

ROV Dive Summary, EX-21-04, Dive 03, July 06, 2021

General Location Map



Dive Information

Site Name	"Hopscotch" Seamount
General Area Descriptor	South of Corner Rise Seamounts
Science Team Leads	Rhian Waller, Jason Chaytor
Expedition Coordinator	Kasey Cantwell, Kimberly Galvez (Expedition Coordinator in Training)

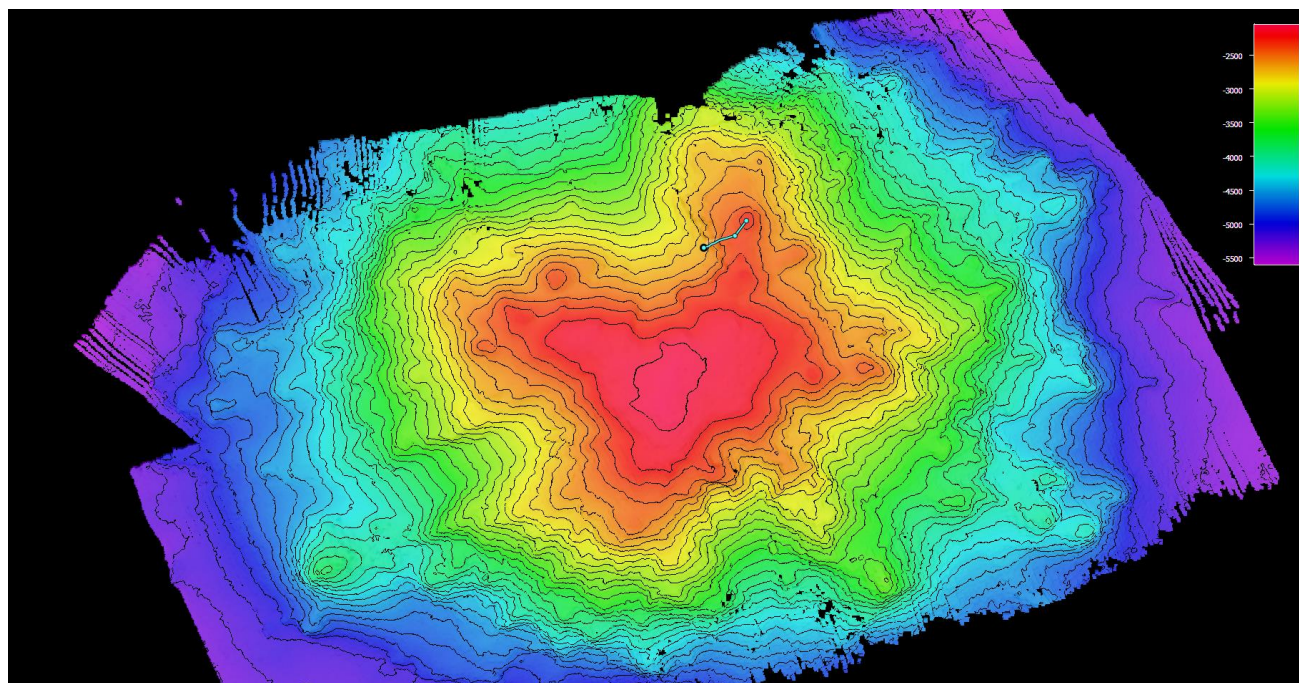
Dive Description	<p>The ROV touched down in a heavily sedimented (primarily biogenic and dominated by pteropod tests with a variable volcanoclastic component) slope mantled by sediment ripples and animal tracks. As the ROV moved upslope, the number and size of FeMn-coated pebbles on the sediment increased and became large enough to support hosting of sponges and coral colonies. The sedimented slope transitioned to a mixed sediment/volcanic (FeMn-encrusted) pavement and then quickly on to 100-200 meters (vertical) of mostly un-sedimented volcanic flow morphologies, dominated by pillow lavas with extensively developed botryoidal FeMn crust textures. A vertical exposure cutting through the slope revealed spectacular examples of different flow types overlying each other in a layered sequence. Toward the end of the dive, the mostly rounded pillows become elongated suggesting eruption on to the steep flanks of the seamount. Prior to departing the seafloor, the morphology of the substrate changed again to more angular outcrops, hypothesized by scientists onshore to be representative of morphologies encountered at the flow-fronts of erupted lava. Two samples were collected during the dive, the first at approximately 2619 m at the transition from sedimented slope to initial rock pavement exposure, and a second toward the end of the dive. Both samples are FeMn encrusted (with botryoidal surface textures) that may have primary volcanic rock inside.</p> <p>Biologically this area was much more diverse than the previous two dives. In the initial sediments we observed multiple <i>Umbellula</i> sp. sea pens, as well as feeding/movement trails. As we reached the hard bottom areas we initially saw multiple <i>Lepidisis</i> bamboo corals (possibly two species) on larger boulders, before reaching pavement where initially diverse walls of sponges were observed. There were <6 species of sponges observed during this dive, including those from the <i>Farrea</i>, <i>Euplectellidae</i>, and <i>Euretidae</i> with two collections being made of unknown species from this region. Bamboo corals (~4 species), as in the previous two dives, were abundant throughout the dive where hard bottom was encountered, but we also saw representatives of <i>Bathypathes</i>, <i>Corallium</i>, <i>Anthomastus</i>, <i>Primnoidea</i>, <i>Chrysogorgia</i>, and scleractinian cup coral (possibly <i>Caryophyllidae</i>). Zooanthids were also observed, though not in high abundance as in Dive 2, and we observed a different species of cerianthid than Dive 2. <i>Echinus</i>, <i>Henricia</i> sp. and an unknown species of seastar and sea cucumber were observed, alongside other associated fauna such as snails, hermit crabs (with anemone attached), and amphipods. A swimming scale worm (<i>swimma</i> sp.) was also observed as well as an unknown jellyfish.</p>
Notable Observations	High diversity of sponges and deep sea corals
Community and habitat observations	<p>Corals and Sponges - (Present) Chemosynthetic Community - (Absent) High biodiversity Community - (Present) Active Seep or Vent - (Absent) Extinct Seep or Vent - (Absent) Hydrates - (Absent)</p>
CMECS Feature Type(s)	Rock, Sediment (Fine & coarse unconsolidated)
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=2263

