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BLUEMED Mediterranean Research Infrastructures Stakeholders' Report

List of attendees

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Forty-nine participants joined the event. All presentations are available online on BLUEMED website: http://www.bluemed-initiative.eu/bluemed-mediterranean-research-infrastructures-stakeholders-conference-13th-and-14th-june-2019-paris-france/

Opening remarks

Marco Weydert (European Commission), Alain Lagrange (French Ministry of Higher Education, Research and Innovation) and Giuseppe Provenzano (Union for the Mediterranean) opened the meeting.

Marco Weydert gave several elements of context in which the meeting took place and he provided information on the next research and innovation framework programme Horizon Europe. He mentioned **the importance of the future mission boards like Healthy Oceans, Seas, Coastal and Inland Waters**, which will be composed of various appointed stakeholders to ensure the success of the missions.

Giuseppe Provenzano provided information on the main missions and structure of the Union for the Mediterranean. He reminded how his institution closely follows the BLUEMED Initiative through supporting several BLUEMED events and sharing knowledge by connecting the project to other UfM activities.

Alain Lagrange highlighted the importance of BLUEMED for the French Ministry of Higher Education, Research and Innovation and the role his institution plays to animate the network of national blue growth stakeholders involved in BLUEMED activities.

Introduction

Nicolas Arnaud (CNRS-INSU) introduced the objectives of the event and what was expected from the discussions. He reminded the work already done on Research Infrastructures in the framework of BLUEMED CSA (Work Package 3 – Framework conditions). He highlighted the 13 key priorities that have recently emerged from the BLUEMED SRIA and explained that the workshops have been built according to them. Indeed, **the discussions** held during the event **will both feed a Roadmap on RIs and support the implementation of the BLUEMED SRIA**.

Keynote speech

Françoise Gaill (CNRS-INEE and Climate & Ocean Platform) delivered the keynote speech. She presented the global ocean context in which BLUEMED is operating and reminded that a lot still remains undiscovered under the surface. She highlighted the importance of ecosystem services for humanity and in terms of economic resources. Françoise Gaill mentioned **the UN Decade of Ocean Science** coming soon. This **unique momentum** will require the participation of a large diversity of stakeholders with representatives from policymaking, business, scientific communities and civil society. She highlighted the fact that civil society has a growing influence in the discussions and decisions related to oceans.

Roundtable

The roundtable enabled Georgios Sylaios (Democritus University of Thrace) to present the scope and progresses of **ODYSSEA**. This project, in its second year of implementation, aims at developing an interoperable, fully integrated and cost-effective **platform** being networked with local and regional observing and forecasting systems across the Mediterranean basin. Its main goals are **to make Mediterranean data easily discoverable, accessible and create services and products based on these data for all users**.

His presentation was followed by Ferial Louanchi (ENSSMAL, EuroMed GSO BLUEMED WG delegate), Ghaleb Faour (CNRS-Lebanon) and Baris Salihoglu (METU, EuroMed GSO BLUEMED WG delegate), who exposed the current state of marine RIs in their respective countries.

After presenting the existing RIs in Algeria, Ferial Louanchi explained that there is no real data sharing policy in Algeria and there is a need for national data integration before Mediterranean data integration. She also expressed her wish for **southern researchers to be fully involved in the conception and analyze of data**, rather than only being data providers. She also explained that there is a need for framework of governmental agreements (such as WestMed), especially to allow foreign vessels to access seas of Algeria.

She introduced Samir Grimes, also attending the meeting, who coordinates the ongoing project on marine biodiversity BANBIOM, aiming at connecting at Algerian level all players of biodiversity.

Ghaleb Faour highlighted several restrictions faced by researchers in Lebanon. He stressed that data became more accessible nowadays, but still, high resolution is not fully operable and countries from the South shore often have to pay for them. He also highlighted the heterogeneity of data and showed that the majority of measurements is made in the Western part of the Mediterranean, as there is a lack of fine-scale studies and observation in the Levantine basin. His recommendations are to **raise awareness of the open access policy of in-situ measurements data**, draw a roadmap for the share ability of in-situ data, provide higher spatial and temporal resolution satellite imageries free of charge.

Baris Salihoglu presented several RIs existing in Turkey such as the National Centre of Excellence in Marine Ecosystem and Climate Research, the observatories, institutes and the vessels. The high number of research vessels in Turkey is an asset for the country. He also highlighted some examples of ongoing collaborative projects in which Turkey is involved (Super Site, BlueExcell). He recommended for **BLUEMED to play a coordinating role in supporting infrastructures and to develop a roadmap for cross-basin cooperation and integration, for co-creating and co-funding mechanisms**.

Workshop sessions

Participants then split into the different workshops for the end of the afternoon and the beginning of the second day. They finally grouped together again in plenary session to learn about what have been said in other workshops. Two rapporteurs/workshop facilitators have been previously identified. They moderated the discussions into the different working groups and presented the outcomes of the discussion in their respective atelier in front of the participants.

