# OKEANOS EXPLORER ROV DIVE SUMMARY

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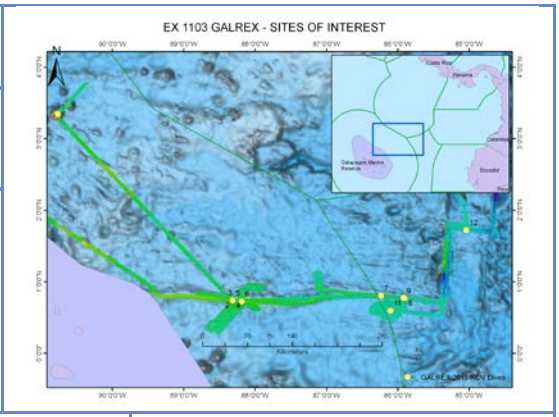
|---|---|---|---|
| **Site Name** | 4aW |  | |
| **ROV Lead/ Expedition Coordinator** | Dave Lovalvo/<br>Jeremy Potter | | |
| **General Area Descriptor** | Site 4aW, Galapagos Rift eastern limb,<br>~320nm northwest of the Galapagos Islands | | |
| **ROV Dive Name** | Cruise Season | Leg | Dive Number |
| | EX1103 | 2 | DIVE09 |
| **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: EX1103L2_DIVE09<br>^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^<br>In Water at: 2011-07-22T14:23:51.125000<br>00°, 46.210' N ; 085°, 54.785' W<br><br>Out Water at: 2011-07-23T00:15:21.335000<br>N/A ; N/A<br><br>Off Bottom at: 2011-07-22T22:59:19.353000<br>00°, 46.219' N ; 085°, 54.742' W<br><br>On Bottom at: 2011-07-22T16:21:30.374000<br>00°, 46.088' N ; 085°, 54.699' W<br><br>Dive duration: 9:51:30<br><br>Bottom Time: 6:37:48<br><br>Max. depth: 2581.4 m | | |
| **Special Notes** | Click here to enter text. | | |
| **Scientists Involved** *(please provide name / location / affiliation / email)* | Timothy M. Shank/ Okeanos Explorer Lead Scientist/WHOI/tshank@whoi.edu<br>Edward T. Baker/NOAA-PMEL, Washington/Edward.baker@noaa.gov<br>Robert W. Embley/NOAA-PMEL, Oregon/Robert.w.embley@noaa.gov<br>Stephen Hammond/ NOAA-PMEL, Oregon/Stephen.r.hammond@noaa.gov<br>James F. Holden/ UMASS Amherst/jholden@microbio.umass.edu<br>Scott White/University of South Carolina/swhite@geol.sc.edu<br>Sharon L. Walker/ NOAA-PMEL, Washington/sharon.l.walker@noaa.gov<br>Santiago Herrera/ WHOI Exploration Command Center/WHOI/sherrera@whoi.edu<br>T. Jennifer Lin/UMASS Amherst/tjennlin@gmail.com<br>Catriona Munro/ WHOI Exploration Command Center WHOI/catmunro89 @gmail.com | | |

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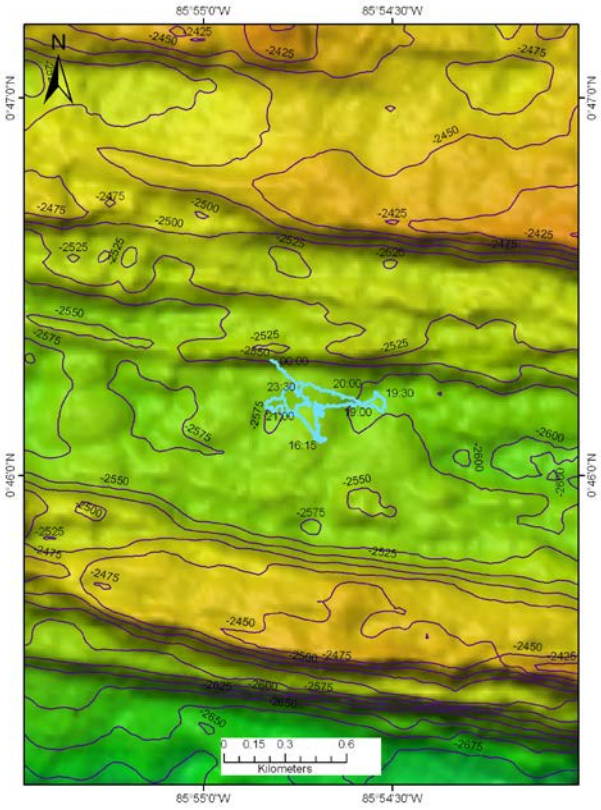
**Purpose of the Dive**

