European
MARINE BOARD
COMMUNICATIONS PANEL

2020 COMM OCEAN

4th International Marine Science Communication Conference

Proceedings

1-2 December 2020

"As communicators, we have always had to adapt quickly to a changing world, and over the next two days I am looking forward to hearing about the new and inventive ways that we have found to keep marine science in hearts and minds."

Lucy Cox
European Marine Board
Communications Panel, Chair

Due to COVID-19 CommOCEAN2020 was a virtual event

@commocean
@CommOceanConf
marineboard.eu
commocean.org

About CommOCEAN

CommOCEAN is for communicators working in marine institutes, governmental bodies and NGO's, and marine scientists looking to develop skills in modern ocean science communication, wherever in the world they are working.

The conference programme seeks to combine hands-on exercises in current science communication skills for disseminating ocean research and technology, with plenty of expertise-sharing, social interaction and fascinating marine science along the way.

Dissemination, outreach and communication of scientific knowledge has never been more important in today's society, where social inclusion is an integral part of environmental protection and sustainable development. This is particularly true for the world of ocean research, a world that is largely hidden from our view, representing an added challenge to the communication of marine research. From its inception, the Ocean Literacy movement has advocated closer interaction between marine scientists, educators and other stakeholders (the public, policy-makers, private sector), and inspired new events and networks all over the world. CommOCEAN is a prime example of such an initiative.

The conference, as the International Marine Science Communication Conference, was launched by the European Marine Board Communications Panel (EMBCP) and organised in the first instance by its Portuguese partners (CIIMAR, Ciencia Viva) in Porto in 2014. It focuses on a target audience of young marine scientists and communicators wanting to be trained in science communication skills. The second event held in Bruges-Ostend was organized by (VLIZ, and UNESCO/IOC/IODE) and incorporated a 1-day training program in the InnovOcean facilities in Ostend. The third conference was held in Southampton, UK in 2018 organised by the NOC.

Due to travel restrictions as a result of the COVID-19 pandemic, the 4th conference took place as a virtual event online, hosted and organised by the Institute of Oceanology Polish Academy of Sciences (Institute of Oceanology PAN, Poland).

Table of contents

Committees

Organising committee

Tymon Zielinski
Head of CORE-Climate and Ocean Research and Education Unit, Institute of Oceanology PAN, Poland

Ángel E. Muñiz Piniella
Science Officer, European Marine Board

Lucy Cox
Head of Communications, National Oceanography Centre (NOC), UK

Marco Faimali
Researcher, Consiglio Nazionale dell Richerche - Instituto di Scienze Marine (CNR-ISMAR), Italy

Tiago Garcia
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Partnerships Senior Officer, Marine Universities of France, France

Andreas Villwock
Head Communication and Media, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany

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Tiago Garcia
Science and Communication Officer, EurOcean Foundation

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Kelle Moreau
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Francesca Petrera
Science Communicator, Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS), Italy

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Head of Communications, Vlaams Instituut voor de Zee (VLIZ), Belgium

Maija Sirola
Communications Manager, BONUS EEIG

Local organising committee

Tymon Zielinski
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Paulina Pakszys
Institute of Oceanology PAN, Poland

Tomasz Kijewski
Institute of Oceanology PAN, Poland

Izabela Kotyńska-Zielińska
Today We Have, Poland

Conference Programme

1 December 2020 10:00 – 16:00 CET

Recordings from the conference are available on the CommOCEAN YouTube Channel.

All CommOCEAN 2020 session recordings **VIDEO LINK**

09:50 – 10:00	Log in by participants	
10:00 – 11:00	Welcome and opening addresses	**VIDEO LINK**
	Lucy Cox European Marine Board Communications Panel (EMBCP) Chair	
	Jan Marcin Węsławski Institute of Oceanology PAN, Poland	
	Gilles Lericolais European Marine Board (EMB) Chair	
Keynote	**Vinicius Lindoso** UNESCO/IOC + Q&A	
Practical info	**Tymon Zielinski** Institute of Oceanology PAN, Poland	
11:00 – 11:30	Coffee break	
11:30 – 12:30	Breakout sessions	
	Breakout 1	**VIDEO LINK**
	Amy Dozier The Value Of Visual Science Communication	
	Raquel A. F. Neves Marine Science Communication and Local Community – a Brazilian Case Study	
	Sonya Agnew The ECOSTRUCTURE Observatory – a novel online citizen science mapping tool to engage coastal communities	
	Breakout 2	**VIDEO LINK**
	Gonzalo Bravo Dive into our ocean: discovering the underwater world of your own city	

Bart De Smet
RV Simon Stevin digital twin

Gavin Arneill
Can Twitter help to increase societal discourse about anthropogenic underwater noise?

Breakout 3 **VIDEO LINK**

Camilla Brendon
Visualising Ocean Human Relationships

Noirin Burke
The Irish Ocean Literacy Network "We Are Islanders" Campaigns – promoting awareness of the Sea across the Island of Ireland

Lucy Cox
Making a MOOC – lessons learned

Breakout 4 **VIDEO LINK**

Marta Correia
Awareness activities for the youngest to promote fisheries without litter – do they work?

Cushla Dromgool-Regan
My Explorers Seashore Guide Workbook

Mariola Norte Navarro
Communicating the unexpected – when climate change is not to blame

12:30 – 13:00 Lunch break

13:00 – 14:00 Show and tell exhibition **VIDEO LINK**

14:00 – 15:00 Workshops

Workshop 1 **VIDEO LINK**

Marine sci-comms – what's our recipe for success?
Facilitator: **Lucy Cox**

Workshop 2 **VIDEO LINK**

How to connect marine science to society using the European Atlas of the Seas
Facilitators: **Andree-Anne Marsan** and **Nathalie Van Isacker**

Workshop 3

Speaking to Mermaids and Pirates! Engaging with future marine experts
Facilitator: **Nicola Bridge**

15:00 – 15:30 Coffee break

15:30 – 16:00 Plenary session and close **VIDEO LINK**

Jon Clay
SilverBack Films + Q&A

Close
Tymon Zielinski
Institute of Oceanology PAN, Poland

2 December 2020 10:00 – 16:30 CET

Recordings from the conference are available on the CommOCEAN YouTube Channel.

All CommOCEAN 2020 session recordings **VIDEO LINK**

09:50 – 10:00	Log in by participants
10:00 – 11:00	Welcome and keynote addresses (recording is unavailable)
	Lucy Cox European Marine Board Communications Panel (EMBCP) Chair
	Maija Sirola BONUS EEIG
	Angela Schultz-Zehden SUBMARINER Network
Practical info	**Tymon Zielinski** Institute of Oceanology PAN, Poland
11:00 – 11:30	Coffee break
11:30 – 12:30	Breakout sessions

Breakout 5 **VIDEO LINK**

Jill Burgess
Innovations in Coastal Management Technology communicated through Water Pistols and Poetry

Steve Hall
Underwater Technology Podcast

Paulina Pakszys
How do you choose the best videoconferencing software that suits your specific needs and goals?

Breakout 6 **VIDEO LINK**

M. Carmen Garcia
Oceanicas: Women and Oceanography

Aurora Ribeiro
#IDiveAtHome - marine education during COVID-19 times
How can we communicate the sea and its issues to a locked down public that is dealing with a worldwide pandemia?

Kathrin Kopke
Engaging Project Stakeholders during COVID 19
– the JONAS Underwater Noise Workshop

Breakout 7 **VIDEO LINK**

Jessica Giannotti
Marine science is beautiful

Louise Ras
Expedition Sea the Future, a journey for the dissemination of Ocean Literacy

Frances Camille Rivera
Communicating marine science to coastal communities
– a case study in Negros Oriental, Philippines

Breakout 8 **VIDEO LINK**

Francis Strobbe
10 years of EMODnet in 10 minutes!
How to communicate and celebrate a decade of achievements

Tymon Zielinski
Open Science Days, an example of a diverse approach to communicate about ocean and climate change

Izabela Kotynska-Zielinska
I Live by the Sea Summer School

12:30 – 13:00 Lunch break

13:00 – 14:00 Breakout sessions

Breakout 9 **VIDEO LINK**

Hester Whyte
Diving into Art, Science, Technology & Knowledge: Catching A Wave

Clara Antonia Kloecker, J. Massing, I. Osemwegie, A. Roesner
What hampers early career scientists to communicate effectively within academia and beyond

Jan Seys
Marine Citizen Science in Europe: state of the art, challenges & opportunities

Breakout 10 **VIDEO LINK**

Chloe Russell
Kalerrâ - How can we use sonifications to create lasting connections to the environment?

Charline Guillou
BLUE DiplomaSEA, a serious game about high seas governance

Rebecca Lahl
Designing and disseminating effective Policy Briefs

Breakout 11 **VIDEO LINK**

Carla Elliff
Marine science communication by women in Brazil – the Chat with Neptune experience

Andrei Polejack
Marine Science Communication as a pillar of Ocean Science Diplomacy

Chanikya Naidu, S. Abuthagir Iburahim
Disseminating Scientific Infographics via social media for engaging Peoples in Fisheries science

14:00 – 15:00 Workshops

Workshop 4 **VIDEO LINK**

Inclusive communication – How Ocean Literacy can be accessible to all
Facilitator: **Dina Eparkhina**

Workshop 5

Communicating Ocean Science for Impact (IPSO and OneOcean)
Facilitator: **Natalie Hart**

Workshop 6

Going digital: using virtual tools to foster marine citizenship
Facilitator: **Sara Mynott**

Workshop 7

5 Social Media Strategies to Generate Global Reach on Marine Communications
Facilitator: **Joanne Sweeney**

15:00 – 15:30	Coffee break
15:30 – 16:30	Plenary session and close of conference **Kira Coley** ECO magazine **Larissa Milo-Dale** WWF European Policy Office Announcement of Show and Tell exhibition winners & Close **Tymon Zielinski** Institute of Oceanology PAN, Poland

Discussion

Due to the COVID-19 pandemic, the online presence of (marine) science activities has increased considerably, but there is currently an "online fatigue". Do you think this has reduced the impact of our activities?

"Having turned all of our events this year online we are seeing even higher participation than before"

"There certainly is online fatigue, but I've not seen the impact or engagement reduced, in fact we have seen the opposite and can reach more people"

"We are seeing higher attendance"

"For a lot of activities, I don't think online is as effective as being with people"

"It's great that we have been able to reach people all around the world more than ever before"

"Certainly, at the start I was so busy creating online content that I missed out on seeing others people's outputs, as there was so much"

"It's been very hard to choose what we really want to see...and to remain focused on it, with usually a lot of other things going on in our homes at the same time"

"It's opened up opportunities that might not otherwise have been there – we can share our digital content more widely"

"Online talks seem to have encouraged those who might be too shy to give them at conferences to do them, and that's an advantage"

"Being able to connect digitally with people all over the world has to be one of the positives from this year"

"Online fatigue is a real issue"

"There may be a fatigue, but educators and learners now have access to things which might otherwise not have been available"

Breakout Session Abstracts

Click here to view submitted abstracts online

Breakout 1
The Value Of Visual Science Communication

Amy Dozier
MaREI Centre, Environmental Research Institute, University College Cork

In today's media-rich society, the value of high-quality visual communication cannot be understated. When used in the communication of marine research, visual graphics have the power to inform, persuade, and delight a wide range of audiences, from coastal community members to decision-makers. Graphic design and illustration can make complex scientific information more attractive, understandable, and more accessible, especially when visual materials are shared across digital platforms. This presentation will showcase how graphic design has been used to democratise research findings, clarify complex scientific messages, and incentivise audiences to take notice of key environmental outputs from the ECOSTRUCTURE project, an Ireland-Wales research project focussing on the use of eco-engineering to improve biodiversity in the Irish Sea coastal environment.

Marine Science Communication and Local Community: a Brazilian Case Study

Raquel A. F. Neves
Federal University of the State of Rio de Janeiro (UNIRIO), Rio de Janeiro, Brazil

Over the last few years, science communication in Brazil has increased in universities and research institutions stimulated by public investment to support university outreach and science communication activities. However, a recent analysis conducted in 2019 by the Brazilian Center for Management and Strategic Studies have demonstrated that 90% of subjects (i.e., people who were interviewed) do not remember the name of a Brazilian scientist and 88% could not indicate the name of a research institution in Brazil. Despite that, more than 60% of the subjects have demonstrated interest for science and technology and environmental issues. Our activities of science communication have been developed in the context of the research projects, among them the "Eco-shift: a pioneering innovative, integrated and predictive proposal for the sustainable management of multi-impacted coastal lagoons". In order to communicate the issues (e.g., eutrophication and harmful algal blooms) related to marine systems in Rio de Janeiro (Brazil), we are using social media (e.g., @conhecendoashabs) and other communication techniques, such as participation in podcasts and videos. Moreover, in situ activities are conducted with local communities directly affected by environmental impacts. Science communication activities are planned and developed to artisanal fishermen organized in the main fishing association of Rio de Janeiro city (Colônia Z-13). These activities include small meetings and presentations to the fishermen to approximate their everyday activities to our research topics and highlight the human impacts (i.e., coastal pollution, habitat destruction, introduction of non-native species) on marine ecosystems, fishery production, economy, and human health.

