



UNOLS 2011 DeSSC Meeting Student and Early Career Presentations

December 4, 2011



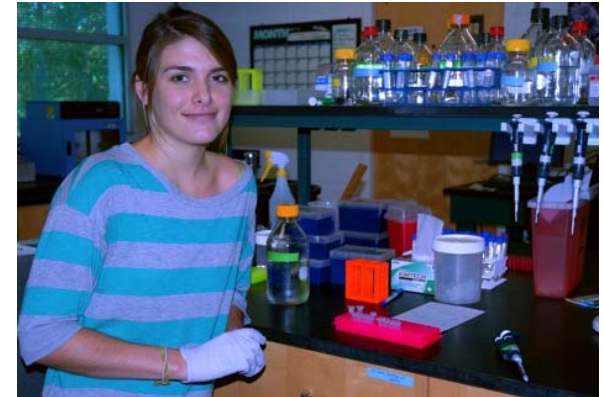


Arielle Anderson

Expected Spring 2012:

B.S. Biochemistry, B.S. Chemistry

University of Minnesota



Research experience:

2011 NSF REU, Bermuda Institute for Ocean Science
“Cellular oxidative damage in sea urchin models of aging”

Mentor: Dr. Andrea Bodnar, Molecular biology

2011 Directed Research, U of MN
“Siderophore microbial ecology of the Soudan Mine”

Mentor: Dr. Christine Salomon, Center for Drug Design

2009-10 Undergraduate Research Opportunities Program, U of MN

“Formation of hydrogen peroxide under deep-sea hydrothermal conditions”

Research interests:

- Use of molecular biology and bioinformatics to study the biodiversity found at hydrothermal vents
- Astrobiology & evolution, especially with respect to cellular adaptations to the toxicity of reactive oxygen species



RV Atlantic Explorer outside the BIOS station

Future plans:

- Summer '12: Internship to continue research in molecular biology lab at BIOS
- Currently applying for entrance into a PhD. program, studying molecular biology of deep-sea hydrothermal vent invertebrates

Rick Berg

Graduate Student

School of Oceanography

University of Washington

Current research areas:

- ❖ Biogeochemical cycling in marine sediments
- ❖ Gas hydrate dynamics

Additional research interests:

- ❖ Numerical modeling methods
- ❖ Long-term monitoring instrumentation

Danny Brothers
Research Geophysicist
USGS
Woods Hole, MA

Marine Paleoseismology
Submarine Canyon Formation
Submarine Landslides and Slope Stability

Looking for collaborators and potential postdocs interested in
joining this type of research

Amy Burgess

- PhD Student:
University of Oregon/OIMB
 - Subtidal ecology
 - Deep-sea seep connectivity
- MS: WWU/SPMC
 - Algal toxin transfer in larvae
- BS: BYU
 - Intertidal invertebrate predator/prey interactions



Msc. Derya Itir DILMEN

Civil/Ocean engineer

Currently: Research Assistant- Phd. candidate at Earth and
Space Sciences Department at University of Washington

Current Subject: **Tsunami
Forecasting**

Looking for a summer research project/job

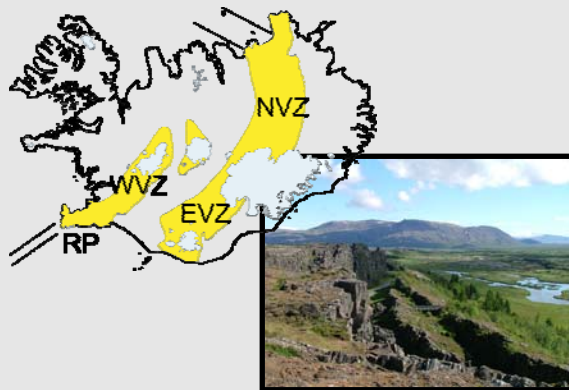
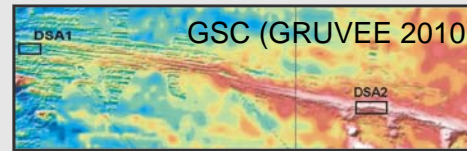
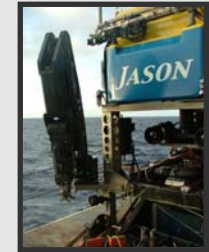
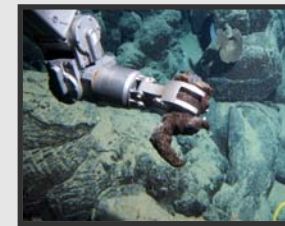
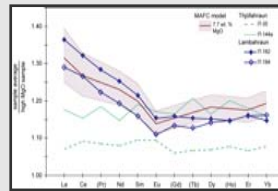
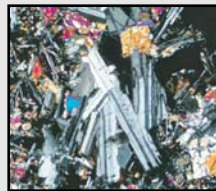


Deborah Eason

Postdoctoral Researcher | Geology & Geophysics | University of Hawaii

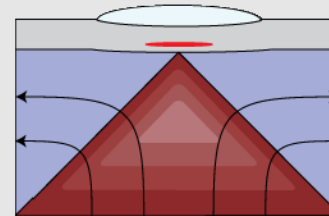


Interests: magmatic processes at mid-ocean ridges and ocean islands; source (mantle melting, melt transport) to surface (magma storage, transport & eruption)

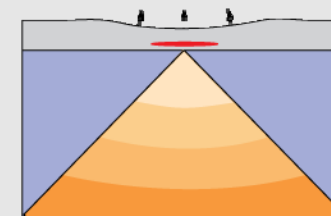


Talk V32B-01: Melt & chemical transport in the mantle: Insights from deglaciation-induced melting perturbations in Iceland
(co-authors: Garrett Ito, John Sinton)

decompression due to spreading



glacial unloading



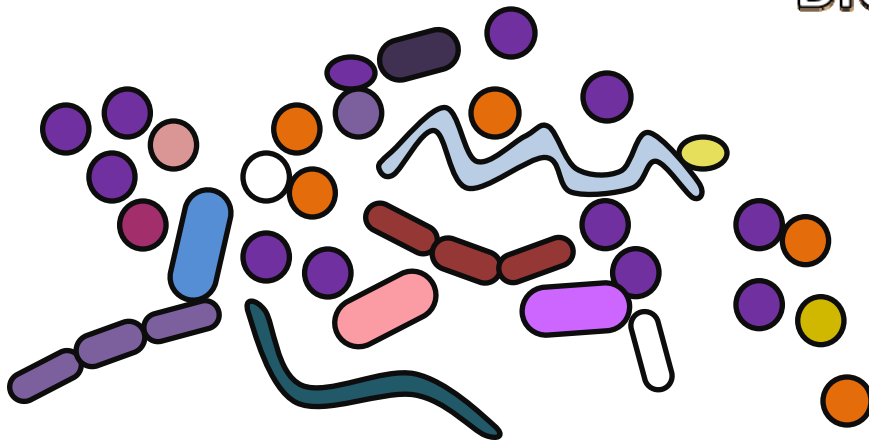
Nick Fylstra

- **Education:** 5th year undergraduate biochemistry major at the California Polytechnic State University in San Luis Obispo, CA.
- **Research interests:** chemical oceanography, particularly trace metal biogeochemistry.
- **Research experience:**
 - Using atomic absorption spectroscopy (AAS) to establish a seasonal pattern of arsenic in the flies and brine shrimp of Mono Lake, CA.
 - Developing a method for preconcentration of trace metals in seawater using inductively coupled plasma-mass spectrometry (ICP-MS).
 - Using incubation experiments to assess copper toxicity on the inshore waters of Bermuda using flow cytometry (FCM) measurements.
- **Looking for:** potential graduate school advisors and to learn more about chemical oceanography!



