OBSERVATOIRE Défense & Climat

Report

HADR OPERATIONS IN THE INSULAR CARIBBEAN IN AN ERA OF CLIMATE CHANGE

GEOPOLITICAL SHIFTS AND SECURITY IMPLICATIONS OF EVOLVING HURRICANE RISK

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DGRIS

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The Defence and Climate Observatory, launched in December 2016, aims to study climate-related security and defence issues.

It is coordinated by IRIS as part of the contract carried out on behalf of the French Ministry of Armed Forces's Directorate General for International Relations and Strategy (DGRIS). The Observatory's multi-disciplinary team includes researchers specialising in international relations, security, defence, migration, energy, economics, climatology and health. It is directed by Mathilde Jourde and François Gemenne.

The Observatory has initiated numerous collaborations with European partners (Netherlands, Luxembourg) and international partners (Australia, United States, India), international NGOs and national and international public bodies. These initiatives have strengthened cooperation on climate issues and their security implications.

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MAPS

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The Caribbean is difficult to define, both geographically and geopolitically. Depending on the approach, the term may refer to the Antillean arc, the Caribbean Sea, or the wider basin including its coastal states. This study focuses primarily on the insular Caribbean, a vast arc stretching more than 4,000 km from Mexico's Yucatán Peninsula to the coast of Venezuela. It comprises 30 political entities: 13 sovereign states[1] and 17 American[2], British[3], French[4] and Dutch[5] "micro-island territories" with highly diverse statuses (Taglioni, 2006; Giacobbi, 2025). The region is characterised by its maritime nature (Domergue, 2024), its "archipelagic fragmentation"[6] (Audebert, 2022) and a history shaped by colonisation, the plantation economy and slavery (Sainton, 2004). This geographical and political fragmentation is matched by considerable institutional[7], economic[8] and cultural diversity (Cruse, 2011).

The region nonetheless forms a coherent strategic space. Located at the crossroads of the Americas, close to the Panama Canal and along major trade, migration and drug-trafficking routes, it remains closely bound up with US security interests. This strategic dimension helps to explain the historical use of the term "American Mediterranean" (Reclus, 1889; Taglioni, 2000). The Caribbean is thus a space where sovereignties, cooperation and power relations overlap: "a sea of empires and anti-imperialisms" (Spillemaeker, 2026).

Yet this diversity does not preclude a particularly powerful unifying factor: hurricane risk. In an archipelagic region exposed to multiple vulnerabilities, a major hurricane can quickly overwhelm national capacities, especially in microstates with limited response capabilities, and require external assistance (Giacobbi, 2026). With hurricanes a shared environmental risk in a deteriorating climate, humanitarian assistance and disaster relief (HADR) operations conducted by the armed forces reveal regional interdependence and may also become instruments of strategic cooperation or competition.

Building on the Defence and Climate Observatory's 2024 work[9], this study first analyses how climate change is affecting hurricane risk in the Caribbean. It then examines the regional HADR

[1] Antigua and Barbuda, the Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.
[2] Puerto Rico and the US Virgin Islands.
[3] Anguilla, the British Virgin Islands, the Cayman Islands, Montserrat, and the Turks and Caicos Islands.
[4] Guadeloupe, Martinique, Saint Barthélemy and Saint Martin.
[5] Aruba, Bonaire, Curaçao, Saba, Sint Eustatius and Sint Maarten.
[6] The Bahamas comprise some 700 islands and more than 2,000 cays, only around forty of which are permanently inhabited.
[7] Three main regional organisations coexist, with different geographical scopes and degrees of integration: the Organisation of Eastern Caribbean States (OECS), the Caribbean Community (CARICOM) and the Association of Caribbean States (ACS).
[8] In 2021, GDP per capita ranged from USD 1,883 in Haiti to USD 27,476 in the Bahamas.
[9] In particular:
De Guglielmo Weber, M. & Duffau, E. (2024). Humanitarian Assistance and Disaster Relief Operations in Response to Climate-Related Disasters: What Role and Challenges for the French Armed Forces ? Defence and Climate Observatory, IRIS. https://defenseclimat.fr/wp-content/uploads/2024/06/ObsDefClim_2024_05_HADR_Note_EN.pdf

architecture and how the actors that shape it are gradually adapting to the new climate reality. Finally, it highlights the geopolitical shifts under way, as the role of traditional actors evolves and new players emerge.

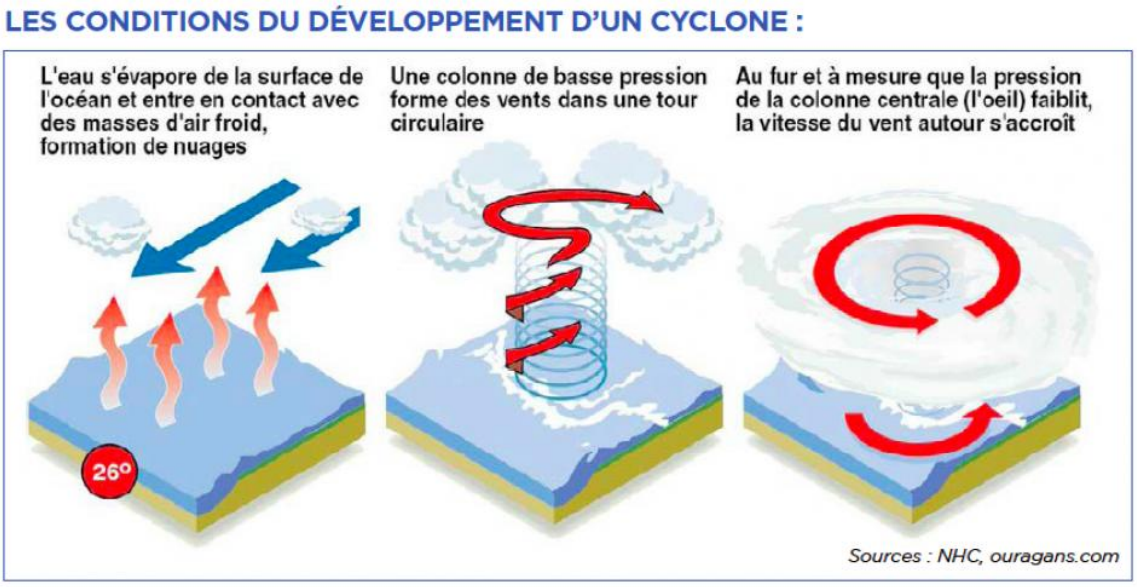
de Guglielmo Weber, M. (2022). Geopolitical and security implications of Climate vulnerability in the Carribbean Islands. Observatoire Défense & Climat, IRIS.
https://defenseclimat.fr/wp-content/uploads/2022/11/ObsDefClim_Note-Caraibe_10-2022_EN.pdf

PART 1
CLIMATE CHANGE AND EVOLVING HURRICANE RISK

A - Tropical cyclones: definition, measurement and tracks

A **tropical cyclone is a rotating weather system organised around an area of very low pressure and fuelled by energy exchanges between the warm ocean and the atmosphere[10].** Its formation, known as cyclogenesis, requires several conditions (Doumengue, 2000): a **sea surface** temperature generally above 26.5–27°C, a sufficiently **deep layer of warm ocean** water[11], an unstable and humid **atmosphere**, low vertical **wind** shear, a **pre-existing initial** disturbance[12] and **sufficient distance from the equator** for the Coriolis force to take effect[13]. In the North Atlantic, this extreme weather phenomenon is known as a hurricane; in the North-West Pacific, the same storms are called typhoons.

Figure 1: Conditions for cyclone formation



[10] The word "cyclone" derives from the Greek κύκλος (kuklos), meaning "coiled" or "wound".

