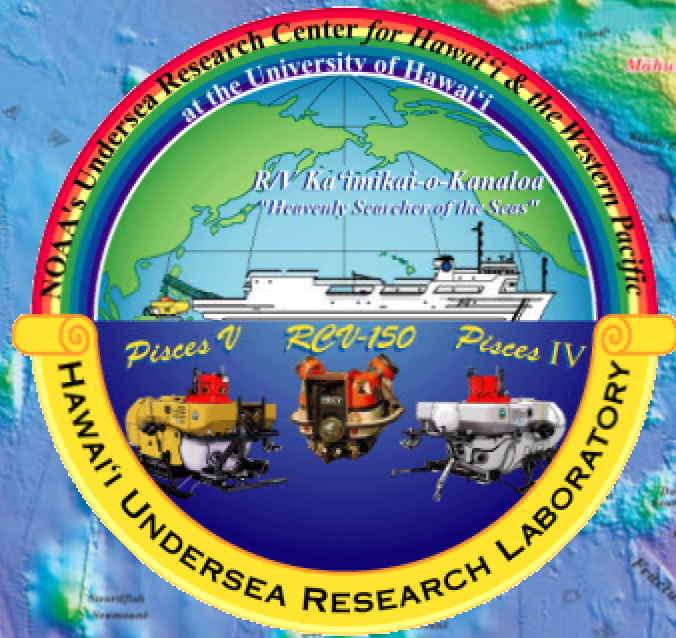
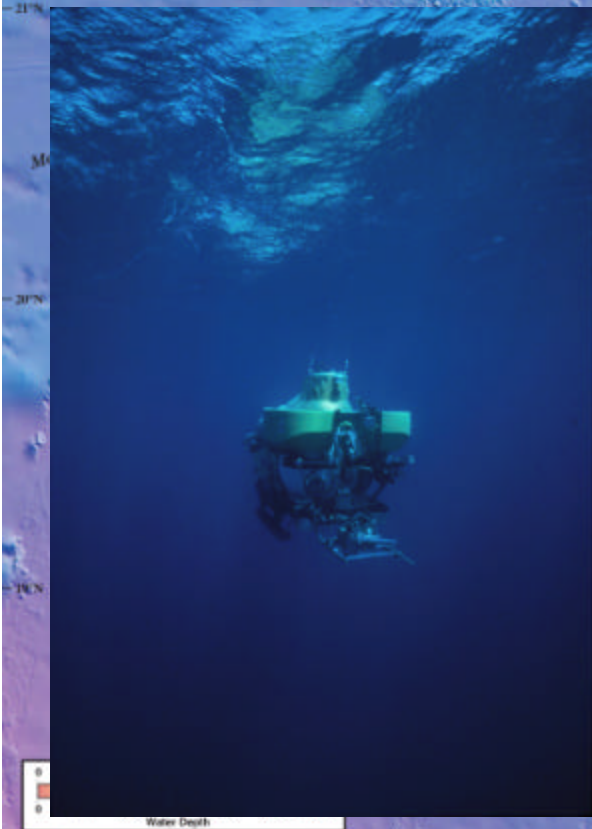


