



Is America Prepared for an Accessible Arctic?

**Mead Treadwell, Chair
U.S. Arctic Research Commission
MARAD Arctic Conference – Washington
June 5, 2008**



US ARCTIC RESEARCH COMMISSION



Mead Treadwell, Chair



Michele Longo Eder



Susan Sugai



Duane Laible



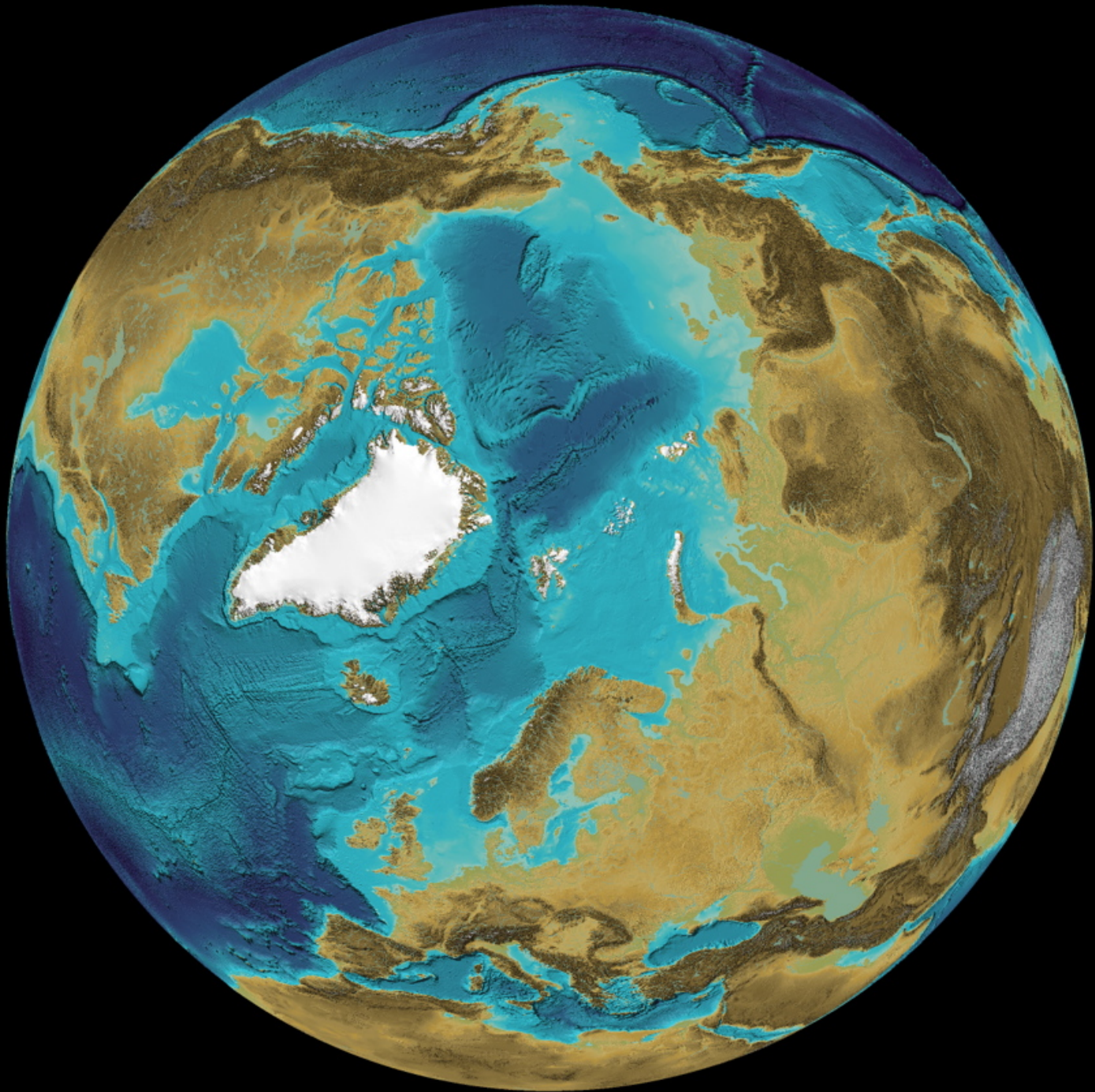
Vera Kingeekuk Metcalf



Tom Royer



Charles Vörösmarty



Timeless Arctic Marine Transport



Arctic Research in the US

- **The U.S. Arctic Research Program is approximately \$400 million per year...across at least 15 federal agencies...cooperating with over a dozen nations ...using research infrastructure worth billions...and building America's competitive position**



U.S. Arctic Research Commission



*Report on
Goals & Objectives
2007*

Report on Goals and Objectives for Arctic Research

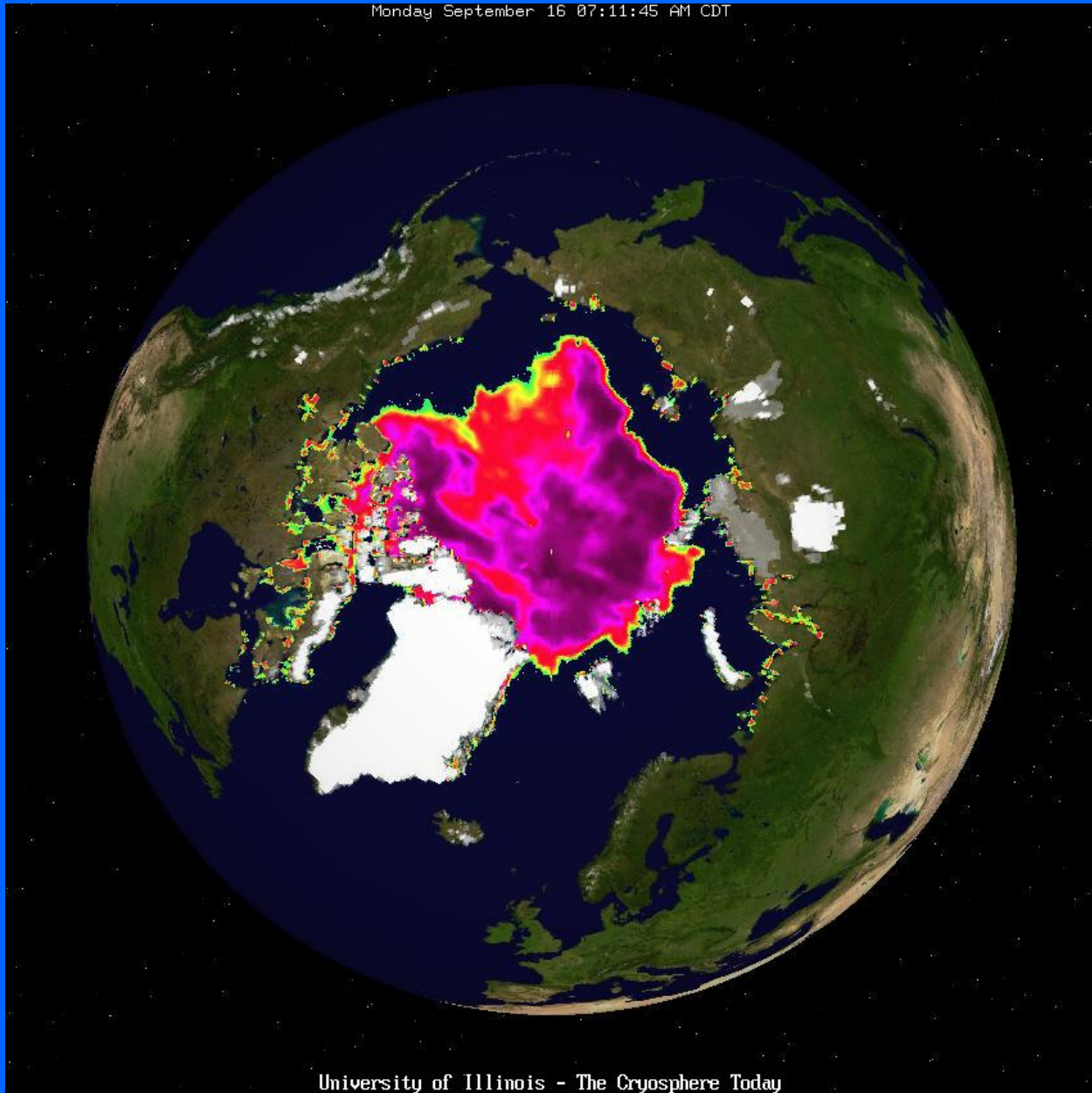
IARPC²⁰⁰⁷ meeting

April 27, 2007

Cover Photo Credit: Dr. Martin Jakobsson
Department of Geology and Geochemistry
Stockholm University

