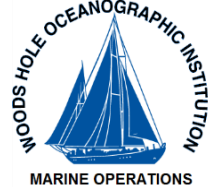


AT39-05: Hutchins: Co limited N-fixers 1400 Wednesday 11 October 2017

SSSG Conference Room, Smith

Call: 508-289-3192 ext. 203811

Synopsis: <http://www.whoi.edu/cruiseplanning/synopsis.do?id=4502>



Mission Objectives:

We will be using trace metal clean sampling and incubation techniques to investigate iron and phosphorus control of nitrogen fixation in the tropical Atlantic. Our research plan involves both station work to sample mixed layer profiles (~6-8 depths), collect whole water filtered samples using McClain pumps, net tows to obtain Trichodesmium samples. Several sets of deckboard incubations will be running concurrently with the transect sampling. I have uploaded a list of 20 straw-man stations, but we will be looking for Trichodesmium blooms, using both semi-daily net tows and based on ocean color imagery to be periodically sent to the chief scientist. Therefore, stations will necessarily be a bit opportunistic, and may require minor deviations from the cruise track (within reason, of course).

Science Activities:

Station sampling will include regular CTD rosette profiles down **full depth (~5km)**, deployment of a trace metal clean rosette system (coPI Saito), surface seawater trace metal clean pumping system (Saito), McClain pumps (Saito), possibly deployment of an in situ FiRE fluorometer (Hutchins), and frequent net tows to collect Trichodesmium samples (Hutchins/Webb). We also be carrying out simultaneous deckboard incubation work throughout the cruise using 4-5 flow-through deckboard incubators.

Chief Scientist and PI contact info:

David Hutchins: Chief Scientist, Principal Investigator
3616 Trousdale Parkway P.O. BOX 90089 Los Angeles, CA USA 90089
+1 626 993 4093
dahutch@usc.edu

Mak Saito: Principle Investigator
WHOI MS#51
+1 508 289 2393
msaito@whoi.edu

Eric Webb: Principle Investigator
eawebb@usc.edu

Identify operating area: Latitudinal transect from Cape Verde due S to ~8°S, return NW transect to San Juan, PR
Depth Range: 0 / 200m

Station Information: *“stations will necessarily be a bit opportunistic, and may require minor deviations from the cruise track, within reason, of course”*

Approximate Stations (will be adjusted as needed to sample Trichodesmium blooms):

Leg 1	Leg 2
15.5N x 22.0W	5.6S x 26.5W
12.5N x 22.0W	3.0S x 30.8W
9.5N x 22.0W	0.0 x 36.9W
6.5N x 22.0W	2.6N x 40.0W
3.5N x 22.0W	5.0N x 44.3W
0.0 x 22.0W	7.5N x 48.5W
2.0S x 22.0W	10.0N x 52.7W
4.0S x 22.0W	12.8N x 57.0W
6.0S x 22.0W	15.5N x 61.0W
8.0S x 22.0W	17.0N x 65.4W

***There will be 10 regular stations, can provide better station map if desired**

Ship's Personnel:

Captain: Lunt Chief Mate: Leonard Chief Eng.: TBD SSSG: TBD

Voyage Info:

Ship transits at Max 11kts

Load: 05 February 2018 – Praia, Cape Verde ***Return ticket not necessary; K.Strom to provide ships letters**

Depart: 08 February - Praia

Arrive: 11 March – San Juan, Puerto Rico*

Unload: 13 March – San Juan*

*San Juan port call is contingent on confirmation from agent that all ship & science needs can be met. Alternative port is Bridgetown, Barbados.

Schedule Notes:

06 February (pm): Science Personnel can move into their rooms

05 Feb (?): Crane needed to load one 20' container (20k lbs) – Crane costs to science

05 Feb (?): 5T Fork lift needed for winch removal from container –Fork lift costs to winch pool?

Other Forklift needs?

12 March: Science personnel will move out of their rooms day after arrival

Science Party (size): 24 Max, plus 2 required berths for SSSG techs – anticipate # in the upper teens; foreign participants (Swedish, Italian, Chinese?)

