Cabled Observatory Vent Imaging Sonar (COVIS): Operations Summer 2018

Project Title: Collaborative research: Heat flow mapping and quantification at ASHES hydrothermal vent field using an observatory imaging sonar (NSF OCE 1736702, 1736393, 1726920, 1736621)

<table>
<thead>
<tr>
<th>Cruises</th>
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<tbody>
<tr>
<td>Leg “2”</td>
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<td>Leg “4”</td>
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<tr>
<td>1 science day funded</td>
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<td>2 science days funded</td>
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<td>ROV JASON: 2+ dives</td>
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<td>Dive 1065 (parts): flow measurements at Diva and Tiny Towers</td>
<td>Dive 1095: installed COVIS, flow and temperature measurements at Inferno and Mushroom</td>
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<td>Dive 1069 aborted due to power failure; Dive 1070 (~12 hours): near-bottom thermal survey, flow measurements at Inferno</td>
<td>Dive 1096: installed 1-m arrays (temperature variance), surveyed positions, spot flow and temperature measurements, visual survey of Mushroom (back side from CamHD)</td>
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<td>Most objectives completed (except intended higher (10m) level thermal survey)</td>
<td>Objectives met. Navigation accuracy inadequate but compensated by sonar surveying of sensor locations.</td>
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**COVIS TEAM**

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<thead>
<tr>
<th>Science</th>
<th>Engineering (@UW)</th>
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<tr>
<td><strong>@RU:</strong> Karen Bemis; @Clemson: Leonid Germanovich</td>
<td>Tim McGinnis, Aaron Marburg</td>
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<tr>
<td>@UW: Darrell Jackson, Anatoliy Ivakin, Guangyu Xu</td>
<td>Mike Kenney, Nick Michel-Hart, Ben Brand</td>
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<tr>
<td>Peter Rona (deceased)</td>
<td>Russ Light (deceased), Vern Miller (retired)</td>
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COVIS is an innovative imaging sonar platform designed to monitor hydrothermal discharge. COVIS uses backscattering ...

- by turbulent mixing of hot and cold fluids to estimate vertical flow rates in plumes
- from seafloor to estimate the thermal variance of diffuse hydrothermal discharge.

Flow and temperature measurements

Flowmeter at Inferno

5-m Thermistor Array hanging out in Inferno’s plume

Thermal anomalies: above Inferno, Mushroom, and other vents in ASHES

Come see our poster on Thursday Dec 13 – V43G-0206. I’ll be there 4-6 pm.