It has to be noted that workshop outputs are relevant for BLUEMED developments, including the Implementation Plan and the Pilot Action on Healthy Plastic-free Mediterranean Sea.

Please refer to Annex A at the end of this document for more details on the outcomes of the different workshops.

Panel discussion

Thorsten Kiefer (JPI Oceans) presented the objectives and activities led by the organization he represents, which is a pan-European Research and Innovation platform whose objective is to increase the impact of national investments in marine and maritime R&I. He mentioned the thematic scopes of the JPI Oceans SRIA and provided examples of agenda implementation through JPI Oceans actions and he stressed one example of Infrastructure sharing.

Rosa Fernandez Otero (CETMAR & EMB) came back on the outcomes of EurOCEAN Conference 2019, which took place in UNESCO headquarters in Paris just before the BLUEMED meeting. EurOCEAN's aims were, among others, to discuss the contribution of European marine science to the UN Decade of the Ocean Science for Sustainable Development and provide a forum for interaction among members of the marine research community and marine stakeholders. She reminded that there are reasons for optimism despite the feeling of pressure and urgency to preserve our marine ecosystem services. She ended her presentation by presenting the activities led by EMB in the field of research vessels and the recommendations that emerged during EurOCEAN 2019.

Saloua Sadok (INSTM) mentioned the five laboratories composing her institute and she gave some examples of bilateral cooperation existing between Tunisia and Southern and Northern countries. One of the major issues faced in Tunisia is the lack of jobs for young graduates, who have to move abroad.

Final remarks

Finally, Fabio Trincardi (CNR) closed the conference by thanking the organizers, the participants and reminded that a lot of ground has been covered during this two-day event. He underlined that **Blue Growth in the Mediterranean should follow the principles of circular economy to ensure sustainability**. He also stressed the importance of dialogue between Mediterranean countries, between European countries and inside each BLUEMED country to efficiently support marine science developments and as precondition of a global Med.

Annex A – Workshops' outcomes

Workshop n°1 – Which tools to address key pollution issues in the Mediterranean?

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Existing sources of pollution in the Mediterranean and potential responses:

- ⇨ **Oil spill** – there is a huge traffic in the Mediterranean Sea, with tankers highways and risks of harbor pollution:
    - Identify hotspots (Algeria, Sicily Channel, Cyprus, strait of Gibraltar for example);
    - Implement a monitoring system of oil spill similar to the one existing for forest fire monitoring;
    - Creation of a shared platform at Mediterranean level.
- ⇨ **Pollution from inlands** is also having dramatic consequences on the Mediterranean:
    - Historic pollutants such as heavy metals or persistent organic pollutants;
    - **Emerging pollutants**: plastics (micro and nano) whose behavior in water is still unknown, hormones, persistent organic pollutants…
    - **Lack of knowledge** on these emerging pollutants;
    - **Develop protocol harmonization to monitor and assess plastic litter at sea** (refer to GESAMP guidelines).
- ⇨ **Atmospheric** pollution (ICOS ERIC, ACTRIS PP);
- ⇨ **Acoustic** pollution (EMSO ERIC);
- ⇨ **Light** pollution (ESA);
- ⇨ **Harmful algae** (EMBRC & LifeWatch ERICs);
- ⇨ **Alien species** (EMBRC & LifeWatch ERICs, Euromarine, Emodnet);
- ⇨ **Acidification** (EMSO & ICOS ERICs).

Recommendations:

- ⇨ Need for a better coordination, organization and integration at Mediterranean Sea level through a better communication and exchange of information in the field of pollution:
    - Encourage **protocols harmonization**;

- Encourage access to open **data**, the use of existing common databases like Copernicus, EMODnet and SeaDataNet but also **national databases** and the interoperability of data;
- **Link the BLUEMED community with regional networks such as Eurocean, MonGOOS, EuroGOOS, EOOS, and … Support a better coordination of research vessels** by sharing vessels' activities and time, encourage joint cruises and TNAs (examples of Eurofleets+ and ERVO activities).

Solutions to improve North-South cooperation:

- ⇨ **Rely on ENVRI-FAIR ENVironmental Research Infrastructures** building Fair Services accessible for society, innovation and research;
- ⇨ **Encourage the development of co-programmed initiatives** like PRIMA, consisting on EU member states, H2020 associated countries and Mediterranean partner countries on an equal footing basis, with support via co-funding, co-ownership and co-management;
- ⇨ **Involve policy makers** in scientific issues at the very beginning;
- ⇨ **Further encourage the synergies with political science policy interface organization**, i.e. the Union for the Mediterranean, as asset to improve North-South cooperation and **with regional initiatives** like WestMed;
- ⇨ **Support, valorize and capitalize the benefits of existing networks/consortiums of universities such as TETHYS;**
- ⇨ **Encourage the development of more political agreements;**
- ⇨ **Encourage the development of programs such as MedPol,** which assists Mediterranean countries in the formulation and implementation of pollution monitoring programmes, including pollution control measures and the drafting of action plan aiming at eliminating pollution from land-based sources**;**
- ⇨ **Increase cooperation with NGOs.**

Workshop n°2 – Which tools to support adaptation and mitigation of climate change in the Mediterranean?

