Marine Geological Samples Laboratory

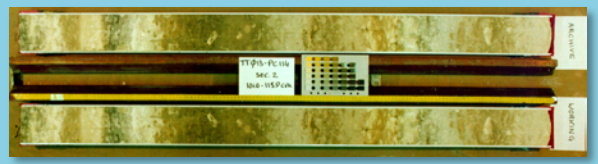
Graduate School of Oceanography
University of Rhode Island
Narragansett, R.I. 02882

Curator: Dr. Steve Carey

Marine Geological Samples Laboratory

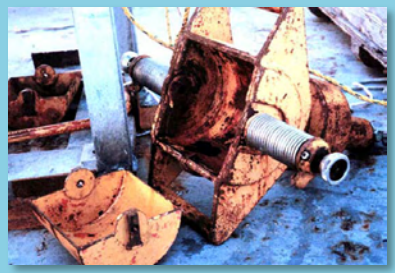
Repository for collections of Marine Geology and Geophysics faculty and staff

Sediment cores



Dredge rocks/ ROV

Sediment grabs



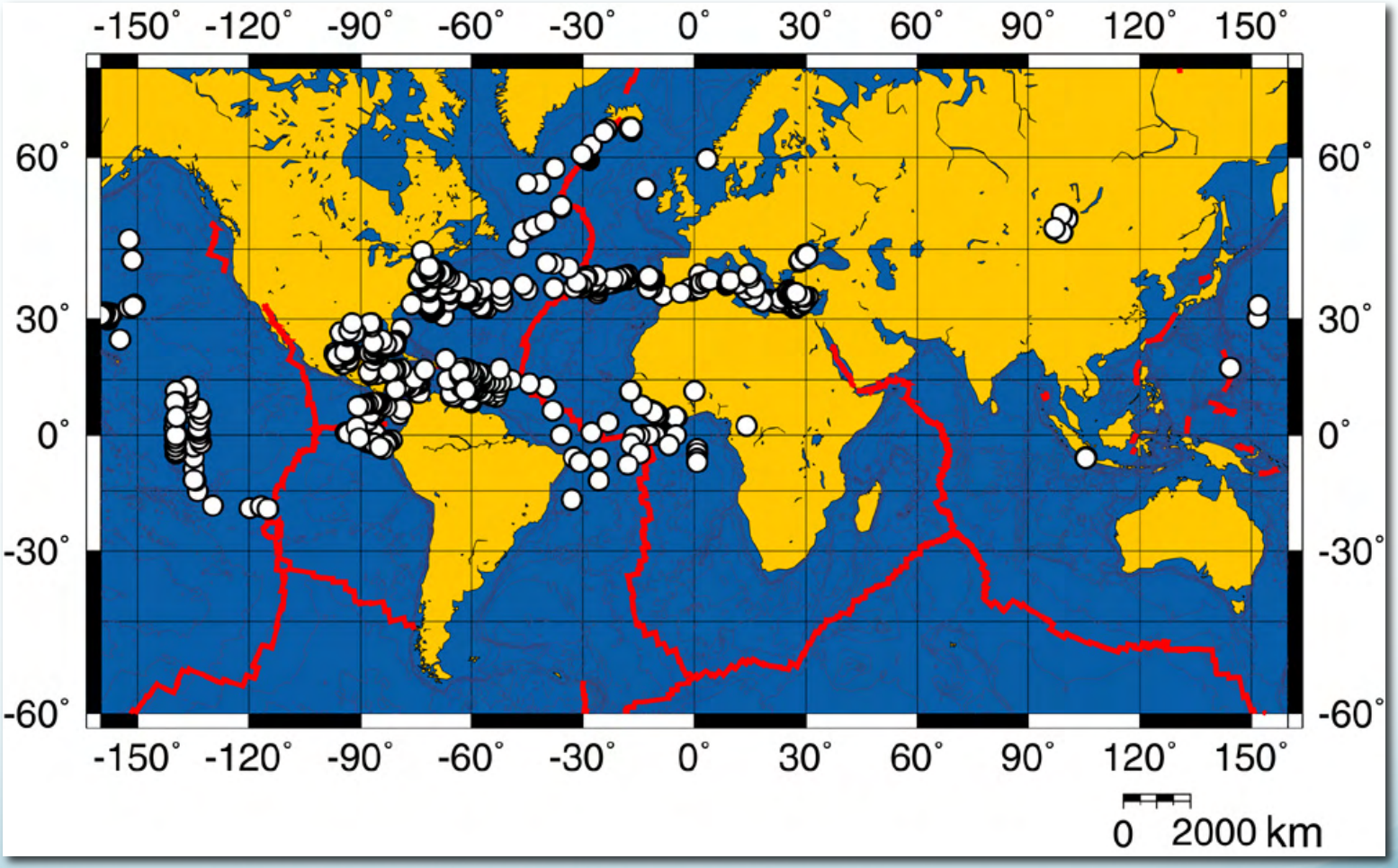
Volcanic island and continental margin

MGSL Sediment Core Collection

