

# OVERVIEW OF DISASTERS IN LATIN AMERICA AND THE CARIBBEAN 2000 - 2022



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UNDRR

UN Office for Disaster Risk Reduction

OCHA

# Foreword

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Since 2000, disasters have affected more than 190 million people in Latin America and the Caribbean.

Three out of every 10 people in the region have withstood a hurricane. Or an earthquake. Or a drought, landslide or volcano, to name just a few of the region's most common natural hazard emergencies.

Disasters leave lasting scars on a person and communities, and in some cases an entire country, who must pick up the pieces. Some move on without the loved ones, homes, business or community infrastructure they once relied on.

As we know, not every natural hazard or event results in a disaster. Exposure and vulnerability play a large role. Extreme weather and seismic events are occurring in places where poverty, inequality, food insecurity, displacement and violence are already part of the daily life of millions of people in Latin America and the Caribbean. Growing risks and continuing vulnerability mean that disasters are more likely to occur, threatening more lives and livelihoods and causing more human and material losses.

Certain climate-related disasters, like drought and storms, are especially concerning given their cyclical nature and increasing frequency and intensity. According to the World Bank, the impacts of climate change will likely lead to more than 17 million people moving in search of better living conditions, livelihood opportunities and basic services by 2050.

We also live in an increasingly interconnected world. Each new shock can trigger cascading and compounding effects that, in turn, cause serious social, economic and environmental disruptions.

Latin America and the Caribbean saw this first-hand in 2020 with the COVID-19 pandemic. If the estimated 2.8 million deaths in the region wasn't harrowing enough, the strained healthcare systems, mobility restrictions, economic paralysis and spikes in food insecurity left millions of people more vulnerable to future emergencies.

Back-to-back hurricanes Eta and Iota ravaged Central America at the height of the pandemic in late 2020 and some communities are still struggling to recover.

We may not be able to prevent natural hazards; however, we are getting better at anticipating events. We need now to invest equally in reducing risks and vulnerabilities and acting earlier on early warning signs and forecasts to mitigate loss of life and livelihoods.

To that end, this joint report helps us better understand the past trends of hazards and disasters in the region as we chart our path towards a safer and more prepared future.

## **Shelley Cheatham**

Head of Office, UN Office for the Coordination of Humanitarian Affairs (OCHA) - Regional Office for Latin America and the Caribbean

### **PHOTO ON COVER:**

Homes, hotels and hospitals are severely damaged at Boulevard 4, Haiti (August 2021)  
Photo: UNFPA/Ralph Tedy Erol



A boy in the Dominican Republic in front debris left behind by Hurricane Irma (September 2017)  
Photo: UNICEF

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Over the past two decades, disasters have affected more than 190 million people in Latin America and the Caribbean. The vulnerability of millions in the region and the accumulation of risks has reached unimaginable levels in recent years. Economic crises, growing inequality and exclusion, increasing numbers of people falling into poverty each year, chaotic urbanization patterns and the indiscriminate exploitation of natural resources and environmental degradation have worsened at an alarming pace. Consequently, the human and economic losses associated with disasters continue to escalate.

Nevertheless, significant positive changes have occurred in recent decades, and substantial progress has been made in understanding risk and its manifestation in disasters. New knowledge, concepts, and approaches are being advanced, linking risks to their underlying causes as well as revealing their cascading effects. The COVID-19 pandemic and climate change have clearly dimensioned the extent to which hazards and risks are interconnected and reverberate across various systems and sectors. This report makes a significant contribution in shedding light on these linkages and interactions.

Given the economic and social impact of disasters in Latin America and the Caribbean, a crucial catalyst for risk reduction and prevention is the incorporation of disaster risk considerations in public and private investment analysis and decisions. Maybe in a more active voice: Public and private sector financing must adequately internalize current and projected disaster risk. Risk-blind investment decisions are driving future disasters. Engaging with investors and regulators is critical, advocating for the removal of legal and other regulatory barriers to incorporating prevention criteria and processes in such investments, avoiding risk-blind investments. Incentives are also needed to drive more resilient capital investments in businesses in

the interest of ex-ante longer-term risk reduction and resilience. This is essential to ensure the resilience of critical infrastructures and the services they provide.

Early warning systems are a cost-effective tool that saves lives, reduces economic losses, and provides an estimated up to tenfold return on investment. People-centered, integral, multi-hazard early warning systems can minimize harm to individuals, assets, and livelihoods by triggering well-prepared and well-tested early actions. This is why the UN Secretary-General launched the “Early Warnings for All” initiative in March 2022, calling for global coverage by 2027. Multi-hazard early warning systems should be based on a comprehensive understanding of risk and the articulation of the expertise and capacities of multiple actors, sectors and levels of intervention. Such early warning systems and actions, in general, must be accompanied by a substantial increase in finance and investment in corrective and prospective disaster risk reduction processes—attacking the problem of risk at its roots.

The work ahead of us is challenging, but achievable. Nevertheless, we must work together with unwavering commitment, understanding that disasters are not natural. If we can limit the death and destruction from disasters, then we will be able to contribute to and protect global progress towards the Sustainable Development Goals and adaptation to a changing climate. If not, much hard-won progress could easily be undone. We cannot afford a future where every hazard becomes a disaster. Now is the time to reduce risk and create a safer world.

**Nahuel Arenas García**

Chief of the United Nations Office for Disaster Risk Reduction (UNDRR) – Regional office for the Americas and the Caribbean



Several men work on the restoration of a tobacco warehouse destroyed after Hurricane Ian hit Pinar del Río, Cuba (September 2022)  
Photo: Yander Zamora

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## Latin America and the Caribbean is the second most disaster-prone region in the world 190 million affected by 1,534 disasters (2000-2022)<sup>1</sup>



**681**  
FLOODS

- Floods are the most common disaster in the region, affecting the most people in Colombia, Brazil and Peru.
- Brazil is one of the top 15 countries in the world with the greatest population exposed to river flood risk. These 15 countries account for almost 80 per cent of the population affected annually by flooding.
- On 12 occasions since 2000, floods in the region have caused more than US\$1 billion dollars in total damage.



**400**  
STORMS

- Storms are becoming more frequent. In 2021, the 30-year average for the Atlantic Hurricane season increased to 14 named storms, 7 hurricanes and 3 major hurricanes (the 1881-2010 averages were 12 storms, 6 hurricanes and 3 major hurricanes). An Eastern Pacific hurricane season averages 15 named storms, 8 hurricanes and 4 major hurricanes.
- In 2019, Hurricane Dorian became the strongest Atlantic hurricane on record to directly make landfall.
- The 2020 Atlantic Hurricane season was the most active on record with 30 named storms, including 14 hurricanes and 7 major hurricanes. This heightened activity continued in 2021, which was the third most active season on record and the sixth-consecutive above-normal Atlantic hurricane season<sup>2</sup>.



**92**  
EARTHQUAKES

- 65 per cent of earthquakes magnitude 8.0 or higher have occurred in South America
- Since 2000, there have been 57 magnitude 7.0 or greater earthquakes in the region: 26 in the Central America, 26 in South America and 5 in the Caribbean
- The 2010 Haiti earthquake with over 222.5K casualties ranks among the top 10 deadliest earthquakes in human history.



**77**  
DROUGHTS

- Drought is the disaster that has affected the highest number of people in the region: over 53 million people since 2000.
- Drought is the single greatest culprit of agricultural production loss; 82 per cent of all drought impact is agricultural.
- Between 2008 and 2018, \$13 billion was lost in Latin America and the Caribbean because of drought-induced declines in crop and livestock production<sup>3</sup>.
- 975 calories per capita per day were lost due to disasters between 2008 and 2018 in the region, more than in Africa (559 calories) and Asia (283 calories).

<sup>1</sup> All data on of occurrences of disasters – classified as natural -, people affected, injuries and total damage are from CRED EM-DAT (<https://public.emdat.be>), accessed on 10 January 2023, unless otherwise specified.

<sup>2</sup> State of the Climate in Latin America and the Caribbean 2021, WMO

<sup>3</sup> Damage and loss ([fao.org](http://fao.org))



\* Others – 75 epidemics (excluding COVID-19), 3 mass movement, 1 insect infestations.

### Observations and challenges on data on disasters

Although the quality of information on disasters has improved exponentially over the past decades, there remain significant differences among information sources preventing a clear understanding of the true impact of disasters.

Challenges in classifying data: classification of disasters and working with clear criteria and definitions are necessary on the one hand but limit the possibility to analyze the potential interconnectedness between different disaster types<sup>4</sup>.

For this overview, data is (unless otherwise stated) from the Centre for Research on the Epidemiology of Disasters (CRED) Emergency Events Database (EM-DAT).

CRED EM-DAT distinguishes between natural and technological hazards. The data analyzed relates to those disasters classified as “natural” which have unfolded in Latin America and the Caribbean between 2000 and 2022. A disaster needs to meet one of the following criteria to be listed in the database:

- 10 or more people reportedly killed
- 100 or more people affected
- A declaration of state of emergency
- Call for international assistance

This overview does not cover technological hazards, security related events, armed conflicts, complex human activities and other situations of social instability, however

we acknowledge that in an interconnected world hazards such as these cannot be overlooked.

Although epidemics are considered a disaster type in the CRED EM-DAT, COVID-19 is not always included.

Compounding and cascading effects of regional disasters / hazards and other global pressures such as the war in Ukraine and the effects of COVID-19 lockdown are difficult to measure in a database.

### Regional context and drivers of risk

Latin America and the Caribbean is the second most disaster affected region in the world after Asia and the Pacific. Along with high physical exposure to hazards, the region has a complex environment of risk drivers, including climate change; dense urban populations; slow economic growth; widening inequality and poverty; political instability; displacement and mass migration; and high levels of violence. These intertwining risks create situations of vulnerability and heavily impact the capacity of a population to prepare, respond and recover from a disaster.

- With highly populated urban and low-lying coastal areas, the region has some of the highest physical exposure to hazards. In Latin America and the Caribbean, about 340 million people live in cities with populations of 500,000 or more that are highly vulnerable to at least one type of natural hazard<sup>5</sup>.

<sup>4</sup> Classification | EM-DAT (emdat.be)

<sup>5</sup> UNDRR Regional Assessment Report on Disaster Risk in Latin America and the Caribbean (RAR 2021)



- Climate change is increasing the frequency and intensity of severe weather-related events across the region. By 2050, over 17 million people<sup>6</sup> in Latin America could be forced to migrate to escape the impacts of slow-onset climate change.
- Since 2000, economic growth has been incredibly volatile in the region. According to the World Bank, in 2020, the region saw an average GDP loss of 6.6 per cent while 2021 saw an average increase of 6.5 per cent. The high exposure to disaster events threatens sustainable economic growth. It is estimated that since 2000, 1.7 per cent of annual GDP has been lost on average to climate-related disasters<sup>7</sup>. In the Caribbean, where exposure to intense weather events is much greater, this increases to 3 per cent. In recent years some countries have endured hurricanes that have generated losses that outweigh their entire GDP.
- Latin America and the Caribbean have the highest levels of inequality in terms of income distribution. Between 2009 and 2020, 40.8% of the region's population were living below the national poverty line. In 2021, an estimated 36 million<sup>8</sup> people experienced multidimensional poverty. With increasing climate shocks and inflation, poverty and inequality are predicted to rise, increasing the region's vulnerability.
- Violence remains a common reality for many people across the Latin America and Caribbean region. Despite making up only 8% of the world's population, the region accounts for more than 30% of global intentional homicides (UNODC data) – the intentional homicide rate per 100,000 people is almost 4 times the global average (21.2 vs 5.6 in 2020). In fact, most countries in the region exhibit homicide rates that are considered epidemic by World Health Organization (WHO) standards. Violence or the threat of violence exacerbates existing inequalities and creates significant challenges for disaster response.
- Latin America and the Caribbean face the world's largest migration crisis. Some 6.8 million Venezuelans alone have fled their homes, with more than 80% settling in other countries in the region<sup>9</sup>. Movement from northern Central American countries has continued with high numbers arriving at the US Southern border. Similarly, numbers of those attempting to cross the Darien Gap (between Colombia and Panama) have increased. Disasters not only threaten to further increase this population, but also pose additional risks to these people in vulnerable conditions.

