Lessons from the *EV Nautilus*

EV Nautilus is operated by the OET; supported in part by NOAA to map/explore US waters

- extensive mapping from the ship
- exploratory dives with the ROVs
- representative sampling of bio and geo samples
- telepresence-enabled outreach

Scientists can volunteer to lead expeditions; collected open-access data and samples; use the experience to develop NSF-style research program

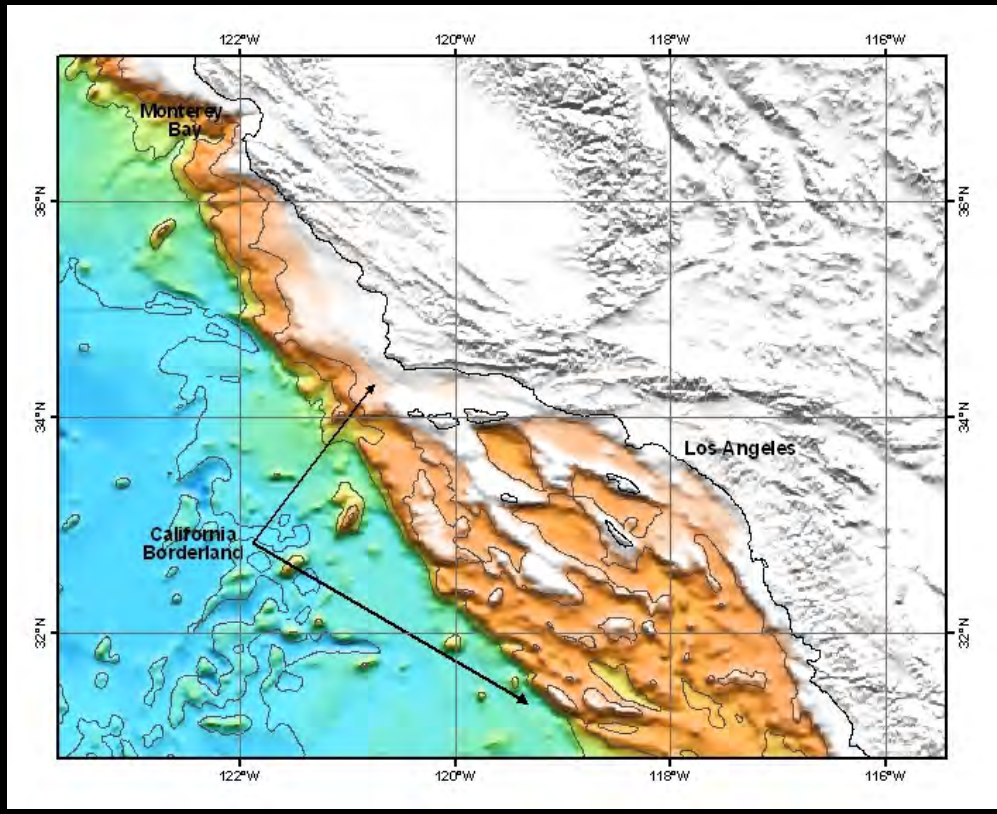
EV Nautilus and ROVs *Argus* & *Hercules*

From exploration to hypotheses

Two expeditions from July 27 to August 18th

Led by Chris German, Lisa Levin and Peter Girguis to explore the southern CA borderland

- very geologically active region
- Well mapped; very very few ROV or HOV dives
- extensive uncharacterized seepage



