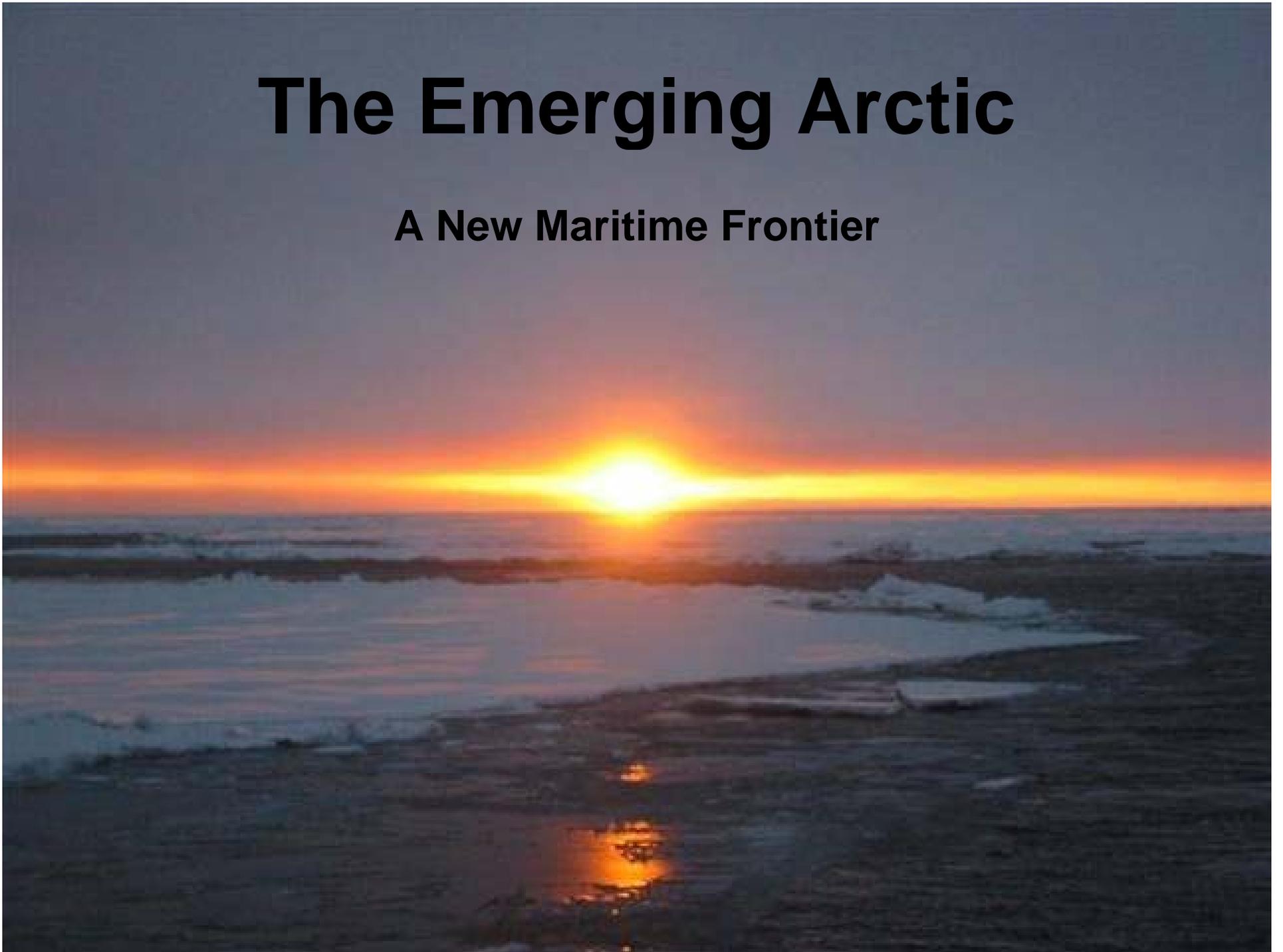


The Emerging Arctic

A New Maritime Frontier



Agenda

- The Changing Arctic Frontier
- Strategic Challenges & Drivers
- Recent & Future Operations
- Hydrographic Services



