Islands' Sea Areas: Effects of a Rising Sea Level

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1. Introduction

In its Fourth Assessment Report, issued in 2007, the Intergovernmental Panel on Climate Change (IPCC) stated that, based on observations of rising global average air and sea temperatures, large-scale melting of snow and ice, and a rising global average sea level, warming of the climate system is "unequivocal," and the sea level is rising as this warming progresses. The IPCC report noted that the global average sea level had been rising at an estimated average rate of 1.8 millimeters a year since 1961 and of 3.1 mm a year since 1993 with contributions from thermal expansion, melting glaciers and ice caps, and the polar ice sheets, and it offered projections based on a set of scenarios for a further rise of 0.18 to 0.59 meters by the end of the century.[1] And in 2008 the secretary-general of the United Nations issued a report noting that sea-level rise has been progressing faster than expected and warning that, at current levels of greenhouse gas emissions, the sea level will rise by 0.5 m to 1.4 m by the end of the century.[2]

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[1] Intergovernmental Panel on Climate Change, *Climate Change 2007*: Synthesis Report Summary for Policy Makers (2007), at http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf (accessed on August 28, 2012), pp. 2, 7, and 8.

[2] Oceans and the Law of the Sea: Report of the Secretary-General, UN Doc. A/63/63 (March 10, 2008), p. 89.

Aside from causing the sea level to rise, global warming also contributes to various extreme weather events that cause tremendous damage in coastal areas. Islands are most susceptible to the impact of rising sea level and extreme maritime weather. This applies in particular to small island states at low elevations, such as Kiribati, the Maldives, the Marshall Islands, and Tuvalu.

The effects of sea-level rise on islands themselves are widely recognized, but the effects on the islands' sea areas have received surprisingly little attention, perhaps because the impact is not readily visible. In addition to their land area, islands have territorial seas and continental shelves, and they can also have exclusive economic zones (EEZs) and contiguous zones. These EEZs and continental shelves in some cases cover huge areas of the sea. In the case of islands belonging to a coastal state, the state has sovereign rights to the natural resources of these sea areas; a sea-level rise, by causing a change in the baselines for measurement of the sea areas in question, can have a major impact on the extent of the state's claims. And if the rise causes an island to submerge below the surface of the water, the baselines will cease to exist; this will raise the new issue of the legal status of the sea areas that the state has claimed. In the worst-case scenario, an entire island state might end up submerged under the rising waters or so extensively flooded that it becomes uninhabitable or incapable of sustaining its own economic life; such a development would raise the serious issues of the legal status of not only the sea areas it claimed but also the island state itself.

The purpose of this article is to consider such effects of rising sea level from the perspective of international law. These effects were not generally foreseen when formulating the existing rules of international law, including the United Nations Convention on the Law of the Sea (UNCLOS), and so in many respects there are no specific relevant provisions. Also, if existing provisions were applied as they now stand, they could have an extremely inequitable impact on island states, which generally bear the lowest level of responsibility for greenhouse gas emissions and other causes of global warming and climate change. In view of this impact of sea-level rise, unforeseen when the provisions of UNCLOS were being negotiated, below I will propose that the international community adopt supplementary provisions to mitigate the inequitable legal effects.[3]

[3] In March 2012 the Ocean Policy Research Foundation issued a "Policy Proposal on 'Conservation and Management of Islands,'" which included the following recommendation concerning this issue: "The low water lines of islands are important, as they constitute the normal baseline for measuring the breadth of the territorial sea, EEZs and the continental shelves. The sea level rise due to climate

