Clear and Present Microbial Threats in Alaska Related to the Changing Climate

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Purpose

- Outline some observations on infectious disease threats in Alaska related to:
  - Higher atmospheric temperatures
  - Warming seas
  - Loss of permafrost
  - Reduced sea ice

Maureen Clark / AP Images

THE DEAD SALMON WERE A BAD SIGN

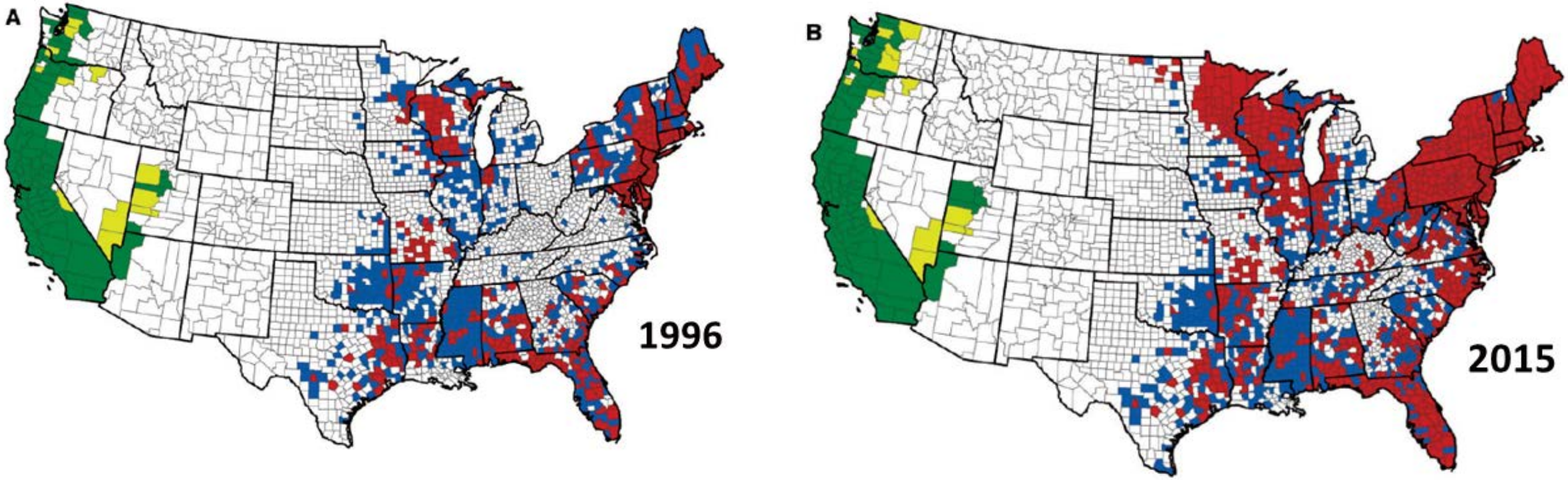
Want to know what climate change feels like? Ask an Alaskan.

By Maddie Stone on Oct 8, 2019

The New York Times

Anchorage Had Never Reached 90 Degrees. That Changed This Week.

Range of *Ixodes scapularis* and *I. pacificus* by County, US, 1996 and 2015



Red and green = counties with established populations based on ≥6 ticks or ≥2 life stages detected in a single year