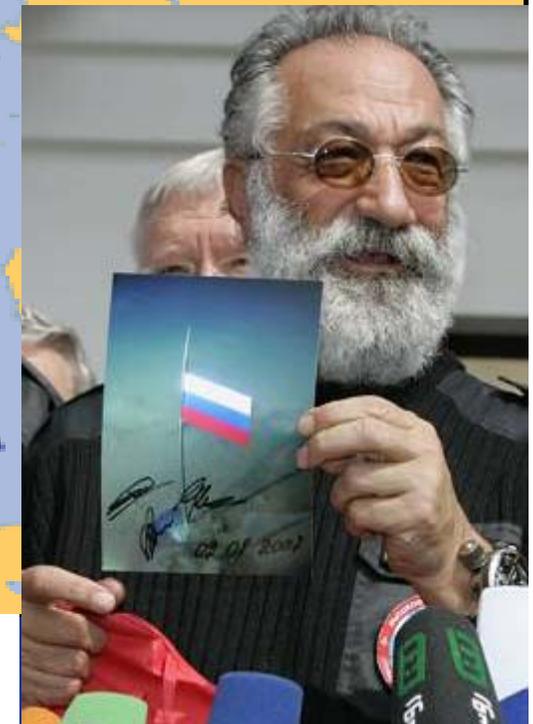
Summer Sea Ice Retreat



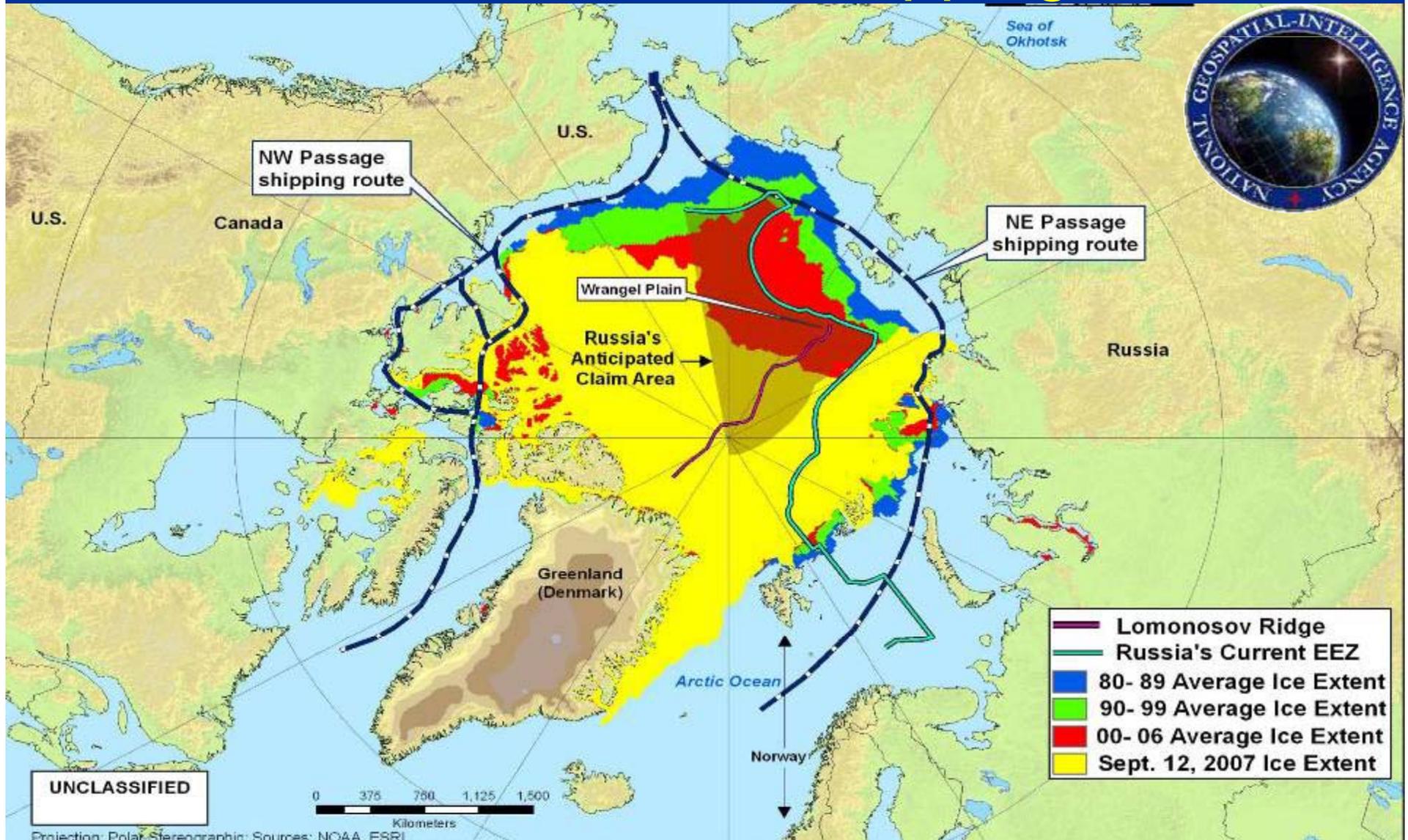
Sovereign Rights and Jurisdiction



- 1) North Pole 2) Lomonosov Ridge 3) 200 nautical mile line 4) Russian-claimed ECS 5) EEZ & CS Dispute



Future Maritime Arctic – Shipping Routes



UNCLASSIFIED

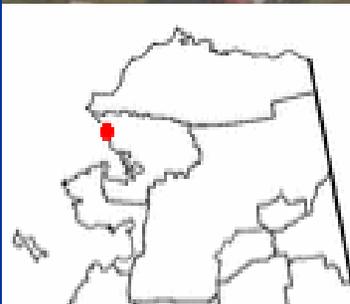


Homeland Security



Coastal Erosion

Loss of protection from Fall storms



Kivalina



Shishmaref



**Homeland
Security**



Economic/Energy Security

At Least \$1 Trillion

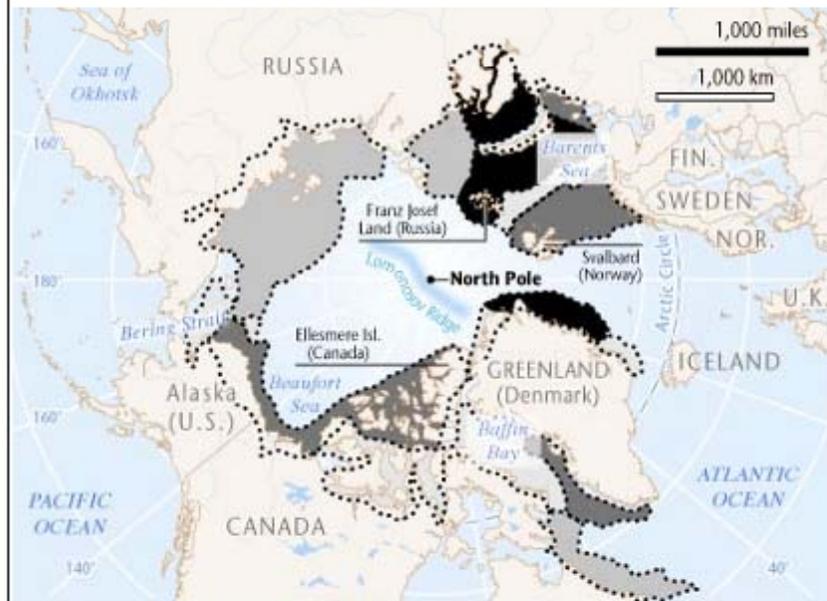
Hydrocarbons (Oil & Gas)

- Estimated 10 Billion Barrels
- 750,000 sq km sediment > 1 km

Manganese Nodules & Crusts

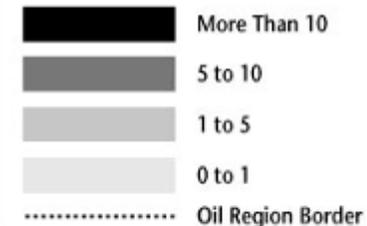
- Manganese nodules
 - 182 million tons
 - Highest concentration
 - Highest grades
- Copper: 9 million tons
- Nickel: 12 million tons
- Cobalt: 5,000 tons

