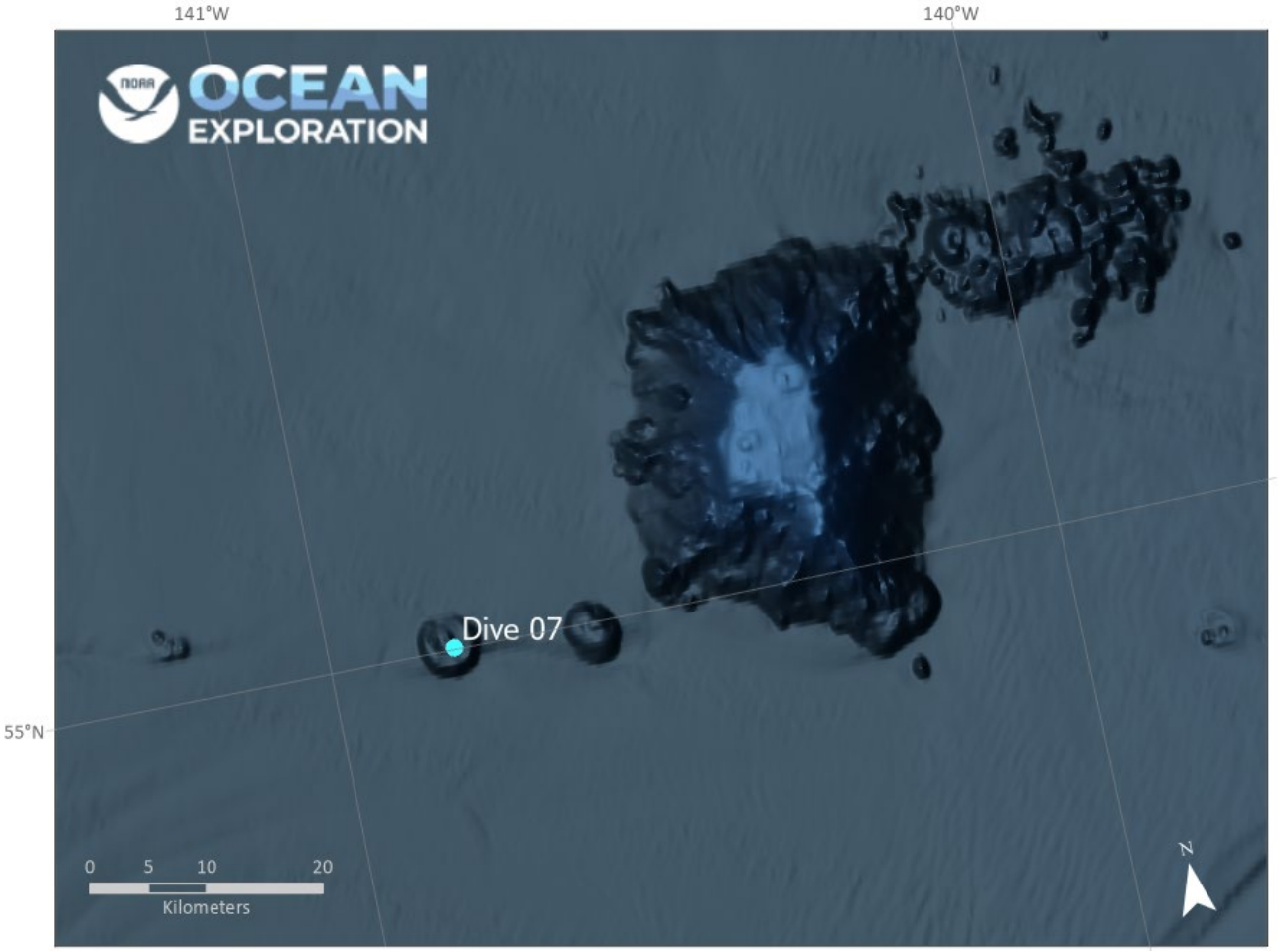
ROV Dive Summary
EX2306, Dive 07, August 30, 2023

