



National Snow and Ice Data Center
Supporting Cryospheric Research Since 1976



MODIS Data at NSIDC

*Douglas Fowler, NSIDC MODIS Lead
MODIS Science Team Meeting
Columbia, MD
29-30 April, 2014*



Outline

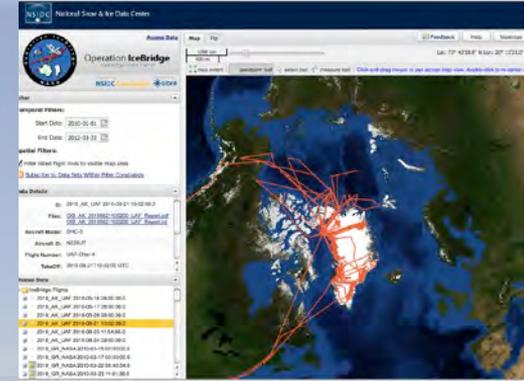
- NSIDC overview
- Data System Status and Plans
- MODIS Distribution Metrics
- MODIS Related Products
- Data Access & Discovery
- User Support

The National Snow and Ice Data Center...



Manages and distributes scientific data

Provides tools for data access



Researches the cryosphere and data science

Supports local and traditional knowledge



Supports data users

Educates the public about the cryosphere



MODIS Data at NSIDC - D. Fowler

Presented at the MODIS Science Team Meeting, January, 2010



Institutional Relationships

- Part of the University of Colorado
- Within the CU Cooperative Institute for Research in Environmental Sciences (CIRES) Cryospheric and Polar Processes Division
- Chartered by NOAA's National Environmental Satellite, Data, and Information Service. Affiliated with the NOAA National Geophysical Data Center (NGDC)
- Funded by NASA, NOAA, NSF, and others at the program level
- Member of the International Council for Science (ICSU) World Data System



Data System Status and Plans

NSIDC's MODIS support provided by the NASA-supplied ECS data system

- NSIDC DAAC ECS activities

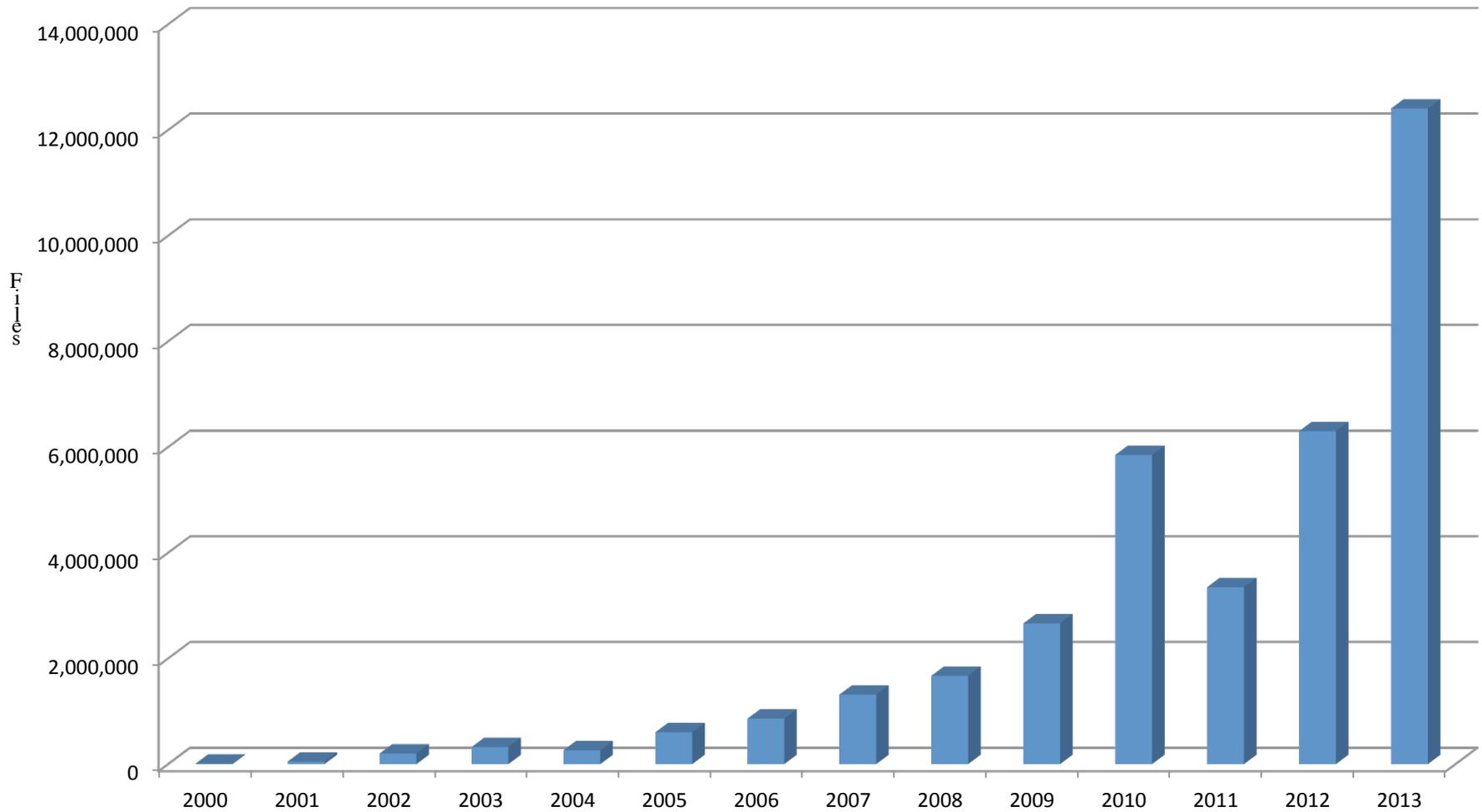
- Software Release 8.2 into Operations in Oct 2013
 - Transition from Sybase to Postgres database
 - DAAC Data Pool/HEG replaced by Data Access
- ECHO/Reverb upgrades
 - Data Access, above, is a service offered through Reverb
 - Order flow modified for ease of use

- NSIDC Search Tool

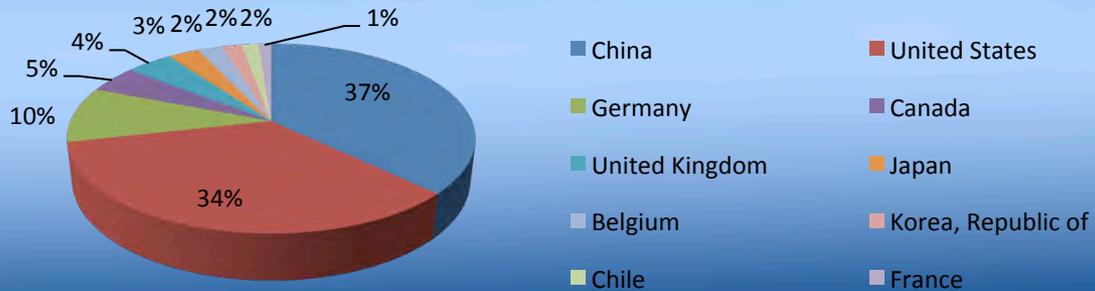
- Improved search design using better ranking algorithms
- Simpler workflow for accessing data
- Current efforts focused on providing users with ways to
 - Filter, compare, and identify data sets
 - Faceted browse and data comparison