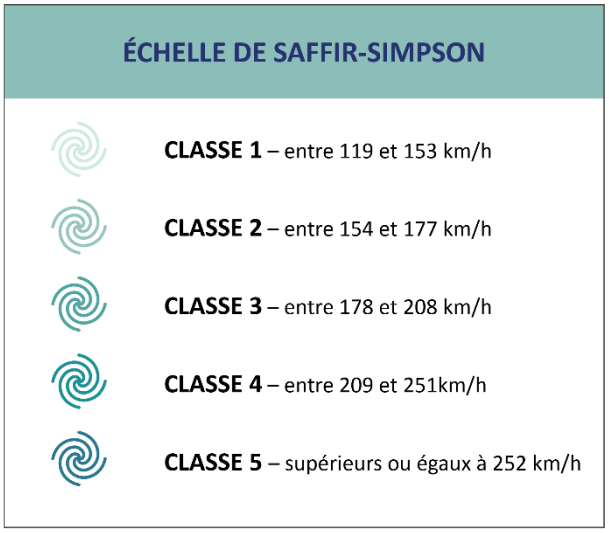
[11] The warm ocean layer refers to the depth of water below the surface that remains warm enough to supply the cyclone with heat and moisture. A threshold of around 26–26.5°C over several tens of metres, typically 50 to 60 m, is generally used.

[12] Initial disturbances are most often tropical easterly waves, which usually form over the Sahel region of West Africa before moving out over the tropical Atlantic.

[13] The Coriolis force is the inertial effect of the Earth's rotation, which deflects air movements and allows a disturbance located far enough from the equator to start rotating. As this effect is almost zero at the equator, tropical cyclones generally form several degrees of latitude away from it.

In the Northern Hemisphere, cyclone tracks are shaped by the general atmospheric circulation. Systems usually move westwards with the trade winds, before curving north-westwards or northwards depending on the position of the Azores subtropical high and on regional atmospheric conditions. In the Atlantic basin, a system is classified as a **tropical depression** when its maximum sustained winds remain below 63 km/h, and as a **tropical storm** when they reach 63 to 118 km/h, the stage at which it is given a name. It becomes a **hurricane** once winds exceed 118 km/h. The Saffir-Simpson scale then classifies hurricanes into five categories, with Categories 3, 4 and 5 regarded as major hurricanes. **Between 1951 and 2024, 888 named storms** were recorded in the Atlantic basin. Almost half of them (419) never progressed beyond tropical storm strength. The remaining 469 intensified into hurricanes, of which 185 became major hurricanes and 28 reached Category 5. **The insular Caribbean was affected by 103 of these systems**, around 12% of the total.

Recent scientific literature, however, calls for an approach that goes beyond the frequency of these events alone.



B - Changing hurricane risk under climate change

Climate change would not necessarily lead to a uniform increase in the number of cyclones, but rather to changes in some of their characteristics: intensity, speed of development, seasonality, tracks, rainfall and interaction with extreme sea levels.

1. Changing intensity: a qualitative transformation of cyclones

One of the main recent scientific findings is **the distinction between trends in the total number of cyclones and trends in their intensity.** Several studies project a stagnation, or even a decline, in the total number of tropical cyclones in some basins, while pointing to an increase in the proportion of the most intense events. In the Atlantic, projections thus combine a possible decrease in the number of tropical storms and hurricanes with an increase in Category 4 and 5 hurricanes by the end of the twenty-first century (Bender et al., 2010; Knutson et al., 2013; Knutson et al., 2020; Walsh et al., 2016). This trend is also supported by recent probabilistic studies, which highlight a higher likelihood of Category 4 and 5 hurricanes

in a warmer climate (Jewson, 2022). A distinction must therefore be drawn between overall cyclone activity and the risk posed by extreme events.

Scientific analysis has accordingly shifted towards the cumulative destructive potential of cyclones. Indices such as the Power Dissipation Index[14] (PDI) and Accumulated Cyclone Energy[15] (ACE) make it possible to capture this power. Although trends differ between basins, the relative share of the most intense events remains central to climate projections (Emanuel, 2005; Klotzbach et al., 2022; Patricola and Wehner, 2018). The conclusion is therefore not that cyclones will multiply uniformly, but that the risk is being reshaped qualitatively: fewer events, or the same number, but a greater proportion of very intense ones.

Rapid intensification (RI) refers to a sharp increase in a cyclone's intensity over a short period, with most studies setting the threshold at a gain of at least 25 or 30 knots in 24 hours (Bhatia et al., 2022). In the Atlantic, the magnitude of RI episodes grew between 1986 and 2015: in the most extreme cases, the 24-hour increase in wind speed rose by around 3.8 knots per decade (Balaguru, Foltz & Leung, 2018). Recent research also shows that **repeated intensification** events are becoming more common (Garner, 2023; Manikanta, Joseph and Naidu, 2023), particularly near coastal regions, notably in the Caribbean and the Gulf of Mexico (Li et al., 2023). Cyclones thus appear more likely to move rapidly from a moderate stage to major hurricane status: **they can change intensity faster, sometimes several times during their lifetime.**

Changes in the location of peak intensity and in seasonality also appear significant, though they vary from one region to another. The latitude at which cyclones reach their lifetime maximum intensity (LMI) is reportedly migrating polewards at an average rate of around one degree of latitude per decade, with marked regional differences (Kossin, Emanuel & Vecchi, 2014). **In the Atlantic, simulations suggest a spatial and seasonal reshaping of activity,** including a decrease in the number of cyclone days in the western part of the basin, which includes the Gulf of Mexico and the Caribbean Sea (Chauvin et al., 2020; Belmadani et al., 2021). This local decrease may, however, be accompanied by a longer exposure period: the Atlantic hurricane season could lengthen by 27 to 41 days, while intense cyclones would tend to form earlier (Patricola et al., 2024; Shan et al., 2023).

[14] An index that sums the cube of a cyclone's maximum wind speed over its lifetime, in order to estimate its total destructive potential.
[15] An index measuring cumulative cyclone energy on the basis of wind intensity and system duration, used to assess the overall activity of a hurricane season.

2. The hydrologisation of hurricane risk in the Caribbean

Beyond wind hazards, hurricane risk is undergoing a form of "hydrologisation"[16], characterised by **the growing importance of extreme rainfall, runoff, river floods, coastal flooding, swell and extreme sea levels.** Flash floods caused by cyclonic rainfall, for instance, accounted for 17% of damage costs over the past decade alone (Nabukulu et al., 2026). A warmer atmosphere can hold more water vapour, leading to more intense rainfall. Many projections point to a significant increase in rainfall near the core of cyclones, and extreme rainfall can pose a danger comparable to, or even greater than, that of wind (Emanuel, 2017; Knutson et al., 2013; Knutson et al., 2020; Patricola and Wehner, 2018). In the Lesser Antilles, cyclonic rainfall varies considerably in space and time depending on the track, the structure of the system, rainfall intensity and island topography. This confirms that rainfall risk cannot be reduced to a simple increase in average totals (Cantet et al., 2021; Nabukulu, Jetten and Ettema, 2024). Attribution studies carried out after Hurricane Harvey also illustrate this trend, **estimating that climate change increased the event's rainfall intensity by around 15%** (van Oldenborgh et al., 2017).

The marine dimension completes this hydrologisation. **Storm surges are among the deadliest hazards,** having caused more than 5,000 deaths in the region in the first two decades of the twenty-first century (Martin et al., 2023). They are therefore **a major concern in a region where populations and infrastructure are heavily concentrated along the coast**[17] (Needham, Keim and Sathiaraj, 2015; Muis et al., 2016; Torres and Tsimplis, 2014; Bernier et al., 2024). In the Lesser Antilles, wave setup[18] plays a major role in the maximum sea levels reached at the shoreline during hurricanes, and extreme hurricane-driven waves could also increase (Krien et al., 2017; Belmadani et al., 2021). This combination of rainfall, river floods, storm surge, waves and extreme sea levels can produce compound flooding (Gori, Lin and Xi, 2020), with greatly amplified destructive effects on populations and infrastructure.

Climate change is therefore driving major transformations in cyclones that cannot be reduced to a simple increase in the number of hurricanes. The most recent studies point to potentially more **intense** events, **faster intensification,** a possibly longer **exposure** period and the growing weight of **hydrological** hazards. For Caribbean states, as for the armed forces likely to assist them, this **reshaping of hurricane risk directly affects the conditions for HADR preparedness, anticipation and response.**

[16] *Hydrologisation* refers to the growing share of hydrological components (extreme rainfall, floods, inundation) in the manifestation of cyclone risk.
[17] According to the IPCC's latest report (2022), more than half of the Caribbean's population lives within 2 km of the coast, and around 22 million people live less than 6 m above sea level.
[18] A rise in the mean water level near the shoreline caused by breaking waves.