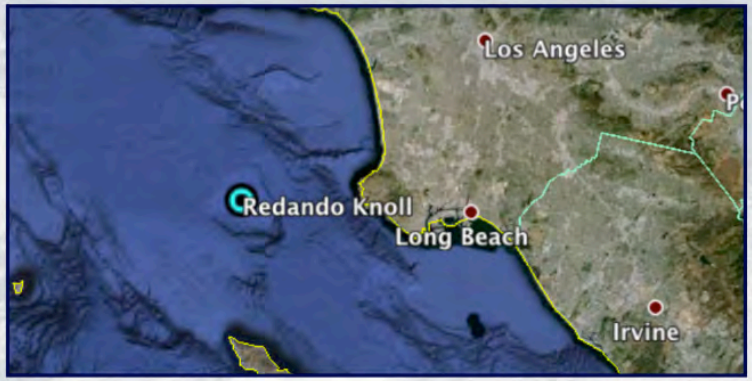
courtesy of MBARI

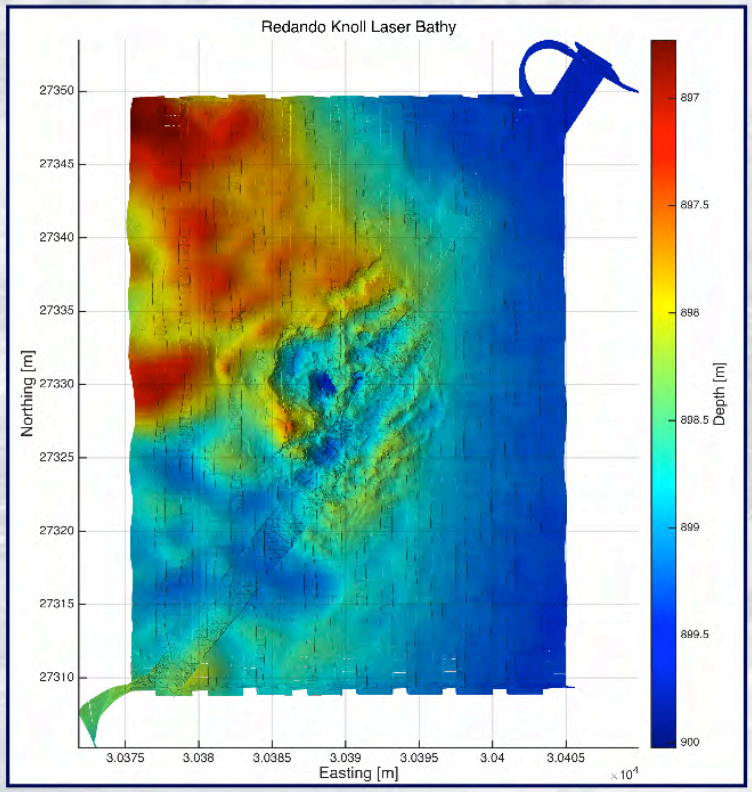
Discovered new seep fields devoid of megafauna in the hypoxic/anoxic basins

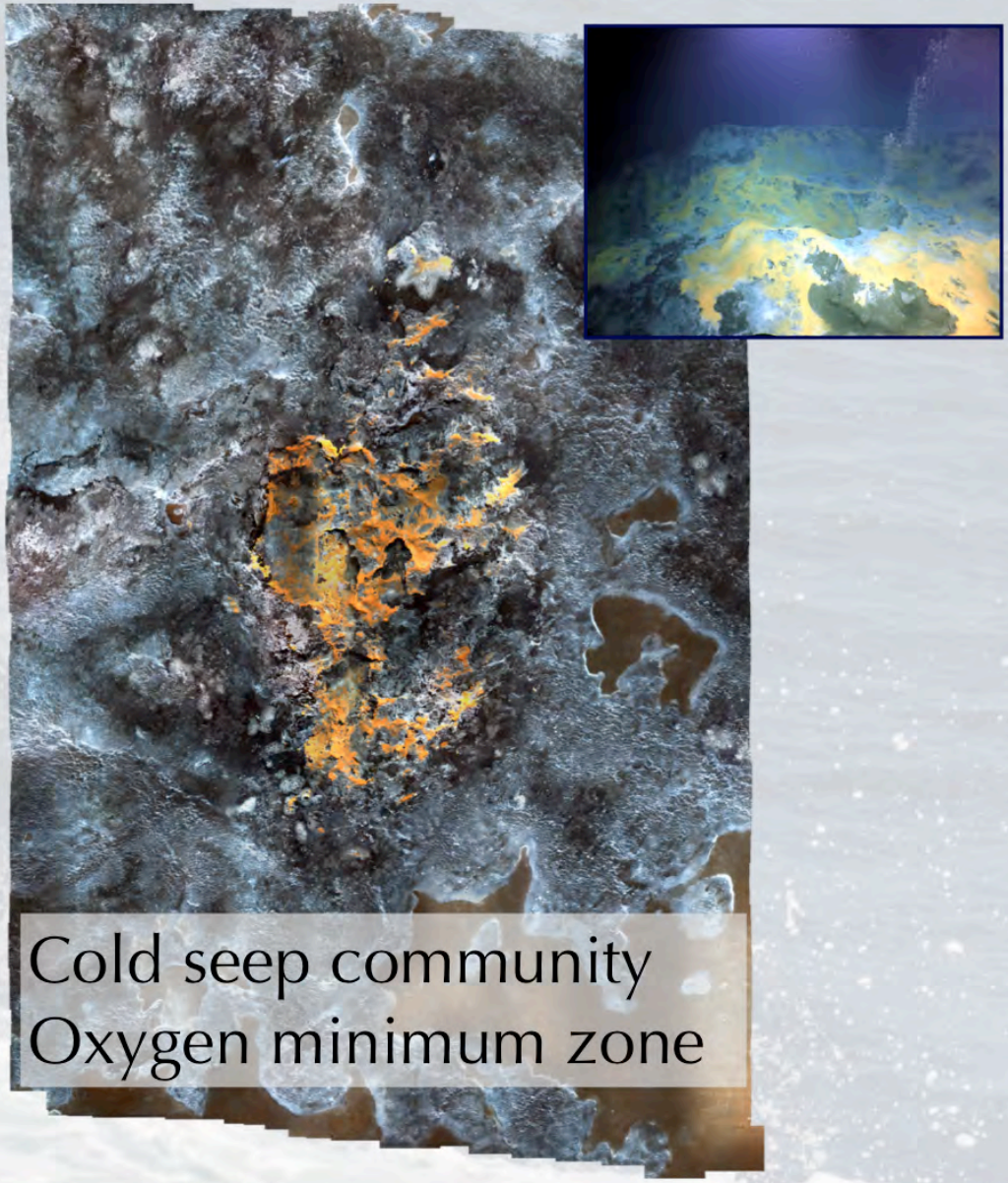
Discovered massive carbonate mounds off Los Angeles that are harbors for commercial rockfish

