



# Towards an All-Atlantic Ocean Research Alliance

Key outcomes and conclusions from the  
All-Atlantic Ocean Research Forum

6-7 February 2020



Research and  
Innovation

## **Towards an All-Atlantic Ocean Research Alliance**

Key outcomes and conclusions from the All-Atlantic Ocean Research Forum, 6-7 February 2020

European Commission  
Directorate-General for Research and Innovation  
Directorate C — Healthy Planet  
Unit C.4 — Healthy Oceans and Seas

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EUROPEAN COMMISSION

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All-Atlantic Ocean Research Forum**

**6-7 February 2020**

edited by Laura Mc Donagh

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*"This Forum is an opportunity for our Atlantic Community to come together. To look back at what we have achieved. To look to the future at what we want to achieve. But more importantly, to renew our commitment, as a community, to our shared resource: the Atlantic Ocean."*

*Commissioner Mariya Gabriel during her welcoming speech at the All-Atlantic Ocean Research Forum 6 February 2020*

## Introduction

The All-Atlantic Ocean Research Forum took place on 6 – 7 February 2020 with over 500 participants in Brussels, to take stock on the state of cooperation and to start identifying some areas of potential future cooperation. This Forum marked a turning point in the work of the Alliance, from an effort in community building to building a community of purpose to bring science and innovation in support of societal well-being around the Atlantic Ocean.

The Forum highlighted results and solutions for our citizens and communities from Antarctica to the Arctic, which this cooperation has produced so far, and plan the further implementation of the Galway and Belém Statements.

During the Forum, the Atlantic community defined together a vision of how it can strengthen its international cooperation to seize the opportunities and address the common challenges facing the Atlantic Ocean and the



communities that depend on it. The Forum paid particular attention to the projected changes the Atlantic Ocean and its ecosystems will undergo, as outlined in the IPCC Special Report on Oceans and Cryosphere and the IPBES Global Assessment Report on Biodiversity and Ecosystem Services, and to the solutions that research and innovation can provide to our societies.

A highlight of the Forum was the launch of the All-Atlantic Ocean Youth Forum by European Commissioner for Innovation, Research, Culture, Education and Youth, Mariya Gabriel. The Youth Forum will support the implementation of an All-Atlantic



wide community of Ocean Youth Ambassadors by initiating an All-Atlantic Educational Programme or Module with a strong emphasis on science and citizen engagement, communication and outreach as part of their training pathway for career development.

As an outcome of the Forum, the partners

together set a new strategic direction for the All-Atlantic Ocean Research Alliance, which can support the implementation of the UN Agenda 2030 for Sustainable Development, the UN Decade of Ocean Science for Sustainable Development and deliver on the priorities such as the European Green Deal, the Horizon Europe Mission Healthy Oceans, Seas, Coastal and Inland Waters and other national or regional commitments taken by the different international partners.

Forum participants had the opportunity to witness the power of art to convey knowledge and to strengthen the bridge between science and society. This was thanks to the artists and exhibitors who were central to the Forum. Thyssen-Bornemisza Art Contemporary Foundation opened the Forum with their commissioned piece, *Territorial Agency: Oceans in Transformation*. Participants also had the opportunity to witness the work of Skye Morét, a data-driven designer and marine scientist who fuels her belief in the power of art and design in communicating science, and the Science Communication Lab a design studio that specialises in providing innovative visual communication specifically for the sciences and for complex, explanation-intensive subjects. The graphic illustrator, Julie Boiveau beautifully summarised the major outcomes of each of the sessions in self-explaining drawings that are featured throughout the report.

The Forum finished on day one with a remarkable dance performance by Marine Miséramond, a 17-year-old student from Belgium that was especially choreographed for the event by Nadine Bourlez.

*This report will now present a more detailed account of the proceedings of the 6 – 7 February 2020 and the recommendations and next steps for the implementation of the future of the All-Atlantic Ocean Research Alliance.*

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*The Forum was also very big on social media, having generated over 12 thousand tweets using #AtlanticAll and was the number one trending topic in the Brussels region on 6 February 2020. Check out #AtlanticAll to see the many messages posted throughout the event!*

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## Opening - Day One of the All-Atlantic Ocean Research Forum

The conference was moderated by Karen Coleman, award winning Irish broadcaster, journalist and author.

### *Welcome Speeches*



**Mariya Gabriel**, European Commissioner for Innovation, Research, Culture, Education and Youth, officially opened the Forum and welcomed all the participants from along and across the Atlantic Ocean. She thanked the representatives of all the countries involved and present here today, from Europe to Argentina, Brazil, Cabo Verde, Canada, South Africa and the United States.

Commissioner Gabriel invited us all to look back at what we have achieved, to look to the future at what we want to achieve and, most importantly, to renew our commitment, as a community, to our shared resource: the Atlantic Ocean.

The All-Atlantic Ocean Research Alliance is a positive and concrete example of Science Diplomacy, and Commissioner Gabriel stressed

the need to listen and learn from each other; to act together; and to use our existing tools to achieve our common goals. In doing so, the scientific dimension is crucial but not self-sufficient; it is important too that we engage with citizens, including our youth, and with the international community, and to communicate in different ways.

The work achieved with this Forum will inspire others and reach further sea basins so that our impact will go beyond the Atlantic to reach a global dimension. To be able to act we need to develop and use the instruments we have. The Commissioner highlighted that on the EU side, the work of the Forum will underpin many of our existing or upcoming initiatives. This includes the Communication "A New Approach to the Atlantic Maritime Strategy – Atlantic Action Plan 2.0", another is the European Green Deal, and the others including the high precision digital model of the Ocean, and the Horizon Europe Mission Healthy Oceans, Seas, Coastal and Inland Waters.



During her speech, Commissioner Gabriel was joined on stage by the 23 All-Atlantic Ocean Youth Ambassadors to officially launch the All-Atlantic Ocean Youth Forum. The Youth Forum aims to better equip a broader community of early-career ocean youth with the skills, education and training to become ocean leaders and empower them to drive positive change and sustainable development along and across the Atlantic Ocean.



The Youth Forum will become the Alliance’s most important vehicle to promote young people’s competences and skills by empowering them and promoting early career training, capacity development initiatives, promoting fellowships and career development opportunities.

Before concluding, Commissioner Gabriel thanked participants for their hard work and conveyed her full support to the initiative. She reminded us again to *“Learn and listen from each other, act together and use the instruments to achieve concrete and targeted solutions”*.

**The full speech delivered by Commissioner Gabriel is available to view [here](#).**

*High Level Representatives:*

**Marcelo Morales**, Secretary of State, Ministry of Science, Technology, Innovation and Communication, Brazil, highlighted the importance of the Forum for Brazil. He emphasised that Brazil is engaged in digitalization, open access, and on the Sustainable Development Agenda 2030. Science has a key role in the development of international cooperation. Challenges are global and do not recognise boundaries. As such, they need to be tackled together. Brazil is ready to improve this cooperation and to take it to the next level. Science, technology and innovation should be brought close to society to boost economic development and an emphasis must be brought on higher education and training.



**Maria Da Graça Carvalho**, Member of the European Parliament noted that for the first time, under Horizon 2020, marine activities are being addressed in a more organic way and that she was pleased to

have contributed to it. She emphasised that we can continue to count on her support for the All-Atlantic Ocean Research Alliance, International Cooperation and Science Diplomacy in the Parliament. For the next phase of the European Institute of Innovation & Technology (EIT), she proposes a Knowledge and Innovation Community (KIC) on Oceans and Waters, with an emphasis on education and skills.

**Jean François Quérat**, Secrétaire Général Adjoint de la Mer & French Presidency of the EU Atlantic Strategy, stressed that a lot of results have been achieved by the Alliance since a similar event organised in April 2015, and that the vision of the All-Atlantic Ocean Research Alliance is becoming a reality. Science should be at the base of the revision of the Atlantic Action Plan.

**Craig McLean**, Assistant Administrator for Oceanic & Atmospheric Research and Acting Chief Scientist, National Oceanic and Atmospheric Administration, United States referred to the priorities of the United States: Blue economy, scientific excellence, building both international (US is a strong supporter of the UN Decade of Ocean Science) and multi-sectorial partnerships. The Galway Statement is a success and should be regarded as a model for other sea basins. The Forum serves to celebrate, to engage and to look forward. It requires a better understanding of scientific questions across geopolitical alliances. He noted the role of private sector, citing for instance, the Vulcan Foundation which will help to support the Deep ARGO programme. At present only 40% of the US EEZ is mapped at high quality. Under the Seabed 2030 global initiative, the US aspires to map the rest of the global ocean by 2030.

**Manelisi Genge**, Ambassador of South Africa to Belgium, Luxembourg and the European Union, underlined that international cooperation is imperative to advance the multitude of challenges faced globally as well as to address the implementation of the Sustainable Development Goals, especially number 14, which commits us to conserve and sustainably use the oceans, seas and marine resources. Science and innovation are a priority for the Government of South Africa. Ambassador Genge highlighted that the All-Atlantic Ocean Research Forum provides an important mechanism and opportunity to enhance cooperation. South Africa looks forward to hosting the next Forum in December 2020.

**Hector Cima**, Ambassador of Argentina to the European Union, noted how Argentina holds a deep and important relation with the Oceans. He referred to the *Pampa Azul* Programme, on innovation and technology. Argentina is glad to be partners in the Horizon 2020 funded AANChOR project which supports the implementation of the Belém Statement and attends the Forum with the intention of contributing.

**Geneviève Béchard**, Director of the General Canadian Hydrographic Service, Fisheries and Oceans, Canada highlighted that as a maritime nation and an ocean leader, Canada is committed to international scientific cooperation to develop knowledge, technologies and capacities. A key mechanism for Canada to deliver on objectives such as the Sustainable Development Agenda and the Charlevoix Blueprint is through partnerships established under the Galway Statement. Canada will continue to strengthen their partnership with the US and EU, whilst taking into

account the collaborative scientific efforts throughout the Atlantic Ocean Community.

