L-DEO Office of Marine Operations:

UNOLS Council and FIC Meetings

June 5-7,2012

Boston, MA

Lamont-Doherty Earth Observatory
Columbia University | Earth Institute

Outline:

1. 2012 Science Schedule
2. Summary of Line Islands Coring Cruise
3. Update on Glosten Winch Plan

Location of 2012 Science Missions

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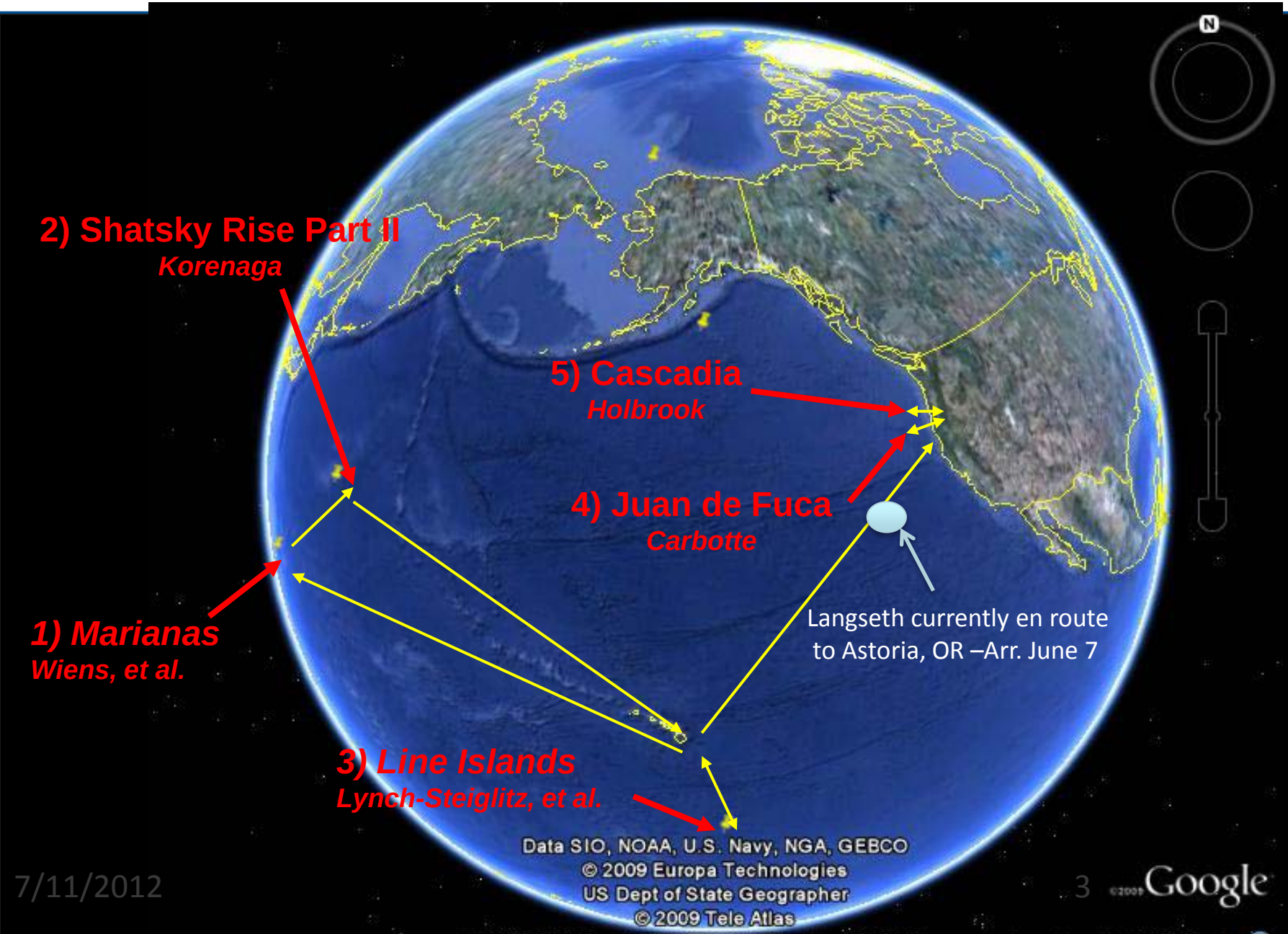

