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# Exploring the Depths of Marine Scientific Research: A Legal Analysis

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## ABSTRACT

*The term “marine scientific research” refers to a broad range of scientific disciplines concerned with the research and understanding of oceans, marine flora and fauna, and physical interfaces with the solid earth and the atmosphere, such as “biology, biotechnology, geology, chemistry, physics, geophysics, hydrography, physical oceanography, and ocean drilling and coring.” The primary objective of this type of exploration is “to observe, explain, and eventually understand sufficiently well how to predict and explain changes in the natural (marine) world.” Thus, marine scientific research aids in the pragmatic application of the marine resources, the protection of the marine ecosystem, safer routing, and military applications of the water, as well as a better overall understanding of the planet. Marine scientific research, for example, is important in determining the position of oilfields, paving the way for the use of maritime oil resources. Furthermore, marine scientific research is critical for the preservation and safeguarding of the underwater ecosystem since it aids in the understanding of local marine ecosystems as well as the substances and circumstances that may affect or damage them. This paper will be focusing over the legal analysis of the regulatory structure present to govern the Marine Scientific Research.*

**Keywords:** *Marine Scientific Research, UNCLOS, The Area, Exclusive Economic Zone.*

## I. INTRODUCTION

The term “marine scientific research” refers to a broad range of scientific disciplines concerned with the research and understanding of oceans, marine flora and fauna, and physical interfaces with the solid earth and the atmosphere, such as “biology, biotechnology, geology, chemistry, physics, geophysics, hydrography, physical oceanography, and ocean drilling and coring.” The primary objective of this type of exploration is “to observe, explain, and eventually understand sufficiently well how to predict and explain changes in the natural (marine) world.”<sup>2</sup> Thus, marine scientific research aids in the pragmatic application of the marine resources, the

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<sup>2</sup> (1) Florian H. Th. W., *Marine Scientific Research: The Operation and Status of Research Vessels and Other Platforms in International Law* (Vaughan Lowe ed.,2005)

protection of the marine ecosystem, safer routing, and military applications of the water, as well as a better overall understanding of the planet. Marine scientific research, for example, is important in determining the position of oilfields, paving the way for the use of maritime oil resources.<sup>3</sup> Furthermore, marine scientific research is critical for the preservation and safeguarding of the underwater ecosystem since it aids in the understanding of local marine ecosystems as well as the substances and circumstances that may affect or damage them.<sup>4</sup> For example, sustainable fish exploitation can only be achieved if comprehensive maritime scientific research has accumulated the information necessary to prevent overfishing.<sup>5</sup> Marine scientific research can also be utilised to investigate waves and currents, conduct depth soundings, hunt for wrecks, and map the ocean floor, all of which are critical for navigation safety.<sup>6</sup> Similarly, when it comes to the military's usage of the ocean, maritime scientific research has helped to create a capability to detect submarines.<sup>7</sup> Marine scientific research nevertheless aids in improving our awareness of the earth by providing information on the seafloor's tectonic movement, the submarine terrain, terrestrial magnetic field and paleomagnetism, the force of gravity, quake as well as elastic wave, and the formation of sediments which aid in the prediction of tsunamis and earthquakes.<sup>8</sup> Finally, maritime scientific research gives information about the ocean-atmosphere relationship through meteorology and climatology. These and other applications of marine scientific study demonstrate how important such research is in numerous disciplines that affect man's interaction with the water.<sup>9</sup> The journeys of scientists onboard "H.M.S. Challenger (1872-1876)", which studied both the ocean floor and the water column, can be traced back to the origins of the age of ocean discovery.<sup>10</sup> However, the use of echo sounders and the advent of sonic devices used to monitor submarines during "World War I" marked the true beginning of exploration.<sup>11</sup> At the moment, the continuation of marine scientific research has an impact upon energy and food security, and the sustainability of humanity is at stake. Until the decade of the 1950s, marine scientific research was unregulated, whereupon the global community enacted the Geneva Convention of 1958 on the Continental Shelf which acknowledged the establishment of a legal system that

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<sup>3</sup> (2) Robin R and Vaughan Lowe A, *The Law of the Sea 400* (Dominic McGoldrick ed, 3rd ed 1999)

<sup>4</sup> Id

<sup>5</sup> Id

<sup>6</sup> Id

<sup>7</sup> Id

<sup>8</sup> Supra Note 2

<sup>9</sup> Id

<sup>10</sup> (9) Nandan SN, Introduction to Office For Ocean Affairs and The Law of The Sea, *Marine Scientific Research: A Guide to the Implementation of the Relevant Provisions of the United Nations Convention on the Law of The Sea* (United Nations 1991)

<sup>11</sup> (10) Id

required Coastal State agreement for the execution of scientific studies on the continental shelf.<sup>12</sup>

