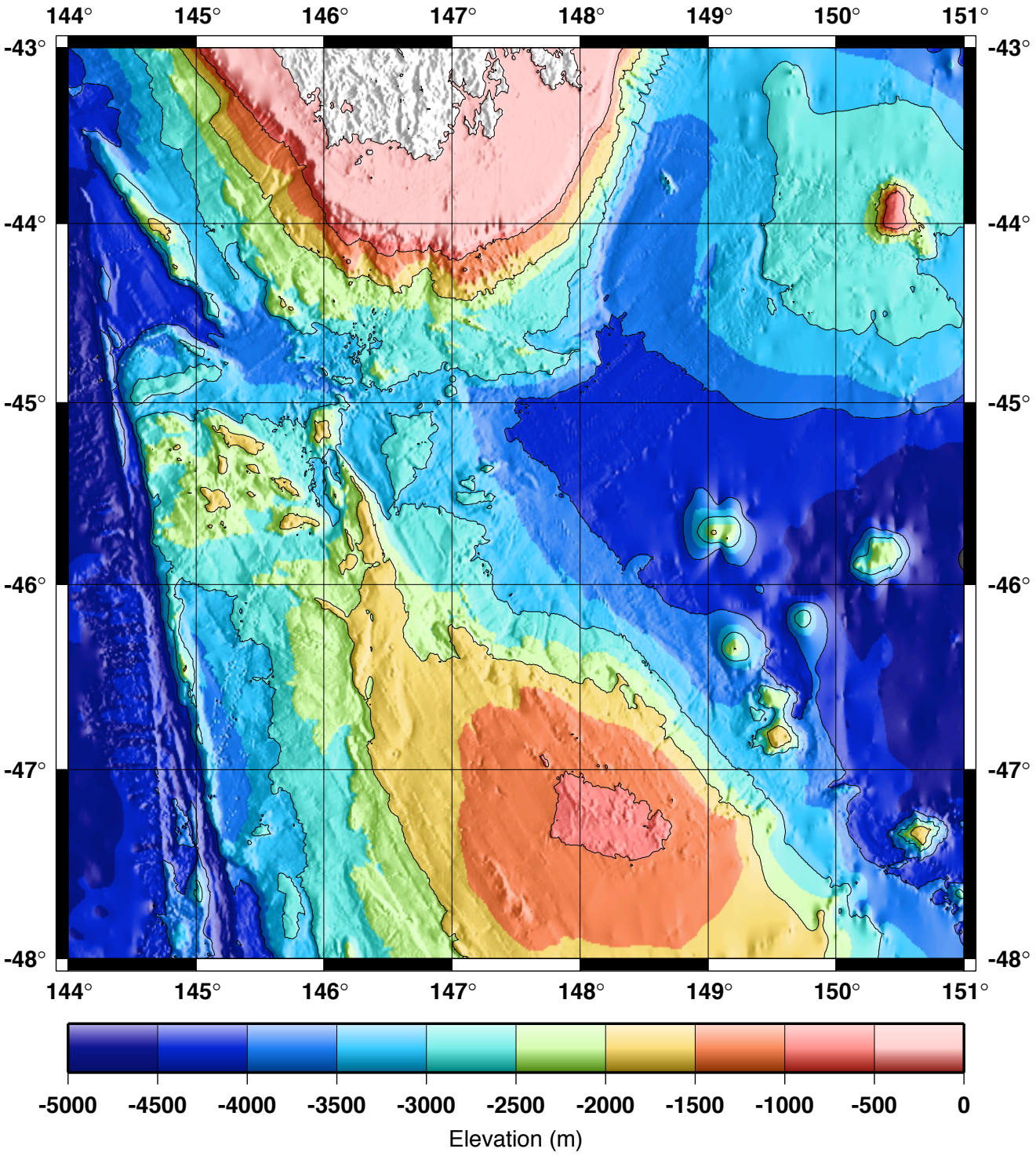
Jason II Reports

Jess Adkins

Thompson/Jason II

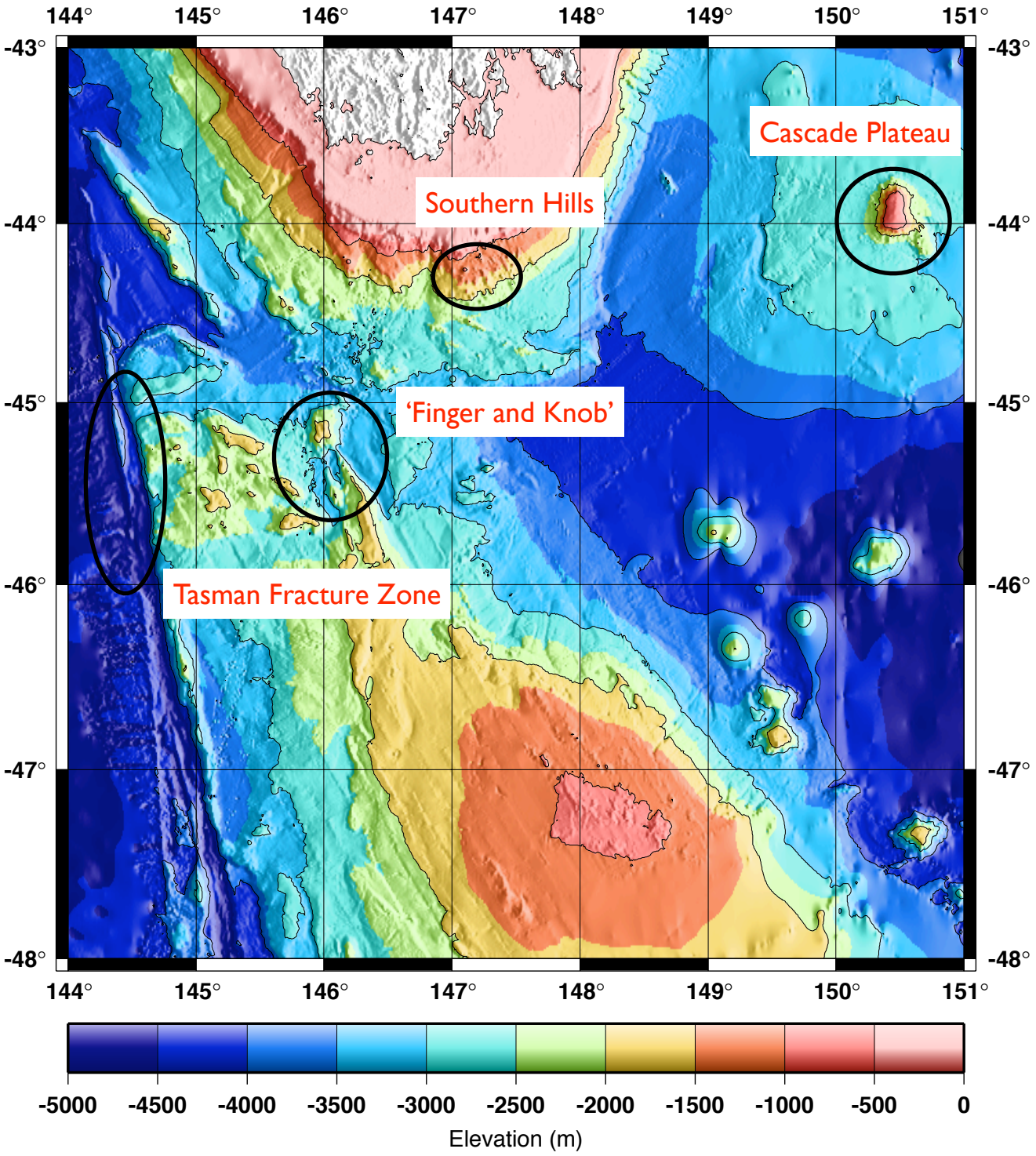
Dec 16, 2008 – Jan 17, 2009



TN228: A Jason expedition to collect deep-sea corals south of Tasmania

AND

SS0108: An ABE cruise to map the sea floor and search for likely deep-sea coral locations



