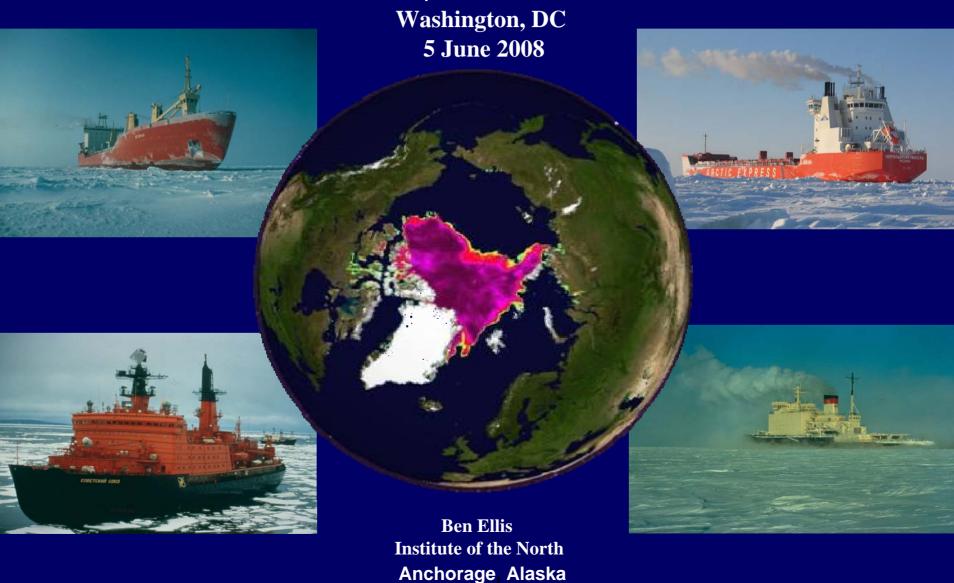
Arctic Marine Shipping Assessment Implications of a Changing Arctic

Arctic Transportation Conference





Arctic Council

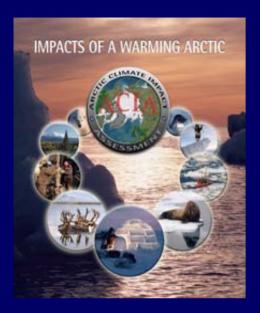
- The Arctic Council is an international non-binding treaty organizations comprised of the eight Arctic nations: the United States, Canada, Russian Federation, Norway, Finland, Sweden, Iceland and Denmark (Greenland/Faroe Islands.)
- It is also recognizes six international indigenous organizations. The Permanent Participants are Aleut International Association, Arctic Athabaskan Council, Gwich'in Council International, Inuit Circumpolar Council Russian Association of Indigenous Peoples of the North and the Saami Council.

<u>http://www.arctic-council</u>

Arctic Council Arctic Marine Shipping Assessment (AMSA)

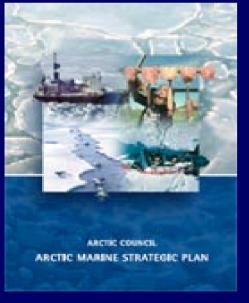
Reykjavik Declaration, 4th Ministerial (Nov 2004)

" Request PAME to conduct a comprehensive Arctic marine shipping assessment as outlined in the AMSP under the guidance of Canada, Finland, and the United States as lead countries and in collaboration with the EPPR working group and other working groups of the Arctic Council and Permanent Participants as relevant."



Arctic Marine Shipping Assessment (AMSA) Key Points

- **AMSA Natural Follow-on to:**
 - Arctic Climate Impact Assessment (ACIA)
 - Arctic Marine Strategic Plan (AMSP)
- Circumpolar, yet Regional (Large Marine Ecosystems) and Local Focus
- Member State Commitment & Support with Data Collection Effort
- AMSA web site: [www.pame.is]
- ACIA web site: [www.amap.no]



