

# Okeanos Explorer ROV Dive Summary

## **Dive Information**

General Location	83°W/	82°W	81°W	80°W	79°W	78°W	77°W	76°W	75°W
Мар	NL2E				1 - Contraction of the second			Ocean I and Res	Exploration search
	N <sub>a</sub> Te	*		11	) Dive 06				N°1.5
	Nuce								- CE
	29°N	-4	Port	Canaveral					19-01
	28*N								28°N
	N_2 0 20 40 83"W	Nautical N 80 82*W	Ailes Bi <sup>*</sup> W	Bo'W	79°W		Tr'w	1 76°W	NJ2 75"W
General Area Descriptor	U.S. South	east , Blak	e Plateau						
Site Name	Stetson M	esa Poten	tial Seep						
Science Team Leads	Amy Wagr	ner (CSUS)	and Alex	kis Weinni	g (Temple)				
Expedition Coordinator	Kasey Can	twell (NOA	A-OER)						
ROV Dive Supervisor	Chris Ritte	r (GFOE)							
Mapping Lead	Shannon H	loy (NOAA	-OER)						

#### **ROV Dive Name**

Cruise	EX1903L2
Dive Number	DIVE 06

### **Equipment Deployed**

ROV	Deep Discoverer			
Camera Platform	Seirios			
	✓ CTD	✔ Depth	✓ Altitude	
ROV	✓ Scanning Sonar	✓ USBL Position	✓ Heading	
Measurements	✓ 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	
Equipment				
Malfunctions				
ROV Dive Summary	Dive Summary: EX1903L2	2_DIVE06		
Processed ROV)	^^^^	~~~~~	~~	
,	In Water	2019-06-27T13-18-14 103338		
	in water.	2013-00-27113.10.14.103330		
	30°, 26.0	064' N ; 79°, 34.919' W		
	On Bottom:	2019-06-27T14:14:02.114034		
	30°, 26.2	217' N ; 79°, 34.795' W		
		2010 06 27720 06 07 620120		
	Off Bottom:	2019-06-27120:06:07.629120		
	30°, 26.071' N ; 79°, 35.144' W			
	Out Water:	2019-06-27T22:54:51.255079		
	30°, 27,766' N : 79°, 34,886' W			
	Dive duration:	9:36:37		
	Bottom Time:	5:52:5		
	Max. depth:	841.0 m	1. 1	
Special Notes	Launch was delayed due to	strong Gulf Stream currents and t	he need to adjust ship position.	



## Scientists Involved (provide name, affiliation, email)

Name	Affiliation	Email	
Adam Skarke	Mississippi State University	adam.skarke@msstate.edu	
Adrienne Copeland	NOAA OER	adrienne.copeland@noaa.gov	
Alexis Weinnig	Temple University	aweinnig@temple.edu	
Allen Collins	NOAA's National Systematics Lab	Collinsa@si.edu	
Amy Wagner	California State University, Sacramento	amy.wagner@csus.edu; amywagner98@gmail.com	
Andrew Shuler	CSS, inc.	andrew.shuler@noaa.gov	
Asako Matsumoto	Chiba Institute of Technology	amatsu@gorgonian.jp	
Bernard Ball	University College Dublin	bernie.ball.ucd@gmail.com	
Cheryl Morrison	U.S. Geological Survey	cmorrison@usgs.gov	
Christopher Mah	Dept. of Invertebrate Zoology, NMNH Smithsonian	brisinga@gmail.com	
Cristiana Castello-Branco	Postdoc at Smithsonian National Museum of Natural History	cristianacbranco@gmail.com	
Danielle Power	NOAA Ship Okeanos Explorer	danielle.l.power@noaa.gov	
Dhugal Lindsay	JAMSTEC	dhugal@jamstec.go.jp	
Elizabeth Fraser	NOAA NCCOS	gugliottief@gmail.com	
Erik Cordes	Temple University	ecordes@temple.edu	
Ervan Garrison University of Georgia		egarriso@uga.edu	
Georgios Kazanidis University of Edinburgh		georgios.kazanidis@ed.ac.uk	
Heather Coleman	DSCRTP, NOAA	heather.coleman@noaa.gov	
Heather Judkins	University of South Florida St. Petersburg	Judkins@mail.usf.edu	
Herbert Leavitt	NOAA Office of Ocean Exploration and Research (OER Hollings Scholar)	herbert.leavitt@noaa.gov	
J Dunn	NOAA OER	christopher.dunn@noaa.gov	
James Austin	University of Texas/Austin	jamie@ig.utexas.edu	
Janessy Frometa	NOAA Deep Coral Ecology Lab	janessy.frometa@noaa.gov	
Jenna Hill USGS		jhill@usgs.gov	
Jill Bourque	USGS	jbourque@usgs.gov	
John Reed Harbor Branch Oceanographic Institute		jreed12@fau.edu	



