AQUANAVI

A New Navigation Tool for Aquatic Mesocosm-Based Research To Address Grand Challenges and Their Mitigation

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Background

Aquatic ecosystems are under pressure due to global change drivers, e.g. pollution, habitat degradation, rising temperatures, and ocean acidification

Aquatic experimental research infrastructures (RIs) allow studying the impact of these drivers in controlled but realistic environments, thus delivering the basis for **predictions** and the development of **mitigation measures**

The challenge

Information on the **technical specifications** and location of aquatic experimental research infrastructures is available at aquacosm.eu and mesocosm.org, but it is **neither searchable nor machine readable**

Publications are not systematically linked to the RIs

This **lack of easy access** to information does **not** comply with the **FAIR** principles and **limits usage** of these valuable RIs and of previously acquired knowledge

Solution

Inconsistent terminology of facility metadata and relevant concepts:

- Development of additional **controlled vocabulary** for describing facilities and their . experimental capacities (including grand ecological challenges)
- Streamlining of terminology together with **RI user community**

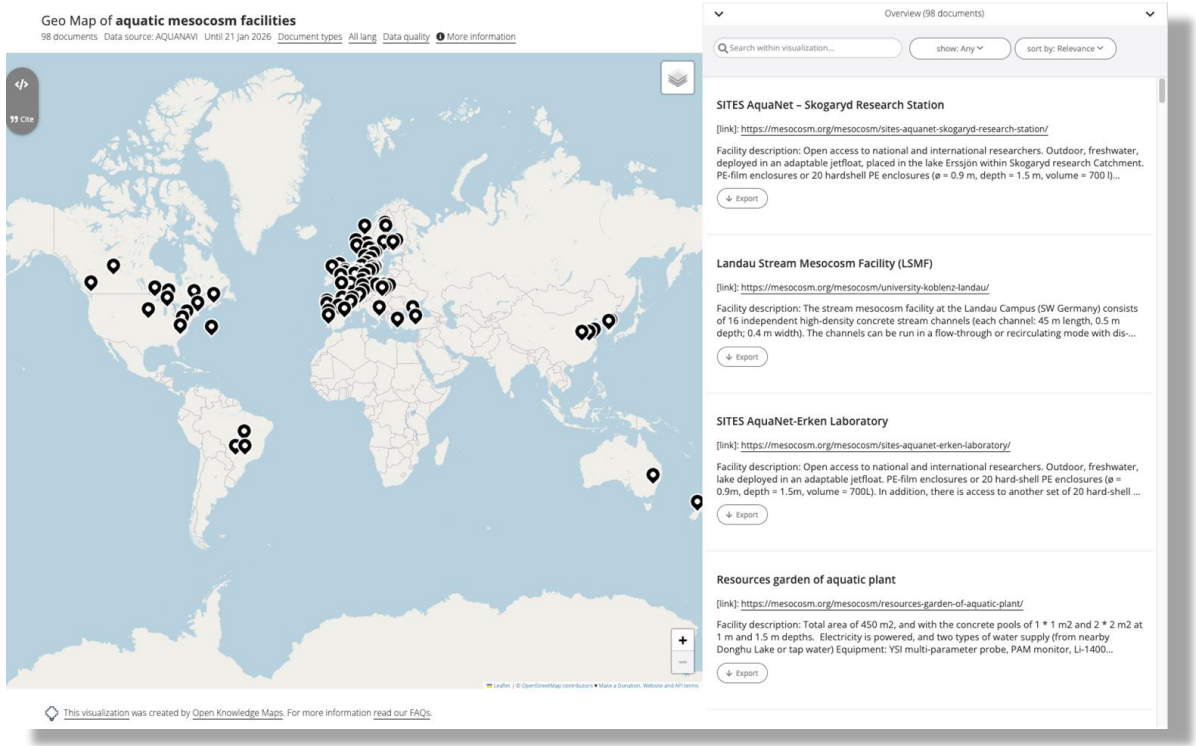
Incomplete and outdated facility metadata and lacking link between RIs and publications:

- Manual **annotation of publications**
- Improving **options for easy contribution** of updated information

Lacking options for searching and filtering across RIs:

- Development of a **schema for metadata linking**
- Development of **AI-driven search and filtering functions**

Results



AI-driven visualizations:

- Searchable Geo Map for RIs and linked technical information
- Dynamic, interactive Knowledge Maps and Streamgraphs of relevant publications and datasets

FAIR knowledge graph:

- Representation of assembled metadata of facilities and publications in Wikidata

Integration into a community-run website:

- All search options will be made available at mesocosm.org

Geo Map of **aquatic mesocosm facilities**

98 resources Data source: AQUANAVI Until 21 Jan 2026 Resource types All lang Data quality More information

This visualization was created by Open Knowledge Maps. For more information read our FAQs.

