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MARINE SCIENTIFIC RESEARCH AND THE 1982 UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

*Marko Pavliha** and *Norman A. Martínez Gutiérrez***

I. INTRODUCTION

The expression “marine scientific research” refers to a variety of scientific disciplines, such as biology, biotechnology, geology, chemistry, physics, geophysics, hydrography, physical oceanography, and ocean drilling and coring, which are dedicated to the study of oceans, marine flora, fauna, and physical boundaries with the solid earth and the atmosphere. The purpose of such research is “to observe, to explain, and eventually to understand sufficiently well how to predict and explain changes in the natural (marine) world.”¹ Marine scientific research thus contributes to the rational exploitation of the sea’s resources, the preservation of the marine environment, safer navigation, and military uses of the sea, as well as the better general understanding of the earth. For example, marine scientific research is germane in the location of oilfields, which allows for the exploitation of offshore oil resources.² Also, by helping understand local marine ecosystems, as well as the substances and factors which may affect or endanger them, marine scientific research is essential for the protection and preservation of the marine environment.³ For example, the sustainable exploitation of a

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1. FLORIAN H.TH. WEGELEIN, *MARINE SCIENTIFIC RESEARCH: THE OPERATION AND STATUS OF RESEARCH VESSELS AND OTHER PLATFORMS IN INTERNATIONAL LAW* 9 (Vaughan Lowe ed., 2005).

2. See ROBIN R. CHURCHILL & A. VAUGHAN LOWE, *THE LAW OF THE SEA* 400 (Dominic McGoldrick ed., 3rd ed. 1999).

3. *Id.*

particular stock of fish can only be achieved after sufficient marine scientific research has provided the necessary data to prevent overfishing.⁴ Marine scientific research is also used for the study of waves and currents, depth soundings, searches for wrecks, and the overall mapping of the ocean floor, which are essential for the safety of navigation.⁵ Similarly, in relation to military uses of the sea, marine scientific research has contributed to the development of the ability to detect submarines.⁶ Marine scientific research also contributes to a better understanding of the earth⁷ by providing, through geology and geophysics, knowledge of the tectonic movement of the seafloor, submarine topography, terrestrial magnetism and paleomagnetism, gravity, quake and elastic wave, and sedimentation, which help predict tsunamis and earthquakes.⁸ Finally, through meteorology and climatology, marine scientific research provides information about the relationship of the oceans and the atmosphere.⁹ These, and other uses of marine scientific research, clearly illustrate the fact that such research is essential in many areas that affect the relationship between man and the sea.

The roots of the age of ocean discovery can be unearthed from the voyages of scientists aboard the H.M.S. *Challenger* (1872-1876), who sampled both the ocean floor and water column.¹⁰ However, the true beginning of exploration was marked by the echo sounder and the development of the sonic methods used to trace submarines in the First World War.¹¹ Currently, food and energy is impacted by the continuation of marine scientific research, and in effect, the future of mankind depends on it. Marine scientific research had been unregulated until the 1950s, when the international community adopted the 1958 Geneva Convention on the Continental Shelf and agreed to the

4. *Id.*

5. *Id.*

6. *Id.*

7. *Id.*

8. WEGELEIN, *supra* note 1, at 14-15.

9. *Id.*

10. Satya N. Nandan, *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 vii, vii (United Nations 1991) [hereinafter Guide to Implementation].

11. *Id.*

introduction of a legal regime, which called for coastal State consent for the conduct of research on the continental shelf.¹²

In 1960, the General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO) established the Intergovernmental Oceanographic Commission (IOC).¹³ The IOC's purpose is "to promote international cooperation and to 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, the protection of the marine environment, and the decision-making processes of its member State[s]."¹⁴ To a certain extent, marine scientific research also falls under the jurisdiction of various other international organizations and bodies, including the Food and Agriculture Organization (FAO), the World Meteorological Organization (WMO), the International Hydrographic Organization (IHO), and the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP).

II. THE 1982 UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

Currently, the most important international legal source governing marine scientific research is Part XIII of the United Nations Convention on the Law of the Sea (UNCLOS), which was adopted on December 10, 1982, and entered into force on November 16, 1994.¹⁵ The provisions of Part XIII are closely related to Part XIV, which regulates the development and transfer of marine technology, and must be read together with Parts II-V, which relate to the different maritime zones.¹⁶

At the outset, it is important to mention that UNCLOS does not include a definition of marine scientific research.¹⁷ Although different

12. Convention on the Continental Shelf, Apr. 29, 1958, 499 U.N.T.S. 311, *available at* http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_1_1958_continental_shelf.pdf. It is important to note that the Convention on the Continental Shelf was the only convention of the four conventions adopted by UNCLOS I, which expressly regulated marine scientific research.

