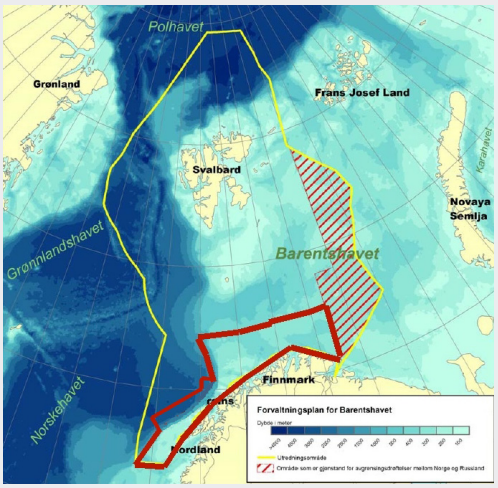
NGU
Norges geologiske undersøkelse
Geological Survey of Norway

FOCUS

Geoscience in ocean management:

The MAREANO programme

MAREANO is the largest multidisciplinary mapping programme of its kind in Norway. It was initialized by the government in 2005 to provide essential scientific information regarding the benthic ecosystems in the Lofoten islands – Barents Sea region. The goal is to ensure sustainable future management of Norway's northern seas.

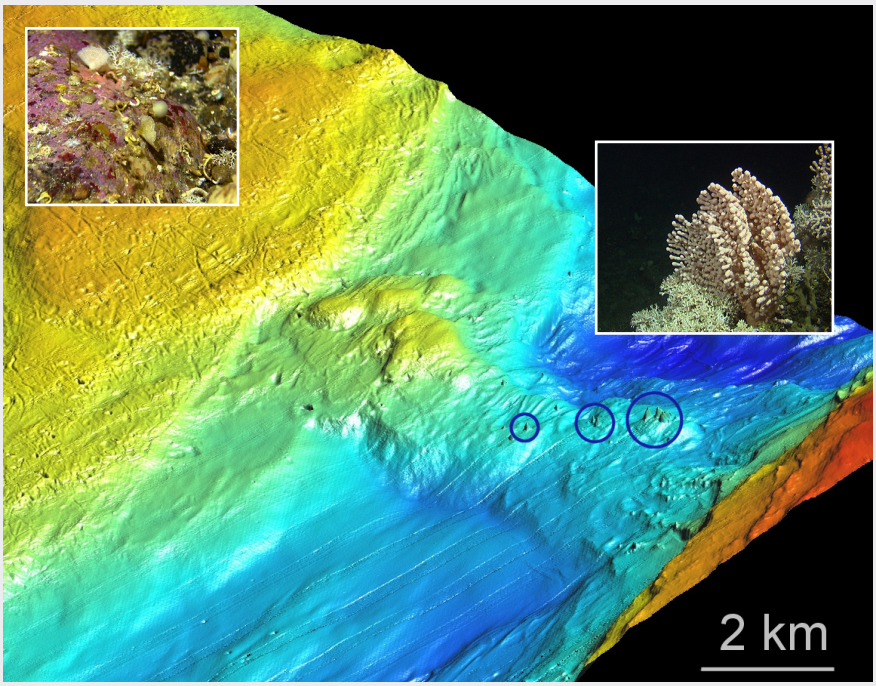


Overview map of the area (140.000 km^2) that is covered by MAREANO (red line).

With some of the world's largest fish resources, vulnerable ecosystems and important hydrocarbon resources, the Lofoten islands – Barents Sea region is an area of potential conflicts. An extensive environmental impact assessment identified severe knowledge gaps regarding the area, which the MAREANO programme is designated to fill.

The programme includes hydrography, geology, biology and chemistry. The Institute of Marine Research (IMR- programme coordinator), the Geological Survey of Norway (NGU), and the Norwegian Mapping Authority, Hydrographic Service (NHS) are core partners. The Programme is financed by the Ministry of Fisheries and Coastal Affairs, the Ministry of Environment and the Ministry of Trade and Industry via contributions from the National Budget.

