

Suggestions on International Law System to Mitigate the Adverse Effects of Sea-level Rise Caused by Climate Change

Han Xiao¹

¹ China institute of Boundary and Ocean Studies, Wuhan University, Wuhan, China

Correspondence: Han Xiao, China institute of Boundary and Ocean Studies, Wuhan University, Wuchang Distruct, Bayi Street, China.

doi:10.56397/LE.2022.10.03

Abstract

Sea-level rise is closely linked to increasing global temperatures. Even as uncertainties remain about how much sea level may rise this century, it is virtually certain that sea-level rise this century and beyond will pose a growing challenge to coastal communities, infrastructure, and ecosystems.

Sea-level rise has been mentioned as one of serious risks. It means that sea-level rise has become a global phenomenon and thus creates global problems, impacting on the international community as a whole.

The legal matters of sea level rise caused by climate change are challenging for humankind, but there are still having blank spaces in legal research and practice closely related to sea level rise.

This essay tries to deal with the possible legal effects of sea-level rise on the international law system from three aspects: legal status of maritime features and fixed baselines and outer limits of the maritime spaces measured from the baselines. It also discusses the legal recommendations on international law to mitigate the adverse effects of sea-level rise. Specifically, by analyzing the possible legality of reclamation and fortification activities on maritime features and fixed baselines and to promote international community to improve domestic legislation, cooperate in international and regional organization.

Summarily, the suggestions on international law system to mitigate the adverse effects of sea-level rise caused by climate change are following: Firstly, recognizing and admitting evolutionary interpretation and application of existing international treaties and conventions concerning climate change, especially the United Nations Convention on the Law of the Sea (UNCLOS), United Nations Framework Convention on Climate Change (UNFCCC) and related protocols. Secondly, paying attention to the development of international and regional customary law from the aspect of opinio juris and state practice. Thirdly, Enacting implementation rules on the certain articles of UNCLOS.

Keywords: climate change, sea-level rise, baselines, construction activities on islands

1. Introduction

1.1 Introduce the Problem

Sea level rise is closely linked to increasing global temperatures. According to recent scientific research on sea level rise, it suggests that when the temperature rises by 4 degrees, the global sea level rise is estimated to be between 0.5 and 2 meters. However, even as uncertainties remain about how much sea level may rise this century, it is virtually certain that sea-level rise this century and beyond will pose a growing challenge to coastal communities, infrastructure, and ecosystems from increased inundation, more frequent and extreme coastal flooding, erosion of coastal landforms, and saltwater intrusion within coastal rivers and aquifers.

Sea-level rise has been mentioned as one of serious risks, which caused by climate change, in paragraph 14 of

the 2030 Agenda for Sustainable Development, which passed in the U.N. General Assembly. It recognized that climate change is one of the greatest challenges of our time and sea-level rise is seriously affecting coastal areas and low-lying coastal countries. According to a 2018 report from International Law Commission (ILC), more than 70 States are or are likely to be directly affected by sea-level rise, a group which represents more than one third of the States of the international community.

It means that sea-level rise has become a subject of increasing importance for a significant part of the international community in recent years, because sea-level rise has become a global phenomenon and thus creates global problems, impacting on the international community as a whole. It is already having an increasing impact upon many essential aspects of the world, such as human settlements in coastal areas, sovereign right and jurisdiction of States (especially the low-lying coastal States and small island States) and related international law system.

The consequences of sea-level rise prompt a number of important questions relevant to international law system while there is no perfect solution now. The questions, whether this human-induced and natural phenomenon will affect the legal status of maritime features, legal effect of ambulatory or fixed baselines and the existing maritime boundary, were not foreseen, explained and solved by related international treaties and conventions in the past draft stage. There is no evidence that customary international law concerning sea-level rise has been crystallized. Besides, no case law provides a close reference for sea level rise. But more and more interest relevant states are realizing these questions and taking measures to clear the position on related issue by kinds of declarations and reduce the risk of legal gap and destructive impact of sea-level rise by some modification activities.