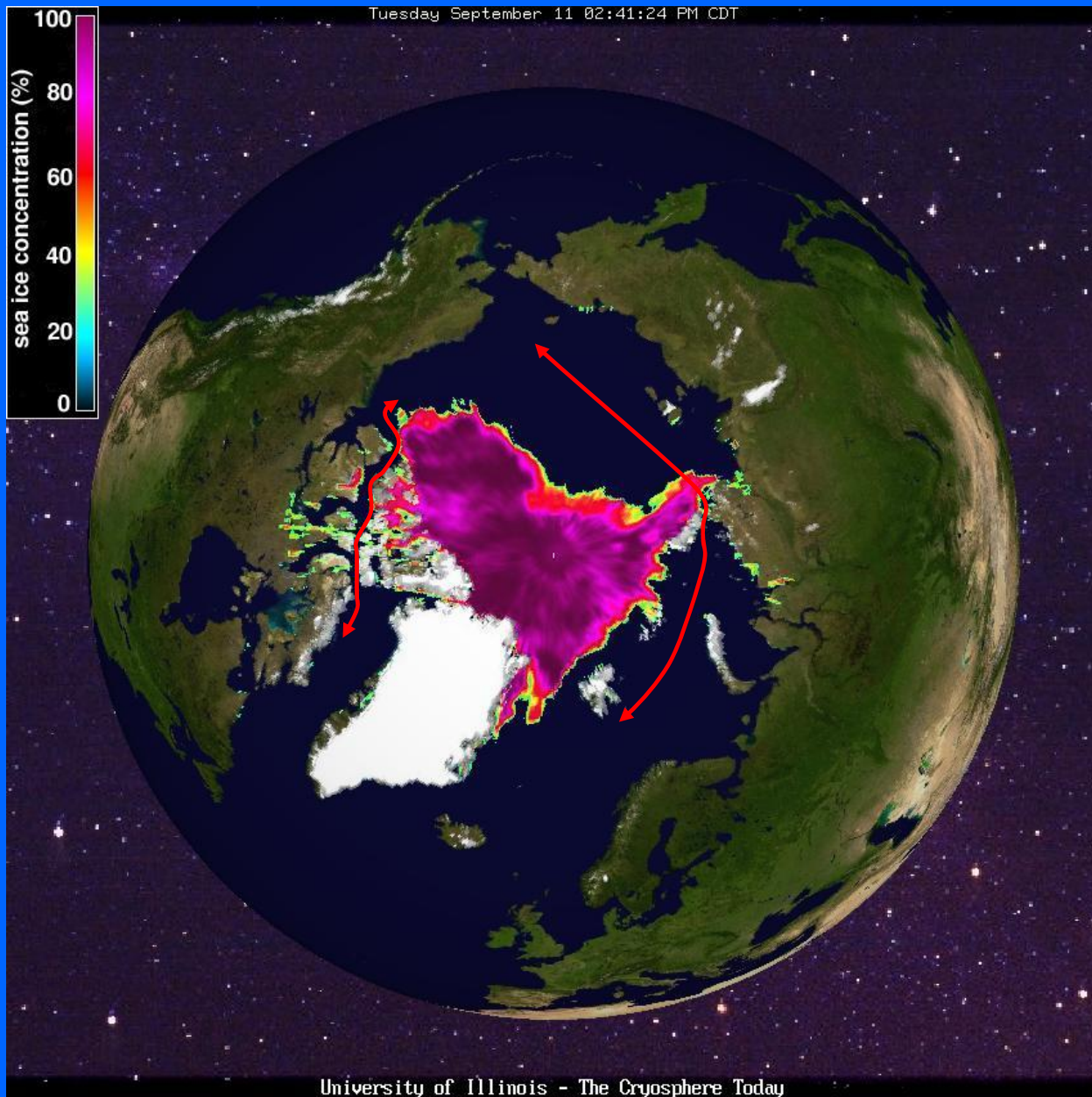
16 September 2002

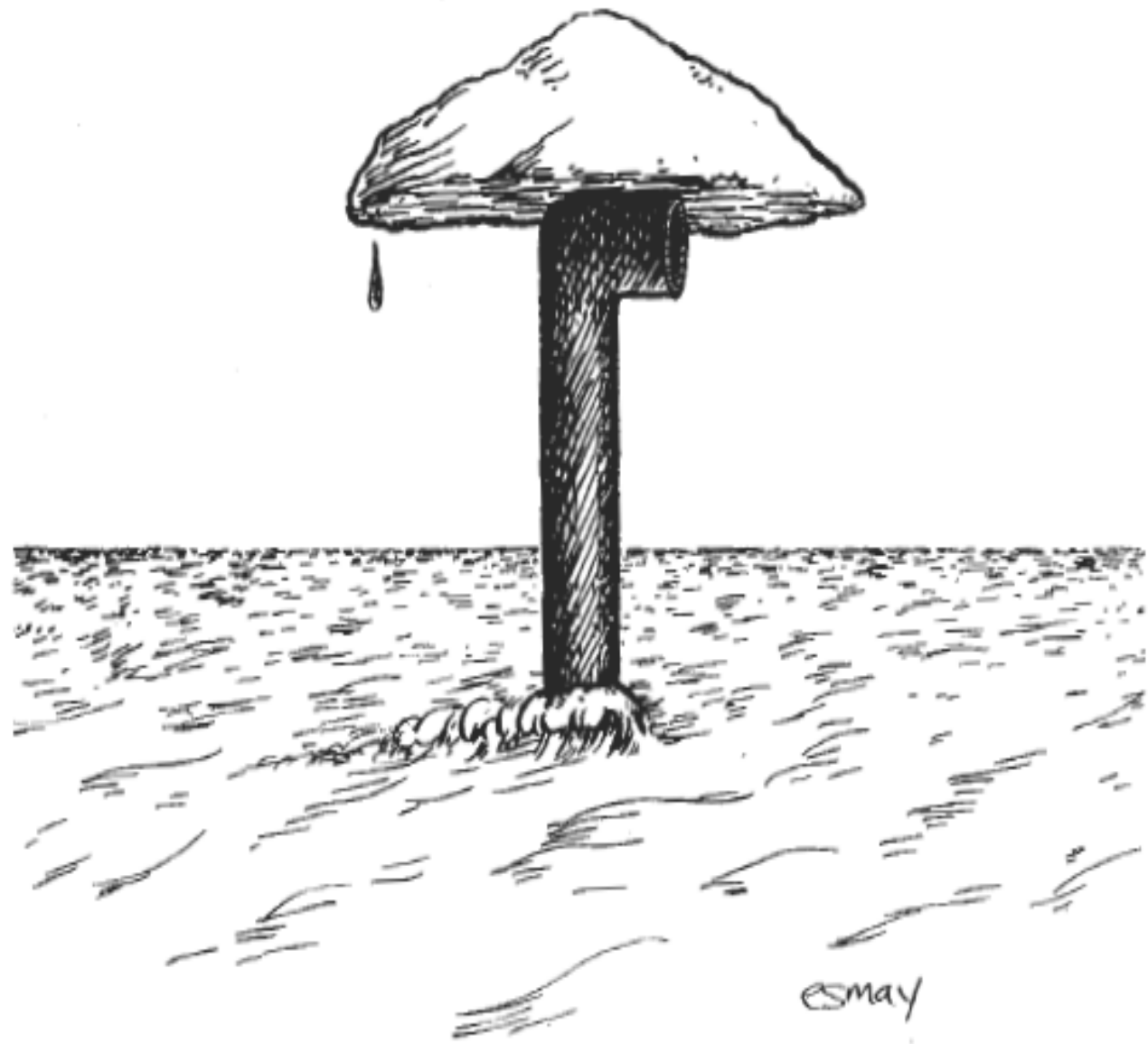
Monday September 16 07:11:45 AM CDT



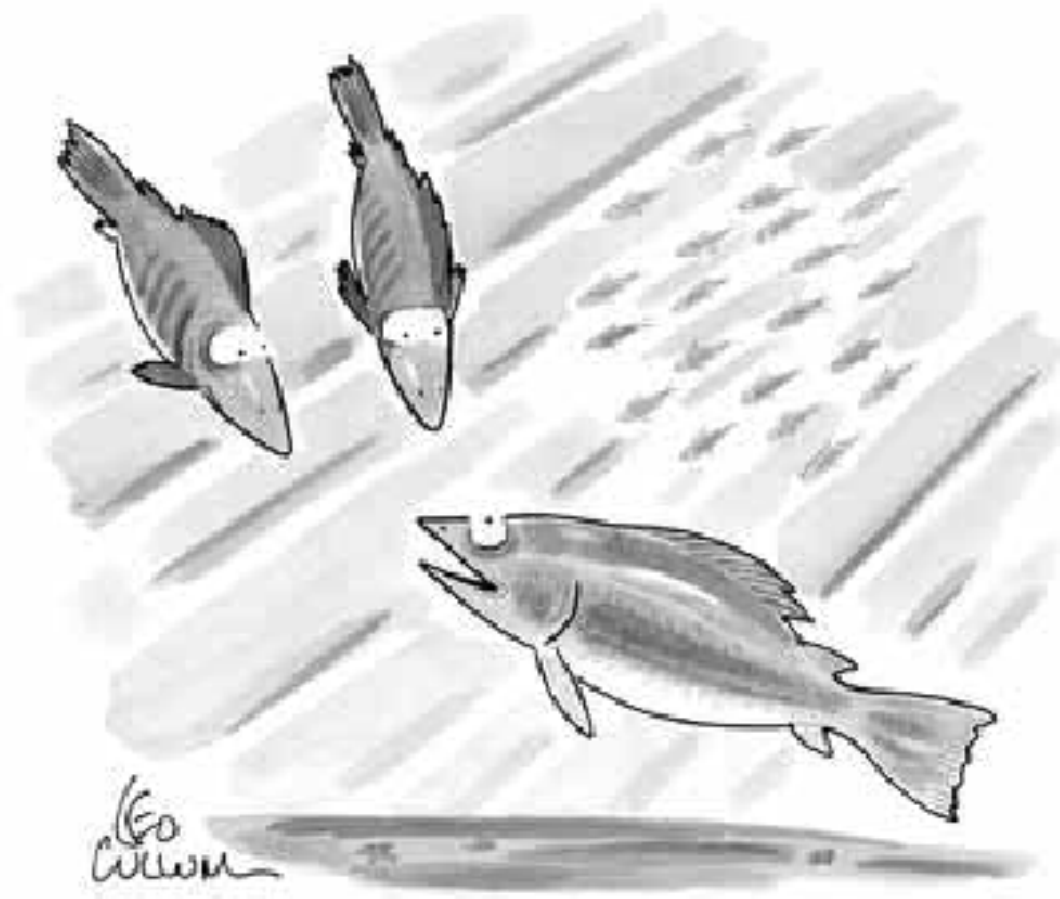
University of Illinois - The Cryosphere Today

11 September 2007





Last Trip Under the Polar Ice Cap



*"I'm not sure what I am, but I believe
I'm a product of Norway."*

THE RULING POWERS IN THE EARLY AZTEC EMPIRE BELIEVED THEY COULD AFFECT THE WEATHER BY RIPPING OUT A FEW HEARTS!

WE MUST HELP THE SUN GROW HOTTER!