PART 2

THE CARIBBEAN HADR ARCHITECTURE: A MULTI-LEVEL SYSTEM UNDER STRAIN

A - A dense and complex HADR ecosystem

Disaster response in the Caribbean rests on a **multi-level governance architecture** which, within the framework of **civil-military cooperation** (CIMIC), brings together local actors, regional organisations, international institutions and armed forces (Audet, 2011).

1. Civilian organisations: from national response to regional governance

The first level of response consists of national disaster management agencies. Every state in the insular Caribbean now has a permanent body responsible for the prevention, preparedness and management of hurricane-related crises.

Table 1 – Natural disaster management agencies in the insular Caribbean

State	Natural Disaster Management Organisation	Supervisory Ministry
Antigua and Barbuda	National Office of Disaster Services (NODS)	Ministry of Health and Home Affairs
Bahamas	National Emergency Management Agency (NEMA)	Cabinet Office
Barbados	Department of Emergency Management (DEM)	Prime Minister
Cuba	Defensa Civil	Ministerio de las Fuerzas Armadas Revolucionarias
Dominica	Office of Disaster Management (ODM)	Ministry of National Security and Legal Affairs
Grenada	National Disaster Management Agency (NaDMA)	Ministry of National Security, Public Administration & Disaster Management
Haiti	Protection civile	Premier ministre
Jamaica	Office of Disaster Preparedness and Emergency Management (ODPEM)	Ministry of Local Government & Rural Development
Dominican Republic	Centro de Operaciones de Emergencia (COE)	Presidencia de la República Dominicana
Saint Kitts and Nevis	National Emergency Management Agency (NEMA)	Prime Minister
Saint Vincent and the Grenadines	National Emergency Management Organization (NEMO)	Ministry of National Security
Saint Lucia	National Emergency Management Organisation (NEMO)	Prime Minister
Trinidad and Tobago	Office of Disaster Preparedness and Management (ODPM)	Ministry of National Security

Despite the variety of their names, these agencies show the place that natural disasters now hold in national security policies. Initial crisis management decisions, the activation of emergency plans, damage assessment and requests for international assistance all fall within their remit. They form the first link in the HADR chain.

When national capacities are overwhelmed, coordination gradually passes to the regional and international levels (Maertens and Louis, 2016). At the global level, **the United Nations** Office for the Coordination of Humanitarian Affairs (OCHA) coordinates international aid, notably by activating inter-agency coordination mechanisms and deploying United Nations Disaster Assessment and Coordination (UNDAC)[19] teams. **The European Union** acts mainly through the Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO), the EU Civil Protection Mechanism and the Copernicus satellite programme, which rapidly provides maps of affected areas (Schellekens-Gaiffe, 2017). Both the UN and the EU play an essential role in coordinating and funding the international response, even though their direct operational presence remains limited.

At the Caribbean level, the main actor is the Caribbean Disaster Emergency Management Agency (CDEMA). Established in 1991 as CDERA[20] and renamed CDEMA in 2009, it is the agency of the Caribbean Community (CARICOM) responsible not only for disaster response but also for disaster risk reduction and climate change adaptation. Based in Barbados, it coordinates national disaster management systems, facilitates requests for international assistance and encourages the pooling of resources among CARICOM member states. It is now the focal point of regional disaster governance, although it has no operational capabilities of its own.

Finally, the French Red Cross's Regional Intervention Platform for the Americas and the Caribbean (PIRAC) rounds out the regional system. Based in Guadeloupe, PIRAC has a warehouse at Pointe-à-Pitre's Le Raizet airport, prepositioned stocks on several Caribbean islands and response teams. This civilian architecture forms the foundation of regional HADR governance. **However, the capability shortfalls of many island states make it essential to call on military assets** capable of providing strategic airlift, logistical support, military engineering and medical evacuation. It is in this context that the region's main military actors come in.

2. Military actors: the operational backbone of the HADR response

The armed forces are one of the main operational tools of the Caribbean HADR response (Hofmann and Hudson, 2009; Frisse, 2010). They intervene at the request of affected states or within regional cooperation mechanisms, alongside civilian authorities. They then deploy the projection, transport and command capabilities that are essential to the early phases of a crisis (Weil, 2001; Kovács & Spens, 2007; Thomann, 2018). Their action concentrates on the first phases of the emergency, notably reopening access to cut-off areas, delivering aid and

[19] Teams of United Nations experts deployed to assess needs and support the coordination of international relief following a major disaster.
[20] Caribbean Disaster Emergency Response Agency

restoring logistical capacity, before gradually giving way to the civilian actors responsible for long-term assistance and reconstruction.

At the regional level, the Regional Security System (RSS), also based in Barbados, occupies a unique position. Established in 1982 to strengthen the collective security of the member states of the Organisation of Eastern Caribbean States (OECS), it has gradually made disaster management one of its priority missions. Its Disaster Management and Humanitarian Assistance (DM/HA) Department coordinates the CARICOM Disaster Relief Unit (CDRU), a multinational force built from contributions by the armed forces of participating states. However, the CDRU has limited capabilities in personnel, projection and support, as do the armed forces of these small island developing states (SIDS). These capability shortfalls soon make it necessary to turn to external partners

Among external actors, United States Southern Command (SOUTHCOM) remains the main provider of military capabilities. SOUTHCOM is one of the eleven Unified Combatant Commands of the US Department of War, each responsible for conducting US military operations in each geographical area or functional domain. Established in 1947, SOUTHCOM is headquartered in Miami, and its area of responsibility covers the whole of Central and South America[21]. This strategic presence reflects the view of the Caribbean as the United States' "third border", the desire to control sea lanes and the Panama Canal, and counter-narcotics policy. With its joint structure, its naval, amphibious and air assets, and its logistical capabilities, SOUTHCOM can rapidly project substantial resources across the entire Caribbean basin. The operations conducted after Hurricanes Matthew (2016), Irma and Maria (2017), Dorian (2019) and Melissa (2025) illustrate this rapid response capability (see map), which rests on strong interoperability with regional partners.

France is the second permanent military actor in the region, through the French Armed Forces in the Antilles (FAA). Prepositioned in Martinique and numbering more than 1,400 personnel, they simultaneously carry out sovereignty missions, the fight against illicit trafficking and humanitarian assistance across the Caribbean. The permanent presence of air[22], naval[23] and land[24] assets enable France to respond rapidly anywhere in the region. The **Netherlands** has a comparable permanent set-up in the Commander Zeemacht Caribisch Gebied (CZMCARIB), operating out of Curaçao and responsible for protecting the Kingdom's

[21] Excluding Mexico.
[22] Two shipboard helicopters of the French Navy.
[23] The Ventôse and Germinal surveillance frigates (FS), the Antilles-Guyane patrol vessel (PAG) *La Combattante*, and the overseas support and assistance vessel (BSAOM) *Dumont d'Urville*, stationed at the Fort-de-France naval base.
[24] The 33rd Marine Infantry Regiment (33e RIMa), comprising a command and logistics company, two combat companies and a reserve company.

Caribbean territories, maritime surveillance and support to civilian authorities in the event of disaster.

These permanent forces are supplemented by occasional contributions. The **United Kingdom** traditionally keeps a Royal Navy vessel in the region during the hurricane season and can deploy reinforcements from Europe, as it did in 2017 after Hurricanes Irma and Maria. **Canada**, which has no prepositioned forces, occasionally takes part in post-hurricane relief operations. These contributions complement the permanent assets without amounting to a regional presence comparable to that of the United States, France or the Netherlands.

Caribbean HADR governance thus rests on a functional complementarity between civilian organisations and military actors, which has gradually structured a genuine regional **ecosystem for post-hurricane disaster management** (Giacobbi, 2026).