1813 piston, gravity and box cores

Majority stored under refrigerated conditions in d-tubes

MGSL Sediment Core Distribution



Sediment Core Storage at MGSL

Split cores are stored under refrigerated conditions in d-tubes

Core reefer capacity= 10,000 ft^3

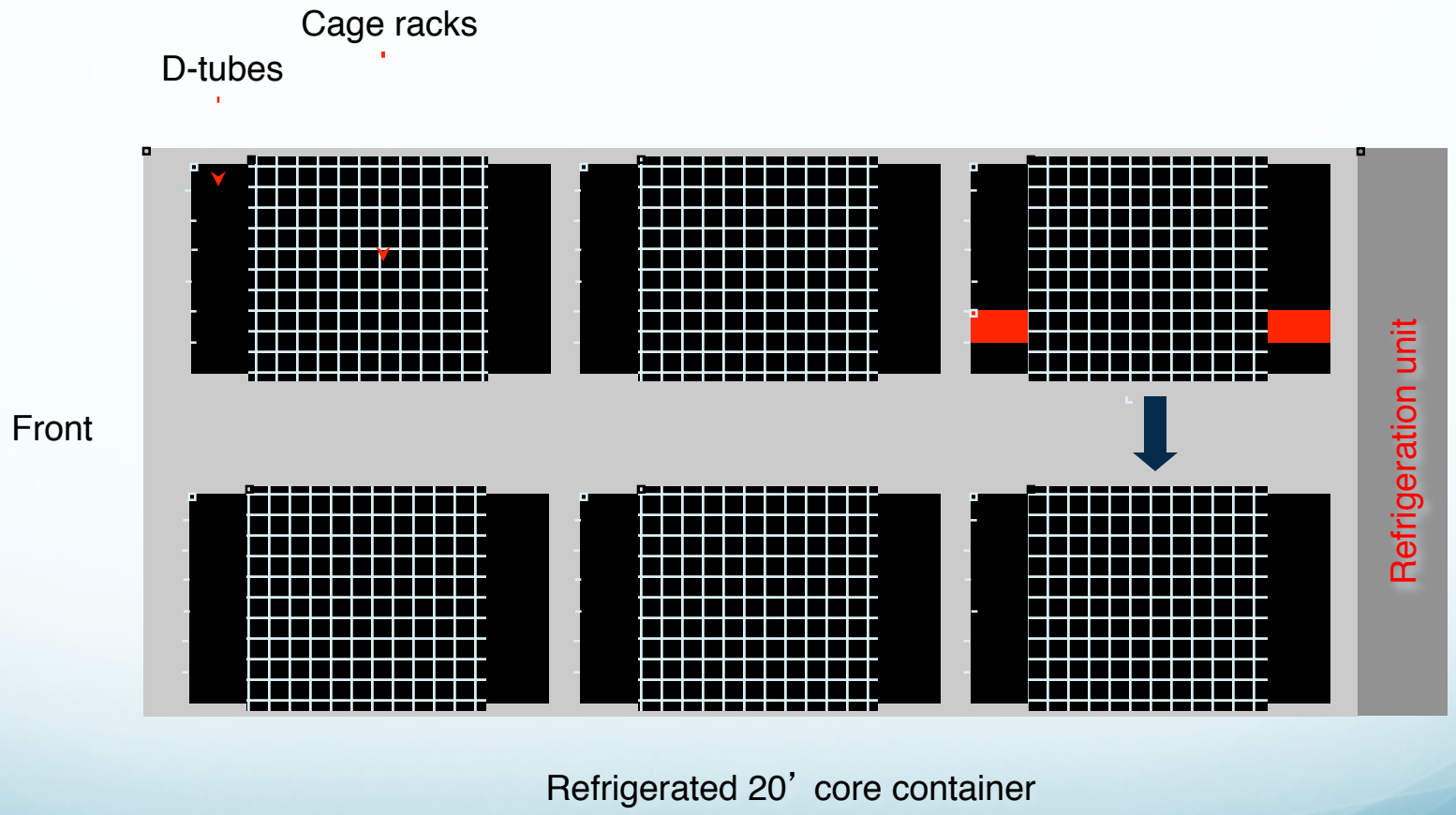
Currently about 95% full

Expansion of Core Storage at MGSL

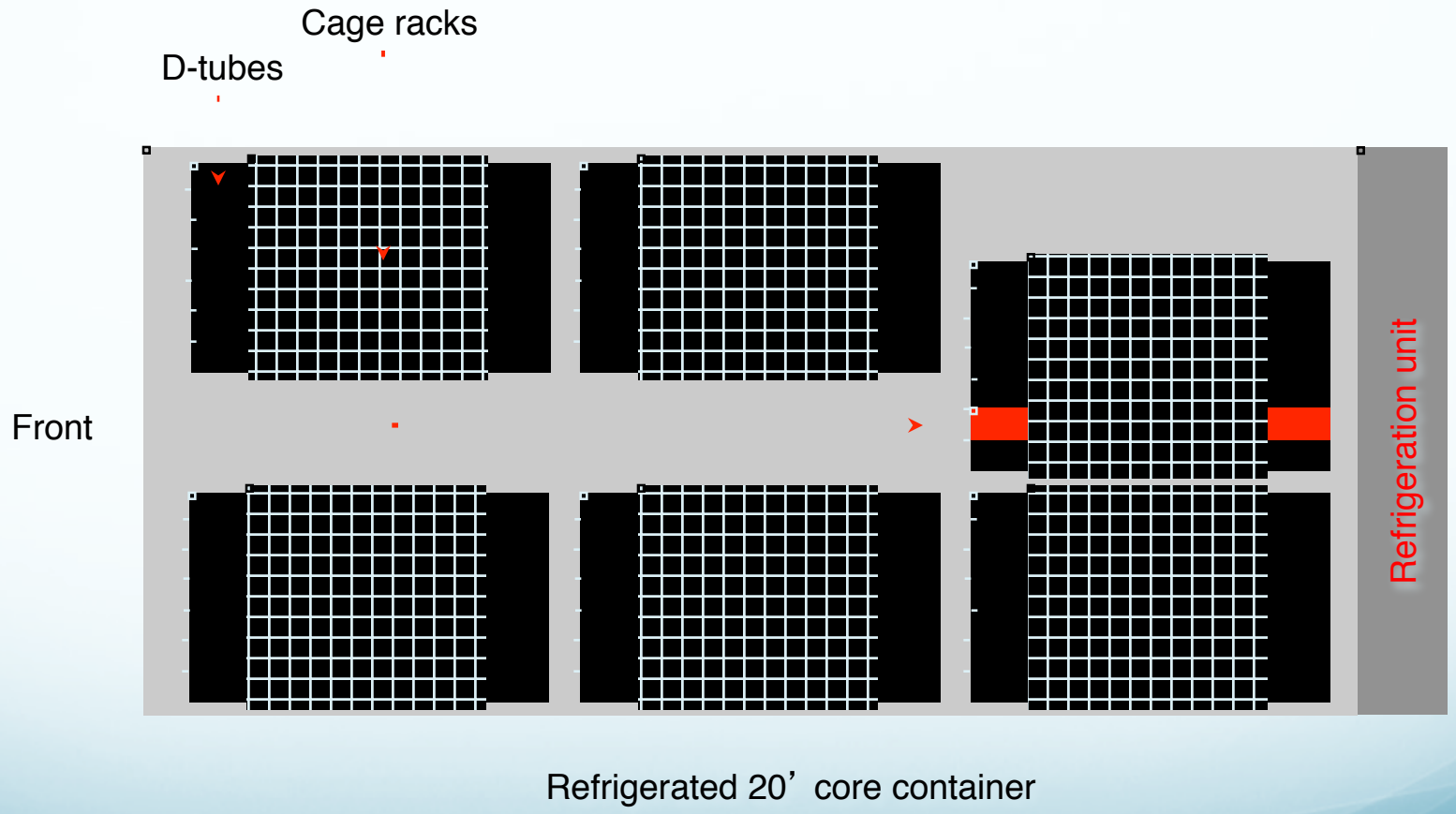
Three 20’ and one 40’ refrigerated containers have been added outside of the MGSL and permanently connected to building power

