Inuvialuit Settlement Region](#) of Canada. You can see our new [Inuvialuit Regional map](#) as well as regional maps from Alaska at our [website](#). Visit our [archives](#) and follow us on [Facebook](#)

Climate Events in the Circumpolar North – *In Alaska:* thousands of walrus come ashore in Point Lay, a mysterious algal bloom in Homer, and the Forty Mile caribou herd crosses the Yukon River for the first time in memory. *In Canada:* game managers close caribou hunt to prevent unmanaged harvest of Forty Mile herd, starfish continue to die near Vancouver, north bound grizzlies settling at Cambridge Bay, and polar bears attacking dogs in Arviat. *In Sweden:* jelly fish have caused shut down of one of the world's largest nuclear power plants. [ANTHC](#)

What's that brown algae floating in Kachemak Bay? October 6, 2013. A brown sludgy plankton bloom is raising concerns on how it may impact the delicate filtration systems of shellfish and other marine life. The plankton from the group *Gymnodinium* is described as four or five feet deep in its most concentrated areas. Though NOAA, as part of the federal government shutdown, is banned for the moment from continuing the plankton inquiry, the Kachemak Bay Research Reserve is on the job conducting phytoplankton sampling with residents all around the Bay. [Homer Tribune](#)

Deadly trio may cause mass extinction of marine species October 9, 2013. Marine scientists warn that a deadly combination of warmer temperatures, acidification and decreasing oxygen levels are a looming threat to the survival of the world's oceans. "We are entering an unknown territory of marine ecosystem change, and exposing organisms to intolerable evolutionary pressure," scientists with the International Programme on the State of the Ocean (IPSO), wrote in the most recent report. [Arctic Journal](#)

Arctic coastlines threatened by melting permafrost October 5, 2013. Approximately 34 percent of the world's coastlines are covered permafrost, which absorbs the impact of ocean waves and protects against coastal erosion. Sea ice helps too, by blocking waves from the shore. That buffer zone is disappearing, however, and without it coastal erosion could accelerate and threaten critical infrastructure including oil and gas pipelines – in the Arctic and elsewhere. [Barents Observer](#)

Eat locally for sustainability globally — Alaska family lives a year off only local foods September 25, 2013. "There is a misconception Alaska can't support its own food needs," said Saskia Esslinger, of Anchorage, who with her family transformed a few hundred square feet in an urban neighborhood into their garden and grew rhubarb, cabbage, cucumbers, kale and other greens, zucchini and other gourds, and c



Participate in LEO



We needed a network sensitive to the issues that are important to local residents, that connected traditional and western knowledge systems.



And a tool that would help share the findings. LEO started in January 2012 , a network of local observers in tribal environmental programs. There are now over 200 voluntary participants.



Weather

Erosion

Permafrost

River

Seasonal

Coastal

Plants

Wildlife

Infrastructure

Environment

Transportation

Disease

Food

Water



The focus for LEO is environmental change, and observers report on a wide range of local events that are time and location specific.



The LEO participants apply Traditional Ecological Knowledge to identify and select observations that are unusual, unique and important.



Many LEOs are experienced with western scientific methods and active participants in research projects.



Observations can be from anyone in the community. LEOs serve as local contacts for collecting, reviewing and completing the information and for follow-up based on the findings and technical consultations.



LEOs decide within their own organizations what information to share.

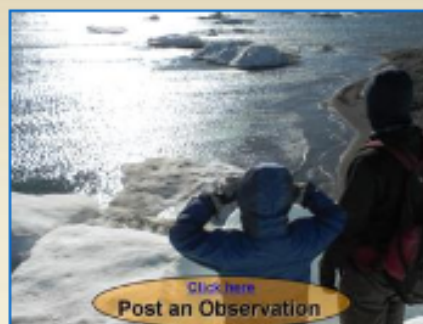


You are here: [ANTHC](#) > [Community Health Services](#) > [Community Environment and Safety](#) > [Climate and Health](#) > [LEO Home](#)



Local Environmental Observer (LEO) Network

Northern communities are changing due to environmental impacts, climate change and development. Monitoring the environment is important for understanding the risks and benefits and for adaptation. The LEOs are the eyes, ears and voice of environmental change in our communities.

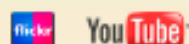


[Click here](#)
Post an Observation



[Click here](#)
"Join LEO"

We are tribal professionals who apply traditional knowledge, western science and technology to document unusual plants and wildlife, extreme weather, erosion, flooding, droughts, wildfire and other events that can threaten food security, water security and community health. Check out our LEO monthly maps, and other links to learn more. To view the LEO Observations Dataset, [click here](#).



Return to: [Center for Climate and Health](#)



LEO October 2013 Map



View LARGE [click here](#)

Monthly Maps

September 2013

Category Maps

Air Quality

Alaska Region Maps

Aleutian & Pribilof Isl

Canada Region Maps

Inuvialuit Settlement

LEO communities at a glance, click icon:



Related Pages

- [About LEO](#)
- [Contact Info](#)
- [Pages of LEO](#)
- [LEO Youth](#)
- [Webinar](#)

