



Global Climate Change and National Security



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Navy Task Force Climate Change
29 July 2014**



Our climate is changing ... Our world is changing ... Are we?



Water



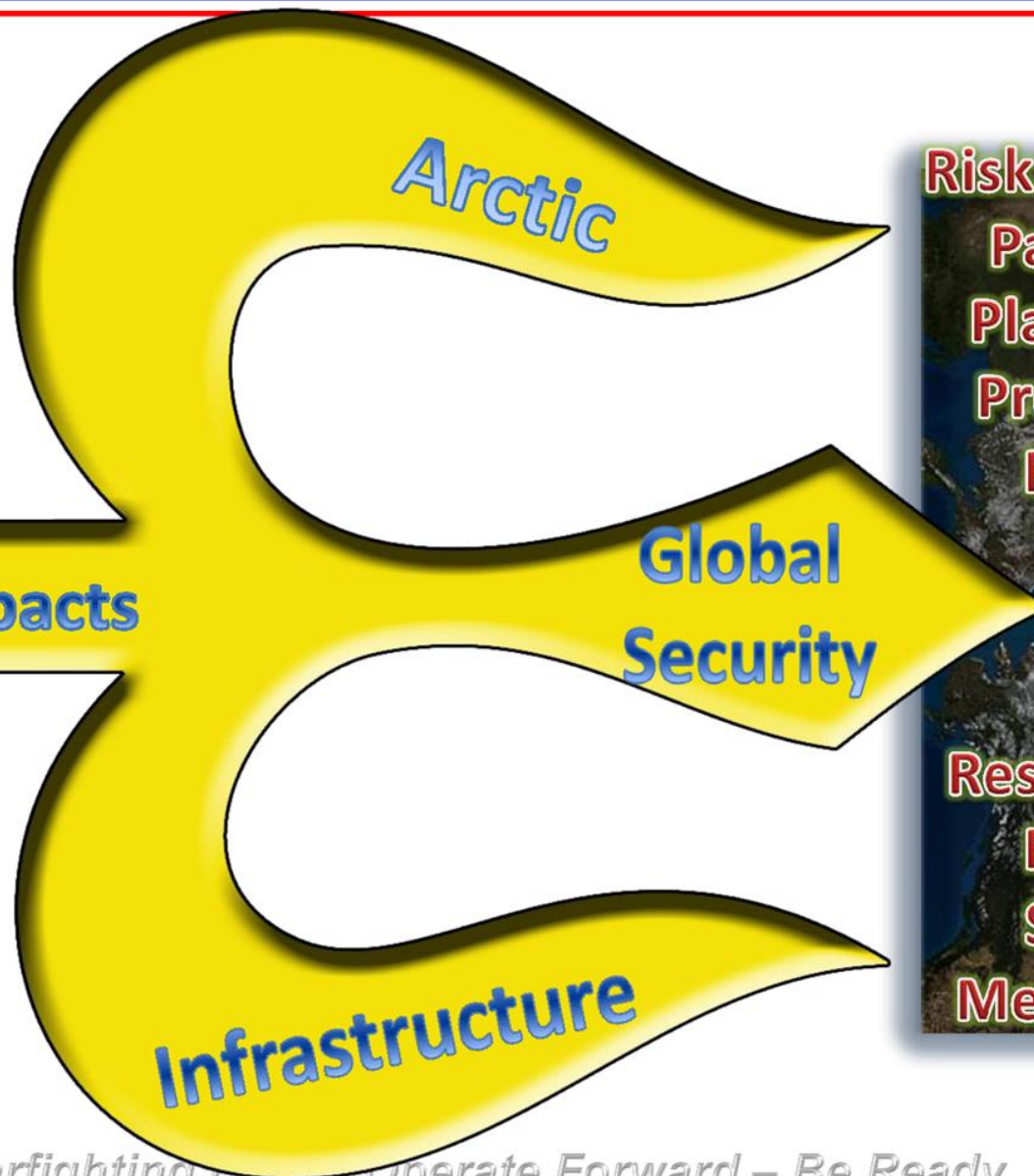
People



Behavior



Climate Change Strategic Interests



Climate Impacts

**Risk Assessments
Partnerships
Plans & Policy
Preparedness
Resilience**

**Responsiveness
Readiness
Strategies
Methodologies**