Eisen RJ, Eisen L, Beard CB. *J Med Entomol*2016; 53(2):349-386

Division of Environmental Health
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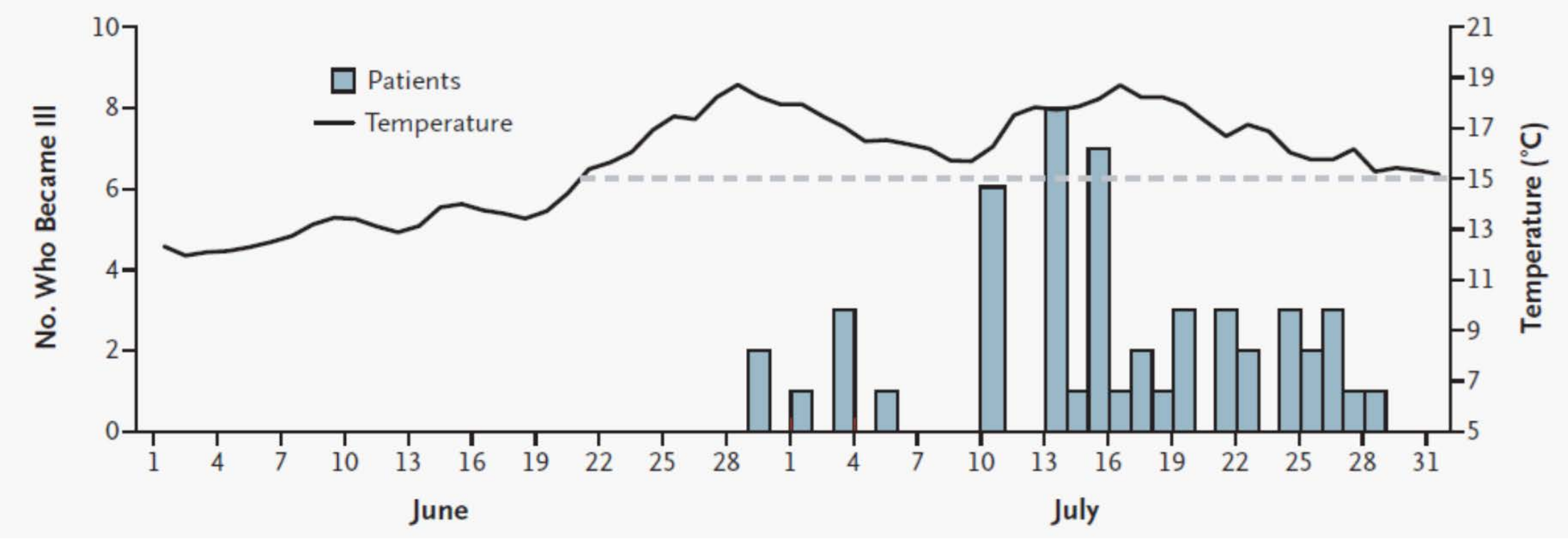
ALASKA SUBMIT-A-TICK PROGRAM

In 2019, the Alaska Office of the State Veterinarian, in collaboration with the Alaska Department of Fish and Game and the University of Alaska, began the Alaska Submit-A-Tick Program. Through this program, individuals who find ticks on themselves, their family members, pets, or wildlife (e.g. hunted or trapped animals) can submit ticks for species identification and pathogen testing. Veterinarians, biologists, and other Alaskans who handle domestic animals and wildlife in the state are important resources for the monitoring program, and we welcome you to submit ticks.

Researchers are asking Alaskans to submit ticks to help determine which tick species are currently in the state. Tick submissions will also help us learn more about how ticks are being imported into Alaska so that we can create effective strategies to limit their introduction. Ticks can transmit bacteria, parasites, and viruses that can cause diseases in humans and wildlife. Pathogen testing allows us to assess tickborne disease risk in the state.

