

# Navigating in Iceberg Infested Waters (past – present – future)



CDR Scott Rogerson  
USCG International Ice Patrol  
North American Ice Service  
October 2009





# Navigating in Iceberg Infested Waters



'Deutschland' sails between large icebergs at mouth of Ilulissat ice fjord in August 2009

(<http://sermitsiaq.gl/indland/article99154.ece?lang=EN#>)



# North American Ice Service



**Denise Kruse**  
**Commanding Officer**  
**NIC**



**Scott Rogerson**  
**Commander**  
**IIP**



**Doug Bancroft**  
**Director**  
**CIS**



# Outline

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- Mission & History of International Ice Patrol
- Iceberg Collisions thru the Years
- Detection of Icebergs from Space
- Concerns & Suggestions for the Future





# USCG International Ice Patrol



Photo by Dennis Flynn (2008)

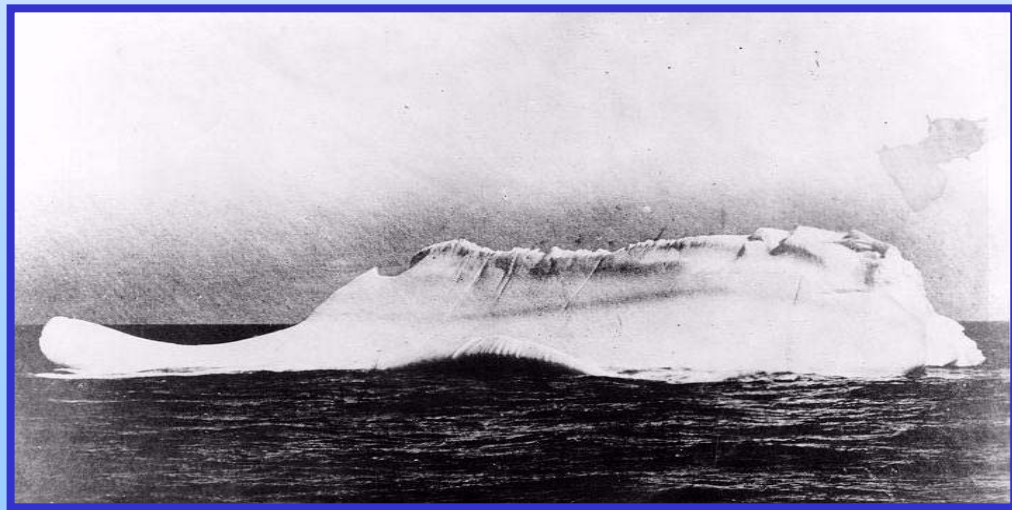
**Mission:** Monitor iceberg danger near Grand Banks of Newfoundland and provide limit of all known ice to maritime community

