



UNIVERSITY OF  
CALGARY

Department of Political Science



# The Impact of Climate Change on Transportation in Canada's North: The Strategic Reality

Advantage North: Resource Development and  
Northern Transportation Conference

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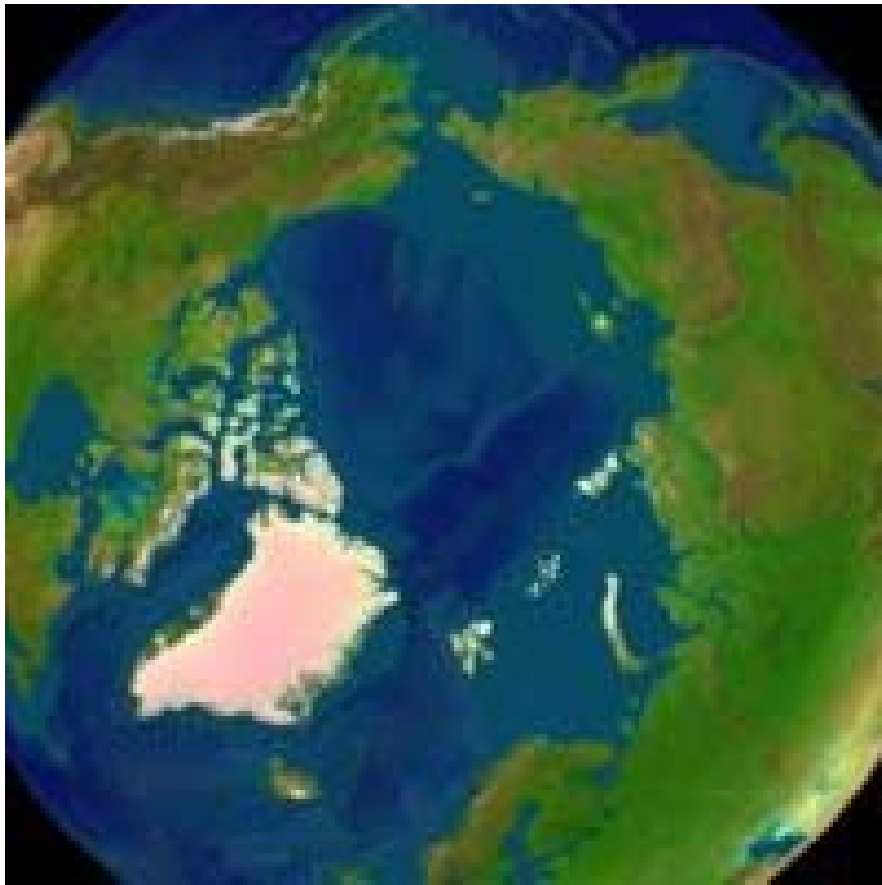
# Main Themes

- Arctic is in a state of massive transformation that will allow for new transportation opportunities and challenges
- “Others” are thinking and “doing” transportation in the Arctic
- Change is occurring in a non-linear fashion
- Climate Change is creating a reality and perception that Arctic is more accessible
- Accessibility creates Security and Sovereignty needs

