

# Poster # A51G-0138: The Need and Opportunity for an Integrated Research, Development and Testing Station in the Alaskan High Arctic

Jasper Hardesty<sup>1</sup>, Mark Ivey<sup>1</sup>, Catherine F. Cahill<sup>2</sup>, Fred Helsel<sup>1</sup>, Darielle Dexheimer<sup>1</sup>, Dan Lucero<sup>1</sup>, Al Bendure<sup>1</sup>

<sup>1</sup> Sandia National Laboratories; Albuquerque, NM, USA

<sup>2</sup> Alaska Center for Unmanned Aircraft Systems Integration (ACUASI), Geophysical Institute, University of Alaska-Fairbanks, USA

Contact: Jasper (Joe) Hardesty | Sandia National Laboratories | PO Box 5800, MS-0734 |  
Albuquerque, NM USA | 505.844.8388 (off) | 505.206. 0910 (cell) | joharde@sandia.gov

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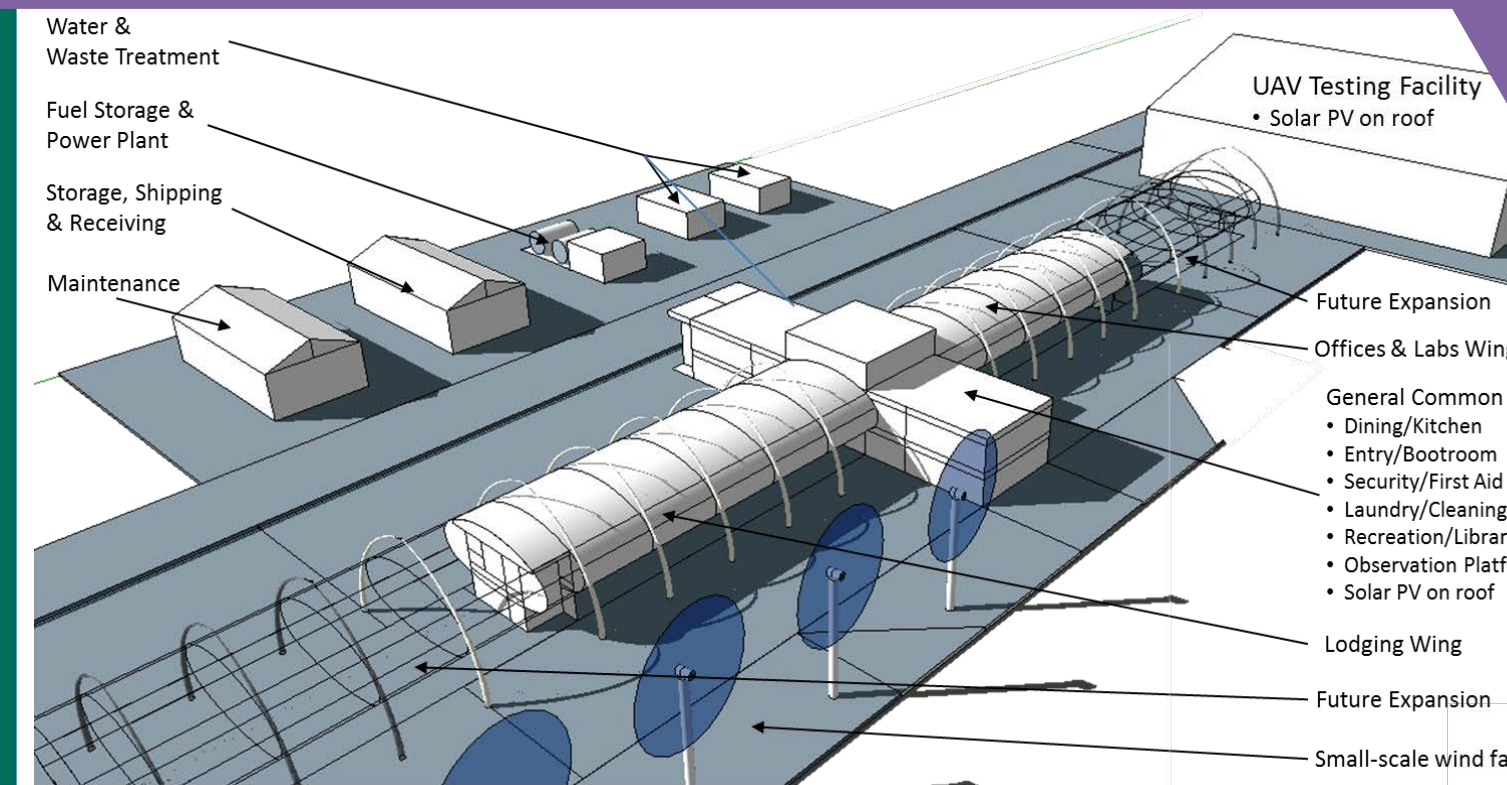
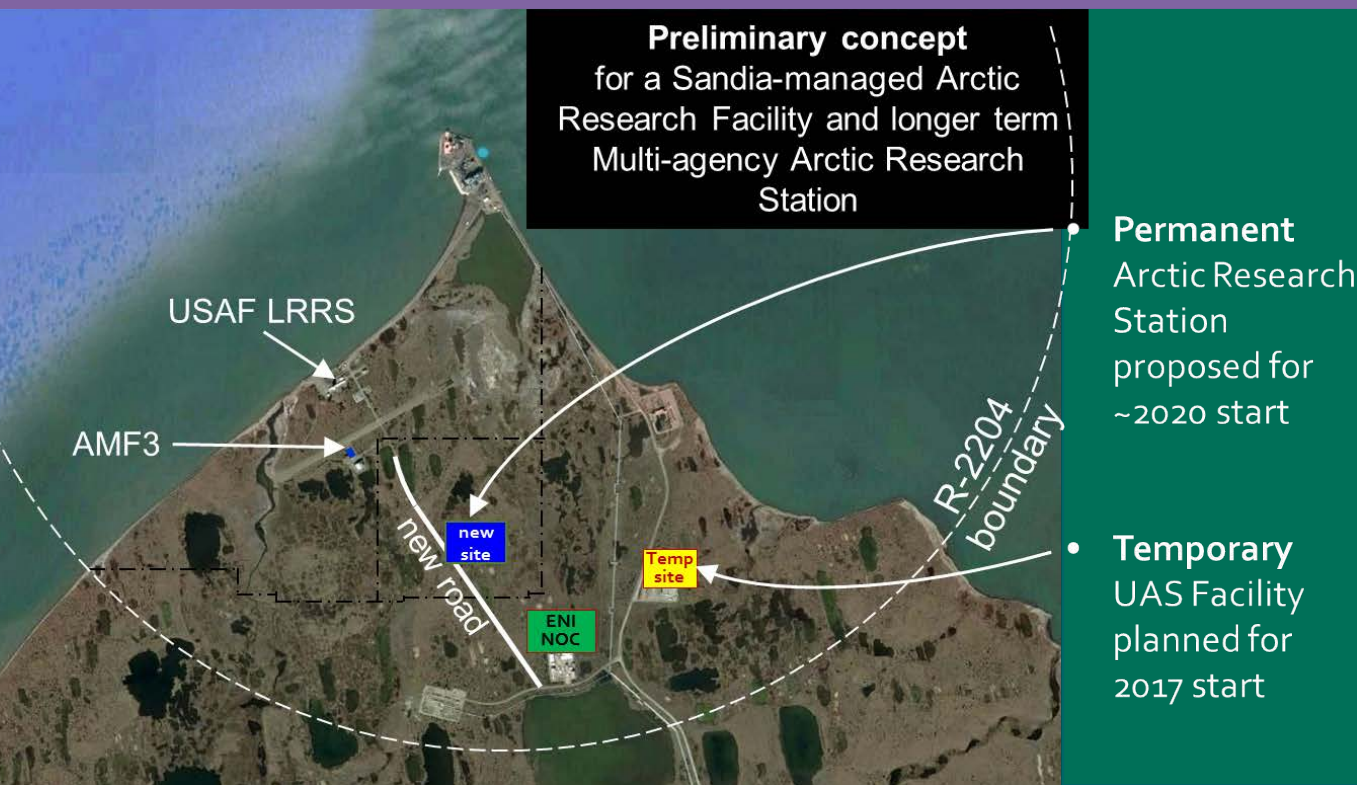
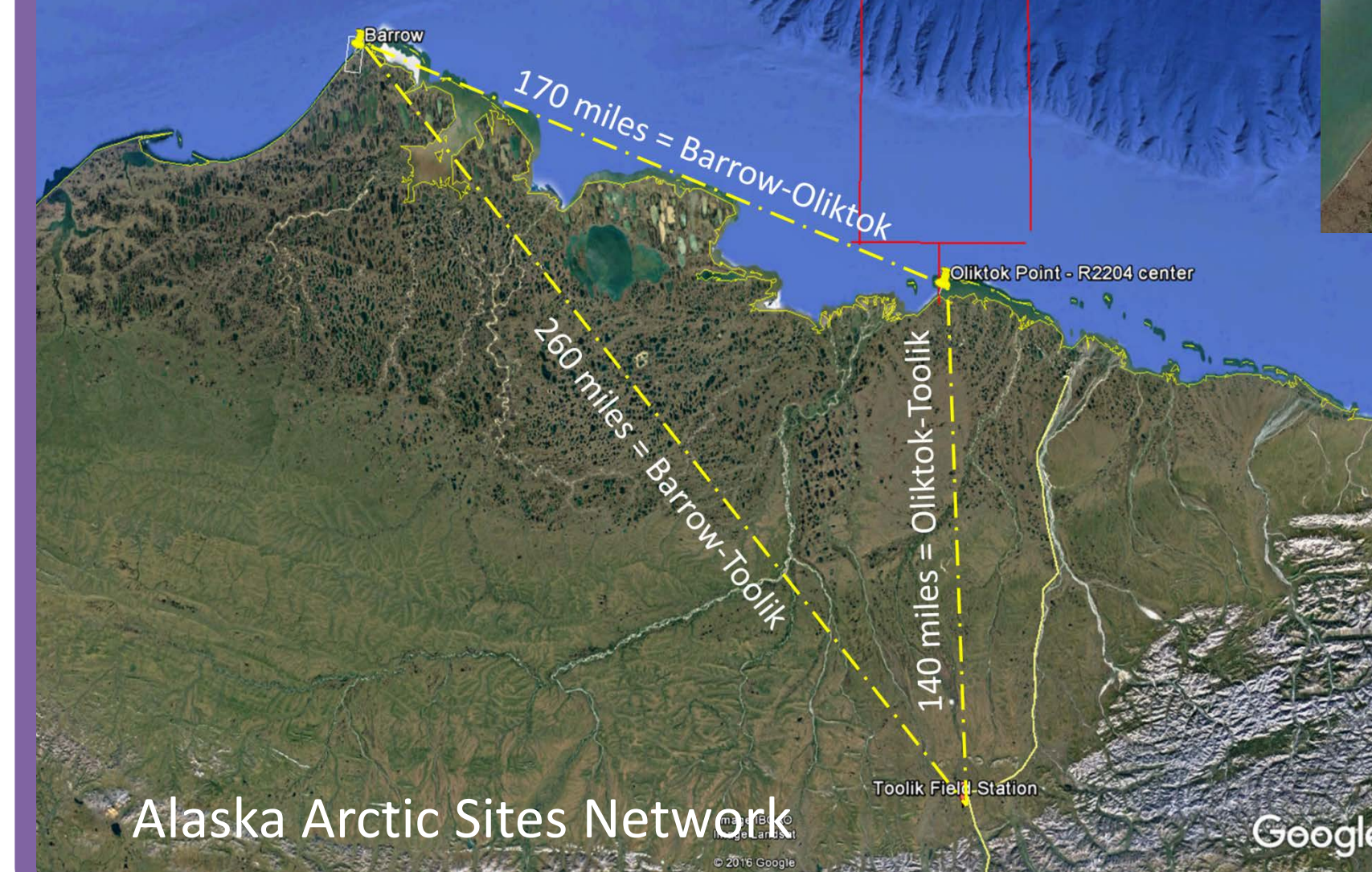