13. CHURCHILL & LOWE, *supra* note 2, at 415.

14. *Strategy*, INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION, http://www.ioc-unesco.org/index.php?option=com_content&task=view&id=29&Itemid=81 (last visited Sept. 17, 2010).

15. United Nations Convention on the Law of the Sea pt. XIII, Dec. 10 1982, 1833 U.N.T.S. 397 [hereinafter UNCLOS].

16. *Id.* pt. XIV; *id.* pt. II-V.

17. See WEGELEIN, *supra* note 1, at 11 (explaining that UNCLOS does not include a definition because "participants apparently agreed that a definition was not necessary

definitions have been proposed, what remains clear is that certain activities, such as “survey activities,” “prospecting,” and “exploration,” do not fall under the regime of Part XIII, but are dealt with in other parts of UNCLOS.¹⁸ Another important definition omitted is the term “competent international organizations.” It is noteworthy that in Part XIII the term has been used generally (as opposed to the term “the competent international organization,” used in other parts of UNCLOS). When referring to the tasks assigned to the relevant organization by its constituent instrument, the “competence” of each organization has to be determined.¹⁹ Similarly, UNCLOS does not distinguish between State-sponsored and private organizations,²⁰ rather it merely refers to the “researching State.”²¹ This may have a serious effect on diligent organizations that may face a denial of their requests based on the negligent conduct of other organizations having the same nationality.²²

A. General Principles Relating to Marine Scientific Research

Article 238 of UNCLOS recognizes the right of “all States, irrespective of their geographical location, and competent international organizations, . . . to conduct marine scientific research subject to the rights and duties of other States,” provided for in UNCLOS.²³ Such research must be carried out in accordance with general principles, which include that the research be conducted only for peaceful purposes, that it be carried out with scientific methods that are compatible with UNCLOS, and that the research not unreasonably interfere with other uses of the sea under UNCLOS. Further, UNCLOS provides that the research must comply with the regulations adopted thereunder, including those for the “protection and preservation of the marine environment.”²⁴

because the intended meaning would become clear from the content of the provisions”); see also ALFRED H. A. SOONS, *MARINE SCIENTIFIC RESEARCH AND THE LAW OF THE SEA* 124 (Kluwer Law and Taxation Publishers, 1982).

18. See GUIDE TO IMPLEMENTATION, *supra* note 10, at 1; UNCLOS, *supra* note 15, art. 19(2)(j) & art. 40 (discussing survey activities); art. 153 & Annex III art. 3 (discussing exploration); and Annex III art. 2 (discussing prospecting).

19. See GUIDE TO IMPLEMENTATION, *supra* note 10, at 13.

20. See WEGELEIN, *supra* note 1, at 34.

21. See UNCLOS, *supra* note 15, art. 246.

22. See GUIDE TO IMPLEMENTATION, *supra* note 10, at 13.

23. UNCLOS, *supra* note 15, art. 238.

24. *Id.* art. 240.

In addition, marine scientific research activities may not serve as the legal basis for a claim “to any part of the marine environment or its resources.”²⁵

UNCLOS also requires that States and competent international organizations cooperate to promote the peaceful use of marine research, “in accordance with the principle of respect for sovereignty and jurisdiction.”²⁶ In order to meet this goal, both groups must work together to create a positive environment that allows for the research to be conducted.²⁷ Additionally, they must make information available regarding both the objectives of potential programs, and the knowledge gained from the marine research that is conducted.²⁸ To do so, States and international organizations have to keep the interests of developing countries in mind, and share scientific data and knowledge with them, while also helping to promote programs in marine scientific research in developing nations.²⁹

B. High Seas and the Area

Marine scientific research is now expressly listed as one of the freedoms of the high seas.³⁰ In fact, UNCLOS expressly provides that “[a]ll States, irrespective of their geographical location, and competent international organizations have the right . . . to conduct marine scientific

25. *Id.* art. 241.

26. *Id.* art. 242(1).

27. *Id.* art. 243.

