



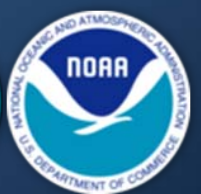
# A Changing Arctic: An Urgent Call For Collaborative And Cooperative Action

3rd Symposium on the Impacts of an Ice-diminishing Arctic on Naval & Maritime Operations

**Dr. Jane Lubchenco**

Under Secretary of Commerce for Oceans and Atmosphere & NOAA Administrator  
National Oceanic and Atmospheric Administration | NOAA

June 9, 2009



# A Changing Arctic

**Atmosphere**

**Sea Ice**

**Ocean**

**Land**

**Biology**



# Domestic & International Context

**UNCLOS**

**Sea Ice Extent**

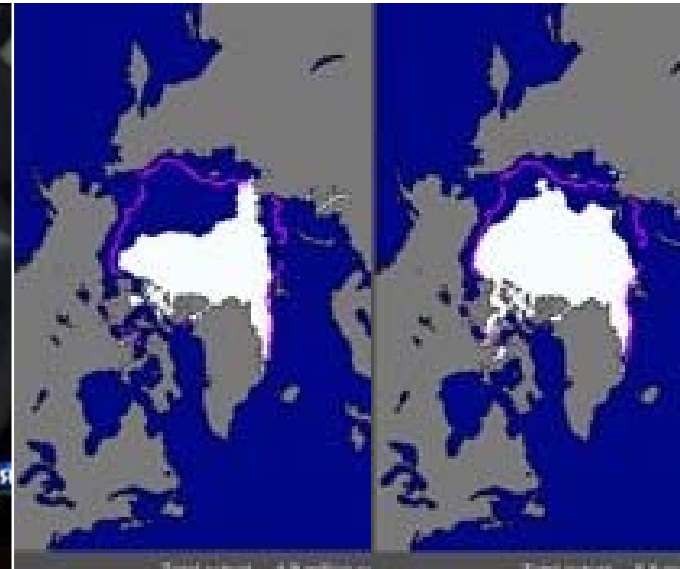
**Polar Bear and ESA**

**NSPD 66/HSPD 25**

**North Pacific Fisheries Management Council**

**House Arctic Protections Letter**

**Russian Security Council Announcement**



A Changing Arctic: An Urgent Call For Collaborative And Cooperative Action



# A National Challenge

## **Challenge:**

**Critical environmental, economic, and national security issues are emerging**

## **The Nation needs:**

**Science-based information and baselines necessary for understanding and evaluating climate change and its impacts**

**Expansion of critical NOAA services in the Arctic region**



# Climate Science & Services

**Understanding relative contributions of natural climate variability and anthropogenic forcing**

**Impacts of lower latitude activities on the Arctic climate**

**Region's role overall in global climate change and ecosystem impacts**

**Potential actions to prevent or mitigate climate changes in the Arctic and globally**



# Coastal Community Hazard Resilience

**Manage Coastal  
Resources**

