



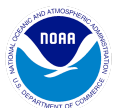
Okeanos Explorer ROV Dive Summary

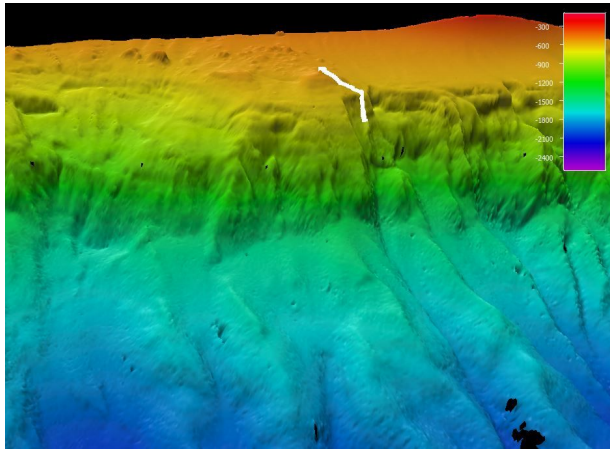
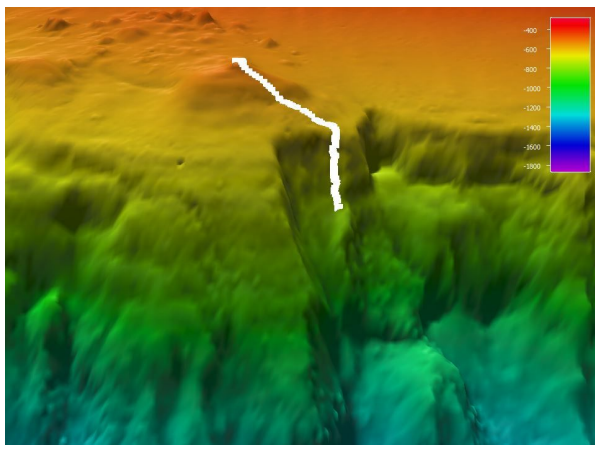
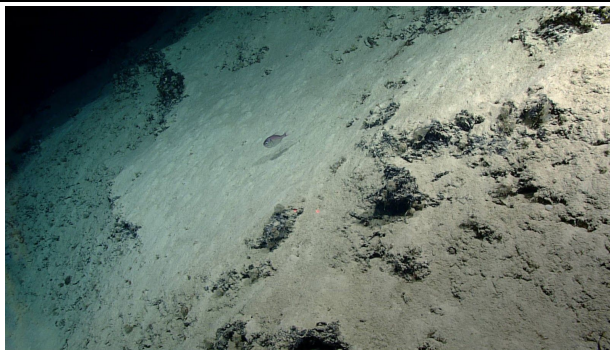

Dive Information	
General Location Map	
General Area Descriptor	U.S. Caribbean Sea
Site Name	East of Vieques Island 2
Science Team Leads	Stacey Williams (ISER) Steven Auscavitch (Temple)
Expedition Coordinator	Daniel Wagner (NOAA-OER)
ROV Dive Supervisor	Chris Ritter (GFOE)
Mapping Lead	Derek Sowers (NOAA-OER)
ROV Dive Name	
Cruise	EX1811
Dive Number	DIVE02
Equipment Deployed	
ROV	<i>Deep Discoverer</i>
Camera Platform	<i>Seirios</i>

