Polar View

# Global Sea Ice Monitoring

# User Feebacks

Georg Heygster, University of Bremen

Polar View Progress Meeting 6,
ESRIN, April 16-18, 2008

esa

CSA ASC

Universität Bremen



# Global Sea Ice Monitoring

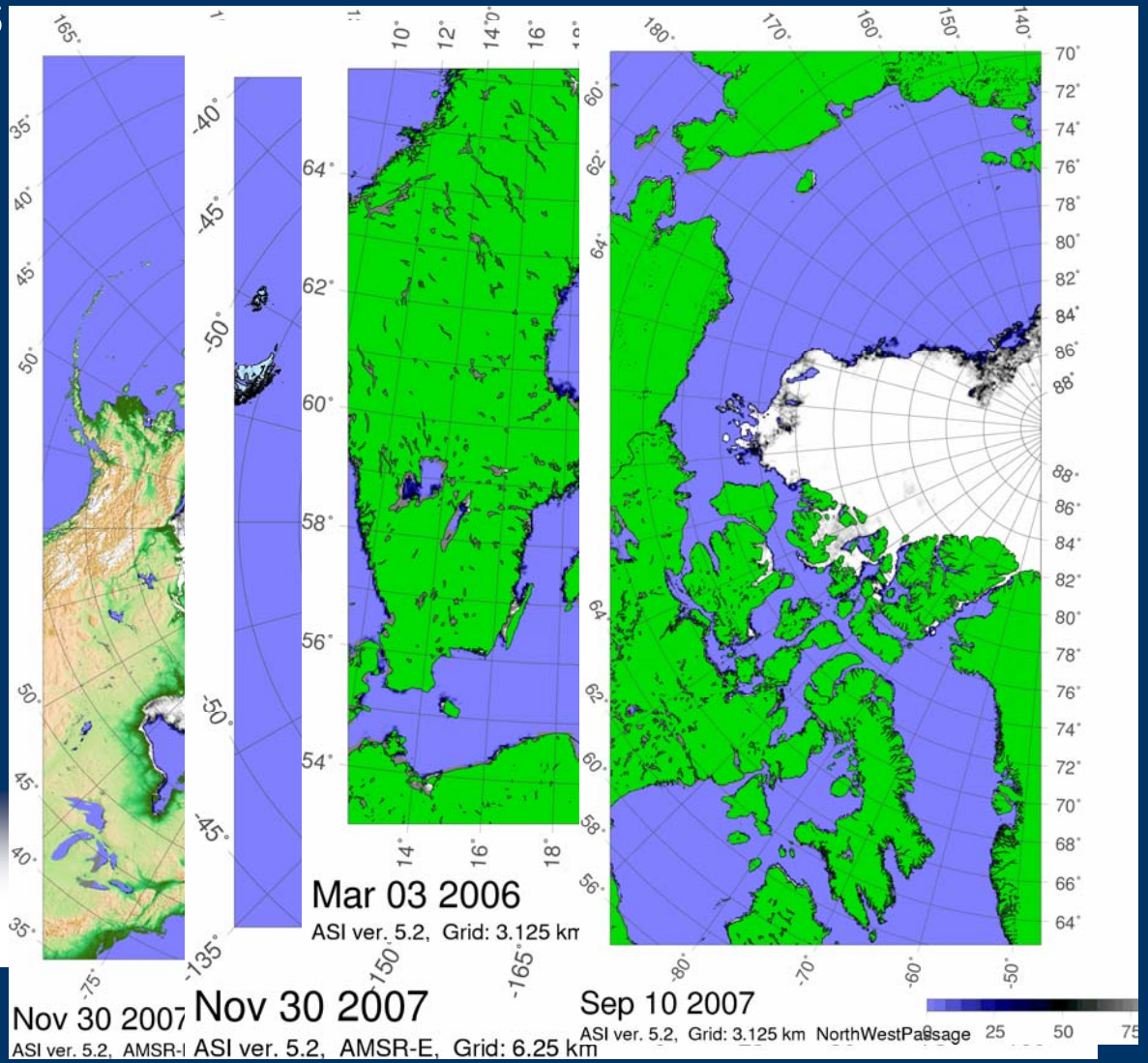
- Daily global (6 km grid) and regional (3 km grid) sea ice maps based on data of passive microwave sensors AMSR-E and SSM/I
- Higest resolved sea ice maps which are daily and globally available
- Global backbone service for low frequented water



