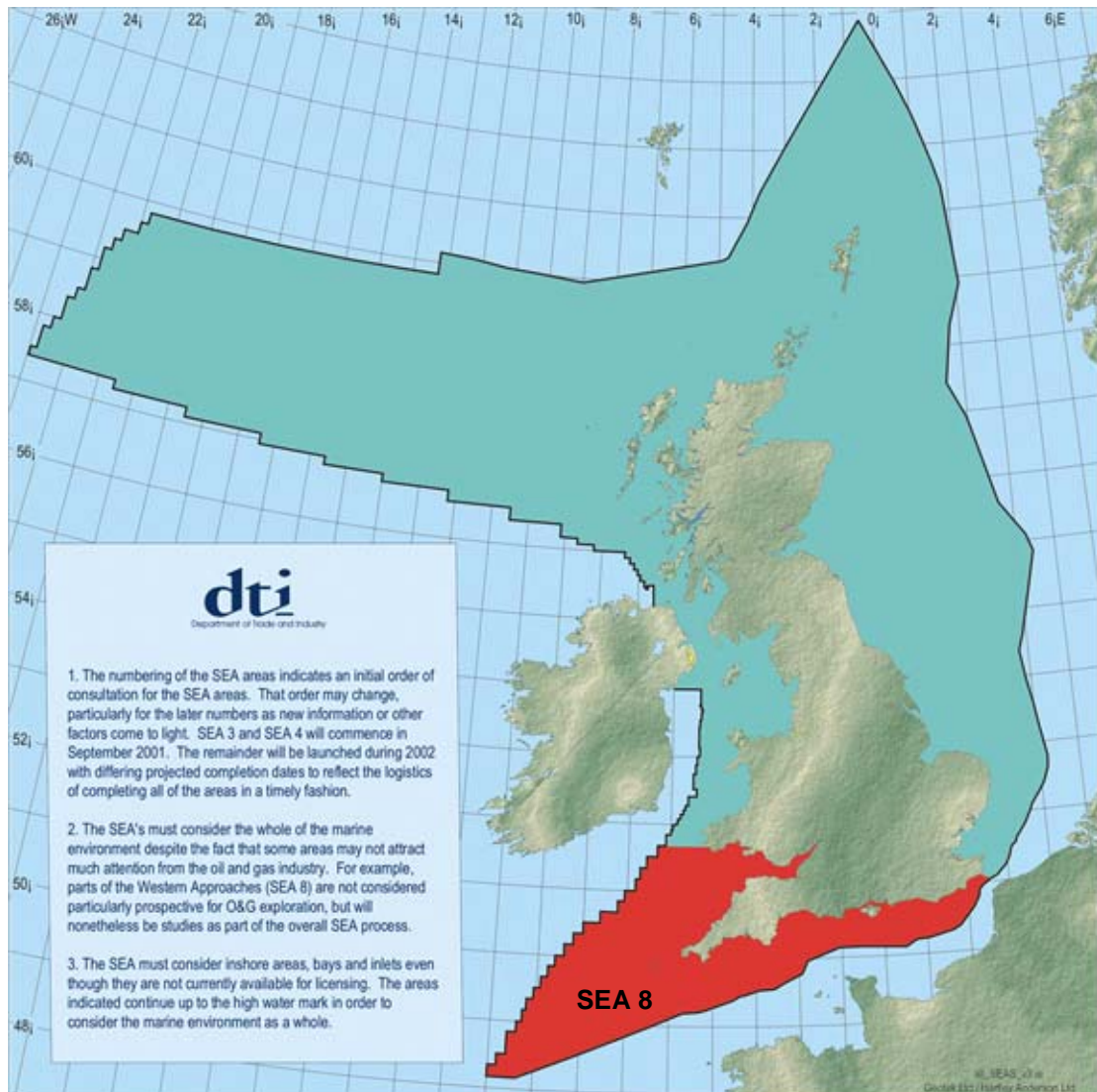


# Metadata report for DTI area 8 (approx. 48°N – 51.7°N, 10°W – 1°E)

## Plankton



## 1 Introduction

1.1 This report, prepared for the DTI as part of the Strategic Environment Assessment (area 8), aims to provide a comprehensive overview of all parties engaged in activities involving plankton research in the study area (approx. 48° North – 51.7° North, 10° West – 1° East). A number of organisations are interested in the study of the plankton community, as it can provide useful information as regards to the local environment, as well as an indication of much larger ecosystem changes. A comprehensive list of such organisations, and a point of contact, is given under Section 2. Section 3 details the actual datasets that are available for SEA 8. Section 4 lists pertinent references of published plankton research.

1.2 Plankton can be divided into phytoplankton and zooplankton, representing plants and animals generally. The majority of the plankton occurs in the top 20m of the sea, known as the photic zone (the layer that light penetrates to allow photosynthesis). The pycnocline is a zone of marked density gradient between stratified upper layers and mixed lower waters, which form in summer months in the northern North Sea. Denser concentrations of plankton may accumulate in the pycnocline; this may enter up at the surface, forming a 'front'. The vertical position of the pycnocline can vary throughout the year (Richardson et al., 1998).

1.3 The phytoplankton community can be divided into larger entities such as diatoms and dinoflagellates, and the smaller flagellates. The latter are often referred to as pico or nano plankton because of their small size, but can at times make up a large proportion of the phytoplankton community. Diatoms are characterised by having a siliceous test, comprising 2 valves, and being autotrophic (produce energy by photosynthesis). Dinoflagellates differ in having 2 flagella and a rigid test. They are usually heterotrophic (consume substances), but can also photosynthesize under certain conditions.

1.4 In the plankton community a 'bloom' of phytoplankton occurs every spring, often followed by a smaller peak in the autumn. Phytoplankton (diatom) blooms are normally initiated by the establishment of a thermal stratification in spring, as a result of increased light and temperature. Dinoflagellate communities are associated with post spring bloom conditions, when surface waters are limited by the amount of phosphorus and nitrogen left after the initial diatom bloom (Williams and Lindley 1980). The factors that initiate the spring bloom are vertical mixing and stratification of the water column, along with the length of photoperiod. During the winter months, in periods of low light, phytoplankton growth is inhibited. In this period, the nitrogen, phosphorus and silicate and ammonia nutrients increase in concentrations, as little or no primary production is taking place to utilise them. When the water becomes stratified in the spring, advantageous diatom species increase rapidly in abundance, hence the term 'bloom'. As the spring progresses to summer, surface waters warm and a more permanent thermocline develops. Colder, nutrient-rich waters sink away from the photic zone; primary production slows and tends to be largely confined to deeper layers in the pycnocline. Silicate (essential for diatom growth, being incorporated into their 'test') eventually becomes limited and other groups, such as flagellates, bloom, followed later by the dinoflagellates. The resulting phytoplankton community is one that can cope with reduced nutrient levels. With the onset of autumn, and the increase in wind strength, the sea becomes mixed once again. This secondary bloom is limited in size by the amount of phosphorus and nitrogen left after the initial diatom bloom. As the light levels diminish in the latter part of the year, primary production once again decreases. The water then becomes mixed and this aids the distribution of nutrients throughout the water column.

1.5 The most common group of organisms in the zooplankton community are the copepods (small, insect-like crustaceans which range from 0.5mm to 6mm). These are known to reach large concentrations, and they form the main food source for higher trophic levels.

1.6 By using a long term dataset of plankton, broad scale processes can be identified, such as anthropogenic impacts and responses to hydro-climatic variation. As plankton represent the first level on the trophic chain, their importance as primary producers should not be underestimated. Similarly, in this position it has been hypothesised that the plankton community will respond first to climate change.

1.7. Acknowledgements for this report must be given to the staff at the Marine Biological Library in Plymouth, as well as Polly Hadziabdic at BODC.

## **2. Contacts for data and organisations involved with plankton research in SEA 8**

### 2.1

**CENTRE-NAME:** Free University of Brussels, Laboratory for Ecotoxicology and Polar Ecology

**ADDRESS:** Pleinlaan 2  
1050 Brussels  
Belgium

**DESCRIPTION:**

The activities are in two main research areas: (1) Monitoring of stable pollutants (PCBs, organochlorine pesticides, heavy metals) at the different trophic levels of marine ecosystems (phytoplankton, zooplankton, benthos, fish, birds and mammals) with special interest for background concentrations (levels in Arctic and Antarctic areas); (2) At sea study of the distribution of marine birds and mammals: seasonal variations of distributions, linkage with hydrographical regimes, estimations of population sizes and densities. Estimations of food demands and energy fluxes through higher trophic levels of the marine ecosystems.

**CONTACT-NAME:** Prof. C. Joiris

**PHONE:** +32 2 629 34 14

**FAX:** +32 2 629 34 38

**EMAIL:** cjoiris@vub.ac.be

## 2.2

**CENTRE-NAME:** ICES Secretariat, International Council for the Exploration of the Sea

**ADDRESS:** Palaegade 2-4,  
1261 Copenhagen K  
Denmark

**CENTRE-WEBSITE:** [www.ices.dk](http://www.ices.dk)

### **DESCRIPTION:**

ICES is the oldest international marine science organization. It was formed in 1902 to promote the scientific understanding of the mechanisms inducing variability in North Atlantic commercial fish stocks, including their ecological interactions. Its member countries, of which there are currently 19, are located around the North Atlantic and its adjacent seas, particularly the North Sea and the Baltic Sea. Although its original remit concerned the scientific aspects of fisheries, the current remit of ICES has matured into providing member countries and various North Atlantic Regulatory Commissions with scientific and management advice concerning fisheries and environmental quality. To meet this end ICES addresses a wide range of issues from fundamental marine science questions to technical questions relating to fish capture via approximately 100 Working and Study groups, who provide the basic material for consideration by its advisory committees.

To support its advisory role, ICES has sought to promote and support marine science programmes by means of stimulating member governments to participate in collaborative programmes. In particular the main thrust of the activities of the ICES Secretariat is to provide professional support and publication facilities for use by scientists working to meet ICES' objectives. In former days, ICES concerned itself with the publication of raw scientific data as well as the prominent research findings of the day, and this has evolved into the scientific management of a number of data banks concerned with fish catches, fisheries biological data, oceanographic data, and data on marine contaminants. ICES promotes the collection of data of the highest accuracy by means of, for example, co-ordinating intercalibration exercises, and providing advice on quality assurance procedures.

The oceanographic data activities of the Secretariat are concerned primarily with oceanographic profile data. These data are provided by member countries. ICES endeavours to work closely with existing National Data Centres, and provides advice and products to fisheries scientists on the use of oceanographic data. Data are not necessarily freely available. Details of restrictions will be provided on request. ICES also maintains a computerised inventory of cruise summary reports, which also doubles as a catalogue of its data holdings. Currently this inventory contains detailed information about 13,000 marine scientific cruises and programmes that have been conducted since 1967 when this inventory system was introduced.

ICES member countries are Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Iceland, Ireland, Latvia, Netherlands, Norway, Russia, Spain, Sweden, Poland, Portugal, UK, and USA.

**CONTACT-NAME:** General Secretary

**PHONE:** +45 33 154225

**FAX:** +45 33 939215

**EMAIL:** ocean@ices.dk

2.3

**CENTRE-NAME:** CNRS / STATION BIOLOGIQUE DE ROSCOFF

**ADDRESS:** Place Georges Teissier,  
BP 74, 29682,  
ROSCOFF,  
FRANCE

**CENTRE-WEBSITE:** <http://www.cnrs.fr/index.html>

**DESCRIPTION:**

La station a été fondée en 1872. Elle héberge 55 laboratoires de recherche en biochimie, électrophysiologie, biologie moléculaire et océanographie ainsi que des aquariums. Enseignement universitaire annuel et écoles d'été. Navire PLUTEUS II

**CONTACT-NAME:** VAULOT Daniel

**PHONE:** +33(0)2 98 29 23 34

**FAX:**

**EMAIL:** [vaulot@iznogoud.sb-roscoff.fr](mailto:vaulot@iznogoud.sb-roscoff.fr)

**CONTACT-NAME:** MORIN Pascal

**PHONE:** +33(0)2 98 29 23 17

**FAX:**

**EMAIL:** [pmorin@iznogoud.sb-roscoff.fr](mailto:pmorin@iznogoud.sb-roscoff.fr)

2.4

**CENTRE-NAME:** MarLIN Marine Life Information Network

**CENTRE-HOST:** Marine Biological Association of the UK, Plymouth

**VISIT-ADDRESS:** MarLIN  
MBA  
The laboratory,  
Citadel Hill  
Plymouth  
PL1 2PB  
United Kingdom

**CENTRE-WEBSITE:** [www.marlin.ac.uk/](http://www.marlin.ac.uk/)

**DESCRIPTION:**

MarLIN is an initiative of the marine Biological Association of the UK in collaboration with major holders and users of marine biological data and information. It provides a structure for linking available data on marine life around Britain and Ireland.