28. *Id.* art. 244.

29. UNCLOS, *supra* note 15, art. 244.

30. *Id.* art. 87(1)(f). *But see* Convention on the High Seas art. 2, Apr. 29, 1958, 13 U.S.T. 2312, 450 U.N.T.S. 81, (providing that:

The high seas being open to all nations, no State may validly purport to subject any part of them to its sovereignty. Freedom of the high seas is exercised under the conditions laid down by these articles and by the other rules of international law. It comprises, inter alia, both for coastal and non-coastal States:

- (1) Freedom of navigation;
- (2) Freedom of fishing;
- (3) Freedom to lay submarine cables and pipelines;
- (4) Freedom to fly over the high seas.

These freedoms, and others which are recognized by the general principles of international law, shall be exercised by all States.);

see CHURCHILL & LOWE, *supra* note 2, at 401 (noting, however, that the International Law Commission recognized that the phrase “and others which are recognized by the general principles of international law” was wide enough to include marine scientific research); *see also* WEGELEIN, *supra* note 1, at 61.

research in the water column beyond the limits of the exclusive economic zone.”³¹

Moreover, under UNCLOS, “the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction” define the Area.³² In this respect, Article 256 provides that regardless of their geographic location, all States and competent international organizations are allowed to “conduct marine scientific research in the Area” provided that the research is “in conformity with the provisions of Part XI.”³³ In UNCLOS, the relevant provision in Part XI, dedicated to the Area, is Article 143, which provides the following guidelines for marine scientific research in the Area. First, the research must be conducted “exclusively for peaceful purposes and for the benefit of mankind as a whole.”³⁴ Second, the International Seabed Authority (the Authority)³⁵ may enter into contracts in order to execute marine scientific research.³⁶ In addition, the Authority “shall promote and encourage the conduct of marine scientific research in the Area,” and in turn, distribute the “results of such research and analysis when available.”³⁷ Third, State Parties³⁸ are permitted to conduct this type of research in the Area, while “promoting international cooperation in marine scientific research in the Area.”³⁹ This is accomplished by “participating in international programmes,” guaranteeing that “programmes are developed through the Authority or other international organizations as appropriate for the benefit of developing States and technologically less developed States,” and ensuring that the research results and analysis are distributed through the Authority or “other international channels when appropriate.”⁴⁰

C. Territorial Sea

In the exercise of their sovereignty, coastal States have the exclusive right to regulate, authorize and conduct marine scientific research in their

31. UNCLOS, *supra* note 15, art. 257.

32. *Id.* art. 1(1)(1); *compare* Convention on the Continental Shelf, *supra* note 12, art. 1 (defining the continental shelf to include the seabed and subsoil).

33. UNCLOS, *supra* note 15, art. 256.

34. *Id.* art. 143.

35. *Id.*

36. *Id.*

37. *Id.*

38. “States which have consented to be bound by this Convention and for which this Convention is enforced.” *Id.* art. 1(2)(1).

39. UNCLOS, *supra* note 15, art. 143.

40. *Id.*

territorial sea.⁴¹ By analogy, the same principle applies to research to be carried out in the internal waters of a coastal State or in the archipelagic waters of an archipelagic State, which are also subject to the sovereignty of the coastal or archipelagic State.

Such research must be carried out only if the coastal State has given its express consent and the research follows certain conditions provided by the State.⁴² In fact, ships cannot carry out marine scientific research while exercising the right of innocent passage, because conducting research or survey activities on board the ship renders passage non-innocent.⁴³

When the territorial sea in question forms part of a strait used for international navigation or an archipelagic sea lane, Article 40 of UNCLOS provides that while exercising the right of transit passage, “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.”⁴⁴ Article 54 extends the application of this article to ships exercising the right of archipelagic sea lanes passage.⁴⁵

D. Exclusive Economic Zone and Continental Shelf

UNCLOS provides that under the exercise of their jurisdiction, coastal States may regulate and carry out marine scientific research in their exclusive economic zone (EEZ) and on their continental shelf.⁴⁶ Therefore, the coastal State must consent to such research.⁴⁷ Under normal circumstances, coastal States must give consent to other States or international organizations in order for them to conduct research projects exclusively for peaceful purposes and “in order to increase scientific knowledge of the marine environment for the benefit of all mankind.”⁴⁸

Even though diplomatic relations between the coastal State and the researching State may not exist, Article 246(4) of UNCLOS provides that normal circumstances may still be present.⁴⁹ Therefore, it seems that circumstances would be “normal” unless there is an imminent danger of

41. *Id.* art. 245.

