

TAKING THE PULSE OF THE GLOBAL OCEAN

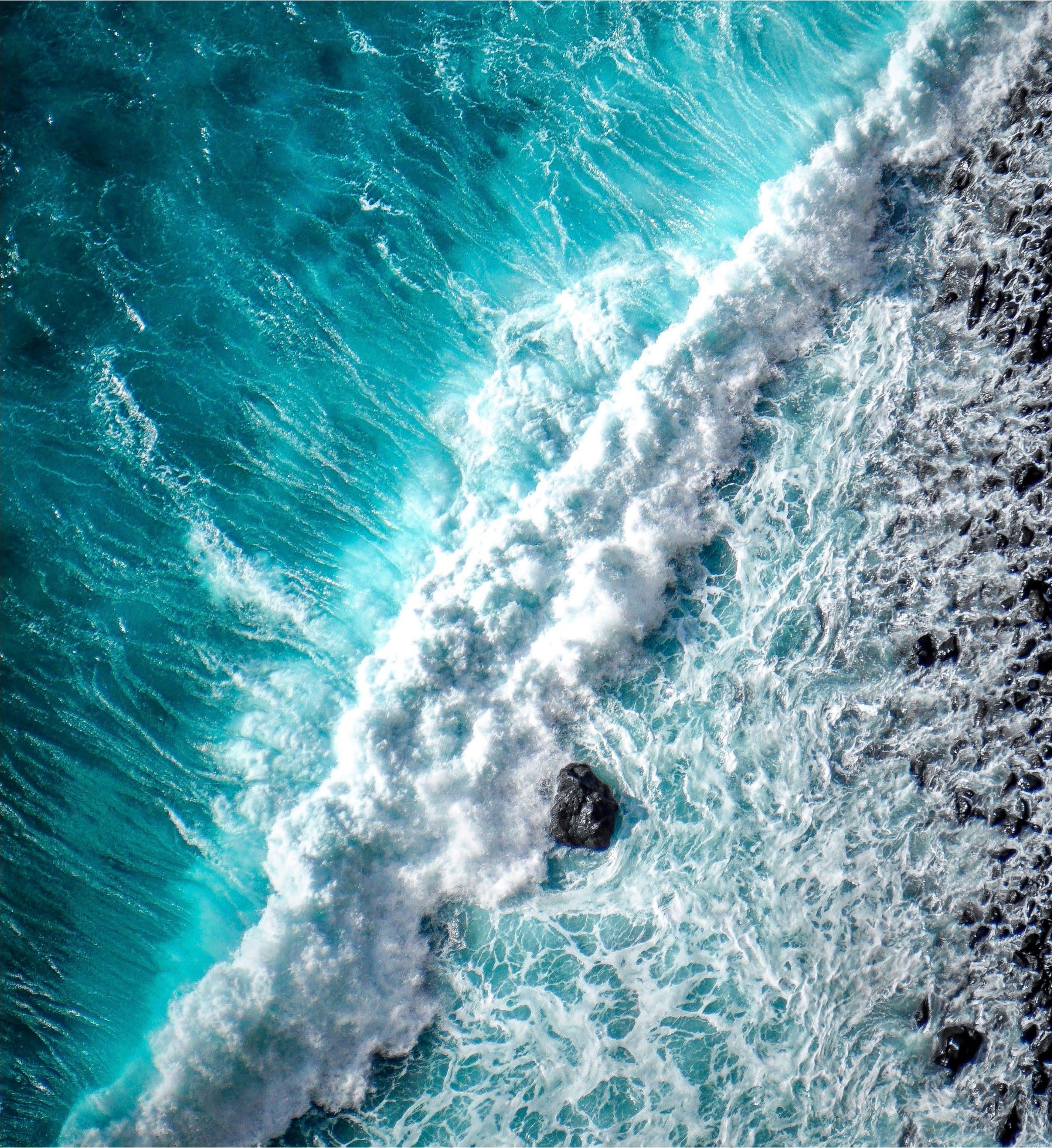
Strategy of the Partnership for Observation
of the Global Ocean (POGO)



2021



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POGO was founded in 1999 by Directors of oceanographic institutions around the world as a forum to promote and advance the observation of the global ocean.

The purpose of this strategy is to look forward to our priorities for future years. It reaffirms our commitment to work collectively as a global community to promote and deliver the development of the truly global ocean observation system needed to advance understanding of the ocean and its wise use for the benefit of humankind.

KEY SUCCESSES

1999

First POGO Meeting



2004

Establishment of Partnership with Nippon Foundation



2009

COP15 – Beginning of POGO engagement with UNFCCC



United Nations
Framework Convention on
Climate Change

2011

Creation of GEO Blue Planet



2018

Ocean Sound EOVS accepted by GOOS



2020

1,000 training grants provided over 20 years



2021

Ocean Biomolecular Observing Network (OBON) accepted as UN Decade Program



youtu.be/ZH6lt7hoG7E



Nicholas Owens
Scottish Association for Marine Science, UK

POGO was founded in 1999 by Directors of oceanographic institutions around the world



See the full time line of POGO's milestones and achievements

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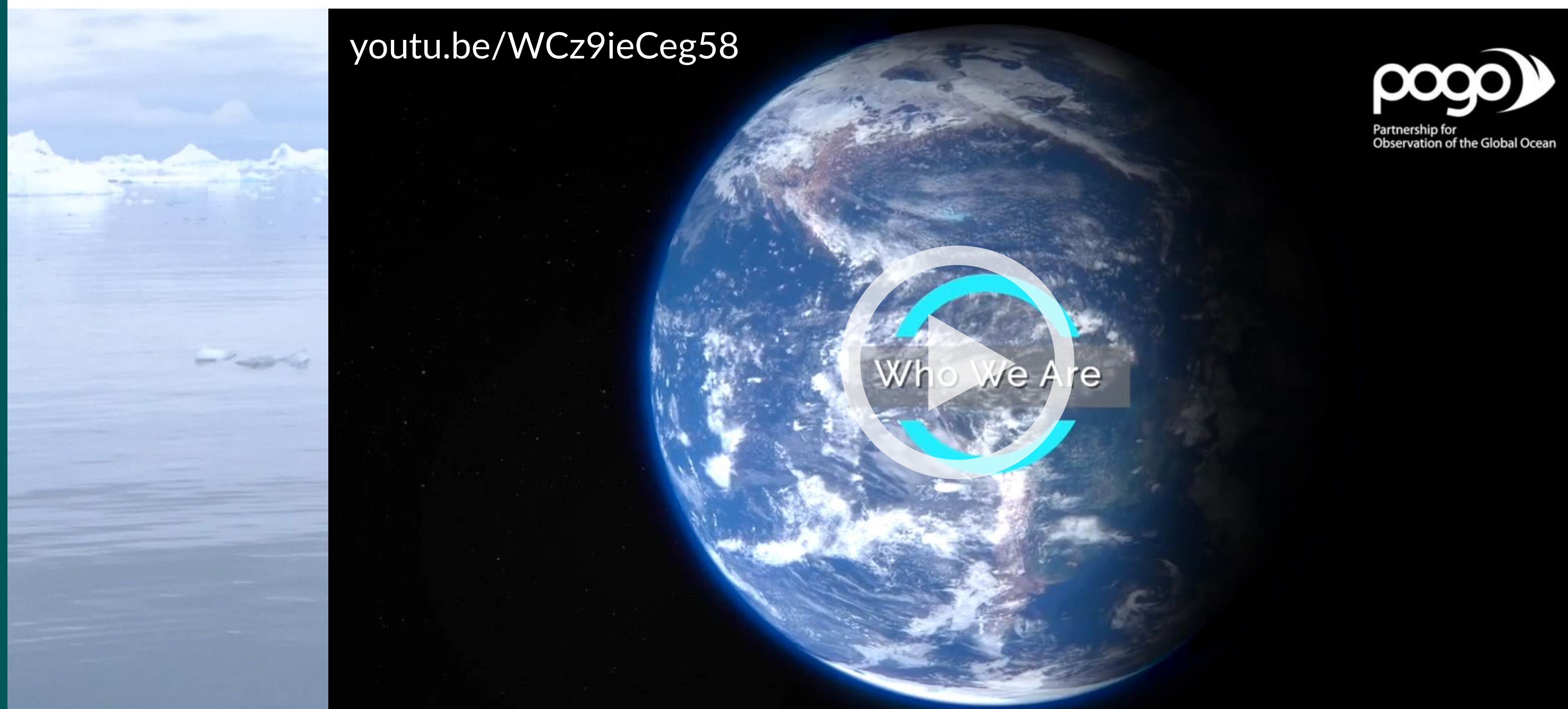
WHO WE ARE

POGO's membership includes most of the world's leading ocean science and technology institutions, and it continues to grow through the addition of new countries that are developing their interest in and capacity for ocean observation. Our expertise, experience and infrastructure provide the unique and long term capability to design, build, operate and innovate the global ocean observing system. We are also training the next generation of ocean scientists, and strive for a more ocean literate society. Our commitment as a partnership is to pursue this mission globally.