Equipment Deployed

ROV	<i>Deep Discoverer</i>
Camera Platform	<i>Seirios</i>

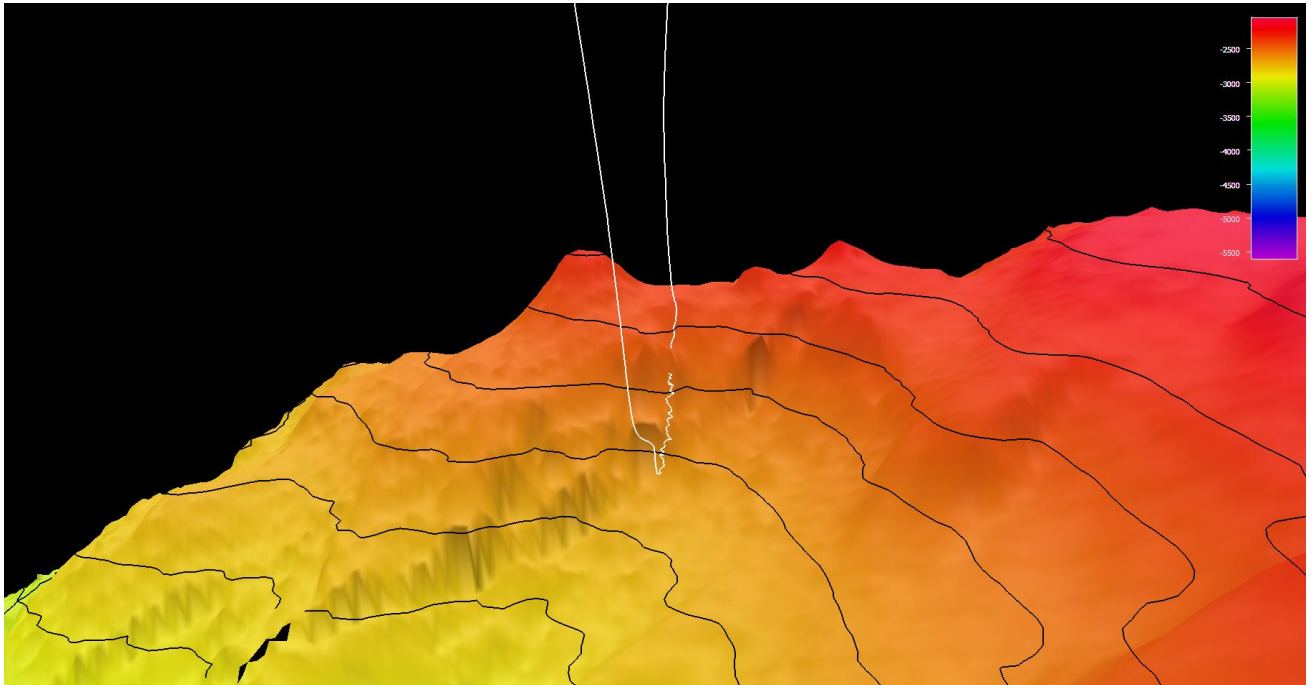
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, suction sampler, sample drawers and thrusters. The section below notes if any of these sensors were malfunctioning or not operational
Equipment Malfunctions	

