



Challenger 150 Conference

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STATEMENT

by

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It really is a tremendous honour and a privilege to be here today to celebrate the 150th anniversary of the Challenger expedition.

It is also a great privilege for the International Seabed Authority to be the headline sponsor of this event. We are delighted to take the opportunity to participate in force this week as a sign of our strong commitment to international scientific research on the ocean and its resources.

As every student of marine geology knows, the immediate connection between ISA and the Challenger expedition is that HMS Challenger recovered large quantities of hitherto unknown manganese nodules from the seafloor of the Pacific, Indian and Atlantic Oceans. The reports of the expedition make interesting reading. Although the morphologies, internal structures and chemistry of these nodules were scientifically interesting, there was no suggestion at the time that nodules could ever be exploited commercially.

Manganese nodules would remain an interesting footnote for students of marine geology for the next 75 years until the International Geophysical Year in 1957-58 and the subsequent publication of John Mero's seminal book *Mineral Resources of the Sea* in 1965.

Mero's estimates of the tremendous resource potential of manganese nodules – which have never been shown to be wrong – and the response of the major mining companies at the time, who invested over \$600 million into resource evaluation and the development of mining and processing technologies, led directly to Arvid Pardo's proposal to the General Assembly of the United Nations to set aside the seafloor and its resources as the common heritage of mankind. The major implication of this was, for the first time in human history, to create a global common to be administered internationally for the benefit of all.

That proposal in turn would set off a sequence of events leading to the Third United Nations Conference on the Law of the Sea, from 1974 to 1982, and the adoption of the United Nations Convention on the Law of the Sea – UNCLOS – which created the International Seabed Authority as the institution through which

States parties to the Convention would organize and control all activities relating to mineral exploration and exploitation in the seabed beyond national jurisdiction.

So, in a way, we can see that UNCLOS, and ISA, have a direct connection to the discoveries made by HMS Challenger.

But I want to take the opportunity today to explore another connection between the Challenger expedition and ISA.

Just as HMS Challenger ushered in a new era of oceanographic exploration, so the decision to internationalize the deep seabed ushered in a new era of marine science and technology for the benefit of all humanity.

Although interest in deep sea mining has waxed and waned over the years since Mero's book was published, we now have the benefit of 50 years of scientific exploration of the deep seabed. The Clarion Clipperton Zone, where HMS Challenger recovered those first samples, and which has been the focus for much of the ISA's work, is now one of the most intensively studied areas of seafloor on the planet. Most, if not all, of this research has been driven by the prospect that, eventually, deep sea mining will prove commercially viable and environmentally sustainable.

As a result of this research, we have massively improved our understanding of geological processes in the Earth's upper mantle. We have developed a holistic understanding of the relevant processes for the formation of manganese nodules and identified the prime ocean basins for their enrichment. We have discovered new mineral resources, including polymetallic sulphides and cobalt-rich crusts and advanced our understanding of hydrothermal circulation as the prime process for crustal cooling at mid-ocean ridges and the high number of hydrothermal vent sites along ocean ridges. We also have a much better understanding of mid-ocean ridge geometries, formations, spreading rates, overlaps, tectonic and volcanic activities.

In terms of ecology, we have recognized that the deep sea is the largest environment on Earth, supporting a particularly high biodiversity, but also that no part of the ocean is completely untouched by anthropogenic activity. Most of that activity of course, is on land. At the same time, through efforts such as the Census of Marine Life, we have significantly increased our understanding of deep-sea biodiversity and the measures necessary to ensure proper conservation and management.

These advances have gone hand in hand with the development of marine technology and innovation. Especially relevant are advances in AUV and ROV technology, a transformation in the way in which we can map the seafloor through multi-beam echo sounding, and the development of more sophisticated systems for oceanographic sampling, measurement, and monitoring of physical, chemical, and biological parameters.

One hundred and fifty years after Challenger, there are of course fundamental differences in the way in which we approach ocean science.

Let me mention just three of them, which are particularly relevant both to the work of ISA and for consideration of the future of ocean science.

First is the fact that, thanks to the UN Convention on the Law of the Sea, or UNCLOS, there is a globally accepted legal regime governing and enabling international cooperation in ocean science. For the deep seabed beyond national jurisdiction, that regime is embodied by ISA and the mandate it is given under UNCLOS.

