

THE US AND ITS EMERGING ARCTIC INTEREST

A talk by

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6:30 pm



Haldane Room, Wilkins Building
University College London
Gower Street, London WC1E 6BT

Organised by:



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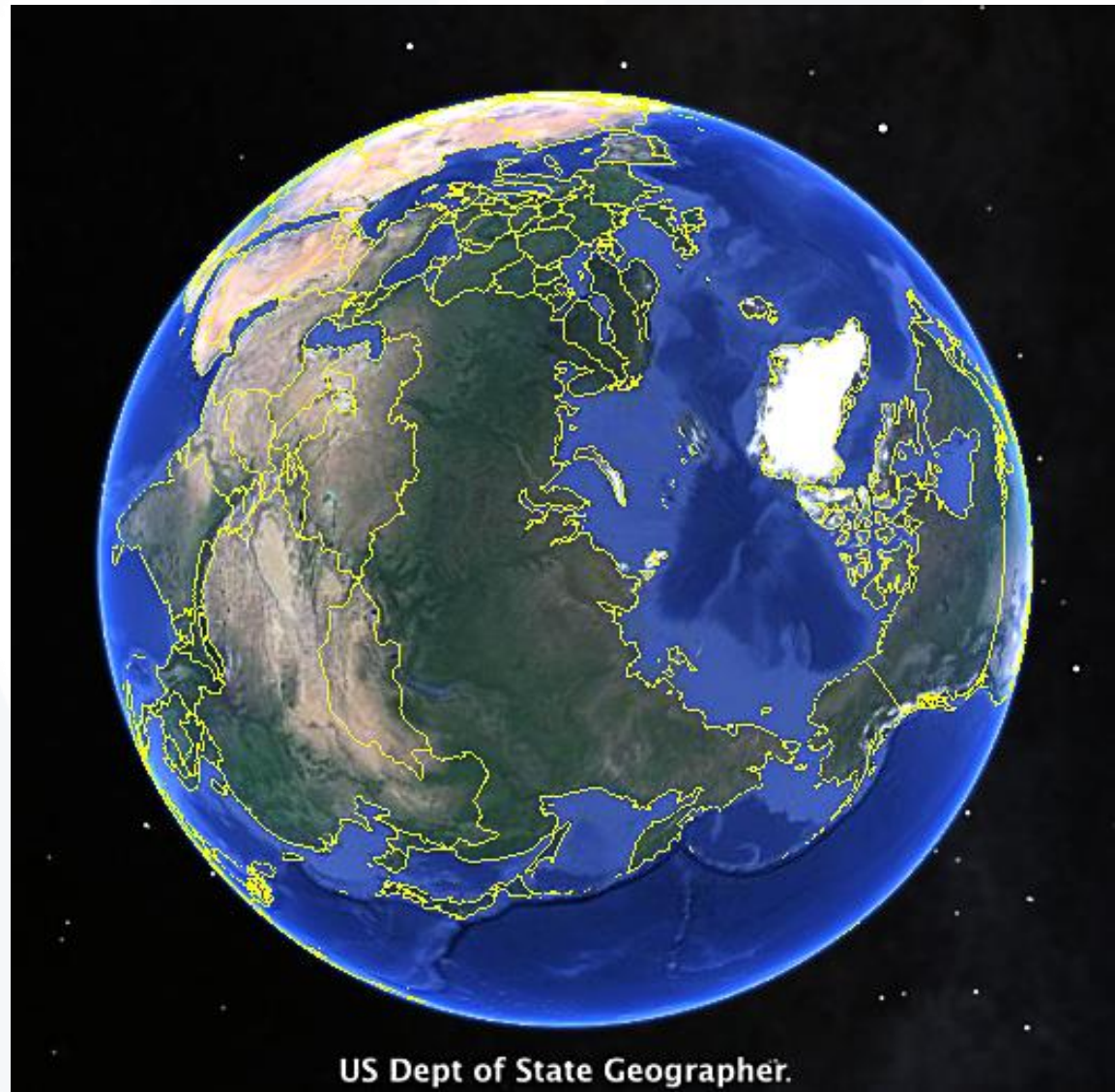
The Arctic Region



Names and boundary representation are not necessarily authoritative.