IN TODAY'S ADVANCED SOCIETY, WE NOW UNDERSTAND ALL IT TAKES IS A LOT OF BILFOLDS!

WE MUST STOP GLOBAL WARMING!



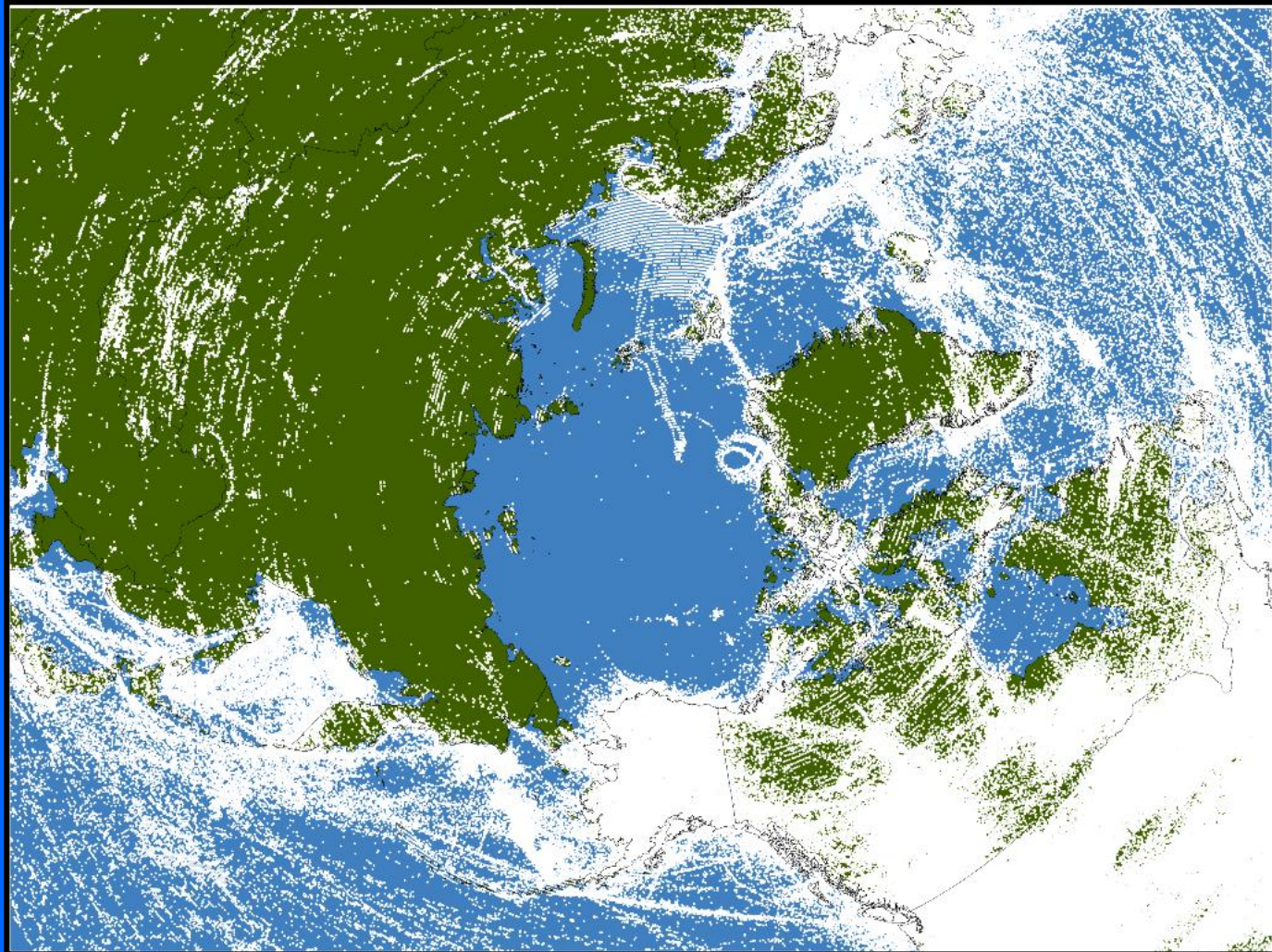
July 2001

Arctic Voice and Data



Source: Iridium, LLC

July 2006 Arctic Voice and Data



Source: Iridium, LLC



Trillion Dollar Issues

- Ownership, security, sovereignty
- Harvesting Arctic resources
- **Global Trade: Trans-Arctic Shipping**
- Climate Change Mitigation/Adaptation
- Protecting values we share – culture and conservation

