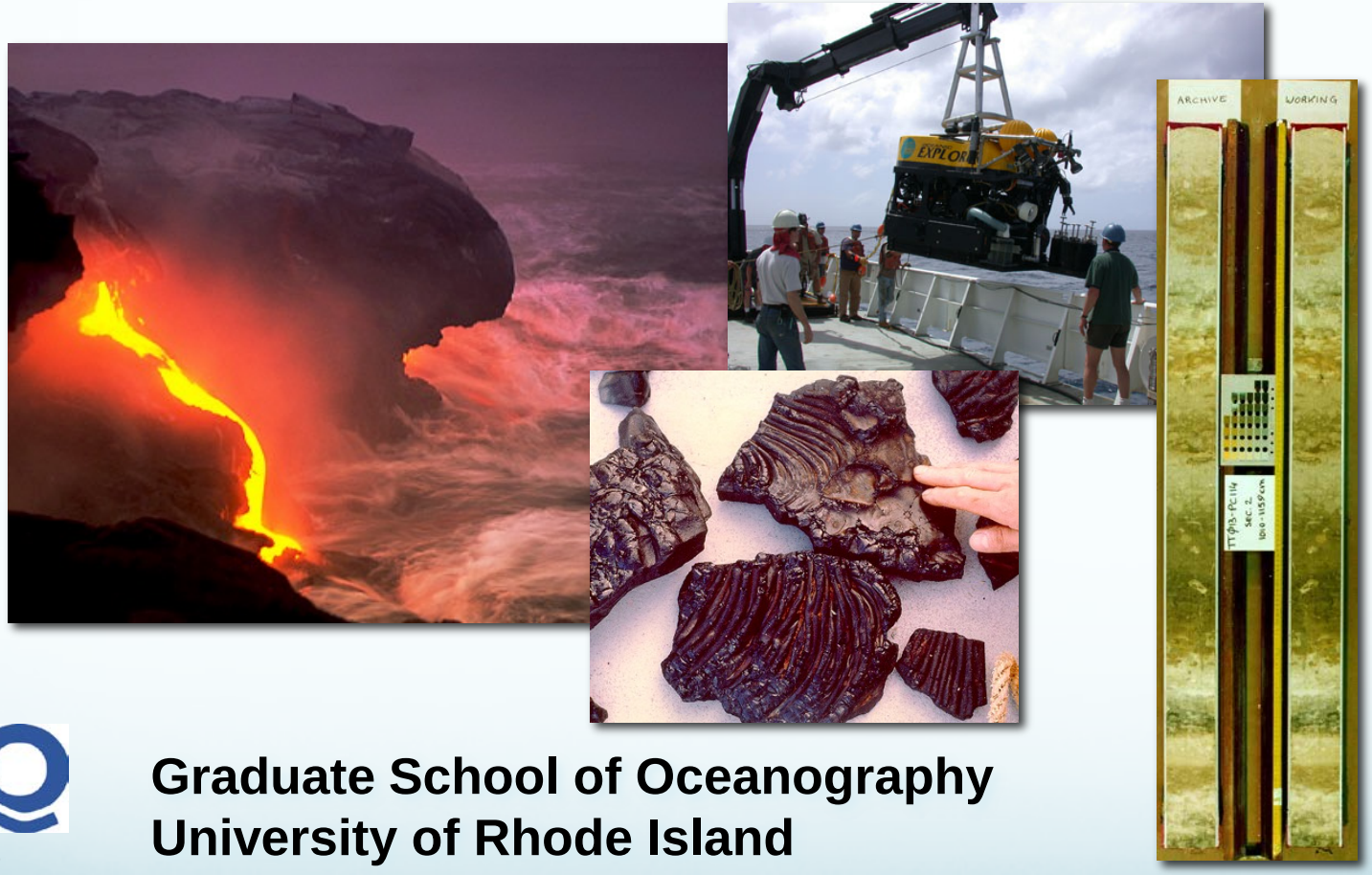
Marine Geological Samples Laboratory



Graduate School of Oceanography
University of Rhode Island
Narragansett, R.I. 02882

Curators: Drs. Katie Kelley and Rebecca Robinson
Curator Emeritus: Dr. Steve Carey

