Observing Together: Meeting Stakeholder Needs and Making Every Observation Count

Registration of Ocean Decade Actions by United Nations Entities

*** 1. Lead Institution**
The Global Ocean Observing System (GOOS) through lead sponsor IOC/UNESCO

*** 2. Lead institution physical address**

GOOS Office, IOC/UNESCO, 7 place de Fontenoy, 75007 Paris, France

*** 3. Contact person (Principal contact for Decade Action)**
Albert Fischer / Emma Heslop

*** 4. Contact details (email)**
Paris, France
observing_together@goosocean.org

* 5. Contact person (Communications contact for Decade Action)
See above

* 6. Contact details (email)
See above

7. **Partner details** if relevant (for each partner please list Institution name, contact details including address & email and role of partner) [Need to reformat into text]

Founding Partners

GOOS Steering Committee
https://www.goosocean.org/
Dr. Anya Waite, Co-Chair
Scientific Director
Dalhousie University
Canada
Anya.Waite@dal.ca

IOCCP
http://www.ioccp.org/
Dr. Kim Currie
co-Chair IOCCP
NIWA, Private Bag 56, Dunedin, New Zealand
kim.currie@niwa.co.nz

The Pacific Community (SPC)
http://spc.int
Molly Powers-Tora
Team Leader, Ocean Intelligence
Private Mail Bag, Suva, Fiji
mollyp@spc.int

Seychelles Dept of Blue Economy, Seychelles Fishing Authority, Seychelles Meteorological Office
Francis Marsac
Senior Research Officer
Institut de Recherche pour le Développement (IRD)
Seychelles
francis.marsac@ird.fr

National Oceanographic and Atmospheric Administration (NOAA)
https://www.noaa.gov/
Craig McLean
Assistant Administrator for Oceanic and Atmospheric Research
NOAA, Silver Spring, MD, USA
craig.mclean@noaa.gov

Agency for Meteorology Climatology and Geophysics (BMKG)
https://www.bmkg.go.id/
Dr. Dwikorita Karnawati
Indonesia
dwiko@bmkg.go.id

Servício de Hídrografia Naval
http://www.hidro.gov.ar/
Alvaro Scardilli
Head Department
Argentina
asscardilli@hidro.gov.ar

Key identified partners

GOOS-IODE Ocean Best Practice System
Co-Chair Jay Pearlman
IEEE France, Four Bridges
USA

CoastPredict (proposed Decade programme)
Co-Chair Joaquín Tintoré
SOCIB
Spain

IODE OceanTeacher Global Academy
Gregory Reed
Program Manager
IODE Office, Belgium
g.reed@unesco.org

Marine Life 2030: A Global Integrated Marine Biodiversity Information Management and Forecasting System for Sustainable Development and Conservation (proposed Decade programme)
Emmett Duffy
Smithsonian Institution
DuffyE@si.edu

*** 8. Please select if the Decade Action is a**

A Decade Programme

*** 9. Name of the Ocean Decade Action**

Observing Together: Meeting Stakeholder Needs and Making Every Observation Count

10. Short title / acronym of the Decade Action for communications purposes (if any):

Observing Together

* 11. **Summary description** of the Decade Action *(50 words or less to be used on website and in communications – please use lay terms that can be understood by a wide audience)*

We aim to transform ocean data access and availability by connecting ocean observers and the communities they serve, through enhanced support to both new and existing community-scale projects. Globally, many communities are unable to access ocean data in decision-ready formats and so cannot see the value of investment in ocean observations. Co-design will broaden equitable access to and relevant application of ocean knowledge by a myriad of stakeholders. We will leverage the Global Ocean Observing System's network of expertise to bring needed observations and forecasts to community users and into global data streams, making every observation count.

* 12. Start & end date of proposed Decade Action

Start Date: 1 March 2021
End Date: 31 December 2030

* 13. **Estimated total budget** of proposed Decade Action *[form only allows one line of text]*

$5M for 10 years for programme support, project seed funding of $10M, and a total for project implementation of $375M

[An estimated total budget would include the total cost of all potential project that could, in a decade, be a part of this proposal and is therefore subject to large uncertainty. An order of magnitude estimate for a successful and a reasonable project can be offered as scale. However it is anticipated that this programme will support and make more efficient scattered investments across many nations especially nations with less developed observing system capability or connections, and provide a seed funding mechanism to support the development of projects.

Support - 450 k€ / yr
Seed Fund - 1 million a year (10 projects)
Actual - 10 million (10 projects per year that keep running, cumulative, but less to keep running 500K)
v basic estimate - probably cost goes down to run and/or more done for the money,

Year	Description	Staff Budget (€)	Activity budget (€)
2021	full-time project officer (9 Person Months) part-time fundraiser (6 PM) consultant for comms (3 PM)	180 k€	target consistent with activities proposed
2022	full-time project officer (12 PM) part-time project officer (6 PM) full-time fundraiser (12 PM) consultant for comms (6 PM)	360 k€	
2023+	2 full-time project officers full-time fundraiser consultant for comms (6 PM)	420 k€	

The budget includes salary for a fundraiser. The role of this position is to raise funds for participating Projects, the activity budget will be dependent on the level of support required by the Projects. The fundraiser will also create a seed fund for Projects]

Indicative Early Activities	**Timeframe**	**Implementation Lead**
Recruitment of project officer, fundraiser, comms consultant, other key roles	Q2 2021	GOOS SC/ IOC Secretariat

