Healy Science Infrastructure, Equipment, & Technical Support

Overview for BEST PI meeting Sep 2006

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Overview of this discussion

- What science support is “routine” on Healy?
- What do you need?
- Working on Healy is different!

Categories of data by “type”

- Time of day
- Navigation, Attitude, & Heading
- Sonars (multibeam, sub-bottom, ADCP)
- Physical properties (weather, TSG)
- Pictures
- Metadata

Time of day is the key that ties all of the data sets together

Healy uses a GPS station clock to provide time of day synchronization across the science network.

The (NOAA) SCS data system time stamps all of it's incoming data with time of day derived from GPS time.

Navigation Sources

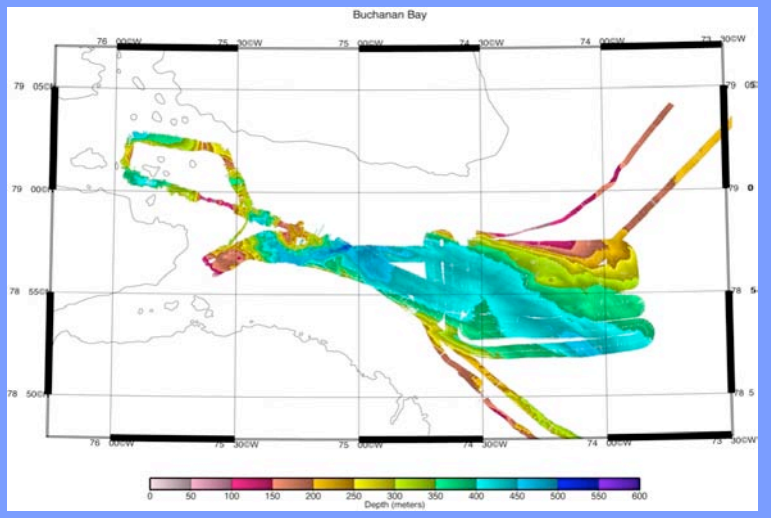
- Rockwell Collins P-Code
- Trimble Centurion P-Code GPS
- Ashtech ADU-5 GPS
- Furuno WAAS GPS
- Ashtech Glonass/GPS
- Applanix POS/MV-320

Text
Text

Attitude & Heading

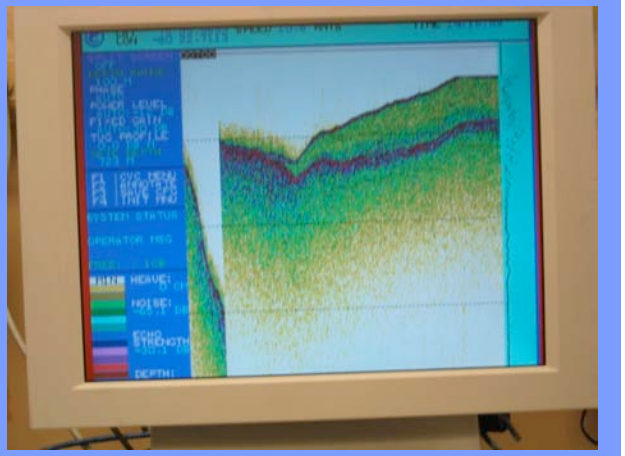
- Sperry MK-37 gyro compasses (2)
- TSS-335 Marine Motion Sensor (leaving soon?)
- Seatex MRU-6
- Applanix POS/MV-320
- Ashtech ADU5 (was an ADU2)

Multiple formed beam sonar: (multibeam) SeaBeam 2112



- 50m - 10km water depth
- 12 kiloHertz (cw, short pulse)
- 115º full swath (on a good day)
- seafloor bathymetry
- image (~sidescan)
- amplitude

