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DATA SUMMIT 2010

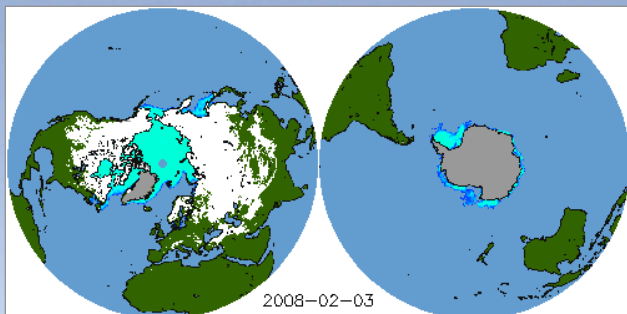
Preparing, Posting and Preserving Climate Change Data: Lessons Learned from the National Snow and Ice Data Center

Siri Jodha S. Khalsa, Ph.D.

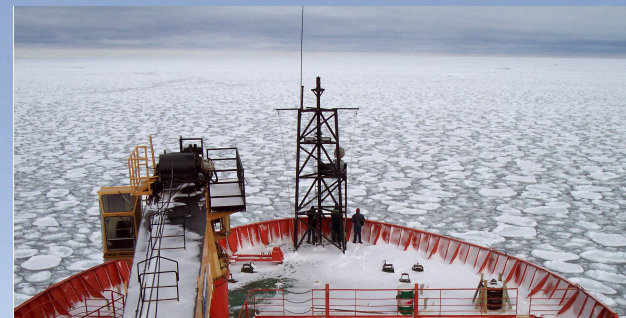
National Snow and Ice Data Center

Cooperative Institute for Research in Environmental Sciences

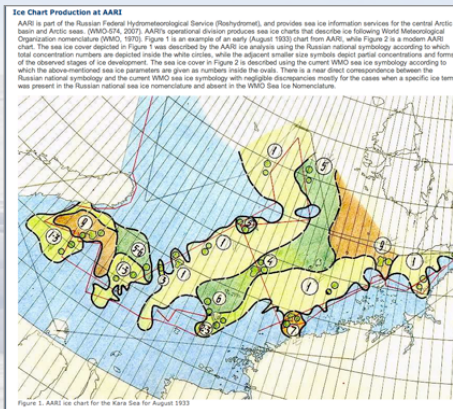
University of Colorado, Boulder



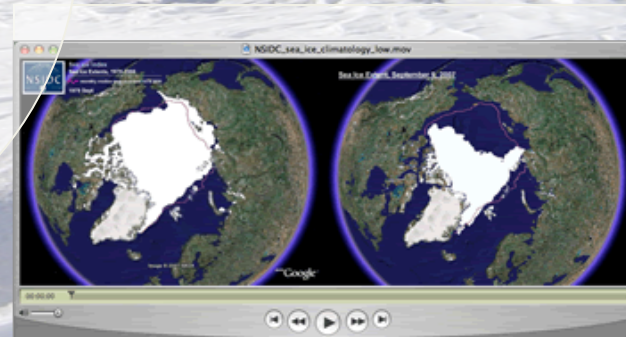
Manages and distributes scientific data



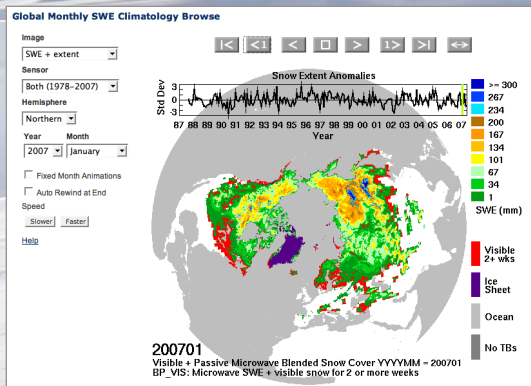
Performs scientific research



Supports users