# Global Sea Ice Monitoring (2)

Daily

- Arctic and Antarctic maps
- 20 regional maps

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# User Feedbacks

- BSH, met.no and SMHI: maps used for operational analysis of ice situation
- Met.no, BAS, SMHI reporting separately, skipped here
- BSH uses specifically the Baltic ice maps, other maps in cases of specific consulting requests
- Policy of free data access → little user feedback
- Visitor's book temporarily closed because of spamming



# 2 Types of feedback

I. Individual user feedback
II. Web access statistics



# I. Individual user feedback

- March 7, message put on web page:

**We need your help: In order to keep this service free of charge in future, we need user feedback to demonstrate its usefulness. Please send your feeback to heygster[AT]uni-bremen.de:**

**....**

**Interested users are invited to attend the Polar View workshop held April 15-17 at ESA-ESRIN, Italy. Please contact Georg Heygster..**



# Individual User Feedback

- 7 feebacks from **single users**
- 2 feedbacks from **professional users**
  - Joerg Nobis, Fleet manager, Hapag-Lloyd, Hamburg
  - Aidan Byrne, Dean, College of Science AN, Canberra Australia
- 4 **more detailed** feedbacks
- 4 feedbacks from users with **SLA**

  BSH,
  Ifremer
  Reporting separately; met.no, SMHI, BAS

- All feedbacks collected in report



# More Detailed Feedbacks

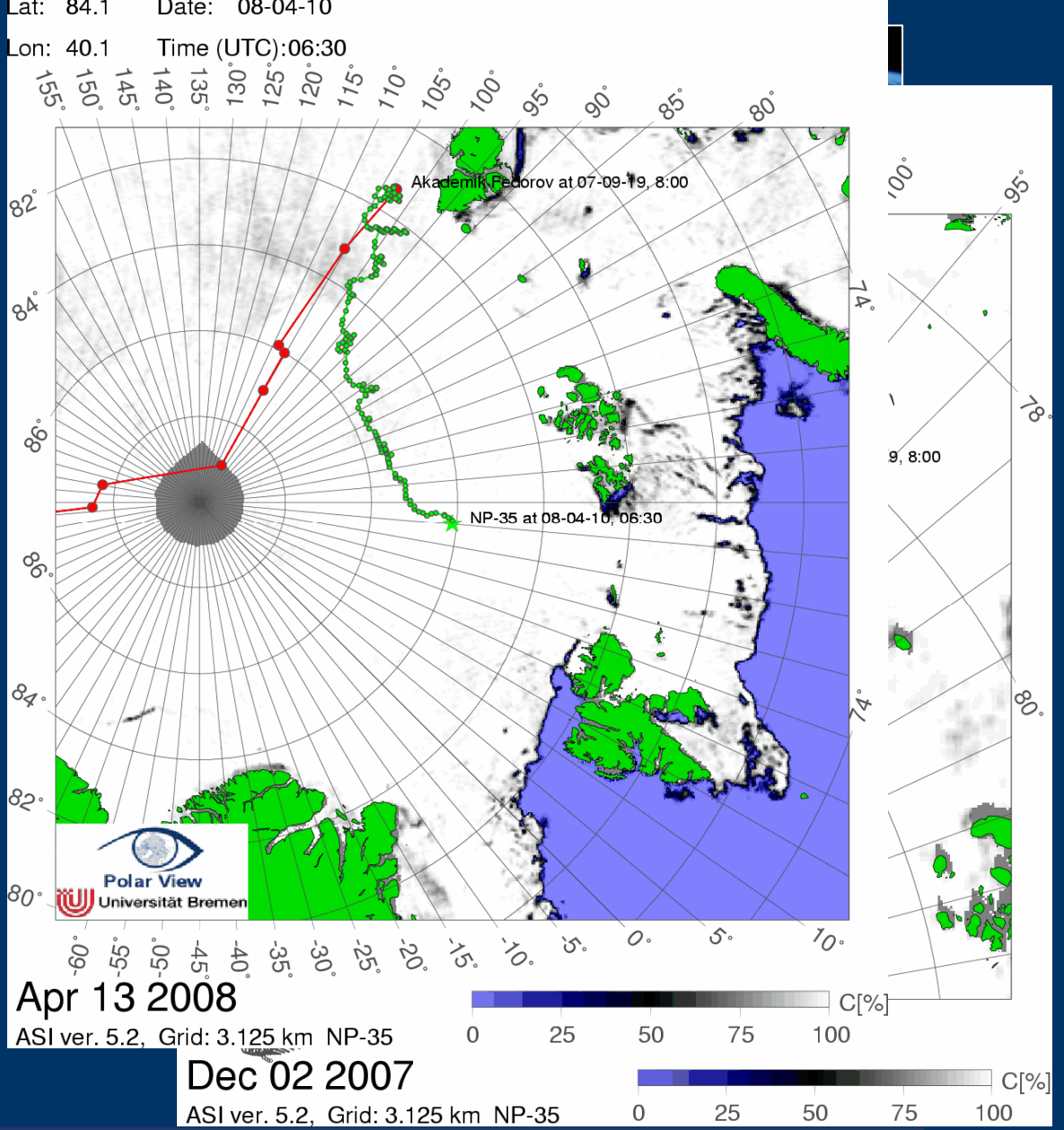
1. AWI / NP-35

maps used to support AWI part of the current russian AARI North Pole Drifting Station (NP-35) project

- During search of an appropriate ice floe,
- During the first weeks of the drifting station: information about distance to the ice edge
- Whole campaign: sea ice data from the whole Arctic region are obtained daily, automatically, published on 2 web pages

- sea-ice/position plots were shown on german TV (3Sat, nano) reporting about this project.