Overview of Dive Site



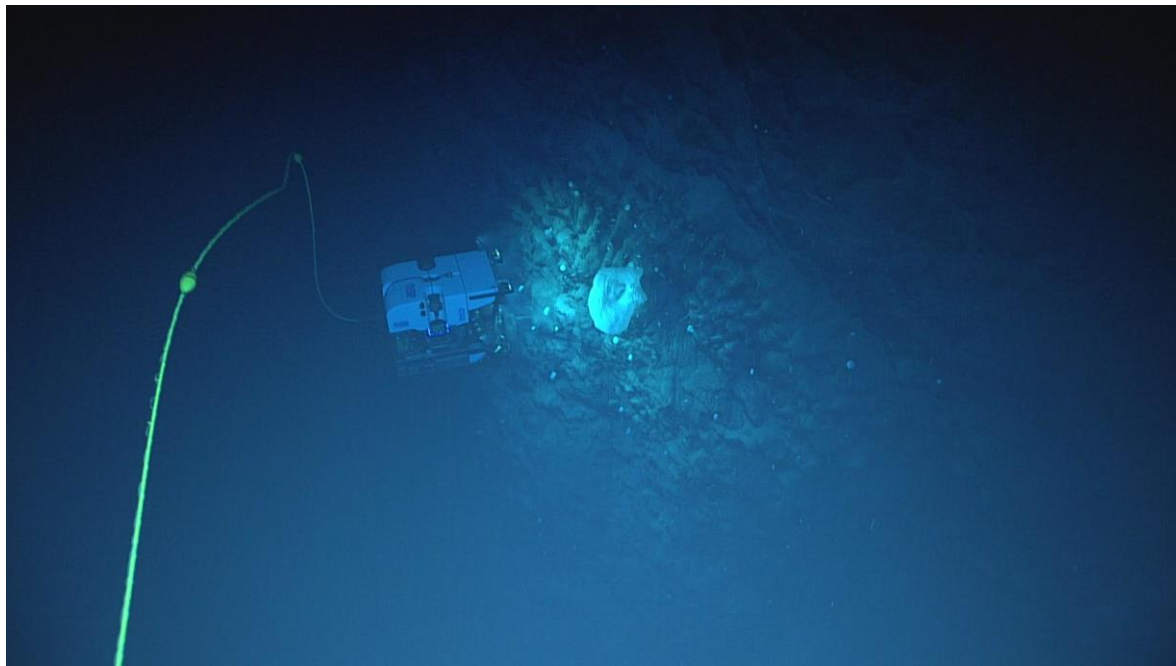
Smoothed ROV dive track (blue) on an overview bathymetry of the seamount, 3x vertical exaggeration.

Close-up Map of Main Dive Site



Smoothed ROV dive track (white) bathymetry, 3x vertical exaggeration, depth in meters, 100 meter contours

