EXPERT TEAM ON SEA ICE – FIFTH SESSION
STEERING GROUP FOR THE PROJECT
GLOBAL DIGITAL SEA ICE DATA BANK (GDSIDB) –
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Submitted by: Florence Fetterer and Peter Pulsifer
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# REPORT FROM THE NATIONAL SNOW AND ICE DATA CENTER

## Summary and Purpose of Document

This document provides a summary update of activities of the National Snow and Ice Data Center (NSIDC) that are relevant to the GDSIDB, for consideration by the Expert Team on Sea Ice. These activities work toward

- Support for sea ice climatology and ice information
- Enhancing the integrated ice services and forecasting

## Overview of NSIDC funding profile

The majority of NSIDCs budget is supported by NASA (about 85%) for operation of the Distributed Active Archive Center (DAAC). The DAAC handles remote sensing data. In recent years, NASA has supported development of outreach and information products like Arctic Sea Ice News and Analysis (http://nsidc.org/arcticseaicenews/) and Satellite Observations of Arctic Change (http://nsidc.org/soac). Sea ice thickness estimates from IceBridge (http://nsidc.org/data/icebridge/) can be used to provide a crosscheck with estimates of ice thickness from operational sources.

Funding from NOAA (about 3% of NSIDCs budget) supports NOAA@NSIDC (http://nsidc.org/noaa/). NOAA@NSIDC is the program under which GDSIDB data sets at NSIDC are maintained. This program supports the work described in this report, with the exception of the NSF-supported sea ice ontology research project. NOAA@NSIDC is affiliated with the NOAA National Geophysical Data Center (NGDC). In 2014, NGDC was forced to pass along a 7% cut in the budget for NOAA@NSIDC.

The reduction in funding means that we cannot be as actively involved in the GDSIDB as we have been in years past. However, we remain committed to continuing to work with operational services to archive digital sea ice charts and to promote the use of these by researchers. This work is high priority for NOAA@NSIDC.

## Work with operational services

We support the International Ice Charting Working Group (IICWG) by hosting the Web site (https://nsidc.org/noaa/iicwg/) and by reviewing proposed changes to digital chart archive formats.

The National Ice Center Arctic Sea Ice Charts and Climatologies in Gridded Format continues to have high usage statistics, although it has not been updated since 2007.

While not a GDSIDB data set, the Multisensor Analyzed Sea Ice Extent – Northern Hemisphere (MASIE-NH) data product is one example of how operational products (in this case the NIC IMS product) can be made more accessible for research.

Two papers from the Environmental Working Group (EWG) Joint U.S.-Russian Arctic Sea Ice Atlas published in 2000 have been re-published as NSIDC Special Reports. The first paper, Data on the Geographical Distribution of Sea Ice by R.G. Barry, has been published as NSIDC Special Report #15 and provides a historical review of sea ice data measurements from the mid 1800s to 2000. The second paper, Sea Ice In the Climate System: A Russian View by V. F. Zakharov, has been published as NSIDC Special Report #16 and provides an overview of sea ice and its role in the climate system as it was known in 2000. To access these papers, see the NSIDC Special Reports page: http://nsidc.org/pubs/special/

## Maintenance of existing and publication of new data collections

The table below includes those data that are part of or particularly relevant to GDSIDB. Note the publication year in the citation.

| GDSIDB or related data sets distributed by the National Snow and Ice Data Center, Boulder, CO, USA Compiled by F. Fetterer, 3/25/14 | | | |
|---|---|---|---|
| **URL** | **Data set title** | **Citation** | **Format(s) and/or file type** |
| http://nsidc.org/data/g02176.html | Sea Ice Charts of the Russian Arctic in Gridded Format, 1933-2006 | Arctic and Antarctic Research Institute. 2007. Sea ice charts of the Russian Arctic in gridded format, 1933-2006. Edited and compiled by V. Smolyanitsky, V. Borodachev, A. Mahoney, F. Fetterer, and R. Barry. Boulder, Colorado USA: National Snow and Ice Data Center. Digital media. | EASE-Grid (binary), SIGRID (ASCII), and browse (PNG) files |
| http://nsidc.org/data/g02172.html | National Ice Center Arctic Sea Ice Charts | National Ice Center. 2006, updated 2009. *National Ice Center Arctic sea ice* | EASE-Grid (binary),GIS- |