**Giliardo Nascimento**, Legal adviser, Ministry of Maritime Economy, Cabo Verde stressed that Cabo Verde is an island nation with 1% land and 99% ocean. The ocean is a fundamental resource (main sector being tourism). Mr Nascimento underlined the many initiatives Cabo Verde have to deepen the knowledge of the ocean potential: SEA Campus, Atlantic Technical University, School of the Sea, Ocean Research – with the creation of the Institute of the Sea. All have in common to share global goals with local attitude and behaviours.



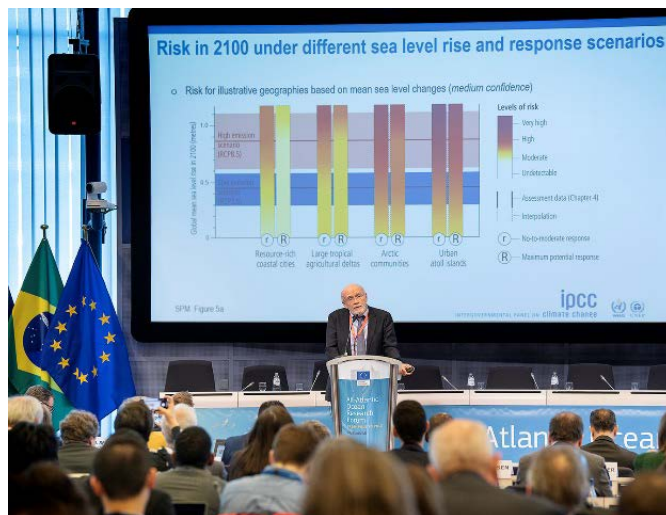
## The Challenges facing our Atlantic Ocean and our Communities

### Keynote Addresses

The programme continued after the official opening by addressing the Challenges Facing Our Atlantic Ocean and Our Communities. **Hans-Otto Pörtner** from the Intergovernmental Panel on Climate Change (IPCC) spoke to the challenges associated with climate change and the role the ocean plays in it, in light of the *Special Report on the Ocean and Cryosphere in a Changing Climate*.

Mr Pörtner firstly outlined the contributions to sea level rise, which included the Greenland ice sheet mass loss; Antarctic ice sheet mass loss; Glacier mass loss; and Ocean heat content.

In his presentation, Mr Pörtner compared two scenarios: one where we are and one where we hope to be successful with respect to ambitious emission reduction leading us into a world that



does not warm beyond 1.5 and stays far below 2°C, the second trajectory we are currently on which is taking us into a higher emission and high CO2 future with a longer warming degree and which certainly comes with more melting. Considering each scenario, we should be able to project how much sea level will be changing, while also taking extreme weather events into consideration, which may now become annual events. The assessment has compared the risk of sea-level rise depending on the levels of adaptation in Resource-rich coastal cities; Large tropical agricultural deltas; Arctic communities; and Urban atoll islands and outlined the different response scenarios.

Mr Pörtner highlighted vulnerable ecosystems including warm water coral reefs. Even with a 1.5-degree warmer world, there is still a high risk of losing 70 to 90% of coral reefs and associated services for humankind, and even more at 2 degrees. To summarise the assessment, 80% of the earth surface climate change affects the life sustaining systems - from the top of the mountains to the depth of oceans. These changes will continue for generations to come. Finishing his presentation, Mr Pörtner reminded us that ***“Every bit of warming matters, Each year matters, Each choice matters.... closely following emission pathways matters and Political and societal will matters”***.

**Robert Watson**, former Chair of the Intergovernmental Science- Policy Platform on Biodiversity and Ecosystem Services (IPBES) together with **Yunne Shin**, IPBES Coordinating Lead Author presented the IPBES Global Assessment. Mr Watson gave

an overview of the oceans in perspective to the rest of the planet, by opening with a stark statement that it is *"quite clear that we humans are destroying nature"*. We have already lost more than 85% of our wetlands and more than one million species out of a total of eight million species are threatened by extinction. We can stop them going extinct, but not with a business-as-usual trajectory. We need to act now in conserving and sustainably using and restoring our land and water.

Mr Watson underpinned the proximate causes of deterioration in nature are the root causes. The indirect drivers include demographic & sociocultural; economic & technological; institution & governance; and conflicts & epidemics. While the direct drivers include terrestrial; freshwater; and marine, with climate change likely to be the dominant direct driver in the coming decades.



Ms Shin highlighted that fishing had the largest negative impact on marine biodiversity so far, and ultimately paints the picture of over-exploitation in the world. In the future, under our business-as-usual trajectory, and if you take the example of climate change only, you would end up with; a decrease of fish biomass in the ocean; migration towards the poles, local extinctions in the

tropics; coral reefs collapse to 1% of their current surface with 2°C warming; upsurge of extreme events and sea level rise will cause loss of coastal habitats; and dramatic expansion of hypoxic zones and increase of ocean acidification.

The IPBES provides solutions and options to make a difference, and Ms Shin focused on the example of fisheries. The solutions are known and it is a question of rebuilding fish stocks (to avoid over exploitation). The IPBES models show that by rebuilding fish stocks it can ensure sustainability, profitability and employment. Ms Shin emphasised that the All-Atlantic Ocean Research Alliance is an opportune initiative to develop cross-Atlantic science, and highlighted the example of the Horizon 2020 funded TRIATLAS project in doing so.

Mr Watson finished the presentation by stressing that we are failing to achieve the Aichi Biodiversity Targets and as we look forward to achieving ambitious, successful targets in the future, we need to understand why we are failing now.

Climate change and biodiversity is not only an environmental issue, it is a development issue, an economical issue, a security issue, an equity issue and a



moral issue. Citizens need to realise that the future of humankind depends on addressing these two issues; you cannot address any of the Sustainable Development Goals unless you address the issues of climate change and biodiversity. In concluding, Mr Watson stressed that we need transformational change, we need to address both the direct and indirect drivers, take climate change and biodiversity together the same way we take land and ocean together, evolve our economic and financial systems, and engage everyone from governments, private sector and civil society, Indigenous people and local communities.

The programme continued through the day with a number of panel sessions, the first of which focused on **A Climate-Resilient Atlantic Ocean**. This session discussed how research and innovation can support Atlantic coastal communities to better prepare for, plan and adapt to the effects of climate change and extreme events on the Atlantic Ocean. The session also considered what forecasting capacity and user-driven ocean observation and data are needed and what measures and solutions communities and industries are taking.

The session commenced with a project and initiative showcase focusing on solutions, the first of which was from **Bruno Pacheco** who presented the Atlantic International Research (AIR) Centre as a collaboration framework for knowledge-driven sustainable development in the Atlantic Ocean. The AIR Centre promotes dialogues between government, academia, industry and civil society to share knowledge and connect people. They do this through a Scientific Agenda which integrates Ocean, Space, Climate, Earth, Energy and Data Science.

Secondly, **Juliet Hermes** highlighted the ocean observation work that the South African government have committed to, namely the Agulhas System Climate Array (ASCA) and the South Atlantic Moored Buoy Array (SAMBA), both of which are in collaboration with international partners, in order to understand the heat and salt flooding the Atlantic Ocean as one solution.

Thirdly, **Andrea Gerecht** presented the Horizon 2020 funded CLIMEFISH project where they have co-created a decision support framework to ensure sustainable fish production in Europe under climate change. CLIMEFISH has also developed Forecasting Models for Production that are important for climate adaptation, together with Climate Adaptation Plans for seven case studies. Ms Gerecht outlined one of the case studies the project has worked on in regards the Galician Mussels

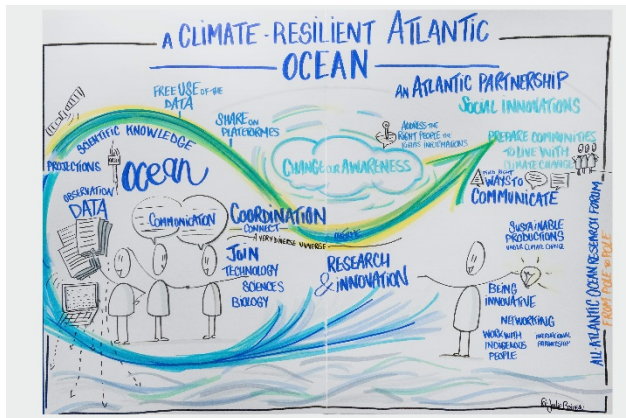
## KEY MESSAGES A CLIMATE-RESILIENT ATLANTIC OCEAN

- Improve communications by improving cooperation/collaboration between:
  - Scientists/countries
  - Use or better develop already existing platforms
  - More interdisciplinary – social science, economists, arts, indigenous knowledge, citizen science.
- Rethink how we communicate with the public. Many people think linearly but the ocean processes are very dynamic.
  - Change our perspective and awareness of the ocean.
- More accessible open access data for all
  - Digital Twin – Ocean 5D
- Invest in observation platforms that are basin wide, and long term
  - Design work from onset to be broader, more inclusive and integrated from the beginning
- Paradigm shift to ocean observation systems as part of our infrastructure
  - Local/regional action is essential
- Rethink Protect and restore ecosystems

Aquaculture, outlining the threats and opportunities of climate change effects on these mussels.

During the roundtable discussion, **Janice Trotte Duhá** highlighted how research and innovation, as part of the solution, can improve and enlarge cooperation. Better coordination on clear objectives and the target of reaching out to our citizens. **Warren Joubert** underlined the need to use available technologies and improve it. Scarcity of resources forces us to think outside the box. Examples: community observatories to observe sea surface conditions (waves); use of satellites to predict algal blooms and distinguish among regular and harmful ones.

When asked how to ensure (and improve) the integration of observation and the access to data, **Pierre Bahurel** outlined the importance of demonstrating the value of observations. For instance, ARGO has doubled the accuracy of weather prediction and, consequently, has contribute to improve the quality of related services (e.g. forecast of energy production, agriculture, alerts in case of extreme events).