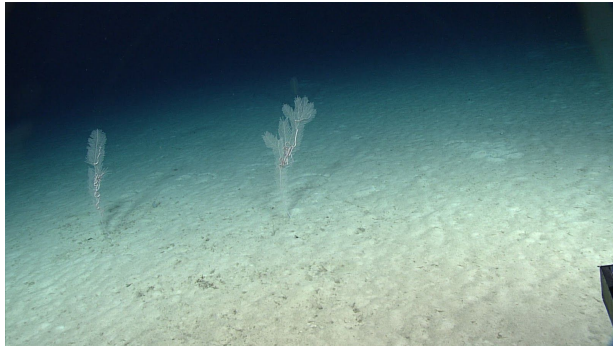
ROV Measurements	✓ CTD	✓ Depth	✓ Altitude																																																																																				
	✓ Scanning Sonar	✓ USBL Position	✓ Heading																																																																																				
	✓ Pitch	✓ Roll	✓ HD Camera 1																																																																																				
	✓ HD Camera 2	✓ Low Res Cam 1	✓ Low Res Cam 2																																																																																				
	✓ Low Res Cam 3	✓ Low Res Cam 4	✓ Low Res Cam 5																																																																																				
Equipment Malfunctions	The science chatroom did not display ROV navigation and environmental data during the dive. This data had to be manually imported into SeaTubeV2 after the dive. The starboard vertical thruster on D2 failed during ascent due to a blown fuse, but did not affect operations.																																																																																						
ROV Dive Summary Data (from processed ROV data)	In Water:	2018-11-01T12:22:42.367912 18°, 9.815' N ; 64°, 59.44' W																																																																																					
	On Bottom:	2018-11-01T13:08:39.494240 18°, 9.79' N ; 64°, 59.439' W																																																																																					
	Off Bottom:	2018-11-01T20:03:44.096221 18°, 10.126' N ; 64°, 59.755' W																																																																																					
	Out Water:	2018-11-01T20:32:29.542309 18°, 9.958' N ; 64°, 59.505' W																																																																																					
	Dive duration:	8:9:47																																																																																					
	Bottom Time:	6:55:4																																																																																					
	Max. depth:	780.0 m																																																																																					
Special Notes	N/A																																																																																						
Scientists Involved (provide name, affiliation, email)	<table border="1"> <thead> <tr> <th>Name</th> <th>Affiliation</th> <th>Email</th> </tr> </thead> <tbody> <tr> <td>Amanda Demopoulos</td> <td>US Geological Survey</td> <td>ademopoulos@usgs.gov</td> </tr> <tr> <td>Andrea Quattrini</td> <td>Harvey Mudd College</td> <td>aquattrini@g.hmc.edu</td> </tr> <tr> <td>Asako Matsumoto</td> <td>Chiba Institute of Technology</td> <td>amatsu@gorgonian.jp</td> </tr> <tr> <td>Ashley Perez</td> <td>Tenenbaum Puerto Rico Trench Expedition Team</td> <td>ashley.perez@bahiapr.com</td> </tr> <tr> <td>Cheryl Morrison</td> <td>U.S. Geological Survey</td> <td>cmorrison@usgs.gov</td> </tr> <tr> <td>Christian Jones</td> <td>NOAA/NMFS</td> <td>christian.jones@noaa.gov</td> </tr> <tr> <td>Colleen Peters</td> <td>URI-ISC</td> <td>innerspacecenter@googlegroups.com</td> </tr> <tr> <td>Daniel Wagner</td> <td>NOAA/OER</td> <td>daniel.wagner@noaa.gov</td> </tr> <tr> <td>Debi Blaney</td> <td>NOAA/OER</td> <td>debi.blaney@noaa.gov</td> </tr> <tr> <td>Enrique Salgado</td> <td>NOAA/CSS</td> <td>enrique.salgado@noaa.gov</td> </tr> <tr> <td>Elizabeth Gugliotti</td> <td>NOAA/CSS</td> <td>gugliottief@g.cofc.edu</td> </tr> <tr> <td>Graciela Garcia-Moliner</td> <td>Caribbean Fishery Management Council</td> <td>graciela_cfmcc@yahoo.com</td> </tr> <tr> <td>Jason Chaytor</td> <td>US Geological Survey</td> <td>jchaytor@usgs.gov</td> </tr> <tr> <td>Jaymes Awbrey</td> <td>University of Louisiana at Lafayette</td> <td>jawbrey@louisiana.edu</td> </tr> <tr> <td>Jessica Robinson</td> <td>University of Victoria</td> <td>jrobinson@uvic.ca</td> </tr> <tr> <td>John Ogden</td> <td>University of South Florida</td> <td>jogden@usf.edu</td> </tr> <tr> <td>Kate Overly</td> <td>NOAA/NMFS</td> <td>katherine.overly@noaa.gov</td> </tr> <tr> <td>Kevin Rademacher</td> <td>NOAA/NMFS</td> <td>kevin.r.rademacher@noaa.gov</td> </tr> <tr> <td>Mashkoor Malik</td> <td>NOAA/OER</td> <td>mashkoor.malik@noaa.gov</td> </tr> <tr> <td>Matthew Kupchik</td> <td>Louisiana State University</td> <td>mkupch1@lsu.edu</td> </tr> <tr> <td>Megan Cromwell</td> <td>NOAA/NCEI</td> <td>megan.cromwell@noaa.gov</td> </tr> <tr> <td>Megan McCuller</td> <td>North Carolina Museum of Natural Sciences</td> <td>megan.mcculler@naturalsciences.org</td> </tr> <tr> <td>Michelle Schärer</td> <td>HJR Reefscaping</td> <td>michelle.scharer@upr.edu</td> </tr> <tr> <td>Nolan Barrett</td> <td>Medical University of South Carolina</td> <td>barrettnh@g.cofc.edu</td> </tr> <tr> <td>Ricardo Lugo</td> <td>Boqeron Fishermen Association</td> <td>ricardo.juan.lugo@gmail.com</td> </tr> <tr> <td>Santiago Herrera</td> <td>Lehigh University</td> <td>sherrera@alum.mit.edu</td> </tr> <tr> <td>Scott Sorset</td> <td>BOEM</td> <td>scott.sorset@boem.gov</td> </tr> </tbody> </table>			Name	Affiliation	Email	Amanda Demopoulos	US Geological Survey	ademopoulos@usgs.gov	Andrea Quattrini	Harvey Mudd College	aquattrini@g.hmc.edu	Asako Matsumoto	Chiba Institute of Technology	amatsu@gorgonian.jp	Ashley Perez	Tenenbaum Puerto Rico Trench Expedition Team	ashley.perez@bahiapr.com	Cheryl Morrison	U.S. Geological Survey	cmorrison@usgs.gov	Christian Jones	NOAA/NMFS	christian.jones@noaa.gov	Colleen Peters	URI-ISC	innerspacecenter@googlegroups.com	Daniel Wagner	NOAA/OER	daniel.wagner@noaa.gov	Debi Blaney	NOAA/OER	