Map 1 : Armed forces and HADR institutions in the insular Caribbean

Armed Forces and HADR Institutions in the Insular Caribbean

Armed forces and internal security forces

60,000 — Armed forces

690 — Internal security forces*

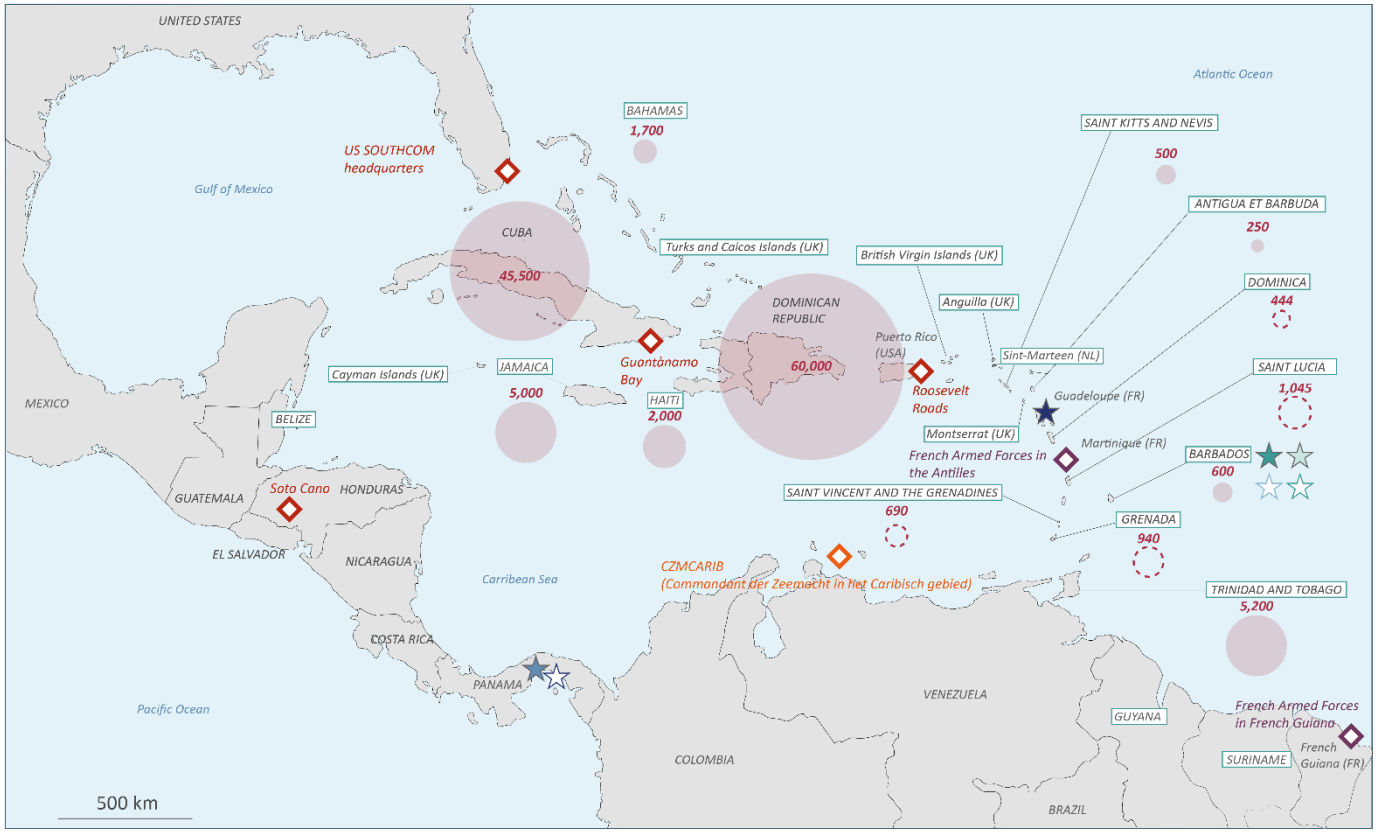
**Dominica, Grenada, Saint Lucia, and Saint Vincent and the Grenadines have no armed forces, only police forces.*

Main Non-Caribbean Military Bases and Command Structures

United States | France | Netherlands

Main institutions and organizations involved in disaster management (or in HADR)

- CDEMA Headquarters - *Carribean Disaster Emergency Management Agency*
- BELIZE — CDEMA Participating States and Territories
- Regional Security System Headquarters
- French Red Cross: Regional Intervention Platform for the Americas and the Caribbean (PIRAC)
- OCHA Regional Office for Latin America and the Caribbean (ROLAC)
- World Food Programme office
- The Delegation of the European Union to Barbados, the Eastern Caribbean States, the OECS and CARICOM/CARIFORUM
- DG ECHO Regional Office for Latin America and the Caribbean



Sources: CDEMA; CARICOM; Regional Security System; IISS - *The Military Balance 2026*

Map 2 : Category 5 hurricanes and HADR operations in the insular Caribbean, 2017–2025

Category 5 Hurricanes and Hadr (Humanitarian Assistance and Disaster Relief) Operations in the Insular Caribbean, 2017-2025

Hurricane classification on the Saffir-Simpson scale

- Tropical storm - 63 to 118 km/h
- CATEGORY 1 – 119 to 153 km/h
- CATEGORY 2 – 154 to 177 km/h
- CATEGORY 3 – 178 to 208 km/h
- CATEGORY 4 – 209 to 251 km/h
- CATEGORY 5 – 252 km/h or more
- *IRMA (2017)* — Category 5 hurricane on the Caribbean islands that prompted a HADR response

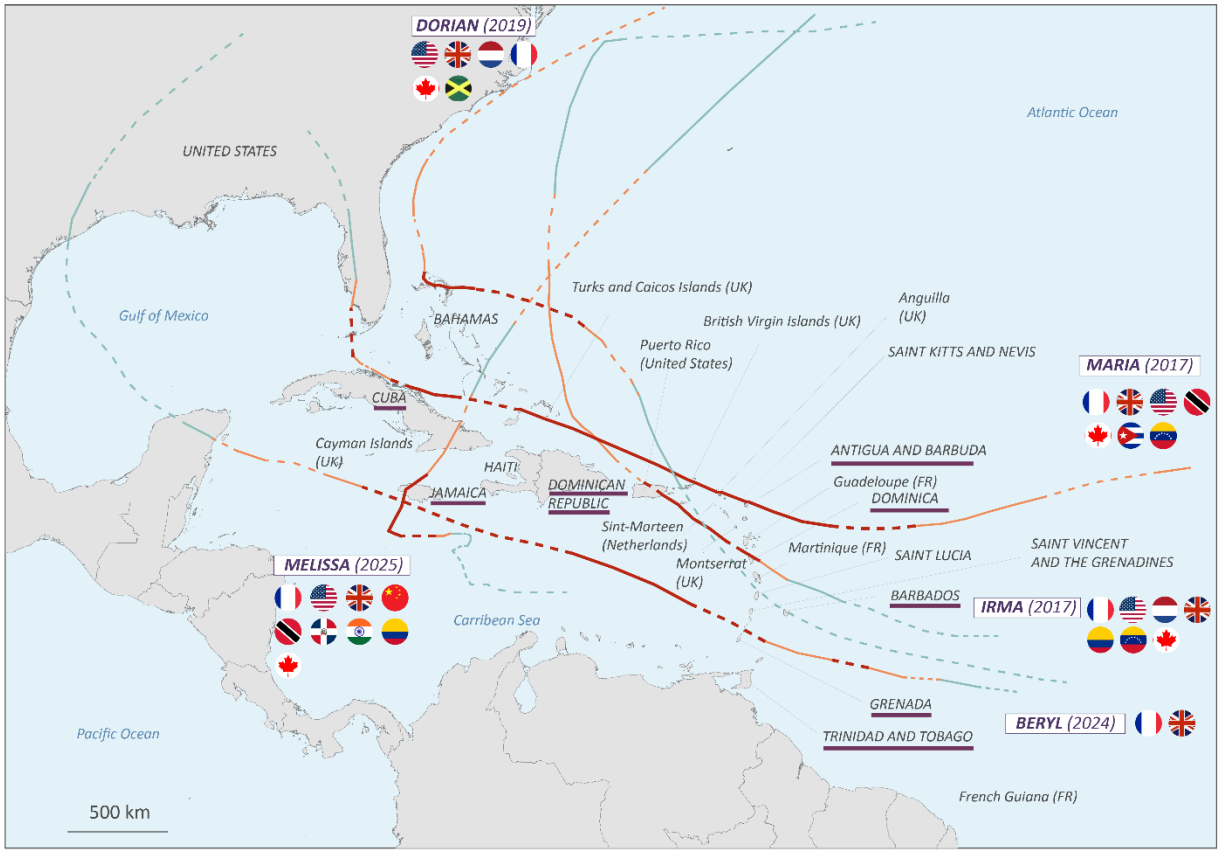
States that have deployed military assets as part of HADR operations

