ROV Operator Workshop Feb 2012
Geomar, Kiel.

HCMR Underwater Activities

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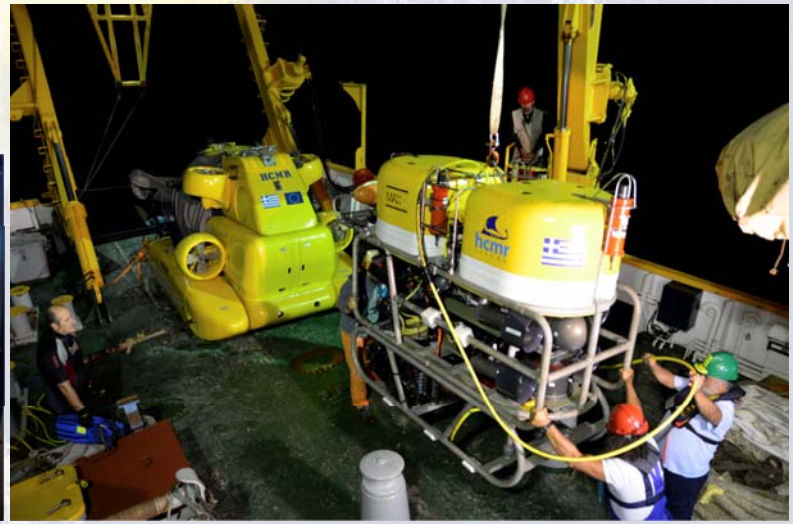
History/Vehicles

1990: Benthos Mini Rover 300 m
1999: DSSI Max Rover 2000 m
1999: Comex “Thetis” 600 m
1999: Super-Achilles 500 m
2009: Seabox LBV 200 m
2010: Saab Falcon 300 m

Principal Platforms

RV Aegaeo

- 65 m
- 20 Scientists
- No dp
- Carries ROV
- Thetis or Deep Tow
- 1.5 Containers



Principal Platforms

RV Philia

- 26 m
- 6 Scientists
- No dp
- Carries ROV (to 2000 m)
- Not much else at the same time

Operational Personnel

Personnel: 6 (full time HCMR, part-time UA team)

- Submarine Pilots (1+1)
- Submarine Engineers (Hydraulics 1)
- ROV Pilots (5)
- ROV Engineers (electrical/tronics 2)
- Divers (2, for deployment and recovery)
- Most personnel are cross-qualified

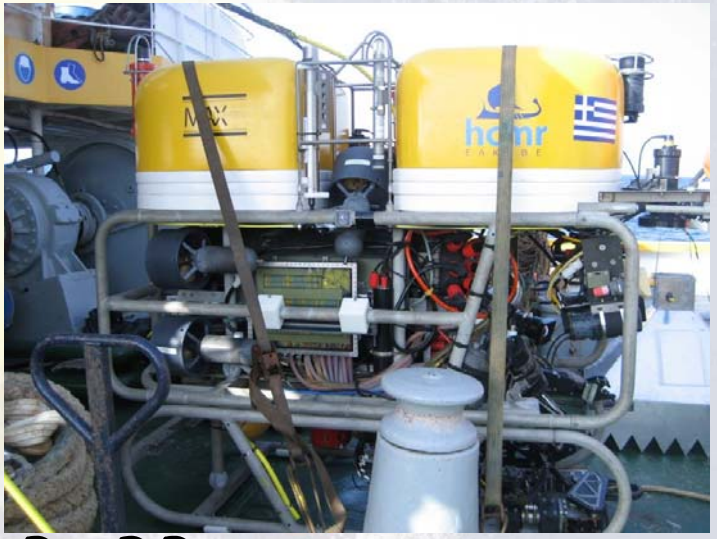
Geographical Area

Operational Areas to Date

- Greece (Ionian, Aegean, Libyan Seas)
- Balearic Sea
- Egypt (Nile Fan)
- Red Sea (Saudi)

Max Rover

Built: DSSI 1999 (now Oceaneering)
Converted: HCMR 2011 to fibre optic
Depth: 2000 m
Power: 12 hp/14 Kw, 1 ph.
Weight: 900 Kg
Payload: 100 Kg - used
Manip: 2 x 5-funct
Cameras: 2 HDTV, 3 CCD
Sonar: Tritech, Scan, SSS, PSBP
Nav: RDL DVL (still integrating)
Winch: 3 phase 25 hp, 5 ton (2.4m^3)