Marine Geological Samples Laboratory

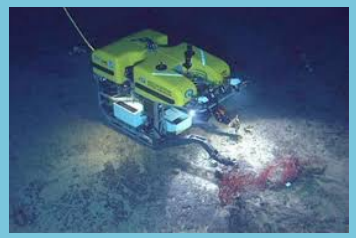
Primary repository for collections of GSO Marine Geology and Geophysics faculty/staff and E/V Nautilus

Sediment cores

Dredge rocks

Sediment grabs

ROV grabs



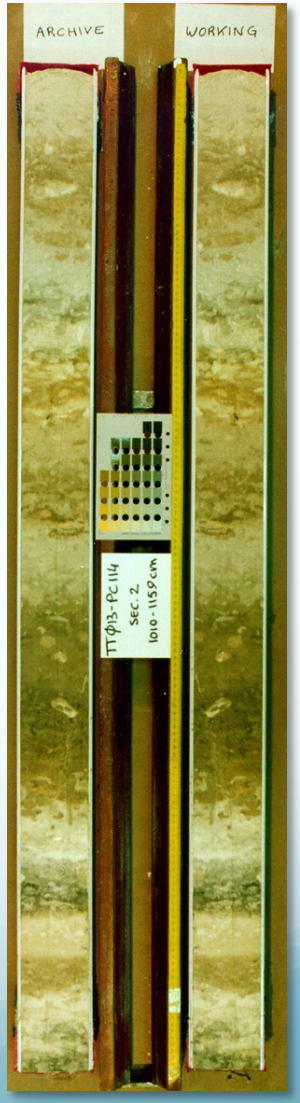
Volcanic island and continental margin

Current staffing: 2 PI/Curators (Kelley, Robinson)
2 Full Time Graduate Student Assistants (1 NSF, 1 URI)