Educates the public about the cryosphere

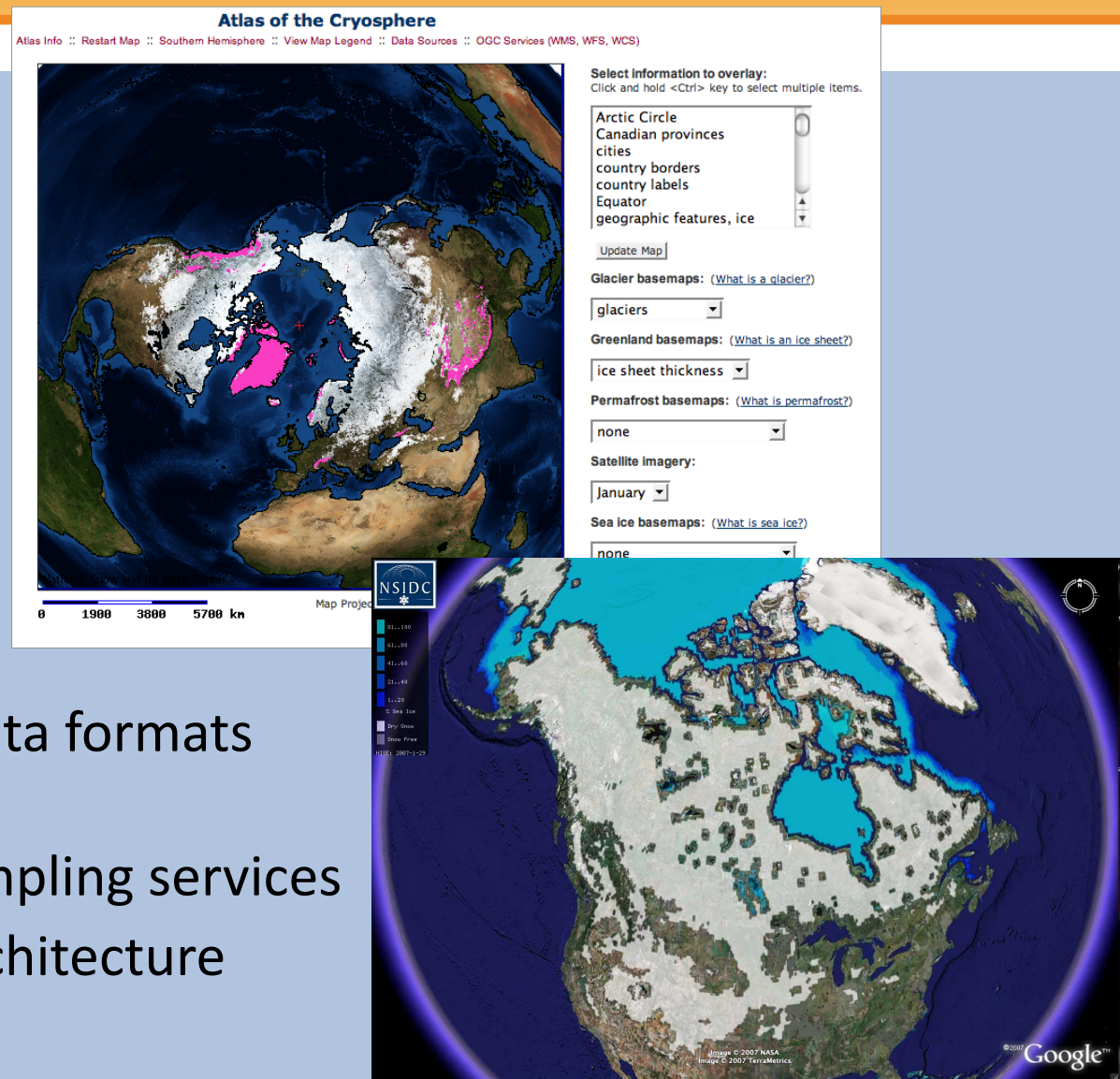


Creates tools for data access



Supporting Cryospheric Research

- Multiple methods for data search and discovery
- Direct data access
- Map servers & support for GIS tools
- [Virtual globes](#) & animations
- Support for multiple data formats and web services
- Reprojection and resampling services
- Evolution of archive architecture



Information on Glaciers at NSIDC



Glacier Photograph Collection: 4,000 online glacier photographs, from 1880 to present

Retreat of Toboggan Glacier, Alaska, photographed in 1909 and 2000 by S. Paige and B. Molnia.