Discovered a new 200 m x 1.5 km seep site !!!

Low oxygen seep sites







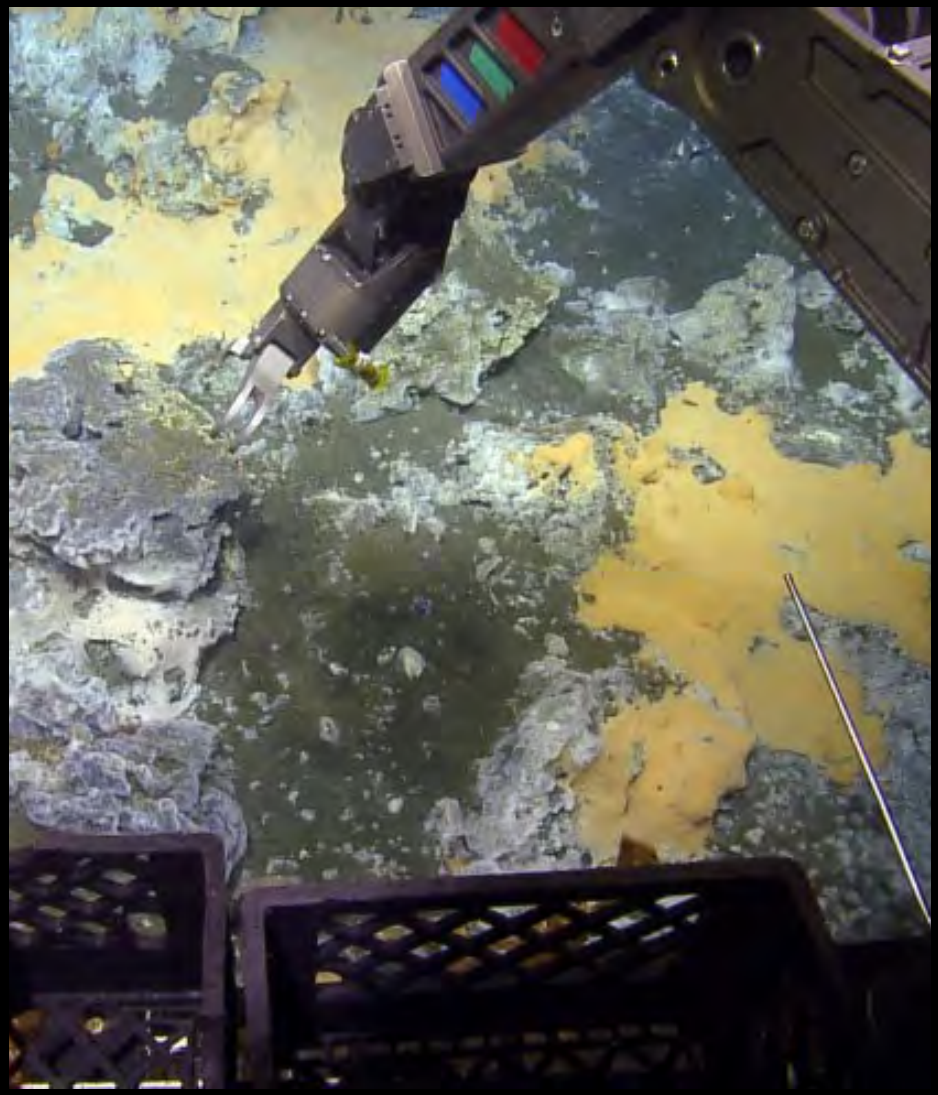
Massive carbonates

1.5 km long seep

Samples were deposited in open access repositories at Harvard/URI

Why open access?

