Sea Ice data from ARSV Laurence M. Gould and RVIB Nathaniel B. Palmer cruises LMG0106, LMG0205, NBP0104, and NBP0204 in the Southern Ocean from 2001-2002 (SOGLOBEC project; Sea Ice Microbes project)

Website: https://www.bco-dmo.org/dataset/2377
Data Type: Cruise Results
Version: 1
Version Date: 2003-02-11

Project
» U.S. GLOBEC Southern Ocean (SOGLOBEC)
» GLOBEC: Sea Ice Microbial Communities (Sea Ice Microbes)

Programs
» U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)
» U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)

Contributors	Affiliation	Role
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Abstract
Sea Ice data from ARSV Laurence M. Gould and RVIB Nathaniel B. Palmer cruises LMG0106, LMG0205, NBP0104, and NBP0204 in the Southern Ocean from 2001-2002 (SOGLOBEC project; Sea Ice Microbes project)

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Coverage

Spatial Extent: **N**:67 **E**:63.917 **S**:-69.25 **W**:-76.85
Temporal Extent: 2001-07-27 - 2002-09-15

Dataset Description

Sea Ice Observations during Southern Ocean GLOBEC

Sea ice observations on the Southern Ocean GLOBEC cruises were conducted according to standardized protocols developed and utilized by members of the Antarctic Sea Ice Processes and Climate working group (co-sponsored by SCAR and GlOCHANT).

Related datasets:
ice properties, ice thickness, snow pits

More details regarding methodology can be found at http://www.scar.org/GLOCHANT/ASPeCt/seaiceobs.htm or by contacting Dr. C.H. Fritsen at cfritsen@dri.edu.

OPEN WATER (OpnWtrCode):
Code --- Description
0 --- No openings
1 --- Small cracks
2 --- Very narrow breaks, <50m
3 --- Narrow breaks, 50-200 m
4 --- Wide breaks, 200-500 m
5 --- Very wide breaks, >500 m
6 --- Lead/coastal lead
7 --- Polynya/coastal polynya
8 --- Water broken only by small scattered floes
9 --- Open sea

ICE CONCn (IceCon): to be expressed in tenths.

ICE TYPE (ITypeCode):
Code --- Description
10 --- Frazil
11 --- Shuga
12 --- Grease
20 -- Nilas
30 --- Pancakes
40 --- Young grey ice, 0.1-0.15 m
50 --- Young grey-white ice, 0.15-0.3 m
60 --- First year, 0.3-0.7 m
70 --- First year, 0.7-1.2 m
80 --- First year, >1.2 m
85 --- Multiyear floes
90 --- Brash
95 --- Fast ice

SEA ICE (IThkns) AND SNOWTHICKNESS (SnoThkns): to be expressed in centimetres.

FLOE SIZE (FloSzCode):
Code --- Description
100 --- Pancakes
200 --- New sheet ice
300 --- Brash/broken ice
400 --- Cake ice, <20 m
500 --- Small floes, 20-100 m
600 --- Medium floes, 100-500 m
700 --- Large floes, 500-2000 m
800 --- Vast floes, >2000 m

SNOW TYPE (SnoTypCode):
Code --- Description
0 --- No snow observation
1 --- No snow, no ice or brash
2 --- Cold new snow, < 1 day old
3 --- Cold old snow
4 --- Cold wind-packed snow
5 --- New melting snow (wet new snow)
6 --- Old melting snow
7 --- Glaze
8 --- Melt slush
9 --- Melt puddles
10 --- Saturated snow (waves)
11 --- Sastrugi

TOPOGRAPHY (TopoCode):

Code	Description
100	Level ice
200	Rafted pancakes
300	Cemented pancakes
400	Finger rafting
5xy	New, unconsolidated ridges (no snow)
6xy	New ridges filled with snow or a snow cover
7xy	Consolidated ridges (no weathering)
8xy	Older, weathered ridges
x values	**Areal Coverage**
0	0-10%
1	10-20%
2	20-30%
3	30-40%
4	40-50%
5	50-60%
6	60-70%
7	70-80%
8	80-90%
9	90-100%
y values	**Avg. Sail Height**
1	0.5 m
2	1.0 m
3	1.5 m
4	2.0 m
5	3.0 m
6	4.0 m
7	5.0 m

The following weather observation codes and descriptions are from the "National Weather Service Observing Handbook No. 1", Marine Surface Weather Observations, August 1995. U.S. Department of Commerce, Silver Spring, MD.

