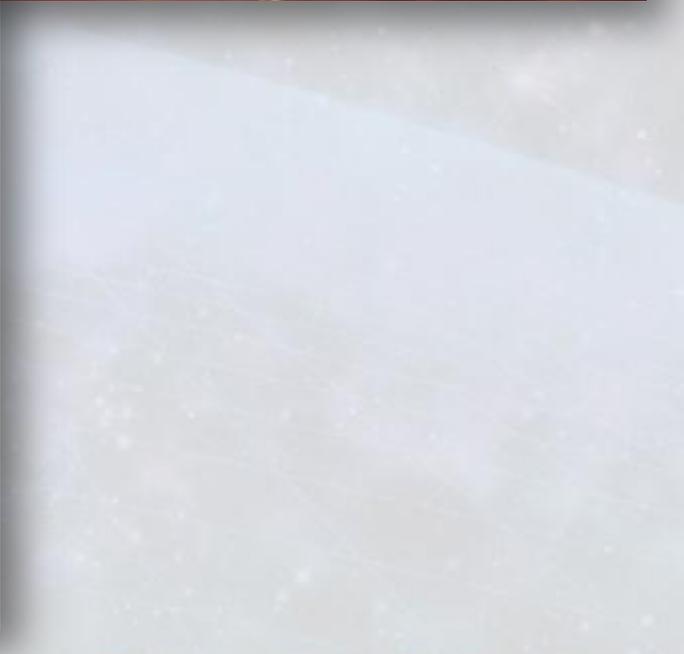
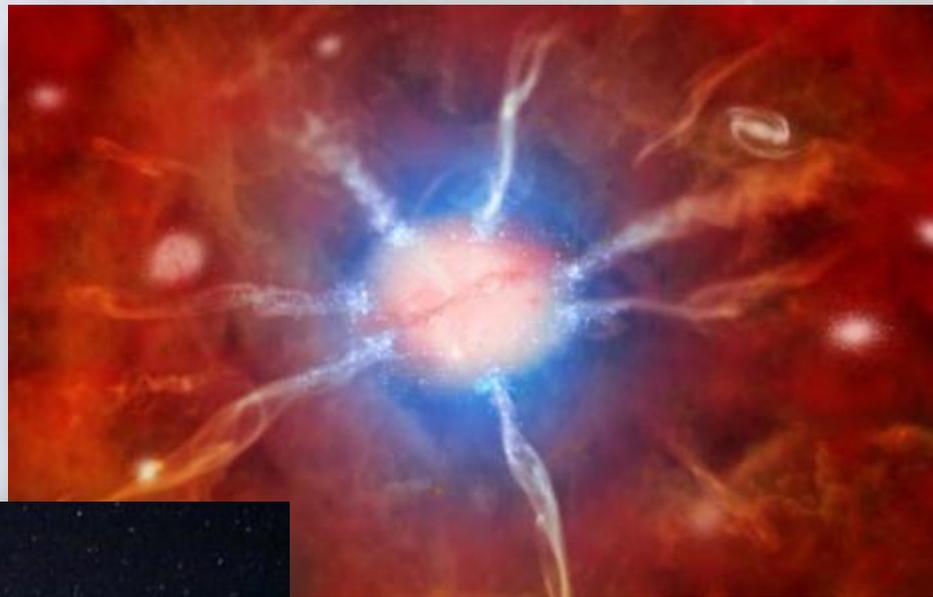