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|---|---|---|---|
| | and Climatologies in Gridded Format | *charts and climatologies in gridded format.* Edited and compiled by F. Fetterer and C. Fowler. Boulder, Colorado USA: National Snow and Ice Data Center. Digital media. | compatible (.shp) and browse (GIF) files |
| http://nsidc.org/data/g02171.html | Canadian Ice Service Arctic Regional Sea Ice Charts in SIGRID-3 Format | Canadian Ice Service. 2009. Canadian Ice Service Arctic regional sea ice charts in SIGRID-3 format. Boulder, Colorado USA: National Snow and Ice Data Center. Digital media. | Shapefiles (.shp) encoded in SIGRID-3 format. |
| http://nsidc.org/data/g02169.html | March through August Ice Edge Positions in the Nordic Seas, 1750-2002 | Divine, D. V., and C. Dick. 2007. March through August ice edge positions in the Nordic Seas, 1750-2002. Boulder, Colorado USA: National Snow and Ice Data Center. Digital | ASCII, JPEG, and shapefile forma |
| http://nsidc.org/data/g01962.html | Environmental Working Group Joint U.S.-Russian Arctic Sea Ice Atlas | Arctic Climatology Project. 2000. Environmental Working Group joint U.S.-Russian sea ice atlas. Edited by F. Tanis and V. Smolyanitsky. Ann Arbor, MI: Environmental Research Institute of Michigan in association with the National Snow and Ice Data Center. CD-ROM | See URL, documentation, and FAQ |
| http://nsidc.org/data/g02182 | Sea Ice Edge Location and Extent in the Russian Arctic, 1933-2006 | Mahoney, A. 2008. Sea ice edge location and extent in the Russian Arctic, 1933-2006. Boulder, Colorado USA: National Snow and Ice Data Center. http://dx.doi.org/10.7265/N5W37T8Z | Comma delimited ASCII text files |
| http://nsidc.org/data/g01111.html | The Dehn Collection of Arctic Sea Ice Charts, 1953-1986 | NSIDC/WDC for Glaciology, Boulder, compiler. 2005. The Dehn collection of Arctic sea ice charts, 1953- | PNG and TIFF images of primarily Alaska region ice charts. Not WMO format. |

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|---|---|---|---|
| | | 1986. Boulder, CO : National Snow and Ice Data Center/World Data Center for Glaciology. Digital media. | |
| http://nsidc.org/data/docs/noaa/g10006-unified-sea-ice/ | Unified Sea Ice Thickness Climate Data Record Collection Spanning 1947-2012 | Lindsay, R. W. 2013. Unified Sea Ice Thickness Climate Data Record, 1975-2012. Boulder, Colorado USA: National Snow and Ice Data Center. http://dx.doi.org/10.7265/N5D50JXV. | ASCII text |
| http://nsidc.org/data/docs/noaa/g02203-dmi/ | Arctic Sea Ice Charts from Danish Meteorological Institute, 1893 - 1956 | Danish Meteorological Institute (DMI) and NSIDC. 2012. Arctic Sea Ice Charts from the Danish Meteorological Institute, 1893 - 1956. Compiled by V. Underhill and F. Fetterer. Boulder, Colorado USA: National Snow and Ice Data Center. http://dx.doi.org/10.7265/N56D5QXC | JPEG image files (.jpg) |
| http://nsidc.org/data/docs/noaa/g10007-dmi-seaice/ | Arctic Sea Ice Concentration and Extent from Danish Meteorological Institute Sea Ice Charts, 1901-1956 | Underhill, V., F. Fetterer, and C. Petersen. 2014. Arctic Sea Ice Concentration and Extent from Danish Meteorological Institute Sea Ice Charts, 1901-1956. Boulder, Colorado USA: National Snow and Ice Data Center. http://dx.doi.org/10.7265/N5MP517M. | JPEG Shapefiles |

## Sea ice ontologies

The Semantic Sea Ice Interoperability Initiative has interviewed operational service analysts about the meaning of sea ice charting terms, and gives this description of the work:

SSIII is a National Science Foundation (NSF)-funded effort to enhance the interoperability of sea ice data to establish a network of practitioners working to enhance semantic interoperability of all Arctic data. SSIII is a collaborative project between NSIDC and the Rensselaer Polytechnic Institute (RPI) Tetherless World Constellation project. We seek to build on the work initiated under the International Polar Year (IPY) and create a community of practice working to improve interoperability within the Polar Information Commons (PIC), the Sustained Arctic Observing Network (SAON), and broader global systems.

(from http://nsidc.org/ssiii/ accessed 3/25/14)

References:

1. IICWG website: http://nsidc.org/noaa/iicwg/
2. IICWG-XIV Meeting Report at http://nsidc.org/noaa/iicwg/meetings.html

Appendices: A) Update on Activities of the International Ice Charting Working Group (IICWG)

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DISCUSSION

Update on Activities of the International Ice Charting Working Group (IICWG) in 2013

1. IICWG-XIV: The 14th meeting of the International Ice Charting Working Group (IICWG)