

The Philippines submission in the Benham Rise region: lessons learned from establishing the outer limits of the continental shelf around a large igneous province

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Abstract

In April 2012, the Commission on the Limits of the Continental Shelf (CLCS) adopted by consensus its recommendations regarding the Philippines' submission in the Benham Rise region. The Philippines successfully demonstrated that Benham Rise, a large igneous province, is a natural prolongation of Luzon Island. Approximately 137,000 sq. km was added to the State's seabed entitlement, an area about 25% larger than the island. This presentation describes technical aspects of the Benham Rise submission process that could be useful for coastal States yet to establish continental shelf outer limits whose continental shelves include areas of hotspot-spreading ridge interaction, such as Costa Rica and Ecuador. Key points include demonstrating accretion of the feature, continuity across narrow saddles, and foot of slope points along fracture zones.

Legal regime of Shipbreaking in Bangladesh: An Analysis of its Compatibility with International Law

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Abstract:

Ship-breaking or recycling is an inseparable part of the global shipping industry and is widely known as a pollution haven industry. With some limited exception ship-breaking industry is currently concentrated only in three countries of the Indian subcontinents who exclusively rely on their inter-tidal zones to carry out this gigantic operation. Presently there is no enforceable international law that directly governs this industry. Bangladesh's ratification to the recently adopted Hong Kong Convention on ship recycling (Not enforced) is extremely crucial for the enforcement of this convention. Bangladesh law on ship-breaking on the other hand, has recently undergone a stringent review by its supreme judiciary which ultimately has led to the enactment of Ship-breaking and Recycling Rule 2011. Endeavour has been taken, using doctrinal and comparative research methodology, to assess the efficacy of this important legal and institutional framework attempting to ensure a sustainable, safe and environmentally sound recycling of ships and its preparedness to ratify the Hong Kong Convention. The research demonstrates that numerous legislative attempts designed to ratify the Convention have been too little too late to bring about a sustainable solution for Bangladesh due to the incompatibility of the provisions of this convention with the reality on the grounds of this developing nation. Curbing the catastrophe in coastal environmental from ship-breaking on its littoral zone through these questionable legislative frameworks remains a far cry.

Classificaitons of Seafloor Highs according to Legal Hermeneutics

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Abstract:

The classification of seafloor highs as submarine elevations that are natural components of the continental margin is the core exercise in the application of Article 76 of UNCLOS. Its outcome determines whether the outer limits are necessarily constrained by a 350 M distance line from the baselines, or, alternatively, according to the 2.500 m depth constraint the latter of which may be more advantageous. Such classifications are rendered difficult because of a general lack of any clear definition in the treaty text. This presentation purports to examine the constitutive criteria that govern the classification of seafloor highs as submarine elevations that are natural components of the continental margin. It is concluded that the interpretation of Article 76(6) of UNCLOS is necessarily dictated by a textual approach.

The Brazilian Legal Framework on Deep-Seabed Mining

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Abstract:

Aiming to analyse the international legal system of protection of the marine environment applicable to deep-seabed mining, the panellist intends to answer the questions: do Brazilian law comply with the International Seabed Authority (“ISA”) standards of environmental protection? What are the main challenges faced by the country? The research is based on an understanding of the principle of the common heritage of mankind and its consequences in the national legal system. In this context, the critical analysis of the Brazilian national law will be made in the light of the study of international responsibility of the States for marine environmental damages, being thus fundamental to analyse the outcomes of ITLOS Case No. and to study ISA’s regulations and recommendations. Thus, when facing those questions, first it is necessary to explain UNCLOS relevant provisions on deep-seabed mining in international maritime areas, highlighting the importance of the marine environment and the rules of marine environment protection. Then, one must make considerations on the International Tribunal for the Law of the Sea (“ITLOS”) Advisory Opinion No. 17 and ISA regulations in force. Finally, the Brazilian legal framework shall be analysed and the applicable national laws must be compared with the international legal system of protection of the deep-seabed marine environment.