**CONTACT-NAME:** Dr. Keith Hiscock

**PHONE:** +44 (0)1752 633336

**FAX:** +44 (0)1752 633102

**EMAIL:** marlin@mba.ac.uk

2.5

**CENTRE-NAME:** Royal Holloway, University of London, School of Biological Sciences

**ADDRESS:** School of Biological Sciences,  
Royal Holloway,  
University of London,  
Egham,  
Surrey,  
TW20 0EX,  
United Kingdom

**CENTRE-WEBSITE:** [www1.rhbnc.ac.uk/biological-sciences/](http://www1.rhbnc.ac.uk/biological-sciences/)

**DESCRIPTION:**

The School of Biological Sciences carries out academic and contract research, including marine ecology, phyto- and zooplankton, fish stocks, toxicology and diseases and parasites.

**CONTACT-NAME:** Prof. J.D. Dodge

**PHONE:** +44 1784 443774

**FAX:** +44 1784 471739

**EMAIL:** j.dodge@rhbnc.ac.uk

2.6

**CENTRE-NAME:** Sir Alister Hardy Foundation for Ocean Science (SAHFOS)

**VISIT-ADDRESS:** The Laboratory,  
Citadel Hill,  
Plymouth  
PL1 2PB,  
United Kingdom

**CENTRE-WEBSITE:** [www.npm.ac.uk/sahfos/sahfos.html](http://www.npm.ac.uk/sahfos/sahfos.html)

**DESCRIPTION:**

The Foundation was established to study spatial patterns in the abundance of marine plankton. It is responsible for the Continuous Plankton Recorder Survey, inaugurated in 1931. A major remit is to maintain the integrity of a unique planktonic database. Area of operation includes the North Atlantic, particularly European Shelf Seas, and recently the North Pacific. Sister surveys operate in Australia, Finland and North West America.

**CONTACT-NAME:** Darren Stevens

**PHONE:** +44 1752 633271

**FAX:** +44 1752 670637

**EMAIL:** [dpst@wpo.nerc.ac.uk](mailto:dpst@wpo.nerc.ac.uk)



2.7

**CENTRE-NAME:** Plymouth Marine Laboratory (PML)

**ADDRESS:** Plymouth Marine Laboratory,  
Prospect Place,  
The Hoe,  
Plymouth,  
PL1 3DH,  
Devon,  
United Kingdom

**CENTRE-WEBSITE:** [www1.npm.ac.uk/](http://www1.npm.ac.uk/)

**DESCRIPTION:**

The Plymouth Marine Laboratory (PML) was formed in 1988 through the merger of the former Institute for Marine Environmental Research and the Marine Biological Association. Research interests include the role of the oceans in the global carbon cycle; physical, chemical and biological processes in seas and estuaries; plant and animal communities; cell biology and response of marine organisms to pollutants. Facilities include a major library.

**CONTACT-NAME:** Prof. Nick Owens.

**PHONE:** +44 1752 222772

**FAX:** +44 1752 670637

**EMAIL:**

2.8

**CENTRE-NAME:** British Oceanographic Data Centre (BODC)

**ADDRESS:** Proudman Oceanographic Laboratory,  
Bidston Observatory,  
Bidston Hill,  
PRENTON,  
Merseyside,  
CH43 7RA,  
United Kingdom

**CENTRE-WEBSITE:** [www.bodc.ac.uk](http://www.bodc.ac.uk)

**DESCRIPTION:**

BODC operates on behalf of the Marine Science and Technology Board of the UK's Natural Environment Research Council and acts as the UK's focal point for international oceanographic data exchange. It participates within the Intergovernmental Oceanographic Commission (IOC)'s network of national oceanographic data centres (NODCs) and was a founding partner of the European Sea-Search network.

BODC maintains a national oceanographic database, and provides a data service to research scientists, industry, and local and central government, and to major oceanographic programmes. In particular, it provides active data management support to NERC's Thematic Projects, including the AUTOSUB, LOIS and PRIME projects and the UK components of JGOFS and WOCE. It is the WOCE Data Assembly Centre for sea level data and, on behalf of the IOC and IHO Joint Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), is responsible for developing the GEBCO Digital Atlas. BODC also acts as the data centre for a number of EC/MAST projects including OMEX, INDIA and PROVESS.

BODC exchanges data freely with other NODCs on a bilateral basis, but reserves the right to charge other users the marginal costs involved in making data available e.g. costs of copying, materials and postage. These charges may be waived for reasonable requests in support of bona-fide scientific research. Some data held by BODC are of restricted availability, awaiting final clearance by the scientists involved in their original collection.

**CONTACT-NAME:** BODC Enquiries Officer

**PHONE:** +44 (0) 151 653 1510

**FAX:** +44 (0) 151 652 3950

**EMAIL:** enquiries@bodc.ac.uk

2.9

**CENTRE-NAME:** Southampton Oceanography Centre

**ADDRESS:** Southampton Oceanography Centre,  
University of Southampton,  
Waterfront Campus,  
European Way,  
Southampton.  
SO14 3ZH

**CENTRE-WEBSITE:** [www.soc.soton.ac.uk/](http://www.soc.soton.ac.uk/)

**DESCRIPTION:**

The Southampton Oceanography Centre comprises both the NERC oceanographic research institute and the Department of Oceanography at Southampton University. It is a multidisciplinary department covering all the major fields of oceanography. Research work is conducted through a variety of organisations. Data are retained in a variety of forms and individual members of staff of the Department should be contacted for particular data. Details of the Department are available from the Departmental Secretary. Degrees of B.Sc., M.Sc. and Ph.D. are awarded in Oceanography.

**CONTACT-NAME:** Head of Department

**PHONE:** +44 1703 595000

**FAX:** +44 1703 593059

**EMAIL:**

2.10

**CENTRE-NAME:** FRS, Marine Laboratory, Aberdeen

**ADDRESS:** Fisheries Research Services,  
Marine Laboratory,  
PO Box 101,  
Victoria Road,  
Aberdeen,  
AB11 9DB,  
United Kingdom

**CENTRE-WEBSITE:** [www.marlab.ac.uk/](http://www.marlab.ac.uk/)

**DESCRIPTION:**

The Marine Laboratory, Aberdeen is one of two constituent parts of Fisheries Research Services (FRS) which is an executive agency of the Scottish Office (SO). The programme of the Laboratory is authorised by a committee chaired by the SO Fisheries Secretary. Research on freshwater and migratory species (principally Atlantic salmon and sea trout) is carried out by the other constituent part of FRS, the Freshwater Fisheries Laboratory, Faskally, Perthshire.

Within the United Kingdom, fisheries research and development are integrated by a Customer Group, composed of representatives of FRS, the Centre for Environment, Fisheries and Aquaculture (CEFAS) and the Department of Agriculture Northern Ireland (DANI). A UK Co-ordinator of Fisheries Research and Development ensures that liaison is maintained between FRS, CEFAS and DANI.

The main thrust of the Laboratory's scientific programme is in support of the fisheries management responsibilities of the Scottish Office Agriculture, Environment and Fisheries Department (SOAEFD). The objective is to monitor the state of the main fish and shellfish stocks, and effort is aimed at conserving and managing the fish and shellfish resources to support an efficient, market-orientated fishing industry. Thus, the largest part of the research programme is directed at investigation of the main fish stocks exploited by Scottish fishermen. Attention is also paid to investigating the various technical measures adopted to promote the conservation of fish stocks. The Laboratory maintains a strong interest in the events and processes taking place in the oceanic and coastal waters around Scotland, ranging from broad interactions between water movements and fisheries to the more local effects on fish nursery grounds. The Laboratory supports The Scottish Office in its environmental interests, conducting research aimed at monitoring and protecting the quality of the seas around Scotland and their fisheries from the adverse effects of environmental change. There is a need for information and advice on the circulation of waters around Scotland and the consequent dispersion of particular contaminants arising from man's activities. The Laboratory also has an interest in the field of fish farming. Here, some of the important roles are the statutory inspection of fish and shellfish farms and the prevention of the spread of fish diseases within the Much of the marine environmental data collected by the Laboratory is submitted to national (BODC) and international (ICES) organisations for inclusion in appropriate data bases. Other data appear in a variety of publications, ranging from internal reports and working papers to refereed papers in the scientific literature.

In general, any requests for data by bone fide researchers are generally granted with possibly only a small charge for materials and time involved in putting together the data in a form to suit the enquirer. Requests for data from commercial organisations or from research institutes using the data for commercial gain shall be charged at rates laid down by FRS to recover costs of extracting and supplying the data.

Each year, FRS publishes its Annual Review describing the scientific activities of the Marine Laboratory, Aberdeen. A separate Annual describing the scientific activities of the Freshwater Fisheries Laboratory is Marine Laboratory, also produced. Copies of Working Papers describing particular aspects of the, work of the Laboratory are also freely available.

**CONTACT-TITLE:** Director

**PHONE:** +44 1224 876544

**FAX:** +44 1224 295511

2.11

**CENTRE-NAME:** Natural History Museum, London (NHM)

**ADDRESS:** The Natural History Museum,  
Department of Zoology,  
Cromwell Road,  
London,  
SW7 5BD,  
United Kingdom

**CENTRE-WEBSITE:** [www.nhm.ac.uk/zoology/index.html](http://www.nhm.ac.uk/zoology/index.html)

**DESCRIPTION:**

The Natural History Museum in London, formerly known as the British Museum (Natural History), is internationally recognised as one of the world's foremost institutions for systematics - the study and classification of animals, plants and minerals. The Museum employs about 300 scientific staff in its five scientific departments - botany, entomology, mineralogy, palaeontology and zoology. In addition there is a separate department of library services.

The Museum's scientific collections of more than 68 million items are the largest and most comprehensive in existence. They are a major reference resource for mankind's endeavour in researching the flora and fauna of our planet. They are unique in their global coverage, richness of species represented, historical importance and their wealth of type and other reference specimens. The quality and orderliness of these collections is extremely high as they receive continual curation and benefit from regular enhancement by researchers - both Museum staff and visitors - who are internationally acknowledged authorities in their fields.

The Museum's library of over one million volumes is the world's most complete collection of published works about natural history. It has a comprehensive range of modern periodicals and books, and an unequalled collection of historical materials.

**CONTACT-NAME:** Keeper of Zoology

**PHONE:** +44 20 7942 5275

**FAX:** +44 20 7942 5054

**EMAIL:** [psr@nhm.ac.uk](mailto:psr@nhm.ac.uk)

2.12

**CENTRE-NAME:** Centre for Environment, Fisheries and Aquaculture Science

**ADDRESS:** CEFAS, Lowestoft Laboratory,  
Pakefield Road,  
Lowestoft,  
Suffolk,  
NR33 OHT  
United Kingdom

**CENTRE-WEBSITE:** [www.cefasc.co.uk/](http://www.cefasc.co.uk/)

**DESCRIPTION:**

CEFAS is a scientific research and monitoring centre for fisheries management and environmental protection. It provides contract research, consultancy, advice and training in fisheries science and management, marine environmental protection, aquaculture and fish and shellfish disease and hygiene to a variety of public and private sector clients around the world.

CEFAS is an agency of the UK government's Ministry for Agriculture Fisheries and Food (MAFF).

There are two broad aims for this research. Firstly, the assessment of the state of the stocks of fish and shellfish to provide a sound scientific basis for management policies at national and international level which will maintain the supply of fish and promote the efficiency of the industry; and secondly, the protection of the aquatic environment and especially its fish and shellfish resources, as well as man as a consumer of marine food, from the adverse effects of pollutants introduced through man's industrial and other activities.

There are Fisheries Laboratories at Lowestoft, Burnham-on-Crouch, Whitehaven and Weymouth. All enquiries should be directed to the Contracts Office, CEFAS, Lowestoft Laboratory, Pakefield Road, Lowestoft, Suffolk NR33 OHT, United Kingdom (Tel: +44 1502 562244; Fax: +44 1502 513865 (FAO Contracts Officer), Telex: 995543 (FAO Contracts Officer)).

At Burnham-on-Crouch research is concentrated on the protection of the aquatic environment from the disposal of non-radioactive waste and also the effects of other man-made changes such as offshore oil and marine gravel exploitation.

**CONTACT-NAME:** Contracts Office, CEFAS, Lowestoft

**PHONE:** +44 1621 562244

**FAX:** +44 1621 513865

2.13

**CENTRE-NAME:** Netherlands Institute for Sea Research (NIOZ)

**ADDRESS:** Nederlands Instituut voor Onderzoek der Zee (NIOZ) Data Management Group

Landsdiep 4  
P.O. Box 59  
1790 AB Den Burg/Texel  
Netherlands

**CENTRE-WEBSITE:** [www.nioz.nl/en/facilities/dmg/meta](http://www.nioz.nl/en/facilities/dmg/meta)

**DESCRIPTION:**

The Netherlands Institute for Sea Research (NIOZ), on the Frisian island Texel, is supervised and financed by the Netherlands Organisation for Scientific Research (NWO). NIOZ is devoted to fundamental marine research and offers research opportunities for visiting scientists from The Netherlands and abroad. Various applied and fundamental research projects are carried out, mainly for governmental bodies but also for the industry.

