

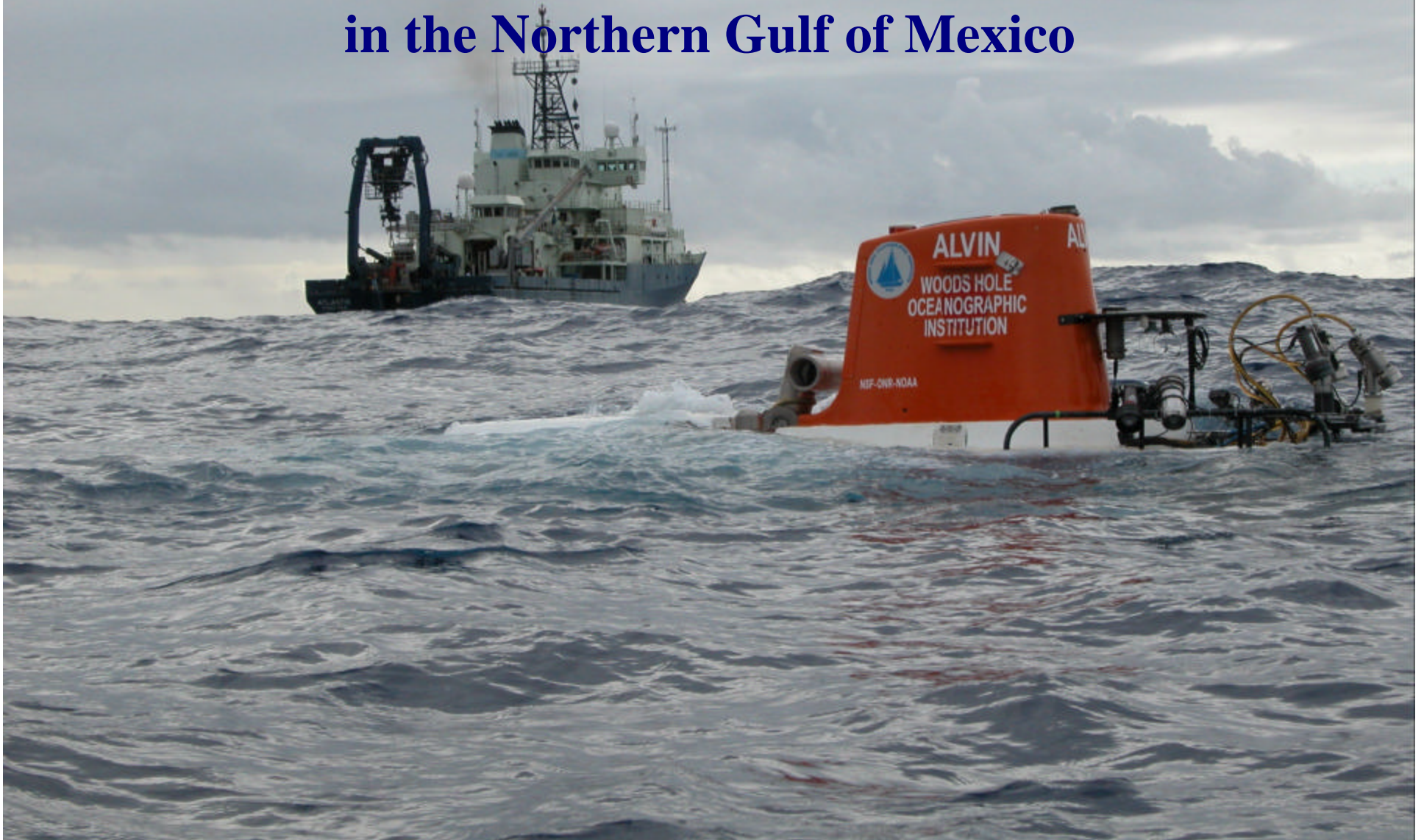
ALVIN REPORTS 2006



May 07- June 02

John McDonough: Ocean Exploration

**An Investigation of the Deep Coral *Lophellia pertusa*
in the Northern Gulf of Mexico**

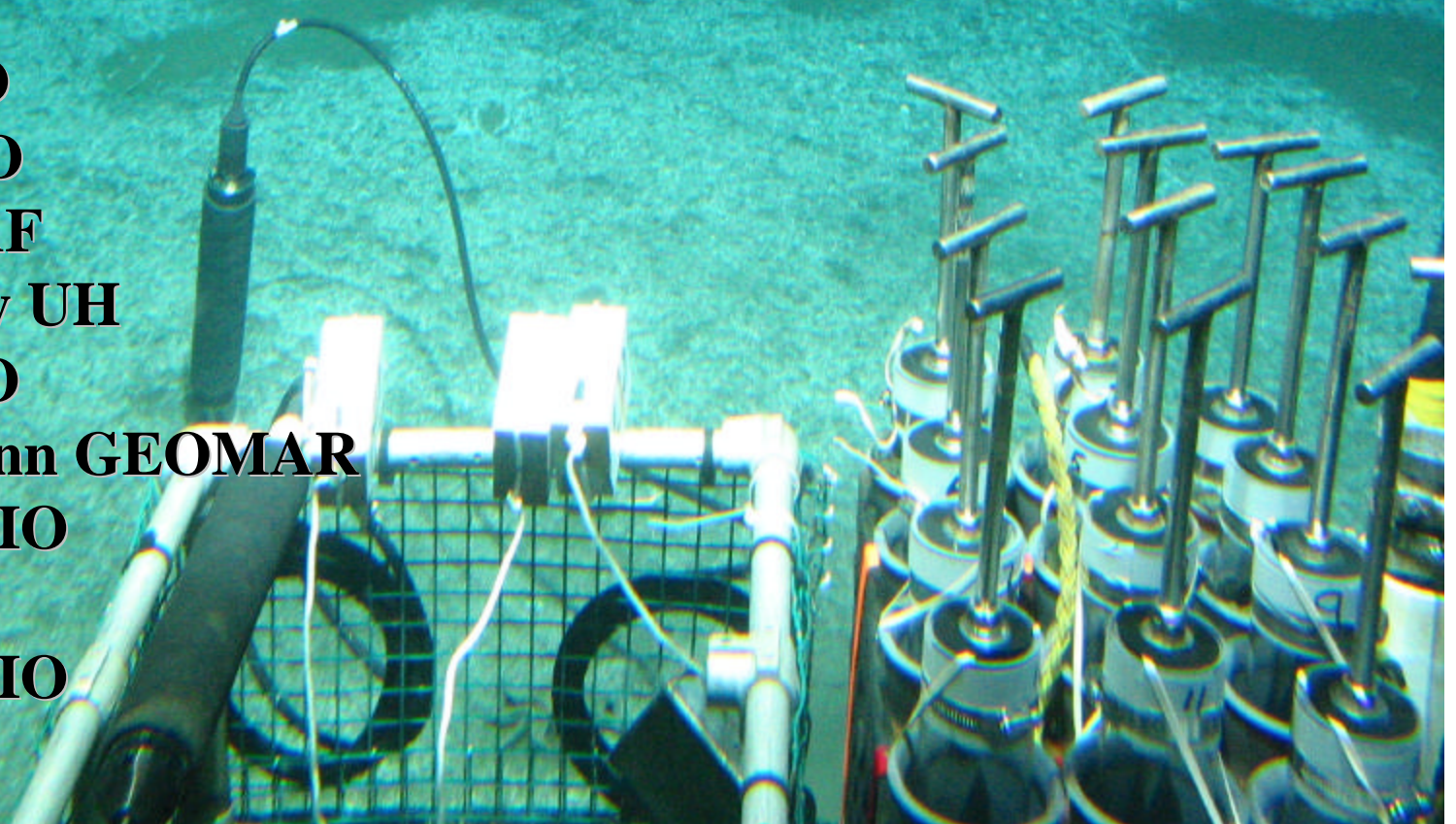


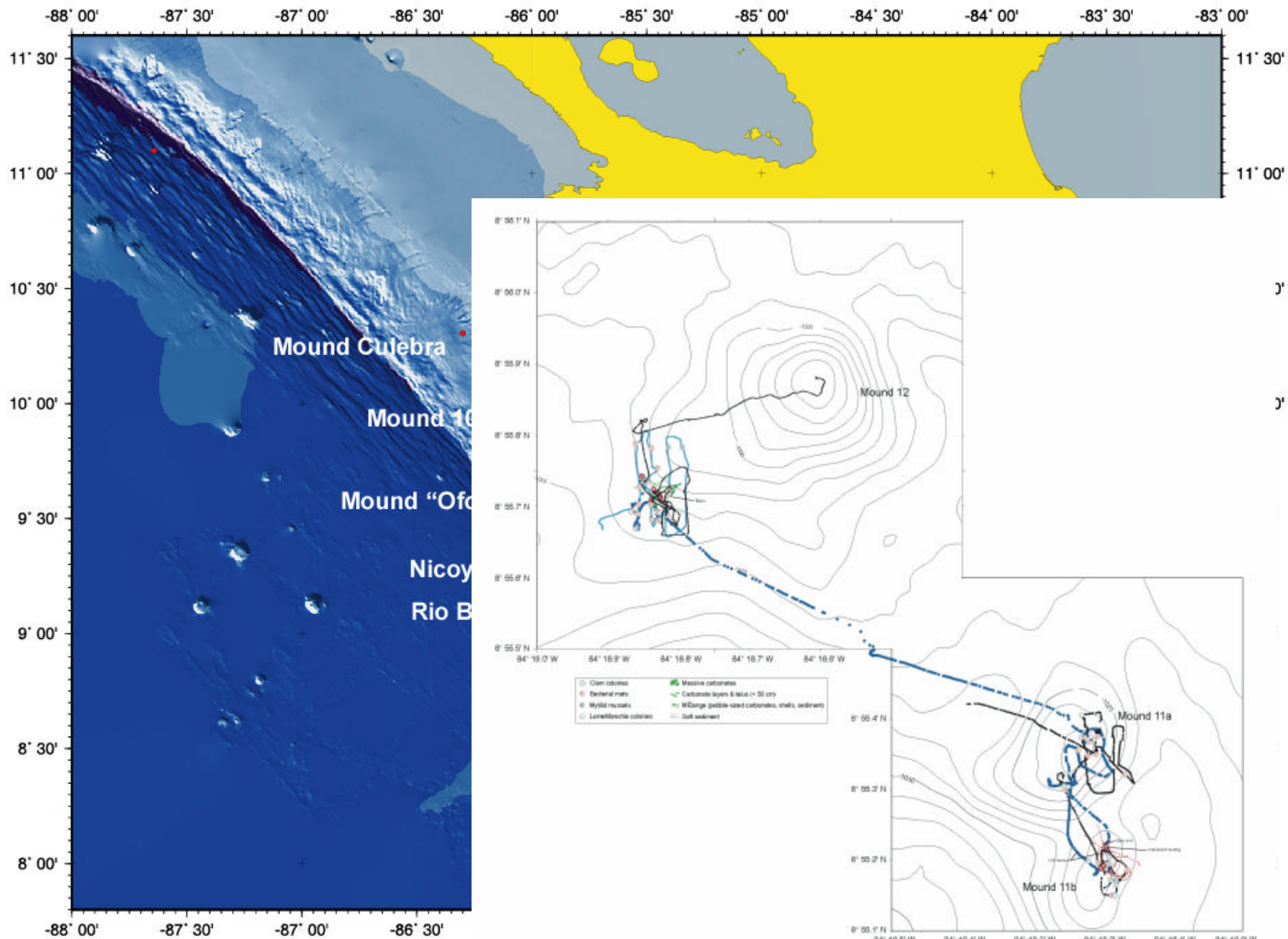
Quantifying Elemental Fluxes and Fluid Origins at the Costa Rica Forearc Using Novel Submarine Instrumentation