42. *Id.*

43. *Id.* art. 19(2)(j).

44. *Id.* art. 40.

45. UNCLOS, *supra* note 15, art. 54.

46. *Id.* art. 246(1).

47. *Id.* art. 246(2).

48. *Id.* art. 246(3).

49. *Id.* art. 246(4).

armed conflict.⁵⁰ Perhaps a less obvious form of abnormal circumstances may relate to cases where there is a pending maritime delimitation and there is a jurisdictional dispute over the area where the research is to be undertaken.⁵¹ It is noteworthy that considering the generality of the consent rule set forth in Article 246(3), the burden of proving abnormal circumstances rests with the coastal State.

On the other hand, UNCLOS provides that coastal States may exercise their discretion to withhold their consent if the proposed marine scientific research project is of “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.”⁵² The same is true if the proposed research project will require that artificial islands be constructed or used, if the coastal State receives inaccurate information about the goal of the project, or if the “researching State or competent international organization has outstanding obligations to the coastal State” from a previous project.⁵³

Although UNCLOS does not elaborate on what constitutes “direct significance for resource exploration and exploitation,”⁵⁴ and because this formulation may be subject to different interpretations, the *Guide to Implementation* provides 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.”⁵⁵ For this reason, many authors refer to this type of research as “applied research.”⁵⁶

However, consent in the outer continental shelf, that is, beyond 200 nautical miles, is addressed in a different manner from consent in the inner continental shelf. With respect to the outer continental shelf, States do not have discretion to refuse consent to parties interested in conducting marine scientific research, other than in certain areas 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

50. See GUIDE TO IMPLEMENTATION, *supra* note 10, at 10; CHURCHILL & LOWE, *supra* note 2, at 407.

51. GUIDE TO IMPLEMENTATION, *supra* note 10, at 10.

52. UNCLOS, *supra* note 15, art. 246(5)(a)-(b).

53. *Id.* art. 246(5)(c)-(d).

54. CHURCHILL & LOWE, *supra* note 2, at 405.

55. GUIDE TO IMPLEMENTATION, *supra* note 10, at 12.

56. See CHURCHILL & LOWE, *supra* note 2, at 405.

reasonable period of time.”⁵⁷ Although coastal States are required to provide reasonable notice of these specific areas, they are not obligated to provide any details regarding the “details of the operations” being, or soon to be, undertaken.⁵⁸

E. Marine Scientific Research Procedure

1. Submitting the Request for Coastal State Consent

Article 250 of UNCLOS requires that marine scientific research communications be submitted through official channels.⁵⁹ Therefore, unless otherwise agreed, requests for a marine scientific research project should be submitted by diplomatic channels. In this respect, if a State or a competent international organization wishes to conduct research in the EEZ or the continental shelf of a coastal State, the request for consent must be submitted no less than six months before the anticipated starting date of the project.⁶⁰ In so doing, the researching State or competent international organization must provide the coastal State with certain information, including the full description 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 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.⁶¹

57. UNCLOS, *supra* note 15, art. 246(6).

58. *Id.*

59. *Id.* art. 250.

60. *Id.* art. 248.

61. *Id.*

2. The Granting of Consent

The first task of the coastal State in assessing a request is to determine if the request has been submitted within at least six months prior to the expected date of commencement of the research.⁶² Naturally, it would be the prerogative of the coastal State to waive this requirement and consider requests submitted in a shorter time. If the information submitted is not complete, the coastal State has four months within which it can request supplementary information.⁶³ The researching State would then have the opportunity to review its proposal or convince the coastal State that the research will be undertaken in accordance with UNCLOS.