NIOZ is organised in 7 working groups:

**HYDROGRAPHICAL**

- 1) physical oceanography
- 2) chemical oceanography and marine pollution
- 3) marine geology and geochemistry

**BIOLOGICAL**

- 4) coastal systems
- 5) benthic systems
- 6) pelagic systems

**APPLIED SCIENTIFIC RESEARCH**

- 7) BEWON

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**EMAIL:** bruin@nioz.nl



2.14

**CENTRE-NAME:** Royal Belgian Institute for Natural Sciences, Management Unit of the North Sea and Scheldt Estuary Mathematical Models (MUMM)

**CENTRE-HOST:** RBINS, Beheerseenheid Mathematische Modellen van de Noordzee/Unité de Gestion du Modèle Mathématique de la mer du Nord

**VISIT-ADDRESS:** Gulledelle 100  
1200 Brussels  
Belgium

**CENTRE-WEBSITE:** [www.mumm.ac.be](http://www.mumm.ac.be)

**DESCRIPTION:**

The Management Unit of the North Sea and Scheldt Estuary Mathematical Models (MUMM) is a department of the Royal Belgian Institute of Natural Sciences, part of the Federal Office for Scientific, Technical and Cultural Affairs. The unit, founded in 1976, is responsible for marine environmental protection and resource assessment.

MUMM's main tasks are :

- the monitoring of temporal and spatial trends in the North Sea environment through surveillance programmes, also including aerial surveillance (CNUE);
  - the management of marine environmental data;
  - the management of the Belgian oceanographic research vessel (RV Belgica);
  - the management of the State environmental protection activities related to the sea,
- MUMM is responsible for implementing national and international legislation pertaining to the protection of the marine environment e.g. the Oslo and Paris Convention for the prevention of the pollution of the sea, and for coordinating work pertaining to the North Sea Conferences;
- the study of marine processes, marine resource management and marine pollution, using mathematical models as a tool;

MUMM is designated by IOC as National Oceanographic Data Centre and as such the Belgian focal point for international oceanographic data exchange. MUMM holds various types of marine data sets since the beginning of the 70's : meteorological data, physical data, chemical data, biological data and meta information. Part of the data is acquired by MUMM, other data are received from scientific institutes in the frame of interdisciplinary projects or national and international monitoring obligations, such as the Nutrient Monitoring Programme and the Joint Assessment and Monitoring Programme of the Oslo and Paris Commission (OSPAR). At the measurement section of MUMM (located in Ostend), the underway data sets obtained on board of the R/V BELGICA with the Oceanographic Data Acquisition System (ODAS), the CTD data and the ROSCOP data set for research cruises are held since 1984.

**CONTACT-NAME:** G. Pichot

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**FAX:** +32 2 770 69 72

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2.15

**CENTRE-NAME:** German Oceanographic Datacentre (NODC)

**CENTRE-HOST:** Deutsches Ozeanographisches Datenzentrum (DOD)

**VISIT-ADDRESS:** Bernhard-Nocht-Strasse 78,  
20359 Hamburg,  
Germany

**CENTRE-WEBSITE:** [www.bsh.de/Meereskunde/DOD/972.htm](http://www.bsh.de/Meereskunde/DOD/972.htm)

**DESCRIPTION:**

The DOD - Deutsches Ozeanographisches Datenzentrum (German Oceanographic Datacentre) is the National Oceanographic Datacentre (NODC) for Germany and serves as a focal point for the national and international exchange of oceanographic data.

The objectives of DOD are:

- to acquire the marine data sampled by German institutes and agencies, archive it and maximize its utilisation by promoting data exchange on a national and international level
- to meet Germany's international data exchange obligations according to the resolution of the Intergovernmental Oceanographic Commission (IOC), and under the Oslo/Paris and Helsinki Conventions regarding monitoring of the North Sea/North-East Atlantic and Baltic Sea, respectively.

**CONTACT-NAME:** Friedrich Nast

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**FAX:** +49 (0)40 3190 5000

**EMAIL:** [friedrich.nast@bsh.d400.de](mailto:friedrich.nast@bsh.d400.de)

2.16

**CENTRE-NAME:** IFREMER / IFREMER/DRV/RH - ECOHAL (NANTES)

**VISIT-ADDRESS:** IFREMER - Lab.Ecologie halieutique, rue de l'Ile d'Yeu, BP 21105,  
44311, NANTES CEDEX 03, FRANCE

**DESCRIPTION:**

Les principales missions en recherche halieutique du département Recherches Halieutiques de la Direction des Ressources vivantes de l'IFREMER sont de :1) Prendre part à l'aménagement de l'exploitation des ressources par l'élaboration de diagnostics sur l'état des stocks et des pêcheries en regard de points de référence agréés, et par l'évaluation de scénarios d'aménagement cohérents avec les critères de pêche responsable. Cette approche inclut les facteurs économiques et sociaux qui déterminent les modalités d'exploitation et de gestion.2) Améliorer les connaissances biologiques sur les espèces et les écosystèmes exploités. Ces recherches visent notamment une meilleure compréhension de l'incidence des conditions environnementales (hydrodynamique, climat) sur les processus biologiques (mécanismes de recrutement), identifier et délimiter les populations et les stocks, comprendre les interrelations entre stocks.3) Caractériser les écosystèmes halieutiques en identifiant les habitats et les peuplements en particulier dans le domaine côtier (de l'estuaire à la bordure du plateau) ; évaluer la pression anthropique subie par ces écosystèmes, par la pêche mais aussi par l'activité humaine en général. Proposer des indicateurs de santé, évaluer des scénarios de gestion des habitats, allant de la protection aux aménagements y compris artificiels.4) Contribuer à prendre en compte la dimension environnementale dans la régulation des pêches en étudiant et proposant des modes d'exploitation qui réduisent l'impact de la pêche sur les populations et sur les écosystèmes, améliorent la sélectivité intra et interspécifique. Inclure ces contributions dans la gestion intégrée des écosystèmes marins

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**PHONE:** +33(0)2.40.37.42.19

**FAX:** +33 (0)2 40.37.40.75

**EMAIL:** Jacques.Bertrand@ifremer.fr

2.17

**CENTRE-NAME:** IFREMER / IFREMER/DEL/SR SERVICE ETUDES REGIONALES

**VISIT-ADDRESS:** IFREMER Centre de Brest, BP 70, 29280, PLOUZANE, FRANCE

**DESCRIPTION:**

La Direction Environnement Littoral (DEL) de l'IFREMER a pour mission l'observation et la surveillance de la qualite de l'environnement marin le long des cotes de France. Le service SR est charge des etudes au niveau regional.

**CONTACT-NAME:** DE KERGARIOU Gabriel

**PHONE:** +33(0)2 98 22 49 14

**FAX:** +33 (0)2 98 22 45 48

**EMAIL:** Gabriel.De.Kergariou@ifremer.fr

2.18

**CENTRE-NAME:** Marine Biological Association of the UK (MBA)

**VISIT-ADDRESS:** Marine Biological Association of the UK,  
Citadel Hill,  
Plymouth,  
PL1 2PB,  
Devon,  
United Kingdom

**CENTRE-WEBSITE:** [www1.npm.ac.uk/mba/index.htm](http://www1.npm.ac.uk/mba/index.htm)

**DESCRIPTION:**

The Laboratory was opened in 1888, and the Association supports a programme of fundamental research in marine biology and physiology through a grant-in-aid from the NERC and from funds or contracts from other bodies. Services and facilities are shared with the Plymouth Marine Laboratory (PML), and include one of the world's major marine scientific libraries. A Centre for Cephalopod Neurobiology was established in 1991.

**CONTACT-NAME:**The Director

**PHONE:** +44 1752 222772

**FAX:** +44 1752 226865

### 3. Metadata report

#### 3.1

**DATASET-NAME:** Distribution of armoured planktonic dinoflagellates in the North East Atlantic and coastline (benthic) dinoflagellates around UK (1970-)

**CENTRE-NAME:** Royal Holloway, University of London, School of Biological Sciences

**TIME-PERIOD:** from approximately 1970 onwards

**GEOGRAPHIC-  
COVERAGE:** North East Atlantic, including the North Sea

**PARAMETERS:** planktonic dinoflagellates; benthic dinoflagellates around the coasts of UK

**SUMMARY:**

Over the past 20 years data have been accumulated on the distribution of armoured dinoflagellates in the area of the North East Atlantic bounded by latitude 20deg N and 70deg N, longitude 5deg E and 25deg W, and benthic dinoflagellates around the coasts of UK. Over 2500 samples, collected by a range of oceanographic techniques, have been examined. To date 250 species have been identified and their distributions plotted using a 5 degree grid.

**STORAGE-MEDIUM:** Unknown

**AVAILABILITY:** Contact Prof. J.D. Dodge for further details

**CONTACT:** J.D. Dodge

#### 3.2

**DATASET-NAME:** The response of deep-sea benthic and benthopelagic communities to perturbation in the North East Atlantic (1989-)

**CENTRE-NAME:** Southampton Oceanography Centre

**TIME-PERIOD:** from 1989 onwards

**GEOGRAPHIC-  
COVERAGE:** Eastern North Atlantic Ocean. Work areas centred on EU station 48deg 50'N,

16deg 30'W. Also 31deg N, 21deg W; projected site at 20deg N, 30deg W.

**PROJECT:** DEEPSEAS, abyssal benthic biology within the framework of EU research programmes co-ordinatee by SOC and NERC strategic programmes

**PARAMETERS:** abyssal biota, megafauna, macrofauna, meiofauna, foraminifera, bacteria, abundance, diversity, biomass, size spectra, life history strategies.

**INSTRUMENTS:** multiple corer, spade box corer, epibenthic sledge, otter trawl, trap, BATHYSNACK and BATHYSNAP (baited and unbaited free-fall camera systems), WASP (wide angle survey photography), landers, sediment traps.

**SUMMARY:**

The aim of DEEPSEAS is to study the responses of deep sea benthic and benthopelagic communities to perturbation. A comparison is made at the species to community level between

areas where deep winter mixing and marked seasonality of primary production result in a strong pulse of phytodetritus to the deep sea floor, and areas under shallow winter mixing and near constant primary production where phytodetritus deposition is at a very low level and quasi-seasonal.

Gears listed have sampled organisms in the bacteria to megafaunal size range and obtained photographic records of megafaunal abundance, necrophage behaviour and benthic activity. Between September 1996 and September 1998 6 cruises were conducted to the same site to study seasonal changes. Comparing data from all cruises from 1989 cruises onwards, long-term changes have been detected in deep-sea fauna.

Sorting and analysis of samples is in progress, and involves collaboration with the Natural History Museum London and the Universities of Galway, Liverpool, Queen's Belfast and Brest, Gothenburg, Gent, Patras, Aricon, IFREMER, GEOMAR, CNRS, SAMS, NIOZ and the Alfred Wegener Institute.

**STORAGE-MEDIUM:** Samples in preservative, data as hard copy and on disk, circa 3000 35mm frames on circa 20 films and video from sledge, WASP and BATHYSNAP

**AVAILABILITY:** Access to samples, data and films by arrangement. Data archived by ISMARE, Dublin

**CONTACT:** David Billett email dsmb@soc.soton.ac.uk

3.3

**DATASET-NAME:** IOS Deacon Laboratory Biological Database of the North East Atlantic (1969-)

**CENTRE-NAME:** Southampton Oceanography Centre

**TIME-PERIOD:** from 1969 onwards

**GEOGRAPHIC-  
COVERAGE:** Eastern North Atlantic Ocean, Western Mediterranean, Arabian Sea/Persian Gulf, off Bermuda, Weddell Sea

**PARAMETERS:** macroplankton, micronekton, benthic fish, amphipods, cephalopods, ctenophores, medusae, pteropods, heteropods

**INSTRUMENTS:** rectangular midwater trawl (1 and 8 metre), benthic nets

**SUMMARY:**

The Biology Group at IOS Deacon Laboratory has been engaged in a series of comprehensive mid-water sampling programmes in the North Atlantic between the equator and 60deg N and from offshore Europe and Africa mainly to 33deg W for many years.

Between 1969 and 1974 the sampler used was the opening/closing Rectangular Midwater Trawl (1+8), but in 1974 this was superseded by the multiple version (1+8m) Using both systems a macroplankton and a micronekton sample are collected simultaneously in an RMT1 and RMT8 net respectively, fished in tandem. At many stations a series of horizontal hauls were taken systematically in discrete depth strata 50-200m in thickness, so the whole water column was sampled. In the upper 900-1000m usually both day and night samples were collected; below these depths samples were taken irrespective of the light regime.

A relational database is used for storage and retrieval of the biological data relating to the vertical and geographic distribution of open ocean species of macroplankton and micronekton. Data on the vertical distribution and maturity stages of the following taxonomic groups are included in the database: Decapoda, Ostracoda, Chaetognatha, Mysidacea, Fish, Siphonophora, Euphausiacea, amphipoda, cephalopoda, ctenophora, medusae, pteropoda, heteropoda. The total number of records entered into the database is 81523 and the number of specimens identified is over 4.5 million.

**REFERENCE:** Hargreaves, P.M. 1990 North East Atlantic data held in the biological database of the Institute of Oceanographic Sciences Deacon Laboratory, U.K. Arquipelago. Life and Earth Sciences 8:55-61

Angra do Heroismo. Domanski, P.  
1981 BIOS data base for marine biological data. Journal of Plankton Research 3:3.