### **The impact of COVID-19 in Latin America and the Caribbean<sup>10</sup>**

There have been at least 175 million reported COVID-19 infections and 2.8 million reported COVID-19 deaths in the region.

WHO estimates that there were 13 per cent more deaths in the Americas than reported, bringing the total to an approximate 3.2 million deaths.

The mortality rates in the region are disproportionately high compared to its population. Peru ranks highest in the world with more than 6,480 deaths per 100,000 people.

Despite having 8 per cent of the world's population, the region accounted for approximately 15 per cent of global cases and 30 per cent of global reported deaths by COVID-19.

COVID-19 has affected Latin America and the Caribbean's challenges to reduce inequalities, guarantee people's rights and improve health services. The region is one of those that face the greatest inequalities and gaps between rural and urban areas, and it is precisely in the most densely populated urban areas where COVID-19 has had the greatest impact on concentrations of poverty. As

6 World Bank, *Groundswell Part 2: Acting on Internal Climate Migration 2021*

7 *A Green and Resilient Recovery for Latin America, CELAC, SRE & Global Centre on Adaptation 2021*

8 UNDP *Global Multidimensional Poverty Index 2022*

9 UNDP *A Better World for Migrants in Latin America and the Caribbean 2022*

10 The impact of the pandemic is not considered in the CRED EM-DAT and will therefore be viewed separately as a cross-cutting factor.

a result, there were 20 million more people living in poverty and 8 million more people in extreme poverty by 2021.

The effects of the pandemic increased barriers to accessing health services, especially for the poorest, who often work in the informal labour market and who are also at high risk of food insecurity.

In the first months of the pandemic, due to the health systems' weaknesses, countries in the region applied severe isolation measures which, in turn, have had a severe impact on access to education, slowdown in economic growth, high social costs, increase in violence and decrease in people's rights, currently an extensive impact on household food security for several vulnerable populations, including indigenous, afro-descendants and elderly people, women heads of household, children and adolescents, people with disabilities, migrants and refugees, among others.

COVID-19 has significantly increased the financial burden on the region - already the most indebted region in the developing world - especially on Caribbean Small-Island Development States, leaving them ill-positioned to adequately prepare for and respond to disasters.

The combined effect of COVID-19 and natural hazards is jeopardizing progress towards achieving the Sustainable Development Goals.

### **Interconnected and cascading risks**

In the current globalized economic system, networks of communication and trade have led not only to a world that is more and more interconnected. As evidenced by the COVID-19 pandemic and climate change, no process can function independently, but often connects and relies on other systems, generating highly interdependent social, technical and biological systems.

In such a risk interconnected world, where shocks often cascade and compound in complex ways, with broad social, economic, and environmental implications, to continue analysing and managing disaster shocks with a silo approach (one by one, at a time) narrows the focus, often leaving undetected fragilities or vulnerabilities. A more comprehensive understanding and integration of a multi-hazard systemic risk approach, as well as risk mitigation, preparedness, and anticipatory action, in the humanitarian sector, will ensure a greater coherence and better risk-informed actions across the humanitarian-development-peace (HDP) nexus.

It is also necessary to assess the possibility that a hazard could manifest into a shock or stress that might lead to disruptions in connected parts of the system. One event can also trigger another (referred to as a cascading hazard). For example, heavy rainfall leading to a landslide, or a volcanic eruption leading to a landslide that triggers a tsunami. Similarly, heavy rains can lead to the collapse of dams, causing flash floods and creating the conditions of a new epidemic hazard. (Figure 1)

Generalized knowledge of disaster risk has evolved in recent years, thanks to the efforts and advocacy of academia and concerned practitioners, to recognizing the unequivocal complicity and human responsibility in the creation, maintenance, and materialization of disaster risk. As a clear result of this we no longer use the term "natural disasters", as a clear recognition of the role of societies in turning natural events or hazards into disasters.

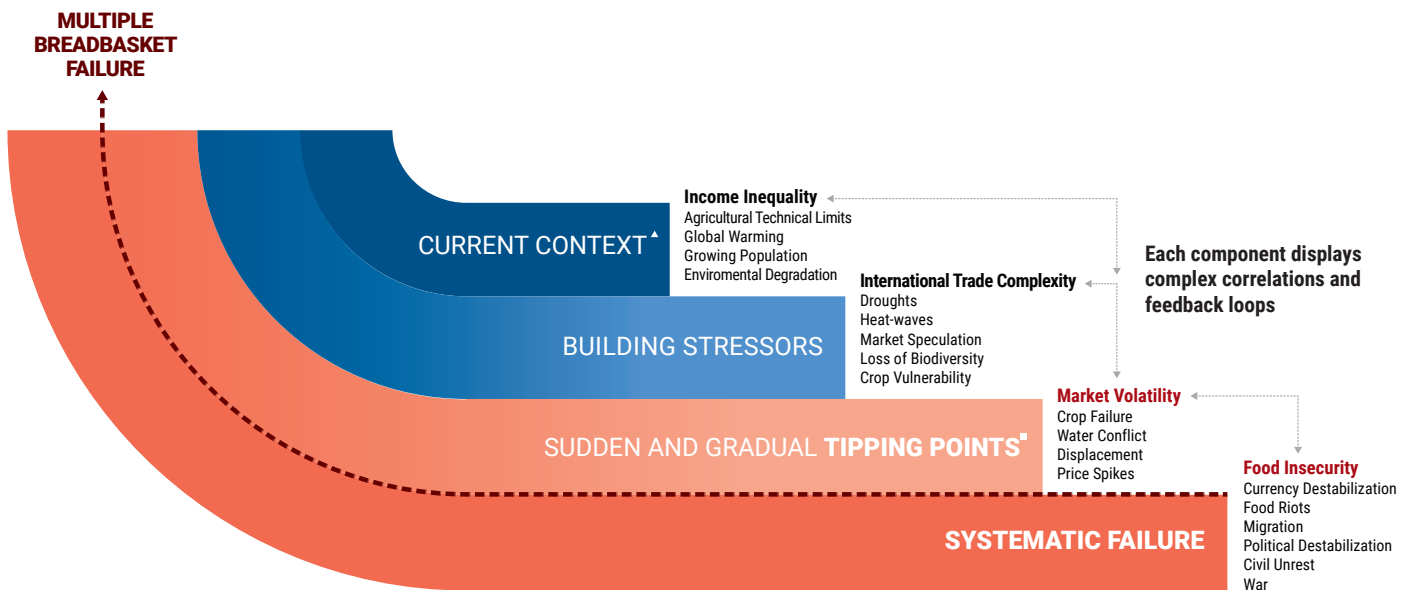
For more information on how risk science is changing, explore areas for additional endeavour, and learn about aspects of understanding and managing systemic risk, please visit: <https://www.undrr.org/publication/global-assessment-report-disaster-risk-reduction-2019><sup>11</sup>

<sup>11</sup> Further reading: Maskrey, A., Jain, G., Lavell, A. (2021) "The Social Construction of Systemic Risk: Towards an Actionable Framework for Risk Governance", United Nations Development Programme (UNDP), Discussion Paper.

UNDRR, ISC (2020) "Hazard definition and classification review", Technical Report, United Nations Office for Disaster Risk Reduction (UNDRR), International Science Council (ISC).  
UNDRR (2023), "Strengthening risk analysis for humanitarian planning Integrating disaster and climate risk in the Humanitarian Programme Cycle", United Nations Office for Disaster Risk Reduction (UNDRR).

UNDRR (2019), "Global Assessment Report on Disaster Risk Reduction", United Nations Office for Disaster Risk Reduction (UNDRR).

Figure 1



Source: UNDRR (2019)

▲ Capacity to absorb negative events is being reduced slowly (e.g. population growth pushing the limits of agricultural technology)

■ An event of great magnitude or multiple failures at the same time could suddenly exceed all remaining capacity

Ensuring the Humanitarian Programme Cycle (HPC) includes a better risk analysis is therefore essential for both the population and the overall humanitarian community. Although humanitarian crises cannot always be prevented, the suffering associated with the impacts

of various shocks, crises and disasters can be greatly reduced through strong, proactive and collaborative risk-informed programming. For more information please visit: <https://www.undrr.org/publication/strengthening-risk-analysis-humanitarian-planning>

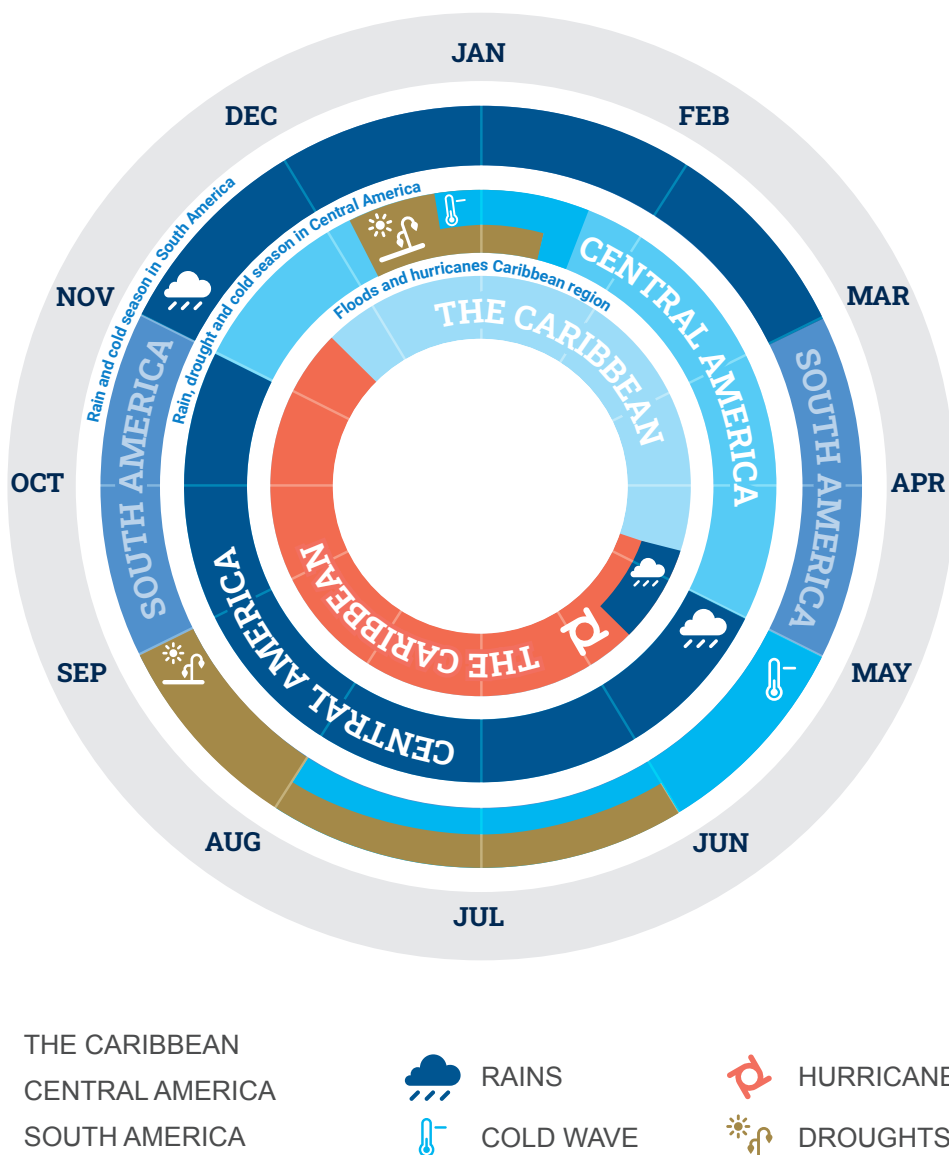
# Cyclical nature of hazards in the region

While many hazards in the region are cyclical in nature, those most likely to trigger a major international humanitarian response are sudden onset hazards such as earthquakes, hurricanes and flash floods. The collective impact of recurring climate shocks, most notably protracted droughts followed by seasonal flooding, lead to complex and multidimensional humanitarian needs.