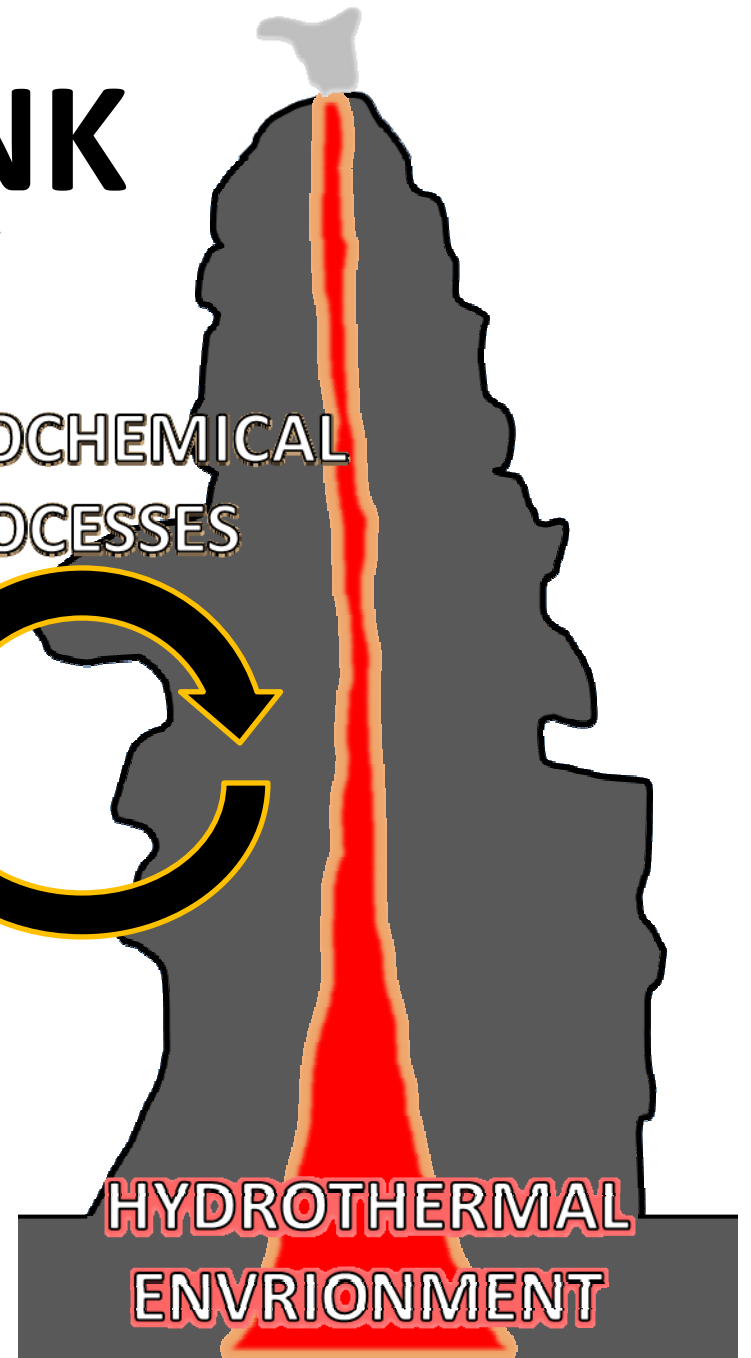
KIANA FRANK

Doctoral Candidate, Harvard University
Girguis Lab



MICROBIAL ECOLOGY

BIOGEOCHEMICAL
PROCESSES



HYDROTHERMAL
ENVIRONMENT

B22A: *Biogeochemical Cycling in
Deep Subsurface Ecosystem*
Tues. Dec 06, 11:35-11:50 AM
Room 2006 (Moscone West)

JOSÉ LUIS GRANJA BRUÑA

Assistant Professor
Universidad Complutense of Madrid
Spain

Research Interest:

Using geophysical methods to
work on active tectonics and
earthquake geology in the
northern Caribbean

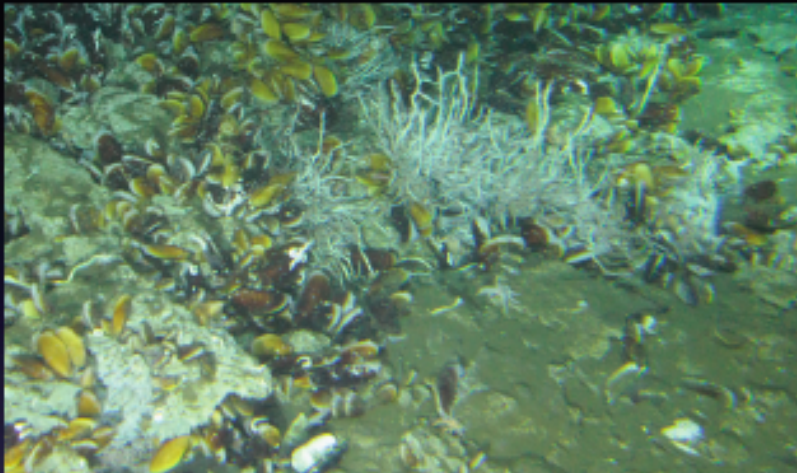
Slide 10

MD1

Annette DeSilva, 12/2/2011

Benjamin Grupe

Scripps Institution of Oceanography, UC San Diego

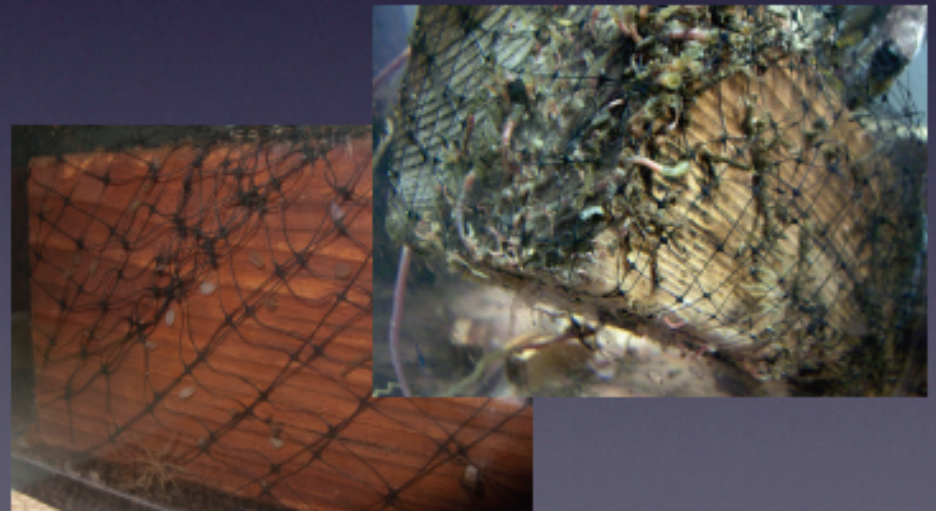


Mussel beds and tube worm bushes at Costa Rica methane seeps, Mound 12 (AD 4586)

How do different sources of heterogeneity contribute to observed community patterns and trophic structure at deep-sea chemosynthetic ecosystems?



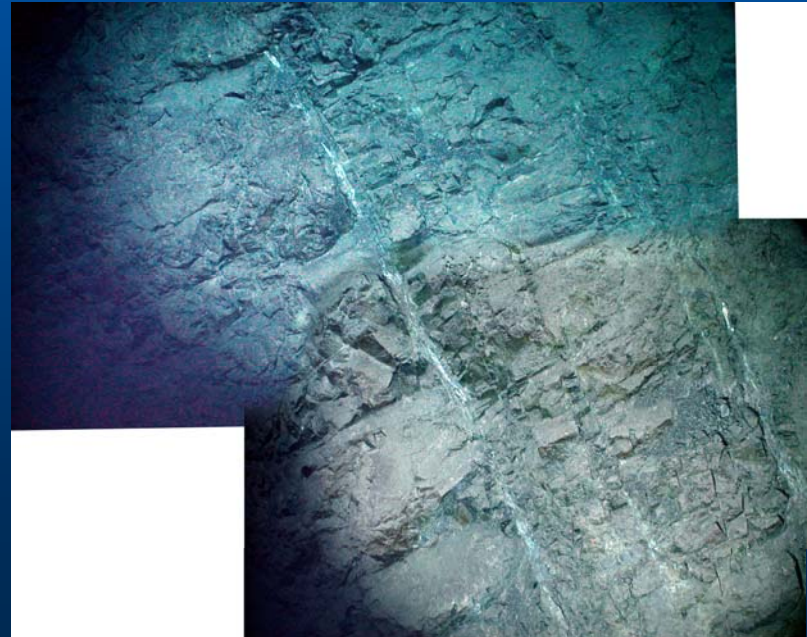
Carbonate rock with associated fauna from Hydrate Ridge seeps (AD 4632)