General Location Map



Dive Information

Site Name	Deep Discoverer Dome
General Area Descriptor	Gulf of Alaska
Science Team Leads	Merlin Best (Bio); Jamie Conrad (Geo)
Expedition Coordinator	Sam Candio
ROV Dive Supervisor	Lars Murphy
Dive Purpose	To target one of a number of enigmatic small seamounts present in the Gulf of Alaska that are on the order of 10 km across and several hundred meters high that may be small volcanic vents or mud volcanoes.
Maritime Heritage Restrictions	No
ROV Dive Summary Data	Dive Type: Normal In Water: 2023-08-30T16:25:50.187626 55.0133596201446 ; -140.826670554781 On Bottom: 2023-08-30T18:18:27.883456 55.01364623462229 ; -140.83229173038754 Off Bottom: 2023-08-30T22:48:53.037084 55.01174805137316 ; -140.83455157667646 Out Water: 2023-08-31T00:35:17.370309 55.01041279297443 ; -140.84146845608345 Dive Duration: 8:09:27 Bottom Time: 4:30:25 Max Vehicle Depth: 3289.8 m Min Seafloor Depth: 3171.6 m Distance Traveled: 327.5 m

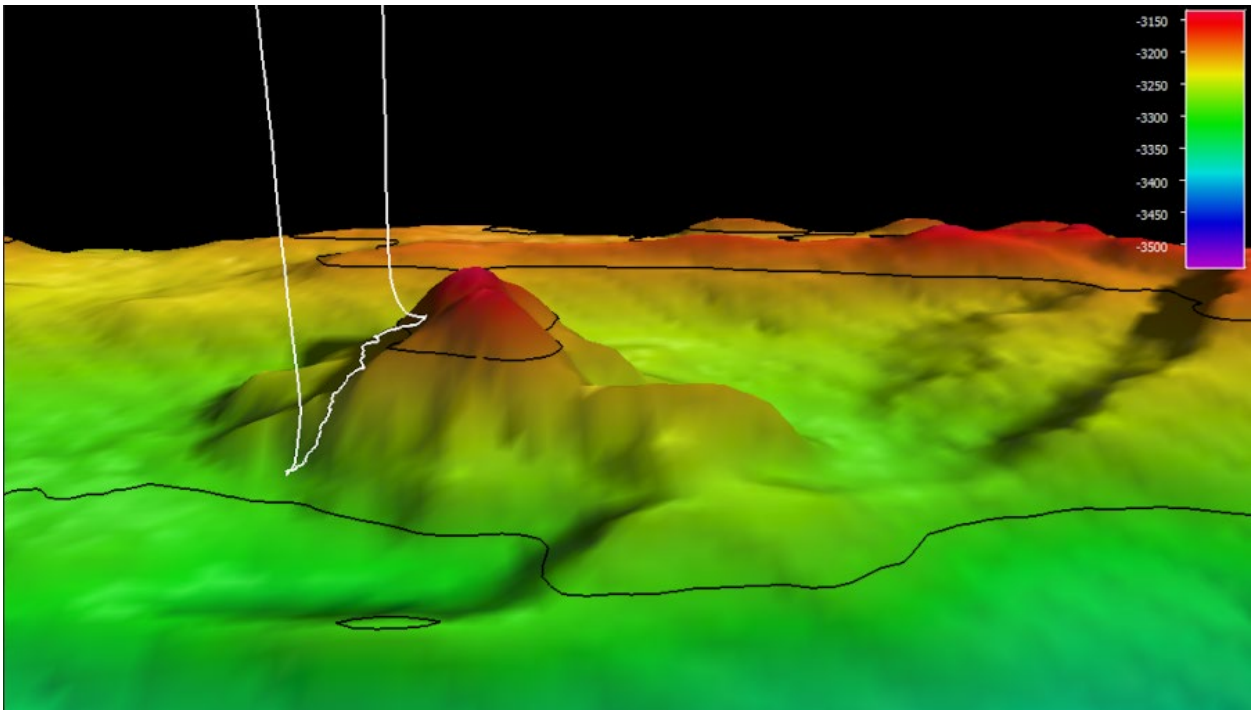
Dive Description	***Geology*** This dive was on a small enigmatic seamount roughly 10 km across and 300 meters high lying about 3300 m deep in the abyssal depths of the Gulf of Alaska. This is one of numerous small seamounts of similar size and shape that form discontinuous chains with varying orientations that seem unrelated to the much larger seamounts of the Kodiak-Bowie or Cobb seamount chains. These small seamounts are generally circular in shape, and many have central areas that are depressed roughly 50-200 m relative to the edges. A few of these central depressions have one or more small peaks that rise 100-300 m above the surrounding area. The ROV dive planned to explore the central depression of this seamount and then one of the small 200-m-high peaks that rise up within the depression. The floor of the central depression was found to consist of soft muddy unconsolidated sediment, with a few small cobble-sized pieces of basalt scattered about. The cone-shaped peak was underlain by fine-grained mostly angular cobbles and boulders of aphanitic basalt. Abundant flow features, including flow banding, pillow structures, and flow tops were encountered. Near the top of the feature were small areas of lapilli-sized fragments of basalt or scoria interspersed with basalt cobbles and boulders, in places mantled with a thin veneer of fine hemipelagic sediment. Three samples of the basalt were collected, and some lithic sand was recovered as an associate with a biologic sample. ***Biology*** The dive provided a rare glimpse into the abyssal depths as we saw the shift from a highly sedimented area to rocky outcrop. We documented cf. Astlantisella sp. in high abundance, a high diversity of Antipatharia and Crinoidea, Keratoisididae, Antipatharia, and an as-of-yet completely unidentified specimen.
Notable Observations	Unidentified Specimen; unidentified Amphidiscosida on soft sediment; 6-armed crinoid; Fungiacyathus sp.
Community and Habitat Observations	Corals and Sponges — Present Chemosynthetic Community — Absent High biodiversity Community —Absent Active Seep or Vent — Absent Extinct Seep or Vent — Absent Hydrates — Absent
CMECS Feature Type(s)	Basin Boulder Field Flat Outcrop/Rock Outcrop Pinnacle Plateau Seamount Slope