2012 Science Schedule

2012 Science Schedule (~195 Operating days)

- *January:* Transit to Guam -
- *February/March*: Wiens – Marianas (Guam to Guam)
- *April*: Korenaga – Shatsky Rise (Guam to Honolulu)
- May: Lynch-Steiglitz et al.- Line Islands Coring (Honolulu-Honolulu)
- June: Carbotte/Abers – Juan de Fuca – (Astoria to Astoria)
- July: Holbrook – Cascadia Margin- (Astoria to Astoria)

Fall 2012 Work Pending Approvals (Total of up to ~90 days) :

- 3D MCS Survey offshore of Diablo Canyon Power Plant in central CA- (Carton, Carbotte, et al.)
- 2D MCS Survey off of San Onofre Nuclear Generating Station (SONGS) near San Diego, CA in collaboration with SIO (Driscoll, Kent, et al.)

Line Islands Cruise Science Party Logo

"We Came, We Saw, We Cored"

MGL12-08 – Line Islands Cruise

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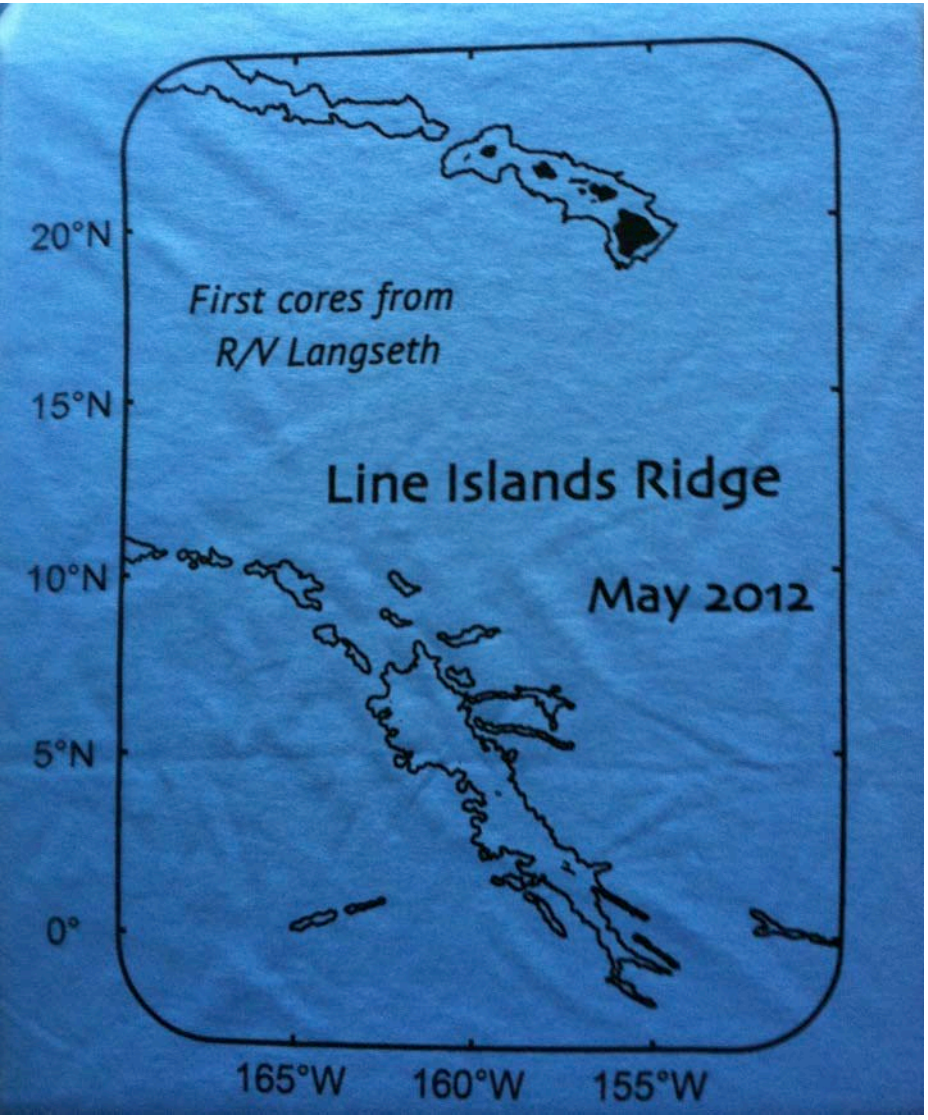