UNDRR’s Hazard Definition and Classification Review has identified 302 hazards; with 88 biological hazards, 60

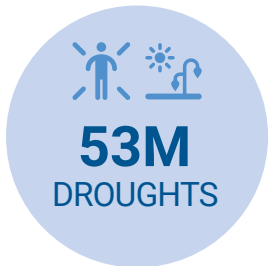
hydrometeorological hazards, 53 technological hazards, 35 geohazards, 25 chemical hazards, 24 environmental hazards, 9 extraterrestrial hazards and 8 societal hazards.

The technical report is the result of an iterative process of consultation with over 500 technical experts from relevant science groups, UN organisations, the private sector and other partners. For more information please visit: <https://www.undrr.org/publication/hazard-definition-and-classification-review-technical-report>

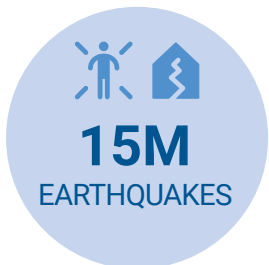


# Impact of natural hazards

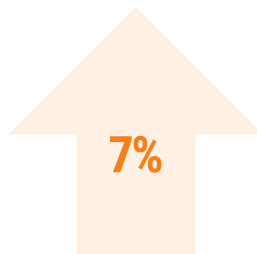
## Number of people affected by type of disaster



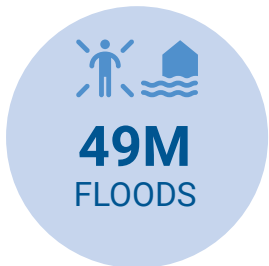
CRED recorded 2 additional droughts since 2019, both in Brazil, however there is no data on the number of people affected (as such, it appears that there is no increase between 2019 and 2022). Other sources suggest a minimum of 15 million people have been affected in these droughts. Documenting the human impacts of droughts remains a challenge.



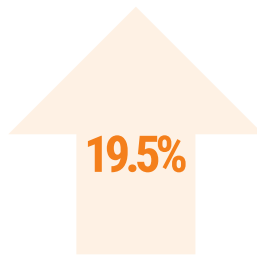
**+1M**



increase between 2019 and 2022.



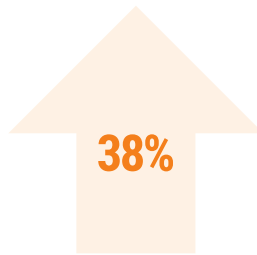
**+8M**



increase between 2019 and 2022.



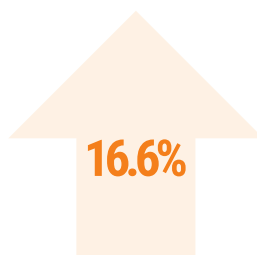
**+13M**



increase between 2019 and 2022.



**+0.5M**



increase between 2019 and 2022.

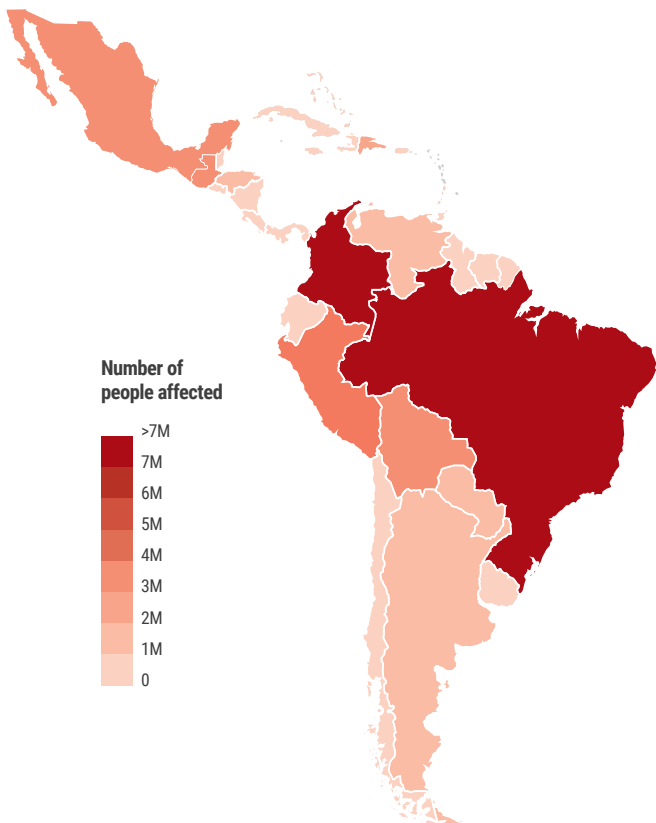
### Regional impact of droughts



### Regional impact of earthquakes



### Regional impact of floods

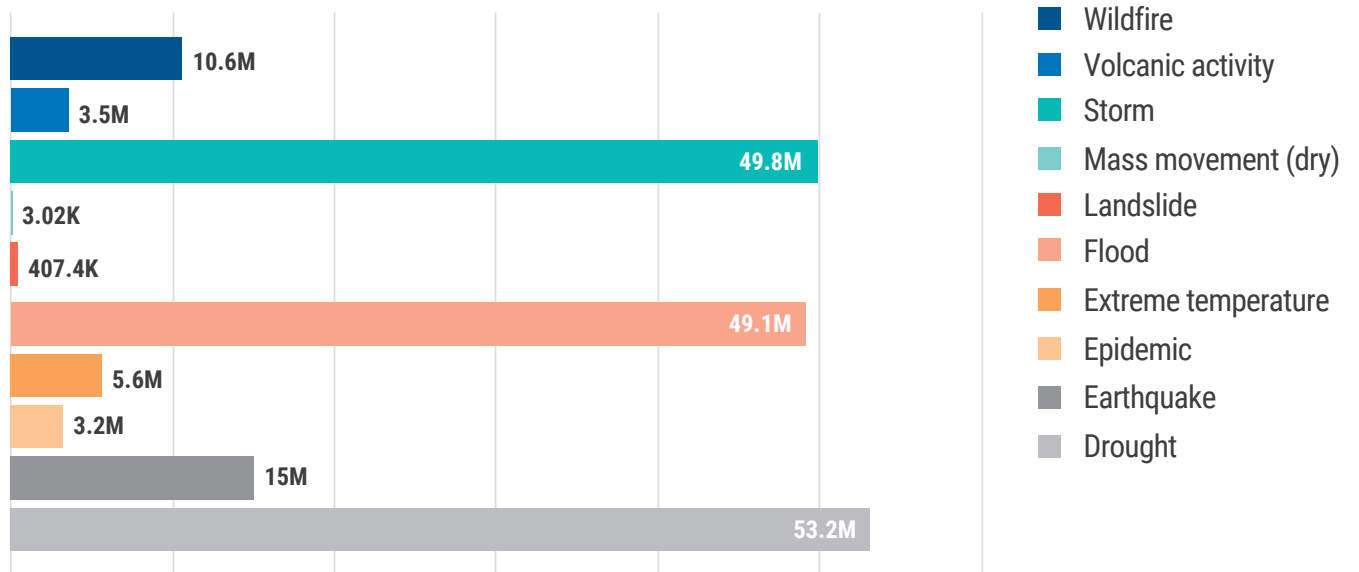


### Regional impact of storms



Source: CRED EM-DAT

### Number of affected people by disaster type



A resident clears a home that was damaged during the earthquake in the Capicot area in Camp-Perrin in Haiti's South Department (August 2021)  
Photo: UNICEF

# Tropical storms and hurricanes



The aftermath of Hurricane Irma in Codrington, Barbuda (September 2017)  
Photo: UN/Rick Bajornas

With a total of 400 disaster events, storms are the second most frequent disaster type in the region behind floods. Storms continue to be more frequent, leaving affected people with less time to recover between events. Between 2019 and 2022, the total number of people affected by storms jumped from 34 million to 47 million, growing by a worrisome 38 per cent - more than any other disaster type in the region.

There is less time for recovery between events. Dominica was still recovering from the impact of Tropical Storm Erika in 2015, when in 2017 it was completely devastated by Hurricane Maria, which killed 64 people

and affected the entire estimated population living on the island (71,293).