The “Intergovernmental Oceanographic Commission (IOC)” was officially established by the “General Conference of the United Nations Educational, Scientific, and Cultural Organisation (UNESCO)” in 1960.<sup>13</sup> The IOC's mission is to “promote international cooperation and coordinate programmes in research, services, and capacity building in order to learn more about the nature and resources of the ocean and coastal areas and to apply that knowledge for the improvement of management, sustainable development, marine environment protection, and decision-making processes in its member countries.”<sup>14</sup> To certain degree, marine scientific research also receives oversight by other international organisations and bodies, such as the “Food and Agriculture Organisation (FAO)”, “World Meteorological Organisation (WMO)”, “International Hydrographic Organisation (IHO)”, and the “Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)”.

## **II. UNCLOS (UNITED NATIONS CONVENTION ON LAW OF THE SEA), 1982**

“Part XIII of the United Nations Convention on the Law of the Sea (UNCLOS)”, which received its ratification on the 10th of December 1982 and came into effect on the 16th of November in 1994, is at present considered to be the most essential international legal instrument for monitoring marine scientific research.<sup>15</sup> Part XIII's provisions have a significant connection to Part XIV's clauses, which govern the “development and transfer of marine technology”, and should be read in conjunction with Parts II-V, that govern the various maritime domains.<sup>16</sup>

To begin, it is crucial to note that the UN Convention on the Law of the Sea does not encompass any definition on maritime scientific research.<sup>17</sup> Despite the fact that several definitions have been given, it is obvious that certain operations, such as “survey activities”, “prospecting”, and “exploration”, cannot be classified as part of the provisions of Part XIII, but are addressed in other areas of the UN Convention on the Law of the Sea.<sup>18</sup> Another crucial definition lacking

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<sup>12</sup> Convention on the Continental Shelf, Apr. 29, 1958, [http://untreaty.un.org/ilc/texts/instruments/english/conventions/8\\_1\\_1958\\_continental\\_shelf.pdf](http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_1_1958_continental_shelf.pdf).

<sup>13</sup> Supra note 3

<sup>14</sup> Strategy, Intergovernmental Oceanographic Commission, [http://www.iocunesco.org/index.php?option=com\\_content&task=view&id=29&Itemid=81](http://www.iocunesco.org/index.php?option=com_content&task=view&id=29&Itemid=81)

<sup>15</sup> (14) United Nations Convention on the Law of the Sea part XIII, December, 10 1982.

<sup>16</sup> Id, part XIV

<sup>17</sup> Supra note 21

<sup>18</sup> UNCLOS, supra note 15, article 19(2)(j) & article 40 (discussing survey activities); article 153 & Annex III article 3 (discussing exploration); and Annex III article 2.

is “competent international organisations”.

It's important to remember that within Part XIII, the phrase is used broadly (as opposed to “the competent international organisation”, which is used in other areas of the UN Convention). The “competence” of any organisation must be evaluated when referring to the functions allocated to the appropriate organisation by its constituent legislation.<sup>19</sup> Similarly, the UN Convention on the Law of the Sea makes no distinction between State-sponsored and private organisations, instead referring to the “researching State”.<sup>20</sup> This could have major consequences for diligent organisations who may face rejections of their requests due to the irresponsible behaviour of other organisations of the identical nationality.<sup>21</sup>

### **III. GENERAL POLICIES AND PROCEDURES FOR MARITIME SCIENTIFIC RESEARCH**

The liberty of “all States, regardless of geographical location, and competent international organisations, . . . to conduct marine scientific research subject to the rights and duties of other States” is acknowledged within the United Nations Convention on Law of the Sea, Art 238.<sup>22</sup> Research of this kind is required to be executed in compliance with general guidelines, which include conducting the research solely for peaceful ends, using scientific techniques that are fully suitable with UNCLOS, and refraining from interfering with other UNCLOS-mandated uses of the oceans. Furthermore, UNCLOS requires that the research adhere to the guidelines enacted under it, particularly those governing the “protection and preservation of the marine environment.”<sup>23</sup> Beyond that, maritime scientific research operations are forbidden to be used as a legal argument for an assertion “to any part of the marine environment or its resources”.<sup>24</sup> The UN Convention on the Law of the Sea additionally encourages Nation-states and appropriate international agencies to work together to encourage the peaceful utilisation of marine resources “in accordance with the principle of respect for sovereignty and jurisdiction”.<sup>25</sup> In order to accomplish this objective, both parties must collaborate to establish a pleasant climate in which the exploration can be carried out.<sup>26</sup> Furthermore, they must render the data available concerning both the goals of proposed programmes and the information that has been gathered from the maritime research.<sup>27</sup> To accomplish so, nation-states and

