NOAA CORAL REEF CONSERVATION PROGRAM

Sea Floor Characterization of the U.S. Caribbean
2011 Field Season
Day 15: April 11, 2011

More on Small Boat Operations

Tauna Rankin here; today I went out with Tim Battista, Marty Schnure, and the small boat operator, John Hoisington, to learn more about the ground truthing they do with the drop camera. As you may have read on previous blogs, the multibeam acoustic data that we collect overnight can only tell use so much about the composition of the seafloor. It can detect differences in solidity/density of the bottom as well as rugosity (the amount folds or 3-dimensional complexity on a surface). But we haven't gotten to the point where we can automatically identify a habitat type (e.g. coral reef, sea grass bed, sandy bottom, etc.) without visually confirming a sampling of the acoustically distinct signatures. So, we went out to some predetermined points to verify the habitat type with a video camera.

Drop camera set-up

Marty adjusting the position of the drop camera to point downward by pulling the cable in

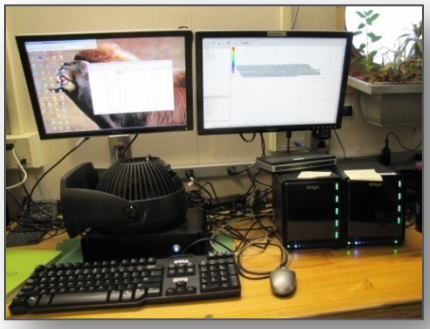
Tim watching the live feed from the video camera which is approximately 100 ft below

Tim and Marty retrieving the camera

When we got out to our first set of coordinates, John gave Marty the signal to drop the video camera in the water. As she put, it's kind of shaped like a fish. It has what looks like a big rudder attached to the back (see picture). The power cable is taped along the back of the rudder (note the high-tech duct tape used to affix it). And a line is tied to the camera, so that when you hold the cable and line straight, the camera looks out horizontally. Once Marty drops the camera down close enough to the bottom, Tim tells her to hold the lines and pull the cable end towards her to get a downward shot of the bottom, or alternatively, the line end towards her to get a horizontal shot of the landscape. It's all pretty clever, but technically simple. While Marty is working the camera, Tim is looking at a mini monitor with built-in DVR that is connected to the other end of the cable with the live stream from the video. The video is recorded digitally and Tim also has a handheld, water resistant GPS/computer that he can make notes in about each site.

More from Will

This is Will Sautter writing for today's blog. Today is another sunny and clear day with high wispy cirrus clouds and a slight breeze. Yesterday we had a few nimbus clouds move in from the East, bringing us a 20 minute rain shower but once it cleared we had an amazing sunset. We began surveying operations at 4 pm, south of St. Thomas through a very busy shipping passage. NOAA Corps Junior Officer Jamie Park had to avoid expensive yachts, island hopping cruise ships, and keep a sharp eye out for the numerous local fishing trap buoys. Our surveying was mostly hitting patches that our multibeam missed during our previous survey sweeps called "holidays". The range of the multibeam coverage will shorten if the ship goes over a shallow shoal or along a ledge which causes the sonar pings to miss the sea floor. We have to then go back to the gaps in our data and sweep them until we get 100% coverage.



Backscatter station: two monitors are hooked to Cappuccino PC, which is cooled by discount fan. To the right are the "Robocops".

Our scientists work 24 hours a day at the survey department in the dry lab and are divided into A and B teams. We use a huge array of computing, positioning, navigating and acquisition hardware. We have to keep the lights down and turn off all unused computer screens because it can get pretty hot in here with all the electronics running. I am mostly working in here from after lunch to midnight cleaning backscatter data and converting files from one format to another, and then backing it all up to our network. The backscatter workstation was set up by survey technician and captain of the A-Team, Mike Stecher from Solmar Hydrography. The setup is a portable desktop called Cappuccino PC which has a dual core processor and is pretty fast, but it doesn't have a cooling system so we have placed a fan right on top of it to cool it off and give me a little air conditioning. The PC is connected to two monitors; one is used for the acquisition software Hypack and Hysweep and the other is for the backscatter processing program Geocoder.

Once the backscatter data is cleaned and corrected, I then convert it to get location and brightness values of the sea floor. Then I upload it to geospatial software, called ArcGIS, where the data is set to a specific standardized coordinate system that is used by NOAA for their nautical charts. After this step, we can than do the analysis we use to classify the different sea floor types in ArcMap and with imagery software called ENVI. Finally, all of the data is backed up to the network of the Nancy Foster called Buffalo 6 and to our portable hard drives (called the Drobo, but we call them Robocop) that we take back to the NOAA offices. We have two Drobos that have 5 drives each, with 2 terabytes in each drive. That means we can take 20,000 gigabytes of data back with us, not including the dozens of DVD's of ROV footage that we will also analyze. All of these data go towards determining the different habitats of the Caribbean seafloor which we can use to better understand the complete ecosystems.

Highlights from today's ROV dives

Mermaid's Tea Cups

Social Feather Duster Worms

Same eagle ray from yesterday!

For more information about NOAA's Center for Coastal Monitoring and Assessment Biogeography Branch visit, http://ccma.nos.noaa.gov/about/biogeography/welcome.html