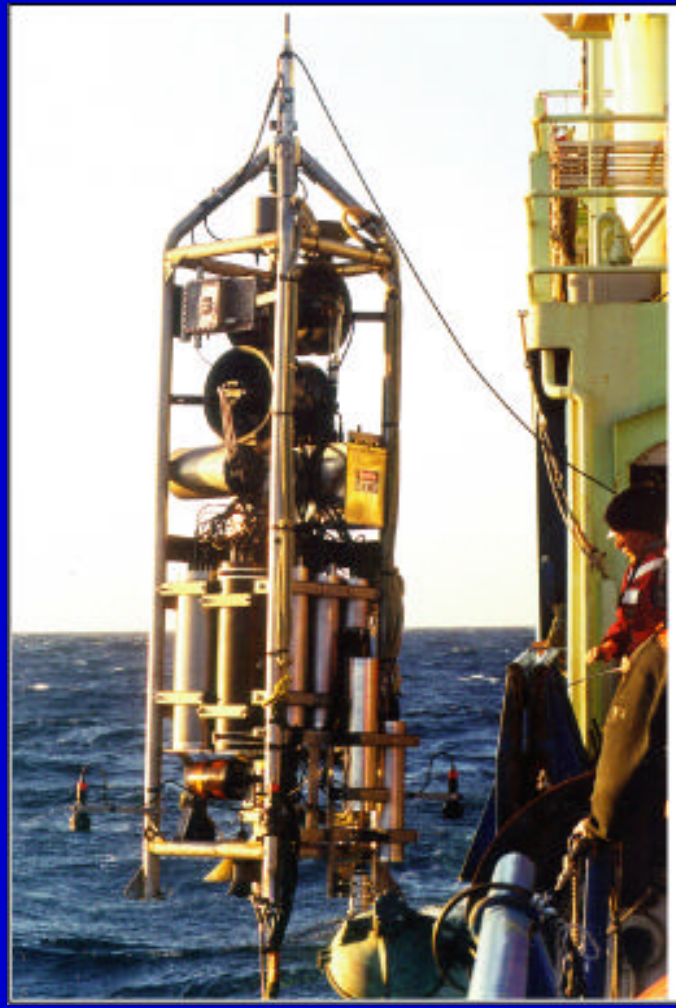
Non-NDSF Vehicle Science Reports

Control Vehicle
Debbie Kelley Presenter (if no SIO rep present)

Control Vehicle



MPL CONTROL VEHICLE (CV)

2 Horizontal Hydraulic Thrusters
(~100 lbf max thrust)

Sonars: 12 kHz LBL Navigation
23.5 kHz Altimeter
325 kHz Sector Scanning

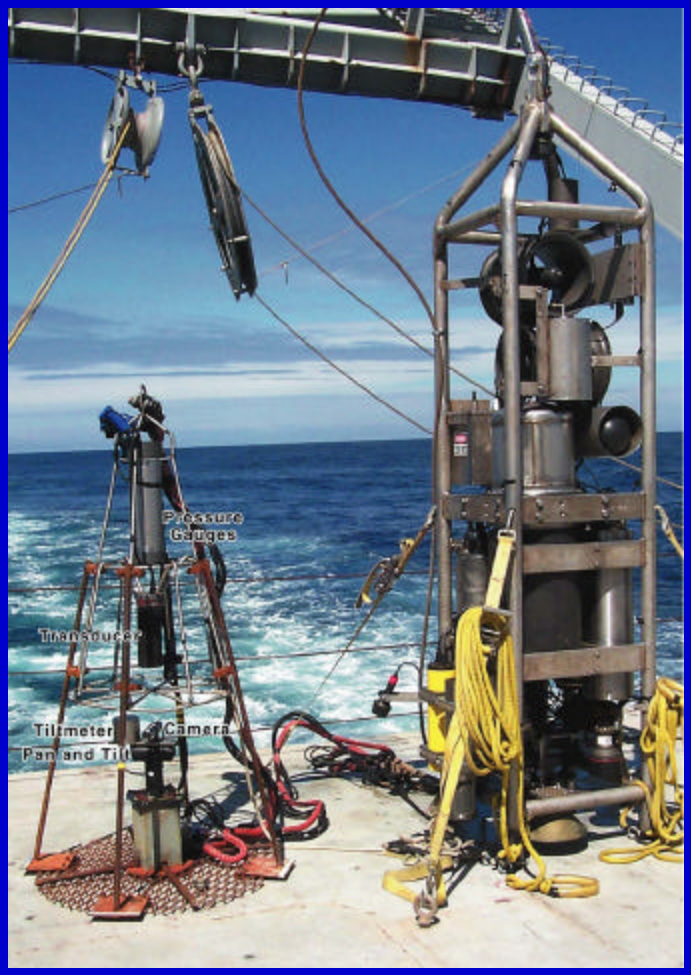
Video: B&W Low-Light Camera
250 W Low Voltage Lights (4)

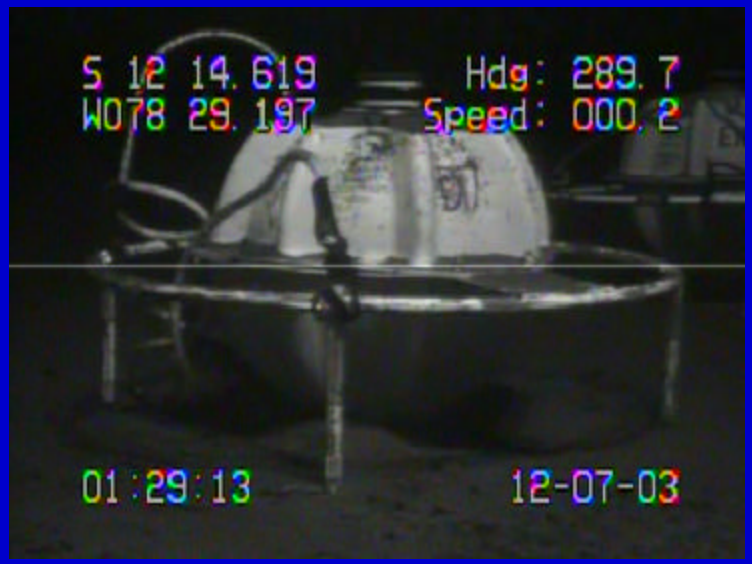
Power: 1800 V at ship
110 V & 220 V @ 60 Hz at CV
Nominal 10 kVA at CV

Compass, Pressure Gauge
Height -- 3.5 m Footprint -- 0.4 M^2
Weight -- 500 kg (water), 1000 kg (air)

- Heavy lift capability of 1300 kg at 5000 m with sub-meter control on package placement
- Contact: Richard Zimmerman rzimmerman@ucsd.edu (858-534-6593)

CV was used to replace seafloor transponders and conduct precision vertical deformation surveys for seafloor geodetic studies offshore Lima Peru in Dec 2003, (K. L. Gagnon G21A-0138 Tuesday am) and on the submerged south flank of Kilauea volcano in Aug./Sept. 2004 (K. A. Phillips G51A-0053 Friday am)



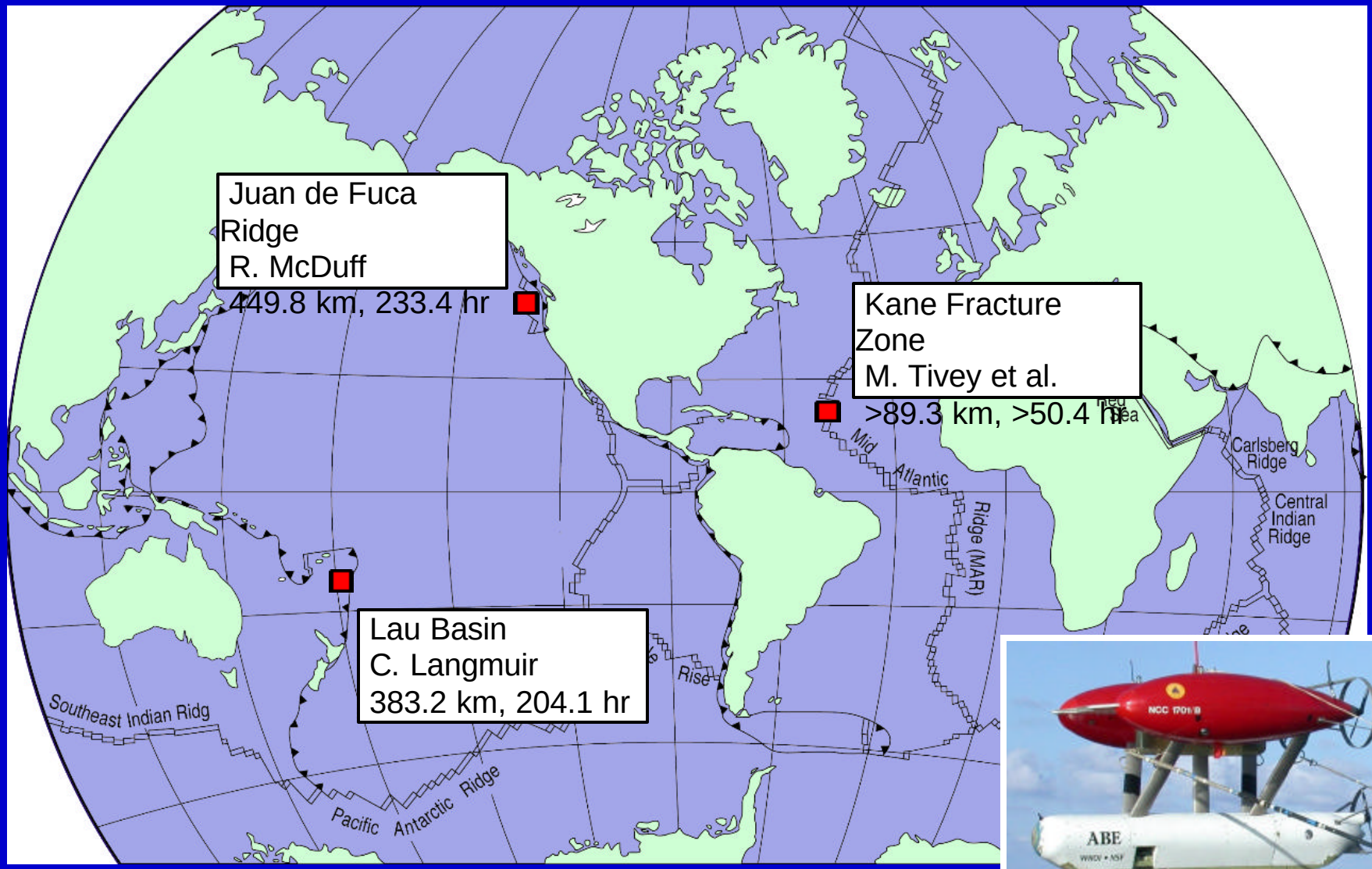


Precision transponder viewed from seafloor survey package.