# Polar Programs: An Overview

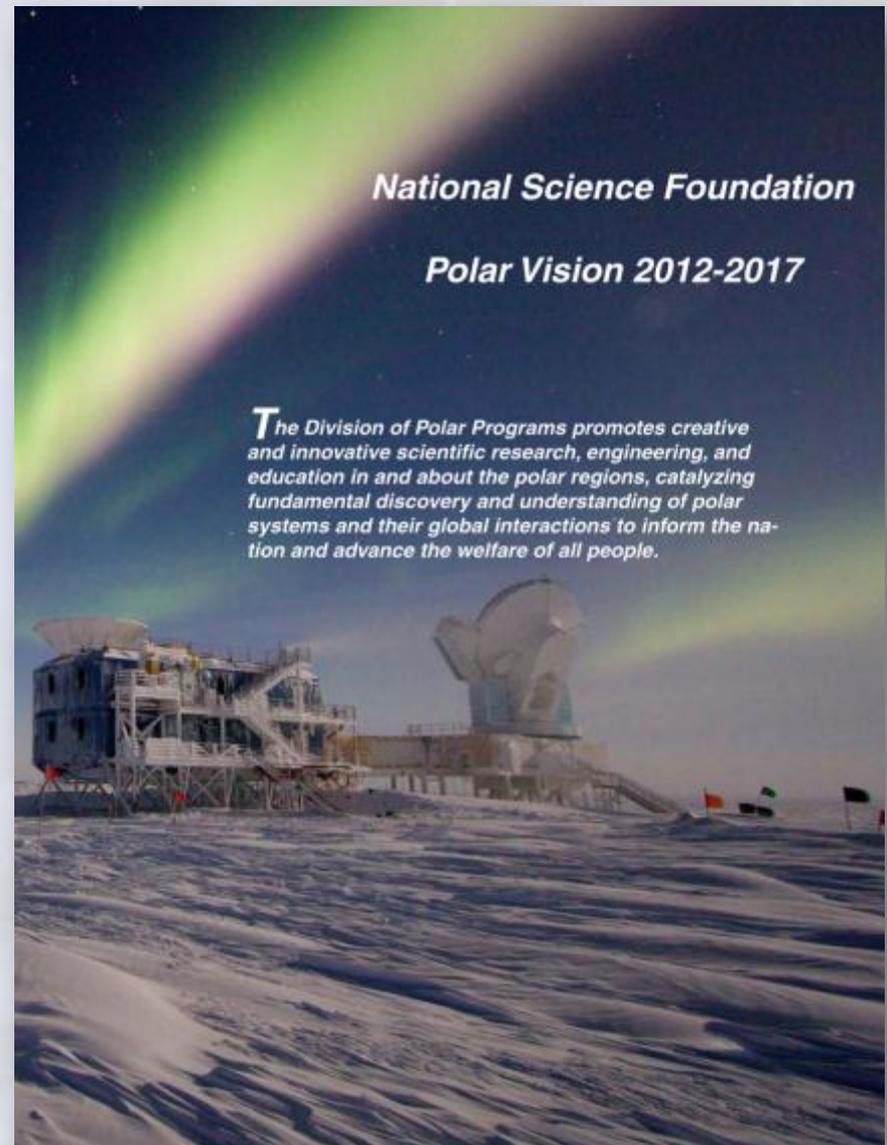
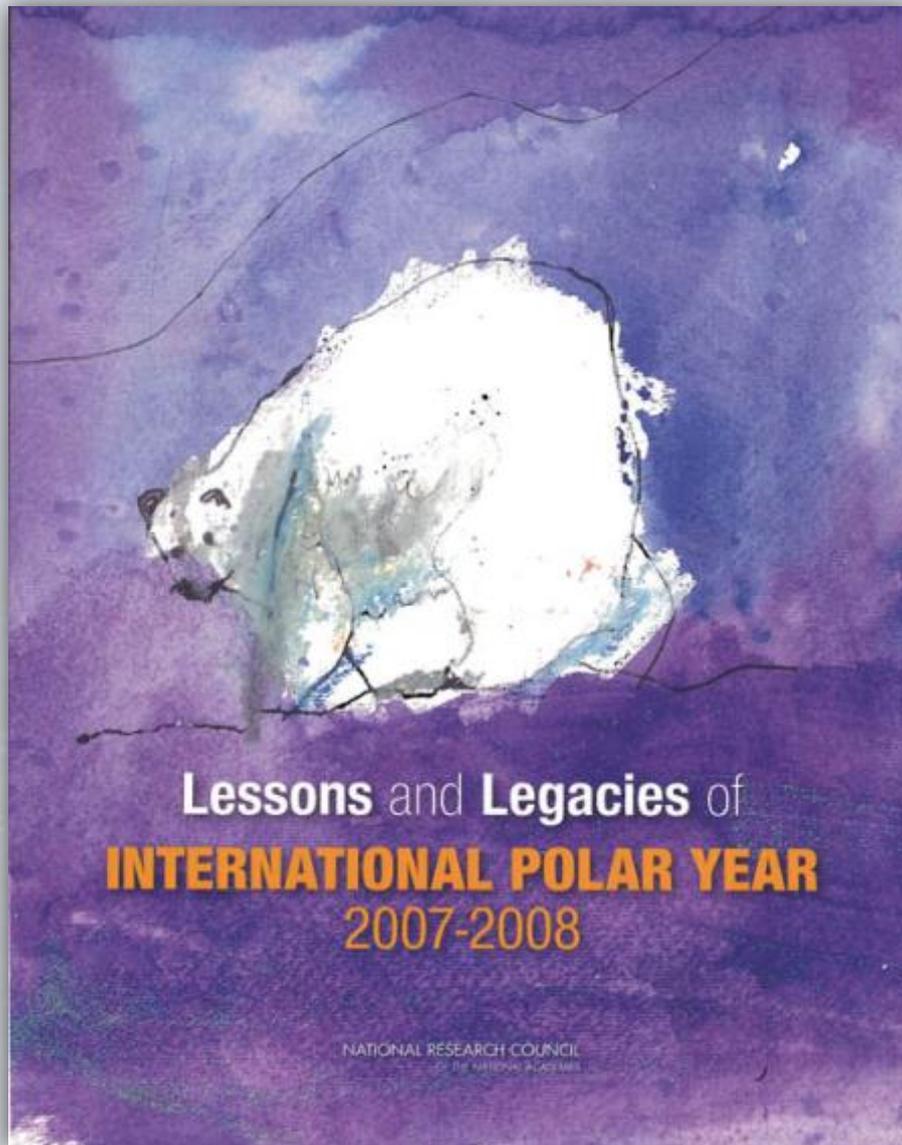