Examining the question whether naturally formed features can ever be artificial in light of the South China Sea Award (2016)

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Abstract

Discussions of insular status have, in recent times, seemingly assumed that naturally formed features may attain artificial status, which a feature may through human modification transform into an artificial island. However, the presentation will explain that this assumption may not be so readily made. Indeed, we are reminded that this is so by the South China Sea Award—which constitutes the most significant consideration of such matters in recent times. It will be demonstrated that the Award revealed the long-held doubt about whether naturally formed features can ever be artificial ones. It will explore this question in light of the treatment of heavily modified features by the Arbitral Tribunal. It will be shown that the Award does not clarify the position and contend that a solution on such matters is needed for the effective governance of our oceans in light of the advances in state coastal engineering and island construction capabilities.

China Submits Undersea Feature Name Proposals, Actively Participate in International Cooperation of SCUFN

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Abstract:

Undersea feature names refer to the naming of special seabed topography and physiognomy after scientific discrimination and confirmation. It is an indispensable geographical element for coastal countries in the process of ocean mapping and surveying. The standardization and systematization of undersea feature names can avoid the problem of multiple names for one place and multiple locations for one name in the seabed, and provide concise tool and reference frame for people to identify, describe and manage the oceans.

In recent years, the undersea feature names in China have flourished, and as of 2018, 116 Chinese undersea feature name proposals have been accepted by SCUFN and included in the GEBCO Gazetteer. For quantitative terms, the undersea feature name proposals show an increasing trend from 7 in 2011 to 79 in 2018. For the sea area, the undersea feature names span from the Pacific Ocean, Atlantic Ocean to Indian Ocean. For the way of submitting, it is achieved from the submission of domestic institutions to specialized agencies, respectively submitted by the China Committee Undersea Feature Names (CCUFN). In addition, China has established a system of naming rules embodying the Chinese traditional culture.

The work of undersea feature names for China has become an important part of the national marine management system, which has practical significance. Firstly, the publication and use of undersea feature names have realized the cognition and description of the seabed topography in relevant area. It is beneficial to the compilation of all kinds of marine maps and the development of marine scientific research. Secondly, the acquisition of geographic information related to undersea feature names requires a large number of marine science and research work as support. As an opportunity, it is helpful to improve the level of marine science and research in China. Thirdly, by participating in the international undersea feature names, we can show the results of China's marine investigation to the international community, realize the exchange and sharing of relevant information, and strengthen the international exchange of scientific investigation and exploration in the marine field. Finally, active participation in the work of undersea feature names is helpful to grasp the new trend of international ocean affairs rules, to express the will of China in the process of rules making and modification, to shape national image and publicize the national culture externally.

A large number of Chinese undersea feature name proposals are adopted, not only reflecting the strength promotion of China's marine research and the importance

attached by the State to the ocean, but also showing China's positive contribution to the international undersea feature names. In the future, China will further grasp and apply the guidelines, principles and rules of the SCUFN, strengthen the investigation of the topography in seabed, make full use of the survey data available, actively participate in SCUFN international cooperation, and strive for the adoption of more undersea feature name proposals, make greater contributions to international maritime affairs.

SOU-A specific method for delineating the outer margin of the continental margin in particular regions

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Abstract:

Delineating the outer edge of the continental margin is the basis for determining the outer limits of the continental shelf of a coastal State beyond 200 nautical miles from its baselines from which the breadth of the territorial sea is measured. In addition to the method for determining the outer margin of the continental margin provided for in Article 76, the Third United Nations Conference on the Law of the Sea adopted the “Statement of understanding concerning a specific method to be used in establishing the outer edge of the continental margin” (SOU) . The SOU establishing a specific method for delineating the outer margin of a continental margin in particular regions.

The submerged prolongation of Islands' land masses. The particular case of islands located in active spreading mid-oceanic ridges settings.

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Abstract:

From the articulation of articles 121 (2) and 76 of the United Nations Convention on the Law of the Sea (UNCLOS), islands from a coastal State are entitled to a continental shelf, to be determined in the same way as for any other land territory.