ABE
Mike Jakuba Presenter

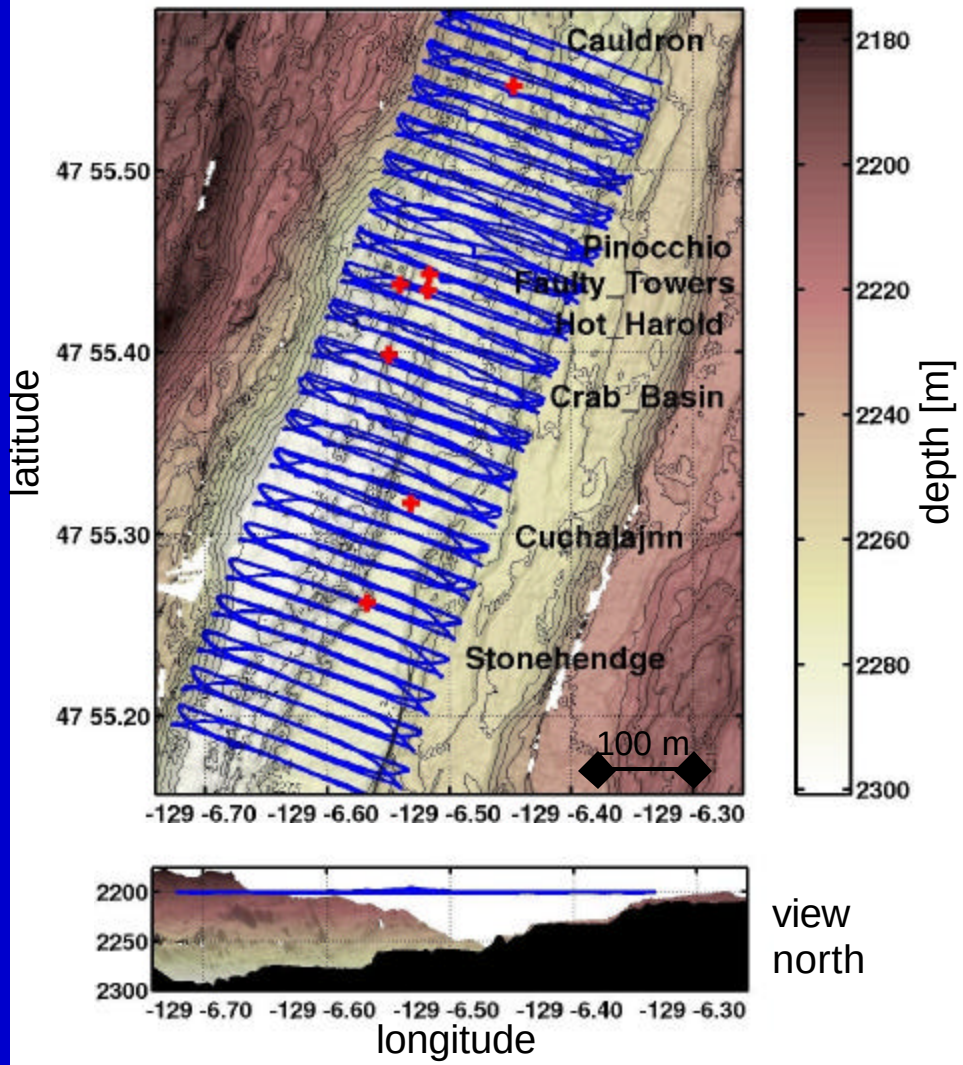
ABE Work 2004

D. Yoerger, A. Bradley, M. Jakuba (presenting)

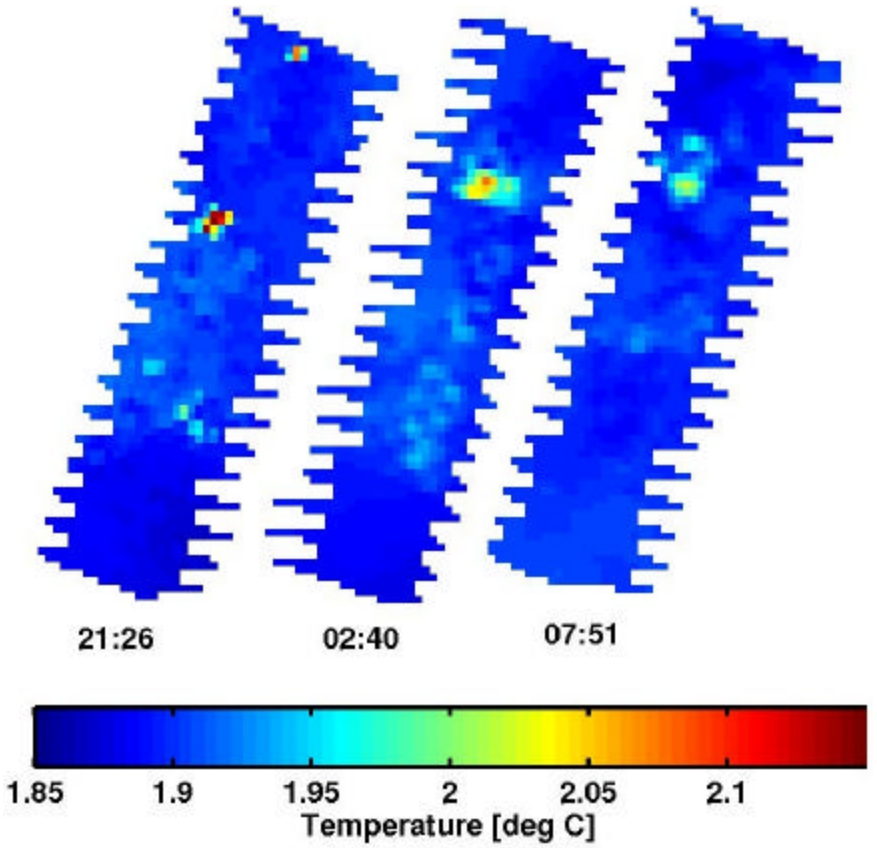


JdF: Seabreeze 2004

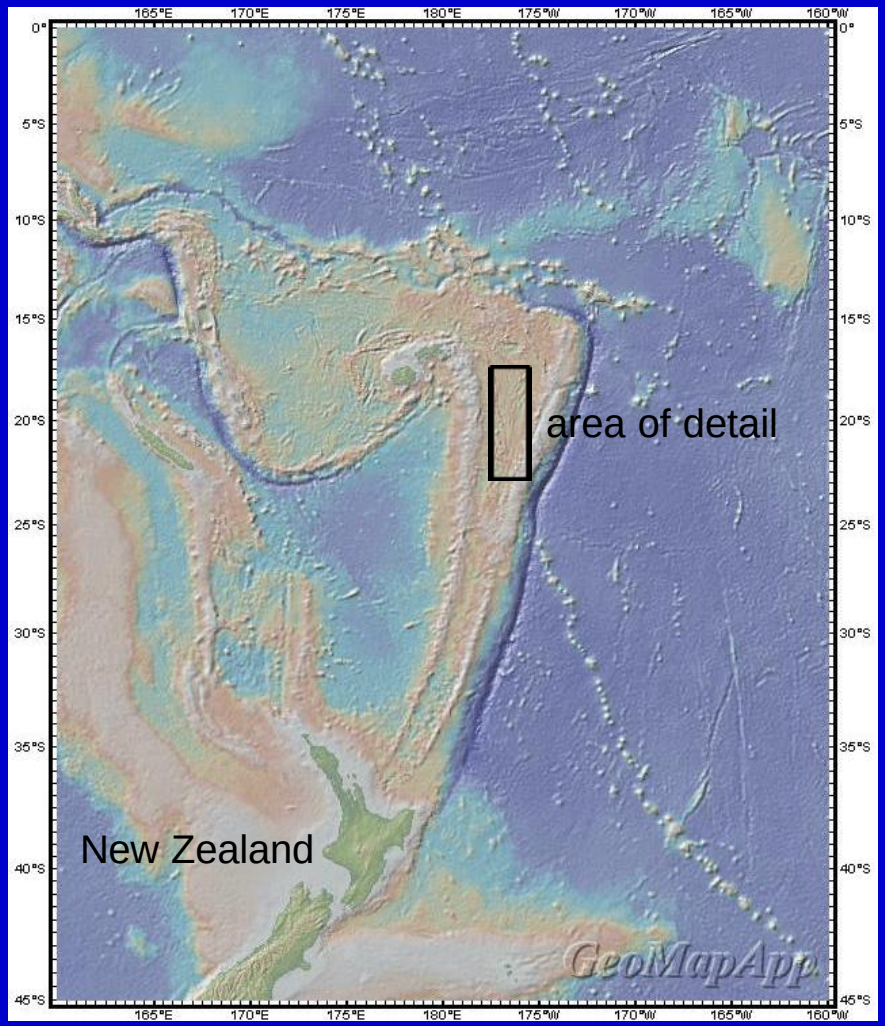
Mothra Vent Field

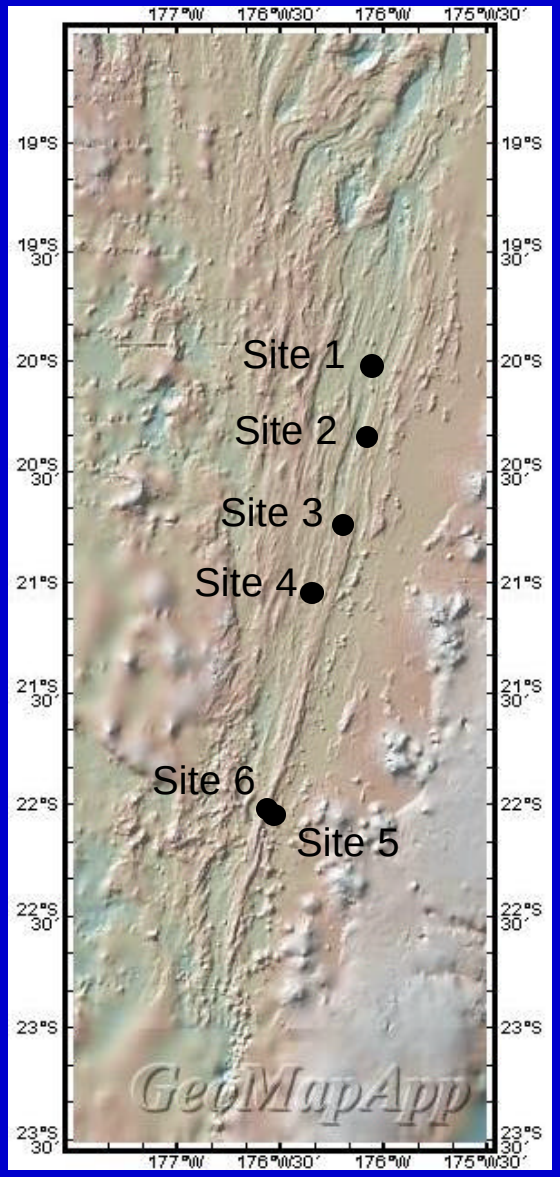


Plume Stem Variability

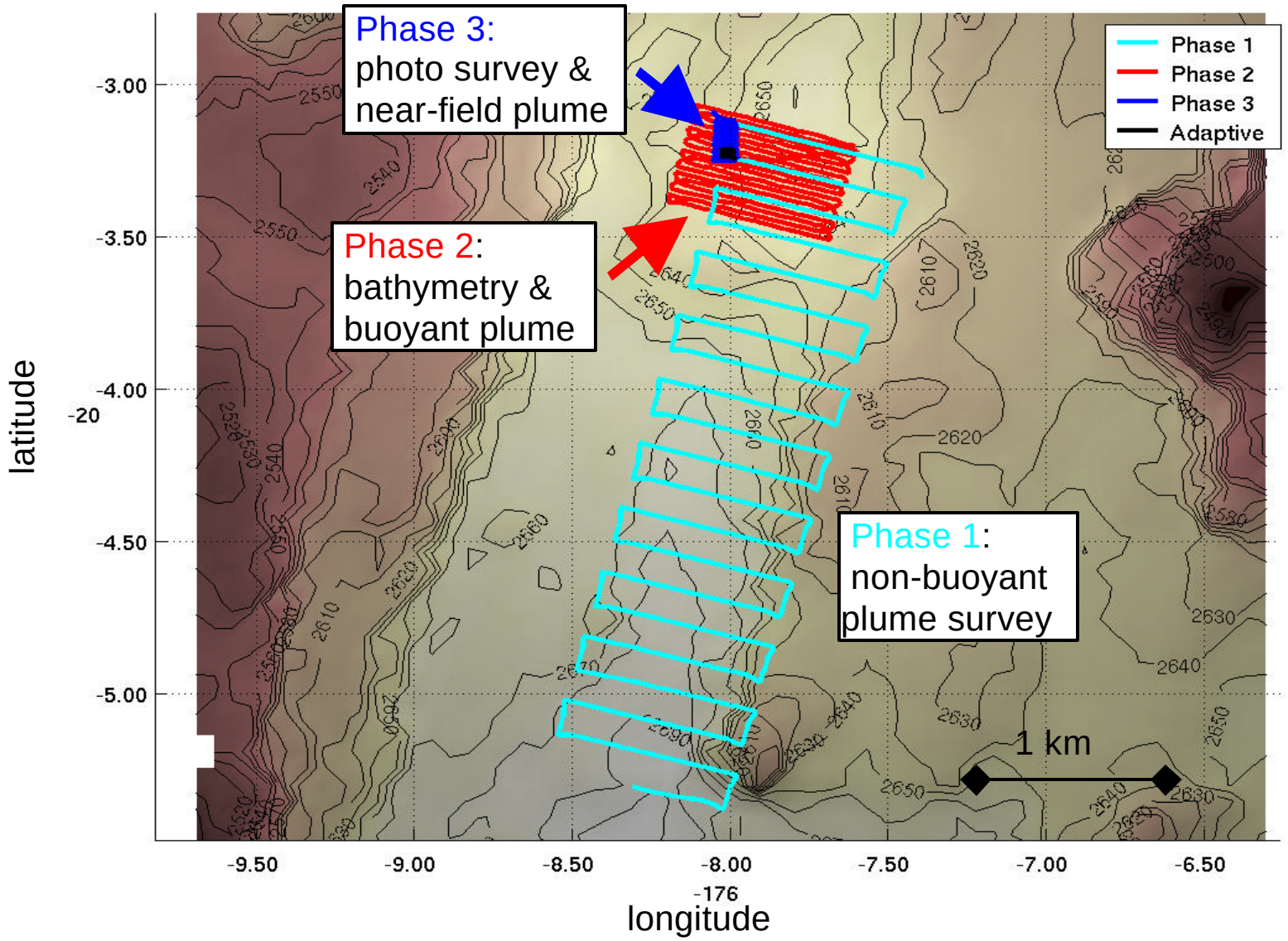