MGSL Sediment Core Collection

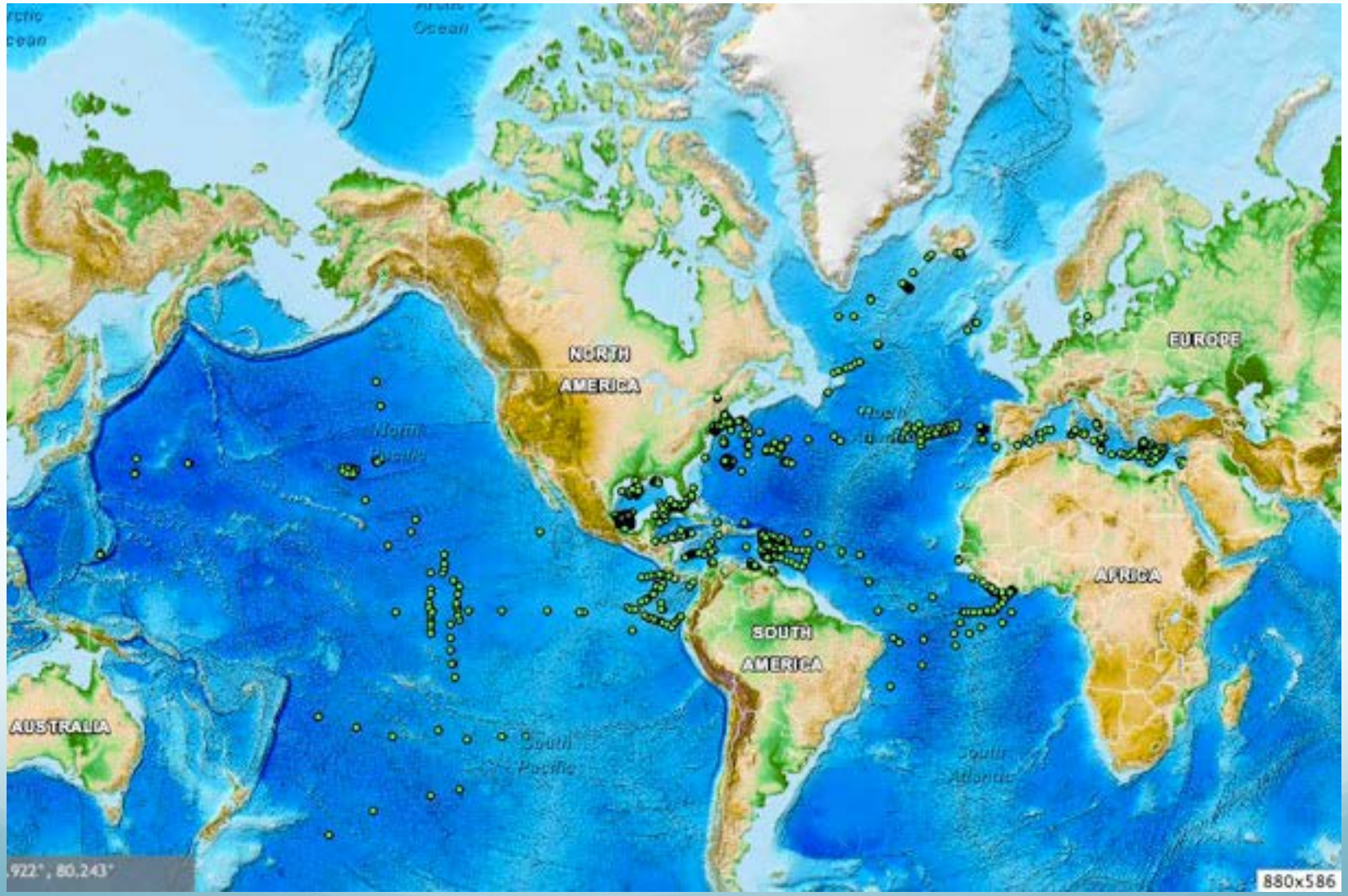
1865 piston, gravity and box cores

Majority stored under refrigerated conditions in D-tubes



Core reefer capacity= 10,000 ft^3
Currently about 95% full

MGSL Sediment Core Distribution



Expansion of Core Storage at MGSL

Three 20’ and one 40’ refrigerated containers have been added outside of the MGSL and permanently connected to building power

Added 3400 ft^3 of racked storage

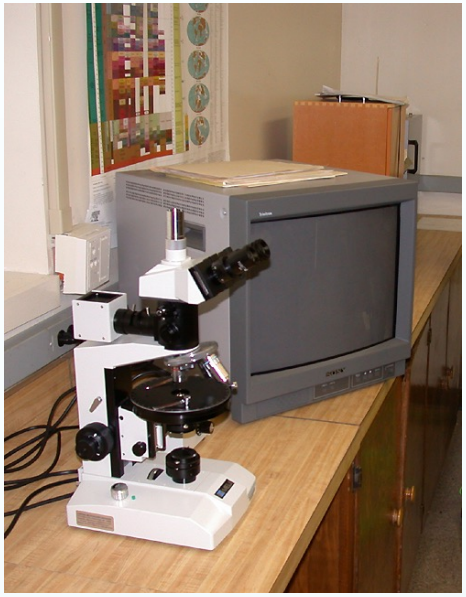
Expansion of Core Storage at MGSL

Interior view of external core storage vans with movable D-tube racks

MGSL Sediment Lab Facilities

Portable x-ray machine

Air-driven core splitter



New petrographic microscope
With digital camera and monitor

Other facilities: petrographic and picking microscopes, core photography, sieving lab, grain size analyzer, description and sampling tables