We believe that our efforts on marine science communication contribute towards improving science education and public engagement in marine systems conservation and management.

The ECOSTRUCTURE Observatory – a novel online citizen science mapping tool to engage coastal communities

Sonya Agnew
ECOSTRUCTURE, School of Biology & Environmental Science, University College Dublin

The Irish and Welsh coasts of the Irish Sea contain most of our cities, towns and infrastructure, which are already protected by an extensive network of sea defences, to provide protection from increased storminess and sea level rise associated with global climate change. ECOSTRUCTURE, part-funded by the ERDF through the Interreg Ireland Wales Cooperation Programme 2014-2020, is a trans-disciplinary project, which examines, develops and tests ecologically sensitive design for artificial coastal structures to the benefit of both; our coastal communities and our coastal environment. The project brings natural science, coastal engineering, science communication and social science together to support the development of positive effects of coastal structures that can enhance economic, environmental and cultural value for coastal stakeholders and communities. The ECOSTRUCTURE Observatory is an online citizen science mapping platform, that facilitates knowledge exchange and engagement with coastal communities and stakeholders on different topics, which reflect the synergistic interaction between the diverse disciplines within the project. Participatory activities facilitated through the Observatory include mapping and identifying of coastal artificial structures, marine species and sharing local, personal or historic knowledge and stories associated with artificial coastal structures. The platform allows the ECOSTRUCTURE team to learn in novel ways about people's perceptions of their coastal areas and any potential modifications to them and to increase knowledge about the cultural ecosystem services these structures may provide.

Breakout 2
Dive into our ocean: discovering the underwater world of your own city

Gonzalo Bravo
ProyectoSub, Universidad Nacional de la Patagonia San Juan Bosco, LARBIM, Instituto de Biología de Organismos Marinos (IBIOMAR), CCT CONICET- CENPAT

Discover the underwater world is not always accessible and few people have the opportunity to explore oceans due to the high cost of logistics, even living besides the sea. However, the combination of low-cost technology and people willing to share knowledge become an excellent tool to teach about marine life in places where people are not aware of what's under the sea. Using an accessible small ROV and scientific divers equipped with devices to verbally communicate with the surface, we are broadcasting live on the sea-floor, allowing school students to raise awareness about ocean conservation and ask questions while they are in a boat or pier observing organisms living in the sea floor. This outreach program is carried out by ProyectoSub foundation with the support of the Science, Exploration and Education initiative (SEE).

RV Simon Stevin digital twin

Bart De Smet
Flanders Marine Institute

Research vessels are of great importance to enable marine scientists to conduct research at sea. However, unless you are a scientist or a crewmember, it is very difficult to get access to them. This also applies to the Flemish research vessel RV Simon Stevin. This multidisciplinary ship is deployed mainly for coastal oceanographic research in the Southern Bight of the North Sea. The Flanders Marine Institute (VLIZ) manages the scientific programme and research equipment. During the annual science day in Belgium the public at large gets the chance to visit the ship. During this visit, scientists explain their research on board and crewmembers inform people on the operation of the ship. Nevertheless, throughout the year, VLIZ gets many questions from a.o. teachers and coastal guides to board the ship. To meet this demand, VLIZ launched a digital twin of the research vessel. Visitors can embark the ship virtually and get 360° views from the engine room up to the bridge. Visitors can decide to either discover the ship in a random order, or follow a predefined walk through the different rooms of the vessel. In ten carefully selected rooms, visitors get more information on (1) hot marine research topics such as the link between the ocean and human health, climate change or marine robotics, and (2) life on board of a research vessel. The provided information includes different media and is composed in such a way to fascinate both children and adults. The interface used is very flexible and the content can be adjusted depending on the research VLIZ wants to spotlight, the targeted audience or the time of the year. Moreover, the tool is user friendly, freely accessible from any mobile device, and provides an informative and safe activity in times of the Coronavirus.

Can Twitter help to increase societal discourse about anthropogenic underwater noise?

Gavin Arneill
MaREI Centre, Environmental Research Institute, University College Cork, Ireland
School of Biological, Earth and Environmental Sciences, University College Cork

Anthropogenic underwater noise is now recognised by scientists as a global environmental concern. However, this topic remains largely absent in broader societal discourse concerning our oceans, human activities and impact on marine life. In contrast, high levels of public awareness about marine litter have resulted in discussions across society about how to reduce marine litter and support mitigating policies. The latter is especially important, as a range of environmental policies that address mitigation have been shown to require public support to be successful. This highlights an urgent need for targeted science communication about underwater noise to increase awareness and understanding across all levels of society. One method that is perceived by many scientists and research institutions as an effective way to disseminate information in the public domain is social media, especially Twitter. Consequently, this requires an understanding of the best practices and limitations of such platforms. Using Twitter as a study platform, we assessed the levels of engagement with posts that fall within three marine topics of interest: 'underwater noise', 'marine litter' and 'generic ocean' over a three-month study period. These topics were selected to collate an extensive dataset that allows comparative learning that can support effective underwater noise science communication.

Breakout 3
Visualising Ocean Human Relationships

Camilla Brendon
Self-employed artist

I am an artist working on visualising issues affecting oceans and waterways, improving ocean literacy, and providing a platform for dialogue around consumption and sustainability. I propose to create a webpage that showcases my collaborative projects to demonstrate the potential of art in science communication. The webpage would include imagery, videos (studio tour and interview), text and links to past and ongoing projects, including Humans Make Plastic (HMP). This project began with funding from UCL and brings together artists, students, educators, grassroots community groups, and scientists researching plastic degradation, to create communal sculptures from plastics collected from inland and coastal waterways. HMP toured at OceanAction2020 and at Plastic Matter at The University of Hertfordshire, and both showings included a workshop in which a variety of stakeholders participated. The workshops stimulate dialogue around consumption and how our actions affect ocean and planetary health. HMP was shown at Totally Thames Festival, and Brendon led art workshops including a canal towpath clean facilitated by The Lower Regents Coalition and inspired by a multidisciplinary panel discussion. In collaboration with Britt Alexander, Brendon began to explore other issues affecting the ocean, using plastic as a gateway. They have developed projects on phytoplankton and kelp forests, which would also be included in the webpage. The projects focus on communicating the importance of these organisms in marine ecosystems, including their role as carbon sinks, their decline, and the need for conservation measures. Activities include 'Tiny Ocean Plants' workshops, a recycled collage series, and 'Phytoplankton in the City' sculpture workshops and exhibition . Brendon explored the Sea Kelp project during her 2020 residency at the University of Hertfordshire. She is creating an 'unnatural kelp forest' from recycled materials and living plants, which will be an immersive sculpture allowing people to experience a kelp forest without getting in the sea.

The Irish Ocean Literacy Network "We Are Islanders" Campaigns - promoting awareness of the Sea across the Island of Ireland

Noirin Burke
Irish Ocean Literacy Network

The Irish Ocean Literacy Network (IOLN) 'We Are Islanders' social media campaign provides a case study of marine communication in practice demonstrating successful activities and outcomes that raised awareness and engagement across the Island of Ireland in 2019 - 2020. Launched to coincide with Ireland's national maritime festival Seafest and World Ocean Day in June 2019 the #WeAreIslanders campaign connected families and key stakeholders with the ocean, engaging and inspiring local and national communities. The IOLN members come from a diverse range

of backgrounds including NGO'S, Public/ Government, industry, academia, media and general interest. Working collectively, this ocean literacy initiative reached over 100K people at 'SeaFest 2019' and has seen a significant increase in the IOLN membership throughout 2019-2020. In 2019, over 100 photographs were taken using giant #WeAreIslanders photograph portrait frame boards, capturing people's passion for the ocean. These photographs have been used to communicate a positive message of our ocean wealth, maritime heritage and supported stories about living on the island of Ireland, resulting in an increase in Facebook(™) engagement and Twitter(™) impressions (e.g. increase 67% May - June 2019). The campaign has continued to run throughout 2020 where the network has promoted the importance of our ocean through the community, national and international events. A dedicated day of social media engagement for 'World Ocean Day 2020' resulted in #WeAreIslanders trending online. IOLN members also supported Ireland's national broadcaster - Raidió Teilifís Éireann (RTÉ)- on this day, providing educational resources for the RTÉ Junior ('RTÉjr') platform. Feedback from Suzanna Kelly, Head of Children's & Young People's Content at RTÉ, was extremely positive, noting that 'the team at Irish Ocean Literacy Network created beautiful pieces of content that kids really connected with and we look forward to working with them again in the future on joint initiatives across RTÉjr platforms'.

Making a MOOC – lessons learned

Lucy Cox
National Oceanography Centre

Massive Open Online Courses (MOOCs) are fantastic ways to educate people about any topic. In 2020, the National Oceanography Centre (UK) completed the production of a 4 week long, 30 video MOOC aligned to a major collaborative science project, titled 'Ocean Science in Action: Addressing Marine Ecosystems and Food Security in the Western Indian Ocean', which ran for the first time in October 2020. This presentation will focus on what was involved in producing this MOOC, how it was promoted, how interactive tools were used to try and boost learner engagement with it (and if they worked!), and whether or not it was deemed a success - by the learners and by the PI.

Breakout 4
Awareness activities for the youngest to promote fisheries without litter – do they work?

Correia, M.[1], Mendes, R.P.[1], Castelo, D. [3], Ramos, S.[1], Almeida, C.M.[1,2]

[1] Interdisciplinary Centre of Marine and Environmental Research (CIIMAR). Porto, Portugal

[2] Centro de Monitorização e Interpretação Ambiental (CMIA) de Vila do Conde. Vila do Conde, Portugal

[3] Environment and Planning & Centre for Environmental and Marine Studies (CESAM), University of Aveiro, Portugal

At a time when marine litter is a major world concern, NetTag project aims to reduce and prevent marine litter derived from fisheries by working directly with fishers in a combined preventive approach: i) reducing lost gear using new acoustic technologies to locate and recover lost gears; and ii) promoting better practices on-board regarding the management of fishing waste. Complementing NetTag's work, awareness activities for the younger community, including children and young relatives of fishers, were developed. These activities took place in schools of Vila do Conde (Portugal), an area with an active fishing community and relevant cultural fisheries heritage. The activities developed included:

1. lectures on the problematic of ocean pollution, particularly marine litter, ghost gear and plastics;

2. experimental activities related to the presence of marine litter in the marine environment;

3. didactic games addressing topics relevant to fisheries, such as the necessity of preserving healthy and productive oceans and the need to prevent ghost fishing gears.

Students also visited a research centre (CIIMAR), to learn about the research developed in the field of Marine and Environmental Sciences, promoting their interest in these scientific areas and contributing for informed citizens. Additionally, questionnaires were made to teachers whose students participated in the awareness activities. These questionnaires were made to evaluate the performance of the previous activities to the awareness of the youngest, regarding the need to protect the ocean and to prevent marine litter from fisheries. Questionnaire results showed that the activities increased the awareness on marine litter problematic and ocean pollution on the participant students, raised their Ocean Literacy and reinforced the engagement of young generations of fishers to adopt better practices. Thus, these type of awareness activities should be promoted to help engage future generations to the ocean pollution problematic and necessity to protect our oceans.

