



# BELGICA

a civil service oceanographic vessel

The sea affords Belgium the benefits of marine resources taken in the broadest sense: fishery, tourism, sand and gravel exploitation, but also the dispersive capacity of water bodies permitting the controlled disposal of wastes, and transport routes requiring large harbour infrastructures and maintenance of the navigable channels.

The intensive uses of all these resources have obvious economic impacts. They also interact in a competitive way, and they can affect the natural equilibrium of the marine ecosystem.

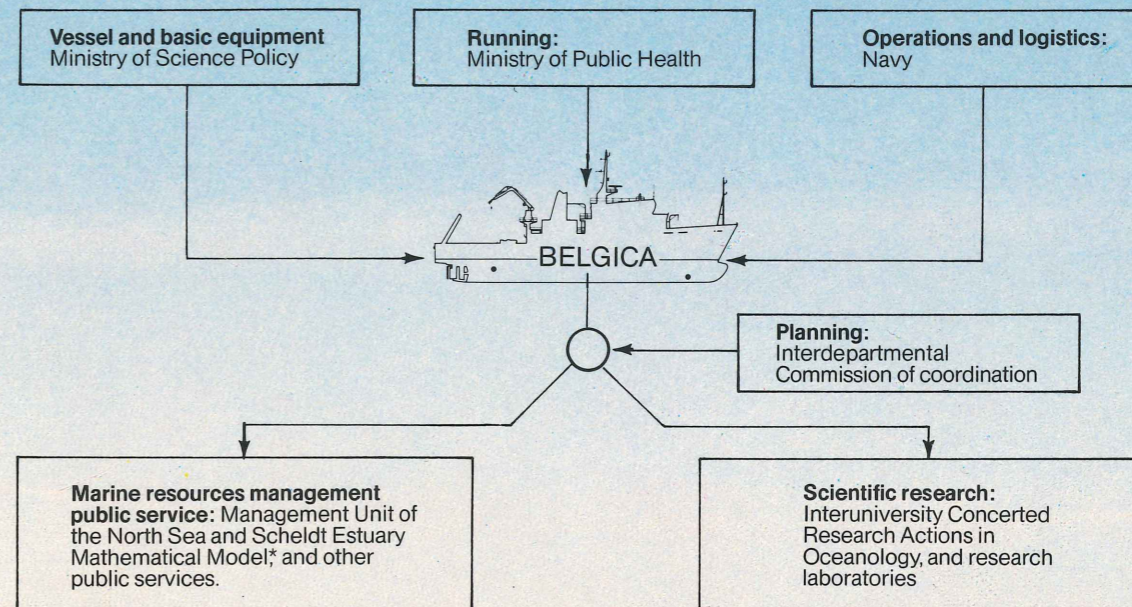
In order to ensure an optimal management of these different uses — for which various government departments are responsible — the public authorities utilize the "North Sea and Scheldt Estuary Mathematical Model" that they developed for that purpose.

This model is continuously improved by taking benefits from research efforts in oceanology. It allows one to simulate on computer the evolution and impact of the various hydrodynamic, physical, chemical, biological and geological processes that take place in the sea. The model provides, especially through the comparison of various scenarios, objective informations for defining the most suitable management options.

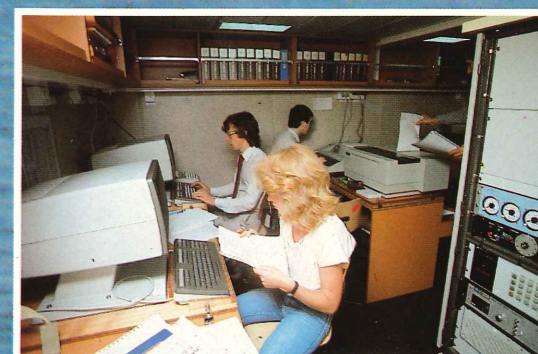
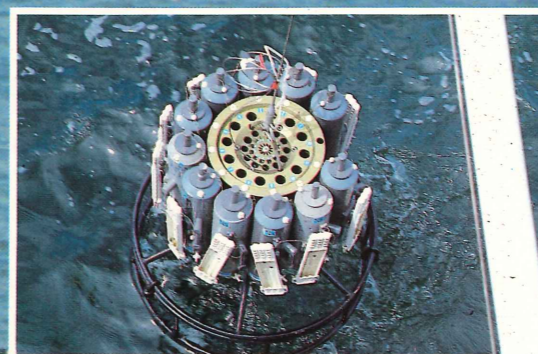
Such informations need to be constantly validated by field observations. The performance of the model itself must be improved through a better understanding of marine processes. The acquisition of oceanographic data, largely automatized, constitutes, therefore, an essential goal of the BELGICA, a public service research vessel.

