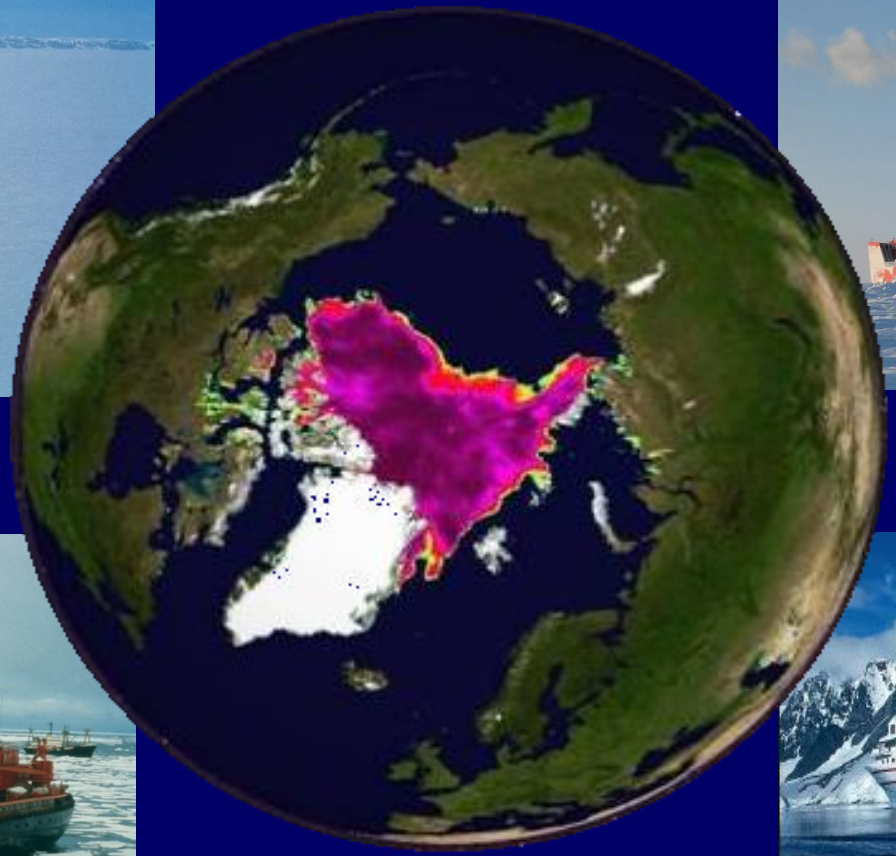
The Arctic Marine Shipping Assessment & Marine Infrastructure Issues

Alaska Deep-draft Arctic Ports Planning Charrette

Anchorage , AK ~ 16 May 2011



Lawson W. Brigham, PhD
Professor, University of Alaska Fairbanks
Chair, Arctic Marine Shipping Assessment (2005-09)

2004 – 2009

Arctic Council ~ Intergovernmental Forum

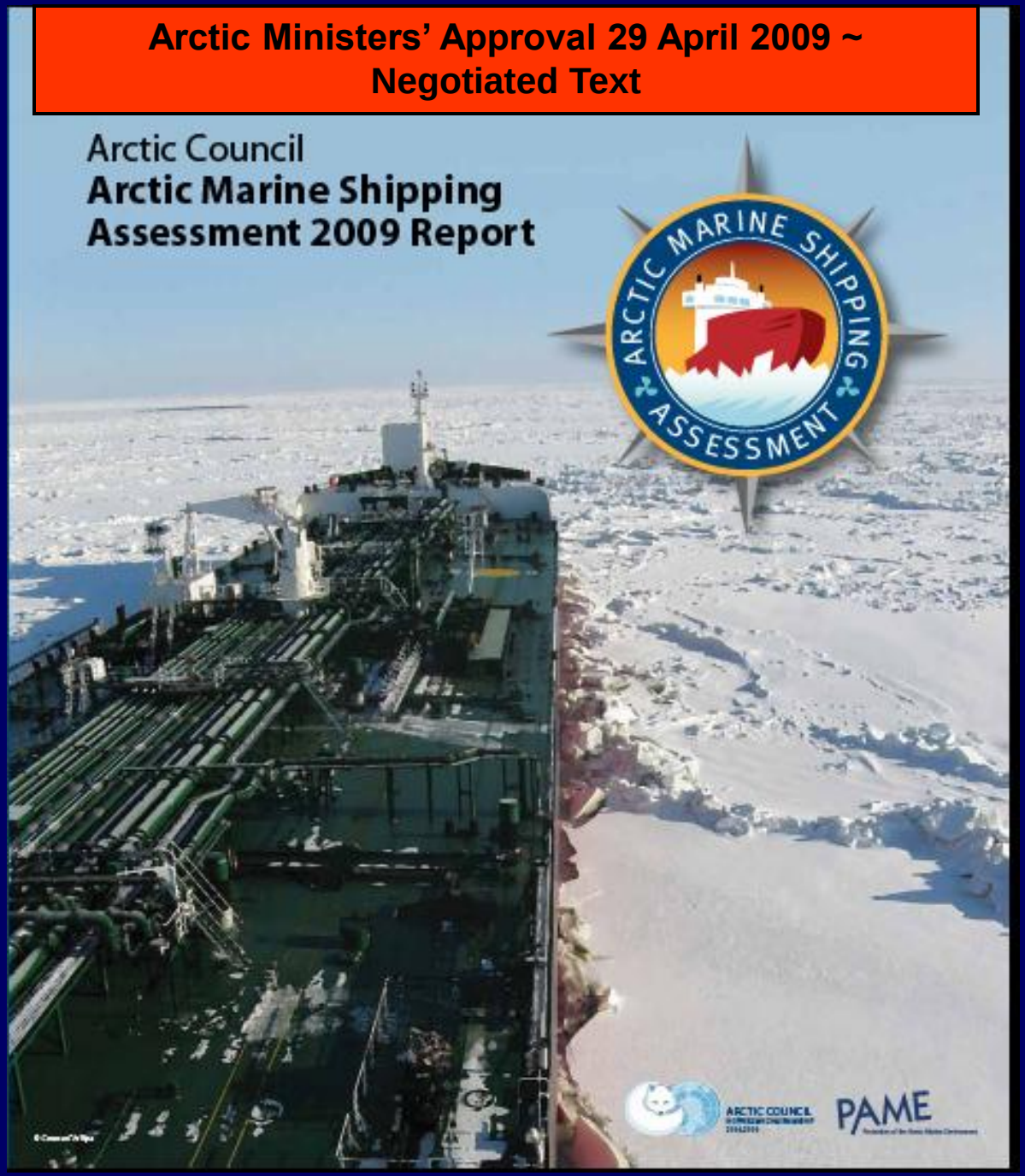
AMSA Lead Countries for PAME ~ Canada, Finland & USA