Dr. Kelly Kenison Falkner  
Director, Polar Programs  
October 16, 2012

# South Pole 10-m Telescope



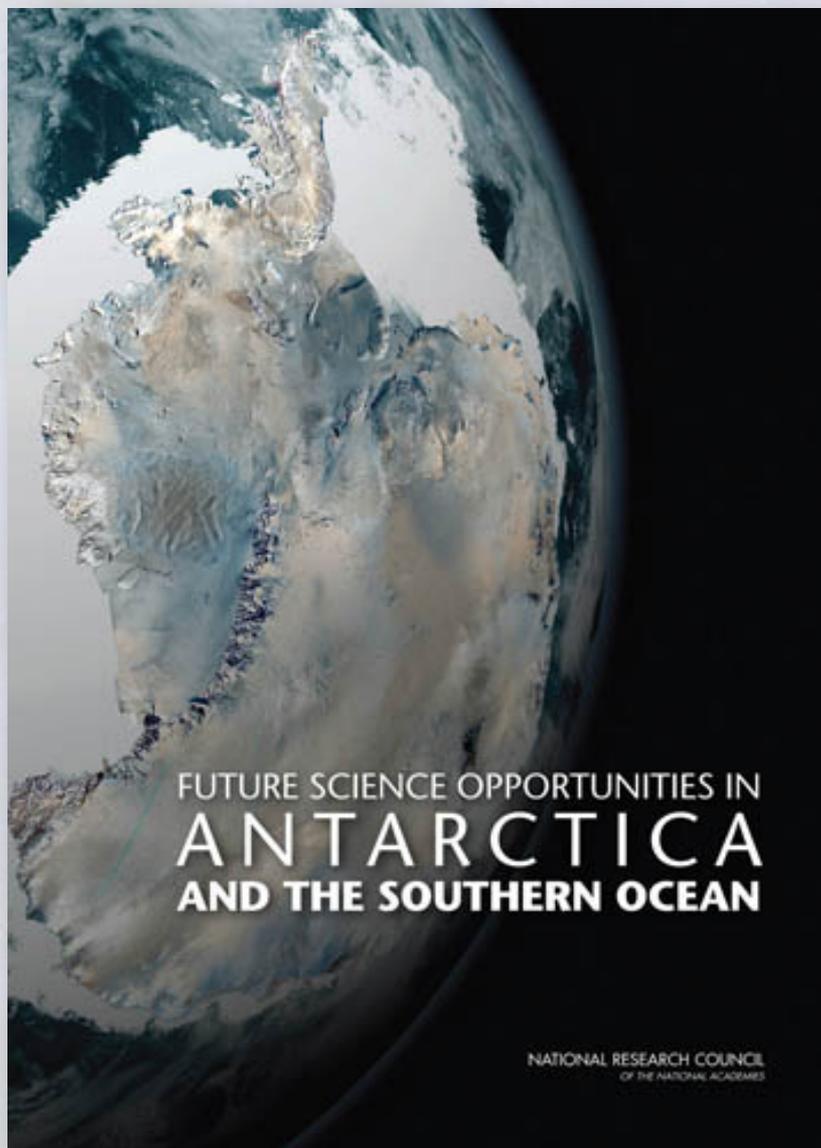
# Polar Programs Vision



# THE UNITED STATES IN ANTARCTICA

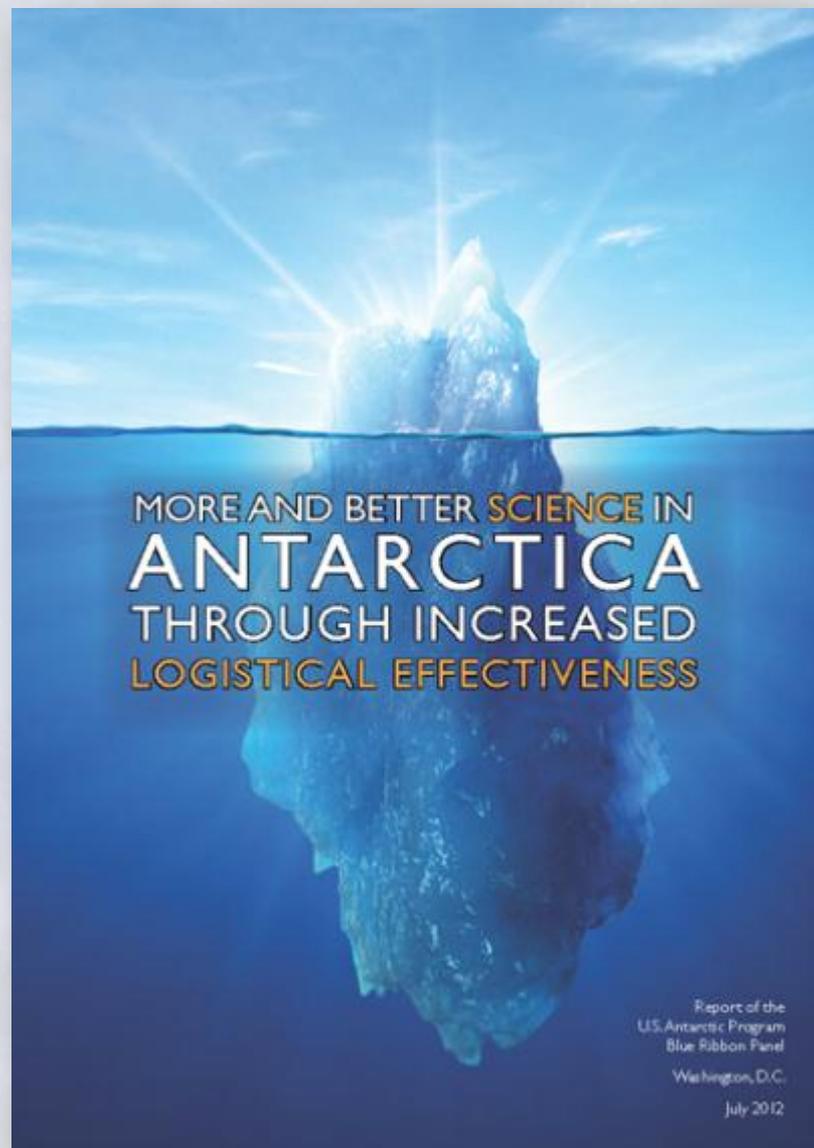
Report of the  
U.S. Antarctic Program  
External Panel





FUTURE SCIENCE OPPORTUNITIES IN  
**ANTARCTICA**  
**AND THE SOUTHERN OCEAN**

NATIONAL RESEARCH COUNCIL  
OF THE NATIONAL ACADEMIES



MORE AND BETTER **SCIENCE** IN  
**ANTARCTICA**  
THROUGH INCREASED  
**LOGISTICAL EFFECTIVENESS**

Report of the  
U.S. Antarctic Program  
Blue Ribbon Panel

Washington, D.C.

July 2012

## Interagency Arctic Research Policy Committee

### Arctic Research Plan: FY2013 - 2017

Contributing authors: Jonathan Berkson, United States Coast Guard; Shella Biallas, Department of the Interior; John Calder, National Oceanic and Atmospheric Administration; C. Nikoosh Carlo, National Science Foundation; Ashley Chappell, National Oceanic and Atmospheric Administration; Kathy Crane, National Oceanic and Atmospheric Administration; Richard Eckman, National Aeronautics and Space Administration; Wanda Ferrell, Department of Energy; William Fitzhugh, Smithsonian Institution; Martin O. Jeffries, Department of Defense; Brendan P. Kelly, Office of Science and Technology Policy; Igor Krupnik, Smithsonian Institution; Michael Kuperberg, Department of Energy; Marya Levintova, National Institutes of Health; Kim McGraw, Department of the Interior; Adrianna Muir, Department of State; Alan Parkinson, Centers for Disease Control and Prevention; James Partain, National Oceanic and Atmospheric Administration; Robert Sanford, National Science Foundation; Sandy Starkweather, National Oceanic and Atmospheric Administration; Simon Stephenson, National Science Foundation; Louis Tupas, Department of Agriculture; Taneil Uttal, National Oceanic and Atmospheric Administration; Thomas Wagner, National Aeronautics and Space Administration.