Warfighting First - Operate Forward - Be Ready

Arctic Ice Coverage

Sea Routes



Northern Sea Route

2025: 6 weeks open
41' controlling draft



Transpolar Route

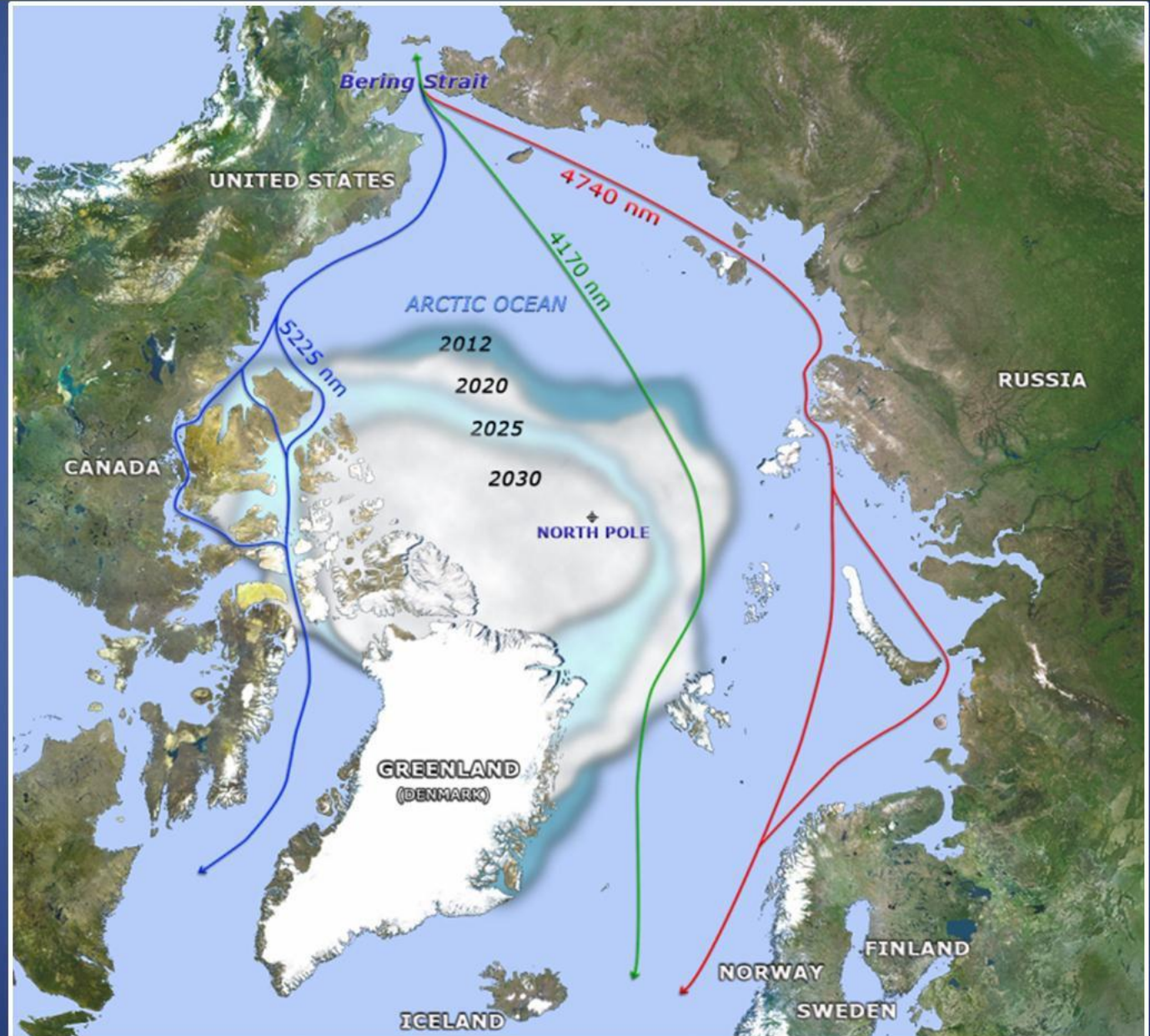
2025: 2 weeks open
Deep ocean transit



Northwest Passage

2025: intermittently open
33' controlling draft

Sea route distances:
Distance from the
Bering Strait to
Rotterdam

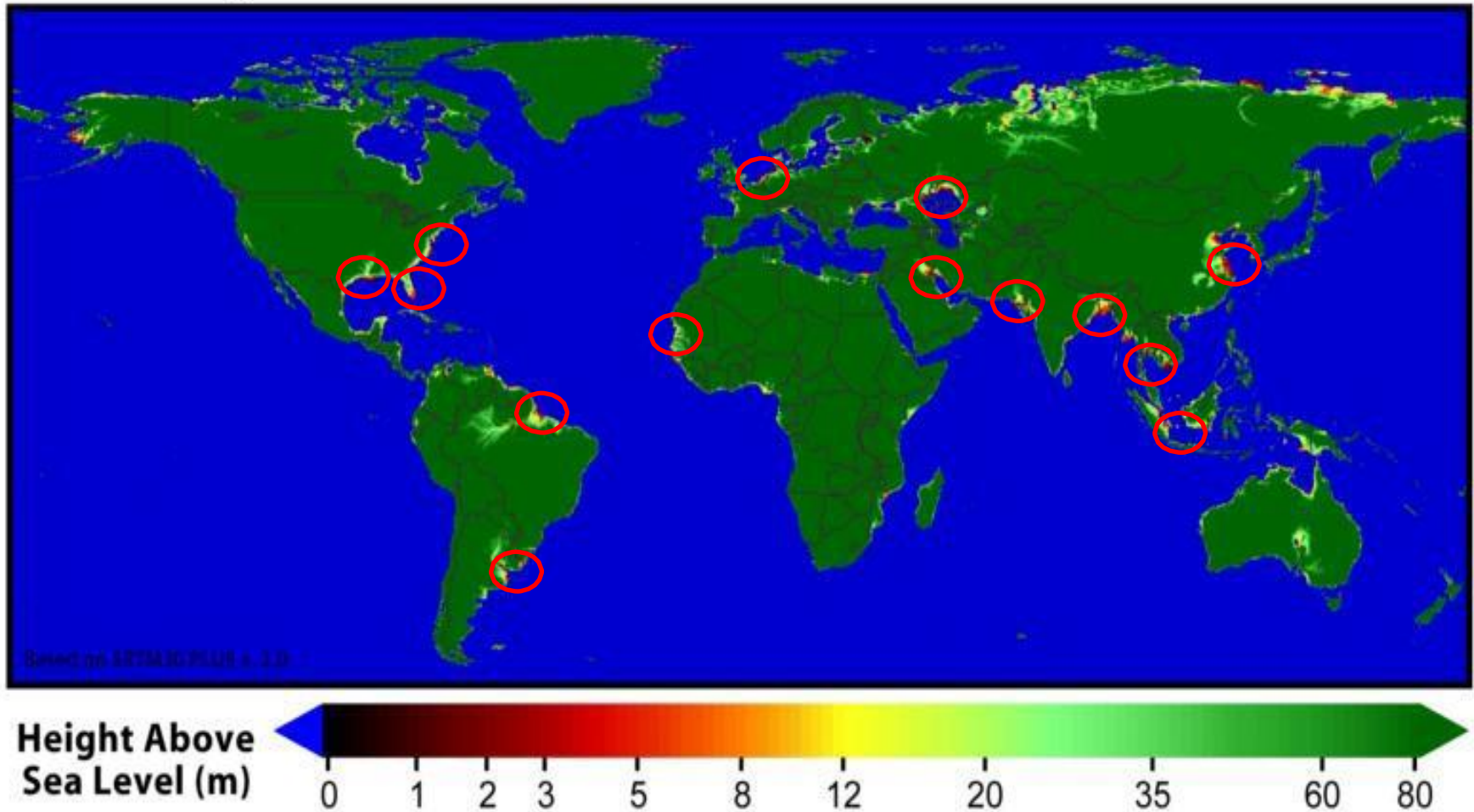




Instability and Conflict Risk?



Regions Vulnerable to Sea Level Rise





Navy Sea Level Rise Concerns



Physical Impacts

- Inundation
- Wetlands
- Erosion patterns & rates
- Surface/ground water supplies
- Water tables
- Tidal flows & currents
- Storm & flood damage

Challenges

- Infrastructure
- Mission capabilities
- Training & testing lands
- Transportation means/facilities



Opportunities

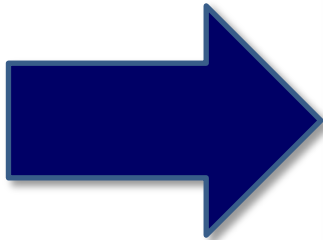
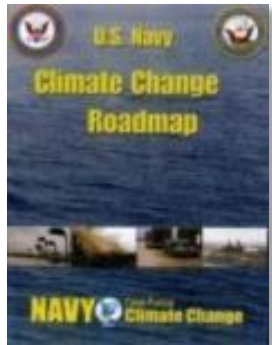
- Adaptation partnerships
- Recapitalization incentive