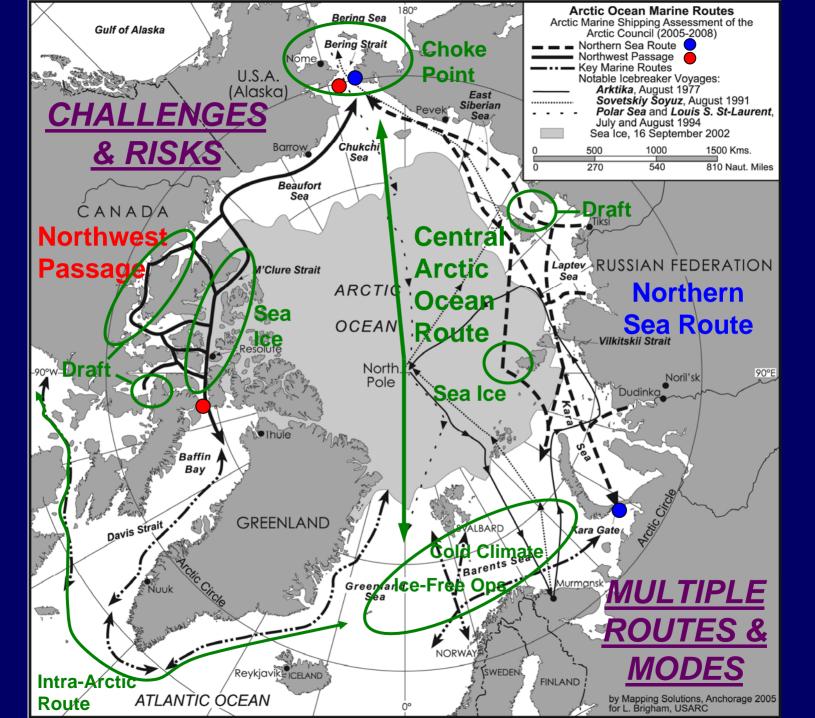
Arctic Council PAME-led Arctic Marine Shipping Assessment

- Lead Countries: Canada, Finland, and USA
- Key Countries: Norway & Russia (Barents), Iceland, Denmark-Greenland-Faroe Islands, Sweden
- • Timeline: 2005 2009
- Electronic Survey Questionnaire: 2004 Data from 7 Arctic States (6 coastal and 1 non-coastal)
- Inclusive Participation: Member States, Permanent Participants, Working Groups of the Arctic Council; Council Observers; Shipping Industry; International Maritime Organization; Ship Classification Societies; Research Organizations; Non-Arctic Stakeholders (examples: Japan, Germany, UK) and Others

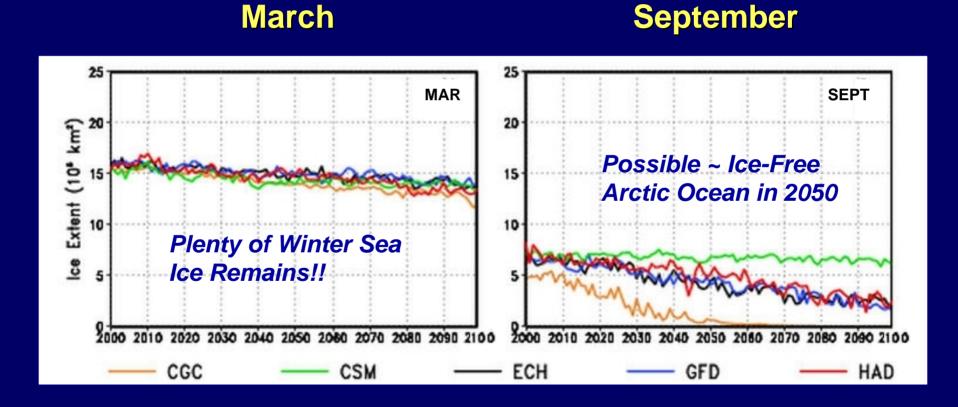
AMSA Chapter Outline

- Chapter 1: Introduction
 - Changing AO, ACIA, AMSP, Importance to Arctic residents
 - Definitions & Modes of Transport
- **Chapter 2:** Geography and History of Arctic Marine Use
 - Major Straits, LMEs, Arctic Sea Ice, Regulatory Regimes
- Chapter 3: Current (2004) Levels of Arctic Marine Use
 By Season & Region (Narrative & Pictorial)
 - - Shipping Data + Indigenous Use Data + LMEs + Sea Ice
- **Chapter 4: Historical & Current Indigenous Arctic** Ocean Use
 - Results of the Town Hall Meetings
- **Chapter 5:** Scenarios of Future Arctic Ocean Marine
- Activity for 2020 and 2050
 - Pictures, Narratives, Assumptions, Key Drivers

