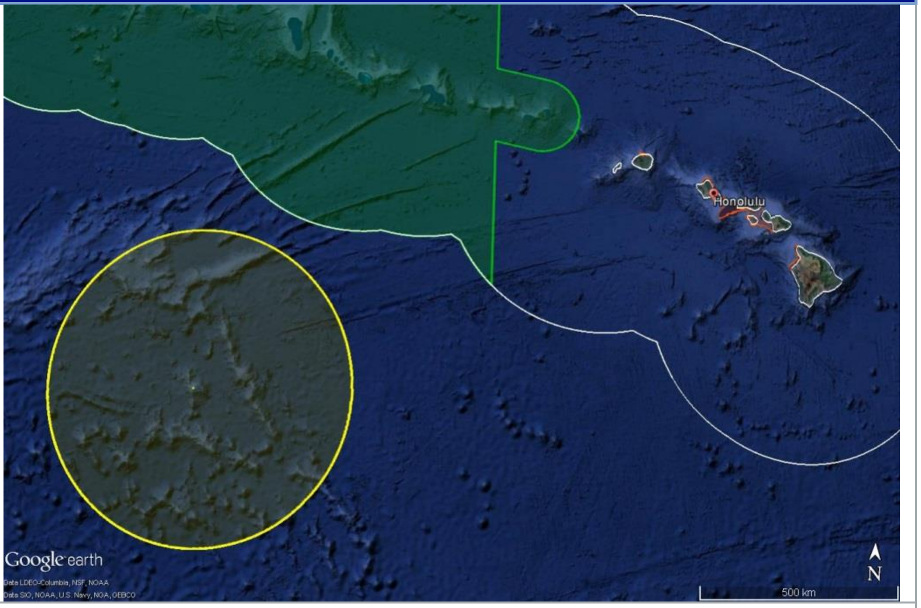
Ocean Exploration
and Research

Okeanos Explorer ROV Dive Summary

Dive Information

Dive Map	
Site Name	Horizon Guyot
ROV Lead(s)	Dan Rogers
Expedition Coordinator(s) / Mapping Lead	Kelley Elliott / Mashkoor Malik
Science Team Lead(s)	Chris Kelley & Chris Mah
General Area Descriptor	Johnston Atoll Unit of PRIMNM

ROV Dive Name

Cruise	EX1706
Leg	
Dive Number	2

Equipment Deployed

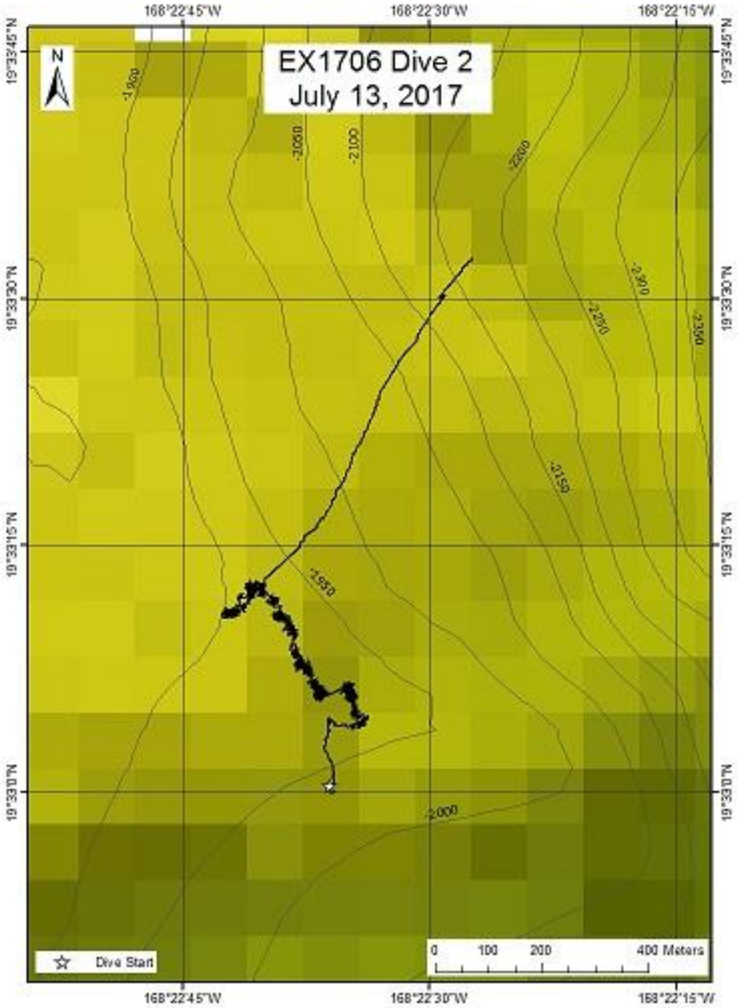
ROV	Deep Discoverer (D2)		
Camera Platform	Seirios		
ROV Measurements	☒ CTD	☒ Depth	☒ Altitude
	☒ Scanning Sonar	☒ USBL Position	☒ Heading

