



National Snow and Ice Data Center  
*Supporting Cryospheric Research Since 1976*



QuickTime™ and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.



# International Polar Year Data Management

*Mark A. Parsons*

*IPY Data Policy and Management Sub-committee*

*IPY Data and Information Service*



CODATA06  
Beijing, China  
25 October 2006



NOAA

Illustration par L. La Roche, d'après un croquis de M. de la Roche.

Le 'L'ASTOR'.

Fig. 1. — Le 'L'ASTOR'.

L'ASTOR ARRÊTÉ PAR UN GLAÇON À L'ISSUE DE LA BANQUISE À KESKIBIDJ.



# the 125 Year

IPY 1  
1882-83

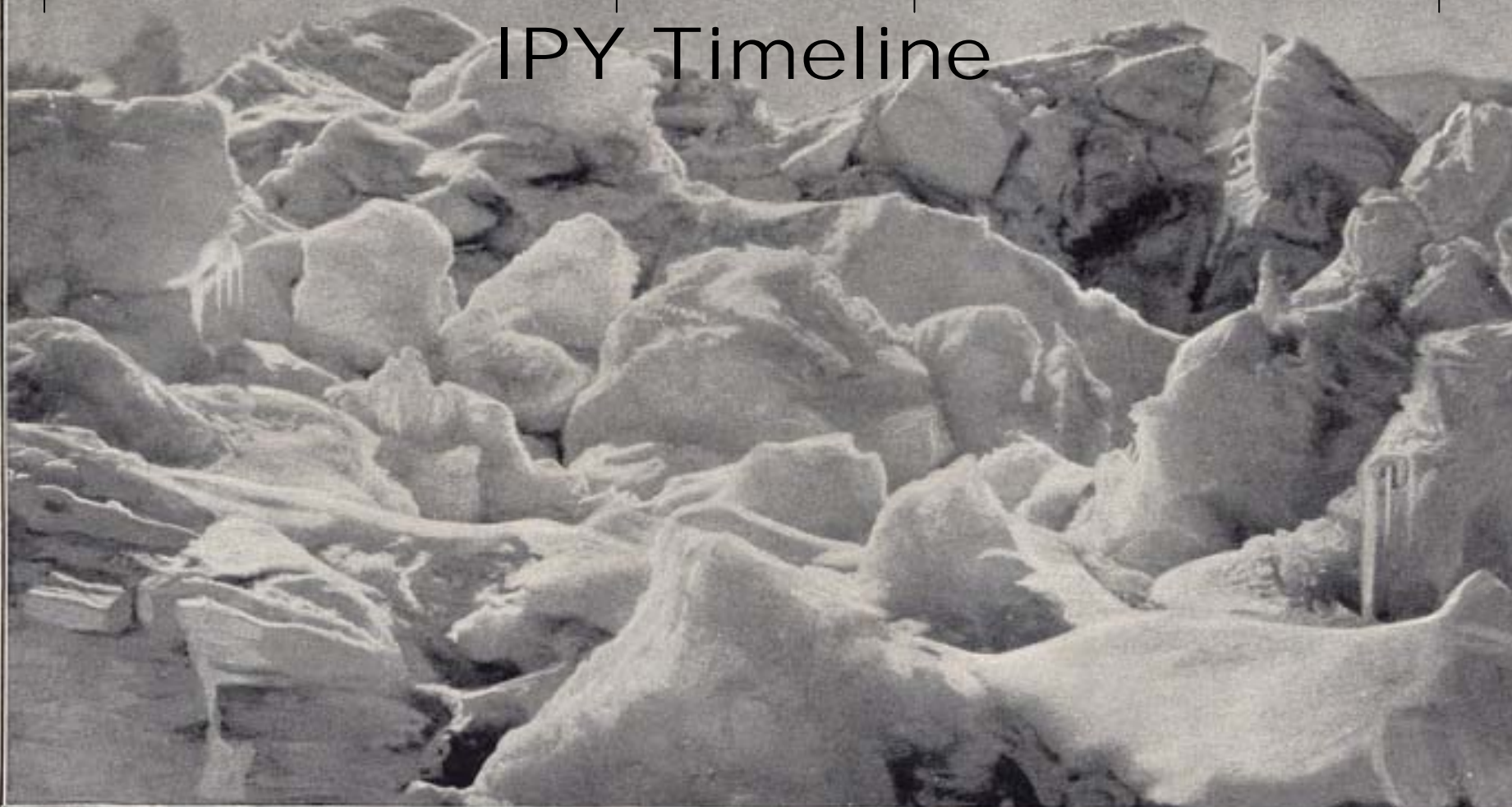
IPY 2  
1932-33

IGY  
1957-58

IPY  
2007-08



## IPY Timeline



# *IPY Themes*

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- Current status
- Past & future changes
- Linkages to global processes
- Investigate frontiers of science in polar regions
- Vantage point to earth history & to space
- Social & cultural dynamics & resiliency



Joint Committee  
IPY

Programme  
Office

Education, Outreach &  
Communication  
Subcommittee

Observations  
Subcommittee

Data Policy &  
Management  
Subcommittee





Earth Land People Ocean Ice Atmosphere Space Education & Outreach

Bering Land Bridge (29)  
Hydro-thermal Vent Systems (173)

USNP Environmental Change (21)  
Cold Land Processes (138)  
Ecological Response to Changes (55)  
USGS Integrated Research (86)  
Plate Tectonics & Polar Gateways (77)  
Rift System Geodynamics (109)  
Continental Margin Drilling (67)  
Gamburtsev Highlands Exploration (67)

East Antarctic Traverse (152)  
Antarctic Climate Evolution (54)  
Antarctic Climate Evolution (452)  
Biology & Ecology of Antarctica (329)  
Polar Ecosystems & Contaminants (97)  
Cryosphere Evolution (33)  
Permafrost & Soil Environments (113)  
Deep Permafrost (113)  
Permafrost Observatories (50)  
Permafrost & Polar Gateways (185)  
Polar Observing Network (185)

Earth Land People Ocean Ice Atmosphere Space Education & Outreach

**60,000 participants from more than 60 nations**

**Both 'Dazzling' science**

*Antarctic*

*Arctic*

I n t e r n a t i o n a l P o l a r Y e a r & I n f o r m a t i o n S e r v i c e s