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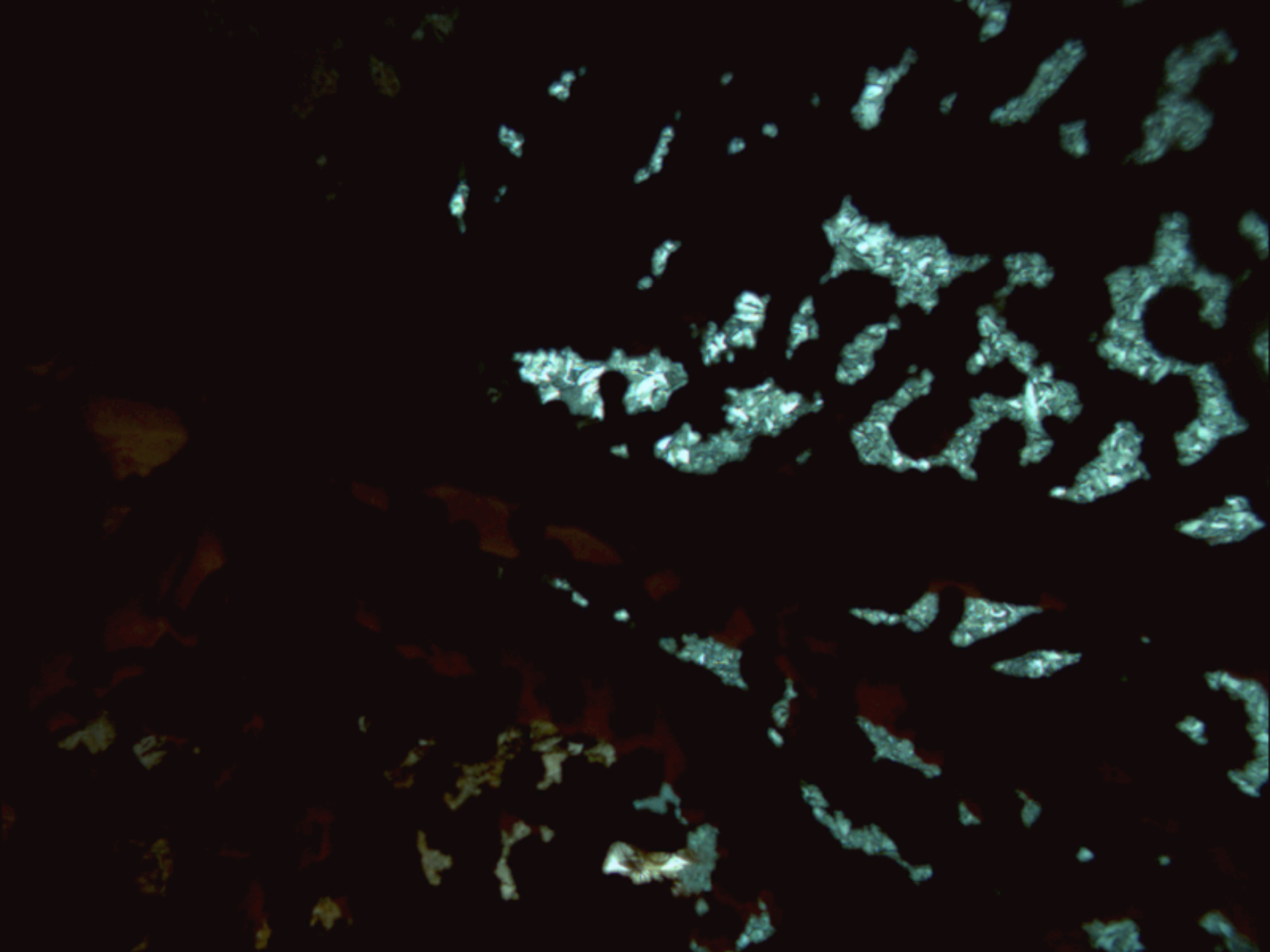
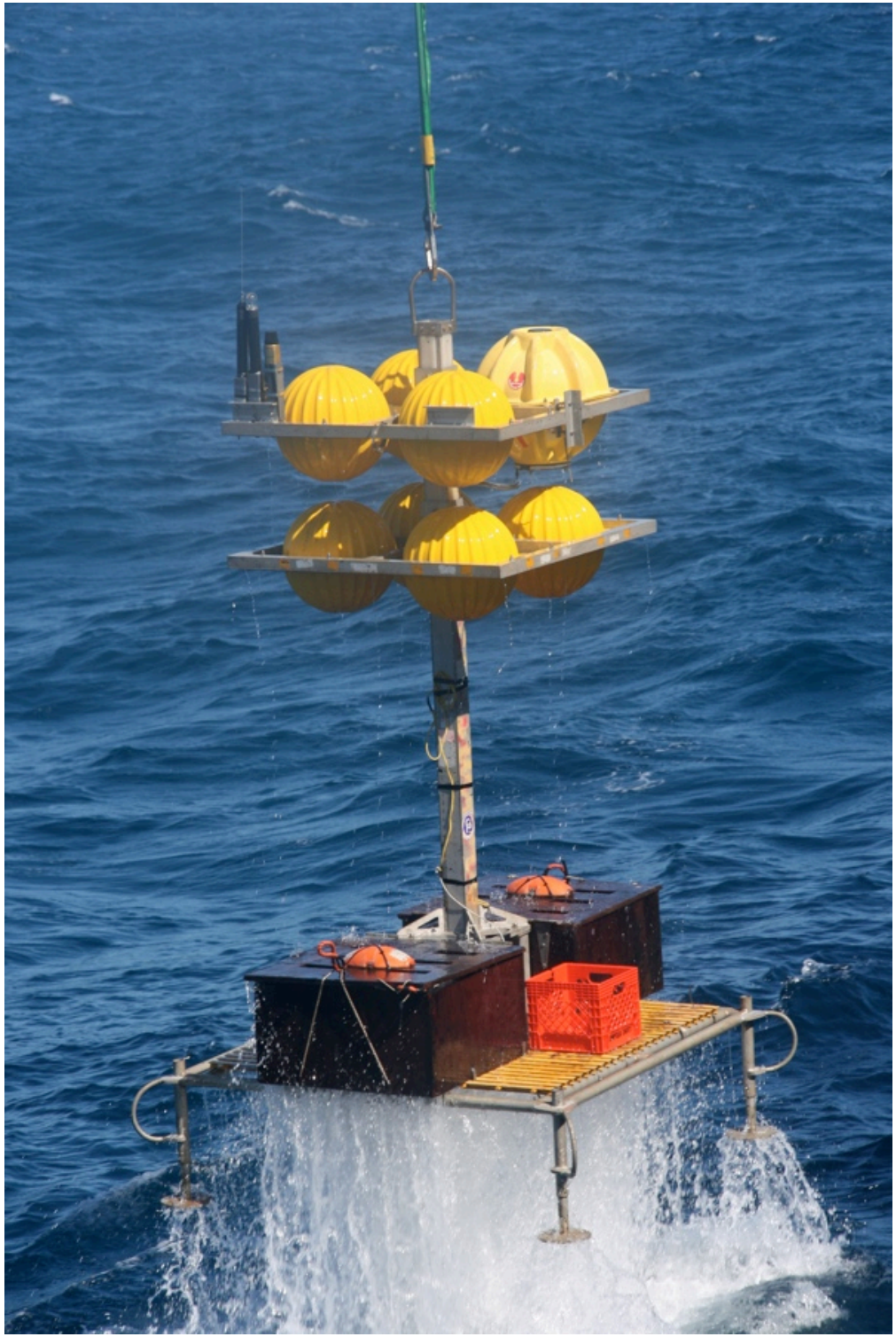
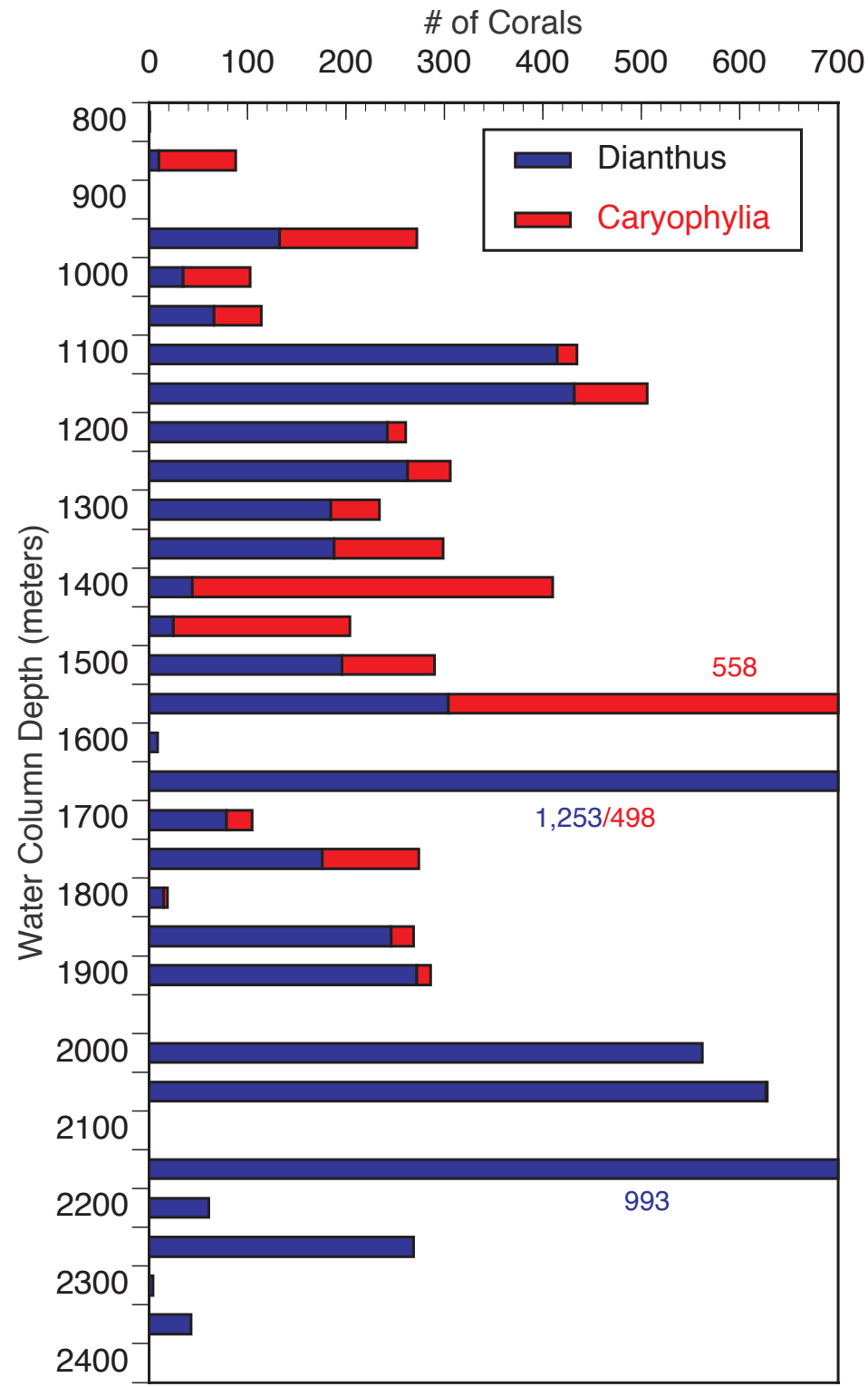
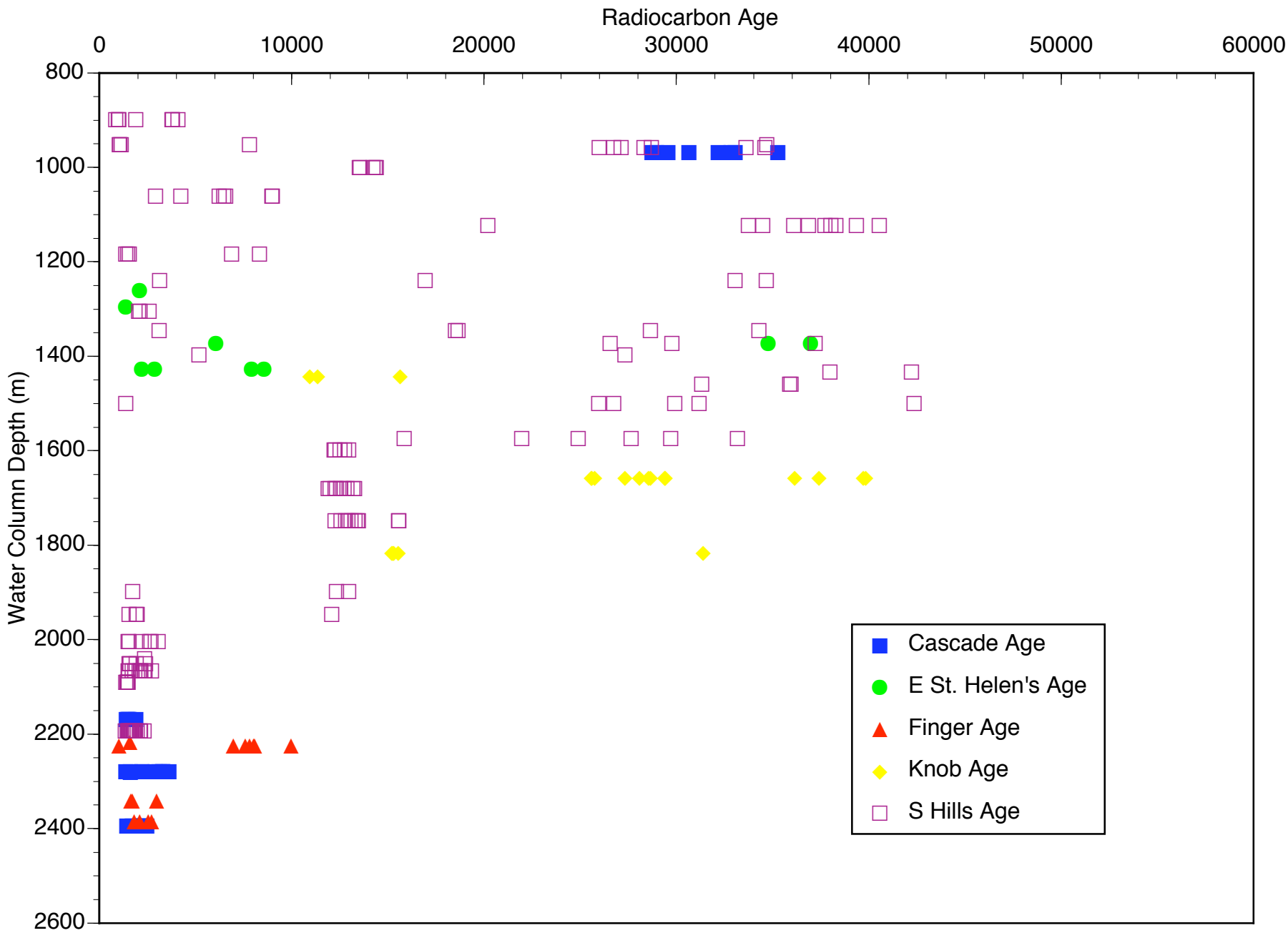