MAREANO maps bathymetry, sediment composition, biodiversity, habitats and biotopes as well as pollution in the seabed in the region. The aim is to provide answers to questions such as:

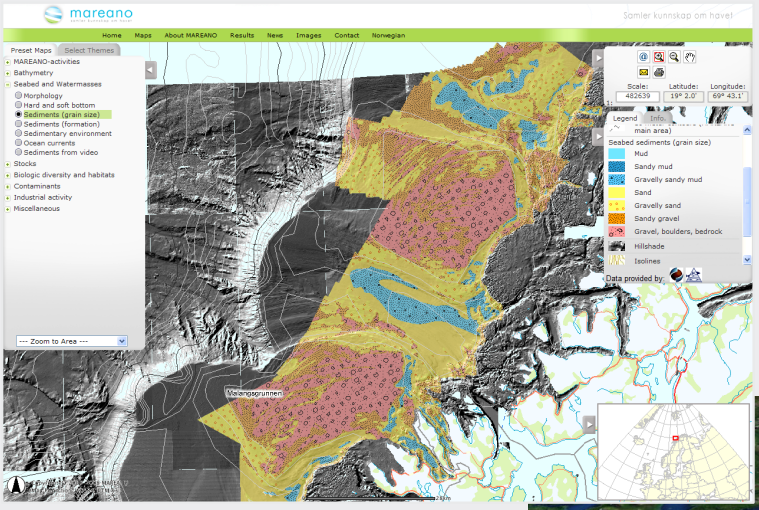


3D terrain models were used to target these coral reefs (blue circles), located on a sandstone ridge in a glacially formed cross-shelf trough. Along the margins, boulder fields with spectacular red algae cover occur (all data and images – MAREANO).

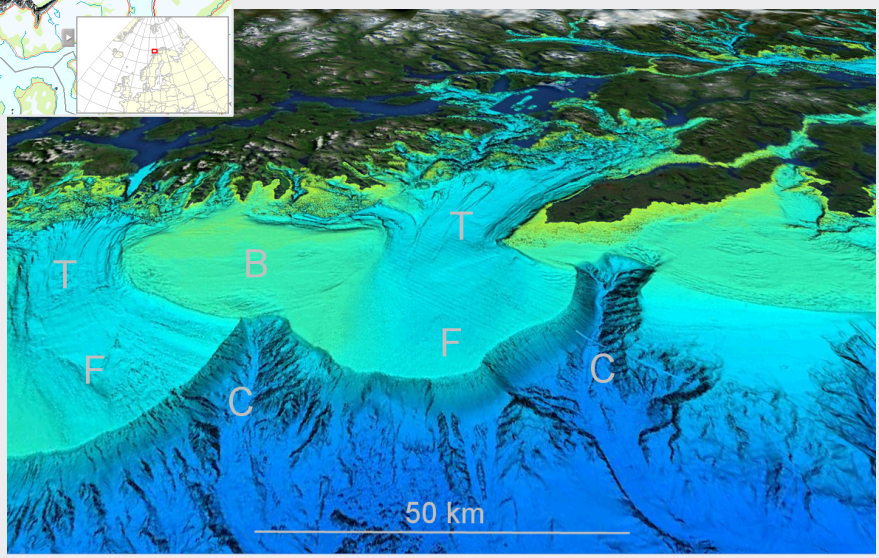
- What are the submarine landscapes of the Norwegian continental shelf?
- What does the seabed consist of?
- How are habitats, biotopes and biodiversity distributed across the seabed?
- What is the relationship between the physical environment, biodiversity and biological resources?

Multibeam echosounding provides a detailed bathymetric 3D terrain model of the seabed, and has proven to be critical for the mapping of geology and biology. Extensive video documentation and sampling, together with multibeam backscatter and sediment echosounder data are interpreted by multidisciplinary teams of geologists and biologists, compiling the final map products.

The basic geological products are maps showing grain size, genesis (Quaternary geology), sedimentary processes, acoustic hardness (backscatter) and submarine landscapes and landforms. The geological maps form the basis for nature type maps, along with biological data, describing ecosystems and habitats. Environmental maps showing levels of contaminants in the sediments include both heavy metals (NGU) and organic contaminants like hydrocarbon, PAH and other POPs (IMR). All products are available through the web site www.mareano.no, together with news and other results from the MAREANO programme.



The web site www.mareano.no has an advanced map interface, showing all the main maps produced. In this example, a shaded relief image of the bathymetry (NHS) is overlain by a grain size map(NGU), combined with geographical data at IMR and provided to the user's computer.



Geological processes have shaped the continental shelf, and exert a strong influence on the physical environment, nature types and habitats. T – glacial trough, B – bank, F- fan, C – canyon. Water depths from 0 to 2000 meters.

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