Pre-cruise and Administrative

1. Financial responsibility: WHOI Project Number

Institutions outside of WHOI will require a purchase order (PO) to enable incidental costs to be funded. Expenses can include services such as agent charges, shore cranes, forklifts, taxi & hotels, Immigration/Customs entry fees to foreign countries, Hazmat disposal, and freight forwarding to name a few. A link to review potential costs can be found here: <http://www.whoi.edu/page.do?pid=8457>

****WHOI now charges MTDC of 37.5%*** Therefore, it will be significantly cheaper for you all to make your shipping arrangements independent from WHOI by directly interfacing for purchasing agreements with our agent or any other agent and freight forwarder that you may choose.*

2. Personnel forms due: 1 month before cruise to Kim Ray (kray@whoi.edu)

*Forms should be kept confidential, and sent only to the address specified

3. Berthing Plan: Complete and remit to sfuller@whoi.edu

<http://www.whoi.edu/filesserver.do?id=17092&pt=2&p=19713>

4. Any Special Food Requirements? (Kosher, Allergy, Vegetarian, etc)

In addition to providing this information on personnel forms we ask that the Chief Scientist request this information from their science party especially information on allergies. This information will be given to the stewards in advance of the cruise

Scientific Support

General Duties of Marine Technicians

SSSG Technicians (WHOI SSSG) TBD

Please Note: WHOI sssg techs are not watch standers, and are not part of the science party. If specialized/dedicated techs are required to run operations or equipment, they must be added to your science party.

Shipboard Equipment

Deionized Water System

- 80L/day maximum production onboard, expect 50-75L/day needed for bottle rinsing etc.
- Bring reservoir carboys to make ahead of time
- Filters will have been recently changed, or will be near needing change. We will have 1 additional filter cartridge aboard in case needed after that change.
- Part numbers for extra spares, should you want them:
 - o Millipore QPAK1 CPMQ004R1
 - o Millipak 40 Gamma Gold MPGL046K2

Fume Hood **All will be needed**

~~Navigation—Position~~

Science Underway Seawater System

~~Transducer well for visiting instrumentation~~

Shipboard Communication

Basic Internet access via HiSeasNet

Need to receive data ashore – what kind/quantities/frequency? **Connect with Laura Stolp about bandwidth needs**

~~Other Communication needs? (voice, fax, e-mail, Blog)~~

Science party is responsible for communication costs.

CTD/Water Sampling

911+ Rosette 24-position, 10-liter bottle Rosette with dual T/C sensors

Biospherical underwater PAR (1000m depth limit) with reference Surface PAR (**no underway PAR**)

SBE43 oxygen sensor

~~Seapoint STM turbidity sensor~~

~~Wet Labs ECO-AFL fluorometer~~

Wet Labs FLNTURTD Combination Fluorometer and Turbidity Sensor

MET Sensors

Wind speed and direction

Short Wave Solar Radiation

Navigation

~~Needed?~~

Sample Storage

Freezer -70°C 25 cu. ft.

Freezer -70°C 3.2 cu. ft. ea.

Would like to leave ½ shelf of samples aboard in -80 until returned to WHOI

Refrigerator 8.6 cu. ft.

Liquid Nitrogen Dewars

- **Will bring their own, including shipping dewars**
- **Explained ship's dewars cannot be used for sample storage, are for production only. Bringing own dewars. Will look into obtaining initial ~50L in Cape Verde and just using ours to top off during cruise. If not possible, need to have ship's 2 20L dewars full at start of cruise. Will need**

to take ship dewars OFF OF THE SHIP to pour these 20L dewars into theirs. NO POURING OF DEWARS TO EVER OCCUR ON THE SHIP. Otherwise they know we can only dispense ~1L at a time.

-

-

Approximate amount of sample stowage space needed? (Efforts to accommodate samples from multiple cruises)

Storage Notes: LN

LN generator is installed and available for use. Consider a backup plan should the generator unexpectedly malfunction. **Generator only produces 3-4L/day**

Do you plan on using ship's dewars, or are you shipping your own? How many, what size?

2 ship's dewars can start full, but note that filling empty & warm dewars may take several days.

Please follow all necessary precautions when handling/transferring LN to avoid spillage on deck.

