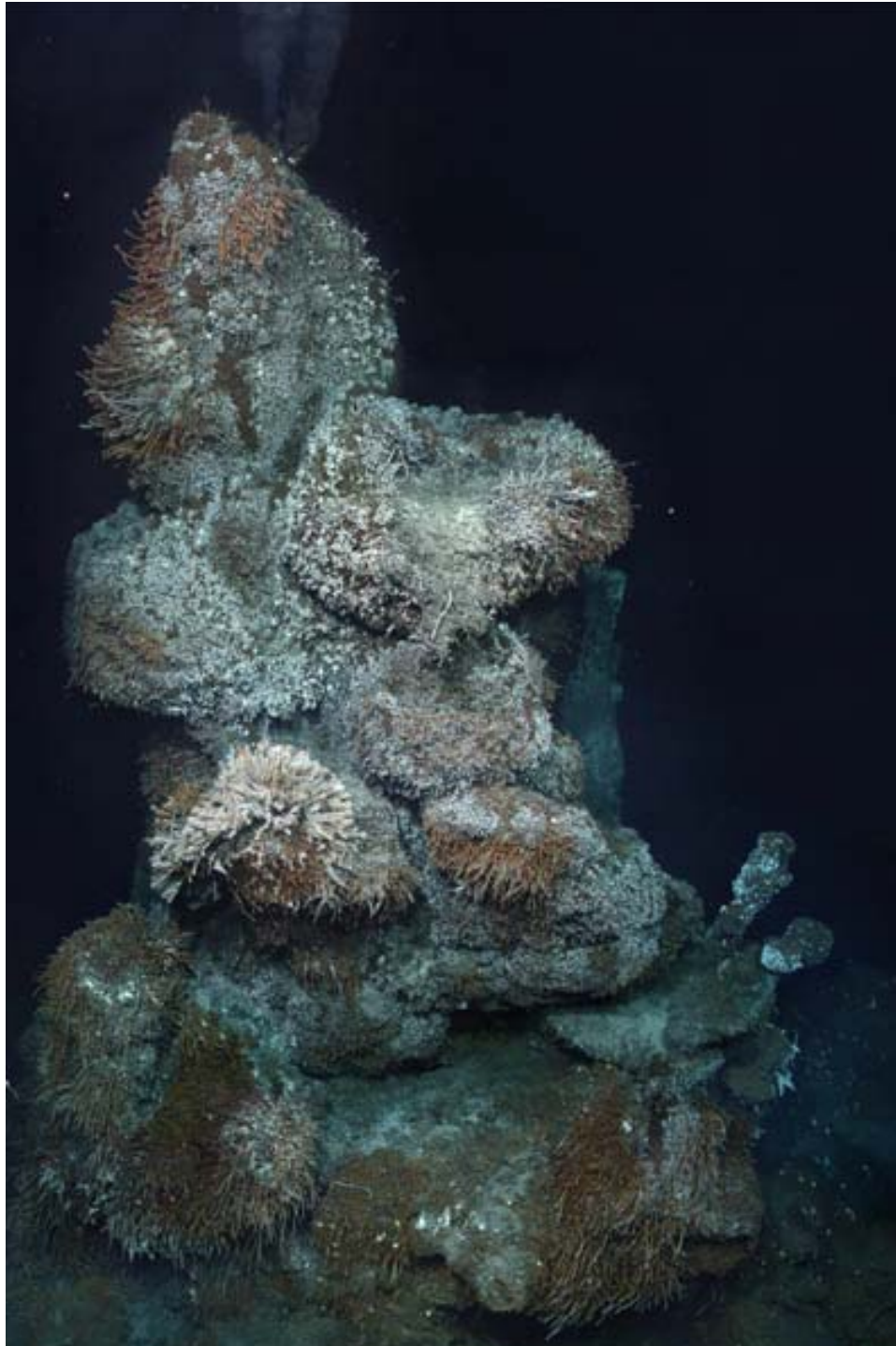




***Welcome to the
UNOLS Deep
Submergence Science
Committee Meeting***

2008

**San Francisco
Marriott**



DESSC Members

Debbie Kelley

Bill Chadwick

Jeff Karson

Jennifer Reynolds

Mike Tryon

Craig Young

Marsh Youngbluth

Wiebke Ziebis

ex-officio

Tim Shank

Chris German

Susan Humphris

A photograph of an underwater cave system. Several tall, jagged stalactites are illuminated from below, creating a dramatic scene. A diver's head and light are visible in the upper left, and another diver's light is visible in the middle left. The water is dark, and the overall atmosphere is mysterious and scientific.