5,354 Visits
2 Recent Hits Alaska

revolvermaps



Get directions

My places



LEO - Yukon Kuskokwim Alaska

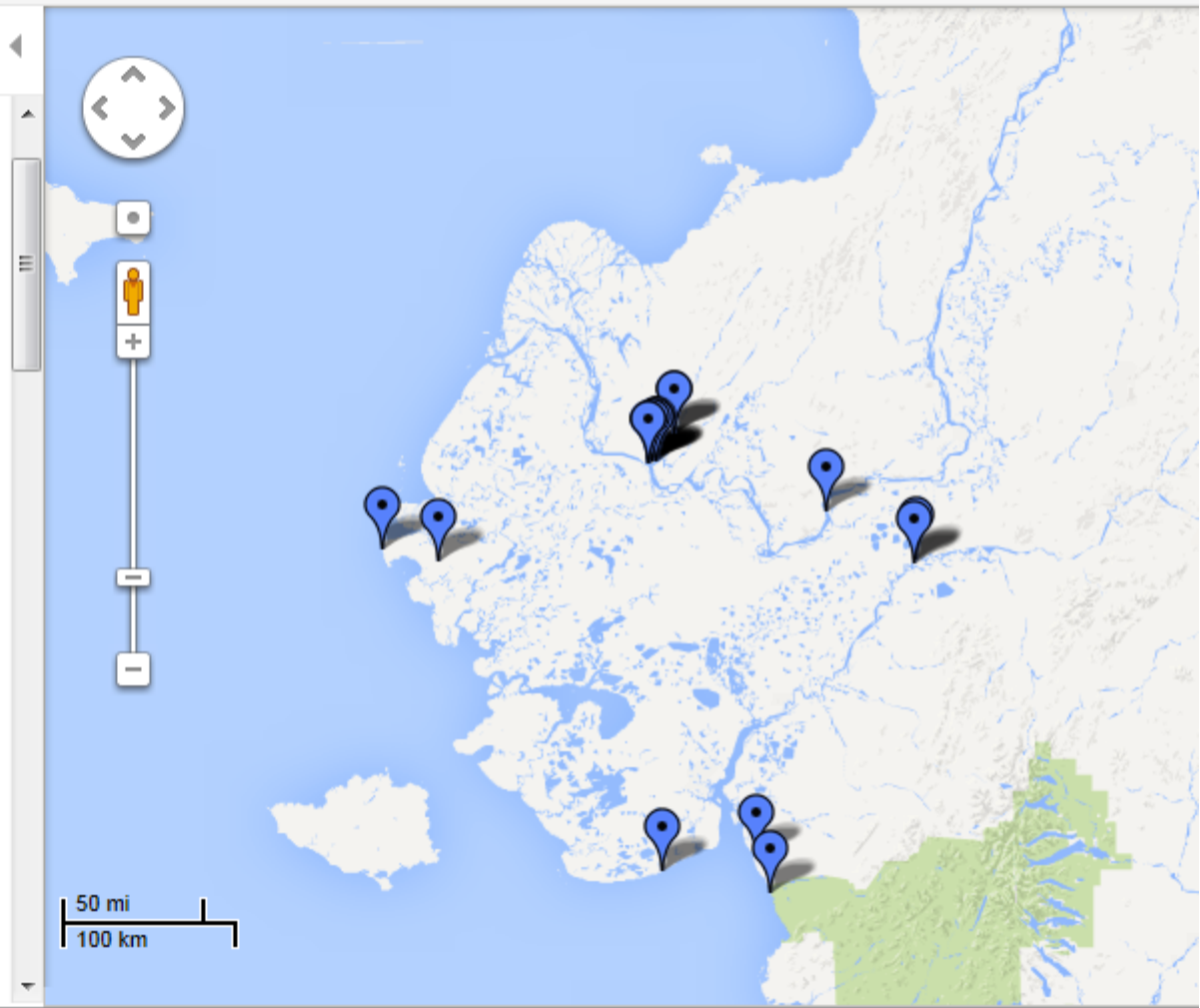
This map includes local observations of unique, unusual, or noteworthy environmental events that have occurred in Alaska's Yukon Kuskokwim region since January 2012. These observations were posted by members of the Local Environmental Observer (LEO) Network. The map is co-hosted by the Alaska Native Tribal Health Consortium (ANTHC) Center for Climate and Health and the Kuskowim River Watershed Council. To learn more about LEO, Google us at "LEO Network". To learn more about the Kuskowim River Watershed Council go to www.kuskokwimcouncil.org Kuskokwim region

Public · 2 Collaborators · 199 views
Created on Jul 8, 2013 · By [mbrubaker](#) · Updated Dec 6, 2013

[Rate this map](#) · [Write a comment](#) · [KML](#)

8+1 0

- Huge pressure ice ridges "Vuneqs" near coast (phot Kwigillingok, Februay 22 (coast, ice) After a winter storm from southerly directions we noticed some pressure ice ridges hav formed along our coast. These ridges have grown over 100 ft Not ...
- Flood concerns on Kuskokwim River
Lower Kalskag, May 8 12:30 PM (ice) Ice break-up occurred 7, 2012 and stopped that same day. The ice moved again on and water levels were rising. On May 10 the water levels beg reced...
- Chum salmon condition and food safety explored



Google

Get directions My places

Collaborate

EDIT

Explore making custom maps in an [interactive tutorial](#).

Local Environmental Observer (LEO) Map, May 2012

Local Environmental Observer (LEO), May 2012
This map provides a monthly record of unusual or noteworthy events that have occurred across Alaska. The purpose is to increase communication and understanding about our changing environment and to encourage healthy ways to adapt. Reports are provided through the network of Local Environmental Observers (LEO); environmental professionals located in local or regional tribal organizations across Alaska.

