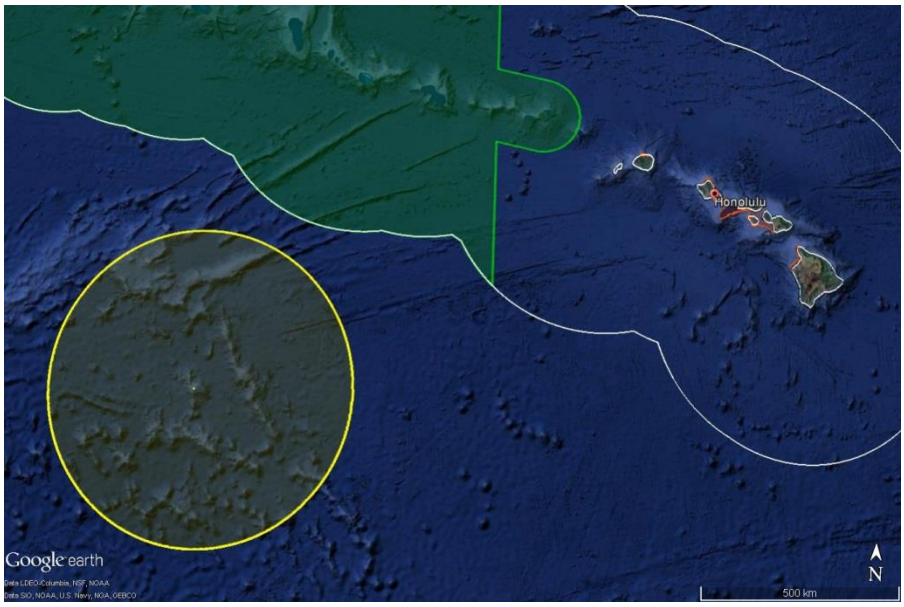
Ocean Exploration and Research

Okeanos Explorer ROV Dive Summary

Dive Information			
Dive Map			
Site Name	"Sally" Seamount		
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	5		
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

<table>
<tr><td rowspan="2"></td><td>Low Res Cam 3</td><td>Low Res Cam 4</td><td>Low Res Cam 5</td></tr>
<tr><td>LSS</td><td>ORP</td><td></td></tr>
<tr><td>Equipment Malfunctions</td><td colspan="3">None</td></tr>
<tr><td>ROV Dive Summary
(from processed ROV data)</td><td colspan="3">Dive Summary: EX1706_DIVE05
^^^
In Water: 2017-07-17T18:30:09.992000
16°, 11.970' N ; 169°, 34.027' W