Sub-bottom Profiler

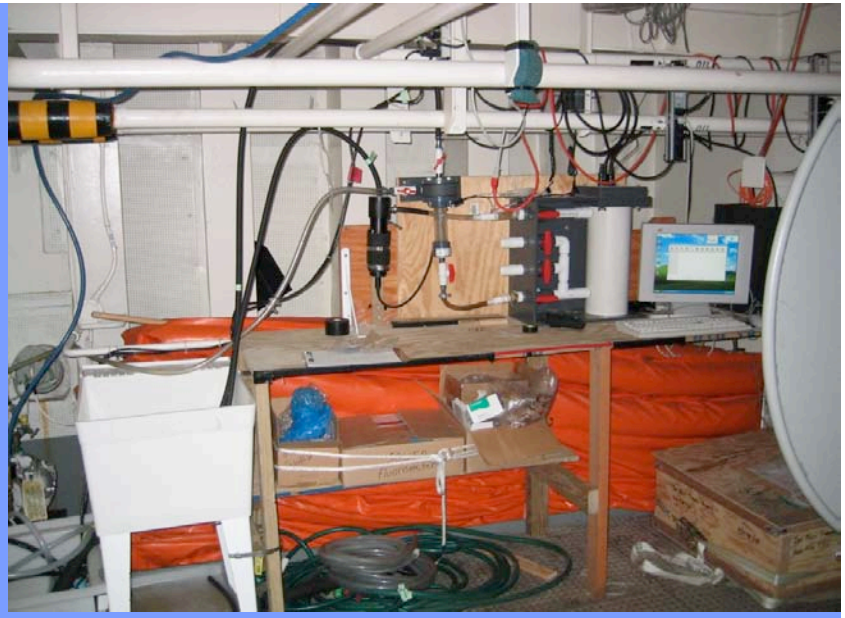


- Knudsen 320B/R
  - CW and FM modulated transmission
  - 3 to 6 KHz subbottom
  - 12 KHz echo sounder
  - Only one set of transducer arrays for each frequency
  - No 12 KHz w/ multibeam

Acoustic Doppler Current Profilers (ADCP)

- RDI ADCP-75 Ocean Surveyor (76.8 KHz)
- RDI ACP-150 Broad Band (153.6 KHz)
  - Has an SVP-2000 sound speed probe in the well with it.

Thermosalinographs



- Sea-Bird Electronics SBE-21
  - Forward (Biochem Lab)
    - Two remote temperature probes, one for each water intake (old and new)
  - Forward location likely this winter

Seawater Systems

- We need a clear definition of the needs:
  - Incubators, TSGs, sinks, samples
- Include adequate water “aft”
  - Sinks in labs
  - On deck (sample wash?)
  - ?

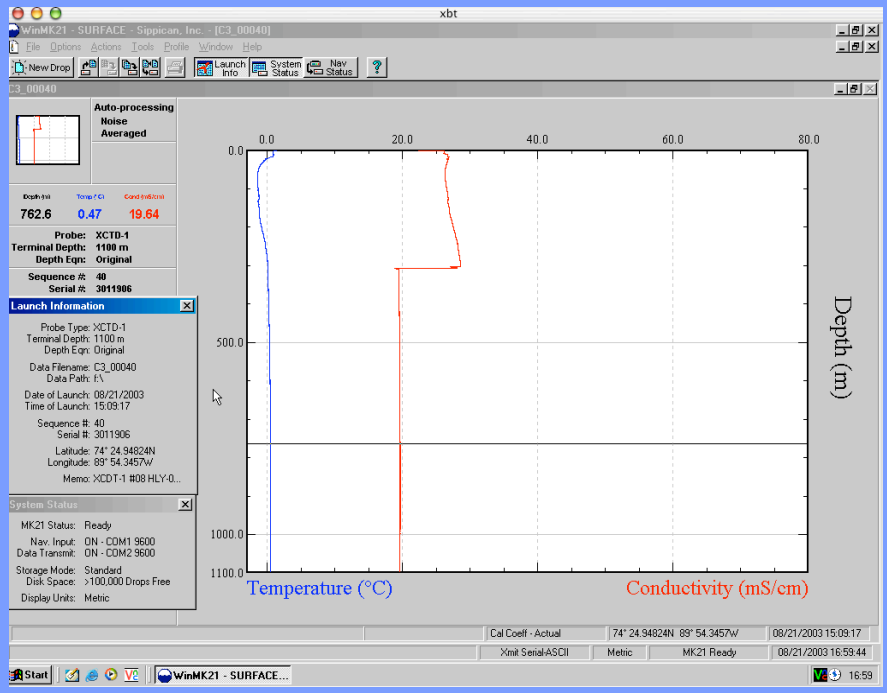
Drain as appropriate
Diff Pre

CTD & Rosette

- SBE-911
- Multiple bottle sizes
- Salinometer
- Support from SIO/ODF is possible
- What you need?