- Arctic Interdisciplinary Dialogue (160)
- Impact Assessment Perspectives (378)
- Learning & Indigenous Knowledge (112)
- Linguistic & Heritage Network (82)
- Wireless (105)
- Education & Communication Clearinghouse (328)
- International Polar School (402)
- On-line Polar Atlas (176)
- Publication Directory (51)
- Arctic Dialogue (160)
- Indigenous Well-being Symposium (433)
- IPY at University of the Arctic (189)
- Next Generation of Scientists (395)
- Circumpolar Student Exchanges (294)
- Snow Crystal Network (282)
- Arctic Research for the Public (295)
- Youth Steering Committee (168)
- Polar Education Gateways (453)
- New Maps of Polar Geology (315)
- Polar Research Book Series (79)
- University Consortium for Antarctica (147)
- Geomatics Conference (156)
- Congress of Arctic Social Sciences (69)
- Indigenous Forum on Monitoring (396)
- Health Assessment Workshop (145)
- Youth Conservation Projects (446)
- Research & Education Base Camp (282)
- Artists Exploration (338)
- Voices Exhibit (410)
- Arctic Nations Exhibition (438)
- Meltdown Giant Screen Film (405)
- Polar Information for Teachers (397)
- Marine Organisms in Aquariums (80)
- IPY History Exhibitions (296)
- Antarctic Touring Exhibition (451)
- Antarctic Anthology (244)
- Art-Science Consortium (417)
- Polar Outreach Voyage (116)
- Arctic Energy Summit (299)
- Rangifer Research Network (400)
- Yukon IPY Community Liaison (389)
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IPY PLANNING CHART  
www.ipy.org  
24 July 2006, Vers 4.0



Earth

Land

People

Ocean

Ice

Atmosphere

Space

Education & Outreach



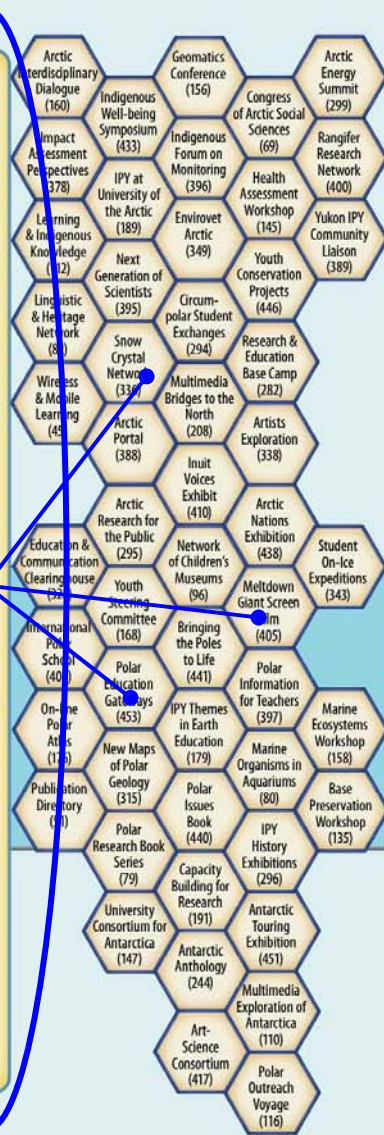
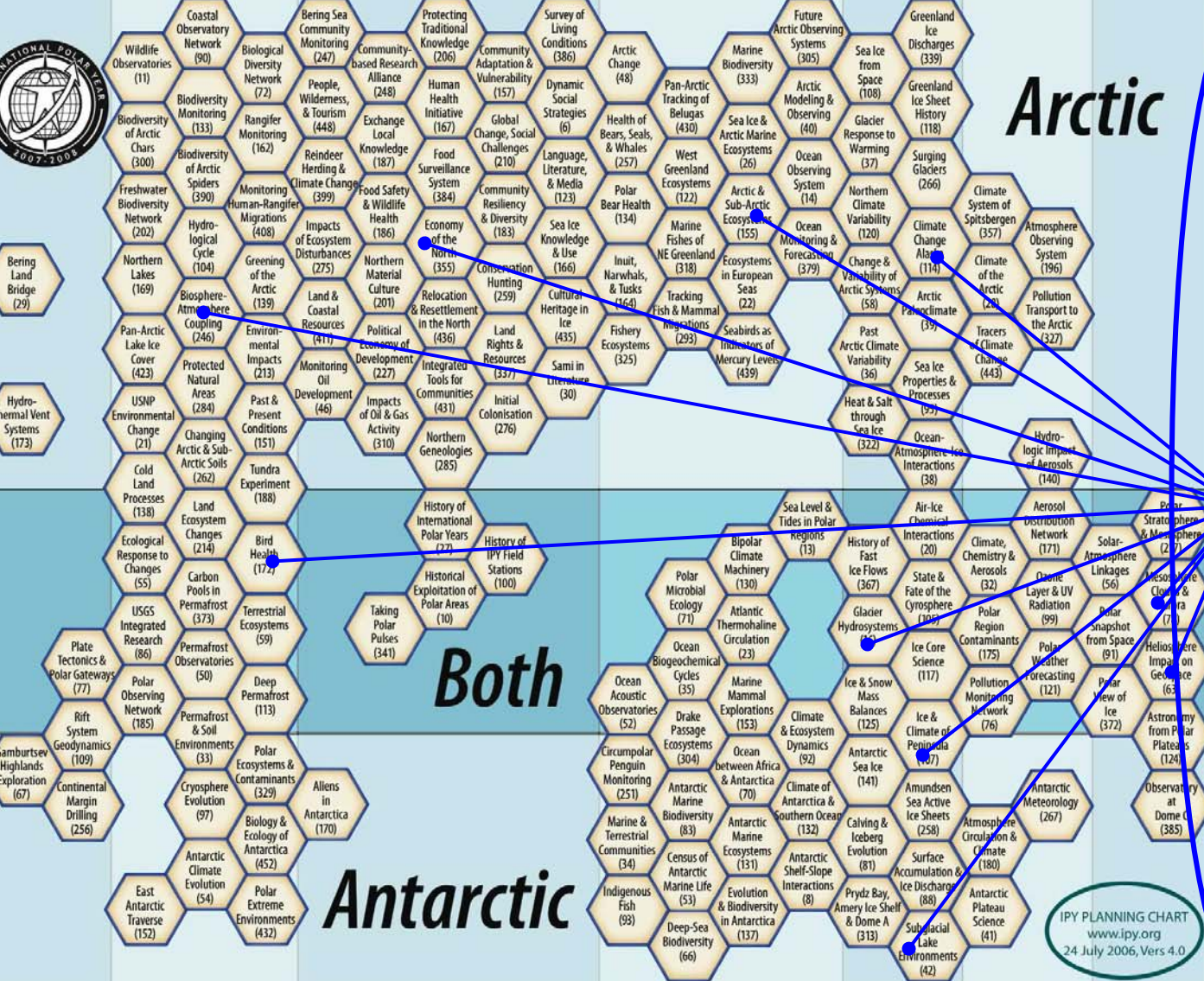
# Arctic

