

Dataset Information

Dataset Description

Dataset Name	ArcticNet 2009 Physical Ice Data
Dataset Description	Sea Ice Physical sampling is conducted each year at designated stations. Sampling included, but was not limited to taking ice cores, measuring thickness, temperature, salinity and conductivity. At each station, physical properties of sea ice in the vicinity were observed. By measuring the temperature and salinity of the sea ice it is possible to calculate the brine volume present in the sea ice and thus get an estimate for the ice porosity. The total thickness and freeboard of the ice floe was also recorded. Physical sampling activities were generally conducted in concert with scatterometer and SBR EM scans, and were constrained by the presence / absence of sea ice.
Dataset Keywords	Arctic, ArcticNet, BaySys, Beaufort Sea, CCGS Amundsen, IPY-CFL, Ice thickness, Mackenzie shelf, Physical Ice sampling, Sea Ice
Dataset keyword Vocabulary	
Dataset Status	In Progress
Dataset Version	1.0
Dataset Research Area	Arctic
Dataset Maintenance and Update Frequency	As Needed
Resource Type	Dataset
Dataset Collection Start Date	2009-09-04
Dataset Collection End Date	2009-10-27
Date Last Revision	2019-11-06
Dataset DOI	Assigned by CanWIN unless user already has one

Dataset Contributors

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Metadata Creation Date	2019

Datasets in this series

Salinity Core Dataset	Temperature Core Dataset	Activity collection Date	Research Area
	Leg_3a_Temp_1.csv	2009-09-02	Arctic
Leg_3a_SAL_1.csv	Leg_3a_Temp_2.csv	2009-09-04	Arctic
Leg_3a_SAL_2.csv	Leg_3a_Temp_3.csv	2009-09-05	Arctic
Leg_3a_SAL_3.csv	Leg_3a_Temp_4.csv	2009-09-06	Arctic
Leg_3a_SAL_4.csv		2009-09-09	Arctic
Leg_4a_SAL_1.csv	Leg_4a_Temp_1.csv	2009-10-10	Arctic
Leg_4a_SAL_2.csv	Leg_4a_Temp_2.csv	2009-10-10	Arctic
Leg_4a_SAL_3.csv	Leg_4a_Temp_3.csv	2009-10-21	Arctic
Leg_4a_SAL_4.csv	Leg_4a_Temp_4.csv	2009-10-22	Arctic
Leg_4a_SAL_5.csv	Leg_4a_Temp_5.csv	2009-10-22	Arctic
Leg_4a_SAL_6.csv	Leg_4a_Temp_6.csv	2009-10-27	Arctic
Leg_4a_SAL_7.csv	Leg_4a_Temp_7.csv	2009-10-27	Arctic

Deployment Information

Platform Name	Platform Type	Start Date	End Date	Deployment	Coordinated (Dataset) Platform Deployment
CCGS Amundsen	Ship	2009-08-27	2009-09-12	Leg 3a	
CCGS Amundsen	Ship	2009-10-08	2009-11-06	Leg4a	

Site Information

Site ID	Site Latitude	Site Longitude	Site Type	Site Location Country
L1	71.113333	-139.321667	Ice Floe	Canada
L2	74.581167	-137.081333	Ice Floe	Canada
L3	74.423667	-133.910733	Ice Floe	Canada
L1.1	72.511667	-136.766667	Ice Floe	Canada
130A	76.266667	-74.033333	Ice Floe	Canada
103B	76.260000	-76.290000	Ice Floe	Canada
-9999	71.58878	-134.392	Ice Floe	Canada
-9999	71.62173	-134.303	Ice Floe	Canada
-9999	74.33	-102.79	Ice Floe	Canada
-9999	74.3	-102.76	Ice Floe	Canada
-9999	74.3	-102.76	Ice Floe	Canada

Collection and Analysis Procedures

Sample Collection Method Name	Physical Ice Sampling
Method Link	http://hdl.handle.net/1993/33983
Method Summary	<p>Typical Sea ice physical sampling activities include, but are not limited to:</p> <ol style="list-style-type: none"> 1. Taking ice cores from a location with the same snow depth close to where the snow pit is/was done (even at the same spot). Extract two cores: one core for temperature, and one for salinity. <p>Details:</p> <ol style="list-style-type: none"> 1. At each station, physical properties of sea ice in the vicinity were observed. The temperature at depth within the visited ice floe(s) was determined by coring the floe and drilling holes in it at 10 cm intervals, starting 5 cm from the ice surface. After each hole was drilled a fast response digital temperature probe was inserted and the result recorded. The surface temperature of the ice surface was also recorded. 2. A second core was pulled at each station and cut in the field at 10 cm intervals in order to determine the salinity profile within the ice floe
Analytical Method Name	Salinity and Temperature Profiling
Analytical Method Link	http://hdl.handle.net/1993/33983
Analytical Method Summary	<p>From the ice cores and site measure:</p> <ul style="list-style-type: none"> • Freeboard (FB): determine FB from a core hole using a ruler. • Thickness (hi): determine hi using an ice thickness gauge. • Temperature (Ti): Measure at surface or snow/ice interface immediately after removing snow cover. <p>Temperature profiles at intervals in the ice using temperature probe: immediately after extracting core, use drill to make hole to the center of ice core at a known distance from the surface, insert temperature probe to measure temperature. Shade the sensor from direct solar radiation.</p> <ul style="list-style-type: none"> • Salinity: An Additional core extracted. Cut into 5-10 cm intervals after retrieval and placed into a whirl pack bag or bucket. Brought back to ship to melt so conductivity and salinity can be measured.
Analytical Laboratory Name	CCGS Amundsen

Processing Description

Variable	Variable method speciation	Variable sample fraction

CanWIN Data Cleaning Notes

The data for temperature and salinity cores (initially both in one excel file) has been split so that each core's data is listed in one .csv file.

