

Original Paper

Sea-Level Rise and the Limits of *Rebus Sic Stantibus* in Maritime Boundary Treaties

Yangbo Jiang¹

¹ Dalian Ocean University, Dalian, Liaoning, China

Received: April 20, 2026

Accepted: April 30, 2026

Online Published: May 5, 2026

doi:10.22158/elp.v9n1p345

URL: <http://dx.doi.org/10.22158/elp.v9n1p345>

Abstract

*Sea-level rise, driven by thermal expansion and polar ice-sheet melting, is progressively reshaping the coastal geography upon which the international law of the sea is built. As baselines shift landward and low-lying islands face submersion, the stability of existing maritime boundary treaties comes under increasing pressure. This article examines whether the doctrine of *rebus sic stantibus*, codified in Article 62 of the Vienna Convention on the Law of Treaties (VCLT), can be invoked to terminate or modify maritime boundary treaties in response to sea-level rise. After surveying the debate between the ambulatory and fixed baseline theories, and analyzing the institutional framework of Article 62 and its boundary treaty exception, this article tests sea-level rise against each constituent element of the doctrine. It concludes that in the vast majority of cases, sea-level rise fails to satisfy the cumulative requirements of Article 62, and that the pursuit of treaty stability through baseline fixation, bilateral arrangements, and multilateral norm-building represents a more viable and legally sound path forward.*

Keywords

*sea-level rise, maritime boundary treaties, *rebus sic stantibus*, VCLT Article 62, baseline stability, UNCLOS*

1. Introduction

The United Nations Convention on the Law of the Sea (UNCLOS) establishes a comprehensive regime for the delimitation of maritime zones, anchored in the concept of baselines from which the breadth of the territorial sea, contiguous zone, exclusive economic zone (EEZ), and continental shelf are measured. This entire normative architecture rests on an implicit premise: that the coastal geography defining baselines remains relatively stable over time. Sea-level rise, one of the most tangible consequences of global climate change, is steadily eroding that premise.

According to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), the rate of sea-level rise between 1993 and 2020 has doubled compared to the first half of the twentieth century (IPCC. *Climate Change 2021: The Physical Science Basis*, 2021). Under high-emission scenarios, global mean sea-level could rise by as much as 1.1 meters by 2100. For low-lying atoll nations such as Tuvalu, the Marshall Islands, Kiribati, and the Maldives—where average elevations rarely exceed two to three meters—this poses an existential threat not only to their territorial integrity but also to the maritime entitlements upon which their economies and sovereignty depend.

The legal consequences of these geographic changes are far-reaching. As the low-water line retreats landward, normal baselines under Article 5 of UNCLOS shift accordingly, potentially compressing the outer limits of all maritime zones measured therefrom. Where base-points used for straight baselines or archipelagic baselines are submerged, the legal foundation of entire baseline systems may be called into question. These cascading effects ultimately exert pressure on the stability of existing maritime boundary treaties, prompting the question at the heart of this article: can a state invoke the doctrine of fundamental change of circumstances—*rebus sic stantibus*, as codified in Article 62 of the Vienna Convention on the Law of Treaties (VCLT)—to terminate or modify a maritime boundary treaty whose geographic basis has been altered by sea-level rise?

To address this question, this article proceeds in four parts. Section 2 surveys the debate between the ambulatory and fixed baseline theories, situating the doctrinal controversy within judicial practice. Section 3 examines the institutional framework of the *rebus sic stantibus* doctrine and the contested scope of the boundary treaty exception under Article 62(2)(a). Section 4 tests sea-level rise against each constituent element of Article 62(1). Section 5 offers an overall assessment and concluding observations.

2. The Baseline Debate: Ambulatory versus Fixed Baselines

The legal significance of sea-level rise for maritime boundary treaties cannot be appreciated without first understanding its impact on baselines. Sea-level rise affects baselines through two principal mechanisms: the landward retreat of the low-water line, which shifts normal baselines under Article 5 of UNCLOS; and the submersion of insular features, which may eliminate base-points used for straight baselines (Article 7) and archipelagic baselines (Article 47).

