



BIBLIOGRAPHY OF SEABED AND HABITAT MAPPING
*Relevant for mapping in the offshore North
Atlantic*

Deliverable 9.2 Work Package 9
Seabed & Benthic Habitat Mapping

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Relevant for mapping in the offshore North Atlantic

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CONTENT

Introduction	3
Classification of Sediments, Habitat, Landscapes and Bioregions	3
Habitat Classification	3
Marine Landscape Classification	6
Bioregional Classification	6
Seabed Substrate Classification	6
Standardisation of Seabed Mapping	7
Mapping Techniques	8
Field methods, survey design and data interpretation	8
Post processing and data analysis	10
Vulnerable Habitats	15
Cold Water Corals	15
Deep Sea Sponge Aggregations	16
Hydrothermal Fields	17
Predictive mapping	19
Habitat Descriptions and Maps	21
Sediment mapping	23
Bottom topographic maps	24
Acoustic classification	25
Links to Project Web Sites and On-Line Resources	27

INTRODUCTION

This bibliography lists 330 publications classified in 9 main themes. In addition to literature references, relevant web sites and European seabed mapping projects are listed.

The list is not complete and publications are selected based on their relevance to the Atlantic deep sea, or because of their general methodological or theoretical relevance.

The issue of Seabed and Habitat Mapping covers several research fields, ranging from characterization of biological communities to sediment geology and underwater acoustics. Many of the publications cover several topics and are listed under more than one of the themes below. A list of relevant web sites (project home pages) and on-line resources is also presented.

Classification of Sediments, Habitat, Landscapes and Bioregions

(53 papers)

The term "Habitat" here includes both biotopes and habitats. The terms "habitat" and "biotope" are used almost synonymously in the literature, for describing the environment associated with occurrence of certain species. Here, we recognise the difference of these terms as "biotope" applying to the community's environment and "habitat," to the species' environment (Udvardy 1959; Whittaker et al. 1973). The majority of classification schemes cover both substrates and biological units (dominant species or characteristic communities. Classification schemes or principles dealing only with seabed substrates are listed separately below.

Habitat Classification

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MAPPING TECHNIQUES

(103 papers)

The literature presenting techniques relevant for mapping of the seabed and its habitats is immense. The references below are separated in two themes: 1) Field methods, operational procedures, sampling design and data and 2) Post processing and data analysis.

Sampling strategy, survey design and data interpretation

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VULNERABLE HABITATS

(34 papers)

Several coral and sponge species build habitats that are fragile to physical disturbance, such as bottom trawling. Whereas the corals and sponges are made by long-lived species hydrothermal vents are built up by a combination of autigenic and biogenic processes. All these habitat types are species rich and have great value for research, and industry.

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LINKS TO PROJECT WEB SITES AND ON-LINE RESOURCES

EXPERT GROUPS AND RESEARCH COMMUNITIES

Working Group of Marine Habitat Mapping

<http://ices.dk/community/groups/Pages/WGMHM.aspx>

ICES Working Group on Marine Habitat Mapping (WGMHM) coordinates the review of habitat classification and mapping activities in the ICES area and promotes standardization of approaches and techniques.

GeoHab (Marine Geological and Biological Habitat Mapping)

<http://geohab.org/>

An international association of marine scientists studying biophysical (i.e, geologic and oceanographic) indicators of benthic habitats and ecosystems as proxies for biological communities and species diversity.

Intergovernmental Oceanographic Commission (IOC) of UNESCO. Ocean Biogeographic Information System (OBIS),

www.iobis.org

HABITAT MAPS AVAILABLE ONLINE

European Broad-Scale Seabed Habitat Map

www.emodnet-seabedhabitats.eu

UK,

<http://jncc.defra.gov.uk/seabedhabitatmapdata>

Norway:

www.mareano.no

Spain

<http://www.magrama.gob.es/es/pesca/temas/cartografiado-marino/default.aspx>

DATA PORTALS AND REPOSITORIES

EMODnet Seabed Habitats (EUSeaMap 2):

This is one of seven thematic projects under the European Marine Observation and Data Network (EMODnet; www.emodnet.eu).

Access to European habitat maps through an online interactive map:

www.emodnet-seabedhabitats.eu/webgis

The EMODnet Seabed Habitats website provides a single portal for the outputs of the EUSeaMap and MESH projects. Habitat maps from surveys and broad scale predictive habitat maps from European seas are available through the new EMODnet seabed habitats mapping portal. The pages of the MESH website and its excellent guide to marine habitat mapping are still available as an archive. (<http://www.emodnet-seabedhabitats.eu/>)

EMODNET - Geology

www.emodnet-geology.eu

Geo-Seas

An Integrated Infrastructure Initiative of the Research Infrastructures programme within EU FP7 (2009-2013). An e-infrastructure was set-up of 26 marine geological and geophysical data centres, located in 17 European maritime countries. A common data portal (www.geoseas.eu). The aims of Geo-Seas were aligned with European directives and large-scale framework programmes on global and European scales, such as GEOSS and GMES, EMODnet and INSPIRE.