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Bottlenecks:

- ⇨ Lack of political will to sign agreements between states;
- ⇨ Lack of sustainable targeted long-term financial commitment;
- ⇨ Lack of climate change awareness in Southern countries, not perceived as a priority;
- ⇨ Lack of research laboratories in the South;
- ⇨ Lack of a culture of data sharing and policies for data sharing and exploitation;
- ⇨ Lack of knowledge about existing data and their status (are they interoperable);
- ⇨ Lack of quality data due to a lack of publication performance (need for DOIs).

Recommendations:

- ⇨ **Develop systematic training initiatives through RIs – including exchange and dedicated time for researchers' and students' mobility:**
  - Embarking students on vessels is for example a very efficient way to teach and it is not systematic everywhere in the Mediterranean at this stage.
- ⇨ **Support common platforms to show RIs' outcomes and start building national platforms as a baseline for future information sharing;**
- ⇨ Creation of common observation sites based on the general panorama of infrastructures – refer to ENVRI-PLUS initiative;
- ⇨ Integrating tools (Research Vessels, EO, Drones, UAVs/gliders, in-situ, modelling) to cover spatial, temporal and observation gaps;
- ⇨ **Data rescue** – check historical data, make them available, digitalization
- ⇨ **Support interoperability and standardization initiatives:**
  - Apply already agreed standards;
  - Identify subsets of data relevant for Mediterranean studies.
- ⇨ **Develop common operational protocol to make data comparable;**
  - Especially to compare results from experiments led under controlled conditions;

- Develop mesocosms for controlled conditions (identify native species responses, invasive species interactions);
- Support long term experiments, very relevant for climate change topics;
- Identify sub regional climate area.

⇨ **Encourage synoptic campaigns rather than geographical = planning campaigns around common research themes;**

- In the same way, integrating observation platforms around common scientific challenges connected to climate change;

⇨ Create the best conditions for field research (safety, transboundary agreements for cooperation, data policy/sharing agreement);

⇨ **Encourage interactions with NGO's for financial possibility to support co-funding** (example of Pew Charity Trusts);

⇨ **Encourage co-creation and co-development between the North Shore and the South Shore** (relevant examples already existing in Tunisia);

⇨ **Change the perspective and make climate change a priority in southern countries;**

⇨ General imbalance between North/South and East/West data coverage (at surface & depth)

- DOI are attributed by a given institution, this mechanism is essential to develop national databases. **Therefore, this mechanism should be encouraged and institutions in different Mediterranean countries could start the development of national databases;**

⇨ **Pan-euro-Mediterranean initiatives such as BLUEMED and WestMed can encourage Mediterranean countries' political commitments:**

- Need for clearance to access some of southern countries' seas – scientists are willing to cooperate together but they often face political bottlenecks, it has been proposed that BLUEMED GSO WG could encourage national governments to tackle this issue;
- BLUEMED could be a platform to express which data are key, which subsets of data are the most needed, and which standards we should use in the Mediterranean. BLUEMED could also help to develop agreements to make data from southern countries accessible;
- BLUEMED could support standardization and interoperability procedures.

⇨ Encourage pan-Mediterranean initiatives to promote joint North/South research.

⇨ Encourage the development of **collaborative science** and raise awareness on the importance of collaboration between citizens and scientists;

⇨ **Encourage the development of projects to better connect land and sea scientific communities**. They use different ways of modelling ecosystems; we should start to think about the development of common modelling tools;

⇨ **Encourage a homogeneous repartition of skills among countries;**

⇨ **Optimization of funding and equipment to improve local capacity;**

- ⇨ Integration of marine-based research infrastructures, especially for renewable energy. Effort to make advantage of these infrastructure for multi-purpose monitoring and testing;
- ⇨ Develop capacity building – need to transfer technologies in the South so researchers can make their own experiments and develop their own expertise.

Workshop n°3 – Which tools to ensure a sustainable use of bio-resources in the Mediterranean?