AGENDA

0900 Intro Remarks, Introductions

0915 Agency Reports

0945 National Facility Ops. Report

1030 Break

1045 PI Reports

1230 NDSF Vehicle Debrief Interviews

1300 Adjourn

1400 DESSC Meets-update on RHOV,
community welcome to attend

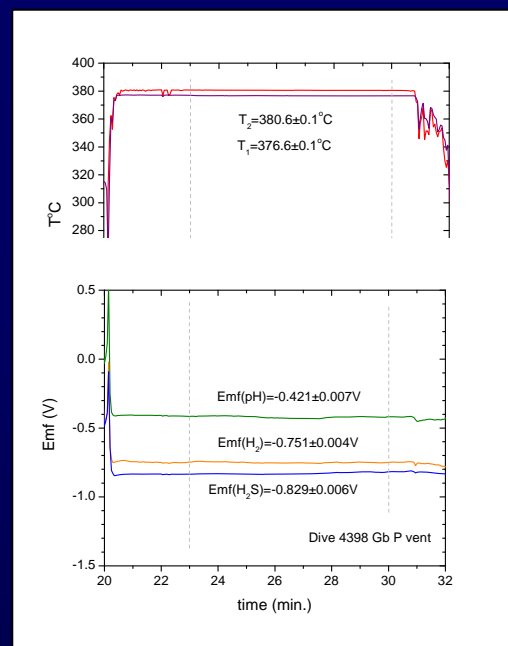
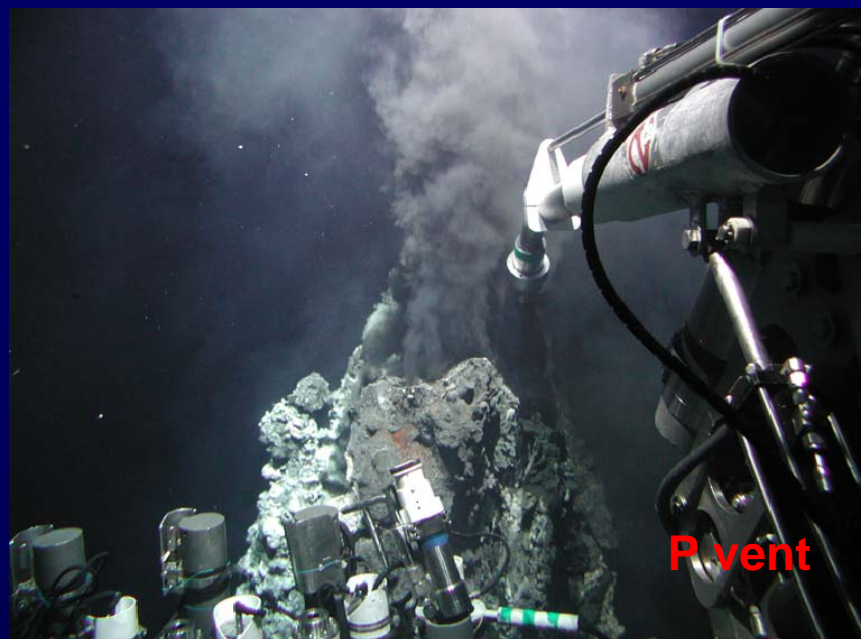
A photograph showing the Alvin submersible, a bright orange and white deep-sea research vehicle, floating on the surface of the ocean. The submersible is positioned in the foreground, with its conical top and various mechanical components visible. On the side of the orange conical part, the text "ALVIN" is written in large white letters, followed by "WOODS HOLE OCEANOGRAPHIC INSTITUTION" in smaller white letters. To the left of the submersible, a large blue and white support ship is visible, equipped with a crane and other deck machinery. The ocean is choppy with small waves, and the sky is overcast with grey clouds. The overall scene is a maritime research operation.

***DESSC Meeting
December 2008***

Alvin Science User Reports

AT 15-28 Alvin Cruise EPR

Ghostbusting at the vents

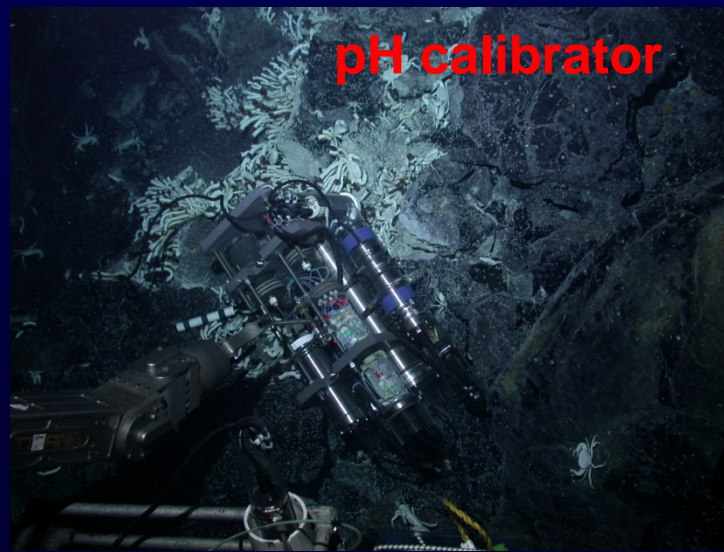
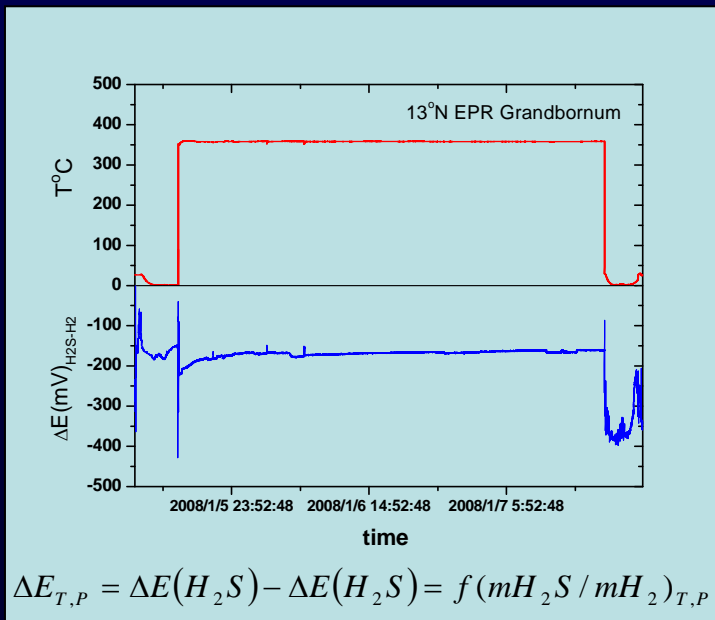
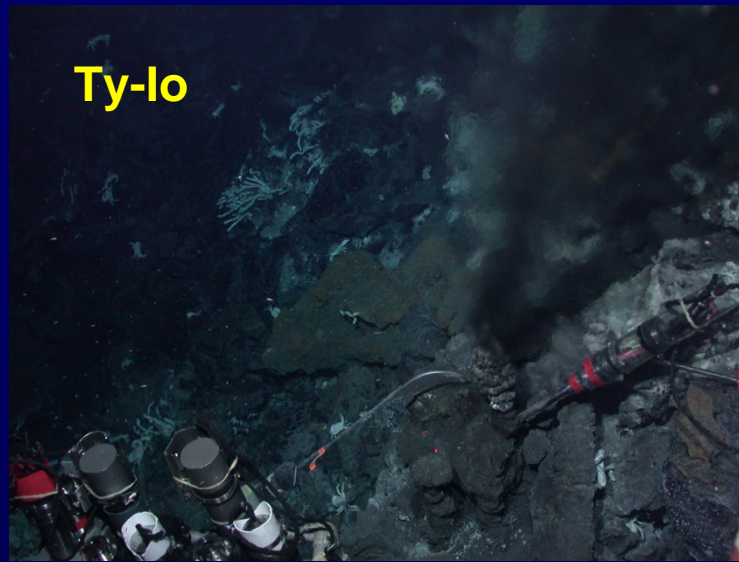
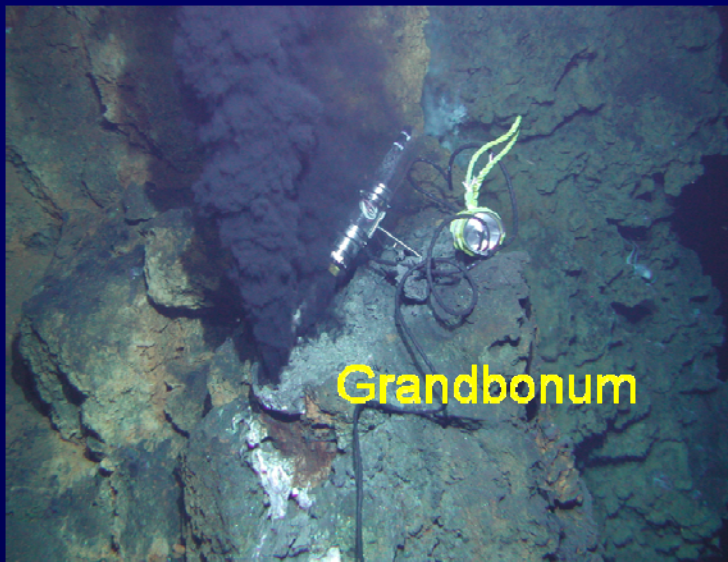