The Bangladesh–Myanmar delimitation before the International Tribunal for the Law of the Sea (ITLOS) illustrates the practical stakes. New Moore Island (also known as South Talpatti), over which Bangladesh and India had disputed sovereignty for decades, was permanently submerged by sea-level rise in 2010. When ITLOS rendered its judgment in the Bay of Bengal case in 2012, the Tribunal notably refrained from addressing whether the island’s disappearance extinguished the baseline entitlements previously derived from it, opting instead to delimit the boundary by the equidistance/special circumstances method (ITLOS, 2012, pp. 1-151). This judicial avoidance itself is instructive: international courts remain reluctant to pronounce on the automatic legal consequences of

geographic change for baselines, signaling a regulatory vacuum that neither UNCLOS nor customary international law has yet filled.

This vacuum has given rise to two opposing theoretical positions. The ambulatory baseline theory holds that baselines are inherently dynamic and must track the actual low-water line as it shifts. Proponents invoke the ICJ's emphasis on geographic realities in the *Anglo-Norwegian Fisheries* case (1951) (ICJ., 1951, pp. 116-206), arguing that allowing baselines to remain fixed at a historical position would create an untenable divergence between legal norms and physical facts. David Caron, among early commentators, acknowledged that the ambulatory view may be more faithful to the textual meaning of Article 5, even if it disadvantages coastal states whose shorelines are retreating (Caron, D. D., 1990, pp. 621-653).

The fixed baseline theory, by contrast, maintains that baselines lawfully established and deposited under UNCLOS should not be recalculated in response to sea-level rise. Its proponents rely on three textual arguments: Article 7(2), which provides that straight baselines remain in force until the coastal state itself modifies them; Article 76(9), which requires that the outer limits of the continental shelf be permanently described; and Article 16, which mandates the deposit of baseline charts with the UN Secretary-General. The International Law Association's Committee on International Law and Sea-Level Rise endorsed this position in its 2018 Sydney Report (ILA Committee on International Law and Sea Level Rise, 2018, pp. 866-915), and the Pacific Islands Forum's 2021 Declaration on Preserving Maritime Zones further consolidated this stance as a matter of state practice (Pacific Islands Forum, 2021). Tuvalu and the Marshall Islands have enacted domestic legislation freezing their existing baselines and maritime zone coordinates.

A third, intermediate position—sometimes termed the differentiated approach—proposes distinguishing between territorial sea boundaries, which implicate sovereignty and should remain fixed, and EEZ and continental shelf boundaries, which primarily concern resource jurisdiction and may tolerate a degree of baseline adjustment (Árnadóttir, S., 2016, pp. 94-114). While this compromise has not achieved mainstream acceptance, it reflects scholarly efforts to mediate between the competing values of geographic accuracy and legal certainty.

The 2024 ITLOS Advisory Opinion on climate change obligations, while affirming that UNCLOS Article 194 applies to greenhouse gas emissions, similarly declined to make any normative pronouncement on whether sea-level rise affects the legal validity of baselines (ITLOS, 2024). The accumulating judicial silence, combined with the growing convergence of state practice toward baseline fixation, suggests that the international legal order is gravitating—cautiously but perceptibly—toward the fixed baseline position. This trend, however, does not eliminate the possibility that states adversely affected by sea-level rise may turn to treaty law for relief, invoking *rebus sic stantibus* as a basis for terminating or withdrawing from maritime boundary treaties whose geographic foundations have shifted. It is to this possibility that the remainder of this article is devoted.

3. The Doctrine of Rebus Sic Stantibus and the Boundary Treaty Exception

3.1 Article 62 of the VCLT: Normative Content and Requirements

The principle of rebus sic stantibus—that treaties may be terminated when the circumstances fundamental to their conclusion undergo a radical transformation—has roots in Roman law but was first codified in Article 62 of the 1969 Vienna Convention on the Law of Treaties. As an exception to the foundational rule of pacta sunt servanda (Article 26 VCLT), it is subject to stringent conditions. Article 62(1) permits a party to invoke a fundamental change of circumstances as a ground for terminating or withdrawing from a treaty only where two cumulative requirements are met: first, the existence of those circumstances must have constituted an essential basis of the consent of the parties to be bound; and second, the effect of the change must be radically to transform the extent of obligations still to be performed under the treaty (United Nations, 1969, p. 331).

Crucially, Article 62(2)(a) provides that a fundamental change of circumstances may not be invoked with respect to a treaty establishing a boundary. The drafting history of this exception reveals, however, that the International Law Commission's 1966 discussions referenced only land boundary cases, and that maritime delimitation practice was virtually nonexistent at the time (Villiger, M. E., 2009). This historical gap leaves open the interpretive question of whether boundary in Article 62(2)(a) encompasses maritime boundaries.