Expendable Probes

- Sippican electronics
- Capable of XBT, XSV, XCTD
- XBT provided with multibeam for sound speed profile (one per day)



Weather+

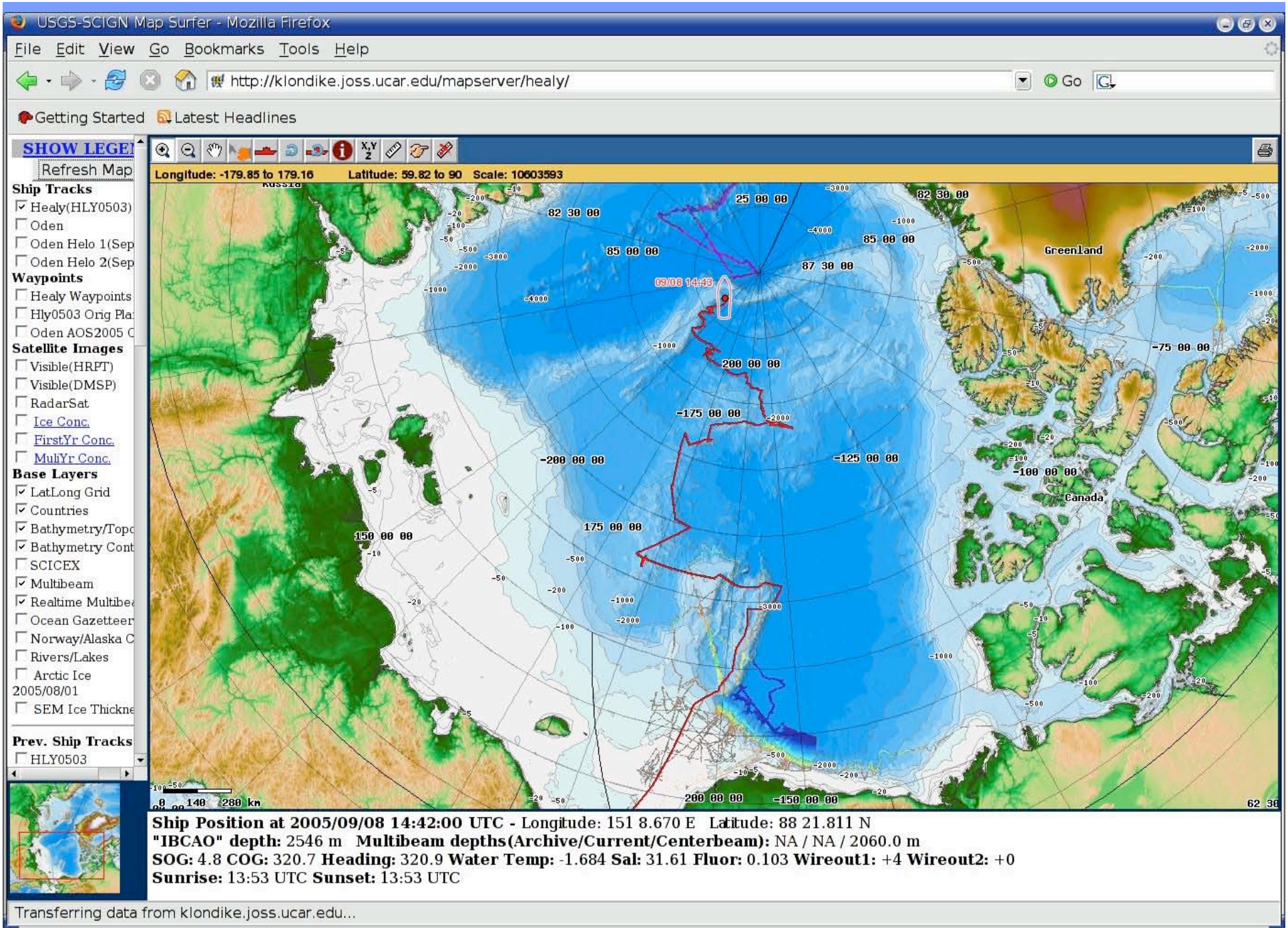
- R M Young (and manual)
  - Wind speed & Direction
  - Temperature
  - Humidity
  - PAR (is not standard yet)
  - Atmospheric Pressure
- Terascan (satellite image receiver)

