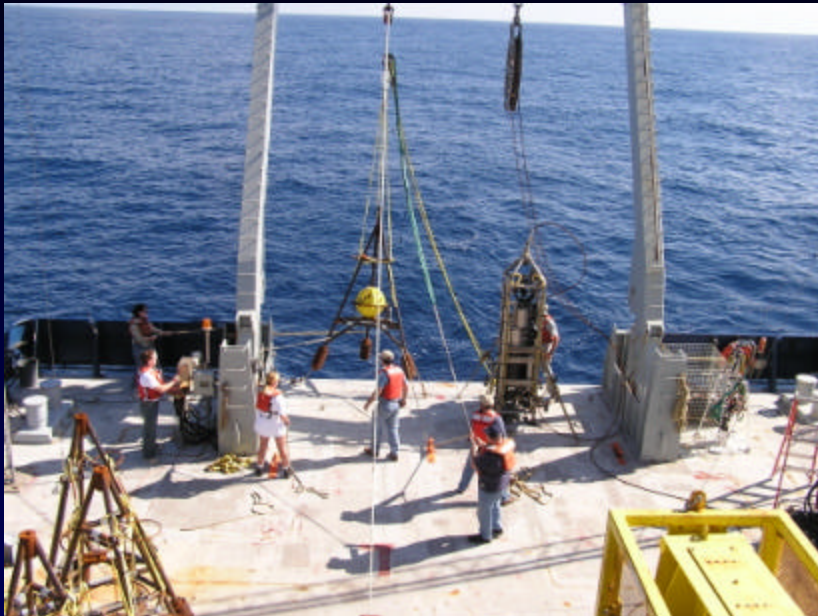
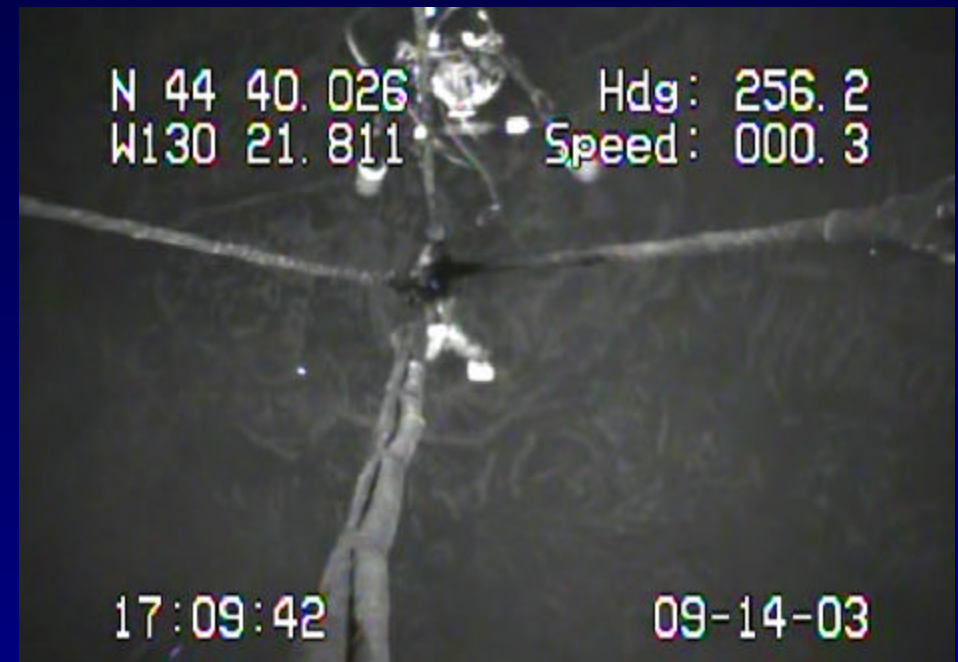


Fred Spiess



MPL Control Vehicle (CV) used to install 4 precision acoustic ranging units within the axial valley at the south Cleft segment of the Juan de Fuca Ridge during cruise CNTL15RR – Sept 2003.



