

Operational Decision Support System (ODSS) for the Baltic Blue Mussel Farming - a platform enabling upload, analysis and sharing of information

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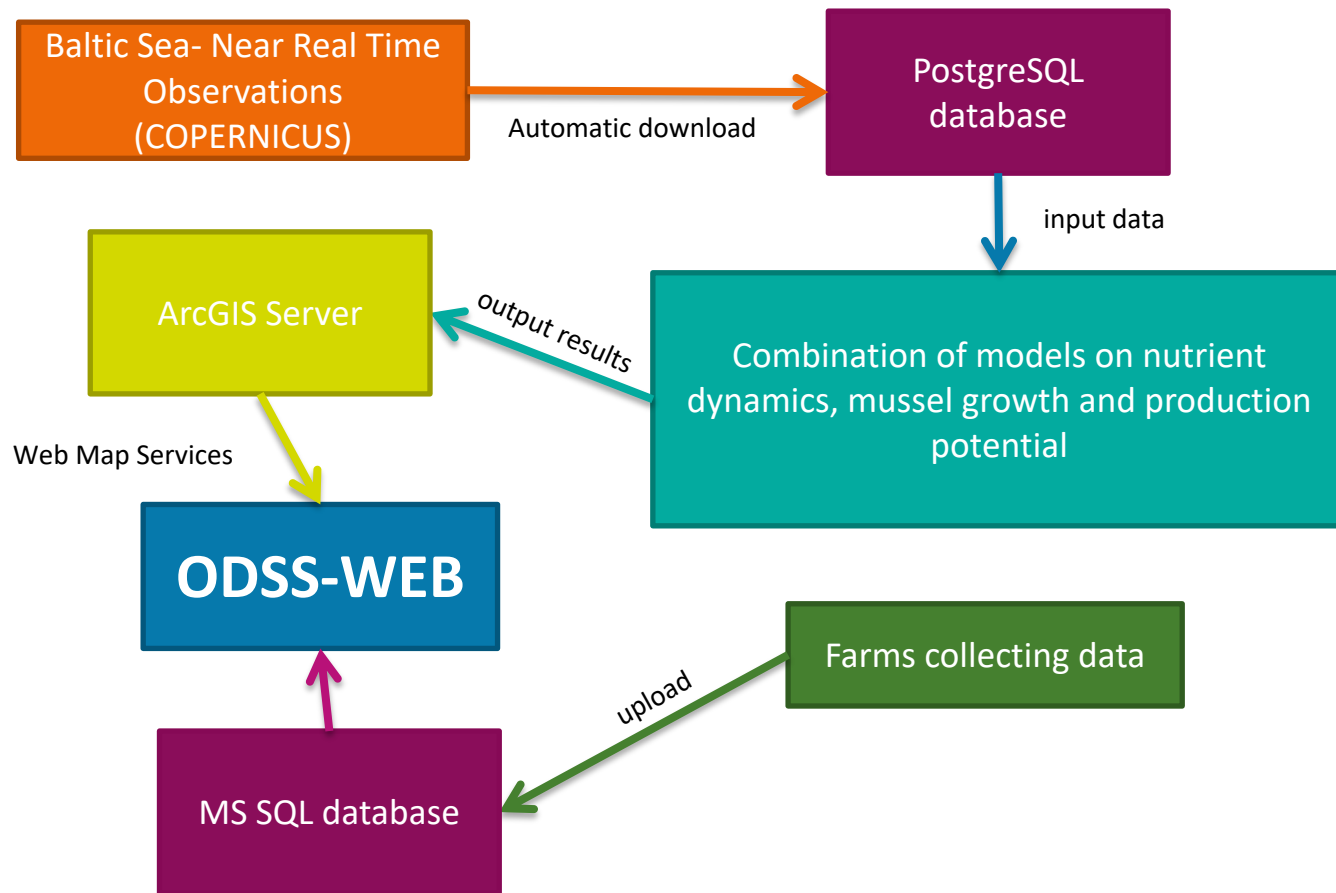
19 March 2019

www.sea.ee/bbg-odss

Operational Decision Support System (ODSS)

- The ODSS enables different end-users to make effective decisions about mussel farming in the Baltic Sea.
- These decisions are driven by the best existing monitoring and modelling data.
- As such the ODSS raises the capacity of government and county level officials, internal and external stakeholders and the industry to achieve the environmental, economic and socio-economic objectives of the mussel farming.

ODSS data flow principal diagram



Cross-platforming

Web-application developed using ASP.NET MVC development framework for building dynamic websites with HTML, CSS, JavaScript and server scripting, that conform to the latest web standards and can be opened on almost all devices and browsers. Map application environment will be developed using ArcGIS API for JavaScript.