3.2 Does The Boundary Treaty Exception Extend To Maritime Boundaries?

Three principal positions have emerged in the scholarly literature on this question. The first and broadest view holds that the term boundary in Article 62(2)(a) covers both land and maritime boundaries. Freestone has argued that maritime boundary agreements belong, from the moment of their conclusion, to the category of treaties whose validity is unaffected by subsequent changes in circumstances (Freestone, D., 1999, pp. 73-90). Lisztwan, drawing on the drafting history, has contended that the silence of the negotiating record effectively confirms that the contracting parties intended to extend its protection to agreements delimiting maritime space (Lisztwan, M., 2012, pp. 153-200).

The second view restricts the exception to land boundaries alone, excluding maritime boundaries. Caron has argued that the dynamic character of the marine environment distinguishes maritime boundaries from the presumed immutability of land frontiers, and that when parties could not have foreseen environmental changes such as sea-level rise, an invocation of rebus sic stantibus may be justified (Caron, D. D., 1990, pp. 621-653).

The third view—the differentiated approach advanced by Árnadóttir—proposes that the exception protects only boundaries that delimit territorial sovereignty, namely land and territorial sea boundaries, while EEZ and continental shelf boundaries fall outside its scope and may therefore be subject to the rebus sic stantibus doctrine (Árnadóttir, S., 2016, pp. 94-114). This framework draws an analytical distinction between sovereignty-based and jurisdiction-based boundaries, but faces the objection that delimitation practice frequently treats territorial sea, EEZ, and continental shelf boundaries as an

integrated whole, making surgical separation difficult in practice.

In the absence of authoritative judicial pronouncement, the scope of the boundary treaty exception remains contested. Regardless of one's position on this question, however, an examination of whether sea-level rise can satisfy the substantive requirements of Article 62(1) remains an indispensable step in the analysis.

3.3 Judicial Standards for the Application of Rebus Sic Stantibus

International judicial practice has consistently applied the doctrine with extreme stringency. In the Fisheries Jurisdiction case (1974), Iceland invoked fundamental changes in fishing technology to justify terminating a dispute-resolution clause. The ICJ rejected this claim, holding that the changes, however significant, did not directly affect the dispute-resolution obligation Iceland sought to escape (ICJ, 1974, pp. 175-228). The Court emphasized that changed circumstances must bear a direct impact on the very obligation the invoking party seeks to terminate.

In the Gabčíkovo-Nagymaros case (1997), Hungary cited political transformation, economic decline, and evolving environmental norms as grounds for terminating a dam-construction treaty. The ICJ acknowledged that political and economic conditions existing at the time of conclusion could constitute an essential basis of consent, but ultimately found that the cumulative changes lacked a sufficiently close nexus to the specific dam-construction obligations at issue (ICJ, 1997, pp. 7-84). This judgment recognized the theoretical possibility of cumulative effects satisfying the doctrine's threshold, while in practice setting that threshold extremely high.

4. Testing Sea-Level Rise against the Elements of Article 62

4.1 Unforeseeability

The requirement that the change of circumstances was not foreseen by the parties at the time of the treaty's conclusion is the first and arguably most formidable hurdle. The temporal benchmark is fixed at the moment of conclusion, measured against the reasonable knowledge available to the contracting parties at that time.

For maritime boundary treaties concluded before UNCLOS negotiations in the late 1970s, a plausible case for unforeseeability can be constructed. Climate change had not yet entered mainstream scientific discourse; the United Nations Environment Programme was established only in 1972, and the first World Climate Conference was held in 1979 (WMO, 1979). Treaties concluded in the 1960s and early 1970s were negotiated in an era when the prospect of accelerated sea-level rise altering coastal baselines was not part of the parties' cognitive horizon.

For treaties concluded between 1982 and 2000, the case for unforeseeability weakens considerably. During the UNCLOS negotiations, delegations from small island developing states explicitly raised the threat of sea-level rise. The establishment of the IPCC in 1988 and its subsequent assessment reports brought sea-level rise into the domain of public international knowledge (IPCC, 1990). While a gap may exist between general awareness and specific foresight regarding effects on a particular boundary,

the presumption that contracting parties possessed at least basic knowledge of the risk becomes increasingly difficult to rebut.