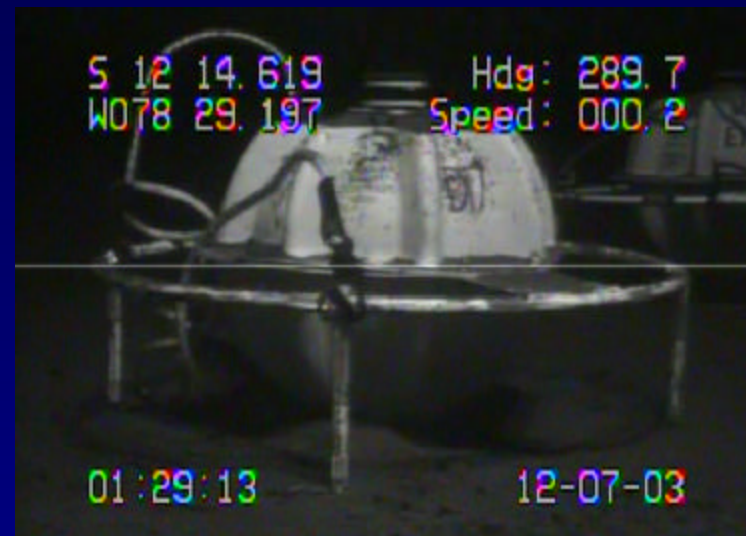
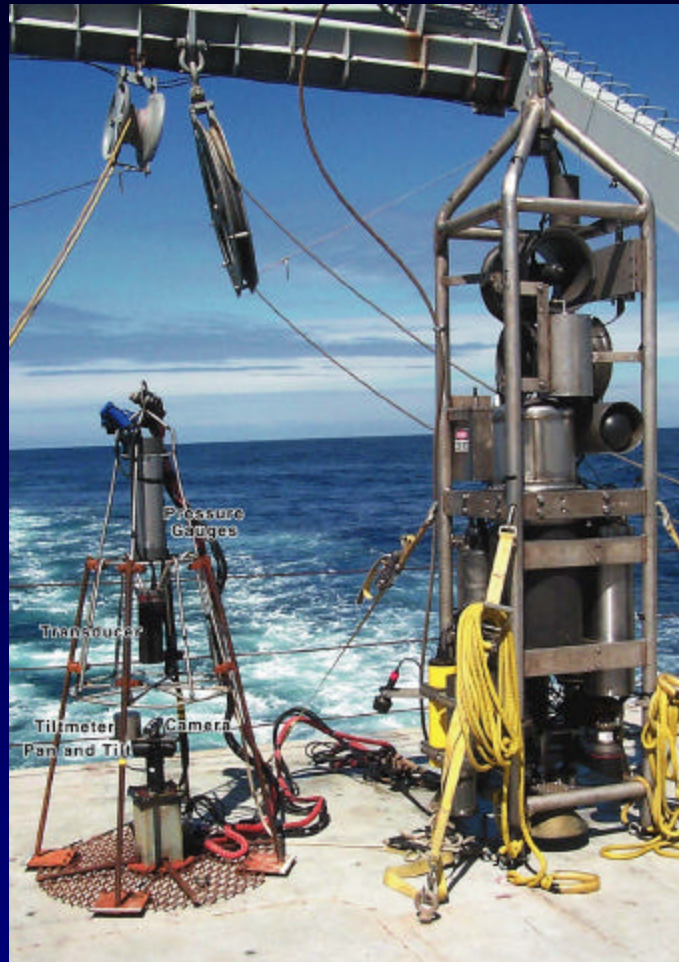
N 44 40.026
W130 21.811

Hdg: 256.2
Speed: 000.3

17:09:42

09-14-03

CV used to replace seafloor transponders and conduct precision vertical deformation survey on continental shelf offshore Lima Peru as part of seafloor geodetic study of subduction zone deformation during cruise DANA04RR – Dec 2003.



Jaye Cable

Artificial Seeps and Radioactive Brine

JSL Cruise Sept 03

NOAA-NURP and NOAA OE

Cruise Objectives

- Deploy 72 Sulfide Biogenerators according to a formal ANOVA design testing effects of seep proximity and size.
- Characterize Radon and Radium content of Brine Pool
- Many other things.