The Dynamic Arctic

- New US Administration
- Clarity in US Policy?
- Strategic Bering Strait
- Asian interests in the Arctic
- Russia and North Korea?
- Sustainable Arctic communities
- SAR
- Security: Environmental, Political, Economic, Social, Military
- Infrastructure



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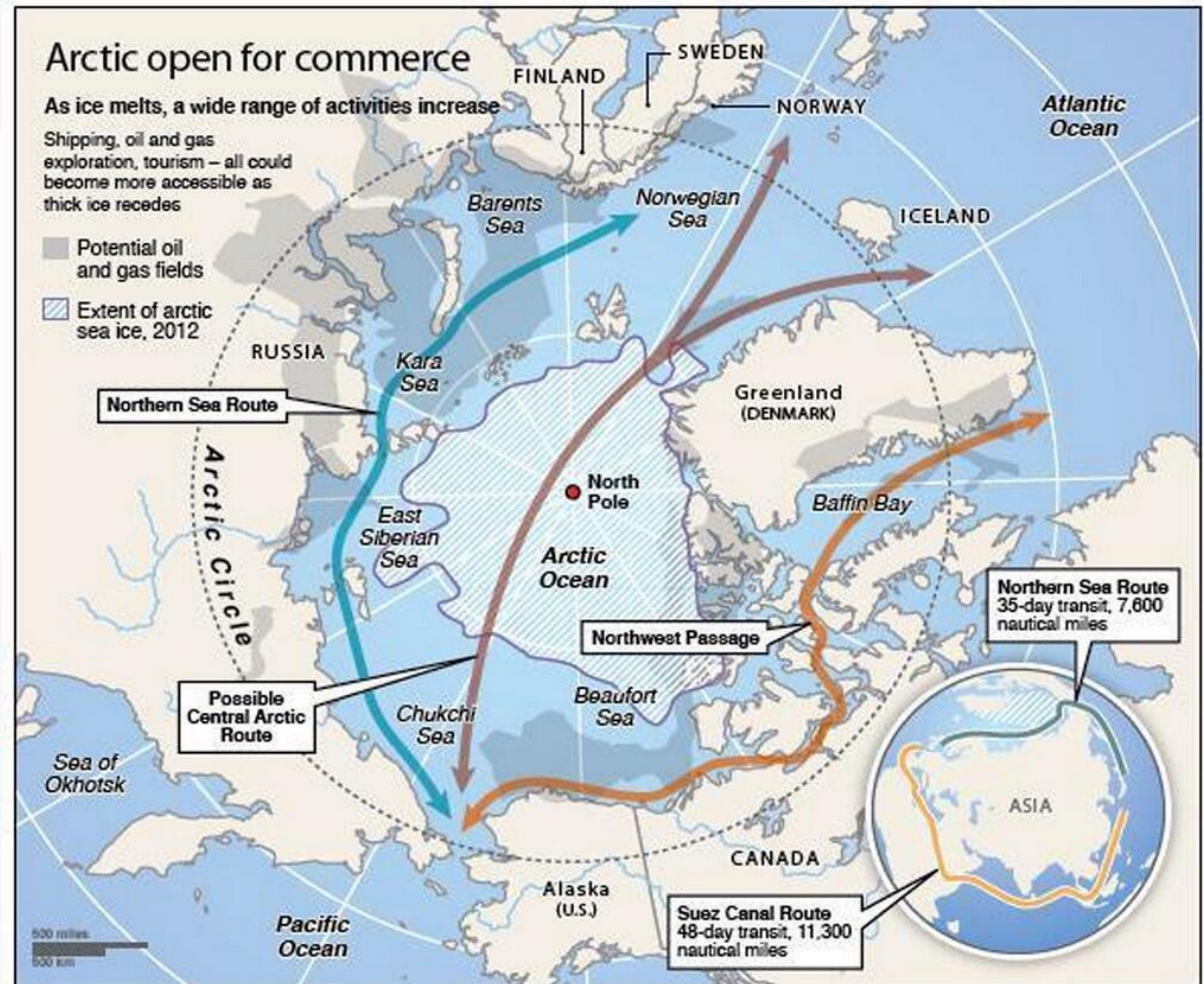
The Arctic is Changing

