International Ice Patrol Annual Count of Icebergs South of 48 Degrees North, 1900 to Present, Version 1

International Ice Patrol. 2020. *International Ice Patrol (IIP) Count of Icebergs South of 48 Degrees North, 1900 to Present, Version 1*. Boulder, Colorado USA. NSIDC: National Snow and Ice Data Center. doi: https://doi.org/10.7265/z6e8-3027

Table of Contents

Data Description

These data are a compilation by the International Ice Patrol (IIP) of the number of icebergs that drift south across the 48° N line of latitude within the western Atlantic Ocean. The number of icebergs is tracked monthly and annually starting from 1900 through present day.

***Figure 1**. Ships, aircraft, and satellites are used to survey icebergs. Image courtesy of the IIP.*

Every year during the ice season, the IIP surveys icebergs in the vicinity of the Grand Banks of Newfoundland and issues daily iceberg charts. As described by Rudnickas and Serumgard (2018), the number passing south of 48° N has special significance:

> "In order to convey information about how an Iceberg Season impacts mariners and other stakeholders, it is useful to be able to assign a level of relative severity to each season. A traditional measure of Iceberg Season severity is the number of icebergs that travel south of 48° N in a given year. This metric was first utilized by Smith (1926) and is still used today. The 48° N line of latitude passes roughly between two well-known geographic features in the western North Atlantic: St. John's, Newfoundland and the northern point of the Flemish Cap. Below this line, icebergs are considered to pose a more significant threat to transatlantic shipping. Trivers (1994) provided the most extensive description of the record and we refer the reader there for a more comprehensive analysis of the history of this metric. The observed number of icebergs south of 48° N is maintained and reported externally by the International Ice Patrol (IIP) to include the time period from 1900-present. Such data sets are rare in modern observational oceanography and identifying and explaining trends is a useful endeavor for patrol resource allocation and ship routing considerations."

The area (Iceberg Limit) and length of time over which icebergs are a danger to shipping (Season Length) also enter into the severity of a season. For instance, "dangerous iceberg conditions that persist for long periods of time impede commercial shipping and require the International Ice Patrol (IIP) to use more flight hours to assess the iceberg limits" (Rudnickas and Serumgard, 2018). To arrive at a Normalized Season Severity Index, Rudnickas and Serumgard (2018) combine the number of icebergs south of 48° N with iceberg season length and area. Note that season length and area metrics are only available back to 1984, however.

NOAA@NSIDC archives these data for the IIP, along with the IIP Iceberg Sightings Database.

Parameters

The number of icebergs crossing south of 48° N.

File Information

Format

Data are provided in a single comma-separated value (`.csv`) data file.

File Contents

The data file contains a row for each year of data from 1900 to the present. Note that the years are arranged in terms of iceberg year (instead of calendar year), where an iceberg year encompasses October of the previous year through September of the next year. For example, iceberg year 1900 begins in October 1899 and goes through September 1900.

The first column of the data file is labeled *YEAR* and identifies the iceberg year the data were collected. The following 12 columns each represent a month, beginning with *OCT* and ending with *SEP*. Within these columns (2 through 13) each cell contains the number of icebergs that crossed south of 48° N for that month of the year. The last column is labelled *TOTAL* and contains the total number of icebergs seen for a specific iceberg year. Figure 2 contains a sample of the data file. This data set includes counts of icebergs greater than or equal to 15 meters in length at the waterline (defined as “Small" icebergs) only. Growlers or Bergy Bits that are ice of glacial origin, smaller than 15 meters in length at the waterline, are not represented in this data set.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
2	1900	0	0	0	10	0	0	5	32	33	6	1	1	88
3	1901	1	0	0	1	0	0	4	13	29	22	6	5	81
4	1902	1	2	5	3	0	1	1	13	5	16	1	0	48
5	1903	1	0	0	0	2	400	166	151	52	23	7	0	802
6	1904	0	0	1	0	0	12	63	82	89	14	3	2	266
7	1905	0	0	0	3	2	168	373	109	100	50	9	8	822
8	1906	8	0	15	14	11	77	49	133	87	18	16	0	428
9	1907	0	0	0	0	1	11	162	248	138	64	11	0	635
10	1908	0	0	3	1	0	7	39	82	51	2	2	20	207

***Figure 2**. Sample of G10028_Icebergs_South_of_48N.csv.*

Naming Convention and Directory Structure

The `.csv` data file is named `G10028_Icebergs_South_of_48N.csv`. The file resides in the following FTP directory: ftp://sidads.colorado.edu/pub/DATASETS/NOAA/G10028.