MGSL Dredge Rock Collection

1039 dredge samples

One of the most extensive collections of volcanic rocks from the mid-ocean ridge

About 1/4 of ridge system has been sample at an average interval of 40 km

MGSL Dredge Rock Distribution

Dredge Rock Storage at MGSL

Dredge hauls are stored in plastic and burlap bags

Database keeps track of drawer locations for easy retrieval

Current rack system is about 7/8 full

MGSL Dredge Rock Facilities

Small and large slab saws

Sample prep lab

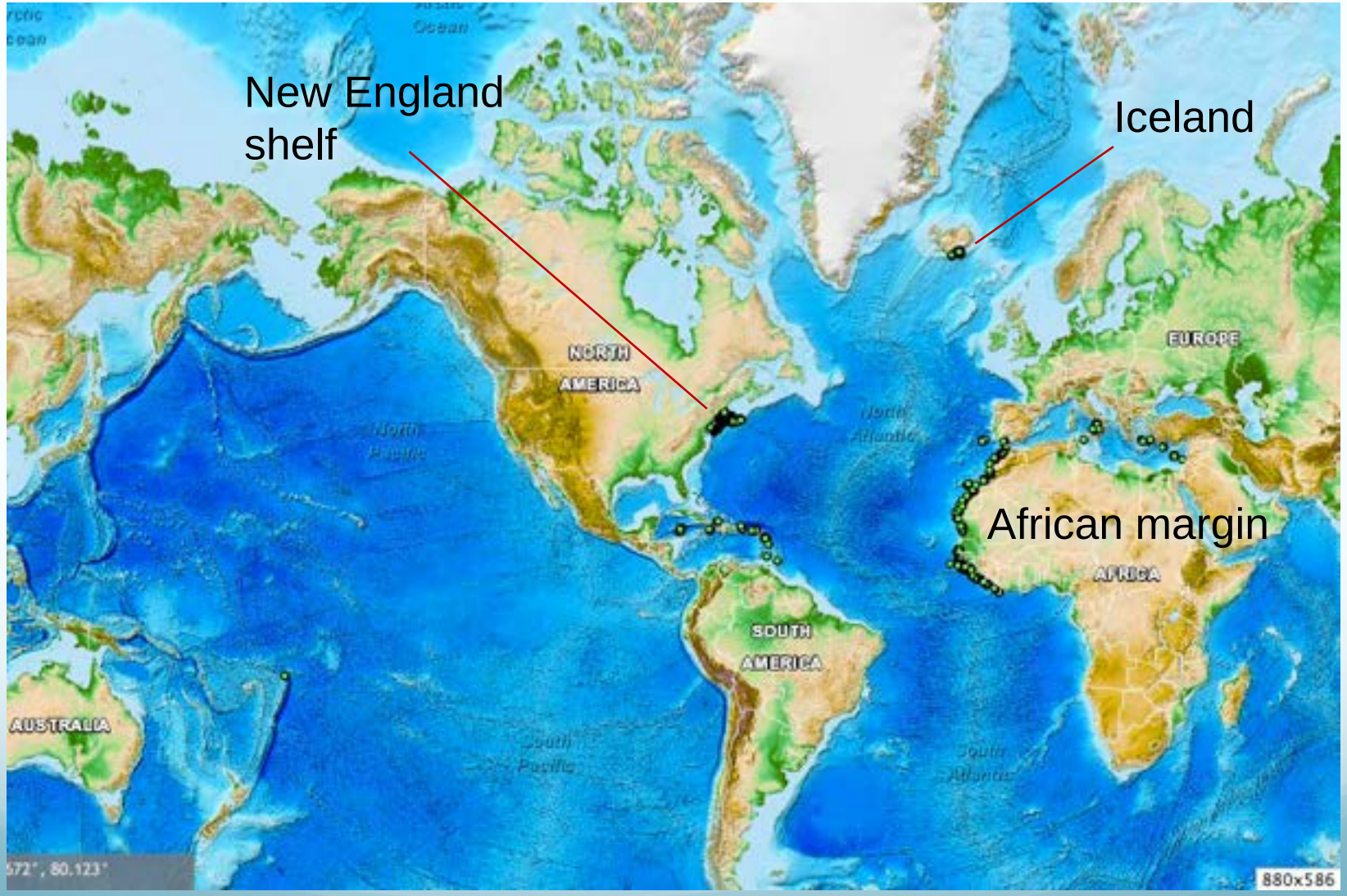
Other facilities: petrographic and picking microscopes, thin section prep, magnetic separator, jaw crusher, ball mill

MGSL Sediment Grab Collection

Current holdings:
767 grab samples

Majority from the northeast coast of the U.S., continental margin of Africa and some from the coastal zone in Iceland

