L-DEO Office of Marine Operations:

UNOLS MLSOC Meeting

August 15, 2013

Web Meeting

Lamont-Doherty Earth Observatory
Columbia University | Earth Institute

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

Outline:

1. OMO Office Update
2. 2013 Science Schedule
3. Summary of Canales 2D MCS/OBS
4. Summary of Sawyer 3D MCS/OBS
5. Science Plan for Hey MB Survey
6. 2014 Projected Science Plan
7. Glosten Winch Plan and Long Core update
8. Update on Ship Maintenance/Modifications/Tech Projects

OMO Activities:

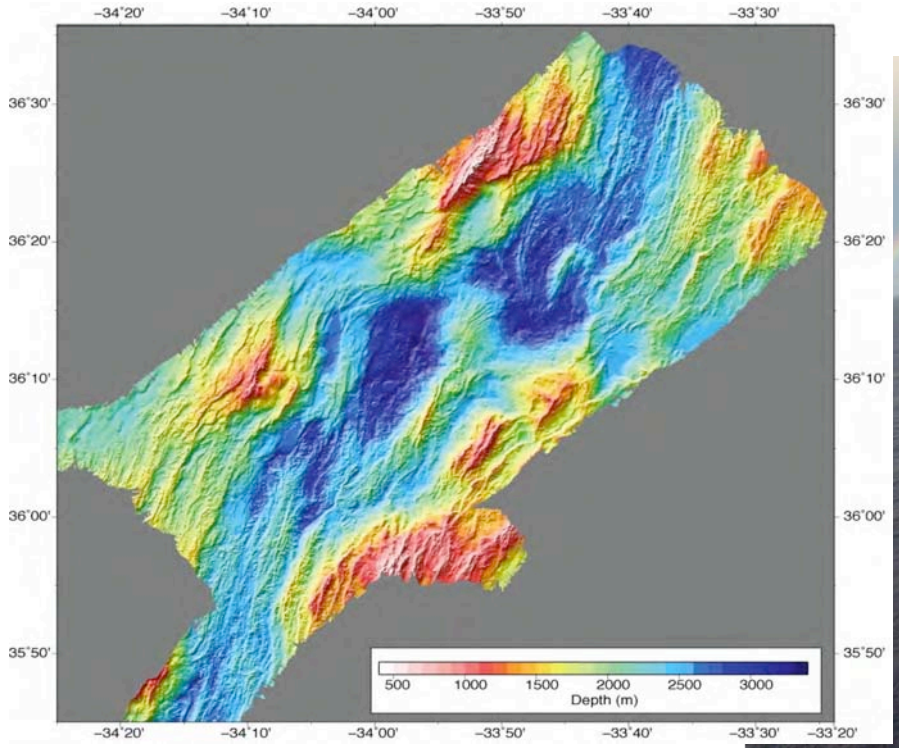
1. Columbia Internal Audit Completed
2. Office staffing changes
3. Two Maritime Union Negotiations Completed
4. Export Controls & Technology Control Plans
5. Discussions with NSF on Contracts/Permitting 3rd Party Science
6. Annual ABS ISM Inspections Completed