**Protect Community &  
Ecosystem Health**

**Sustain Indigenous  
Cultures**



# Weather & Water Services

**More Frequent &  
More Accurate  
Information**

**Better Forecast &  
Warning Capability**

**Sea Ice Forecasts**



Ocean Acidification



# Marine Navigation & Homeland Security

**Provide essential tools for safe navigation**

**Improved support of fleet and aircraft assets**

**Prepare for expanded oil spill response and restoration needs**





# Arctic-Capable Research Platforms

**NOAA's aircraft operate in the Arctic**

**Testing of Unmanned Aircraft Systems is ongoing**

**NOAA's ship fleet has limited capability to operate in ice**

**Alaska Regional Research Vessel**

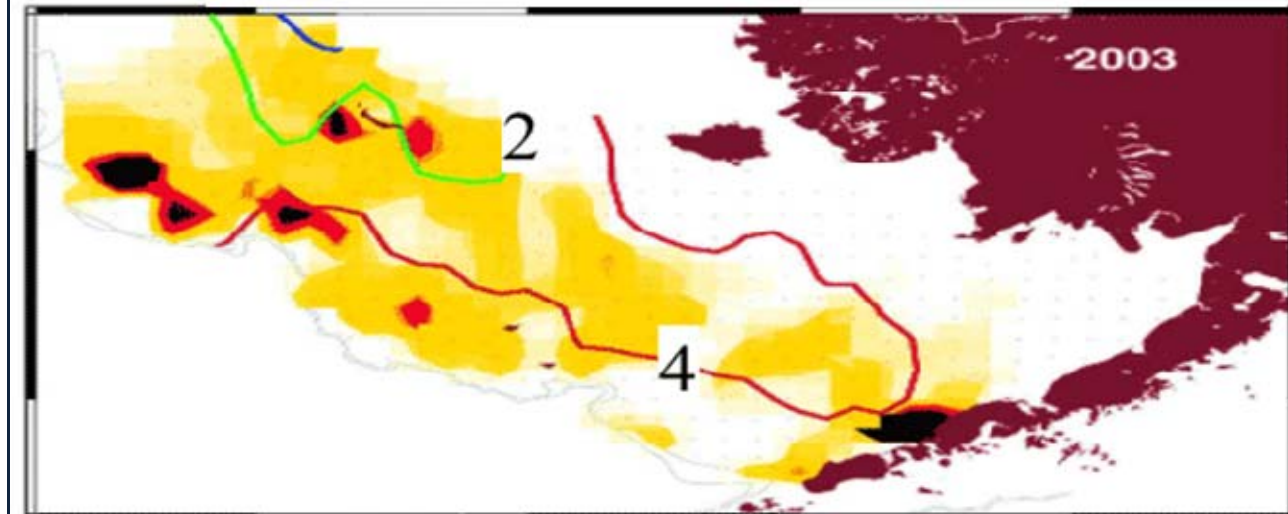
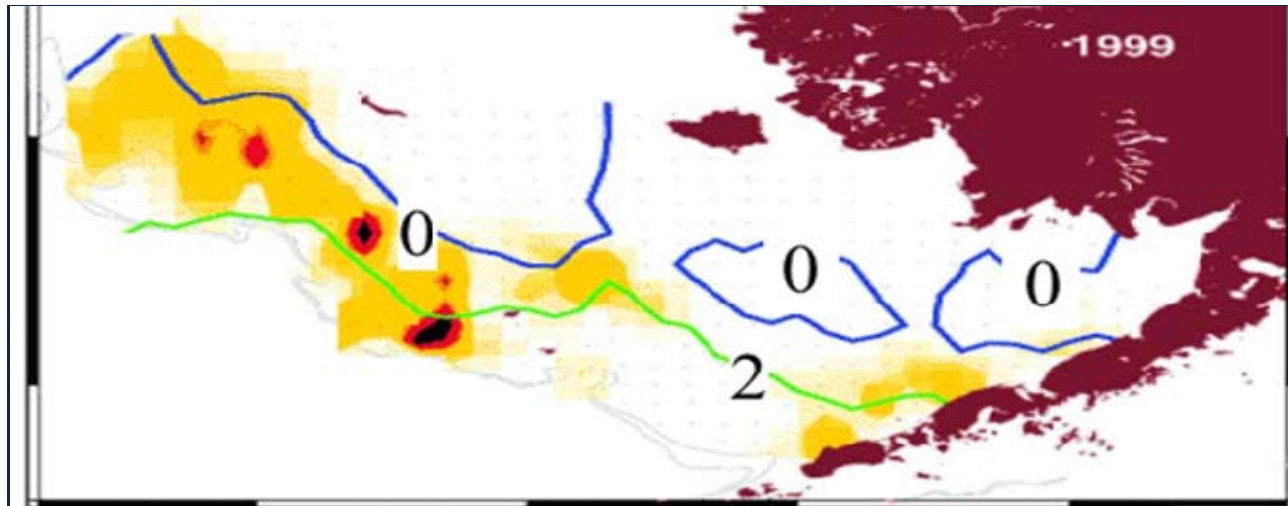


# Marine Ecosystems & Resource Management

**Ecosystems & Associated  
Resources Remain Poorly  
Understood**

**Climate Change Impacts  
Put Living Marine  
Resources in Flux**

**Preparation for Changed  
Arctic Required**



# Arctic Governance & International Cooperation

**International Partnerships  
Critical**

**Convention on the Law of  
the Sea**

**Extended Continental Shelf**

Maritime jurisdiction and boundaries in the Arctic region

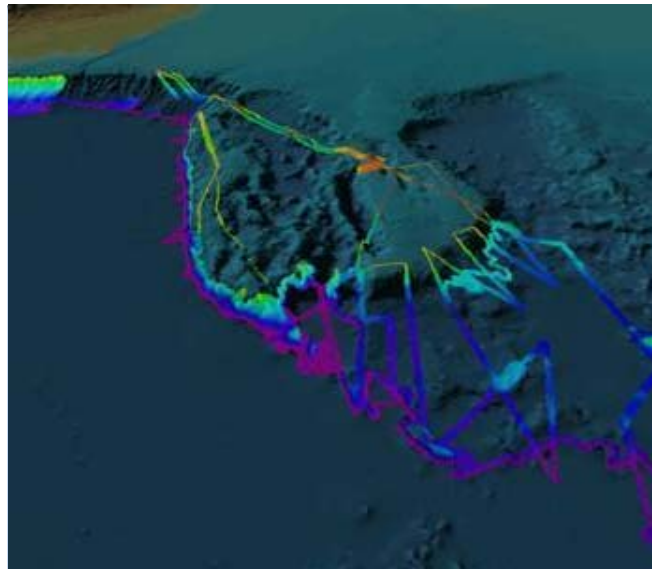


# The Way Forward

**Greater investment in regional observations and supporting infrastructure**

**Scientific exploration, research, modeling, and predictions**

**Technology and data management**





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