

ASSEMBLE



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Abstract

This deliverable describes the outcomes of the trans-national access programme (TNA) offered at EMBRC Belgium, in terms of: installations available, applications received and user's projects performed (through on-site and / or remote access), users' profile and other stats (country of origin, career profile, type of organization, satisfaction of the services used).



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1. Introduction

Transnational Access in ASSEMBLE Plus is provided to a total of 36 marine stations in 15 countries. In the whole consortium, the stations provide access to a high diversity of marine environments; from the high Arctic (IOPAN) and Antarctic (UKRI-BAS) to the tropics (IUI and NIOZ-CNSI) and the mid-Atlantic ridge (CCMAR and IMAR). Within mainland Europe, access is provided to the Mediterranean, the Atlantic, the North Sea and the Baltic seas. Habitats comprise estuaries (e.g. SZN, ISMAR, CCMAR, AWI, IOPAN, UG, VLIZ), mega-tidal seas (SBR), cold-water coral reefs (KMRS, NUIG, SAMS), brackish seas and sea ice communities (IOPAN, TSZ, ARI, HBS), near-shore deep sea (HCMR, IMEV, NUIG, UGOT, SAMS) and volcanic seeps (high CO₂ – low pH; HCMR, SZN, IMAR). The TA-providing stations (access providers) have modern research laboratories and a wide array of specialized research facilities to support internal and external users. Several of these also have technological backup of nearby university institutions.

This deliverable describes the outcomes of the trans-national access programme (TNA) offered at EMBRC Belgium, in terms of: installations available, applications received and user's projects performed (through on-site and / or remote access), users' profile and their stats (country of origin, career profile, type of organization, satisfaction of the services used).

2. Objective

This deliverable intends to show the outcomes of the transnational access programme executed at EMBRC Belgium, hence contributing to the ASSEMBLE Plus objectives:

- Enhance transnational access to a coordinated set of state-of-the-art European infrastructures for marine biology and ecology;
- Improve service provision by these infrastructures in line with their areas of excellence in marine biology and ecology, with emphasis on developing novel key enabling technologies and data solutions;
- Strengthen complementarity and interoperability within the consortium and with related infrastructures;
- Lay the logistical and strategic foundations to expand the coverage of the European Marine Biological Resource Centre (EMBRC) in both its scope and its geographical distribution and to consolidate its long-term sustainability.

3. Outcomes of the Transnational Access programme

3.1 Overview of the access provider(s)

The infrastructure is part of the Belgian node of EMBRC, with VLIZ and UGent. VLIZ provides access to the marine habitats and its biota, experimental facilities and technology platforms, while UGent hosts a wide variety of scientific installations to perform research on these



biotas. VLIZ is a centre for marine and coastal research, and operates the nearby Marine Station Ostend (MSO).

The station houses a wet and dry biological lab, a molecular lab and a chemistry lab. MSO houses a core repository and a key installation is the climate-controlled room with three seawater tanks of 4.5m³ each for in-vivo marine organism experiments.

VLIZ manages the RV Simon Stevin, a multidisciplinary research vessel for marine research in the Southern Bight of the North Sea and eastern part of the English Channel. VLIZ also manages the ROV Genesis deployable down to 1400m, which can be launched from the RV Simon Stevin and from smaller research vessels.

UGent manages services under 5 facilities: experimental ecology, structural and chemical analysis (fatty acid, pigment, CN sediment, nutrient analyses, this infrastructure allowing a complete biochemical screening of marine organisms), molecular analysis optimised for high throughput analysis, biological analysis (16 fish challenge tanks to support the fish caught with the help of VLIZ, to perform pathological experiments and histological analyses) and imaging facilities including state of the art microscopes (including digital imager to capture movement of live samples - ZebraLab).