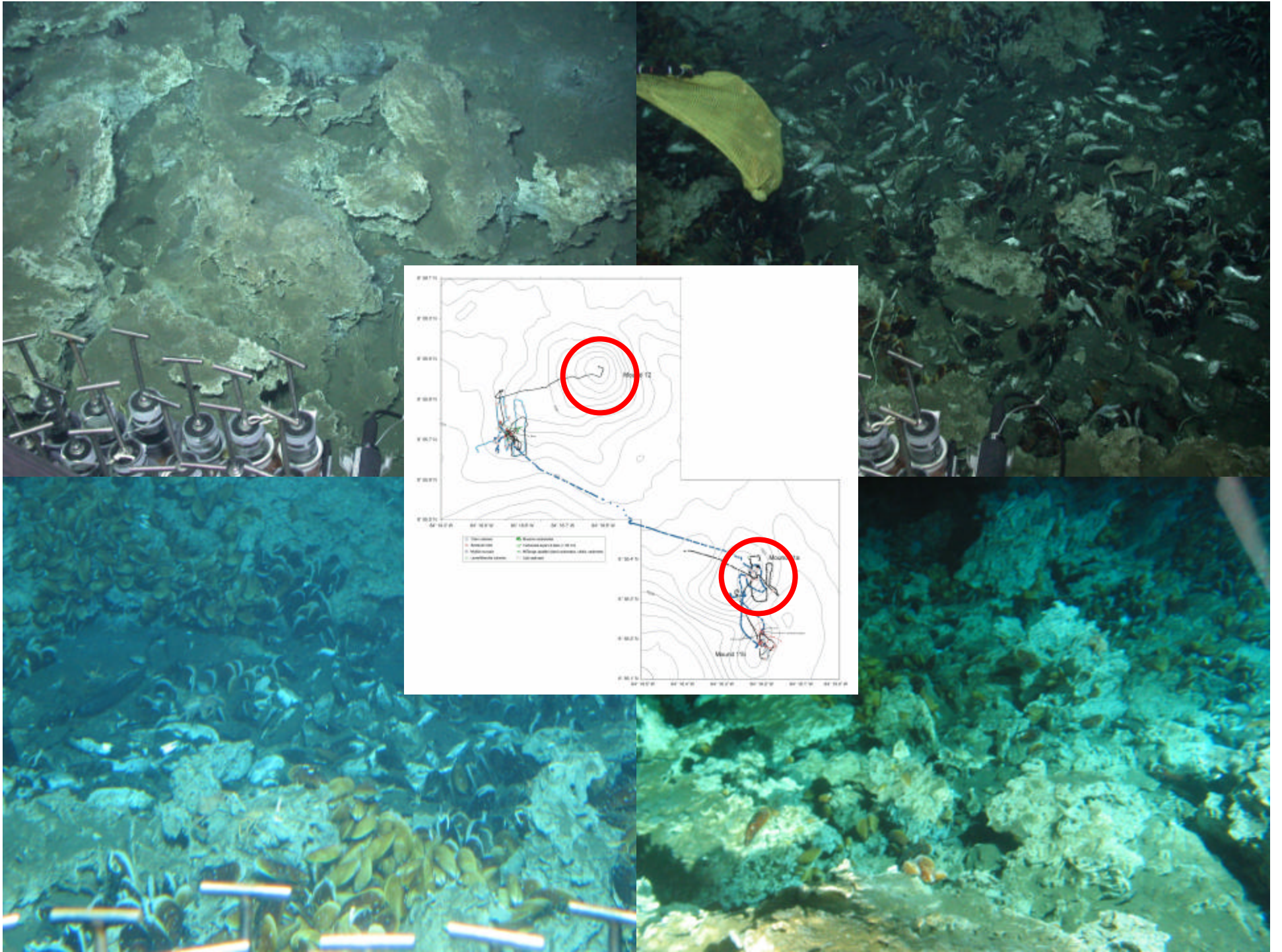
Alvin/Atlantis AT 11-28 and 15-5

June 2005 and June 2006

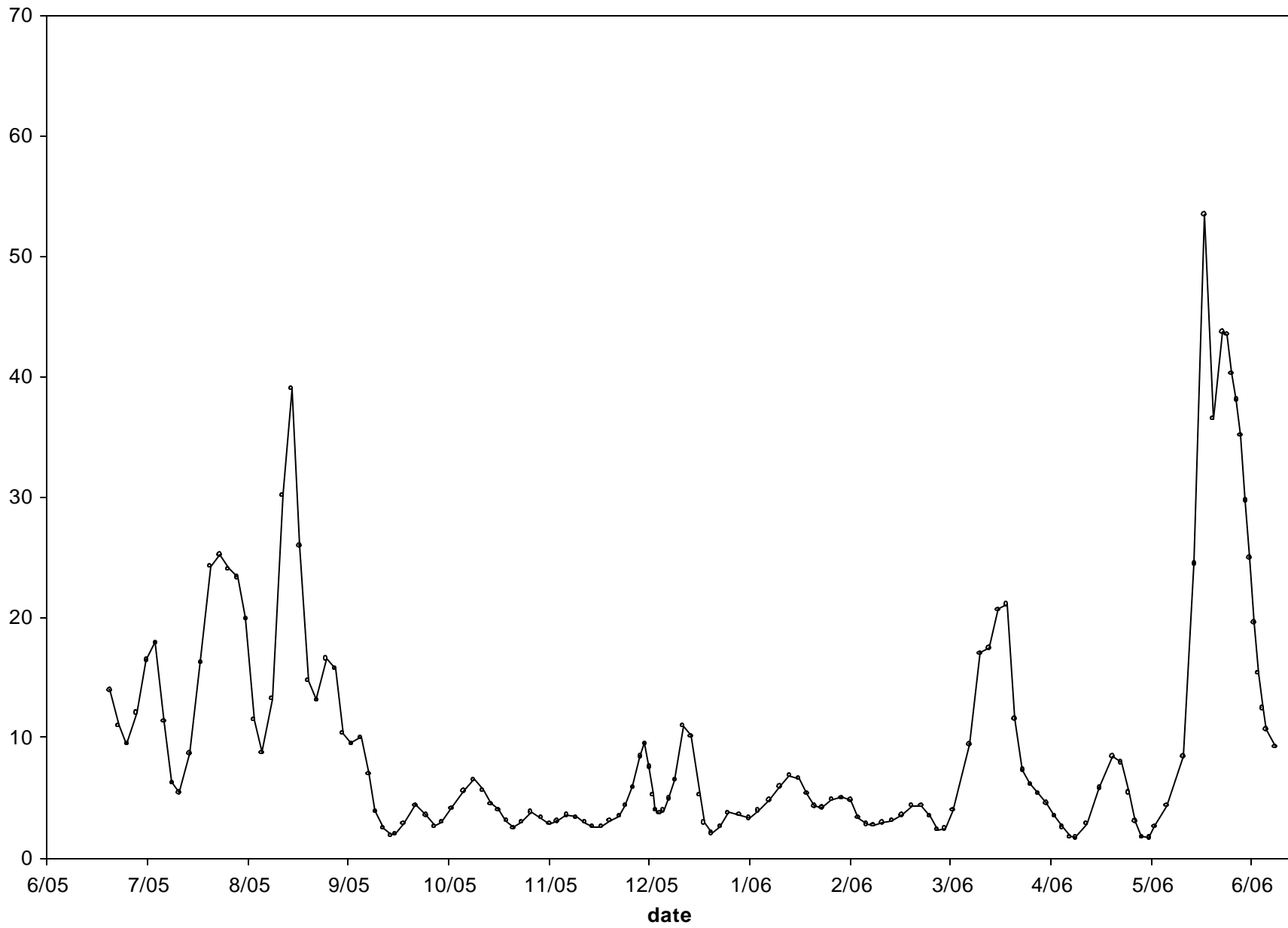
D. Hilton SIO
K. Brown SIO
G. Wheat UAF
G. McMurtry UH
M. Tryon SIO
W. Brückmann GEOMAR
A. LaBonte SIO
E. Füre SIO
A. Thurber SIO