VISIBILITY (visib):
Code --- Visibility in m/km
90 --- less than 50 m
91 --- 50 but less than 200 m
92 --- 200 but less than 500 m
93 --- 500 but less than 1000 m
94 --- > 1 but less than 2 km
95 --- > 2 but less than 4 km
96 --- > 4 but less than 10 km
97 --- > 10 but less than 20 km
98 --- > 20 but less than 50 km
99 --- > 50 km or more

TOTAL CLOUD COVER (cldcvr): to be expressed in eighths; -1 = Sky obscured by fog, snow or other met. phenom.

PRESENT WEATHER (wx):

Code	Description
	Change of sky during past hour
0	Cloud development not observable
1	Clouds dissolving or becoming less developed
2	State of the sky on the whole unchanged
3	Clouds generally forming or developing
	Phenomena in past hour but not at time of obs
28	Fog (in past hour, but not at time of obs.)
36	Slight or moderate drifting snow, low (below eye level)
37	Heavy drifting snow, low (below eye level)
38	Slight or moderate drifting snow, high (above eye level)
39	Heavy drifting snow, high (above eye level)
	Fog at the time of observation
41	Sky visible Fog in patches (visibility may be greater than 1/2 nm)
42	Sky visible Fog has become thinner in past hour
43	Sky invisible For has become thinner in past hour
44	Sky visible Fog, no change in past hour
45	Sky invisible Fog, no change in past hour
46	Sky visible Fog has begun or thickened in past hour
47	Sky invisible Fog has begun or thickened in past hour
	Drizzle
50	Intermittent Slight drizzle

56	Slight Freezing drizzle
	Rain (Not falling as showers)
60	Intermittent Slight rain
	Solid precipitation not falling as showers
70	Intermittent Slight snow in flakes
71	Continuous Slight snow in flakes
72	Intermittent Moderate snow in flakes
73	Continuous Moderate snow in flakes
74	Intermittent Heavy snow in flakes
75	Continuous Heavy snow in flakes
76	Diamond dust (with or without fog)
77	Snow grains (with or without fog)
	Solid precipitation in showers
85	Slight Shower of snow
86	Moderate or heavy Shower of snow

Methods & Sampling

Sea ice observations on the Southern Ocean GLOBEC cruises were conducted according to standardized protocols developed and utilized by members of the Antarctic Sea Ice Processes and Climate working group (co-sponsored by SCAR and GlOCHANT).

Routine observations of sea ice and snow characteristics were routinely collected on an hourly basis while the *L.M. Gould* was actively steaming throughout the cruise. These observations began on 26 July 2001 and continued through 27 August 2001. The observational protocol followed during the cruise was the protocol that is formally endorsed by the SCAR ASPeCt (Antarctic Sea ice Processes and Climate) program for observing sea ice characteristics. In short, our program (combined efforts of BG-244 as well as OG-241) was able to gather the information that will be used to characterize the predominate types of ice in the region according to parameters, such as areal coverage, floe size, ice thickness, snow type, snow thickness and deformation.

Data Processing Description

More details regarding methodology can be found at http://www.scar.org/GLOCHANT/ASPeCt/seaiceobs.htm or by contacting Dr. C.H. Fritsen at cfritsen@dri.edu.

