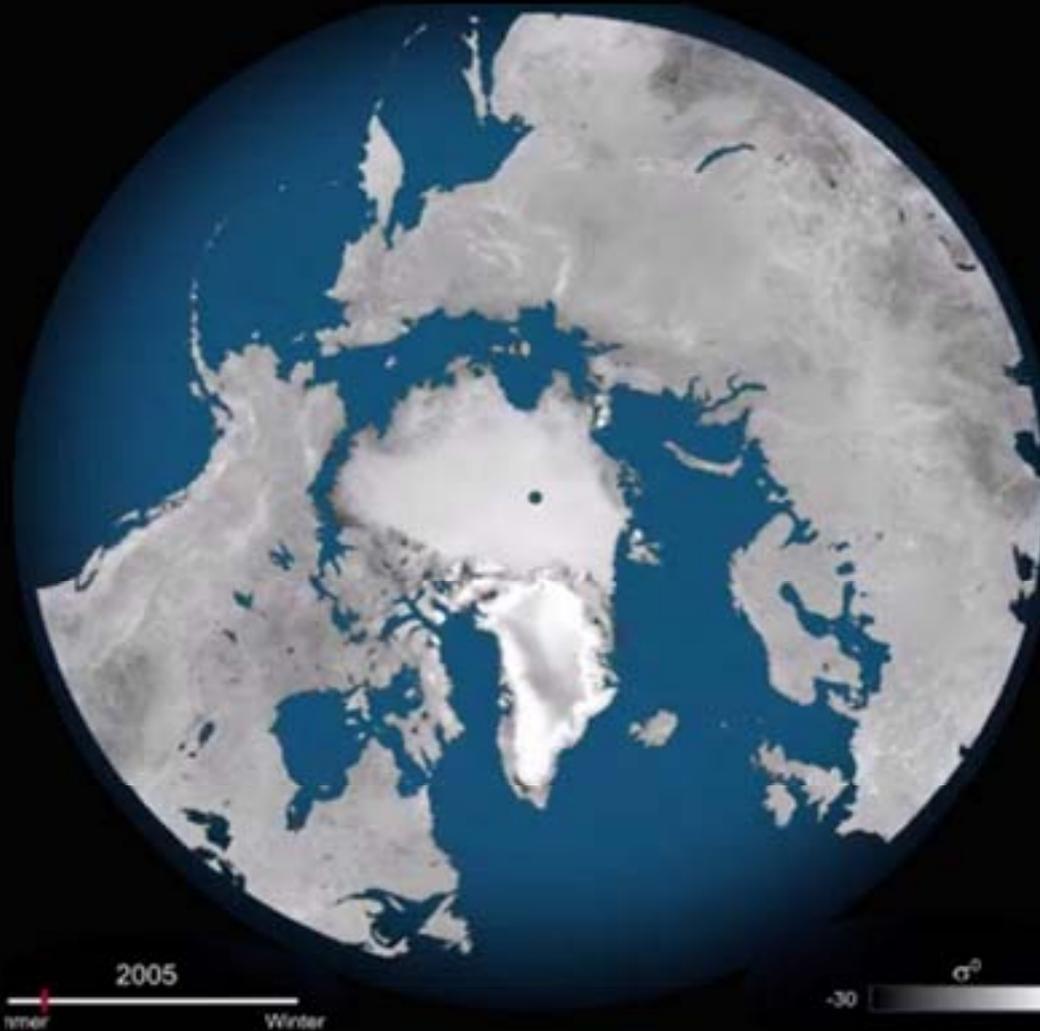




Naval Implications of an Ice Free Arctic





Issues and Opportunities