**Vision:** Eliminate the risk of iceberg collision

**Core Values:** Partnerships, Improvement, Commitment

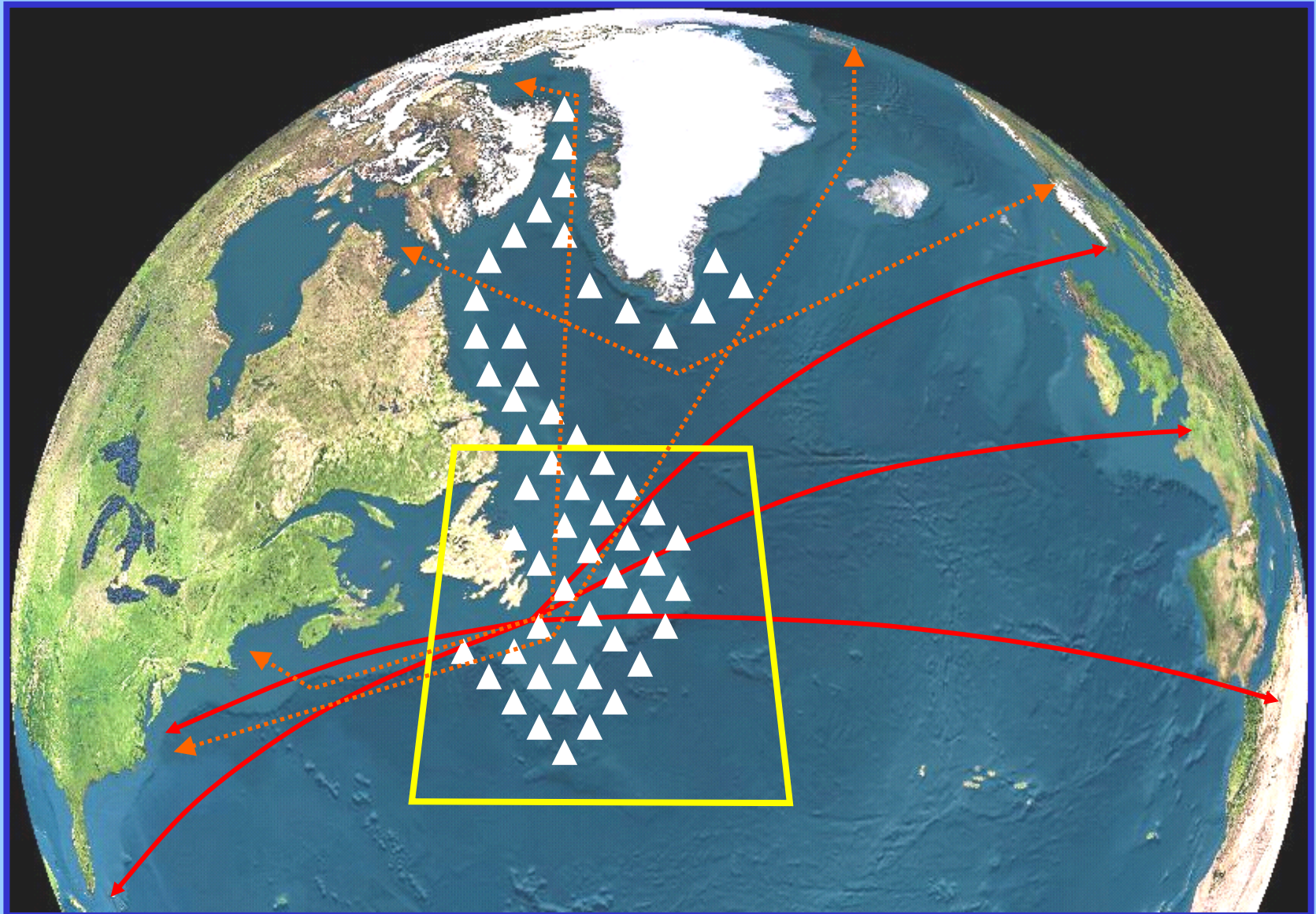


# R.M.S. Titanic (1912)



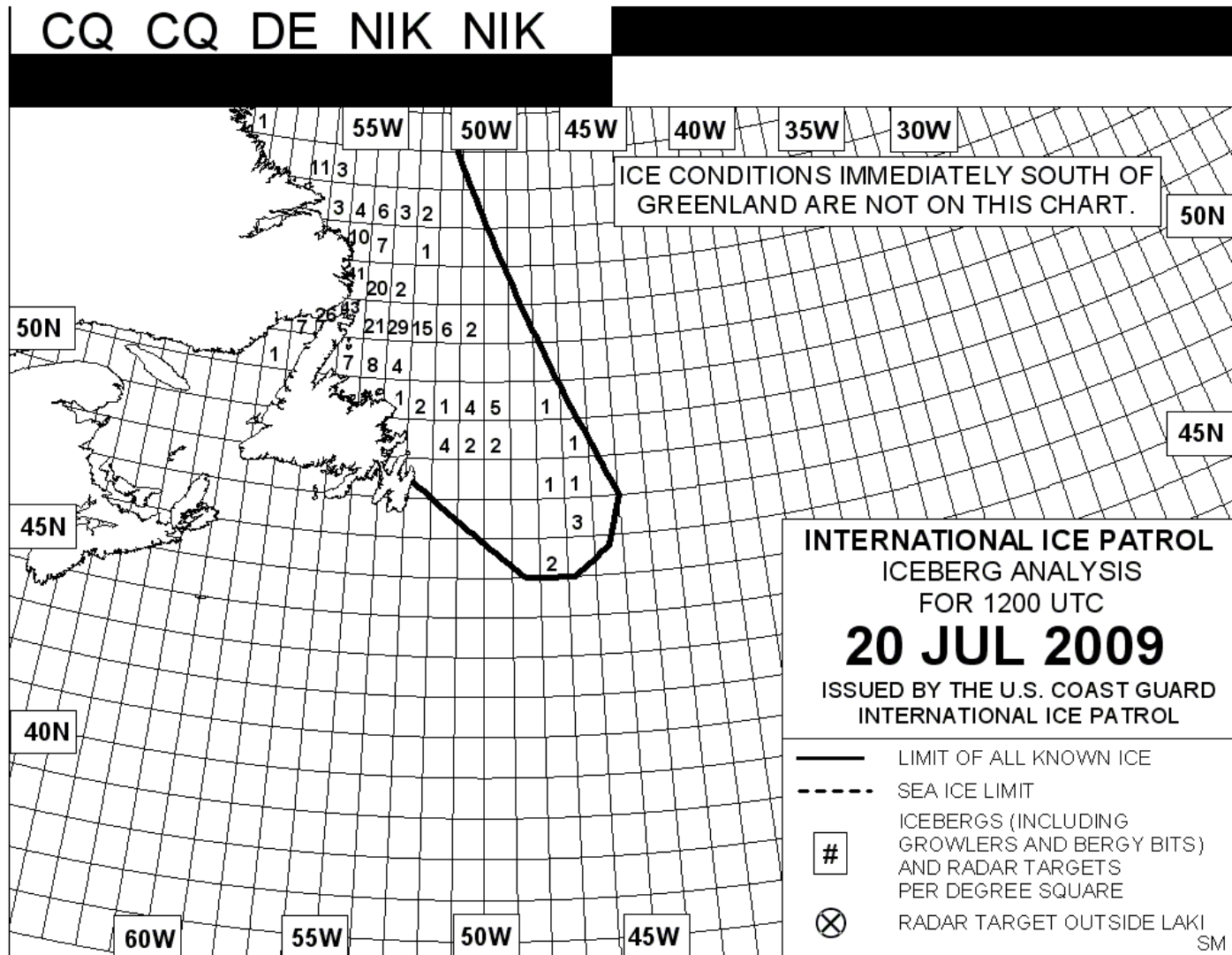


**IIP's Core Purpose: Promote safe navigation in northwest Atlantic Ocean when danger