At the core of UNCLOS is a collective vision of a comprehensive legal regime to achieve the sustainable use of marine mineral resources based on equality between States and in such a way as to provide benefit for all humanity.

In this context, the International Seabed Authority has been equipped with a series of unique and complementary responsibilities including to manage activities in the deep seabed, protect the marine environment, promote, and encourage marine scientific research and share the benefits based on equity.

This regime is one of the most complex and ambitious systems of global governance that humanity has yet devised. It must balance all interests in a way that is fair and promotes consensus. Implementation has presented challenges and is frequently misunderstood and misrepresented. Yet overall, it has been hugely successful.

One clear indicator of this success is that since UNCLOS was adopted in 1982 there have been no unilateral claims to the seabed resources outside the international rules set by ISA. On the contrary, ISA has granted 31 exploration contracts to a diverse range of States, state entities and private corporations sponsored by States. Eleven of these contracts were granted to developing States, including six Small Island Developing States, which is further evidence that the regime works in the way it was intended to work.

Some of these contracts have been in place for more than 20 years, and many of them are quite mature. In practical terms this has resulted in significant advances by contractors in identifying the existence, or not, of mineral resources, in mapping the seafloor in detail, and of particular importance, in carrying out environmental studies, which have taken them to the point of decision as to whether they intend to proceed to exploitation. In some cases, tests of mining technology are being performed.

The reality also is that, far from damaging marine ecosystems, the data and information generated from exploration for minerals resources over the past 50 years have made an important contribution to increased knowledge of the deep sea and its environment. Some of these contributions I have already mentioned. The same scientific knowledge also plays a critical role in informing the development of evolving rules governing future exploitation, which is being done before any extractive activity begins.

It is through the development and implementation of a set of rules and standards governing deep-seabed mining and related activities, including rules for marine scientific research, that the international community can balance the imperative need for resource extraction with the preservation of the marine environment. The goal is a regime that is crafted in a way that fully respects the proper application of the precautionary approach yet is consistent with the social, economic, and environmental aspirations of the sustainable development goals.

Mention of the SDGs brings me on to the second fundamental difference in the way in which we approach ocean science. Something that was noticeably absent from the HMS Challenger expedition is the participation of women in ocean science.

I must observe that the same absence was also noticeable even in the law of the sea conferences in the 1970s. Progress has been regrettably slow. I learned recently for example that it was only as recently as 1987 that Australia permitted women to go to sea as seaman officers. But we have seen much better progress in recent years, largely because of SDG 5 on gender equality. Here again, the ISA is proud to have been a leader on that front and to be taking practical steps to identify and implement specific actions that will result in women's empowerment and leadership.

One example is our Women in Deep Sea Research Project, which is being implemented in partnership with a long list of UN agencies, governments, and institutions, including the National Oceanography Centre. This project aims to raise awareness of the challenges faced by women scientists from developing countries and identify practical steps to alleviate those challenges.

Another example is our request to our exploration contractors to give more priority to training for women scientists for developing countries, which has been remarkably successful. In fact, it turned out that we were pushing at an open door. We are proud to say that out of 163 individuals who have benefited from the contractor training programme in the past three years, 74 were women. What we need to do is focus on empowering these trainees and making sure that they can be supported during and after training, for example through developing networks and communities of practice. Similarly, ISA contractors, from 22 different countries, were willing to follow ISA's lead and adopt and publicize anti-harassment policies for women on board research vessels.

I am pleased to share with you today that in few weeks, the project will launch a ambitious mentoring programme which I believe will significantly contribute further to better inclusivity and gender representation in a field of work where too many barriers exist. I invite you all to join us in this endeavor and am sure my team would be happy this week to liaise with any of you interested to formalize your engagement.

I also wish to take this opportunity to put in a word for our Women in Law of the Sea Conference, to be held in New York later this month. All information is available on our website and registration are open.

The third fundamental difference is also something that was absent from the Challenger expedition and that is a recognition of the need for diversity and a focus on equity and capacity development.

Today we recognize that the interests of all humanity in the ocean and the conservation and sustainable use of its resources make it imperative that the global governance regime reflects the maritime interests of all States, whether coastal or landlocked, and with due consideration for the specific needs of the most vulnerable groups, such as the landlocked countries and small island developing States.