Added 3400 ft^3 of racked storage

Expansion of Core Storage at MGSL

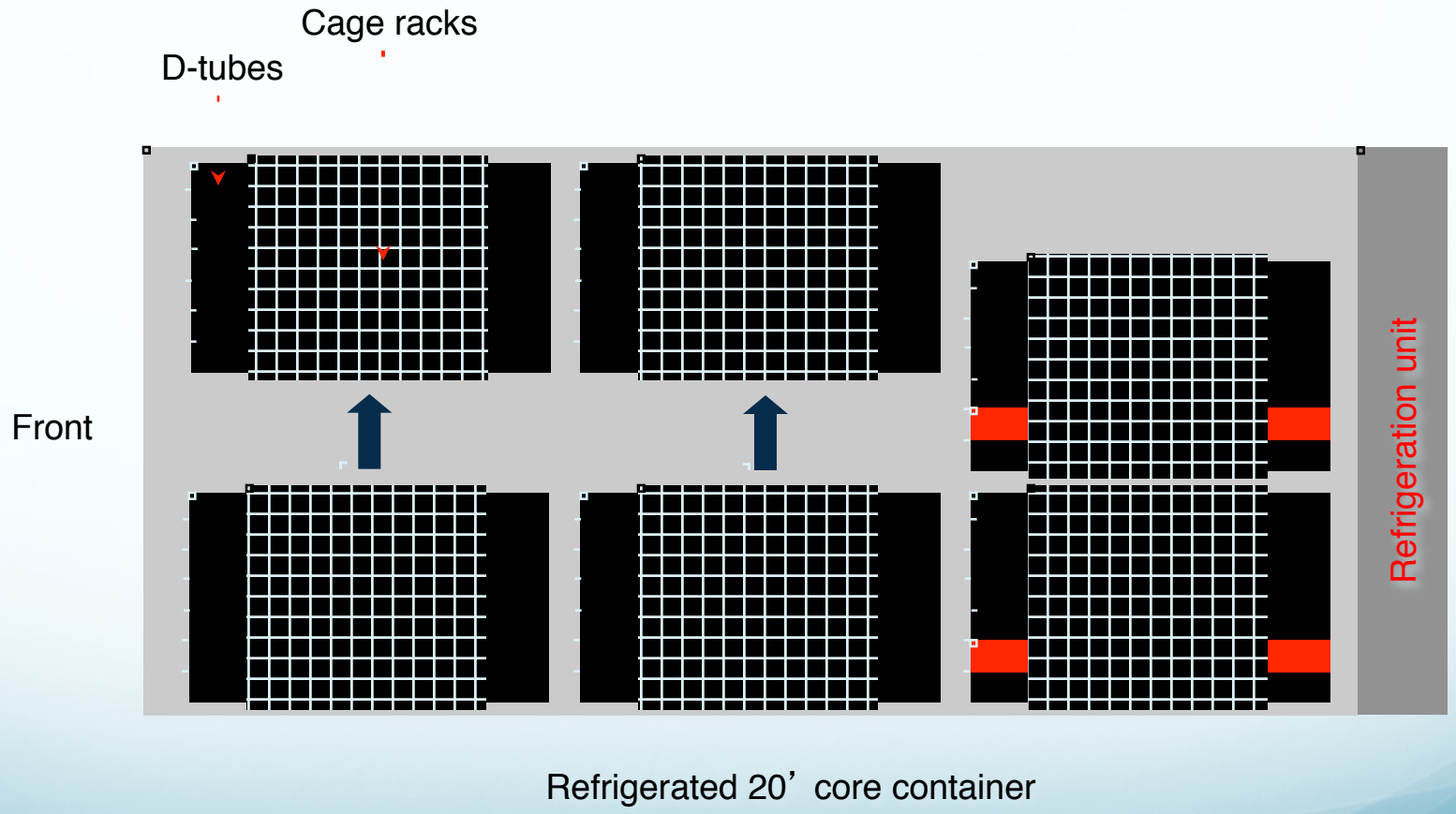


Expansion of Core Storage at MGSL

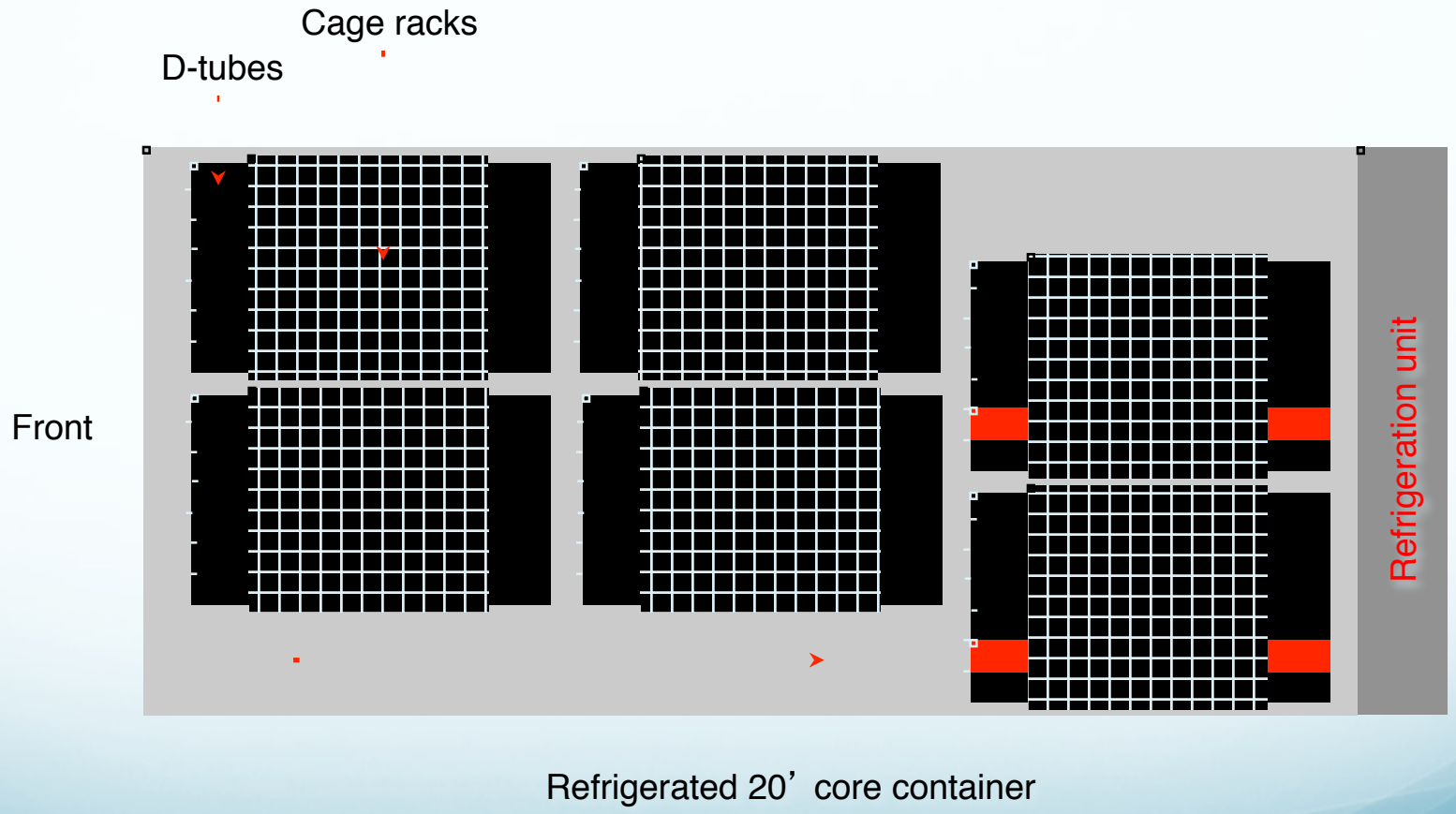


Refrigerated 20’ core container

Expansion of Core Storage at MGSL



Expansion of Core Storage at MGSL



Refrigerated 20’ core container

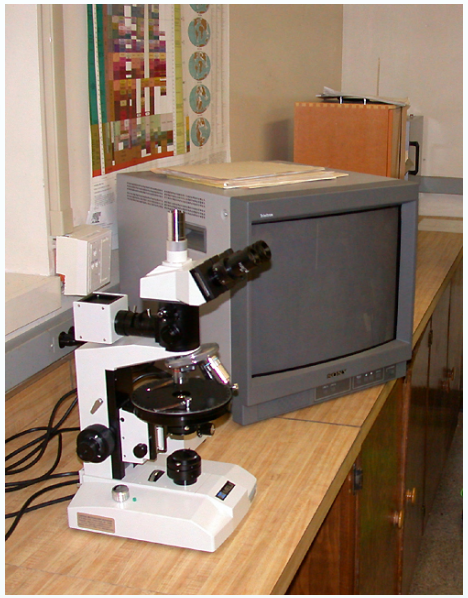
Expansion of Core Storage at MGSL

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 microscopes, core photography, sieving lab, description and sampling tables

Sediment core description database

Filemaker input format

Marine Geological Samples Lab: Core Description Form

Cruise RB-03-03 **Core ID** 100 - GC **Section** 1a **of** 1

Latitude 12°29.778' N **Longitude** 061°55.980' W **Water depth (m)** 2873

Index # 100 - GC1a

Sediment Classification Granular Siliciclastic

Core Photo

Interval (cm)	Upper Contact	Lower Contact	Color	Sediment Type: Major modifier	Sediment Type: Major modifier	Sediment Type: Principal name	Sediment Type: Minor modifier	Comments
0-4.5		graded	10YR5/4		volcaniclastic	coarse silt	with clay	smear slide at 3 cm; crystals(amph,plg,px), scoria/glass, carbonate material, forams, sponge spicules, silicoflagellates, clay to fine sand - ave. coarse silt
4.5-6	graded	graded	10YR4/3		volcaniclastic	silty clay	with bioclasts	interbedded with clay, smear slide at 5 cm; crystals(amph,px,plg, hematite, aragonite), glass/scoria, sponge spicules, forams, coccoliths, silicoflagellates, clay to coarse silt - ave. clay