Arctic Oil and Gas Potential



Estimated Oil, Gas Yet to Be Found

In billions of barrels of oil equivalent



SOURCE: Wood Mackenzie
Map based on a *Financial Times* graphic

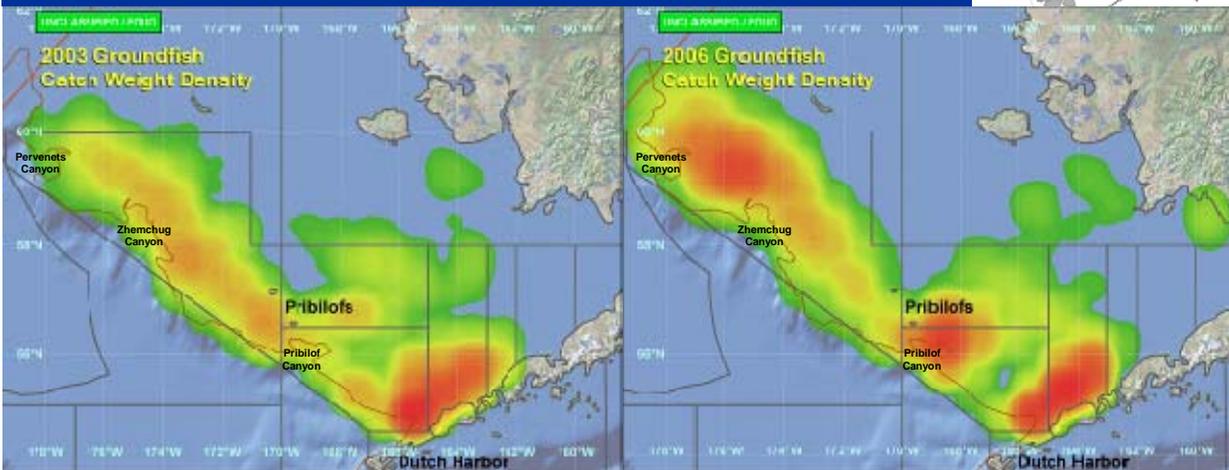
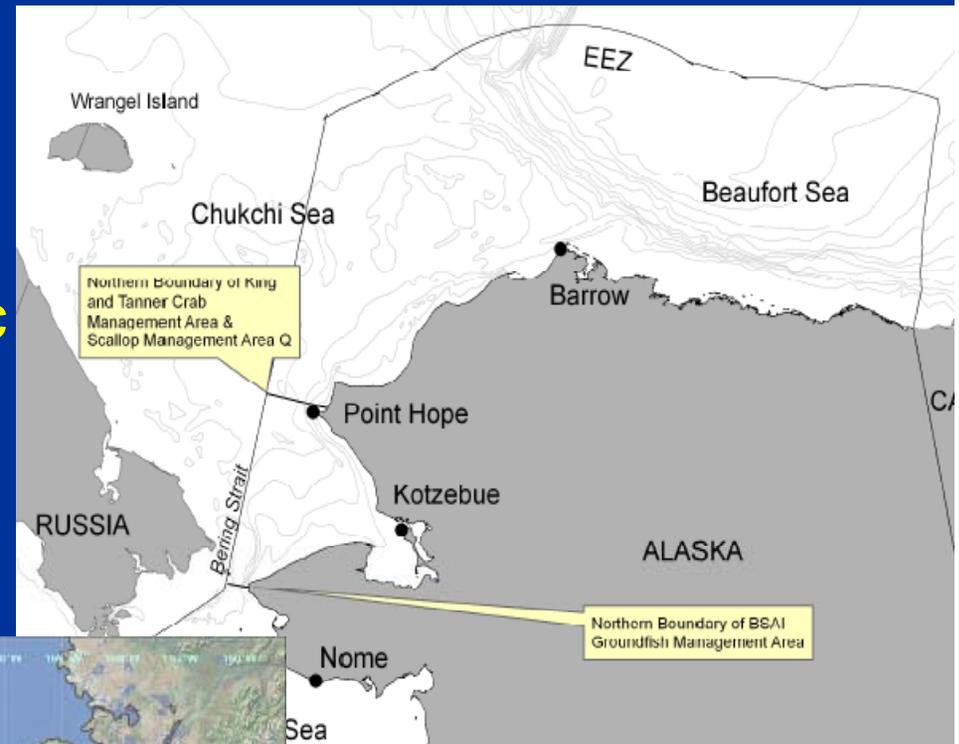


Homeland
Security



Species Movement North

- Stocks are moving North
- No commercial fishing in Arctic
 - Awaiting NPFMC decision
 - Potential large closed area enforcement challenges



**NPFMC – North Pacific
Fishery
Management
Council**

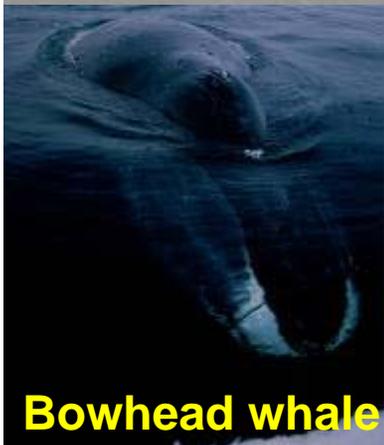


**Homeland
Security**



Threatened and Endangered Species

- Marine Mammal Protection Act - prohibits harassment, injuring, or killing
- Most populations are healthy.
 - Politically charged 'climate canaries'
- Legal issues pending in 9th Circuit Court of Appeals



