

— ÉTUDES MARINES —

THE STRAITS OF THE INDIAN OCEAN

Proceedings of the 2018 Seminar held
by the Alidade workgroup on the Indian Ocean

N°19 – June 2021
Centre d'études stratégiques de la Marine

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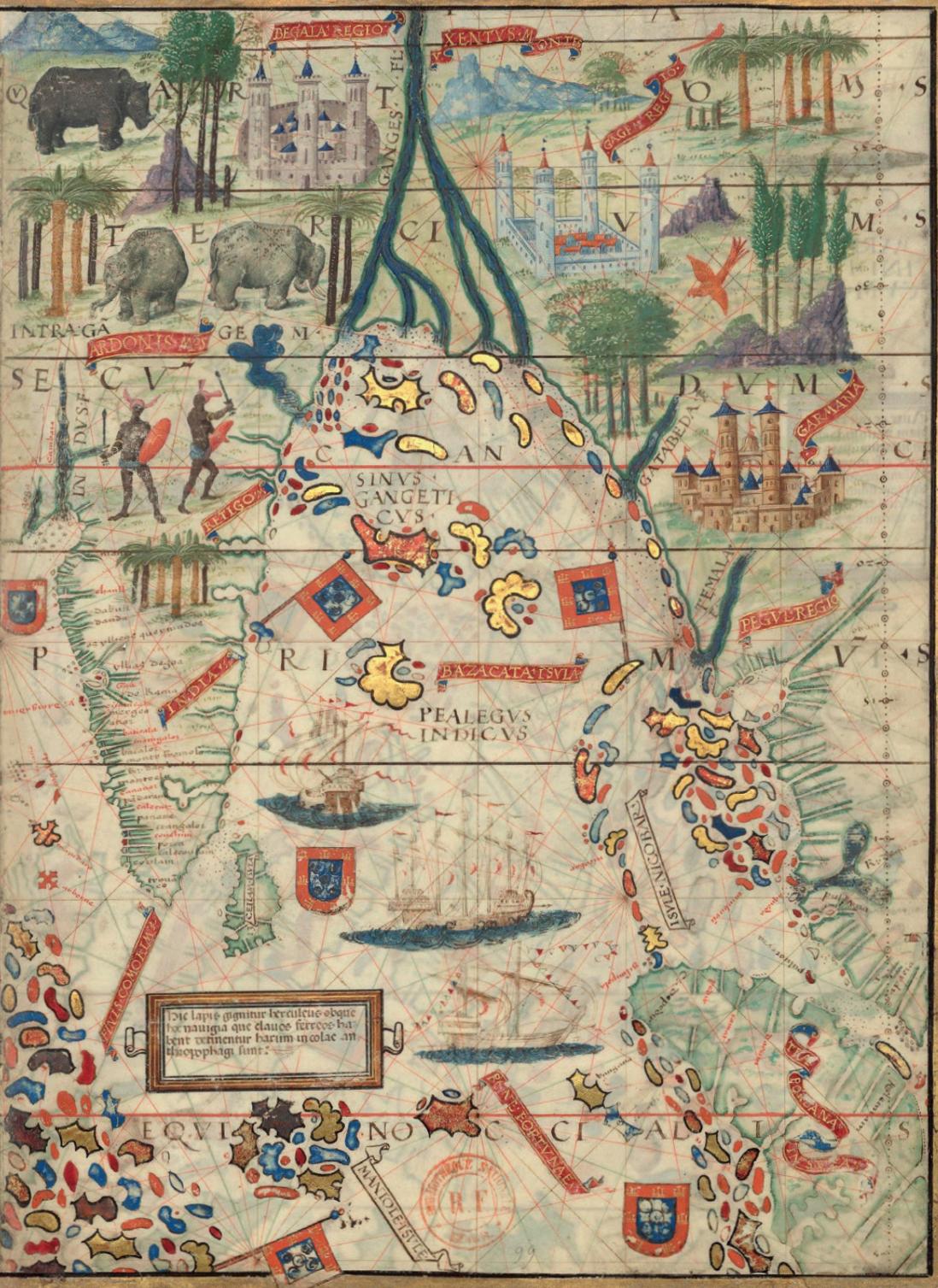
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Commander of French Naval Forces in the Indian Ocean Maritime Area (ALINDIEN),

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EMASOH - European Led Maritime Awareness in the Strait of Hormuz



Nautical atlas of the world, known as the
Miller Atlas, North Indian Ocean with
Arabia and India, Lopo Homem, 1519.
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PREFACE

Vice admiral Didier PIATON

*Deputy Commander NATO Maritime Command (MARCOM) Northwood,
Former Commander of French Naval Forces in the Indian Ocean Maritime Area
(ALINDIEN)*

Every time you look at a map of the world, one thing stands out: the planet is blue. More than two-thirds of its surface are covered by oceans. This liquid immensity, which gives Earth its colour, has a physical continuity that allows a ship to travel freely to the four corners of the world. A closer look at the map unveils narrow passages between continents which break the continuity of the oceans. These chokepoints, which connect one sea with another, represent both a constraint and an opportunity.

According to sailors' folklore, a strait is a special step. They are both dreaded because of the risks involved in their crossing and praised for their scenic beauty. Given that threats tend to concentrate around straits, sailors and merchant captains alike tend to be more alert during transits.

While I was exercising the responsibilities of ALINDIEN¹ between 2016 and 2018, the Bab el-Mandeb Strait – the southern chokepoint of the Red Sea – rose to the same level of geopolitical concern as the more well-known Strait of Hormuz, the chokepoint of the Arabian Gulf. The multifaceted naval threats that had gradually developed there as a result of the war in Yemen could strike indiscriminately. The strait was symbolically called the “Gate of Tears” by the Saudi-led Arab coalition: the situation in its vicinity created an insecurity that went beyond the belligerents.

At the very beginning of my career, I was assigned to a dual-purpose frigate, the *Doudart de Lagrée*. The ship was based in Djibouti and regularly patrolled the regional area to preserve the freedom of the seas. Thirty years later, well after the settlement of the sovereignty disputes over the islands between Eritrea and Yemen, which has since been reunited (administratively, if not politically), the chokepoint became a priority for me once again. The world quickly realised how the ups and downs of international relations could bring the straits back into the spotlight. In 2018, I therefore mustered a group of university lecturers to engage in a multidisciplinary analysis on the strategic straits of the Indian Ocean.

These reflections unfolded under the enthusiastic direction of Anthony Chamboredon. He was able to bring together the necessary expertise and

1. Since 1973, ALINDIEN has been the admiral commanding the French naval forces in the Indian Ocean up to the limits of the southern Indian Ocean zone, centered on Réunion Island. Since 2012, he is also the Inter-Army Commander of the French forces based in the United Arab Emirates.

direct an original publication of great interest. Its contributors were all informed experts and residents of this maritime zone. We would like to thank them for their valuable contributions to this collective work.

What Is a Strait?

Straits are strategically important maritime communication routes. Their free use is the object of attention of all great powers, and conversely, their closure is synonymous with war. The blockade of the Straits of Tiran in 1967, which was associated with the outbreak of the Six-Day War, or even the Tanker War that closed the Strait of Hormuz in the 1980s: in the Indian Ocean area alone, there are many examples.

From a maritime perspective, a strait is first and foremost a narrow arm of the sea which offers a passage for ships between two larger sea areas. From a terrestrial perspective, it is also a passage, much like a ford on a river, offering over the ages an opportunity for populations to cross from one territory to another. This maritime passage can even link two continents (for example the Strait of Gibraltar linking Europe to Africa, or the Bering Strait which in some circles are thought to have given passage to the first Native Americans before they were formed as the ice between these two great continents melted). Depending on their physical characteristics, navigation is often tricky.

As maritime risk zones, straits have played a major role in geopolitics throughout history, both for the oceans and for the territories they connect: a military role through their conquest or crossing, but also a commercial role by allowing the founding of trading posts and the flow of goods.

Strategic Issues

Nations invest in their navies to fulfil their strategic objectives, which implies two primary missions: securing the use of the sea for military purposes and ensuring its free use for economic actors.

These include the merchant fleets, which transport 90% of the world's tonnage of goods, but also the submarine cables through which the vast majority of Internet traffic circulates. In the light of various technological revolutions, the

free movement of both military and merchant fleets across the oceans, and hence the free use of international straits, remains key to any maritime strategy.

With regard to the Indian Ocean, the study presented by Yann Rodier notably highlights the prominent role of the main straits in the maritime geostrategy of the European powers that have deployed in the area since the 16th century. It is interesting to note that this maritime expansion took place after the Ottomans themselves had lost control of the straits giving access to the Indian Ocean and Asia by reducing their territorial footprint in the Arabian Peninsula.

The Straits of Insulindia



Although the major straits of the Indian Ocean are often associated with the movement of hydrocarbons, all shipowners with a transoceanic vocation develop strategies incorporating their use. Using the example of the world's third largest container ship operator, *CMA CGM*, Stéphane Courquin and Marin Quigna demonstrate with remarkable clarity how the straits of the Indian Ocean are taken into account in the definition of this strategy. They especially mention the hypotheses of the closure of the Suez Canal, which is particularly topical with the grounding of the container ship *Ever Given* in March 2021, and the immediate economic consequences that have resulted.

The Legal Framework Applicable to Straits

Considering all these issues, nations have historically legislated on the regime of passage through the straits, until the establishment of the Montego Bay Convention in 1982. This Convention provides a legal reference point recognised as customary law, including by non-signatory countries.

These rules are often the result of specific bilateral treaties and UN international law. This is notably the case for the Strait of Hormuz, with the agreements between the Sultanate of Oman and Iran in 1974, and the enforcement in 1994 of the Montego Bay Convention, but also for the Strait of Bab el-Mandeb, with the 1979 agreement between Yemen and Eritrea (arbitrated by the Permanent Court of Arbitration), which allowed freedom of movement to be maintained.

Jean-Michel Morinière brilliantly demonstrates (“Three Straits: Legal Perspectives”) how the status of straits, and particularly the legal regime applicable to the hundred or so international straits recognised in the world, was slowly developed on the basis of geography and the strategic stakes of states. His description of the three main straits of the Indian Ocean (Bab el-Mandeb, Hormuz, Malacca) provides essential information for understanding this maritime area.

This legal knowledge, which is essential to our maritime, military, and commercial operations, is preserved in the French Navy through naval commissioners of the Commissariat of the Army (Service du Commissariat des Armées, SCA), who have been practising this specific environmental expertise for many years.

The Blue Economy in the Indian Ocean

The blue economy has several definitions, from the broadest that encompasses all sea-related economic activities to the World Bank’s definition of the blue economy as “*the sustainable use of ocean resources for economic growth, improved incomes and employment, and healthy ocean ecosystems*”.

In their presentation of the challenges of the blue economy in the Indian Ocean, which is based on the later definition, Professor Kosmas Pavlopoulos and Dr Haïfa Ben Romdhane show the extent to which the regional countries (accounting for a

third of the world's population) depend on this oceanic expanse. While the straits play an essential economic role in the transportation of hydrocarbons and other goods, the authors note that the ocean is a source of wealth in itself. Of course the oceans have also become a major environmental issue, weakened by the effects of global warming (rising sea levels, acidification of waters, recurrence of extreme events).

The Indian Ocean and Its Straits

In this maritime space and in the context thus described, I was implementing an important part of France's military strategy, in the tradition of the admirals who preceded me as ALINDIEN. This privileged dual position as an actor and an observer created very interesting discussions with several experts on regional dynamics, including Dr Jean-Loup Samaan. In his clear-sighted and precise analysis of the regional power game, he takes a step back from the straits to draw up a remarkable updated portrait of contemporary geopolitics in the Indian Ocean.

Among other duties, I was responsible for military operational cooperation with a dozen countries in the region. Between Bangladesh in the east and Jordan in the west, on the border between the Mediterranean and the Eastern worlds, these countries have the common characteristic of all having a coast on the Indian Ocean, or its adjacent seas (the Gulfs of Aqaba, Arabian Peninsula, and Bengal). Each of my interlocutors was therefore particularly concerned, albeit in different ways, with free movement across the straits.

North of the Red Sea, the role of the Straits of Tiran in the Six-Day War is almost forgotten. Yet it was in this strategic chokepoint that I participated on board the frigate *Montcalm* in the implementation of the embargo in the early hours of the Second War of Liberation of Kuwait in 1990. It was the western limit of the coalition's area of operations against Iraq.

To the south of the Red Sea, the control of the Bab el-Mandeb Strait was, from the opening of the Suez Canal, an issue in the competition between the European colonial expansions towards East Africa and Asia. In the 1980s, when we were conducting preventive operations with the *Douard de Lagrée*, it was still a Cold War confrontation zone on the borders of the Democratic Republic of South Yemen.

In 2016, I witnessed the first maritime attacks related to the new civil war in Yemen, which demonstrated the potential lethality of the military capabilities deployed by the pro-Houthi militias (mines, remote-controlled explosive boats, missiles). As an operational controller, I was therefore required to reinforce the self-protection measures of our own combat vessels against asymmetric threats. I also had to ensure the dissemination of the necessary information to the maritime community to enable them to plan their own activities.

Even further south, the Gulf of Aden and the Horn of Africa were the focus of a new large-scale piracy phenomenon that peaked between 2008 and 2012. This phenomenon required the mobilisation of many forces and was the source of a profound change in the strategic landscape in the region due to the unprecedented maritime presence that continues to be maintained today to curb it. While NATO Operation Ocean Shield ended in 2016, other multinational operations continue today: those of the Combined Maritime Forces² and the EU (Operation Atalanta). The Indian, and above all the Chinese navies, operate in the same area. Since 2017, the latter has had a base in Djibouti, the first Chinese military establishment abroad, ideally placed on the Maritime Silk Road. These operations are likely to continue.

In the Strait of Hormuz, I had benefited from an early initiation since the *Doudart de Lagrée* also took part in the escort of oil tankers in the context of the so-called “Tanker War”, in the middle of the Iran-Iraq War. This was a major strategic issue, probably long before oil exports, as illustrated by Dr Yann Rodier.

From a maritime and tactical point of view, I saw the events in the Bab el-Mandeb Strait as a premonition or even a test for a possible replication in the Strait of Hormuz. Seen from the theatre commander's point of view, the historical context of tensions between Iran and the United Arab Emirates, the internal crisis in the Cooperation Council for the Arab States of the Gulf, which further blurred the reading of events, and above all President Trump's unilateral denunciation of the nuclear agreement with Iran, appeared to me as an interesting complexity factor. But a factor that required particularly careful and clear directives for our ships.

Subsequently, the attacks on oil tankers in 2019 in the Arabian Sea translated these tensions into the maritime theatre and led France to launch a new naval

2. In particular *Task Force 151* of the *Combined Maritime Forces*, a coalition under American command.

operation in 2020 (Operation Agénor, which today brings together eight European countries), the military component of a European cooperation aimed at preserving free movement in the Strait of Hormuz and preventing a further rise in tensions.

As for the Straits of Malacca and Singapore, located beyond the eastern limit of the area for which I was responsible, they remain an endemic hotspot of piracy, as shown by the annual report published in January 2021 by the MICA Center (some fifty events recorded in 2020).

Faced with all these challenges, the Navy as a whole has shown its ability to adapt. The careful maintenance of knowledge of these areas, the preservation of expertise thanks to the rigorous organic preparation of the crews, their capacity for innovation in adapting tactics and developing our equipment have enabled us to preserve the freedom of action essential to the success of our missions, and to play a decisive role in all our coalition actions.

Beyond the Indian Ocean, where conflicts are intertwined and interdependent, the world's straits remain a significant concern to all navies, all of which are aware of their eminently strategic nature. As common goods of mankind, they are a fascinating source of study which probably needs to be pursued by geopoliticians and polemologists, as is the case with the present contributions of the distinguished lecturers and researchers whom I would like to thank once again.



Strait of Malacca. © Leo Gaggl / Flickr.



A MULTIDISCIPLINARY STUDY FOR A STRATEGIC ISSUE

Dr. Anthony CHAMBOREDON

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The Indian Ocean is surrounded by the continents of Africa and Asia, Insulindia (insular Southeast Asia) and Australia, and adjoins the Southern Ocean. It forms a trapezoid, with the 35° South as its major base. Its length, from north to south (from 35° South to 25° North), is about 6,500 kilometres and its maximum width, through 35° South, is about 8,800 kilometres. This area of about 74 million square kilometres represents 20% of the surface of the globe.

The average depth has been estimated at 3,500 metres. The deepest trenches have been found in the north-eastern area, between the Sunda Islands and Australia, at 5,852 and 6,205 metres. The western and southern parts are shallower.

The Indian Ocean, as a gigantic crossroad of cultures and civilisations, concentrates most of international trade. The world's most important maritime routes in terms of traffic density link Asia, the Middle East, Europe, and America. In the Indian Ocean alone, there are more than twenty straits (Bab el-Mandeb, Badung, Hormuz, Lombok, Malacca, Makassar, Palk, Pandan, Sunda, Tiran, etc.).

The Straits

Straits are narrow inlets between two bordering coasts, connecting two marine or lacustrine areas. In maritime law, a distinction is made between internal and international straits. Internal straits are used exclusively for the internal navigation of a state. International straits connect two areas of high seas or a zone of high seas with a territorial sea of a foreign state.

International straits primarily raise the issue of the national sovereignty of the littoral states and the rights of the international community on the high seas. In these lines of discontinuity or territorial severance, both littoral states and sea users are obliged to apply the principle of freedom of navigation imposed by the United Nations Convention on the Law of the Sea (UNCLOS) signed in Montego Bay on 10 December 1982.

The Montego Bay Convention defines the legal regime of the various maritime spaces in the light of the principles of sovereignty and freedom of states over each of these spaces: innocent passage of ships and naval fleets, prohibition of the imposition of tolls, obligation to ensure the safety and security of

navigation.¹ Their maximum width (i.e. less than or equal to twice the 12 nautical miles of the territorial sea between opposing baselines) is 24 nautical miles.

Considered as passages that are too narrow for the high seas or exclusive economic zone (EEZ) regimes to apply, straits belong to the territorial sea of one (or more) state(s), but are used for international navigation. Under the Montego Bay Convention, the sharing of the strait is based on the rule of sharing by equidistance.

The maritime border of a strait differs from a land border because it cannot be reduced to a simple line. Due to different width and depth, it can be crossed or followed along its length. Moreover, the sea is not a “vacuum”. Despite political rivalries or conflicts, the riparian states are obliged to take this into account and sometimes to collaborate in order to manage this fragile space.

So, despite the existence of a border, environmental risks are increasingly common. One example is the abandonment of the tanker *FSO Safer*, stuck outside the port of Hodeida, in Yemen, with its cargo of oil barrels. It has been disputed by the official government and the Houthis since 2015 and poses a threat to more than 1.5 million people living from fishing in the area. The UN Security Council prompted a special meeting in July 2020, mandating international technicians to assess how to prevent a disaster in the Red Sea, around the Bab el-Mandeb Strait...²

As longitudinal flows, the straits also represent a major stake for world trade. These maritime highways consist of a system of traffic rails running parallel to the coastline, which is more easily controlled than the high seas. This system makes it possible to control maritime traffic. Nevertheless their potential closure is an economic threat, but also a military one, as it directly affects the deployment of naval fleets.