**STORAGE-MEDIUM:** Data on disk (Oracle RDBMS)

**AVAILABILITY:** These data may be made available to bona fide members of the scientific community at negotiable cost. Further enquiries should be addressed to the Biology Group at IOSDL, Wormley, Surrey, UK.

**CONTACT:** Phil Pugh (Tel: +44 1428 684141)

3.4

**DATASET-NAME:** Control Volume Experiment (CONVEX) North Atlantic (1991-)

**CENTRE-NAME:** Southampton Oceanography Centre

**TIME-PERIOD:** from 01 August 1991 onwards

**GEOGRAPHIC-  
COVERAGE:** North Atlantic (UK to Cape Farewell, Greenland)

**PROJECT:** World Ocean Circulation Experiment (WOCE), CONVEX

**PARAMETERS:** temperature, salinity, transmittance, dissolved oxygen, nitrate, silicate, oxygen-16/oxygen-18 ratio, CFCs, plankton, meteorological measurements, current profiles, bathymetry

**INSTRUMENTS:** thermosalinograph, XBT, CTD, transmissometer, rosette sampler, nets, multimet recorder, Simrad echo-sounder, shipborne ADCP, drifting buoys

**SUMMARY:**

This data set was collected on RRS Charles Darwin cruise 62 (CONVEX 91) as a contribution to WOCE core Project 3. The data set comprises high quality CTD, nutrient, dissolved oxygen, and CFC data between the UK and Cape Farewell, Greenland. These data were collected to investigate the distribution of water masses and to derive full depth circulation. Two approximately meridional sections were completed with linking sections on 20deg W and 30deg W. Two drifting buoys were deployed during the cruise.



**STORAGE-MEDIUM:** Magnetic disk

**AVAILABILITY:** Contact Dr. W.J. Gould for details; data may be restricted to WOCE scientists

**CONTACT:** L.J. Rickards, BODC

3.5

**DATASET-NAME:** Vivaldi '91 (Pilot cruise for seasonal studies in the North Atlantic)

**CENTRE-NAME:** Southampton Oceanography Centre

**TIME-PERIOD:** from 25 April to 16 May 1991; from 18 May to 10 June 1991

**GEOGRAPHIC-  
COVERAGE:** North East Atlantic, 39deg N - 54deg N, 12deg W - 34deg

**PROJECT:** VIVALDI trial 1991 (UK WOCE)

**PARAMETERS:** depth/pressure, temperature, salinity, transmittance, dissolved oxygen, nitrate, silicate, phosphate, chlorofluorocarbons (CFC-11, CFC-12, CFC-113), chlorophyll-a, alkalinity, pH, inorganic carbon, pCO<sub>2</sub>, lugol, PAR; surface temperature, salinity, nitrate, silicate, phosphate and chlorophyll-a; current speed and direction; surface meteorology, wind speed and direction, long and short wave radiation, significant wave height, atmospheric hydrocarbons and PAH, zooplankton counts

**INSTRUMENTS:** CTD, transmissometer, fluorometer, oxygen sensor, acoustic pinger, 10 litre 24 bottle rosette, SeaSoar CTD, fluorometer, PAR sensor, thermosalinograph, shipboard ADCP, em log, GPS receiver, multimet (short and long wave solarimeter, psychrometer, wind direction and speed), shipborne wave recorder, wind stress fast sampling system, atmospheric sampling system, zooplankton nets

### **SUMMARY:**

As a major contribution to the UK World Ocean Circulation Experiment (WOCE) Vivaldi was conceived as a series of seasonal surveys covering the North Atlantic. In order to obtain both spatial coverage and high resolution, a plan was developed for the Vivaldi '91 trial in which nearly north-south SeaSoar sections (spaced 300km apart relative to longitude 20deg W as origin) would be complemented by deep CTD stations every 3 degrees of latitude. Vivaldi '91 (25 Apr - 10 Jun 1991) represented the first attempt to carry out a systematic survey as suggested by the Vivaldi concept. The survey was carried out in two parts, first a southeastern part from Barry, UK to Ponta Delgada, Azores and then a western and northern part from Ponta Delgada back to Barry. The area covered by the Vivaldi '91 cruises was 39deg N to 54deg N, 12deg W to 34deg W.

A total of 35 deep CTD casts was made with a Neil Brown Mk IIIb CTD. The CTD and SeaSoar data were complemented by a shipboard ADCP, chlorofluorocarbon (CFC) tracer chemistry, oxygen, nutrient and chlorophyll measurements and mean surface meteorology.

Surface temperature and salinity from the thermosalinograph were recorded every 30 seconds, and surface salinity samples were taken from the non-toxic supply every hour whilst underway.

Surface chlorophyll samples were taken every hour. Surface nutrient and alkalinity/pH samples were taken every 30 minutes. Alkalinity, pH, inorganic carbon, pCO<sub>2</sub> measurements were taken only on the first part of the cruise.

**REFERENCE:** RRS Charles Darwin Cruises 58 and 59 (IOS Cruise Report No 228 1991);

**STORAGE-MEDIUM:** Magnetic tape/disk

**AVAILABILITY:** As for North Atlantic Sea Rover/SeaSoar Data Set.

**CONTACT:** Mike Griffiths, James Rennell Centre for Ocean Circulation, Chilworth Research Centre, Chilworth, Southampton, SO1 7NS (Tel: +44 01703 766184; Email:mjg@uk.ac.nerc-southampton.unixb)

3.6

**DATASET-NAME:** UK coastal sea water quality survey (1980-1982)

**CENTRE-NAME:** Centre for Environment, Fisheries and Aquaculture Science

**TIME-PERIOD:** from 1980 to 1982

**GEOGRAPHIC-** 9 sites (Walton-on-the-Naze, Reculver, Whitstable, Beaulieu, Milford Haven,

**COVERAGE:** Inland Sea and Tal-y-foel (Anglesey), Conwy, Connel) on the UK coastline

**PARAMETERS:** Temperature, salinity, phytoplankton, pH, nutrients (silicate, nitrate, nitrite, orthophosphate, inorganic and organic carbon), Vibrios and total bacteria

**SUMMARY:**

Sea water was collected at high tide on a weekly basis from March to October inclusive. Temperature was taken at the time of collection using a thermometer. Sea water subsamples (0.1 ml) were spread over nutrient agar and TCBS medium immediately after collection for the assessment of total bacteria and *Vibrio* spp respectively. Salinity was measured by refractometer and pH with a pH meter. Nutrients were measured by colorimetric methods using an automatic analyzer.

Phytoplankton identification and enumeration were carried out using a binocular microscope

**DATA-WEBSITE:** [www.cefas.co.uk/](http://www.cefas.co.uk/)

**STORAGE-MEDIUM:** Magnetic disk

**AVAILABILITY:** Report - data available on application. Contact the Contracts Office, CEFAS, Lowestoft.

**CONTACT:** S.D. Utting

3.7

**DATASET-NAME:** Triennial Mackerel Egg Surveys at the shelf edge (1977-1995)

**CENTRE-NAME:** Centre for Environment, Fisheries and Aquaculture Science

**TIME-PERIOD:** from 1977 to 1995 (March to July each year)

**GEOGRAPHIC-** Shelf edge, from the north coast of Spain, Biscay, Celtic Sea to west of Ireland

**PROJECT:** International Western Mackerel (plus Horse Mackerel) egg surveys

**PARAMETERS:** Plankton, temperature, salinity

**SUMMARY:**

An international series of cruises undertaken to estimate the spawning stock biomass of the western mackerel and horse mackerel stocks by plankton survey. Only the surveys carried out by England are listed below:

1977: Five surveys of 70-85 samples each were undertaken, carried out between March and July. Mackerel and Horse Mackerel eggs were counted and staged. Mackerel, Horse Mackerel, Hake and Blue Whiting larvae were counted and measured. A spawning stock biomass estimate for mackerel was produced. Environmental parameters were measured as follows: continuous measurements of temperature, turbidity, oxygen, pH and in-vivo chlorophyll-a concentrations; 'V' shape profiles of temperature on each sampling position; surface salinity measurements from bottle samples from each sampling position.

1980: Three surveys of 90-140 samples each were undertaken, carried out between March and July. Analysis was as for 1977. Environmental parameters were measured as follows: continuous measurement of temperature; 'V' shape profiles of temperature on each sampling position; surface salinity measurements from bottle samples from each sampling position.

1983: Two surveys of 110-150 samples each were undertaken, carried out between March and June. Mackerel, Horse Mackerel, Hake and Blue Whiting eggs were staged and larvae measured. A spawning stock biomass estimate for mackerel was produced. Environmental parameters were measured as in 1980 plus a 'V' shape profile of salinity on each sampling position.

1986: One survey of 158 samples was carried out between May and June. All fish eggs and larvae were identified. Mackerel and Horse Mackerel eggs were staged. Mackerel larvae were measured. Environmental parameters were measured as follows: continuous measurement of temperature and salinity; 'V' shaped profiles of temperature and salinity on each sampling position; continuous in-vivo chlorophyll-a measurements.

1989: One survey of 148 samples was carried out between May and June. Mackerel and Horse Mackerel eggs were staged. Environmental parameters were measured as follows: continuous measurements of temperature and salinity; 'V' shape profiles of temperature and salinity on each sampling position.

1992: One survey of 132 samples was carried out between May and June. All fish eggs were identified. Mackerel and Horse Mackerel eggs were staged. Environmental parameters were measured as follows: continuous measurements of temperature and salinity; 'V' shape profiles of temperature and salinity on each sampling position.

1995: One survey of 83 samples was carried out during April/May. All fish eggs were sorted from the samples. Only Mackerel and Horse Mackerel eggs were identified and staged. Environmental parameters were measured as follows: continuous measurements of temperature and salinity; 'V' shape profiles of Celtic Sea and west of Ireland, March-July 1980, 1983, 1986. temperature and salinity on each sampling position.

**DATA-WEBSITE:** [www.cefas.co.uk/](http://www.cefas.co.uk/)

**STORAGE-MEDIUM:** Magnetic disk

**AVAILABILITY:** Contact the Contracts Office, CEFAS, Lowestoft

**CONTACT:** S. Milligan, CEFAS, Lowestoft Laboratory

3.8

**DATASET-NAME:** Bristol Channel Sole Egg Surveys (1990)

**CENTRE-NAME:** Centre for Environment, Fisheries and Aquaculture Science

**TIME-PERIOD:** from February to June 1990

**GEOGRAPHIC-  
COVERAGE:** Bristol Channel (between north Cornwall and South Wales out to 7deg W)

**PARAMETERS:** Plankton, temperature, salinity

**SUMMARY:**

Six cruises were undertaken collecting 70-80 samples to estimate the spawning stock biomass of the Sole (*Solea solea*) in the Bristol Channel area. Plankton samples were sorted and all fish eggs and larvae identified to species level where possible. *Solea solea* and plaice (*Pleuronectes platessa*) eggs were staged to enable seasonal production estimates and mortality rates to be calculated. Edible crab (*Cancer pagurus*) larvae have also been sorted, staged and densities calculated.

Temperature and salinity 'V' shaped profiles are available at each sampling position. Continuous near-surface (3m) temperature and salinity data are available for the complete cruises tracks.

**DATA-WEBSITE:** [www.cefas.co.uk/](http://www.cefas.co.uk/)

**STORAGE-MEDIUM:** Magnetic disk

**AVAILABILITY:** Contact the Contracts Office, CEFAS, Lowestoft

**CONTACT:** S. Milligan, CEFAS, Lowestoft Laboratory

3.9

**DATASET-NAME:** International English Channel Sole egg survey (1991)

**CENTRE-NAME:** Centre for Environment, Fisheries and Aquaculture Science

**TIME-PERIOD:** from March to June 1991

**GEOGRAPHIC-  
COVERAGE:** Eastern English Channel

**PARAMETERS:** Plankton, temperature, salinity

**SUMMARY:**

Four cruises were undertaken collecting 70-80 samples to estimate the spawning stock biomass of the Sole (*Solea solea*) in the eastern English Channel. This was part of an international series of cruises covering the Southern Bight and the whole English Channel. Plankton samples were sorted and all fish eggs and larvae identified to species level where possible. *Solea solea* eggs were staged and seasonal production estimates and mortality rates have been calculated. Edible crab (*Cancer pagurus*) larvae have also been sorted, staged and densities calculated.

Temperature and salinity 'V' shaped profiles are available at each sampling position. Continuous near-surface (3 m) temperature and salinity data are available for the complete cruises tracks.