My Explorers Seashore Guide Workbook

Cushla Dromgool-Regan
Camden Education Trust

The Marine Institute's Explorers Education Programme provides a case study of marine communication in practice demonstrating a successful education and communication campaign around the publication of a children's book called "My Explorers Seashore Guide Workbook," by Cushla Dromgool-Regan. The publication was launched to coincide with international biodiversity day in May 2020 and has engaged and connected key stakeholders including children, parents, teachers and the media with the seashore in Ireland. The Explorers Programme aims to create ocean champions and to do this, we believe it is important to instil a passion for the ocean at a young age, so as to create long-term change in ocean literacy - forming a better understanding of how the ocean has an influence on our lives and how we impact the ocean. Supporting the sustainable development goal SDG14 to conserve and sustainably use the oceans, seas and marine resources, the timely publication of the children's workbook has been an anchor in helping encourage the new, novice and lapsed explorer to head to the beach and start exploring the seashore species and seaweeds, as well as cleaning our coastlines of litter. The book has been promoted through dedicated media and online social media activities as well as national radio interviews, feature articles in local, trade and national papers where conversations about our love and memories of the shore have been reignited. The communications strategy in promoting the book as a free book to download from www.explorers.ie has successfully increased the Explorers Education Programmes profile at a local and national level. The campaign has been further supported by working collectively with the Explorers Education Programme outreach team who annually aim to reach over 11,000 primary school children through a range of marine projects and seashore safaris. As part of our blended learning approach, the publication of the book as inspired parents to use the free workbook at home with their children. Available in print, teachers are now using it as an accessible fit-for-purpose educational resource for outdoor education and cross-curricular activities in the classroom.

Communicating the unexpected: when climate change is not to blame

Mariola Norte Navarro
University of Vigo, Centro Tecnológico del Mar- Fundación CETMAR

People is at the centre of adaptation to climate change. How to trigger action has proven to be challenging, particularly in those activities that happen in a natural environment. For the fisheries and aquaculture sectors, addressing climate change means adding uncertainty and using long term scenarios which are at odds with their acute needs. The puzzle becomes thornier with the evidence that engaging multiple stakeholders is critical to integrate their knowledge and experience and translate them into achieve actionable science. Hence the design of an effective communication strategy is crucial to approach the starring stakeholders from the seafood industry, decision makers,

NGOs and scientists. However, sometimes this is not enough. In this story we describe how experience-based knowledge and stakeholder interaction improve the quality of the research results and its application to a real context through the lens of seven case studies involving marine and freshwater fisheries and aquaculture sectors across Europe within the frame of the ClimeFish project. But, how to engage them? Nobody says it was easy, a context-based approach was developed to meet each case study needs and to keep more than a hundred stakeholders from different backgrounds engaged during the full length of the project. Unexpected situations -beyond those resulting from the uncertainties of climate change- had to be dealt during this process, reinforcing the relevance of communication (e.g., disentangling climate change impacts from isolated weather events). Using a participatory approach, a stakeholders hub was implemented. The hub functioned as an adaptive and flexible platform to facilitate the production of knowledge, the uptake of results and multi-level networking, involving multiple communication tools and customized actions to generate continuous communication flow in this sort of Babel Tower. This experience will provide advice when designing climate change communication strategies for the fisheries and aquaculture sectors.

"I truly enjoyed each session I attended and was able to walk away with a wealth of knowledge

The most important takeaway for me, was that truly the science does not exist if no one knows what is happening"

Breakout 5
Innovations in Coastal Management Technology communicated through Water Pistols and Poetry

Jill Burgess
National Oceanography Centre

Rising sea level is increasing the flood hazard from sea defence overtopping. New coastal schemes need to be cost-effective and future-proofed. WireWall, with its portable, low cost measurement technology, is a system that can collect overtopping speeds and volumes to inform new scheme design and validate flood forecasting systems. Whilst the application of technology is important, it is equally vital that the scientific community actively raise awareness and understanding of coastal management policies and initiatives. To engage the public in understanding coastal hazard, how it is managed and how new advances in research informs management decisions, a number of approaches have been taken. A portable demonstration model of the WireWall field rig was constructed. This tool, which uses Lego and water pistols, has successfully initiated in situ engagement between the public, coastal practitioners and researchers to develop support for a new scheme being planned at the WireWall study site. In addition, a narrated coastal walk was developed with a local poet, highlighting the importance of coastal hazards and shoreline monitoring. Whilst plans for a Marine Awareness Day, to compliment the above, had to be put on hold due to the pandemic, a little bit of innovative thinking and the use of Twitter and our followers helped to create a community poem and some lovely musical accompaniment! This multidisciplinary approach show how those in both the science and arts can share techniques and learn from one another with a view to improving interdisciplinary communication and collaboration. The wellbeing of coastal communities depends on clear communication of new research that is making sense of changing seas. Here we show approaches that can do just that (PLUS it was great fun!).

Underwater Technology Podcast

Steve Hall
Society for Underwater Technology

Following the imposition of COVID precautions in March/April 2020, the Society for Underwater Technology needed a way to stay in touch with members as we could no longer hold our usual face to face meetings. Steve Hall started a weekly 'Underwater Technology Podcast' using the 'Buzzsprout' platform that can be listened to via all of the major podcast platforms are directly via https://sut.buzzsprout.com Each week Steve interview an expert in a broad range of underwater technology subjects, these have included divers, archaeologists, offshore energy sector workers, explorers, engineers, scientists and historians. The podcast has received over 5000 downloads plus streamed episodes and has proven far more popular than we expected. Steve will outline how straightforward the process of podcasting is, the equipment required, and lessons learned so far. Steve moves to a new CEO role in December but such is the success of the Underwater Technology Podcast that we've written the need to continue it into the job-specification for his successor.

How do you choose the best videoconferencing software that suits your specific needs and goals?

Paulina Pakszys
Institute of Oceanology Polish Academy of Science

The coronavirus pandemic meant that many people who previously worked from the office (as it turned out to be largely unnecessary) started working remotely. As a result, the videoconferencing program suddenly became the basic tool, while until now such products were largely considered niche and were used primarily by large corporations dispersed in many locations. Thanks to videoconferencing software, you can connect remotely with others without leaving your home, especially in the difficult time of the coronavirus pandemic. In this presentation we present the most popular videoconferencing program from which you can choose the best option for each form of videconference: chat with friend, online conference, webinar or simple team meeting. We will present you solutions, we will show you the advantages and disadvantages, and you will decide which solution is best for a given form of online presentation.

Breakout 6
Oceanicas: Women and Oceanography

M. Carmen Garcia
Instituto Español de Oceanografía

"OCEANICAS: WOMEN AND OCEANOGRAPHY" is a project of the Spanish Institute of Oceanography devoted to communicate the role of women (pioneers and present) devoted to the study of the oceans. One of the main objectives of Oceanicas is to promote scientific vocations in girls and boys, to foster their creativity, decision-making and to avoid gender inequalities from an early age. Climate change, overfishing and pollution threaten to transform the oceans forever. This makes equal access for women and men in all fields of marine science, including positions of responsibility, more necessary than ever. We have a huge challenge and we need to have all the talent of humanity. OCEANICAS project is a very good example of how an activity designed to enhance the role of women in marine science has become a tool to disseminate oceanographic sciences Different products have been obtained from Oceanicas project:

1. In OCEANICAS, PIONEERS OF OCEANOGRAPHY the story of 10 scientists, some of them quite forgotten has been recovered. From the first and only woman to travel around the world during the time of the great explorations to women who today lead the fight for the conservation of the oceans. All of them are necessary references for young people who dream of being a marine scientist. Their stories have been published in a book (only in Spanish) (www.oceanicas.ieo.es)

2. TODAY'S OCEANICAS Researchers, business women, managers, etc. participate in OCEANICAS by telling how they discovered their passion for marine science and how they have made it their profession. More than 100 women have participated in these micro-blogs.

3. FIRST OCEANICAS MEETING. The Spanish Minister of Equality has founded the celebration of the 1st Oceanic Meeting to be held on October 28-29. This meeting will serve as a forum for discussion on the problems faced by women working in marine science. More than 300 people have registered.

#IDiveAtHome - marine education during COVID-19 times. How can we communicate the sea and its issues to a locked down public that is dealing with a worldwide pandemia?

Aurora Ribeiro
Observatório do Mar dos Açores

In 2019 OMA's Educational team visited Faial Island's schools (Azores) almost daily, promoting hands-on marine educational activities with more than 7000 students from every school grades. In the beginning of 2020, our educational activities agenda was full until June, but, due to COVID-19

lockdown, everything was abruptly cancelled on March 13th. Five days later, OMA released #IDiveAtHome, the first of 34 online activities already tested in classroom context. The activities were written down and illustrated, as well as readapted for home context, targeting children from age 3 to 12, with or without adult supervision, depending on age. Initially we published a new activity every weekday, changing to once a week when the official online classes started. The main thematics approached were: Marine Life, Marine Litter, Oceanography, Deep Sea, Maritime History and World Ocean Day. The activities were shared via Facebook, e-mail and on our website. Statistics show a total reach of 50.828 (organic) on Facebook. Although we have no numbers for email and website outreach, we have been asked by Portuguese educational and environmental institutions as well as nature sciences and elementary school teachers to use this resource. As some foreign partners also showed their interest, some activities were translated to English, French and Spanish. The activities explored an emotional connection to the sea, in order to reconnect them to something they love but could not reach and enjoy at the moment. This project is also an example of how adaptation and autonomy is a key aspect to keep on the work of marine education during unexpected scenarios.
The Sea Observatory of the Azores (OMA) is a technical, scientific and cultural non-profit association, aiming the dissemination of scientific and technological culture and the promotion of activities of interpretation and environmental education, within the scope of Marine Sciences, contributing directly for the implementation of SDG 14. It is part of the Regional Network of Science Centres of the Azores since 2012. Since this date, it has involved around 71.000 from all age groups, a number that has been growing every year, registering more than 17,000 participants in 2019 alone.

Engaging Project Stakeholders during COVID 19 – the JONAS Underwater Noise Workshop

Kathrin Kopke
MaREI Centre, University College Cork

The Joint Framework for Ocean Noise in the Atlantic Seas (JONAS) project aims to streamline the monitoring and risk management of underwater noise in the northeast Atlantic ocean and support EU member states in meeting the requirements of the Marine Strategy Framework Directive (MSFD). JONAS stakeholder engagement involves a series of planned workshops acting as focal points for proactive knowledge exchange between the project and its stakeholders. The first JONAS workshop was initially scheduled to take place face to face with policy and decision makers and the project scientists. This event had to be cancelled due to COVID-19 restrictions and the project team designed an online workshop. It was of utmost importance for the project team to engage with stakeholders in a way that fostered open and constructive dialogue. To entice participants to engage online and to ensure interactions are comfortable for all involved, the team decided to adapt a guided conversation approach for this online context based on participant Group Facilitation Methods developed by the Institute of Cultural Affairs (ICA). Direct stakeholder feedback collected through e-mails and the post-workshop evaluation survey showed that participants had a positive experience and that this format of stakeholder engagement was valuable for all involved. The online workshop captured a wealth of information and input from workshop participants, which resulted in a set of specific recommendations to take forward.

Breakout 7
Marine science is beautiful

Jessica Giannotti
Crùbag

Crùbag's mission is to communicate marine science, share the unseen beauty of the ocean and inspire a deeper connection with the natural world through beautifully crafted textiles paired with environmental education and science outreach content. We communicate the discoveries of marine scientists and explore the relationship between people and the sea through design, art and textiles as a medium. Explore in this presentation with Dr Anuschka Millar, head of Comms at SAMS and Jessica Giannotti, founder of Crùbag how a series of collaborations between SAMS scientists and the design studio Crùbag created a powerful platform to bring marine science closer to society. Some of the collaboration projects we will discuss include:

- Gachon Collection - We used microscopy images to develop colourful, bold print designs inspired by research on algae/pathogen interactions. We collaborated with Dr Claire Gachon from (SAMS) to explore Claire's exciting research on the warfare between the brown marine algae Ectocarpus and the oomycete pathogen Eurychasma. Her work is shedding some light on how these interactions impact marine ecosystems.

- Flora Collection - inspired by the smallest of algae and their harmful blooms. It's about red tides and so much more. Our designs focused on five mechanisms in which a HAB can be detrimental: damage to fish gills; water discolouration; anoxia; slime or foam formation and biotoxin production.

- Our Plastic Oceans Notebook Collection - a collective effort of art, science education, and action that aims to bring awareness to the imminent issue of microplastic pollution. The pupils of primary 6 and 7 of Taynuilt Primary collaborated with Crùbag and scientists at the Scottish Association for Marine Science.

- The Seamount Collection – in collaboration with Professor Bhavani Narayanaswamy, we created a collection of gender-neutral silk and cashmere scarves inspired by a selection of benthic organisms sampled at various seamounts around the world.

