Research to Support Arctic Naval Operations

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Physical Oceanography
• Previous ONR sponsored Arctic research
  – ACOUS, CEAREX, SIMI, SHEBA, SBI, SCICEX, ICEX

• Shift in Navy focus
  → Shift in ONR focus

• ONR High Latitude Program Interests
  – Still There
  – Aligned under Physical Oceanography Program

• Continued steady investment
  – O($1.5M)/yr
  – NOPP, IABP, DEPSCOR, IPY, ICEX
SCICEX 99

- USS Hawkbill (SSN 666) Lomonosov Ridge survey
  - Dramatically altered understanding of Arctic bathymetry

- IBCAO 2.5 km vs GEBCO
  - Far more complex morphology
  - Ridge broken into several smaller segments
  - Pronounced kink projecting into Amundsen Basin
  - Crest generally shallower and wider
  - Notably flat-topped at several sections
Current Efforts

• **National Oceanographic Partnership Program (NOPP)**
  – Coastal Effects of a Diminished-Ice Arctic Ocean (ONR, NSF, MMS, Shell)
    • A Comprehensive Modeling Approach Towards Understanding and Prediction of the Alaskan Coastal System Response to Changes in an Ice-diminished Arctic. Maslowski (NPS), Cassano (U Col), Walsh (USF)
    • Circulation, Cross-shelf Exchange, Sea Ice, And Marine Mammal Habitats On The Alaskan Beaufort Sea Shelf. Weingartner (UAF), Pickart, Plueddemann (WHOI); Stafford (APL-UW); Moore (NOAA); Holt, Kwok (JPL)
    • Toward a predictive model of Arctic coastal retreat in a warming climate, Beaufort Sea, Alaska. Wobus (U Col), Stanton (NPS)
    • Episodic Upwelling of Zooplankton within a Bowhead Whale Feeding Area near Barrow, AK. Ashjian (WHOI); Okkonen (U Alaska); Campbell (URI); Stafford. (APL-UW); George (N Slope Dept Wildlife Mgmt); Moore (NOAA)

• **Defense Experimental Program to Stimulate Competitive Research (DEPSCOR)**
  • Upper Ocean Interactions: Observations and Modeling. Harper Simmons (UAF)

• **Ice Exercise 2007 (ICEX)**
  • Time Evolution of the Arctic Sea Ice Thickness Distribution from New Submarine Sonar Measurements. Peter Wadhams (U of Cambridge)
Research Questions Remain

- Acoustics
- Navigation
  - MIZ, Leads, Bathymetry
- Global Ocean Circulation
- Climate
- Biology
- Natural Resources

USS Normandy (CG 60) underway in the Arctic Ocean, 12 June 2007
Future Considerations

- Foreign Policy Changes
- Future Navy Priorities
- Strategy and Operations
  - DHS/USCG, USN
- Vessel Traffic & Design
- Natural Resources
- Global Climate
- Global Ocean Circulation
QUESTIONS?

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USS Harry S. Truman (CVN 75) and USNS Lewis and Clark (T-AKE 1), Atlantic Ocean, Feb 07