Besides her public service function, the ship represents a major research tool for the oceanological studies achieved in the North Sea.

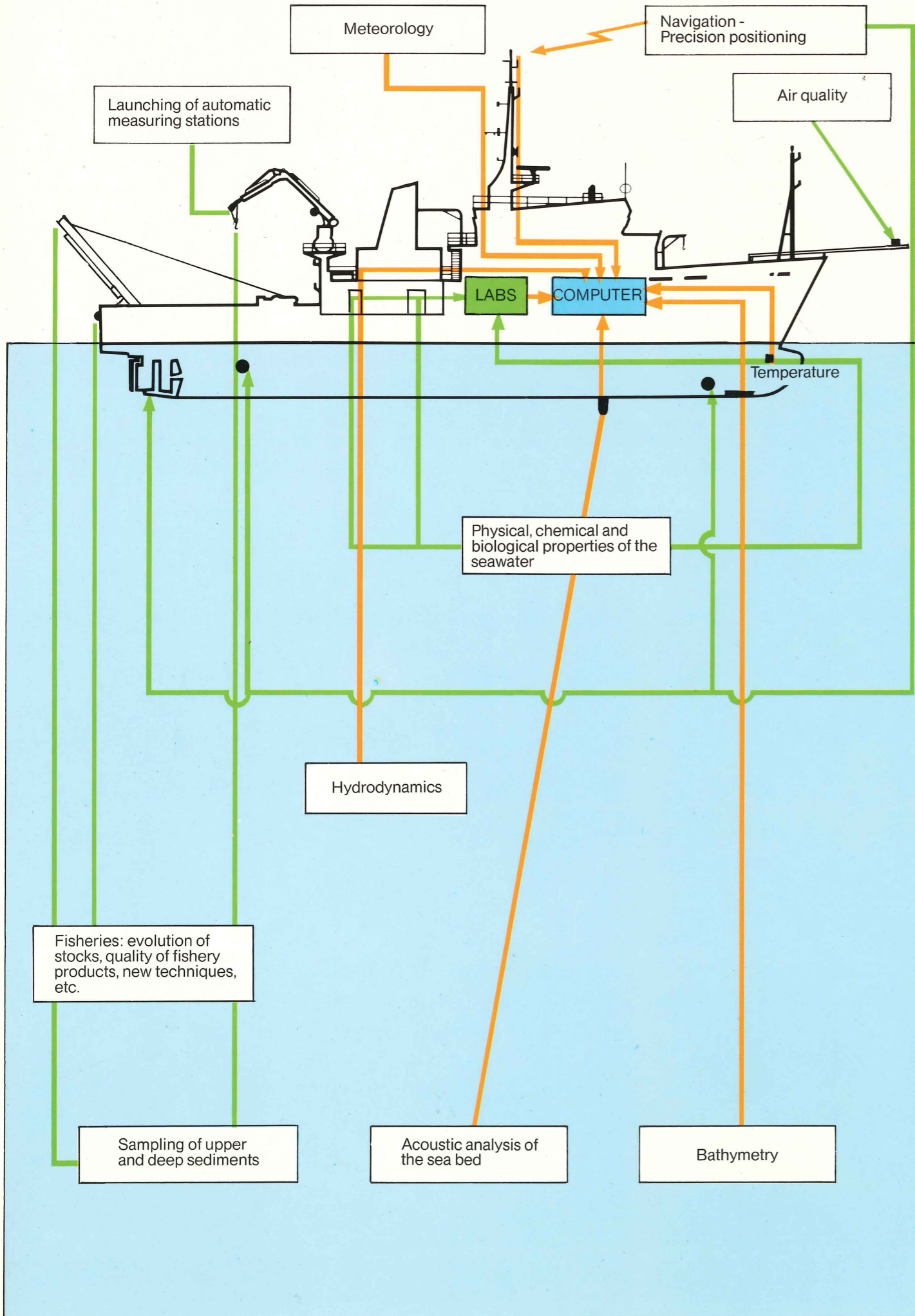
The management and protection of the North Sea are implemented thanks to a tight cooperation between all the riverine States. Belgium ratified international conventions that require permanent control and monitoring programmes. The BELGICA enables the efficient fulfilment of such obligations.