SeaTube Link (science annotations)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=6690

Equipment Deployed

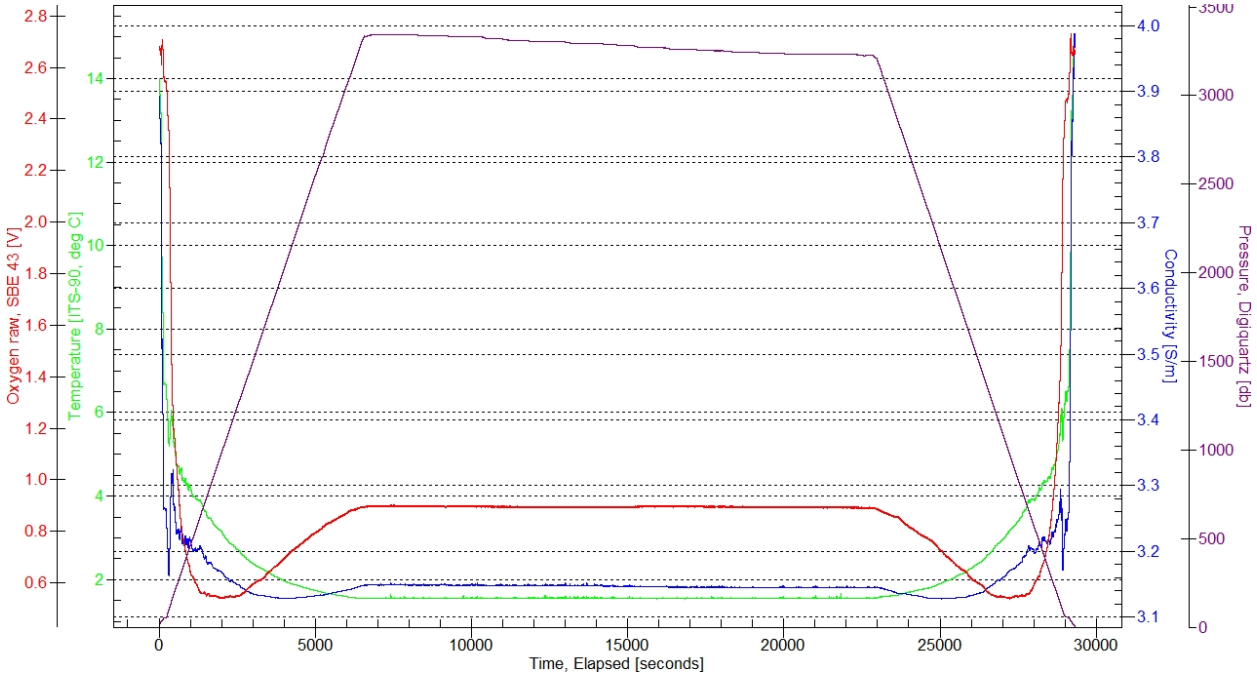
ROV	*Deep Discoverer*
Camera Platform	*Seirios*
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, suction sampler, sample drawers and thrusters. The following row notes if any of these sensors were malfunctioning or not operational
Equipment Malfunctions	Misfire of Niskin #3 at depth.

