US Deep Coral Projects and Opportunities

TRACES European Workshop 3/29/08

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US Mandates for International Collaboration

ALL THE RIGHT LANGUAGE IS THERE

- **National Science Foundation (NSF):** fosters interchange of scientific and engineering information between the US and other countries
- **Sigma Xi:** "support involvement in *multinational* and multidisciplinary research"
- **U.S. Ocean Research Priorities Plan:** calls for "use of existing mechanisms for collaboration among the federal agencies and with *international*, state, local, and tribal entities, and the private sector"
- **U.S. State Department:** coordination & oversight of major science and technology agreements with foreign countries
- **Universities:** Most encourage international projects

International Collaboration

- **U.S. Dept. of Interior:**
  - **Minerals Management Service (MMS):** energy production; **International Activities Program-**liaison for MMS involvement in International Affairs
  - **US Geological Survey:** broad mandate to provide reliable scientific information to describe and understand the Earth (global perspective)
- **U.S. Dept. of Commerce**:
  - NOAA mission "environmental assessment, prediction, & stewardship."
    - Many NOAA divisions have ***international program offices***
  - **NOAA International Program, Statement of International Goals**
    - Improve **exchange of data** between countries.
    - Improve **stewardship** of natural resources via international cooperation.
    - Promote **decision-making** based upon science & observational data.
    - Increase **partnerships** in science.
    - Increase **exchange** of expertise and knowledge between countries.
    - Increase creative **application of NOAA expertise** in diverse contexts.
    - Foster **cost-sharing opportunities** with other nations to carry out global scale science and stewardship.

AND. . . "Support research and surveys of and work to protect deep-sea coral communities."

The point of all this language is that the structure is there on the US side to encourage international collaborations.

Thus, there are opportunities.

But, the challenge for US scientists is how to take advantage of these. Funding???

US RESEARCH FUNDING (DSC)

- **NSF**: supports all fields of fundamental science and engineering, budget > $ 6 billion, funds ~ 20% of all US science (~ 10,000 new grants/year). NSF may not be the best source of TRACES programmatic funding, but will be an important component.

- **AGENCIES** (government and non-government)
  - NOAA
  - USGS
  - MMS

  } major support for past & ongoing DSC research

  - NGOs (Environmental Defense, Oceana, Marine Conservation Biology Inst.)

NSF--Partnerships for International Research & Education (PIRE)

- Objectives:
  - Frontier research that requires international partnership
  - Unique, complementary expertise of international partners
  - Student engagement in international research
  - Institutional engagement to enable collaboration
- 5-year awards of up to $2.5M each
- 32 active awards across all NSF disciplines
- Next competition: FY2009 (pending availability of funds)
  - Preproposals likely due late summer 2008

NOAA/NSF-- Comparative Analysis Of Marine Ecosystem Organization (CAMEO)

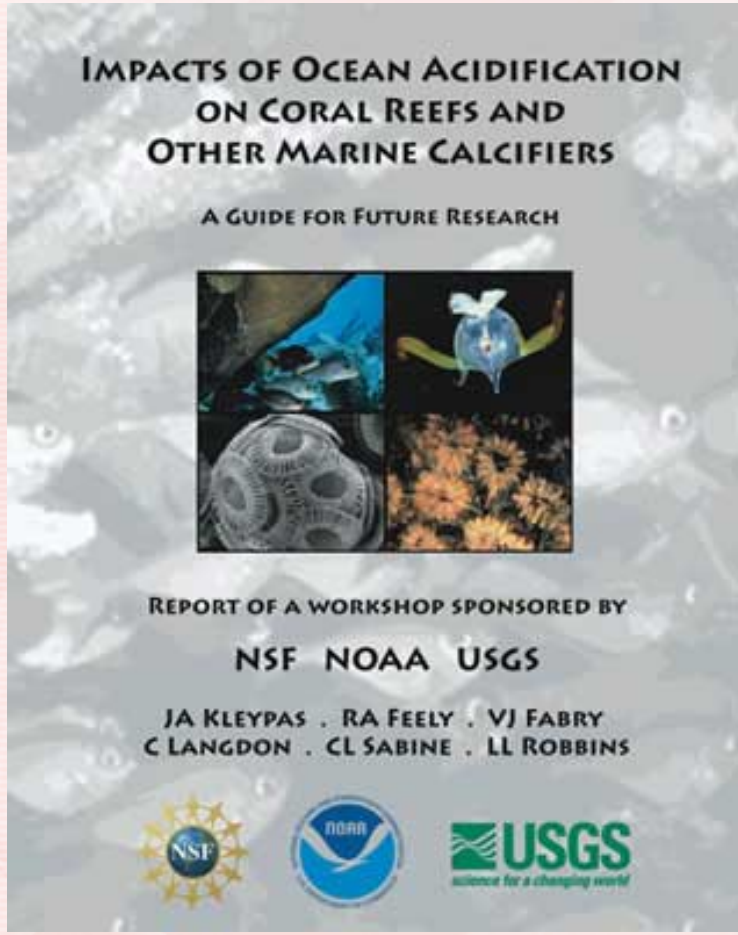
"*Advancing Fundamental Understanding of Marine Ecosystem Processes as a Foundation for Living Resource and Habitat Management*"

