

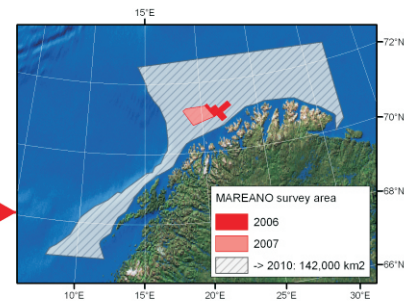
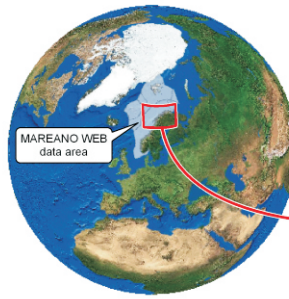
MAREANO WEB

GIS Internet portal for marine data
in Norwegian waters

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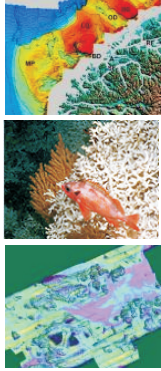
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INTRODUCTION

The objective of the MAREANO project is to contribute to a more complete, knowledge based management of Norwegian waters.



The project consists of three main elements:

- Detailed survey and mapping of the physical, chemical, and biological environment of the sea floor.
- A user-friendly Internet portal that contains information and data related to the project: MAREANO WEB.
- Research activity focused on coral reefs, the marine environment, the relation between biotopes and sediments and the relation between gas and oil leakage and biotopes.

The objective of MAREANO WEB is:

- To be the most important Norwegian portal for marine data.
- To be a knowledge based decision making tool for public management.

The MAREANO WEB Internet portal:

- Combines information about the project and the research data, a map viewer, and data from different research areas in the same portal.
- Gives efficient access to marine data for public management.
- Provides simple data presentation for the public.
- Includes data from many institutions in the same map viewer.
- Accesses data from distributed databases. The data owners maintain their own data.
- Offers the possibility to download data.

The MAREANO project is a collaboration between

- The Norwegian Institute of Marine Research (IMR),
 - The Geological Survey of Norway (NGU),
 - The Norwegian Mapping and Cadastre Authority (SK)
- and it is financed by the Norwegian Government.



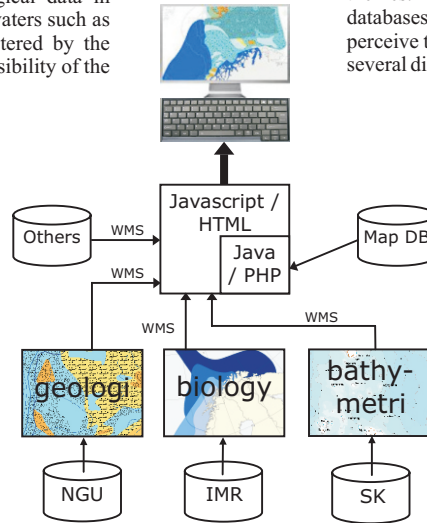
OVERVIEW

The project members' data are accessed through the MAREANO WEB portal. This includes geological, bathymetric, and ecological data in addition to data describing human activities in Norwegian waters such as fisheries and petroleum operations. The data are administered by the respective project member, which means that it is the responsibility of the data owners to update, format, and quality control the data.

MAREANO WEB data:

- Bathymetry
- Geology
- Distribution maps for fish and marine mammals (seal and whale)
- Fish farming and fisheries (trawl areas)
- Petroleum operations (oil and gas production, pipelines, CO₂ storage)
- Coral reefs
- Contaminated sediments (mercury, lead)
- Marine protective areas
- Video data from surveys

The distributed databases are connected by standardized interfaces for exchanging map data such as XML (eXtended Markup Language), and WMS (Web Map Server). Various data themes are presented as separated map layers, which can be shown separately or in combination with other map layers.



In the MAREANO WEB map viewer a user selects an area and data themes. Data that matches the selection are collected from the distributed databases, and the system presents the result in a map. The user will perceive the system as one map server, but the data will be collected from several distributed map services and databases.

The user interface of the MAREANO map viewer contains two ways of accessing data: one for the GIS novice and one for the advanced GIS user.

The GIS novice gets easy and perspicuous access to the data by choosing from predefined maps. The predefined maps are simple representations of national data sets, which are in great demand by both the public management and the public.

The advanced GIS user gets more flexibility: he can choose from all the MAREANO data layers and put them together exactly the way he wants. In addition the advanced user gets more map tools and several functions for exploring the data.

It is very important that both user groups experience the map viewer as user-friendly and efficient.



CHALLENGES

The development of the MAREANO map viewer presents several challenges:

- Adjusting the user interface to a wide variety of users (scientists, public management, and the general public).
- Creating a user-friendly and efficient user interface without losing flexibility.
- Creating a user-friendly and efficient user interface with many map layers.
- Combining map layers that are useful and in great demand by the users.
- Managing metadata.
- Creating unambiguous symbolizing.
- Handling data that vary in time and depth.

FUTURE WORK

The MAREANO project is an ongoing project financed by the Norwegian Government until 2010. Survey activity is planned for each year until 2010. The existing pilot version of the MAREANO WEB portal will be replaced by the new version in February 2007.

In 2007, we will focus on the implementation of the WFS standard as a supplement to WMS data. In addition, we will explore how to visualize data that vary in time and depth, i.e. 3D and 4D data.