- Enables best use of samples, beyond the initial needs of the principle investigator
- Enables access to samples when newer technologies become available

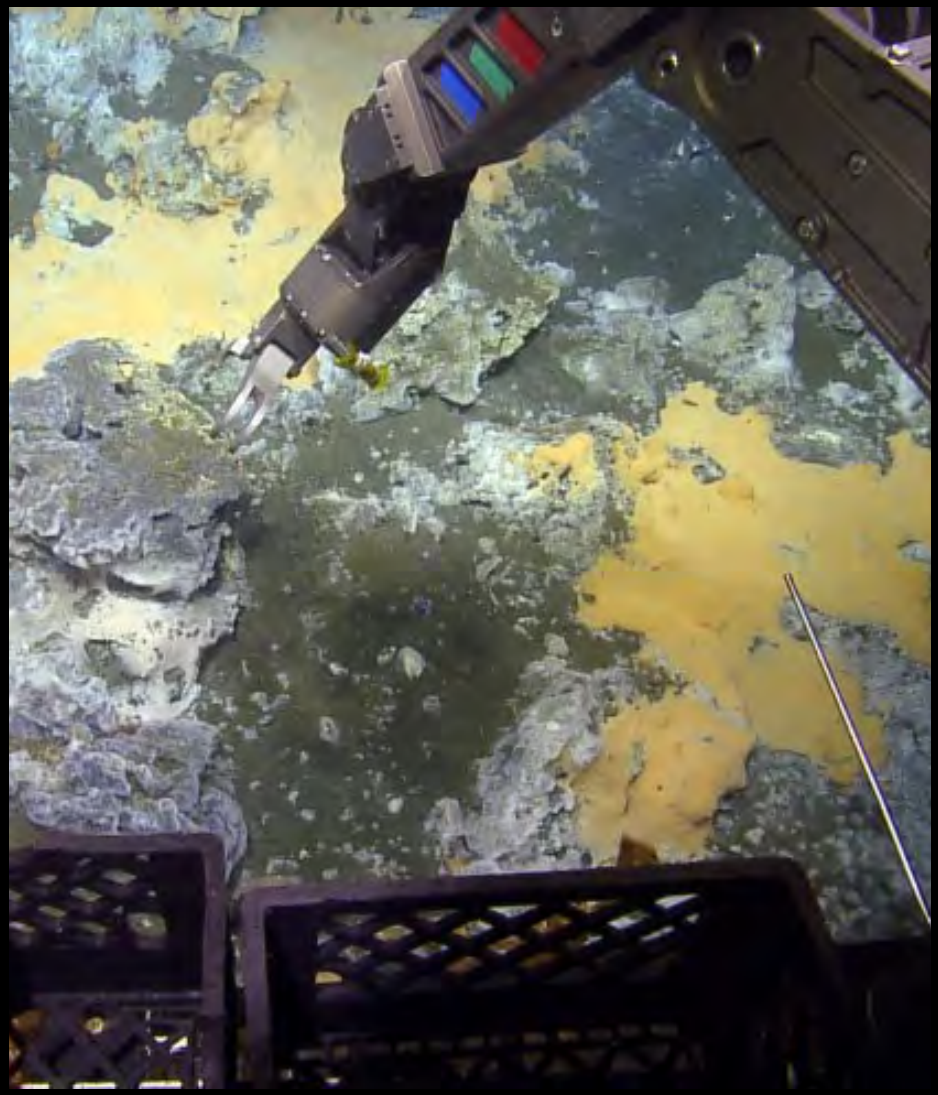


Lead AND shoreside scientists have used this expedition as a launchpad for proposals

NSF
NASA
NOAA
Foundations

An “informal” example of exploration-based scientific inquiry

a key topic at the upcoming DESCEND meeting



EXAMPLES of open access biological repositories

- The Ocean Genome Legacy
  - www.northeastern.edu/cos/marinescience/ogl/
- Museum collections
  - Harvard Museum of Comp. Zoology
  - Scripps invert/vertand geological collections
- There are a number of bio/geo/chem repositories
- Perhaps a list of such repositories on DeSSC website is of value?