Hawai'i Undersea Research Laboratory

NOAA's Undersea Research Center for Hawai'i & the Western Pacific



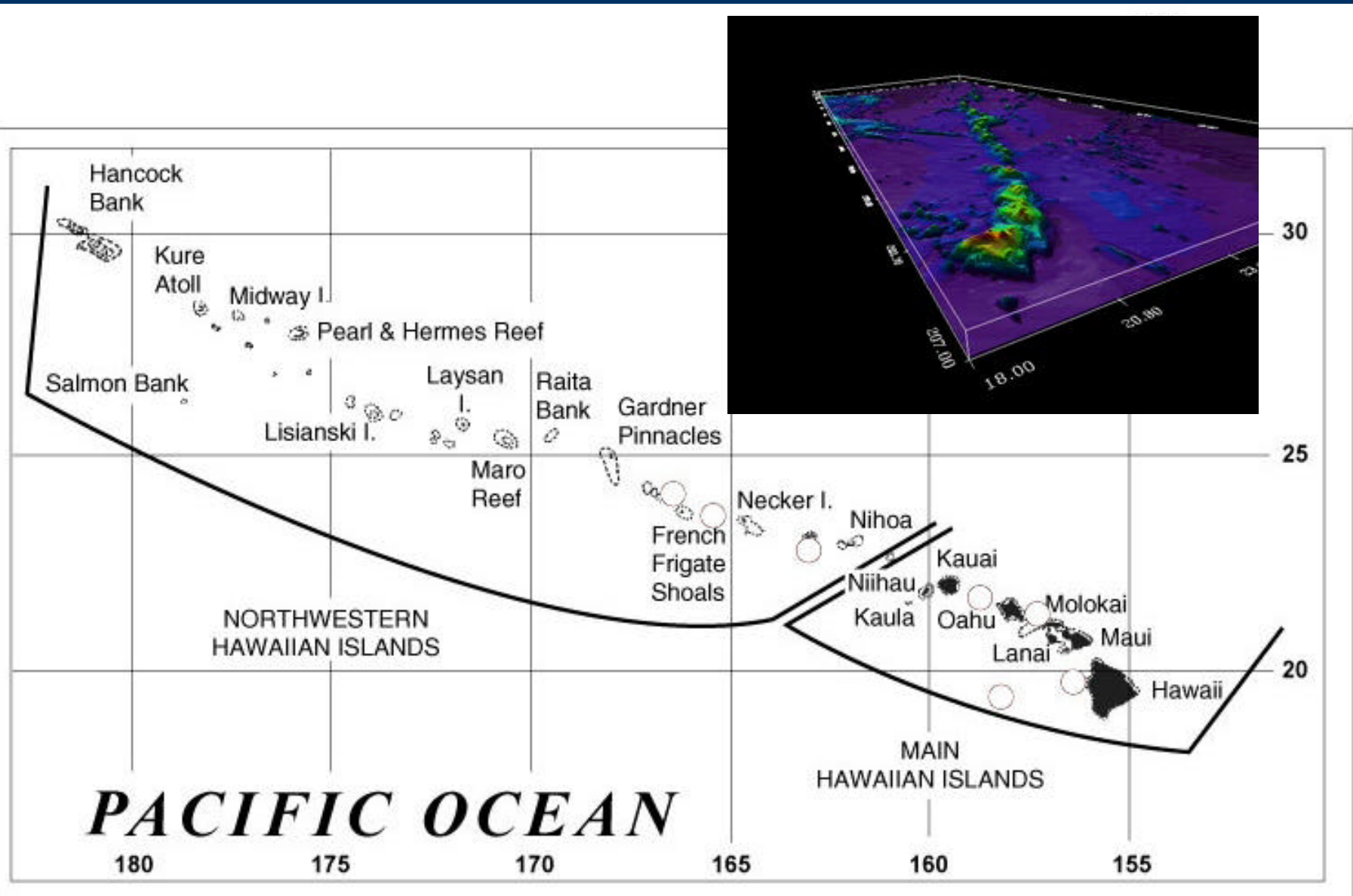
USGS Geologic Investigations Series I-2809