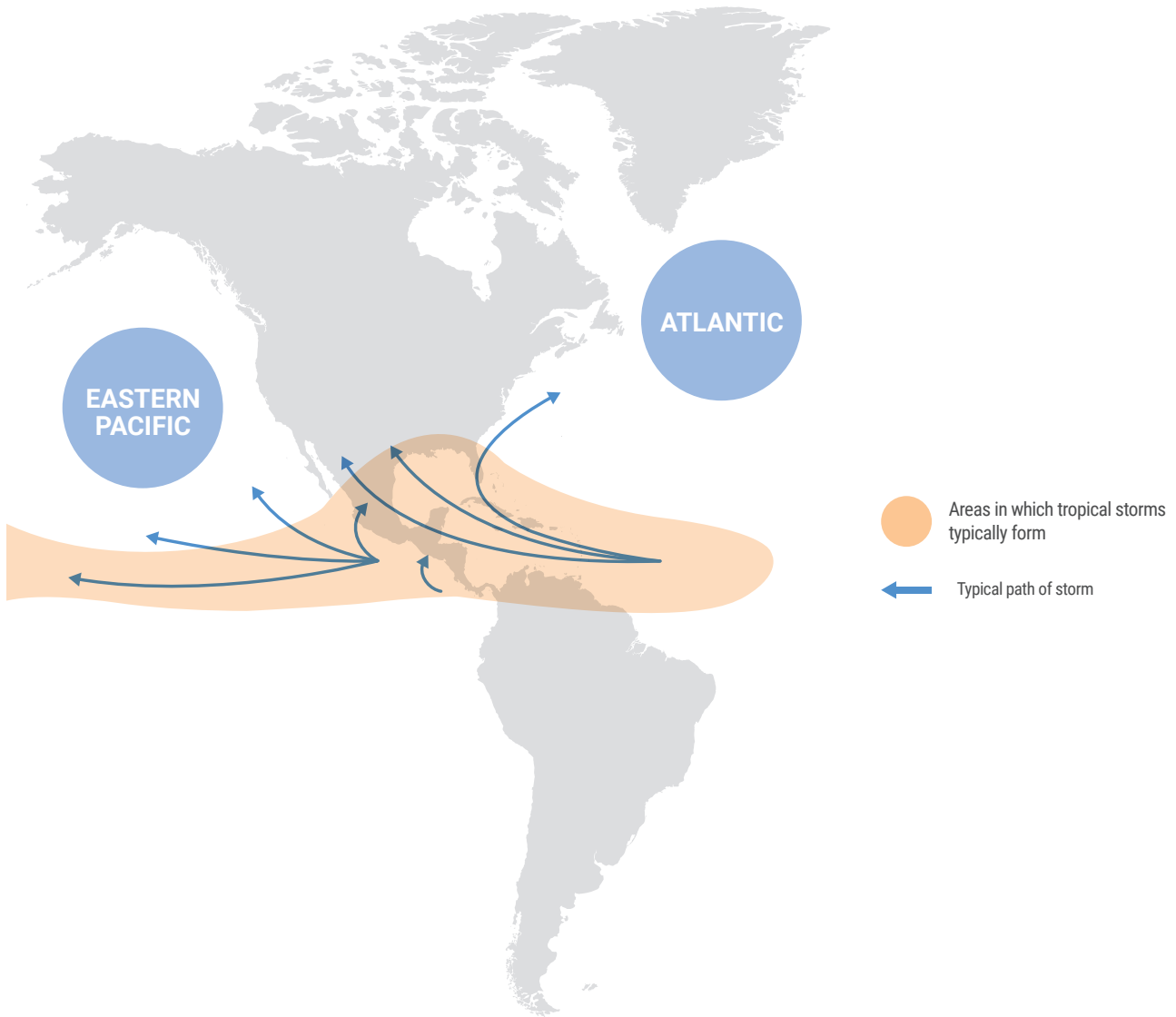
Similarly, during a record-breaking 2020 hurricane season, Hurricanes Eta and Iota hit Central America less than two weeks apart. They battered over Nicaragua, Honduras and Guatemala while causing floods and mudslides across Mexico, Belize, El Salvador, Costa Rica and Panama.

These devastating category 4 hurricanes killed over 400 people and affected almost 9 million people in Central America and left a total of \$1.4 billion in damage in only a few days.



There are two active storm basins that OCHA monitors:

- **Atlantic** (which includes the East Atlantic, West Atlantic, Caribbean Sea and Gulf of Mexico), which starts on 1 June and lasts until 30 November.
- **Eastern Pacific** which runs from 15 May to 30 November.



PERIOD 2000-2021	EASTERN PACIFIC	ATLANTIC	CROSS OVER*
Tropical depression	61	34	--
Tropical storm	194	193	--
Hurricanes	195	168	11
Hurricanes-Cat 5	12	14	2

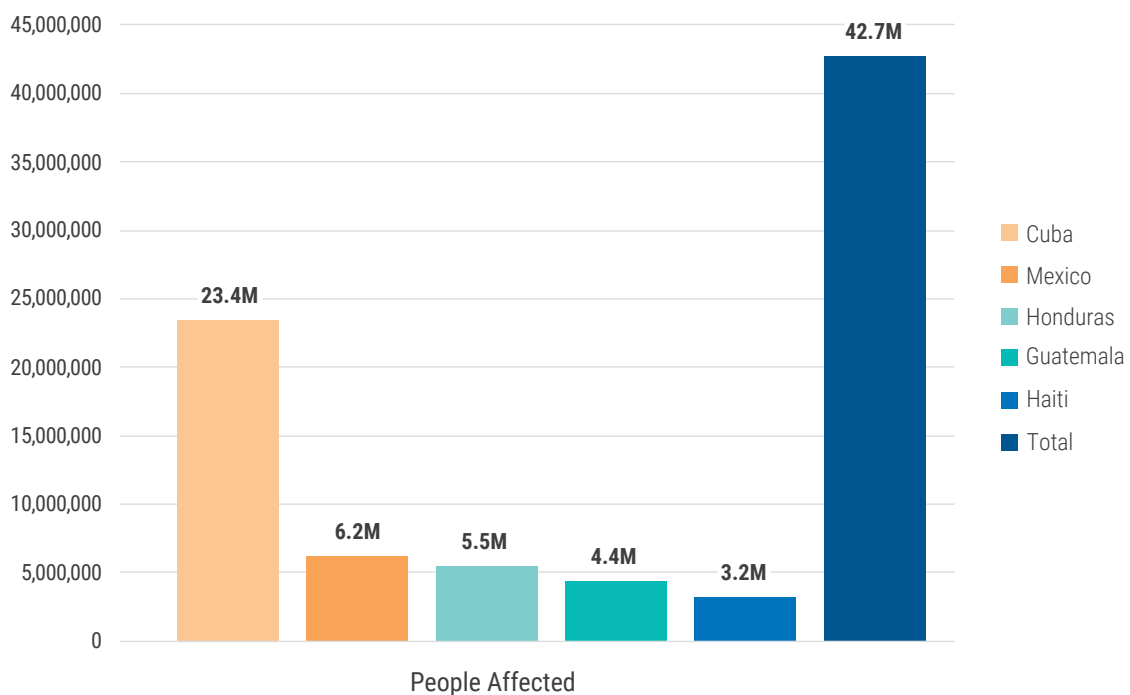
◆ **Source:** [Historical Hurricane Tracks \(noaa.gov\)](https://www.noaa.gov/hurricane-archives) NOAA lists them on both – usually make landfall in Central America Of the 12 category 5 hurricanes, only four made landfall in Mexico

The 2020 hurricane season was the most active on record with a staggering 30 named storms. Hurricanes Eta and Iota, the season’s record-breaking 28th and 29th storms respectively, battered the Caribbean shores of Central America in November. The two storms brought wind speeds as high as 240km/h and rainfalls up to 600mm. The back-to-back events affected almost 9 million people across the region, with at least 7.3 million of these in Nicaragua, Honduras and Guatemala alone. The resulting floods and landslides isolated and displaced many communities. Thousands of people were forced to seek refuge in shelters, shelters that faced significant challenges in preventing further COVID-19 spread. Affected families already facing economic hardships due to the pandemic suffered damaged or destroyed crops and harvests that were their sole source of livelihoods and food security.

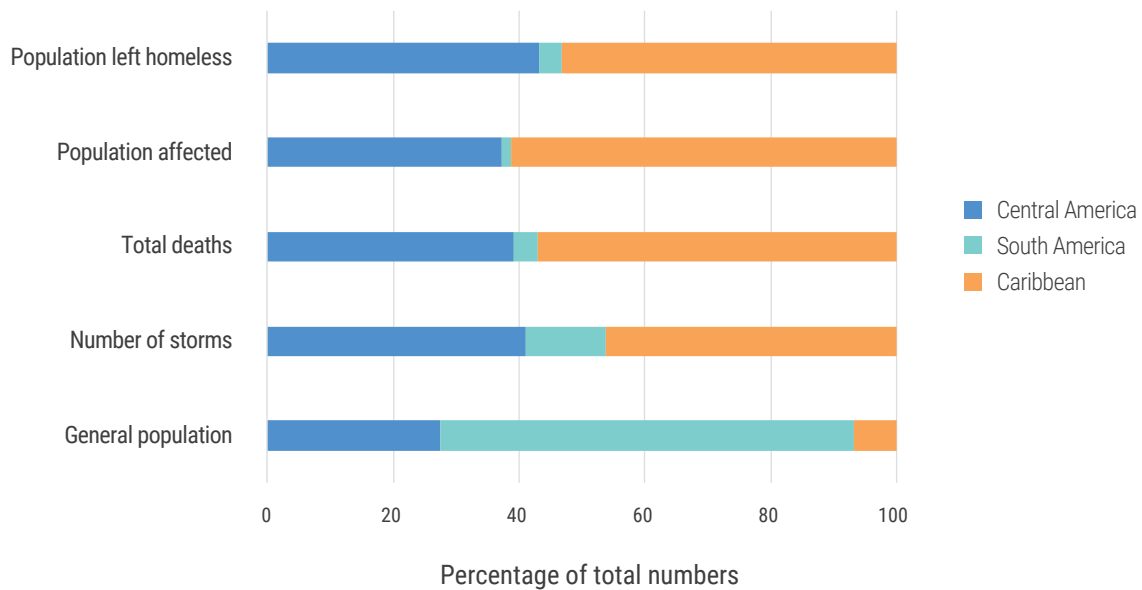
These extreme climate events utterly devastated communities in highly vulnerable conditions, communities where enduring needs have only grown due to the effects of various COVID-19-related crises. The storms leave behind greater challenges in meeting these already complex needs driven by recurring climate shocks, chronic violence and gender-based violence, displacement across and within borders, high poverty and inequalities in basic service access and opportunities, challenges that will likely persist for years to come.

## More countries in the region carry the brunt of impacts by tropical storms and hurricanes

Top 5 countries in the region in which most people have been affected by storms (2000-2022)



### Storm Impact by Subregion



Between 2000 and 2019, the countries most affected by storms in the region were Cuba, Mexico and Haiti. By the end of 2022, Honduras and Guatemala had joined this group due primarily to Hurricane Eta which ravaged Central America in late 2020.

Haiti accounts for approximately 60 per cent of deaths from storms and hurricanes in the region. Although this is a decrease from 85 per cent in 2019, the death toll remains disproportionately high in Haiti.

Comparing the subregions, storms have the severest impact in the Caribbean, followed by Central America and South America. Despite having only 6 per cent of the region’s population, the Caribbean accounts for the majority of the people affected by storms (30.5 million out of a total of 50 million in the subregion), people left homeless (483 K out of 910 K) and deaths (5.5 K out of 9.5 K).

Storms should be judged not only on their strength, but also on their location and the affected government’s capacity to respond. OCHA’s Regional Office for Latin American and the Caribbean (ROLAC) will often pre-deploy to a country if the forecast is for an impact from a hurricane.

### Exposure to tropical cyclones ▶

COUNTRY	PHYSICAL EXPOSURE TO TROPICAL CYCLONE
Bahamas	8.8
Antigua and Barbuda	8.4
Cuba	8.0
Dominican Republic	7.9
Mexico	7.7
Dominica	7.6
Haiti	7.2
Jamaica	7.2
Belize	7.2
Saint Kitts and Nevis	6.9

▶ The indicator is the INFORM 2023 Risk Index based on the physical exposure to tropical cyclones publicly available here: [INFORM Risk - Map \(europa.eu\)](https://www.europa.eu). These 10 countries are also among the 20 countries globally with the highest exposure to tropical cyclones.