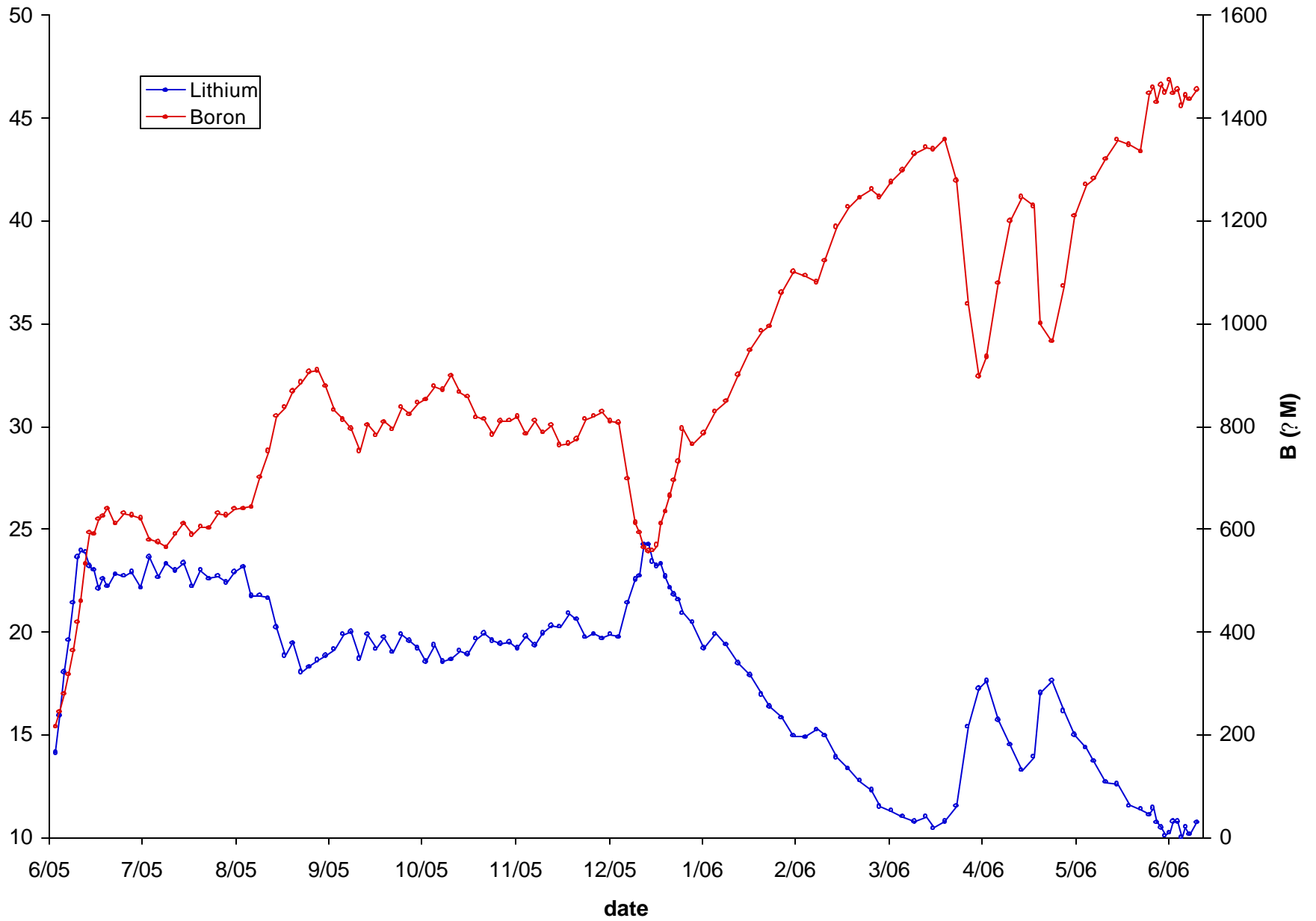




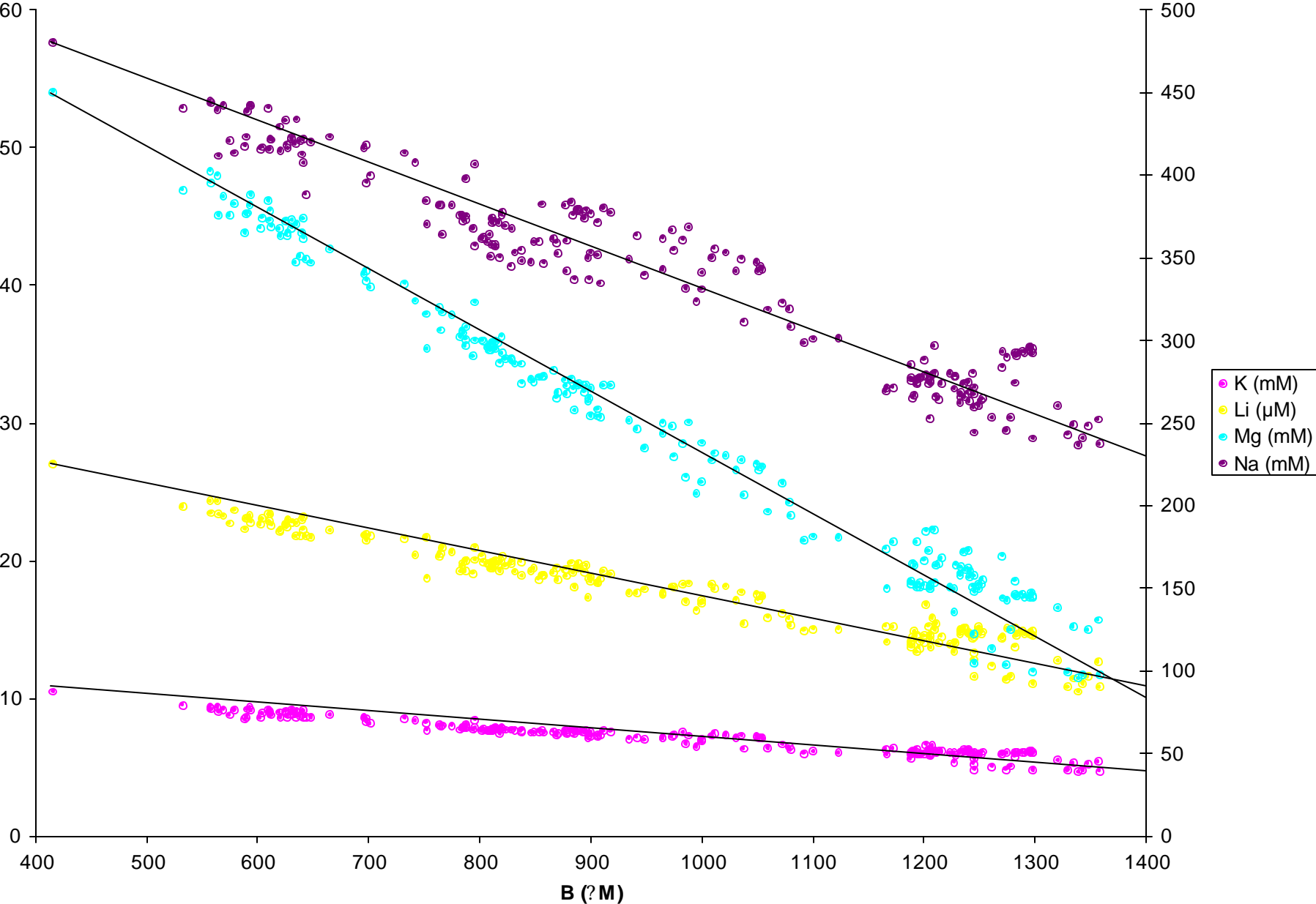
flux rate



Lithium and Boron



Mixing Lines





All Objectives Accomplished!

9 Days on site with 9 Dives

>1/2 km² surveyed

8 Instruments deployed and recovered

5 Peepers deployed and recovered

**>100 push cores collected for chemistry,
biology, and sediment**

**Clams, mussels, crabs, tubeworms, and rocks
collected**

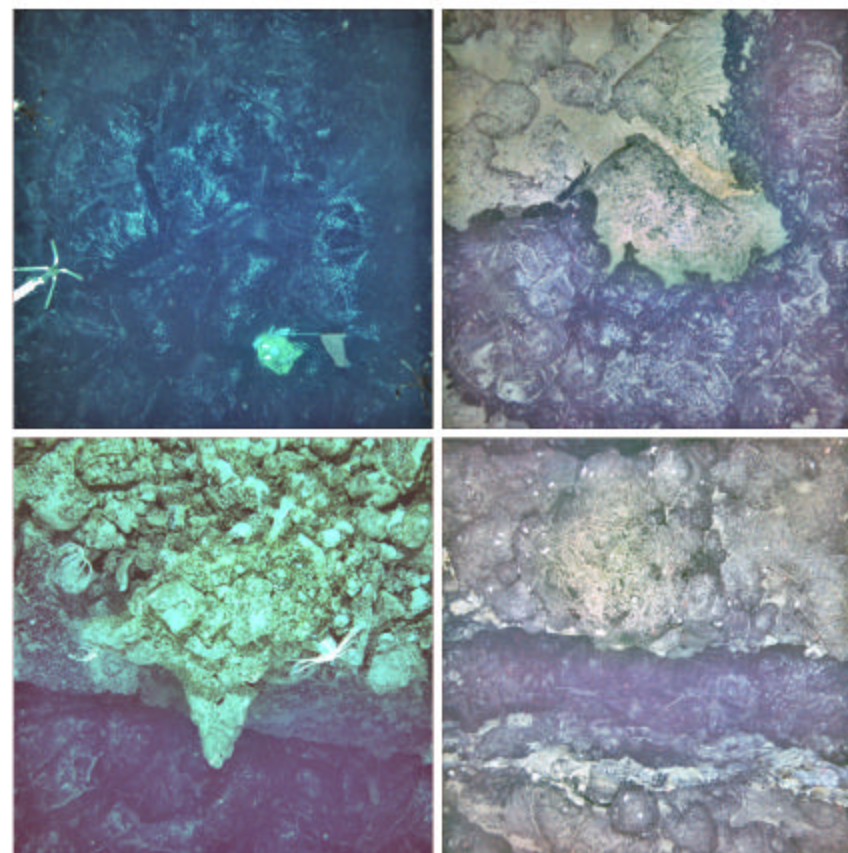
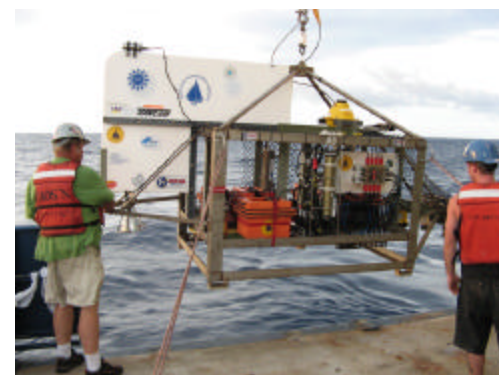
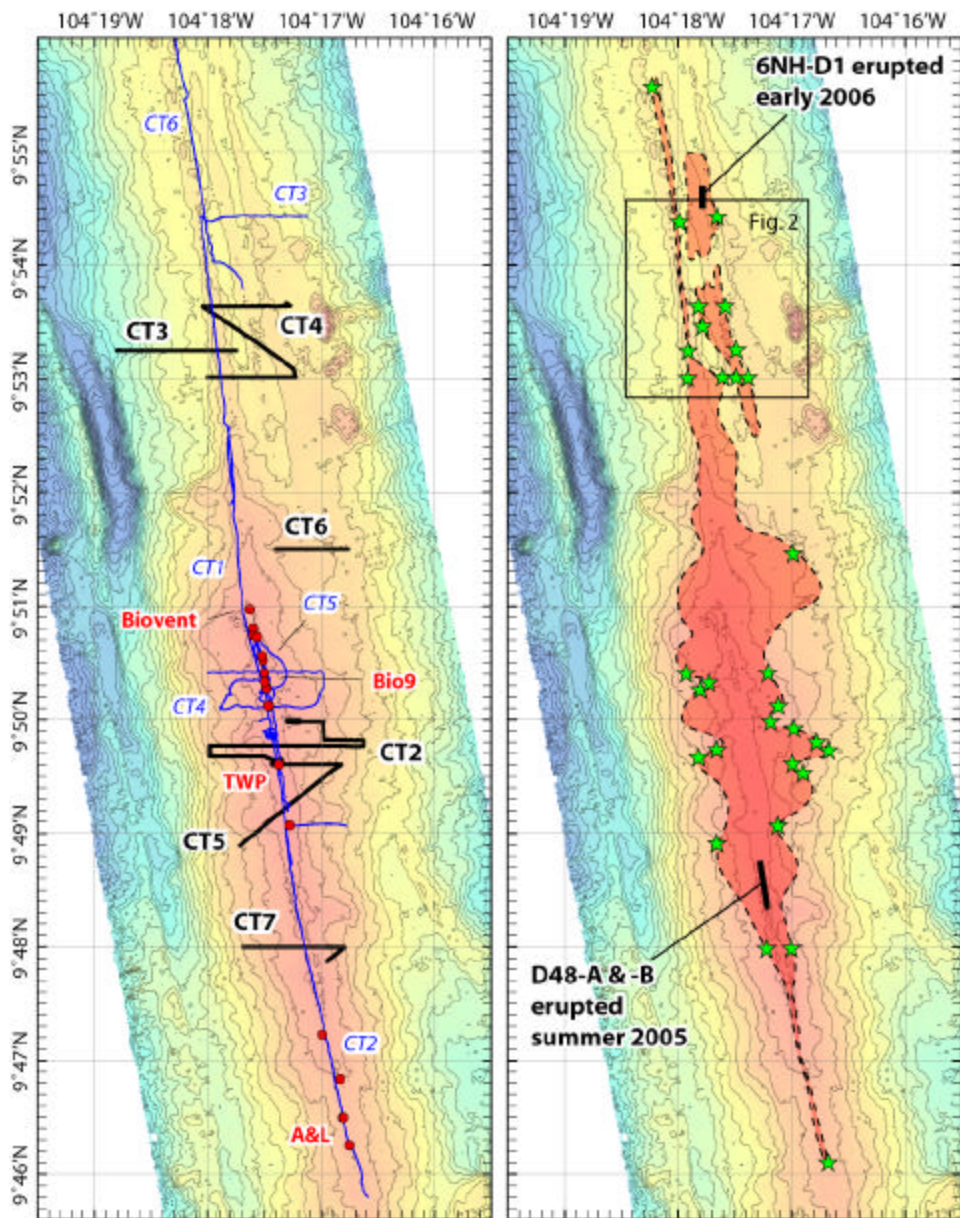
12 Heat flow measurements

Jun 18-July 17

Karen Von Damm (Marv Lilley)