UNCLOS defines the continental shelf of a coastal State in relation to its continental margin. Article 76 (3) defines the continental margin in terms of the submerged prolongation of the land mass of the coastal State, irrespectively of the nature of the crust that supports that land mass. This concept of crustal neutrality is also supported in paragraph 7.2.9 of the Scientific and Technical Guidelines (S&TG) of the Commission on the Limits of the Continental Shelf (CLCS).

For the purposes of UNCLOS any kind of land mass of a coastal State may generate a continental margin to be delineated in accordance with Article 76. However, establishing the outer edge of the continental margin of islands located in active spreading mid-oceanic ridges settings may present a challenge to coastal States when following the methodology developed in the S&TG, which were established considering geological continental margins.

This paper discusses how to distinguish the base of the continental slope (BOS) from the deep ocean floor for islands in active spreading mid-oceanic ridge settings within the legal framework provided by UNCLOS, taking into account the S&TG, and the summary of recommendations adopted so far by the CLCS.

Technical and Legal Challenges of the Statement of Understanding

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Abstract:

The Statement of Understanding adopted at the final UNCLOS negotiating conference modifies the application of the sediment thickness formula in Article 76(4) in certain circumstances. A qualified State that implements this provision may establish the outer edge of its continental shelf by a line where the sediment thickness is not less than 1km. Three States (Sri Lanka, Myanmar and Kenya) have invoked the Statement in their submissions to the CLCS. We discuss some of the technical and legal challenges that the CLCS may have to address when considering these submissions.

Continental Prolongation - a Review of CLCS Recommendations

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Abstract:

Recommendations of the Commission on the Limits of the Continental Shelf (CLCS) for 31 regions have been adopted. These regions include a diverse range of morphological and geological characteristics and tectonic histories. Examples from these recommendations are used to illustrate how the CLCS has interpreted the natural prolongation of a State's land mass to the outer edge of various types of continental margins. In particular, they are used to illustrate how bathymetric, geophysical and geological data assist the interpretation of the morphology and identify the region of the base of the slope.

The French national portal of maritime limits

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Abstract:

France's maritime spaces, a total area of around 10.8 million km², represent the world's second largest maritime space. Due to the extent of those maritime spaces through the World, France shares 47 maritime boundaries with 31 neighbouring countries. Currently, about twenty-five of those maritime boundaries are defined by a bilateral agreement.

As national referent for maritime delimitations, the French hydrographic office – Shom - is contributing to the definition of the maritime spaces of sovereignty or jurisdiction by computing the limits according to UNCLOS definitions and drawing up the technical elements of decrees. Shom also provides technical support to the French Ministry of foreign affairs within the scope of bilateral negotiations for maritime boundaries. It also contributes to the set-up and the defence of the submissions of continental shelf extension in front of the CLCS within the scope of the national program Extraplac.

This presentation will focus on the request of the government and the development of the national portal of maritime limits. An update will be given on the issues involved in the finalization of cross-border projects of maritime spatial planning (example of Europe).

Geographical changes and their impact on the legal status of maritime features and in the context of maritime delimitation

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Abstract:

Coastal geography can be transformed by natural phenomena, such as erosion, accretion or sea-level change, or by artificial means, such as land reclamation or the construction of artificial islands, installations and structures.

This presentation will focus on the effects of those natural and artificial changes on the legal status of maritime features and in the context of maritime delimitation.

With regard to the methodology, after giving a general overview of the topic, a review of the practice of States and contemporary jurisprudence will be provided. In this respect, practical examples will be used to illustrate the complexity of the topic, such as those concerning Okinotorishima (Japan) and the maritime features in the South China Sea that have been heavily transformed by human modification. Special reference will be also made to the work of the International Law Association Committees on “Baselines under the International Law of the Sea” and on “International Law and Sea Level Rise”. Finally, some concluding remarks will be made to highlight some of the main issues and questions that remain opened.