This issue is being researched generally by some international institutions and there has been some important, authoritative and preliminary conclusions. The topic of sea-level rise was initially examined by the International Law Association (ILA) Committee on Baselines under the International Law of the Sea. ILA established a new committee to focus this work and gave some interim report related to the law of the sea, human right of climate refugees and migration and statehood. In 2018, at the seventieth session, ILC was recommended to take the topic "Sea-level rise in relation to international law" into its long-term programme of work, and by 2020, its study group published the first issues paper on sea-level rise in relation to international law and gave some observations.

In summary, the legal matters of sea level rise are challenging for humankind, but there are still having blank spaces in legal research and practice closely related to sea level rise.

1.2 Research Questions and Its Significance

Geographical stability forms an important basis for many regimes of international law of the sea. While sea level rise makes the maritime features and territorial baselines in an uncertain state, and even leads to legal conflicts between relevant provisions of different international law.

It is really needed to strengthen the study on its interpretation, application and revision, pay close attention to the development of customary international law on the sea, and strengthen the study on the provisions of the UNCLOS concerning climate change and sea level rise. To perfect international legal systems with environmental change is meaningful for coastal states to make agreements on fixed or ambulatory base points and baselines and outer limits of various maritime zones permanently in accordance with the UNCLOS, which helps reduce disputes and enhance international coordination of climate refugees.

This essay tries to deal with the possible legal effects of sea-level rise on the maritime features, baselines and outer limits of the maritime spaces measured from the baselines. It also discusses the possible legality of construction activities on maritime features and baselines for the purpose of preservation and reclamation.

2. Research Methodology

2.1 Normative Method

According to order of the sources of international law, namely, treaties, international custom, general principles and international jurisprudence and so on, this paper mainly analyzes the legal consequence of sea-level rise in order, and tries to find out the legal issues caused by this complicated phenomenon whether they have been covered by the existing legal regime.

2.2 Comparative Method

This paper chooses three cases related to fixed and ambulatory baselines directly or not, which are Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea, Maritime Delimitation in the Black Sea and Aegean Sea Continental Shelf as comparative samples.

2.3 Literature Analysis Method

Since there are existing a large number of reading treaties, jurisprudence, dissertations, journal papers, news, books and so on, it is imperative to interpretation article, draw on the previous research results and make a certain summary to make the paper more reliable.

3. General Legal Research on Maritime Features and Baselines Under the Sea-Level Rise

It becomes the common knowledge in international law field that the conference of experts who met throughout the decade of the 1970's did not anticipate that there could be a significant global regression of coastlines apparently.

In 2010, Clive Schofield called on all countries to pay attention to the impact of the retreat of the low tide line that may be caused by sea level rise on the waters under national jurisdiction. For example, the gradual degradations of ocean-going islands contribute to the complete loss of the right to claim jurisdiction over waters; the state territories and status may disappear with the islands without full entitlements or even submerged. In 2012, when David Freestone summarized the achievements, challenges and new agenda of the 30th anniversary of the UNCLOS, he clearly pointed out that the Convention lacked provisions for climate change and greenhouse gases. Relevant regulation on emissions was the focus that should be improved in the next phase of the Convention. In 2014, Davor Vidas systematically explained the decisive role of the objective and stable geographic environment under the UNCLOS on the two basic principles of "the land dominates the sea" and "baselines determine the boundary of sea areas under national jurisdiction".

Numerous international law scholars continue to pay attention to the impact of sea level rise on international law, making it an important issue of the International Law Association (ILA). In 2008, the ILA established the Committee of Baseline to discuss the possible impact of sea level rise on the current baseline system. In the first research report released by the Baseline Commission in 2012, the Commission believed that sea-level rise led to a series of international law issues including international peace and security. It not only affected the baseline system and the law of the sea related issues, but also triggered continued territorial disappearance, reconsideration of states definitions, human rights, standards of refugee, national responsibilities, etc. Therefore, in order to explore the impact of sea level rise on the current international legal system better, the ILA established the Committee of Sea Level Rise, which listed three major tasks--mainly addressed the law of the sea issues caused by sea level rise, climate refugees, and the legal status of submerged countries. In final report to the 2018 Sydney Conference of ILA, it concluded that the Pacific islands were the most vulnerable to losses of territory and baseline points from sea level rise. So they would be among those "States whose interests are specially affected", which was a significant attribute regarding the establishment of a general practice in the formation of a new rule of customary international law. Hence, there was at least *prima facie* evidence of the development of a regional State practice.

