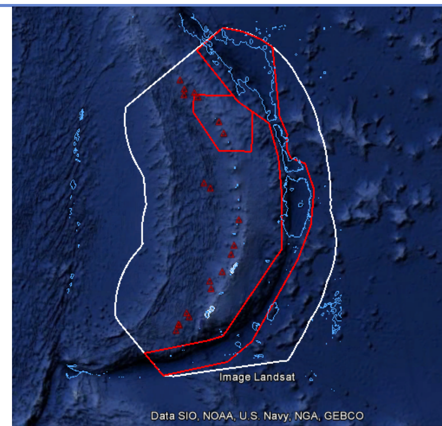
OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	Hadal Ridge		
ROV Lead/Expedition Coordinator	Jim Newman/ Kasey Cantwell		
Science Team Leads	Shirley Pomponi (HBOI-FAU, CIOERT) Patty Fryer (UH)		
General Area Descriptor	Areas in and around the Marianas Trench Marine National Monument		
ROV Dive Name	Cruise	Leg	Dive Number
	EX1603	3	DIVE04
Equipment Deployed	ROV:	Deep 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)	Dive Summary: EX1605L3_DIVE04 ^^ In Water: 2016-06-20T21:25:05.741000 20°, 28.914' N ; 146°, 58.598' E Out Water: 2016-06-21T07:34:01.370000 20°, 29.717' N ; 147°, 00.349' E Off Bottom: 2016-06-21T04:23:10.150000 20°, 28.802' N ; 146°, 58.523' E On Bottom: 2016-06-21T01:31:50.770000 20°, 29.064' N ; 146°, 58.699' E Dive duration: 10:8:55 Bottom Time: 2:51:19 Max. depth: 5999.8 m		
Special Notes			
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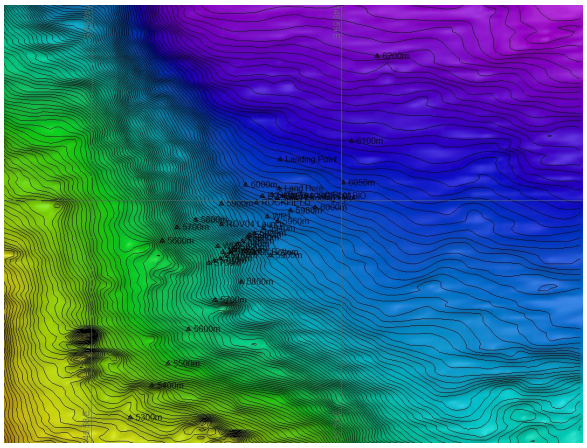
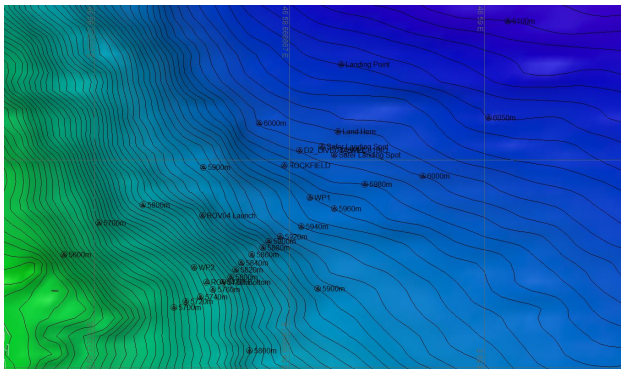
Purpose of the Dive

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 fine-grained 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
Comments	Calcium Carbonate. White all the way through. Dissolves in vinegar. OGL sample taken.

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