Directly impacts readiness, strategic access, & influence



Moving From Theory to Practice

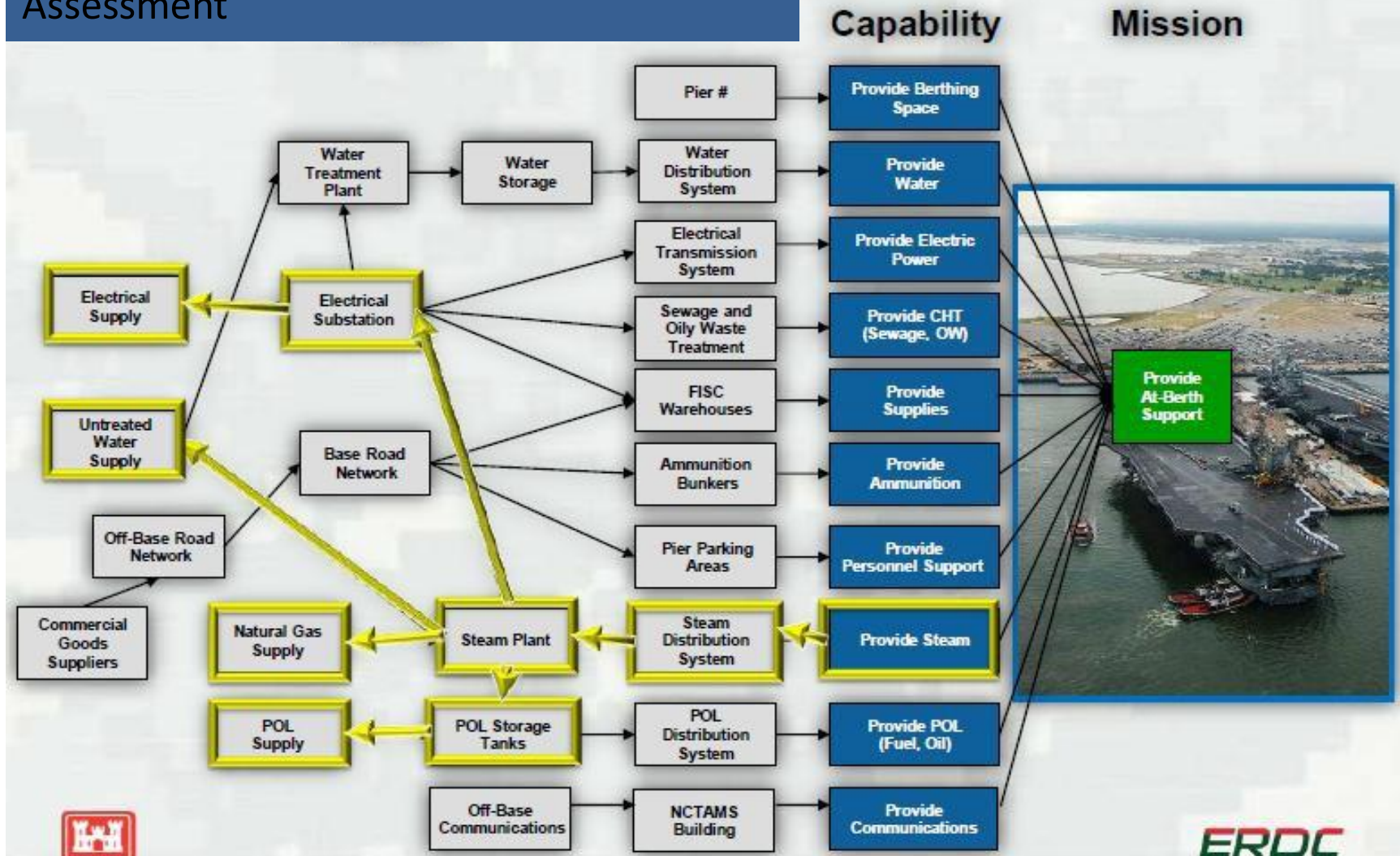




SLR Adaptation & the US Navy



From USN Hampton Roads Vulnerability Assessment





SLR Assessments