Development of outreach materials (infographics, infosheets, PPT decks) to explain Programme and attract additional project partners/donors	Q1-2 2021	
Establish advisory board/ steering committee, develop and approve TOR and 2-year workplan	Q2-3 2021	Project officer with GOOS SC
Identify decade Projects to support through this Program (initially those that have submitted Decade Proposals, going forward this will include targeted outreach and application submissions)	Q2 2021 and ongoing	IOC Secretariat
Organise fundraiser for participating projects, depending on level of support required	Q3 2022	Fundraising officer with GOOS SC
Engage with Ocean Best Practices and highlight global brightspots in application of ocean observation for stakeholder communities (e.g. through Ocean Best Practices Newsletter, Ocean Info Hub)		
Host quarterly webinar series on best practices in connecting to and working with user communities to enhance ocean observations and their applications for sustainable development		
Connect with OceanTeacher Global Academy- promote and engage with their Ocean Literacy for the UN Decade course		

* 14. Countries in which the proposed Decade Programme will be implemented

All interested countries with a coastline. The Programme is global in scope, and will be implemented by Projects working with specific communities. These communities may be geographical (eg residential, national, regional), ethnic (eg indigenous communities) or based on a common interest (eg business communities, civil society organisations, communities of practice).

* 15. Ocean basins in which the proposed Decade Programme will be implemented

All ocean basins.

*** 16. What is the high-level objective(s) of your proposed Decade Programme?**

1. Equitable and practical access to ocean observations enabled by engagement and co-design with local observation and stakeholder communities.

2. A truly Global Ocean Observing System that makes a greater number of global and local observations available, integrated, interoperable and comparable.

3. Strengthened connections, mutual understanding, and improved knowledge sharing between ocean observers and the stakeholder communities they serve, at the global and local scale.

4. Increased evidence that ocean observations are applied to solve problems and inform decision-making at community, national, regional, and global levels.

5. Efficient design and use of ocean observations to maximise return on investment.

*** 17. Description of the Decade Action *(600 words or less)***
(653 words)

Observations of the global ocean provide knowledge and enable prediction of our marine environments as they are changing and impacting many aspects of marine health, of the economy and of human well-being. Equitable access to, and application of this knowledge requires

contribution, co-design, and use by myriad stakeholders and communities. Globally, many communities are unable to access ocean data in decision-ready formats and so cannot see the value of investment in ocean observations. This Programme will better connect, through a series of practical Projects, ocean observers and the communities they serve. It aims to leverage the Global Ocean Observing System (GOOS) network of expertise and support in bringing needed observations to community users and into global data streams, as well as leveraging global observations and forecasts for community use.

Many observing efforts exist which meet specific needs but are not part of the global system, and therefore do not contribute to the wide range of end-user products that a fully integrated observing system can support. In addition, it is anticipated that many observing activities that will be implemented during the UN Decade of Ocean Science for Sustainable Development will focus on specific outputs and will not necessarily contribute to the wider observing community.

This multi-year Programme will provide a platform for connecting inter-disciplinary Projects under the UN Decade which seek a deeper understanding of regional ocean issues, and will build partnerships across the value chain - from observing networks through data and forecasting systems, scientific analysis and assessments, to service providers and users. The Programme will assist ocean observers to work within the GOOS Framework for Ocean Observing (FOO) and enable the observations to be integrated into end-products designed to meet specific stakeholder needs. GOOS expertise, resources, partnerships, and networks will be applied to deepen engagement throughout the ocean data ecosystem to advance the application and impact of observations, and to demonstrate benefits and increase the return on investment. By assisting such efforts to enhance their practices and contribute to the GOOS, there will be considerable added value to the Projects, the Ocean Decade and to the global stakeholder community.

There is an opportunity to use global observations, data and model products, integrated with local observations as well as local and indigenous knowledge to strengthen forecasts, localise information and enhance decision-making. Delivery of forecasts, services and scientific assessments will be improved by facilitating and strengthening partnerships, via associated Projects. Local uptake of services and products will be boosted by strengthening knowledge through capacity building and information exchange. Learning from successful projects will enable efficient spreading of best practice through new and established channels. This will help local communities create the best possible value from observations, as well as providing feedback to GOOS on the data that are having the highest impact in stakeholder communities.

There is also value added to the observers in adopting GOOS best practices in terms of data quality and operational efficiency, these include using internationally recognised standard operating procedures, co-locating observations, applying FAIR data principles and being part of the wider observing network community for support.

The Programme will provide an umbrella service for a diverse range of Projects, leveraging and applying GOOS expertise, to yield maximum value for the individual observing efforts. Brokering collaborations and partnerships will encourage efficient delivery of observing data for incorporation into forecasts, services and scientific assessments. Initially working on a collection of diverse projects (regions, communities), this Programme will scale the learning into other areas and seek to develop sponsors for a seed fund for new and scaled project initiatives under this umbrella.

The initial Projects identified target community needs and regions, including but not limited to: informing fishing communities in Indonesia on how ocean observing empowers them, observing system training to adapt and apply climate change projections to sector users in the Pacific Islands, the development of partnership for the sharing of resources across South American observing projects.

* 18. To which Sustainable Development Goal(s) (SDG) will the Decade Action contribute *(200 words)*? Please select a maximum of three SDGs

GOAL 13: Climate Action
GOAL 14: Life Below Water
GOAL 17: Partnerships to achieve the Goal

* 19. How will your proposed Decade Action will contribute to the SDGs selected? Please Explain *(200 words)*

(181 words)
Coherent and integrated observations form the basis of data products used to inform decisions on the conservation and sustainable use of the ocean, seas and marine resources. This Programme will enable those making and using ocean observations to contribute efficiently and cost-effectively to forecasts, assessments, and other products thereby directly contributing to SDG Goal 14, as well as through forecasts and early warnings and the application of these services to Goal 13, as well as numerous other SDG goals that are supported by ocean information, notably disaster risk reduction.