MODIS Distribution

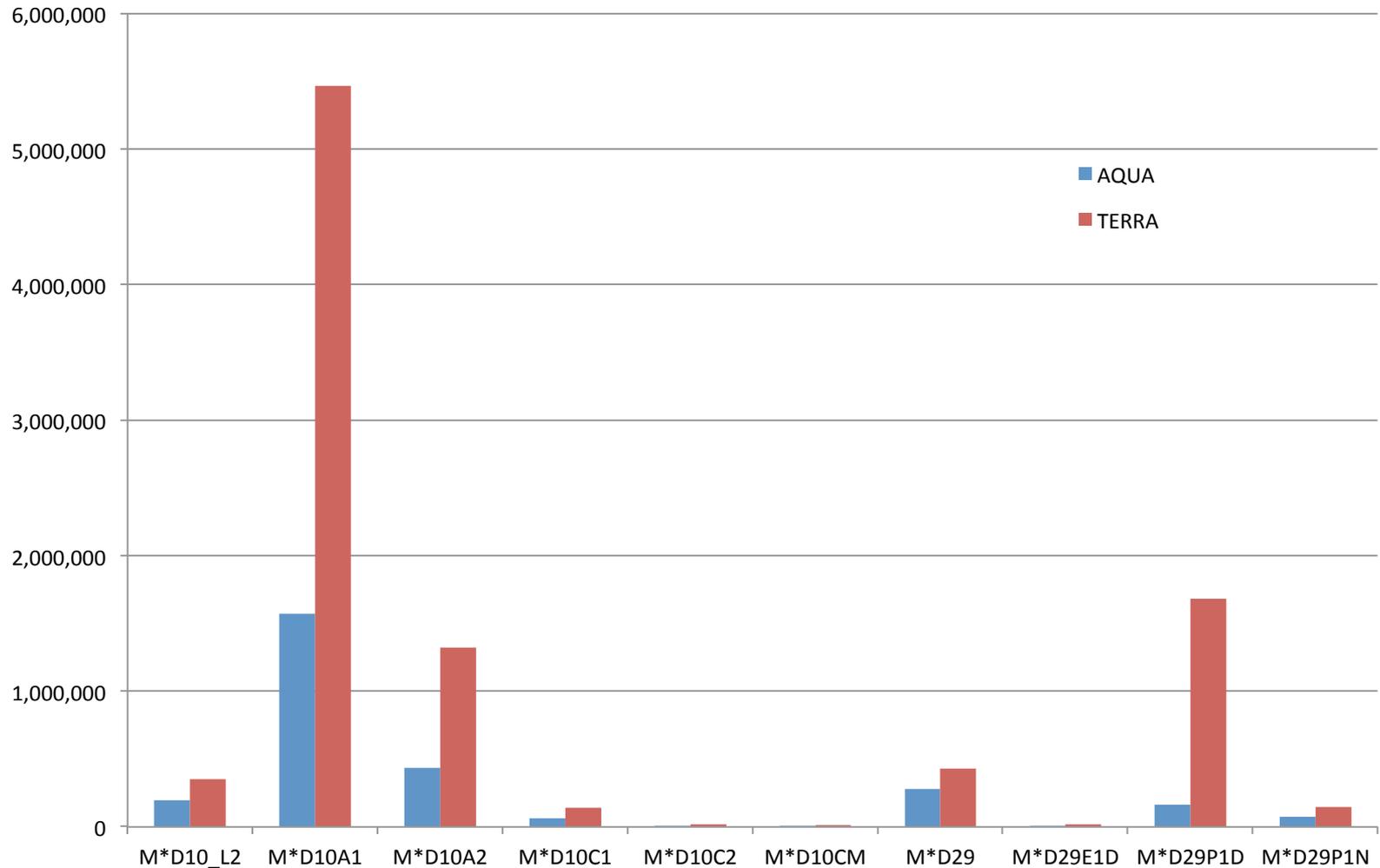
MODIS Data Orders



MODIS Distribution Ranked by Country - 2013



Files Distributed by Instrument and Product -2013



Distributed vs. Archived Files by Percent -2013

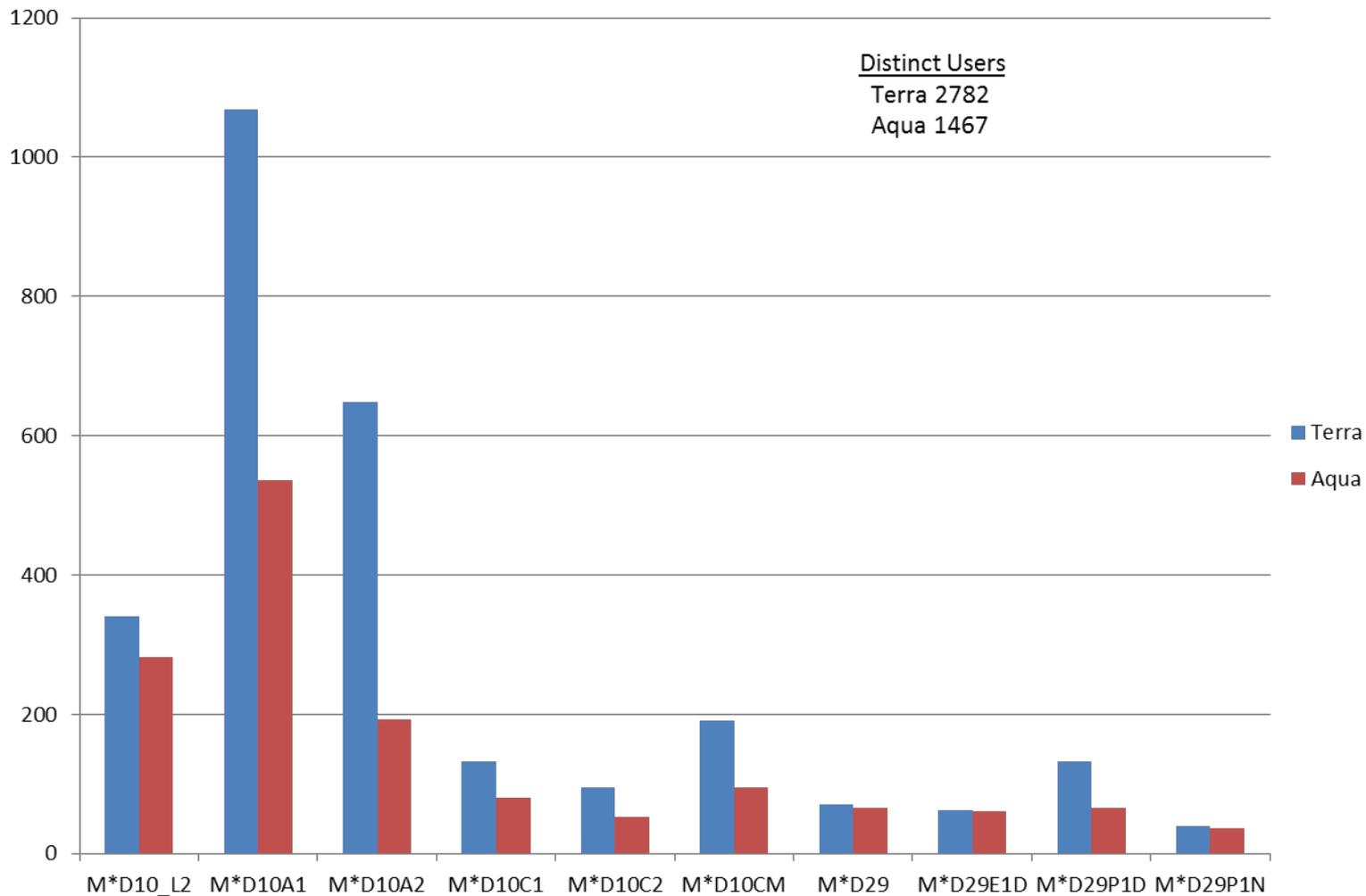
Terra

	Distributed	Archived	% Distributed
MOD10CM	13,340	165	8085%
MOD10C2	20,326	647	3142%
MOD10C1	138,708	5,109	2715%
MOD10A2	1,322,390	197,577	669%
MOD29E1D	20,033	5,105	392%
MOD10A1	5,466,021	1,554,728	352%
MOD29P1D	1,684,746	1,034,485	163%
MOD29	431,120	890,900	48%
MOD10_L2	351,955	805,829	44%
MOD29P1N	147,878	1,032,905	14%

Aqua

	Distributed	Archived	% Distributed
MYD10CM	4,849	140	3464%
MYD10C1	62,917	4,285	1468%
MYD10C2	6,202	541	1146%
MYD10A2	434,124	165,481	262%
MYD29E1D	10,505	4,286	245%
MYD10A1	1,571,902	1,306,823	120%
MYD29	280,429	751,606	37%
MYD10_L2	199,319	678,054	29%
MYD29P1D	163,330	868,162	19%
MYD29P1N	75,682	868,727	9%

Distinct Users by Product - 2014



Other MODIS-Based Products

ID	Authors	Title
NSIDC-0280	Haran, Bohlander, Scambos, Painter, Fahnestock	MODIS Mosaic of the Antarctic (MOA) Image Map
NSIDC-0321	Brodzik, Armstrong, Savoie	Global EASE-Grid 8-day Blended SSM/I and MODIS Snow Cover