We bring to our shared aims the strength that comes from the diversity of our people, expertise, partnerships and our wide geographical coverage.

POGO VISION

Ocean observations available on-line to all



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Find out more about our members

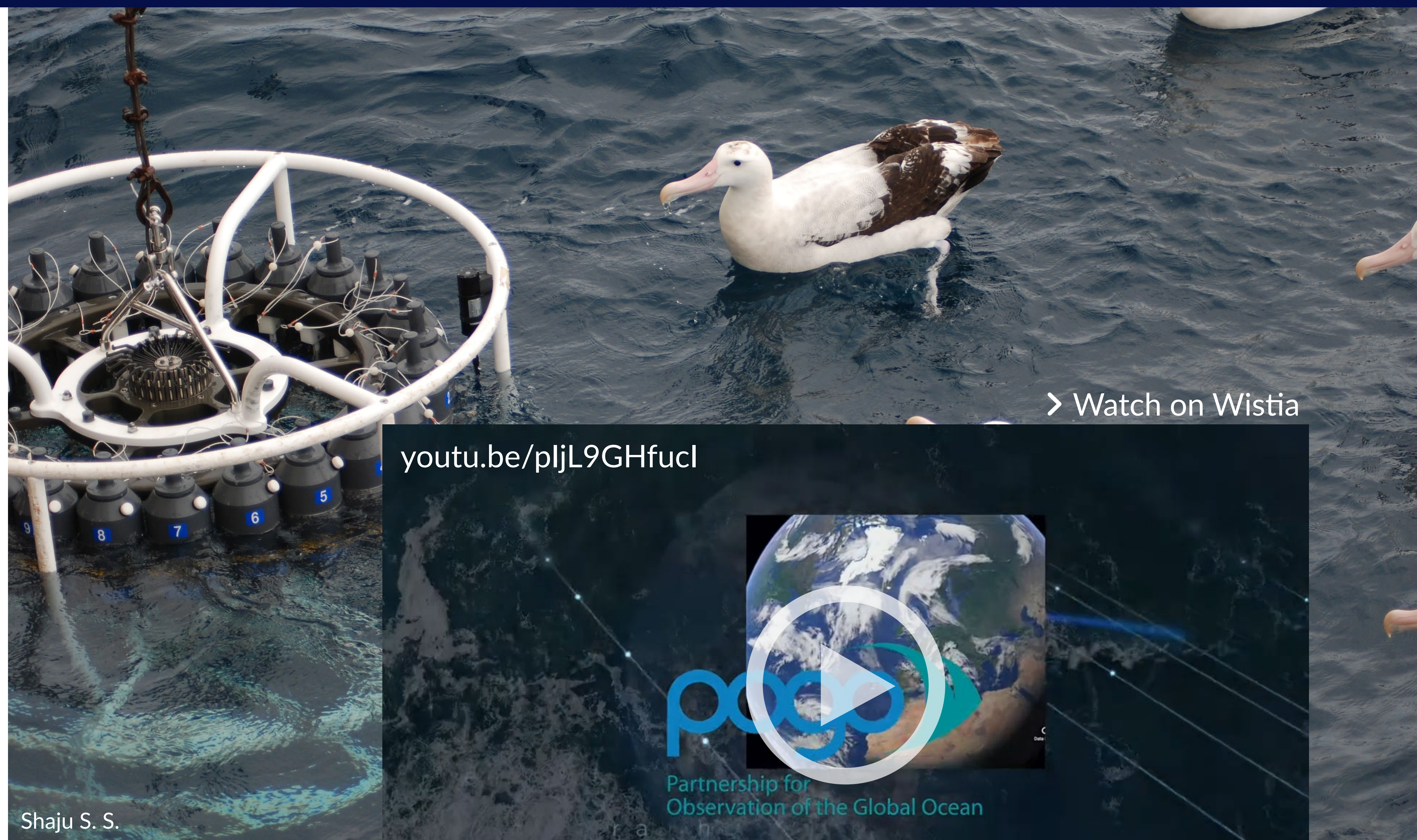


OUR MISSION



Our goal is to have by 2030, world-wide cooperation for a sustainable, state-of-the-art global ocean observing system that serves the needs of science and society. To achieve this, we will:

1. Lead innovation and development of the crucial components of the ocean observing system.
2. Identify and contribute to the development of the key skills, capabilities and capacities needed to achieve the vision.
3. Work with governments, foundations and industry, to articulate the benefits to society and required funding to build and sustain the system.



Shaju S. S.

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The Partnership for Observation of the Global Ocean, POGO

OUR SHARED VALUES

We are motivated by a common belief that advancing scientific understanding of the ocean is rooted in making systematic, high quality measurements. We believe that this understanding and its wise use is critical to enabling humanity to develop a sustainable relationship with a healthy, productive and biologically diverse ocean. We are further motivated by the shared belief that our vision can only be realised by working together across the world, since we can achieve together what none of us could do alone.

For these reasons, in our collective endeavours, we value:

- Research excellence and relevance
- Equality, diversity and inclusion
- Transparency and openness
- Shared belief in science as critical to evidence-based decisions
- Partnership and cooperation.

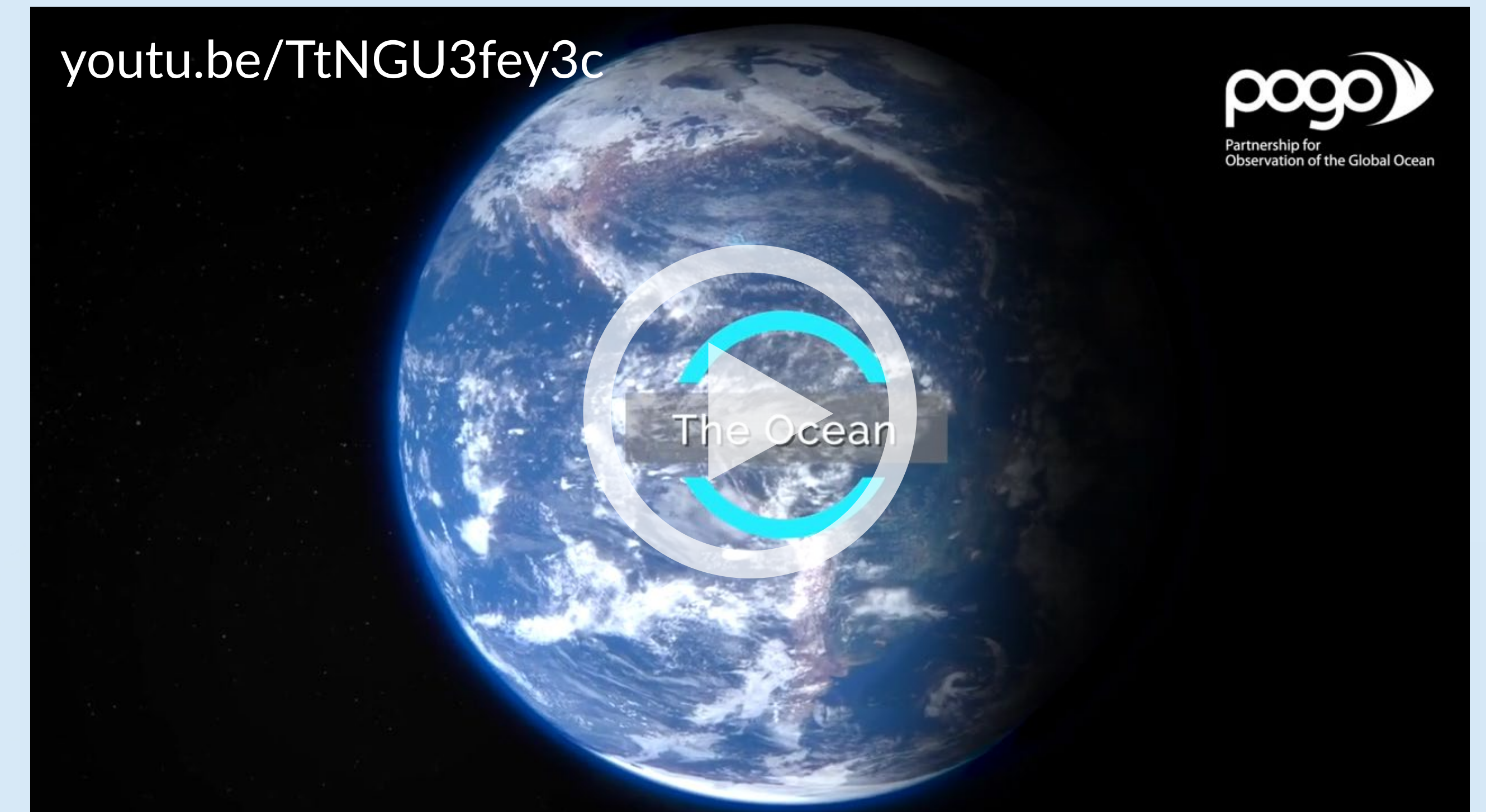
THE OCEAN

The ocean is the dominant feature of planet Earth, covering 71 % of its surface, represents 99 % of the Earth's biosphere and contains 97 % of the Earth's water. It makes Earth the only habitable planet in our solar system. It produces half of our oxygen and a growing portion of the world's food, particularly in developing countries. The ocean regulates the Earth's climate and weather patterns, is critical in the cycles of heat, water, and carbon, and is the home of a significant proportion of the Earth's biodiversity.