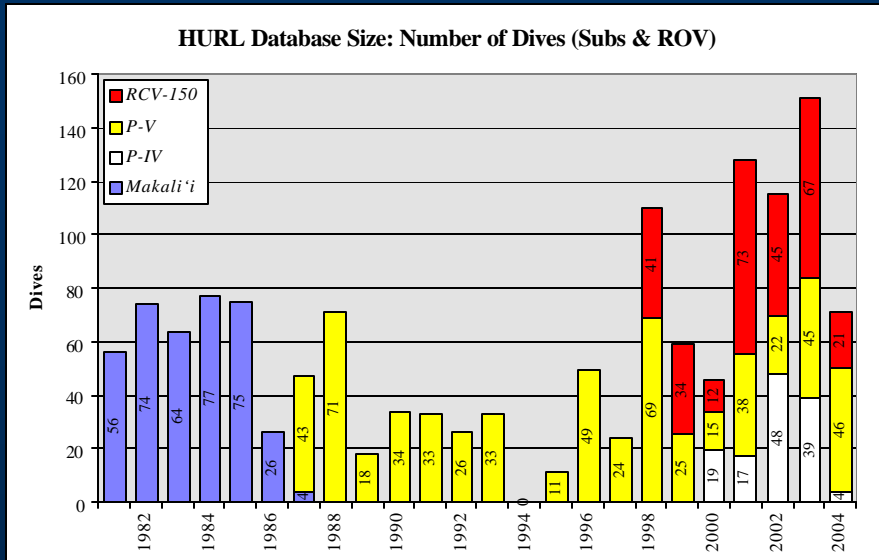
2003 Accomplishments

- 64-day expedition to the NWHI
- Featured on Discovery Channel & History Channel
- Continuation of projects in the Main Hawaiian Islands
- Record number of dives (84 *Pisces*, 67 ROV)
- HURL and collaborative PI research on Essential Fish Habitat in the NWHI & MHI gaining recognition and funding

The Northwestern and Main Hawaiian Islands



HURL Dive Statistics including 2004



HURL Data Center: A Comprehensive Pacific Benthic Ecology Database

By the end of Nov. 2004 the database consisted of **1398 dives** (376 *Makali'i*, 127 *Pisces IV*, 602 *Pisces V*, and 293 *RCV-150*) that represented **6858 hours** of time underwater -- the largest annotated video collection of its kind in the Pacific.

2004 projects (51 *Pisces* & 24 ROV dives = ~75 total) in the main Hawaiian Islands including studies of:

Deep-water benthic algae (2)

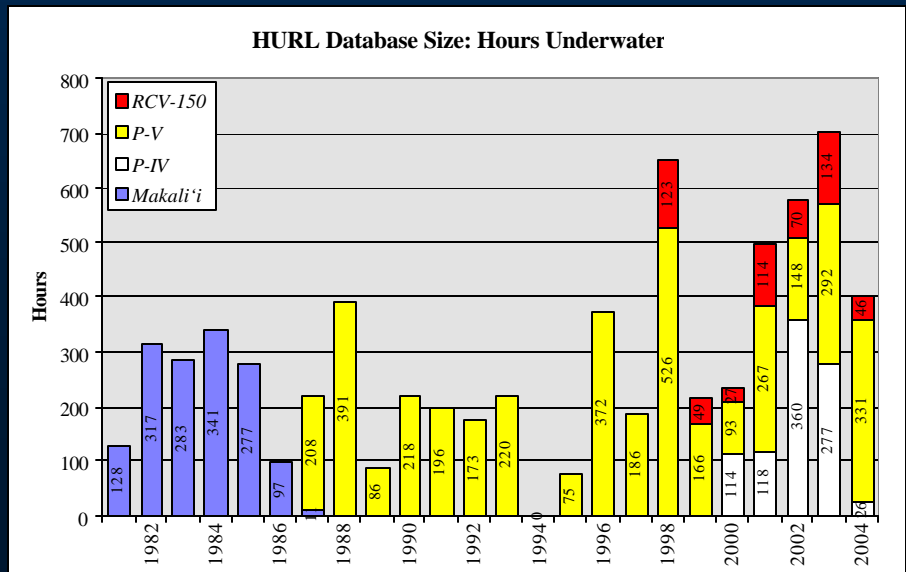
Deep-water precious corals (3)

