About *LEO*

The Local Environmental Observer Network

LEO – 2013 Observations and Activity Update

Moses Tcheripanoff LEO Manager, Center for Climate and Health Alaska Native Tribal Health Consortium



February 25, 2014 Google us: "LEO Network"







About LEO

What is the program?

Why was is started?

How does it work?

How is it different from community based monitoring?

What kind of observations were made in 2013?

What is new in 2014?

For more information e-mail mbrubaker@anthc.org



Photo by Michael Brubaker

las









Photo by Yuri Gorokhovich

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



The Arctic is changing – really fast!

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

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

Sand Point, D. Osterback 2005

Annual Number of Storms at Barrow Alaska, 1950-2004 (northernmost town in the United States)



The number of coastal storms has generally increased as the amount of ice along the coast has decreased. This increase threatens commercial activity and communities in Alaska. The blue line indicates the annual number of open-water storms, those occurring in primarily ice-free water (July to December). The purple line indicates the number of storms occurring when thick sea ice is present (January to June). The black and green lines are smoothed using 5-year averages. Image Reference: University of Alaska¹ National Climate Assessment





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

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Copyright©2009 Permafrost Lab, GI, UAF

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Temperature, °C

-5





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

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Copyright©2009 Permafrost Lab, GI, UAF

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Temperature, °C

-5



Selawik Alaska, M. Brubaker

V-VA

CONSIGNATION

AAAA MMAILE

Frozen junction box - Selawik



CO.C.C.

Noatak River, by Ryan Brubaker



Troublesome beetles spotted close to Yukon border

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

CSC Nexs Posted: Nay 22, 2012 2:04 PM CT | Last Updated: Nay 22, 2012 2:57 PM CT



6 Mountain Pine basele or bank basele is seen on the tip of forester Call Wettershink knife during the examination of meas in the (tible River National Forest near Vall, Calo., in this July 5, 2005 file ghoto. The basele has also reveged forests in 6.C., and has been sported close to the Yukun borden. (Ed Andrieski/AP Photo)



ROVER DINNET.

Latest North News Headlines



 Northern food obsta remain sky high

- Yellowknife leachers ratify 2-year agreement.
- Yet might be undiscovered polar bear hybrid, acientist says
- Norway returns inuit artifacts to Gjos Haven.
- Hay River isen sentenced to 5 months



The Yukon Government continues to monitor the Mountain Pine Beetle as

Must Watch

Scanning the Arctic for Climate Impacts

Anchorage Daily News Greenland Telegraph Iceland Review Radio Sweden Barents Observer Ria Novosti Alaska Public Media Inuvik Drum Nome Nugget Bristol Bay Times

Nunatsiaq Online Alaska Dispatch Norway Post Yle Finland Fairbanks Daily News Miner Juneau Empire Canadian Broadcast Company (CBC) Yukon News **Arctic Sounder Dutch Harbor Fisherman**



Community Scale Assessment
Local Environmental Observers





Climate Change in Nondalton, Alaska

Strategies for Community Health











Image dated June 2004



The 2007 line on the image indicates where Newtok, Alaska's shoreline had eroded to by 2007. The other lines are projected assuming a conservative erosion rate of 36 to 83 feet per year; however, Newtok residents reported a July 2003 erosion rate of 110 feet per year. Image Reference: U.S. Army Corps of Engineers<u>1</u> National Climate Assessment

Seldovia, Alaska 9455500

9.45

mm/year

1964 - 2006



East

Siberian Sea

which is equivalent to a change of -3.10 feet in 100 years. Choose plot: Linear Trend Average Seasonal Cycle Interannual Variation Interannual Variation

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 retic cean

NT-

3.30

mm/year

1951 - 1983

Riber an See

-

Google



Photo by Mike Brubaker – Simulation by Moses Tcheripanoff







Yukon-Kuskokwim Health Corporation


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



Mag courtesy of AK Degt, of Commerce-

Project Name: Central Alaska Peninsula 1987 Baseline Harvest Profile





Kivalina Council

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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.

Fred Bauer – Nilolski, AK

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Outbreak of Vibrio parahaemolyticus Gastroenteritis Associated with Alaskan Oysters

Joseph B. McLaughlin, M.D., M.P.H., Angelo DePaola, Ph.D., Cheryl A. Bopp, M.S., Karen A. Martinek, R.N., M.P.H., Nancy P. Napolilli, B.S., Christine G. Allison, B.S., Shelley L. Murray, B.S., Eric C. Thompson, B.S., Michele M. Bird, M.S., and John P. Middaugh, M.D.

ABSTRACT

BACKGROUND

Vibrio parahaemolyticus, the leading cause of seafood-associated gastroenteritis in the United States, typically is associated with the consumption of raw oysters gathered from warm-water estuaries. We describe a recognized outbreak of *V. parahaemolyticus* infection associated with the consumption of seafood from Alaska.