According to a 2020 report released by International Law Commission (ILC) confirmed that sea-level rise was not a lie but a fact that was currently happening. ILC gave some preliminary observations but not certain answer on four main legal problems: the possible effects of sea-level rise on the baselines and the outer limits of the maritime spaces that are measured from the baselines; the possible legal effects of sea-level rise on maritime delimitations; the possible legal effects of sea-level rise on the exercise of sovereign rights and jurisdiction of the coastal State and its nationals, as well as on the rights of third State and their nationals, in maritime spaces in which boundaries or baselines had been established; the issue of legal status of artificial islands, reclamation or island fortification activities as a response and adaptive measures to sea-level rise. While it must be highlighted that there was an overarching concern for preserving legal stability, security, certainty and predictability at the very center of this report, which might be seen as an implicit point in favor of preservation of state status, baselines and its outer limits measured from baseline.

Some Chinese scholars are also researching on the impact and challenges of international law related to sea-level rise. There are two main issues in China. One is the relationship between sea-level rise and international law system, such as provisions in UNCLOS, UNFCCC, VCLT and customary law. The other is to safeguard the interests of developing countries. Specifically, many writers, such as Ma Bo, He Zhipeng, Lin Tinggui and Jiao Zhinian, aim at protecting small island states; some scholars devote to safeguarding the rights and interests of China in the South China Sea, such as Chen Zhenru, Li Xuwen and Li Jinming. Most of them also mention the jurisprudential issues on the improved islands.

4. Legal Basis of Permanent Maritime Features

4.1 The Classification of a Maritime Feature Shall Be Based on its Original Condition Before Human-induced Sea-level Rise

Many islands changed to islets or rocks because of sea-level rise. The term used in Article 121(3) of the UNCLOS indicates that the determination of a maritime feature's legal status should be based on its original condition. International jurisprudence has made it clear, positive evidence that humans historically lived on a

feature or that the feature was the site of economic activity before intervening forces can constitute relevant evidence of a feature's capacity. Intervening forces include war, pollution, environmental harm and sea-level rise. This finding suggests that the original condition—and not human intervention—will determine whether the feature has certain intrinsic capacity. Therefore, in the case of features made submerged or inhabitable because of sea-level rise, only the original condition before sea-level rise matters as to the determination of their legal status.

4.2 It Is Consistent with the Spirit of the UNCLOS to Classify a Maritime Feature Based on the Original Condition before Sea-level Rise

As noted by the International Law Association, some of the principal motivations of the UNCLOS are to contribute to the maintenance of peace, security and cooperation between States. This is evident from the preamble of the UNCLOS.

Furthermore, it appears that the drafters of the UNCLOS they were not averse to fixing baselines in the context of deltas and unstable coasts under Article 7(2) of the UNCLOS and the outer boundary of the continental shelf permanently under 76(9) of the UNCLOS. These are indications of concern manifested in the UNCLOS for ensuring stability.

Recent international jurisprudence also lends support to the need to maintain stability of maritime entitlements. The ICJ in the Maritime Delimitation in the *Black Sea case* and the Tribunal in the *Bay of Bengal Maritime Boundary Arbitration* took into account of the existing physical state of features at the time of delimiting maritime boundaries and stressed the importance of the stability of boundaries.

On the grounds of legal stability and security, the classification of a maritime feature shall be based on the original condition before sea-level rise. If the classification of a maritime feature changes according to the physical changes caused by sea-level rise, the potential adverse impacts on legal stability and certainty will be significant. A small island could generate up to 431,014 square kilometers maritime area, whereas a “rock” limited to only a territorial sea would only generate 1,550 square kilometers. Therefore, to reclassify a fully entitled island to a rock may result in great changes in maritime entitlements. So do the reclassification of an island to a low-tide elevation, or the denial of the existence of a low-tide elevation. Third States might benefit from these changes, but at the expense of the coastal state. Such changes will bring the risk of creating uncertainty, instability and the possibility of disputes. Just as argued by Judge Jesus who is the former President of ITLOS, omitting the impact of sea-level rise is necessary to ensure stability.

