



## Alaska Native Tribal Health Consortium: Assessing Health Impacts and Documenting Observed Changes

---

The Alaska Native Tribal Health Consortium's (ANTHC) Center for Climate and Health has done a tremendous amount of work over the past four years to support Alaska Native communities in chronicling climate change impacts on the landscape and on human health. Staff members from the center apply their "engineering, environmental health and community health experience to perform assessments, develop community-appropriate strategies, and to describe climate-health connections."

Much of the early work has focused on areas of Alaska with high climate vulnerability, including the Northwest Arctic. Impacts of climate change in the Northwest Arctic region range from thinning sea and river ice, to permafrost melting and coastal erosion. Though many research groups are working to identify and monitor the changing environmental conditions around Alaska, ANTHC's approach is unique both in its data collection methods and its focus, namely community-based adaptation strategies.

In order to create effective adaptation strategies, leaders must consider a whole host of climate-influenced health concerns. For instance, "climate change can indirectly increase the risk of infectious disease by damaging and disrupting water and sanitation infrastructure" (Brubaker et al., 2011b). Climate change can also threaten food security for communities that rely on traditional, permafrost-encapsulated storage cellars. The loss of reliable refrigeration can in turn increase incidence of food borne diseases and can attract large predatory mammals, such as bears, to population centers.

ANTHC employs western science, traditional ecological knowledge, *and* a vast network of climate change impact "observers" to develop comprehensive, community-scaled climate change health assessments (CCHA). These assessments, which include adaptation



Emergency erosion control on the coastline near Kivalina, AK. Photo courtesy Millie Hawley.

recommendations for individual communities, tackle complex health issues that span the fields of both climate science and epidemiology. Part of the impetus for creating CCHAs was a desire to provide support to community leaders who are tasked with creating protective climate change adaptation strategies in response to unpredictable and rapidly changing environmental conditions. CCHAs provide technical input and relevant data for community leaders who face the daunting challenge of drafting adaptation plans.

Mike Brubaker, Director of the Center for Climate and Health at ANTHC, has worked for years with Alaska Native communities that are being directly impacted by climate change. Through this experience, Brubaker has been able to identify a practical, stepwise process for communities initiating a climate change adaptation campaign. The process includes the following steps:

1. Raise awareness
2. Identify your network
3. Engage in climate dialogue
4. Be a local environmental observer
5. Describe your climate baseline
6. Identify climate vulnerabilities
7. Develop targeted adaptation strategies

### **Climate Change Health Assessment Reports Project Implementation and Progress**

---

The very first assessment report was developed for Point Hope, Alaska in early 2009. Since that initial CCHA, a total of five Alaska Native communities have participated in the comprehensive assessment process. The communities, which include Point Hope, Kivalina, Noatak, Kiana, and Selawik, reside in geographically and culturally unique villages ranging in size from 360-700 residents. Each of the community-tailored reports focuses on, “local observations and traditional seasonal time scales, on [synthesizing] climate and health causal chains, and on a broadly participatory framework, which combines Indigenous and Western knowledge systems” (Brubaker et al., 2011a). More specifically, the assessments each include, “descriptions of climate-health mechanisms, vulnerability by health category, measures of health risks and benefits, principles for adaptation planning and specific public health recommendations.”

Rather than highly generalized regional assessments, local leaders can turn to CCHAs to better understand the temporally and spatially specific “climate-health vulnerabilities” (Brubaker et al., 2011a) identified for their particular community. Negative health impacts associated with climate change range from compromised drinking water and wastewater infrastructure, to changes in the prevalence of zoonotic diseases. ANTHC assessment authors consider health holistically and detail not only the physical, but also the mental health effects of climate change on Alaska Native community members.

This tremendous resource is produced through collaborations between ANTHC staff and tribal representatives and professionals. Brubaker et al. (2011a) describe the four-step process used to create a Climate Change Health Assessment report as follows:

- (1) Scoping to describe local conditions and engage stakeholders
- (2) Surveying to collect descriptive and quantitative data
- (3) Analysis to evaluate the data

- (4) Planning to communicate findings and explore appropriate actions with community members

As a follow up to the five completed profiles, the Center plans to conduct three community-based assessments in Bristol Bay, four in Alaska's North Slope region, and three in Norton Sound. The estimated dates of completion vary by region, but all assessments are scheduled to take place within the next three years.