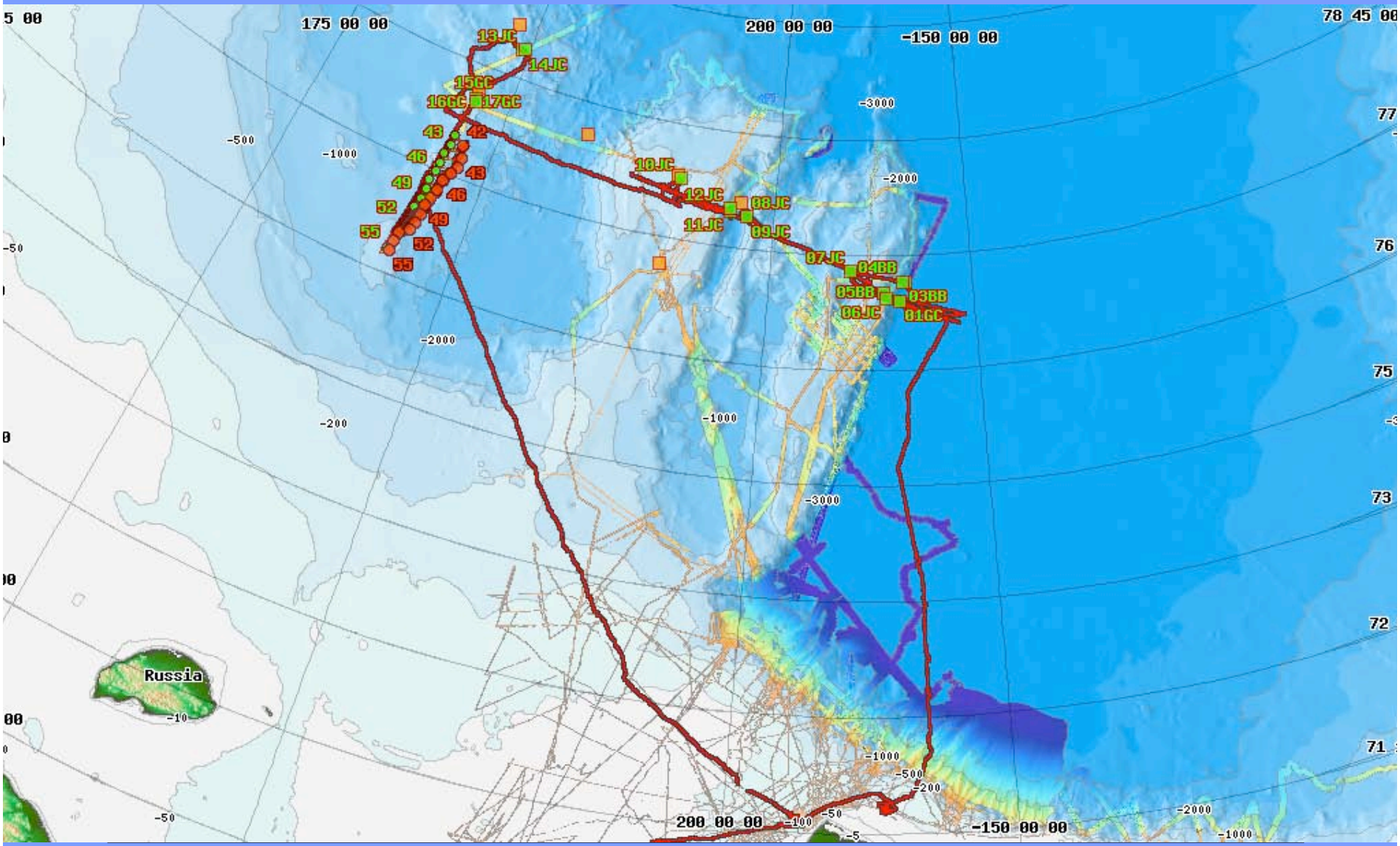
On board network & computer support

- Public workstations
- Wireless and wired network for your computers + (what else will you bring?)
- Disk space
- Printing and plotting
- End of cruise data distribution

Improved MapServer (real-time GIS)

- Improved code:
  - Incorporate live waypoints from VMS
  - Added subbottom profiler data
- Improved performance (response)
- Expect to add daylight readable displays in Aloft Conn and Aft Conn


