

BIOGEOGRAPHY BRANCH

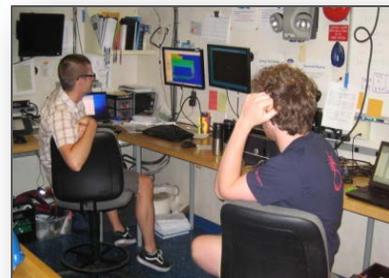
CENTER FOR COASTAL MONITORING & ASSESSMENT
NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE



Sea Floor Characterization of the U.S. Caribbean 2011 Field Season Day 16: April 12, 2011

Beaming Through the Night

Guns N' Roses. The Boss. Some of Neil Young's harder stuff. It all keeps Beam Team B (*right and below*) sharp and on the ball through the "early" shift – midnight through 8 am. These hours are not wasted aboard the *Nancy Foster*; she stops only briefly every 4 hours for a CTD cast that calibrates the multibeam according to variable oceanographic properties. The rest of the time a small rotating cadre of NOAA Corps officers carefully guide the vessel along predetermined tracklines as the Reson 7125 SoNAR blankets the shelf off the southern coast of St. Thomas with a less melodic tune than those we're jamming to in the dry lab – just a simple, continuous lullaby of 400 kHz.

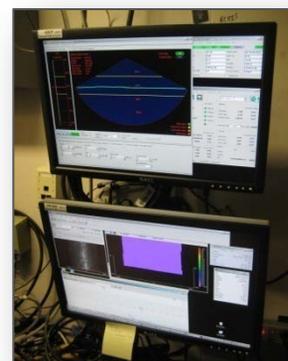


Paul Turner and Sam Tormey



This cave-like working environment keeps the equipment from overheating

It all starts with the raw data coming in off the multibeam's acquisition computer, which is managed by *Foster* survey technician Laurie Roy. She can adjust various settings that influence how the transducer sends and receives pings so that the data acquired optimally represents the soundings coming off the real bottom, and ignores "noisy" pings that are logged in error (*image on the right*). Then she ships each line off to Paul Turner, of NOAA's Office of Coast Survey, who applies all sorts of information about tides, sound speed in the water column, and the ship's movement relative to the multibeam data. He also gets to take the first look at the cleaned data, and under the careful gaze of Paul and his colleague at OCS, Edward Owens (a proud Beam Team B alumnus), the early shift has discovered 5 previously uncharted shipwrecks.



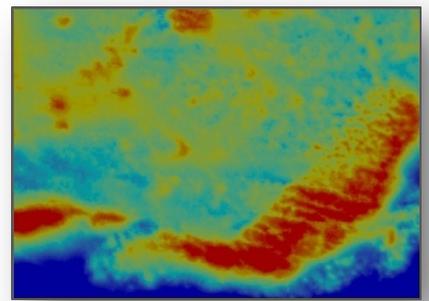
The multibeam acquisition displays

Beam Team A can only count one to its unit (Mike Stetcher), but still has two shifts left to make up ground.

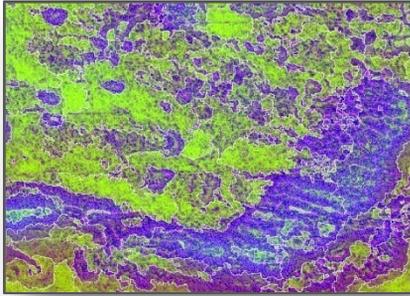
Lead Hydrographer Mike Stetcher approves of Beam Team B's work



Across the room on another machine, Vanessa Wright of the UVI Center for Marine and Environmental Studies (CMES), plugs away at the backscatter processing. While she lives in a world of black and white – the intensity surfaces are most often displayed in grayscale – this measure of sonic reflectance off the seafloor often uncovers reefs hidden in the bathymetry and is a huge help in estimating habitat delineations.



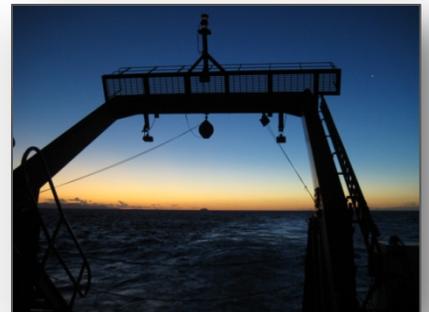
Bathymetry (depth) of an area south of St. Thomas



The complexity surface derived from the same area as above

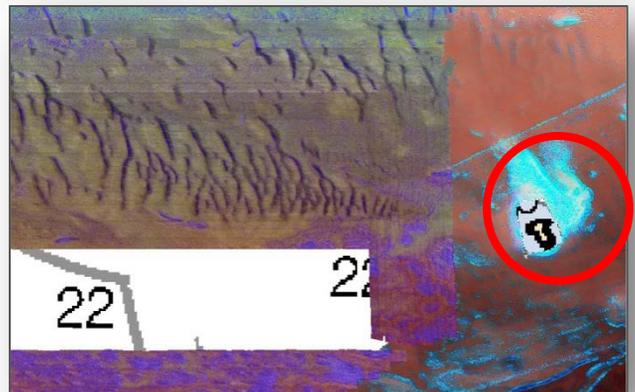
The last link in the chain, the Biogeography Branch's Sam Tormey integrates the depth surface created by Turner (above) and Wright's backscatter into the image at left, which accentuates areas of high complexity that could indicate important habitats. Since this surface also exaggerates differences between seafloor types, it's relied upon in delineating where one habitat ends and the next begins, a line in the sand (so to speak) that Beam Team B continually plays its part in refining.

There's also this treat each morning for added inspiration...



Today's Agenda

Last night the beam team uncovered some cool features on the ocean floor, just west of French Cap Cay, a little island south of St. Thomas. In the image to the right, French Cap Cay is circled in red and to the west of the island, the multibeam has clearly picked up the ripples in the sandy bottom, due to the easterly currents that are traveling quickly past the island and eroding more of the sand away to the north and south and less within the "shadow" of the island.



Today, the small boat operations were cut short due to high seas. They managed to get ~8 sites in before lunch and came back soaking wet. The ROV dives revealed similar habitats to the previous days, with one exciting discovery: off in the distance - the faint image of a shark could be seen. A Caribbean reef shark is our best guess.