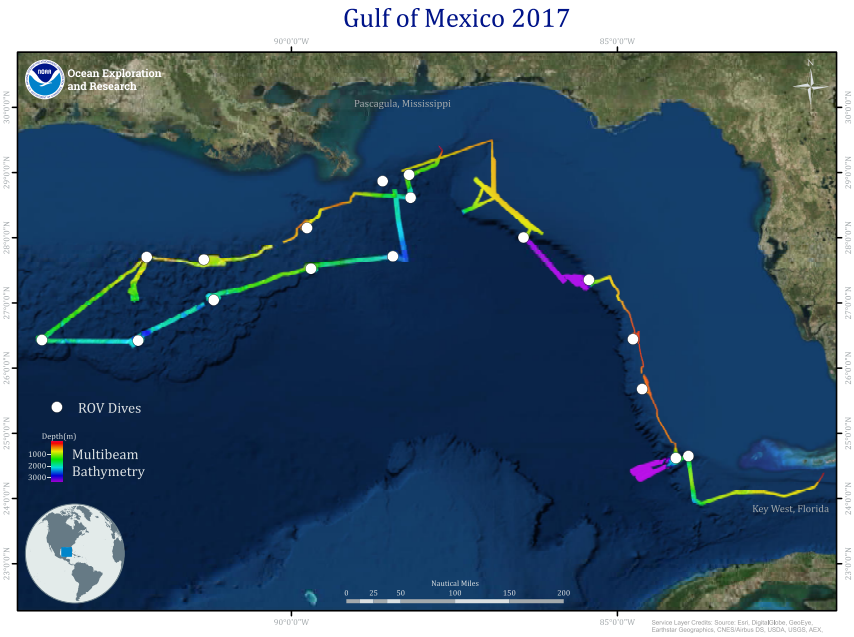
Ocean Exploration and Research

Okeanos Explorer ROV Dive Summary

Dive Information	
General Location	
General Area Descriptor	Gulf of Mexico
Site Name	AT 251
Science Team Leads	Diva Amon and Charles Messing
Expedition Coordinator	Brian Kennedy
ROV Dive Supervisor	Dan Rogers
Mapping Lead	Mike White
ROV Dive Name	
Cruise	EX1711
Leg	-
Dive Number	DIVE08
Equipment Deployed	
ROV	Deep Discoverer
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
Equipment Malfunctions	none		

ROV Dive Summary (from processed ROV data)

Dive Summary:	EX1711_DIVE08
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In Water:	2017-12-10T16:22:37.288000
	27°, 42.647' N ; 088°, 26.637' W
Out Water:	2017-12-10T23:33:52.154000
	27°, 43.455' N ; 088°, 26.842' W
Off Bottom:	2017-12-10T22:20:17.589000
	27°, 42.881' N ; 088°, 26.754' W
On Bottom:	2017-12-10T17:37:07.802000
	27°, 42.873' N ; 088°, 26.670' W
Dive duration:	7:11:14
Bottom Time:	4:43:9
Max. depth:	2170.2 m

Special Notes: none

Scientists Involved (please provide name, location, affiliation, email)

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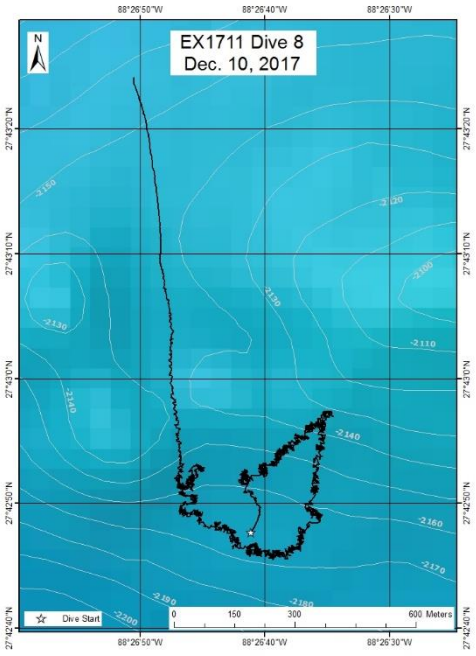
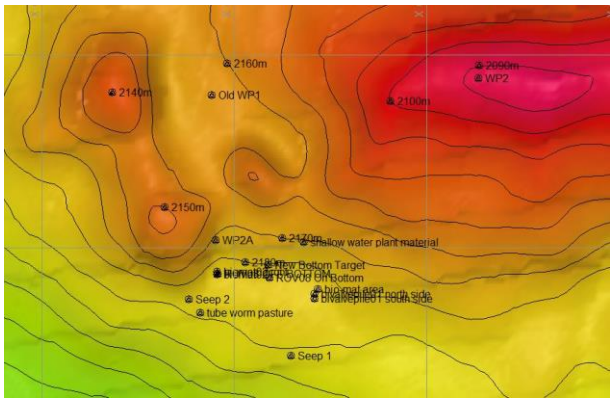
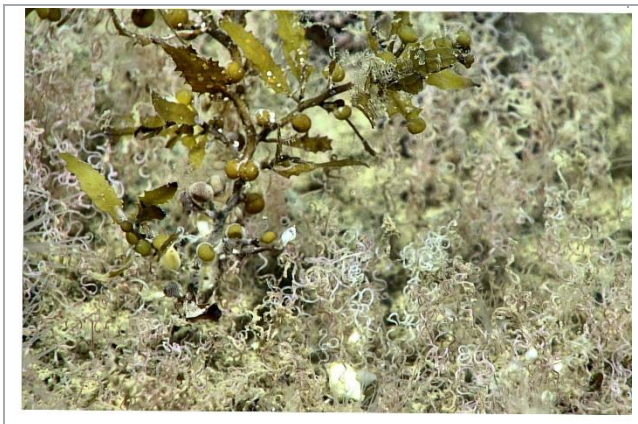
Purpose of the Dive	The dive was located on a BOEM seismic anomaly located in a geologically active area. The dive explored this feature, which included two possible locations of methane bubble plumes (confirmed during multibeam surveys by the NOAA Ship *Okeanos Explorer*). ROV exploration of this feature aided our understanding of the geological composition and origin of this area. Additionally, baseline data was collected on the distribution, abundance, diversity, biogeography and connectivity of chemosynthetic communities and surrounding faunal assemblages.		