For treaties concluded after 2000, unforeseeability is virtually impossible to establish. The IPCC's Third Assessment Report (2001) projected sea-level rise of 0.09 to 0.88 meters; the Fourth Assessment Report (2007) provided detailed regional projections (IPCC, 2001). Even where actual rates have exceeded earlier projections (IPCC. *Climate Change 2021: The Physical Science Basis*, 2021), whether this acceleration constitutes a fundamental change beyond what was foreseeable remains a threshold that courts have interpreted with extreme stringency.

In sum, the unforeseeability requirement exhibits a pronounced temporal gradient: the older the treaty, the stronger the claim; the more recent, the weaker. Given that the majority of existing maritime boundary treaties were concluded after 1980, the unforeseeability element presents a near-insurmountable evidentiary barrier in most cases.

4.2 Essential Basis of Consent

The second requirement demands that the circumstances that have changed constituted an essential basis of the parties' consent to be bound. For maritime boundary treaties, the geographic features of the coastline—the position of the low-water line, the existence of insular features, the configuration of base-points—are arguably among the factual foundations upon which delimitation agreements rest. If sea-level rise causes an island that served as a critical base-point to be permanently submerged, the geographic premise of the treaty may be said to have been undermined.

However, establishing the requisite causal link poses formidable difficulties. The ICJ's jurisprudence demands a direct and specific connection, not merely a general association between changed circumstances and the treaty's subject matter. In the *Gabčíkovo-Nagymaros* case, the Court found that various changes invoked by Hungary lacked a sufficiently close nexus to the specific obligations at issue (ICJ, 1997, pp. 7-84). Analogously, a party seeking to invoke sea-level rise would need to demonstrate that a particular geographic feature, the alteration of which has undermined the boundary, was the indispensable factual predicate of the treaty's delimitation formula—a causal chain that international judicial practice has set at an exacting level.

4.3 Radical Transformation of Obligations

The third requirement imposes the highest qualitative threshold. Applied to maritime boundary treaties, this element demands proof that sea-level rise has altered the parties' obligations under the treaty to a degree that is not merely quantitative but qualitative. A modest landward shift of a baseline, resulting in a minor compression of one party's EEZ, is unlikely to meet this standard. Even where a more dramatic geographic change occurs—such as the submersion of an island that served as a turning point in the boundary line—the gradual and incremental nature of sea-level rise makes it difficult to identify a discrete moment at which the transformation can be characterized as radical. The ICJ's emphasis in the *Bay of Bengal* case that delimitation should be based on the geographic realities at the time of the treaty's conclusion further suggests that subsequent environmental changes do not, in principle, affect

treaty obligations unless a far higher threshold is crossed (ITLOS, 2012, pp. 1-151).

5. Conclusion

The foregoing analysis yields a clear conclusion: the doctrine of *rebus sic stantibus*, as codified in Article 62 of the VCLT, offers an extremely narrow and, in most practical scenarios, unavailable avenue for states seeking to terminate or modify maritime boundary treaties in response to sea-level rise.

The three constituent requirements of Article 62(1) present cumulative obstacles that are exceptionally difficult to surmount. The unforeseeability element is virtually foreclosed for any treaty concluded after the early 1980s. The essential-basis element demands a degree of causal specificity that international judicial practice has consistently set at an exacting level. The radical-transformation element requires a qualitative shift in treaty obligations that the gradual character of sea-level rise struggles to satisfy at any discrete point in time.

Even in the unlikely event that all three elements were met, the boundary treaty exception of Article 62(2)(a) would impose a further constraint. While the precise scope of this exception remains a matter of scholarly debate, at minimum territorial sea boundaries would be shielded from the doctrine's application. The differentiated approach, which would permit the invocation of *rebus sic stantibus* for EEZ and continental shelf agreements, has not yet received authoritative judicial endorsement.

The rarity of successful invocations of Article 62 in international judicial practice is itself telling. Since the VCLT's adoption in 1969, no international court or tribunal has upheld a claim of fundamental change of circumstances as a ground for treaty termination (Boisson, D., Chazournes, L., & Condorelli, L., 2000, pp. 67-87). This near-uniform judicial rejection reflects a systemic commitment to treaty stability that is further reinforced by the principle of territorial integrity as articulated in General Assembly Resolution 2625 (United Nations General Assembly, 1970). The International Law Commission's 2025 final report confirmed the legal stability of baseline coordinates, providing the most authoritative institutional endorsement to date of the position that established maritime boundaries should not be unilaterally altered in response to geographic changes driven by climate change (ILC, 2025).

