



NOTES

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Roger Barry (Credit:CIRES)

Roger Barry Retires from NSIDC

Roger Barry, founder and former director of NSIDC and the World Data Center for Glaciology, officially retired last December, after nearly sixty years of work in the climatology field. He continues to serve as Professor Emeritus of Geography at the University of Colorado at Boulder and Fellow Emeritus of the Cooperative Institute for Research in Environmental Sciences (CIRES).

In his career, Barry published twenty textbooks, authored over two hundred articles, and supervised fifty-five graduate degrees. Sabbatical leaves and visits took him to lecture at institutes in Europe, Russia, China, Japan, and Venezuela. He served as a

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A Better Daily Ice Edge: MASIE Now Available

Strung around the northernmost part of Earth for tens of thousands of miles, the edges of the Arctic sea ice pack are a crucial marker of seasons and ecosystems. As seasons, climate, and local weather change, the ice edge shifts, retreats or advances. Scientists can now study the extent of this constantly changing sea ice pack with much greater accuracy, using the Multisensor Analyzed Sea Ice Extent project for the Northern Hemisphere (MASIE).

Past and current satellite views of sea ice extent for climate studies have been too panoramic for studying the ice edge, and ice charts for navigation have been too close-up. But MASIE is a new marriage of these data that provides a “just-right” view. NSIDC worked with the U.S. National Ice Center (NIC) to create MASIE, and to give the best available Arctic-wide answer to the question: Where is Arctic sea ice now?

NIC analysts produce an Arctic-wide sea ice and snow extent map, called the Interactive Multisensor Snow and Ice Mapping System (IMS), that draws on various data sources. This gridded 4-km product locates the ice edge with much



MASIE produces daily images of Arctic sea ice extent, such as this image from 13 February 2011. (Credit: NSIDC/NIC)

greater accuracy than daily products based on single-source satellite data. The IMS product takes advantage of visible and radar imagery, passive microwave data, NIC weekly analysis products, and other data that are combined via intensive daily manual analysis at NIC.

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Truffer (in grey), Scambos (left), and Bohlander make repairs on the AMIGOS station on Flask Glacier on the Antarctic Peninsula. (Credit: NSIDC)

Return Expedition to the Larsen Ice Shelf, Antarctica

Scientists from NSIDC and the University of Alaska Fairbanks traveled to the Larsen Ice Shelf region November to conduct minor repairs on measurement stations on several glaciers. NSIDC lead scientist Ted Scambos, NSIDC researcher Jennifer Bohlander, and Martin Truffer, a glaciologist from the University of Alaska Fairbanks flew to several glaciers to service instrument stations that had been installed there during a previous expedition. These stations, called Automated Meteorological

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IceBridge Data Management Updates

NSIDC continues to release IceBridge data on an accelerated schedule as we receive data and sensor information from the data providers. Some of the data from the 2010 Greenland and Antarctic campaigns are available for download, with the remainder currently being ingested and prepared for distribution. NSIDC is also publishing data from Pre-IceBridge campaigns, which are those campaigns that used the same or similar instruments as IceBridge, but occurred before the official start of the IceBridge project in the spring of 2009.

A few members of the NSIDC IceBridge staff participated in the IceBridge science team meeting on 20 January at the NASA Goddard Space Flight Center in Greenbelt, Maryland, and attended the CryoSat Validation Workshop on 1 to 3 February in Frascati, Italy.

For more information and to access Pre-IceBridge and IceBridge data, please see the IceBridge Data Overview Web page (<http://nsidc.org/data/icebridge>).

GLIMS Updates

The Global Land Ice Measurements from Space (GLIMS) project at NSIDC now has over 93,000 glacier analyses available for download. Data analyses are continually being supplied to NSIDC by the participating institutions. Once the correct format is confirmed, they are made available in the database. Recent data submissions to the database include glaciers from Alaska, Argentina, Northern Chile, New Zealand, and Austria.

In addition, approximately 247,000 Advanced Spaceborne Thermal Emission and reflection Radiometer (ASTER) browse images are available for viewing in the GLIMS database. This subset of ASTER

browse imagery is primarily tailored for use by the GLIMS community as a means for finding suitable ASTER imagery for glacier analysis.

The original grant for funding the GLIMS project at NSIDC through NASA recently ended and responsibility for GLIMS data management was transferred to the NSIDC Distributed Active Archive Center (DAAC). The DAAC is continuing limited support through the existing NASA DAAC core services contract. There will be some changes to the GLIMS services, data ingest and delivery, but at a minimally disruptive level.