Insecurity on land (e.g. political instability of the littoral states) can also be projected to the sea.³ Controlling access to international straits is therefore a key strategic and geopolitical issue for both littoral states and major powers.

1. Montego Bay Convention, came into effect on 16 November 1994 (ratification by France).

2. C. Nooten, «L'ONU met en garde contre le risque d'une «catastrophe écologique imminente» en mer Rouge», *Le Monde*, 18 July 2020.

3. N. Fau, *Hypergéo*, 2004. See also: Éric Frécon, «Compétition entre armements européens et asiatiques pour la domination des routes maritimes Europe-Asie et intra-asiatiques», *Étude de l'observatoire de l'Asie du Sud-Est*, Asia center, 2014, p. 2-11. «Canaux, Détroits: entre atouts et vulnérabilités», *Brèves marines*, Centre d'études stratégiques de la Marine (CESM), n°189, April 2016.

A Context of a Globalised and More Than Ever “Maritimised” Economy

From the Strait of Hormuz to the Strait of Malacca, 70% of the Middle East’s hydrocarbons flow to Asia by sea. These are the densest maritime trade routes in the world. With 39% of maritime oil trade and 33% of liquefied natural gas (LNG) trade, the Suez Canal accounts for 7% of global maritime oil trade and is the main trade route for LNG containers.

The Strait of Malacca, which is more than 800 kilometres long but half the size of the Red Sea, carries most of the trade to Asia, which depends on it for its oil, gas, iron, and containerised trade. The only alternative to the Strait of Malacca would be to use the Indonesian Straits of Lombok and Makassar for Australian iron ore. China depends on the Strait of Malacca for 100% of its soybean imports, 90% of its oil, 40% of its iron, and 40% of its gas. The volume of oil traffic for China, Japan, Taiwan, and South Korea is estimated at 450 million tonnes per year.

About 200 million tonnes of oil transit to America and Europe through the Red Sea or the Mozambique Channel and the Cape of Good Hope. Approximately 30% of the world’s oil production transit through the Mozambique Channel. At the same time, trade in mineral raw materials between China and East Africa is increasing. Recent explorations in the Mozambique Channel reveal the presence of hydrocarbon reserves.

A New Rise in Insecurity and Environmental Risks

Between all these straits, the safety/security nexus is organised crime.⁴ Along the Pakistani and Iranian coasts, 2.4 tonnes of drugs were intercepted by the French frigate *Floréal* in December 2020.⁵ In the far east of the Indian Ocean, some areas remain popular for maritime robbery. Of the 96 events recorded in 2020, 50 were related to the Straits of Singapore and Malacca, where small groups of thieves board ships to steal equipment.⁶

4. A. Chamboredon, *La sécurité dans la péninsule arabique*, Lexis Nexis, Abu Dhabi, 2016.

5. J.-P. Numa, «Océan Indien : étude géopolitique et stratégique des flux maritimes, risques et menaces», *Diploweb.com: la revue géopolitique*, 28 January 2018.

6. “Maritime piracy and brigandage in the world”, *MICA Center*, 2020, p. 52.

Many coastal countries in Eastern and Southern Africa are the points of departure, transit, or destination for men, women, and children in forced labour and sex trafficking. Traffickers use countries with access to the Indian Ocean to dispatch arms, drugs, and other illicit goods from Asia and the Middle East to Africa and, further north, to Europe.

The trafficking of protected animal and plant species is also endemic. According to the NGO Traffic, the illegal trade in endangered animals and poaching has reached a ten year peak.⁷ The pangolin, which until five years ago was of no interest to anyone, is now the most illegally traded animal in the world, particularly to satisfy Chinese demand.⁸

Nor should we underestimate the stakes involved in fishing⁹ and the difficult implementation of the 1995 United Nations Fish Stock Agreement. Despite the international network of Regional Fisheries Management Organisations (RFMOs), such as the Indian Ocean Tuna Commission (IOTC) or the Southern Indian Ocean Fisheries Agreement (SIOFA), the report published in November 2020 by the World Wildlife Fund (WWF) shows that without adequate legal tools, illegal fishing is gaining pace.¹⁰

Straits are genuine chokepoints (some of them are already almost saturated) and the risks of ecological disasters are multiplying. For instance, a Panamanian-flagged oil tanker, the *New Diamond*, was hit by a fire in early September 2020, which was finally brought under control but led to fears of an oil spill on the coasts of Sri Lanka and the Maldives.¹¹

Finally, 2019 has been full of developments around the Strait of Hormuz: boarding of Iranian and British oil tankers, sabotage of four oil tankers in Emirati territorial waters near the port of Fujairah, acts of piracy, American drones shot down over the Arabian Sea, invectives and threats of armed escalation. This strait, which regularly makes the geopolitical headlines, appears on the maps as one of the most risky points on the planet.

7. According to the NGO *Traffic*, more than 1.3 million live animals and plants, 1.5 million skins and 2,000 tons of meat have been exported from Africa to East and Southeast Asia. See <https://www.traffic.org/>.

8. «Pangolin : à la rescousse du mammifère le plus trafiqué au monde», *Libération*, 26 September 2016.

9. The Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

10. “Unregulated fishing on the high seas of the Indian Ocean”, *WWF*, November 2020.

11. «Un incendie sur un pétrolier fait craindre une nouvelle marée noire dans l'océan Indien», *Le Monde* with AFP, 4 September 2019.



The crew of the *Floréal* poses with the seized drug: CTF 150 is the name of the Combined Task Force. © French Armed Forces.

The military presence of the major powers is constantly being reinforced by new players such as China and India. It is not surprising that China, for example, has been carrying out extensive mapping operations in the area. Along with the *Xiang Yang Hong 03*, three other similar vessels have been conducting oceanographic mapping campaigns over the past two years. One of these research vessels, number 06, is said to be specifically tasked with the use of underwater drones.¹²

The straits of the Indian Ocean are of obvious strategic importance. The world's major powers are keen to protect the bulk of hydrocarbon production and its evacuation from the Gulf, Iraq, and Iran. These navies act to control the outlet of the Red Sea and the Suez Canal, to monitor the straits linking the Indian Ocean and the Pacific as well as the Cape Route, to intervene if necessary in Africa, or to strengthen their presence in Asia. Finally, France's territories in the Indian Ocean give it the second largest maritime space in the world after the United States, which represents an exceptional, often contested, strategic position.

A Multidisciplinary Study

Bringing together academics and professionals from the maritime and military worlds based in the Indian Ocean, a multidisciplinary research group seeks to update geographical, historical, sociological, economic, legal, and geostrategic points of view, in order to contribute to the reflection on the new challenges linked to the straits of the Indian Ocean.

The importance of the straits and maritime traffic for the European and French economies will be highlighted, as well as the evolution of the balance of power in the area, particularly with the development of the Chinese presence, in order to better understand how the specific stakes of the maritime straits of the Indian Ocean lead the powers to invest in the region.

This initiative involves researchers from the Sorbonne University in Abu Dhabi, the University of Paris, the National Defence College of the United Arab Emirates (UAE), in cooperation with the Commander of the Indian

12. N. Guibert, «Comment la Chine cartographie le fond de l'océan Indien», *Le Monde*, 23 January 2021.

Ocean Maritime Zone (ALINDIEN) and the French Forces in the United Arab Emirates (FFEAU). I warmly thank Admiral Didier Piaton for his confidence, as well as all the contributors for having allowed the publication of their work.

THE FOUNDATIONS OF THE MARITIME GEOSTRATEGY OF EUROPEAN POWERS (16TH-19TH CENTURY)

Dr. Yann RODIER

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Abu Dhabi, United Arab Emirates*

As a key geostrategic gateway, the strait is today the sole symbol of globalisation, playing the role of a key artery of the world economy. The figures speak for themselves: 3.8 billion barrels pass through the Bab el-Mandeb Strait every year, 17 billion through the Strait of Hormuz and 15.2 billion through the Strait of Malacca. Although the Strait of Malacca is located in the Andaman Sea, it provides a passage between the Indian and Pacific Oceans. Its inclusion in this study is justified, historically speaking, by the complementary nature of these straits, which the Portuguese sought to control from the 16th century onwards in order to develop their thalassocratic empire in Asia. The concept of the Indo-Pacific now in use shows the relevance of considering these spaces as a maritime *continuum*.¹ A conference organised in April 2017 at the *École de guerre* underlines that the straits of the Middle East polarise multiple strategic stakes, which must be placed in a complex socio-cultural and socio-economic context.

From the conflict-ridden Arabian Peninsula to Iran, *via* the Horn of Africa which is in turmoil due to its weak or failed states, the straits polarise international tensions and the militarisation of these areas. Anchored at the interconnection of several spaces, notably Arab and African at Bab el-Mandeb, the straits are complex because they do not fall under a single territorial power but are wedged in-between the convergence of regional geo-economic and geo-strategic interests. These crossroads of intertwined tribal, confessional, ethnic and historical issues, some of them very old, need to be put into perspective. Before the arrival of the Europeans with the opening of the East India route, the straits of the Indian Ocean were already at the heart of commercial relations between the countries of the Gulf and North-East Africa in order to trade with Persia, Oman, India, and Madagascar.² Trade with the East was dominated by the *Serenissima*, the city-state of Venice, driven by Byzantium's interventions for trade with Africa, Persia, India, and Madagascar.³ The arrival of Vasco da Gama in India *via* the Cape at the end of the 16th century, under the *impetus* of Portuguese monarchs, marked the beginning of a permanent European presence. The construction of the Portuguese empire in Asia developed from the control of the straits and gradually became a real thalassocracy from which European rivalries escalated between the 17th and 19th century. The straits

1. C. Lechervy, « La France et le concept d'Indo-Pacifique », *Politique étrangère*, vol. automne, n°3, 2019, p. 23-35.

2. A. Gascon, « Les damnés de la mer : les pirates somaliens en mer Rouge et dans l'océan Indien », *Diplomatie*, n°40, 2009.

3. E. Crouzet-Pavan, *Venise triomphante : les horizons d'un mythe*, Albin Michel, 1997.

became coveted strategic crossroads that constituted the keystone of imperialist and colonial rivalries between the European powers. From the early modern times, with the opening of the East India route, the straits became the object of an ambitious maritime geostrategy from the Portuguese thalassocracy to Franco-British colonial ambitions.

Straits and the Portuguese Empire in Asia: The Thalassocratic Temptation

The expansion of the Ottoman Empire at the end of the 15th century into the Mediterranean basin and the sealing off of the Red Sea and the Gulf resulted in the closure of Asia to the West.

Known as the “Spice King”, Manuel I implemented the “India Plan” to encourage Portuguese expansion into the Indian Ocean by circumnavigating Africa. The arrival of Vasco da Gama in 1498 in Calicut, India, opened the monopoly of Portuguese expansion in Asia for more than a century, which the political scientist George Modelska describes as thalassocratic hegemony.⁴ The birth of the *Estado da India* was based on a network of trading posts, known as *fitoria*, which revolved around the control of the straits. In accordance with this strategy, Admiral Albuquerque, known as the “lion of the seas”⁵, set up the first blockade of the Red Sea in 1502⁶ and began ambitious conquests between 1507 and 1513. He thus entered into conflict with the Mamluks, a Muslim dynasty that ruled over Egypt, Syria, and the Arabian Peninsula between 1250 and 1517, in order to establish the Portuguese presence in the Indian Ocean. These conquests can be summarised in three main stages: control of the Bab el-Mandeb through the conquest of Socotra, Aden, and the island of Kamaran, north of the Yemeni coast⁷; control of the Gulf with the conquest of the Strait of Hormuz and Muscat; and finally the control of the Strait of Malacca through the conquest of the eponymous city of the same name and of Sumatra. The primary objective was to cut off the access of the Mamluks and then of the Ottoman Empire to the Indian Ocean, thus shifting the heart of the European economy from the Mediterranean to the Indian Ocean.

4. G. Modelska, *Seapower in Global Politics 1494-1993*, Palgrave Macmillan, 2014.

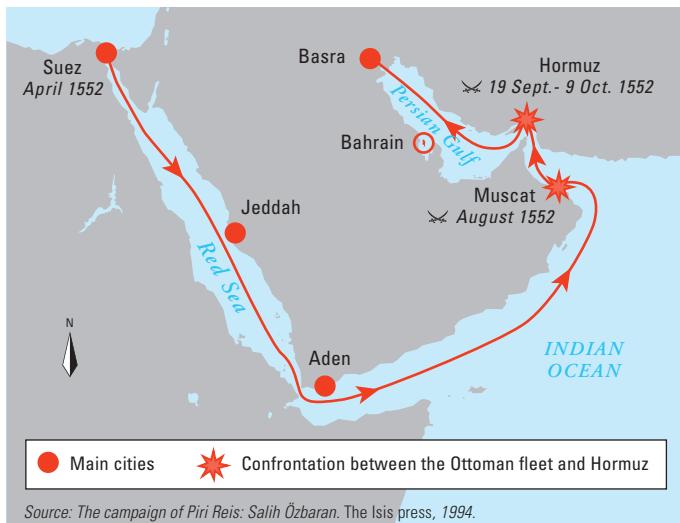
5. G. Bouchon, *Albuquerque: Le lion des mers d'Asie*, Desjonquères, 1992.

6. A.M. D'Alos-Moner, “Conquistadores, Mercenaries and Missionaries: The Failed Portuguese Dominion of the Red Sea”, *Northeast African Studies*, vol. 12, No. 1, Michigan State University, 2012, pp. 1-28.

7. R.S. Whiteway, *Rise of Portuguese Power in India*, Asian Educational Services, 1995, p. 155.

Secondly, the aim was to control all the maritime routes in the Indian Ocean and to promote the interconnection with the Pacific, since Malacca was at the confluence of international trade between the Far East and Insulindia, the heart of the spice trade. Following their entry into the Indian Ocean, back then called the Southern Ocean, the Portuguese demonstrated that maritime spaces were interconnected. The Miller Atlas shows thus a continuous maritime space between Arabia, India and the island of Java, from the Bab el-Mandeb Strait to the Malacca Strait. It is extended on the reverse side by the islands of Insulindia.

Admiral Piri Reis' expedition against Hormuz in 1552



Source: *The campaign of Piri Reis: Salih Özbaran*. The Isis press, 1994.

The Portuguese added numerous settlements and fortified posts in coastal regions ranging from Sofala, in East Africa, to Ternate, in the Moluccas, *via* the Indian coasts of Coromandel and Malabar. The new Ottoman Empire rapidly understood the geostrategic importance of controlling the straits. Established on both sides of the Red Sea, the latter could not be sailed without their permission until the Bab el-Mandeb Strait. They also founded a colony in Hormuz to maintain their trade route in the Indian Ocean. The Porte seized Basra in 1546 and then the current Iraqi, Qatari, Kuwaiti, and Bahraini territories, which were gradually vassalized and integrated under the Porte's authority. The straits were the endpoints of the Ottoman Empire, which developed a northern and internal vision of the Gulf, from Basra, and of the Red Sea, from Suez to Aden. The control of this maritime space constituted a strategic

barrier for the development of trade routes and reinforced the Empire's global hegemony. The Ottoman campaign against Hormuz, led in 1552 by Admiral Piri Reis from Suez to Basra to drive out the Portuguese, is representative of the Ottoman admiralty's maritime vision of an Arab peninsula whose territorial unity was based on the control of its straits and the so-called *Khalidjian* spaces. Their failure to drive the Portuguese out of the region forced the Ottomans to gradually relinquish the control of the straits to the European powers and to adopt a more continental vision.

The European Challenge of the Straits in the Indian Ocean

With the decline of the Portuguese empire in Asia, other European powers had similar ambitions in the East Indies in the early 17th century.⁸ Here again, it is interesting to note that the geostrategic vision of European maritime powers focused on the control of the straits. The young British East India Company (BEIC), founded in 1600 by Elizabeth I to develop trade in Asia, began by allying itself with the Safavid Persians to conquer Hormuz in 1622 and drive out the Portuguese. This marked the starting point for the British presence in the Gulf. The Dutch East India Company, the VOC, a competitor of the BEIC, tried to establish itself in Asia following a similar logic. Consequently, the Middle East of the Modern Era is defined by its maritime coastline, from Basra to Suez *via* the two straits. Arabia is divided into *Arabia Petraea*, *Arabia Felix*, and *Arabia Deserta*, and the Gulf belongs to this last region, stretching from the northern course of the Euphrates to the Bab el-Mandeb Strait, from Basra to Suez. The cartographic projection of the East Indies is often centred on the three strategic straits of the Eastern or Indian Ocean, as illustrated by the map of the East Indies engraved by the king's geographer, Pierre Duval.

The birth of a new thalassocratic empire, that of the Dutch East Indies (1619-1942), began in 1619 with the conquest of Batavia by the VOC governor-general to control the Sunda Strait and take part in the spice trade. Its expansion continued with the conquest of Mocha, in Yemen, and then Bandar Abbas in 1623, near Hormuz, to establish commercial and diplomatic links with Persia. In 1641, the Dutch took over Malacca to establish a vast Insulindian empire controlling the spice route in Java, the Moluccas, and Sulawesi and extending to India, China, and Japan. The development of Dutch cartography preceded their

8. S. Subrahmanyam, *L'empire portugais d'Asie (1500-1700)*, Seuil, 2013.

thalassocratic ambitions and contributed to the improvement of maritime and topographical knowledge of the straits, with the mention of reefs, sandbanks, water depths, and topography.



Map of the East Indies, Pierre Duval, 1677, Paris.

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The rise to power of the Ya'ruba dynasty in Oman also marked the beginning of a unification of the sultanate under the leadership of a thalassocratic ambition, emanating from Muscat. Sultan bin Saif chased the Portuguese away from Muscat in 1650 and built a new Arab-African maritime empire. The triangle of straits now ran from Hormuz to Bab el-Mandeb, but turned its back on Malacca, in favour of the Mozambique Channel, which some consider a strait. The Ya'rubi state became a prosperous maritime empire based on the control of trade. The strategy of military conquest shows the strategic importance of the coastal trading posts and straits for the young Omani fleet, which made numerous incursions into the Strait of Hormuz to repel the Persians. Before the arrival of the British, the Omani empire extended all around the Indian Ocean, from Mozambique to the Somali cape Gardafui and the Great Lakes route, from Dhofar to Bandar Abbas, and as far as Bahrain.⁹

9. H. Ghubash, *Oman : Une démocratie islamique millénaire*, Maisonneuve et Larose, 1998.

Straits in the Age of Colonial Imperialism

The British colonial empire was also built on the centrality of the geostrategic straits in Asia. Some may recall that several of these straits were even institutionalised as colonial settlements under the supervision of the powerful British India Company under the name of Straits Settlements. This British colony of Penang, Singapore and Malacca, administered by the BEIC, came into being in 1826 after the signing of an Anglo-Dutch treaty to separate their areas of mutual influence in the Malay Archipelago.