\*Administered by the State Secretary of Public Health and Environment

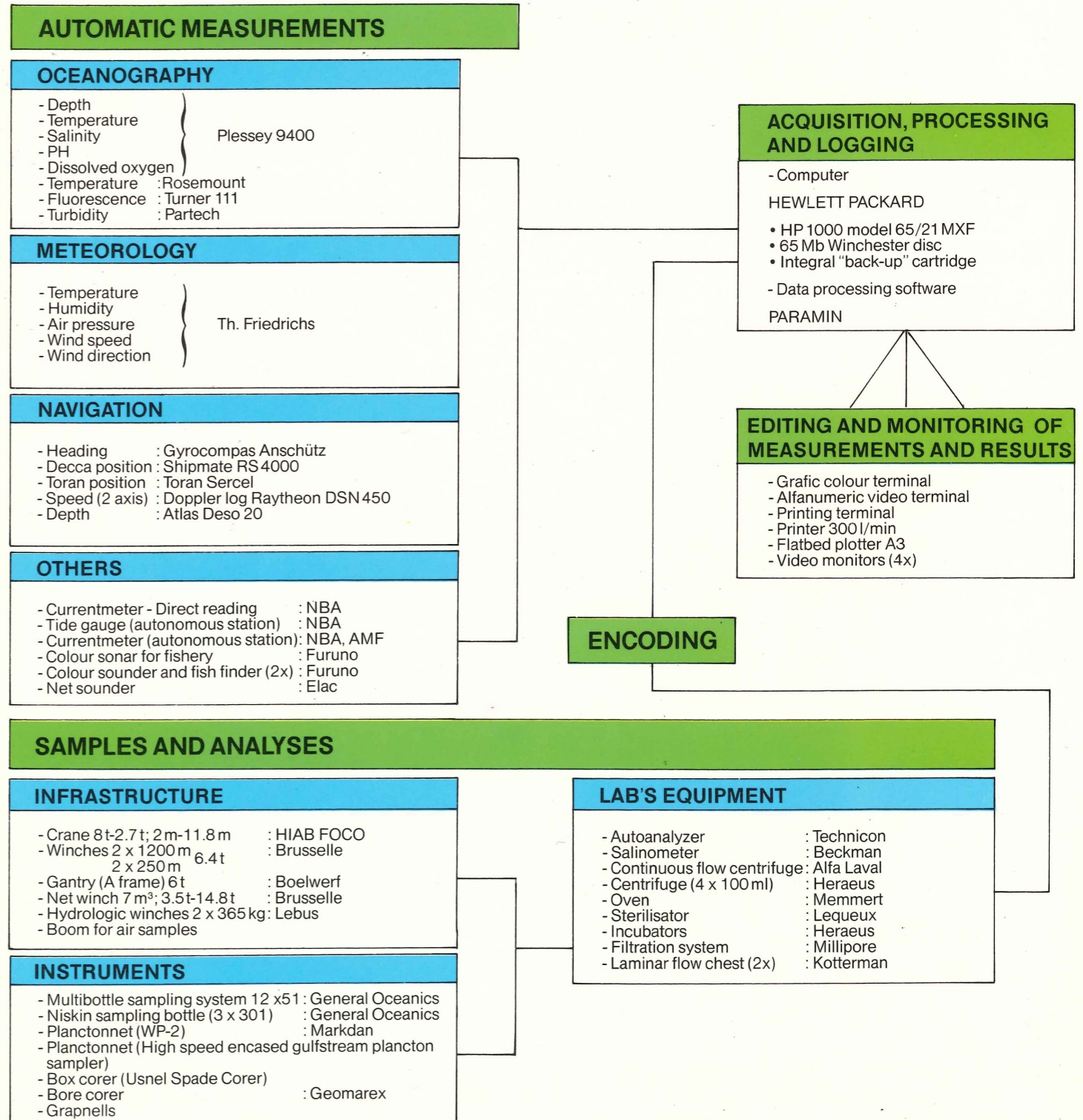


An equipment designed for multipurpose missions



## Basic instruments

The basic configuration allows the use of many different instruments for the execution of specific programs.





