



Managing our Planet: the State of the Arctic (and National Security)



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Climate Change. Challenges. Solutions

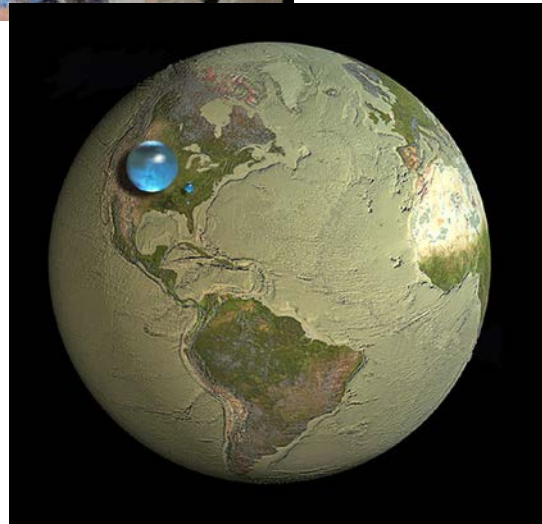
19 March 2014

Why Care About Climate Change?



- It's About *People*

- It's About *Water*



- It's About *Change*



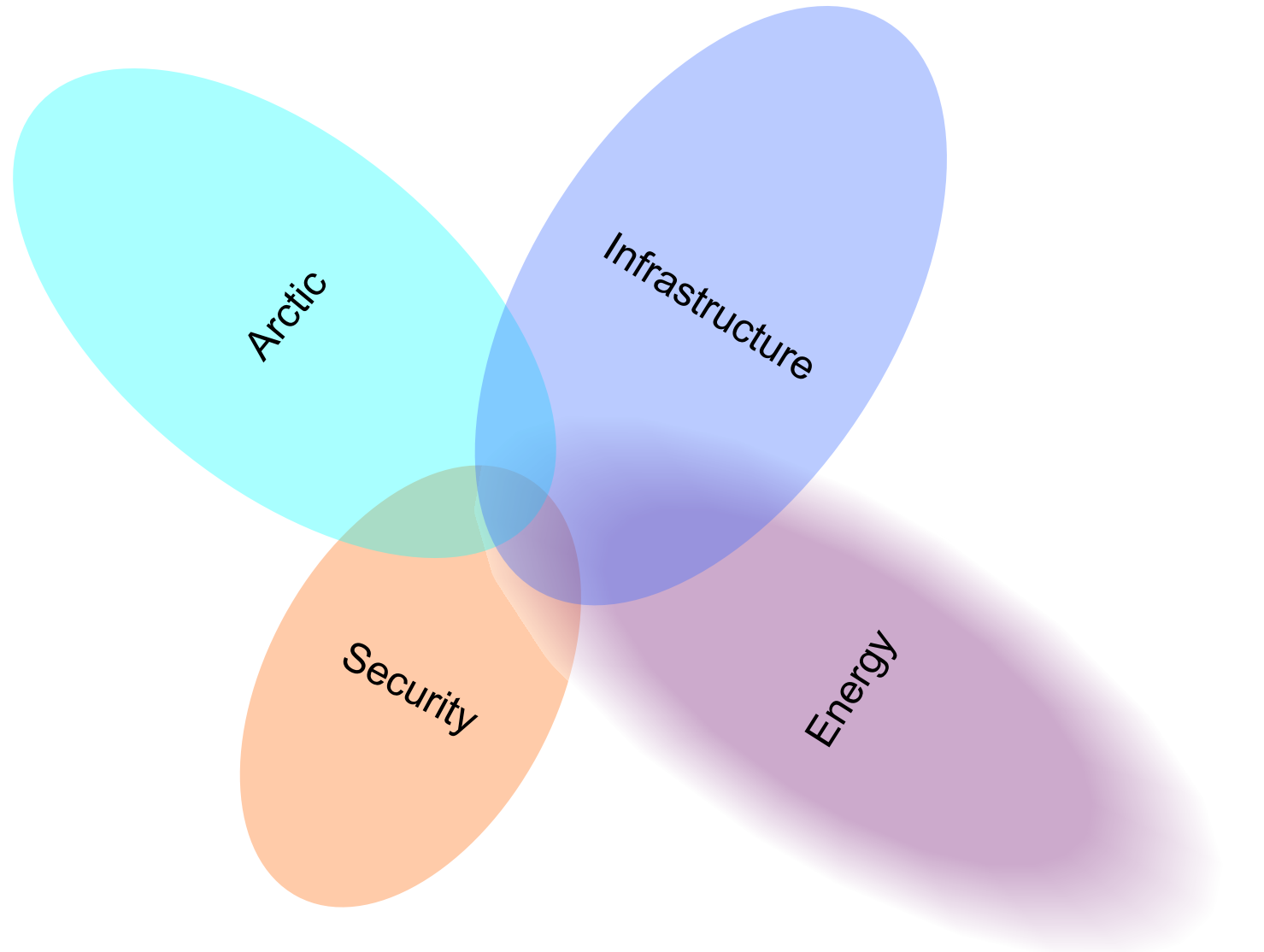
World Population (est.) 10,000 BC - 2,000 AD