Overview (98 resources)

Search within visualization...

Albufera Biological Station

[link]: https://mesocosm.org/mesocosm/albufera-biological-station/

Facility description: The aquatic mesocosm facility of the Albufera Biological Station is made up of 30 mesocosms of >1 m3, stocked with aquatic plants, plankton, and macroinvertebrate species characteristic of Mediterranean coastal wetlands Equipment: 30 mesocosms and all equipments...

Export

ALPSTREAM ECO-HYDRAULIC FLUMES

[link]: https://mesocosm.org/mesocosm/alpstream-eco-hydraulic-flumes/

Facility description: The flumes system is fed with water coming directly from the Po river. By exploiting a natural pool and using a small barrier to regulate the water stage, water is made to flow into a pipeline connected to the flumes. The pipeline intake (diameter is 0.80 m) is placed close to...

Export

Aqua-stress

[link]: https://mesocosm.org/mesocosm/aqua-stress/

Facility description: The system consists of 32 independent circular freshwater mesocosms each of 1000 L capacity. They can be used either with flowing water i.e. a stream mesocosm (using a pump in each mesocosm to create the flow) or as a pond mesocosm (without the pump). The mesocosm...

Export

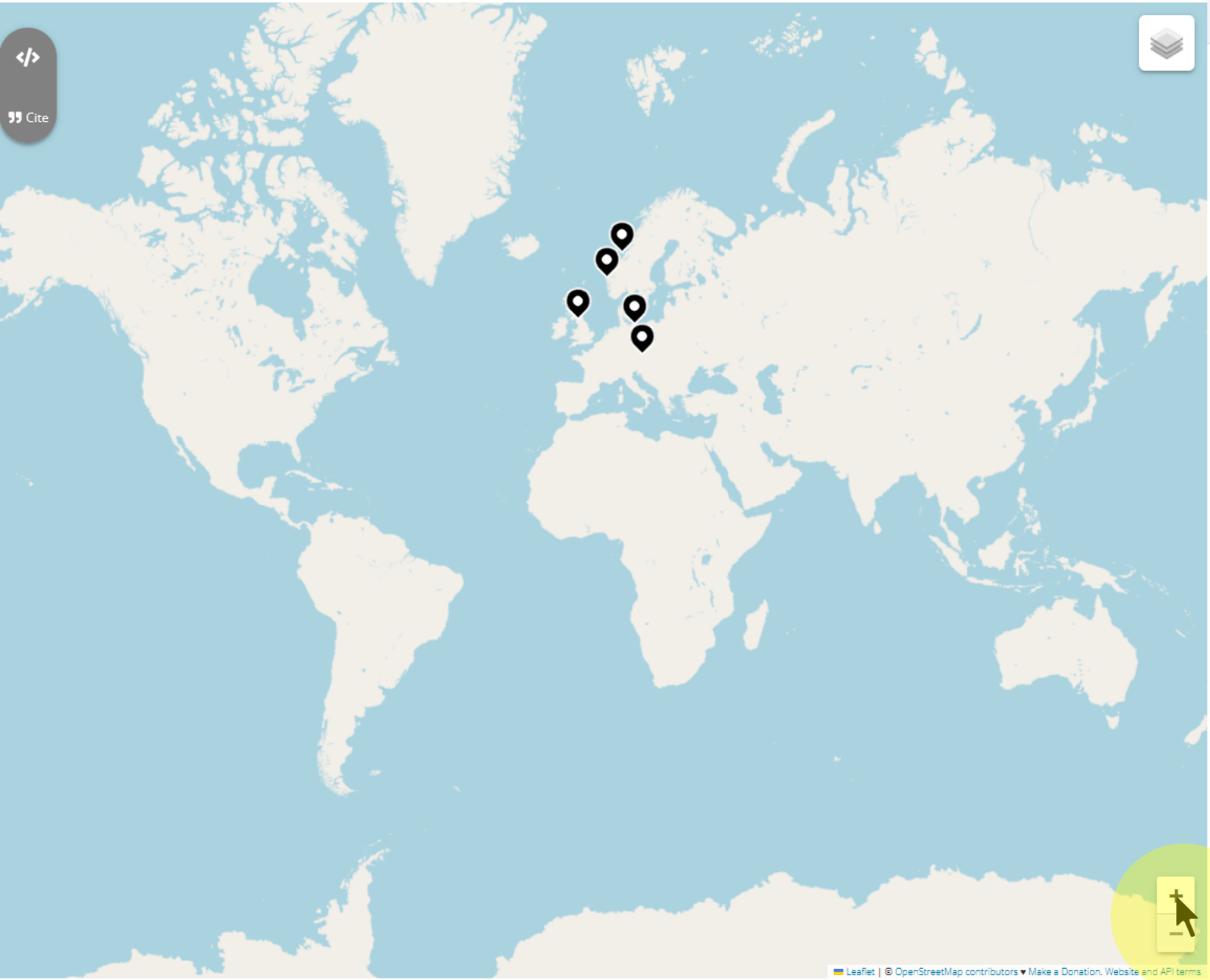
Aquatic Research Facility at the University of Kansas Field Station