MGSL Grab Sample Distribution



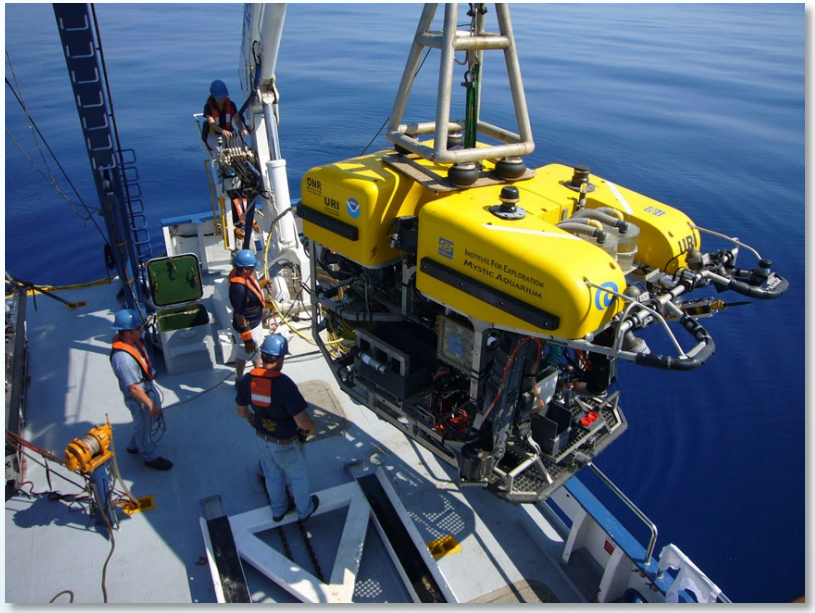
New Technologies for Ocean Exploration

Dr. Robert Ballard, University of Rhode Island, discoverer of the RMS Titantic

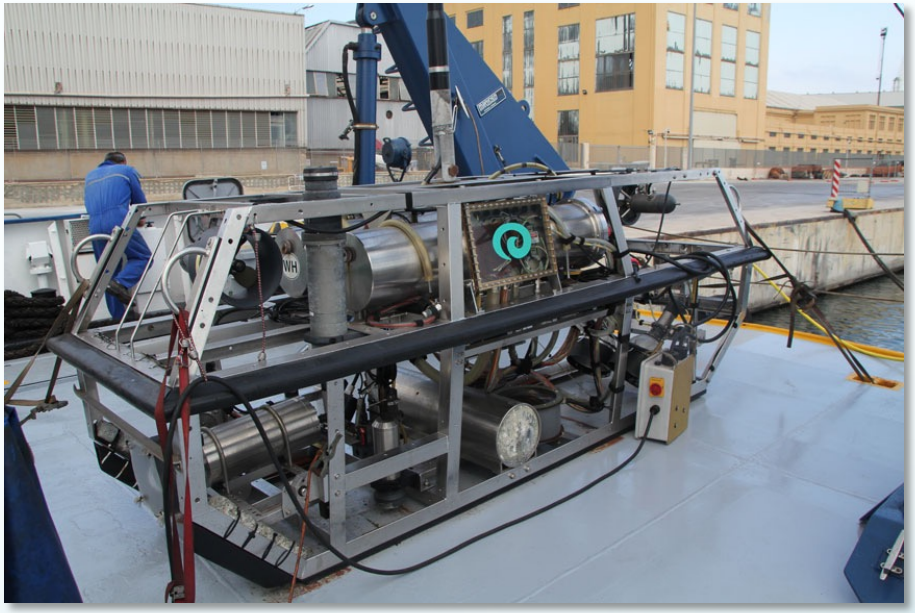
E/V Nautilus- ship of exploration operated by Dr. Ballard and the Ocean Exploration Trust

