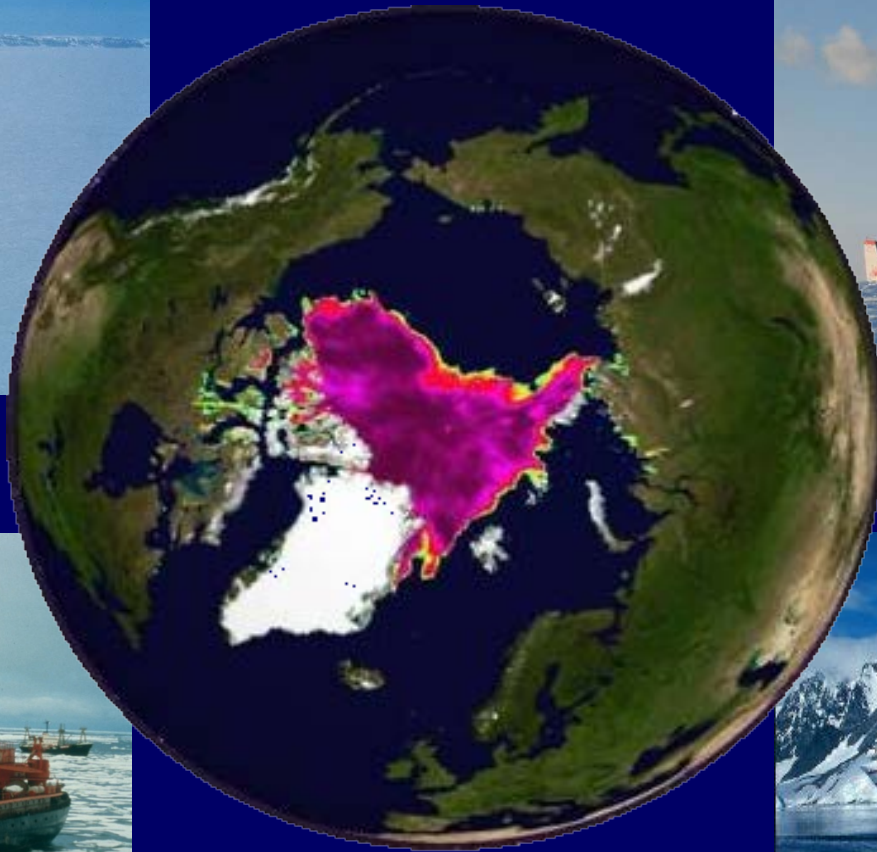


The Emerging Maritime Arctic

NOAA Hydrographic Services Review Panel Arctic Webinar

Long Beach, CA ~ April 9, 2015



Lawson W. Brigham, PhD
Professor, University of Alaska Fairbanks
HSRP Member & Captain, USCG (Ret.)

U.S. National Strategy for the Arctic Region ~ 10 May 2013

•Under 2. Line of Effort: *Pursue Responsible Arctic Region Stewardship*

--Chart the Arctic region:

(A) Make progress in charting and mapping the Arctic region's ocean & waterways; mapping coastal & interior lands with reliable/modern standards.

(B) Prioritize & synchronize charting efforts (more effective resource use & attain faster progress);

(C) Make navigation safer & ID ecologically sensitive areas & reserves of natural resources.

Implementation Plan for the National Strategy for the Arctic Region ~ January 2014