Line Islands Summary:

April 17-30- In port preparation and tests
May 1-26 – Science Cruise

Cruise met or exceeded all science objectives according to PI's based on their summary and cruise report.

Highlights:

•41 Cores (Piston/Big Bertha Gravity, Multi-cores, small gravity cores) between 0-8°N across Line Islands ranging from ~2500-3800m.

•Approximately 170m total recovery of sediment with large piston/gravity cores from 5-10m each.

•Hi-Res Seismic- 2 priority sections shot with 2-GI guns and 900m streamer using Langseth MCS.

•14 CTD's collected with 24 bottle rosette.

Cruise Preparation:

Six months of planning with NSF, Science Party, WHOI, SIO, Oregon St. coring group, and OMO staff to plan 12-day install period in Honolulu in mid-April. Included:

- Temporary Coring Winch & Wire Installation on OBS deck.
- Commissioning Winch with Markey tech reps and staff training
- 20K lb. Water bag System Test
- Installation of LCi90 winch monitoring equipment and WinchDeck software for tension monitoring in main lab
- New Deck adaptor plates for OSU coring equipment.
- New outrigger arms on starboard side for cores.
- New lab tables, freezer, acid cabinet, etc..
- New turning blocks, over boarding sheaves installed
- Installation of refrigerated van, lab van, Hiab crane, coring equipment, multi-core and 24-bottle CTD set up.
- Setting up water system to provide water for coring winch and main deck.
- One day “at sea” tests of gravity and piston coring upon completion of installs on April 30th.

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Left, new outrigger arms for holding sediment core. Arms fold in to ship and lock with attached pin when not in use.

On right, installation of new turning blocks and sheaves

MGL12-08 – Line Islands Cruise

Markey DUS-9 coring winch temporarily installed on OBS deck for this cruise. ~8500m of wire spooled on at U.H. marine facility

On right, photo of OBS deck layout of core winch, HPU, and shipping frame.

Below, view aft towards core winch on OBS deck.

Starboard Side Forward Dry Lab

Lab was outfitted with new tables, refrigerator, freezer, acid cabinet, and redeployed Millipore H2O system

Starboard Side-Wet Lab Location

- Core cutting/splitting
- Multi-core extrusion
- POC and Uncontaminated SW sampling

MGL12-08 – Line Islands Cruise

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Starboard wet lab space before (left) and in use during MGL12-08 (on right)

PI Post-cruise Comments/Issues:

The PI's provided a cruise report and also a facility review as part of evaluating Langseth's first non-MCS cruise. While the Langseth and OSU received praise from PI's on technical/IT support, overall cruise performance, hi-res seismic acquisition, and meeting overall science objectives, the PI's brought up issues related to Facility layout and equipment that we need to address.

Issues/Concerns:

1. Deck Safety
2. Deck Space
3. A-Frame Position and impact on coring and deployments
4. CTD Deployments
5. Overall Lab Space/Facilities

