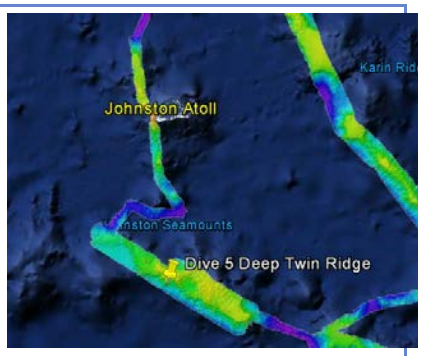
OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	Deep Twin Ridge	
ROV Lead/Expedition Coordinator	Karl Mcletchie/ Brian RC Kennedy	
Science Team Leads	Scott France and Mackenzie Gerringer	
General Area Descriptor	Johnston Atoll Pacific Remote Islands Marine National Monument	

ROV Dive Name	Cruise Season	Leg	Dive Number
	EX1504	4	DIVE05
Equipment Deployed	ROV:	Deep Discoverer	
	Camera Platform:	Seirios	
ROV Measurements	☒ D2 CTD	☒ Depth	☒ Altitude
	☒ Scanning Sonar	☒ USBL Position	☒ Heading
	☒ Pitch	☒ Roll	☒ HD Camera 1
	☒ HD Camera 2	☒ ROV HD 2	☒ Seirios CTD
	Temperature Probe	☒ D2 DO Sensor	☐ Seirios DO sensor
Equipment Malfunctions	VSAT continues to underperform		

ROV Dive Summary (From processed ROV data)

Dive Summary: EX1504L4_DIVE05

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In Water:	2015-09-18T18:30:08.234000 15°, 37.876' N ; 169°, 29.420' W
Out Water:	2015-09-19T02:23:19.390000 15°, 38.395' N ; 169°, 29.131' W
Off Bottom:	2015-09-19T01:11:42.515000 15°, 38.480' N ; 169°, 29.277' W
On Bottom:	2015-09-18T19:58:23.781000 15°, 38.055' N ; 169°, 29.313' W
Dive duration:	7:53:11
Bottom Time:	5:13:18
Max. depth:	2433.7 m

Special Notes

Scientists Involved *(please provide name / location / affiliation / email)*

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Purpose of the Dive

To explore the bathyal community of a hard bottom on a deep ridge on the south side of the Johnston Seamounts in the Pacific Remote Islands Marine National Monument

Description of the Dive:

On arrival at the dive target we encountered a rubbly bottom with many angular rocks and fairly extensive drape of sediment. A rock collection was made almost immediately. We also encountered large isolated boulders that appeared to have tumbled down the slope. Fauna were very sparse, with only some comatulid crinoids and a presumed disk-like xenophyophore/foraminiferan observed.

While not abundant, several corals and other sessile cnidarians were seen throughout the dive. *Chrysogorgia* corals were among the most abundant metazoans seen, many with associate chirostylid squat lobsters. These colonies were seen most often on local highs and in channels between large rocks, possibly erosion channels, where currents are likely accelerated. We measured a notably tall bamboo coral whip (*Lepidisis*) at 4.2 m. Other octocorals observed included. *Keratoisis*, lyrate *Isidella*, *Narella dichotoma*, *Narella bowersi*, *Candidella gigantea*, *Iridigorgia,* "Pleurogorgia" (with anemones); and black corals *Heteropathes* and *Trissopathes*. A colony of *Heteropathes* living on a small cobblestone in the sediment, rather than on the plentiful raised hard bottom around it, was collected, at 2378 m. The sponge and coral community appeared to have higher density as we passed 2200 m, possibly due to changes in local substrate. A cluster of giant solitary hydroids (Corymorphidae) with yellow attachment bases was observed on the side of a boulder.