NSIDC-0447	Brown, Brasnett	Canadian Meteorological Centre (CMC) Daily Snow Depth Analysis Data
NSIDC-0497	Hulbe, LeDoux	MOA-derived Structural Feature Map of the Ronne Ice Shelf
NSIDC-0547 (in-work)	Haran, Bohlander, Scambos, Painter, Fahnestock	MODIS Mosaic of Greenland (MOG) Image Map

Data Discovery & Access

Data Pool GUI (web-access) Retired

- HDF-EOS to GeoTIFF (HEG) data services now accessible in Reverb
- Data Pool FTP site remains for direct data access

REVERB reverb.echo.nasa.gov

- FTP download All Products
- Data services Most Standard Products
 - Spatial & Parameter Subsetting, Reformatting to GeoTIFF, Projection Conversion

MODIS Interactive Subsetting Toolkit (MIST)

- MOD09A1, MOD10A1, MOD11A2, MCD43A1 subsets over GC-NET and IASOA stations
- On-line interactive graphics and analysis support
- Hope to increase available products and subsettable regions

Data Discovery & Access

NSIDC Search – Live, but still evolving

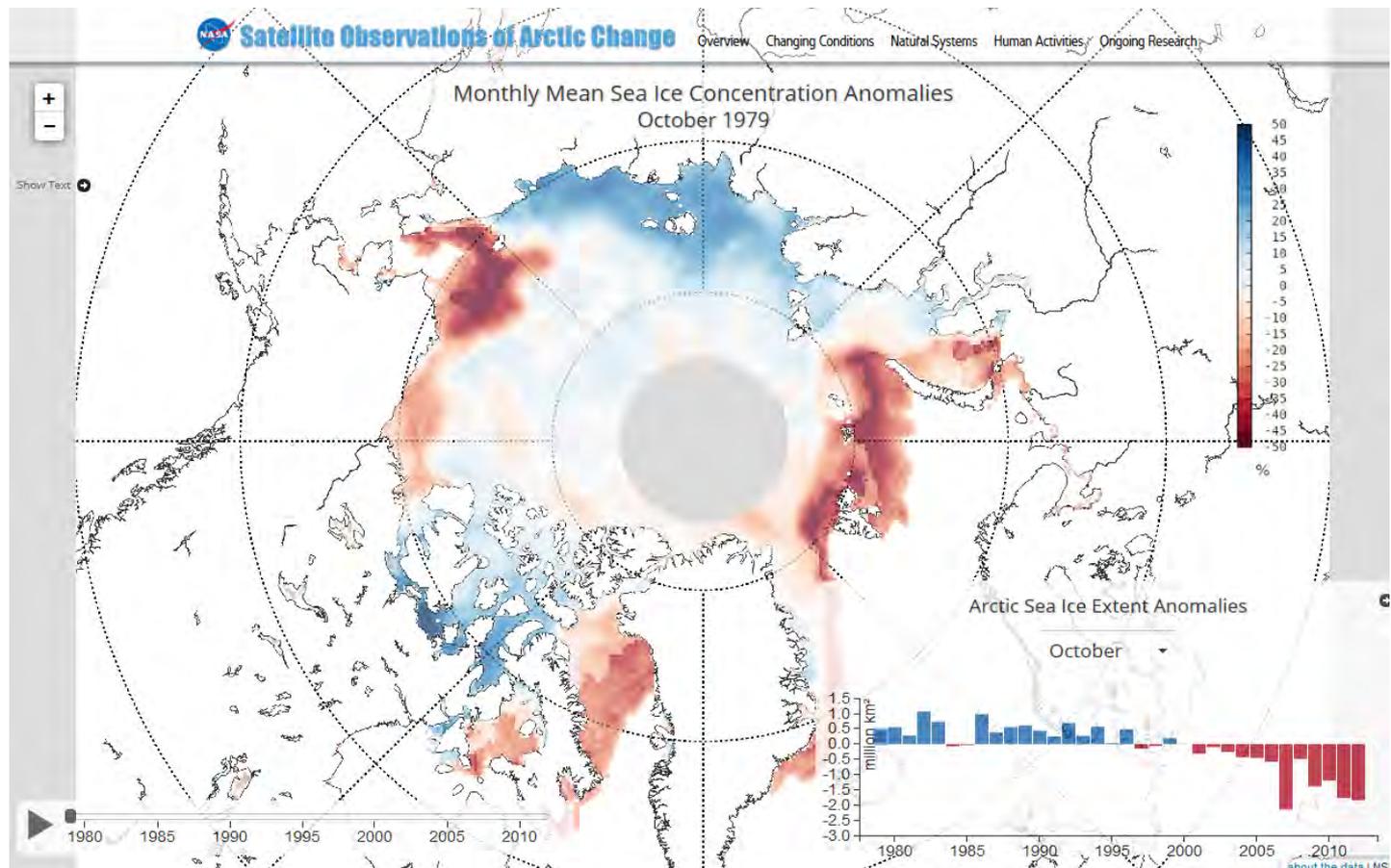
- User feedback: Challenging to find and select data which best meets needs
- Current
 - Improved search algorithms
 - Faceted browse
- Plans
 - Side-by-side data set comparison