Lau Basin

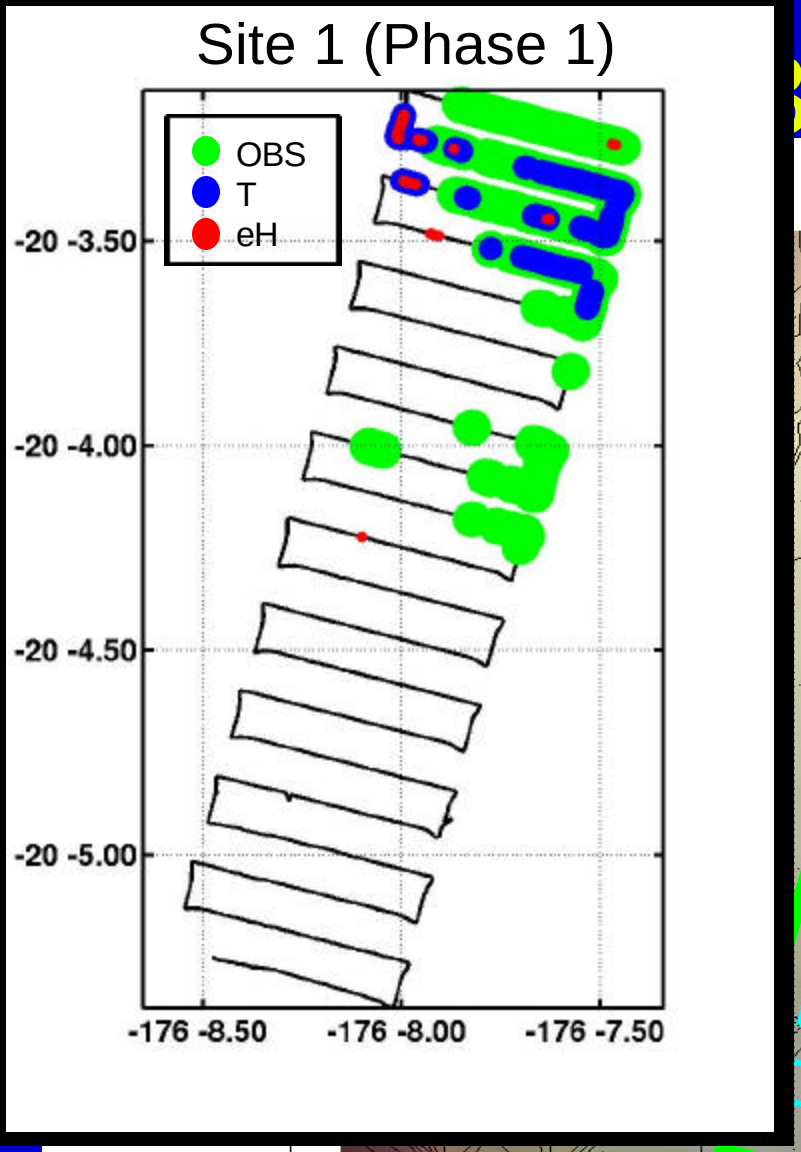

area of detail
New Zealand
GeoMapApp


Site 1
Site 2
Site 3
Site 4
Site 6
Site 5
GeoMapApp

Lau Basin: Site 1

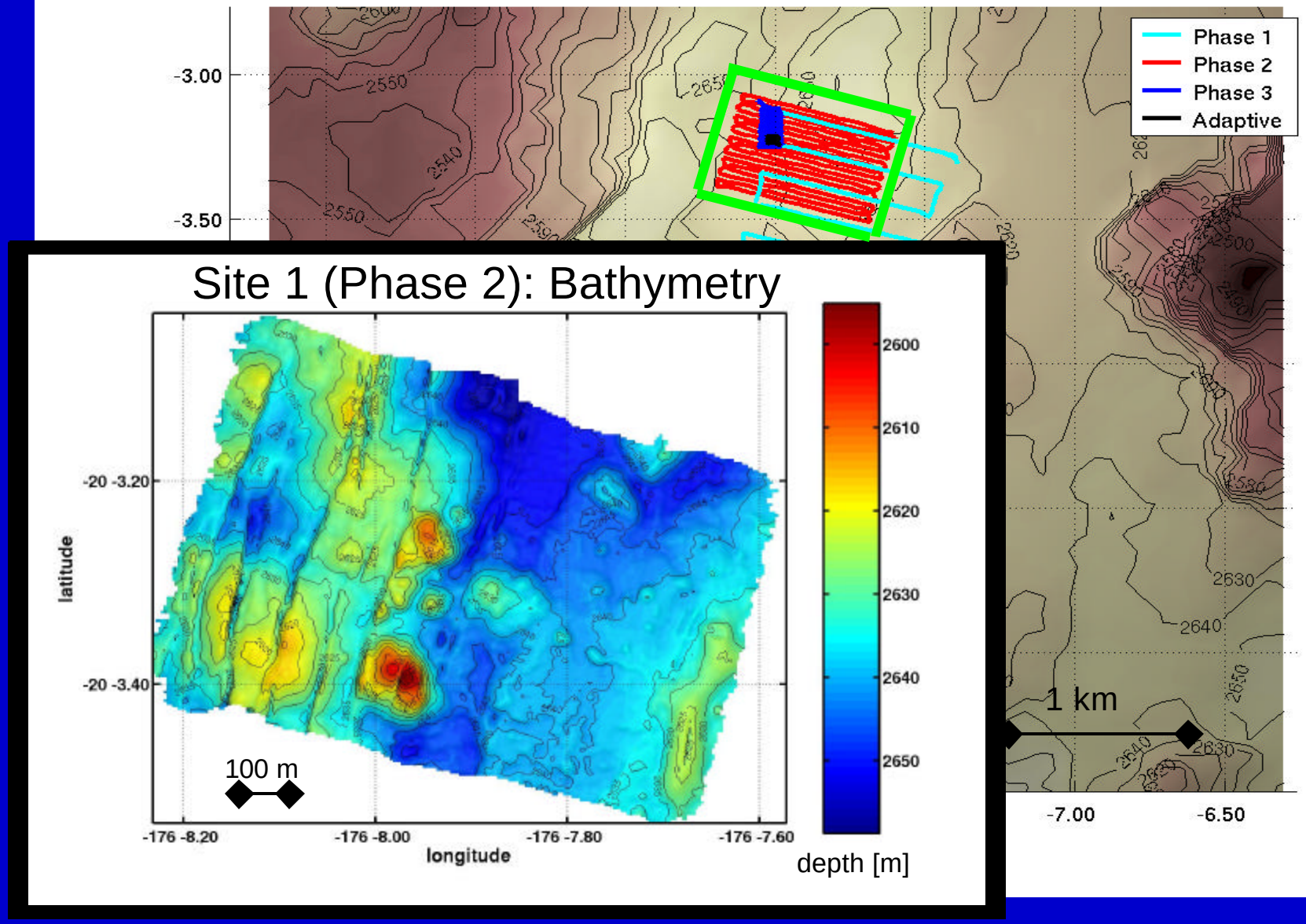


Basin: Site 1

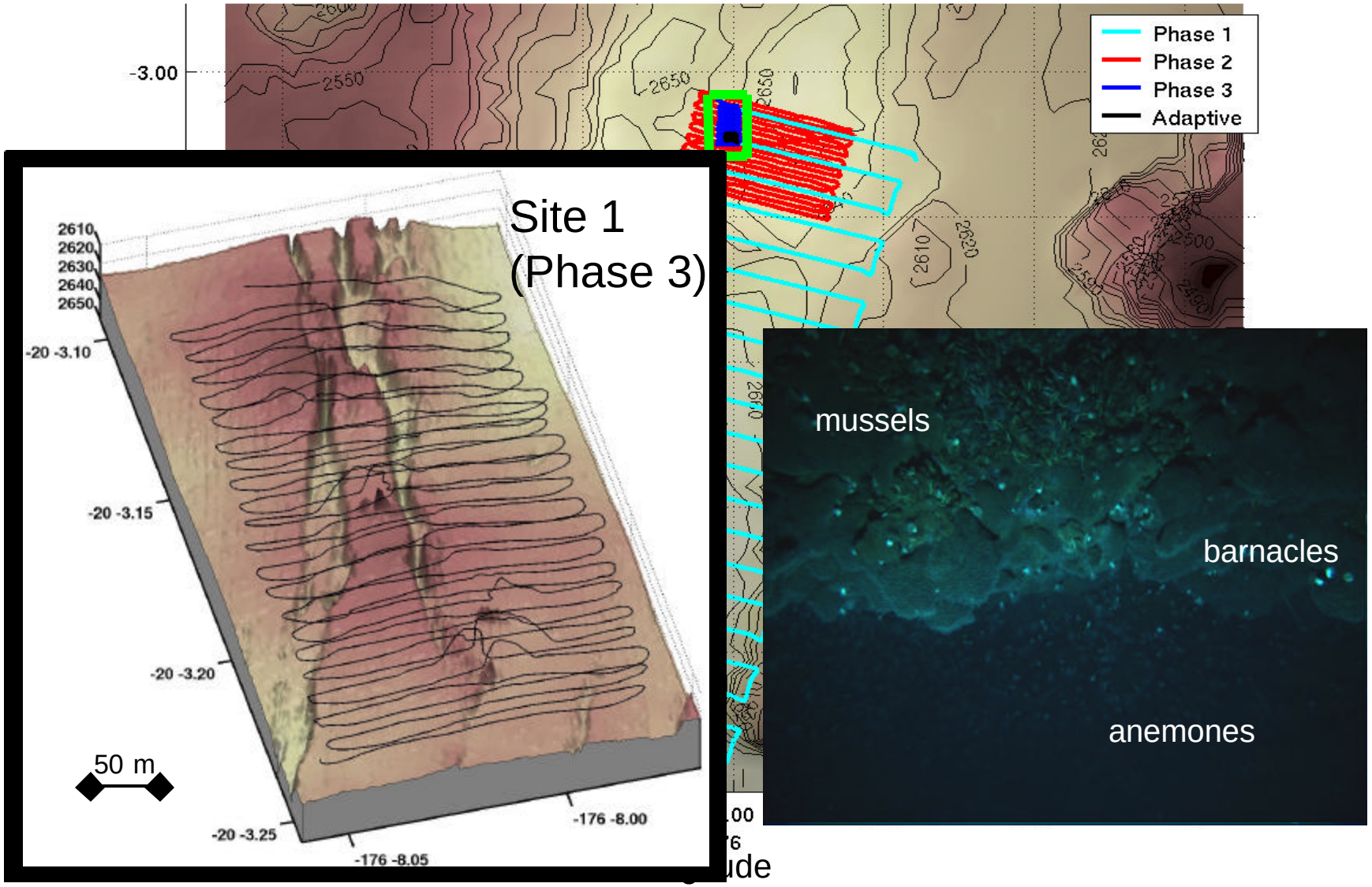

Site 1 (Phase 1)
OBS
T
eH
-20 -3.50
-20 -4.00
-20 -4.50
-20 -5.00
-176 -8.50
-176 -8.00
-176 -7.50

