National Snow and Ice Data Center

Stable Isotopes of Ice on the Surface of Taylor Glacier, Antarctica

Summary

This data set contains Oxygen and Deuterium isotope ratios for approximately 980 sites on the surface of the ablation zone of Taylor Glacier, Antarctica. The data set gives latitude and longitude of collection, oxygen ratio (18/16) in per mil, and Deuterium ratio (H/D) in per mil. Data are in space-delimited ASCII text format and are available via FTP.

Citing These Data

We kindly request that you cite the use of this data set in a publication using the following citation. For more information, see our Use and Copyright Web page.

Cuffey, Kurt, Andrew Bliss, Jeffrey Kavanaugh, Sarah Aciego. 2007. Stable isotopes of ice on the surface of Taylor Glacier, Antarctica. Boulder, Colorado USA: National Snow and Ice Data Center. http://dx.doi.org/10.7265/N5WM1BBZ.

Overview Table

Category	Description
Data format	space-delimited ASCII text
Spatial coverage and resolution	Southernmost Latitude: 78.00° S Northernmost Latitude: 77.50° S Westernmost Longitude: 160.00° E Easternmost Longitude: 163.00° E
Temporal coverage and resolution	01 December 2003 - 30 January 2004
File naming convention	taylor_isotopes.dat
File size	Approximately 34 KB.
Parameter(s)	oxygen isotopes of ice, deuterium isotopes of ice
Procedures for obtaining data	

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1. Contacts and Acknowledgments

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2. Detailed Data Description

Format

Data files are in ASCII text format viewable with spreadsheet software.

File Naming Convention

Files are named according to the following convention.

File name	File Size	Description
`taylor_isotopes.dat`	34 KB	space-delimited ASCII text File

Spatial Coverage

Southernmost Latitude: 78.00° S
Northernmost Latitude: 77.50° S
Westernmost Longitude: 160.00° E
Easternmost Longitude: 163.00° E

Parameter or Variable

Parameter Description

The measured parameters are oxygen isotopes of ice, deuterium isotopes of ice.

Sample Data Record

The data below are the first 10 data samples: latitude and longitude of collection, oxygen ratio (18/16) in per mil, and Deuterium ratio (H/D) in per mil.

lat	lon	18O	H/D
77.72596	162.21936	-44.43	-351.50
77.72599	162.21789	-41.79	-335.30
77.72618	162.21675	-41.60	-336.90
77.72636	162.21604	-43.88	-348.70
77.72642	162.21516	-43.22	-345.90
77.72654	162.21408	-42.88	-345.80
77.72660	162.21281	-44.07	-349.30
77.72672	162.21161	-44.40	-350.90
77.72674	162.21084	-44.45	-356.50
77.72681	162.20948	-44.06	-356.60

Volume

The data set is approximately 34 KB.

Related Data Collections

- Surface velocities of Taylor Glacier, Antarctica
- Ablation Rates of Taylor Glacier, Antarctica

4. Data Acquisition and Processing

Sensor or Instrument Description

Finnegan-MAT Delta Plus XL triple collector mass spectrometer

Data Acquisition Methods

Ice was sampled along a longitudinal transect spanning 28 km on the lower Taylor Glacier. Samples were obtained with ice screws, emplanted 10cm in the ice, after chopping off a surface layer of a few cm thickness with an axe. Each sample in the data set is a mixture of ice from four screws, located within 2 m of one another. Isotope ratios were measured on

a Finnegan-MAT Delta Plus XL triple collector mass spectrometer. For deuterium ratios, sample size was ten microliters, and the sample was analyzed using a hot chromium reactor interfaced with the spectrometer in dual inlet mode. For oxygen ratios, sample size was 200 microliters, and analysis used the CO2 equilibration method. For both isotope ratios, isotopic drift in the machine was corrected using multiple standards that bracketed the sample values (see the Aciego et al. 2007 manuscript for details).

5. References and Related Publications

Aciego, S.M., K.M. Cuffey, J.L. Kavanaugh, D.L. Morse, and J.P. Severinghaus, 2007. Pleistocene ice and paleo-strain rates at Taylor Glacier, Antarctica. Quaternary Research 68, 303-313.

6. Document Information

Acronyms and Abbreviations

The following acronyms and abbreviations are used in this document.

FTP	File Transfer Protocol
NSIDC	National Snow and Ice Data Center
H/D	Deuterium ratio (D/H) in per mil
URL	Uniform Resource Locator

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