AMSA Focus ~ Marine Safety & Marine Environmental Protection

13 Major Workshops & 14 Town Hall Meetings

Key Challenge ~ Many Non-Arctic Stakeholders

Arctic Ministers' Approval 29 April 2009 ~ Negotiated Text



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- Environmental Impacts

Infrastructure

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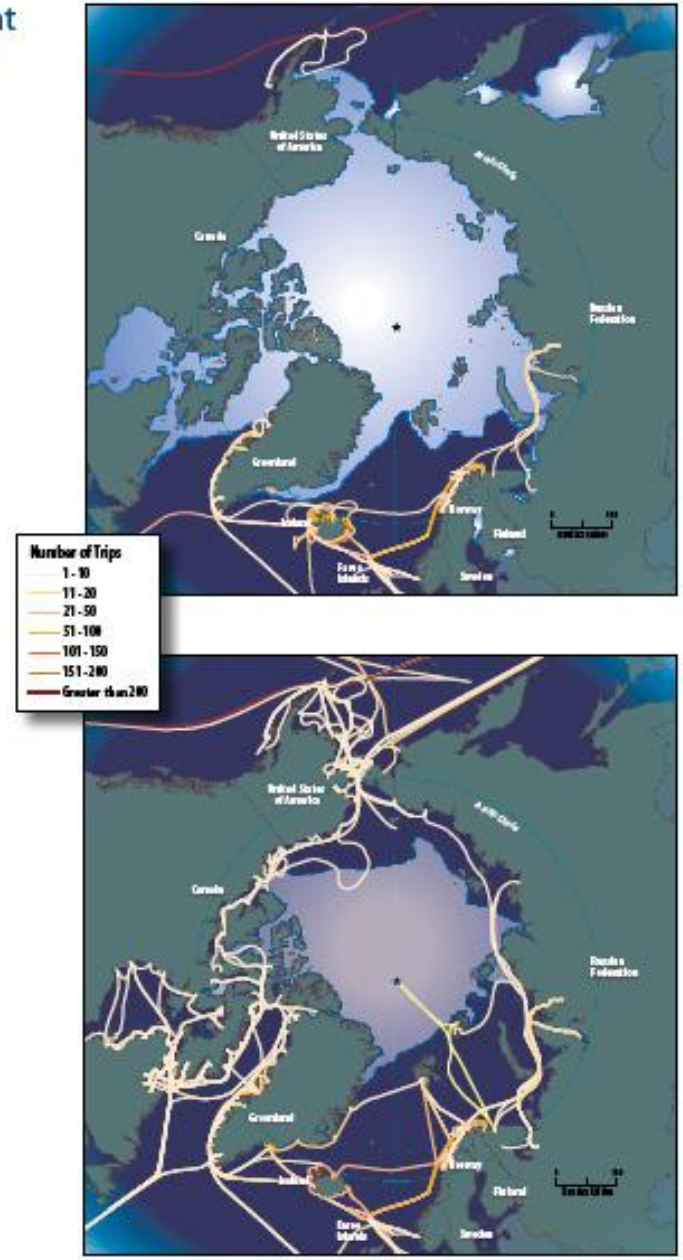
Sea Ice Extent Differences