2. Islands and Their Sea Areas

UNCLOS, in Article 121 (Regime of Islands), defines an "island" as "a naturally formed area of land, surrounded by water, which is above water at high tide" (paragraph 1), and it provides that the territorial sea, contiguous zone, EEZ, and continental shelf of an island are determined in accordance with the provisions of the convention applicable to other land territory (paragraph 2). But the same article also distinguishes between "rocks"—which it does not define—and "islands," stating, "Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf" (paragraph 3). This can be taken to mean that they do have territorial seas and contiguous zones. It is not clear from the wording of this article whether the "rocks" of paragraph 3 are a type of "island" as defined in paragraph 1 or are excluded from this definition. Scholars differ in their interpretation of this point, as do states in their application of the provisions. For example, the Japanese government considers that Okinotorishima Island meets the conditions of an island under paragraph 1 and that the provisions of paragraph 3 concerning rocks do not apply to it.[4] However, areas of land that are above water at low tide but submerged at high tide, which are called "low-tide elevations" in UNCLOS, have no territorial sea of their own (Article 13). It thus seems clear that the rocks referred to in Article 121 (3) are assumed to be above water at high tide. However one may interpret this third paragraph, Article 121 can be taken to mean that in order for any island or rock to have its own waters of any sort, some part of the land or rock must be above water at high tide. So if, as a result of the sea-level rise that has been forecast for the future, islands or rocks become

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change may cause shifts in the low water lines or submergence of part or the whole of the island territory, but such situations are not considered in existing international rules.

"Under such circumstances, it is desirable for the international community to clarify the problems in relevant provisions of UNCLOS, and promote the adoption of new rules to cope with the effects of climate change."

At http://www.sof.or.jp/en/report/pdf/201203_2.pdf (accessed on January 14, 2013), p. 12.

[4] See, for example, the answer delivered by Oshima Shotaro, director general of the Ministry of Foreign Affairs Economic Affairs Bureau, representing the government in response to a question at a session of the House of Representatives Committee on Construction on April 16, 1999, at http://www.shugiin.go.jp/itdb_kaigiroku.nsf/html/kaigiroku/001414519990416008.htm?OpenDocument (accessed on August 28, 2012; in Japanese).

submerged—or rocks, even if they are not submerged, become unable to sustain human habitation or economic life of their own—then they will lose their sea areas or at least their EEZs and continental shelves.

Below I will consider in detail how sea-level rise may impact the sea areas of coastal states, particularly with respect to those of islands and rocks.

3. The Impact of Sea-Level Rise on Baselines and Sea Areas

Islands, like other land areas, have their own territorial seas and continental shelves; in addition, they can serve as the basis for claims by the state that owns them to contiguous zones and EEZs. The outer limits of these sea areas are determined by distances measured from baselines on their coasts (though criteria other than distance also apply in the case of the continental shelf). UNCLOS provides for both "normal" baselines and other types of baselines. The normal baseline is the low-water line along a coast (Article 5). In the case of islands on atolls or with reefs, the baseline is the seaward low-water line of the reef as shown by the appropriate symbol on charts officially recognized by the coastal state (Article 6). A low-tide elevation, as noted above, does not have sea areas of its own, but if it is situated wholly or partly at a distance not exceeding the breadth of the territorial sea from the mainland or an island, its low-water line may be used as the baseline (Article 13, paragraph 1).

Aside from normal baselines, UNCLOS also allows the use of straight baselines and of closing lines across the entrances to bays and mouths of rivers. Straight baselines may be used in localities where the coastline is deeply indented, such as a ria coast, or where there is a fringe of islands along the coast; these baselines are determined by drawing lines connecting appropriate points along the coast in keeping with certain conditions, including that the lines must match the general direction of the coast (Article 7). In the case of the mouths of rivers and entrances to bays as defined by UNCLOS, straight lines connecting points on the low-water line on opposite banks of rivers or connecting the natural entrance points of bays may be used as the baseline, but the distance between the entrance points used for this purpose may not exceed 24 nautical miles (Articles 9 and 10). Archipelagic states as defined by UNCLOS may use baselines that are straight lines joining the outermost points of the outermost islands and drying reefs of the archipelago, subject to certain conditions (Article 47).

Coastal states can in this way set their own baselines subject to certain conditions, but UNCLOS requires that these baselines be publicized: The normal baseline and the baseline of reefs must be as marked on charts officially recognized by the coastal state (Articles 5 and 6). And in the case of other baselines, such as straight or archipelagic baselines, the baselines or the limits derived from them must be shown on charts of appropriate scale, or else lists of geographical coordinates must be provided, and the coastal state must give due publicity to these charts or lists and deposit copies of them with the secretary-general of the United Nations (Article 16 and Article 47, paragraphs 8 and 9).