Boundaries beyond 200 nautical miles

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Abstract:

Despite the many maritime boundaries established by international Courts and Tribunals, only three of these delimit the continental shelf beyond 200 nautical miles (M) (Bangladesh/Myanmar, Bangladesh/India and Côte d'Ivoire/Ghana). With cases currently before the court, and many such shelf boundaries yet to be delimited, we question whether there have been precedents set or if there is emerging case law in delimitation beyond 200 M.

The three-step approach commonly used by the Court provides a useful element to boundary delimitation and has been applied in all three continental shelf cases. The outcome of the boundaries beyond 200 M has been rather similar in all three cases, with the boundary beyond 200 M following the same azimuth of that within 200 M.

Notably, these three cases are all between adjacent States, and therefore no precedents exist for delimitation between opposite States. Here delimitation is likely to reflect different methods, and may take into account the seafloor geomorphology and geology, which has been soundly dismissed in previous cases. We discuss these implications, and also comment on the risks of the Court delimiting before Article 76 recommendations are available.

The Canada-US Boundary Dispute In The Beaufort Sea: Employing an Integrated Law-And-Science Approach To Resolving Maritime Boundary Disputes In Arctic Waters

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Abstract:

This contribution will analyse the unresolved maritime boundary, situated in Arctic waters in the Beaufort Sea, between Canada and the United States (US) based on an integrated law-and-science approach incorporating new imagery technology. Resolving the Canada-US disagreement over the Beaufort Sea boundary based on modern geo-scientific technology, including a new 4DSSM (Satellite Seafloor Morphology) image analysis technique, that will be used to create, review, and QC (Quality Control) check suggested present-day Normal Baselines for both Canada and the USA (not published) and additionally will be used to review the Canadian Straight Baselines (Published). These new suggested Baselines will then be used to create the equitable solution for the yet-to-be-resolved Maritime Boundary. The three-step delimitation methodology developed by the jurisprudence of international courts and tribunals could serve as a catalyst for the peaceful and equitable resolution of all other unresolved boundaries in the Arctic Ocean. This includes the boundaries involving Russia, which can claim more than 40 percent of the Arctic shoreline. Given that the US is not a party to the UN Convention on the Law of the Sea, this contribution will focus on mechanisms available to Canada and the US under general international law and by applying “best law” and “best science” to predict possible outcomes.

The Eastern Mediterranean: Will Law of the Sea Applications Unlock Both Seabed Hydrocarbons and a Regional Peace?

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Abstract:

The Eastern Mediterranean Sea is rimmed by seven states, with an overall Maritime Frontier Area of approximately 464,637 square kilometres (geodetic). These offshore waters are rich in possible/probable seabed hydrocarbon resources. Estimates suggest that the area contains up to USD 50 Trillion Dollars' worth of oil and gas, mostly the latter. And yet, only two genuinely major discoveries have been made in recent years, both of which are now fully on track to development stage. These are Leviathan, discovered in December 2010 and reported to hold 22 trillion cubic feet in gas reserves, and Zohr, discovered in August 2015 and reported to be even larger at 30 TcF.

The Eastern Mediterranean Regional Law of the Sea Studies area show that, by following the United Nations Guidelines and the applicable "Rules of Procedure" that there are 12 primary Maritime Boundaries that define the offshore Maritime Frontier spaces for Greece-Turkey-Syria- Cyprus- Lebanon – Israel and Egypt. Present day (October 2019) of these twelve Maritime Boundaries, only two have been agreed upon under Bilateral Treaties, leaving ten – or approximately 83% of the region's Maritime Boundaries unresolved and/or in dispute. This can further be broken down into approximately 220 nautical miles of Maritime Boundaries that are treated, leaving approximately 1,223 nautical miles yet to be resolved.