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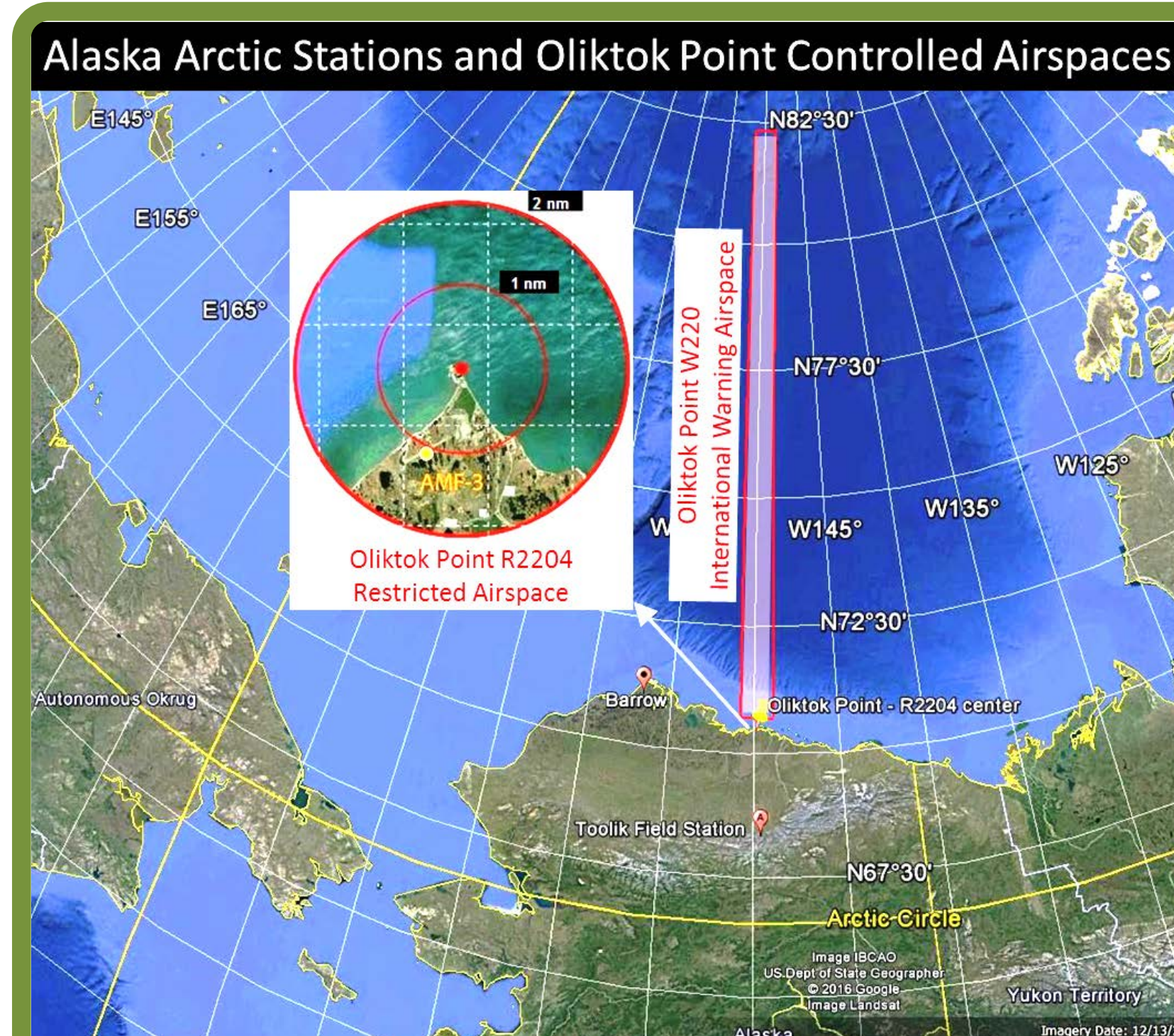
## 6. Alaska Arctic Station Network

