

Evolution of Archive Technologies at the National Snow and Ice Data Center

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Outline

- A brief history of NSIDC
- Current holdings
- Current systems
- Thoughts on the future

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A brief history of NSIDC

- World Data Center for Glaciology
 - 1957 - U.S. National Committee for the IGY awarded the operation of WDC-A for Glaciology to the American Geographical Society under the direction of Dr. William O. Field
 - 1970 - WDC for Glaciology transferred to the U.S. Geological Survey in Tacoma, Washington under the direction of Dr. Mark F. Meier
 - 1976 - WDC for Glaciology transfers to the NOAA Environmental Data and Information Service; an agreement between the University of Colorado and NOAA placed the WDC at CU-Boulder, Colorado under the direction of Roger Barry

A brief history of NSIDC

- National Snow and Ice Data Center
 - 1982 - NOAA grants NSIDC its name
 - 1983 - NSIDC receives a grant from NASA to archive Nimbus 7 passive microwave data
 - 1990 - NSIDC receives funding from NSF for the Arctic System Science (ARCSS) Data Coordination Center (ADCC)
 - 1993 - NSIDC receives first NASA Distributed Active Archive Center (DAAC) contract

A brief history of NSIDC

- 1996 - Antarctic Data Coordination Center (ADCC) established with NSF support
- 1999 - Antarctic Glaciological Data Center (AGDC) established with NSF support
- 2002 - Frozen Ground Data Center (FGDC) established with International Arctic Research Center (IARC) support

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Current Holdings

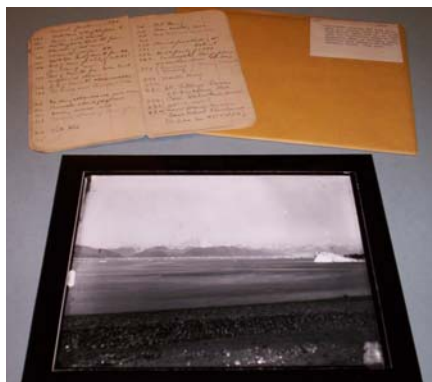
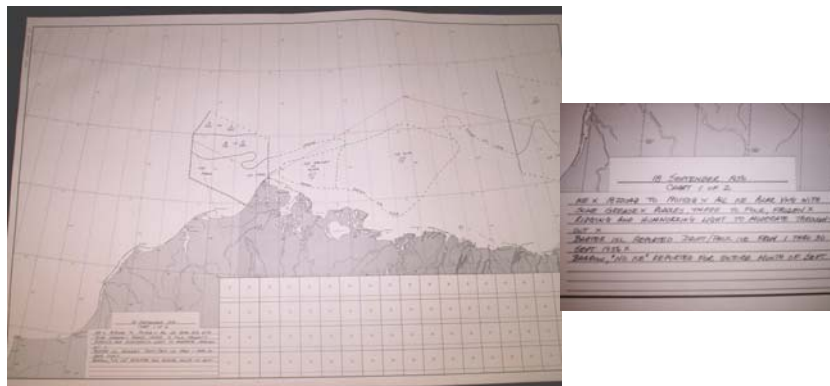
- Information Center
 - ~44,000 monographs, reports, serials, reprints, etc.



Current Holdings (continued)

Analog Archives

- ~ 10,000 glacier photos
- ~ 7,000 sea ice charts
- ~ 1,440 maps
- TBD cu ft of manuscripts and other records



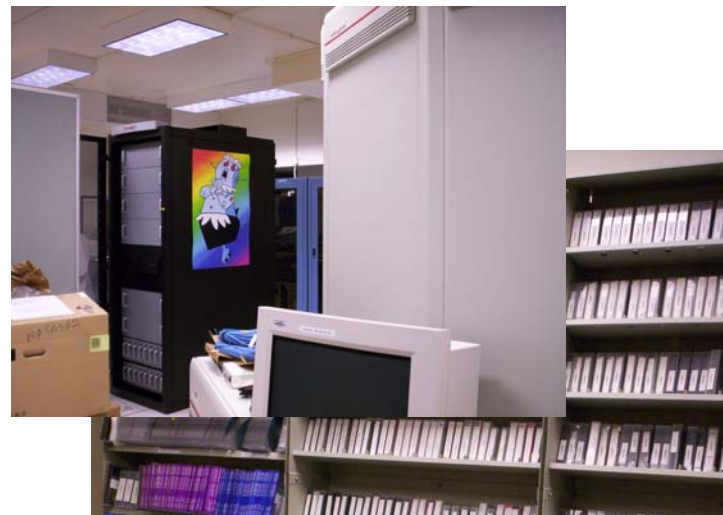
Data Holdings (continued)