**Sandy Starkweather** highlighted that Arctic observations represent an important gap in term of quantity, quality and geographical coverage. SAON (Sustaining Arctic Observing Networks) has proposed a roadmap aiming at developing and observing network in the Arctic based on societal benefits. The roadmaps clearly recognise

the importance of connecting with global initiatives and is meant to attract sustained funding.

**Alex Rogers** stressed that free and open access to data is essential, and that we need to show that private-public-partnership can work. **Warren Joubert** further supported this idea of free and open access to data, together with the use of available technologies and improve it. Scarcity of resources forces us to think outside the box. Examples: community observatories to observe sea surface conditions (waves); use of satellites to predict algal blooms and





distinguish among regular and harmful ones.

**Brad de Young** emphasised the need to bring in the social science perspective to improve “storytelling” in order to better inform civil society and decision makers, and to better assess the dynamics of very complex systems such as coastal communities. He also stressed the need to have a clear long-term plan - we cannot rely exclusively on initiatives limited in time (e.g. research projects).

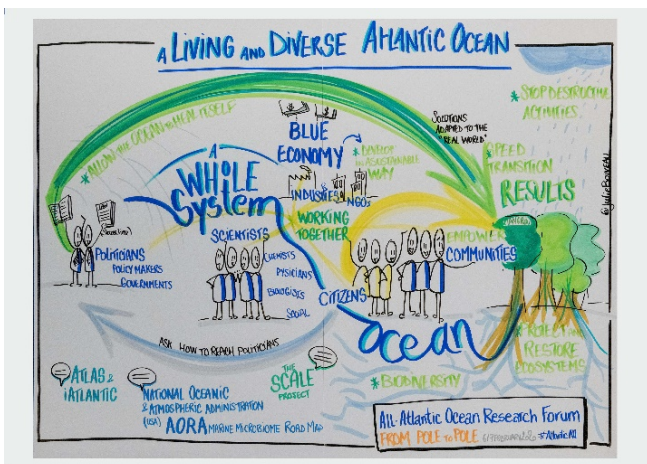
## An Atlantic Ocean of Opportunity

The Ocean is a biologically diverse and highly productive system that provides us with immense sources of food, energy, novel compounds and ecosystem goods and services. The session ***A Living and Diverse Atlantic Ocean*** discussed solutions for discovering, preserving and restoring the unique and wonderful life in the Atlantic Ocean and the ecosystems it provides for the benefit of coastal communities and humanity as a whole.

The always-energetic **Murray Roberts** opened the session by presenting the key achievements of **ATLAS** and **iAtlantic**, two Horizon 2020 funded projects working towards the All-Atlantic Ocean Research Cooperation. Mr Roberts outlined how the work carried out by the ATLAS project feeds into policy, for example the Ecologically or Biologically Significant Marine Areas (EBSAs), and Marine Biodiversity in Areas Beyond National Jurisdiction (BBNJ) process.

### KEY MESSAGES A LIVING AND DIVERSE ATLANTIC OCEAN

- Face to the emergency! We have to take action even if we do not know everything. We know enough to take action and propose solution to restore and protect.
- The Blue Economy must be Green. Maritime Spatial Planning is a solution to engaging all sectors for better planning in front of changes happenings in the Ocean.
- Use of the marine space more wisely by integrating ecology and biodiversity and the best available technologies and knowledge into activity development at sea, with multipurpose approaches. Subsidies should no longer go towards destructive activities, large scale fisheries, oil and gas.
- Of course research and knowledge are still needed, marine biology and ecosystems are so complex. In particular, focus on the structure and processes of the ocean and tipping points
- Pollution, beside fisheries and climate, are still a main threat and must tackled. Action on land is necessary to protect the ocean and to harness it.



**The Oceans are the Earth's largest Microbiome.** Kelly Goodwin presented the Atlantic Ocean Research Alliance Marine Microbiome Roadmap. The Roadmap sets out a vision to spark fascination about this hidden treasure for society, and to demonstrate the socio-economic values of the Atlantic's microbiome. The Roadmap is organised around the three pillars in a set of cross-cutting challenges, and

understanding these can result in solutions:

1. **Food Value Chain** – to promote eco-friendly and truly sustainable food production.
2. **Biodiscovery** – to initiate and develop research partnerships across government, academia and industry to deliver the benefits derived from microbiomes.
3. **Environment and Climate** – to identify actions to map, understand and parametrise microbiomes, allowing for predictive capabilities.



**Thato Mishali** presented the Southern oCean seasonal Experiment (SCALE) programme; a South African science-led novel experiment aiming to strengthen environmental observations by building on their comparative geographical advantage. The programme identified the following integrated scientific themes to address the common research

challenges: Air-Sea-Ice fluxes; Biological Carbon Pump; Decadal Changes – Ocean Interior; Physics and top Predators; and Digital Tech Solutions.

The SCALE Programme has carried out two research cruises involving over 90 scientists, half of which were postgraduate students.

When asked what can Research and Innovation can do to protect and restore the health of the Atlantic during the roundtable discussion, **Andras Kraemer** announced the “Rise up a blue call for action” (26 conservation organisation defined goals and 28 priority actions). He



highlighted that we do not need more research to know what is happening in the ocean and to act. We know enough to take actions now and should review the existing science, for example the IPBES and IPCC, and give proposals for solutions. We need social sciences to help us convince politicians and civil society to act.

**Ellen Kenchington** stated that focusing on the understanding of the structure and functioning of the oceans will help identify tipping points. Work should be done to increase the biological science component to complement the already existing physical data. Biology is so complex in its response to a changing physical environment and we need knowledge to identify the mayor tipping points.

It was emphasised through the session that Blue Economy should also be Green. The ocean is a huge bioreactor, and as soon as we protect areas, the ocean restores very quickly. We should first restore and let the ocean heal itself. Furthermore, we need to distinguish between different industries, from oil extraction to pharmaceuticals. The time from lab to market is often long due to regulation, for example with in the area of seaweed for food applications in Europe.

The Atlantic Ocean holds the key to fuel, feed, power and heal our communities. Yet, we have only mapped around 5% of the ocean floor, are only beginning to unlock the potential of its microbiome and still need to make progress to sustainably manage the many resources that the Atlantic Ocean provides. This session, ***Unveiling the resources of the Atlantic Ocean***, discussed how to align international efforts to discover and map the Atlantic Ocean, and how science and research can support the sustainable management of its resources and ensure food security.

**Monica Verbeek** presented the new [Blue Manifesto – the Roadmap to a Healthy Ocean in 2030](#). The plan lays out concrete actions to turn the tide on the ever-degraded and polluted ocean and coastlines. To date, 102 Non-Governmental Organisations have joined the Manifesto that calls for at least 30% of the ocean to be highly or fully protected by 2030, shift to low-impact fishing; secure a



Mapping International Working Group, highlighting that the Group is delivering maps of areas of the Atlantic Ocean which were previously not yet surveyed. To continue this effort, there is a need for open data, methodologies and standards,

pollution-free ocean; and plan human activities that support the restoration of thriving marine ecosystems.

**Thomas Furey** presented the work of the Atlantic Ocean Research Alliance Atlantic Seabed

## KEY MESSAGES UNVEILING THE RESOURCES OF THE ATLANTIC OCEAN

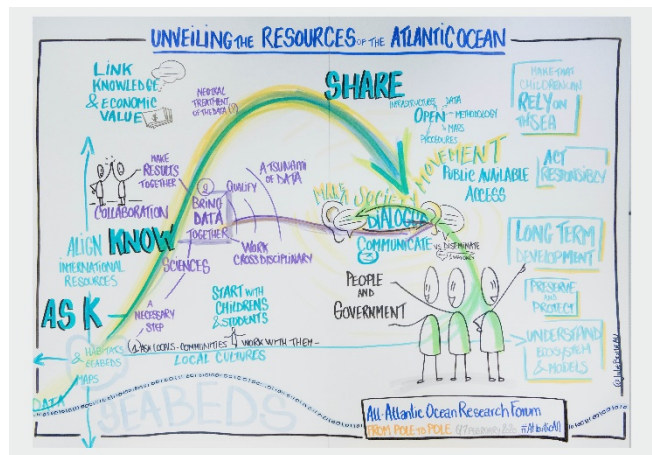
- 2020 is the year that can mark the change of the ocean. A better knowledge and understanding of the ecosystems is a key step to preserve and protect the ocean. We need long terms ecosystem science-based practises.
- Atlantic Ocean mapping contributes to understanding ecosystems functions, coastal management, design of protected areas, etc. Key priorities include:
  - Share open data, define methodologies and standards. Artificial Intelligence should assist to manage the huge magnitude of data.
  - Increase amount of work in the high seas.
  - Understand the biology not only physical mapping.
- To succeed, decision makers, academia and citizens have to work together towards the healthy ocean we wish in 2030.
- Management of the knowledge generated by exploration is crucial to avoid negative consequences and allow long-term benefits for future generations
- We need to strengthen civil society at local, national and global level to create public awareness of the value of natural resources to prevent short-term unsustainable exploitation.

and further development of common infrastructures, capacity building and enhanced public awareness and engagement.

**Ronaldo Christofolletti** from the Federal University of São Paulo presented the *Tide of Science* project, which aims to integrate decision makers, academia and citizens to work together for sustainable development. In his presentation, he looked at how to align international efforts to discover and map the Atlantic Ocean, and also how science and research can support the sustainable management of its resources and ensure food security. He highlighted the need to map from the seabed to coastal areas and to link local actions with global goals.

When asked how can we better align international resources to map the Atlantic Ocean seabed and its habitats, **Genevieve Pons** highlighted the need to discuss how to standardise data better in countries and to have different scales of the maps of the oceans. More discussions are needed, as we are in different stages, but is also important that the maps have different levels to know different regions and compose the complex seascape.

In terms of what solutions research and innovation can provide to ensuring the sustainable management of mineral, physical and living resources, **Alexandra Neyts** highlighted aquaculture as a good example for potential sustainability. Long term ecosystem-based practises and objectives, together with an understanding of the carrying capacity of the systems and respecting the limits are needed. Support open data, and collaborate to provide data to build better models on ecosystems and the impacts.