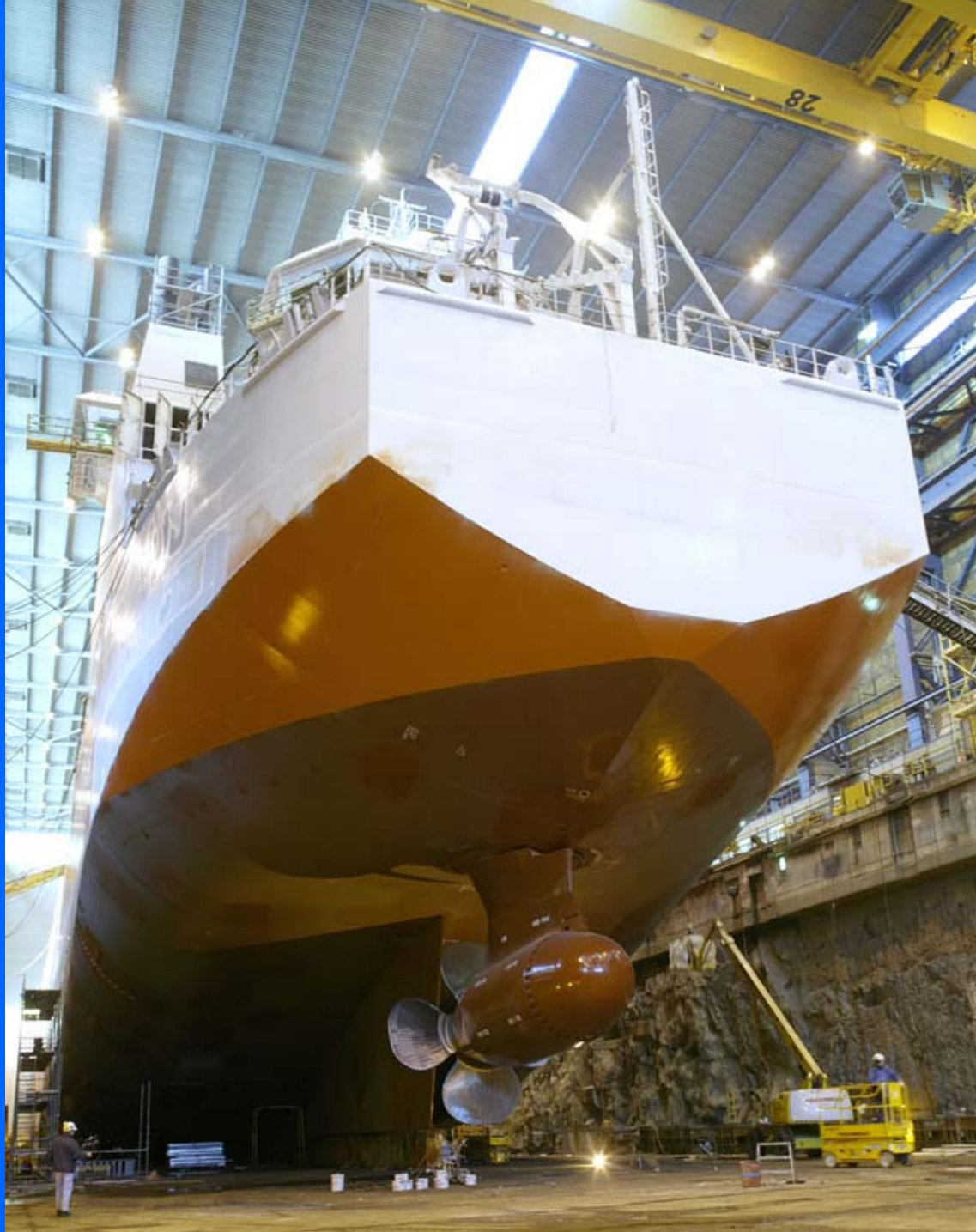
Icebreaker Design for Greater Efficiency

Future Convoy Requirements?



**Icebreaking (Double Acting) Container Ship
Norilskiy Nickel in the Kara Sea
March 2006**

Aker Arctic



**Aker Arctic
Technology**



Shorter Shipping Distances

**Distance:
Hamburg
to Yokohama
(nautical miles)**

**Northern Sea
Route ~ 6,920**

**Suez Canal ~
11,073**

**Panama Canal ~
12,420**

**Cape of Good
Hope ~ 14,542**



Homework

- International Assessment
- US Policy Review
- Infrastructure analysis
- Investment decisions
- Long-term climate monitoring
- Effects of shipping on values we hold dear
- Economics

ARCTIC MARINE SHIPPING ASSESSMENT

Scenarios of the Future



An Assessment Undertaken by the Protection of Arctic Marine Environment Working Group of the Arctic Council



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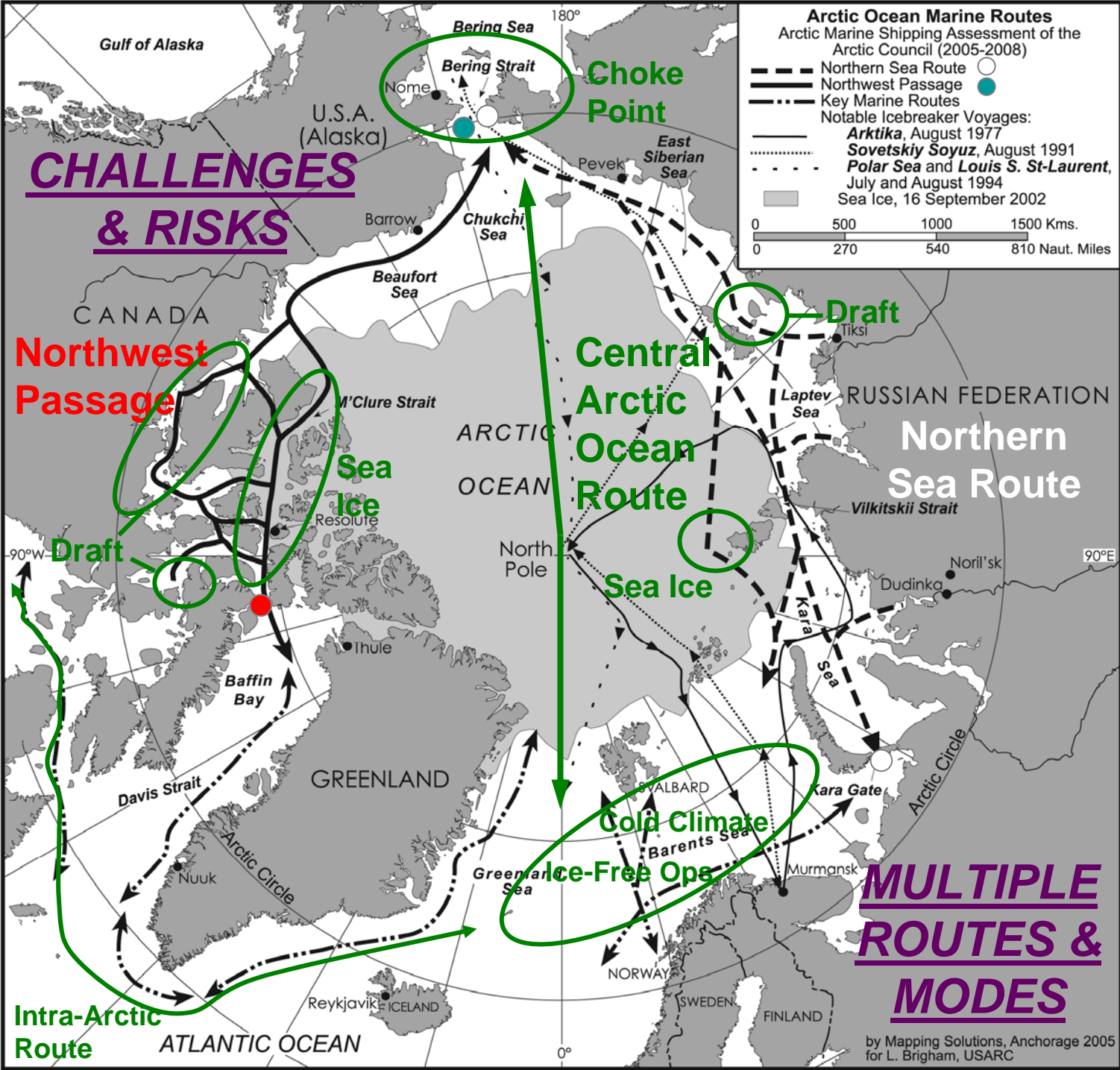
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Examples of Increasing Arctic Marine Use

- **Largest Number of Cruise Ship Voyages off Greenland in Summer 2007 (250+)**
- **Norwegian Arctic Offshore LNG to Spain**
- **Arctic Tanker Shuttle ~ Pechora Sea to Murmansk: Tankers Under Construction in Korea 7 Russia**
- **World's Largest Copper & Nickel Mine ~ Norilsk Nickel Expansion**
- **Year-round Navigation to Dudinka ~ Icebreaking Carriers (No Icebreaker Convoying/Escort)**
- **World's Largest Zinc Mine ~ Red Dog (Access ++)**
- **Expanding Marine Exploration in Marginal Seas (Greenland EEZ) & Central Arctic Ocean**
- **2004 to 2007 ~ 28 Icebreaker North Pole Transits**
- **Offshore Lease Sales in U.S. Arctic Offshore (\$2 Bil+)**
- **Largest # of Ships in the Barents Sea**



Potential Themes for AMSA Discussions

IMO Arctic Ship Guidelines/ Future Polar Code

International Arctic SAR Agreement

Monitoring/ Observing the Environment (SAON/IPY Legacy)

Use of Large Marine Ecosystems Concept

International Arctic Environmental Response

Protection & Marine Safety ~ Central Arctic Ocean

Indigenous Marine Use ~ Multiple Use Management

Surveillance of Arctic Marine Activity ~ Sharing Arctic Ship Information

Arctic States & Global Cruise Ship Industry

Enabling Maritime Infrastructure

AMSA Communication to the Arctic & Global Maritime Communities

Future Role & Responsibilities of EPPR

28 May 2008



THE ILULISSAT DECLARATION

ARCTIC OCEAN CONFERENCE
ILULISSAT, GREENLAND, 27 – 29 MAY 2008

British Minister for Foreign Affairs and the Premier of
five coastal States bordering on the Arctic Ocean –
Federation and the United States of America
2008 in Ilulissat, Greenland, to hold
Climate change and
the livelihoods
of



Having a safe, secure and reliable Arctic shipping regime is vital to the proper development of Arctic resources, especially now given the extent of Arctic ice retreat we witnessed this past summer...We can have such a regime only through cooperation, not competition, among Arctic nations. Denial of passage through international waterways, even though they may be territorial waters, and burdensome transit requirements will not benefit any nation in the long run.”