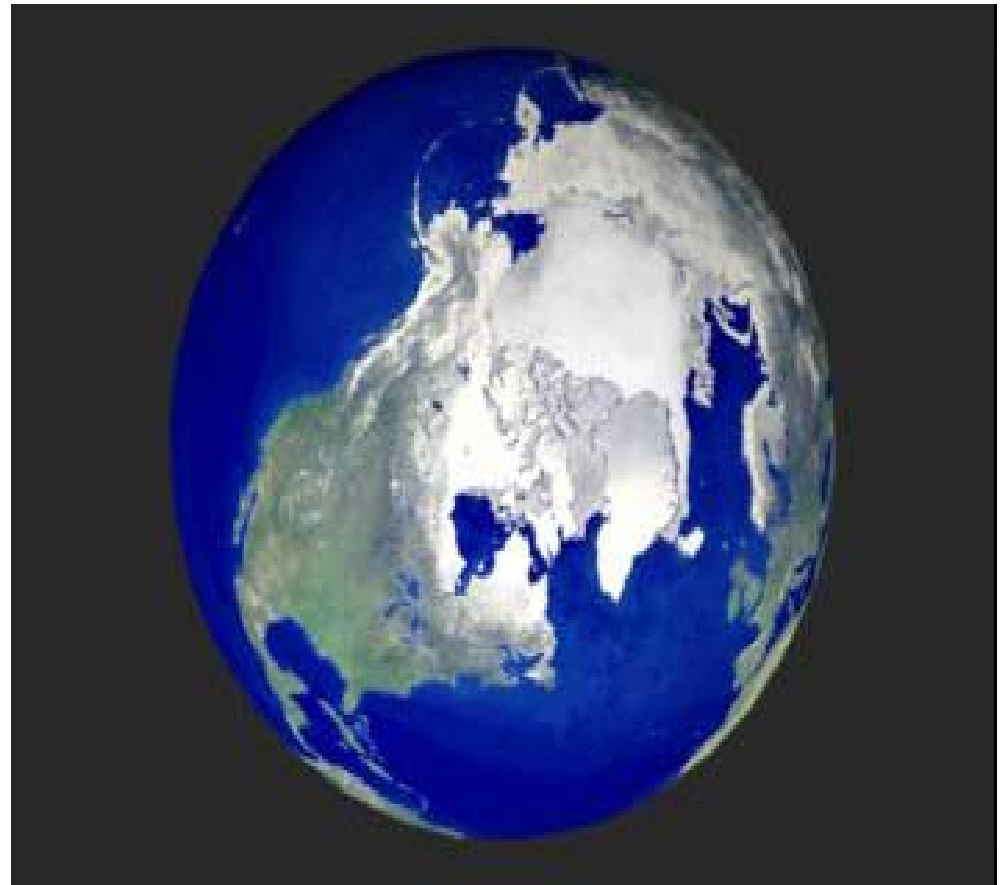
# The Changing Arctic Security Environment

- Climate Change
- Resource Development
- Net Effect - Increased Accessibility to Arctic Waters (Real and Perceived)
- Increased International Interaction as Arctic Waters turn into a Regional Sea
- Increased conflict points

# The Arctic Region: Two Views



Landsat



Radarsat

Source: NASA

# The Retreating Ice

Jan 1990



Jan 1999



Sept 2005

# Shipping in the Arctic

- Government
  - Coast Guard, Navy
- Oil, Natural Gas, Hydrates
  - will proceed independent of melting arctic
  - Pipelines versus shipping
  - Development of new Shipping Technologies - LNG
- International Shipping
  - increase as ice retreats but uncertain development trend
- Fishing
  - Accessibility to new stocks – eg shrimp and turbot
- Tourism
  - Small but growing
- Fresh Water
  - Arctic as potential supply point

# Tourist / Cruise Ship Activity

## Cruise Ships in 2004

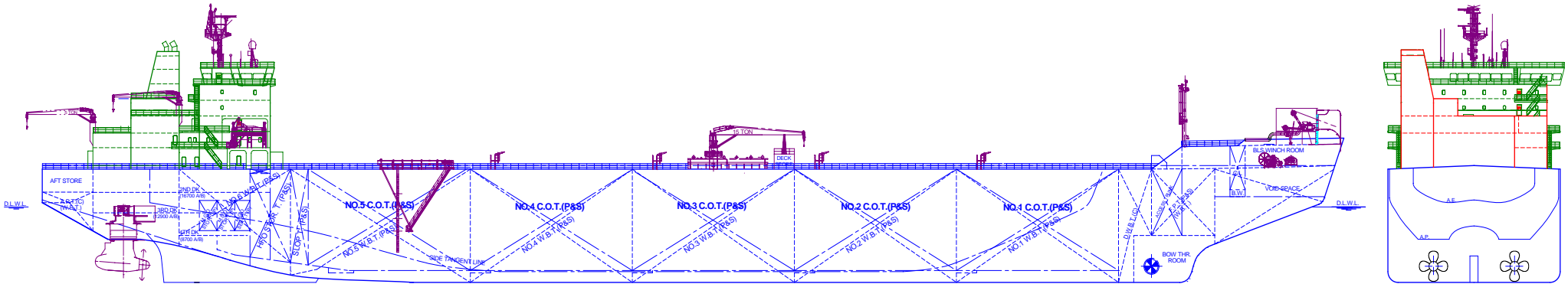
**MV Hanseatic - Bahamas**  
**MV Orion – Malta (Germany)**  
**MV Orlova - Russia**  
**Akademik Ioffe - Russia**  
**Kapitan Khlebnikov - Russia**  
**Le Levant - France**  
**MS Clipper Adventurer – Bahamas (US)**