The baselines are thus drawn between particular points on the coast, but whether they are low-water lines or other lines, in almost all cases the points on which they are based will shift (recede inland) if the sea level rises. The movement will depend on the geology of the coastal area, but one example shows that a rise of several hundred millimeters can cause the shoreline to recede by several kilometers.[5] The shift is liable to be pronounced in cases where islands or rocks used as points for determining the baseline become submerged at high tide, particularly with respect to long sections of the baseline.

This shifting of baselines may have a major impact on the territorial sea, EEZ, and other sea areas of the coastal state. For example, if the low-water line of Samese in the Danjo Islands of Nagasaki Prefecture were to recede by 2 kilometers, it has been estimated that the area of the relevant EEZ would shrink by about 78 square kilometers.[6] In general, when the outer limit of territorial seas recedes, the area of the waters in which foreign ships are free to navigate expands toward the land, and the receding of the outer limit of an EEZ can cause a major loss to the coastal state depending upon the distribution of fishery and other resources. And if the outer limits of territorial seas and EEZs clearly recede but the coastal state persists in

[5] Leendert Dorst and Ina Elema, "The Effects of Changing Baselines on the Limits of the Netherlands in the North Sea," paper presented at the 5th ABLOS Conference, Monaco, October 15–17, 2008, at http://www.gmat.unsw.edu.au/ablos/ABLOS08Folder/Session6-Paper3-Dorst.pdf (accessed on 28 August 2012), p. 4.

[6] Headquarters for Ocean Policy, "Haitateki keizai suiiki oyobi tairikudana no hozen oyobi riyo no sokushin no tame no teichosen no hozen oyobi kyoten shisetsu no seibi to ni kansuru horitsu" (Act Concerning the Preservation of Low Water Lines and Improvement of Base Point Facilities to Promote Preservation and Use of Exclusive Economic Zones and the Continental Shelf), at http://www.kantei.go.jp/jp/singi/kaiyou/teichousen/gaiyou.pdf (accessed on August 28, 2012; in Japanese).

failing to officially recognize the shift, depending on the utility of the sea areas in question, they could become the object of disputes between the coastal state and neighboring or other states interested in developing the sea area's resources.

The provisions noted above may be read to indicate the need for coastal states to officially change their baselines when they recede or otherwise shift, but UNCLOS does not make this requirement explicit. Under the provisions concerning straight baselines, however, in the case of deltas or other conditions making the coastline highly unstable, the coastal state may select points "along the furthest seaward extent of the low-water line"; furthermore, "notwithstanding subsequent regression of the low-water line, the straight baselines shall remain effective until changed by the coastal State in accordance with this Convention" (Article 7, paragraph 2). Conversely, in the case of other baselines like normal baselines, these provisions can be taken to mean that the shifts are not necessarily effective until the coastal state officially changes the baselines and thus to confirm the duty of the coastal state to change them at some point in time.

4. Impact of Sea-Level Rise on Islands, Rocks, and Island States

It is easy to imagine how the effects of rising sea level on coastal states, as described above, may in extreme cases have an especially severe impact with respect to islands, rocks, and some small island states. Below let us consider what specific type of impact this may have under current international law. In what follows, I will use the term "rocks" without defining it, since Article 121 of UNCLOS, while defining "island" in paragraph one, uses "rocks" without definition, and this ambiguous set of provisions is subject to differing interpretations. I will consider the following four scenarios: (a) total submersion of some islands or rocks belonging to a coastal state, (b) large-scale flooding of such islands or rocks, (c) total submersion of all the islands making up an island state, and (d) large-scale flooding of all the islands of an island state that escape total submersion.

(a) Submersion of Islands or Rocks

First let us consider the legal status of the sea areas around an island or rock belonging to a coastal state that becomes totally submerged at high tide. UNCLOS Article 121, in its provisions regarding the territorial sea, contiguous zone, EEZ, and continental shelf of islands, explicitly requires that the island be above water at high tide. Paragraph 2 provides that, except in the case of rocks ("which cannot sustain human habitation or economic life of their own") as specified in paragraph 3, these

waters "are determined in accordance with the provisions of this Convention applicable to other land territory"; in the case of the territorial sea, contiguous zone, and EEZ, the existence of a baseline is a precondition. Inasmuch as the submersion of the land forming the baseline means the disappearance of the baseline, such a development may be taken to mean the disappearance of the state's claims to these sea areas.