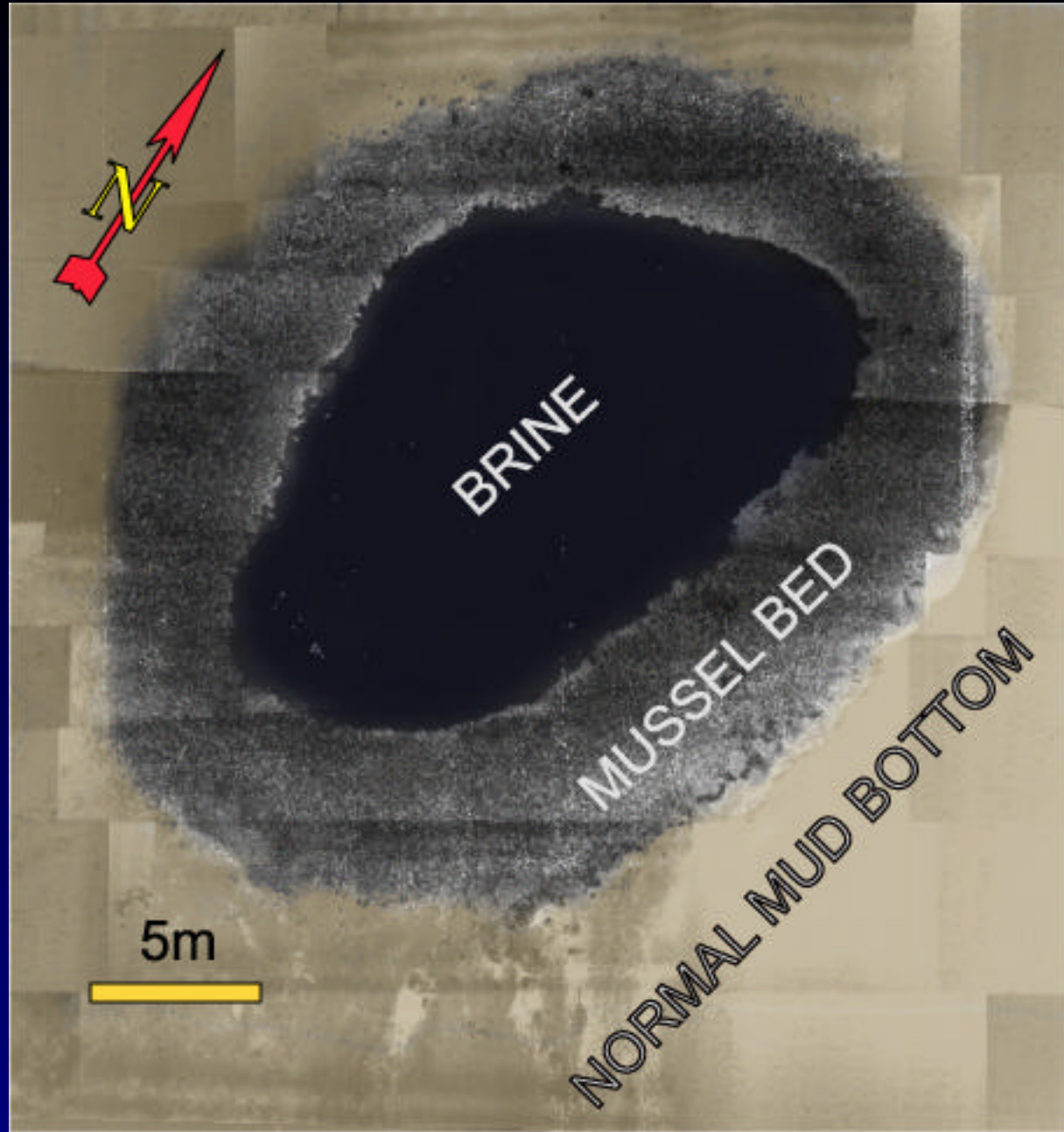
Sulfide Biogenerators

- Same Rabbit Chow devices described earlier.
- 12 deployed at 6 sites in clusters of 1 and 3.
 - 3 Known seep sites ~ 500 - 600m
 - 3 Non-seep sites ~ 500 - 600m
- Begin sampling in 2005

