

ODSS – Operational Decision Support System

BBG
GRASS Menu ▾



Initiating full scale mussel farming in the Baltic Sea
Baltic Blue Growth establishes fully operational mussel farms to counteract eutrophication and create new blue growth opportunities.

Operational Decision Support System (ODSS)

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

GRASS: Growing Algae Sustainably in the Baltic Sea



BLUE BIO SITES

Where cumulative impact analyses meet the future of low-trophic aquaculture

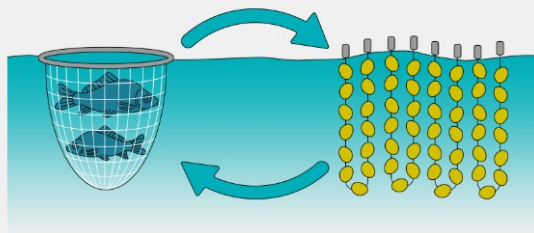
ODSS
Operational Decision Support System

PlanWise4Blue

PlanWise4Blue
Estonia

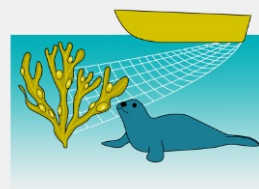
PlanWise4Blue
NorthEastern
Baltic Sea

PlanWise4Blue
Baltic Sea

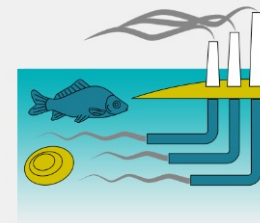


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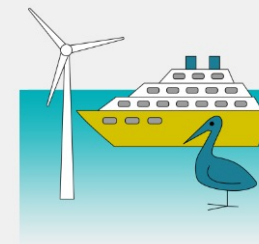
The blue mussel and macroalgae farming application - a platform for uploading, analysing and sharing information



GUIDES



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GUIDES

Your science-based compass for managing multiple pressures on marine assets

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Contact us:
bluebiosites@ut.ee

<https://gis.sea.ee/odss>

ODSS – Operational Decision Support System



Helps different end-users to **make effective decisions about algal and mussel farming in the Baltic Sea**, **through the OLAMUR project, we are expanding to the North Sea**