A diversity of sponges was seen along the dive track, including *Lefroyella* with its commensal anemones, *Caulophacus*, *Tretopleura, Bolosoma, Saccocalyx, Poliopogon,* a Farreidae, and an unknown demosponge. This unknown sponge was located on a particularly impressive pinnacle that rose several meters above the sea floor, creating a habitat for a wide variety of sponges and corals. This site housed the highest abundances and diversities seen on the dive. Many dead sponge skeletons were also encountered (*Walteria*, farreids, *Tretopleura*).

Very few fish were seen during this dive. A cutthroat eel (*Synaphobranchus brevidorsalis*) and a small macrourid (?*Trachonurus*) were seen. Most interestingly, an ophidiid, thought to be *Eretmichthys pinnatus* was encountered. If

this ID is correct, this is a very large range extension into the central Pacific of this animal.

Other observations of note included a snail (*Gaza* sp.) that was seen rolling downslope, propelled by its foot, perhaps as a stress response (also seen a couple of times on leg 2); an urchin (*Aspidodiadema*?) walking on elongate spines; a swimming polychaete (*Swima*?) that lifted off a rock after a head shake and swam briefly; and small agglutinated structures (oval disk on a short stalk) thought to be foraminiferans.

Toward the end of the dive, we encountered more rippled sediments than exposed rock, although rocky outcrops were scattered throughout.

Fauna Observed

Cnidarians: Isididae (*Lepidisis*. *Keratoisis*, lyrate *Isidella*), Chrysogorgiidae (Chrysogorgia, Iridigorgia, "Pleurogorgia") Primnoids (*Narella dichotoma*, *Narella bowersi*, *Candidella gigantea*), Sea pen; Black corals (*Heteropathes*, *Trissopathes*); Hydrozoa: giant solitary hydroids (Corymorphidae), red *Aegina*-like narcomendusae

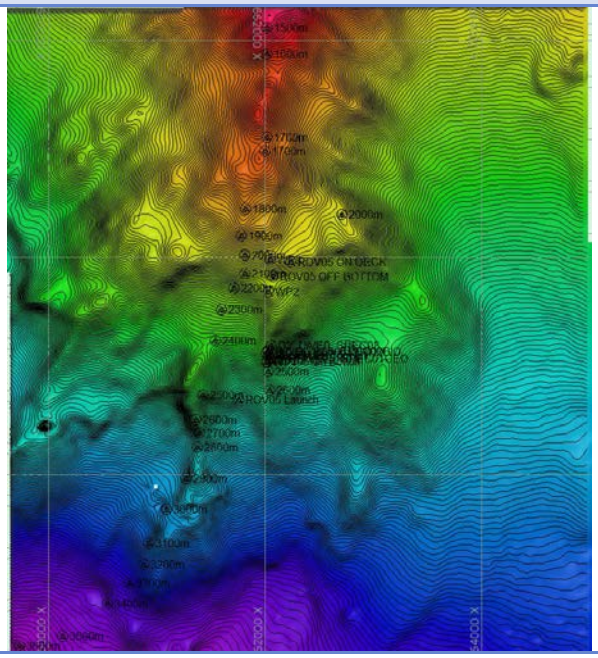
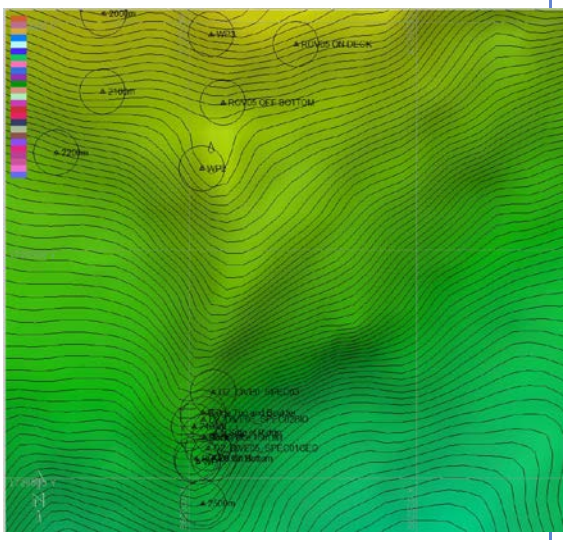
Sponges: Hexactinellida: *Euplectella*, *Caulophacus*, Farreidae, *Tretopleura*, ?*Lephroella*, *Bolosoma*, *Saccocalyx*, *Poliopogon*, Demospongiae, skeletons (*Walteria*, farreids, *Tretopleura*),