For more information visit our site at the [Alaska Native Tribal Health Consortium](#), Center for Climate and Health:

<http://www.anthc.org/chs/ces/climate/leo/>
Email: anthcleo@anthc.org

Funded by the Environmental Protection Agency

Public · 2 Collaborators · 8,470 views
Created on May 3 · By [mbrubaker](#) · Updated Jul 9

[Rate this map](#) · [Write a comment](#) · [KML](#) · [+](#) [0](#)

Deer with fur loss in Southeast

Discolored seal with sores on side flipper (photo)

Last Updated by [moe](#) on Jul 9



Shishmaref, May 19, 11:30 PM, (sea animal)
This ringed seal was taken in Shishmaref Inlet, approximately 3 miles up the staked trail to 7 mile ice pond. There was no breathing hole present, the seal had traveled from the east of the stakes heading westward. There seems to be a BB size lump on one of the forearms, and showing evidence of sores on one side flipper. Hopefully this seal will bring us closer to understanding what may be causing the illness and disease that our marine mammals are being affected by. According

[Directions](#) [Search nearby](#) [Save to map](#) [more](#)

A good observation provides information about the nature of the observation as well as why it is unique and important, and any interpretations by the observer. Ideally it also includes photos or video.

Get directions

My places



Collaborate

EDIT

Explore making custom maps in an [interactive tutorial](#).

LEO Network Participants (Please Do Not Distribute)

This is a private map for LEO Network Participants. It shows the locations of all LEOs and has contact information to encourage collaboration within the network. This map is for LEO participants only, so please do not distribute. You can click on the individual icons to look at LEO information and their photos. If you have comments or would like to add information, or be removed from the map, you can contact the map hosts at: anthcleo@antho.org

Unlisted • 3 Collaborators • 2,548 views
Created on Jan 24 • By [mbrubaker](#) • Updated Jun 26
[Rate this map](#) • [1 comment](#) • [KML](#) •

Moses Tcheripanoff, LEO 01 (photo)

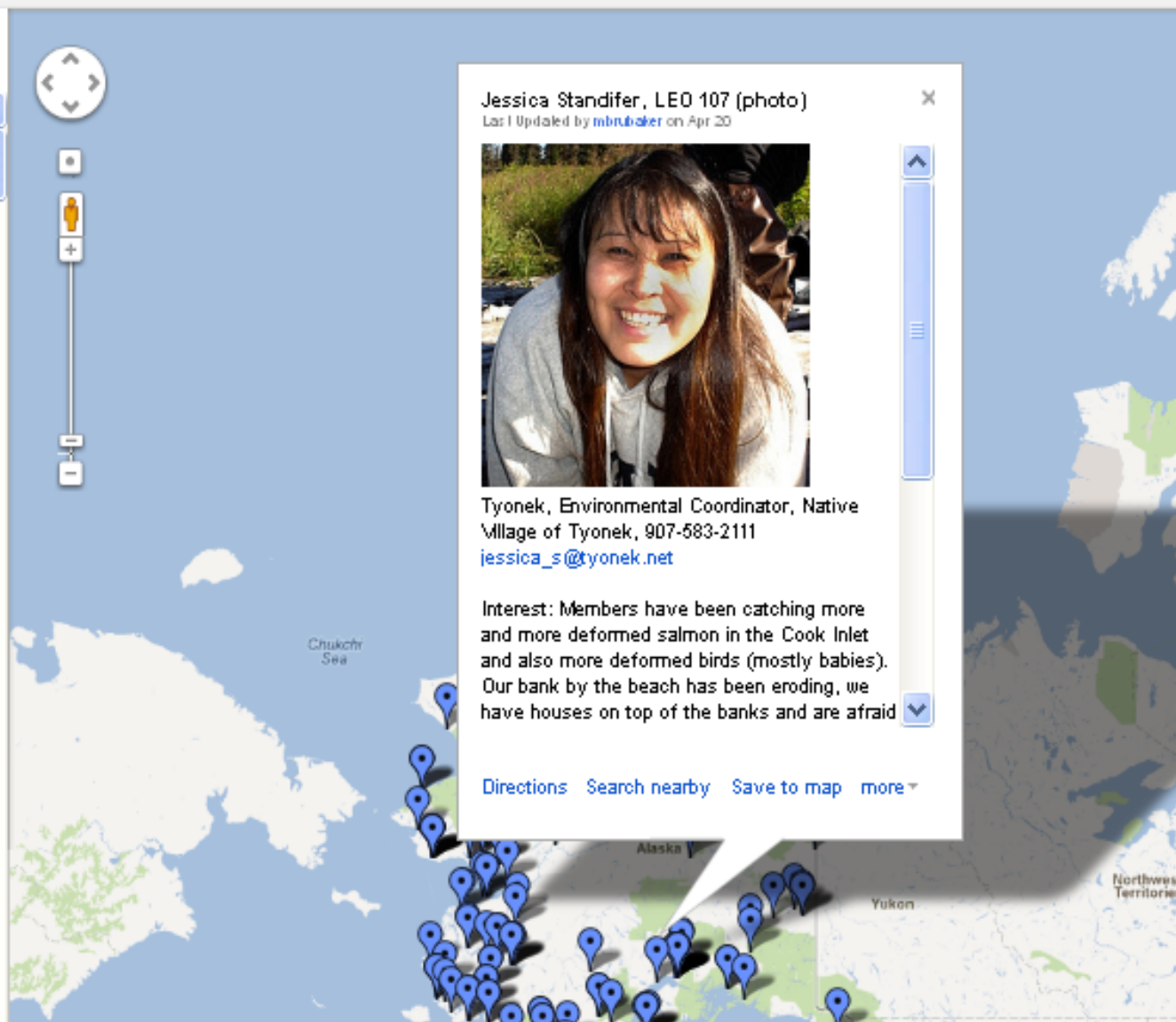
Wasilla LEO Manager and Web Guru, Alaska Native Tribal Health Consortium, 907-729-2496, mtcheripanoff@antho.org Interests: believe that this program is essential for keeping our communities connected...