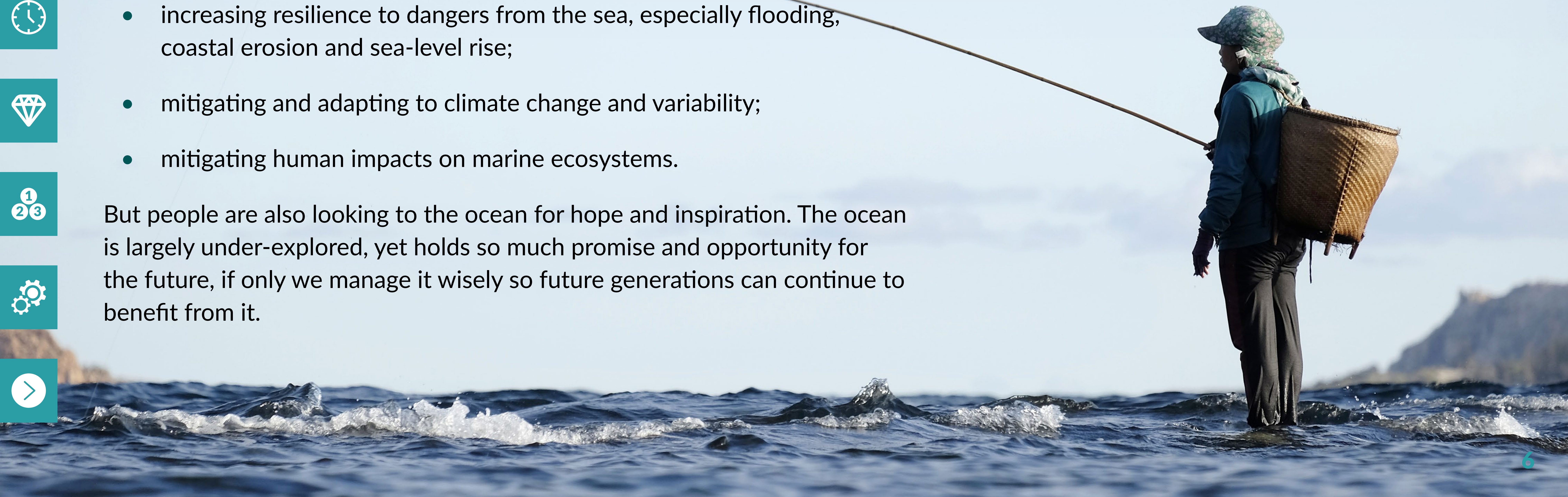
As human population is predicted to reach 9 billion by 2050, people are turning with growing urgency to the ocean for answers to the greatest challenges of our age, such as:

- feeding the world's growing population;
- providing clean energy to power vibrant economies;
- increasing resilience to dangers from the sea, especially flooding, coastal erosion and sea-level rise;
- mitigating and adapting to climate change and variability;
- mitigating human impacts on marine ecosystems.

But people are also looking to the ocean for hope and inspiration. The ocean is largely under-explored, yet holds so much promise and opportunity for the future, if only we manage it wisely so future generations can continue to benefit from it.



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To realise this promise we need to understand that whilst the ocean benefits people, humans have had an unprecedented impact on the sea, with about half of the ocean negatively affected by human activities, and some marine ecosystems in crisis. This ocean state cannot continue: we need to find ways to manage more effectively our relationship with the ocean, coasts and estuaries.



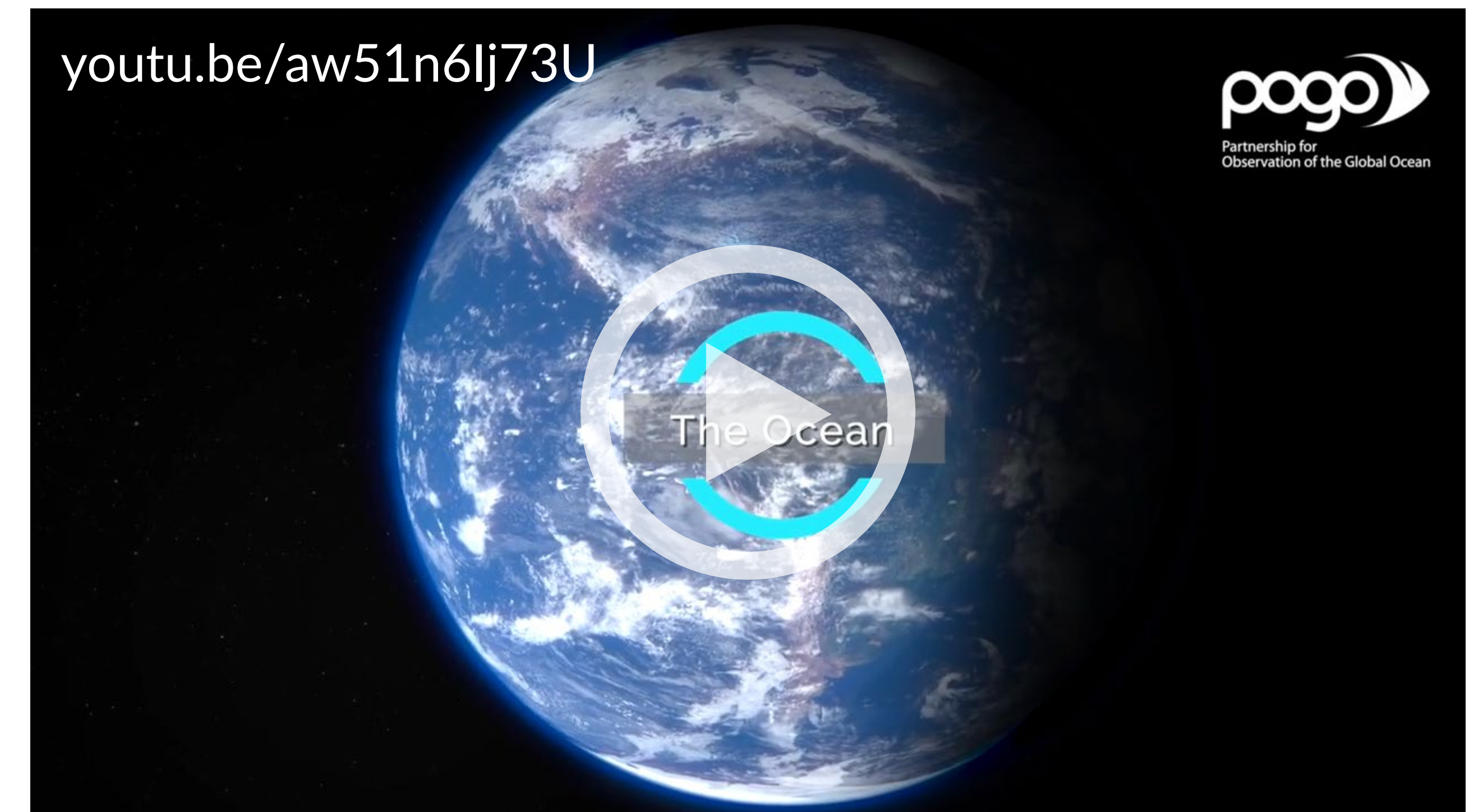
The global ocean is a shared resource. Whilst it separates us physically it also binds us together in many ways. In their continual movement, the ocean's waters abundant with life respect no human borders. And the ocean's processes affect people who are widely separated across the world, sometimes through catastrophic events such as tsunami waves striking distant shores around the rim of a shared ocean basin or the dramatic shifts in weather patterns such as monsoons or irregular atmosphere-ocean oscillations that affect vast regions, bringing floods to some countries and droughts to others.



In an increasingly globalised economy the ocean affects us in often hidden ways. The vast majority of global trade is carried by sea and most of the intercontinental electronic communications are channelled through submarine cables. The effects of marine-related natural disasters experienced in one place can ripple around the world with unforeseen effects on societies, by causing fluctuations in commodity prices and financial markets, or disruption of globally-distributed supply chains.