**Response Cruise to the April 2006 Eruption Site
at the R2K EPR 9°N Integrated Study Site (ISS)**

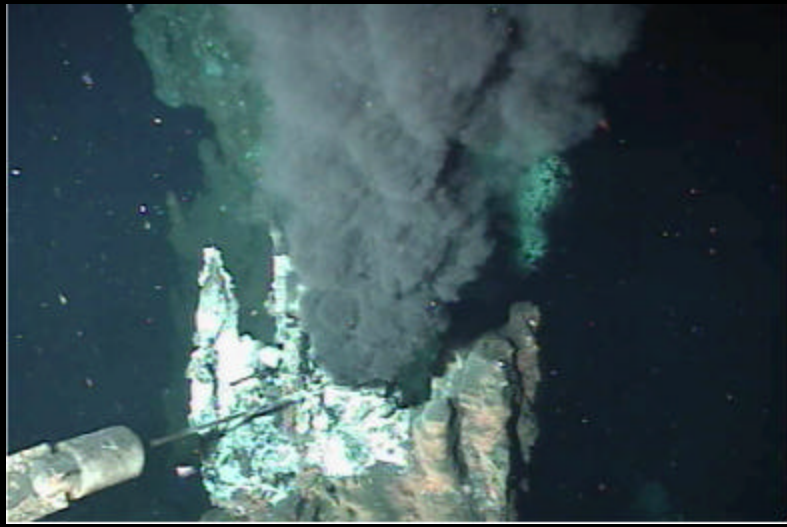




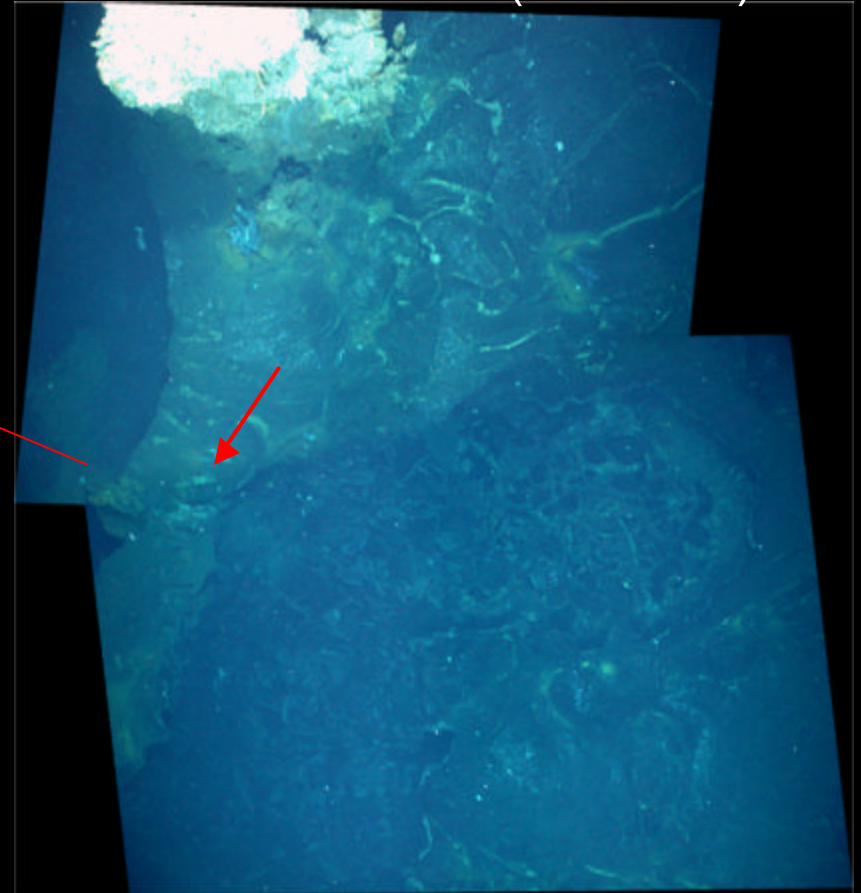
— RESET06
— NewHorizon06

● Vents
★ Lava contacts

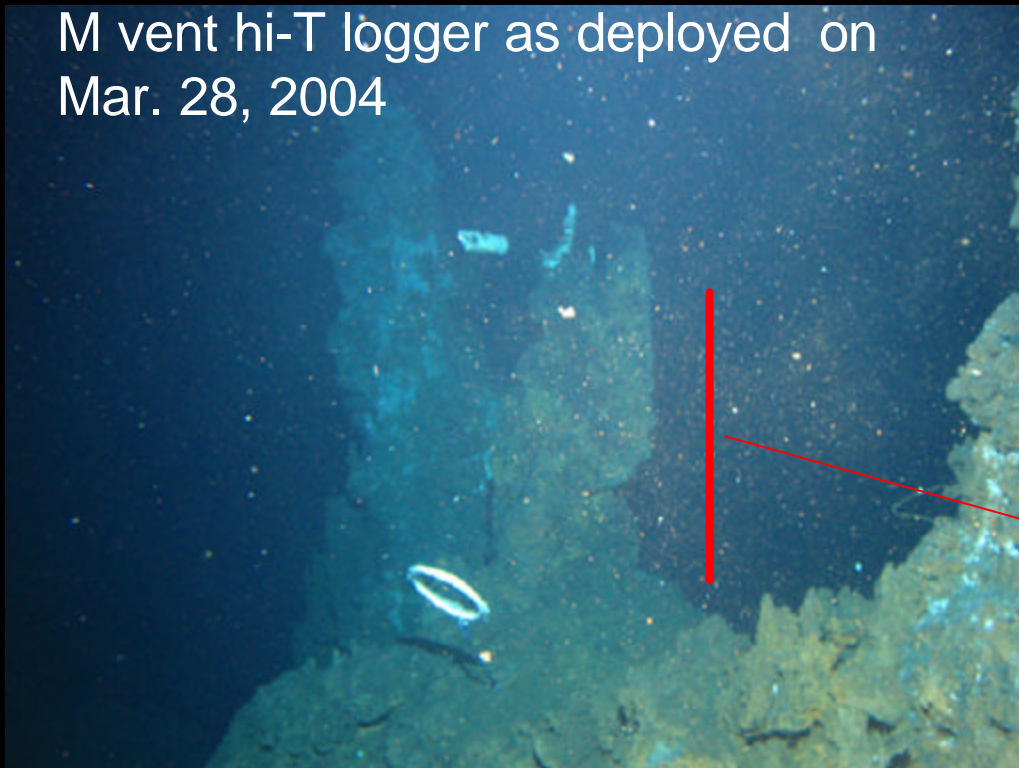
■ Inferred lava flow boundary



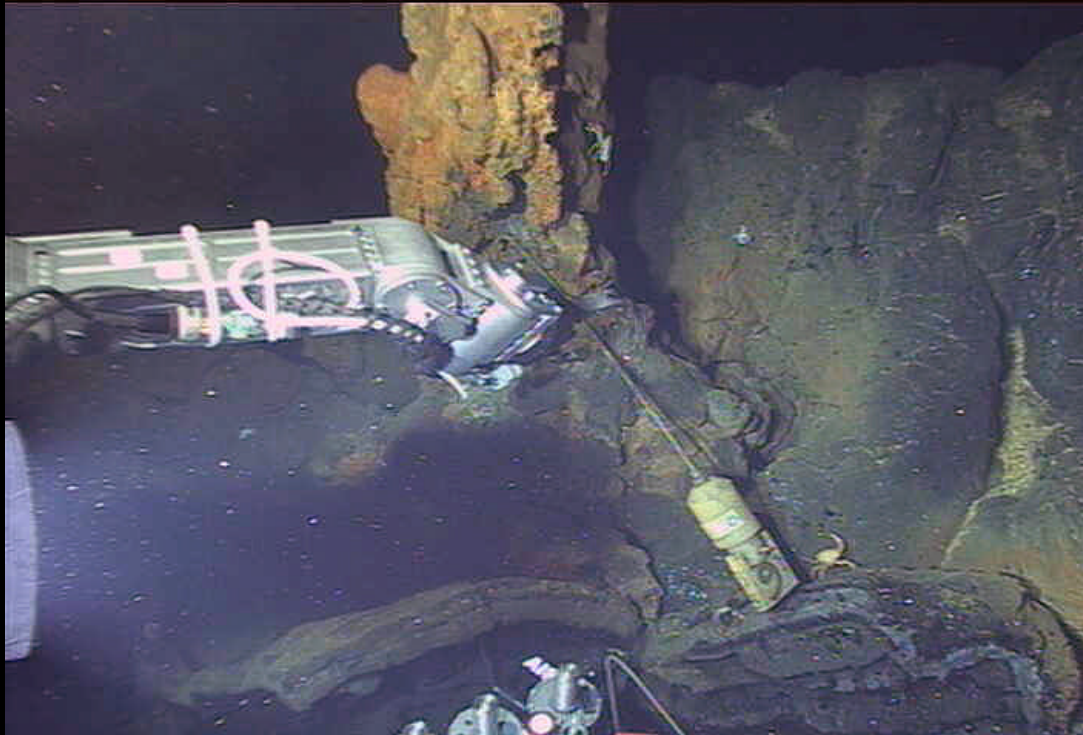
M vent hi-T logger - May 2006
TowCam mosaic (T. Shank)



M vent hi-T logger as deployed on
Mar. 28, 2004

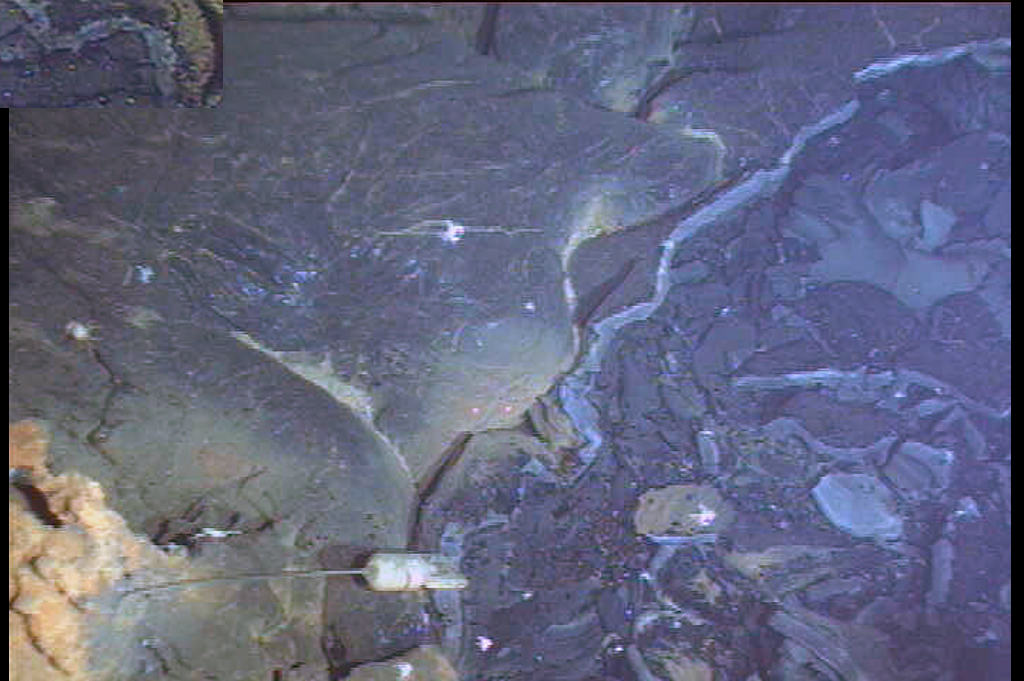


Compare this distance
between logger and
seafloor with next
images from D4202



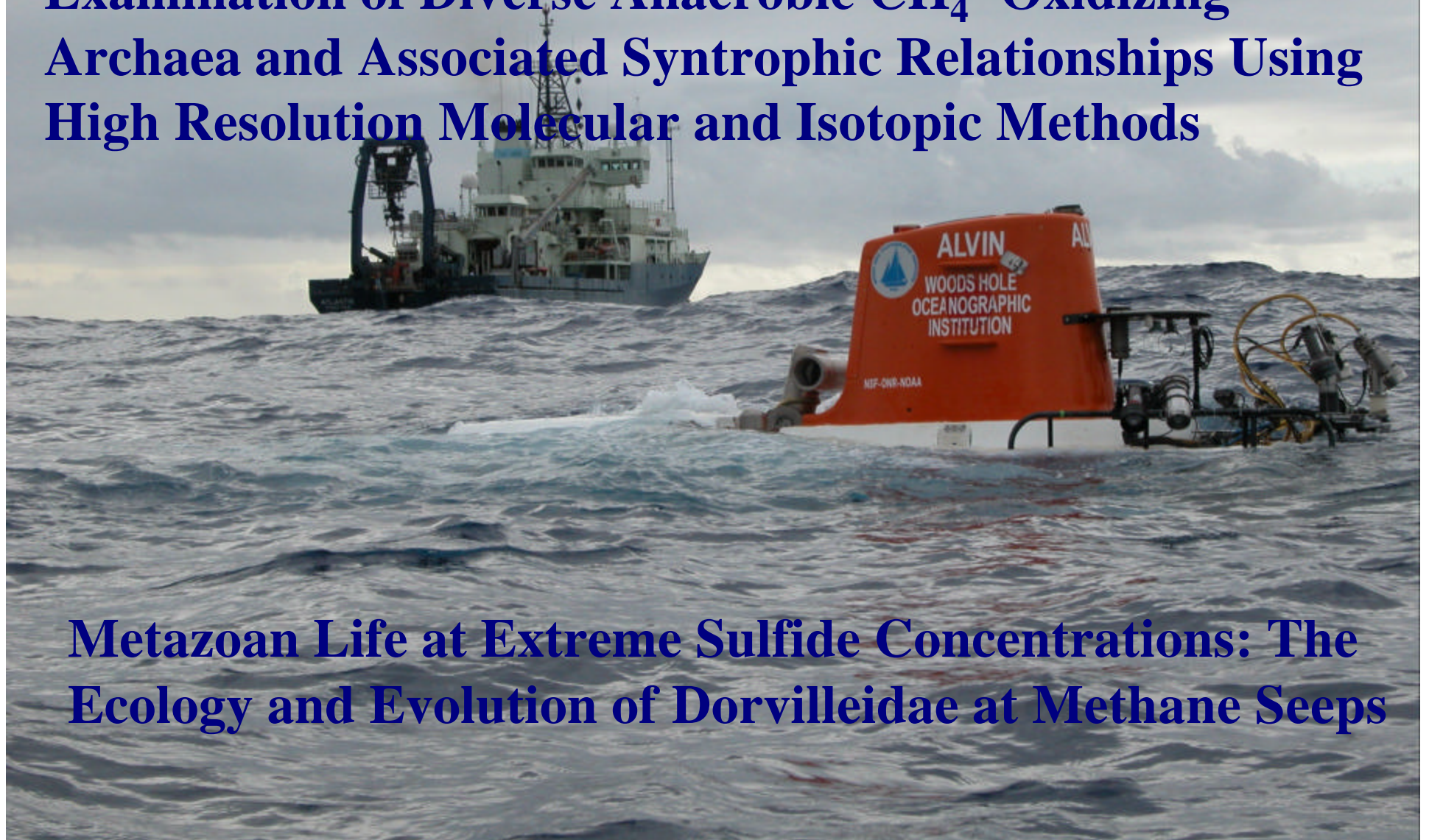
M vent logger recovery -
Dive 4202

New lava surrounds and
buries by ~1 m base of
old inactive chimney



**July 10-July 30 Lisa Levin, Vicki Orphan
September 26 - October 13**

**Examination of Diverse Anaerobic CH₄ -Oxidizing
Archaea and Associated Syntrophic Relationships Using
High Resolution Molecular and Isotopic Methods**