of iceberg collision exists**





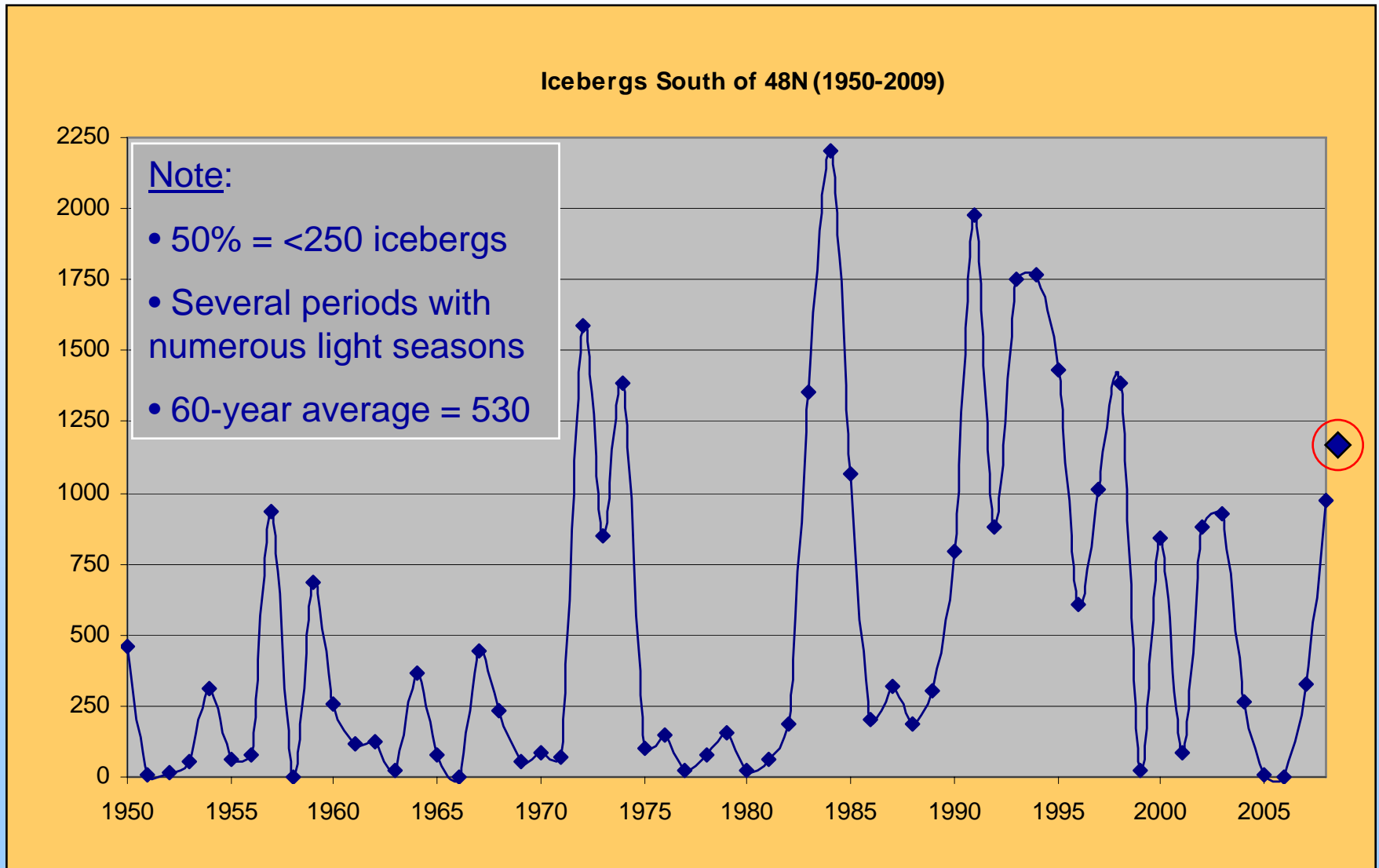
# Summary of 2009 Iceberg Season





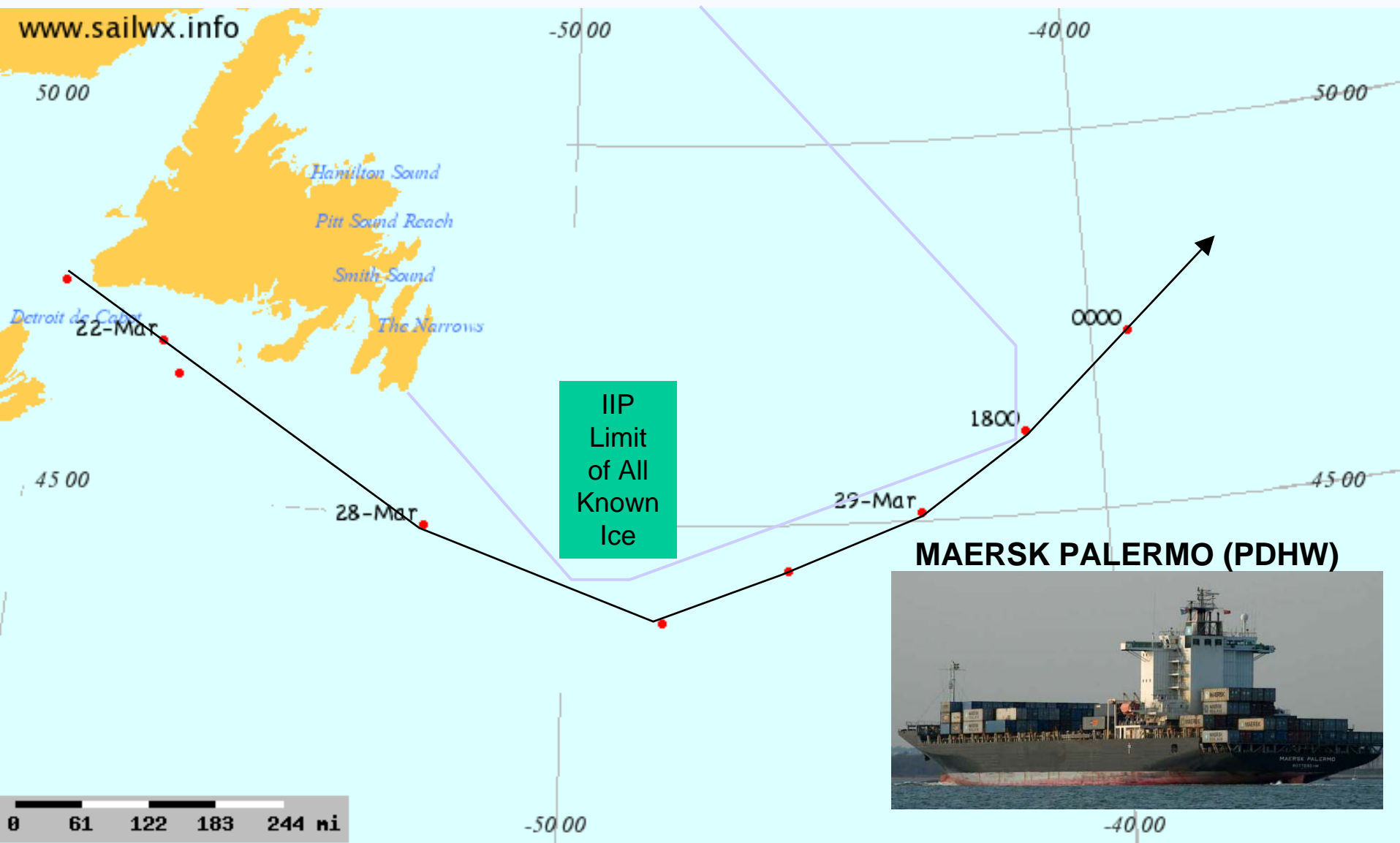


# Iceberg Threat (since 1950)





# Optimal Customer Behavior

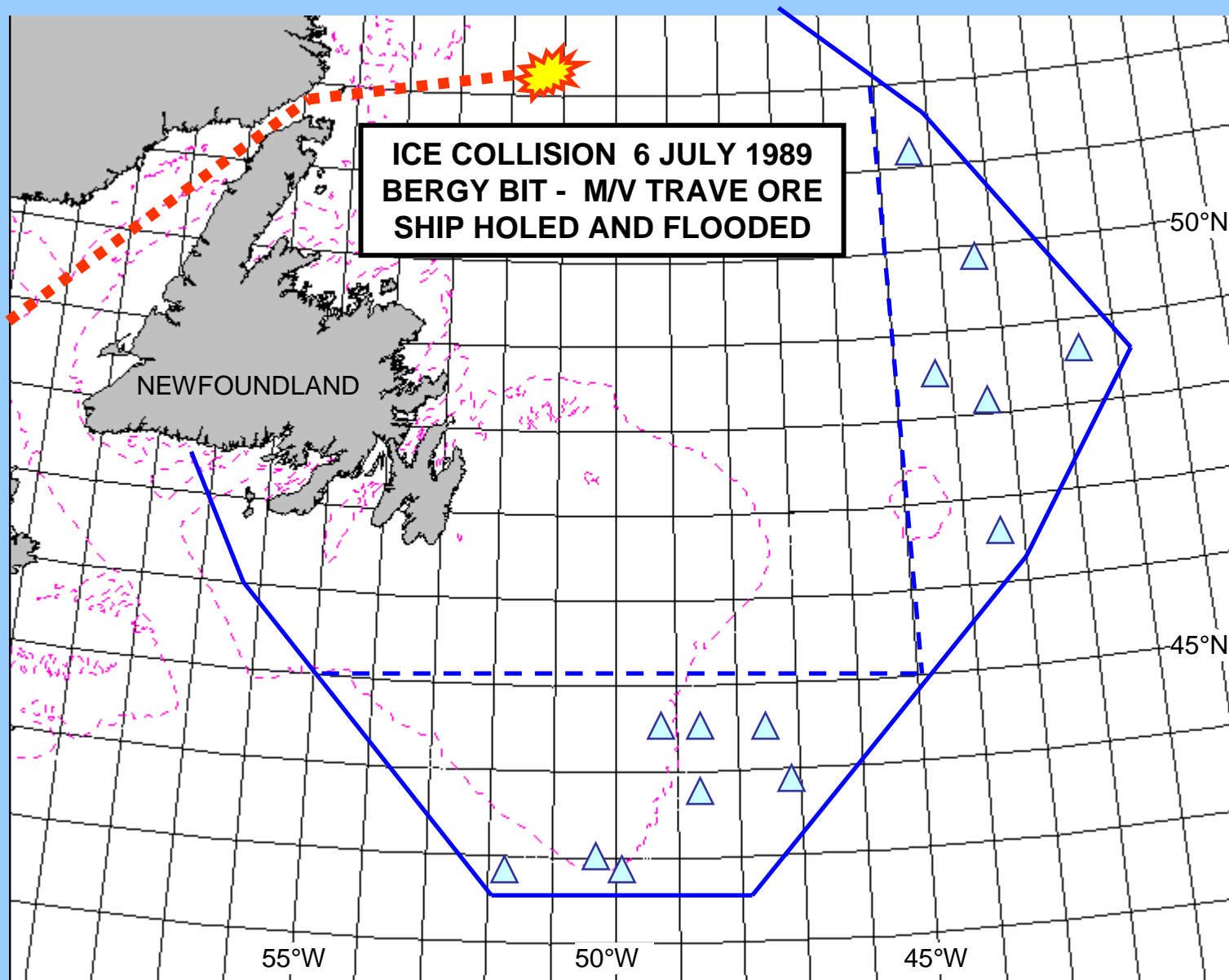




# M/V TRAVE ORE



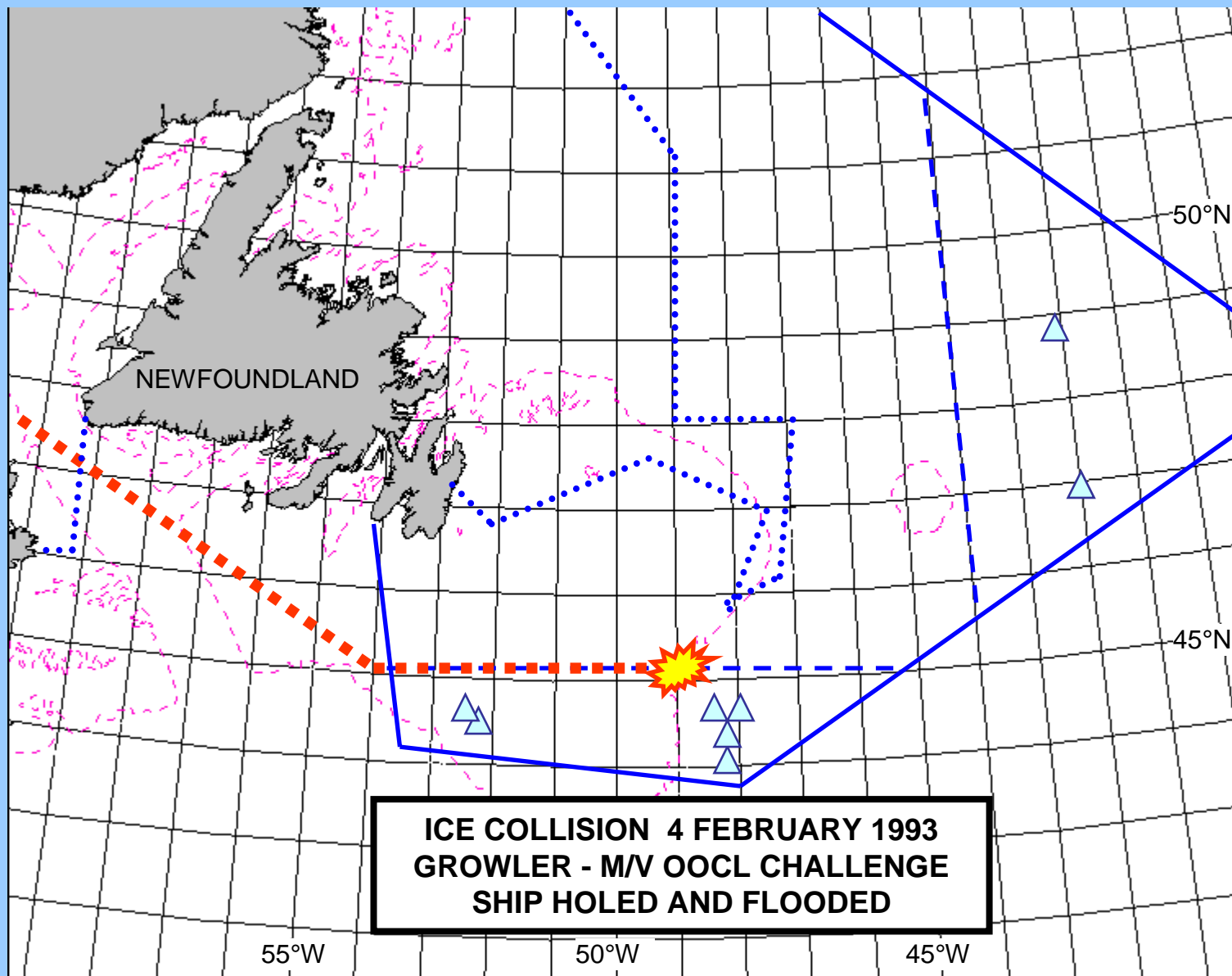