View Help View Legend

Database Layers:

- GLIMS Glaciers
- ASTER Footprints
 - Day Images Only
- Regional Center Outlines
- GLIMS Participants
- Glaciers from DCW
- World Glacier Inventory
- STAR Polygons
- Countries

Background Imagery

- MODIS Blue Marble
- Source Images

Temporally Constrain Data

- GLIMS Glaciers
- ASTER Footprints

Start Date: 2007-03-01
Year: [dropdown] Month: [dropdown] Day: [dropdown]
End Date: 2007-10-01
Year: [dropdown] Month: [dropdown] Day: [dropdown]

Refresh Map

GLIMS Glacier Database

Zoom to... Map Size...

Download Data in Current View

Latitude:
Longitude:

Global Land Ice Measurements from Space (GLIMS): using high resolution satellite data to map > 70,000 glaciers

World Glacier Inventory (produced by WGMS and served through NSIDC interfaces)



What does it take to become a trusted data repository?

Data stewardship

The basic functions of science data center are preserving and making accessible the data entrusted to it.

- The origin, processing history and characteristics of the data are well-documented
- The meaning, quality and appropriateness of use of the data are documented and easily understood
- The data are preserved for the long term
- The data can be reliably discovered and accessed

Being responsive to your user community's needs

Being familiar with how your users make use of your data enables you to tailor services to their needs

- Tailoring how the data are organized, formatted, visualized and served
- Providing customized tools
- Availability of knowledgeable user support staff
- Tracking the evolving needs, character of user community
- Information and computer sciences must compliment discipline science in designing data systems



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What are some major challenges science data centers face?

Increasing volumes of data

All sciences are experiencing an explosion in data volumes. Storage is mostly no longer a problem. Helping users manage and make sense of the data is.

- How to mine, combine, distill and extract meaningful information from the data
- Information and computer sciences must compliment discipline science
- Facilitating community engagement, dialog and feedback important

Supporting interdisciplinary science

Data transfer across disciplinary boundaries brings new requirements

- Raw data must be interpreted or used to derive higher-level products
- Ability to combine with data from diverse sources important → interoperability
- Semantic understanding crucial
- Characterizing data quality and uncertainty

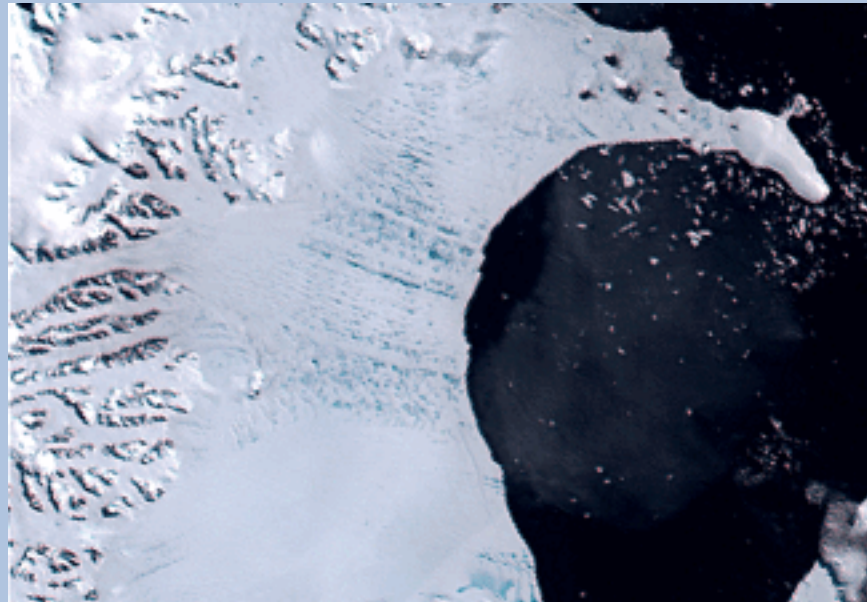


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Monitoring Antarctic Ice Shelves

- Collapse of Larsen B Ice Shelf in 2002 resulted in the loss of 3,250 km² of ice from Antarctic Peninsula and an acceleration in the outflow from glaciers it buttressed.