UNCLOS imposes an obligation on coastal States to “establish rules and procedures [which ensure that] consent will not be delayed or denied unreasonably.”⁶⁴ In fact, if a coastal State does not reply to a request within four months, consent is implied. Significantly, when a marine scientific research project is to be carried out by an international organization in the EEZ or on [the continental shelf of a] “coastal State which is a member of [the organization] or [with which it] has a bilateral agreement,” it is implied that the coastal State authorized the project if certain circumstances are met.⁶⁵ The coastal State has to approve the proposed project when the organization decides to undertake the project, and as long as the coastal State does not object within four months of being notified about the project, authorization by the State is implied.⁶⁶

3. Conduct of Marine Scientific Research

UNCLOS requires that both States and competent international organizations follow certain regulations and guidelines when conducting marine scientific research in the EEZ or on the continental shelf of a coastal State. For example, if the coastal State wants to participate in the research project either on board the research vessel or another type of research installation, they have this right as long as their participation is practicable.⁶⁷ Additionally, the researching State or organization must provide the coastal State with a preliminary report and with a final report

62. *Id.*

63. UNCLOS, *supra* note 15, art. 252(c).

64. *Id.* art. 246(3).

65. *Id.* art. 247

66. *Id.*

67. *Id.* art. 249(1)(a).

detailing results and conclusions once the project is completed, if the coastal State requests such a report.⁶⁸ The coastal State also has the right to request data and samples that result from the research, in addition to an assessment of the data.⁶⁹ Once the research results are compiled, they should be made “internationally available through appropriate national or international channels, as soon as practicable.”⁷⁰ Finally, should any significant change occur during the research process, the coastal State must be notified immediately, and any research equipment or installations should be removed at the conclusion of the research unless the parties agree to another arrangement.⁷¹ In the case of applied research, coastal States are free to impose further conditions in the “exercise of their discretion to grant or withhold consent.”⁷²

Notably, UNCLOS does not distinguish between the terms “participation” and “representation.” For this reason, these terms are unfortunately often used as synonyms. However, it is believed that the term “participation” carries with it a more intricate relation to the scientific project. It is submitted that “participation” may entail scientists from the coastal State working side by side with the scientists of the researching State, whereas “representation” relates to the appointment of observers by the coastal State to monitor the project without taking an active part in it.⁷³

4. Suspension and Cessation of Marine Scientific Research

Once the project has commenced within a coastal State’s EEZ or on its continental shelf, the coastal State is entitled to require the suspension of research activities if they are not being performed in conformance with the conditions agreed to when the State consented to the research project, or if the researching State or organization does not comply with UNCLOS’s requirements regarding the coastal State’s rights.⁷⁴ Moreover, a coastal State has the right to suspend any marine scientific research activity due to non-compliance with agreed upon conditions that

68. *Id.* art. 249(1)(b).

69. UNCLOS, *supra* note 15, art. 249(1)(c)-(d).

70. *Id.* art. 249(1)(e).

71. *Id.* art. 249(1)(f)-(g).

72. *Id.* art. 249(2).

73. GUIDE TO IMPLEMENTATION, *supra* note 10, at 16.

74. UNCLOS, *supra* note 15, art. 253(1)(a)-(b).

results in a “major change in the research project,”⁷⁵ or where issues with non-compliance are not corrected within a reasonable period of time.⁷⁶

5. Rights of Neighbouring Land-Locked and Geographically Disadvantaged States

Under UNCLOS researching States and competent international organizations must give notice (and later on, if requested, also the relevant information) to the “neighbouring land-locked and geographically disadvantaged States of the proposed research project, and shall notify the coastal State thereof.”⁷⁷ Neighbouring land-locked and geographically disadvantaged countries may “request [to] be given the opportunity to participate . . . in the proposed marine scientific research project through qualified experts appointed by them and not objected to by the coastal State.”⁷⁸

6. Marine Scientific Research Installations or Equipment

Article 258 provides that the deployment and use of any type of scientific research installations or equipment in any area of the marine environment is subject to the same conditions as are prescribed in UNCLOS for the conduct of marine scientific research in any such area.⁷⁹ This short and simple provision may, in some cases, have wide and complicated repercussions, particularly when these relate to issues of jurisdiction. In principle, researching States are “free to deploy . . . research installations or equipment on the high seas” (even for research activities concerning the Area) and these “installations . . . are subject to the jurisdiction of the researching State.”⁸⁰ On the other hand, “[t]he deployment and use of any type of scientific research installations or equipment”⁸¹ in the territorial sea would require the consent of the coastal State and, in the exercise of its sovereignty, the coastal State has jurisdiction over such installations or equipment.⁸²

75. *Id.* art. 253(2).

76. *Id.* art. 253(3).

77. *Id.* art. 254(1).

78. *Id.* art. 254(3).

79. *Id.* art. 258.

