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# MANICE

CANADIAN ICE SERVICE



**MANUAL OF  
STANDARD PROCEDURES FOR  
OBSERVING AND REPORTING  
ICE CONDITIONS**

Canada

# MANICE

## **Manual of Standard Procedures for Observing and Reporting Ice Conditions**

### **Issuing authority:**

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Meteorological Service of Canada

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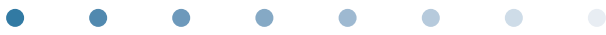


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# FORWARD

**MANICE** is the authoritative document for observing all forms of Sea, Lake and River Ice, as well as Ice of Land Origin. It describes the standard procedures of the Canadian Ice Service for observing, recording and reporting ice conditions.

**MANICE** has been prepared in accordance with internationally recommended terminology and symbology established by the World Meteorological Organization (WMO). It describes procedures that are completely compatible with WMO nomenclature (cf. 1), coding and observing practices, along with additional procedures, coding and symbology adapted for Canadian use or, in the case of icebergs, used in conjunction with the International Ice Patrol (IIP).

This manual has been reviewed, revised and updated by the Operations and Field Services divisions of the Canadian Ice Service. Although the standard procedures for observing and recording ice conditions are basically unchanged, this ninth edition contains many corrections and amendments.

## **Amendments and Corrections**

Amendments and corrections will be issued when warranted. All holders of the manual are responsible for keeping their copies current. When amendments have been received, they should be recorded on page x (“**Record of Amendments**”).

## **Inquiries**

Please direct any inquiries on the content of this manual to the Canadian Ice Service, through appropriate channels. Local changes or deviations from these instructions are not permitted unless authorized by the Assistant Deputy Minister, Meteorological Service of Canada.





# INTRODUCTION

The information from ice observations is very important and serves many purposes and needs. Ice observations and carefully prepared records have long-range, as well as immediate value.

- ❑ Some people require up-to-the-minute information; for example, an icebreaker captain needs current ice reports and forecasts.
- ❑ Others require data having daily, monthly or long-term climatological significance; for instance, marine engineers require climatological and/or monthly data. The decision to construct a dock in a certain locality or the strengthening a vessel structure should have in order to withstand ice stress will depend on ice data obtained over a long period.

Ice observations may be made from:

- fixed-wing aircraft,
- the deck of a ship,
- a helicopter, or
- a shore base.

In each case, the perspective of the observer differs and adjustments need to be made to the observing procedures.

Since ice is a global phenomena, ice information must be freely exchanged between countries throughout the world. This requires coordination and standardization of practices and procedures and the efficient exchange of ice data. The WMO has undertaken these tasks, including promotion of further application of ice information services to shipping, marine resource activities and other human safety activities. The results have been international codes and standardized nomenclature and symbology.

To carry out resolutions and to discuss and coordinate ice activities within certain geographical areas, WMO Members are grouped in six Regional Associations, among which Region IV comprises Canada, the United States, Mexico and the Central American countries.

To meet special requirements, a Member or group of Members within a region may develop a special reporting procedure. For instance, the Great Lakes Ice Nomenclature was developed through bilateral agreement between Canada and the United States to meet the local requirements of shipping and other uses. Such codes or code changes are called "national practices".

Although international and national codes may both be used in ice reporting, ice messages for interregional broadcast must use the International Code.

This manual has been prepared with due consideration to the recommended practices and procedures set down by the World Meteorological Organization (cf. 1) and the Meteorological Service of Canada. All statements throughout this manual shall be regarded as authoritative and shall be considered by the observer to be instructions.



The word “shall” is used in this manual to indicate that instructions are mandatory and must be followed. The word "should" is used to denote a recommended practice.

An “Ice Services Specialist” (ISS) is a member of the Meteorological Service of Canada who is trained and qualified to make ice observations and reports, or a person authorized or qualified to do so by the Assistant Deputy Minister.

It is the duty of the observer to report ice conditions as they actually exist at the time of observation. He/she is responsible for keeping a close and continuous watch on the ice while on duty, and his/her records and reports shall be as complete and accurate as possible. Prompt and accurate reports are necessary for the provision of forecasts and ice-warning services, and may be the means of preventing property damage and loss of life. Delayed reports are of less value for forecasting and for operational decision-making. However, if communication or other difficulties delay or prevent distribution of reports, the observer shall continue to observe the ice and record the observations for later transmission. Before finally being transferred to the Canadian Ice Service archives, observed ice data is subjected to an analysis or review, which may reveal errors.

The observer must be competent and trained to make observations accurately and to code and chart the resulting reports for transmission as quickly as possible. He/she should realize, however, that it is neither possible nor desirable to prepare detailed instructions to cover reporting and coding of ice in all of its forms. Therefore, initiative and resourcefulness in dealing with unusual conditions are most important in observing ice.

Data held at the Canadian Ice Service in Ottawa is used in the preparation of official publications, and by both government and industry in the preparation of statistical analyses for decision-making purposes. The accuracy of the archived data determines, to a large degree, the quality of the publication or analysis; it is therefore extremely important to take suitable measures to ensure that observed data is of the highest quality consistent with reasonable cost.

This manual deals principally with procedures for the visual observation of ice from various platforms. Where appropriate, electronic aids such as airborne or satellite radar for ice data collection are referred to; however, for a much more detailed description of SLAR (Side Looking Airborne Radar) and SAR (Synthetic Aperture Radar) technical operation and image interpretation, please refer to the following documents:

- ❑ **SLAR Users Manual** (cf. 5), and
- ❑ **SAR Ice Interpretation Guide** (cf. 4).

These guides are also available from the Canadian Ice Service.

The terminology has been prepared with the needs of the international marine community in mind; it is therefore highly oriented toward terms relating to sea ice and ice of land origin found at sea. Nevertheless, many of the terms apply equally to lake ice and/or river ice, particularly those relating to floe sizes and ice-dynamic processes. A section on lake ice nomenclature has been added, and this manual is now the authoritative guide for observing all types of floating ice, including ice of land origin.