As of October 2019, all seven coastal States in the eastern Mediterranean had active offshore hydrocarbon industries, albeit at very different stages of development, with approximately 238,135 square kilometres of waters divided into some 231 available Oil and Gas Blocks, representing just over 51% of the total offshore waters in the region. Of the present-day blocks currently on offer, up to 36% can be classified as "contentious" due to the current uncertainties regarding the exact locations of the maritime boundaries. As a consequence of the uncertainties surrounding the vast majority of the maritime Boundaries in the Eastern Mediterranean, future economic development is stemming from seabed hydrocarbon discoveries and exploitation already being negatively affected, thereby reducing overall revenue for the region. This will continue unless and until solutions are found and most importantly – implemented.

This paper will review the long-term regional economic potential, for both recent and future hydrocarbon possibilities, with basic reviews for suggested (computed) locations for regional Maritime Boundaries covering all seven Coastal States (using the International Courts & Tribunals "suggested starting positions"- Strict Equidistance (geodetic) Lines Calculations) and, additionally by using 2019 update Regional Mapping (completed in detailed LOS Desktop Studies) for all nations Territorial Sea Baseline Models (TSBM), and using this accurate data, show how

the present-day offered individual Coastal States Oil & Gas Concessions Blocks, are showing “overlaps” based on the suggested (computed Regional Maritime Boundaries)

The Timor-Leste/Australia Conciliation: closing the Timor Gap

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Abstract

The 2018 Timor-Leste/Australia maritime boundary agreement was the first time that the UNCLOS compulsory conciliation procedures had been used. This hitherto untried process differs significantly from the conventional judicial system of dispute resolution through courts and tribunals. Through close engagement with the two Parties the Conciliation Commission were able to understand the seemingly intractable positions on both sides and reach a compromise solution.

The dispute concerned the continental shelf and EEZ boundaries in the infamous Timor Gap. Australia and Indonesia had agreed their seabed boundary in 1972 on either side of Timor-Leste using the principle of natural prolongation; were this to be continued along the Timor Trough it would seriously disadvantage Timor-Leste being about 80M from its coast. Timor-Leste's position has always been that its entitlement under international law should be the median line.

This paper reviews from a technical perspective the history of the long and often acrimonious dispute, the parties' positions at the start of the conciliation and the, often painful and difficult, process that led to the final agreement.

**Unsustainable architecture of present rules on continental shelf outside the
200 mile EEZ limit: A need for reappraisal of existing legal conceptual
framework**

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Abstract

The paper will reappraise of the legal relation between a residual regime of high sea freedoms and the continental shelf beyond the 200 mile outer limit of the EEZ. A new more complex architecture of protected interest from the 19th century general communication interest to present day developing integrated interests as sustainable development of maritime spaces and its conflicting use from biodiversity to exploitation will be discussed. As seen in state practice, coastal states are e.g. more and more reluctant to accept an unfettered freedom of laying cables and pipelines due to concern as biodiversity and sustainable development of maritime spaces including special protected zones of the seabed.

LEGAL STATUS OF THE INTERNATIONAL WARSHIPS WRECKS IN INDONESIA WATER

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Abstract

The definition of warships in international law has been long established. In reverse, the legal status of such vessels after they have sunk has been, and remains, a matter of considerable uncertainty. The 1982 UN Convention on the Law of the Sea (UNCLOS) provides no rules whatsoever relating to sunken warships nor to wrecks more generally. The Legal status of warship still in service is protected by international law and national law of flag State, stipulating that warships are entitled on sovereign immunity. Recently this issue become a big issues due to loss of some warships wreck in Indonesia waters, and rises big question whether or not such sovereign immunity and legal status follows for those warship wreck in Indonesia water? Contemporary international law regulates very few considering 'legal status of international warships wreck', but customary international law, municipal court decisions and State practices are addressing issue quite profoundly, stating that even the warship is no longer in service it is still entitled on sovereign immunity status. In order to acquire clear stand point on issue of Sovereign Wrecks legal status, especially of international warships wreck, an in-depth analysis of legal material is necessary particularly in correlating for both national and international law. The Government of Indonesia is currently conducting an inventory of wrecks of warships in Indonesian waters referring to IHO Publication S-4 and B-420 on Hydrographic Wreck. In connection with that matter, The Hydrographic and Oceanographic Center of Indonesian Navy (Pushidrosal) has published historic wrecks located in Java Sea in Notices to Mariner's and Indonesia has been working on a national regulation for protecting the historic wrecks.

