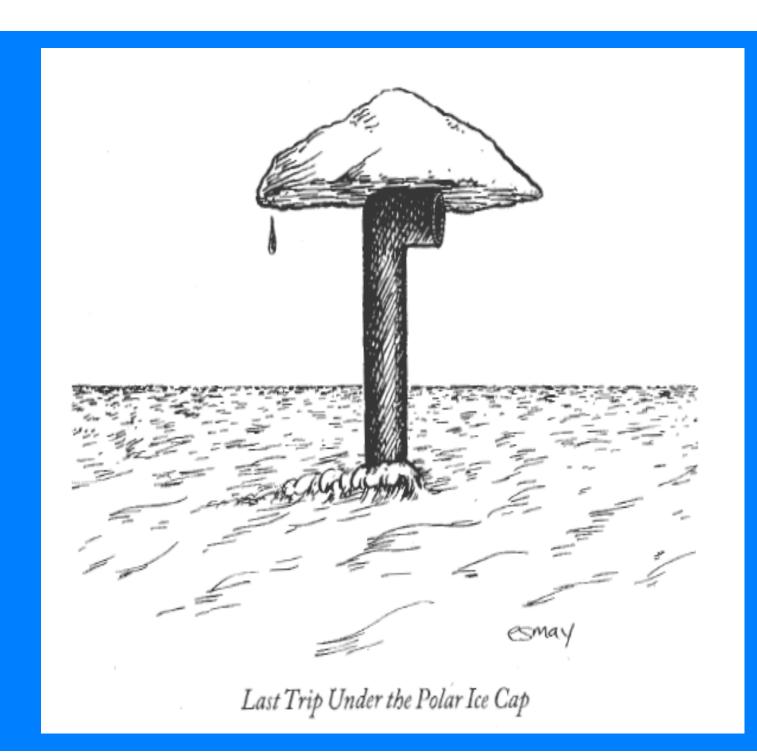
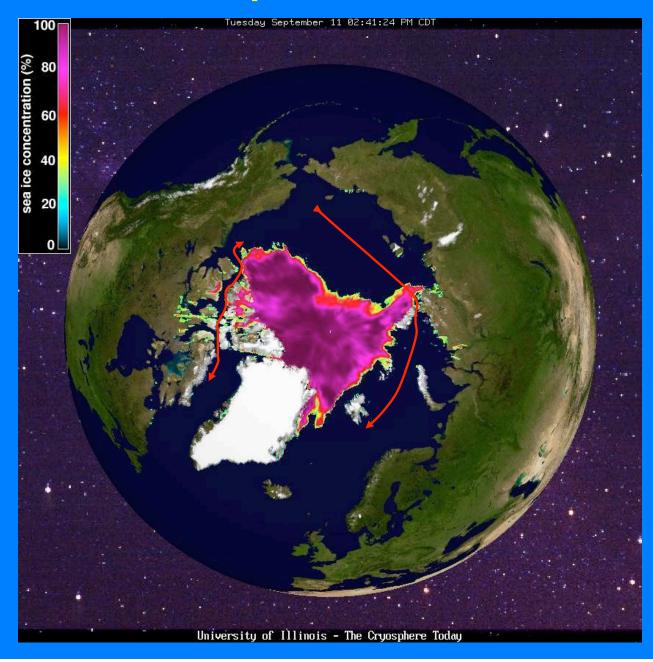