Science for conservation of marine biodiversity was highlighted as a measure that the All-Atlantic Ocean Research Alliance could and should take together to unveil and sustainably manage the Atlantic Ocean. **David Millar** highlighted the importance of communicating research and science to ordinary people and politicians. This was further echoed by **Evaldo Vilela** who stated that we need more communication between the public and government about what we are doing. Capital sharing and joint work of the Alliance is incredibly important as ocean research infrastructure is too expensive for one country to maintain on their own.

## Feedback from the side events - 5 February

*\*detailed summary of these events is included as annex*

### *Improving the knowledge of our oceans and seas and bringing them closer to citizens*

Sara Garavelli presented the *workshop Improving the knowledge of our oceans and seas and bringing them closer to citizens* that took place on the margins of the Forum and brought together the different players in data infrastructure from around the Atlantic to better understand the international data/e-infrastructure landscape and the needed efforts to accelerate the establishment of a global Blue-Cloud to effectively and efficiently bring data to the service of society.

The workshop was focused around four main themes. The first being ***How citizens can contribute to data collection/usage***. One conclusion was that trust is key – feedback to citizens is fundamental to helping them understand the impact of their contribution to science. The second being ***How to connect the different data infrastructures across the Atlantic***. One outcome from the discussion was the need for top-down coordination actions at international level to accelerate the establishment of a global Blue-Cloud with engagement and funding from regional authorities. During the workshop, they also gathered expressions of interest from relevant stakeholders to contribute to the **Blue-Cloud Roadmap 2030** to help provide recommendations for future funding programmes and extend the proof of marine data infrastructures that are currently part of Blue-Cloud.

The third being ***Industry and Data Ocean***. It was clear from the workshop that there are already many initiatives to which industry is contributing and making data available. One recommendation stemming from this was that policy makers need to engage with academia and industry to establish fit-for-purpose measurements to be required by legislation for collecting ocean data and forcing it to follow **FAIR principles**.

And the fourth, ***Communicating 'Blue Science'*** looked at how to simplify communication to support the impact of scientific results and recommended avoiding integrated silo communication frameworks (physically and digitally).

### *Results and progress from the Coordination and Support Horizon 2020 funded projects AORA-CSA, & AANChOR*

*'If you want to go far, you go alone,  
If you want to go further, you go together'*

The two Horizon 2020 funded Coordination and Support Actions (CSA) tasked with the implementation of the Galway and Belém Statements were presented.

**Margaret Rae**, coordinator of the Horizon2020 funded **AORA-CSA**, which supports the implementation of the Galway Statement, reviewed the main achievements of



the project, which ended in February 2020. Those outcomes include five new roadmaps for Aquaculture; Ecosystem Approach to Ocean Health and Stressors, Marine Microbiome; Seabed Mapping, and Ocean Literacy. The AORA-CSA organised a countless number of workshops, meetings, conferences and events involving marine stakeholders and the All-Atlantic Ocean community at large. Communication and dissemination were key during the life of the AORA-CSA with over 20 thousand marine professionals engaged via social media and over five million people reached over 3.5 years.

**Sofia Cordeiro**, the coordinator of the Horizon 2020 funded **AANChOR-CSA** presented the All-Atlantic Cooperation initiatives that are being populated on the projects portal; an online database that will be systematically updated in the near future. The next group to be included in this database includes over 500 new initiatives.

One of the key activities promoted by the AANChOR-CSA is to build long-term cooperation using the multi-stakeholder platforms on capacity development; knowledge transfer; common standards for information and data; ocean citizen awareness and literacy; and convergence and alignment of research and innovation infrastructures. These five platforms, launched in November 2019, consist of 79 experts from along and across the Atlantic Ocean, and include a number of strategic objectives, namely:

- The identification of existing infrastructures;
- The identification of gaps and needs;
- The identification of concrete joint actions using existing initiatives;
- The implementation of concrete joint actions by you and other initiatives.

#### *Atlantic Seabed Mapping International Working Group*

Andy Armstrong presented the outcomes of the Atlantic Seabed Mapping International Working Group, whose focus was to develop a plan to map the Atlantic Ocean. Ultimately, a large part of the Atlantic Ocean remains unmapped, and the Group set out a framework to approach this. In addition, Mr Armstrong outlined how the Group has tracked what has been done so far by updating spreadsheets to track mapping cruises and transits, and also by developing a website for outreach and mapping results.

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*The All-Atlantic Ocean Research Forum took place during an ocean-rich week in Brussels, with many events taking place all over the city from 3 - February 2020. The AORA and AANChOR CSAs organised Working Groups and Multi-Stakeholder Platforms meetings, and teamed up for a joint-event to showcase in detail the latest achievements coming from the massive EC effort behind the All-Atlantic Ocean Cooperation.*

Day one of the All-Atlantic Ocean Research Forum closed with a beautiful dance performance by **Marine Miséramond**, a 17-year-old student whose dance was especially choreographed for the event by Nadine Bourlez.



## Opening - Day Two of the All-Atlantic Ocean Research Forum



Day two of the Forum focused on the **future of the All-Atlantic Ocean Research Alliance**, and opened with a welcome address from **Manuel Heitor**, Minister of Science, Technology and Higher Education, Portugal. Minister Heitor spoke to three main points.

Firstly, there is a need to go deeper in knowledge, but there is also a need for a new approach in knowledge production; a user-driven transdisciplinary process to better understand user needs.

Secondly, the need to engage citizens when designing research. Minister Heitor cited the Horizon Europe Mission Healthy Oceans, Seas, Coastal and Inland Waters as an example of engaging citizens in Europe and beyond to better understand the value of

science.

And thirdly, the need to better use the opportunity that we face with the digital transformation and better develop intelligent systems to integrate in-situ ocean data with processing data.

Minister Heitor finished by announcing a conference that will take place on the Azores Islands next year in June in the context of the Portuguese Presidency that will build on what has been achieved since the signing of the Galway Statement, and also of the Belém Statement.

This was followed by inspirational keynote speakers presenting different ways to look at ocean issues and solutions. The first being **Fionn Ferreira**, a 19-year-old student and winner of the Google Science Fair 2019, who explained how he found an impactful innovative non-harmful way to extract microplastics from water using vegetable oil and rust powder.

**Thomas Lessage**, a 16-year-old student and founder of the *NGO Children for the Oceans* explained how Children for the Oceans aims at increasing the awareness of children of the protection of the oceans. He has set up partnerships with NGOs in Asia, and developed projects associating ocean and arts while attending international conferences to make the voice of children heard by the decision makers and representatives of national and international authorities.



And lastly, **Eleni Marianou**, Secretary General, Conference of Peripheral Maritime Regions who believes in the importance of the All-Atlantic Ocean Research Alliance. Ms Marianou stated that they would like to complement the climate deal with a Blue Deal by ensuring that regions are engaging with citizens and bridging the gap between EU policies and their implementation, stressing they should be equal partners.

## D(r)iving Towards Solutions

The Atlantic Ocean is our planetary life-support system. Yet there is a considerable lack of awareness among citizens, the public and decision-makers about the opportunities and challenges of the Atlantic Ocean. The session ***Connecting our Atlantic Ocean to our Citizens*** discussed the role of science, communication and the next generation to promote awareness, engage citizens and create an emotional connection of the public with the Ocean.

**Pascal Lamy**, Chair of the Horizon Europe Mission Healthy Oceans, Seas, Coastal and Inland Waters recalled that the Mission, as proposed in the *lab-fab-app report*, will be a top down approach, with an ambitious target. The full “aquasphere” will have to be included. There is an “emotional deficit” between society and the ocean, especially those not living at the coast.

As we know, media plays a huge role in this connection, and the always-fascinating BBC

documentaries were presented by **James Honeyborne**, producer of Blue Planet II. Mr Honeyborne also reminded us that we not only have to create awareness, but initiate action, and to never underestimate the power that a good, exciting story will tell.

**Miho Mazereeuw** presented the Urban Risk Lab who are developing maps to see where sea level will be and which areas are likely to be exposed to flooding. The maps are developed by asking citizens to share and upload pictures of flooding to get live maps, and are used by citizens, as they make investments for the future and are also useful for emergency response. Real-time information allows for

### KEY MESSAGES CONNECTING OUR ATLANTIC OCEAN TO OUR CITIZENS

- The central challenge is to create a link from information to knowledge to awareness to mobilisation to action.
- However, a major problem for mobilisation is what we call the “emotional deficit”. The lack of connection of citizens with the oceans, with a big divide between populations in coastal environment and people elsewhere.
- To overcome this lack of connection, we should draw on the power of a good story, well told. Stories that connect citizen’s culture, heritage and traditions with the ocean. And stories that empower citizen’s actions.
- For that, we need balanced messages: we should not only berate citizens, and tell them what’s going wrong. But we need to give hope and empower citizens and get a conversation going.
- We have heard of a number of concrete ways of how to connect people: Apps enabling citizens not only to make informed decisions (e.g. on buying property) but to contribute themselves to emergency responses. Allowing citizens to share their own Atlantic stories, connect their culture and traditions to the ocean. And to reward communities for taking positive action, e.g. with Atlantic-friendly certificates.
- And finally, we should have faith in people that they are willing to make a contribution, willing to find solutions and willing to make the world a better place to live.

immediate reaction and response. The main mission of this effort is to help people reduce risk together by helping each other to prepare and be aware of such events.

During this session, 6 of the 23 the **All-Atlantic Ocean Youth Ambassadors** presented their passionate, inspiring, and provocative campaigns focused on ***Ocean Literacy***; ***Culture and Celebration***; and ***Human Impacts***.

The **Ocean Literacy** campaign wants not only to improve Atlantic communities' understanding of the importance of the ocean to humankind, but also to provide them with the tools to communicate their appreciation of the ocean. This will empower Atlantic citizens – whether they are involved in ocean science or not – to spread/share their passion for and commitment to a healthy ocean and a sustainable use of ocean resources.



