

Notice to Data Users:
The documentation for this data set was provided solely by the Principal Investigator(s) and was not further developed, thoroughly reviewed, or edited by NSIDC. Thus, support for this data set may be limited.

AMSRice03 Snow Depth Data

Summary

This data set contains snow depth measurements collected over sea ice in the Barrow, Alaska area and at the Navy Ice Camp in the main pack ice of the Arctic Ocean as part of the joint in situ and aircraft AMSRice03 campaign conducted in March 2003. The snow depth data, measured in situ using a self-recording depth probe, were collected 04 March 2003 to 19 March 2003. The total volume of this data set is approximately 139 kilobytes. Data are provided in four American Standard Code for Information Interchange (ASCII) text files, and are available via FTP.

These data were collected as part of a validation study for the Advanced Microwave Scanning Radiometer - Earth Observing System (AMSR-E). AMSR-E is a mission instrument launched aboard NASA's Aqua Satellite on 04 May 2002.

Citing These Data:

The following example shows how to cite the use of this data set in a publication. List the principal investigators, year of data set release, data set title, publisher: NSIDC, and digital media.

Sturn, M., and J. Stroeve. 2009. *AMSRice03 Snow Depth Data*. Boulder, Colorado USA: National Snow and Ice Data Center. Digital media.

Overview Table

Category	Description
<u>Data format</u>	ASCII tab-delimited text files
<u>Spatial coverage</u>	Barrow: 71.18 N to 71.28 N, 156.15 W to 156.40 W Navy Ice Camp: 72.90 N to 72.95 N, 147.50 W to 147.65 W
<u>Temporal coverage</u>	04 March 2003 to 19 March 2003

<u>File naming convention</u>	beaufort_mainline.txt chuckchi_crossline.txt chuckchi_mainline.txt elson_mainline.txt
<u>File size</u>	6 KB to 58 KB
<u>Parameter(s)</u>	snow depth
<u>Procedures for obtaining data</u>	Data are available via FTP.

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1. Contacts and Acknowledgments:

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Acknowledgements:

We thank the Barrow Arctic Science Consortium for providing logistics for the field campaign. Special thanks to Glenn Sheehan and Richard Glenn. Warren Matumeak

provided field advice from his long experience on the sea ice. Tom Douglas, William Simpson and others enthusiastically participated in the field work. Don Cavaliere provided encouragement and support for the entire concept of an in-depth field campaign.

2. Data Description:

Format:

Four ASCII tab-delimited text files.

File Naming Convention:

The files are named according to location and transect line type:

beaufort_mainline.txt
chuckchi_crossline.txt
chuckchi_mainline.txt
elson_mainline.txt

File Size:

The four files range from 6 KB to 58 KB and total 139 KB.

Spatial Coverage:

Navy Ice Camp:

Southernmost Latitude: 72.90 N

Northernmost Latitude: 72.95 N

Westernmost Longitude: 147.65 W

Easternmost Longitude: 147.50 W

Barrow Area:

Southernmost Latitude: 71.18 N

Northernmost Latitude: 71.28 N

Westernmost Longitude: 156.40 W

Easternmost Longitude: 156.15 W

Temporal Coverage:

Measurements were taken between 04 March 2003 and 19 March 2003.

Parameter or Variable:

Parameters in this data set include snow depth measured in centimeters, with measurement locations identified by latitude and longitude.

3. Data Access and Tools:

Data Access:

Data are available via FTP at:
ftp://sidacs.colorado.edu/pub/DATASETS/AVDM/data/cryosphere/AMSRice03/ground_data/snowdepth/

Software and Tools:

No special tools are required to view these data. Any text reader or web browser is suitable.

Related Data Collections:

For related data collections, please see the AMSR-E Validation Data Web site:
http://nsidc.org/data/amsr_validation/

4. Data Acquisition and Processing:

The AMSRice field experiment consisted of a detailed set of snow and ice measurements over sea ice along a series of transects across the shore-fast ice near Barrow, Alaska USA, and at a U.S. Navy ice camp in the central Beaufort Sea on the main pack ice 175 km north of Barrow. Snow depth measurements were collected along approximately 20 kilometers of traverse lines.

Theory of Measurements:

Sampling Technique

Snow depth was measured every 0.5 m along 100-m lines at 15 separate stations. Snow depth was also measured at approximately 4 m spacing along traverse lines that ranged from 2 to 5 km in length, for a cumulative total of more than 18.4 km of probing.

Sensor or Instrument Description:

Snow depth was measured using a self-recording depth probe; ± 0.3 cm accuracy.

Processing:

We found a strong relationship between ice roughness, snow surface characteristics (i.e. snow drift patterns) and snow depth. In the Beaufort Sea and Navy Ice Camp sub-areas, near pressure ridges and in rubble fields, the snow pack was deep with large variations in depth. On the intervening smooth floes, the snow was thin (or absent) and relatively uniform (Sturm et al. 2006).

By inspection, we noted that the smooth ice had a snow pack less than 10 cm deep, rough ice had a snow pack deeper than 25 cm, and moderately deformed ice had a snow cover between 10 to 25 cm deep (Sturm et al. 2006).

5. References and Related Publications:

Sturm, Matthew, James Maslanik, Don Perovich, Julienne Stroeve, Jackie Richter-Menge, Thorsten Markus, Jon Holmgren, John Heinrichs, and Ken Tape. 2006. Snow Depth and Ice Thickness Measurements from the Beaufort and Chukchi Seas Collected During the AMSR-Ice03 Campaign. *IEEE Transactions on Geoscience and Remote Sensing - Part 1*, 44(11): 3009-3020, doi:10.1109/TGRS.2006.878236.

Refer to the AMSRIce03 Web site (<http://polarbear.colorado.edu/AMSRICE/AMSRIce03.html>) for in-depth information on the science mission and goal of the AMSRIce03 project.

6. Document Information:

List of Acronyms

The following acronyms are used in this document:

AMSR-E – Advanced Microwave Scanning Radiometer – Earth Observing System

CCREL – Cold Regions Research and Engineering Laboratory

CIRES – Cooperative Institute for Research in Environmental Sciences

FTP – File transfer protocol

GPS – Global Positioning System

NASA – National Aeronautics and Space Administration

NSIDC – National Snow and Ice Data Center

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