OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	USGS Hazard 3		
ROV Lead/Expedition Coordinator	Brian Bingham/ Kelley Elliott		
Science Team Leads	Tim Shank (shore) Andrea Quattrini (ship)		
General Area Descriptor	Northwest Atlantic Ocean; Northeast U.S. Canyons		
ROV Dive Name	Cruise Season	Leg	Dive Number
	EX1304	1	DIVE01
Equipment Deployed	ROV:	Deepwater Discoverer	
	Camera Platform:	Seirios	
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 2
Equipment Malfunctions	Occasional Port Vertical Motor Failure		
ROV Dive Summary (From processed ROV data)	In Water at: 2013-07-09 T12:34:27 39°, 45.086' N ; 071°, 04.297' W Out Water at: 2013-07-09 T20:50:30 39°, 45.328' N ; 071°, 04.672' W Off Bottom at: 2013-07-09 T19:29:58 39°, 45.328' N ; 071°, 04.672' W On Bottom at: 2013-07-09 T14:14:48 39°, 44.912' N ; 071°, 04.521' W Dive duration: 8:16:3 Bottom Time: 5:14:50 Max. depth: 1880 m		
Special Notes			
Scientists Involved *(please provide name / location / affiliation / email)*	**Primary** Tim Shank, Woods Hole (shore-based science team lead), WHOI, tshank@whoi.edu Andrea Quattrini, EX (onboard science team lead), Temple, Andrea.Quattrini@temple.edu Brendan Roark, EX, TAMU, broark@geos.tamu.edu Neah Baechler, NOAA Charleston, baechlernv@g.cofc.edu Peter Etnoyer, Charleston, NOAA, Peter.Etnoyer@noaa.gov Taylor Heyl, Woods Hole, MA; WHOI, theyl@whoi.edu Santiago Herrera Woods Hole, MA; WHOI, sherrera@whoi.edu Scott France, Lafayette, LA, U. Louisiana at Lafayette, france@louisiana.edu Bob Carney, Baton Rouge, LA; LSU, rcarne1@lsu.edu Jason Chaytor, Inner Space Center, USGS at Woods Hole, jchaytor@usgs.gov Amanda Demopoulos, Gainsville, FL; USGS SE Ecological Science Center, ademopoulos@usgs.gov		

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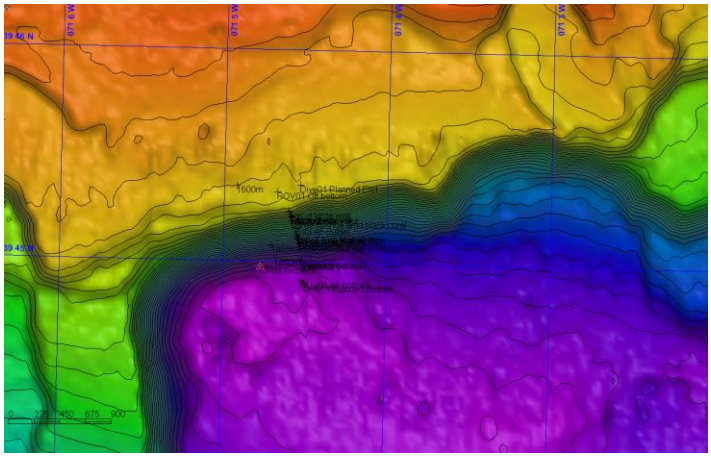
Purpose of the Dive