**Metazoan Life at Extreme Sulfide Concentrations: The
Ecology and Evolution of Dorvilleidae at Methane Seeps**

Dorvilleid Polychaetes as a Model to Study the Evolution and Ecology of Metazoan Life at Extreme Sulfide Concentrations

Atlantis/ALVIN

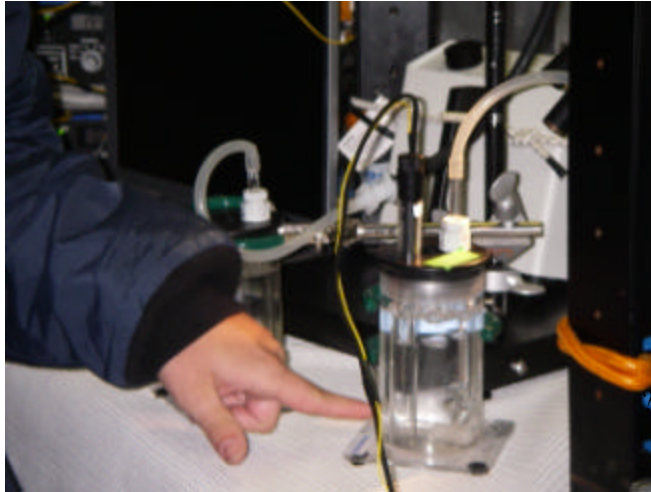
July 10-30 and
Sept. 26-Oct.13,2006

Hydrate Ridge and
Eel R. Methane Seeps

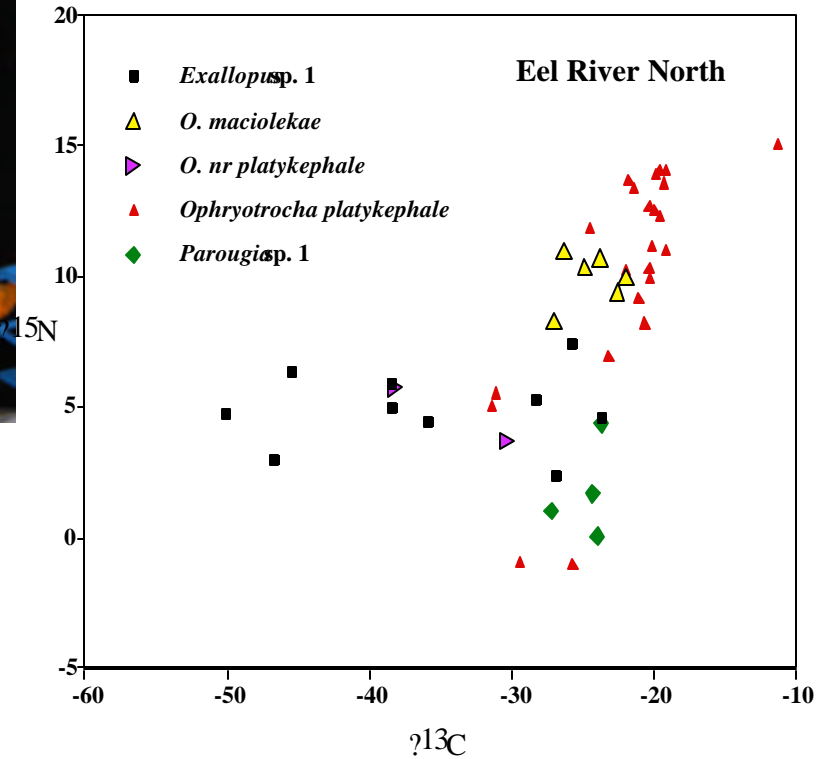
- 18 Dives
- 110 Tube cores
- 85 CTD Casts
- 25 Scoops
- Multiple Rocks
- 8 short-term/20 long-term sulfide experiments
- 18 wood and rock colonization experiments
- 40 + Multicore drops

PIs : L. Levin (SIO), W. Ziebis (USC),
R. Lee (Wash State), K. Halanych (Auburn)

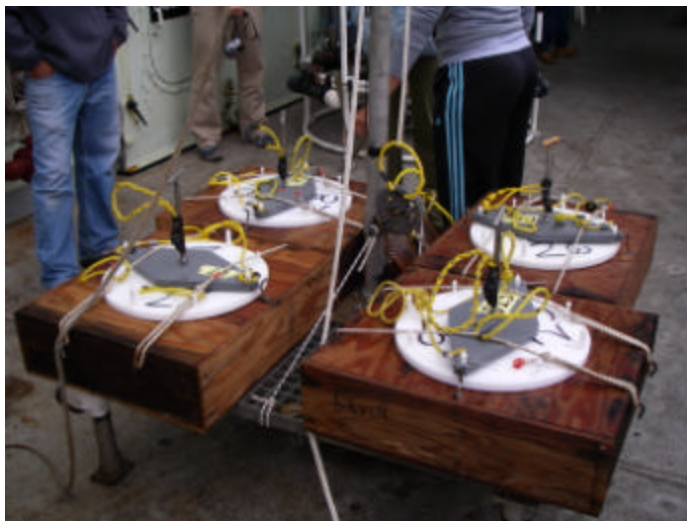
Microscale characterization of geochemical environments



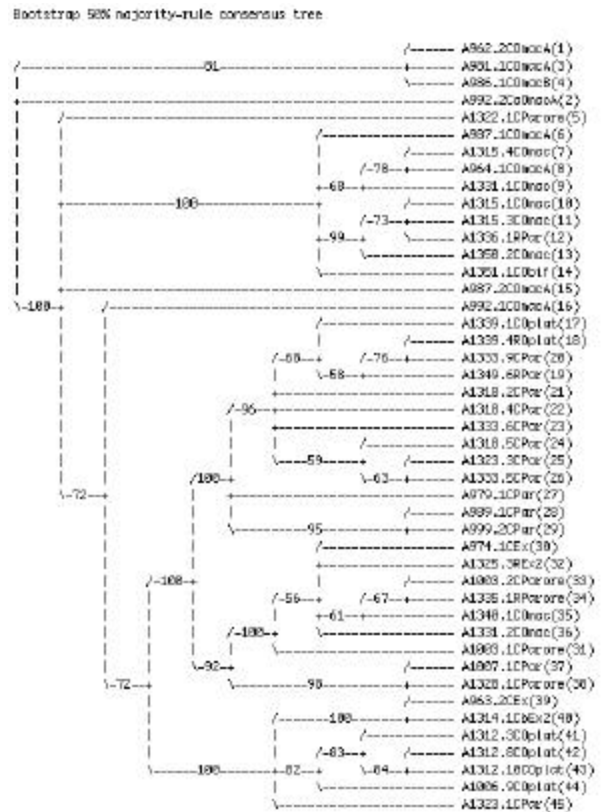
Isotope and lipid studies of
habitat partitioning by diet



Colonization experiments to study settlement response to sulfide



Physiological studies of sulfide tolerance and adaptation



Molecular analysis of dorvilleid evolution in relation to sulfide

August 3-20 Ken Smith



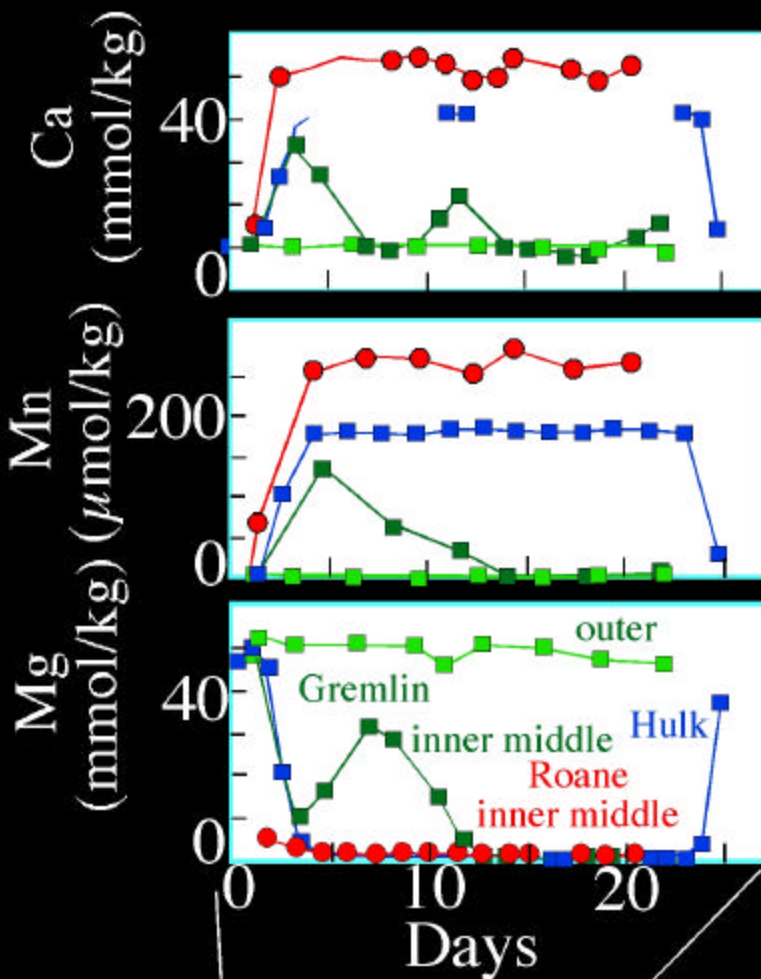
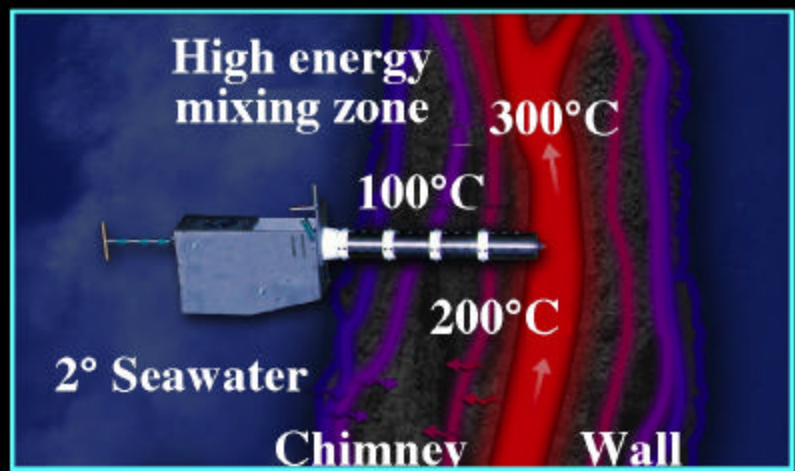
An autonomous bottom-transecting instrument for making long time-series measurements of phytoplankton fluorescence and acoustically detectable sediment structure to abyssal depths