UNCLOS contains special provisions in this connection regarding the continental shelf. Under Article 76, paragraph 1, the continental shelf is defined as comprising "the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance." Under paragraph 8 of the same article, the coastal state is required to submit information on the limits of the continental shelf beyond 200 nautical miles to the Commission on the Limits of the Continental Shelf (CLCS). The CLCS makes recommendations to coastal states in this connection, based on which coastal states establish the outer limits of their continental shelf; once established, these limits are both "final" and "binding." And under paragraph 9, it is provided that the coastal state is to deposit charts and relevant information "permanently describing" the outer limits of its continental shelf with the UN secretary-general, who is to "give due publicity thereto." This is generally interpreted to mean that if a state "permanently describes" the limits of its continental shelf beyond 200 nautical miles, having submitted information for consideration by the CLCS and received its recommendations, these limits will not be affected by future shifts of its baseline or by its disappearance (such as by the submersion of islands). With respect to the continental shelf up to a distance of 200 nautical miles, submission to the CLCS is not required, but the provision concerning depositing charts and information with the UN secretary-general does not refer directly only to the portion beyond 200 nautical miles, and it may be interpreted as meaning that the coastal state may unilaterally deposit these materials with the secretary-general. It would be inequitable if only coastal states with continental shelves extending beyond 200 nautical miles were allowed to establish outer limits permanently, while those coastal states with continental shelves extending only up to 200 nautical miles had no procedure for doing so, meaning that

they would lose portions of their continental shelf when islands became submerged.[7]

Another issue is the status of the seabed formed by an island that has become totally submerged. UNCLOS has no provisions about this. But according to general international law, a state consists of the land, its subsoil, and the airspace above this land.[8] In consideration of this, along with the fact that the seabed in question was part of the coastal state to which the island belonged before it became submerged, it is possible to view this seabed as having a special status like that of the continental shelf. And it seems proper to apply similar thinking to the seabed of the territorial sea that was attached to the island. Otherwise, if only the continental shelf remains permanently defined after an island is submerged we will be left with an unreasonable outcome, namely that the state to which the island belongs will retain its sovereign rights and title to this continental shelf but will be left with no rights or title to the sea area in its center, over which it was previously sovereign. There is room for debate concerning the specific sort of title that a coastal state should retain with respect to the seabed formed by a submerged island and that of its former territorial sea, but it is probably appropriate at least to recognize rights and title comparable to those that the coastal state holds with respect to its continental shelf.

In the case of the "rocks" referred to in Article 121, paragraph 3, since they do not have their own EEZ or continental shelf, the issue is the status of the seabed formed by the rocks themselves and that of their territorial sea if the rocks become submerged. UNCLOS has no provisions regarding this eventuality either, but by analogy with the application of the general principles of international law mentioned above, one would expect the coastal state to which the rocks belonged to retain some sort of rights and title over this seabed. Here again, the specifics, such as the possibility of recognizing rights and title analogous to those applicable to the continental shelf, will be open to debate.

(b) Large-Scale Flooding of Islands or Rocks

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[7] See A. H. A. Soons, "The Effects of a Rising Sea Level on Maritime Limits and Boundaries," *Netherlands International Law Review* 37, no. 2 (1990), 217. See also Jenny Grote Stoutenburg, "Implementing a New Regime of Stable Maritime Zones to Ensure the (Economic) Survival of Small Island States Threatened by Sea-Level Rise," *International Journal of Marine and Coastal Law* 26, no. 2 (2011), p. 270.

[8] Robert Jennings and Arthur Watts, eds., *Oppenheim's International Law*, 9th ed., vol. 1 (1996), pp. 572–73.