-- Assistant Secretary of State Daniel S. Sullivan, 10/15/2007



USARC ECUMENICAL BELIEF



- The United States must maintain its global maritime capability—as a government AND as a Nation
- If the U.S. does not exercise its visible maritime presence in the Arctic Ocean—we cede it to whomever wants it!

SARAH PALIN
GOVERNOR
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STATE OF ALASKA
OFFICE OF THE GOVERNOR
JUNEAU

March 18, 2008

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The President
The White House
Washington, DC 20500

Dear Mr. President:

I write in support of new icebreakers for the U.S. Coast Guard. The nation's only two icebreakers built to handle heavy sea ice are more than 30 years old and nearing the end of their service lives. Yet at the same time as our icebreakers are hobbled by years of hard service and lack of maintenance funds, more freighters and cruise ships than ever before are traveling through the Arctic — with many more on the way to U.S. waters. Oil and gas explorers are spending billions of dollars in the Arctic to find the energy resources our nation needs to power its homes and businesses. Similar commercial work is underway on both sides of the U.S. Arctic borders, moving ahead while our nation remains at the dock.

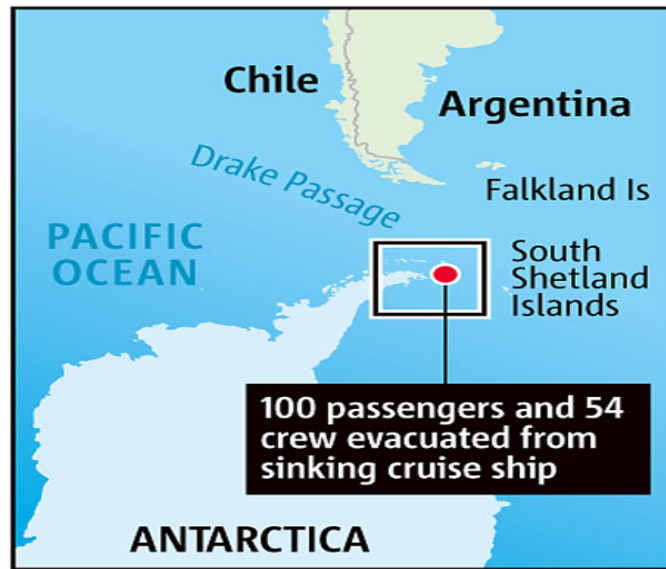
All the while our country needs more access and climate change and its effects, especially in remote areas. The U.S. Coast Guard is in poor shape and our energy and national security, and to recognize the United States to build a pair of new icebreakers.

The U.S. Coast Guard is in poor shape and our energy and national security, and to recognize the United States to build a pair of new icebreakers.



“I’m not sure I’m qualified to talk about the scientific issues related to global warming,” the Coast Guard commandant, Adm. Thad W. Allen, said in an interview. “All we know is we have an operating environment we’re responsible for, and it’s changing.” --NY Times, 10/18/2007