Wood deployed for three years in different flow environments at Juan de Fuca, Main Endeavour (retrieved AD 4622)

Nick Hayman

- Research Associate @ UTIG (Austin, TX)
- Structural geologist w/ strengths in geophysics & geochemistry/petrology
- Focus on deep-marine (ridge & deep-water rift) systems, some projects on trench systems
- Looking for collaborators to launch interdisciplinary & specialized NDSF programs
- UTIG & the Jackson School have institutional postdocs



Samuel Hulme:

Research Associate, Moss Landing Marine Labs



- ☞ Trace element fluid geochemistry of low-temperature hydrothermal systems
- ☞ Sonar mapping of vent features and subduction zone processes in the Mariana
- ☞ CORK instrumentation, deployment and operations with the JOIDES Resolution, Submersible Alvin, and ROV Jason 2.
- ☞ Osmotic pumping system design for seafloor and borehole experiments
- ☞ Upcoming expeditions with ROVs Kaiko (Nankai) and Jason 2 (North Pond, Juan de Fuca, and Costa Rica) and the AUV Sentry (Costa Rica)



Samuel Hulme on the R/V Atlantis after recovering a prototype osmosis-powered instrument recovered by the ROV Jason 2 on the Juan de Fuca ridge flank

Katie Inderbitzen

Ph.D. candidate, Univ. of Miami – RSMAS, advisor: Keir Becker

- Subseafloor observatories (CORKs) in Middle Valley and on Juan de Fuca ridge flank
 - Long-term borehole/seafloor pressure data: trends and transients
- Regional hydrothermal fluid circulation on sedimented ridges, effects on subseafloor processes (biogeochemical, etc)

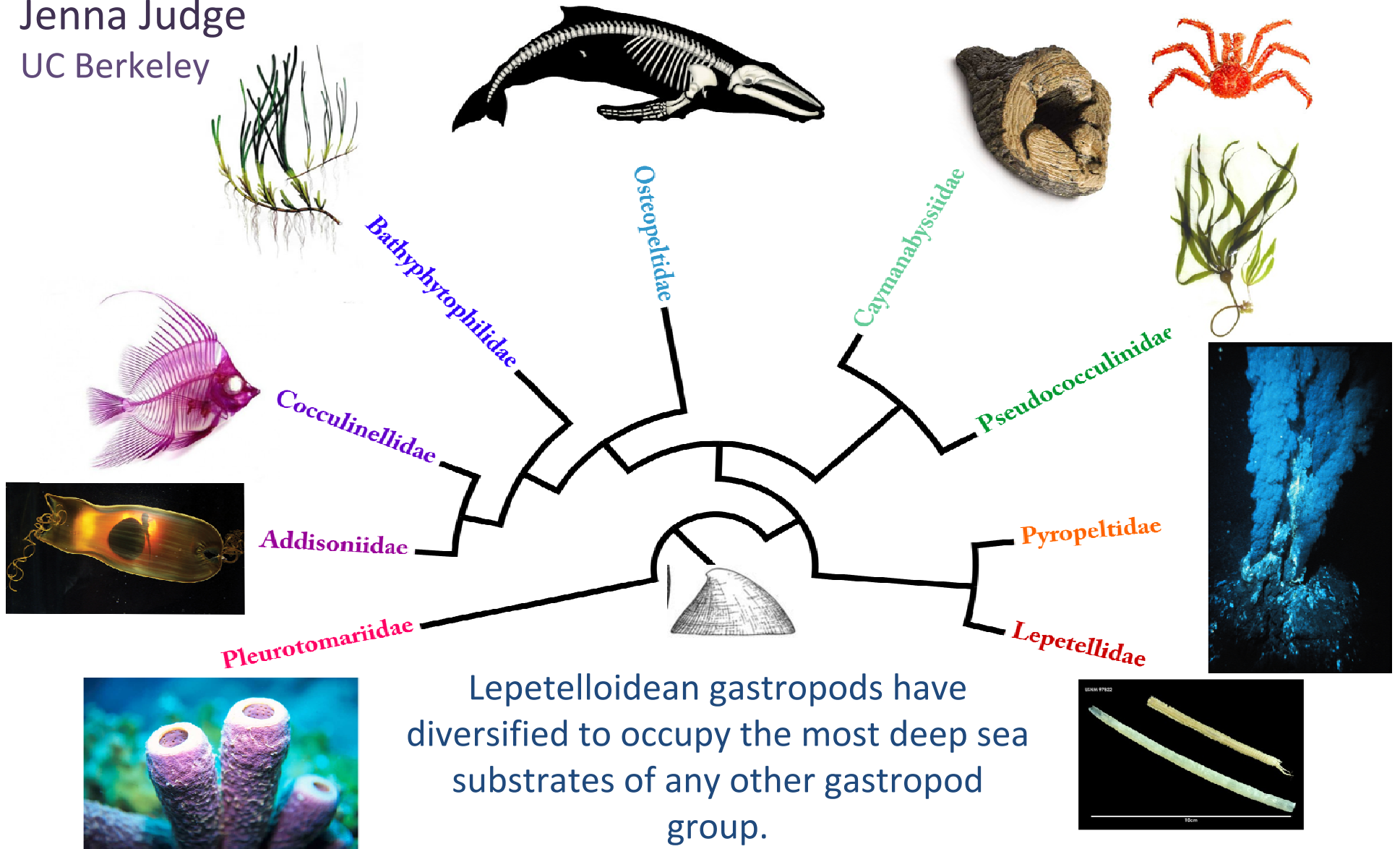


Other expertise:

- Scientific ocean drilling/HOV/ROV ops
- Removing oceanographic effects from data
- Low-temp alteration in sediments
- Aqueous geochemistry

Monday AM: OS11A-1457. Seafloor Uplift in Middle Valley, Juan de Fuca Ridge: New High-Resolution Pressure Data

Jenna Judge
UC Berkeley



Did they undergo an adaptive radiation? What factors influenced their diversification and ecological differentiation?

What processes are important for the evolution of specialized communities in the deep-sea?

Edwin Kite

(www.climatefutures.com)

Interest:

Long-term climate stability

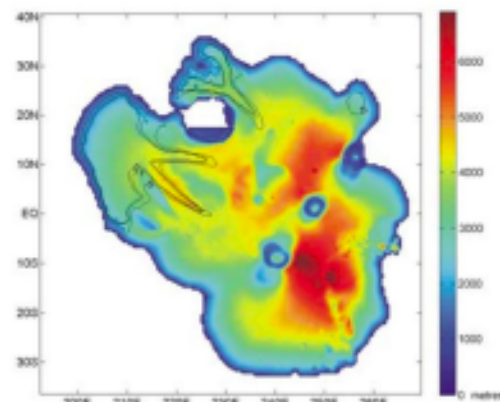
B.A. & MSci Geosciences (Cambridge)

Graduate work in planetary science (UC Berkeley; Mars, exoplanets)

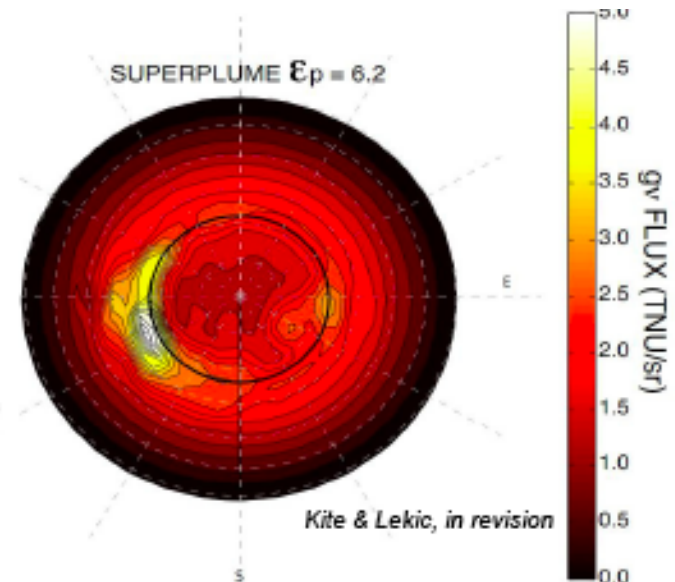
Starting an open-ended postdoc fellowship
at Caltech Jan 2012