6-9	graded	graded	2.5Y4/3			clay		interbedded with clayey silt
9-12	graded	graded	10YR4/3			clayey silt		interbedded with clay
12-27	graded	sharp	2.5Y5/2			silty clay		
27-34	sharp	sharp	2.5Y5/2		volcaniclastic	very fine sand	with bioclasts	interbedded with fine grained ash, bioturbated, smear slide at 27 cm; glass/scoria, crystals(amph,px,plg, aragonite), forams, sponge spicules, fine sand to silt - ave. v. fine sand.
34-35.5	sharp	sharp	GLEY1 2.5/10 GY		crystalline	ash	with bioclasts	discontinous layer, smear slide at 34.5 cm; glass/scoria, crystals(amph,px,plg, aragonite), forams, sponge spicules, diatoms, coccoliths?, med. sand to clay - ave. v. fine sand
35.5-40.5	sharp	sharp	2.5Y5/2			clayey silt		
40.5-42.5	sharp	sharp	GLEY1 2.5/10 GY		vitric	ash	with foraminifera	smear slide at 41.5 cm; scoria/glass, forams, crystals(amph,px,plg, lithics), sponge spicules, coarse sand to clay - ave. v. fine sand
42.5-67.5	sharp	sharp	2.5Y5/2		nannofossil	coarse silt	with glass or pumice	bioturbated, smear slide at 55 cm; coccoliths, glass/scoria, forams, sponge spicules, crystals(aragonite, amph,px,plg), diatoms, fine sand to clay - ave. coarse silt

Figure 4. Example of the electronic core description form used by the Marine Geological Samples Laboratory at URI.