Latin America	North America	Asia
Colombia	Canada	China
Cuba	United States	India
Jamaica	**Europe**	
Dominican Rep.	France	
Trinidad and Tobago	Netherlands	
Venezuela	United Kingdom	

Medical diplomacy

CUBA — Visits carried out by the Harmonious Mission Medical Team of the People's Liberation Army of China

2011: Cuba, Jamaica, Trinidad and Tobago; 2015: Barbados, Grenada; 2018: Grenada, Dominica, Antigua and Barbuda, Dominican Republic; 2025: Jamaica (Kingston and Falmouth), Barbados



Sources: National Oceanic and Atmospheric Administration; United Nations Office for the Coordination of Humanitarian Affairs (OCHA)

B - A HADR system in flux

This balance is, however, being reshaped by two concurrent factors: the adaptation of traditional state actors to the effects of climate change, and the shift in US policy since Donald Trump's return to power in 2025.

1. The adaptation of traditional actors

The changing nature of hurricane risk in the Caribbean has gradually led the main prepositioned armed forces to take the climate factor into account in their doctrine, capability thinking and operational preparedness (Alex, 2020).

At the **doctrinal level**, the **first US strategic thinking** on the subject dates to the early 2000s and presents climate change as a threat multiplier, likely to increase humanitarian crises, population displacement and the need for military intervention (Alex and Estève, 2018; Estève, 2020). **In France, reflection began at the turn of the 2010s and was formalised in the Climate and Defence Strategy published in 2022.** Organised around four strands[25], it explicitly recognises the Antilles as a territory particularly exposed to the consequences of climate change[26]. This framework document provides for the adaptation of prepositioned assets, the strengthening of regional cooperation and the integration of climate scenarios into operational preparedness. As early as 2023, the FAA applied this approach locally by holding the first Caribbean "Defence and Climate" seminar. The **Netherlands has undergone a comparable evolution,** with climate-related disasters now fully integrated into CZMCARIB's operational mandate, alongside its traditional missions of maritime surveillance and protection of the Caribbean territories (Van Schaik et al., 2020).

This doctrinal shift goes hand in hand with a capability adaptation based on multi-role assets. Within the FAA, the overseas support and assistance vessel (BSAOM) *Dumont d'Urville* is a good example: its operational availability of 200 days a year[27], shallow draught, carrying capacity[28], landing craft[29] and diving equipment directly address the constraints of post-hurricane operations on small islands. Permanent air capabilities, by contrast, remain more limited, as tactical transport assets come mainly under the French Armed Forces in French

[25] Know, anticipate, adapt and cooperate.
[26] "The armed forces are regularly engaged in humanitarian relief operations following natural disasters, both in France and abroad. This is notably the case in the Antilles (…), often as part of international cooperation." (Ministry of the Armed Forces, 2022, *Climate and Defence Strategy*, p. 2).
[27] This makes the vessel fully operational throughout the hurricane season.
[28] Capacity of 200 tonnes of dry cargo, handled by a cargo crane, plus 150 m³ of water and 180 m³ of fuel.
[29] The BSAOM operates a utility boat (EMBSV).

Guiana[30], which requires permanent complementarity between France's overseas forces. Other prepositioned forces follow a comparable logic: despite differing national approaches, their adaptations converge on the same aim, namely **equipment that meets the requirements of regional security and natural disaster management at the same time**. This applies in particular to the Dutch forces, which have a logistic support vessel, HNLMS[31] *Pelikaan*, and are now equipped with MQ-9 Reaper drones able to contribute to counternarcotics operations and to support relief efforts.

Finally, this adaptation rests on an evolution in operational preparedness, with hurricane disasters now regarded as recurring scenarios for military engagement (de Guglielmo Weber and Duffau, 2024). The FAA play a central role in this dynamic through **Exercise Caraïbes**, which has gradually become a major regional HADR exercise based on scenarios drawn directly from lessons learned from Hurricanes Irma and Maria. The 2022 edition, which brought together nearly 2,500 participants, 11 vessels, 10 aircraft and 90 vehicles from five nations[32], marked an important step in the FAA's positioning within the Caribbean humanitarian ecosystem. Subsequently, the deployment of the *Jeanne d'Arc* naval officer training group (GEAOM) for Exercises Caraïbes 2024 and 2026 sent a strong defence diplomacy signal. The presence of an amphibious helicopter carrier (PHA), one of the French Navy's main projection assets, reflects **France's desire to make HADR a preferred vehicle for influence and cooperation in the Caribbean**. This momentum was extended in 2025 by the creation of the **Caribbean Academy,** designed to strengthen training, the sharing of lessons learned and interoperability between military, institutional and civilian partners in the region. The first session of this new body was held in Martinique in March 2026. It brought together more than 30 participants from eight Caribbean territories, representing organisations including CDEMA, the International Federation of Red Cross and Red Crescent Societies (IFRC), the Pan American Health Organization (PAHO), PIRAC, the RSS and the European Union. This week-long training course combined theory, a presentation of the FAA's assets and a simulation exercise in which an international crisis cell responded to a hurricane scenario.

The integration of the climate factor thus no longer rests solely on one-off responses to hurricane disasters. It is **gradually transforming the doctrine, capabilities and training of prepositioned armed forces**, making HADR operations a lasting component of their operational preparedness.

[30] With H225M Caracal and SA 330 Puma helicopters and CASA CN-235 logistic transport aircraft.
[31] His Netherlands Majesty's Ship.
[32] The United States, France, the United Kingdom, the Netherlands and the Dominican Republic.

2. The Effects of Trump 2.0

Donald Trump's return to the White House in January 2025 marks a major shift in the Caribbean geopolitics of emergency. While reaffirming the region as an area of priority strategic interest, the new administration has refocused US foreign policy on sovereignty, the fight against illegal immigration and drug trafficking. This revival of a logic close to the Monroe Doctrine[33] is accompanied by a display of military power, including a reinforced US naval presence in the Caribbean basin and the intervention in Venezuela in January 2026. It reflects the return of a policy based more on power relations than on regional cooperation (Quessard, 2025; Ventura, 2025).

This geopolitical reorientation is accompanied by an equally profound break in the way climate change is addressed. Whereas Presidents Obama and Biden regarded it as a "threat multiplier", the Trump administration has made the rejection of climate policies an ideological marker of its foreign policy (de Guglielmo Weber, 2025). Withdrawal from the Paris Agreement, the termination of some federal climate programmes, staff cuts at the National Oceanic and Atmospheric Administration (NOAA) and the abandonment of many Department of Defense workstreams on the security impacts of climate change all contribute to "a form of repoliticisation of climate issues" (Duffau and Jourde, 2025, p. 315), or even to "climate populism" (Collomb, 2021). **This effort to marginalise climate issues in US strategic thinking goes hand in hand with a challenge to regional scientific cooperation.** In particular, the sharing of certain satellite data used to monitor Atlantic hurricanes has been suspended, even though Caribbean states are among the territories most exposed to such climate hazards. Finally, this reduction in scientific capacity is compounded by **the abandonment of several regional cooperation training programmes**, including one on civil-military coordination for the armed forces of Trinidad and Tobago.

This pattern of disengagement also extends to US international aid policy. Humanitarian assistance had long been a traditional lever of US soft power in the Caribbean basin. Against this background, **the dismantling of the United States Agency for International Development (USAID) in 2025 represents one of the most significant breaks of Trump's second term.** Between 2024 and 2025, the US international assistance budget fell from over USD 82 billion to under USD 20 billion, while funding specifically allocated to humanitarian aid was cut to less than a fifth of its previous level. **For the Caribbean, this contraction is even more significant because USAID operated across the entire disaster management cycle**:

[33] Formulated in 1823 by US President James Monroe, the Monroe Doctrine holds that the Western Hemisphere is an area of privileged strategic interest for the United States and must be protected from any outside interference.

awareness-raising, warning systems, prepositioning of relief stocks, assessment teams and funding for regional organisations. In 2020, for instance, the agency granted USD 4.5 million to CDEMA to strengthen regional disaster preparedness capacity, before funding new telecommunications equipment in 2023.