This does not mean, however, that states affected by sea-level rise are without recourse. The more promising path lies not in invoking the exceptional and high-risk mechanism of *rebus sic stantibus*, but in constructing forward-looking institutional responses: the legislative fixation of baselines and maritime zone coordinates through domestic law and deposit with the United Nations; the negotiation of supplementary bilateral agreements that reaffirm existing boundaries while addressing changed geographic realities; active participation in the progressive development of international law through forums such as the ILC and UNCLOS review processes; and the deployment of engineering and technical measures to maintain the physical integrity of critical base-points.

The stability of maritime boundary treaties is not an end in itself but a means of preserving the predictability and order upon which the international law of the sea depends. How to reconcile that stability with substantive equity—ensuring that the most vulnerable states, particularly small island developing states, are not stripped of their maritime entitlements by forces beyond their control—remains one of the most pressing challenges confronting international law in the age of climate change.

References

- Árnadóttir, S. (2016). Termination of maritime boundaries due to a fundamental change of circumstances. *Utrecht Journal of International and European Law*, 32(83), 94-114. <https://doi.org/10.5334/ujiel.335>
- Boisson, D., Chazournes, L., & Condorelli, L. (2000). Common Article 1 of the Geneva Conventions revisited: protecting collective interests. *International Review of the Red Cross*, 82(837), 67-87. <https://doi.org/10.1017/S1560775500075404>
- Caron, D. D. (1990). When law makes climate change worse: Rethinking the law of baselines in light of a rising sea level. *Ecology Law Quarterly*, 17(4), 621-653.
- Freestone, D. (1999). International law and sea level rise. In R. Churchill, & V. Lowe (Eds.), *The Law of the Sea* (3rd ed., pp. 73-90). Manchester: Manchester University Press.
- ICJ. (1951). Fisheries Case (United Kingdom v. Norway). Judgment. *ICJ Reports*, 1951, 116-206. <https://doi.org/10.18356/9789211544923c013>
- ICJ. (1974). Fisheries Jurisdiction (Federal Republic of Germany v. Iceland). Judgment. *ICJ Reports*, 1974, 175-228. <https://doi.org/10.18356/9789211598537c002>
- ICJ. (1997). Gabčíkovo-Nagymaros Project (Hungary/Slovakia). Judgment. *ICJ Reports*, 1997, 7-84. <https://doi.org/10.18356/9789211595253c002>
- ILA Committee on International Law and Sea Level Rise. (2018). Report of the Committee: International Law and Sea Level Rise (Sydney Conference). *International Law Association Reports of Conferences*, 2018(78), 866-915.
- ILC. (2025). *Report of the Study Group on Sea-Level Rise in Relation to International Law: Final Report*. UN Doc A/CN.4/L.xxx. Geneva: International Law Commission.
- IPCC. (1990). *Climate Change: The IPCC Scientific Assessment (First Assessment Report)*. Cambridge: Cambridge University Press.
- IPCC. (2001). *Climate Change 2001: The Scientific Basis (Third Assessment Report)*. Cambridge: Cambridge University Press.
- IPCC. Climate Change 2021: The Physical Science Basis. (2021). *Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.

- ITLOS. (2012). Dispute Concerning Delimitation of the Maritime Boundary between Bangladesh and Myanmar in the Bay of Bengal. Judgment. *ITLOS Reports, 2012(4)*, 1-151.
- ITLOS. (2024). *Request for an Advisory Opinion Submitted by the Commission of Small Island States on Climate Change and International Law*. Advisory Opinion. ITLOS Reports.
- Lisztwan, M. (2012). Stability of maritime boundary agreements. *Yale Journal of International Law, 37(1)*, 153-200.
- Pacific Islands Forum. (2021). *Declaration on Preserving Maritime Zones in the Face of Climate Change-Related Sea-Level Rise*. Suva: Pacific Islands Forum Secretariat.
- United Nations General Assembly. (1970). *Resolution 2625 (XXV): Declaration on Principles of International Law Concerning Friendly Relations and Co-operation Among States*. New York: United Nations.
- United Nations. (1969). Vienna Convention on the Law of Treaties. *United Nations Treaty Series, 1969(1155)*, 331.
- Villiger, M. E. (2009). *Commentary on the 1969 Vienna Convention on the Law of Treaties*. Leiden: Martinus Nijhoff Publishers. <https://doi.org/10.1163/ej.9789004168046.i-1058>
- WMO. (1979). *Proceedings of the World Climate Conference*. Geneva: World Meteorological Organization.