4.3 The Classification of Maritime Features Shall Be Based on the Original Condition Before Sea-level Rise in Order to Respond Adequately to the Pressing Concerns of the International Community Prompted by Sea-level Rise

Sea-level rise has an impact on the international community as a whole, especially on some island developing States. The natural resources of the EEZ constitute a major livelihood source for many of them, if these States are deprived of their EEZ based on the physical changes caused by sea-level rise, the consequences could be economically, socially and culturally catastrophic. It is also in all States' interests to preserve the existing balance of rights under the UNCLOS. Therefore, in order to respond adequately to the pressing concerns of the international community, it is necessary to provide certainty to vulnerable States affected by sea-level rise.

5. Legal Basis of Permanent Baselines

In UNCLOS, normal baselines are ruled by article 5, and straight baselines are defined under article 7, paragraph 1. The drawing of straight baselines must follow the conditions provided for under article 7. Other provisions of the Convention related to baselines and basepoints are those referring to reefs, mouths of rivers, bays, low-tide elevations and archipelagic baselines. Besides, measured from baselines, the outer limits of maritime zone under national jurisdiction, such as internal waters, territorial sea, contiguous zones, exclusive economic zones and continental shelf are regulated by article 8, 3, 33, 57 and 76 respectively. While in practice, the baseline may be drawn by the coastal State using a combination of the methods presented in articles 3 to 7 and 9 to 13, as provided for by article 14 of the Convention.

A number of authors, such as Clive Schofield and David Freestone, suggest, based on the language of article 5 of the Convention, which mentions the “low-water line along the coast as marked on large-scale charts officially recognized by the coastal State”, that “the key requirement is that the chart be recognized by the coastal States”. In this case, if States do not update their charts to reflect the loss of land territory or basepoints, they can freeze their baselines. However, they note that “a policy of not updating charts would pose potential dangers to seafarers as official charts become more and more inaccurate over time.

5.1 The Convention Does Not Indicate an Obligation to Draw and Notify New Baselines When Coastal Conditions Change, Especially the Shifting Baselines are Inimical to the Interests of States

Article 47(9) shall be interpreted to ensure the fixed archipelagic baselines after the archipelagic State has deposited lists of coordinates of the archipelago with the Secretary-General of the United Nations for the following reasons.

The UNCLOS prescribes the permanency of the continental shelf seaward limits and of coastlines that are highly unstable, which indicate its concern for ensuring stability, taking into account the importance of preserving the entitlements of the coastal State in this maritime zone. Especially the latter case reflects the attitude that the drafters took in anticipation of changes that could affect legal stability, certainty and predictability. Had the drafters of the convention been able to anticipate the effects of sea level rise, perhaps they would have taken a similar attitude, i.e., perhaps they would have provided for a fixed baseline system.

5.2 There is an Overarching Concern for Preserving Legal Stability, Security, Certainty and Predictability, as well as the Balance of Rights Between the Coastal State and Third States in These Maritime Zones

The UNCLOS should not be interpreted as prescribing an ambulatory character for baselines when dealing with the legal effects of sea-level rise. The ambulatory theory/method regarding baselines does not respond to the pressing concerns of the international community that are prompted by the effects of sea-level rise and the consequent need to preserve legal stability, security, certainty and predictability.

The approach based on the preservation of baselines is consistent with the spirit of the UNCLOS. The UNCLOS was drafted at a time when sea level rise was not perceived as a problem that needed to be addressed by the law of the sea. Although the UNCLOS does not prescribe fixed baselines, it is quite important to underline that the Convention does not indicate expressis verbis that new baselines must be drawn, recognized or notified by the coastal State when coastal conditions change. Parties are not obligated to draw or notify new baselines even if the geographical reality has been changed by sea-level rise.

5.3 Regional Customary International Law is Formulating

The Pacific Islands Forum, which is relevant for evidencing the regional State practice, emphasizes that preservation of existing maritime zones and the entitlements that flow from them is essential. As early as 2010, Pacific Islands Forum Leaders committed to preserving Members' existing rights stemming from maritime zones in the face of sea-level rise. They also favor stable maritime zones for practical reasons.