- Integration across different sites with sustained data collection
  - DOE-ARM, NOAA, NASA, FWS
  - NSB-DWM, NSF-AON, USGS, Others



- Networked platforms
  - Vessels, UAS, etc.
- Arctic logistics experience
- Operational demos for:
  - Search & rescue
  - Spill containment
  - Emergency response

- Alaska Arctic Station Network:
  - Utqiagvik (Barrow)
  - Toolik Field Station
- Coordinated support for:
  - Operational exercises
  - Technology testing
  - Science research



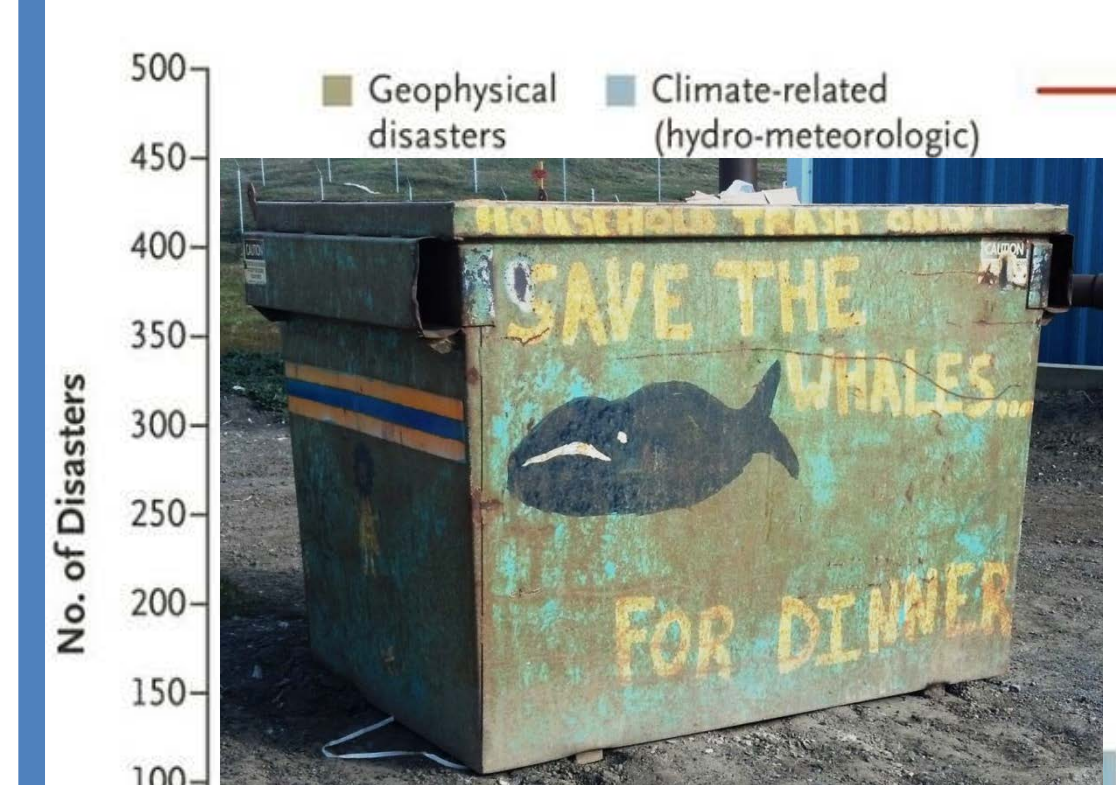
- Road to Lower 48
- Fiber optic cable
  - Comm's
  - Data
- UAS expertise
- Energy systems
- Industry partners
- Controlled airspaces:
  - Restricted R2204 (2 nm radius)
  - Warning W220 (40 x 700 nm toward North Pole)

## 5. Oliktok = access + infrastruc- ture

Shore Access  
Road Access  
Controlled  
airspace

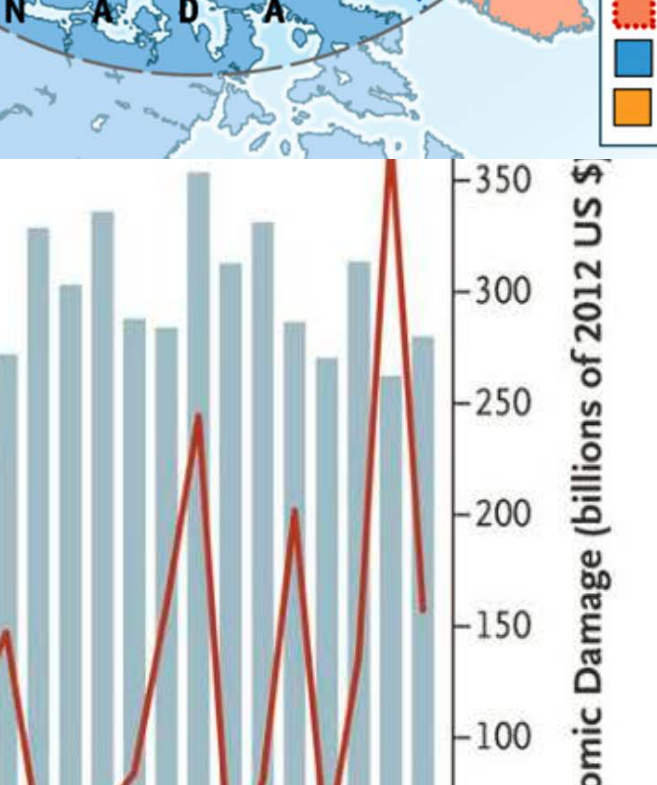


- Territorial disputes
- Subsistence communities
- Jet stream/Polar vortex
- Ocean current changes
- Resilience, risk and costs