- CAMEO's goal: compare and contrast ecosystems (**comparative ecosystem analyses**) in a manner that can yield management insights. The spatial scale of comparative analyses can range from **ocean basins to local oceanic features(e.g., seamounts, shelves)**.
- First year CAMEO proposals due 17 Jun 08, with future funding depending on Congressional appropriations.

- CAMEO is not focused on deep-sea corals but such projects would be relevant.

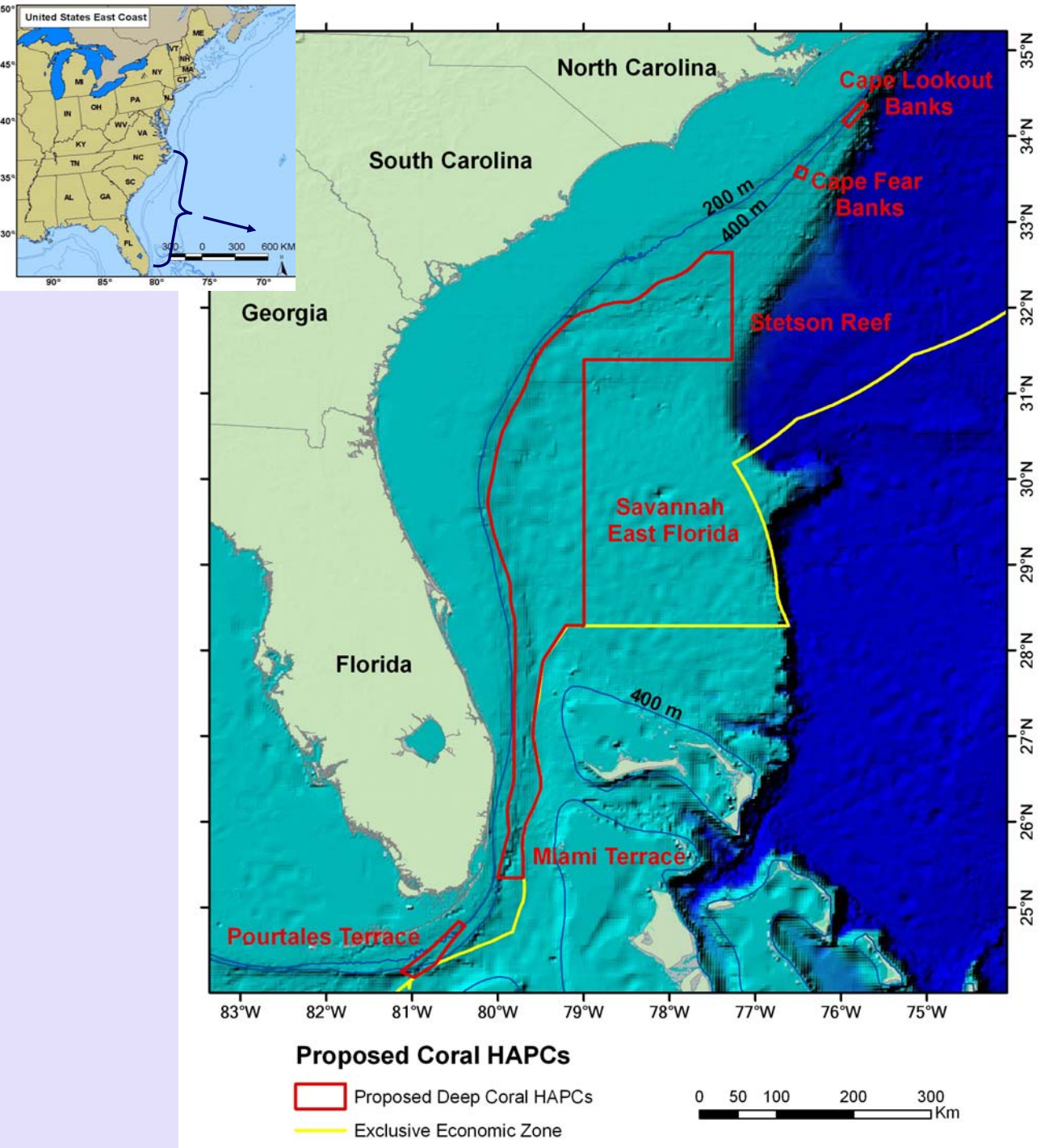
Research Mandates for NOAA

- National Marine Sanctuaries Act
- Ocean Acidification Act (FOARAM Act)
- Ocean Exploration and Research Act (pending)– merges NURP & OE (OER) in FY2008- provides extramural access to science and technology



Research Mandates for NOAA