During the same decade, Great Britain intervened in the Gulf in 1820 with the violent attack on Ras el-Khaimah, which went beyond the sole official motivation of the programmed destruction of the Qawasimi “pirates” in the name of the freedom of the seas.¹⁰ The growing interest in the control of the straits was marked by Britain’s commissioning of cartographic missions to the Indian Navy in 1835, namely the trigonometric *surveys* of Socotra, the Bab el-Mandeb Strait and the Gulf of Aden. As a soldier in the BEIC and a diplomat in Her Majesty’s service, Malcolm underlined that the British government’s political and imperial thinking sought to integrate the Gulf and the Red Sea into the Anglo-Indian empire by securing the Straits of Hormuz and Bab el-Mandeb. Malcolm dreamt of a commercial emporium, based on the Portuguese model, between the Red Sea, the Gulf, India, and Malacca.¹¹ The British Admiralty subsequently strove to build upon this diplomatic vision.

The port of Aden, in Yemen, was annexed in 1839 to stop the advance of Egyptian troops into the Yemeni Tihama and to prevent the establishment of another European power. An agreement with the neighbouring kingdoms made Aden a protectorate of the British Empire.¹² As a key part of the two-India route and the control of maritime routes, the straits became a geostrategic source of tension between the colonial powers. With its presence in Indochina and Madagascar, France had several projects to settle around the Bab el-Mandeb Strait. Given that the strait was considered as pivotal to France’s presence in the Indian Ocean, plans were developed to create a trading post at Sheikh-Said, at the tip of Yemen, which France claimed until the beginning of the 20th century. With the opening of the Suez Canal in 1869, the straits became

10. S. M. Al-Qasimi, *The Myth of Arab Piracy in the Gulf*, Routledge, 2017.

11. G. Crouzet, *Genèses du Moyen-Orient. Le golfe Persique à l’âge des impérialismes (vers 1800-vers 1914)*, Champ Vallon, 2015, p. 102-118.

12. R. J. Gavin, *Aden Under British Rule, 1839-1967*, C. Hurst & Co. Publishers, 1975, p. 1.

the shortest and fastest line of maritime communication between Europe, Asia, and the Pacific. The straits literally began to embrace the definition of a line of maritime communication, as this narrow seaway was a place where maritime traffic and trade could be effectively hindered or impeded. This gave rise to the formidable weapon of the blockade, giving weight to economic arguments for the protection of the straits and their militarisation. The Suez Canal, which halved the usual transit times to the Indian Ocean, sparked a colonisation race of the territories surrounding the Bab el-Mandeb Strait.

The strait was divided by a line between the 1860s and 1880s. Driven by imperialistic ambitions in Indochina, France conquered the African shores by capturing Obock (the future Djibouti). The British, on the other hand, took over the Arab shores with Socotra and Aden.¹³ With the seizure of Somaliland (1888), located at the gates of Bab el-Mandeb, Great Britain stopped the extension of French influence. The establishment of the Anglo-Egyptian Sudan in 1899 completed the territorial blockade of the straits and British maritime domination from the Mediterranean to the Indian Ocean *via* the Red Sea, and from the Indian Ocean to the Pacific *via* the settlements on the straits of Malaysia.

The succession and superposition of these different maritime empires and colonial rivalries in the Indian Ocean shows the importance of favouring a connected and global approach to the straits on a transoceanic scale. The historical analysis of the straits is only effective if it is done in a simultaneous and complementary reading of the Indian Ocean straits – Bab el-Mandeb, Hormuz and Malacca – which were rapidly taken into account in the geostrategic visions developed by the maritime powers of the time. Alfred T. Mahan observed at the end of the 19th century in his book *The Influence of Sea Power Upon History 1660-1783* that the Navy's vocation was to keep the straits open. According to his aphorism, “*the necessity of a military navy, emanates from the existence of peaceful navigation, and disappears with it*”¹⁴. The discovery of the first oil deposits in the Arabian Peninsula in the 1930s transformed the status of the Suez Canal and the Bab el-Mandeb Strait. These maritime spaces gradually became the vital arteries of energy supply for Western countries and were poised to become strategic issues throughout the Cold War period in the opposition between the two new superpowers.¹⁵

13. C. Dubois, *Djibouti 1888-1967. Héritage ou frustration?*, Harmattan, 1997.

14. A.T. Mahan, *The Influence of Sea Power Upon History 1680-1783*, Scrivener, 1890, p. 23

15. H. al-Yadoomi, “The Strategic Importance of the Bab el-Mandab Strait”, *U.S. Army War College*, Pennsylvania, 1991, p. 6.

A SHORT DESCRIPTIVE ANALYSIS OF THE OPPORTUNITIES AND CHALLENGES OF THE BLUE ECONOMY

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The oceans are the world's largest ecosystem: they cover nearly three quarters of the Earth's surface and provide a massive arena for complex and interconnected emerging development issues such as climate change, livelihoods, trade and security.¹ The World Ocean Commission estimates that ocean resources contribute 5% of global GDP, provide jobs for three billion people and support the livelihoods of 350 million people.² According to the World Bank, the blue economy is “*the sustainable use of ocean resources for economic growth, improved livelihoods and jobs while maintaining the health of the ocean ecosystem*”.³

The Indian Ocean is the third largest ocean division in the world, covering an area of 70.56 million km² (about 20% of the Earth's surface)⁴, which includes large Exclusive Economic Zones (EEZ) of various countries and large “high seas”. It is bound by Asia in the north, Africa in the west, Australia in the east and the Southern Ocean or Antarctic in the south. In the south, the Indian Ocean stops at the Atlantic Ocean at 20° East, south of Cape Agoulas, and by the Pacific Ocean at 146°55' East, running south from the southern tip of Tasmania. The northernmost extent of the Indian Ocean is about 30° North in the Arabian Gulf. The boundaries of the Indian Ocean, as delimited by the International Hydrographic Organisation (IHO) in 1953, included the Southern Ocean, but not the marginal seas along the northern shore. By 2000, the IHO had separately delimited the Southern Ocean, which discharged waters to the south (from 60° South latitude).⁵

The main straits of critical importance to the Indian Ocean are the Suez Canal (Egypt), Bab el-Mandeb (Djibouti-Yemen), the Strait of Hormuz (Iran-Oman), and the Strait of Malacca (Indonesia-Malaysia). Seas include the Gulf of Aden, Andaman Sea, Bay of Bengal, Bay of Bengal, Gulf of Mannar, Mozambique Channel, Gulf of Oman, Arabian Gulf, Red Sea, and other tributary water bodies.

1. J. Larik, “Blue Growth and Sustainable Development in Indian Ocean Governance”, *Hague Institute for Global Justice Policy Brief*, 2017.

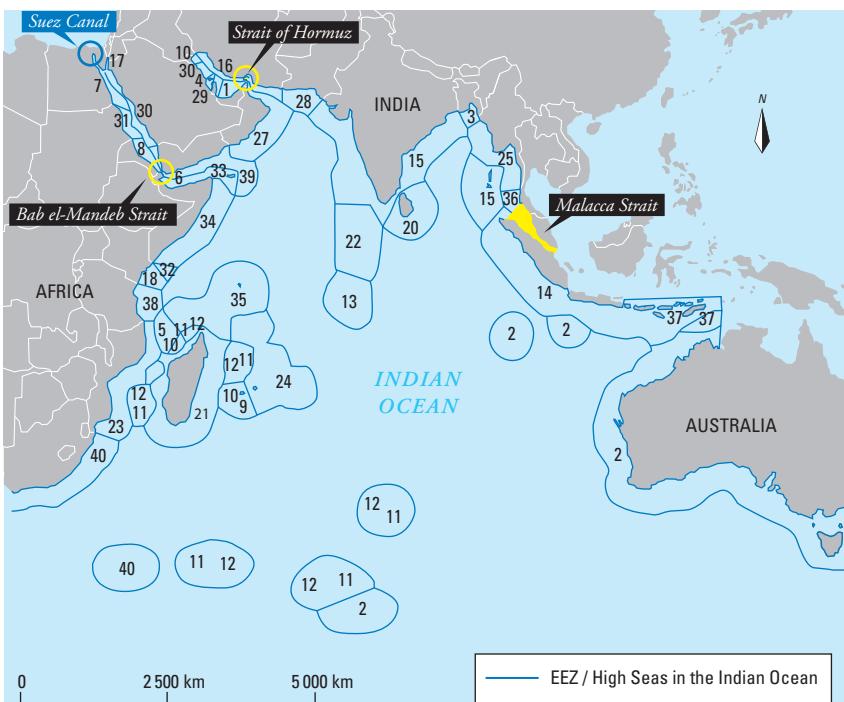
2. Global Ocean Commission, 2014.

3. “What is the Blue Economy?”, The World Bank, 2017.

4. B.W. Eakins and G.F. Sharman, “Volumes of the World's Oceans from ETOPO”, NOAA National Geophysical Data Center, 2010.

5. M. N. Pearson, *The Indian Ocean*, Routledge, 2003.

Indian Ocean: main straits, exclusive economic zones (EEZ), and high seas



* Data collected from the Indian Ocean Tuna Commission.

- (0) High Seas of the Indian Ocean.
- (1) United Arab Emirates EEZ.
- (16) Iran EEZ.
- (19) Kuwait EEZ.
- (27) Oman EEZ.
- (28) Pakistan EEZ.
- (29) Qatar EEZ.
- (30) Saudi Arabia EEZ.
- (31) Sudan EEZ.
- (6) Eritrea EEZ.
- (39) Yemen EEZ.
- (32, 33 et 34) Somalia EEZ (new and undisturbed).
- (18) Kenya EEZ.
- (3) Bangladesh EEZ.
- (25) Myanmar EEZ.
- (36) Thailand EEZ.
- (26) Malaysian EEZ.
- (37) Indonesia EEZ.
- (20) Sri Lanka EEZ.
- (22) Maldives EEZ.
- (13) British Indian Ocean Territory EEZ.
- (35) Seychelles EEZ.
- (38) Tanzania EEZ.
- (5) Comoros EEZ.
- (2) Australia EEZ.
- (40) South Africa EEZ.
- (21) Madagascar EEZ.
- (23) Mozambique EEZ.
- (24) Mauritius EEZ.
- (11 et 12) France EEZ (Indian Ocean area including Mayotte EEZ).
- (9) European Union EEZ (including the EEZ of Réunion Island).

The Indian Ocean is vital to the economies, security, and livelihoods of its littoral states. However, there are economic and sustainable development problems on its shores.⁶ These problems are particularly difficult because the majority of the coastlines are in developing countries. These countries are home to a third of the world's population, which is largely dependent on marine resources for its livelihoods and food security. The size of this population puts the resources of the Indian Ocean under pressure from pollution, habitat degradation, and overexploitation.⁷ As the region's population is expected to grow significantly over the next few decades, its impact on food security and the marine resource economy will become more substantial.⁸ In addition, the region and its resources face multidimensional challenges related to the effects of climate change such as the rise of sea levels, ocean acidification, and extreme weather events.⁹ These, in turn, contribute to changes in the distribution of aquatic species and community structures due to migration as well as to declining economic productivity.¹⁰

This article first presents the different climate, environmental, and geological characteristics of the Indian Ocean with the aim of outlining the different resources and assets present in this region. The blue economy and its potential in the Indian Ocean region are then discussed, particularly in the context of fisheries, environmental protection, and the impacts of climate change. Thus, this paper presents a brief descriptive analysis of the existing opportunities and challenges at the regional level to finally propose some recommendations towards a sustainable governance framework for the Indian Ocean blue economy.

Climatic and Environmental Characteristics

The climate north of the equator is affected by a monsoon climate. Strong north-eastern winds blow from October to April. South and west winds prevail from May to October. In the Arabian Sea, the violent monsoon brings rain to

6. M. Tomczak and J. S. Godfrey, *Regional Oceanography: an Introduction*, Elsevier, 2013.

7. C. M. Rogerson, A. Benkenstein and N. Mwongera, *Coastal Tourism and Economic Inclusion in Indian Ocean Rim Association States*, 2018.

8. C. Anderson, "Subaltern Lives: Biographies of Colonialism in the Indian Ocean World, 1790-1920", *Cambridge University Press*, 2012.

9. J. Clifton, M. Etienne, D. K. Barnes, R. S. Barnes, D. J. Suggett, and D. J. Smith, "Marine Conservation Policy in Seychelles: Current Constraints and Prospects for Improvement", *Maritime Policy*, vol. 36, No. 3, pp. 823-831, 2012.

10. A. Roy, *Blue Economy in the Indian Ocean: Governance Perspectives for Sustainable Development in the Region*, January 2019.

the Indian subcontinent. In the Southern Hemisphere, the winds are generally milder, but summer storms near Mauritius, for example, can be extreme. When the monsoon winds change, cyclones sometimes hit the shores of the Arabian Sea and Bay of Bengal.¹¹

Among the few major rivers that flow into the Indian Ocean are the Zambezi, Shatt el-Arab, Indus, Godavari, Krishna, Narmada, Ganges, Brahmaputra, Juba, and Irrawaddy. The ocean currents are mainly controlled by the monsoon. Two major circular currents control the dominant flow pattern. During the winter monsoon, the currents in the north are reversed. The deep water circulation is controlled mainly by inflows from the Atlantic Ocean, the Red Sea, and the Antarctic currents north of latitude 20° South. This affects surface temperatures and the entire water column.

The Indian Ocean is the warmest ocean in the world, even though the ice pack and icebergs are found all year round in the south (latitude 65° South). The average northern limit of icebergs is latitude 45° South. Research indicates that greenhouse warming and changes in the frequency and magnitude of El Niño events are the triggers for the strong warming in the Indian Ocean.¹²

Sea surface temperature (SST) in the tropical Indian Ocean has risen rapidly from 1950 to 2015, with SSTs showing an average warming of about 1°C. SST and heat content trends are very likely to continue in the future, under different emission scenarios. Climate models project an increase in tropical SST in the Indian Ocean of 1.2-1.6°C and 1.6-2.7°C in the near (2040-2069) and distant (2070-2099) future for the *Representative Concentration Pathway (RCP)* 4.5 and RCP 8.5 greenhouse gas (GHG) emission scenarios, in comparison to the 1976-2005 baseline period.¹³

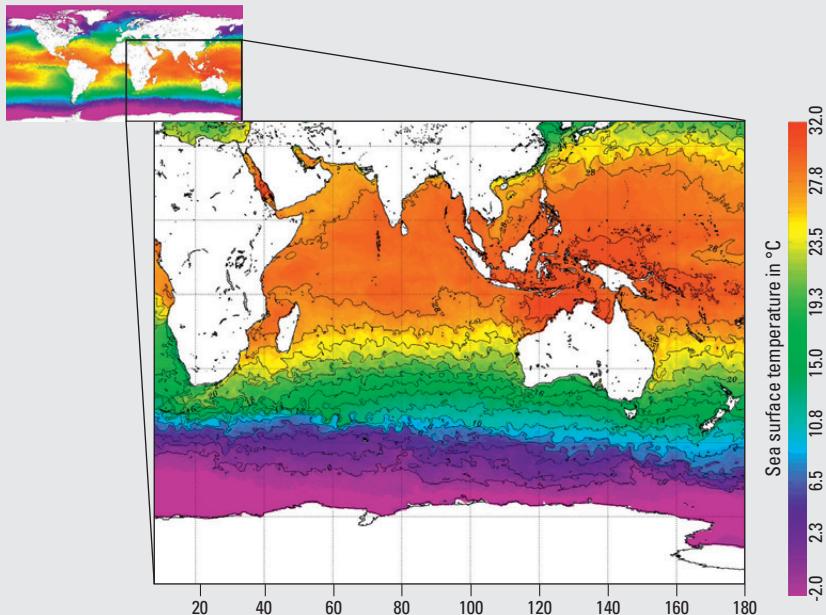
These temperature variations are accompanied by salinity variations. The latter also depend on precipitation and ocean evaporation. Salinity variations in the Indian Ocean are driven by:

11. J. Yang, Q. Liu, S.-P. Xie, Z. Liu, and L. Wu, "Impact of the Indian Ocean SST Basin Mode on the Asian Summer Monsoon", *Geophysical Research Letters*, vol. 34, n°2, 2007.

12. M. K. Roxy, K. Ritika, P. Terray, and S. Masson, "The Curious case of Indian Ocean Warming", *Journal of Climate*, vol. 27, No. 22, pp. 8501-8509, 2014.

13. P. J. Akhiljith *et al*, "Climatic Projections of Indian Ocean during 2030, 2050, 2080 with Implications on Fisheries Sector", *Journal of Coastal Research*, vol. 86, pp. 198-208, 2019.

**Mixed geo-polar analysis of sea surface temperature at 5 km,
27 November 2020**



Source: NOAA / NESDIS. NASA Earth Observatory.

- input from rivers mainly from the Bay of Bengal,
 - the fresh water supply from the Indonesian through-flow,
 - the input of higher salinity water from the Red Sea and the Arabian Gulf.
- Surface water salinity contours range from 32 to 37‰, with the highest occurring in the Arabian Sea and in a strip between South Africa and South West Australia.¹⁴

14. R. R. Rao and R. Sivakumar, "Seasonal Variability of Sea Surface Salinity and Salt Budget of the Mixed Layer of the North Indian Ocean", *Journal of Geophysical Research, Oceans*, vol. 108, p. 9, 2003.

In addition, the warming of the Indian Ocean has most likely resulted in the decrease both of oxygen (O_2) concentrations in the tropical Indian Ocean and pH levels.¹⁵ This inevitably has implications for the marine ecosystem, such as the decline of marine phytoplankton in the western Indian Ocean. Indeed, a study on phytoplankton variations in the Indian Ocean indicates a decrease of up to 20% in marine phytoplankton over the last six decades. The observed trends in O_2 , pH levels, and marine phytoplankton are expected to increase in the future with continued GHG emissions.

Risks to the Marine Environment and Biodiversity

As presented in the previous section, global climate change means an increase in the temperature of oceanic and marine waters in the Indian Ocean region, leading to a decline in biodiversity or an erosion of biodiversity which corresponds to an ecological crisis involving the extinction of different species, particularly benthic and pelagic species.¹⁶ This is likely to have a negative impact on coral reefs, for example. Surrounded by East Africa, South Asia, Indonesia, and Western Australia, the Indian Ocean is the second largest coral reef province in the world, after the Pacific Ocean. Recently, there has been an increase in the frequency of mass coral bleaching events across the Indian Ocean reefs (resulting in the death of a large proportion of coral colonies and weakening of the coral skeleton).¹⁷ For example, the reefs of the Chagos Archipelago in the central Indian Ocean suffered severe bleaching and mortality in 2015, causing a 60% decrease in coral cover, and then a 12% decrease in April 2016.¹⁸ Coral bleaching is often correlated with increased CO_2 concentration, which is believed to cause acidification of marine and ocean waters.¹⁹ According to current forecasting models, ocean acidification will first affect Madagascar and the Comoros (2030) and then all countries by 2050 (with the greatest impact in the Mozambique Channel). Other observations directly related to climate change in the region include an increase in the intensity of cyclones and sea level rise.²⁰

15. G. Delaygue *et al*, "Oxygen Isotope/Salinity Relationship in the Northern Indian Ocean", *Journal of Geophysical Research, Oceans*, vol. 106, p. 4565-4574, 2001.