Mesopelagic boundary layer structure

Glacial sea level lowstand

Temporal evolution of Loihi hydrothermal system since the 1996 seismic event

...and return to the Japanese midget sub area



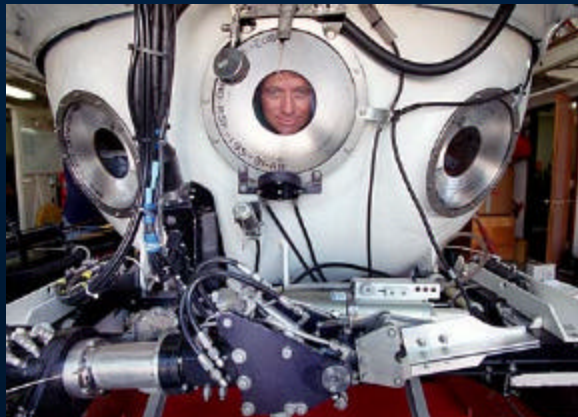
Pisces IV & Pisces V

~2000 meter capable

Continual upgrades in science and operational gear

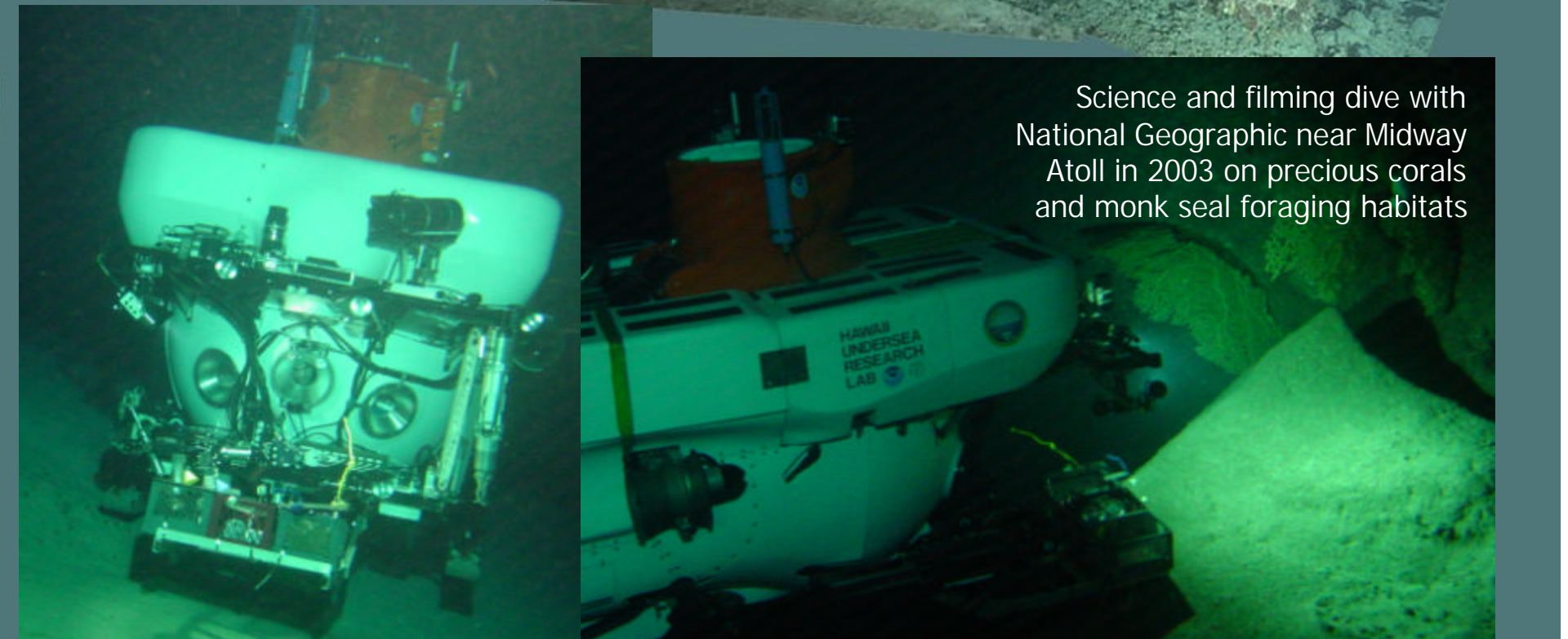
Provides self-rescue capability