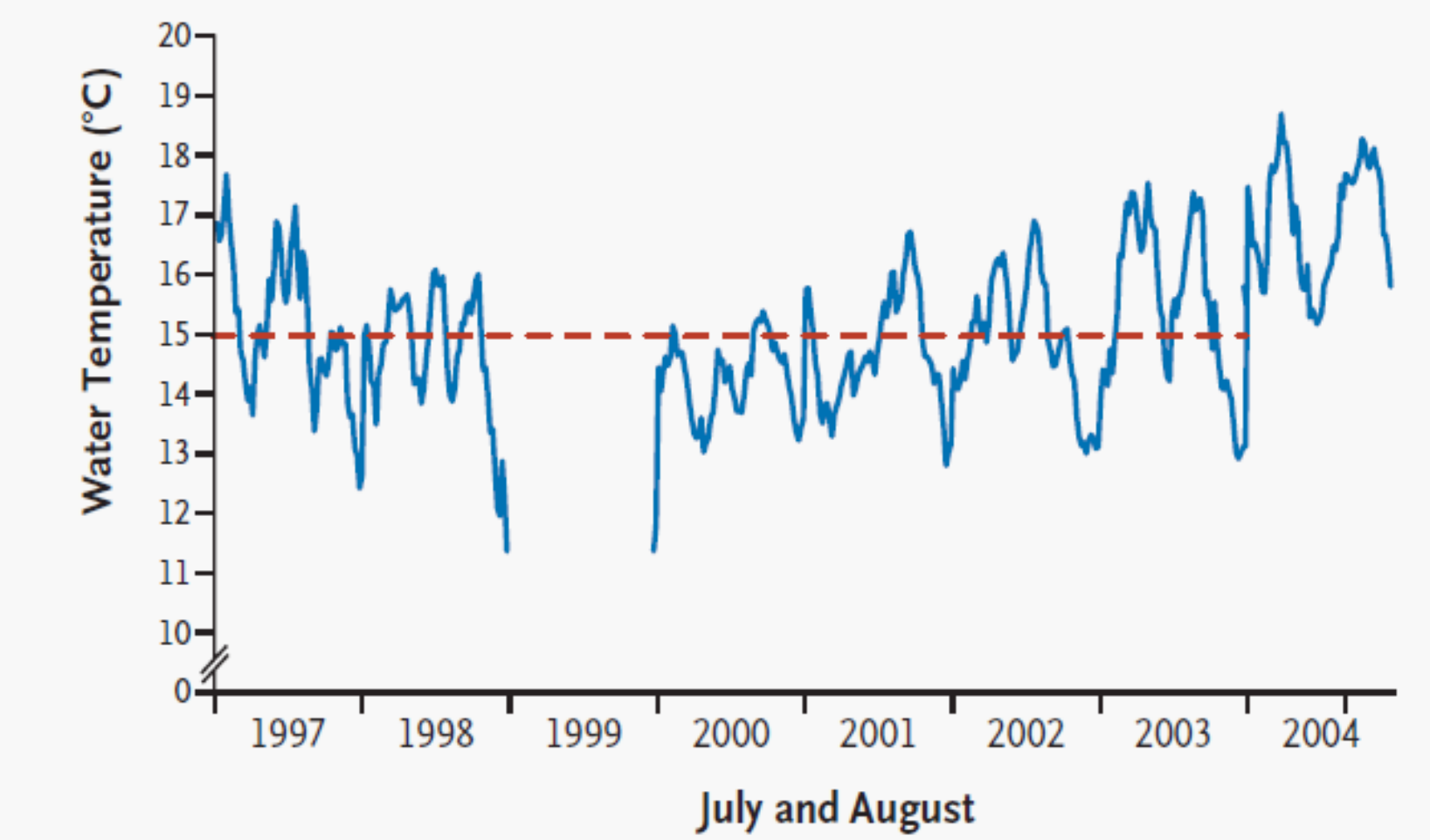
QUICK TICK LINKS

Illness Onset Dates of *V.p.* Cases and Mean Daily Water Temperature at Linked Oyster Beds, 2005



