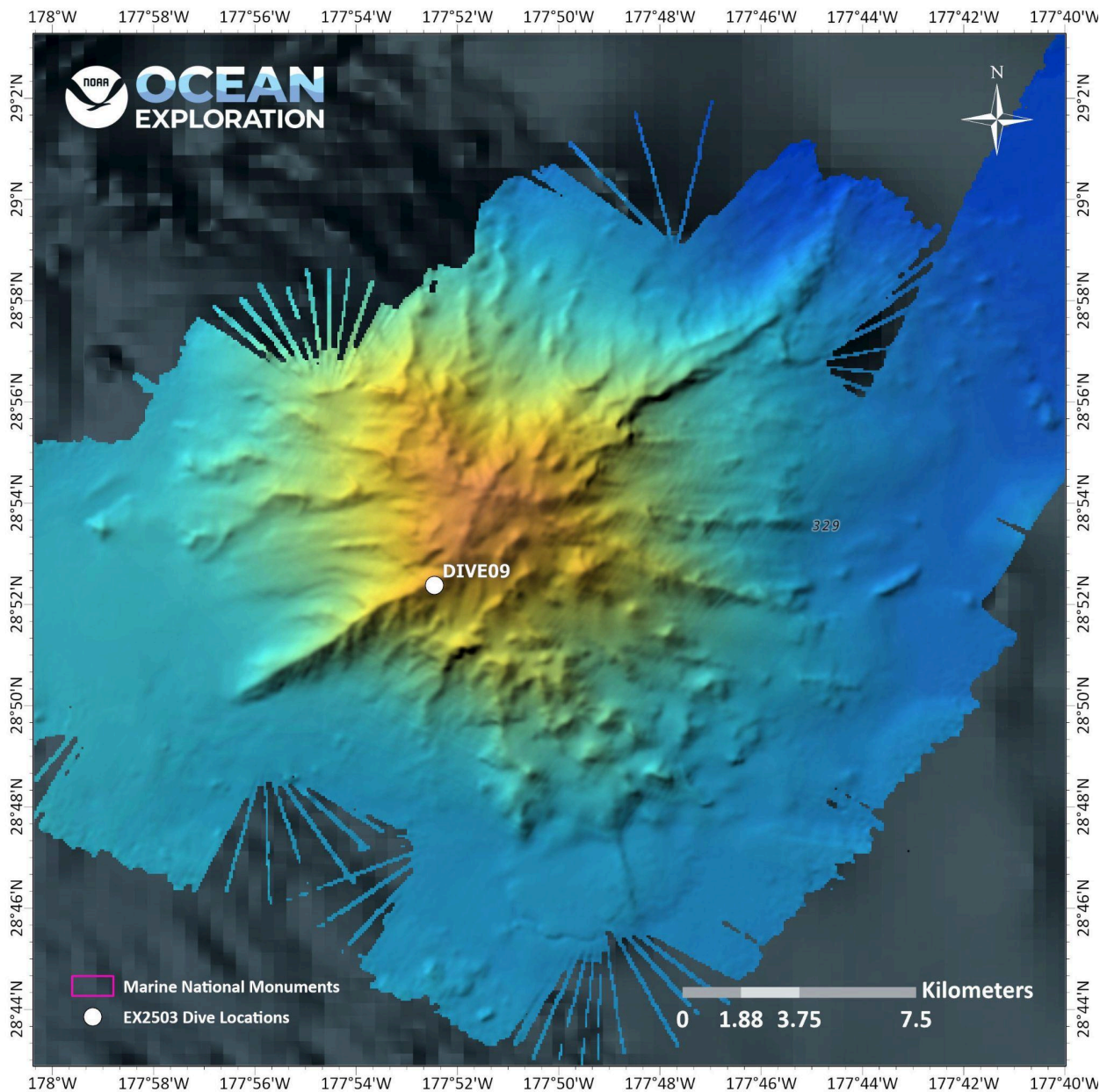


ROV Dive Summary

EX2503, Dive 09, April 22, 2025

General Location Map



Dive Information

Site Name	Wentworth Seamount
General Area Descriptor	Papahānaumokuākea
Science Team Leads	Sara Kahanamoku-Meyer (UH Mānoa/HI Sea Grant) and Brian Kennedy (ODL/BU)
Expedition Coordinator	Sam Cuellar (NOAA Ocean Exploration)
ROV Dive Supervisor	Chris Ritter (GFOE)
Mapping Lead	Neah Baechler (NOAA Ocean Exploration/UCAR)
Sample Data Manager	Anna Lienesch and Jordan Schweizer (NCEI)
Dive Purpose	The goal of EX2503 Dive 09 was to explore the southwestern ridge arm of Wentworth seamount northwest of Kuaihelani (Midway) and investigate geological features that could help to provide clues to the age and provenance of the seamounts in this region. Another key goal was to characterize the ecosystem of this seamount ridge arm, including key faunal components and organismal interactions.
Maritime Heritage Restrictions	No