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Max Rover

Consoles – all transportable racks

Max Rover: Upgrade

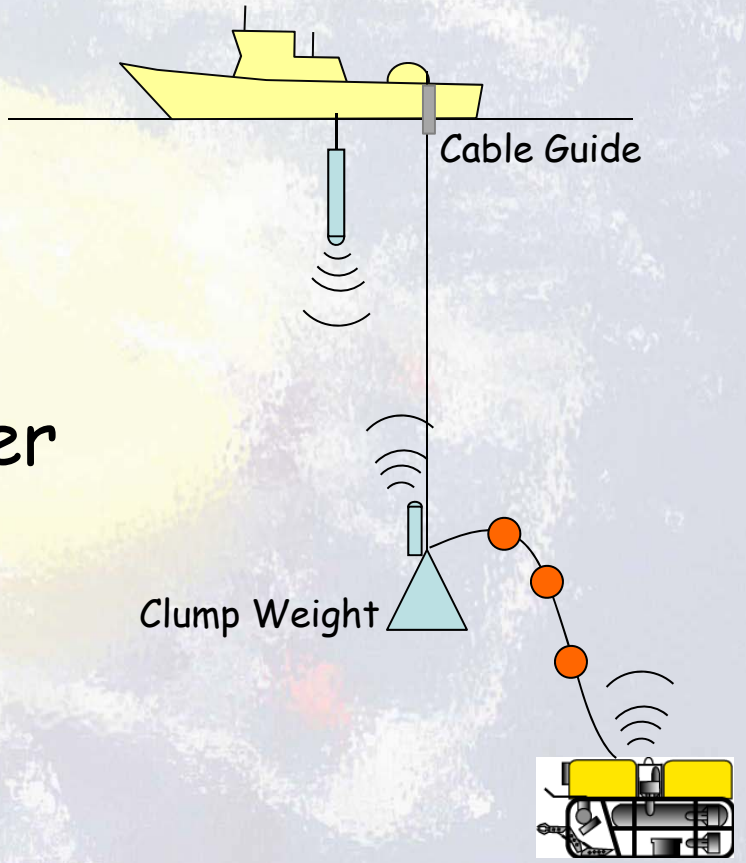
2011 Fibre Optic Upgrade

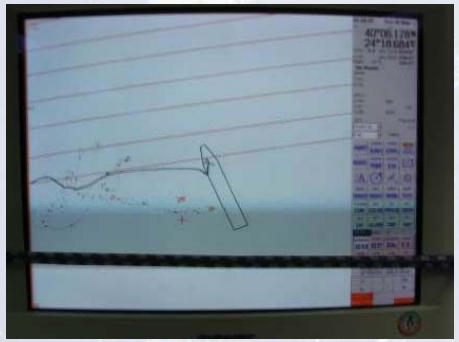
- Inserted between the top and bottom
- Smaller armoured cable (19 vs 32 mm)
- FO Sliprings external on winch
- Macartney Nexus system for FO signal
- Oil filled cables
- HDTV Cameras
- Scaling lasers
- Additional HID Lights
- PSBP sonar
- Toolskid
- Floatation

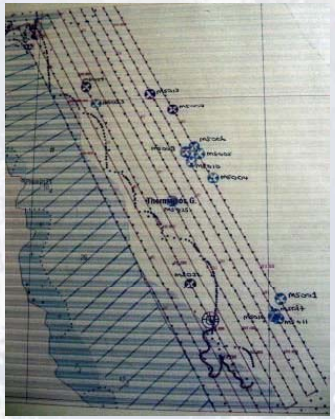
Operations & Positioning

Live boating (min. depth 70 m)
Positioning USBL Systems
- Trackpoint 3000 m (!)
- Tracklink 1000 m (!)
- Tracklink 10000 m (?)

Through Captains Nav Computer
DVL being integrated (RDL)
GPS







ROV Operations

Operation Type	Time
Internal Science Projects:	30%
External Science Projects:	30%
Services:	40%

Science Operations

- Primarily Video Survey
- Limited sample carrying capacity
- External Sampling Basket (problematical)

