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Purpose of the Dive

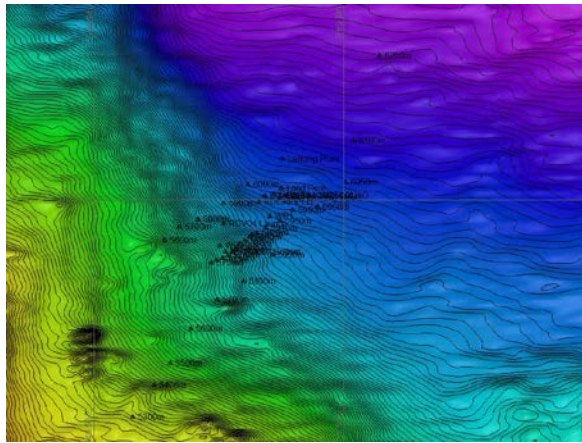
Most biological investigations in the deeper parts of the MTMNM (deeper than 4,000 m) have occurred south of Guam due to the lure of the Challenger Deep. This dive provides an opportunity to study communities to the north along the trench and to evaluate similarity with those communities sampled to the 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:

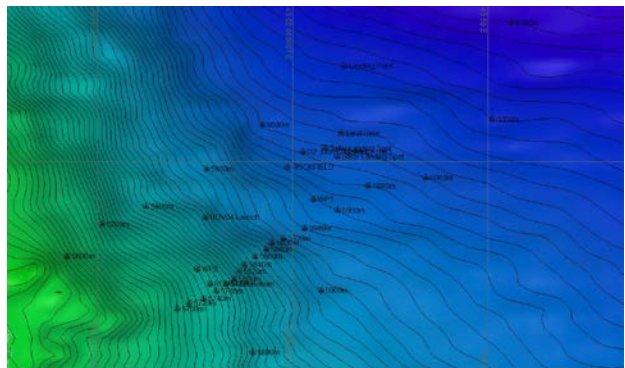
The goal of the dive was to document the diversity of organisms at this transition between abyssal and hadal zones. Although fauna was sparse, we observed brisingid seastars, cladorhizid (carnivorous) sponges, shrimp, amphipods, and at the very end of the dive, a holothurian (*Enypniastes*) and what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



<p>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?</p>	<p>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.</p>	
<p>Samples Collected</p>		
<p>Sample ID</p>	<p>SPEC01GEO</p>	
<p>Date (UTC)</p>	<p>20160621</p>	
<p>Time (UTC)</p>	<p>015441</p>	
<p>Depth (m)</p>	<p>5983.07</p>	
<p>Temperature (°C)</p>	<p>1.62</p>	
<p>Field ID(s)</p>	<p>ROCK WITH WHITE SFC</p>	
<p>Comments</p>	<p>Calcium Carbonate. White all the way through. Dissolves in vinegar. OGL sample taken.</p>	
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