Phase 1
Phase 2
Phase 3
Adaptive
1 km
-9.50
-9.00
-8.50
-8.00
-7.50
-7.00
-6.50
-176
longitude

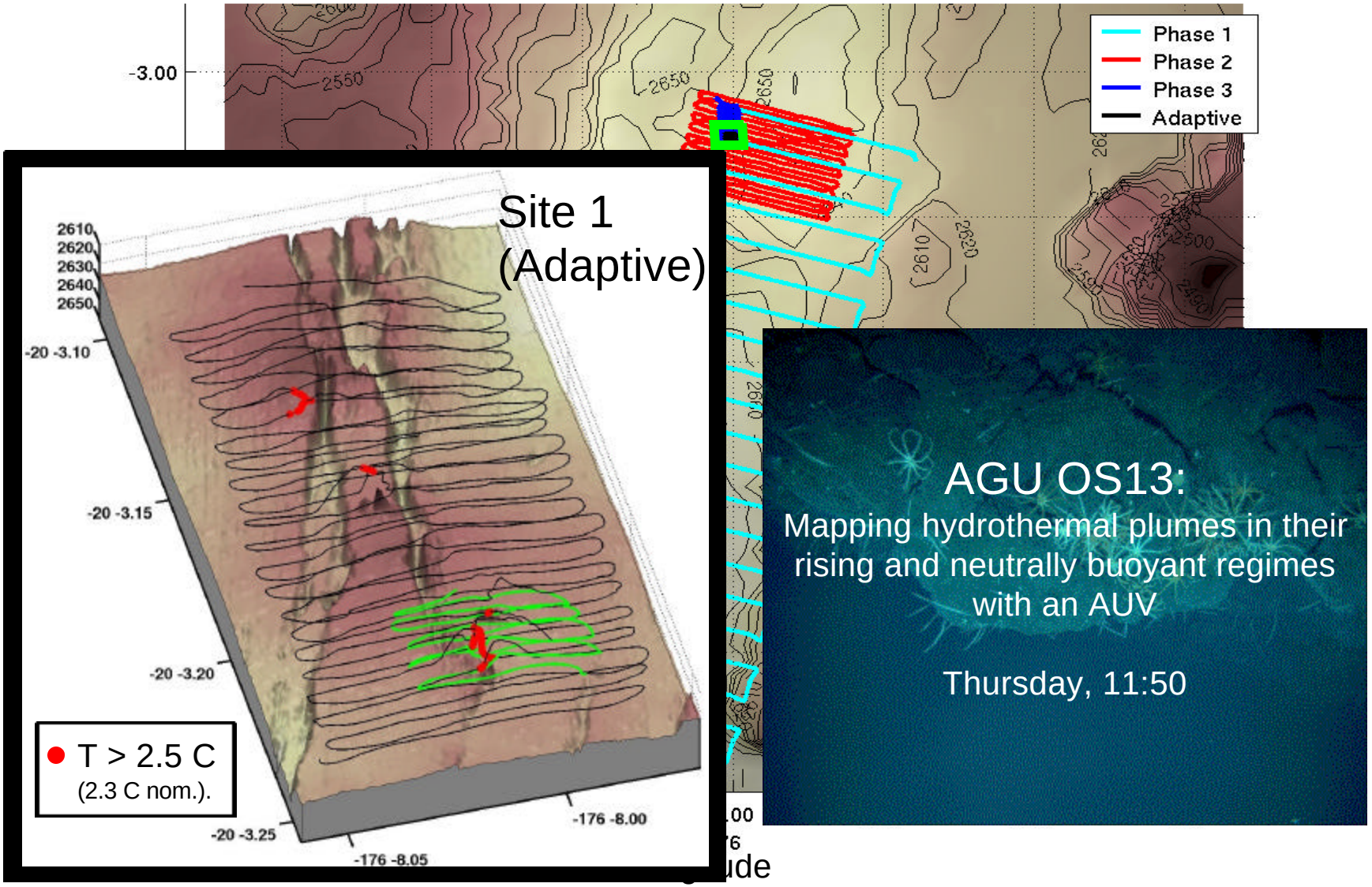
Lau Basin: Site 1



Lau Basin: Site 1

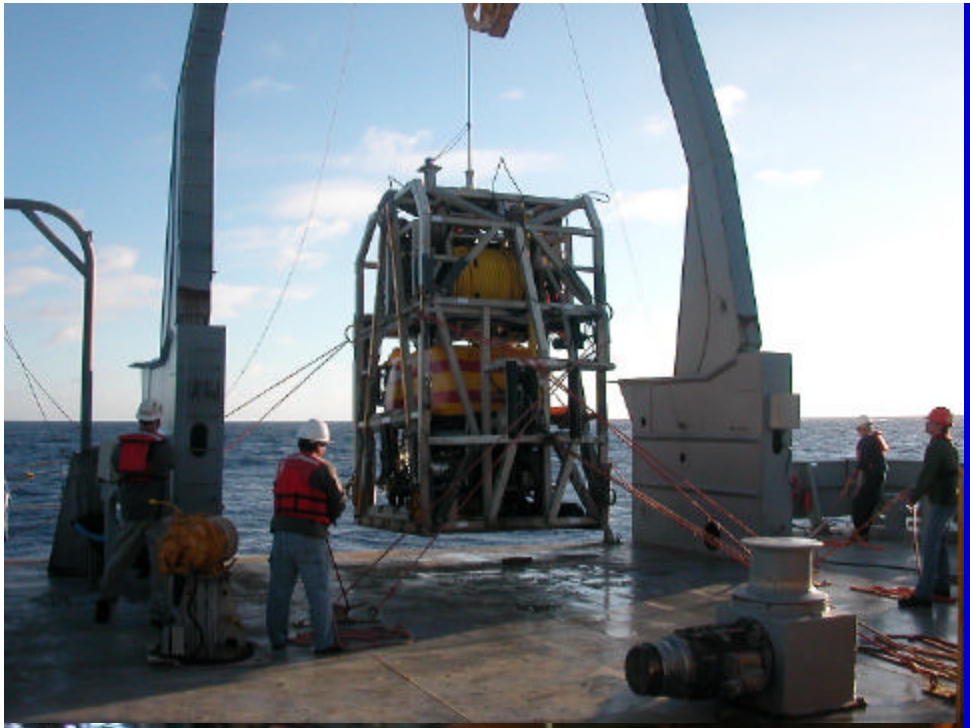


Lau Basin: Site 1



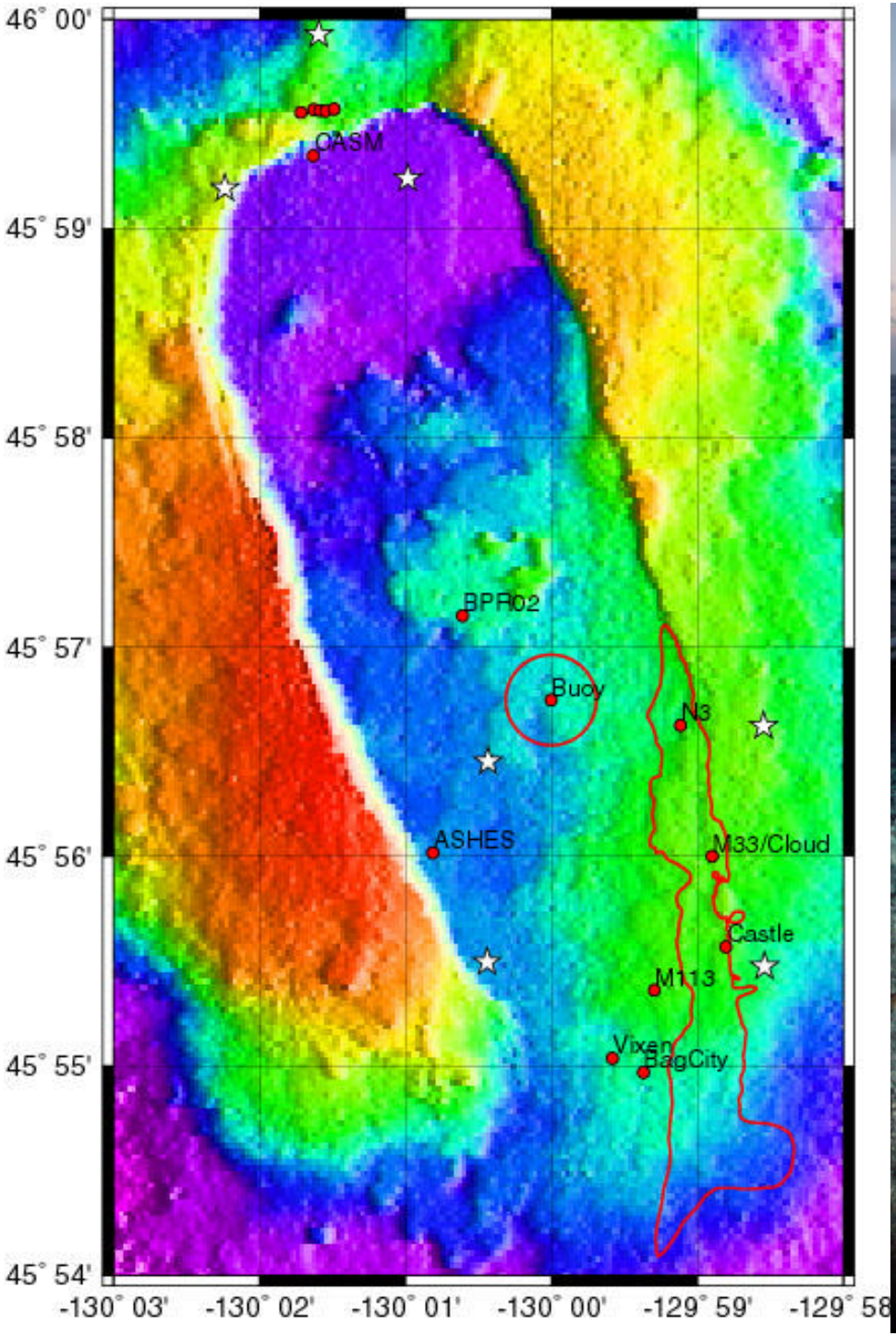
ROPOS – NeMo 2004

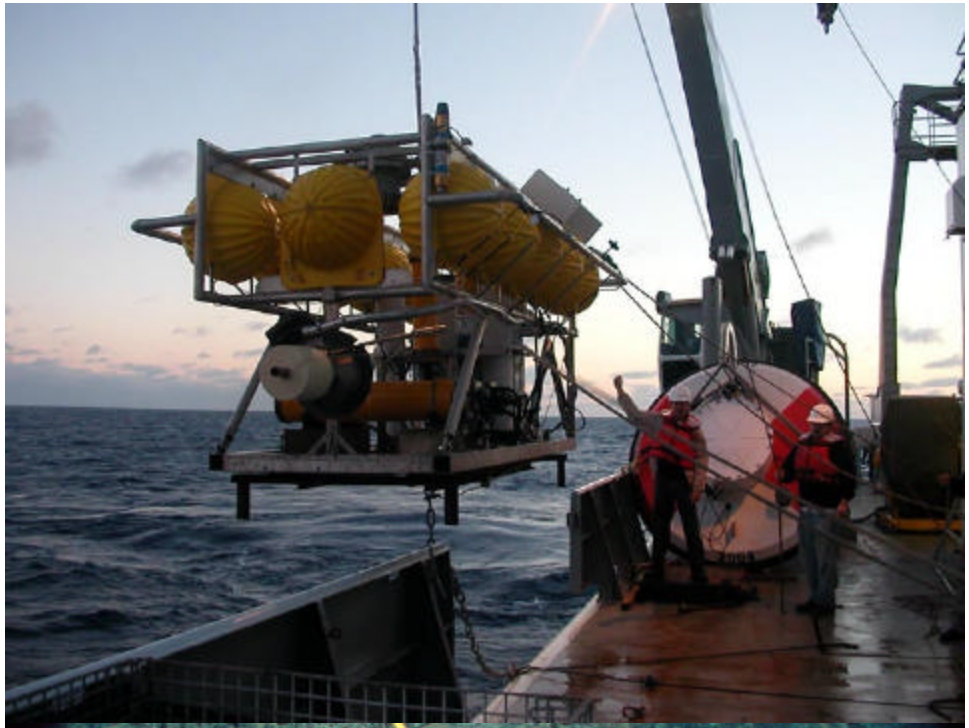
Bill Chadwick Presenter

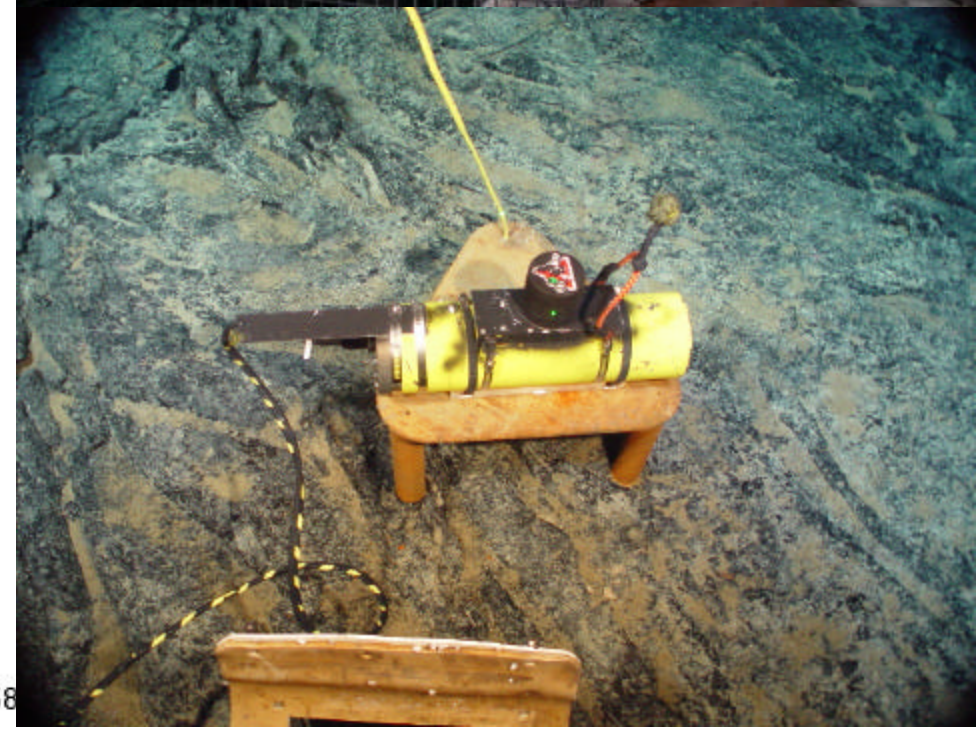


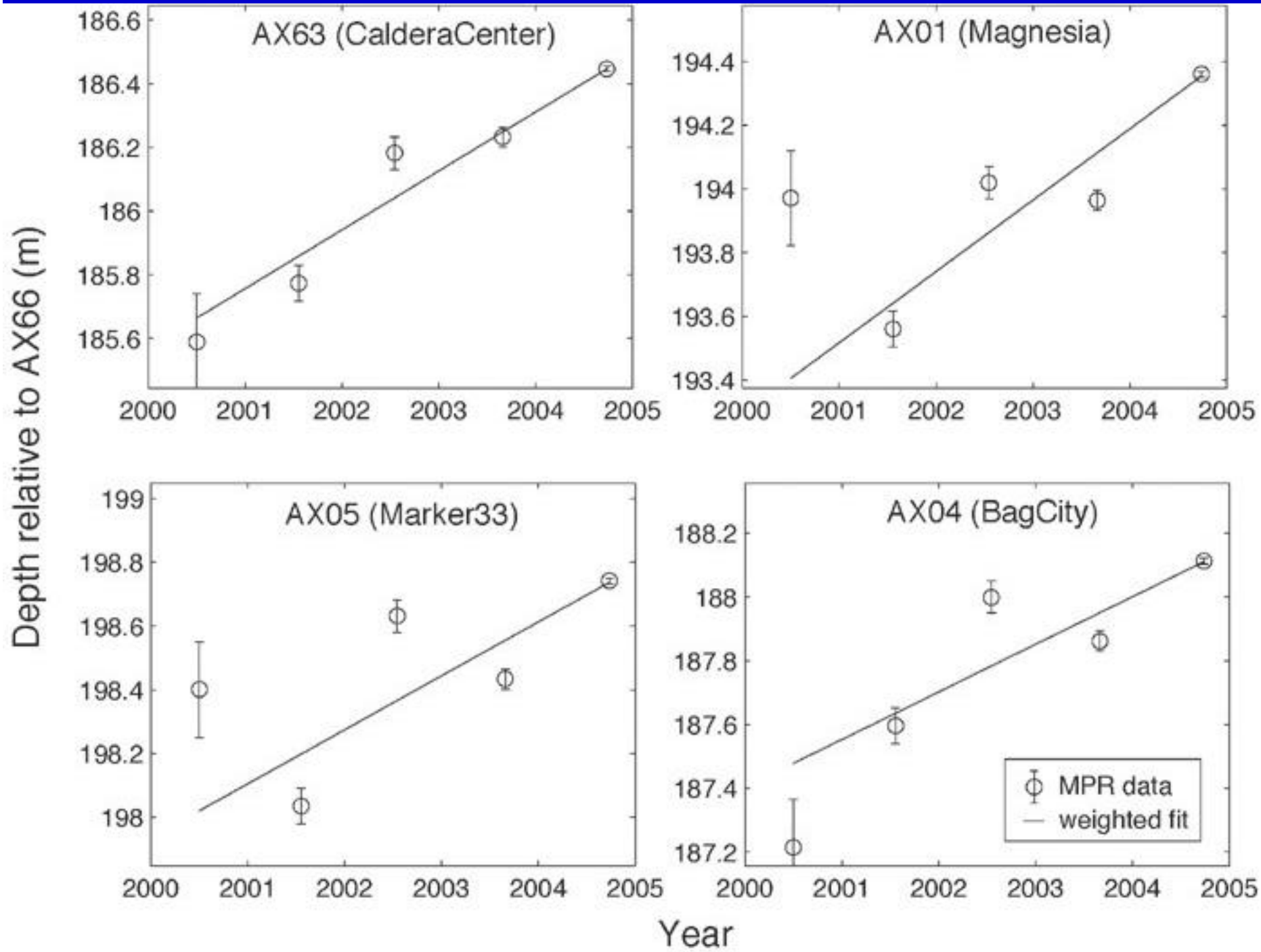
NeMO 2004 OVERVIEW

- 1 ROPOS dive at Endeavour for UW
- 5 ROPOS dives in 7 days at Axial
- Turned around NeMO Net (Buoy, RAS, BPR)
- Fluid sampling at high- and low-temperature vents
- Repeated pressure transects to monitor volcanic inflation