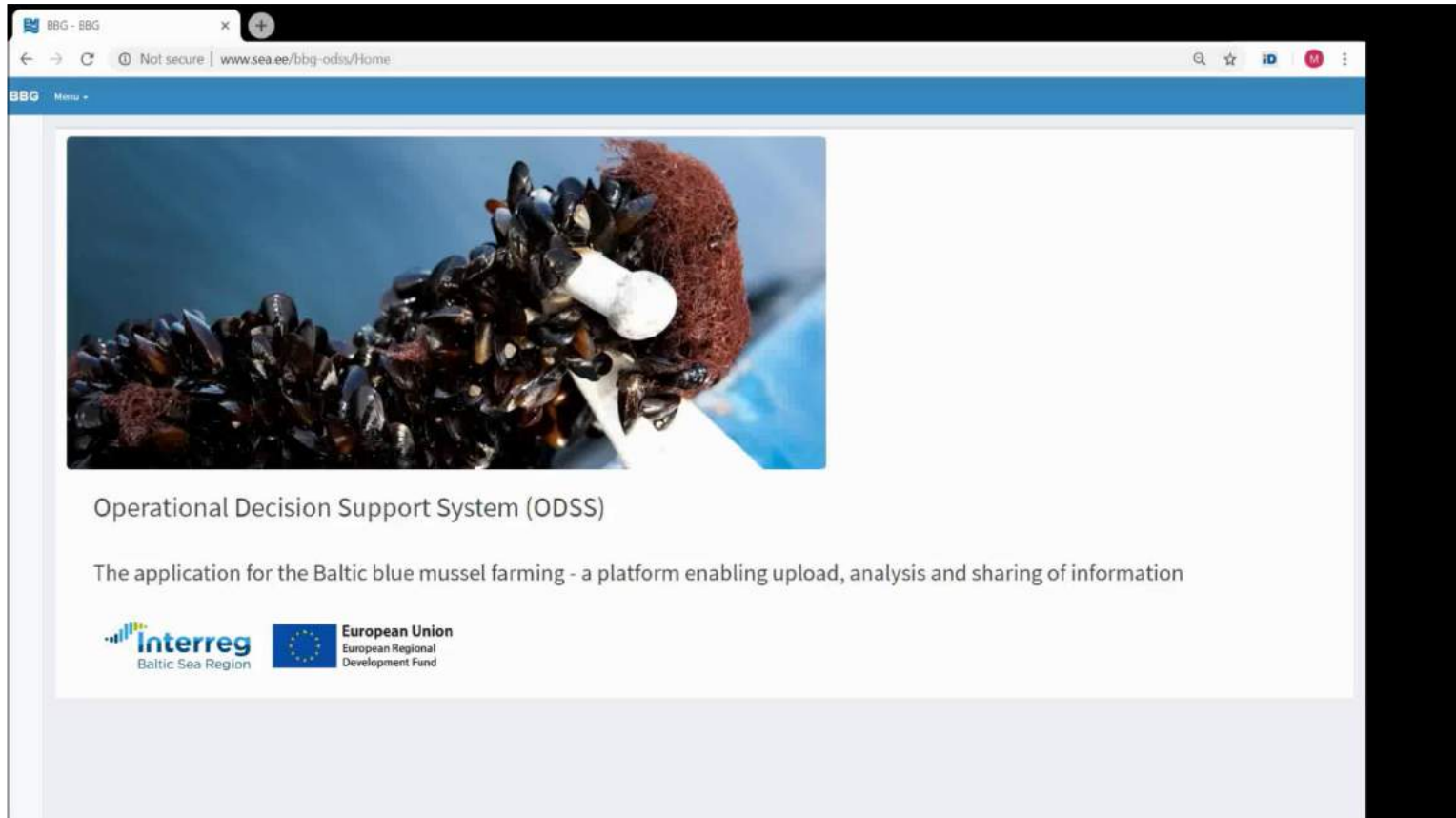
Sections of the ODSS

- Farms & Additional Info
- Environmental Impact Assessment
- Earlier Impact Evidence
- Continuous Oceanographic Recordings
- Plan your FARM

Farms & Additional Info

This section presents the current mussel farms in the Baltic Sea area as well as provides information on variables monitored in these farm areas. Results of the environmental monitoring are shown in the subsection Environmental Impact Assessment.


Farms & Additional Info

A screenshot of a web browser displaying the homepage of the Operational Decision Support System (ODSS) for Baltic Blue Growth. The browser's address bar shows the URL 'www.sea.ee/bbg-odss/Home'. The website features a blue header with the 'BBG' logo and a 'Menu' button. The main content area includes a large image of a mussel farm with a red net. Below the image, the text 'Operational Decision Support System (ODSS)' is displayed, followed by a description: 'The application for the Baltic blue mussel farming - a platform enabling upload, analysis and sharing of information'. At the bottom, there are logos for 'Interreg Baltic Sea Region' and the 'European Union European Regional Development Fund'.

BBG - ODSS


← → ↻ ⓘ Not secure | www.sea.ee/bbg-odss/Home


BBG Menu



Operational Decision Support System (ODSS)

The application for the Baltic blue mussel farming - a platform enabling upload, analysis and sharing of information