Mike Brubaker, LEO 02 (photo)

Anchorage / McDonald Spit LEO Manager, Director Community Environment and Safety, Alaska Native Tribal Health Consortium, 907-729-2464, mbrubaker@antho.org Interests: community change related to c...

Hanna Eklund, LEO 03 (photo)

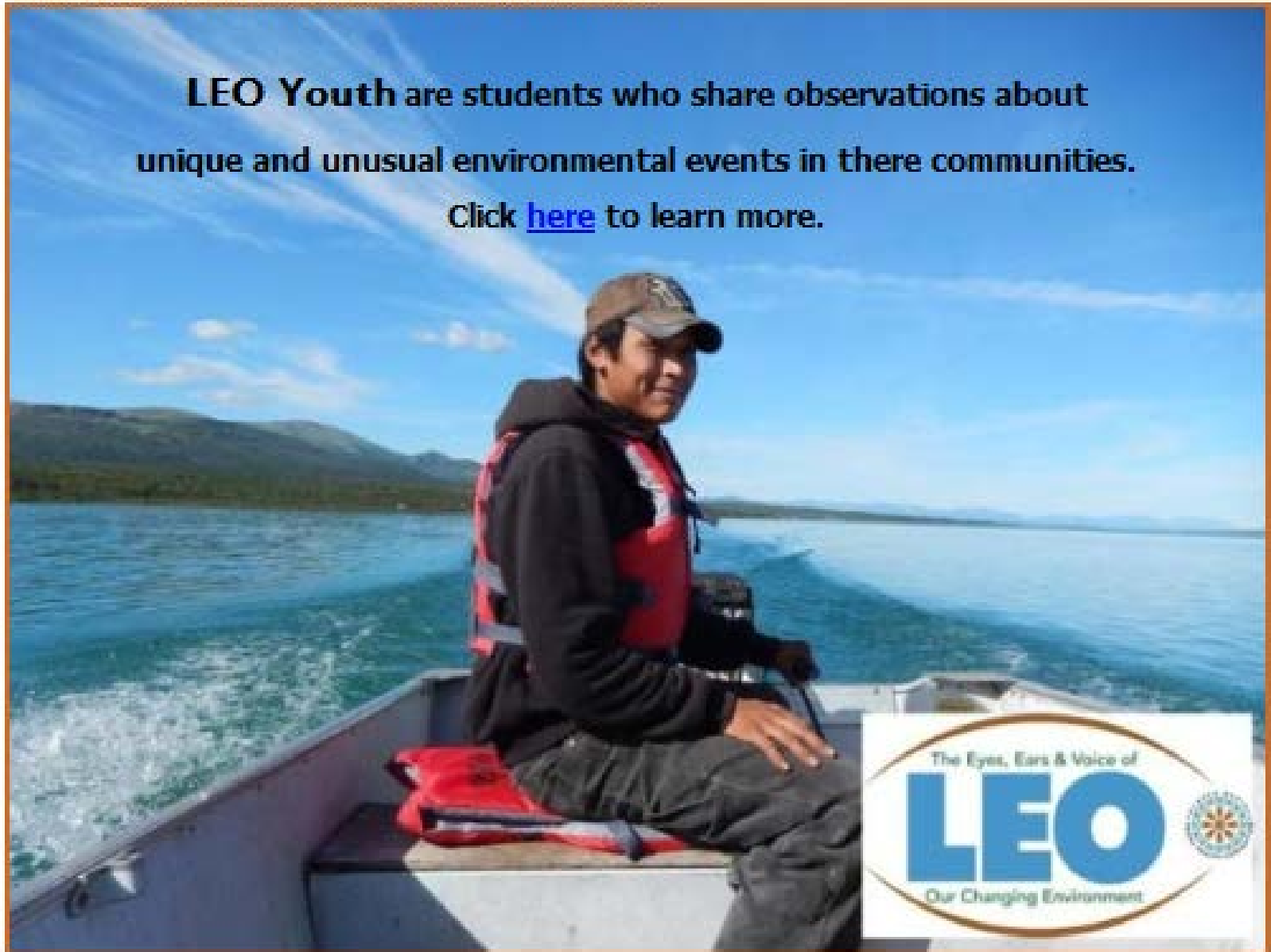
Chugach / Anchorage, Researcher, Chugach Regional Resource Commission, 907-562-6647, hanna@circalaska.org Interests: ... LEO since January 2012.



LEO is also a social network and participants correspond with each other directly to discuss local concerns and exchange information.

LEO Youth are students who share observations about unique and unusual environmental events in there communities.