Spatial Information

Coverage

This data set gives a count of icebergs that have moved south of 48° N in the Atlantic Ocean (Figure 3).

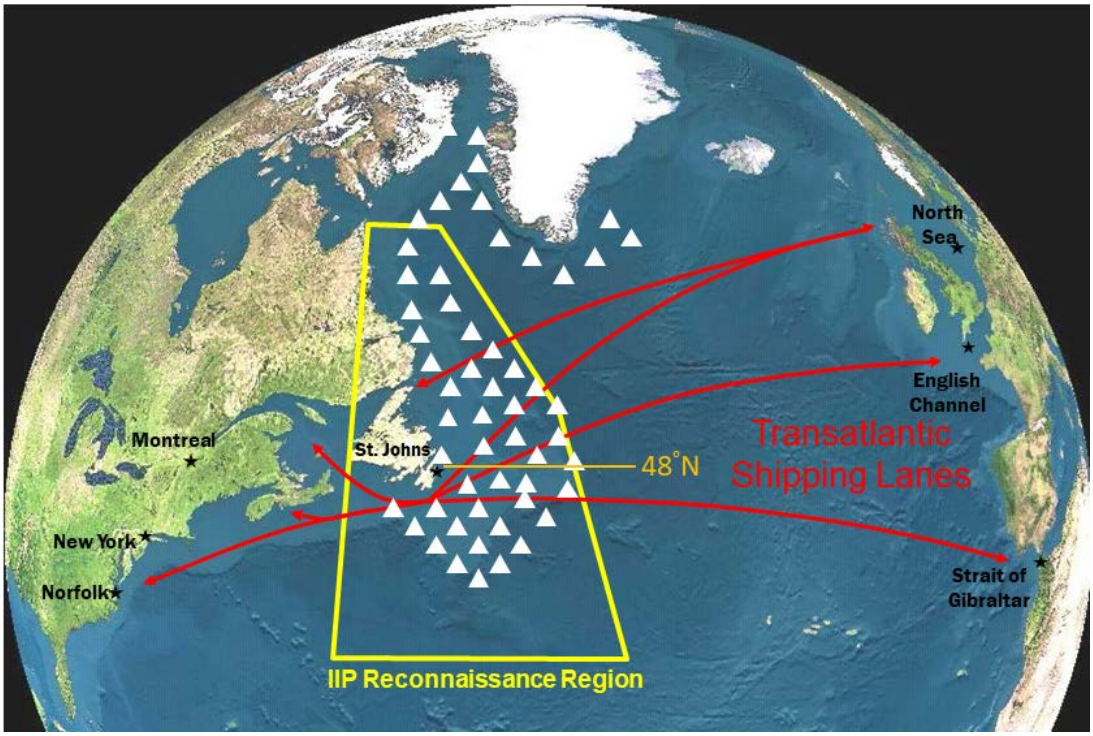

***Figure 3**. Map showing the IIP Reconnaissance Region (yellow box) and the 48° N line.*

Resolution

Not applicable.

Temporal Information

Coverage

These data span from October 1899 to the present. Note that the years are arranged in terms of iceberg year (instead of calendar year), where an iceberg year encompasses October of the previous year through September of the next year. For example, iceberg year 1900 begins in October 1899 and goes through September 1900.

Resolution

Iceberg counts are given as monthly and annual totals.

Data Acquisition and Instrumentation

NOAA@NSIDC acquires these data directly from the IIP. For a description of how the IIP conducts annual surveys, along with a wealth of background information, please referr to the Report of the International Ice Patrol in the North Atlantic, 2018 Season, Bulletin No. 104, CG-188-73 from the U.S. Coast Guard (IIP, 2018).