When, because of large-scale flooding or erosion, islands or rocks become uninhabitable or unable to sustain economic life of their own, if they are considered rocks under UNCLOS Article 121, paragraph 3, they can still maintain their territorial sea and contiguous zone (though the baselines for these will need to be shifted), but they will lose their EEZ. If, however, the outer limits of the continental shelf have been established permanently under the procedures described in section (a) above, this continental shelf can be maintained even after the flooding of the rock.

(c) Submersion of All the Islands Making Up an Island State

What would happen in the extreme case where sea-level rise caused all the islands or rocks of an island state, such as one located on atolls, to become totally submerged—in other words, a case in which the state lost all of its land area? Since possession of land area is a condition for the existence of a state, in theory the island state might cease to exist as a state, but in practice it is inconceivable that such a state would fail to take some sort of action in advance of its submersion; one would assume that it would negotiate with some other suitable country and conclude an agreement on the migration of its people and the formation of a federation or union with that country. (In what follows, I shall use the term "successor state" to refer to a state that takes over the rights and titles of an island state under such an agreement.) UNLCOS has no specific provisions concerning the submersion of an entire state, but presumably Article 121 would apply in such a case. So, as described in section (a) above, it is possible that the island state's territorial sea, contiguous zone, and EEZ would be lost, but if the required procedures were followed, the successor state could take over the rights and title to the island state's continental shelf, and the arguments presented in section (a) above regarding the seabed formed by the submerged islands themselves and by their former territorial sea could also be advanced in this case.

(d) Large-Scale Flooding of All the Islands of an Island State

Similarly, in a case where flooding or erosion caused all the islands or rocks of an island state to become uninhabitable or incapable of sustaining economic life of their own, it would become difficult for an island state composed solely of these islands or rocks to continue to exist as a state, and one may assume that it would make some arrangements with another state as in section (c) above. In this case, assuming that the remaining pieces of land were considered rocks under Article 121, paragraph 3, they would maintain their territorial seas and contiguous zones, but they would lose their EEZs. With respect to the continental shelf, one can interpret the applicable provisions to mean that, as in the case of section (a) above, outer limits that have

been "permanently described" as specified would be maintained and the successor state would take over the relevant rights and title.

5. Legal Measures to Alleviate the Impact of Sea-Level Rise on the Sea Areas of Island States

As set forth above, sea-level rise may have a serious impact on some islands and particularly island states, depending on the shape and geological characteristics of the islands or rocks in question. Since sea-level rise due to global warming was not considered when UNCLOS was being negotiated, the results of warming may ironically be worst for island states bearing the least responsibility for the global increase of greenhouse gases. As conventional measures to protect against the adverse impact, physical reinforcement of coastal areas may be undertaken, but there will inevitably be limits to the availability of the tremendous sums of money required to resist the growing destructive power of nature resulting from sea-level rise and extreme weather, as well as to the effectiveness of such measures relative to their cost.

The processes of submersion and large-scale flooding of islands and rocks cannot be completely avoided; it is only possible to minimize the adverse impact from these phenomena as much as possible with such measures as are feasible. One such measure is the adoption of new provisions for the law of the sea aimed at keeping the negative impact to a minimum. In concrete terms, this would involve replacing the existing treaty provisions concerning baselines and the outer limits of territorial seas and EEZs, under which coastal states are expected to adjust these lines and limits in accordance with the shifting of low-water lines, with a new set of rules formulated by the international community that would allow these lines and limits to be frozen in place at a certain point in time. One proposal that has been advanced calls for the baselines to be frozen (and thus for the outer limits of the various sea areas determined therefrom to be fixed).[9] Another suggests just freezing the outer limits.[10] Under the former proposal, new sea areas resulting from submersion of land inside the frozen baselines would be "internal waters," meaning that foreign ships would not enjoy the right of innocent passage through them.

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[9] J. L. Jesus, "Rocks, New-born Islands, Sea Level Rise and Maritime Space," in *Verhandeln für den Frieden: Negotiating for Peace*, ed. J. Frowein et al. (Berlin: Springer 2003), pp. 602–3.

[10] Soons, "Effects of a Rising Sea Level," p. 225. Also, Stoutenburg, "Implementing a New Regime," p. 276, calls for freezing both the baselines and the outer limits.

