Iceberg Monitoring Within the North American Ice Service

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20 June 2011

Photo by Dennis Flynn (2008)
Outline

I. Mission overview
   - International Ice Patrol
   - North American Ice Service

II. Mission execution
   - Reconnaissance
   - Products

III. NAIS Initiatives
   - Future Customer Needs
   - Future Area of Responsibility
   - Future of Mission Execution
Mission History
Do Modern Ships Hit Icebergs?

6.17.2004
International Ice Patrol Mission: monitor iceberg danger near the Grand Banks of Newfoundland and provide the iceberg limit to the maritime community.
North American Ice Service Mission: transform individual organizational strengths into a unified source of ice information and meet all marine ice information needs and obligations of the U.S. and Canadian governments.
Area of Responsibility
Interannual Variability

Note
• Average = ~500
• Several periods of light seasons

Number of Icebergs South of 48N (1970-2009)
Mission Execution
Aerial Reconnaissance

Visual
Ice Observers

Radar
ELTA-2022 & APN-241
Other Sources

- **Aerial**
  - Canadian Ice Service
  - Oil & gas industry

- **Surface**
  - Canadian Coast Guard
  - Mariners
Space-Borne Reconnaissance

- **Challenges:**
  - Access
  - Cost
  - Coverage
  - Discrimination
  - Resolution

- **IIP/CIS studies in 2011**

- **NAIS evaluation in 2011**
  - Radarsat-2 - C-CORE
  - TerraSar X - NIC
  - Underflight - IIP
Operations Center

- Process iceberg reports
- Process environmental data
- Run iceberg model
- Set iceberg limit & create products
- Distribute product to mariners

Winds, Waves, SSTs, Currents
CQ CQ DE NIK IM

IIP IS NOW ACTIVELY MONITORING IN THE NORTHWEST ATLANTIC BUT IS NOT ISSUING DAILY CHARTS AT THIS TIME.

DAILY UPDATES OF THE LIMIT OF ICE AND ICE INFORMATION FOR CANADA CAN BE OBTAINED FROM THE CANADIAN ICE SERVICE AT WW.

WEEKLY UPDATES WILL CONTINUE SCHEDULED UPDATE IS ON 21 MAY.

NORTH AMERICAN ICE SERVICE
SERVICE DES GLACES DE L'AMÉRIQUE DU NORD

ICEBERG LIMIT / LIMITE DES ICEBERGS
SEA ICE LIMIT / LIMITE DES GLACES
ICEBERGS PER DEGREE SQUARE / ICEBERGS PAR DEGRÉ CARRE
RADAR TARGET OUTSIDE ICEBERG LIMIT / CIBLE RADAR À L'EXTERIEUR DE LA LIMITE DES ICEBERGS

ICEBERG ANALYSIS / ANALYSE D'ICEBERGS FOR / POUR 1200 UTC

01 JUN / JUN 2011

NOTE / NOTER:
SIGNIFICANT REDUCTION OF ICEBERG LIMIT
REDUCTION SIGNIFICATIVE DE LA LIMITE DES ICEBERGS

NOTE: EMPTY SQUARES INSIDE THE ICEBERG LIMIT MAY CONTAIN GROWLERS OR BERGY BITS.
NOTE: LES CARRES VIDES À L'INTÉRIEUR DE LA LIMITE DES ICEBERGS PEUVENT CONTENIR DES FRAGMENTS D'ICEBERG OU DES BOURGUIGNONS.
Customer Behavior

www.sailwx.info

Iceberg Limit

Detroit de Subat
Hamilton Sound
Pitt Sound Reach
Smith Sound
The Narrows
22-Mar
28-Mar
29-Mar
1800
1800
1800
1800
0000

0 61 122 183 244 mi

-50 00
-40 00
50 00
45 00
50 00
45 00
NAIS Initiatives

2011:

• Harmonized iceberg chart
• Started operational evaluation of NAIS iceberg model
• Satellite studies (IIP/CIS)
• Satellite operational evaluation

2012+:

• Develop NAIS reconnaissance strategy
• Iceberg Analysis and Prediction System replacement
• Continue operational evaluations (model, satellite)
• Harmonize iceberg text products, develop ECDIS product
Future Customer Needs?

Transatlantic Mariners: Iceberg Limit with density remains sufficient

Subpolar Mariners: Iceberg Limit with density sufficient or will individual iceberg positions be desired/feasible?
Future Area of Responsibility?
Future of Mission Execution?

**Immediate Future (2012)**
Incorporate HC-144A (with HC-130J) for IIP reconnaissance

**Near Future (2013-2015)**
Incorporate commercial reconnaissance for IIP reconnaissance
Incorporate satellite and other data sources

**Eventual Future (~2020+)/**
Rely primarily on satellite and other data sources
(such as AIS, ELINT, LRIT, NAFO, VMS)
Summary

• Icebergs remain a danger to mariners within the NAIS area of responsibility

• The iceberg population south of 48N has historically exhibited significant interannual variability that is expected to continue

• NAIS customer needs may require more detailed information and/or an expanded area of responsibility in the future

• NAIS mission execution will depend on funding, resources, and evolving technology

• Moving to satellite and other data sources requires development of infrastructure and expertise for required data fusion
Questions?