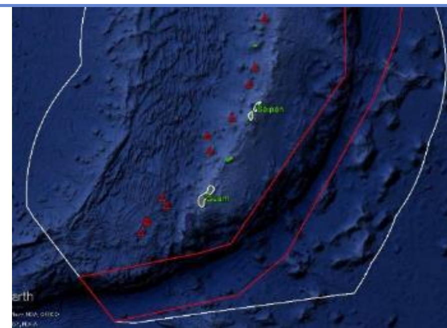
OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	New Hydrothermal Vent Field 1		
ROV Lead/ Expedition Coordinator	Jim Newman / Kelley Elliott		
Science Team Leads	Deborah Glickson & Diva Amon		
General Area Descriptor	Southern Marianas		
ROV Dive Name	Cruise Season	Leg	Dive Number
	EX1605	1	DIVE 10
Equipment Deployed	ROV:	Deep Discoverer	
	Camera Platform:	Seirios	
ROV Measurements	☒ D2 CTD	☒ Depth	☒ Altitude
	☒ Scanning Sonar	☒ USBL Position	☒ Heading
	☒ Pitch	☒ Roll	☒ HD Camera 1
	☒ HD Camera 2	☒ ROV HD 2	☒ Seirios CTD
	Temperature Probe	☒ D2 DO Sensor	☒ Seirios DO sensor
Equipment Malfunctions			
ROV Dive Summary (From processed ROV data)	Dive Summary: EX1605L1_DIVE10 ^^ In Water: 2016-04-30T20:26:59.441000 15°, 29.915' N ; 144°, 30.457' E Out Water: 2016-05-01T06:31:59.770000 15°, 29.346' N ; 144°, 31.020' E Off Bottom: 2016-05-01T04:13:10.105000 15°, 29.543' N ; 144°, 30.447' E On Bottom: 2016-04-30T22:42:57.580000 15°, 29.892' N ; 144°, 30.582' E Dive duration: 10:5:0 Bottom Time: 5:30:12 Max. depth: 3930.6 m		
Special Notes			
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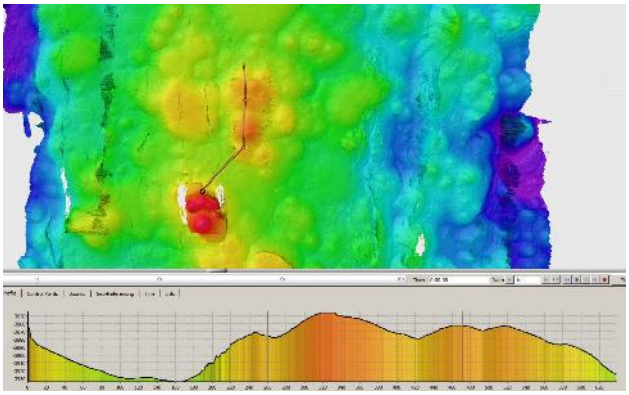
Purpose of the Dive

This dive explored an area mapped with the Sentry AUV in December 2015 while searching for new hydrothermal vents on the seafloor The dive targets were suspected to be high-temperature black smoker chimneys. We planned to document animals living at and near the vents. The dive was planned to begin at an approximate depth of 3860 m, and move from north to south for ~640 m, ending at a slope whose bottom depth was 3923 m.