In-situ Chemical data for P vent 9° N EPR

	2008	2004
T ° C	379.7 ± 1.6	362.6 ± 3.2
pH	5.14 ± 0.04	4.90 ± 0.05
H2 (mM)	0.47 ± 0.18	0.12
H2S (mM)	18.5 ± 3.5	10.1

AT 15-28 Alvin Cruise EPR

Monitoring vent fluid chemistry

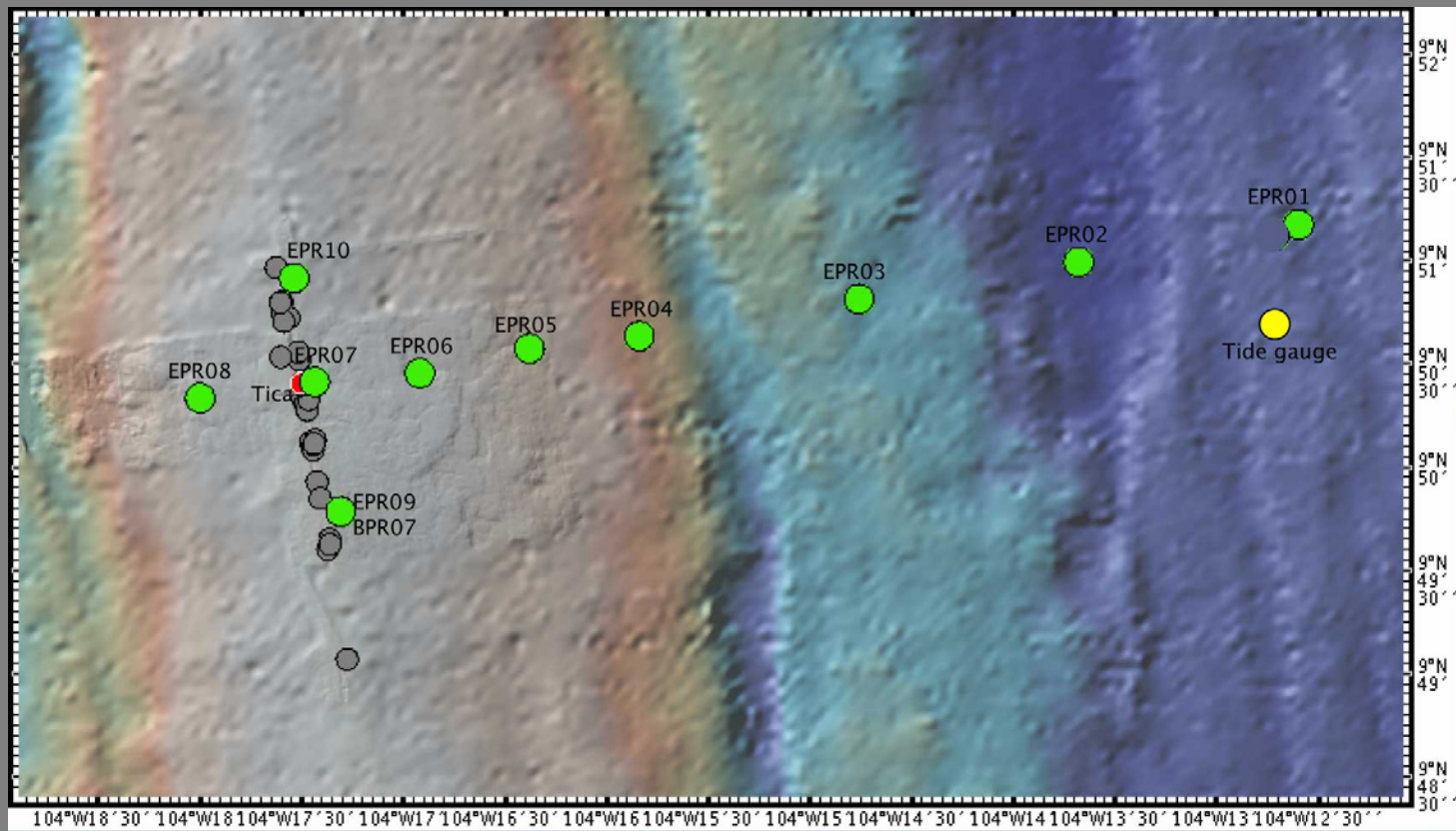


Luther/Nooner East Pacific Rise 2008 with Alvin

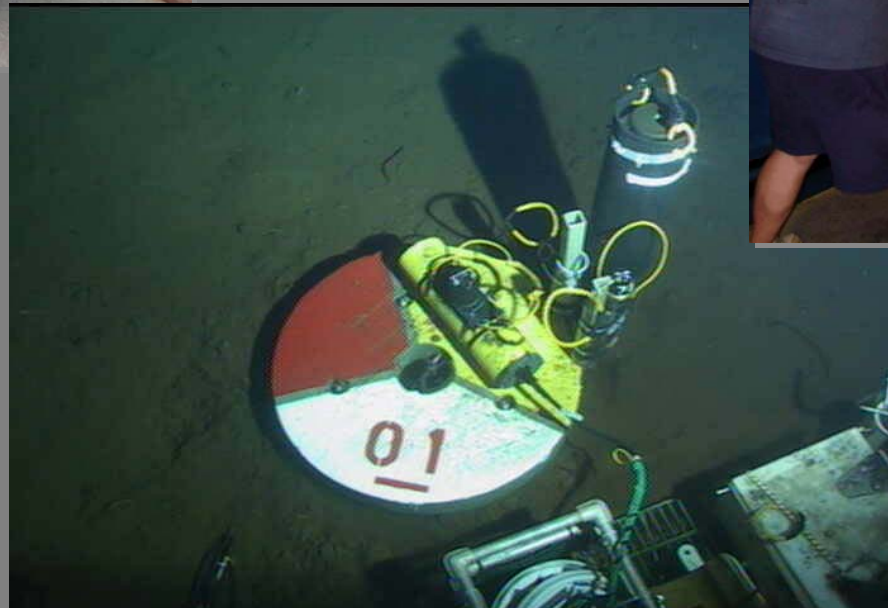
June 3rd - 19th 2008