# NP-35 maps




Target tracking, here NP-35

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# More Detailed Feedbacks

## 2. Karl Newyear, Raytheon Polar Services Company

- US Antarctic Program supporting two research vessels operating year-round in the Antarctic
- Routinely refers to the ASI data for general overview of expected and historic ice conditions
- Sending small cropped (~50kb) versions of the area of interest via email to the ships.

'Last week one of our vessels was transiting northward out of the Ross Sea and wanted to pick the path of least ice coverage. The ASI data available on the web provided higher-resolution data than was otherwise available and helped them determine that a trackline to the east of a straight point-to-point path. New track quicker and easier.'



# More Detailed Feedbacks

## 3. John Mitchell on NIWA vessel Tangaroa (NZ)

Since 50 days in the Ross Sea, Antarctica, conducting biological research for the NZ IPY-CAML survey. AMSR-E images images were very useful in our assessment of what areas in the Ross Sea were potentially available for us to work in. Looking at the trends from day to day helped make serious logistical decisions.

Although Polarview AMSR-E analysis showed trends well it was overly optimistic in the representation of the ice cover, showing far greater area clear of ice than reality, but still very useful.

The imagery we found the most useful for planning was the Polarview EnviSat imagery released every few days. Being realtime visual imagery we found it extremely useful in both day to day operations and longer term planning. By georeferencing it in ArcInfo and overlaying bathymetry and our planned stations we were able to see what areas to avoid, what areas to work in and when to move on.

This year the EnviSat data made the difference between an average success and a very successful research voyage.