The screenshot displays the NSIDC Scientific Data Search interface. At the top, there is a navigation bar with links for HOME, DATA, PROGRAMS, RESEARCH, NEWS, ABOUT THE CRYOSPHERE, and ABOUT US. Below this is a search bar with a dropdown menu set to 'All', a text input field containing 'Snow cover', and a 'Search' button. To the right of the search bar, there are fields for 'Spatial Coverage' (N:64.11, S:40.85, E:-55.66, W:-106.62) and 'Temporal Coverage' (yyyy-mm-dd to yyyy-mm-dd). Below the search bar, there are three faceted search sections: 'Temporal Duration' with options like '< 1 year (0)', '1+ years (15)', '5+ years (14)', and '10+ years (14)'; 'Spatial Coverage' with 'Global (14)' and 'Non Global (4)'; and 'Parameter' with various options like 'Active Layer (0)', 'Air Temperature (1)', 'Albedo (2)', etc. The main content area shows search results for 'Snow cover', displaying 14 data sets. The first result is 'MODIS/Terra Snow Cover 8-Day L3 Global 500m Grid', followed by 'MODIS/Aqua Snow Cover Daily L3 Global 500m Grid', 'MODIS/Terra Snow Cover Daily L3 Global 500m Grid', and 'MODIS/Terra Snow Cover 5-Min L2 Swath 500'. Each result includes details on spatial coverage, temporal coverage, parameters, and data format, along with a 'Get Data' button and a NASA logo.

Data Discovery & Access

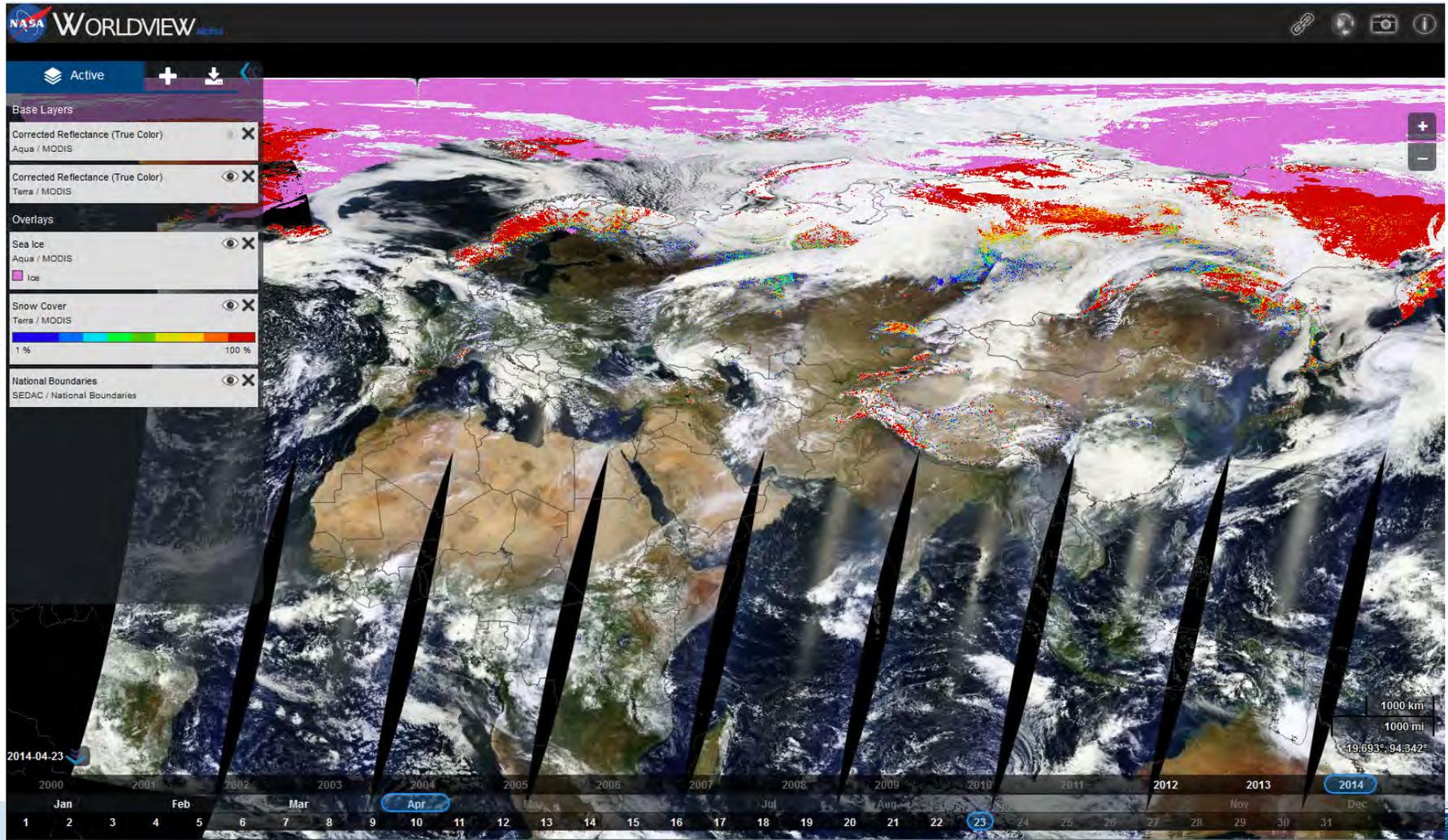
Satellite Observation of Arctic Changes (SOAC)

To publicize NASA satellite data and research on Arctic change, in the form of maps that illustrate the changes taking place in the Arctic over time.