All of the above makes it clear that the ocean is of paramount importance for humanity; however, paradoxically, human activities are having widespread detrimental impacts on the ocean such as pollution, overfishing and biodiversity loss, the acidification of the ocean as it takes up excess carbon dioxide from fossil fuel burning, or the spread of disintegrating waste plastics throughout the ocean with as yet poorly understood consequences.



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Sujeet Verma



THE OPPORTUNITY

The growing importance and pervasive impact of the ocean are starting to draw attention at the highest political levels, such as the G7, G20 and United Nations. The UN has dedicated one of its 17 Sustainable Development Goals (SDG) to “life below water” and proclaimed the decade 2021-2030 the “Decade of Ocean Science for Sustainable Development”. Furthermore, the economic value of the ocean has been highlighted by the Organisation for Economic Cooperation and Development (OECD). Fourteen countries have come together to form a “High-Level Panel for a Sustainable Ocean Economy” and develop an ocean action agenda committing to 100% sustainable ocean management of national waters. The media have brought the issue of global plastic pollution to the forefront, and governments worldwide have been under pressure to pass legislation limiting single-use plastics as a result.

This growing attention on the ocean provides an unprecedented opportunity for the ocean observing community. The UN Decade of Ocean Science for Sustainable Development offers a unique vehicle to transport us towards our common goal: the realisation of a truly global, sustained, multi-disciplinary, integrated ocean observing system openly available “on-line” for all. The international community is poised ready to take up the challenge, through enhanced collaboration between the many actors in this field. POGO is in a unique position to play a leading implementing role in the fulfilment of many of the Decade’s objectives.



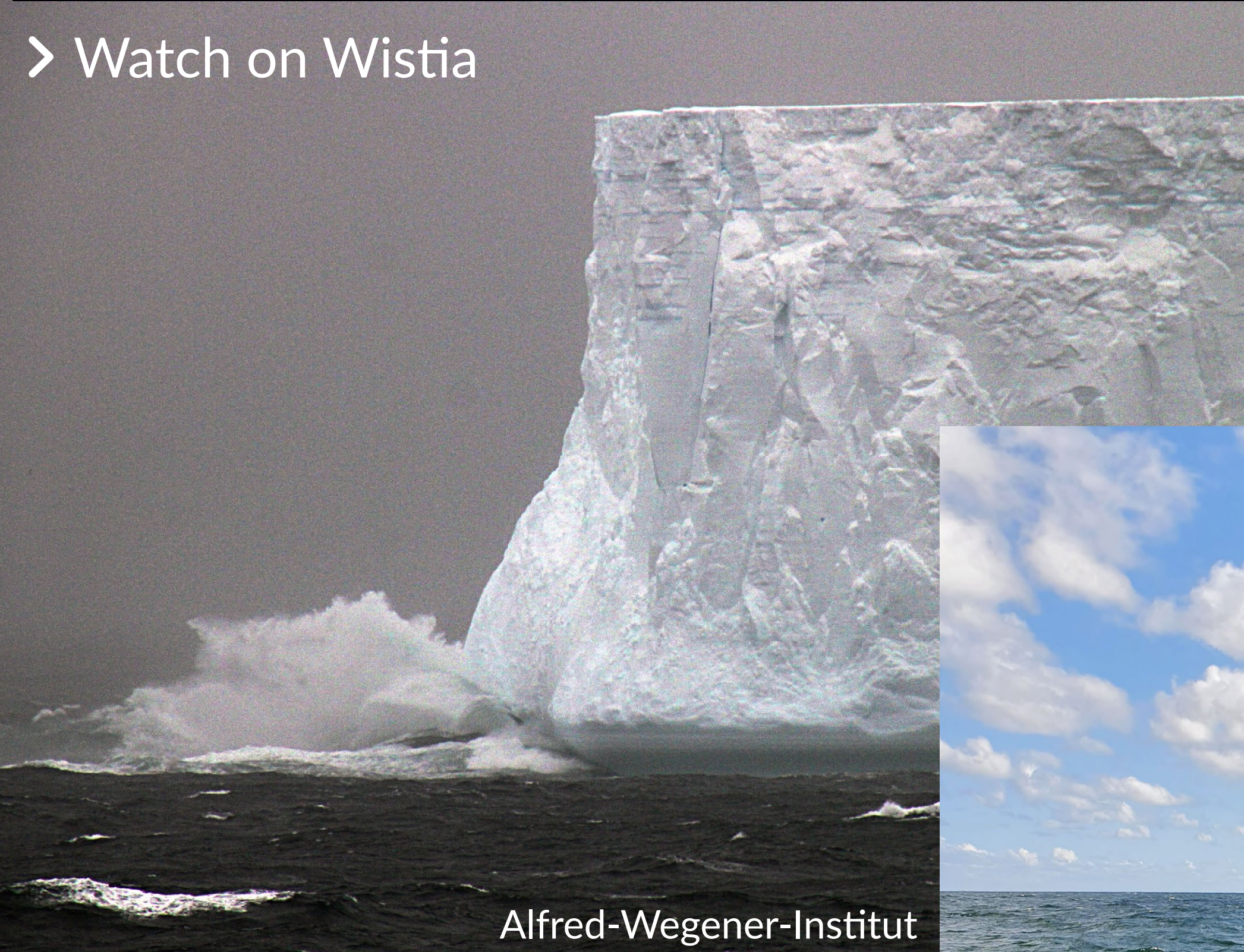
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National Oceanography Centre

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WHY OBSERVE THE OCEAN?

We need to be more continuously aware of how and why the ocean is changing, so that we can predict the impacts of the ocean on people and of people on the ocean. To this end, making continuous ocean measurements with global coverage is now a pressing priority. We need to do this to manage a safer, more sustainable relationship between people and the ocean – because we cannot manage what we cannot measure!

Under the remit of the Global Ocean Observing System’s framework for ocean observing, a diverse set of “essential ocean variables” is being established which range from physical quantities such as temperature, salinity and sea-level through to chemical, biogeochemical and ecosystem variables. Measuring these variables at a global scale, in a continuous and coordinated manner, can only be achieved through international cooperation and capacity development.

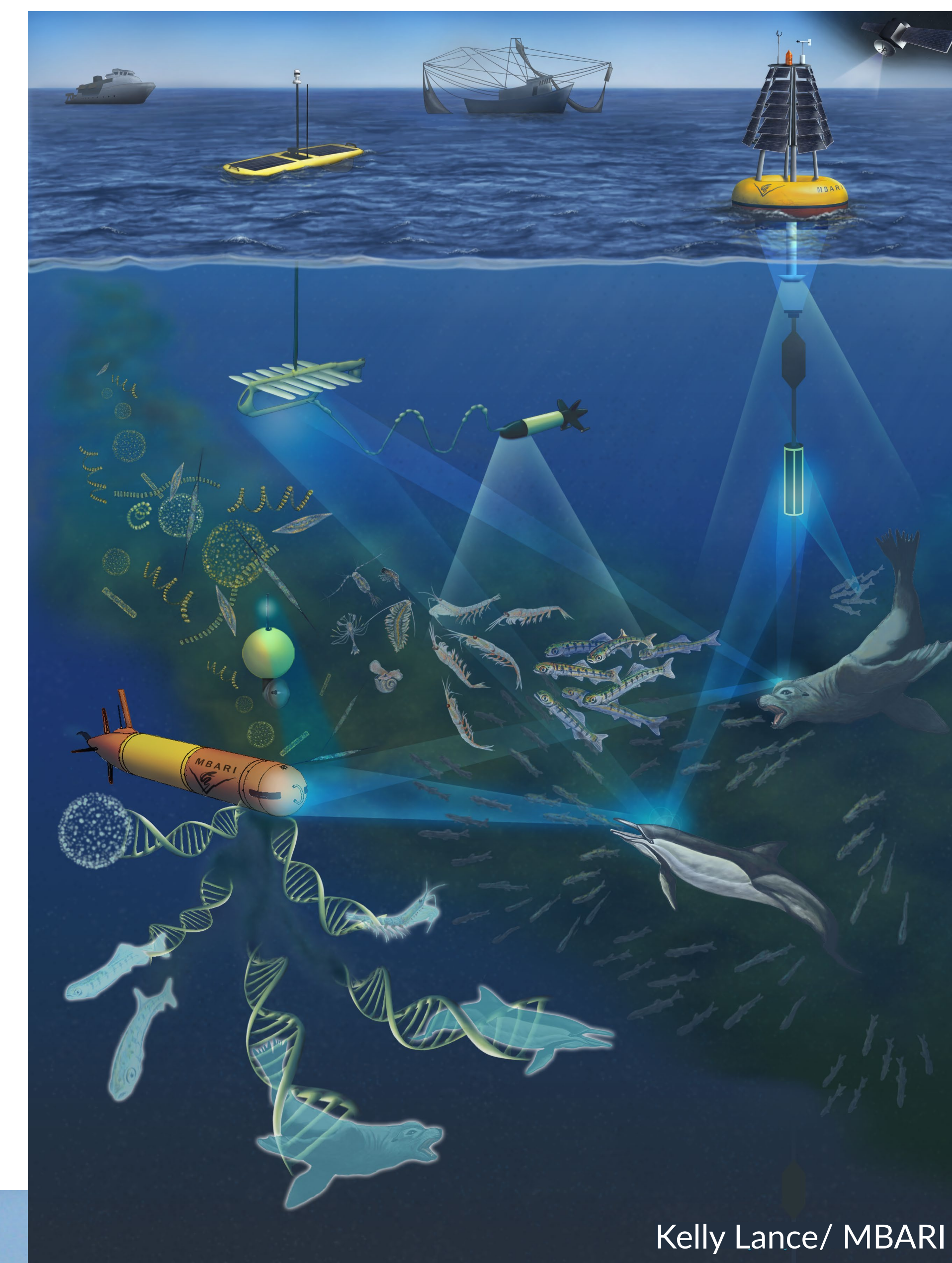
That is why we, the major ocean research institutions of the world have come together to form the Partnership for Observation of the Global Ocean (POGO).