Under the latter proposal, by contrast, the baselines would have to be adjusted, and the waters outside the new baselines would become territorial sea, meaning that the right of innocent passage would apply; also, in the case where the territorial sea extended to 12 nautical miles from the baseline, the breadth of the new territorial sea would exceed the maximum allowed under UNCLOS. So, from the perspective of the coastal state, the former proposal, freezing the existing baselines, is more advantageous.

Based on the above considerations, I have proposed elsewhere the adoption of new rules for the law of the sea with a core provision reading something like this:[11]

> A coastal state may declare the baselines established in accordance with the relevant provisions of UNCLOS as permanent once it has shown them on charts of an adequate scale or described them by a list of geographical coordinates, and given due publicity thereto, notwithstanding subsequent changes in geographic features of coasts or islands due to sea level rise.

Introducing this sort of freeze on baselines would naturally require the addition of a number of other new provisions; it would also be desirable to use this occasion to clarify and supplement the points that are unclear under the current UNCLOS provisions, as I have noted above. In particular, a completely new rule would be required concerning the status of the seabed formed by submerged islands and rocks.

What sort of advantages would these new rules offer with respect to islands and rocks and to island states that are liable to be adversely affected by sea-level rise? Let me break them down according to the four above-mentioned scenarios: If (a) islands or rocks forming part of a state's territory became totally submerged or (b) they underwent large-scale flooding, then the freezing of baselines would allow the affected state to maintain its existing maritime claims—territorial sea, contiguous zone, EEZ, and continental shelf. But in scenario (a), former land areas within the baselines would become submerged seabed, requiring a new rule, and in scenario (b), the areas other than the remaining land would become internal sea. If (c) all the

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[11] Hayashi Moritaka, "Sea Level Rise and the Law of the Sea: Legal and Policy Options," in *Proceedings of International Symposium on Islands and Oceans* (Ocean Policy Research Foundation, Tokyo, January 22–23, 2009), at http://www.sof.or.jp/en/report/pdf/200903_ISBN978-4-88404-217-2.pdf (accessed on August 28, 2012), p. 84; Hayashi Moritaka, "Sea-Level Rise and the Law of Sea: Future Options," in *The World Ocean in Globalisation*, ed. Davor Vidas and Peter Johan Schei (Leiden/Boston: Martinus Nijhoff Publishers, 2011), p. 198.

islands making up an island state became submerged or (d) they underwent large-scale flooding, then the rights and title to the various maritime zones determined on the basis of the permanently established baselines would go to the successor state, but the status of the seabed formed by islands after their submersion, scenario (c), would depend on the new set of rules, while in the case of large-scale flooding, scenario (d), the submerged areas within the baselines would become internal waters.

It bears noting that the introduction of such new rules would alleviate the losses suffered by states affected by sea-level rise without directly hurting the rights or title enjoyed by other states under the existing law of the sea. The focus is on doing as much as possible to alleviate the adverse impact of sea-level rise on states most of which have virtually nothing to do with the causes of the rise. So the proposal ought to be acceptable to the international community as a whole.

6. Procedure for Adoption of the New Rules

The formulation of rules under international law concerning baselines in anticipation of sea-level rise might be handled in a number of different ways, such as through the formation of customary law, a decision by a meeting of the UNCLOS parties, a revision of UNCLOS, or the adoption of an implementation agreement or supplementary treaty. The reliance on customary law is not appropriate, however, since it requires an accumulation of practices by many states, including those directly concerned, and in this case of practices by states premised on serious damage, what is most important is to avert the damage in question, such as the loss of rights concerning maritime zones. As for the meeting of UNCLOS parties, this is a body of the convention convened annually, but at least up to now its agenda has been limited to matters like decisions concerning the budget, management, and procedures of the UNCLOS organs and the election of officials; the meeting is therefore not expected to deal with matters of substance concerning the specific provisions of the convention.