46° 00'
45° 59'
45° 58'
45° 57'
45° 56'
45° 55'
45° 54'
-130° 03'
-130° 02'
-130° 01'
-130° 00'
-129° 59'
-129° 58
CASM
BPR02
Buoy
N3
ASHES
M33/Cloud
Castle
M113
Vixen
BagCity






AX63 (CalderaCenter)
AX01 (Magnesia)
AX05 (Marker33)
AX04 (BagCity)
Depth relative to AX66 (m)
Year
MPR data
weighted fit
186.6
186.4
186.2
186
185.8
185.6
194.4
194.2
194
193.8
193.6
193.4
199
198.8
198.6
198.4
198.2
198
188.2
188
187.8
187.6
187.4
187.2
2000
2001
2002
2003
2004
2005

HURL

Donald Potts Presenter

- SEABEAM
- Dive observations

Sample data:
* sedimentary facies
* U/Th ages
* climatic proxies

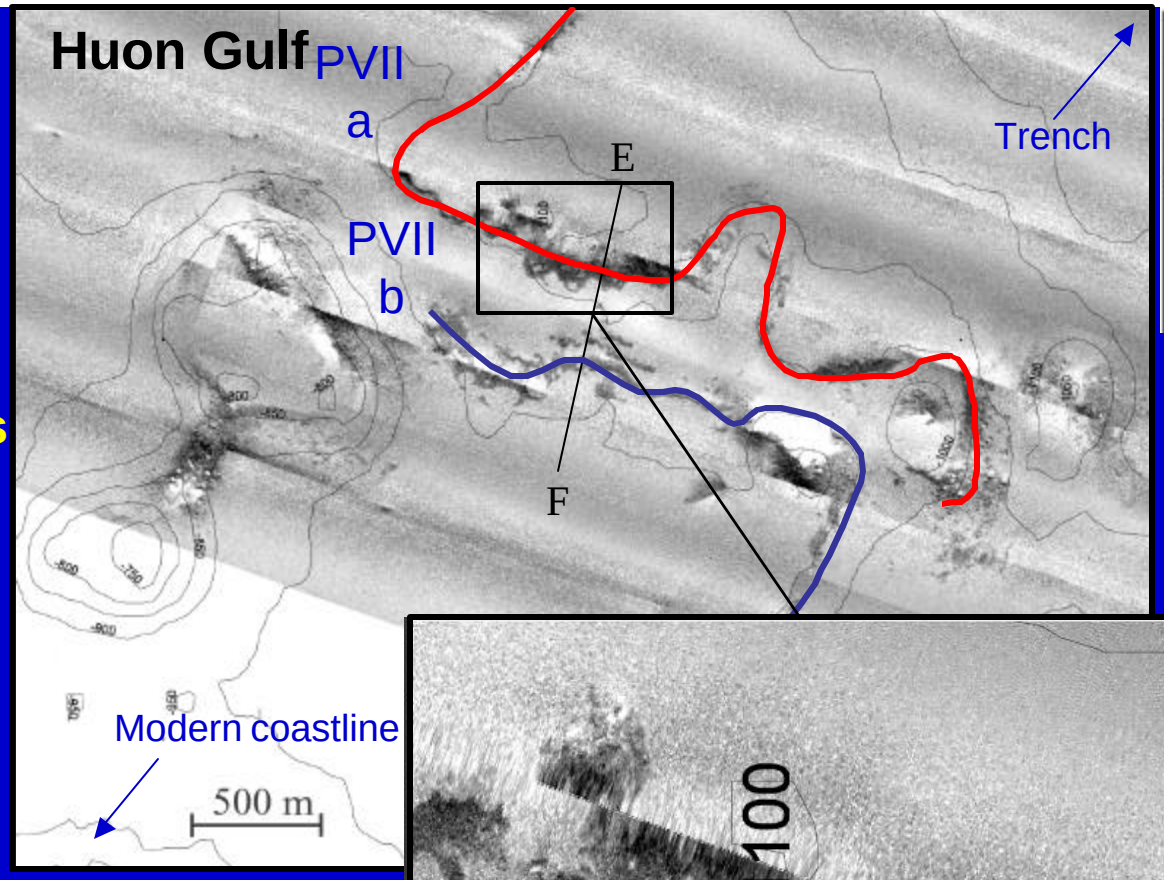
Models of carbonate platform development and demise