2013 Science Schedule (~185 Operating days)

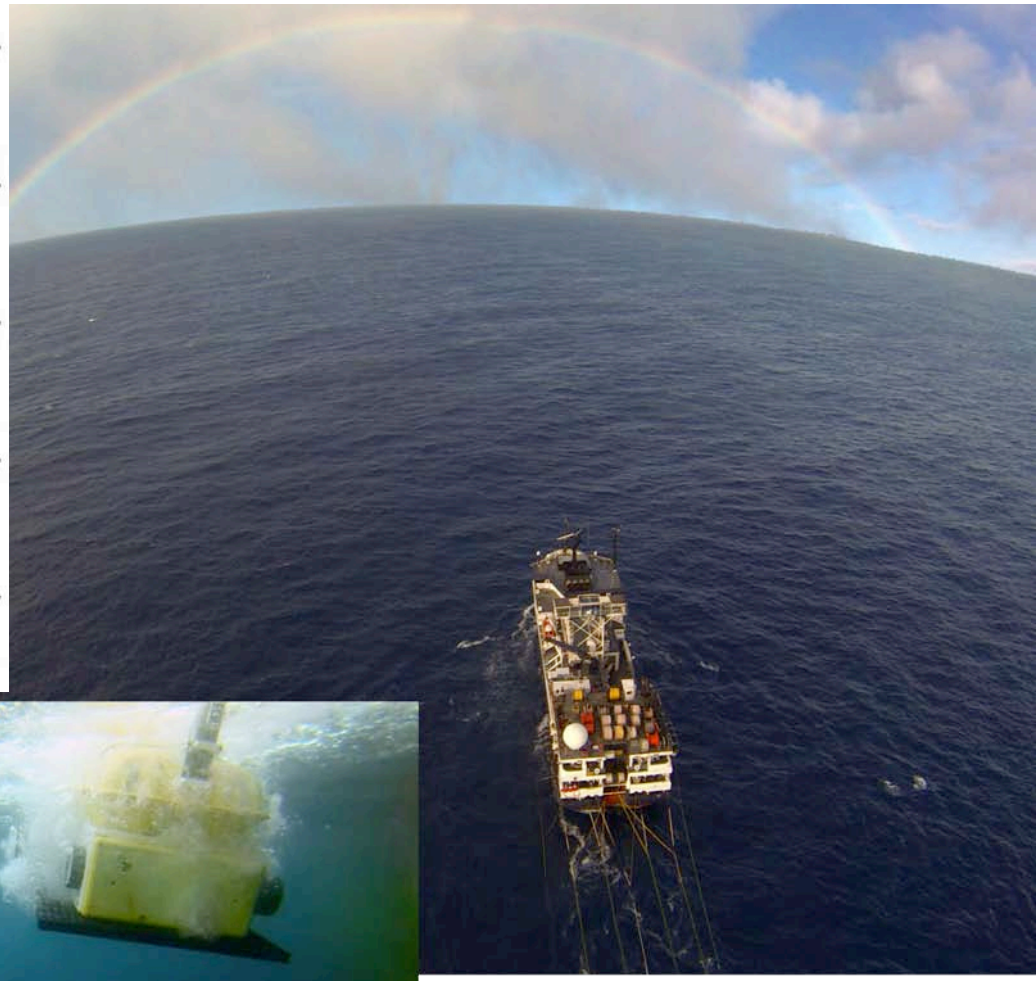
- *January/February:* In port at OSU Facility, Newport, OR
- *March*: Transit to Galveston, TX
- *April/May*: Transit to Bermuda and Canales 2D MCS/OBS Project at Rainbow Hydrothermal Field at Mid-Atlantic Ridge. (Bermuda to Azores)
- June/July: Sawyer, et al.- 3D MCS/OBS Project at Galicia Basin offshore Spain.
- August/Sept: Hey, et al. Bight Reorganization Project at S. Reykjanes Ridge, SW of Iceland.
- Sept/Dec: Tentatively scheduled at Newport, RI Navy Yard for dockside maintenance and tie up.

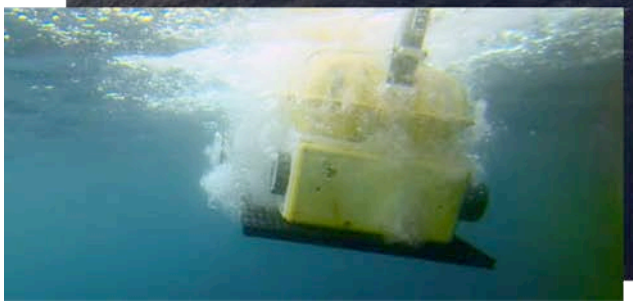
Canales- 2D MCS/OBS Rainbow Hydrothermal Vent Field

OBServing the Rainbow From the Langseth



Langseth MB Example





Images from Canales, et al. MGL1305 Cruise Report.

