

Climate Change Impacts on Human Health and Community Resilience in the U.S. Arctic



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2016 Knauss Fellow

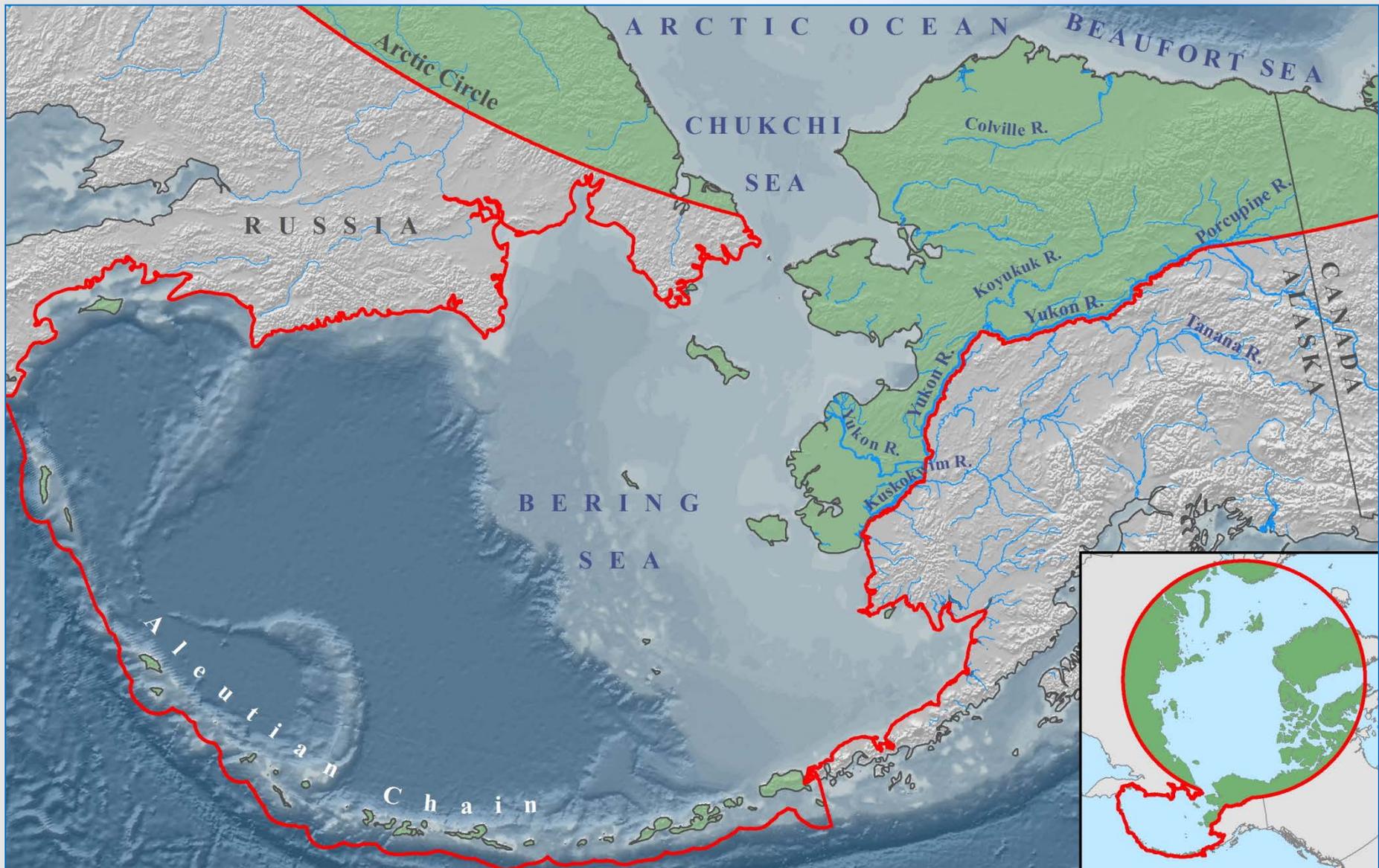
NOS Policy Division

NOAA Arctic Program, NOAA One Health Working Group

What is the Arctic?