- Climate variability: temperature, phenology, hydrology
- Landscape transformation
- Increased use of resources
- Energy, mineral development and shipping
- Changing economies



Shipping, Commerce, and Tourism

- Northwest Passage
- Northern Sea-Route
- Search and Rescue Dilemmas



U.S. Geological Survey Report ~ July 2008



Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle

The U.S. Geological Survey (USGS) has completed an assessment of undiscovered conventional oil and gas resources in all areas north of the Arctic Circle. Using a geologically-based probabilistic methodology, the USGS estimated the occurrence of undiscovered oil and gas in 33 geologic provinces thought to be prospective for petroleum. The sum of the mean estimates for each province indicates that 99 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids may remain to be found in the Arctic, of which approximately 84 percent is expected to occur in offshore areas.



Discovered and undiscovered oil and gas resources in the Arctic Circle, Alaska, summer 2007. USGS photo by David Stockman.

Introduction

In May 2008, a team of U.S. Geological Survey (USGS) scientists completed an appraisal of possible future additions to world oil and gas reserves from new field discoveries in the Arctic. This Circum-Arctic Resource Appraisal (CARA) evaluated the petroleum potential of all areas north of the Arctic Circle (66°50' north latitude); quantitative measurements were conducted in those geologic areas considered to have at least a 10-percent chance of one or more significant oil or gas accumulations. For the purposes of the study, a significant accumulation contains recoverable volumes of at least 50 million barrels of oil and/or oil-equivalent natural gas. The study included only those resources believed to be recoverable using existing technology but with the important assumption that offshore areas that the resources would be recoverable even in the presence of permanent sea ice and ocean water depth. No economic considerations are included in these initial estimates; results are presented without reference to costs of exploration and development, which will be important in many of the assessed areas. So-called unconventional resources, such as coal bed methane, gas hydrates, oil shale, and tar sand, were explicitly excluded from the study. Full details of the CARA study will be published later.

A number of offshore areas in Canada, Russia, and Alaska already have been explored for petroleum, resulting in the discovery of more than 400 oil and gas fields north of the Arctic Circle. These fields account for approximately 240 billion barrels (BBOB) of oil and oil-equivalent natural gas, which is about 10 percent of the world's known conventional petroleum resources (cumulative production and remaining proved reserves). Nevertheless, most of the Arctic, especially offshore, is essentially unexplored with respect to petroleum. The Arctic Circle encompasses about 6 percent of the Earth's surface, an area of more than 21 million km² (8.1 million mi²), of which about 8 million km² (3.1 million mi²) is offshore and more than 7 million km² (2.7 million mi²) is on continental shelves under less than 500 m of water. The extensive Arctic continental shelves may constitute the

geographically largest unexplored prospective area for petroleum remaining on Earth.

Methodology

A newly compiled map of Arctic sedimentary basins (Arthur Grant and others, unpublished work) was used to define geologic provinces, each containing more than 3 km of sedimentary strata. Assessment units (AUs)—mappable volumes of rock with common geologic traits—were identified within each province and quantitatively measured for petroleum potential. Because of the sparse seismic and drilling data in much of the Arctic, the usual tools and techniques used in USGS resource assessments, such as discovery process modeling, prospect delineation, and deposit simulation, were not generally applicable. Therefore, the CARA relied on a probabilistic methodology of geological analysis and analog modeling. A world analog database (Chapman and others, 2006) was developed using the AUs defined in the USGS World Petroleum Assessment 2000 (USGS World Assessment Team, 2000). (Continued on back page)

U.S. Department of the Interior
U.S. Geological Survey

USGS Fact Sheet 2008-3049
2008

“Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle”

–13% Undiscovered Oil

–30% Undiscovered Natural Gas

–20% Undiscovered Natural Gas Liquids

<http://pubs.usgs.gov/fs/2008/3049/>

New Arctic Resource Discoveries



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Ice-Breakers and Polar-Class Vessels



