



## **CRUISE SUMMARY**

**NOAA Ship *Ron Brown* / ROV *Jason* Expedition RB-1903  
April 9 to April 30, 2019**

for

### **DEEP SEARCH**

**DEEP Sea Exploration to Advance Research  
on Coral/Canyon/Cold seep Habitats**

**Deepwater Atlantic Habitats II:  
Continued Atlantic Research and Exploration  
in Deepwater Ecosystems with Focus on  
Coral, Canyon and Seep Communities  
Contract - M17PC00009**

## Expedition Background

The RB1903 expedition on board the NOAA Ship *Ron Brown* with the ROV *Jason* is the fifth cruise of the project, and the second first submersible sampling cruise. The primary goals of this cruise are as follows:

1. Exploration of new sites and new areas within known sites
2. Sampling of corals and associated fauna for biodiversity and biogeography
3. Community sampling at seep and coral habitats
4. Sediment sampling at soft sediment sites for biogeochemistry and diversity
5. Collections of corals for live coral experiments
6. Water sampling for water chemistry and microbial diversity
7. Sediment, water, and faunal samples for eDNA work
8. Geological observations and sampling for geomorphology
9. Lander deployments

## General Dive Plans

Each dive will have a specific plan based on the type of habitat, the sampling needs at the site, the capacity of the *Jason* “basket,” the results of the previous dive(s), and the overall needs of the entire project. Although much of this information will only be available the evening before the dive, there is enough existing information to present generalized dive plans for the three habitats that are the focus of this study: canyons, corals, and cold seeps.

**Canyons:** The canyon dives will focus on coral diversity, biogeochemistry, macro-infauna, geology, and water sampling. If bubble plumes and seeps are present, they will also be investigated. Dives will begin in the deepest parts of the chosen targets, and proceed upslope.

Basket: 11 push cores on port swing arm, 14 push cores on the basket, 8 sample quivers on swing arm, 6 on the basket, 4 niskins, 5-chamber slurp, 1 large biobox, 3 mussel pots (if seeps present), additional sample quivers (if seeps are not present)

Priorities: corals for barcoding, key coral and mussel species with associates for pop gen, push cores in canyon axis and near corals and/or mussels (if possible), water samples near scleractinians and large coral colonies, rocks for geology

**Corals:** These dive plans are primarily focused on the *Lophelia*-dominated habitats in the southern part of the study area.

Basket: 11 push cores on swing arms, 8 sample quivers on swing arms, 4 niskins, 5-chamber slurp, 2 large bioboxes, 3 coral pots, rock boxes, additional sample quivers

Priorities: video survey of distinct geomorphologies identified from new and existing multibeam data, coral community samples, push cores associated with and away from community samples, water samples near the seafloor where live corals are present, rocks (if present), other corals for barcoding, *Lophelia* in bioboxes for live coral experiments

**Seeps:** The dive plans for the deep seep sites where mussels are present (i.e. Cape Fear) and shallow sites that are dominated by bacterial mats (i.e. Pea Island) will be similar with the replacement of the mussel pots with additional push cores at the shallow sites.

Basket: 25 push cores on swing arms, 14 sample quivers, 8 on swing arms, 6 on the basket, 4 niskins, 5-chamber slurp, 1 large biobox, 2 mussel pots (if seeps present), rock boxes, additional push cores and sample quivers (if seeps are not present)

Priorities: Mussel community sampling, push cores associated with community samples and away, mussel sampling into bioboxes for pop gen plus gill/host genomics, water samples associated with all mussel samples, coral samples (if present), carbonates

## **Expedition Activities**

### **April 5**

Jason mobilization begins with the arrival of the four Jason vans plus the rad van on the crane barge. All of these were loaded onto the ship and installation begins. Shipments from the science party including hand-carried packages and pallets are also brought on board using the ship's crane.

Nancy Prouty from USGS reports that she has strep throat, so she is replaced by Lauren Carroll from Mandy Joye's group.

### **April 6-7**

Additional members of the science party arrive and mobilization continues. There are problems encountered with rigging the rad van. Eventually, it is determined that there is a ground in the power cable coming from the van. Issues with the port ship's crane overheating slow the process, with the lander still on the pier and an inability to move large items on the deck.

### **April 8**

The remaining members of the science party arrive in the morning and everyone moves on board. An electrician is scheduled to address the problem with the rad van. A frayed wire is located on the connection from the van to the ship's power supply and this repair eliminates the ground. Issues with the port crane overheating continue and the lander remains on the pier.