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Data Files

File
seaice.csv (Comma Separated Values (.csv), 173.64 KB) MD5:58779039493a50f1fd32617c32dc4a55 Primary data file for dataset ID 2377

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Parameters

Parameter	Description	Units
month_gmt	month in GMT time	
day_gmt	day of month GMT time	
time_gmt	time in GMT, in hours and minutes	
lat	latitude, decimal degrees, minus = south	
lon	longitude, decimal degrees, minus = west	
ConT	total ice concentration in tenths	
OpnWtrCode	open water code	
TrackDist	distance along track in Km from start of ice observations	
IceCon1	ice concentration in tenths	
IType1Code	ice type code for IceCon1	
IThkns1	ice thickness code for IceCon1 in centimeters	
Flo1SzCode	ice floe size code for IceCon1	
Topo1Code	ice topography code for IceCon1	
SnoTyp1Code	snow type code for IceCon1	

SnoThkns1	snow thickness for IceCon1 in centimeters	
IceCon2	ice concentration in tenths	
IType2Code	ice type code for IceCon2	
IThkns2	ice thickness code for IceCon2 in centimeters	
Flo2SzCode	ice floe size code for IceCon2	
Topo2Code	ice topography code for IceCon2	
SnoTyp2Code	snow type code for IceCon2	
SnoThkns2	snow thickness for IceCon2 in centimeters	
IceCon3	ice concentration in tenths	
IType3Code	ice type code for IceCon3	
IThkns3	ice thickness code for IceCon3 in centimeters	
Flo3SzCode	ice floe size code for IceCon3	
Topo3Code	ice topography code for IceCon3	
SnoTyp3Code	snow type code for IceCon3	
SnoThkns3	snow thickness for IceCon3 in centimeters	
temp	water temperature, degrees centigrade	
temp_air	air temperature, degrees centigrade	
wind_speed_kts	wind speed in knots	
wind_dir	wind direction in degrees	

frame	photograph taken, PI reference ID number	
visib	visibility code in meters/kilometer	
cldcvr	total cloud cover code in eights	
wx	present weather code	
Comments	free text, PI observational notes	
cruiseid	cruise id	unitless
year	4 digit year	unitless

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Deployments

LMG0106

Website	https://www.bco-dmo.org/deployment/57639
Platform	ARSV Laurence M. Gould
Report	http://www.ccpo.odu.edu/Research/globec/cruises01/lmg0106_menu.html
Start Date	2001-07-21
End Date	2001-09-01
Description	**Methods & Sampling** Sea ice observations on the Southern Ocean GLOBEC cruises were conducted according to standardized protocols developed and utilized by members of the Antarctic Sea Ice Processes and Climate working group (co-sponsored by SCAR and GlOCHANT). **Processing Description** More details regarding methodology can be found at http://www.scar.org/GLOCHANT/ASPeCt/seaiceobs.htm">http://www.scar.org/G... or by contacting Dr. C.H. Fritsen at mailto:cfritsen@dri.edu">cfritsen@dri.edu.

LMG0205

Website	https://www.bco-dmo.org/deployment/57644
Platform	ARSV Laurence M. Gould
Report	http://www.ccpo.odu.edu/Research/globec/main_cruises02/lmg0205/report_lmg0205.pdf
Start Date	2002-07-29
End Date	2002-09-18
Description	**Methods & Sampling** Sea ice observations on the Southern Ocean GLOBEC cruises were conducted according to standardized protocols developed and utilized by members of the Antarctic Sea Ice Processes and Climate working group (co-sponsored by SCAR and GlOCHANT). **Processing Description** More details regarding methodology can be found at http://www.scar.org/GLOCHANT/ASPeCt/seaiceobs.htm">http://www.scar.org/G... or by contacting Dr. C.H. Fritsen at mailto:cfritsen@dri.edu">cfritsen@dri.edu.

NBP0104

Website	https://www.bco-dmo.org/deployment/57638
Platform	RVIB Nathaniel B. Palmer
Report	http://www.ccpo.odu.edu/Research/globec/cruises01/nbp0104_menu.html
Start Date	2001-07-22
End Date	2001-08-31
Description	**Methods & Sampling** Sea ice observations on the Southern Ocean GLOBEC cruises were conducted according to standardized protocols developed and utilized by members of the Antarctic Sea Ice Processes and Climate working group (co-sponsored by SCAR and GlOCHANT). **Processing Description** More details regarding methodology can be found at http://www.scar.org/GLOCHANT/ASPeCt/seaiceobs.htm">http://www.scar.org/G... or by contacting Dr. C.H. Fritsen at mailto:cfritsen@dri.edu">cfritsen@dri.edu.