	☒ 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 5
	☒ LSS	☒ORP	
Equipment Malfunctions	None		
ROV Dive Summary (from processed ROV data)	Dive Summary: EX1706_DIVE02 ^^^		
	In Water:	2017-07-13T22:00:56.667000 19°, 33.008' N ; 168°, 22.617' W	
	Out Water:	2017-07-14T02:29:11.381000 19°, 33.543' N ; 168°, 22.456' W	
	Off Bottom:	2017-07-14T01:26:42.813000 19°, 33.197' N ; 168°, 22.693' W	
	On Bottom:	2017-07-13T23:10:58.349000 19°, 33.093' N ; 168°, 22.611' W	
	Dive duration:	4:28:14	
	Bottom Time:	2:15:44	
	Max. depth:	1920.2 m	
Special Notes			
Scientists Involved (please provide name, location, affiliation, email)	Abby Lapointe, University of Hawaii, abbylap@hawaii.edu Amanda Netburn, FAU CIOERT/OER, amanda.netburn@noaa.gov Amy Baco Taylor, Florida State University, abacotaylor@fsu.edu Asako Matsumoto, Planetary Exploration Research Center, Chiba Institute of Technology, Japan, amatsu@gorgonian.jp Chris Kelley, UH, ckelley@hawaii.edu Chris Mah, SI NMNH, brisinga@gmail.com Dhugal Lindsay, JAMSTEC, dhugal@jamstec.go.jp Donald Kobayashi, NOAA NMFS PIFSC, donald.kobayashi@noaa.gov Heather Judkins, University of South Florida St. Petersburg, Judkins@mail.usf.edu John Smith, University of Hawaii/SOEST, jrsmith@hawaii.edu Ken Sulak, U.S. Geological Survey, ksulak@usgs.gov Kevin Kocot, The University of Alabama , kmkocot@ua.edu Les Watling, University of Hawaii at Manoa, watling@hawaii.edu Michael Vecchione, NMFS, vecchiom@si.edu Mike Ford, NOAA Fisheries, michael.ford@noaa.gov Nikola Rodriguez, NOAA EPP, nikola.rodriguez@noaa.gov Nolan Barrett, FAU Harbor Branch Oceanographic Institute, barrettnh@g.cofc.edu Scott France, University of Louisiana at Lafayette, france@louisiana.edu Steven Auscavitch, Temple University, steven.auscavitch@temple.edu Tara Harmer-Luke, Stockton University, luket@stockton.edu		

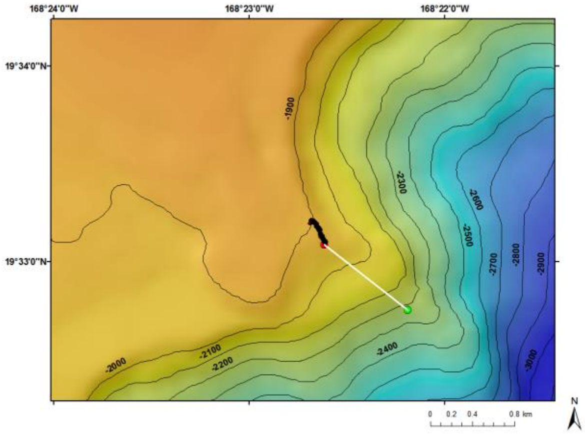
	Timothy Shank, Woods Hole Oceanographic Institution, tshank@whoi.edu Tina Molodtsova, P.P. Shirshov Institute of Oceanology RAS, tina.molodtsova@gmail.com
Purpose of the Dive	This is a Mn-crusted guyot located in the PCZ. The edge of the summits of these types of flat-topped seamounts may be targeted by future deep sea mining efforts to extract Mn crusts because they are generally free of sediment, are flat, and the crust is coating soft carbonate or lithified lagoonal sediments and therefore can be relatively easily extracted by mining equipment. Guyot summit edges are also likely locations of deep water coral and sponge communities that could be impacted by crust extraction. This site was selected to explore and gain a better understanding of Mn crust communities but also for logistical reasons, since this was the furthest site in the monument that the ship could reach in time to do a dive.
Description of the Dive	This start of this dive was delayed until 12 pm due to a problem with the ship's DP and Gyro system. D2 reached the bottom at 22:00 UTC at a depth of 1,930 m. The substrate was mixed rock and sediments, the former being more dominant and consisting primarily of manganese covered boulders and cobbles. Most of the sediment formed a relatively thin layer except for a couple of small areas of thicker cover where bedforms were present. The general topography was relatively flat because time constraints required the start point be relocated closer to the Waypoint 2 on the summit. The community observed at the dive site was dominated by hexactinellid sponges including colonies of *Tretopleura* sp, *Walteria* cf *leuckarti*, euretids *Farrea* nr *occa erecta* and a strange colony that was collected that was possibly in the genus *Chonelasma*, and pheronematid in the genus *Poliopogon* and *Sericolophus*. Many of these sponges were observing with associates that included brittle stars (cf. Amphiuridae), small squat lobsters, hydroids. These were widely distributed along the dive track. Also present within this area were apparently dead sponges (white, brown, discolored) laying on their sides, in areas where living sponges were also present. Feather stars (comatulid crinoids) were present on the tops of several standing dead or inert glass sponge stalks. There was also one "sunburst" cladorhizid demosponge. Present in relatively low abundance were several octocorals and antipatharians. Highlights included bamboo corals (*Jasonisis* sp), primnoids (*Candidella gigantea* and *Calyptrophora* cf *angularis*), "mushroom" soft corals (*Pseudanthomastus*), cup corals, (Scleractinia), chrysogorgiids (*Chrysogorgia* sp. and *Irridigorgia magnispiralis*), and a stoloniferan. Other observed invertebrates included several members of the Echinodermata. At least two hyocrinid stalked crinoids, including one in the genus Tiburonocrinus were observed. Multiple ophiuroids were observed, including ophiacanthids which were present as commensals on both octocorals and glass sponges, as well as tiny ophiuroids (likely to be members of the Amphiuridae) which were observed inside glass sponges and on rocks. One very large ophiurid, which resembled *Ophiomusium* was also seen on a sandy bottom. A large spatangoid urchin with prominent spines was observed in conjunction with sediment traces on a large sediment bed. Synallactid sea cucumbers were observed as well as two observations of freyellid brisingidans, probably in the genus Freyella. The brisingids were sitting on dead sponge stalks in a manner similar to the feather stars as described above.