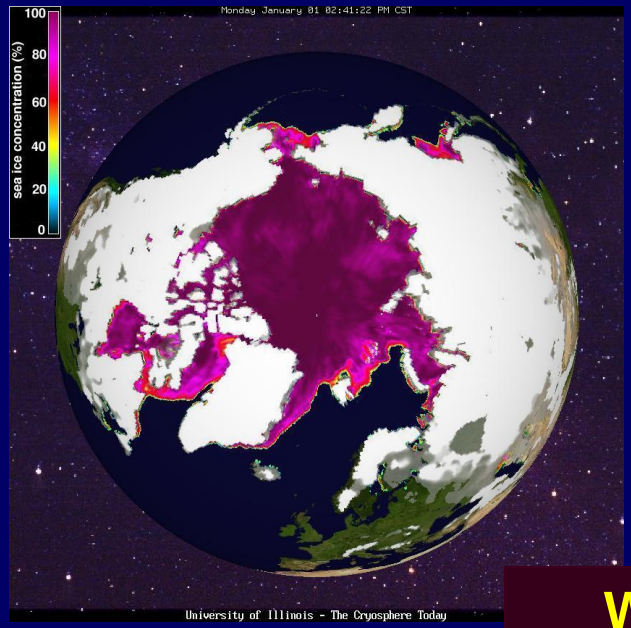


January 2004 Traffic

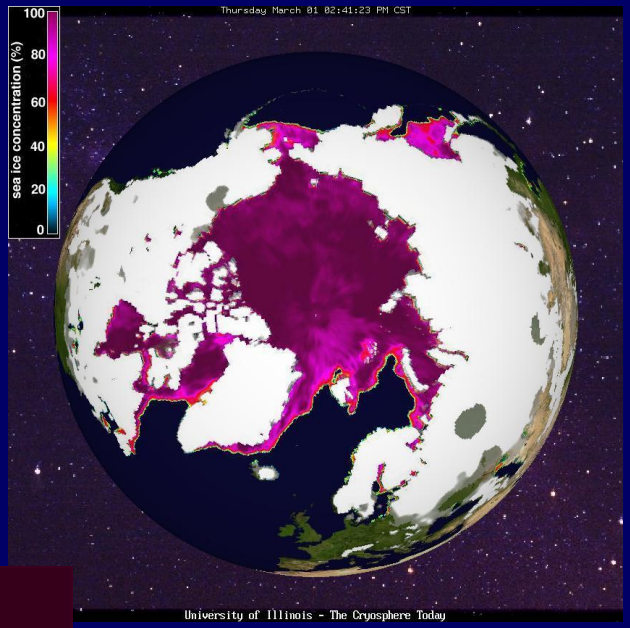
July 2004 Traffic

Winter & Spring Months 2007

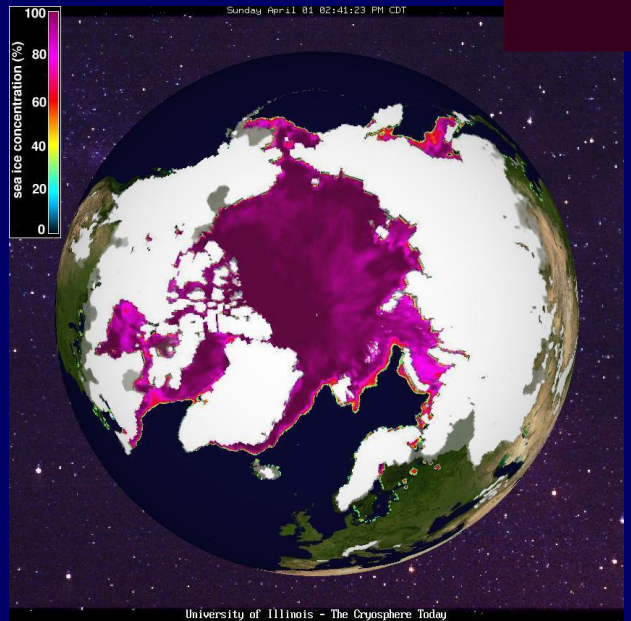
1 January 2007



1 March 2007



1 April 2007



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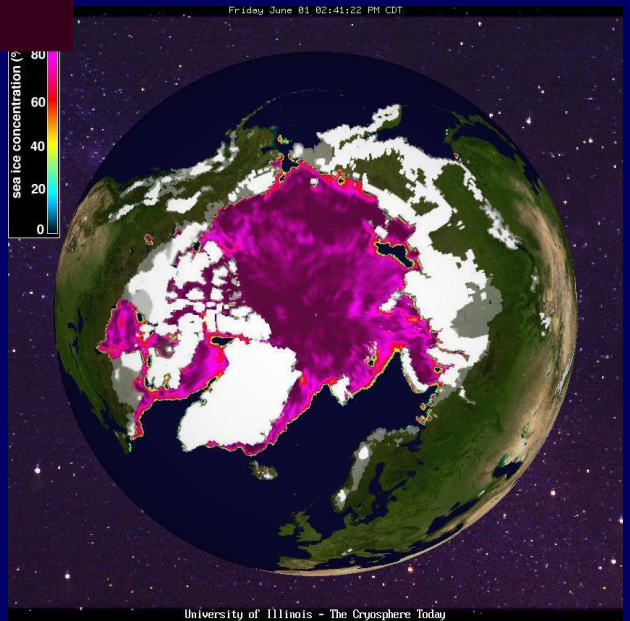
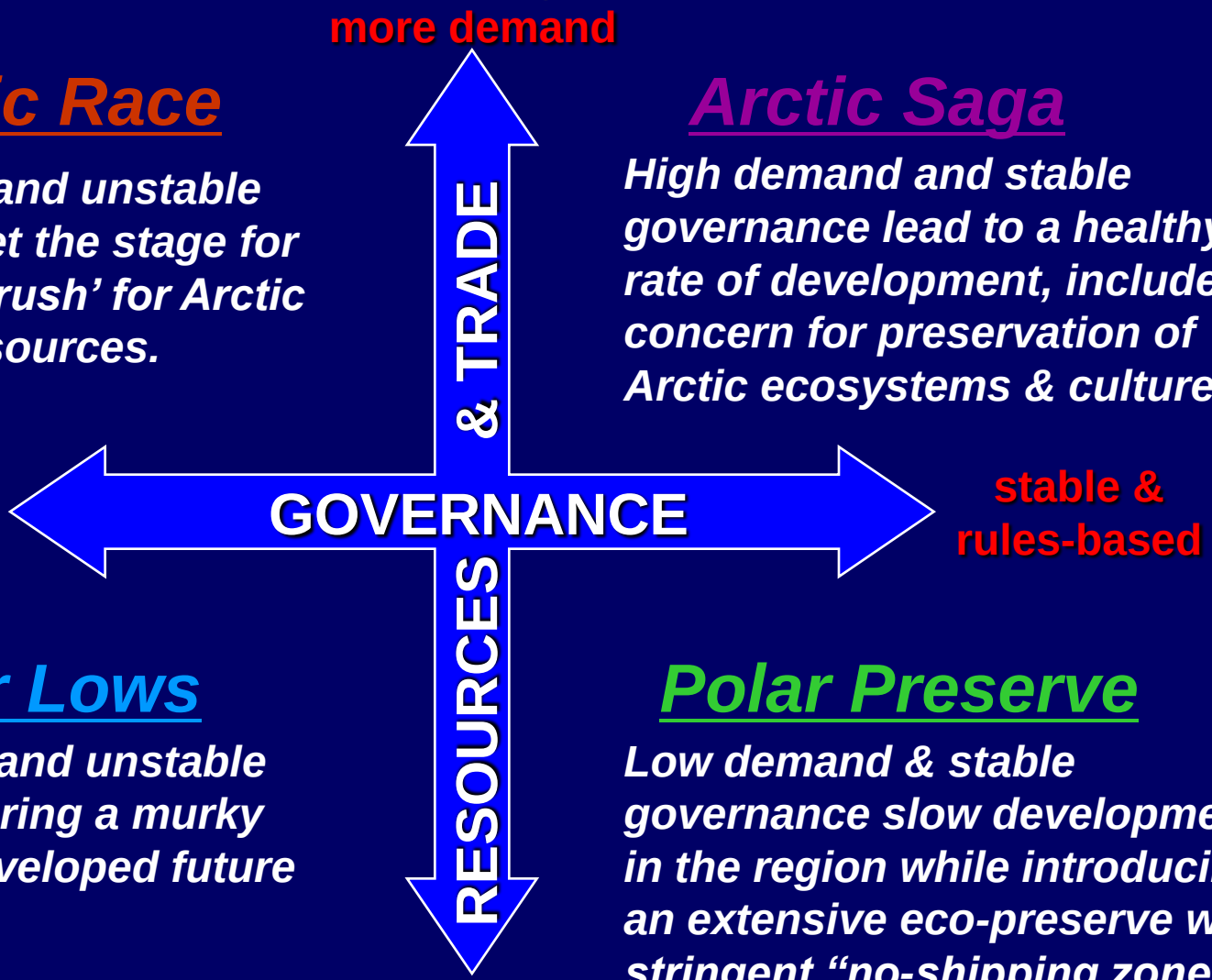


Scenarios on the Future of Arctic Marine Navigation in 2050



Arctic Race

High demand and unstable governance set the stage for an economic '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.

