

6th -12th - October - 2005
Cruise: HERMES-CORAL II (Coral Survey in the Cap de Creus canyon, Western Mediterranean)
Research Vessel García del Cid

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1. Summary

The deep sea coral communities in the Mediterranean are poorly known. Especially, the Western Mediterranean was practically unexplored. The only available information about coral locations were provided by coral fishermen and by some ROV video transects conducted in 2003 (Cruise Coral I). The Coral I cruise had as objective to look for red coral in the Cap de Creus canyon in the frame of a Research Spanish project, accidentally in one of the filmed transects a few colonies of probably *Madrepora oculata* were visualized in the transects. Using these first indicia as start point, the information from the fishermen and mainly the precise multibeam bathymetry from the Cap de Creus canyon recently acquired by AOA, Fugro and UB, we planned the second coral cruise in the frame of the HERMES project: HERMES-

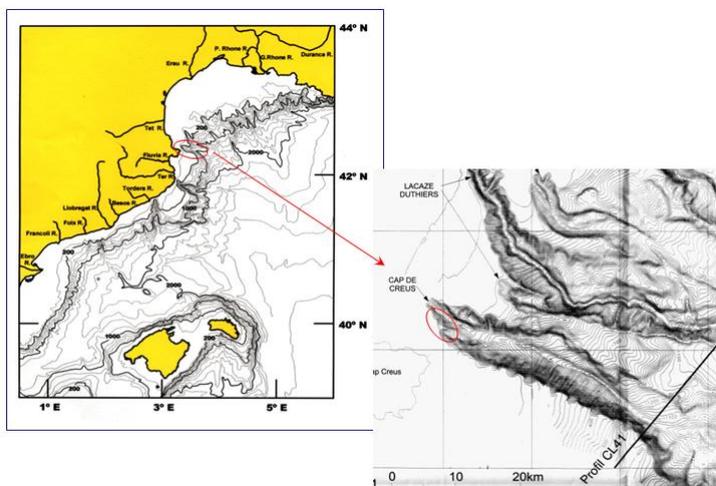


Fig. 1 Sampling area in the Cap de Creus canyon

CORAL II.

The main objective of this cruise was to exactly locate and, as far as possible, to quantify the benthic deep sea communities in a selected area (the Cap de Creus Canyon) in the northwestern Mediterranean Sea (Fig. 1); A second one was to try to identify the role of the coral populations and also other suspension feeders in the marine trophic chains and in the biogeochemical cycles near the sea

bottom. A joint work between marine ecologist, taxonomist, geologist, oceanographers and technicians did allow a high multidisciplinary study of these communities.

2. Specific objectives of the cruise

1. To characterize the situation of the coral communities (and in general of the benthic communities) through ROV video transects, studying the distribution patterns of the species, abundances and stage of conservation.
2. Characterisation of the environmental conditions of the areas where these communities are developing. Keeping this in mind, several aspects of the water column – mainly in the layers near the bottom- will be analysed. The particle flux and current regime and intensity will be also analysed.
3. Determination of the physiological stage of the animals (and water) through biochemical analysis.

3. Workingplan: gears, methods and first observations

3.1 Deployment of moorings

During the HERMES-CORAL II cruise, two instrumented mooring lines were deployed at 300-m and 1000-m depth in the Cap de Creus canyon axis (Fig. 2). Each mooring line included a currentmeter (Aanderaa RCM9) placed at 5 meters above the bottom (mab), which recorded current speed and direction, temperature, conductivity and turbidity at 30 minutes rate, and a sequential sediment trap (Technicap PPS3/3) with 12 collecting cups placed at 30 mab and programmed to record integrated downward particle fluxes at 15 day intervals.

These two moorings will collect data at the same time than seven additional lines with the same configuration that have been or will be deployed in the frame of the HEMES Project in other cruises, deeper in the Cap de Creus Canyon, in the Lacaze-Duthiers Canyon and in the North-Balearic basin.



Fig. 2 Deployment of moorings in the Cap de Creus Canyon on board of the RV García del Cid.

3.2 Work on board with the ROV Falcon

The underwater images were recorded by using a "Falcon" ROV supplied by the German enterprise FIELAX

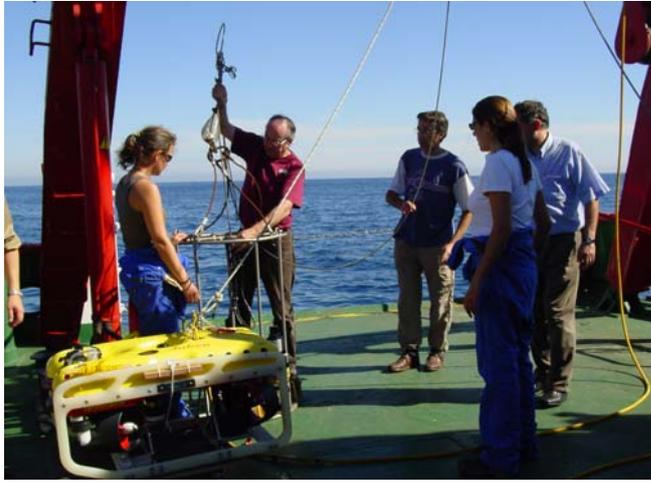


Fig. 3 Preparation of the deployment of ROV "Falcon" on board.