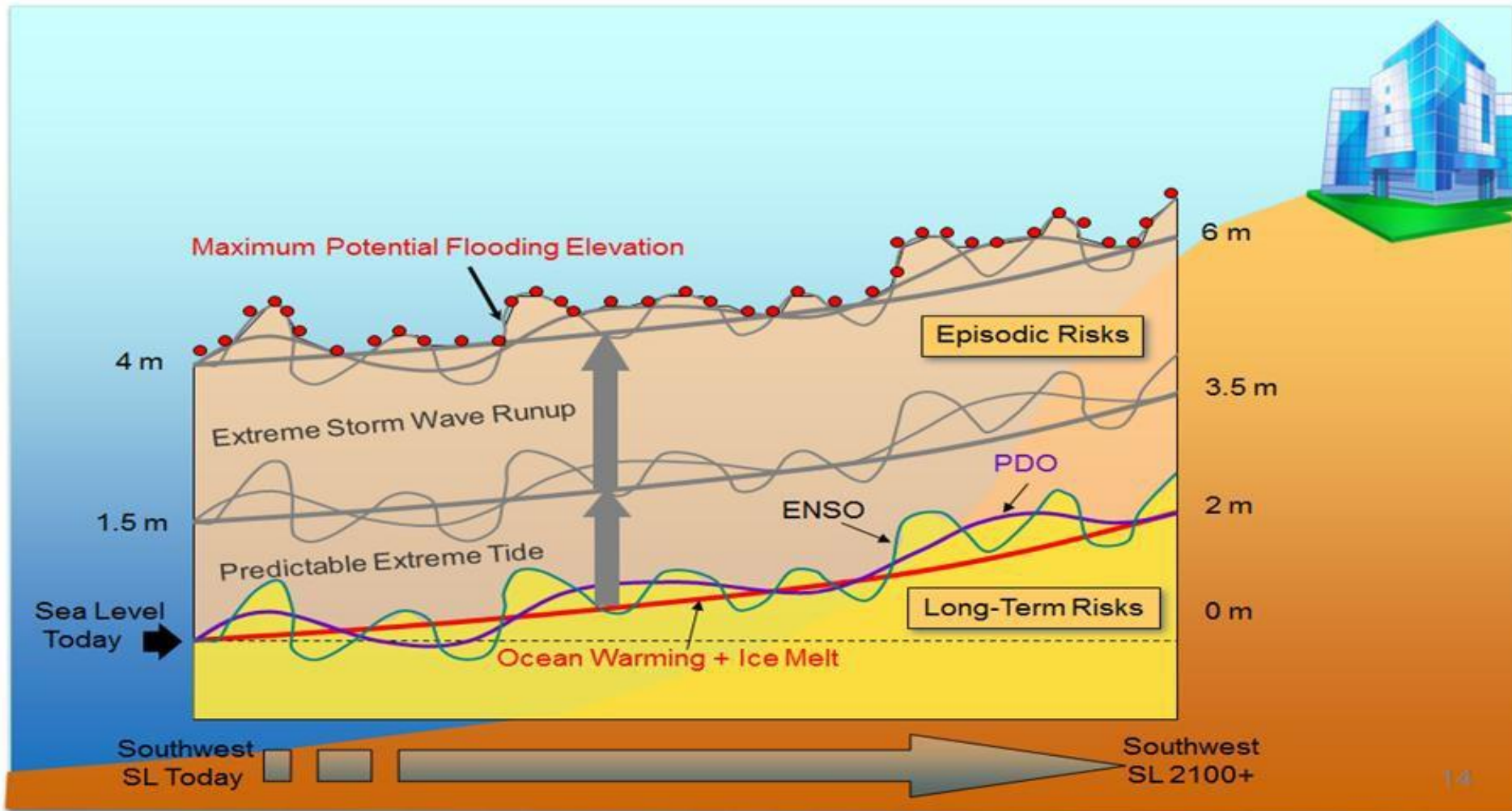
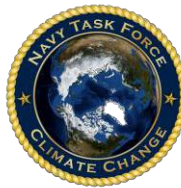


Figure 4-2. Schematic of approximate amplitudes of MSLR, tides, non-tide residual (NTR) variations, and wave-driven runup during 21st century.



