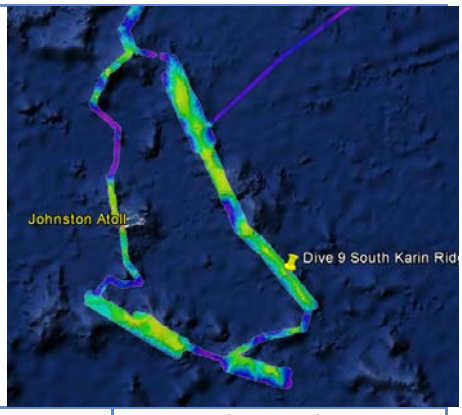
OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	Southern Karin 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	DIVE09
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_DIVE09

In Water:	2015-09-22T18:18:41.281000 16°, 08.644' N ; 167°, 51.614' W
Out Water:	2015-09-23T03:56:03.281000 16°, 09.072' N ; 167°, 50.079' W
Off Bottom:	2015-09-23T01:22:20.171000 16°, 08.316' N ; 167°, 51.033' W
On Bottom:	2015-09-22T19:27:06.203000 16°, 08.601' N ; 167°, 51.368' W
Dive duration:	9:37:22
Bottom Time:	5:55:13
Max. depth:	1980.0 m

Special Notes

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

Name	Institution	Email Address
Abby Lapointe	University of Hawaii Zoology	abbylap@hawaii.edu
Amy Baco-Taylor	FSU	abacotaylor@fsu.edu

Asako Matsumoto	University of Tokyo	amatsu@gorgonian.jp
Astrid Leitner	University of Hawaii	aleitner@hawaii.edu
Bruce Mundy	NOAA NMFS Pacific Islands Fisheries Science Center	bruce.mundy@noaa.gov
Chris Kelley	University of Hawaii	ckelley@hawaii.edu
Dennis Hanisak	FAU/HBOI	dhanisak@fau.edu
Diva Amon	University of Hawaii	divaamon@hawaii.edu
Jasper Konter	University of Hawaii	jkonter@hawaii.edu
Jeff Drazen	University of Hawaii	jdrazen@hawaii.edu
John Smith	University of Hawaii	jrsmith@hawaii.edu
Les Watling	University of Hawaii	watling@hawaii.edu
Mackenzie Garringer	University of Hawaii	mgerring@hawaii.edu
Mary Wicksten	Texas A&M University, College Station	wicksten@bio.tamu.edu
John Reed	Harbor Branch Oceanographic Institute-Florida Atantic University	jreed12@fau.edui
Scott France	University of Louisiana at Lafayette	france@louisiana.edu
Tina Molodtsova	P.P.Shirshov Institute of Oceanology	tina.molodtsova@gmail.com tina@ocean.ru
Rachael Bassett	NOAA	rachel.bassett@noaa.gov
Andrew Shuler	NOAA/NOS/NCCOS	andrew.shuler@noaa.gov
John Reed	FAU Harbor Branch Oceanographic	jreed12@fau.edu
Jim Masterson	FAU Harbor Branch Oceanographic	jmaster7@fau.edu
Kimberly Galvez	University of Miami - RSMAS CSL-Center for Carbonate Research	kgalvez@rsmas.miami.edu
Bill Clancey	IHMC	wclancey@ihmc.us

Purpose of the Dive

To explore the bathyal community of a hard bottom on the crest of a ridge extending to the south (this ridge may be one identified as Sculpin Ridge) in the Pacific Remote Islands Marine National Monument

Description of the Dive:

The landing site was characterized by large pillow lavas likely heavily encrusted with manganese, and very little sediment. Large boulders were seen in one area about midway through the dive, perhaps eroded from a larger feature. Below the summit, there were patchy areas with a bit more sediment deposited. The summit was particularly rugged. At one point, a reddish deposit was seen, described as possible brecchia. Two geological samples were taken, one from 1969 m, one from 1929 m.

