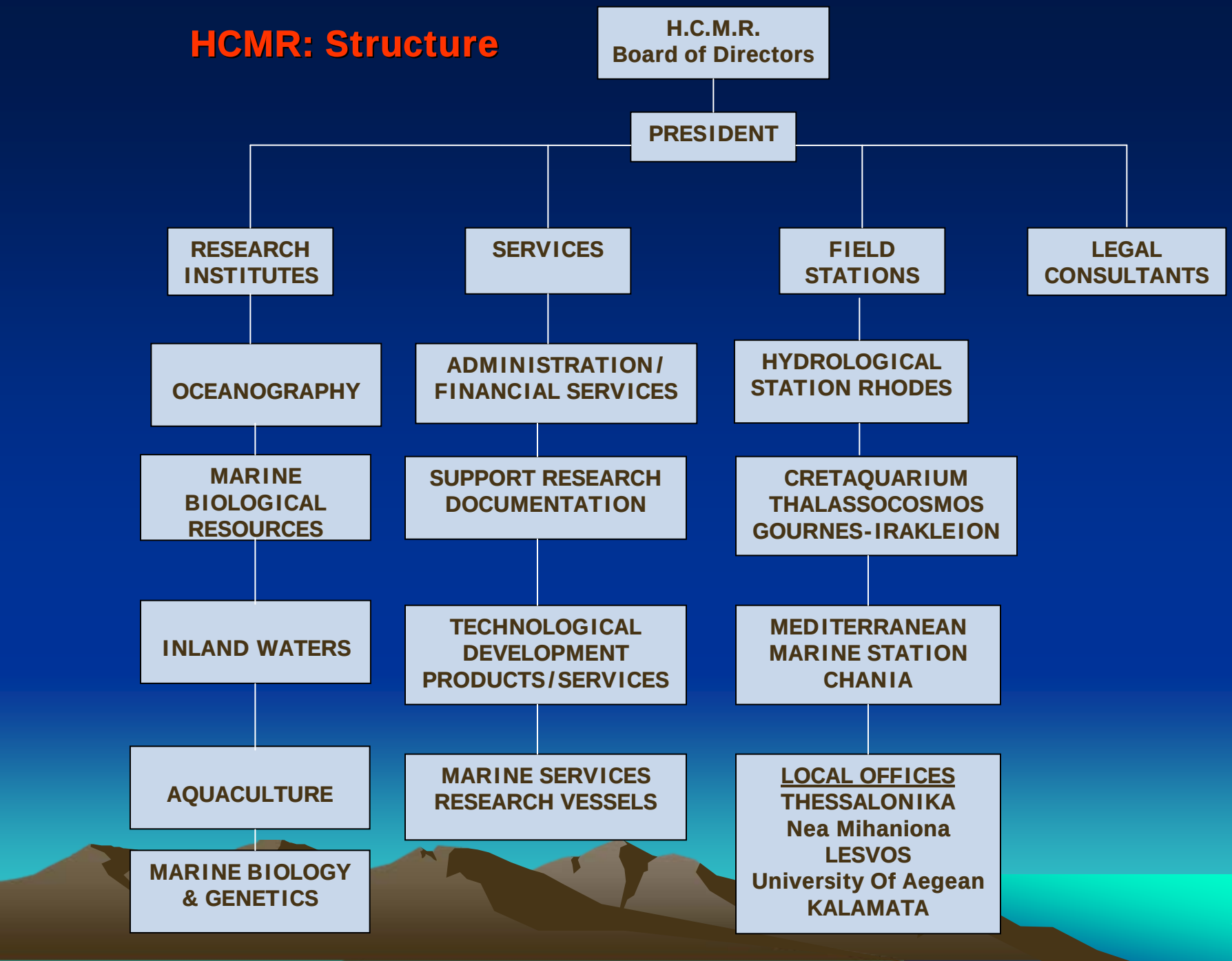
Part I: Hellenic Centre for Marine Research

Dr Aristomenis (Aris) P. Karageorgis
ak@ath.hcmr.gr

Hellenic Centre for Marine Research

HCMR: Structure



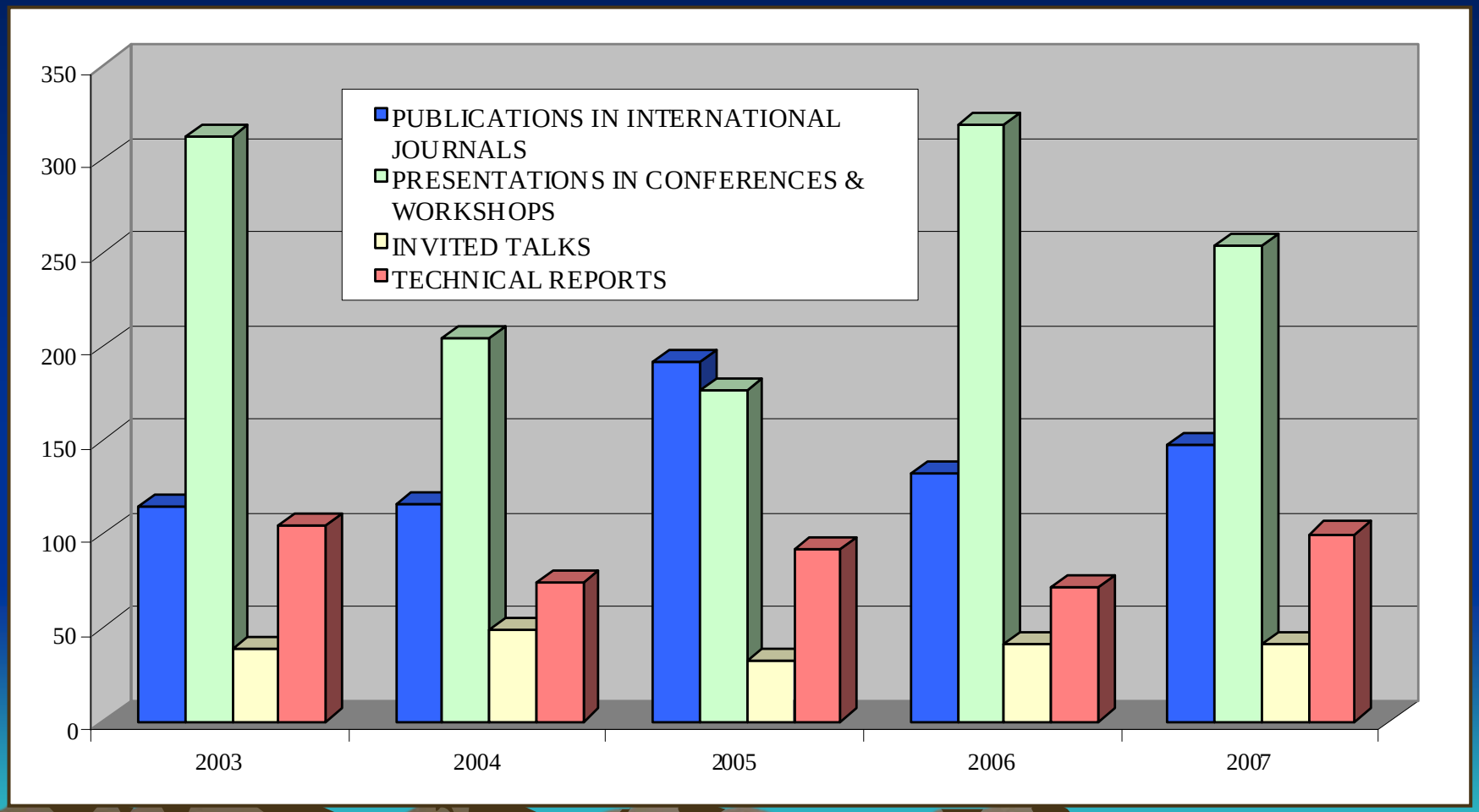
HCMR personnel (2007)

