

MAST I (1989 to 1992) had a budget of approximately \$60 million and 45 projects were selected for funding. These projects covered a wide range of topics including: physical oceanography, ecology/biology studies, biogeochemistry, coastal ecosystems/morphodynamics, underwater acoustics, robotics and development of new sensors.

A second phase, MAST II (1991 to 1994), has now been agreed to but calls for proposals have not yet been made as expected. The delay is caused by procedural problems between the European Commission and the European Parliament. The substances of this and the other programs affected are not the concerns. MAST II is expected to be launched later this year.

MAST II has an increased budget of approximately \$125 million, with a similar technical content; however, the geographical coverage of the program will be extended to include the northern Atlantic and subpolar Arctic seas.

A breakdown of the expenditure of the two programs is as follows:

The focus of marine technology is to encourage the development of existing and new instruments and enabling technologies. It will be subdivided into one of four main topics:

Instruments For Science

- To include the development of new sensors and instrument packages for autonomous long-term in-situ monitoring for surface, water-column and seabed measurements as well as real-time data transmission and two-way communication/control links.

Underwater Acoustics

- To include self-navigating of autonomous vehicles, determination of sea floor properties, the bathymetry underneath ice, detection of ice and icebergs, acoustic communications, sub-bottom profiling, and innovative acoustic measurements.

Enabling Technologies

- To include underwater signal transmission, imaging, advanced robotics and testing advanced materials/components for use in marine instrumentation.

Studies on the Exploitation of Marine Resources (Excluding Hydrocarbons and Fish)

- To include studies on environmental impact and necessary technologies associated with the exploitation of these resources, particularly in the deep seas.

Integrated projects will be concerned with developing models to describe the general circulation in seas and oceans and its variability on time scales of decades, and with improvement of our understanding of physics and ecology. Two integrated projects are proposed, one on the Mediterranean Sea and the other on the northern Atlantic and subpolar Arctic seas.

Other relevant E.C. programs are as follows:

Fisheries and Aquaculture Research (FAR)

- This aims to promote interdisciplinary initiatives for rational and scientific research on resources; to develop aquaculture; and to develop new methods and procedures for exploiting little-researched resources.
- The program has a budget of \$42 million for the period 1988 to 1992.

Science and Technology for Environmental Protection/European Program on Climatology and Natural Hazards (STEP/EPOCH)

- Marine environmental research in this program covers a wide range of studies, from research on individual hazard pollutants to long-term basic ecosystem studies. These are mainly directed at better understanding the structure and functioning of coastal ecosystems. Two examples of the type of large interdisciplinary and transnational research being carried out are