Digital Archives

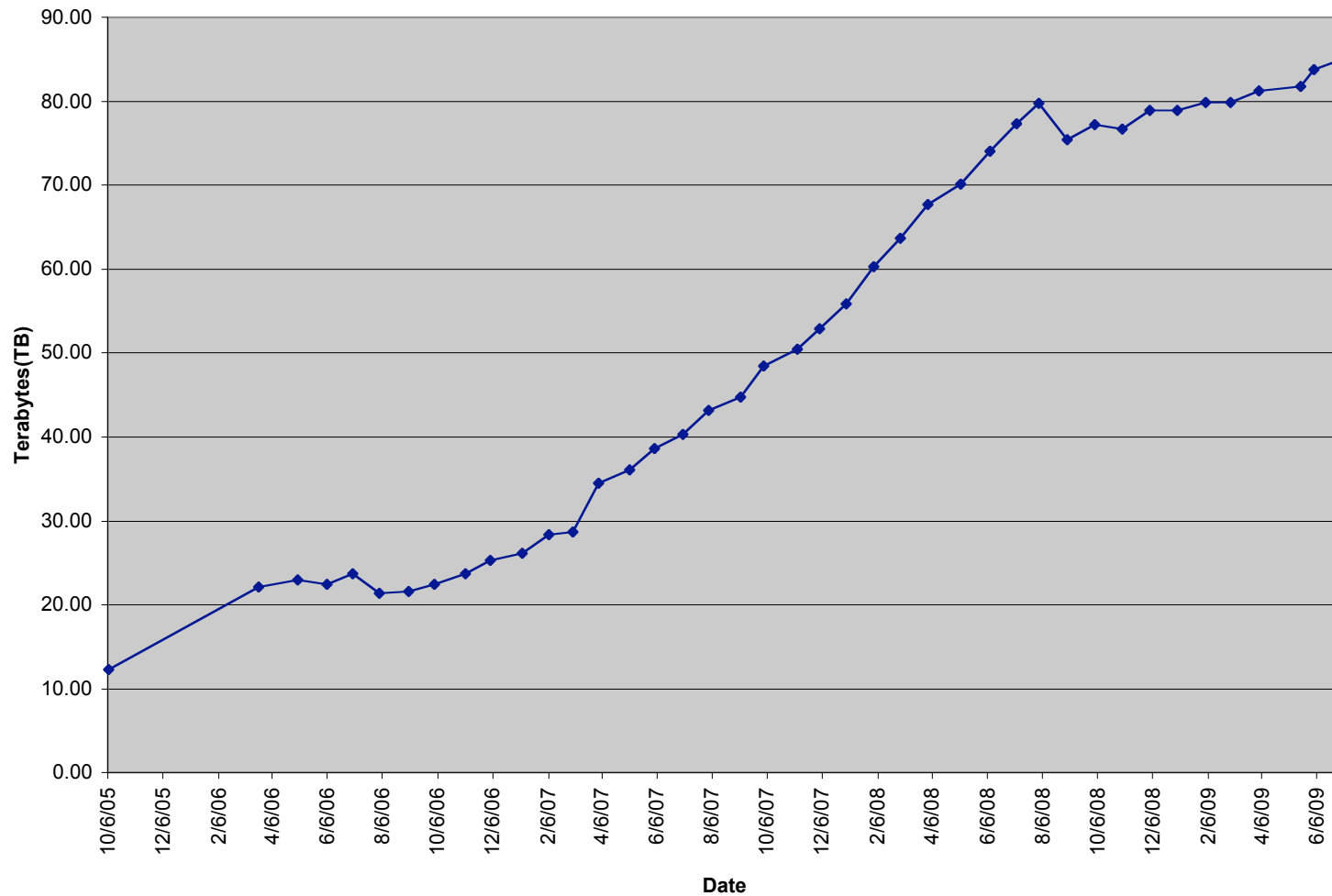
- ~ 440 publicly advertised data sets
- 4.6 million granules in ECS system
- > 3.5 million files in non-ECS systems