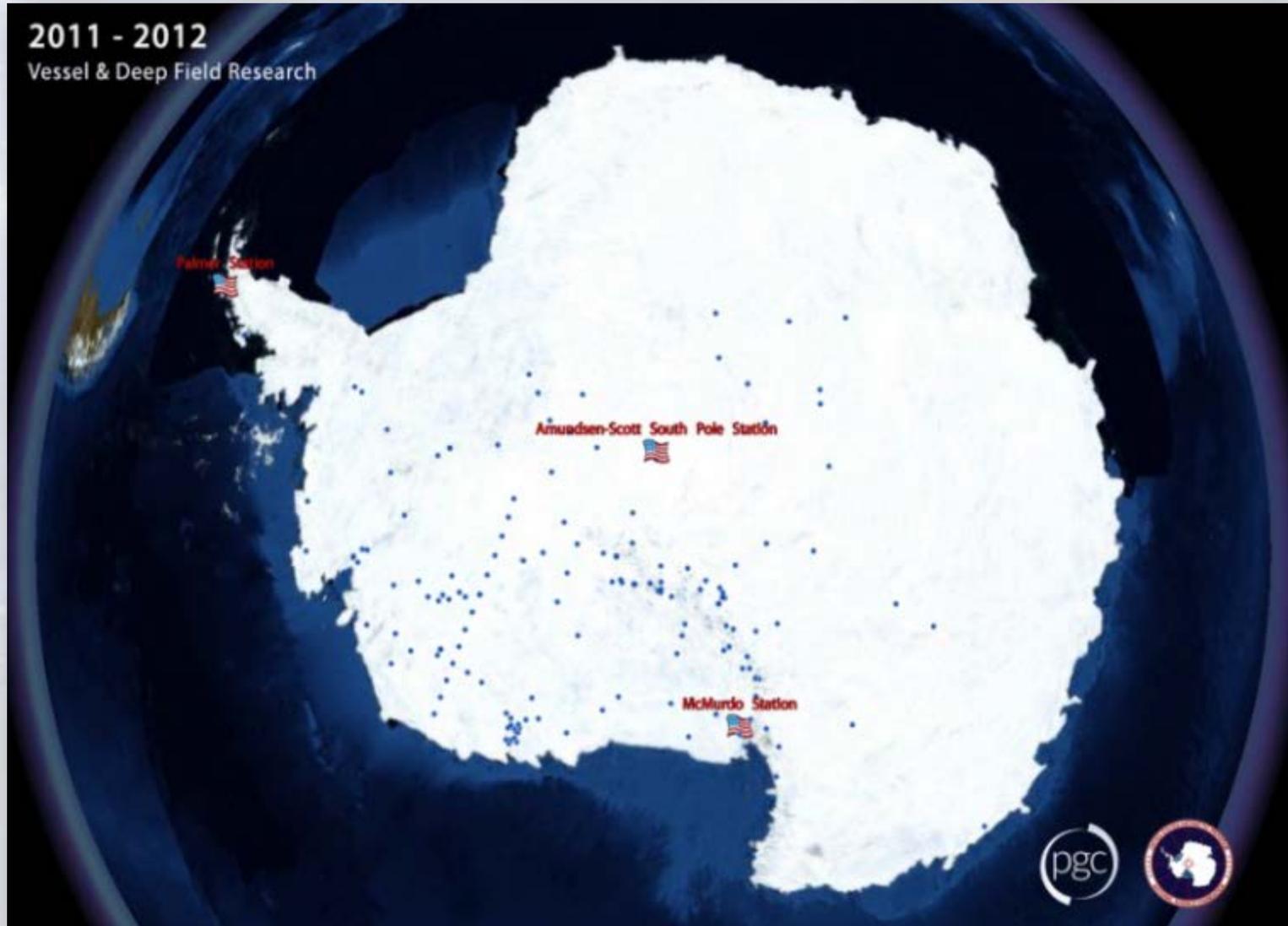
Date

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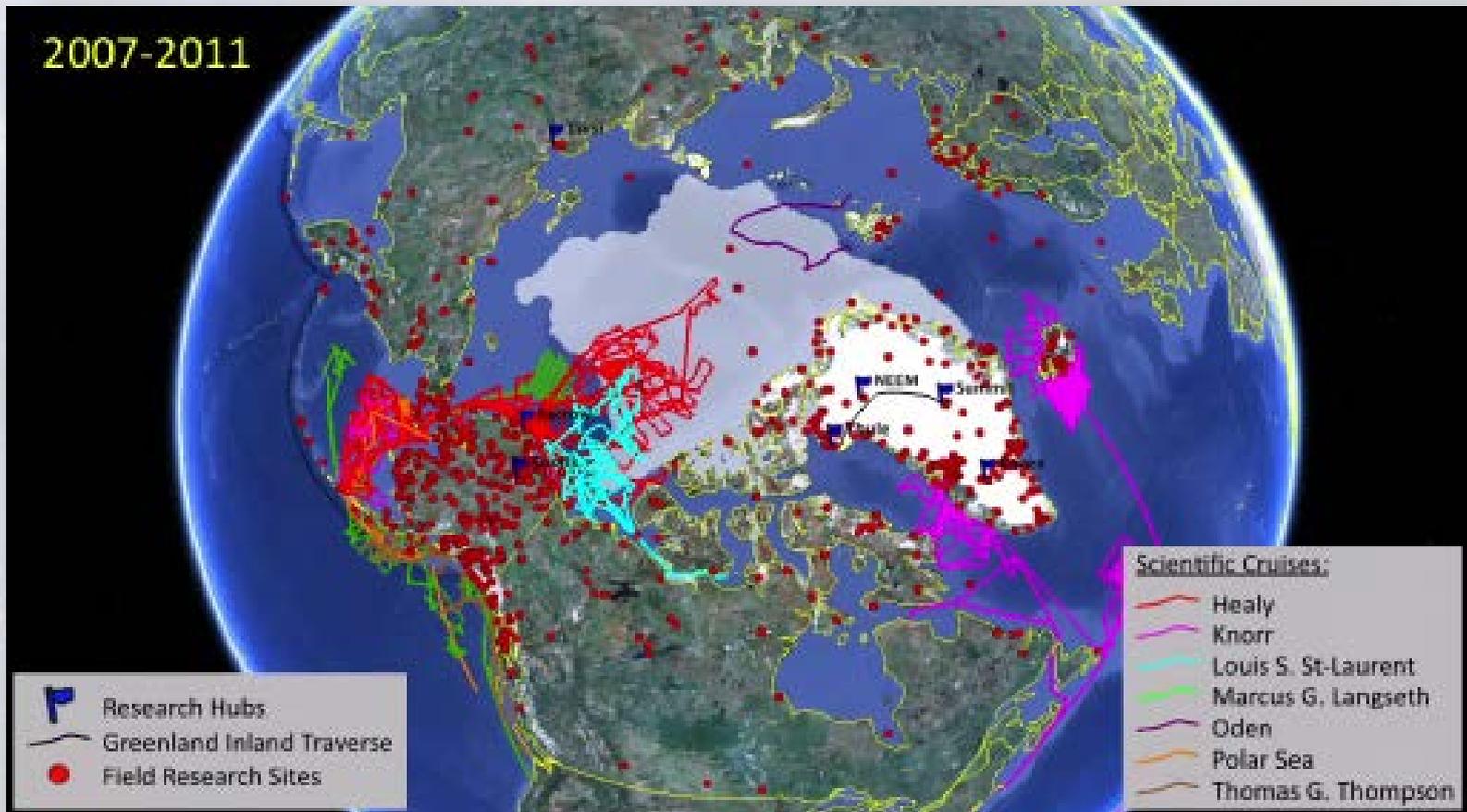
1. Executive Summary
2. Introduction and Background
3. Research Areas
  - 3.1. Understand sea-ice processes, ecosystem processes, ecosystem services, and climate feedbacks in the Beaufort and Chukchi Seas and the contiguous Arctic Ocean
  - 3.2. Understand terrestrial ice processes, ecosystem processes, ecosystem services, and climate feedbacks in the Arctic
  - 3.3. Atmospheric surface heat, energy, and mass balances
  - 3.4. Integrate and continue to deploy a national Arctic observing system and promote international cooperation to create a circumpolar observing system
  - 3.5. Integrate Arctic regional models
  - 3.6. Assess strengths and vulnerabilities of Arctic communities to impacts of climate change and develop adaptation strategies and tools to maximize sustainability, well-being, and cultural and linguistic heritage
  - 3.7. Understand factors that affect human health in the Arctic, including infectious and non-communicable diseases, environmental contamination, climate change, and behavioral and mental health disorders
4. Research Infrastructure
5. Acronyms
6. Acknowledgments