Petascale and Beyond



Four Climate Components to Security

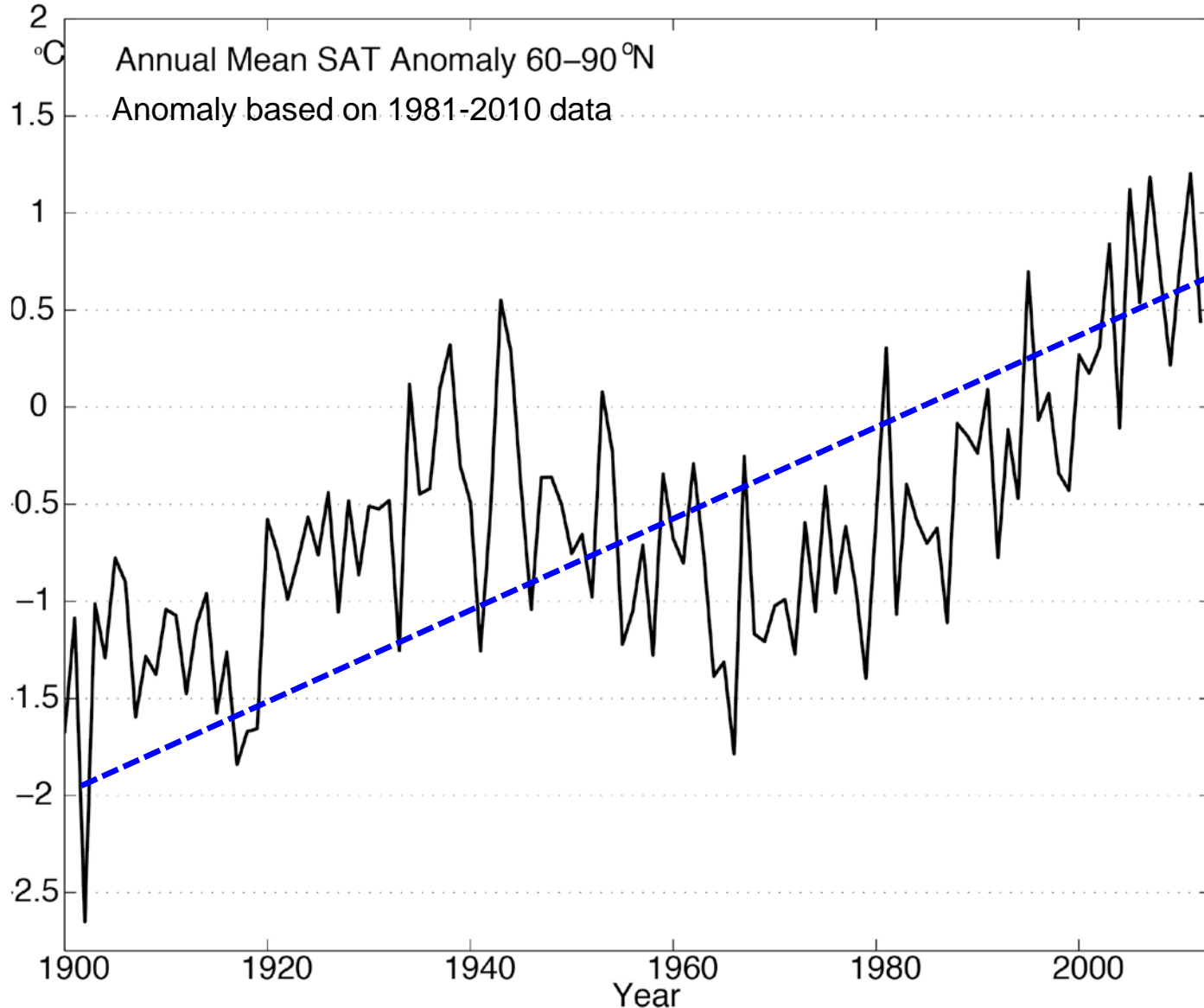




- It's an Ocean