Beyond its operational consequences, this new ordering of Washington's security priorities contributes to a reshaping of the Caribbean geopolitics of emergency. By favouring coercive instruments at the expense of climate cooperation and humanitarian assistance, the United States is freeing up room for manoeuvre for traditional actors such as France and the Netherlands. It is also opening space for new powers that had until then played a secondary role in the Caribbean humanitarian ecosystem, notably **China, India and the Gulf monarchies**. **Emergency aid is thus becoming one of the instruments of a renewed competition for influence** along this "third border" of the United States.

PART 3
HADR TESTED BY CARIBBEAN GEOPOLITICAL SHIFTS

A - A redistribution of roles at the regional level

At the regional level, HADR is undergoing a gradual redistribution of roles: the withdrawal of certain long-standing regional actors is matched by the growing assertiveness of Latin American powers and the increasing capabilities of the Caribbean states themselves.

1. Cuba and Venezuela: two weakened models of humanitarian diplomacy

For several decades, Cuba has been a major HADR actor in the Caribbean through its medical diplomacy, a pillar of its soft power. Developed from the 1960s onwards, this strategy is one of the Castro regime's main instruments of international influence and a vehicle for South–South cooperation (Faivre d'Arcier-Flores, 2015; Lamrani, 2021). Rather than military assets, Havana relies on its health brigades deployed in several Caribbean states, particularly the Henry Reeve contingent, established in 2005 (Blue, 2010; Mesa Ridel et al., 2018). In the field of hurricane response, its most emblematic action took place in Dominica after Hurricane Maria (2017), with the dispatch of a medical brigade as reinforcement, followed by the exceptional deployment of the patrol vessel *Río Jatibonico*, carrying 300 tonnes of humanitarian aid.

This model of intervention has, however, slowed markedly since Donald Trump's return to power in 2025. The gradual deterioration of Cuba's economic and social situation (Pedraza and Romero, 2023), aggravated by the tightening of the embargo and the energy crisis, already limits Havana's projection capabilities. In addition, US policy explicitly targets Cuban medical brigades. In 2025, visa restrictions were extended to foreign officials involved in hosting them, with the aim of deterring partner states from maintaining their cooperation agreements with Havana. Washington has also exerted diplomatic pressure on several Caribbean countries to end their health cooperation with Cuba, despite protests from CARICOM states, which continue to regard Cuban medical assistance as an essential component of regional health security (Shames, 2020). Hurricane Melissa (2025) illustrates this reversal of roles, as Cuba has itself gradually become a recipient of international aid, receiving support from the World Food Programme (WFP).

Since the early 2000s, Venezuela has developed a strategy of "social power diplomacy", an external influence strategy based on oil rents and expressed through particularly active HADR diplomacy (Feinsilver, 2008; Corrales, 2009). Unlike Cuba, Caracas has regularly deployed military assets. In 2015, after Hurricane Erika, a C-130 Hercules aircraft and the patrol vessel *Yekuana* of the Fuerzas Armadas Nacionales Bolivarianas (FANB) delivered more than 2,000 tonnes of aid to Dominica. In 2017, the FANB deployed another C-130 to help evacuate the

2,000 inhabitants of Barbuda threatened by Hurricane Irma. Caracas sought to pursue this engagement by sending humanitarian aid to Cuba and Jamaica after Hurricane Melissa in 2025. This humanitarian policy is, however, now being called into question. **Economic collapse and the US military intervention of January 2026 have considerably reduced the regime's capacity for external action**: like Cuba, Venezuela has gradually become a major recipient of international aid itself, as illustrated by the double earthquake of 24 June 2026[34].

2. Brazil and Colombia: the gradual assertion of Latin American ambitions

Since the 2000s, Brazil has aspired to establish itself as the voice of the "Global South", but this strategy remains mainly focused on South America, with the Caribbean a secondary area, Haiti excepted (Bry, 2017; Ventura, 2023). After the 2010 earthquake and Hurricane Matthew in 2016, Brasília mobilised substantial naval and air assets to bring relief to Port-au-Prince. Lula's return to the Planalto in 2023 has been accompanied by a revival of this ambition, illustrated by the purchase from the Royal Navy of three Round Table-class amphibious vessels. These give the Marinha do Brasil one of the largest HADR projection capabilities in Latin America (Belém Lopes, 2024). They have not, however, yet been deployed in recent hurricane disasters. Nevertheless, **the participation of Brazilian military personnel in Exercise Caraïbes 2026, organised by the FAA, reflects a growing interest in regional cooperation on disaster response.**

By contrast, **Colombia has gradually made humanitarian action a central pillar of its foreign policy, explicitly incorporating climate change adaptation and disaster response into its international cooperation strategy** (Agencia Presidencial de Cooperación Internacional de Colombia, 2023). In 2017, during Hurricane Irma, a Boeing 727-200 *Vulcano* of the Fuerza Aérea Colombiana (FAC) carried 15 tonnes of emergency humanitarian aid to Cuba. In 2024, Colombia sent a C-130 Hercules loaded with relief supplies to Cuba after Hurricanes Oscar and Rafael. In 2025, after Hurricane Melissa, the OPV[35] *Victoria* of the Armada de la República de Colombia (ARC) delivered 244 tonnes of humanitarian cargo to Santiago de Cuba, while a FAC Boeing 737-400 delivered 14 tonnes of equipment to Haiti. This policy also draws on lessons learned from the destruction of the Colombian islands of Providencia and San Andrés by Hurricane Iota in 2020[36]. The disaster led to the creation in 2021 of the Brigada de Rescate e Intervención en Atención de Desastres (BRIAD), a specialised unit of nearly 950 military personnel intended for both domestic and overseas operations. **Colombia thus now appears**

[34] In particular, France deployed 85 rescue workers and delivered 44 tonnes of humanitarian aid, part of it aboard the BSAOM *Dumont d'Urville*
[35] Offshore Patrol Vessel
[36] The French Armed Forces in the Antilles provided assistance at the time through a HADR mission of the BSAOM *Dumont d'Urville*.

to be the Latin American partner that has most clearly institutionalised HADR as an instrument of foreign policy and regional cooperation.

3. The rise of Caribbean states

Beyond the traditionally prepositioned powers, **a comparable development can be observed within Caribbean armed forces, which are gradually integrating climate change and HADR operations into their doctrine, organisation and capabilities.**

The **Dominican Republic** is today the most advanced example of this development in the insular Caribbean. The publication in 2022 of its first Defence White Paper marked a major doctrinal shift, as it devoted an entire chapter to the consequences of climate change for defence and security. It states[37]: "*The armed forces provide increased support (…) to disaster risk management in all its aspects*"[38]. The document makes risk management one of the Armed Forces' lines of action, reflecting the integration of climate security into national strategic thinking. This orientation has notably materialised in the creation of the Cuerpo Especializado de Mitigación a Emergencias y Desastres (CEMED), a permanent joint unit specifically responsible for natural disaster prevention, preparedness and response. **This development is also reflected in growing involvement in regional cooperation mechanisms.** Although the resources committed remain modest, the regular participation of the Fuerzas Armadas de la República Dominicana (FARD) in Exercise Caraïbes carries strong symbolic weight. During the 2022 edition, for instance, Santo Domingo deployed a patrol vessel and a detachment specialising in disaster management. The deployment reflected less a large-scale projection capability than a clear desire to contribute to regional HADR operations and to strengthen interoperability with French forces. The Jamaica Defence Force (JDF) is following a comparable path. In 2024, it organised Exercise Event Horizon, which brought together naval and air components and coastguards from eleven nations for two weeks, around a hurricane response scenario in the Caribbean[39].

