



# Okeanos Explorer ROV Dive Summary

## Dive Information

<p>General Location Map</p>	
<p>General Area Descriptor</p>	<p>U.S. Southeast, Blake Plateau</p>
<p>Site Name</p>	<p>Central Plateau Scarp</p>
<p>Science Team Leads</p>	<p>Amy Wagner (CSUS) and Alexis Weinnig (Temple)</p>
<p>Expedition Coordinator</p>	<p>Kasey Cantwell (NOAA-OER)</p>
<p>ROV Dive Supervisor</p>	<p>Chris Ritter (GFOE)</p>
<p>Mapping Lead</p>	<p>Shannon Hoy (NOAA-OER)</p>

## ROV Dive Name

<p>Cruise</p>	<p>EX1903L2</p>
<p>Dive Number</p>	<p>DIVE08</p>



## 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
Amy Wagner	California State University, Sacramento	amy.wagner@csus.edu; amywagner98@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
Cristina Cedeño-Posso	Invemar, Colombia	cristina.cedeno@invemar.org.co; cristina.cedeno@hotmail.com
Danielle Power	NOAA Ship Okeanos Explorer	danielle.l.power@noaa.gov
Enrique (Ren) Salgado	NOAA CSS	enrique.salgado@noaa.gov
Erin Easton	University of Texas Rio Grande Valley	erin.easton@utrgv.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
Joana Xavier	CIIMAR, University of Porto, Portugal	joanarxavier@gmail.com
Katharine Egan	NOAA OER	katharine.egan@noaa.gov
Kelley Brumley	Fugro	kbrumley@fugro.com
Kenneth Sulak	U.S. Geological Survey (Emeritus)	jumpingsturgeon@yahoo.com
Kevin Jerram	UNH	kjerram@ccom.unh.edu
Laura Anthony	NOAA	laura.anthony@noaa.gov
Michael Rhode	ECS	rhodemichael@hotmail.com
Michael Vecchione	NOAA National Systematics Lab	vecchiom@si.edu
Mike Ford	NOAA	michael.ford@noaa.gov
Nolan Barrett	Georgia Institute of Technology	barrettnh@g.cofc.edu
Peter Etnoyer	NOAA NCCOS	peter.etnoyer@noaa.gov
Robert Carney	LSU, Oceanography, emeritus	rcarne1@lsu.edu
Scott France	University of Louisiana at Lafayette	france@louisiana.edu

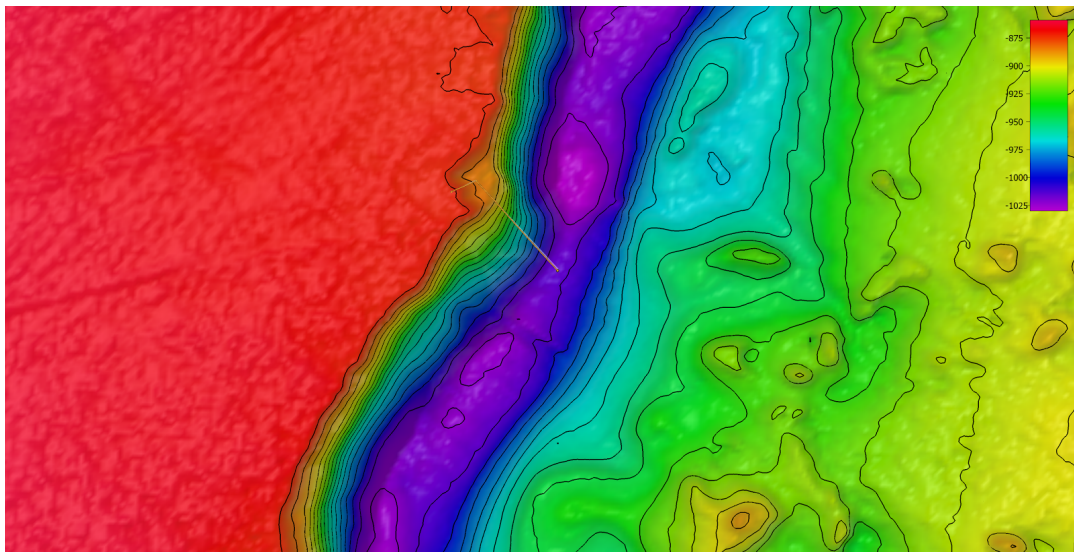


Shannon Hoy	NOAA OER	shannon.hoy@noaa.gov
Tara Harmer Luke	Stockton University	luket@stockton.edu; tara.luke@stockton.edu
Tina Molodtsova	P.P.Shirshov Institute of Oceanology RAS	tina@ocean.ru