# U.S. Antarctic Program

## Research sites 2004-Present (animation)



# ARMAP Arctic Map (animation)



# Sustainable Support

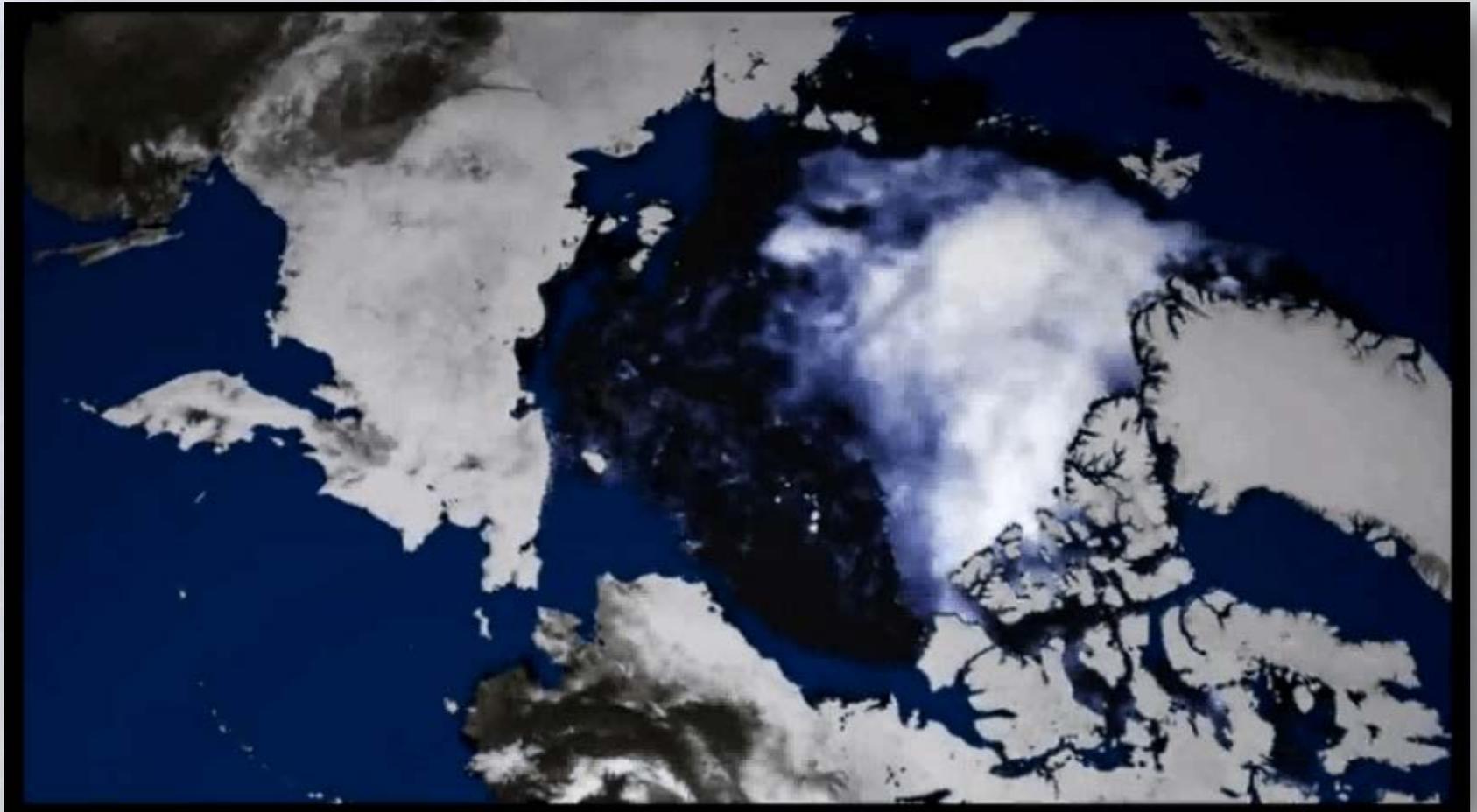


# Polar Environment, Health and Safety

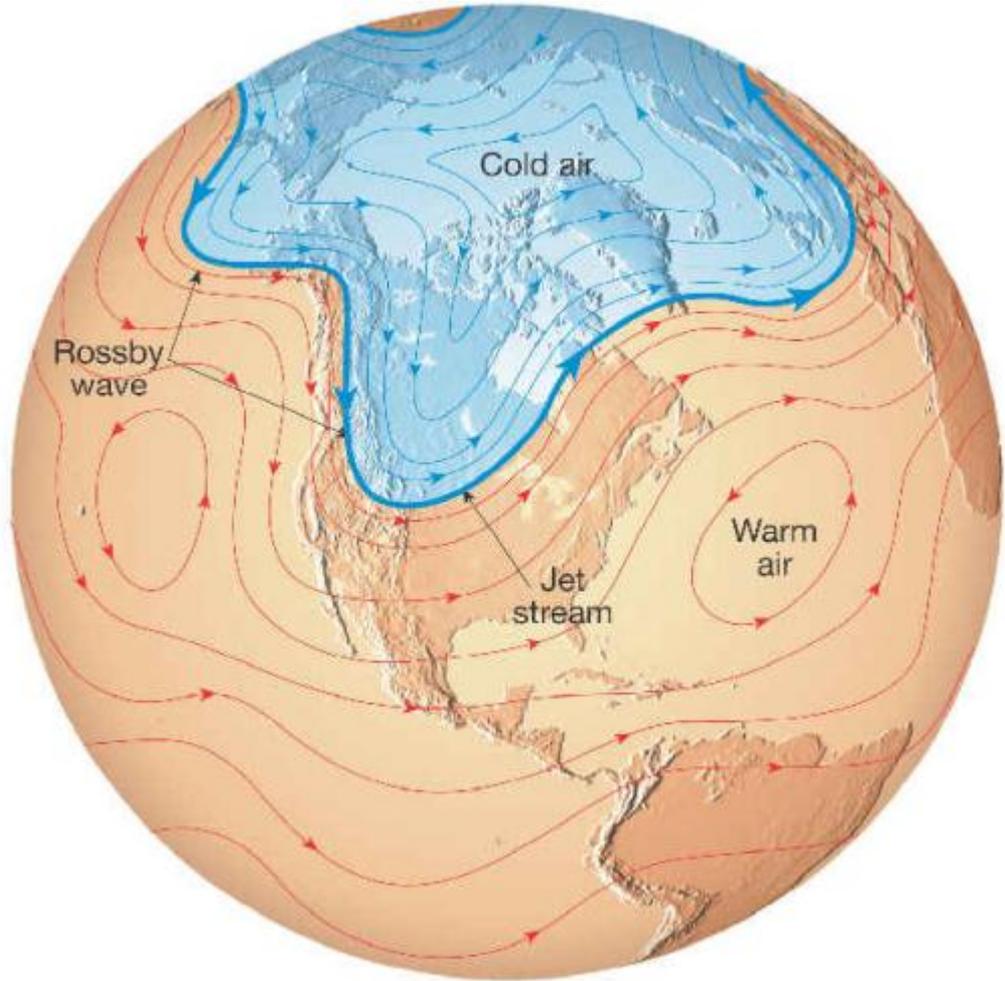


# OPP Big Stories

Arctic Sea Ice minimum video, produced by the Yale Forum on Climate Change & Media