Expedition Sea the Future, a journey for the dissemination of Ocean Literacy

Louise Ras
Sailing Hirondelle Association

The "Expedition Sea the Future" project is carried out by the association Sailing Hirondelle, based at

the Breton tip. The members intend to understand and witness the effects of human activities on the ocean and the coastline through a sailing expedition from Nantes to Saint-Malo this year, and along the coasts of North West Europe in 2021. The schooner "Hirondelle" is an itinerant platform for the co-creation of Ocean Literacy content. The productions are interdisciplinary and cover a wide range of subjects in order to address the complex ocean system and to bring the public to a better understanding of the multiple links they have with the marine environment. Educational tools are also created such as posters, comics, booklets, a radiophonic documentary fiction, a podcast channel accessible to a large public and a board game at the end of the expedition. Created in May 2019, Sailing Hirondelle has a strong commitment to bring the ocean protection on land, in the daily life of everyone. The founders, influenced by research in communication of climate change, want to create content that best respects the conclusions drawn from these fields: to show the human face of the changes underway, a spatio-temporal proximity with the target audience, from a positive angle, showing the possible scales of action.

Communicating marine science to coastal communities: A case study in Negros Oriental, Philippines

Frances Camille Rivera
Oceanus Conservation Inc.

Living in the center of marine biodiversity, Philippines is blessed with unique corals and fishes, some of which are endemic to the country. There are approximately 2,824 fish species, and 488 species of corals, compared to anywhere in the world. However, there is little awareness of the society especially the people living in the coasts. Threats to the marine environment are rampant in the country and many factors are contributing to it and one is the lack of environmental education. Environmental education in the country started in 1970s, but it is only in the 1990s that the environmental education curriculum framework for all levels were formulated. This is only applicable to students who can afford to pay for school and not the communities living near this diverse ecosystems. This case study presents two approach in communicating marine science to the coastal communities of Negros Oriental. This case study will explore the learning development of coastal communities using what is perceived in papers in comparison to what is perceived on the ground.

Breakout 8
10 years of EMODnet in 10 minutes! How to communicate and celebrate a decade of achievements

Francis Strobbe
EMODnet Secretariat

10 years of EMODnet in 10 minutes! How to celebrate and promote in a festive and effective way a decade of achievementsHow to capture efficiently the story of an organization, from its launch 10 years ago, to where we are now and where we will go next? How to celebrate a decade of achievements and the people who made this possible in a festive way? This oral presentation will give an overview of the communication activities developed in the context of the celebration of the 10 years of the European Marine Observation and Data Network (EMODnet), in September 2020. From the creation of a new logo to the production of a short documentary, an infographic and a webinar, tune in to hear our case study.

Open Science Days, an example of a diverse approach to communicate about ocean and climate change

Tymon Zielinski
Institute of Oceanology Polish Academy of Science

Institute of Oceanology PAN, together with partners, runs the Open Science Days annual project. On the first day we have a conference for young learners, entitled Where the world is heading. The conference is dedicated to marine topics, and is a replica of a real science conference, with a scientific committee, presentation sessions and takes place at the conference venue. Before the conference, we run workshops, which goal is to share knowledge about marine environments. Our student groups come up with ideas for promotion and communication actions, they come up with project names, acronyms, describe methods and target groups. The participating groups work out the following:

- Which engagement activity/methodology is most useful for community groups?
- What resources can scientific organizations provide to support community action?
- What format (infographic, brief, video, presentation, etc.) is most effective?

Through their dedication to run the proposed activity, students create the following outputs:

- Ready actions and solutions for promotion and communication of ocean issues.
- Tips on accelerating community led actions.
- Network between community stakeholders, with special emphasize on young learners.

During 2 months students implement actions in the chosen group of stakeholders (families, schools, friends, etc.), and the results of their actions are presented during the conference. During the workshops, we run dedicated questionnaires which we use for preparing scientific papers.

I Live by the Sea Summer School

Izabela Kotynska-Zielinska
Today We Have

Increasing awareness of global change, with climate change as one of the major issues, is crucial in order to develop the next generation of world society, who will be ready to make science based decisions in order to provide secure, sustainable outcomes for the entire planet. In times of global environmental changes, it is obvious that science based education plays a critical role in increasing the current condition of peoples' awareness. Properly designed and conducted science, provides tools for meeting various social needs, including quality education. Thus, there is a strong need for both researchers and educators to cooperate and provide modern approaches to produce science based information and motivate people to act with an environmental perspective. Sustainability science and sustainable and quality education seem to be the obvious tools for achieving these goals. We hope that this first edition of the I live by the Sea Summer School will provide an interdisciplinary platform for discussions of these challenging issues. We also hope that our webinars will facilitate the exchange of information among users from different parts of the world, who care about our environment. This first edition of the I live by the Sea Summer School provided an interdisciplinary platform to discuss these difficult issues. Our webinars have facilitated the exchange of information between users from different parts of the world who care about our environment. The recordings of 5 webinars were seen by 14.7 thousand people.

Breakout 9
Diving into Art, Science, Technology & Knowledge: Catching A Wave

Hester Whyte
MaREI Centre for Energy, Climate and Marine, Environmental Research Institute, University College Cork (UCC)

Communicating science to engage stakeholders and generate change remains one of the biggest challenges of our time. In a world of constantly shifting biophysical and social realities, we face an ever-evolving need for new ideas around sustainable development. Catching a Wave represents a collective of multi and transdisciplinary researchers from six universities based in the USA, UK and Ireland, combining expertise in environmental, social sciences and the arts. The philosophy and nature of the Catching A Wave project has the liberty and potential to generate shifts in social perceptions in ways that science and data alone currently do not. Catching a Wave is planned as an iterative sea-level rise multi-media installation to act as a catalyst for shift individual and collective mind-sets towards action on sea level rise and consideration for the people who live, work and interact within at risk coastal spaces.Each glass wave is an exact replica of a wave of water, captured in real time using photogrammetric and highspeed imaging processes. The digital output is printed to create 3D models which are then used as patterns for glass moulds. Using a transdisciplinary approach to overcome barriers in language, discipline specific jargon and siloed thinking, the project team are exploring ways of integrating voices of coastal and island peoples and communities who are often marginalized. In addition, we have initiated: The Planetary Wave project. Small hand-held 'wavelets' distributed through workshops are being brought together in this virtual installation to show the connection we all have in different ways with the ocean. The Catch A Wave project is a movement to reinvigorate linkages between the arts and sciences in order to address urgent issues of our time under the auspices of the Sustainable Development Goals with an emphasis on SDG 14 Life Below Water.

Catching A Wave collective: Shona Paterson (Global Challenges Research Fellow, Brunel University, UK), Martin Le Tissier (UCC, Ireland), Hester Whyte (UCC, Ireland), Lisa Beth Robinson (East Carolina University, USA), Kristin Thielking University of Wisconsin, Stevens Point, USA) and Mrill Ingram (University of Wisconsin, USA)

What hampers early career scientists to communicate effectively within academia and beyond

[1]Kloecker, C., A.; [2]Massing, J., C.; [3]Osemwegie, I.; [4]Roesner, A.

[1]IfU - Institute of Environmental Engineering, Eidgenössisch Technische Hochschule, Switzerland

[2]HIFMB - Helmholtz Institute for Functional Marine Biodiversity at the University of Oldenburg, Germany

[3]ZEF - Center for Development Research, University of Bonn, Germany

[4]MARUM - Center for Marine Environmental Sciences, University of Bremen, Germany

In an era of increasing specialization in the academic landscape, growing science skepticism and complex environmental challenges, a majority within the scientific community agrees that more effective science communication is needed within and beyond academia. This dire need for external communication, also applies to early career scientists (ECS), like us, who are particularly concerned about the discrepancy between scientific evidence, policy adjustments and societal reforms. We would like to step up to this challenge, but especially for ECS we see systemic obstacles to contribute to external science communication. In our contribution, we will highlight those obstacles which mainly concern recognition and time constraints. As opposed to its recognition of internal scientific communication, the current institutional reward system scarcely acknowledges contributions of scientists which concern science communication beyond their "bubble" in terms of its funding criteria, evaluation of scientific credit and on the tenure track. Due to time constraints, ECS are commonly experiencing high pressures and mental stress to satisfy the internal communication standards. Thereby, they miss out on valuable training opportunities in effective interdisciplinary exchange and public outreach, and therefore lack the confidence to engage with non-scientific audiences in the future. We further want to showcase the benefits and opportunities of integrating ECS into a vocal science communication community and provide approaches on how to exit the vicious circle of "silence" created by systemic obstacles requiring top down solutions and personal attitudes towards external science communication requiring a bottom-up mentality shift among academics. Only with stronger commitments to changes from both sides can we turn the tide towards more effective and equitable collaboration in science and informed decision making in politics and society. Thereby, not only do we live up to our own, but also to the societal expectations of a science that actively addresses pressing challenges degrading our oceans.

Marine Citizen Science in Europe: state of the art, challenges & opportunities

Jan Seys
Flanders Marine Institute (VLIZ)
Van Hall Larenstein, Leeuwarden

Citizen Science is rapidly gaining interest worldwide, not at least in the oceanic and marine realm. Some of the oldest citizen science initiatives started at the interface between the ocean and terrestrial environments. And many new projects emerge in shallow coastal areas, where collaboration between large numbers of citizens and research experts provides huge opportunities. An inventory of marine citizen science in the North Sea area identifies 127 projects, with a clear focus on marine biodiversity (large charismatic species such as marine mammals, seabirds and fish) and pollution. A majority of the projects in the North Sea region (almost 60%) collect data from the most accessible part of the coast, i.e. the beach. A descriptive analysis shows that most initiatives have a crowdsourcing level of participation as predicted by the pyramid of engagement. Furthermore, we see a distinct increase in marine citizen science projects in the North Sea from 1990 onwards, and could identify only 25 out of 127 projects that have ended. In terms of who is

coordinating projects, non-governmental organisations take the lead, followed by research institutes and mixed partnerships. This presentation sheds light on the needs and special features of marine citizen science, with a focus on Europe. Based on specific marine citizen science projects, we analyse the keys to success and the pitfalls, and end with recommendations towards the future.

Breakout 10
How can we use sonifications to create lasting connections to the environment?

Chloe Russell
Kalerrâ

Combining the voices and narratives of five scientists and artists from the Expedition to Weisboydlund, Upper Eastern Greenland, I have created a scored podcast that communicates ocean literacy, climate change and oceanic plastic pollution through interviews, music, and field recordings (or soundscapes) I made during this voyage in Greenland. For my MSc Science Communication research project I'm looking at how people respond to the sounds of science and the natural world. I have worked with Composer Ben Imber to create a 30 minute long podcast that plays out like an album, the podcast is called Kalerrâ which translates as 'the sound of it' in old Greenlandic. Kalerrâ features three artists, including myself, and two scientists from the expedition. The two scientists featured are Amy Pryor, Marine Biologist and Wanda Bodnar, Marine Scientist who both work at Thames Estuary Partnership and We Are Ocean. Kalerrâ aims to engage publics about climate change, oceanic plastic pollution and ocean literacy through the use of immersive audio media. Running alongside Kalerrâ have been two surveys, one for the pilot and one for the full podcast. These surveys help gather data on how people respond to the use of sonifications as a form of science communication, including a comparison of an audio-visual version. Kalerrâ is available on all podcast platforms.

BLUE DiplomaSEA
- a serious game about high seas governance

Charline Guillou
Ocean University Initiative - Université de Bretagne Occidentale

The high seas refer to maritime areas that are not under the authority of any State. They belong to no one, even though more and more actors are asserting their interests in them. They begin 200 nautical miles from the coast and cover 2/3 of the ocean. The deep seabed (soil and subsoil), also known as "the Area", is part of the common heritage of mankind under the United Nations Convention on the Law of the Sea (UNCLOS). For the most part, these areas remain unknown. Since 2018, the UN has been conducting negotiations relative to biodiversity conservation in the high seas (known as BBNJ). From warnings by the scientific community about serious threats posed on biodiversity (IPBES) by climate change and the race for blue growth, emerges the need to quickly agree on a binding agreement for conservation on the high seas. In this context, the Ocean University Initiative of the University of Brest and its partners decided to create a serious game shaped as a role-playing game and named BLUE DiplomaSEA. It aims to support the implementation of the future international treaty on the conservation and sustainable use of biological diversity in the high seas. It addresses the multi-stakeholder and multi-sectoral governance complexity of the

high seas through a systemic approach of ocean sustainability. It is designed both as a training tool for the actors in charge of implementing the BBNJ treaty and as a support tool for raising citizens' awareness to the high seas issues.