Goal is to make them as identical as possible with a complete set of spares



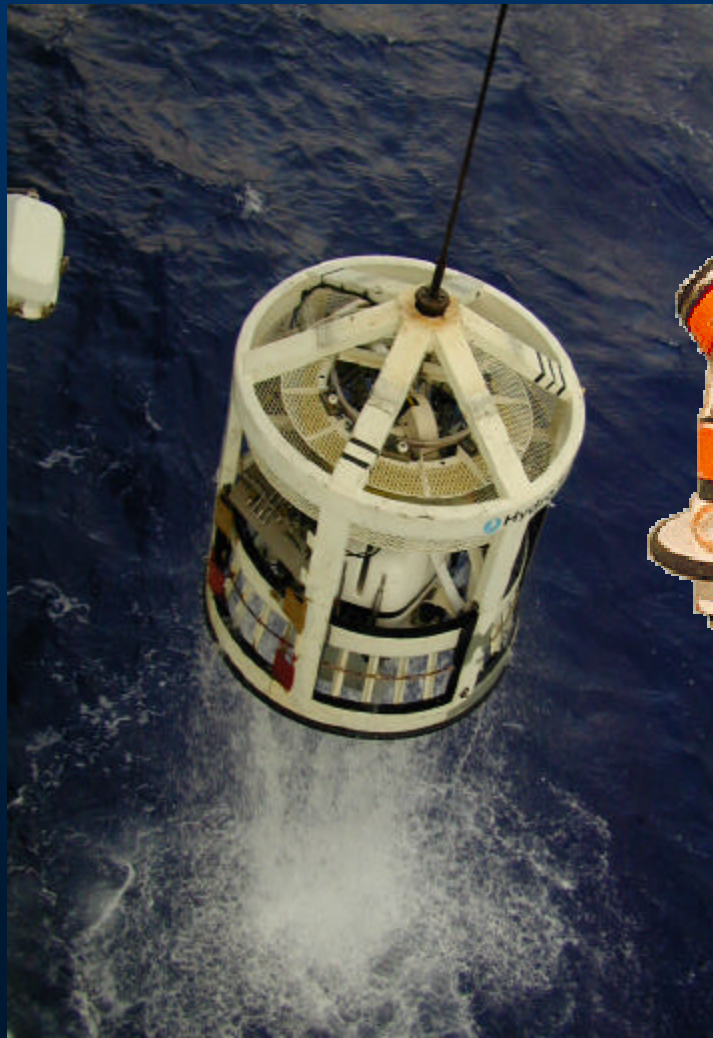
Dual sub diving for rescue training, occasional science projects, and documentary filming

Japanese midget submarine located by HURL in August 2002



Science and filming dive with National Geographic near Midway Atoll in 2003 on precious corals and monk seal foraging habitats