debi.blaney@noaa.gov	Enrique Salgado	NOAA/CSS	enrique.salgado@noaa.gov	Elizabeth Gugliotti	NOAA/CSS	gugliottief@g.cofc.edu	Graciela Garcia-Moliner	Caribbean Fishery Management Council	graciela_cfmcc@yahoo.com	Jason Chaytor	US Geological Survey	jchaytor@usgs.gov	Jaymes Awbrey	University of Louisiana at Lafayette	jawbrey@louisiana.edu	Jessica Robinson	University of Victoria	jrobinson@uvic.ca	John Ogden	University of South Florida	jogden@usf.edu	Kate Overly	NOAA/NMFS	katherine.overly@noaa.gov	Kevin Rademacher	NOAA/NMFS	kevin.r.rademacher@noaa.gov	Mashkoor Malik	NOAA/OER	mashkoor.malik@noaa.gov	Matthew Kupchik	Louisiana State University	mkupch1@lsu.edu	Megan Cromwell	NOAA/NCEI	megan.cromwell@noaa.gov	Megan McCuller	North Carolina Museum of Natural Sciences	megan.mcculler@naturalsciences.org	Michelle Schärer	HJR Reefscaping	michelle.scharer@upr.edu	Nolan Barrett	Medical University of South Carolina	barrettnh@g.cofc.edu	Ricardo Lugo	Boqeron Fishermen Association	ricardo.juan.lugo@gmail.com	Santiago Herrera	Lehigh University	sherrera@alum.mit.edu	Scott Sorset	BOEM	scott.sorset@boem.gov
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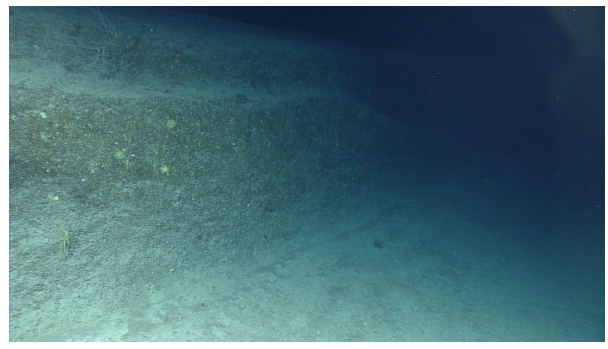
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	Tina Molodtsova	P.P. Shirshov Institute of Oceanology	tina@ocean.ru
Dive Purpose	<p>The purpose of the dive was exploratory with an emphasis on identifying occurrences of deepwater fish species, as well as their habitat preferences. The dive survey was designed to traverse a variety of slopes and ultimately ending on a local topographic high. The targeted depth range lied within the known depth range for commercially-important snapper and grouper species. The dive also sought to survey and characterize deep-sea coral and sponge communities.</p>		
Dive Description	<p>The second dive of this expedition took place on a relatively gentle sloped drop-off south of St. Thomas terminating on a 100 m tall mound. Substrate type for the majority of the dive was consolidated sediment with occasional outcrops of exposed hard rocky bottom. The mound feature was consolidated sediment with terrace-like features rising toward the summit.</p> <p>The diversity of demersal fish species was higher than on Dive 01, with more fish being observed at the beginning of the dive at deeper depths. Sixteen species of fish were observed during this dive. Most of the fish spotted were out in the open and not shy of the camera. The species observed at the beginning of the dive (UTC 13:17-15:13) in order as observed were cutthroat eel, cusk eel, halosaur, beardfish (<i>Polymixia</i> sp.), <i>Gephyroberyx</i> sp., grenadier, toadfish (<i>Chaunax</i> sp.), shortbelly eel (<i>Dysomma anguillare</i>), black mouth bass (<i>Synagrops bellus</i>), tripod fish (<i>Bathypterois</i> sp.), goosefish (<i>Lophiodes beroe</i>). An unknown fish was spotted at UTC 17:03, along with rosy dory (<i>Cyttopsis rosea</i>). The striped brotula (<i>Neobythites marginatus</i>) was seen swimming in a bottle at UTC 18:15-18:43, snailfish (Liparidae) at UTC 18:05, another unknown fish at UTC 18:57, catshark (maybe a first for the Caribbean) at UTC 19:29, and finally a possible sighting of <i>Erythrocles</i>. There was some trash found along the route, which included glass bottles, aluminum can and some old cable (might be from an old FAD).</p> <p>The echinoderms were by far the most abundant at the more flat areas with soft consolidated sediment. Crinoids, both stalked and unstalked, contributed the most to the echinoderm abundance. We saw a unique armored crinoid, of the genus <i>Holopus</i>. We spotted three species of sea cucumbers (purple floating, pink spiky, and clear white), three urchin species (mostly Cidarids) and an irregular sea urchin that looked like a dead sponge from a far. There were a lot of brittle stars hanging off the soft corals and inside crevices. A bumpy or ribbed brittle star (<i>Asteroschema</i> sp.) was collected along with a soft coral at UTC 18:06. There were four species of sea stars observed, including <i>Pteraster</i> sp., <i>Tamaria</i> sp., and <i>Linkia</i> sp. Yellow glass sponges were in high abundances along near-vertical structures. There were a few <i>Euplectella</i> glass vase sponges scattered along the seafloor around 13:43 UTC. Also, we observed two species of stalked glass sponges (<i>Sympagella</i> sp.), along with smaller glass sponges (Farreidae) that were in low abundance. A few species of demosponges were also observed during the dive.</p> <p>Deepwater corals were neither particularly abundant throughout the dive, nor would any particular portion of the dive be classified as high density. Nevertheless, at least 16 species of corals were observed across the following groups: Stylasteridae, Scleractinia (solitary only), Octocorallia, and Antipatharia. Early on in the dive, black coral whips in the genus <i>Stichopathes</i> were the most common coral often attaching to the sparse hard substrate. As the slope increased (around 14:00 UTC) other rigid corals including numerous small colonies of <i>Crypthelia</i> sp. (Stylasteridae) were common rocky outcrops. A sample of a particularly large colony was acquired at 15:59 UTC for identification confirmation (EX1811_D02_01B). <i>Crypthelia</i> sp. was commonly observed on hard substrate throughout the dive. Other octocorals present on this dive include <i>Thesea</i> sp., <i>Stylopathes</i> sp., <i>Acanthoprimnoa cf. goesi</i>,</p>		