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<sup>19</sup> Supra note 11

<sup>20</sup> Supra note 15, article 246

<sup>21</sup> Supra note 10

<sup>22</sup> Supra note 15, at article 238

<sup>23</sup> Id, article 240

<sup>24</sup> Id, article 241

<sup>25</sup> Id, article 242(1)

<sup>26</sup> Id, article 243

<sup>27</sup> Id, article 244

organisations around the globe must bear developing nations' concerns in mind while imparting scientific information as well as expertise with them, and also assisting in the promotion of programmes in maritime scientific research among countries that are developing.<sup>28</sup>

### **(A) The Area and the High Seas**

Maritime scientific research has been clearly mentioned as a component among the high seas freedom.<sup>29</sup> However, the UN Convention on the Law of the Sea specifically stipulates that “all States, regardless of geographical location, and competent international organisations have the right... to conduct marine scientific research in the water column beyond the limits of the exclusive economic zone”.<sup>30</sup> More importantly, the Area is defined by UNCLOS as “the seabed and ocean floor, and subsoil thereof, beyond the limits of national jurisdiction”.<sup>31</sup> In relation to this, Article 256 stipulates that irrespective of where they are situated, every nation and appropriate international organisations are permitted to “conduct marine scientific research in the Area," provided that the research is "in accordance with the provisions of Part XI”.<sup>32</sup> Article 143 of the UN Convention on the Law of the Sea (UNCLOS) specifies the subsequent parameters concerning maritime scientific research within the Area. First and foremost, the scientific research needs to be carried out “exclusively for peaceful purposes and for the benefit of mankind as a whole”.<sup>33</sup> Secondly, the “International Seabed Authority” (the Authority) has the competence to engage into agreements to carry out maritime scientific research.<sup>34</sup> Furthermore, the aforementioned authority “shall promote and encourage the conduct of marine scientific research in the Area”, as well as is obligated to disseminate “results of such research and analysis when available”.<sup>35</sup> Thirdly, State Parties<sup>36</sup> can carry out these kinds of the research within the Area whilst “promoting international cooperation in marine

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<sup>28</sup> Supra note 15, UNCLOS article 244

<sup>29</sup> Id, UNCLOS article 87(1)(f) “Freedom of the high seas: - 1. The high seas are open to all States, whether coastal or land-locked. Freedom of the high seas is exercised under the conditions laid down by this Convention and by other rules of international law. It comprises, inter alia, both for coastal and land-locked States:

(a) freedom of navigation;

(b) freedom of overflight;

(c) freedom to lay submarine cables and pipelines, subject to Part VI;

(d) freedom to construct artificial islands and other installations permitted under international law, subject to Part VI;

(e) freedom of fishing, subject to the conditions laid down in section 2;

(f) freedom of scientific research, subject to Parts VI and XIII.”

<sup>30</sup> Supra note 15, UNCLOS article 257

<sup>31</sup> Id, article 1(1)(1)

<sup>32</sup> Supra note 15, article 256

<sup>33</sup> Id, article 143

<sup>34</sup> Id

<sup>35</sup> Id

<sup>36</sup> Supra note 15, UNCLOS article 1(2)(1)

scientific research in the Area”.<sup>37</sup> The aforementioned may be achieved by “participating in international programmes”, making certain that “programmes are developed through the Authority or other international organisations as appropriate for the benefit of developing and technologically less developed countries”, and making certain the fact that “research results and analysis are distributed through the Authority or other international channels as appropriate”.<sup>38</sup>

### **(B) Territorial Sea**

The coastal states possess the ultimate authority, within the framework of their the concept of sovereignty, to govern, authorise, and carryout maritime scientific research within their territorial waters.<sup>39</sup> Likewise, the aforementioned concept extends to research executed within a coastal State's waters within its borders or an archipelagic State's archipelagic waters, that are additionally subjected to the inherent sovereignty of the respective coastal or archipelagic State.

Research of this kind is allowed to be conducted solely with the explicit authorization of the coastal state in accordance with specific regulations imposed by the governing body.<sup>40</sup> As a matter of fact, vessels cannot engage in maritime scientific exploration simultaneously claiming their “right of innocent passage”, because undertaking exploration or survey operations while aboard the vessel constitutes movement non-innocent.<sup>41</sup> Whenever the region of territorial waters in dispute constitutes a part of any strait that is utilised for maritime commerce or an archipelagic water lane, the provisions of Article 40 of the UN Convention on the Law of the Sea stipulates that “foreign ships, including marine scientific research and hydrographic survey ships, may not carry out any research or survey activities without the prior authorization of the States bordering straits”.<sup>42</sup> The provisions of Article 54 broadens the scope of this statute to vessels executing their freedom of passage across archipelagic water routes.<sup>43</sup>

### **(C) Exclusive Economic Zone and Continental Shelf**

According to UNCLOS, the coastal nations hold the right to govern and execute maritime scientific exploration within the boundaries of their own exclusive economic zone (EEZ) as well as on their respective continental shelf.<sup>44</sup> As a result, any research studies must be

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<sup>37</sup> Id, article 143

<sup>38</sup> Id

<sup>39</sup> Id, article 245

<sup>40</sup> Id

<sup>41</sup> Id, article 19(2)(j)

<sup>42</sup> Id, article 40.