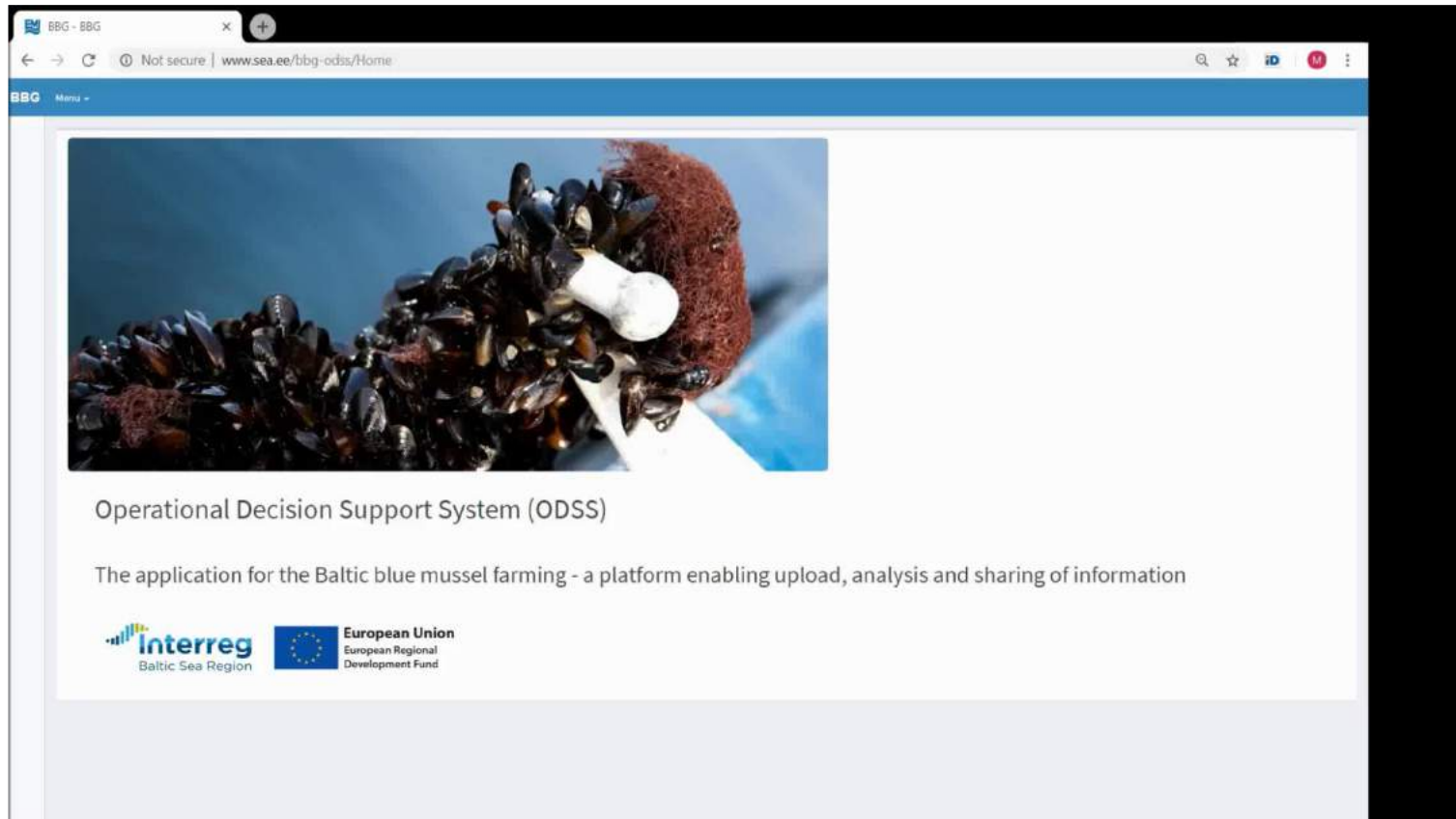
 **Interreg**
Baltic Sea Region

 **European Union**
European Regional
Development Fund

Environmental Impact Assessment

- This section summarizes the existing monitoring data in the Baltic Sea mussel farms and shows a presence of any significant effects either positive or negative due to mussel farming.
- A user can select farm and environmental variable(s) and then the engine calculates if there exists statistical difference in these variables between mussel farm and the respective reference area.
- The results are summarized in a form of downloadable figures and tables.

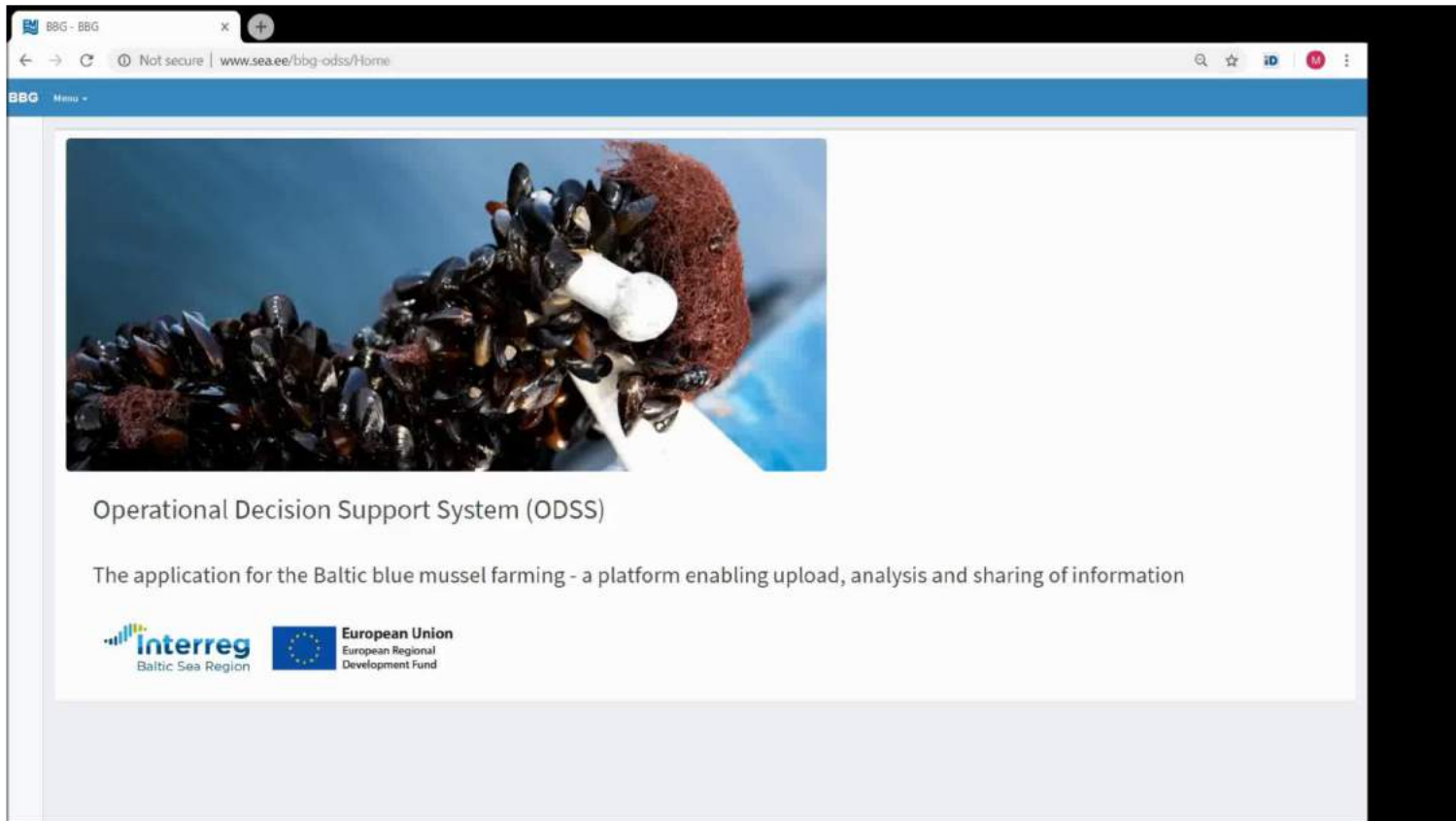
Environmental Impact Assessment



Earlier Impact Evidence

- This section revises the earlier impact evidence of mussel farming before the Interreg project Baltic Blue Growth.
- Similar to previous section, users can select farms and environmental variables and see if mussel farms are expected to have any negative and positive effects.


Earlier Impact Evidence



Continuous Oceanographic Recordings



- In order to optimize monitoring activities and collect high-frequency data on oxygen concentration at sediment-water interface underneath the Baltic Sea mussel farms, different types of oceanographic instruments were deployed.
- This section shows results of these oceanographic instrument measurements.
- The functionality of this section resembles earlier sections.