“Stricken cruise ship off Antarctica evacuated” MSNBC- 11/23/07



TOWARD AN INTEGRATED

ARCTIC OBSERVING NETWORK



NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

Polar Research Board

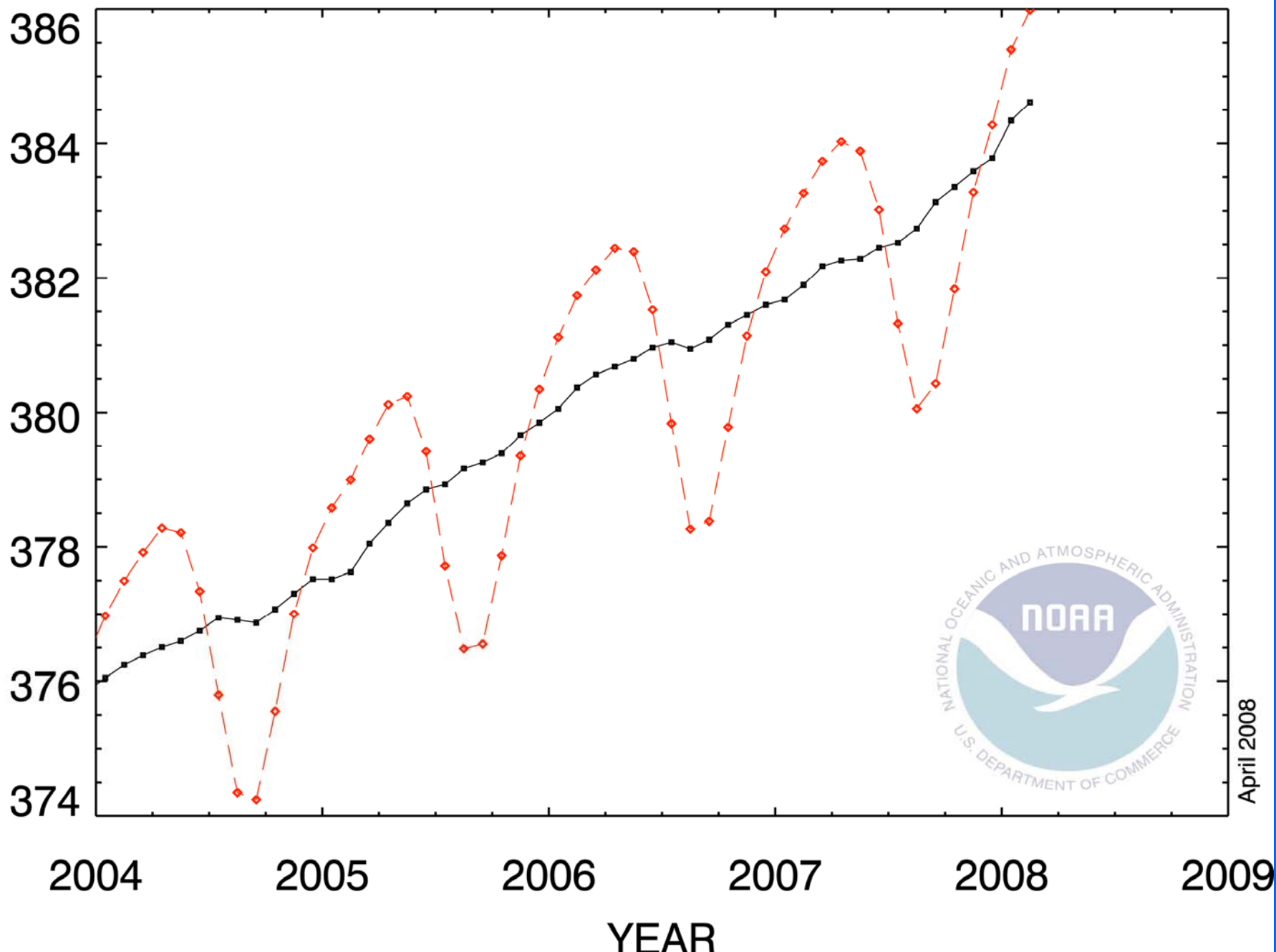
THE NATIONAL ACADEMIES

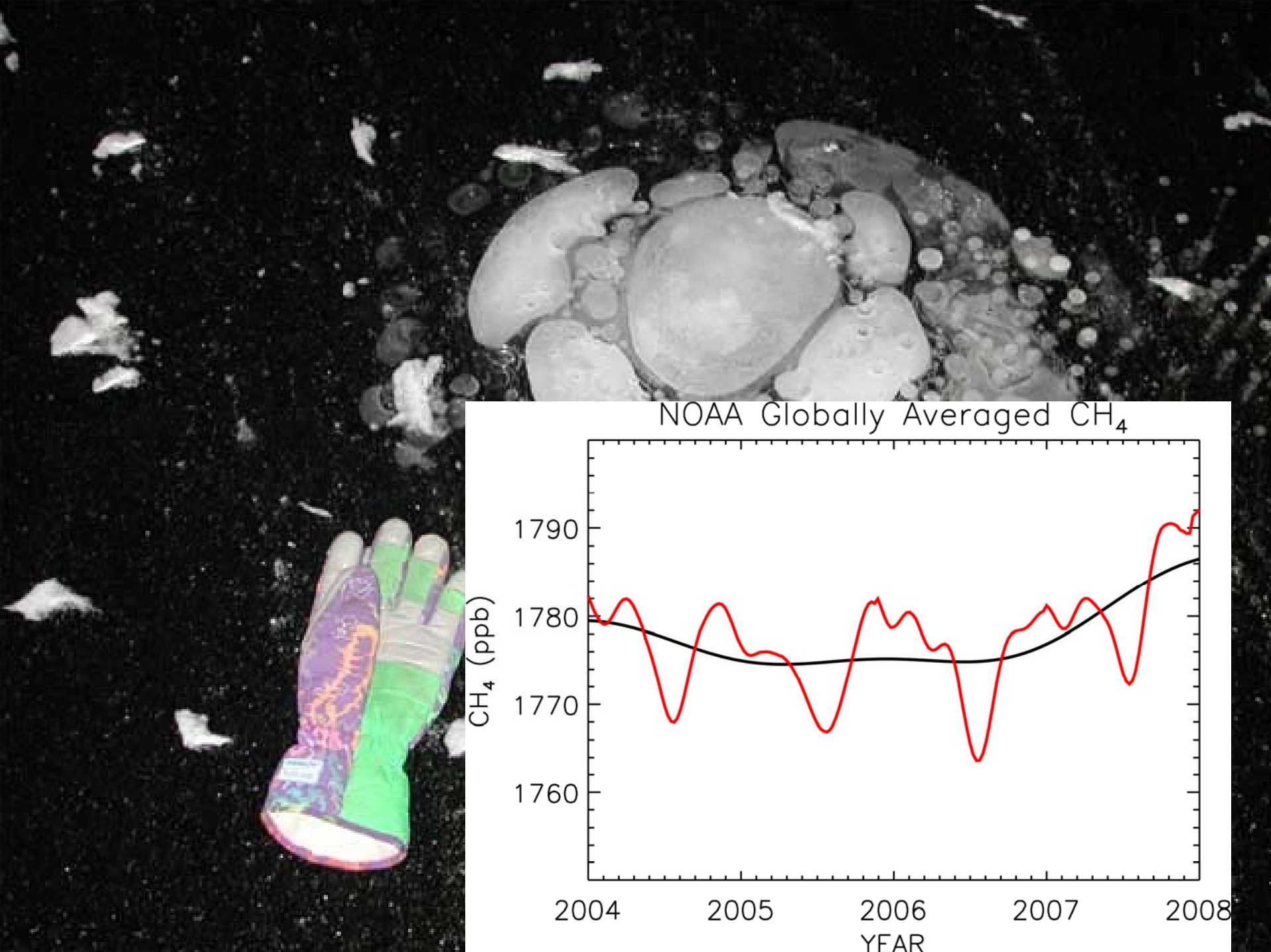
Advisers to the Nation on Science, Engineering, and Medicine

For PDF version,
google "PRB AON"

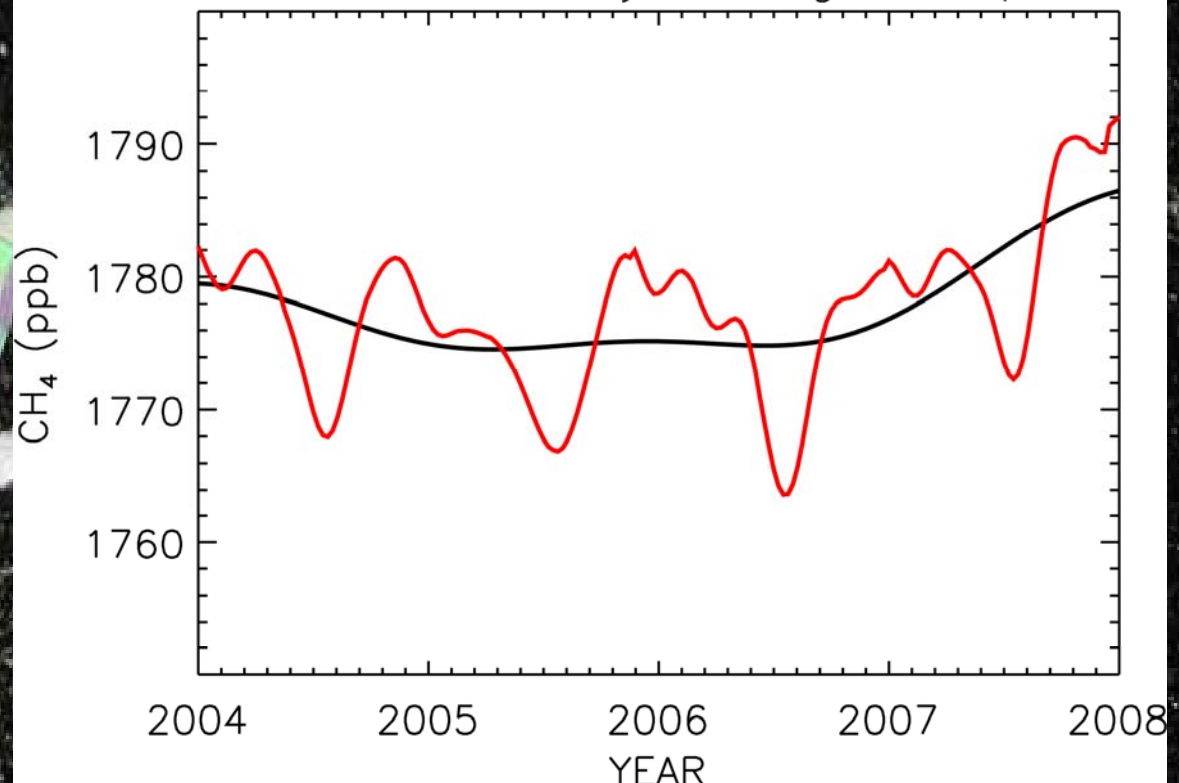
RECENT GLOBAL MONTHLY MEAN CO₂

PARTS PER MILLION

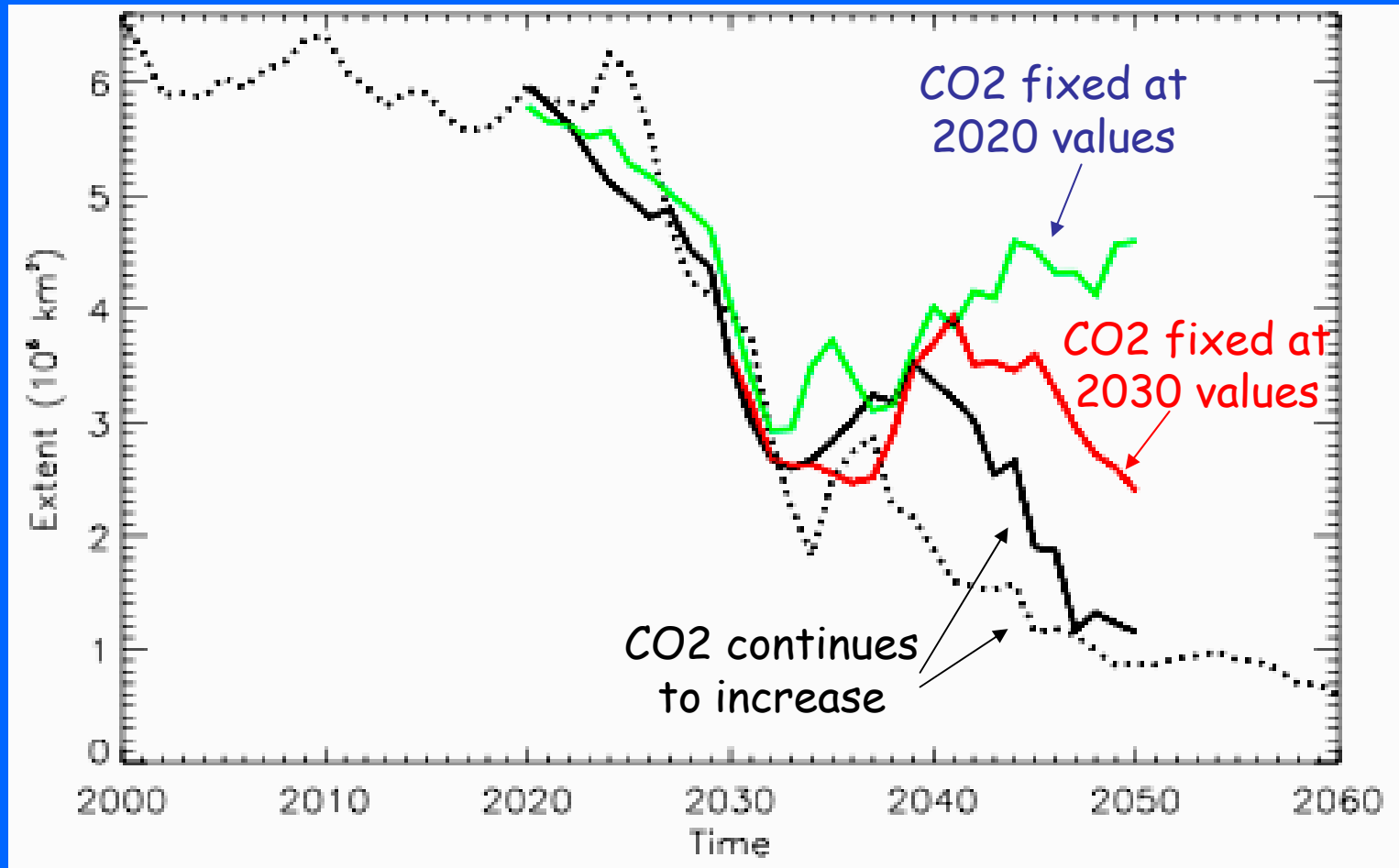




NOAA Globally Averaged CH₄



Have we passed a point of no return?