Designing and disseminating effective Policy Briefs

Rebecca Lahl
Leibniz Centre for Tropical Marine Research (ZMT)

Policy briefs can be an effective communication tool that make research results more accessible for decision-makers and a larger audience. Policy briefs inform decision-makers on key research results and provide them with specific recommendations for e.g. environmental policies. In this presentation we will introduce policy briefs as communication tool, highlight the importance with its potential to transfer scientific research results to larger audiences and to decision-makers in particular. The presentation will further cover the structure, as well as several crucial principles for design and dissemination. We will compare early drafts written by researchers with the finally edited policy briefs. The Leibniz Centre for Tropical Marine Research (ZMT) publishes the ZMT Policy Brief Series that will be used as a specific example in this presentation.

Breakout 11
Marine science communication by women in Brazil: the Chat with Neptune experience

Carla Elliff
Instituto Oceanográfico - Universidade de São Paulo (IOUSP)

Chat with Neptune is a Brazilian marine science communication platform maintained by seventeen volunteers (from undergrad to university professors) from different institutions located in different regions of the country. We post outreach articles, which are reviewed by our editorial board, categorized into six sections as :

- i) Marine Sciences, where we explain scientific results, curiosities and fun facts;
- ii) Scientist Life, which focuses on who is investigating our oceans;
- iii) Women in Science, dedicated to the specific challenges of being a woman in this field;
- iv) Uncomplicating Neptune, demystifying core-concepts to marine sciences;
- v) Neptune Comics, with comic strips to spark the reader's imagination;
- and vi) Neptuning Around, where we show our other outreach activities.

We started five years ago, and since then we publish new material in Portuguese weekly (and monthly translations into English), mostly with personalized illustrations. This year we launched a Podcast, in a storyteller format about the life experiences of marine scientists, and Youtube videos to reach an even broader audience. Based on our team experience, here we present our lessons learned in science communication:

- i) horizontal governance is important to allow all volunteers to have the same voice, but it is crucial to have a small core team of leaders to keep the team working on the proposed schedule;
- ii) working remotely has allowed greater diversity in our team, so learning about online tools has been essential to keep Chat with Neptune thriving and communication organized;
- iii) diversity also in the social media platforms used has allowed us to expand our audience and increase engagement;
- iv) interactions in scientific and non-scientific events are crucial to be seen and heard, and are a great opportunity for people to get to know our work;
- v) do not stay only within your comfort zone, keep learning and stay up to date.

Running a science blog can be an excellent tool for empowerment in so many ways. Though challenging at times, the team has learned not only how to better communicate our science, but also why science communication must be part of the everyday life of scientists.

Marine Science Communication as a pillar of Ocean Science Diplomacy

Andrei Polejack
World Maritime University
Ministry of Science, Technology and Innovations

The ocean is both perceived as a global commons and a common heritage of humankind, especially when considering the resources in the seabed, ocean floor, and subsoil. Much evidence is available on the Anthropocene risks the ocean is facing and a call for a global integrated approach to ocean management is in place. Scientific evidence and other ways of knowing inform this process, so global ocean management can be negotiated and adopted in light of the best available knowledge. Due to the nature of science, evidence acts in these international negotiations as a reliable source of information, but also as a country's soft power in either promoting national views and interests or in providing safer and less tense grounds for dialogue building. Thus, there is a dynamic interrelation between science and international relations which is embedded in the umbrella term of science diplomacy. Communication is strategic: from science informing policymaking to citizenry engagement, a good communication strategy can set priorities and highly influence the science diplomacy mechanism. The aim of this presentation is to discuss these timely issues, gathering perceptions from the audience on how to improve communication in this regard, especially in light of the upcoming UN Decade of Ocean Science for Sustainable Development.

Disseminating Scientific Infographics via social media for engaging Peoples in Fisheries science

Abuthagir Iburahim S
Central Institute of Fisheries Education

Infographics are graphic visual representations of information, data, or knowledge, intended to present complex information quickly and clearly. They are used for many reasons: They're entertaining, eye-catching, concise, and all the information they contain is easily digested by the reader so they're useful, too. Social media has changed the way we interact with data and other people. An attempt has been made to transfer the information's and facts related to Fisheries and Marine sciences through social media like the Facebook, Instagram, WhatsApp, Twitter, and Blogs to disseminate catchy and scientific information to the public for increasing awareness about the Fisheries science.

Workshops

Click here to view submitted abstracts online

Workshop 1
Marine sci-comms – what's our recipe for success?

Facilitator
Lucy Cox
National Oceanography Centre

A successful dedicated marine science communication conference is evidence that there's a thriving community of marine science communicators in the world, but what does it take to achieve really effective marine science communication? What's our recipe for success?

This interactive workshop will gather information and views from participants, first on the current provision of marine science communication through an online poll, and then on what ingredients make the most effective campaigns, using the online collaborative pin-board 'Padlet' (no registration or download required).

Interactive activities:

1. (10 minutes) Survey of current marine science communication provision using an online polling tool. Participants will be asked a number of quick questions to establish a baseline of marine science communication provision across Europe and wider world.

2. (30 minutes) Interactive online pin-board activity, titled What are the essential ingredients needed to effectively communicate marine science? Through the use of the online pin-board 'Padlet', participants will rate and comment on a number of pre included comms 'ingredients' and be asked to submit ideas for other items to be added. The pinboard can be embedded into the CommOCEAN website and accessed, and added to, by all participants (whether attending the workshop or not), until a designated time.

Outputs: (1) current position analysis (2) recipe infographic and report

Workshop 2
How to connect marine science to society using the European Atlas of the Seas

Facilitator
Andree-Anne Marsan
EMODnet Secretariat

The European Atlas of the Seas is now available in the 24 official languages of the EU. Citizens from all around Europe now have access to stunning marine maps and interactive oceanic information in their own language, making the Atlas an even more accessible and useful ocean literacy tool. With an enriched catalogue of more than 285 interactive map layers and the possibility to create custom maps that can be printed, shared and embedded in articles or presentations, the European Atlas of the Seas is an easy and attractive way to connect people to our blue planet. With this interactive workshop, participants will learn and explore, with concrete examples, how a tool like the European Atlas of the Seas could be used to better communicate about the ocean and its challenges. Divided in breakout groups, participants will develop storytelling in three different topics - climate change, marine litter and sustainable fishing – using the Atlas of the Seas map layers and marine information. The structure of the workshop will be the following:

- 10-minute presentation by workshop lead.
- 30-minute for breakout groups where participants will think of questions they would like to have answers to (e.g. What kind of litter ends up on European beaches?) and will explore how the European Atlas of the Seas can help answering them.
- 20 minutes wrap-up with the participants

After the workshop, participants will be able to use the ideas they have generated to better communicate and raise awareness about our blue planet at work, in classrooms and even at home. The European Atlas of the Seas is the official digital mapping tool of the European Commission's Directorate General for Maritime Affairs and Fisheries dedicated to ocean literacy.

Workshop 3
Speaking to Mermaids and Pirates! Engaging with future marine experts

Facilitator
Nicola Bridge
European Marine Science Educators Association (EMSEA), the Ocean Conservation Trust and children from Connect MAT

Meet primary school children from the UK's Connect Multi Academy Trust. They will help you to discover what children want to know about the Ocean and the best ways to communicate with them for maximum impact

The session will run as follows:

- 10 mins – The EMSEA team will introduce you to the current picture of schools and ocean education as well so some background info to the EU4Ocean Blue School project
- 15 mins – The children will explain what they find interesting about the ocean, what they find fun about learning about the ocean, what they think are the best ways for marine scientists to talk to children, what are bad ways for scientists to talk to children
- 20 mins – participants/scientists can then tell the children about their current marine science projects and get their feedback
- 15 mins – Wrap up with top tips for working with schools across Europe

This session has no participant limit. If you would like the children to review your project, please send details e.g. any education resources, website etc to nicola.bridge@oceanconservationtrust.org so that they can take a look beforehand. On the day, if you would like to present something to the children, please keep this to 2 minutes with just one slide/picture or other engagement tool (no PowerPoint!)

Workshop 4
Inclusive communication – How Ocean Literacy can be accessible to all

Facilitator
Dina Eparkhina
European Global Ocean Observing System

The EuroGOOS Ocean Literacy Network has been established to upscale the national efforts of the EuroGOOS community and contribute to broader Ocean Literacy efforts globally. Bringing together experts from 20 organizations in 8 countries and 3 organizations with pan-European or global remit, the group is facilitated by the EuroGOOS Office and works to:

- Provide visibility and recognition of the members' Ocean Literacy efforts at pan-European and global levels;
- Allow re-using, re-purposing, adapting or translating each other's materials;
- Join efforts in collaborative projects or initiatives and help foster international partnerships;
- Contribute to the European role in international Ocean Literacy in link with the developments of the UN Decade of Ocean Science for Sustainable Development.

The EuroGOOS Ocean Literacy Network has started to undertake what is thought to be the most comprehensive survey of Ocean Literacy activities across European oceanographic organizations; and in doing so identified a potential gap in activities which are accessible to all.

In this interactive session, participants heard from experts in accessible communication about the skills and techniques needed to ensure as many people as possible can access and understand the messages we want to convey. The workshop featured a keynote from Valeria Bottalico, accessibility expert from TBA21-Academy's Ocean Space, and case studies from EuroGOOS Ocean Literacy Network experts Paola Agostini of the Euro-Mediterranean Center on Climate Change (CMCC) and Angela Pomaro of the Italian Research Council (CNR). The group then discussed the skills and techniques needed to ensure as many people as possible can access, understand, and engage in Ocean Literacy.

As summarized by the workshop chair Dina Eparkhina, Ocean Literacy does not only highlight the importance of knowledge and understanding. It also brings into focus the importance of values, gratitude (to the ocean and those working with it), connectiveness, inclusivity and accessibility. "Nothing about us without us" is a critical guiding principle for achieving a true sustainability and Ocean Literacy is a key enabler of co-design and inclusiveness in the implementation of the UN Decade of Ocean Science for Sustainable Development.

Workshop 5
Communicating Ocean Science for Impact (IPSO and OneOcean)

Facilitator
Natalie Hart

How can we communicate ocean science effectively and why is this important? The International Programme on the State of the Ocean and the Packard Foundation funded OneOcean will together run a one-hour workshop on how to communicate ocean research to influence real life planetary protection. The workshop will include:

- Why does communication matter? An introduction on why clear, accessible communication of science is vital to the protection of the ocean.
- An introduction to the new IPSO paper (due to be launched Nov 20) entitled 'Ocean Matters: Evolving the Narrative for a Rapidly Changing Ocean', authored by twelve prominent marine scientists, on an integrated and impactful approach to communicating the ocean.
- A 'Comms 101' with practical guidance on when scientists should start thinking about the communications plan for their research, development a communication plan, the use of social media, making communications accurate and compelling, how to work with non-governmental organisations, considerations when pitching to the media.
- Contributions and case studies from scientists who have put out well-communicated papers, with explanations on how they went about this and the impact that was achieved.

At the end of the workshop, participants will be armed with information to show them that science communication is not a dark art, but a practical tool they can wield to ensure that their research plays an active and influential role in protecting our planet's life support system. Note: This workshop compliments 'Communicating the Value of the Ocean in the New Normal'

Workshop 6
Going digital: using virtual tools to foster marine citizenship

Facilitator
Sara Mynott
University of Victoria, School of Environmental Studies

Chris Leakey
Marine Alliance for Science and Technology for Scotland (MASTS)

Emma McKinley
Cardiff University

Digital tools offer a gateway to the ocean – from the vibrant sea surface to the enrapturing wonders of the deep. In a time where access to the ocean is even more limited, with restrictions on travel and time outdoors, the importance of virtual technologies have never been greater. This workshop will stimulate discussions on how diverse digital tools can connect people to these hard-to-reach places, educating, inspiring and motivating marine stewardship. From visual storytelling and immersive audio, to interactive games and citizen science, we will explore how different tools can be developed and used to engage communities with the marine environment and, ultimately, facilitate positive change for the ocean. Drawing on the experience of facilitators and the collective knowledge of all present, we will examine examples of where digital methods have been used to greatest effect, as well as opportunities for improvement. We will explore ways to anticipate, navigate and overcome digital engagement challenges, highlighting key lessons to take forward – and pitfalls to avoid – when using digital approaches to foster marine citizenship. Attendees will leave with insights to diverse digital engagement tools and an understanding of how to use these to best effect. After a brief opening talk, attendees will participate in a carousel of facilitated group discussions around targeted themes. During the workshop there will be opportunities to join whole-group question and answer sessions, and dynamic polling. Attendees will be asked to come prepared with examples they have been involved in or had experience of to contribute to discussions. Outcomes from the session will be synthesised and shared as a lasting, openly available resource. This workshop will be delivered in partnership with the Marine Social Science Network and the People Ocean Planet behavioural change initiative, providing legacy through further development, application and promotion of workshop outcomes.