Under UNCLOS, any state party to the convention can at any time propose an amendment and request the convening of a conference to consider it; for the conference to be convened, at least one half of the parties must reply favorably to the request (Article 312). However, UNCLOS was adopted only after a long and extremely difficult round of negotiations as a package deal striking a delicate balance among the diverse, conflicting interests relating to numerous issues. The overall integrity of the convention is always emphasized, and any official proposal to amend it can be expected to run into strong opposition. So up to now the procedure

that has been used instead of the formal amendment process is the adoption of "implementation agreements"—supplementary treaties including clauses that effectively revise existing provisions or add new ones. Such agreements have already been concluded with respect to Part XI of the convention (concerning the "Area"—the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction) and to high seas fisheries, and an implementation agreement is one of the options now being considered by a working group on rules concerning the conservation of marine biological diversity beyond areas of national jurisdiction. An implementation agreement is thus probably the most practical procedure for the adoptions of new rules relating to sea-level rise.

In concrete terms, the best procedure would involve using the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea and other informal forums within the framework of the UN General Assembly to raise this issue and then, based on the discussions at such forums, to seek the adoption of a General Assembly resolution to officially take up the matter. Such a resolution might theoretically call for the convening of an international conference to draft a new UNCLOS implementation agreement, but ordinarily one would expect it to decide on the launch of a working group or informal consultations to deliberate the matter and consider the draft of a new agreement. The results of such deliberations would be reported to the General Assembly, and if a consensus were reached there, a decision would then be made on concrete procedures for convening a conference to negotiate the new pact.

7. Conclusion

The seriousness of the issue of sea-level rise has recently attracted the attention even of the UN Security Council, which in July 2011 held a special meeting concerning the security implications of climate change and issued a presidential statement that included this sentence: "The Security Council expresses its concern that possible security implications of loss of territory of some States caused by sea-level rise may arise, in particular in small low-lying island States."[12] And on September 7, 2011, leaders of the Pacific Islands Forum (PIF) met with the UN secretary-general and issued a joint statement noting the need for urgent international action to avert the threat from climate change (and ocean acidification), calling for this matter to be addressed in every relevant international forum, and referring to the implications of

[12] UN Press Release SC/10332, July 20, 2011.

sea-level rise for the territorial integrity of the small island developing states in the Pacific and their continued existence as viable dynamic communities.[13]

Also at the 2011 PIF gathering, the leaders of the smaller island states group in this forum came out with a joint statement on September 6 calling for urgent action on climate change. The leaders were concerned about the implications for the survival of states "an impending consequence of climate change," and they called for careful consideration of "what *the loss of physical State* might mean for *countries' right to exist* while maintaining their sovereignty as nations and their right to manage their collective resources" (emphasis added).[14]

This sense of crisis was shared by the participants at the June 2012 Rio+20 Conference (United Nations Conference on Sustainable Development). In "The Future We Want," the outcome document of the conference, they declared, "Sea-level rise and other adverse impacts of climate change continue to pose a significant risk to small island developing States and their efforts to achieve sustainable development and, for many, represent the gravest of threats to *their survival and viability*, including for some *through the loss of territory*" (emphasis added).[15]

As we can see from these developments, sea-level rise is no longer a hypothetical concern, and in some places it is already becoming a harsh reality. The international community should promptly launch a process aimed at formulating new rules under the UNCLOS framework to deal with this critical prospect.

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[13] Annex 3, Forum Communiqué of the Forty-Second Pacific Islands Forum, Auckland, New Zealand, September 7–8, 2011, at http://www.forumsec.org/resources/uploads/attachments/documents/2011%20Forum%20Communique,%20Auckland,%20New%20Zealand%207-8%20Sep1.pdf (accessed on February 3, 2013).

[14] Press statement at http://www.forumsec.org/pages.cfm/newsroom/press-statements/2011/forum-sis-leaders-want-urgent-action-on-climate-change.html (accessed on February 3, 2013). The joint statement was issued by the leaders of the Cook Islands, Kiribati, Nauru, Niue, Palau, Republic of the Marshall Islands, and Tuvalu.

[15] "The Future We Want," UN Doc. A/CONF.216/L. 1, at http://www.uncsd2012.org/content/documents/727The%20Future%20We%20Want%2019%20June%201230pm.pdf (accessed on February 3, 2013), para. 178.

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