Foreland basin evolution

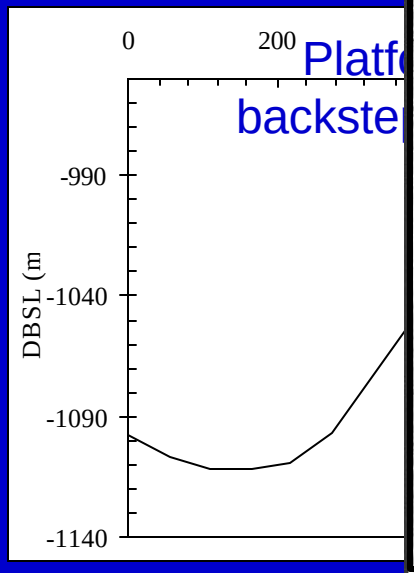
Changes in:
1. Sea-level
2. Paleoclimate

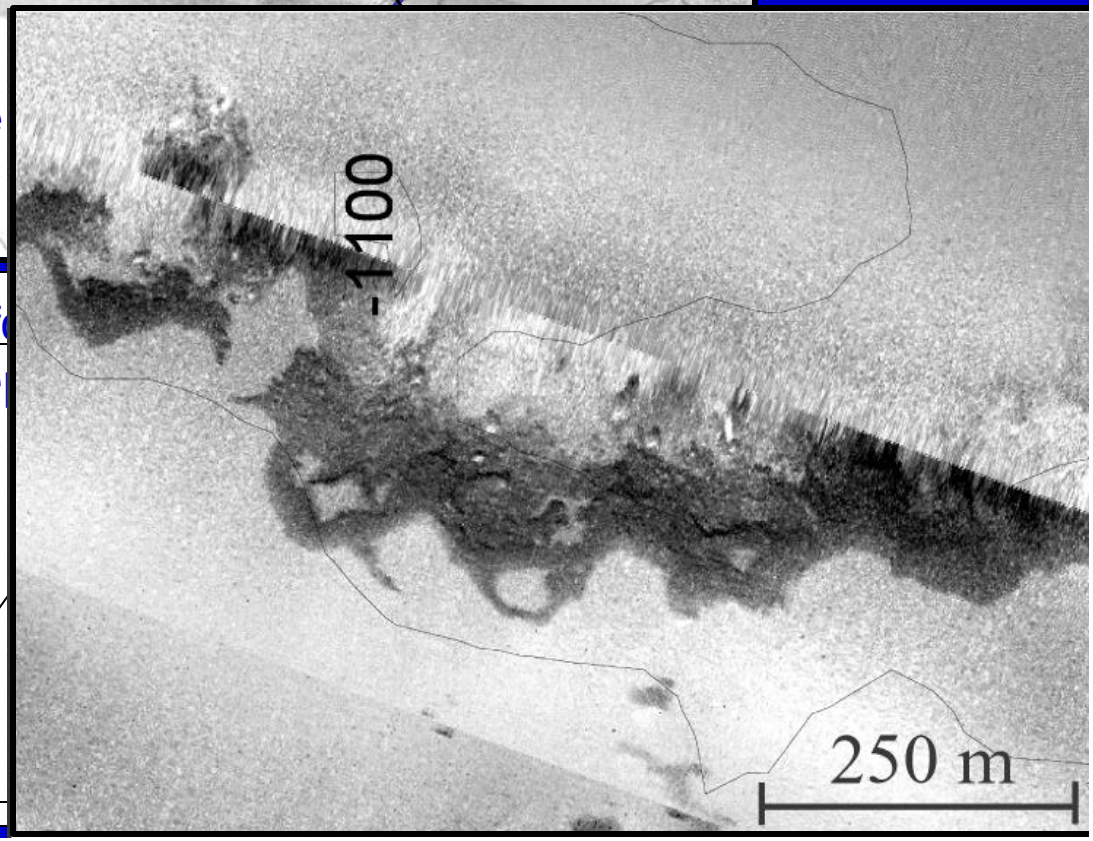
Webster et al, 2004 a
Marine Geology
Webster et al, 2004 c
G-cubed

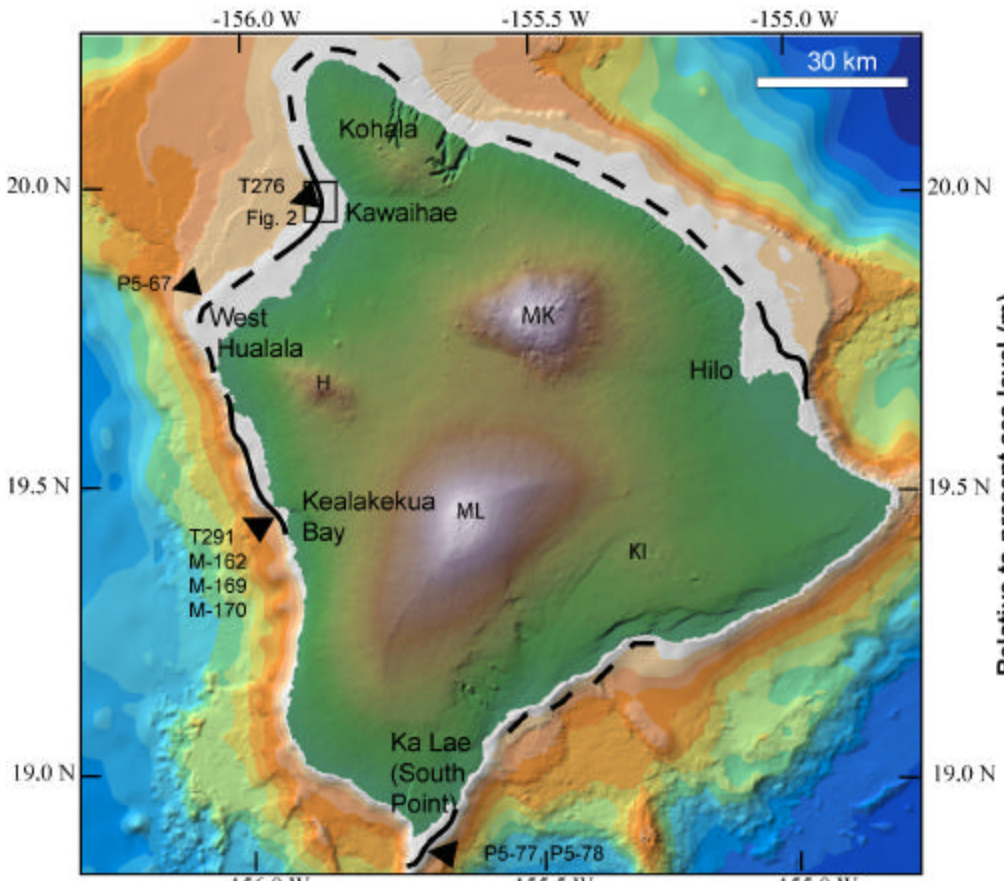
R.V. Melville
DSL-120
ROV Jason

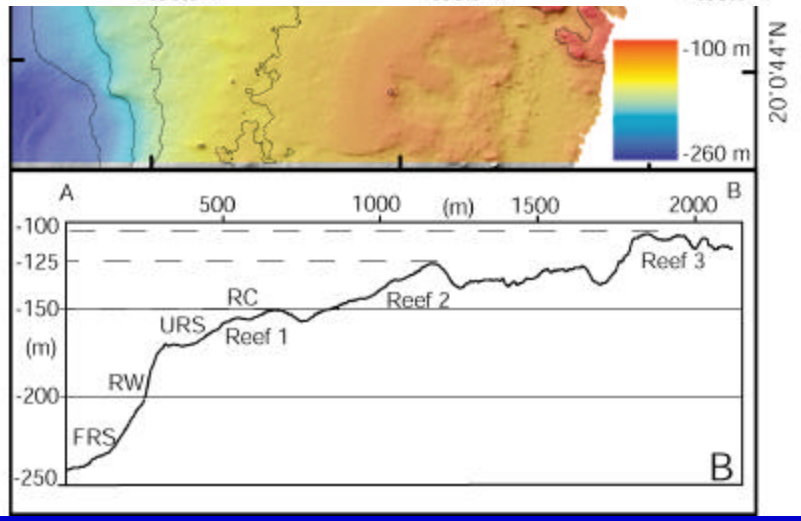


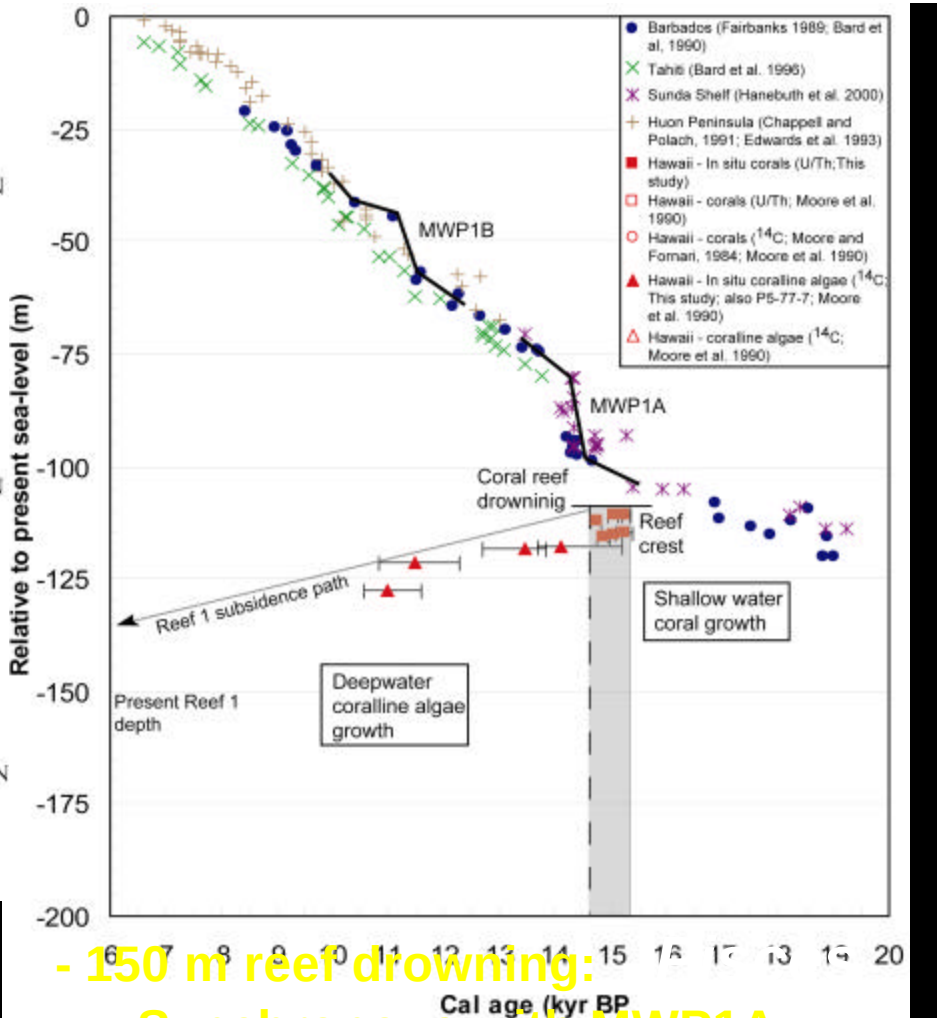
PVII a-b
1000-1150 m











- 150 m reef drowning:
Synchronous with MWP1A

Hawaii - leeward reefs

Webster et al. 2004 b - *Geology*

Other meltwater pulses?

