



## Iceberg Standing Committee Report

### IICWG-19

September 24, 2018

Mr. Michael Hicks  
International Ice Patrol

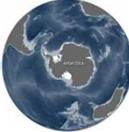
International Ice Charting Working Group



## IICWG Iceberg Standing Committee

The IICWG Iceberg Subcommittee (IBSC):  
10 members, representing 9 national ice services.





- Alvaro Scardilli, Argentina
- Neal Young, Australia
- **Doug Leonard, Canada**
- Keld Qvistgaard, Denmark
- Wolfgang Dierking, Germany
- Nick Hughes, Norway
- Vasily Smolyanitsky, Russia
- Chris Readinger, United States
- Kristen Serumgard, United States
- Mike Hicks, United States

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## Iceberg Standing Committee Activity

Since last IICWG in Hobart...

- IBSC members met monthly:
  - 6 by teleconference
  - 2 in-person with some IBSC in conjunction with other meetings e.g., IIP Annual Meeting, NAIS meeting
- Completed or closed 5 Action Items.
- Made significant progress on most other action items.

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## Iceberg Standing Committee Activity

- IC 17-1 Seek funding source(s) and research opportunities to develop and evaluate a method/model to track propagation of large icebergs after calving.
- IC 17-7 Evaluate the implementation of the NAIS Iceberg Drift and Deterioration Model in Argentina, Denmark, and Norway.
- IC 17-9 Share best practices on collecting “ground truth” iceberg data for continued model and remote sensing evaluation

OPEN

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## Iceberg Standing Committee Activity

- IC 17-11 Update ICE ASSIST iceberg reporting standards with new SIGRID-3 convention. CLOSED
- IC 17-18 Consider clarification of wording in SIGRID-3 concerning using and mixing 2 and 6 letters identifiers; develop updates for the corresponding documentation (SIGRID-3). CLOSED

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## Iceberg Standing Committee Activity

- IC 17-19 Consider necessity of keeping individual databases for Arctic and Antarctic icebergs. Address use of BYU database to provide indication of area of hazard only pertaining to large icebergs. CLOSED
- IC 17-21 Agree upon draft version of "Isolated, Few, Many" standard symbology for operational test by each Ice Service. CLOSED

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### Iceberg Standing Committee Activity

- IC 18-1 Review, compare, and harmonize iceberg polygon and point classes for iceberg concentration, max length/height, and non-ice S57 attributes in SIGRID-3 and Ice Objectives Catalogue. OPEN
- IC 18-2 Review, compare, and harmonize new symbols and color coding contained within Sea Ice Nomenclature I and III, Color Code Standard, and S-411 for the areas and boundaries of iceberg shape, size, number, and concentration.
  - Include symbology for “Isolated, Few, Many” and “Unknown but Estimated”
  - Agree on proposals, submit to ETSI OPEN

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### Iceberg Standing Committee Activity

Current symbology

  
One iceberg

  
Many icebergs

  
One growler

  
many growlers

Proposed symbology (option 1)

  
One (isolated) iceberg  
(at dots location)  
(easy to count number on radar screen, <100)

  
few icebergs  
(within 10-12 nm)  
(easy to count number on radar screen, <100)

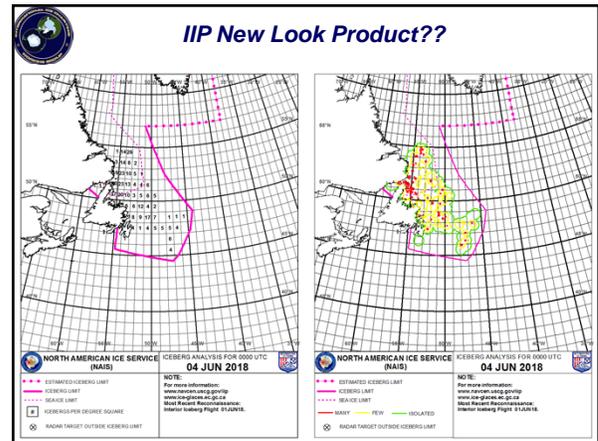
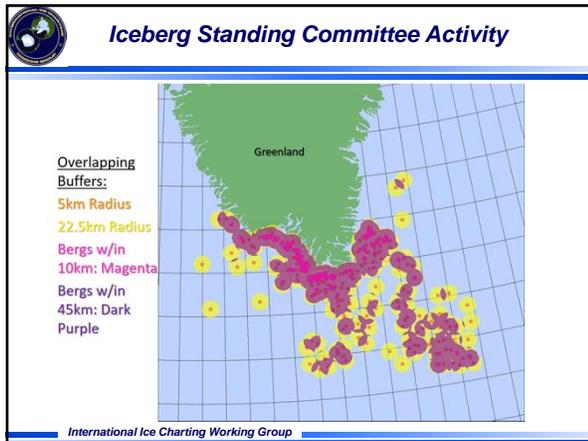
  