- Nooner's team objectives:
 - Establish a geodetic network over the 2005/2006 eruption site
 - Make baseline vertical geodesy measurements
- Luther's team objectives:
 - Deploy in situ Electrochemical Analyzer (Insect)
 - Test coupling communication technology

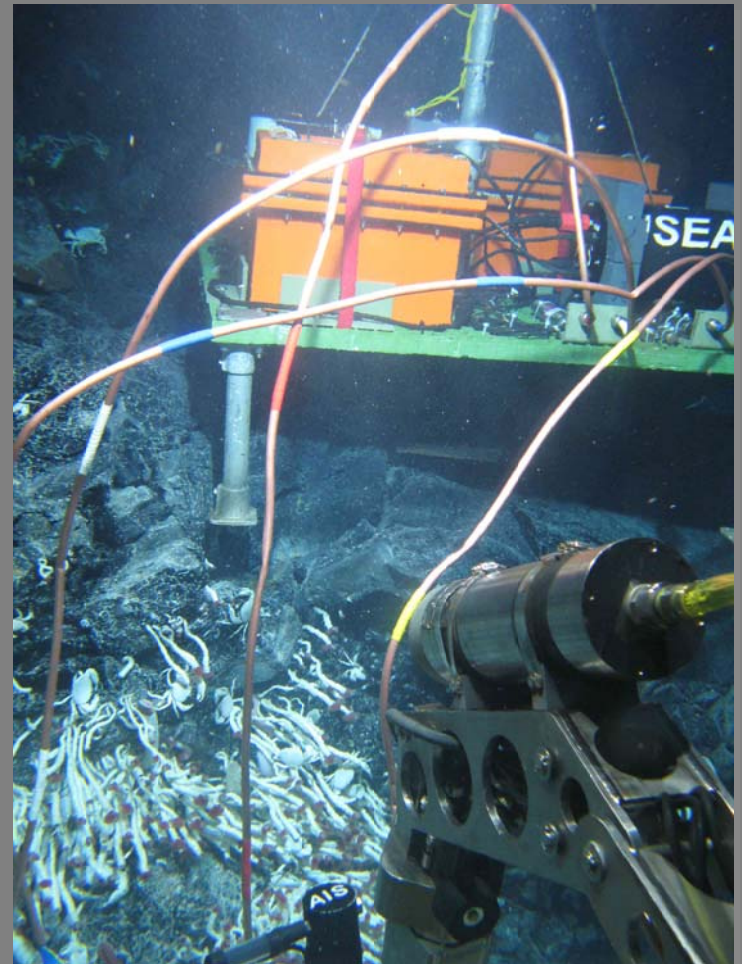
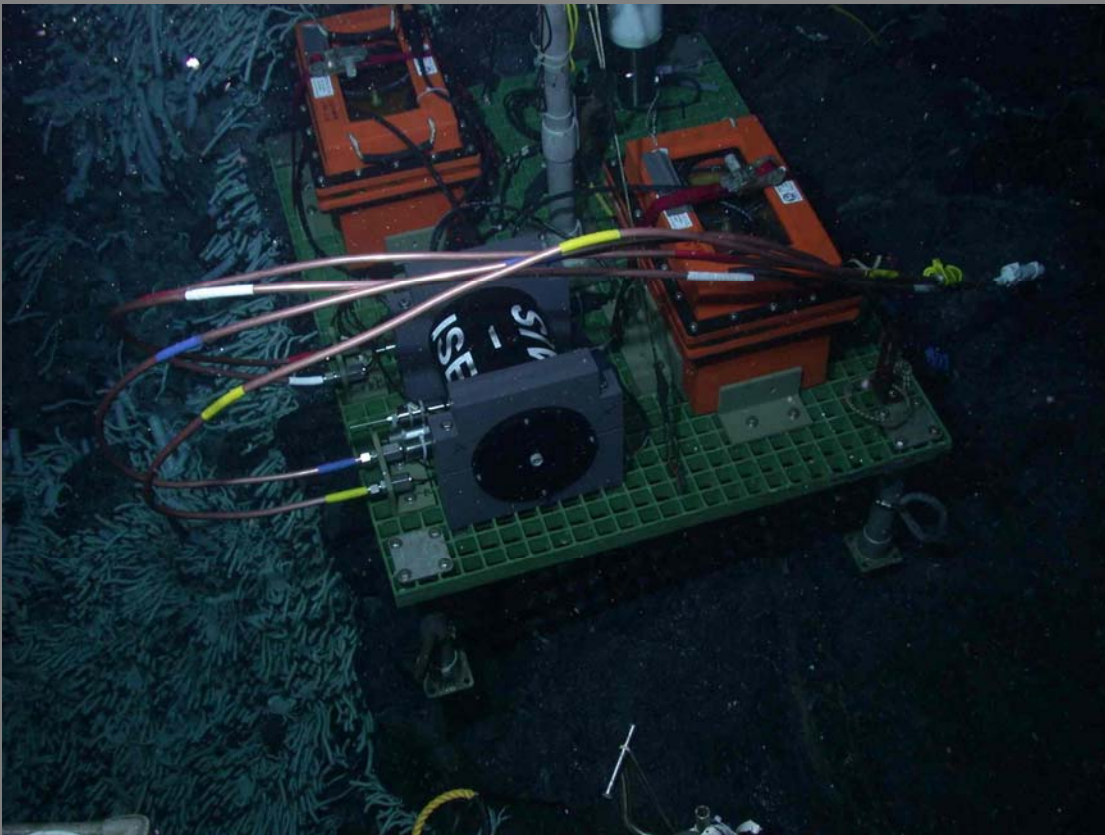
Geodetic Network (Nooner)