MGSL Dredge Rock Collection

751 samples from 436 stations

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

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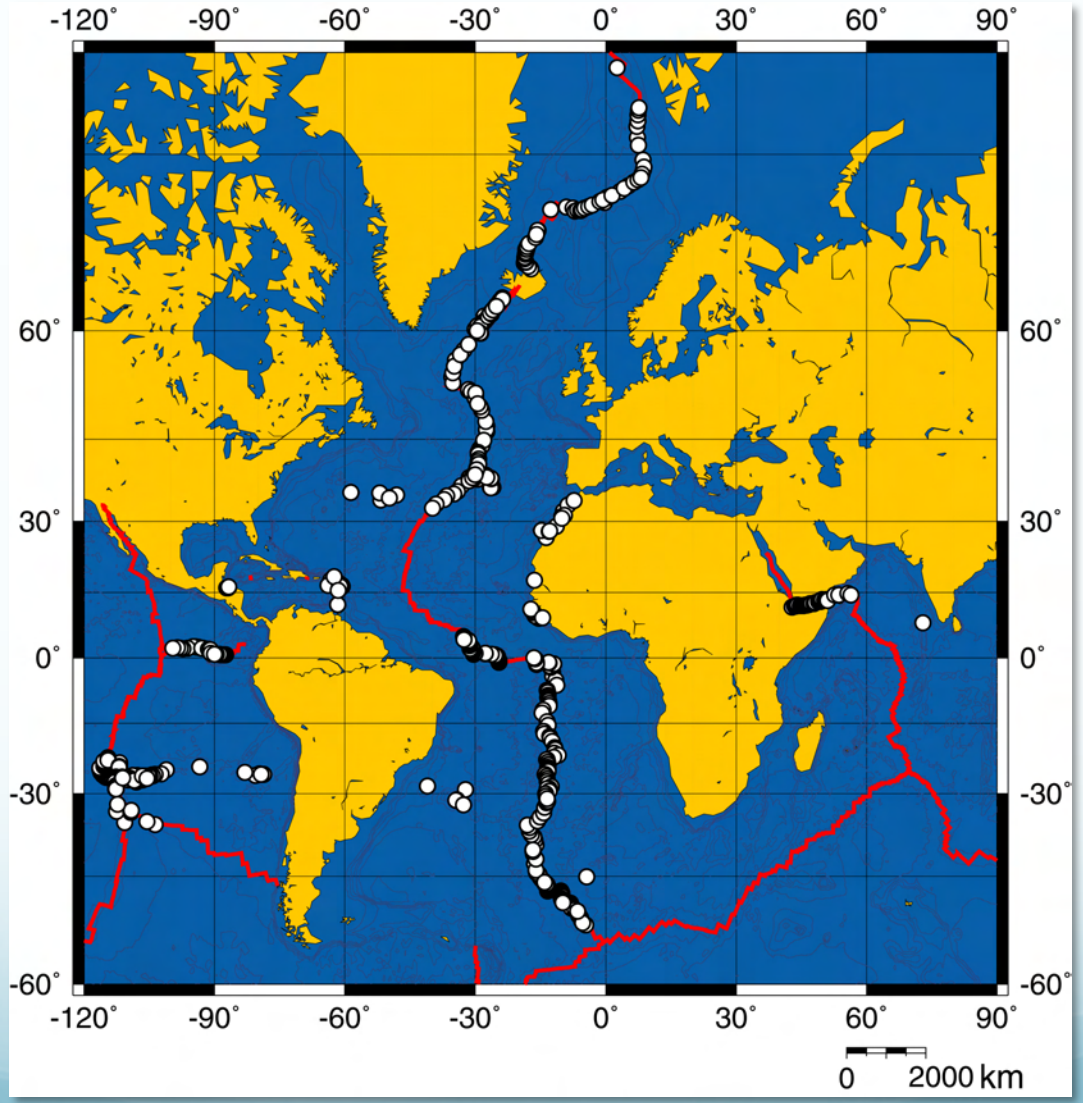


