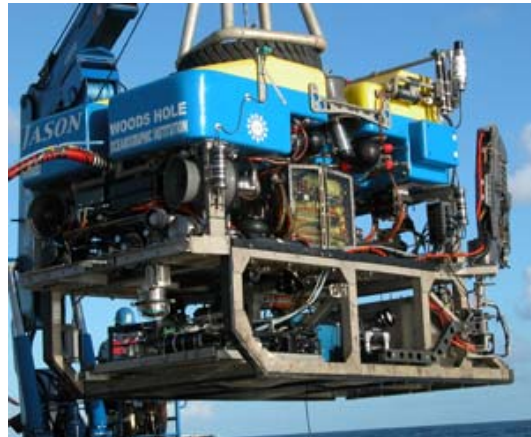


NDSF Data Management Structure



NDSF DATA MANAGEMENT

(1)
Video and
Imaging Systems

(2)
Real-Time Data
Logging
and Display

(3)
Pre-Cruise and
Post-Cruise
Coordination

(4)
At-Sea Processing
Pipeline and QC

(5)
Processing
Tools

NDSF Data
Archives



Standard NDSF Data Deliverables...

- Offer prospective vehicle users **information necessary for pre-cruise planning**
- **Impose responsibility guidelines** on NDSF
- **Assure a departing chief scientist** that she or he has received the expected collective of data
- Serve the larger ocean science community by **ensuring that products of consistent content and quality** are available long after the initial science studies have concluded



Data Deliverables: Commonalities Among the Vehicles

- Software DVLNav (Whitcomb and Kinsey) collects, and processes (ROV/AUV), navigational data. Integrates ship and vehicle data, acoustic LBL if deployed, DVL.
- Real-time/raw data: time, position, heading, pitch, roll, depth, altitude, temperature, salinity, magnetometer (optional on *Alvin*)
- Imaging: video and stills from digital camera, bathymetric sonar if requested
- Autosnaps and events: framegrabbed video coregistered with sensor data
- Archived in accordance with WHOI Archive Policy; hard media archived at WHOI Data Library



Data Deliverables: *Alvin* Specifics

- **Straight from the vehicle**

- Raw sensor logs
- DVLNav logs
- Framegrabber: framegrabbed video (30 sec) from two external digital cameras, coregistered w/ vehicle nav, attitude, & science instrument data

- **Digital video**

- Science selects two of four external cameras, to DVCAM tape
- Ship tech makes exact copies, overlaying science's choice of real-time data & delivers these copies with standard data package



Data Deliverables: *Jason* Specifics

- Raw (includes GPS & LBL) and DVLNav logs from *Jason*, *Medea* and ship
- First-order nav (merged LBL and DVL) and first-order SM2000 sonar (yielding XYZ dot cloud and 1m grid)
- Virtual Van and Event Logger: four cameras from *Jason* and *Medea* coregistered with ship and vehicle data; also science comments, if any. Online post-cruise, with password access during moratorium
- Video (three *Jason* cameras), to DVD
 - Science copies are overlaid with selection of real-time fields
 - Archive copies are not overlaid, but they carry the info