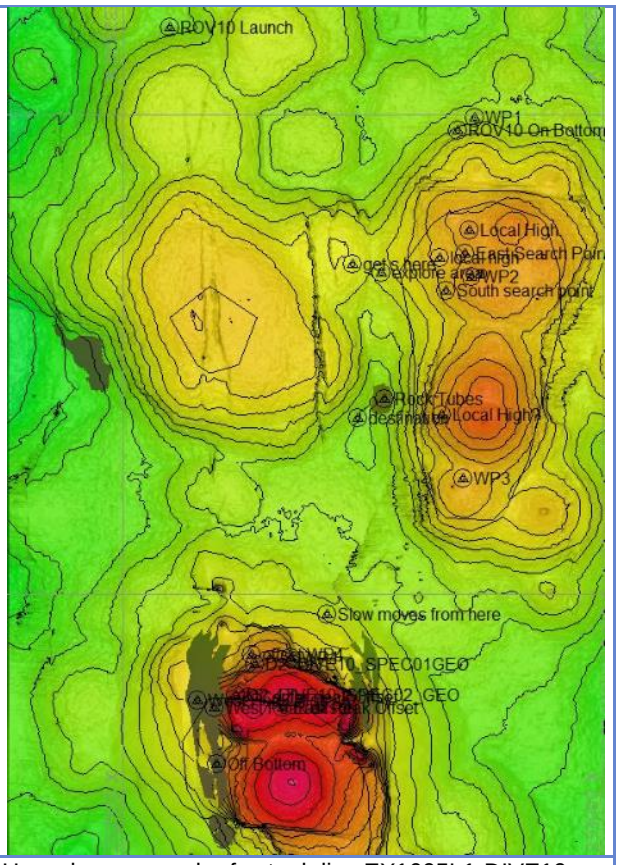
Description of the Dive:

The dive began at a depth of 3912 m in moderately-sedimented pillow lavas. These pillow lavas are expected to be older than yesterday's fresh lava, so this was not unexpected. We traversed upslope to the top of the pillow mound, where there was a waypoint that had indicated hydrothermal flow. Instead we found a "haystack," a steeply-sided eruptive vent with very long, stringy pillows flowing out. After traversing the top of the mound and not finding anything hydrothermal, we jumped down into a valley to the west, between two pillow mounds. We traversed the valley and noted that the morphology of the pillows changed from the western to eastern mounds – the western flows had tons of little pillow toes and protuberences, while the eastern pillows were smoother and lacked extrusions. Towards the end of the traverse through the valley, we came across an area of small, ropy, stick-like talus. We then moved up another pillow mound and found another haystack eruptive vent, but no hydrothermal indicators. Last, we flew over to the 4th waypoint, climbed a slope of pillow talus and ascended another sheer wall of broken pillows. At and near this eruptive vent we found pillows that looked like "dreadlocks" – very thin and stringy. We collected two samples near the top of this last slope (D2_DIVE10_SPEC01GEO and D2_DIVE10_SPEC02GEO). The biology on this dive was minimal. There were actiniarians, brisingid asteroids, porcellanaster asteroids, and many different species of holothurians and fish.

Map of ROV Dive Area

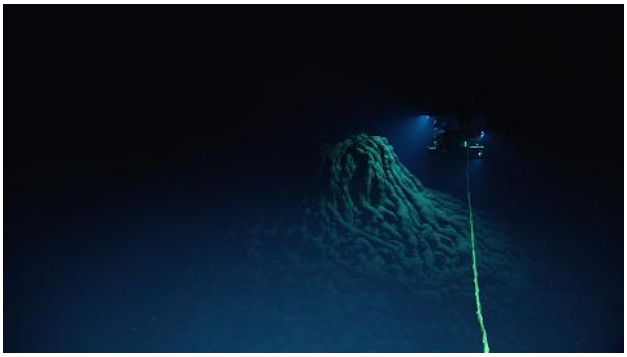


Fledermaus map of planned dive EX1605L1-DIVE10 track.



Hypack screengrab of actual dive EX1605L1-DIVE10 track.

Representative Photos of the Dive



A “haystack,” or steep-sided eruptive pillow lava vent seen on DIVE 10.

A view of the large pillow mounds seen during DIVE 10.

Samples Collected

Sample ID	D2_DIVE10_SPEC01GEO
Date (UTC)	20160501
Time (UTC)	03:34:12

Depth (m)	3820.63
Temperature (ºC)	1.628
Field ID(s)	Pillow extrusion
Comments	No commensals.

Sample ID	D2_DIVE10_SPEC02GEO
Date (UTC)	20160501
Time (UTC)	03:49:57
Depth (m)	3807.96
Temperature (ºC)	1.630
Field ID(s)	Pillow extrusion
Comments	No commensals.

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