Discovery & Access: Worldview Imagery

Provides interactive browse and download of **full-resolution imagery** and access to the source **data**.



<https://earthdata.nasa.gov/labs/worldview/>

User Support

User Services Knowledge Base support.nsidc.org/forums

- Accessible by users
 - Dynamic FAQs
 - User can view tutorials for tools and data access
 - Submit questions to User Services

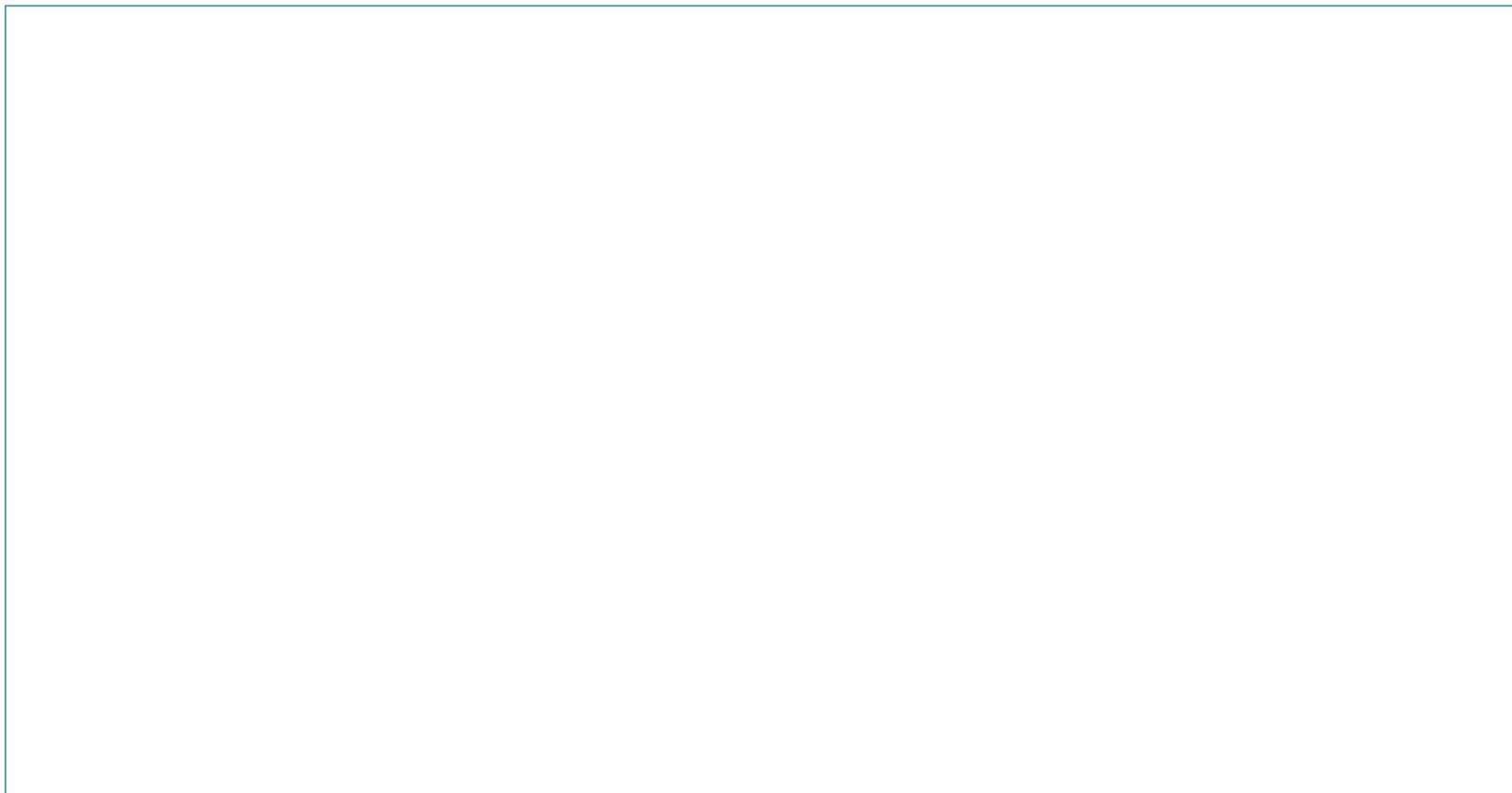
The Drift nsidc.org/the-drift/

- Consolidated online data announcements, data highlights, tools, and tips into a blog-style Web site
- Replaces NSIDC Notes