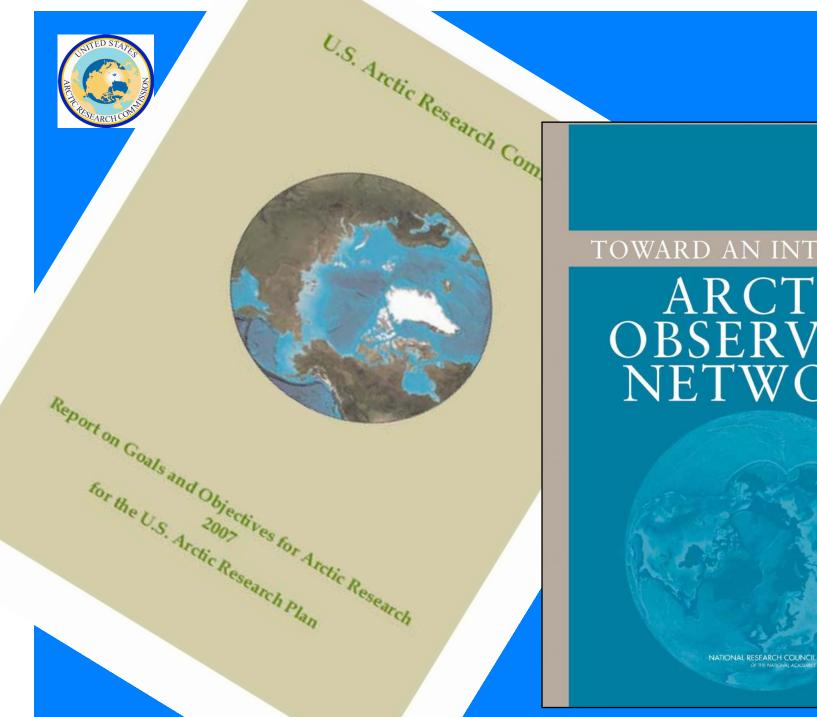
an "accessible" Arctic Ocean

Mead Treadwell, Chair **U.S. Arctic Research Commission** Senior Fellow, Institute of the North 11 February 2008 – Alaska Forum on the Environnment www.arctic.gov



11 September 2007





TOWARD AN INTEGRATED

ARCTIC OBSERVING NETWORK







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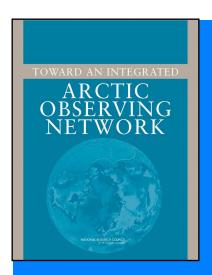
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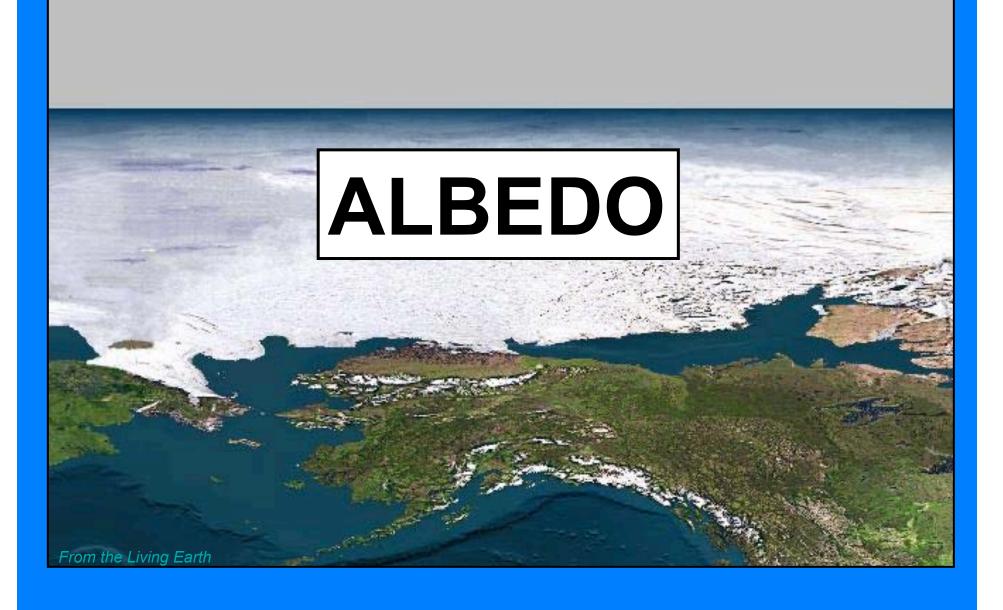