Coral and sponge diversity and abundance were among the highest seen on Leg 4. We passed through distinct zones where sponges or corals were dominant; the impression was that corals became abundant on the high points of the ridge while sponges dominated in the deeper saddles. The community of sessile fauna was most dramatic at the highest point we achieved on the ridge. Many of the octocoral colonies were impressively large, suggesting very old ages. Coral diversity at the local summit of this ridge was distinctly higher than on the deeper part of the ridge transited. We noted currents over the saddle of the ridge were very fast and slower at the summit. One conjecture was that saddle currents may be too fast for tall corals as only a few small coral colonies were seen in these areas of accelerated current flow. At the summit, however, the current seemed less rushed and large corals were abundant. Corals observed over the course of the dive include primnoid octocorals (*Narella macrocalyx, Narella dichotoma, Narella* unbranched, *Narella* branched, *Candidella gigantea*), chrysogorgiid octocorals (*Chrysogorgia stellata, Chrysogorgia chryseis Chrysogorgia ?averta, Iridigorgia magnispiralis*), bamboo corals (*Acanella ?weberi,* lyrate *Isidella, Isidella trichotoma, Keratoisis, Jasonisis,* unbranched Isididae), black corals (*Stauropathes, Bathypathes*), scleraxonian octocorals (*Paragorgia, Corallium, Hemicorallium cf. lauense*), and a scleractinian cup coral. Species of *Narella* and *Chrysogorgia* were thought to be the most abundant. An unbranched primnoid was collected from 1944 m and a primnoid fan was collected from 1931 m.

A most interesting observation on today's dive were highly branched sponges that from a distance looked like flabellate stony coral colonies. In several places these sponges were aligned along the upstream edge of local high points, with smaller individuals clustered around them. A sample of one of the sponges was collected from a depth of 1939 m. Other sponges commonly observed (particularly on the deeper part of the ridge) were *Poliopogon*, several types of *Caulophacus* (including one with three heads, two of which were broken off), *Bolosoma*, *Tretopleura*, *Dictyaulus*, Farreidae, and the foxtail-like sponges collected on dive 3 (?*Monorhaphis*).

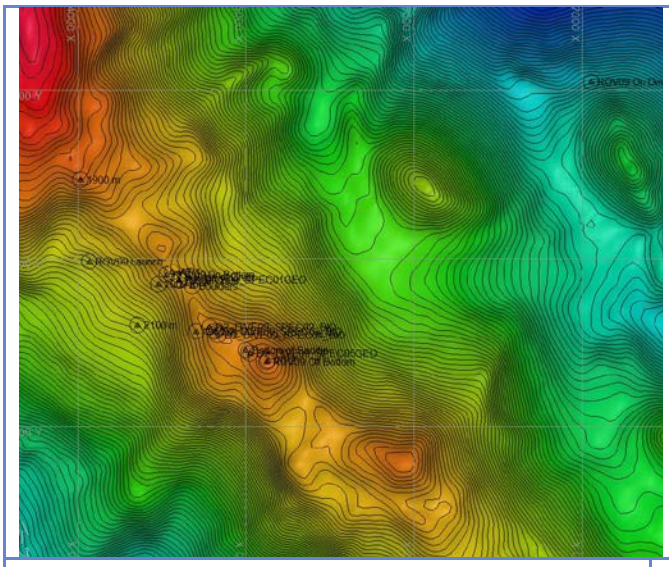
Fish observations were again few in number. Two macrourids (*Coryphaenoides longicirrhus*), both of which had large isopod parasites near the operculum, a cutthroat eel (*Synaphobranchus brevidorsalis*), and cusk eels (*Eretmichthys pinnatus* and another which is either the female *Eretmicthys* or a *Bassogigas*) were the few observed.
Unstalked crinoids (Comatulida) were present in high abundance throughout the dive; most were smaller than many of the crinoids seen on previous dives. No stalked forms were seen. As usual, many ophiuroids were present. Notably, a high number of very small ophiuroids were imaged on the base of a dead *Poliopogon* sponge. It was speculated that the sponge base may provide refuge for juvenile brittle stars. A few *Henricia pauperrima* asteroids were seen, one of which appeared to be feeding on one of the flabellate branched-sponges (the genus *Henricia* is known to include spongivores). Flatter regions of the dive were characterized by many low-growing hydroid colonies. Also in notably high abundances were decapod crustaceans (most *Nematocarcinus*, some *Plesiopenaus armatus*) and anemones (Exocoelactidae). Another decapod (*Lebbeus*) was imaged that is very rarely seen alive.
Additional Metazoa observed

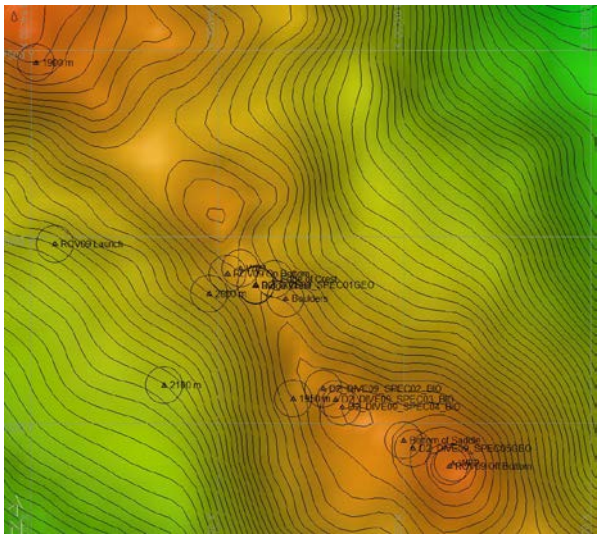
Cnidarians: Zoanthid overgrowth, note particularly end of dive on bamboo coral *Keratoisis*

