NDSF Data Management
Outline

- New NDSF Event Logger
- *Alvin* Nav/Imagenex Issues
- NDSF Nav/Sonar Processing Tools
- NDSF-MGDS Linkages
- At-Sea Quality Control

New NDSF Event Logger
Objectives

- Effort funded through MGDS

- Goals:
  - Improve ease with which digital metadata is captured
  - Improve functionality of NDSF event loggers
    - *Jason*
    - *Alvin*

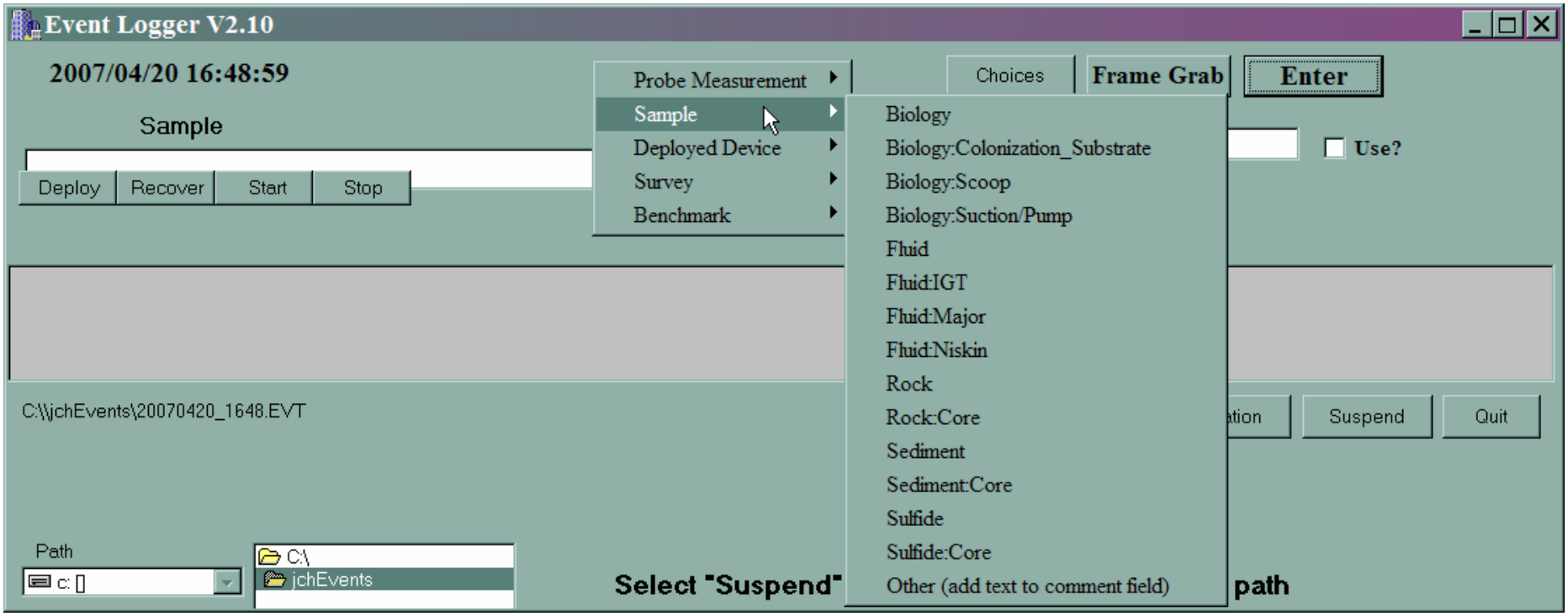
New NDSF Event Logger
Progress

- Compatibility tested during KM0631
- Beta-testing conducted during AT15-17
  - MGDS controlled vocabulary
  - Events and configuration files emailed to LDEO after each dive
  - Metadata extracted on shore and transmitted back to ship

New NDSF Event Logger
Progress

- Feedback from AT15-17
  - Ease of use
  - Event logger layout
  - Suggestions for improvement

New NDSF Event Logger
Graphical User Interface (GUI)



Controlled vocabulary

New NDSF Event Logger
Future Plans

- Continued beta-testing planned during upcoming Fisher cruise
- Anticipate modified interface for *Jason* ops this year
- Explore options for *Alvin* interface