## Cruise Ships in 2005

**Akademik Ioffe - Russia**  
**Kapitan Khlebnikov - Russia**  
**MS Clipper Adventurer – Bahamas (US)**  
**MV Orion – Malta (Germany)**  
**MV Explorer – Liberia (UK)**  
**MV Ushuaia – Panama (Canada)**

# 70K Arctic Shuttle Tanker



## Main Dimension

- Length : 234.7 m
- Breadth: 34.0 m
- Depth : 21.0 m
- Draft : 14.0 m
- DWT : 70,000 MT

## Tank Capacity

- C.O.T : 85,300 m<sup>3</sup>
- W.B.T : 38,000 m<sup>3</sup>
- F.O.T : 3,500 m<sup>3</sup>

## Flag & Class

- Flag: Russian
- Class: RS-ABS

## Vessel's Speed

- In Ice : 2.8 kts (1.57m)
- Open Water: 15.7 kts

## Propulsion System

- Pod Unit : 10 MW x 2
- G/Engine: 27 MW

## Winterization

- Ice Class: LU6
- Design Temp.: -45 deg.

## Steam Generation

- Boiler : 15 ton x 2
- Economizer: 2 ton x2

## Cargo Handling System

- Type: Elec. Deep Well
- Capacity: 800 m<sup>3</sup>/h x 10



# Arctic Strategic Issues

- Military Forces Development
  - Submarine Forces:
    - US – Seawolf and Los Angeles Class;
    - Russia – Borei Class
    - Russian northern basing – Kola Peninsula
  - Missile Development

Proliferation/Missile Defence – Ft. Greely



# HMS *Tireless* Damaged in Explosion

HMS *Tireless* and  
USS *Hampton*  
Operating off north  
coast of Alaska  
March 2007



# Fort Greely – Delta Junction



# Arctic Disputes I

- Status of Northern Waters:
  - Internal Waters vs International Straits
  - i) Northwest Passage – Canada vs US +EU
  - ii) Northern Sea Route – Russia vs US
  - Control of Shipping
  - Law and Order, Enforcement,

# Physical Attraction of Northern Transpolar Shipping Routes

- Sea Route via Suez Canal
- Sea Route via Panama Canal
- Sea Route via Northern Sea