Winches

CTD Winch with .322" Electro-mechanical wire

Additional Clean winch & block request through Brian Guest (Winch Pool). M Saito will deploy his own trace metal rosette system, trace metal surface pumping system, and has requested McClain pumps as well.

- Clean winch is 480V, 3phase, ~30A.
- Clean winch placed on stbd side just aft of CTD, overboards via clean block on stbd crane
- Winch needs to be shipped back to WHOI from Puerto Rico
- Pinger needed? Will not be trace metal compliant

Hutchins will occasionally want to do mixed layer profiles with a submersible FiRE fluorometer, which will need to be deployed using the winch. **Probably on clean winch, but not sure because being brought by foreign collaborator. FiRE is a self-contained instrument to be mounted on CTD...does not need external power or data.**

McLane pumps on clean winch.

Vans

20' Winch van (weight?)

Shipped with science supplies from M Saito

To be located on 01 deck?

Supplied by B. Guest or M Saito?

Cost share?

5T Forklift needed to remove winch from van prior to loading

What are the crane needs?

20' Science Lab Van (20k lbs)

Owned by Hutchins, shipping directly to Praia

Needs: power (**440V 60A**), ~~water, telephone?, alarm?, internet?~~

Crane needed to load

To be located on main deck out of way of winch ops & 6+ deck incubators – **Webb(?) will bring garden hose & spigot Y splitters for incubator salt water**

Preference for van stowage on port side

Special Over the Side Equipment

Details: M Saito has clean rosette system

McLane Pump **includes wire clamps**

Fish – will work out deployment on the spot

Plankton nets - One type is small, hand-deploy during CTD casts. Other type want to be trace-metal clean, deployed away from ship. Proposed they deploy with clean winch, or could bring additional clean block to suspend from port boom, use air tugger and line to lower.

Instrument Deployment / Recovery Procedures: please submit so can be attached to synopsis

Special Requirements

Science stowage – supplies & equipment → elaborate size/quantity/type
4-5 deck incubators – need flowing seawater

Hazardous Material

Hazmats will be confined to lab use.

Hazmats include: HCl, NaOH, acetone, formalin, compressed H₂, N₂ and acetylene cylinders

Make sure to bring own spill kits, MSDS

Be prepared to remove Hazard Waste and unused chems in San Juan if not possible to carry to WHOI

Loaded most chems @ WHOI, see ship inventory.

Loaded @ WHOI: 6x N₂ Saito, 2x N₂ Webb, 2x Air Webb, 2x H₂ Webb to 01 deck.

Discussed keeping hydrogen in ROV hanger (need to mount gas racks or brackets there) within ~10 feet of pass-through to hydro lab. They should bring plenty of tubing to run into hydro lab.

Please Submit MSDS electronically to R/V Atlantis Chief Mate. chmate@atlantis.who.edu

Radioactive Material: no

Additional Information

Anticipated night time work

Bubbles to be built in the lab – bring your own wood – no drilling into ship's benches

Safety

Deck Safety – Safety Shoes must be worn at all times on deck and in common areas. Safety Shoes, hard hats and vests must be worn when launching/recovering over the side instruments. Steel toe shoes for movement of heavy equipment. Over the side – safety plan for any over the side work/deployments or recoveries
On the dock or at sea – hard hats for overhead lifts, fall protection for working on top of vans or for attaching gear on railings or towers.

Closed toed and back shoes for working in labs or on deck. Open toe/open back only allowed in cabin.

We will have some hard hats, but bring one if you have one.

Lab Safety – PPE

Science party is responsible for laboratory PPE including lab goggles, coat, gloves, storage containment and cleanup kits for working with all hazardous materials brought onboard the vessel.

Shipping & Loading Logistics

Note: All WHOI contacts should be copied on all communications with Agents. Information regarding the shipment of any equipment, containers or supplies should be communicated to the Agent and to all WHOI contacts.

Customs - You must send me all Bills of Lading or Air Way Bills (BOL's or AWB's) when your gear is shipped so that the captain can have all documents proving that your gear originated in the United States. You can get these forms from your shipper / freight forwarder. We require these documents prior to your mobilization on Atlantis.