# Both

# Antarctic

Integrated Data & Information Services

IPY PLANNING CHART  
www.ipy.org  
24 July 2006, Vers 4.0



Earth

Land

People

Ocean

Ice

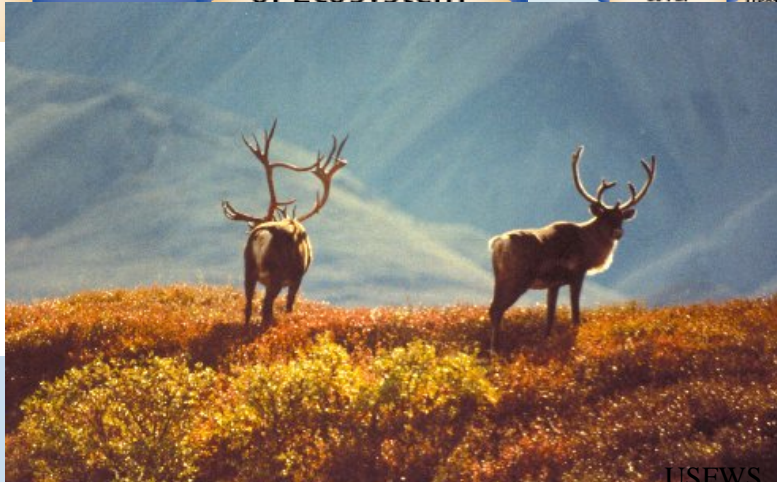
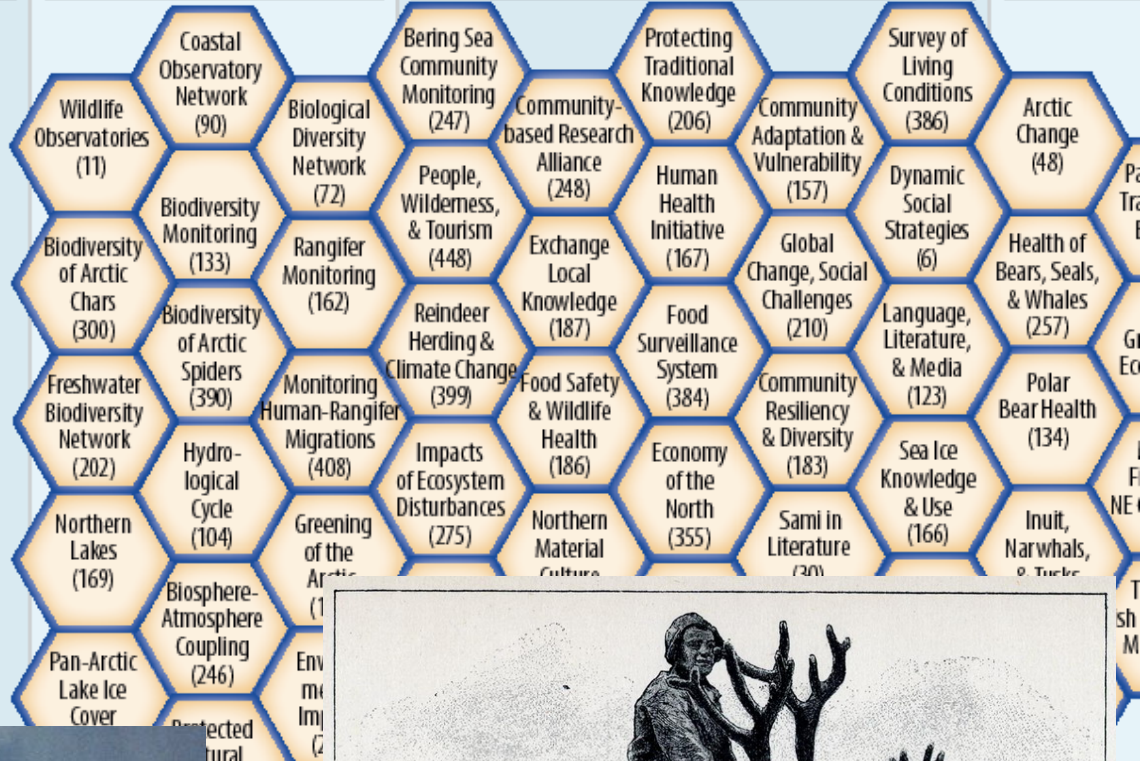
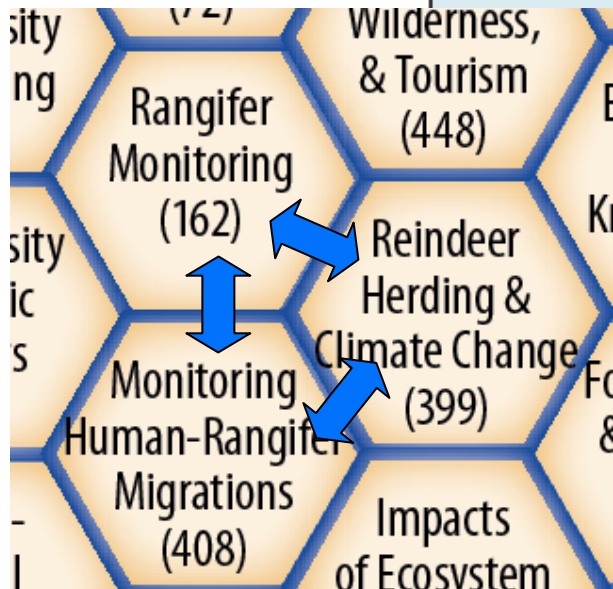
Atmosphere