We are not daunted by the task ahead of us – we are excited by it. This is because we believe that collectively we have the capability to succeed, enabled by rapidly advancing technological innovations that we are leading. We believe that working together there is now a real prospect, over the next decade, of making major strides forward in building the truly global ocean measurement system needed to understand and monitor the ocean for the benefit of all.

WHY NOW?

The global ocean is experiencing extensive and dramatic changes, driven by anthropogenic activities and climate change. The changes occurring in many coastal ocean ecosystems are affecting ecosystem services and the welfare of human-beings.

Building the global ocean observing system began more than two decades ago and important advances have been made, particularly in the realm of physical (climate-related) ocean observations. Disappointingly, progress has been stalled for more than a decade, partly because of the costs entailed especially during a period of economic down-turn for many countries. Biological and chemical observations are still lagging behind their physical counterparts. The observing system falls far short of what is needed.



Kelly Lance/ MBARI

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Why Now?

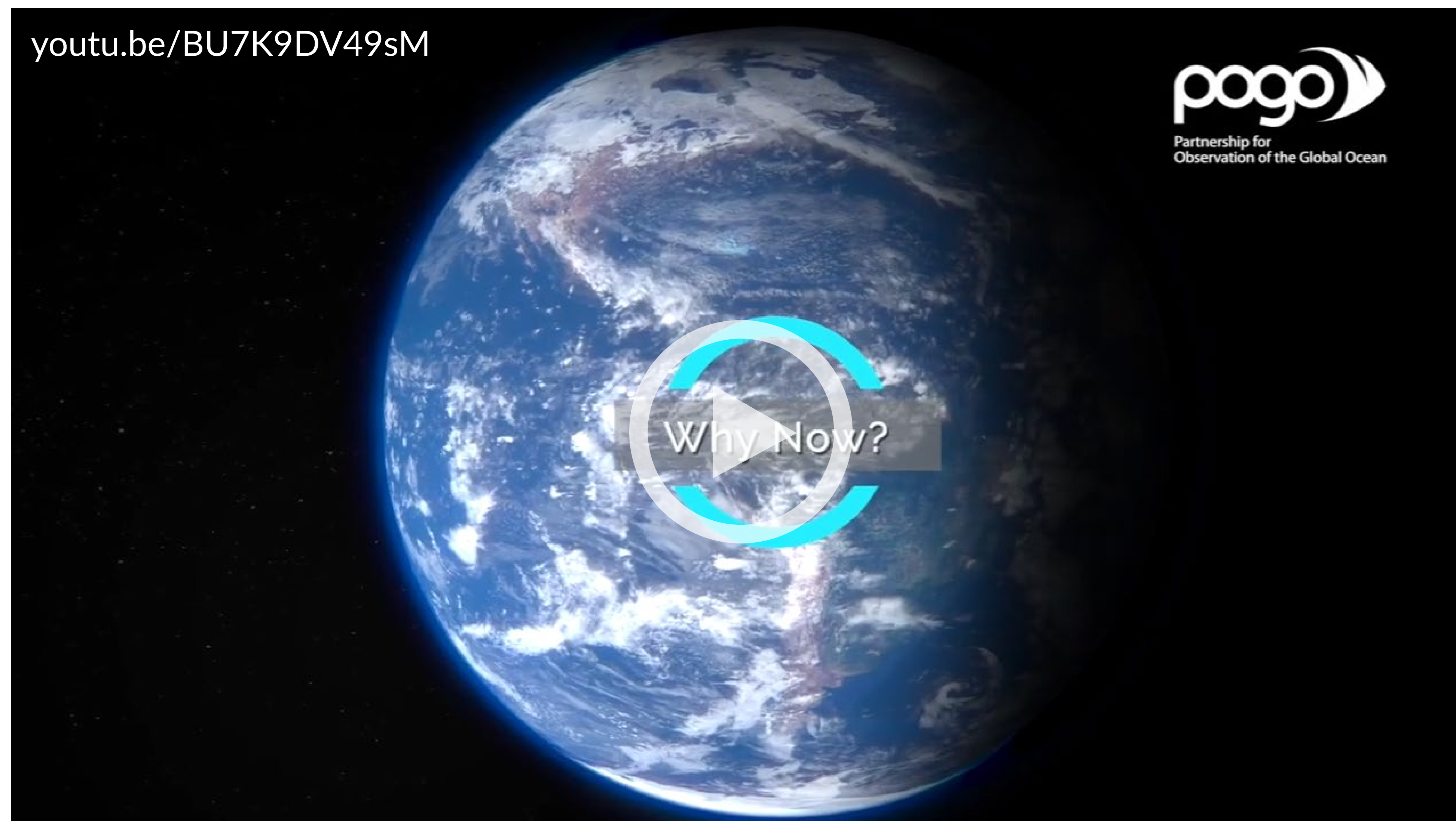
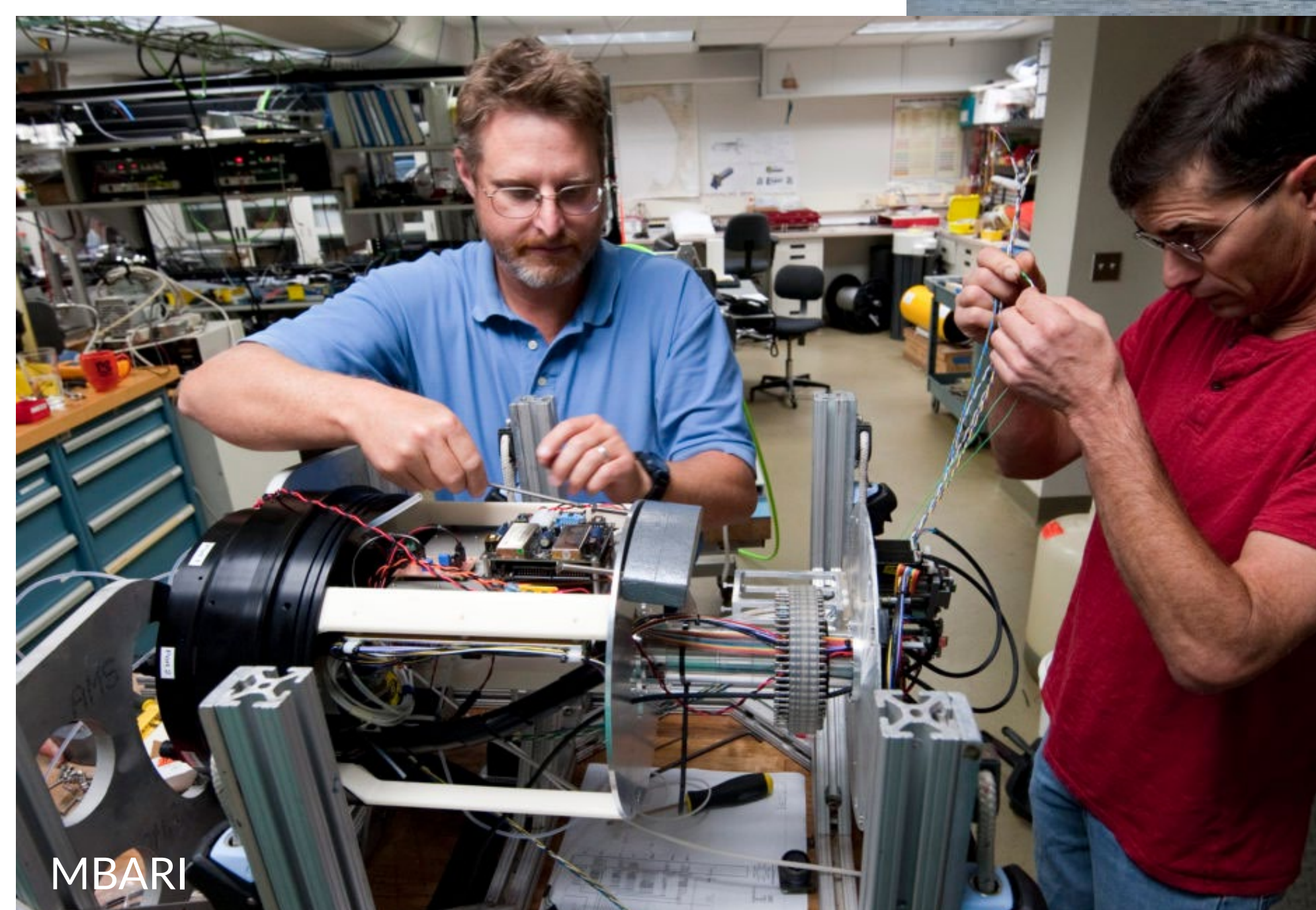
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David White