<sup>43</sup> Supra note 15, article 54

<sup>44</sup> Id, article 246(1)

approved by the coastal state.<sup>45</sup> Under the usual circumstances, coastal nations shall grant permission to various countries or organisations around the world to execute research activities solely for harmonious reasons and “in order to increase scientific knowledge of the marine environment for the benefit of all mankind”.<sup>46</sup> Even if diplomatic ties among a coastal nation and the nation conducting the study State are not established, UNCLOS provision under Article 246(4) stipulates that normal conditions may still take precedence.<sup>47</sup>

As a result, it might seem that conditions will remain "normal" until there's a serious possibility of an armed conflict.<sup>48</sup> A less visible sort of anomalous situations might include scenarios in which there is a prospective maritime delimitation and an issue of jurisdiction concerning the geographical region wherein the study is supposed to be conducted.<sup>49</sup> However, it is significant to note that, given the broad applicability of the authorization rule outlined in the provisions of Article 246(3), the obligation of showing extraordinary events falls on the coastal nation.<sup>50</sup> However, UNCLOS further states that coastal nations are allowed to withhold their approval if the intended maritime scientific studies project has “direct significance for the exploration and exploitation of natural resources, whether living or non-living, if it involves drilling into the continental shelf, or if it requires the use of explosives or the introduction of harmful substances into the marine environment”.<sup>51</sup> The aforementioned holds true if the proposed study's objective necessitates the establishment or utilisation of artificially created islands, if the coastal nation receives misleading data regarding the objective of the study, or if the “researching State or competent international organisation has outstanding obligations to the coastal State” from a previous endeavour.<sup>52</sup>

However, the UN Convention on the Law of the Sea does not define “direct significance for

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<sup>45</sup> Id, article 246(2)

<sup>46</sup> Id, article 246(3)

<sup>47</sup> Id, article 246(4)

<sup>48</sup> Supra note 10

<sup>49</sup> Id

<sup>50</sup> Supra note 15, article 246(3)

<sup>51</sup> Id, article 246 (5): - “Coastal States may however in their discretion withhold their consent to the conduct of a marine scientific research project of another State or competent international organization in the exclusive economic zone or on the continental shelf of the coastal State if that project:

(a) is of direct significance for the exploration and exploitation of natural resources, whether living or non-living;

(b) involves drilling into the continental shelf, the use of explosives or the introduction of harmful substances into the marine environment;

(c) involves the construction, operation or use of artificial islands, installations and structures referred to in articles 60 and 80;

(d) contains information communicated pursuant to article 248 regarding the nature and objectives of the project which is inaccurate or if the researching State or competent international organization has outstanding obligations to the coastal State from a prior research project.”

<sup>52</sup> Id



resource exploration and exploitation”,<sup>53</sup> and due to the above statement could be interpreted differently, the “Guide to Implementation” stipulates that “such research projects may generally be considered those which can reasonably be expected to produce results enabling resources to be located, assessed, and monitored with respect to their status and availability for commercial exploitation”.<sup>54</sup> As a result, numerous scholars referred this particular form of study as “applied research”.<sup>55</sup>

Permission for the outward continental shelf, i.e. past 200 nautical miles, is dealt differently than permission within the internal continental shelf. Nation-states are not granted the authority to decline authorization to parties who are interested in carrying out maritime scientific investigations along the outer continental shelf, except for locations that the state “may at any time publicly designate as areas in which exploitation or detailed exploratory operations are occurring or will occur within a reasonable period of time”.<sup>56</sup> Despite the fact coastal nations are anticipated to furnish adequate advance notice of these particular regions, they are not compelled to publish any specifics about the “details of the operations” that have been or will shortly be done.<sup>57</sup>

#### IV. PROCEDURE FOR CONDUCTING MARINE SCIENTIFIC RESEARCH

- Submitting the Coastal State Consent Request

The provisions of Article 250 of the UN Convention on the Law of the Sea mandates in order that maritime scientific investigations publications must be provided through proper means.<sup>58</sup> As a result, except agreed upon otherwise, proposals for a maritime scientific research initiative ought to be made through diplomatic processes. In regard to this, if a nation or an authorised international organisation seeks to carry out research in a coastal State's EEZ or continental shelf, their request for authorization needs to be presented no longer than six months prior the investigation's projected start date.<sup>59</sup> For this to happen so, the conducting Country or responsible international agency must send specific facts to the coastal State, thus comprising a comprehensive account of:

*“(a) the nature and objectives of the project;*

*(b) the method and means to be used, including name, tonnage, type and class of vessels and a*

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<sup>53</sup> Supra note 3, at p405

<sup>54</sup> Supra note 10, at p10

<sup>55</sup> Supra note 3, at p405

<sup>56</sup> Supra note 15, article 246(6)

<sup>57</sup> Id

<sup>58</sup> Id, article 250

<sup>59</sup> Id, article 248

*description of scientific equipment;*

*(c) the precise geographical areas in which the project is to be conducted;*

*(d) the expected date of first appearance and final departure of the research vessels, or deployment of the equipment and its removal, as appropriate;*

*(e) the name of the sponsoring institution, its director, and the person in charge of the project; and*

*(f) the extent to which it is considered that the coastal State should be able to participate or to be represented in the project.”<sup>60</sup>*

- Consent Granting

The very first step during a coastal State's evaluation of an appeal is to ascertain if it was originally submitted no less than six months before to the anticipated start of the research.<sup>61</sup> Needless to say, the coastal nation ought to have the right to forego this restriction and take proposals received in a shorter amount of time under consideration. The coastal nation has a four-month period to file an appeal for further information if the data provided is incomplete.<sup>62</sup> Following that, the conducting State might have the chance to revise their request or persuade the coastal nation that the study is going to be conducted in line with UNCLOS.

It is a requirement of UNCLOS that coastal nations “establish rules and procedures which ensure that consent will not be delayed or denied unreasonably”.<sup>63</sup> As a matter of fact, when a coastal nation doesn't respond to an application in a period of four months, approval is assumed granted. Intriguingly, when a maritime scientific study project is intended to be undertaken by an international organisation in the exclusive economic zone (EEZ) or along the continental shelf of a “coastal State which is a member of the organisation or with which it has a bilateral agreement”, it is presumed that the coastal nation has authorised the venture if certain requirements are met along the way.<sup>64</sup> When an organisation determines to move forward with a project, the coastal nation is required to give its approval. If the coastal nation fails to express an objection during a four-month period of being informed of the project, authorisation from the State is presumed.<sup>65</sup>

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<sup>60</sup> Id

<sup>61</sup> Id

<sup>62</sup> Supra note 15, article 252(c): “it requires supplementary information relevant to conditions and the information provided for under articles 248 and 249”

<sup>63</sup> Id, article 264(3)

<sup>64</sup> Id, article 247

<sup>65</sup> Id

- Conducting Marine Scientific Research

When undertaking oceanographic studies in a coastal State's exclusive economic zone (EEZ) or on its continental shelf, Nations and authorised international organisations are required by UNCLOS to adhere to a number of laws and regulations. For instance, a coastal nation has the right to take part in the exploration project aboard the research vessels or in any other kind of research station, provided that doing so is feasible.<sup>66</sup> In addition, if the coastal nation demands an account summarising the findings and conclusions after the research endeavour is finished, the conducting State or organisation is required to give the coastal state both an initial report and a final summary of the findings.<sup>67</sup> In addition to requesting an evaluation of the findings, the coastal nation holds the authority to seek research-related information along with specimens.<sup>68</sup> The results of the investigation are required to be provided “internationally available through appropriate national or international channels, as soon as practicable” following the time they have been gathered.<sup>69</sup> The coastal nation must also be informed right once if there have been any substantial changes throughout the study process, and any constructed structures or machinery should be taken down when it's all over, provided the involved parties have made other arrangements.<sup>70</sup> Coastal nations are entitled to apply additional constraints in regard to the context of practical research in the course during the “exercise of their discretion to grant or withhold consent”.<sup>71</sup>

Furthermore, UNCLOS does not make any distinction amongst "participation" and

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<sup>66</sup> UNCLOS; Supra note 14, article 249(1)(a): - “Article 249: 1. States and competent international organizations when undertaking marine scientific research in the exclusive economic zone or on the continental shelf of a coastal State shall comply with the following conditions:

(a) ensure the right of the coastal State, if it so desires, to participate or be represented in the marine scientific research project, especially on board research vessels and other craft or scientific research installations, when practicable, without payment of any remuneration to the scientists of the coastal State and without obligation to contribute towards the costs of the project; 121

(b) provide the coastal State, at its request, with preliminary reports, as soon as practicable, and with the final results and conclusions after the completion of the research;

(c) undertake to provide access for the coastal State, at its request, to all data and samples derived from the marine scientific research project and likewise to furnish it with data which may be copied and samples which may be divided without detriment to their scientific value;

(d) if requested, provide the coastal State with an assessment of such data, samples and research results or provide assistance in their assessment or interpretation;

(e) ensure, subject to paragraph 2, that the research results are made internationally available through appropriate national or international channels, as soon as practicable;

(f) inform the coastal State immediately of any major change in the research programme;

(g) unless otherwise agreed, remove the scientific research installations or equipment once the research is completed.”