# M/V OOCL CHALLENGE



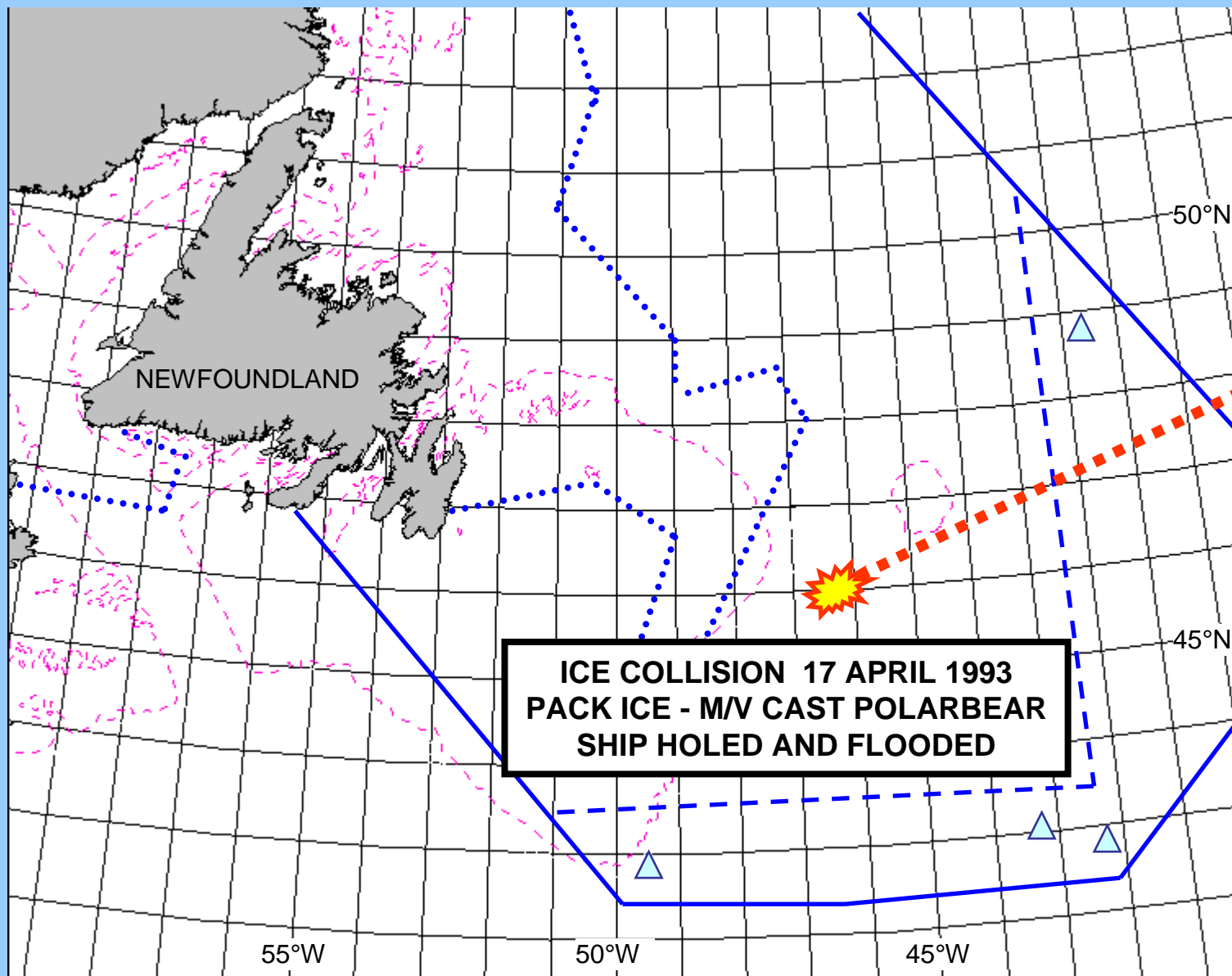






# M/V CAST POLARBEAR



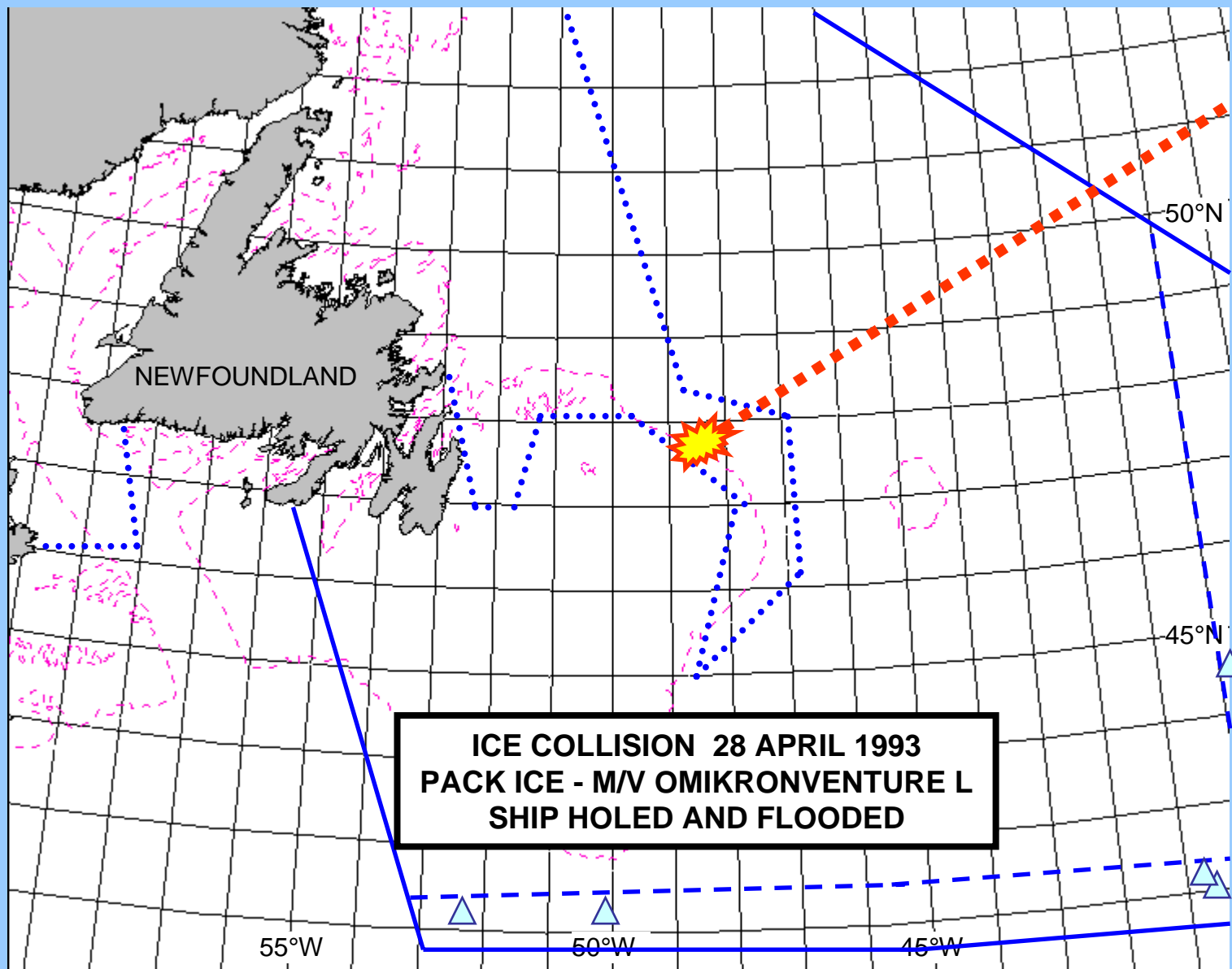




# M/V OMIKRONVENTURE L









# Common Factors

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- Voyages through known ice concentrations
- High speed in reduced visibility
- No additional bridge personnel or other precautions
- Poor use of radar equipment
- Inadequate use of ice bulletins and other environmental information available

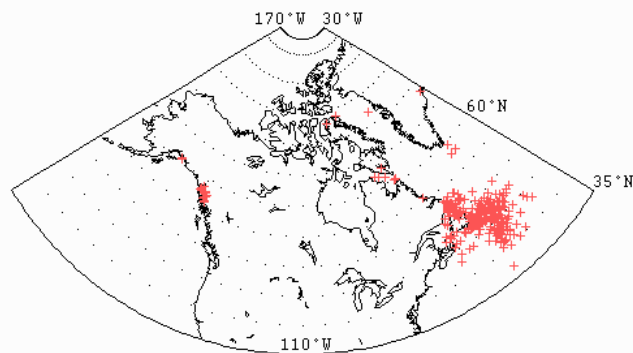


# Historical Perspective



Since 1800 over 600 accidents have occurred with ships colliding with icebergs in the northern hemisphere, mostly on the Grand Banks of Newfoundland but with several further afield in the northern waters of Labrador and the Canadian Arctic, and also in the waters off Alaska.

In short, where there are icebergs & ships, the two have collided.



