Historical Sea Ice Data

Until now, no tool has existed that allows the simultaneous viewing of multiple sources of historical sea ice data. This new, web-based atlas is designed to let users view historical sea ice data collected between the mid-1800s and today, and compiled for display on an interactive map of the seas surrounding Alaska.

Why a Historical Sea Ice Atlas?

A major motivation for this project was the need for a longer, systematically-compiled record of sea ice to better understand sea ice trends and variations, and to answer questions such as, How unique is the recent sea ice retreat in the longer record? This atlas can be used to learn how sea ice extent and concentration have changed over the past century and a half. The atlas is not designed for forecasting or prediction, but can provide useful historical context for future planning efforts.

If you are …

• a resident of a coastal community
• someone who hunts or fishes in a marine environment
• a member of the shipping or oil & gas industries
• in the US Coast guard
• a scientist or student
• interested in Arctic sea ice data and global change

... this atlas is for you.

Explore the Digital Sea Ice Atlas

The historical sea ice atlas is available online. Scan this QR code to go there now.
seaiceatlas.snap.uaf.edu

About the Sea Ice Data in this Atlas

Sea ice data for this atlas were compiled from a variety of sources, from 19th century whaling ship reports to airplane surveys to passive microwave data measured by satellites. These data, although focused on the waters surrounding Alaska, represent surveys conducted by Denmark, Japan, the U.S., and Russia. With multiple data sources representing a wide range of data collection, archiving, and analysis procedures, standardization was required to compile all data into one resource. The atlas displays sea ice data at 0.25 x 0.25° spatial resolution and monthly temporal resolution. See the other side for a full listing of data sources used in this atlas.
Sea Ice Concentration and Extent

Some historical observers recorded only the presence/absence of ice or the ice edge, while others recorded sea ice concentration (or the ratio of sea ice to water). Sea ice concentration was denoted as a fraction (8/10) or percentage (80%) of sea ice coverage.

Data compiled for the atlas were grouped into 3 bins:

- <30% ice concentration = navigable by ship
- 30–90% ice concentration = open drift to close pack ice
- >90% ice concentration = solid ice

Data Uncertainty

The data in this atlas represent “snapshots” of sea ice in time, as well as historical trends in arctic sea ice cover and extent. They are not projections or predictions of future conditions. Sources of uncertainty in the sea ice data include data collection and data compilation challenges.

Data Conversion Example:

**Danish Meteorological Institute Sea Ice Chart, April 1909**

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