Measuring the ocean's role in the Climate System requires detailed and sustained observations (SDG Goal 13) in all marine and coastal jurisdictions, which can be integrated into climate models and mitigation strategies, for use in determining the response of the ocean to any changes in climate driver or climate response.

This Programme will initiate and leverage collaborations between observation experts, funders and end user stakeholders to enable effective use of the ocean observation infrastructure and resources (SDG Goal 17). The Programme will provide the coordination service to ensure that all observations count.

*** 20. How will the Decade Action contribute to the vision and mission of the Decade *(200 words)*?**

***
Vision: The science we need for the ocean we want.
Mission :Transformative ocean science solutions for sustainable development, connecting people and our ocean.
***
Ocean observations provide the in-situ scientific basis with which to build data products that are used by societal end-users to achieve outcomes related to ocean health, climate change adaptation, extreme events, and sustainable economic development, locally, regionally, globally and across the Ocean Decade. Enabling local stakeholders to contribute efficiently to global ocean observing will result in a zero-waste scenario where all observations contribute to multiple end-uses, and return on investments are maximised. Local uptake of services and products will be boosted by strengthening knowledge through capacity building and information exchange, thereby connecting people to the ocean, both locally and globally.

This Programme will enable participating Projects to conduct their scientific observations, and to contribute to end-user products, using internationally recognised methodology as outlined in the GOOS Framework for Ocean Observing, thereby allowing the science to contribute to as broad a range of science solutions as possible. End-users will benefit from having data products encompass as many input observations as possible.

Ensuring that observations made during the Decade can contribute towards as many end-uses as possible, will be transformative, and will enhance all steps in the value chain.

* 21. To which Decade outcome(s) will the Decade Action contribute?

The Programme will directly contribute to

Outcome 2 ''A healthy and resilient ocean'' whereby marine ecosystems are mapped and protected, multiple impacts (including climate change) are measured and reduced, and provision of ocean ecosystem services is maintained;

Outcome 3 "productive ocean"

Outcome 4 "A predicted ocean where society understands and can respond to changing ocean conditions"

Outcome 5 ''A safe ocean'' whereby human communities are protected from ocean hazards and where safety of operations at sea and on the coast is ensured

Outcome 6 "An accessible ocean with open and equitable access to data, information and technology and innovation".

Outcome 7 "An inspiring and engaging ocean where society understands and values the ocean in

relation to human wellbeing and sustainable development."

* 22. How will the Decade Action contribute to the Decade outcome(s) selected? *(200 words)*

(219 words)

Ocean observations provide the scientific basis for understanding the current state of the oceans and for predicting future changes. This Programme will assist those providing ocean observations to make them in such a way that they can contribute to the global integrated observing system, and so be incorporated into data products, models and other prediction tools. Stakeholders from a variety of end-user communities will have access to the observations via tailored products and specific information, thereby allowing them to practically and efficiently respond to the changing ocean conditions, and their evolving relationship with the ocean.

A predicted ocean requires observations across disciplines and across geographies, necessarily incorporating a range of knowledge types, technical sophistication and stakeholder contributions. Incorporating such a diverse range of observational capability into useful predictive tools requires that the observations are made so as to be comparable and integrated. GOOS expertise and experience will allow Projects to efficiently use the resources and capability available to them, to contribute to and participate in the global observing system. Adherence to the FAIR data principles will result in observational data being shared openly and being available for re-use in data products designed for particular stakeholder needs. Capacity building and training for the different stages of the FOO encourages contribution to and access to data, information, technology and innovation.

* 23. To which Ocean Decade Challenge(s) will the Decade Action contribute?

The proposed action primarily addresses:

Challenge 7: Ensure a sustainable ocean observing system across all ocean basins that delivers accessible, timely, and actionable data and information to all users.

Challenge 9: Ensure comprehensive capacity development and equitable access to data, information, knowledge and technology across all aspects of ocean science and for all stakeholders.

In addition, we anticipate individual projects within the Programme will contribute toward:

Challenge 3: Generate knowledge, support innovation, and develop solutions to optimise the role of the ocean in sustainably feeding the world's population under changing environmental, social and climate conditions.

Challenge 4: Generate knowledge, support innovation, and develop solutions for equitable and sustainable development of the ocean economy under changing environmental, social and climate conditions.

Challenge 5: Enhance understanding of the ocean-climate nexus and generate knowledge and solutions to mitigate, adapt and build resilience to the effects of climate change across all geographies and at all scales, and to improve services including predictions for the ocean, climate and weather.

Challenge 6: Enhance multi-hazard early warning services for all geophysical, ecological, biological, weather, climate and anthropogenic related ocean and coastal hazards, and mainstream community preparedness and resilience.

* 24. How will the Decade Action contribute to the Ocean Decade Challenge(s) selected?

This Programme will contribute strongly to infrastructure Challenges 7 (sustainable ocean observing system) and 9 (capacity development and equitable access) through all of its projects. We anticipate that the focus of individual projects within the programme will contribute to the knowledge and solution Challenges 3, 4, 5, and 6.

Ocean observations are made by a wide variety of stakeholders providing their particular communities with

data products specific to their needs. Many of these observations contribute to the global sustained and integrated observing system, but many observation projects do not participate and so their data are not available for incorporation into products for the wider end-user community. GOOS expertise in designing observing systems, integrating data and delivering end-products, as detailed in the Framework for Ocean Observing, will allow Projects to efficiently add value for their own communities, while also contributing to a globally integrated network (Challenge 7).

