



U.S. Navy's Climate Change & Energy Initiatives



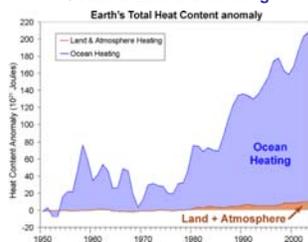
Commander Blake McBride
Arctic Deputy, Task Force Climate Change
June 2010

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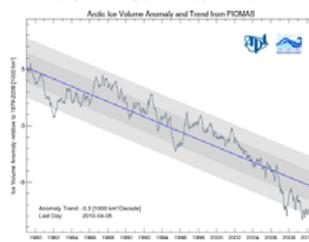
Climate Change Update

Ocean & Land are warming



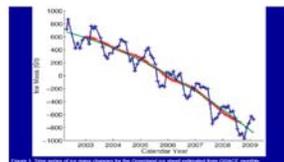
Total Earth Heat Content from 1950 (Murphy 2009). Ocean data taken from Domingues et al 2008

Arctic Sea Ice Continues to Melt & Thin



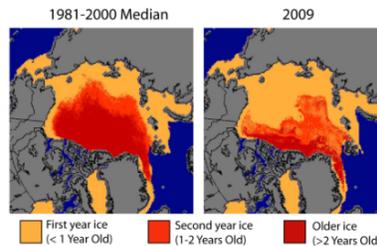
APL-UW PSC, J. Zhang (2010)

Greenland Ice Sheet Mass Loss is Accelerating



I. Velicogna, Geophysical Research Letters, 2009

End of February Arctic Sea Ice Age



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Chuck Fowler and Jim Maslanik, University of Colorado, and NSIDC, 2009



Climate Change Guidance

National



Executive Order 13514

"Federal Agencies will reduce, monitor, track, & report GHG emissions"

Defense



2010 QDR

"Climate change, energy security, and economic security are inextricably linked"

"DOD will work to foster efforts to assess, adapt to, and mitigate the impacts of climate change"

Navy



Maritime Strategy

"Climate change is gradually opening up the waters of the Arctic"

"These opportunities offer potential for growth, they are potential sources of competition for access and natural resources"

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Task Force Climate Change

Establishment

Chief of Naval Operations Executive Board on May 15, 2009



Composition

Navy, NOAA, USCG in core group with Joint, interagency, international support



Charter

Global climate change impacts with near term Arctic focus

Science-based approach, cooperative partnerships, risk assessments

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Navy Outreach



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Navy Climate Change Concerns

Near-term

- > Increasing Arctic maritime activity
- > Partnership opportunities
- > Energy security initiatives



Mid-Term

- > Sea level rise impact on installations
- > Water/resource challenges
- > Potential increase in HA/DR

Wild-cards

- > Ocean acidification
- > Abrupt climate change
- > Geoengineering

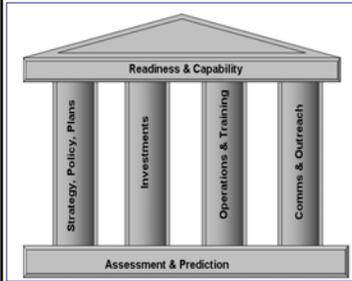


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Navy Arctic Roadmap

Framework



Execution



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Navy Arctic Strategic Objectives



I. Contribute to safety, stability, & security in the region



IV. Strengthen existing & foster new cooperative relationships in the region



II. Safeguard U.S. maritime interests in the region



V. Ensure Navy forces are capable and ready



III. Protect the American people, our critical infrastructure, & key resources

Towards the desired end state: a safe, stable, and secure Arctic

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Climate Change Roadmap

Phase 1 (FY10)

Climate adaptation assessments, studies

- Climate assessment
- Continue Arctic Roadmap execution***
- Support White House Interagency Adaptation Task Force***
- Research & development for air-ocean-ice observation & prediction***

GHG Tracking & Reporting***

OSD SERDP's sea level rise studies

Naval Studies Board climate change study

Phase 2 (FY11-12)

POM-14 CBA, NSP, SPPs address climate change adaptation

- Formalize /new cooperative adaptation partnerships
- Climate change considered in Fleet training, operations, & planning***
- Sponsor climate symposia & conferences***
- Formalize interagency partnership for air-ocean-ice observation & prediction

Complete sea level rise studies

Phase 3 (FY13-14)

Execute POM-14

- Implement climate change adaptation study recommendations
- Implement new cooperative adaptation partnerships
- Climate science & security implications included in formal Navy education
- Climate change TTX's & wargames***
- Update roadmap ICW QDR

Navy is fully mission-capable through changing climatic conditions

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*** Indicates recurring action



Navy Initiatives

Task Force Climate Change

Observation & Prediction

- Next Generation Air-ocean-ice numerical prediction
- Environmental Impact Assessments
- Cooperative Oceanographic Surveys
- Remote sensing

Adaptation

- Arctic & Climate Change Roadmaps
- Sea level rise impact modeling
- Water resource management
- Arctic civil relocation & erosion control
- Arctic fleet training

Task Force Energy

Energy Efficiency

- Smart Grid
- Net Zero Installations
- Metering & Auditing
- Incentivized Conservation
- New Construction & Renovation
- Training & Awareness
- Smart Voyage Planning, & Efficient Aircraft & Ship Systems

Alternative Energy

- Portable Power
- Biofuels
- Renewable power
- Alternative Fuel Vehicles

Technology and Research to Understand, Predict and Adapt to Climate Change

Assure Mobility + Expand Tactical Reach + Lighten the Load = Combat Capability

Reduce the Navy Carbon Footprint

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