



International Ice Charting Working Group (IICWG) / JCOMM Expert Team on Sea Ice (ETSI)

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Ice floating in the ocean is what makes navigation in the Polar Regions unique and challenging. Whether it is sea ice, formed of frozen sea water, icebergs calved from coastal glaciers, or river ice near the shore, floating ice presents a significant navigational hazard. The Polar Code recognizes this: “*Ships shall have the ability to receive up-to-date information including ice information for safe navigation*”. References to ice are numerous throughout the text of the Polar Code but the bottom line is that, in addition to knowing how to manage their vessel in ice, masters sailing in the Polar Regions must plan their passages with full knowledge of the ice conditions to be expected and make tactical navigation decisions based on up-to-date ice information. This is where the ice charting services of the world offer an invaluable service to Polar mariners.

All of the Arctic states have national ice services that provide routine monitoring and charting of the ice conditions in support of marine safety. Within the Arctic Polar Code region, Canada, Denmark (Greenland), Norway, Russia, and the United States all have sophisticated ice information programs that incorporate large volumes of satellite imagery, computer models of ice dynamics and experienced human analysts and forecasters to produce timely ice charts to support the safety of marine navigation. In addition to producing ice charts for their own waters and economic zones, these ice services also collaborate to jointly construct ice charts for the entire Arctic Ocean.

All of the national ice services have joined together in the International Ice Charting Working Group (IICWG). Formed in 1999, the IICWG is a recognized collaboration of national ice services promoting standardization, product development, and best practices to most effectively serve their collective clients. Shipping, by its very nature, is international and the IICWG believes that mariners should have access to a consistent quantity, quality, and presentation of ice information when travelling among multiple national regimes. To that end, the IICWG has worked continuously to implement standard notation, symbology, and “look-and-feel” for ice charts, including electronic representation for Electronic Navigation Chart Systems (S-411). The IICWG collaborates closely with the Joint Commission on Marine Meteorology (JCOMM) Expert Team on Sea Ice (ETSI) to codify these standards and best practices in publications such as the Sea Ice Nomenclature (WMO-No.259), Sea-Ice Information Services in the World (WMO-No.574) and the Manual for Marine Meteorological Services (WMO-No.558). To help ensure a consistently high level of quality, the IICWG and ETSI conduct regular Ice Analyst Workshops to share training opportunities among its member services. On behalf of the IICWG and ETSI, the German Ice Service operates the Ice Logistics Portal which hosts ice charts in various formats from all of the national ice services as a convenient single point of access for mariners.

There are many different types of ice charts intended for varying uses. Climatological, or historical, ice charts depict “normal” ice conditions mainly for advance planning of maritime



INTERNATIONAL ICE CHARTING WORKING GROUP (IICWG)

operations. Ice analysis charts show current ice conditions in a given area and are the basic information aimed at enhancing marine safety for mariners in ice-frequented waters. Depending on need and resources, these are generally produced daily or a few times a week. Finally, concise ice information (commonly ice edge and iceberg positions), along with weather information, is provided to mariners worldwide at least daily by the Global Maritime Distress and Safety System (GMDSS) for the regions of the Arctic METAREAs XVII-XXI and adjacent areas of METAREAS I, IV and XII.

Ice analysis charts are based primarily on satellite imagery received in near real-time at the ice services. Expert ice analysts at the ice services analyze the images, calibrate them with other data such as all-important ship reports, extrapolate to fill gaps in the satellite coverage and make adjustments for time differences between images to prepare the ice analysis charts. To supplement ice analysis charts, some ice services produce forecast ice charts showing the ice conditions expected in a few days.

The IICWG is actively promoting the use of POLARIS, a risk assessment tool for Polar mariners, by ensuring that ice charts include the information needed for its application as well as assessing its applicability to the Southern Ocean. The IICWG member services have worked with the Nautical Institute to help define training requirements as well as providing curricula and training materials related to ice navigation.

For the PAME web portal, the IICWG and the ETSI propose the following hyperlinks:

- The Ice Logistics Portal (<http://www.bsis-ice.de/IcePortal/>): operated by the German Hydrographic Service, this site provides convenient access to current ice charts produced by all of the national ice services as well as background information
- The Polar View data page (<http://www.polarview.aq/arctic/>): operated by the British Antarctic Survey, this site provides freely available satellite data and automated ice information products
- IICWG website (<http://nsidc.org/noaa/iicwg/>): operated by the National Snow and Ice Data Center, this site provides contact information for the national ice services as well as general information about ice information
- JCOMM website (<http://www.jcomm.info/>): provides standards and information publications on sea ice, and other marine, information

Submitted on behalf of the International Ice Charting Working Group
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