16. P. J. Akhiljith *et al*, *ibid*

17. J. P. Quod, *Coral Reefs and Men Facing the Climate Change for a Sustainable Development and the Upkeep of the Ecological and Ecosystem Services of the Coral Reefs of the South-West of the Indian Ocean*, 2012.

18. C. E. Head *et al*, "Coral Bleaching Impacts from Back-to-Back 2015-2016 Thermal Anomalies in the Remote Central Indian Ocean", *Coral Reefs*, vol. 38, n°4, p. 605-618, 2019.

19. L. Cao and K. Caldeira, "Atmospheric CO_2 Stabilization and Ocean Acidification", *Geophysical Research Letters*, vol. 35, n°19, 2008.

20. N. Bassey, *Climate Justice and Community Renewal Resistance and Grassroots Solutions*, 2020.



A soft coral from a coral reef in the Indian Ocean. The generic term “soft coral” relates to their fixed erect forms coupled with a skeleton with little or no mineralization. © D.R.

Pelagic resources (e.g. tuna) have also suffered a sharp decline in recent decades, mainly due to marine overexploitation and intensified industrial fishing. Climate change and ocean warming are additional factors contributing to this decline in biodiversity. Other threatened marine species include dugongs, seals, sea turtles, and whales.²¹

Boundary Geology and Floor Configuration

The oceanic domain, which covers more than 70% of the Earth's surface, contains vast areas that remain unscathed by exploration. The best known parts of the seabed are near the borders of the continents, where many surveys have been mapped as an aid to navigation.²²

The Indian Ocean has active ridges that are part of the global mid-ocean ridge system. In the Indian Ocean, these stretching ridges meet at the Rodrigues triple point with the central Indian ridge. This includes the Carlsberg Ridge, separating the African Plate from the Indian Plate; the Southwest Indian Ridge separating the African Plate from the Antarctic Plate; and the Southeast Indian Ridge separating the Australian Plate from the Antarctic Plate.²³ The central ridge extends northwards over the Arabian Peninsula and Africa at the Mediterranean Sea.

The morphological features of the Indian Ocean are similar to those of the Atlantic Ocean and include mid-ocean ridges, abyssal plains and some deep trenches (subduction zones). The Indian Ocean has very few seamounts and islands, but contains numerous submarine shelves and mounds.

A series of underwater ridges and mountain ranges produced by hotspots pass over the Indian Ocean.²⁴ The Reunion hotspot, active 70-40 million years ago, links Reunion Island and the Mascarene Plateau to the Chagos-Laccadive Ridge and the Deccan Traps in northwest India. The Kerguelen hotspot, active

21. C. M. Roberts *et al*, "Marine Biodiversity Hotspots and Conservation Priorities for Tropical Reefs", *Science*, vol. 295, No. 5558, pp. 1280-1284, 2002.

22. J. F. Pepper and G. M. Everhart, "The Indian Ocean: The Geology of its Bordering Lands and the Configuration of its floor", *U. S. Geological Survey*, 1963.

23. A. Akilan, K. A. Azeez, H. Schuh, and N. Yuvraaj, "Large-scale Present Day Plate Boundary Deformations in the Eastern Hemisphere Determined from VLBI Data: Implications for Plate 17 Tectonics and Indian Ocean Growth", *Pure and Applied Geophysics*, vol. 172, No. 10, pp. 2643-2655, 2015.

24. P. A. Tyler, *Ecosystems of the Deep Oceans*, Elsevier, 2003.

between 100 and 35 million years ago, connects the Kerguelen Islands and the Kerguelen Plateau to the Ninety East Ridge and the Rajmahal Traps in northeast India. The Marion hotspot, active 100–70 million years ago, eventually links the Prince Edward Islands to the Eighty Five East Ridge.²⁵ These hotspots tracks were broken by the still active spreading ridges.

However, in this part of the seabed, which is a border zone between the *toast* and the deep ocean, much more detailed information is needed on the character of the topography and geology. In many places, the stratigraphic and structural features of the coast extend offshore, but their relationship to the shelf and slope rocks is unknown, and the geology of the coast must be projected offshore across the continental shelf and slope.²⁶

Mineral Resources and Regional Economic Importance

Oil and natural gas are by far the most economically important mineral resources. The Arabian Gulf is the world's largest oil-producing region. Offshore oil and gas exploration is also underway in the Arabian Sea and the Bay of Bengal, both of which are believed to have significant reserves. Other sites of exploration activity are off the northwest coast of Australia, in the Andaman Sea, off the coast of Africa south of the equator, and off the southwest coast of Madagascar. Apart from the Arabian Gulf countries, only India produces commercial quantities of oil from *offshore* areas, with much of its total production coming from fields off Mumbai. Some natural gas is also produced from fields off the northwest coast of Australia.

Another potentially important mineral resource is contained in manganese nodules, which are abundant in the Indian Ocean. Sampling sites throughout the central part of the ocean, as far south as South Africa, and to the east in the South Australian Basin have yielded nodules; the manganese content are higher in the east and lower towards the northwest. The difficulty of mining and processing these minerals, despite technological advances, has prevented their commercial extraction. Other minerals of potential commercial value are ilmenite (a mixture of iron oxide and titanium), tin, monazite (a rare earth), zircon, and chromite, all of which are found in coastal sandy bodies.

25. C. O'Neill, D. Müller and B. Steinberger, "Geodynamic Implications of Moving Indian Ocean hotspots", *Earth and Planetary Science Letters*, vol. 215, No. 1-2, pp. 151-168, 2003.

26. J. F. Pepper and G. M. Everhart, *ibid*.

The *United States Geological Survey* (USGS) study found 27.6 billion barrels of oil, 441.1 trillion cubic feet of natural gas and 13.77 billion barrels of liquid natural gas in the Indian Ocean area. Recently, results from the US *Energy Information Administration* (EIA) confirmed the USGS findings that the West Indian Ocean is becoming the next oil frontier. A month before the USGS study began, the Indian Ocean archipelago of Comoros awarded its first exploration licence to *Bahari Resources*, an oil and gas exploration company based in Kenya.

New gas discoveries in Mozambique and Tanzania, oil fields and new discoveries in South Sudan and Uganda, and seabed exploration in Madagascar, Tanzania and more recently the Seychelles have opened up the Indian Ocean region to energy resource interests, including those of China and India.

The presence of organic carbon in the Indian Ocean ensures the availability of “methane hydrate” or “gas hydrate”. It is estimated that gas hydrates account for about one third of the world’s mobile organic carbon. In the case of the Indian Ocean or deep inland lakes, gas hydrates are formed when methane and water combine at the high pressure and low temperature generated by 300 to 500 metres or more of overlying water.

In addition to gas hydrates, there are multiple mineral resources in the Indian Ocean.²⁷ The Japan oil, gas, and metals national corporation (JOGMEC) and the Seychelles national oil company *PetroSeychelles* announced that they had completed a 2D seismic acquisition and embarked on geochemical data collection in the region to grant themselves an exploration licence to prospect for deep sea minerals such as cobalt, platinum, nickel, molybdenum, and other rare metals. The International Seabed Authority has also granted licences to the *China Ocean Mineral Resources Research and Development Association (COMRA)* and to the Indian government, in order to explore mineral resources in the deep waters of the Indian Ocean.

These abundant mineral resources around the Indian Ocean thus present multiple promising prospects for several Asian and global economies.

27. J. R. Hein, T. Conrad, K. Mizell, V. K. Banakar, F. A. Frey, and W. W. Sager, “Controls on Ferromanganese Crust Composition and Reconnaissance Resource Potential, Ninety east Ridge, Indian Ocean”, *Oceanography Research Papers*, vol. 110, p. 1-19, 2016.

Earthquakes and Natural Hazards

Addressing the influence of environmental factors in the history of the Indian Ocean, case studies cover a wide range of natural hazards: fires in Madagascar, droughts in India, cyclones and typhoons in Oman, Australia and the Philippines, climate variability, storms and floods in Vietnam and the Philippines, and volcanic eruptions, earthquakes, and tsunamis in Indonesia.²⁸ For example, the 2004 Indian Ocean tsunami was a devastating disaster that killed an estimated 250,000 people. The coastal areas of Aceh, at the northern tip of Indonesia, were the hardest hit and around 5% of the province's population died.²⁹ In 2017, more than 80 people were killed and tens of thousands displaced in Madagascar when cyclone Enawo battered the island.³⁰

In view of this situation, integrated coastal management and coastal erosion management are needed in these countries even more than elsewhere.³¹ Coastal management, in general, could be based on an efficient spatial approach, based on the notion of sediment cell, storm waves and tsunami. It could also be based on a joint and comprehensive institutional, research and administrative integration, on a regional and international scale.

Blue Economy: Challenges and Potential

The idea of the “Blue Economy” was first formulated by Gunter Pauli in 2010 and then discussed at the UN conference on sustainable development, Rio+20, in 2012. Blue Economy has since emerged as an influential concept in the Indian Ocean region and a powerful and relatively contested discourse, among member states of the main regional governance organisation, the Indian Ocean Rim Association.

As discussed in the previous sections, the Indian Ocean region has provided a unique and rich ecosystem and connectivity routes between different resources

28. G. Bankoff and J. Christensen, *Natural Hazards and Peoples in The Indian Ocean World: Bordering on Danger*, Springer, 2016.

29. B. P. Resosudarmo, “Reconstruction and Rehabilitation After Large-Scale Natural Disasters: Lessons from the Indian Ocean Tsunami in Aceh and Nias, Indonesia”, *Spatial Economic Modelling of Megathrust Earthquake in Japan*, Springer, 2017, pp. 313-334.

30. A. Le Bellec, “North-Eastern Madagascar and Cyclone Enawo”, *The State of Environmental Migration*, 2018.

31. V. Cazes-Duvat, «Les archipels de l'ouest de l'océan Indien face à l'érosion côtière (Mascareignes, Seychelles, Maldives)», *Annales de géographie*, 2005, n°4, p. 342-361.

and wealth for centuries. Technological and scientific progress has further expanded the opportunities presented by this environment. Sustained - and sustainable - growth of the blue economy in the Indian Ocean region would therefore require concerted efforts by governments, the private sector, and the wider community, including scientists. In terms of domestic consumption and trade, there has been a significant increase in the number of preferential trade agreements over the past two decades. However, the Indian Ocean countries are considered to be lagging behind the rest of the world, especially the US and Europe which have many more agreements in place.³²

Achieving the objectives of the blue economy would require extensive and integrated cooperation between the community of coastal states and a range of other stakeholders, including the private sector, non-governmental organisations and the scientific and local communities.³³ It would be useful to refer to the legislative models and their mechanisms as well as the implementation policies formulated and imposed by other regional bodies such as the Pacific and Caribbean communities.³⁴

Adapting best practices to the Indian Ocean context would fill the current void of a solid foundation of regionalism on which new approaches to fisheries, climate change and food security could be developed.

Conclusion

This study briefly brings together the climate, environmental, and geological characteristics as well as the marine resources and potential risk factors in the Indian Ocean.

The Indian Ocean's assets and environmental characteristics make it vital to the economies, security, and livelihoods of its littoral states.

However, the reviewed hazards and risk factors expose challenges to the development of the blue economy in the region. This leads to recommendations on how to advance the governance of the blue economy in order to address pressures and ensure sustainable development in the region.

32. A. Roy, *ibid.*

33. J. Larik, *ibid.*

34. J. Clifton, M. Etienne, D. K. Barnes, R. S. Barnes, D. J. Suggett, and D. J. Smith, *ibid.*

Indeed, the problems of economic and sustainable development in the periphery are particularly challenging as countries with diverse political systems, development status and agendas are home to a third of the world's population that rely heavily on marine resources for their livelihoods. This subjects ocean resources to the pressures of pollution, habitat degradation, and overexploitation.

In order to achieve sustainable development goals and ensure food security, marine-based livelihoods and economies, as well as the promotion of the blue economy through sustainable management of ocean resources, must be considered high priorities in the region.

STRAITS AND CONTAINERISED CARGO FLOWS: THE EXAMPLE OF THE INDIAN OCEAN

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The shock of the 11 September attacks tends to mask in our collective consciousness the other major geostrategic event of 2001. On 11 December, China's accession to the WTO marked a turning point in the dynamic of the internationalisation of trade initiated at the dawn of the 1990s. Between 2001 and 2019, the annual volume of containerised goods¹ transported worldwide by sea rose from 45 to 170 million TEUs (twenty-foot equivalent units)², a growth of 277% in 18 years. Chinese exports alone now account for a third of this total.³

At the same time, the Asia-China-Europe maritime route, on which *CMA* had positioned itself as early as 1992, is becoming the main artery of international trade.⁴ Its development is generating an explosion of maritime traffic in the Straits of Malacca and Bab el-Mandeb.

As a key link in the maritime routes of international trade, the Indian Ocean is characterised by the concentration of merchant traffic on a limited number of structuring routes, all bound by straits (Figure 1). As a strategic area for container shipowners, it is an exemplary case for the study of the relationship between straits and containerised goods flows.

The Strait: The Object of the Shipowner's Economic Calculation

The routes used by container ships in the Indian Ocean can be roughly divided into two groups (Figure 2).

A main artery links Asia to Europe through the Straits of Malacca, Bab el-Mandeb, and the Suez Canal. The concentration of traffic on this route makes these straits the busiest in the world, with respectively 25% and 22% of the world's containerised flows passing through them.⁵ In 2020, 20% of the total capacity of the world container fleet was deployed on the Asia-Europe route.⁶

1. According to the Review of Maritime Transport published in 2019 at the end of the United Nations Conference on Trade and Development (UNCTAD), a quarter of the total tonnage of goods transported by sea was containerised in 2018 (excluding tankers). Moreover, most trade of finished and semi-finished products is now carried out *via* containers, which makes this mode of transport the most important in terms of value exchanged.

2. "50 Years of review of maritime transport, 1968-2018", UNCTAD, 2020.

3. Container Trade Statistics (CTS), 2020.

4. According to the CTS, China-Europe container trade accounts for about 8% of the world total. The route is also used for all Asia-Europe volumes. It now ranks ahead of the Trans-Pacific.

5. Container Trade Statistics (CTS), 2018 and 2019.

6. Alphaliner Monthly Monitor, September 2020.

This figure masks the existence of disparities between shipping companies. In fact, only the world's top nine container shipowners deploy vessels in the region.⁷ On the one hand, with a world market share of over 10% each, there is the leading group of European plus *Cosco* shipowners which allocate between 21 and 26% of their capacity to this market. On the other hand, there are the smaller Asian shipowners with greater exposure to this route: *Evergreen* (35%) and *HMM* (39%).⁸

The absence of shipowners not belonging to the world's top⁹ is essentially linked to the search for economies of scale by the main market players. The commissioning of ships with increasing cargo capacities on the main international long-distance routes is leading to a race for gigantism, involving the massive mobilisation of capital.¹⁰ The smallest players find themselves disqualified. The Asia-Europe route is home to the largest container ships currently in service. The artery mobilises the whole of the latest generation of 23,000 TEU ships, almost all the ships exceeding 15,000 TEU, and a quarter of the ships with a capacity of between 10,000 and 15,000 TEU.¹¹

Around this corridor crossing the northern Indian Ocean from east to west, there are clearly marked secondary routes. To the north, a loop serves the western coast of India and the Arabian Gulf *via* Hormuz. As the only opening to the Gulf ports, this strait sees the transit of 6% of the world's containerised flows.¹² To the south-west, a route connects with the ports of East Africa *via* the Mozambique Channel and joins, at the Cape of Good Hope, an axis crossing the Indian Ocean from Malacca and the north of Sumatra. Finally, in the east, a route serves Western Australia from Asia *via* the Sunda and Lombok Straits. Articulated around the Asia-Europe artery, these routes allow the entire Indian Ocean basin to be served by international and regional shipping companies. The India-Near East market thus represents 11% of the world's capacity, while East Africa accounts for approximately 4 to 5%.¹³

7. *Idem.*

8. *Idem.*

9. The smallest shipowner participating in the Asia-Europe route is currently *Yang-Ming* (Taiwan) with 2.5% of the world market share and 27% of its capacity deployed on this route.

10. The construction of a 17,000 TEU ship thus costs an average of \$150 million.

11. Alphaliner Monthly Monitor, *ibid.*

12. Container Trade Statistics (CTS), *ibid.*

13. Alphaliner Monthly Monitor, *ibid.*

Straits have become areas of concentration of containerised cargo traffic. For the container shipowner however, the straits are more than just transit areas. In many respects, they are an integral part of his economic calculation.



Figure 1. Density of commercial shipping routes, 2012.

© B.S. Halpern (T. Hengl, D. Groll) / Wikimedia Commons.

A strait is an open navigation route between two maritime areas and is primarily of value to the shipowner in that it allows him to reduce the distances covered by his ships. In the Indian Ocean, this is the case for the Straits of Malacca and Bab el-Mandeb on the Asia-Europe route. By limiting the transit time of goods by sea, shipping through the straits reduces the main competitive disadvantage of maritime transport *vis-à-vis* other modes such as air or, on certain routes, rail and road. The emphasis lies on the impact of this reduction in distances on the costs borne by the shipowner. First are the bunkering costs. The distance covered and the speed of the ship are the main determinants of a ship's fuel consumption. This is a strategic issue for shipowners whose bunkers represent on average 15% of their costs. Second is the cost of the fleet. By reducing the length of a rotation¹⁴, the passage through the straits facilitates the optimisation of ship efficiency. To maintain ports of call on a weekly basis, a shipowner will need to deploy 12 ships on a rotation completed in 84 days as opposed to 14 for a 98-day rotation. For the same market volumes, ships making their rotation in 84 days will therefore have a higher yield, thereby covering their costs more efficiently.

14. An example is CMA CGM's FAL 1 service: China - Singapore - France - Germany - Netherlands - UK - Spain - Malaysia - China. In 84 days with 12 ships with an average capacity of 19,300 TEU, i.e. a weekly call in the ports of the rotation.

These undeniable benefits explain the marked preference of shipowners for the route through the Straits of Malacca and Bab el-Mandeb over its competitor around the Cape of Good Hope. The gain of 3,400 nautical miles achieved¹⁵, i.e. 9.4 days of navigation at a speed of 15 knots¹⁶, has a cost. Firstly, there are the fees paid for the passage through the Suez Canal. Excluding potential reductions, the fees amount to about USD 700,000 per passage for a 20,000 TEU loaded ship. In addition to this amount, there are insurance premiums that may be increased to cover the risks associated with the passage of the straits. This is particularly salient with piracy in the Strait of Malacca and off the coast of Somalia, or with political instability in the Strait of Hormuz. In the summer of 2019, the insurance of ships sailing in Gulf and Omani waters increased by an average of USD 35 per TEU carried in response to attacks around the strait.