- It's Changing
- It's not a Vacuum



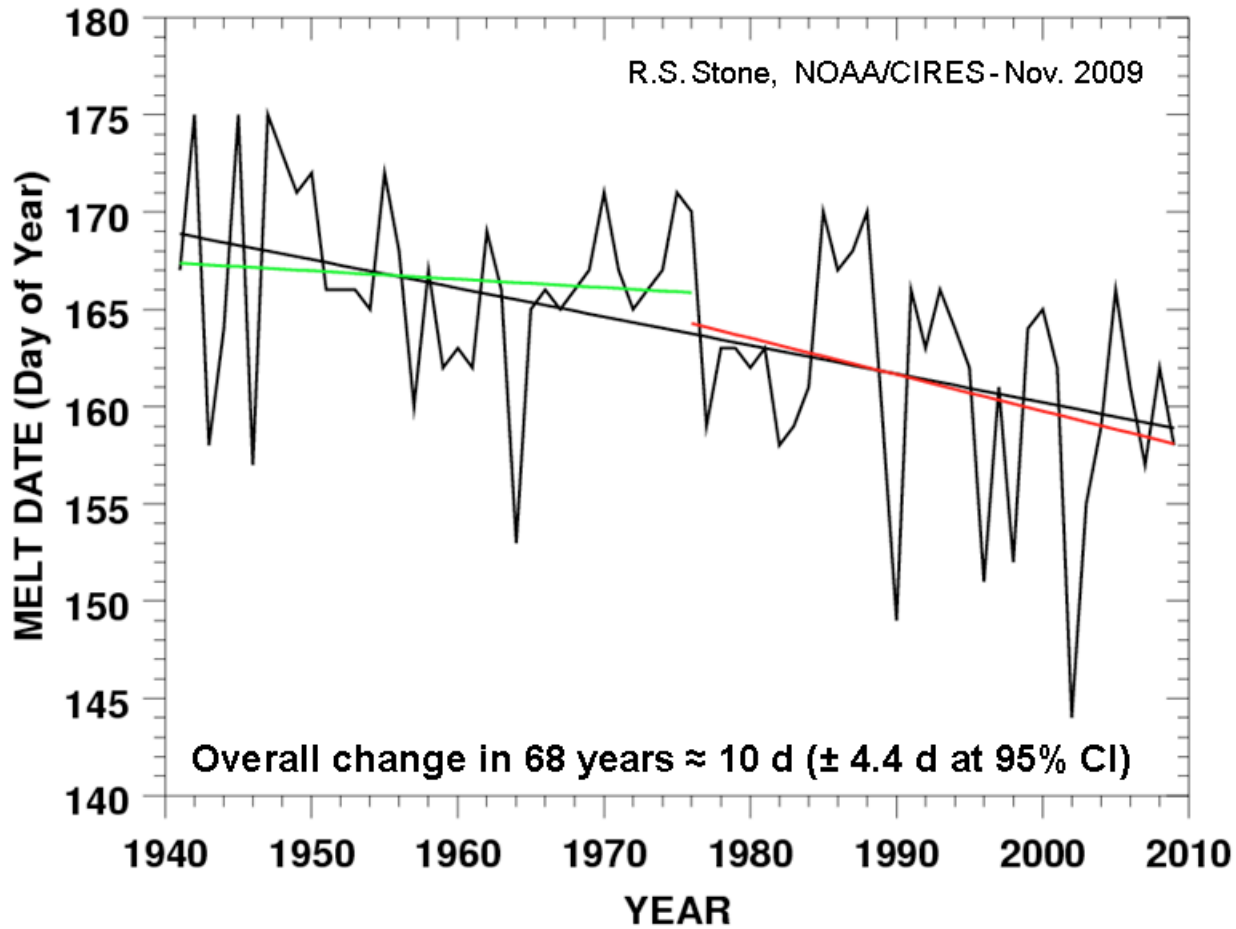
Arctic Surface Temperature Anomaly (1900 – 2013)