Besides, many States take positive position on the establishment of fixed baselines. This opinion is expressed by the majority of Member States in the submissions to the International Law Commission and reflected by statements in the Sixth Committee of the General Assembly. The States include Maldives, The Federated States of Micronesia, the member States of the Pacific Islands Forum, Australia, Thailand, Canada and so on. Moreover, no statement was in favor of an ambulatory system in the Sixth Committee of the General Assembly. This shows the pressing concerns of the international community prompted by the effects of sea-level rise.

6. Legal Basis of Reclamation and Fortification Activities

6.1 The Reclamation and Fortification Activities as Response Measures to Sea-level Rise Are Acceptable Under International Law

States may take reclamation and fortification activities as response measures to deal with the impacts of sea-level rise. Similar practice has not been uncommon for centuries. States with low-lying coastal area, such as the Netherlands, used land reclamation activities to defend their territories against encroachment by the sea. As the international community is increasingly concerned about sea-level rise, there emerges general agreement that the use of artificial means to maintain basepoints, coastal areas and island features is acceptable under international law. The agreement is evidenced by wide State practice. The States including Australia, Singapore, Tanga and Viet Nam adopted artificial measures to protect their land from sea erosion or have made plans to do so. The reclamation and fortification activities, which can protect the lives and ensure the safety of persons with habitual residence on the islands, are also well supported by international human rights law.

6.2 The Reclamation and Fortification Activities are Further Justified by the UNFCCC and the Paris Agreement

The UNFCCC and the Paris Agreement to the UNFCCC make clear the importance of adaptation to the adverse consequences of climate change. Pursuant to Article 4 of the UNFCCC and Article 7 of the Paris Agreement, the Parties are obligated to cooperate in preparing for adaption to the impacts of climate change, including adaptive measures for coastal fortification and island preservation. Meanwhile, pursuant to Article 4(8) of the UNFCCC and Article 8(3) of the Paris Agreement, the Parties shall give full consideration to the adaption measures to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change.

7. Suggestions on the Existing International Law

The suggestions on international law system to mitigate the adverse effects of sea-level rise caused by climate change are following:

7.1 Interpretate and Applicate Existing International Law Evolutionarily

Recognizing and admitting evolutionary interpretation and application of existing international treaties and conventions concerning climate change, especially the UNCLOS, UNFCCC and related protocols.

At the time of the drafting of the UNCLOS, sea-level rise was not perceived as an issue necessary to be addressed by the law of the sea, and no drafters foresaw the negative effect of climate change and intended to address it by providing a detailed set of clauses, but there were some provisions concerning highly unstable coastline, artificial islands and permanent outer limits of continental shelf, which imply that fixed baselines and legal status of maritime features meet the stability, security and predictability of the current legal regime.

7.2 Develop Customary International Law

Paying attention to the development of international and regional customary law from the aspect of opinio juris and state practice.

Some states are establishing fixed baselines and outer limits of maritime zones measured from the baselines while some states support ambulation theory. Thus, state practice in relation to this issue is not uniform.

Regionally, there is a custom in Pacific and South-East Asia regions, but few information from Africa or Latin America although the effects of sea-level rise also affect these regions.

7.3 Enact Implementation Rules

At present, member states of UNFCCC have reached a consensus in principle, but there are no specific legal provisions to clarify the standards and criterion of activities for countries to maintain the baseline and the legal status of islands.

References

The United Nations Convention on the Law of the Sea (UNCLOS).

United Nations Framework Convention on Climate Change (UNFCCC).

The Vienna Convention on the Law of Treaties (VCLT).

M. H. Nordquist et al. (eds.). *United Nations Convention on the Law of the Sea 1982: A Commentary*, vol. I (Leiden, Nijhoff, 1985), vol. II (1993), vol. III (1995), vol. IV (1991), vol. V (1989), vol. VI (2002) and vol. VII (2011).

Olivier Corten and Plerre Klein (eds.). (2011). *The Vienna convention on the Law of Treaties: A commentary*, Oxford: Oxford University Press, pp. 804-885.

Sea-level rise and international law, ILC Report, UN GA/CN.4/740.

Sea-level rise in relation to international law, ILC Report, UN GA/73/10.

International Law Association Committee on Baselines under the International Law of the Sea. (2012). *Final Report*. Sofia Conference.

The Interim Report of the ILA Committee on International Law and Sea Level Rise. (2016). Johannesburg Conference.