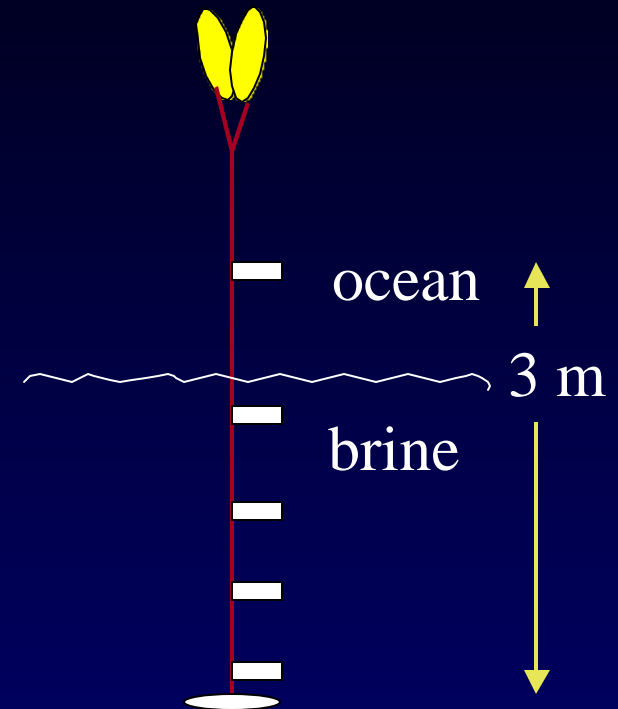
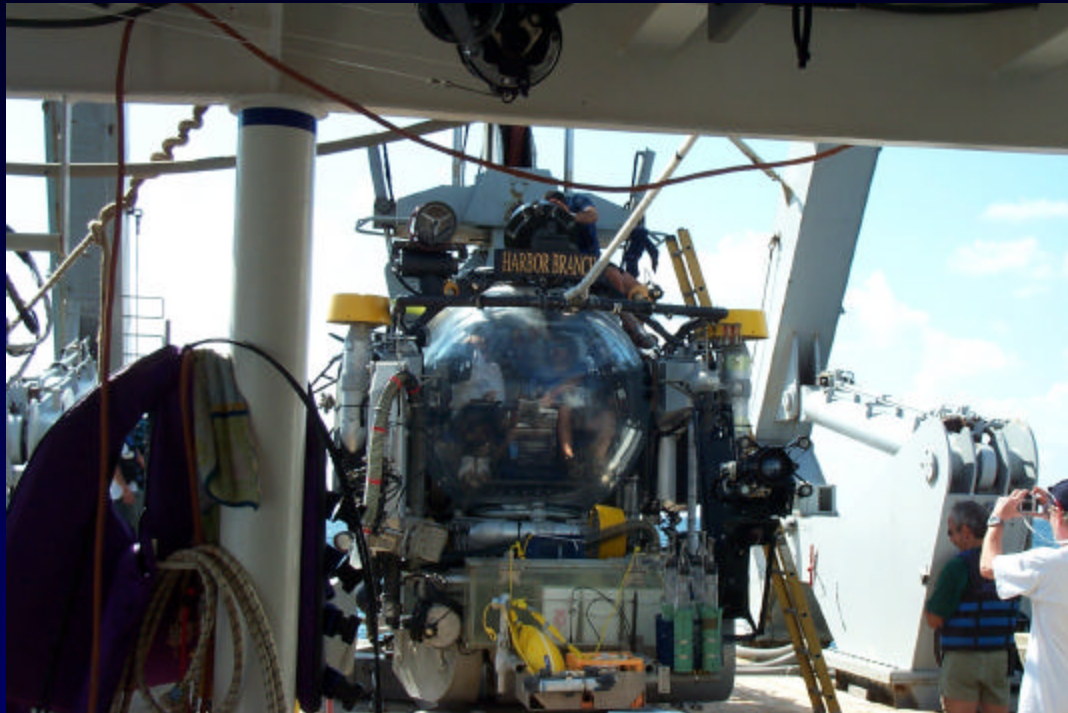


Radioactive Brine

- Excess ^{222}Rn analyzed from brine waters
- Vertical profile of Ra quartet across brine-ocean interface
- Activity ratios will be used to calculate residence time and seep rate of brine pool
- Ambient water column profiles of ex ^{222}Rn and ^{226}Ra also collected