Geodetic Network (Nooner)



Insect and in situ Communications (Luther)



Even Biology...



Education and Outreach

- http://www.venturedeeperocean.org/tales/magma_move/
- <http://pubs.acs.org/cen/coverstory/86/8644/cover3.html>



First Timers





AT15-34

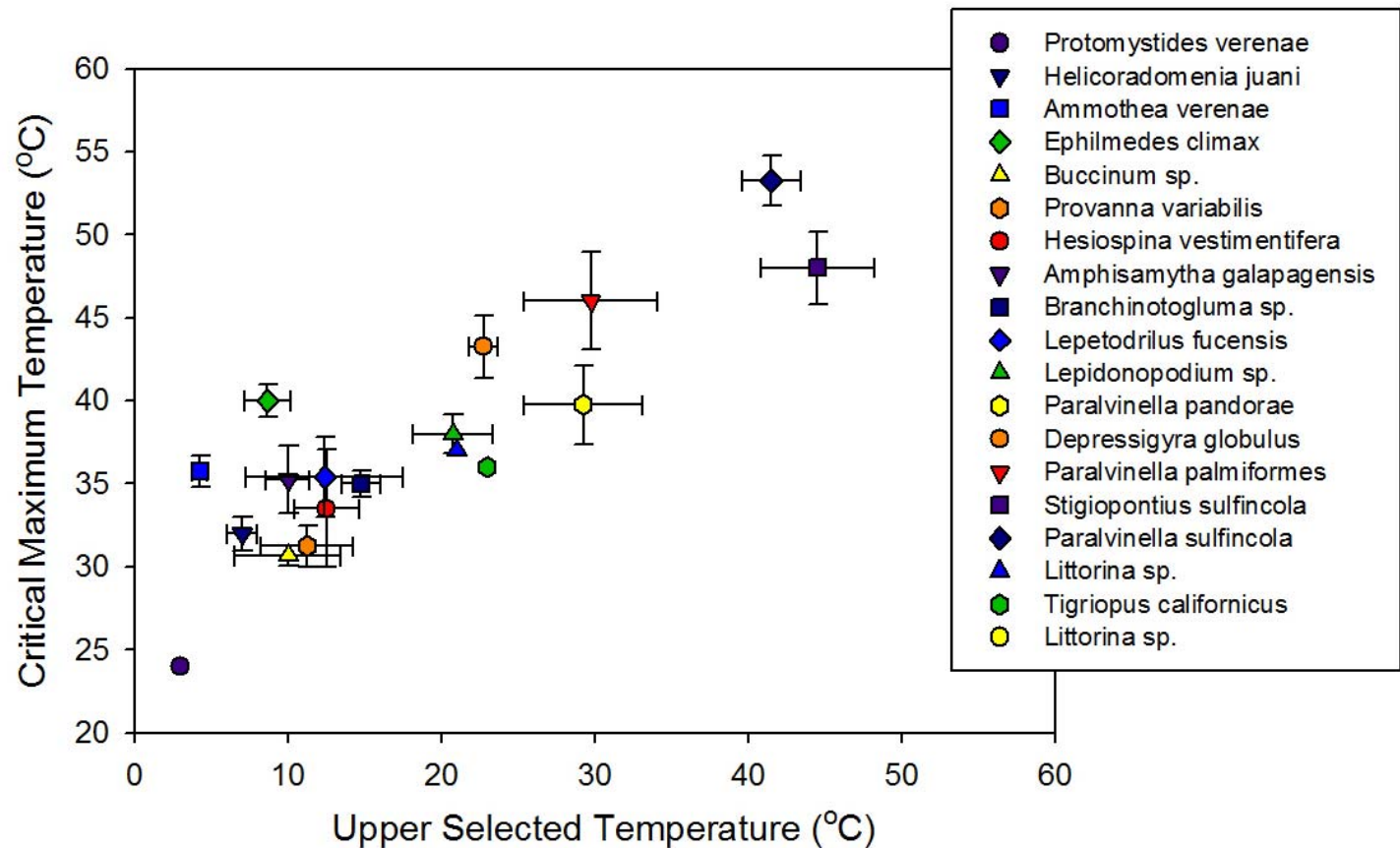
- cruise dates July 5-21, 2007 Juan de Fuca Ridge
- Thermal biology of alvinellid worms - Ray Lee and Peter Girguis PI's
- Hydrothermal vent flow and turbulence measurements - Daniela D'lorio PI
- Vehicles used – *Alvin*