BULLBARS

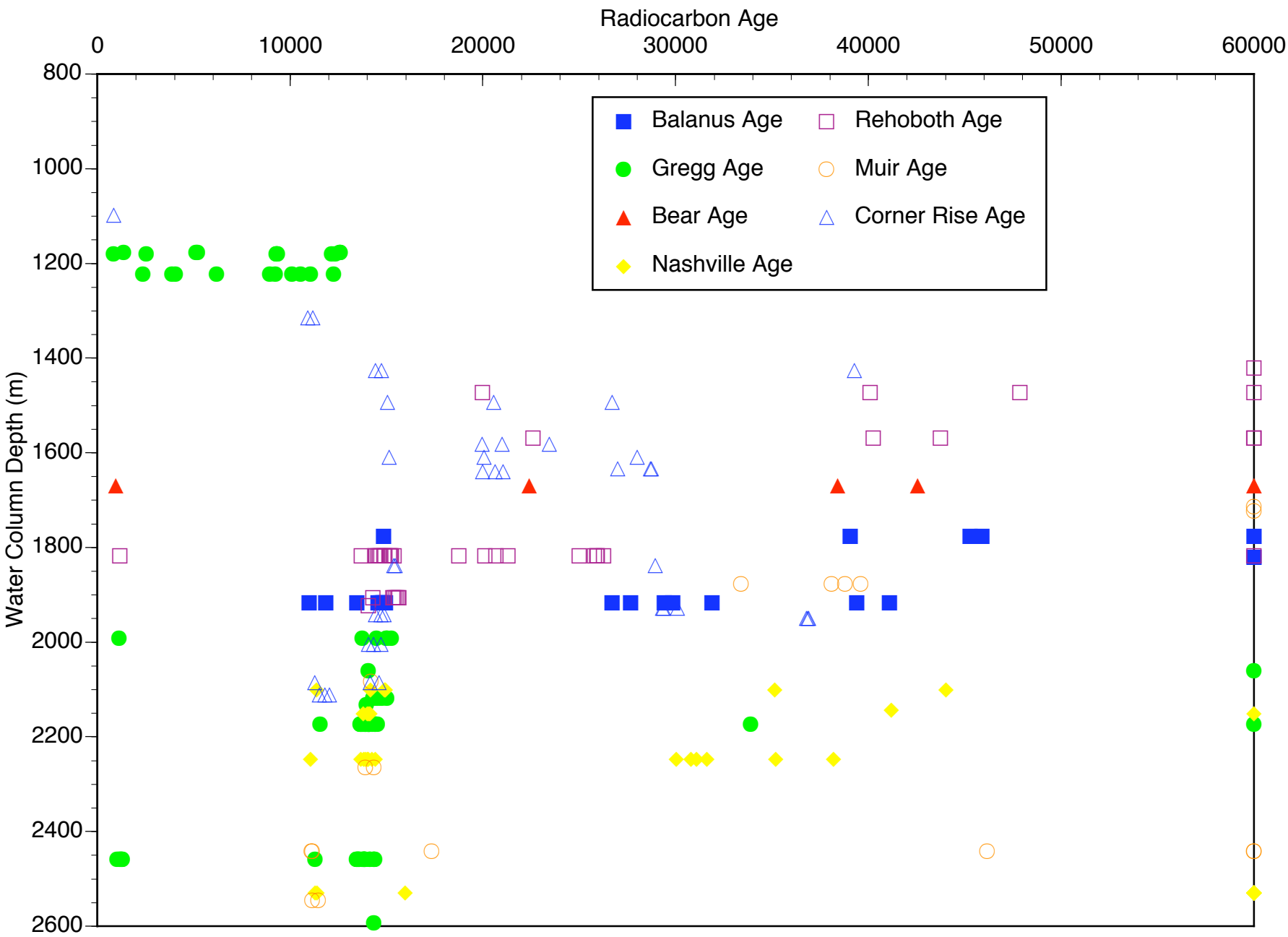



# of Corals
0
100
200
300
400
500
600
700
Water Column Depth (meters)
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
Dianthus
Caryophylia
558
1,253/498
993

Tasmania Age Screening Results



North Atlantic Age Screening Results



Main Issues and/or Comments

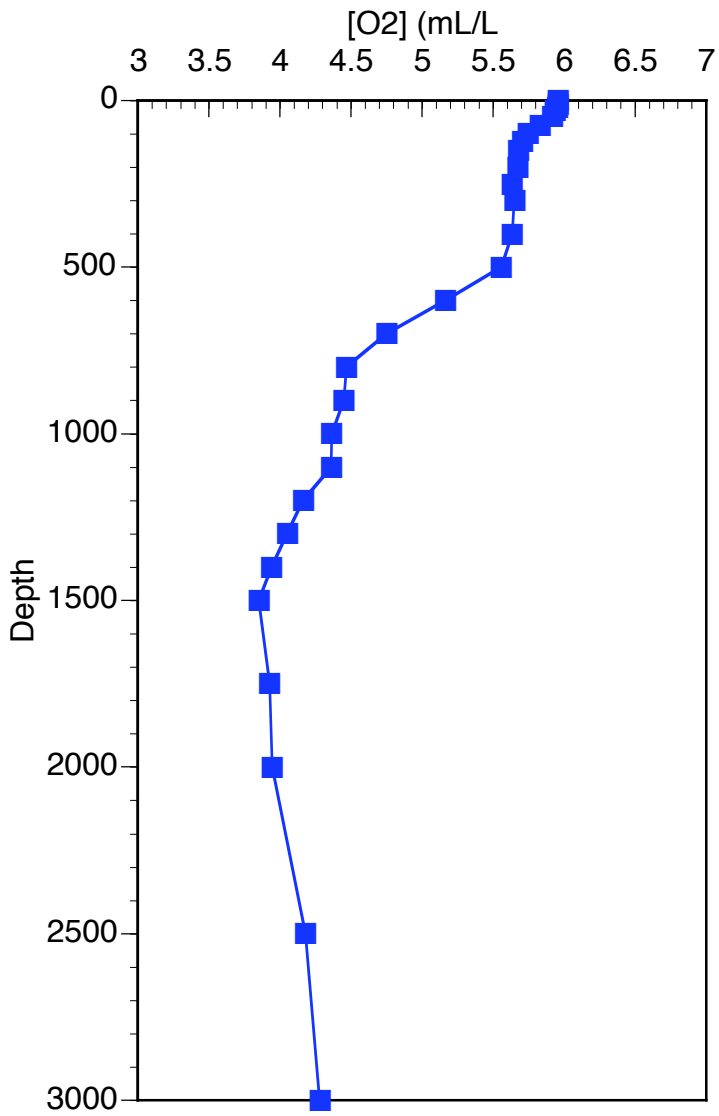
-Fantastically successful, even in pretty tough conditions. Thank you to all...

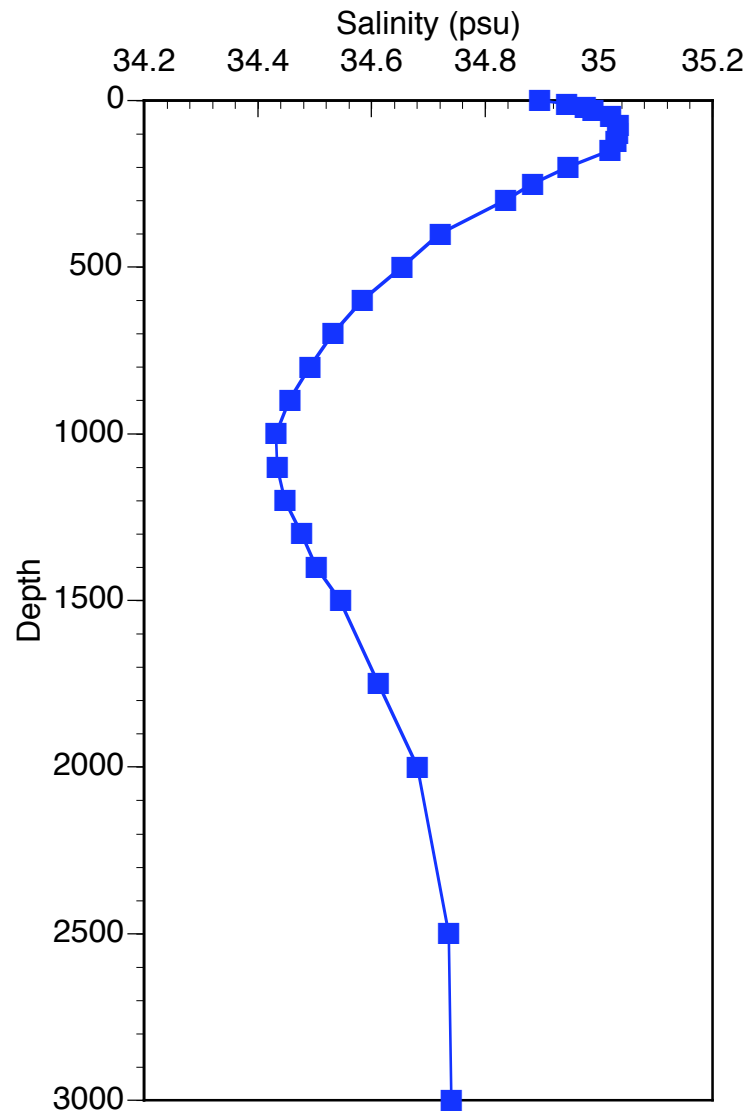
-Weather, weather and more weather
  - 1/3 planned ABE dives
  - 50% planned Jason dives

-HD video with stills is beautiful, still working on 'logistics'

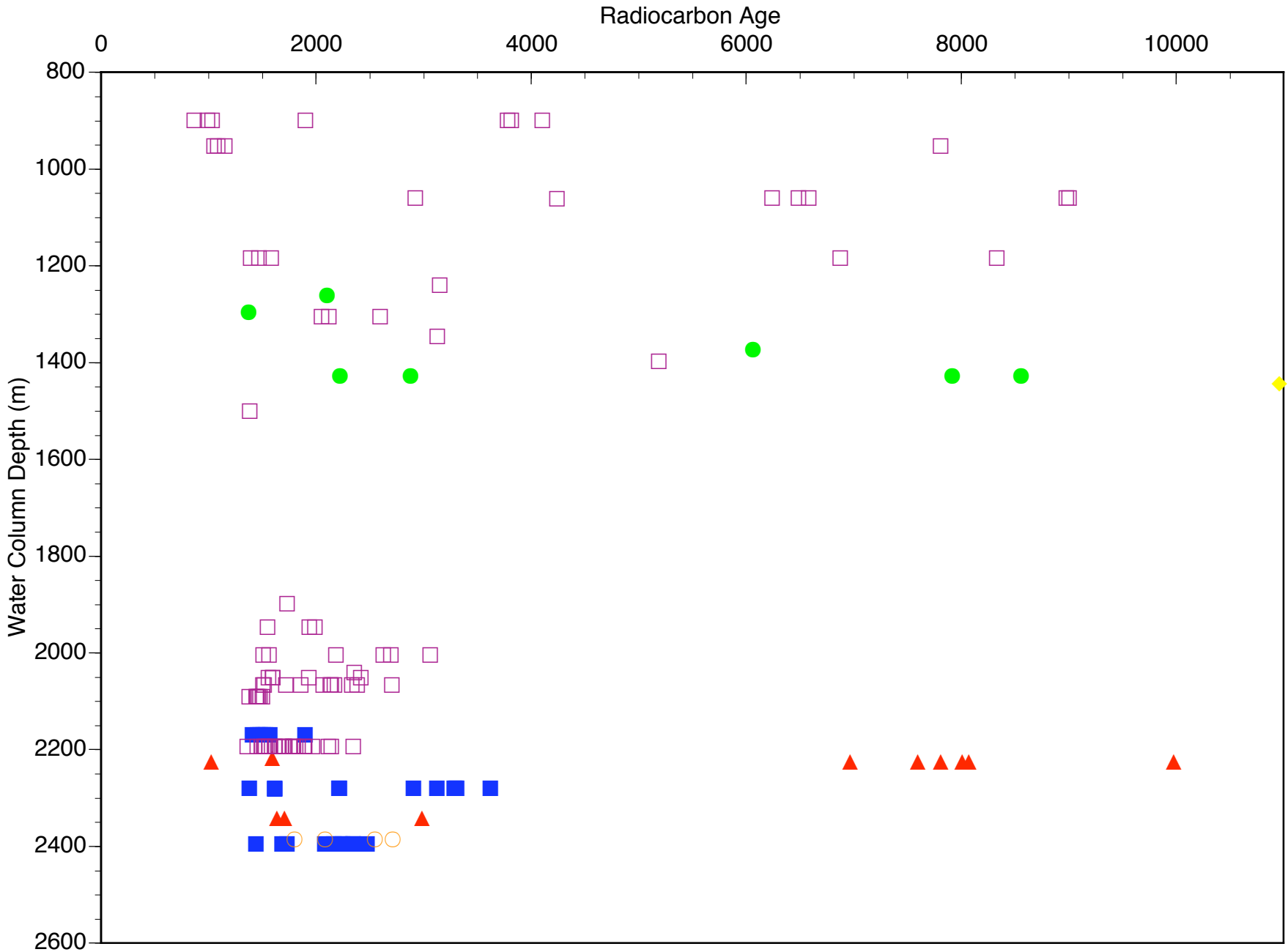
-Jason deployment is not designed for most ocean conditions