3.2 Installations offered

EMBRC Belgium offered access to two marine stations with a specific set of installations:

3.2.1 Flanders Marine Institute (VLIZ)

- **Online data and information systems and servers:** environmental data, taxonomic information, species occurrence data, biological samples (biobank).
- **Marine Station Oostende:** facilities for in vivo experimental work with marine organisms (mesocosms, climate rooms), imaging facilities (plankton imagery) and associated biology and genomic laboratories
- **RV Simon Stevin:** coastal multidisciplinary research vessel (collection of samples in coastal and estuarine waters) and associated sampling and measuring equipment
- **ROV Genesis:** remotely operated vehicle used for observations of marine biota

3.2.2 Ghent University (UGent)

- **Imaging:** Physiology (PAM) imaging, Cell tracking, SEM, morphology, and microscopy services at the Lab for Protistology and Aquatic Ecology and the Artemia Reference Centre
- **Structural and chemical analysis:** Artemia, fatty acid, methyl ester separation, grain size, pigment, nutrient. This infrastructure allowing a complete biochemical screening of marine organisms.



- **Molecular analysis:** Marine bacterial platform, marine molecular platform and molecular analysis optimised for high-throughput analysis.
- **Biological analysis:** 16 fish challenge tanks to support the fish caught with the help of VLIZ, to perform pathological experiments and histological analyses.
- **Experimental ecology:** Climate rooms, water manipulation equipment, water and sediment incubation units, aquaria, annular flume, in situ pressure sensors, respiration measurements.

4. Applications received

4.1. Origin country of applicants

EMBRC Belgium has received a total of 31 applications in the nine calls of TNA. Among these, 23 applicants were based in European countries while 8 applicants came from other non-European countries.

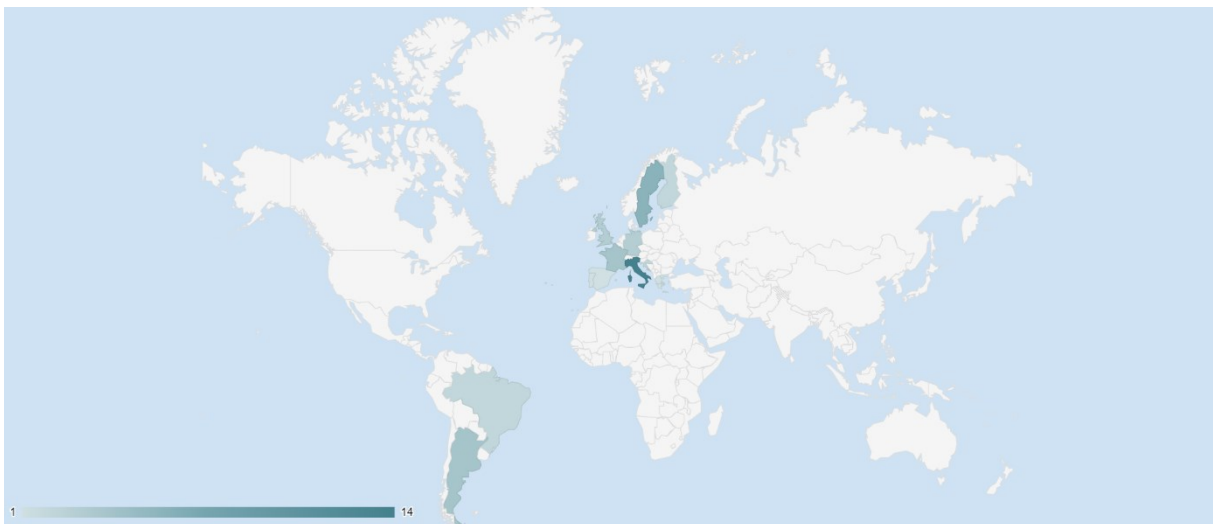


Figure 1: Geographic distribution of EMBRC Belgium applicants (total: 43 users).

4.2. Applicants profile

4.2.1. Home institution type

Applicants were mostly based in academic institutes (universities: 48.8%; research organizations: 51.2%).