Aug 25-Sept 11 D. Kelley & Marv Lilley

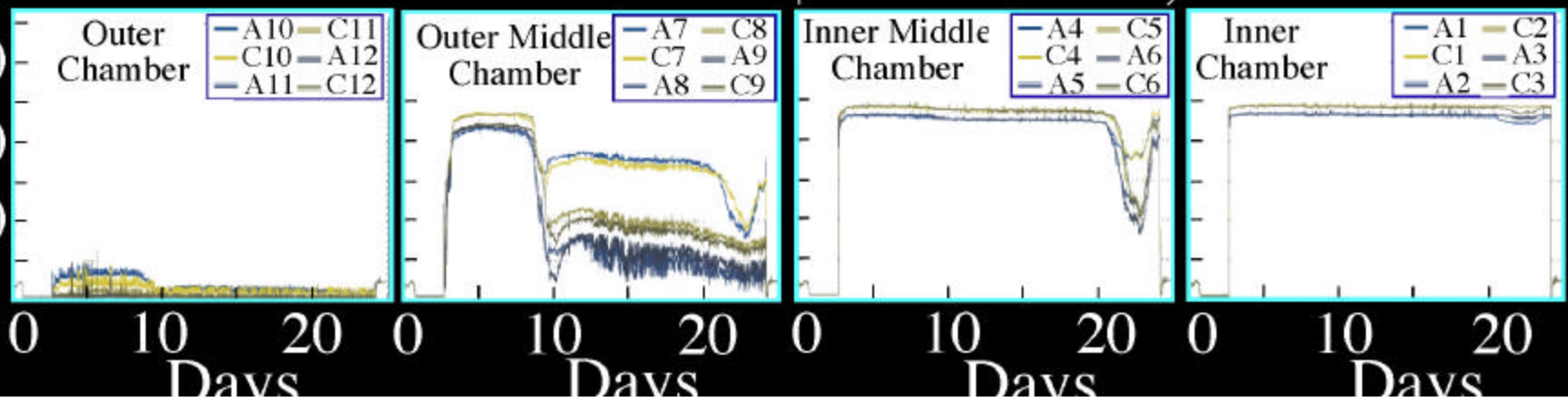
**Determining the Limits to Life in Submarine
Hydrothermal Systems: Active Sulfide Deposits as
Natural Laboratories**



**Smart Sensors for In-Situ monitoring of Hydrothermal
Vent Systems**



Temperature (°C)





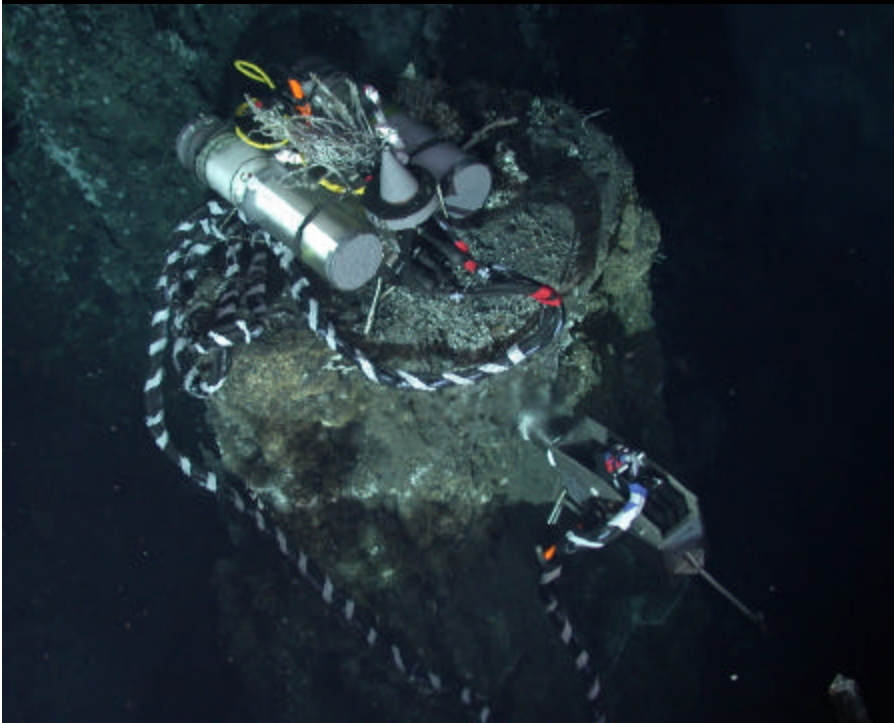
Recovered two incubators after 1-year deployment;

Both instruments worked full year with in situ temperature (36 probes, 20 min), H_2 , and fluid in 1-2 chambers, + microbes, sulfides, anhydrite

