

FIG WORKING WEEK 2019

22-26 April, Hanoi, Vietnam

Presented by the FIG Working Week 2019,
April 22-26, 2019 in Hanoi, Vietnam

"Geospatial Information for a Smarter Life
and Environmental Resilience"



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Comprehensive Database for Seabed Environment

Kari Strande, Norway

Ministry of Local Government and Modernisation

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1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS

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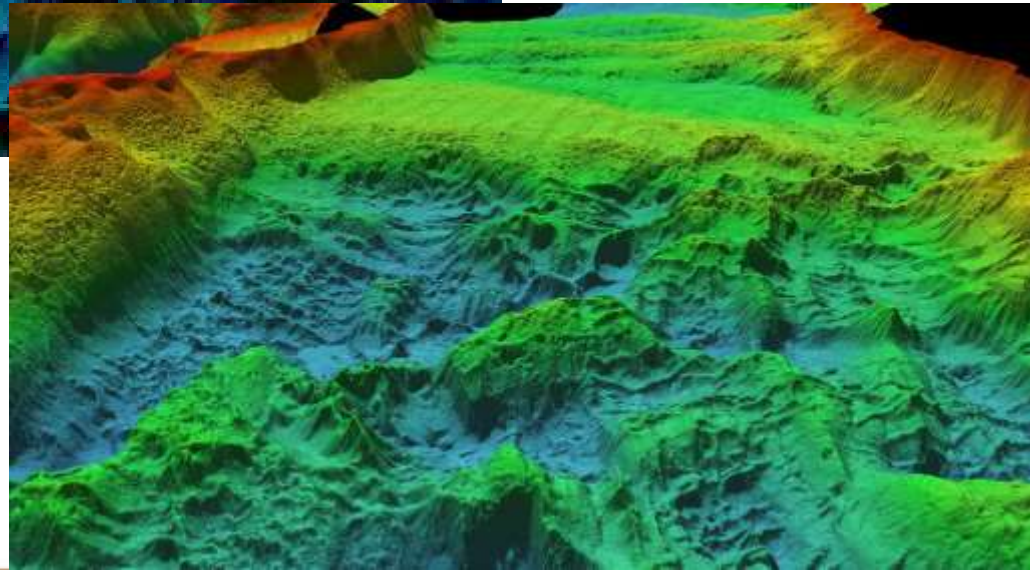
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14 LIFE BELOW WATER



- Increase scientific knowledge
- Develop research capacity
- Transfer marine technology
- Improve ocean health



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*Look deep into nature, and then you
will understand everything better.*

