

Great Lakes Ice Thickness Data Rescue

Primary Investigator: Raymond Assel - NOAA/GLERL (Emeritus)

Overview

Ice cover is an important environmental factor affecting physical and biological processes in the coastal region of the Great Lakes. However, computerized ice thickness data along the shores of the Great Lakes prior to about 1965 are extremely sparse. The presence or absence of a stable ice cover in shallow spawning grounds in northern Lake Michigan has been shown to affect whitefish recruitment. A stable ice cover can also contribute to increased under ice zooplankton activity and to decreased re-suspension of particulate matter in the water column.

Objective

Historical NOAA National Weather Service ice reports currently exist in paper copy. These reports are in text form and contain qualitative descriptions of ice conditions and quantitative information on ice thickness in specific near shore areas of the Great Lakes. There are approximately 530 pages of reports spanning the winters from 1899 to 1970. In this project the ice reports will be computerized by creating computer image files of the original paper reports and by digitizing the ice thickness data for specific site locations. The objective is to make these coastal region ice data more accessible for climate, winter ecosystem, and engineering design and feasibility studies.



Ice formation in the St. Joseph channel. Lake Michigan. Feb. 18, 2000

Accomplishments

Historical National Weather Service Great Lakes ice reports were digitized to provide a dataset of ice thicknesses and ancillary ice information for the coastal zone of the Great Lakes for the winter seasons from 1899 to 1970. This work was accomplished under the NOAA Climate Database Modernization Program. These data are now available in a computer compatible format. The data abstracted and digitized from the historical paper copy NWS ice reports

consisted of site name, lake or river on which site is located, year, month, and day of report, ice thickness, ice condition, and a section of supplementary descriptive ice cover information. An estimate of the latitude and longitude location of each site and a site number were added by GLERL. The original paper copy reports were scanned and a graphic image file was created for each of the original report pages. Each digitized ice site record is cross-referenced with its image file to facilitate examination of the original data. The digital data is summarized as tabular listings, image files of the original NWS ice reports, and image files of each site's location. Data and analysis procedures are documented in Assel (2004) and the complete data set is available on the Internet in appendices of that report.

Products

Assel, R.A. *Computerized National Weather Service Great Lakes ice reports for winter seasons 1899-1970. NOAA Technical Memorandum GLERL-130.* NOAA, Great Lakes Environmental Research Laboratory, Ann Arbor, MI, 31 pp. (2004).

Ice Cover on the Great Lakes Brochure