- **Regional Fishery Management Councils** (established by MSA): decision-making bodies; develop and recommend management measures through fishery management plans
- Four councils operate in Atlantic US EEZ waters



South Atlantic Fishery Management Council proposed a huge area of deep sea corals for protection as HAPC in 2006.

Currently under review.

May bring new funding.

U.S. Atlantic DSC Science Plans

- SAFMC– to support new proposed DSC HAPCs

draft *Research and Monitoring Plan for DSC of the South Atlantic Region*:

- **Phase I:** Map & describe known & DSC ecosystems
- **Phase II:** Determine ecological role of DSC ecosystems, especially as Essential Fish Habitat, and expand understanding of DSC biology and ecology

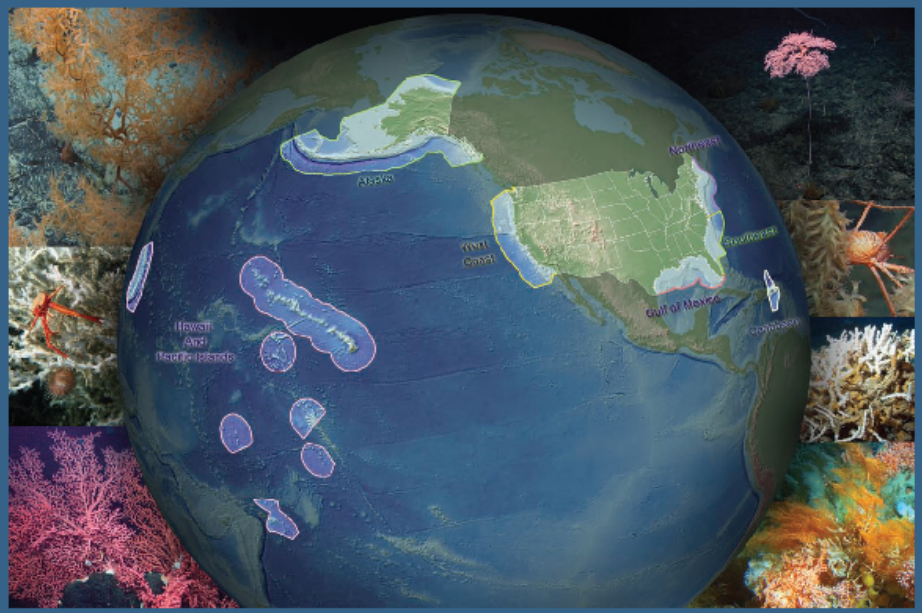
But there is no funding yet to implement plan.