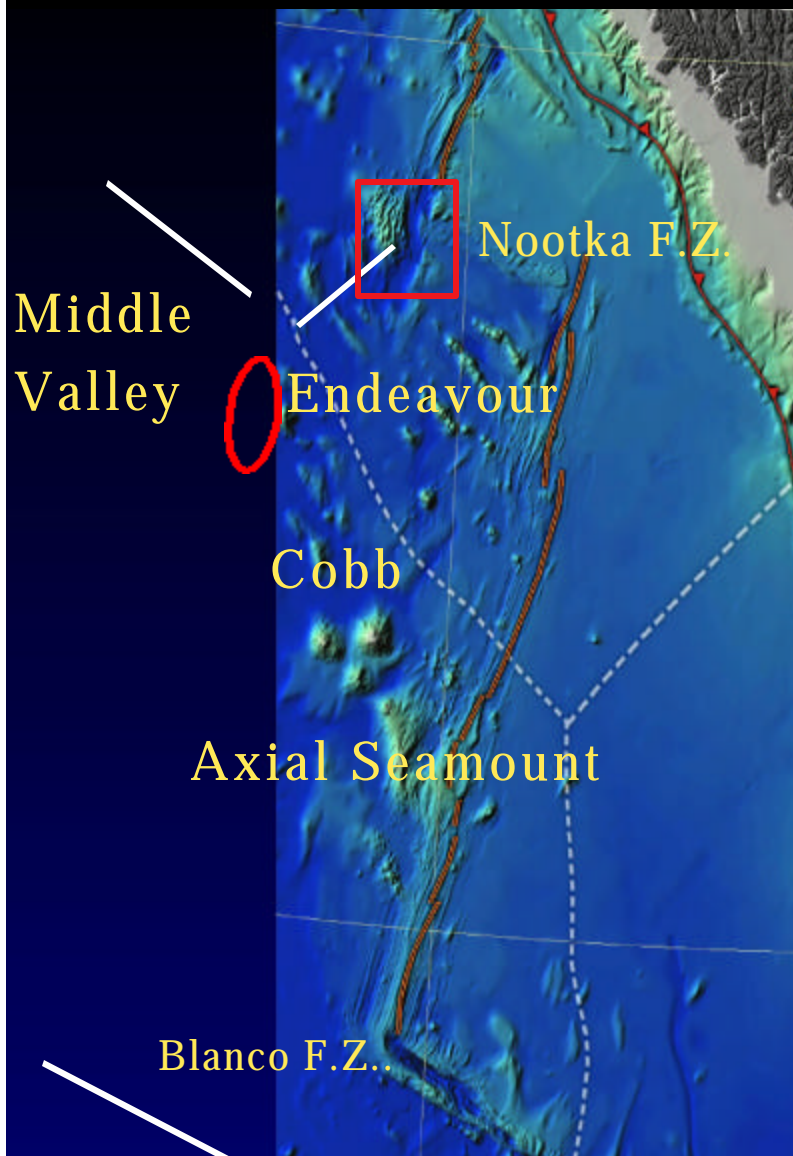
Mn-fiber Vertical Array



residence time

$$\frac{{}^{228}\text{Ra}}{{}^{226}\text{Ra}} = \frac{\exp(-\lambda_{228}t)f_{em}}{\exp(-\lambda_{226}t)f_{em}}$$

KECK 2003 J.R. Delaney



*Linkages among seismic activity,
fluid flow and