Continuous Oceanographic Recordings



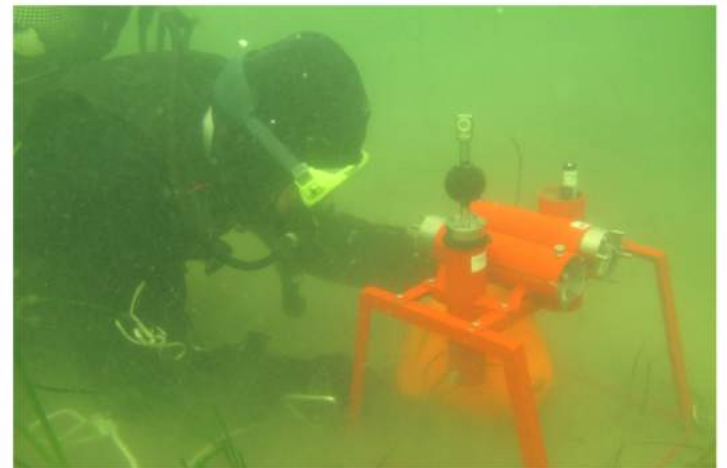
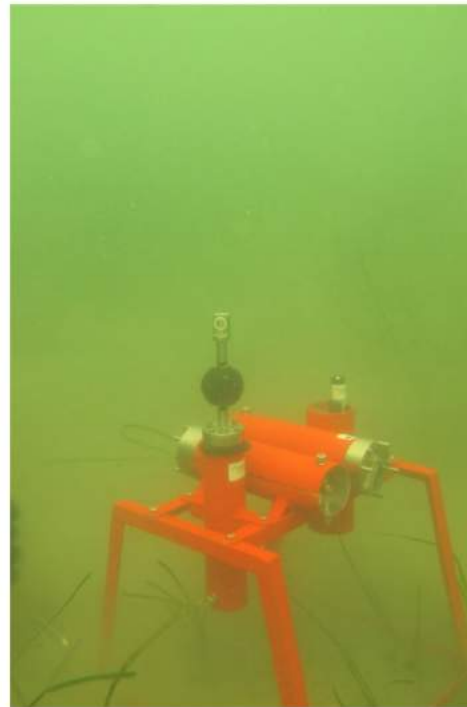
Operational Decision Support System (ODSS)

The application for the Baltic blue mussel farming - a platform enabling upload, analysis and sharing of information

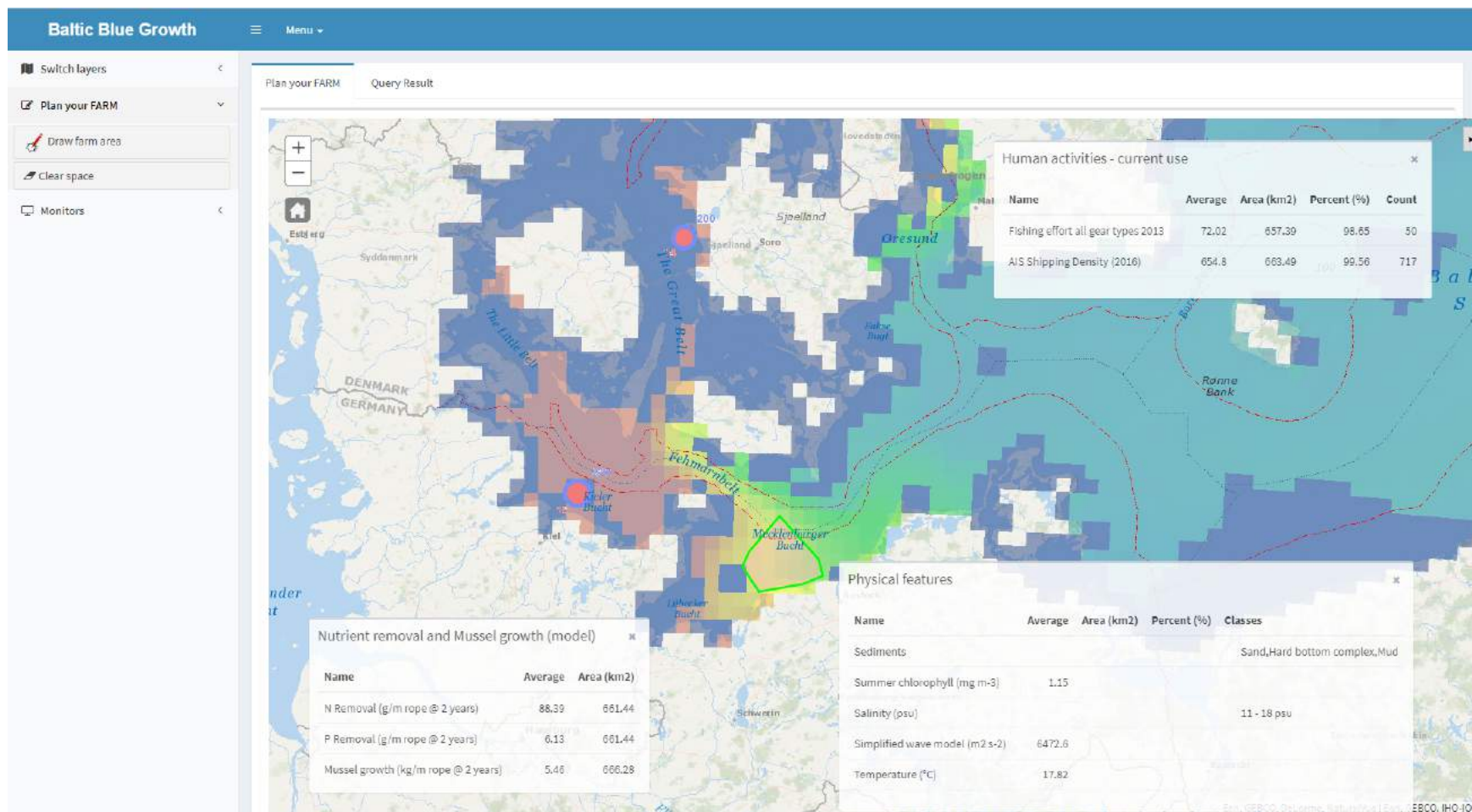
 

The screenshot shows a web browser window with the address bar displaying 'www.sea.ee/bbg-odss/Home'. The page features a large image of mussels and a red net. Below the image, the text 'Operational Decision Support System (ODSS)' is displayed, followed by a description: 'The application for the Baltic blue mussel farming - a platform enabling upload, analysis and sharing of information'. At the bottom, there are logos for 'Interreg Baltic Sea Region' and the 'European Union European Regional Development Fund'.