ChEssBase

Ramirez-Llodra, E., Blanco, M. & Arcas, A. (2004) ChEssBase: an online information system on biodiversity and biogeography of deep-sea chemosynthetic ecosystems. Version 1. World Wide Web electronic publications, www.noc.soton.ac.uk/chess/db_home.php.

Chessbase A dynamic relational database available online since early 2005. The aim of ChEssBase is to provide taxonomic, biological, ecological and distributional data for all species described from deep-water chemosynthetic ecosystems, as well as information on available samples, images, bibliography and information on the habitats. These habitats include hydrothermal vents, cold seeps,

This is a portal under CEOS International Directory Network

<http://idn.ceos.org/portals/Home.do?Portal=amd&MetadataType=0>

MAJOR EUROPEAN MARINE HABITAT MAPPING PROJECTS

OSPAR habitat mapping programme

This programme collates existing data on the presence of OSPAR listed threatened and/or declining habitats in the north-east Atlantic (also known as 'special habitats' under the MSFD). It is part of a wider programme to enable Contracting Parties to identify appropriate measures for the protection of these habitats. The programme is led by the UK Joint Nature Conservation Committee (JNCC) and requires Contracting Parties to collate, standardise and submit habitat records to a single, common dataset

Available online through the EMODnet Seabed Habitats online interactive map: www.emodnet-seabedhabitats.eu/webgis

Full link to see the OSPAR layer on the interactive map: <http://www.emodnet-seabedhabitats.eu/default.aspx?page=1974&LAYERS=OSPARhabPolygon,OSPARHabPoints,Region&zoom=3&Y=51.759999999887654&X=2.269999999995032>

MAREANO

www.mareano.no

The programme started in 2005 as one of the tools for the process of developing a plan for the integrated management of the marine environment of the Barents Sea. MAREANO aims to map terrain, sediments, benthic habitats, species diversity and sediment pollutants. It is a multi-disciplinary collaboration between the Institute of Marine Research (IMR), the Geological Survey of Norway (NGU), and the Hydrographic Service (SKSD). In addition to collecting new data, the partners collate existing information and present it integrated in the web portal www.mareano.no

INFOMAR

www.infomar.ie

INFOMAR (Integrated Mapping for the Sustainable Development of Ireland's Marine Resource) is a joint venture between the Marine Institute and the Geological Survey of Ireland. The mapping programme aims to carry out integrated mapping over the entire shelf and coastal waters of Ireland.

MAREMAP

<http://www.maremap.ac.uk/>

The Maritime Environment Mapping Programme (MAREMAP) was launched in June 2010 to bring together Natural Environment Research Council (NERC) organisations with common geoscience objectives. It is a joint initiative led by the British Geological Survey (BGS), the National Oceanography Centre (NOC) and the Scottish Association for Marine Science (SAMS) with partners from the University of Southampton, Channel Coastal Observatory, the University of Plymouth, the Maritime and Coastguard Agency (MCA), the Centre for Environment, Fisheries & Aquaculture Science (CEFAS) and Marine Scotland.

CODEMAP

<http://www.codemap.eu/>

CLASSIFICATION LISTS

The Marine Life Information MarLIN, Network for Britain and Ireland

<http://www.marlin.ac.uk/habitats.php>

The National Marine Habitat Classification for Britain and Ireland. Version 04.05.

www.jncc.gov.uk/MarineHabitatClassification

EUNIS Habitat Classification. European Environment Agency:

<http://eunis.eea.eu.int>

BATHYMERY DATA

GEBCO (2014). General bathymetric chart of the oceans (GEBCO).

http://www.gebco.net/data_and_products/gridded_bathymetry_data/gebco_30_second_grid/

PROCESSING TOOLS

dbSEABED: Information Integration System for Marine Substrates:

<http://instaar.colorado.edu/~jenkinsc/dbseabed/>

dbSEABED creates unified, detailed mappings of the materials that make the seafloor by efficiently integrating thousands of individual datasets. The goal is to bring decades of seabed information - and today's information - from marine geology, biology, engineering and surveys into one seabed mapping that can fulfil the community needs for ocean-bottom information on many spatial scales. The system deals with seabed texture, composition, acoustic properties, colour, geology and biology.