As an obligatory point of passage at the junction of maritime routes, the strait also offers shipowners a space adapted to the organisation of their transhipment activities. It should be noted here that shipping companies organise the regional distribution of goods according to a model that could be described as polycentric *hub and spoke*. Long-distance shipping lines make port in several major harbours in the regions they connect. Distribution to secondary ports is organised from these hubs by smaller vessels. This last activity is sometimes subcontracted to regional and/or specialised operators. Yet, as we shall see below, the basic trend in recent decades has been for the largest shipping lines to concentrate the entire chain.

Ports located in the immediate vicinity of the straits are very valuable for the optimisation of such networks. The transhipment of goods from such ports ensures a minimum deviation from the route of long-distance ships while maximising the possibilities of redistribution in the areas linked by the strait. The case of the Indian Ocean zone perfectly illustrates this calculation. The ports of Singapore (37.1 million TEU handled in 2019), Jebel Ali (14.1 million TEU) or Port Kelang (13.5 million TEU)¹⁷ are all located at the junction of straits. The most important ports of the region, ranked in the global top 13¹⁸, are all driven by a solid transhipment activity. As a logical consequence of the value of their geographical location, the ports of the straits attract investments

15. The Singapore - Rotterdam route is 8,400 nautical miles *via* Malacca and Bab el-Mandeb compared to 11,800 *via* Cape of Good Hope.

16. This is the average speed of the ships used on the Asia-Europe route.

17. Alphaliner Monthly Monitor, September 2020.

18. *Idem*.

from shipping companies. For the latter, it is a question of controlling strategic operations while minimizing their costs. For instance, we can note the participation of *Maersk* in the terminals of Tanjung Pelepas (Strait of Malacca), Salalah (proximity of Bab el-Mandeb) and Port-Saïd (Suez Canal), or of *Cosco* in the terminals of Singapore (Strait of Malacca), Abu Dhabi (Strait of Hormuz) and Port-Saïd.

Blocking the Straits: What Impacts for the Shipowner?

In the framework of the reflection carried out between 2018 and 2019 under the aegis of COMFOR UAE/ALINDIEN, a seemingly simple question was submitted to us. How would the closure of one or more commonly used straits impact container shipowners? The answer is that there are many possible blockage scenarios. Given the various constraints that shipowners face, multiple solutions of adaptation have been explored. In addition to the immediate effect of the closure of a strait on the logistics of a shipping company, there would be indirect consequences such as the increase in the price of hydrocarbons, whose supply circuits could be disrupted. Rather than listing all potential scenarios, we will concentrate on two cases that, in our view, shed light on this question.

Firstly, the evolution of the economic model of companies in the sector has greatly impacted their capacity to adapt to exogenous shocks. Over the last ten years, container shipowners have undertaken a twofold movement of concentration and diversification of their activities. Following the 2008 crisis, the world fleet suffered from overcapacity and created conditions favourable to sustained dynamics of mergers and acquisitions. Four of the world's top six shipowners have thus made major acquisitions since 2015: *CMA CGM* with the takeover of *APL* in 2016, *Maersk* with the takeover of *Hamburg Süd*, and *Hapag-Lloyd* with the takeover of *UASC* in 2017, *Cosco* with the takeover of *OOCL* in 2018.

In April 2018, another actor was born with the creation of *ONE* (the sixth largest shipowner in the world), a merger of three Japanese shipowners (*K-Line*, *NYK* and *MOL*). By operating fleets on all the main international trade routes, these players concentrated between 6.4% and 16.8% of the world market.¹⁹

19. Alphaliner Monthly Monitor, *ibid.*

In parallel with these acquisitions, the market has been structured since 2015 into three major operational alliances controlling 81% of global capacity.²⁰ The impact of the systemic importance of such players should be raised. To stick to our subject, it must be noted that the distribution of fleets over multiple routes and their pooling within alliances reduces shipowners risk exposure.

This reduces the financial impact of a traffic disruption in a strait. Another underlying trend is the diversification of shipping companies' activities. Shipowners have eagerly invested in port terminals as a logical complement to transport. In 2019, terminals generated 9.5% of *Maersk's* turnover.²¹ However, 6 out of 8 terminals in the Indian Ocean where the company invested are located near straits. Without going so far as to jeopardise the financial health of the shipowner, these assets would obviously be exposed in the event of disruption of the routes feeding their traffic. The situation is less clear-cut with regard to the freight forwarding activities developed by some shipowners, such as *CMA CGM via CEVA* or *Maersk via DAMCO*²². By extending transit time by sea or reducing the supply of space on a route, a disruption of maritime traffic could even represent an opportunity for these logistics solution integrators. A drop in sales of sea freight would thus potentially be offset by an increase in sales of air, road, or rail freight, all of which are more profitable per tonne per kilometre. Concentration and diversification would therefore tend to make shipowners more resilient to the shock of a strait closure.

This increased resilience would not, however, exempt shipowners from having to make major adjustments to the organisation of their fleets in the event of a closure of straits such as Malacca or Bab el-Mandeb. Any attempt to estimate the financial impact would be futile. The volatility of certain parameters (oil prices, state of demand, charter market) and the multiplicity of possible scenarios would not allow it. We will therefore limit ourselves to stressing that although this impact could prove significant, shipowners would nevertheless be able to limit its effects by deploying their ships on alternative routes. In the theoretical situation of a closure of the Straits of Malacca and Bab el-Mandeb, the Asia-Europe route could, for example, be redirected via the Indonesian straits (Sunda, Lombok, etc.) and the Cape of Good Hope. Recent events provide an illustration of this. At the height of the European wave of COVID-19 in

20. 2M (*Maersk, MSC*), Ocean Alliance (*CMA CGM, Cosco, Evergreen*) and The Alliance (*ONE, Hapag-Lloyd, Yang Ming, HMM*).

21. *Maersk*, Annual Report 2019.

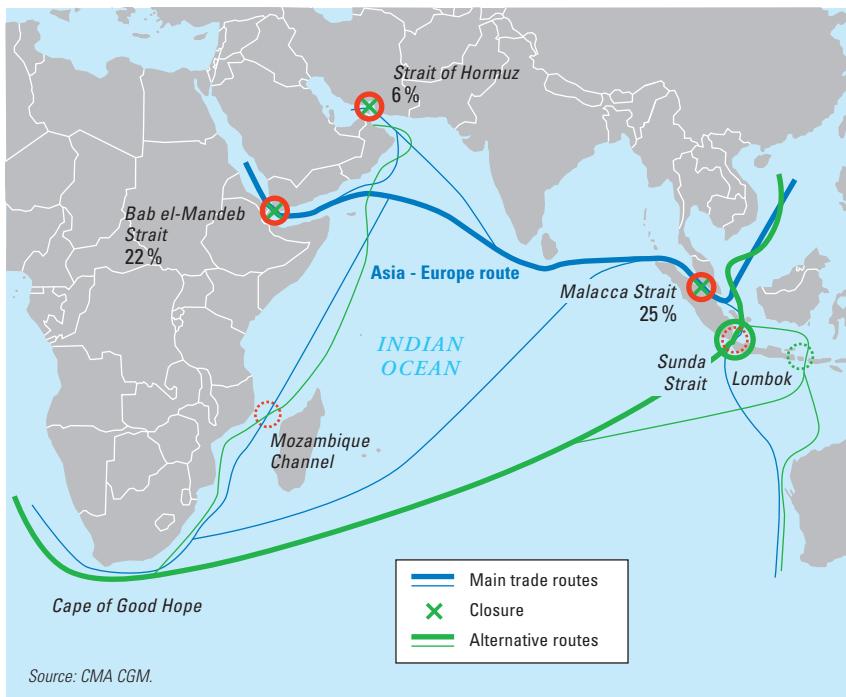
22. Integrated in 2020 under the *Maersk* brand.



The vessel *CMA CGM Kerguelen*. © CMA CGM.

the spring of 2020, the fall in oil prices and the drop in demand for maritime freight pushed some shipowners to reroute their vessels. This was the case for the *CMA CGM Alexander von Humboldt* (16,020 TEU) which left Algeciras on 27 March to reach Port Kelang *via* the Cape of Good Hope on 21 April or, in the opposite direction, the *CMA CGM Chile* (15,052 TEU) which left Singapore on 29 March to reach Le Havre *via* the same route on 24 April.

Figure 2. Containerised cargo flows and concentration by strait



The calculation is simple. On the one hand, savings linked with Suez Canal passage fees. On the other hand, to limit the impact of the lengthening of the route on the transit time, an increase in the speed of the ships (15 to 17 knots). This implies an increase in their consumption, which is then compensated for by the reduction in bunkering costs. In the light of this example, it is easy to understand the range of possibilities open to shipowners when deploying their vessels on a longer route. Increasing speed to maintain a constant port of call frequency and transit time with an equal number of ships. Maintaining speed and increasing the number of vessels to maintain a constant port of calls

frequency despite a degraded transit time. Maintaining speed with a constant number of ships and accepting a deterioration in the frequency of port of calls and transit time. The choice between these three options and their range of intermediate solutions will be dictated in particular by the price of oil, the rate of utilisation of the world fleet, and the freight market demand. In conclusion, it must be said that these last remarks do not apply to the Strait of Hormuz. Its closure would represent a real logistical headache. The problem has become more acute since the 2019 summer crisis. Experience invites us to imagine scenarios involving the closure of shipping lanes to the Emirati and even Omani coasts of the Indian Ocean. The expansion projects of the Emirati and Saudi rail networks now seem all the more strategic.

THREE STRAITS: LEGAL PERSPECTIVES

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“The country that controls Bahrain, Oman, and Yemen controls the world.”
Scylax of Caryanda, Greek advisor to the Persian king Darius I

“Whoever becomes lord of Malacca has Venice by the throat.”
Tomas Pires, Portuguese apothecary who stayed in Malacca from 1512 to 1515

On 4 January 2021, the South Korean chemical tanker *Hankuk Chemi* was intercepted in the Strait of Hormuz by the Iranian Islamic Revolutionary Guard Corps (IRGCN) Navy. Using allegations of maritime pollution as an excuse, a dispute over the freezing of Iranian bank assets by Seoul developed. On 14 December 2020, not far from the Bab el-Mandeb Strait, the Singaporean oil tanker *BW Rhine* was the target of what appeared to be a terrorist attack. On 9 May 2020, five pirates boarded the bulk carrier *Vega Aquarius* off Pulau Nongsa in the Singapore Strait.

Navigation in the major international straits is subject to impediments that raise legal issues. These impediments concern both private and public actors, as evidenced by the most recent incidents between states in the Taiwan Strait in the South China Sea and the Kerch Strait in the Sea of Azov.

The three international straits of Bab el-Mandeb, Hormuz, and Malacca are vital gateways to the Indian Ocean for world trade. These vital sea lanes of communication are sensitive chokepoints in terms of political and sovereignty issues for the littoral states and users.

The nature of their legal status is decisive for those who pass through them, commercial ships or state warships alike. Much is also at stake concerning air traffic, or the passage of submarines and transoceanic submarine cables.

Narrow Shipping Corridors

Straits have haunted our imagination ever since the myths of Charybdis and Scylla, when they were passed through by Ulysses, Aeneas, and the Argonauts. As a crossroads between marine and terrestrial territories, straits are hubs of activities: places of passage for some and borders for others. Their control by the inhabitants makes them “gates” or “bridges”. Depending on the circumstances, they can be opened or closed, which has an impact on human activities.

The French word “*détroit*”, which means “strait”, comes from the Latin “*discritus*”, past participle of “*distringuer*” meaning “narrowed” or “bound on one side and on the other”. In the 14th century, French referred to it as “*esitreit*” or “*estrait*” and in the 16th century “*destroict*” is defined as a “narrow passage”. According to the dictionary of the French Academy, it is a “natural passage between two lands through which two marine areas communicate”. According to the *Littré*²³, it is a “narrow arm of the sea between two continents, between an island and the continent, between two islands far from each other”. The English expression “strait” comes from the old French word “*estrait*” and has not been linked to the roots of the word “*narrow*” from the Frisian “*naru*”.

In practice and depending on the language, many of these passages are not referred to as “straits” but for example as “*pas*” (*pas de Calais*, or Strait of Dover), “*passages*” (Canadian Northwest Passage), and also as “*kanal*” (channel), or “*bælt*” (belt) in Danish, “*proliv*” in Russian, “*kaikyo*” in Japanese, “*selat*” in Malay, and “*bab*” (door) in Arabic.

For the jurist Gidel, it is a “narrow maritime passage between two lands”.

Sovereignty and Freedom of Navigation

Technically, straits are a restricted maritime threshold appropriated by the riparian states according to the equidistance sharing rule (median line). Geographically, they are a natural or artificial arm of the sea squeezed between two coasts, allowing the connection of two maritime spaces.

Such a passage may be unavoidable, especially if it constitutes a shorter route to connect two open or closed bodies of water. The location may be suitable for building a bridge between the two opposite shores. The riparian states are naturally tempted to exercise their sovereignty by offering more or less freedom to cross.

In terms of maritime navigation, there are two categories of rights: those relating to freedom of navigation and those relating to the sovereignty of coastal states.

23. [Translator's note] The Dictionnaire de la langue française by Émile Littré, commonly called the Littré, is a four-volume dictionary of the French language.

Hugo de Groot, known as Grotius, one of the fathers of public international law and promoter of Vitoria's "*mare liberum*" (freedom of the seas) theory, applied the latter in a case concerning a strait. On 25 February 1603, the Portuguese galleon *Santa Catarina* was seized by the Dutch admiral Jacob van Heemskerk in the Singapore Strait off Changi. Grotius invoked the principle of freedom of the seas in this case to justify an attack on navigation in the straits. In fact, the aim was to put an end to the Portuguese monopoly on freedom of navigation by applying a reverse policy to their benefit, known as "*mare clausum*".

Freedom of Innocent Passage

To understand the current legal situation of the straits, one must go back to a more recent time and a decision of the International Court of Justice known as the *Corfu Channel case of 4 April 1949* in a dispute between the United Kingdom and Albania. In 1946, British warships had been damaged and suffered casualties after hitting mines in Albanian waters. In this decision, the Court recognised as customary international law the freedom of a state, in times of peace and without requiring the prior authorisation of the coastal state, to transit its ships harmlessly through straits used for international navigation.

For the Court, the strait must connect two parts of the high seas for the purposes of international navigation and for a route which, even if it is not the only one possible, is useful for international traffic. The condition for this freedom is innocent passage, a notion whose interpretation will naturally become controversial in the case of warships.

A Law of the Sea Issue

The codification of customary international law of the sea took shape through the work of the United Nations Conferences on the Law of the Sea (UNCLOS). The first UNCLOS was held in Geneva between 1956 and 1958 and was quite successful, resulting in four international conventions. The convention on the territorial sea and the contiguous zone, with regard to straits, took up the principles adopted by the Corfu Channel case. This added to the definition of international straits the connection between the high seas and the territorial sea of a foreign state in order to take account of the situation of the Straits of Tiran. The second UNCLOS, which began in 1960, did not result in any

major changes. It was not until the work of the third UNCLOS, led by a Maltese, Arvid Pardo, and a Sri Lankan, Hamilton Shirley Amerasinghe, that the international law of the sea applicable to straits was codified as it stands today. The third UNCLOS led to the adoption in Jamaica of the 1982 Montego Bay Convention (MBC), which entered into force on 16 November 1994.

The legal concept of a strait is restricted and has only emerged to resolve functional navigational issues in an international context:

- Article 16.4 of the 1958 Geneva Convention on the Territorial Sea deals with “*straits which are used for international navigation between one part of the high seas and another part of the high seas or the territorial sea of a foreign state*”;
- Article 37 of the MBCMBC refers to “*straits which are used for international navigation between one part of the high seas or an exclusive economic zone and another part of the high seas or an exclusive economic zone*”.

There are an estimated 265 international straits in the world. Only 101 of these straits are said to have become international straits within the meaning of the MBC. The MBC has so far been ratified by 168 states, but not by the United States of America (USA), which accepts and claims most of the customary rules.

From Innocent Passage to Transit Passage

The coastal state shall not, under Article 24 of the MBC, “*hamper the innocent passage of foreign ships through its territorial sea except in accordance with this Convention*”. Innocent passage is passage that does not prejudice the peace, good order, or security of the coastal state. The MBC provides for the conditions of intervention by the coastal state in this respect. However, in these exceptional cases, the coastal state must not “*impose requirements on foreign ships which have the practical effect of denying or impairing the right of innocent passage*” (MBC Art. 24.1.a). Freedom of passage through territorial seas in international straits takes on a special meaning because of the often unavoidable nature of such passage. Discussions on this point were one of the issues at stake in the third UNCLOS, which extended the territorial sea from 3 to 12 nautical miles. As a result, a large number of international straits, which were less than 24 nautical miles wide, came under the territorial sea regime. The counterpart to this extension in favour of coastal states was the creation of a new regime specific

to straits and favourable to users of straits, that of transit passage. This regime provides, under Article 38 of the MBC, unhindered freedom of navigation and overflight for the sole purpose of continuous and expeditious transit through the straits. No activities other than transit passage are permitted and coastal states have the possibility to regulate the safety of the passage and their legitimate interests. According to Article 42 of the MBC, the laws and regulations of coastal states “*shall not discriminate in form or in fact among foreign ships or in their application have the practical effect of denying, hampering or impairing the right of transit passage*”.

Categories of Straits According to the MBC

The provisions of the MBC distinguish five main categories of straits:

- those that remain governed by a specific international convention (e.g. the 1936 Treaty of Montreux concerning the Bosphorus and the Dardanelles);
- those with a navigation corridor in international waters for which the passage through adjacent territorial waters is subject to innocent passage (e.g. the Florida-Cuba Strait);
- those between an island and the main territory of a state that are subject to innocent passage without hindrance (e.g. the Strait of Messina);
- straits connecting part of the high seas or an exclusive economic zone with the territorial sea of another state which are subject to innocent passage without interference (e.g. the Straits of Tiran);
- and finally, those subject to the new regime of transit passage with a geographical criterion: “*straits between one part of the high seas or an exclusive economic zone and another part of the high seas or an exclusive economic zone*”, and a functional criterion: “*which are used for international navigation*”.

This last category, transit passage, is a creation of the MBC which is not accepted as an international custom by all. Some states have not ratified the MBC and not all of those that have ratified recognise the customary character of its new provisions, which are not based on long-standing practice. Some states bordering straits only recognise innocent passage through their territorial part.

They are sometimes still party to the 1958 Geneva Convention on the Territorial Sea and the Contiguous Zone and/or have legislated internally at the national level on passage through their territorial sea. Neither the USA nor the Islamic Republic of Iran (Iran), which frequently clash in the Strait of Hormuz, have ratified the MBC and both have their own interpretation of what constitutes international custom in straits. Some seek to impose transit passage, whereas others, while not outrightly opposing it, harass ships to remind their non-recognition of this right and claim that warships must obtain prior authorisation for harmless passage to apply.