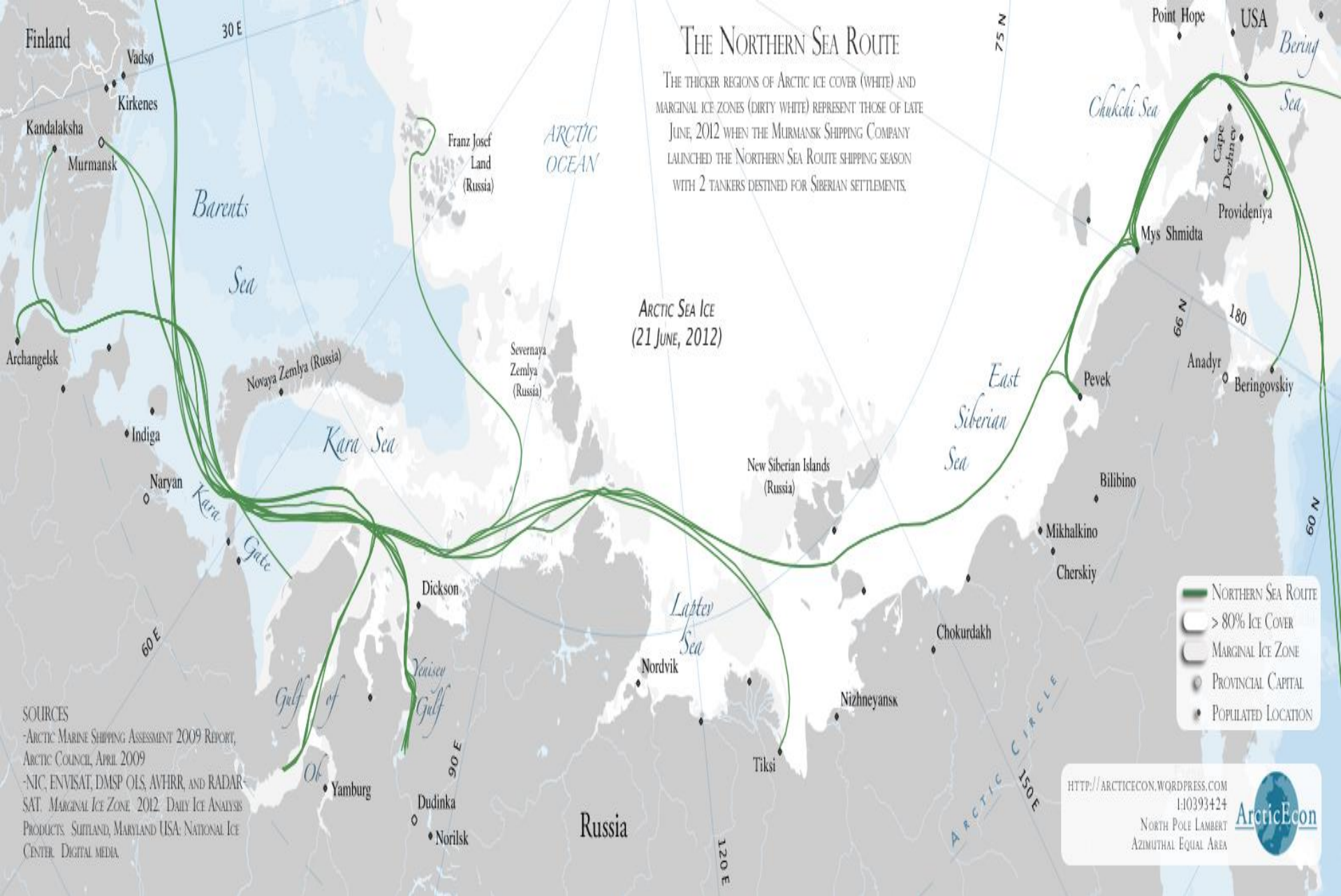
Russia in the Arctic

- The Arctic is an Important Component of Russian Identity, Economic Development, Security Buffer, and Projection of Force and Influence



The US, RUSSIA and the Arctic







Yamal Project: LNG Icebreaking Carrier Plan

WINTER (mid Nov~June)