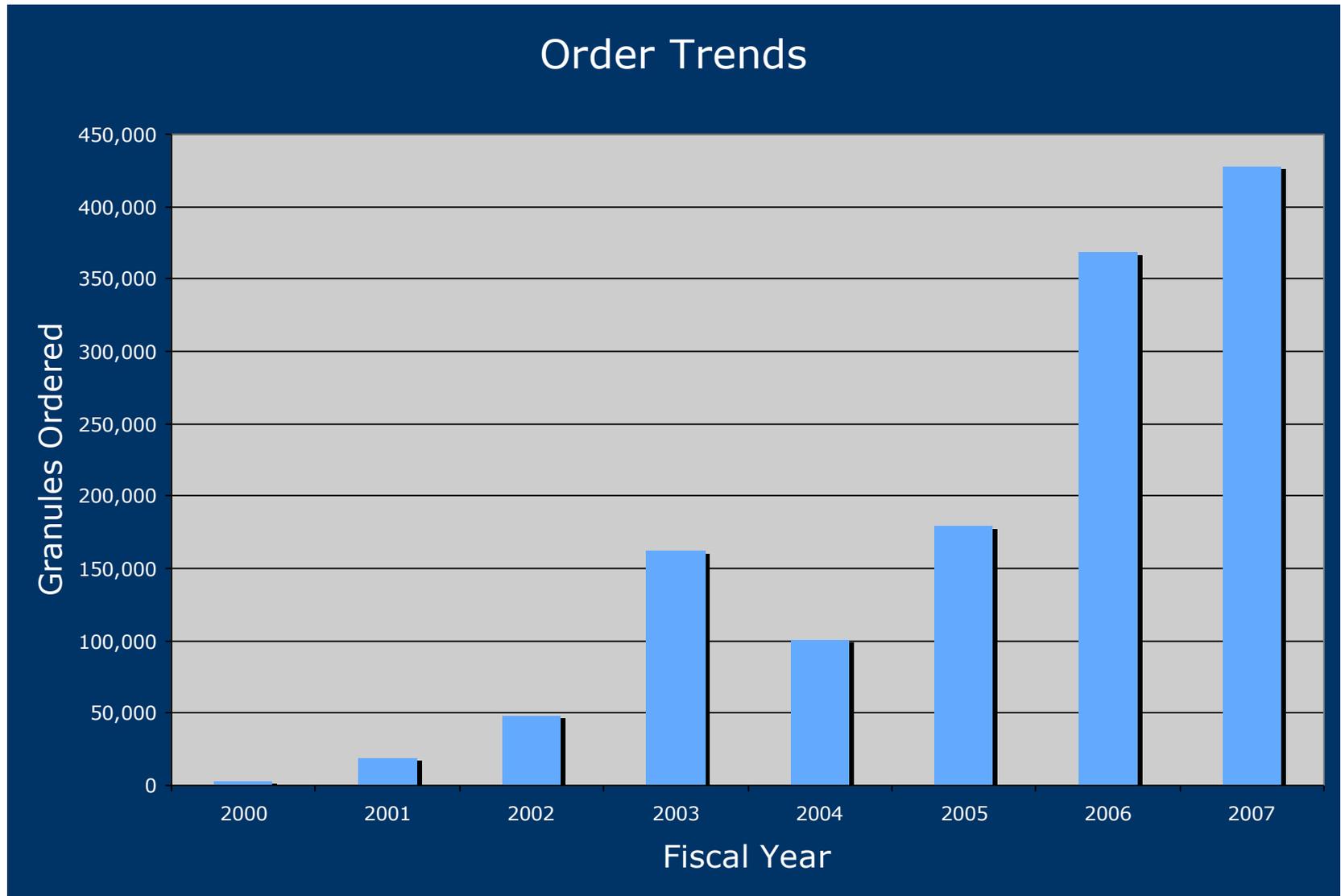
In Closing

- Both NSIDC and the DAAC have expanded the types of science being done and what we're supporting
 - working to make data more available
 - Tools to assist researchers/users
- MODIS distribution and number of users is high
- Collection 6
 - Archive testing
 - Distribution
 - Documentation, in work

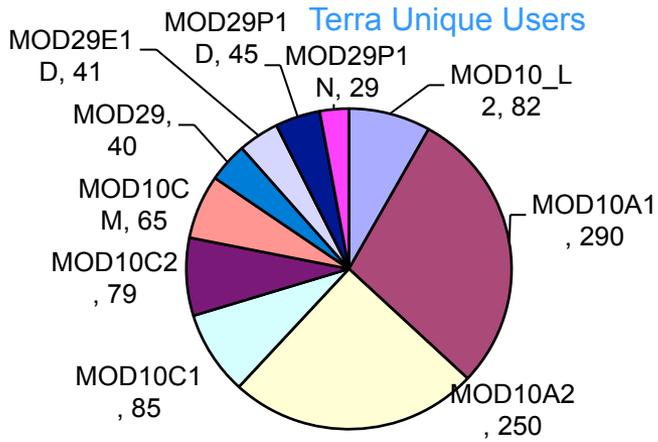
Backup Slides



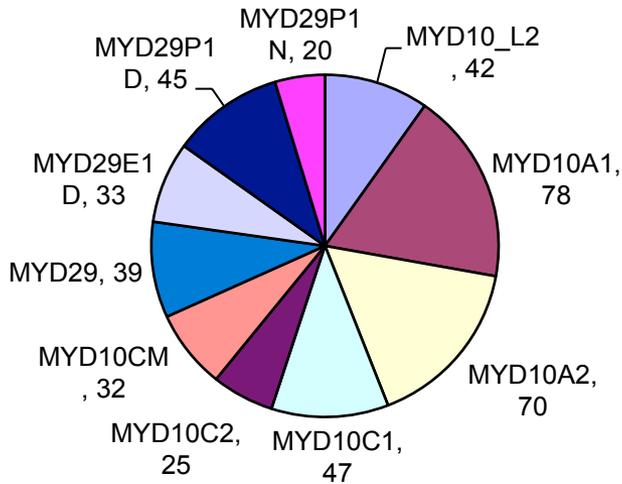
MODIS Data Orders



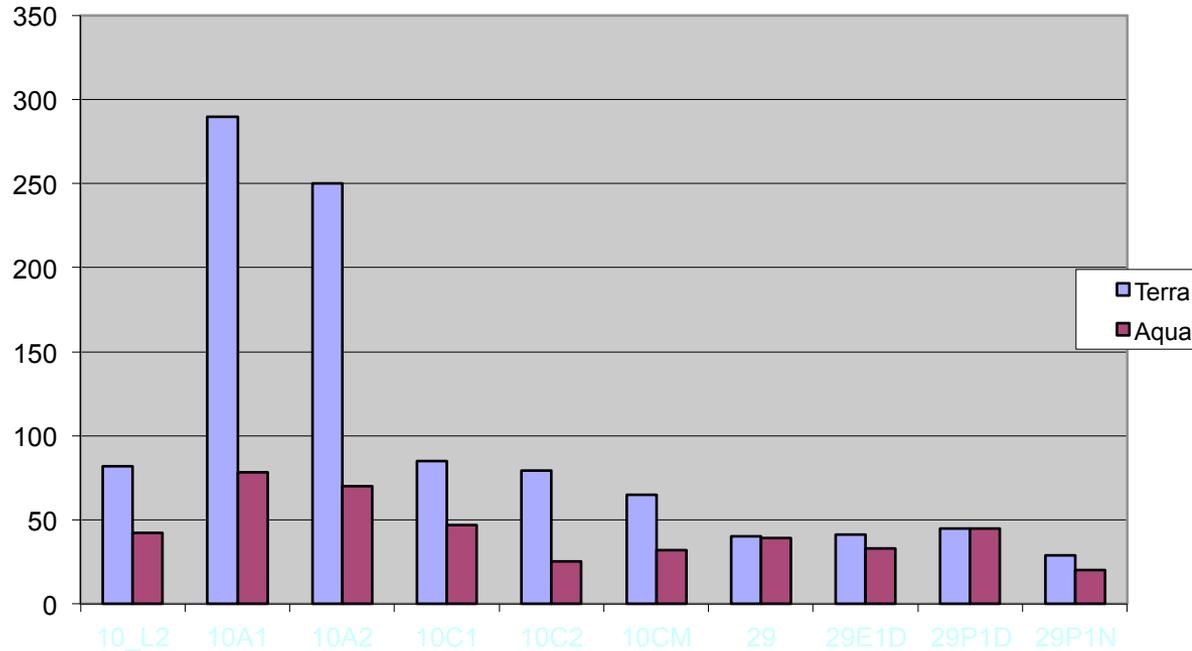
Metrics - Distinct MODIS Users - 2008



Aqua Unique Users (2008)