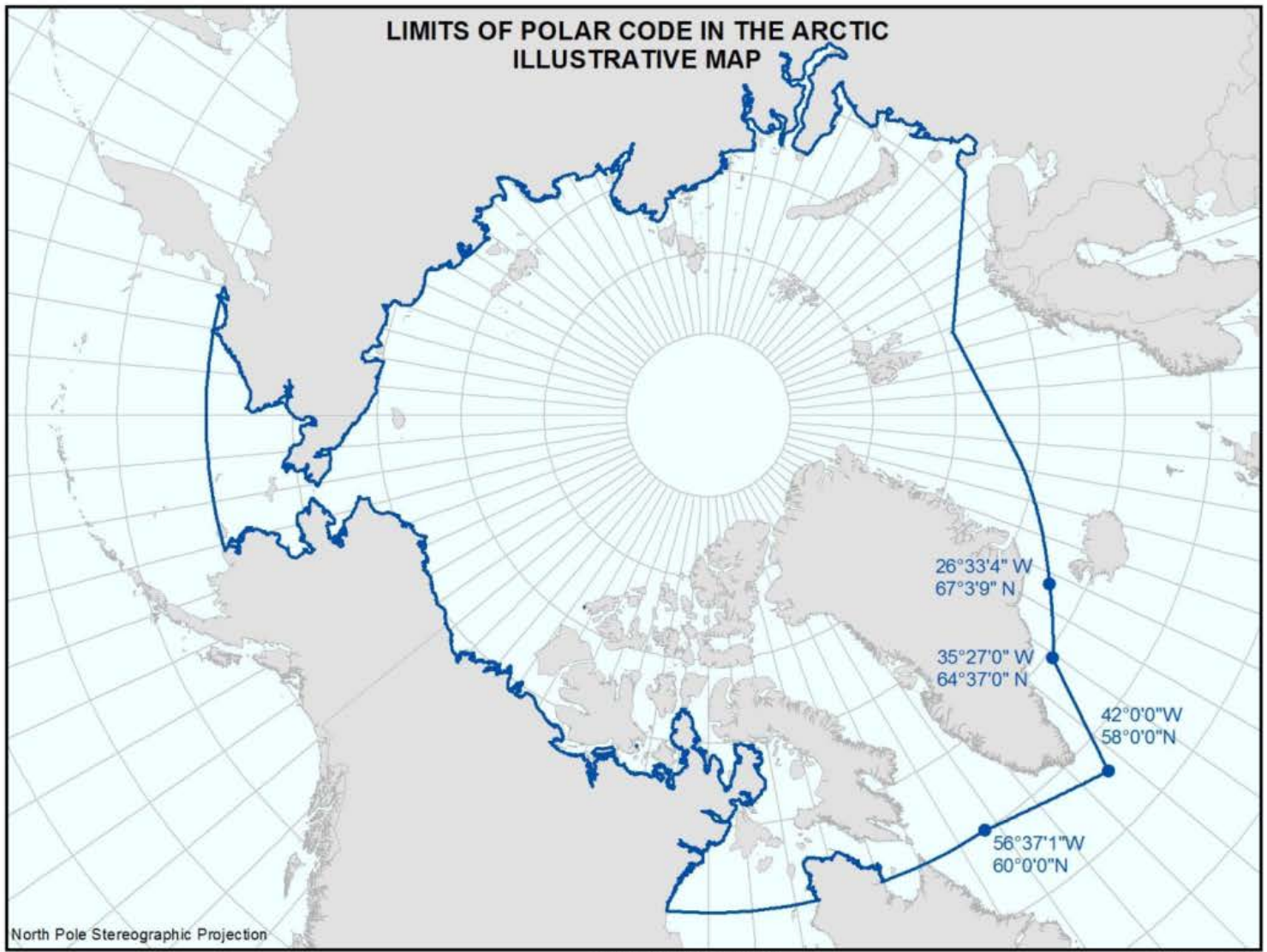
Chart the Arctic Region: Lead: DOC/NOAA; Supporting: DOD, DHS/USCG, DOI, DOS and DOT.

- ***Objective:*** Coordinate surveying, mapping & charting U.S. Arctic waters, hydrography, shorelines & topography
- ***Next Steps:***
 - Complete acquisition of U.S. Arctic elevation data & geoid model development
 - Transition to Arctic water level gauge operations
 - Increase public access to existing Arctic mapping data sets
 - Increase % of Bering Strait surveyed & charted (for future IMO routing /rules)
 - Increase % of potential U.S. Arctic deep draft ports & harbors of refuge surveyed & charted
 - Increase % of U.S. Arctic with comprehensive topographic mapping products.