Crustaceans: Galatheid crabs (Munnopsids), amphipods, shrimp *Plesiopenaus armatus* eating something, *Nematocarcinus* with bopyrid isopod parasite, lithodid stone crab (*Paralomas*)

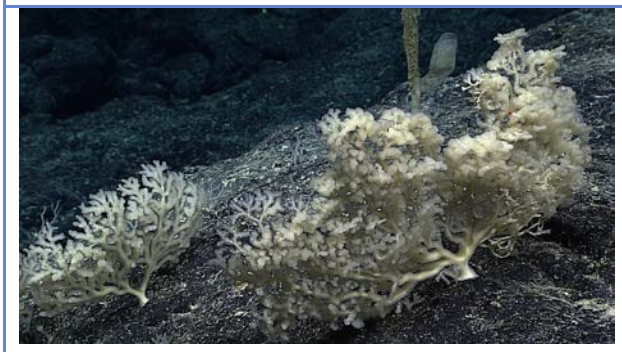
Other: pelagic ctenophore, aplacophoran feeding on chrysogorgid octocoral

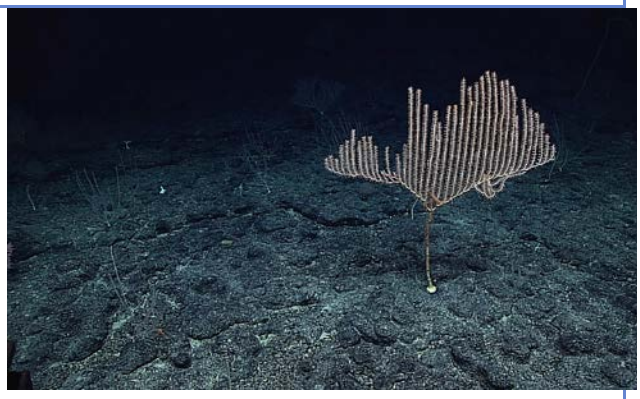
Overall Map of ROV Dive Area	**Close-up Map of Main Dive Site**





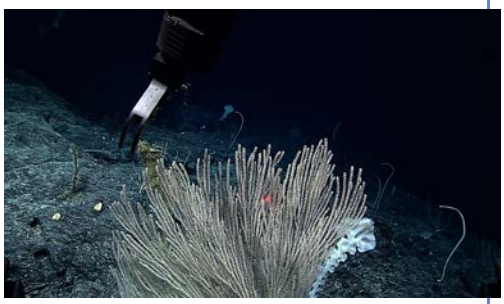
Representative Photos of the Dive





Samples Collected

Sample ID	EX1504L4_20150922T203849_D2_DIVE09_SPEC01GEO
Date (UTC)	20150922

Time (UTC)	203849	
Depth (m)	1969.31	
Temperature (°C)	2.07	
Field ID(s)	Mn-encrusted basalt	
Comments		
Sample ID	EX1504L4_20150922T231725_D2_DIVE09_SPEC02BIO	
Date (UTC)	20150922	
Time (UTC)	231725	
Depth (m)	1944.48	
Temperature (°C)	2.08	
Field ID(s)	Primnoidae planar	
Comments		
Sample ID	EX1504L4_20150922T234004_D2_DIVE09_SPEC03BIO	
Date (UTC)	20150922	
Time (UTC)	234004	
Depth (m)	1938.65	
Temperature (°C)	2.09	
Field ID(s)	Porifera branching	
Comments		
Sample ID	EX1504L4_20150922T235210_D2_DIVE09_SPEC04BIO	
Date (UTC)	20150922	
Time (UTC)	235210	
Depth (m)	1931.81	
Temperature (°C)	2.25	
Field ID(s)	Narella sp.	
Comments		
Sample ID	EX1504L4_20150923T003720_D2_DIVE09_SPEC05GEO	

Date (UTC)	20150923	
Time (UTC)	003720	
Depth (m)	1929.28	
Temperature (^{o}C)	2.27	
Field ID(s)	Mn-encrusted basalt	
Comments		
	NOAA Office of Ocean Exploration & Research 1315 East-West Highway (SSMC3 10th Floor) Silver Spring, MD 20910 (301) 734-1014	