



Okeanos Explorer ROV Dive Summary

Dive Information	
General Location	
General Area Descriptor	Southeast U.S. Continental Margin
Site Name	Currituck
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ROV Dive Supervisor	Bobby Mohr
Mapping Lead	Derek Sowers
ROV Dive Name	
Cruise	EX1806
Leg	-

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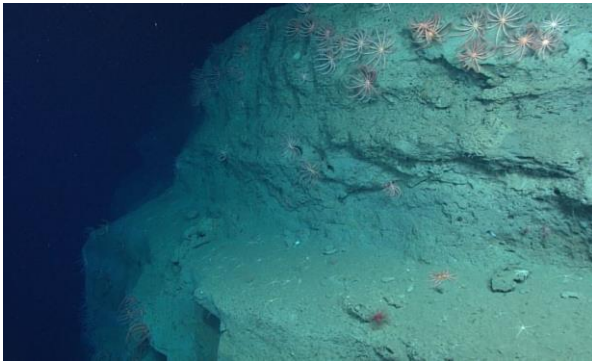
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Purpose of the Dive	<p>The Currituck Landslide is one of the largest submarine landslides on the US East Coast where a massive, partially intact segment of the continental slope detached and slid to depths exceeding 2000 m. Information about this landslide site is often used in tsunami hazard modeling. This dive explored and characterized unfailed sedimentary sections preserved in the landslide’s lower headwall.</p>		
Description of the Dive	<p>This dive explored the lower headwall of the unfailed portion of continental margin associated with the Currituck Landslide feature. The dive began at a depth of 1880 m, approximately 140 m from the wall’s base on the sediment plain. These sediments were dominated by echinoderms, including hundreds of ‘overly distributed’ brittle stars (<i>Ophiomusia</i> sp.), pancake urchins (<i>Hygrosoma</i> sp.) and many sea urchins (<i>Equinuss</i> sp.). Moving toward the wall, the ROV encountered increasing amounts of displaced material, with large >1m blocks at the base of the apron’s sloped rubble bank. These blocks were heavily compacted, stiff indurated muds that collapsed when nudged by the manipulator arm. Larger blocks were very angular with squared edges. Smaller blocks resembled concrete blocks or bricks. These unlithified ‘rocks’ did, however, provide good substrate for many organisms including numerous brisingid sea stars, <i>Chrysogorgia</i>, <i>Acanella</i>, and <i>Anthomastus</i> octocorals and several unknown sponges. During the ~100 m ascent of the wall, many areas were vertical and smooth clay and had numerous vertical micro-fractures and sharp 90° angular edges. A few short terraces allowed for collection of a sediment scoop of clay shards (rubble material). The entire wall appeared to comprised of the stiff clay. Brisingid sea stars dominated the wall, facing into what little current existed. A large <i>Keratoisis grayi</i> bamboo coral grew on the sheer rock face, and a <i>Bathypathes</i> black coral was observed. At several points during the ascent, the ROV moved laterally the length of its tether, revealing very continuous horizontal layers/strata. At the top of the wall was another broad sediment plain, very similar to the dive’s starting position. Numerous individual rocks, clearly out of place (Ballast?</p>		



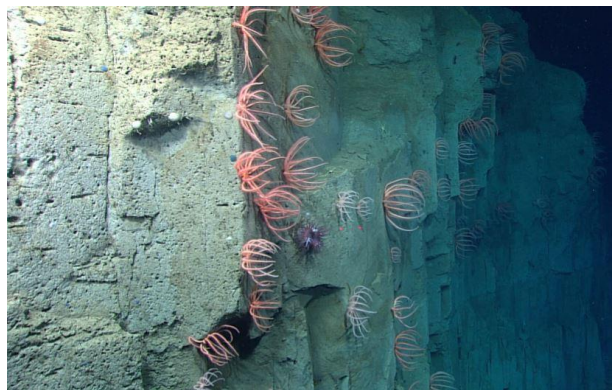
The seabed at the base of the wall (1880 m) was flat, featureless mud, covered with *Ophiomusa limini* brittle stars. A couple of halosaurs (*Halosauropsis macrochir* pictured here) were also seen.