### Hurricane Dorian (2019)

At its peak strength, Dorian, a category 5 hurricane, brought winds in excess of 220mph and 23ft. storm surge as it barreled over north-western Bahamas. During its path of destruction, Dorian slowed to a crawl over Grand Bahama (pop. 51,000), remaining nearly stationary for some 36 hours. Abaco, the most severely affected island, suffered thousands of flattened homes, downed power lines and damaged roads and water wells. Abaco residents were left badly in need of water, electricity, sanitation and shelter. Dorian all but destroyed two Central Abaco settlements of mostly undocumented migrants. A total of 67 deaths have been reported across affected islands in the Bahamas.

### Weak storms can be equally as destructive as more powerful ones

On 28 October 2015, Tropical Storm Erika passed well to the north of Dominica as a weak tropical storm with sustained winds of just 50mph<sup>12</sup>. What it lacked in intensity, however, it made up for in rainfall, as torrential downpours (maximum totals of 12.62 inches) triggered flash floods and landslides<sup>13</sup>, leaving 20 dead and affecting approximately 40 per cent of the total population. The total damage caused by Erika amounted to US\$483 million, or 90 per cent of GDP<sup>14</sup>.



Dorian's devastating winds and rains all but wiped out The Mudd, a shanty town in Marsh Harbour, Abaco Islands (September 2019)

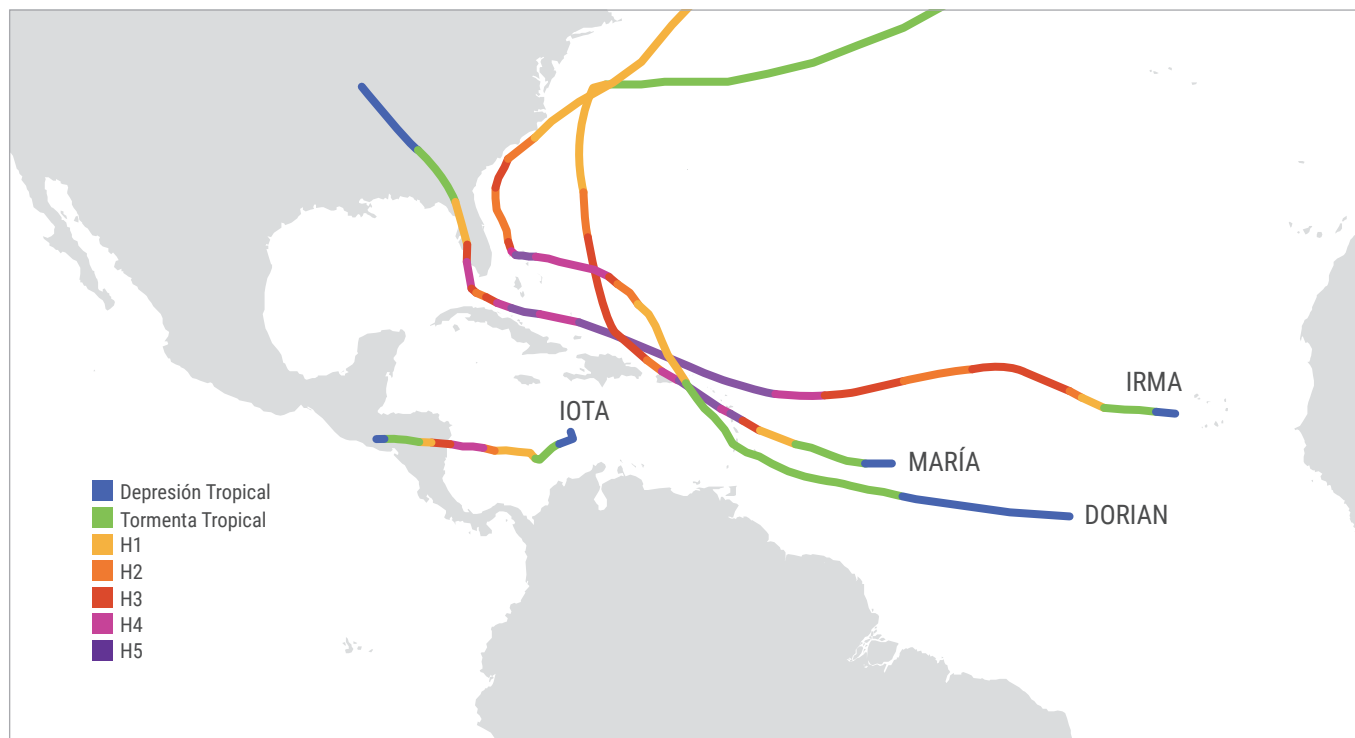
Photo: OCHA/Christophe Illemassene

<sup>12</sup> NOAA

<sup>13</sup> NOAA

<sup>14</sup> Common Wealth of Dominica

**Category 5 hurricanes paths\***



	<b>IOTA</b>	<b>IRMA</b>	<b>MARÍA</b>	<b>DORIAN**</b>
<b>Disaster subtype</b>	Hurricane	Hurricane	Hurricane	Hurricane
<b>Date</b>	November 12 - November 18, 2020	August 30 - September 12, 2017	September 16 – 30, 2017	August 24 - September 10, 2019
<b>Areas affected</b>	El Salvador, Guatemala, Honduras, Nicaragua	Anguilla, Antigua and Barbuda, Bahamas (The), Barbados, Cuba, Dominican Republic (The), Haiti, Puerto Rico, Saint Barthélemy, Saint Kitts and Nevis, Saint Martin (French Part), Sint Maarten (Dutch Part), Turks and Caicos Islands (The), Virgin Island (British), Virgin Island (U.S.)	Dominica, Dominican Republic (The), Guadeloupe, Haiti, Martinique, Puerto Rico, Virgin Island (British), Virgin Island (U.S.)	Lesser Antilles, Puerto Rico, The Bahamas
<b>Wind speed</b>	160 mph (257 km/h)	180 mph (290 km/h)	170 mph (274 km/h)	220 mph (354 km/h)
<b>Deaths</b>	<b>39</b>	<b>47</b>	<b>143</b>	<b>67</b>
<b>People affected</b>	<b>1.6M</b>	<b>10M</b>	<b>927K</b>	<b>29.5K</b>

\* Hurricanes often make landfall or affect more than one country on their path. Here are four examples of category 5 Hurricanes that left destructive paths and required international assistance in more than one country at the same time.

\*\* Data from Dorian is from OCHA and NEMA.

# Earthquakes

 <b>15M</b> PEOPLE AFFECTED (2000 - 2022)	 <b>229K</b> DEATHS (2000 - 2022)	 <b>57.2B</b> TOTAL DAMAGE (2000 - 2022)
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Between 2000 and 2022, Latin America and the Caribbean experienced 92 significant earthquakes (17 since 2019) across the region, resulting in 229,000 deaths (+ 3,000 since 2019) and 353,000 injured (+14,000 since 2019), affecting 15 million people (+1 million since 2019) and causing approximately US\$57 billion (+3 billion since 2019) in total damage.

## Exposure to earthquakes\*

COUNTRY	PHYSICAL EXPOSURE TO EARTHQUAKES
Peru	9.9
Guatemala	9.8
Chile	9.8
Ecuador	9.8
Haiti	9.7
Dominican Republic	9.7
El Salvador	9.7
Costa Rica	9.6
Colombia	9.6
Nicaragua	9.5

There is no accurate way of providing actionable early warning as to when an earthquake will occur. Earthquakes are measured using a magnitude scale based on a base-10 logarithmic scale, which means that for each whole number increase in magnitude, the amplitude on the ground increases ten- fold. The depth of an earthquake is also an important characteristic which determines how much damage it can be expected to cause, with shallow earthquakes likely to be the most devastating.



**GDACS**  
Global Disaster Alert and Coordination System

GDACS is an online tool that provides automatic estimates and risk analysis following sudden-onset disasters. [www.gdacs.org](http://www.gdacs.org)

- Shows the 10 countries in Latin America and the Caribbean (LAC) with the highest exposure to earthquakes. The exposure is rated from 0 (lowest) to 10 (highest). INFORM Risk Index 2023, physical exposure to earthquakes available here: [INFORM Risk - Map \(europa.eu\)](https://europa.eu/inform-risk)

## Impact of earthquakes

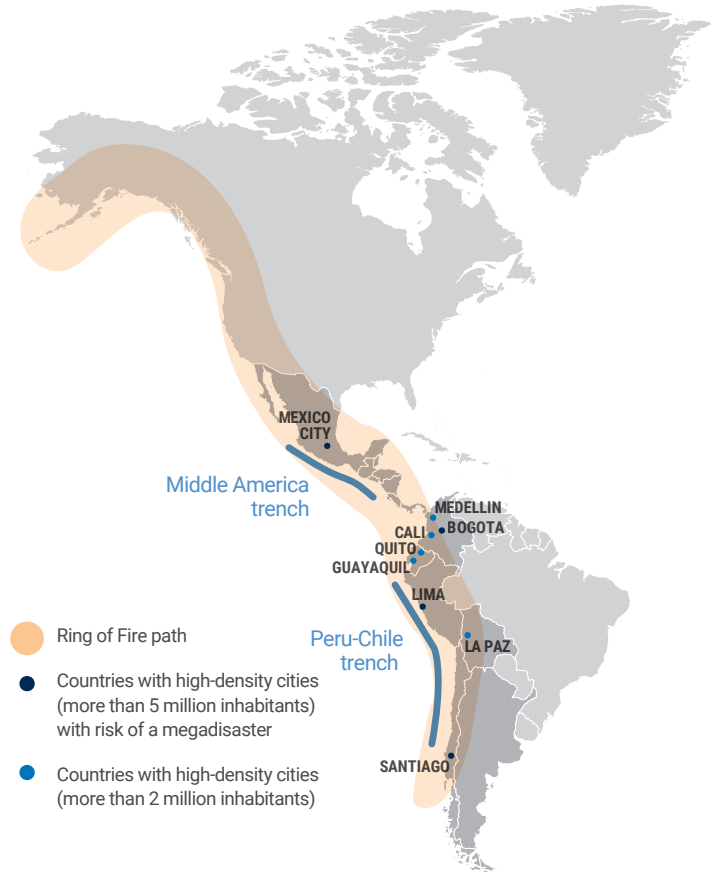
Of the 20 countries most exposed to earthquakes worldwide, 11 are in Latin American or Caribbean. The region is therefore vulnerable to earthquakes, while


Central and South America have a greater exposure compared to the Caribbean. Central America and the west coast of the South American continent are situated within the 'Ring of Fire', a path located along the Pacific

Ocean characterized by active volcanoes and frequent earthquakes. The western coast of South America is one of the most seismogenic zones in the world, with more than a quarter of the world’s 8.0-magnitude or greater earthquakes having occurred there<sup>15</sup>.

**Monitoring**

The magnitude of an earthquake, as well as the level of readiness and national capacity to respond, will largely determine the extent of OCHA’s response and, if needed, surge deployment. OCHA begins to actively monitor earthquakes registering a magnitude 6.0 or higher on the Richter Scale depending on the depth. For example, a 6.0 earthquake with a depth of <30km (shallow) would trigger contact with the International Search and Rescue Advisory Group (INSARAG) focal point.





**INSARAG** is a global network of more 90 countries (21 countries in the region) and organizations dedicated to urban search-and-rescue and operational field coordination, which is organized within the framework of the UN, with OCHA serving as its secretariat. INSARAG is a leading authority on best practices in organizing urban search-and-rescue operations in the aftermath of an earthquake.