Space

Education & Outreach

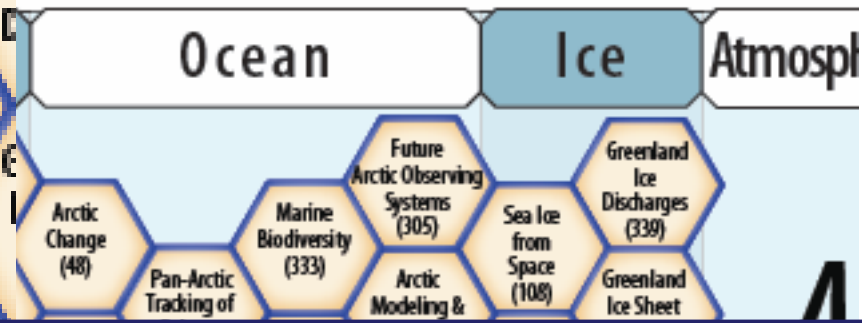
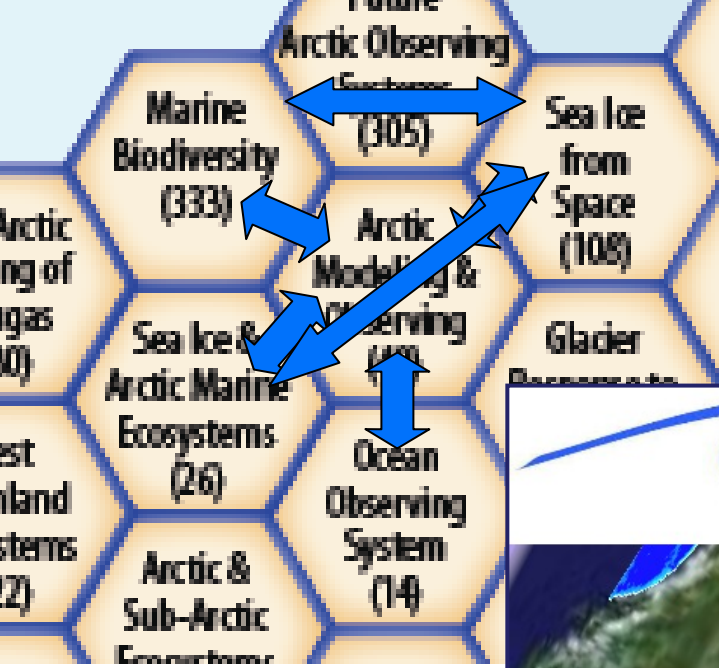