E/V Nautilus Exploration Vehicles

2 Vehicle System



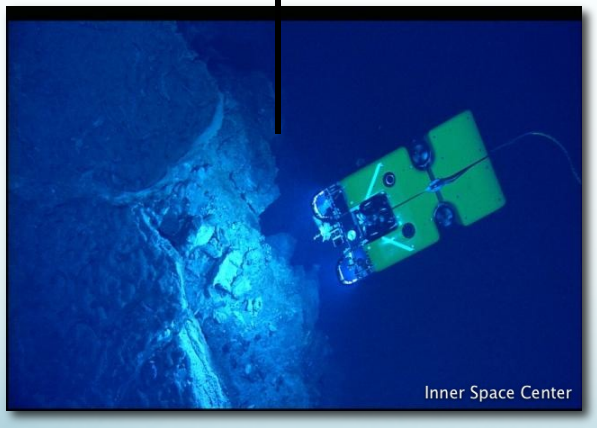
Hercules ROV



Argus ROV

“Telepresence” Exploration of the Ocean

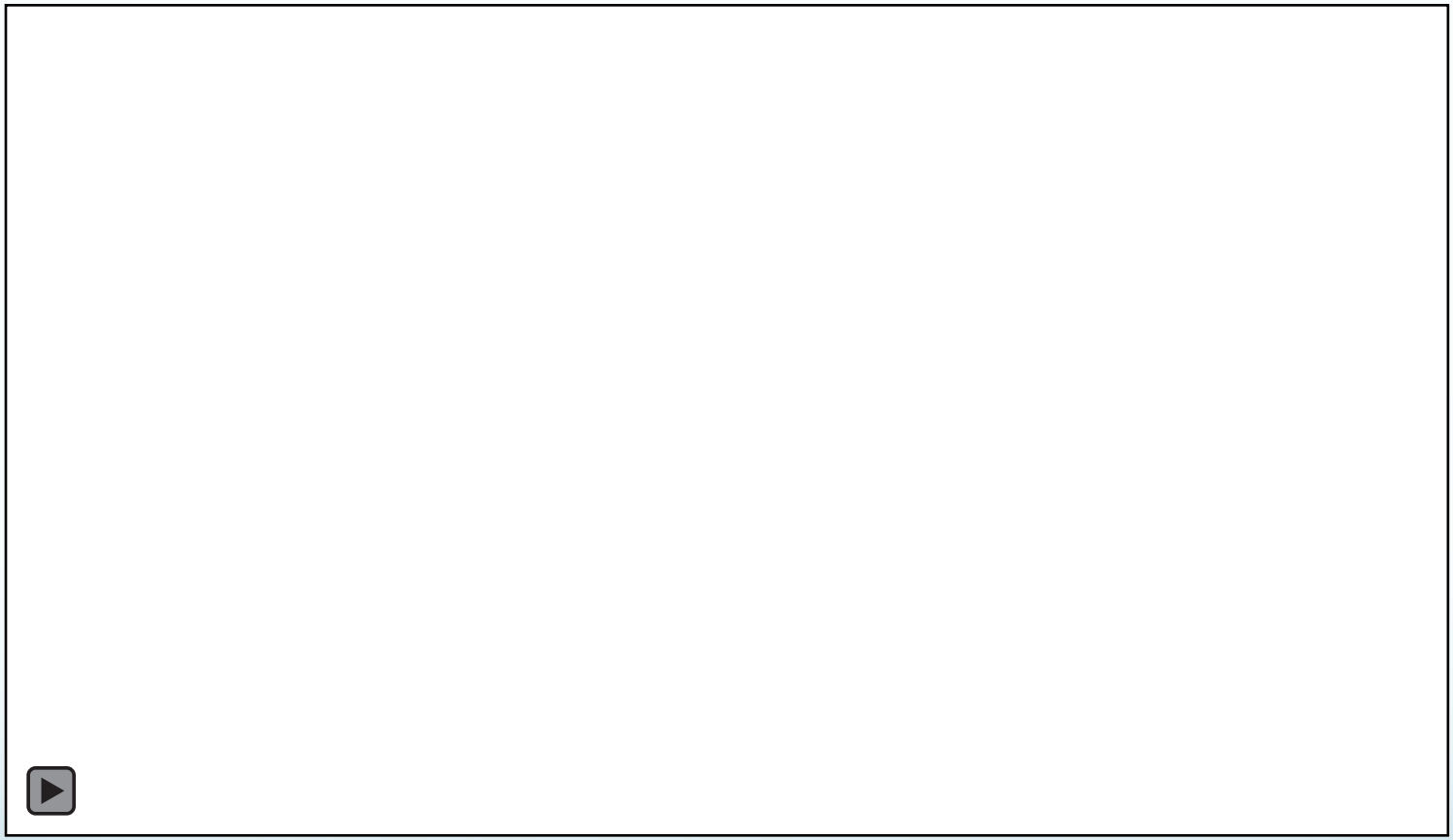
Satellite feed



ROV on the seafloor

Mission Control and
Nautilus Live Website

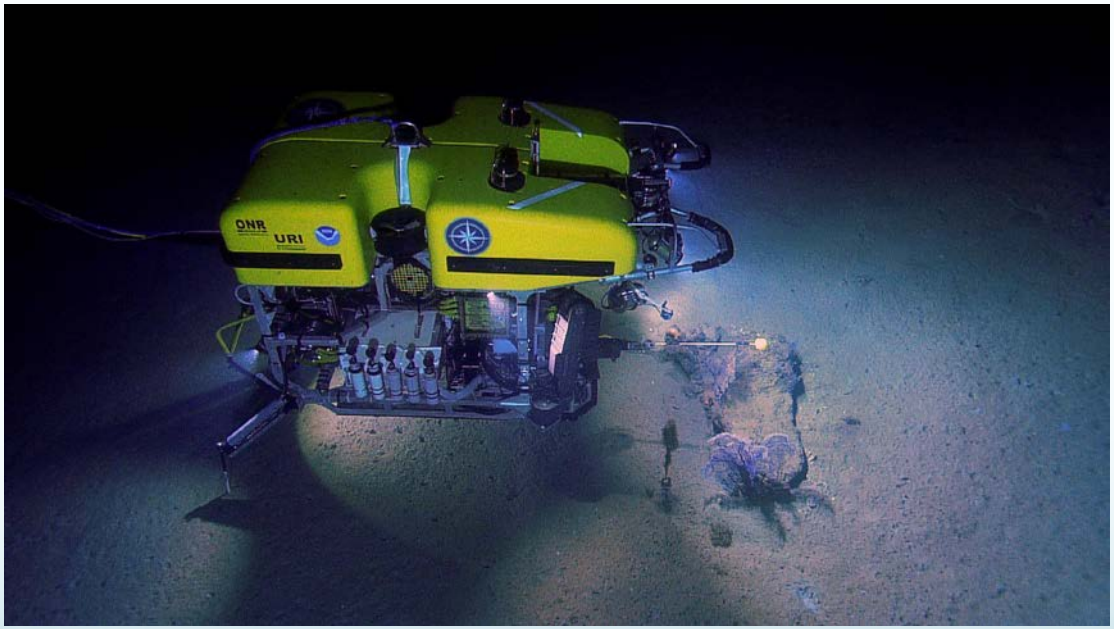
ROV Hercules sampling operation



Collecting sample of basaltic scoria from the Straits of Sicily (NA-018)

