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Environmental impacts of Arctic shipping

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**Canadian Embassy
Berlin, 22. February 2011**

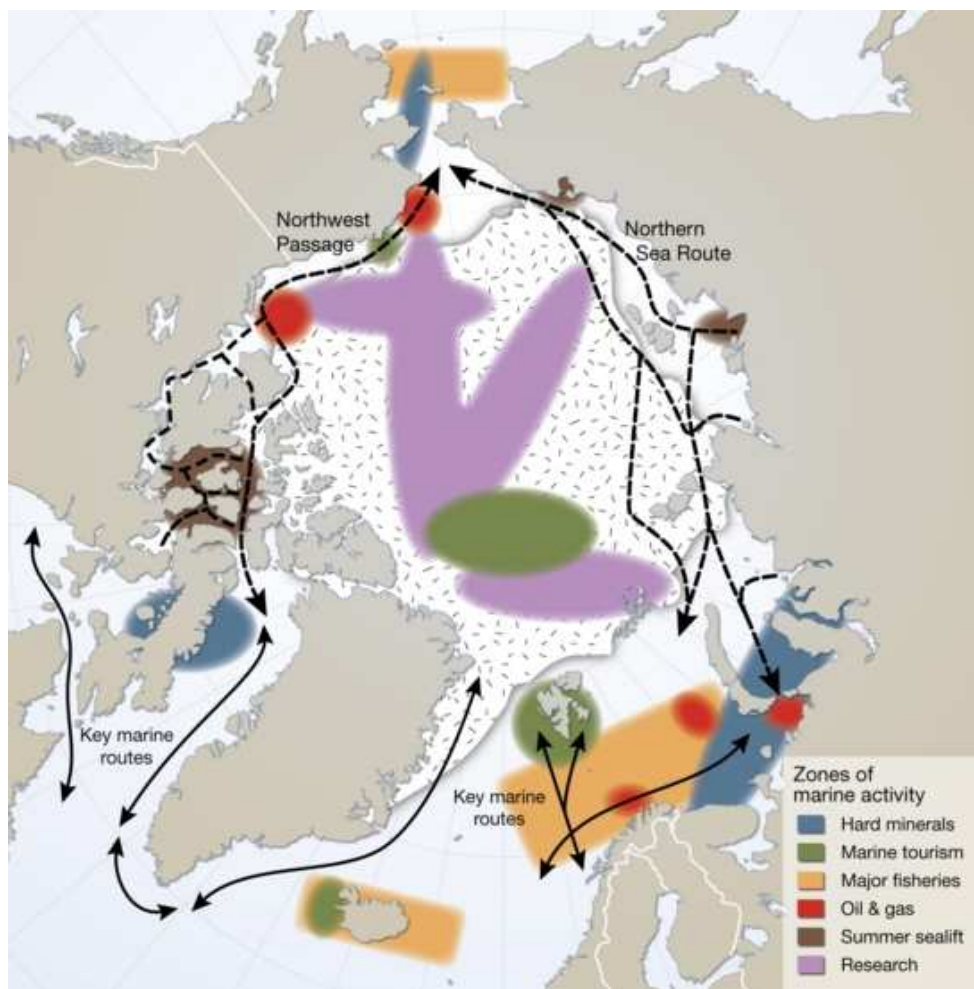


Outline

- Overview of Arctic shipping
- Environmental impacts
 - Emissions
 - Waste
 - Accidents
 - Invasive species
 - Noise
- Policy needs



Overview



UNEP/GRID-Arendal, 2010



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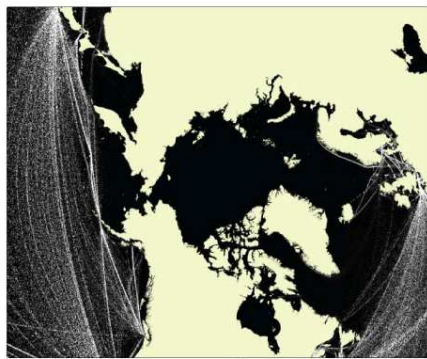