Archive Types

- ~ 8 TB on-line
- ~ 80 TB near-line
- >5 TB off-line
- Off-site backups for primary data without recovery agreements



NSIDC Near-Line Archive Size

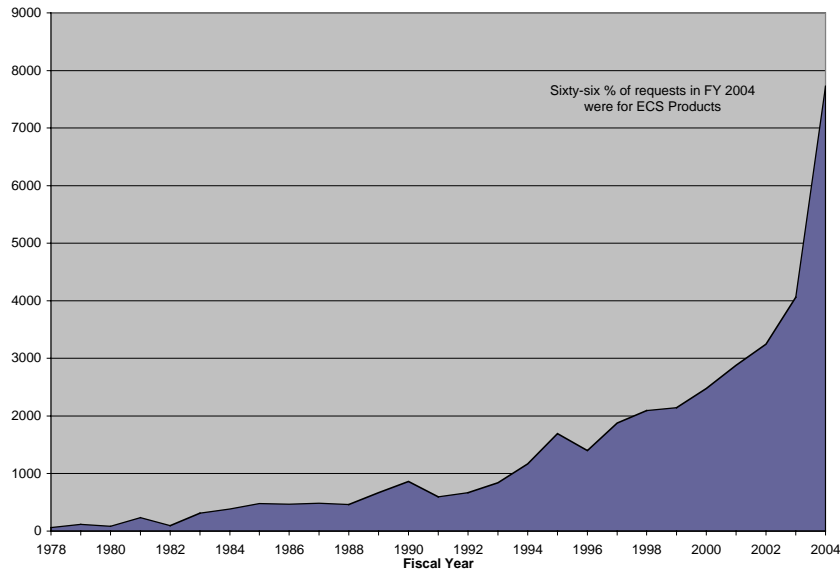


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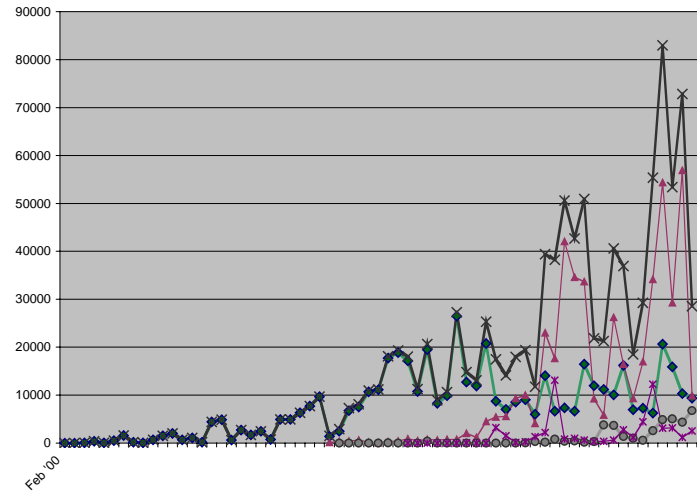