~Albert Einstein

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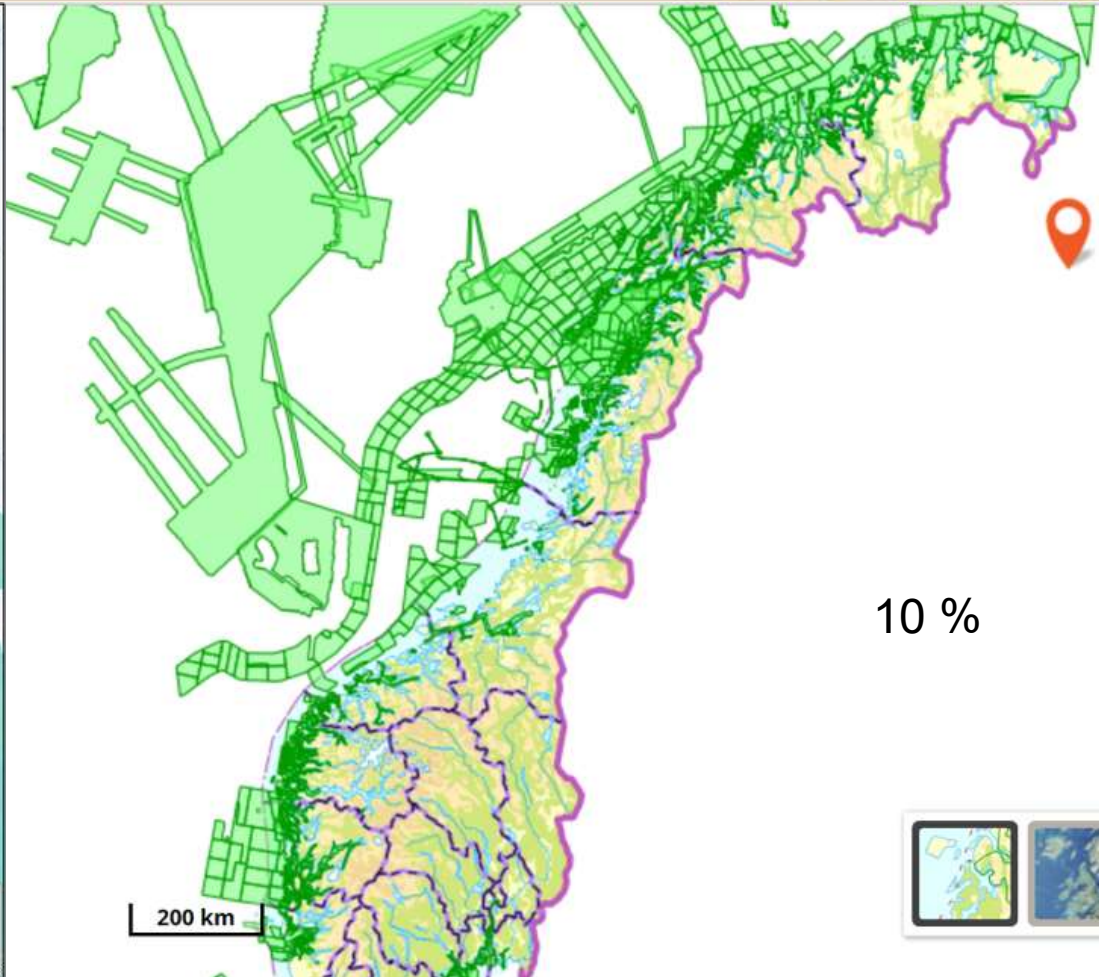


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Marine **AREA** database for **NO**rwegian waters A tool for Blue Economy and sustainable ocean development

Mareano and Blue Economy: Turning aspiration into opportunity as dependence on the oceans increases, to provide food, energy and ecosystem services for a growing population, the Blue Economy faces unprecedented growth. At the same time secure sustainable ecosystems and biodiversity

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MAREANO maps the seabed off the Norwegian ocean, presenting knowledge on:



Habitats – geological and biological composition

Nature types – terrain variability and seascape

Environmental status in bottom sediments

Detailed bathymetry

Database- and map services presenting systematic information about Norwegian seas

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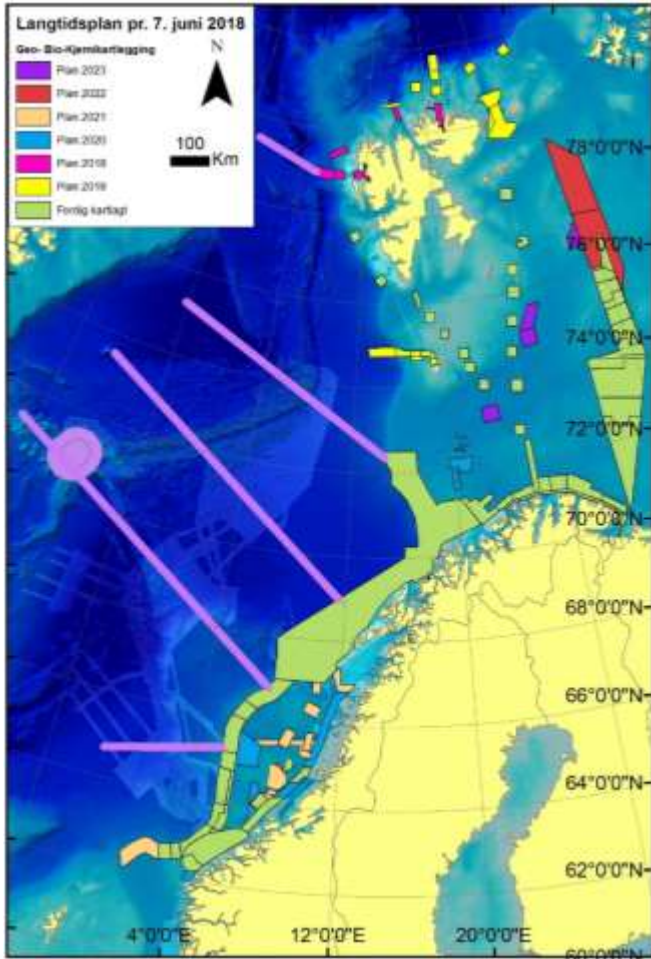