Dredge Rock Storage at MGSL

Dredge hauls are stored in plastic and burlap bags

Database keeps track of drawer locations for easy retrieval

Current rack system is about 3/4 full

MGSL Dredge Rock Facilities

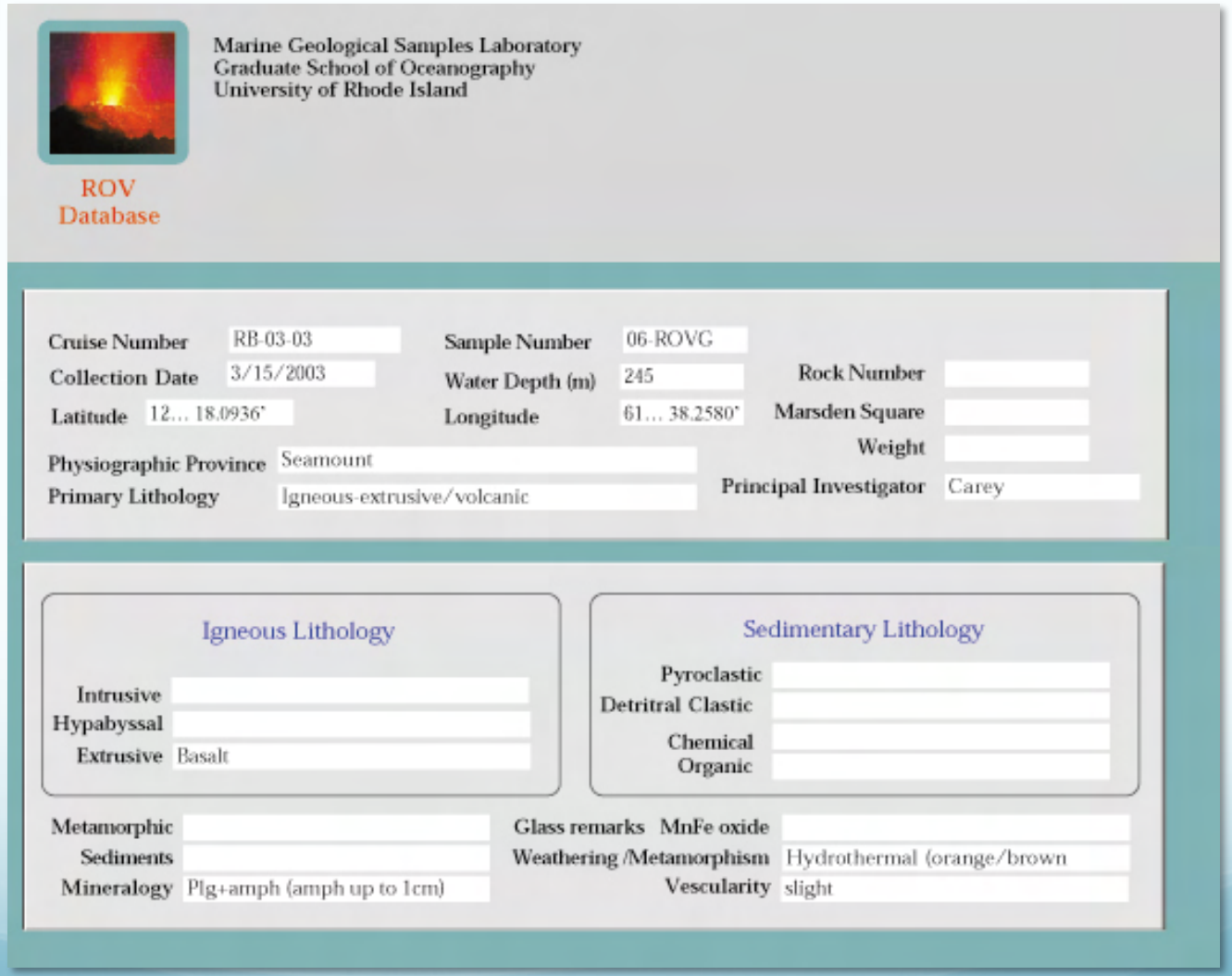
Small and large slab saws

Sample prep lab

Other facilities: petrographic microscopes, thin section prep magnetic separator

Rock Description Database

Filemaker input format



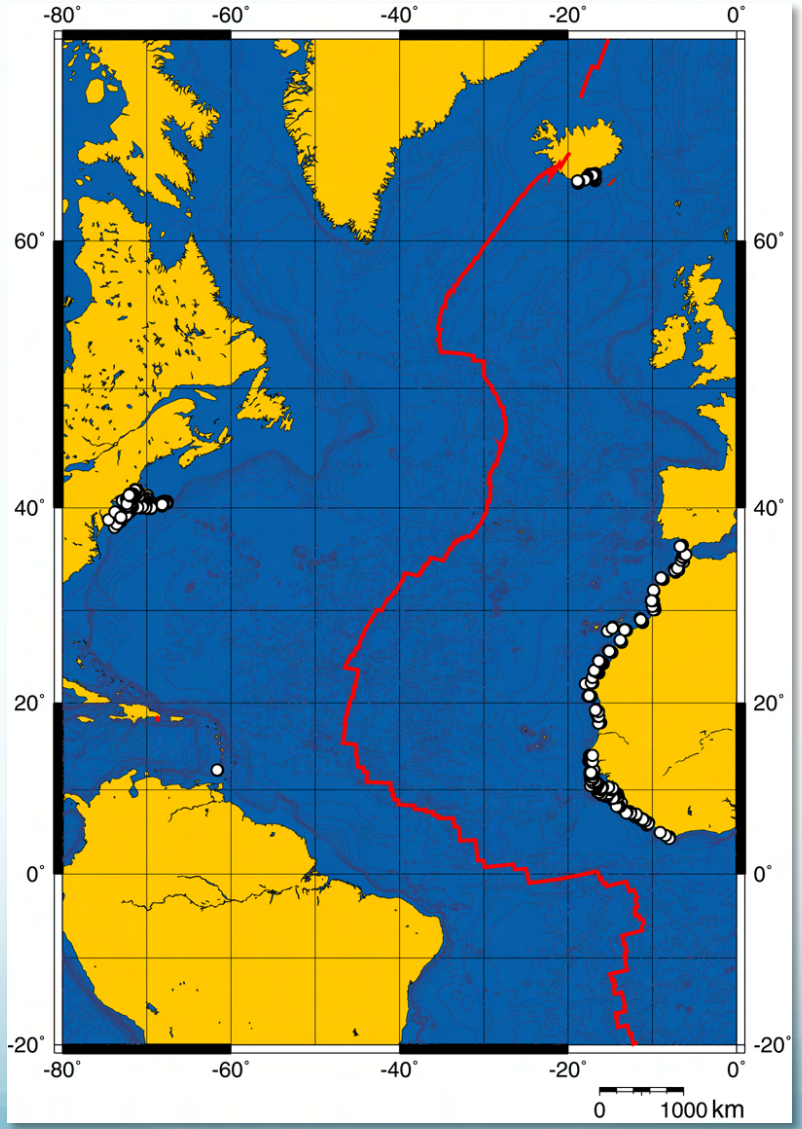
MGSL Sediment Grab Collection

Current holdings:
693 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 England shelf