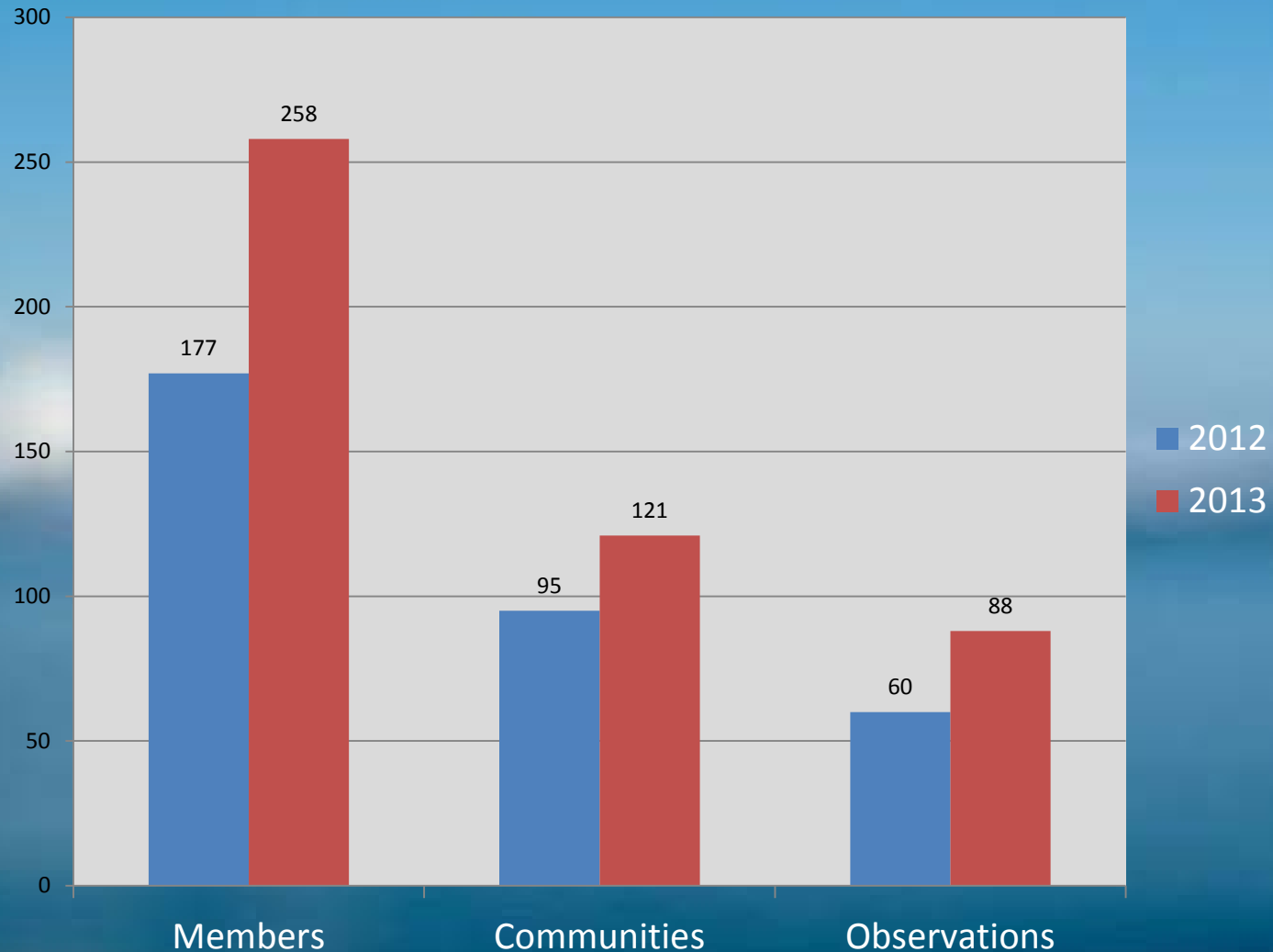
Click [here](#) to learn more.