What is the Arctic?



Unique Regional Challenges

Alaska



Unique Regional Challenges

Low resource availability

High cost of living

Seasonal operations



Housing crisis

Poor sanitation

Few medical resources



Pathogen exposure

Poor treatment options

Mental health impacts

Poor emergency response



Arctic Communities: Vibrant and full of life



Subsistence Hunting and Gathering



Climate Change in the Arctic

- Warming 2x faster than global average
- Decreased seasonal sea ice and snow cover
- Permafrost thawing
- Coastal erosion
- Sea level rise
- Ocean acidification
- Ecosystem shifts
- Species distributions
- Migratory patterns



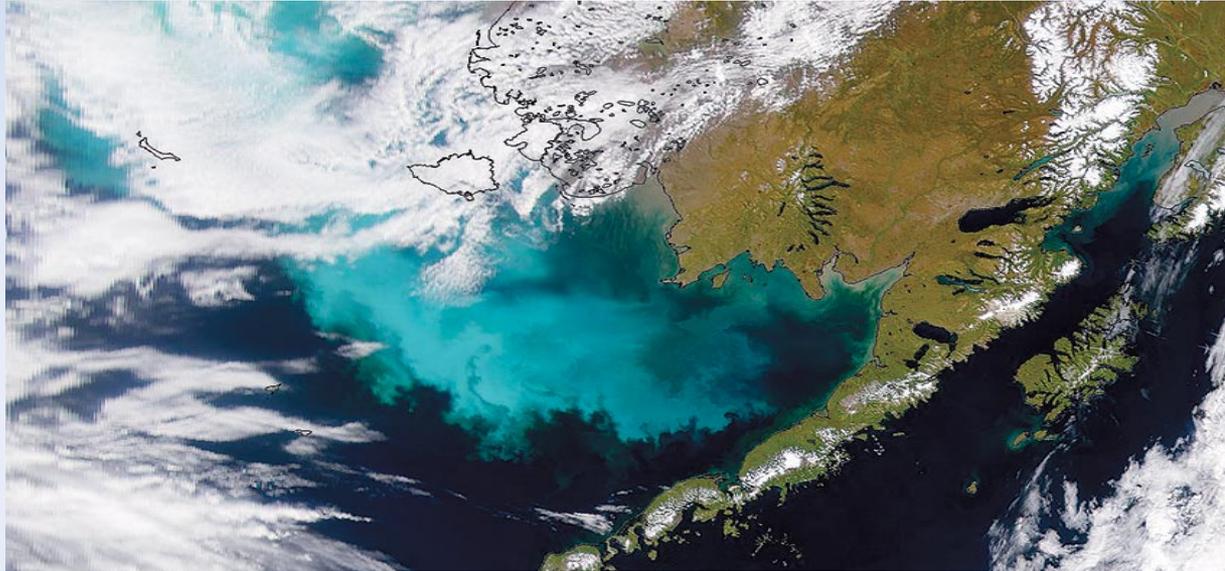
Becoming more
unpredictable

Environmental Impacts on Subsistence Communities

- Increasingly difficult to predict migration patterns
- Reduced access to hunting grounds
- Threatened food security
- Cultural impacts:
 - Disengaged younger generation
 - Traditions, languages forgotten
 - Loss of identity
 - Mental health issues



Pathogens, Toxins, and Contaminants



- 2004 *Vibrio* outbreak
- 2014-15: Record-breaking HABs in the Bering Sea
- Historical contaminant issues: PAHs, PCBs, others
 - Projected increase in ship traffic:
 - Black carbon and oil contamination