Canales- 2D MCS/OBS Rainbow Hydrothermal Vent Field

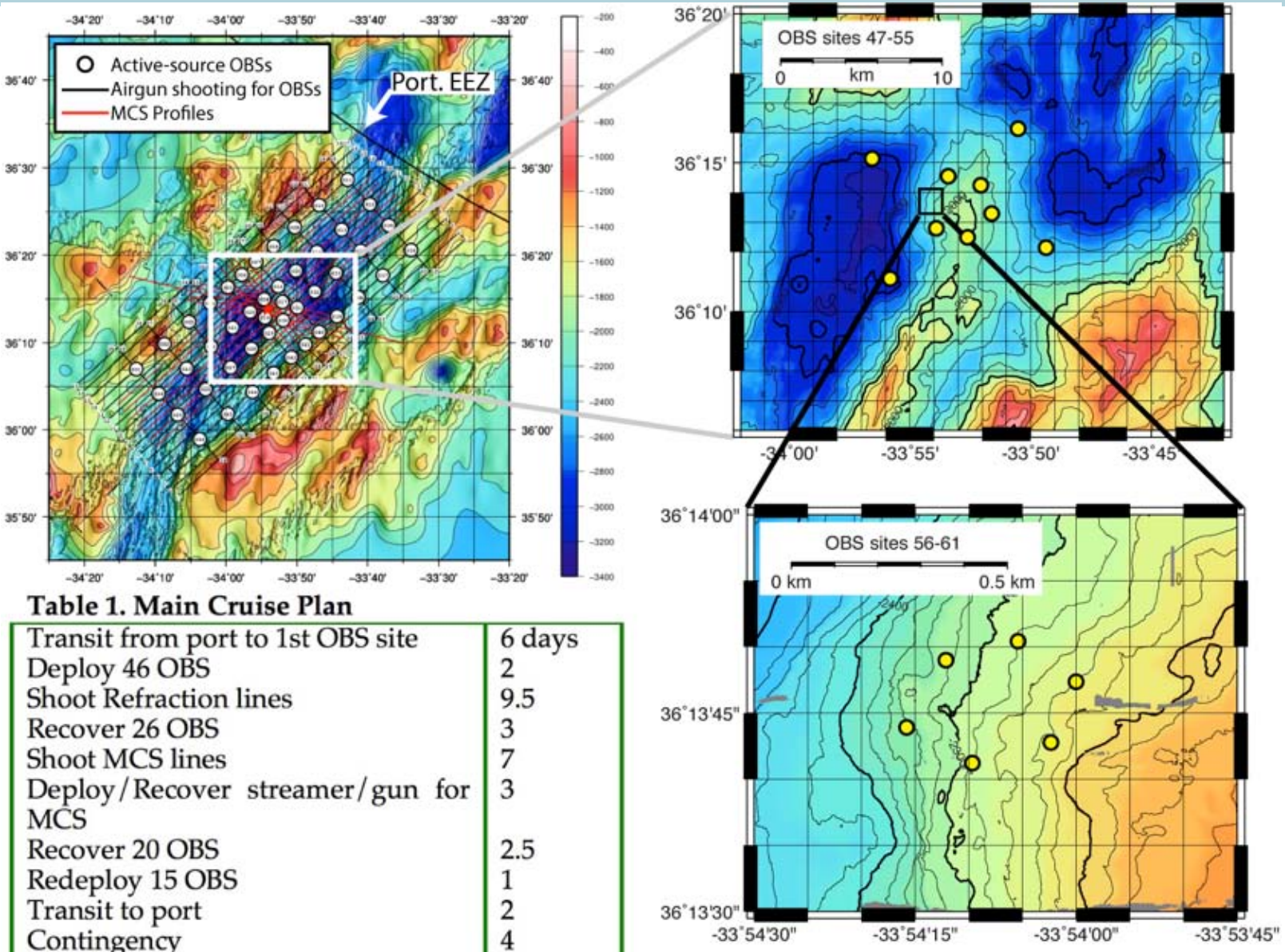


Table 1. Main Cruise Plan

Transit from port to 1st OBS site	6 days
Deploy 46 OBS	2
Shoot Refraction lines	9.5
Recover 26 OBS	3
Shoot MCS lines	7
Deploy/Recover streamer/gun for MCS	3
Recover 20 OBS	2.5
Redeploy 15 OBS	1
Transit to port	2
Contingency	4
Total	**40 days**

Canales- 2D MCS/OBS –
PI Cruise Summary to NSF—Pablo Canales

"The cruise went really well, and despite some time lost due to ship's mechanical problems before departure and bad weather after two weeks at sea, we were able to accomplish 100% of our scientific objectives, including:

- Deployment of 61 OBSs.
- Recovery of 45 OBSs.
- ~1,700 km of airgun shooting along 26 OBS lines (3823 shots, at 450 m spacing).
- ~1300 km of airgun shooting along 21 MCS lines (~35,000 Shots, at 37.5 m spacing).
- Acquisition of multibeam bathymetry and backscatter data with full coverage within a 30km x 80km area.
- ~3,600 km of magnetic data.