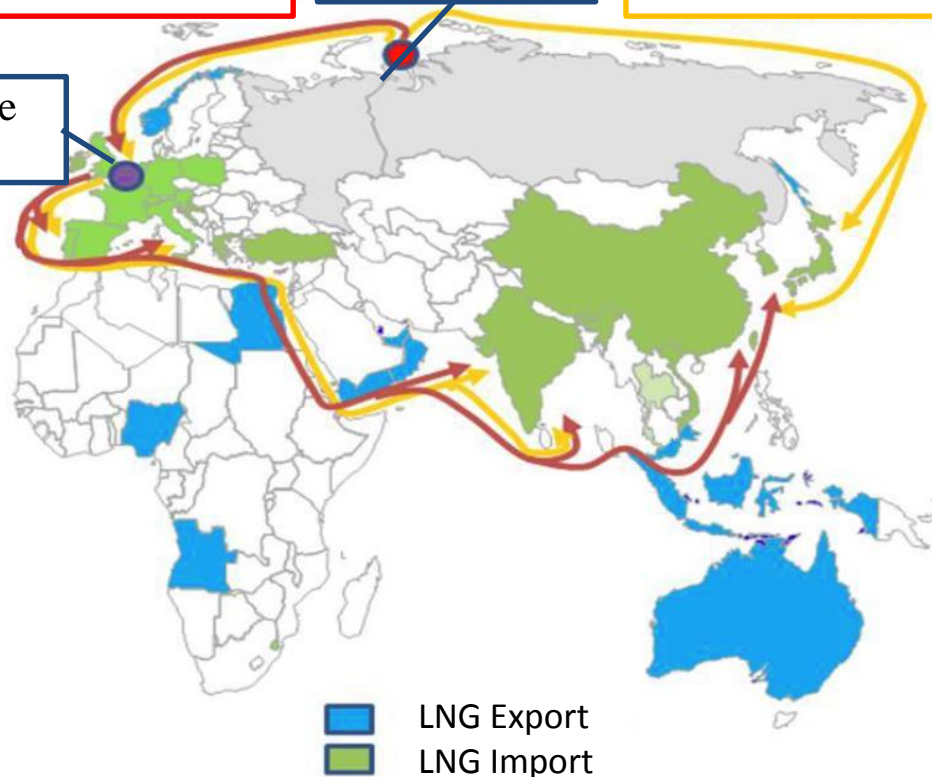
- ARC7 15 LNGCs shuttle to Europe
- Light ice-class LNGCs (ARC4 or less, up to 11 ships) to Asia
- ✓ Distance: 13,700 miles
- ✓ One voyage: 55 days @10 knots

SUMMER (July~mid Nov)

- ARC7 15 LNGCs to Asia via NSR transit.
- ✓ Distance: 4,900 miles
- ✓ One voyage: 20 days @10 knots

Yamal LNG
Terminal at
Sabetta

Trans Shipment in Europe
(Zeebrugge port)



YAMAL Arc7/PC4 LNG Carrier







[illegible]



“Of the 18 vessels going transit on the NSR in 2015, ten were Russian, two were Chinese, one Dutch and one Swedish. The Chinese general cargo carrier «Yong Sheng», which shipped twice along the route, alone accounted for more than 75 percent of the 2015 NSR cargo”

<http://www.thebarentsobserver.com/industry/2016/02/historical-low-northern-sea-route>



"One Belt One Road" is China's roadmap for building infrastructure and trade ties. It consists of a land route from Beijing to the Netherlands, and a sea route from Quanzhou to both Antwerp and Australia.