Geographic distribution of 360 known locations of iceberg incidents over the last 200 years

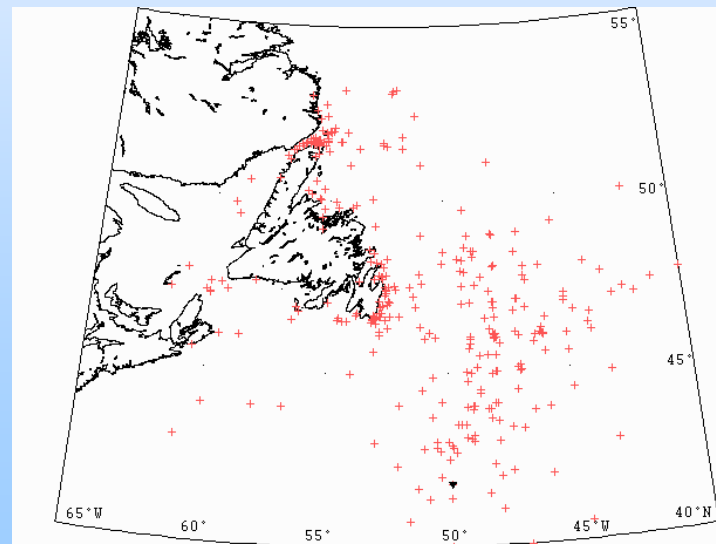


Chart of the approximately 300 known locations of iceberg collisions off Newfoundland over the last 200 years with the Titanic location marked as a triangle.





# Do Modern Ships Hit Icebergs?



Yes!

(Even with today's  
technology)

6.17.2004

# Harsh Marine Environment





# ENVISAT 30m Resolution

*Courtesy of C-CORE*  
© ESA

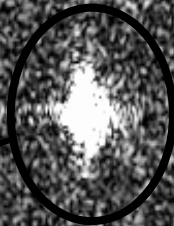
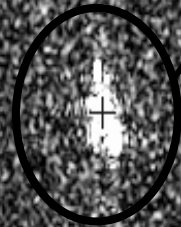
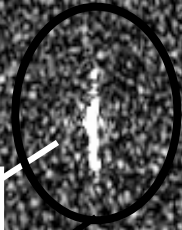