Managing Uncertainty



Temporary Infrastructure

Long Lived Infrastructure

2014

2100

Short Term

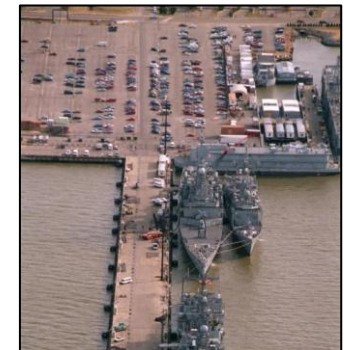
Long Term

CLIMATE CHANGE CONSIDERATIONS

Maintenance Actions

Major Refurbishment

Base Realignment



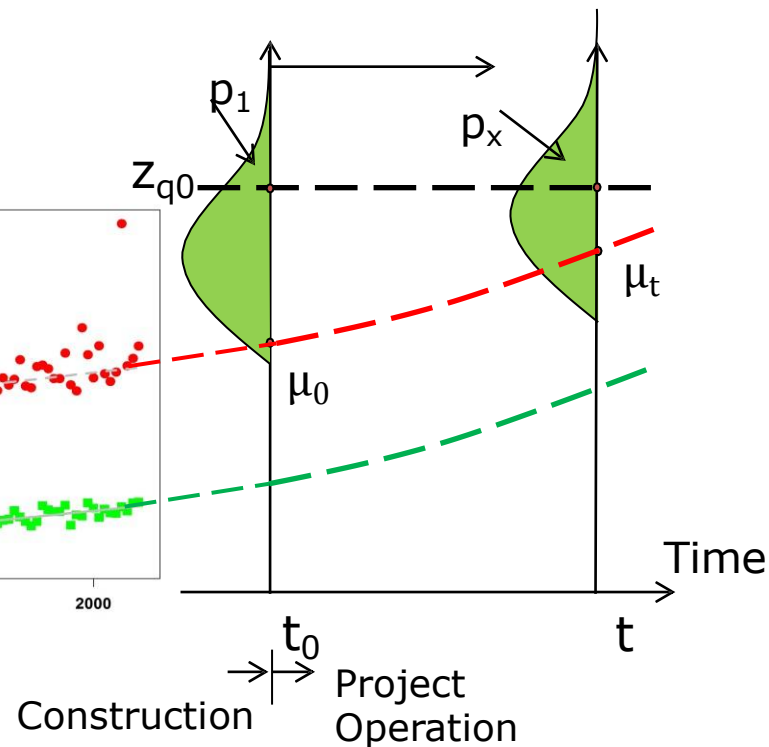
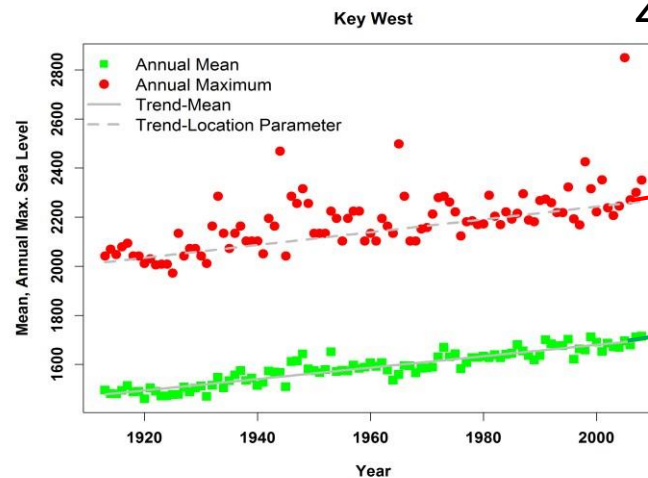
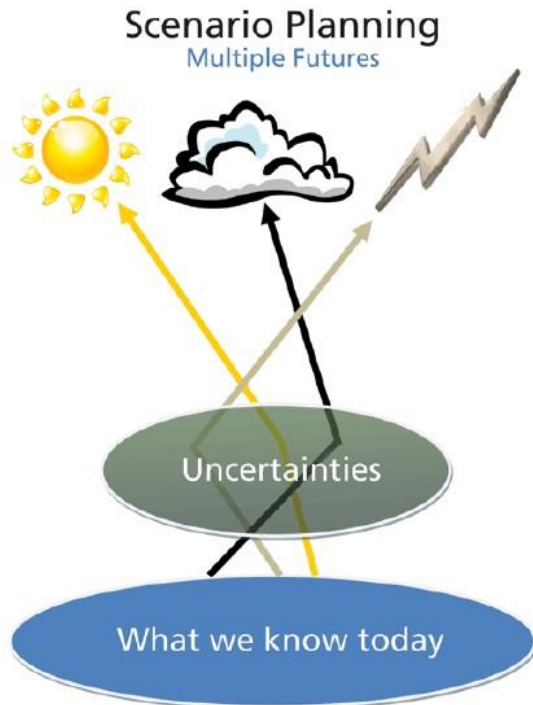
Risks Associated with Climate Change Increase with Time



Graphical Representations of Risk



- **Getting the most accurate data to policy makers that is easily digestible.**



The Marriage of Science and Policy