NSIDC Distribution Statistics

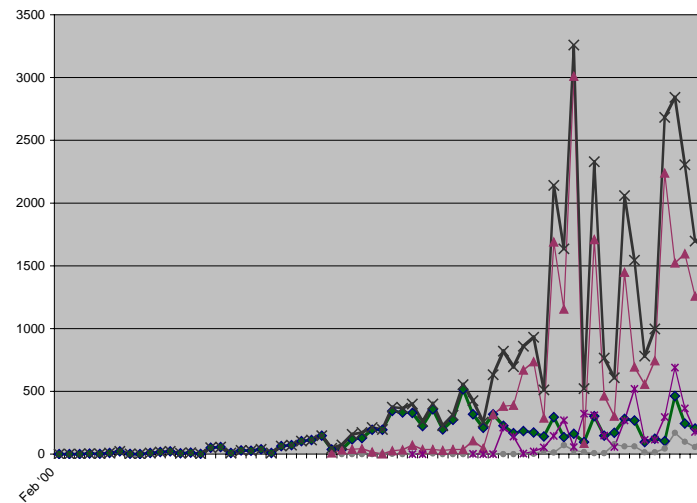
NSIDC Data and Information Request Totals
Fiscal Years 1978-2004



ECS Product - Total Granules Distributed by Month and Instrument Type



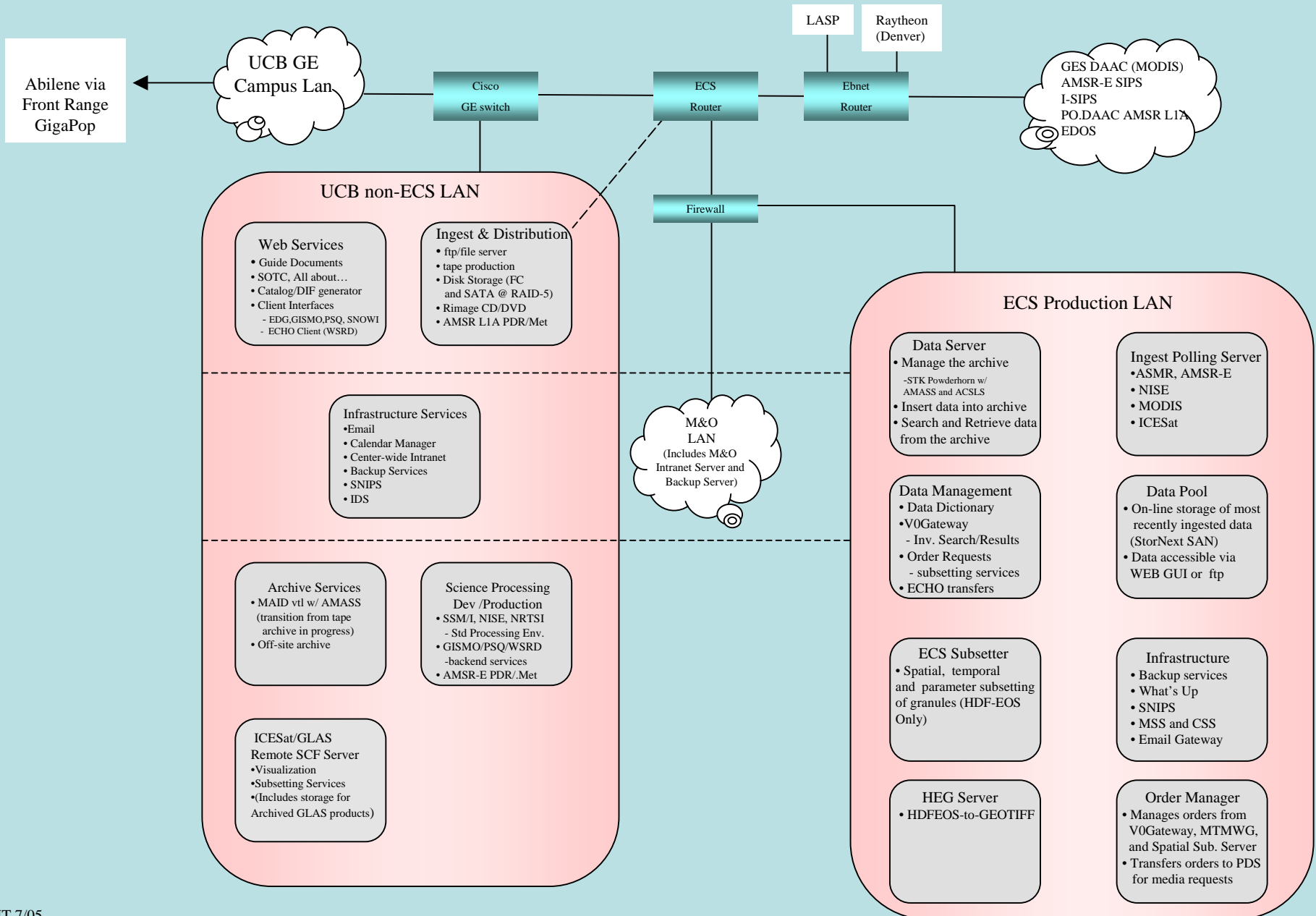
ECS Product Distribution in GB per Month and Instrument Type