The Issue of Authorisations and/or Prior Notification of Passage

The negotiation of the MBC by the principle of consensus and according to the “package” method made possible a treaty reform that also had the ambition to become customary. Some thirty states, including some bordering straits, did not fail to formulate reservations concerning the possibility of harmless passage or transit of warships through the straits that concern them. The concept of innocent passage in territorial waters does not discriminate among warships and civilian vessels and does not consider the former as potentially “offensive” in nature. A majority of states therefore accept the interpretation underlying the text of the MBC, as summarised by Sweden in an objection to reservations made by Ecuador: *“No vessels or aircraft need to notify or seek prior authorisation from the coastal state when exercising its right under the principle of the freedom of the high seas [...] in accordance with UNCLOS”*. Passage under the transit status negotiated under the MBC was not conceived as requiring prior permission or notification. Faced with this situation, the two great post-war powers, the USA and the Union of Soviet Socialist Republics (USSR) had a converging interest in defining a doctrine on innocent passage in the territorial sea in general. On straits, there was the issue of the Bering Strait, which separates them by the “ice curtain”. There were also broader issues of international power in other major straits. A year before reaching an agreement on the Bering Strait, the USA and the USSR formulated a joint declaration on 23 September 1989, known as the *Jackson Hole Declaration*, which was named after the place where it was proclaimed, in Wyoming. This *US/USSR Joint Statement on Uniform Acceptance of Rules of International Law Governing Innocent Passage* refers to Article 19 of the MBC on the definition of innocent passage. It states that ships of all types benefit from innocent passage without any prior notification or authorisation from the coastal state. It also claims that a state which disputes innocent passage must inform the ship of this and give reasons

for its decision to allow the ship to clarify its position. The declaration considers that national laws should only be applied within the framework of international obligations (e.g. organisation of traffic separation schemes).

The Affirmation and Maintenance of Custom Through Practice

As everyone knows, when one benefits from an easement under common law, it is advisable to claim and use it in order not to lose it over time through usucaption. In international law, the same applies to the maintenance of a customary easement. In the world, only the USA has a specific programme dedicated to maintaining and sustaining freedom of navigation (FON). Created in 1979, this programme aims to challenge the unilateral acts of other states to restrict freedom of navigation. Since 1983, following the signing and ratification of the MBC, the USA has included in the definition of its public policy for the oceans a willingness to exercise and enforce rights and freedoms for the use of the sea that is compatible with the balance of interests reflected in the MBC. The USA considers excessive the claims of other states that are incompatible with the international law of the sea by infringing on the rights and freedoms of its use, including the overlying airspace.

The FON programme has two parts:

- the diplomatic part, with diplomatic consultations and statements by the Department of State;
- the military part, with operations planned, beforehand approved, and then implemented. An annual report is produced. The latest available one is for the 2018-2019 financial year, during which 22 states' claims deemed excessive were subject to FONOP challenge operations.

While a significant proportion of these operations target China, some actions also target the straits of interest to us:

- Hormuz: with Iran for its contested straight baselines and restrictions on transit passage through the strait, as well as the Sultanate of Oman (Oman) for its excessive demand for innocent passages through the Strait of Hormuz;
- Bab el-Mandeb: with Yemen for the request of prior authorisation of passage for warships in its territorial sea.

Although they do not have a specific dedicated programme, other states such as France and the United Kingdom regularly conduct operations with the same purpose. For example, in the case of France, the *Vendémiaire* made a free passage through the Taiwan Strait in early April 2019. Following the incident that this passage provoked with China, France reaffirmed, in the words of its Minister of the Armed Forces “*its attachment to the freedom of navigation, in accordance with the law of the sea*”. The French Navy also regularly crosses the Straits of Hormuz and Bab el-Mandeb, affirming its conception of freedom of navigation by reference to the law of the sea. France has also played a major role in the implementation of the European Maritime Surveillance Initiative in the Strait of Hormuz (EMASOH) and its military component the Agénor operation from its base in Abu Dhabi, United Arab Emirates (UAE).

Bab El-Mandeb: Between the Red Sea and the Indian Ocean

Bab el-Mandeb or “Gate of Tears” is the name given to the 29-kilometre wide strait where the passage between the Red Sea and the Indian Ocean is located. Legend has it that this name was given in reference to the complaints of those who drowned there during the tectonic separation of Africa and Asia. Located between the coasts of Djibouti and Eritrea, on the African continent and the Yemeni coast on the Arabian Peninsula, the narrowest point lies between Ras Siyan in Djibouti and Perim Island in Yemen. There is also a smaller strait between this island and the Yemeni coast, the Alexander Strait, which is a coastal strait not used for international navigation.

The volcanic islet of Perim has always been the real control point of the strait. In 1513, the Portuguese admiral Afonso de Albuquerque considered building a fortress there, but decided against it because of the hostile nature of the area.

In 1799, a British regiment led by Murray for the British India Company considered the same project before abandoning it for the same reasons. The British returned in 1857 to take possession of the island before the French. Ceded to the Republic of South Yemen in 1967, the islet saw a first attempt at occupation in order to block passage through the strait. A faction of the National Liberation Front of Yemen tried, without success, to prevent the passage of Israeli oil tankers. It was the Egyptians who, in October 1973 during the Yom Kippur War, provided the necessary assistance to block these same oil



The Bab el-Mandeb Strait. © *eol.jsc.nasa.gov*.

tankers. The island did not re-emerge at the centre of regional issues until 2015, at the beginning of the current civil war in Yemen. Initially taken by the Houthi rebels, the islet was recaptured with the help of the United Arab Emirates (UAE) before being controlled by the Saudi-Emirati coalition.

In 2008, a Saudi businessman operating from Dubai in the UAE, a half-brother of Osama Bin Laden, planned to build a bridge between Perim and Djibouti with the agreement of the coastal authorities. The first phase of the so-called “Bridge of the Horns” (of Africa and Arabia) was to begin in 2010. The project, which included the construction of a new city on each side, never saw the light of day. The crossing of the strait is continuously busy with trade and migration in both directions. Rimbaud, Monfreid, London, and Kessel already witnessed this in their time.

Perim and Ras Siyan are separated by about 25 kilometres/16 nautical miles, and a maximum depth of about 300 metres. Despite its strong currents and coastal reefs, described in numerous tales of shipwrecks, the strait itself does no longer present any particular danger to modern shipping. The narrow part of the strait extends into the Red Sea along the Eritrean coast.

Today, the passage in this strait is affected by two main dangers: political instability in Yemen which creates a permanent terrorist threat, and political instability in Somalia which periodically creates risks of piracy on the Indian Ocean side. Attacks or attempted attacks are regular, by mines, explosive boats, drones, or missiles. In addition to the very recent attacks near the strait in Saudi ports in the Red Sea, recent years have seen attacks on the USS *Cole* on 12 October 2000, on the French oil tanker *Limburg* on 6 October 2002, on the Emirati ship *Swift* on 1 October 2016, and on the Saudi oil tanker *Abqaiqas* in January 2020.

The MBC was signed on 10 December 1982 by the then “two” Yemen countries, the Yemen Arab Republic and the South Yemen Democratic Republic, before being ratified on 21 July 1997 by the country that had reunified in 1990. The Yemen Arab Republic had taken the reservation in 1982 that military vessels and aircraft had to obtain prior approval to enter its territorial waters. The People’s Democratic Republic of South Yemen also reserved in 1987 the application of its national legislation in force since 1967 by requiring prior authorisation for the entry or passage of foreign warships, submarines, nuclear-powered vessels or vessels carrying radioactive substances.

In 1991, Yemen passed Law No. 37 setting out its maritime territories. Its straight baselines were defined by Law No. 26 of 2014. On 12 April 2015, Yemen implemented a general ban on entering its territorial waters except with permission and inspection by the Saudi-Emirati coalition. *Bimco*, like most marine insurance associations, recommends that commercial vessels avoid all passage through Yemeni waters.

The Republic of Djibouti signed the MBC on 10 December 1982 and approved it on 11 June 1985 before ratifying it on 8 October 1991. There is no agreement on the delimitation of maritime territories between Yemen and Djibouti. Djibouti defined its maritime boundary by Law 52/AN78 of 9 January 1979, with the median line of the strait as a reference, as specified by Decree No. 85-048 of 5 May 1985. Djibouti's Decree No. 89-085/PR/PM regulating the passage of foreign ships through Djibouti's territorial waters does not specifically refer to the strait but applies to Djibouti's territorial sea by referring to the authorisation of innocent passage, taking the liberal approach of the MBC.

Eritrea, which has been independent from Ethiopia since 24 May 1993, is not located at the narrowest point of the strait between the African continent and Yemen, but at the exit of the strait on the side of the Red Sea. However, there are archipelagos in the middle of the strait, such as Hanish and Dahlac, which were the subject of international arbitration in December 1999 between Yemen and Eritrea.

Eritrea is neither a party to the MBC nor to the 1958 Geneva Convention, but has defined its territorial sea, by Proclamation No. 7 of September 1991, as 12 nautical miles in the revival of the Ethiopian Maritime Proclamation to the United Nations No. 137 of 1953, amended in 1956.

The three coastal countries of the Bab el-Mandeb Strait are members of the International Maritime Organisation (IMO), Djibouti and Yemen since 1979, Eritrea since 1993. In the framework of the 1972 International Regulations for Preventing Collisions at Sea (known as the COLREG Convention), which defines the "road rules" of international navigation, these three countries have set up traffic separation schemes in the strait and off the Hanish Islands at its exit under the aegis of the IMO. These two traffic lanes were supplemented on 3 August 2009 by the establishment of a recommended international transit corridor.

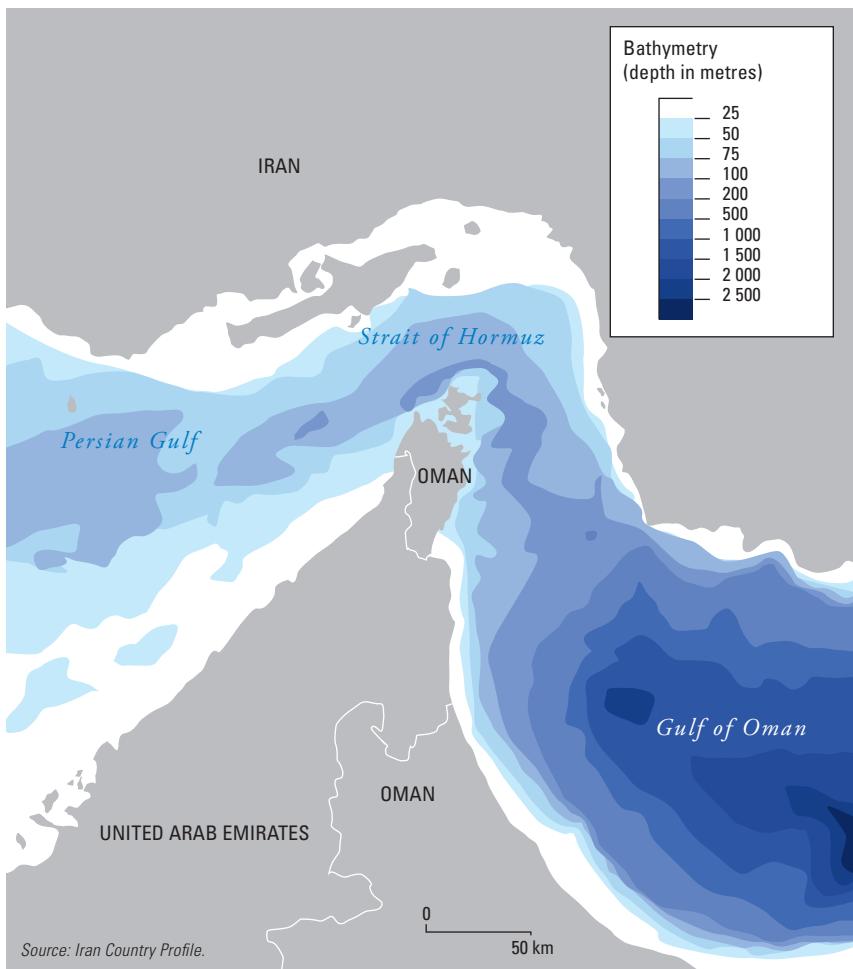
The Bab el-Mandeb Strait is thus marked by insecurity due to terrorism emanating from Yemen and insecurity created by piracy emanating from Somalia. This situation is tempered by the presence of various foreign military bases in the coastal state of Djibouti, which has traded in hosting these bases (notably the ones of China, the United States, France, Japan, Spain, Italy, and Saudi Arabia), not to mention the presence of the Saudi-Emirati coalition in Assab (Eritrea), and in Perim and Socotra (Yemen). The users from the maritime powers are thus in a position to impose their conception of passage through the strait (harmless without prior notification, or prior authorisation, or in transit).

Hormuz: Between the Persian Gulf and the Indian Ocean

The Strait of Hormuz, about 55 kilometres/30 nautical miles wide, is named after a very ancient trading and port city (Bandar-e-Hormoz) on the Iranian coast, near the present-day palm city of Minab. Two possible origins are attributed to this name, either the Zoroaster deity creator of good and chaser of evil Ahura Mazda (Hormazd) or the combination of two local dialect words, “*Hur*” and “*Mogh*”, one meaning “marsh” and the other “date palm”. This second explanation has the merit of fitting the situation since the Minab region is known for its palm groves and its river that flows into the strait. The name Hormuz is now associated with a small island known for its ochre off the coast of Minab. This strait is the gateway between the Gulf of Oman in the Indian Ocean and an enclosed sea, the Arabian Gulf (Gulf). The Gulf coastal states are Oman, UAE, Qatar, Kingdom of Bahrain, Kingdom of Saudi Arabia, Kuwait, Iraq, and Iran. Only Oman and Iran border the strait. Qatar, Bahrain, Kuwait, and Iraq have no other sea routes to the open sea than the strait. Iran, Oman, and the UAE have independent access to the Indian Ocean, and Saudi Arabia has an outlet to the Red Sea.

The strait was already a place of intense trade before the Common Era. There is evidence of trade between the Arab and Persian peoples and Asian countries before the Islamic era. Products from China are found at the fair of Batne, on the Euphrates, in the 4th century. Marco Polo visited Hormuz twice, in 1272 and 1293. The Portuguese settled in the area, followed by the Dutch and then the British. Local dialects such as Kumzari, spoken around the village of Kumzar in the northern Omani peninsula of Mussandam and as far away as the Emirati region of Ras el-Khaimah, are still said to be influenced by various languages including Arabic, Persian, Portuguese, and Dutch.

Bathymetry of the Strait of Hormuz



The Strait of Hormuz has become a focus of attention as about 30% of the world's oil traffic passes through it in a complex regional political environment. Of the two coastal states, Oman is a rather peaceful state and a peacemaker in the region. Its mediation is often required to bring together local actors who no longer speak to each other. The other coastal state, Iran, is a state caught up in various regional and international conflicts that everyone knows about, some of which are quite old. Throughout history, Iran has often threatened to close the Strait of Hormuz but has never carried out its threat.

However, Iran regularly sends signals about the possible exercise of its claimed sovereignty in the strait. Incidents with the US Navy, which we will not list, are regular. More often than not, the harassment is cleverly carried out under the protection of a legal cloak. The recent case of the Hankuk Chemi mentioned in the introduction is a case in point. The ship left the port of Al-Jubail in Saudi Arabia and was boarded by the Iranian authorities while transiting the strait on the grounds of “*repeated violation of marine environmental laws*”. Most observers saw this as an immediate retaliation to a seizure of Iranian bank assets by South Korea at the request of the US.

The strategic control of the strait is not new, the Portuguese understood this in 1553 when they prevented the capture of Hormuz and the control of the strait by the Ottoman fleet of Admiral Ahmed Muhiddin Piri Reis. The recapture of the fortress of Hormuz in 1622 by the Persians, assisted by the English, as well as the important battle of 1625 in the strait, which pitted the Portuguese against the English and the Dutch, all bear witness to the strategic importance of the place. To return to more recent times, Iran was already threatening to close the strait during the Iran-Iraq war between 1980 and 1988. In 2012, when the first Western sanctions against Iran’s nuclear programme were imposed, the threat resurfaced and is still regularly heard since then. The idea of being able to bypass the strait naturally sprang to mind for those who depend on it. Qatar has considered developing *pipelines* to the west to export its gas. Since 2006, the UAE has been considering the construction of a 360-kilometre *pipeline* between Habshan, on the Arabian Gulf coast, and Fujairah on the Indian Ocean side of the country, at the exit of the strait. The latter has been built and became operational in the summer of 2012. However, the limits of such a bypass have recently been seen in the face of the tumultuous neighbour’s ambitions: “*unofficially attributed*” attacks took place on 12 May 2019 against four ships anchored off Fujairah and then, on 13 June 2019, against two ships leaving the strait and continuing their route towards the Gulf of Oman.

Oman signed the MBC on 1 July 1983 and ratified it on 17 August 1989. Its territorial sea had already been fixed at 12 nautical miles by a decree of 7 July 1972, supplemented by another decree of 17 July of the same year defining the applicable straight baselines. This was further clarified by Royal Decree No. 15/81 of 10 February 1981. Article 1 of the Law of 7 July 1972 states that the Sultanate exercises its sovereignty “*in harmony with the innocent passage of ships and aircraft of other states in international straits*”. In its second declaration on the territorial sea and the passage of warships through Omani territorial waters, it states:

“Warships shall enjoy the right of innocent passage through Omani territorial waters subject to prior permission. Submarines shall also enjoy this right provided that they sail on the surface and fly the flag of the state”. The only border demarcation agreement between Oman and Iran dates from 1974. It was completed in 2015 but only covers the delimitation of their respective continental shelves.

Iran has signed but not ratified the MBC. Iran had also signed but not ratified the 1958 Geneva Convention on the Territorial Sea and the Contiguous Zone. Iran has a domestic law of 2 May 1993 on the “maritime territories of the Islamic Republic of Iran in the Persian Gulf and Gulf of Oman”. This sets the territorial sea at 12 nautical miles. One of the problems here is that the straight baselines set by Iran in 1973 are contested as going beyond the customary or conventional rules defining them. The 1993 law recognises the principle of innocent passage (Art. 5) by determining which activities would not be innocent (Art. 6). Article 9 creates an exception to the rule for the passage of warships, submarines, and vessels with nuclear propulsion or carrying toxic substances, which are subject to prior authorisation. Submarines must sail on the surface and fly their flags.

Neither the Strait of Hormuz nor the Gulf are very deep. This does not prevent foreign submarines from diving under the transit regime, even though it causes sometimes some incidents because of the shallow waters. For example, on 8 January 2007, the American nuclear submarine USS *Newport* collided with the Japanese oil tanker *Mogamigawa* as a result of a Venturi phenomenon which caused the submarine to stick onto the tanker which was sailing above it. On 20 March 2009, the US submarine USS *Hardford*, sailing below the surface, collided with the US amphibious ship USS *New Orleans*. Neither incident resulted in major damage to property or the environment. This type of underwater navigation in the strait is possible under the MBC transit regime but not under the innocent passage regime or Iranian law.