WOA Hydrography in Region





A Focus on the Holocene off Tasmania



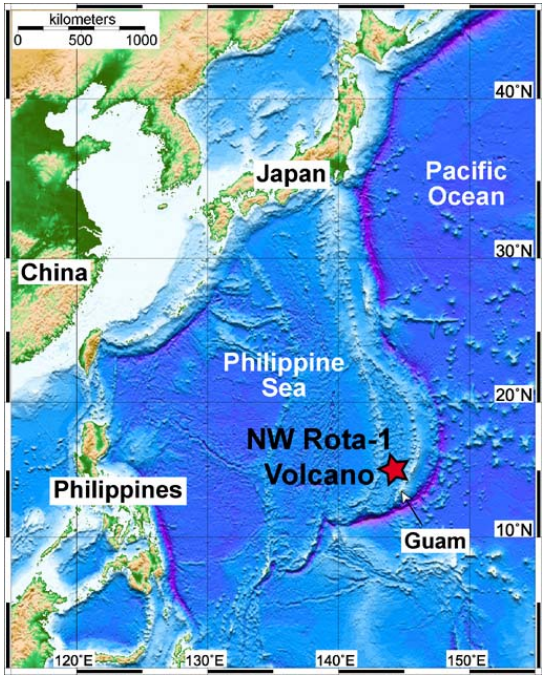
Bill Chadwick

Thompson/Jason II

April 3 - 17, 2009

NW Rota-1 2009 Expedition (1st year of 2)

R/V Thompson - April 3-17, 2009, Guam-Guam



Objectives:

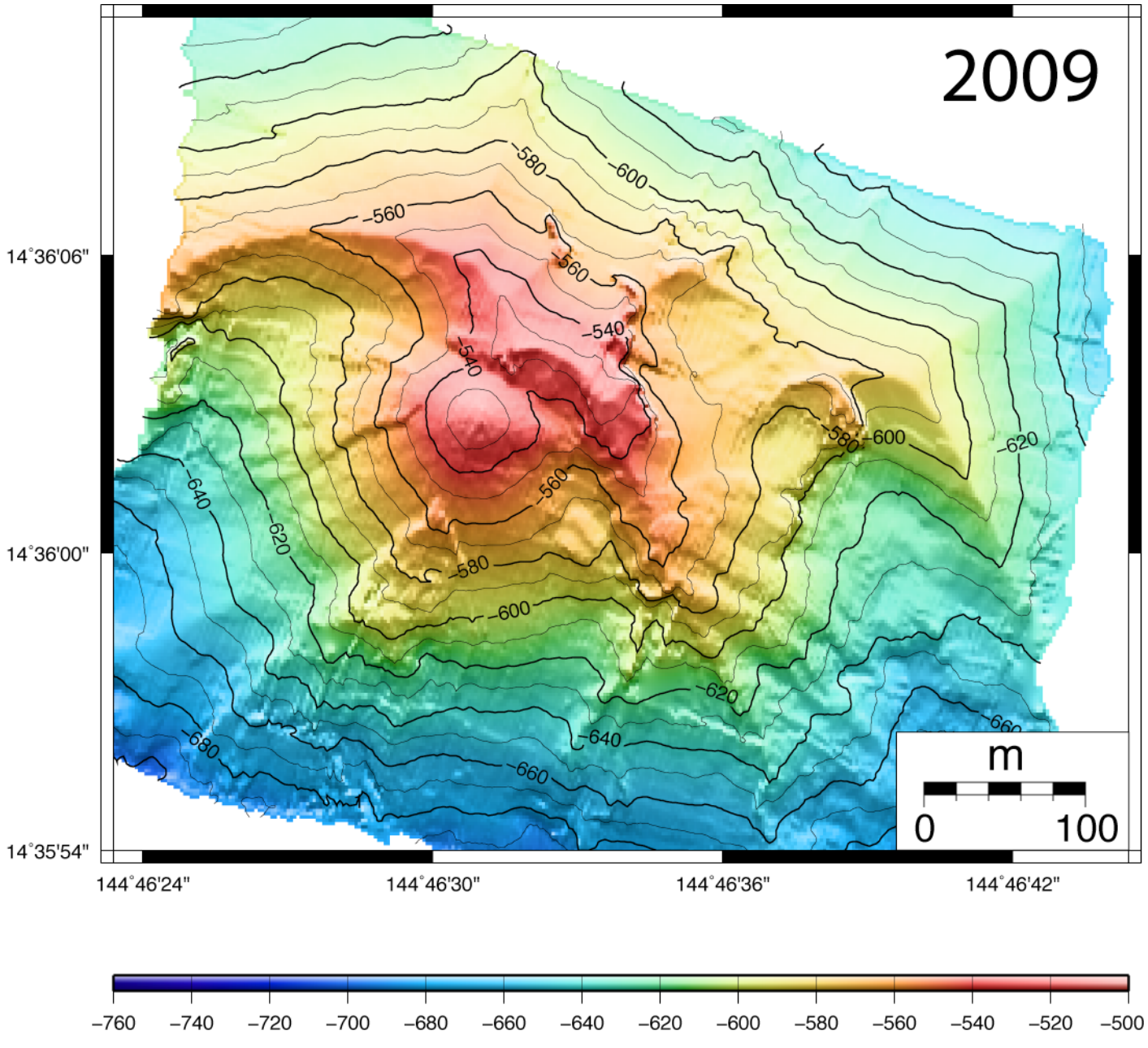
- Characterize longer-term eruptive activity with moored hydrophone, MAPRs, CM, RAS
- Focused sampling of tephra, lava, fluids, gases, biology, eruptive & landslide plumes
- Look for interactions between volcano and biological community

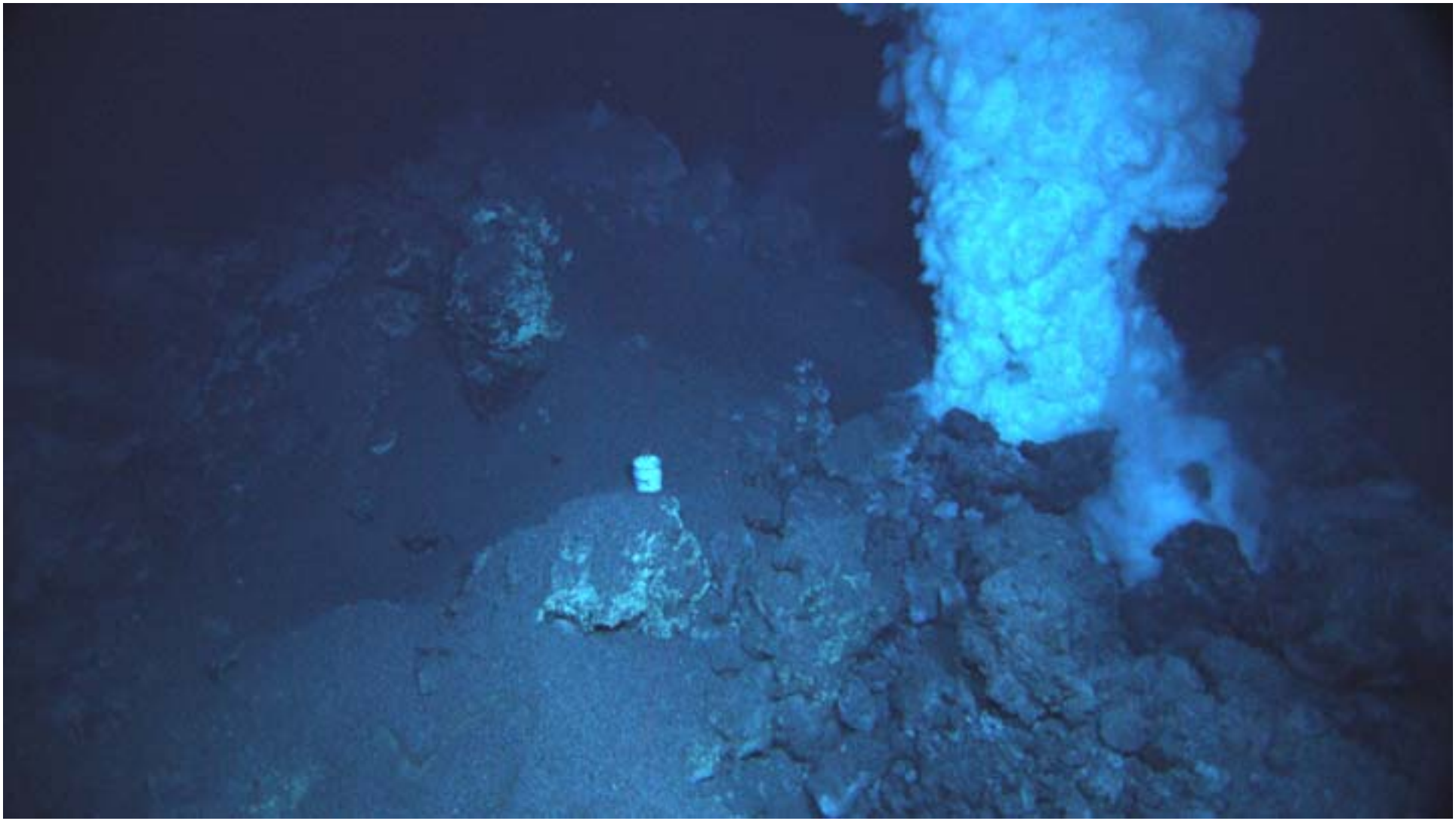
More information:

- http://nwrota2009.blogspot.com/
- AGU sessions V43I, V44B, and V51D

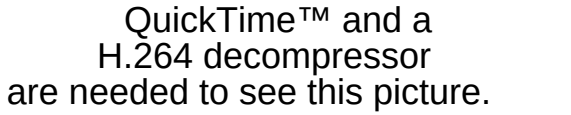
NW Rota-1 2009 Expedition Highlights

- 17 Jason ROV dives (180 hrs wet time; 160 hrs bottom time)
- 34 hrs of HDTV video, 3000 HD framegrabs, 2000 DSC images)
- 13 tephra samples, 8 scoop samples, 44 rock & sulfur samples
- 3 portable hydrophone deployments, 3 mooring deployments
- 21 CTD casts & tows, 14 plankton tows
- 4 suctions samples of Loihi shrimp, 4 traps of Alvinocaris shrimp,
- 1 sample of limpets, 2 samples of new barnacles
- 58 vent fluid samples, 17 filter samples (particles, RNA, DNA)
- 22 gas-tight samples (4 for bubbles), 4 bacterial map suctions
- EM300 (ship) and SM2000 (Jason) multibeam resurveys


2009
14°36'06"
14°36'00"
14°35'54"
144°46'24"
144°46'30"
144°46'36"
144°46'42"
-560
-580
-600
-540
-620
-640
-660
-680
m
0
100
-760
-740
-720
-700
-680
-660
-640
-620
-600
-580
-560
-540
-520
-500




QuickTime™ and a
Sorenson Video 3 decompressor
are needed to see this picture.