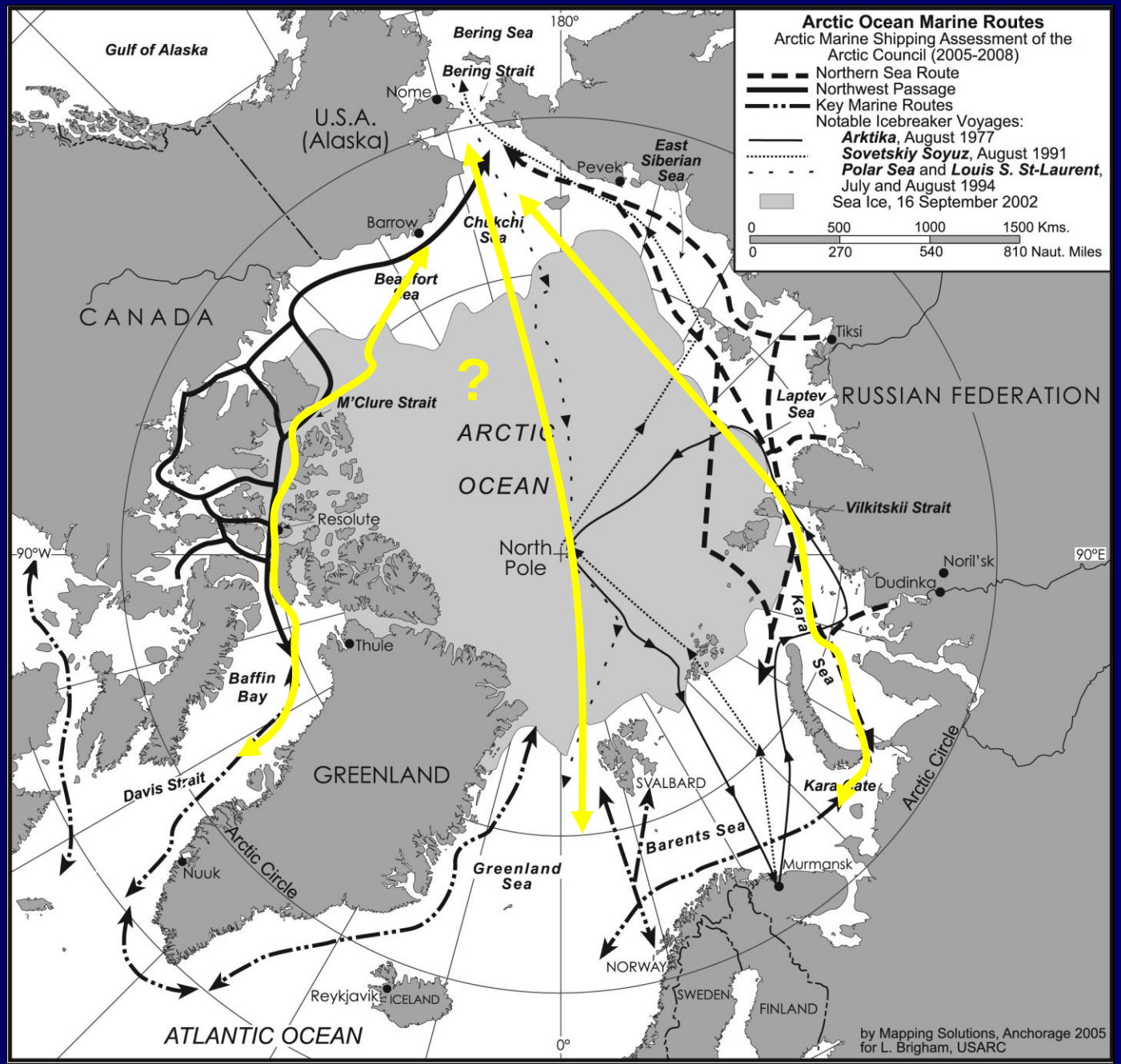
Polar Lows

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

Polar Preserve

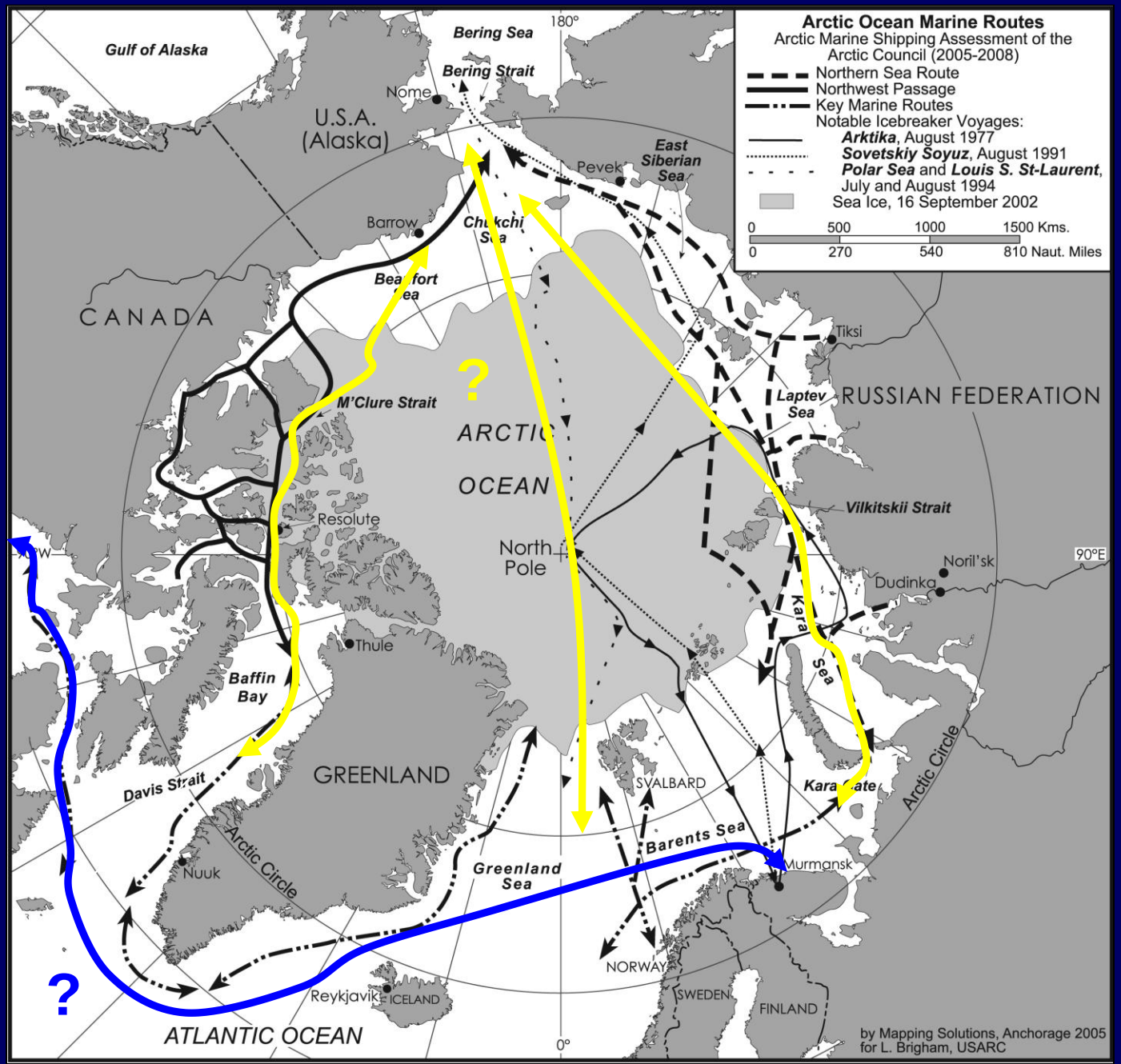
Low demand & stable governance slow development in the region while introducing an extensive eco-preserve with stringent "no-shipping zones".

Future Arctic Marine Transport Modes



Future Arctic Marine Transport Modes

Churchhill to Murmansk Route



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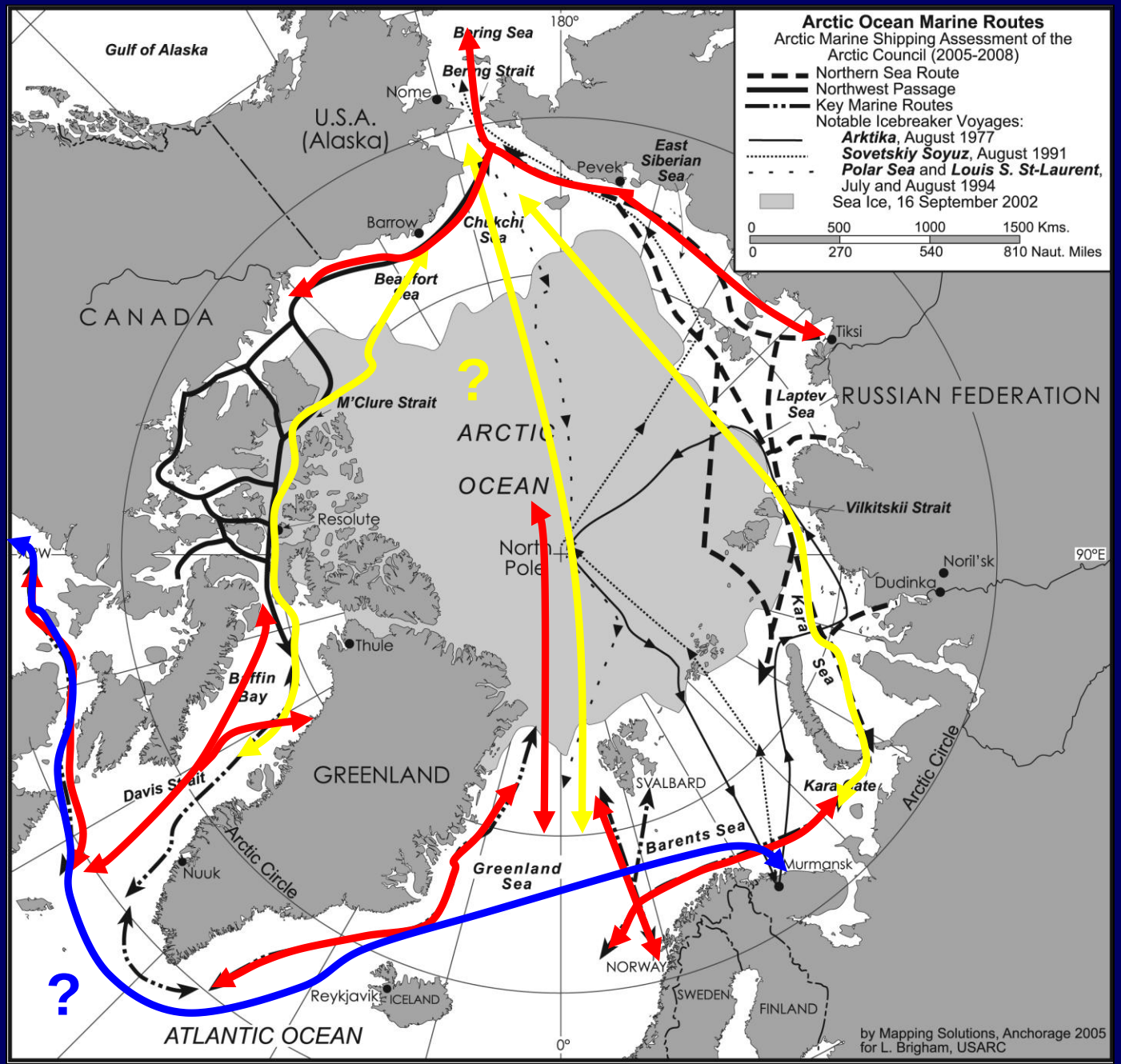