Bowhead whale



Seals



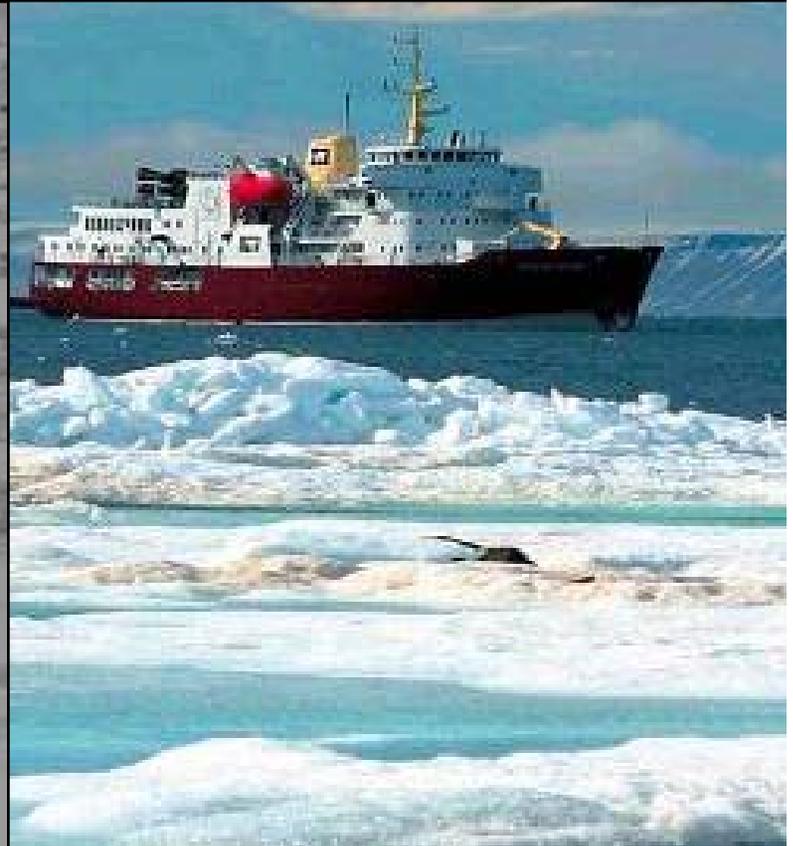
Walrus

Growing Eco-Tourism



M/S Explorer:

- Antarctica, Nov 2007
- Struck Iceberg (Sank!)
- 154 PAX/Crew Abandon Ship

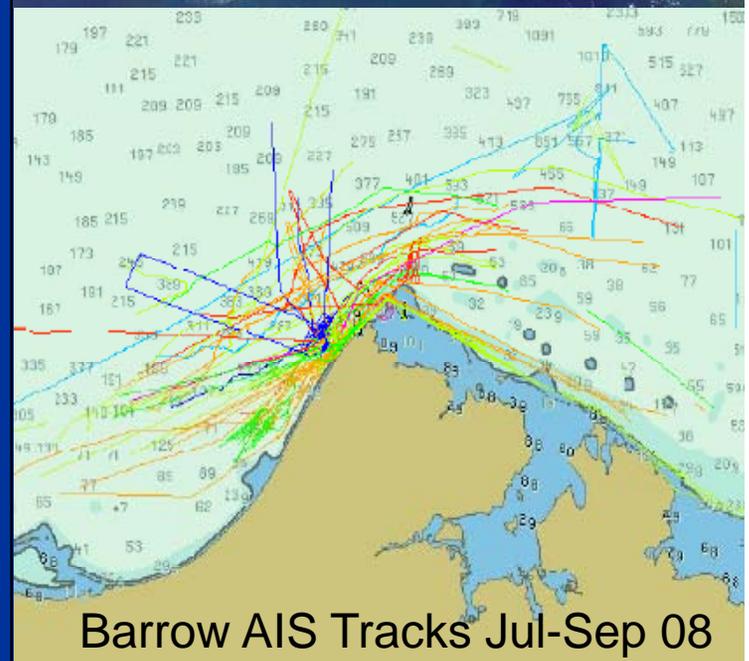


Bering Strait Summer Transits 2008

- **Bering Strait transits on the U.S. side**
~73 vessels with ~104 transits through
(mostly research vessels)
- **Kivalina/Red Dog Mine**
~ 30 round trips (bulk carriers & tugs)
- **Russian transits**
30+ vessels with over 80 transits
(mostly cargo carriers)
- **Total Bering Strait transits**
100+ vessels making over 180 transits.



Bering Strait



Barrow AIS Tracks Jul-Sep 08



UNCLASSIFIED

Projected 2009 Arctic Activity

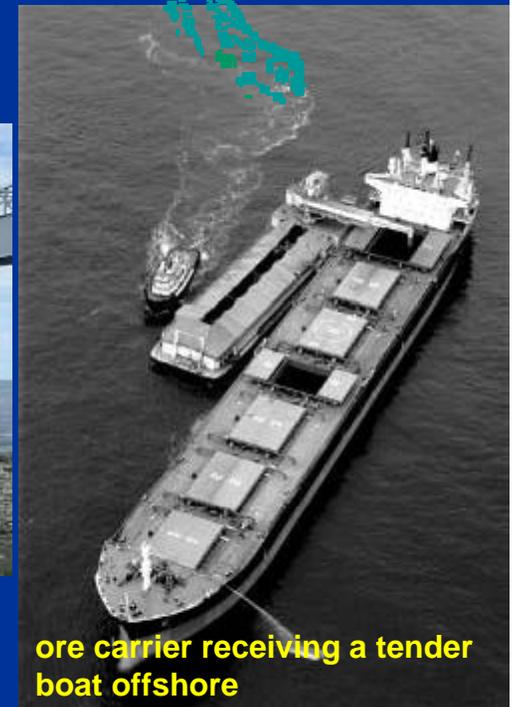
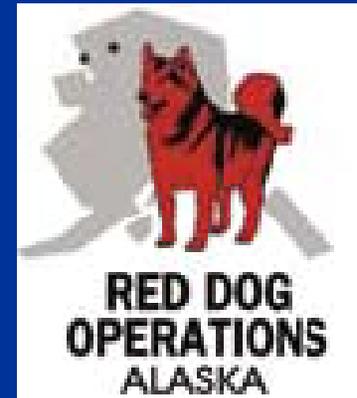
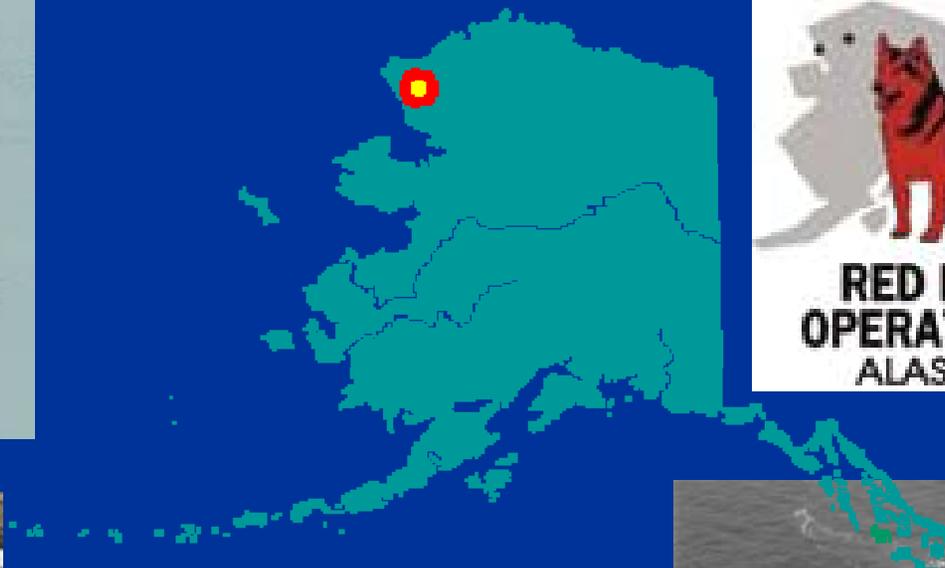
- **No significant change in cargo traffic is expected in 2009**
 - German vessel to transit unassisted through the Northern Sea Route
- **Oil and Gas research to remain the same**
 - Drilling on hold (9th Circuit)
- **Cruise Ship Activity**
 - 8 cruise ships to operate in northern Bering Sea
 - 2 Northwest Passage cruise ships into Barrow
- **Oceanographic research will decrease**
 - IPY research ends in March