Workshop 7
5 Social Media Strategies to Generate Global Reach on Marine Communications

Facilitator
Joanne Sweeney
Public Sector Marketing Institute

In this practical workshop, participants will be taught how to introduce proven winning strategies into social media communications. Each strategy will have a marine communications example covering Facebook, Twitter, Instagram, Livestreaming and LinkedIn. Joanne Sweeney is a two-time author and CEO of the Public Sector Marketing Institute. Specialising in digital communications for government and public sector agencies, Joanne's books are used by police forces, universities local and national governments, EU institutions and a range of public sector bodies across the world to instruct them how to communicate in the Digital Age. Her latest book Public Sector Marketing Pro was named in the best new PR Books of 2020 by Book Authority and was a finalist in the 2002 British Book Awards for Best International Business Book. Joanne has also developed her own suite of online certified training programmes. Joanne is a trainer and consultant and works directly with government agencies across the world. Joanne is also a podcaster and vlogger and host of the Public Sector Marketing Show.

Online Exhibition - Show and Tell

Click here to view online pinboard - click here to listen to oral presentations

The REV Ocean Communication Platform

Lawrence Hislop
REV Ocean

This 'show and tell' will highlight the state-of-the-art communications capabilities and opportunities being planned for the new REV Ocean research vessel. The vessel has been designed as a global floating research and communications platform available to take onboard scientists, educators, innovators, artists and anyone else who can help achieve the REV organisation's mission of finding ocean solutions. The 183-meter vessel is currently under construction in Norway and will be ready to sail on its first missions in 2022. Some of the exciting communications equipment onboard includes:

- Conference centre with large and small meeting rooms
- Multi-purpose exhibition rooms and education centre
- 36 seat auditorium for lectures with Dolby atmos sound system
- Media editing suites for videography, documentaries and related film production.

The vessel is also equipped with submersibles fitted with sensors, broadcast-quality cameras, and live streaming capabilities to capture never before seen deep-sea ecosystems and showcase them to the world in real-time. This includes:

- The Triton 7500/3 which is the world's deepest diving acrylic hulled submersible and capable of taking 3-passenger on-board.
- REV Ocean's 6000-meter depth rated remotely operated vehicle (ROV) made by Kystdesign.

REV Ocean will have open calls for proposals and make all of these facilities available for researchers, innovators and filmmakers around the world.

The voices of the Youth for our Ocean

Natalie Prinz, Olivia Garcia presenters
Eloïse Faure, Olivia Garcia, Natalie Prinz, Nil Rodes video authors
Youth 4 Ocean

The European Ocean Coalition (EU4Ocean) connects diverse organisations, projects and people contributing to ocean literacy and the sustainable management of the ocean. Supported by the European Commission, this bottom-up inclusive initiative aims at uniting the voices of Europeans to make the ocean a concern of everyone!

The EU4Ocean coalition combines EU-wide activities with actions dedicated to the Arctic Ocean,

the Atlantic Ocean (including the North Sea), the Baltic Sea, the Black Sea, the Mediterranean Sea and the global ocean. It is made up of three components: a Platform for organisations and individuals engaged in Ocean Literacy initiatives, the Youth4Ocean Forum, and a Network of European Blue Schools.

The video is introducing the Youth4Ocean Forum, and the call for project submission to become a Young Ocean Advocate. As EU Young Ocean Advocates, members will have the chance to showcase their project, participate and pitch their ideas in European events, connect with mentors, network with leading European experts, participate in working groups along with stakeholders and decision-makers to address ocean challenges, and benefit from leadership resources to make a positive change.

What's the story, Instagram glory?

Mercedes Fernández , Rosa Chapela , Mariola Norte and José L. Santiago
Fisheries Socioeconomic Department, Centro Tecnológico del Mar-Fundación (CETMAR)

Mariola Norte
University of Vigo

As Twitter did years ago, Instagram is conquering the social media universe with photos and videos. But how can a researcher take his research to Instagram?

Well, Instagram very dynamic and particular format: Instagram stories. These stories are supported by the channel and get more visibility and interactions than the standard publications. Stories are designed to be an informal format, a place to upload the latest and not so polished content.

For an ocean researcher, that could be content related to:

- Learning and teaching
- Field work
- Mentions
- Discoveries and failures
- Lab and desk work

But Instagram challenges us. Stories only last for 24 hours and links, the door to take your community to your web, are only available if you have more than 10,000 followers or a verified account. Some tricks, as the highlights and stickers will allow us to tacked these challenges.

We plan our stories as a screenshot containing a image or video, text and a call to action, or a door to motivate the viewer to do something. In AquaVitae project, we have perceived that Instagram opens the access to an audience that is usually far from the research realm: young and global (US, India and Brazil are the three countries with the greatest reach).

Be an actor of this story! Spread the word on the ocean in Instagram!

The use of public art to raise awareness about ocean plastic pollution

José Teixeira, Ricardo Nicolau de Almeida
CIIMAR | Interdisciplinary Centre of Marine and Environmental Research of University of Porto, Terminal de Cruzeiros do Porto de Leixões, Avenida General Norton de Matos, S/N, 4450-208 Matosinhos, Portugal

Every day we hear new worrying news about million tons of plastic reaching the ocean: whales hitting the shore with dozens of pounds of plastic in their stomachs, plastic discovered in large quantities in the ocean floor, microplastic found in sea salt or in seafood, millions of marine animals killed due to the ingestion of plastic.

Ocean Action is an awarded Portuguese Campaign to address and raise awareness of school community and general public about the problem of plastic waste in the ocean. It includes more conventional activities, such as beach cleanings, hands-on science activities and lectures, educational videos, together with different artistic and multimedia tools and views, such as theatre, sculpture and video.

During 2020 the Campaign organized a new sculpture exhibition Marine Monsters that portrays this admirable new normal in which plastic has become an integral part of aquatic ecosystems, almost as a new invasive and predatory species. From plastics picked up on our beaches, the artist Ricardo Nicolau de Almeida recreates a seabed composed of great imaginary and frightening creatures, builds an army of human figures and masks that make up the "idiot's room", and compiles countless of small installations and pieces of an almost museological nature, which use the individual history and the collecting nature of each of the plastic objects, color and shape games, and the repetition and overwhelming amount of different products of daily use, alert us to a problem of alarming dimensions.

These sea monsters, human masks and installations communicate with visitors through the sensations and emotions they leave on the public, and thus encourage critical reflection on our contribution to the problem of marine litter and the need to adopt environmentally responsible behaviors.

More info about the exhibition: https://www.youtube.com/watch?v=RUI9ZCOFLA0&t=39s
More info about the Campaign: https://oceanaction.pt/

Join the Ocean Literacy movement and reach out to young people

Carolyn Scheurle
Institut de la Mer de Villefranche, Sorbonne Université

Within the context of the United Nations "Decade of Ocean Science for Sustainable Development"

(2021-2030), science communication will undeniably be a resourceful tool to support the ambitious goals. Together with science outreach, it will add its values to key societal outcomes including the new pillar ("An engaging and inspiring Ocean") specifically dedicated to ocean literacy. In order to foster an ocean-literate generation, specific approaches will be developed and needed, and original ways will be explored. These will take into consideration challenging aspects such as local vs. global or in-person vs. digital, and benefit from the multidisciplinary and fascinating research in ocean sciences. Together with Frontiers for Young Minds, we (marine scientists and outreach experts) will present "The Ocean" Collection for kids and teens. As part of the online journal, this collection gathers articles written by scientists and reviewed by a board of kids and teens. Thus, the collection and associated actions (e.g. scientific mentoring of young people and accompanying them during the review process) represent an example of a novel approach at the interface of ocean outreach and communication. In our presentation, we will show and share first outcomes and impressions as well as discuss and exchange on its potential for future development. We will also indicate various ways to get involved (e.g. as scientist and/or grand-/parent) and thus engage in the ocean literacy movement.

Argo floats in your pocket : a smartphone app to discover and explore the Argo network.

Kevin Balem
Laboratory for Ocean Physics and Satellite remote sensing

Argo is an international program that collects data from inside the ocean using a fleet of robotic instruments that drift with the ocean currents and move up and down to measure physical and biochemical parameters. Communicating about the argo initiative to the general public is more and more present in the projects and having the right tools and supports to do so is important. With that in mind, we, at Argo France, developped a smartphone application that present the argo project and that allows the users to explore the data (Temperature, Salinity and more) from the global Argo network. This app is a simple but efficient outreach tool that will facilitate the discussion, especially with a young audience.

Gambierdiscus, a dangerous traveler from tropical waters

Greta Gaiani
IRTA, Sant Carles de la Ràpita

Oceans and their resources have sustained nations for millennia, with seafood being a strong part of cultural identity and tradition. However, marine waters also contain organisms that are able to produce toxins, which can accumulate in shellfish, fish and other seafood. This is the case

of Gambierdiscus, a genus of microalgae original of tropical waters, which ability to produce ciguatoxins (CTXs) has been known for years. CTXs are lipophilic compounds that bioaccumulate in fish flesh and through the food webs, and are responsible of an intoxication known as ciguatera fish poisoning (CFP). CFP results in gastro-intestinal, cardio-vascular and neurological diseases that can last weeks, months or even years. It affects between 50,000 and 500,000 people annually, and for this reason, is considered the most commonly reported marine toxin-related illness worldwide. Nonetheless, the real incidence of CFP is unknown due to misreporting, misdiagnosis and lack of awareness, especially among the medical community. Our work is focused on the development of biotechnological tools that can contribute to identify both the toxins in fish flesh and the microalgal producer, giving fast and reliable response. Since in the past years Gambierdiscus presence has been detected outside of its endemic area, another objective of our work is the development of methods that would detect Gambierdiscus DNA directly in water, to better predict the occurrence of CFP and protect human health. The devices developed in our works are easy to use, cheap, and reliable, and they could be integrated in monitoring programs. Acknowledgments: The research has received funding from the Ministerio de Ciencia, Innovación y Universidades through the CIGUASENSING (BIO2017-87946-C2-2-R) project. The authors acknowledge support from CERCA Programme/ Generalitat de Catalunya. G. Gaiani acknowledges IRTA-Universitat Rovira i Virgili-Banco Santander for her PhD grant (2018PMF-PIPF-19).

I live by the Sea Photo and Film Contest

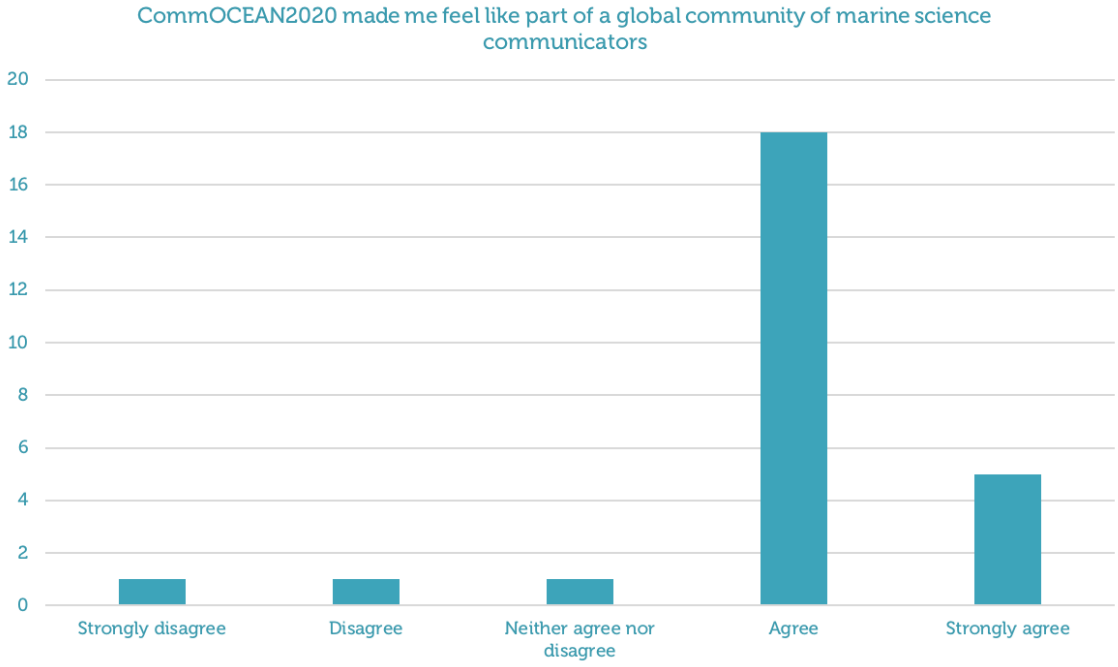
Izabela Kotynska-Zielinska
Today We Have