**DATA-WEBSITE:** [www.cefas.co.uk/](http://www.cefas.co.uk/)

**STORAGE-MEDIUM:** Magnetic disk

**AVAILABILITY:** Contact the Contracts Office, CEFAS, Lowestoft

**CONTACT:** S. Milligan, CEFAS, Lowestoft Laboratory

3.10

**DATASET-NAME:** Abundance and distribution of edible crab larvae around the UK (1981, 1989, 1993)

**CENTRE-NAME:** Centre for Environment, Fisheries and Aquaculture Science

**TIME-PERIOD:** 1981, 1989 and 1993

**GEOGRAPHIC-** Mainly English Channel, Western Approaches, Bristol Channel and North Sea

**COVERAGE:**

**PROJECT:** To study the abundance and distribution of edible crab larvae

**PARAMETERS:** Numbers of edible crab larvae per metre squared of sea surface by larval stage and by cruise station position; some vertical distribution samples

**INSTRUMENTS:** Research vessel plankton cruises using a high speed tow net or Longhurst Hardy plankton recorder (LHPR). Analysis mainly by laboratory staff. Some plankton analysis by Plymouth Marine Laboratory under contract to DFR.

**SUMMARY:**

The data set comprises numbers of edible crab larvae per metre squared of sea surface by larval stage and by cruise station position from various research vessel cruises carried out in the English Channel, Western Approaches, Bristol Channel and North Sea in 1981, 1989 and 1993. Some cruises used the LHPR for vertical distribution studies. Many of the cruises were primarily aimed at other species.

**REFERENCE:** Thompson, B.M., Lawler, A.R. and Bennett, A.B., 1995. Estimation of the Spatial Distribution of Spawning Crabs (*Cancer pagurus* L.). Using larval surveys in the English Channel. ICES Mar. Sci. Symp., 199 : 139-150.

**STORAGE-MEDIUM:** Ingres database (plankton suite)

**AVAILABILITY:** Contact the Contracts Office, CEFAS, Lowestoft

**CONTACT::** S.R. Lovewell, CEFAS, Lowestoft Laboratory

3.11

**DATASET-NAME:** NHM foraminifera collection from the oceans and seas adjoining Europe (1850-)

**CENTRE-NAME:** Natural History Museum, London (NHM)

**TIME-PERIOD:** from 1850 onwards

**GEOGRAPHIC-  
COVERAGE:** oceans and seas adjoining Europe; very extensive coverage

**PROJECT:** taxonomic research

**PARAMETERS:** plankton and benthos

**SUMMARY:**

The Palaeontology Department of the Natural History Museum holds one of the finest and largest collections in the world of recent as well as fossil foraminifera. These are both wet and dry preserved specimens and include historically important collections such as the 'Challenger', Terra Nova', 'Discovery' and other cruises of international importance. The Department holds extensive collections from European coastal regions and seas.

The foraminifera collection comprises material obtained by individuals and by cruises from the north east Atlantic, the Arctic Ocean, the North Sea, the Baltic, the Irish Sea, the west Irish coast, the English Channel and Western Approaches, the Mediterranean and the Black Sea. The Brady collection contains not only the famous Challenger collection, but also much material from European coasts obtained in exchange from Scandinavia and the Mediterranean. We hold material from the 'Porcupine' cruises, and much material in the Heron- Allen and Earland collection from European shores (e.g. Clare Island Survey). Other famous collections include the Parker and Jones' collection (North Atlantic and Grecian Archipelago) and the Williamson collection of British foraminifera.

Data are stored in a series of handwritten registers (species, geographical and donor indices). This is to be computerised in the near future. Active research is being undertaken on the more important historical collections (e.g. Heron-Allen and Earland, Parker and Jones' collections).

**REFERENCE:** Reference to the Heron-Allen and Earland collections published in the Journal of Micropalaeontology (Vol. 8, pt. 2, pp 149-156) and the Parker (and Jones) collections in the Bulletin of the British Museum (Nat. Hist.), (Geol.) (Vol. 48, pt.2, pp 45-78).

**STORAGE-MEDIUM:** Handwritten registers and indices. Computerization is being undertaken. Wet and dry preserved specimens.

**AVAILABILITY:** The collections are available for scientific study within the Museum and in some situations, for loan to institutions. The Heron-Allen Library houses one of the finest collections of books on foraminifera in the world.

**CONTACT:** Dr. J.E. Whittaker, Head, Micropalaeontology Division, Department of Palaeontology, Natural History, Museum

3.12

**DATASET-NAME:** MLA Zooplankton Data (1986-)

**CENTRE-NAME:** FRS, Marine Laboratory, Aberdeen

**TIME-PERIOD:** from 1986 onwards

**GEOGRAPHIC-  
COVERAGE:** Scottish coastal waters, central and northern North Sea, Rockall, north east Atlantic

**PROJECT:** Various internal projects, national and international programmes

**PARAMETERS:** Species composition, biomass concentration, dry weight, feeding and growth rates, length/weight data, and other derived parameters

**INSTRUMENTS:** Dutch Gulf III, ARIES, 1m nets, optical plankton counter, OCEAN sampler, single and multiple METHOT nets, LOCH EWE net, and water bottle samplers

**SUMMARY:**

These data have been collected over a period of many years using a wide range of sampling gears. The ARIES sampler is a multiple net sampler which can be fitted with a variety of environmental sensors as well as a multiple water bottle sampler. It was designed and developed within the Laboratory. The OCEAN sampler was also designed and developed by the Laboratory and is a modified version of the traditional Gulf III high speed sampler. It is fitted with four nets, is acoustically controlled and can be fitted with an environmental sensor package if required. The LOCH EWE net is again an internally designed system and consisted of two concentric nets of different mesh sizes, one to trap zooplankton and the other for phytoplankton. These sampling gears have been operated in different modes - vertical hauls, oblique and double-oblique tows, at multiple depths on the one tow, and at a single fixed depth. The choice of sampling strategy was dependent on the scientific requirements of the programme.

Since many of the samples which have been collected were for a specific research project, a full analysis to stage and species level has not been done in many instances. This is particularly true of the samples collected during ICES Herring Larvae surveys. Here, the herring larvae are extracted from the sample for further study but the rest of the sample is not analyzed. In other instances, only selected samples from a particular cruise or survey may have been analyzed in detail. The other samples were not analyzed in detail but were dried to produce dry weight data.

In the present data base, data only goes back as far as 1986. There is the potential to include data back as far as the mid-60s but this is heavily dependent on the availability of manpower resources. At present, the data are arranged by cruise but, as the integrated data base grows and extra features are added, better search and query facilities will be available.

Almost the entire data set was collected by research vessels operated by or on behalf of the Marine Laboratory, Aberdeen. The exception is the data set collected on the ICES Herring Larval surveys. The Laboratory acts as the international coordinator for the collation of these data and is also responsible for archiving the entire data set.

**DATA-WEBSITE:** [www.marlab.ac.uk/](http://www.marlab.ac.uk/)

**STORAGE-MEDIUM:** Magnetic tape, optical disk, floppy disk, manuscript

**AVAILABILITY:** This data set is currently being assimilated into an integrated computerised relational data base. Until such time as this has been accomplished with the necessary examination and validation of all data prior to its inclusion in the data base, these data are not generally available.

**CONTACT:** Steve Hay (S.Hay@marlab.ac.uk)

3.13

**DATASET-NAME:** Ocean Margin Exchange Phase II (OMEX II) Project Data Set (1996-1999)

**CENTRE-NAME:** British Oceanographic Data Centre (BODC)

**TIME-PERIOD:** Data collected from November 1996 to October 1999

**GEOGRAPHIC-  
COVERAGE:** The Iberian Margin

**PROJECT:** EU MAST Ocean Margin Exchange (OMEX)

**PARAMETERS:** Physical, chemical and biological data collected mostly in the water column but also including benthic data.

**INSTRUMENTS:** CTD, water bottle, XBT, Continuous Plankton Recorder, current meter, thermistor, benthic lander, sediment trap, box and multicore, camera, epibenthic trawl, net hauls, drifting buoy, underway sampling, underway centrifuge, turbulence probe, echo sounder and swath bathymetry system.

**SUMMARY:**

The Ocean Margin Exchange (OMEX) Project was one of the major projects funded by the CEC MAST Programme. The project included two major field programmes, one funded under MAST II and the other funded under MAST III. The aim of the project was study biogeochemical processes at the shelf break and to quantify the fluxes of material between the shelf and the open ocean.

The second field phase (OMEX II) comprised 33 cruise legs, involving research vessels from seven nations. The primary study area was a box extending to the base of the slope from Vigo to Cap Finistere. However, data are included from both further offshore (filament tracking) and from the Portuguese Margin.

The data set comprises an exceptionally diverse collection of physical, chemical and biological measurements, encompassing well over 1000 parameters. There are data from over 1000 CTD/rosette stations, over 440 core profiles, over 180 sediment trap samples, over 140 net hauls and much, much more.

The British Oceanographic Data Centre (BODC) has assembled over 96% of the data sets collected during OMEX I into its project database system. Once basic quality control procedures have been completed the data set will be published, complete with extensive data documentation, on CD-ROM.

**DATA-WEBSITE:** [www.bodc.ac.uk](http://www.bodc.ac.uk)

**STORAGE-MEDIUM:** BODC Oracle project database. To be published on CD-ROM.



**AVAILABILITY:** The fully documented data set will be available on CD-ROM from BODC from July 2001. Order forms will be available on the web site. Until then, contact BODC for details of obtaining the data.

**SUPPLY-DETAILS:** The fully documented data set will be available on CD-ROM from BODC from July 2001

**CONTACT::** R.K. Lowry, BODC.

3.14

**DATASET-NAME:** PROPHEZE Project Data Set - physical and biological characteristics of shelf waters of the Celtic Sea, 2000

**CENTRE-NAME:** British Oceanographic Data Centre (BODC)

**TIME-PERIOD:** 15th to 29th May 2000

**GEOGRAPHIC-** Sampling at 7 stations in the Celtic Sea. Mapping of tidal front in St George's

**COVERAGE:** Channel within the limits 50 to 52 degrees North and 5.6 to 8.7 degrees West

**PROJECT:** UK Natural Environment Research Council PROPHEZE (PROduction and PHysical interactions in the Euphotic ZonE) project

**PARAMETERS:** temperature, salinity, currents, turbulence, optics, nutrients, Fe speciation, oxygen respiration and production, pigments, phytoplankton, microplankton, microbial community structure, particulate absorption, primary production and photosynthesis, bacteria

**INSTRUMENTS:** Continuous underway sampler, Meteorological package, Shipborne wave recorder, CTD, Water-bottles, Undulating Oceanographic Recorder, Acoustic Doppler Current Profiler mooring, FLY microstructure profiler, Bottom Pressure Recorder, Temperature Minilogger, remote sensing, SIMBAD radiometer, Optical Profiling sensors, nutrient autoanalysers, flow-injection chemiluminescence, Winkler titration, HPLC, spectrophotometry, Plankton net tows, FISH (Fluorescent In-Situ Hybridisation), Microscale gradient sampler, Image analysis, Microscopy, flow cytometry, Cytobuoy, FRRF (fast repetition rate fluorescence), Production incubations, microplankton grazing experiments

**SUMMARY:**

PROPHEZE was an integrated, multidisciplinary study of the interactions between physical processes and biological production in contrasting pelagic shelf waters. These interactions are required for ecosystem modelling. The specific objectives of the project were a) to quantify light fields, turbulence, vertical advection and diffusion in waters of contrasting physical status; b) to study the community structure and biogeochemical function of pelagic populations of phytoplankton, bacteria and protozoa in relation to physical and other ambient environmental conditions; c) to relate remote sensing to pelagic community structure and function; and d) to model the interactions of physical forcing and the dynamics of pelagic production and test

control mechanisms.

The objectives were met by working at seven stations, whose physical and biological characteristics varied, in the Celtic Sea. The stations were occupied for 24 hours, and a wide range of physical, chemical and biological conditions were analysed at each. An additional goal of the cruise was to map the tidal front situated in the St George's Channel using pre-operational model simulations to plan the ship's track for UOR tows, CTD profiles and station selection. Three ADCPs were deployed.

**DATA-WEBSITE:** [www.bodc.ac.uk](http://www.bodc.ac.uk)

**ORIGINATOR:** Chief Scientist for the project was Peter Burkill, Plymouth Marine Laboratory

**STORAGE-MEDIUM:** Magnetic/optical disk; Oracle RDBMS

**AVAILABILITY:** Data are currently restricted to project scientists. Contact BODC for further information.

**CONTACT:** BODC Enquiries Officer

3.15

**DATASET-NAME:** ACSOE/MAGE (Atmospheric Chemistry Studies in the Oceanic Environment/Marine Aerosol and Gas Exchange) marine data set (1996-1998)

**CENTRE-NAME:** British Oceanographic Data Centre (BODC)

**TIME-PERIOD:** 1996-1998

**GEOGRAPHIC-  
COVERAGE:** Eastern Atlantic, North-Eastern Atlantic and Northern North Sea

**PROJECT:** UK NERC Thematic Research Programme Atmospheric Chemistry Studies in the Oceanic Environment (ACSOE)

**PARAMETERS:** CTD profiles and Seasoar transects (temperature, salinity, fluorescence, underwater PAR, attenuation, optical backscattering), current speed and direction, biomass measurements (chlorophyll and accessory pigments, particulate organic nitrogen, size-fractionation, micro- and nanophytoplankton abundance, microzooplankton abundance, bacterial diversity, bacterial abundance, seabirds and cetacean counts), suspended particulate matter, biological productivity and nutrient/gas cycling (size-fractionated carbon uptake, DOC production, PI 14C curves, size-fractionated ammonium and nitrate uptake, ammonium remineralisation, microzooplankton grazing, DMSlyase activity, DMS speciation and cycling), dissolved gases (SF<sub>6</sub> tracer, DMS, DMSP, methyl bromide, nitrous oxide and methane, non-methane hydrocarbons, volatile selenium, pCO<sub>2</sub>, carbon monoxide, methyl halides, oxygen), dissolved nutrients (nitrate, nitrite, silicate, phosphate and iron) and *Bacillus globigii* tracer.