Homeland
Security

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Seasonal Ore Operations



Arctic Ops Summer '08

- Arctic Domain Awareness
 - Nome C130 Deployment
- Cutter Operations
 - HEALY, POLAR SEA
- CGC SPAR Waterways Analysis & Management System
- Tailored Force Package Deployment
- Coastal Community Engagement



Arctic Domain Awareness

- Air Patrols
 - ‘Eyes on’ above the Arctic Circle
 - Provide scientists platforms of opportunity



CGC HEALY



- Three Arctic deployments in 2008 in support of National Science Foundation

CGC POLAR SEA

- 2008 – Illustrated Multi-mission platform capability
 - Fisheries enforcement
 - Hard science
 - Ice navigation training



Waterways Analysis & Management System (WAMS)

- Assessment/reassessment of North Slope



CGC Spar

CGC SPAR ARCTIC VOYAGE

August – September 2008



- 18 AUG- Underway Kodiak
- 20 AUG- St Paul Island
- 22 AUG- Dr. Levi & Dr. Borgerson disembarked Kivalina
- 23 AUG- ARCTIC
- 25 AUG- Kaktovic
- 26 AUG- Prudhoe Bay
- 28 AUG- SAREX w/ HAMILTON
- 29 AUG- 1 SEP- Barrow
- 2 SEP- Wainwright
- 3 SEP- Point Lay
- 4 SEP- Point Hope
- 5 Sep-Red Dog/Delong Mountain Pier Hydro Survey
- 6 SEP- Kivalina
- 7-10 SEP- Kotzebue
- 11 SEP- Little Diomede
- 12-13 SEP- Nome
- 15 SEP- Gambell and Savoonga
- 17 SEP- Adak
- 19 SEP- Dutch
- 21-26 SEP- False Pass & Bechevin Bay
- 28 SEP- Kodiak



Search and Rescue Exercise

- Buoy tender plays the role of a disabled cruise ship
 - Illustrated difficulties of North Slope SAR in a concrete way



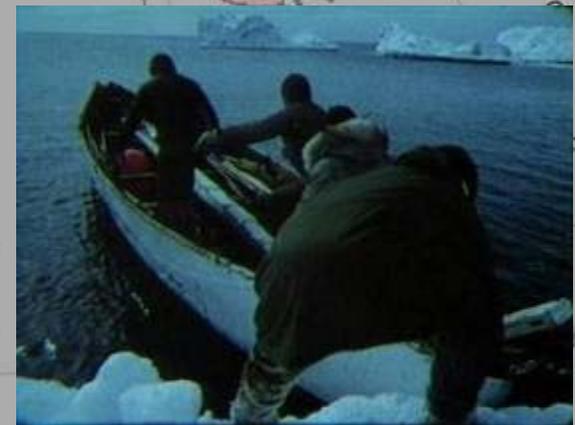
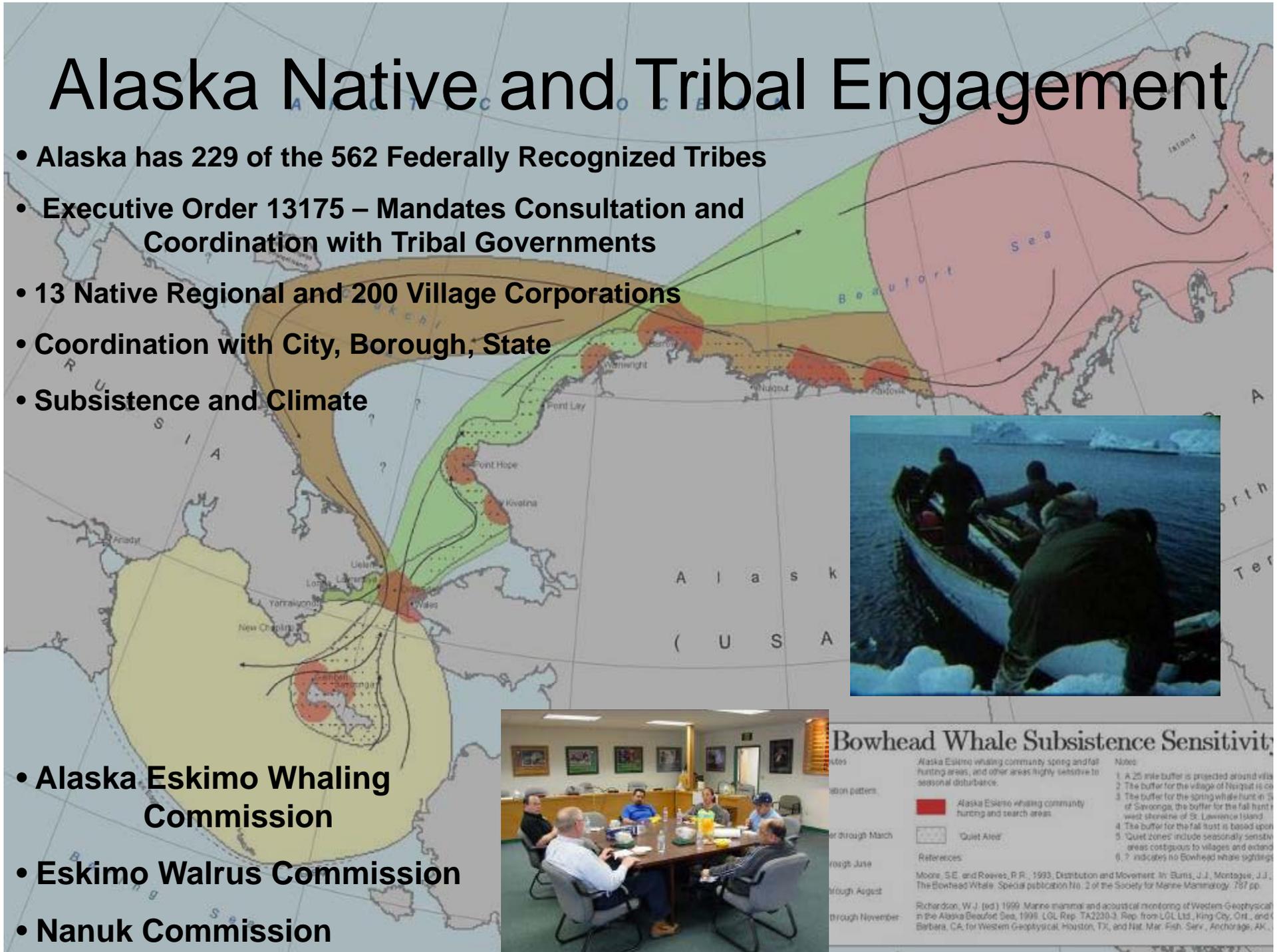
CGC Hamilton