Many large blocks of stiff, nearly-lithified muds were found at the base of the 100 m vertical wall. Attempts to collect a sample resulted in total collapse of the "rock's" structure.



Thick sequences of indurated, but not lithified muds made for vertical walls with small terraces.



Note the smooth, highly angular vertical "rock" face. These vertical mud walls provide excellent substrate for many brisingid sea stars.



The known association between a juvenile cusk eel (*Ophidiidae*) and a pancake urchin (*Hygrosoma*) was observed.



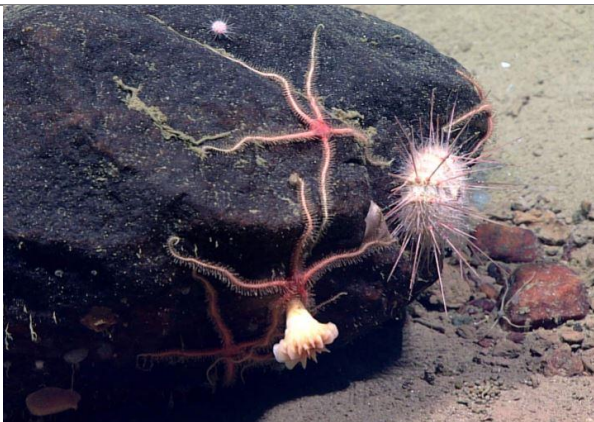
Colorful Actinaria anemones (*Actinermis* sp.) were common.



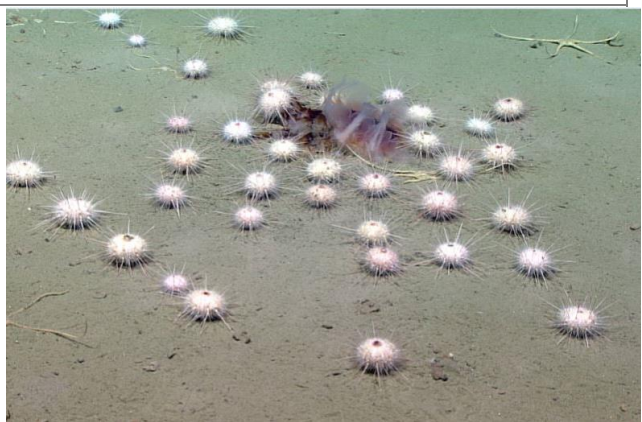
A bathysaurus (*Bathysaurus ferox*) posed for the camera.



Asteroschema brittle stars were seen characteristically associated with a *Paramuricea* octocoral in both the muddy and wall substrates.



A species of brittle star different from those that dominated the mud substrate was found on all of the random rocks encountered at the base of and on top of the wall. Cup corals (*Desmophyllum dianthus*) and urchins (*Equinuss* sp.) were also seen.



Several recently-dead lion's mane jellyfish (possibly *Cynea lamarckii*) served as a buffet to many urchins (*Equinuss* sp.) and *Ophiomusa limini* brittle stars.



A 'bramble' of bamboo coral (*Keratoisis flexibilis*) was found at the base of the wall.



A tiny white seastar (*Pythonaster* possibly *atlantidis* sp.) was found clinging to one of the mud blocks at the base of the wall.



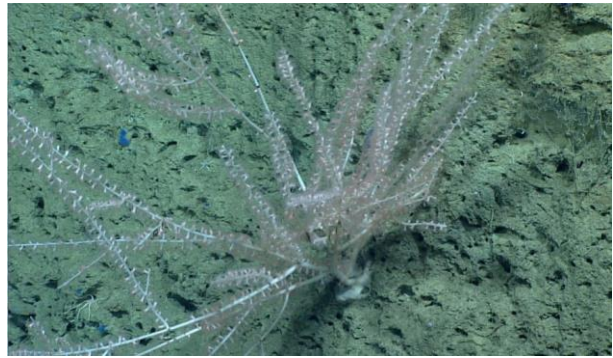
Several sponges of different species were observed, including several small white cladorhizid carnivorous sponges.