Iran’s interpretation of the application of the MBC is as follows: *“Notwithstanding the intended character of the Convention being one of general application and of law make nature, certain of its provisions are merely product of quid pro quo which do not necessarily purport to codify the existing customs or established practice regarded as having an obligatory character. Therefore it seems naturel and in harmony with Article 34 of the 1969 Vienna Convention on the Law of Treaties, that only states parties to the Law of the Sea Convention shall be entitled to benefit from the contractual rights created therein. The above considerations pertain specifically (but*

not exclusively) to the following: the right of transit passage through straits used for international navigation (Part III, Section 2, article 38)."

Iran concludes that "*In the light of customary international law, the provisions of Article 21, read in association with Article 19 (on the Meaning of Innocent Passage) and Article 25 (on the Rights of Protection of the Coastal States) recognise (though implicitly) the rights of coastal states to take measures to safeguard their security interests including the adoption of laws and regulations regarding, inter alia, the requirements of prior authorisation for warships willing to exercise the right of innocent passage through the territorial sea".*

Some authors contest that the right of transit passage is the regime applicable in the Strait of Hormuz, but temper this comment with the observation that passage through the strait *via* the traffic separation scheme set up under the aegis of the IMO takes place in the Omani territorial waters. In practice, however, all those who frequent the strait know that the Iranian authorities frequently harass ships passing through the system.

Although not directly bordering the narrow part of the strait, the UAE has a territorial dispute with Iran on the Gulf side near the strait. This dispute concerns three islands, Greater and Lesser Tunbs, and Abu Musa, which are located between the Northern Emirates of the UAE (Sharjah and Ras Al Khaimah) and Iran, in the middle of the traffic routes in and out of the strait. This ancient dispute is complex because of the local history and the fact that the same clan of the Bani Ghule tribe, the Qassimi, has members on both countries' shores. Without going into the details of this dispute, the current situation came into being on 29-30 November 1971, when Iran took control of the three islands just before the end of the British protectorate over the Omani Trucial States that would become the UAE. Various attempts at bilateral negotiations or mediation and even the possibility of taking the case to the International Court of Justice have failed. The stakes are twofold: the control of navigation, and the exploitation of subsoil resources. In January 2014, it was reported in the press that an agreement had been reached between Iran and the UAE through Oman. The announcement referred to an agreement to transfer sovereignty to the UAE over the territory of the Greater and Lesser Tunbs Islands, with the adjacent seabed reverting to Iran. The situation of Abu Musa remained to be defined, as well as the possibility of Oman granting an Iranian presence in Omani Mussandam in exchange for the construction of a *pipeline* between Oman and Iran for the supply of gas. No further news has emerged since then.

In 2021, the strait remains a place where foreign powers attempt to impose the right of transit or innocent passage without notification or permission while Iran continues to assert its national right through demonstrations, harassment and threats. Meanwhile, the dhow trade between the two shores and clandestine traffic by fast skiff continue to unfold. The latter bring goats from Iran to the Omani Mussandam for the Emirati market before taking consumer goods purchased in Oman or the UAE back to Iran.

Malacca and Singapore: Between the China Sea and the Indian Ocean

The Straits of Malacca and Singapore are really the same when considering international traffic. It is the busiest strait in the world. Nearly 100,000 ships pass through it annually, which is just a little less than Hormuz in terms of volume and number of tankers but much more than the rest of the conventional traffic. It is above all the obligatory passage for destinations outside the Pacific which are still difficult to reach by the new northern route. Flows through this strait can only develop insofar as today 17 of the 20 largest world ports are in Asia: 14 in China (including Hong Kong), Singapore, as well as Busan and Gwangyang in South Korea. According to UNCTAD, more than half of the world's maritime trade passes through the strait. It has a total length of nearly 1,000 kilometres, if we consider the two successive straits, an average depth of 25 metres and a width ranging between 1.5 to 225 nautical miles. The area has become a place which, beyond the strategic and security issues, imposes more controlled regulation of traffic than Bab el-Mandeb and Hormuz for obvious reasons of access capacity, safety of navigation, and environmental protection.

Around 1400, Parameswara, the last king of Singapore, founded the city of Malacca. According to a disputed legend, the name Malacca comes from a tree (the melaka tree). This oldest port in Malaysia gave its name to the sultanate that was established there. The city of Malacca is now the capital of one of the thirteen states of the Federation of Malaysia that bears the same name. The port of Malacca played an important role in the trade from India and the Arab-Persian region to China. Muslim traders used the area as a transhipment point between these two worlds. Conquered in 1511 by the Portuguese, then by the Dutch in 1641, it came under British control in 1824 until decolonisation in the 1960s.

The strait, which connects the South China Sea to the Indian Ocean, has been the object of several appropriation attempts throughout history. The most recent

are those of the two riparian states since their independence, Indonesia and Malaysia. Geographically, it follows on from the Singapore Strait, of which it is merely a continuation. The Strait of Malacca cannot be considered without the Strait of Singapore because the shallow depth of the latter determines the draught for the passage (22 metres).

The strait remains today the shortest route to connect, *via* the South China Sea, the Pacific and Indian Oceans. The routes through the Karimata and Sunda Straits (adding 1,600 kilometres/1 to 2 days of sailing) or Lombok (adding more than 2,300 kilometres/3 to 4 days of sailing) are much longer and have other navigation constraints. The only possibility of avoiding this passage and shortening the journeys lies in a project dating back to the 17th century which failed to materialise : the construction of a channel crossing and cutting Thailand between the Andaman Sea and the Gulf of Thailand. Known as the “Kra Canal” because of the location of a first project, it is now called *Khlong Thai* (Thai Canal), with its location changing between Kra (a 96-km canal) and a more southern location between Krabi and Trang (a 120-km canal). The canal would avoid 1,200 kilometres of navigation *via* the Strait of Malacca, or one or two days of navigation. China has recently revived this project for its new Maritime Silk Routes, but Thailand, concerned about its independence, buried the project again in September 2020. This project would also create an artificial border with three southern Thai provinces, which raises internal political concerns. Finally, Singapore, which derives most of its activity from its presence at the entrance to the strait, views the project with a bad eye. For the anecdote, the Frenchman Marie-Charles David de Mayrena, who in 1888 proclaimed himself Marie 1, King of the Sedangs, imagined in 1890 to sell shares of a company to build a canal through the isthmus of Kra.

The littoral states of the Straits of Malacca and Singapore are Indonesia, Malaysia, and Singapore. Since their independence, these states have made national claims to the straits. Following the 1958 Geneva Convention on the Territorial Sea and the Contiguous Zone, the Indonesian and Malaysian governments extended the limit of their territorial waters to 12 nautical miles. The narrowest part of the Strait of Malacca was thus covered by the national waters of both countries, threatening free maritime traffic.

On 27 October 1969, the two countries signed an agreement on the delimitation of their respective continental shelves. On 17 March 1970 they concluded a treaty on the delimitation of their territorial sea in the strait. On 25 May 1973,

an agreement was concluded between Singapore and Indonesia on the delimitation of their territorial sea in the Straits of Singapore and Johor. On 10 March 2009, a new treaty between the two countries was signed to deal with the western part of the Strait of Singapore. Singapore and Malaysia have an agreement between them dating back to 1927 on the delimitation of territorial waters in the Strait of Johor, and a 2005 agreement on Singapore's artificial offshore extensions in this strait. On 28 May 2018, the International Court of Justice also ruled on the fate of Pedra Branca ("white rock" in Portuguese), a small island at the entrance to the Strait of Singapore.

On 16 November 1971, the Malaysian and Indonesian governments had jointly declared that the Strait of Malacca was not an international strait, but that they allowed foreign ships to pass through under the principle of innocent passage. Singapore took note of this decision but did not associate itself with it. The desire of the littoral states to control the strait has been tempered by the USA, which has notably pressured Indonesia to commit to freedom of navigation in the strait and on the routes through its archipelagic waters.

Singapore, Indonesia, and Malaysia signed the MBC on 10 December 1982. Indonesia ratified it on 3 February 1986, Singapore on 17 November 1994, and Malaysia on 14 October 1996. In 2005, the states bordering the straits met in the port of Batam in Indonesia to formulate three declarations:

- the recognition of the sovereignty of coastal states;
- the willingness to be consistent with the MBC;
- and the tripartite organisation of a system of patrols and information exchange.

There is a threat of local robbery in the strait, but this rarely occurs outside territorial waters. There is also a terrorist threat from local Islamist groups linked to international groups. The situation evolves according to the economic and political crises that can affect the populations of the region. A peak in violence was experienced in 2005, when the *Lloyd Market Association* classified the area as a war risk, forcing the Secretary General of the International Maritime Organisation to convene a meeting in Jakarta.

The traffic separation scheme for the Straits of Malacca and Singapore was adopted by Maritime Safety Committee No. 69 of 1998 in accordance with

IMO Resolution A.858(20). The circumstances of navigation in the strait have given the name of the latter to a class of ship known as “Malaccamax”, which is mainly used as a reference for supertankers carrying oil from the Persian Gulf to China. The “Chinamax” and “Cape Size” cannot sail through it. In this architectural class, a ship is no more than 333 metres long, 60 metres wide, 20.5 metres draught, and a maximum of 300,000 tonnes deadweight.

The challenges of maintaining the safety and security of navigation in the strait have a certain cost for the riparian states. In 2006, the latter were tempted to implement a toll as the Portuguese had done in the 16th century, but this would have been another form of hindrance to the freedom of navigation in the strait.

The issue of safety and security in the strait has not been a concern only for the littoral states. Japan, a user state for its energy supplies, became aware of its dependence on the strait very early on. This encouraged the island nation to help littoral states as early as 1969 by setting up the Japan Strait of Malacca Council in Japan. This council financed, through cooperation projects, the installation and maintenance of buoys, the conduct of joint hydrological studies, the removal of wrecks, the dredging of the strait, the financing of service vessels, and the creation of dedicated funds. In 1971, the riparian states themselves organised their cooperation and formalised it in 1977 by setting up a tripartite group of experts responsible for their cooperation and relations with the IMO and users. Following the events of 11 September 2001, the tripartite technical group, the users of the strait, and the IMO set up an institutionalised “cooperation group” with a secretariat in Port Kelang, Malaysia. This group is at the origin of the “Straitrep” vessel tracking system. Also noteworthy is Japan’s initiative to set up a regional maritime security body for combating piracy and armed robbery against ships in Asia (ReCAAP), adopted on 11 November 2004 in Tokyo. ReCAPP came into force in 2006 with headquarters in Singapore, but neither Indonesia nor Malaysia is a member.

Three Straits: Two Types of Problems

In Bab el-Mandeb and Hormuz, freedom of navigation is threatened by political reasons in the context of the conflicts affecting the region. In Malacca, freedom of navigation is threatened, apart from recurrent piracy, by the danger posed by the intensity of its traffic, which increases the probability of groundings or other navigational incidents that would jeopardise this important artery.

The extent to which riparian states have the right to implement or avoid these impediments remains debated. Some scholars question the customary character, outside the MBC, of the right of transit passage through the straits and the right of free innocent passage of warships. There are clearly legal arguments that can justify this position, particularly with reference to the application and interpretation of international treaties. However, this conservative position does not seem to us to be in line with history or with the evolution of the law of the sea as conceived in the spirit of the MBC.

Many people now want to see a new UNCLOS implemented to develop the law of the sea and to address new issues. We are thinking in particular of the need to regulate new aspects of the exploitation of the seabed, or the creation of international maritime sanctuary zones to protect fisheries resources and biodiversity in a sustainable manner, and finally the question of unmanned automated vessels. It seems doubtful to us that such a project could reopen, at its margin, a debate on the issue of straits. Only practice will or will not ratify the law prescribed by the MBC as customary. The French representative to the MBC, Guy Ladreit de la Charrière, called this “the work yet to be done”.

The right of transit passage, when claimed as a customary right, is imposed in a power relationship. It could be challenged by abandoning or changing this relationship. This does not seem to be within the reach of the riparian states concerned in the Indian Ocean. Could the rise of the People's Republic of China (China) influence the situation?

China, a New Player in the Three Straits

Although China has 18,000 kilometres of coastline, its maritime ambitions are tempered by its limited access to seas rather than oceans. It faces four seas, the Bohai Sea, the Yellow Sea, the East China Sea, and the South China Sea, all of which are bordered by archipelagic or island states. Its dependence on external energy resources from the Gulf and its dependence on external trade to the west make it a particularly interested stakeholder in these three straits.

China took part in the negotiation of the MBC between 1973 and 1982, signed it in 1982, and ratified it in 1996. This was China's first participation in a major international negotiation after joining the United Nations in 1971. Chai Shufan, and then Ling Qing, led the Chinese delegation to the UNCLOS

with three principles to defend: anti-hegemony (mainly American and Russian), support for the Third World, and protection of national interests. *In the end*, China found the convention unclear on many points, even flexible, which some saw as an opportunity to better defend Chinese interests. In this regard, the position of Wang Shuguang, Director of the State Oceanic Administration, is that “*disputes between states should be resolved among themselves with mutual respect for the integrity of their respective territories without involving third countries or organisations*”. This position partly explains China’s attitude and stance on the arbitration conducted and delivered by the Permanent Court of Arbitration on 12 July 2016 in favour of the Philippines in the South China Sea.

As a littoral state, China is concerned with several straits, three of which are the object of particular attention: Hainan (Qiongzhou), Taiwan, and Myiako. However, the issues are particular because of the territorial claims of the three straits. In the absence of direct access to the oceans, China is working to protect its commercial maritime interests by developing the strategy sometimes referred to as the “string of pearls”. It is establishing itself westwards, beyond its direct zone of influence, through coastal presences abroad: Djibouti, Maldives, Sri Lanka, Pakistan, Kenya, and Tanzania. China’s New Silk Roads (or Belt and Road Initiative, BRI) project is designed with maritime and land routes as alternative and complementary. In any case, China remains particularly concerned about the freedom of navigation in the three straits.

China’s domestic law of 25 February 1992 on the territorial sea recognises the concept of innocent passage but requires prior authorisation for the passage of foreign warships. China is one of about 30 countries that have claimed this right. In its declaration of 7 June 1996 for the ratification of the MBC, China stated that innocent passage through the territorial sea shall not prejudice the right of a coastal state to request, in accordance with its laws and regulations, a foreign state to obtain advance approval from or give prior notification to the coastal state for the passage of its warships through the territorial sea of the coastal state.

Little is known about China’s practice in relation to passage through the Indian Ocean straits. As China does not consider its own straits to be international, its position on them is not clear. China’s policy on preventing obstructions in international straits seems to be primarily a matter of bilateral relations and land-based posturing. On 4 January 2013, the Xinhua news agency revealed a goal of building 18 Chinese military bases along the Afro-Eurasian coasts to

maintain the navigation corridors vital to the country. The Chinese strategy is less legal than it is practical: the doubling of maritime routes with land routes, the construction of pipelines, roads, and railway lines as well as alliances with countries bordering the straits form a set of measures to prevent the risks of hindering oil supplies or the export of products manufactured in China. With the rise of the Chinese navy and its interventions in the South China Sea becoming increasingly visible, its positions on the protection of freedom of navigation in international straits will necessarily play a role in defining what is customary. As Walter Raleigh said in 1616, “*whosoever commands the sea commands the trade*”, the stakes presented by the straits of the Indian Ocean illustrate this perfectly.

THE NEW INDIAN OCEAN AND ITS STRATEGIC DYNAMICS

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For a long time, the Indian Ocean was considered as a mere transit zone between Asia and Europe that lacked its own geopolitical coherence. In 1966, Alastair Buchan, who was then the director of the International Institute for Strategic Studies, wrote that the Indian Ocean was “*nothing more than water surrounded by land, and not a strategic whole like the Atlantic and Pacific oceans*”¹. In other words, the subsections of the Indian Ocean were too different from each other to contemplate the idea of a regional policy. In France, for a long time, very little work in the field of strategic studies have been dedicated to the area.² This may come as a surprise given the full sovereignty of France over a number of territories (Réunion island, Mayotte, the Scattered Islands) and the fact that it has had a military command for the entire region - ALINDIEN - since 1973. However, this former lack of interest has matured into a new debate over the last fifteen years on the strategic nature of the Indian Ocean. Studies are now concentrating on the regional new dynamics and their consequences on French interests. This article intends not only to recount this recent evolution, but also to put into perspective the major trends that should nourish naval thinking in the years to come.

French Perspectives on the Indian Ocean

The French vision of the Indian Ocean has changed significantly over the past fifteen years. In 2008, when piracy off the coast of Somalia became a regional issue and led the European Union to launch Operation Atalanta, the French White Paper on Defence and National Security (FWPNDS) stated the idea of an “arc of crises” stretching from the Sahel zone to Afghanistan.³ The term, new in official French terminology, stemmed from the American strategic debate of the late 1970s. In December 1978, Zbigniew Brzezinski, then President Jimmy Carter’s National Security Advisor, stated that “*an arc of crises stretches along the shores of the Indian Ocean, with fragile social and political structures in a region of vital importance to us threatened with fragmentation*”.⁴

1. A. Buchan, “Britain in the Indian Ocean”, *Survival*, Vol.8, No.7, 1966, pp. 222-228, p. 222.

2. Also the volume by Hervé Coutau-Bégarie, *Géostratégie de l'océan Indien*, Economica, 1993.

3. O. Jacob, *Défense et Sécurité nationale: le Livre blanc*, 2008, p. 43-45.

4. “Iran: The Crescent of Crisis”, *Time*, 15 January 1979.

Despite not creating any links between the situations of each regional country, the concept enabled the 2008 FWPNDS to tie issues such as maritime piracy and illicit trafficking (drugs, arms) with regional crises (Horn of Africa, Persian Gulf, Indo-Pakistani conflict). The term, which soon became part of the common language of the Armed Forces, rapidly came under much criticism. Some observers, such as the geographer Michel Foucher, underlined the distorting effect of the concept. They criticize the reductionist perspective on the Indian Ocean and claim that it overestimates “*a global terrorist threat whose roots are concentrated in this arc and which is not of a strategic nature*”⁵. In his conference to the Ambassadors in August 2010, former French President Nicolas Sarkozy, expanded on the ideas established by the FWPNDS and tried to qualify the uncertain outlines of this “arc”: “*Each country faces a specific situation that must receive an appropriate response from the governments in charge. Today there is no operational coordination between the groups acting at the different ends of this arc of crisis. But if the situation were to deteriorate, there would be a great risk of a continuous chain linking the terrorist bases in Quetta and South Afghanistan to those in Yemen, Somalia, and the Sahel*”⁶.

The analysis was not really convincing and the concept was finally abandoned in the 2013 White Paper, which adopted a more cautious and vague notion of a “zone of main interest”. The Indian Ocean is described as a “*transit zone for international trade [...] at the heart of global strategic issues*”⁷ and the security environment is simply an aggregation of multiple crises.

While the latest Strategic Review of 2017 does not attempt to review this terminology, it does take note of the latest strategic developments in the area, and more particularly of “*the rise of Chinese military power and the consequences it may have in the new areas of interaction in Africa (Djibouti) and in the Indian Ocean*”⁸. This quote shows the evolution of the French perspective on the Indian Ocean within the last decade: the region has gone from an area of strategic vacuum ordered solely by the crises within it to an area of competition instigated by Chinese influence. The disadvantage of such a reading is that it tends to make the Indian Ocean a strategic region that exists only through its external actors.