The Draft Report of the ILA Committee on International Law and Sea Level Rise. (2018). Sydney Conference, p. 19.

Submission of countries and organizations, forwarded through letter, Note Verbale and so on to the ILC, Retrieved from https://legal.un.org/ilc/guide/8_9.shtml#govcoms.

Resolution adopted by the General Assembly on 22 December 2018. Retrieved from <https://undocs.org/en/A/RES/73/265>.

Davor Vidas. (2014). Sea-level rise and international law: At the convergence of two epochs. *Climate Law*, Vol. 4, p. 71.

Clive Schofield. (2009). Shifting limits? Sea level rise and options to secure maritime jurisdictional claims. *Climate and Carbon Law Review*, Vol. 4.

Clive Schofield. (2011). Rising waters, shrinking states: The potential impacts of sea level rise on claims to maritime jurisdiction. *German Yearbook of International Law*, (53), pp. 189-231.

David Freestone. (2012). The Law of the Sea Convention at 30: Successes, challenges and new agendas. *International Journal of Marine and Coastal Law*, 27(4), pp. 675-682.

Sarra Sefrioui. (2017). Adapting to sea level rise: A law of sea perspective, in Gemma Andreone ed. *The Future of the law of the sea: Bridging gaps between national, individual and common interests*. Springer.

- Stuart B. Kaye. (2017). The law of the sea convention and sea level rise in the light of the South China Sea Arbitration. *International Law Studies*, Vol. 93, p. 428.
- Davor Vidas. (2014). Sea-level rise and international law: At the convergence of two epochs. *Climate Law*, Vol. 4.
- Davor Vidas and Peter Johan Schei, eds. (2011). *The world ocean in globalization*, Lerden /Boston: Martinus Nijhoff Publishers.
- Alan Boyle. (2012). Law of the sea perspectives on climate change. *The International Journal of Marine and Coastal Law*, Vol. 27.
- Gregory E. Wannier and Michael B. Gerrard. (2013). Overview, in Michael B. Gerrard and Gregory E. Wannier (eds.), *Threatened Island Nations: Legal Implications of Rising Seas and a Changing Climate* (New York: Cambridge University Press).
- Murari Lal, Hideo Harasawa and Kiyoshi Takahashi. (2002). Future climate change and its impacts over small island states. 19 *Climate Res* 39.
- Michael Gagain. (n.d.). Climate change, sea level rise, and artificial islands: Saving the maldives' statehood and maritime. *Claims Through the Constitution of the Oceans*, pp.83-114.
- Jorgen Odalen. (2014). Underwater Self-determination: Sea-level rise and deterritorialized small island states. 2 *Ethics, Policy and Environment* 17.
- Margreet Wewerinke, Curtis F.J. Doebbler. (2011). Exploring the legal basis of a human rights approach to climate change. *Chinese Journal of International Law*, pp. 148.
- John E. Hay. (2003). Climate variability and change and sea-level rise in the Pacific Island Region. *South Pacific Regional Environment Program*, Apia, Samoa.
- Feng Shoubo. (2019). Territorial loss and statehood: The challenge of sea level rise for small island states. *Western Law Review*, No. 3.
- He Zhipeng, Xie Shenxiang. (2014). Exploring the international law qualifications of states whose territories are completely submerged by seawater. *Oriental Law*, (4), pp. 82-93.
- Chen Zhenru. (2015). Challenges to the UNCLOS baseline system and possible implications for the sovereignty dispute over islands in the South China Sea due to sea level rise. *Chinese Review of International and Supranational Law*, (2), pp. 248-276.
- Lin Tinghui. (2012). The impact of sea level rise on the maritime rights of island states. *Taiwan International Law Quarterly*, (2), pp. 97-120.
- Ma Bo. (2015). Examining the legal rationality of island construction in the South China Sea from Three Dimensions of International Law. *Law Review*, (6), pp. 153-161.
- Shu Guang, Yin Peng and Duan Peli. (2017). International research progress on the impact of sea level rise on islands and countermeasures. *Resource Development and Markets*, (8).
- Gui Fang. and Zhang Lei. (2013). Impacts of climate change on islands and reefs in the South China Sea and China's response measures. *Journal of Hainan University (Humanities and Social Sciences Edition)*, (6).

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).