Close-Up Map of Main Dive Site



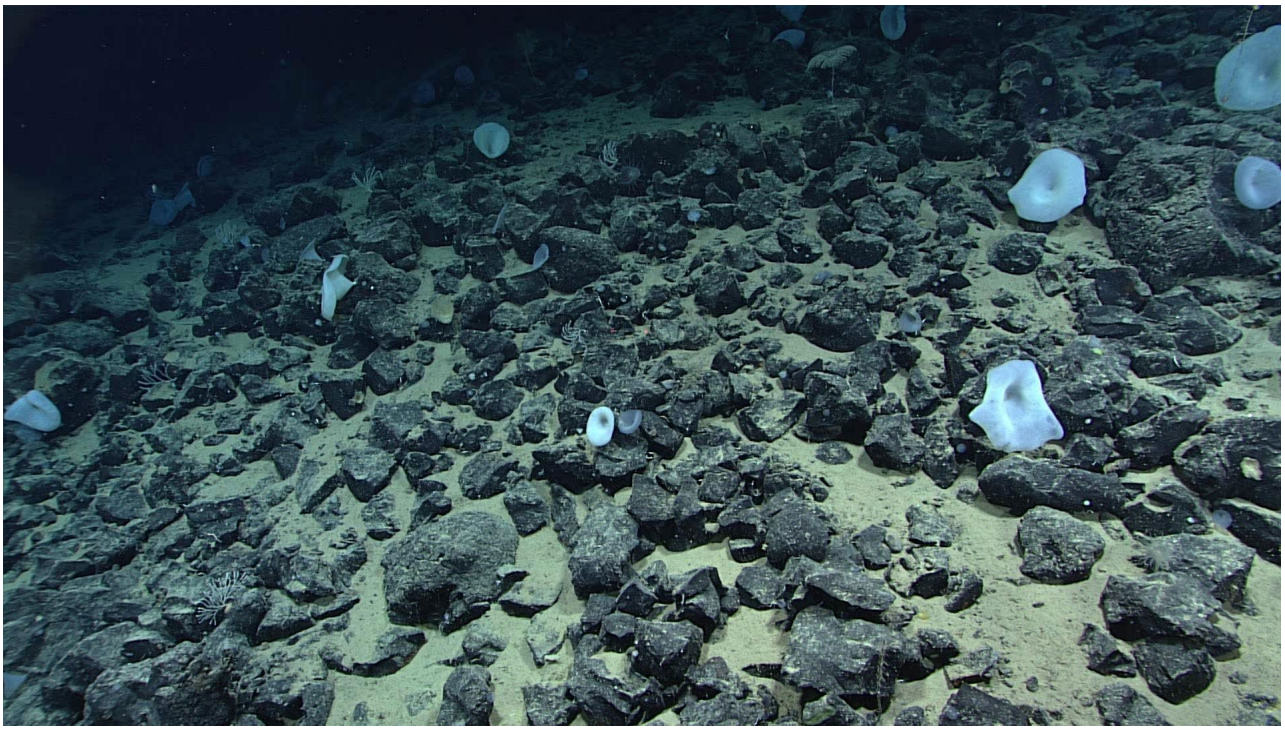
Smoothed ROV dive track in white on 30x30 m cell size bathymetry, 3x vertical exaggeration, depth in meters, 100 meter contours.

ROV CTD Profile



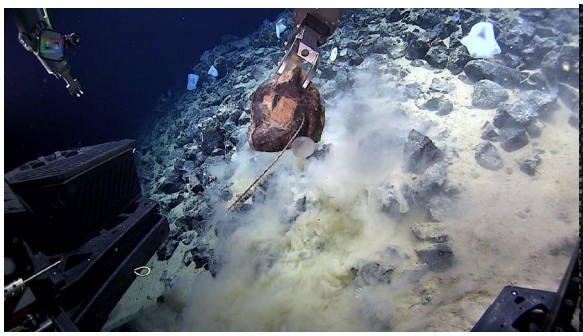
Plot of the ROV CTD profile, showing temperature, conductivity, pressure, and dissolved oxygen over time.