microbial productivity*

EM300 map of Endeavour & Cobb
Segments

Deployment of 7 in situ short-period
seismometers

Deployment of 1 sediment-buried broadband
seismometer-working when left

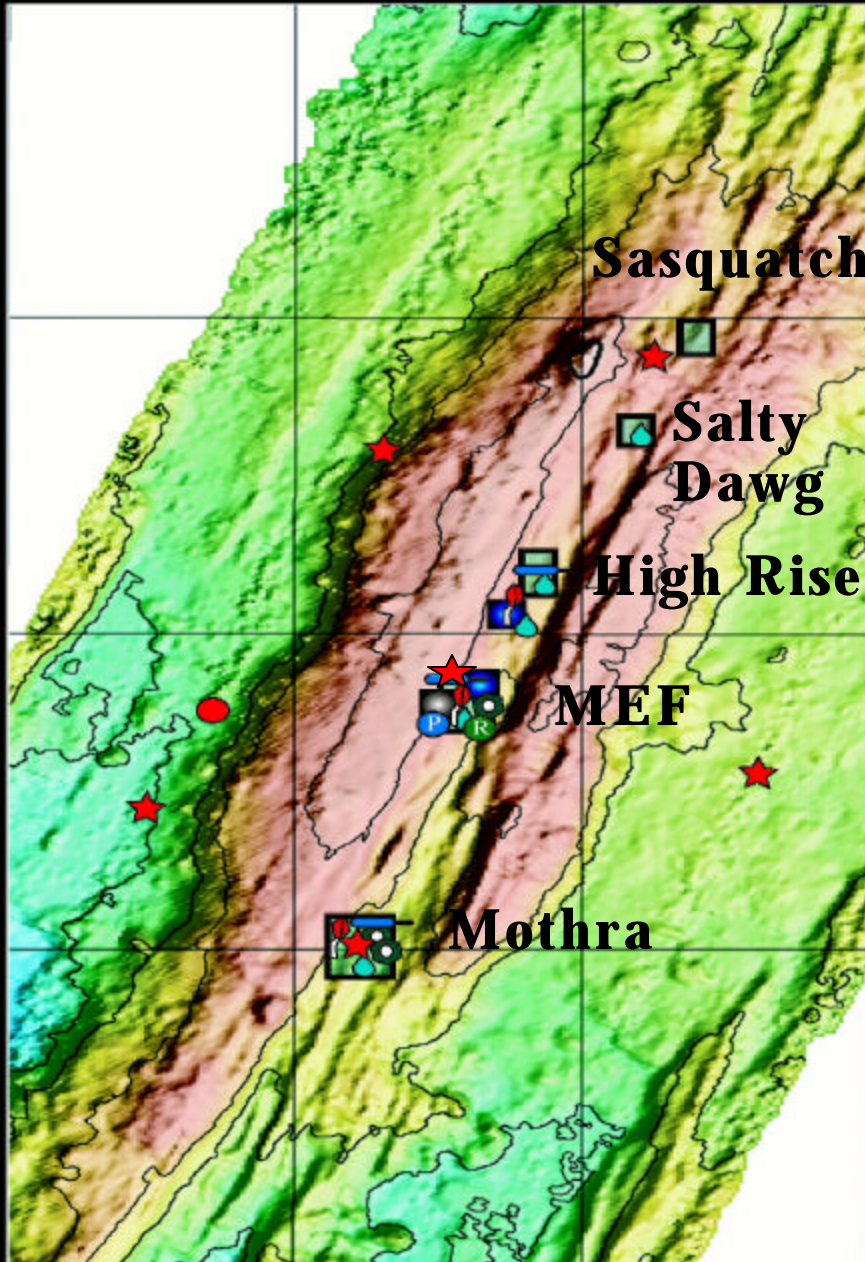
Recovery/deployment of sulfide microbial
incubator