Development of the IMO Polar Code

- **1993** ~ IMO Outside Working Group
- **1998** ~ Draft Polar Code to IMO
- **2002** ~ IMO Guidelines for Ships Operating in Arctic Ice-covered Waters
- **2004-09** ~ Arctic Council's Arctic Marine Shipping Assessment (Arctic States Call for Mandatory Application of Guidelines & Augmentation of IMO Conventions)
- **2006-08** ~ Draft IACS Unified Requirements for Polar Class Ships Adopted
- **2009** ~ IMO Guidelines Updated to Polar Waters
- **2010** ~ IMO Working Group on Mandatory Requirements
- **2014** ~ IMO MSC Approves Draft SOLAS Amendments
- **2017 (1 January)** ~ Polar Code in Force

LIMITS OF POLAR CODE IN THE ARCTIC ILLUSTRATIVE MAP



North Pole Stereographic Projection

Summary: Marine Safety ~ SOLAS & STCW Amendments in the Polar Code

- **Polar Ship's Structural Standards**
- **Marine Safety and Lifesaving Equipment**
- **Training & Experience Aboard Polar Ships**
 - **Polar Ship Certificate**
 - **Polar Waters Operations Manual**

Summary: Environmental Protection ~ MARPOL Amendments in the Polar Code

- **Annex I : Oil & Oily Mixtures (zero discharge)**
- **Annex II : Noxious Liquid Substances (zero discharge)**
 - **Annex IV : Sewage**
 - **Annex V : Food waste/garbage**
- **Waiting for Ballast Water Management Convention**

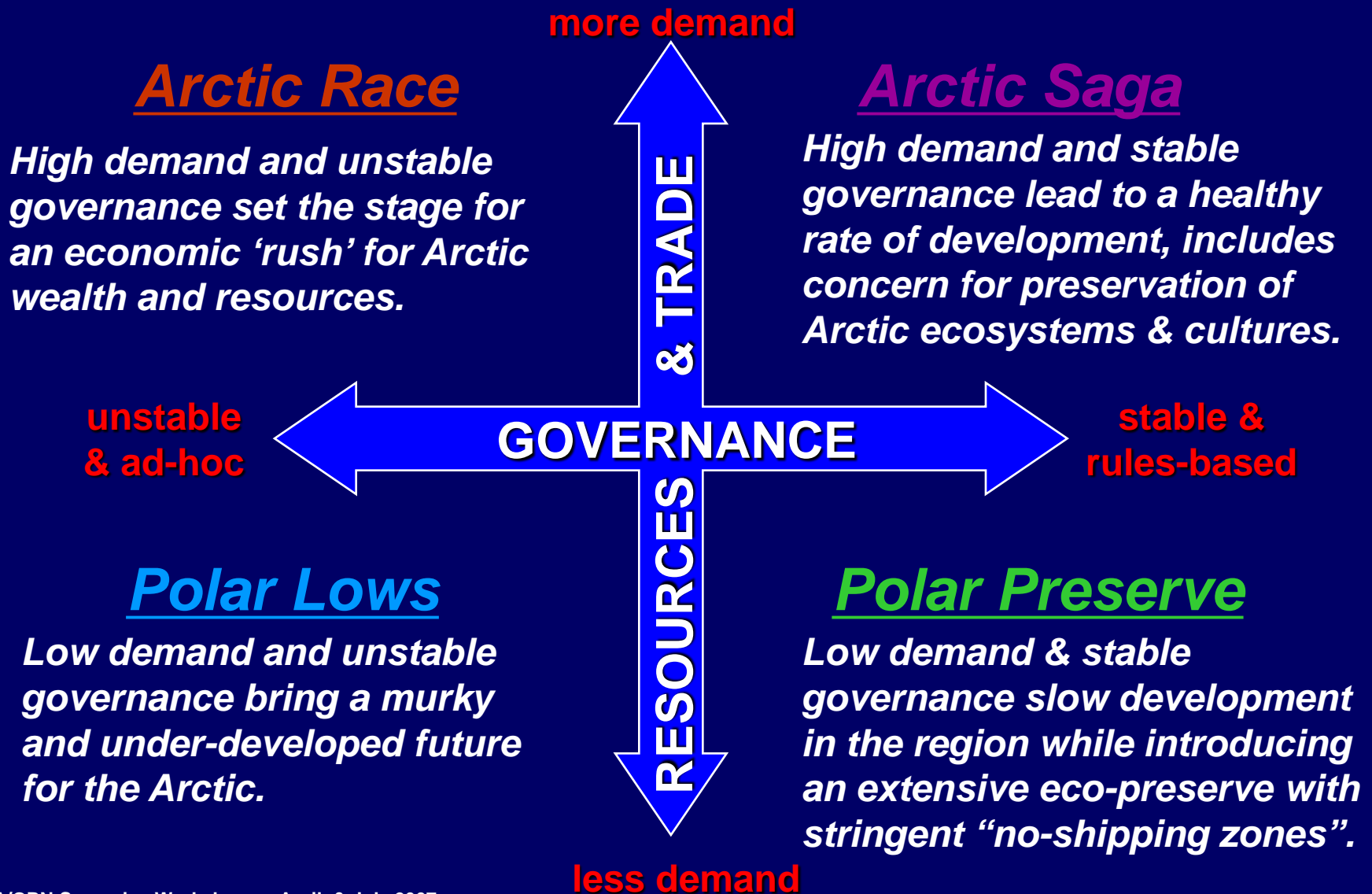
UAF Study ~ *Alaska & the New Maritime Arctic*