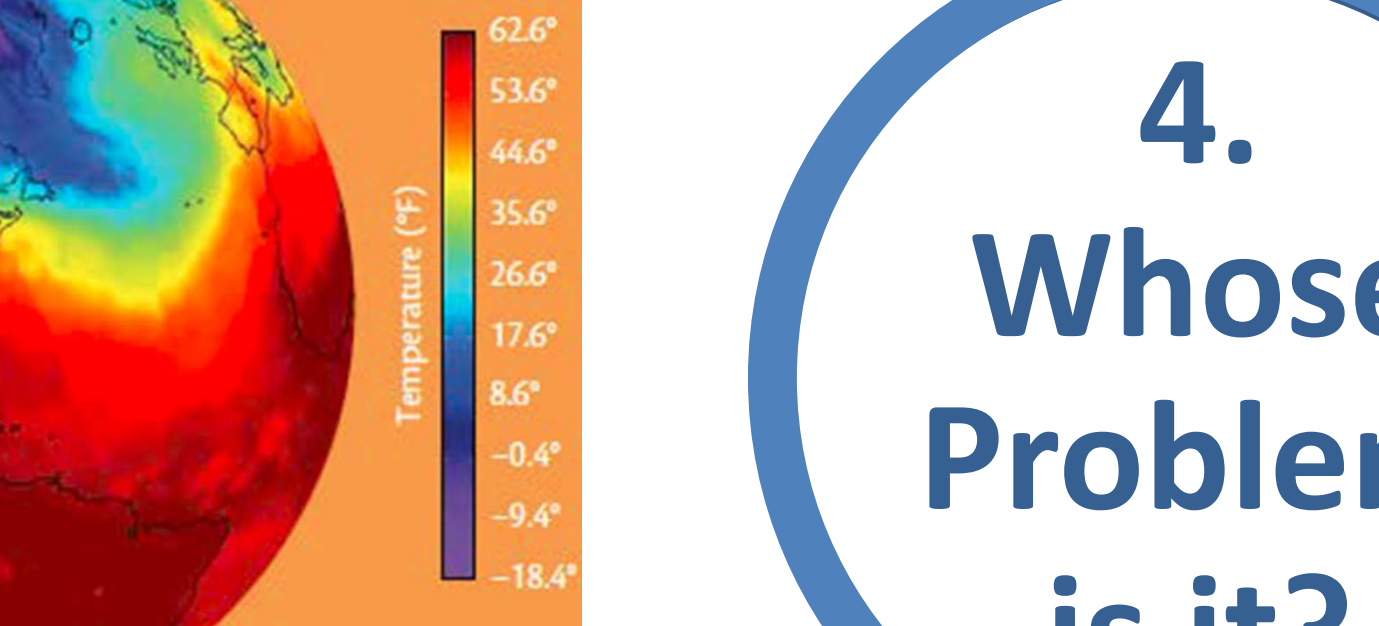
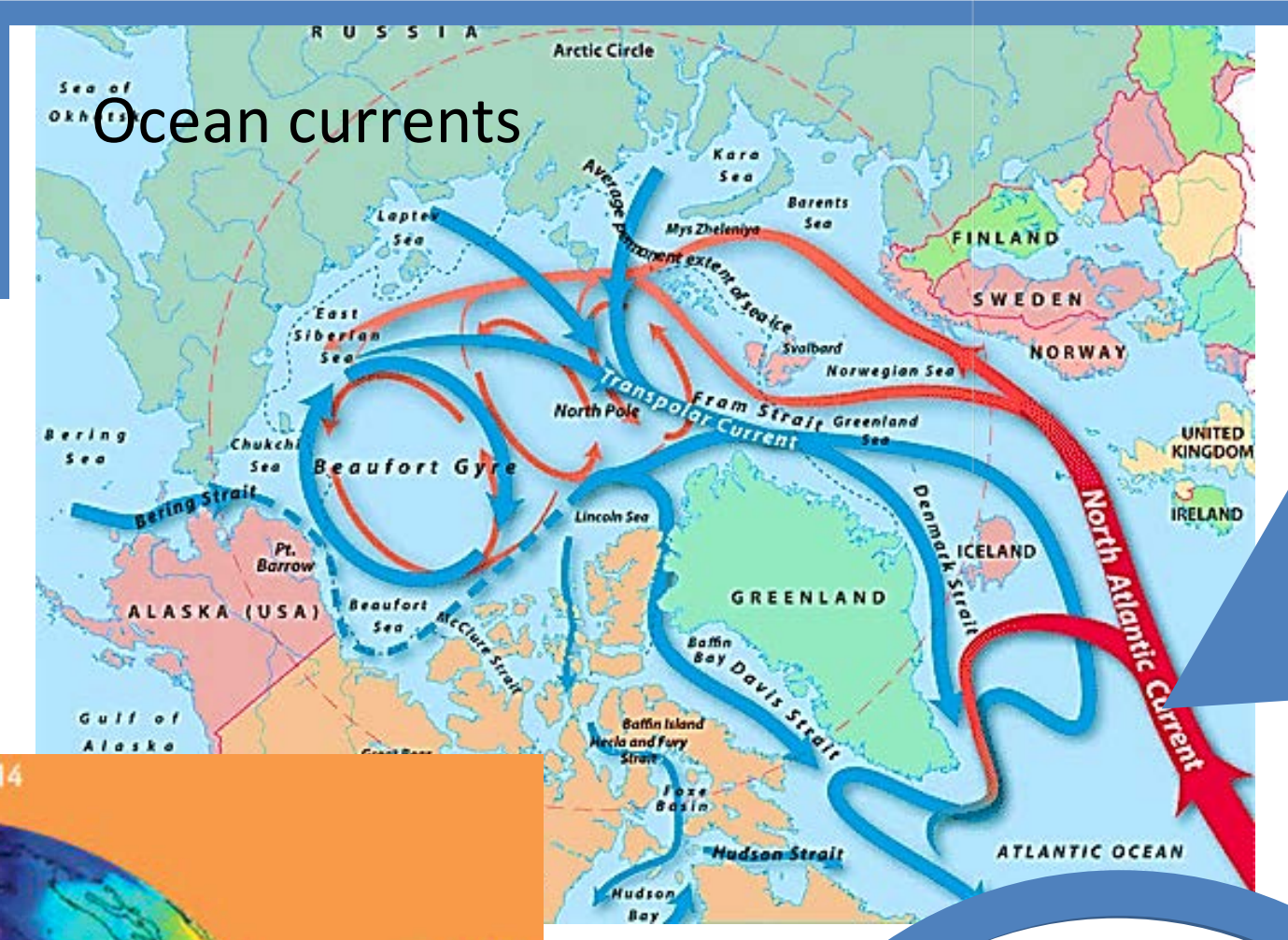