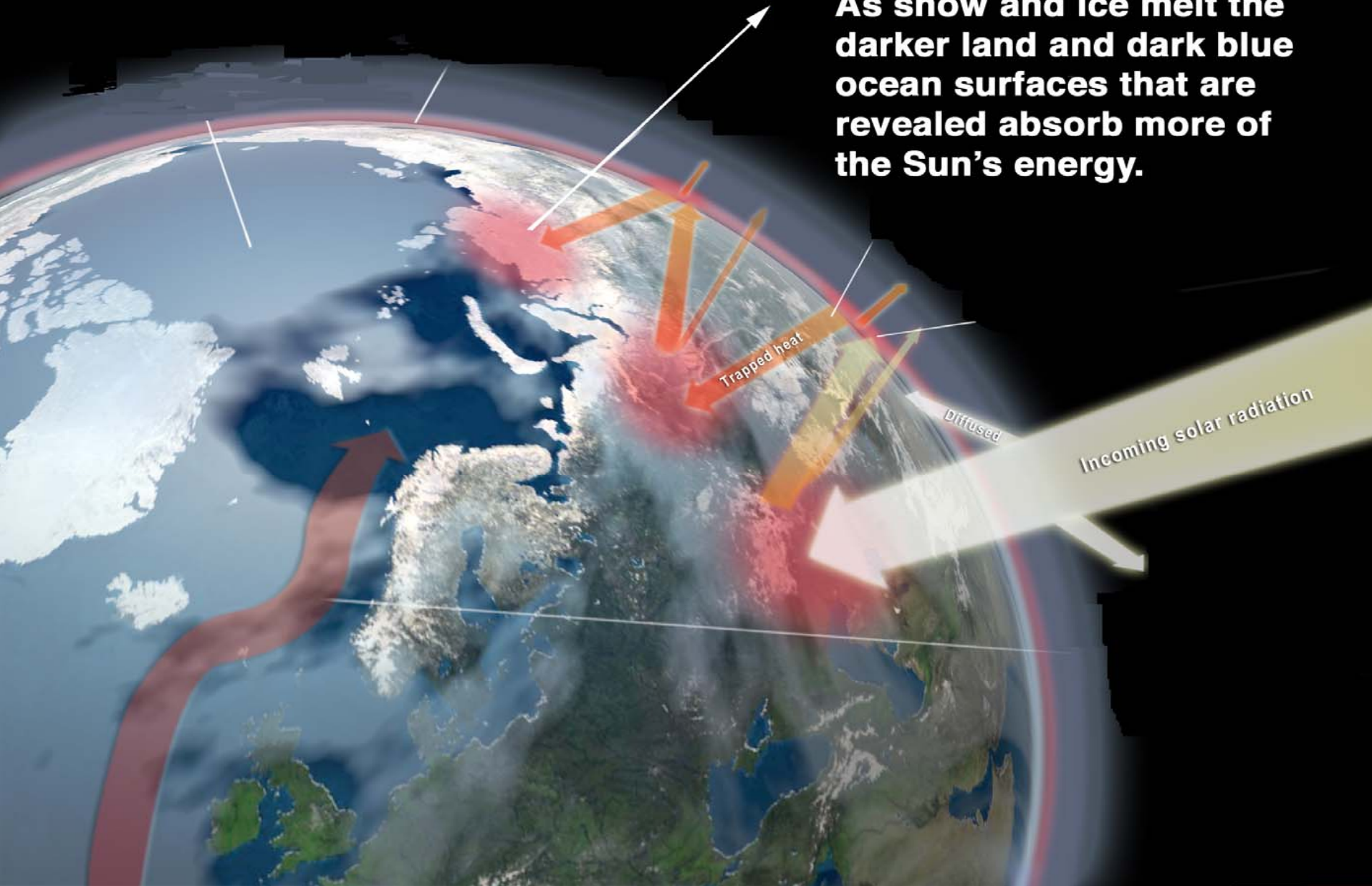
Preliminary model results suggest

- that sea ice can recover if *CO2* levels fixed/decline
- that a seasonally ice-free Arctic might be avoidable.
- May depend on when/for what ice state this occurs.

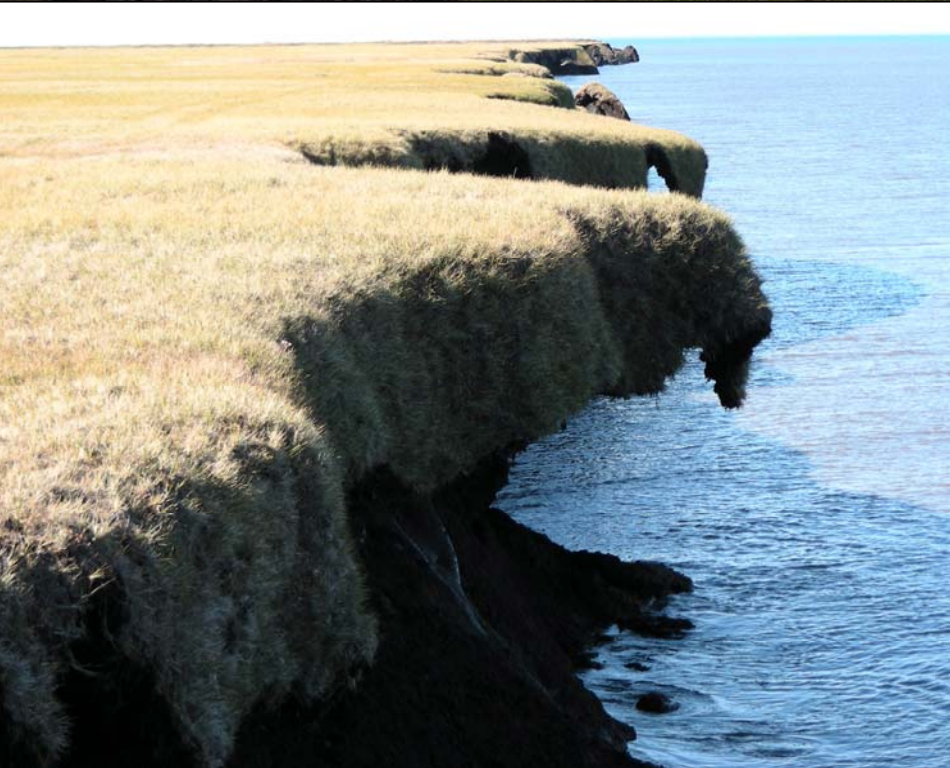
Why the Arctic Warms Faster

A Critical Reason is that:

As snow and ice melt the darker land and dark blue ocean surfaces that are revealed absorb more of the Sun's energy.



Permafrost degradation - NPRA, Alaska



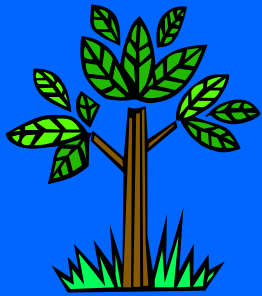






“People, people’s needs,
and nature...”