Kate Rose	Northern Gulf Institute/NOAA NCEI	kate.rose@noaa.gov
Kelley Brumley	Fugro	kbrumley@fugro.com
Kevin Jerram	UNH	kjerram@ccom.unh.edu
Kevin Kocot	University of Alabama	kmkocot@ua.edu
Laura Anthony	NOAA	laura.anthony@noaa.gov
Lauren Walling	University of Louisiana at Lafayette	lauren.walling1@louisiana.edu
Les Watling	University of Hawaii at Manoa	watling@hawaii.edu
Michael Vecchione	NOAA National Systematics Lab	vecchiom@si.edu
Mike Ford	NOAA	michael.ford@noaa.gov
Mike Brennan	SEARCH	mike.brennan@searchinc.com
Nolan Barrett	Georgia Institute of Technology	barrettnh@g.cofc.edu
Paola Santiago	NOAA Ocean Exploration Research	paola.santiago@noaa.gov
Robert Carney	LSU, Oceanography, emeritus	rcarne1@lsu.edu
Roger Pugliese	SAFMC	Roger.Pugliese@safmc.net
Ryan Gasbarro	Temple University	tuj64508@temple.edu
Scott France	University of Louisiana at Lafayette	france@louisiana.edu
Shannon Hoy	NOAA OER	shannon.hoy@noaa.gov
Tara Harmer Luke	Stockton University	luket@stockton.edu; tara.luke@stockton.edu
Timothy Gallaudet	NOAA	Timothy.gallaudet@noaa.gov
Tina Molodtsova	P.P.Shirshov Institute of Oceanology RAS	tina@ocean.ru
Tracey Sutton	Nova Southeastern University	tsutton1@nova.edu
Upasana Ganguly	University of Louisiana at Lafayette	upasana.ganguly1@louisiana.edu

Dive Purpose Bathymetric data was collected around this region of the Blake Plateau by the Okeanos Explorer during 2014. Adam Skarke's Lab at Mississippi State University was able to analyze the EM302 water column data and assign a relatively high confidence (2 out of 5) that a cold seep could be in the area. There were two potential seep sites identified and the more northern site, with more topographic variability, was selected to increase the likelihood of encountering benthic communities that have settled on or around the authigenic carbonate. This dive will give us the opportunity to investigate a potential cold seep, which are known to provide resources and habitat for a wide variety of life forms and significantly impact ocean chemistry in the surrounding water. On the ROV ascent,



	we will be doing several mid-water transects (700 m, 500 m, and 300 m) to observe and
	collect the biota in the vastly unexplored water column.
Dive Description	The ROV launched at 13:11 UTC and reached the bottom (depth of 839 m) at 14:14 UTC on a soft, sandy bottom on the northeastern side of the target. As we approached bottom, we first observed rubble on soft sediment and a few carbonate outcrops. Our dive track was designed to work our way up the feature to investigate a potential methane seep target that was identified in 2014 EM302 water column data. Throughout the dive we were keeping our eyes open for signs of present or past methane seepage, which could include authigenic carbonate, bacterial mats, methane bubble plumes, or other seep associated fauna. As we continued up the feature, we continued to see coral rubble which increased in density as we approached the local high. There were rich biological communities living among the coral rubble including bamboo corals, chrysogorgia octocorals, black corals, <i>Enallopsammia profunda</i> , <i>Lophelia pertusa</i> , plexaurid octocorals, alcyonacean octocorals, <i>Madrepora</i> sp., goniastrid seastars, hexactanilid and demosponges. There was also a number of fish species noted throughout the dive track including synaphobranchid eels, a duckbill eel, a congrid eel, a Pluto ray, hake fish, <i>Nezumia</i> rat tails, and a few chimaera. We observed a few large coral bases and colonies (including a <i>Leiopathes</i> black coral) that indicate that they had been growing on that substrate for a very long time (potentially hundreds to thousands of years). We did not see any further signs of active or passive seepage after the potential authigenic carbonate observed towards the base of the feature. The geology in the area was also quite interesting, while we did see exposed carbonate-like rock (with rubble mixed in) around the base of the feature rock was collected and the ferromanganese was at least 5 cms thick (no underlying rock collected) indicating that it had been exposed to seawater for a very long time. Four biological and one geological samples were collected on the benthic portion of the dive wethen performed three midwater transects wit
Notable Observations	No seep discovered. Observed an abundance of corals and sponges.
Community Presence/ Absence (community is defined as more than two species)	<ul> <li>Corals and Sponges</li> <li>Chemosynthetic Community</li> <li>High biodiversity Community</li> <li>Active Seep or Vent</li> <li>Extinct Seep or Vent</li> <li>Hydrates</li> </ul>