Iceland

African margin

New Technologies for Ocean Exploration

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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

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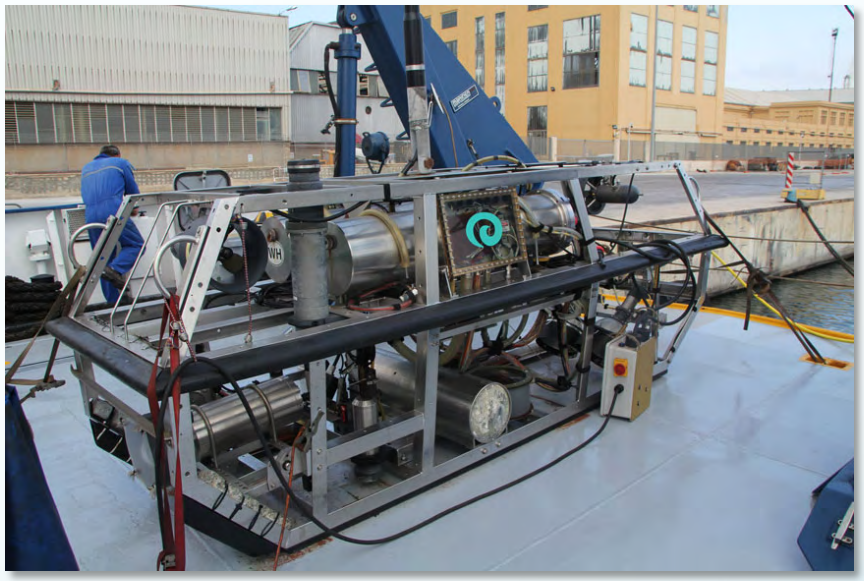
2 Vehicle System