Deployment of oceanographic instruments to Musholm in May 2017



Plan your FARM



Plan your FARM

- Plan your farm section compiles different datasets that are needed to reach effective decisions on mussel farming.
- The datasets span from original Baltic Blue Growth products to different online sources.
- Here the user can get a spatial overview on the physical environment of the Baltic Sea, intensity of different human uses or pressures and environmental protection.
- Most importantly, the engine produces maps of a pan Baltic potential of mussel growth and nutrient removal.

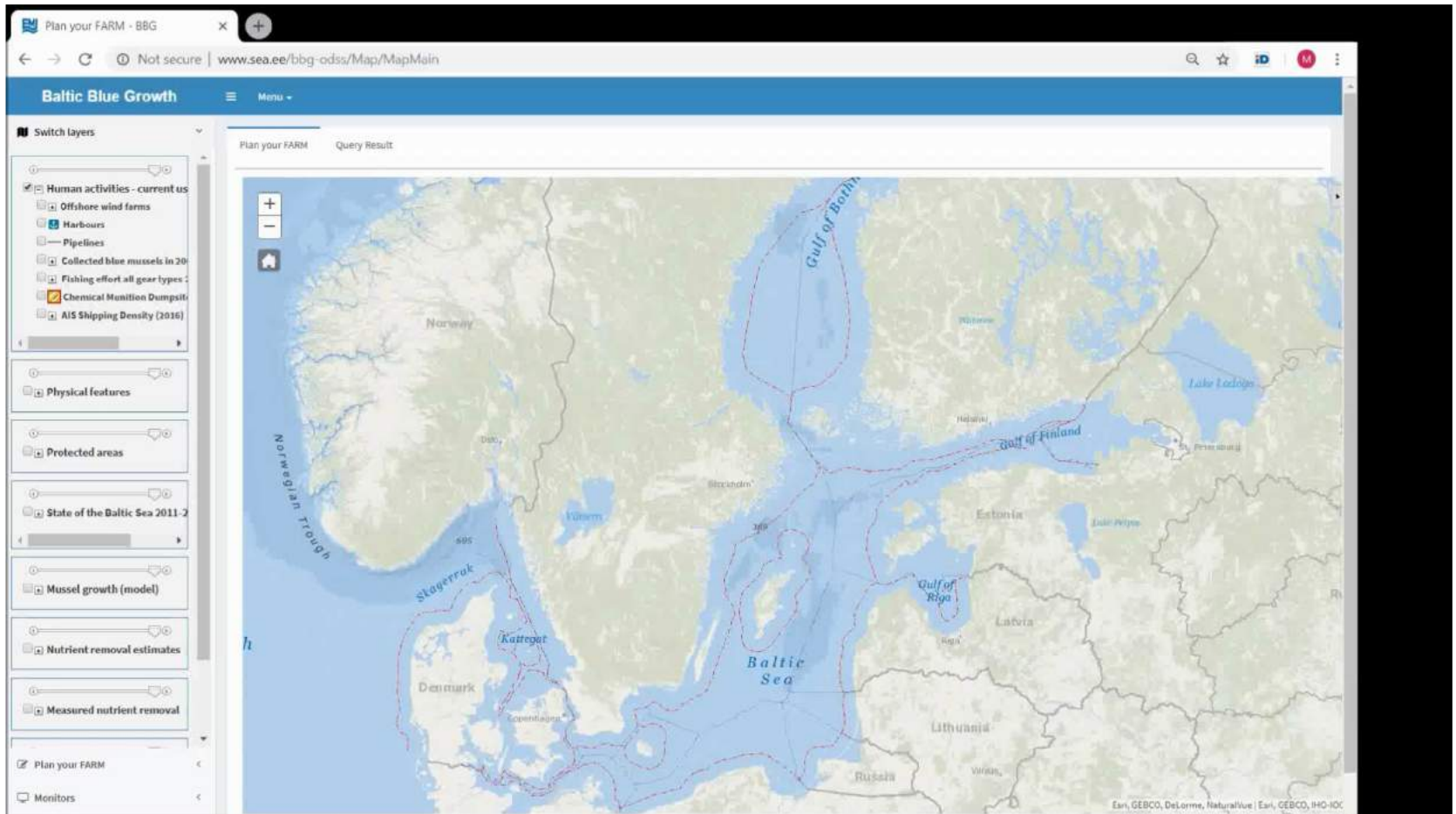
Plan your FARM

HELCOM Map Layers

Human activities - current use

- Offshore wind farms
- Harbours
- Pipelines
- Collected blue mussels in 2005 – 2015 (avg kg/year)
- Fishing effort all gear types 2013 (h)
- Chemical Munition Dumpsites
- AIS Shipping Density (2016)