Research Mandates for NOAA

Magnuson-Stevens Fishery Conservation and Management Act:

- 1996 amendment added Essential Fish Habitat (EFH) & Habitat Areas of Particular Concern (HAPCs)
- 2007 Reauthorization- Deep Sea Coral Research and Technology Program.
  - Identify existing research and known locations for DSC
  - Locate and map
  - Monitor activity in locations where deep sea corals are known or likely to occur
  - Conduct research

NOAA– *State of Deep Sea Coral Ecosystems* report.
Precursor to national science plan?



THE STATE OF
DEEP CORAL ECOSYSTEMS OF
THE UNITED STATES: 2007

PRODUCED BY THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINSTRATION

NOAA TECHNICAL MEMORANDUM CRCP - 3

Report to Congress on the

Implementation of the Deep Sea Coral Research and Technology Program

U.S. Department of Commerce

National Oceanic and Atmospheric Administration

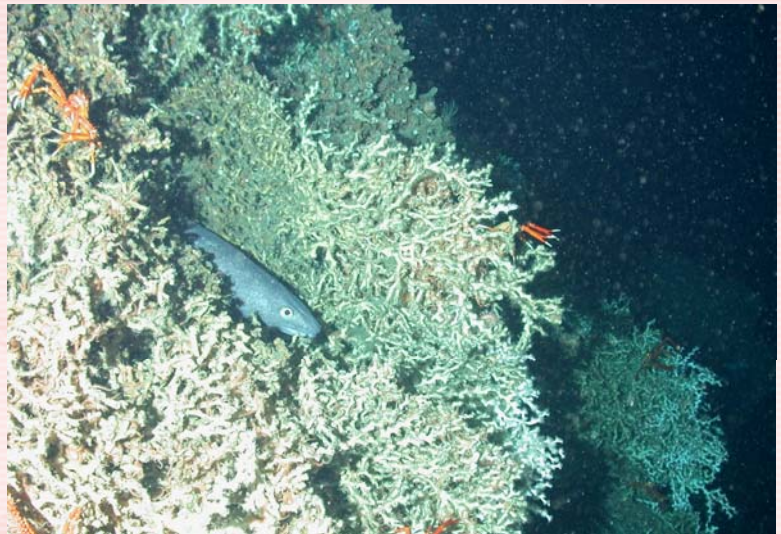
National Marine Fisheries Service

Coral Reef Conservation Program

March 2008
Silver Spring, Maryland

NOAA Deep Sea Coral Research and Technology Program

- new *Deep Sea Coral Research and Technology Program*; initial $1.5 million to help NOAA increase protection of this habitat by mapping locations of DSC and monitoring fishing and other activities. Future funding should increase. Charged to develop a science plan.