Description of the Dive	EX1711 Dive 8 was on the southeastern side of a BOEM seismic anomaly at a site dubbed 'AT251'. The dive track was meant to climb to the local high of the feature where exposed authigenic carbonates with accompanying coral communities were expected. However, several hours into the dive, it became apparent that the entire feature was covered in a thick layer of sediment. As a result, a decision was made to change the objective of the dive to instead search for the sources of two of the four bubble plumes detected during the previous night's multibeam survey. The ROV descended to a sedimented slope at 2160 m where a high diversity of fishes were observed, including *Coryphaenoides armatus*, *C. mexicanus*, Synaphobranchidae sp., *Penopus microphthalmus*, *P. porogadus* and *Bathypterois quadrifilis*. Numerous invertebrates on the sediment slope included *Nematocarcinus* sp., a hermit crab (Paguroidea sp.) with an actiniarian replacing its shell, holothurians (*Benthothuria funebris*, *Benthodytes* sp., *Chiridota heheva*, and *Psychropotes depressa*), *Hymenodiscus* sp. brisingids, and *Lepidisis caryophyllia*, siboglinids (*Sclerolinum contortum* and *Siboglinum* sp.), *Bathymodiolus* sp. (both dead and alive), and a small area of reduced blackened sediment with bacterial mats. This area also hosted small sediment mounds, with infaunal residents evidenced by sediment released from their tops. After altering the ROV track to move towards the two bubble targets, we undertook a long transit over chiefly vacant sediment. Although the first bubble target supported no chemosynthetic communities, the second supported an assemblage including *Siboglinum* sp., *Lamellibrachia* sp., *Chiridota heheva*, *Munidopsis* sp. bacterial mats, and numerous spatangoid heart urchins. Nearby, small carbonate outcrops hosted Hormathiidae sp., Corallimorpharia sp. and *Desmophyllum* sp. Other notable observations included large areas of sargassum that had drifted from the sea surface, a small Cladorhizidae sp., as well as several pieces of marine debris.

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

Representative Photos of the Dive



A dense bed of *Sclerolinum contortum* chemosynthetic worms in curlicue tubes accompanied by sunken *Sargassum* brown algae on a fine muddy bottom adjacent to several bacterial mats. Depth: 2,154 m.

The ophidiid *Penopus microphthalmus* photographed at a depth of 2,152 m.

The apodid sea cucumber *Chiridota heheva* on a fine muddy bottom accompanied by dead *Sargassum* brown algae and bacterial mats. This species occurs in association with cold seeps. The white spots are clusters of microscopic wheel-shaped skeletal ossicles. Depth: 2,163 m.

A dense bed of chemosynthetic mussels, *Bathymodiolus* sp., and siboglinid polychaete worms, perhaps *Lamellibrachia* sp., accompanied by the shrimps *Alvinocaris* sp. and small anemones, at a cold seep at a depth of 2,163.5 m.

Samples Collected- None

Sample

Sample ID		No samples were collected on this dive
Date (UTC)		
Time (UTC)		
Depth (m)		
Temperature (°C)		
Field ID(s)		

Commensal ID and Field Identification	
Comments	

Please direct inquiries to:

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