However, we now stand at the cusp of a technological revolution based on autonomous and robotic observation systems, smart sensors and communication technologies. Similarly, the capabilities of Earth Observations are rapidly evolving. These offer new promise of more cost-effective continuous presence in the ocean, making measurements all day every day, at least for some essential ocean variables. Meanwhile, development of artificial intelligence and machine learning offer a reliable and efficient way to meet the challenges of management and interoperability of observation data. Automated biological sampling and imaging systems, together with genomics (and other “omics”) and environmental DNA techniques, now offer the promise of scaling-up biological and biodiversity observations in a similar manner to biogeochemical and physical ocean observing. Following up on the recommendations of OceanObs’19, what was once a dream is now in our grasp if we work hard at it over the coming decade. The UN Decade of Ocean Science for sustainable development will offer the opportunity to build partnerships and redouble our efforts to once more set our sights on building a truly comprehensive global ocean observing system.

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OUR UNIQUE ROLE



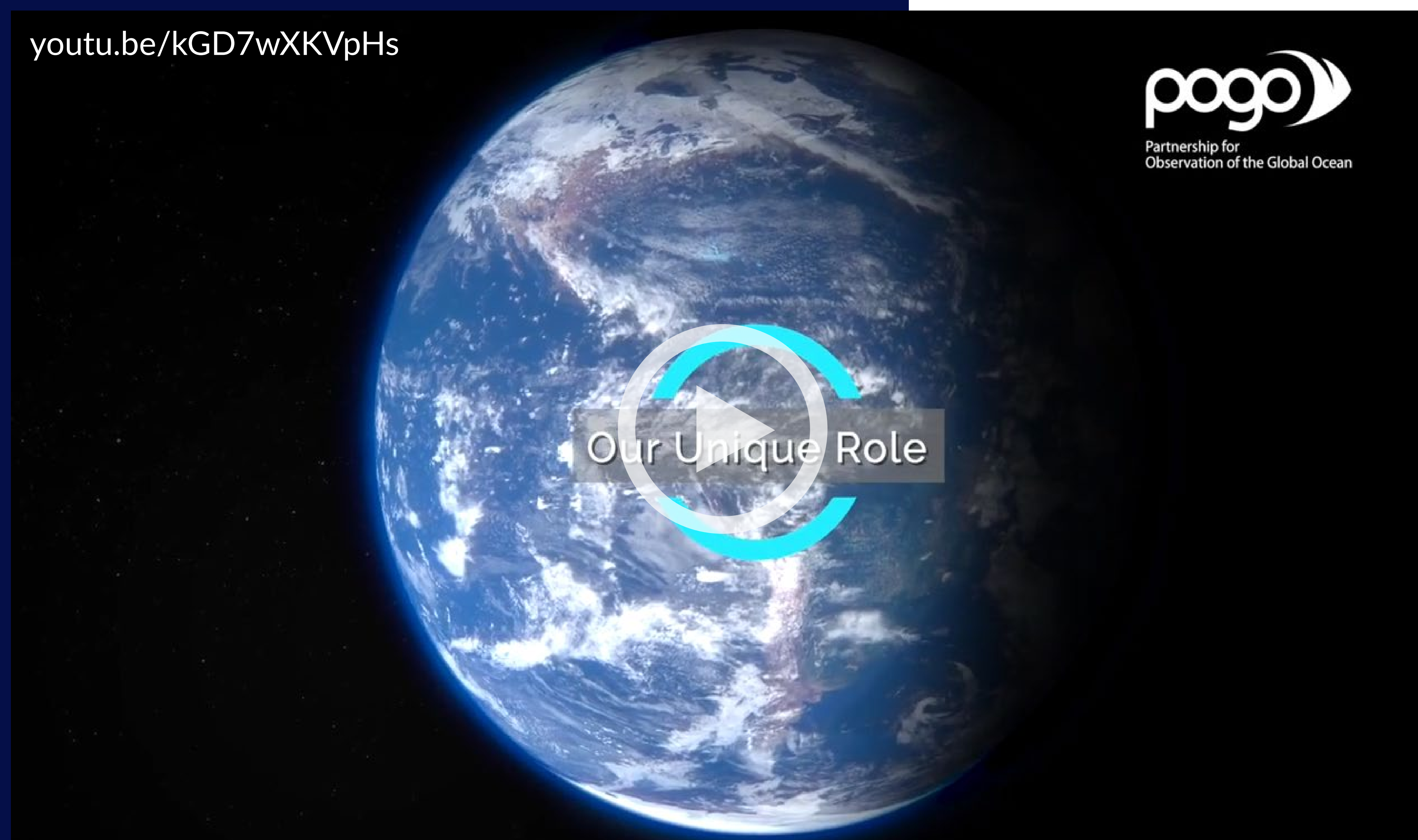
Sustainable development of our ocean can only be achieved through sound science that is underpinned by a comprehensive global ocean measurement system and the international ocean community coming together.



POGO is uniquely placed to deliver a comprehensive global ocean measurement system. It is within our institutions that the key long-term scientific and technical capability resides that is needed to develop and interpret the results from systematic global ocean measurements.



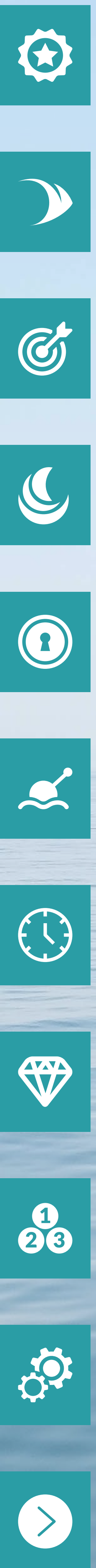
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POGO's capability and capacity, our uniqueness, is defined by:

- Distributed network: with a presence on every continent and access to all major ocean basins, we provide many of the key technological and methodological innovations needed for *in-situ* observations.
- Excellence in research: a consortia of the world's leading research institutions, who individually have distinct strengths and collectively have unparalleled expertise. POGO's members are well-known ocean research institutions of high stature and profile in our own countries. We are recognised and respected institutions within the international scientific community.
- Collaborative achievement: decades of cross-institutional research activities conducted at a global-scale. POGO's member institutions are home to many of the key scientists and technologists developing the global ocean research and measurement agenda.
- Institutional longevity: research institutional arrangements that are stable and have delivered an innovative long-term observing system. We are repositories of the technical expertise, experience and know how, often built up over many decades, needed to develop, continually innovate and adapt an in situ observing system in harsh ocean environments.
- Trust: commitment to providing peer reviewed and open data sharing of global ocean measurements.



Many actors, working together internationally, are needed to bring about sustainable management of the ocean that is informed by sound science, underpinned by a comprehensive global ocean measurement system. These include national governments working individually and through intergovernmental structures– who are agents for action and international consensus and support the governance framework for international cooperation and non-governmental organisations aimed at coordinating science, influencing policy and/or raising public awareness at regional and global scales.