	<p>Chrysogorgiidae, <i>Antipathes</i> sp., <i>Callogorgia</i> sp., <i>Pennatula</i> sp. and multiple cup coral species. One Pennatulid sea pen (<i>Pennatula</i> sp.) was sampled (EX1811_D02_02B) because of its poor identification in this area. The third occurrence of unidentified <i>Callogorgia</i>-like colonies was sampled at 554 m for identity confirmation (EX1811_D02_03B). This genus is not well documented in the Caribbean and at least two species have been recently described in the literature from collections and museum specimens. On the summit of the mound closest to the final waypoint, <i>Parantipathes</i>-like black corals were found, as well as a different species of <i>Stichopathes</i> sp. with yellow-pale coloration. Bamboo coral fans (S1 Clade) were present on the rocky vertical fringes of the mound.</p>
<p>Notable Observations</p>	<p>Fish in a bottle. Well-camouflaged irregular sea urchin. Large <i>Callogorgia</i> sp. sea fans.</p>
<p>Community Presence/Absence (community is defined as more than two species)</p>	<p><input checked="" type="checkbox"/> Corals and Sponges <input type="checkbox"/> Chemosynthetic Community <input checked="" type="checkbox"/> High biodiversity Community <input type="checkbox"/> Active Seep or Vent <input type="checkbox"/> Extinct Seep or Vent <input type="checkbox"/> Hydrates</p>
<p>Overall Map of the ROV Dive Area</p>	
	<p>Close-up Map of Main Dive Site</p> 
<p>Representative Photos of the Dive</p>	
	