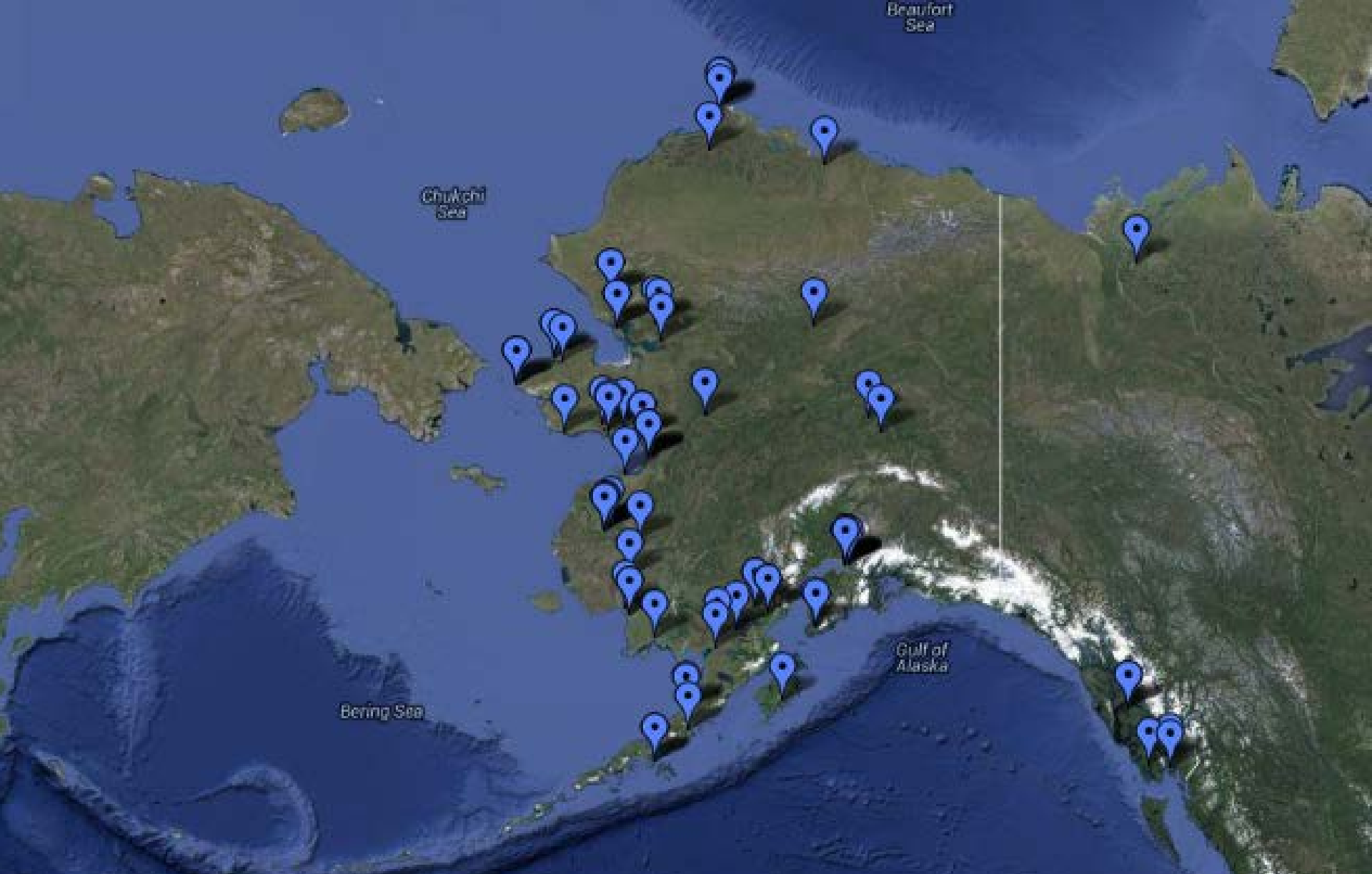




Observations are shared with other networks and technical experts to assist with interpretation and work with the LEO on the issue.