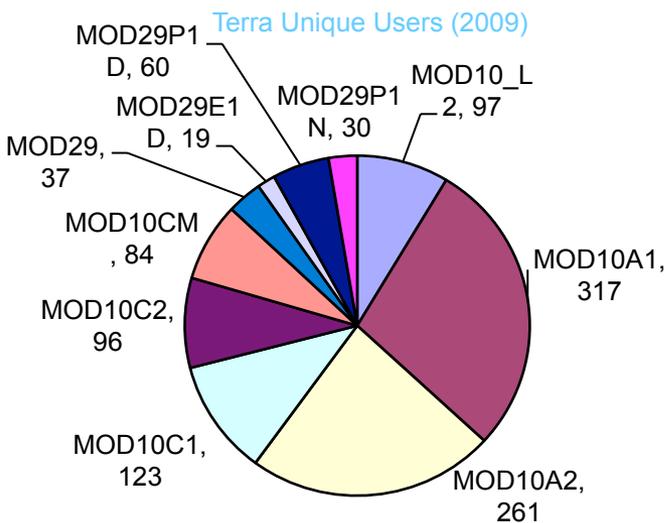


Unique Users by Product

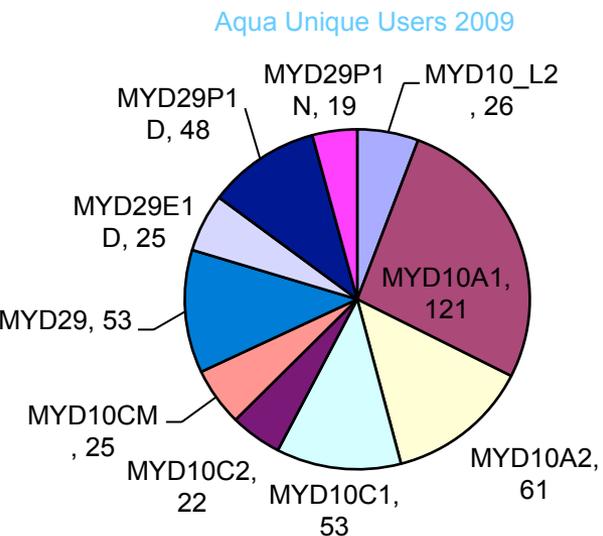
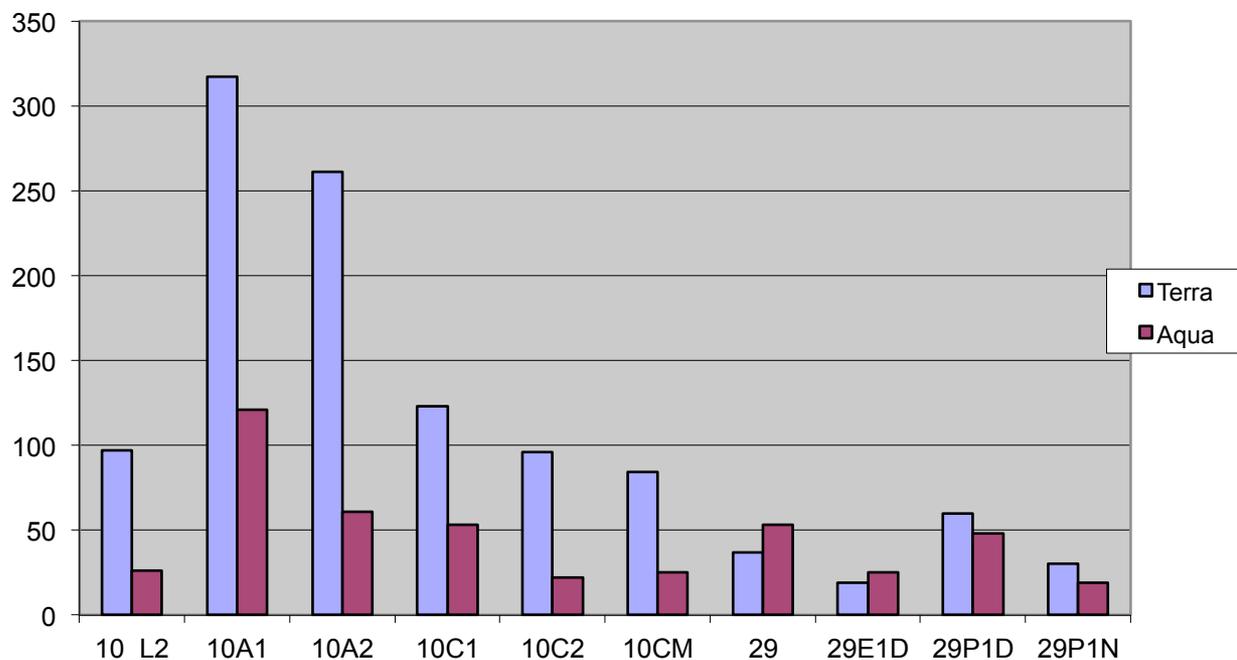