Out Water: 2017-07-18T04:31:06.296000
16°, 11.704' N ; 169°, 33.447' W

Off Bottom: 2017-07-18T01:32:26.456000
16°, 11.697' N ; 169°, 33.934' W

On Bottom: 2017-07-17T19:46:35.904000
16°, 11.911' N ; 169°, 33.720' W

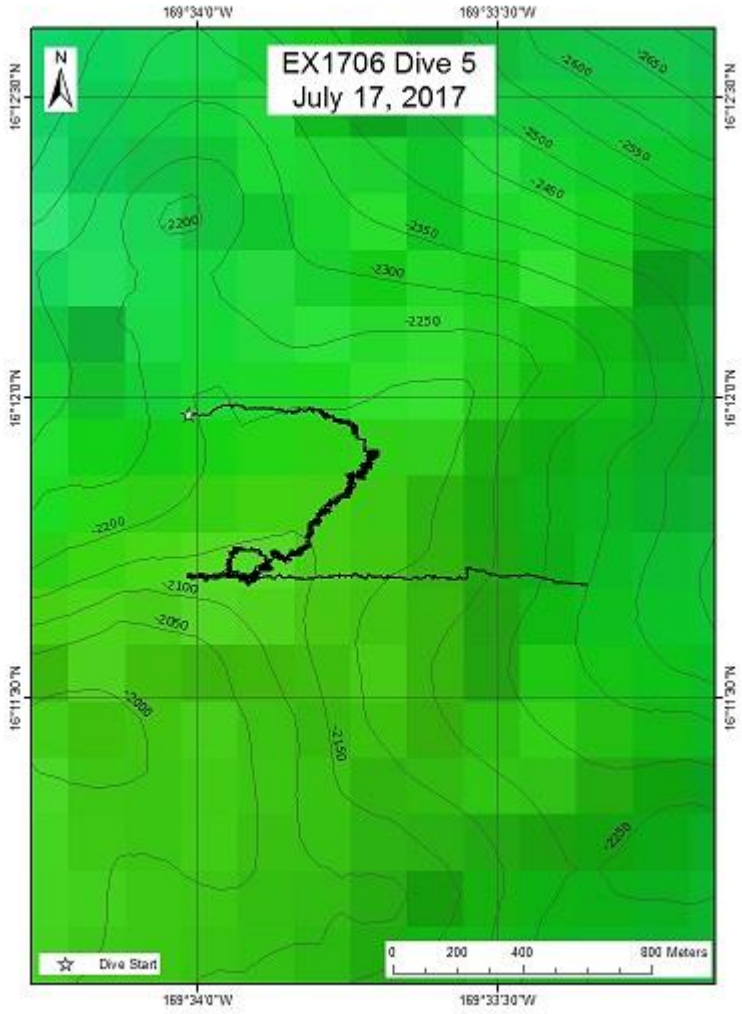
Dive duration: 10:0:56

Bottom Time: 5:45:50

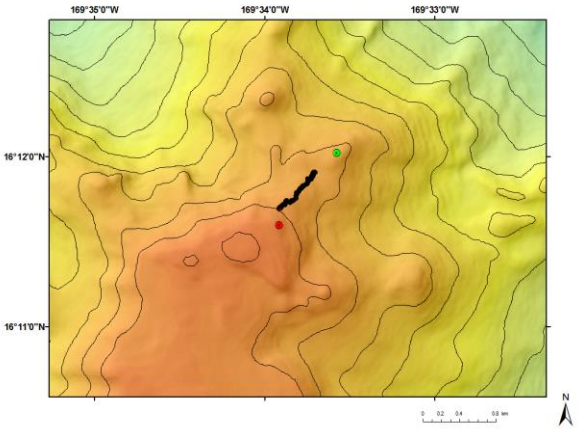
Max. depth 2183.7</td></tr>
<tr><td>Special Notes</td><td colspan="3"></td></tr>
<tr><td>Scientists Involved
(please provide name, location, affiliation, email)</td><td colspan="3">Amanda Netburn, FAU CIOERT/OER, amanda.netburn@noaa.gov
Amy Baco Taylor, Florida State University, abacotaylor@fsu.edu
Asako Matsumoto, Planetary Exploration Research Center, Chiba Institute of Technology, Japan, amatsu@gorgonian.jp
Brian Greene, Association for Marine Exploration, bgreene@hawaii.edu
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
George Matsumoto, MBARI, mage@mbari.org
Heather Judkins, University of South Florida St. Petersburg, Judkins@mail.usf.edu
John Smith, University of Hawaii/SOEST, jrsmith@hawaii.edu
Jonathan Tree, University of Hawaii at Manoa, jtree@hawaii.edu
Katie Mussser, University of Louisiana at Lafayette, katielynnmusser@gmail.com
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
Luke McCartin , Woods Hole Oceanographic Institution, lmccartin@whoi.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
Sonia Rowley, University of Hawai'i at Manoa, srowley@hawaii.edu</td></tr>
</table>