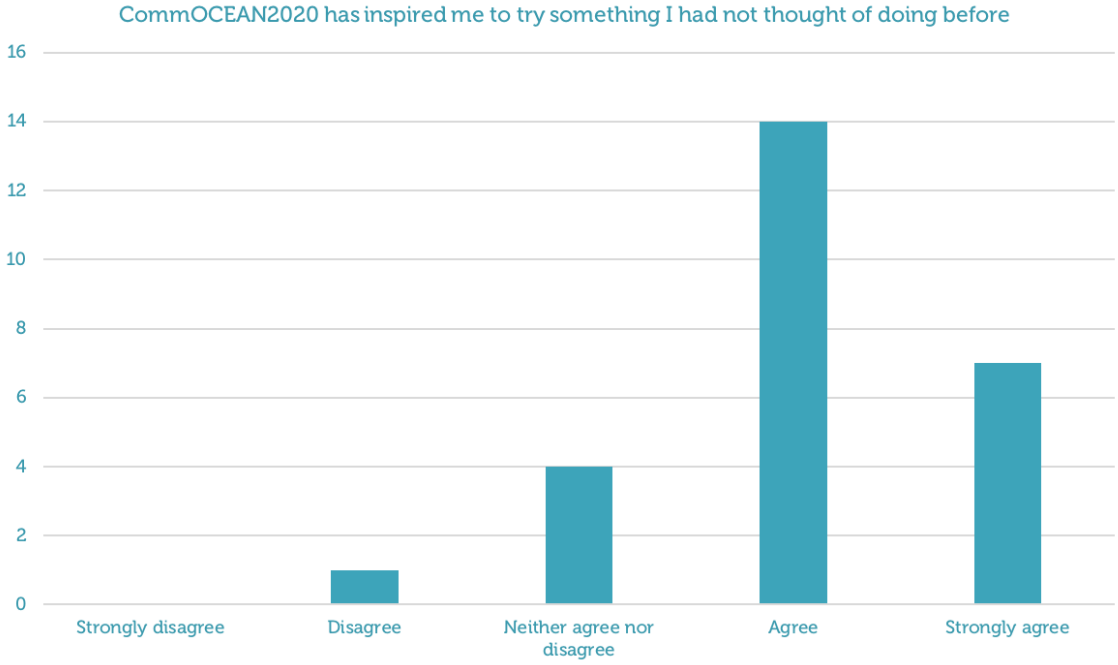
The philosophy behind the I live by the Sea Contest, which is run by Today We Have, in co-operation with a number of institutions is to create a platform which enables exchange of information for all people interested in the ocean. The Contest is an official partner of the UN Decade of Ocean Science for Sustainable Development, and so, we strive to create an international society, whose members believe in the need to achieve the UN Sustainable Development Goals, with special emphasis on marine issues. We facilitate the exchange of experiences of young people from various parts of the world and so, we hope that our contest unites international youth who mutually learn about various aspects of marine environments, from social to natural issues. We state that we all live by the sea. No matter how far from the sea you live, next to the beach or far away in the mountains, we still have a great impact on it. And it is up to us whether we create a positive relationship with the sea or have adverse impact on it. We believe that educating people about the importance and the beauty of marine environments is the key to creating positive attitudes towards the sea. Our first edition was closed with an exhibition, alongside many others, during the UN Ocean conference in New York in 2017 which was a great experience for us. Following, we had fantastic exhibitions in Brussels 2018 and Lisbon 2019. As a result, our exhibition gained the rank of one of the major events for this year's UN Ocean Conference, which was supposed to be held in June in Lisbon 2020.

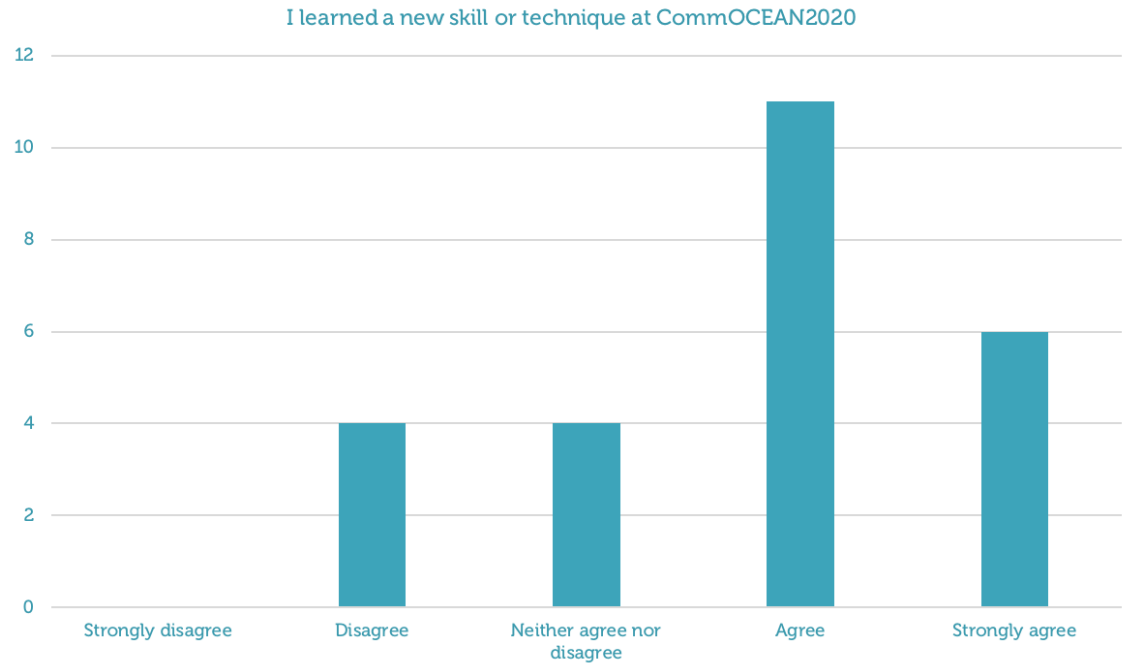
Feedback

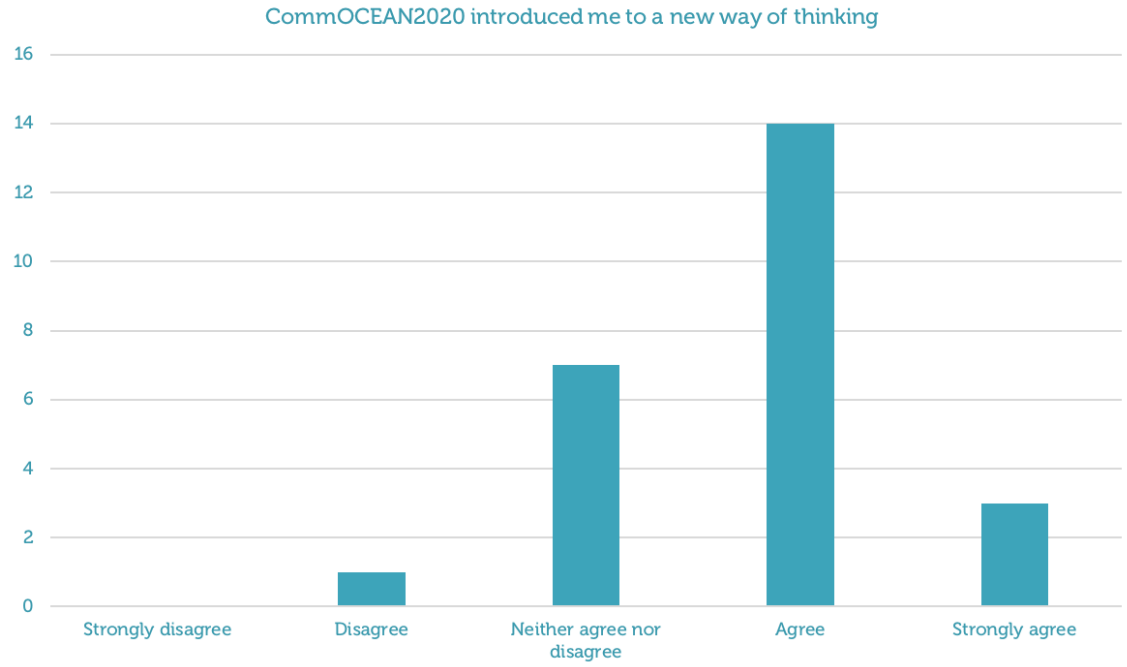
A link to an online feedback questionnaire was circulated at the end of the conferences, the responses were as follows.

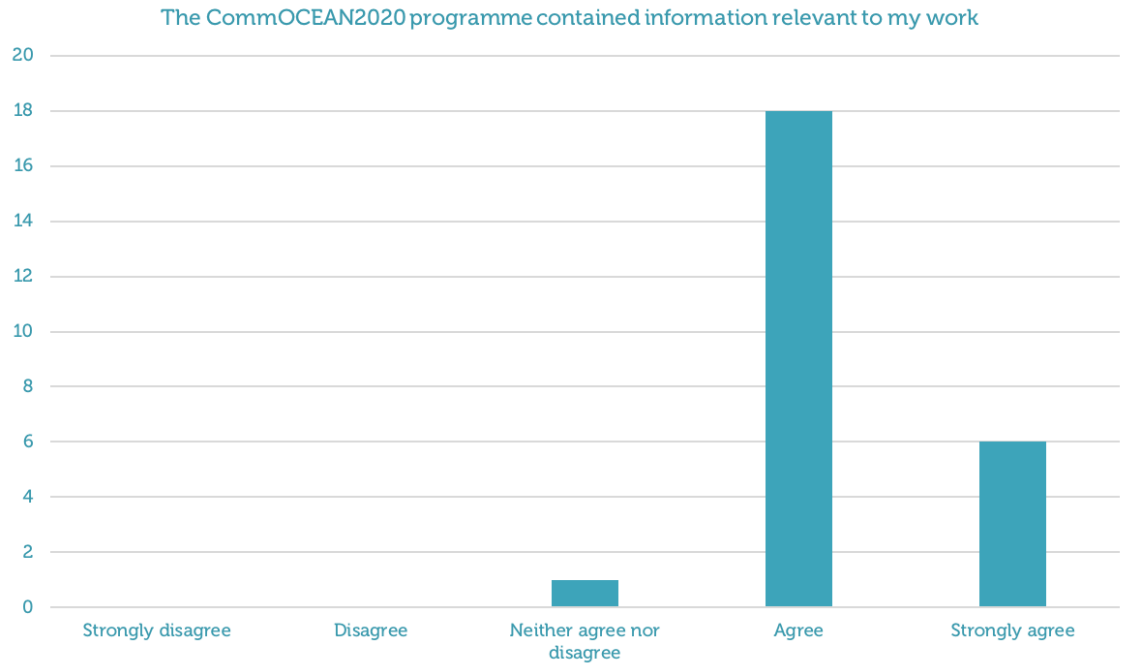
Feedback from 28 respondents

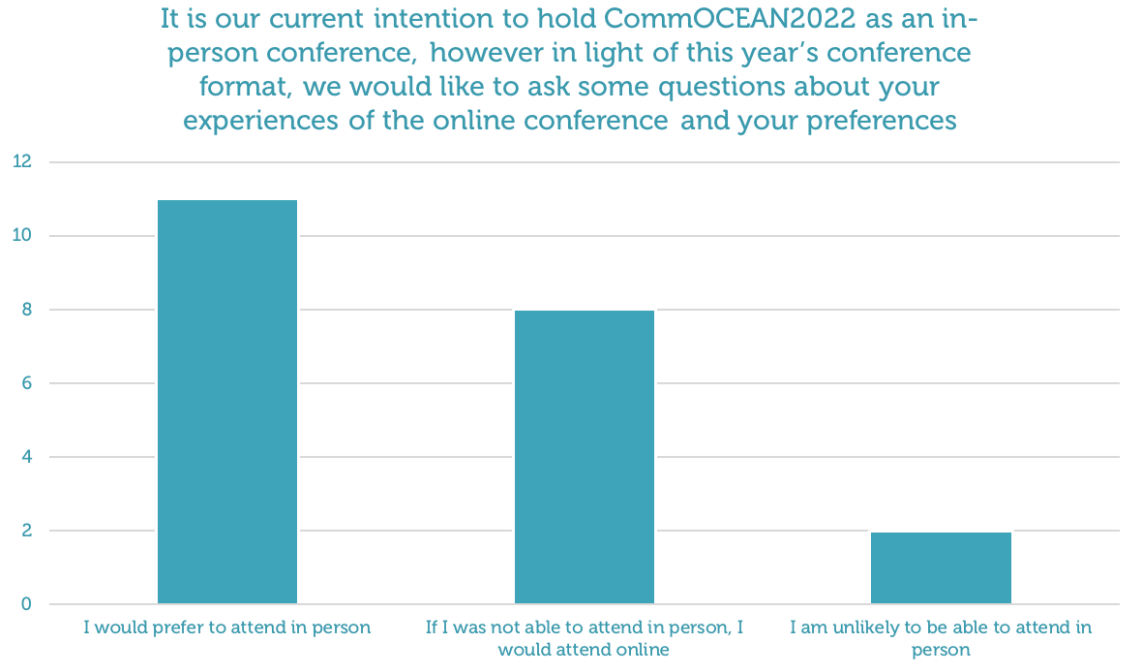





I learned a new skill or technique at CommOCEAN2020
12
10
8
6
4
2
0
Strongly disagree
Disagree
Neither agree nor disagree
Agree
Strongly agree


