

Sea ice parameters near McMurdo Station, Antarctica from 1986 to 2013

Website: <https://www.bco-dmo.org/dataset/675187>

Data Type: Other Field Results

Version: 2

Version Date: 2023-10-12

Project

» [Food web dynamics in an intact ecosystem: the role of top predators in McMurdo Sound](#) (McMurdo Predator Prey)

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Abstract

This dataset contains sea ice thickness, sea ice temperature, and air temperature at the sea ice runway near McMurdo Station, Antarctica, from 1986-2013.

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Coverage

Spatial Extent: N:-77 E:166.5 S:-78.5 W:163.8

Temporal Extent: 1986-10-01 - 2013-11-30

Methods & Sampling

Actual sampling location varied slightly between years and may be obtainable from support contractor records. Approximate location of sampling was McMurdo Station, Antarctica (77°51'14"S, 166°28'07"E). The number of measurements varied between different years from 1 to 20. All data were collected within an area of approximately 0.28 km², at a standard suite of 16 stations along a 3000 m distance, and five stations across an orthogonal 1000 m distance.

At each station, small holes were drilled through the ice and the thickness measured using a meter tape with a lever-arm that held the zero-point against the bottom of the fast ice. Thickness was measured for solid ice and did not include underlying brash ice or frazil ice, nor overlying snow.

Notes:

1999 began collection of additional data on time of day and snow depth
2003 began collection of additional data from shipping channel sites
2006 stopped collection of shipping channel site data, began collection of additional data on ice temperature profiles
2010 did not collect ice temperature profile data.

For access to additional data that are available but not transcribed into this data set; please contact authors to obtain access.

BCO-DMO Processing Description

Version 1 (2017-01-18):

- * data file imported into the BCO-DMO data system.
- * added a conventional header with dataset name, PI name, version date
- * modified parameter names to conform with BCO-DMO naming conventions
- * blank values replaced with no data value 'nd'
- * added approximate latitude and longitude of sampling location near McMurdo Station.

Version 2 (2023-10-12) replaces version 1 (2017-01-18):

- * Version 2 corrects issues in version 1;
- ** values in ice_thickness_median, and ice_temp_median columns were corrected to in 2010, 2011, and 2013 as the values for ice thickness and ice temperature were reversed within each year.
- ** dates 1/3/02, 2/6/02, and 3/1/02 changed to 1/3/03, 2/6/03, and 3/1/03 respectively. The corresponding "year" column changes from 2002 to 2003 for each of the three dates.
- * date file IceThickRev.csv imported into the BCO-DMO data system as version 2 with "nd" as the missing data identifier.
- ** Missing data values are displayed differently based on the file format you download. They are blank in csv files, "NaN" in MatLab files, etc.
- * Date converted to ISO 8601 format

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Data Files

File
675187_v2_ice_thick.csv (Comma Separated Values (.csv), 19.52 KB) MD5:71fc5b3d08f379324496ba1cfde66acd
Primary data file for dataset ID 675187, version 2

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Parameters

Parameter	Description	Units
lat_approx	Approximate latitude of sampling near McMurdo Station; Antarctica; south is negative	decimal degrees
lon_approx	Approximate longitude of sampling near McMurdo Station; Antarctica; west is negative	decimal degrees
date	sampling date in ISO 8601 format	unitless
year	sampling year	unitless
month	sampling month	unitless
day	sampling day	unitless
ice_thickness_median	median ice thickness	centimeters
ice_temp_median	median ice temperature	degrees Celsius
air_temp	air temp	degrees Celsius

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Instruments

Dataset-specific Instrument Name	meter tape
Generic Instrument Name	Measuring Tape
Generic Instrument Description	A tape measure or measuring tape is a flexible ruler. It consists of a ribbon of cloth, plastic, fibre glass, or metal strip with linear-measurement markings. It is a common tool for measuring distance or length.

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Deployments

McMurdo_IceThickness_1986-2013

Website	https://www.bco-dmo.org/deployment/679632
Platform	McMurdo Station
Start Date	1986-10-01
End Date	2013-11-30

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Project Information

Food web dynamics in an intact ecosystem: the role of top predators in McMurdo Sound (McMurdo Predator Prey)

Website: <https://scini-penguin.mlml.calstate.edu/pauls-wordpress-test-site/>

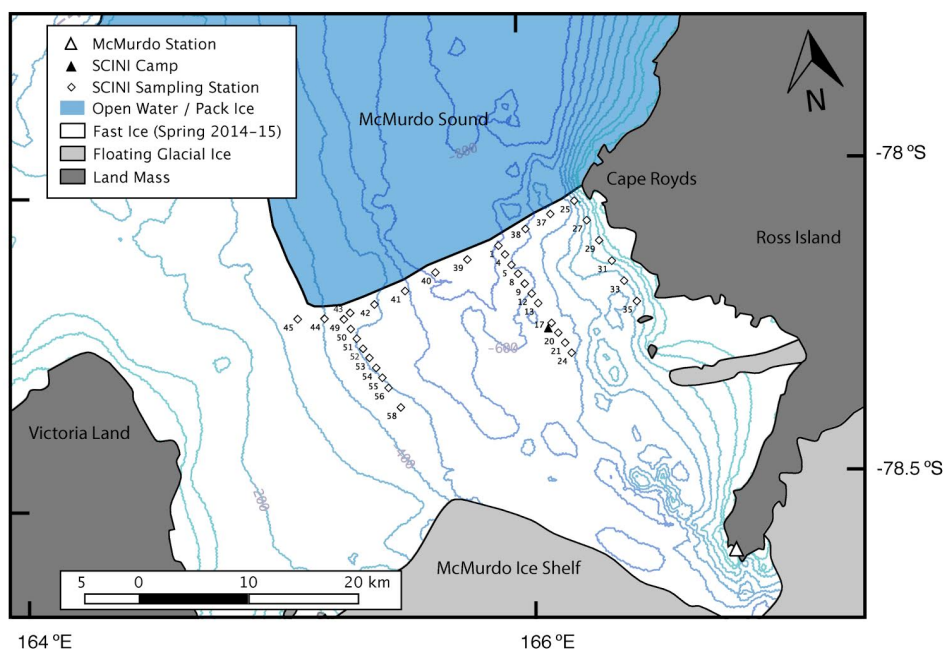
Coverage: McMurdo Sound, Antarctica

Extracted from the NSF award abstract:

The research project investigates the importance of top down forcing on pelagic food webs. The relatively pristine Ross Sea includes large populations of upper-level predators such as minke and killer whales, Adélie and Emperor penguins, and Antarctic toothfish. This project focuses on food web interactions of Adélie penguins, minke whales, and the fish-eating Ross Sea killer whales, all of which exert foraging pressure on their main prey, crystal krill (*Euphausia cyrstallorophias*) and silver fish (*Pleuragramma antarcticum*) in McMurdo Sound.

The investigators used a video- and acoustic-capable ROV, and standard biological and environmental sensors to quantify the abundance and distribution of phytoplankton, sea ice biota, prey, and relevant habitat data. The sampling area included 37 stations across an 30 x 15 km section of McMurdo Sound, stratified by distance from the ice edge as a proxy for air-breathing predator access. This study will be among the first to assess top-down forcing in the Ross Sea ecosystem and will form the basis for multidisciplinary studies in the future.

Map sampling stations



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Funding

Funding Source	Award
NSF Division of Polar Programs (NSF PLR)	PLR-0944747
NSF Division of Polar Programs (NSF PLR)	PLR-0944511
NSF Division of Polar Programs (NSF PLR)	PLR-0944694

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