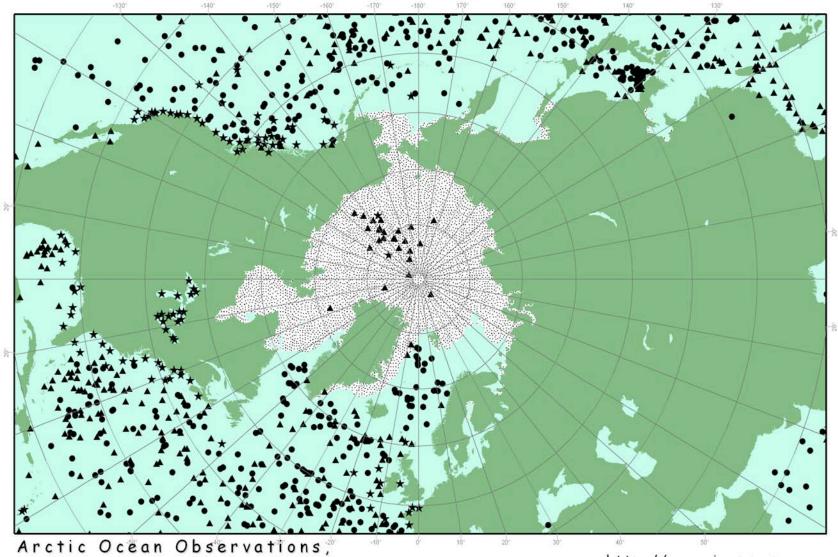
Arctic Observing Network

- Marine system
- Coastal zones
- Terrestrial systems
- Rivers
- Permafrost
- Glaciers and Snow
- Arctic residents



The Arctic Sea Ice Cover



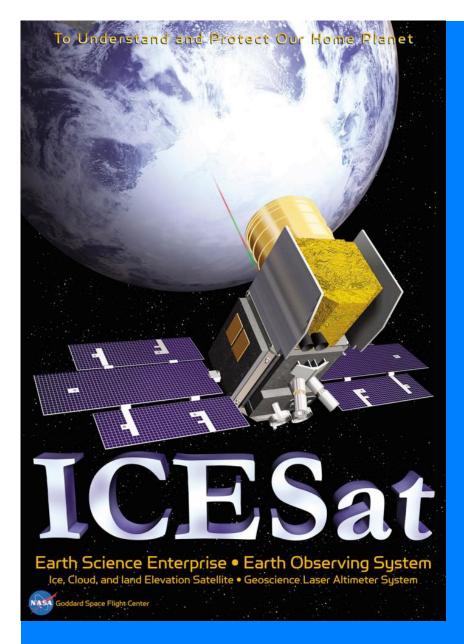


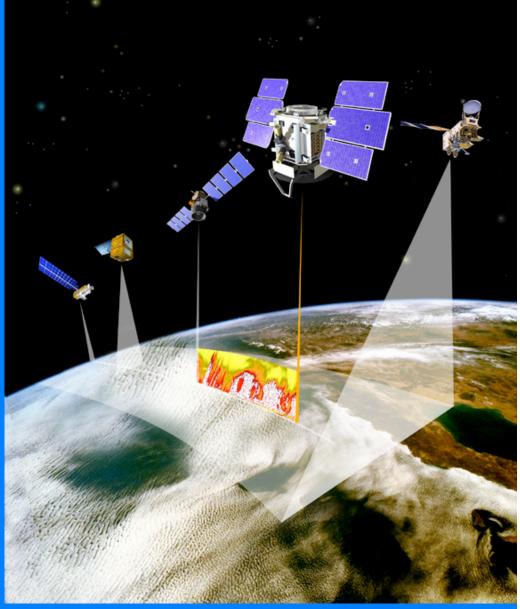
Arctic Ocean Observations, status as of November 2005

http://www.jcommops.org

Ice Edge

- ▲ Drifting Buoy
- ★ Moored Buoy
- Argo Float





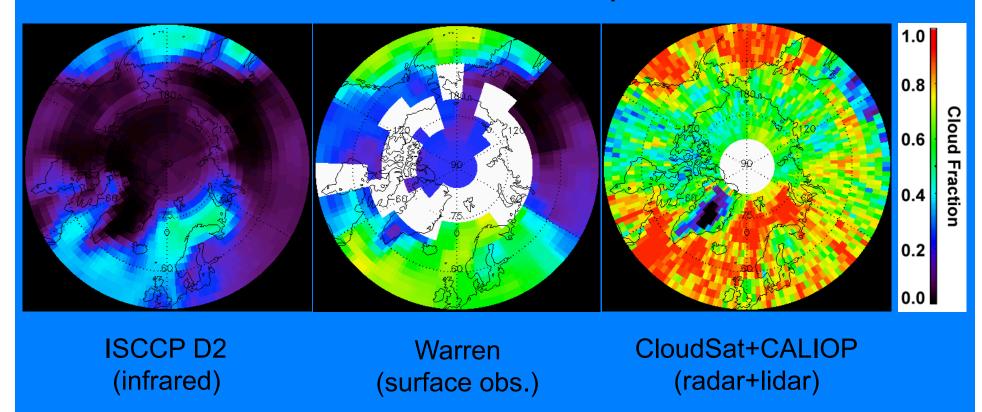
Space Studies Board

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

The A-train provides a unique view of Arctic clouds.