Only one fish was observed which was a cutthroat eel in the family Synaphobranchidae.

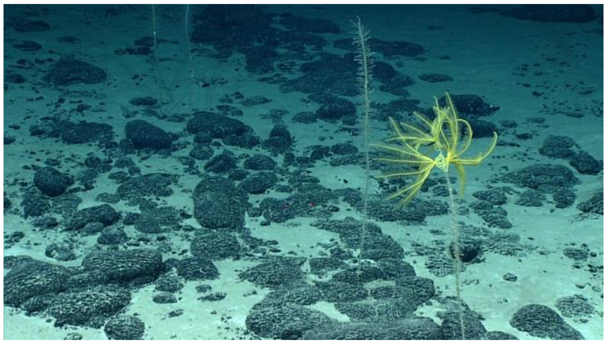
Overall Map of the ROV Dive Area



Close-up Map of Main Dive Site



Representative Photos of the Dive

	
Walteria sp glass sponge and *Glyptometra* sp crinoid commonly seen during the dive.	*Tretopleura* sp glass sponge commonly seen during the dive

Samples Collected

Sample

Sample ID	D2_DIVE10_SPEC01BIO
Date (UTC)	20170225
Time (UTC)	22:38:11
Depth (m)	623.388

Temperature (°C)	6.25730
Field ID(s)	Hexactinellida sponge
Comments	

Sample

Sample ID	D2_DIVE10_SPEC02BIO	 EX1702_IMG_20170225T225825Z_ROVHD.jpg
Date (UTC)	20170225	
Time (UTC)	23:05:47	
Depth (m)	610.9940	
Temperature (°C)	6.33438	
Field ID(s)	Antipatharia	
Comments		

Sample

Sample ID	D2_DIVE10_SPEC03GEO	 EX1702_IMG_20170225T233930Z_ROVHD.jpg
Date (UTC)	20170225	
Time (UTC)	23:42:16	
Depth (m)	568.0900	
Temperature (°C)	6.93560	
Field ID(s)	rock	

Comments		
Sample		
Sample ID	D2_DIVE10_SPEC04BIO	 EX1702_IMG_20170226T014240Z_ROVHD.jpg
Date (UTC)	20170226	
Time (UTC)	01:43:52	
Depth (m)	361.5599	
Temperature (°C)	14.67788	
Field ID(s)	Gorgonocephalus?	
Comments		

Sample		
Sample ID	D2_DIVE10_SPEC05GEO	
Date (UTC)	20170226	
Time (UTC)	02:20:54	
Depth (m)	325.4760	
Temperature (°C)	16.68620	

Field ID(s)	Rock with associate soft octocoral	
Comments		
Sample		
Sample ID	D2_DIVE10_SPEC06GEO	 EX1702_IMG_20170226T030048Z_ROVHD.jpg
Date (UTC)	20170226	
Time (UTC)	03:02:05	
Depth (m)	315.2899	
Temperature (°C)	16.97638	
Field ID(s)	Rock with scleractinian and sponge	
Comments	Rock had pink spots (likely calcareous algae)	

Please direct inquiries to:

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