80. CHURCHILL & LOWE, *supra* note 2, at 414. This jurisdiction is akin to the exclusive jurisdiction of the flag State over ships flying its flag on the high seas. *Id.* at 413-414.

81. UNCLOS, *supra* note 15, art. 258.

82. CHURCHILL & LOWE, *supra* note 2, at 413-414.

For research to be undertaken in the EEZ or on the continental shelf, the “deployment and use [of any type] of [scientific] research installations [or] equipment [also] require[s] the consent of the coastal State.”⁸³ However, the issue of jurisdiction is not so straightforward and depends on several factors, such as the type of research installation to be used and the type of research to be conducted.⁸⁴

With respect to equipment in the form of “artificial islands,” “installations” and “structures,”⁸⁵ Article 60(2) provides that the “[c]oastal 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.”⁸⁶ This remains true regardless of the type of research to be undertaken.⁸⁷ However, when the equipment used is not in the form of artificial islands, installations and structures, the issue of jurisdiction turns to the type of research to be conducted.⁸⁸ In the case of applied research, the coastal State may, in the exercise of its discretion, impose any conditions it deems fit for the granting of its consent.⁸⁹ This has been interpreted as allowing the coastal State to claim jurisdiction over such equipment.⁹⁰ The issue is not so clear, however, when the equipment is used for pure or fundamental research.⁹¹ Although it may be recalled that in normal circumstances the coastal State should not withhold its consent for this type of research, there seems to be no provision in the UNCLOS which allocates jurisdiction over such equipment.⁹² Therefore, to determine which State has jurisdiction over equipment used for pure or fundamental research, it may be necessary to refer to Article 59, which supplies the procedure for resolving “attribution of rights and jurisdictions” conflicts in the EEZ.⁹³ UNCLOS states that the “conflict should be resolved on the basis of equity and in the light of all relevant circumstances, taking into

83. *Id.* at 413.

84. *See id.*

85. UNCLOS, *supra* note 15, art. 60(2).

86. *Id.* Article 80 extends the application of Article 60 to artificial islands, installations and structures on the continental shelf. *Id.* art. 80.

87. CHURCHILL & LOWE, *supra* note 2, at 413.

88. *Id.*

89. *Id.*

90. *Id.*

91. *Id.*

92. *Id.* at 414.

93. UNCLOS, *supra* note 15, art. 59.

account the respective importance of the interests involved in the parties as well as to the international community as a whole.”⁹⁴

Markedly, marine scientific research “installations or equipment . . . do not possess the status of islands.”⁹⁵ In fact, the installations and equipment “have no territorial sea of their own, and their presence does not affect the delimitation of [maritime zones].”⁹⁶ However, although these installations do not project maritime zones, “safety zones of a reasonable breadth not exceeding a distance of 500 metres may be created around [them].”⁹⁷ Notwithstanding the lack of maritime zones and territorial sea, “all states have to ensure that such safety zones are respected by their vessels.”⁹⁸ Therefore, these installations cannot “constitute an obstacle to established international shipping routes”⁹⁹ and must “bear identification markings indicating the State of registry or the international organization to which they belong.”¹⁰⁰ In addition, the installations must have “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 organizations.”¹⁰¹

7. Development and Transfer of Marine Technology

As mentioned above, marine scientific research goes hand in hand with the development and transfer of marine technology. The term “marine technology” applies to “instruments, equipment, vessels, processes and methodologies” that are utilized “to produce and use knowledge to improve the study and understanding of the nature and resources of the ocean and coastal areas.”¹⁰² Specifically, it includes *inter alia* “information and data . . . on marine sciences and related marine operations and services, manuals, guidelines, criteria, standards, reference materials, sampling and methodology equipment, . . . observation facilities and equipment, . . . equipment for *in-situ* and

94. *Id.*

95. *Id.* art. 259.

96. *Id.*

97. *Id.* art. 260.

98. *Id.*

99. UNCLOS, *supra* note 15, art. 261.

100. *Id.* art. 262.

