OKEANOS EXPLORER ROV DIVE SUMMARY

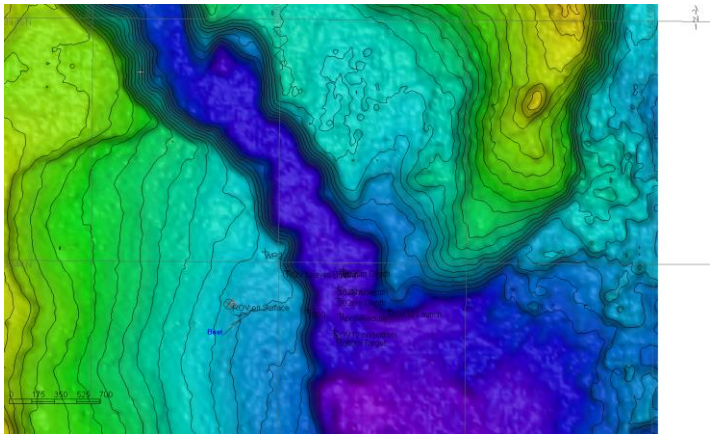
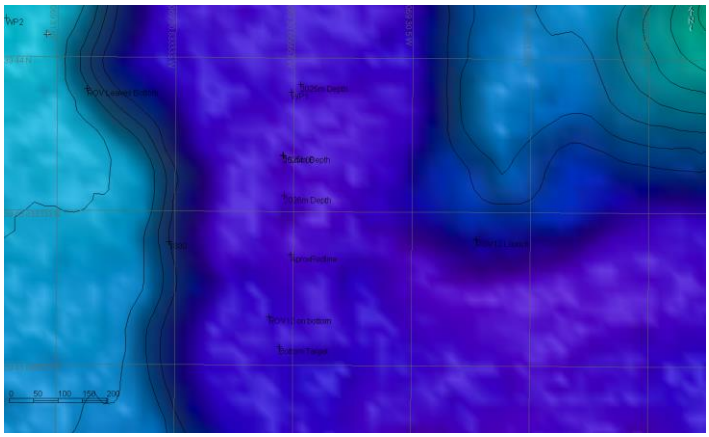
Site Name	USGS Hazards 2		
ROV Lead/Expedition Coordinator	Brian Bingham/ Kelley Elliott		
Science Team Leads	Tim Shank (Shore) Andrea Quattrini (Ship)		
General Area Descriptor	Northwest Atlantic Ocean; Northeast U.S. Canyons		
ROV Dive Name	Cruise Season	Leg	Dive Number
	EX1304	1	DIVE12
Equipment Deployed	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			
ROV Dive Summary (From processed ROV data)	In Water at:	2013-07-20T12:34:52.431000 39°, 43.797' N ; 069°, 30.465' W	
	Out Water at:	2013-07-20T20:15:13.678000 N/A ; N/A	
	Off Bottom at:	2013-07-20T19:31:12.265000 39°, 43.949' N ; 069°, 30.971' W	
	On Bottom at:	2013-07-20T13:45:01.253000 39°, 43.720' N ; 069°, 30.698' W	
	Dive duration:	7:40:21	
	Bottom Time:	5:46:11	
	Max. depth:	2026.9 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 Taylor Heyl, Woods Hole, MA; WHOI, theyl@whoi.edu Scott France, Lafayette, LA, U. Louisiana at Lafayette, france@louisiana.edu Jason Chaytor, Inner Space Center, USGS at Woods Hole, jchaytor@usgs.gov Mike Vecchione, Washington, DC; SI/NOAA, vecchionem@si.edu Les Watling, Darling Marine Center, Maine, watling@maine.edu **Passive** Amanda Demopoulos, Gainesville, FL; USGS SE Ecological Science Center, ademopoulos@usgs.gov Jay Lunden, Philadelphia, PA; Temple, jlunden@temple.edu Walter Cho, San Diego, CA; Point Loma Nazarene, waltercho@pointloma.edu		