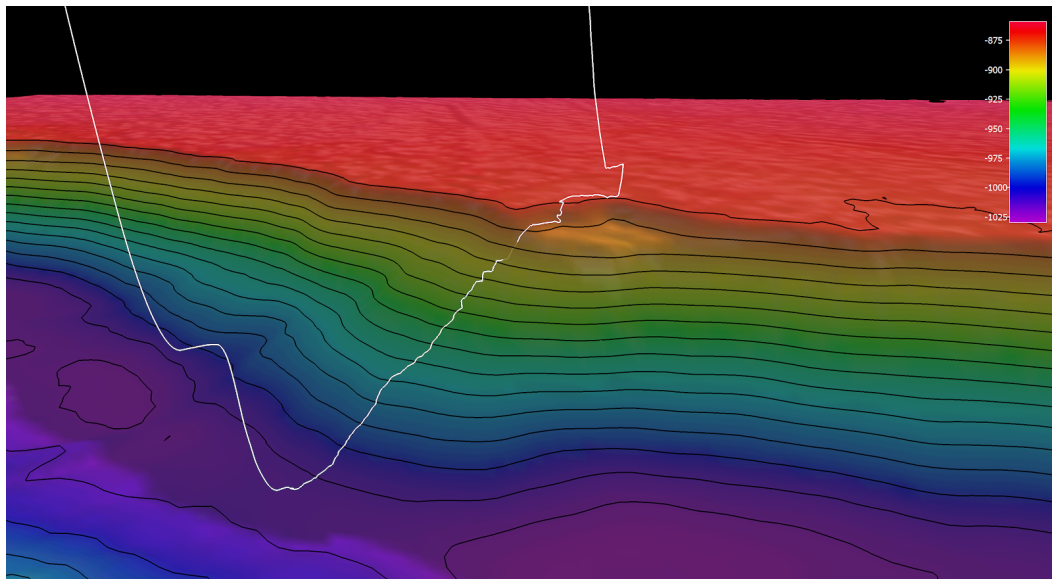
Dive Purpose	<p>During the mapping portion of the EX1903 Windows to the Deep 2019 expedition, an interesting temperature profile was noted on several XBT casts near a scarp within the central Blake Plateau. Following a subsequent CTD cast, it was determined that there was a sharp drop in temperature, decrease in salinity and increase in dissolved oxygen at approximately 860 meters water depth. The dive track was planned to transit through this depth layer, up the face of the scarp and then along the top of the plateau. CTD data on the ROV will be collected throughout the entire dive. The first objective of this dive is to confirm the temperature, salinity, and dissolved oxygen anomaly at a depth of approximately 860 m in the central Blake Plateau. Upon reaching the bottom, the seafloor habitat and geology will be characterized as we travel up along the face of a 120 m scarp.</p>
Dive Description	<p>Today we targeted a scarp site in the central Blake Plateau that was mapped during Windows to the Deep 2019 Leg 1 where an interesting temperature and dissolved oxygen profile was observed at approximately 860 m water depth. On the descent, we saw the temperature and oxygen anomaly on the ROV CTD around 865 m. Below this depth, the water temperature was between 4.5 and 5.5 C and dissolved oxygen was approximately 7.5 mg/L. When the ROV reached bottom at a depth of 1010 m, a sandy bottom with many small, round rocks thought to be manganese or phosphite encrusting on the carbonate bedrock. A geologic sample was collected for confirmation. As we approached the wall of the scarp, some small, weathered coral rubble became apparent and the rocks increased in size and became more angular, indicating that the rocks seen at the base were from rock falls from the wall itself. As we ascended up the feature, the number of octocoral and sponge coverage increased, although very few stony corals were seen. Many Goniasterid seastars were noted, including several <i>Sthenaster emmae</i>, a seastar that had not been previously observed alive. A number of crinoids and bryozoans were also found on the rocky substrate. The top of the feature was about 865 m and was mostly flat, patchy black life with few corals and low lying sponges. For the majority of the dive along the top of the scarp, the temperature of the ROV CTD was reading 5.5 degrees C while the CTD on Serios (12 to 20 m above D2) was reading between 8.5 and 9.2 C suggesting that the boundary between the two temperature layers was around 860 m, as indicated by the CTD on Leg 1. The benthic portion of the dive ended at 19:00 UTC and we ascended to 840 m to begin the midwater portion.</p> <p>We completed a 15-minute transect at 840 m and an additional 15-minute transect at 700 m before ascending to the surface. The Deep Scattering Layer (DSL) was detected to extent between 478 and 605 meters. A squid and a lobate ctenophore were sampled with the suction sampler. Overall, the number of midwater organisms encountered during these two transects was quite low relative to previous midwater dives. Determination of the Gulf Stream relative to the midwater dive location was made with the Global RTOFS Z-Level simulation (NOAA NCEP Marine Modeling and Analysis Branch).</p>
Notable Observations	