Main interests in deep sea research:-

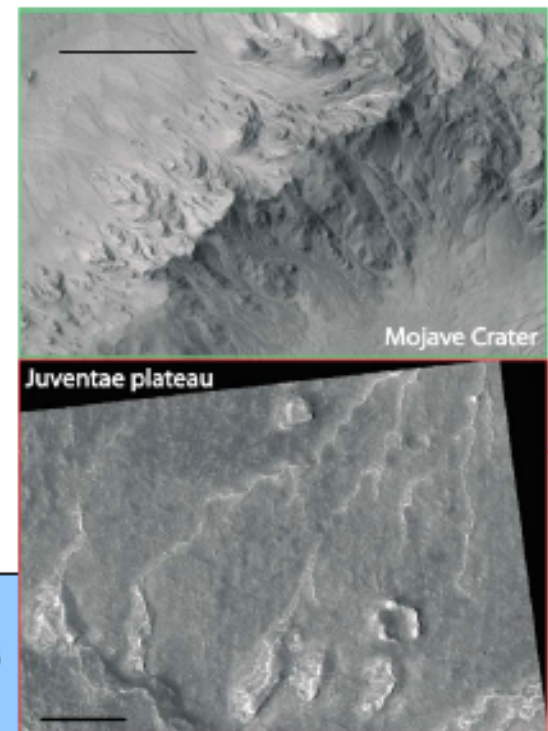
- (1) what controls the rate and extent of carbonate formation in the oceanic crust?
- (2) modern microbial analogs for Proterozoic and Archean biospheres.



Kite & Hindmarsh, GRL, 2007



Kite & Lekic, in revision



Kite et al., JGR-E 2011a, 2011b

Talk: Tuesday 2pm, Room 307 :

P23F-03. Climate destabilization on tidally locked exoplanets

Edwin S. Kite; Eric Gaidos; Michael Manga

- Kite et al., ApJ 2009, 2011

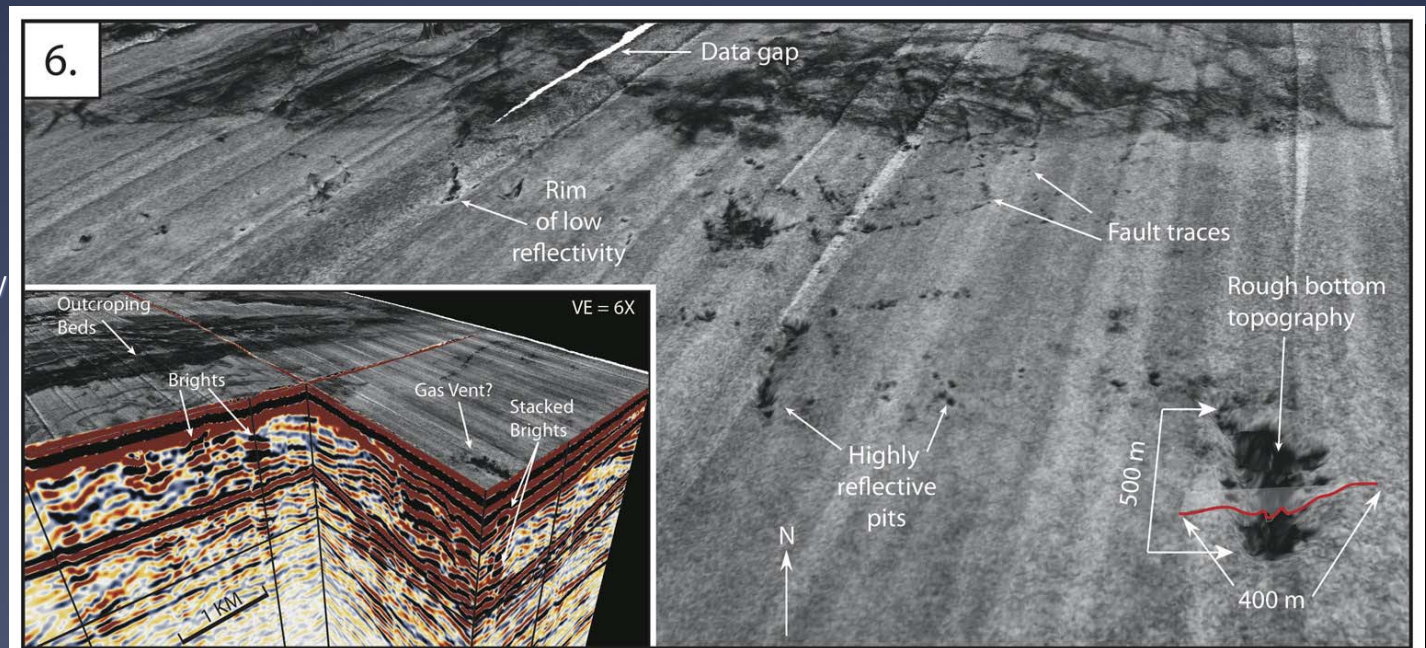
Jared Kluesner, UCSC

jared.kluesner@gmail.com
858-531-4894

- * Post-doctoral researcher at UCSC working with Eli Silver
- * Current project: CRISP 3D seismic project offshore Costa Rica
 - * High-res multibeam/backscatter
 - * 3D seismics
 - * Understand detailed surface structure and fluid-flow features

AGU poster: T21B-2336: Detailed Surface Structure in High-Resolution Bathymetry and Backscatter from the CRISP 3D Seismic Experiment, Offshore Costa Rica

Perspective view of possible gas-escape features
Inset: 3D seismics below showing evidence of gas concentration





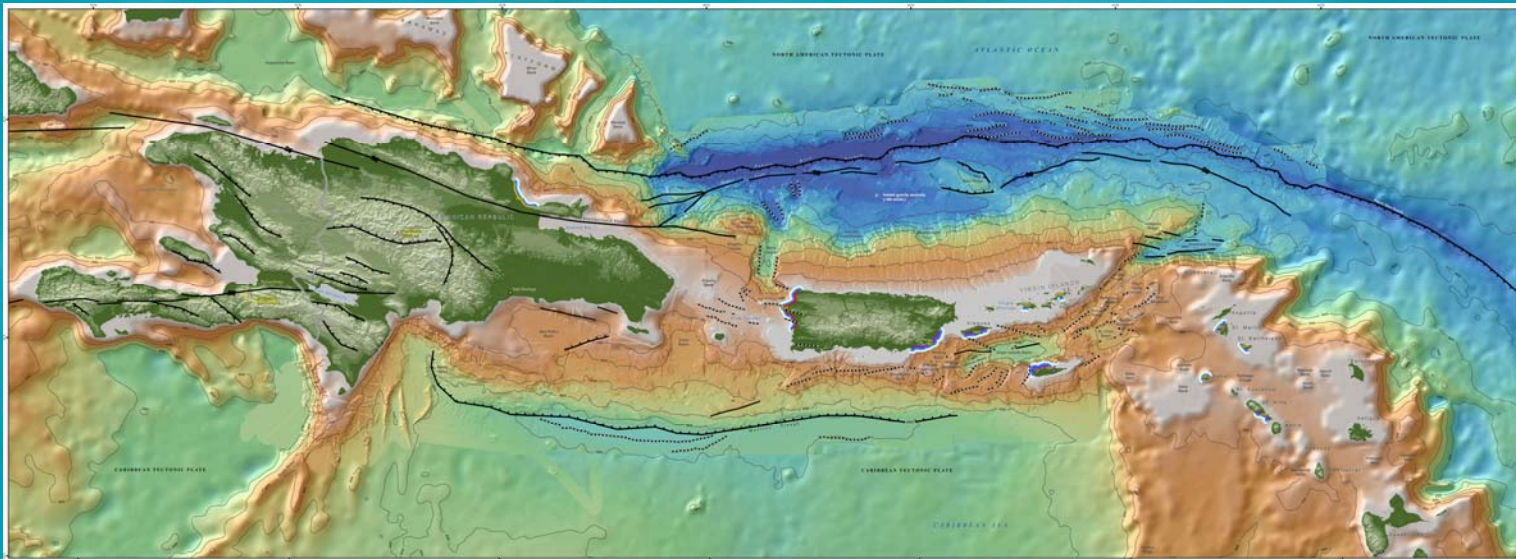
Pilar Llanes Estrada

Assistant Professor, Geodynamics Department

Universidad Complutense de Madrid, Spain

Research Guest

University of California, Santa Cruz



Current research offshore Hispaniola Island

Ship time schedule for the spring of 2013

In Search of Endolithic
Anaerobic Methane Oxidation

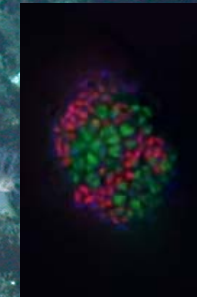
Jeff Marlow

Carbonate Rock
(4588 E3)