**Earth**      **Land**      **People**

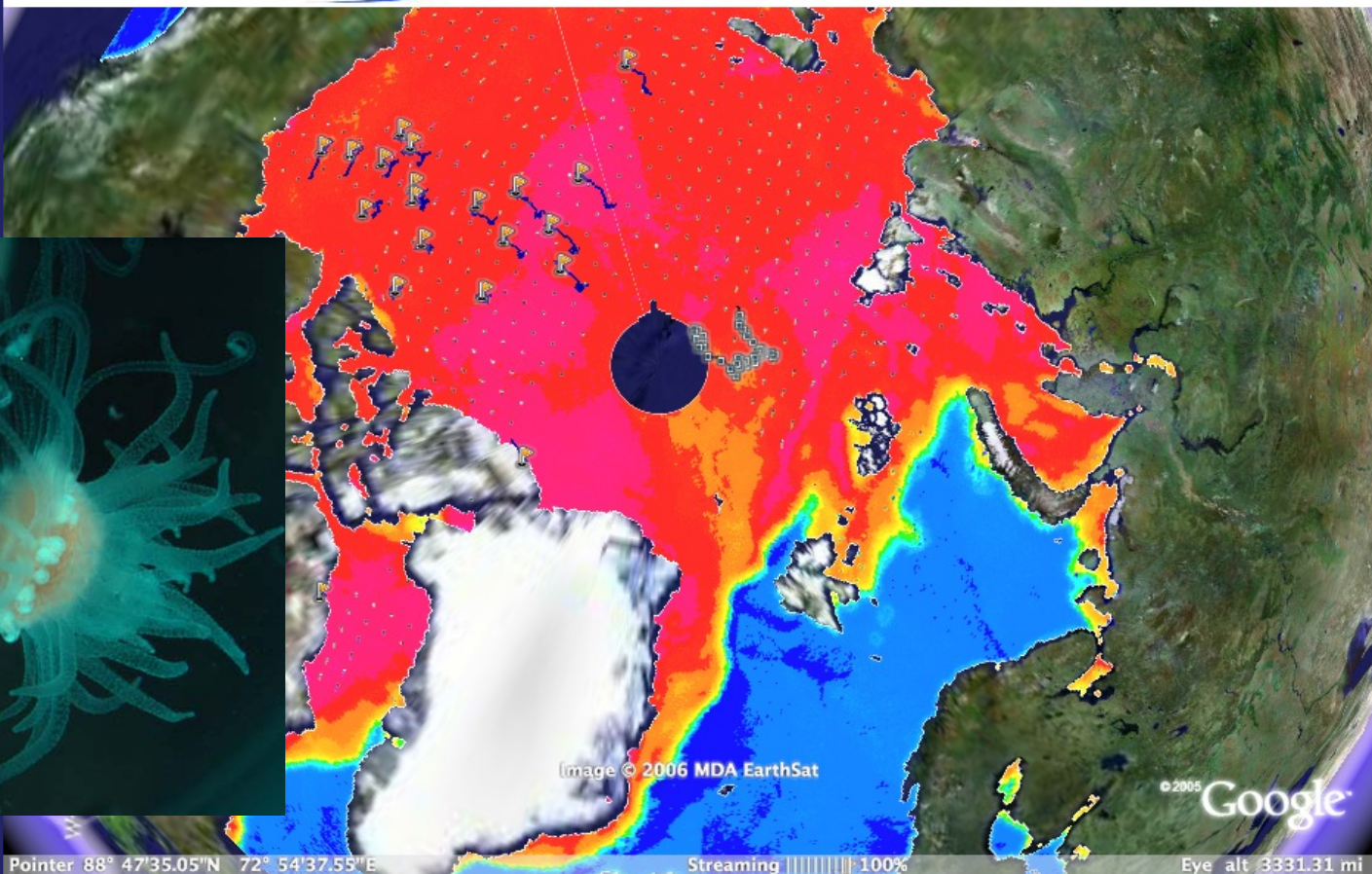


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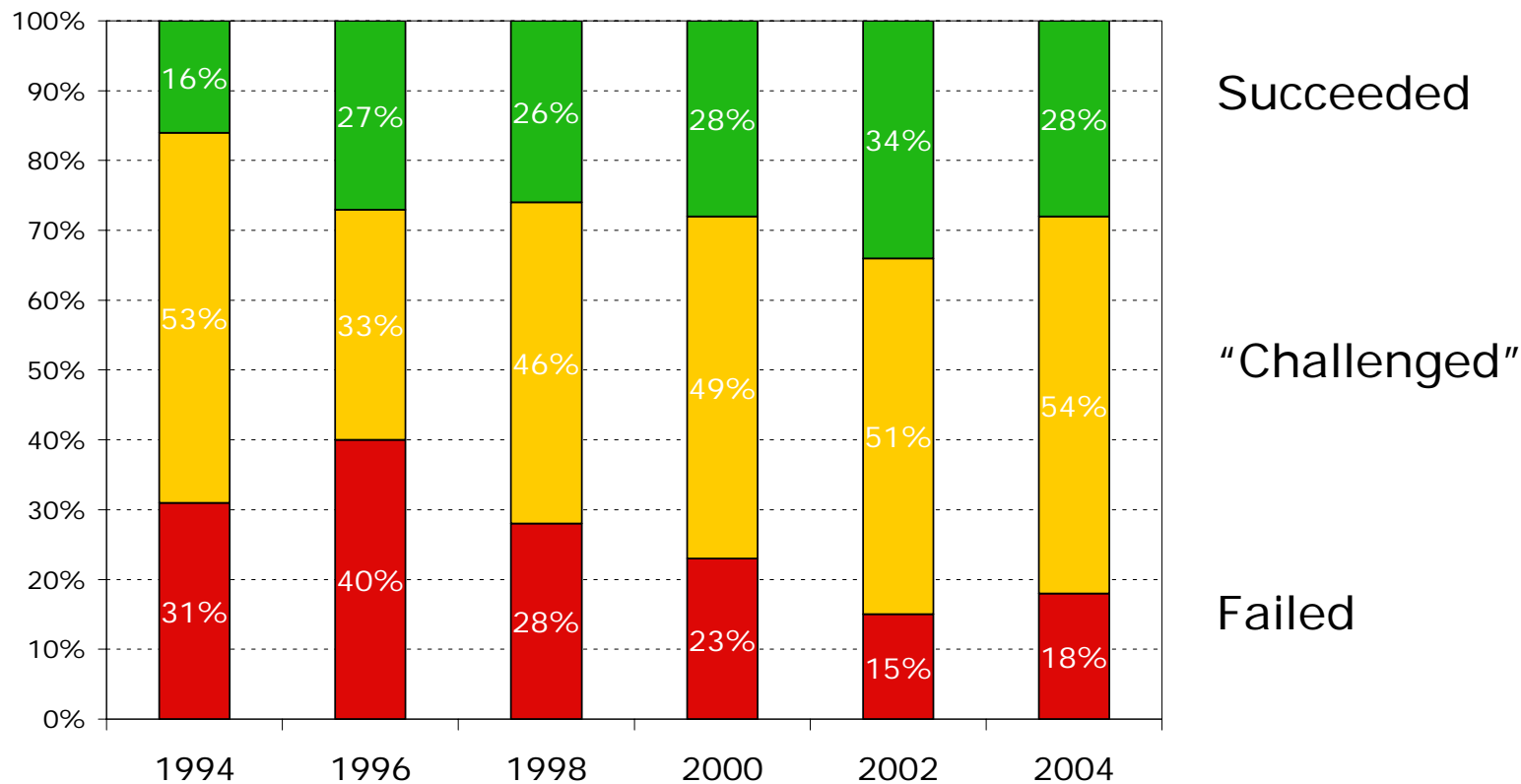
The **DAMOCLES**  
**Polar View**  
Earth Observation for Polar Monitoring



# Systems and Innovation

"We're entering a new world in which data may be more important than software."

- Tim O'Reilly



The Standish Group's "CHAOS report". An assessment of over 40,000 IT application projects



## *The People Part*

“A striking proportion of **project difficulties stem from people** in both customer and supplier organisations failing to implement known best practice.”

— Oxford University/Computer Weekly survey of public and private sector IT projects (emphasis added)

However, people (data managers and data providers) are much more able to adapt to change, uncertainty, and messy systems.

Service counts.



# *Exchange for Local Observations and Knowledge in the Arctic*

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- Local and traditional knowledge (LTK) encompasses the various systems of knowledge, practice, and belief gained through experience and culturally transmitted among members and generations of a community.
- ELOKA is concerned with:
  - Fair and multilevel access
  - Fair and multilevel use
  - Broad sharing of LTK while maintaining local control
  - Legal requirements



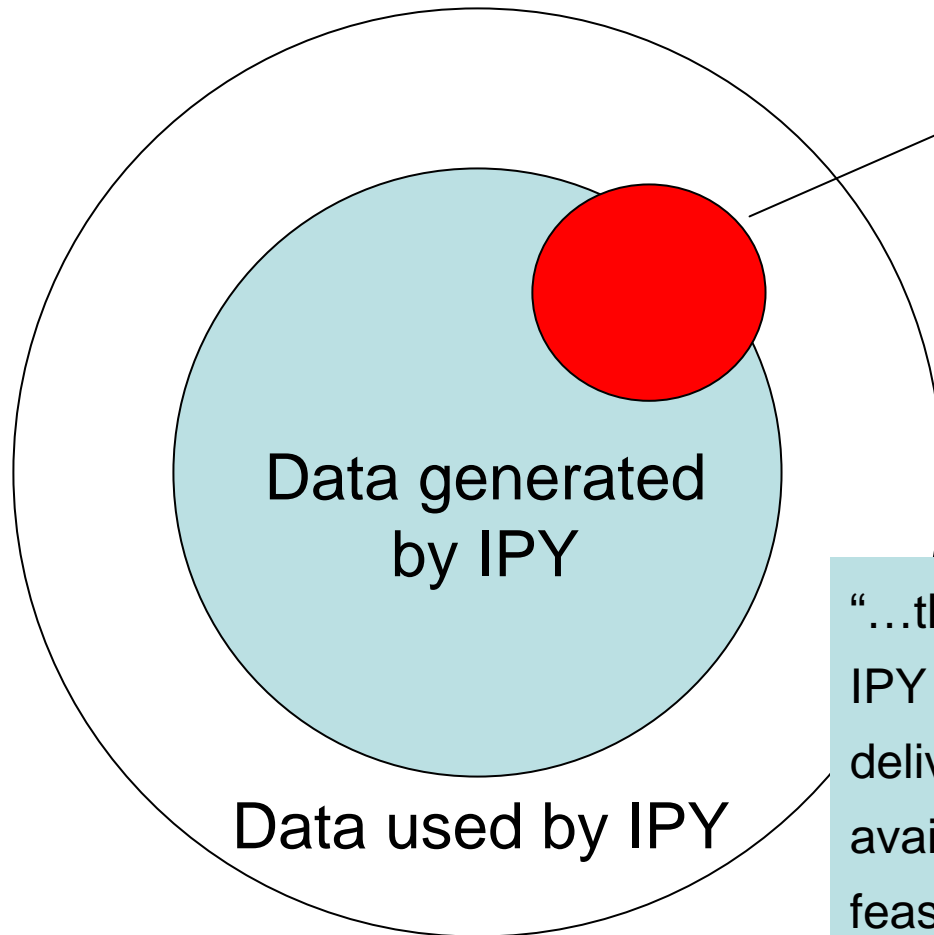
# *What's been done*

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- Data Committee has defined a data policy
- Data Committee working on a data strategy and outlining overall IPY data flow.
- Workshop on data management (see report at <http://nsidc.org/ipydis>)
- Proposals submitted (some funded) to manage and ensure fair access to IPY data.