MGSL ROV Grab Collection

850 precisely-located ROV samples collected by the Hercules/Argus vehicles
(still and video imagery of sample collection)



Locations: Mediterranean, Aegean, Caribbean, Gulf of Mexico and eastern Pacific

MGSL ROV Grab Collection

Nautilus Study Areas 2017 Field Season

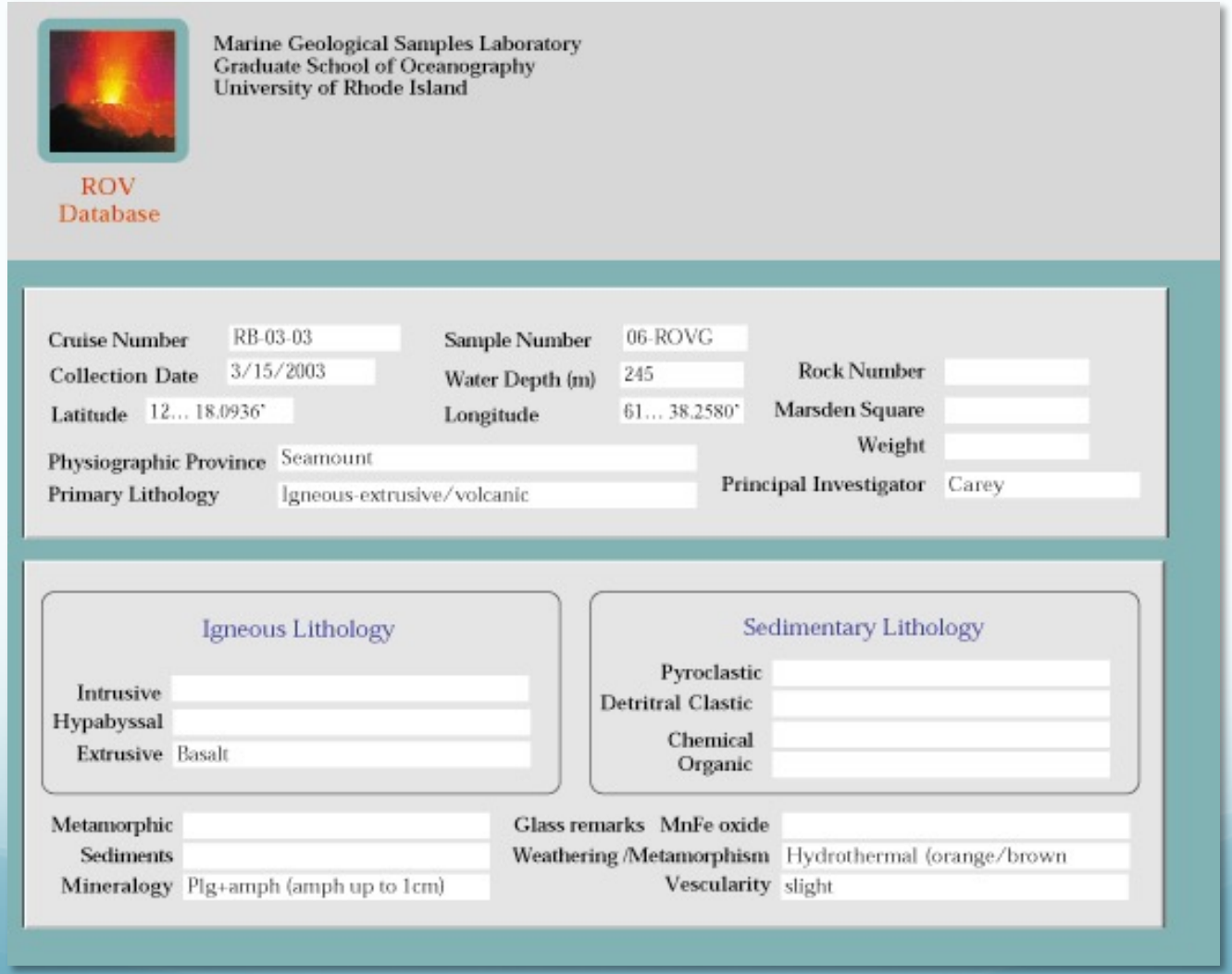
MGSL Volcanic island and continental margin samples