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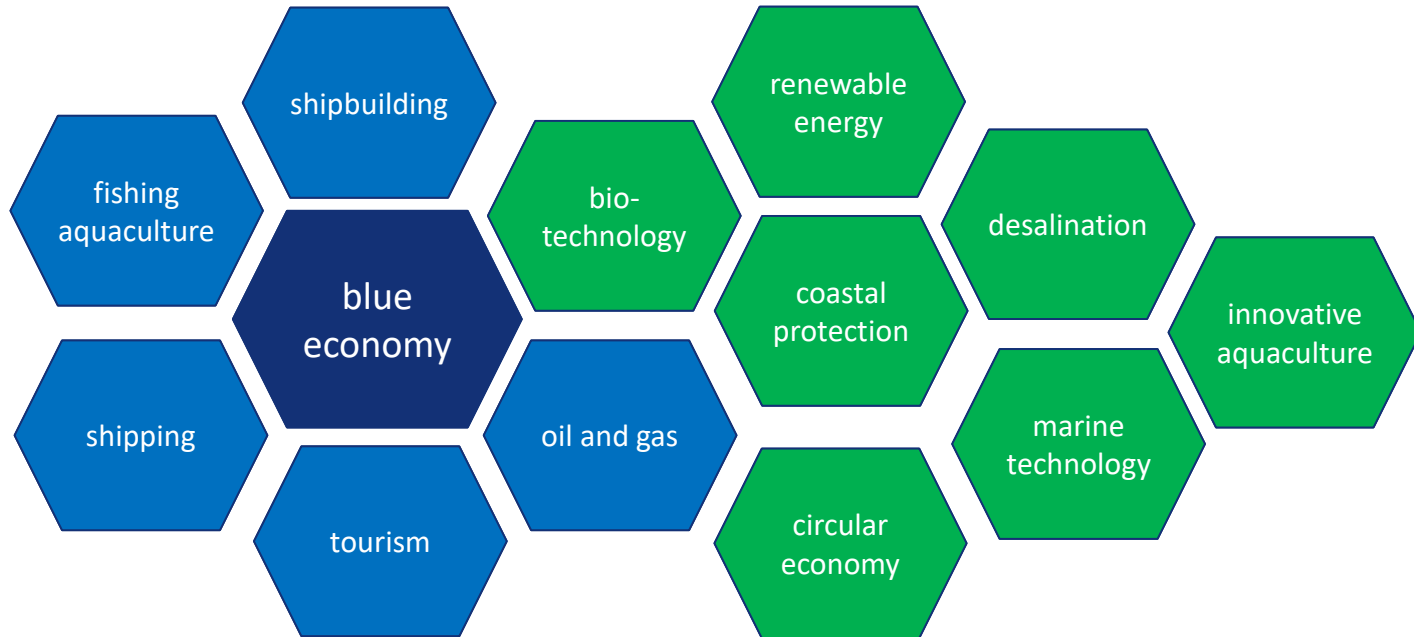
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Traditional and emerging sectors in the blue economy