[link]: https://mesocosm.org/mesocosm/aquatic-research-facility-at-the-university-of-kansas-field-station/

Facility description: The Aquatic Research Facility at the KU Field Station provides a physical platform for a broad range of field-based research. Experimental ponds and tanks (mesocosms) function as surrogates of the natural environment and permit replication of treatments and controls....

Geo Map of **aquatic mesocosm facilities**

98 resources Data source: AQUANAVI Until 21 Jan 2026 Resource types All lang Data quality More information



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Overview (5 resources)

brownification

CEH Aquatic Mesocosm Facility (CAMF)

[link]: https://mesocosm.org/mesocosm/ceh-aquatic-mesocosm-facility-camf/

Facility description: The CEH Aquatic Mesocosm Facility (CAMF) comprises 32 cylindrical insulated fibreglass outdoor mesocosms, each 1.0m deep and 2.0m in diameter (3000 l and 3 large fibreglass tanks 1.0m deep and 4.0m in diameter (12000 l) The latter are mainly used as storage reservoir for...

Export

IGB LakeLab

[link]: https://mesocosm.org/mesocosm/igb-lakelab/

Facility description: The LakeLab in the deep clear-water Lake Stechlin, NE Germany, consists of 24 cylindrical enclosures encompassing large water volumes of 1270 m3 (9m diameter, 20m depth) each. All 24 units of the LakeLab are equipped with automated sensors mounted on vertical profil-...

Export

Lunz Mesocosm Infrastructure (LMI)

[link]: https://mesocosm.org/mesocosm/lunz-mesocosm-infrastructure-lmi/

Facility description: 1A) WCL-Mesocosms-Ptacnik 40 land-based mesososms (320 L each); water pipes for aeration and mixing; exchangeable inner walls; app. 500 m from lake; local tab water suitable for experiments (not chlorinated) 1B) WCL-Mesocosms-Kainz 24 land-based mesososms (400 ...

Export

Sletvik Field Station

[link]: https://mesocosm.org/mesocosm/sletvik-field-station/

Facility description: sea based mesocosms Equipment: Two large lecturing and three smaller laboratories, one of which has access to salt water, and a meeting room Controlled parameters: nutrients; browning Grand challenges: Pollution/ Brownification; Pollution/ Nutrient pollution Research topic...