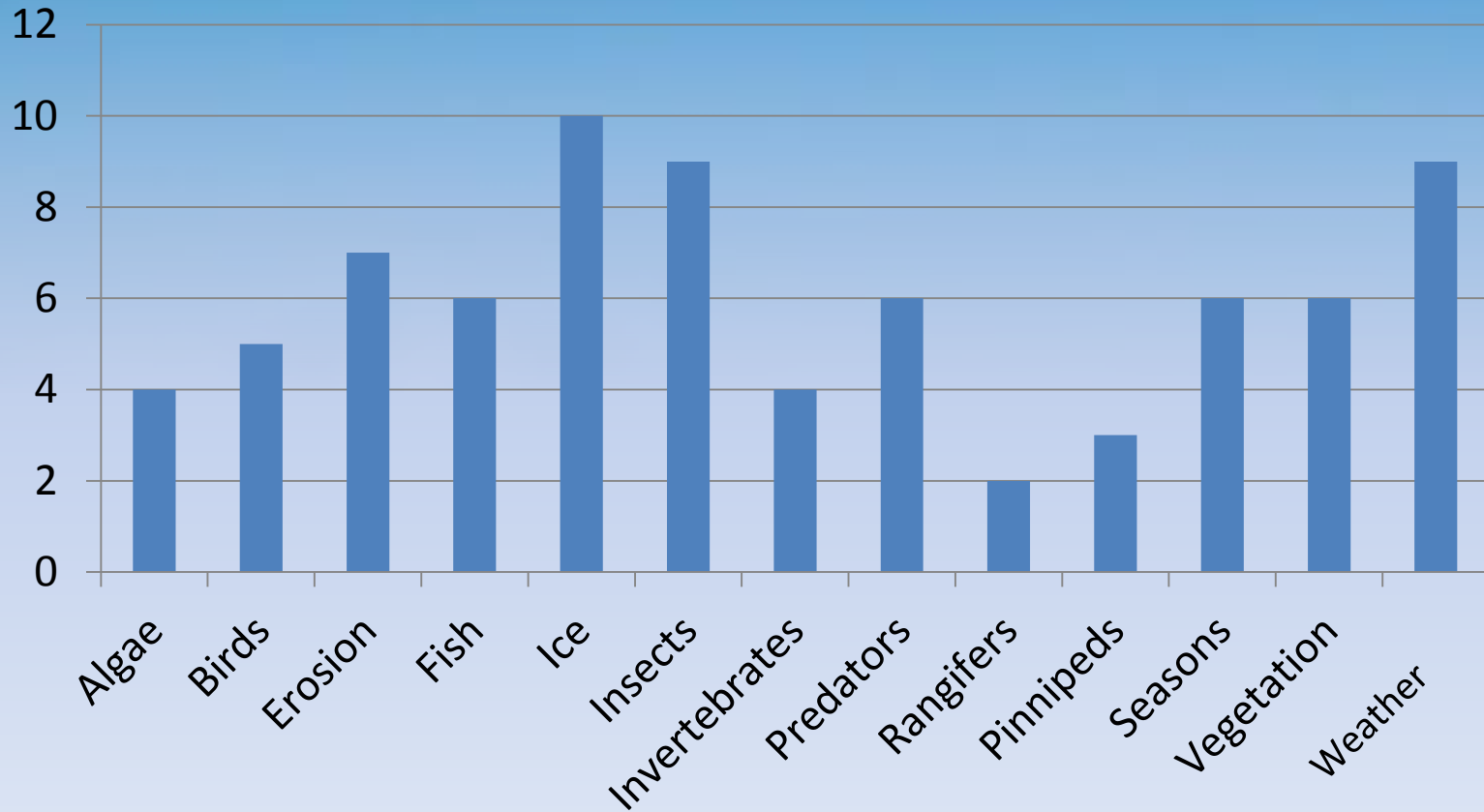
LEO Program Growth – 2012 to 2013



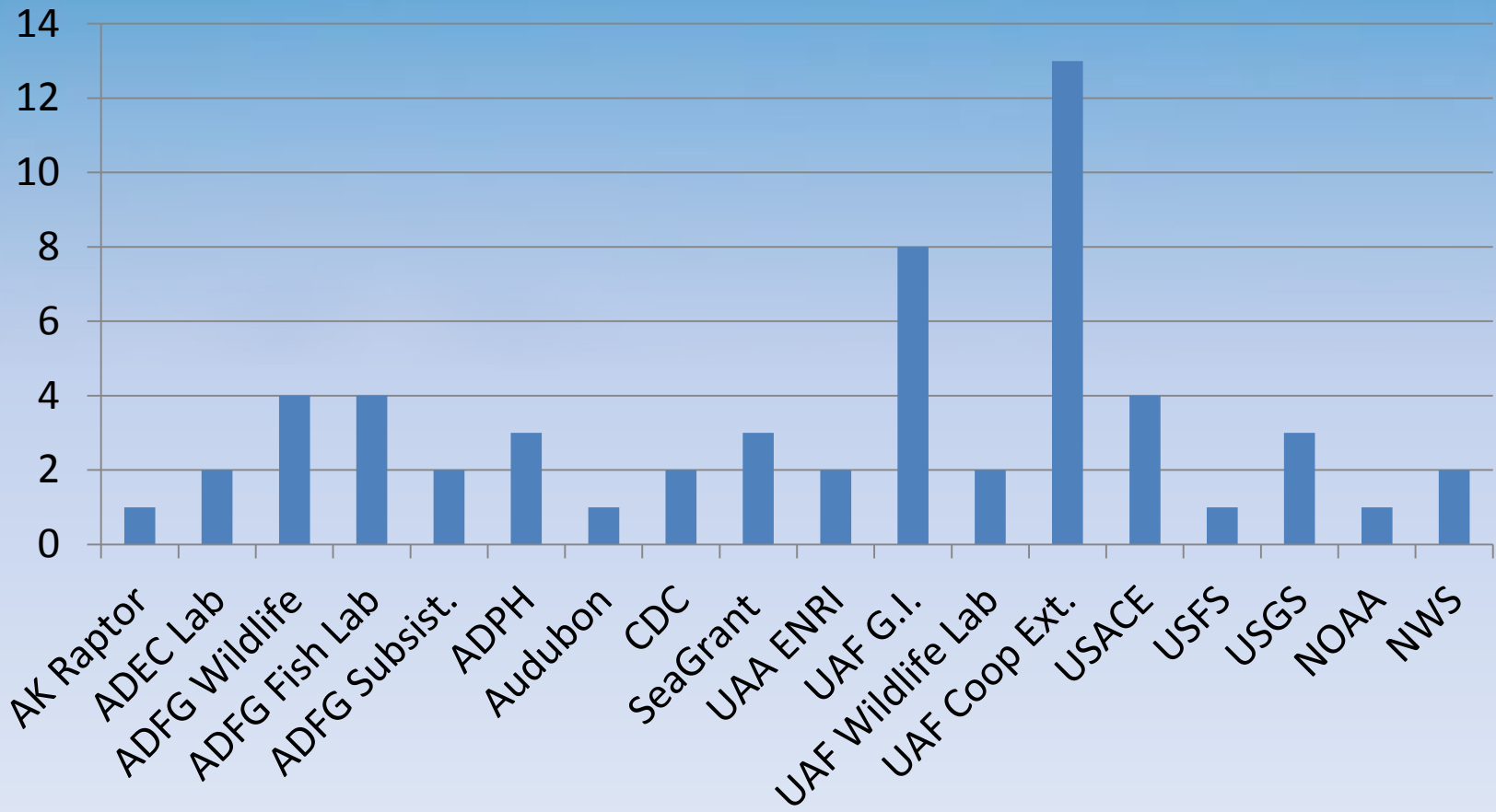


In 2013 LEO has posted over 80 observations across Alaska about unusual environmental, weather, wildlife and community events. The first observations from Canada was posted in September.

2013 Number of Observations by Category



2013 Number of Referrals by Organization



January – no sea ice.