Deck Safety

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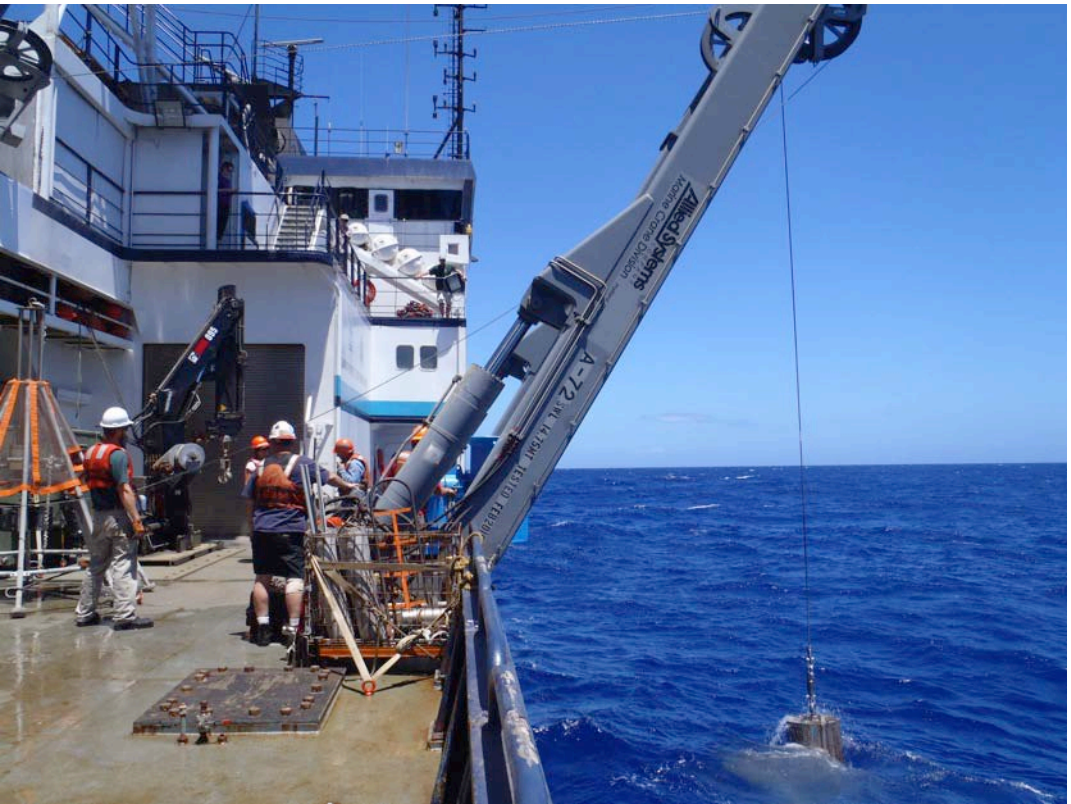
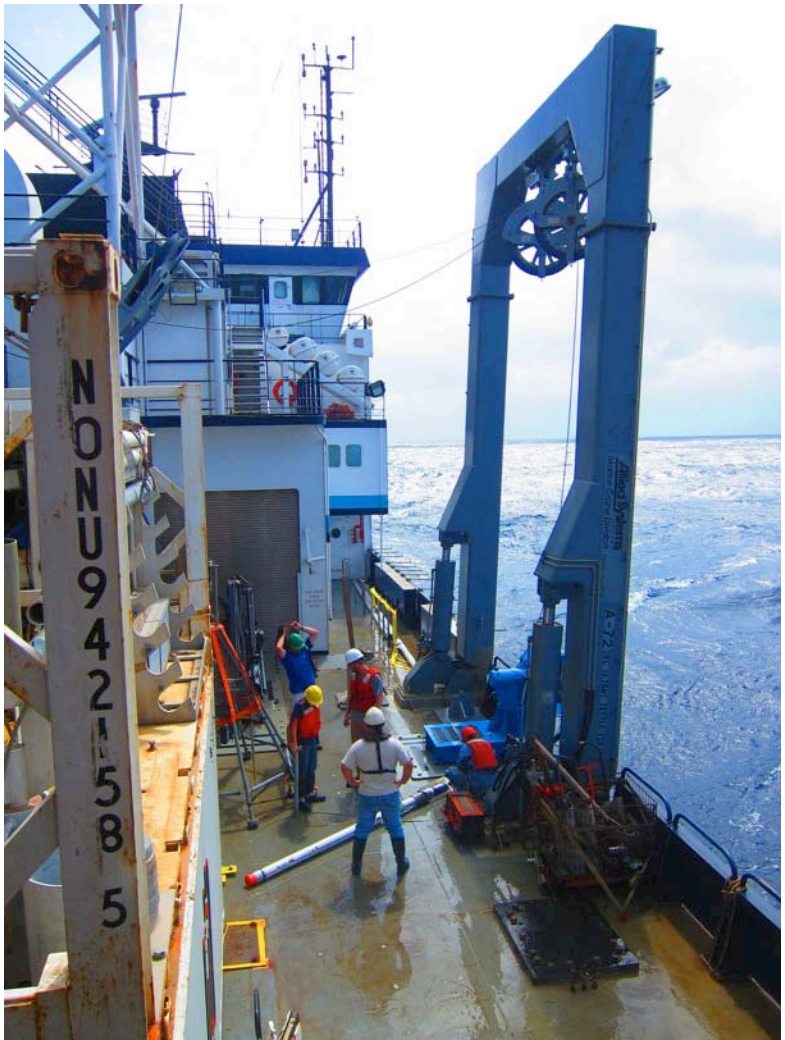
Issue raised was “wetness” of main deck work area during coring and CTD operations. While wet decks are not uncommon, possible remedies include higher side rail and a raised grated deck. In colder climates and heavier seas, more protection suggested.