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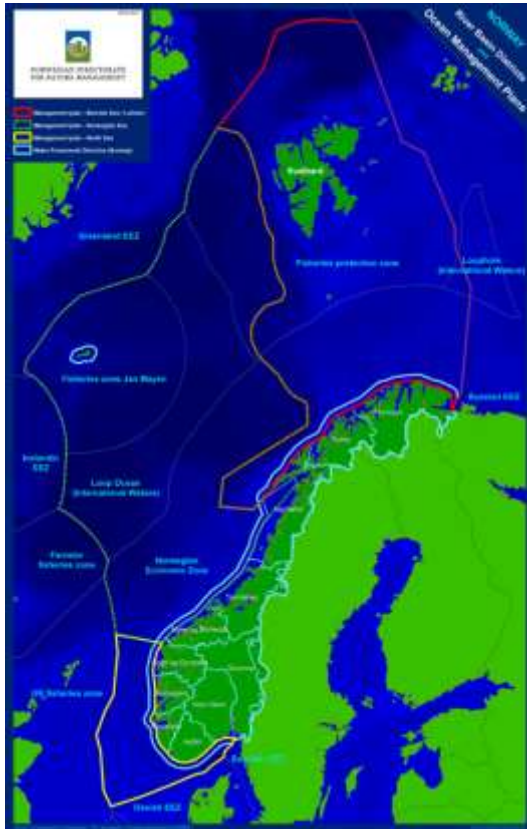
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Management plans for Norwegian Sea Areas



Integrated Management plan for the Barents Sea and Lofoten



Integrated Management plan for the Norwegian Sea



Integrated Management plan for the North Sea – Skagerrak

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The purpose of the Integrated Management Plans is to provide a framework for the sustainable use of natural resources and goods derived from an area and at the same time maintain the structure, functioning and productivity of the ecosystems of the area.

Evaluate conflicting interest

Guidelines for activities



Achieve consensus about the management

Identify knowledge gaps

Guidelines for monitoring

Levels for acceptable influence by human

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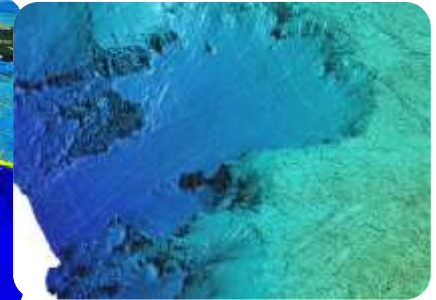
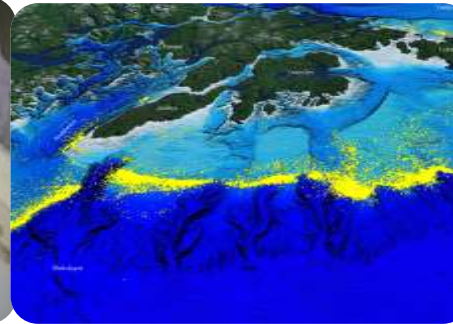
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Knowledge for whom and for what?



Characterising of nature types
Basic knowledge for future ecosystem-based management

Pollution status for marine sediments
Basic knowledge for future ecosystem-based management

Fisheries
Reduced fuel combustion, reduced negative effects on the seabed and fishing gears

Industry
Stability judgement for subsea installations, location of wind-driven marine located electric power plants

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Depth mapping / Bathymetry

Multibeam echo sounding from surface ship (depth data, backscatter and water column data)



Geological sampling

Sediment samples by using corers or grab
Visual observation of the seabed (real-time video)
Sediment-penetrating echo sounder (e.g. TOPAS)