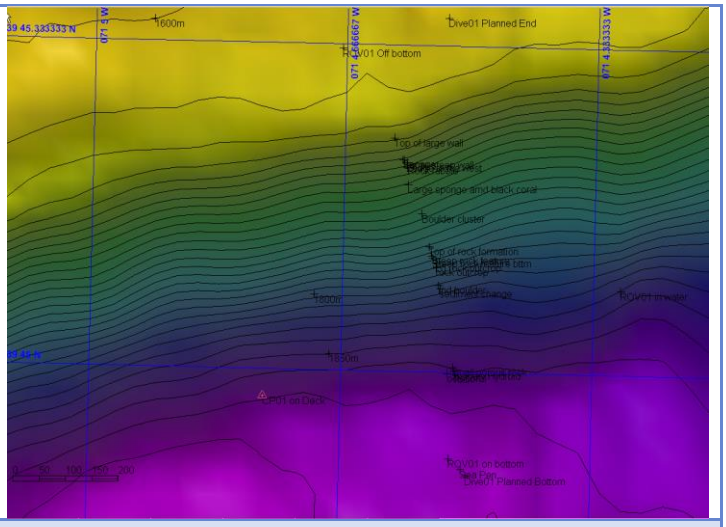
The purpose of this proposed dive is to investigate headwall scarps of a large landslide scar on the lower continental slope. The scientific rationale for this site is: 1) to determine if these scarps are relatively young and if they pose a hazard in terms of tsunami generation; 2) evaluate the long term stability of landslide scars and test hypotheses about their evolution, 3) attempt to develop a means of using biologic activity on the scarps and deposits as a means of determining relative ages of the features and the response of bottom communities to catastrophic events (Bob Carney, LSU has an interest in this also).

Description of the Dive:

The ROV Deep Discoverer (D2) was launched at 12:33 UTC. During the lowering through the water column, several mesopelagic organisms were observed, including at least one species of squid and numerous species of midwater fishes. The ROV reached the bottom at 14:15 UTC at a depth of 1870 m, where the surrounding sediment was mostly silt and silty clays, most likely dominated by foraminiferal ooze. The ROV then transited over this fairly flat, soft sediment bottom toward the base of the slope feature, or headwall scarp of a landslide scar. A number of large angular boulders, most likely mudstones ornamented with varying levels of bioturbation and other erosion, detached from the adjacent vertical walls were encountered Several species of fishes were observed over this soft sedimented area, including halosaurs, cutthroat eels, chimaera, rajiid skates, and macrourid rattails. The invertebrate megafauna was dominated by one holothurian (*Paelopatides* sp.) and at least one sea urchin (*Echinus* sp.); however, pycnogonid sea spiders and at least 3 species of sea pens were observed during the transit to the hard bottom features. At ~15:15 UTC the ROV approached the first hard substrates during this dive, and continued to survey hardbottom habitats until ~18:53 UTC. The overall slope was ~20-30 deg; however, there were two large vertical rock wall with relief of more than 15 m. separated by a steeply sloped ledge. Several other smaller walls and rock/boulder outcrops (>2-3 m) were encountered during the dive. Several smaller rocks appeared to have ferromanganese coatings during the deeper part of the dive. Numerous corals colonized the faces and tops of the large hard features, including *Paramuricea* cf. *grandis, Anthomastus* sp., *Chrysogorgia* sp., and *Radicepes* sp. Stony corals including *Desmophylum* were observed attached to the underside of ledges and a solitary hydrozoa, *Corymorpha* sp. was observed. Brown staining was observed on the walls, and in many areas the hard substrates were heavily eroded, with numerous burrows and crevices, and some columnar structures were also observed. The top of this feature (~1621 m depth) was covered with soft sediment composed of silt and silty clays. Of note, few fauna were observed on top of the feature, with the exception of halosaurs and cutthroat eels. The sessile fauna was dominated by *Acanella* sp., a type of bamboo coral that commonly occurs on both soft and hard substrates. One notable behavior observed was potential predation event, of what appeared to be an *Echinus* sea urchin preying upon an *Acanella* colony. The dive was ended 5 min prior to scheduled recovery time, as we lost complete control and communication with the vehicles due to someone accidentally hitting the emergency stop in the ROV hangar. The successful first dive of the cruise ended at 19:26 UTC at 1610 m.

Overall Map of ROV Dive Area	Close-up Map of Main Dive Site





Representative Photos of the Dive

Two *Paramuricea* colonies on top of a rock block with a cup coral on the ledge. This image was captured at 15:24 UTC at a depth of 1855 m.

An urchin on top of a bamboo coral *Acanella* sp. in what appears to be a predation event. Image captured at 18:56 at a depth of ~1619 m.

Please direct inquiries to:

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