- **Completed 31 January 2015**
- **Grant from the State of Alaska Department of Commerce, Community & Economic Development**
- **International Workshop held 6-7 November 2014**
- **Report Sections on the U.S. Maritime Arctic:**
 - Sea Ice Changes; Marine Traffic; NSR & NWP Developments; Projected Impact of Arctic Offshore Hydrocarbon Development; Arctic Infrastructure Issues; Alaskan Arctic Maritime Workforce Potential**
 - Major Findings of the Study & International Workshop; and, Project Recommendations**

Major Findings of the Study


- (1) Arctic Natural Resource Development ~ primary driver of Arctic marine transportation (consistent with AMSA).**
- (2) Arctic Shipping Routes ~ unlikely to revolutionize the global shipping routes; *seasonal supplements* to existing routes.**
- (3) AMSA 17 Recommendations compare favorably with U.S. *National Strategy for the Arctic Region* themes & key issues.**
- (4) IMO Mandatory Polar Code ~ Arctic-specific rules & regulations for the U.S. maritime Arctic; in force 1 January 2017.**
- (5) Maximum winter Bering Sea ice edge has not changed much in 5 decades; earlier seasons of navigation in spring not anticipated.**

Scenarios on the Future of Arctic Marine Navigation in 2050



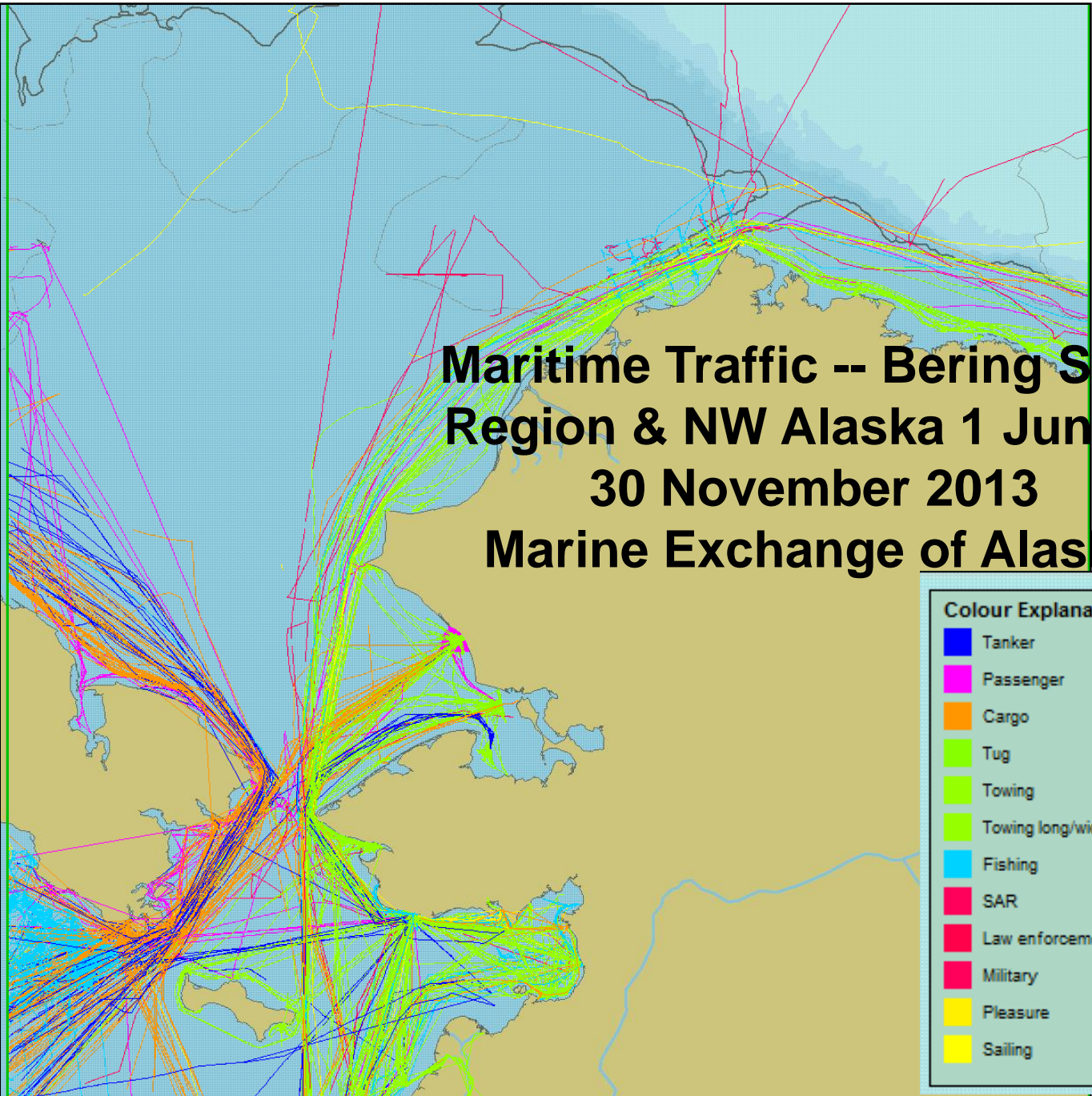
Major Findings ~ Continued

- (6) Minimum Arctic sea ice extent has retreated dramatically in 5 decades; anticipated longer autumn operational seasons for offshore drilling & coastal resupply.**
- (7) Highly seasonal marine traffic in the Bering Strait Region: no traffic Dec to May; key commercial traffic June to Nov; direct correlation to regional sea ice cover.**