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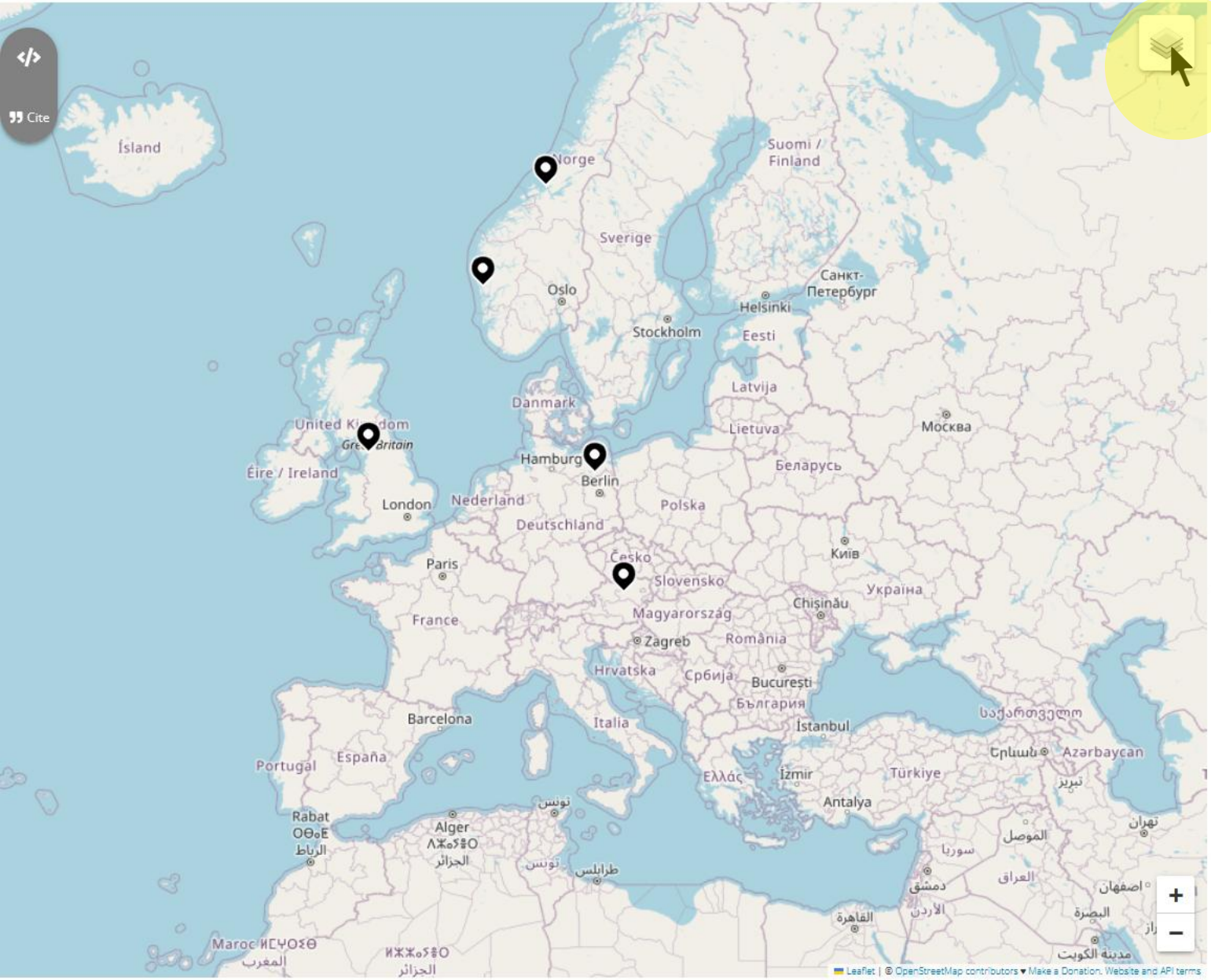

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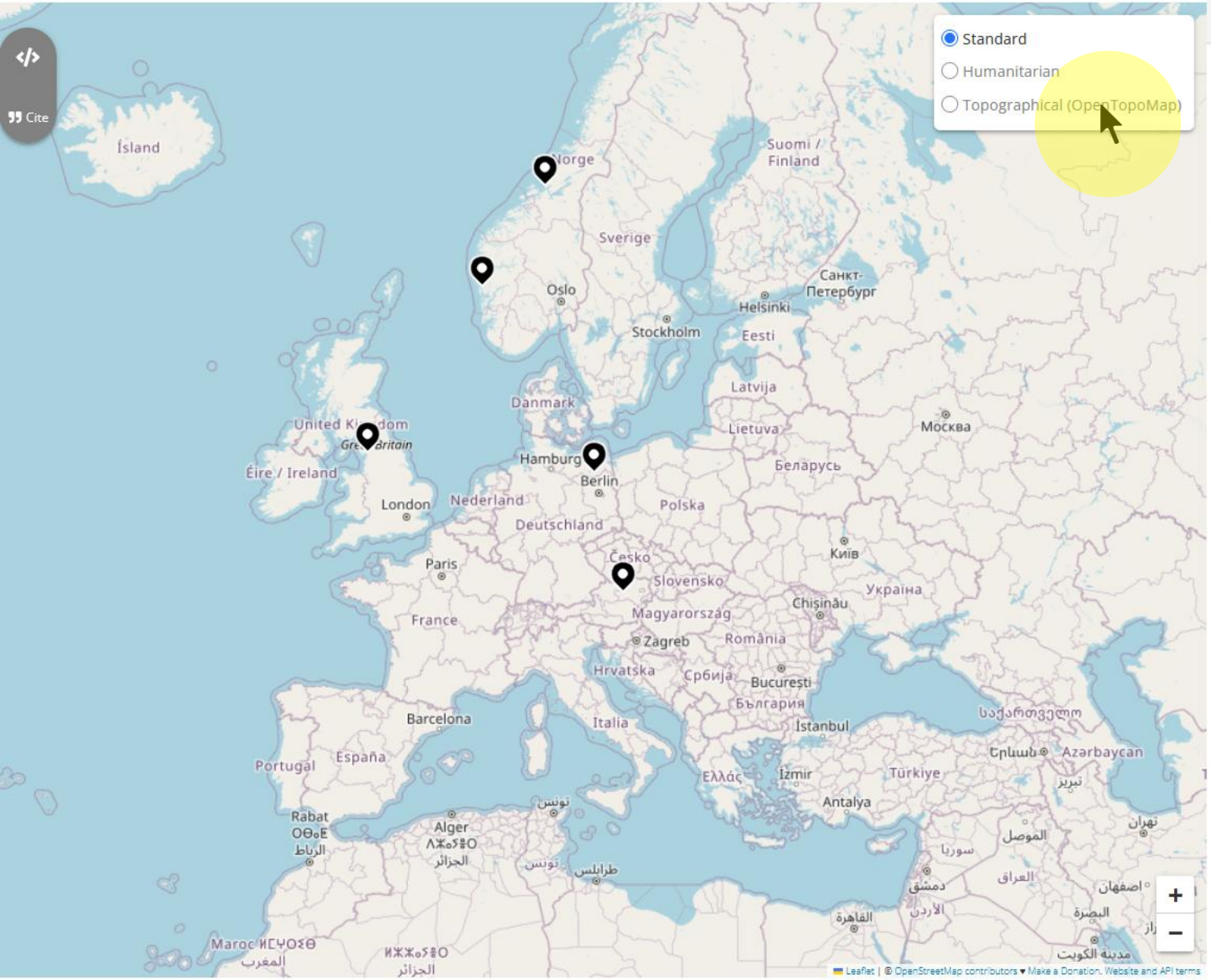