QuickTime™ and a
H.264 decompressor
are needed to see this picture.


QuickTime™ and a
Sorenson Video 3 decompressor
are needed to see this picture.

Offload HD camera video courtesy of WHOI/AIVL

QuickTime™ and a
Sorenson Video 3 decompressor
are needed to see this picture.

Submarine Eruption sessions @ AGU: V43I, V44B, and V51D

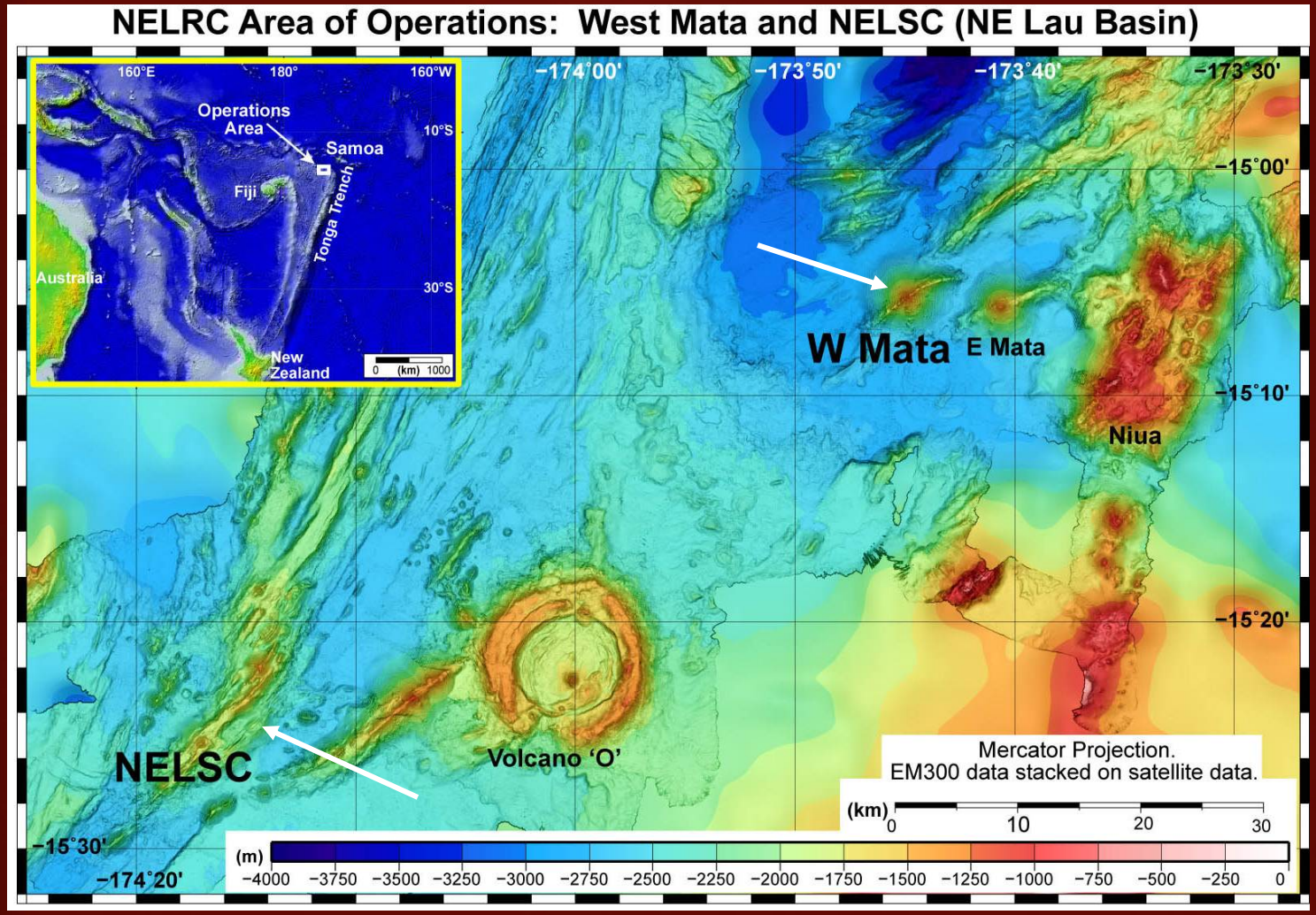
Joseph Resing

Thompson/Jason II

May 5 - 13, 2009

NE Lau Response Cruise

Resing: Chief Scientist



Funding

- NOAA-Ocean Exploration and Research, PMEL Vents
- NSF- Margins, Ridge 2000

Timeline

- November -- Discovery (PMEL Plume Cruise)
- January -- Convince program managers
- February to March
  - Solicit and consider letters of interest
    - >40 PI's considered
  - Three proposals (2 to NSF, 1 to NOAA)
  - Reschedule Thompson and Jason-2
- May 5-13 -- At Sea

What Happened

- Seven dives were conducted.
  - 5 at the erupting W. Mata
  - 2 at the NE Lau Spreading Center
- Jason Flexibility
  - resulted in a first dive upon arrival (short to keep schedule)
    - First discovery of molten lava at Summit of W. Mata
  - a long final dive to consume every last moment of ship time
  - Allowed switching of fluid sampler and suction sampler on daily basis. This allowed dives to be schedule efficiently.
- Only a few problems.
  - HD video failed on last dive (Fiber issue)
  - A couple of hydraulic problems were fixed or worked around.
  - Jason crew did a great job interfacing with all reasonable scientific needs.
  - We were all happy…… although it was the longest 8 day cruise in history!!

NE Lau Spreading Center May 2008

Pui Pui Flows (curtain in Tongan)

Fresh lava flows over the region
Abundant clastic debris

No Evidence of enhanced
Or new hydrothermal venting

Hades is the lord of the dead and ruler of the nether world.

Imagery from very first dive (J413). 1st sequence is the discovery after a little more then 70 minutes on the bottom, less than 24 hours after leaving port.

Pillow lava

More video from W Mata will be shown in sessions V43I and V51D

Chuck Fisher
(Ian MacDonald – presenter)

Thompson/Jason II

May 16 – June 8, 2009


Processes and patterns in back arc basin hydrothermal vent communities
ridge 2000
from mantle to microbe
TN 235: 5/16/09 - 6/08/09
RV Thomas Thompson
Jason II ROV
NSF
C. Fisher Chief Scientist
T. Collasius, Jason Expedition Leader
Depart Samoa 5/16/09 at 0900
Arrive in Tonga at 0900 on 6/08/09
•12 successful lowerings at 5 different sites on the ELSC
•Less than 24 hours lost to weather
•No time lost to equipment or ship problems

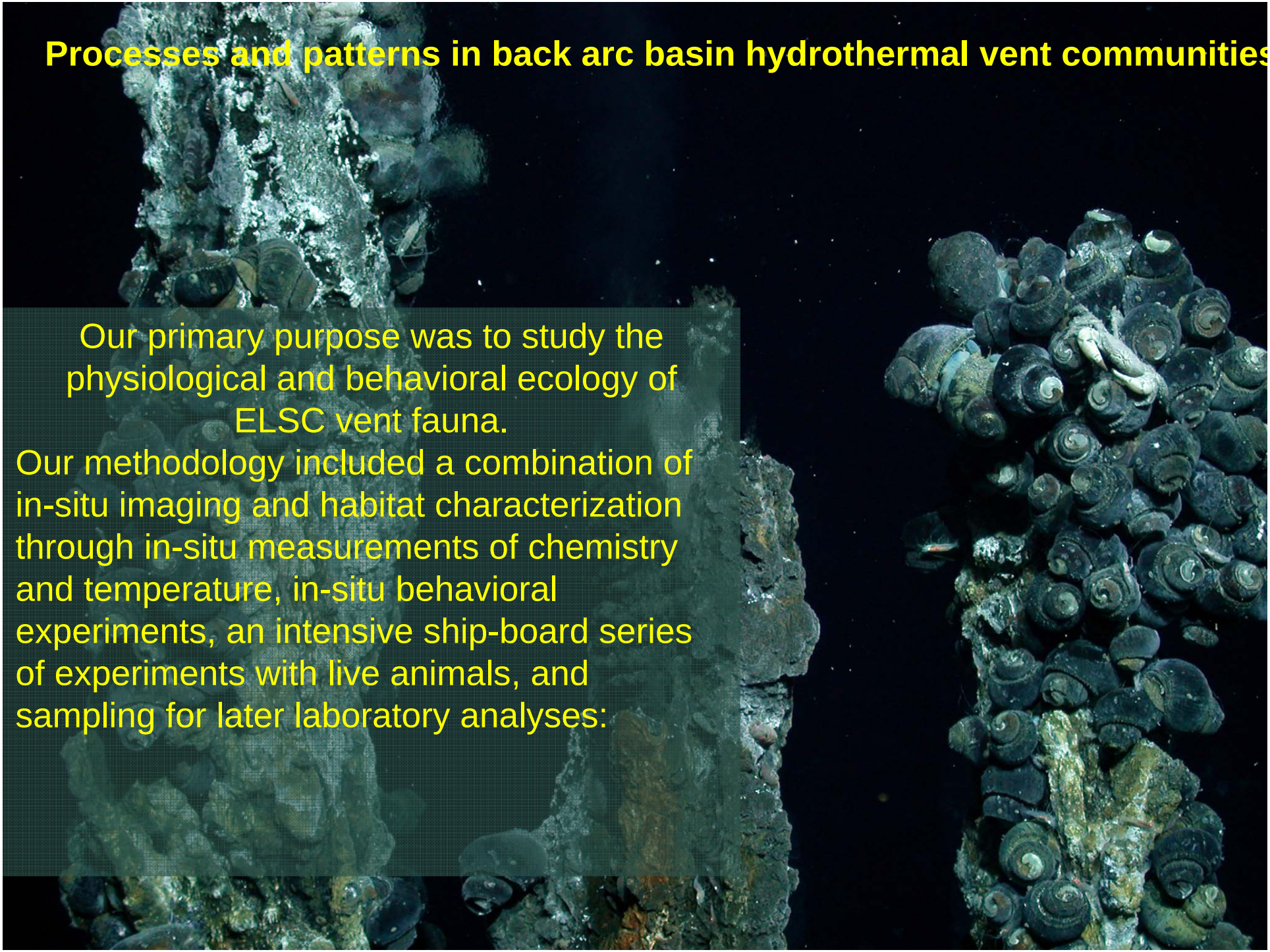
Processes and patterns in back arc basin hydrothermal vent communities