Plan your FARM



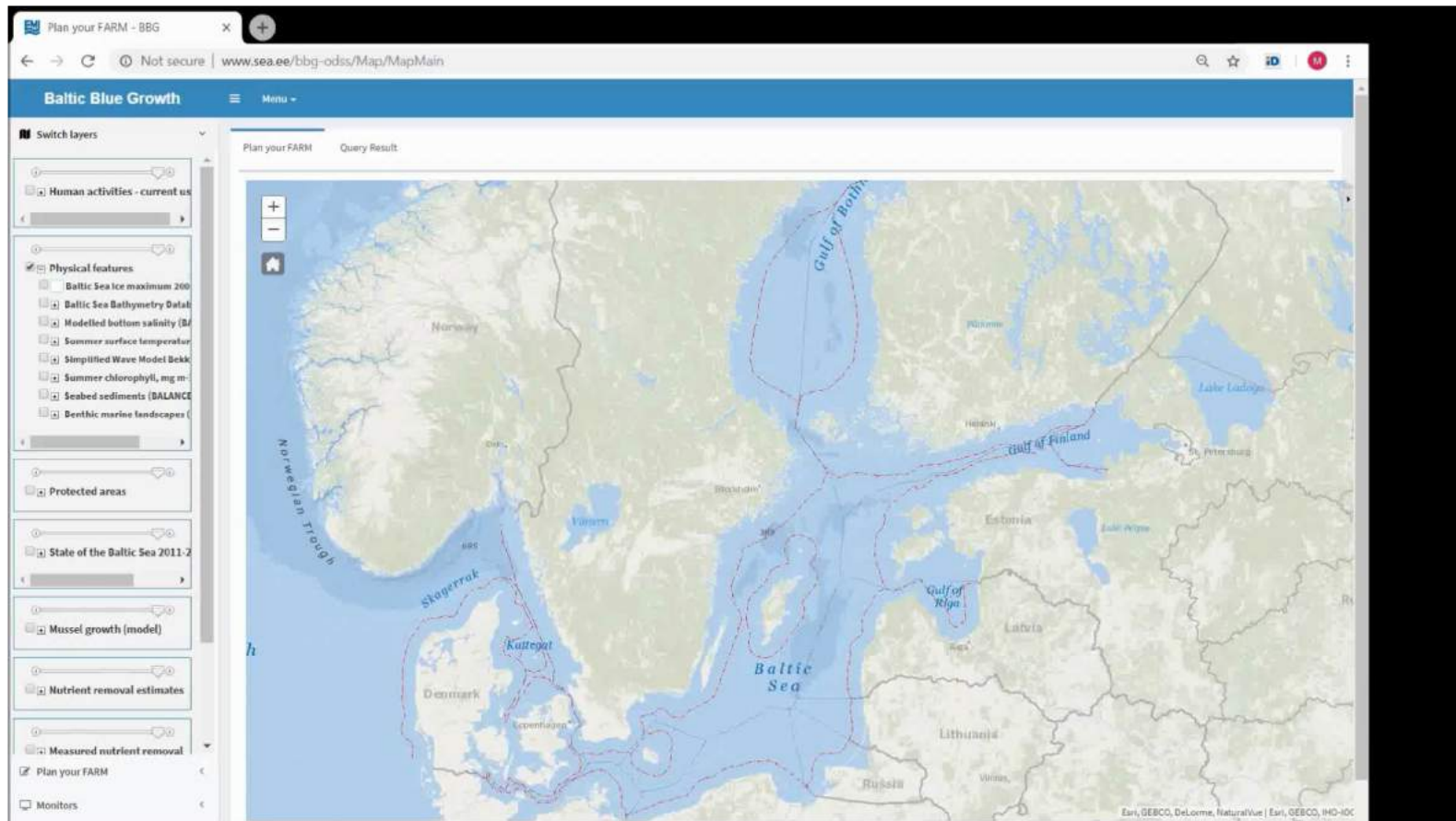
Plan your FARM

Map Layers

Physical features

- Baltic Sea Ice maximum 2005 to 2009 (Copernicus)
- Baltic Sea Bathymetry Database, m (IOW)
- Modelled bottom salinity (BALANCE)
- Summer surface temperature, °C (Copernicus)
- Simplified Wave Model Bekkby, $m^2 s^{-2}$ (AquaBiota)
- Summer chlorophyll, $mg m^{-3}$ (Copernicus)
- Seabed sediments (BALANCE)
- Benthic marine landscapes (BALANCE)

Plan your FARM



Plan your FARM

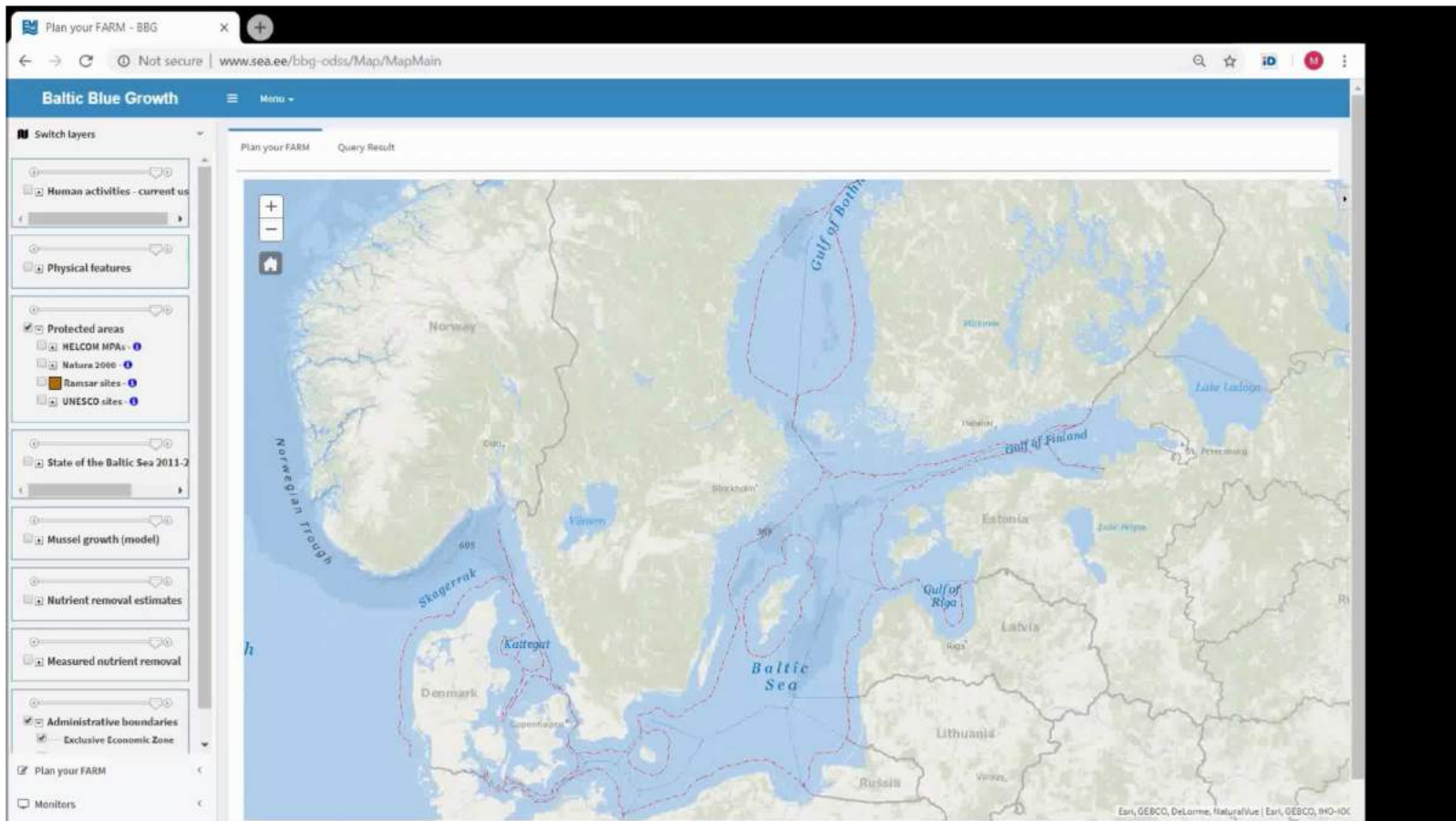
HELCOM Map Layers

Protected areas

- HELCOM MPAs
- Natura 2000
- Ramsar sites
- UNESCO sites

State of the Baltic Sea 2011-2016 (HOLAS II)