<sup>67</sup> Id, article 249(1)(b)

<sup>68</sup> Id, article 249(1)(c)-(d)

<sup>69</sup> Id, article 249 (1)(e)

<sup>70</sup> Id, article 249(1)(f)-(g)

<sup>71</sup> Id, article 249(2)

"representation." The aforementioned phrases are regrettably frequently referred to as substitutes because of this. Nevertheless, it's thought that the expression "participation" refers to the scientific endeavour in a more complex way. According to one argument, "participation" could mean that researchers from the coastal nation collaborate with those of the conducting State, meanwhile "representation" refers to the coastal State's selection of those who observe to keep an eye on the research endeavour without actively participating.<sup>72</sup>

- Marine Scientific Research Suspension and Termination

The coastal nation has the authority to call for the halting of research operations as soon as the venture starts to operate within their EEZ or along its continental shelf whenever it believes that they aren't being carried out in accordance with the terms that were agreed upon when the nation-state gave permission to the project, or if it believes the conducting State or organisation has failed to abide by UNCLOS's prerequisites with respect to the coastal State's rights.<sup>73</sup> Furthermore, a coastal nation retains the discretion to halt any maritime research programmes if criteria were not met, leading towards a "major change in the research project"<sup>74</sup> or where the problems concerning the conditions have not been solved in the prescribed time frame.<sup>75</sup>

- Rights of Adjacent States that Are Geographically Disadvantaged and Landlocked

In accordance with UNCLOS, investigating Nation-states and qualified internationally recognised organisations have a duty to inform the "neighbouring land-locked and geographically disadvantaged States of the proposed research project, and shall notify the coastal State thereof", and they must additionally provide notification (and perhaps later, if asked for, the necessary information).<sup>76</sup> In terms of geographically isolated as well as landlocked neighbouring countries might "request to be given the opportunity to participate in the proposed marine scientific research project through qualified experts appointed by them

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<sup>72</sup> Supra note 10

<sup>73</sup> Supra note 15, article 253(1)(a)-(b): "A coastal State shall have the right to require the suspension of any marine scientific research activities in progress within its exclusive economic zone or on its continental shelf if: (a) the research activities are not being conducted in accordance with the information communicated as provided under article 248 upon which the consent of the coastal State was based; or (b) the State or competent international organization conducting the research activities fails to comply with the provisions of article 249 concerning the rights of the coastal State with respect to the marine scientific research project."

<sup>74</sup> Id, article 253(2): "A coastal State shall have the right to require the cessation of any marine scientific research activities in case of any non-compliance with the provisions of article 248 which amounts to a major change in the research project or the research activities."

<sup>75</sup> Id, article 253(3): "A coastal State may also require cessation of marine scientific research activities if any of the situations contemplated in paragraph 1 are not rectified within a reasonable period of time."

<sup>76</sup> Id, article 254(1): "States and competent international organizations which have submitted to a coastal State a project to undertake marine scientific research referred to in article 246, paragraph 3, shall give notice to the neighbouring land-locked and geographically disadvantaged States of the proposed research project, and shall notify the coastal State thereof."

and not objected to by the coastal State”.<sup>77</sup>

- Installations or Tools for Marine Scientific Research

The establishment and utilisation of any particular kind of scientific investigation equipment within any oceanographic region is pursuant to the exact same regulations set forward within UNCLOS regarding the execution of maritime scientific studies throughout any such area, according to the provisions of Article 258.<sup>78</sup> In some instances, this brief and simple regulations could have significant and intricate ramifications, especially when they concern questions of sovereignty. Generally speaking, exploring States are “free to deploy... research installations or equipment on the high seas” (as well as for scientific research pertaining towards the Area), thus these “installations... are subject to the jurisdiction of the researching State”.<sup>79</sup> Nevertheless, “the deployment and use of any type of scientific research installations or equipment”<sup>80</sup> in the territorial seas would necessitate the authorization of the coastal nation, because it has power of jurisdiction throughout these kinds of facilities or technology as part of its sovereign power.<sup>81</sup>