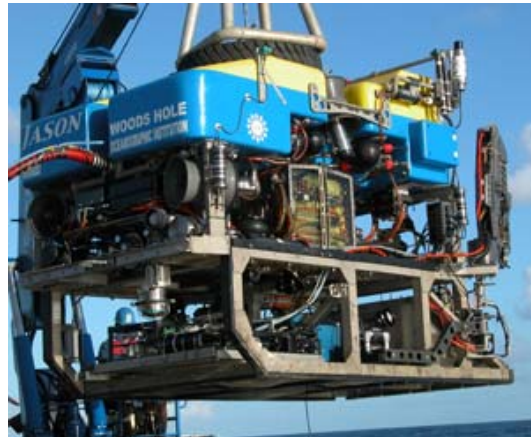


Data Deliverables: AUV Specifics

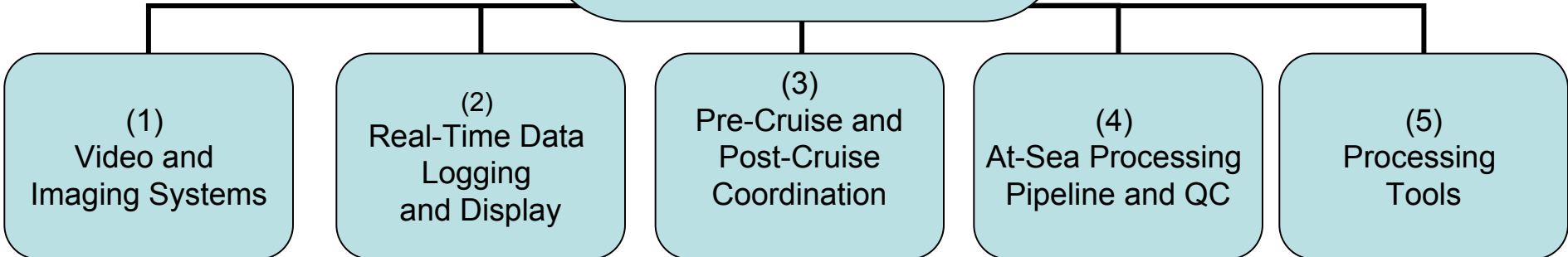
- Nav: first-order processing; LBL merged with DVL, recalibrated compass and magnetometer
- Digital still photos: .jpg
- Vehicle data coregistered with science subsystem fields; ASCII .csv
- Bathymetry
 - *ABE*: SM2000 sonar; raw (.smb), XYZ point cloud, gridded at 5m
 - *Sentry*: Reson sonar; deliverables are expected to be similar or superior to the SM2000 product



NDSF Data Management Structure



NDSF DATA MANAGEMENT



NDSF Data Archives



(1) Video and Imaging Systems

- Improved cameras (Lange)
- Revisiting lighting (Lange)
- Video is a standard product
 - Do we *require* science to provide personnel to run *Jason* DVD decks for archive video?



(2) Real-Time Data Logging and Display

- Vehicle Metadata Standardization
 - Transmit to beach and make available (and harvestable) during cruise via xml files
- Event Logger Update
 - Address the backbone of how data are organized
 - Sampling metadata (MGDS vocabulary)
 - NDSF vocabulary – consultation in 2008
- Virtual Van/FrameGrabber
 - *Alvin* renav ingestion
 - AT11-07, AT11-10, AT11-13, AT11-20, AT11-26
 - Provide *Jason* data by lowering (testing)



(3) Pre-Cruise/Post-Cruise Coordination Archives

DESSC
December 2007

- Coherent pan-NDSF backbone data structure is critical
- Evaluate management of all vehicle data on one server (RAID drive) by NDSF Data Manager
 - Dive metadata
 - Vehicle data
- Parallel RAID drive at NDSF/WHOI Archive
 - Long-term goal 1: make data available online
 - Long-term goal 2: remote data archive



(4) At-Sea Processing Pipeline/QC

- Organize all NDSF vehicle data at sea by lowering
 - Data deliverables provided to science and archive by lowering/dive
 - Archived *Jason* data also preserved by day
- Hard drive backups now standard for *Jason* dives in addition to DVDs
- Longevity of DVDs?
 - 90 examined from 2003: found 3 with read errors