Staff Category	
Researchers	90
Technical scientists	82
Technical Personnel	53
Administrators and auxiliary personnel	71
R/Vs crew (AEGAEO-PHILIA-THETIS)	32
Personnel under contract	145
Scholarship holders	26
TOTAL	**499**

HCMR budget (2007)

Budget Categories	*H.C.M.R. (in €)*
Governmental Funds (only salaries)	5,500,000
Public sector	1,650,000
European Union	4,400,000
Private sector	5,000,000
Other	350,000
TOTAL	**16,900,000**

HCMR Publications 2003-2007



Anavyssos (Attica), HCMR Headquarters

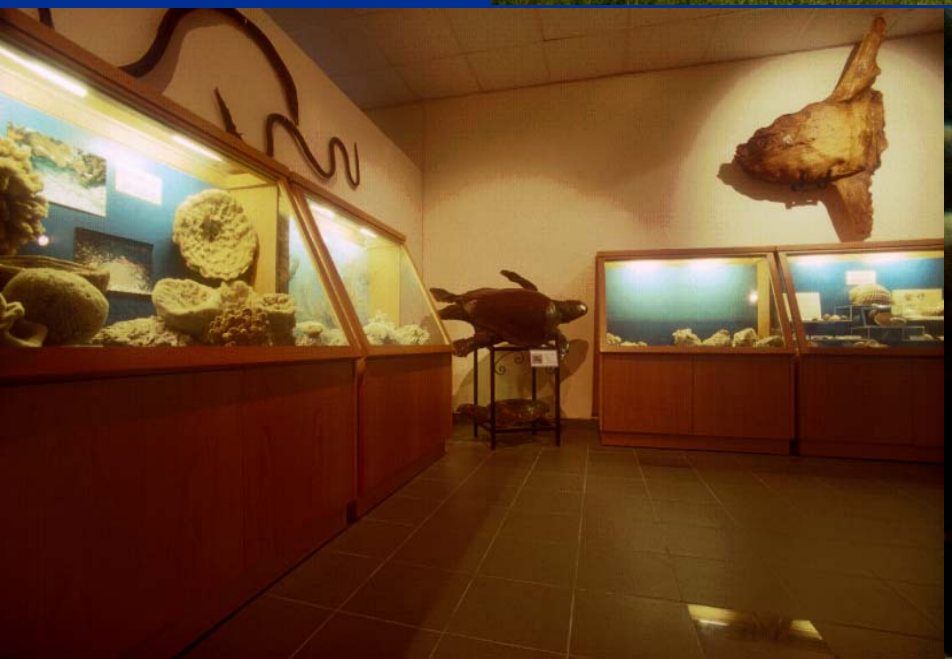
Ag. Kosmas,
Inst. of Biological Resources

Heraklion (Crete): Inst. of Aquaculture
and Inst. of Marine Biology and Genetics

Aquaculture Laboratories, Heraklion, Crete

Aquarium in Crete: “Thalassokosmos”

Aquarium in Rhodes island



Research vessel “Aegaeo”

Built in 1985, Rebuilt in 1997
Length : 62 m
Max. Speed : 12.5 Knots
Maximum cruising range : 20 days
On-board Staff
Crew : 22 persons
Scientific personnel : 21 persons

Scientific Laboratories
- **General Laboratories (Chemistry/Biology)**
- **Wet Laboratory**
- **Primary Productivity Laboratory**
- **Geological Acoustics survey room - CTD & Electronic Laboratory**
- **Computers Laboratory**
- **Container converted to clean room (for dissolved trace element analysis)**

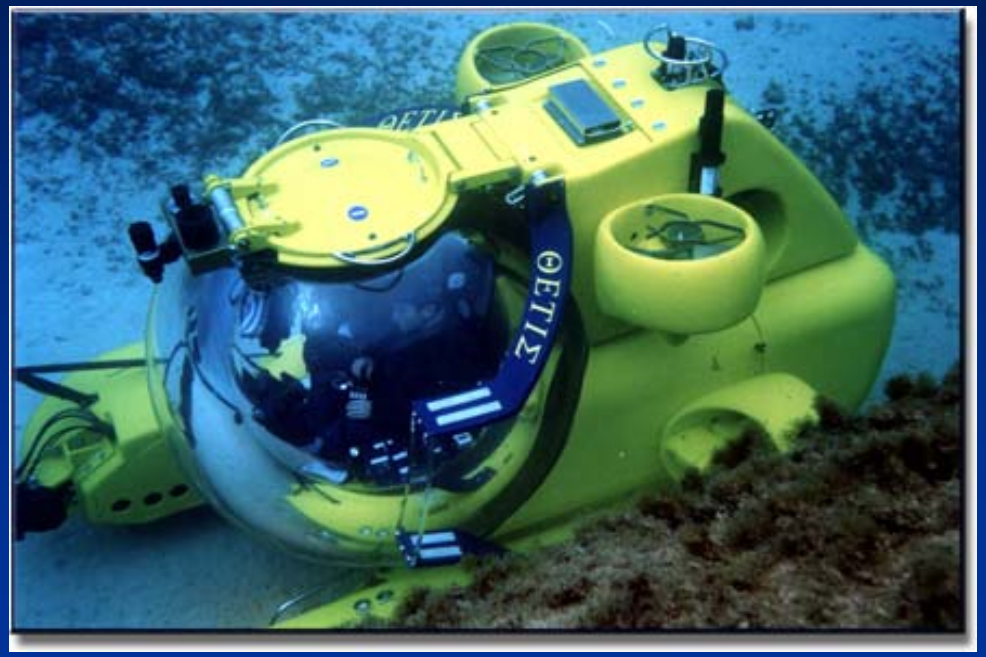
Research vessel “Philia”

Built in 1986
Length : 26,1 m
Max. Speed : 10 Knots
Maximum cruising range : 10 days
On-board Staff
Crew : 7 persons
Scientific personnel : 6 persons