# *IPY Data Policy*

[http://www.ipy.org/Subcommittees/final\\_ipy\\_data\\_policy.pdf](http://www.ipy.org/Subcommittees/final_ipy_data_policy.pdf)



## Special Cases:

- Human subjects
- Intellectual property of LTK
- Where data release may cause harm

“...the IPY Joint Committee requires that IPY data, including operational data delivered in real time, are made available fully, freely and on the shortest feasible timescale.”



# *An IPY Data Management Workshop*

- More than 40 participants from 13 countries
- Major goal: determine functions, form, and implementation for an IPY Data and Information Service
- Full report at

<http://nsidc.org/ipydis>



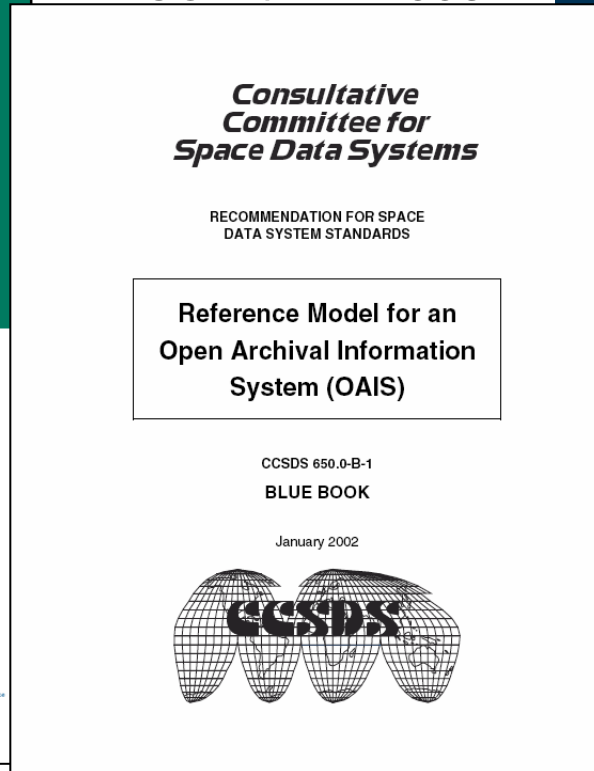
Photo courtesy SJS Khalsa

# Reference Documents

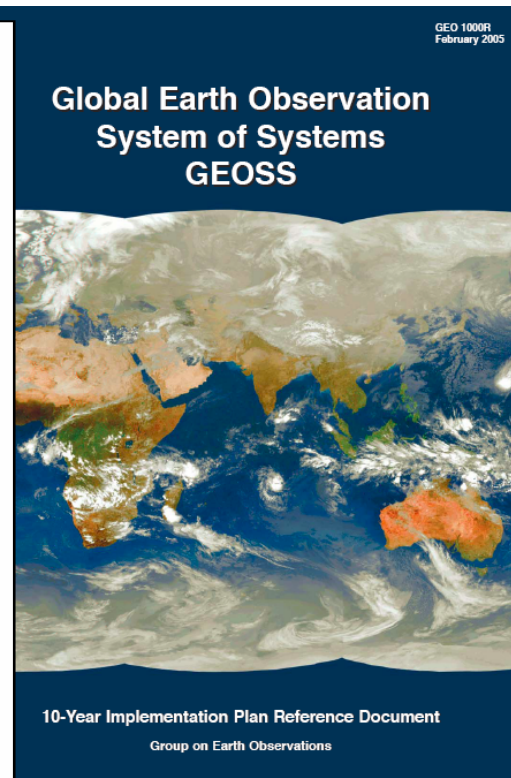
ISO 14721:2003



google "icsu paa"



google "oais"



earthobservations.org

# *Overarching themes*

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- Outreach to the scientific community
- Data discovery and access
- Interoperability
- A data coordination office
- A phased approach
- Funding



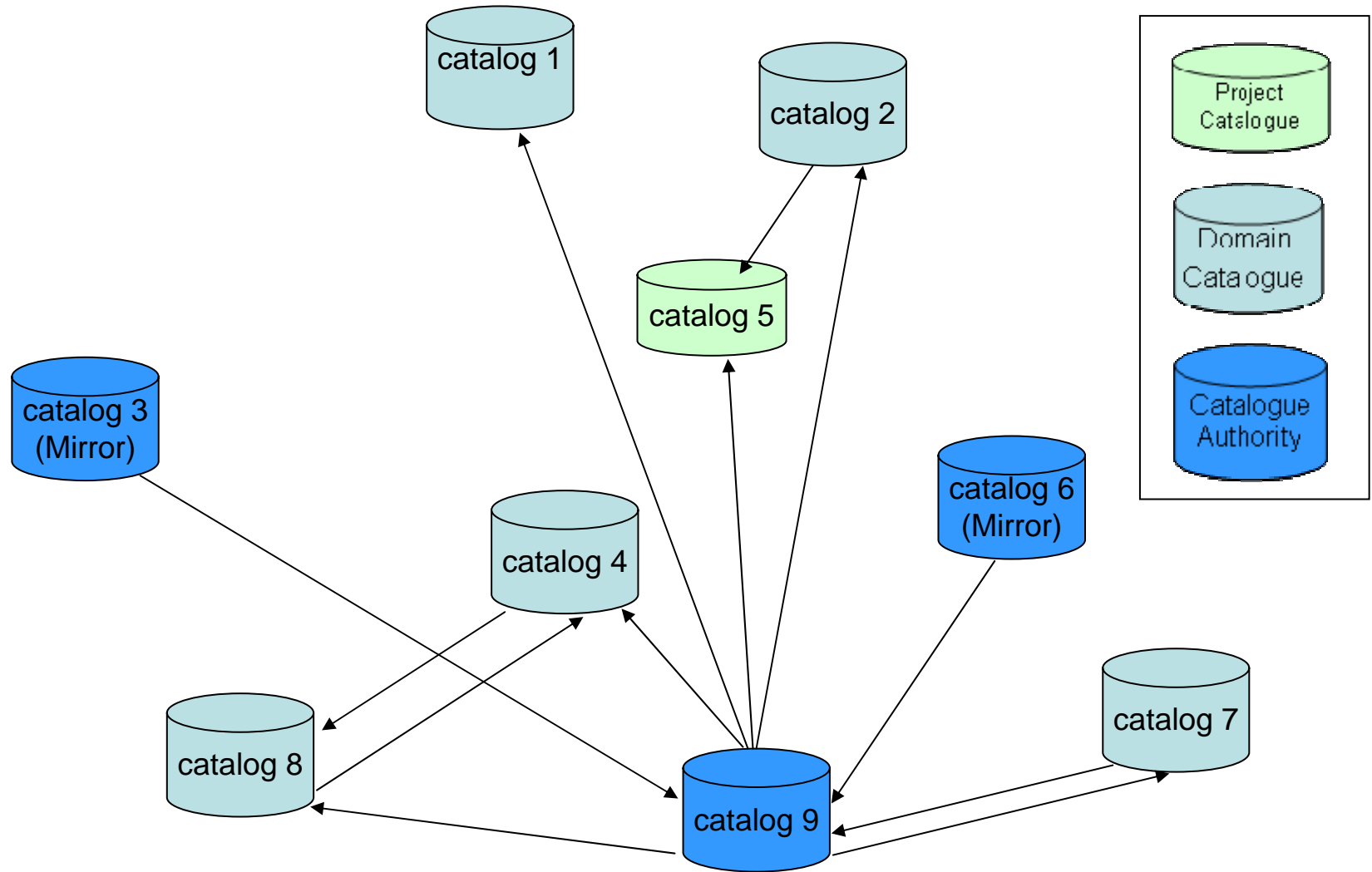
## *Vision: a cultural shift in science*