The **Culture and Celebration** campaign aims to restore this connection with the ocean, and to create new connections among individuals and communities along and across the Atlantic Ocean. They plan to collect myths and legends that are meaningful to the Atlantic community and to create an anthology of stories. These tales will be documented in podcasts, videos, and most notably a book that will engage both children and seniors alike, creating an inter-generational *impact*.

The **Human Impacts** campaign is developing an 'Atlantic Friendly' certification that would certify entire coastal communities as being ocean-friendly. The criteria for this certification will differ from community to community, and from institution to institution, but goals for each participating organisation or locality will then be decided. Participants will receive on-going support during their efforts to be Atlantic-Friendly certified, and also after their certification to ensure that they can sustain themselves as an ocean-friendly community. After the pilot run on Sal Island, Cabo Verde, the hope is to extend this project to as many areas as possible around the Atlantic Ocean.

The Ambassadors also created the hashtag **#MyAtlanticStory** that allows you to support their movement by sharing your Atlantic story. During the Forum, which

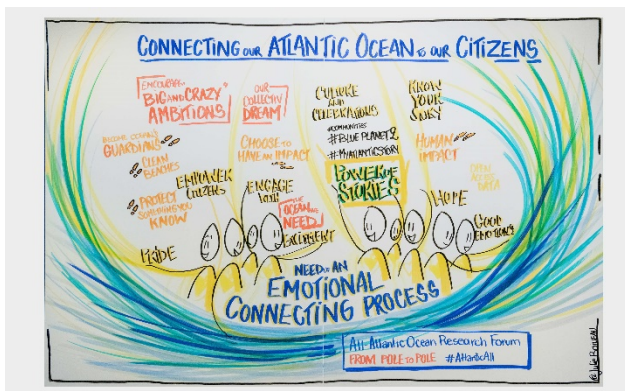
was the 100th event attended by the Youth Ambassadors, they asked participants to share their Atlantic Story with them. You can learn more about them and their activity on Facebook, Twitter and Instagram.

As Commissioner Gabriel stated the previous day, our Youth Ambassadors *“are the leaders of today, not tomorrow”* and with that, our Youth Ambassadors received a large standing ovation.



Following the presentation by the Youth Ambassadors, **Martin Visbeck** and **Abdoulaye Diagana** gave their perspectives. For Mr Visbeck, a priority is to provide a 5D visualisation capability of the ocean using digital transformations to connect people with the environment. It is not only about building the capacity to act, but reaching the hearts and minds of citizens when doing so. We need to have a positive narrative about how citizens can be part of the solutions. There are government plans to help create the bridge from science to policy, where you provide the information and connect it with the citizens, but none of this is effective if you cannot win over the hearts and minds of the citizens.

**Abdoulaye Diagana** stated how inspiring it is to know that this Alliance is trying



to connect the whole Atlantic. He highlighted that science and innovation need to give the right information to decision-makers and legislators, and to talk and provide society with solutions in a language that is clear. Mr Diagana mentioned that there is a project to develop the Youth aspect in the Abidjan Convention and invited the All-Atlantic Ocean Youth Ambassadors to connect.

## A Pollution-Free Atlantic Ocean

The Atlantic Ocean and its ecosystems is under threat from a myriad of pressures and pollutants. Oil spills, nutrients, harmful algae blooms such as Sargassum, plastic, pathogens and other pollutants are affecting the health of the ocean and are impacting on the livelihoods of coastal communities. This session *A Pollution-Free Atlantic Ocean* discussed which solutions research and innovation can provide to ensure a pollution-free and healthy Atlantic Ocean for present and future generations.

### KEY MESSAGES A POLLUTION-FREE ATLANTIC OCEAN

- Prevention
- Large scale Marine Protected Areas
- Scientists share your passion with the public
- Push for globally-binding agreement on plastics and redesign for a sustainable resource efficient future.
- Education for behaviour change

**Claudia Gintersdorfer** from the European External Action Service opened this session by recognising **Juan C. Toledo-Roy** from Mexico, and member of the winning team of the 2019 Ocean Hackathon that took place in the Campus de la Mer, Brest. The Team developed an algorithm by leveraging machine learning (Artificial Intelligence techniques) which improves the satellite detection of floating Sargassum algae. The Sargassum algae severely affects the marine and coastal ecosystems of Mexico and other Caribbean countries, and has a strong economic and health impact on the citizens. The algorithm will therefore help improve the forecasting of the algae for the benefit of the citizens living there.



**Easkey Britton** presented the Horizon 2020 funded project SOPHIE (The Seas, Oceans and Public Health in Europe). From the work carried out thus far, Ms Britton described the Ocean and Human Health multistage influence of societal and citizen stakeholder priority themes for protecting public health and the

health of the marine environment for a sustainable future. She explained them in six stages which are inter-linked, and which show the power of peoples values and how we perceive our connection with the ocean:

1. Ocean and Human Health Knowledge
2. Prevent and Eliminate Pollution
3. Protect and Promote Public Health: Risks and Benefits



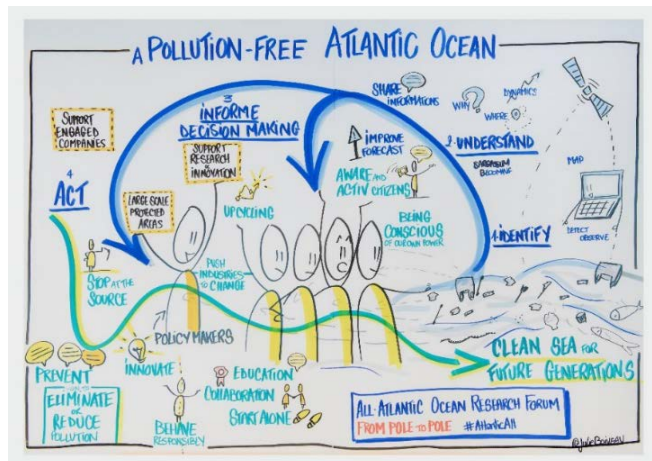
4. A Culture of Care
5. Ocean and Human Health Governance
6. Protect Ocean Health

The SOPHIE project also recently launched their Strategic Research Agenda for Oceans and Human Health.

**Katie Cavell** presented The Clean Atlantic Project that aims at improving capabilities to monitor, prevent and remove (macro) marine litter, to raise awareness and change attitudes, and to improve marine litter management systems. To do so, the project has identified the following actions to tackle marine litter in the Atlantic Area:

- Apps for identifying waste (beach, floating, seabed)
- Collaboration with fish harvesters
- Mapping software to track, trace, understand waste movements
- Analysis of impact on the environment and on economies
- Database of existing projects on marine litter
- Awareness raising in schools

**Badr El Mahrad**, a BlueMed Young Ambassador, explained his concept of the peer-education approach to fighting pollution in the ocean – ‘shifting youth to take action for sustainability’. Mr El Mahrad explained that this is like the butterfly approach to start small and reach big for a clean sea for all generations to enjoy. **This is the power of future generations on saving our Atlantic Ocean.**



It was clear from the session that **education, communication** and **behavioural changes** are needed to succeed with a pollution-free Atlantic Ocean. The All-Atlantic Ocean Youth Ambassadors could work with the Alliance to design a joint roadmap to scale up these efforts. Participants were reminded that education is a public responsibility, and the example of Brazil was shared where they have the Science in Schools education network, and are moving to thematic topics for ocean (even doing this much further inland).

To operationalise these measures in terms of science, communication, capacity sharing, policy, and partnerships, we need the political will to be driven by public wants and needs. The science community is making sure that the public looks for alternatives, and are not constrained by rules by ensuring that there are viable alternatives. We need a globally coordinated and concerted action plan to combat plastic pollution (plastic and waste management systems are global).



## Towards an All-Atlantic Ocean Research Alliance

The last session of the Forum focused on working together for a new strategic direction for the All-Atlantic Ocean Research Alliance, from the Arctic to Antarctica, and to provide solutions for the citizens living on its shores. The Co-Chairs of the Galway and Belém Statements, together with representatives on behalf of Argentina and Cabo Verde each gave their concluding words.

### Secretary of State Morales

highlighted the oil spill crisis in Brazil and the need for future cooperation to prevent and mitigate future similar events. In response, **Craig McLean** proposed a science-based Alliance with Brazil to share oil spill management experience. Mr McLean also emphasised the funding forum to fund future cooperation.

In answering the question of how can we now tie all the existing initiatives presented these two days together, **Geneviève Béchard** echoed the need to align investments to fund the work needed, and supported the need of a funders meeting.

**Yonah Seleti** suggested that we need the time and space to define who we are and our future ambitions. The next All-Atlantic Ocean Research Forum announced to take place in South Africa could give other perspectives. There is a need for a convergence of policy nexus: action now, with a solutions-driven mission as part of looking towards the future, with ingenuity and creativity and more people.

### KEY MESSAGES TOWARDS AN ALL-ATLANTIC OCEAN RESEARCH ALLIANCE

- Need for policy convergence to better protect the oceans.
- Need to align funding across countries and sources for shared science with society, including industry and nongovernmental organisations.
- Engage in the European Green Deal and engage in Horizon Europe.
- The ocean has no borders, so should our mobilisation and cooperation as stated in the Galway and Belém Statements.



**Sandra Torrusio** highlighted that the synergies between the Galway and Belém Statements are mandatory. Ms Torrusio emphasised the need to learn from the different experiences and solutions in the North and South Atlantic and to share knowledge, data and information. She also stated that Argentina wants active participation in the Alliance.

When looking to the future, **Giliardo Nascimento** emphasised the need to mobilise everyone around the ocean, that has no borders, and the need for joint measures, but at different speeds.

**John Bell** echoed the words of Commissioner Mariya Gabriel by encouraging us to *Listen and Learn from each other, Act Together and Use our existing tools to achieve our common goals*. Mr Bell emphasised that we should hear more about and from the polar community. He highlighted that science should no longer be observers but actors in this decade, and challenged us all to engage in the European Green Deal and the Horizon Europe Mission Healthy Oceans, Seas, Coastal and Inland Waters. Mr Bell suggested also creating an Ocean Alumni Group to bring the different generations together.