This process will require training and capacity development (Challenge 9) so that associated Projects can effectively contribute across the value chain from observations, to data management, scientific analysis and production of end-user-relevant services. This Programme will coordinate the training needs, and provide specific capacity building as required by the Projects to allow participation in the relevant components of the observing chain. This could include, for example, increasing ocean literacy of local fishermen in Indonesia through a Fisherman Weather Field School Project; assisting the ocean acidification observing community to use internationally recognised methodology; training in down-scaling of regional models for local predictions.

The Programme will partner with participating Projects to provide authoritative guidance on observing system design, so that the Projects can implement standards and good practice in system design and data reporting, connection to specific GOOS Ocean Decade programme focused on integrated ocean observing system design will support this. Ensuring that ocean observing data and information are findable, accessible, interoperable and reusable (FAIR), with appropriate quality and latency will ensure that ocean observations are able to be used efficiently by a wide range of data users, data products and stakeholder applications. A range of capacity development tools and resources will be required to ensure a broad range of stakeholder participation. Some of these tools will focus on network capacity development and on regional observing and delivery needs, particularly in countries with less developed ocean observing systems. Other capacity development tools will enhance and encourage use of existing resources, particularly regional and international data systems.

* 25. To which Decade Objective(s) will the Decade Action contribute?

Objective 1: Identify required knowledge for sustainable development, and increase the capacity of ocean science to deliver needed ocean data and information.

Objective 2: Build capacity and generate comprehensive knowledge and understanding of the ocean including human interactions, and interactions with the atmosphere, cryosphere and the land sea interface.

Objective 3: Increase the use of ocean knowledge and understanding, and develop capacity to contribute to sustainable development solutions.

The Programme will contribute to all three Decade Actions

* 26. How will the Decade Action contribute to the Decade Objective(s) selected?

Ocean data that is obtained and used efficiently will provide cost-effective information for end-users and stakeholders to manage ocean resources according to their needs (Objective 1). Many ocean observing efforts are designed to meet a specific but limited end-use. These efforts may be very local (e.g. observing the impact of a mangrove restoration project), or may serve a particular community (e.g. national algal bloom monitoring programme), but with some augmentation could contribute to the global ocean observing system and serve more end-users.

The Programme will work with participating Projects to identify specific areas of knowledge and expertise where upskilling, capacity development and collaboration will allow the Project to benefit from, and to contribute to, the global ocean observing system (Objective 2). Such upskilling may include:
- efficient observing system design so as to maximise the ocean data obtained from individual projects by co-locating measurements, adhering to standard operating procedures, using appropriate reference materials;
- data and metadata management practices, leading to FAIR data which can be used for a variety of end-uses,
- development of partnerships and collaborations for the sharing of resources and expertise, for example, connecting South American projects such as Pampa Azul, AX18, SAMOC, PNBOIA, iAtlantic.

Capacity development and knowledge enhancement will also be required by end-users to allow maximum benefit and application of ocean observing data products, and thereby maximise the return on the investment in the Project (Objective 3). Examples of such knowledge enhancement include:
- empowering local fishing communities by illustrating the importance of ocean observing to their economic well being, and to their safety
- training in adapting and applying regional climate change projections to national and island-scale areas

It is envisaged that a wide range of Projects will come under the umbrella of this Programme. The Programme will seek out and proactively engage appropriate Projects, including assistance with a funding-matching service. Initially, the Programme will target Projects that are already in development and have associated funding (see attached case-studies). As the Decade progresses, and the funding-matching service develops, new Projects can be incorporated into the Programme. GOOS Regional Alliances will also benefit by enabling the improvement of current and further Observational Projects, and encourage the presentation of new proposals under the Ocean Decade.

The Programme could also assess Project proposals put forward for Decade endorsement and provide feedback on the efficacy of the design in contributing to the "Measure once, use multiple times" concept.

* 27. With respect to the Decade Objectives you selected above, to which Decade Sub-Objective(s) will the Decade Action contribute?

1.1: Provide the scientific basis for regular integrated assessments of the state of the ocean and identify priority gaps at different scales and in different geographies to frame efforts in exploration, observations and experimentation.

1.2: Promote new technology development and enhance access to technology to generate ocean data, information and knowledge.

1.3: Enhance and expand existing ocean observing systems across all ocean basins to deliver information on standardized essential ocean variables including social and economic, geological, physical, chemical, bathymetric, biological, ecological parameters, and observations on human interactions with the ocean.

1.4: Develop mechanisms that support community-led science initiatives and the recognition and inclusion of local and indigenous knowledge as a fundamental source of knowledge.

1.5: Undertake regular assessments of the state of ocean science capacity to identify and overcome barriers to generational, gender and geographic diversity, and promote sufficient and sustainable investment.

2.1: Generate a comprehensive inventory, mapping, and understanding of the role and function of ocean components including their human interactions and interactions with the atmosphere, cryosphere and the land sea interface.

2.2: Generate a comprehensive understanding of thresholds and tipping points for ocean components, including human interactions.

2.3: Innovate and expand the use of historical ocean knowledge to support sustainable development solutions.

2.4: Improve existing, and develop new generation ocean models for improved understanding of the past, current and future states of the ocean, including human interactions.

2.4: Improve prediction services and increase predictive capability for oceanic hazards or events including extreme weather and climate.