Biological sampling

Fauna is sampled by using grab, sledge and beam trawl
Video



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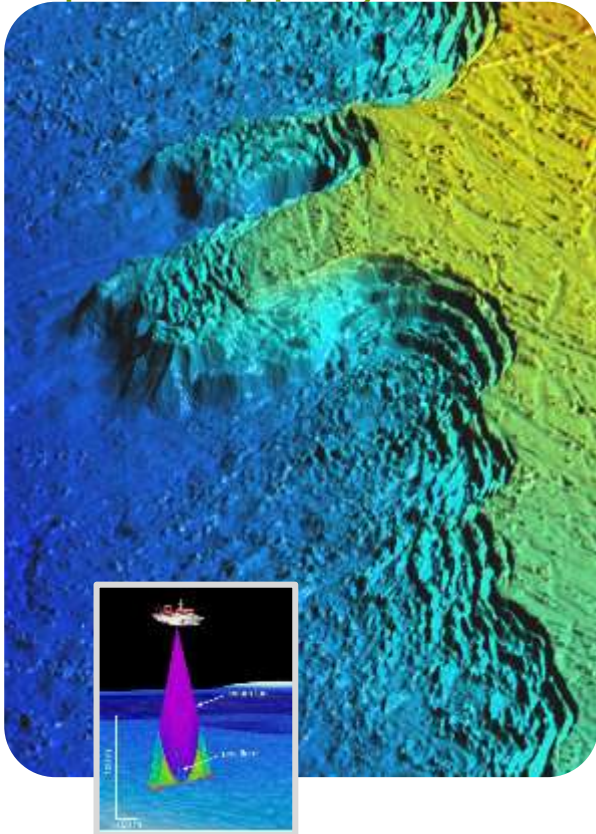
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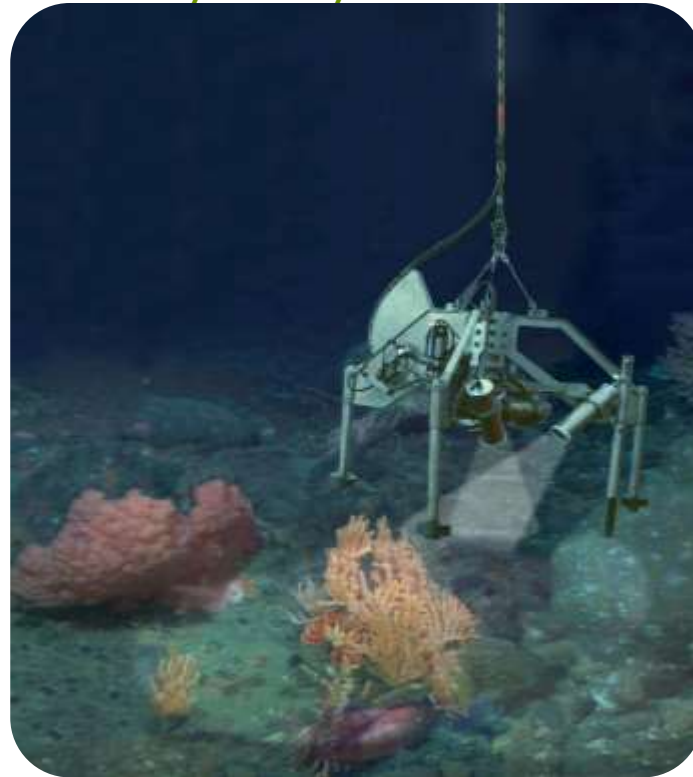
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Example: Mapping coral reefs with bathymetry and HD video