Source: Ocean Policy  
Research Foundation

# Northwest Passages

## ■ NORTHWEST PASSAGE

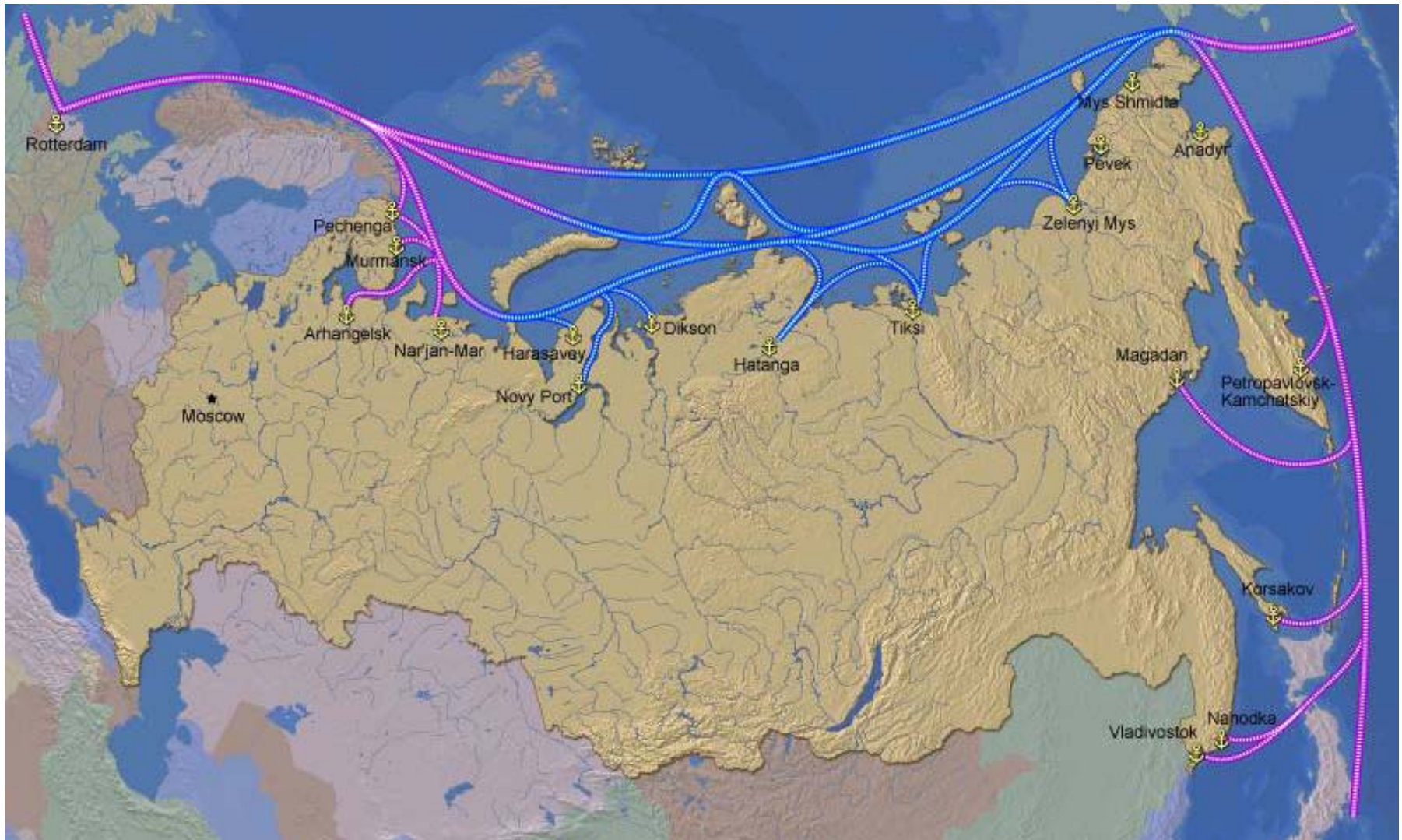


By Ron Coddington, USA TODAY

# International Shipping NWP versus Panama Canal



# Northern Sea Route(s)



Source: Lebedev



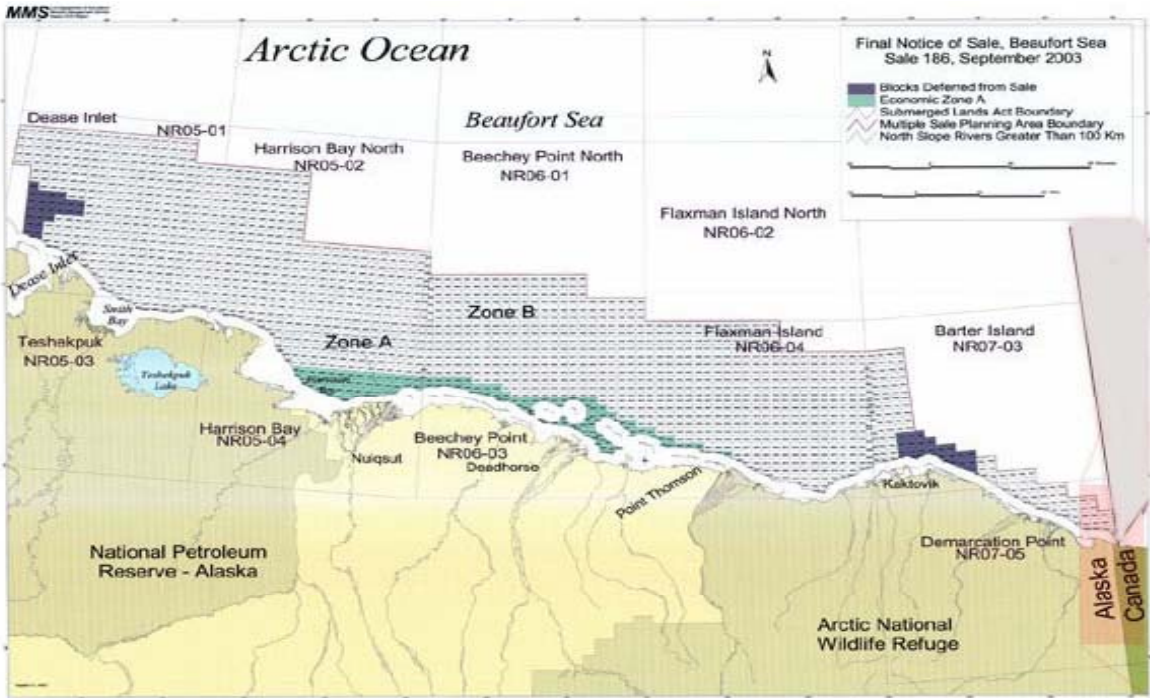
# International Shipping: Northern Sea Route vs Suez Canal