2.5: Expand cooperation in ocean-related education, training, capacity development and transfer of marine technology.

3.1: Broadly communicate and promote the role of ocean science for sustainable development across diverse stakeholder groups including through formal and information education and an expansion of ocean literacy approaches across stakeholder groups.

3.2: Develop interoperable, open access platforms and applications to share data, information and knowledge in a format that connects knowledge generators and users.

3.3: Undertake interdisciplinary, multi-stakeholder co-design and co-delivery of ocean solutions including policy, decision making, integrated ocean management frameworks, applications and services, and technology and innovation.

3.4: Expand and enhance spatial planning processes to contribute to sustainable development across regions and scales.

3.5: Expand and enhance inclusive and integrated management frameworks and tools, including nature-based solutions, to maintain ecosystem functioning, provide for adaptive processes under changing ocean conditions, and incorporate community values and needs.

3.6: Expand and enhance services, applications and management tools for building and mainstreaming preparedness and adaptive responses to multiple stressors and hazards.

3.7: Expand and enhance tools, applications and services that integrate and facilitate use of data, information, and knowledge on ocean-related natural capital including the social, cultural, environmental, and economic characteristics of the ocean.

1.3: Enhance and expand existing ocean observing systems across all ocean basins to deliver information on standardized essential ocean variables including social and economic, geological, physical, chemical, bathymetric, biological, ecological parameters, and observations on human interactions with the ocean

1.4: Develop mechanisms that support community-led science initiatives and the recognition and inclusion of local and indigenous knowledge as a fundamental source of knowledge.

2.5: Expand cooperation in ocean-related education, training, capacity development and transfer of marine technology.

3.1: Broadly communicate and promote the role of ocean science for sustainable development across diverse stakeholder groups including through formal and information education and an expansion of ocean literacy approaches across stakeholder groups

3.3: Undertake interdisciplinary, multi-stakeholder co-design and co-delivery of ocean solutions including policy, decision making, integrated ocean management frameworks, applications and services, and technology and innovation.

* 28. How will the Decade Action contribute to the Decade Sub-Objective(s) selected? (200 words)

(209 words)
The Programme contributes directly to Sub-Objective 1.3. The Programme will enable participating Projects to deliver information on the physical, biogeochemical and Bio-Eco EOVs that is standardised, conforms to recognised measurement protocols, data and metadata formats, and is available for use by regional, national and international stakeholders. GOOS will use its extensive experience and expertise in managing all aspects of an integrated ocean observing system, to allow new and existing Projects to individually realise and contribute collectively to 1.3, and in doing so, expand cooperation and capacity development in ocean observing (2.5).

Through the power of networks, the Programme will support community-led ocean observing initiatives to have greater impact, return on investment and to be more efficient. The Programme will also encourage and promote projects which feature the inclusion of local and indigenous knowledge.

Stakeholders at all steps of the FOO value chain will be involved, and communication between them is vital for the successful implementation of the Programme (3.1). Capacity building, conveying needs and requirements, and developing the partnerships and collaborations needed to optimise the investment in observing will be a fundamental role of the Programme. We will utilise a brokering and match-making approach to ensure that the individual needs of each Project are met.

* 29. Please identify which of the following criteria the Decade Action will contribute to:

Accelerating the generation or use of knowledge and understanding of the ocean, with a specific focus on knowledge that will contribute to the achievement of the SDGs and complementary policy frameworks and initiatives.

Facilitating the co-design or co-delivery of ocean science by knowledge generators and users, and facilitating the uptake of science and ocean knowledge for policy, decision making, management and/or innovation.

Promoting the availability of ocean science date in an open access, shared, discoverable manner. As relevant, please provide details in the text box below about where data generated as part of the Decade Action will be deposited.

Strengthening existing or create new partnerships across nations and/or between diverse ocean actors, including users of ocean science.

Contributing towards capacity development, including, but not limited to, beneficiaries in Small Island Developing States, Least Developed Countries and Land-locked Developing Countries.

Overcoming barriers to diversity and equity, including gender, generational, and geographic diversity.

Collaborating with and engaging local and indigenous knowledge holders.

All of the criteria, but particularly

Criteria 1 “Accelerating the generation or use of knowledge and understanding of the ocean, with a specific focus on knowledge that will contribute to the achievement of the SDGs and complementary policy frameworks and initiatives.” and

Criteria 2 “ Facilitating the co-design or co-delivery of ocean science by knowledge generators and users, and facilitating the uptake of science and ocean knowledge for policy, decision making, management and/or innovation.

* 30. Please explain how the Decade Action will contribute to the criteria selected *(400 words)*:

(404 words)
“Observing Together” will contribute to all of the criteria, but particularly will ensure that observational information generated during the Decade can be harnessed efficiently by managers and decision makers, on local, national and global levels and including those who are directing SDG commitments. The Programme will assist those

generating knowledge to make the observations in such a way that they can contribute to multiple end-uses on local and global scales (Criteria 1). By enabling all partner Projects to adopt international observing and data management protocols as outlined in the GOOS Framework for Ocean Observing and relevant best practices, the resulting ocean observations will be able to be integrated and used in a wider context, so adding value to both the observing community and to the end-users. The Programme coordinating team will work with Projects to identify areas where observing systems can be enhanced by application of standardised methodologies, communities of practice, system design, data and metadata management protocols etc.

Partnerships and collaborations will be developed or strengthened, and solutions will be tailored to Project groupings according to their needs, using a collaborative and co-design approach. The sharing of practices and lessons learnt, scaling up capacity building and ocean literacy tools, and promoting the value of ocean observations to global and local communities will facilitate the uptake of the science, because the added value of the observations will allow incorporation and use by additional end-users and stakeholders. Enabling observational information to be used for many purposes will add value to those investing in the observing systems and to those who are using the integrated knowledge (Criteria 2 and 4).