Makalii

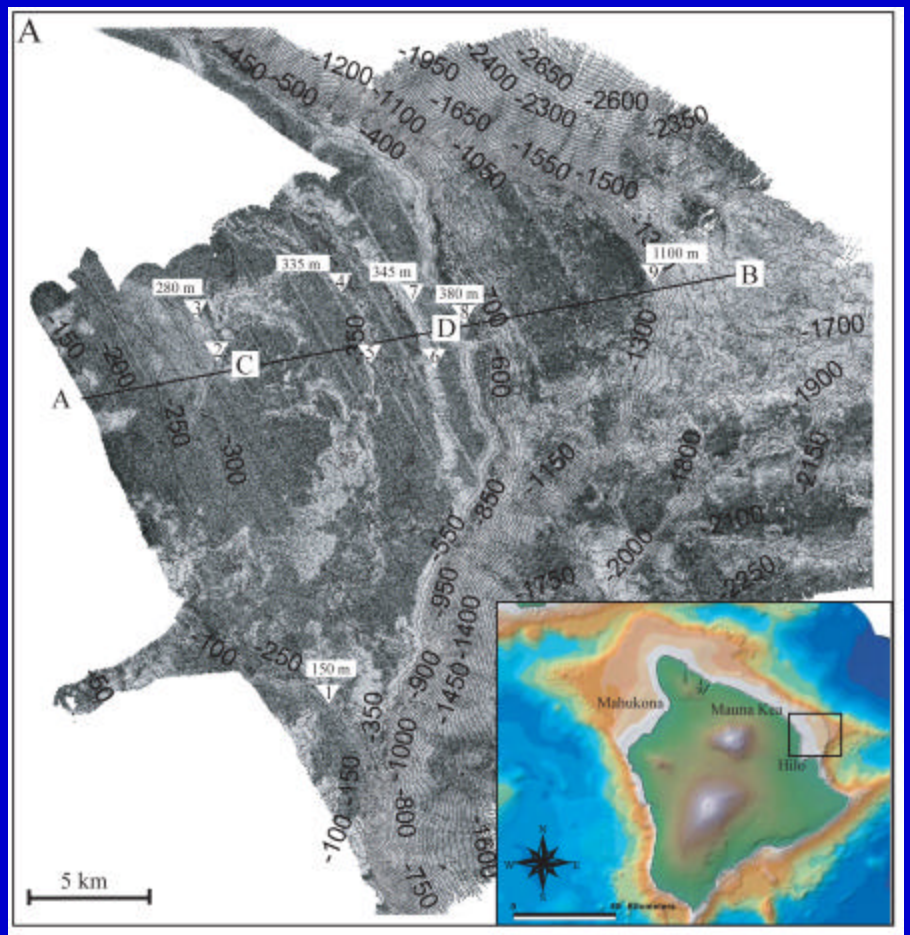
ROV

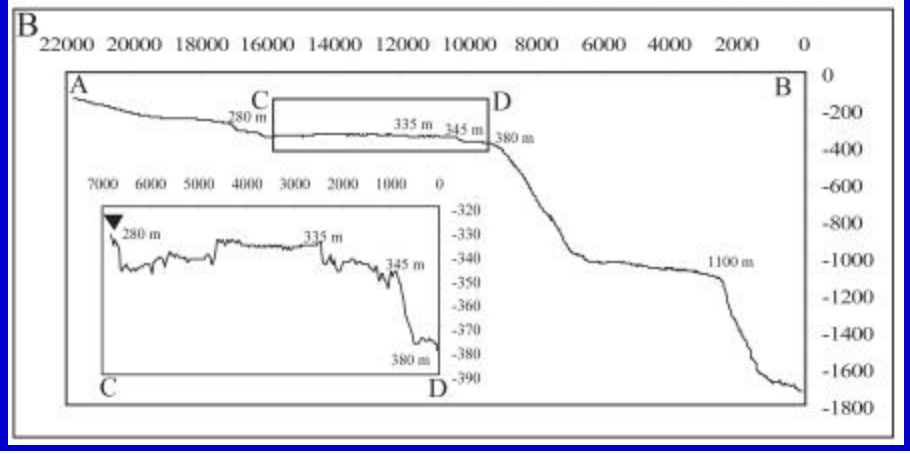
Tiburon

Samples c/o J. Moore (USGS), D. Clague (MBARI)

Hilo Dives - windward reefs

Pisces
ROV RCV-150





Objectives 2005-2006

- Windward reefs - virtually unknown
- Differing subsidence rates and timing
- Interstadial reefs ?
- Timing of interstadials and deglaciations
- Seasonal - millenial scale climatic variation (e.g. paleo-ENSO?)

Future Work in NWHI ?

- High latitude - sensitive to global change
- Marginal - geographically, ecologically
- Upwelling ? High nutrients
- North Pacific Gyre *vs.* Equatorial Current
- Coralline algae *vs.* coral framework

ROPOS – Ring of Fire

Bob Embley Presenter

Submarine Ring of Fire 2004

Exploratory Interdisciplinary Investigations of Active Hydrothermal and Volcanic Processes of Mariana Arc Submarine Volcanoes

R/V *Thomas G. Thompson*
With *ROPOS* ROV
March 27 – April 17, 2004

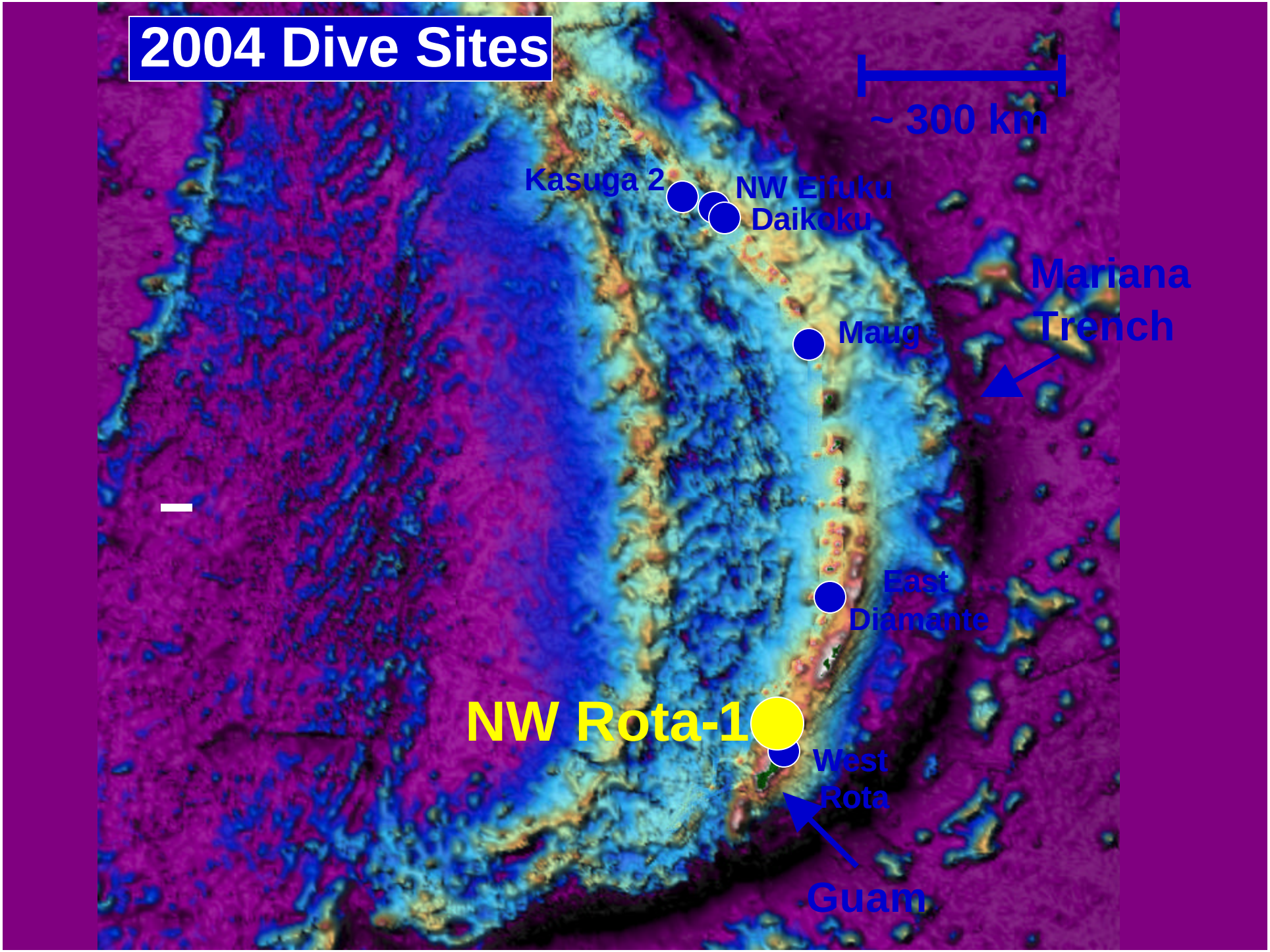
Generously Supported by:

NOAA Office of Ocean Exploration

Natural Sciences & Engineering Research Council of Canada

Pacific Marine Environmental Laboratory/VENTS Program

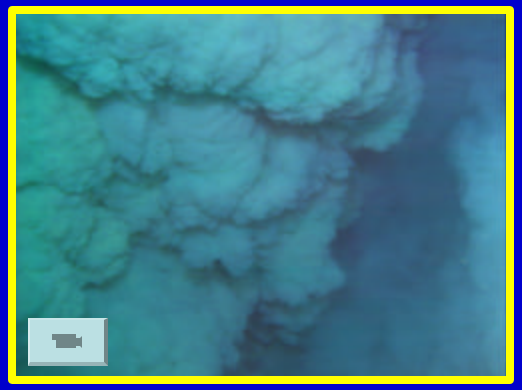
14 Dives at 7 Volcanoes


2004 Dive Sites
~ 300 km
Kasuga 2
NW Eifuku
Daikoku
Mariana
Trench
Maug
East
Diamante
NW Rota-1
West
Rota
Guam

West Rota

NW Rota-1 →

Mobile Biology



Eruption Cloud @ 540 m

East Diamante →

Smokers at 345 m

Chemo & Photo @ 200 m

Maug

NW Eifuku →

Liquid CO_2 @ 1600 m

High Volatiles=
Dense Biotope

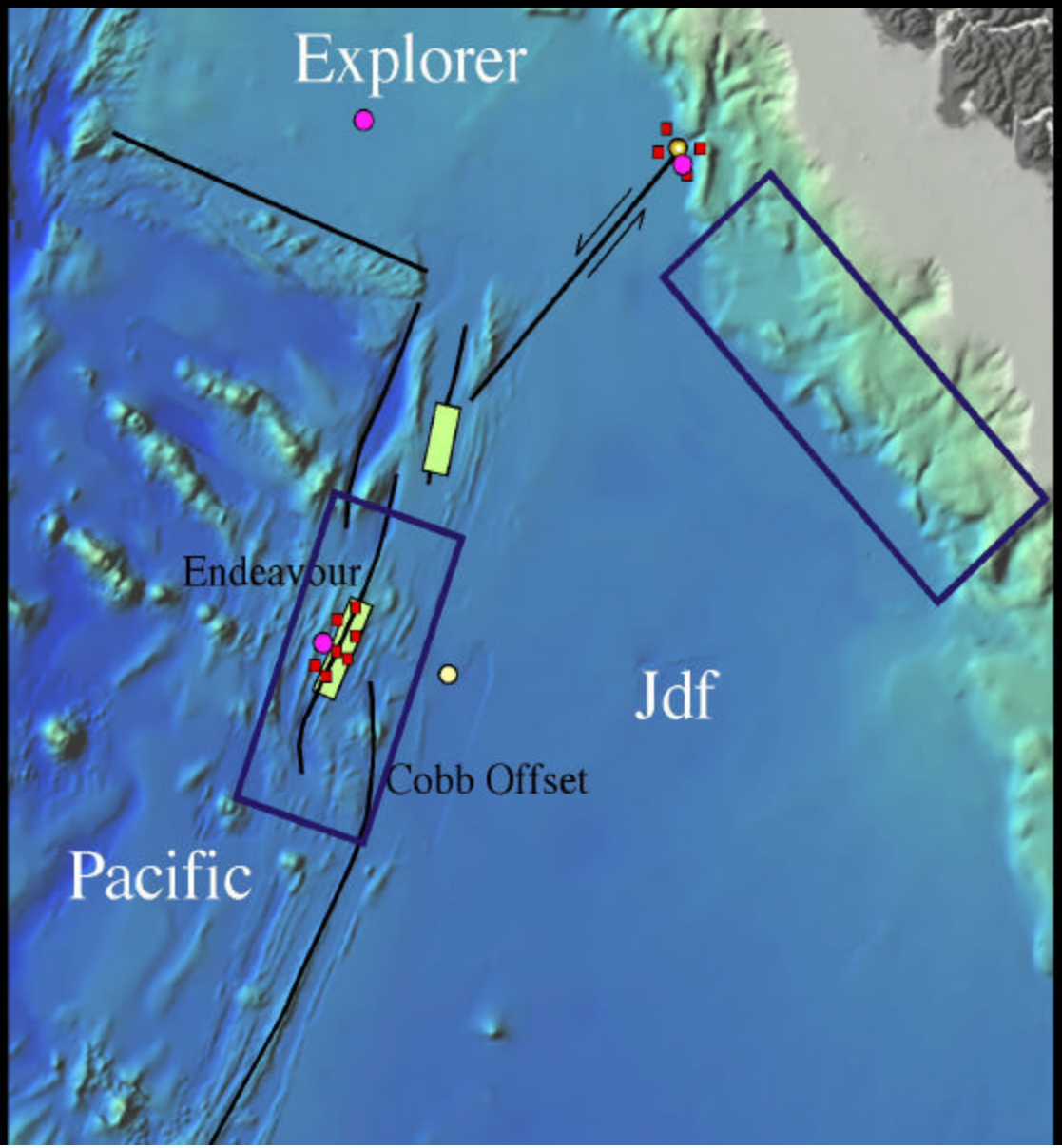
Daikoku

NEPTUNE Program

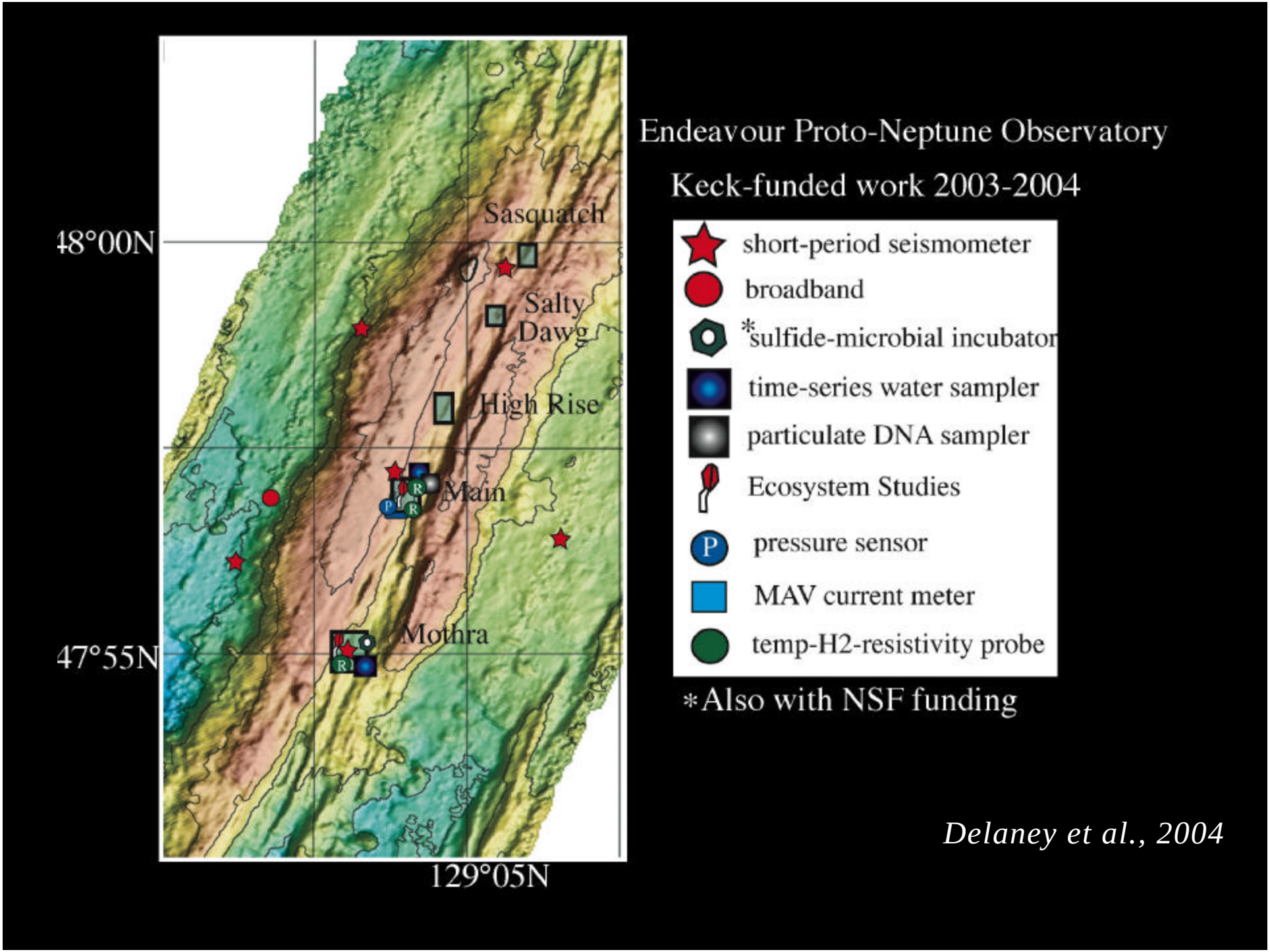
John Delaney - Presenter

Keck Funded Work: UW, MBARI, U of O, SIO, PGC

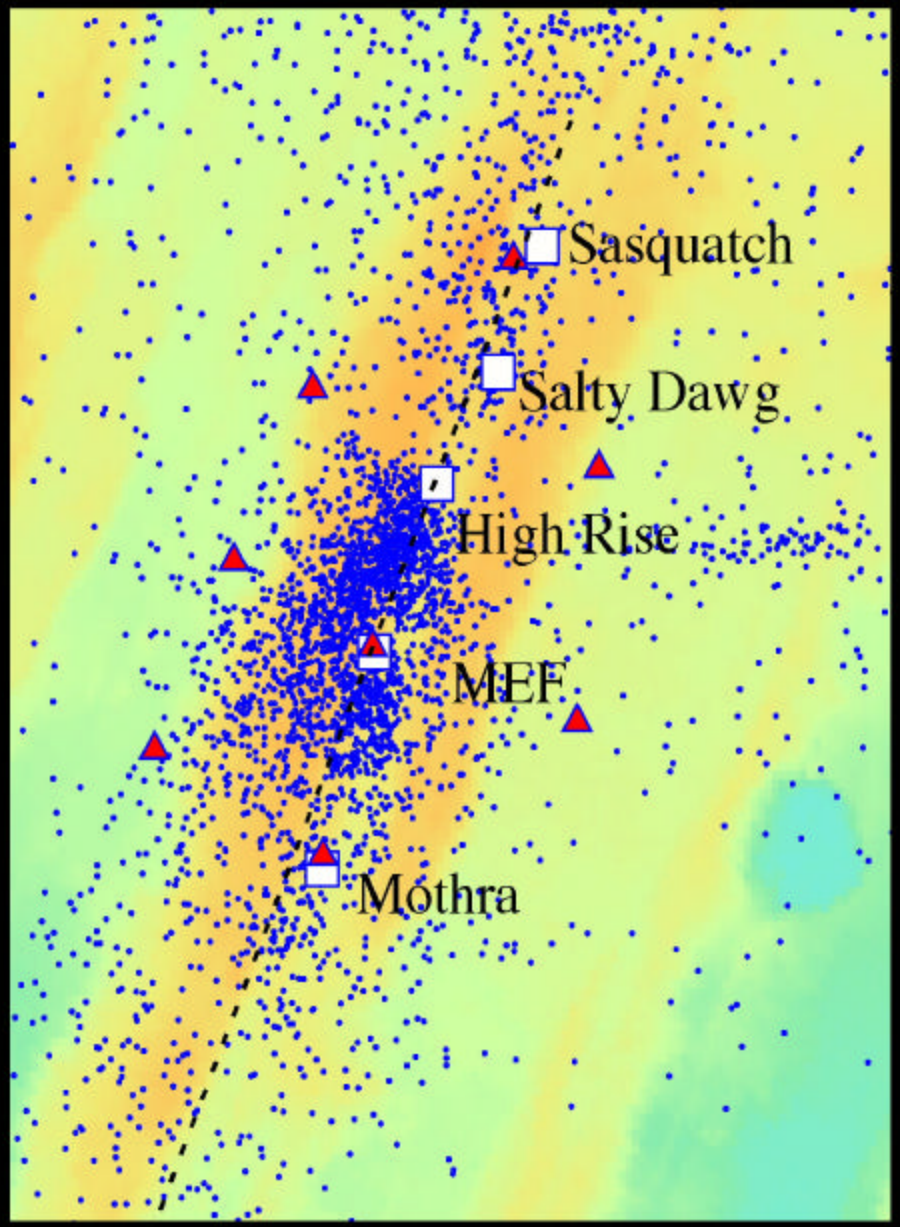
2003-2004



- Buoy-Acoustic Modem Observatory (WHOI-UW)
- Seismic array
- Fluid/microbiological Sampling/In-situ senors
- EM300 mapping
- Pressure Sensor


48°00N
47°55N
129°05N
Sasquatch
Salty Dawg
High Rise
Main
Mothra
Endeavour Proto-Neptune Observatory
Keck-funded work 2003-2004
short-period seismometer
broadband
*sulfide-microbial incubator
time-series water sampler
particulate DNA sampler
Ecosystem Studies
pressure sensor
MAV current meter
temp-H2-resistivity probe
*Also with NSF funding
Delaney et al., 2004

First seafloor seismic observatory



7 short-period seismometers

1 broad band (2003)

3 broad bands (2004)

All seismometers worked

>10,000 earthquakes recorded 2003-2004

Friday Harbor training course

Established Endeavor & Nootka Observatories

Endeavour:

7 short period seismometers, 1 broad band

3 in situ temperature-resistivity-H2 probes

2 in situ fluid samplers - temperature

1 in situ particulate DNA sampler

1 pressure sensor

1 pore fluid pressure sensor

Nootka:

WHOI buoy with real-time transmission

Hydrothermal node: T-R probe

Flow meter - chemical sampler

Seismometer, Heat flow probe

Pressure sensor, current meter

3 short-periods, 2 broad bands, 2 flow sensors