Crustaceans: Chirostylidae (associated with Chrysogorgids), squat lobster *Munnidopsis*, shrimp Nematocarcinidae

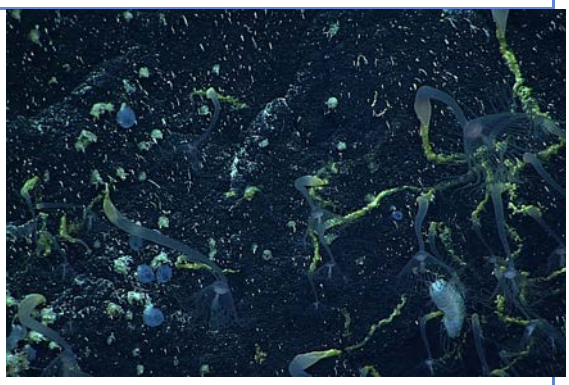
Echinoderms: Ophiuroidea, Crinoidea (Atelocrinid), Holothuroidea (Elasopodida, Synallactidae), Asteroidea (Brisingidae)

Fishes: Ophidiid – ?*Eretmichthys pinnatus* (not previously reported from the Hawaiian Islands region), *Synaphobranchus brevidorsalis*, Macrourid (?*Trachonurus*)

Other: polychaete worm (Polynoidae) on holothurian, swimming polychaete (?*Swima*), Foraminifera

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

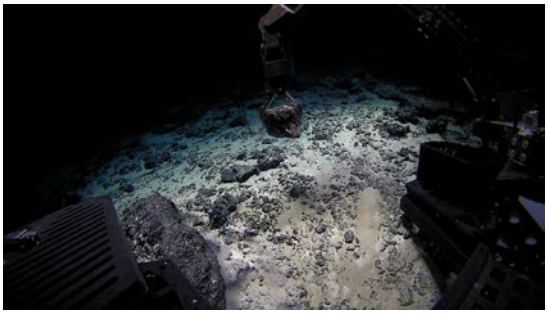
Representative Photos of the Dive



Samples Collected	
Sample ID	EX1504L4_20150918T200955_D2_DIVE05_SPEC01GEO
Date (UTC)	20150918
Time (UTC)	200955
Depth (m)	2429.32
Temperature (^{o}C)	1.81
Field ID(s)	Mn-encrusted basalt
Comments	Red clay deposit on rock

Sample ID	EX1504L4_20150918T213321_D2_DIVE05_SPEC02BIO
Date (UTC)	20150918
Time (UTC)	213321
Depth (m)	2378.43
Temperature (^{o}C)	1.89

Field ID(s)	Heteropathes	
Comments		

Sample ID	EX1504L4_20150918T220456_D2_DIVE05_SPEC03GEO	
Date (UTC)	20150918	
Time (UTC)	220456	
Depth (m)	2356.96	
Temperature (^{o}C)	3.3	
Field ID(s)	Mn encrusted basalt	
Comments		

Sample ID	EX1504L4_20150918T213300_D2_DIVE05_SPEC04BIO	
Date (UTC)	20150918	
Time (UTC)	213300	
Depth (m)	2378.43	
Temperature (^{o}C)	1.89	
Field ID(s)	Sponge	
Comments	Unknown sponge growing on rock with the sampled black coral	

Please direct inquiries to:	NOAA Office of Ocean Exploration & Research 1315 East-West Highway (SSMC3 10th Floor) Silver Spring, MD 20910 (301) 734-1014