(Bremerhaven) (Fig. 3). The ROV was deployed 6 times during the cruise by different depths (see Table 1). Fig. 4 shows the different transects done in different places of the canyon. Control of the equipment was done by the both ROV pilots with help of scientist and crew on board. From the 6 transects two of them shows communities of *Madrepora oculata*. Transect 6 (St.12) was the most spectacular one, showing well developed communities with high abundances (Fig. 5).

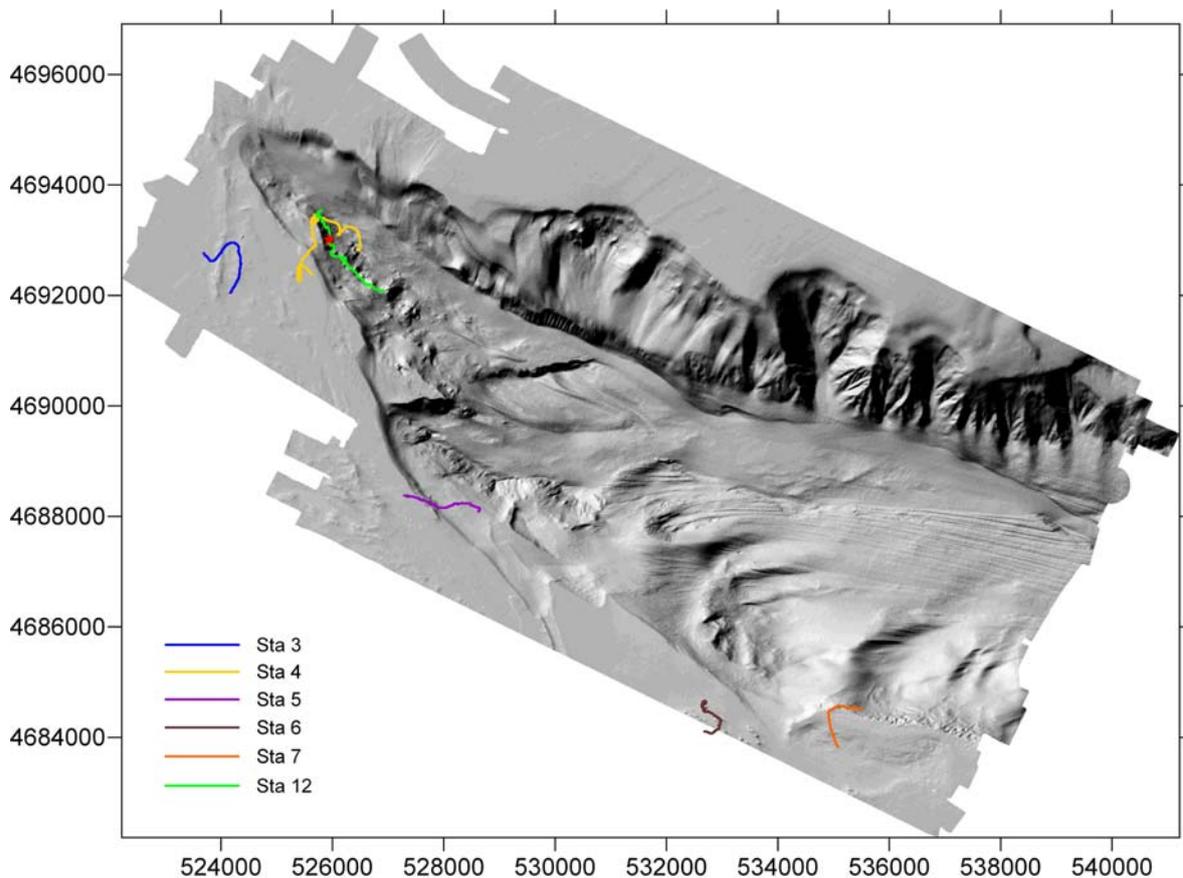


Fig. 4 Position of the station where the 6 ROV transects were carried out. The red mark indicates the position of a wall plenty of *Madrepora oculata* colonies. (Coordinates are given as UTM).



Fig. 5 Four views from a *Madrepora oculata* community in the area cover by transect number 6 (see Fig. 4). All images were recorded by approx. 200 m depth.

3.3 Water profiles and sampling with a CTD equipped with a Rosette

In order to characterize the area where corals are living on several CTD profiles (Temperatur, Salinity, fluorescence and Conductivity) were done in different stations (Table 1). Water was taken from three different depths: near the bottom, at a middle depth and by the surface.