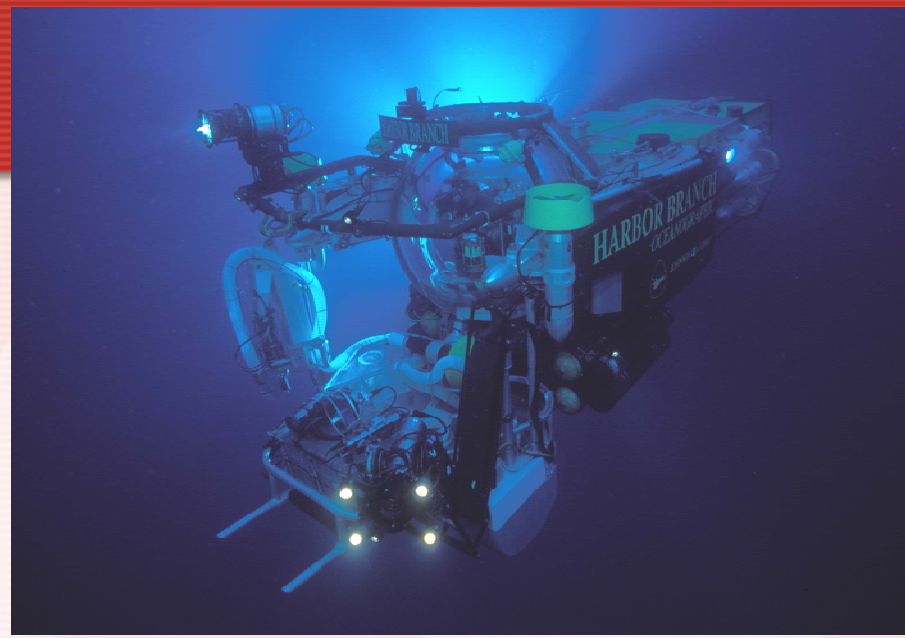


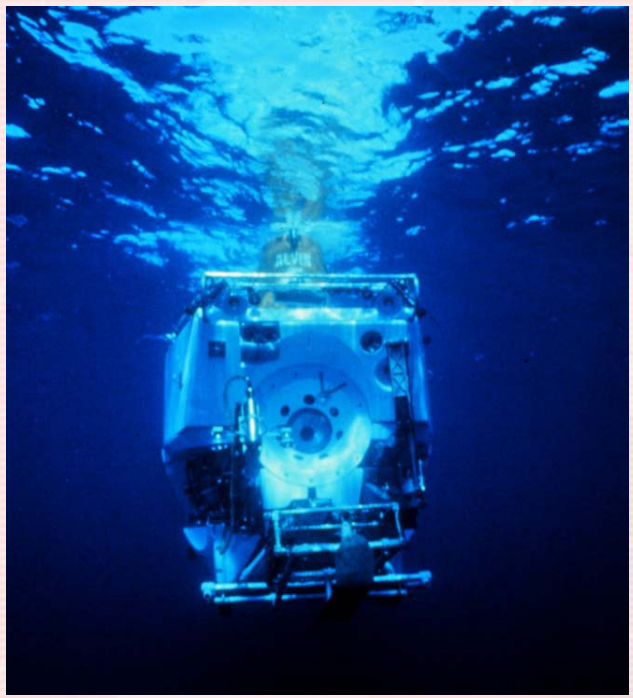
Partnerships important for US scientists

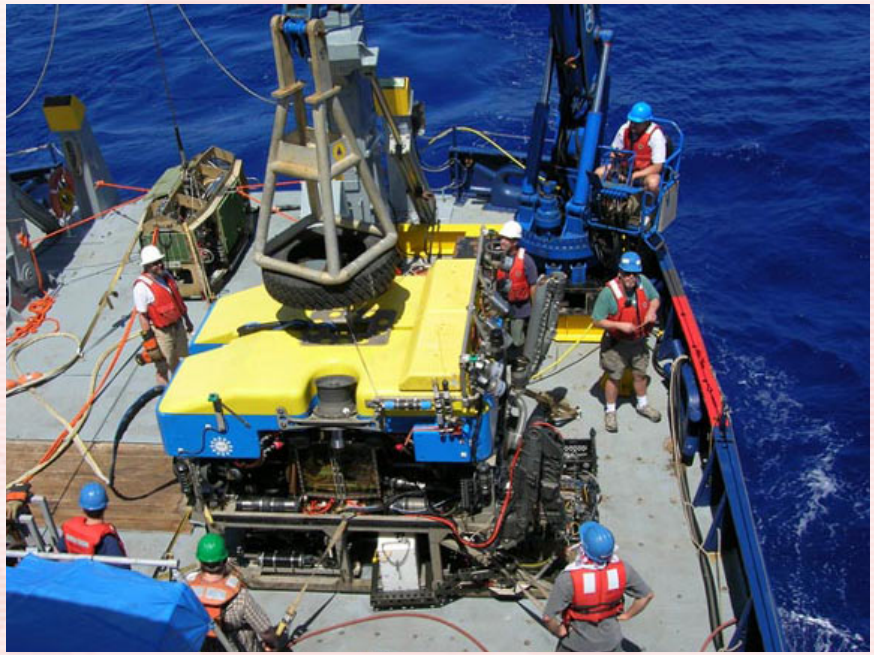
- Fishery Councils- SAFMC supports DSC studies
- NGOs– advocacy, planning and promotion, limited project support
- Foundations for projects– e.g., Pew, Sloan MacArthur, Packard
- States, Congress, fishermen groups
- Education organizations– Sea Grant, regional & national museums
- **International collaboration – TRACES?**