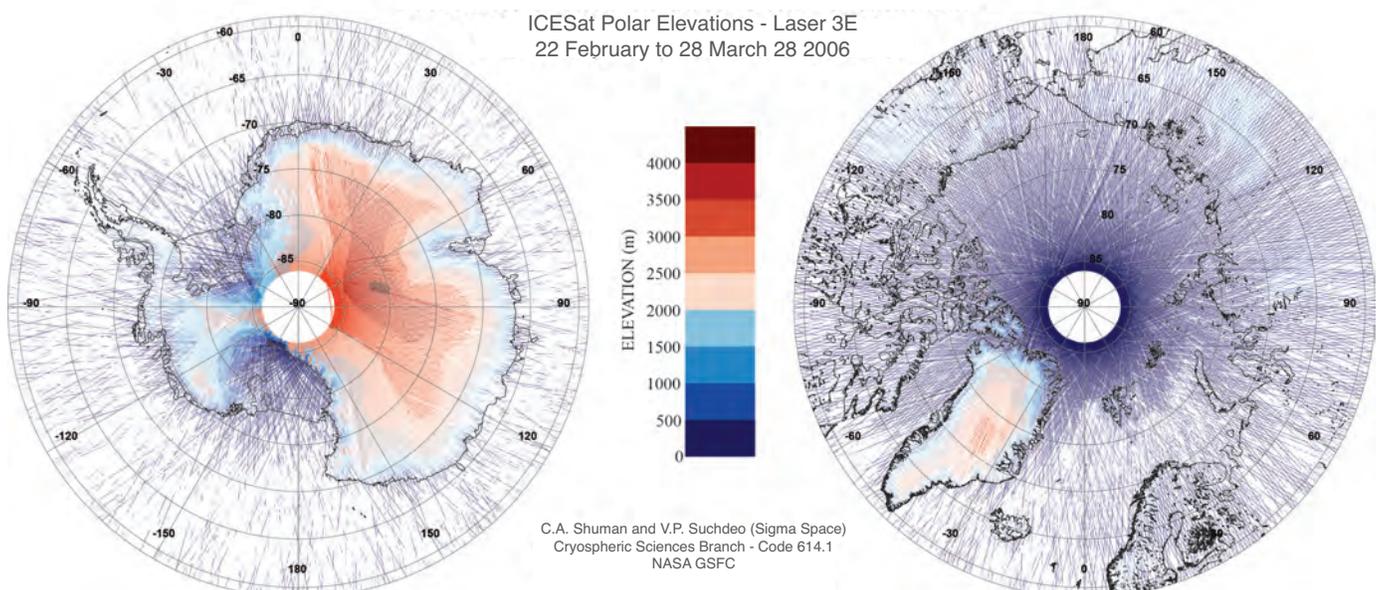
NSIDC Notes will feature updates about the GLIMS project in future issues, including information such as recent data sets ingested and improvements to the GLIMS Glacier Viewer. Registered users of GLIMS will also receive updates about the product by email.

For more information about the workflow of the GLIMS project, and to access the data, please see the GLIMS Web site (<http://glims.org>).

ICESat World and Polar Elevation Maps 2003 to 2009

A complete set of elevation maps are now available for all eighteen Ice, Cloud, and land Elevation Satellite (ICESat) Geoscience Laser Altimeter System (GLAS) laser operations periods. These maps illustrate all of the ICESat tracks for a given laser period. The maps show elevations from the GLA06 elevation data product at two resolutions, high-resolution Joint Photographic Experts Group (jpeg) files and moderate resolution sequential Microsoft Powerpoint files.

These images will facilitate visualization of the temporal and spatial coverage of ICESat's elevation data over the mission's lifetime. For each elevation map, the lowest elevations (sea level to 500 meters)



The polar images above show ICESat orbit tracks in purple, and the color bar indicates surface elevation as detected by ICESat in winter 2006. The image was produced using GLAS GLA06 Global Elevation Data. (Credit: Shuman, Suchdeo, and Harding)

PRODUCTS & SERVICES

are shown in dark blue, and the other colors define higher elevations in 500-meter increments (see scale bar on the elevation map). All elevations above 4000 meters are represented by dark red. White spaces on each of the maps are areas where no elevation data were obtained. This includes gaps along any individual track, generally due to atmospheric losses, as well as between adjacent tracks

For more information and to download these elevation maps, please see the ICESat/GLAS Laser Operational Periods Web site (http://nsidc.org/data/icesat/laser_op_periods.html). Lastly, the final release of GLAS data, Release-33, is due out later this year.