USGS-SCIGN Map Surfer - Mozilla Firefox
File Edit View Go Bookmarks Tools Help
http://klondike.joss.ucar.edu/mapserver/healy/
Go
Getting Started
Latest Headlines
SHOW LEGE
Refresh Map
Ship Tracks
Healy(HLY0503)
Oden
Oden Helo 1(Sep
Oden Helo 2(Sep
Waypoints
Healy Waypoints
Hly0503 Orig Pla
Oden AOS2005 C
Satellite Images
Visible(HRPT)
Visible(DMSP)
RadarSat
Ice Conc.
FirstYr Conc.
MuliYr Conc.
Base Layers
LatLong Grid
Countries
Bathymetry/Topo
Bathymetry Cont
SCICEX
Multibeam
Realtime Multibe
Ocean Gazetteer
Norway/Alaska C
Rivers/Lakes
Arctic Ice 2005/08/01
SEM Ice Thickne
Prev. Ship Tracks
HLY0503
Longitude: -179.85 to 179.16
Latitude: 59.82 to 90
Scale: 10603593
Russia
Greenland
Canada
09/08 14:43
25 00 00
82 30 00
85 00 00
87 30 00
200 00 00
-175 00 00
-200 00 00
-125 00 00
-100 00 00
-75 00 00
175 00 00
150 00 00
-150 00 00
0 140 280 km
Ship Position at 2005/09/08 14:42:00 UTC - Longitude: 151 8.670 E Latitude: 88 21.811 N
"IBCAO" depth: 2546 m Multibeam depths(Archive/Current/Centerbeam): NA / NA / 2060.0 m
SOG: 4.8 COG: 320.7 Heading: 320.9 Water Temp: -1.684 Sal: 31.61 Fluor: 0.103 Wireout1: +4 Wireout2: +0
Sunrise: 13:53 UTC Sunset: 13:53 UTC
Transferring data from klondike.joss.ucar.edu...


175 00 00
200 00 00
-150 00 00
78 45 00
13JC
14JC
15GC
16GC
17GC
43
42
46
43
49
46
52
49
55
52
55
10JC
12JC
08JC
11JC
09JC
07JC
04BB
05BB
03BB
06JC
01GC
Russia
-3000
-2000
-1000
-500
-200
-100
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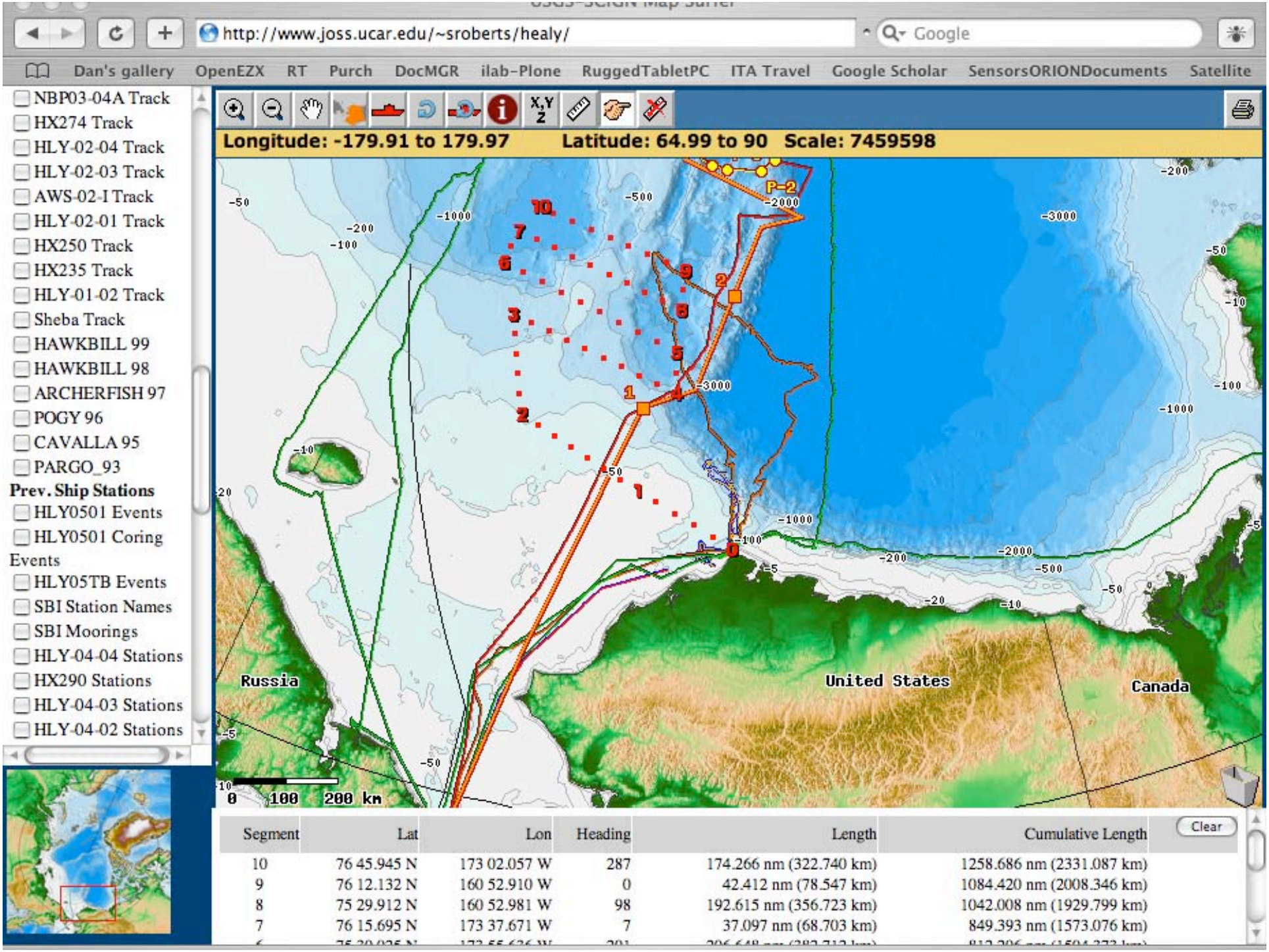
-10
-5
77
76
75
73
72
71
200 00 00
-150 00 00