ROV RCV-150



~ 1000 meters

TMS system

Small & agile

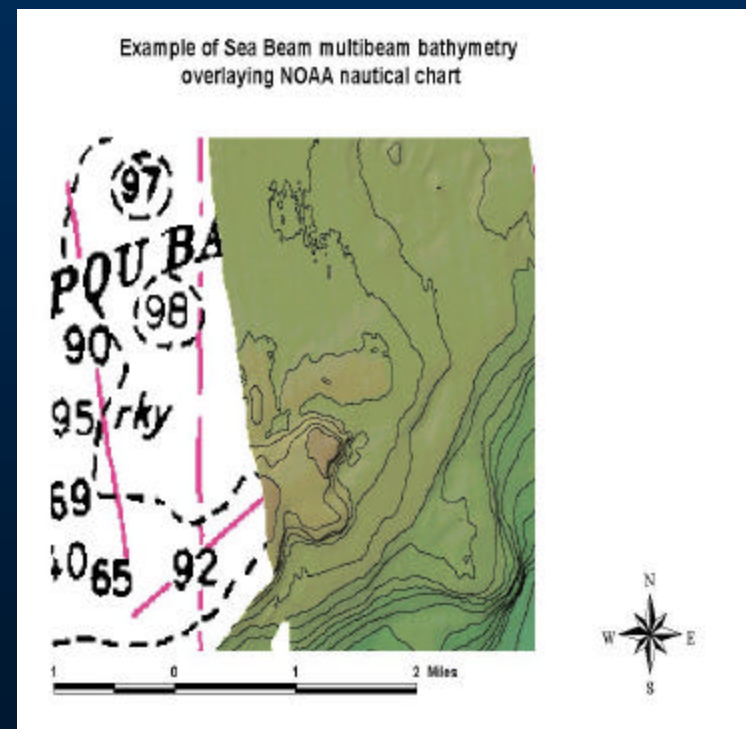
SeaBeam 210 system on KoK

- 12 kHz deep water multibeam sonar
- 16 beams, no sidescan backscatter
- Hybrid system, one of a kind
- Swath width ~ 70% water depth



R/V *Ka'imikai-o-Kanaloa*

Allows for 24 hr/day ops – HOV, ROV, Mapping, CTD/Tow-Yo as needed



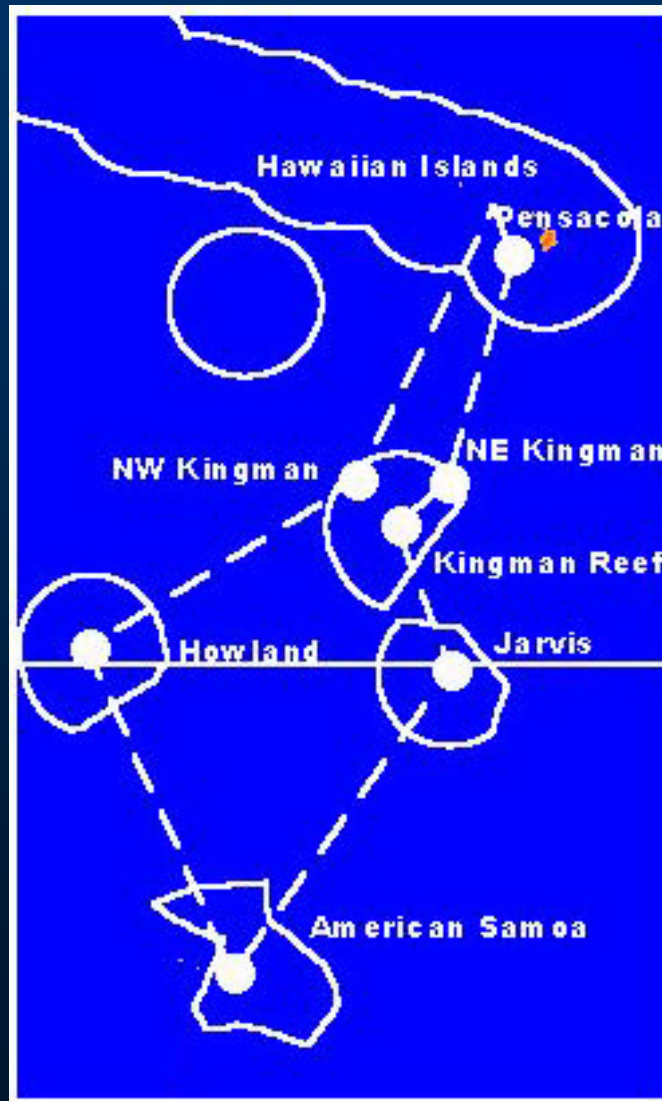
Output from SeaBeam on *KoK*

Approved Study Sites for HURL's Expedition to American Samoa and beyond in 2005 (March-July)