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You are not finished until you have done the research, published the results, **and published the data**, receiving formal credit for everything.

*“Preserve or Perish”*

# Data Discovery & Access—the “Union” Catalog

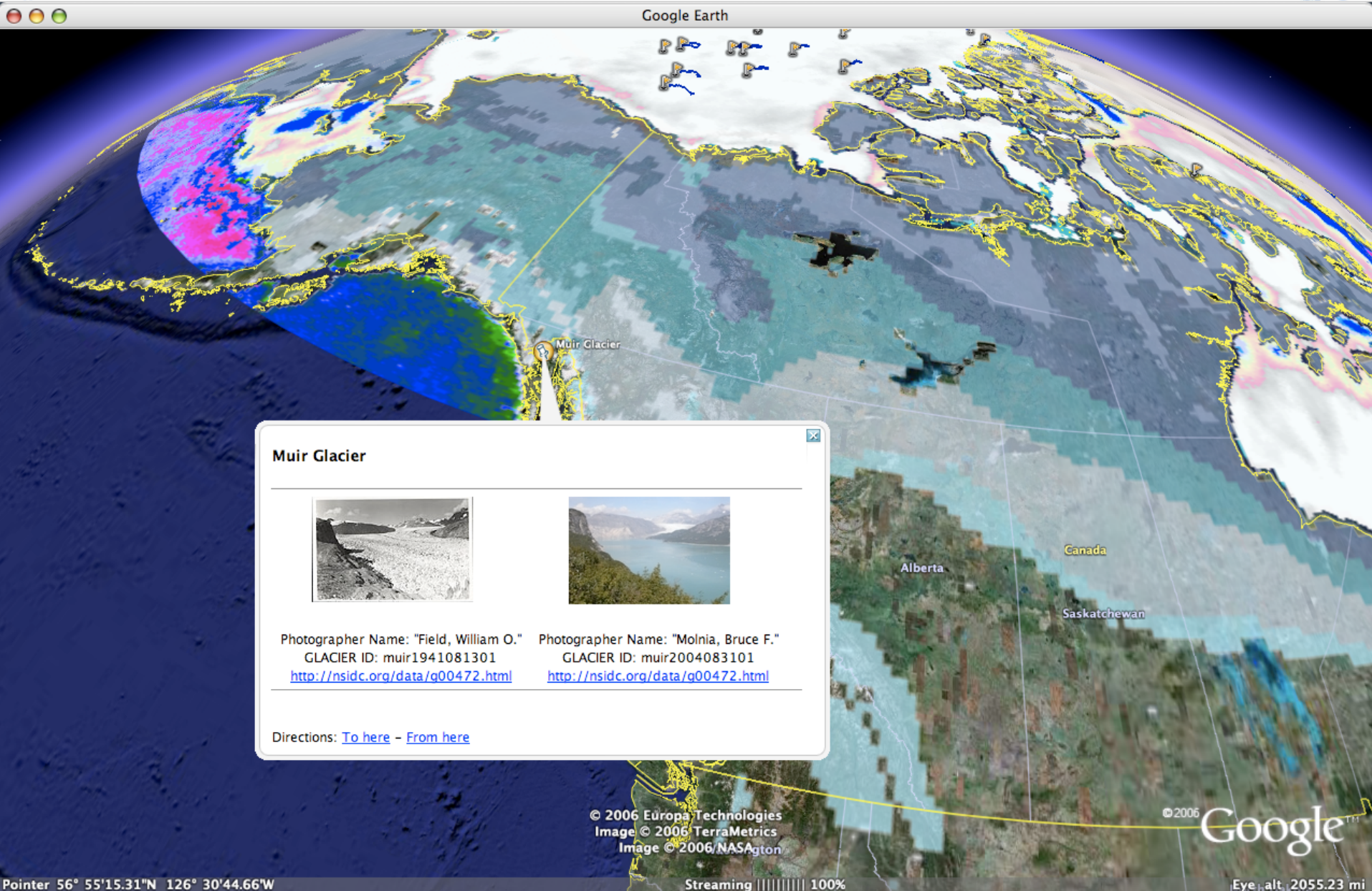


# *Data Discovery & Access*

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- Data policy on free and open access
- Working with the ICSU CODATA Global Information Commons for Science Initiative to handle IPR issues with local and traditional knowledge.
- Visualization





### Muir Glacier



Photographer Name: "Field, William O."  
 GLACIER ID: muir1941081301  
<http://nsidc.org/data/g00472.html>



Photographer Name: "Molnia, Bruce F."  
 GLACIER ID: muir2004083101  
<http://nsidc.org/data/g00472.html>

Directions: [To here](#) - [From here](#)

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# *Interoperability*

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“What few things must be the same so everything else can be different.”