**INSTRUMENTS:** CTD with fluorometer, underwater PAR sensor, transmissometer and

nephelometer; XBT; SeaSoar with CTD and fluorometer; drifting buoys; underway ship's navigational, meteorological and hydrographic instruments; underway shipborne ADCP; CTD-rosette water samplers.

**SUMMARY:**

ACSOE was a 5-year UK NERC Thematic Research Programme investigating the chemistry of the lower atmosphere (0 - 12 km) over the oceans. The study aimed to bring about a clearer understanding of natural processes in the remote marine atmosphere, and how these processes are affected by atmospheric pollution originating from the continents. The marine component was only a small part of ACSOE which focused mainly on atmospheric processes through two of its three consortia: Oxidising Capacity of the Oceanic Atmosphere (OXICOA) and Aerosol Characterisation Experiment (ACE). The third consortia, Marine Aerosol and Gas Exchange (MAGE) was the only component of the ACSOE Project which included measurements in the marine environment. This consortia focused on the study of aspects of air-sea exchange relevant to atmospheric chemistry and aerosol production. It consisted of four cruises: the Eastern Atlantic Experiments EAE96 and EAE97 in June-July 1996 and in May 1997, the ASGAMAGE North Sea experiment in the Southern North Sea in October-November 1996, and the North Atlantic Experiment NAE in the North Eastern Atlantic in June-July 1998.

ACSOE data management was a shared responsibility between the British Atmospheric Data Centre (BADC) and the British Oceanographic Data Centre (BODC). BODC handled the management of ship data as well as all other data collected in the water column during the ACSOE/MAGE cruises. BODC assisted in the onboard collection and

**DATA-WEBSITE:** [www.bodc.ac.uk](http://www.bodc.ac.uk)

**STORAGE-MEDIUM:** BODC data storage system (Oracle RDBMS, optical and magnetic disk). The data will be available on CD-ROM.

**AVAILABILITY:** Unrestricted

**CONTACT:** BODC Enquiries Officer

3.16

**DATASET-NAME:** Temperature, salinity, chemical and phytoplankton data from Station E1, western English Channel (1928-1987)

**CENTRE-NAME:** Marine Biological Association of the UK (MBA)

**TIME-PERIOD:** from 1928 to 1987

**GEOGRAPHIC-** Station E1 (50deg 02'N, 4deg 22'W), offshore from Plymouth, western English

**COVERAGE:** Channel; other stations across the Channel for part of the period

**PARAMETERS:** temperature, salinity, phytoplankton, nutrients

**SUMMARY:**

Water bottle samples were taken six to seven times a year between 1928 and 1987 at Station E1 (50deg 02'N, 4deg 22'W), offshore from Plymouth, for obtaining the following data: temperature, salinity, phosphate, nitrate, silicate and phytoplankton (species counts). Data were also collected at other stations in the English Channel for part of the period.

**REFERENCE:** Maddock, L and Swann, C.L. 1977 A statistical analysis of some trends in sea temperature and climate in the Plymouth area over the last 70 years. *J. mar. biol. Ass.*, 57, 317-338

Boalch, G.T., Harbour, D.S. and Butler, E.I. 1978 Seasonal phytoplankton production in the English Channel 1964-1974. *J. mar. biol. Ass. UK*, 58, 943- 953

Maddock, L., Boalch, G.T. and Harbour, D.S. 1981. Populations of phytoplankton in the western English Channel between 1964 and 1974. *J. mar. biol. Ass. UK*, 61, 565-583

Southward, A.J. 1983 Fluctuations in the ecosystem of the Western Channel: a summary of studies in progress. *Oceanologica Acta SP* 187-189.

**STORAGE-MEDIUM:** Magnetic tape

**AVAILABILITY:** By reference to Dr. L. Maddock, MBA, Plymouth

**CONTACT:** M.A. Kendall, PML

3.17

**DATASET-NAME:** Larval stages of fish and zooplankton off the Eddystone reef, near Plymouth (1924-1987)

**CENTRE-NAME:** Marine Biological Association of the UK (MBA)

**TIME-PERIOD:** from 1924 to 1987

**GEOGRAPHIC- COVERAGE:** Off the Eddystone reef, near Plymouth, western English Channel

**PARAMETERS:** Zooplankton and fish larvae

**SUMMARY:**

The data comprise a series of weekly hauls at a single station off the Eddystone reef between 1924-1940 and 1946-1987, using 1m or 2m nets on an oblique path through the water column. Resulting data are held on pro-forma invoices or in notebooks. Some have been transferred to Lotus-123 spreadsheets for PC, then edited averages transferred to a mainframe computer. Some averaged data have been published.

**REFERENCE:** Southward, A.J. 1980 The western English Channel - an inconsistent ecosystem? *Nature* 285 p 361-366.

**STORAGE-MEDIUM:** Mainframe computer files/floppy disks

**AVAILABILITY:** By reference to Dr. A.J. Southward/Dr. L. Maddock, MBA, Plymouth

**CONTACT:** M.A. Kendall, PML

3.18

**DATASET-NAME:** Net phytoplankton surveys near Plymouth, western English Channel (1964-1987)

**CENTRE-NAME:** Marine Biological Association of the UK (MBA)

**TIME-PERIOD:** from 1964 to 1987

**GEOGRAPHIC-  
COVERAGE:** Area off Plymouth, western English Channel (approximately 50deg 10'N - 50deg 20'N, 5deg W -3deg 40'W)

**PARAMETERS:** Phytoplankton species

**SUMMARY:**

Net phytoplankton samples collected between 1 and 3 times a week over the period 1964 to 1987 in the area 50deg 10'N - 50deg 20'N, 5deg W -3 deg 40'W, near Plymouth in the western English Channel. Species have been identified, but not counted.

**REFERENCE:** Maddock, L., Harbour, D.S. and Boalch, G.T. 1989. Seasonal and year-to-year changes in the phytoplankton from the Plymouth area, 1963-1986. J. mar. biol. Ass. UK, 69, 229-244

**STORAGE-MEDIUM:** Magnetic tape

**AVAILABILITY:** By reference to Dr. G.T. Boalch/Dr. L. Maddock, MBA, Plymouth

**CONTACT:** M.A. Kendall, PML

3.19

**DATASET-NAME:** PML Celtic Sea Project Data Set (1982-1986)

**CENTRE-NAME:** Plymouth Marine Laboratory (PML)

**TIME-PERIOD:** from 1982 to 1986

**GEOGRAPHIC-  
COVERAGE:** Celtic Sea

**PARAMETERS:** phytoplankton, zooplankton, fish larvae, fish eggs, primary production, bacterial production, particle characterisation, salinity, temperature, chlorophyll

**INSTRUMENTS:** salinometer, temperature profiler, fluorometers, plankton nets, Undulating Oceanographic Recorder, Longhurst Hardy Plankton Recorder, CHN analyser, photosynthesis-irradiance incubator

**SUMMARY:**

The project was an investigation of the role of picoplankton in pelagic productivity of a shelf sea. In 1979, the first descriptions appeared in the literature of a class of very small phytoplankton (less than 1.0 micron in diameter). Most of these phytoplankton were marine cyanobacteria, but there were also a number of eukaryotic algae which were also extremely small. The study involved measuring primary productivity of 3 size classes of phytoplankton, less than 1 micron, 1-5 microns, and greater than 5 microns in diameter. The smallest size fraction was found to account for about 25 per cent of the annual productivity and the other 2 size fractions were both just less than 40 per cent. A number of physiological measurements were done to determine the relationship between photosynthetic rate and irradiance. Samples of zooplankton were taken to determine how much of the secondary production was supported by the different size fractions of phytoplankton.

**REFERENCE:** Joint, I. Can.Bull.Fish.Aquat.Sci. 214:287-309

**STORAGE-MEDIUM:** 6 published papers, some data on floppy disk, most in notebooks

**AVAILABILITY:** by special arrangement

**CONTACT:** Dr. Ian Joint

3.20

**DATASET-NAME:** PML Celtic Sea Shelf-break Project Data Set (1991-)

**CENTRE-NAME:** Plymouth Marine Laboratory (PML)

**TIME-PERIOD:** from 1991 onwards

**GEOGRAPHIC-  
COVERAGE:** Celtic Sea Shelf Break (Little Sole Bank)

**PROJECT:**

**PARAMETERS:** phytoplankton, zooplankton, Undulating Oceanographic Recorder, Longhurst Hardy Plankton Recorder, Coulter Counter, CHN analyser

**INSTRUMENTS:** CTD, fluorometer, plankton nets, Undulating Oceanographic Recorder, Longhurst Hardy Plankton Recorder, Coulter counter, CHN analyser

**SUMMARY:**

The Celtic Sea shelf break is a major area for mackerel spawning and PML is testing the hypothesis that physical processes, particularly those influenced by bottom topography, have a controlling influence on biological production. In June 1991, the first of 2 cruises on RRS Challenger began an investigation of the small scale events occurring on Little Sole Bank, one of the linear banks radiating from the shelf edge. In June 1991 and May 1992, the area was sampled intensively with CTDs, instrumented plankton samplers and the Undulating Oceanographic Recorder. Areas of elevated temperature and chlorophyll were associated with the shelf edge near Little Sole Bank and there were some minor effects of the bank itself. Primary productivity in these regions was high ( $1-2\text{gC m}^{-2}\text{ d}^{-1}$ ) compared with less than  $0.5\text{gC m}^{-2}\text{ d}^{-1}$  at least productive stations over the bank. Copepod feeding and reproduction was related to phytoplankton biomass. The project will continue from 1993 for 3 years as part of the EC MAST project on Ocean Margin Exchange (OMEX).

**REFERENCE:** no publications as yet

**STORAGE-MEDIUM:** 1 optical disk

**AVAILABILITY:** by special arrangement

**CONTACT:** Dr. Ian Joint

3.21

**DATASET-NAME:** PML Bristol Channel Project (GEMBASE) Data Set (1972-1980)

**CENTRE-NAME:** Plymouth Marine Laboratory (PML)

**TIME-PERIOD:** from 1972 to 1980

**GEOGRAPHIC-  
COVERAGE:** Bristol Channel and Severn Estuary

**PARAMETERS:** salinity, temperature, turbidity, nutrients (nitrate, phosphate, silicate, nitrite), chlorophyll, phytoplankton, zooplankton, primary production, dissolved and particulate metals, benthic communities, tidal range, currents

**INSTRUMENTS:** salinometers, MC5, plankton nets, CHN analyser, autoanalyser, atomic adsorption spectrometer, benthic grabs, tide gauges, current meters

**SUMMARY:**

The NERC Institute for Marine Environmental Research (IMER) was involved in an intensive study of the Bristol Channel from 1971 until 1980. Over 50 cruises were completed over that period, with the most intensive sampling taking place before 1975. A grid of 58 stations was established in the Bristol Channel and Severn Estuary and although not every station was sampled on every cruise, there was good geographical and temporal discrimination. Every month was sampled at least once in that period and some months in the spring and summer were sampled in 4 or 5 years. The project had two distinct phases. The earliest cruises were concerned with measuring parameters such as salinity, temperature, nutrient and metal concentrations and plankton biomass; these parameters were used to set the initial conditions for a model of the Bristol Channel (GEMBASE - a GEneral Model of the Bristol channel and Severn Estuary). The second phase of the fieldwork was concerned with studying key processes and establishing better parameters for GEMBASE. Data were also collected by the regional Water Authorities for the Severn Estuary on salinity, temperature, turbidity, metals concentration, etc. and these data were collated and stored at IMER (which became the PML in 1988).

**REFERENCE:** Marine Pollution Bulletin 15: number 2 (special issue) 1984

**STORAGE-MEDIUM:** Magnetic tapes

**AVAILABILITY:** by arrangement

**CONTACT:** Dr. Ian Joint

3.22

**DATASET-NAME:** Carmarthen Bay nutrient cycling (1979-1981)

**CENTRE-NAME:** Plymouth Marine Laboratory (PML)

**TIME-PERIOD:** from August 1979 to January 1981

**GEOGRAPHIC-  
COVERAGE:** Carmarthen Bay, north west Bristol Channel

**PARAMETERS:** nutrients, phytoplankton growth, excretion

**SUMMARY:**

The data set comprises a series of five multi-disciplinary cruises on RRS John Murray to examine nutrient cycling in shallow bays.