All cleaned files were q.a/q. c'd for any error. The following standards were set for the physical ice sampling data:

- Both Latitude and Longitude are listed in Decimal Degrees (DecDeg)
- Dates follow the ISO standard: yyyy-mm-dd (i.e. 2011-09-07 = September 7th, 2011)
- Time is displayed in 24 hours and is UTC
- Device Salinity units are listed as PSU
- Conductivity units are listed as mS/cm
- Temperature is listed in Degrees C
- If a data point is missing, invalid, was not taken, corrupt, etc., the value -9999 was used

Variable Detection Limits

Variable Name	Units	Detection Limit Value & Units
Salinity	PSU	
Temperature	°C	
Conductivity	mS/cm	+/- 0.01

In Table 1. Below indicate the codes used in the dataset for above or below detection limit values.

Table 1. . CanWIN & User defined Detection Limit Codes

CanWIN Description	User Code
Above detection limit	
Below detection limit	

Instruments

CanWIN Instrument Name	Common Instrument Name	Activity Collection Type	Variables measured	Units
Hart Scientific Model 1522 Temperature probe	Temperature probe	Field Measurement	Ice Temperature	°C
Hach Sension5 portable conductivity meter	Conductivity meter	Field Measurement	Conductivity	mS/cm
Kovacs Enterprises Mark II Coring System	Ice corer	Field Measurement	Extracts cores with a 9cm diameter	None

Additional Comments

The Kovacs Enterprises Mark II Coring system, extracts cores with a 9cm diameter. Ice temperature profiles were measured in the field using a drill and a Hart Scientific Model 1522 temperature probe. Additional Ice cores were brought back to the ship for profile measurements of salinity, the cores were cut into 10cm core pieces. The pieces were then melted for measurements of conductivity using the Hach Sension5 portable conductivity meter.

Instrument/Result Data Parameters

Salinity Dataset Parameters

Header	Description	Units	CanWIN Variable Name	Result Value Type	Formula /script applied	Statistic Applied
Station_ID	Station ID	None	Station ID	None		
Latitude_DecDeg	Latitude	Decimal Degree	Latitude	None		
Longitude_DecDeg	Longitude	Decimal Degree	Longitude	None		
Date	Date	YY: MM:DD	Date	None		
Time_UTC	Time of sampling	UTC	Time	None		
Depth_Top_m	Depth at top	Meters	Depth	None		
Depth_Bottom_m	Depth at bottom	Meters	Depth	None		
SAL_o_oo	Salinity	PSU	Salinity	Calculated Value		
Cond mS_cm	Conductivity	mS/cm	Conductivity	Actual		
Temp_C	Temperature	Celsius	Temperature	Actual		

Temperature Dataset Parameters

Header	Description	Units	CanWIN Variable Name	Result Value Type	Formula/ script applied	Statistic Applied
Station ID	Station ID	None	Station ID	None		
Latitude_DecDeg	Site latitude	Decimal Degrees	Latitude	None		
Longitude_DecDeg	Site Longitude	Decimal Degrees	Longitude	None		
Date	Date of sampling	YY: MM:DD	Date	None		
Time_UTC	Time of Sampling	UTC	Time	None		
Depth_cm	Depth	cm	Depth	Actual		
Temp_C	Core Temperature	°C	Temperature	Actual		

Table 2. Result Value Qualifier

CanWIN Short Code	Definition	User Code
\$	Incorrect sample container	
EFAI	Equipment failure, sample lost	
FEQ	Field Equipment Questionable	
FFB	Failed. Field blank not acceptable	
FFD	Field Duplicate, failed	
FFS	Failed. Field spike not acceptable	
H	Holding time exceeded	
ISP	Improper Sample Preservation	
ITNA	Incubation time not attained	
ITNM	Incubation temperature not maintained	
JCW	Sample Container Damaged, sample lost	
NC	Not Collected	
ND	Not detected	
NS	Sample collected but not submitted	

Terms of Use

License Type	Open
Dataset License	CC-BY-NC-ND-4.0
Terms of Use	CanWIN site terms of use

Terms of Access

Access Level	Allowed Users on CanWIN project site
Allowed Users	Allowed
Embargo Date	Available
Embargo Time	Not applicable
Embargo Time zone	Not Applicable
Access Constraints	

Related Data

Related Identifier	
Identifier Type	
Relationship	
If part of a series, name series	ArcticNet 2009 Physical Ice Sampling

Related Publications

CCGS Amundsen 2009 field program ArcticNet/IORVL partnership MetOcean data report.

(2009).Centre for Earth Observation Science, <http://hdl.handle.net/1993/33983>

Retrieved from, <https://mspace.lib.umanitoba.ca/>

Section 5.3. Temperature and Water Vapour Profiling Radiometer, in Asplin M.G., and

Candlish, L.M. T. (Eds.) CEOS-TEC-2009-12-04. pp. 162-171.