Scientific Laboratories
- ✓**Wet Laboratory**
- ✓**Dry Laboratory**
- ✓**CTD & Electronic Laboratory**
- ✓**Computers Laboratory**


PHILIA

Twin Seater Submersible “THETIS”



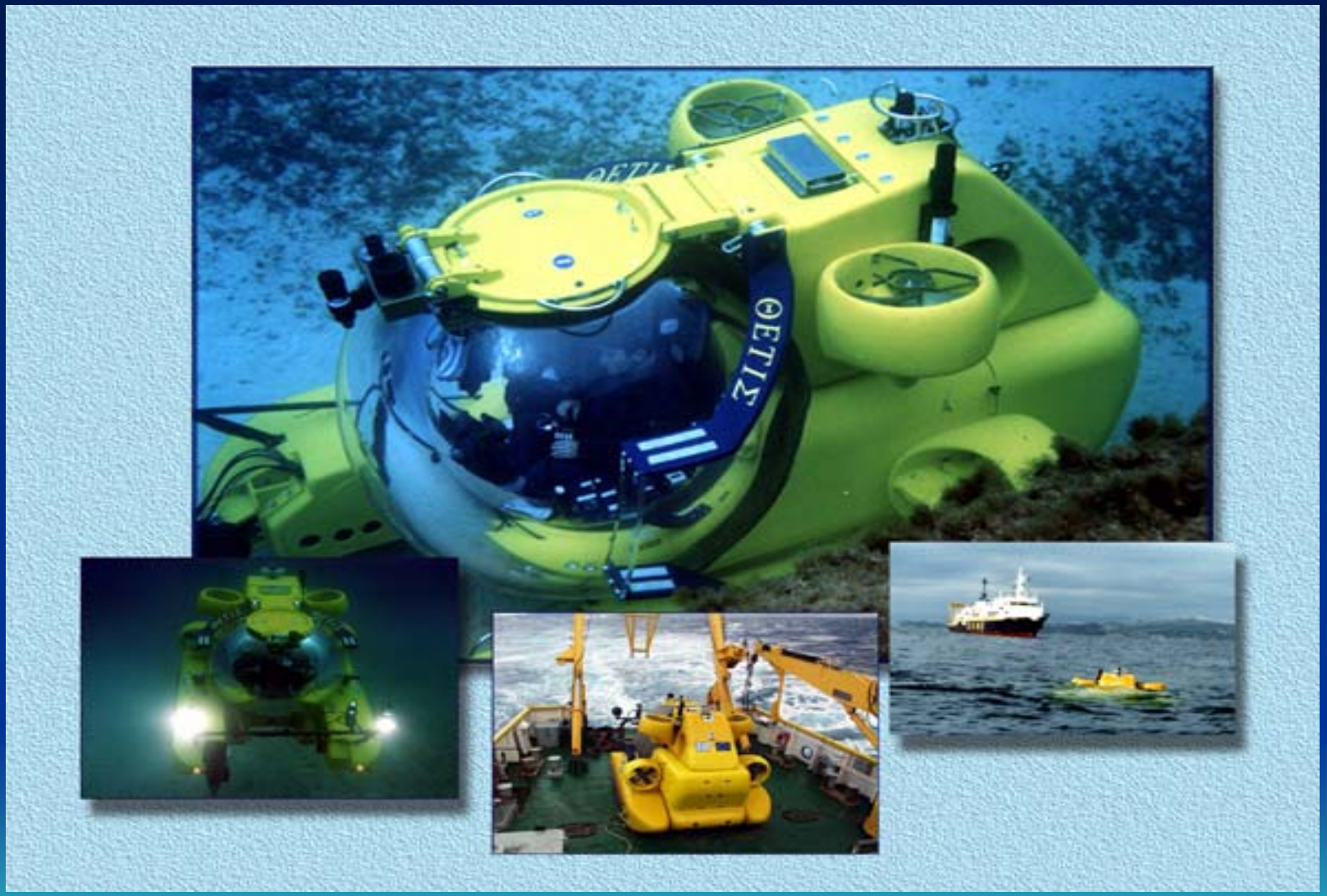
Operating depth : 610m

Operating time: 9 hours

Survival time : 72 hours

Equipments installed:

- CYBERNETIX remote arm SAMM 5 axes.
- Scanning profiler
- High resolution 725 kHz scanning sonar
- High resolution and sensitivity color video-camera.
- Black and white SIT very high sensitivity camera
- Aft-looking color TV-camera (safety in wrecks)
- Video recorder