Deployment of two McLane time-series
water samplers, and one particulate DNA
time-series sampler

Deployment of temperature-resistivity probe
and hobos

Cleaned up transponders

Establishing a Seafloor Observatory at Endeavour



- ★ short-period seismometer
- broadband
- vent fluid samples
- ⬡ sulfide-microbial insert
- ⬢ time-series water sampler
- ⬢ particulate DNA sampler
- ⌋ macrofaunal samples
- temperature probe
- Ⓡ temperature-resistivity probe
- Ⓟ pressure sensor

KECK

UW-MBARI Seismometer array
Wilcock, Stakes, McGill, Barkley, Toomey

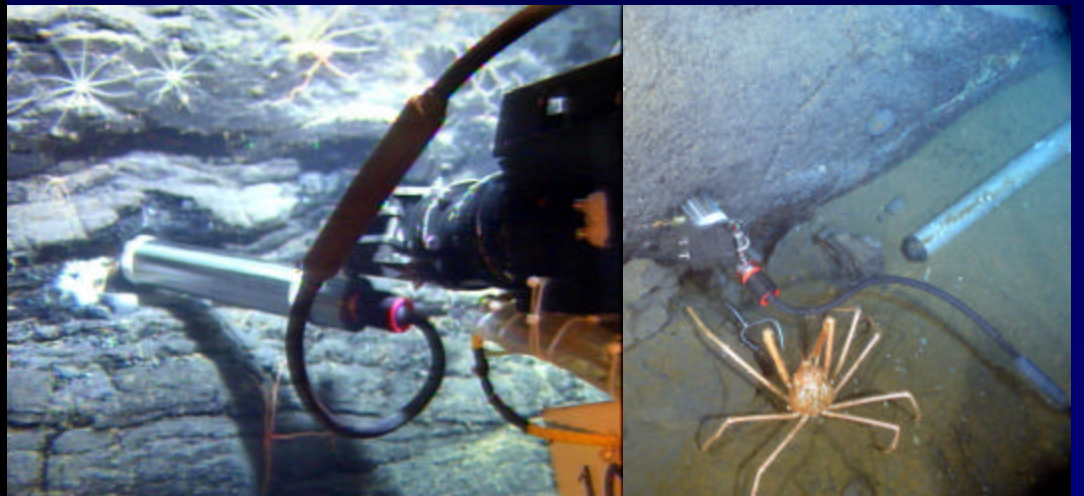
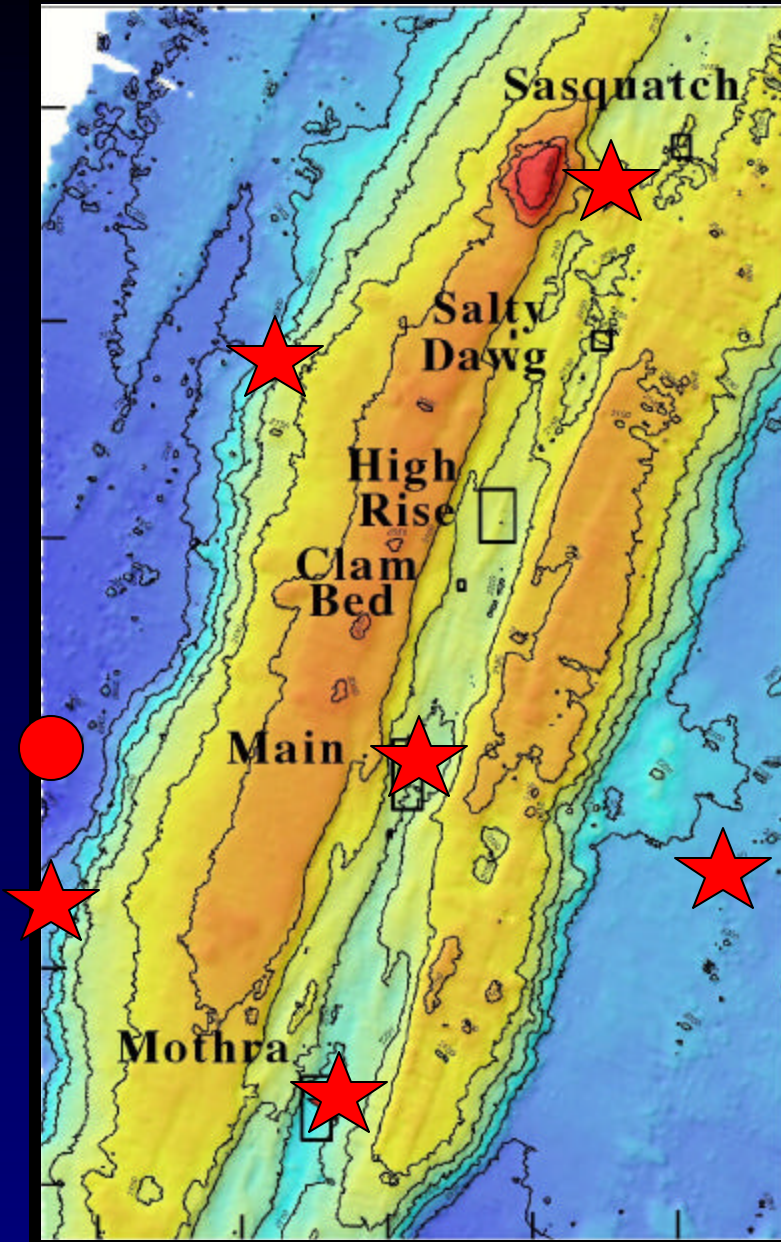
Started installation 2002 Tiburon