**REFERENCE:** Owens, N.J.P. et al., 1986 Marine Biology 93, p329-342

**STORAGE-MEDIUM:** published papers and notebooks

**AVAILABILITY:** contact P.H. Burkhill at PML for details of availability

**CONTACT:** N.J.P. Owens, PML

3.23

**DATASET-NAME:** AUTOSUB microzooplankton data

**CENTRE-NAME:** Plymouth Marine Laboratory (PML)

**TIME-PERIOD:** 1998-2001

**GEOGRAPHIC-  
COVERAGE:** Waters off Southampton and Oban

**PROJECT:** AUTOSUB

**PARAMETERS:** Microzooplankton grazing, abundance and community structure

**INSTRUMENTS:** Microscopy and dilution experiments

**SUMMARY:**

The AUTOSUB project

Samples were taken during the various AUTOSUB missions and analysed for microzooplankton grazing, abundance and community structure

**ORIGINATOR:** Claire Widdicombe PML

**STORAGE-MEDIUM:** spreadsheets

**AVAILABILITY:** Data currently restricted to AUTOSUB project participants - contact Claire Widdicombe PML

**CONTACT:** Claire Widdicombe PML

3.24

**DATASET-NAME:** Zooplankton and optical plankton counter database for the North and South Atlantic

**CENTRE-NAME:** Plymouth Marine Laboratory (PML)

**TIME-PERIOD:** 1994 onwards

**GEOGRAPHIC-  
COVERAGE:** North and South Atlantic

**PROJECT:** Atlantic Meridional Transect, Plankton Reactivity in the Marine Environment plus various others

**PARAMETERS:** Zooplankton abundance

**INSTRUMENTS:** Microscopy and optical plankton counter, zooplankton nets



**SUMMARY:**

A database has been established covering optical plankton counter and more traditional methods of establishing mesozooplankton abundance. This covers both North and South Atlantic - cruises include those undertaken as part of the PRIME, AMT and other projects.

**REFERENCE:** Not yet published

**ORIGINATOR:** Chris Gallienne, PML

**STORAGE-MEDIUM:** database

**AVAILABILITY:** Contact Chris Gallienne, PML

**CONTACT:** Chris Gallienne, PML

3.25

**DATASET-NAME:** The North Atlantic Continuous Plankton Recorder Survey Data Set (1931-)

**CENTRE-NAME:** Sir Alister Hardy Foundation for Ocean Science (SAHFOS)

**TIME-PERIOD:** from 1931 onwards

**GEOGRAPHIC-  
COVERAGE:** North Atlantic (35deg N to 60deg N, 71deg W to 11deg E). The area east of about 15deg W has been sampled from the late 1930s whereas the area west of this line has been sampled only for the period 1961 to 1984, although sampling restarted in 1991 on a transect from Iceland to Newfoundland.

**PARAMETERS:** phytoplankton, zooplankton

**SUMMARY:**

The Continuous Plankton Recorder is a piece of apparatus towed by vessels for sampling plankton near the sea surface. The CPR now used is very little different from that described by Hardy (1939). The CPRs are towed by ships-of-opportunity at a depth of 10m and are deployed as far as possible, at monthly intervals over a standard set of routes.

Water enters through an aperture in the nose cone and is slowed to one thirtieth of its original speed before being filtered through a slowly moving band of bolting silk. The plankton is retained on the filtering silk and held in position by a second band of silk to form a 'sandwich' which is wound onto a spool in a tank containing a preservative (formalin). The silk is cut into lengths representing 10 nautical miles of tow, and the lengths of silk are then subjected to a standard routine analysis. Each 10 mile length of tow is regarded as a sample taken at its centre point and, for the purposes of constructing an atlas, allocated to a standard 1 degree latitude by 2 degree longitude rectangle.

The current catalogue of CPR records lists a total of 391 taxa identified to varying taxonomic levels. For each taxon the mean number per sample in each rectangle is calculated for each month, and the monthly means are averaged over a chosen period of years to give a mean value for each rectangle. Phytoplankton counts only are available for the years from 1958 onwards; before this only presence/absence is available. Data for the most abundant of the zooplankton taxa are available for the years from 1946, and data for all are available from 1958. For the pre-war years, when the survey was being developed, only a few taxa are as yet available. Some effort is being expended in an attempt to extract more data from the notebooks of the period.

Data handling procedures in the CPR survey have evolved alongside the development of the laboratory computer, with the data archive and retrieval systems being elaborated as computer systems became more sophisticated. Since the Survey was established over 60 years ago, over 155,000 samples have been analyzed and the data entered into the data archive.

**REFERENCE:** Hardy, A.C. 1939 Ecological investigations with the Continuous Plankton

**STORAGE-MEDIUM:** IBM compatible PC. CPR database (including access programs and some processed data) extends to approximately 64Mbytes.

**AVAILABILITY:** Contact the Sir Alister Hardy Foundation for details of access to the data set.

**CONTACT:** Darren Stevens dpst@mail.pml.ac.uk

3.26

**DATASET-NAME:** Marine Species Biology and Sensitivity Key Information

**CENTRE-NAME:** MarLIN Marine Life Information Network

**TIME-PERIOD:** present

**GEOGRAPHIC-  
COVERAGE:** Britain and Ireland

**PROJECT:**

**PARAMETERS:** general biology, habitat preferences, distribution, taxonomy, reproduction, natural heritage importance

**INSTRUMENTS:** not known

**SUMMARY:**

As part of the MarLIN programme a web-based database of key information on marine species and biotopes is being produced.

**REFERENCE:** Hiscock K Jackson A and Iear D 1999 Assessing seabed species and ecosystem sensitivities. Existing approaches and development. Report to the DETR (MarLIN report no 1)

**DATA-WEBSITE:** [www.marlin.ac.uk/](http://www.marlin.ac.uk/)

**STORAGE-MEDIUM:** web site

**AVAILABILITY:** See web site

**CONTACT:** Keith Hiscock MarLIN

3.27

**DATASET-NAME:** Marine Species Record Collections

**CENTRE-NAME:** MarLIN Marine Life Information Network

**TIME-PERIOD:** present

**GEOGRAPHIC-  
COVERAGE:** UK and Ireland

**PROJECT:**

**PARAMETERS:** List of collections

**INSTRUMENTS:** not known

**SUMMARY:**

The list of marine species record collections has been compiled mainly from the results of a questionnaire circulated at the Marine Species Recording workshop held at the University of Newcastle-upon-Tyne on 29-30th January 1998.

**REFERENCE:** Foster-Smith 1998. Marine Species Recording Workshop held at the University of Newcastle-upon-Tyne 29-30th Jan 1998

**DATA-WEBSITE:** [www.marlin.ac.uk/](http://www.marlin.ac.uk/)

**STORAGE-MEDIUM:** web site

**AVAILABILITY:** see web site

**CONTACT:** Keith Hiscock MarLIN

3.28

**DATASET-NAME:** German physical, chemical and biological oceanographic data collected in JGOFS North Atlantic Bloom Experiment (1989)

**CENTRE-NAME:** German Oceanographic Datacentre (NODC)

**TIME-PERIOD:** 1989

**GEOGRAPHIC-  
COVERAGE:** NE Atlantic

**PROJECT:** Joint Global Ocean Flux Study (JGOFS) - North Atlantic Bloom Experiment (NABE)

**PARAMETERS:** temperature, salinity, oxygen, NO<sub>3</sub>, NO<sub>2</sub>, NH<sub>4</sub>, SiO<sub>3</sub>, particulate organic carbon, particulate organic nitrogen, particulate PO<sub>4</sub>, particulate SiO<sub>3</sub>, chlorophyll-a, carbon nitrogen ratio, primary production

**INSTRUMENTS:** Thermometer, Salinometer, Bathythermograph, Titrations and Electrochemical Determination, Autoanalyzer, GC-Mass Spectrometry, weight and extraction

**SUMMARY:**

This will, upon completion, be the North Atlantic Bloom Experiment (NABE) contribution of Germany. So far only data collected by CTD and Rosette have been included. It is expected that net haul data, sediment trap data, sediment data, and underway data will be available in the near future.

**REFERENCE:** JGOFS reports

**DATA-WEBSITE:** [www.bsh.de/Meereskunde/DOD/972.htm](http://www.bsh.de/Meereskunde/DOD/972.htm)

**STORAGE-MEDIUM:** Magnetic tape

**AVAILABILITY:** The data set is available on request to the German Oceanographic Datacentre.

**SUPPLY-DETAILS:** E-mail, ftp or disk

**CONTACT:** dod@bsh.d400.de

3.29

**DATASET-NAME:** Bulletin Hydrographique - Physical, chemical and biological oceanographic data in the North Atlantic, North Sea and Baltic (1902-1956)

**CENTRE-NAME:** ICES Secretariat, International Council for the Exploration of the Sea

**TIME-PERIOD:** from 1902 to 1956

**GEOGRAPHIC-  
COVERAGE:** North Atlantic, North Sea and Baltic

**PROJECT:** Fisheries Oceanography

**PARAMETERS:** physical, chemical and biological oceanography

**INSTRUMENTS:****SUMMARY:**

The observations published by ICES in the Bulletin Hydrographique were collected during ICES coordinated projects and routine programmes. The observations included (a) listings of surface temperature and salinity along 18 or so ship routes across the Atlantic, North Sea and Baltic and at light vessels (approximately 500,000 observations), (b) observations from classical hydro-chemical stations (approximately 200,000 stations), and (c) observations acquired from plankton hauls, principally in the North Sea (several thousand stations).

The listings are accompanied by detailed documentation of the instrumentation used, and other logistical matters of relevance to understanding the underlying accuracy of the data. Until 1936 most of the observations were published quarterly, with separate listings for each ship or route. Subsequently observations were published in geosorted form.

This publication is available in most marine libraries of ICES member countries, as well as in the ICES Secretariat. The observations contained therein include the majority collected in the North Atlantic area during the first half of the 20th century. Most of the other data are published in

other ICES publications (e.g. Rapports Atlantique).

All of these data are available in digital form from the ICES database, however some of the metadata is available only through these publications.

**REFERENCE:** ICES Bulletin Hydrographique

**STORAGE-MEDIUM:** Manuscript

**AVAILABILITY:** On application to marine libraries in ICES member countries

**CONTACT:** H.D. Dooley

3.30

**DATASET-NAME:** ARC - Belgian 'Concerted action research project' - a further multidisciplinary study of Southern Bight of North Sea (1977-81)

**CENTRE-NAME:** Royal Belgian Institute for Natural Sciences, Management Unit of the North Sea and Scheldt Estuary Mathematical Models (MUMM)

**TIME-PERIOD:** from 1977 to 1981

**GEOGRAPHIC-  
COVERAGE:** North Sea, Western English Channel and Western Scheldt estuary, Belgium

**PROJECT:** 'Actions de Recherche Concertees' - Action Interuniversitaire - Oceanologie

**PARAMETERS:** As the project was aiming at the deepening of the study of the marine system components and fluxes, initiated during the Belgian 'Project Sea', again a vast collection of parameters were monitored in all fields of marine science.

**INSTRUMENTS:** NIO bottles, reversing thermometers, Van Dorn bottles, Van Veen grabs, various corers, various probes, salinometers, currentmeters, various types of plankton nets, incubators, filtration units, etc.

**SUMMARY:**

ARC, Actions de Recherche Concertees. The 'concerted action' was launched by the Belgian Department of Scientific Policy in 1977. In contrast with the Belgian 'Project Sea', there was no central coordination. The mode of funding was also different. The project was aiming at the deepening of the study of the marine ecosystem components and fluxes - including the cycle of pollutants. The various research teams took advantage of the monitoring program of the recently established MUMM or planned specific cruises in concertation with MUMM.

**REFERENCE:** The most relevant data gathered during this project have been summarized and discussed in two progress reports and a Final Report in 3 volumes (all edited by the 'Services de Programmation de la Politique Scientifique', 8, rue de la Science, B-1040 Bruxelles):

1. Rapport des journées d'étude (1979). 254 pp.
2. Rapport des journées d'étude (1980). 302 pp.
3. Rapport final. Volume 1 (1983): 'Hydrodynamic and dispersion

models, boundary fluxes and boundary conditions'. 257 pp., Nihoul & Wollast (eds.)

4. Rapport final. Volume 2 (1984): 'Distribution, transport and fate of heavy metals in the Belgian coastal marine environment'. 171 pp., Disteche & Elskens (eds.)

5. Rapport final. Volume 3 (1985): 'Biological processes and translocations'. 226 pp., Heip & Polk (eds.)

**ORIGINATOR:** Different research teams.

**STORAGE-MEDIUM:** in addition to reports prepared by individual laboratories, data exist in the form of a collection of about 30 cruise reports, and synthesis reports (paper reports). It must be noted that nearly all nutrient, metal and chlorophyll data from the regular monitoring cruises have also been incorporated in the MONITB dataset (mass storage media of MUMM).

**AVAILABILITY:** A complete exemplar of the collection of paper reports is conserved at MUMM and can be consulted there. A catalog is available upon written request.