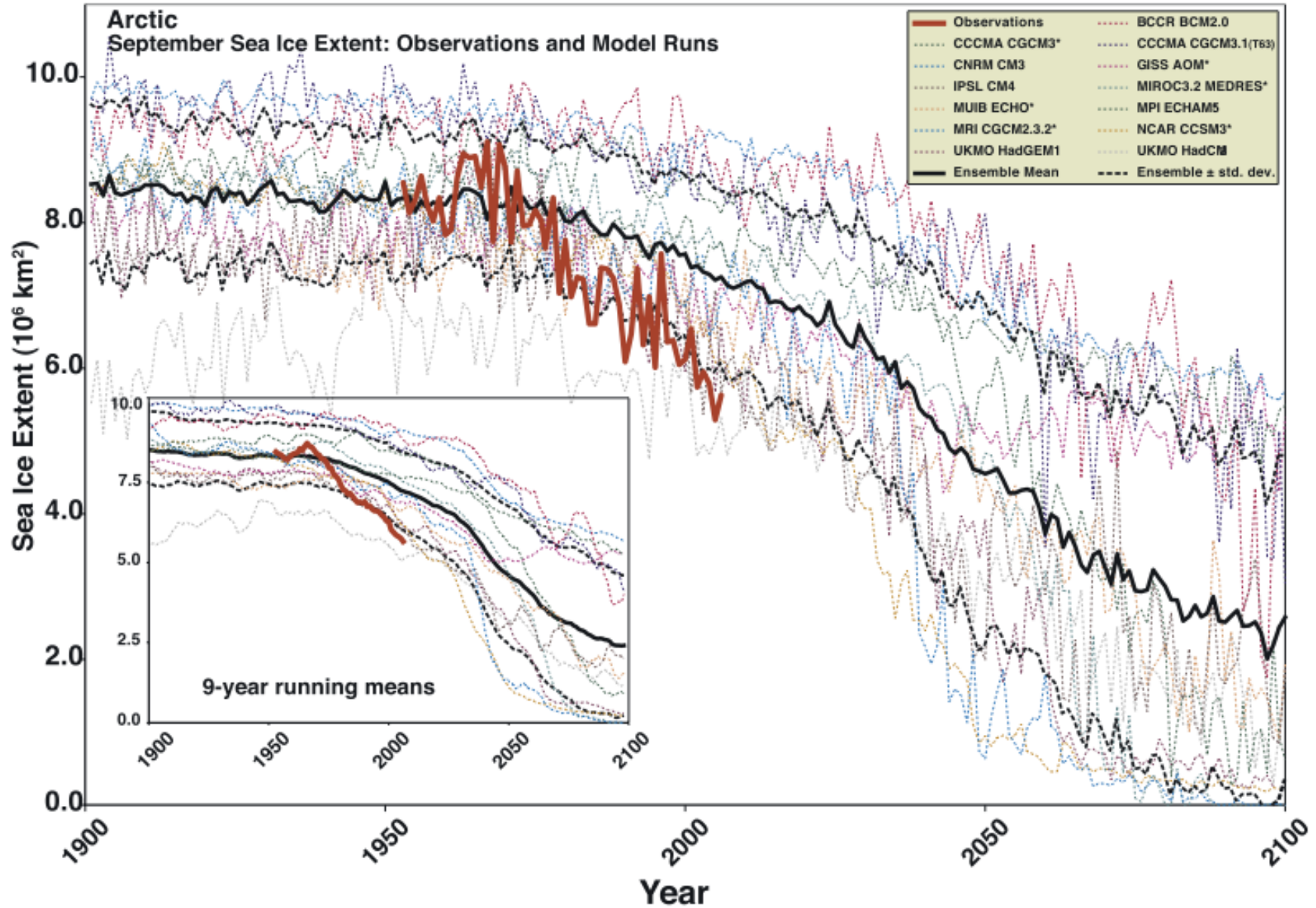


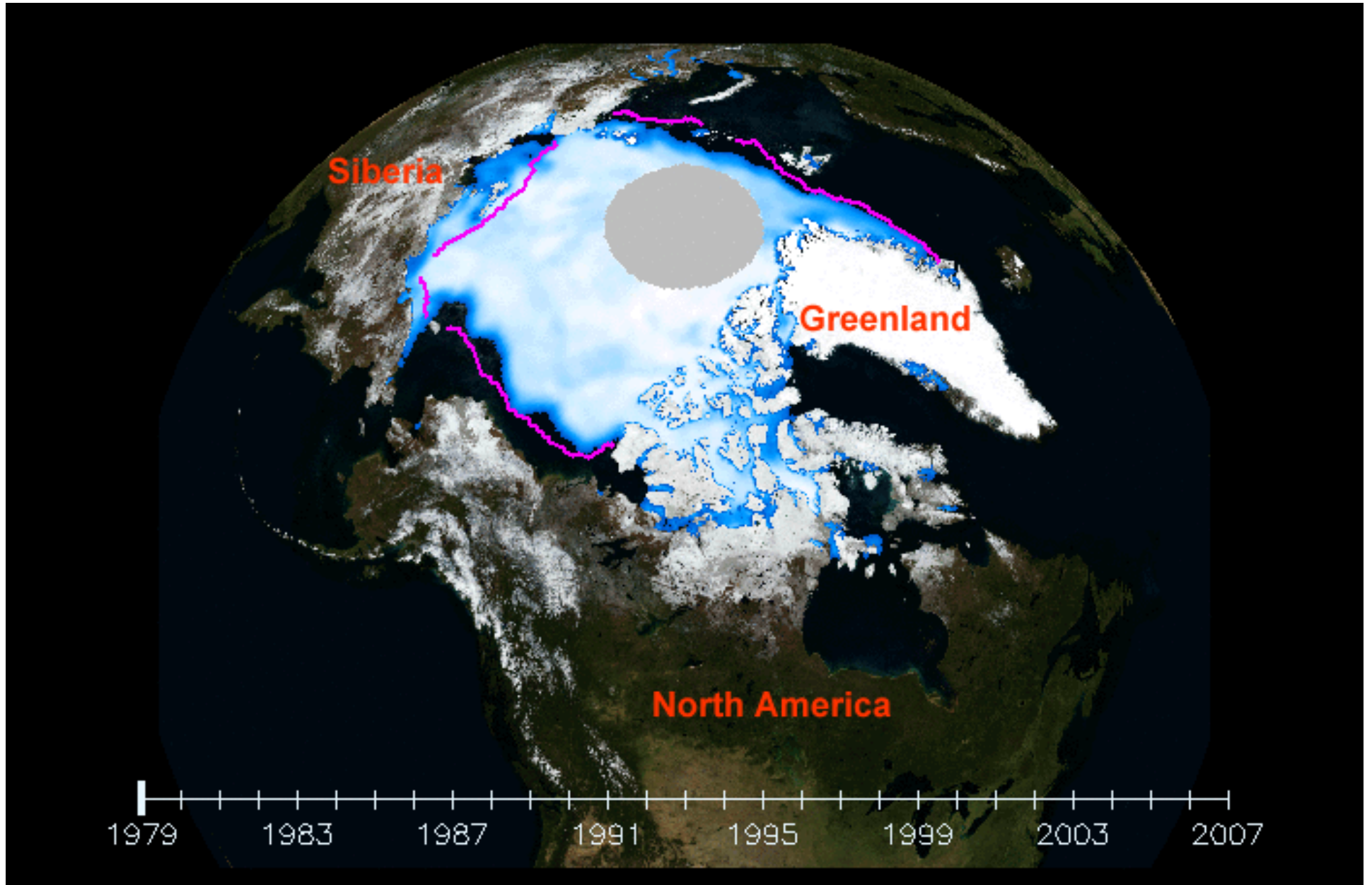


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Published Research







Arctic Sea Ice News & Analysis

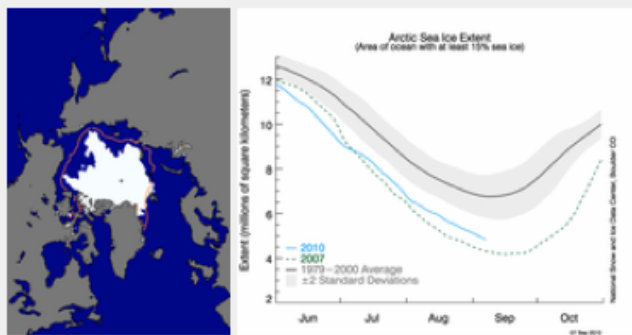
Arctic [sea ice](#) reflects sunlight, keeping the polar regions cool and moderating global climate. According to scientific measurements, Arctic sea ice has declined dramatically over at least the past thirty years, with the most extreme decline seen in the summer melt season.

Read timely scientific analysis year-round below. We provide an update during the first week of each month, or more frequently as conditions warrant.

Please credit the National Snow and Ice Data Center for image or content use unless otherwise noted beneath each image.