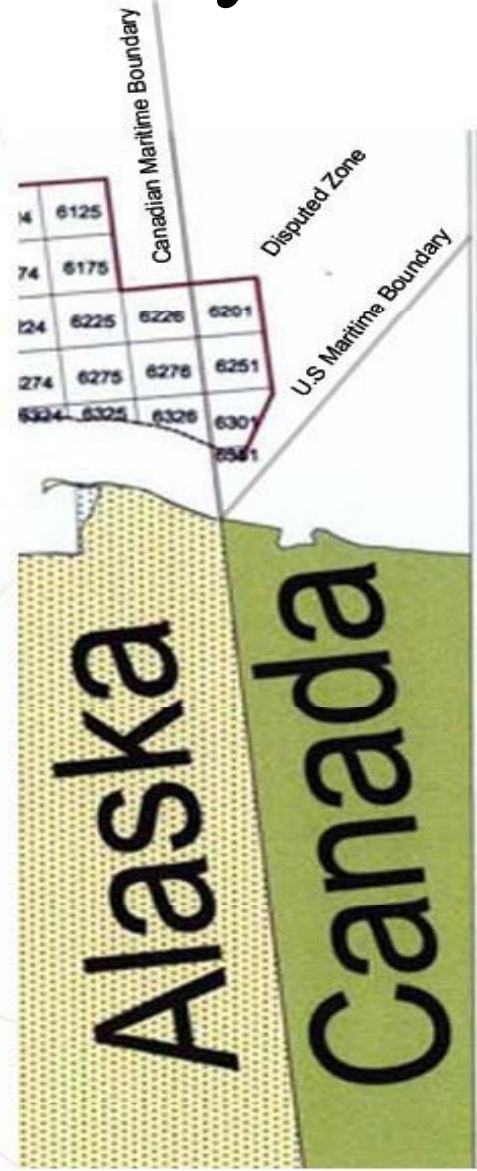
# Arctic Disputes II

- Maritime Boundary Issues
  - i) Beaufort Sea : Canada and US
  - ii) Lincoln Sea: Canada and Denmark
  - iii) Barent Sea: Russia and Norway
  - Control of Resources; Determination of Environmental Standards
- Land Boundary Issue
  - Hans Islands
  - Maritime Access

# Maritime Boundary Issues: Canada-US - Beaufort Sea Boundary Issue



**Map Source:**  
 U.S. Department of Interior  
 Minerals Management Services  
 Alaska OCS Region  
 <<http://www.mms.gov/alaska/images/Sale186Small.jpg>>  
 \* Maritime Boundary Lines Added



Source: US Dept of Interior

# Maritime Boundary Issue: Canada-US - Beaufort Sea Boundary



Source: 1984 Inuvialuit  
Land Claim Agreement

# Land Boundary Dispute: Hans Island



# Arctic Disputes III

- Continental Shelf
  - i) Russia vs US, Denmark, Canada
  - ii) Possible Canada vs US vs Denmark
  - Control of Resources on Seabed and Subsoil (oil and gas)