Above, water coming onto main deck area.
On right, moderate waves off stbd side rail.

Deck Space

The main deck space on Langseth was loaded with OSU coring equipment, MST van, Hiab Crane, multi-corer, CTD rosette, and core support equipment. Issue raised was question of having enough open deck space for other more complex operations. Possible solution could be repositioning of lab van or other equipment.





A-Frame Position Impacts

Issues: The straight-leg Langseth A-Frame cannot support multiple activities at same time —CTD and Piston Core, unless piston core is limited in size (20' barrel) and rigged vertically. This limitation wasn't appreciated ahead of cruise. The A-Frame must be vertical when using piston core/CTD at same time as head of piston core and barrel cannot be disconnected. Location of A-Frame overall limits max. piston core to 15m to allow room for core extrusion.

Possible solutions include possible change in location of A-Frame inboard or modifying A-Frame itself, moving CTD operations to separate boom, and re-examining piston head/barrel connection.

Lab Spaces

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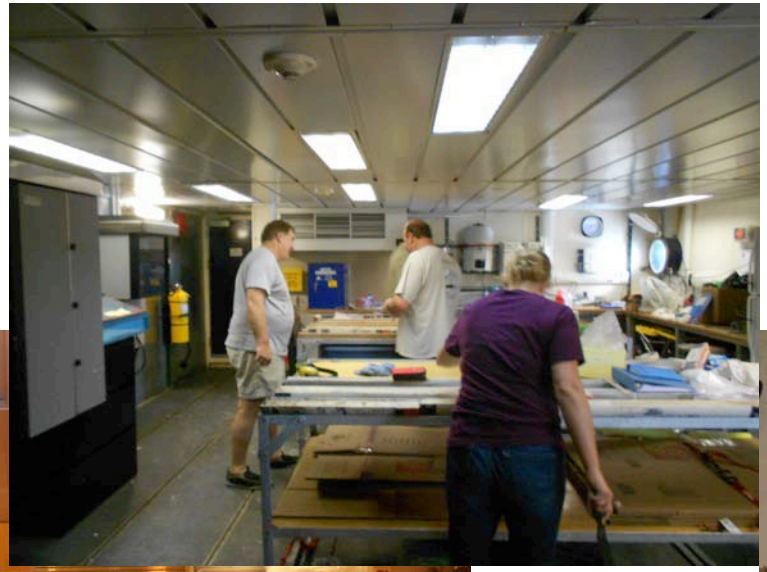
The starboard side wet and dry labs we're prepared for this cruise. The wet lab served as core splitting, multi-core extruding, and POC water sampling area while dry lab worked as core description, sampling, and sample prep. area. The issue raised was potential lack of overall lab space for more complex cruises. Possible solutions include use of port side dry lab for additional space (increase space by 30%) in addition to other lab vans locations.



- On left, photo dry lab space for sampling and core curation.
- Bottom left, wet lab space for core splitting and multi-core extrusion.
- Below, wet lab space for water sample preparation.