New Data Sets from AGDC

The NSIDC Antarctic Glaciological Data Center (AGDC) has released two new data sets. *Radar Studies of Internal Stratigraphy and Bed Topography along the US ITASE-II Traverse* contains ice penetrating radar data from the US International Trans-Antarctic Science Expedition (ITASE) Traverse, from Taylor Dome to South Pole recorded by the St. Olaf College deep radar system. For more about this product, see the Web page (<http://nsidc.org/data/nsidc-0475.html>).

Multiple Isotope Analysis of Sulfate in the West Antarctic Ice Sheet Divide Ice Core provides measurements of multiple sulfur and oxygen isotopes from sulfates, from an ice core drilled at the West Antarctic Ice Sheet (WAIS) Divide site in 2005. To access this data set, see the product Web page (<http://nsidc.org/data/nsidc-0479.html>).

For more information on Antarctic data from AGDC, see the AGDC Data Catalog Web page (<http://nsidc.org/agdc/data.html>).

Update to Polar Stereographic Brightness Temperatures

NSIDC is pleased to announce a major update to the Defense Meteorological Satellite Program Special Sensor Microwave/Imager (DMSP SSM/I) and Special Sensor Microwave Imager/Sounder (SSMIS) Polar Gridded Brightness Temperatures product. The update to this data set includes data from the F17 SSMIS instrument for 14 December 2006 through 19 August 2010. NSIDC has analyzed the data, comparing the results with the previous F13 data stream. Small biases do exist between the sensors, and these are explained in the data set documentation. For more information please see the product Web page (<http://nsidc.org/data/nsidc-0001.html>).

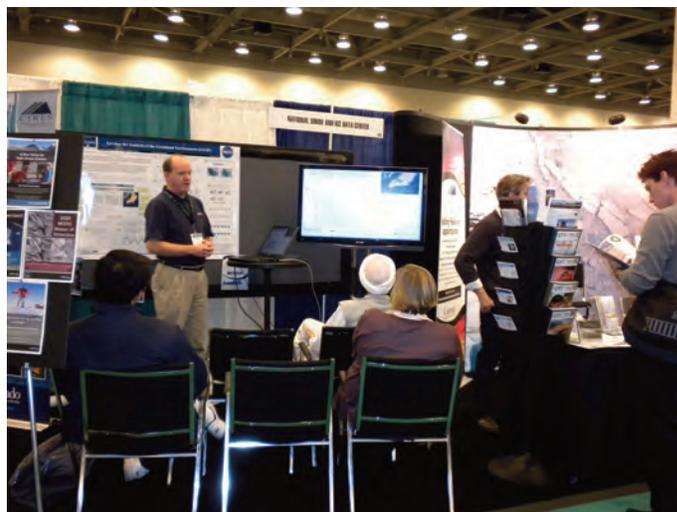
CONFERENCE NEWS

Fall AGU Report

NSIDC staff attended the 2010 Fall American Geophysical Union meeting held in San Francisco, California, 13 to 17 December. The conference hosted a record 19,000 attendees. Staff members enjoyed meeting new users and greeting familiar ones at the NSIDC booth. This year NSIDC shared exhibit space with our parent organization, the Cooperative Institute for Research in Environmental Sciences (CIRES). The NSIDC booth in the exhibit hall hosted multiple demonstrations on seven data products and services. Over two hundred people visited the NSIDC booth and learned about new products, met scientists and staff, and took information and trinkets. Thank you for stopping by!

During the conference, NSIDC scientists and staff presented more than forty posters, oral presentations, and sessions. Highlights include six invited talks, including Richard Armstrong on the role of glaciers in the hydrology of Nepal, Ruth Duerr on identifying data in the earth sciences, and Walt Meier on the development of cryospheric climate data records from passive microwave data. NSIDC Lead Scientist and Antarctic expert Ted Scambos participated in a press conference with NASA scientists, talking about ice loss on the Antarctic Ice Sheet. A summary of the briefing, including the presentation and images, are available from the NASA Web site (<http://www.nasa.gov/centers/goddard/news/releases/2010/10-118.html>).

A full list of NSIDC presentations at AGU is available on the NSIDC Web site (http://nsidc.org/news/events/agu_2010).



NSIDC staff member Scott Lewis demonstrates the Web interface for a data tool. (Credit: NSIDC)

Upcoming Sea Ice Workshop

NSIDC and NASA Goddard Space Flight Center (GSFC), supported by funding from World Climate Research Programme (WCRP) Climate and Cryosphere (CliC), will be hosting the Satellite-derived Sea Ice Products Community Workshop at NASA GSFC in Greenbelt, Maryland, 15 to 16 March 2011. The focus will be on passive microwave sea ice concentration products. Prior to the work-

shop, users of passive microwave products are encouraged to provide information on any needs or issues for passive microwave data. Please send comments and requests for further information to NSIDC User Services (nsidc@nsidc.org).