He closed the session so eloquently by explaining that “Science must give courage to politics, respite to nature, fairness to communities, opportunities to innovators and hope to citizens”. In the words of the Irish poet Seamus Heaney, *‘And hope and history rhyme’*, that is now our task.

## Closing Remarks



**Jean-Eric Paquet**, Director-General for Research and Innovation, together with **Bernhard Friess**, Acting Director-General for Maritime Affairs and Fisheries gave the closing remarks of the All-Atlantic Ocean Research Forum.

**Mr Friess** acknowledged the overall engagement of the Atlantic community during the Forum, and outlined a number of actions for the All-Atlantic community to consider going forward ,

in view of the adoption of the Commission Communication “A new approach to the Atlantic maritime strategy – Atlantic Action Plan 2.0”.:

- The All-Atlantic community needs to produce scientific solutions to global issues such as Climate Change.
- The All-Atlantic community needs to join the Marine Data Network (Emodnet).

This network is well established in Europe but can be expanded to cover the whole Atlantic. The All-Atlantic community needs to move from the brown economy to the blue economy. Mr Friess stressed the importance of renewable and circular technologies to preserve our marine environment.

**Mr Paquet** commended the work achieved by the All-Atlantic Ocean Research Community during the Forum. He noted that the All-Atlantic Ocean Research Forum highlighted the leading marine science, which is connected to its communities, based on open data as well as shared infrastructures and relevant to policymaking. Mr Paquet officially closed the All-Atlantic Ocean Research Forum.



## ANNEX

*Detailed summary of side events held back to back to the all-atlantic ocean research forum*

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### *Improving the Knowledge of Our Oceans and Seas and Bringing Them Closer to Citizens*

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*Towards a global “Blue-Cloud”: Improving the knowledge of our oceans and seas and bringing them closer to citizens*

A half-day workshop “**Improving the Knowledge of our Oceans and Seas and bringing them closer to citizens**” jointly organised by the Blue-Cloud project in collaboration with the AANChOR and AORAC-SA projects and the AtlantOS program took place in Brussels, Belgium, on the 5th of February 2020 in co-location with the All-Atlantic Ocean Research Forum.

The event gathered over 90 experts from funding agencies, Research Infrastructures, data providers, research & academic institutions and industry throughout Europe, the USA, Brazil, Canada and South Africa forming part of the Atlantic blue economy to discuss the needs and the benefits of establishing a global “Blue-Cloud” as a means to **bring the wealth of ocean data available to the benefit of society**.

#### ***Science at Ocean Preservation Service***

Research, innovation and data are critical to better monitor, understand, protect, preserve and sustainably manage our oceans and seas. Numerous initiatives and organisations are ongoing worldwide to facilitate the collection, access and management of data to provide scientists, agencies, the private sector and policy makers with ready-to-use tools and knowledge which can help address grand societal challenges and guide policy decisions. During the workshop, a set of examples were presented to reveal the potential of ocean and sea data such as the results of the project on satellite detection of Sargassum in the Caribbean presented by **Juan C. Toledo-Roy**, a researcher specialised in data analysis techniques and computational modelling and simulation at the National Autonomous University of Mexico (UNAM), or the industry cases described by **Ben Williams**, Metocean Director for the Americas region at Fugro (see the presentation [here](#)).

These presentations set the scene to discuss the challenges and priorities to unlock the “blue-data” market. This was followed by four, in-depth round tables.

#### ***How citizens can contribute to data collection and usage***

Citizen Science is the collaboration between scientists and volunteers from the general public, to gather and/or analyse data relating to the natural world. The vastness of the ocean and the lack of connection most people feel with the blue part of our planet, make marine citizen science a vital tool to promote ocean literacy and engage citizens in coastal and ocean research. Moderated by **Toste Tanhua**, GEOMAR & EuroSea Coordinator & **Telmo Carvalho**, IPMA, the round table discussion aimed at identifying success stories and main challenges in ocean citizen science and make recommendations to policy makers on how to enhance it.

The main conclusion was that trust and reciprocity are key to ensuring citizen involvement in science. Mechanisms to provide feedback to citizens need to be put in place to showcase the impact made by their contribution and to further stimulate their engagement. Citizens must also be equipped with easy-to-use systems to upload and download data, and encouraged to use

cheap sensors to move from pure visual observations to sensor-based ones. Finally, citizen science should work with adequate support from scientists, and for this more engagement from both sides is needed, as well as best practices.

### ***Industry & Ocean Data***

The focus of the round table moderated by Ben Williams, Fugro, was on the contribution to sustained ocean observation from Public, Private, Academic Partnerships. It was noted that industry is contributing more and more to making data available on a voluntary basis and there are already several examples where this is happening, such as in the Seabed 2030 initiative. However, policy makers need to engage with industry in order to establish fit-for-purpose measurements to be required by legislation to collect ocean data following FAIR principles. This can really help increase the availability of ocean data from industry.

### ***How to connect the different data infrastructures across the Atlantic***

Chaired by **Sara Garavelli**, TRUST-IT & Blue-Cloud Coordinator and **Dick Schaap**, MARIS & Blue-Cloud Technical Coordinator, the round table immediately recognised the value of establishing a global Blue-Cloud. But how? Top-down coordination actions at international level are needed to accelerate the establishment of a global Blue-Cloud with engagement and funding from regional authorities. In order to examine this topic in depth, the workshop participants were invited to contribute to the Blue-Cloud Roadmap 2030, a policy document that will provide recommendations for the future funding programmes and will discuss the actions needed to extend the pool of marine data infrastructures federated by the Blue-Cloud. Many expressions of interest were collected. Finally, it was observed that a gap still exists in terms of communication between scientists and policy makers and governments: one idea to fill this gap could be to simulate a disaster using local data (e.g. European only data) and repeat the same simulation using data from all over the Atlantic to showcase how data sharing can have a real impact and truly

support policy makers. This action could also provide a useful lever for governments reluctant to share data.

### ***Communicating "Blue science"***

The theme of communication was also the main topic of the last round table led by **Skye Moret**, TBA21–Academy. An integrated communication strategy, using physical and digital channels, to promote the scientific process is needed to elevate the social value of Blue-Science. Partnerships with media and stakeholders that are often overlooked such as youth, are key to maximising impact and clearly funded and coordinated communication strategies across a range of platforms should be created.

The outputs of the discussions were presented on the 6th of February 2020 to the over 600 participants of the All Atlantic Ocean Research Forum (See the presentation [here](#)).

### ***The European Commissioner Mariya Gabriel mentions Blue-Cloud as one of the key projects to support ocean sustainability***

**Mariya Gabriel**, the European Commissioner for Innovation Research Education and Youth, opened the All Atlantic Ocean Research Forum outlining three priorities for the future of the ocean: **1. listen and learn from each other 2. act together 3. use existing tools**. The European Commissioner mentioned Blue-Cloud as one of the key projects working towards the third priority, highlighting that Blue-Cloud is building a smart federation of existing data resources, computing platforms, and analytical services to provide researchers with access to multi-disciplinary data from observations, in-situ and remote sensing, data products and outputs of numerical models and to a Virtual Research Environment (VRE) with various services to undertake world-class science.

### ***Injecting the vibes and ideas of the Atlantic community in Blue-Cloud***

"The All Atlantic Ocean Research Forum was a vibrant and inspiring event" commented Sara Garavelli, Coordinator of the Blue-Cloud project, "The mix of speakers and panellists featured during the event ranging from policy makers, funders, scientists, coordinators of projects to youth ambassadors, all with a common purpose, to preserve the oceans, made this event unique. They were not only capable of describing the most worrying challenges that society is nowadays faced with such as climate change, ocean pollution, ocean acidification and the increase of the sea temperature and level, but they were especially able to communicate that there are solutions and ongoing efforts in place to address these challenges, and that the coordination of these actions at a global level will be one of the keys to success. The event was extremely important for Blue-Cloud to strengthen links and cement new collaborations, not only with its sister project EuroSea, but also with other relevant projects such the iAtlantic and Atlantico projects and to invite a set of key international organisations to contribute to its Blue-Cloud 2030 roadmap".



### **Atlantic Seabed Mapping International Working Group (ASMIWG)**

The AORA Seabed Mapping Working Group, known most commonly as the Atlantic Seabed Mapping International Working Group (ASMIWG) has been most successful at engaging with industry and industry members are now embedded in the group meetings. Each member gave an update on what they are doing and how aligning these activities with ASMIWG objectives can move the initiative forward. The AANChOR coordination & support action was introduced to the group by Ifremer, however, Seabed Mapping is not currently defined as a priority area, task or joint action. It was felt that the ASMIWG could make some recommendations to AANChOR about the inclusion of Seabed Mapping. It is unclear what supporting mechanism will be used to bring European Invited Experts to ASMIWG meetings in the future – clarity and certainty around this is needed. A very useful case study was presented by ASPIRE – where a massive coral habitat was found off the Blake plateau – an area previously thought to be a flat abyssal plain and this erroneous information is used in S. Atlantic Fisheries management decision making. The group would like to consider how to extend the ASPIRE map of research activity to cover all of the North Atlantic. The Research Vessel Coordinator position was discussed once more – currently the position remains unfilled. Efforts to involve philanthropy were also discussed.