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UiB Mesocosm Centre (University of Bergen Mesocosm Centre)

[link]: https://mesocosm.org/mesocosm/uib-mesocosm-centre-university-of-bergen-mesocosm-centre/

Facility description: outdoor – pelagic – marine The UIB-MC at Espegrend is part of the Department of Biological Sciences (BIO). It offers a wide range of opportunities for marine mesocosm experiments. The facility includes a floating platform with 12 enclosures in the Raunefjord (10-30 m3 eac...

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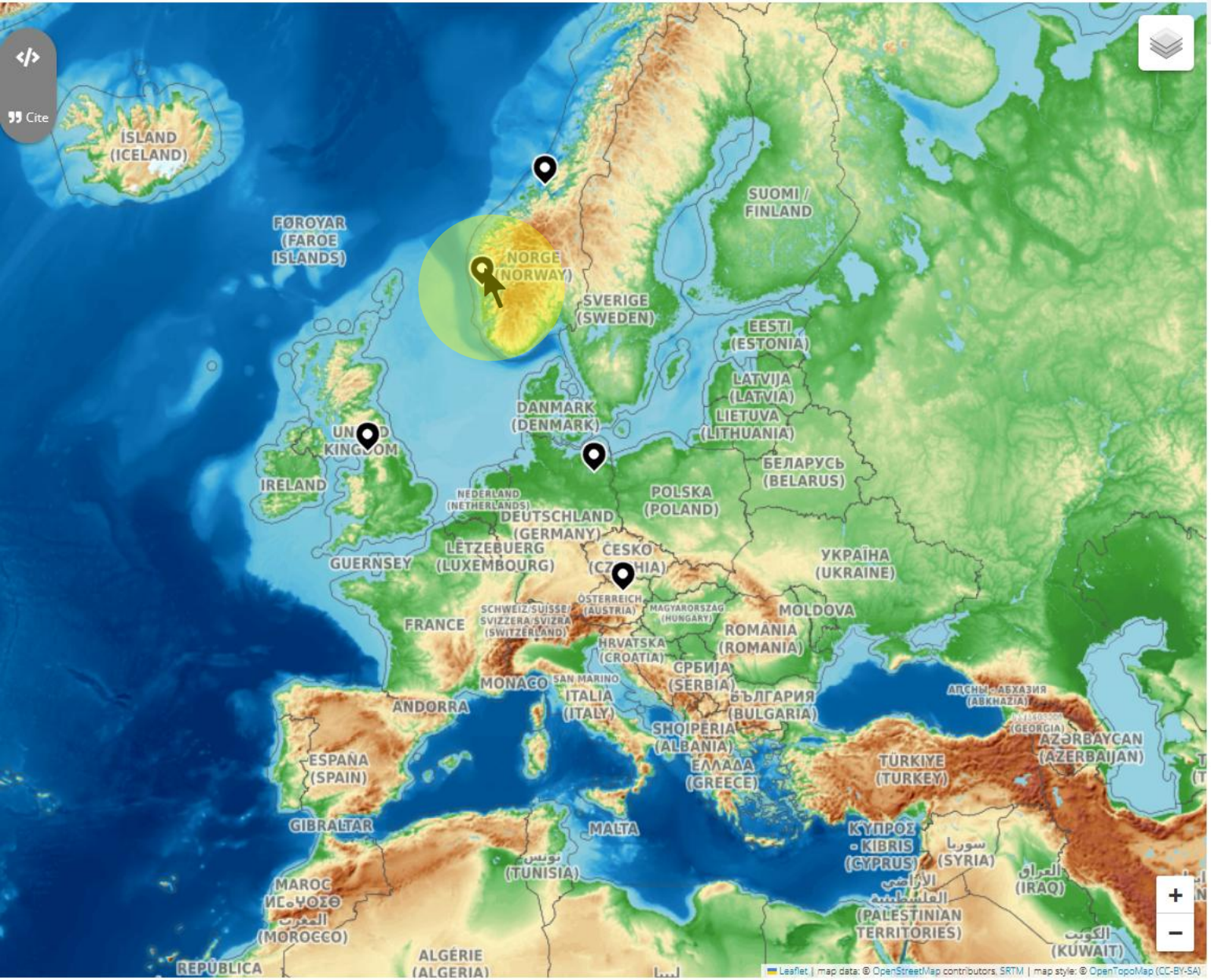