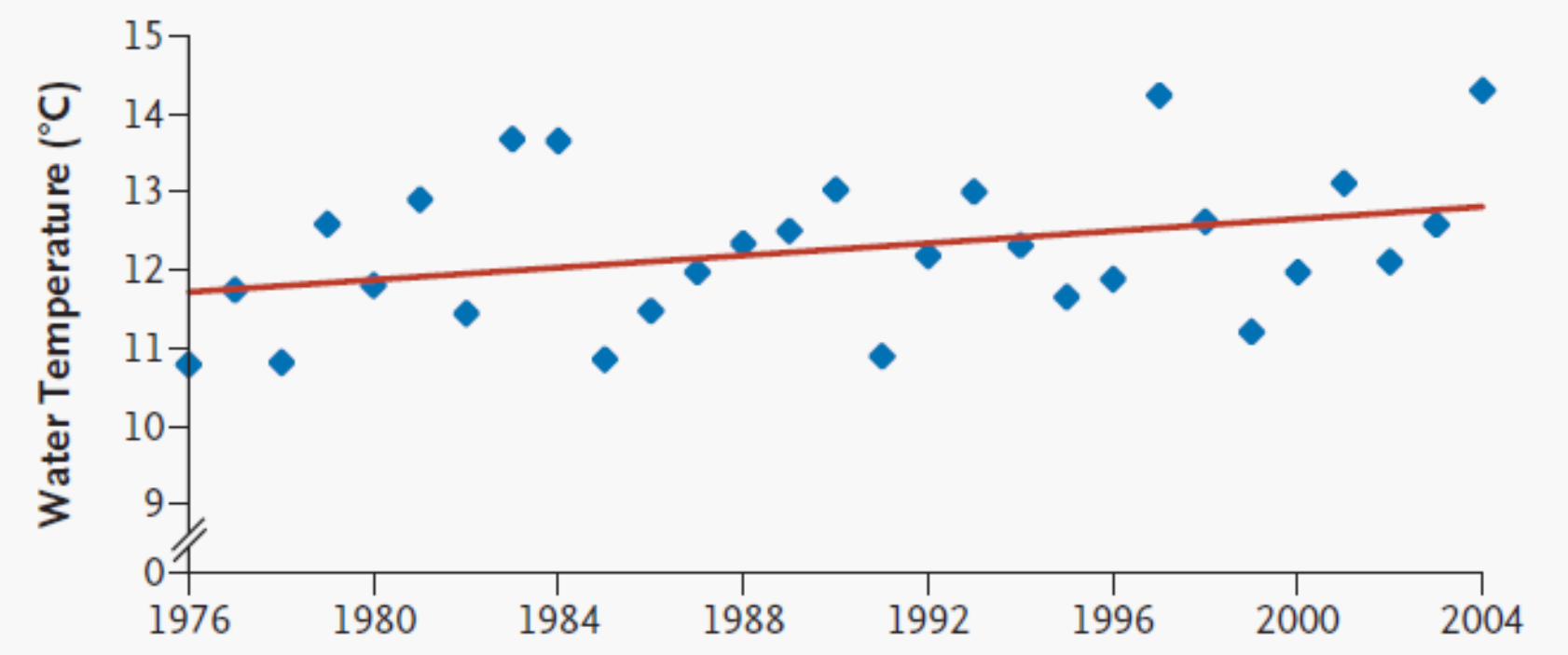
McLaughlin JB, et al. *N Engl J Med* 2005;353(14):1463-1470

Mean Daily July and August Water Temperature at Linked Oyster Beds at 5 Foot Depth



McLaughlin JB, et al. *N Engl J Med* 2005;353(14):1463-1470

July and August Gulf of Alaska Surface Water Temperatures, NOAA Buoy 46001 (500 km S of PWS Beds), 1976-2004