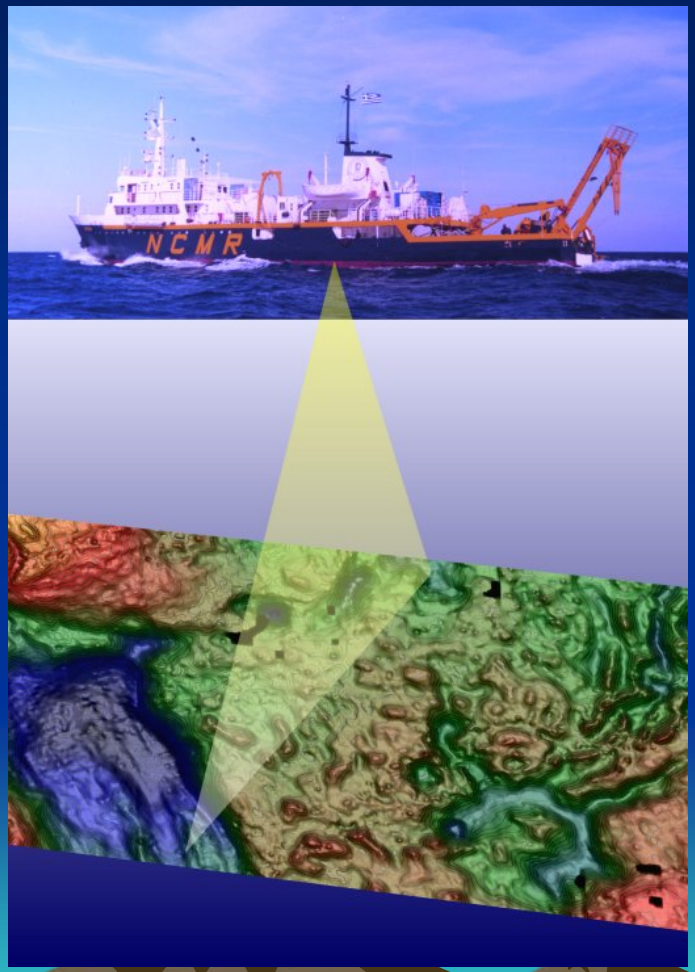

ΘΕΤΙΣ

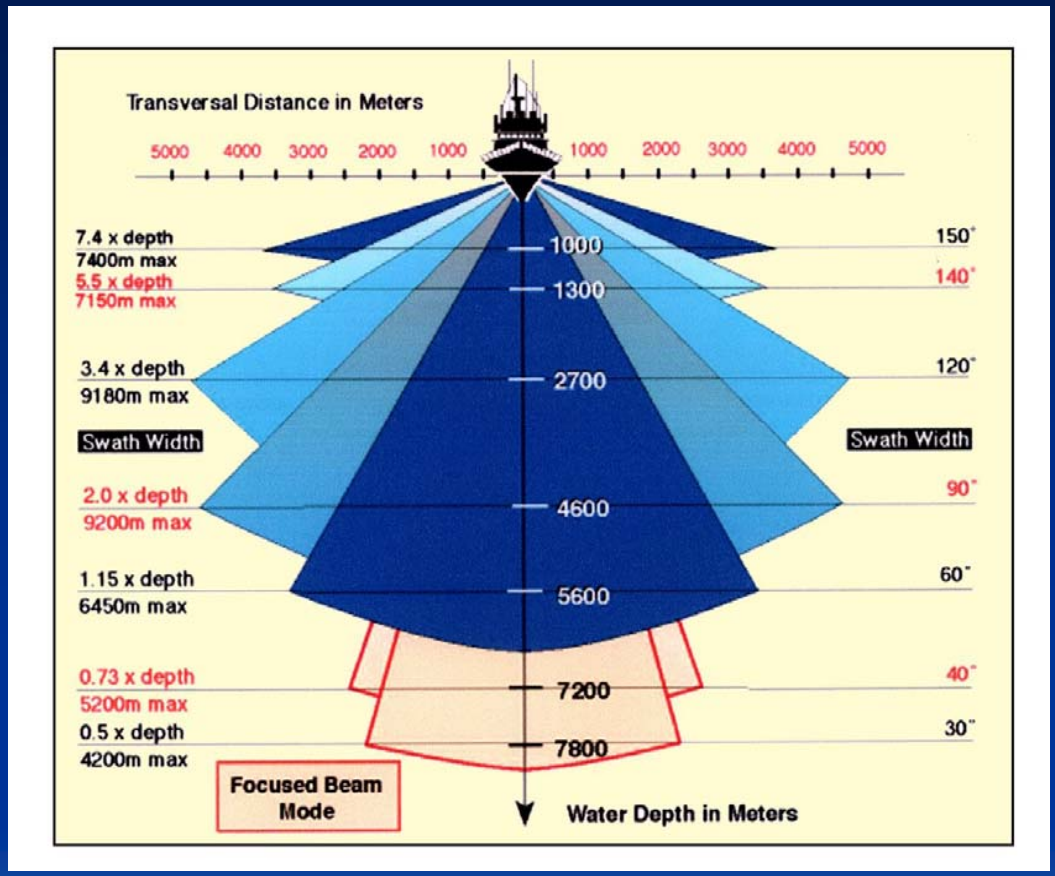
Remote Operated Vehicles (ROVs)

ROV SUPER ACHILLES
Total weight: 120 kg Length: 720 mm
Width: 0.6m Height: 0.5 mm
Maximum operating (dive) depth:
1.000 m / 3.279 ft
Operating Time: Unlimited
Underwater speed: 2,5 knots

ROV MAX ROVER
Model: Max Rover Mark II
Maximum operating (dive) depth: 2000 m
Operating Time: Unlimited
Total weight: 750 kg Length: 2.2 m
Width: 0.9 m Height: 1.2 m
Underwater speed: 2.5 knots (fwd/rev), 1.5 knots (vert/lat)