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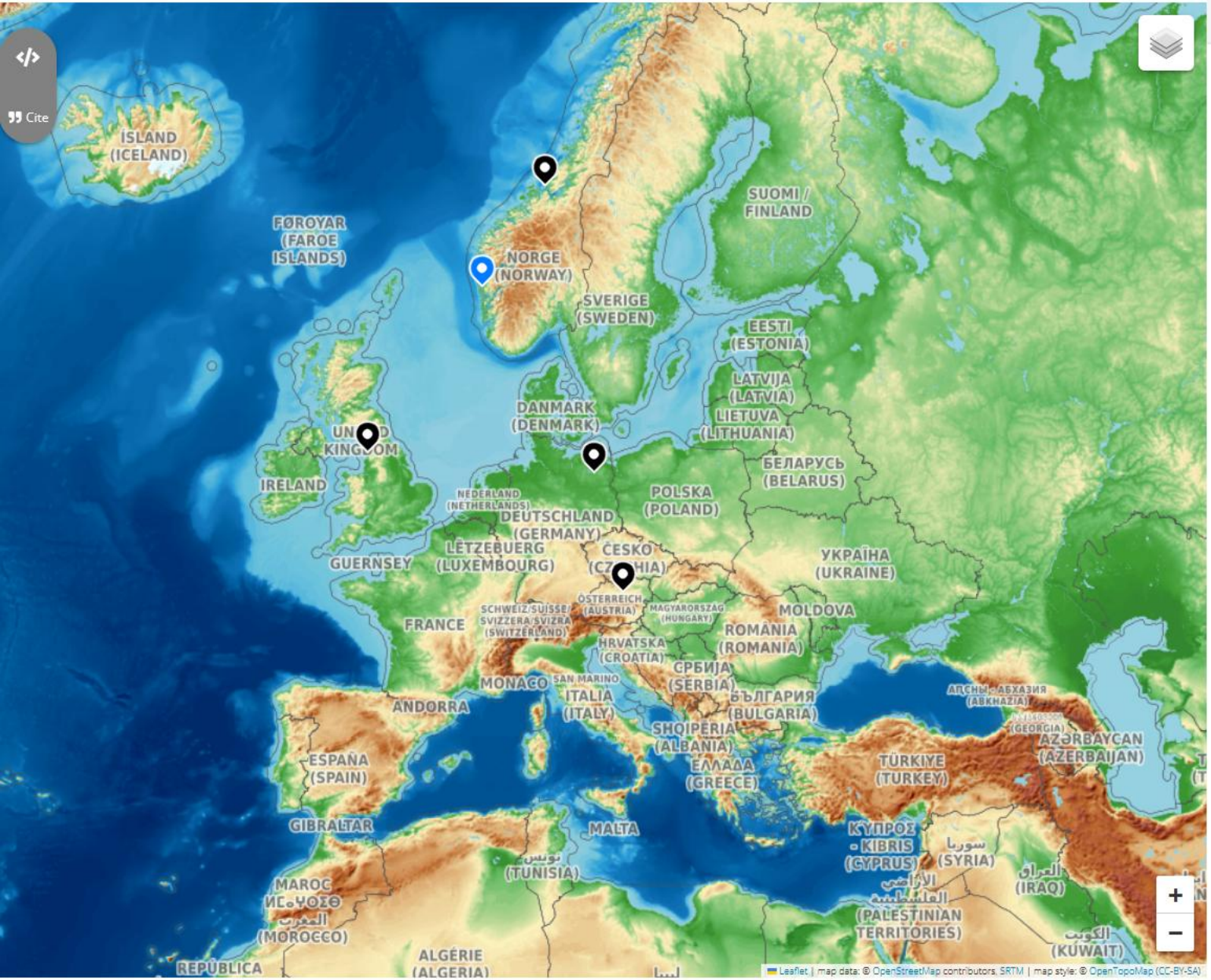

Cite

Overview (1 resource)

brownification

UiB Mesocosm Centre (University of Bergen Mesocosm Centre)