ROV Dive Summary
Data

Dive Type: Normal

In Water: 2025-04-22T18:25:31.252967
28.873173352526877 ; -177.87392567352802

On Bottom: 2025-04-22T19:46:15.482545
28.8760683795404 ; -177.87071653150485

Off Bottom: 2025-04-23T01:28:31.075210
28.8793677553762 ; -177.8693675736401

Out Water: 2025-04-23T02:36:55.782266
28.88111517714302 ; -177.8648881184554

Dive Duration: 8:11:24

Bottom Time: 5:42:15

Max Vehicle Depth: 2116.4 m

Min Seafloor Depth: 2026.0 m

Distance Travelled: 487.9 m

Dive Description

EX2503 Dive 09 began with visualization of the seamount ridge arm at 0945 HST. The current at this depth was relatively strong and likely coming out of the northwest. The initial community found at our bottom depth of 2116m was relatively sparse, but dominated by large *Polipogon* sponges and smaller *Walteria* sponges. The first hour of the dive focused on geological sampling, which included the sampling of a basalt rock for aging and sediment collections — both from the remains of a *Polipogon* base that had become substrate for a new community of infaunal and epifaunal organisms, and from “free” sediment nearby to the sponge for comparison. As we continued onwards and climbed the ridge arm, the current (now coming from the northeast) increased in apparent strength. Areas with relatively “weaker” current often housed entire communities of large *Polipogon* sponges and fan-shaped Ferreid sponges and Primnoid corals, while those with stronger currents were dominated by whip-shaped corals and *Walteria* sponges. We encountered a wide variety of sponge morphologies, including a number of extremely large Ferreidae sponges and the remains of *Caulophacus* sponge stalks. These subfossil sponge stalks were very large, with some measuring more than 2m in length. We also encountered a number of unusual Ferreid sponge morphotypes, one of which was sampled for further analysis.

Towards the end of the dive, we glimpsed a solitary geologic feature in the distance that puzzled shoreside and shipboard geologists until we were able to visualize it fully — a massive, solitary, rectangular dike that measured more than 15m in height, 12 meters in length, and 4.5 meters in width. The current-facing portion of this wall was home to an abundant assemblage of *Hemicorallium* and Primnoid coral colonies. We observed numerous examples of Goniasterid sea star corallivory at this site. The lee wall of the dike was nearly barren of corals, illustrating the importance of current direction in shaping benthic coral assemblages on these deep seamounts. While collecting rock from the dike feature was not possible, we collected a geologic sample from upslope that will likely contribute to aging this feature. Water samples for eDNA were collected at bottom and top depths as well as at the base of the large dike (dubbed the “wonder wall” by shoreside scientists for the awesome coral assemblages it housed). We ended the dive at 2026m on another cobble slope, with visuals of more large *Polipogon* sponges in the distance.

Large dike rock formation with a high-density coral community

Community and Habitat Observations	Corals and Sponges — Present Chemosynthetic Community — Absent High biodiversity Community — Present Active Seep or Vent — Absent Extinct Seep or Vent — Absent Hydrates — Absent
CMECS Feature Type(s)	N/A
SeaTube Link (science annotations)	https://data.oceannetworks.ca/app/dive-logs/1705

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 following row notes if any of these sensors were malfunctioning or not operational.
Equipment Malfunctions	