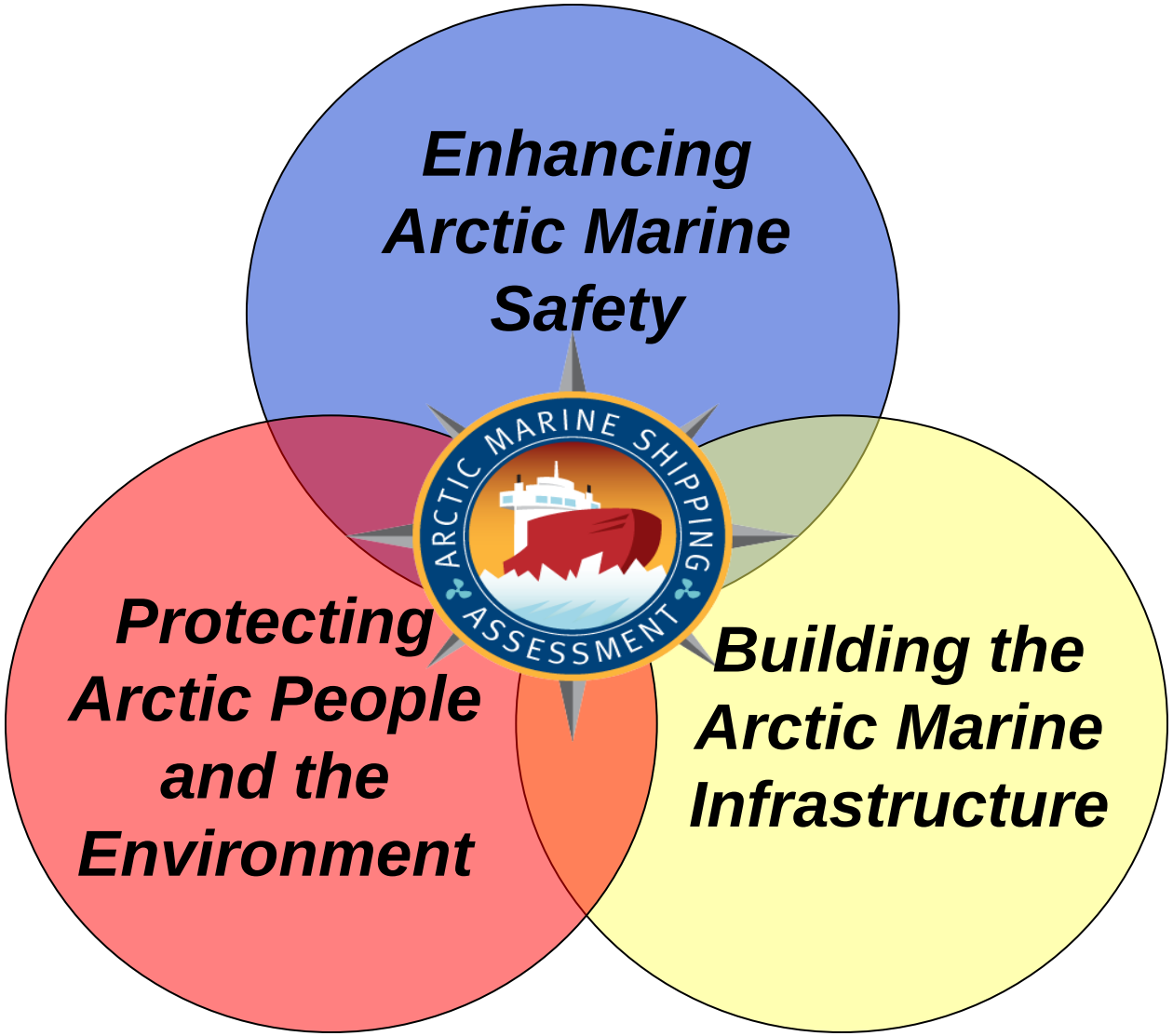
Select AMSA Infrastructure Findings:

- AO Marine Charts ~ Est. 6% to Int. Standards
- Few Places of Refuge
- Limited Environmental & Emergency/SAR Response Capacity
- Extremely Sparse Met/Ocean Obs
- Few Arctic Ports (None in U.S. Arctic)
- Minimal Salvage & Limited Salvor Response
- Communications & Aids to Nav Gaps

