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

(updates by IICWG-17 are underlined by yellow color)

**5th Ice Analysts Workshop, U.S. National Ice Center, 16-20 May 2016**

Recommendations

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| --- | --- | --- | --- |
| No | Recommendation | By whom | When / target |
| ***Sea ice and icebergs in GMDSS*** |
| A1 | Use the existing rules for content of sea ice information and description of ice edge in GMDSS SafetyNET for the Southern Ocean METAREAs | ETSI, ETMSS | 03.2017 |
| A2 | Recommend to extend rules for icebergs description in GMDSS SafetyNET bulletins in the WMO-No.558 by the following specifications (a) information on icebergs shall be either in in METAREA and NAVAREA messages exactly in the same manner and shall be prepared by the specialized Service (national ice service in most cases) (b) Iceberg analysis for SafetyNET should be done daily(c) Iceberg information in SafetyNET should include following 4 sections (parts)Mandatory* “EXTREME ICEBERGS LIMIT” (using the WMO-558 specifications for ice edge)
* “POSITION OF ICEBERGS GREATER THAN 10 NM” (accepted naming conventions are based on four 90° longitude quadrants developed by the U.S National Ice Center) – agreed

Optional* “POSITION OF ICEBERGS SMALLER THAN 10 NM” (if observed, in enumerated manner)
* “POSITION OF ICEBERGS ZONES” (clusters or zones of certain number of icebergs or concentration) using limited number of latitude-longitude pairs (recommended number - 4 pairs)