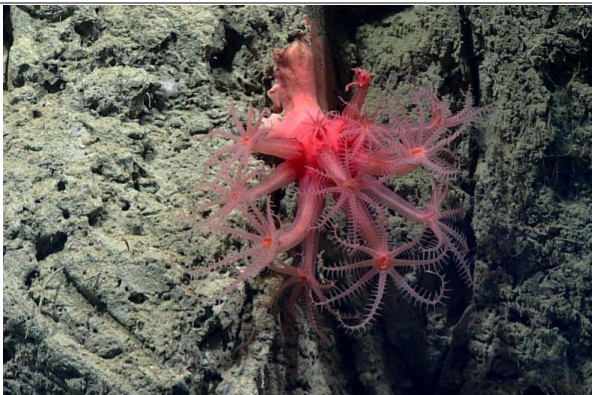
A large stalked hydrozoan (Family Corymorphidae) was seen on one of the large debris rocks at the wall's base.



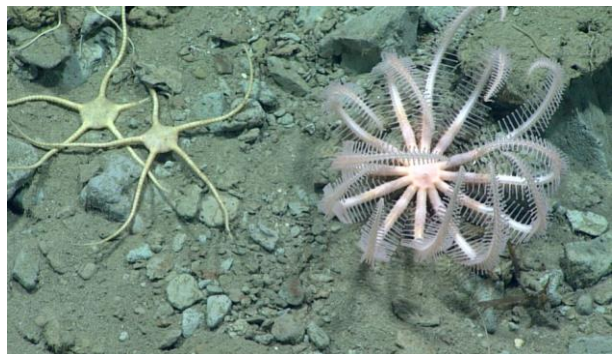
Cobalt blue demersalsponges were seen on many parts of the wall.



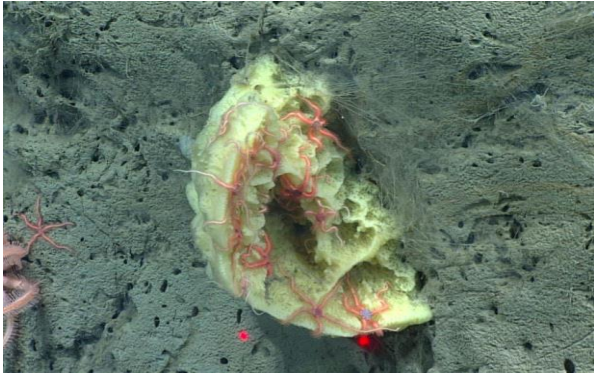
A large bamboo coral, *Keratoisis grayi*, was seen on a sheer rock face.



Anthomastus soft corals were common on the wall.



Brisingid sea stars (*Freyella*) were abundant on the walls and rubble. Brittle stars were the most abundant echinoderm observed.



Sponges were also home to brittle stars.

Bathypathes



Several small red sea pens (possibly *Protophilum* sp.) were observed in soft sediment.

[Descriptive caption here]


Samples Collected

Sample

Sample ID	EX1806_D2_DIVE17_SPEC01BIO	
Date (UTC)	20180701	
Time (UTC)	151355	
Depth (m)	1867.92	
Temperature (°C)	3.63	
Field ID(s)	Chrysogorgia	
Reason for Collection	<i>Scientists in the chat room were uncertain of the species.</i>	
Notes		
Associates	<i>[Notes section here can include number of organisms, condition of organism(s) upon retrieval or photos as needed]</i>	

Associate ID	Field Identification	Notes

Sample

Sample ID	EX1806_D2_DIVE17_SPEC02BIO	
Date (UTC)	20180701	
Time (UTC)	153551	
Depth (m)	1866.83	
Temperature (° C)	3.63	
Field ID(s)	Acanella	