- (8) Offshore hydrocarbon activity ~ most significant factor in increases in marine operations in the U.S. maritime Arctic for the next several decades; by 2025 in Chukchi Sea could plausibly have 100 support vessels (assuming 8 platforms)**
- (9) Hydrography & charting in the U.S. maritime Arctic ~ critical to safe navigation & facilitating coastal development of ports.**

A map of the Bering Strait region and Northwest Alaska. The landmasses are colored in a light tan or yellowish-brown, while the water bodies are light blue. The map shows the coastline of Alaska, including the Bering Sea, Chukchi Sea, and the Bering Strait. A green rectangular border is drawn around the map area. The text is centered over the map.

**Maritime Traffic -- Bering
Strait Region & NW Alaska
1 January to 31 May 2013
Marine Exchange of Alaska**

**Maritime Traffic -- Bering Strait
Region & NW Alaska 1 June to
30 November 2013
Marine Exchange of Alaska**



Major Findings ~ Continued

- (10) Arctic port in western Alaska ~ key to regional development; must be linked to natural resources exports & servicing the offshore hydrocarbon industry.**

- (11) Seasonal increase in marine traffic along the NSR; no indicators that large numbers of commercial ships will use the NWP.**

- (12) Key U.S. maritime Arctic infrastructure needs: hydrography & charting; Arctic observing networks; marine domain awareness; Alaska deepwater port; SAR & environmental response capacity; polar & coastal icebreaking capacity; defined Arctic transportation corridors.**

Arctic Ministers' Approval 29 April 2009 ~
Negotiated Text

Arctic Council
Arctic Marine Shipping
Assessment 2009 Report



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2002/2009

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Partnership for the Arctic Marine Environment

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