The “deployment and use of any type of scientific research installations or equipment also requires the consent of the coastal State” allowing exploration that would be conducted within the Exclusive Economic Zone or along the floor of the continental shelf.<sup>82</sup> The question of legal jurisdiction, nonetheless, may not be that simple and depends upon a number of variables, including the sort of scientific establishment that will be employed and the specific kind of exploration to be done.<sup>83</sup> The provisions of Article 60(2) stipulates further that the “coastal State shall have exclusive jurisdiction over such artificial islands, installations and structures, including jurisdiction with regard to customs, fiscal, health, safety and immigration laws and regulations”<sup>84</sup> within relation to instruments within the manner of “artificial islands”, “installations”, and “structures”.<sup>85</sup> This holds accurate no matter what kind of research is being

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<sup>77</sup> Id, article 254(3): “*The neighbouring land-locked and geographically disadvantaged States referred to above shall, at their request, be given the opportunity to participate, whenever feasible, in the proposed marine scientific research project through qualified experts appointed by them and not objected to by the coastal State, in accordance with the conditions agreed for the project, in conformity with the provisions of this Convention, between the coastal State concerned and the State or competent international organizations conducting the marine scientific research.*”

<sup>78</sup> Id, article 258.

<sup>79</sup> Supra note 3

<sup>80</sup> UNCLOS, supra note 15, article 258.

<sup>81</sup> Supra note 3

<sup>82</sup> Id

<sup>83</sup> Id

<sup>84</sup> Id, article 80, “*Article 80 extends the application of Article 60 to artificial islands, installations and structures on the continental shelf.*”

<sup>85</sup> supra note 15, article 60(2)

done.<sup>86</sup> The question of jurisdictional competence instead revolves around the kind of research allowed to be carried out considering the technology that is not manmade islands, installations, or structures.<sup>87</sup>

When it comes to “applied research”, the coastal nation has the authority to impose whatever conditions it sees fit before giving its assent.<sup>88</sup> It can be seen as meaning that the coastal State is now empowered to assert its sovereignty over such machinery.<sup>89</sup> However, when the tools are utilised for fundamental or pure study, the problem is less obvious.<sup>90</sup> Essentially it can be noted that despite this, in most cases the coastal nation shouldn't refuse to give its agreement for this kind of research, it appears that the UNCLOS contains no clause that delineates who has authority regarding this type of technology.<sup>91</sup> As a result, it could be essential to consult the provisions of Article 59, thereby outlines the procedures for addressing “attribution of rights and jurisdictions” problems within the EEZ, in determining whether State holds sovereignty regarding technology employed for scientific or fundamental research purposes.<sup>92</sup> In compliance with the UN Convention on the Law of the Sea the “conflict should be resolved on the basis of equity and in the light of all relevant circumstances, taking into account the respective importance of the interests involved in the parties as well as to the international community as a whole”.<sup>93</sup>

Significantly, maritime scientific research “installations or equipment... do not possess the status of islands”.<sup>94</sup> As a matter of fact, the structures and machinery “have no territorial sea of their own, and their presence does not affect the delimitation of maritime zones”.<sup>95</sup> Despite the fact that these structures aren't extending into marine zones, “safety zones of a reasonable breadth not exceeding a distance of 500 metres may be created around them”, according to the regulations.<sup>96</sup> Irrespective of the non-existence of maritime boundaries and territorial seas, “all states have to ensure that such safety zones are respected by their vessels”.<sup>97</sup> This means that they have no ability to “create a barrier to established international shipping routes”<sup>98</sup> and are required to “bear identification markings indicating the State of registry or the international

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<sup>86</sup> Supra note 3

<sup>87</sup> Id

<sup>88</sup> Id

<sup>89</sup> Id

<sup>90</sup> Id

<sup>91</sup> Id,

<sup>92</sup> UNCLOS, supra note 15, article 59.

<sup>93</sup> Id

<sup>94</sup> Id. article 259.

<sup>95</sup> Id

<sup>96</sup> Id, article 260.

<sup>97</sup> Id.

<sup>98</sup> UNCLOS, supra note 15, article 261.

organisation to which they belong”.<sup>99</sup> The facilities also need to be equipped with “adequate internationally agreed warning signals to ensure safety at sea and the safety of air navigation, taking into account rules and standards established by competent international organisations”.<sup>100</sup>

## V. CONCLUSION

UNCLOS offers a thorough system concerning the control of maritime scientific research, as has been previously explained. The convention's detailed framework, that represents the outcome of the difficult discussions conducted at the third UNCLOS session, does not confine itself to the carrying out of maritime scientific research within any one particular maritime zone. The maritime scientific research is permitted in the open waters without restriction, but the more near the research is to the coastlines of other coastal nations, the greater the constraints are imposed on the capability of Nation-states and qualified international organisations in carrying out oceanographic study operations. In fact, following the acknowledgment of the Exclusive Economic Zone notion, UNCLOS has broadened the geographical field of administration of maritime scientific research in contrast against the 1958 Geneva Conventions<sup>101</sup> to now encompass some of the most essential regions to support scientific research in the oceans.