3D model from multibeam bathymetry



Towed platform with HD video

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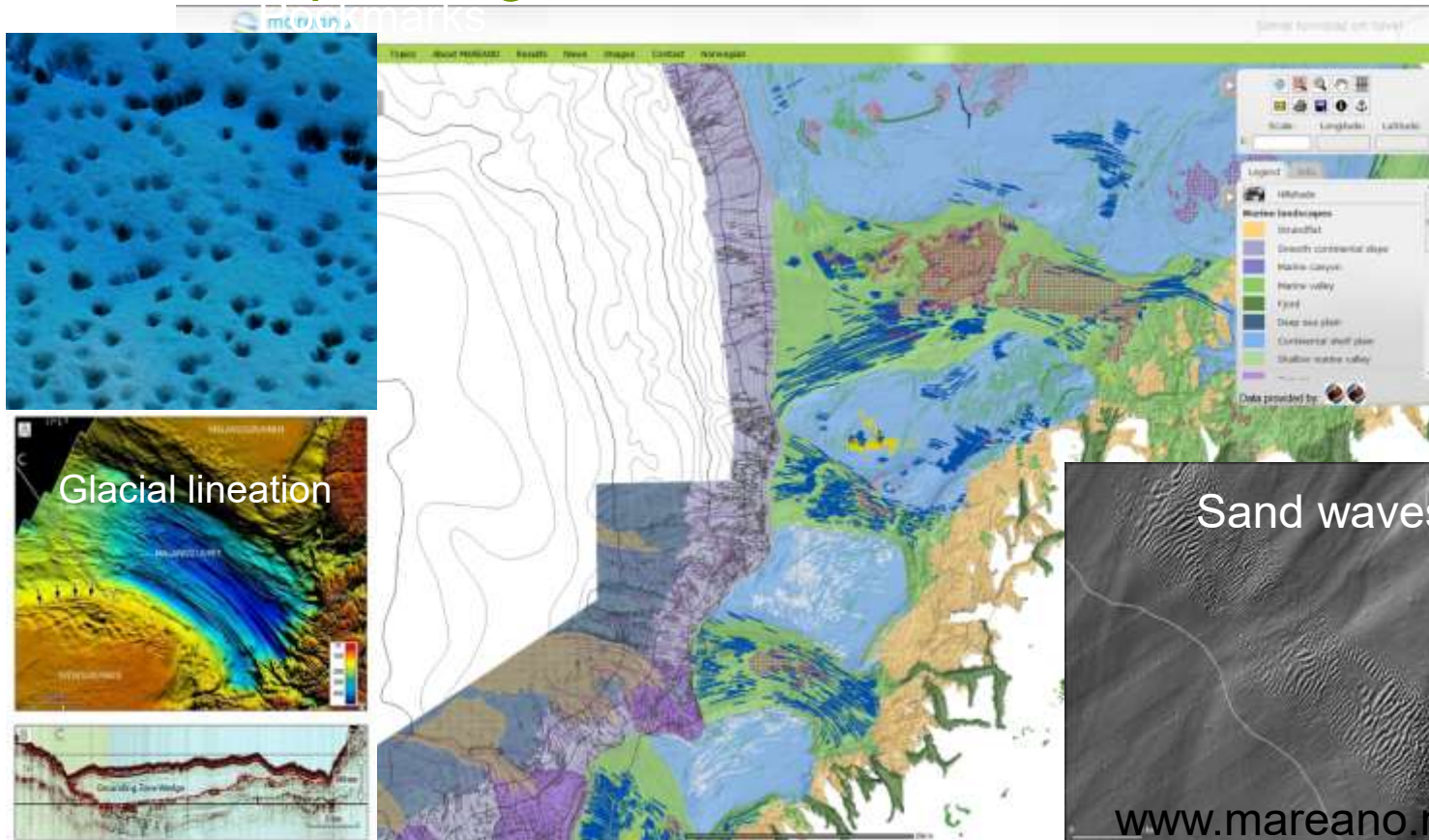
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Marine landscapes, e.g.