Deployed several poor-man incubators for another year

First time sampled fluids in all 5 fields since 2000

Several students dove in Alvin for the first time

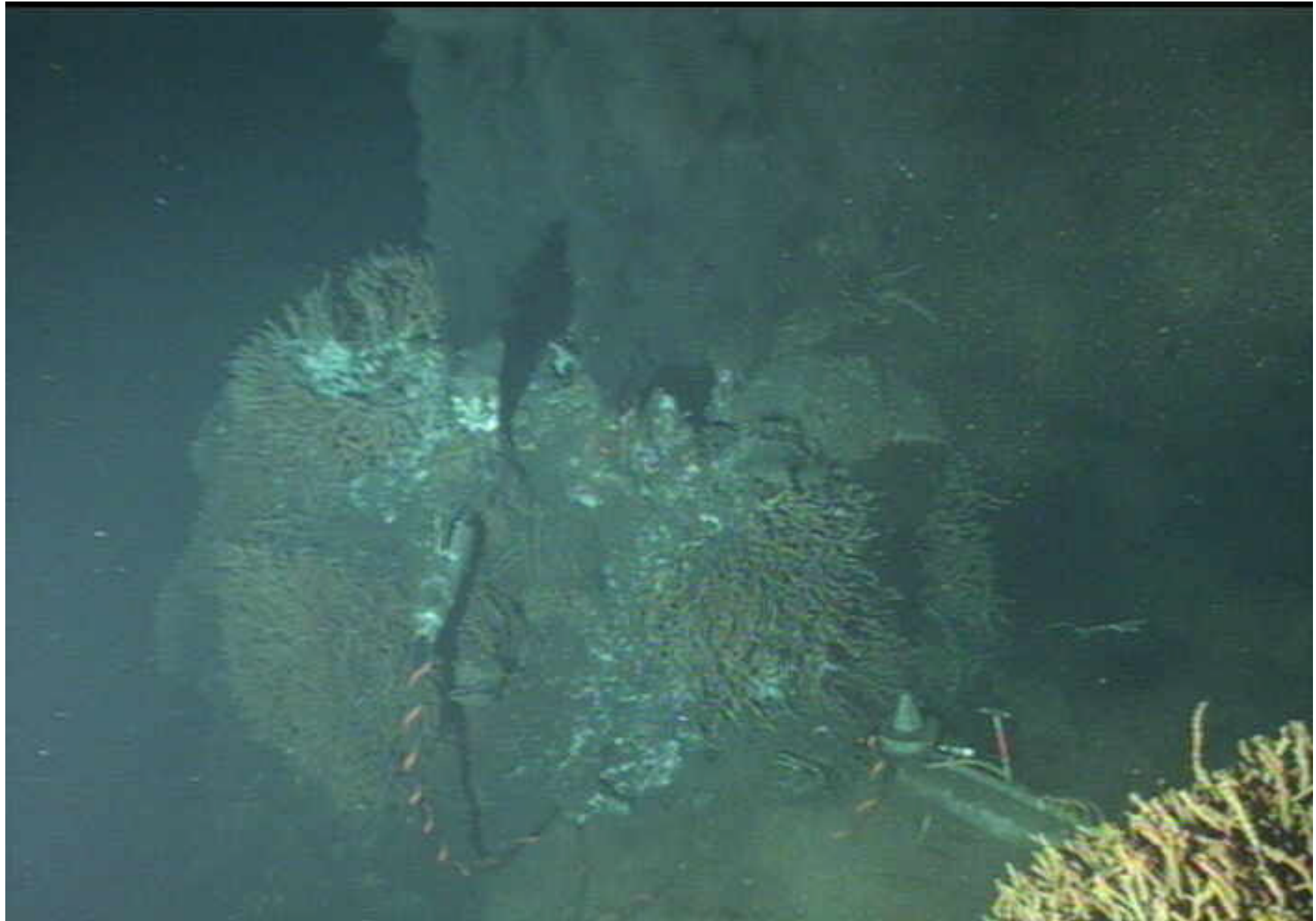


AT15-9, Endeavour

Karl Booksh – ASU, Instrument Testing

Brian Marquardt – UW, Instrument Testing

Marv Lilley – UW, Instrument Recovery,
Fluid Sampling

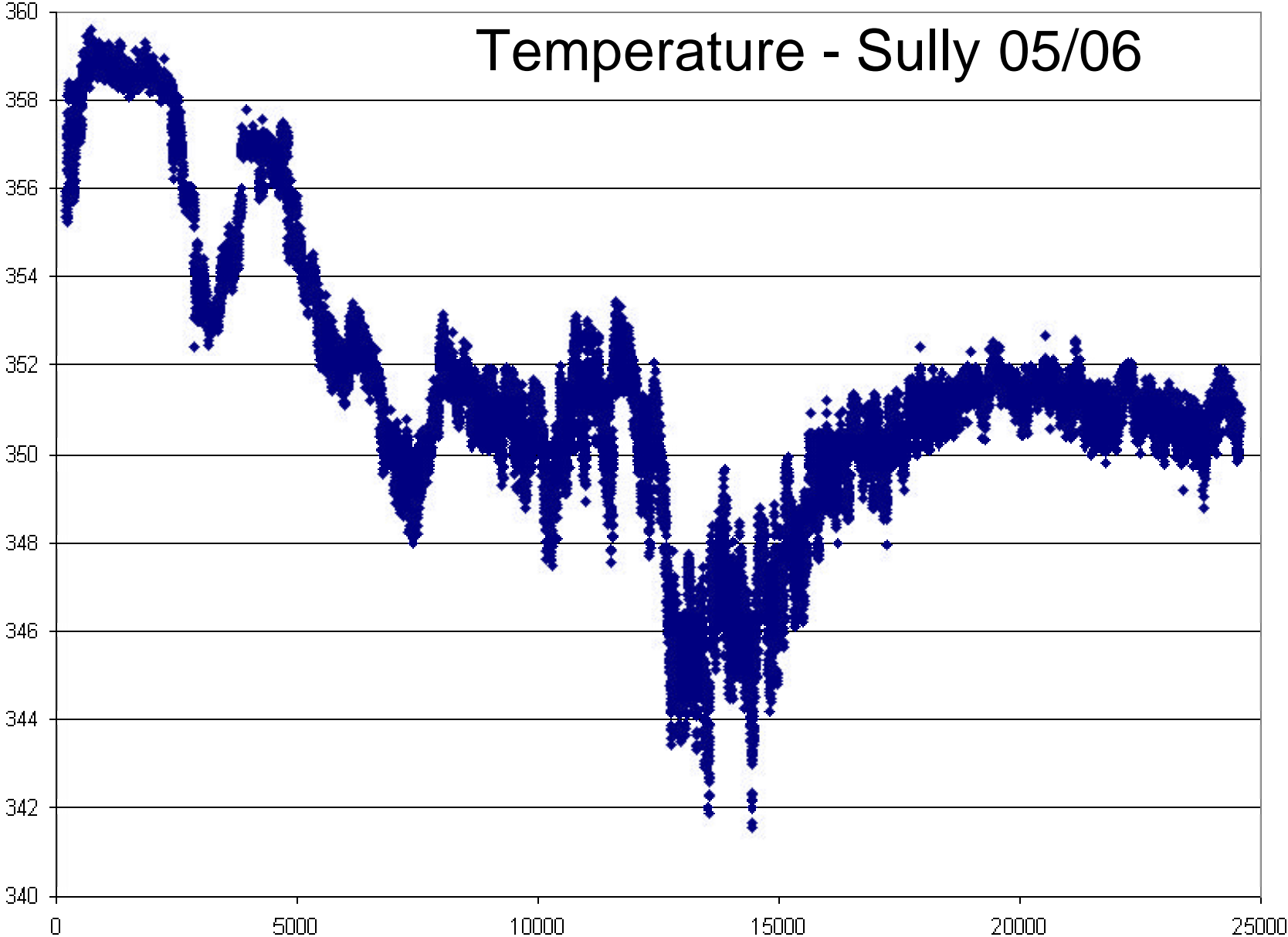




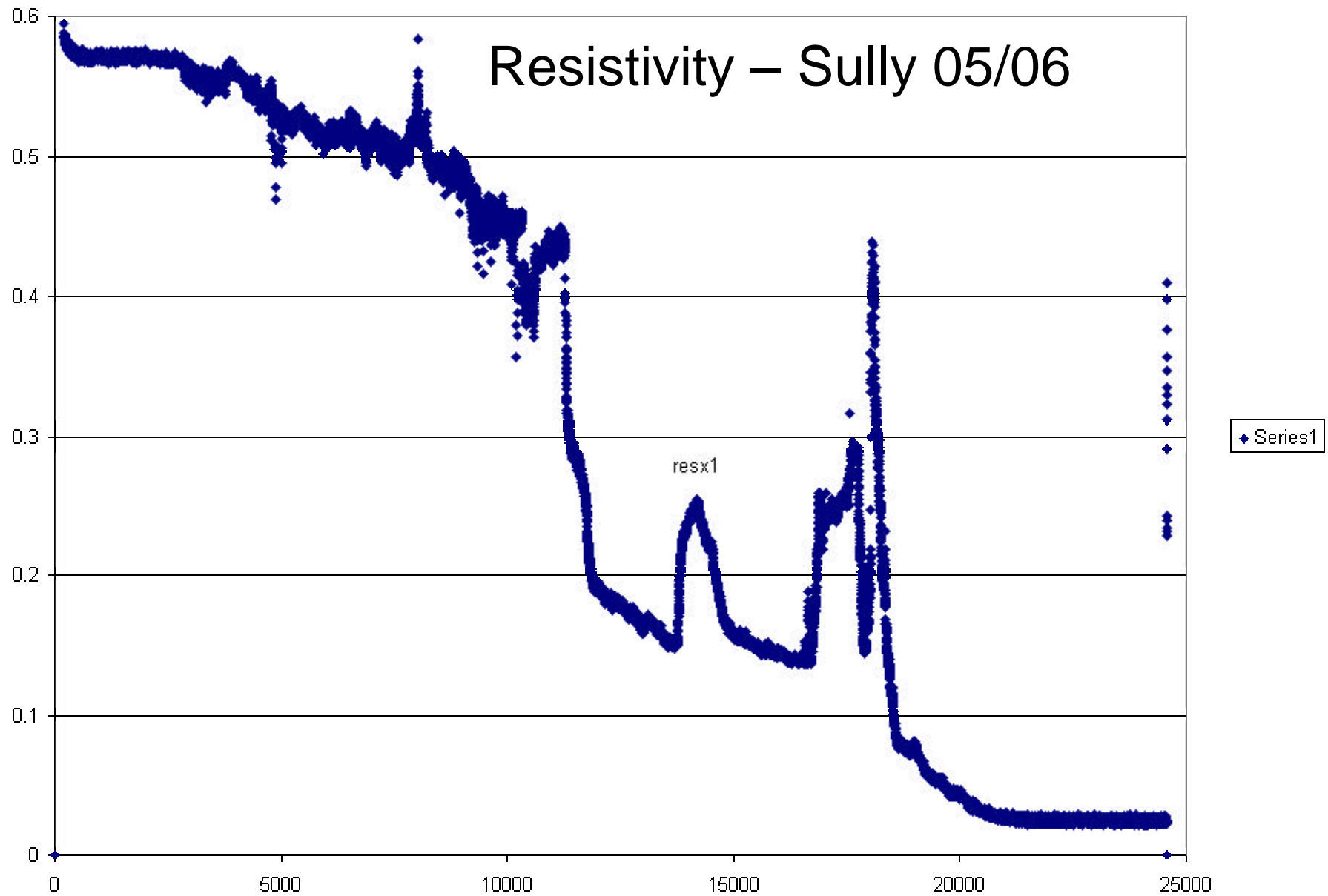




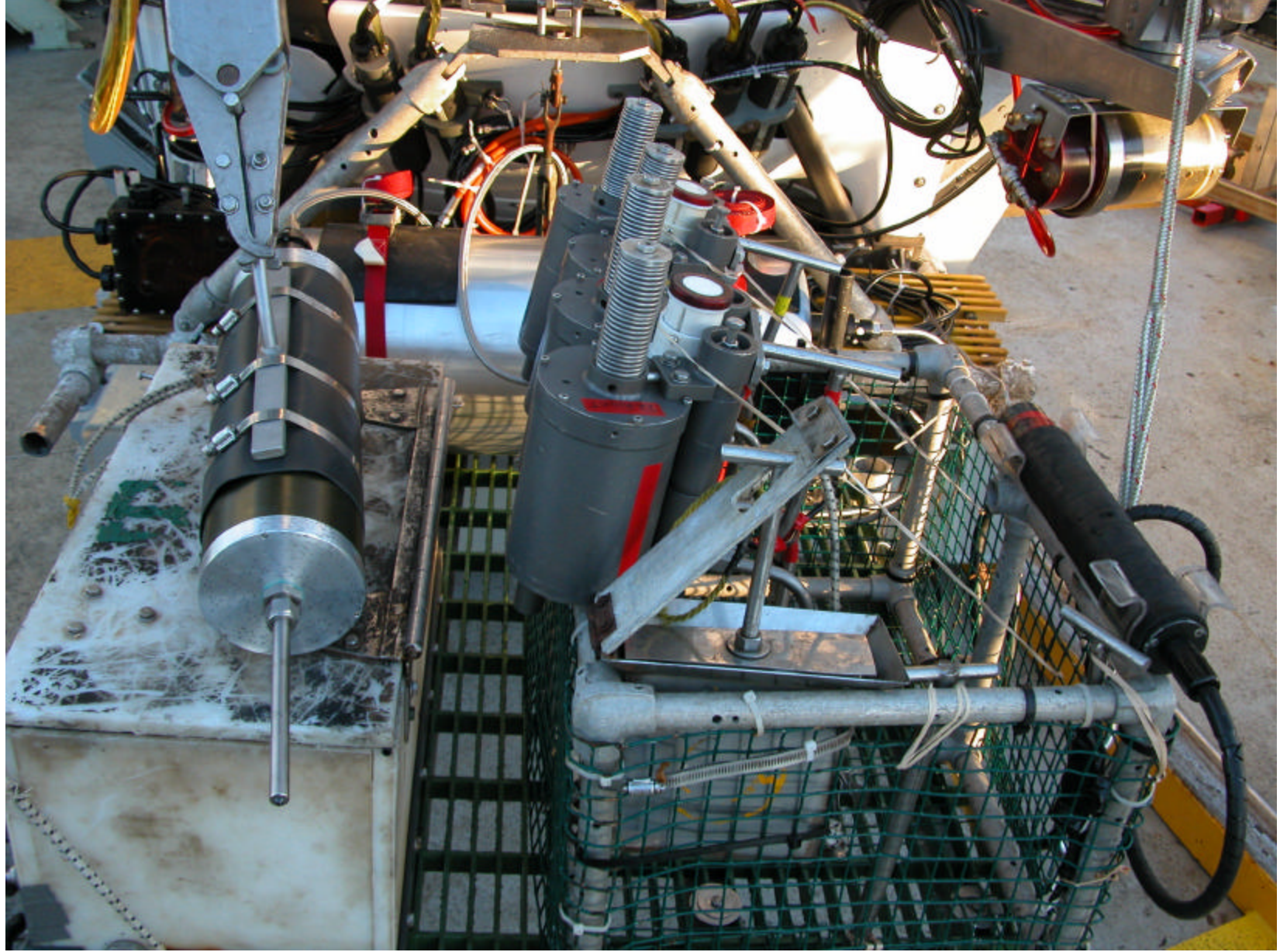
Temperature - Sully 05/06

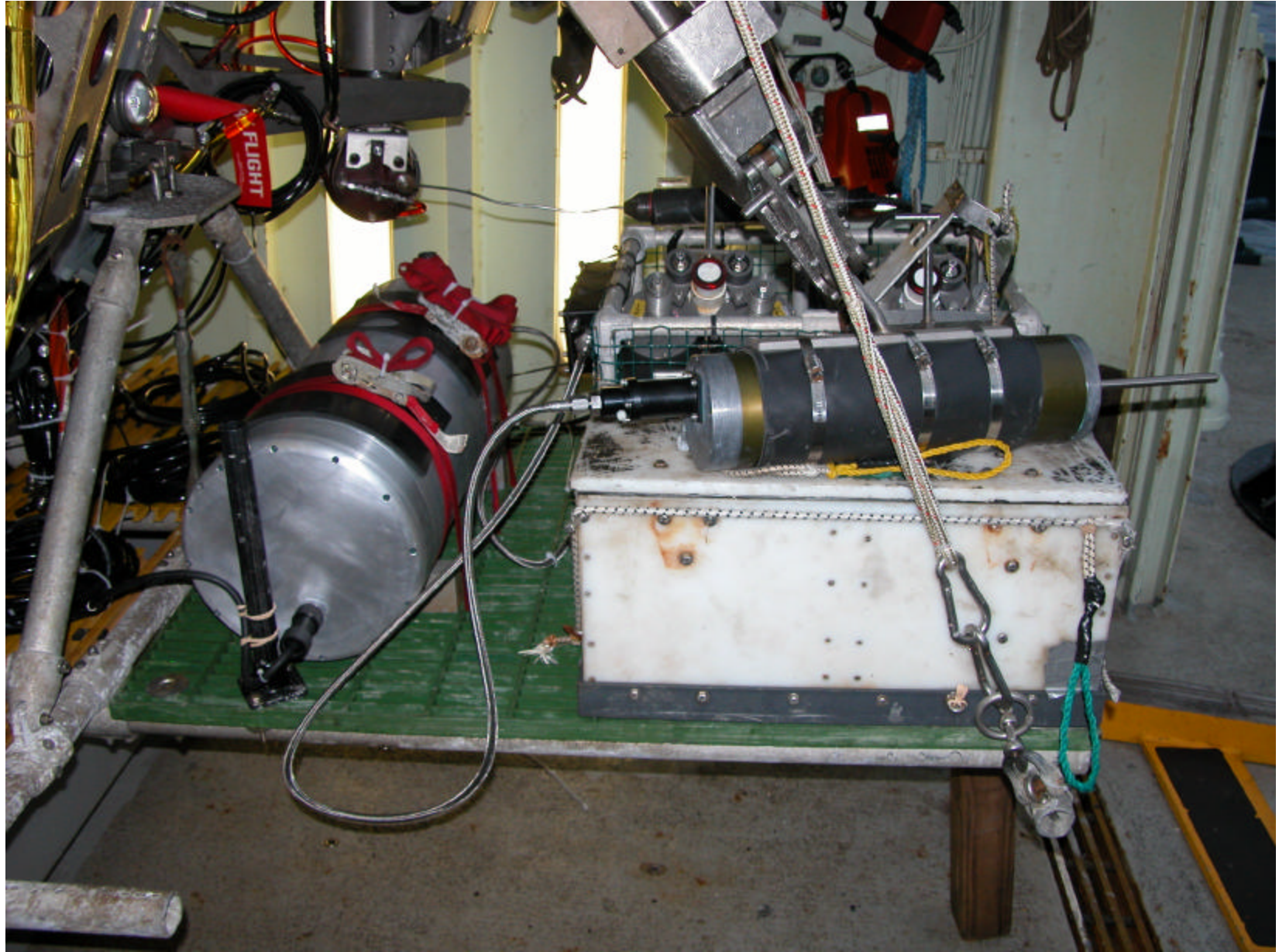


Resistivity – Sully 05/06





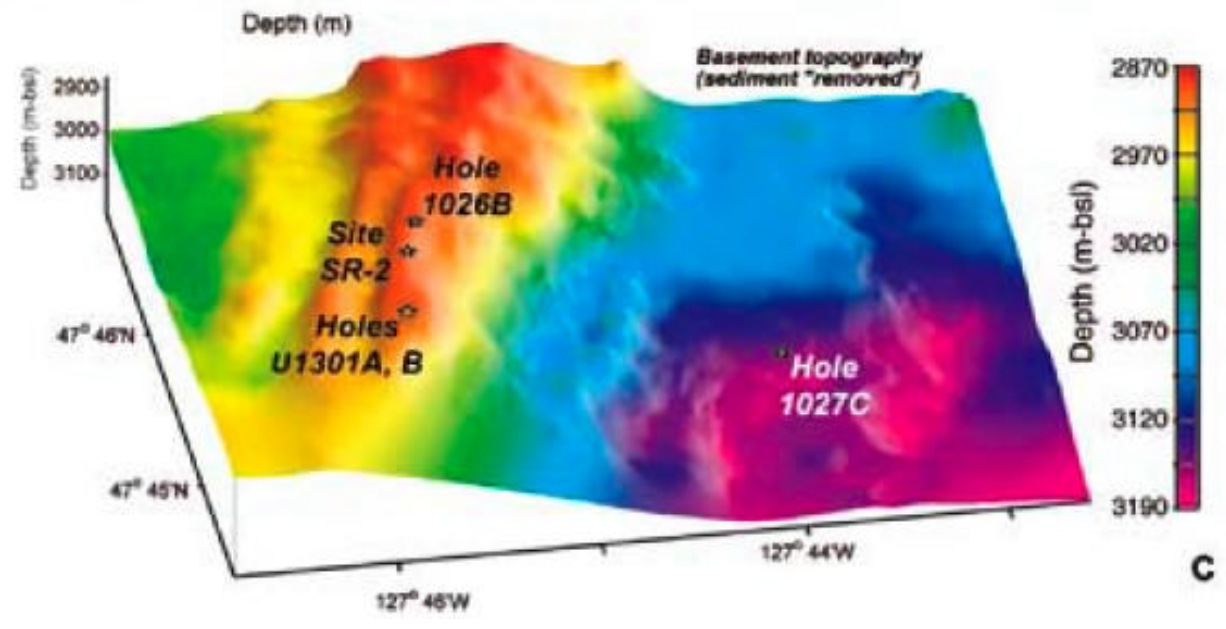
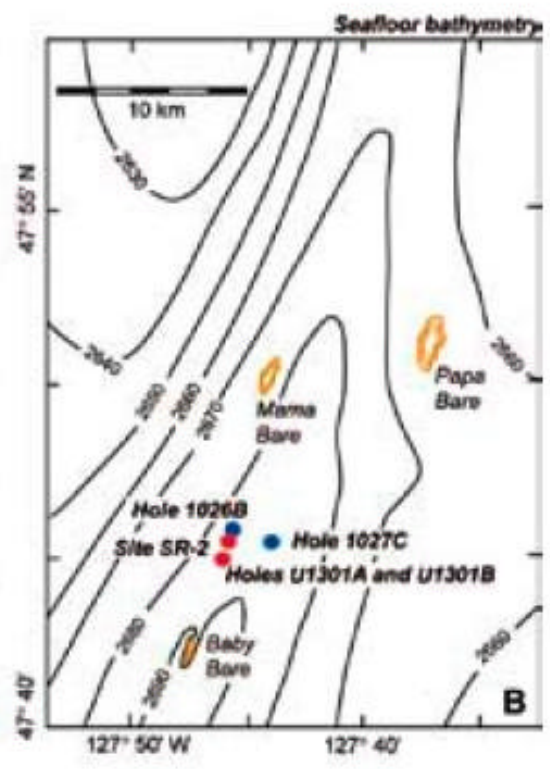