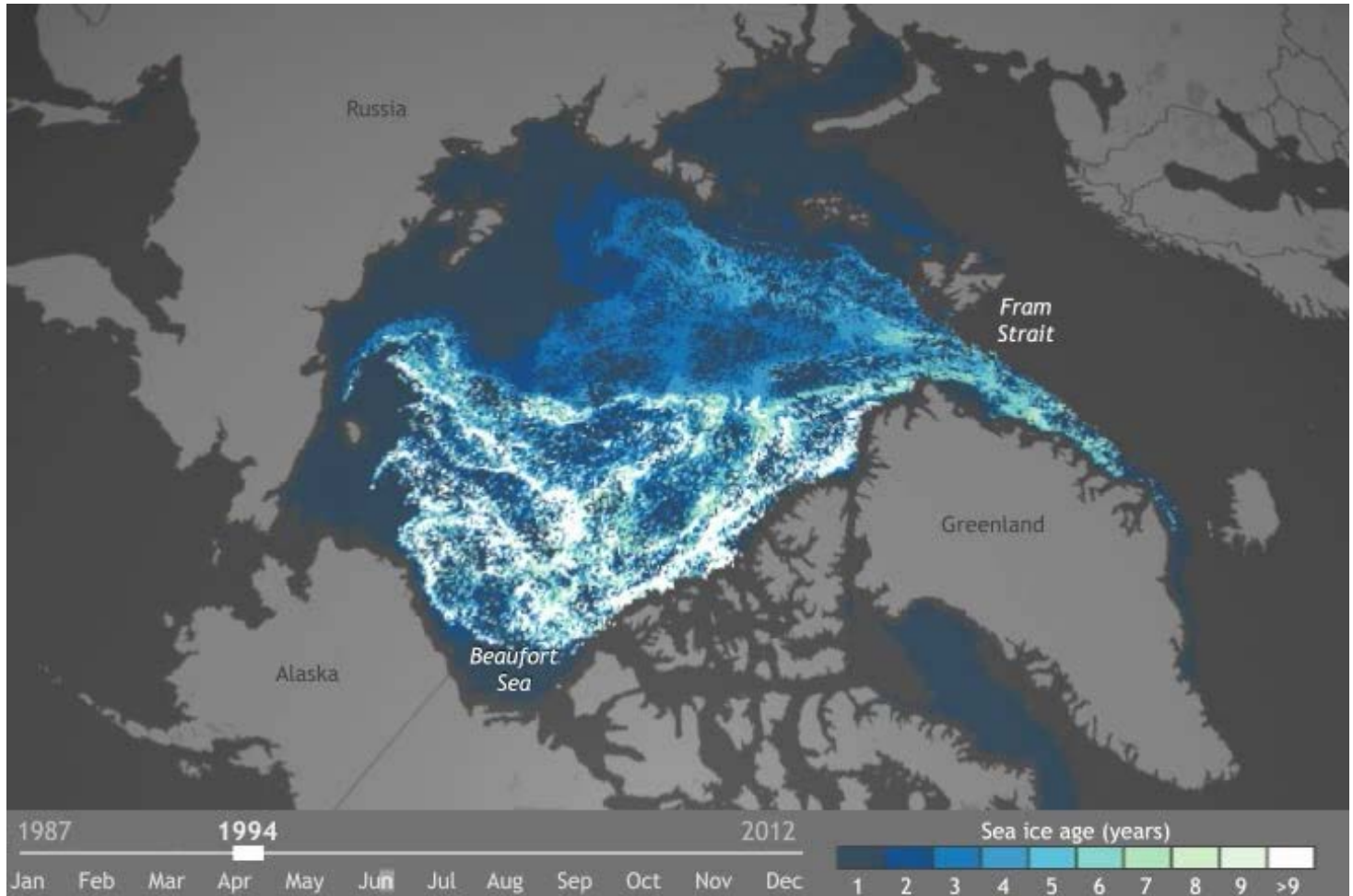
Barrow AK snow melt dates

NOAA BRW melt date time series, 1941-2009



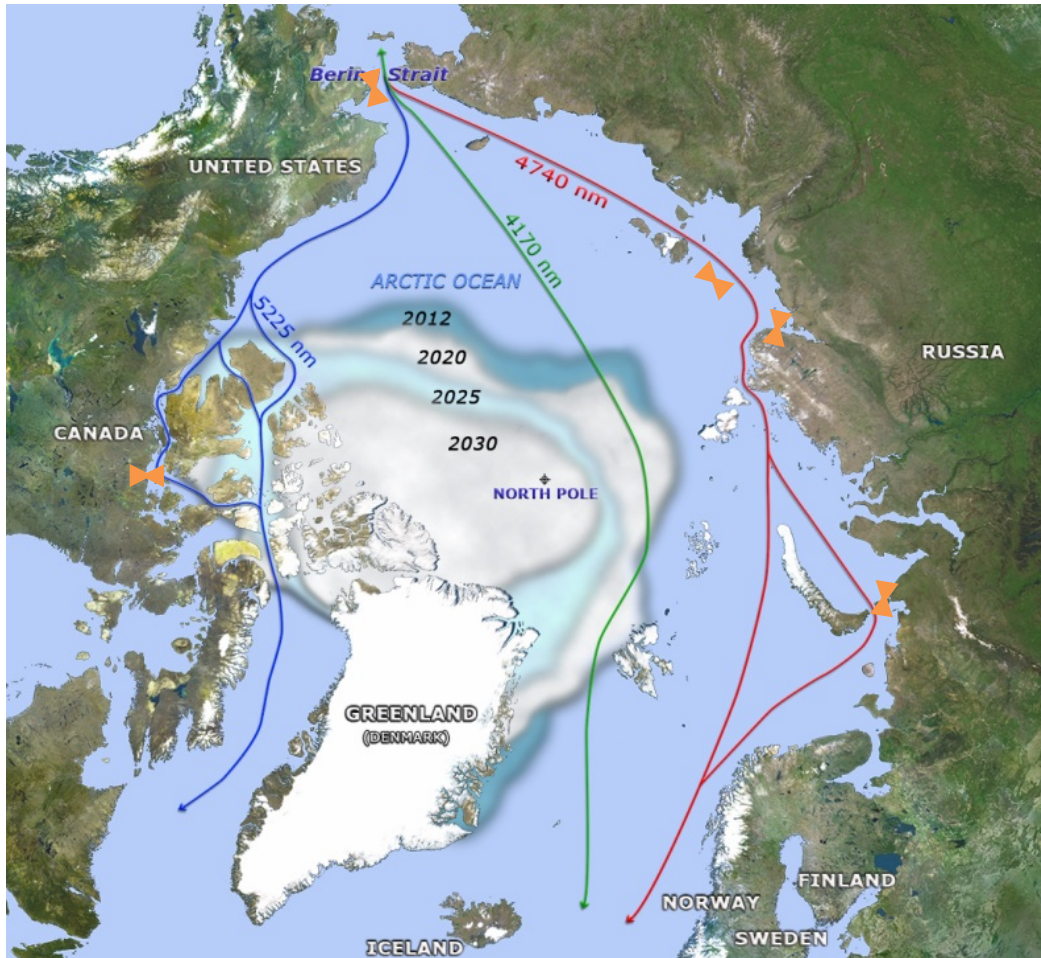


Arctic Sea Ice (1994 – 2012)





Arctic Trade Routes: Today & Tomorrow



Northern Sea Route

2025: 6 weeks open
41' controlling draft



Transpolar Route

2025: 2 weeks open