Science Operations

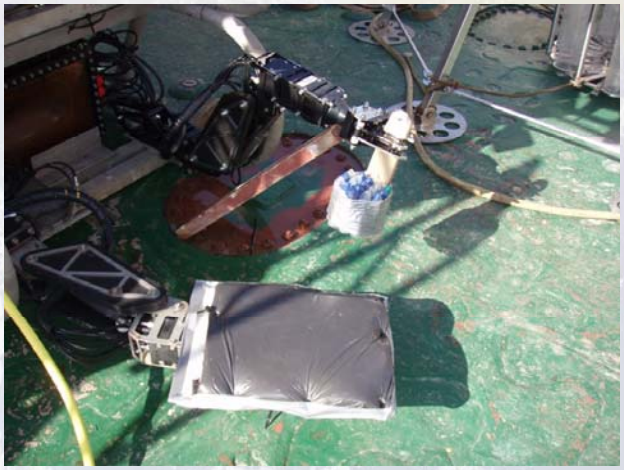
So,
but 1 dive, 1 sample

Megafauna

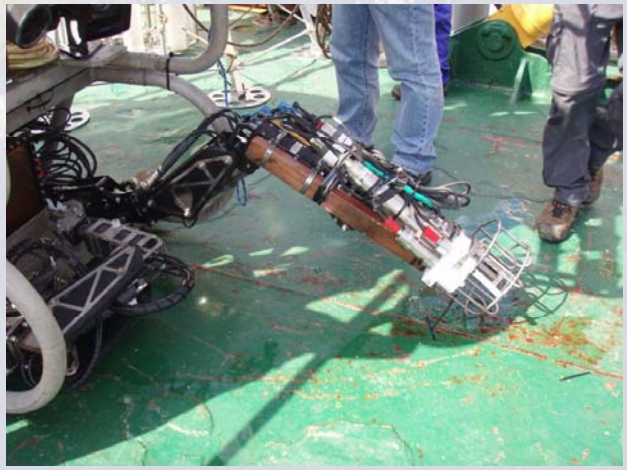
Placing Niskins

40 l Bottom Water

Bacterial Mats



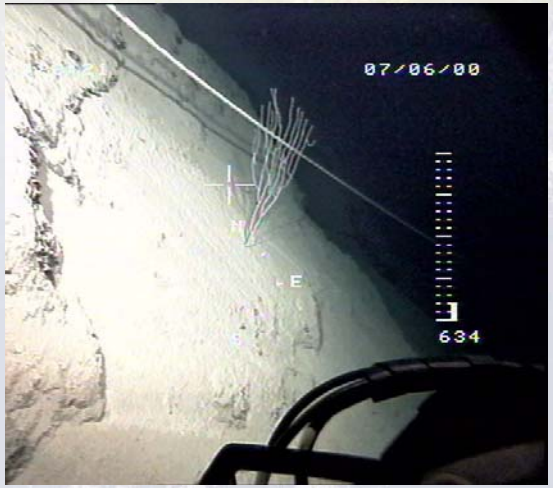
Placing the CTD



Services

Recent Services

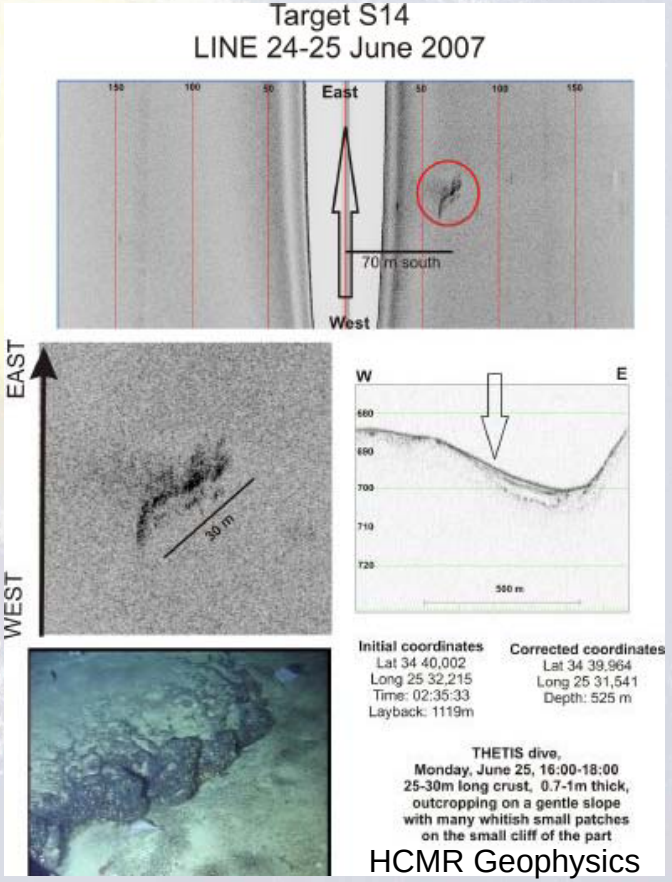
- Search and Survey
- State's first response to maritime disaster
- Mirage and F16 fighter jets
- Chinook army helicopter
- *Sea Diamond* cruise liner



Search and Survey

Joint Techniques - Geologists

- Large area survey (multibeam)
- Systematic search and target location (side scan sonar and sub bottom profiler)
- Target identification - Us