Our distributed network includes:

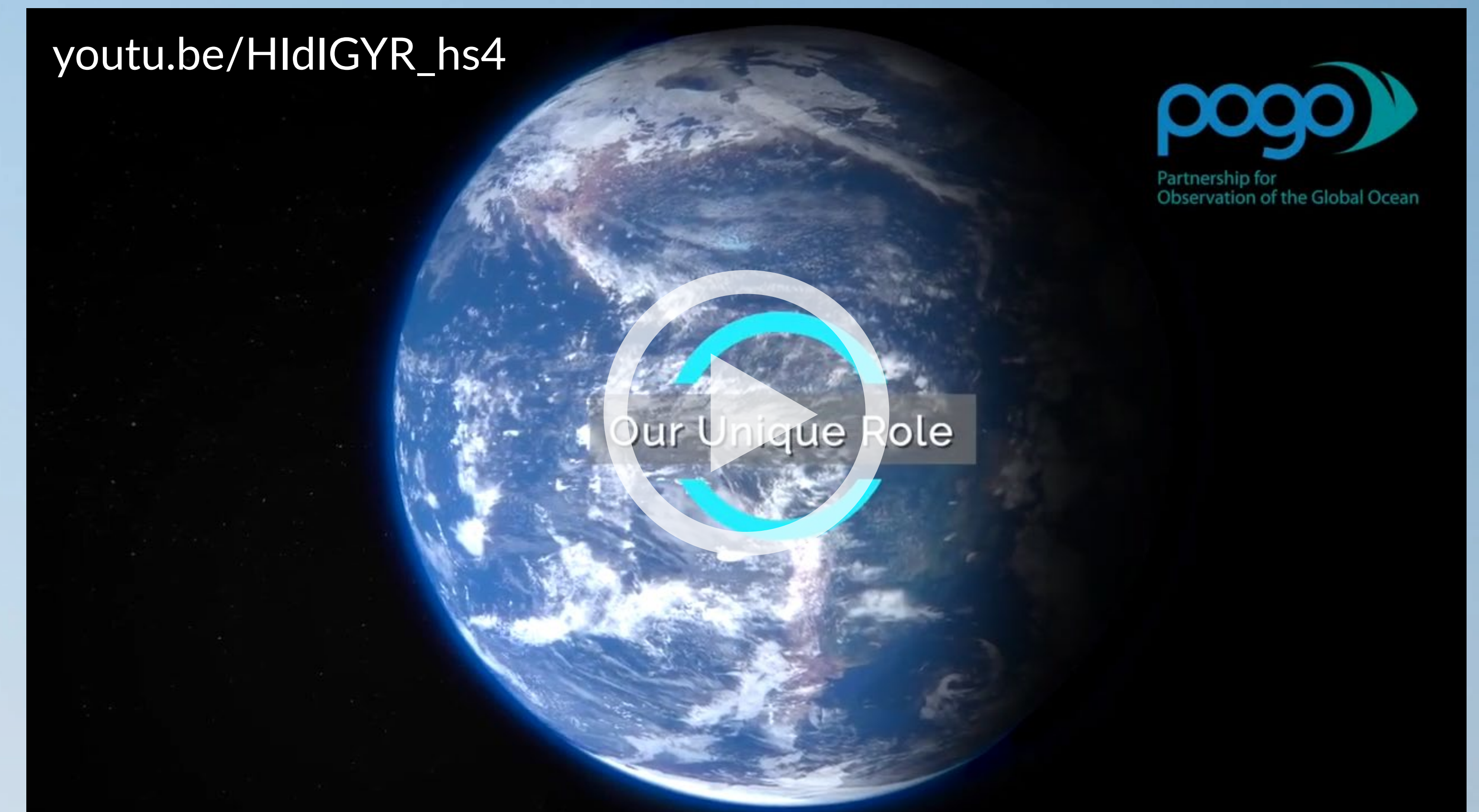
- The wider scientific community, working nationally and internationally – who undertake research, share and synthesise ideas and findings and identify key scientific challenges and develop internationally agreed research agendas.
- Funders of research and monitoring programmes whether they be governments, businesses or not for profit foundations – who provide the resources needed.
- Individual citizens whose support and desire for a better life and world provides continuing motivation and inspiration for all involved.

Our aim is to focus on actions based on our unique individual and collective capabilities as described. It is not our aim to duplicate or replicate work that can or should be done by other organisations with relevant competencies.

We retain close and complementary relationships with two bodies providing overarching frameworks for global observations, namely UNESCO's Intergovernmental Oceanographic Commission governed Global Ocean Observing System (IOC-GOOS) and the Group on Earth Observation's Blue Planet Initiative.

Our unique capability and capacity mean we are ideally placed to deliver some of the UN Decade's greatest challenges, namely:

- Expanding sustained and systematic ocean observations to all ocean basins and depths to document ocean change, initialise coupled models and facilitate improved ocean understanding.
- Advancing ocean robotics and the combination of remote and *in situ* ocean observations, which offer new opportunities and reduce operational costs.



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OUR PRIORITIES

1 INNOVATION IN OCEAN OBSERVING

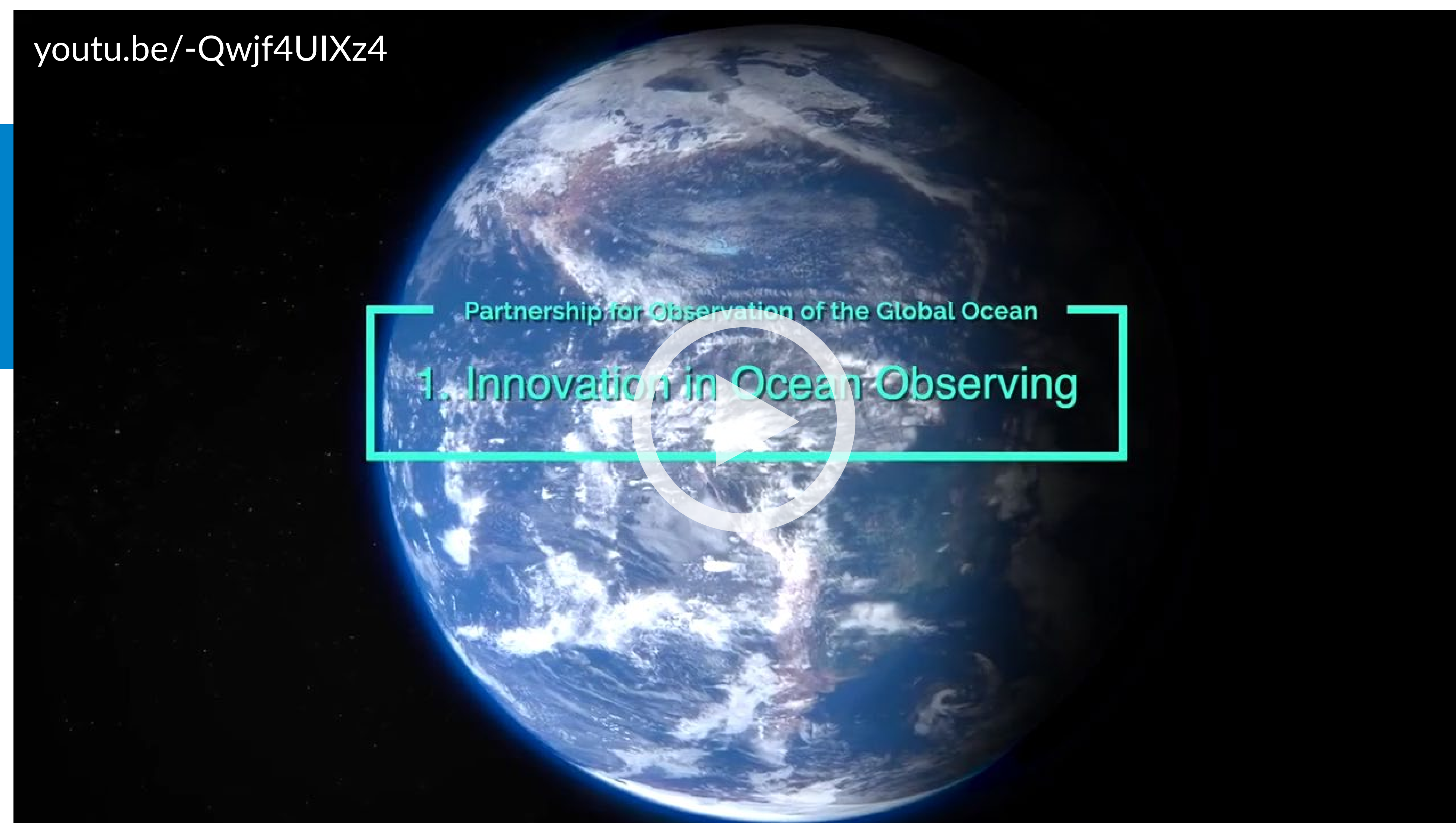
Lead the making and innovation of observations that contribute to the global ocean observing system.

Over the next 5 years, we will focus on advancing and operationalising biological ocean observations, to mainstream observations of biodiversity and ecosystems as an integral part of GOOS.

We will judge progress by our success in

- Refreshing the way we think about the approach to building the global observing system from the opportunities opened by rapidly developing and adopting emerging and transformative technologies.
- Expanding the observing system in quantum steps in respect of biological and biogeochemical parameters.
- Leading innovation in ocean observing within the UN Decade and in preparations for the decadal status review at the OceanObs' 29 conference.

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NOAA Office of Ocean Exploration and Research, Deep-Sea Symphony: Exploring the Musicians Seamounts

2 CAPACITY DEVELOPMENT

Develop the world-wide capacity and capabilities needed for ocean observations and nurture new generations of scientists, technical experts and leaders in ocean affairs.