5. M. Foucher, «L’Arc de crise, approche française des conflits», *Bulletin de l’Association de géographes français*, 2012, n°1, pp. 6-17, p. 6.

6. Annual speech by President Nicolas Sarkozy at the 28th Conference of French Ambassadors, 25 August 2010.

7. *Livre blanc Défense et sécurité nationale*, Direction de l’information légale et administrative, 2013, p. 57.

8. *Revue stratégique de Défense et de Sécurité Nationale*, Ministry of Defence, 2017, p. 43.



The European Union Naval Force deployed on Operation *Atalanta*
off Somalia alongside with the Japanese Navy, October 2020.

© European Union Naval Force, Operation Atalanta.

This bias is not specific to the French debate and can also be seen in American reports. In a noteworthy article in *Foreign Affairs*, in 2009, the journalist Robert Kaplan had already identified the Indian Ocean as the theatre of the great conflict between the United States and China.⁹ In such a vision, even a local power like India is then doomed to play the role of Washington's auxiliary against Beijing. The limits of such an analysis were underlined by the academics James Holmes and Toshi Yoshihara, who stressed that “such a narrow approach assumes that the region will remain an inanimate object vulnerable to manipulation from outside”¹⁰.

The 2017 Strategic Review does not ignore the persistence of low-intensity crises, notably related to piracy, but these elements seem to be relegated to the background. From this perspective, it is important to extend the debate on the major trends at work in the Indian Ocean, in order to benefit from a more robust analytical framework. This is not just an intellectual exercise; the understanding of the dynamics in the area ultimately determines the ability of our diplomatic and military apparatus to defend French interests in the region.

The Structuring Issues of the New Indian Ocean

Several issues are intertwined in the region, creating an extremely fickle security environment. However, it is possible to identify four major dynamics at work likely to influence France's future policy choices.

China as a Unifying and Polarising Factor

Chinese policy in the Indian Ocean has become the structuring element between all local actors. This is the result of the vast economic project - the Belt and Road Initiative (BRI) - that Xi Jinping has been leading since he came to power in 2013. The BRI aims to connect land and port infrastructures from Europe to the shores of Asia in order to create corridors for resources and goods to China. Given the massive investments that the BRI generates and the economic development issues that arise for the countries bordering

9. R. Kaplan, “Center Stage for the Twenty-first Century: Power Plays in the Indian Ocean”, *Foreign Affairs*, Vol. 88, No. 2, March-April 2009, pp. 16-32.

10. J. Holmes, Toshi Yoshihara, “China and the United States in the Indian Ocean: An Emerging Strategic Triangle?”, *Naval War College Review*, Vol. 61, No. 3, 2008, pp. 41-60, p. 61.

the Indian Ocean, every country has had to react to the Chinese mechanism, in order to benefit from it and avoid being marginalised within the regional economy. In this sense, the BRI unifies the regional stakeholders by creating a future interdependence.

However, it also carries the risk of polarisation because being part of the BRI implies a political alignment with Beijing's agenda. In other words, Chinese investments in the underdeveloped areas of the Indian Ocean would be accompanied by more or less explicit conditionalities regarding the adoption of the Chinese strategic agenda by the local authorities. Chinese development is no longer the "peaceful rise" portrayed by former President Hu Jintao a decade ago. It now goes along with a rise in military power which, without being fully clarified, is no longer minimised by its architects. The building of a naval base in Djibouti in 2017 and the ostentatious deployment of Chinese capabilities at many points in the area are a perfect example. Moreover, according to the Pentagon's annual report on Chinese military power, no fewer than twelve countries in the area are considering the possibility of offering port access to the Chinese navy.¹¹

The New Ambitions of Indian Regional Policy

The first consequence of the China issue in the Indian Ocean is the revival of a policy of partnerships between New Delhi and its neighbourhood, towards the countries of ASEAN, the Arabian Peninsula and the African rim. Although India has always seen the Indian Ocean as its natural zone of influence, for a long time its governments did not translate this vision into political and budgetary priorities. The capacity gap of the Indian Navy underlines this: because of the constraints due to its air-land confrontation with Pakistan, India has not been able - or has not known - how to project its ambitions at sea.¹²

The election of Narendra Modi in 2014, with the support of his national security advisor Ajit Doval, has launched a new impetus. This evolution follows the degradation of Sino-Indian relations. Delhi's leaders are well aware of the unification-polarisation phenomenon that stems from Chinese policy in the region and intend to avoid an Indian disengagement on the diplomatic, economic, and military levels. This takes the form of a revival

11. "Military and Security Developments Involving the People's Republic of China", US Department of Defense, August 2020.

12. H. Pant, *The Rise of the Indian Navy: Internal Vulnerabilities, External Challenges*, Routledge, 2012.

of the Look-East Policy towards the partners of South-East Asia, but also of economic and military cooperation with Saudi Arabia or the United Arab Emirates (UAE), which were launched at the beginning of the 2000s without any real concrete results.

The combination of these Indian and Chinese ambitions is causing delicate situations in the Indian Ocean, with countries being courted simultaneously by both. This is the case, for example, in the Sultanate of Oman. India and China are investing militarily and economically in the port of Duqm, which could become the “Djibouti of the Gulf” in the next few years. The Maldives is another example: while the island has long been under the strategic tutelage of Delhi, Beijing’s economic influence has grown steadily since the mid-2000s. In 2017, its president Abdulla Yameen, elected in 2013, signed a free trade agreement with China and allowed the latter to launch multiple infrastructure projects, making the Maldives a key element of the BRI. While Beijing’s influence has eroded somewhat after Yameen’s electoral defeat in 2018, the island’s finances remain dependent on Chinese investment, despite Indian attempts to counterbalance it.¹³

The Indian Ocean Through the Lens of the US Indo-Pacific Strategy

In December 2017, the Trump administration’s National Security Strategy formalised a new approach to making the Pacific and Indian Oceans a single strategic area, the Indo-Pacific. In the wake of this, the Department of Defence announced that it was renaming the *Pacific Command* into the *Indo-Pacific Command* in order to better highlight the operational consequences of this strategy. However, this renewal of American policy reflects less the centrality of the Indian Ocean than its indexation to Asian issues, and more particularly to those related to Chinese maritime expansion.¹⁴ Institutionally, the Indian Ocean remains a secondary zone for the Department of Defence, an in-between area shared by the Africa, Middle East, and Indo-Pacific Commands. In reality, the prefix “Indo” here does not designate the Indian Ocean but only India, the whole of the western periphery of the zone being relegated to the other commands.

13. B. Palanisamy, “India is Making Inroads in Maldives, but China Stays on Top”, *Policy Forum*, 22 October 2020.

14. We humbly refer to our article, “The Trump administration’s Indo-Pacific strategy: a difficult emergence”, *Foreign Policy*, Vol. 83, No. 3, 2019, pp. 37-48.

The emerging idea in Washington of an ‘Indo-Pacific’ zone thus underlines the fact that the Indian Ocean can only be understood through Asian power relations. This American isolationism is not, however, a withdrawal such as the “east of Suez” one initiated by the United Kingdom in 1968, which completely redefined the balance of power in the region. Washington’s withdrawal does not call into question the still resounding military superiority of the United States in the area for the moment, but in the long term it raises the question of its willingness to intervene in future crises.

The Emergence of New Players Seeking Strategic Autonomy

This is probably the most recent and striking dynamic. The last decade has seen a growing desire by Indian Ocean littoral states to be more in control of their destiny, or at least to diversify their economic and military partnerships. Thus, not only are the Gulf monarchies launching their own military operations, such as the Riyadh-led coalition in Yemen since 2015, but some of them are also increasingly asserting themselves as regional powers whose influence is felt well beyond the Arabian Peninsula, and especially in the Horn of Africa. For example, the United Arab Emirates is deploying its army in Eritrea and Somaliland, while Saudi Arabia is opening a base in Djibouti.

These area-specific power games add a layer of complexity to our understanding of the dynamics between the Indian Ocean regional countries. For example, the 2017 crisis between Qatar and the Arab Quartet (Saudi Arabia, UAE, Egypt, Bahrain) caused upheavals beyond the Gulf. The Maldives, where Abu Dhabi’s investments have been growing steadily over the past five years, has sided with the UAE and Saudi Arabia. *On the other hand*, Somalia has refused to suspend relations with Doha and tensions rose with the Quartet, partly leading the UAE to question its assistance in training Somali security forces. In addition, the Gulf Cooperation Council (GCC) states aim to become middle powers in the Indian Ocean while strengthening their relations with the three main strategic stakeholders, namely China, the USA, and India. Riyadh and Abu Dhabi’s increased cooperation with Beijing, in the military (*via* imports of drones and ballistic missiles) and health sectors (for example, with the participation in the *Sinopharm* programme for the COVID-19 vaccine), keep American decision-makers nervous and is likely to lead to increased pressure from Washington on its Gulf partners. In any case, these episodes are not anecdotal: they show the progressive intricacy of

the strategic issues of the Indian Ocean regional stakeholders, a phenomenon that should continue over the next few years.

Conclusion

This overview highlights a more complex and above all more dynamic perspective of the Indian Ocean. The Indian Ocean is no longer exactly the strategic vacuum described by the 2008 FWPNDS, as evidenced by the competition between China, India, and the United States. Moreover the emerging powers of the area also have new ambitions and intend to conduct their own regional policies. At the same time, however, the region is still undoubtedly marked by a governance vacuum, which is reflected in the lack of a viable security architectures. There is currently no regional organisation with the mandate and resources to work in this direction: the *Indian Ocean Rim Association* or the *Indian Ocean Commission* are modest entities that do not claim to play this role.

Any future reflection on French interests in the region and the modalities of their protection require the four previous dynamics to be taken into account. The three issues that stem from them must also be taken into consideration in order to anticipate political trends in the area.

First, it is essential to determine to what extent regional competition between China, the United States, and India will continue to shape the calculations of the littoral states and condition their orientations *vis-à-vis* a logic that is increasingly that of a zero-sum game. In this regard, the COVID-19 pandemic has not only revealed these fractures within the countries of the region but also reinforced the bipolarisation between Washington and Beijing. We then need to understand the degree of autonomy of the dynamics of the Indian Ocean sub-regional groups (Horn of Africa, Gulf, South Asia) and assess whether these risk an increasing fragmentation rather than regional cohesion. Finally, we must ask ourselves how future governance in the area will be achieved in the absence, at this stage, of credible mechanisms. For a country like France that sees itself as a power bordering the Indian Ocean, two options exist. Work to strengthen existing multilateral institutions and initiatives such as those above mentioned (the Indian Ocean Rim Association or, in the military context, the Indian Ocean Naval Symposium), or consider that regional security architectures will emerge through the growing use of

ad-hoc partnerships and in so doing bring together three to four countries, following the example of the France-India-Australia strategic dialogue¹⁵ or the similar France-India-EAU project. The answers to these problems could well, in the end, irrigate the regional policy that Paris would like to implement.

15. Frédéric Grare, “Exploring Indo-Pacific Convergences: The Australia-France-India Trilateral Dialogue”, *The Washington Quarterly*, Vol. 43, No. 4, pp. 155-170.



The French Navy's carrier strike group passing through the Suez Canal
on Saturday 6 March 2021, during the *Clemenceau 21* mission. © French Navy.



CONCLUSION

Commodore Jacques FAYARD

*Commander of French Naval Forces in the Indian Ocean Maritime Area
(ALINDIEN),*

*Commander of the French Forces stationed in the United Arab Emirates,
Commander of Operation AGENOR, military pillar of the European initiative
EMASOH - European Led Maritime Awareness in the Strait of Hormuz*

Launched in 2018 under the instigation of Admiral Prazuck, then Chief of Staff of the French Navy, and led by my two predecessors, Vice-Admirals Piaton and Maletterre, the Alidade group dedicated to the Indian Ocean is publishing its first works.

This group is made up of leading figures based in the United Arab Emirates who come from very different educational and professional backgrounds. The work conducted exclusively focuses on the many challenges in the Indian Ocean.

On a global scale, the whole world passes through or patrols the Indian Ocean. At the regional level, the strategic landscape is being reshuffled at an unexpected speed. At the national level, the Indian Ocean is a strategic area in which more than one million of our French citizens reside.

The Indian Ocean, a Zone of Peace?

Fifty years ago, on 16 December 1971, the United Nations General Assembly adopted resolution 2832, which “*solemnly declares that the Indian Ocean, within limits to be determined, together with the airspace above and the ocean floor subjacent thereto, is hereby designated for all time as a zone of peace*”.

It is often said that maritime spaces have no borders. The sea connects and does not separate... But all sailors, military, and merchant alike know this is a myth.

Maritime spaces remain areas of tension. The Indian Ocean and its straits are no exception. Disputes over maritime delimitations, the management of marine resources, the fight against illegal, unreported and unregulated (IUU) fishing, and questions about hydrographic research regularly carried out in the area are recurring grounds for debate between regional states.

These tensions are also reflected in the flows that pass through the straits. First of all, legitimate maritime commerce flows remain threatened by Somali piracy, albeit contained, but whose root causes remain highly dependent on the level of insecurity in the straits. The slightest incident can cause insurance or raw materials prices to soar. Illegal flows, whose artisanal nature as described in the past by Monfreid, Kessel or Hergé has now taken on an industrial dimension under the effect of globalisation, have grown to constitute another source of security instability as evidenced by the quantities of drugs discovered each year.

The Indian Ocean: At the Heart of the Navy's Operations

The year 2021 will see the simultaneous deployment in the Indian Ocean maritime zone of the carrier strike group around the aircraft carrier *Charles de Gaulle*, the Jeanne d'Arc group (the training school for naval officers on board the PHA *Tonnerre* and the FFL *Surcouf*), and a mine warfare group. This dense operational year nevertheless echoes with previous deployments. Indeed 30 years after the Gulf War and 20 years after 11 September 2001, operations have never really stopped in the Indian Ocean.

Today, the French Navy is involved in Operation AGENOR, the military pillar of the European-Led Maritime Awareness in the Strait of Hormuz (EMASOH) initiative, whose diplomatic component is entrusted to the Danish ambassador Julie Pruzan-Jørgensen.



The FREMM *Languedoc* back in the Mediterranean after a six-month deployment in the Indian Ocean. November 2020. © French Navy / Defence.

This operation, which was declared fully operational on 25 February 2020, is an *ad hoc* initiative of eight European nations (Belgium, Denmark, France, Germany, Greece, Italy, the Netherlands, and Portugal). With due consideration that their interests were at stake after the increase in tensions in the Strait of Hormuz region in 2019, they chose to act within the framework of international maritime law in order to gain an autonomous assessment of the situation, to reduce tensions, and to reassure merchant maritime traffic through the presence of a dedicated naval force.

By supporting this initiative, France demonstrated that European nations are capable of collectively mobilising their efforts to achieve concrete results when their interests are at stake. Relying on the command facilities offered by the presence of the French Forces stationed in the United Arab Emirates (FFEAU), Operation AGENOR has successively brought together Dutch, Danish, Greek, and Belgian naval assets alongside French frigates and maritime patrol aircraft. It is placed under the operational control of ALINDIEN (OHQ) with a tactical headquarters (FHQ) at the Abu Dhabi naval base, entrusted to a Danish commodore until summer 2021.

The French Navy also continues to be regularly involved, with frigates deployed from France or Réunion island, within Combined Task Force 150, integrated into the Combined Maritime Forces (CMF), a coalition of 33 nations set up after the attacks of 11 September 2001. France is a key contributor to this operation against terrorist organisations and their illegal activities at sea. The French Navy seized and destroyed seven tonnes of narcotics in the Indian Ocean in 2020 in the midst of the health crisis.

2021: IONS

In 2021, France will assume Chairmanship of the *Indian Ocean Naval Symposium* (IONS). After being postponed due to the health crisis in 2020, the symposium should be held in Réunion island at the end of June. All 25 members¹, eight observer countries², nine non-adhering coastal states³, and two international organisations, the Indian Ocean Commission and the African Union, will be invited. Almost all the states bordering the Indian Ocean are members of this forum, an inclusiveness that deserves to be emphasised.

After India (Delhi, 2008), the United Arab Emirates (Abu Dhabi, 2010), South Africa (Cape Town, 2012), Australia (Perth, 2014), Bangladesh (Dhaka, 2016) and Iran (Tehran, 2018), France, an Indian Ocean nation and a full member since 2014, will chair this forum for the first time since its creation in 2008.

1. South Africa, Saudi Arabia, Australia, Bangladesh, Myanmar, United Arab Emirates, France, India, Indonesia, Iran, Kenya, Malaysia, Maldives, Mauritius, Mozambique, Oman, Pakistan, Qatar, United Kingdom, the Seychelles, Singapore, Sri Lanka, Tanzania, Thailand, East Timor.

2. Germany, China, Spain, Italy, Japan, Madagascar, the Netherlands, Russia.

3. Bahrain, Comoros, Djibouti, Egypt, Eritrea, Iraq, Kuwait, Somalia.

In a maritime space without a collective security mechanism, IONS is a forum for cooperation and dialogue. It is a forum in which actors, who would not otherwise meet, find opportunities to discuss. As a forum for navies, IONS focuses on maritime security issues, maritime information sharing, and humanitarian operations through three working groups. There is no room for diplomatic disputes. With the adoption of a consensus system, the biennial meeting allows dialogue between states that may otherwise have conflicting relations.

Beyond the Indian Ocean...

The Indo-Pacific is increasingly becoming a strategic area of attention as demonstrated by the ongoing American “pivot”. France is an Indo-Pacific nation seeking to make its voice heard. The speech delivered by the President of the French Republic at Garden Island, Sydney, Australia, the publication of an Indopacific strategy by the French Ministry of the Armed Forces, and the regular deployment of primary naval assets (carrier strike group, Jeanne d’Arc group, SSN) all confirm this ambition.

As with IONS, France strives to act as a balancing power, working tirelessly to promote multilateralism, strengthen the sovereignty of states, and preserve natural resources...

The wish of the UN General Assembly in 1971 for the elimination of “*all bases, military installations and logistical support services from the Indian Ocean*” is likely to remain a vain wish. The Indian Ocean is challenged and this will undoubtedly be a good topic for the future work of the Indian Ocean Alidade Group.

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THE STRAITS OF THE INDIAN OCEAN

Once called Eastern Ocean, Hindu Ocean, or Indic Ocean, the Indian Ocean is the third-largest of the world's oceanic divisions after the Pacific and the Atlantic. It covers 20% of Earth's surface.

One of its main characteristics is that it links Asia to the East, with Europe and Africa to the West. It is also the crossroads of many straits and channels: Malacca, Hormuz, Bab el-Mandeb, the Mozambique Channel, etc. At a time when trade routes transit mainly by sea, the role of the Indian Ocean, and more particularly that of its straits, has thus become a major political and economic issue.

This issue of *Études marines*, written by both military and civilian specialists, provides insights on the importance of this region where France has strategic interests, despite being far from the mainland.



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