Close-Up Map of Main Dive Site

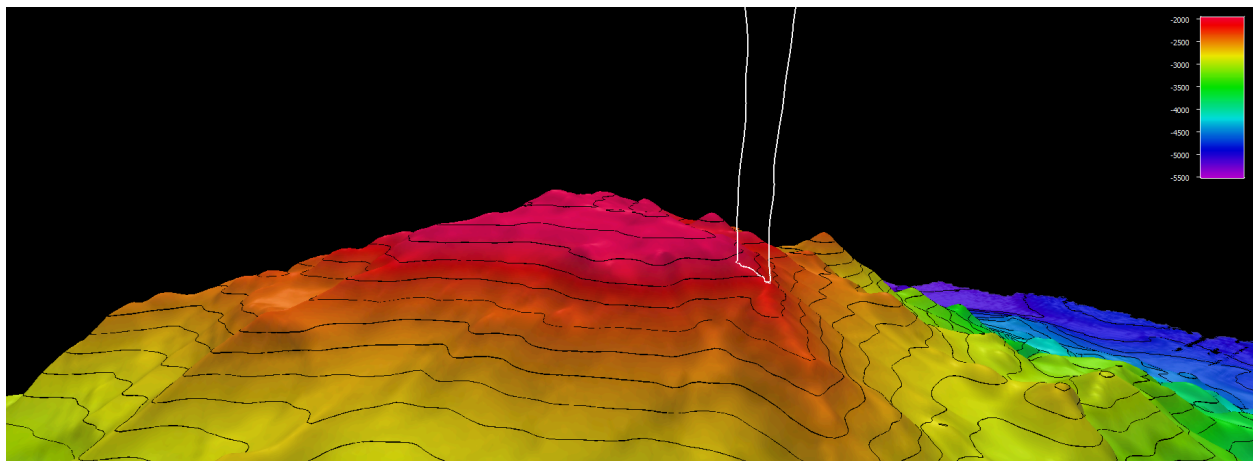


Figure 1: Dive 09 dive site. Shown in 2x vertical exaggeration; smoothed ROV dive track shown in white on 25x25 cell size bathymetry. Depth shown in meters; coloration based on depths with 100-meter contours overlain.

Sound Speed Manager Image of ROV CTD Profile

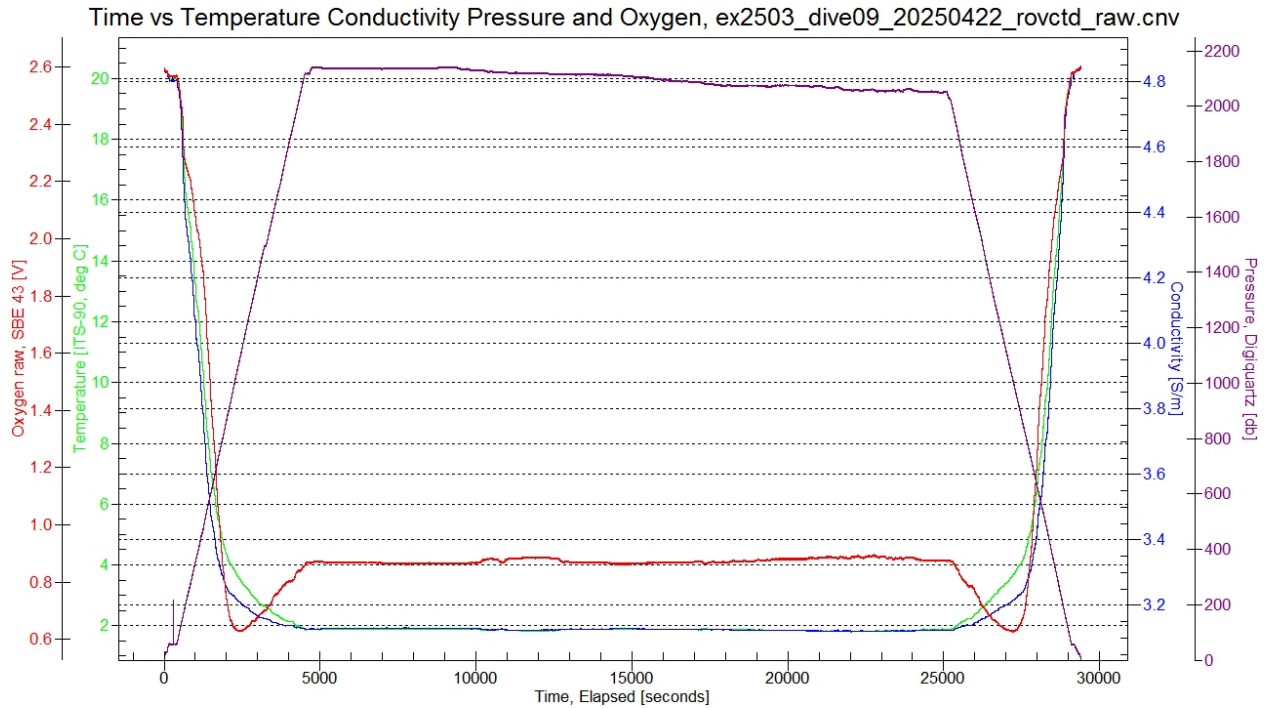


Figure 2. Ambient conditions during Dive 09. Plot shows Temperature (°C), Conductivity (S/m), Pressure (db), and Oxygen (V; as measured by SBE43).