While earthquakes are difficult to predict, recent seismological studies have identified large zones in Ecuador, Colombia, Peru and northern Chile which could produce large-magnitude earthquakes in the future. There is a possibility of a magnitude-9.0 earthquake or greater occurring in this part of South America, with the Arica seismic gap in northern Chile identified as the locus of such a major earthquake<sup>16</sup>.

To date, the strongest earthquake on record worldwide is the 1960 Valdivia earthquake in Chile, which registered a magnitude of 9.5 on the Richter Scale.

**Earthquakes per subregion**

Of the 92 major earthquakes registered in the region since 2000, 43 occurred in South America, 37 in Central America and 12 in the Caribbean.



<sup>15</sup> Incorporated Research Institutions for Seismology.

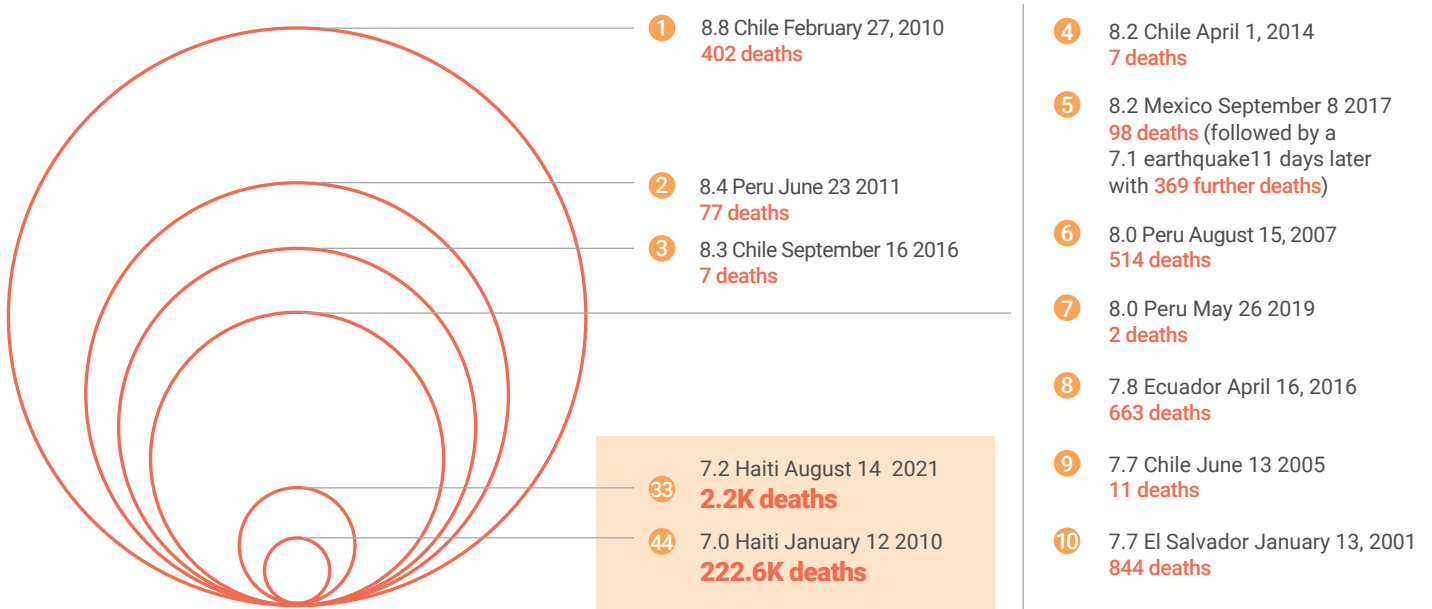
<sup>16</sup> Seismic hazards along Ecuador, Peru and northern Chile (South America), available at <https://link.springer.com/article/10.1007%2Fs11069-015-1900-x>  
 Updated concepts of seismic gaps and asperities to assess great earthquake hazard along South America, available at: <https://www.pnas.org/doi/10.1073/pnas.2216843119>

The impact on human life and total damage suffered in the Caribbean have been disproportionate to the number of earthquakes in the subregion when compared to Central and South America.

This is largely a result of the catastrophic earthquake in Haiti in 2010, which accounts for the vast majority of deaths (222,570) and injuries (300,000) in the region over the last 20 years from earthquakes.

Haiti alone accounts for 98 per cent of deaths, 89 per cent of injuries, 30 per cent of people affected and 17 per cent of total damage in the entire region for this period (2000-2022).

**Strongest earthquakes in the region<sup>17</sup>**



Comparison of earthquakes by energy release

The impact of an earthquake depends largely on context. The geographical location, the socio-economic vulnerability of the population, and levels of preparedness and national capacity all contribute to the impact of and subsequent response to an earthquake. Despite ranking relatively low (33rd and 44th respectively) in magnitude for example, the 2010 and 2021 earthquakes in Haiti remain two of the deadliest in the region.



### Haiti 7.0 magnitude (2010) vs. Chile 8.3 magnitude (2015)

<b>Haiti 7.0 (2010)</b> Sustained large-scale international assistance	<b>Chile 8.3 (2015)</b> International assistance was not requested
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The 2010 Haiti earthquake was a catastrophic event exacerbated by the extreme vulnerability of the population and the lack of preparedness and response capacity at the national level.

In Chile, the high frequency of small and medium-sized earthquakes, which normally cause limited damage, have served to create a culture of earthquake preparedness among the Chilean population. The country now has rigorous building codes, conducts regular evacuation simulations and has warning systems in place to alert the population following an earthquake.

### Tsunamis

Tsunamis are giant waves generated by earthquakes or volcanic eruptions under the sea. There have been tsunamis associated with many significant earthquakes in Chile, Ecuador, Peru, Guatemala, El Salvador and Nicaragua, with varying degrees of impact. For instance, while the tsunami associated with a 7.4-magnitude earthquake in Martinique in 2007 did not have much of an impact, a series of tsunami waves brought on by an 8.8-magnitude earthquake in Chile in 2010 led to 562 deaths in coastal areas.

While not all earthquakes trigger tsunamis and the tsunami impact has been limited in the region, the physical exposure to tsunamis remains high due to the region’s vulnerability to earthquakes and its many low-lying coastal areas. especially in the Caribbean where more than 70 per cent of the population reside in coastal areas and where key infrastructure and economic activities are located<sup>18</sup>.

Many monitoring early warning systems exist in the region and OCHA monitors them to decide when and what kind of action to take.

### Exposure to tsunamis ◀

COUNTRY	PHYSICAL EXPOSURE TO TSUNAMIS
Peru	9.3
Ecuador	9.2
Chile	9.1
Panama	9.1
Costa Rica	8.7
Dominica	8.5
El Salvador	8.2
Nicaragua	8.1
Colombia	7.9
Guatemala	7.4

◀ Shows the 10 LAC countries with the highest exposure to Tsunamis. The exposure is rated from 0 (lowest) to 10 (highest). INFORM Risk Index 2023, physical exposure to tsunamis available here: [INFORM Risk - Map \(europa.eu\)](https://europa.eu/inform-risk)

<sup>18</sup> The University of the West Indies Seismic Department.

# Volcanoes



**1.2B** TOTAL DAMAGE (2000 - 2022)



Parts of St. Vincent and the Grenadines were shrouded in the ash following the eruption of the La Soufrière volcano that forced some 16,000 residents to evacuate their homes to cruise ships and safer parts of the island (April 2021).

Photo: OCHA

Active volcanoes can be regularly monitored and their potential for eruption can be accurately predicted. Volcanic eruptions usually have a localized impact and may lead to temporary displacement and loss of livelihoods, which may be dealt with effectively by national authorities. In some instances, however, volcanic eruptions may require international assistance if national response capacity is overwhelmed, as was the case in Ecuador in 2006 and Guatemala in 2010.

Many countries in Central and South America are situated along the 'Ring of Fire', which stretches from Mexico to Chile in the region, exposing them to

volcanic activity. The Caribbean is also vulnerable to volcanic activity, with active volcanoes in Montserrat, St. Vincent and the Grenadines, Guadalupe and Martinique. There is also a highly active submarine volcano, Kick 'em Jenny, which is located in the Grenadines island chain just 8km north of Grenada. Volcanic eruptions, though far less frequent, have the potential to cause 100 per cent property destruction and, by extension, lead to significant death tolls in the most severely affected areas<sup>19</sup>.

The impact of a volcanic eruption can greatly vary depending on the local context. While the 2018 eruption

<sup>19</sup> OCHA

in Guatemala had a much higher death toll and number of people affected, the 2021 La Soufrière volcano eruption in Saint Vincent affected the entire island's population during COVID-19, causing significant economic losses and setting back long-term development.

### **Guatemala – Volcanic eruption of Fuego Volcano (2018)**

On 3 June 2018, Guatemala's 3,763-metre (12,346 feet) Fuego Volcano erupted, killing more than 400 people, injuring 27, and leaving some 260 people missing. The eruption of the Fuego Volcano was one of the most devastating in recent years, reinforcing the threat

of volcanic activity in the region and its potential for significant destruction.

The volcano emitted an eight-kilometer (five-mile) stream of hot lava and a dense plume of black smoke and ash that blanketed Guatemala's capital city and other regions. The ash columns and mudflow from the Fuego Volcano affected 1.7 million people in three departments surrounding the volcano destroying agricultural land and livelihoods. It was the largest eruption of the volcano in 44 years<sup>20</sup>.

### **Saint Vincent and the Grenadines – La Soufrière volcano eruption (2021)**

On 9 April 2021, La Soufrière entered an explosive state, with the first eruption shooting ash plumes up to 20,000 feet, followed by a second eruption just six hours later. Heavy ashfall initially affected the neighboring islands of Barbados, Grenada and Saint Lucia, although it did not cause considerable damage or force evacuations in these islands.

One day before, on 8 April 2021, due to heightened activity at La Soufrière volcano, the Government had issued an immediate evacuation order and raised the alert level to red after having reinforced the monitoring of volcanic activity during the previous months.

Some 20,000 people were evacuated from the 'red zone' around the volcano, about 4,500 of whom relocated to shelters. People living near the volcano were affected by heavy ash fall and pyroclastic flows that damaged crops and livelihood inputs, including farming equipment, and affected livestock. These impacts were expected to deepen poverty and food insecurity, which were already on the rise amidst the COVID-19 pandemic. Ash fall affected all the country's approximately 110,000 inhabitants, with most homes across the main island of Saint Vincent left without running water. Per CRED EM-DAT, damage totaled \$325 million.

The most pressing needs identified by the Government and humanitarian partners were emergency food assistance, access to safe water, hygiene and sanitation, shelter and education assistance, health and protection interventions, including Gender-based violence and child protection, as well as ash clean-up. OCHA supported the UN Resident Coordinator's Office for Barbados and the Eastern Caribbean in developing the US\$29.2 million Global Funding Appeal and in coordinating a US\$1 million Central Emergency Response Fund (CERF) allocation.

<sup>20</sup> OCHA

## Recurring climate-related shocks



Due to the drought in the Dry Corridor, WFP has launched a pilot seed nursery, field school and agricultural training project for water harvesting in El Triunfo (Choluteca department), Honduras (2021)

Photo: WFP Honduras/Julian Frank

### El Niño and La Niña

Latin America and the Caribbean is one of the regions most exposed to climate phenomenon; as such its societies and ecosystems are particularly vulnerable to the adverse effects of climate change. The region is repeatedly affected by drought, intense rains, cyclones and the El Niño/La Niña phenomenon.