Over the next 5 years, we will focus on training programmes geared towards the direct application of skills and methods learnt to the available resources in the home institutions. We will also provide access to and training on the construction, use and maintenance of low-cost observing technologies, and provide opportunities for knowledge and technology transfer through the POGO network.

We will judge progress by our success in

- Developing low-cost, open-access technologies and integrating citizen science into global ocean observing networks;
- Developing the human resources required for ocean and coastal observations at the global scale
- Integrating our alumni into global networks, and their institutions into the POGO consortium.

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Partnership for Observation of the Global Ocean

2. Capacity Development

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POGO

3 OUTREACH AND ADVOCACY

Advocate and promote in our own countries and world-wide (to inter-governmental organisations, governments, funding agencies, businesses, foundations and citizens) the importance of making systematic sustained, ocean observations for the advancement of science and for sustainable management of the ocean.

Over the next 5 years, we will focus on developing our relationship with governments and businesses and develop convincing case studies on the importance of ocean observing for the global economy as well as for human health and safety. We will also develop citizen science projects targeting specific stakeholder groups (e.g. school children, fishers, professional yacht racers...).



Ha Nam Thang

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We will judge progress by our success in

- Increasing awareness and understanding of the “real-life” applications of ocean observations and of the need for sustained funding for continuous, global observing.
- Broadening the membership of POGO to a wider range of oceanographic institutions across the world to increase diversity of perspectives on our shared goals and extending geographical coverage.
- Widening and strengthening engagement with a more diverse range of potential partners especially in business and industry, to better understand their measurement needs, advance uptake and exchange of new technologies between business and science, enhance skills and capabilities, and achieve a more broad-based support for sustained ocean observations.



HOW WE WORK

This strategy provides the overall framework within which we work and explain our aims to others.



SIO Time Series Group

We will place particular emphasis on:

- Continually committing to the importance of scientific and technical excellence and rigour in underpinning all we do.
- Developing joint activities where we particularly strive to support long-term measurements and associated capability (rather than more ad hoc individual experiments or expeditions, which are also part of our work as individual institutions).
- Promoting and increasing the participation of developing countries in ocean observation through joint activities, region-focused ship time, capacity development initiatives and financial support for participation in POGO.
- Areas where we can make a collective difference because the whole is greater than the sum of what we could do individually.
- Developing common messages and consensus position statements that can be used by members to promote and deliver our shared aims in national and international contexts.
- Sharing experiences and practices that can be used to assist individual institutions to continually improve their approaches to delivering our shared priorities.
- Keeping our primary focus on ocean observations, while adapting to changing global circumstances.
- Introducing the knowledge of ocean observations accumulated by indigenous peoples.

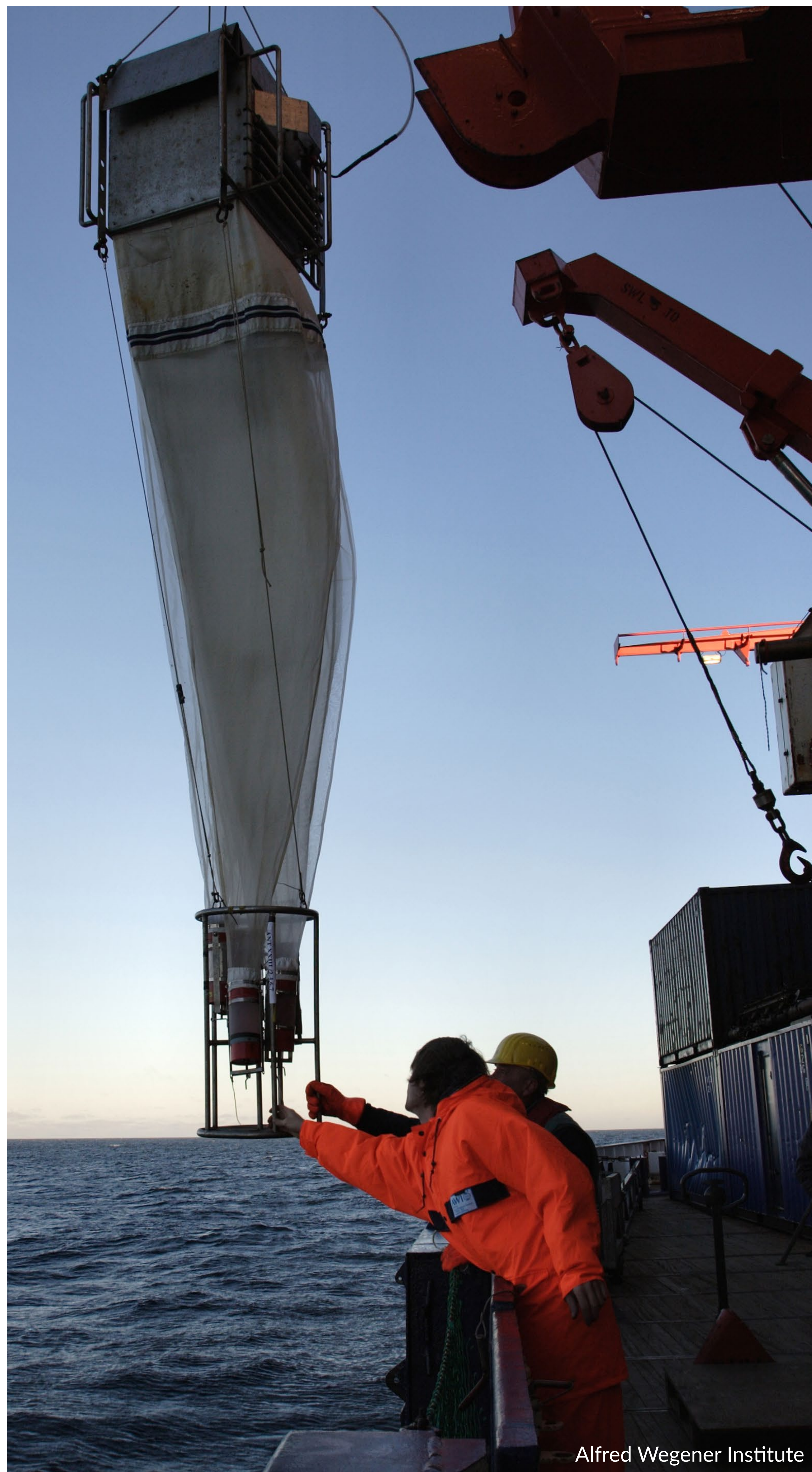


In recognising the complementary contributions of others we may from time to time:

- Develop recommendations for consideration by other competent organisations.
- Seek, where appropriate, to work in partnership with a diverse range of other like-minded organisations and individuals when that would add weight, value and breadth of perspective in delivering or promoting our vision and purposes.

In terms of working methods we will:

- Work by consensus.
- Work within a documented, open and transparent governance, decision making and reporting framework.
- Engage together as a group directly once a year. This is expected to be at director level within institutions to build and sustain a spirit of mutual trust, ease communication and maximise the influence of our collective voice.
- Communicate on a regular basis, electronically or in person, in between annual meetings, to ensure that progress is being made.



In terms of the annual meeting:

- Its purpose will be to set priorities, hear reports of progress, share best practice and grow and develop the global ocean observing community.
- In selecting a venue for the annual meeting, due consideration will be given to the relative merits, opportunities and timeliness of meeting in one of the member's institutes or in other venues such as in capital cities where we may have the opportunity to directly engage collectively with relevant decision-makers and other influencers to advance our collective aims.
- Time-limited inter-sessional working groups shall be established to progress activities agreed upon at the annual meeting.

In terms of this strategy document, we will:

- Support delivery of this strategy with a more detailed implementation plan and work programme.
- Revisit and refresh our strategy at least every 5 years.





CALL TO ACTION

We call on the wider scientific community to communicate with the general public about the importance of the ocean and its life to human well-being. We can no longer afford to remain ignorant of the ocean's impact on society and our impact on it.

We call on policy makers in all nations to take into account the urgent need for a more sustainable relationship between healthy people, healthy economies and a healthy ocean. To do this we need to be more continually aware of how and why the ocean is changing. We urge that sound scientific understanding of the ocean underpinned by ocean observations spanning the globe is critical to transforming the relationship between people and the ocean.

We call on the ocean observing community -in particular our members- to seize this pivotal

opportunity, driven by advances in technology and the ever-growing urgency to redouble efforts to complete work already started: to build and innovate the truly global ocean observation system needed. We, the world's major oceanographic institutions – who are based on every continent and around every ocean basin on the globe - have between us most of the key expertise necessary to build this system - but we know the endeavour will fail unless we work together – the ocean is too vast and too interconnected to do otherwise.

We call on all like-minded institutions to join us – to take up the tasks of making the measurements, growing and developing the skills needed world-wide and engaging decision-makers, influencers and citizens everywhere in promoting the case for resources to enable this vitally important world-wide endeavour.

youtu.be/V9ThXmXxtrg



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