Holes completed 2003 J2

7 Short-Periods Installed 2003, ROPOS

1 Broadband 2003, ROPOS, serviced 2004

2 more broadbands installed 2004





REVEL Project

**Research and Education:
Volcanoes, Exploration and Life**

- **June 13-17, 2003**

**Pre-cruise orientation workshop in
collaboration with R2K, 20 teachers
& educators, UW**

- **June 18-July 1, 2003 Atlantis-Alvin**

1 REVEL Mentor

3 REVELers

- **July 21-Aug 6 Thompson-Ropos 2 mentors, 4 REVELers**

- **Aug 7- August 24 Vero, 1 mentor, 4 REVELers**

HBOI operators report

Widder

Frank

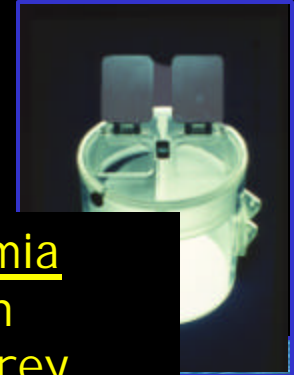
Youngbluth

Wright

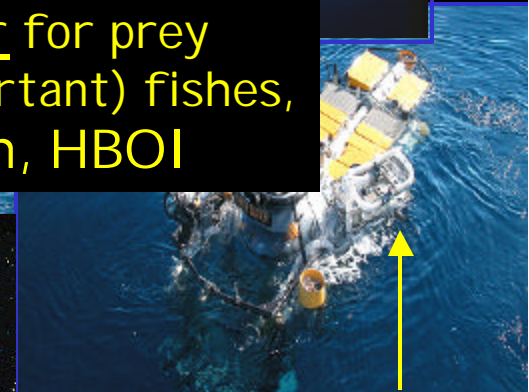
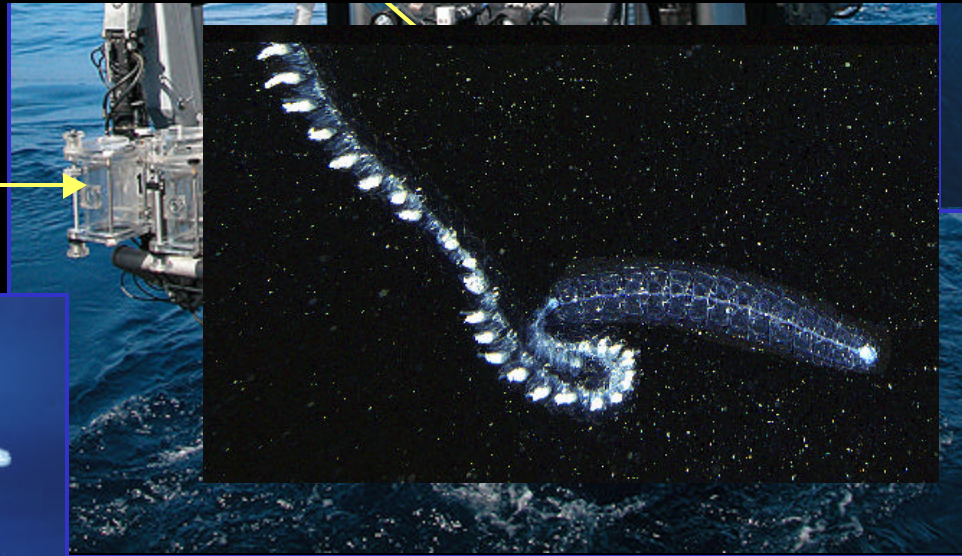
Johnson Sea Link Submersible



VIDEO CAMERA
AND PAIRED
LASER



HYPOTHESIS: The physonect siphonophore Nanomia cara is an important predator of zooplankton. When numerous, this species is a major competitor for prey consumed by zooplankton, (commercially important) fishes, and mammals.
Marsh Youngbluth, HBOI



SUCTION SAMPLERS



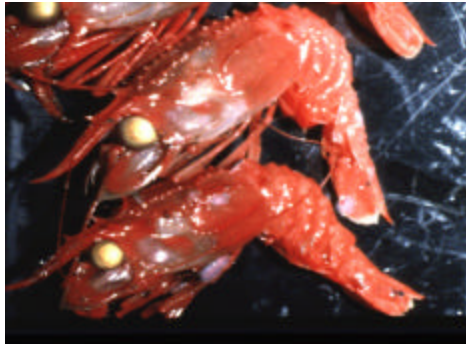
CTD-SENSORS
TRANSMISSOMETER
FLUOROMETER



SAMPLER FOR GELATINOUS
ZOOPLANKTON

Depth range - 1000m
32 samplers

Tammy Frank, HBOI



- Some benthic species in the aphotic zone have enormous photoreceptors



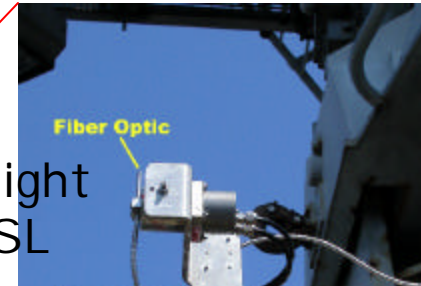
- Pelagic species living above them in the water column have reduced photoreceptors

To what wavelengths of light are these benthic species most sensitive?

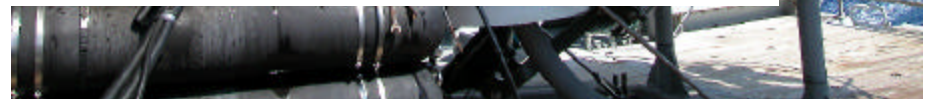
Edie Widder, HBOI :

- Measurement of spectral radiance to 500 m w/ high sensitivity spectroradiometer

- Thru-hull fiber optic penetrator transmitted light from outside to inside JSL



- Benthic traps, deployed and retrieved with JSL, allow for collection of live animals with intact eyes.



Amy Wright, HBOI



- Forcepia* sp. is source of
- potent cytotoxic agents
 - novel mechanism of action



Selective, non-destructive
collections using JSL

Effects of lasonolides on human
pancreatic cancer cell lines is being
investigated using a number of
assays, including DNA microarrays,
to determine MOA.



Rare, potent, sponge
re-discovered after
19 yrs of searching!