Have a question about sea ice? Visit our updated [Frequently Asked Questions](#) page.

Daily image update



Sea ice data updated daily, with one-day lag. Orange line in extent image (left) and gray line in time series (right) indicate 1979 to 2000 average extent for the day shown. Click for high-resolution image.

[Learn about update delays](#) and other problems which occasionally occur in near-real-time data. [Read about the data.](#)

—Credit: National Snow and Ice Data Center

September 7, 2010

End of summer approaches for Arctic sea ice

Arctic sea ice generally reaches its annual [minimum](#) extent in mid-September. This August, ice extent was the second lowest in the satellite record, after 2007. On September 3, ice extent dropped below the seasonal minimum for 2009 to become the third lowest in the satellite record.



Archives

Arctic Sea Ice News 2010

Select a date

Previous Years

Select a year

Press Resources

Arctic Sea Ice Press Announcements

Select a press announcement

Press Information

Select a topic

Contact

General public and data users:
[Contact NSIDC User Services](#) or call
+1 303.492.6199

Press direct line: +1 303.492.1497

See Also



NSIDC Education Center

Earth is home to snow and ice in many different forms. These frozen realms of the [cryosphere](#) influence life all over our planet. Here in the NSIDC Education Center, you will find a range of information about Earth's snow and ice, from comprehensive "All About" sections to quick facts on popular snow and ice topics.

What is the Cryosphere?



[All About the Cryosphere](#)

Read an overview of the frozen regions of Earth.



[All About Frozen Ground](#)

Find out how frozen ground works, and how it makes a difference all over the world



[All About Glaciers](#)

Find glacier facts, the story of a glacier's life cycle, and links to glaciological data and science programs.



[All About Snow](#)

Find facts and information about snow, avalanches, and blizzards



[All About Sea Ice](#)

Learn about sea ice and why it is so important to our environment.



[Arctic Climatology and Meteorology Primer](#)

Explore Arctic weather, climate, and meteorological patterns.

Studying the Cryosphere



[IceTrek](#)

Scientists explore the lifecycle of a drifting Antarctic iceberg.



[Antarctic Megadunes](#)

Scientists travel to the edge of Earth to understand fantastic formations.



[The Arctic Ice Dynamics Joint Experiment](#)

In the 1970s, researchers camped on ice floes to study how sea ice moves and changes.

Snow, Ice, and Climate Change



[The State of the Cryosphere](#)

Learn about snow and ice as indicators of climate change.

Basic Information



[Quick Facts](#)

Find basic information on sea ice, ice sheets, ice shelves, and icebergs.

Learn About NSIDC

[Education Resources](#)

[News](#)

[Scientists](#)

Related Resources

[Tour of the Cryosphere Movie](#)

An animated flight through the frozen areas of the Earth, produced by NASA using NSIDC data. Updated in 2009.

[Google Earth Outreach](#)

Google Earth files highlighting environment, climate change, and science.

[University of Colorado at Boulder: Learn More About Climate](#)

NSIDC Scientists Ted Scambos, Mark Serreze, and Shari Gearheard discuss climate change in a video, "Colorado's Changing Climate."

Contacts

General public and data users: nsidc@nsidc.org or +1 303.492.6199

Members of the press: leitzell@nsidc.org or +1 303.492.1497



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Responsibility to decision-makers, the press and the public

Provide full and open access to data

Transparency, provenance, characterization of uncertainty

- Traceability to source data
- Facilitating community engagement, dialog and feedback

Provide unbiased reporting and interpretation

Help users understand the meaning of events.

- The Internet is replacing print and broadcast media as the primary source of information on issues of public interest
- This makes data centers all the more responsible for becoming easily-accessed and understood source of trusted information



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Summary

- The responsibilities of science data centers are evolving, due to technological, scientific and sociological trends.
- Transparency, accountability, impartiality, reliability and a knowledgeable user support staff all contribute to establishing a science data center as a trusted resource.
- Data centers must look beyond their traditional user communities and learn how other data centers are addressing common challenges.



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An aerial photograph of a vast, rugged landscape. In the foreground, a large, textured glacier flows towards the viewer. The middle ground is dominated by a dark blue body of water, likely a fjord or bay, filled with numerous icebergs of various sizes. In the background, a range of dark, jagged mountains is partially covered in snow and glaciers under a pale, overcast sky.

Thank you!