HV



# ENVISAT 30m Resolution

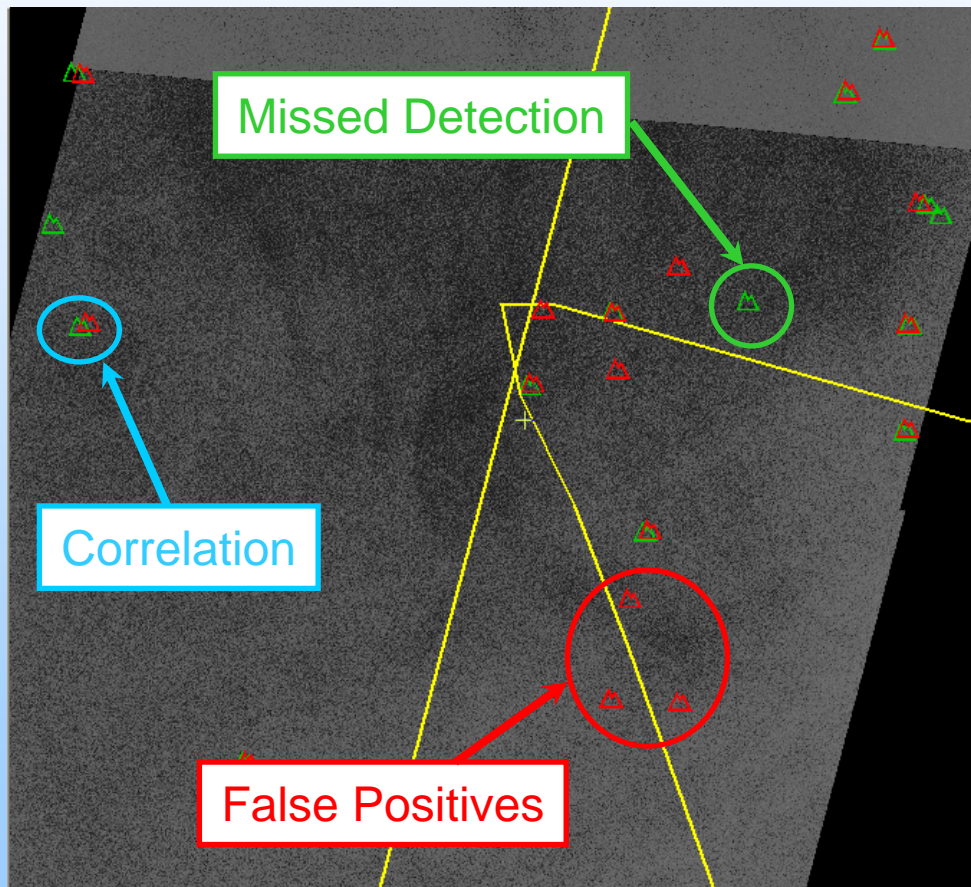
*Courtesy of C-CORE*  
© ESA







# Iceberg Correlation Study (2007)



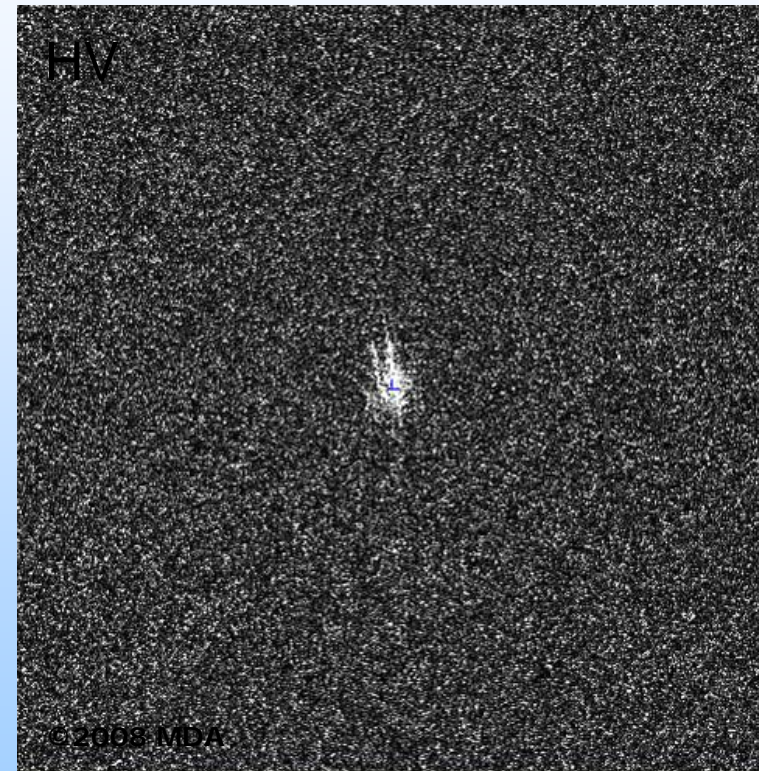
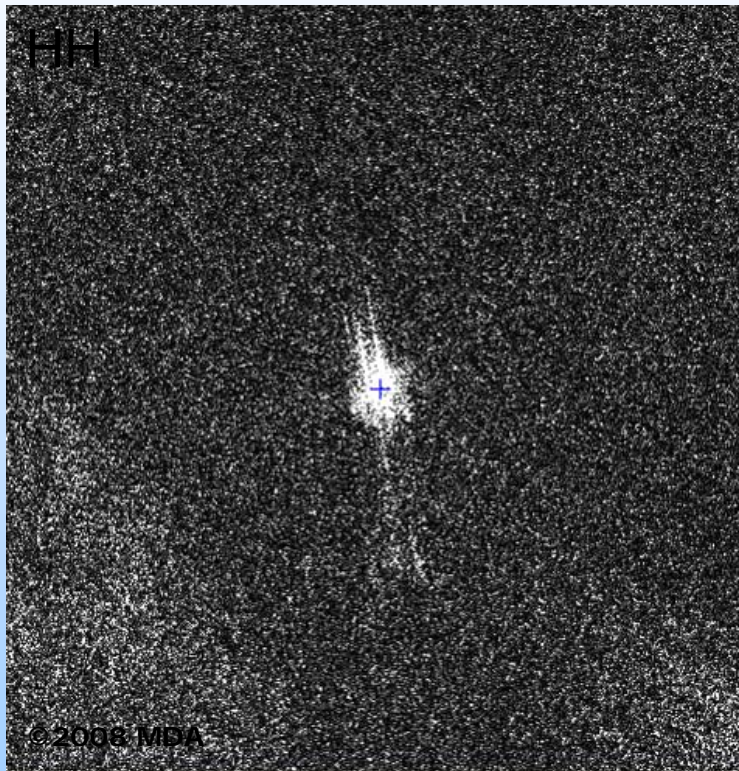
- 134 correlated icebergs
- Data collected in regions with low ship density



# Sample Iceberg in RSAT-2 Data



© MDA



Target features visually apparent – improved discrimination expected





# Concerns



- Ships don't always desire to avoid ice
  - Some must navigate near icebergs
  - Some seek out ice (e.g., EXPLORER)
- “Limit of All Known Ice” doesn't work north of Grand Banks of Newfoundland
  - Greater population of icebergs year-round
  - Ship traffic thru region (vice around)
- Aerial reconnaissance (alone) won't work
  - Space-borne reconnaissance will be critical



# Suggestions



- More satellites with better coverage & resolution, with imagery available to ice services responsible for safety of navigation
- Ability to overlay iceberg (& sea ice information) on shipboard navigation systems, including imagery & products from ice services
- Revamp current (antiquated) SOLAS regulations regarding North Atlantic Ice Patrol – possibly opting to replace defunct reimbursement process with cooperative agreement regarding satellite imagery (e.g., USCG IIP executes NAIP; various space agencies provide imagery)



# Key Strategic Challenges



- Changing Customer Needs
- Future Aerial Reconnaissance Options
- Space-Borne Remote Sensing Systems
- Mission Review (USCG/IMO)
- BAPS Replacement
- Public Affairs – especially in 2012



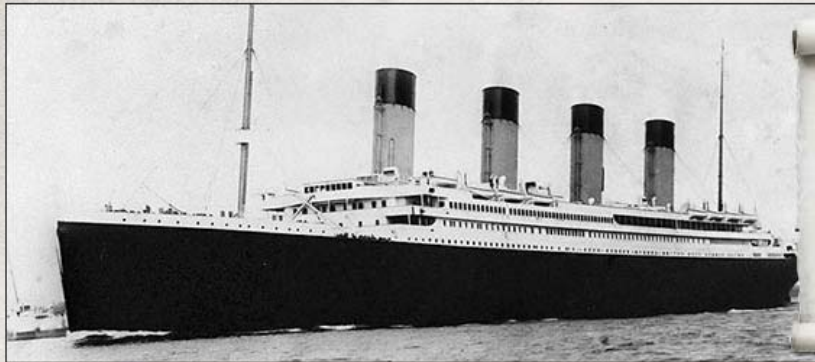




# Coming in 2012...

## Titanic Memorial Cruise

### 100th Anniversary Voyage to Set Sail 2012



This unique cruise  
is being operated by  
Miles Morgan  
Travel in  
association with  
Fred. Olsen Cruise  
Lines, one of  
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### Reserve your place in history Bookings now being accepted

British travel firm Miles Morgan Travel are now accepting bookings for a unique cruise that will commemorate the Titanic's tragic voyage in April 1912.

Our voyage of a lifetime will sail from Southampton on 8th April 2012 the twelve night cruise on board the MS Balmoral and will follow the RMS Titanic's original itinerary, passing by Cherbourg on the French coast before calling into the Irish port of Cobh.



From here the ship will sail across the Atlantic, arriving at the Titanic site on April 14th/15th exactly 100 years on from this tragic voyage, where a memorial service will be held to pay tribute to the brave passengers and crew who perished on that fateful night.



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# Questions / Discussion



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