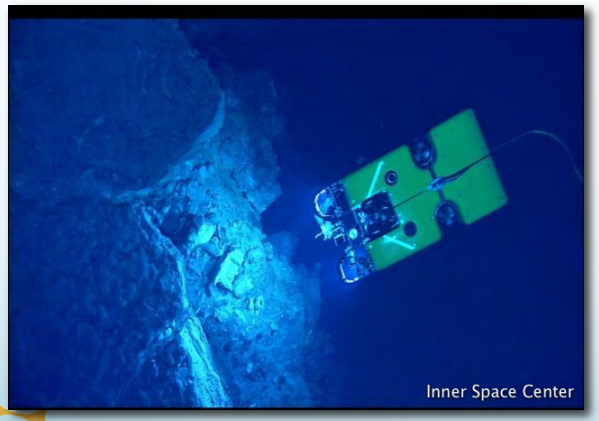
Hercules ROV



Argus ROV

“Telepresence” Exploration of the Ocean

Satellite feed



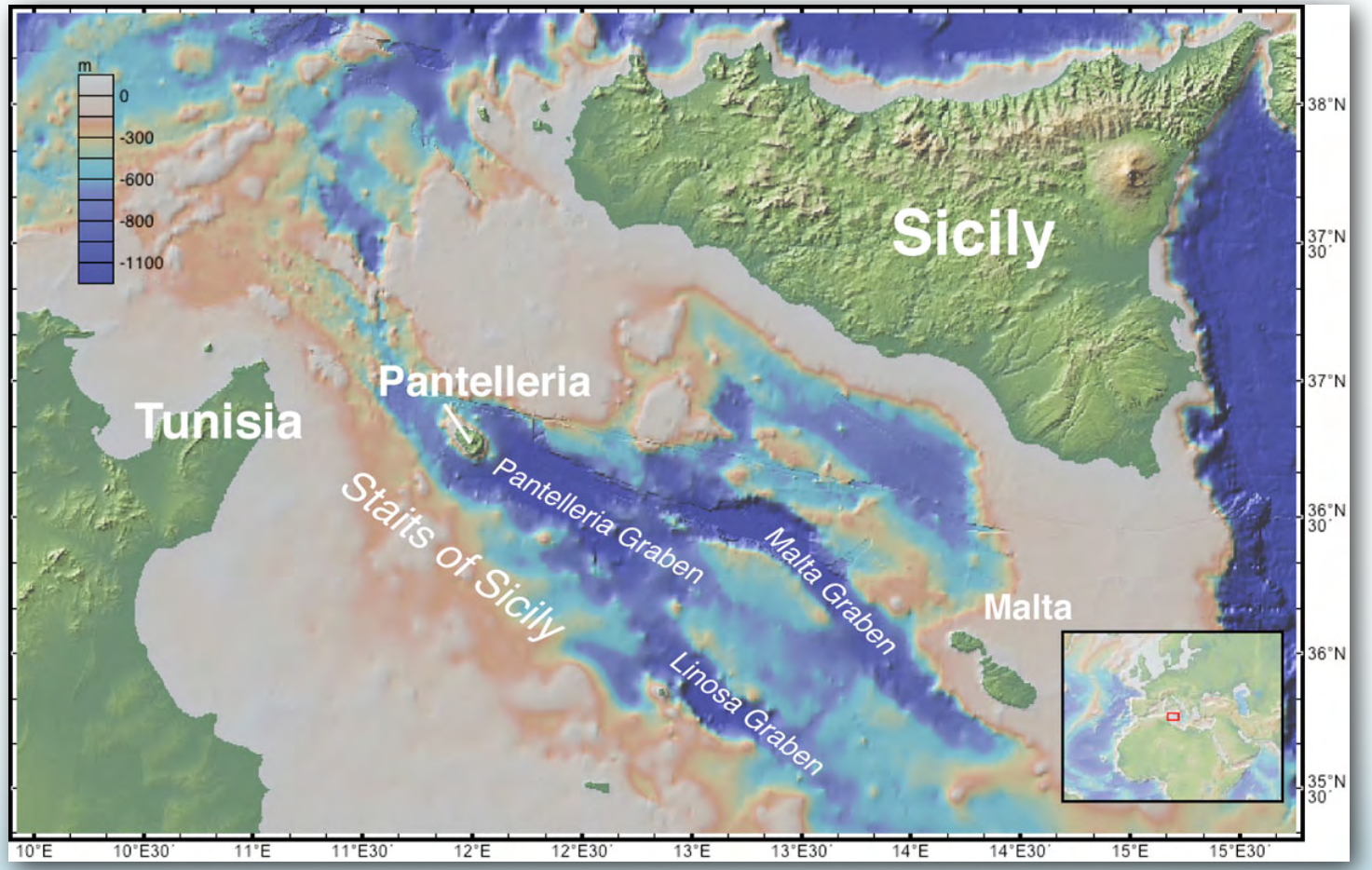
ROV on the seafloor

Mission Control

“Telepresence” Exploration of the Ocean

Nautilus Live website allows the public to follow along with the exploration

“Telepresence” Exploration of the Ocean



Halloween 2011 Surprise Discovery

Nautilus Study Areas in the Mediterranean

310 ROV samples from Nautilus cruises in the Mediterranean Sea and eastern Atlantic Ocean

ROV Hercules in operation

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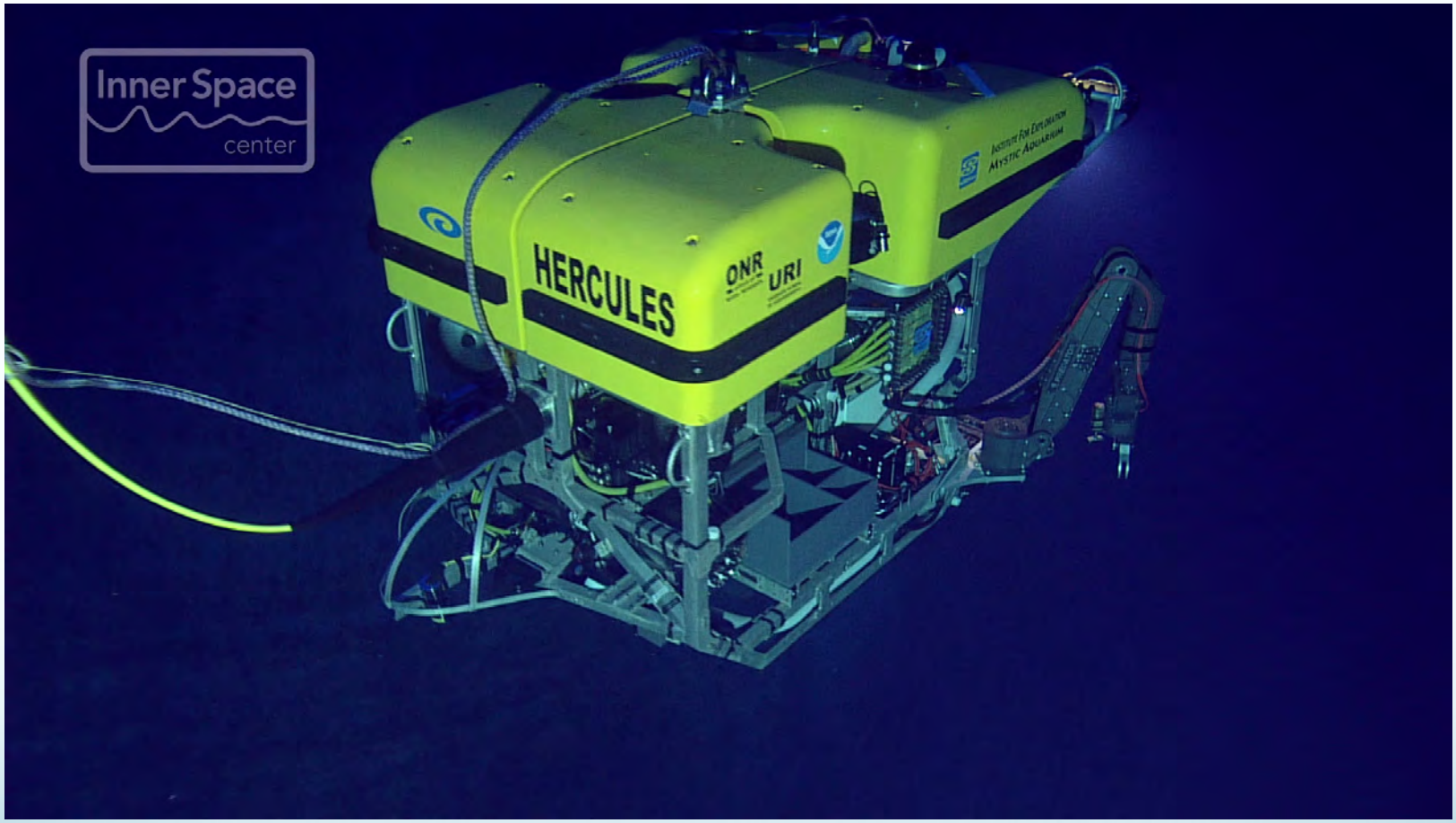

High definition SONY video cameras

ROV Hercules sampling operation

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

MGSL Volcanic island and continental margin samples

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6900 samples

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

Recent Distribution Activity at MGSL

(Last three years)

Sediment core collection	2777
Dredge rock collection	10
Volcanic island and continental margin	58
ROV grab collection	457

Recent Acquisitions at the MGSL

(Last 3 years)

86	Sediment cores
39	Dredge rocks
40	Volcanic island and continental margin samples
289	ROV samples

Educational and Outreach Activities

1. Used for laboratory exercises in the following graduate courses:
    a. OCG540 Marine Geology and Geophysics
    b. OGG545 Volcaniclastic Sedimentation

2. Public displays of posters and samples have been developed for:
    a. Elementary and middle school classes
    b. Special visitors to the Graduate School of Oceanography

Future Concerns for the MGSL

1. Lack of refrigerated core storage space (present repository is 95% full).
    a. temporary storage adjacent to facility
    b. construct an addition to present facility
    c. begin to shift cores into ambient storage conditions

2. Updating of repository website

3. Continued support from the University for infrastructure maintenance and improvements