This dynamic confirms the emergence of HADR cooperation increasingly driven by the Caribbean states themselves and even tends to extend beyond their island space. Within the Conference of Central American Armed Forces (CFAC), the Dominican Republic takes part, alongside Guatemala, Honduras, Nicaragua and El Salvador, in activities devoted to adapting armed forces to climate change and to disaster management.

[37] Ministerio de Defensa de la República Dominicana, 2022, Libro blanco de la defensa de República Dominicana, p. 185.
[38] « Las Fuerzas Armadas brinden un mayor respaldo (...) en una gestión de riesgos ante eventos de desastres en todas sus vertientes ».
[39] The Bahamas, Belize, Canada, the Cayman Islands, Colombia, Costa Rica, the Dominican Republic, Haiti, Jamaica, the Netherlands, and the Turks and Caicos Islands.

B - Humanitarian emergencies: a new arena of influence for extra-regional actors

Alongside the rise of regional actors, **Caribbean HADR is attracting extra-regional players that use humanitarian assistance as a new instrument of presence and influence in the Caribbean** (de Guglielmo Weber and Duffau, 2024).

1. China: a new humanitarian power in the Caribbean?

The **People's Republic of China** (PRC) has so far only very rarely conducted genuine HADR operations in the Caribbean in the wake of hurricanes. It has nevertheless gradually carved out a prominent place in the Caribbean humanitarian landscape. This involvement stems from an influence strategy built around the Belt and Road Initiative[40] (BRI), the "One China" policy[41] and growing rivalry with the United States (Courmont, 2018; Constant, 2021; Drouhaud, 2024).

Its main instrument is **naval medical diplomacy**, conducted through the **hospital ships of the People's Liberation Army** (PLA) as part of military operations other than war (MOOTW). These missions combine **medical assistance, the demonstration of military capabilities and public diplomacy** (Pina, 2024). Chinese hospital ships have thus made **several tours** of the Caribbean as part of the Harmonious Mission operations:

Table 2 – Chinese naval medical diplomacy: a tour of the People's Liberation Army's hospital ships

Year	Hospital ship	Ports of call
2011	*Peace Ark*	Cuba Jamaica Trinidad and Tobago
2015	*Peace Ark*	Barbados Grenada
2018	*Peace Ark*	Grenada Dominica Antigua and Barbuda Dominican Republic
2025	*Silk Road Ark*	Jamaica (Kingston and Falmouth) Barbados

[40] An investment and international cooperation programme launched by the PRC in 2013, aimed in particular at developing transport infrastructure between China and its partners.
[41] The principle that there is only one sovereign Chinese state, the People's Republic of China. Beijing therefore makes the establishment of diplomatic relations conditional on the official non-recognition of Taiwan.

These vessels have substantial hospital capacity[42] and can treat several thousand people on each mission. The choice of ports of call also reflects diplomatic considerations: **the missions favour states that matter to Chinese diplomacy**, whether strategic partners or countries that have recently severed relations with Taiwan (such as the Dominican Republic in 2018).

The *Silk Road Ark*'s calls in Jamaica in December 2025, although long planned, came a few weeks after Hurricane Melissa. They enabled the PRC to showcase its health assistance at the very moment the United States was deploying its carrier strike group as part of its counternarcotics campaign. **Beijing communicated extensively on this contrast between the Chinese hospital ship and US warships, presenting them as two competing approaches to international presence in the region: humanitarian assistance on one side, military action on the other.** This medical diplomacy enables Beijing to strengthen its regional foothold while promoting a narrative of South–South solidarity (Parthenay, 2022).

China's presence also rests on financial and in-kind donations made after natural disasters[43]**. Their distribution relies on the mobilisation of local Chinese communities, thereby contributing to Beijing's soft power in the region.** In 2023, China also provided USD 100,000 in financial support to CDEMA to strengthen regional disaster response capacity, while occasionally supporting national civil protection agencies. Finally, **cooperation takes the form of military and medical training**: since 2023, several seminars have brought together representatives of Caribbean armed forces on military medicine, natural disaster preparedness and HADR operations (Pina, 2024)[44].

This policy enables China to increase its presence in a region traditionally regarded as a US sphere of influence. This growing role nevertheless remains constrained by the tyranny of distance and limited projection capabilities, whereas the traditional regional actors have prepositioned forces. Moreover, **Chinese action remains largely bilateral and poorly coordinated with regional disaster management mechanisms**, notably CDEMA and the RSS. This lack of integration limits the operational reach of its engagement.

2. A rapidly diversifying range of new actors

A growing number of extra-regional actors are now moving into the Caribbean humanitarian space. Lacking permanent bases in the region, these states either project relief supplies or medical capabilities by military aircraft when conditions allow or favour financial donations.

[42] More than 300 beds, eight operating theatres and an embarked helicopter.
[43] Aid has been recorded in particular after Hurricanes Erika (Dominica, 2015), Maria (Dominica, 2017), Dorian (the Bahamas, 2019), Beryl (Grenada, 2024) and Melissa (Jamaica, 2025).
[44] In particular the Trinidad and Tobago Defence Force (TTDF) in 2023 and the FARD in 2025.

This diversification illustrates the rise of genuine **geopolitics of emergency**, in which **humanitarian assistance can become an arena for competition and international visibility**.

India appears, in this field, to be the most ambitious newcomer. Itself highly exposed to natural disasters, it has gradually made HADR an instrument of its foreign policy and of its image as a "responsible power" (Parmar, 2012; Shanbog and Kevlihan, 2022; Chanana and Pandey, 2024). After financial assistance to the Bahamas (2019) and more than 60 tonnes of aid to Saint Vincent and the Grenadines after Beryl (2024), New Delhi reached a new milestone after Melissa (2025). It deployed an Indian Air Force (IAF) C-17 Globemaster III carrying 20 tonnes of humanitarian supplies and the Arogya Maitri mobile hospital[45] to Jamaica and Cuba. This open reliance on military assets, combined with a strengthened India–CARICOM dialogue, reflects New Delhi's desire to establish itself as a credible partner in Caribbean HADR.

The Gulf states are more recent actors (Barakat, 2024). Qatar, the United Arab Emirates, Saudi Arabia and, to a lesser extent, Kuwait fund relief and reconstruction operations. In 2024, for instance, after Hurricane Beryl, Saudi Arabia donated 21 humanitarian containers, worth USD 200,000, to Grenada. In 2025, in coordination with CDEMA, the Emirates Development Agency (EDA) also sent basic necessities and materials for building shelters to Jamaica after Melissa. For these monarchies, humanitarian aid complements a broader strategy of economic diversification and international assertiveness.

Taiwan concentrates its aid on the four Caribbean states that still recognise Taipei[46]. Sino-Taiwanese rivalry is thus also expressed through competition over post-disaster aid. After Hurricane Irma (2017), the floods in Saint Lucia (2022), torrential rains in Haiti (2023) and Hurricane Beryl (2024), Taiwanese aid mainly took the form of financial donations, food and relief supplies. This assistance is an essential instrument for preserving Taiwan's diplomatic space in the face of pressure from Beijing. It has not, however, involved the deployment of military assets.

Finally, **Japan favours an approach based on development cooperation and disaster risk reduction**. Through the Japan International Cooperation Agency (JICA), it regularly provides essential goods after hurricane disasters: Haiti after Dennis (2005), Saint Lucia and Saint Vincent and the Grenadines after Tomas (2010), Dominica after Erika (2015), Saint Vincent and the Grenadines after Beryl (2024) and Jamaica after Melissa (2025). This solidarity reflects a desire to increase Japan's diplomatic presence in the Caribbean and to offer a discreet alternative to Chinese influence.

[45] An innovative mobile medical unit designed for rapid deployment in crisis zones.
[46] Haiti, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines.

Ultimately, although these new actors lack the permanent military assets of the prepositioned powers, their growing involvement confirms that humanitarian emergencies have become a strategic space for diplomatic projection. Hurricane disasters now offer a wide range of powers the opportunity to strengthen their partnerships, defend their geopolitical interests and increase their visibility in a region where humanitarian aid has become a genuine instrument of influence. **These developments require the armed forces present in the Caribbean to adapt their preparedness and capabilities to changing hurricane risk, while taking account of the reshaping of the regional HADR ecosystem.** Several recommendations follow from these dynamics, aimed at consolidating the operational effectiveness and strategic positioning of the French armed forces in Caribbean HADR.