- A *few* good standards:
  - ISO19115 metadata
  - Open Geospatial Consortium
- Explore advanced semantic approaches

# *The Equatorial Bias on a Spherical Earth*

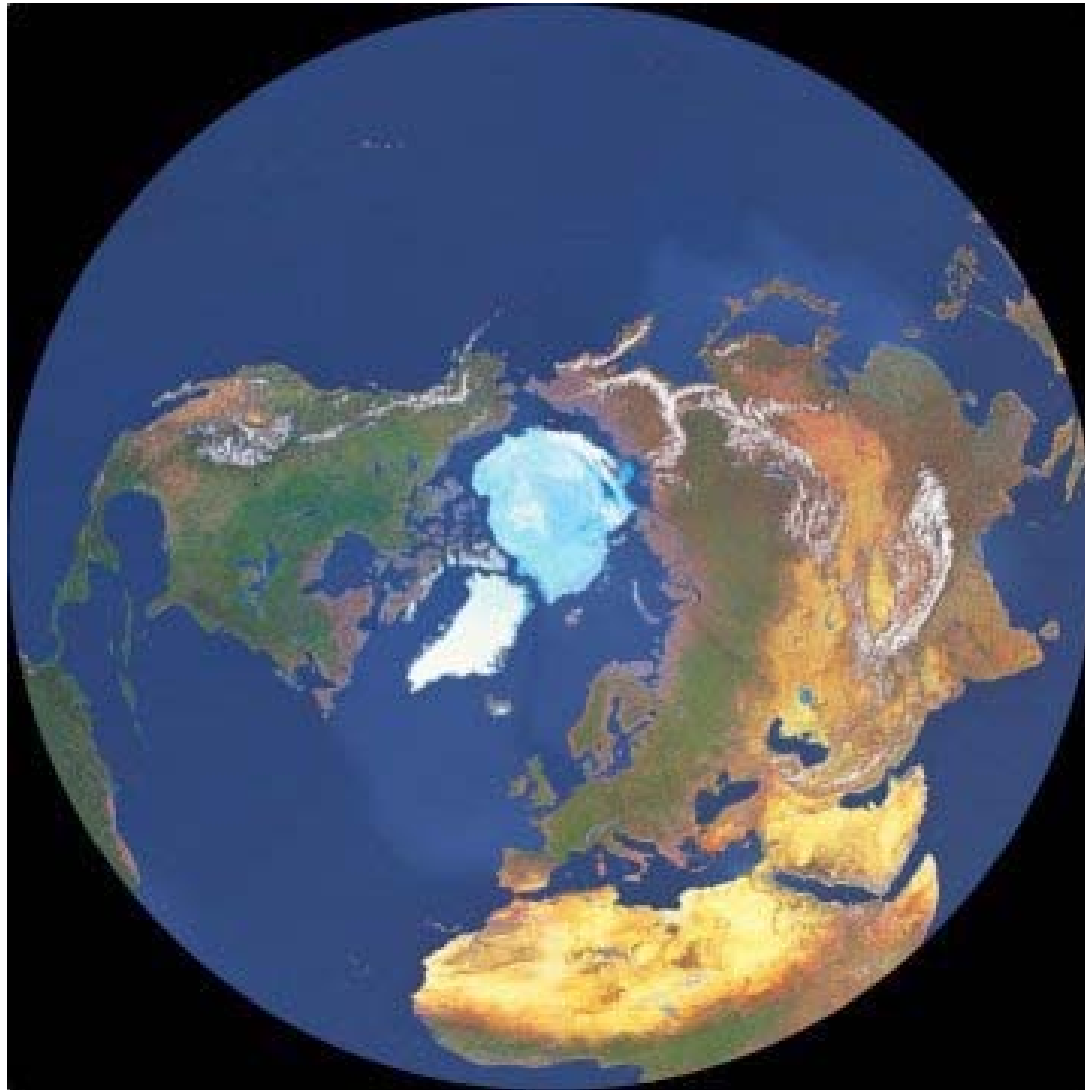
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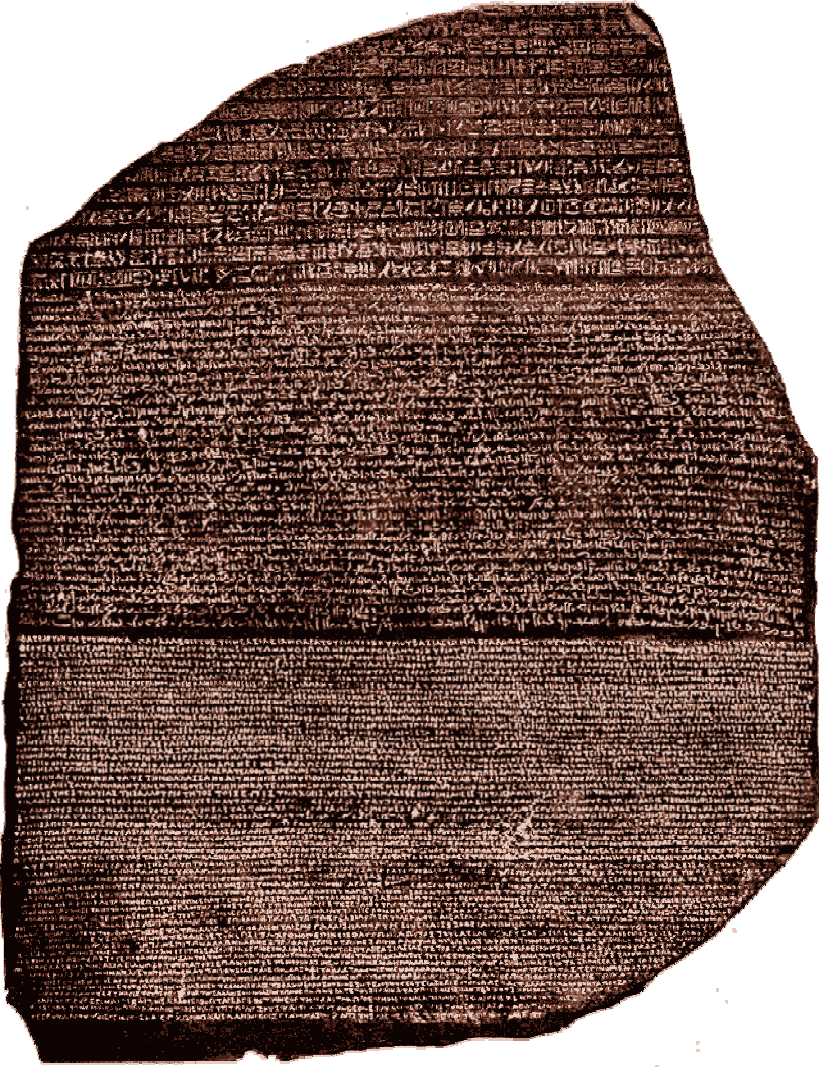
# *The Equatorial Bias on a Spherical Earth*

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# *Design for Durability*

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Data formats should

- transparent
- interoperable
- extensible
- compact

Systems should be simple and robust

# *A Phased Approach*

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Think BIG but start small

IPY provides a unique opportunity to revolutionize data management, but...

IPY is only 126 days away



A polar bear is sitting upright on a large, white ice floe. The bear is looking towards the camera with a neutral expression. The background consists of a vast expanse of blue water with numerous smaller ice floes scattered throughout. A blue speech bubble is positioned above the bear's head, containing the word "Questions?".

Questions?

NOAA

<http://nsidc.org/ipynis>