Multi Beam bathymetric system

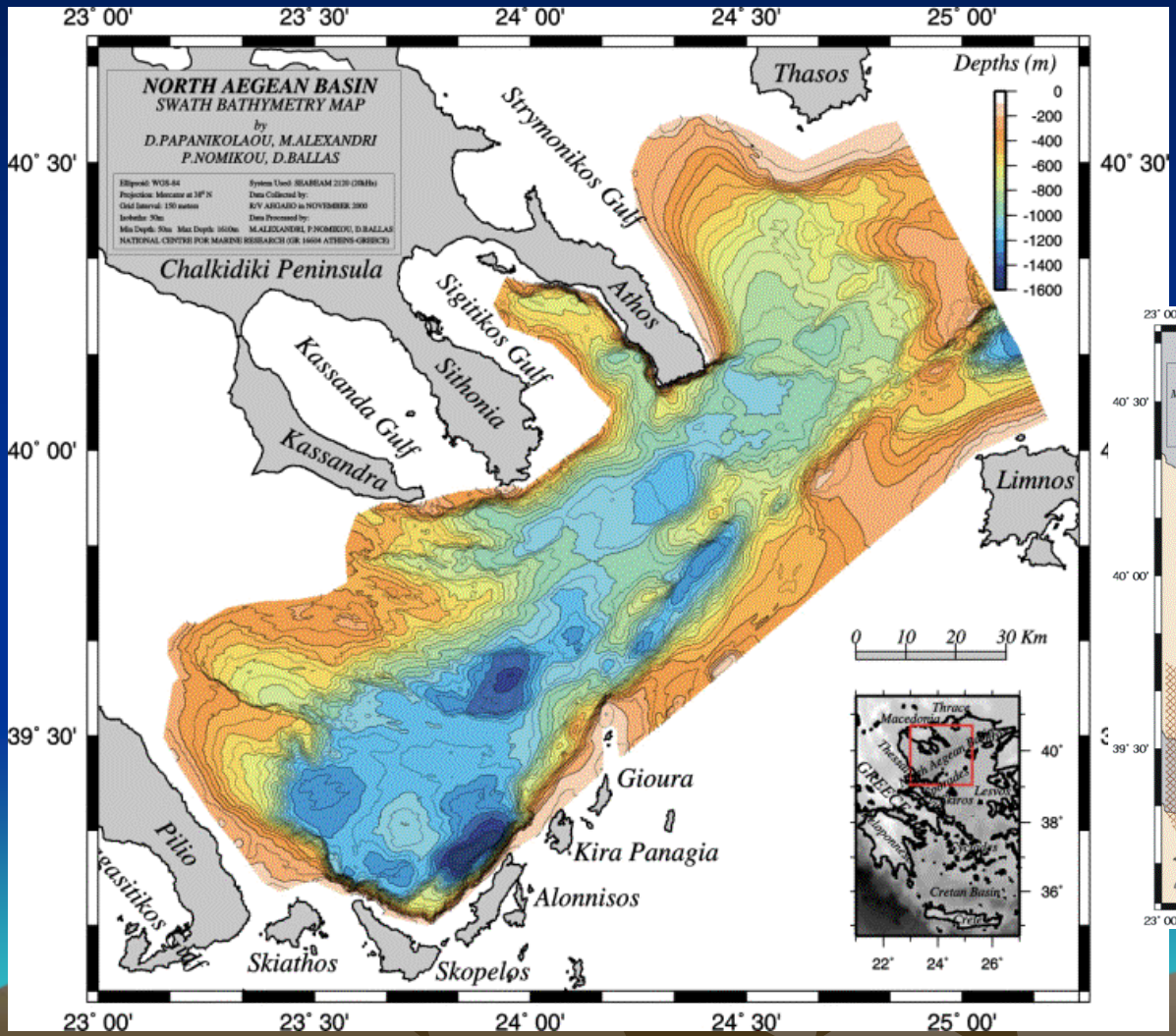


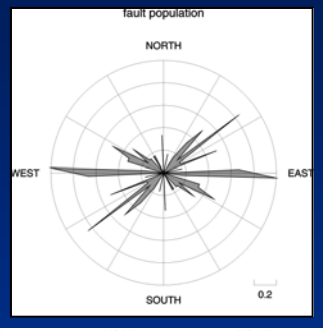


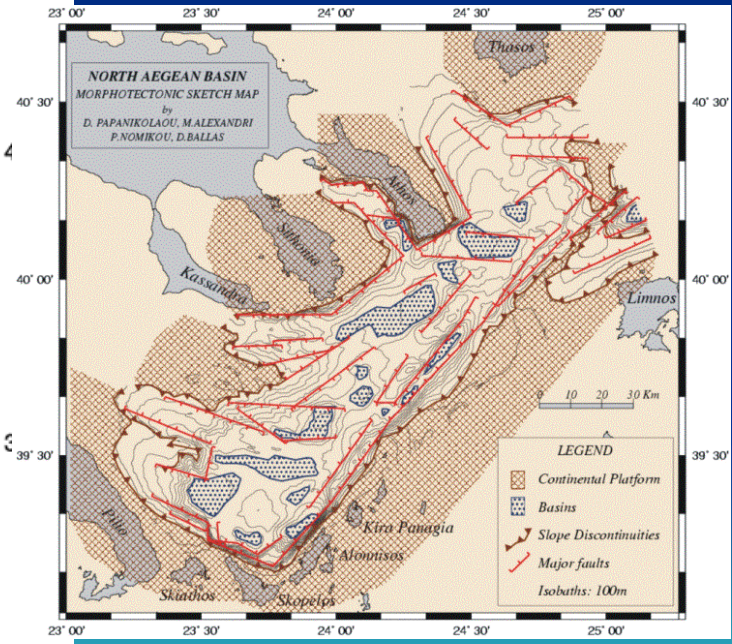
SB 2120

20 KHz

1.8ºx1.8º


NORTH AEGEAN BASIN
SWATH BATHYMETRY MAP
by
D.PAPANIKOLAOU, M.ALEXANDRI
P.NOMIKOU, D.BALLAS
Depths (m)
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
Thasos
Strymonikos Gulf
Athos
Chalkidiki Peninsula
Sigitikos Gulf
Sithonia
Kassanda Gulf
Kassandra
Limnos
Gioura
Kira Panagia
Alonnisos
Pilio
Skiathos
Skopelos
0 10 20 30 Km
23° 00'
23° 30'
24° 00'
24° 30'
25° 00'
40° 30'
40° 00'
39° 30'


fault population
NORTH
WEST
EAST
SOUTH
0.2


NORTH AEGEAN BASIN
MORPHOTECTONIC SKETCH MAP
by
D. PAPANIKOLAOU, M.ALEXANDRI
P.NOMIKOU, D.BALLAS
Thasos
Athos
Sithonia
Kassandra
Limnos
Kira Panagia
Alonnisos
Pilio
Skiathos
Skopelos
0 10 20 30 Km
LEGEND
Continental Platform
Basins
Slope Discontinuities
Major faults
Isobaths: 100m
23° 00'
23° 30'
24° 00'
24° 30'
25° 00'
40° 30'
40° 00'
39° 30'

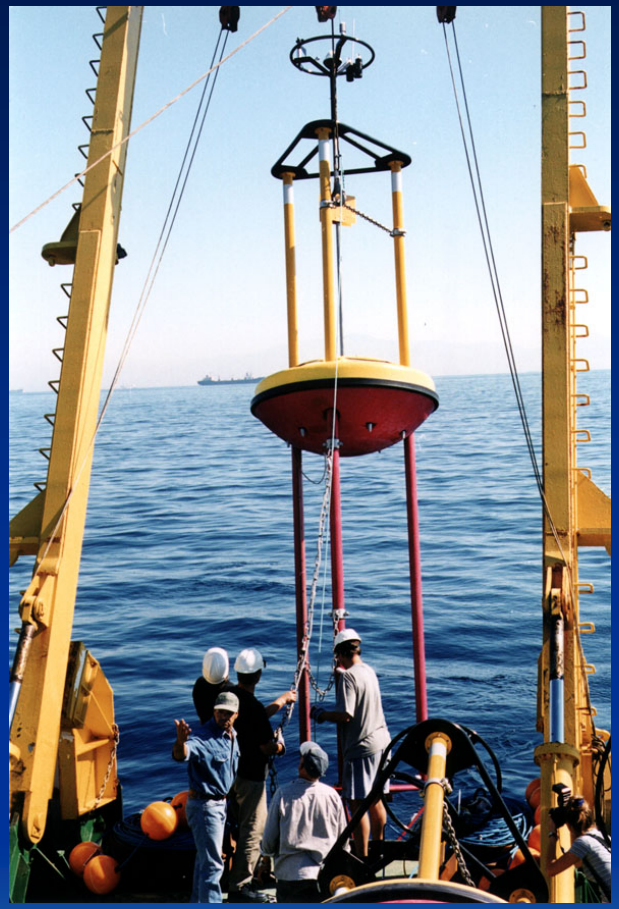
Research activities

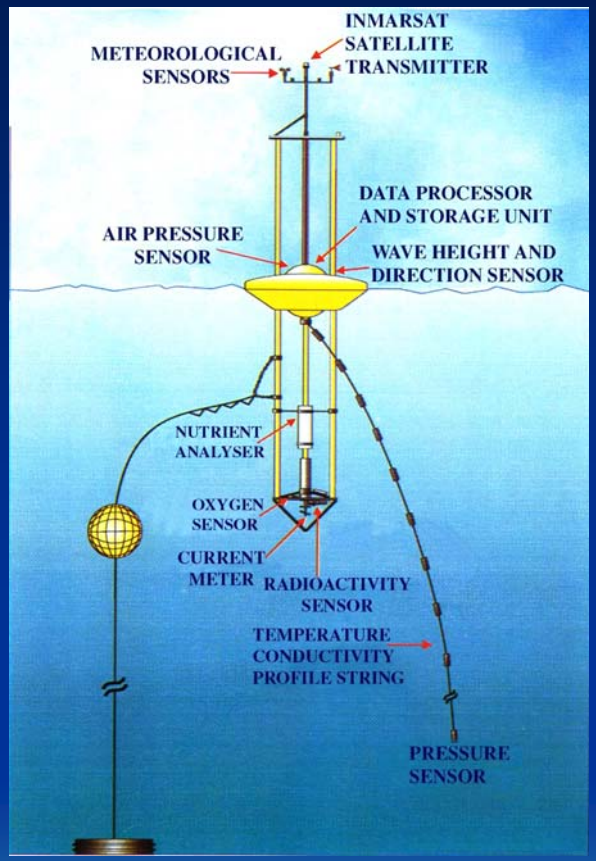
POSEIDON network

- **11 SeaWatch buoys**
  - ✓ Meteorological Sensors
    - Air Temperature
    - Atm. Pressure
    - Wind Speed / Direction
  - ✓ "Blue" Sensors
    - Temperature
    - Salinity
    - Current
    - waves
  - ✓ "Green" Sensors
    - Dissolved Oxygen
    - Chlorophyll-A
    - Light Attenuation
    - Radioactivity