101. *Id.*

102. Intergovernmental Oceanographic Commission, *IOC Criteria and Guidelines on the Transfer of Marine Technology*, at A(2) [hereinafter *IOC Criteria*].

laboratory observations, analysis and experimentation,” and scientific and legal expertise.¹⁰³

Part XIV of UNCLOS mostly regulates the development and transfer of marine technology.¹⁰⁴ Most regrettably, the discussions at UNCLOS III were dominated by the opposition of developed States to the inclusion of specific obligations for the transfer of technology.¹⁰⁵ Consequently, Part XIV lacks concrete obligations and this has led authors to describe it as a *pacta de contrahendo*.¹⁰⁶

Therefore, in June 2003, the Intergovernmental Oceanographic Commission (IOC) Assembly adopted the *IOC Criteria and Guidelines on the Transfer of Marine Technology*.¹⁰⁷ The IOC Criteria “aim[s] at applying the [relevant] provisions of . . . UNCLOS, providing a critical tool to promote capacity-building in ocean and coastal related matters through international cooperation.”¹⁰⁸

Generally speaking, the modern law of the sea calls for the following activities to be promoted:

- (a) the acquisition, evaluation and dissemination of marine technological knowledge and facilitate access to such information and data;
- (b) the development of appropriate marine technology;
- (c) the development of the necessary technological infrastructure to facilitate the transfer of marine technology;
- (d) the development of human resources through training and education of nationals of developing states and countries and especially the nationals of the least developed among them; [and]
- (e) international cooperation at all levels, particularly at the regional, subregional and bilateral levels.¹⁰⁹

Those objectives should be achieved through “programmes of technical cooperation for the effective transfer of all kinds of marine technology to [the States] which may need and request technical assistance in this field, particularly the developing land-locked and geographically disadvantaged States.”¹¹⁰ States are expected to “promote

103. *Id.*

104. CHURCHILL & LOWE, *supra* note 2, at 418.

105. *See id.* at 403.

106. *Id.*

107. IOC Criteria, *supra* note 100.

108. *Id.* at A(1).

109. UNCLOS, *supra* note 15, art. 268.

110. *Id.* art. 269(a).

favourable conditions for the conclusion of [equitable] agreements, contracts and other similar arrangements.”¹¹¹ They are encouraged to “hold conferences, seminars and symposia on scientific and technological subjects, in particular on policies and methods for the transfer of marine technology,”¹¹² as well as to “promote the exchange of scientists and of technological and other experts.”¹¹³ States should also “promote the establishment . . . of national [and regional] marine scientific and technological research centres and the strengthening of existing national centres, in order to stimulate and advance the conduct of marine scientific research by developing coastal States and to enhance their national capabilities to utilize and preserve their marine resources for their economic benefit.”¹¹⁴

For the development and transfer of marine technology, UNCLOS calls for “international cooperation . . . through existing bilateral, regional or multilateral programmes, and also through expanded and new programmes in order to facilitate marine scientific research, the transfer of marine technology, particularly in new fields, and appropriate international funding for ocean research and development.”¹¹⁵

Finally, it is important to mention that there are a number of international organizations that have endeavoured to promote the development and transfer of marine scientific research. The Food and Agricultural Organization (FAO) and the International Maritime Organization (IMO) serve as notable examples. FAO facilitates “the transfer of fisheries technology to . . . developing States,” and IMO provides States, through its Technical Cooperation Division, with assistance in matters relating to shipping safety, the protection of the marine environment, and the “training of maritime personnel”.¹¹⁶

III. CONCLUSIONS

As explained above, UNCLOS provides a comprehensive regime for the regulation of marine scientific research. The detailed regime of UNCLOS, which is the result of arduous negotiations undertaken at UNCLOS III, is not limited to the conduct of marine scientific research in any specific maritime zone. Although there is freedom of marine

111. *Id.* art. 269(b).

112. *Id.* art. 269(c).

113. *Id.* art. 269(d).

114. *Id.* art. 275(1).

115. UNCLOS, *supra* note 15, art. 270.

116. CHURCHILL & LOWE, *supra* note 2, at 418.

scientific research in the high seas, the right of States and competent international organizations to undertake marine scientific research activities in the different maritime zones becomes more limiting the closer the research gets to other coastal States' shores. In fact, with the recognition of the concept of the EEZ, UNCLOS has, in comparison with the 1958 Geneva Conventions,¹¹⁷ increased the geographical scope of regulation of marine scientific research to now include the most important areas for marine scientific research.