In establishing the prerequisites necessary to carry out marine science studies, UNCLOS maintains an equilibrium among the competing demands of the worldwide scientific community as well as those of coastal nations, especially in connection to the coastal state's entitlements over resources as well as financial operations. By demanding the coastal State's permission before conducting maritime scientific studies within its maritime domains, UNCLOS has safeguarded the coastal state's liberties as previously mentioned. On the contrary, by establishing guidelines that would avoid the arbitrarily denying of this kind of consent, it has succeeded in safeguarding the legitimate interests of the global scientific community. Additionally, a coastal Nation's ability to hinder a ongoing research endeavour is strictly limited to reviewing for adherence, and the sole form of “enforcement” authority that a coastal nation is granted under UNCLOS is the authority to inquire for the research endeavor's cessation or suspension. However, coastal nations are able to be certain that no matter how the study turns out, it won't be used to establish a constitutional argument for the marine ecosystem

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<sup>99</sup> Id, article 262.

<sup>100</sup> Id

<sup>101</sup> Convention on the Territorial Sea and the Contiguous Zone, Apr. 29 1958; Convention on the High Seas, Apr. 29, 1958; Convention on Fishing and Conservation of the Living Resources of the High Seas, Apr. 29, 1958; Convention on the Continental Shelf, Apr. 29, 1958,

or its natural assets.<sup>102</sup>

Despite what was aforementioned, not every Nation-states have ratified UNCLOS. Therefore, poses the question whether or not the regulations contained in UNCLOS are incorporated into conventional international law, which could make them enforceable against third parties. The parties made explicit in the preamble to the “1958 High Seas Convention” that the parties believed the provisions that they were enacting constituted conventional international law.<sup>103</sup> UNCLOS was an exception to this. Indeed, in his concluding remarks delivered at the Conference following UNCLOS III's adoption, the second President stated that “this Convention is not a codification Convention. The claim that the Convention represents current international practise or codifies customary law is untrue in fact and unsupportable in legal terms”.<sup>104</sup>

On the contrary, the “International Court of Justice (ICJ)” has made clear on multiple occasions that a certain UNCLOS articles should be viewed as an element of international legislation which has evolved through time. It could be claimed that while UNCLOS (commonly identified as the "Constitution for the Oceans") can't be considered as a complete codification of conventional international law, several of its sections do.<sup>105</sup>

The nation's practises in connection with maritime scientific studies mostly follow UNCLOS guidelines. The aforementioned opens up the prospect of arguing the fact that the UNCLOS regulations requiring coastal State approval for marine research within the territorial waters, EEZ, and the continental shelf have now become a component of conventional international law, even though the majority of laws in this area predate the UNCLOS's entry into force.<sup>106</sup> The following could be applicable to the prerequisite of coastal State authorization for marine scientific studies that is conducted in Exclusive Fisheries Regions when it "involves the taking of fish" since, in spite of not being defined within UNCLOS, this advancement in the legislation of the sea (which preceded the adoption of UNCLOS), hasn't encountered much resistance.<sup>107</sup> This justification, despite this, could not necessarily be pertinent to various other UNCLOS regulations pertaining to marine scientific investigation, “such as the period of notice required before the research begins and the rules on implied consent,” which seem to be missing what is required “norm-creating character” in order to become an aspect of the international

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<sup>102</sup> UNCLOS, *supra* note 15, article 241.

<sup>103</sup> *Supra* note 101

<sup>104</sup> *Supra* note 2

<sup>105</sup> *Continental Shelf (Libyan Arab Jamahiriya vs. Malta)*, Judgment, 1985 I.C.J. 13, ¶ 34.

<sup>106</sup> *Supra* note 3

<sup>107</sup> *Id*



framework that is generally recognised.<sup>108</sup>

On the other hand, it may be argued that given the substantial amount of the ratification UNCLOS received to date, the controversy of whether it represents customary international law has diminished some of its significance.<sup>109</sup> Furthermore, it is to be expected that as a result of the advancement of satellite imagery operations, the comprehensive framework established in UNCLOS for the administration of marine scientific studies could soon become redundant,<sup>110</sup> and these are consequently outside the UNCLOS's ambit of the relevance and permit the gathering of information from space.<sup>111</sup>

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<sup>108</sup> Id

<sup>109</sup> Supra note 2

<sup>110</sup> U.N. GAOR, 29th Sess., “*Remote sensing is defined as the sensing of the Earth’s surface from space by making use of the properties of electromagnetic waves emitted, reflected or diffracted by the sensed objects, for the purpose of improving natural resources management, land use and the protection of the environment.*” (Dec. 3, 1986).

<sup>111</sup> Supra note 2