10 Smart-800 Buoys
(waves only)

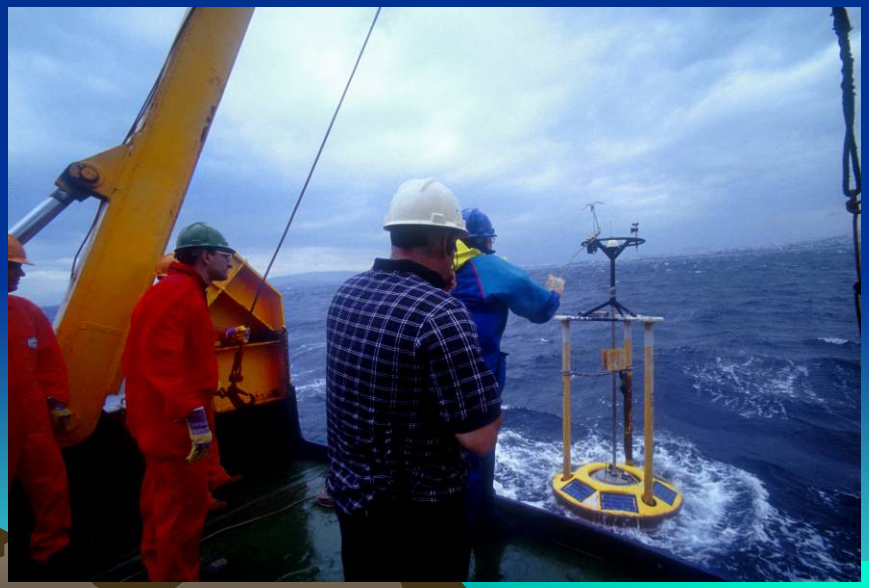
The SeaWatch Buoy





- *Height*: 7.9 m
- *Width:* 1.75 m
- *Weight*: 900 kgr
- *Energy*: Solar panels + batteries
- *Communication*: Imarsat C, GSM every 3 hours

SeaWatch buoy deployment



Products for the public – Mobile telephony products

SMS Service

Operational since Aug.2002

4264-Available to all mobile telephony users

8000-10000 users/month

iMode Service

Operational since Aug. 2004

3500 reg. users

MMS/SMS weather forecast

Operational since Feb. 2003

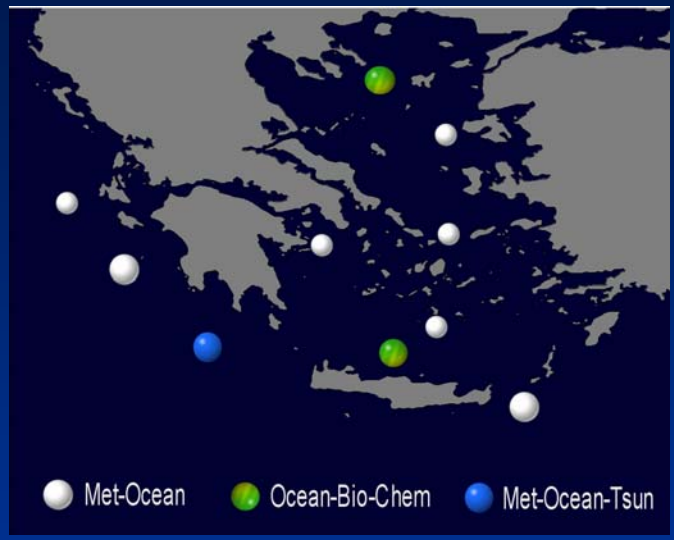
Free for company's subscribers

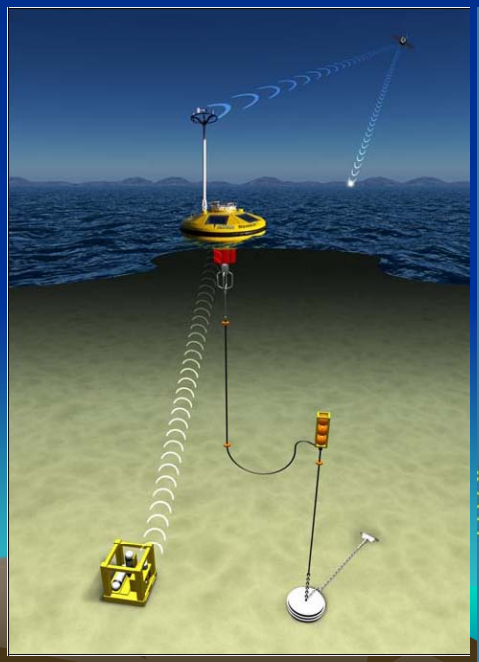
Poseidon II – Key elements

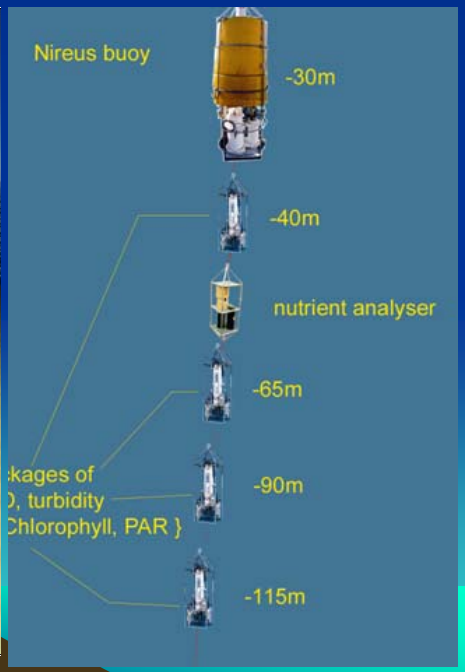
1. In-situ observations

15 (10 upgraded +5 new) modular buoys able to measure:

- Meteorological (including experimental underwater acoustic rain gauges)
- + Surface physical oceanographic param. (waves, currents, T/S at 0-50m)
- Deep hydrological properties T&S 0-2000m (3-4 buoys)
- Biochemical (chlorophyll-a, nutrient analysers, PAR, deep-water samplers etc) parameters at least 0-100m (2-3 buoys M3A concept)
- New sensor calibration facilities
- Deep platform including tsunami detection module







Poseidon II – Key elements

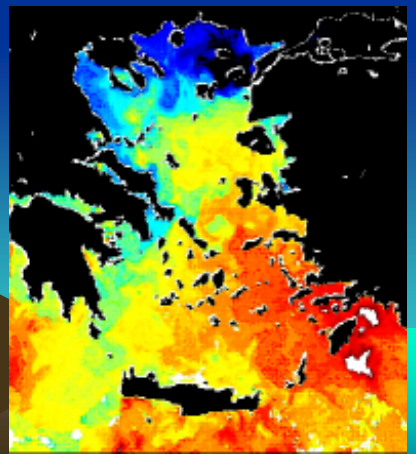
2. Ocean Forecasting

- New parameterizations in meteorological, ocean, wave models
- Atmospheric–ocean coupling methods
- Data assimilation techniques utilising both remote sensed and buoy measured data
- Pre-operational ecosystem models coupled to the ocean forecasting systems for the Aegean – Eastern Mediterranean Seas.