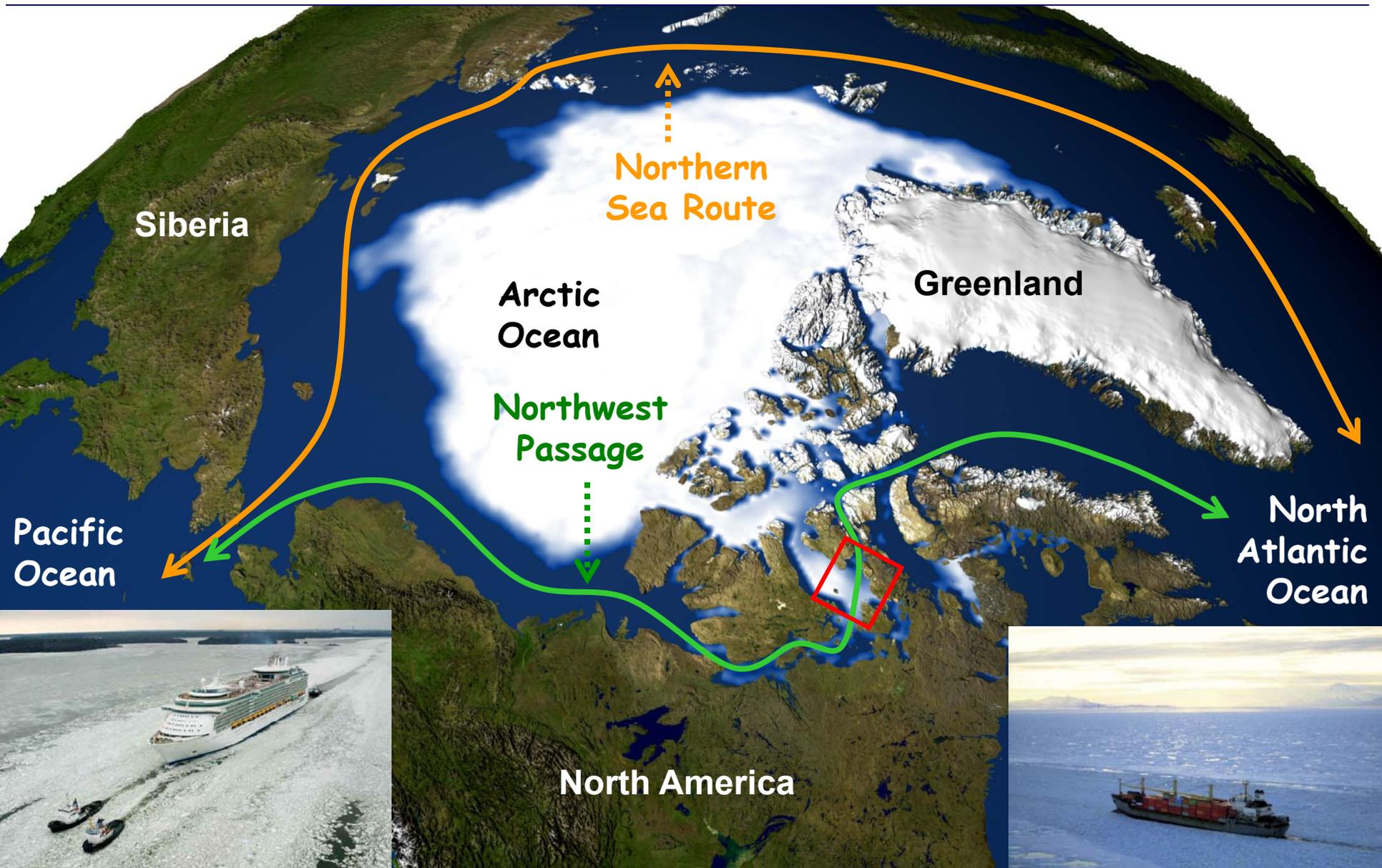


“If we do not change our direction, we are likely to end up right where we are headed.”