The ship departs at noon for a test of the recently rebuilt generator in the harbor. While this is ongoing, a trip to the NOAA Hollings lab is completed to fill the liquid nitrogen dewars (there is no -80°C freezer on board).

The ship notifies us that the original crew member scheduled for the cruise is now healthy and can sail for the entire length of the cruise. That results in a shuffling of the berthing since that person (a male) is replacing a male on leg 1 and a female on leg 2.

### **April 9**

We are scheduled to depart at 1000, but this is delayed while the crane repairs are finalized and the lander is then loaded onto the ship. The ship finally departs at approximately 1400 hrs.

## 2200 **CTD-01** in Stetson Shallow

We arrive at a location in the Stetson Shallow region with sufficient water depth (> 500 m) to conduct the USBL calibration with the elevator. The USBL pole is deployed and a CTD cast is conducted to generate a sound velocity profile and collect a series of water column samples.

## **April 10**

When the CTD cast is complete at approximately 0130, the ship attempts to hold station, but is not able to in the ~3 knots of current that are present here. The Gulf Stream is significantly further west now than it was in August. We continue on to the Richardson Hills sites on the other side of the Gulf Stream.

## 0700 **CTD-02** Richardson Hills

We arrive and the surface currents are just under 1 knot. We lower the USBL pole and conduct a CTD cast, generating a water-column profile with the CTD and firing niskin bottles near the seafloor (21) and near the surface (3).

## 0900 Elevator deployment

The elevator is deployed in a flat spot along the eastern edge of the “U” that separates the Stetson Banks sites to the west from the Richardson Hills sites to the east. Then the ship molds station at a series of cardinal points and determines the range and bearing to the elevator to complete the USBL calibration.

## 1900 Elevator recovery

## 2000 Launch **J2-1128** at Richardson Hills swale site

On the descent, we crossed a clear thermocline at approximately 750m, far deeper than normal, but similar to the water column profile over the other Lophelia mounds at the northern reef track at Richardson Hills.

The ROV landed immediately on coral rubble habitat with abundant live Lophelia colonies. Ivan took the controls to get the camera dialed in. He determined that frequent white balancing of the camera will greatly improve the color temperature of the image, particularly when you go from sitting down to transiting or vice versa. We then began a series of octocoral collections - there were abundant Plumarella and neptheids throughout, and patches of a white plexaurid from time to time. The first swale was mostly this type of habitat with live Lophelia colonies in the “bush” stage with some Madrepora and a few Solenosmilia mixed in. The second swale near WPT 2 was mostly coral rubble with very little live coral consisting of smaller colonies of Lophelia and occasionally Enallopsamia.

The bottom of the swale between WPT 2 and 3 was finer sediments with clear bedforms of sand and small rubble. As we began to climb up towards WPT 3, there was mostly rubble with large numbers of small, white plexaurid colonies. At the top near WPT 3, we encountered another field of standing dead coral with numerous live coral colonies interspersed. We set up for the first coral pot sample here, and then made a live coral collection into the biobox. Leaving WPT 3, the coral cover began to decline on the way to WPT 4.

We continued along the track from WPT 4 to 5, and observed coral rubble in the swales/furrows between the peaks, with dense live *Lophelia* on the highs. The structure below the live *Lophelia* appeared to be a dense matrix of dead *Lophelia* and fine and sandy sediments. We collected MP2, soft coral, *Plumarella*, and *Lophelia* into a quiver and biobox during the watch. Fish observations included rattails (e.g., *Nezumia*), snaphobranchid eels, and a goosefish (*Lophiodes*). Depth ranged from ~747 to 773 m. There was a noticeable shimmer in the water around these topographic highs, consistent with water temperature changes.

Near WPT5, on the flank close to the top of a small feature at approximately 780 meters, the substrate was mostly coral rubble with white plexurid octocorals plus sponges. We collected one of the white plexurids as a representative of this habitat. As we continued up the feature, we came across occasional *Enallopsammia profunda* colonies, most were the yellow morph, but a few were white. We collected some of each. An invertebrate that was conspicuous was the pinkish *Echinus* urchin. We continued upslope towards WPT 6. At approximately 750 m, the temperature began to climb sharply, from 4.4 to 6.5 degrees C at 760 m, then to about 10 degrees at 730 m. We traversed across a swale with coral rubble/sandy substrate before climbing to WPT6, where there was again a higher abundance of large live coral colonies in the warmer waters. Here we began to see occasional *Madrepora oculata*. We collected *M. oculata* and *Lophelia*, plus *Plumarella*. Within about 5 minutes, we observed 3 chimeara with black spots.