Alvin Nav/Imagenex

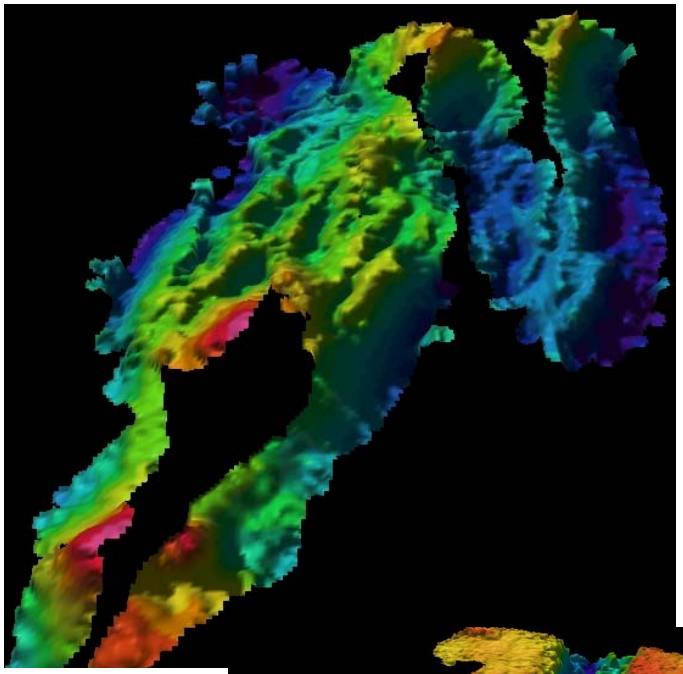
- Bathymetric errors (meter-scale offsets)
- Identified through MGDS R2K-funded processing of *Alvin* nav and Imagenex data
  - EPR post-eruption
  - JdF
- Source of problem identified (Whitcomb/Ferrini)
  - Timing issue
  - Loss of bottom lock

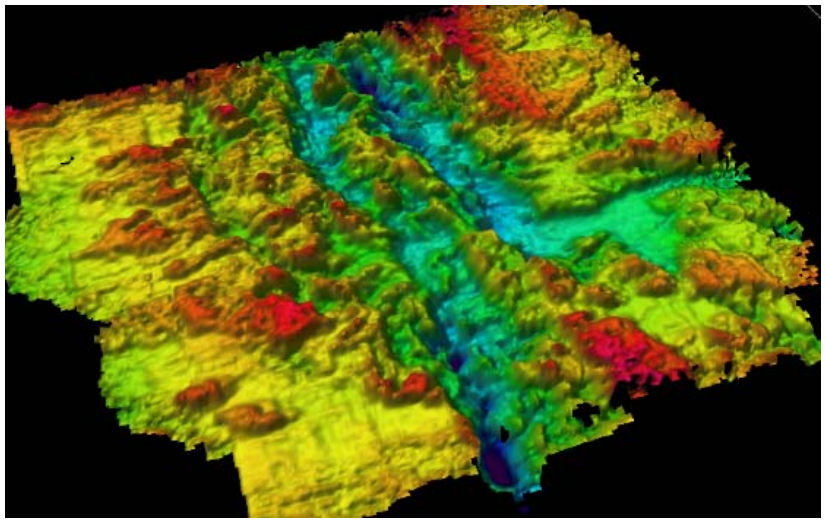
Alvin Nav/Imagenex

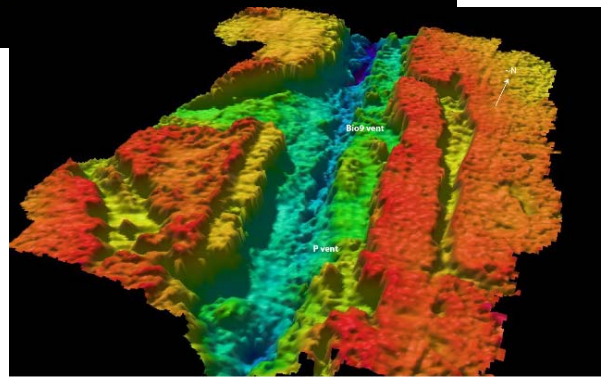
- Software modifications have been made to prevent recurrence of timing problem
- Operational guidelines: bathymetric surveys should be conducted at an altitude < 20 m

Alvin Nav/Imagenex

- **JdF ISS**
  - Dive 4236 processed
- **EPR ISS**
  - AT15-17 SM2K mapping







NDSF Nav and Sonar Software Tools

- **Successful at-sea processing during AT15-17**
  - Nav processing
    - Transmission of small data files for first order QC
  - At-sea renav ingestion into Virtual Van
  - High resolution SM2K maps generated
    - Transmission of small data files for first order QC
- **Documentation for NDSF personnel**
- **Training provided for upcoming *Jason* trip**
  - Transmission for QC
  - Test transmission of SM2K/nav data files

NDSF - MGDS

- **NDSF dive renav currently available through MGDS:**
  - **136** *Alvin* dives (renav and Imagenex data)

    AT11-07, AT11-10, AT11-13, AT11-20, AT11-26,
    AT15-06†, AT15-12†, AT15-13†, AT15-14†, AT15-15†

  - **39** *Jason* dives (renav)