Community Presence/Absence (community is defined as more than two species)	<ul style="list-style-type: none"> <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	Rock outcrop

### Overall Map of the ROV Dive Area

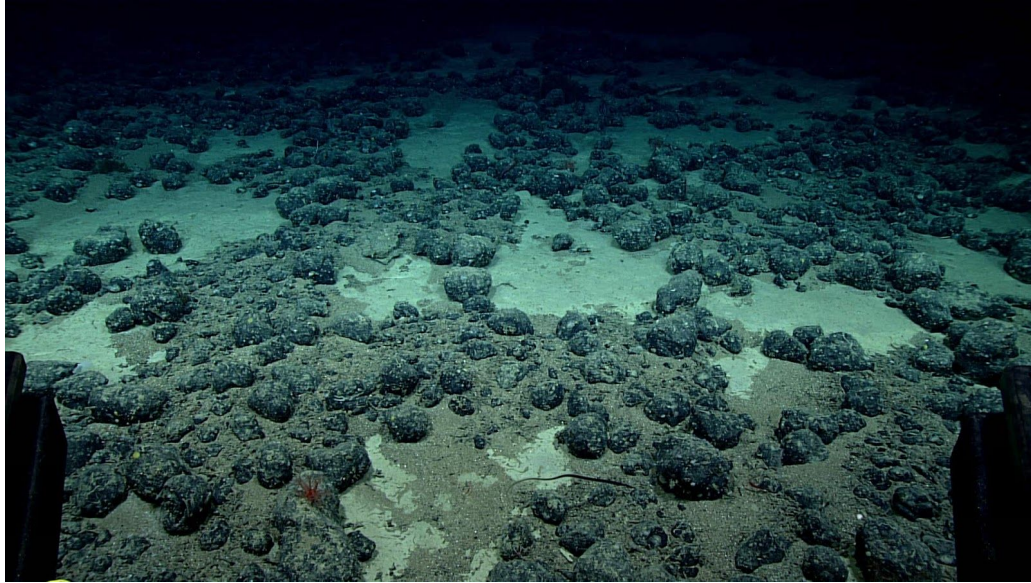


### Close-up Map of Main Dive Site

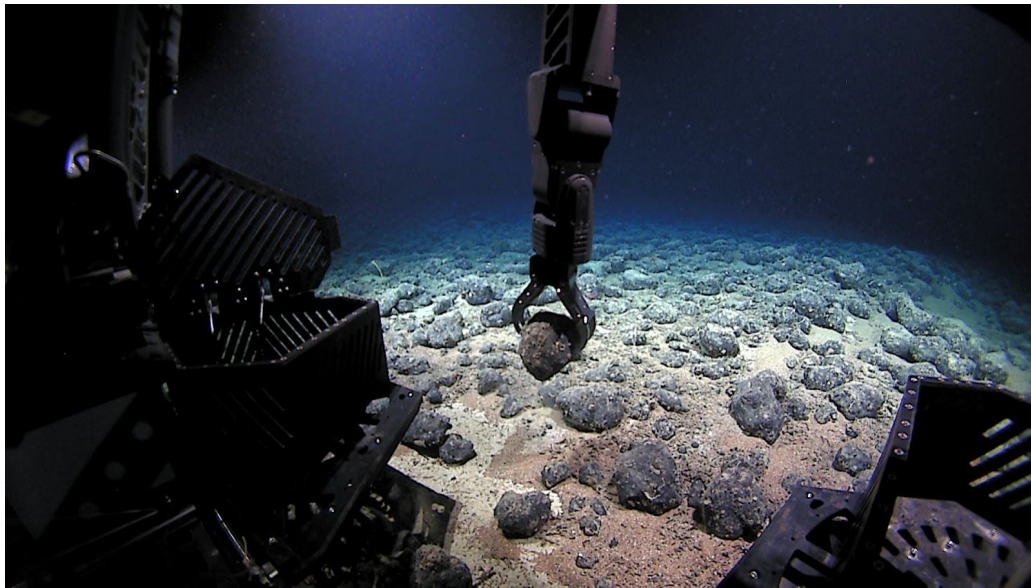




## Representative Photos of the Dive



Ferromanganese encrusted rocks at bottom of scarp (approximate depth of 1010 m).



