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**International Ice Charting Working Group (IICWG) 2013**

**JCOMM Expert Team on Sea Ice (JCOMM ETSI)**

**Project title**: Joint Production of Antarctic Sea Ice Analysis

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**Background**

Over the years, the ice services of the IICWG have recognized the value of cooperative activities in ice services supporting maritime navigation and polar environmental awareness. With the implementation of the WMOSIGRID3 code used in geodatabases, the possibility of collaborative ice charting has made attaining this goal more realistic.

Currently, AARI produces bi-monthly (1st and 15th) Antarctic Sea Ice Analysis Charts. USNIC produces an analysis biweekly, and NIS analyzes sea ice for the Antarctic Peninsula and Weddell Sea on a weekly basis during the austral summer (October-April). Per agency specific requirements, all three agencies use SIGRID3 to code ice concentration, ice type, ice form, and icebergs.

Because of this overlapping area of responsibility, sea ice services of IICWG would like to implement a regular collaborative method to analyze and disseminate a weekly Antarctic sea ice analysis hence contributing to development of a safer ice navigation in the Antarctic waters as well as regional GMDSS.

**Desired Output**

An established process describing the parameters to be analyzed; a common geospatial dataset; a common coast line; defined dissemination process; documented methodology and a SOP to include a rotating schedule of the responsible analysis party; to deliver a sustained weekly hemispheric ice analysis.

**Requirements**

In order to appoint personnel to participate in this effort, the managements of the respective agencies must agree to a commitment to provide work time and resources (including some travel expenses) to participate in working groups required to develop and perfect process.

Methodology: Upon acceptance of this proposal, select personnel will manage the development of the product. Initial actions should include a well-defined end product and steps needed to achieve the product. USNIC contact will schedule the first meeting of the working group. A timeline, along with notes of discussions, proposals, details will be forwarded to appropriate agency chain of command. Each agency should monitor the progress of the project on a regular basis. Quarterly updates will be made to IICWG for informational purposes, as well as to ensure communication and obtain feedback from all IICWG ice services involved in the project.

**Acronyms**

AARI – Arctic and Antarctic research Institute

NIS – Norwegian Ice Service

SOP – Standard Operating Procedure

USNIC – United States National Ice Center

**Table 1 - Valid specifications for the SO ice analysis at NIC, NIS, AARI and proposed cooperative product**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  **Feature** | **NIC** | **NIS** | **AARI** | **Cooperative Product** |
| **CT** | Ice free | Ice free | Ice free | Ice free |
| 1-3 | 0-1 | 1-3 | 1-3 |
| 2-4 | 1-4 | 4-6 | 2-4 |
| 4-6 | 4-7 | 7-8 | 4-6 |
| 6-8 | 7-9 | 9-10 | 6-8 |
| 8-10 | 9-10 | 10 | 8-10 |
| 10 | 10 | occasionally 1-2, 2-3, 8-9, 9 | 10 |
| **SoD** | 1 - New ice | 1 - New ice | 1 - New ice  | 1 - New ice |
| 3 - Young ice for ice thicker than 4, 5 (?) | 6 - First-year ice | 2 - Nilas  | 3 - Young ice for ice |
| 7 - Thin first-year ice | 7\* - Old ice | 4 - Gray | 7 - Thin first-year ice |
| 6 - First-year ice for ice thicker than 7 | ^\* - Iceberg | 5- Gray-white | 6 - First-year ice for ice thicker than 7 |
| 7\* - Old ice |   | 3 - Young | 7\* - Old ice |
| ^\* - Iceberg |   | 7 - Thin first-year | ^\* - Iceberg |
|   |   | 6 - First-year |   |
|   |   | 7\* - Old |   |
|   |   | ^\* - Iceberg |   |
| **Color Code** | Based on CT (blue, green, yellow, orange, red, gray) | Based on CT (blue, green, yellow, orange, red, gray) | Based on CT and SoD (varies in season) | Based on CT and SoD (varies in season) |
| **Partial concentations** | Only 7\* | N/A | yes | Only 7\*, to continue tracking the amount of old ice, which is the ice type vessels are most interested in. |
| **Eggs/SIGRID** | We currently produce online content which comes in both eggs and SIGRID code. As we analyze we use eggs, which I believe are easier to work with. | N/A | Online content as graphic come commonly with colour coding (based either on CT or SoD), optionally with an ice symbol either in Russian national or WMO egg-symbol. Digital version is coded in shp with DBF in AARI internal coding which is 1=1 convertible to SIGRID-3 | Online content should be available in SIGRID-3 and in graphics with colour coding. Graphic replica with WMO egg-code is desirable but not critical. |
| **Icebergs** | We currently track icebergs >10NM. With a distributed workload and more manpower I would like to track more icebergs, however this would have to be approved internally and that is unlikely. | Use BYU database for tracking. Based on NIC data and OSCAT analyses. Where adequate imagery exists, icebergs are drawn as separate polygons. | Draws some of the largest icebergs as polygones. | Continue to analyze icebergs that exceed 10NM. They're usually not hard to find with MODIS (while daylight), or use previous analysis or our table to help find them. Many are grounded/fasted and do not move. |
| **Product Dissemination** | Our analyses are posted online at: http://www.natice.noaa.gov/Main\_Products.htm We have a graphical, interactive "Products on Demand" version, as well as hemispheric shapefiles that are posted and downloadable. | Graphical chart is posted online at: http://polarview.met.no/antarctic/antarctic.jpg, and also sent out via e-mail. | Graphic chart are posted at: http://info.raexp.ru/report-ledobs1-arhiv2.html. SIGRID-3 files are availble at http://wdc.aari.ru/datasets/d0015/antarc/ | Analyses to be posted on each organizations websites, as image files and SIGRID-3. Access to content should be in advance of 1 day before the time of analysis for any side. Access to a common sets of satellite imagery supporting sustained hemispheric analysis is critical. |
| **Antarctic Shoreline Update** | Suggestions to use NGA data, or use SAR images to re-draw shoreline. | Could we use the Antarctic Digital Database. http://www.add.scar.org/ | Vladimir Bessonov proposes to test a common coastline which he redrawn on a basis of the latest MODIS imagery; I posted coastline at wdc.aari.ru/datasets/\_topo/antarc/antarc\_coastline\_50S.zip | Test Vladimir Bessonov coastline at I posted coastline at wdc.aari.ru/datasets/\_topo/antarc/antarc\_coastline\_50S.zip |
| **Chart valid each week** | Wednesdays. Thursdays if necessary. Iceberg table is valid Fridays. | Valid Mondays. | 1st and 15th of each month; AARI is planning to switch to bi-weekly analysis (odd or even week, harmonized with NIC) | NIC/AARI charts should come opposite NIS charts in the week so that customers would see two products/week and work would not be duplicated. All charts should not be contradictory, in particur if products are for the -3/+3 days interval. |