Many icebergs  
(within 10-12 nm)  
(difficult to count number on radar screen, >100)

  
One (isolated) growler  
(at dots location)  
(easy to count number on radar screen, <100)

  
few growlers  
(within 10-12 nm)  
(easy to count number on radar screen, <100)

  
many growlers  
(within 10-12 nm)  
(difficult to count number on radar screen, >100)

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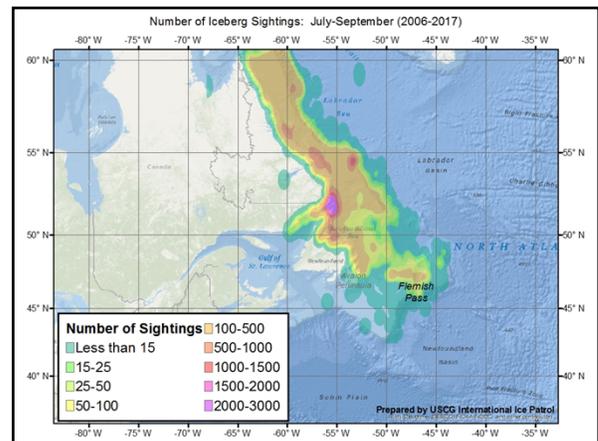


### Iceberg Standing Committee Activity

- IC 18-3 Share results from Glacial Ice Hazards Workshop on development of a North Atlantic iceberg limit and iceberg distribution climatology.
  - Discussed at GIHWG. Decided on 1991-2020 update to coincide with sea ice climatology period – formal report forthcoming.
  - Decided to include iceberg data up to 60N (currently stops at 50N)
  - IIP/CIS reviewed working with CIS to address gaps in both datasets
  - AARI and DMI shared information on climatology in their respective areas

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**Iceberg Standing Committee Activity**

- **IC 18-4** Develop a prototype product showing the Iceberg Limit for the Atlantic sector of the southern ocean (~Weddell Sea). Eastern extent TBD (METAREA VI, SRR?)
  - Argentina has been working to configure a new product based on existing Iceberg product.
  - New product will contain weekly Iceberg Limit update and will be available in SHAPE and KML formats.
  - SAR image availability will limit frequency of product availability
    - Launch of SAOCOM 1a and 1b L-Band SAR should help!
  - Discussion topic for Iceberg Committee sessions this week.

**OPEN**

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**Iceberg Standing Committee Activity**

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**Iceberg Standing Committee Activity**

- **IC 18-5** Investigate the possibility of using “Machine Learning” as a way to exploit Big Data for iceberg detection using SAR imagery.
 

**CLOSED**
- **IC 18-6** Investigate the possibility of using VHF Data Exchange System (VDES) for sending IIP Iceberg Limit.
  - Made initial inquiries but no movement.
  - Investigate use of Digital Radio Mondiale (DRM)? – HF transmission of AIS (and other) data e.g., NIC Ice Edge

**OPEN**

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**Summary**

Focus going forward...