PIs: C. Fisher, P. Girguis, and G. Luther III

33 Scientists on board including:

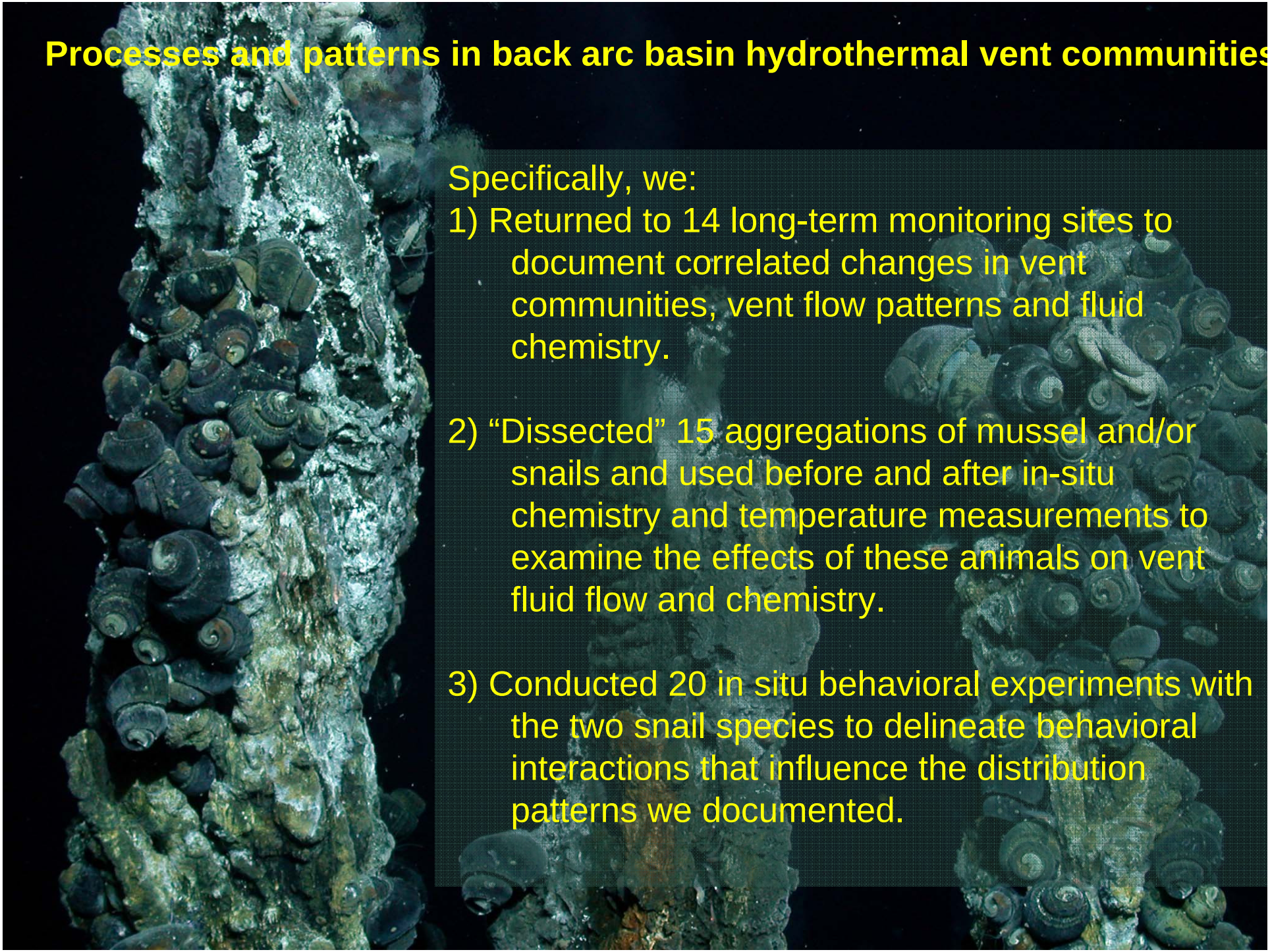
- 10 members of the Jason Group
- 12 scientists from PI institutions: 5 scientists from PSU, 3 from Harvard, and 4 from Univ. Delaware
- 5 other US scientists: New England Biolabs, USC, WHOI, Susquehanna, and Wash. State
- 5 foreign participants: 3 from France, 1 from the Univ. Vienna, and 1 Tongan Observer
- Ridge 2000/FLEXE Education and Outreach facilitator from Scripps.

Processes and patterns in back arc basin hydrothermal vent communities



Our primary purpose was to study the physiological and behavioral ecology of ELSC vent fauna.

Our methodology included a combination of in-situ imaging and habitat characterization through in-situ measurements of chemistry and temperature, in-situ behavioral experiments, an intensive ship-board series of experiments with live animals, and sampling for later laboratory analyses:



Processes and patterns in back arc basin hydrothermal vent communities

Specifically, we:

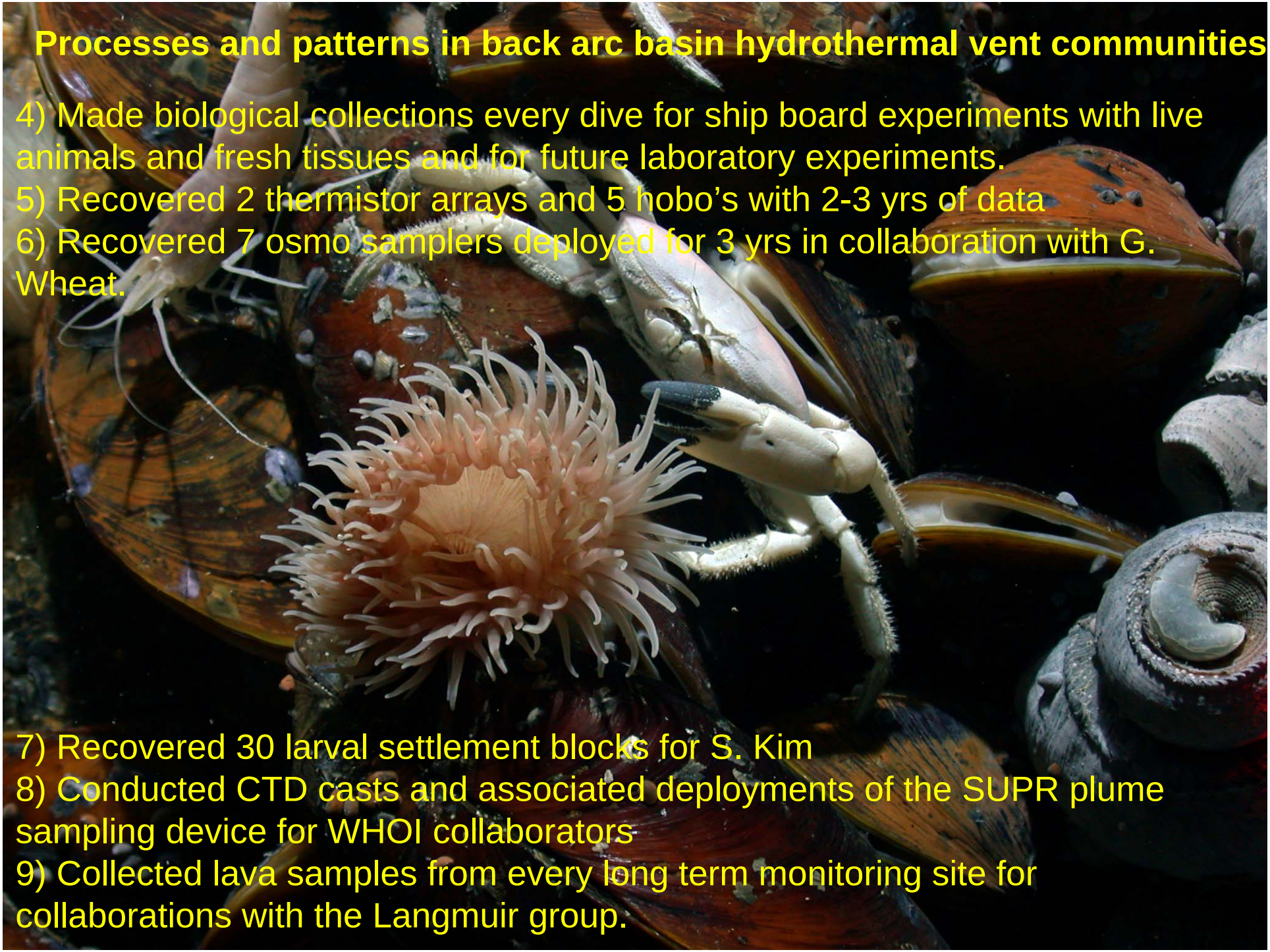
1) Returned to 14 long-term monitoring sites to document correlated changes in vent communities, vent flow patterns and fluid chemistry.

2) “Dissected” 15 aggregations of mussel and/or snails and used before and after in-situ chemistry and temperature measurements to examine the effects of these animals on vent fluid flow and chemistry.

3) Conducted 20 in situ behavioral experiments with the two snail species to delineate behavioral interactions that influence the distribution patterns we documented.

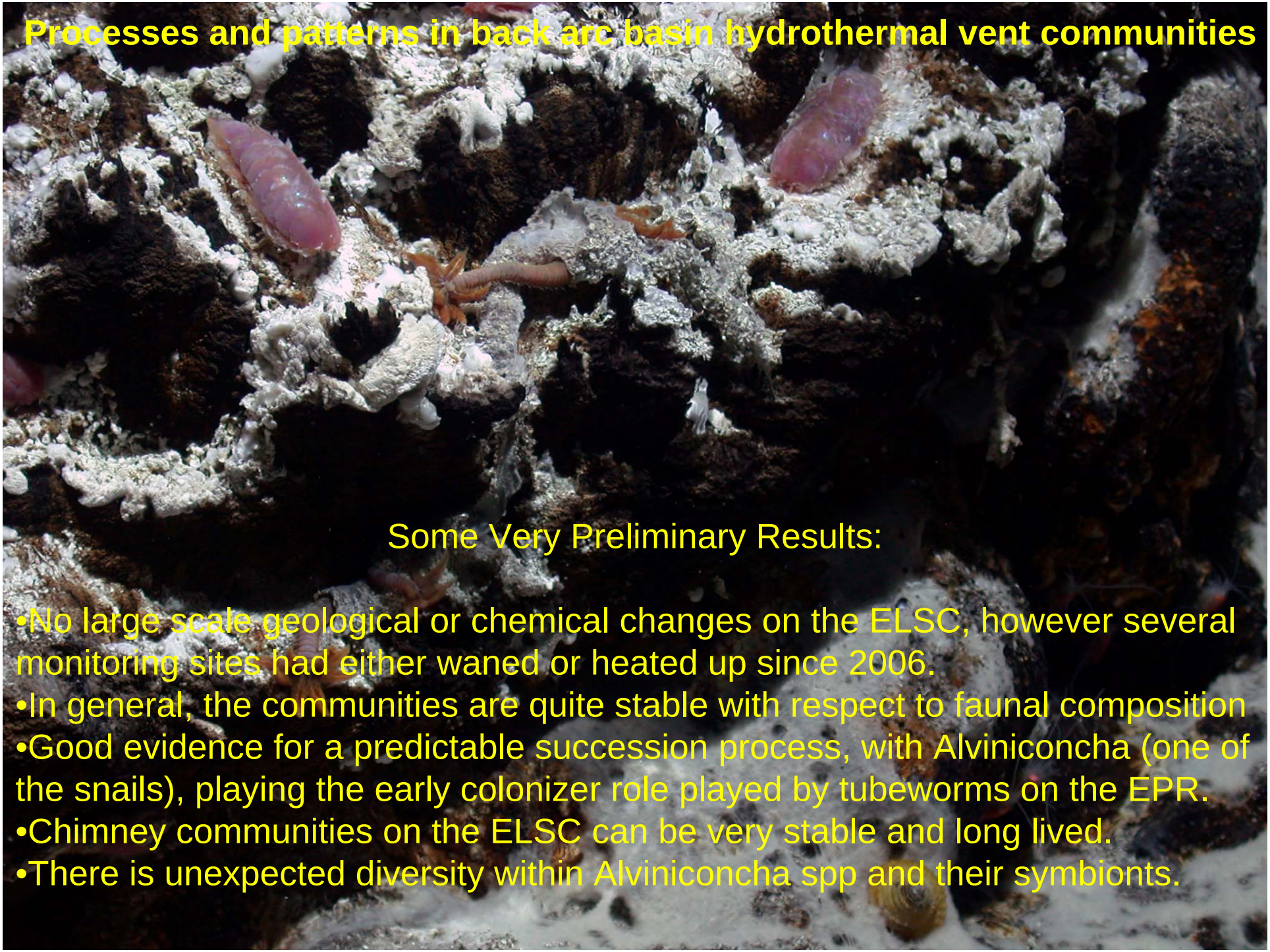
Processes and patterns in back arc basin hydrothermal vent communities

4) Made biological collections every dive for ship board experiments with live animals and fresh tissues and for future laboratory experiments.
5) Recovered 2 thermistor arrays and 5 hobo's with 2-3 yrs of data
6) Recovered 7 osmo samplers deployed for 3 yrs in collaboration with G. Wheat.