Overview

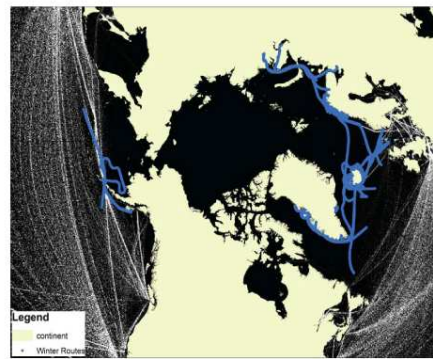


MercoPress, 2010

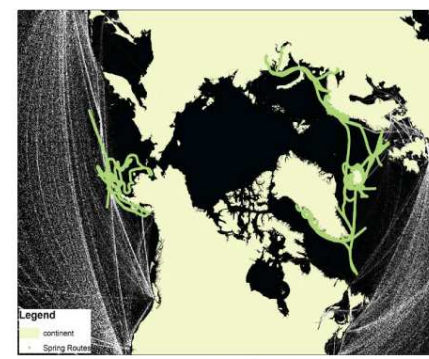
Overview



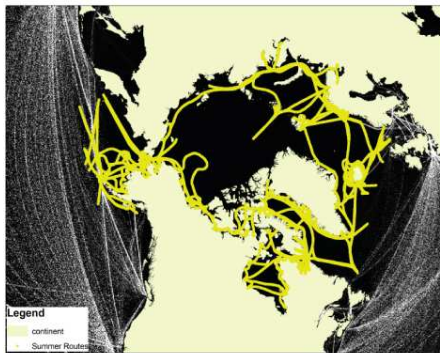
a)



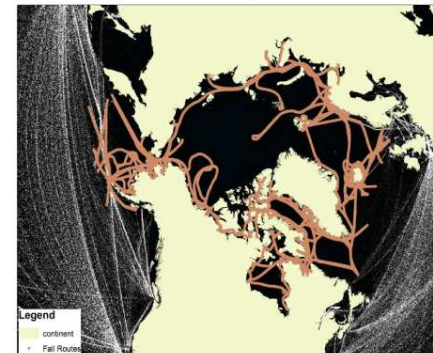
b)



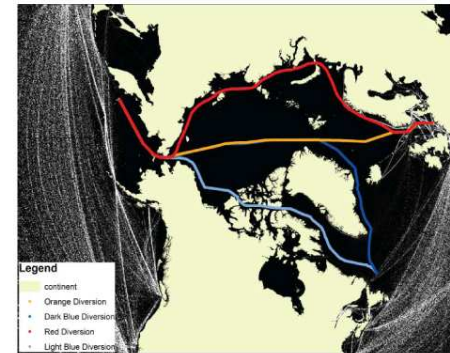
c)



d)



e)



f)

Corbett, 2010



Overview

2004 Ship traffic by type and season reported by the Arctic marine shipping assessment (AMSA).

Ship Type	Annual Trips	Season	Seasonal Trips
<i>Bulk Trips</i>	1052	Winter (December–February)	3072
<i>Container Trips</i>	2096		
<i>General Cargo Trips</i>	1403	Spring (March–May)	3390
<i>Government Vessel Trips</i>	273		
<i>OSV Trips</i>	58	Summer (June–August)	4807
<i>Passenger Vessel Trips</i>	6972		
<i>Tanker Trips</i>	2827	Fall (September–November)	3729
<i>Tug and Barge Trips</i>	317		
Total Trips in 2004	14 998		14 998

Note: Container trips include portions of transoceanic voyages that transected the study region; voyages for most other ship-types are contained within the study domain.