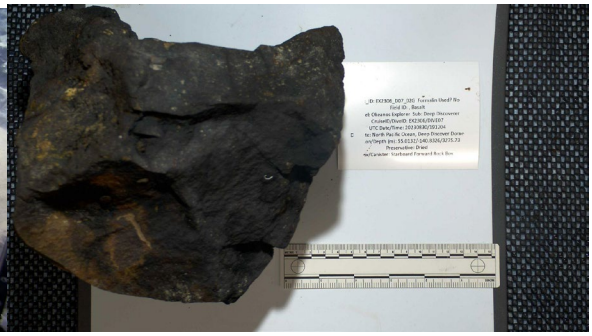
Representative Photos of the Dive



Cobble and boulders with abundant Atlantisella sp. glass sponges

Samples Collected

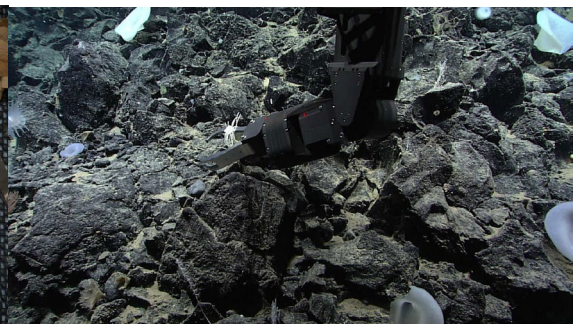




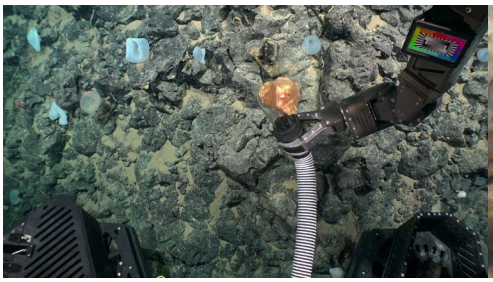
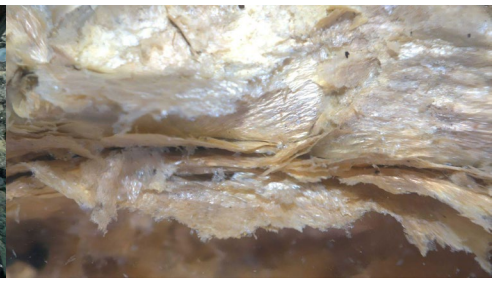
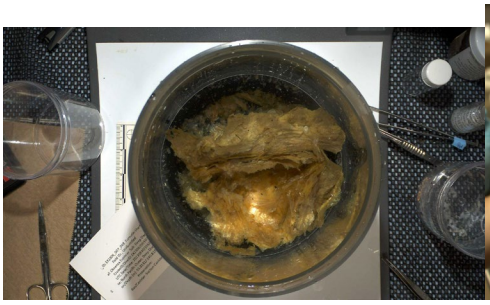
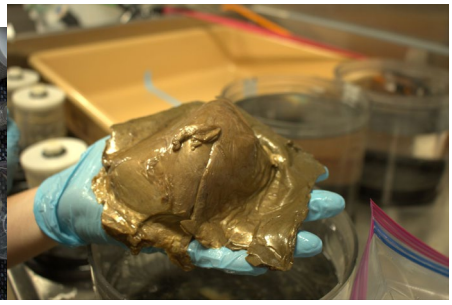
Sample ID	EX2306_D07_02G
Date (UTC)	20230830
Time (UTC)	191204
Depth (m)	3275.72705078125
Latitude (decimal degrees)	55.0132369995117
Longitude (decimal degrees)	-140.832595825195
Temp. (°C)	1.54700005054474
Field ID(s)	Basalt
Comments	aphanitic basalt with Fe-Mn crust

Associates Sample ID:	EX2306_D07_02G_A01B
Field Identification:	Antipatharia
Count:	1

Associates Sample ID:	EX2306_D07_02G_A02B
Field Identification:	Atlantisella
Count:	1