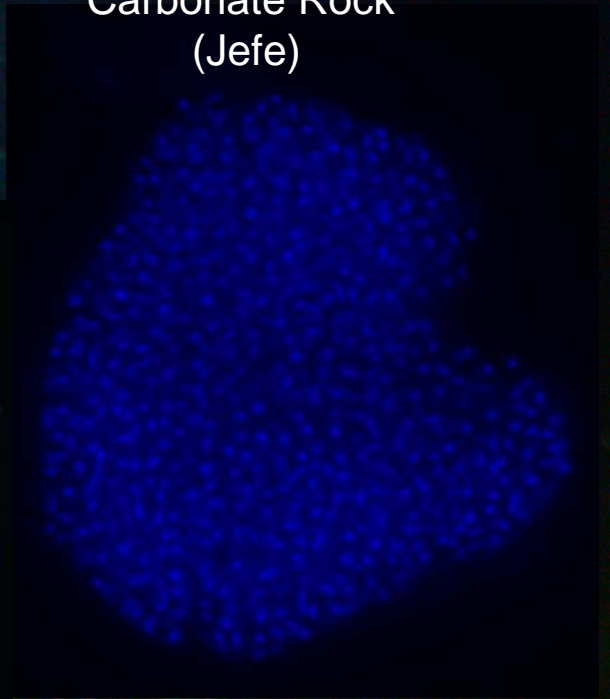
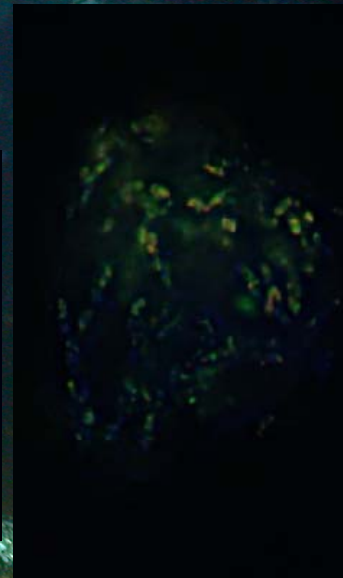
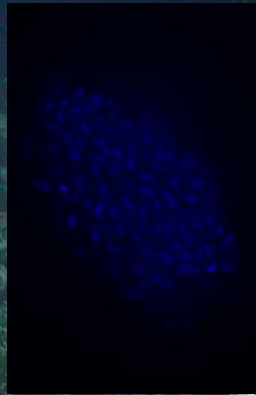
Carbonate Rock
(Jefe)

Nodule
(3099)

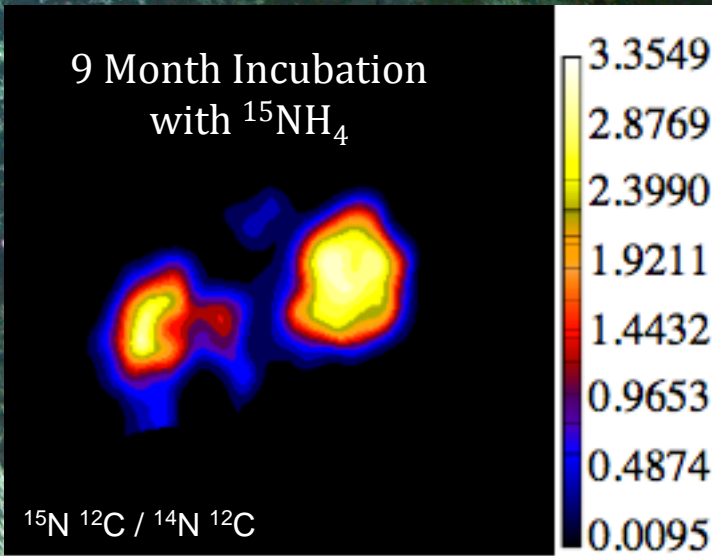
Sediment
(3098)



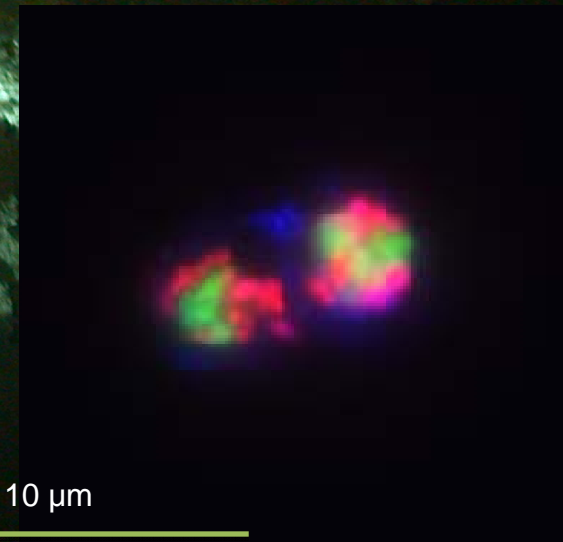
6µm



9 Month Incubation
with $^{15}\text{NH}_4$



$^{15}\text{N} \text{ }^{12}\text{C} / ^{14}\text{N} \text{ }^{12}\text{C}$



Tim McClinton

Ph.D. student

University of South Carolina

Research interests: submarine volcanology, seafloor exploration

GRUVEE (2010): Alvin + Sentry + TowCam = success

AGU2010 and Chapman: Submarine lava morphology mapping

AGU2011: V53D-2650/Submarine volcanic emplacement processes



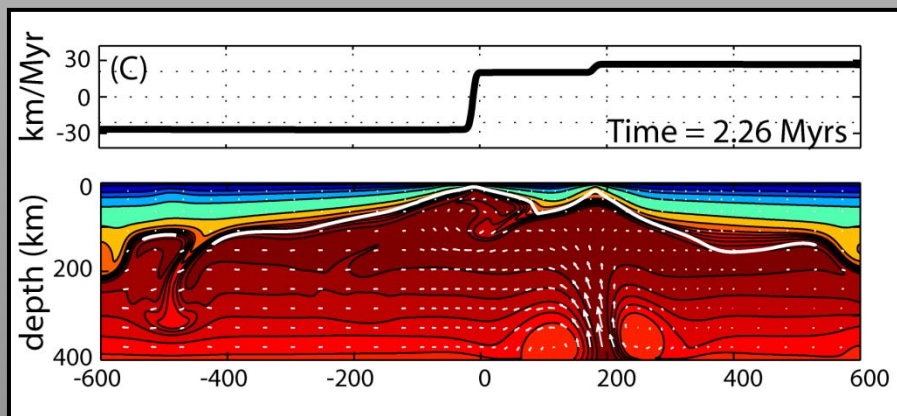
Eric Mittelstaedt

Research Interests:

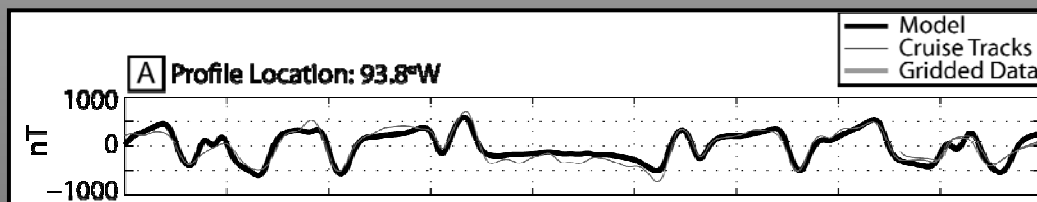
1. Plume-Ridge Interaction
2. Hydrothermal Venting
3. Deformation along MORs

Methods:

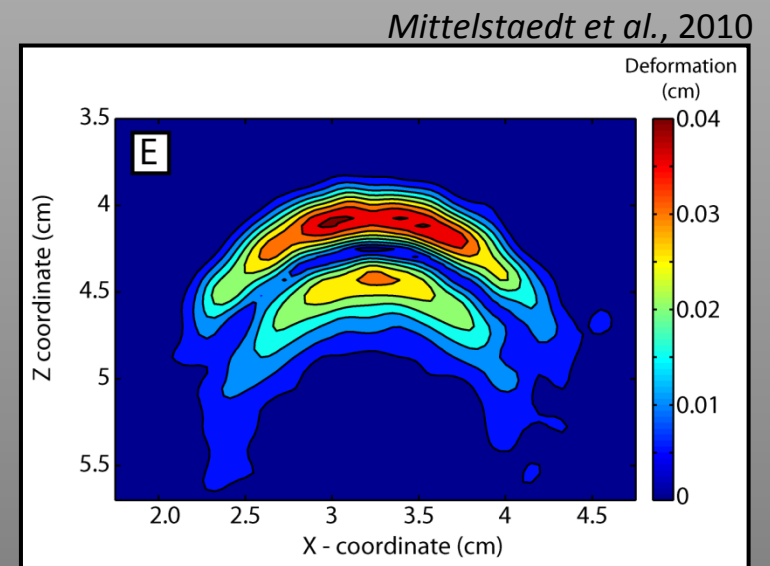
- A. Numerical Modeling
- B. Laboratory Experiments
- C. Analysis of Geophysical Data
- D. Imagery Analysis



Mittelstaedt et al., 2011



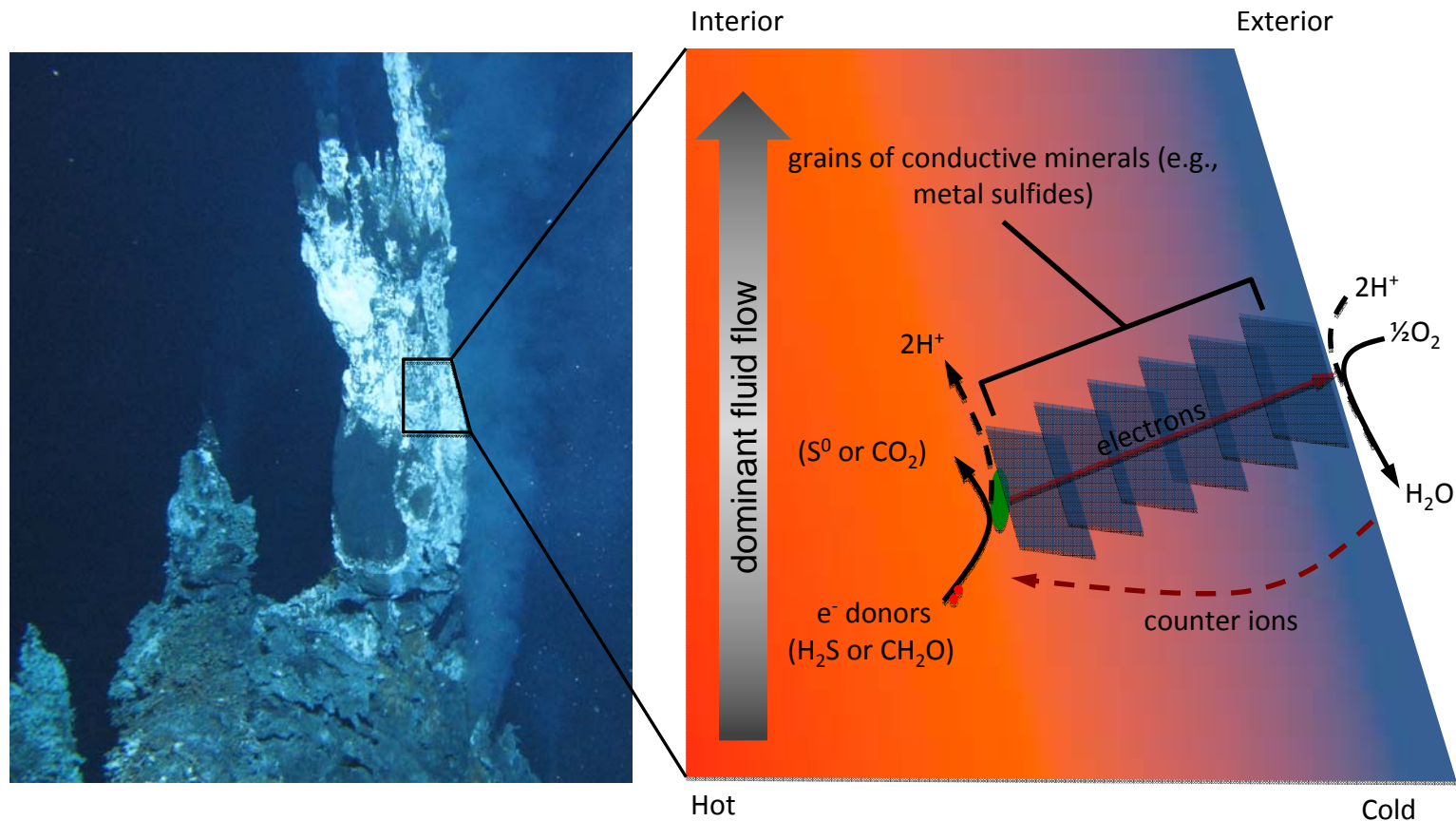
Mittelstaedt et al., In Prep



Mittelstaedt et al., 2010

Mark Nielsen

Microbial extracellular electron transfer to and from solid-phase electron acceptors and donors.



Endolithic foodweb based on EET

Organisms can oxidize sulfide without direct access to oxygen

Conductive minerals are an integral part of the respiration system



Beth Orcutt

www.MicrobesAreAwesome.com



- **Currently:** Postdoc, Center for Geomicrobiology, Aarhus University, Denmark



- **Soon-to-be (April 2012):** Senior Research Scientist, Bigelow Laboratory for Ocean Sciences, Boothbay, Maine, USA

****** looking for a technician and a postdoc ******

- **Deep-sea Science:**

- Microbial ecology and biogeochemistry of deep-sea sediments and oceanic crust
- use of long-term seafloor observatories

- **AGU presentations:**

- Monday, 8AM poster, OS11A-1459
- Wednesday, 4:30PM talk, T34B-03 (Room 2011)