Summary

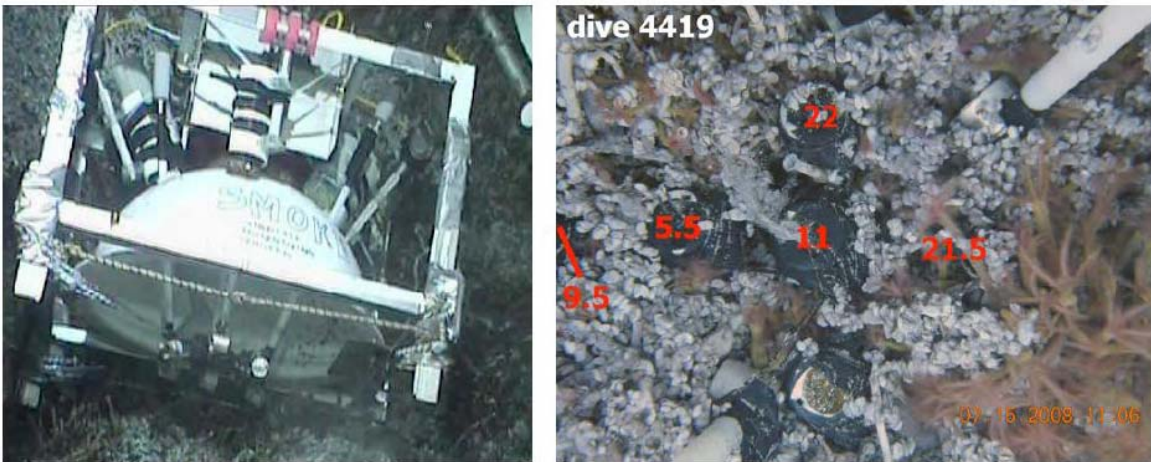
- 15 Alvin dives at Mothra, Endeavour, Clam Bed and Middle Valley
- Alvin ops were “flawless”, effort was above and beyond.
- Biology activities
 - Macrofaunal suction sampling
 - High temperature water sampling
 - In situ time-lapse photography of animal movement in a temperature probe array
 - Shipboard high pressure aquarium experiments testing effects of temperature, sulfide, and anoxia.
 - In situ mass spectrometry

High pressure aquarium studies

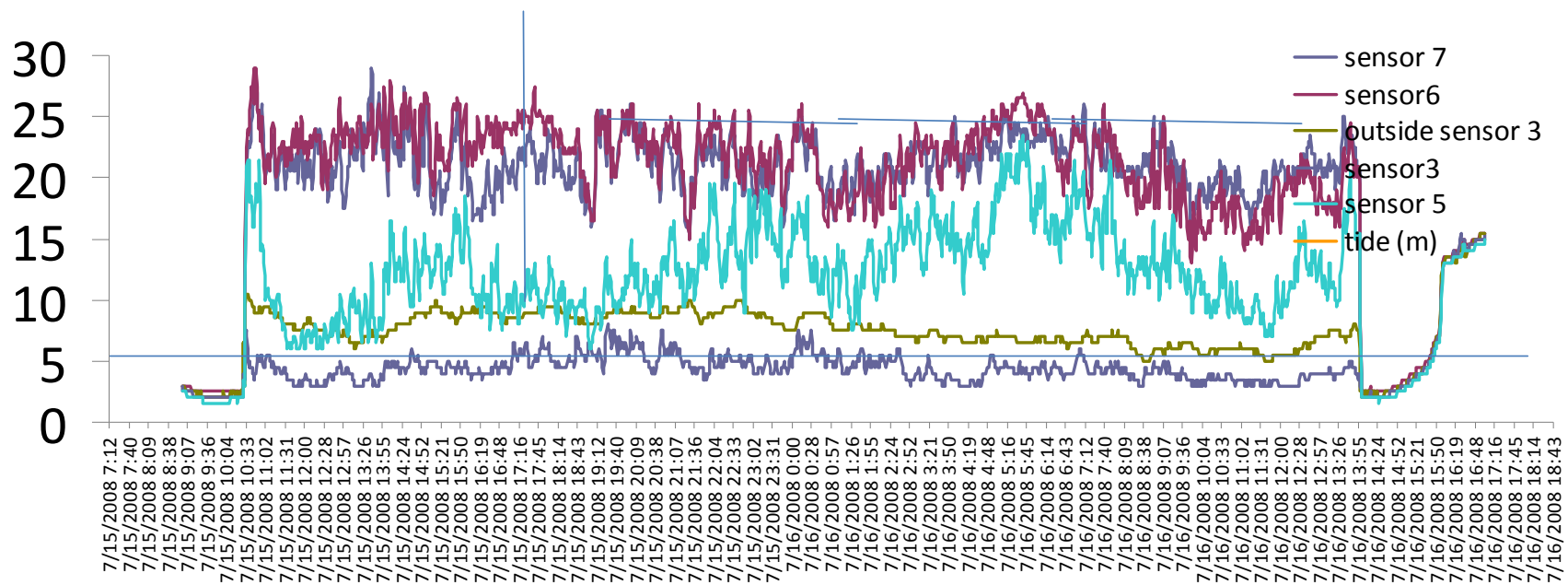
- Thermal limit and preference for all major macrofauna species at Endeavour



In situ time-lapse camera and temperature sensor array



Left: SMOKE is being deployed by the manipulator arm of the submersible Alvin in 2200m depth.
Right: Time lapse picture take by SMOKE. Temperature data were added by image processing software.