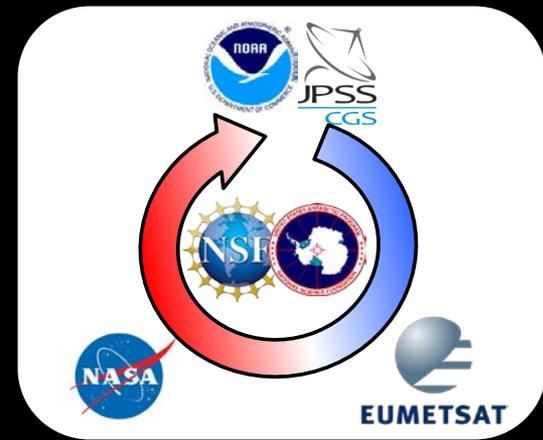


# Implications: alteration of storm patterns, phenologies, migration, disease



# EUMETSAT Metop-A Environmental Satellite

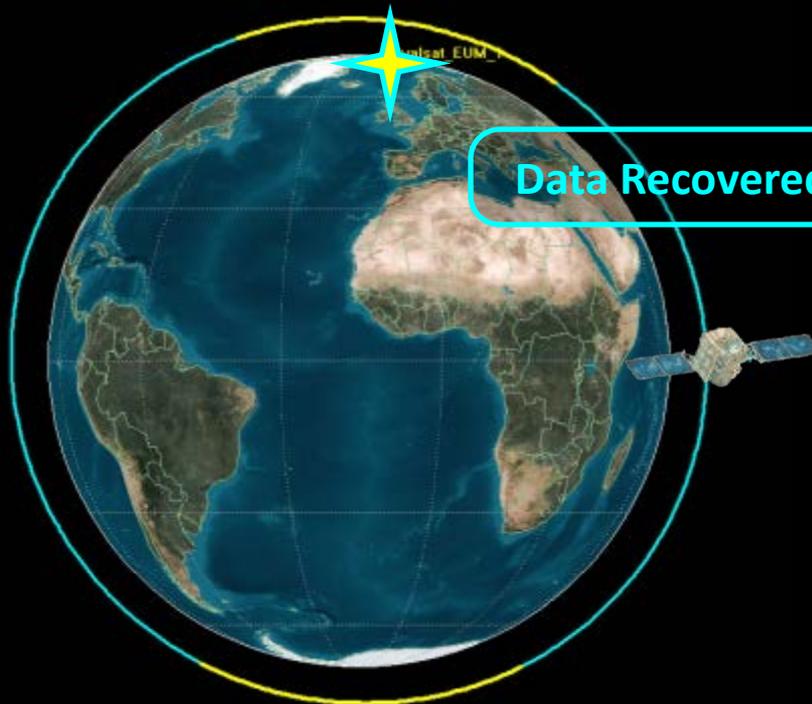
- Real-time data flow via McMurdo cuts data delivery time in half
- Latency goals for weather “now-casting” met
- NOAA as recipient of data - benefits for U.S. national weather forecasting