Collecting EX1903L2\_D08\_01G into the port forward rock box.







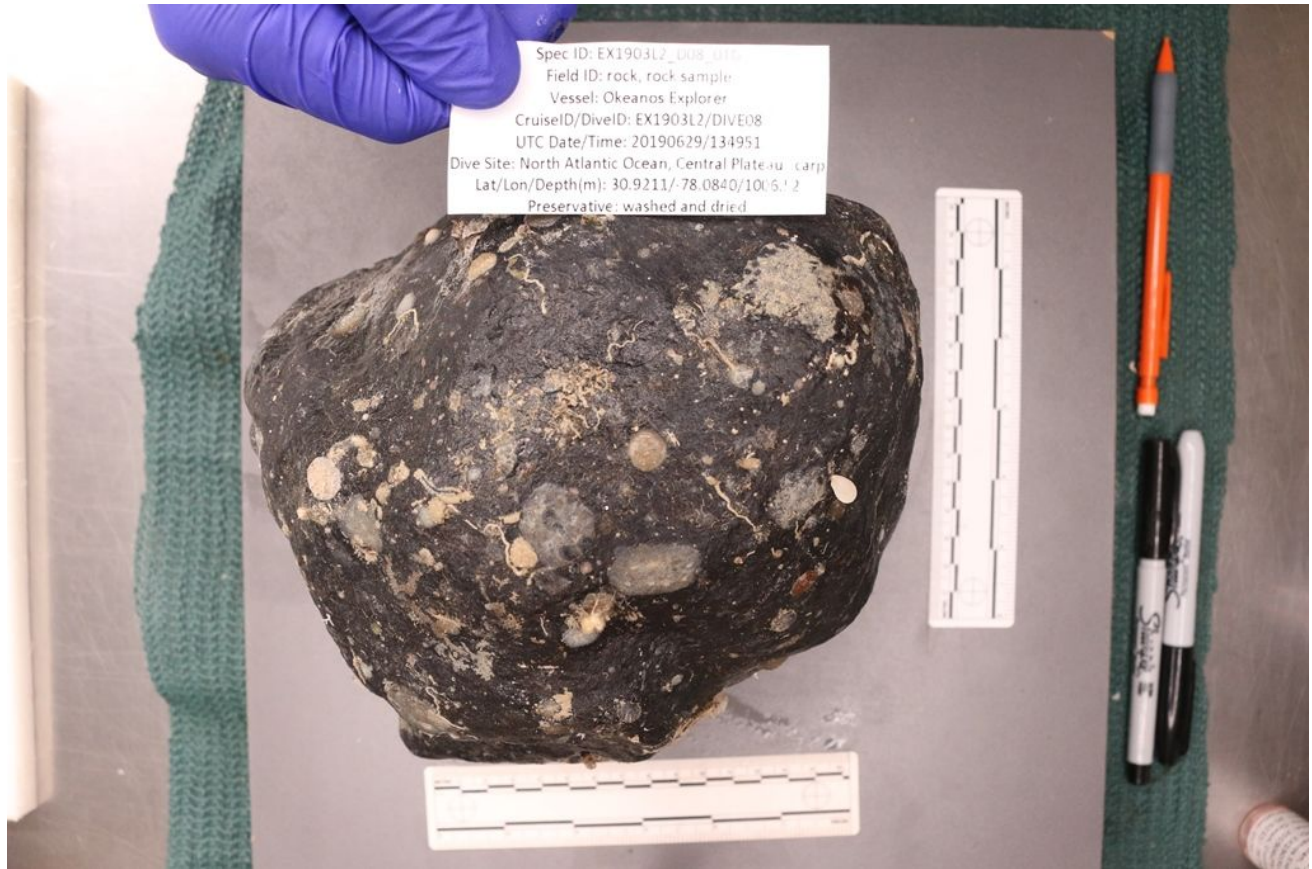
*Sthenaster emmae* eating Primnoid coral.



Paper nautilus (*Argonauta sp.*) egg case.