**Resource /
biological
sustainability**



**Economic
sustainability**



Social equity



Arctic shuttle container link from Alaska US to Europe

AARC K - 63

Aker Arctic



Mach 2006
M. Arpiainen
R. Kiili

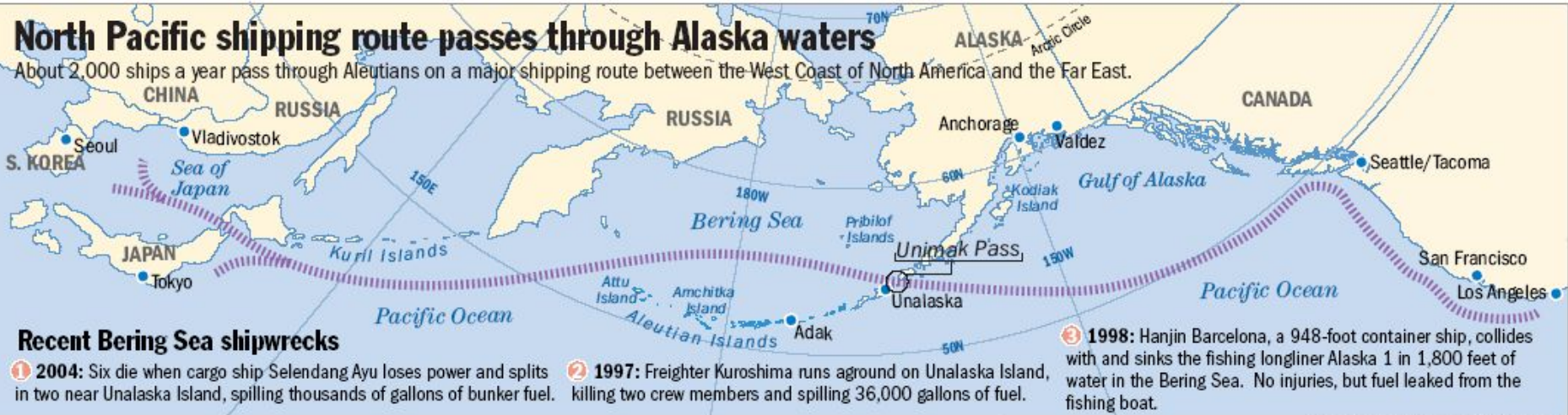


ADAK, Alaska

Photo from Arvid Fuchs Expedition
website, <http://www.arved-fuchs.de>

North Pacific shipping route passes through Alaska waters

About 2,000 ships a year pass through Aleutians on a major shipping route between the West Coast of North America and the Far East.



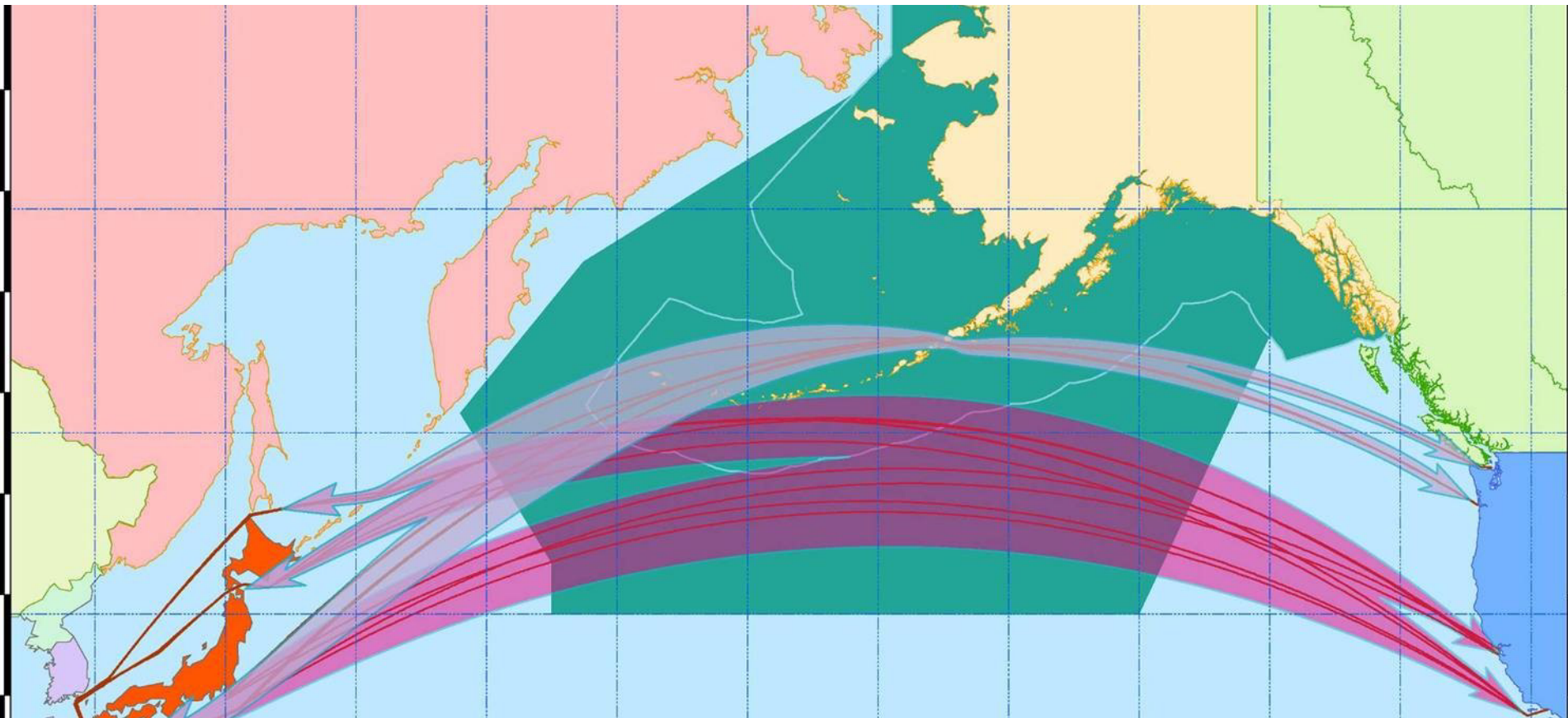
Recent Bering Sea shipwrecks

① **2004:** Six die when cargo ship Selendang Ayu loses power and splits in two near Unalaska Island, spilling thousands of gallons of bunker fuel.

② **1997:** Freighter Kuroshima runs aground on Unalaska Island, killing two crew members and spilling 36,000 gallons of fuel.

③ **1998:** Hanjin Barcelona, a 948-foot container ship, collides with and sinks the fishing longliner Alaska 1 in 1,800 feet of water in the Bering Sea. No injuries, but fuel leaked from the fishing boat.

CHARLES ATKINS / Anchorage Daily News



USARC and Arctic Shipping

- NGA Notices to Mariners
- NAS Icebreaker study
- US leadership of AMSA
- Conference sponsorships: ION/CITF, ICETECH, PAME/Iceland; NATICE operations
- DRAFT shipping research goals
- OSRI Oil Spill Research goals
- Arctic Policy Review, 1994 & 2008
- ECS Task Force
- Arctic access issues



Drivers for Arctic Marine Shipping

- **Oil & gas (e.g., shipping from Russian Arctic may increase 100-fold in the next decade)**
- **Mineral resources (e.g., Alaska's Red Dog mine, the world's largest source of zinc and other metals)**
- **Local shipping and affiliated infrastructure**
- **Tourism**
- **Marine scientific research**
- **Commercial fisheries are moving northward**
- **Trans-Arctic shipping routes may become economically competitive with longer routes thru Suez/Panama/Eurasian & North American land bridges**



Drivers for Research

Themes

- **Technology**
- **Environment**
- **International Aspects**
- **Economics**

National Interests

- **Climate & Oceans**
- **Commerce & Arctic Development**
- **Arctic Residents & Living Resources**
- **National Security**

Needs

- **Monitoring / Arctic Observing Network (AON)**
- **Sea Ice Studies**
- **Marine Shipping of Hydrocarbons**
- **US Arctic Offshore**
- **Ports**
- **Icebreaking Capability**
- **Arctic Societal Impact**
- **Arctic Marine Ecosystems**
- **Knowledge & Information**
- **Presence & Enforcement**



Recommendations for Fed. & State Agencies

- **National Security Council**
- **Council on Environmental Quality**
- **Department of State**
- **Office of Science and Technology Policy**
- **National Science Foundation**
- **Department of Homeland Security/U.S. Coast Guard**
- **Department of Transportation/Maritime Administration**
- **Department of Energy**
- **Department of the Interior (USGS and MMS)**
- **Department of Defense**
- **Department of Commerce/NOAA**
- **NASA**
- **National Research Council**
- **Marine Mammal Commission**
- **State of Alaska**



USARC AMT Working Group

- **Ron Kiss**, Webb Institute, President, Retired
- **Duane Laible**, USARC Commissioner, deceased
- **Hank Marcus**, MIT, Professor
- **George Newton**, USARC, Advisor, former Chair
- **Mead Treadwell**, USARC, Chair
- **Lawson Brigham**, USARC, Deputy Director

International Polar Year



<http://www.ipy.org>

www.arctic.gov

www.us-ipy.org

www.us-ipy.gov



www.arctic.gov

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