4.2.2. Career status

The most recurring career profile of the applicant was PhD students (48.8%) followed by Postdoc (25.6%), early career scientists (16.3%) and senior scientists (9.3%).



5. User hosted and their stats

5.1. *Projects completed*

Overall, EMBRC Belgium has hosted 19 projects for a total of 25 users. 16 projects were carried out on-site, 3 in remote access. The main reason for remote access was COVID. One user however requested remote access to Culture collections unrelated to COVID. UGent send her the requested diatom strains so she could perform experiments at her home university.

The list of projects completed at EMBRC Belgium is available in "[Appendix 1 – List of user-projects completed](#)" further below.

5.2. *Installations used*

The installations used were for UGent: Biological Analysis, Experimental Ecology, Imaging, Molecular analysis and Structural and Chemical Analysis and for VLIZ: MSO and RV Simon Stevin.

5.3. *User satisfaction*

Overall, users have positively evaluated the services offered (Very good: 61.1%; Good: 16.7%). In general, comments from the users were positive. Users were satisfied about the service provision.

5.4. *Projects not completed or cancelled*

At UGent the main reason why projects that passed scientific evaluation did not take place are related to COVID. Due to the restrictions many projects were postponed. At the moment it was allowed to host the TA users at UGent it was not always easy to fit the TA in the schedule of the users and/or lab technicians at UGent. In two cases the user did not have time anymore to travel to Ghent: 1) due to the advancement of a PhD thesis it was not possible to fit the TA in the academic timeline.

2) the user changed plans and was not able to carry on the TA project. In one occasion, it was the schedule of UGent that caused cancellation of a TA project. The main researcher that was supposed to guide the user was on sickness leave and all other lab technicians were fully booked.

VLIZ couldn't service a fifth user as the project, initially approved under the 9th call, was finally not granted due to financial re-arrangements governed by Assemble+ Project Management.



6. Use of resources

Beneficiary / Linked Third Party	PM	short name of the installation(s)	explanations of tasks
VLIZ	0.6	All installations	Administrative support
VLIZ	0.3	All installations	Service Support
UGent	5.1	All installations	Administrative support to users
UGent	6	Molecular analysis	Lab technician
UGent	7	Structural and chemical analysis	Lab technician
UGent	4	Experimental ecology (culture collection)	Scientific support

7. Conclusion

UGent

There were some difficulties with the user access agreement. It always took a long time before the user and the provider came to an agreement.

VLIZ

Providing access to users was sometimes troublesome as the exact needs were not easy to identify. In some cases, users were not specific enough in explaining what their plans and expectations were. In one case the scientific purpose and of the project and the scientific competency of the visiting scientist was questioned.

VLIZ expects that the use of services and infrastructure is mentioned/acknowledged in any publications that result from the services provided (both from a node and an institutional perspective). It is difficult to check this is effectively done.



8. Appendices

8.1. *List of user-projects completed at EMBRC Belgium*

List of user-projects completed at VLIZ

- Project title: Diatoms' grazing experiments (DIGRAE). Users: Alessandra Petrucciani, Alessandra Norici (Università Politecnica delle Marche, IT). Services used: Ecosystem Access, Sampling equipment,
- Project title: Isolation and Characterization of microbial communities from contaminated environmental samples (PHD). Users: Janardhan Ausuri, (National Research Council (CNR), IT). Services used: Ecosystem Access, Sampling equipment, Technology platforms
- Project title: Searching the type of the minute diatom *Chaetoceros tenuissimus* (Meunier 1913) (CHAETOTYPE). Users: Daniel Grzebyk, Philippe Cecchi, Yann Quilichini, Vanina Pasqualini (CNRS, FR). Services used: Ecosystem Access, Aquaria and tanks;
- Project title: Smearing matters: establishing an easy-to-use correction factor for the Sediment Profile Imaging camera for different sediment types (SPI-FACT). Users: Annabell Moser, (Heriot-Watt University, GB). Services used: Ecosystem Access, Scientific diving, Sampling equipment;