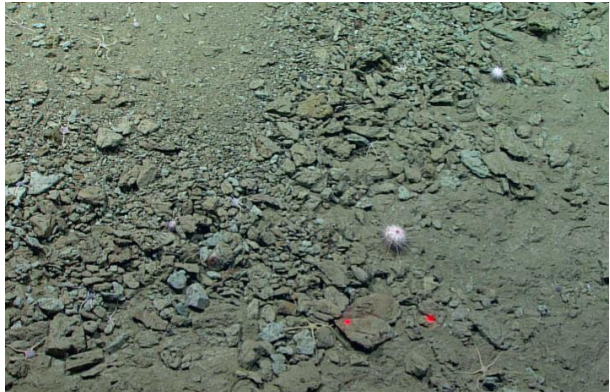
Reason for Collection	<i>Lab Assessment Required for ID</i>
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Notes	
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[Notes section here can include number of organisms, condition of organism(s) upon retrieval or photos as needed]

Associate ID	Field Identification	Notes
EX1806_D17_02B_A01	Platyctenidae	benthic ctenophore

Sample


Sample ID	EX1806_D2_DIVE17_SPEC03GE O	
Date (UTC)	20180701	
Time (UTC)	164937	
Depth (m)	1825.18	
Temperature (° C)	3.64	
Field ID(s)	indurated/stiff mud, mostly clay-sized particles (nannofossils?), with planktonic foraminifera in >63um size fraction.	

Reason for Collection	<i>Characterize mud walls of scarp.</i>
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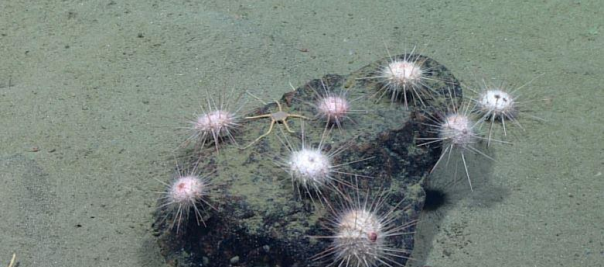



Notes	These 'chips' were collected on a small sloped terrace between two large vertical mud walls.		
Associates	<i>[Notes section here can include number of organisms, condition of organism(s) upon retrieval or photos as needed]</i>		
	Associate ID	Field Identification	Notes
	EX1806_D17_03G_A01	Echinoidea	
	EX1806_D17_03G_A02	Ophiuroidea	

Sample

Sample ID	EX1806_D2_DIVE17_SPEC04GE O		
Date (UTC)	20180701		
Time (UTC)	181226		
Depth (m)	1786.85		
Temperature (°C)	3.64		
Field ID(s)	Mud burrow		
Reason for Collection	<i>Characteristic of site - we saw these many times in the NE and were never able to collect them</i>		
Notes			
Associates	<i>[Notes section here can include number of organisms, condition of organism(s) upon retrieval or photos as needed]</i>		
	Associate ID	Field Identification	Notes
	EX1806_D17_04G_A01	Sipuncula	
	EX1806_D17_04G_A02	Gastropoda	
EX1806_D17_04G_A03	Astroidea		

Sample

Sample ID	EX1806_D2_DIVE17_SPEC05GE O	
Date (UTC)	20180701	
Time (UTC)	181226	
Depth (m)	1786.85	
Temperature (°C)	3.64	

Field ID(s)	Random chunk of granite (ballast? drop stone?), covered with urchins and a couple of brittle stars.	
Reason for Collection	<i>Rare rock for area/ potential dropstone- NOT characteristic of substrate.</i>	
Notes		
Associates	<i>[Notes section here can include number of organisms, condition of organism(s) upon retrieval or photos as needed]</i>	
	Associate ID	Field Identification
	EX1806_D17_04G_A01	Sipuncula
	EX1806_D17_04G_A02	Gastropoda
	EX1806_D17_04G_A03	Asteroidea
Sample		
Sample ID	EX1806_D2_DIVE17_SPEC06 BIO	
Date (UTC)	20180701	
Time (UTC)	unknown	
Depth (m)	unknown	
Temperature (°C)	unknown	
Field ID(s)	Annelida	
Reason for Collection	Opportunistic/ associate from another sample (?), but cannot be determined	
Notes	Long shot, but this may be the polychaete that was on the Chrysogorgia (SPEC01BIO)	
Associates	none	

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