- Clarify and prioritize open action items.
- Continue to review/harmonize iceberg information in key references:
  - ✓ SIGRID-3
  - ✓ JCOMM/ETSI, Electronic Chart Systems Ice Objects Catalogue (IOC), Version 5.2
  - ✓ WMO/TD-No. 1215 , Ice Chart Colour Code Standard
  - ✓ Special Publication JCOMM S-411, Ice Information Product Specification
- Summarize in a proposal to ETSI

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**Questions?**



# ICEBERG STANDING COMMITTEE

## ACTION ITEMS STATUS

Last Updated 20 October 2018

### Iceberg Standing Committee (IBSC)

Co-Chairs: Mike Hicks, Alvaro Scardilli

- IC 17-1    Seek funding source(s) and research opportunities e.g., European Maritime Safety Agency, and research opportunities to develop and evaluate a method/model to track propagation of large icebergs after calving. Applies to both hemispheres.  
Responsible: N. Young, C. Readinger, W. Dierking  
Deadline:    IICWG 2018  
Status:        OPEN. UPDATE: A post-doc and a PhD student, funded by the University in Tromsø (UiT) and the Center for Integrated Remote Sensing and Forecasting for Arctic Operations (CIRFA), are working on remote sensing detection of "sea ice, iceberg, and growlers" with a focus on small icebergs (a few pixels in the SAR image). One paper on quad-pol data has already; another, on Sentinel-1 EWS imagery, has just been submitted. With the work accomplished, funding is not presently needed but may be in the future. References to papers will be distributed on request, as available.
- IC 17-7    Evaluate the implementation of the NAIS Iceberg Drift and Deterioration Model in Argentina and Denmark  
Responsible: IBSC  
Deadline:    IICWG 2018  
Status:        OPEN. UPDATE; Model is running in Argentina though still some coastline issues to work out. A. Scardilli is confident that the model will be operational for next ice season. DMI has model running with HYCOME currents but still has limited resources to conduct a comprehensive evaluation. NIS has sorted out their coastline but is still working through incorporation of ocean-atmosphere inputs to drive the model. NOTE: IIP and NIC will be working with the US Naval Research Lab to evaluate HYCOM currents for driving the NAIS model. CIS and NRCC will also be involved in establishing ownership and versioning for the NAIS model.
- IC 17-9    Share best practices on collecting "ground truth" iceberg data for continued model and remote sensing evaluation e.g., through use of iceberg tagging, vessel sightings etc.  
Responsible: M. Hicks  
Deadline:    IICWG 2018  
Status:        OPEN. UPDATE: US DHS is supporting an effort to tag multiple icebergs during the 2019 season. A DHS Contractor is working with IIP, C-CORE, and other Canadian researchers to develop concept of



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operations. DMI is working on a small study to evaluate ship +observations coincident with Sentinel-1 acquisitions as a source of ground truth. A. Scardilli also shared a link for software developed for Argentine Naval ships to code iceberg observations from vessels (Sistema de Información Glaciológica or SIGLAC). The DMI Study and Argentine's SIGLAC underscore the importance in properly incorporating vessel sightings in ground truth validation.

**IC 17-11** Update ICE ASSIST iceberg reporting standards with new SIGRID-3 convention. Waiting adoption by ETSI.

Responsible: N. Hughes

Deadline: IICWG 2018

Status: CLOSED. N. Hughes recommended shifting this project over to the DICSSC as MET Norway has funding to support a larger effort to further develop the Ice Watch ASSIST shipboard monitoring system and database from U. Alaska Fairbanks. This should include the capability for iceberg observations.

**IC 17-18** Consider clarification of wording in SIGRID-3 concerning using and mixing 2 and 6 letters identifiers; develop updates for the corresponding documentation (SIGRID-3).

Responsible: M. Hicks

Deadline: IICWG 2018

Status: CLOSED. Refers to Appendix A, 2. In SIGRID-3 document.

Members of the Iceberg Committee discussed possible changes to the language in this paragraph to clarify. IBSC will address this under IC 18-1.

**IC 17-19** Consider necessity of keeping individual databases for Arctic and Antarctic icebergs. Address use of BYU database to provide indication of area of hazard only pertaining to large icebergs

Responsible: IBSC

Deadline: IICWG 2017

Status: CLOSED. C. Readinger gave a presentation to the Committee on the BYU Iceberg Database, Methodology, Pros, Cons, and Comparisons to the NIC Database. It will be shared with the IICWG as a whole. The group concluded that while this database is useful for archival purposes for Antarctic icebergs, it is not appropriate for northern hemisphere efforts or for developing southern hemisphere iceberg limit products since the focus of both NIC and BYU databases are on much larger icebergs.