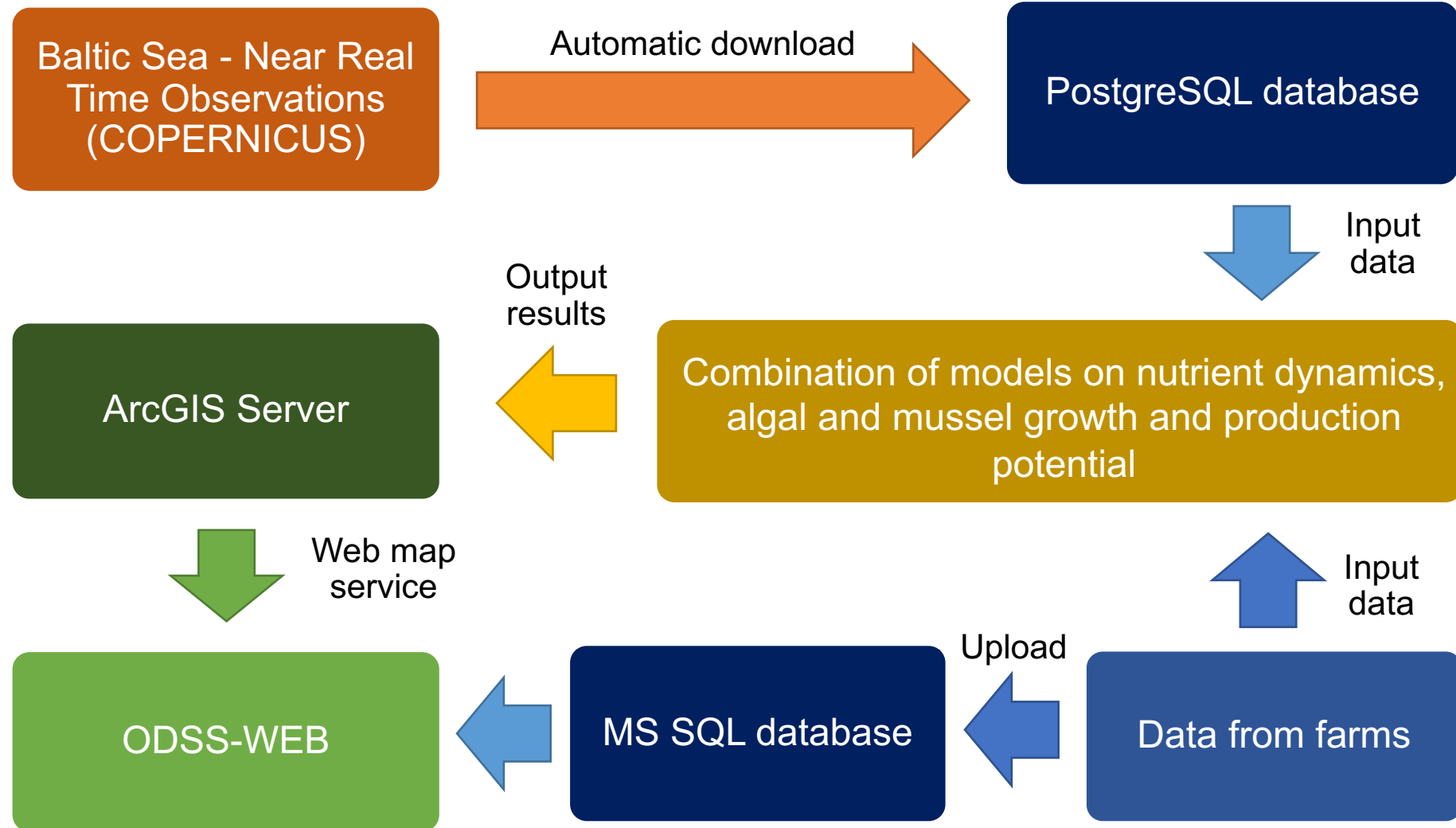


These decisions are **based on the best monitoring and modelling data**



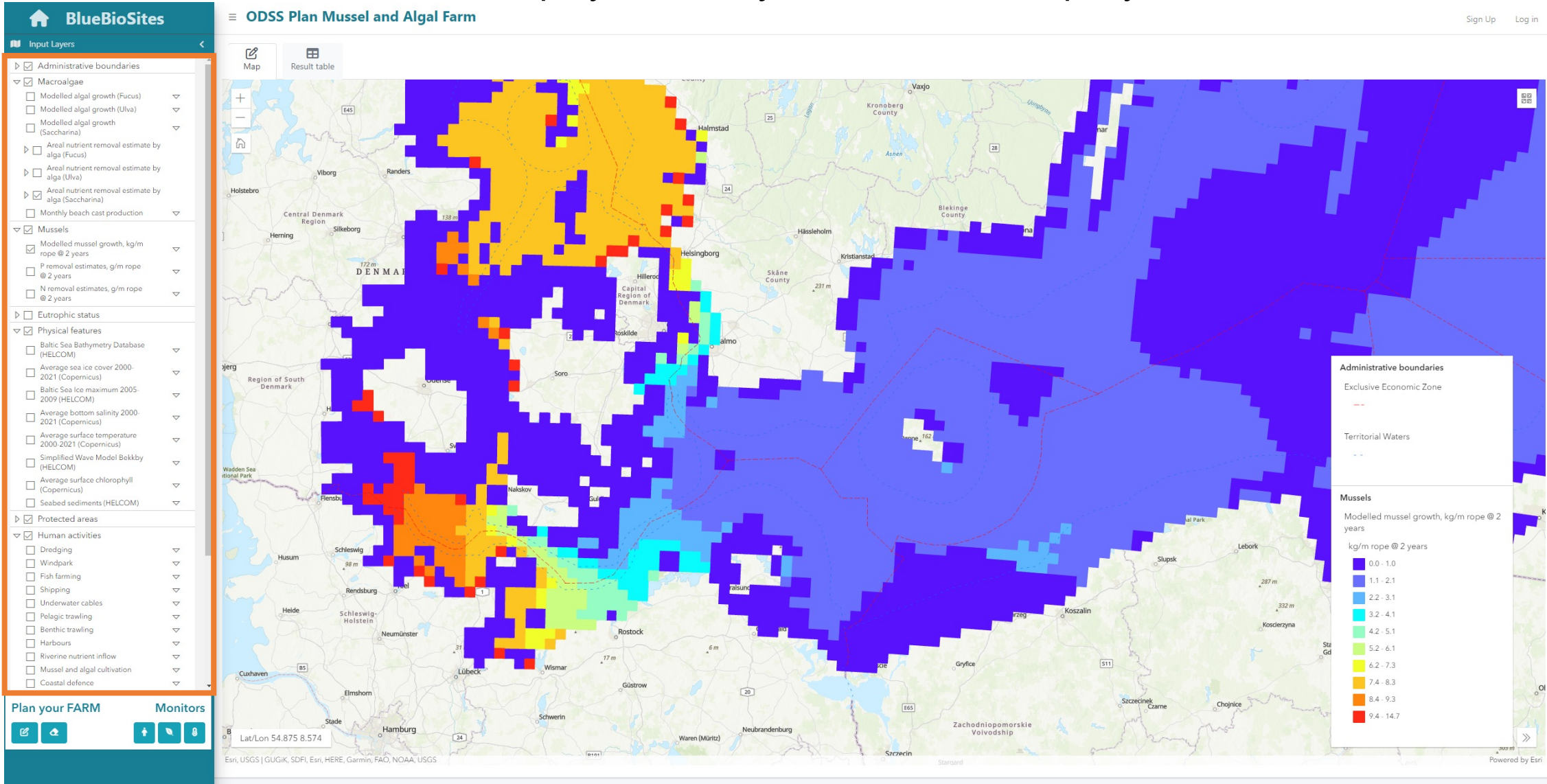
Raises the capacity of different users to **make decisions along the environmental, economic and socio-economic dimensions of LTA**