    KN180-01, TUIM05MV*, TUIM07MV, MGLN07MV

- **109 Ridge/MARGINS related dives next:**
  - **74** *Alvin*

    AT11-09(11), AT11-21(13), AT15-09(16), AT11-23(12),
    AT11-24(12), AT11-28(7), AT15-05(3), AT15-17(5)

  - **30** *Jason*

    TUIM06MV(14), TN183/184(16)

†Real time nav (*CSV) also provided
*Renav in Virtual Van

NDSF - MGDS

- **MGDS access to NDSF nav data through:**
  - Data Link
  - GeoMapApp & GoogleEarth

MARINE GEOSCIENCE DATA SYSTEM

Tools and Services	Data	Partners	Ex
Search for Data: GeoMapApp Data Link Create Maps & Grids Web Services Data for Google Earth Education Modules	Antarctic Bathymetry MARGINS Ridge 2000 Ridge Bathymetry Seismic Reflection	GfG ODP Borehole LDEO Core Repository UTIG Processed Seis NGDC GeoWS	What's Relate Contri Meeti Ackno Statist Advisc

MARINE GEOSCIENCE DATA SYSTEM

Tools and Services	Data	Partners	Explore Further
Search for Data: GeoMapApp Data Link Create Maps & Grids Web Services Data for Google Earth Education Modules	Antarctic Bathymetry MARGINS Ridge 2000 Ridge Bathymetry Seismic Reflection	GfG ODP Borehole LDEO Core Repository UTIG Processed Seis NGDC GeoWS	What's New Related Links Contribute Data Meetings & Reports Acknowledgements Statistics & Holdings Advisory Committee

Data Link ADO Data

Entry ID: AT15-12
Scientist(s): Ferrini_Vicki

NUMBER OF DATA FILES: *14*
TOTAL SIZE: *30.13 MB*

Download Now
or
Request Tape

ESTIMATED DOWNLOAD *(hh:mm:ss)*
00:00:06 - LAN
00:02:37 - T1
00:06:06 - DSL/Cable
01:15:13 - 56K

Click on active links to access data or information.

Data File	File Size	Launch Type/ID	File Format	Data Type	Device Type	Locale	Start Date	Start Longitude	Start Latitude	Stop Date	Stop Longitude	Stop Latitude	Quality	Nav Type
4259_1Hz_renav.txt	2.1 *MB*	HOV 4259	ASCII	Navigation	Navigation	EPR: 9N: 9_30	2006-10-31 16:00:29	-104.241225	9.4945293	2006-10-31 20:54:43	-104.2460242	9.5057458	2	DVL/LBL:Renav
4260_1Hz_renav.txt	2.2 *MB*	HOV 4260	ASCII	Navigation	Navigation	EPR: 9N: 9_50	2006-11-01 16:08:59	-104.2925956	9.8345022	2006-11-01 21:29:12	-104.2904631	9.8324007	2	DVL/LBL:Renav

Data Link Dive Data

HOV Dives for Entry AT15-12 on Platform Alvin

Click on live links to access data and information

DIVE ID#	DATE	NAV FILE	NAV TYPE	AREA	PURPOSE	PILOT	OBS #1	OBS #2
4259	2006-10-31 14:17:00	Download	DVL/LBL:Renav	EPR: 9N: 9_30	Biology	Hickey, Pat	McCarthy, Michael	Thurnherr, Andreas
4259	2006-10-31 14:17:00	Download	DVL/LBL	EPR: 9N: 9_30	Biology	Hickey, Pat	McCarthy, Michael	Thurnherr, Andreas
4260	2006-11-01 14:03:00	Download	DVL/LBL	EPR: 9N: 9_50	Biology	Eppard, Gavin	Bright, Monika	Strasser, Carly

NDSF - MGDS

MARINE GEOSCIENCE DATA SYSTEM

Tools and Services	Data	Partners	Explore Further
Search for Data:	Antarctic Bathymetry	GfG	What's New
GeoMapApp	MARGINS	ODP Borehole	Related Links
Data Link	Ridge 2000	LDEO Core Repository	Contribute Data
Create Maps & Grids	Ridge Bathymetry	UTIG Processed Seis	Meetings & Reports
Web Services	Seismic Reflection	NGDC	Acknowledgements
Data for Google Earth		GeoWS	Statistics & Holdings
Education Modules			Advisory Committee