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NSIDC Architecture



NSIDC Data Catalog



A Half-Century of Change in Arctic Alaskan Shrubs: A Photographic-Based Assessment

[Documentation](#) [Order Data](#)

In this study, the locations of 193 old aerial photographs of northern Alaskan landscapes were rephotographed and assessed for changes in vegetation. The original photographs were taken over northern Alaska between 1948 and 1951, and the new photographs were taken between 1999 and 2003. The region covered by the original and repeat photographs stretches from the southern extent of the Brooks Range in the south to the Coastal Plain in the north, and from the Chukchi Sea in the west to the Canning River in the east. Approximate coordinates are 68°N to 70°N and 145°E to 164°E.

The original photographs were taken by the U.S. military as part of geologic reconnaissance and exploration, and the method used to acquire them was to fly both sides of a river valley while photographing the river and the facing valley slopes. Of the several thousand original photographs, only a fraction were repeated for the purpose of assessing vegetation change. Repeat photographs were selected for geographic coverage and to produce the greatest likelihood of detecting vegetation change. The original and repeat photographs were then scanned and stored in TIFF format. Individual image file sizes range from 5 to 60 MB each, and the total file size for the data set is 11 GB. The photographs are distributed on a set of three DVDs.

The images should not be published without the consent of the investigators.

Data Citation

Sturm, M., and C. Racine. 2005. *A Half-Century of change in arctic Alaskan shrubs: a photographic-based assessment*. Boulder, CO: National Snow and Ice Data Center. DVD.

See Also

- [User Services](#)

- Contains metadata about each published data set
 - GCMD, FGDC compliant metadata
- Used to drive web page creation
- Modification underway to include OAIS/PREMIS compliant metadata for all data sets



Search Data Sets

Search Help

This is a beta version that allows you to search data sets only. (Use our [Site Wide Search Powered by Google](#) to search all web content at NSIDC.) Please [contact NSIDC User Services](#) to report any bugs or errors.

Keywords (help)

Keywords search input fields with dropdown menus for '(ALL)' and options for 'and' or 'or'.

Spatial Extent (help)

Spatial Extent search interface featuring a world map with latitude and longitude markers (Northernmost 90, Southernmost 90, Western -180, Eastern 180) and input fields for search criteria.

Temporal Coverage (help)

Temporal Coverage search interface with instructions: 'If searching by time, you must enter a start and end year for the search to work properly.' It includes 'Start' and 'End' date pickers.

Data Centers Searched (help)