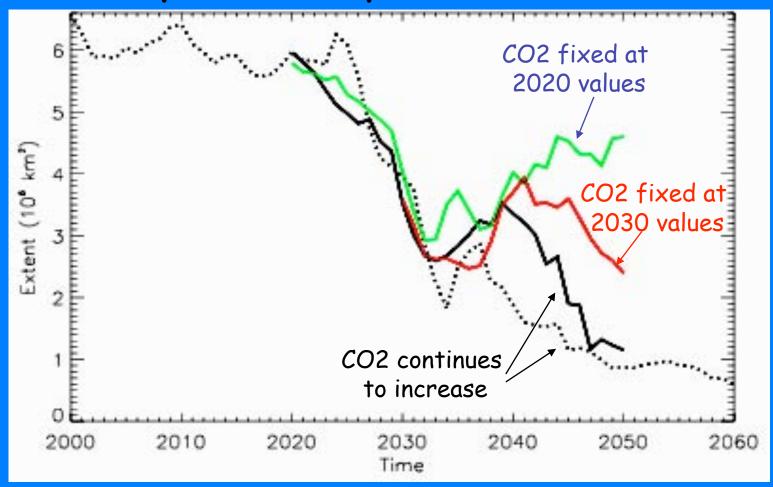
DJF Low Cloud Maps







Have we passed a point of no return?



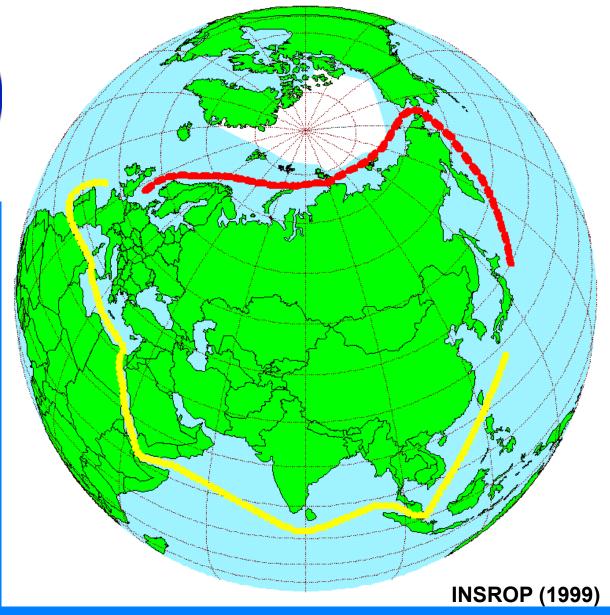
Preliminary model results suggest

- · that sea ice can recover if CO2 levels fixed/decline
- · that a seasonally ice-free Arctic might be avoidable.
- May depend on when/for what ice state this occurs.









New Shipping Routes?

Distance when using the NSR for European ports (Miles)

Port of	Routing	Ports		
Destination Via		Rotterdam	Scapa Flow	Algeciras
Yokohama	Suez	11205	11436	9821
	NSR	7345	7070	8660
	Difference	3860	4366	1161
	Difference (%)	34%	38%	12%
Shanghai	Suez	10521	10781	9166
	NSR	8079	7804	9394
	Difference	2442	2977	-228
	Difference (%)	23%	28%	-2%
Hong Kong	Suez	9748	10004	8389
	NSR	8929	8654	10244
	Difference	819	1350	-1855
	Difference (%)	8%	13%	-22%
Sydney	Suez	11570	11826	10211
	NSR	11725	11401	12991
	Difference	-155	425	-2780
	Difference (%)	-1%	4%	-27%





"Demand for ice-class tankers has been steadily rising as oil exports from Russia's Arctic regions become ever more attractive. The ordering pace...in the tanker industry... (reached) some \$4.5 billion in (2004) alone."