# More Detailed Feedbacks



## 4. Frank-Oliver Nitsche, Lamont-Doherty Earth Observatory of Columbia University

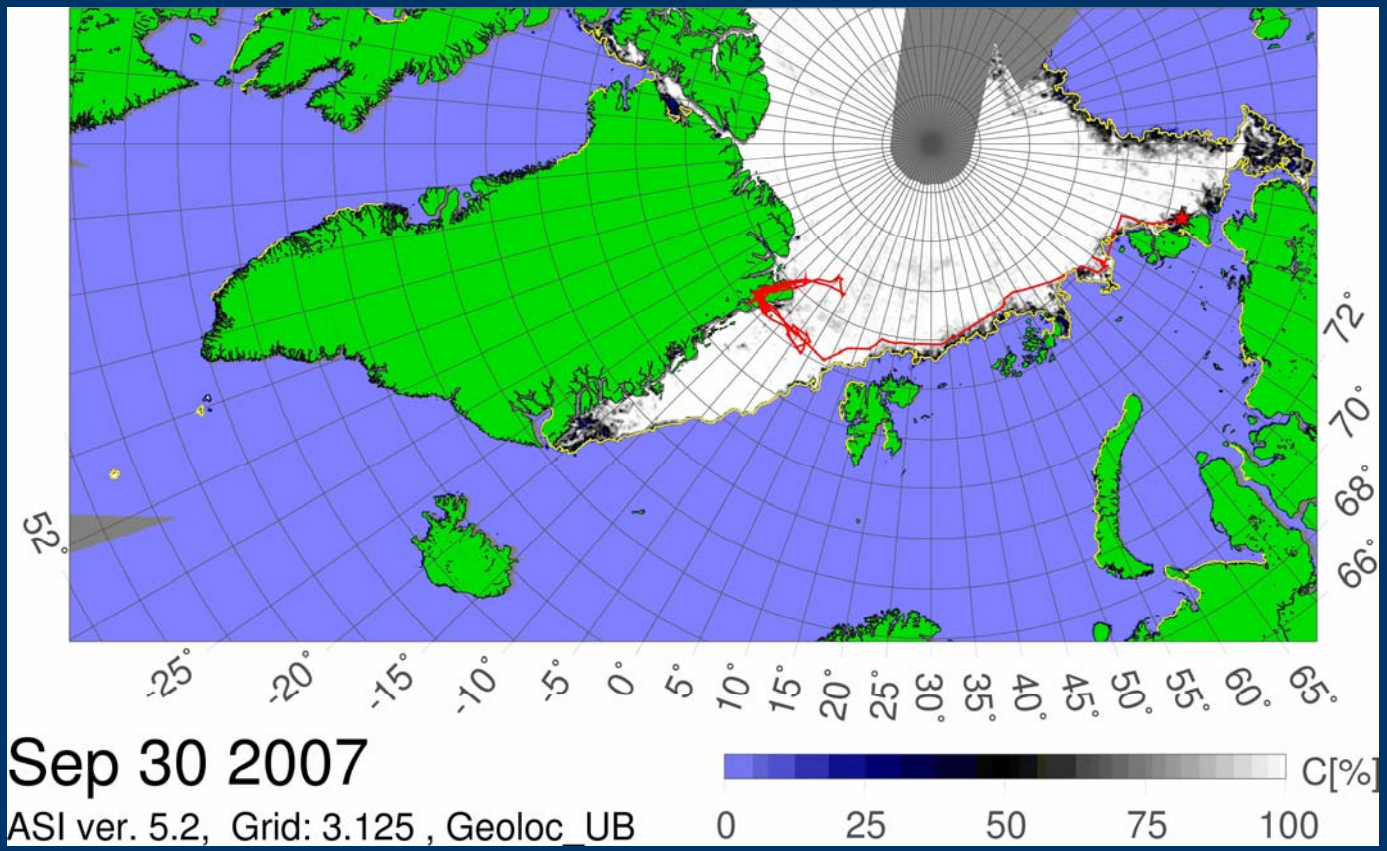
Marine expeditions along West Antarctica, part of the NSF US Polar Research Program.

On last cruise 2007 routinely used UB AMRS-E data to plan our routes and next steps.
Geotiff images downloaded, cropped , included in ArcMap , sent to ship.
Overlay with our track, bathymetry and planned sampling stations.

'A very valuable tool to plan our activities on the research vessel.'
One of the focus sites during our cruise was the Pine Island Bay area in the Amundsen Sea. Your team in Bremen was very responsive to our request and managed to produce a couple of image with a modified coastline.
It would be great to upgrade the coastline in the standard product in future.

The setup of the website and the data products are easy and straight forward to use. It is a great tool for planning and conducting scientific cruises around Antarctica. I plan to use these products for future cruises, e.g. a planned expedition with the NB Palmer in early 2009, and I know many colleagues are using this products as well for their cruises. Having these data available improves our ability to make critical decisions during the scientific expeditions in these ice covered areas.