ONE BELT, ONE ROAD

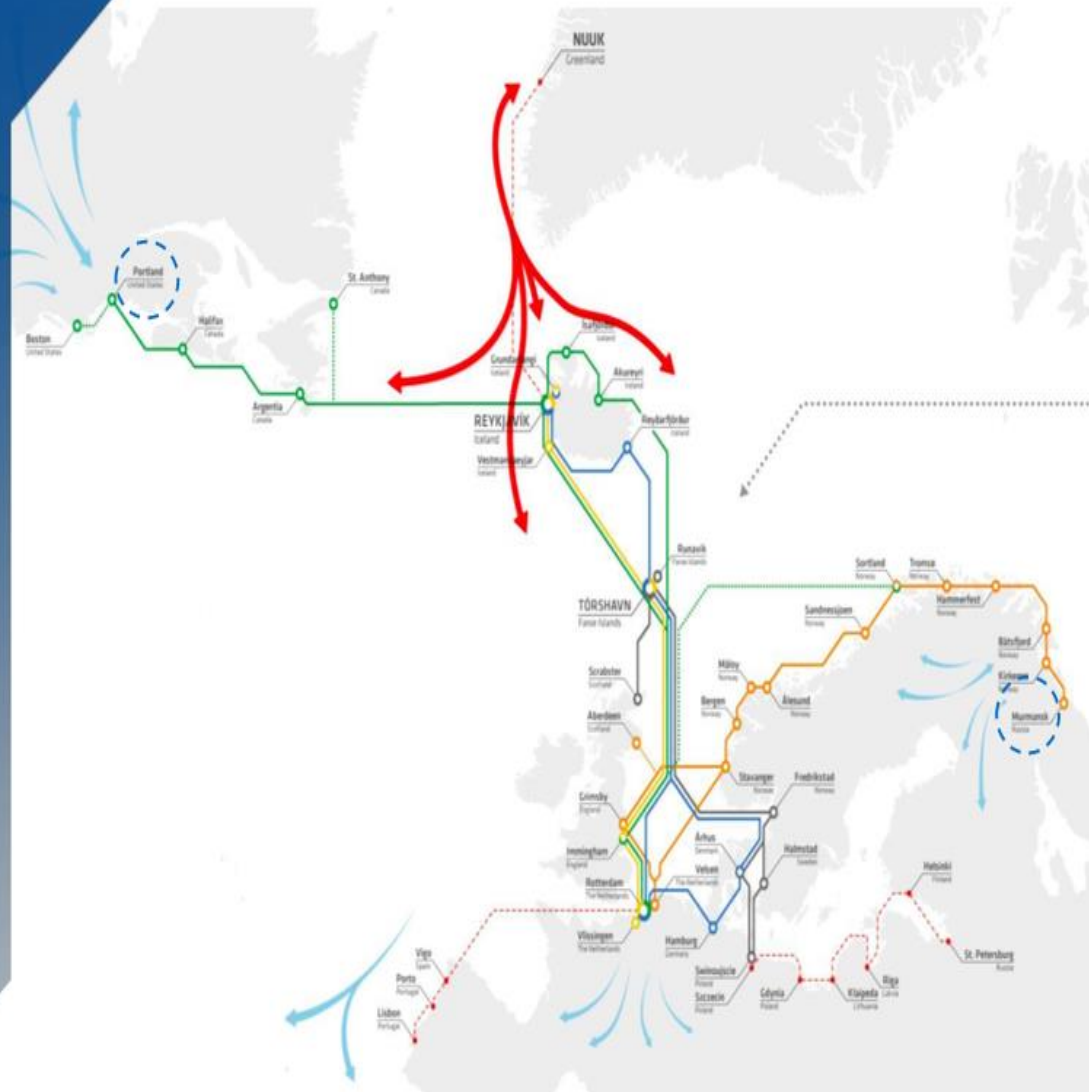


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New Connection

Weekly service to Greenland

- Eimskip and Royal Arctic Line, the national carrier of Greenland, signed a cooperation agreement in January
 - Connect Greenland to the rest of the world
 - Vast natural resources
 - Capacity sharing on larger vessels
 - Increases efficiency and service reliability





The Wilson Center - Arctic Circle Forum:

The United States and Russia in the Arctic

June 21-22, 2017

#ArcticinDC

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United Kingdom



Netherlands



Germany



Poland



France



Spain



The Arctic Council



Arctic Countries

Permanent Participants (indigenous peoples organizations)

OBSERVERS

Arctic Council



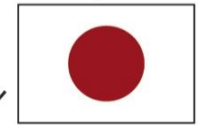
China



Italy



Japan



Korea



Singapore



India



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ARCTIC COUNCIL

Arctic Council Structure

2015 – 2017 Chairmanship: **UNITED STATES**

*Six indigenous groups (“Permanent Participants”) participate at all levels

Ministers



Senior Arctic Officials (SAOs)