The objective of Dive 9 of this program was to descend to a location (85 54.648 00 46.104) on the eastern limb of the Galapagos Rift and to explore the landing site before moving to the west - northwest in search of hydrothermal vents. A strong hydrothermal plume signal (4a west) was observed a few weeks ago in this area. This area is ~1.7 kilometers west of dive 08 site, at a depth of 2560m.

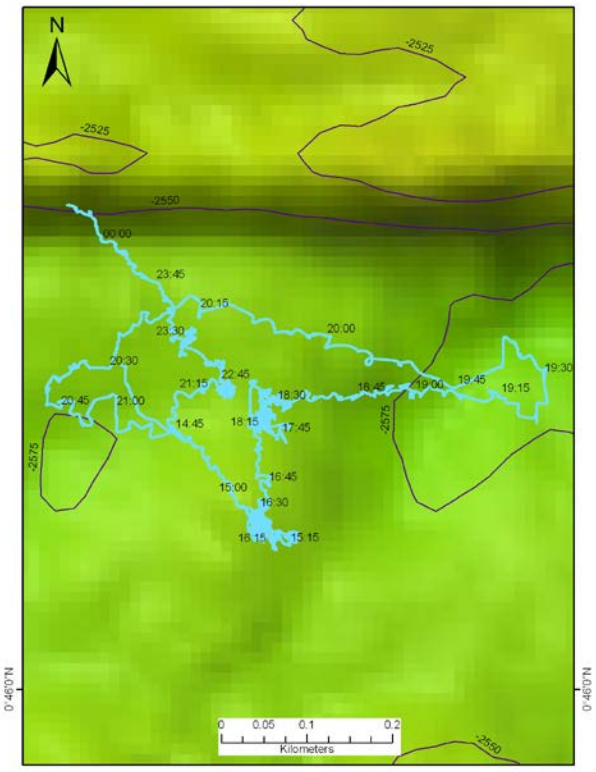
**Description of the Dive:**

On bottom, we explored the landing site near 85° 54.648 W, 00° 46.104 N at a depth of 2560 meters before moving to the west. We located what looked to be active fissures and grabens in the area and *Little Hercules* moved through water heavy with particulates and observed increasing numbers of brachyuran crabs on pillow lavas. We came upon the edge of an extensive field of empty clam shells and *Riftia* tubeworms were observed living in shimmering water rising from between pillow lavas and lobes. We began surveying the vent field and found that there were extensive beds of clam shells both along the margins of the field as well as in the central active venting area. In the active-flow areas, there was evidence of recent colonization by tubeworms including *Riftia*, *Oasisia*, and *Tevnia*, a species previously unknown from the Galapagos Rift, along with highly–abundant bathymodiolin mussels filling cracks and crevices in the lobate lavas. White aggregations of mineral sulfides and microbial mats were observed in diffuse flow areas, between young lobate lava flows. Much of the rock in these areas had dark discoloration, likely caused by the grazing activity of a least 4 species of limpets on the white microbial material. Dandelion siphonophores were abundant along all margins of the field as well as shrimp and anemones. At the end of the dive, we had explored to the eastern boundary and noted that the dead clam shells continued on to the east. It may be that this field is one of the largest vent fields found yet on the Galapagos Rift (spanning 130m by 40m), with the general community being older in the west and the development of the communities being younger to the east.

**Overall Map of ROV Dive Area**




**Close-up Map of Main Dive Site**



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|---|---|
| **Representative Photos of the Dive** | |
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| Extensive beds of clam shells were present both along the margins of the field as well as in the central active venting area | Active flow area with Riftia and numerous sea anemones |
| **Please direct inquiries to:** | NOAA Office of Ocean Exploration & Research<br>1315 East-West Highway (SSMC3 10th Floor)<br>Silver Spring, MD 20910<br>(301) 734-1014 |