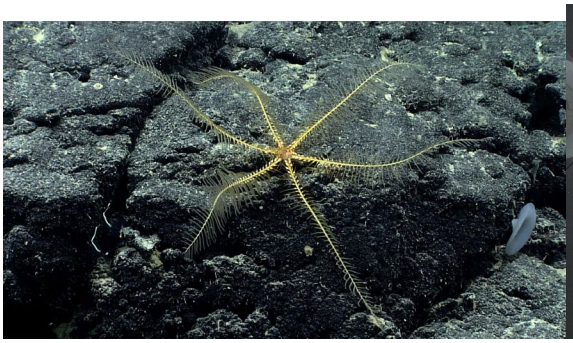
Sample ID	EX2306_D07_03B
Date (UTC)	20230830
Time (UTC)	192835
Depth (m)	3266.11206054688
Latitude (decimal degrees)	55.013256072998
Longitude (decimal degrees)	-140.832901000977
Temp. (°C)	1.54700005054474
Field ID(s)	Primnoidae
Comments	Likely Narella sp.

Sample ID	EX2306_D07_04B
Date (UTC)	20230830
Time (UTC)	195808
Depth (m)	3250.76196289063
Latitude (decimal degrees)	55.0130844116211
Longitude (decimal degrees)	-140.832962036133
Temp. (°C)	1.54900002479553
Field ID(s)	Unidentified
Comments	Likely an egg case

Sample ID	EX2306_D07_05B
Date (UTC)	20230830
Time (UTC)	201803
Depth (m)	3240.14111328125
Latitude (decimal degrees)	55.0128898620605
Longitude (decimal degrees)	-140.833312988281
Temp. (°C)	1.54900002479553
Field ID(s)	Crinoidea

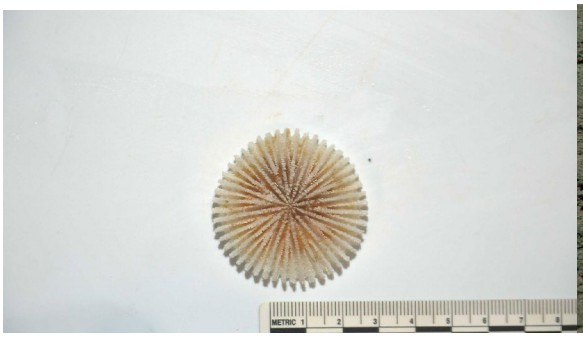
Associates Sample ID:	EX2306_D07_05B_A01B
Field Identification:	amphipoda
Count:	1



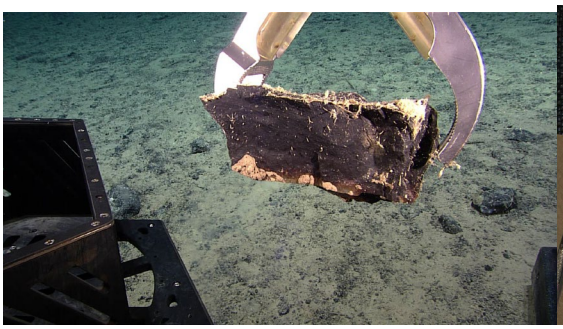

Sample ID	EX2306_D07_07B
Date (UTC)	20230830
Time (UTC)	205533
Depth (m)	3215.45190429688
Latitude (decimal degrees)	55.0126686096191
Longitude (decimal degrees)	-140.833511352539
Temp. (°C)	1.53999996185303
Field ID(s)	Crinoidea
Comments	Unusual 6-rayed crinoid


Sample ID	EX2306_D07_08B
Date (UTC)	20230830
Time (UTC)	210913

Depth (m)	3208.083984375
Latitude (decimal degrees)	55.0126571655273
Longitude (decimal degrees)	-140.833877563477
Temp. (°C)	1.53900003433228
Field ID(s)	Anemone
Comments	Cerianthid, only pieces of the tentacles collected



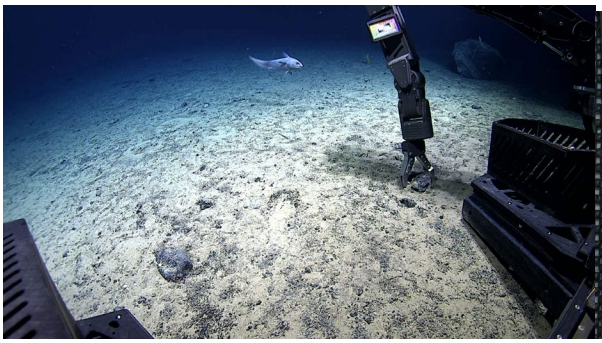
Sample ID	EX2306_D07_09B
Date (UTC)	20230830
Time (UTC)	215759
Depth (m)	3184.48608398438
Latitude (decimal degrees)	55.0120887756348
Longitude (decimal degrees)	-140.834259033203
Temp. (°C)	1.56599998474121
Field ID(s)	Fungiacyathus
Comments	No apparent live tissue