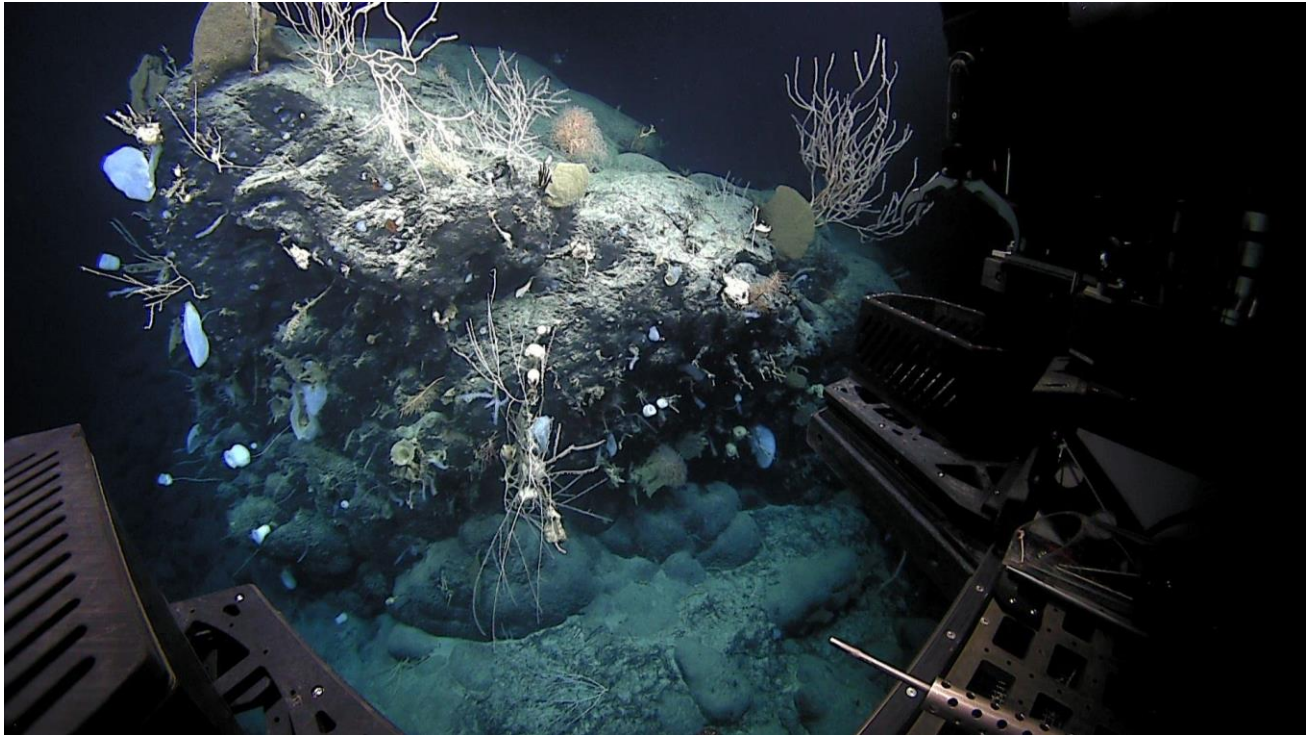
Representative Photos of the Dive



[D2 imaging an exceptionally large sponge during the mid portion of the dive. A number of these unknown types of sponge were observed on steep sloped rocky pavement]

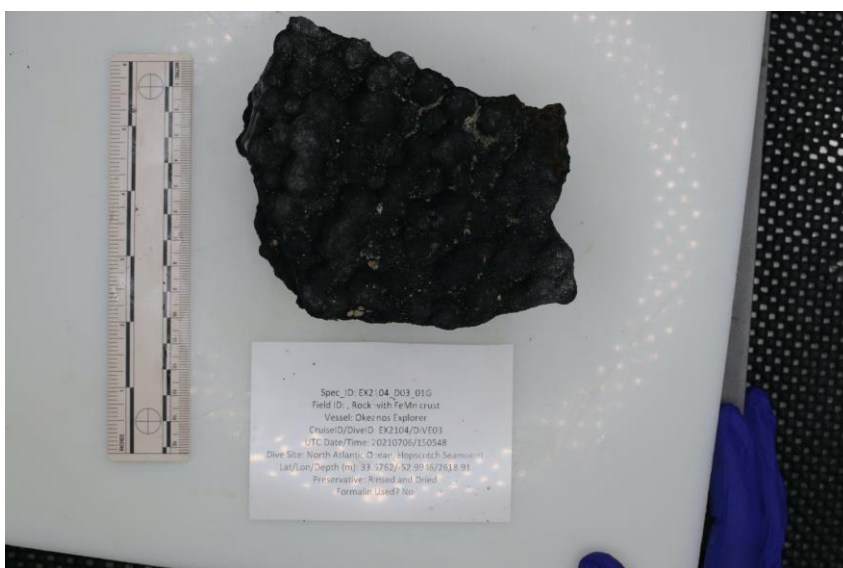


[A large fractured pillow basalt observed towards the end of the dive, with “tulip” sponges similar to that collected during this dive]



[Large boulders covered in biota were seen throughout the dive once out of the sediment zone during the initial landing. This rock has multiple species of coral and sponges associated with it.]