# Ivory Gulls (O. Gilg)




(See separate animation)

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# II. Web access statistics

- Regularly over 1000 users

  - SLAs with
    - BSH, Germany
    - BAS, UK
    - IFREMER, France
    - met.no. Norway
    - SMHI, Sweden (SLA in preparation)

- Usage of data rather constant since last Polar View meeting:

| | hits | files | pages | | GB | sites |
|---|---|---|---|---|---|---|
| Nov 2007: Per day | 11716 | 9690 | 847 | Total | 56 | 10650 |
| March 2008 | 9889 | 8367 | 896 | | 74 | 17130 |

# Top 8 Users by MBytes



***March 2008: Top 50 Users by KBytes***

| # | Mbytes | | Visits | | Country | Hostname |
|---|---|---|---|---|---|---|
| ***1*** | 32,348 | 37.68% | 5441 | 16.34% | | Australian Antarctic Division **each 8 minutes** |
| ***2*** | 6,381 | 7.43% | 95 | 0.29% | US Commercial | crawl-66-249-65-99.googlebot.com |
| ***3*** | 4,138 | 4.82% | 25 | 0.08% | US Commercial | crawl-66-249-65-179.googlebot.com |
| ***4*** | 2,785 | 3.24% | 11 | 0.03% | US Commercial | crawl-66-249-65-104.googlebot.com |
| ***5*** | 1,759 | 2.05% | 82 | 0.25% | Italy | 88.213.135.59 2BITE DIALUP NETWORK A |
| ***6*** | 1,532 | 1.79% | 8 | 0.02% | US Educational | spgpix.ucsd.edu |
| ***7*** | 894 | 1.04% | 35 | 0.11% | Germany | 62.109.84.249 KG HAMBURG 1 FERNSEHE |
| ***8*** | 810 | 0.94% | 33 | 0.10% | France | pleiade.ifremer.fr |