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Facility description: outdoor – pelagic – marine The UIB-MC at Espegrend is part of the Department of Biological Sciences (BIO). It offers a wide range of opportunities for marine mesocosm experiments. The facility includes a floating platform with 12 enclosures in the Raunefjord (10-30 m3 each) plus 18 land-based outdoor mesocosms (2.5 m3), both located at UIB's Marine Biological Station. A unique feature of the enclosures in the fjord is a floating raft that provides high-quality wet-lab space and electricity for immediate sample processing and lab-based measurements of samples. Small boats facilitate easy access from land to the platform. The mesocosms can also be set-up for temperature (land tanks only) and CO2 treatments by users. Infrastructure on land includes multiple laboratories (chemistry lab, isotope minilab for 14C and 3H, live lab, formalin lab, 3 walk-in cold rooms with running sea-water and light control, general lab equipment such as freezers and ovens, Milli-Q water, a cooled centrifuge, microscopes, etc). 1. Floating platform including up to 12 floating rings with mesocosm bags ranging from 10 to 30 m3, diameter 2 m; length 5-10 m, see Fig.1 2. Land-based system with up to 18 tanks of 2.5 m3 , diameter 1.5 m; height 1.5 m, deployed within 3 tanks of 30 m3 , diameter 5 m; height 1.5 m, see Fig.2

Equipment: Small boats (with outboard motor), CTD w/fluorescence sensor, plankton nets and water samplers. Pumps and airlift systems for mesocosms. General lab equipment such as freezers, ovens and washing machines for lab equipment, Milli-Q water (small volumes only), distilled water, a cooled centrifuge, basic microscopes etc In collaboration with UiB scientists: state-of the-art microscopy imaging, fluorometer, genomics, proteomics, X-ray fluorescence, Flow cytometry, FlowCam, and more

Controlled parameters: nutrient composition; mesozooplankton; CO2; pH; browning; iron

Grand challenges: Climate change/; Pollution/ Acidification; Pollution/ Brownification

Research topics: Studies of the whole microbial community from viruses to mesozooplankton, grazing studies, initiate and follow specific phytoplankton blooms (e.g. diatoms, Emiliania huxleyi) acidification experiments, testing outcome/results of simulation models

Location: Norway

Keywords: not available

Resource type(s): other/unknown material

Export

← Show all resources

UiB Mesocosm Centre (University of Bergen Mesocosm Centre)