7200 samples

Active volcanic areas in:
Western U.S.
Italy
Mexico
Chile
Lesser Antilles
Indonesia
Iceland
Greece
Aleutians

Rock & Core Description Database

Filemaker input (internal, not public)
Data periodically pushed to NCEI for discovery and IGSN



Sample Stats at MGSL

	Current Collection	Samples Distributed (last 4 yrs)	New Acquisitions (last 4 yrs)
Sediment Cores	1865	8352	31
Dredges	1039	273	323
ROV Grabs	850	451	508
On-land samples	7200	74	340

Educational and Outreach Activities

1. Used for laboratory exercises in URI courses (80 students):
    a. Marine Geology and Geophysics core class
    b. Ocean Engineering undergraduate seminar
2. Facility tours and hands-on interactions at MGSL (200):
    a. Elementary/middle/high school groups
    b. Visitors to the Graduate School of Oceanography
3. Traveling booth to communicate our mission off site:
    a. GSO “Endeavor Day” open house
    b. America’s Cup and other boating events in RI

Future Concerns for the MGSL

1. Lack of refrigerated core storage space (present repository is 95% full).
    a. temporary storage adjacent to facility
    b. begin to shift cores into ambient storage conditions
    c. rock storage space is also filling up quickly

2. Updating of repository website

3. On-land samples - improving visibility and access

4. Continued support from the University for infrastructure maintenance and improvements: new campus master plan Includes construction of a new repository


SHIPPING & RECEIVING
MAINTENANCE
ROCK STOR.
OCEAN RESOURCES/ TANK
OCEAN TECH. AND ROBOTICS
UPPER QUAD
GSO RES.
OSEC
RI NUCLEAR REACTOR
GSO RES.
KNAUSS QUAD
TEACHING COMMONS
TEACHING COMMONS
COASTAL OUTREACH
CONF. CTR
MOSBY
WWI BUNKERS
LOGISTICS
MARINE OPS & DIVE LOCKER
NEW TANK
PELAGIC
ARC
AQUARIUM
BLOUNT
1
2
3
3
4
5
6
7
8
PLAN
1. MAIN ENTRANCE + BUS STOP
2. NEW PARKING LOTS
3. PHOTOVOLTAIC PANELS
4. VEGETATED BUFFER
5. VEGETATED ROOF
6. PUBLIC BEACH ACCESS
7. EXPANDED DOCK
8. REINFORCED SHORELINE