The transit between 6 and 7 was mainly along the top of a ridge. At WPT 7, there were numerous large live *Lophelia* colonies. Some of these were approaching the thicket stage, with rings or semi-circles of live coral growing around a center consisting of standing dead skeleton. In some places, these structures were so large that they had tipped over and the live coral continued to grow at the edges.

## **April 11**

ROV was off bottom at 0730, but the level-wind was not functioning and there was a wrap in the winch. The ship moved to the NE into deeper water and the ROV was

lowered back to the bottom. Recovery was slow and methodical, but avoided any further mishaps.

1000 recover J2-1128

1030 launch **lander** @ Richardson Hills

1100 triangulate lander position

The lander was deployed at a site approximately 1 km NE of the area that was just surveyed on the previous dive. The intent is for the lander to stay down for ~48 hours collecting data then we will return to recover and redeploy it in a nearby location.

1330 **CTD-03** at Richardson Hills swale site

1500 **CTD-04** at Richardson Hills swale site

The first CTD (03) was to collect bottom water for the live coral tanks and buckets in the cold room. The second CTD (04) was for a complete water column profile roughly half way between the lander position and the end of the J2-1128 dive.

The winds and seas were consistently climbing all day, so we moved to mapping operations. A survey was planned to fill the gaps in the bathymetry between the Richardson Hills and Blake Deep sites. However, at this time, one of the crew members had a family emergency, and the ship turned to transit to the nearest port, which is Cape Fear near Wilmington NC.

## **April 12**

We arrived inside the fairway at Cape Fear at 0700 and a Costa Guard boat came out to meet us and transfer the crew member. We then turned and headed back out towards the Richardson sites. The weather continued to be too rough for an ROV deployment, so we ran two mapping lines between Richardson Hills and Blake Deep.

## **April 13**

At 0630, we broke off of the multibeam line and transited over to the lander site. Just after 0800, we triggered the release of the lander. It was successfully recovered around 0900. It seemed to be a successful deployment with plenty of data from all of the instruments, and a large number of amphipods inside of the fish that were deployed with the baited camera.

We then transited to the Richardson Hills site where Alvin dive 4963 took place. We took 3 CTD casts, the first for bottom water and the second and third for a full water column profile. The 2<sup>nd</sup> cast was to the northeast, downstream from the site, and the 3<sup>rd</sup> cast was to the southwest, upstream of the site (the current was approximately 1.5

knots at a heading of 060). We then waited until the sea state declined to launch the ROV at this site.

1130 **CTD-05** at Richardson Hills A4963 site

1300 **CTD-06** at Richardson Hills A4963 site

1600 **CTD-07** at Richardson Hills A4963 site

1900 Launch **J2-1129** at Richardson Hills A4963

We launched the vehicle about 1.5 nautical miles SW (upstream) of the seafloor target. The Jason group wanted to text their level-wind on the way down so we decided to allow for the drift of the ship in the 1+ knot surface currents. On the descent, the temperature dropped steadily the entire time. At 450 m, it was approximately 16 deg C, and at 650 m it was 11 deg C. On the seafloor at 725 m, it was around 9 deg C. Occasionally during the dive, the shimmering water of the thermocline was observed at depth.

At 2014 local time, the bottom was in sight. We set up on bottom and immediately looked for a place to deploy the McLean pump. We came across the large 3m high marker that was deployed with the coral transplant experiment, but it was in a different location, just down hill from the deployment site. This was a relatively flat area of rubble surrounded by live coral cover on the side of the coral mound, so we set the McLean pump here at 2046 local and used the marker to relocate the pump at the end of the dive.

As we came off the bottom, we turned towards the transplant target and almost immediately found them. The three cement blocks with the stained coral were retrieved into the starboard biobox without incident. However, we had a very hard time closing the box even though it was not apparently fouled in any way. Between 2130 and 2200 hrs, we shot a series of highlight video in this area of large live *Lophelia* colonies on a fairly steep slope.