Corbett, 2010



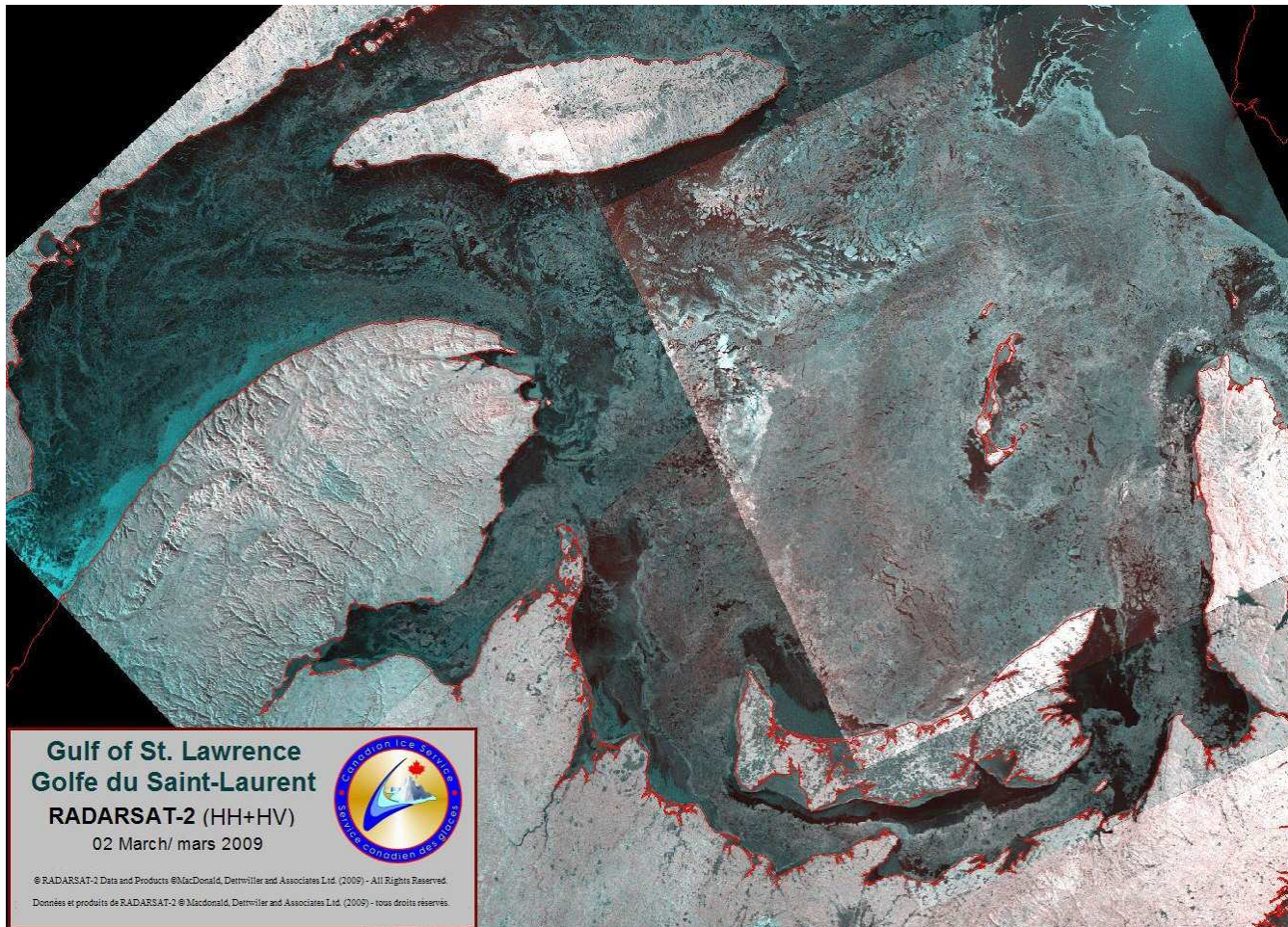
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Overview





Overview





Environmental impacts

- Emissions
- Waste
- Accidents
- Invasive species
- Noise

Environmental impacts: Emissions

- Greenhouse gases
- Short-lived climate forcers



<http://www.rit.edu>

Environmental impacts: Waste

- Oily water
- Sewage, gray water
- Food waste (with plastics)



Doug Helton, NOAA, NOS, ORR

Environmental impacts: Accidents

- Oil spill
- Cruise ship accident



<http://www.boemre.gov>

Environmental impacts: Invasive species

- Relatively pristine, only 1 known invasive marine species above 66°North
- Predicted to increase



nmfs.noaa.gov

Environmental impacts: Noise

- Potentially harmful to marine wildlife
- Need planning and technological solutions



fakr.noaa.gov



Policy needs

- ✓ International Maritime Organization (IMO)
 - ✓ Binding Polar Code
 - ✓ Arctic PSSA(s)
- ✓ International regulation of shipping emissions (UNFCCC or IMO)
- ✓ Development of shipping infrastructure



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Thank you

Arctic TRANSFORM:

<http://arctic-transform.org>

EU Arctic Footprint and Policy Assessment:

<http://arctic-footprint.eu/>

Ecologic Institute:

<http://ecologic.eu/>