Purpose of the Dive

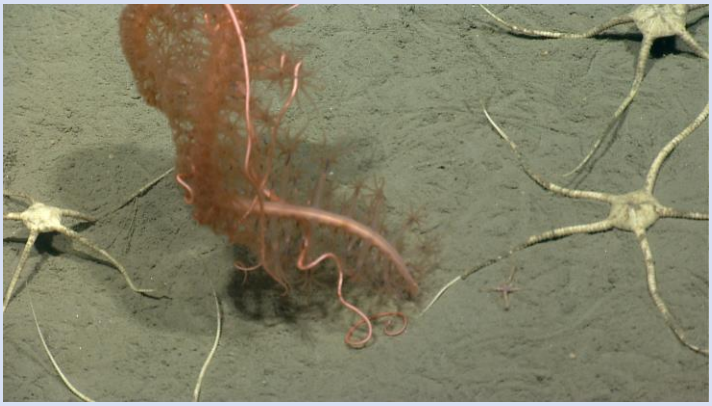
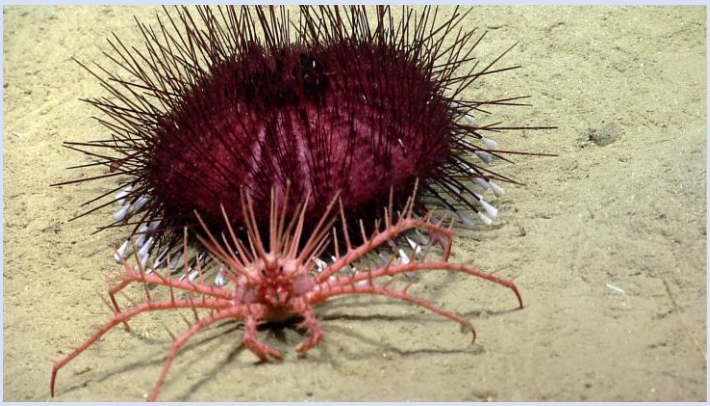
The purpose of this proposed dive is to investigate the transition (marked by the red dashed line on the map) from canyon processes to landslide deposition within Veatch Canyon to establish relative timing of the landslide event. The Veatch Canyon landslide breaches the eastern levee of Veatch Canyon and deposits debris within the canyon, blocking the normal sediment transport pathway. If Veatch Canyon is still active, the landslide may be relatively young (Recent), but if Veatch Canyon has been inactive since the LGM, the landslide may be late Pleistocene in age.

Description of the Dive:

The ROV D2 reached the bottom at 13:43 UTC at a depth of 2108 m (3.4 deg C). Soft sediment comprised of silt and clay with larger components was evident, with some biotrubation including feeding traces, hummocks, and burrows. Burrows often appeared round, like a hole had been "punched out". Throughout the entire dive, ?*Ophomusium* brittle stars blanket the seafloor; 10's of thousands were apparent. Cerianthid anemones, sea pens, and polychaetes tubeworms were also abundant throughout the dive. Few fishes were observed overall, but included the deep-sea lizardfish (*Bathysuarus ferox),* tripod fish (*Bathypterois* sp.), halosaurs (Notacanthidae), rattails (Macrouridae) and blue cod (*Antimora rostrata).* At least four species of sea urchins were common, including *Hygrosoma petersi (*often with purple polychaetes) and green heart urchins. Two species of holothurians were abundant as well (*Paleopatides* sp. and ?*Mesothuria* sp.) A piece of wood that was heavily bored was observed at 14:13 UTC, and a crinoid and pink Ophioplinthacid brittle stars occurred on the wood. At 14:32 UTC, a helium balloon was spotted on the seafloor. The overall dive track of the ROV D2 consisted of moving due north through a transition area, before heading south-west up a gradual slope on the west side of the canyon wall at ~16:38. As the ROV continued to move up this gradual slope, new fauna appeared. This included at least three different species of sea pens, lithodid king crabs (possibly juveniles), an *Acanella* bamboo coral, and a *Lepidisis* bamboo coral. On the sea pens, different ophiuroid brittle star associates were noted, including one that had a rounded purple disc. It was noted that the brittle stars on the sediment were never seen on the corals. Anemones were also noted growing on one type of sea pen. The ROV was able to just make it to the top of the slope, before leaving bottom at a depth of 1969 m and a time of 19:30 UTC. A weak current was evident at this site.

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

Representative Photos of the Dive

	
Abundant white brittle stars on the sediment *(?Ophiomusium* sp.). In the center, a “curly-cue” *Anthoptilum* sea pen anchored in the soft sediment. Note the different ophiuroid species inhabiting the coral. Time 17:34. Depth 2021 m.	*Hygrosoma petersi* sea urchin with tube feet extended. In front is a juvenile, lithodid king crab. Time 18:04. Depth 1977 m.

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