Modeling Arctic Shipping of Fossil Resources under Global Change

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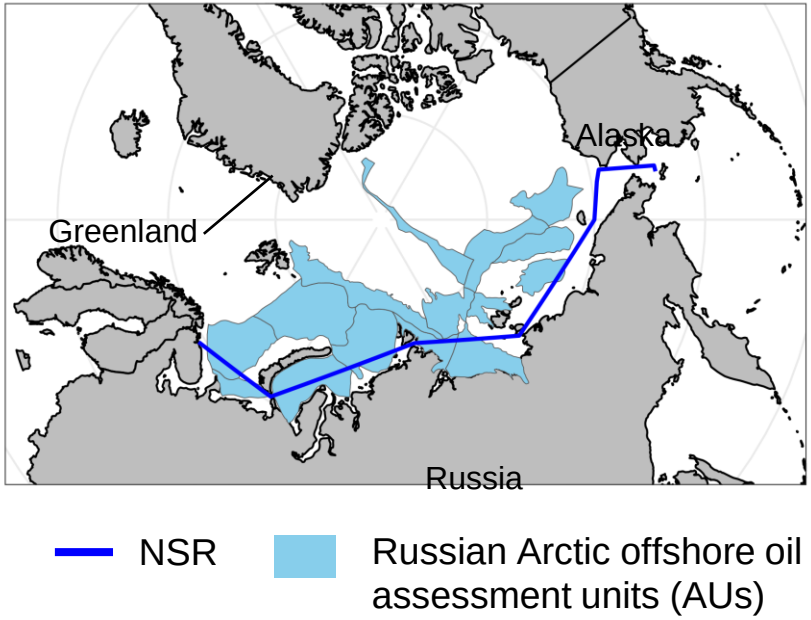
- Climate change driven sea ice decline is opening Arctic shipping routes
- Current analysis of Arctic shipping feasibility focuses on physical drivers
  - We incorporate economic drivers
- Case study: Shipping oil produced in offshore Russian Arctic to East Asian markets
  - Northern Sea Route (NSR) vs conventional Suez Canal Route: costs vary based on sea ice



This research was funded as part of the **Interdisciplinary Research for Arctic Coastal Environments (InteRFACE)** project through the Department of Energy, Office of Science, Biological and Environmental Research Earth and Environmental Systems Sciences Division MultiSector Dynamics program.

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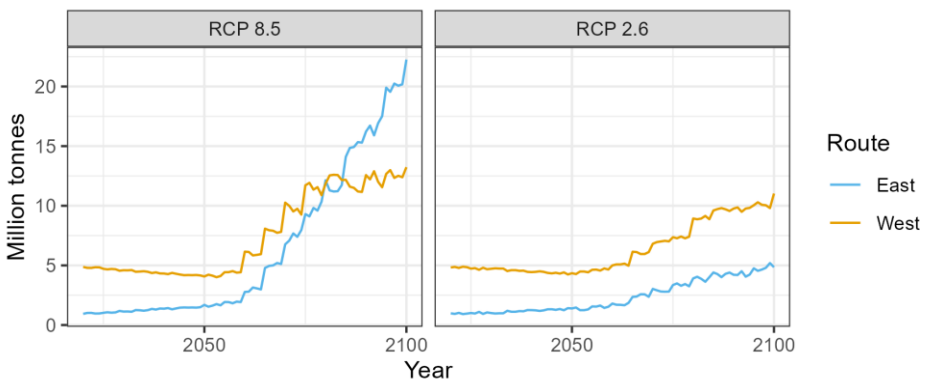
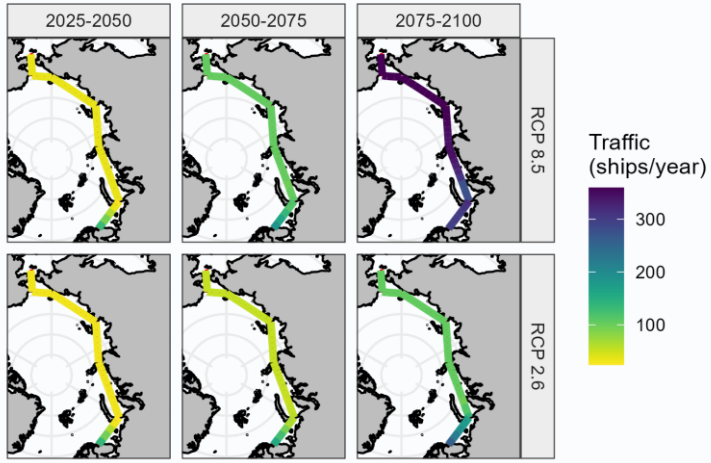
As sea ice declines, the NSR ("East") becomes more cost competitive with the SCR ("West") for shipping Russian Arctic offshore oil. Total shipments increase with global demand and decreasing extraction costs.



Amount of oil shipped via each route

This results in growing oil tanker traffic and associated emissions along the NSR, but lower overall emissions intensity of shipments.



Shipping traffic along the NSR

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