Integrating local observing elements into the global system and enabling local stakeholders to engage and to profit fully from their investment will require knowledge sharing and capacity building. GOOS has substantial expertise within the various components (GOOS Regional Alliances, GOOS physics, biogeochemistry and BioEco science panels, Ocean Best Practices System) which will be utilised to increase the capability of Projects depending on their particular needs (Criteria 5). Partnerships and collaborations fostered within the Programme will be used to leverage training initiatives, for example using the ocean literacy and ocean-going vessel safety initiative for fishermen led by BMGK in Indonesia (refer to attached Case Study) as a blueprint for similar training in other regions. Resources such as the Ocean Teacher Global Academy and the Ocean Literacy for the UN Decade course will also be used as appropriate.

31. Please attach here any additional information that you wish to share with the Decade Coordination Unit in relation to the Decade Action. *(attach files)*

***File with additional information**: two case study projects »*

[text below just for reference, cannot be included on form, but is on the cover page of the additional info]
Two case studies are attached as sample Projects that will engage with the proposed decade Program. These are 1) An ocean literacy and ocean-going vessel safety initiative for fishermen led by BMGK in Indonesia and 2) An ocean services and stakeholder outreach capacity building initiative with national meteorological services across the Pacific Islands and relevant agencies led by the Pacific Community (SPC) in partnership with other organisations. It should be noted that both of these initiatives existed before the Decade and have operated for many years. The implementing agencies, however, recognise the transformational potential that increased collaboration with the GOOS and Decade offers these otherwise isolated projects. Other proposals including the use of ocean observations in early warning systems for extreme events, fisheries monitoring, as well as the provision of scientific information in specific components of Blue Economy policies of Small Island Developing State, are currently under development.This Program will tailor support to meet the needs and gaps present with individual partner projects, whilst promoting data sharing for improved global to coastal ocean understanding and better forecasts. Strengthening the inter-ocean connections, sharing practices and lessons learnt, scaling up capacity building and ocean literacy tools, and promoting the value of ocean observations to global and local communities is possible through the shared commitment of existing partners to engage and participate. All ocean basins and many critical ocean observing networks are represented through the GOOS Steering Committee, and this programme will actively seek additional project partners throughout the Decade.

Observing Together: Meeting Stakeholder Needs and Making Every Observation Count

Proposal for Ocean Decade Programme
Additional information

Two case studies are attached as sample Projects that will engage with the proposed Ocean Decade Program. These are:

1) An ocean literacy and ocean-going vessel safety initiative for fishermen led by BMGK in Indonesia, and
2) An ocean services and stakeholder outreach capacity building initiative with national meteorological services across the Pacific Islands and relevant agencies led by the Pacific Community (SPC) in partnership with other organisations.

It should be noted that both of these initiatives existed before the Decade and have operated for many years. The implementing agencies, however, recognise the transformational potential that increased collaboration with the Global Ocean Observing System (GOOS) and Ocean Decade offers these otherwise isolated projects. Other proposals including the use of ocean observations in early warning systems for extreme events, fisheries monitoring, as well as the provision of scientific information in specific components of Blue Economy policies of Small Island Developing States, are currently under development.

The *Observing Together* programme will tailor support to meet the needs and gaps present with individual partner projects, whilst promoting data sharing for improved global to coastal ocean understanding and better forecasts. Strengthening the inter-ocean connections, sharing practices and lessons learnt, scaling up capacity building and ocean literacy tools, and promoting the value of ocean observations to global and local communities is possible through the shared commitment of existing partners to engage and participate. All ocean basins and many critical ocean observing networks are represented through the GOOS Steering Committee, and this programme will actively seek additional project partners throughout the Decade.

Observing Together
Case Study 1

Indonesia Meteorological, Climatological and Geophysical Agency (BMKG)

Ocean Literacy: Fisherman Weather Field School
Sekolah Lapang Cuaca Nelayan (SLCN)

1. Background

As the archipelagic country with surrounding waters approximately 70 percent of its total area, one of the longest coast line in the world of a nearly 100,000 km and over 17,000 islands, Indonesia relies heavily on marine activities. It is obvious that various kinds of human activities are taking place in the ocean. Therefore, safety and security are the most important keys in supporting marine activities in this country.

To support the safety of maritime activities in Indonesia, The Government of the Republic of Indonesia has authorized the Indonesian Agency for Meteorology, Climatology, and Geophysics Agency (BMKG) to provide maritime weather and ocean climate services in Indonesia. The provision of information is challenging as it is depend on the user's understanding of the information. Since the fishermen are one of the main targets of the information, therefore, it is very crucial that they can understand the information and use them in their daily maritime activities, especially for their safety.

Realizing the above mentioned challenges, it is essential to set up the ocean literacy program for the fishermen community to enhance their level of understanding on the maritime weather and climate forecasting and information. Through this program, it is also hoped that fisherman are well understood and being aware on the important of maritime observation equipment which are essential to produce an accurate maritime whether and climate information for their safety in conducting their maritime activities. Their participation in protecting the equipment installed on the ocean is very crucial and important to prevent vandalism of the ocean observation equipment.