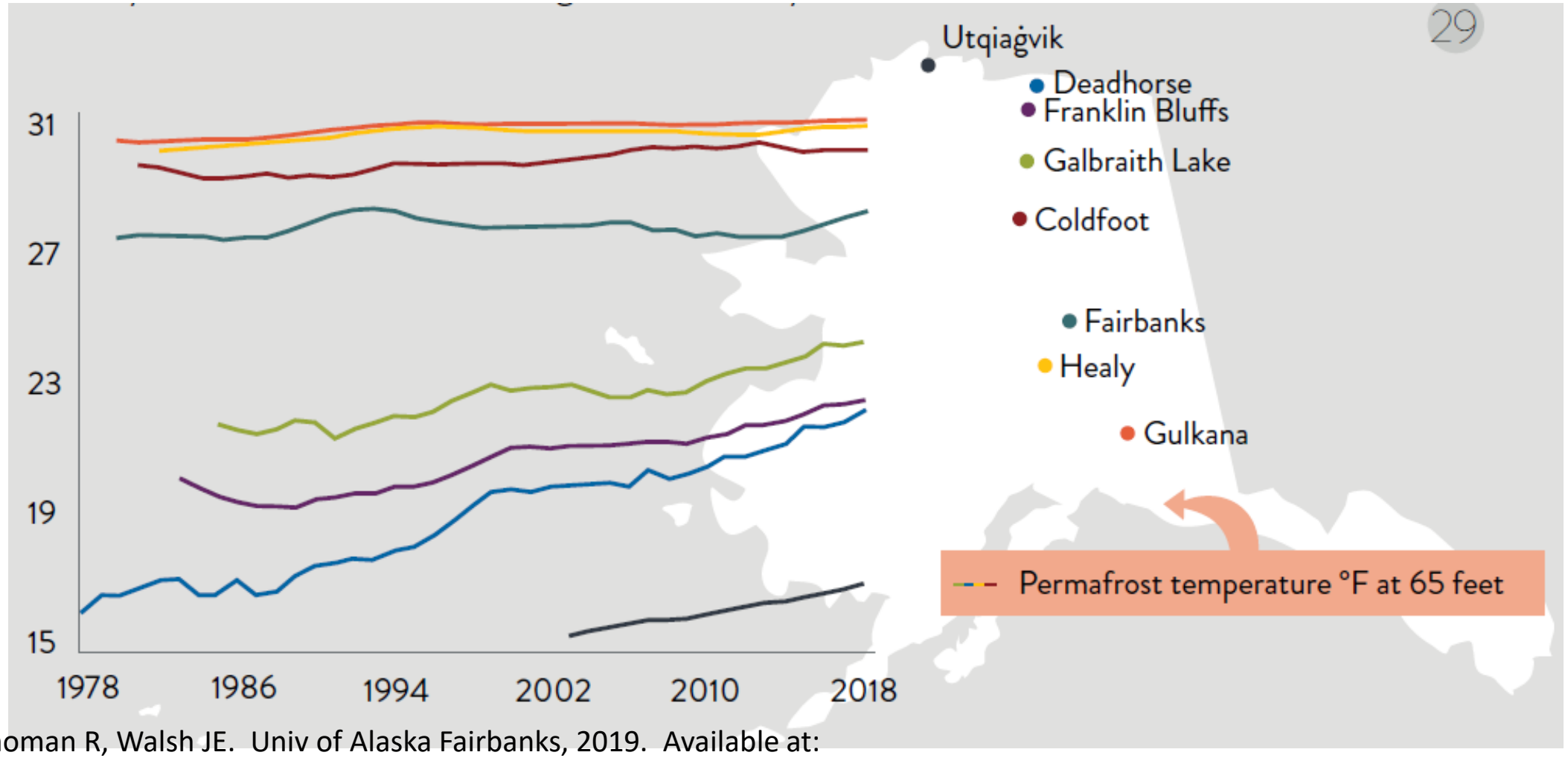


McLaughlin JB, et al. *N Engl J Med* 2005;353(14):1463-1470

Thawing Permafrost Threatens *Sigl-Uaps* (Traditional Inupiaq Food Cellars)

Alaska Native Tribal Health Consortium Center for Climate and Health, Bulletin No. 4, May 7, 2010