This is an issue that is particularly important for ISA and something that lies at the heart of our mandate under UNCLOS. It is also a personal priority since I took office, and I am pleased to note today that important progress has been made. The entirety of UNCLOS was based on the premise that the resources of the ocean should not be reserved exclusively for the wealthy and technologically advanced States but

should be distributed to all based on equity. It is incumbent on all of us to ensure that developing States can participate fully in ocean science and benefit from the results.

So, since the title of this plenary session is the Future of Global Ocean Science, let me offer a few thoughts on the future.

I will start by just saying a few words about the UN Decade of Ocean Science for Sustainable Development. Quite rightly, a lot of emphasis has been placed on the importance of the Decade and a great deal of hope has been invested in the possible outcomes. Some have even explicitly linked the Decade with the progress of deep seabed mining.

In my view, this is a mistake. The Decade of Ocean Science is intended as a catalyst for greater investment in ocean science, in line with the rights and obligations recognized by UNCLOS to States parties and in accordance with the mandates and responsibilities assigned to all competent entities.

It is one element of the existing policy framework conceived to generate impetus and strengthen international cooperation in support of the achievement of the 2030 Agenda for Sustainable Development.

It was not intended as a political tool to be used to review existing legal instruments or challenge any legal regime in place. The fact that it is being used, sometimes, to project political objectives or interests in the name of science undermines the importance of science and the independence of scientists. Scientific knowledge is a continuum. It does not reach a defined point but continues to accumulate over time. We will always know more tomorrow than we know today, and it is not a scientific approach to say that we will have a predetermined amount of knowledge in five- or ten-years' time. This is just an excuse for inaction.

Having said that, ISA is a strong supporter of the Decade and is pleased to play an important role, with IOC-UNESCO, in managing the activities under the Decade. The ISA Assembly has adopted its own Action Plan for marine scientific research in support of the Decade, which sets out six key research priorities for deep sea science. This global political commitment has already led to establishing several strategic partnerships and alliances and leveraging important resources that will enable us, together with all competent stakeholders, to significantly increase the work and advance global knowledge and understanding of fundamental issues.

And this brings me to the three points I wish to make about the future for global ocean science.

First, international efforts in ocean science must be prioritized to respond to societal needs. That is really the point both of the UN Decade of Ocean Science and the ISA Action Plan for marine scientific research. Altruistic science has a place, but we must face the fact that there are limited global resources for ocean science. Collective focus should be on creating synergies and allocating those resources where they are needed most. This implies the need for international cooperation, especially where questions are simply too big for one agency or institution to be able to answer.

An example is ISA's Sustainable Seabed Knowledge Initiative, a global project which started from the identification of a need to intensify efforts to categorize and identify deep sea species. Something that everybody agrees is desirable, necessary, and achievable, but only if people and institutions around the world can be brought together under a common framework. We are delighted to be cooperating with the Museum in the implementation of this initiative.

Second, the importance of independent science. This is a difficult and contentious issue. In some ways, there is no such thing as perfectly independent science. Scientists are human beings like the rest of us and entitled to express their opinions. On the other hand, good science is good science and the fact that science has been funded by industry or by philanthropy does not necessarily make it any less independent. Most ISA contractors have policies in place that permit open publication of scientific results, and this is something that ISA actively encourages.

Independent science also requires that clear boundaries be established between research and decision-making. It is the task of scientists to provide scientific information and advice. Policy makers should, and must, take into account the best available scientific evidence, but this is one of a range of other factors to be considered in reaching decisions that respond to the overall needs of society.

Third, and returning to the earlier theme, global ocean science must be inclusive. It is in the interests of science to ensure that experts from developing States be associated with and progressively equipped to lead and inform their own national institutions. I am proud to say that ISA is once again, leading on that front. I also wish to publicly acknowledge and thank all member States, development partners, contractors, and scientific institutions such as the Natural History Museum and the National Oceanography Centre for providing concrete opportunities to make this a reality.

However, as a community we need to do more and it is in that spirit that the last ISA Assembly, just a few weeks ago, adopted the new Capacity Development Strategy which provides unique and forward-looking objectives and outputs that should allow us to ensure more integrated participation of developing States.