Metrics - Distinct MODIS Users - 2009

1597 unique MODIS users



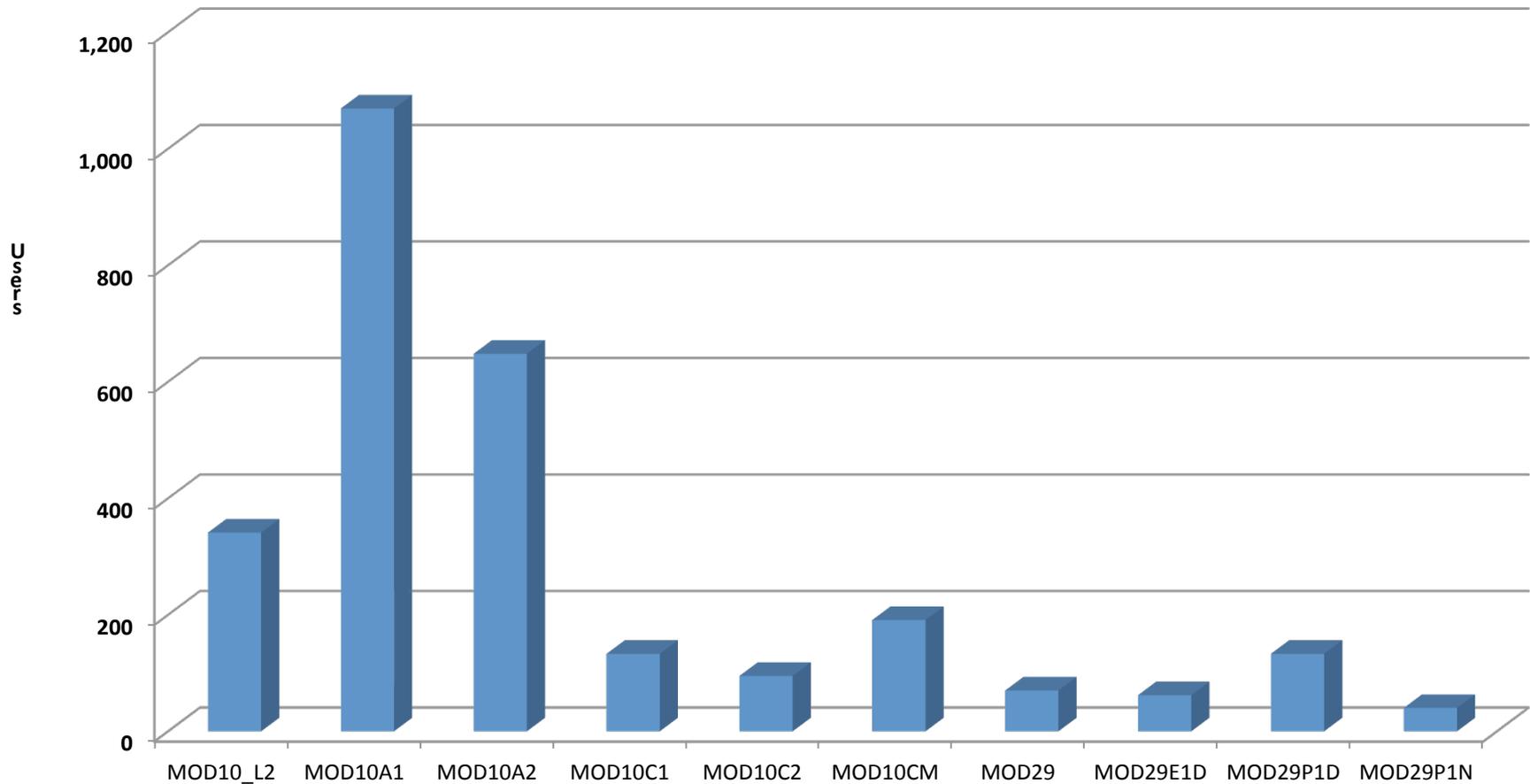
Unique Users by Product



MODIS-related Interfaces and Services

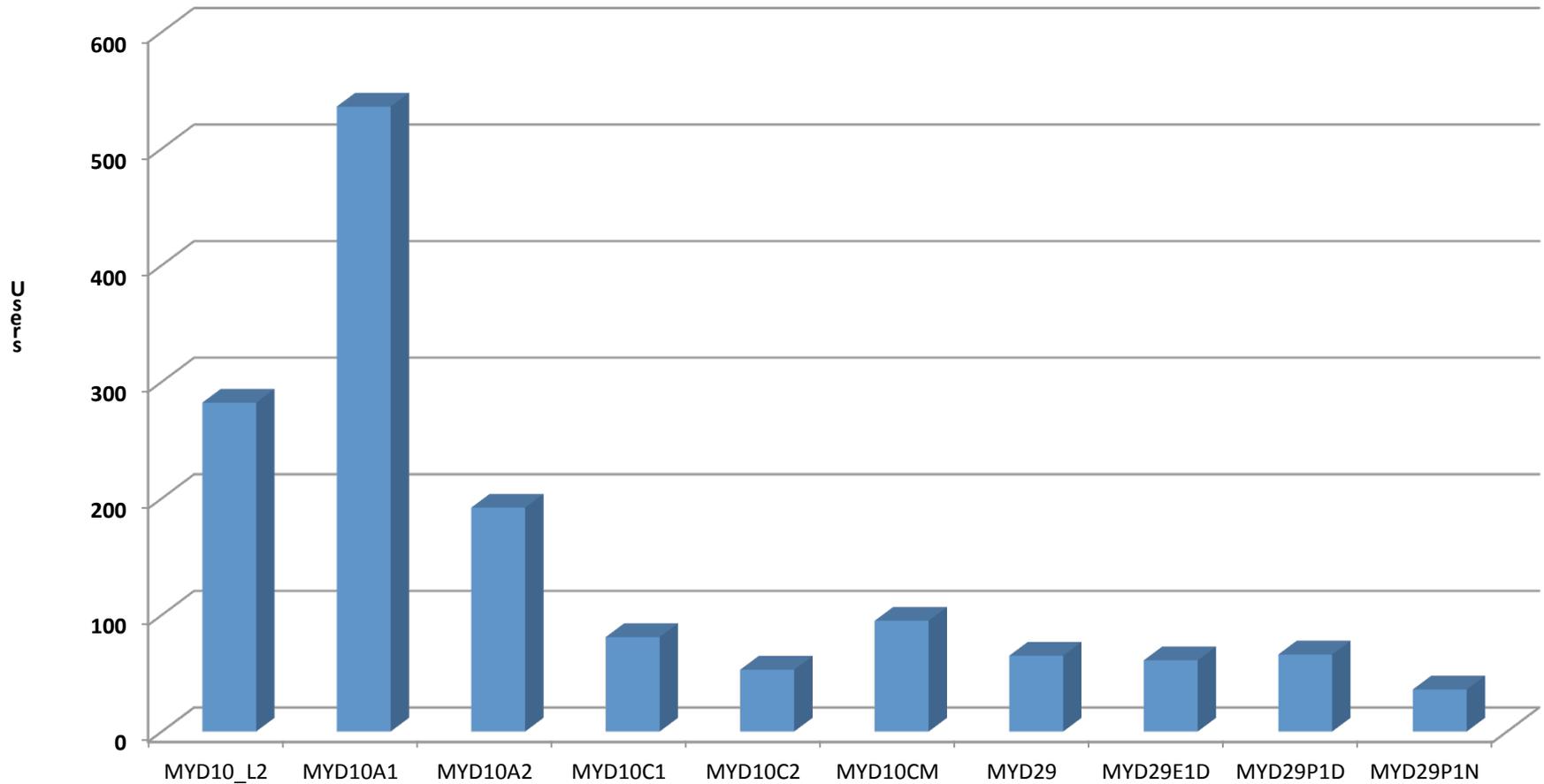
- Map-server interface to the Mosaic of Antarctica
 - <http://nsidc.org/data/moa/>
- Atlas of the Cryosphere
 - <http://nsidc.org/data/atlas/>
 - WMS, WFS, and WCS access to underlying MOA and Blue Marble data
- WMS, WCS services for MOD10C1 re-projected to a polar projection on-the-fly, northern hemisphere

Distinct Users by Product – Terra - 2014



Distinct Users by Product – Aqua

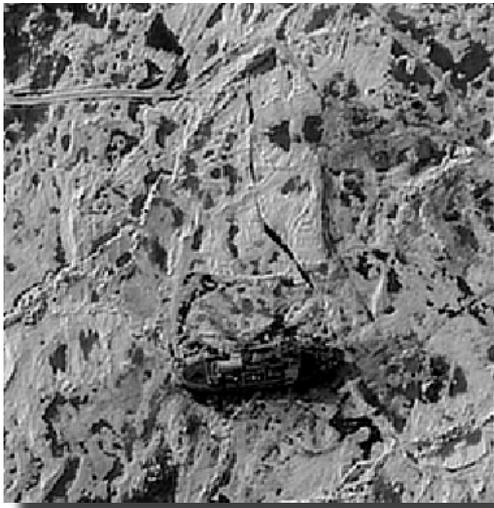
2014



Our Mission

To make fundamental contributions to cryospheric science and excel in managing and preserving data and disseminating information in order to advance understanding of the Earth system.

Data Management and Distribution



Outreach

*International
Data Activities*

