OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	Von Damm		
ROV Lead	Dave Lovalvo		
General Area Descriptor	100 km SSW of Grand Cayman Island		
ROV Dive Name	Cruise Season	Leg	Dive Number
	EX1104	-	DIVE01
Equipment Deployed	ROV:	Little Hercules	
	Camera Platfom:	Seirios	
ROV Measurements	☒ CTD	☒ Depth	☒ Altitude
	☒ Scanning Sonar	☒ USBL Position	☒ Heading
	☒ Pitch	☒ Roll	☒ HD Camera
	☒ Low Res Cam 1	☒ Low Res Cam 2	
Equipment Malfunctions	None		
ROV Dive Summary (From processed ROV data)	Dive Summary: EX1104_DIVE01 ^^ In Water at: 2011-08-05T13:27:59.121000 18°, 22.664' N ; 081°, 47.734' W Out Water at: 2011-08-05T21:15:09.124000 18°, 22.821' N ; 081°, 47.688' W Off Bottom at: 2011-08-05T19:36:16.052000 18°, 22.560' N ; 081°, 47.905' W On Bottom at: 2011-08-05T14:52:29.133000 18°, 22.603' N ; 081°, 47.884' W Dive duration: 7:47:10 Bottom Time: 4:43:46 Max. depth: 2343.9 m		
Special Notes	Click here to enter text.		
Scientists Involved *(please provide name / location / affiliation / email)*	Chris German (Science team lead), EX, WHOI, cgerman@whoi.edu Paul Tyler, EX, Uni. Southampton, pat8@noc.soton.ac.uk Cameron McIntyre, EX, WHOI, cmcintyre@whoi.edu Diva Amon, URI, Uni. Southampton, dja605@noc.soton.ac.uk Bobbie John, URI, Uni. Wyoming, BJohn@uwyo.edu Jameson Clarke, URI, Duke, jamesonclarke@gmail.com Mike Cheadle, URI, Uni. Wyoming, cheadle@uwyo.edu Jill McDermott, URI, WHOI, jmcdermott@whoi.edu Julie Huber, WHOI, MBL, jhuber@mbl.edu Sarah Bennett, Home, NASA JPL, Sarah.A.Bennett@jpl.nasa.gov Cindy Van Dover, Home, Duke, clv3@duke.edu Guy Evans, Home, WHOI, guynevans@yahoo.com		

Steve Hammond, Newport, PMEL, Stephen.r.hammond@noaa.gov
Tim Shank, WHOI, WHOI, tshank@whoi.edu
Santiago Hererra, WHOI, WHOI, shererra@whoi.edu

Purpose of the Dive

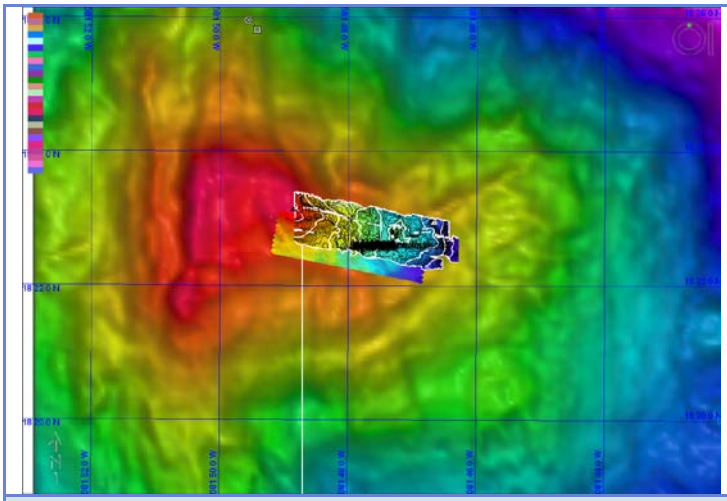
To locate and characterize the full extent of the Von Damm site in a systematic survey covering an area of ~150m on a side. Key objectives will be:

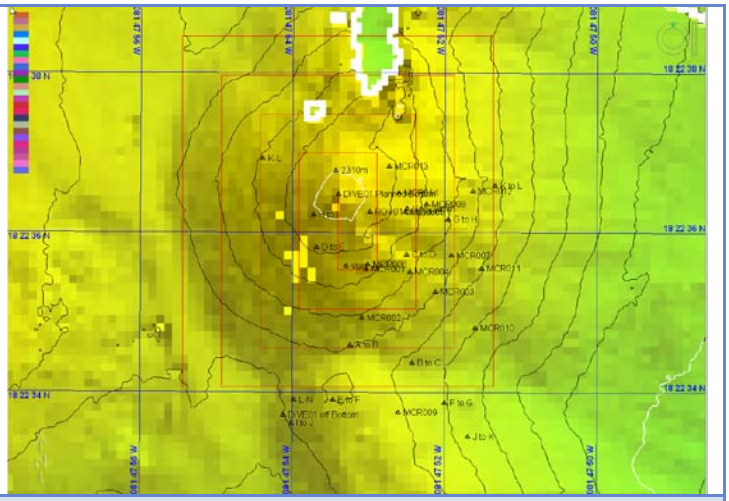
1) To locate the center of the field using the sonars on the vehicles and confirm its precise location relative to the fixes currently provided from our UK colleagues.
2) To survey the surrounding area covering as much of the entire field as possible within this first dive to constrain its outer limits
3) To obtain an overview of the geologic features that determine the size/scale of the site
4) To identify biological (or other) "hotspots" by dropping way-points during this dive in anticipation of more detailed studies at each of those locations during one or more subsequent dives later in the program.

Description of the Dive:

Little Herc was deployed and landed at the top of the Von Damm hydrothermal site at 2292m depth. The position of landing coincided with a tall (~8m) spire emitting diffuse hydrothermal outflow and more focused clear fluid flow from a ~1m orifice just below the summit of the spire on its North side, the whole covered by dense populations of a hydrothermal shrimp cf. *Rimicaris*. After establishment at the seabed Little Herc carried out a video transect following an ever-expanding square spiral outward from the center of the hydrothermal site. The pattern was to travel south, then east, then north and lastly west before repeating this pattern further out from the central point of the vent, keeping to 90° turns to maximize exploration potential vs a more regular square-wave (mowing the lawn) pattern over such steep terrain . The substratum was very varied and consisted of angular talus blocks up to ~1m on a side which often appeared to be extremely hydrothermally altered. While angular talus was common on all sides of the central cone, coarse gravelly sediment was also apparent – most notably on the Eastern side. The slope of the Von Damm site was everywhere rather steep (typically 45° from horizontal) but increasing to essentially vertical at the central spire that rose from 2300m to 2292m at its very shallowest point. A number of well established cf. *Rimicaris* concentrations were noted and waymarked throughout the survey along the southern, eastern and northern flanks of the cone, but none to the East. In addition throughout the dive small patches of hydrothermal activity plus associated shrimp were observed and either way-pointed or logged in the event log. The actual positions of the shrimp communities will be clarified when they are plotted along the ROV track. Often associated with the shrimp were small numbers of zoarcid fish and two additional species of shrimp. As we moved our small patches of hydrothermal activity had associated small coiled gastropods rather than shrimp. Further out, towards the end of the dive, isidid gorgonians (bamboo corals) became more common. Squat lobsters were found throughout the dive, a white species (? *Munidopsis*) being the most common whilst a species cf. *Munida* was attached to the gorgonian corals. Other fauna seen included a brisingid seastar, a normal seastar and macrourid fish.

Overall Map of ROV Dive Area	Close-up Map of Main Dive Site

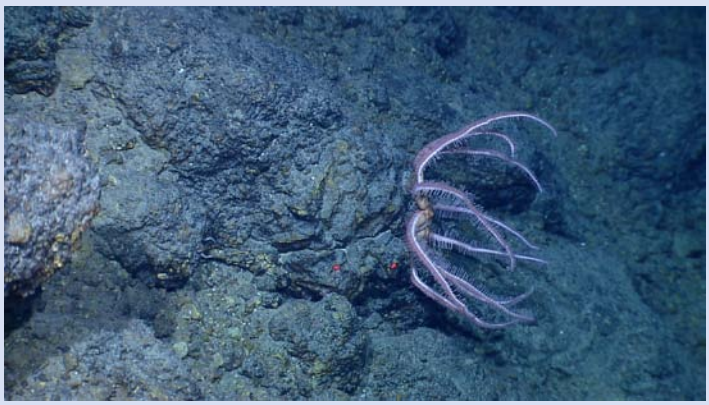




Bathymetry data courtesy of D.P.Connelly et al. (UK).

Representative Photos of the Dive

Chimney covered in a dense population of shrimp that use hydrogen sulphide as an energy source



A brisingid sea star that filter feeds on the particles in the water column formed by the hydrothermal vent

Please direct inquiries to:	NOAA Office of Ocean Exploration & Research 1315 East-West Highway (SSMC3 10th Floor) Silver Spring, MD 20910 (301) 734-1014