Deep ocean transit



Northwest Passage

2025: intermittently open
33' controlling draft

 Crossroads

Sea route distances:
Distance from the
Bering Strait to
Rotterdam

Courtesy: US Navy

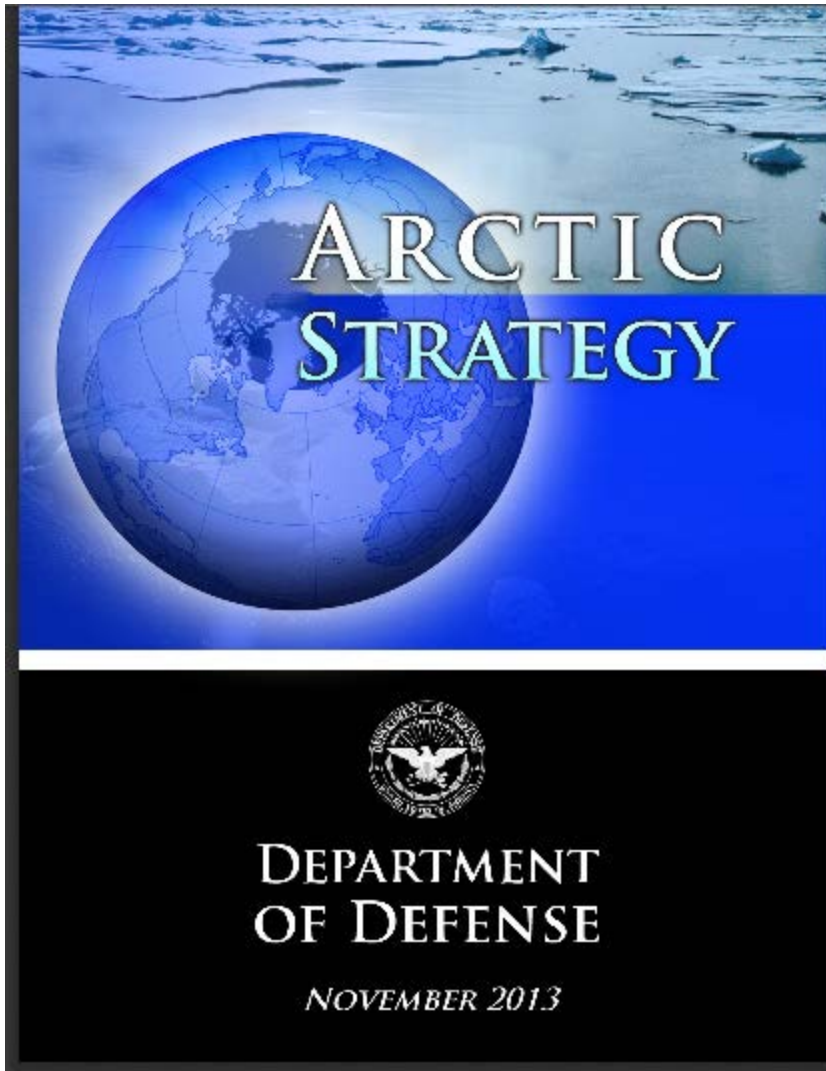


M/V NORDIC ORION Summer Cruise 2013





DoD Arctic Strategy



Desired End-States:

