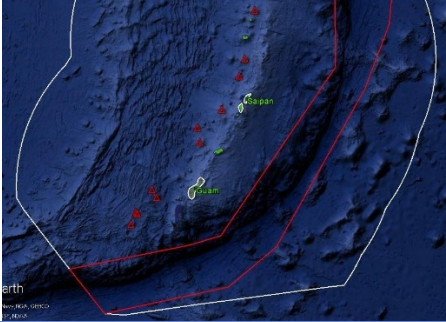


OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	Young Lava Flows			
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 09	
Equipment Deployed	ROV:	Deep Discoverer		
	Camera Platform:	Seirios		
ROV Measurements	<input checked="" type="checkbox"/> D2 CTD	<input checked="" type="checkbox"/> Depth	<input checked="" type="checkbox"/> Altitude	
	<input checked="" type="checkbox"/> Scanning Sonar	<input checked="" type="checkbox"/> USBL Position	<input checked="" type="checkbox"/> Heading	
	<input checked="" type="checkbox"/> Pitch	<input checked="" type="checkbox"/> Roll	<input checked="" type="checkbox"/> HD Camera 1	
	<input checked="" type="checkbox"/> HD Camera 2	<input checked="" type="checkbox"/> ROV HD 2	<input checked="" type="checkbox"/> Seirios CTD	
	Temperature Probe	<input checked="" type="checkbox"/> D2 DO Sensor	<input checked="" type="checkbox"/> Seirios DO sensor	
Equipment Malfunctions				
ROV Dive Summary (From processed ROV data)	Dive Summary: EX1605L1_DIVE09 ~~~~~			
	In Water:	2016-04-29T20:30:50.247000 15°, 26.156' N ; 144°, 30.033' E		
	Out Water:	2016-04-30T06:31:45.418000 15°, 26.162' N ; 144°, 30.872' E		
	Off Bottom:	2016-04-30T04:20:16.694000 15°, 25.931' N ; 144°, 30.285' E		
	On Bottom:	2016-04-29T22:54:47.854000 15°, 26.239' N ; 144°, 30.341' E		
	Dive duration:	10:0:55		
	Bottom Time:	5:25:28		
Max. depth:	4068.5 m			
Special Notes				
Scientists Involved (please provide name / location / affiliation / email)	Stace Beaulieu, WHOI; sbeaulieu@whoi.edu Bill Chadwick, NOAA PMEL; william.w.chadwick@noaa.gov Scott France, UL Lafayette; france@louisiana.edu Patty Fryer, UH; pfryer@soest.hawaii.edu Julie Huber, MBL; jhuber@mbi.edu Chris Kelley, UH; ckelley@hawaii.edu John Kellogg, U Victoria; jkelllogg@uvic.ca Asako Matsumoto, Chiba Institute of Technology; amatsu@gorgonian.jp			

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 Bruce Mundy, NOAA PIFSC; bruce.mundy@noaa.gov
 Shirley Pomponi, FAU/HBOI; spomponi@fau.edu
 Tara Harmer Luke, Stockton University; Tara.Luke@stockton.edu
 Timothy Shank, WHOI; tshank@whoi.edu
 Robert Stern, UTDallas; rjstern@utdallas.edu
 Michael Perfit, UF; mperfit@ufl.edu

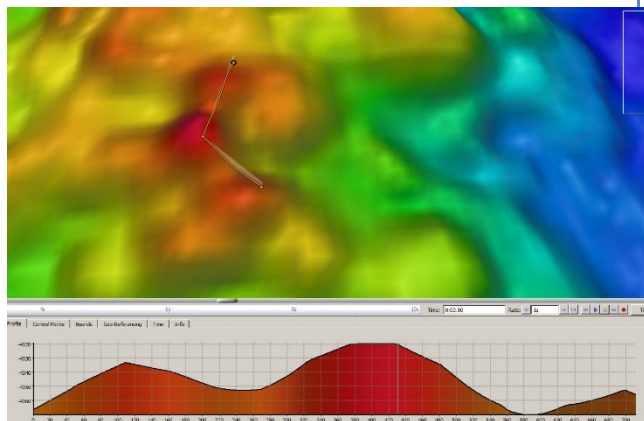
Purpose of the Dive

This dive explored a series of recent (2013-2015) lava flows and searched for hydrothermal vents or diffuse flow on the young lavas. Biology inhabiting the area was noted. The dive began at a depth of 4066 m, and moved south from pillow mound to mound for ~700 m (if possible), ending at a depth of 4055 m.