Representative Photos of the Dive

Samples Collected

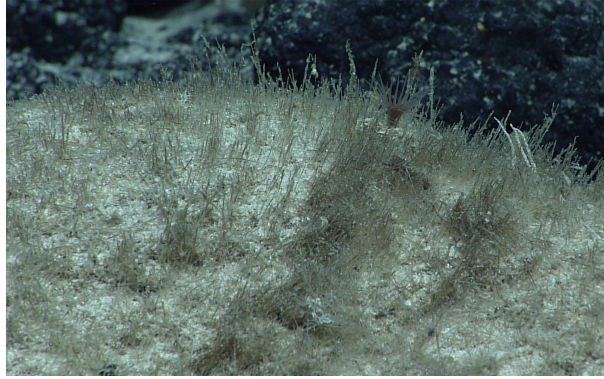
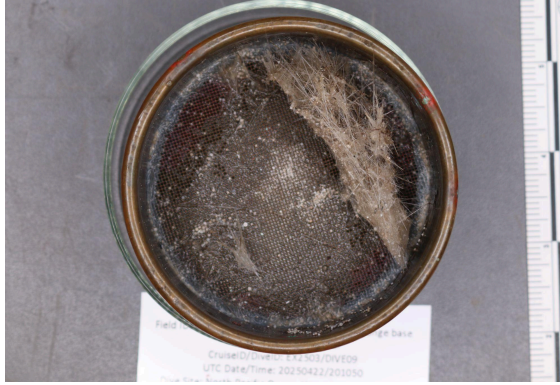


Sample ID	EX2503_D09_01G
Date (UTC)	20250422

Time (UTC)	200055
Depth (m)	2111.12890625
Latitude (decimal degrees)	28.8762168884277
Longitude (decimal degrees)	-177.870635986328
Temp. (°C)	1.8860000371933
Field ID(s)	encrusted basalt with numerous encrusters
Comments	FeMn encrusted basalt? Encrusting sediment tubes single barnacle removed as associate. Botryoidal textured crust.



Associates Sample ID:	EX2503_D09_01G_A01B
Field Identification:	Cirripedia
Count:	1



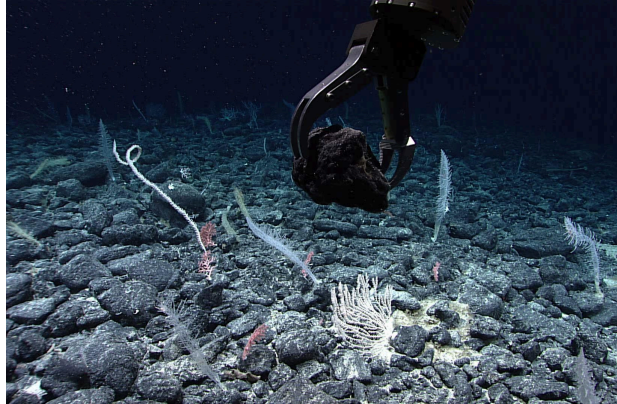
Sample ID	EX2503_D09_03G
Date (UTC)	20250422
Time (UTC)	201050
Depth (m)	2111.67504882813
Latitude (decimal degrees)	28.8762626647949
Longitude (decimal degrees)	-177.870590209961
Temp. (°C)	1.88300001621246
Field ID(s)	Sediment collected in Poliopogon sponge base
Comments	part of the 63-500 micron fractions spilled in the lab. Lots of spicules, few agglutinators in sediment, but noted on sponge.

Associates Sample ID:	N/A
Field Identification:	N/A
Count:	N/A



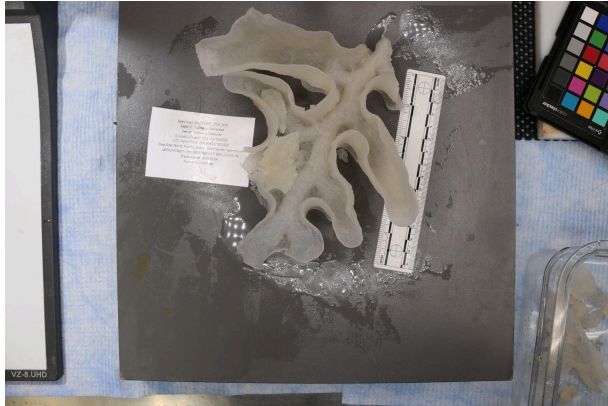
Sample ID	EX2503_D09_04G
Date (UTC)	20250422
Time (UTC)	203516
Depth (m)	2112.90087890625
Latitude (decimal degrees)	28.876293182373
Longitude (decimal degrees)	-177.87060546875
Temp. (°C)	1.89600002765656
Field ID(s)	Sediment collected from pool in cobble
Comments	(near to sponge community). Carbonate. Branch agglutinating forams present.