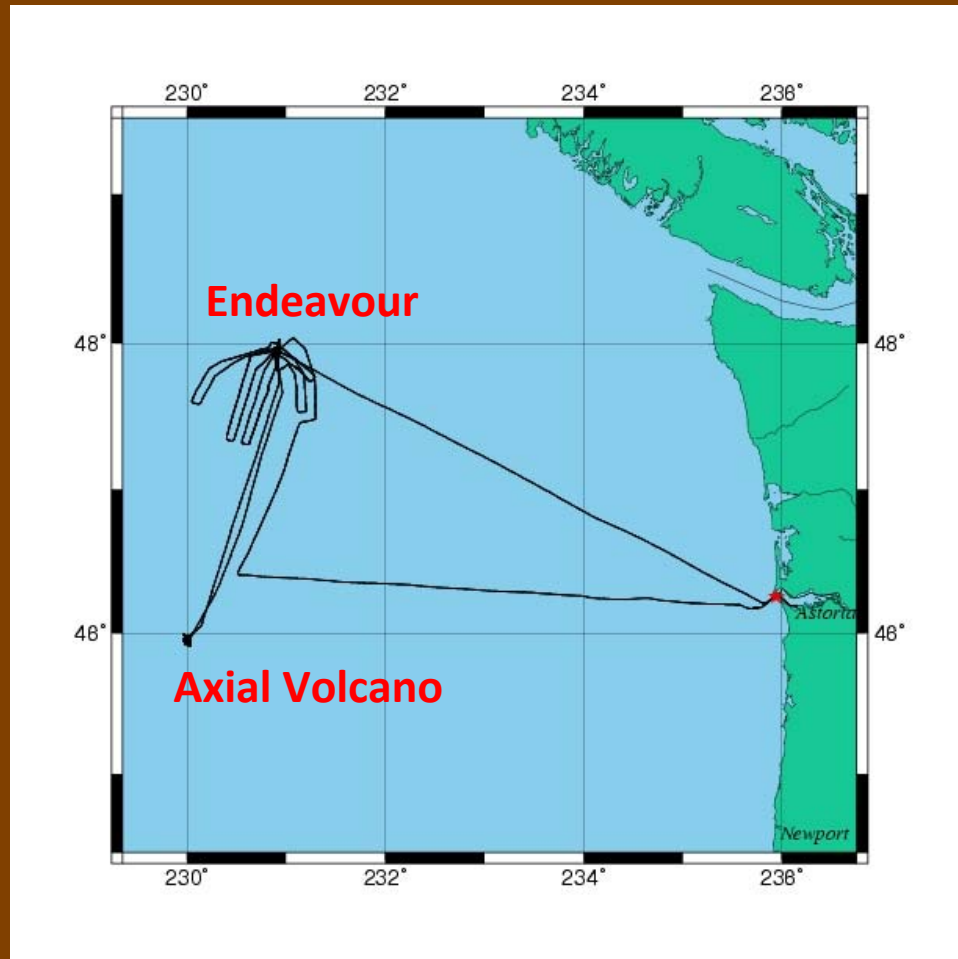
Temperature record over 27 hours

Time-lapse video

- Diffuse flow area
- Images taken every 2 minutes
- Field of view approx 15 x 10 cm



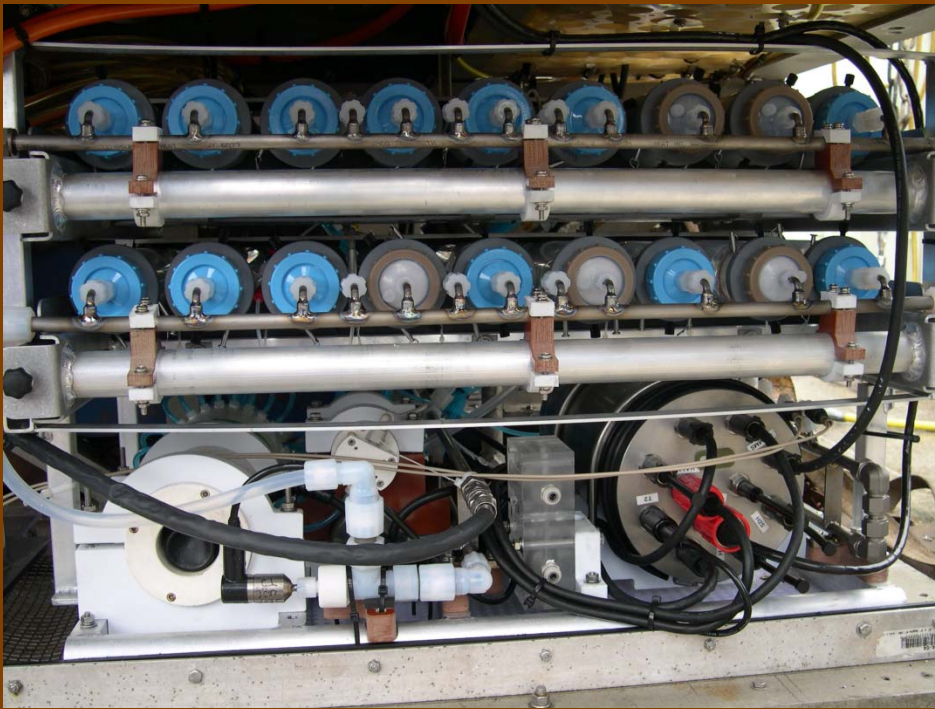
AT15-36 Cruise to Endeavour Segment & Axial Volcano, NE Pacific Ocean August 18 – September 7, 2008