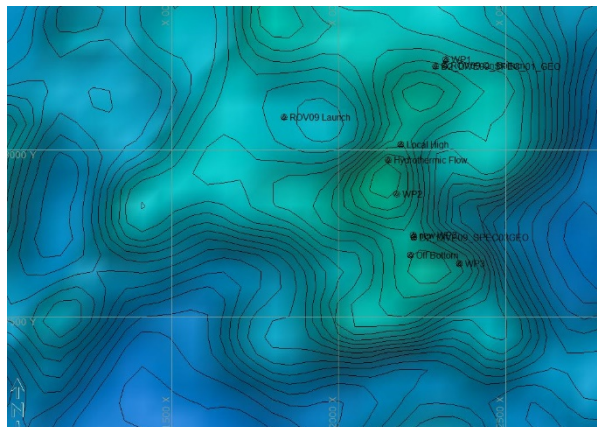
Description of the Dive:

This dive began at the base of a fresh pillow flow at a depth of 4064 m. As expected, the pillow flows were very fresh, with glassy surfaces and very little sediment. Some areas had an iron precipitate that may have been microbially-mediated (although there was no current microbial activity). These took the forms of flocculant, staining, and "rusticles." We collected a sample at this location – the northernmost pillow mound (D2_DIVE09_SPEC01GEO). Some of the pillows looked a bit older due to sediment cover, but all pillows were approximately the same age. As we moved off the pillow mound to the south, we encountered an area of what looked like ash deposits or volcanoclastics, followed soon after by a field of broken pillows with some white authigenic deposits (D2_DIVE09_SPEC02GEO). We guessed that this was due to an explosive event, but then came upon a very steep-walled pillow mound (60 m high) where the pillow toes had fallen off after being erupted. There was some hydrothermal staining here as well. We then jumped to the southernmost of the 3 pillow mounds, where pillows with very glassy textures and some strange morphology (sticking out at 90 degrees into the air) were seen. We collected a particularly glassy and curly pillow extrusion (D2_DIVE09_SPEC03GEO). The biology on this dive was extremely scarce. In total, there were about four morphotypes observed: a Synallactidae holothurian, a *Munidopsis* squat lobster and many swimming polychaetes. One surprise of the dive was finding an area of diffuse flow (7 degrees C), where approximately four vent-endemic *Chorocaris* shrimp were seen.

Map of ROV Dive Area

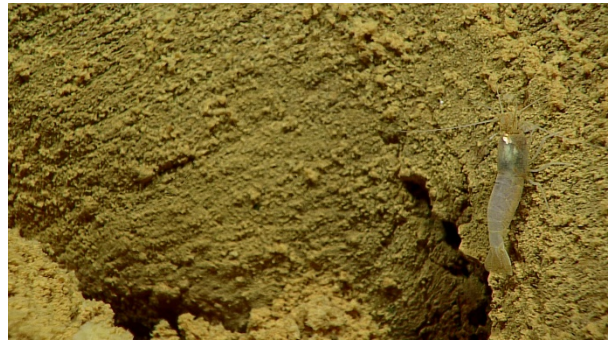
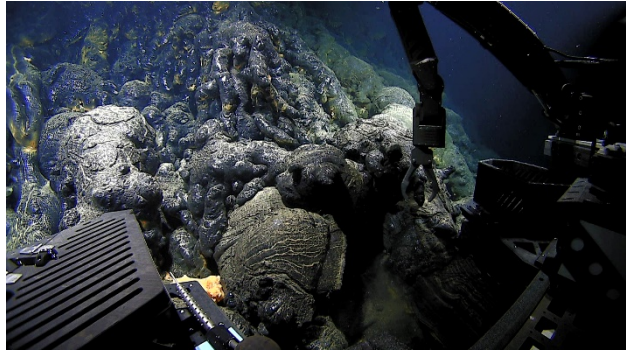


Fledermaus map of planned dive EX1605L1-DIVE09 track.



Hypack screengrab of actual dive EX1605L1-DIVE09 track

Representative Photos of the Dive




Glassy pillow extrusions being collected during DIVE 09.

A species of *Chorocaris* shrimp, a hydrothermal vent endemic, seen during DIVE 09.

Samples Collected

Sample ID	D2_DIVE09_SPEC01GEO	<p>Versar Oceanic Explorer Cruise/Observe: 210509-1 DIVE09 UTC: 20160429T23:17:05 Sample: SPEC01GEO ID: Pillow Extrusion Loc: Fresh Lava Flows Lat: 35.440 Lon: 144.510 Institution: NOAA/USO</p>
Date (UTC)	20160429	
Time (UTC)	23:17:05	
Depth (m)	4056	
Temperature (°C)	1.664	
Field ID(s)	Pillow extrusion	
Comments	No commensals.	
Sample ID	D2_DIVE09_SPEC02GEO	<p>Versar Oceanic Explorer Cruise/Observe: 210509-1 DIVE09 UTC: 20160430T01:15:59 Sample: SPEC02GEO ID: Pillow Lava Loc: Fresh Lava Flows Lat: 35.440 Lon: 144.510 Institution: NOAA/USO</p>
Date (UTC)	20160430	
Time (UTC)	01:15:59	
Depth (m)	4047.9	
Temperature (°C)	1.653	
Field ID(s)	Pillow lava	
Comments	No commensals.	
Sample ID	D2_DIVE09_SPEC03BIO	
Date (UTC)	20160430	
Time (UTC)	03:50:31	
Depth (m)	4062.5	
Temperature	1.652	

e (°C)		
Field ID(s)	Pillow extrusion	
Comments	No commensals.	
Please direct inquiries to:		NOAA Office of Ocean Exploration & Research 1315 East-West Highway (SSMC3 10 th Floor) Silver Spring, MD 20910 (301) 734-1014