All of the datasets are of great quality. The ship's airgun array worked nearly flawlessly requiring only some minor routine maintenance. Streamer data quality is excellent, with less than 1% of bad traces (we used one 8-km-long streamer with 636 channels). The OBSs also worked very well. Only one OBS out of 46 deployed had to be abandoned due to lack of acoustic response.
All of these speak to the dedication and professionalism of the Langseth's crew and technical staff, and OBSIP personnel.

The cruise also offered a great educational and training opportunity to a number of undergrad and graduate students, and postdoc young investigators from US and European institutions".

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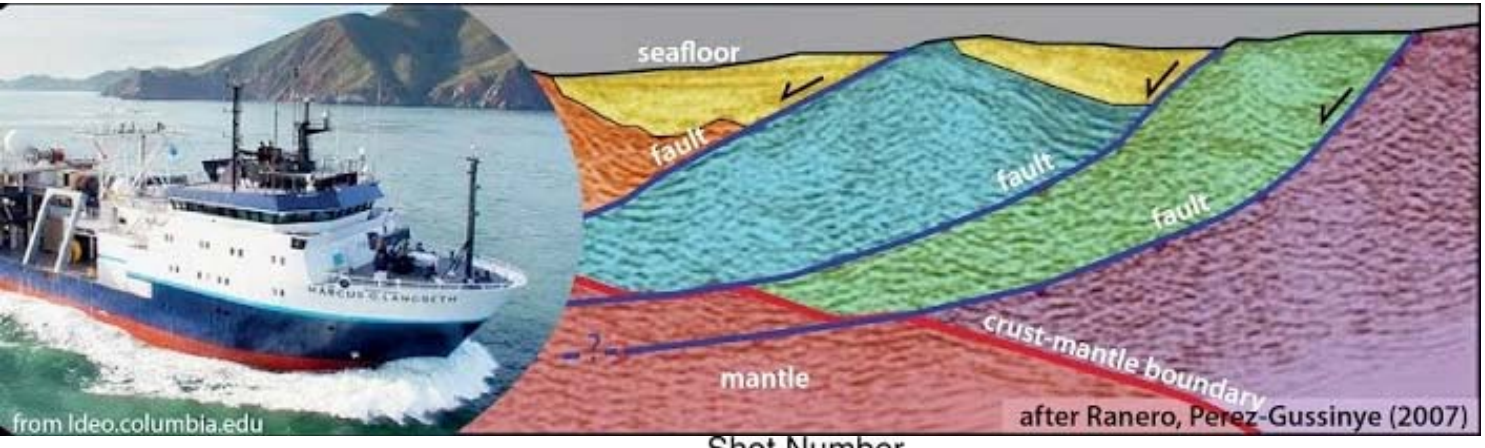
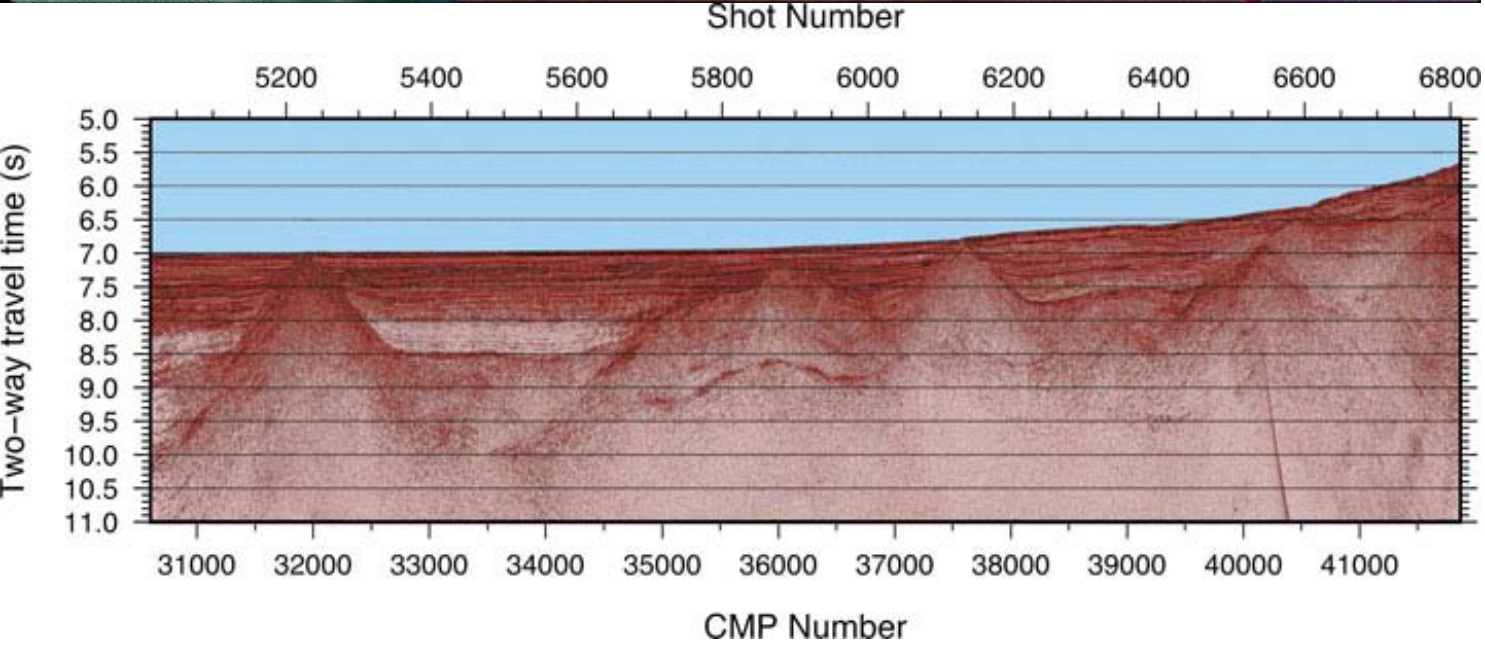
3D Imaging of the Galicia Basin