ODSS data flow



ODSS in action

Display and analysis of different map layers



ODSS in action

Draw the area of the farm using the integrated tool

The screenshot displays the BlueBioSites web application interface for planning a mussel and algal farm. The main map shows the coastal region of Denmark, including cities like Copenhagen, Helsingborg, and Malmö. The interface includes a sidebar on the left with the following sections:

- BlueBioSites** (Home icon)
- Input Layers**: A list of layers with checkboxes:
 - Administrative boundaries
 - Macroalgae
 - Mussels
 - Eutrophic status
 - Physical features
 - Protected areas
 - Human activities
- Plan your FARM**: A section with a pencil icon and a share icon.
- Monitors**: A section with three icons representing different monitoring tools.

The main map area has a title "ODSS Plan Mussel and Algal Farm" and navigation controls (Map, Result table, zoom in/out, home, scale bar). A legend in the bottom right corner identifies the map features:

- Administrative boundaries**: Solid red line
- Exclusive Economic Zone**: Dashed red line
- Territorial Waters**: Dashed blue line

At the bottom of the map, there is a coordinate display: "Lat/Lon 56.897 11.881" and a scale bar showing "123 m". The footer includes the text "Powered by Esri" and a list of data sources: "Esri, CGIAR, N Robinson, NCEAS, USGS | SDPI, Esri, HERE, Garmin, Foursquare, FAO, METI/NASA, USGS".

ODSS in action

Given the selected area the tool will gather the associated information and calculate the features of the planned farm

The screenshot displays the BlueBioSites web application interface for planning a mussel and algal farm. The main map shows a coastal region of Denmark with a black polygon highlighting a specific area. A white dialog box titled "Please wait...." is overlaid on the map, showing progress bars for the following steps:

- Getting features: 100%
- Intersect features: 50%
- Calculating areas: 50%
- Saving: 50%

The interface includes a left sidebar with "Input Layers" (Administrative boundaries, Macroalgae, Mussels, Eutrophic status, Physical features, Protected areas, Human activities) and "Plan your FARM" options. A legend in the bottom right corner identifies "Administrative boundaries", "Exclusive Economic Zone", and "Territorial Waters". The bottom status bar shows coordinates (Lat/Lon 56.455 12.516) and data sources (Esri, CGIAR, N Robinson, NCEAS, USGS | SDPI, Esri, HERE, Garmin, Foursquare, FAO, METI/NASA, USGS).

ODSS in action

BlueBioSites

Input Layers

- Administrative boundaries
- Macroalgae
- Mussels
- Eutrophic status
- Physical features
- Protected areas
- Human activities

Plan your FARM Monitors

ODSS Plan Mussel and Algal Farm Sign Up Log in

Map

Result table

Human activities

Name	Average	Area (km2)	Percent (%)	Count
Dredging	0	0	0	0
Windpark	0	0	0	0
Fish farming	0	0	0	0
Shipping	36.17	23.25	1	
Underwater cables	0	0	0	0
Pelagic trawling	0	0	0	0
Benthic trawling	41.47	26.65	2	
Harbours	0	0	0	0
Mussel and algal cultivation	0	0	0	0
Coastal defence	0	0	0	0
Extraction of minerals	0	0	0	0
Marine plant harvesting	0	0	0	0
Round goby	0	0	0	0
Mud crab	0	0	0	0

Nutrient removal

Name	Average	Area (km2)
N Removal by mussels (Mytilus, g/m rope @ 2 years)	120.37	143.78
P Removal by mussels (Mytilus, g/m rope @ 2 years)	7.22	143.78
Mussel growth (kg/m rope @ 2 years)	8.06	155.63
Fucus growth (growth rate in kg/km2)	1.87	155.67
Ulva growth (growth rate in kg/m)	0.74	155.6
Areal N removal estimate by Fucus (kg/5ha)	33.87	155.66
Areal P removal estimate by Fucus (kg/5ha)	6.77	155.66
Areal N removal estimate by Ulva (kg/5ha)	10.11	155.66
Areal P removal estimate by Ulva (kg/5ha)	1.55	155.62
Saccharina growth (growth rate in kg/m)	0.11	155.65
Areal N removal estimate by Saccharina (kg/5ha)	8.18	155.65
Areal P removal estimate by Saccharina (kg/5ha)	1.53	155.65