NBP0204

Website	https://www.bco-dmo.org/deployment/57643
Platform	RVIB Nathaniel B. Palmer
Report	http://globec.whoi.edu/so-dir/reports/nbp0204/nbp0204b.html
Start Date	2002-07-31
End Date	2002-09-18
Description	Also see NBP0204 Cruise Data Report **Methods & Sampling** Sea ice observations on the Southern Ocean GLOBEC cruises were conducted according to standardized protocols developed and utilized by members of the Antarctic Sea Ice Processes and Climate working group (co-sponsored by SCAR and GlOCHANT). **Processing Description** More details regarding methodology can be found at http://www.scar.org/GLOCHANT/ASPeCt/seaiceobs.htm">http://www.scar.org/G... or by contacting Dr. C.H. Fritsen at mailto:cfritsen@dri.edu">cfritsen@dri.edu.

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Project Information

U.S. GLOBEC Southern Ocean (SOGLOBEC)

Website: http://www.ccpo.odu.edu/Research/globec_menu.html

Coverage: Southern Ocean

The fundamental objectives of United States Global Ocean Ecosystems Dynamics (U.S. GLOBEC) Program are dependent upon the cooperation of scientists from several disciplines. Physicists, biologists, and chemists must make use of data collected during U.S. GLOBEC field programs to further our understanding of the interplay of physics, biology, and chemistry. Our objectives require quantitative analysis of interdisciplinary data sets and, therefore, data must be exchanged between researchers. To extract the full scientific value, data must be made available to the scientific community on a timely basis.

GLOBEC: Sea Ice Microbial Communities (Sea Ice Microbes)

Coverage: Southern Ocean

The U.S. Global Ocean Ecosystems Dynamics (U.S. GLOBEC) program has the goal of understanding and ultimately predicting how populations of marine animal species respond to natural and anthropogenic changes in climate. Research in the Southern Ocean (SO) indicates strong coupling between climatic processes and ecosystem dynamics via the annual formation and destruction of sea ice. The Southern Ocean GLOBEC Program (SO GLOBEC) will investigate the dynamic relationship between physical processes and ecosystem responses through identification of critical parameters that affect the distribution, abundance and population dynamics of target species. The overall goals of the SO GLOBEC program are to elucidate shelf circulation processes and their effect on sea ice formation and krill distribution, and to examine the factors which govern krill survivorship and availability to higher trophic levels, including penguins, seals and whales. The focus of the U.S. contribution to the international SO GLOBEC program will be on winter processes. This component will focus on the distribution and activities of sea ice microbial communities. This will be accomplished using an integrated combination of sampling (vertical profiles, horizontal surveys, and under-ice surveys) and observational protocols. Experiments will be designed to estimate microbial activity within the sea ice and at the ice-seawater interface. The research will be coordinated with components studying the water column productivity and the sea ice habitat. The result of the integrated SO GLOBEC program will be to improve the predictability of living marine resources, especially with respect to local and global climatic shifts.

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Program Information

U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)

Website: http://www.usglobec.org/

Coverage: Global

U.S. GLOBEC (GLOBal ocean ECosystems dynamics) is a research program organized by oceanographers and fisheries scientists to address the question of how global climate change may affect the abundance and

production of animals in the sea.

The U.S. GLOBEC Program currently had major research efforts underway in the Georges Bank / Northwest Atlantic Region, and the Northeast Pacific (with components in the California Current and in the Coastal Gulf of Alaska). U.S. GLOBEC was a major contributor to International GLOBEC efforts in the Southern Ocean and Western Antarctic Peninsula (WAP).

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Funding

Funding Source	Award
NSF Antarctic Sciences (NSF ANT)	ANT-9910098

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