## MACHINERY

### Main propulsion unit

One 6 cylinder, four stroke, turbo charged "ABC6 DZ" medium speed diesel engine (1030 rpm) driving a controllable pitch propeller.  
Maximum continuous output at 360 rpm propeller speed 1154 kW

### Auxiliary propulsion

Two transverse thrusters (bow and stern) hydraulically driven 2 x 150 kW

### Electric plant

Two diesel driven alternators 2 x 275 kW  
One static converter/regulator (220V ± 1% and 50 Hz ± 0,5%) 30 kVA

### Hydraulic plant

The various deck machinery, gantries, winches, etc., are powered by an extensive hydraulic power plant consisting of:  
- two main hydraulic pumps driven by the main engine  
- four auxiliary hydraulic pumps driven by electric motors

### Deck machinery

1 electric anchorage winch combined to the mooring winch 7.5 t  
2 combined trawling-fishing winches 6.4 t  
1 fishing netdrum 7 m<sup>3</sup>/5 t  
2 hydrological winches  
1 net sounder winch  
1 stern gantry 8 t  
1 folding/telescopic hydraulic crane 2 t at 11 m  
8 t at 2 m

## LABORATORIES AND EQUIPMENTS

| Surface or capacity and particular equipments of the laboratories |                   |  |
|---|-------------------|--|
| WET LAB   | 20 m <sup>2</sup> | Storage and rinsing of sampling instruments. Frigo. Deep freezer. Fresh water distillator.                           |
| LAB I biology   | 12 m <sup>2</sup> | Cardan table. Labo centrifuge. Fume extractor.   |
| LAB II microbiology   | 12 m <sup>2</sup> | Cardan table. Laminar flow cabinet. Incubators. Autoclave. Oven.   |
| LAB III chemistry   | 10 m <sup>2</sup> | Cardan table. Laminar flow cabinet. Nutrient autoanalyzer.   |
| FISH LAB  | 20 m <sup>2</sup> | Fish tank. Fish "throw away" tube. Cardan table.   |
| FOTO LAB  | 4 m <sup>2</sup>  | Special lightning.   |
| COMPUTER ROOM   | 14 m <sup>2</sup> | Data acquisition and processing computer system.   |
| CONTAINER LABS  | 13 m <sup>2</sup> | Basic laboratory infrastructure in standard 20 ft container.   |
| WHEEL HOUSE   | 45 m <sup>2</sup> | Navigation instruments. Echo sounders. Recorders. Meteo station. Fish detection instruments. Remote winches control. |
| COOL CHAMBRES   | 14 m <sup>3</sup> | Temperature -25°C and 0°C.   |

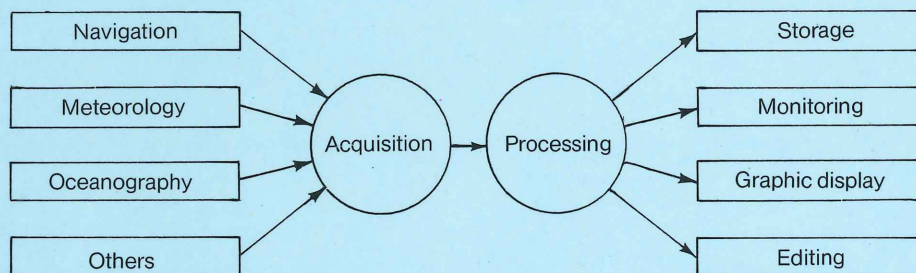
## INSTRUMENTATION

Dual axis doppler log RAYTHEON DSN 450  
Gyrocompas ANSCHÜTZ STD 12  
Navigation instruments SHIPMATE RS 4000  
Positioning system TORAN PH  
Dual frequency echo sounder ATLAS DESO 20  
Meteo station TH FRIEDRICHS  
Fish detection instruments FURUNO  
Net sounder ELAC  
Nutrient autoanalyzer TECHNICON

CTD, PH, O<sub>2</sub> Multiprobe PLESSEY  
Salinometer BECKMAN  
Continuous flow fluorimeter TURNER 111  
Turbidity meter PARTECH  
Water purifier ALFA LAVAL  
Rosette water sampler GENERAL OCEANIC  
Bore corer GEOMAREX  
Box corer USNEL SPADE CORER  
Direct reading currentmeter NBA

Data acquisition and processing computer system DAPCOS

The main functions of the DAPCOS are summarized in the figure hereunder:



The computer system is based on a HEWLETT PACKARD HP 1000 CPU with a WINCHESTER disc 65 Mb memory, a magnetic tape cartridge "back-up," 2 video terminals, 2 printers, 1 plotter and 4 video display monitors. The User Software has been developed in collaboration with "PARAMIN N.V."