CommOCEAN2020 introduced me to a new way of thinking
16
14
12
10
8
6
4
2
0
Strongly disagree
Disagree
Neither agree nor disagree
Agree
Strongly agree


The CommOCEAN2020 programme contained information relevant to my work
20
18
16
14
12
10
8
6
4
2
0
Strongly disagree
Disagree
Neither agree nor disagree
Agree
Strongly agree


It is our current intention to hold CommOCEAN2022 as an in-person conference, however in light of this year's conference format, we would like to ask some questions about your experiences of the online conference and your preferences
12
10
8
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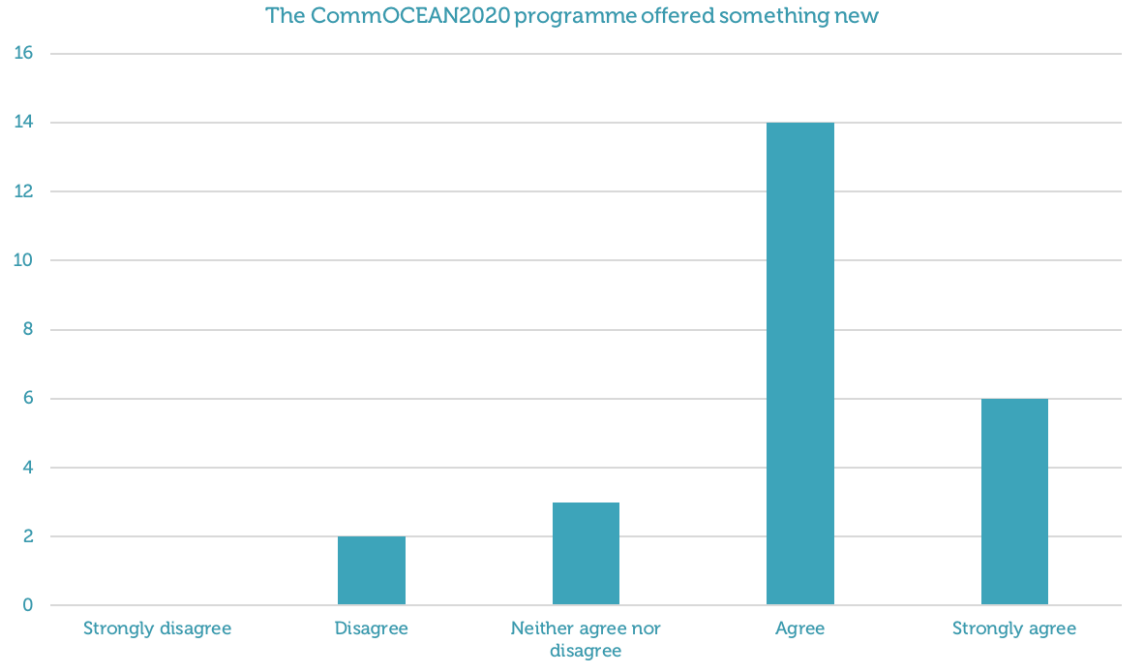
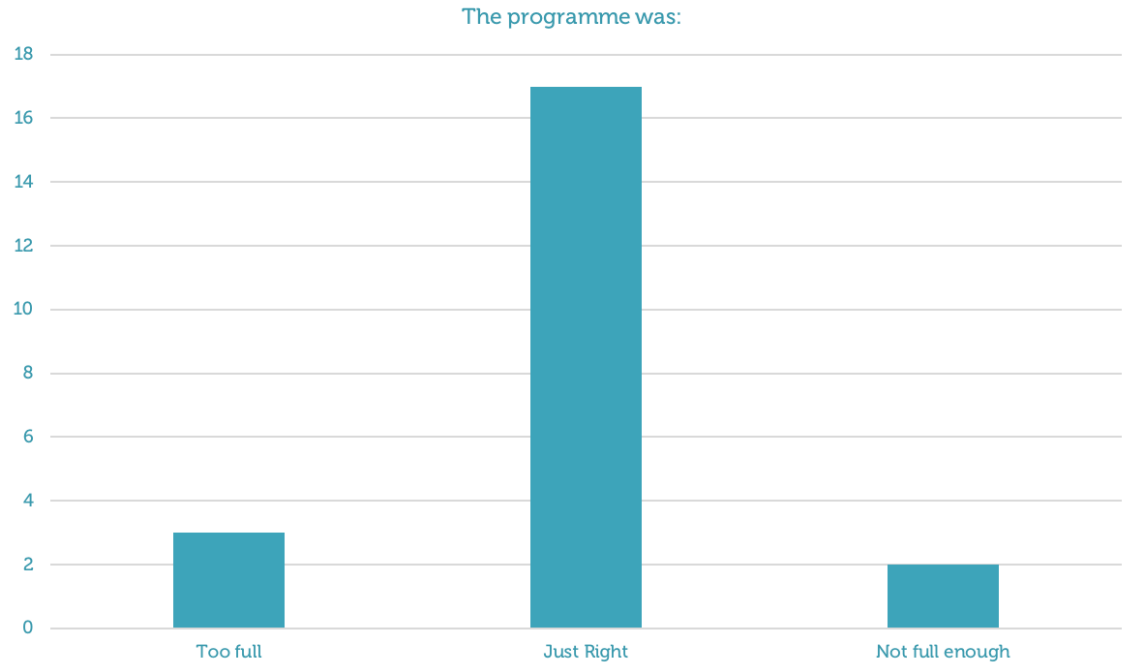
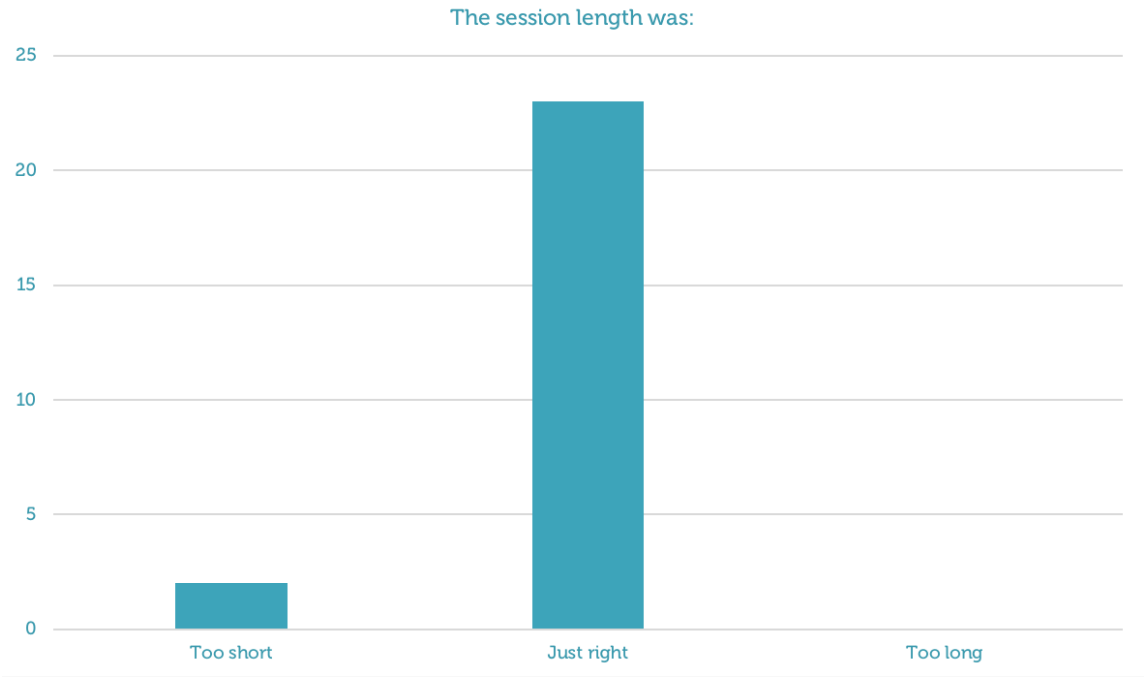
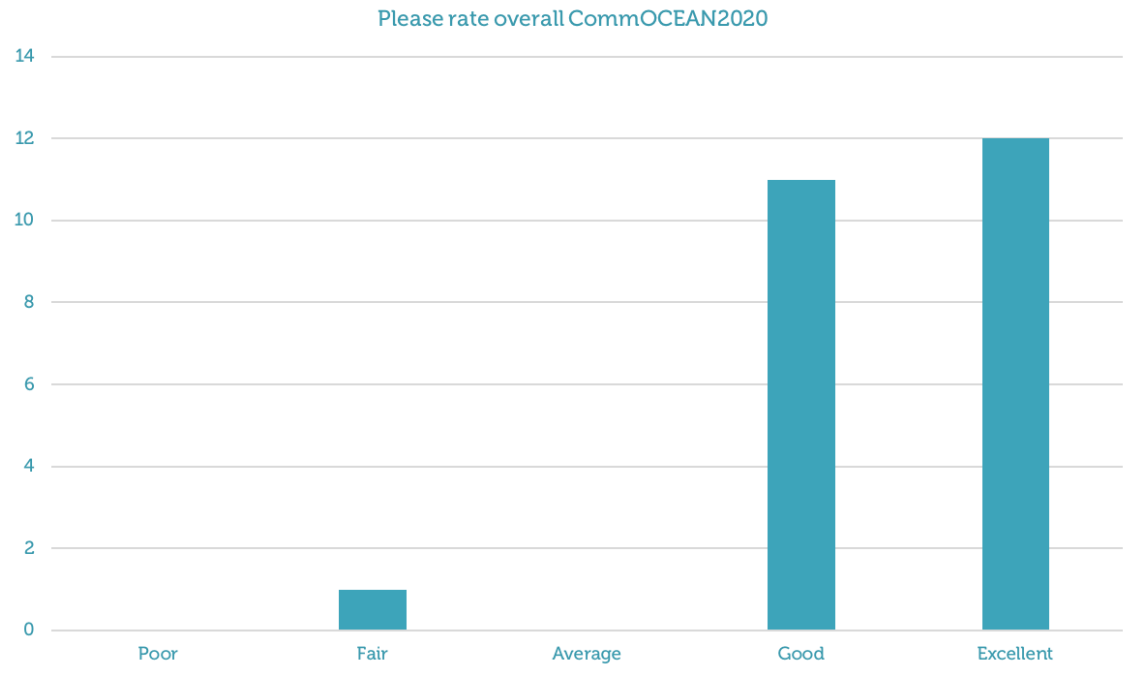
4
2
0
I would prefer to attend in person
If I was not able to attend in person, I would attend online
I am unlikely to be able to attend in person


The CommOCEAN2020 programme offered something new
16
14
12
10
8
6
4
2
0
Strongly disagree
Disagree
Neither agree nor disagree
Agree
Strongly agree


The programme was:
18
16
14
12
10
8
6
4
2
0
Too full
Just Right
Not full enough


The session length was:
25
20
15
10
5
0
Too short
Just right
Too long


Please rate overall CommOCEAN2020
14
12
10
8
6
4
2
0
Poor
Fair
Average
Good
Excellent

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