<p>Steep slopes early on the dive were heavily layered with sediment. Exposed hard substrate was usually colonized by stylasterids (<i>Crypthelia</i> sp.) and sponges.</p>	<p>Current scoured vertical surfaces were often covered with demersalsponges.</p>



Moderate slopes with thin sediment veneer saw large colonies of *Callogorgia* sp. and many invertebrate associates.



The mound feature at the end of the dive track was composed of step-like carbonate rock with occasional attached fauna like Chrysogorgiid octocorals, black corals, and bamboo corals.

Samples Collected

Sample ID	EX1811_2D02_01B	
Date (UTC)	20181101	
Time (UTC)	160604	
Depth (m)	603.07	
Temp. (°C)	10.78	
Field ID(s)	<i>Cryptelia</i> sp.	
Commensals	No commensals	
Comments	N/A	
Sample ID	EX1811_D02_S02B	
Date (UTC)	20181101	
Time (UTC)	175228	
Depth (m)	559.1	
Temp. (°C)	12.25	
Field ID(s)	<i>Pennatula</i> sp.	
Commensals	No commensals	
Comments	N/A	

Sample ID	EX1811_D02_03B							
Date (UTC)	20181101							
Time (UTC)	181004							
Depth (m)	554.11							
Temp. (°C)	12.29							
Field ID(s)	<i>Callogorgia</i> sp.							
Commensals	<table border="1"> <thead> <tr> <th>Commensal Sample ID</th> <th>Field Identification</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>EX1811_D02_03B_A01</td> <td>Ophiuroidea</td> <td>1</td> </tr> </tbody> </table>		Commensal Sample ID	Field Identification	Count	EX1811_D02_03B_A01	Ophiuroidea	1
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EX1811_D02_03B_A01	Ophiuroidea	1						
Comments	N/A							

Please direct inquiries to:

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