DELIMITATION OF INTERNAL WATERS ON ARCHIPELAGIC STATES CASE STUDY INDONESIA

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Abstract

The United Nations Convention on the Law of the Sea 1982 (UNCLOS 1982) has received recognition as a Constitution for the Oceans, which regulates the archipelagic state. Provisions regarding archipelagic state have been regulated in their own chapter, in Chapter IV Article 46 through Article 53. Delimitation of the internal waters on the archipelagic state is specifically regulated in Article 50 of UNCLOS 1982. This paper tries to examine how the archipelagic state practice in determining the delimitation of the internal waters. The assessment was carried out on the provisions of the laws and regulations of the archipelagic state: Antigua and Barbuda, Cape Verde, Fiji, Philippines, Indonesia, Solomon Islands, Comoros, Papua New Guinea, Sao Tome and Principe, Trinidad and Tobago, Tuvalu, and Vanuatu. Among the Indonesian largest archipelagic state, which consists of 17.504 islands. On these islands there are curve contours that meet the requirements to be referred to as bays, but many also include curves that do not meet the requirements stipulated in Article 50 of UNCLOS 1982, so that internal waters cannot be drawn, but indigenous people call them bays. Of course this requires an international legal review. UNCLOS has provided a bay if it does not meet the requirements of UNCLOS 1982 which can be declared a historical bay, but there are no definitive criteria for determining a curve as a historical bay. At this time, Government of Indonesia is conducting a study of the delimitation of internal waters, for example the closure of internal waters in the Lampung Bay, Bintui Bay, Kumai Bay, henceforth will be regulated in national law of Indonesia.

The law-science interface in the law of the sea and the continental shelf

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Abstract

The definition and delineation of the continental shelf are prime examples of the law-science interface within the law of the sea. The UNCLOS refers to- and relies upon science and technology several times, and in various ways. Science and technology have also influenced the development of the law of the sea. Both the historical development of the continental shelf as well as its current application show various ways in which law and science interact. By applying a conceptual framework based upon the law-science literature, we can better understand how and why such interaction occurs, and what its limitations are.

Marine Spatial Planning from a local perspective – Swedish case study

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Abstract

This paper addresses the challenges and opportunities municipalities in Sweden are facing in developing marine spatial plans for their sea areas. Municipalities in Sweden have a large extent of autonomy and are responsible for spatial planning within their geographical boundaries according to the planning and building act (SFS 2010:900 Plan och Bygglag). Municipal borders at sea extend to the outer limit of the territorial sea, which in many cases mean that the sea area of a municipality is larger than its land area. Historically few municipalities have planned their sea areas but recently some initiatives of inventing marine ecological values and making prioritizations between different uses have started to emerge. However, municipalities have limited knowledge, skills and resources for planning marine areas and additional support is needed in order to break the status quo and improve protection and sustainable development of the sea. Furthermore, Sweden has more than 80 coastal municipalities which, if each of them develop their own marine spatial plan, would result in a patchwork of plans not reflecting natural borders in a logic way. Thus inter-municipal planning needs to be encouraged and supported, in particular from a local political level.

Submarine Elevations and Submarine Ridges under Article 76

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Abstract

This presentation addresses the role of submarine elevations and submarine ridges in the delineation of the outer limits of the continental shelf under Article 76 of the Law of the Sea Convention. Elevations and ridges have proven challenging for both coastal States and the Commission on the Limits of the Continental Shelf in the implementation of Article 76. We cover both legal and technical issues related to submarine elevations and submarine ridges in the light of recent summaries of submissions and of recommendations.