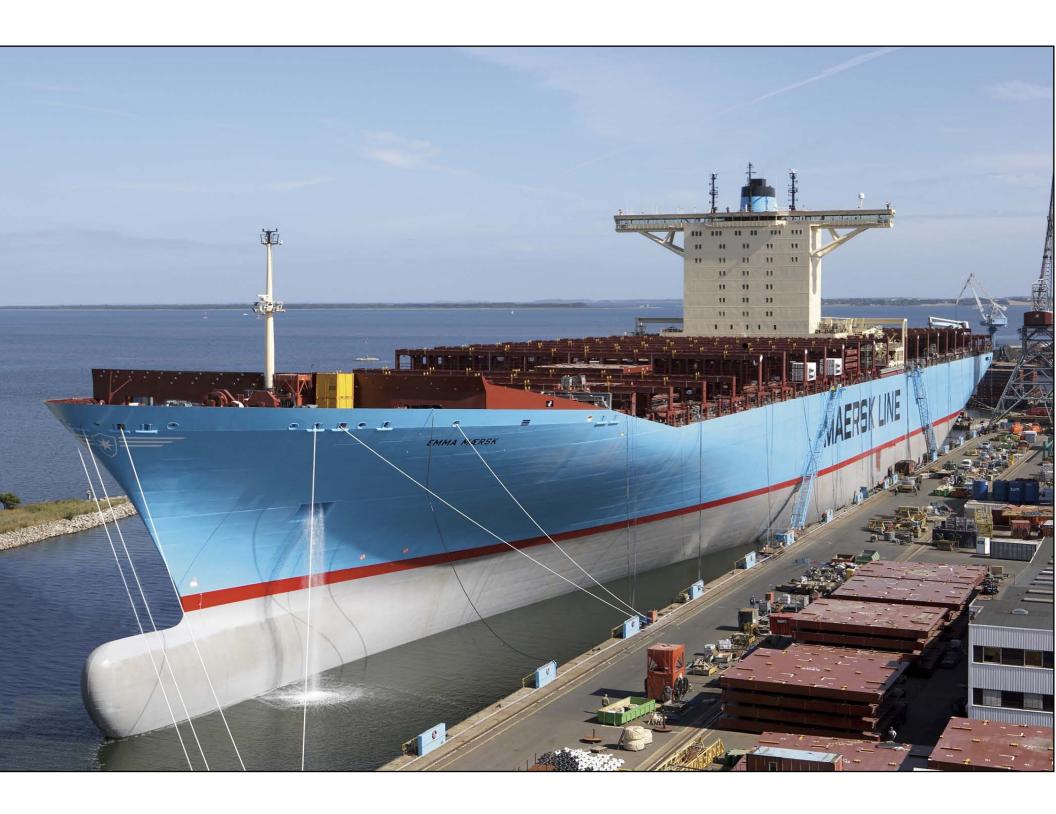
-American Bureau of Shipping, Surveyor, Summer 2005

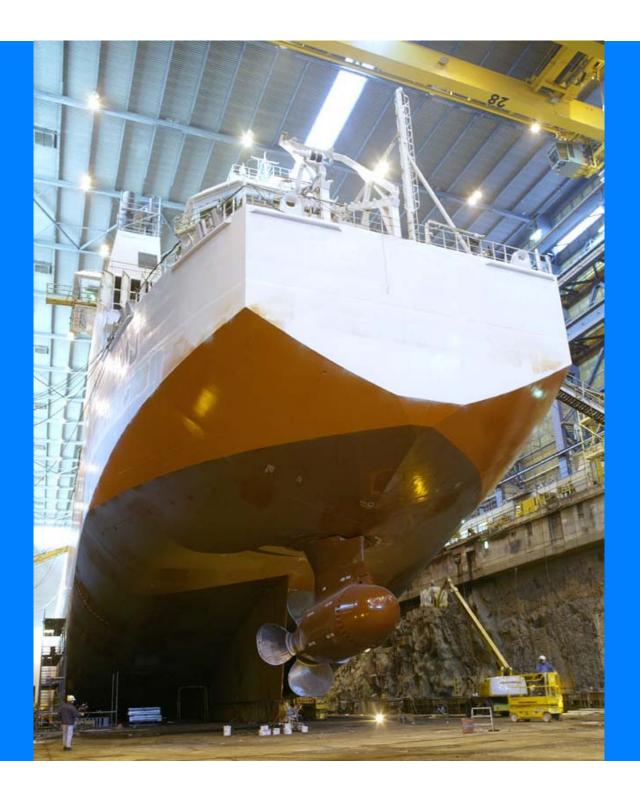
Estimated tradelane traffic flows, 1996-2006 (Million TEU)

Tradelane	1996	2006	Growth	% Growth
Asia-Europe/Med	8.2	27.3	19.1	233%
Transpacific	10.4	33.9	23.5	226%
Transatlantic*	6.6	14.6	8.0	121%
Other	25.6	63.6	38.0	148%
Global Trade	50.8	139.4	88.6	174%