Technologies (manned submersibles & ROVs)

- JSL sub, $25+k/d
- Alvin/Jason, $40-50k/d







AUV Technologies (mostly mapping)

- AUV technology developing rapidly
- Available from a variety of sources, but usually expensive and with limited capabilities

Technologies – NOAA OER

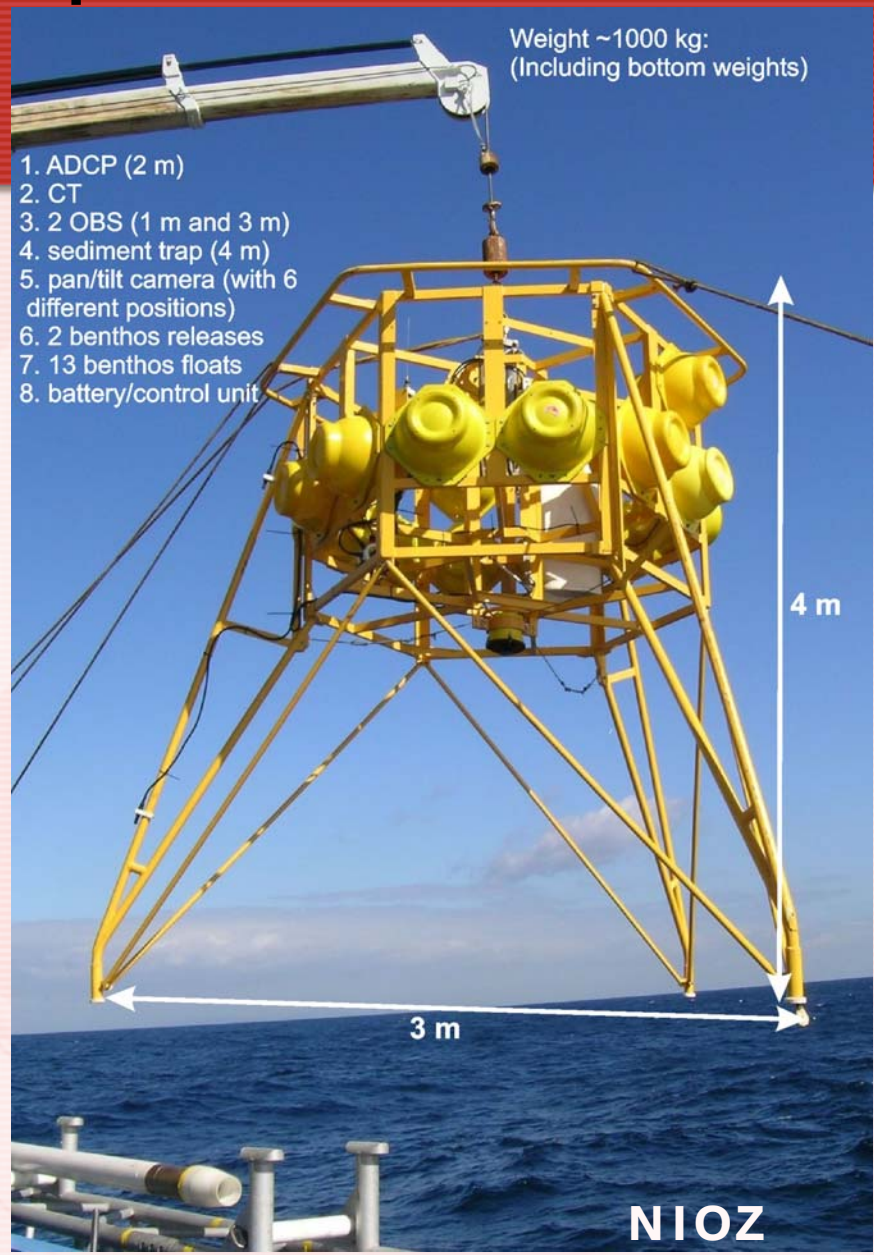
- *Okeanos Explorer-maybe* Atlantic in 2010

- Proteus ROV- $4k/d

- Eagle Ray AUV- $10k/d?