Operational Ice Charting Services Meet in Washington, D.C.

The International Ice Chart Working Group (IICWG) concluded its 11th meeting the week of 18 October 2010, hosted by the U.S. National Ice Center. The group discussed ice modeling and forecasting, and topics for the meeting centered around short term ice forecasting research, forecasting compressive forces in pack ice, and identifying and tracking ice object movement to name a few. After the meeting, the IICWG warned that “sea ice and icebergs continue to present significant hazards to navigation and other maritime activities.” The organization strongly supports the continued development of the International Maritime Organization’s Polar Code for improved safety of ship operations. NOAA@NSIDC team lead Florence Fetterer presented a talk on NOAA and ice forecasting. Co-authors were Janet Intrieri of the NOAA Earth System Research Laboratory and John Calder, program lead for the NOAA Arctic Research Program.

To read the full announcement and to see documents and presentations from the 11th meeting, see the IICWG Meetings Web page (<http://nsidc.org/noaa/iicwg/meetings.html>).

ELOKA Staff at the Alaska Forum on the Environment 2011

Two staff members from the Exchange for Local Observations and Knowledge of the Arctic (ELOKA) attended the Alaska Forum on the Environment 2011, held at the Anchorage Dena’ina Convention Center in Anchorage, Alaska, 7 to 11 February. ELOKA Co-Principal Investigator Henry Huntington and Knowledge Exchange Coordinator Heidi McCann managed the NSIDC/ELOKA booth, attended sessions and met with potential partners and current collaborators of the ELOKA Project. For more information on the

forum, visit the Alaska Forum on the Environment Web site (<http://akforum.com/>).

Upcoming Meetings for NSIDC Staff

NSIDC staff and scientists regularly attend many scientific and data management meetings to keep current on science and data issues, and to present their findings and research. Below is a listing of some of the upcoming meetings NSIDC staff plan to attend. Please introduce yourself to us if you are at the same meeting.

Mark Serreze, NSIDC Director and Senior Scientist, will attend the Union of Concerned Scientists Workshop on Media Communication in Washington, D.C., 17 to 18 February. He will also be at the Gordon Conference on Polar Marine Science in Ventura, California, 20 to 25 March, and the American Meteorological Society (AMS) 11th Conference on Polar Meteorology and Oceanography in Boston, Massachusetts, 2 to 5 May.

Walt Meier, Research Scientist, will attend the 2011 National Conference of the National Science Teachers Association in San Francisco, California, 10 to 13 March. He will host the Satellite-derived Sea Ice Products Community Workshop at the NASA Goddard Space Flight Center in Greenbelt, Maryland, 15 to 16 March. Meier will attend the AMAP Conference: The Arctic as a Messenger for Global Processes, in Copenhagen, Denmark, 4 to 6 May.

Marilyn Kaminski, IceBridge Project Manager, will attend the European Geophysical Union (EGU) General Assembly meeting in Vienna, Austria, 3 to 8 April.

NSIDC staff will attend the Association of American Geographers (AAG) Annual Meeting, in Seattle, Washington, 11 to 16 April.



Igah and Joelle Sanguya of Clyde River, Nunavut, examine whaling equipment on an exchange to Barrow, Alaska. (Credit: S. Gearheard/NSIDC)

A Better Daily Ice Edge, continued from page 1

Like the NSIDC Sea Ice Index product, MASIE is straightforward and gives a graphical view of ice extent in various formats. It relies more on visible imagery at a higher resolution than on passive microwave data, thus creating a product with a more accurate ice edge and an accessible, rolling view of ice edge position. In contrast, the Sea Ice Index uses only low-resolution satellite passive microwave data. This means the monthly average product is a consistently processed record of more than thirty years that is good for climate studies, but the daily product can be off by tens or hundreds of kilometers in tracking any specific ice edge.

MASIE and the Sea Ice Index fill a need for immediate information over several temporal scales. NSIDC recommends using the monthly Sea Ice Index product when a long time series and consistent processing are critical as they would be for climatological studies. However, if it is important to know where the ice is recently, on a daily time scale, consider using the MASIE product.

MASIE lets you view and download:

- Northern Hemisphere-wide sea ice coverage for latest day and the last four weeks
- Sea ice coverage by region
- A file of sea ice extent in square kilometers for the entire Northern Hemisphere and by region for the last four weeks, updated daily
- Convenient formats: georeferenced images (GeoTIFF), compressed images (PNG), GIS-ready files (shapefiles), and virtual globe files (KMZ)

MASIE was developed with support from NIC and the U.S. Naval Oceanographic Office. Distribution by NOAA@NSIDC is made possible by support from the NOAA National Geophysical Data Center (NGDC).