7) Recovered 30 larval settlement blocks for S. Kim
8) Conducted CTD casts and associated deployments of the SUPR plume sampling device for WHOI collaborators
9) Collected lava samples from every long term monitoring site for collaborations with the Langmuir group.

Processes and patterns in back arc basin hydrothermal vent communities



Some Very Preliminary Results:

- No large scale geological or chemical changes on the ELSC, however several monitoring sites had either waned or heated up since 2006.
- In general, the communities are quite stable with respect to faunal composition
- Good evidence for a predictable succession process, with Alviniconcha (one of the snails), playing the early colonizer role played by tubeworms on the EPR.
- Chimney communities on the ELSC can be very stable and long lived.
- There is unexpected diversity within Alviniconcha spp and their symbionts.


PS. The cameras worked great!

Ian MacDonald

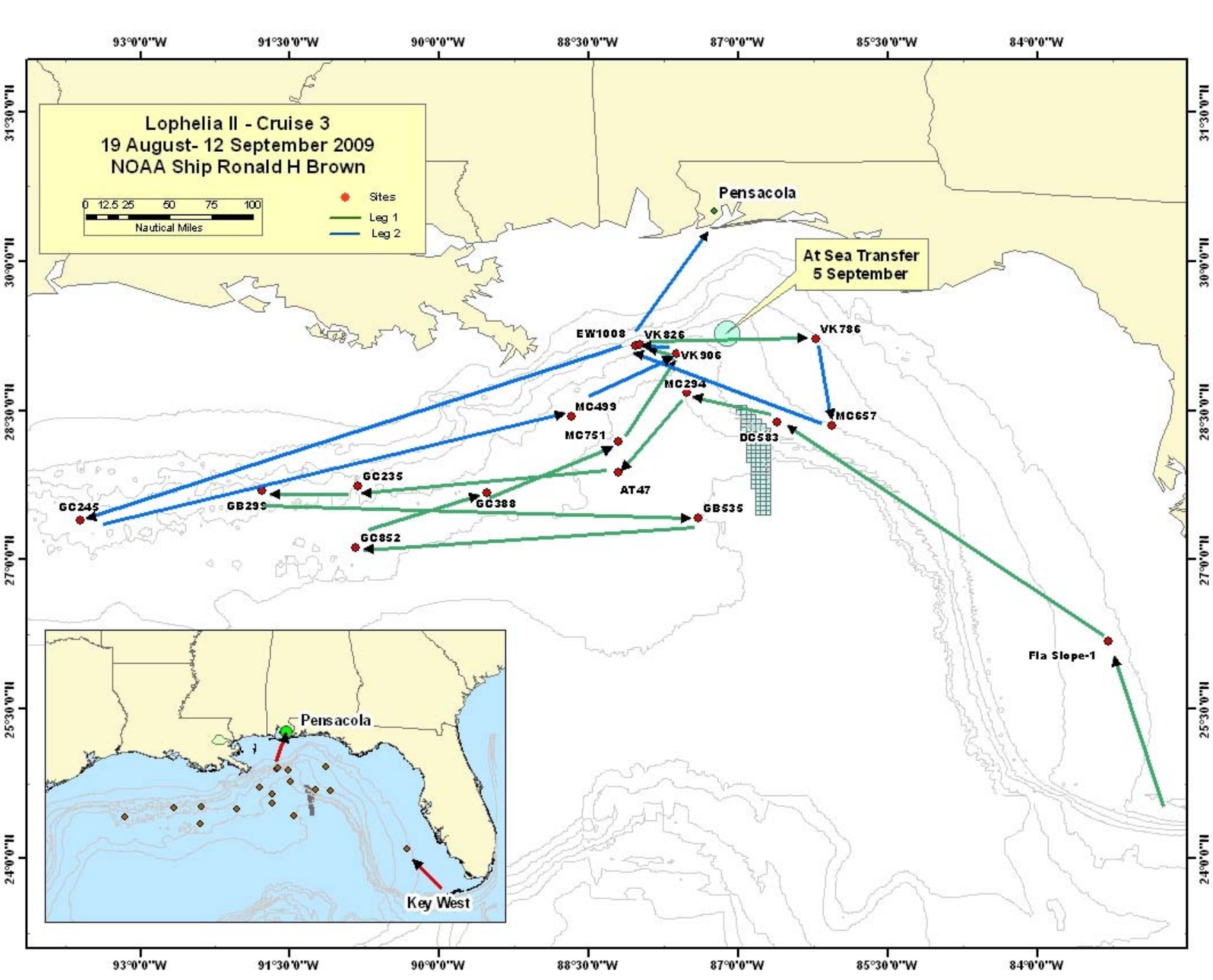
Ron Brown/Jason II

August 19 – Sept 12, 2009

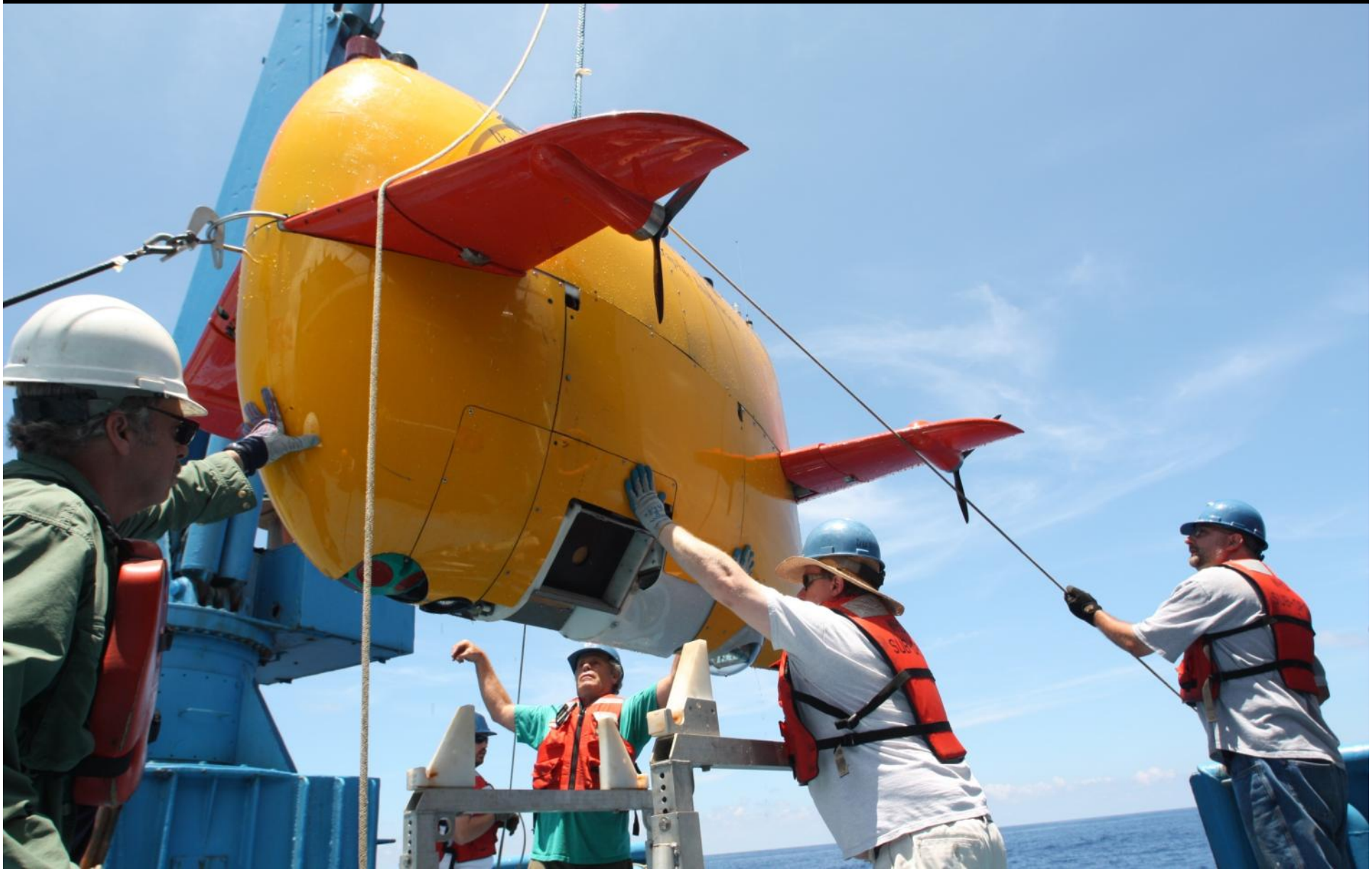
Deepwater Program: Exploration and Research of Northern Gulf of Mexico Deepwater Natural and Artificial Hard Bottom Habitats with Emphasis on Coral Communities: Reefs, Rigs and Wrecks
Lophelia II

Minerals Management Service Contract No. M08PC20038
and
NOAA Ocean Exploration Signature Expedition

I. MacDonald (C. Fisher, H. Roberts, & E. Cordes)
Florida State University
TDI-Brooks International


Lophelia II - Cruise 3
19 August- 12 September 2009
NOAA Ship Ronald H Brown
0 12.5 25 50 75 100
Nautical Miles
Sites
Leg 1
Leg 2
Pensacola
At Sea Transfer
5 September
EW1008
VK826
VK786
VK906
MC294
MC499
MC657
MC751
DC583
AT47
GC235
GC245
GB299
GC388
GB535
GC852
Fla Slope-1
Pensacola
Key West
93°0'0"W
91°30'0"W
90°0'0"W
88°30'0"W
87°0'0"W
85°30'0"W
84°0'0"W
31°30'0"N
30°0'0"N
28°30'0"N
27°0'0"N
25°30'0"N
24°0'0"N