	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 Tracey Sutton, Nova Southeastern University, tsutton1@nova.edu
Purpose of the Dive	Most dives in 2015 were at depths of 2000 m or greater (exceptions were on the slopes of Johnston Atoll or on cones). Large scale, high density coral and sponge communities were found at depths between 2,000-2500 m at other locations but were all but lacking on seamounts explored in JAU in 2015. This dive will take place on an unexplored seamount in this depth range to continue efforts to locate these communities in new locations. Also, on the southern JAU seamounts, most dives took place on the south side of the features, and sessile communities were relatively low density. Could current flow result in different communities on the north slopes? Here I propose to dive on a guyot-like feature with radiating arms whose plateau is at approx. 2040 m, specifically on a north-side ridge leading to the plateau. The primary objective for this dive is to characterize the distribution and abundance of benthic fauna, in particular corals and sponges. The dive satisfies CAPSTONE science themes to “Acquire data to support priority monument and sanctuary science and management needs” and to "Identify and map vulnerable marine habitats – particularly high-density deep-sea coral and sponge communities Mid-Water: The water column is one of the most underexplored environments on the planet. Basic information is lacking on the distributions and abundances of midwater organisms in most parts of the globe, and the vicinity of Johnston Atoll remains a poorly explored region. ROV visual surveys provide crucial data on the distributions, abundances, and behaviors of a variety of midwater animals. ROV surveys are especially well-suited to observe the understudied gelatinous fauna, which commonly fall apart using traditional net sampling methods. Collecting acoustic backscatter data (Simrad EK60) throughout the cruise - including during ROV transects – will complement the ROV surveys by providing critical information on the depth and extent of deep scattering layers, diel vertical migrations, and ROV avoidance behavior.
Description of the Dive	Deployment of the D2 began at 8:30 am with the ROV reaching bottom at 2171m (9:45 AM), landing on a rocky substrate composed primarily of Mn encrusted rocks with a moderate to high light colored sediment. During our initial contact with this area we observed numerous dead bamboo coral skeletons several of which showed strongly calcified calcium carbonate nodes suggesting that they were of some age before they died. Many dead skeletons from glass sponges were also observed in this area prompting discussion of whether this might have been natural versus an acutely catastrophic event. This rocky, Mn encrusted area continued throughout the entire dive with only minor changes in habitat throughout as we proceeded along the survey region. Two rock samples were collected that were thought to potentially contain basalt for age analysis. Numerous octocorals and antipatharians were encountered throughout the survey region, the octocorals including primnoids (e.g. *Narella*, *Calyptophora*), “bamboo” corals (Isididae), the chrysogorgiid *Iridigorgia* magnispiralis, and antipatharians

	including *Heteropathes* and *Parantipathes*. Following these observations, we entered a region where several large, well-developed bamboo corals that formed moderately abundant patches on elevated mounds of Mn crusted pillow lava. Some of these individuals were large (standing up to 8-10 feet tall) and apparently quite old. One bamboo coral was observed to have had a large section of the fleshy tissue stripped off a significant portion of the skeleton. Two aplacophorans, worm-like mollusks, were observed on these barren areas suggesting predation by this species on the bamboo corals, as has been observed with other aplacophorans. Benthic ctenophores potentially in the genus *Lyrocteis* were also perched on these colonies. Several unidentified species of cup corals (single polyp scleractinians) were documented during the dive. A potential new species of bamboo coral and antipatharian coral (*Lillipathes* sp) were collected. Moderate to large sized glass sponges were documented that included *Poliopogon* sp, *Walteria* cf. *leuckarti* and *Bolosoma* sp) as well as others not mentioned here. One unusual glass sponge that had only been photographed during a couple of previous Capstone cruises was collected and is tentatively identified for now as Auloplax sp based on colony morphology although it's spicules are not consistent with known members of that genus. Echinoderms included a large sea star from the genus *Henrica*, several brittle stars in the genus *Ophoplinthaca* which are primarily commensal on octocorals, the swimming sea cucumber likely in the genus *Hansenothuria* and what appear to be several species of feather stars. A small individual feather star displayed a disproportionately large eulimid snail. Eulimids are parasites of echinoderms and it was unusual to observe one parasitizing such a disproportionately sized host. Also observed was what appeared to be a juvenile *Hymenaster* (a slime star) present on the side of a rock face displaying its full skeletal morphology through its transparent body wall. One sea urchin in the family Aspidodiadematidae was also observed. Other invertebrates included the long-legged shrimp, *Nematocarcinus* and a large (10 cm!) purple, polynoid polychaete that took to swimming at the approach of the D2. Fishes observed on the benthic portion of the dive were few. They included an unidentified grenadier (Macrouridae) and a cusk eel (Ophidiidae). The benthic portion of the dive ended at approximately 3:30 pm (HST) with the D2 leaving the bottom from 2040 m to start the midwater portion of the dive. The first 10 minute transect began at 4:00 pm (HST) when the D2 reached a depth of 900 m. A number of other transects were also conducted between that depth and 350 m. Among the most striking of the midwater animals encountered was an undescribed comb jelly identified by Dhugal Lindsay as "Intacta". Notable fish included a bristle mouth (Cyclothone sp), swimming cusk eel (Borodinula infans) several vertically positioned Serrivomer and the hatchet fish, Sternoptyx. Other interesting observations included larvacean houses and a bizarre three to four armed glassine protist Coelodendrid called Phaeodarian. as well as numerous hydrozoan jellyfish, a hyperiid amphipod and several salps.
Overall Map of the ROV Dive Area	