### **AORA Ocean Literacy Working Group**

The AORA Ocean Literacy Working Group met to discuss and agree updating the Transatlantic Implementation Strategy (TIS) to the next version. The Working Group was joined by the Atlantic Arc Commission Executive Director Katie Cavell, the Irish All-Atlantic Youth Ambassador John Armstrong and Stéphane Pesant from the AORA Marine Microbiome Initiative who informed them of AtlantECO an upcoming EU Horizon 2020 research project with a large ocean Literacy component being delivered by Ocean Literacy initiatives with IOC UNESCO. Aquaculture, Seabed Mapping and Ocean Observation and the work achieved in collaboration with the AORA Working Groups continue to be considered priority areas for the AORA OLWG. As some of these groups will continue to collaborate and other new groups have been formed, like the Marine Microbiome Working Group, it was decided to merge all the topics under a single broad action in the TIS: “Collaboration with the AORA WORKING GROUPS on different topics as opportunities arise, namely, through AANChOR”. It is clearer in AANChOR how Ocean Literacy may proceed than for other Working Groups. It was also agreed to include a new Priority Action associated with the Atlantic Youth Ambassadors and with the UN Ocean Conference (Lisbon, June 2020).

## **AORA Marine Microbiome Working Group**

The AORA Marine Microbiome Initiative met to present the finalized engaging AORA Marine Microbiome Roadmap filled with beautiful illustrations, In addition, a screening of the video associated with the roadmap was provided. All were encouraged to promote it through their social networks and that of their organisations. The content of the roadmap and next steps were discussed among those present. Maria Fernandez-Gutierrez suggested that for the roadmap to be a strong recommendation paper for the EU Commission, an abstract with a sharp focus on what needs to be done in the near future might be a good next step. The editorial team have found a impressive prolific work ethic and have expressed interest in continuing the roadmap work after the end of the AORA-CSA programme and until such time as clarity is provided on mechanisms on how to work together beyond the AORA-CSA.

## **Joint AORA – EATiP Aquaculture Meeting**

At the Joint AORA – EATiP Aquaculture Meeting, it was noted that whilst the AORA-CSA supporting the aquaculture working group will end in February 2020, the work of AORA is far from finished. The project finalization stage makes it an appropriate time to harvest what has been achieved to date. It was emphasized at the meeting that the Missions in the next EU Research Framework programme are expected to deliver measurable impact and citizens engagement; not just blue-sky science. Mike Rust (NOAA), Jay Parsons (Fisheries & Oceans Canada) and Wojciech Wawrzynski (ICES/AORA-CSA) provided an overview of the AORA Aquaculture Working Group activity over the last 5 years. Alexandra Neyts and Jacques Fuchs provided a summary of the conclusions of the last AORA-EATiP meetings that included North & South Atlantic partners. This involved ideas for re-enforcement of partnerships beyond projects, facilitation of exchange, alignment of funding, communication and thematic areas of common interest. Three projects also gave updates the AquaVitae EU Horizon 2020 research project, the BluEcoNet bilateral German- Brazilian research network and the AANChOR Coordination & Support Action. Again clarity around how the AOAR Aquaculture Working Group proceeds in the absence of the AORA-CSA and potential connects to the AANChOR need to be defined. The situation in USA, Canada, and Europe was discussed and the mechanisms that the EATiP have found that were successful were shared with the group. Finally, agreement was reached on what to share at the All-Atlantic Ocean Research Forum later in the week.

## **AORA Ecosystem Approach to Ocean Health & Stressors (EA2OHS) Working Group**

The AORA Ecosystem Approach to Ocean Health & Stressors (EA2OHS) Working Group met in the afternoon, progress of the AORA EA2OHS Working Group was discussed, and the new video on ecosystem-based management was screened to

those present. Ways to further promote the outcomes and the legacy of the AORA EA2OHS Working Group were discussed and how to link up with global initiatives. Finally, what to present at the Joint AORA-CSA-AANChOR was agreed.

## **Capacity Development Workshop discussed joint actions promoting transatlantic cooperation**

There is no question humankind is dependent on the ocean, from survival to pleasure and everything in between. Research and innovation are crucial to better understand the ocean process and regulation and are the base for sound decisions. Several initiatives exist at national, European and international level to support research and innovation supporting the sustainable use of the ocean. One of these initiatives is the **All-Atlantic Ocean Research Alliance**.

One of the objectives of the **All-Atlantic Ocean Research Alliance** is the construction of the **All-Atlantic Ocean Research Community**. Through the promotion of new models of cooperation around the whole Atlantic Ocean basin, this massive coordinated and partnership-based endeavour will encourage joint activities, increment operational efficiency within marine research, expand our common understanding and scientific knowledge on the Atlantic, and leverage capacity development through scientific exchange. In order to achieve this objective **five stakeholders' platforms** were created under the AANChOR project to foster the interaction of experts of various key scientific areas. On 5 February 2020, on the eve of the second **All-Atlantic Ocean Research Forum** (Brussels, Belgium), the AANChOR project gathered dozens of experts in five different workshops to better understand what should be the next steps in each of their fields of transatlantic cooperation.

A key aspect of AANChOR's work involves improving **Capacity Development (CD)** around the Atlantic. CD is the process of helping societies, organizations, and individuals to set and achieve their objectives; many need help in this area for a variety of reasons from lack of infrastructure and training to corruption and more. AANChOR includes a stakeholders' platform exclusively to increase capacity development in the Atlantic. It encompasses a group of marine and policy experts from Europe, Africa, and the Americas who met in Brussels in one of the CSA's workshop to set in motion what will hopefully be years of improvements for the Atlantic CD.

Nearly thirty Platform members and guests analyzed many of the known Atlantic Ocean CD programs, initiatives, organizations, and projects in an AANChOR's workshop organized by the project partner [KDM-ZMT](#) from Germany. They explored the related needs and gaps with an end goal to develop potential joint actions (e.g., initiatives, programs, etc.) to tackle the disparities. The joint actions should increase transatlantic collaboration in CD programs in the Atlantic while focusing on the blue economy and increasing innovative initiatives adapted to professionals across fields. They should also improve efficiency, make better use of existing capacities and expertise, avoid duplicative actions, and create highly trained professionals who can face the challenges and opportunities in the Atlantic.

After a solid day of work incorporating various perspectives from candid conversations and the group's collective knowledge, the team came up with three potential ideas for joint actions:

1. Set up a cross-South Atlantic community to foster knowledge exchange, strengthening capacity development and building confidence.
2. Address the skills shortfalls and train technical staff in Atlantic countries to maintain and update ocean technology equipment.
3. Create an All-Atlantic Floating University Network to address the global need for training at sea for young scientists, technicians, and administrators - particularly for less developed countries.

Upon further development through mid-2020, the joint actions may be submitted for funding under the seed money to be granted by AANChOR.

The workshop was chaired by AANChOR's partners from Brazil and South Africa, who are also chairing AANChOR's Capacity Development activities. Questions and comments regarding our CD platform should be directed to [nicolas.dittert@leibniz-zmt.de](mailto:nicolas.dittert@leibniz-zmt.de).

## **Atlantic experts identified major needs and gaps in knowledge transfer initiatives targeting ocean innovation and economy**

One of the objectives of the **All-Atlantic Ocean Research Alliance** is the construction of the **All-Atlantic Ocean Research Community**. Through the promotion of new models of cooperation around the whole Atlantic Ocean basin, this massive coordinated and partnership-based endeavour will encourage joint activities, increment operational efficiency within marine research, expand our common understanding and scientific knowledge on the Atlantic, and leverage capacity development through scientific exchange. In order to achieve this objective, five **stakeholders' platforms** were created under the AANChOR project to foster the interaction of experts of various key scientific areas. On 5 February 2020, on the eve of the second **All-Atlantic Ocean Research Forum** (Brussels, Belgium), the AANChOR project gathered dozens of experts in five different workshops to better understand what should be the next steps in each of their fields of transatlantic cooperation.

The workshop on **Knowledge Transfer for Ocean Innovation and Economy** was led by AANChOR's partner **SPI** from Portugal. It gathered ten experts from the AANChOR platform, four external observers from other projects funded under the same EU funding call, and three AANChOR members.

The main objectives of this workshop were a) to promote discussions regarding work developed by AANChOR on Knowledge Transfer for Ocean Innovation and Economy, b) to cooperatively think of potential joint actions to promote transatlantic cooperation, including the identification of some tasks to receive the seed funding which will be made available by the AANChOR project, and c) to make sure that this platform of experts is active and cohesive, contributing for a strong All-Atlantic cooperation in this area.

The workshop had two sessions. The first one aimed at discussing the baseline characterisation study of existing initiatives targeting Knowledge Transfer for Ocean Innovation and Economy. This baseline is a mapping that analyses a non-exhaustive list of past and ongoing initiatives that tackle knowledge transfer activities involving blue economy and ocean innovation in the Atlantic Basin. During its development phase, this baseline received the contribution from the experts linked to this platform, and in Brussels we had the chance to debate its main findings and conclusions.

The second session of the workshop was dedicated to a discussion regarding the identification of major needs and gaps in knowledge transfer initiatives targeting ocean innovation and economy which are crucial to understand which joint actions need to be implemented. The session served to gather many insightful contributions from the participants, which will be taken into consideration in the following work of AANChOR. Finally, the participants analysed potential joint actions promoting transatlantic cooperation, including the definition of the procedures to apply to the seed money which will be made available by AANChOR. In this final session, activities to be implemented by the selected joint actions were also discussed among the participants.

The next activities of the Knowledge Transfer for Ocean Innovation and Economy platform will be towards identifying the most suitable existing initiatives to be presented as potential candidates for the seed money. Information regarding each initiative will be analysed, such as how the initiative tackles areas of the Belém Statement, and what synergies it includes with other AANCHOR platforms. Questions and comments regarding AANCHOR's Knowledge Transfer for Ocean Innovation and Economy platform should be directed to [anacarolinagomes@spi.pt](mailto:anacarolinagomes@spi.pt)

## **Workshop gathers Atlantic experts on Ocean Data Management to discuss the implementation of joint actions**

One of the objectives of the **All-Atlantic Ocean Research Alliance** is the construction of the **All-Atlantic Ocean Research Community**. Through the promotion of new models of cooperation around the whole Atlantic Ocean basin, this massive coordinated and partnership-based endeavour will encourage joint activities, increment operational efficiency within marine research, expand our common understanding and scientific knowledge on the Atlantic, and leverage capacity development through scientific exchange. In order to achieve this objective, five **stakeholders' platforms** were created under the AANChOR project to foster the interaction of experts of various key scientific areas. On 5 February 2020, on the eve of the second **All-Atlantic Ocean Research Forum** (Brussels, Belgium), the AANChOR project gathered dozens of experts in five different workshops to better understand what should be the next steps in each of their fields of transatlantic cooperation.