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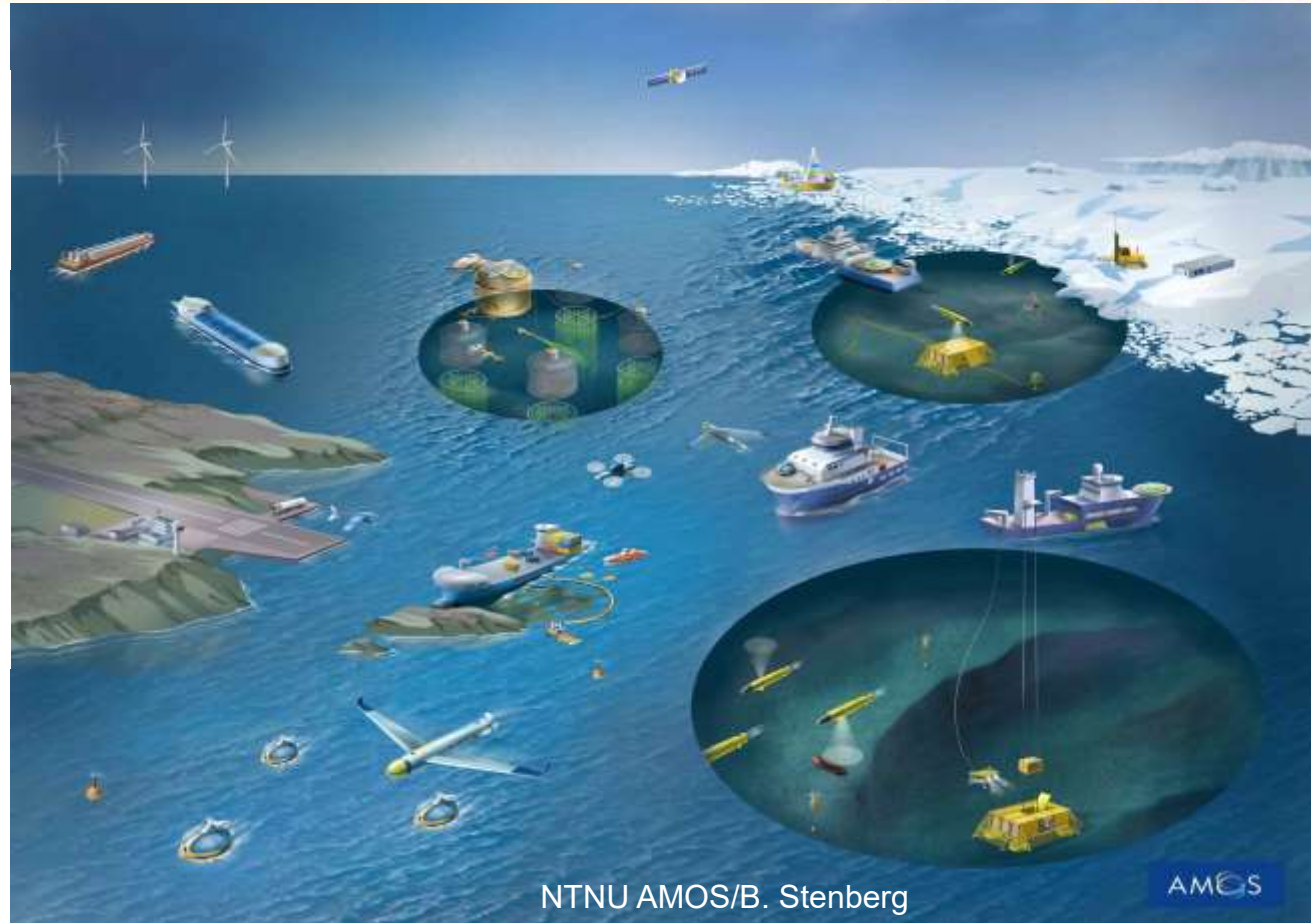
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Technological developments

Automatic methods
Unmanned vessels
Autonomous survey



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The Steering Group

Ministry of Fishery and Trade

Ministry of the Environment

Ministry of Transportation

Ministry of Oil and Energy

Ministry of Local Government and Modernisation

Total 115 mill. USD



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The Programme Group

the Coastal Administration

the Directorate of Fisheries

the Geological Survey of Norway

the Institute of Marine Research

the Norwegian Environment Agency

the Norwegian Mapping Authority – Hydrographic Service

the Norwegian Petroleum Directorate

the Norwegian Polar Institute

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- Mapping and description services
- Scientific papers and articles

Downloadable datasets – terrain models, shape-files, WMS, produced standard maps, quality ensured data

<http://www.mareano.no/datanedlasting> and

www.geonorge.no



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"The ocean's bottom is at least as important to us as the moon's behind."

Gordon G. Lill, Oceanographer



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FOTO: PROMONORGE



FOTO: PER ANDERS BJØRKLUND



FOTO: KARTVERKET



FOTO: STATKRAFT



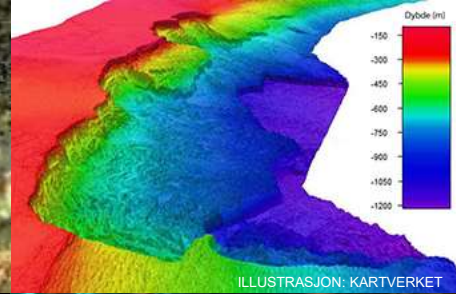
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FOTO: NIVA



FOTO: MAREANO/Hi



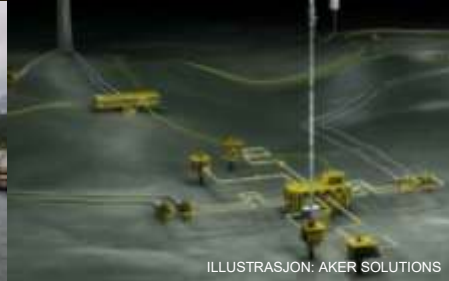
ILLUSTRASJON: KARTVERKET



ILLUSTRASJON: KONGSBERG MARITIME



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