OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	Hadal Ridge			
ROV Lead/Expedition Coordinator	Jim Newman/ Kasey Cantwell			
Science Team Leads	Shirley Pomponi (HBOI-FA Patty Fryer (UH)			
General Area Descriptor	Areas in and around the Marianas Trench Marine National Monument Data SIO. NOAA, U.S. Navy, NGA, GEBCO		Image Landsat Data SIO, NOAA, U.S. Navy, NGA, GEBCO	
ROV Dive Name	Cruise	Leg	Dive Number	
	EX1605	3	DIVE04	
Equipment	ROV: Deep Discov		eep Discoverer	
Deployed	Camera Platform:	Seirios		
	CTD	Depth	Altitude	
ROV	Scanning Sonar	USBL Position	Heading	
Measurements	☑ Pitch ☐ HD Camera 2	Roll Low Res Cam 1	HD Camera 1 Low Res Cam 2	
	Low Res Cam 3	Low Res Cam 4	Low Res Cam 2	
Equipment	Z zew nes cam s	Z zow nes eam i	Z zow nes cam z	
Malfunctions				
	Dive Summary: EX1605L3_DIVE04			
	\(\lambda\) \(\lam			
		2016-06-20T21:25:05.741000 20°, 28.914' N ; 146°, 58.598' E		
		2016-06-21T07:34:01.370000 20°, 29.717' N ; 147°, 00.349' E		
ROV Dive				
Summary (From		2016-06-21T04:23:10.150000 20°, 28.802' N ; 146°, 58.523' E 2016-06-21T01:31:50.770000		
processed ROV	20			
data)	On Bottom: 201			
	20°	20°, 29.064' N ; 146°, 58.699' E		
	Dive duration: 10:	8:55		
	Bottom Time: 2:5	1:19		
	Max. depth: 599	99.8 m		
Special Notes				
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Purpose of the Dive

Most biological investigations in the deeper parts of the MTMNM (deeper than 4,000 m) have occurred south of Guam due to the lure of the Challenger Deep. This dive provides an opportunity to study communities to the north along the trench and to evaluate similarity with those communities sampled to the south. Shallower shoals (subducting seamounts) between this site and those to the south may present hydrodynamic or depth barriers to some animals' distributions. This dive crosses what looks like the plate boundary on existing mapping data.

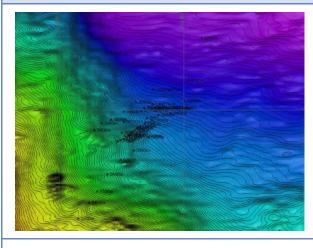
Description of the Dive:

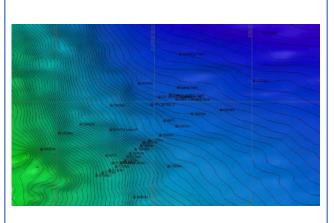
The goal of the dive was to document the diversity of organisms at this transition between abyssal and hadal zones. Although fauna was sparse, we observed brisingid seastars, cladorhizid (carnivorous) sponges, shrimp, amphipods, and at the very end of the dive, a holothurian (*Enypniastes*) and what might be a cusk eel.

The dive on Hadal Ridge provided a glimpse of the complexity of the trench's inner wall. ROV *Deep Discoverer* (D2) set down on fine sediment covered with ripple marks and immediately saw a rock that was likely peridotite (mantle rock) and white rocks of varying sizes that are calcium carbonate. Above this, there were tongues of talus consisting of a variety of pebble- to cobble-sized fragments of mixed composition, but dominated by carbonate. At a depth of 5898 m, *D2* encountered a stratified outcrop of very light colored material (possibly carbonate or serpentinite mudflow material). The outcrop was ~53 m high and topped by darker "polymict" (many rock types) and loosely consolidated formation of what appears to be serpentinite mud with numerous pebble-to cobbble-sized rock clasts imbedded in it. Some dark brown pelagic sediment thinly coats the top of the narrow ridge we were traveling along. Toward the end of the dive, there was a series of knife-edge ridges and troughs exposing some stratified layers of light-colored material (probably composed of serpentinized peridotite with clasts of other rock types). The dive ended at 5750 m, and although we did not cover much of the vertical extent of the inner trench slope, we covered a fascinating, variable and totally unexpected set of exposures.

Overall Map of ROV Dive Area

Close-up Map of Main Dive Site





Representative Photos of the Dive





Image of the D2 from the Seirios vehicle approaching what looks like an "Apline view" of sequences of white and pale green layers. The rock sample was a finegrained carbonate. Is there another "Lost City" up slope?

Carnivorous cladorhizid demosponges were among the few benthic fauna observed during this dive. These predatory sponges eat small crustaceans that get trapped on Velcro-like siliceous spicules on the surface of the sponge.

Samples Collected

Sample ID	SPEC01GEO
Date (UTC)	20160621
Time (UTC)	015441
Depth (m)	5983.07
Temperature (°C)	1.62
Field ID(s)	ROCK WITH WHITE SFC
	Calcium Carbonato White all the wa



Comments

Calcium Carbonate. White all the way through. Dissolves in vinegar. OGL sample taken.

Please direct inquiries to:

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