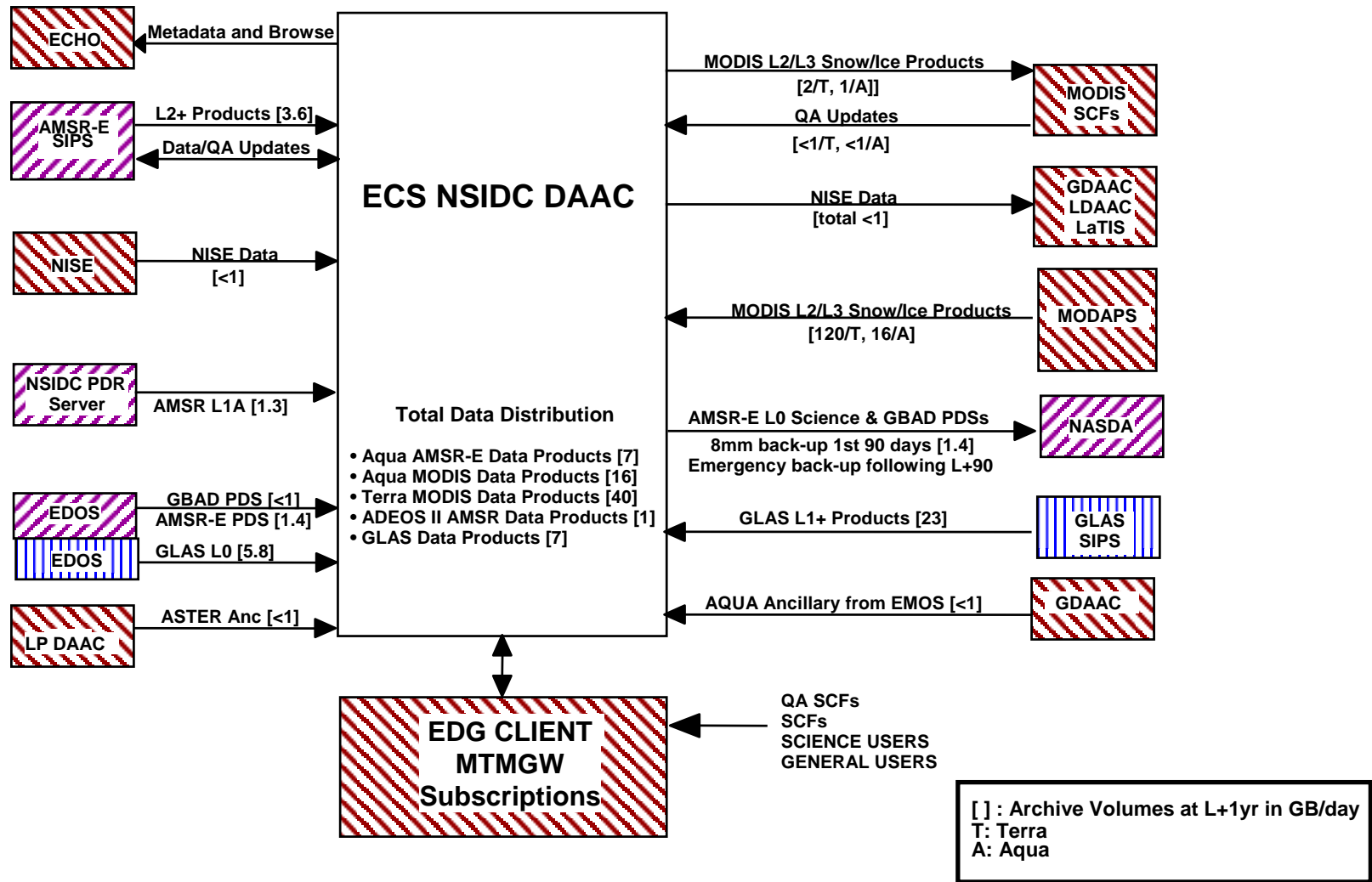
(All - National Snow and Ice Data Center, NSIDC)
IARC Frozen Ground Data Center (FGDC) at NSIDC
NASA Distributed Active Archive Center (DAAC) at NSIDC
NOAA at NSIDC
NSF Arctic System Science Data Coordination Center (ADCC) at NSIDC
NSF Antarctic Glaciological Data Center (AGDC) at NSIDC
World Data Center (WDC) for Glaciology, Boulder at NSIDC

Data Sets Searched (help)