Mobilization in Praia, Cabo Verde – To clear customs, plan for shipments to arrive no later than 25th January, 2 weeks prior to departure. Storage maybe necessary if clearance is efficiently executed, and science will be responsible for storage costs of containers until they can be loaded.

20' Lab Van (~20k lbs) – ship with seal on the doors, or speak with your shipping company about the keys for your container.

Agent & Shipping Information

Ship to:

Master R/V Atlantis

Attn: David A. Hutchins / AT39-05

c/o AGENCIA NACIONAL DE VIAGENS, SA

Rua Serpa Pinto

P.O. Box No. 58

Praia

REPUBLIC OF CAPE VERDE

Phone: +238 2 603101 / 2603103 / 2603106

Fax : +238 2 612162

E-mail anavpraia@cvtelecom.cv

General Manager: Mr. Euclides Pereira, Mobile +238 9912903

Primary contacts: Shipping Manager: Mr. José Manuel - Mobile +238 9917641

Operation Manager: Mr. Bernardino Barbosa - Mobile +238 9916780

Boarding Agent: Mr. Marileno Soares, Mobile +238 9964277

Boarding Agent: Mr. Telmo, Mobile +238 5221259

Needs from Agent & Ship

Customs processing & storage of 2 containers

2, 5, or 35T forklifts available – 5T will be needed for Clean Winch

Shore crane for Lab Van

What other needs are anticipated?

Any shipments other than containers?

Tentative Loading Schedule

06 February (pm): Science Personnel can move into their rooms

06 Feb (?): Crane needed to load one 20' container (20k lbs) – Crane costs to science

06 Feb (?): 5T Fork lift needed for winch removal from container –Fork lift costs to winch pool?

Other Forklift needs?

Demob in San Juan, Puerto Rico – We are still assessing the possibility of ending the cruise in Puerto Rico, dependent on clear outline of anticipated needs while in port. Should San Juan not be able to provide sufficient amenities to accommodate both the demobilization of this cruise and mobilization of the next, the backup is Bridgetown, Barbados.

Agent & Shipping Information

TBD by week of Nov 1

Needs from Agent & Ship

Shipment of 2 containers

Forklift to lift Clean Winch into Container
Shore crane for Lab Van
Samples to be shipped directly to PIs from San Juan
What other needs are anticipated?
Any shipments other than containers?

Tentative Unloading Schedule

11 March (am): Arrival & begin demob
12 March: Science move off ship
13 March: Last day of demob

Can Leave Aboard

Potential to leave gas cylinders and or chem waste, pending available space. Be prepared to cover these needs in San Juan if necessary.

Post Cruise Responsibilities

Actions departing ship: Clean rooms, remove items from chemical van)

UNOLS cruise evaluation: Chief Scientist & Master

Reports to foreign government/State Department: required for work in EEZs; send to Kerry Strom, kstrom@whoi.edu

Data delivery [shipboard]: USB Hard drive

Data archiving policy

All data on a WHOI Cruise Data Distribution (which includes all underway data) will, by default be considered publicly available once a copy of it has been delivered to the chief scientist at the end of the cruise. Please review the [Cruise Assignment of Data Access Protection](#)

As of January 1, 2011, the default treatment for underway data from Woods Hole Oceanographic Institution (WHOI) research vessels is:

1. Cruise data files are copied by a WHOI SSSG Technician to the distribution media. One copy is delivered to the cruise Chief Scientist, the other is delivered to WHOI's Data Library and Archives. Please note that the distribution of cruise data to other scientist is the responsibility of the Chief Scientist.
2. The **default** access status for the cruise instrument datasets is that they will be immediately accessible by the public. If something other than this default protection is desired, the Chief Scientist must assign alternate protection as indicated below. For cruises funded by the National Science Foundation ,the maximum protection is two years, for non-NFS cruises, other guidelines may apply.
3. WHOI maintains a local copy of the cruise shipboard data distribution at its Data Library and Archives, which also honors access moratorium periods. If the cruise Chief Scientist wishes to modify the data protection assignments made in this pre-cruise document upon cruise completion, they should contact the
4. WHOI Data Library and Archives at dla@whoi.edu, or the SSSG Data Manager at sssgdatamgr@whoi.edu