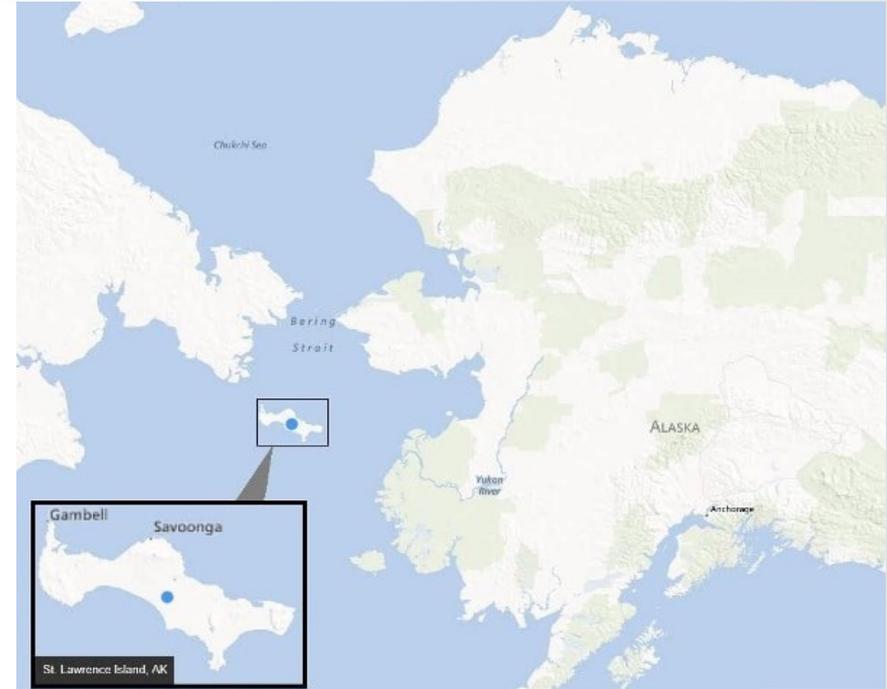
Mysterious, widespread death



Unusual Mortality Event: ringed seals, walrus, and other marine mammals

2011

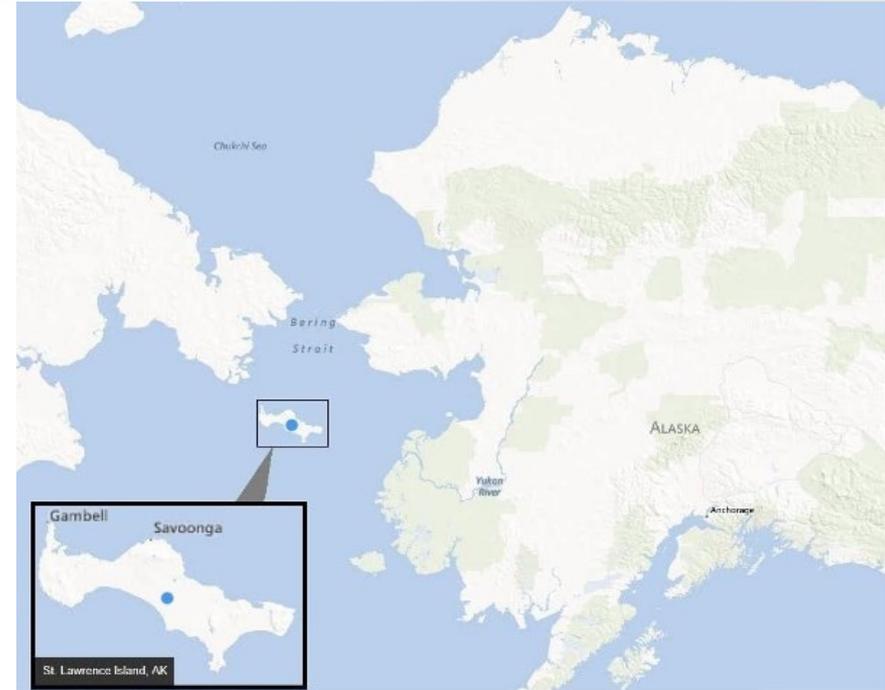
How much is a walrus worth?



Disaster declared for subsistence walrus hunt
on St. Lawrence Island

September 2013

“Good thing nobody eats these...”



Avian Cholera confirmed on St. Lawrence Island
December 2013

Solutions?

- Operationalized “One Health” approach



- Engage diverse group of stakeholders:

Doctors

Resource Managers

Emergency Responders

Community Leaders

Engineers

Veterinarians

Scientists

Thank you!



Questions?

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