- Secure and Stable Region
- Safeguard US National Interests
- Protect US Homeland
- Pursue responsible stewardship
- Work cooperatively

National Arctic Implementation Plan



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White House Releases Implementation Plan for the National Strategy for the Arctic Region

Posted by Patrick Ventrell on January 30, 2014 at 01:09 PM EST



Today the White House released the Implementation Plan for the National Strategy for the Arctic Region. The Administration solicited input from Alaska Natives, the State of Alaska, Congress, academia, industry and others to develop an Implementation Plan that sets forth the guidelines for Federal Departments and Agencies to execute the National Strategy for the Arctic Region. The Implementation Plan complements and builds upon existing initiatives by Federal, State, local, and tribal authorities, the private sector, and international partners, and also focuses efforts where opportunities exist and action is most needed. It is designed to meet the reality of a changing Arctic environment and uphold our interests in safety and security, protect the environment, and work with international partners to pursue our global objective of combating the effects of climate change as described in the President's Climate Action Plan.

While the Implementation Plan is designed to guide the activities of Federal Departments and Agencies, successful implementation will depend upon active engagement and coordination with Alaska Natives and the State of Alaska. The Implementation Plan will be reviewed on an annual basis to ensure that progress continues to be made in

GIVE FEEDBACK ABOUT THIS PAGE

YOUR FEDERAL TAXPAYER RECEIPT



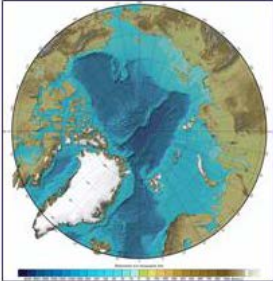
Launch the Receipt

WHITE HOUSE BLOGS

Arctic Considerations

Today

Poorly Charted



Limited Infrastructure

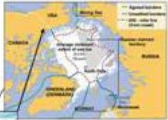


Harsh Operating Environment



Security Concerns

Maritime boundary Disputes
US-Canada
Russia-Norway



Allied Perspective



Opportunities
Russia & China



Transportation Access

Shipping industry requirements

- > 8+ weeks of ice-free conditions
- > Not anticipated for at least 40 years



Concerns

- > Insurance
- > Charts
- > SAR
- > Governance
- > Reliable sea-ice forecasts
- > Ice-strengthened hulls
- > Environmental compliance



One Scenario



The Arctic is not a vacuum – the changes in the region will also impact Asia

Navy Arctic Strategic Objectives

Signed by CNO on 21 May 2010



I. Contribute to safety, stability, & security in the region



IV. Strengthen existing & foster new cooperative relationships in the region



II. Safeguard U.S. maritime interests in the region



V. Ensure Navy forces are capable and ready



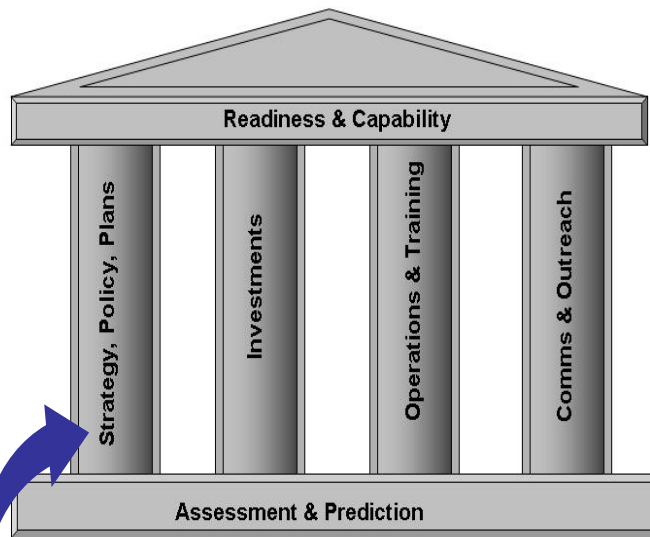
III. Protect the American people, our critical infrastructure, & key resources

Towards the desired end state: a safe, stable, and secure Arctic

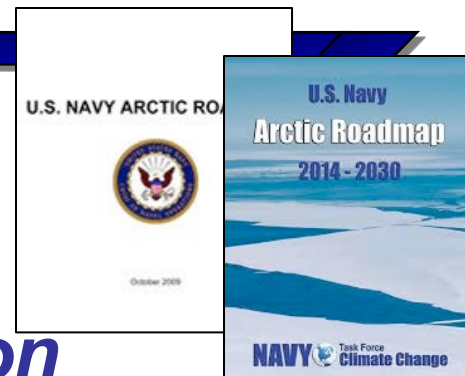


Navy Arctic Roadmap

Framework



Execution



Composition



Phase 1 (FY10)