PART 4
STRATEGIC DIRECTIONS AND OPERATIONAL RECOMMENDATIONS FOR FRENCH FORCES

As certain US arrangements contract and China and other powers become increasingly involved, the FAA's HADR activities are a major vehicle for France's strategic presence in the Caribbean. France has distinctive assets in this field. Its territorial presence gives it detailed knowledge of the Caribbean environment, reinforced by a dense regional diplomatic network, while its armed forces have proven experience in disaster management and in first entry into territories in crisis.

All these strategic directions were built on the 2022 Climate and Defence Strategy, the 2025 National Strategic Review and the Military Programming Law (LPM) updated in 2026. The first stresses the need to adapt prepositioned assets, operational preparedness and regional cooperation to the consequences of climate change. The second reaffirms the strategic importance of the overseas territories and the need to adapt their defence arrangements. The third provides for the reinforcement and modernisation of the assets prepositioned there and incorporates the consequences of climate change into force preparation.

To meet these objectives, the following recommendations call for extending the momentum already initiated by the FAA. They are organised around two complementary strands: strengthening regional cooperation and continuing the FAA's adaptation to the effects of climate change.

A - Anchoring HADR as a central pillar of French regional cooperation

- ### Deepening HADR cooperation with the Netherlands.

French and Dutch forces are the main European armed forces permanently prepositioned in the Caribbean and face comparable geographical and operational constraints. The cooperation agreements concluded in recent years[47] provide a favourable framework for deepening this cooperation in the field of HADR.

This relationship could be deepened through greater complementarity between French transport and projection capabilities and Dutch surveillance assets, notably the Dash-8 aircraft and MQ-9 Reapers deployed in Curaçao. It could also involve **systematic cross-participation in HADR exercises**, building on the participation of the BSAOM *Dumont d'Urville*

[47] In particular, the defence cooperation agreement that entered into force in 2023, which explicitly provides for humanitarian assistance in the event of disasters.

in Exercise Calm Horizon 2025, organised by CZMCARIB, and of Dutch forces in Exercise Caraïbes.

This cooperation could usefully be **anchored more specifically in the Multi-National Caribbean Coordination Cell (MN3C)**, a flexible and proven coordination framework between France, the Netherlands and the United Kingdom. This would help to link regional civilian mechanisms more closely with the military capabilities that could be mobilised in the event of a major crisis.

- **Building a close-knit network of regional military partners.**

In this respect, Colombia is of particular interest: it now has an institutionalised HADR capability, notably the Brigada de Rescate e Intervención en Atención de Desastres, and has conducted a growing number of overseas relief operations since 2017. Alongside counternarcotics, **HADR thus offers a second field of cooperation that could broaden and sustain the Franco-Colombian military relationship**, while remaining attentive to the direction taken by the new Colombian presidency.

In a second circle, **cooperation with the Dominican Republic and Jamaica could be deepened**, given the growing strength of their military responses to climate-related disasters. In the Dominican Republic, the development of the **Cuerpo Especializado de Mitigación a Emergencias y Desastres (CEMED)** offers a **specialised military counterpart** with which cooperation on training, the exchange of expertise and exercises could be developed. In Jamaica, **French participation in the multinational Exercise Event Horizon** could be considered. It would further integrate the FAA into a regional framework combining HADR, search and rescue, and maritime security.

- **Sustaining Exercise Caraïbes and the Caribbean Academy as regional reference frameworks for HADR.**

Exercise Caraïbes and the Caribbean Academy are two complementary instruments of French influence in the field of HADR: the former as a framework for operational implementation and interoperability, the latter as a tool for training regional civilian and military partners. **The occasional participation of assets projected from mainland France**, such as a PHA, A400M aircraft or other transport and support capabilities, could be considered depending on availability and operational constraints. It would make it possible to test, under realistic conditions, reinforcement chains to the Antilles and their integration into regional arrangements. **Committing these assets alongside the forces of partner states would raise**

the profile of France's engagement and help to strengthen the FAA's position as a leading regional actor in HADR.

- **Keeping CDEMA at the centre of France's HADR cooperation strategy.**

As the main centre of gravity of regional disaster governance, CDEMA is the FAA's preferred institutional counterpart. **The agreement concluded in June 2026 between the FAA and CDEMA provides a framework that should be fully exploited** to develop joint preparedness, information sharing, training and lessons learned. This cooperation could be complemented by **closer relations with the Regional Security System** (RSS). Its operational knowledge of the Eastern Caribbean states and its own capabilities, notably its Air Wing with two C-26A aircraft, make it a natural partner for the FAA in HADR.

B - Continuing the FAA's adaptation to climate change

- **Increasing the FAA's air reception and projection capabilities.**

Permanent air assets in the Antilles remain very limited, and the FAA must rely on those of the French Armed Forces in French Guiana. **The availability of tactical transport assets and utility helicopters should therefore be guaranteed during the hurricane season.** This reinforcement capability must continue to be tested regularly through **deployment and projection exercises such as Balbuzard**. **The reception capacity of airfields in the Antilles must also be increased**, to facilitate the rapid arrival of reinforcements from mainland France and their possible onward projection to neighbouring territories. Particular attention could be paid to **the military zone of Guadeloupe's airport**: its proximity to PIRAC's regional humanitarian warehouse and to the Sécurité civile's stocks enhances its value as a HADR logistics hub. With this in mind, consolidating a crisis air staging point would strengthen the armed forces' ability to respond.

- **Developing the FAA's autonomous amphibious projection capability.**

Strengthening amphibious capability in the overseas territories is also an identified need. The planned arrival of an EDA-S[48] in Fort-de-France will consolidate the FAA's landing capabilities, particularly when port infrastructure is unavailable after a hurricane. Beyond the capabilities offered by the BSAOM *Dumont d'Urville* and the future EDA-S, **the merits of having a genuine amphibious capability in the Antilles, of the BATRAL type or equivalent, could be examined**. The aim would be to increase the FAA's reach, endurance and carrying capacity to conduct

[48] Standard amphibious landing craft.

HADR projections between Caribbean islands, including to territories that conventional vessels find difficult to reach. **The seasonal chartering of civilian vessels** already present in the area could provide a complementary or alternative solution, offering additional transport capacity on a temporary basis during the hurricane season.

- **Accelerating the integration of drones within the FAA in support of HADR knowledge, anticipation and action.**

Drones can be a particularly well-suited tool for HADR operations, making it possible to assess damage rapidly, map routes and help prioritise relief efforts in the first hours after a disaster. Capabilities nevertheless remain limited. Their development would also offer **strong dual-use value**, as the same assets could be used for search and rescue (SAR) or counternarcotics operations. The build-up of these capabilities must be accompanied by close coordination with the civil airspace authorities and by **enhanced personnel training, in order to build a sufficient pool of operators.**

- **Strengthening the resilience of the military presence in the Antilles.**

The availability of HADR assets depends on the FAA's ability to continue operating after a hurricane. In the Antilles, the Fort-de-France naval base and the State Aviation Hub (PAE) at Le Lamentin, two facilities essential to FAA projection, are exposed to the direct and indirect effects of hurricanes. Particular attention must also be paid to the resilience of information and communication systems, as illustrated by Exercise Triton. **This vulnerability therefore makes it necessary to accelerate the adaptation of these facilities** to the effects of climate change: reinforcing sensitive installations, protecting critical networks and improving drainage systems. **As regards the naval base, the studies on raising the most exposed quays and port facilities must now lead to actual works.**

- **Creating a "climate-security" analysis and anticipation cell within the FAA.**

Combining military expertise with civilian skills, notably those of Météo-France and of the regional academic and scientific community (Université des Antilles, University of the West Indies), **this body would monitor the long-term effects of climate change likely to have a direct impact on the FAA's missions and capabilities**. Beyond hurricane risk alone, it could analyse the consequences of droughts, floods, coastal flooding and extreme heat events, as well as their effects on the regional security environment. This cell would help to **strengthen the FAA's expertise and visibility on climate security issues in the Caribbean.**

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