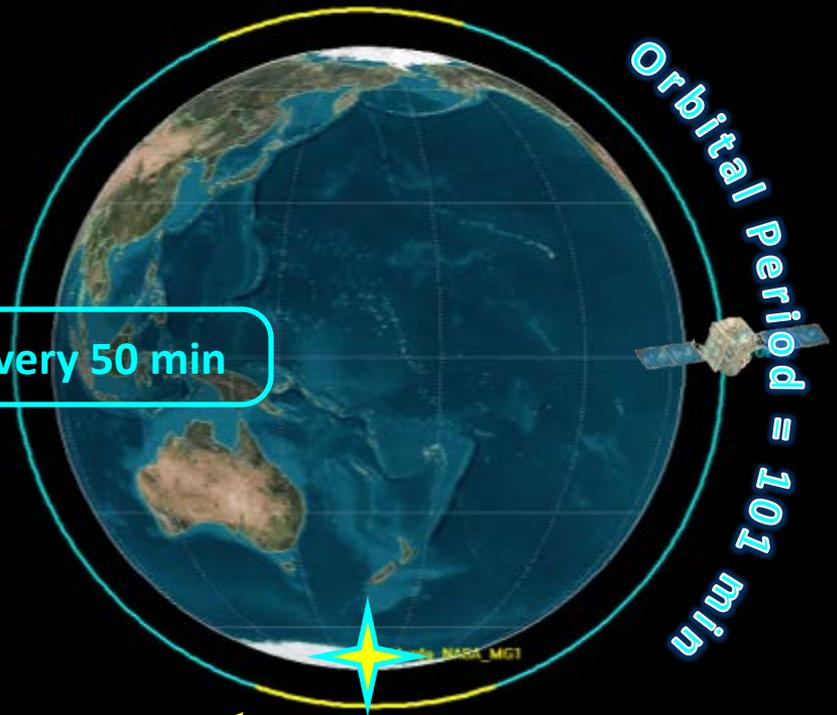
## Svalbard Earth Station

Lat: 78.2286° N

Lon: 15.4014° E



Data Recovered  $\cong$  Every 50 min



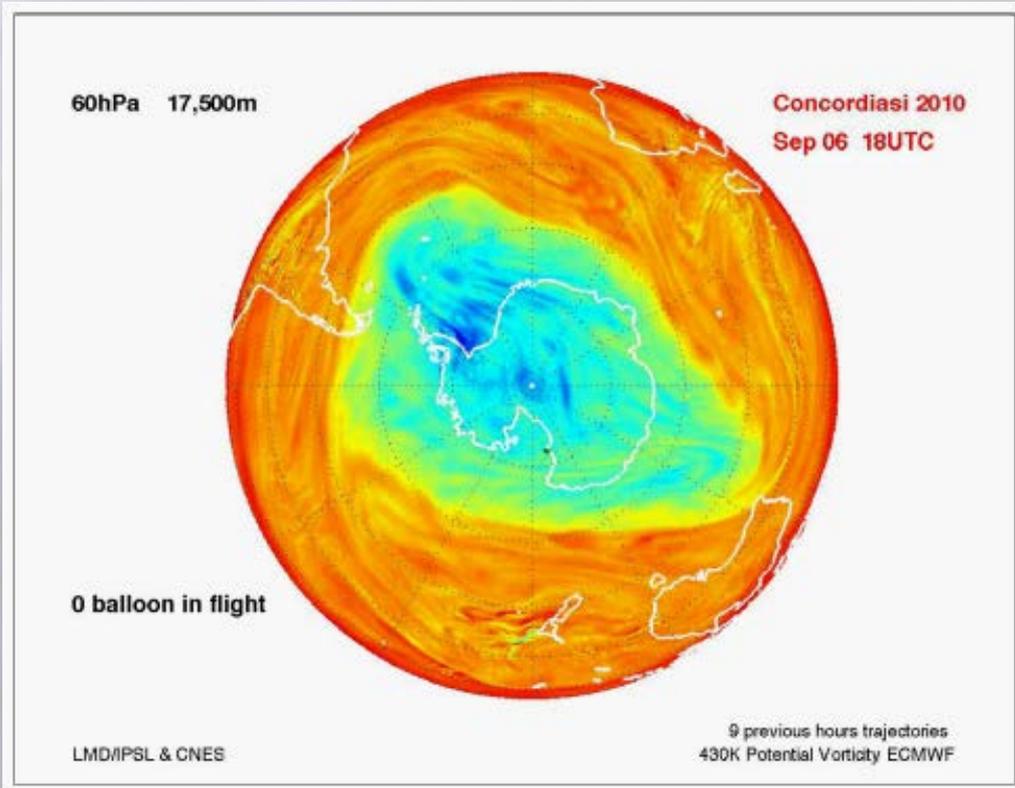
Orbital period = 101 min

## McMurdo Earth Station

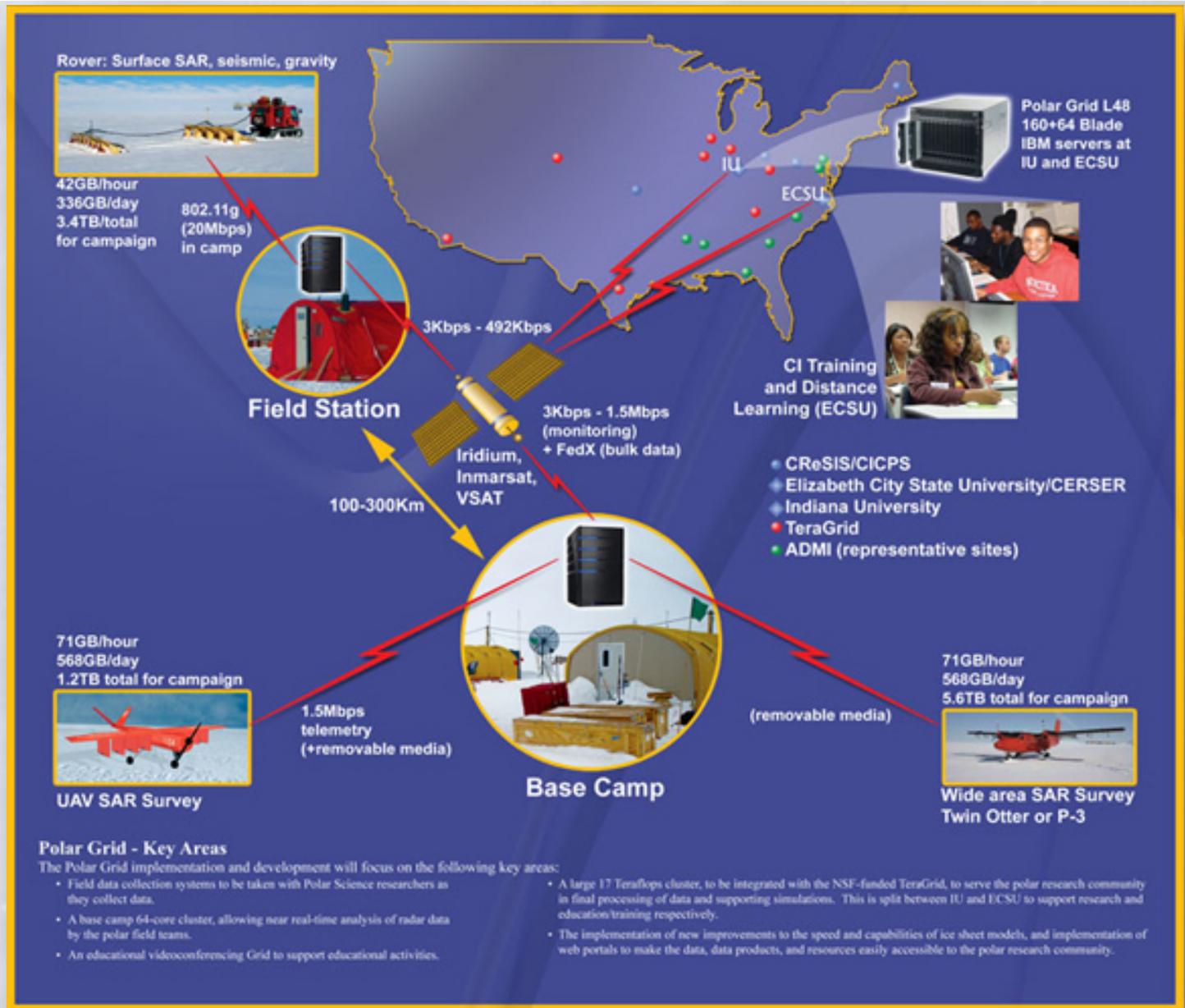
Lat: 77.8391° S

Lon: 166.667° E

# What has polar science done for you lately?



# CReSIS & PolarGRID



# Other Big Stories...

Land ice loss/Polar GRID video



# Joint Science Education Project in Greenland (video)



# BEST

A HISTORIC PARTNERSHIP BETWEEN  
THE NORTH PACIFIC RESEARCH BOARD AND  
THE NATIONAL SCIENCE FOUNDATION

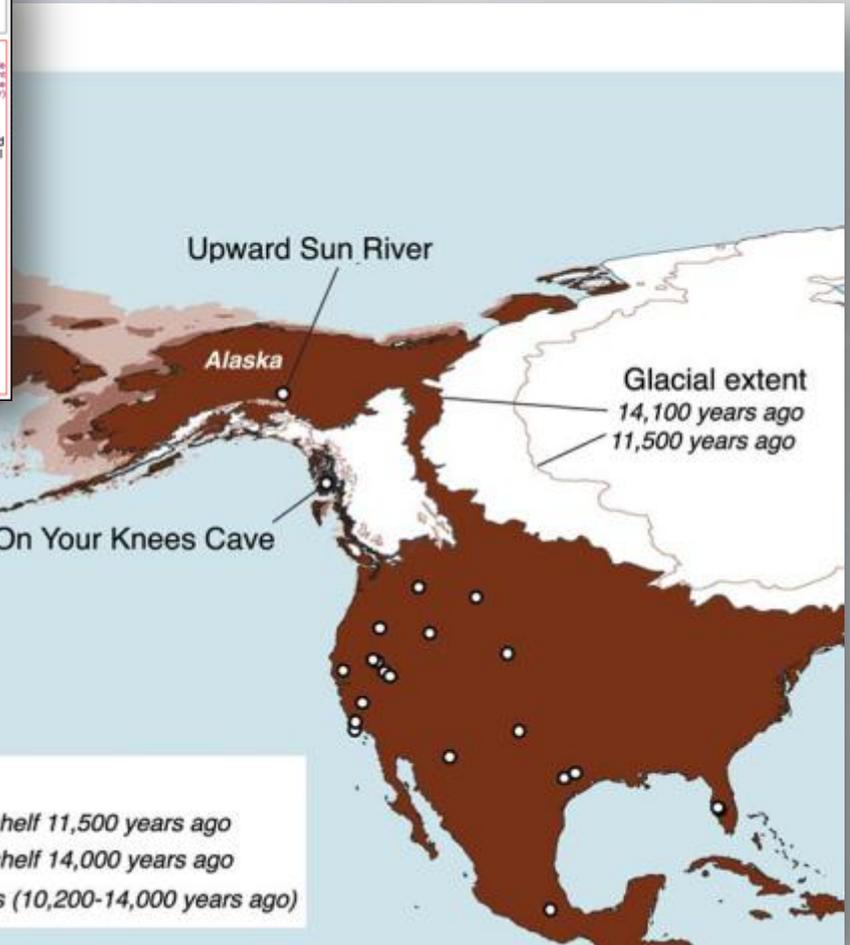
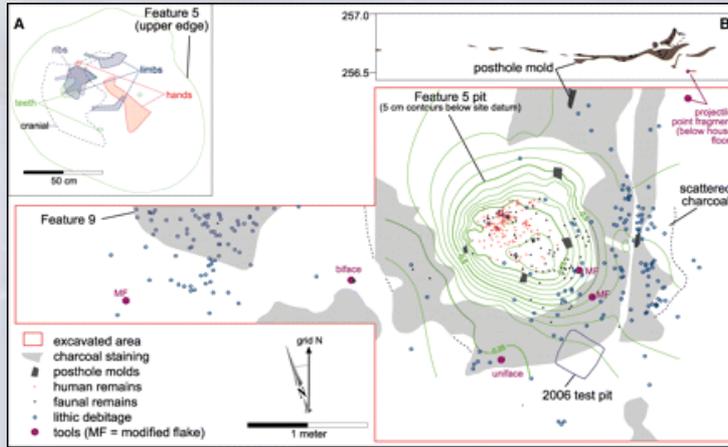
## BEST-BSIERP *Bering Sea* PROJECT

Climate change and reduced ice cover significantly impact the Bering Sea ecosystem. We seek to understand the mechanisms that create and sustain this highly productive region, and how they may be altered over time.