Fisherman Weather Field School or Sekolah Lapang Cuaca Nelayan (SLCN) is one of the ocean literacy program that emphasises to educate a targeted user (e.g. traditional fishermen, aquaculture fishermen, salt pond farmers, and related stakeholders in fisheries and community sector) about weather and maritime information to support safety at sea and improve welfare. The implementation of SLCN has been carried out since 2016 spreading over various locations across Indonesia. This activity plays an important role in increasing public and community awareness and understanding of maritime information and observation. Considering the importance impact of the program to the safety of the communities, it is necessary to maintain the sustainability of the program and to also emulate and implement this program in all Member countries who are facing the same challenges with Indonesia in maritime sectors.

2. Objectives

- Introduce maritime weather and climate information to selected users (catch fishermen, aquaculture fishermen, salt pond farmers and related stakeholders in fishery fields)

- Increase knowledge and skills of users in utilizing maritime weather and climate information to anticipate and adapt to the impacts of extreme weather and climate phenomena in sea.
- Enhance the usage of maritime weather and climate information to support the economic development in the fisheries and coastal sectors.
- Increase public and community awareness and participation in preventing vandalism on maritime weather observation equipment.

3. Outcomes

- Increasing number of users (catch fishermen, aquaculture fishermen, salt pond farmers and related stakeholders in fishery fields) who utilize and take the benefit of the maritime weather and climate information for their daily maritime activities
- Increasing number of maritime production stocks by utilizing maritime weather and climate information
- Increasing people awareness in preventing vandalism of maritime weather observation equipment in order to maintain sustainability of met-ocean observation

4. Details of Activity/Subjects

SLCN program is carried out in the form of presentations, interactive groups, and questions and answers. Learning modules are prepared by BMKG. In general, the outline of the module packages include the definition and interpretation of maritime weather and climate information issued periodically by the national meteorological services, and the practical usage of these information to support maritime activities. The material in the module packages are written in a simple language to make sure that they are easily understandable by the user to optimizing their utilization and application as a reference in their maritime activities. The module package compiled in SLCN consists of several materials, namely:

a. Module 1 : Study contracts and group dynamics;
b. Module 2 : Maritime weather and climate, and Maritime disaster for fishermen;
c. Module 3 : Utilization of maritime weather and climate information and technology and its importance synergy between national meteorological services, local government, related stakeholders and fishermen;
d. Module 4 : Introduction to Ocean Observation;
e. Module 5 : Utilization of maritime weather and climate information in seaweed cultivation techniques to improve public welfare; and
f. Module 6 : Safety standards at sea for fishermen.

The SLCN activity is expected to be a trainer of trainer program. Participants who have been trained in the SLCN program are expected to be able to spread their knowledge to fellow fishermen who cannot participate in the activity. The selection of SLCN's participants involves the role of local government in the marine and fisheries sector. Generally, BMKG asks recommendation for selecting participants from local government e.g. the Head of the Provincial Marine and Fisheries Service, Fisheries Service, Fishery Port, and related stakeholders. Participants who is selected to take part in the activity usually are the head of the fishermen group or extension officers. They then expected to be able to disseminate learning information to fishermen or other users. The number of participants in SLCN activities is generally 25-30 people depending on the availability of funds.

5. Proposed Training Activities

Covid-19 Pandemic has largely impacted the SLCN implementation throughout 2020. During this pandemic, BMKG has been implementing the three modes of attaining the SLCN module, namely face to face, fully remote, and blended learning methods. Face-to-face learning is delivered where course content and learning material are taught in person to a group of participants. This allows for a live face to face interaction between participants and instructors. This method have to follow health protocols and government recommendations in the given area for its implementation. Fully remote learning is where the participants and the educator, or information source, are not physically present. Fully remote learning utilizes online meeting platforms such as zoom, google classroom, etc. to deliver learning materials. Blended learning method combines the face to face method with remote method in delivering the material contents. It requires the physical presence of both the participants and the educator on a certain schedule, and done fully online on a certain schedule as well.

Observing Together

Case Study 2

The Pacific Community (SPC)

The Climate and Oceans Support Programme in the Pacific (COSPPac)

Background

Pacific Island countries and territories are custodians of 20% of global Exclusive Economic Zones (EEZs) and 90% of Pacific Islanders live within 10km of the coast. The majority of economic activities in these countries rely upon the ocean- from commercial and sustenance fishing and aquaculture to shipping and maritime transport to surfing and dive tourism. Accurate ocean information and forecasts are critical for planning, safety at sea, and disaster mitigation along the coast.

The need for improved access to ocean observations on the part of Pacific ocean users has been increasingly recognized over the last decade, particularly in the face of a changing climate. More remote sensing and in situ data are available than ever before, however, oceanographic and marine forecasting expertise in the Pacific region is extremely limited.

To build ocean science capacity and ocean literacy, the Australian-funded Climate and Oceans Support Program in the Pacific has engaged with partners in the National Meteorological Services (NMS) and other key agencies (e.g. Navy, Maritime, Hydrographic offices) in 14 Pacific Island nations, to identify ocean information user priorities, to deploy new insitu ocean observing equipment, to better understand links with indigenous and traditional ocean knowledge, and to develop and deliver tools and training to address these priority stakeholder needs.

Whilst COSPPac is a single regional project, its ongoing activities connect with and underpin other offshoot initiatives across the region, including the Green Climate Fund (GCF) Climate Information Services for Resilient Development Project in Vanuatu (Van-KIRAP) project, the WMO-led Coastal Inundation Forecasting Demonstration Project in Fiji (CIFDP-F), the GCF Tuvalu Coastal Adaptation Program (TCAP), the WMO-led Climate Risk Early Warning System (CREWS) project, and a new UNEP GCF project across 5 Pacific countries approved in November 2020.