CGC Spar

Alaska Native and Tribal Engagement

- Alaska has 229 of the 562 Federally Recognized Tribes
- Executive Order 13175 – Mandates Consultation and Coordination with Tribal Governments
- 13 Native Regional and 200 Village Corporations
- Coordination with City, Borough, State
- Subsistence and Climate

- Alaska Eskimo Whaling Commission
- Eskimo Walrus Commission
- Nanuk Commission



Bowhead Whale Subsistence Sensitivity

Notes:

1. A 25 mile buffer is projected around village hunting areas, and other areas highly sensitive to seasonal disturbance.
2. The buffer for the village of Nauyasut is on the west shore of St. Lawrence Island.
3. The buffer for the fall hunt is based upon the west shoreline of St. Lawrence Island.
4. The buffer for the fall hunt is based upon the west shoreline of St. Lawrence Island.
5. 'Quiet zones' include seasonally sensitive areas contiguous to villages and extend 10 miles.
6. ? indicates no Bowhead whale sightings.

References:

Moore, S.E. and Reeves, R.R., 1993. Distribution and Movement. In: Burns, J.J., Montague, J.J., The Bowhead Whale. Special publication No. 2 of the Society for Marine Mammalogy. 707 pp.

Richardson, W.J. (ed) 1999. Marine mammal and acoustical monitoring of Western Geophysical in the Alaska Beaufort Sea, 1998. LGL Rep. TA2230-3. Rep. from LGL Ltd., King City, Ont., and Barbera, CA for Western Geophysical. Houston, TX, and Nat. Mar. Fish. Serv., Anchorage, AK.

Community Outreach

- Dialogue with Northern and Western Alaskan Communities
 - Imperative for safe operations
 - Boating safety exchange in Barrow, Kotzebue, and several remote North Slope villages



Salliq: Lessons Learned

- **Domain Awareness**
 - Observed activity in region at or slightly above anticipated levels
 - Current technologies proved less than accurate regarding vessel activity and sea ice conditions
- **Logistics**
 - Existing infrastructure insufficient for prolonged operations (fuel, berthing, communications)
 - Need to provide own self rescue



Salliq: Lessons Learned

- **Resource Capability**
 - Small boats/short range helos ineffective
 - Require icebreakers or ice hardened vessels with embarked helos
 - Lack of effective communication network/architecture
- **Outreach**
 - Input from indigenous people imperative
 - Essential to have effective culturally sensitive engagement