# ICEBERG STANDING COMMITTEE

## ACTION ITEMS STATUS

Last Updated 20 October 2018

- IC 17-21** Agree upon draft version of "Isolated, Few, Many" standard symbology for operational test by each Ice Service.  
Responsible: IBSC  
Deadline: IICWG-XVIII.  
Status: CLOSED. Harmonization will first require agreement on new symbols and color coding (per IC17-16 above). This is within the scope of IC18-1 below and will be addressed here.
- IC 18-1** Review, compare, and harmonize iceberg polygon and point classes for iceberg concentration, max length/height, and non-ice S57 attributes in SIGRID-3 and Ice Objectives Catalogue. Include symbology for "Isolated, Few, Many". Agree on proposals and submit to ETSI.  
Lead: M. Hicks  
POCs: IBSC  
Due Date: IICWG XIX  
Status: OPEN. The group briefly discussed the idea of collecting all iceberg related fields within SIGRID-3 in one location within the SIGRID-3 reference. All agreed that this would be helpful but we should avoid listing iceberg field descriptions in different locations to facilitate future revisions. Also, it is important for iceberg products to accommodate sea ice visualization. UPDATE: This will be a key agenda item to discuss after NAIS meeting in New London and during IBSC time in Helsinki.
- IC 18-2** Review, compare, and harmonize new symbols and color coding contained within Sea Ice Nomenclature I and III, Color Code Standard, and S-411 for the areas and boundaries of iceberg shape, size, number, and concentration. Agree on proposals and submit to ETSI.  
Lead: K. Serumgard  
POCs: IBSC  
Due Date: IICWG XIX  
Status: OPEN. Action item addresses how to portray areas of icebergs (not points). Consider need and propose symbology for "Unknown but Estimated". UPDATE: This will be a key agenda item to discuss after NAIS meeting in New London and during IBSC time in Helsinki.
- IC 18-3** Share results from Glacial Ice Hazards Workshop (Oct 2017) on development of a North Atlantic iceberg limit and iceberg distribution climatology.  
Lead: M. Hicks  
POCs: K. Qvistgard  
Due Date: Update status at IICWG XIX



# ICEBERG STANDING COMMITTEE

## ACTION ITEMS STATUS

Last Updated 20 October 2018

Status: OPEN. UPDATE: Significant work at CIS and IIP in developing iceberg distribution and iceberg limit climatologies. Will focus on the 30-year climatological period from 1991-2020 to be consistent with CIS sea ice climatology. DMI also working on updating Greenland climatology with Sentinel-1 data.

IC 18-4 Develop a prototype product showing the Iceberg Limit for the Atlantic sector of the southern ocean (~Weddell Sea). Eastern extent TBD (METAREA VI, 0 Lon, 20E?).  
Lead: A. Scardilli  
POCs: C. Readinger, IIP  
Due Date: Prototype by July 30th. Written document by IICWG 2018.  
Status: OPEN. Subject to analyst time. UPDATE: Though Argentina has been working on configuring a new product, this will not be available for IICWG 2018. A. Scardilli noted that the launch of Argentine's SAOCOM 1a and 1b L-Band SAR satellites should be a significant source for data for creating this type product. C. Readinger recommended that A. Scardilli take lead on this action item.

IC 18-5 Investigate the possibility of using "Machine Learning" as a way to exploit Big Data for iceberg detection using SAR imagery.  
Lead: M. Hicks  
POCs: IBSC, G. Wachira  
Due Date: IICWG XIX  
Status: CLOSED. IIP has made significant progress on this item by teaming with a group from NASA JPL to build a proto-type machine learning tool. Funding is required for continued development, validation and transition to operations. M. Hicks will present an update at IICWG 2018.

IC 18-6 Investigate the possibility of using VHF Data Exchange System (VDES) for sending IIP Iceberg Limit.  
Lead: IIP  
POCs: J. Carson-Jackson  
Due Date: IICWG XIX  
Status: OPEN. Might represent a simple operational demo to move toward getting our ice information out onto ECDIS. No developments on this item.

IC 18-7 Review Tabled IAW 5 Recommendations.  
Lead: M. Hicks  
POCs: IBSC  
Due Date: February 2018



# ICEBERG STANDING COMMITTEE ACTION ITEMS STATUS

Last Updated 20 October 2018

Status: OPEN. M. Hicks circulated Tabled Recommendations for consideration. IBSC will adopt similar approach as DICSSC committee.