# Ifremer feeback

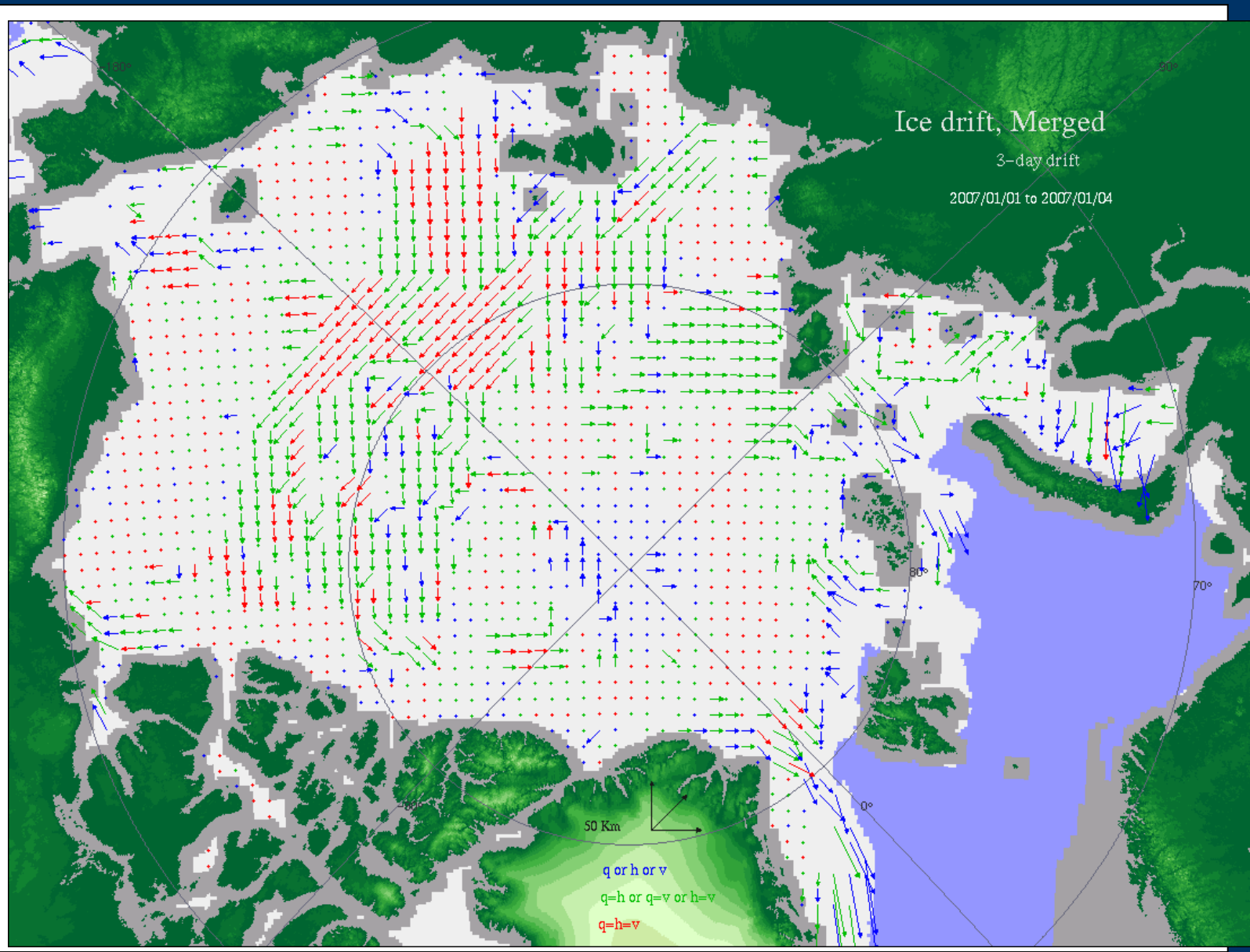
- Ifremer "basic" drift maps available at 62.5 km resolution from combination of QuikSCAT and SSM/I data):
  - 62.5 km resolution
  - 3 days lag
  - low drift can not be estimated.
- Thanks to the AMSR-E data, Ifremer can provide sea ice drift with
  - 31.25 km resolution
  - 2 day-lags,
  - showing low drift

# Ifremer feeback



QuikSCAT and SSM/I:

- Drift at 62.5 km
- 3 days lag

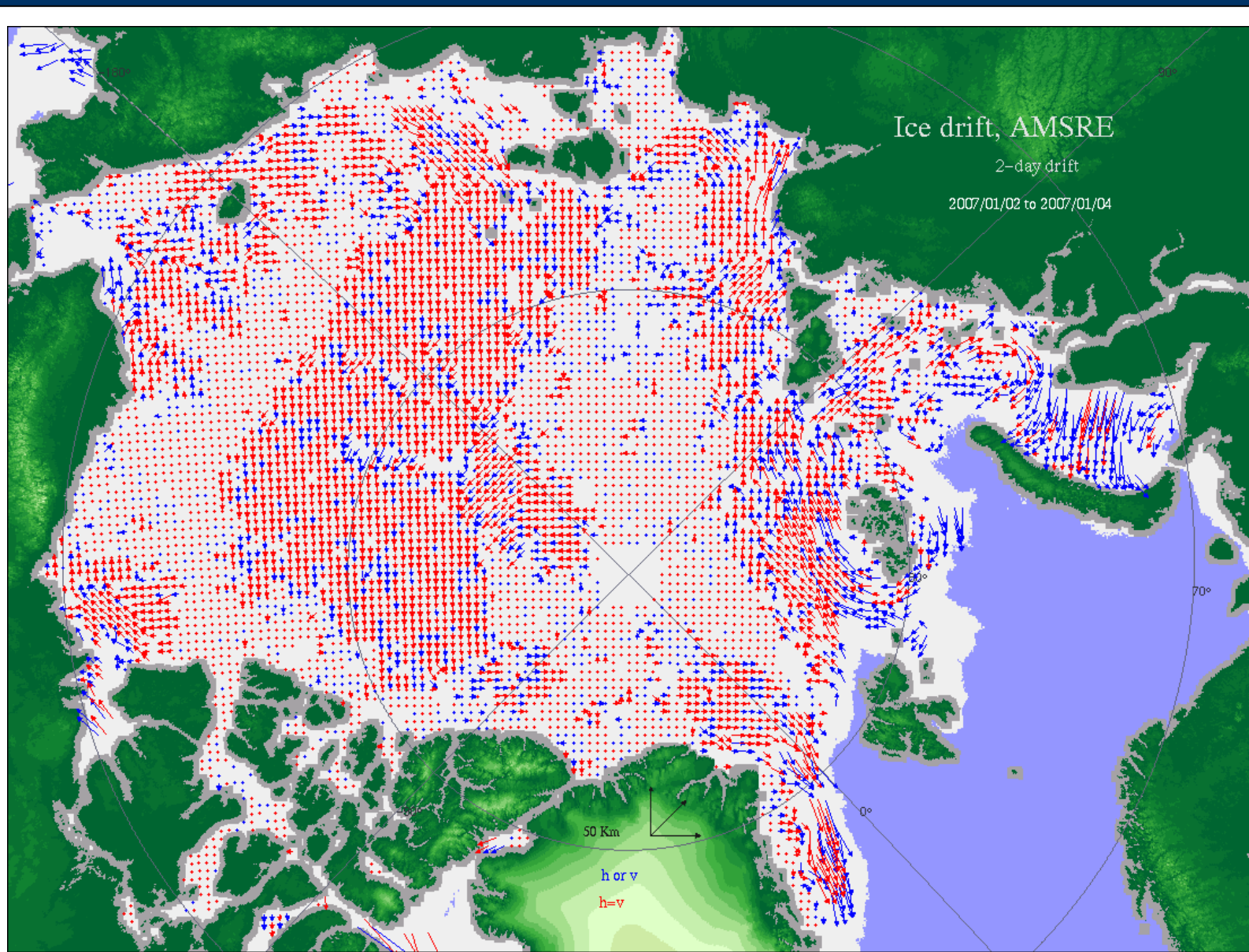


# Ifremer feeback



AMSR-E:

- Drift at 31.25 km
- 2 days lag

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# Known Users by MBytes



| # | Mbytes | | Visits | | Country | Hostname |
|---|---|---|---|---|---|---|
| 1 | 32,348 | 37.68% | 5441 | 16.34% | | Australian Antarctic Division |
| 8 | 810 | 0.94% | 33 | 0.10% | France | pleiade.ifremer.fr |
| 27 | 255 | 0.30% | 24 | 0.07% | Germany | natpool1.AWI.DE |
| 28 | 250 | 0.29% | 36 | 0.11% | Germany | dns2.bsh.de |
| 34 | 197 | 0.23% | 24 | 0.07% | Norway | 90.149.11.80 Tromsoe TELE2-ADSL-DYNA |
| 40 | 176 | 0.21% | 62 | 0.19% | Norway | vnn-fw1.met.no |

# AWI feeback

- Using AMSR/ASI data for mid-term planning (days to weeks)
- Also archived data used for long-term trip planning.

- AMSR-E data very helpful for medium and long term planning, in particular due to their daily availability because it needs to be adapted each day.

- For operational planning (hours to day) resolution not sufficient so that we still do helicopter surveys.



# BSH feeback

- AMSR data is used in the production of Baltic ice charts in case of cloud cover,
- The data is loaded into the GIS application used for the production of the maps and the data subjectively used to draw ice extent.

- AMSR data also used in both polar regions for the occasional assistance for shipping, questions of general public interest, etc. Around Antarctica the AMSR data is used in the process of issuing permit for ships to operate in Antarctic water. In the permits there is also made a reference to the availability of the AMSR data, so that ships operating in Antarctica can make use of them and so make shipping safer, mostly around the Antarctic Peninsula.