Groundings ~ Canadian Arctic Aug-Sept 2010

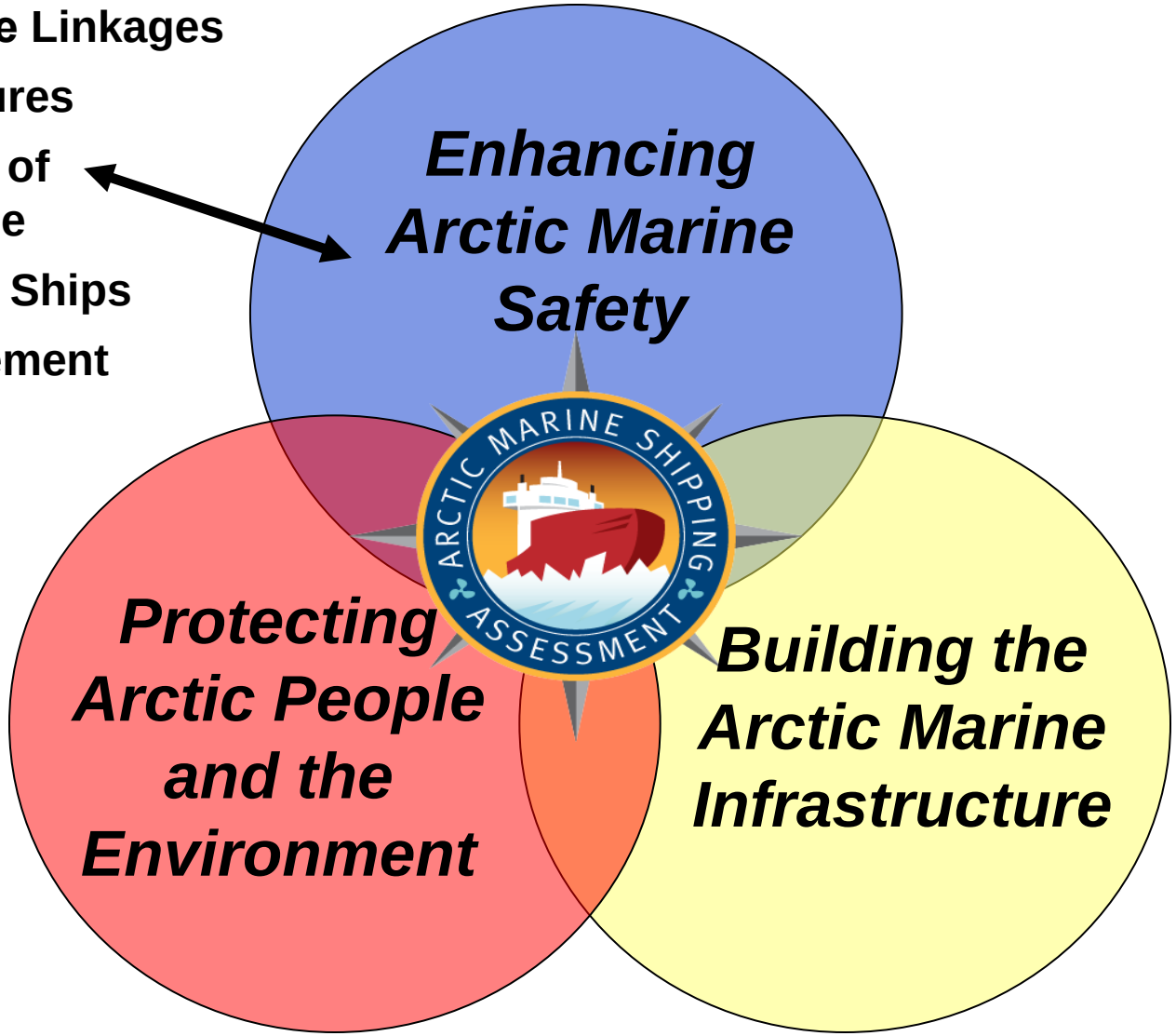
M/V Clipper Adventurer

M/T Nanny



17 AMSA RECOMMENDATIONS ~ THEMES

- Arctic State Linkages
- IMO Measures
- Uniformity of Governance
- Passenger Ships
- SAR Agreement



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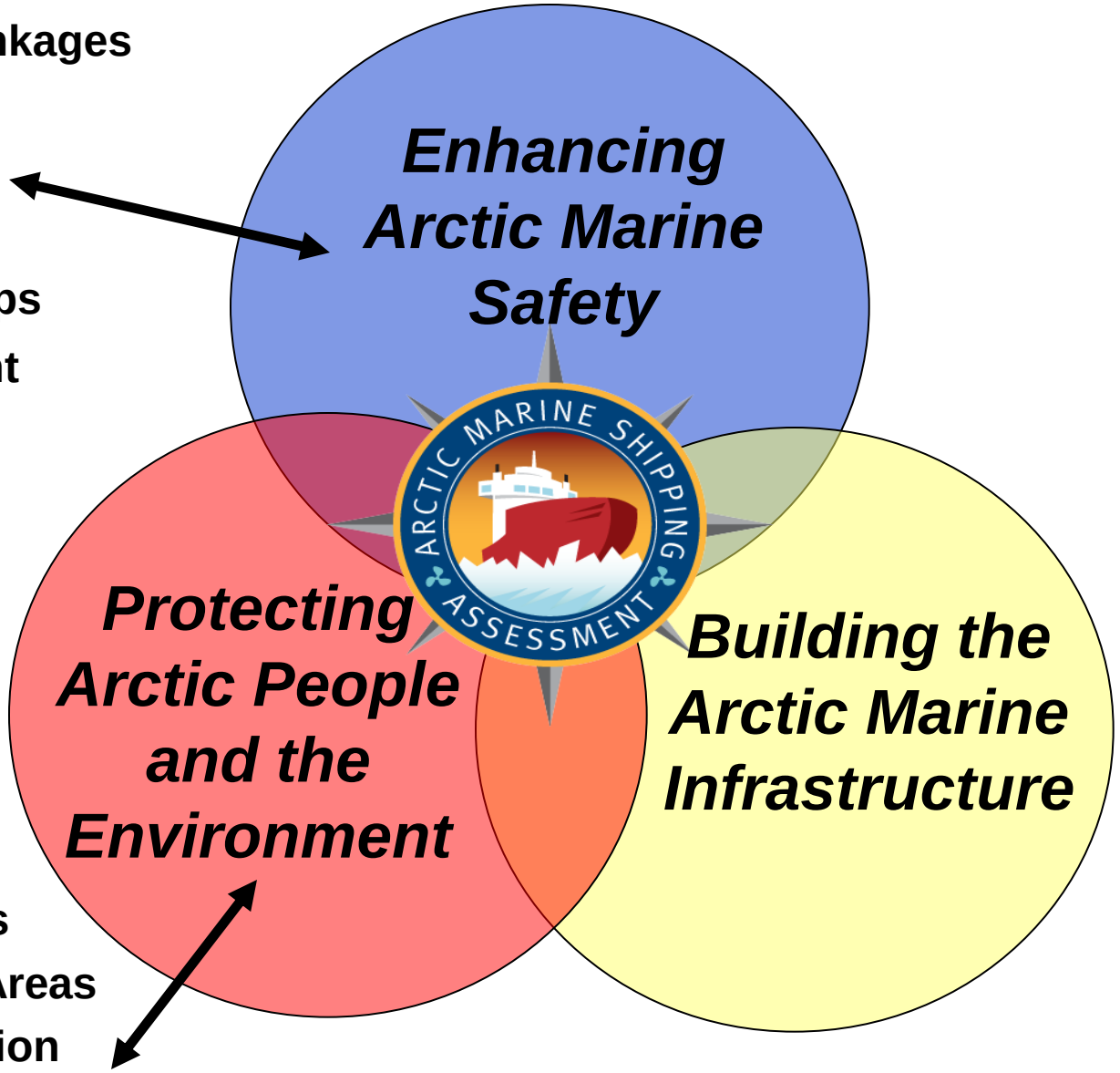
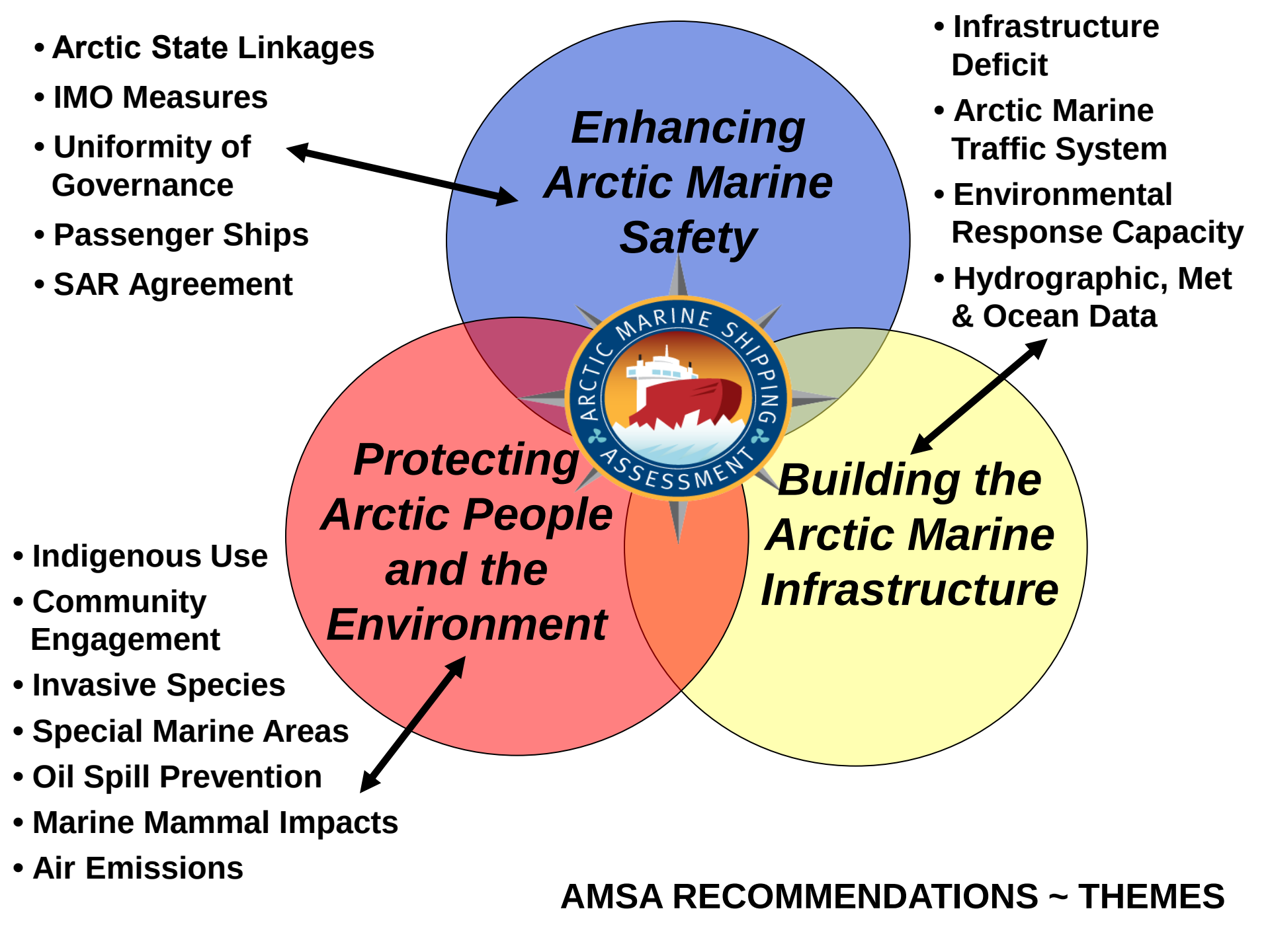