**SUPPLY-DETAILS:** Photocopies, part of data as csv file.

**CONTACT:** Dr. Jean-Paul Mommaerts

3.31

**DATASET-NAME:** Organochlorines and heavy metals in marine life of North Sea, NE Atlantic, Arctic polar seas and Antarctica (1975 onwards)

**CENTRE-NAME:** Free University of Brussels, Laboratory for Ecotoxicology and Polar Ecology

**TIME-PERIOD:** from 1975 onwards

**GEOGRAPHIC-  
COVERAGE:** North Sea and NE Atlantic (1970 - 1985); Greenland and Norwegian Seas (from 1978 onwards), Barents Sea (from 1991 onwards); Antarctica (from 1989 onwards)

**PARAMETERS:** organochlorines (PCBs and pesticides) and heavy metals (total and organic Hg) in phytoplankton, krill, fish, seabirds and marine mammals. In collaboration, pathology of birds and mammals; other heavy metals, metallothioneins, Se.

**INSTRUMENTS:**

**SUMMARY:**

Monitoring of stable pollutants (PCBs, organochlorine pesticides, heavy metals) in the different trophic levels of various marine ecosystems. Interpretation at the ecosystem level (transfer and accumulation mechanisms, fluxes) and the individual level: detoxification, excretion, lethality, mortality).

**REFERENCE:** A list of publications and reports is available from C. Joiris

**STORAGE-MEDIUM:** Apple MacIntosh: excel, statview MS Word

**AVAILABILITY:** by arrangement; contact C. Joiris or L. Holsbeek

**CONTACT:** C. Joiris

3.32

**DATASET-NAME:** Ecology of seabirds and marine mammals in North Sea, NE Atlantic, Arctic polar seas and Antarctica (1970 onwards)

**CENTRE-NAME:** Free University of Brussels, Laboratory for Ecotoxicology and Polar Ecology

**TIME-PERIOD:** from 1970 onwards

**GEOGRAPHIC- COVERAGE:** North Sea and NE Atlantic (1970-1985); Greenland and Norwegian Seas (from

1978 onwards), Barents Sea (from 1991 onwards); Antarctica (from 1989 onwards)

**PARAMETERS:** birds and mammals counts, density, link with other ecological factors (in collaboration: phytoplankton, zooplankton, pelagic and demersal fish)

**SUMMARY:**

At sea study of the distribution of marine birds and mammals: seasonal variations of distributions, linkage with hydrographical regimes, estimations of population sizes and densities. Estimations of food demands and energy fluxes through higher trophic levels of the marine ecosystems.

**REFERENCE:** A list of publications and reports is available from C. Joiris

**STORAGE-MEDIUM:** Apple Macintosh excel, statview, MSWord

**AVAILABILITY:** by arrangement; contact C. Joiris or L. Holsbeek

**CONTACT:** C. Joiris

3.33

**DATASET-NAME:** Abundance of Photosynthetic picoplankton measured by epifluorescence, microscopy and flow cytometry

**CENTRE-NAME:** CNRS / STATION BIOLOGIQUE DE ROSCOFF

**TIME-PERIOD:** 1987 a present

**GEOGRAPHIC- COVERAGE:** Roscoff, Sargasso Sea, East Atlantic, Pacific, East China Sea, Mediterranean

Sea

**PARAMETERS:** Abundance (cell ml<sup>-1</sup>), Light scatter, Chl fluorescence

**INSTRUMENTS:** Flow cytometer

**SUMMARY:**

Abondance de Picoplancton photosynthetique mesuree par epifluorescence, microscopie et flux cytométrique, for each of the following groups:

- *Prochlorococcus*

- *Synechococcus*

- *Picoeucaryotes*

Data are obtained by flowcytometry.

**REFERENCE:** Flow cytometric determination of phytoplankton DNA in cultures and natural populations. Marine Ecology, Progress series, 1991, No 71, pp. 75-84., BOUCHER N., VAULOT F., PARTENSKY F.,

Wintertime presence of prochlorophytes in surface waters of the North-western Mediterranean Sea. Limnology and Oceanography, 1990, 35: 1156-1164., D. VAULOT, PARTENSKY F., NEVEUX J., MANTOURA R.F.C., LLEWELLYN C.,

Wintertime presence of prochlorophytes in surface waters of the North-Western Mediterranean Sea. Limnology and Oceanography. 1990, 35:1156-1164., VAULOT D., PARTENSKY F., NEVEUX J., MANTOURA R.F.C., LLEWELLYN C.,

**DATA-WEBSITE:** <http://www.cnrs.fr/index.html>

**ORIGINATOR:** CNRS

**STORAGE-MEDIUM:** Size of dataset 1MO, storage Disquettes

**AVAILABILITY:** jusqu'a publication

**SUPPLY-DETAILS:**Media Disquettes

**CONTACT:** The author of the description is usually one of the contact points. VAULOT Daniel, vaulot@iznogoud.sb-roscoff.fr, Tel:+33(0)2 98 29 23 34

3.34

**DATASET-NAME:**Monitoring of environmental data and living ressources in the estuaries and shore areas of France in the vicinity of existing or proposed power plants (IGA prog

**CENTRE-NAME:** IFREMER / IFREMER/DEL/SR SERVICE ETUDES REGIONALES

**TIME-PERIOD:** 1975 a present

**GEOGRAPHIC-COVERAGE:** Littoral francais des cotes de la Manche et de l'Atlantique de Dunkerque a l'estuaire de la Gironde  
French coastal waters of the English Channel and Atlantic Ocean from Dunkirk to the Gironde Estuary

**PARAMETERS:** Temperature,salinite,sels nutritifs, chlorophylle, pheopigments, especes



phyto- et zooplanctonique, phyto- et zoobenthos

**INSTRUMENTS:** Bouteille de prelevement, filet a plancton, carottier fonds meubles, benne

**SUMMARY:**

Entrepris en 1974 a la suite des chocs petroliers des annees 70, un vaste programme de recherche de sites d'implantation de centrales electronucleaires sur le littoral francais a provoque un ensemble d'etudes ecologiques du milieu marin et de ses ressources vivantes autour des sites d'implantation potentiels. Initiees par Electricite de France (EDF), ces etudes ont associe les grands organismes de recherche dont l'IFREMER, les universites et l'Institut Pasteur de Lille. De nombreux sites ont ete prospectes : Gravelines, Paluel, Audinghen, Dannes, Penly, Englesqueville, Flamanville, Ploumoguier, Plogoff, St Vio, Corsept, Le Blayais, Vattetot, Beg-an-Fry, Erdeven, Bretignolles, Port-la-Nouvelle. Ces etudes se sont poursuivies sur les sites retenus pour la construction des centrales de Gravelines, Le Blayais, Paluel, Flamanville et Penly et continuent dans un contexte de surveillance au cours de la phase d'exploitation. Les mesures de phytoplancton comportent l'identification et le comptage des especes, la chlorophylle, les pheopigments, la production primaire. Le suivi du zooplancton portent sur l'identification et le comptage taxinomique et la mesure des biomasses. Son etude est centree sur les principales especes representatives de chaque secteur et constituant les phases planctoniques des ressources vivantes (poissons et crustaces). Un suivi des domaines halieutique (macrofaune : juveniles et adultes) et benthique (macrofaune et flore ; morphosedimentologie) est realise.

Des mesures generales d'environnement (meteorologie, hydrologie, apports fluviaux) complètent l'ensemble de ces donnees. Le domaine benthique excepte, ces informations sont geres dans la Base Quadrigue de donnees de physique, chimie et biologie issues des composantes du Reseau littoral de surveillance gere par l'IFREMER (RNO, REMI, REPHY) et de differents programmes nationaux et regionaux d'etude de l'environnement dont on trouvera les publications sur le site//www.ifremer.fr/envlit/

**ORIGINATOR:** IFREMER, Univers., Inst. Pasteur Lille

**STORAGE-MEDIUM:** Size of dataset Plus de 110 000 mesures et 440 000 denombrements

**AVAILABILITY:** No standard confidentiality duration mentioned, S'adresser au responsable

**SUPPLY-DETAILS:** Produits Donnees interpretees, syntheses regionales, publications. Search criterions Zone géographique, periode, parametres. Media internet

**CONTACT:** The author of the description is usually one of the contact points

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3.35

**DATASET-NAME:** Surveys data on the French fisheries for studying the trends of the evolution of the stocks and of their ecosystems in addition to the fisheries statistics

**CENTRE-NAME:** IFREMER / IFREMER/DRV/RH - ECOHAL (NANTES)

**TIME-PERIOD:** 1977 -->

**GEOGRAPHIC-  
COVERAGE:** Atlantique (G. de Gascogne, Mer Celtique), Manche, Sud Mer du Nord,  
Mediterranee Occidentale (G. du Lion, Est Corse)  
Atlantic Ocean (Gulf of Gascogne, Celtic Sea), English Channel, Southern  
North Sea, Western Mediterranean (Gulf of Lyon, East Corsica)

**PARAMETERS:** principalement donnees biologiques de la structure des populations  
(demographie, croissance, reproduction) pour le suivi des stocks  
halieutiques et des especes

**INSTRUMENTS:** Chalut, drague, echo-integration

**SUMMARY:**

Donnees recueillies lors des campagnes en mer realisees par l'IFREMER (et autrefois ISTPM) pour la realisation des differentes missions du Departement : evaluation de stocks et pecheries, etudes d'ecologie halieutique, etudes methodologiques portant tant sur les plans d'echantillonnage que sur les traitements des donnees. Les campagnes sont repetees annuellement selon un protocole d'echantillonnage standardise (50 a 100 stations par campagne). Il y a 3 grandes series de campagnes (chaque serie correspond a un grand type de mileu et une zone geographique): les series de campagnes demersales (IBTS en Mer du Nord, EVHOE en Mer Celtique et Golfe de Gascogne, CGFS en Manche Est, RESGASC dans le Golfe de Gascogne, MEDITS dans le Golfe du Lion et Est Corse) ; les series de campagnes pelagiques (PELMED en Mediterranee Nord-Occidentale, PELGAS dans le Golfe de Gascogne) ; les campagnes cotieres pour les bivalves. Une partie de ces campagnes sont realisees dans le cadre de l'action europeenne de collecte des donnees halieutiques en soutien a la politique communautaire des peches. Un inventaire aussi complet que possible de ces campagnes halieutiques doit etre realise. Les informations recueillies sont principalement des donnees biologiques de la structure des populations (demographie, croissance, reproduction) servant a d'une part aux evaluations des stocks annuelles par les groupes de travail internationaux (CIEM, etc), d'autre part, aux recherches en ecologie. Les donnees sont, pour l'instant, archivees dans les differentes implantations du laboratoire Ressources Halieutiques. Les donnees sont en cours d'integration dans le Systeme d'Informations Halieutiques (SIH) de l'IFREMER qui sert par ailleurs a la gestion des statistiques de peche, des donnees d'echantillonnage des captures commerciales et des donnees economiques sur les flottilles de peche

**ORIGINATOR:** IFREMER

**STORAGE-MEDIUM:** Size of dataset 1 campagne de 50 a 100 stations par an et serie

**AVAILABILITY:** No standard confidentiality duration mentioned, S'adresser au responsable

**CONTACT:** The author of the description is usually one of the contact points. BERTRAND Jacques, Jacques.Bertrand@ifremer.fr, Tel:+33(0)2.40.37.42.19, Fax:+33 (0)2 40.37.40.75

3.36

**DATASET-NAME:** Deep Chlorophyll Maximum in the North Atlantic Ocean (1996)

**CENTRE-NAME:** Netherlands Institute for Sea Research (NIOZ)

**TIME-PERIOD:** From 22-06-1996 to 31-08-1996

**GEOGRAPHIC-** North Atlantic Ocean

**PROJECT:** Deep Chlorophyll Maximum

**PARAMETERS:** oxygen, chlorophyll, DOC, nutrients, POC, T, S

**INSTRUMENTS:** CTD, bottle samples, multinet, vertical net, optical instruments,

**SUMMARY:**

The inverse gradients of light and nutrients (nitrogen) with depth have resulted in a unique phytoplankton distribution and primary production in oligotrophic stratified (tropical) oceans. These gradients can only partly explain why a Deep Chlorophyll Maximum (DCM) is found here world-wide at depths of 80 or 150 m. The microbial composition of this layer is remarkably constant in spite of the high activity of the photosynthetic, microbial and heterotrophic components which indicate a highly dynamic system.

The phytoplankton composition is dominated by picoplankton (< 2 micron in diameter) and consists of a mixture of prokaryotic (Synechococcus and Prochlorococcus) and various (unknown) eukaryotic species of which various subpopulations dominate at different depths. By modelling the production processes and trophic interaction the contribution of the DCM to the sedimentation of particulate carbon will be studied.

The expedition on board Hr. Ms. Tydeman focuses on the factors which prevent (major) fluctuations in structures and organisation of microbial populations present near the Deep Chlorophyll Maximum.

**DATA-WEBSITE:** [www.nioz.nl/projects/dcm](http://www.nioz.nl/projects/dcm)

**STORAGE-MEDIUM:** Disk, CD-ROM

**AVAILABILITY:** Freely

**CONTACT:** T.F. de Bruin, +31-(0)222-369479, [bruin@nioz.nl](mailto:bruin@nioz.nl)

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