First dives on
Vailulu'u Seamount,
an active submarine
volcano

Benthic habitat &
archeological dives
around Samoa

Algae, precious coral
(climate variability),
and biogeography of
remote island areas
(Palmyra, Jarvis,
Kingman)

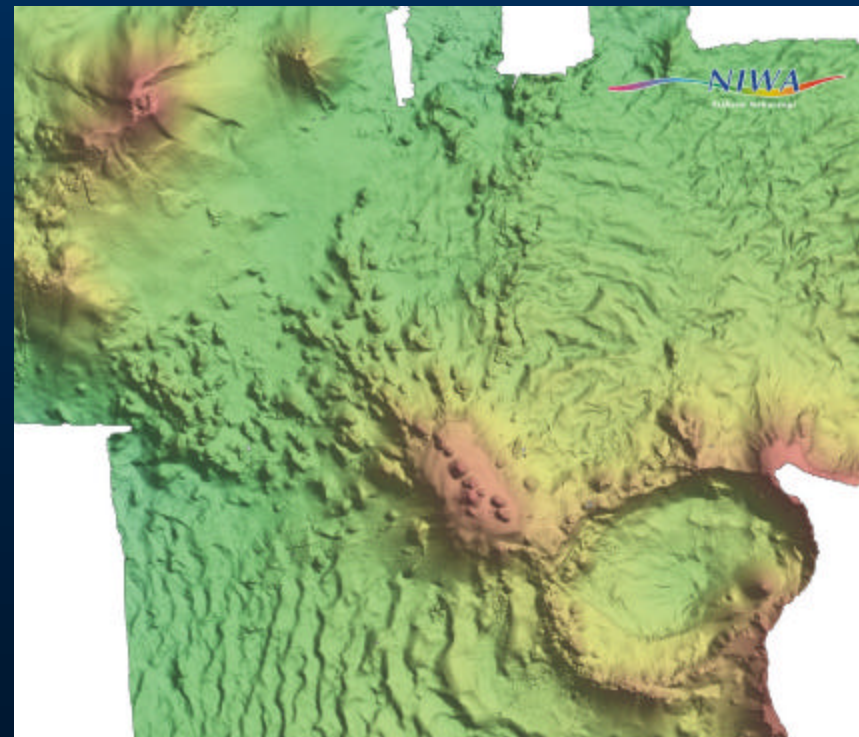
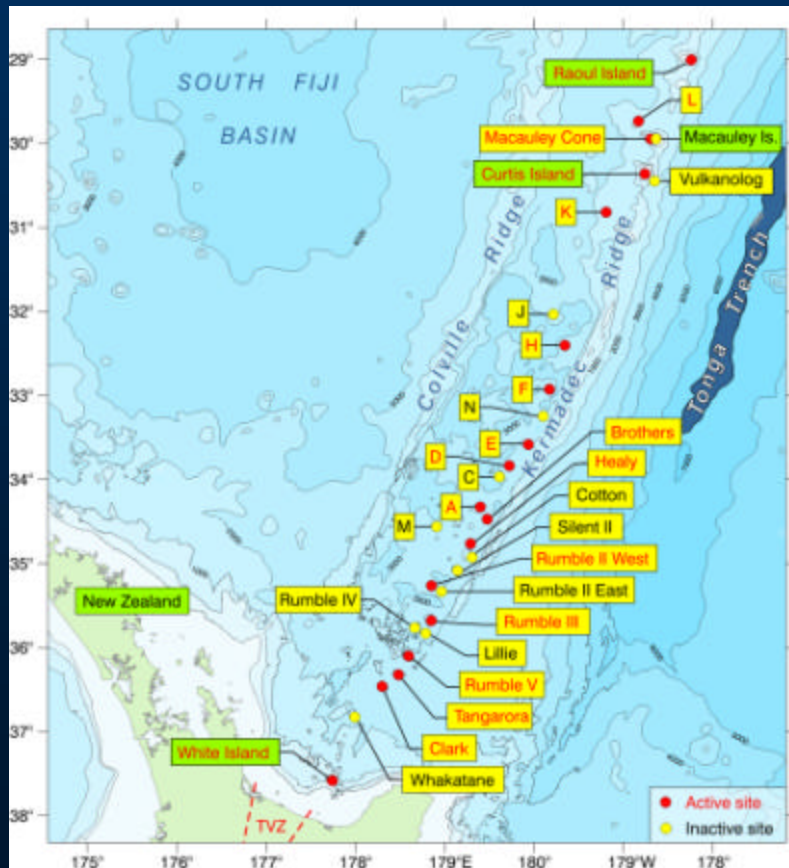