- Indigenous Use
- Community Engagement
- Invasive Species
- Special Marine Areas
- Oil Spill Prevention
- Marine Mammal Impacts
- Air Emissions

AMSA RECOMMENDATIONS ~ THEMES


• Arctic State Linkages
• IMO Measures
• Uniformity of Governance
• Passenger Ships
• SAR Agreement
Enhancing Arctic Marine Safety
• Infrastructure Deficit
• Arctic Marine Traffic System
• Environmental Response Capacity
• Hydrographic, Met & Ocean Data
ARCTIC MARINE SHIPPING ASSESSMENT
Protecting Arctic People and the Environment
Building the Arctic Marine Infrastructure
• Indigenous Use
• Community Engagement
• Invasive Species
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• Oil Spill Prevention
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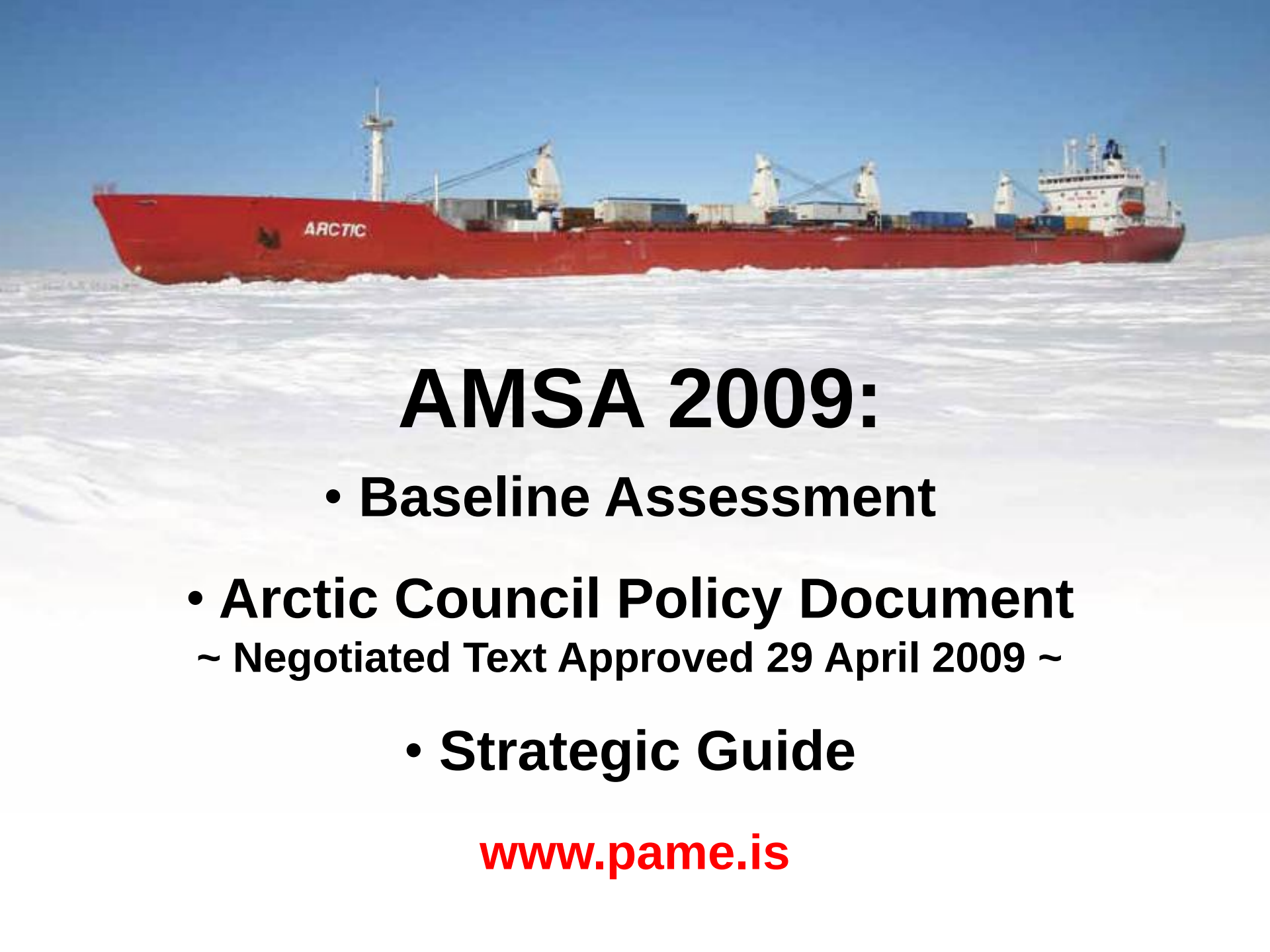

AMSA 2009:

- **Baseline Assessment**
- **Arctic Council Policy Document**

~ Negotiated Text Approved 29 April 2009 ~

- **Strategic Guide**

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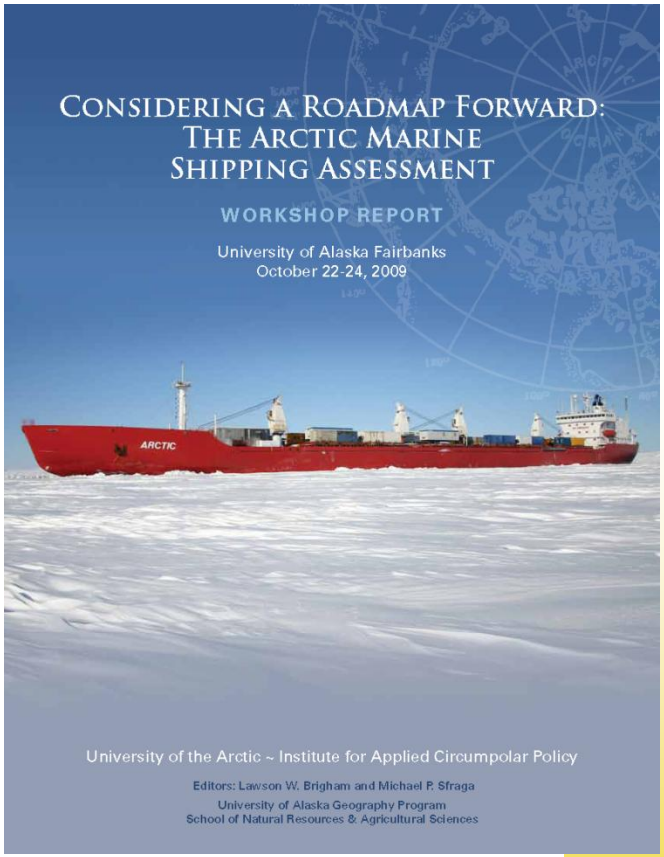
CONSIDERING A ROADMAP FORWARD: THE ARCTIC MARINE SHIPPING ASSESSMENT



Workshop
October 22-24, 2009

Summary ~ Key Policy Issues Ahead

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During the course of the workshop discussions revealed a number of high priority issues as critical outcomes of AMSA. The Co-editors of this report have developed a list of key policy issues from the discussions in Fairbanks that require attention in the near-term to enhance Arctic marine safety and marine environmental protection. Throughout the workshop the highest priority issue consistently noted was the urgent need for a mandatory Polar Code developed by the International Maritime Organization. Implementation of mandatory rules for polar ship construction, design, equipment, operations and ice navigator competency was considered by the workshop participants as the crucial first step for protecting Arctic people and the environment in an era of increased marine operations in the Arctic Ocean.