(c) Naming conventions for the Arctic need to be developedClear text before **Dec 10 2016** (Gabriele, Darlene, Keld) to ETSI | ETSI, ETMSS | 03.2017 |
| A3 | Investigate the influence of financial restrictions on amount of sea ice and icebergs MSI in SafetyNET bulletins | IICWG, ETSI | 03.2017 |
| A4 | Recommend that information on ice edge and icebergs in METAREA/NAVAREA SafetyNET shall be strictly in accordance with specifications in the WMO-No.558 so that its backward conversion into S-411 GML or SIGRID-3 shapefile formats be possible as a way forward for depicting content of GMDSS in ENCs; further discussions will be in March in relation to SafetyNet 2.0 | ETSI | 03.2017 |
| A5 | Consider appropriate both automatic (Bifrost - NMI) and manual (Bifrost - NMI, SIPAS - NIC, ArcGIS - AARI, other national ice services GIS) generation of ice edge in SafetyNET, in the first case manual QC is critical; develop recommendations for appropriate guides (e.g. Sea Ice Information Services in World, WMO-No.471); NIS will consider providing information for 471 before Dec 25 2016 | IICWG,ETSI | 03.2017 |
| ***Sea ice regulatory documentation*** |
| B1 | Agree on the new universal Arctic/Antarctic icebergs size and form coding tables using alpha-numerical coding; develop updates including notes for usage for the corresponding documentation (Sea Ice Nomenclature vol.III, SIGRID-3, Ice Objects Catalogue)**Table is in final form, should be sent to ETSI after IICWG-17** | IICWG, ETSI | 03.2017 |
| B2 | Agree on proposals for additional attributes for the icebergs polygone and point classes (non-ice S-57 attributes, iceberg concentration, maximum length and width of above water part); develop update for the corresponding documentation (SIGRID-3, Ice Objects Catalogue); ETSI Chair to provide the text for SIGRID-3, Ice Obs Cat, include Darlene’s proposal for an estimated icebergs number for Icebergs Sub, and then to ETSI + plus IAW-5 present – Nov 5 for further iteration; milestone mid Feb | IICWG, ETSI | 03.2017 |
| B3 | Agree on proposals for the new symbols and color coding for the areas and boundaries of the areas of particular form/ size/ number / concentration of icebergs; harmonize proposals, in particular in terminology, with those discussed by ETSI-V; test proposals in operational practice and develop updates for the corresponding documentation (Sea Ice Nomenclature vol.I and III, Color Standard, S-411); ETSI Chair to prepare starting material– Nov 5 for further iteration; milestone mid Feb | nat’l ice services IICWG, ETSI | 2016-201703.2017 |
| B4 | Consider harmonization of sea ice and icebergs symbology in Sea Ice Nomenclature vol.III and S-411 presentation library; agree on a need for a single JCOMM / WMO / IHO depository for all sea ice symbology; develop updates for the corresponding documentation – make a decision by mid Feb. | IICWG, ETSI | 03.2017 |
| B5 | Consider harmonization of common ice shelf practices; propose common practice | IICWG, ETSI | 03.2017 |
| B6 | Consider clarification of wording in SIGRID-3 concerning using and mixing 2 and 6 letters identifiers; develop updates for the corresponding documentation (SIGRID-3); general issue – mid Feb | IICWGETSI | 10.2016 03.2017 |
| ***Sea ice and icebergs climatology and observations*** |
| C1 | Agree on developing a comprehensive database of Antarctic icebergs using U.S. National Ice Center naming conventions. Consider necessity of keeping individual databases for Arctic and Antarctic icebergs; SO – most likely BYU, BSH; Arctic – possible way forward – agreement between IIP, nat’l ice services on a common WKT format, ask BSH to manage DB | nat’l ice services, BYU | 2016-2017 |
| C2 | Consider developing a proposal on depicting available historical observations from 18th – 19th – early 20th log-books on the modern time Antarctic sea ice and icebergs propagation; the action needs further development and contacts with NPI and BAS | BASETSIETMC | 2016-2017 |
| C3 | Specify date and time of observation and sensor when providing information on known icebergs and hazard area; need further development to define how to implement it. | nat’l ice services , BYU | 2016-2017 |
| C4 | Address use of BYU database to provide indication of area of hazard only pertaining to large icebergs | nat’l ice services BYU | 2016-2017 |
| C5 | Address restoration of IPAB configuration and encourage better coordination with other institutes with regular buoy deployment to make data open source. – Pablo C.-C. / NIC | ETSI for JCOMM obs | 2016-2017 |
| C6 | IABP/IPAB meeting in Hobart, May 2017. Establish representation from IICWG members and they will provide any relevant information to the IICWG group - Pablo C.-C. / NIC | ETSI for JCOMM obs | May 2017 |
| C7 | Include iceberg parameters (e.g. length, area, type..etc) in ice observations; minimum is position, time, size (length), shape | nat’l ice services BYU | 2016-2017 |
| C8 | Establish a minimum set of ice observations that should be taken to provide recommendations for research vessels and others. Development of system that converts ice observations from each vessel (or protocol used by each service) into a standard ice observation format that can be converted into Sigrid-3; harmonize national manuals like MANICE with SIGRID-3 as the master format | ETSI, IICWGGCW, nat’l ice services  | 2016-2017 |
| ***Capacity building*** |
| D1 | Endorse development of the ‘Bifrost’ open-source GIS for ice charting and preparation of GMDSS bulletins by the Norwegian Meteorological Institute; recommend further development of the system collaboratively by the interested national ice servicesA IICWG letter to NMI; reference Bifrost in JCOMM-5 docs | nat’l ice services IICWG, ETSI | 2016-2017 |
| D2 | Consider developing minimum criteria and best practice system for en-route sea ice observations aboard different classes of vessels (VOS, expeditionary, scientific, under Polar Code) using existing ASPeCT, Argentian etc practices ; See C7  | nat’l ice services IICWG, ETSI | 2016-2017 |
| D3 | Consider developing criteria for Ice Services certification and Ice Services quality control; Proposal before ETSI-6 | IICWGETSI | 10.2016 03.2017 |
| D4 | Develop feedback to SCAR, IHO and GEBCO on updates of Antarctic coastline and shelf based on Antarctic sea-ice AARI-NIC-NMI collaborative project; Include information from IAW-5 into report to GEBCO | AARI, NIC, NMI | 2016-2017 |
| D5 | Develop scripts/software for backward conversion of ice edge and iceberg information in SafetyNET onto S-411 GML and SIGRID-3 shapefile formats as a possible way of making content of GMDSS available in ENC; Action for NIS and BSH | BSH, nat’l ice services  | 2016-2017 |
| D6 | Consider producing continuously updated SIGRID-3 file for the icebergs including standard attributes for names (using U.S. naming conventions for icebergs greater than 10 nm and UKXXX for smaller ones), dimensions, and optionally source of information and link to satellite image within the Antarctic sea-ice AARI-NIC-NMI collaborative project; Action for AARI, action for NIS | AARI, NIC, NMI | 2016-2017 |
| D7 | Consider developing a JCOMM “Guide to Antarctic iceberg analysis” ; Agree, need to define editorial board | nat’l ice services  | 2016-2017 |
| D8 | Develop sea ice chart training to provide minimum basic level information and certification for new analysts. Sea Ice Analysts handbook can be created out of this training program (example is Johnston and Timco, 2008 training manual for old ice in the Arctic); Agree, need to define editorial board | nat’l ice services  | 2016-2017 |
| D9 | Create general wikipage of data download link accessible to all ice charting agencies; Agree | Ice logistics Portal (BSH)IICWG | 2016-2017 |
|  | ***Data Assimilation*** |  |  |
| E1 | Look into the use of MASIE and MASAM2 for data assimilation techniques applied to Antarctic sea ice models; Action for NIC | NIC, IICWG | 2016-2017 |
| E2 | Compile information on how ice service products are assimilated and used into output for models; TBD | FMI, DTU, Met Norway, and OSI SAF | 2016-2017 |
| E3 | Forge better link with data assimilation IICWG group and ice services in Europe and the US. For future DA meetings and topics stress the need for validation component against REAL observations; TBD | IICWG | 2016-2017 |