Arctic Changes Drive Coast Guard Mission Expansion North

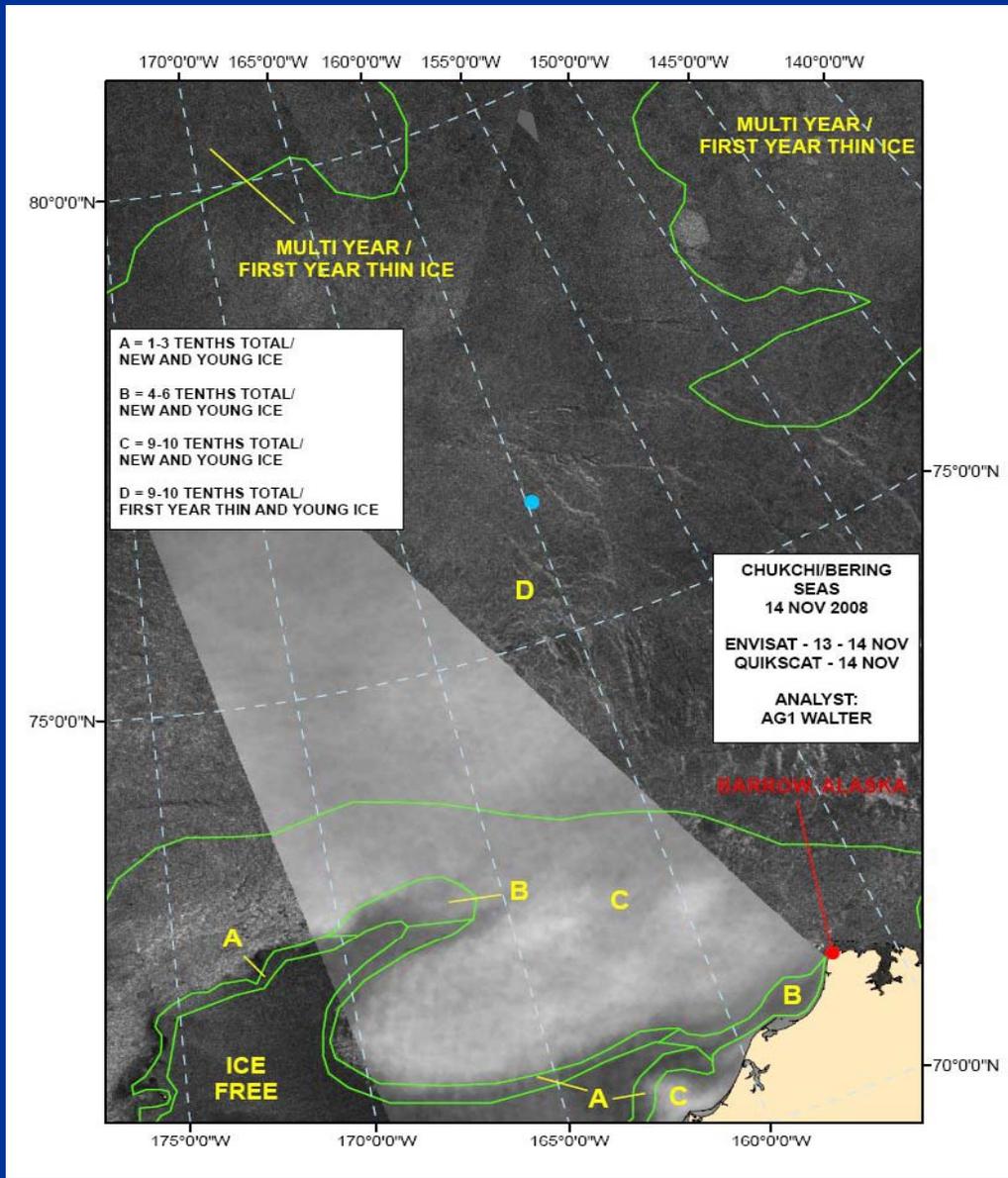
All Coast Guard missions in Southern Alaska must be expanded to Northern Alaska



Future Operations

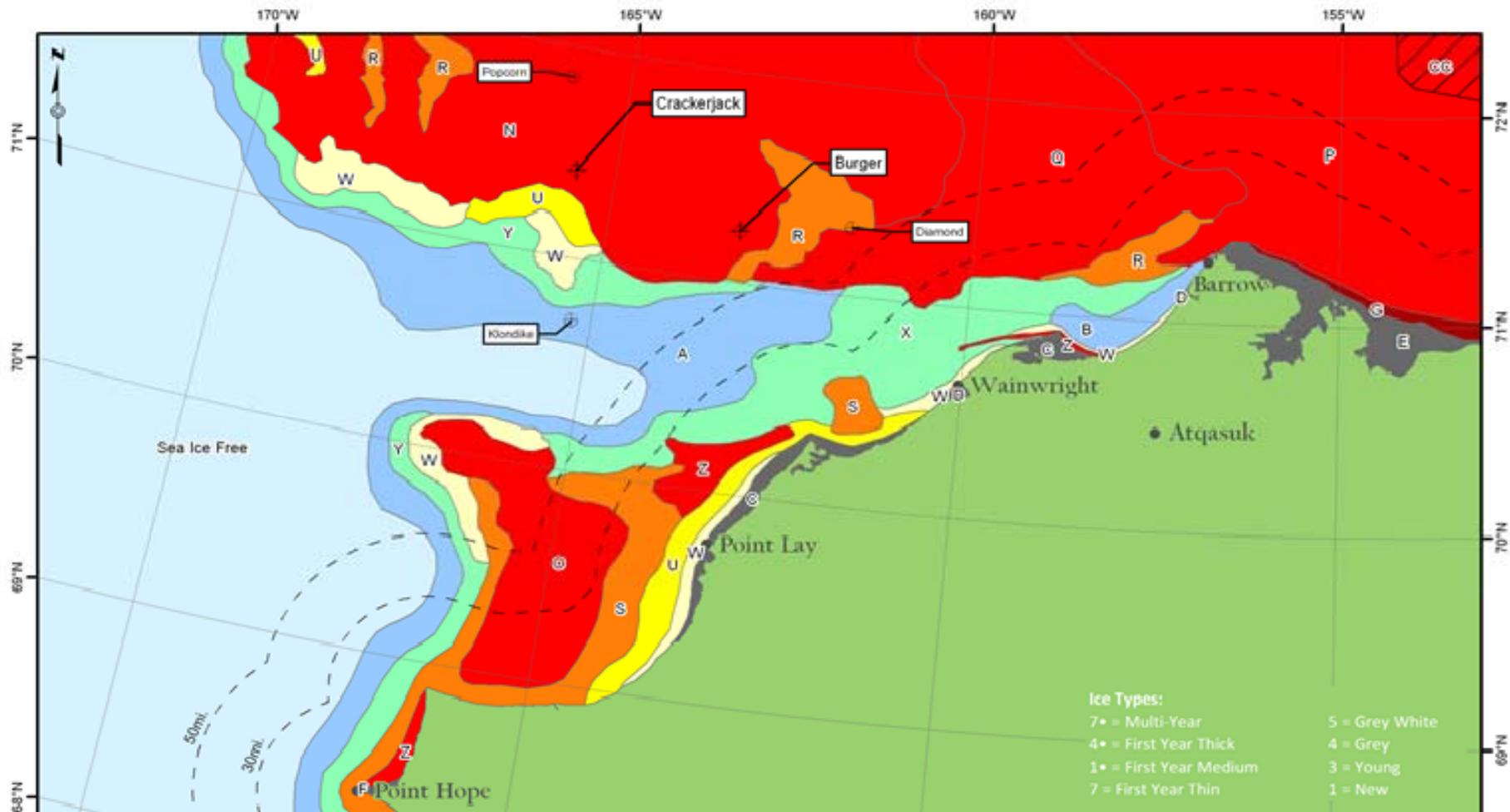
- CGC Polar Sea in Bering/Chukchi Sea Oct-Dec, Feb-April
- Continued ADA flights
- Waterways Analysis
- Summer '09 deployment to Nome.