The following lists are provided as summaries of Arctic policy issues derived from the expert discussions of the AMSA Workshop:

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I. Highest Priority Arctic Policy Issues Related to AMSA:

- A mandatory Polar Code developed by the IMO.
- Full tracking and monitoring of Arctic commercial ships (mandatory AIS).
- An Arctic SAR agreement ~ an ongoing Arctic Council SAR Task Force is to produce a binding agreement by spring 2011.
- Surveys of indigenous marine use so that multiple use strategies in Arctic waterways can be developed.
- A circumpolar response capacity agreement ~ an agreement among the Arctic states (and possibly non-Arctic states) for pooling resources and enhancing regional capacity.
- Implementation of an Arctic Observing Network among the 8 Arctic states and non-Arctic states ~ a network to support scientific research and marine operations.

II. High Priority Arctic Policy issues Related to AMSA:

- A critical Arctic marine infrastructure requirement ~ increased hydrography and surveying of Arctic waters for enhanced navigation charts.
- Oil spill research on prevention best practices and responses to oil released in Arctic ice-covered waters.
- Enhanced research, including mitigation measures, on the impacts on marine mammals, and other migratory fauna, of increased Arctic marine operations.
- Identification of specific ballast water/invasive species issues and prevention strategies related to Arctic marine operations.
- A comprehensive study to identify potential Arctic marine areas, including the central Arctic Ocean, for possible designation as IMO Particularly Sensitive Sea Areas (PSSAs).
- Marine industry development of harmonized best practices for all cruise ships operating in Arctic waters, including operational strategies for mutual rescue.
- Studies on the application of ecosystems-based management to Arctic coastal regions.
- A comparative study of Arctic state liability and compensation strategies for marine incidents with a view to developing future uniform measures.
- Fully developed IMO ice navigator competency requirements included in the STCW; mandatory requirement for onboard ice navigator as part of the Polar Code.
- Enhanced marine communications systems in the Arctic, including full coverage satellite communications in the central Arctic Ocean.

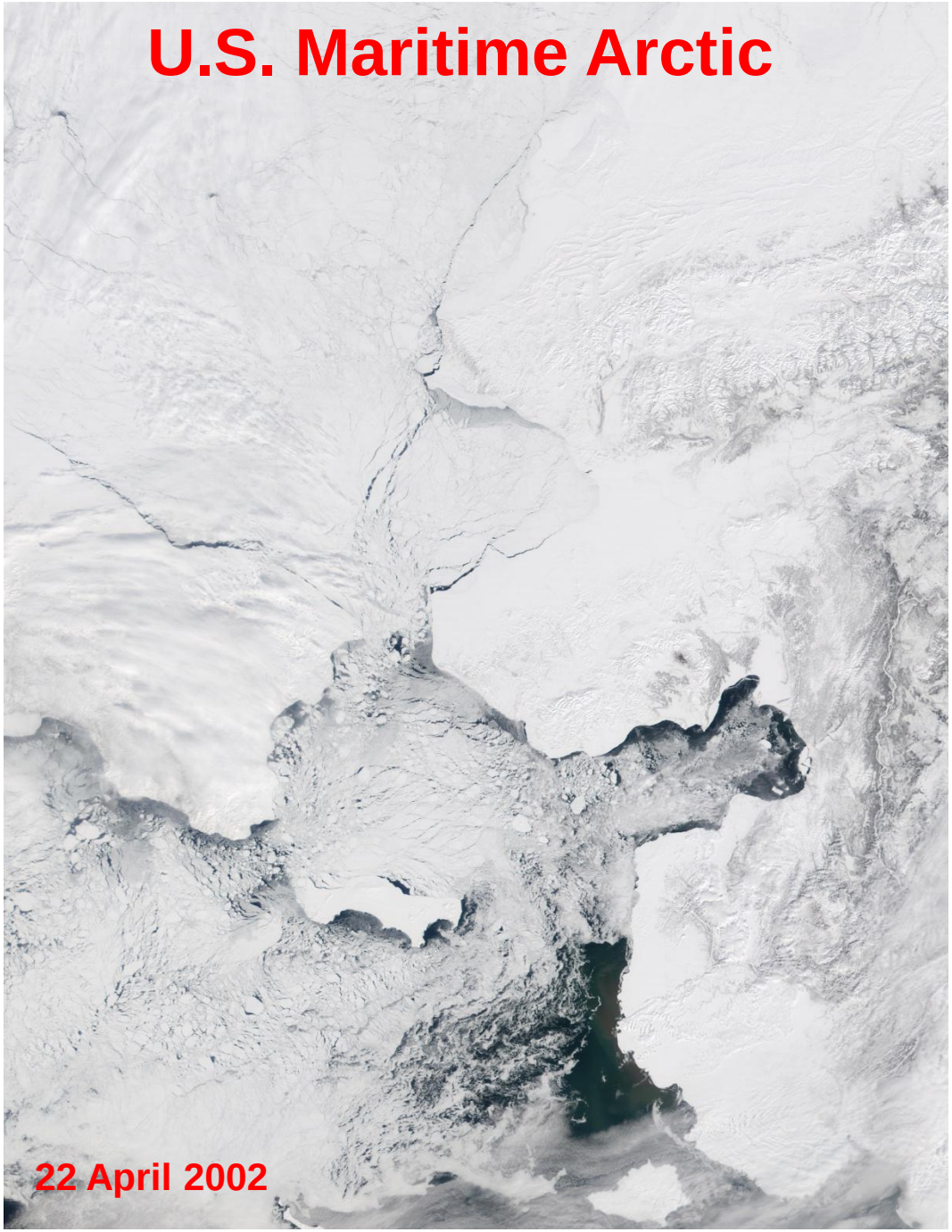
Highest Priority

- Mandatory Polar Code [2012-13]**
- Full Tracking and Monitoring of Commercial Ships (Mandatory AIS)
- Arctic Search and Rescue (SAR) Agreement [Signed 12 May 2011]**
- Indigenous Marine Use Surveys
- Circumpolar Response Capacity Agreement [Task Force 2011-13]**
- Arctic Observing Network Implementation

AMSA Port Considerations Related to U.S. Arctic Ports Planning

- Intermodal Transport Links ~ Air/Rail/Road
- Emergency/SAR/Pollution Response Access ~ Staging Capacity for a Multi-use Response Port
- Access to Marine Activity (Offshore Development, Fishing, Research, Traffic) & Near to Places of Refuge
- Uses: Law Enforcement, Security, Maritime Presence (International Strait/Choke Point for the Arctic Ocean)
- Other Capabilities: Marine Repairs, Communications, Marine Observations Hub

U.S. Maritime Arctic



Bering Strait Region shipping by vessel type:
1 May – 6 September 2010