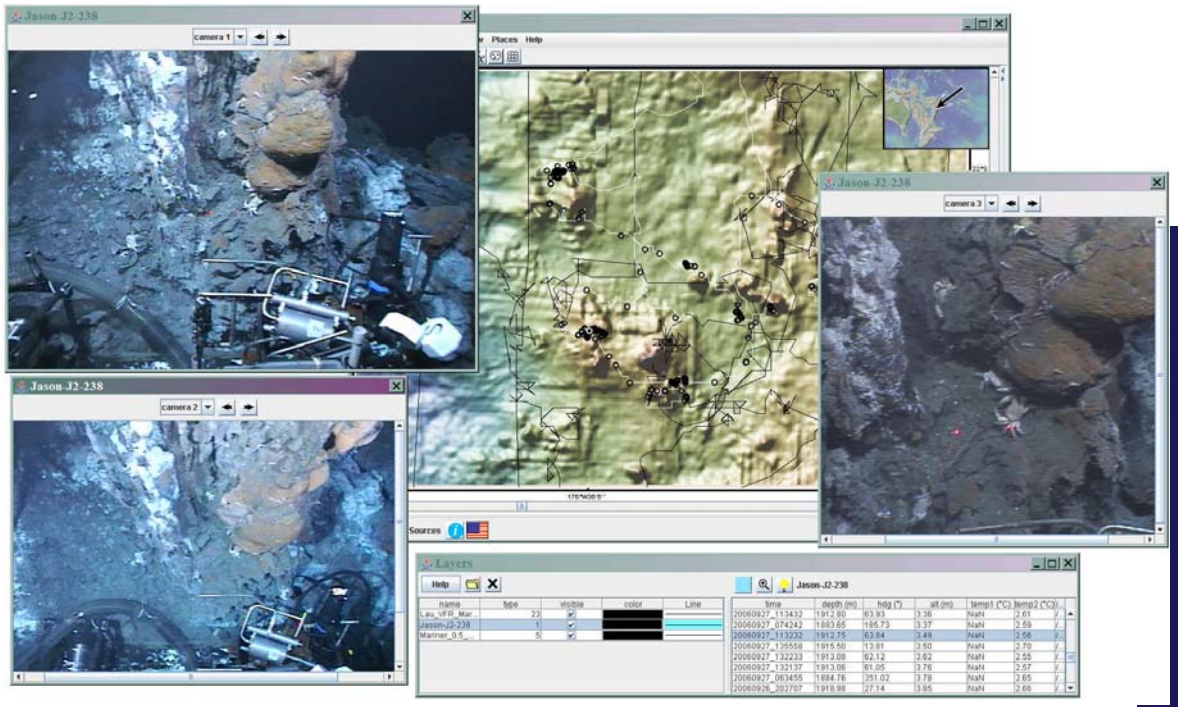
Navigation Type Label Descriptions

Navigation Type	Description
ACOUSTIC_RANGING/GPS	Acoustic ranging from a GPS-navigated ship to identify the location of instrumentation on the seafloor.
DGPS	Differential GPS - Triangulated position data based on information received from satellites and ground base stations.
DVL	Real-time Doppler Velocity Log Navigation. Utilizes a down-looking DVL sonar for dead-reckoning of the vehicle position with respect to the seafloor. Navigational errors can result from (1) loss of Doppler bottom lock when the vehicle altitude is either too high or too low with respect to the seafloor; (2) cumulative errors in the Doppler velocity data; (3) errors associated with time-varying alignment of the Doppler and gyro sensors due to the deformation of the vehicle frame caused by changes in weight, ballast, payload, and trim [Whitcomb et al., 1999a, 1999b; Kinsey and Whitcomb, 2002; Ferrini et al., 2007].
DVL/LBL	Real-time DVL dead-reckoning navigation supplemented with LBL navigation to help constrain fixes to a geographic coordinate system. Errors on the order of 10s (sometimes 100s) of meters are likely in these data.
DVL/LBL:Renav	Post-processed to merge DVL with LBL navigation. When combined with LBL navigation, precision depth measurements, and gyrocompass attitude data, DVL navigation can result in vehicle positioning accuracy ranging from <1 meter to 10s of meters depending on deployment geometry and conditions, and the nature of the post-processing [Kinsey and Whitcomb, 2004, 2006; Ferrini et al., 2005; Kinsey et al., 2006; Ferrini et al., 2007]. **Note that sample position information derived from this navigation product MUST be manually verified (e.g. with bottom photos) to ensure the success of navigational post-processing.**
DVL/LBL:Renav:Confirmed	Indicates that the DVL/LBL:Renav positions have been confirmed by human inspection.
DVL:Renav	DVL data post-processed to remove obvious errors in Doppler position data. Errors on the order of 10s of meters are likely to exist in these data and are due to the limitations of dead-reckoning navigation with DVL sonars. Users should refer to bottom photos to verify positioning information.

NDSF - MGDS

- **Live links to Virtual Van/Frame Grabber Images via GeoMapApp and GoogleEarth**

(demo)



At-Sea Quality Control

- ***Jason***
  - Nav QC via trained *Jason* data processors
  - Additional QC script development - Summer ’07
  - DVD write error checking – Summer ‘07
    - External hard drive as backup
- ***Alvin***
  - Investigate potential for SSSG to implement comparable functionality for *Alvin* nav & FrameGrabber