Snow machiner trapped on fast moving sea ice Nome, January 1, 2013 (ice)
Strong winter wind broke off the sea ice in front of Nome right at the beach and then it moved off shore. A snow machiner was trapped on the quickly moving floe and he was rescued later by a helicopter. Nome residents use the sea ice for subsistence hunting, fishing and crabbing. Open water will mean limited access to winter subsistence resources. Mike Sloan, LEO

February – good caribou



Herd of caribou slowly migrating. Noatak Valley, Alaska, November, 2012 - February, 2013 (land animal) About 3,000 head of caribou are hanging out in and around Noatak, AK moving slowly thanks to the lack of snow in our area this winter. Caribou is the number one staple in our diet. It doesn't matter if you're in Deering, Noatak or Ambler, we all survive on a diet mainly of Caribou and Fish. Maija Lukin, LEO

March – flooding



Late winter storm disrupts transportation. Port Heiden, Alaska, March 7, 2013
(land) Erosion from severe storms on our public roads, transformers, water wells. If erosion continues to wash our roads out it will cost a lot of money to rebuild. And the flooding will ruin our electrical transformers and seep into our water wells. Shannon Matson, LEO

April – weird salmon



St. Mary's, Alaska, April 21, 2013 (fish) We fish under the ice with nets in front of St. Marys. I was checking my net on Sunday morning and I pulled in this Chum salmon. This is the first time I recall ever catching a salmon this early. It felt a little bit soft when I picked it up and it did not look good and I gave this one to my dog. I would like to figure out why they are showing up so late, and I would like to know what is making them sick. Charles Prince, LEO

May – tree infestation



Tree illness observed in Southeast Kake, Alaska, May 15, 2013 (forest) We had 2-3 warm winters which encouraged the aphids to multiply. Usually the cold winter temperatures keep them in check. We had a cold winter 2 winters ago and the Spruce trees recovered. You can see at the ends of the branches, healthy needles. Still not sure about this past winter, but so far I haven't seen any unhealthy needles. Edna Jackson, LEO

June – poor whaling



Ice conditions risky for whaling crews Barrow, June 5, 2013 (ice, whaling, subsistence) This year has been very challenging for our whalers. We've had couple of whaling crews that had to return to shore due to the moving ice. We praise God that no one has gotten hurt or died during this whaling season. Right now, there are still a couple of whaling crews that are still waiting to catch a whale. Qinugan Roddy, LEO

July – extreme heat



Hot weather raises heat illness concerns Nondalton, Alaska, July 22, 2013
(weather) There has been a lot of hot weather this summer. Some weeks have had temperatures in the upper 70s and 80s. This raises concerns for potential heat illness. Parents of small children and infants are challenged to provide protection from sun and insects without overheating. We are learning how to stay cool. Ron Loftfield, LEO

August – eroded river



Muddy river raises salmon concerns Kitchavik, near Golovin, Alaska. August 9, 2013 (river, salmon) The permafrost is thawing on the river banks and has caused a lot of erosion. The bank has collapsed causing the channel to be blocked with dirt and small islands of plants. It used to be clear and you could see the fish. The salmon is late coming into the river this year. Toby Anungazuk Jr., LEO

September – sink holes



Sink hole damages Inuvik Mike Zubko Airport Inuvik, NWT. September 24, 2013 (permafrost, infrastructure). A sinkhole was found in the runway of the Inuvik Mike Zubko Airport on Tuesday September 24th, 2013. Inuvik is serviced by jets seven days a week. Before emergency repairs could be made, airlines had to switch to aircrafts that could land on a shortened runway.. Jennie Knopp, LEO

October - Sick fish



Skin illness on white fish raise concerns. Nuiqsut, Alaska, October 13, 2013 (fish)
For the past week we been catching sick fish on Nigliq Channel. In all the years I've been fishing I never caught any fish like this. Caught 3 more sick fish with same markings and this time one had some kind of growth coming out from its mouth on October 14, 2013. Most people in our community eat this fish. Sam Kunaknana, LEO

November 10, 2013



Storm devastation in Unalakleet “There was no sea ice and the flooding and warm front broke up the river ice.” Victoria Kotongan

December 7, 2013



Wondering when winter will come in Quinhagak Warmer weather than usual this year, we had some snow, but it melted making the ground soft again, and the Kanektok River is still open. Joseph Pleasant

OBV No. (B000)	Observer Name	Date of Observation, time & google map link		What is the location? (landmarks)	or		(All Communities Map)					
					Latitude	Longitude	Community	Weather	Air Quality	Community Water	Community Food	Seasons
B001	Toby Anungazuk Jr.	16-Nov-11	n/a	Mouth of the Kichavik River near Golovin	64° 36' 08"N	-163° 06' 35"W	Golvin				X	
B002	Warren Daniels	27-Dec-11	9:00 AM	Elim beach front	64° 36' 57"N	-162° 15' 30"W	Elim					
B003	Brian Holter Jr.,	22-Feb-12	n/a	Klawock Alaska - On a fishing boat at the cannery. The boat is from Klawock and had been their through the winter.	55° 33' 08"N	-151° 30' 35"W	Klawock					
B004	Gavin Phillip	22-Feb-12	n/a	Coastline Kwigillingik	59° 51' 03"N	-163° 07' 59"W	Kwigillingok					
B005	Tim Greene	09-Mar-12	n/a	Coastal area	59° 21' 33"N	-151° 55' 20"W	Nanwalek					
B006	Oxenia O'Domin	17-Mar-12	5.00pm	Seward Hwy, near Mchugh Creek	61° 01' 47"N	-149° 45' 35"W	Anchorage					
B007	Bruce Wright	20-Mar-12	n/a	Behind the village of Akutan	54° 08' 04"N	-165° 46' 32"W	Akutan					

All observations are available the map archives as well as in a spread sheet format located on the LEO website.

The take home

The environment is changing very quickly.

Communities are responding to a wide variety of impacts.

We need to take action NOW to prepare.

Tribes are the front line for planning.

Training, assessments and work groups are encouraged.

LEO is a good way to share knowledge and stay informed.

For more information: mbrubaker@anthc.org



Joining LEO is easy!!!

1. Google us: “LEO Network”
2. Click on: “Join LEO”
3. Fill out the short form.

That's it!