Working Groups

Task Force on Scientific Cooperation
Co-chairs:
US, RUS

Expert Group on Black Carbon and Methane
Chair:
US

Task Force on Arctic Marine Cooperation
Co-chairs:
US, NOR, IC

Task Force on Arctic Telecommunications Infrastructure
Co-chairs:
NOR, DK

Arctic Monitoring and Assessment Program (AMAP)
Chair: **Finland**

Arctic Contaminants Action Program (ACAP)
Chair: **Sweden**

Protection of the Arctic Marine Environment (PAME)
Chair: **Canada**

Emergency Prevention Preparedness and Response (EPPR)
Chair: **United States**

Conservation of Arctic Flora and Fauna (CAFF)
Chair: **Norway**

Sustainable Development Working Group (SDWG)
Chair: **United States**



Chairmanship Thematic Pillars and Projects

ARCTIC COMMUNITIES

Mental Wellness and Suicide Prevention ● Clean Energy ● Water
Sanitation and Health ● Telecommunications Infrastructure ● Freshwater
Security

ARCTIC CLIMATE

Short Lived Climate Pollutants ● Arctic Resilience ● Pan-Arctic Digital
Elevation Model ● Climate Change Indicator System

ARCTIC OCEAN

Search and Rescue Exercises ● Ocean Acidification ● Marine
Environmental Protection ● Marine Protected Areas Network

**ARCTIC SEARCH AND RESCUE AGREEMENT
AREAS OF APPLICATION
ILLUSTRATIVE MAP**





THE ARCTIC

This fitting image commemorates the first-ever White House Arctic Science Ministerial held September 28, 2016, convening 25 foreign governments to build an international response to the Arctic science challenges of today and tomorrow.

True color image of Arctic sea ice on 2 September 2016 from the Suomi NPP VIIRS instrument, jointly operated by NASA and NOAA. Background imagery is from the NASA Blue Marble. Image created by the NASA Earth Observatory with input from the NASA Goddard Cryospheric Sciences Lab.



Canada — China — Denmark — Greenland — Faroe Islands —
Finland — France — Germany — Iceland — India — Italy — Japan
— Korea — Netherlands — New Zealand — Norway — Poland —
Russian Federation — Singapore — Spain — Sweden —
Switzerland — United Kingdom — **U.S.A.** — European Union



Themes and Deliverables

1. Arctic Science Challenges and their Regional and Global Implications

Diminishing Sea Ice — Warming and Thawing Permafrost — Glacier Mass Loss — Ecosystem Responses

2. Strengthening and Integrating Arctic Observations and Data Sharing

An Integrated Arctic Observing System & Strengthening Sustaining Arctic Observing Networks (SAON) — Multidisciplinary Drifting Observatory for the Study of Arctic Climate — Community-based Observing — Year of Polar Prediction

3. Applying Expanded Scientific Understanding of the Arctic to Build Regional Resilience and Shape Global Responses

Societal Challenges — Community Adaptation — Operational Forecasting — Global Responses

4. Arctic Science as a Vehicle for STEM (Science, Technology, Engineering & Mathematics) Education and Citizen Empowerment

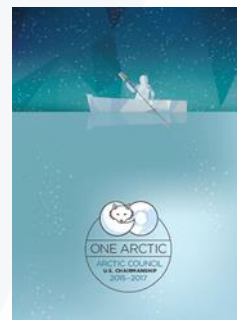
Arctic Science for Arctic STEM Education — Arctic Science for STEM Education Outside the Arctic — Arctic Education Summit