- Fleet readiness assessment, external studies, strategic implementation plan
- Arctic SPP
- Advocate for UNCLOS****
- Monitor Polar SATCOM Program****
- Innovative Readiness Training (IRT)****
- Arctic TTX & LOE
- Cooperative Navy-NOAA Bering Strait Hydrographic Survey
- POM-12 investments for air-ocean-ice numerical prediction

Phase 2 (FY11-12)

- POM-14 CBA, NSP, & SPPs address the Arctic
- Formalize expanded / new cooperative partnerships
- Arctic SAREX, Arctic Edge, Northern Edge NANOOK ****
- ICEX-11
- Environmental assessments
- Support National Ocean Policy / Marine Spatial Planning Implementation For Arctic****
- Interagency partnership for air-ocean-ice numerical prediction

Phase 3 (FY13-14)

- Execute POM-14
- Implement expanded / new cooperative partnerships
- Arctic UUV operations
- Update roadmap ICW QDR

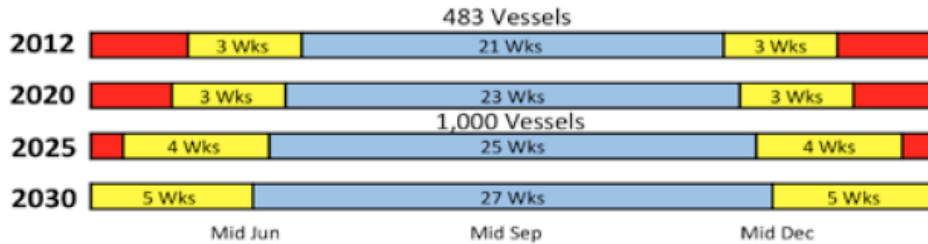
Navy recognized as a valued joint, interagency, & international partner in the Arctic

**** Indicates recurring action

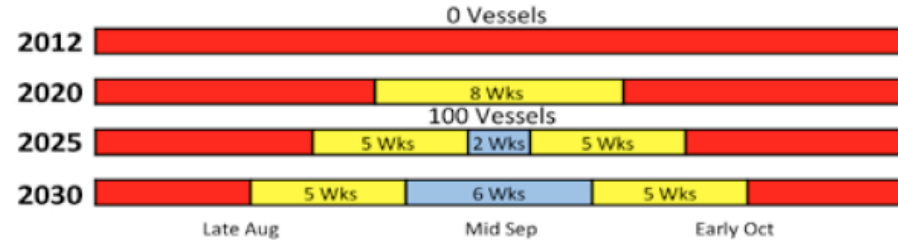
Navy Arctic Roadmap 2014

Arctic Sea Route Navigability

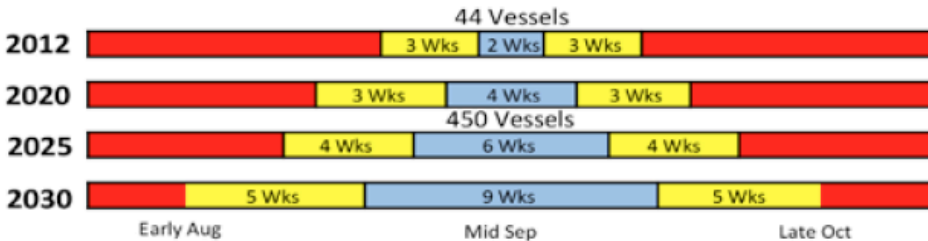
Bering Strait (BS)



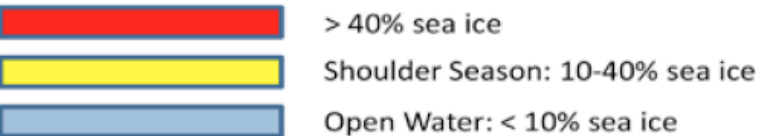
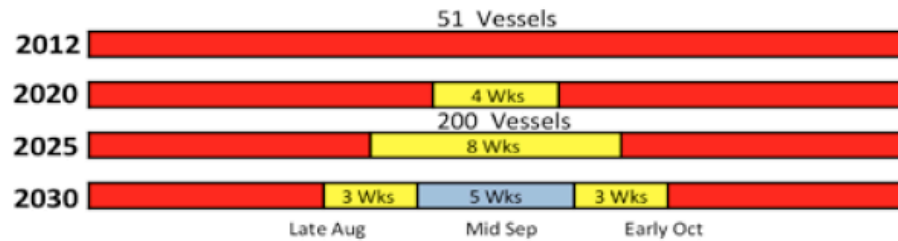
Transpolar Route (TPR) (4,170 NM)