# Impacts

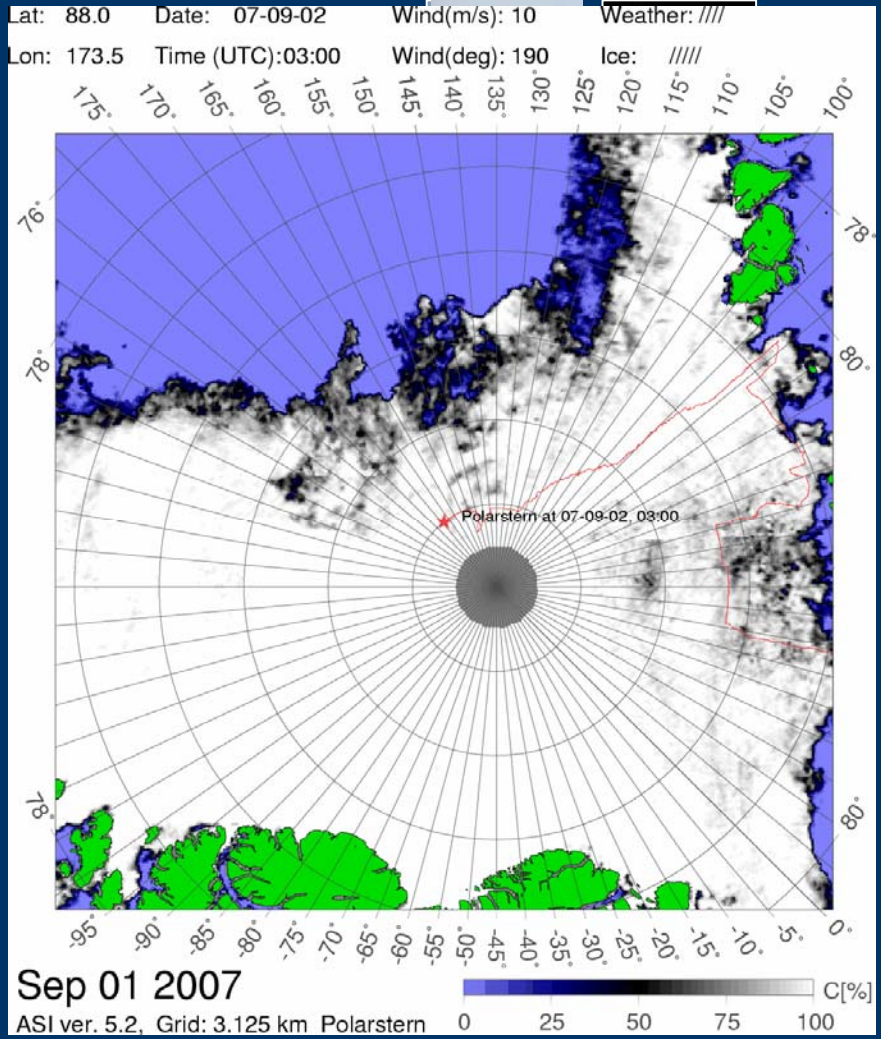
- User groups/communities of practice
  - IPY projects, e.g. DAMOCLES
  - Moving sites: Polarstern, NP-35
  - IPY Ice Logistics Portal www.ipy-ice-portal.org

- Education/awareness/outreach (e.g. IPY activities)
  - TV interviews in German main news emissions: Tagesschau (Sep. 15, 2007), Heute (March 1, 2007)
  - Presentation in school class room
  - UB press release Sep. 19, 2007

# Sustainability

- Elements of sustainability
  - Continous user consulting
  - Support of scientific expeditions & data analysis
  - Operational and stable environment
  - Continous maintenance

- Efforts towards sustainability
  - AWI contract signed
  - Service and extensions (TerraSAR X) welcome in MyOcean, funding open





# Sustainability (2)

- Future development and sustainability scenarios
  - Keep Free: Scientific and occasional users: keep usage simple
  - Charge : Commercial, value adding and regular mass users
  - Develop software for user analysis

# Combining Web statistics & User feedbacks



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- Feedbacks just from few users
- Several 100 silent users not represented here



# Conclusions

AMSR-E/ASI ice concentration data massively used worldwide

- Distributed also in
  - Arctic ROOS,
  - IPY Ice Logistics Portal
- Potential for improvement
  - Near coastlines
  - At low ice concentrations
  - At thin ice
- Adressed within JAXA project
  - Synergy with SAR and optical sensors
- funding required for maintaining service and improvements