

EMBRC future: a gateway to explore our world ocean

The organisation is leading new and ambitious projects that will help unify different fields of science and deepen our knowledge of the marine world.

Since its creation in 2013, the consortium of European Marine Biological Resource Centre ([EMBRC](#)) has been a game-changer for marine biology and ecology. EMBRC has established a transformative culture of collaboration and open research data, and is addressing environmental challenges such as climate change and sustainable aquaculture. EMBRC is now building upon its success to strengthen its infrastructure and expand its collaborative strategy to a broader scale.

“As demand for our services goes up, our technicians’ workload increases”, observes EMBRC Executive Director Nicolas Pade. “And we struggle to get funding dedicated to human resources.” According to him, the consortium’s added value comes not only from its excellent facilities and equipment, but most and foremost from the expert technicians that operate and maintain them.

This situation is a symptom of a larger challenge: getting perennial funding. “One of the greatest qualities of EMBRC as a research infrastructure is that it is built for the long-term: we provide a base to build upon and sustain,” explains Nicolas Pade. “But this will be possible only if we get long-term funding.” This means that the consortium needs to consolidate and enhance its member states’ financial and political commitment.

Another part of EMBRC’s future plans: reaching more international users. For now, applications to EMBRC services from outside of Europe represent less than 20% of the total applications. “We want to enable a global network of observation and scientific collaboration, states Nicolas Pade. “We want to work with countries in Latin America and Africa for instance, learn from them and hopefully also help them enhance capacity.”



Products from aquaculture research, Sweden

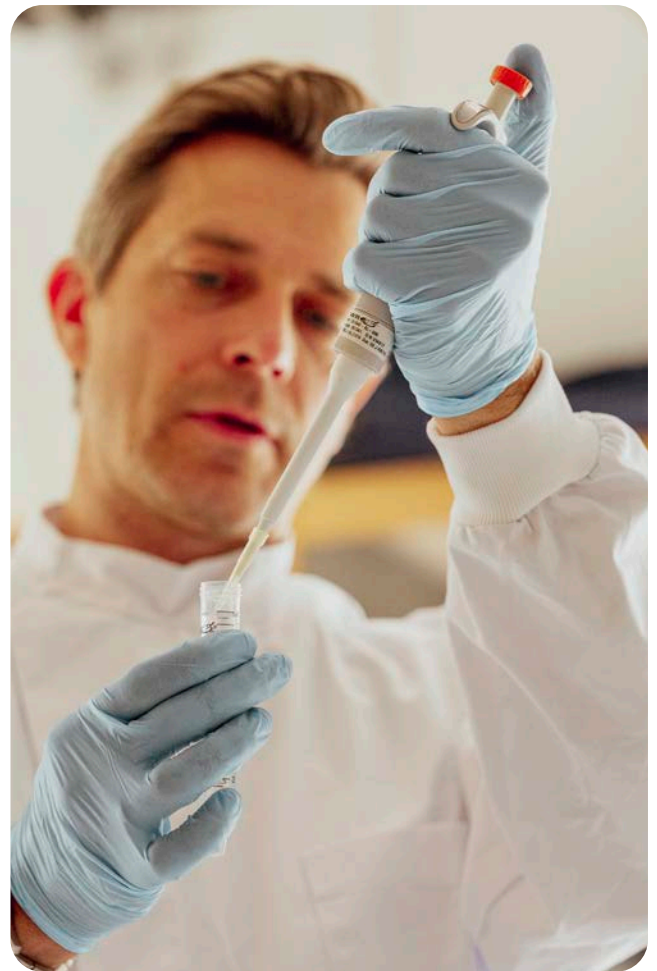
He and his team are particularly interested in the new perspectives researchers from these regions would bring to the table. “They do excellent science for only a fraction of the budget we use in Europe,” EMBRC Executive Director says. “We have lessons to learn in terms of making research more sustainable”.

Recently, EMBRC has dedicated a large part of its efforts to improving marine coastal observation in Europe. As a matter of fact, there are many national and regional research programmes that monitor human impact on the European coastal ecosystems. But these programmes are often fragmented, short-term, and uncoordinated. Funded by the European Union, EMBRC’s newest innovative project called [MARCO-BOLO](#) (MARine Coastal BiODiversity Long-term Observations) is creating a new and lasting generation of integrated observation ecosystem for coastal biodiversity, by connecting existing initiatives, improving research methods, and pushing technological innovations.

“The ocean is a pressing issue for all of us as a society,”

Alice Soccodato

In the long run, EMBRC aims at expanding its horizon beyond coastal areas. Considering that 80% of our ocean is still unexplored, “observing and monitoring our oceans is like exploring a new planet,” says Alice Soccodato, EMBRC Scientific Officer and Project Manager. “To study them, we should take the same approach as if we were sending probes or people to Mars.” That is why the Global Ocean Observing System, or GOOS, was created by the United Nations in 1991. Today, it is composed of about 10 000 observational systems, including marine stations, research vessels, gliders and automated buoys, also called Argo floats. As far as marine biology and ecology is concerned, there are still huge gaps in the global ocean observation system. To fill them, EMBRC partners up with like-minded research infrastructures, such as EMSO-ERIC (another coastal observation network), to refine and enrich its data, and with Euro-Argo, the European contribution to the international Argo float programme. “Since EMBRC focuses mainly on coastal environments, we are a great complement to Argo floats that observe the open and deep sea,” explains Alice Soccodato.