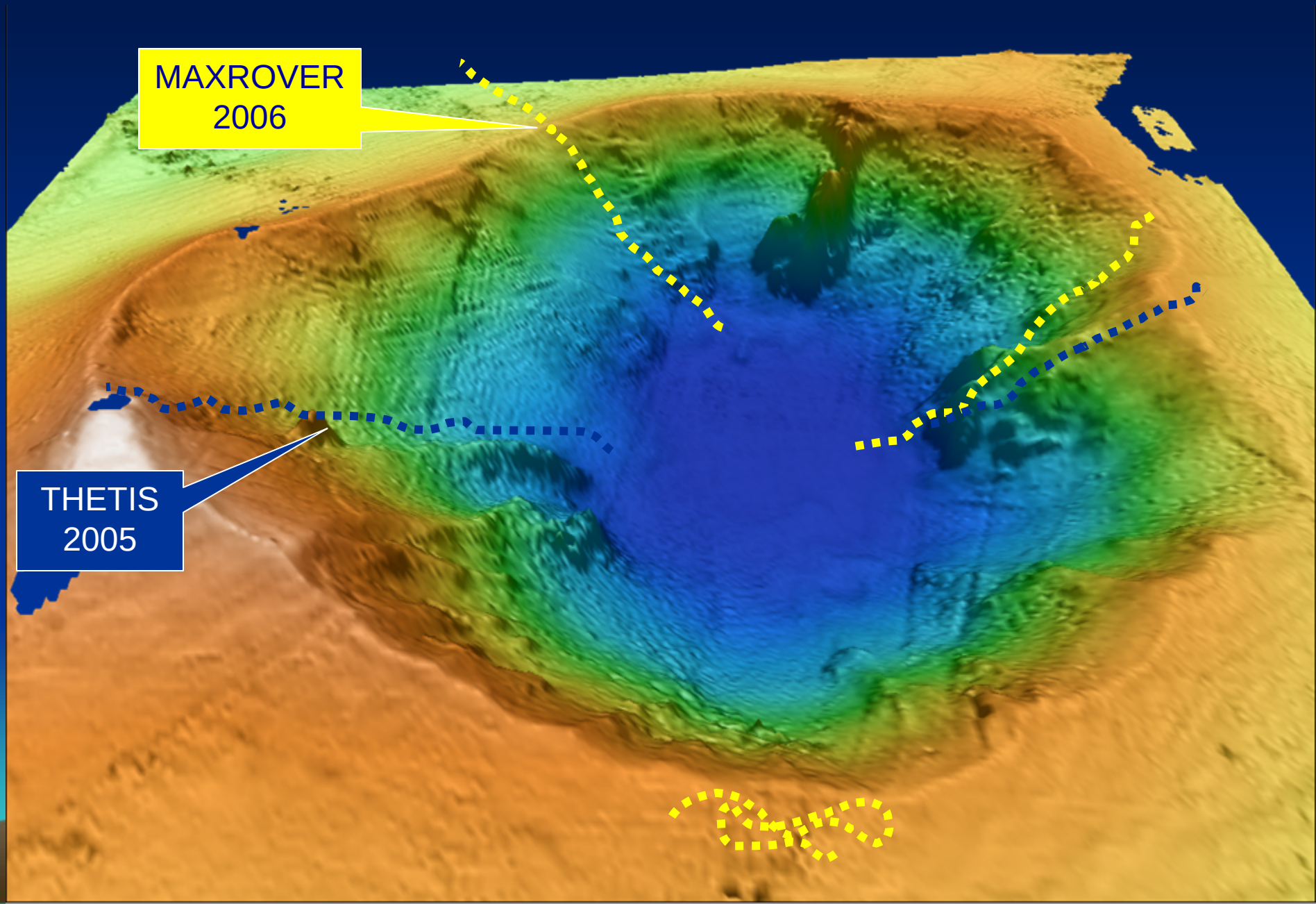
New HPC Unit
SGI Altix3700
128 CPUs

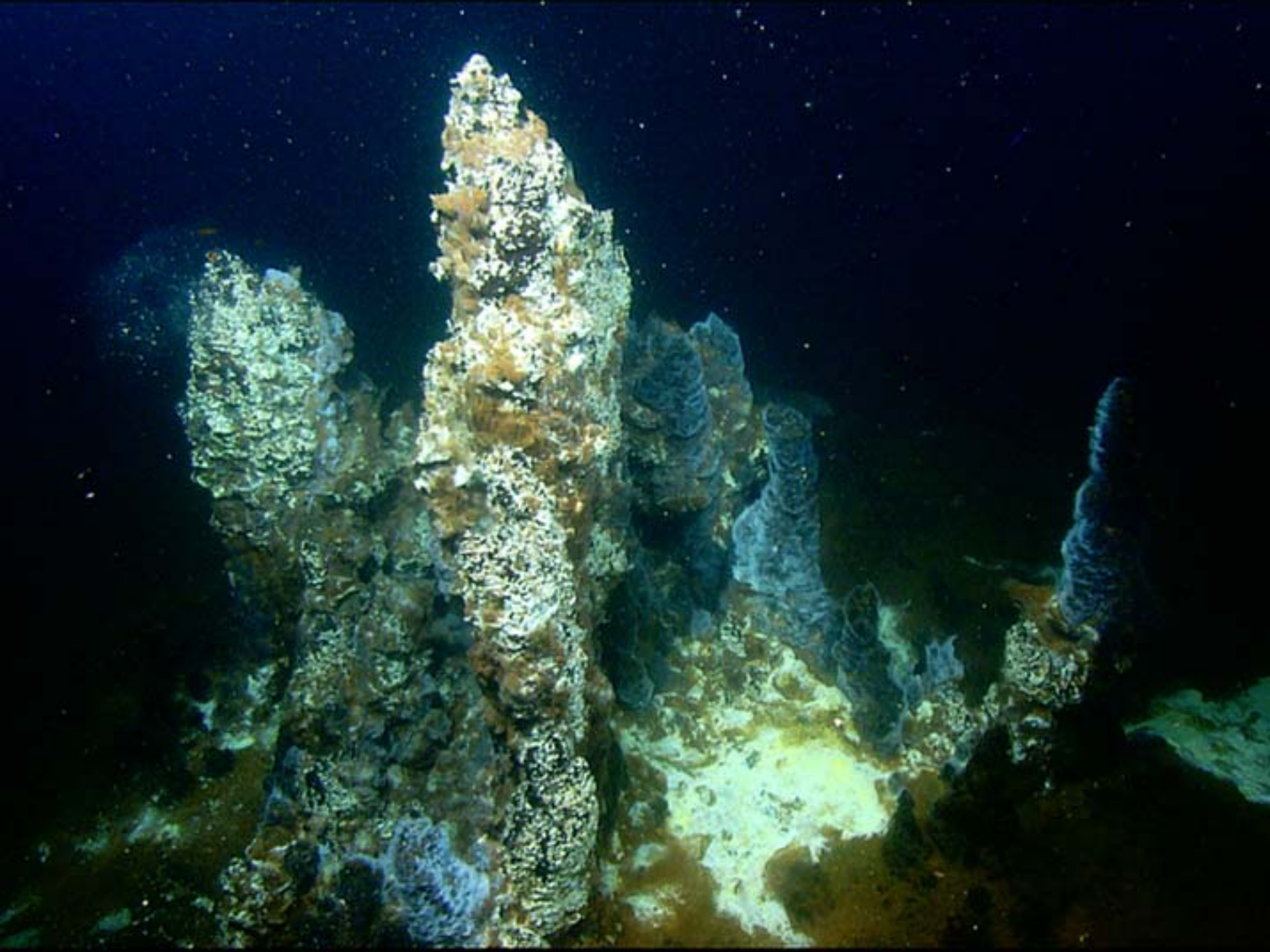
3. Remote sensing

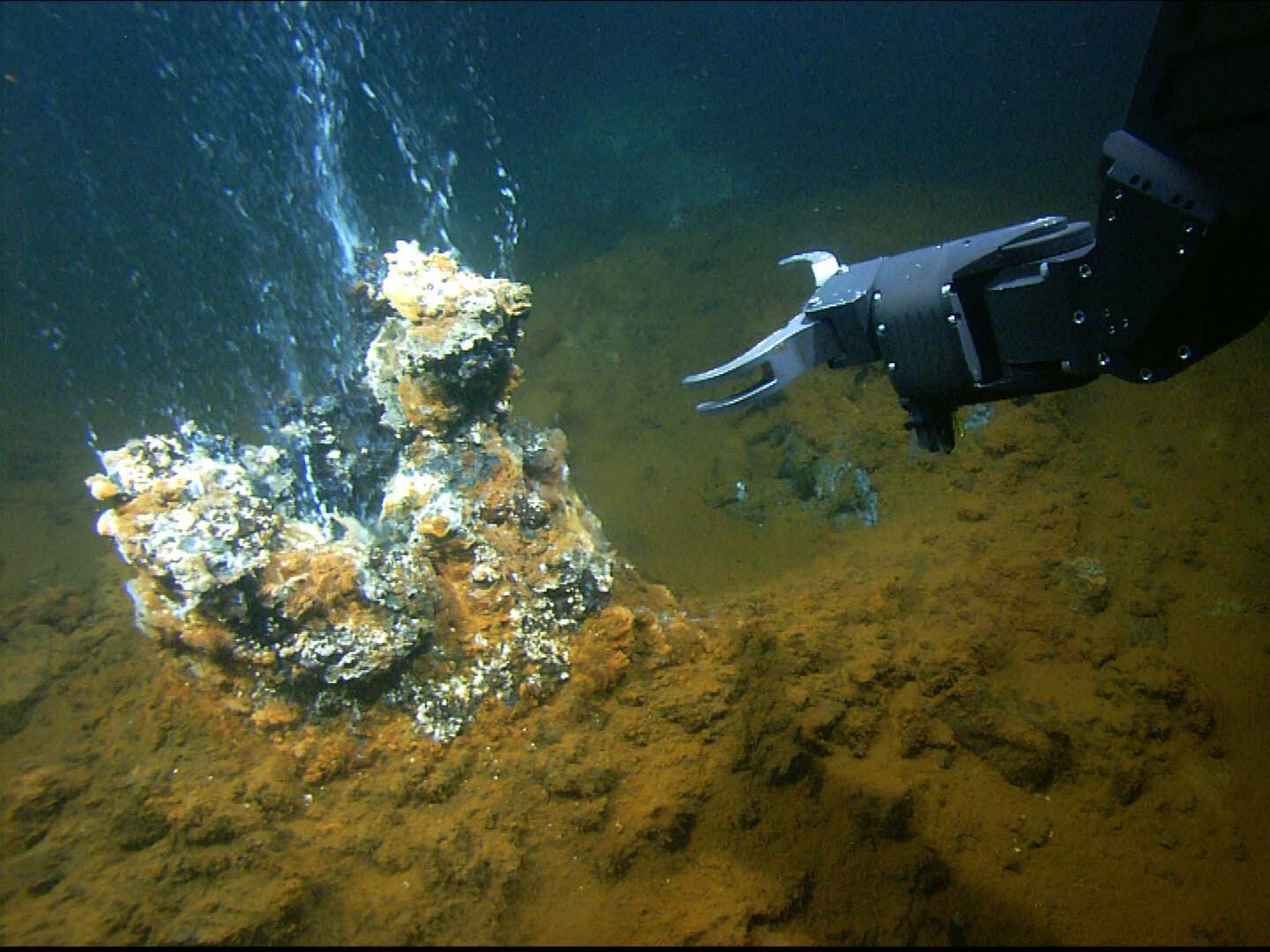
- AVHRR/ATSR and Ocean Color data through ESA/MEDSPIRATION
- SLA (altimetry) data through CLS or other provider
- Rainfall data and secondary products (SST, wind speed, surface roughness) through NASA's TRMM, TERA,AQUA satellites in collaboration with
  University of Connecticut
  NASA, and NOAA/NCEP



Columbo – Submarine volcano, Santorini







GAS HYDRATES

-CH_4 + H_20 in “ice” form

-1 volume hydrate produces 164 volumes of methane

-Potential Future energy source

-Contribution in global climate change (greenhouse gas)

Collaboration with International Institutions & Universities

World Data Center for Oceanography Silver Spring

OCEAN CLIMATE LABORATORY (WDC/OCL)

Woods Hole Oceanographic Institute (WHOI)

Canadian Archaeological Institute at Athens (CAIA)

INSTITUTE OF NAUTICAL ARCHAEOLOGY, Texas A&M University

Rhode Island University

University of LOUISVILLE

Department of Oceanography TEXAS A&M UNIVERSITY

PARTICLE DYNAMICS GROUP, Texas A&M University