List of user-projects completed at UGent

- Project title: Assessing the Archaeal Contribution to RAS (AquaArch). User: Victor Lobanov, (University of Gothenburg, SE). Services used: Structural and chemical analysis; Molecular analysis
- Project title: Bio-remediation of wastewater with algae/bacteria membrane photo-bioreactor: Nutrient removal, Bio-fouling, Microbial community dynamic variation, and Genetic engineering (MMBR). Users: Shahla Radmehr, (Lappeenranta university of technology, FI). Services used: Structural and chemical analysis; Molecular analysis; Imaging
- Project title: Diatom interactions in the sea turtle epizoic biofilm (EpiDialnter). Users: Klara Filek, (University of Zagreb, HR). Services used: Biological analysis; Molecular analysis; Imaging
- Project title: Diatoms' grazing experiments (DIGRAE). Users: Alessandra Petrucciani, Alessandra Norici (Università Politecnica delle Marche, IT). Services used: Experimental ecology (biobanks); Imaging
- Project title: Effects of ultraviolet radiation and high temperature on physiological parameters of *Microcystis* spp. (EUVHTPM). Users: Florencia de la Rosa, (CONICET, AR). Services used: Structural and chemical analysis
- Project title: Fatty acids analysis of shrimp (of co-occurring shrimp) the South-West to the Brazil (FASHRI). Users: Geslaine Rafaela Lemos Gonçalves, (São Paulo State University, BR). Services used: Structural and chemical analysis
- Project title: Fatty acids in intertidal mussels along a large-scale latitudinal gradient: biochemical composition as a biomarker for seasonal variation in food supply (FAM). Users: Celeste Yuvero, Juliana Gimenez (Universidad de Buenos Aires, AR). Services used: Structural and chemical analysis



- Project title: GC-MS and HRMS analysis of a bioactive extract from the marine gastropod *Haliotis tuberculata* (GC-MS HT). Users: Emiliana Tortorella, (CNR-IBP, IT). Services used: Structural and chemical analysis
- Project title: Macrofaunal nematode diversity and connectivity in areas targeted for deep-sea mining (NemaConnect). Users: Sofia Pinto Ramalho, (Universidade de Aveiro, PT). Services used: Imaging; Molecular analysis
- Project title: MEioBenthic response to OXYgen depletion and the role of sedimentary environment in the hypoxia phenomena (MEBOX). Users: Elisa Baldrighi, Francesca Alvisi (CNR - Institute for Biological Resources and Marine Biotechnologies, IT). Services used: Experimental ecology; Structural and chemical analysis
- Project title: Metamorphosis in commercial oyster species regulated by nitric oxide. (OysterNO). Users: Susanne Vogeler, (University of Gothenburg, SE). Services used: Biological analysis; Imaging
- Project title: Molecular regulation of diatom sexual reproduction: benthic versus planktonic pennate diatom life strategies (DIAREP). Users: Rossella Annunziata, Mariella Ferrante (Stazione Zoologica Anton Dohrn, IT). Services used: Molecular analysis
- Project title: SElective BREeding in DIatoms as a strategy to enhance production of high-value Fatty ACids for European Aquaculture (SEBREDIFACEA). Users: Francesco Pisapia, (Banco Español de Algas, ES). Services used: Imaging; Experimental ecology (culture collection); Molecular biology; Structural and chemical analysis
- Project title: Species-specific effect of diatoms on larval settlement in the marine worm *Platynereis dumerilii* (SPEC-ID). Users: Elizabeth Williams, (University of Exeter, GB). Services used: Experimental ecology (culture collection)
- Project title: The effects of low-frequency noise pollution on benthic bioturbator behaviour (SONATA). Users: Jan Beermann, (AWI, DE). Services used: Experimental ecology