For more information on this new product and to download data, see the MASIE Web site (<http://nsidc.org/data/masie>).

Return expedition, continued from page 1

Ice Geophysical Observing Stations (AMIGOS), record and transmit weather conditions, GPS location, photographs, and other data.

The research team, along with two pilots from the British Antarctic Survey, flew to Flask Glacier to service the station known as AMIGOS-3. Another of the stations, AMIGOS-2, was also slated for a visit, but the pilots determined it was too badly crevassed to risk a landing. What they saw from the air confirmed what was learned from the data streaming in from the AMIGOS stations: while the west side of the Peninsula experienced unusual snowfall, the east side, where the stations are, was bone-dry and very warm the previous winter in Antarctica. During their visit in the austral summer, they witnessed melt ponds slowly filling, and the dry warm wind scrubbing the surface down, exposing every crack and ridge.

During the month-long expedition, the team posted updates and photos about their progress on a blog about the expedition, On Thin Ice (<http://iceshelf.wordpress.com/>). The expedition is part of the National Science Foundation-funded Larsen Ice Shelf

System, Antarctica (LARISSA) project. NSIDC researchers set up instruments during an expedition from December 2009 to March 2010. The AMIGOS stations were installed on glaciers that feed into the remaining portion of the Larsen ice shelf, the majority of which disintegrated quickly in March 2002.

Roger Barry, continued from page 1

member of international research and data committees for the World Climate Research Programme, Global Digital Sea Ice Data Bank, Global Terrestrial Observing System, and International Permafrost Association, and as review editor for the Intergovernmental Panel on Climate Change. He received Guggenheim, Fulbright, and Humboldt fellowship awards, as well as the Founder's Medal of the Royal Geographical Society. Barry shared the Nobel Peace Prize with other scientists in 2007 for their work on the Intergovernmental Panel on Climate Change.

When asked to reflect upon his accomplishments, Barry said, "Undoubtedly, my principal professional satisfactions include working with so many brilliant graduate students; communicating the basics of several areas of climatology to a wide audience via textbooks and lectures, occasionally having the pleasure of someone saying, 'I used your book,' and making cryospheric data management a reality by establishing NSIDC as a worldwide resource." His work at NSIDC is greatly appreciated and we commend him for his years of service to the organization.

Colin Bull Remembered

Glaciologist Colin Bull passed away on 7 September 2010. Bull was a professor at the Ohio State University from 1961 to 1986. He worked closely with the NSIDC World Data Center-A (WDC-A) for Glaciology. In 1979, he and WDC-A Director Roger Barry conducted the first WDC-A visit to snow and ice centers in the Soviet Union. Bull was also a reviewer for the WDC-A Committee on Geophysical Data.

For more on Bull's life, see the Ohio State University announcement (http://www.geology.ohio-state.edu/news_detail.php?newsId=109).

NSIDC TRIVIA

Last issue's question:

What are the dates of the sea ice minima for each of the last four years?

Answer:

16 September 2007
14 September 2008
12 September 2009
19 September 2010

This issue's question:

Is wintertime sea ice in Antarctica increasing or decreasing?

The answer can be found on the Arctic Sea Ice News & Analysis Web site (<http://nsidc.org/arcticseaicenews>).

PERSONNEL

Departures

Atsuhiko Muto	Graduate Research Assistant
Azhar Sikander	Graduate Research Assistant

CITING NSIDC DATA

Please acknowledge NSIDC as the source when you obtain data from us. Refer to the data set documentation for suggested forms of acknowledgement and citation, or contact User Services for more information.

NSIDC also requests one reprint or the exact reference of any publication that was supported by data received from NSIDC. We also greatly appreciate reprints of any publication related to snow and ice research, for inclusion in the World Data Center Information Center collection.

If you have published data that you wish to archive and make available to the scientific community, please contact User Services to discuss the content, form, and size of the data set. A list of guidelines for submitting data in electronic format is available.

SUBSCRIPTION, SUBMISSION & CONTACT INFORMATION

For information about any of the products or services offered by NSIDC, or to subscribe to NSIDC Notes, please contact User Services.

NSIDC welcomes the submission of short items from our readers that are of interest to the cryospheric community. Please use the following address to submit news items, publication notes, research notices, or brief articles for publication in NSIDC Notes.

View back issues on the NSIDC Web site (<http://nsidc.org/pubs/notes>).

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