Plan your FARM



Baltic Sea- In Situ Near Real Time Observations

- About 800 stations collecting data
- Parameters: temperature, dissolved oxygen, light irradiance, salinity, concentration of chlorophyll a...
- Look for an updated data
- Automatic download of netCDF files
- Automatic export from netCDF to PostgreSQL database

The screenshot displays the Copernicus Marine Environment Monitoring Service (CMEMS) website. The header includes the European Commission logo and the service name. A navigation bar offers links to 'ABOUT US', 'MARKETS & BENEFITS', 'NEWS', 'SCIENCE & MONITORING', 'TRAINING & EDUCATION', and 'SERVICES PORTFOLIO'. A search bar is located in the top right. Below the navigation bar, the 'ONLINE CATALOGUE' section is active, showing a map of the Baltic Sea with observation stations. The product title 'BALTIC SEA- IN SITU NEAR REAL TIME OBSERVATIONS' is prominently displayed, along with a 'CATALOGUE PDF' button and a 'FIRST VISIT ?' button. A sidebar on the right contains links for 'BACK TO SEARCH', 'ADD TO CART', 'VIEW PRODUCT', and 'DOWNLOAD PRODUCT'. The main content area includes tabs for 'INFORMATION', 'DOCUMENTATION', 'SERVICES', and 'NEWS FLASH'. The 'INFORMATION' tab is selected, showing a 'PRODUCT IDENTIFIER' and an 'OVERVIEW' section with a 'Short description' and a 'Detailed description'.

COPERNICUS MARINE ENVIRONMENT MONITORING SERVICE
Providing PRODUCTS and SERVICES for all marine applications

Search terms OK

ABOUT US | MARKETS & BENEFITS | NEWS | SCIENCE & MONITORING | TRAINING & EDUCATION | SERVICES PORTFOLIO

SHORT-CUT TO SERVICES

Home > Services portfolio > Access to products

ONLINE CATALOGUE

CATALOGUE PDF

FIRST VISIT ?

MY CART 0

BACK TO SEARCH

ADD TO CART

VIEW PRODUCT

DOWNLOAD PRODUCT

BALTIC SEA- IN SITU NEAR REAL TIME OBSERVATIONS

Metadata provided by CMEMS
Credits: E.U. Copernicus Marine Service Information

INFORMATION | DOCUMENTATION | SERVICES | NEWS FLASH

PRODUCT IDENTIFIER: INSITU_BAL_NRT-OBSERVATIONS_013_032

OVERVIEW

Short description:
For the Baltic Sea- The In Situ Thematic Assembly Centre (INS-TAC) integrates near real-time in situ observation data. These data are collected from the BOOS members and complemented by the observation collected by the Global INS TAC in the area. The data are quality controlled using automated procedures. It is updated continuously and provides observations with 24-48 hours from acquisition in average

Detailed description:
Ocean circulation models need information on the interior of the ocean to be able to generate accurate forecast. This information is only available from in-situ measurements. However this information is acquired by different institutes and not always easily accessible to operational users. Therefore, In Situ Thematic Assembly Centre (INS-TAC), by connecting to a lot of regional and international networks, collects, controls and disseminates the relevant in-situ data to operational users and research community. The INS-TAC portal is updated continuously with the observations which have never been disseminated in previous release or have been updated. The latest month of data is available in the "latest" directory, while the data are then accumulated month by month on the same portal. If possible, in connection to the validation periods (every three months), the best copy of data are collected from the data originator.