When iceberg monitoring began between 1900 and 1945, data were collected from ship reports. Most of the data came from the U.S. Coast Guard's cutter patrols. In 1946, the use of U.S. Coast Guard aircraft was added in addition to ship reports. From 1982 to the present, the use of advanced airborne radar systems such as Side Looking Airborne Radar allowed for more thorough iceberg detection at a greater range and also in adverse weather conditions. Additionally, IIP began using iceberg drift modeling in 1979 and deterioration modeling in 1983 to predict iceberg positions. Finally, beginning in 2017, the IIP began to incorporate satellite reconnaissance into their operations (Rudnickas and Serumgard, 2018). Table 1 provides an overview of the acquisition methods.

***Table 1**. Data Acquisition over Time*

Years	Data Source
1900 to 1945	U.S. Coast Guard cutter patrolling reports.
1946 to 1982	U.S. Coast Guard aircraft visual observations in addition to ship reports.
1983 to 2017	Advanced airborne radar, aircraft visual observations, ship reports, and modeled drift positions.
2017 to present	Advanced airborne radar, aircraft visual observations, ship reports, modeled drift positions, and satellite imagery.

Quality, Errors, and Limitations

Originally, the iceberg numbers were collected from ship reports alone. In 1946, the use of aircraft began to provide more data for the number of icebergs in the western Atlantic Ocean. Then, in 1983 the use of advanced radar was responsible for a majority of the iceberg counts. It is likely that prior to the use of advanced tools and technology the number of Icebergs reported were not as accurate as today, due to a lack of full-coverage monitoring of icebergs in the western Atlantic Ocean (Rudnickas and Serumgard, 2018).

As iceberg monitoring technology and methods have improved over time, the number of icebergs counted each year has trended upward. This could lead to the assumption that iceberg seasons are becoming more severe, which may or may not be true. Rudnickas and Serumgard (2018) stated that, "the trend in the iceberg count should not be assumed to be linear over long time periods. Instead, the record is showing increasing variability at interannual and interdecadal timescales, making it harder to predict an Iceberg Season's severity based on prior seasons." In addition to iceberg detection improving over the years, the variability of Iceberg seasons has also increased over time as there have been more rapid shifts in Iceberg seasons (Rudnickas and Serumgard, 2018).

The counts in this data set have not been normalized. Users are referred to Rudnickas and Serumgard (2018) if they would like to convert these data to normalized counts.

Version History

***Table 2**. Version History*

Version	Date	Description
1	February 2020	Initial release of this data set.

Related Data Sets and Web Sites

- International Ice Patrol (IIP) Iceberg Sightings Database: This database contains the data from these sightings from 1960 through most current processing.
- International Ice Patrol Iceberg Drift Tracks: Data set containing information on iceberg tracks from drifting buoys from 1977, 1978, 1980, 1983, and 1989.
- Iceberg Sightings in the North Atlantic: A collection of over 105,000 iceberg records in the North Atlantic from 1880 to 1959 transcribed from a number of contemporary sources.
- Ice Data Canada's Iceberg Sightings Database: A collection of over 105,000 iceberg records in the North Atlantic from the early 1800s to 1959.
- IIP Annual Reports may be obtained from the IIP website. These reports contain iceberg count data as part of an assessment of environmental and iceberg conditions in the North Atlantic for the year.

Contacts and Acknowledgments

Mike Hicks
USCG International Ice Patrol
860.271.2757 (desk)
860.271.2626 (OPCEN)
Michael.R.Hicks@uscg.mil
www.uscg-iip.org

References

Rudnickas, D., K. Serumgard. (2018). “Appendix B. Updated Iceberg Season Severity Definitions: Trends and Standardization” in *Report of the International Ice Patrol in the North Atlantic* Bulletin No. 104 CG-188-73. Alexandria, VA: U.S. Coast Guard.

Smith, E. (1926). Summary of Iceberg Records In the North Western North Atlantic, 1880- 1926. *Report of the International Ice Patrol Services in the North Atlantic* Bulletin No. 15, pp 75-77.

Trivers, G. (1994). International Ice Patrol's Iceberg Season Severity. *Report of the International Ice Patrol Services in the North Atlantic* Bulletin No. 80, Appendix C, pp 49-59.

International Ice Patrol. (2018). Report of the International Ice Patrol in the North Atlantic 2018 Season. Bulletin No. 104 CG-188-73. Alexandria, VA: U.S. Coast Guard.

Document Information

Author

Z. Jackson and A. Windnagel prepared this document with correspondence from M. Hicks and D. Rudnickas.

Publication Date

March 2020