Cruise track

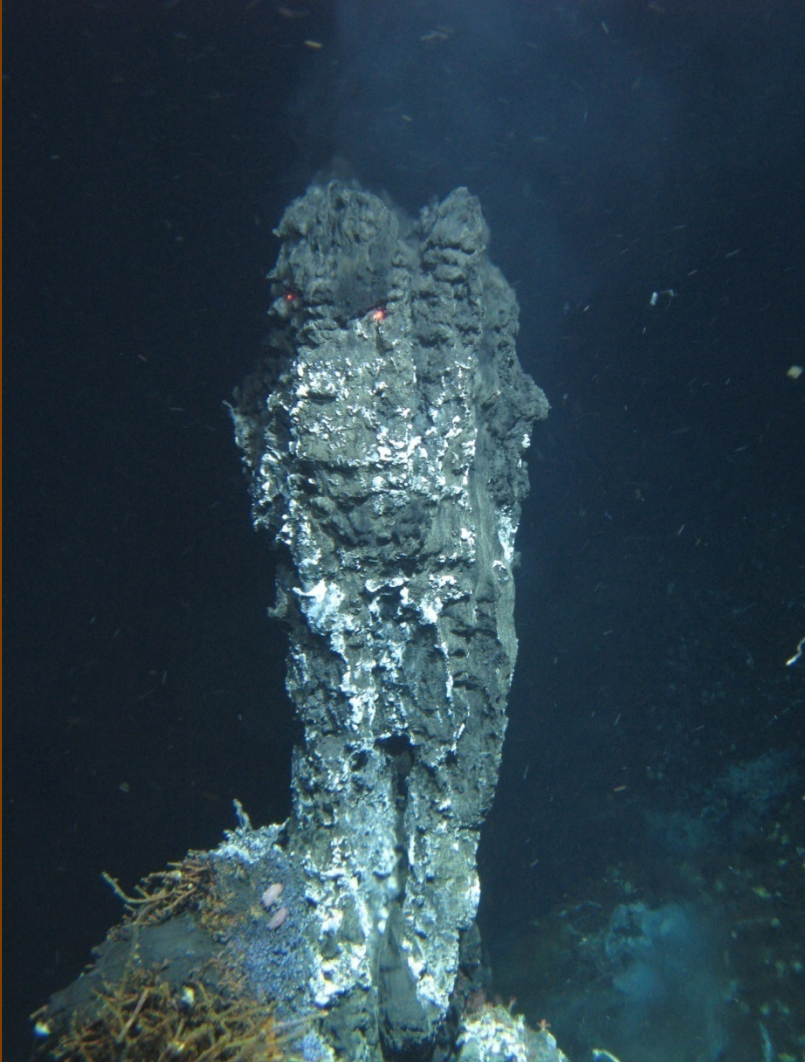
- 18 scheduled *Alvin* dives for 3 funded programs
 - Holden (UMass) et al.: 8 dives
 - Di Iorio (UGA): 6 dives
 - Butterfield (NOAA): 4 dives
- 16 dives completed
 - 2 dives lost to weather
 - 12 dives at Endeavour
 - Main Endeavour: 9
 - Mothra: 1
 - High Rise: 1
 - Sasquatch/Summit Seamount: 1
 - 4 dives at Axial Volcano
- ½ dive used to recover MBARI AUV at Summit Seamount
- DVL largely inoperable, frequent LBL problems, relied often on USBL
- Overall, cruise very successful (Thanks!)

Hydrothermal Fluid Samples Collected for Geochemistry and Microbiology



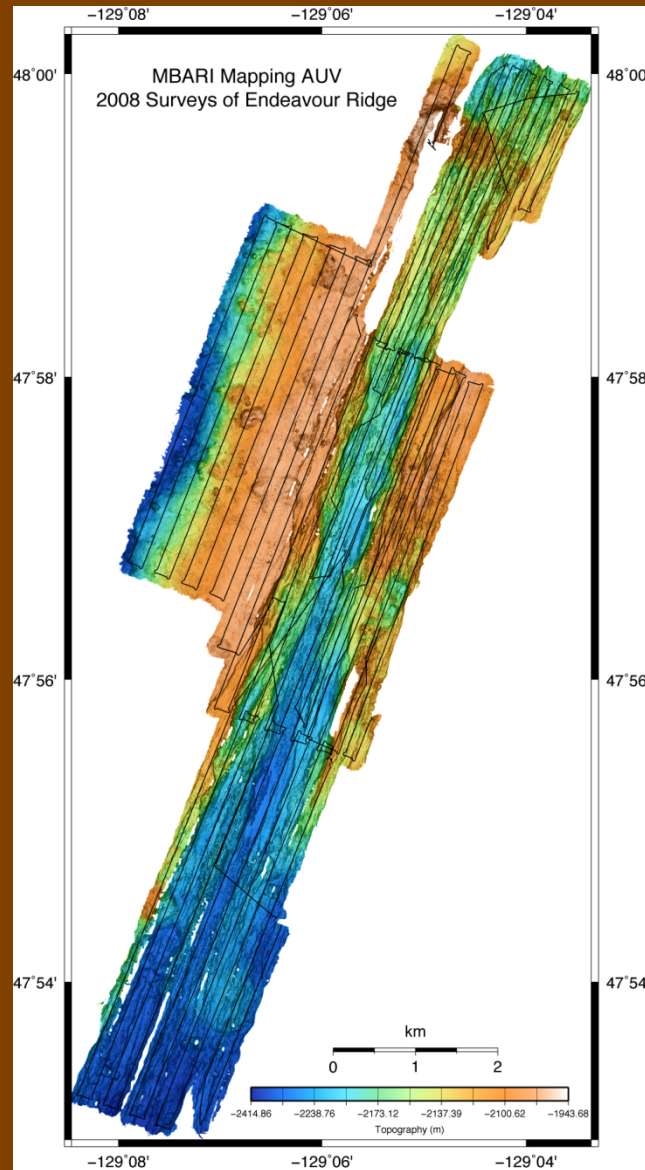
- 220 total fluid samples collected
- 142 fluids collected using NOAA Hydrothermal Fluid Sampler with co-registered temperature meas. (see picture at left)
- 42 gas-tight fluid samples
- 26 major fluid samples
- 10 *Alvin* Niskin samples
- 2 McLane fluid samplers recovered after 1 year, 2 more deployed until next summer (1 each at Endeavour and Axial)

Sulfide Chimney and Deposit Studies, Basalt Samples



- 8 active sulfide chimneys recovered
 - 3 will be used for detailed microbe-mineral-fluid interaction study
- 6 extinct sulfide samples collected
- 3 basalt samples collected
- Detailed heat and fluid flux analyses at 4 massive sulfide deposits in the northern Main Endeavour Field
 - SM2000 horizontal plume surveys at various depths
 - temperature measurements
 - point source flow rate measurements
 - particle samples using Niskins and majors

MBARI AUV Bathymetry



- 12 dives attempted, 6 successful (4 Endeavour, 2 Axial)
- 57 km² of bathymetry at Axial Volcano and Endeavour Segment
- 140 km of track at Axial Volcano
239 km of track at Endeavour (see picture at left)
- 1-m horizontal resolution, 0.1 m vertical resolution
- Navigation error led to grounding of AUV near Summit Seamount, required *Alvin* recovery
- From DESSC perspective, I suggest USBL calibration at the beginning of cruise for INS-navigated AUVs