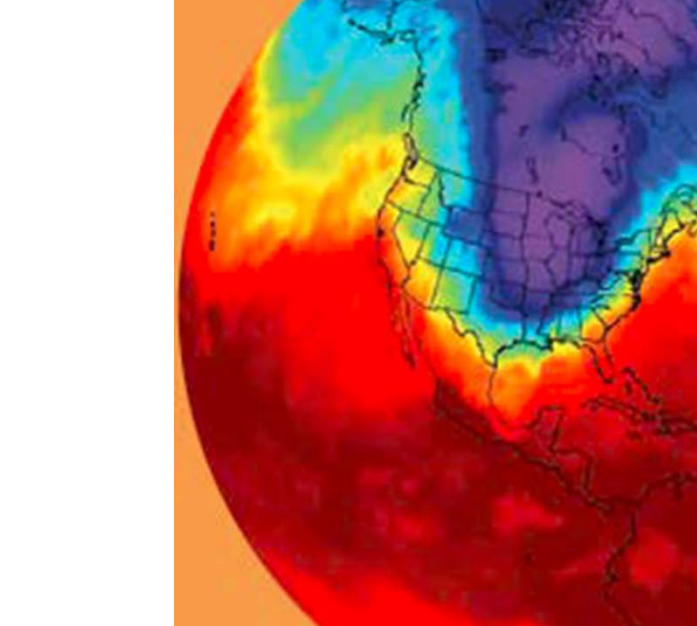


