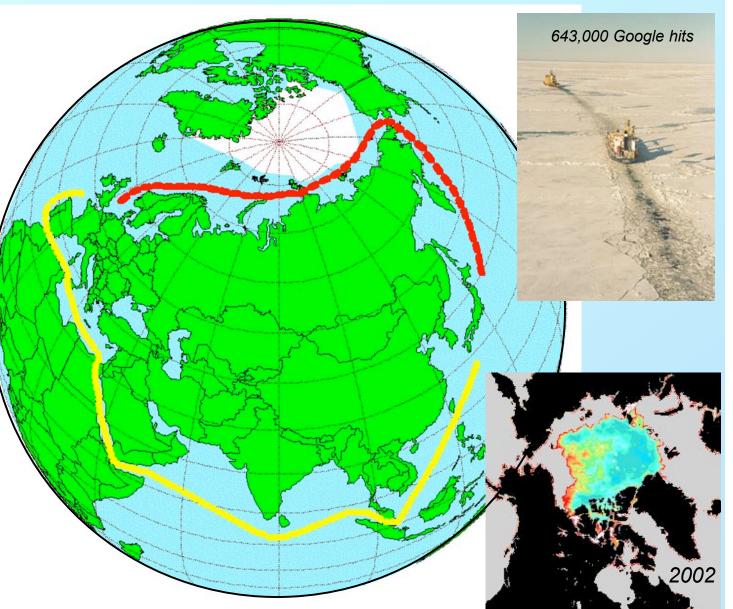
# **Opening of Arctic Sea Transport**

### **Northwest Passage**

Modest activity

### Northern Sea Route

- Not new -since 1930's
- Primary purposes
  - local resupply
  - resource extraction
  - transit traffic
- Good news
  - Shorter by ~ 40%
  - 10 15 days
- Bad news full of ice
  - increased hazard
  - slower speeds
  - need special ships



Transform an icy graveyard into a shorter shipping route

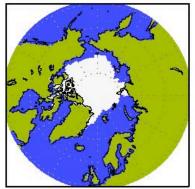
## The Northern Sea Route: Tomorrow

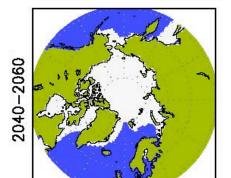
2010-2030

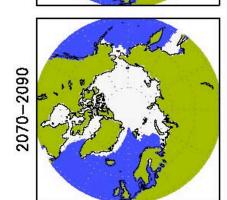
- · Continued changes in the future
- Modest changes in winter
- Major reduction in summer
- Seasonal ice-free NSR

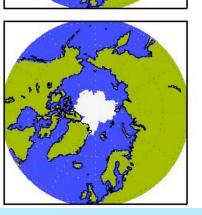
Northern Sea Route: Projection for 2000-2100 240 Mean of 5 ACIA models 220 (skp) 180 160 140 Projected ice extent Median of 5 models (HAD, GFD, ECH, CSM, CGC 25% open water length of navigation 120 100 80 50% open water 75% open water 20 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 March











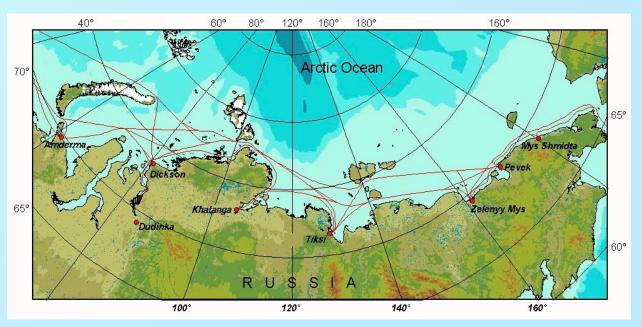
Conditions are improving, but shipping is declining

### More is happening than physical changes

- Economic considerations
- Deteriorating ports and fleets
- Political situation
  - Fragmented institutions
  - Instability
- Legal issues
  - Insurance
  - Tariffs
- Environmental impact
- Societal consequences
- Impact on indigenous people
- External forcing the rest of the world
  - Suez Canal
  - Pirates
  - Wars
  - Shortages







# Critical for this synthesis effort