UNDERSTANDING ECOSYSTEM PROCESSES IN THE BERING SEA 2007-2012  
bsierp.nprb.org • January 2010

# A Terminal Pleistocene Child Cremation and Residential Structure from Eastern Beringia

Dr. Ben A. Potter, UAF



Ben A. Potter,\* Joel D. Irish, Joshua D. Reuther, Carol Gelvin-Reymiller, Vance T. Holliday

Published 25 February 2011, *Science* 331, 1058 (2011)

# Ice Fish Genetics

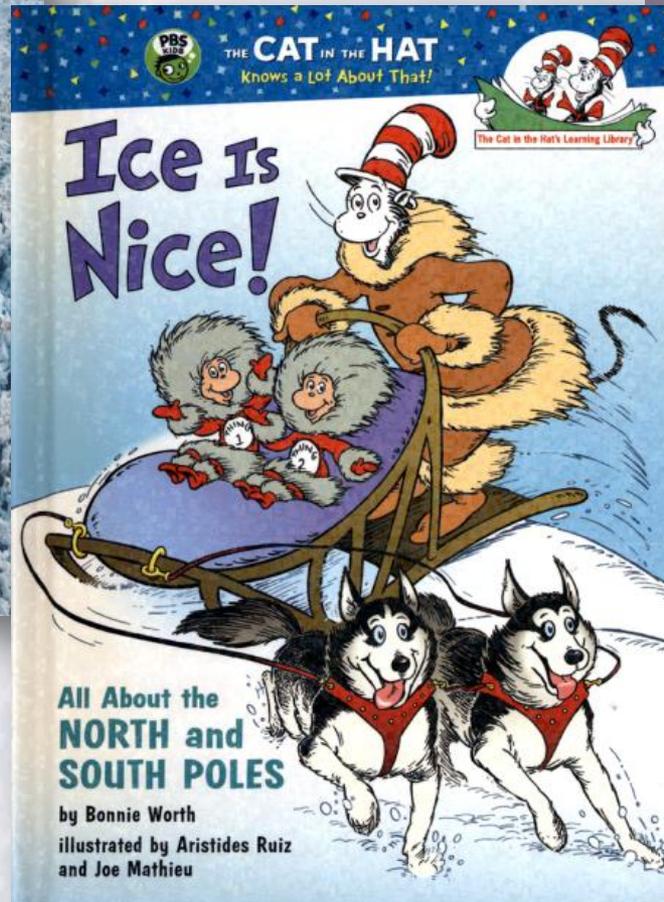
Howard Hughes Medical Institute video



# Exploration/Discovery (video)



# In the Public Eye



**Supplemental Slides Follow**

# Office of Polar Programs Budget

<b>Program</b>	<b>Appropriated 2012*</b>	<b>Request 2013*</b>
Arctic Sciences	\$102.76	\$108.51
Antarctic Sciences	\$69.75	\$75.80
Antarctic Infrastructure & Logistics	\$256.74	\$258.33
Polar Environment, Health & Safety	\$6.62	\$7.10
<b>TOTAL</b>	<b>\$435.87</b>	<b>\$449.74</b>

\*Numbers are in units of million \$US