Northern Sea Route (NSR) (4,740 NM)



Northwest Passage (NWP) (5,225 NM)





Arctic Roadmap 2014 Implementation Plan

Working Groups

- Policy, Strategy, Missions, & Plans
- Requirements
- Operations & Training
- Science & Technology
- Environmental Observation & Prediction
- Safe Navigation
- Maritime Domain Awareness
- Platforms, Weapons, & Sensors
- C4ISR
- Installations & Facilities
- Strategic Communications & Outreach



Near-term (present-2020)

- Primarily undersea and air presence
- Surface ship presence in open water
- Specify Requirements
- Investment decisions
 - Targeted increases
- Gain experience and expertise
 - S&T
 - Exchanges
 - Exercises
- Update Doctrine, CONOPS, TTPs
- Strengthen Partnerships

Mid-term (2020-2030)

- Be ready to respond to contingencies and emergencies
- Periodic presence
 - SAR, DSCA, FoN
- Deliver capability
- Gain additional experience and expertise

Far-term (FY30 and beyond)

- Operate deliberately for sustained periods as needed
- Manned, trained equipped:
 - Sub, surface, air, space, cyberspace

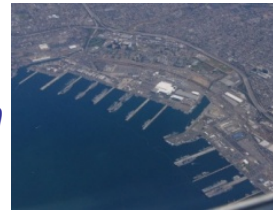
The roadmap leads to a force that is capable and ready to operate in the Arctic as needed

Naval Studies Board Recommendations

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine
NAVAL STUDIES
BOARD



Support ratification of United Nations Convention On the Law of the Sea



Address naval coastal installation vulnerabilities



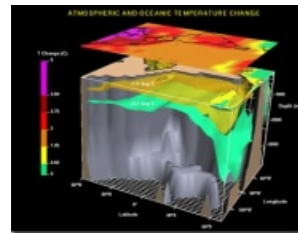
Prepare for increase in Humanitarian Assistance, Arctic missions



Address emerging technical requirements (e.g. polar ops)



Address partnership demands



Support research & development

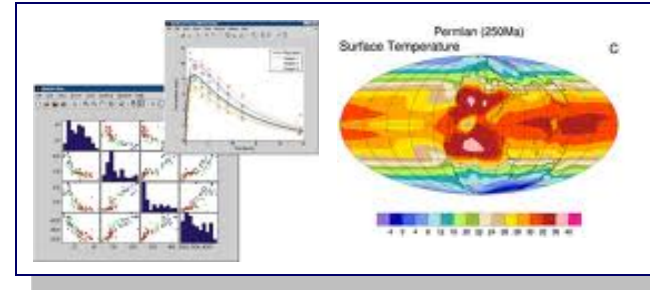
Navy action is already underway

UNCLASSIFIED

Improving Prediction Capability

Earth System Prediction Capability

Recapitalize aging suite of global atmospheric models



Interagency collaboration

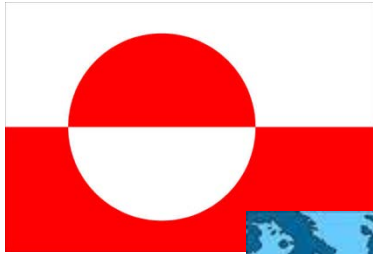
Revolutionary advancement National predictive architecture



Initial Navy investments in today's budget



Unexplored Contingencies



Leadership Counts



CNO
TENETS

- ★ WARFIGHTING FIRST
- ★ OPERATE FORWARD
- ★ BE READY

NAVY OPERATIONAL FORWARD
Change the Game

Discussion





Navy's Arctic Experience



1926
Admiral Byrd's first Over-flight of North Pole



1946
USS Midway tests carrier capabilities



1955-57
Sealift support to construct Distant Early Warning (DEW) line stations



1970's
Cold weather Underway Replenishment experiments



1990's
Submarines continue transits and research



1942-45
World War II: Dutch Harbor, Attu & Kiska



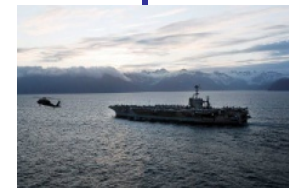
1951-52
Sealift support to enlarge Thule Air Force Base



1958
Nautilus first under-ice transit



1984-85
Arctic undersea exercises



2000's
Continuing Naval exercises



Arctic Trends Assessment

Commercial activity remains limited through 2030

- Shipping, oil, & gas extraction to grow after 2030
- Fishing to grow but only gradually
- Tourism & maritime research will increase the most



Harsh operating environment will remain the greatest limiting factor