Technology Partnerships

- Observatories: Dutch (NIOZ) & UK (SAMS) Landers in collaboration with UNCW/USGS/MMS projects in US Gulf of Mexico and SEUS
- Eventual ties with other US ocean monitoring programs
- Precursors to TRACES



USA TRACES WORKSHOP SUMMARY OF CURRENT DSC PROJECTS

	ECOSYSTEMS			PALEO-CLIMATE	
REGION	LINKAGE-CONNECTIVITY	BIODIV-ERSITY	CORAL BIOLOGY	PROXIES CHRONOLOGY	TEMP. VENTILATION
Gulf of Mexico	3	3	2	1	
SE US	1	2	1	1	
US N. Atl.	2				1
US W. Coast				1	
Cent & N Pacific		2	1	1	1
SW Atl. (Brazil)		1			1
Norway			1		
Mediterr-anean				1	
Worldwide		1			

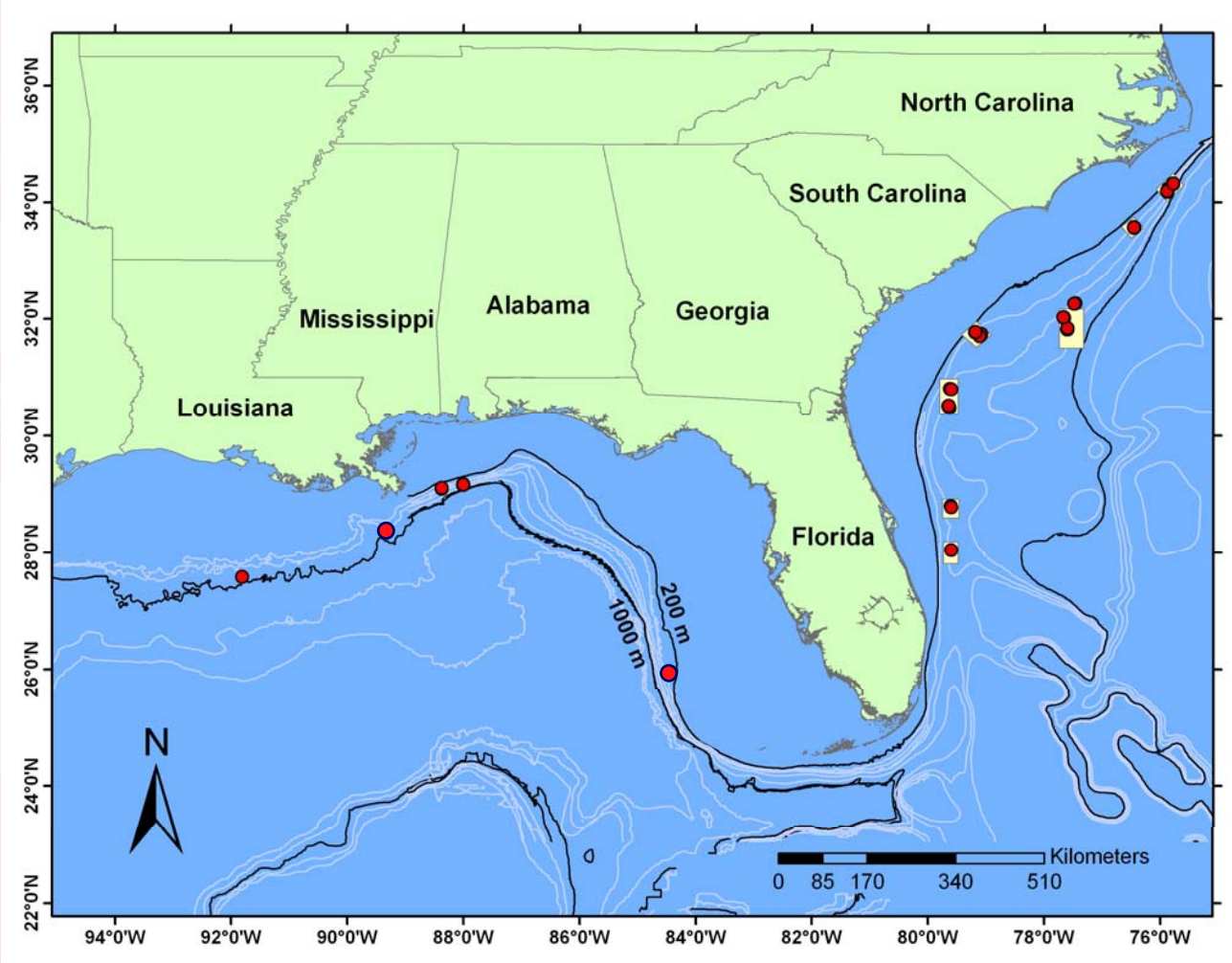
Sponsors: NOAA-10, NSF-6, MMS-4, USGS-2, Others (1 each)-4