Importantly, Mike Brubaker explains, the climate change health assessments constitute only the first in a two-phase process. During the first phase, the goal is to partner with communities and collect climate-relevant data, and then synthesize the results into a comprehensive report. Also during the first phase, ANTHC staff work with communities to identify which resources are already available for adaptation planning and which additional resources or projects are needed. The second phase, meanwhile, focuses on implementation of the projects that were recommended during phase 1.

### Completed Tasks Include:

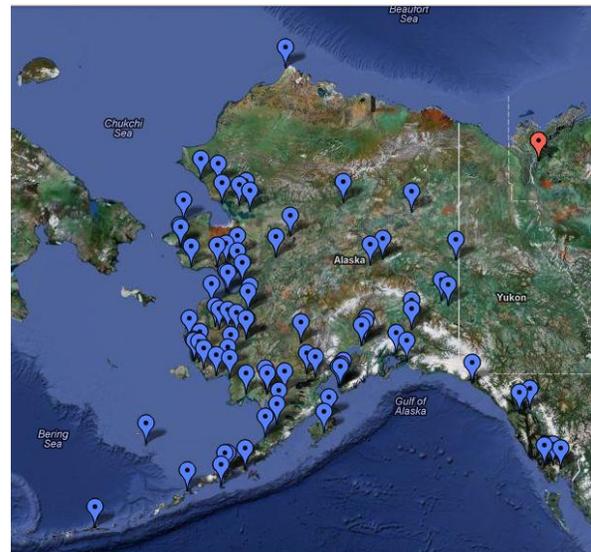
- Publication of five CCHA reports
- Plans in place to complete an additional 10 reports within the next 3 years
- Staff members from the center are currently developing metrics to better evaluate the magnitude of climate vulnerabilities within Alaska Native communities (i.e. water resources, food security)
- Communities that have already completed the assessment phase are now moving into the project implementation phase. These communities will receive direct support from the Center for improvements to water, food, sanitation, and medical infrastructure.

### Local Environmental Observer (LEO) Network: Project Implementation and Progress

---

The LEO Network is sponsored by the ANTHC and currently includes over 100 individuals in 60 communities throughout Alaska. LEOs are “tribal environmental 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.” LEOs receive monthly training through webinars and have support from ANTHC throughout the year. In addition, the Center has created internal quality control (QC) protocol for incoming observations to ensure that the data reported through the website meets a certain degree of analytical rigor.

Observations may include photos, videos, and written accounts. Once submitted via the online



This map shows the locations of all Local Environmental Observer (LEO) Network communities as of October 2012. If you have comments or would like to add information, you can contact the map hosts at: <mailto:anthcleo@anthc.org>

reporting system, LEO observations are made publically available so that interested parties throughout the region can learn more about local climate change observations.

The network has compiled a comprehensive database of observations since its inception in 2011. Typical entries include observed environmental trends like thinning sea or river ice, permafrost melt, and coastal erosion, as well as discrete events or observations (i.e. discovery of a non-native fish skeleton). Mike Brubaker explains that the goal is to have LEO participants throughout the state of Alaska chronicling climate-induced changes in the natural environment. This will help to provide critical monitoring data so that communities can track short and long-term shifts in the surrounding environs. The data can ultimately inform adaptation strategies and obviate the need for climate change mitigation throughout the global community.

To access the LEO database, please visit (<http://www.anthc.org/chs/ces/climate/>). Maps with local observations spanning from winter 2011 through fall 2012 are available through the LEO website.

### Completed Tasks Include:

- There are now over 142 trained professionals (LEOs) enrolled in the LEO network
- These registered LEOs are actively collecting and reporting data from 84 communities (83 Alaskan communities and 1 community in the Northwest Territories of Canada)
- In addition to managing the LEO network database, the Center also hosts LEO-themed tracks during state-wide environmental management conferences



LEO volunteers collecting field data in their respective communities.