^{*}Incl W Asia to N America

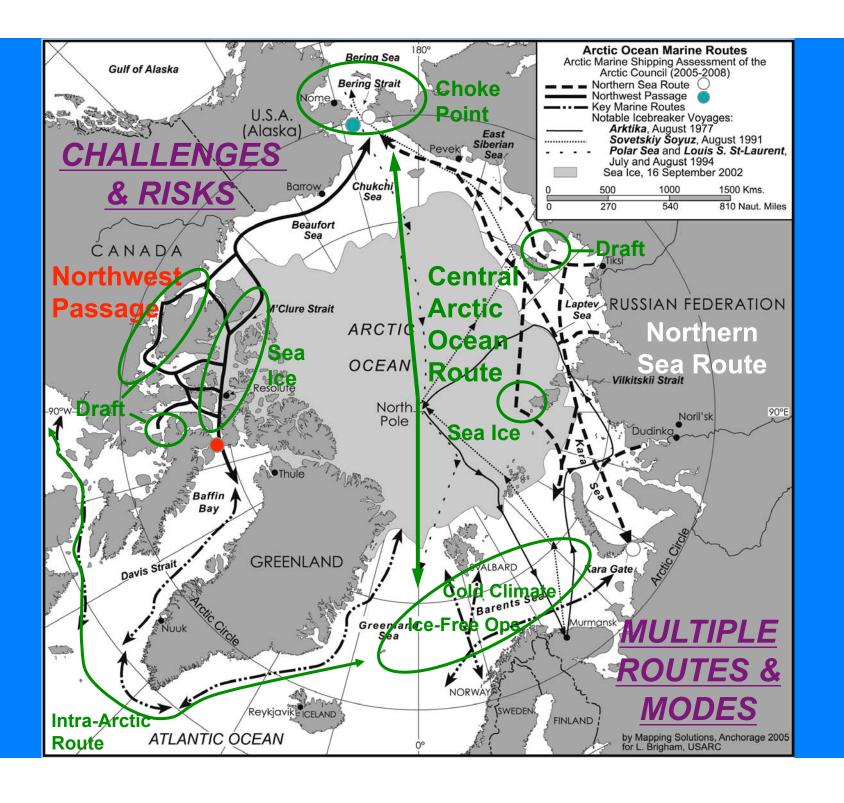
Source: Containerisation International





Aker Arctic Technology





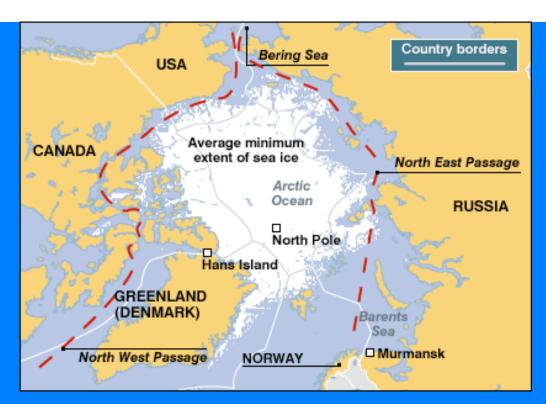




ADAK, Alaska

Photo from Arvid Fuchs Expedition website, http://www.arved-fuchs.de





Having a safe, secure and reliable Arctic shipping regime is vital to the proper development of Arctic resources, especially now given the extent of Arctic ice retreat we witnessed this past summer...We can have such a regime only through cooperation, not competition, among Arctic nations. Denial of passage through international waterways, even though they may be territorial waters, and burdensome transit requirements will not benefit any nation in the long run."

-- Assistant Secretary of State Daniel S. Sullivan, 10/15/2007

Scenarios on the Future of Arctic Marine Navigation in 2050

more demand

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Arctic Race

High demand and unstable governance set the stage for a "no holds barred" rush for Arctic wealth and resources.

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Arctic Saga

High demand and stable governance lead to a healthy rate of development, includes concern for preservation of Arctic ecosystems & cultures.

GOVERNANCE

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Polar Lows

Low demand and unstable governance bring a murky and under-developed future for the Arctic.

Polar Preserve

Low demand & stable governance slow development in the region while introducing an extensive eco-preserve with stringent "noshipping zones".

less demand

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www.arctic.gov

meadwell@alaska.net

www.institutenorth.org