Sample ID	EX2306_D07_10G
Date (UTC)	20230830
Time (UTC)	222733
Depth (m)	3177.9541015625
Latitude (decimal degrees)	55.0117492675781
Longitude (decimal degrees)	-140.834991455078
Temp. (°C)	1.54700005054474
Field ID(s)	Basalt w/ Fe-Mn crust
Comments	aphanitic basalt with Fe-Mn crust

Associates Sample ID:	EX2306_D07_10G_A01B
Field Identification:	Porifera
Count:	1

Associates Sample ID:	EX2306_D07_10G_A02B
Field Identification:	Hexactinellida
Count:	1



Sample ID	EX2306_D07_11B
Date (UTC)	20230830
Time (UTC)	223045
Depth (m)	3178.3779296875
Latitude (decimal degrees)	55.0117721557617
Longitude (decimal degrees)	-140.835098266602
Temp. (°C)	1.5440000295639
Field ID(s)	Ophiuroidea

Associates Sample ID:	EX2306_D07_11B_A01B
Field Identification:	Ophiuroidea
Count:	1

Associates Sample ID:	EX2306_D07_11B_A02G
Field Identification:	basalt
Count:	1

Associates Sample ID:	EX2306_D07_11B_A03B
Field Identification:	Hydrozoa

Count:	1

Associates Sample ID:	EX2306_D07_11B_A04B
Field Identification:	Porifera
Count:	1

Associates Sample ID:	EX2306_D07_11B_A06G
Field Identification:	basalt sand
Count:	1

Niskin Sampling Summary

Sample ID	EX2306_D07_01W
Date (UTC)	20230830
Time (UTC)	182420
Depth (m)	3287.94604492188
Latitude (decimal degrees)	55.0136566162109
Longitude (decimal degrees)	-140.832214355469
Bottle Number	Niskin Bottle 1
Temperature	1.53999996185303
Dissolved Oxygen (mg/L)	3.57500004768372
Treatment	DNA/RNA Shield

Sample ID	EX2306_D07_06W
Date (UTC)	20230830
Time (UTC)	203139
Depth (m)	3228.76904296875
Latitude (decimal degrees)	55.0128707885742
Longitude (decimal degrees)	-140.833251953125
Bottle Number	Niskin Bottle 2
Temperature	1.5440000295639
Dissolved Oxygen (mg/L)	3.51099991798401
Treatment	DNA/RNA Shield

Sample ID	EX2306_D07_12W
Date (UTC)	20230830
Time (UTC)	224301
Depth (m)	3171.5810546875
Latitude (decimal degrees)	55.0115737915039
Longitude (decimal degrees)	-140.83544921875
Bottle Number	Niskin Bottle 4
Temperature	1.5460000038147
Dissolved Oxygen (mg/L)	3.45600008964539
Treatment	DNA/RNA Shield

Sample ID	EX2306_D07_13W
Date (UTC)	20230831
Time (UTC)	001749
Depth (m)	423.463012695313
Latitude (decimal degrees)	55.0108947753906
Longitude (decimal degrees)	-140.839157104492
Bottle Number	Niskin Bottle 5
Temperature	4.33199977874756
Dissolved Oxygen (mg/L)	1.06200003623962
Treatment	DNA/RNA Shield

Scientists Involved

Name	Affiliation
Amanda Maxon	NOAA
Arvind Shantharam	NCEI
Asako Matsumoto	Chiba Institute of Technology
Christa Rabenold	NOAA
Christina Conrath	NOAA
Christopher Kelley	University of Hawaii
Christopher Mah	NMNH
Cindy Van Dover	Duke University
Dhugal Lindsay	JAMSTEC
Elaina Jorgensen	NOAA
Emily Ashe	NOAA
Emily Crum	NOAA
Ervan Garrison	University of Georgia
Hugh MacIntosh	Royal BC Museum
Jamie Conrad	USGS
Jane Rudebusch	USGS
Jennifer Aschoff	University of Alaska, Anchorage
John Deitz	Long Island University
Kelley Brumley	Stanford University
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Kenneth Sulak	USGS
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