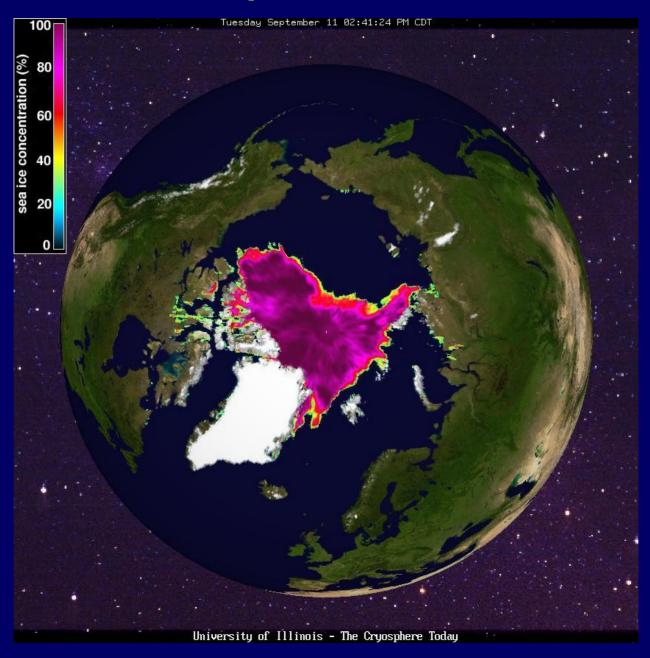
- Chapter 5: Scenarios of Future Arctic Ocean Marine
 Activity for 2020 and 2050
 - Pictures, Narratives, Assumptions, Key Drivers
- Chapter 6: Environmental Impacts of Current &
 Future Marine Activity
 - LMEs, Local 'sensitive areas', Emissions, Discharges, Ballast Water, Noise/Acoustics
 - Risk Levels for Regions, Accidents
- Chapter 7: Social & Economic Impacts at Current &
 Future Levels
- Chapter 8: Current Arctic Infrastructure (and
- Anticipated Needs)
 - Ice Centers, SAR Response, Ports, Monitoring, Icebreakers
- Chapter 9: Conclusions and Findings
- Appendices / Research Agenda



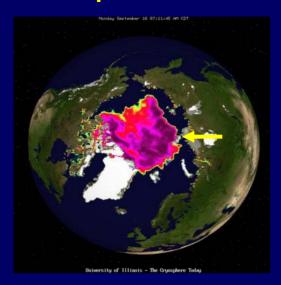
Arctic Climate Impact Assessment Climate model projections of sea ice extent: 2000 - 2100