Feature Type	Colonized Deepwater/Coldwater Reef
SeaTube (annotations program) link	https://data.oceannetworks.ca/SeaTubeV2?resourceTypeId=1000&res ourceId=23621&diveId=2420

### **Overall Map of the ROV Dive Area**



### Close-up Map of Main Dive Site





#### **Representative Photos of the Dive**



Carbonate-like rock observed at the beginning of the dive - possibly authigenic carbonate. The only sign observed of potential past seepage.



Goniasetrid seastars and a citaroid urchin feeding on potentially an astrophoroid sponge





A large black coral (possibly *Lepidisis* sp.) with a very large base and sweeper tentacles around the base and at the portion branches being overgrown by hydroids



One of four chimeras seen swimming throughout the dive



## **Samples Collected**



Sample ID	EX1903L2_D06_01B	
Date (UTC)	20190627	
Time (UTC)	142550	
Depth (m)	837.0	
Temp. (°C)	7.466	
Field ID(s)	Cranchiidae	
Associates		
	Associates Sample ID	Field Identification
	No Associates	
Comments		





Sample ID	EX1903L2_D06_02G		
Date (UTC)	20190627		
Time (UTC)	153021		
Depth (m)	821.8		
Temp. (°C)	7.449		
Field ID(s)	Ferromanganese oxide encrusted carbonate (potentially)		
Associates			
	Associates Sample ID	Field Identification	
	EX1903L2_D06_02G_A01	Ophiuroidea	
	EX1903L2_D06_02G_A02	Scleractinia skeleton	
Comments			





Sample ID	EX1903L2_D06_03B			
Date (UTC)	20190627	20190627		
Time (UTC)	172105			
Depth (m)	771.6			
Temp. (°C)	7.445			
Field ID(s)	Vazella sponge			
Associates				
	Associates Sample ID	Field Identification		
	EX1903L2_D06_03B_A01	Ophiuroidea		
	EX1903L2_D06_03B_A02	Crinoidea		
	EX1903L2_D06_03B_A03	Stylasteridae skeleton		
	EX1903L2_D06_03B_A04	Plexauridae		
Comments				





Sample ID	EX1903L2_D06_04B		
Date (UTC)	20190627		
Time (UTC)	175318		
Depth (m)	767.9		
Temp. (°C)	7.447		
Field ID(s)	Caryophylliidae		
Associates			
	Associates Sample ID	Field Identification	
	EX1903L2_D06_04B_A01	microfossils	
Comments			





Sample ID	EX1903L2_D06_05B		
Date (UTC)	20190627		
Time (UTC)	200157		
Depth (m)	751.3		
Temp. (°C)	7.501		
Field ID(s)	Ophioroidea		
Associates			
	Associates Sample ID	Field Identification	
	EX1903L2_D06_05B_A01	Coral	
Comments			





Sample ID	EX1903L2_D06_06B	
Date (UTC)	20190627	
Time (UTC)	203714	
Depth (m)	696.9	
Temp. (°C)	8.117	
Field ID(s)	Hydrozoa (Jellyfish)	
Associates		
	Associates Sample ID	Field Identification
	No associates	
Comments		

#### Please direct inquiries to:

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