We set down at a new location and collected a series of *Plumarella*, *Anthothela*, and a few sponges into the quivers. We moved over a bit to a relatively undisturbed location and collected a coral pot sample and a few more collections into the quivers. We then moved again to take another coral pot in a nearby location, and some live *Lophelia* into the port biobox.

## **April 14**

The ROV picked up and traversed to WPT 2 on the north side of the mound, away from the Alvin dive tracks in the area. We collected *Madrepora*, *Plumarella*, unknown white plexaurid, and a cup coral. We also collected an unknown yellow plexaurid and

Anthomastus. The area was composed of lots of standing dead Lophelia capped with dense branches of live Lophelia. A few globular sponges that looked like large golf balls were also observed. There were a few fish observed while transiting up the slope, including Nezumia, Laemonema?, and synaphobranchids. At 0223 we started to head toward the McLane pump to start the multibeam patch test at a known target. The seafloor was visible during the multibeam ops, with dense particulate organic matter visible in the water column. There was a time code issue with the 4K camera, where some of the video was collected with an incorrect time code. The issue was corrected. During the MB patch test, the plan was to run lines at different elevations at particular headings to calibrate pitch and roll. Overall resolution of the MB will be ~ 0.5m. At 0345, the survey began, with 5.5 survey lines completed by 0929. During trackline 6, the current was too fast (0.5 kt to the NE) for the ROV to remain on heading and make way, so the decision to break the line was made. It was not possible to complete the cross line, so the plan changed to head to the seafloor and collect samples.

At 0600 local time, we returned to the seafloor on the SW flank of the mound. We deployed marker 1 at 31d59.051 N, 77d24.675 W and then collected Madrepora, Lophelia, and 3 Plumarella colonies into the biobox. We took some nice highlight video in this area after the collections.

At 0645, the wind had come up to about 20 knots, with gusts to 25, and the weather was predicted to get worse throughout the day, so the dive was given 30 minutes until leaving bottom. We took the last mussel pot sample and deployed marker 2 at this location. We then transited over to the pump deployment site, over some very large, tipped-over, live Lophelia colonies, and set up to retrieve the pump. By 0715, the pump was on board and secure. We attempted to fire all of the niskins, but only the two smaller niskins actually triggered. At 0730, we left bottom.

0900 Recover **J2-1129** from Richardson A4963 site

Recovery took a long time because of the persistent issues with the Jason winch level-wind system. At a number of points, the vehicle had to be lowered again to take wraps out of the winch. After recovery, the weight for the lander was repositioned, and the ship began to transit over to the lander deployment location.

1100 Deploy **Albex lander** at Richardson Hills site.

The lander was deployed from the same surface position as before. It was then triangulated in to get a good fix on it at its resting place on the seafloor. It will remain there until the next cruise, which is not scheduled yet, but should occur some time in September – October 2019. Once we were done with the triangulation, then we transited to the Blake Mounds site over night.

## April 15

We arrived at the Blake Mounds site in the morning after a very rough transit. Once we were set up in position at the site, we tested the ability of the ship to hold station. The currents were up to 3 knots, which made it very difficult for any operations. We then went north to the Savannah Banks sites, where the current was approximately 1.5 knots. However, the seas remained at 5-7 feet and the winds were a sustained 20-25 knots. Therefore, the decision was made to head into port early in the hope that we could get the transfer completed in the morning and get back out to sea early on the 16<sup>th</sup> when the weather was supposed to be better.

## April 16

We transferred 11 new science personnel on board. Headed to Savannah Banks for a long dive, J2-1130. The winch level wind was not functioning well so the ROV team did a test to see what adjustments need to be made to the end stop for each wrap. During descent, there was a significant amount of Pom in the water column and squid. On the way to WP1, we saw some octocorals (*Pseudodrifra*) and cup corals and some live and dead *Lophelia* and collected a coral pot. The sediment had too much coral rubble to enable push coring. Other corals observed during the transit upslope included