Physical features

Name	Average	Area (km2)	Percent (%)	Classes
Sediments				Bedrock,Hard bottom complex,Sand,Hard clay,Mud
Average surface chlorophyll (mg m-3)	1.45			
Average bottom salinity	31.88			
Simplified wave model (m2 s-2)	16353.83			
Average surface temperature (°C)	9.67			
Baltic Sea Ice maximum		0	0	
Average sea ice cover		155.65	100	

Administrative boundaries

Exclusive Economic Zone

Territorial Waters

Esri, CGIAR, N Robinson, NCEAS, USGS | SDFI, Esri, HERE, Garmin, Foursquare, FAO, METI/NASA, USGS Powered by Esri

ODSS in action

BlueBioSites

Input Layers

- Administrative boundaries
- Macroalgae
- Mussels
- Eutrophic status
- Physical features
- Protected areas
- Human activities

Plan your FARM

Monitors

ODSS Plan Mussel and Algal Farm

Sign Up Log in

Map Result table

Copy CSV EXCEL

Name	Average	Area (km2)	Percent (%)	Count	Classes
N Removal by mussels (Mytilus, g/m rope @ 2 years)	120.37	143.78	92.39	9	
P Removal by mussels (Mytilus, g/m rope @ 2 years)	7.22	143.78	92.39	3	
Mussel growth (kg/m rope @ 2 years)	8.06	155.63	100	4	
Fucus growth (growth rate in kg/km2)	1.87	155.67	100	38	
Ulva growth (growth rate in kg/m)	0.74	155.6	99.99	3	
Areal N removal estimate by Fucus (kg/5ha)	33.87	155.66	100	43	
Areal P removal estimate by Fucus (kg/5ha)	6.77	155.66	100	34	
Areal N removal estimate by Ulva (kg/5ha)	10.11	155.66	100	8	
Areal P removal estimate by Ulva (kg/5ha)	1.55	155.62	100	4	
Saccharina growth (growth rate in kg/m)	0.11	155.65	100	10	
Areal N removal estimate by Saccharina (kg/5ha)	8.18	155.65	100	38	
Areal P removal estimate by Saccharina (kg/5ha)	1.53	155.65	100	26	
Sediments				5	Bedrock,Hard bottom complex,Sand,Hard clay,Mud
Average surface chlorophyll (mg m-3)	1.45			6	
Average bottom salinity	31.88			10	
Simplified wave model (m2 s-2)	16353.83			10	
Average surface temperature (°C)	9.67			3	
Baltic Sea Ice maximum		0	0	0	
Average sea ice cover		155.65	100	2	
Dredging		0	0	0	
Windpark		0	0	0	
Fish farming		0	0	0	
Shipping		36.17	23.25	1	
Underwater cables		0	0	0	
Pelagic trawling		0	0	0	
Benthic trawling		41.47	26.65	2	
Harbours		0	0	0	
Mussel and algal cultivation		0	0	0	
Coastal defence		0	0	0	
Extraction of minerals		0	0	0	
Marine plant harvesting		0	0	0	
Round goby		0	0	0	
Mud crab		0	0	0	

Current actions

Extending the ODSS tool to the North Sea

Updating data (e.g. OWF sites) and models (e.g. mussel and algal growth models)

Developing new tool features (farm upscaling with no significant effects of nutrient/food limitation on biomass yields)

Quantifying ecosystem services provided by the LTA (e.g. food and feed provisioning, nutrient removal and carbon sequestration)

Integration of new tools, e.g. identification of suitable co-location of LTA with existing and planned OWFs

Modular design

The image displays the BlueBioSites web application interface, illustrating a modular design. The interface is divided into three main sections:

- Left Panel (Configuration):** Titled "Blue carbon valuation", it contains input fields for "Price for carbon sequestration (euros per tC)", "Price for carbon stock (euros per tC)", and "Rate of return". It also includes dropdown menus for "Year" and "Origin". A "Run model" button is visible at the bottom.
- Middle Panel (Workspace Management):** Titled "Cumulative Effects Assessment", it features a table for workspace management and a "new layers" section. The table lists workspaces with their names and timestamps. The "new layers" section shows configuration options for "Scenario Extent" and "Ecosystem Services Impact" (Mytilus trossulus population P sequestration).
- Right Panel (Map Visualization):** Titled "Comparison layers for 'new'", it displays a map of the Baltic Sea region. A legend on the left of the map shows the configuration for the "Scenario Extent" layer, including options for "init value", "end value", "end maximum value", "end minimum value", "decrease", and "increase". The map shows a heatmap of the study area with various municipalities labeled.

The top navigation bar includes "PlanWise4Blue Versions" and "Baltic Sea". The user profile "msp@sea.ee" is visible in the top right corner.