The Pacific Community (SPC) is a key implementing partner in all ocean-related activities in COSPPac and the above projects, with capacity to deploy instruments, develop forecasting systems and data visualisation tools, develop and deliver training, facilitate stakeholder engagement, and work with NMSs to strategise their approaches to meeting ocean stakeholder and community needs.

Project Description(s)

Project Name	Climate and Oceans Support Program in the Pacific (COSPPac)
Funders	Australian Government (DFAT), New Zealand (MFAT)
Implementing Partners	Bureau of Meteorology (BoM), Geoscience Australia, The Pacific Community (SPC), Secretariat of the Pacific Regional Environment Program (SPREP), National Institute for Water and Atmosphere (NIWA)

Funding	Phase 1 (July 2012-June 2018) $AU 36 million Phase 2 (July 2018-June 2022) $AU 23 million ($5 million with SPC)
Objective	COSPPac works with Pacific Island stakeholders to analyse and interpret climate, ocean and tidal data to produce valuable services helping island communities to prepare for and mitigate the impacts of severe climate, tidal and oceanographic events.
Participating Countries	Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu
Background	The COSPPac program carries on the legacy from previous phases of support for NMSs in sea-level monitoring and climate prediction with the inclusion of capacity development and communication, information technology services, ocean services, and traditional knowledge.

Project Name	UNEP GCF: Enhancing Climate Information and Knowledge Services for resilience in 5 island countries of the Pacific Ocean
Funders	Green Climate Fund with in-kind support from implementing partners
Implementing Partners	UNEP, BoM, NIWA, NOAA, SPC, SPREP, University of Hawaii, IFRC, APCC, WMO
Funding	2021-2025 $USD 47.4 million ($4 million with SPC)
Objective	To develop climate science and information services that are essential for sustainable development, environmental management, disaster risk reduction, food security, health services, water resource management and energy efficiency.
Participating Countries	Cook Islands, Marshall Islands, Niue, Palau, and Tuvalu
Background	Links to COSPPac and other Pacific regional initiatives

How the Project would benefit from being part of the Decade?
The NMSs and user communities across 14 Pacific Island project countries will benefit from enhanced collaboration with other ocean observing initiatives providing tailored user services. Increased interaction with global institutes, as well as sharing of best practices, methodologies, resources, and expertise through the Decade would continue to strengthen the programme. Sharing case studies and successful pilot projects across regions can shine a light on replicable initiatives from the Pacific, and improve the design of future projects with lessons from the global stage.

Project countries would also benefit from greater visibility and voice in GOOS and Decade actions that will have an impact on the Pacific ocean basin. Despite being custodian of 20% of global EEZs, the Pacific Islands region has not been well-represented in many previous global ocean initiatives due to limited connectivity, bandwidth, and capacity.

SPC is actively seeking to change that, and has established the Pacific Community Centre for Ocean Science (PCCOS) to help Pacific Island governments and communities access the ocean science and expertise they need to make informed decisions and to protect and sustainably manage ocean resources. COSPPac and all ocean projects that SPC implements also come under the banner of PCCOS. Strategic collaboration between PCCOS, GOOS, IOC, and the UN Decade presents myriad benefits for Pacific ocean stakeholders.

How the Project would contribute to GOOS?
Aligning this project with GOOS's Decade Programme will be an important step toward ensuring all Pacific ocean observations are accessible through global platforms, in keeping with the Framework for Ocean Observing (FOO) and FAIR data sharing principles. Although the COSPPac-managed Pacific Sea Level and Geodetic Monitoring (PSLGM) network of 14 regional real-time tide gauges already contributes data to IODE, numerous other buoys, tide gauges, and other local in situ ocean observing platforms across the Pacific do not. In the next 2-5 years, SPC plans to deploy at least 8 more wave and environmental buoys across the region, so it is a critical opportunity to establish these protocols.

The project would also provide a key link to ocean observing and user communities across 21 Pacific Island countries and territories through its host, the Pacific Community. With satellite offices across 5 countries and trusted relationships built over time with relevant national actors and champions, SPC is well-placed to act as the regional agent to support national uptake and application of ocean data across sectors, promote the value of ocean obs, and help broker relevant global ocean information to a local Pacific audience.

Existing funding/ Additional funds required

	TIMEFRAME	**KEY ACTIVITIES**	**FUNDING (USD)**
COSPPac	2018-2022 (COVID extension to 2023 likely)	- PSLGM network maint. and upgrades - Training of NMS staff on maintenance protocols - Pacific Ocean Portal maint. and develpmt. - In-country ocean science training and stakeholder engagement (x2 per year) - Support development of tailored ocean info products - Support for NMS community outreach events and activities (eg communications, training equipment, NCOFs)	$4 million ($2 million remaining at project midpoint)
GCF	2021-2025	- Deployment of new buoys, HF radar, saildrone and other ocean data collection - Establishment of ocean science officer positions in NMSs - In-country ocean science training and stakeholder engagement - Support development of tailored ocean info products	$4 million (with additional $25 million with countries for procurement and capacity building)

Additional Required	2021-2025 (second half of decade TBD)	- Deployment of new buoys and other ocean monitoring equipment - Establish fund and protocols to support ongoing maintenance and unexpected retrieval, repair, and replacement costs for ocean obs infrastructure - Additional communications and ICT/ programming capacity and training of trainers to develop tailored tools, products, apps - Additional staff to assist with coordination, communication, training, and administrative tasks - OTGA course development support (particularly relevant during the pandemic)	$3 million (plus additional in-kind capacity building and support)