Samples Collected -



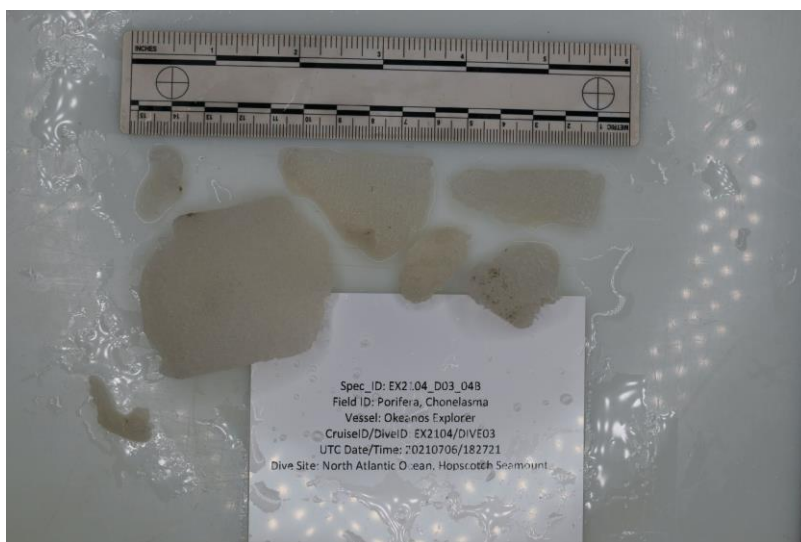
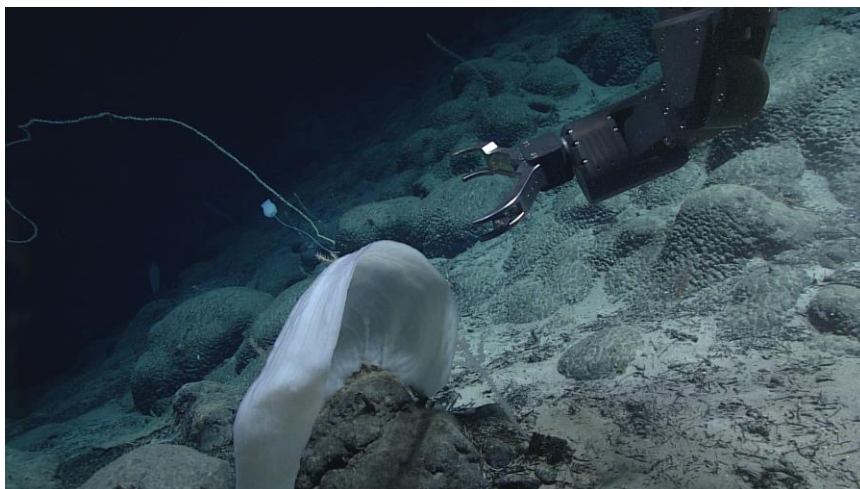
Sample ID	EX2104_D03_01G
Date (UTC)	20210706
Time (UTC)	150548
Depth (m)	2618.909
Latitude (decimal degrees)	33.676204
Longitude (decimal degrees)	-52.994556
Temp. (°C)	
Field ID(s)	Rock with FeMn crust
Comments	13 cm long x 11 cm wide x 5.5 cm tall; you can see Rust so Iron Oxides present; worm tubes - some are encrusted by FeMn, some are not; entire top is botryoidal; broke apart from a larger area during collection.



Sample ID	EX2104_D03_02B
Date (UTC)	20210706
Time (UTC)	173553
Depth (m)	2494.330
Latitude (decimal degrees)	33.676304
Longitude (decimal degrees)	-52.993153
Temp. (°C)	3.276
Field ID(s)	Bolosominae
Comments	13 cm; tulip sponge;



Sample ID	EX2104_D03_03G
Date (UTC)	20210706
Time (UTC)	180821
Depth (m)	2485.613
Latitude (decimal degrees)	33.676407
Longitude (decimal degrees)	-52.992885
Temp. (°C)	
Field ID(s)	BasaltSample
Comments	top is botryoidal; entirely FeMn coated; unsure of the inside composition ; 26 cm long x 18 cm wide x 8.5 cm tall; has worm tubes coated in FeMn crust



Sample ID	EX2104_D03_04B
Date (UTC)	20210706
Time (UTC)	182721
Depth (m)	2474.989
Latitude (decimal degrees)	33.676380
Longitude (decimal degrees)	-52.992595
Temp. (°C)	3.291
Field ID(s)	Chonelasma
Comments	collected in a few pieces; 10 cm is one; plate sponge;

Scientists Involved (provide name, email, affiliation)

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