METHODS

After we received reports of the occurrence of gastroenteritis on a cruise ship, we conducted a retrospective cohort study among passengers, as well as active surveillance throughout Alaska to identify additional cases, and an environmental study to identify sources of *V. parahaemolyticus* and contributors to the outbreak.

RESULTS

Of 189 passengers, 132 (70 percent) were interviewed; 22 of the interviewees (17 percent) met our case definition of gastroenteritis. In our multiple logistic-regression analysis, consumption of raw oysters was the only significant predictor of illness; the attack rate among people who consumed oysters was 29 percent. Active surveillance identified a total of 62 patients with gastroenteritis. *V. parahaemolyticus* serotype O6:K18 was isolated from the majority of patients tested and from environmental samples of oysters. Patterns on pulsed-field gel electrophoresis were highly related across clinical and "This investigation extends by 1000 km the northernmost documented source of oysters that caused illness due to V. parahaemolyticus. Rising temperatures of ocean water seem to have contributed to one of the largest known outbreaks of V. Parahaemolyticus in the United States."

From the Division of Public Health, Alaska Department of Health and Social Services (J.B.M., K.A.M., J.P.M.); and the Alaska Department of Environmental Conservation (N.P.N., C.G.A., S.L.M.) - both in Anchorage; the Food and Drug Administration, Gulf Coast Seafood Laboratory, Dauphin Island, Ala. (A.D.); the Centers for Disease Control and Prevention, National Center for Infectious Diseases, Atlanta (C.A.B., M.M.B.); and the Washington State Department of Health Public Health Laboratories, Shoreline (E.C.T.). Address reprint requests to Dr. McLaughlin at the Division of Public Health, Alaska Department of Health and Social Services, 3601 C St., Suite 540, Anchorage, AK 99503, or at joe_mclaughlin@health.state.ak.us.

N Engl J Med 2005;353:1463-70. Copyright © 2005 Massachusetts Medical Society.

Photo courtesy of Vladimir Romanovsky, UAF

June 2005 - Community water source disappears in Kwigillingok

Photo – Anchorage Daily News

Andrew Frankson– Point Hope, AK

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RAW V

Photo by Michael Brubaker



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).

Health Effects of Climate Change in Alaska



Snow hazards

Adaptive strategy – improve design

E.



Increase community resilience

Begin phase relocation to better areas





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

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, northbound 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. <u>ANTHC</u>

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. <u>Homer Tribune</u>

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. <u>Arctic Journal</u>

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 infrastructu 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 fe in an urban neighborhood into their garden and grew rhubarb, cabbage, curumbers, kale and other greens, zucchini and other gourds, and c





Our 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 Local Environmental Observer (LEO) Network is comprised of local experts who share their knowledge

Improve observation network

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

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And a tool that would help share the findings

Weather **Erosion** Permafrost **River** Seasonal Coastal **Plants** Wildlife Infrastructure **Environment Transportation** Disease Food Water



The focus for LEO is environmental change



Traditional Ecological Knowledge

LEOs – Research Projects



Observations can be from anyone in the community.

Nikki Shanigan and friends - Levelock

200

LEOs and decisions

LEO Program Growth – 2012 to 2013





2013 Number of Google Map Views By Month



2013 Total Site Visits = 192,725

Google

Getdirections

Collaborate

Explore making custom maps in an interactive tutorial.

My place c

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100 ml

200 km

EDIT

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 titews Created on May 3 - By mbrubater - Updated Jul 9 Rate Ints map - Witte a comment - KML - 🔽 Ref []

Deer with fur loss in Southeast

Hollis, Alaska, May 1, 2012 (and mammals) We have been seein Silka Black-tailed deer with large patches of fur hanging from the bodies and baid spots the size of place mats. Some deer also have mu...

💛 Unusual bug found in home (photo)

King Cove, May 6 (insect) Unusual insects were found in a local home. LEO, Honey Lou Wilson, suspects the insect might be the Brown Marmonaled Sink Bug, "We figure the bug came in a box i we had...

Discolored seal with sores on side flipper (photo)

 \times

Las I Updaled 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 am basis affected by According.

Directions Search nearby Save to map more

Alaska

A good observation provides information about the nature of the event.

2013 Number of Observations by Category



Google

Getdirections

Collaborate

Explore making custom maps in an interactive tutorial.

My place c

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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: antheleo@anthe.org

Units led + 3 Collaborators + 2,5+8 tiews Created on Jan 2+ + By mbruhaker + Updated Jun 25 Rate Inis map + 1 comments + KIIL -

Moses Tcheripanoff, LEO 01 (photo)

Wasilia LEO Manager and Web Guru, Alaska Kalve Tribal Realt Consortum, 907-725-2496, mptchetipanot@anthc.org Interests: believe that this program is essential for keeping our community connec...