Throughout the transit from WPT 1 to WPT 2 there was an increase in coral rubble and live coral density as the ROV moved upslope. During the first portion of the transit there was a lot of coral (likely *Lophelia pertusa*) rubble without much live coral except small colonies of stylasterid and nephtheid corals. Then the rubble became denser and the occurrence of live *Lophelia pertusa* thickets increased. As the ROV continued upslope the currents increased to around 1 knot and there were sightings of *Madrepora* and *Enallopsammia* (both yellow and white morphs). Around 0630 (depth?) there was a shift in dominant scleractinian coral from *Lophelia pertusa* to *Enallopsammia* (white morph). Amongst the coral rubble primnoids (*Plumarella*), cup corals (*Thecapsammia*), Nephtheids (*Pseudodrifra*), and sponges were common. There was also a number (>5) of small shark seen throughout the area. At WPT 2 (511m) there was live *Enallopsammia* and the diversity of corals listed above. Downslope from WPT2 the coral diversity suddenly halted and there was almost no live scleractinians and much less rubble. There was very high current with a lot of particulate in the water. Throughout this time, we collected two mussel pots of *Lophelia*, one large live *Lophelia* collection, *Madrepora*, *Plumarella*, *Pseudodrifra*, cup corals, *Enallopsammia* (white and yellow), and sponges. One notable observation was of a shark eating a squid while conducting a live *lophelia* collection. Also noticed that the large urchins are primarily in the rubble areas and not with the live coral. Overall, there were several collections of target corals (e.g., *Enallopsammia*, ... ultimately, we were able to collect push corals in the coral rubble next to the *Pseudodrifra* and near *Enallopsammia*. Collected another mussel pot on a small patch of live *lophelia* with dead. Fish observed included catshark, chimaeria,

Nezumia, scorpaenids. We tripped all 4 niskins at the end of the dive near Enallopsammia, but the aft niskin didn't close all of the way because it had shifted during the dive. We left bottom at 1138 UTC and saw lots of POM during ascent.

**April 17** – Recover ROV, transited to Blake Deep, then dive, J2-1131. Reached bottom at 0106 UTC. Observed several coral species including bamboos and anthipatharians. We attempted to push core but were unable to collect at the beginning of the dive due to the substrate. Between WTP 1 and WPT 2 there was sedimented bottom with octocorals and black corals growing on occasional rock outcrops. The slope up to WPT 2 was not very steep and was very sedimented. The transit between WPT 2 and WPT 3 yielded highly sedimented rocks and interesting geology with sediment/rock shelves all the way up the ridge. At the top of the ridge (1314 m) was a rock overhang (~.5-1 meter thick) with *Desmophyllum*, *anthomastus*, black corals, anemones, and bamboo corals. At 1311 meters there was a sedimented area below the ridge and four push cores were collected. The ROV came around the “nose” of the ridge at WPT 3 and the community did not change much but there were bigger boulders, however everything was still very sedimented. Starting between WPT 3 and 4 there were sparse corals on small sedimented rocks on a not very steep slope. Headed downslope to WPT 4 to try and do some push cores but there were too many rocks so headed back up slope. Throughout this time, we collected *Solenosammilia*, *Hemicorallium*, *Iridogorgia*, black coral, yellow plexaurids + *Astroschema*, dead bamboo coral skeleton, *Metallogorgia*, *Desmophyllum*, *Chrysogorgia*, *Lethothela*, *Swiftia*, and 4 push cores. Continuing on to WP4, the corals encountered were similar to those found at the first part of the dive, including yellow plexaurids, *Solenosmilia*, and unknown bamboo. We collected some nice imagery of a rock with large vase sponges, bamboo, *Solenosmilia*, *Chrysogorgia*, and *desmophyllum*. Also observed a few different types of seapens. Four more push cores were collected. `Rock samples were collected as well.

**April 18** – Recover ROV, CTD, then transit to 2000 m water depth location for level wind test because of issues with ROV winch. Test was successful. Transited to Morehead City.

**April 19** - .... Transit to Morehead City

**April 20** – transit to mapping site at Cape Lookout, map for ~4 hours over target area identified from the predictive models. Started transit to Pamlico Canyon ~ 2230 local.

**April 21** –

Around 0400 am local, we set up to triangulate the lander. Surface current ~3kt to the NE. CTD cast with monocoar started around 0800 local, at a location northwest of our dive target in a gully area at 1300 m (lat: 34.9295, long -75.17132). ROV dive (J2-1132)

launch ~1200 and continued for....Started at the base of the canyon at around ~ m and continued upslope.