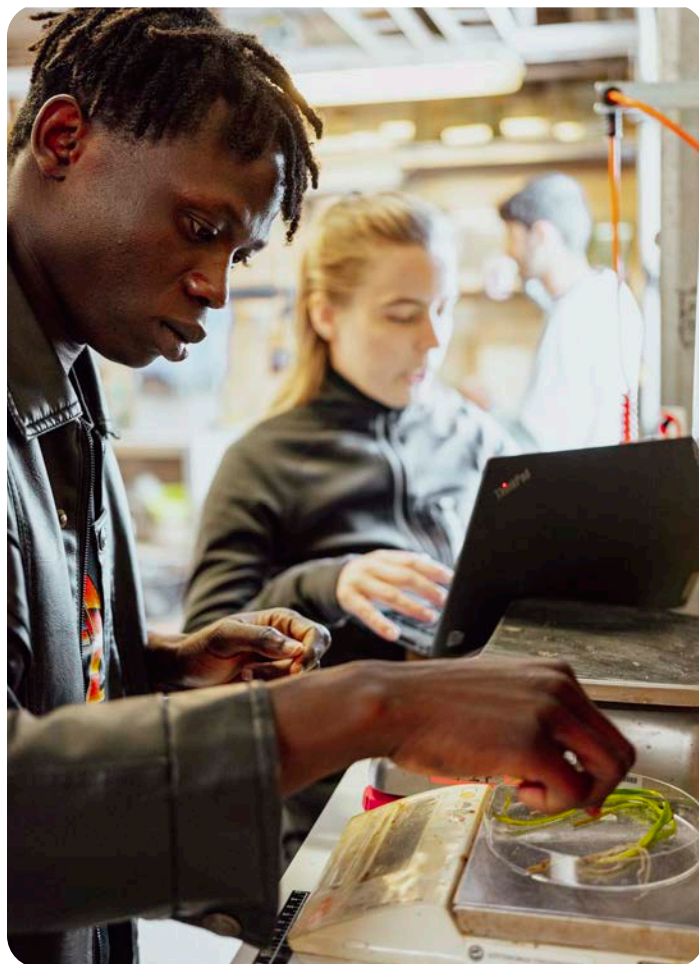


Researcher in a laboratory at the Kristineberg Centre, a marine station part of EMBRC Sweden

To develop a more holistic approach to our ocean, GOOS has created a panel, the BioEco panel, to connect the marine physics and chemistry community and the marine biology community, including EMBRC researchers. The scientific research community encouraged the adoption of monitoring tools - Essential Ocean Variables (EOVs) and Essential Biodiversity Variables (EBVs), supported by GOOS – to analyse specific physical aspects of the ocean as well as marine biodiversity and ecosystem health. “With these indicators, the two research communities should be able to agree on common directions, useful also for policy perspectives,” says Alice Soccodato. EMBRC is also contributing to the [European Digital Twin of the Ocean](#), an ambitious initiative launched by the European Commission. It is a virtual representation of the ocean based on marine observations, advanced modelling, artificial intelligence powered by supercomputing, leveraging all existing European science and assets. EMBRC biodiversity data, collected via EMO BON (European Marine Omics Biodiversity Observation Network) programme, will soon be integrated into these models.

The Digital Twin of the Ocean will be able to predict in near real-time how human activity affects marine ecosystems and help policymakers and the public better manage and preserve our oceans.

“If we put together all the existing technologies and science institutions – satellite observations, oceanographic research campaigns, gliders, Argo floats, biodiversity campaigns, ocean modelling etc., we will finally know everything about our oceans” sums up Alice Soccodato. “We will need to be as productive, cost-efficient and sustainable as possible, and these are lessons we can learn from the field of space sciences”. According to her, there is a need for a “European marine agency” that would function the same way the European Space Agency does. “Marine missions should work just like space missions: these missions should target different ecosystems, be completely coordinated, shared and interoperable, and their results and data should serve not only the scientists but society as a whole,” says Alice Soccodato. “The ocean is a pressing issue for all of us as a society,” she continues. “It is the only resource in the world that is completely free and accessible to everyone, and it is irreplaceable.”



Students at the Kristineberg Centre, Sweden



Samples of seastars, Kristineberg Centre, Sweden



Alice Soccodato
Marine biologist and oceanographer,
Scientific Officer and Project Manager at EMBRC



Nicolas Pade
Marine biologist,
Executive Director at EMBRC