- **Transportation**
- **Commerce and Competition**
- **Weather Patterns**
- **Borders, Governance, Government**
- **Expanded Operating Areas**



Transportation



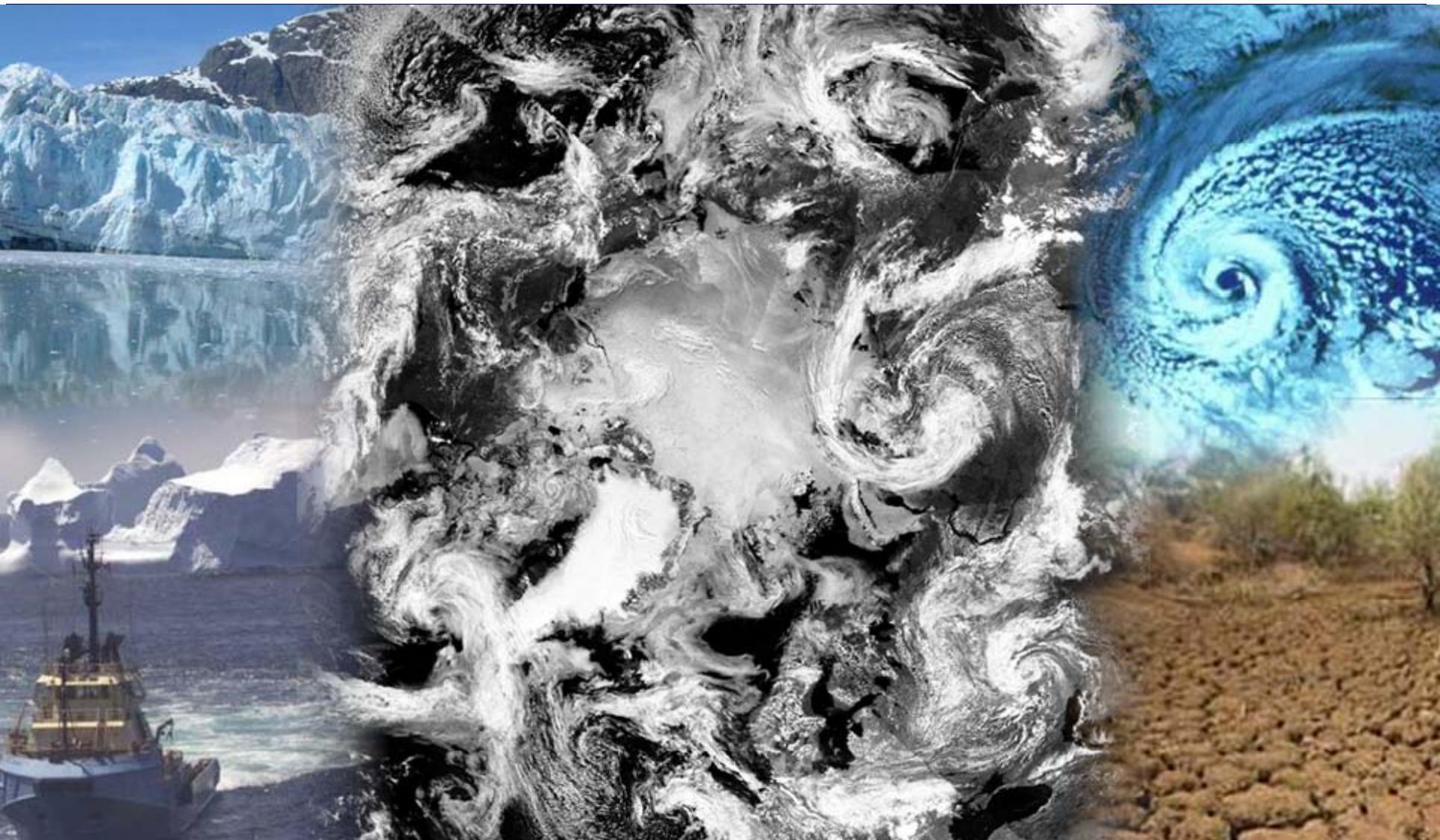


Commerce and Competition





Weather Patterns



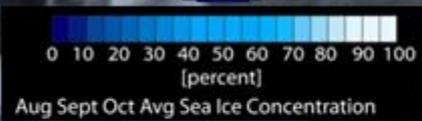
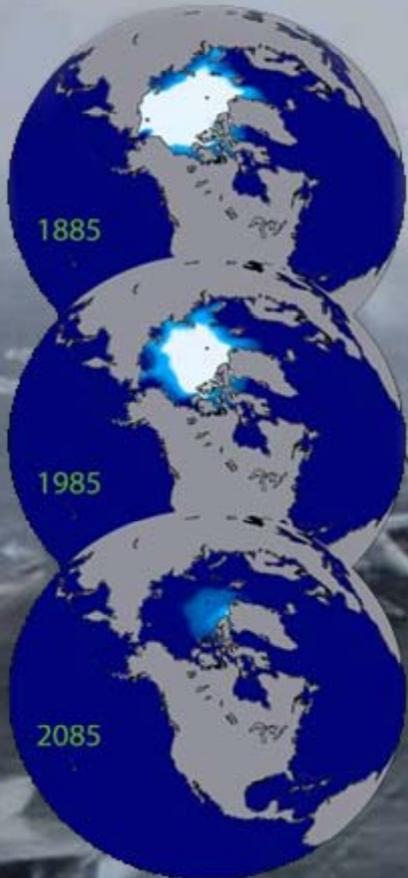


Borders, Governance, Government





Expanded Operating Areas





Conclusion



Humans are adaptable, this is a critical and evolving challenge, but one that can be overcome.

Huge challenges, but equally large opportunities.