Offshore renewable energy vs. high seas freedoms: The need for Marine Spatial Planning in areas beyond national jurisdiction of coastal states

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Abstract

New sea uses such as large-scale offshore wind parks in areas beyond national jurisdictions are rapidly becoming a realistic prospect. Their semi-permanent structures will de-facto appropriate large marine areas and potentially impinge upon the high seas freedoms of other States and sea uses. They also pose adverse impacts on the marine environment and ecosystems. Under the current legal framework, flag states will play a central regulatory role for high seas ocean energy projects. This carries the danger that flags of convenience might evolve and unduly undercut environmental and safety standards that are in place for wind energy projects on the EEZ. The UNCLOS principle of 'due regard' for the rights of other states and actors on the high seas will not provide adequate regulatory control nor will it be appropriate as a management framework.

It is therefore high time to create a framework for Marine Spatial Planning (MSP) on the high seas that can serve as platform to avoid conflicts between users and also to safeguard the marine environment. Such MSP approaches have recently successfully been implemented for clean energy projects in EEZs. Broadening the mandates of relevant international ocean organizations such as the IMO and the ISA to jointly implement MSP in areas beyond national jurisdiction will be politically daunting but presents a long-term sustainable solution.

Provision of Maritime Baselines, Limits, Zones and Boundaries

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Abstract

The presentation will cover a brief review of UKHO's history of publicising maritime baselines, limits, zones and boundaries.

This will lead into our current and developing approaches and views on the use of such data by navigational and non-navigational users.

Some perspectives on the development of IHO S-121

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Abstract

The development of IHO S-121 under the S-100 framework for the modelling and representation of UNCLOS core features presents some challenges to the standards development process, both semantically and technically. This presentation will demonstrate some of the aspects of the standard's development under the S-100 framework and the crossover into broader use within the OGC architectural framework. We will also offer some reflections on the process of constructing a data structure and standard capable of reflecting an international convention, similar to the discharge of SOLAS obligations through IHO S-57 and S-101.

The GEBCO-Nippon Foundation Alumni Team's Success Story: Winners of the Shell Ocean Discovery XPRIZE challenge

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Abstract:

The GEBCO-Nippon Foundations Alumni Team has recently proved that diversity is a strength as they successfully met the challenges set by the Shell Ocean Discovery XPRIZE Challenge. The Team believes their solution will help to advance deep-sea technologies for autonomous, fast, high-resolution ocean exploration, while at the same time meeting the strategic requirement established by the Nippon Foundation-GEBCO Seabed 2030 project.

The Team was led by alumni of the Nippon Foundation / GEBCO Training Program at the Center for Coastal and Ocean Mapping / Joint Hydrographic Center of the University of New Hampshire. Alumni worked closely with the support of advisors from within GEBCO and industry partners. The Team was generously supported throughout the competition by the competition by the Nippon Foundation. The team worked diligently to foster strong working relationship with commercial partners and suppliers to capitalize on their expertise in coming up with the optimal solution. The GEBCO-Nippon Foundation Alumni Team focused on leveraging existing cutting-edge technology wherever possible, and then integrated this technology with newly-developed systems to address recognized shortcomings for efficient unmanned seafloor mapping. Our new approach focused on the delivery and retrieval of an AUV and real-time communication and vessel management during the survey. The Team also focused on the data workflow in order to take full advantage of the data collected to ensure an efficient processing and publishing pipeline to make information publically-available through web-services.

The Teams successful solution was made possible through its global, cross-sector collaborations and strong partnerships with technology and services providers. In total, at least 78 individuals from 22 countries all contributed to the success of the team, where much of the communication over the 2.5 years of the project was undertaken virtually. The success of the team can be attributed in part to a common goal – to map the ocean floor. Other important factors that contributed include this unique opportunity for industry and academia to work together to create an unmanned seafloor mapping solution that was limited only by XPRIZE requirements. Our team was unique in its diversity of nationalities, education, culture, age, gender and colour. Our backgrounds and careers represent academia, industry, national governments, and non-profit corporations from around the world. This diversity was our strength.