All equipment on the vehicle worked fine, but the vessel was having difficulty holding station on occasion with the wind and current. One occasion we left bottom for a few minutes while the ship stabilized, but otherwise managed to maintain normal operations. At the start of my watch we were around 1475 m and working laterally along the northern steep canyon wall in a northwest direction. Dense coral communities were observed under the terrace overhangs. These communities were dominated by *Solenosmilia variabilis*, *Desmophyllum dianthus* and *Acanthogorgia* sp. The fileshell *Acesta* sp was also commonly observed amongst the corals. We moved upslope to explore a different depth range (~1350-1300m) but despite abundant exposed hard substrate at these depths, the habitat was almost devoid of megafauna. The bathymetry contours were tending to spread further apart as we moved WNW up-canyon, so we decided to move back down-slope to the steeper walls. Collections were made of dominant corals, *Acesta* and other fauna using slurp, quivers and bioboxes.

Transiting from WP1 to WP2, series of rock steps and ledges, mainly populated by sea stars and ophiuroids. Near WP2, at the base of a wall, the second set of push cores (7 total) were collected. Transiting from WP2 to WP3, began to see lots of brisingid sea stars and small underhang communities of *Solenosmilia*, *Desmophyllum*, and some colonies of *Acanthogorgia*. Two slurp collections were made of *Solenosmilia* and *Desmophyllum* from these communities (blue and black containers). Upon reaching WP3, took a set of 6 push cores.

April 22 continued dive, started recovery around 1600 local because a storm blew through and seastate picked up. Planned CTD ops directly after USBL recovery took a few hours because set up and drift required setting up the ship ~3 miles southwest of the 1600m depth target in Pamlico Canyon. While deploying CTD, it became clear that with the USBL pole in the water, it was not possible for the ship to back down to enable a straight wire angle. The CTD reached the seafloor at ~1130m within the canyon. Camera on CTD confirmed that we reached the seafloor with a clear image of a crab.

April 23: dive ~midnight planned. Little delay because.... Dive at Pea Island seep, J2-1133. Encountered... collected... etc.

All equipment on the vehicle worked fine, there was a moderate current coming from the north that occasionally re-suspended sediment and reduced visibility. Surface current and winds were minimal and the ship held station well. We spent most my watch traversing a large feature around waypoint 6. Patchy, moderate sized bacterial mats were observed on the flat sedimented periphery, and large discrete authigenic carbonate mounds were common in the center of the feature. These were densely colonized by *Actinoschypia*, zoanthids and anemones. On one occasion a colony of *Lophelia* (11.5 deg C, ~ 280 m) was observed and a sample collected.

Several *Eumunida picta* were associated with the coral colony. No seep-endemic megafauna were observed, but this appeared to be a highly productive site, as evidenced by the large number of fishes (Jacks, Blackbelly Rosefish, *Lymonema*, Cusk-type fish and eels) and crabs. Collections of 16 push cores (in active seep site with bubbles and off-seep), and 4 water samples (1 in bubbles and 3 next to bacterial mats) were made in addition to the coral sample

Dive at Kitty Hawk, J2-1134, launch planned at 2000.

April 24: recover from Kitty Hawk, 1 CTD cast, transit to Keller. On station at ~1600. Planned dive at 0000 on the 25<sup>th</sup>. Current and wind look good, conditions to dive were good throughout the evening until ~2030 when the current picked up to 4.9 kt. At 2200, the bridge, EL, and Chief Sci decided that the conditions

April 25: dive at cape lookout deep, J2-1135.

The ROV had landed slightly deeper than 1000 m on sediment, with scattered small bacterial mats. The previous watch took 4 pushcores within bacterial mats, and suctioned two mats into a slurp chamber. There were few invertebrate megafauna, but moderately abundant fishes of various types (*Nezumia*, *Coryphaenoides*, *Synphobranchid* eels). During my watch, we transited to the NW towards a steeper structure that had been interpreted as a wall. During the transit we came across a pile of small-large boulders of a black material. They were sparsely colonized by sponges, soft corals, and other octocorals (*Acanthogorgia*, bamboo corals, *Chrysogorgia*) and black corals (*Bathypathes*?). We collected a *Chrysogorgia* colony, a small yellow 'plexaurid' (which resembles *Acanthogorgia*) and a rock with a small single branch bamboo colony from the first rock pile. We headed WNW towards the 'wall' and encountered two other rock piles. Stopped for glamor shots for Ivan then continued WNW. I left for dinner at 17:15 and just as I returned an *Acanthogorgia* was being collected from another large rock pile at ~950m. We were given 10 minutes before we had to leave bottom due to deteriorating weather. The Niskin bottles were fired near the large rock pile and we left bottom.