Source: LEO Member Slideshow, <http://www.anthc.org/chs/ces/climate/leo/>

### Challenges and Lessons Learned

When asked about the most significant challenges that his team has encountered, Brubaker responded that one major challenge has been acquiring resources for Alaska Native communities affected by climate change. He explained that climate change impacts can be readily observed across the landscape in Alaska – local residents live with the effects of climate

change on a daily basis. Resources to fund adaptation and mitigation have been slow coming however, because the global community's perception of climate change belies the urgency and immediacy of the resulting needs. In response to this challenge, Brubaker explains that we must "mainstream climate change adaptation" and help to ensure that climate-vulnerable communities are adequately protected.

With regard to lessons learned, the ANTHC staff point out that every Alaska Native community is unique and that each is experiencing "a range of climate impacts that are having effects on health." These climate-health impacts frequently relate to water resources, food supply, and sanitation infrastructure. Nonetheless, the issues vary from one community to the next, and it is only by engaging with community leaders and local residents and professionals that staff members can evaluate suitable avenues for adaptation.

ANTHC staff emphasize that many impacted communities are already employing creative adaptation techniques. Intervention and support are needed nonetheless because as Brubaker explains, "the scale of the disruption that's happening is beyond the resources and capacity of rural Alaskan communities to deal with."

#### **Key Partners:**

- Community members (LEOs)
- U.S. Department of Health & Human Services, Indian Health Service
- U.S. Environmental Protection Agency, Region 10 (Pacific Northwest)
- Centers for Disease Control and Prevention, Arctic Investigations Program

#### **Resources and References**

---

Alaska Native Tribal Health Consortium, Climate Change & Health Impact Assessment Reports  
<http://www.anthc.org/chs/ces/climate/bbs/climateandhealthreports.cfm>

Alaska Native Tribal Health Consortium, Local Environmental Observers Network:  
<http://www.anthc.org/chs/ces/climate/leo/>

Brubaker, M. Y., Bell, J. N., Berner, J. E., Warren, J. A. 2011a. Climate change health assessment: a novel approach for Alaska Native communities. *International Journal of Circumpolar Health*, 70(3): 266-273.

Brubaker, M., Berner, J., Chavan, R., Warren, J. 2011b. Climate change and health effects in Northwest Alaska. *Global Health Action*, 4: 8445-DOI.

Alaska Public Radio. May 2011. AK: Climate Change, radio episode.  
<http://www.alaskapublic.org/2012/05/18/ak-climate-change/>

The Arctic Sounder. June 22, 2012. Network gathers local climate change observations.  
[http://www.thearcticsounder.com/article/1225network\\_gathers\\_local\\_climate\\_change](http://www.thearcticsounder.com/article/1225network_gathers_local_climate_change)

Juneau Empire. March 28, 2011. Warming brings unwelcome change to Alaska villages.  
[http://juneauempire.com/stories/032811/sta\\_806546506.shtml](http://juneauempire.com/stories/032811/sta_806546506.shtml)

## Contact Information:

Mike Brubaker  
Alaska Native Tribal Health Consortium DCHS  
Center for Climate and Health  
4000 Ambassador Drive  
Anchorage, AK 99508  
(907) 729-2464  
[mbrubaker@anthc.org](mailto:mbrubaker@anthc.org)

*Photos and maps in this profile are courtesy of the Alaska Native Tribal Health Consortium.*

---

This profile was developed by Cristina González-Maddux, Institute for Tribal Environmental Professionals, Northern Arizona University.

The profile is available on the Tribes & Climate Change website: [www4.nau.edu/tribalclimatechange/](http://www4.nau.edu/tribalclimatechange/). The tribal climate change profiles featured on the website are intended as a pathway to increasing knowledge among tribal and non-tribal organizations about climate change mitigation and adaptation efforts.

For more information, contact:

- Sue Wotkyns, Climate Change Program Manager, Institute for Tribal Environmental Professionals, [susan.wotkyns@nau.edu](mailto:susan.wotkyns@nau.edu)
- Mehrdad Khatibi, Director, Institute for Tribal Environmental Professionals, [mehrdad.khatibi@nau.edu](mailto:mehrdad.khatibi@nau.edu)