Images from Sawyer et al. MGL13-07 Cruise blog http://galicia3d.blogspot.com/

Sawyer- 3D MCS/OBS -- Galicia Basin Imaging

Sawyer project completed 50 of 56 lines originally planned and all but 2 based on revised Science plan after a mid-cruise delays caused by required engine repairs (~20 days in Vigo, Spain).

Completed Lines

Type	Total	Average Length(km)	Total Length (km)	% Length Total
All	87	53.08	4617.73 —	
Prime	65	56.81	3692.80	79.97 %
Infill	19	47.90	910.16	19.71 %
Reshoot	3	4.92	14.77	0.32 %

Useful Numbers- Based on Revised "Scenario 3" Science Plan-

% Complete 96.9 %
% Prime Complete 96.1 %
% Prime Incomplete 3.9 %
% Complete Infill 23.7 %

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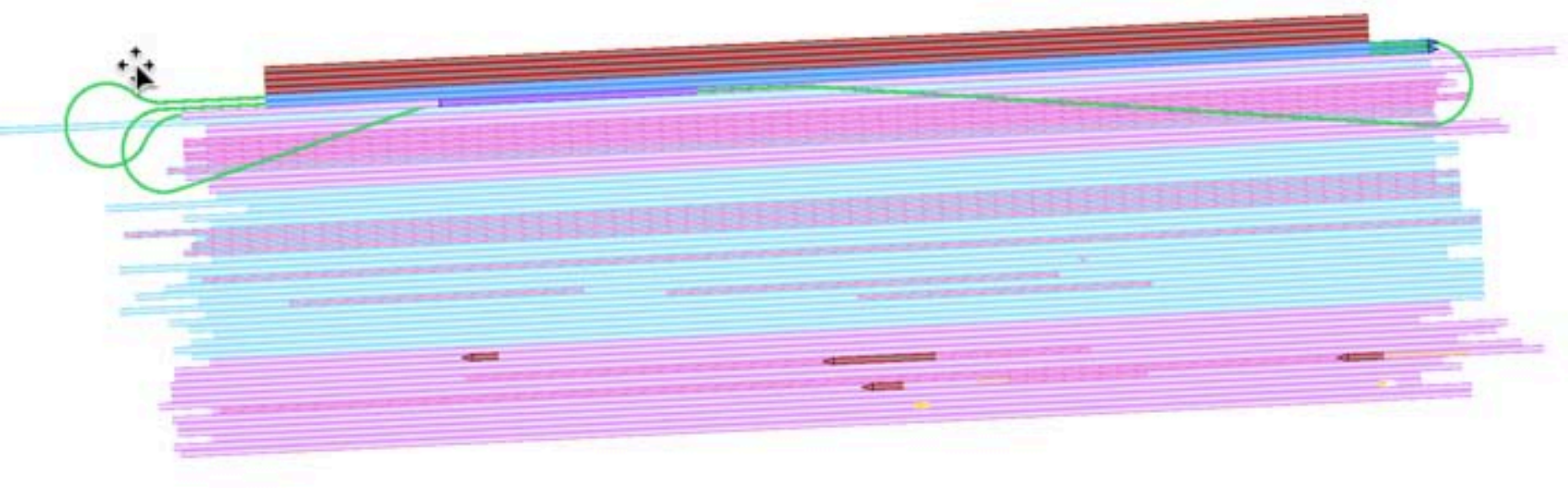
SurvOpt Software Output:

SurvOpt is an industry Survey Tracking/Planning Tool

Sawyer 3D Final- Dark Red section reflects unfinished portion of survey



Sawyer- 3D MCS/OBS – Survey Coverage

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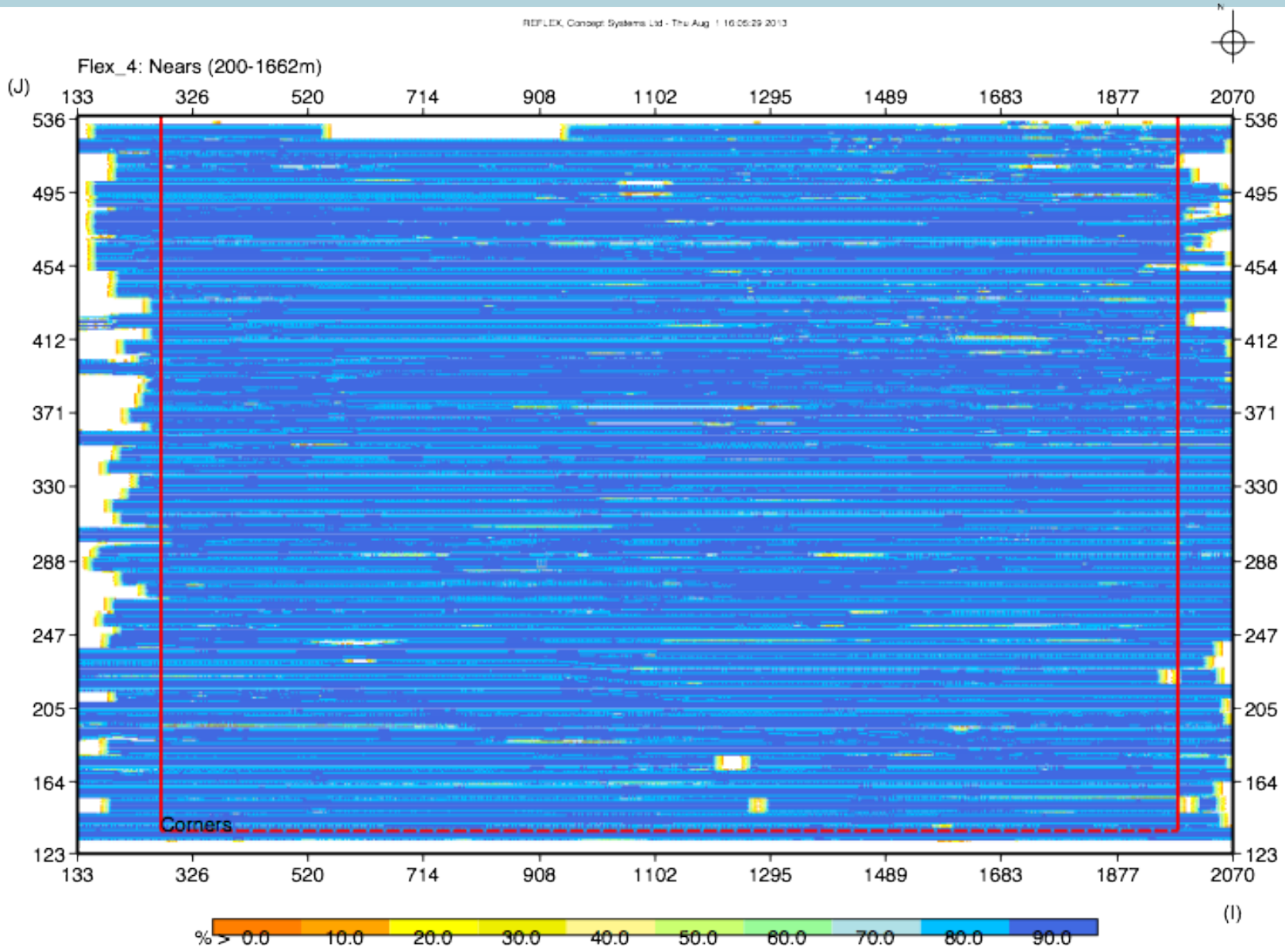