11 September 2007



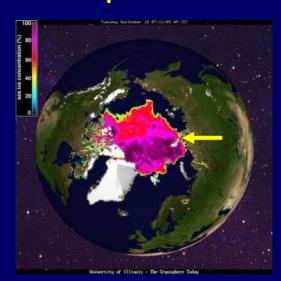
16 September 2002

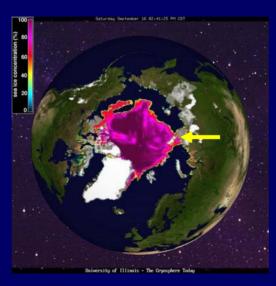


| Committee | Comm

6 September 2005

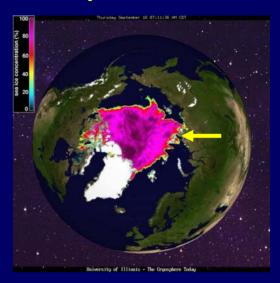
16 September 2003

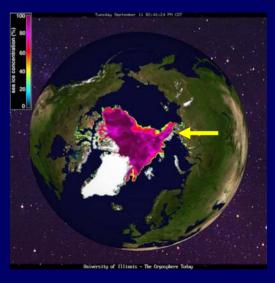




16 September 2006

16 September 2004





11 September 2007

Arctic Ocean Marine Routes The Maritime Bering Sea Gulf of Alaska High Intensity Arctic Marine Shipping Assessment of the Arctic Council (2005-2008) Bering Strait Northern Sea Route **Arctic of Today** Fishing Northwest Passage Key Marine Routes **Snapshot of** Notable Icebreaker Voyages: (Alaska) Arktika, August 1977 East Sovetskiy Soyuz, August 1991 Polar Sea and Louis S. St-Laurent, Siberian Summer 2004 July and August 1994 **Traffic** Sea Ice, 16 September 2002 Chukchi Barrow 1000 1500 Kms. 500 270 810 Naut. Miles Beaufort **Modes of Arctic ONSR** Ć A N A D/A **Marine Transport Transits** Destinational / 6 Research Lapter RUSSIAN FEDERATION Ships Regional 107 M'Clure Strait ARCTIC Voyages • Trans-Arctic 165 Voyages • Trans-Arctic with 52 Ships OCEAN 3-Skip Vilkitskii Strait **Transshipment Transits** Resolute 8 NP Drillin North_ • Intra-Arctic 90°E Pole Davis Strait GREENLAND SVALBARD Kara Gate Barents Sea (53~2005) Murmansk Greenland (150~2006) Sea **Thousands** of Transits High Intensity Reykjavik ICELAND **FINLAND** by Mapping Solutions, Anchorage 2005 for L. Brigham, USARC ATLANTIC ÓCEAN **l** Fishing

AMSA Scenarios on the Future of Arctic Marine Navigation in 2050

more demand

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So

Arctic Race

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

Arctic Saga

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

unstable & ad-hoc

GOVERNANCE

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stable & rules-based

Polar Lows

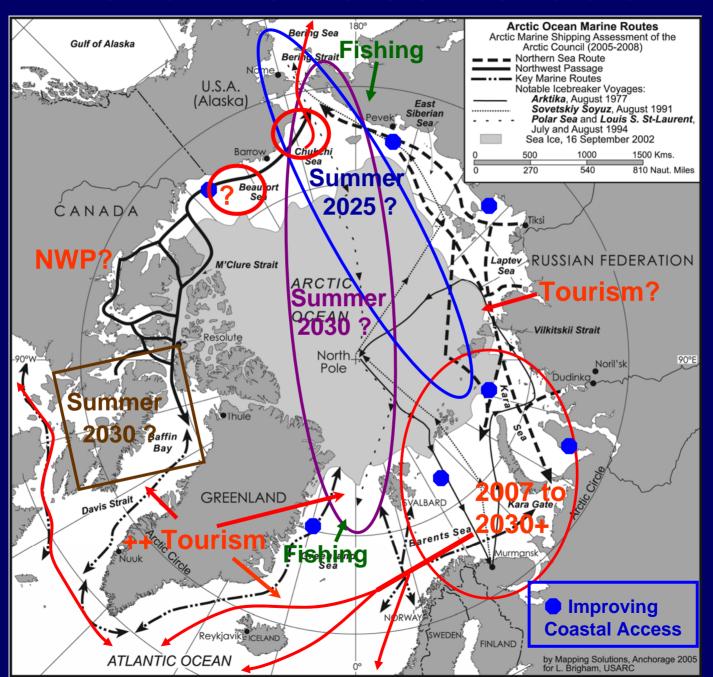
Low demand and unstable governance bring a murky and under-developed future for the Arctic.

Polar Preserve

Low demand & stable governance slow development in the region while introducing an extensive eco-preserve with stringent "no-shipping zones".

less demand

The Maritime Arctic of the Future?



Thank You

Ben Ellis
Managing Director
Institute of the North
Anchorage, Alaska

1 907 771-2445 bellis@institutenorth.org

www.institutenorth.org www.pame.is