**50 panel
approved dives
for 8 PI's from 8
different
institutions**

**~20+ dives
planned pending
final funding
approval**

NZ (GNS & NIWA) – OE (NOAA PMEL) funded expedition to the submarine volcanoes of the Kermadec Arc (2 legs, total 20 dives, Southern-Mid Kermadecs, PI's G. Massoth & R. Embley)

German team funding 10 dive leg in Northern Kermadecs (PI P. Stoffers, University of Kiel)



Macauley Island area, EM 300 bathymetry (NIWA)

Goals for the near future



Continue HURL's expansion of impact and presence into the Pacific with extended expeditions ~every other year

Seek additional funding for collaborative projects with NURP dives to make this happen, both US and foreign

Explore making the HURL facilities more of a national asset shared between the NURP centers and any others

Upgrade capability of submersibles, ROV, multibeam, crew, and ship as funds allow

Pursue the establishment of a pool of additional NSF/OCE funds for non-NDSF vehicles as recommended by the 2004 NRC/NAS future of deep submergence report (up to 10% of NDSF budget)

Provide the ability to host and operate a new *Jason II* type ROV at a second location of geographic relevance, also as recommended by the same report



Approved NURP projects for HURL's Expedition to American Samoa in 2005

PI	Title of Proposal	Locations	# of Dives
Dunbar, Robert	Decadal to Centennial Climate Variability Revealed by Deep Sea Corals from the Central North Pacific Gyre	Palmyra Atoll , Kingman Reef	6-8 <i>Pisces</i> ; 5 ROV
Graves, Michael	Investigation of the USS <i>Chehalis</i> , a shipwreck off American Samoa, focusing on archeological investigation and pollution possibilities of this WWII-era wreck	Pago Pago Harbor, American Samoa	1-2 <i>Pisces</i>
McDermid , Karla	The lower limit of light-harvesting: an examination of photosynthetic capacity and population structure of deep-water benthic algae using in situ active fluorescence and submersible-conducted survey techniques.	Palmyra Atoll	7 <i>Pisces</i>
Parrish, Frank	Exploration of the deep slopes of the US Line and Phoenix Islands to investigate the biogeography of deepwater fish and corals, and identify paleo shorelines	Kingman Reef, Palmyra, Jarvis, Howland and Baker Islands	10 <i>Pisces</i> (2 per site)
Staudigel, Hubert	Vailulu'u Seamount: Exploring a New Hydrothermal System and Microbial Mediation of Basaltic Glass Alteration.	Vailulu'u and Ta'u Seamounts Am. Samoa	[16 shared] 12 <i>Pisces</i> ROV: ev. night
Wood, Stephen	Characterization of Physical Environment at Active Underwater Seamounts for Development of Environment based Navigation Systems	Vailulu'u, Am. Samoa	3 <i>Pisces</i> 3 CTD tow-yo
Wright, Dawn	Mapping Benthic Habitats of the Eastern American Samoan Islands	Am. Samoa, Tutuila to Ta'u	4 <i>Pisces</i> 5 ROV
Young, Craig	Ecological patterns in deep-sea macro- and microbotic communities on Vailulu'u Seamount and Ta'u Island, American Samoa	Vailulu'u and Ta'u Seamounts Am. Samoa	[16 shared] 11 <i>Pisces</i> ; 9 ROV