Learn from the past and get this right. Will require leadership and focus.

Potential for new alliances...countries, NGOs, commercial partners, etc.

Capacity issues for the Navy, Coast Guard and Allies.

“Everyone agrees the Ocean is in Trouble – we know if we don’t get moving now, in 10 years we may not be able to recover”

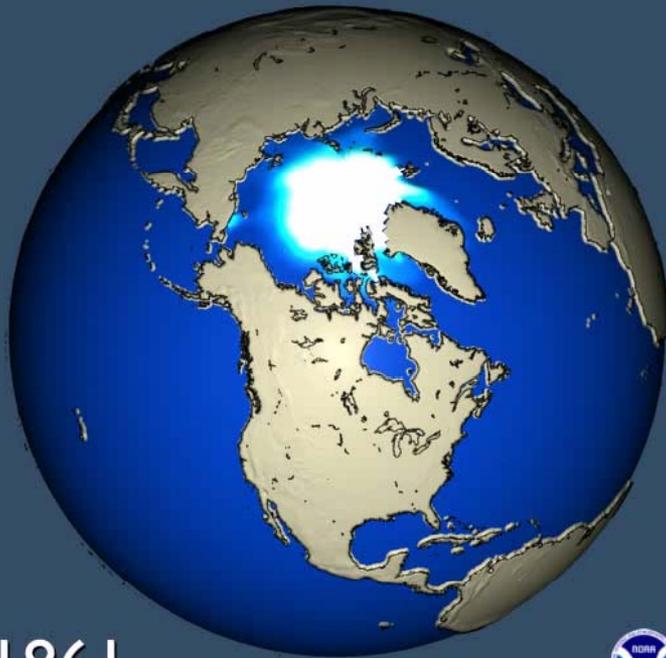
James D. Watkins, ADM (ret)



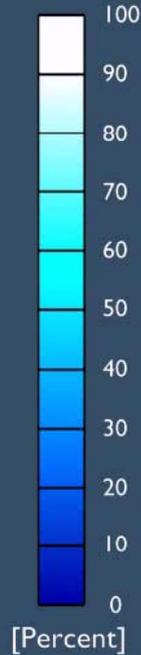
Questions?



NOAA GFDL CM2.1 Model Simulation: SRES A1B Scenario



1861
Aug Sept Oct Avg Sea Ice Concentration



Fractional Arctic Wide Sea Ice Concentration