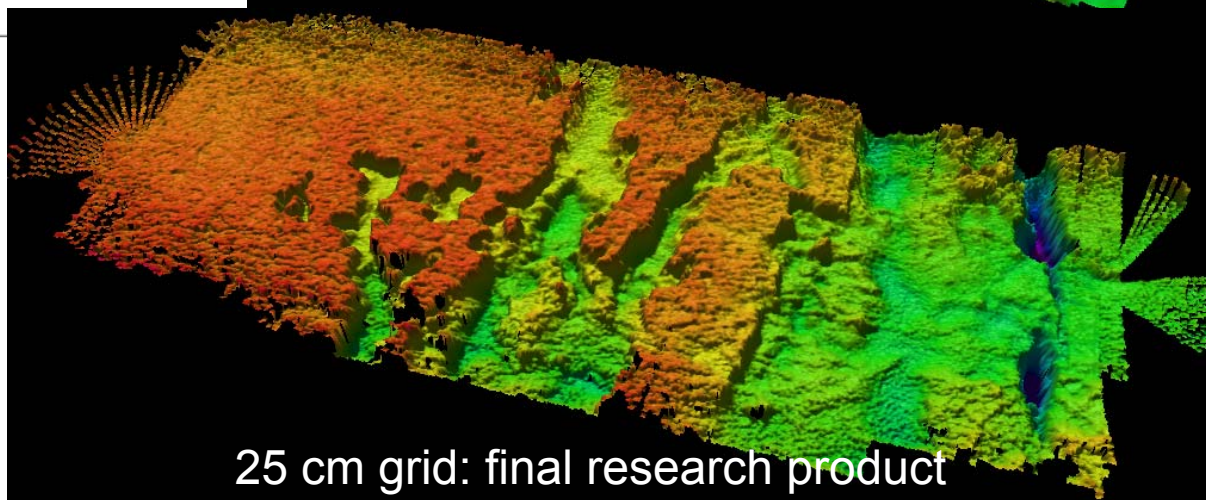
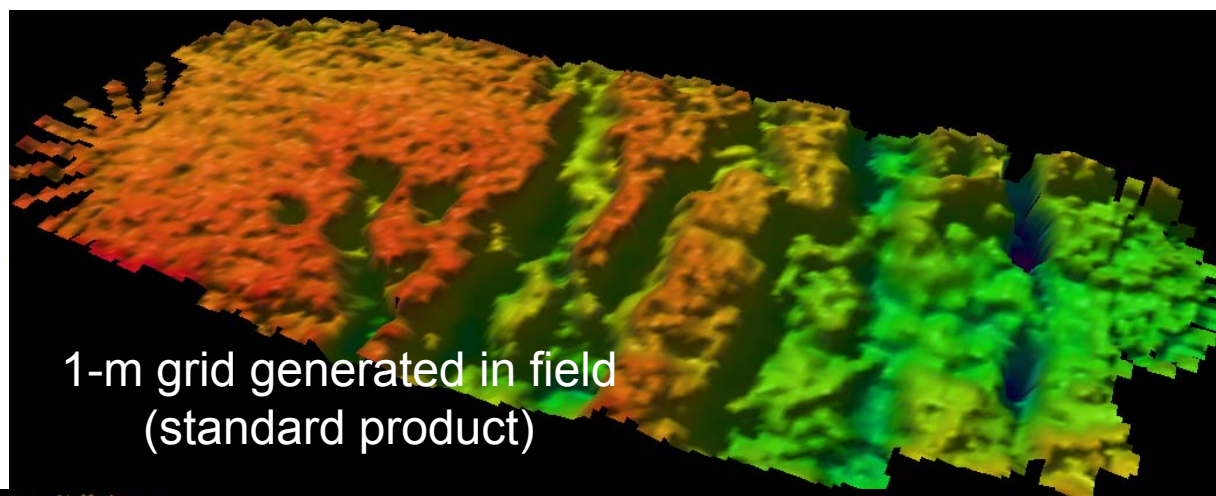
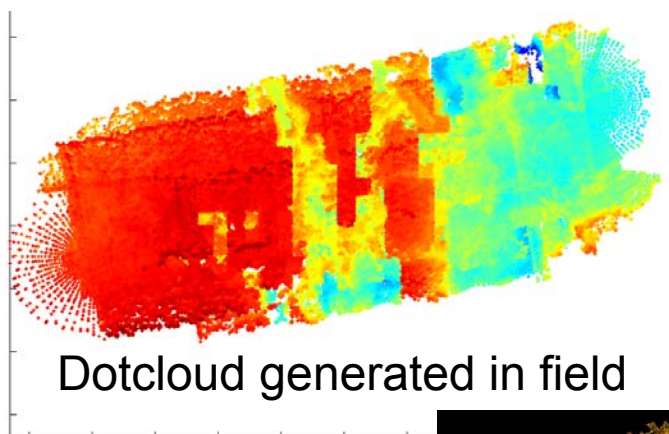
(4) At-Sea Processing Pipeline/QC

- Nav QC
 - *Jason* nav processing at sea
 - Automated scripts for use in field have been developed (J. Kinsey) and are ready for testing
- Sonar QC
 - *Jason* sonar processing at sea
- New QC scripts will be built to leverage digital metadata acquired for each dive



(4) At-Sea Processing Pipeline/QC

- At-sea processing = standard data products only - not final research products



EPR
AT15-17: J2-268



(5) Advanced Processing Tools

- Goal: put NDSF data into more generic formats for processing with other tools
- Continue to support existing DSL software
- Sonar
 - MB System → Caris Hips and Sips
- Photomosaics
 - Use existing DSL mosaicking code for better georeferencing for individual images in large area down-looking mosaics
 - Make UNH video mosaicking software available



Questions for DESSC

- Should the magnetometer be a standard sensor for all vehicles?
 - If so, do we *require* calibration turns for each dive/lowering?