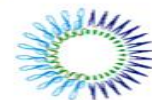
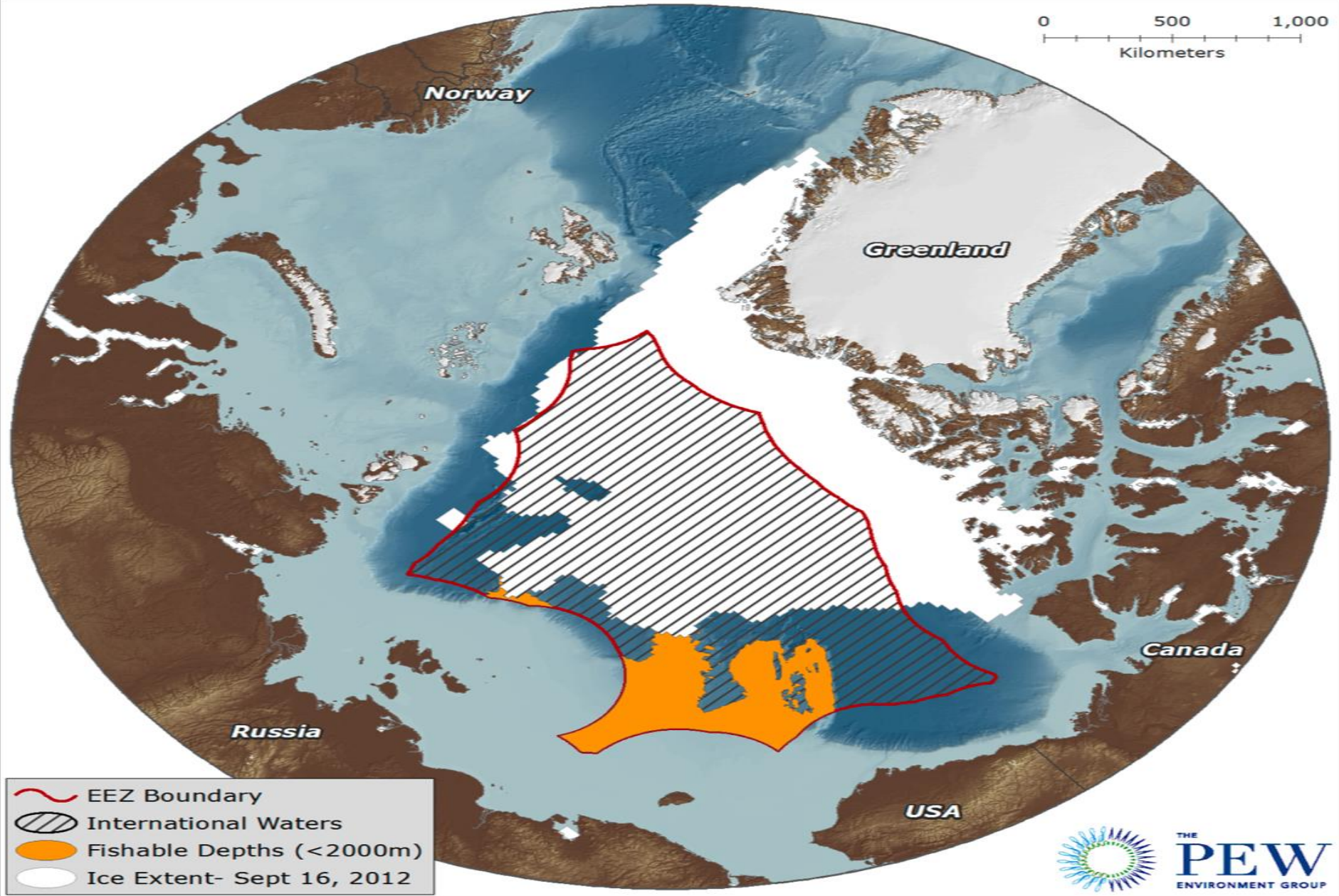


Finish Arctic Council Chairmanship

Mitigation of and Adaptation to Climate Change and on Sustainable Development



- Search and Rescue
- Satellite Use in the Arctic
- Addressing basic education
- Symposium of Arctic educators
- Addressing global warming through scientific cooperation and the Paris Climate Agreement
- Public environmental impact assessment
- Three pillars of sustainable development for Arctic populations
 - Economic
 - Social
 - Environmental
- Cooperation in maritime security
- Strengthening the role of the Arctic Council Secretariat
- Strengthen relationships with other Arctic groups and forums
- Continue long-term strategic planning
- Disaster Response
 - Oil spill cleanup
- Energy development in the Arctic



THE
PEW
ENVIRONMENT GROUP



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The Arctic Region



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