Search and Survey

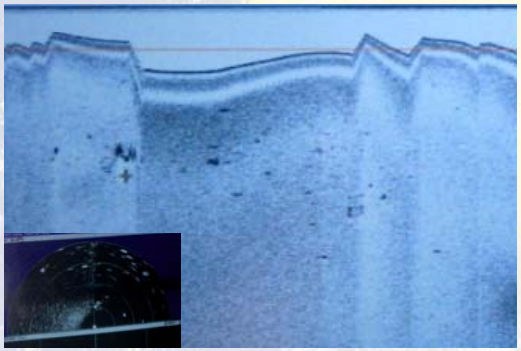
Submarine Techniques

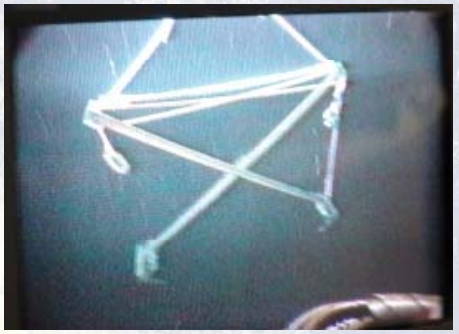
Archaeological excavation and recovery

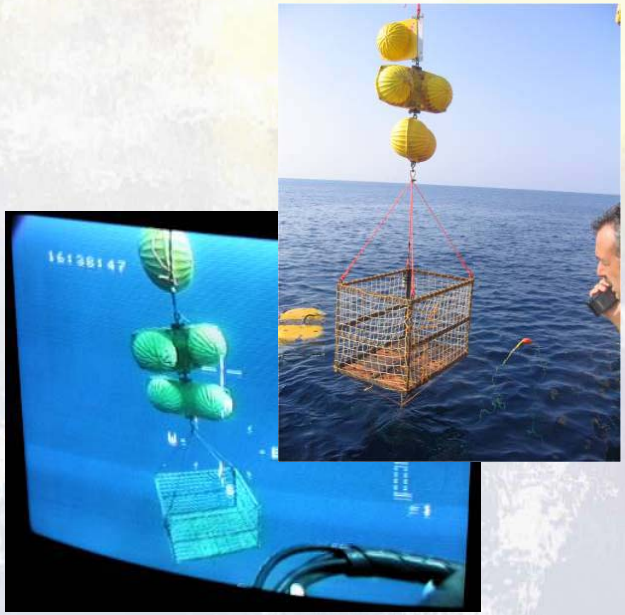
State Support

Chinook Helicopter

Search & Survey 875 m

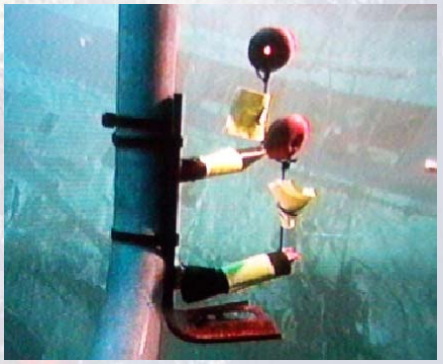






State Support

Sea Diamond
Survey & Recovery Work



Some Small Points

Reflections over the years

- Corporate Identity
- Get all the scientists involved
- Team building is important
- There are reasons for checklists and packing lists
- Always have a back-up plan (mulitcorer, CTD)
- The job is not finished until everything is clean, back in its place with a 'to do' list for faults/replacements.
- Record everything and keep the records on

Some Help: update current science ROVs

ROV Name	Depth Rating (m)	Weight (kg)	Payload (kg)	Horse Power	Operator	Country
ABISMO*	11000	3397		13	JAMSTEC	Japan
Aglantha	2000	740	100	26	Argus/University of Bergen/IMR	Norway
Bathysaurus	5000	850	110	14	Argus/University of Bergen/IMR	Norway
Doc Ricketts	4000	4760	275	75	MBARI	USA
Dolphin	3300	3800	150	67	JAMSTEC	Japan
Holland I	3000	3240	312	100	Marine Institute	Ireland
ISIS	6500	3000	190	30	National Oceanography Centre	UK
Jason 2	6500	3000	150	30	WHOI	USA
Kaiko 7000**	7000	5600	150	47	JAMSTEC	Japan
Kiel 6000	6000	3700	100	80	IFM-GEOMAR	Germany
Kraken	1000	635	80	13	University of Connecticut	USA
Luso	6000	2200	200	60	EMEPC	Portugal
Nereus***	11000	2800	25	7	WHOI	USA
Phoca	3000	1500	100	37	IFM-GEOMAR	Germany
Quest 5	4000	3300	250	80	Marum	Germany
ROPOS	5000	2700	200	40	CSSF	Canada
Ventana	2300	2570	400	40	MBARI	USA
Victor	6000	4600	150	80	IFREMER	France

From: Smith, C.J., and Rumohr, H. (20XX) Imaging Techniques. pp 87-11. In: Methods for the Study of Marine Benthos (4th Edition). Eds. A. Eleftheriou and A. McIntyre. Blackwell Science, Oxford. 418 pp.