El Niño and La Niña are global climate phenomenon caused by cyclical shifts in the water temperature of the Pacific Ocean. Each El Niño or La Niña event lasts approximately nine to 12 months and, on average, occurs every two to seven years causing predictable disruptions

to seasonal temperature, precipitation and winds. Acting like a seesaw between the Pacific and Atlantic oceans, El Niño and La Niña have varying effects on different regions. El Niño and its warm waters typically increase hurricane activity in the central and eastern Pacific basins, while suppressing it in the Atlantic basin. La Niña on the other hand, typically suppresses hurricane activity in the central and eastern Pacific basins while strengthening it in the Atlantic basin<sup>21</sup>.

The 2015/2016 El Niño event was particularly strong, leading to serious disruptions in weather patterns which brought both floods and droughts during different phases.

<sup>21</sup> Impacts of El Niño and La Niña on the hurricane season | NOAA Climate.gov

These recurrent climatic shocks, which trigger cyclical dry spells and torrential rains, have had a serious impact on food security and agricultural production, affecting livelihoods, health, water, sanitation, education and other sectors in the region. They have also been associated with regional disease outbreaks across the world – during the 2015 El Niño, Brazil reported the highest number of cases of dengue fever on record<sup>22</sup>.

The Dry Corridor in Central America (which stretches through El Salvador, Guatemala, Honduras and Nicaragua) experiences prolonged dry periods and water shortages. During the El Niño cycle, these periods are accentuated,

resulting in long periods of drought followed by intense rains and flooding that impact agriculture, livelihoods and hydrological cycles. Between June and August 2018, the Dry Corridor experienced longer and more severe than average dry conditions - the so-called Canícula. Agricultural production witnessed a steep decline ranging from 50-75 per cent<sup>23</sup>. As a result, more than

2.2 million people in these countries were left food insecure and over 1.4 million people in need of food assistance<sup>24</sup>.

"People in Africa, South Asia, South and Central America, and the inhabitants of small island states are 15 times more likely to die from climate disasters. These disasters displace three times more people than war." **UN Secretary-General António Guterres**<sup>25</sup>

22 2015-2016 El Niño triggered disease outbreaks across globe – Climate Change: Vital Signs of the Planet (nasa.gov)

23 WFP

24 Food and Agricultural Organization of the United Nations.

25 Secretary-General's remarks at the launch of the Early Warnings for All Executive Action Plan

# Recurring climate-related shocks - Droughts



**53M** PEOPLE AFFECTED (2000 - 2022)



**19.6B** TOTAL DAMAGE (2000 - 2022)



Farmer showing traces of drought and crop failure (2019)  
Photo: WFP Guatemala

Droughts are characterized by an extended period – a season, a year or several years – of unusually dry weather due to insufficient rainfall. Droughts are context-specific and escape easy definition because of the variety of methods used to define and measure their impact. They are slow onset without a clear beginning or end. Droughts have affected the highest number of people in the region over the last 20 years.

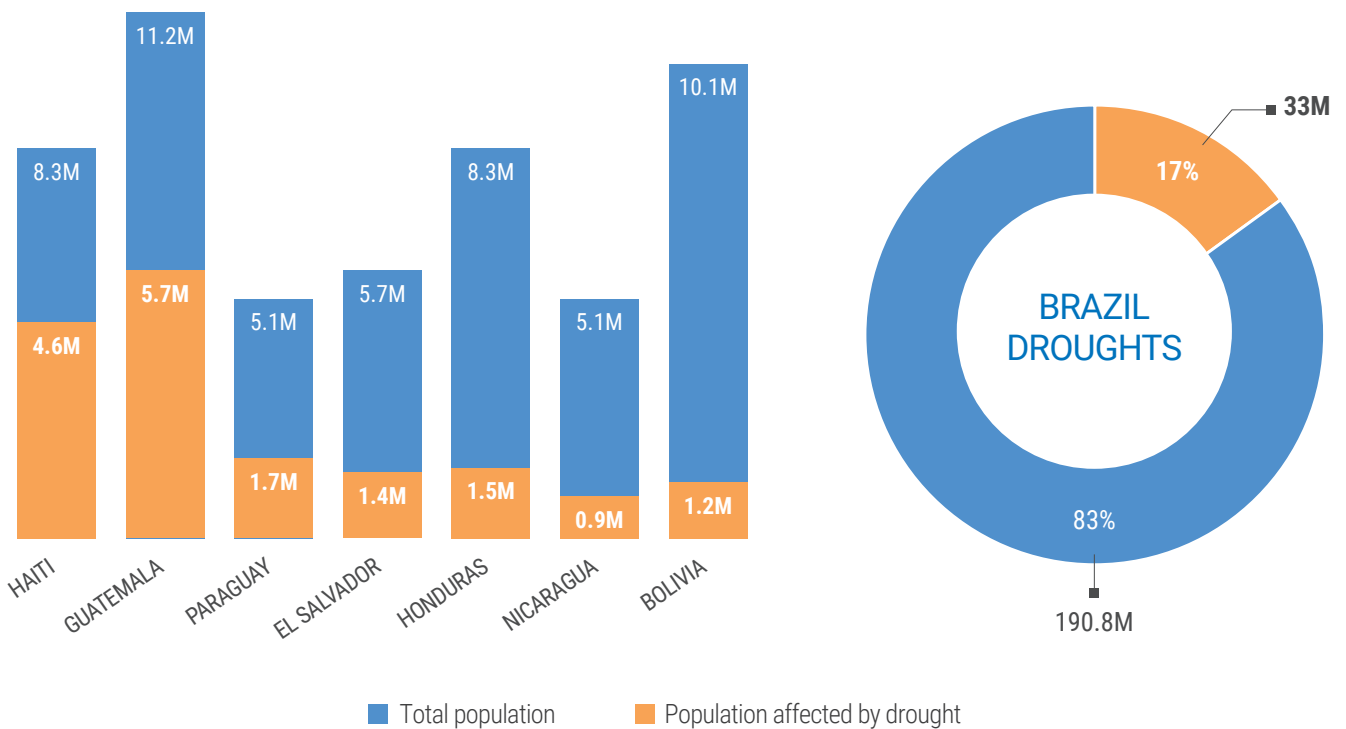
## Impact of droughts

Droughts may cause significant environmental, health and socio-economic problems for affected populations including: damage to or loss of crops negatively affecting agriculture-based livelihoods; depletion of food stocks and malnutrition; shortages of water for drinking and basic sanitation; and forced migration caused by acute food insecurity and a lack of economic opportunity.

While it is difficult to accurately gauge its impact, based on data available from CRED EM-DAT from 2000 onward, drought in Latin America and the Caribbean has contributed to 53 deaths, affected more than 53 million people and caused more than US\$22 billion in total damage. Since 2000, most people have been affected by drought in Brazil (over 33 million), followed by Guatemala (over 5.6 million), Haiti (over 4.6 million), Mexico (2.5 million) and Paraguay (over 1.7 million).

There is a clear link between certain climactic patterns and drought conditions in the region. The El Niño phenomenon contributes to drought in South America, including the Andean zones of Ecuador, Peru and Bolivia as well as northeastern Brazil, and in Central America it has caused severe droughts leading to a protracted crisis in the Dry Corridor, specifically in Guatemala, El Salvador, Honduras and Nicaragua.

**People affected per country (2000 - 2022)**



The Caribbean is also affected by drought. In the case of Haiti, over the past two decades more than 4.6 million people have been affected, which is equivalent to more than 50 per cent of the country's total population.

## Monitoring

The impact of The El Niño phenomenon in the region is an event which exceeds the capacities of a single organization or government and therefore, it requires strategic partnerships as part of a concerted effort by the international community to assist those most affected by drought.<sup>12</sup> In the last decade in Central America, OCHA has helped Governments and the humanitarian community mobilize funds through the CERF to respond to the impact of drought.

## Wildfires

Wildfires occur throughout the region, particularly where there is drought and high winds, which combine to intensify and spread fires. As temperatures continue to increase, one can assume that people will be more exposed to these wildfire-prone weather conditions. Wildfires have the potential to threaten life and livelihoods, damage critical infrastructure, deplete water supplies and destroy biodiversity. Since 2000, 10.6 million people have been affected by wildfires across the region, causing damage amounting to \$1.3 billion. Some 95 per cent of the people affected by wildfires live in Brazil (over 10 million), followed by Bolivia (165,000), Paraguay (129,000), Argentina (125,000), Colombia (119,000) and Chile (22,000). One recent example is the historic heatwave in Argentina which led to wildfires and power outages in 2022.

Per UNDRR<sup>26</sup>, an average 33 million hectares (Mha) of land are estimated to have been affected by wildfires in

Latin America every year between 2000 and 2019. In this timespan, there were approximately 1.47 million fires in Latin America.

In 2010, there was a peak both in the number of fires and burned areas (over 56 Mha), while 2009 and 2018 recorded the lowest annual values, with estimates lower than 24 Mha. In 2019, fire events were concentrated in the outskirts of the Amazon basin and El Chaco. When comparing the burned area to the total territory, Paraguay and Bolivia are the most affected countries with 0.5 per cent and 0.3 per cent respectively.

## People affected by wildfires in LAC 2000-2022

COUNTRY	TOTAL PEOPLE AFFECTED
Brazil	10M
Bolivia	165.3K
Paraguay	129K
Argentina	125.2K
Colombia	119.2K
Chile	21.9K
Nicaragua	16K
Honduras	2.5K
Ecuador	1.9K
Panama	1.4K

<sup>26</sup> Wildfires in Latin America: A preliminary analysis, messages and resources | UNDRR



# Recurring climate-related shocks - Floods



**49M** PEOPLE AFFECTED (2000 - 2022)



**28.1B** TOTAL DAMAGE (2000 - 2022)

## People affected by floods

COUNTRY	TOTAL PEOPLE AFFECTED
Colombia	10.5M
Brazil	9.2M
Peru	4.5M
Guatemala	3.8M
Bolivia	3.7M
Mexico	3.6M
Dominican Republic	3M
Venezuela	1.8M
Argentina	1.5M
Paraguay	1.2M
Guatemala	1M
Honduras	948K

Floods are considered to be one of the costliest disasters because of the wide array and extent of damage, with direct damage and losses to physical and environmental assets, including human belongings and shelter, ecological systems and production across economic sectors, to health-related issues and the loss of human life.

Flash floods are the most dangerous kind of flood, as their destructive power, combined with incredible speed and unpredictability, means they can happen with little or no warning, producing devastating consequences for populations caught off guard and unprepared.

## Impact of floods

Floods are the most common disaster in the region, with 681 floods (+133 since 2019) since 2000. Despite the relatively low death toll directly associated with floods, they have affected 49 million people (+8 million people since 2019) and caused almost US\$28 billion (+2 billion since 2019) in total damage.

The geographical location largely determines the impact of a flood event, with areas near rivers and urban centres more at risk of flooding. Of course, the socio-economic vulnerability of the population, as well as the preparedness and response capacity of the affected government, are also very important factors for determining if international assistance will be required.

## Landslides

There are many different types of landslides and they almost always have multiple causes, including rainfall, changes in water level, stream erosion, earthquakes and volcanic activity. Human activity can also be a contributing factor in causing landslides, including building roads and structures without adequate grading of slopes.