Homeland Security





Ice Types:
 7* = Multi-Year
 4* = First Year Thick
 1* = First Year Medium
 7 = First Year Thin
 5 = Grey White
 4 = Grey
 3 = Young
 1 = New

Sea Ice Concentrations:

Ice Free	7-9/10
<1/10	9-10/10
1-3/10	10/10
3-5/10	Fast Ice
5-7/10	Multi-Year Ice

Concentration in Tenths/Type:

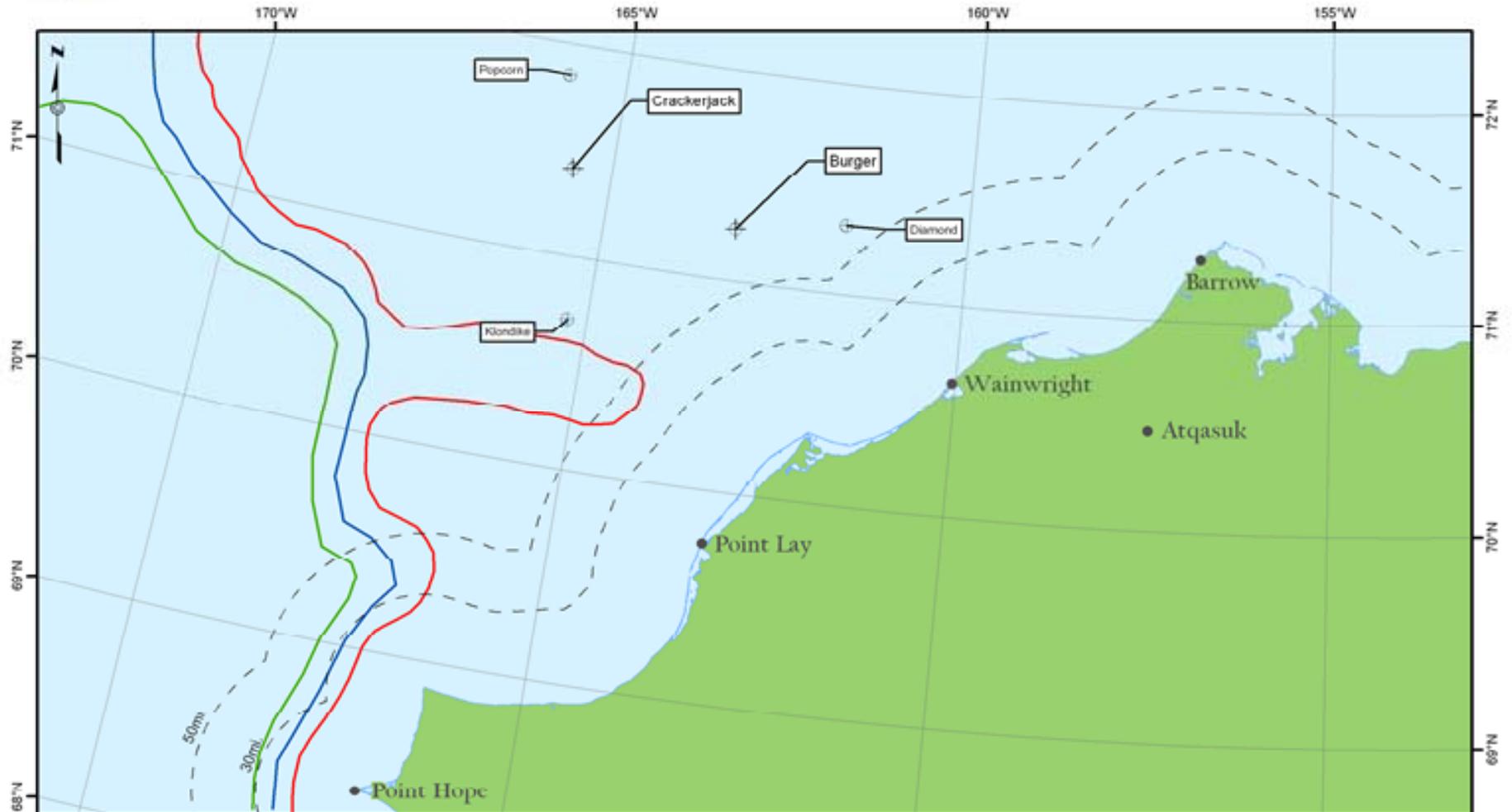
A = 0-1/1	J = 9-10/045/7.73	S = 7-9/1	BB = 7-9/731
B = 0-1/31	K = 9-10/54/7.7	T = 5-7/1/31	CC = 9-10/063/7.73
C = 10/46/73/8	L = 9-10/135/7.73	U = 5-7/1/1	DD = 5-7/1/731
D = 10/37/73/8	M = 9-10/027/7.73	V = 3-5/1/31	EE = 3-5/1/731
E = 10/73/8	N = 9-10/45/31	W = 3-5/1/1	
F = 10/3/8	O = 9-10/27/31	X = 1-3/1/31	
G = 10/73	P = 9-10/270/731	Y = 1-3/1/1	
H = 10/7.	Q = 9-10/31	Z = 9-10/1	
I = 10/31	R = 7-9/31	AA = 3-5/1/731	

**CHUKCHI SEA ICE ANALYSIS
13 NOVEMBER, 2008**

Shell Ice and Weather Advisory Center
Anchorage, AK

Ice Analyst: J. Andrews
Jeff.Andrews@asrcenergy.com
907-339-7621





Hours:

- Current Ice Edge
- 72 Hour Ice Edge
- 168 Hour Ice Edge

**CHUKCHI SEA ICE FORECAST
13 NOVEMBER, 2008**

Shell Ice and Weather Advisory Center
Anchorage, AK

Ice Analyst: J. Andrews
Jeff.Andrews@ascenergy.com
907-339-7621



The CG has 143 years of Arctic Service



USRC *Bear*

- Ice breaking
- Ice patrol
- Loran
- Marine mammal protection
- Bering Sea Patrols
- World War II
- Overland Expedition
- Exploration
- Marine Safety



Homeland
Security



Arctic Conundrum



- The Arctic is upon us
- Arctic boundaries must be determined
- Others will balance development and the environment. The Coast Guard will provide maritime safety and security for their decisions
- All Federal, State, and local agencies must prepare for full seasonal operations in the Arctic

Questions?