# Arctic Continental Shelf

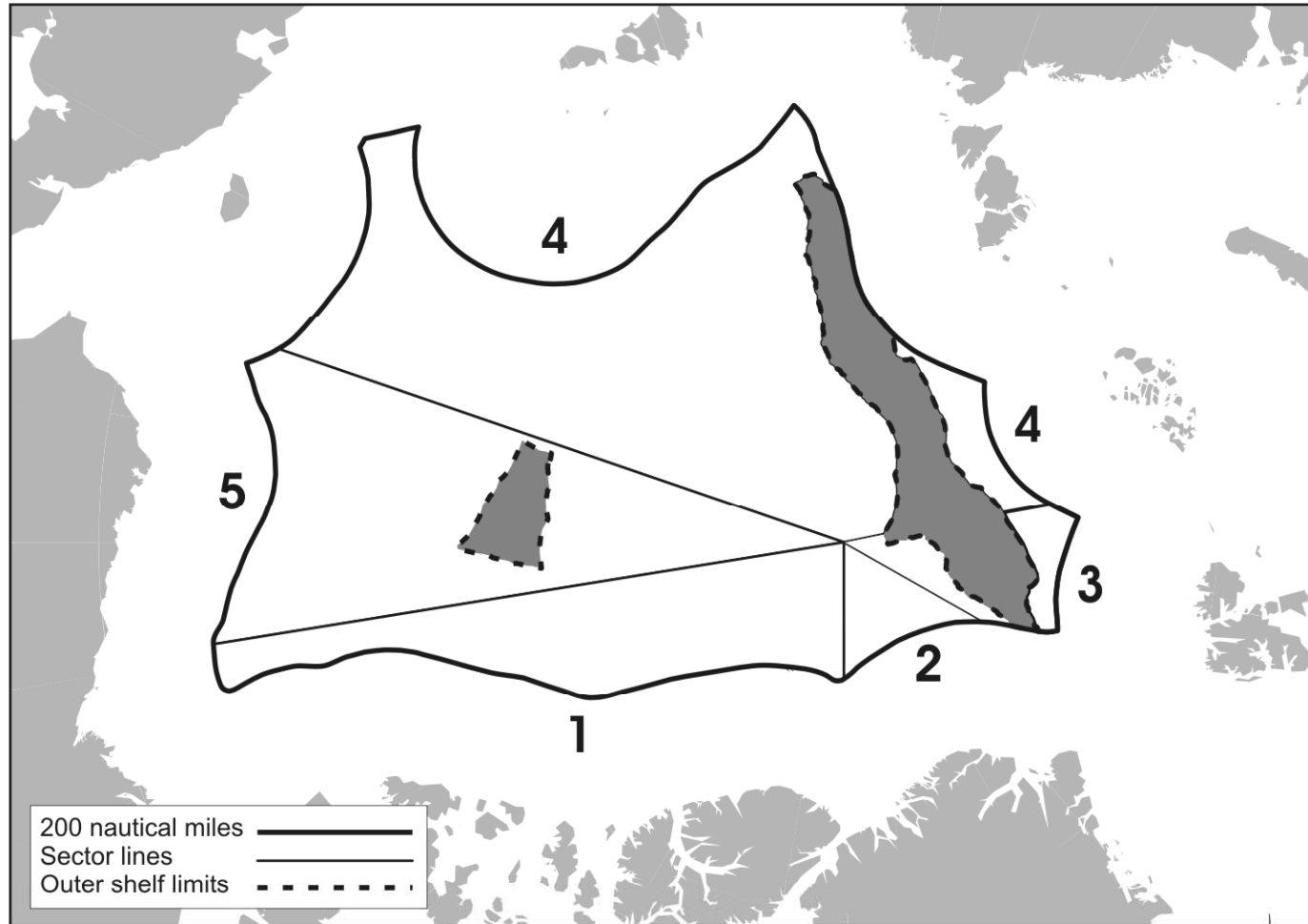
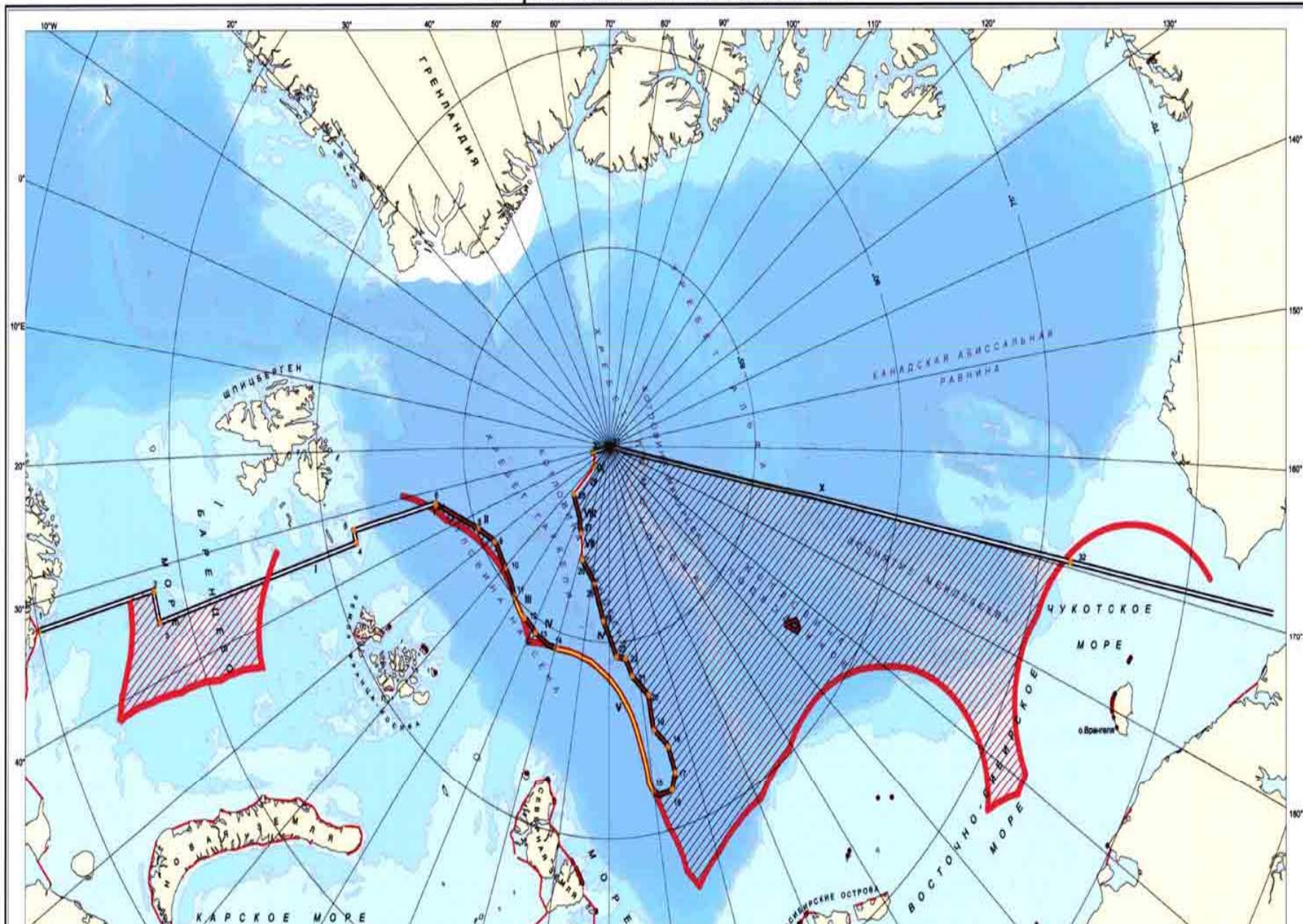


Figure 2. Extended continental shelves beyond 200 nautical miles, partitioned by meridional *sector lines* that converge at the North Pole. 1: Canada; 2: Denmark; 3: Norway; 4: Russian Federation; 5: United States of America.

# Russian Claim - Article 76

Площадь континентального шельфа Российской Федерации в Северном Ледовитом океане за пределами 200-мильной зоны





# International Arctic Maritime Agreement

## Characteristics

- Agreements are new and fragmented
- Cold War prevented the Creation of Arctic Agreements
- Climatic Conditions reduced perceived need
- Arctic Agreements tend to be Soft Law
- Limited Attention given to Arctic Issues

# Conclusion

- Geopolitics Concerns reduced immediately after end of Cold War
- New concerns are arising as Arctic is perceived/becoming more accessible
- Key impact of Accessibility is transportation actions of others
- Existing International Agreements Weak and Fragmented
- As International Interactions increase risk of more Dispute/Conflict
- Transportation is at the heart of the change