## Samples Collected

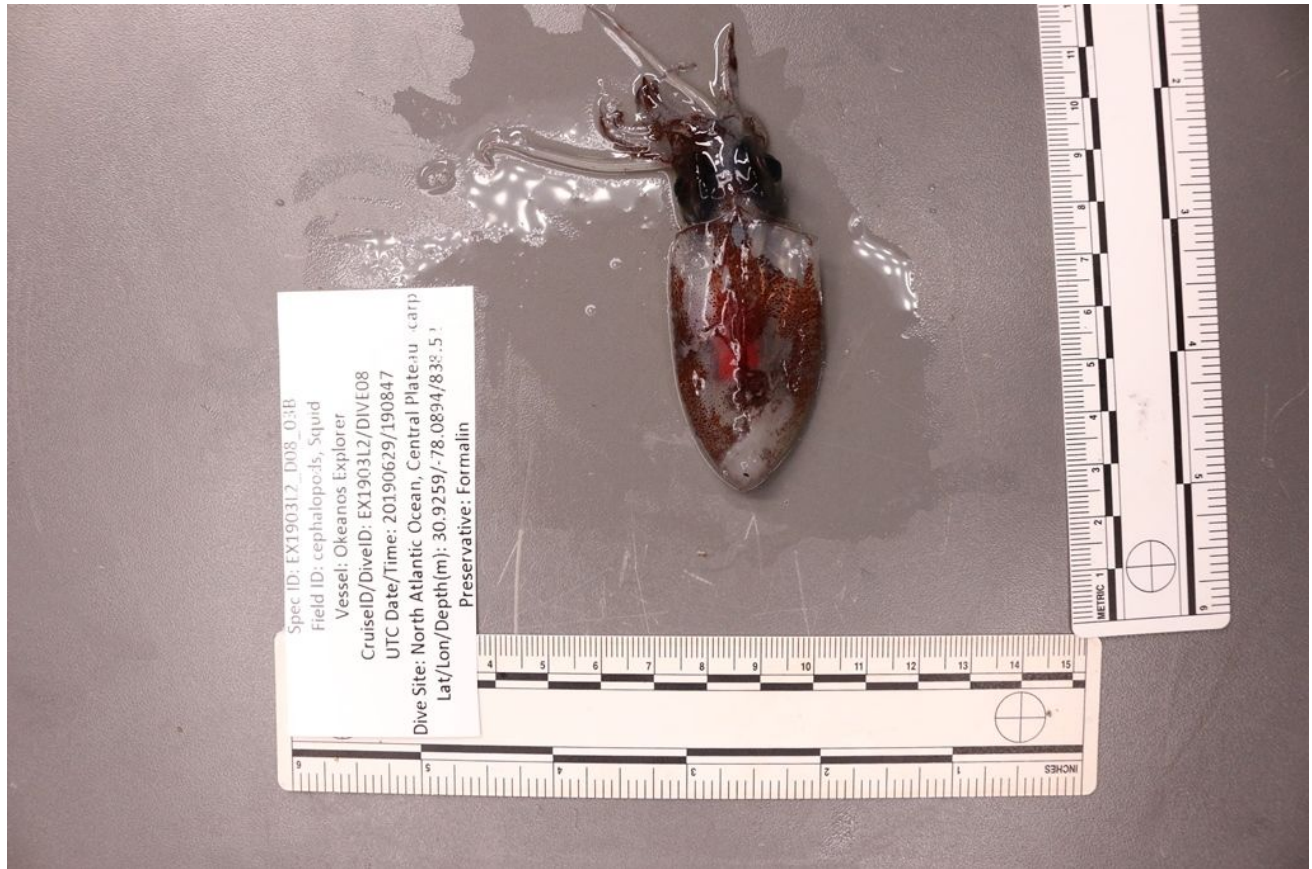


Sample ID	EX1903L2_D08_01G	
Date (UTC)	20190629	
Time (UTC)	134951	
Depth (m)	1006.5	
Temp. (°C)	5.029	
Field ID(s)	Rock sample	
Associates	Associates Sample ID	Field Identification
	EX1903L2_D08_01G_A01	Bryozoa
Comments		





Sample ID	EX1903L2_D08_02B	
Date (UTC)	20190629	
Time (UTC)	151621	
Depth (m)	924.4	
Temp. (°C)	5.709	
Field ID(s)	Nemertean	
Associates	Associates Sample ID	Field Identification
	No associates	
Comments		



Sample ID	EX1903L2_D08_03B	
Date (UTC)	20190629	
Time (UTC)	190847	
Depth (m)	838.5	
Temp. (°C)	9.709	
Field ID(s)	Squid	
Associates	Associates Sample ID	Field Identification
	No associates	
Comments		



Sample ID	EX1903L2_D08_04B					
Date (UTC)	20190629					
Time (UTC)	194441					
Depth (m)	700.0					
Temp. (°C)	14.168					
Field ID(s)	Lobate Ctenophore					
Associates	<table border="1"> <thead> <tr> <th>Associates Sample ID</th> <th>Field Identification</th> </tr> </thead> <tbody> <tr> <td>No associates</td> <td></td> </tr> </tbody> </table>		Associates Sample ID	Field Identification	No 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



**Ocean Exploration  
and Research**