CTD Deployments

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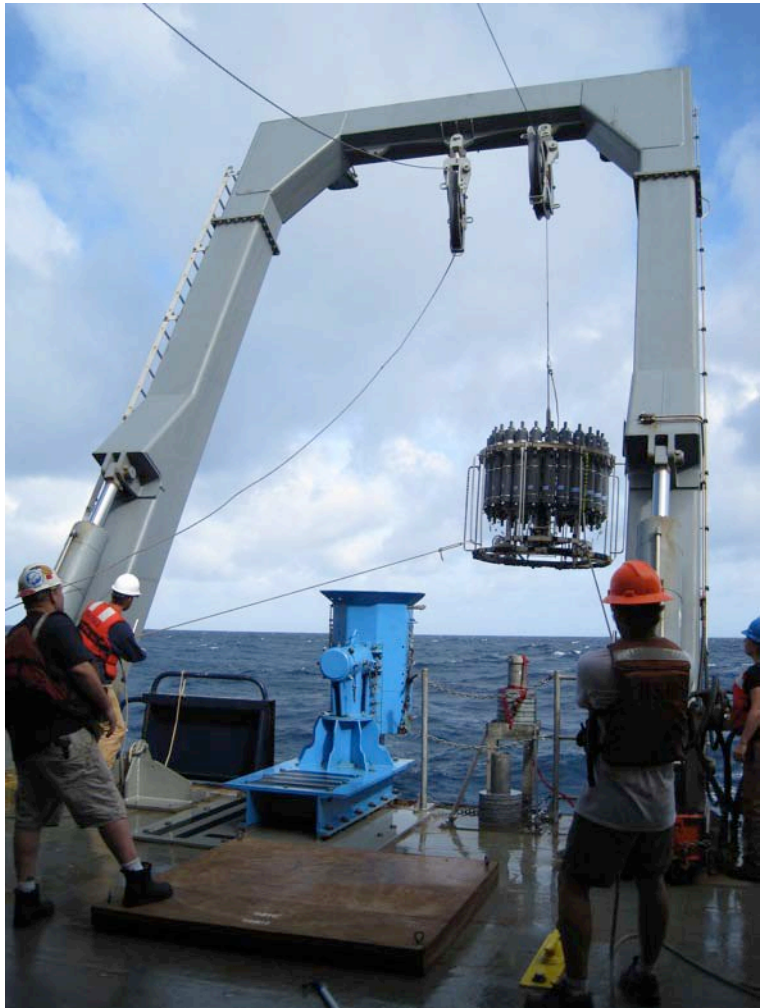
The issue with CTD deployments raised was need for extra people to deploy CTD on aft block of A-Frame to avoid entanglements with piston core rig and right side of A-Frame leg. Possible solution is deploying CTD off with separate over the side boom or modification of A-Frame.



Thanks

OMO would like to acknowledge efforts of the Scientific Party led by Jean Lynch-Steiglitz (Georgia Tech) and Pratigya Polissar (LDEO), OSU coring group, SIO winch pool, WHOI wire pool and CTD loan, and NSF for their support in making this cruise successful. Also thanks to U. Hawaii Marine facility for all of their support.

Above, Langseth on way to fuel pier as science party looks on.
On left, Zen coring master, Chris Moser of OSU in deep contemplation .

Glosten Winch Plan Implementation

Update on Glosten Winch Plan:

- New Smith-Berger turning blocks and over boarding sheaves delivered for coring cruise. Sheaves can be configured with 4 different sized wire groove inserts.
- Structural modifications to A-Frame and turning block foundations completed.
- A-Frame modifications including ladder, lights, and tugger winch installation completed.
- Decision made by NSF to re-deploy R/V Wecoma CTD and coring winches and mid-ship's crane to Langseth. January, 2012
- New winch control house to be installed in new mid-ship location following final equipment layout design in January 2012

On right, photo of new turning blocks and sheaves installed in Honolulu, April 2012

Transitioning of Long Core Facility

Update on Long Core Conceptual Design Study:

- NSF funded study as part of 2011 SSSE with Glosten naval architects.

Written Reports provided separately on:

- Summary of Stability Profile evaluation to date.
- DP System Performance Summary for Line Island cruise