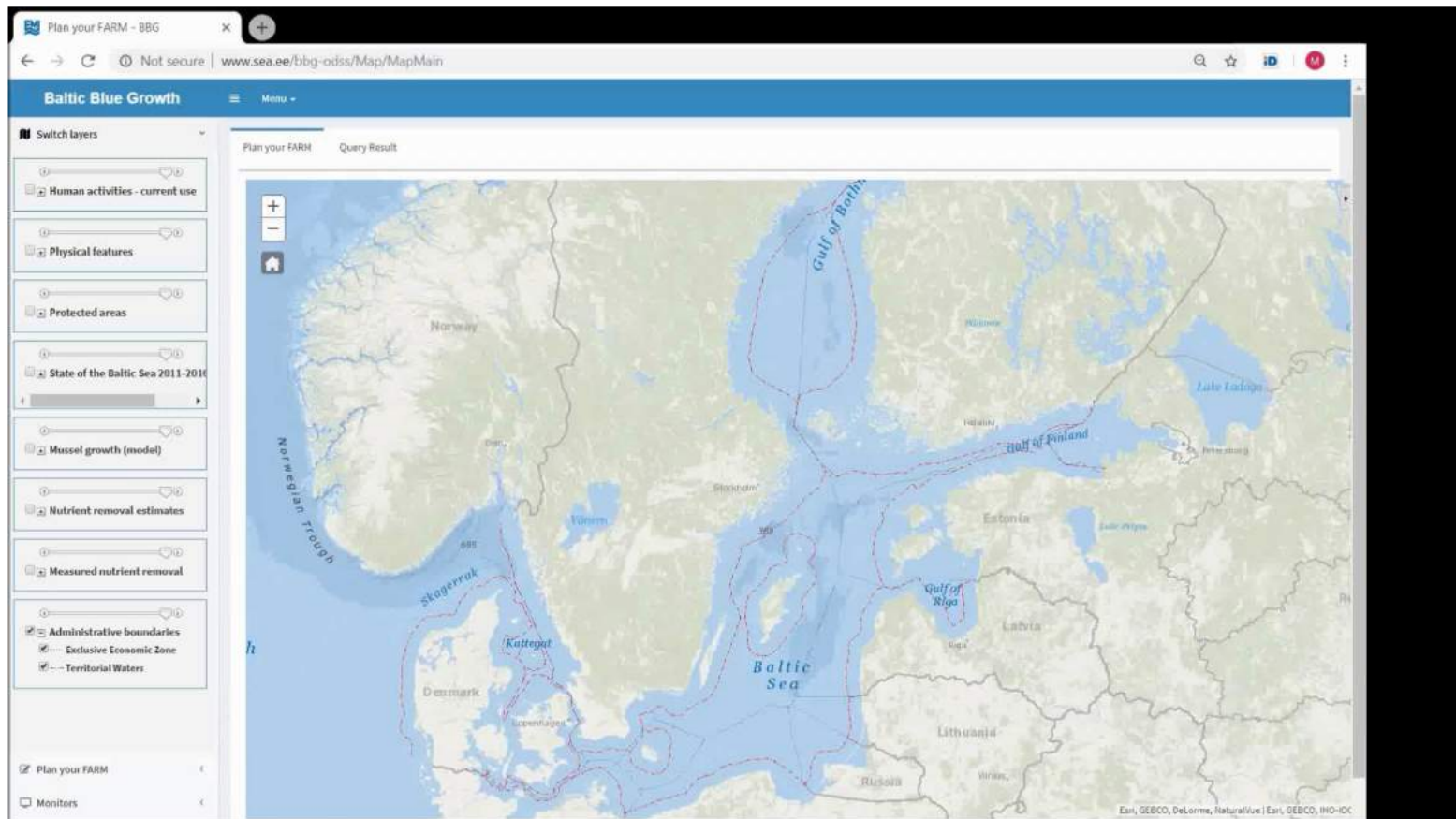
Plan your FARM

Map Layers

- Modelled mussel growth
- Modelled nutrient removal
- Measured nutrient removal

We employed all existing experimental measurements of mussel growth in the Baltic Sea to model the potential growth and yields across the key environmental gradients in the Baltic Sea area. Then, we combined these spatially-explicit empirically modelled growth rates with measured N and P concentrations in farmed mussels to analyze the potential for nutrient removal through mussel harvest.

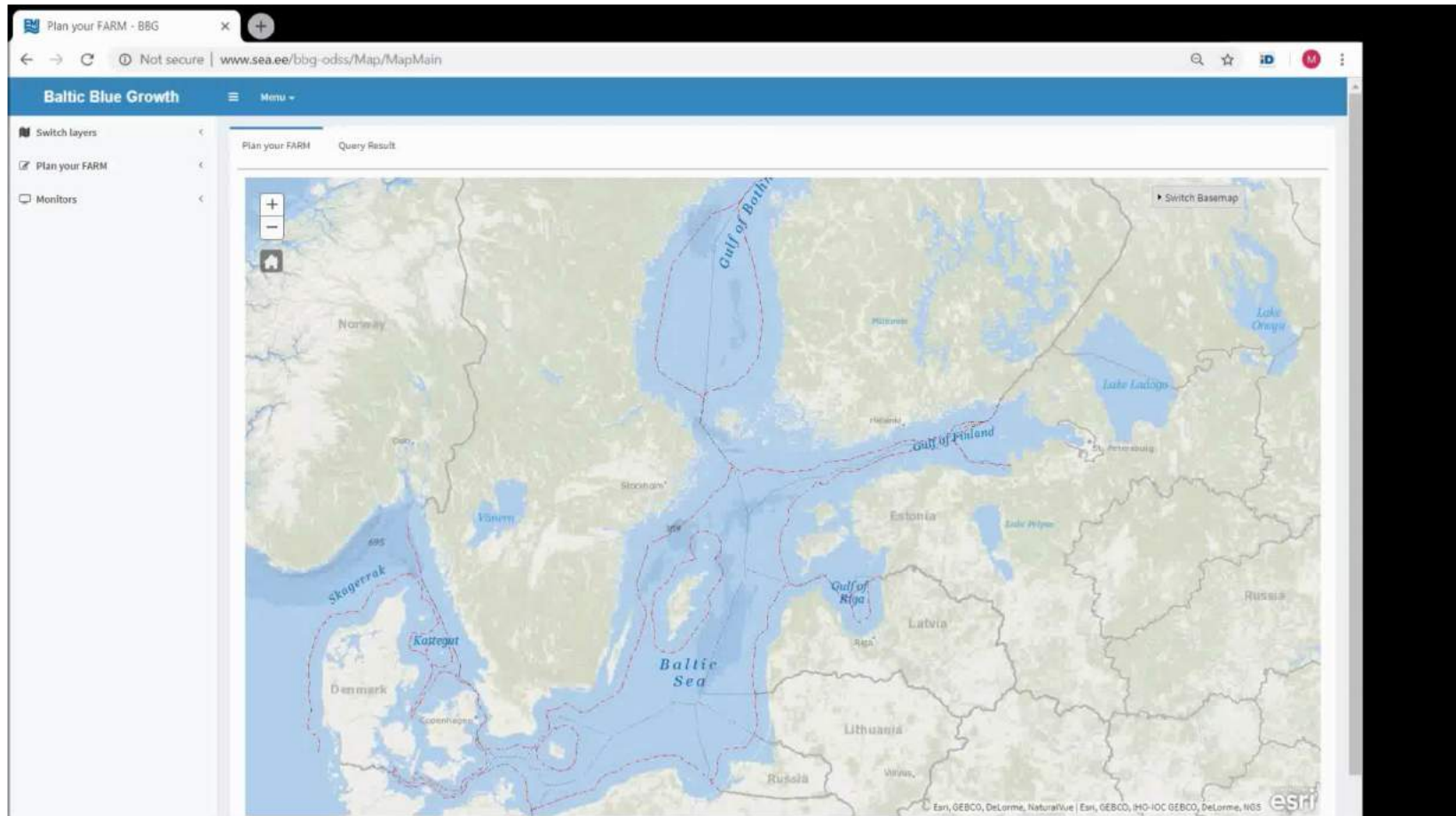
Plan your FARM



Plan your FARM

- „Plan your FARM“ – dynamic tool provides user to draw hypothetical farm area and get the respective environmental and mussel production data as tables.
- When drawing a hypothetical farm area in the map all this information is summarized in a user friendly way and the user can immediately get a synthesis of physical environment, existing human pressures, biomass yield and nutrient removal service provided by such a hypothetical mussel farm.

Plan your FARM



Baltic Blue Growth – <http://www.sea.ee/bbg-odss>

Thank you for your attention!

<http://www.sea.ee/bbg-odss>