AANChOR's partner **KDM-ZMT**, from Germany, organised the workshop on **Ocean Data Management**. The guests were twenty marine and data scientists, and policy experts from around the Atlantic. They were invited within the scope of AANChOR to discuss the problems of today's Atlantic Ocean data management systems, in particular, common standards for information and data sharing.

Data standardization is a hot topic in the marine sciences. In an ideal world, everyone would use a standards-based approach to ensure interoperability between systems, enhance data discovery and data access. In such world, all collected data would be retained and made accessible for analysis and application for current and future users. Marine scientists would not have to worry about redundancy, would spend less time and energy on data reconciliation, manual interventions, corrections and amendments. When aggregating data for decision-making, for example, they would be certain to be comparing "apples with apples" and not with cucumbers. But, we are in the real world where all sorts of challenges exist, being the diversity and increased volume of oceanographic data only the tip of the iceberg.

During the AANChOR workshop, all scientists repeatedly stressed how vital it is to guarantee open data for maximal community benefit and brainstormed on ways and means to address this and other conspicuous problems of the Tropical and South Atlantic. Specifically, they devised three collaborative activities for transatlantic cooperation in Common Standards for Information and Data Sharing. Subsequent to these activities, is the vision of unrestricted access to historical, present and future natural-, social- and humanistic- scientific transatlantic ocean data. This is no easy task! Ultimately, the joint actions should improve efficiency, make better use of existing capacities and expertise, avoid overlap, and create highly trained professionals who can face the challenges and opportunities in the Atlantic in the spirit of the Belém Statement.

The proposed joint actions still need to be characterized in detail, but the themes were already identified. They consider societal needs and benefits, policy aspects, ecosystem health and biodiversity, and business needs: (1) Data needs for



reducing societal vulnerability to harmful algal blooms in the South Atlantic; (2) Data needs for investigating carbon sequestration and storage/ climate change mitigation; and (3) Data on biogeographic regime changes – impacts on fisheries. Questions and comments regarding AANChOR's Ocean Data Management platform should be directed to [ana.rei@leibniz-zmt.de](mailto:ana.rei@leibniz-zmt.de).

## **Ocean Citizen Awareness and Literacy Workshop gathers experts from the Atlantic region to discuss gaps and needs**

One of the objectives of the **All-Atlantic Ocean Research Alliance** is the construction of the **All-Atlantic Ocean Research Community**. Through the promotion of new models of cooperation around the whole Atlantic Ocean basin, this massive coordinated and partnership-based endeavour will encourage joint activities, increment operational efficiency within marine research, expand our common understanding and scientific knowledge on the Atlantic, and leverage capacity development through scientific exchange. In order to achieve this objective, five **stakeholders' platforms** were created under the AANChOR project to foster the interaction of experts of various key scientific areas. On 5 February 2020, on the eve of the second **All-Atlantic Ocean Research Forum** (Brussels, Belgium), the AANChOR project gathered dozens of experts in five different workshops to better understand what should be the next steps in each of their fields of transatlantic cooperation.

The important role of the ocean for society, and the need to use its resources and services sustainably, is at the core of the Belém Statement. Building an All-Atlantic Ocean Research Community requires citizens to have a basic, practical, understanding of the role of the ocean in their lives and the impacts caused by their activities on the marine environment. The Atlantic, from pole to pole, encompasses a wide variety of ecosystems, currents transporting heat, nutrients and, unfortunately, pollution. Populations with different cultures and ways of living share the Atlantic basin and will have to cooperate for a sustainable use of its resources and services. Citizen ocean awareness and ocean literacy are, therefore, foundational to achieve the Belém goals.

Many different projects and programmes in **Ocean Citizen Awareness and Literacy** are already carried out in the Belém Statement countries, adapted to different cultural contexts and audiences. To identify initiatives that can be scaled up and best practices to be shared across the Atlantic, fifteen experts from seven countries and four continents gathered in an AANChOR workshop organised by the project partner Ciência Viva from Portugal on 5 February 2020 in the inspiring setting of the Natural History Museum of Brussels.

The experts further identified gaps and needs regarding ocean citizen awareness and literacy initiatives, in terms of the target audience, the Belém Statement areas of interest and the type of actions. Among the conclusions were the need to engage different publics such as indigenous communities; artists and journalists; small scale fisheries, subsistence fisheries and poachers; business and industry. A lack of resources in the native languages of the Atlantic basin countries was identified, as well as the lack of fun and recreational activities, allowing people to connect emotionally with the ocean. Regarding the Belém areas of interest, there are neither initiatives about the polar regions, nor about aquaculture, despite both being important topics for cooperation.

The need to make ocean literacy a theme *per se*, and not just a knowledge sharing mechanism, was also highlighted during the workshop. Missing typologies of action refer to e-learning platforms, that could use using existing distance learning

infrastructures, the use of vessels of opportunity to provide ship-board and boat experiences beyond oceanographic campaigns, and, in general, missing ocean literacy activities touching other dimensions besides education.

Additionally, societal issues cannot be neglected. The need to empower communities disproportionately affected by the degradation of the ocean through bottom-up literacy programmes or to connect people with different socio-economic backgrounds were some of the needs discussed during the Brussels workshop.

In the forthcoming months, the participant experts will make use of their experience to co-create joint actions that will correspond to these needs and contribute to filling the identified gaps in ocean citizen awareness and literacy. These joint actions should create transatlantic networks and promote an exchange of best practices towards an All-Atlantic Ocean Research Community.

Questions and comments regarding AANChOR's Ocean Citizen Awareness and Literacy platform should be directed to [vbatista@cienciaviva.pt](mailto:vbatista@cienciaviva.pt).

## **Shared-use of marine research infrastructures is key to achieve transatlantic collaboration**

One of the objectives of the **All-Atlantic Ocean Research Alliance** is the construction of the **All-Atlantic Ocean Research Community**. Through the promotion of new models of cooperation around the whole Atlantic Ocean basin, this massive coordinated and partnership-based endeavour will encourage joint activities, increment operational efficiency within marine research, expand our common understanding and scientific knowledge on the Atlantic, and leverage capacity development through scientific exchange. In order to achieve this objective, five **stakeholders' platforms** were created under the AANChOR project to foster the interaction of experts of various key scientific areas. On 5 February 2020, on the eve of the second **All-Atlantic Ocean Research Forum** (Brussels, Belgium), the AANChOR project gathered dozens of experts in five different workshops to better understand what should be the next steps in each of their fields of transatlantic cooperation.

Research infrastructures are facilities that provide resources and services for research communities to conduct research and foster innovation. Facilities for ocean science such as research vessels, underwater vehicles and offshore platforms, are generally particularly costly and require heavy operation to be deployed and operated. Increasing operational efficiencies by optimising the appropriate use and sharing of research infrastructures is one of the objectives of the signatories of the Belém Statement. An emblematic example of "shared-use" of marine research infrastructures is the organisation of joint scientific cruises.

In order to support this objective, AANChOR created a stakeholders' platform dedicated to the **convergence and alignment of research infrastructures (RI)**. Concretely, this expert group will launch activities to support the development of a transatlantic network of RI initiatives and promote the shared use of infrastructures in the Atlantic.

As a first step, the RI platform listed marine research infrastructures available in the Atlantic. This include major scientific equipment's or set of instruments for ocean research, network of facilities, and other research and innovation infrastructures open to external users. A rough estimation showed the availability of more than 3000 facilities operating in the Atlantic. In order to identify key initiatives, a selection of 150 facilities or networks of facilities were listed as a baseline. Most of the marine stations surrounding the Atlantic are part of a wider network called World Association of Marine Stations - WAMS. The AANChOR project will therefore build on these existing networks of infrastructures.

The RI stakeholders' platform includes members from the EU member-states, South Africa, Benin, Brazil, Argentina, Cabo Verde, United States and Canada. At their first meeting held in Brussels on 5 February 2020 and organised by AANChOR partner Ifremer from France, members discussed among others, possible joint actions in the field of coastal observing systems, optimising the use of research vessels and gliders in the Atlantic, coordination of existing polar research programmes, as well as plankton monitoring. In the next months, members will

develop further these ideas into joint actions proposals, of which some tasks might receive seed funding from the AANChOR for implementation.

Questions and comments regarding AANChOR's Convergence and Alignment of Research and Innovation infrastructures initiatives platform should be directed to [Florence.Coroner@ifremer.fr](mailto:Florence.Coroner@ifremer.fr).

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Since setting sail on our common Atlantic Ocean journey together, we have made remarkable progress with our marine research and innovation cooperation. We have significantly progressed towards an All-Atlantic Ocean Research Alliance, which joins efforts undertaken with the signing of the European Union – United States – Canada Galway Statement on Atlantic Ocean Cooperation, and the European Union – Brazil – South Africa Belém Statement on Atlantic Ocean Research and Innovation Cooperation.

The All-Atlantic Ocean Research Forum highlighted results and solutions for our citizens and communities from Antarctica to the Arctic produced so far by this cooperation, and plan the further implementation of the Galway and Belém Statements. During the Forum, the Atlantic community defined a vision of how it can strengthen its international cooperation to seize the opportunities and address the common challenges. A highlight of the Forum was the launch of the All-Atlantic Ocean Youth Forum by European Commissioner for Innovation, Research, Culture, Education and Youth, Mariya Gabriel.

The Forum set a new strategic direction for the All-Atlantic Ocean Research Alliance, which can support the implementation of the UN Agenda 2030 for Sustainable Development, the UN Decade of Ocean Science for Sustainable Development and deliver on the priorities such as the European Green Deal, the Horizon Europe Mission Healthy Oceans, Seas, Coastal and Inland Waters and others.

*Studies and reports*