ALEXIS L. PASULKA



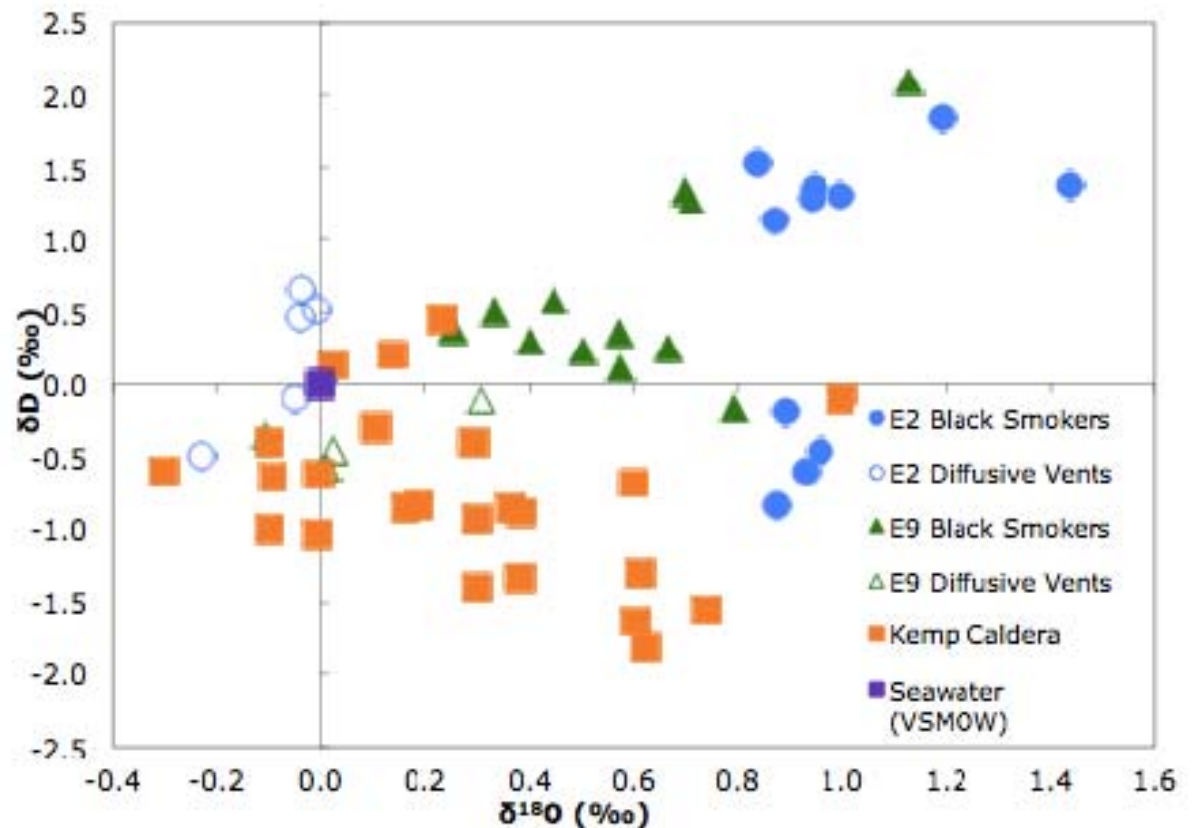
Research Interests

- Marine microbial food-web dynamics
- Ecology of marine protists
- Heterotrophic protists and carbon biogeochemical cycling
- Microbial interactions in methane-seep ecosystems

Isotopic Composition of East Scotia Ridge Hydrothermal Fluids as Determined by CRDS

Alexandra M. Powell, Neil R. Banerjee, Rachael H. James, Lisa E. Munro, Gregor Hsiao

Cavity Ring-Down Spectroscopy (CRDS) simultaneously measures O and H isotopic composition of hydrothermal fluids with minor modifications to the samples and machinery



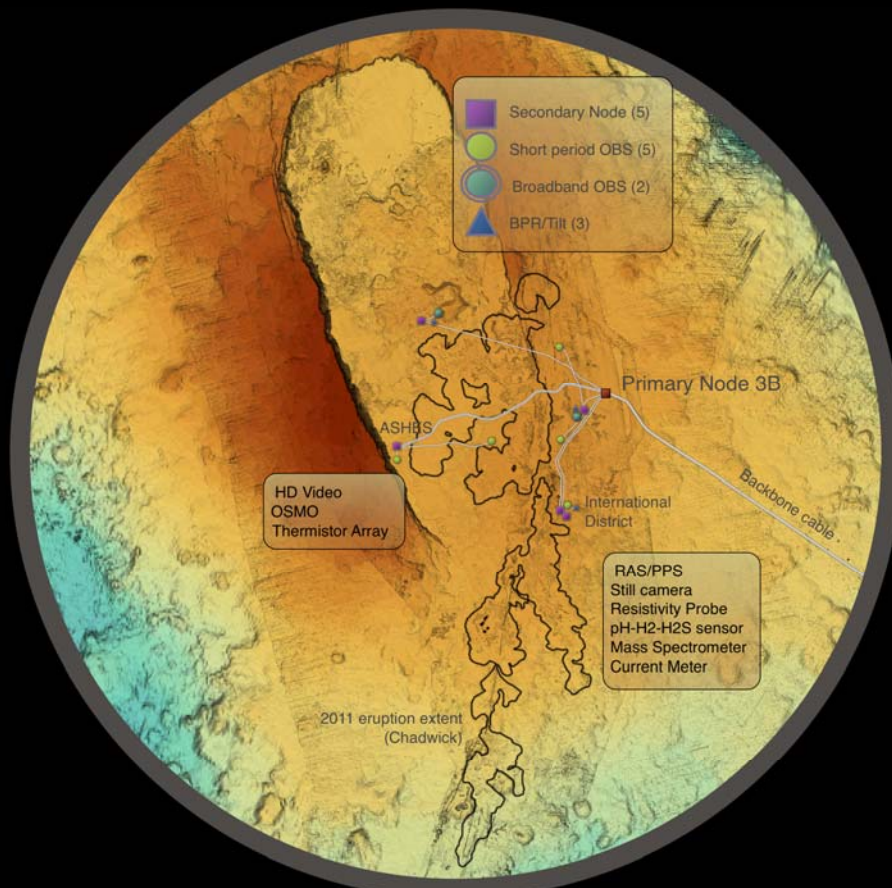
Fluids from three vent fields along the East Scotia Ridge Back-Arc Spreading Centre had unique isotopic compositions

Giora Proskurowski

University of Washington

Project Scientist
OOI-RSN

Research Scientist
UW Oceanography



- Hydrothermal vent fluid chemistry
- Volatiles (H₂, CH₄, CO₂, LMWHCs)
- stable isotope geochemistry
- radiocarbon geochemistry





Karyn Rogers, Carnegie Institution of Washington
Geomicrobiologist, Geochemist, Astrobiologist

Geochemical reaction energetics and microbial diversity in hydrothermal systems

Microbial growth at high pressures & temperatures - barophiles from deep-sea vent systems

Come see my DeSSC poster this afternoon

Novel organic sulfur metabolisms in hydrothermal systems

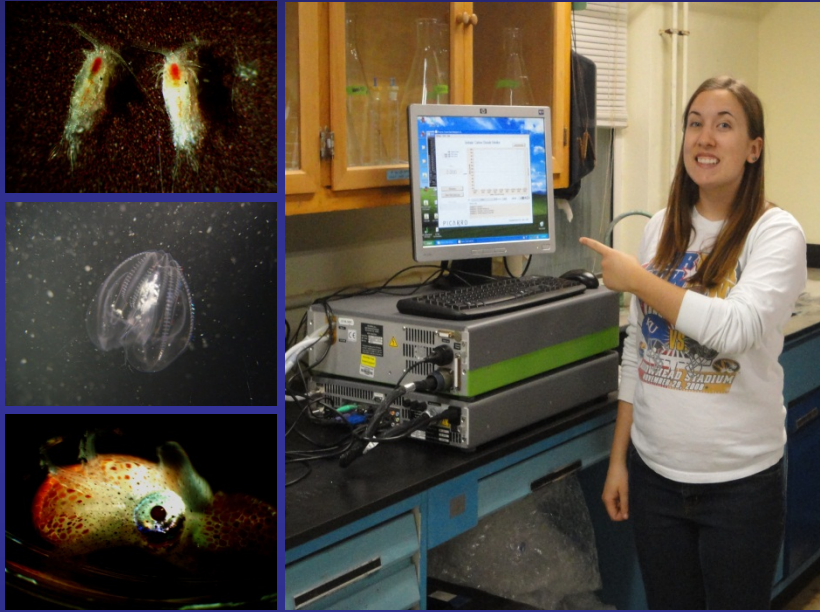
Photosynthesis within Mars' volcanic craters? Insights from Cerro Negro volcano, Nicaragua

Come see the AGU poster: Wednesday PM, P33B-1768

Naomi Shelton



Dauphin Island Sea Lab



Current Research Interests

- Deep-sea gelatinous zooplankton trophic interactions
- Food web dynamics in the oligotrophic of the Sargasso Sea
- Performing grazing experiments on zooplankton to determine their role in carbon transport
- Planning to pursue a master's degree in Fall 2012



Danielle F. Sumy

NSF postdoctoral fellow at USGS-Pasadena

Who am I? Observational and Statistical Seismologist

Research: Earthquake Triggering

Why? Lead us to better understanding of faulting, causes of earthquake activity, and hazard analysis

Dissertation: Mechanisms and triggering of microearthquake activity in the oceanic ridge-transform setting (Lamont-Doherty Earth Observatory, Columbia University)

- tidal triggering of earthquakes at 9°50'N EPR
- how tidal triggering observations can lead us to an estimate of permeability
- the mechanisms of earthquake activity in the newly-formed rift within the Gulf of California

Postdoctoral Research: the relationship between non-volcanic tremor and local earthquake activity at the Parkfield-Cholame segment of the San Andreas fault (USGS)

Future: I am looking for an academic and/or government job, and collaborators!