Associates Sample ID:	N/A
Field Identification:	N/A
Count:	N/A



Sample ID	EX2503_D09_05G
Date (UTC)	20250422
Time (UTC)	234353
Depth (m)	2050.14599609375
Latitude (decimal degrees)	28.8785285949707
Longitude (decimal degrees)	-177.869140625
Temp. (°C)	1.85000002384186
Field ID(s)	mid-dive basalt
Comments	- close to in situ, FeMn encrusted basalt? Encrusting sediment tubes botryoidal textured crust.

Associates Sample ID:	N/A
Field Identification:	N/A
Count:	N/A

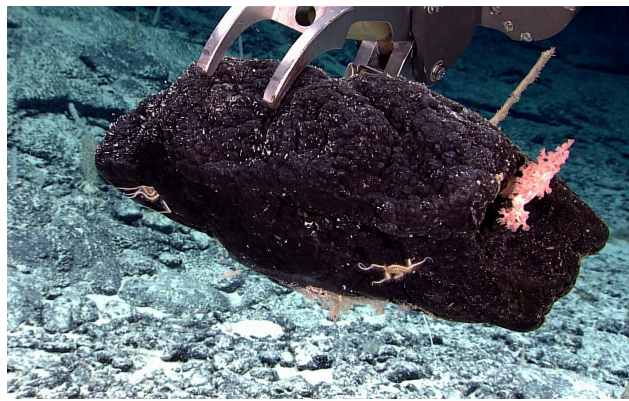


Sample ID	EX2503_D09_06B
Date (UTC)	20250423
Time (UTC)	000323
Depth (m)	2050.76196289063
Latitude (decimal degrees)	28.8788280487061
Longitude (decimal degrees)	-177.869110107422
Temp. (°C)	1.84300005435944
Field ID(s)	Farreidae
Comments	Branching central tube with lobate growth forms bilaterally.



Associates Sample ID:	EX2503_D09_06B_A01B
Field Identification:	Amphipoda

Count:	1
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Sample ID	EX2503_D09_08G
Date (UTC)	20250423
Time (UTC)	011413
Depth (m)	2029.68701171875
Latitude (decimal degrees)	28.8795700073242
Longitude (decimal degrees)	-177.868865966797
Temp. (°C)	1.86800003051758
Field ID(s)	large encrusted basalt upslope of dike
Comments	hexactinellid sponge stalk. Magnesium crusted assume basalt.



Associates Sample ID:	EX2503_D09_08G_A01B
Field Identification:	Hemicorallium
Count:	1

Niskin Sampling Summary

Sample ID	EX2503_D09_02W
Date (UTC)	20250422
Time (UTC)	200128
Depth (m)	2112.05493164063
Latitude (decimal degrees)	28.87619972229
Longitude (decimal degrees)	-177.870681762695
Bottle Number	Niskin Bottle 1
Temperature	1.88699996471405
Dissolved Oxygen (mg/L)	2.76099991798401
Treatment	DNA/RNA Shield

Sample ID	EX2503_D09_07W
Date (UTC)	20250423
Time (UTC)	005631
Depth (m)	2033.85998535156
Latitude (decimal degrees)	28.8792018890381
Longitude (decimal degrees)	-177.868957519531

Bottle Number	Niskin Bottle 2
Temperature	1.85199999809265
Dissolved Oxygen (mg/L)	2.76999998092651
Treatment	DNA/RNA Shield

Sample ID	EX2503_D09_09W
Date (UTC)	20250423
Time (UTC)	012246
Depth (m)	2026.38903808594
Latitude (decimal degrees)	28.8796100616455
Longitude (decimal degrees)	-177.868881225586
Bottle Number	Niskin Bottle 4
Temperature	1.86899995803833
Dissolved Oxygen (mg/L)	2.76699995994568
Treatment	DNA/RNA Shield

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