💡 Mike Brubaker, LEO 02 (photo)

Anchorage / McDonald Op11 LEO Manager, Director Community Environment and Carlety, Ataska Kalter Tribal Health Consortum, 907-729-245, mbrubaken@anthc.org. Interes is : community chang related to C...

💎 Hanna Eklund, LEO 03 (photo)

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

😵 Robert (Bob) Absher, LEO 04

Galona, Entironmental Coordinator, Native Village of Galona, 907-822-5777, galonaadmin2@conternet.net I Interests: Reducti of nearby forests for Biofuel, decline in the Copper River Salmon, erooto...

Ovcenia Odomin, LEO 05 (oboto).



LEO is also a social networking to exchange information.

2013 Number of Observations by Region





Sharing Observations with technical experts

Number of Referrals by Organization



Get directions

Collaborate

LEO - All Observations 2013

This map provides a summary of the observations posted by members of the Local Environmental Observer (LEO) Network in 2013. This map is hosted by the Alaska Native Tribal Health Consortium, Center for Climate and Health with funding from the EPA and the Western Alaska LCC. For more information, google us at "LEO Network".

My places

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EDIT

Public - 2 Collaborators - 32 views Created on Jan 20 · By mbrubaker - Updated Jan 20 Rate this map - Write a comment - KML - 8+1 (0)

Link: Alaska Climate Events 2013 Map

Click here to view the Alaska Climate Events 2013 map, inclu web links to news articles from across Alaska. See more map the Center for Climate and Health.

Snow machiner trapped on fast moving sea ice

Nome, January 1 2013 (ice) A strong winter wind broke off th ice in front of Nome right at the beach and then it moved off s A snow machiner was trapped on the quickly moving floe and was...

Lots of earthquakes in Southeast Alaska

Ketohikan, Alaska, January 5, 2013 (earthquakes) I have noti that there are an increased number of earthquakes. It is impo all the communities of Southeast Alaska because of the imme t...

The lack of sea ice changes the hunt

Unalakleet, January 6, 2013 (ice) Almost all of the ice is gone the ocean. People normally use the ice for hunting bearded s normally around this time of year there is ice way out into t...

Rare brown bear sighting in January

Port Heiden, January 9, 2013 (land animal) This bear was firs spotted in Port Heiden at a remote residential area (Trapper I than went through the Old Hudd Townsite, passed the school continu...

Creeks choked by ice and overflow

Anchorage Alaska, January 16, 2013 (river, ice) There is alot overflow and flooding happening in Anchorage area streams, result of the recent record rain fall. This is usually a little brool

Winter brown bear sighted

St. Mary's, Alaska January 17, 2013 (land animal) A brown bi was sighted roughly 8 miles up the west fork of the Andreafsk from St. Mary's. The bear was observed with a bloody face by local...



2013 LEO Posted (88) Events

2013 Number of Observations by Month



2013 Total = 88

January 1, 2013

"Snow machiner trapped on fast moving sea ice"
February, 2013

"Herd of caribou slowly migrating"

March 7, 2013

"Late winter storm disrupts transportation"

April 21, 2013

"Unseasonable chum salmon catch under ice"

May 1, 2013

"PSP levels rising in Kodiak"

June 5, 2013



69

July 22, 2013

"Hot weather raises heat illness concerns"

August 9, 2013

"Muddy river raises salmon concerns"

September 24, 2013

"Sinkhole damages Inuvik Mike Zubko Airport"

October 13, 2013

"Skin illness on white fish raise concerns"

November 10, 2013

"Broad impact from storm in Norton Sound community"

December 7, 2013

"Unusually warm December weather"

		Date of Observation, time & google map link		What is the location? (landmarks)	or		(All Communities Map)					
OBV No. (B000)	Observer Name				Latitude	Longitude	Community	Weather	Air Quality	Community Water	Community Food	Seasons
B001	Toby Anungazuk Jr.	<u>16-Nov-11</u>	n/a	Mouth of the Kichavik River near Golovin	64° 36' 08"N	-163° 06' 35"W	Golvin				x	
B002	Warren Daniels	<u>27-Dec-11</u>	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	<u>22-Feb-12</u>	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	Oxcenia O'Domin	<u>17-Mar-12</u>	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 on the LEO website.

Local Environmental Observer (LEO) Network

LEO Youth are students who share observations about unique and unusual environmental events in there communities. Click <u>here</u> to learn more.









Marvin Balluta - Nondalton

The take home

The northern environment is changing very quickly.

Northern communities seek assistance responding to impacts.

LEO member select, qualify and post their own observations.

They can apply traditional as well as western science.

LEOs engage directly with technical experts.

LEOs help their communities and region to adapt to change.

For more information e-mail mbrubaker@anthc.org