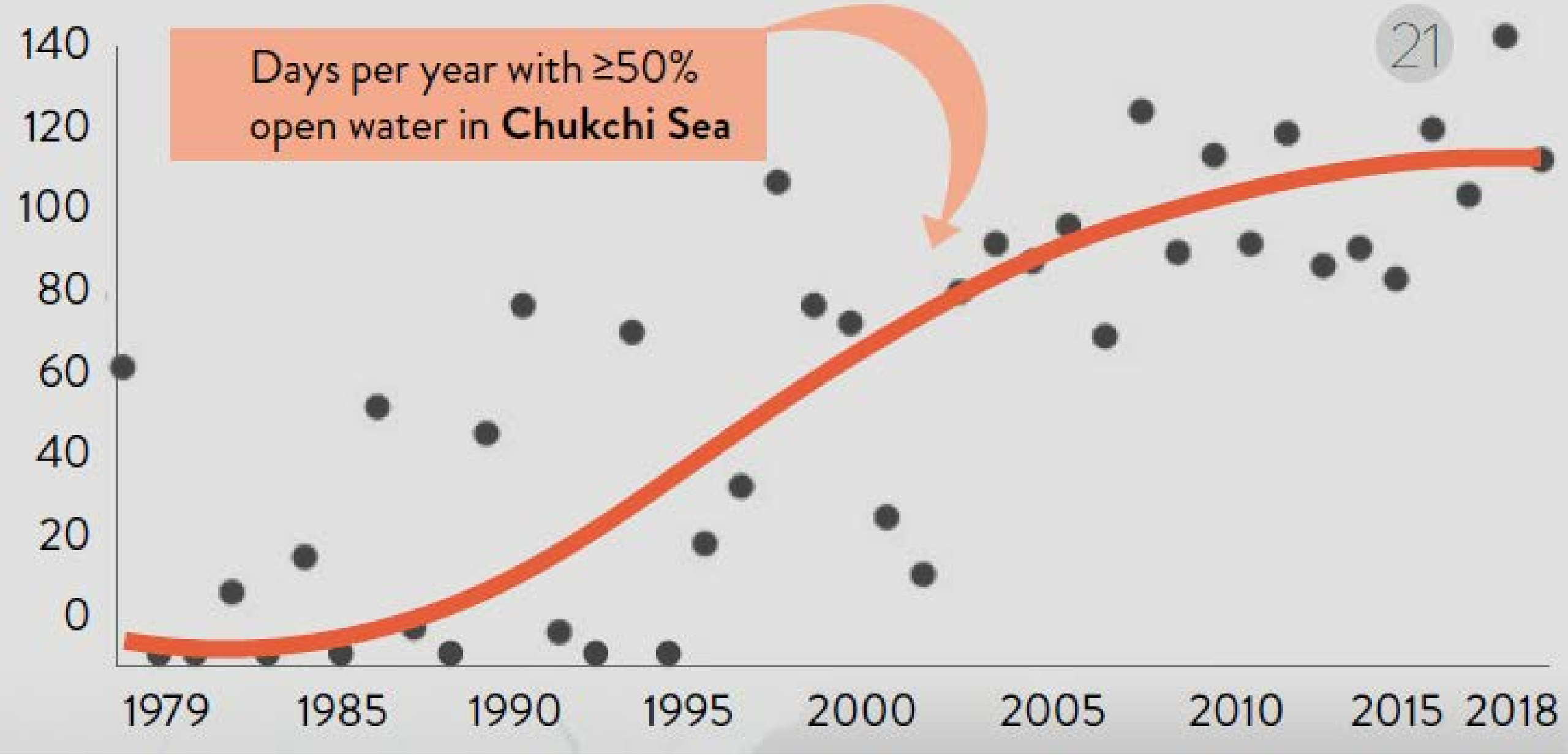
Warming and Loss of Permafrost



Thoman R, Walsh JE. Univ of Alaska Fairbanks, 2019. Available at: https://uaf-iarc.org/wp-content/uploads/2019/08/Alaskas-Changing-Environment_2019_WEB.pdf

Figure 2. Damage to a sewage lagoon following flooding in a village in western Alaska places the community at risk for food and waterborne infectious diseases, such as those caused by enteric viruses (hepatitis A) and bacteria (*E.coli, Salmonella, Shigella*), and parasites such as *Giardia*, and *Cryptosporidium*.

Parkinson AJ, Butler JC. *Internat J Circumpolar Health* 2005;64(5):478-486



Thoman R, Walsh JE. Univ of Alaska Fairbanks, 2019. Available at: https://uaf-iarc.org/wp-content/uploads/2019/08/Alaskas-Changing-Environment_2019_WEB.pdf

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Volume 20 Number 1

Assessment of the Potential Health Impacts of Climate Change in Alaska

Contributed by Sarah Yoder, MS, Alaska Section of Epidemiology

January 8, 2018

http://epibulletins.dhss.alaska.gov/Document/Display?DocumentId=1962