In laying down the conditions for the conduct of marine scientific research, UNCLOS strikes a balance between the conflicting interests of the international scientific community and those of coastal States, particularly in relation to the coastal State's rights over resources and economic activities. As detailed above, UNCLOS has protected the coastal State's rights by requiring its consent to undertake marine scientific research in its maritime zones. On the other hand, it has safeguarded the rights of the international scientific community by laying down rules which would prevent the arbitrary denial of such consent. Moreover, the right of a coastal State to interfere with an ongoing research project is limited to verifying compliance, and the only "enforcement" coastal State power recognized by UNCLOS is the right to request the project's suspension or cessation. Nevertheless, coastal States may be assured that whatever the outcome of the research, it cannot be used to lay a legal claim for the marine environment or its resources.¹¹⁸

Notwithstanding the above, not all States are parties to UNCLOS. This raises the question of whether UNCLOS's provisions form part of customary international law, which may be applicable to non-parties. In the preamble of the 1958 High Seas Convention, the parties made it clear that, in their view, the text they were adopting represented customary international law.¹¹⁹ This was not the case for UNCLOS. In fact, after UNCLOS was adopted, the second President of UNCLOS III declared in his closing statement to the Conference that "[t]his Convention is not a codification Convention. The argument that the Convention codifies

117. Convention on the Territorial Sea and the Contiguous Zone, Apr. 29 1958, 15 U.S.T. 1606, 516 U.N.T.S. 205; Convention on the High Seas, Apr. 29, 1958, 13 U.S.T. 2312, 450 U.N.T.S. 81; Convention on Fishing and Conservation of the Living Resources of the High Seas, Apr. 29, 1958, 17 U.S.T. 138, 559 U.N.T.S. 285; Convention on the Continental Shelf, Apr. 29, 1958, 15 U.S.T. 471, 499 U.N.T.S. 311.

118. UNCLOS, *supra* note 15, art. 241.

119. Convention on the High Seas, *supra* note 117.

customary law or reflects existing international practice is factually incorrect and legally insupportable.”¹²⁰

On the other hand, the International Court of Justice has declared on several occasions that certain provisions of UNCLOS may be regarded as forming part of customary international law.¹²¹ Therefore, it may be argued that although UNCLOS (often regarded as the “Constitution for the Oceans”) cannot be considered in its totality as a codification of customary international law, many of its provisions do form part of customary international law.

In relation to marine scientific research, State practice is largely in accordance with the provisions of UNCLOS. This, coupled with the fact that most enactments on this field pre-date the entry into force of UNCLOS, makes possible an argument that the UNCLOS provisions on the requirement of coastal State consent for marine scientific research in the territorial sea, EEZ, and continental shelf, are now part of customary international law.¹²² This may also be true for the requirement of coastal State consent for marine scientific research to be undertaken in Exclusive Fisheries Zones, which “involves the taking of fish” because although not codified by UNCLOS, this development in the law of the sea (which pre-dated the adoption of UNCLOS) has not faced considerable opposition.¹²³ This reasoning, however, may not necessarily be applicable to other provisions of UNCLOS relating to marine scientific research, “such as the period of notice [required before the research begins] and [the rules on] implied consent,” which seem to lack the necessary “norm-creating character” to become part of customary international law.¹²⁴

Arguably, however, with the level of ratifications received by UNCLOS, the question of it representing customary international law is becoming of marginal importance.¹²⁵ Moreover, it is also feared that the comprehensive regime laid down in UNCLOS for the regulation of marine scientific research may soon become superfluous with the development of remote sensing activities,¹²⁶ which allow the collection of

120. WEGELEIN, *supra* note 1, at 273-274.

121. *Delimitation of the Maritime Boundary in the Gulf of Maine Area (Can./U.S.)*, Judgment, 1984 I.C.J. 246, ¶ 94 (Oct. 12); *Continental Shelf (Libyan Arab Jamahiriya/Malta)*, Judgment, 1985 I.C.J. 13, ¶ 34 (June 3).

122. CHURCHILL & LOWE, *supra* note 2, at 409.

123. *Id.* at 409-410.

124. *Id.* at 409.

125. *Id.*; *see also* WEGELEIN, *supra* note 1, at 274.

126. 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

data from outer space, and is therefore beyond the scope of application of UNCLOS.¹²⁷

the sensed objects, for the purpose of improving natural resources management, land use and the protection of the environment.” U.N. GAOR, 29th Sess., 95th plen. mtg. at 1, U.N. Doc A/RES/41/65 (Dec. 3, 1986).

127. See WEGELEIN, *supra* note 1, at 247.