Hey et al.- MB Survey – Bight Reorganization S. Reykjanes Ridge, N. Atlantic

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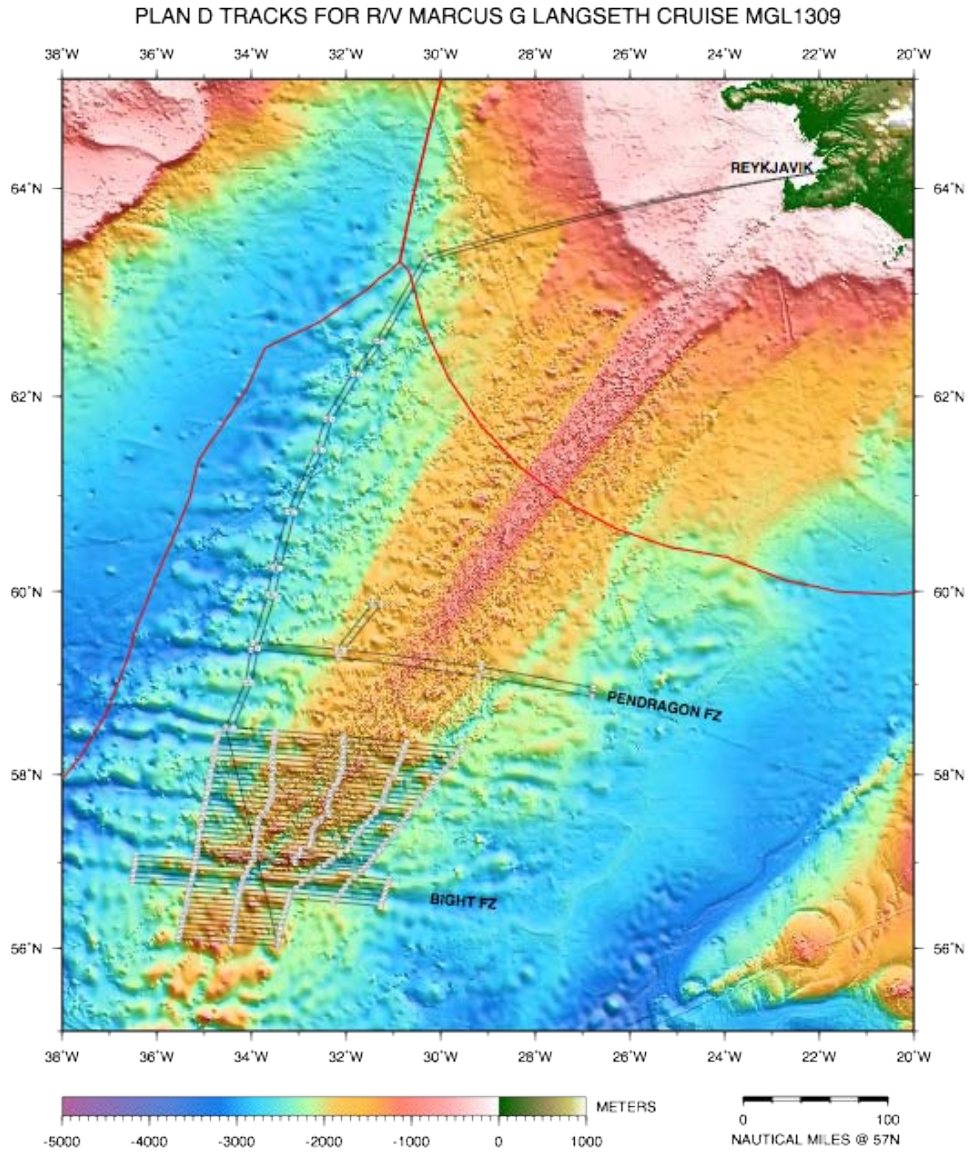

- Track Plan for MB Survey of Bight FZ Area of S. Reykjanes Ridge.
- Cruise is Aug.13-Sept. 15 With Fernando Martinez as Chief Scientist
- First MB only cruise for Langseth.