Close-up Map of Main Dive Site



Representative Photos of the Dive

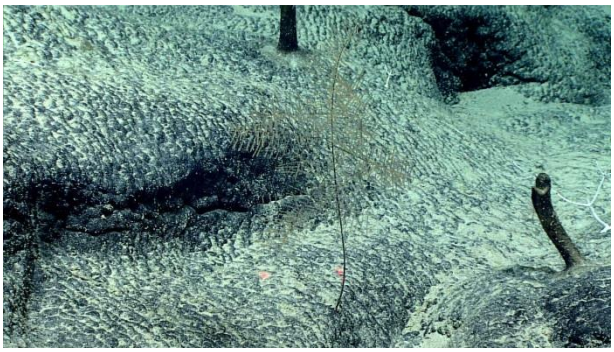
Bamboo corals (Keratoisidinae) in an area of higher abundance.

Stalked glass sponge (Bolosominae) in area of lower abundance.

Samples Collected

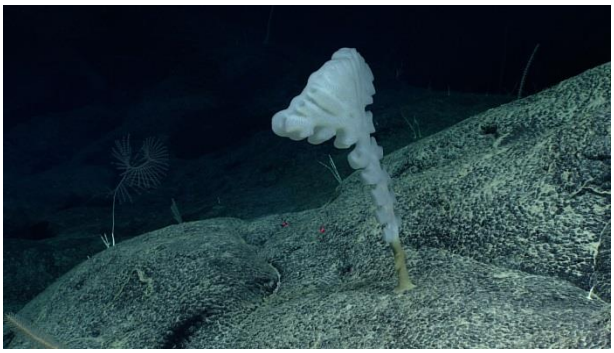
Sample

Sample ID	D2_DIVE_SPEC01BIO
Date (UTC)	20170717
Time (UTC)	205912
Depth (m)	2172
Temperature (°C)	
Field ID(s)	*Lillipathes* sp?
Comments	



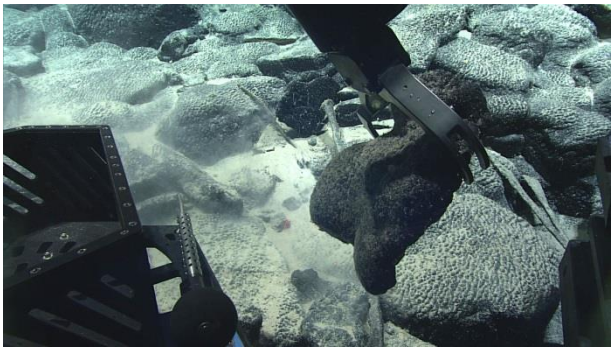
Sample

Sample ID	D2_DIVE_SPEC02BIO
Date (UTC)	20170717
Time (UTC)	215932
Depth (m)	2164
Temperature (°C)	
Field ID(s)	*Auloplax* sp?



Comments	
Sample	
Sample ID	D2_DIVE_SPEC03GEO
Date (UTC)	20170717
Time (UTC)	222511
Depth (m)	2158
Temperature (°C)	
Field ID(s)	Mn crusted rock
Comments	

Sample	
Sample ID	D2_DIVE_SPEC04GEO
Date (UTC)	20170717
Time (UTC)	231940
Depth (m)	2151
Temperature (°C)	
Field ID(s)	Mn crusted rock
Comments	



Sample	
Sample ID	D2_DIVE_SPEC05BIO
Date (UTC)	20170717
Time (UTC)	012339
Depth (m)	2106
Temperature (°C)	
Field ID(s)	Sparse branch D clade
Comments	

Sample		
Sample ID	D2_DIVE_SPEC02BIO_A01	
Date (UTC)	20170717	
Time (UTC)	215932	
Depth (m)	2164	
Temperature (°C)		
Field ID(s)	*Lebbeus* sp?	
Comments	Also small amphipod found on sponge that's listed A02	

Please direct inquiries to:

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