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Gaps:

- ⇨ In the domain of aquaculture and bio-resources, RIs exist in the Mediterranean, but the main problem is related to their **maintenance on the long-term**. It takes time, it is expensive and equipment are not fully working:
  ➔ Need for mechanisms to ensure the sustainability of RIs.
- ⇨ **Facilities for seafood testing**:
  - Lack of reference materials, methodologies and standard analyses. Lack of analytical tool and methodology for labelling and accreditation:
    ➔ Need to apply and adapt methods.
- ⇨ Lack of aquaculture facilities dedicated to specific Southern Mediterranean **relevant species** (sepia, cuttlefish).
- ⇨ **Lack of marine sourced libraries** and southern Mediterranean specific libraries.
- ⇨ **Biological monitoring:**
  - Development of automated biological sensors, connecting genomics/augmented observatories across the Mediterranean.

Bottlenecks to access RIs:

- ⇨ **Visibility and awareness of RIs opportunities and services**:
  - Lack of visibility both in the North and South, knowledge gap, scientists do not always know the existence of RIs, which are not much valorized:
    ➔ Need to better connect existing RIs communication networks to the Southern Mediterranean. For European RIs, 20% of TNA is made accessible to Southern countries, but most of the time, other countries do not know about that, don't use this percentage and buy their own equipment;
    ➔ Need to avoid these duplications. Mediterranean RIs for aquaculture should be added to existing RIs databases such as EurOceansdatabase. Need to use the existing relevant platforms/networks and build on them to

answer the needs. Other example: Ocean Facilities Exchange Group for collaborating for vessel time;
➔ Creation of more platforms to reduce duplication and facilitate access & income;

- ⇨ **Administrative issues**:
  - Publication of papers builds scientists' credibility, this is an issue in Southern countries where it can be more difficult to publish;
  - Visa issue: easy to circulate between southern countries but harder to go North. This is a political issue: it has been suggested that BLUEMED could play a role of political levier via the GSO.
- ⇨ **Migration flows:**
  - Develop solutions to avoid involuntary migration and enable South scientists to access RIs without having to leave far away. There is a great potential to increase exchanges between southern countries and for joint work. It has been proposed that BLUEMED could support this kind of initiatives and play a role to tackle deep roots of migrations at research level. Example of *EuroMedMig-ReNet Project.*
- ⇨ **Samples transfers**: issues linked to the Nagoya Protocol, exchanges of samples are not always allowed between Northern African countries;
- ⇨ **Technical bottleneck**: support a better access to chemical supplies/connectivity, supply chain and distribution centres.
- ⇨ **DATA:** encourage FAIR data and develop same standards & protocols, participation in open science initiatives from Southern Mediterranean on equal footing.

Recommendations:

- ⇨ **Develop entrepreneurship, encourage a better understanding of markets, bring research to market, tackle the innovation gap and valorize research:**
  - Generalize the proximity of companies and research, encourage enterprises to participate to research and encourage co-funding mechanisms between the private and research sector. (The level of private sector's involvement into research is very heterogeneous depending on the countries and scientific sectors);
  - Encourage public-private partnerships: companies' support is required to enable the up-scaling and help to move from lab scale to factory scale.
- ⇨ **Encourage the development of "Living Labs" related to Blue Growth** to improve technology and knowledge transfer:
  - These are environments around platforms and RIs where researchers, enterprises and society are working together. Young graduates can create their own spin-off with their results within the lab, ready to be sold. Consumers can contribute to provide feedback on how to sell products. Living Labs are hubs

of interaction between different sectors, they are between laboratories and incubators;
    - These are a way to link blue economy stakeholders around RIs.
- ⇨ **Encourage co-creation and co-development in Southern Mediterranean countries**;
- ⇨ **Create centers of excellence in Southern Mediterranean and connect them to Northern Mediterranean RIs** to encourage capacity building, sharing best practices and joint development activities;
- ⇨ **Develop novel use of existing RIs**:
    - Tow tanks and wave tanks for fishing gear innovation;
    - Vessels for assessing fish stocks and avoid overexploitation.
- ⇨ **Create a platform to share information on marine biotechnology:** there is no specific platform for the marine and maritime sector at this stage. It should be open and equally discoverable;
- ⇨ Surveys to identify research in the Mediterranean interacting with international projects, in Europe we have some mechanism. In the Med, we have more people interested than opportunities to interact between students and labs.
- ⇨ **Evolution of RIs funding**:
    - Access model: need for a mix of public and private funding – both need to finance the access to RIs;
    - Transnational openness: allowing the use of national science funding for use/services of RIs based in other countries (bi-trilateral agreements) / use RIs with funding from another country. Make access easy for foreign researchers, even if the RI is funded with national grant money (sometimes the access is denied to foreigners in that case);
- ⇨ **Capitalize on the existing RIs:**
    - Encourage platforms and expertise sharing – (example: vessels' sharing with Turkey);
    - Creation of a joint center between Southern countries.
- ⇨ **Develop management plans of bio-resources everywhere in the Mediterranean** to avoid overuse and conserve the biodiversity;
- ⇨ **Towards a European cluster of RIs on bio-products**: to produce protein, lipids, extract product.


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