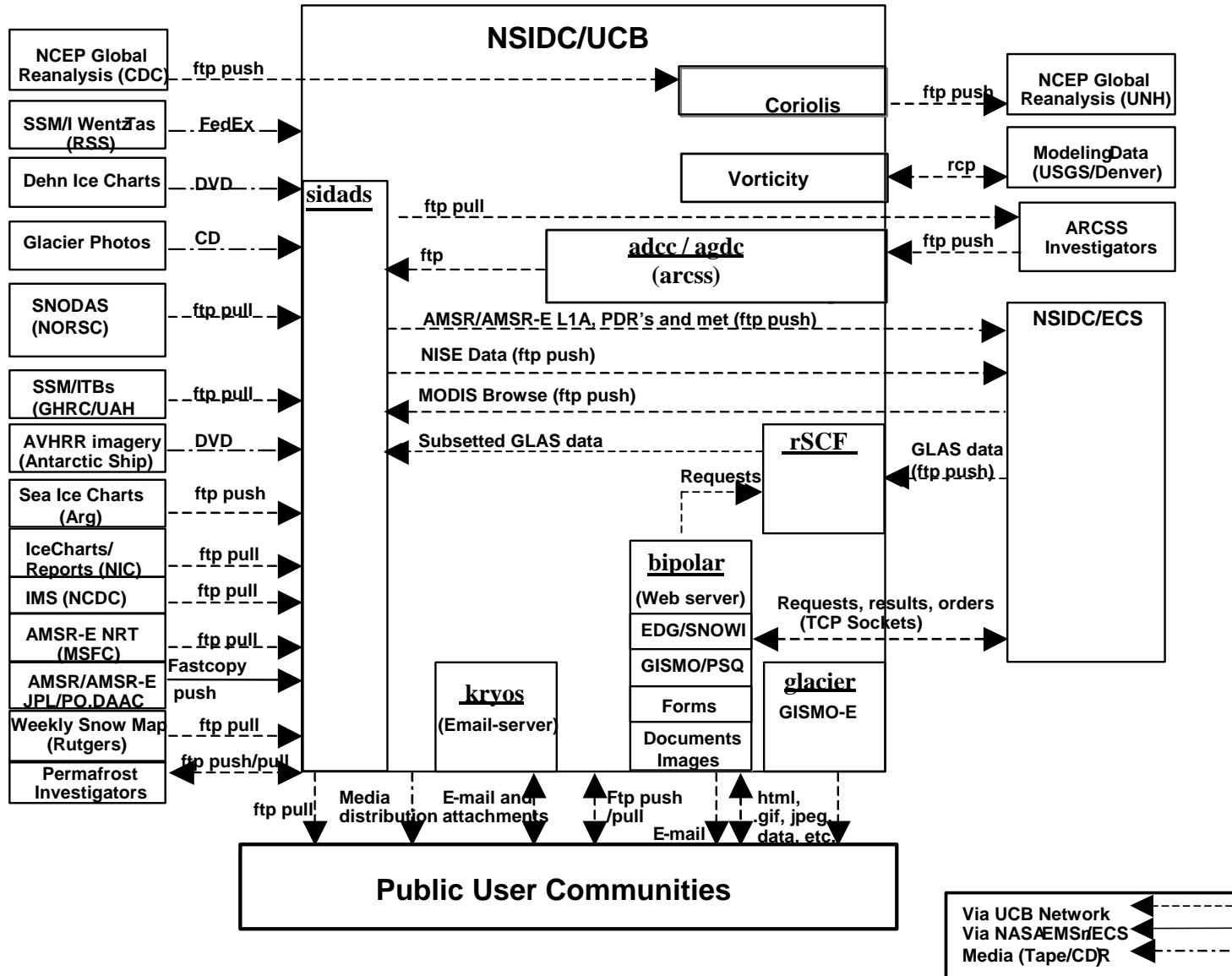
only data sets held by NSIDC
 ALL data sets advertised, including data held elsewhere

[Start Search](#) [Clear Form](#)

NSIDC DAAC ECS Interfaces



NSIDC/UCB Interfaces



COPAN MAID - Early Experiences

- Using AMASS to provide a file system front end to a COPAN 200t system configured as a L700 with 7 - 9940 drives
 - COPAN to act as a drop-in replacement for the STK 9710
- Migration of data underway
- The big surprise was performance
- Minor surprise is the ever shrinking total archive size

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Thoughts on the Future

- NSIDC DAAC is pushing for an entirely on-line archive
 - What technologies will allow this? (SATA RAID, COPAN, or ???)
 - What happens to media?
 - How do we ensure preservation of these data over time?