The CTD was equipped with a Rosette and water samples were also taken in order to analyse the Particulate Organic Carbon (POC) and the content on Lipids (Fig. 6).



Fig. 6 Filtration of Seawater on board for Particulate Organic Carbon (POC) and Lipid analysis.

3.4 Sampling zooplankton

Ten zooplankton samples were collected at about 250 m depth following one transect located in the south



Fig. 7 Sampling zooplankton

wall of the Cap de Creus Canyon (Table 1). A open-close net weight down to ensure that it works close the bottom was used (Fig. 7).

The first view of the samples shown a great abundance of mysidacea, euphausiacea and decapod larvae but also some fish larvae and cephalopoda were collected.

3.5 The HERMES-CORAL II cruise on line: contribution to an education program



Fig. 8 Two of the carried out activities: polystyrene balls exposed to underwater pressure. Light trap to capture zooplankton

One of the main objectives of the ICM outreach projects is the dissemination and popularization of oceanography science which is a duty and a need for scientific and education Institution everywhere. The ICM plans will focus in to increase our participation in outreach programs and look for new approaches of communicate and disseminate our scientific results. During the CORAL II cruise a new project was undertake (Fig. 8). Information about the cruise was daily shown in the web page <http://www.utm.csic.es> by the cruise leader and scientists. At the same time, one student on board informed to their colleagues and friends at the school via the web page <http://www.funcaciocollserola.com/mediterrania>. Each day, a group of students and professors phone him and make questions about the cruise and research on board. All these conversations are now available, together with other texts, pictures and videos in the last mentioned web page.

Table 1. Stations table of the HERMES-CORAL II cruise on board of the R/V García del Cid in the Cap de Creus Canyon (first and second day of cruise are not included because both were navigation days).

Date	Station	Gear	Time start	Time end	Initial position		Final position		Depth (m)
7.10.2005	1	Mooring 1	5:53		42°18,698	03°33,988			999
7.10.2005	2	Mooring 2	8:34		42°23,510	03°19,204			310
7.10.2005	3	ROV transect-1	11:10	13:05	42°22,820	03°17,60	42°23,205	03°17,208	110,5
7.10.2005	4	ROV transect-2	17:02	17:57	42°39,250	03°31,000	42°38,750	3°31,100	190-139
8.10.2005	5	ROV transect-3	5:43	9:00	42°20,768	03°20,859	42°20,836	3°19,891	202,8-151
8.10.2005	6	ROV transect-4	10:49	13:39	42°18,682	03°23,597	42°18,682	03°23,938	116-131
8.10.2005	7	ROV transect-5	14:58	16:02	42°31,120	03°42,937	42°31,183	03°42,383	172-128
8.10.2005	8	CDT-1	18:45		42°18,174	03°26,120			1976
8.10.2005	9	CDT-2	20:47		42°20,390	03°28,400			744
8.10.2005	10	CDT-3	22:25		42°21,370	03°22,550			540
8.10.2005	11	CDT-4	23:34		42°23,180	03°19,420			305
9.10.2005	12	ROV transect-6	5:37	12:15	42°22,837	03°19,624	42°23,588	03°18,757	191-255
10.10.2005	13	Plankton net-1	9:05	9:15	42°21,830	03°20,140	42°22,066	03°19,771	180-170
10.10.2005	14	Plankton net-2	9:48	10:03	42°21,810	03°20,330	42°22,095	03°19,718	178-172
10.10.2005	15	Plankton net-3	11:09	11:24	42°23,980	03°18,480	42°23,970	03°19,160	155-182
10.10.2005	16	Plankton net-4	12:33	12:53	42°23,570	03°18,700	42°24,120	03°18,120	200-185
10.10.2005	17	Plankton net-5	13:12	13:27	42°24,210	03°18,140	42°24,200	03°18,750	185-178
10.10.2005	18	Plankton net-6	14:16	15:31	42°21,330	03°19,800	42°20,930	03°20,190	180-177
10.10.2005	19	Plankton net-7	14:54	15:09	42°20,300	03°20,550	42°20,430	03°21,150	174-177
10.10.2005	20	Plankton net-8	10:35	10:50	42°22,850	03°19,000	42°22,600	03°19,410	189-198
11.10.2005	21	CTD-5	8:33		42°23,250	03°18,490			151
11.10.2005	22	CTD-6	11:02		42°22,360	03°19,210			189
11.10.2005	23	Plankton net-9	11:51	12:06	42°22,200	03°19,630	42°21,96	03°20,14	185-175
11.10.2005	24	Plankton net-10	11:45	14:10	42°22,140	03°19,330	42°21,53	03°20,168	184
11.10.2005	25	CTD-7	12:37		42°21,570	03°20,150			210