Risk is a function of:

- Probability
- Consequence

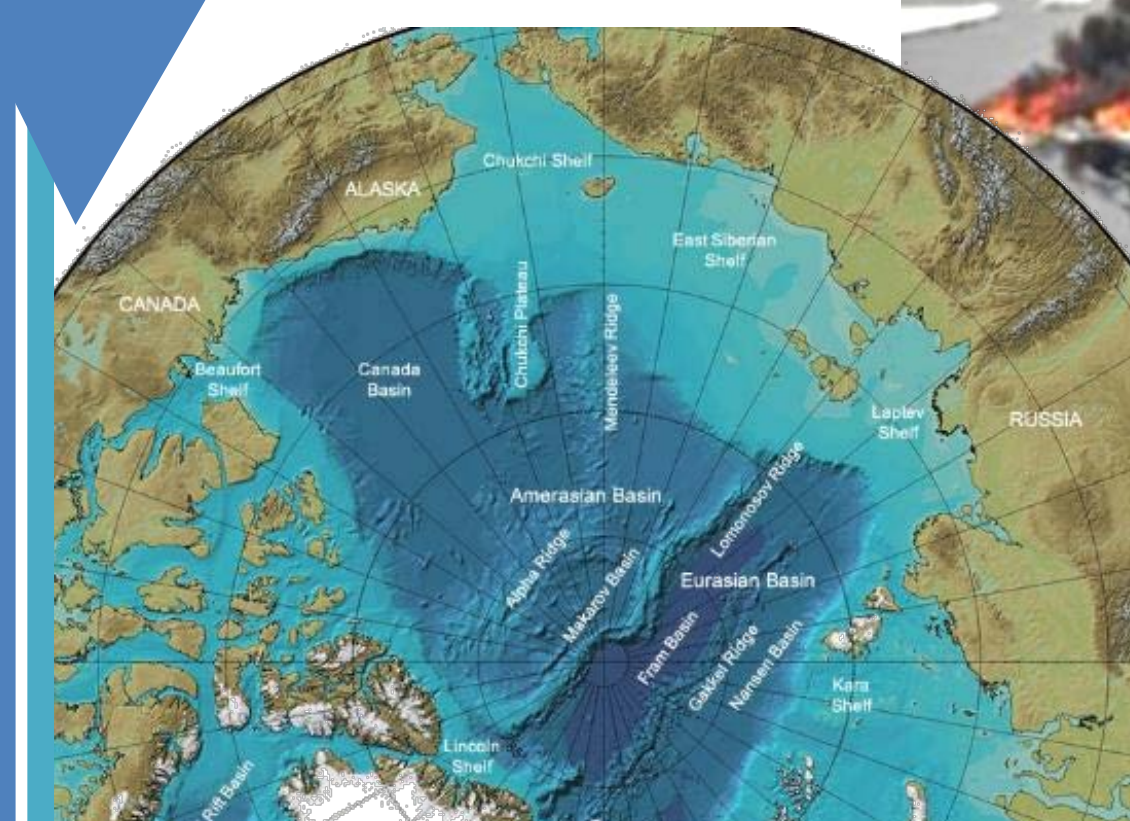


What happens in the Arctic doesn't stay in the Arctic



## 4. Whose Problem is it?

Nations  
Industry  
Locals  
Global



- Harsh conditions
- Emergency response
- Lack of infrastructure

## 3. Gaps & Obstacles

- Poor surveillance
- Poor communications
- Poor navigation charts
- Wildlife protection

Subsistence  
Monitoring  
Search &  
Rescue



Oil spill



Permafrost melt, subsidence



Commercial Shipping



Ice + Vessels



Pollutant Transport



Observation Systems and Scales of Operation



Global to Regional



10s of km



100s of m



Point



Calibration/Validation Scales



Field Measurements



Remote Sensing



Scale and Distance



Scale Resources "Last" Ocean Climate change



1. Why the Arctic?



Arctic nations



Non-Arctic nations



Ecosystem services



Oil, gas, minerals



Fish, wildlife



Arctic amplification



Global impacts



PIOMAS Arctic Sea Ice Volume (10^6 km^3)



Weight of catch (million mt)



Change in temperature, °C



Albedo effect



Tundra is burning



Kivalina, AK coastal erosion



Titanic Problems!



Fires



Commerce



Open Ocean



Pollution



Erosion



2. Needs & Issues

- Coastal erosion
- Permafrost melt
- Commercial shipping
- Tourism