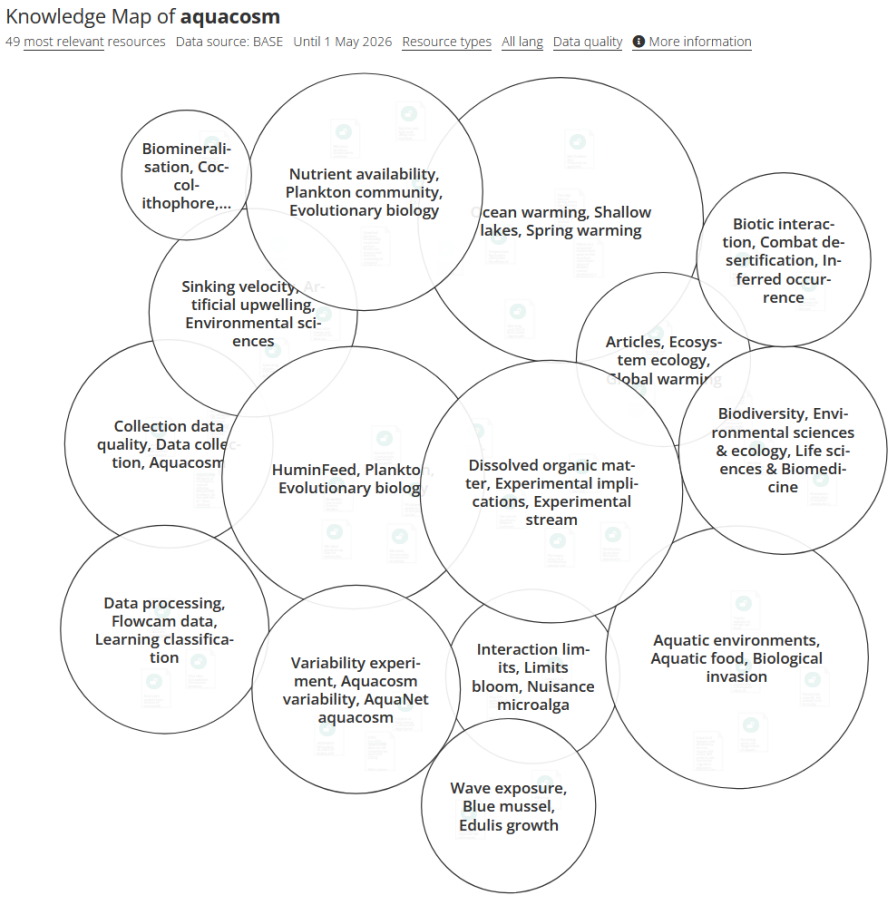
General information

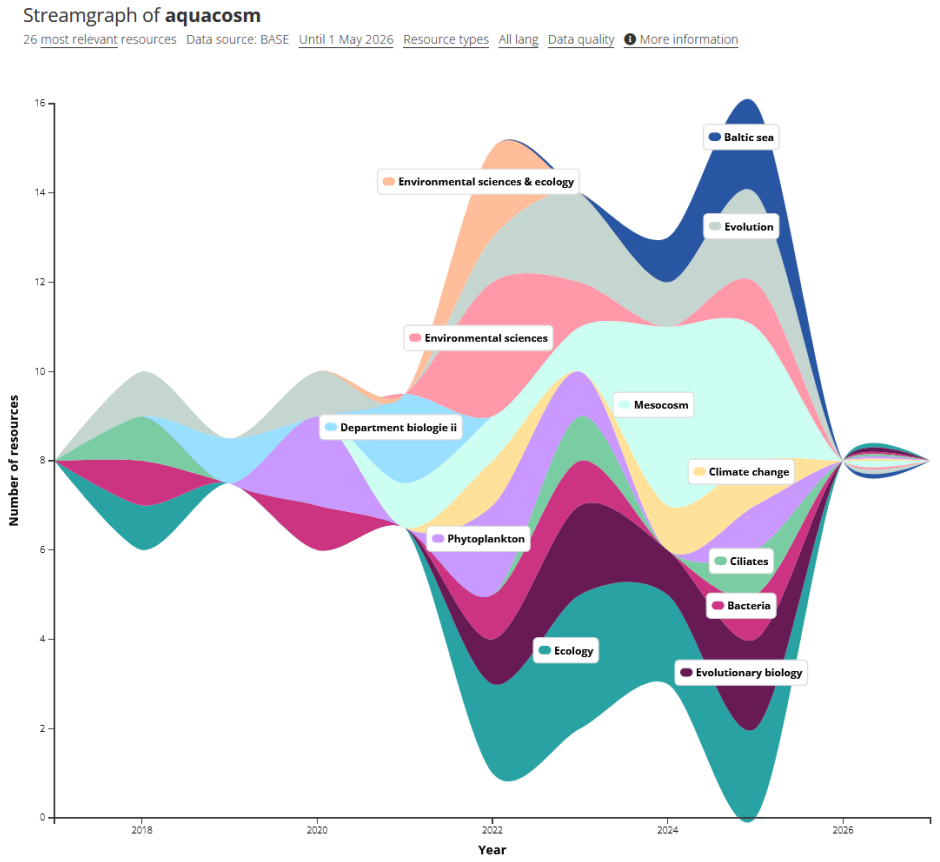
Name	UiB Mesocosm Centre (University of Bergen Mesocosm Centre)
Legal name of organisation	University of Bergen (UiB)
Country	Norway
Continent	Europe
Organisation address	University of Bergen (UiB) Department of Biology PO-Box 7803 5020 Bergen OR Thormøhlensgate 53 A & B 5006 Bergen NORWAY
Primary contact information (PI)	Prof. Jorun Egge Please login or request access to view contact information.
Years of Mesocosm Experiments	1978-present

Lodging	Dormitory with single and double rooms sleeping up to 30 guests, a few steps away from the laboratory building, modern large scale kitchen facilities where guests can provide their meals and a combined dining and living room. Laundry facility is available on site.
Source of Information	http://www.uib.no/node/56734
Photos of experiments/installations	 Fig.1 Floating structure with 12 mesocosms (Photo: Stella A Berger)  Fig.2 Land-based mesocosms (Photo: Stella A Berger)

Founders of mesocosm.org:
Stella Berger, Jens Nejstgaard

Knowledge Maps and Streamgraphs





Sustainability of the results

Facility and publication metadata will stay openly available via **Wikidata**

The AI-driven visualization components are hosted by **Open Knowledge Maps**

AQUANAVI will be connected to the **ENVRI HUB and EOSC services**

The team is well connected with the aquacosm.eu **community of future users** and will spread the word through mailing lists, on conferences and on social media

The project principles and processes will provide a framework that **allows others to implement similar systems in other domains**

Thank you for your attention!

Presenter contact details:
Open Knowledge Maps
Dr. Peter Kraker
Founder & Chairman
pkraker@openknowledgemaps.org

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KNOWLEDGE
MAPS