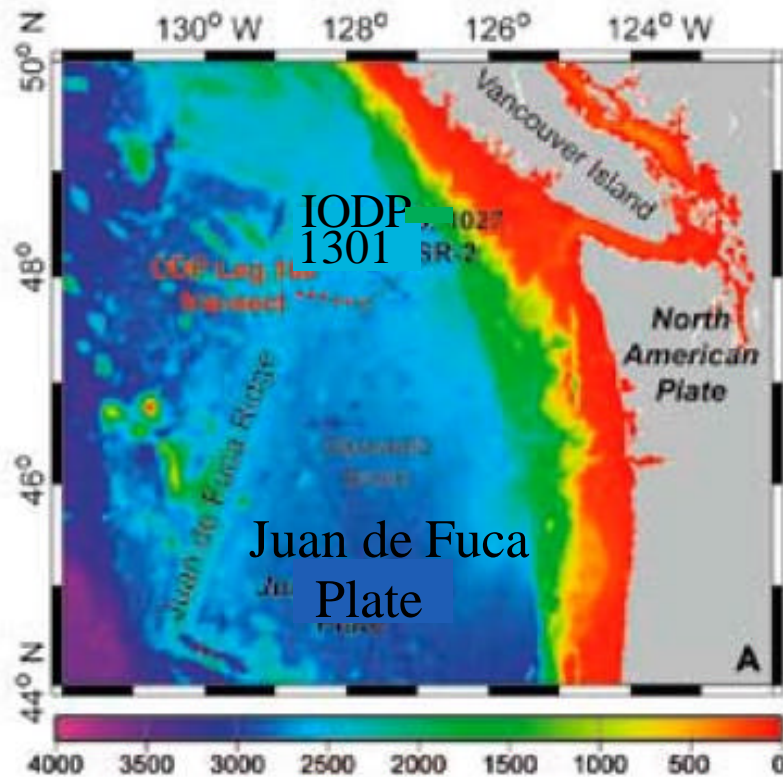


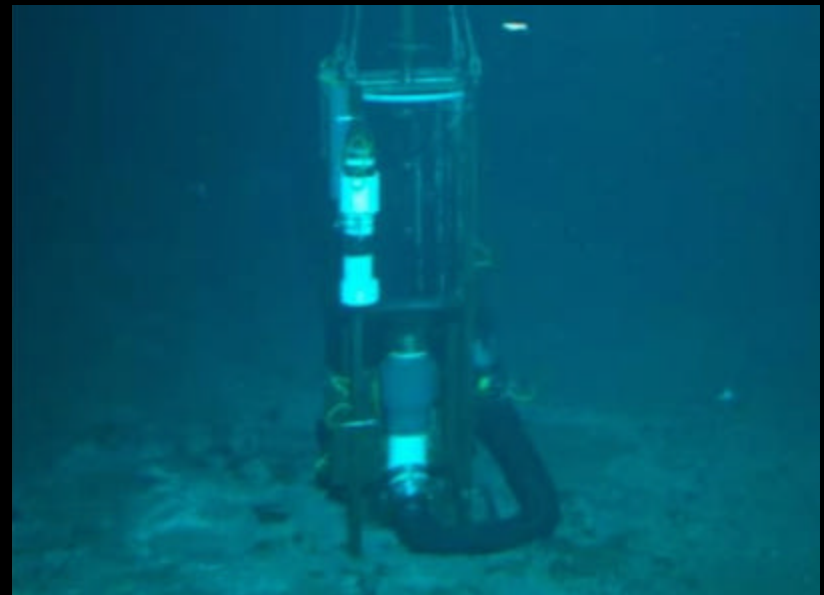
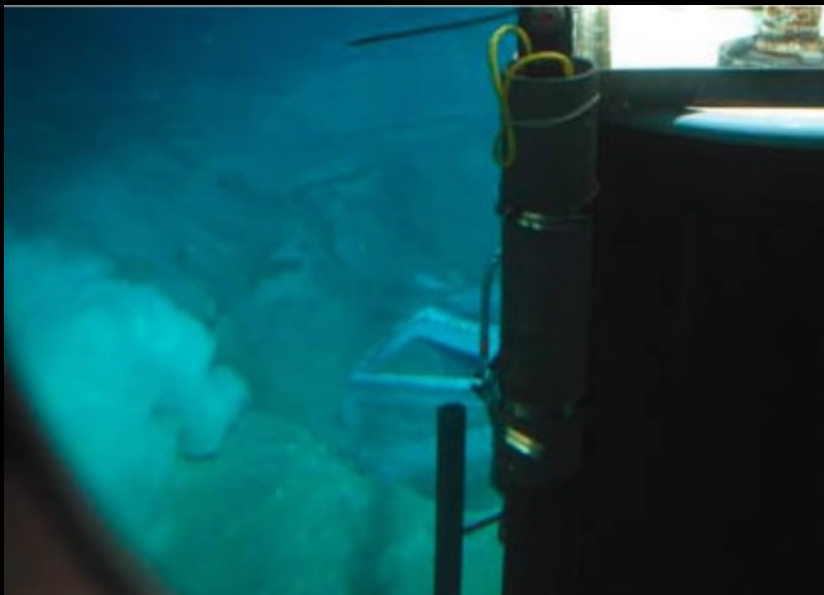


16 September to 21 September
Keir Becker



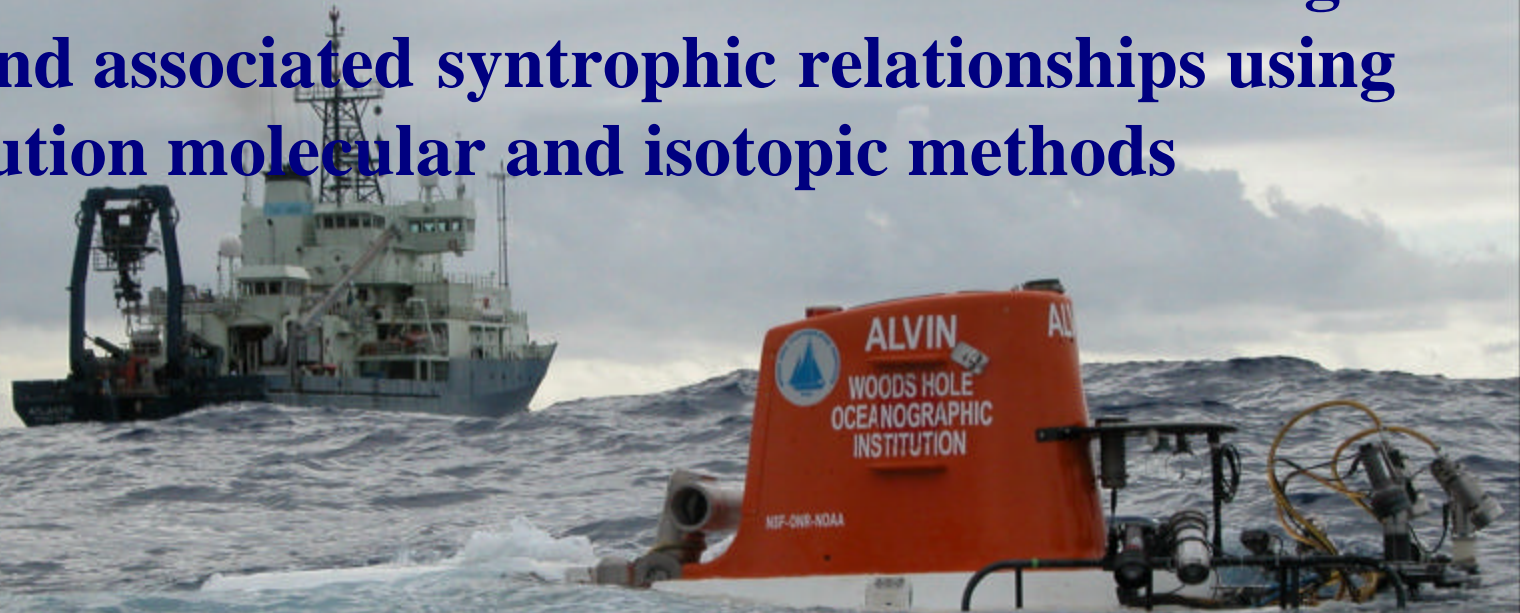
The Hydrogeologic Architecture of Basaltic Oceanic Crust: CORK Experiments for the Initial IODP Expedition to the Flank of the Juan de Fuca Ridge





September 26-Oct 13 Vicki Orphan, Lisa Levin

**Examination of diverse anaerobic methane oxidizing
Archaea and associated syntrophic relationships using
high resolution molecular and isotopic methods**



**Metazoan Life at Extreme Sulfide Concentrations The
Ecology and Evolution of Dorvilleidae at Methane Seeps**