GRØNLAND
ICELANDIC PLATEAU
NORWEGIAN BASIN
NORWEGIAN SEA
VØRING PLATEAU
Arctic Circle
DAVIS STRAIT
FOXE BASIN
HUDSON STRAIT
HUDSON BAY
ISLAND
IRMINGER BASIN
REYKJANES RIDGE
ICELAND BASIN
FAEROE SHELF
ROCKALL PLATEAU
ROCKALL TROUGH
NORTH SEA
BALTIC SEA
NORTHWEST ATLANTIC MID-OCEAN CHANNEL
LABRADOR BASIN
HAMILTON BANK
CHARLIE - GIBBS FRACTURE ZONE
FARADAY FRACTURE ZONE
MAXWELL FRACTURE ZONE
PORCUPINE ABYSSAL PLAIN
CELTIC SHELF
GULF OF ST LAWRENCE
GRAND BANKS OF NEWFOUNDLAND
FLEMISH CAP
BISCAY ABYSSAL PLAIN
KINGS TROUGH
AZORES BISCAY RISE
BLACK SEA
ADRIATIC SEA
MEDITERRANEAN SEA
NEW ENGLAND SEAMOUNTS
PICO FRACTURE ZONE
OCEANOGRAPHER FRACTURE ZONE
BERMUDA RISE
ATLANTIS FRACTURE ZONE
MADEIRA RISE
MADEIRA ABYSSAL PLAIN
HATTERAS ABYSSAL PLAIN
GULF OF MEXICO
NARES ABYSSAL PLAIN
KANE FRACTURE ZONE
Tropic of Cancer
SIGSBEE DEEP
YUCATAN BASIN
PUERTO RICO TRENCH
CAPE VERDE PLATEAU
CARIBBEAN SEA
VENEZUELA BASIN
COLOMBIA BASIN
FIFTEEN TWENTY FRACTURE ZONE
USA
U RUP

MMS/USGS

- Lophelia II project in Gulf of Mexico, 2008-2011
- Drilling Moratorium ends in 2012!

New East coast studies by MMS & USGS??



IN SUMMARY (opportunities)

- Many funding & collaboration opportunities are available to US scientists (with international collaborators).

- Advocacy, education, & promotion

- National/international policy development

- Take advantage of ongoing DSC projects in W. & E. Atlantic

IN SUMMARY (challenges)

- $$$$$$$$$$?????

- Technologies are impressive, but limited. New technology and assets are needed.

- Despite strong and increasing interest in DSC in US waters, little dedicated funding is yet in place.

- TRACES challenge: Sell it as a large scale, coordinated effort to capture a funding and administrative niche in the US science community.

This is the right time.