http://www.joss.ucar.edu/~sroberts/healy/
Google
Dan's gallery
OpenEZX
RT
Purch
DocMGR
ilab-Plone
RuggedTabletPC
ITA Travel
Google Scholar
SensorsORIONDocuments
Satellite
NBP03-04A Track
HX274 Track
HLY-02-04 Track
HLY-02-03 Track
AWS-02-I Track
HLY-02-01 Track
HX250 Track
HX235 Track
HLY-01-02 Track
Sheba Track
HAWKBILL 99
HAWKBILL 98
ARCHERFISH 97
POGY 96
CAVALLA 95
PARGO_93
Prev. Ship Stations
HLY0501 Events
HLY0501 Coring Events
HLY05TB Events
SBI Station Names
SBI Moorings
HLY-04-04 Stations
HX290 Stations
HLY-04-03 Stations
HLY-04-02 Stations
Longitude: -179.91 to 179.97
Latitude: 64.99 to 90
Scale: 7459598
P-2
Russia
United States
Canada
0 100 200 km
Clear
Segment | Lat | Lon | Heading | Length | Cumulative Length
10 | 76 45.945 N | 173 02.057 W | 287 | 174.266 nm (322.740 km) | 1258.686 nm (2331.087 km)
9 | 76 12.132 N | 160 52.910 W | 0 | 42.412 nm (78.547 km) | 1084.420 nm (2008.346 km)
8 | 75 29.912 N | 160 52.981 W | 98 | 192.615 nm (356.723 km) | 1042.008 nm (1929.799 km)
7 | 76 15.695 N | 173 37.671 W | 7 | 37.097 nm (68.703 km) | 849.393 nm (1573.076 km)

Watch Standers Work Station (for underway survey)

- Prototype was used during 2005
- Improvements in ‘06
  - Improved display software
  - Upgraded displays
  - Improved mounting

U.S.
GUARD

Walk-in chambers (2 “controlled”, 2 “cold”)

- They perform as specified in the SOR
- There are significant excursions during defrost cycles
- Think about what you really need and articulate it clearly (and soon)

Science Internet Connectivity

- Currently use 2 hr/day of CG leased Inmarsat service w/ separate backhaul (~50 kbps) for live Internet connection:
  - Be realistic about performance
- Use ganged Iridium for 24x7 email
- What do you actually need?

Planning

- Working with the Healy is different
- We (LDEO) will create an email list server to facilitate the planning process
- Use the cruise planning form at icefloe.net
  - update it early and often
- On-board planning meeting (bring your technical staff) proposed for the week of December 4

More info

- Cruise Planning Questionnaire

  http://icefloe.net/cruiseplan_healy.html
- Lab layouts

  http://www.icefloe.net/healy_layout.html