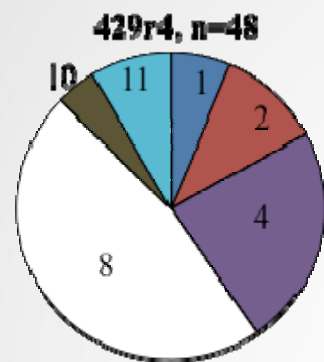
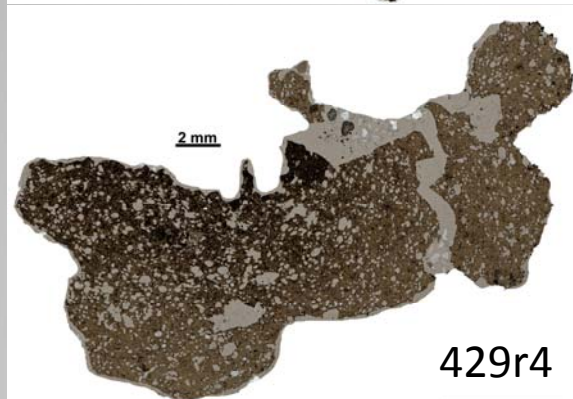
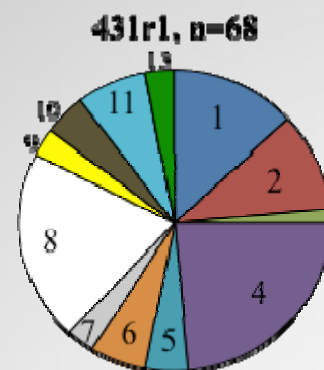
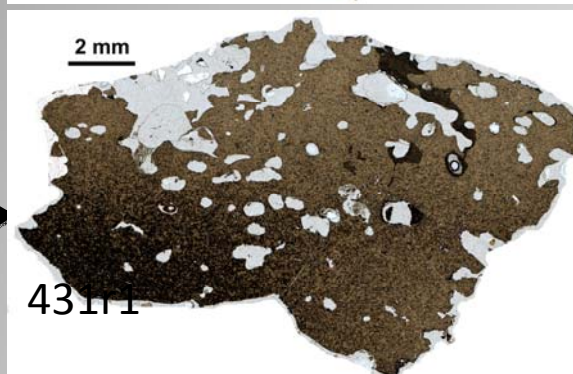
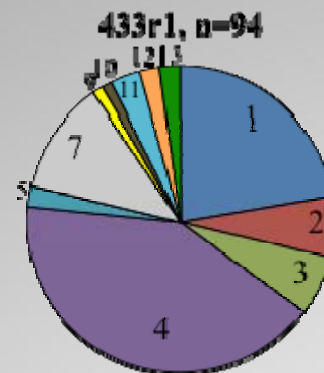
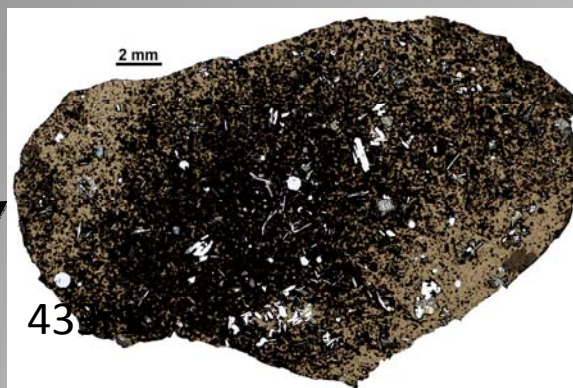
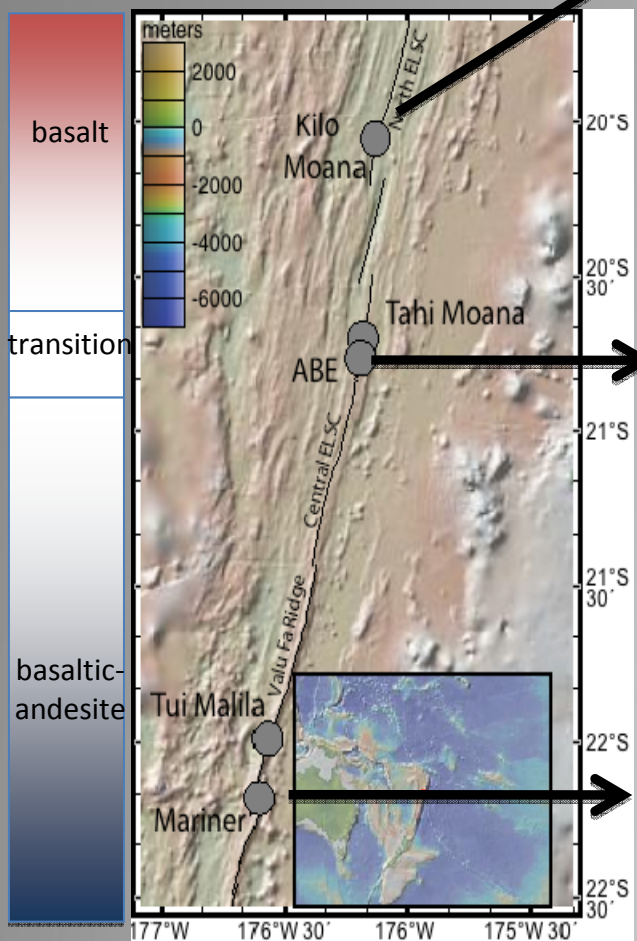
Jason Sylvan

U. Southern California

Postdoctoral Fellow
(looking for a
faculty position!)

Thin Section

16S rRNA clones



- 1 α -proteobacteria
- 2 δ -proteobacteria
- 3 ϵ -proteobacteria
- 4 γ -proteobacteria
- 5 Acidobacteria
- 6 Actinobacteria
- 7 Bacteroidetes
- 8 Chloroflexi
- 9 Lentisphaerae
- 10 Nitrospira
- 11 Planctomycetes
- 12 Verrucomicrobia
- 13 Other

Drew Syverson

Department of Earth Sciences – University of Minnesota, Twin-Cities

- Experimental Geochemistry PhD graduate student working Professor William E. Seyfried Jr.
 - Currently my 3rd year (data=time), have a couple more to go.
- Participated on the Mid-Atlantic 2008 cruise (MAR2008) and enjoyed it thoroughly.
- I would like to get more involved with **field** hydrothermal geochemists and collaborate science.
- My main research focuses on the degree of trace element partitioning and stable isotope fractionation between minerals and hydrothermal fluid as a function of rate (which is a function of many things: Temperature, degree of supersaturation, pH, precursor phases, etc...).
 - Understanding how rates affect the distribution of elements/isotopes in hydrothermal systems can help constrain global budgets of elements.

Andrew Thurber

athurber@coas.oregonstate.edu

Postdoctoral Fellow, Oregon State University

Research Interests:

The impact of microbe-metazoan interactions
on ecosystem function.

Roll of oceanography for determining community
ecology and persistence in the deep sea.

Soft-sediment, deep-sea & polar benthic ecology



Scott D Wankel (Harvard)

Stable Isotope Biogeochemistry

Research Interests:

- Sources/cycling of nitrogen in marine ecosystems
- Linkages among nitrogen, carbon, sulfur and metal cycles
- Coastal, estuarine and deep-sea ecosystems
 - Connecting cycling mechanisms to microbial functional communities

Approaches:

- Stable isotope systems (N, O, C, S)
- *In situ* instrumentation (Laser ICOS, Quadrupole MS)
- Functional gene analyses

Starting as Asst Scientist at WHOI
Looking for students, postdocs, collaborators!

Harrison P. Zimmer

BS Ocean Engineering 2011, MS Ocean Engineering Exp.2013

- M.S. OCE, Advisor Dr. Jason Dahl
 - Thesis: Research in Vibration Induced Vortices (VIV)
 - Flexible Pipe/Tube Modal Variations & Patterns
 - Even vs Odd Modes
 - 2D & 3D Imaging

Previous Work

- 2009 - 10: Awarded the Ernest F. Holling's Scholarship
 - Worked with NOAA and HURL in Hawai'i
- 2011 - Present: Inner Space Center at URI
 - Ocean Exp. Trust, NOAA Ocean Exp. & Research