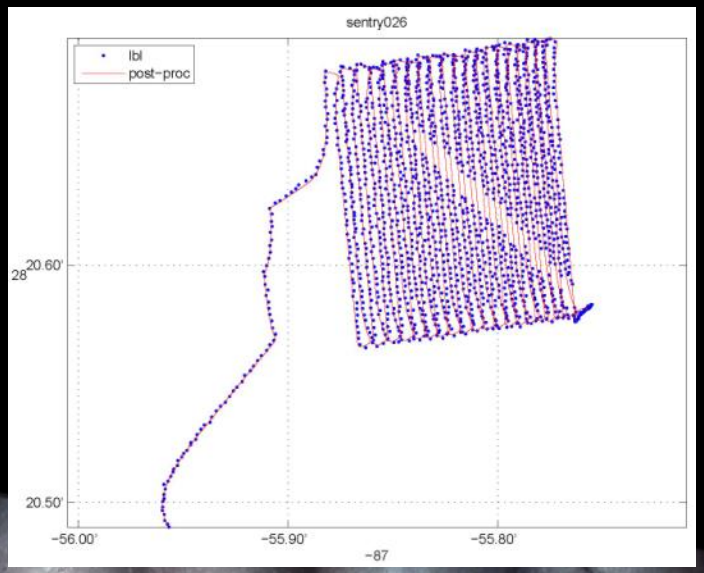
AUV SENTRY



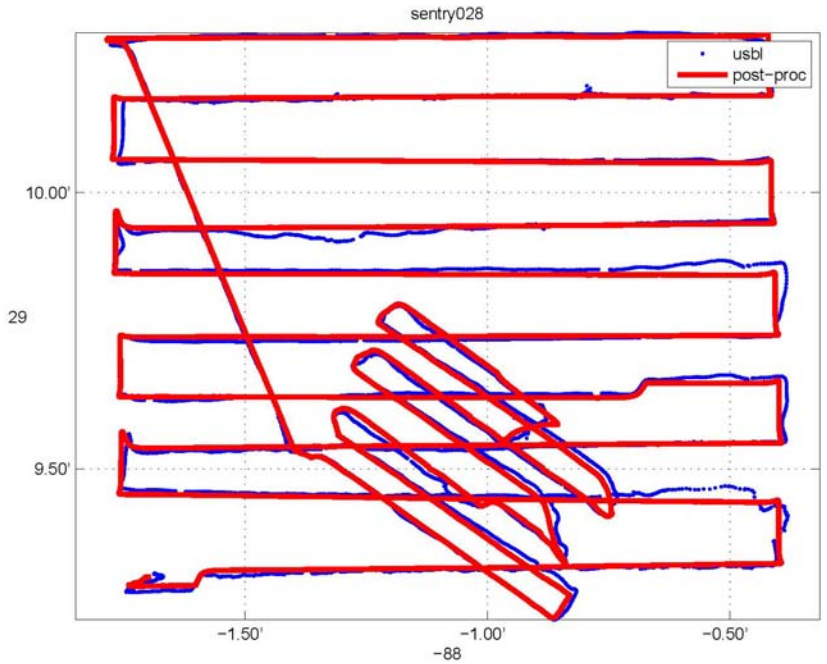
Sentry Problems Encountered Impacted Science Mission

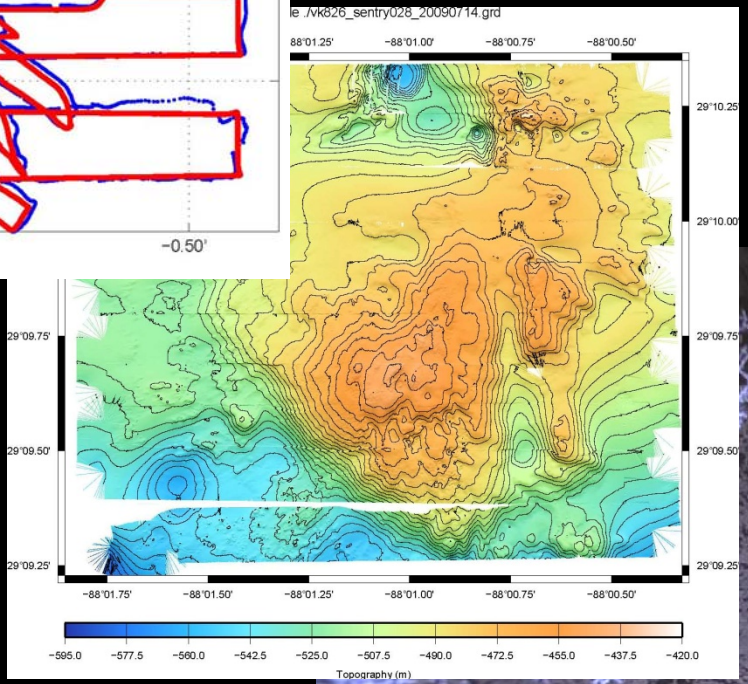
- Launch & Recovery: Initial mishap resulted in cursory damage to vehicle & ~24h down-time.
- Navigation & mission planning: Gaining experience with USBL navigation limited early dives.
- Photographic imaging: Multiple problems impacted several dives.
  - Synchronizing strobe to camera.
  - Un-programmed shut-down of image collection
  - Pin-cushion focus problems
- Octans attitude gyro failed required work-around.
- Premature ballast weight release caused un-programmed termination of 7 dives.

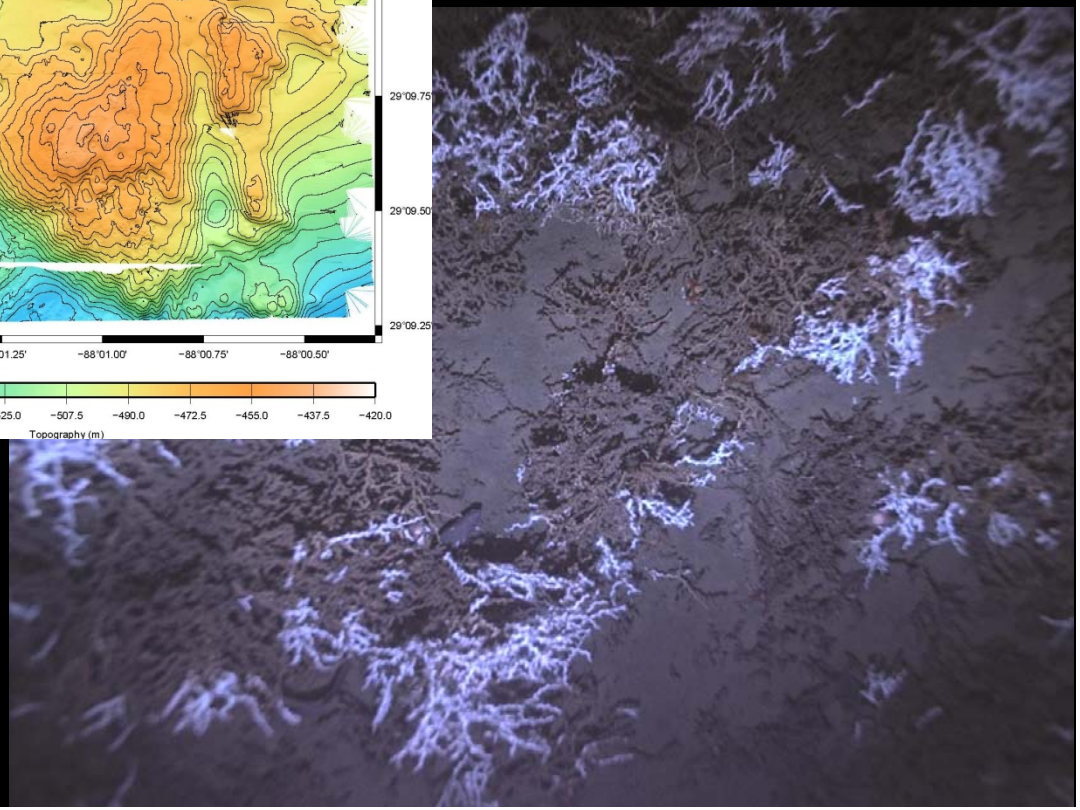
Shipwreck Survey, 2700m



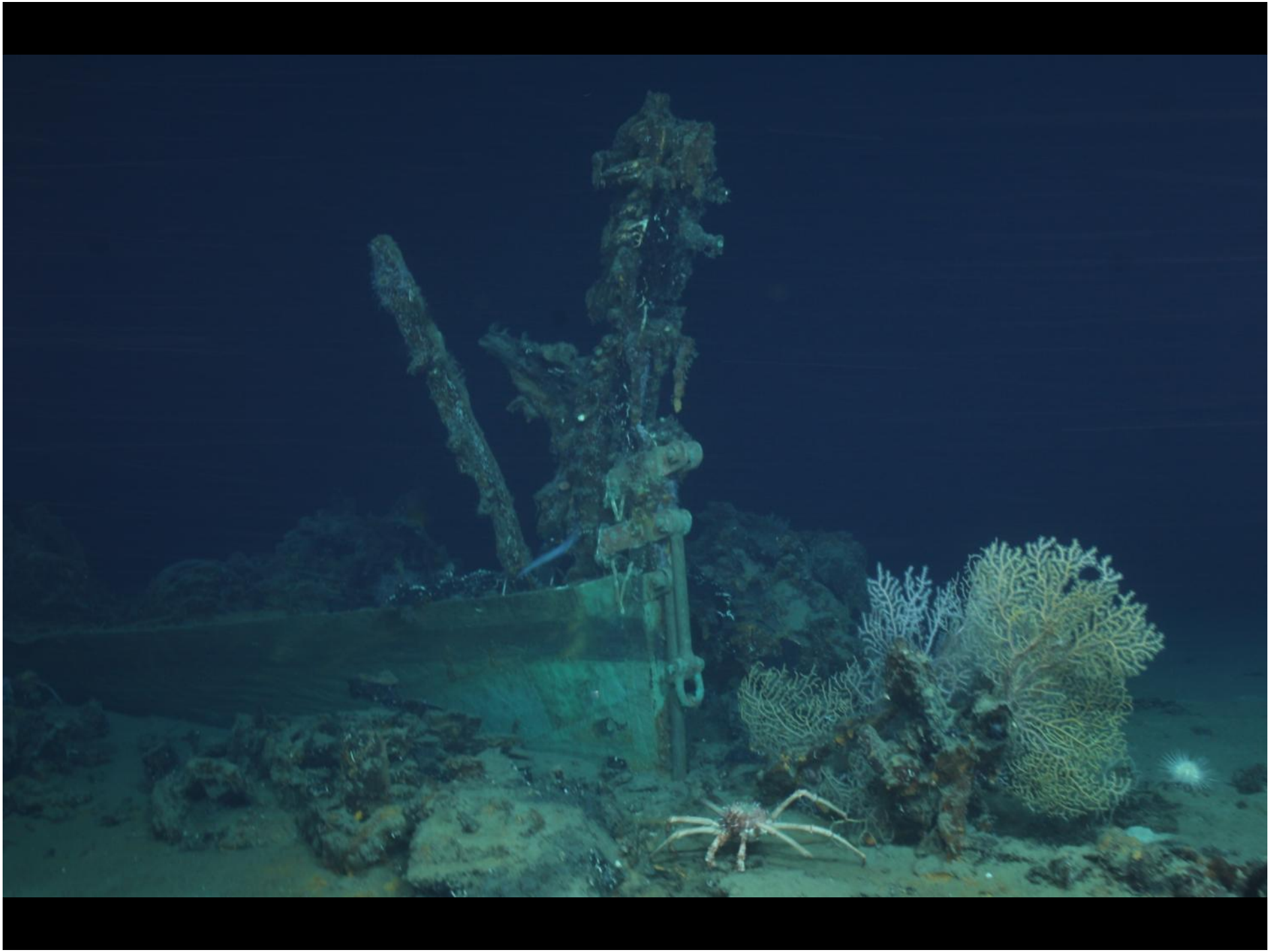
Lophelia Survey, ~400m







ROV JASON **Lophelia II-3** [rb-09-05]



Craig Moyer (movie)

Kilo Moana/Jason II

October 1 -17, 2009