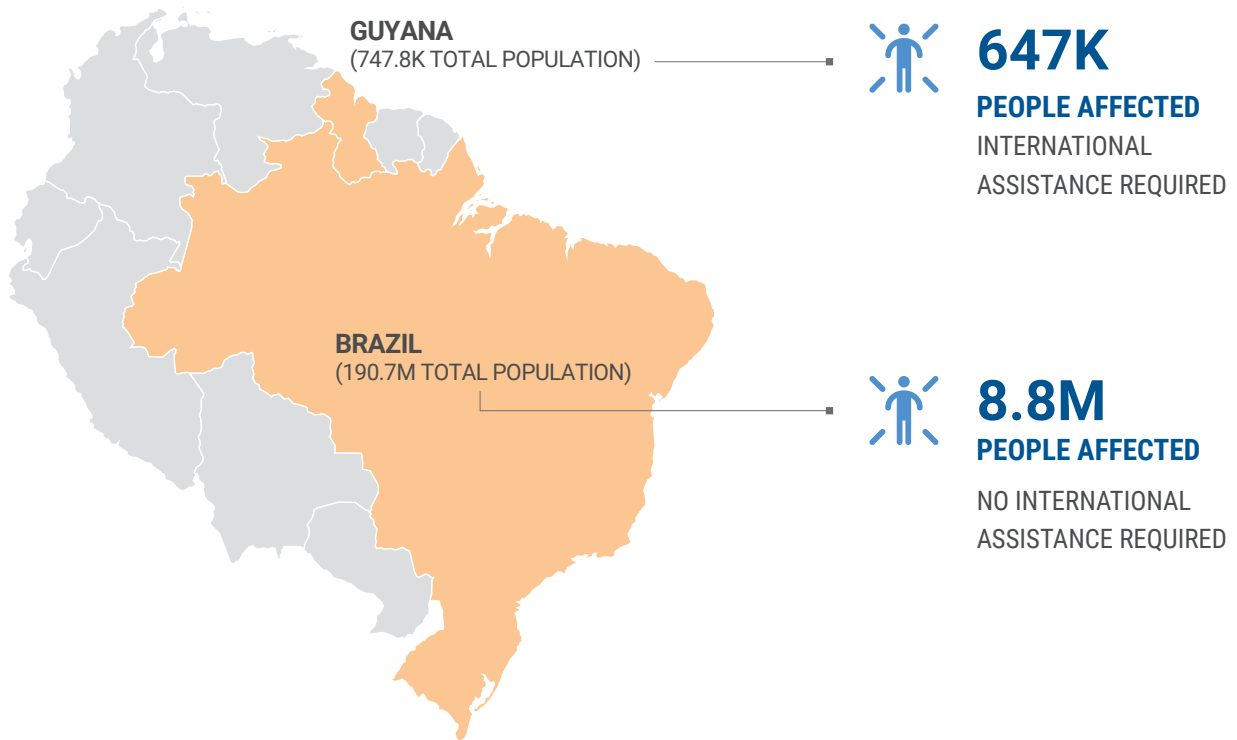
## Impact of landslides

Since 2000, Latin America and the Caribbean has been affected by 78 landslides which caused almost 3,000 deaths. A third of the deaths due to landslides have occurred in Colombia. In recent years, the landslide in Guatemala in 2015, which caused 350 deaths, and Colombia in 2017, which caused 349 deaths and affected more than 45,000 people, stand out as particularly destructive landslide events in the region.

**Context matters**

Since 2000, Brazil, the most flood-prone country in the region, has been affected by 94 significant flood events, affecting 8.8 million people out of the 49 million people affected in the region. Only in Colombia more people have been affected by floods, accounting for 10.5 million flood-affected people.

Guyana, which experiences far fewer flood events and saw only seven over the same period, is proportionately more affected than Brazil, as the population’s vulnerability and lack of preparedness and response capacity put large numbers at risk.





A view of the damage in Las Pacayas, Alta Verapaz, after the passage of Hurrricane Eta. After the heavy rains, the entire valley of the Las Pacayas village became a lagoon (November 2020)

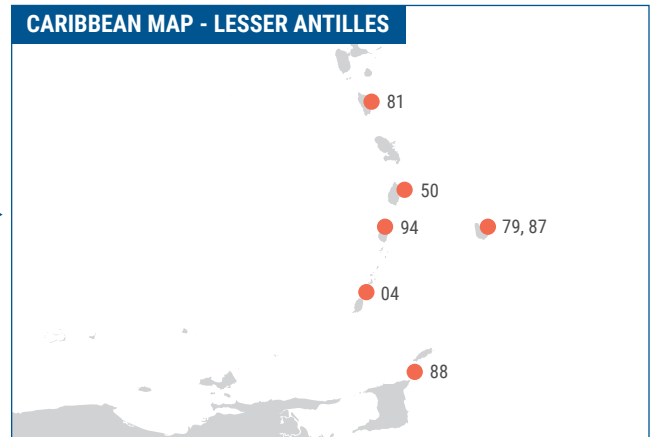
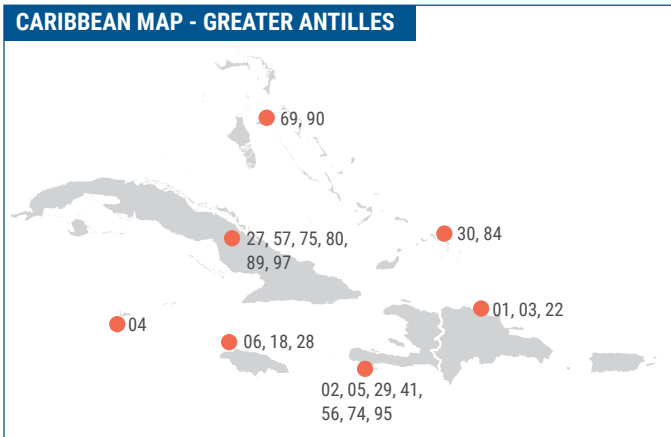
Photo: WFP/Alejandro Arriola



# 97 surge deployments

in response to emergencies due to natural phenomenon, outbreaks and environmental disasters

**OCHA ROLAC** deploys specialized humanitarian personnel to support efforts on the ground in response to new or escalating humanitarian crises. Since 2004, ROLAC has deployed on 97 occasions in the region to provide rapid and temporary reinforcement to support coordination efforts.



**2004**

- 01. Dominican Republic Floods - **May**
- 02. Haiti Floods - **May**
- 03. Dominican Republic Tropical Storm Jeanne - **September**
- 04. Grenada and Cayman Islands Hurricane Ivan - **September**
- 05. Haiti Tropical Storm Jeanne - **September**
- 06. Jamaica Hurricane Ivan - **September**

**2005**

- 07. Guyana Floods - **January**
- 08. El Salvador Floods - **October**
- 09. Guatemala Hurricane Stan - **October**
- 10. Nicaragua Tropical Storm Beta - **October**

**2006**

- 11. Bolivia Floods - **February**
- 12. Ecuador Floods - **March**
- 13. Suriname Floods - **May**
- 14. Ecuador Volcano Tungurahua - **August**

**2007**

- 15. Bolivia Floods - **February**
- 16. Uruguay Floods - **May**
- 17. Peru Earthquake - **August**
- 18. Jamaica Hurricane Dean - **August**
- 19. Belize Hurricane Dean - **August**
- 20. Honduras Hurricane Felix - **September**
- 21. Nicaragua Hurricane Felix - **September**
- 22. Dominican Republic Hurricane Noel - **October**
- 23. Mexico Floods - **November**

**2008**

- 24. Bolivia Floods - **January**
- 25. Colombia Floods - **January**
- 26. Ecuador Floods - **February**
- 27. Cuba Hurricane Gustav - **August**
- 28. Jamaica Hurricane Gustav - **August**
- 29. Haiti Hurricane Hanna - **September**
- 30. Turks and Caicos Hurricane Ike - **September**
- 31. Honduras Floods - **October**
- 32. Panama Floods - **November**
- 33. Guatemala Floods - **November**

**2009**

- 34. Costa Rica Earthquake - **January**
- 35. Guatemala Drought - **September**
- 36. El Salvador Floods - **November**
- 37. Nicaragua Hurricane Ida - **November**
- 38. Bolivia Drought - **December**
- 39. Honduras Drought - **December**
- 40. Guatemala Drought - **December**

**2010**

- 41. Haiti Earthquake - **January**
- 42. Bolivia Floods - **February**
- 43. Chile Earthquake - **February**
- 44. Guatemala Drought - **March**
- 45. Honduras Drought - **March**
- 46. El Salvador Tropical Storm Agatha - **June**
- 47. Guatemala Tropical Storm Agatha - **June**
- 48. Guatemala Pacaya Volcano - **June**
- 49. Peru Cold Wave - **August**
- 50. Saint Lucia - Hurricane Tomas - **November**
- 51. Colombia Floods - **December**

**2011**

- 52. El Salvador Floods - **October**
- 53. Guatemala Floods - **October**
- 54. Nicaragua Floods - **October**

**2012**

- 55. Paraguay Floods - **April**
- 56. Haiti Tropical Storm Isaac - **August**
- 57. Cuba Hurricane Sandy - **October**
- 58. Guatemala Earthquake - **November**

**2013**

- 59. Bolivia Drought - **July**
- 60. Mexico Floods - **December**

**2014**

- 61. Bolivia Floods - **February**
- 62. Chile Forest Fires - **April**
- 63. Paraguay Floods - **June**
- 64. Honduras Drought - **September**

**2015**

- 65. Bolivia Floods - **February**
- 66. Chile Floods - **March**
- 67. Guatemala Oil Spill - **June**
- 68. Guatemala Drought - **August**
- 69. Bahamas Hurricane Joaquin - **October**

**2016**

- 70. Paraguay Floods - **February**
- 71. Honduras Zika virus - **March**
- 72. Ecuador Earthquake - **April**
- 73. Belize Hurricane Earl - **August**
- 74. Haiti Hurricane Matthew - **October**
- 75. Cuba Hurricane Matthew - **October**
- 76. Costa Rica Hurricane Otto - **November**

**2017**

- 77. Chile Forest Fires - **January**
- 78. Peru Floods - **March**
- 79. Barbados Hurricane Irma - **September**
- 80. Cuba Hurricane Irma - **September**
- 81. Dominica Hurricane Maria - **September**
- 82. Guatemala Earthquake - **September**
- 83. Mexico Earthquake - **September**
- 84. Turks and Caicos Hurricane Irma - **September**

**2018**

- 85. Bolivia Floods - **March**
- 86. Colombia Oil Spill - **April**
- 87. Barbados Hurricane Isaac (pre-deployment) - **September**
- 88. Trinidad and Tobago Floods - **October**

**2019**

- 89. Cuba Tornado - **February**
- 90. Bahamas Hurricane Dorian - **August**
- 91. Bolivia Wildfires - **September**

**2020**

- \*COVID remote response (**Regional**)
- 92. Guatemala Hurricanes Eta and Iota - **November**
- 93. Honduras Hurricanes Eta and Iota - **November**

**2021**

- 94. Saint Vincent and the Grenadines Volcanic Eruption - **April**
- 95. Haiti Earthquake - **August**

**2022**

- 96. Peru Oil Spill - **January**
- 97. Cuba Hurricane Ian - **September**

Only deployments in LAC are listed here