2014 Projected Schedule

Pending Atlantic Projects for 2014

NSF Projects:

Mountain, et al - 3D Project – New Jersey Margin (34 Days)

GeoPrisms- Eastern North American Margin (ENAM) – SE Coastal US (onshore and offshore experiment) (37 Days)

USGS Cruises

2 Extended Continental Shelf (ECS) Mapping Projects possible on Atlantic Coast with one in 2014 and/or 2015 (Each 21-28 days) ???

Deferred: NOAA ECS MB and Van Dover ROV Projects

Glosten Winch Plan Implementation

Update on Glosten "Winch Plan":

- Decision made by NSF in 2012 to re-deploy R/V Wecoma CTD and traction winches and mid-ship's crane to Langseth. January, 2014
- New winch control house to be installed in new mid-ship location following final equipment layout design in January 2014

Wecoma ships crane to be installed on Langseth

Transitioning of Long Core Facility

Update on Long Core Conceptual Design Study:

- NSF funded preliminary study as part of 2011 SSSE with Glosten naval architects. Provided estimate of costs.

- UNOLS Council voted to stop any further design study work and to store WHOI Long Core system at this time.

- However, based on this Glosten study and related stability questions to improve platform, NSF is funding study to look at impact of adding sponsons on vessel.

2013 SSSE Projects:

OMO Priority:

1. New PA System $210,000
2. New Workboat Davit $149,000
3. Noise Mitigation on Engine Room Blowers $ 23,000

OMO Final Total: $383,000

SSSE 2013 Group Purchase: Moved to ONR as a Request for 2014

Tempus IC Telemedical Device (8 Units @ $50k each) $400,000

LDEO, U. Hawaii, Oregon St., U. Washington, WHOI, and SIO Deferred

2013 Ocean Instrumentation Outcome

2013 Ocean Instrumentation Projects:

OMO Priority:

1. Trade-in of Barovane 15 for Barovane 16 set (3) $ 21K
2. 50%-Diverter Doors for Towing Airgun Arrays (3) $ 25K
3. Associated Barovane Gear Outfitting $ 40K

Total Request: $86K

Technical Services Maintenance Projects

PRIORITY PROJECTS:

Source, Towing & Handling

* Modify -16 vanes for greatest flexibility into 3 x -16s, 3 x 15s & 3 x 2m "mini"-vanes.
* Overhaul 4 x BARO-vane launch/recovery booms
* Service 4 x source sub-arrays (hang plates, hoses, sausage buoys, cluster bars, etc.)
* Service 2 x MPD wide tow winches
* Service 4 x streamer winches
* Service 4 x source winches
* Replace I-beams (sub-array handling)
* Get 50% doors rigged & running

IT/Lab spaces

* Merkai training for tech staff-- this is the new network system installed on vessel
* Thru-hull acoustic pinger pole
* Server re-tasking
* Main lab console maintenance (replace bad monitors, etc.)

Other science systems

* Fix 3.5 bad transducers (shipyard)
* Fix ADCP (shipyard
* Service pod (shipyard)
* Rewire pCO2 computer system into main lab

Shipyard/Maintenance Priorities

Langseth scheduled for January 2014 Shipyard. Project list below contains both maintenance and projects to be addressed dockside in 2013 and at shipyard in 2014

PRIORITY PROJECTS:

*Propeller Hubs	*Reduction Gears overhaul and upgrade	
Vent preservation	Compressor room supply fans	Vent fan dampers
Anchor windlass	Clean Power transformers	Galley sink
Aft Capstan controls	Interior floor covering	Commercial trash compactor
Dish sanitizer	Main lab make up air	Life raft service support
A-frame Wireless Controls	Winch Control booth	Bilge preservation
Wet lab mods	A-Frame repairs	MG sets Overhaul
Hull and topsides paint	ABS Surveys	Fwd. Ballast tank preservation
Hull and sea chest zincs	Anchors and chains	Rudders
Sea bay and BHD 58 Piping	Stbd Propeller Blades Repair	CTD Winch installation
Spare streamer winch structural support and controls		

*** Major Projects**