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](mailto:tshank@whoi.edu)  Andrea Quattrini, EX (onboard science team lead), Temple, [Andrea.Quattrini@temple.edu](mailto:Andrea.Quattrini@temple.edu)  Brendan Roark, EX, TAMU, [broark@geos.tamu.edu](mailto:broark@geos.tamu.edu)  Taylor Heyl, Woods Hole, MA; WHOI, [theyl@whoi.edu](mailto:theyl@whoi.edu)  Scott France, Lafayette, LA, U. Louisiana at Lafayette, [france@louisiana.edu](mailto:france@louisiana.edu)  Jason Chaytor, Inner Space Center, USGS at Woods Hole, [jchaytor@usgs.gov](mailto:jchaytor@usgs.gov)  Mike Vecchione, Washington, DC; SI/NOAA, [vecchionem@si.edu](mailto:vecchionem@si.edu)  Les Watling, Darling Marine Center, Maine, [watling@maine.edu](mailto:watling@maine.edu)  **Passive**  Amanda Demopoulos, Gainesville, FL; USGS SE Ecological Science Center, [ademopoulos@usgs.gov](mailto:ademopoulos@usgs.gov)  Jay Lunden, Philadelphia, PA; Temple, [jlunden@temple.edu](mailto:jlunden@temple.edu)  Walter Cho, San Diego, CA; Point Loma Nazarene, [waltercho@pointloma.edu](mailto:waltercho@pointloma.edu) | | | | | |
| **Purpose of the Dive**  The purpose of this proposed dive is toinvestigate 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. | | |
| **Please direct inquiries to:** | | NOAA Office of Ocean Exploration & Research 1315 East-West Highway (SSMC3 10th Floor)  Silver Spring, MD 20910  (301) 734-1014 | | | | |