

Status of Mortality and Economic Losses

Status of Mortality and Economic Losses due to Weather, Climate and Water Extremes (1970-2021)

Global

The occurrence of weather, climate and water extremes has been increasing worldwide.

Weather-, climate- and water-related hazards have caused millions of fatalities and have hindered development, both socially and economically. As countries are becoming increasingly exposed to adverse socioeconomic impacts, enhancing resiliency to such hazards becomes ever more important.

Global overview



Between 1970 and 2021, there were **11 778 reported disasters** attributed to weather, climate and water extremes. They caused **2 087 229 deaths and US\$ 4.3 trillion** in economic losses.



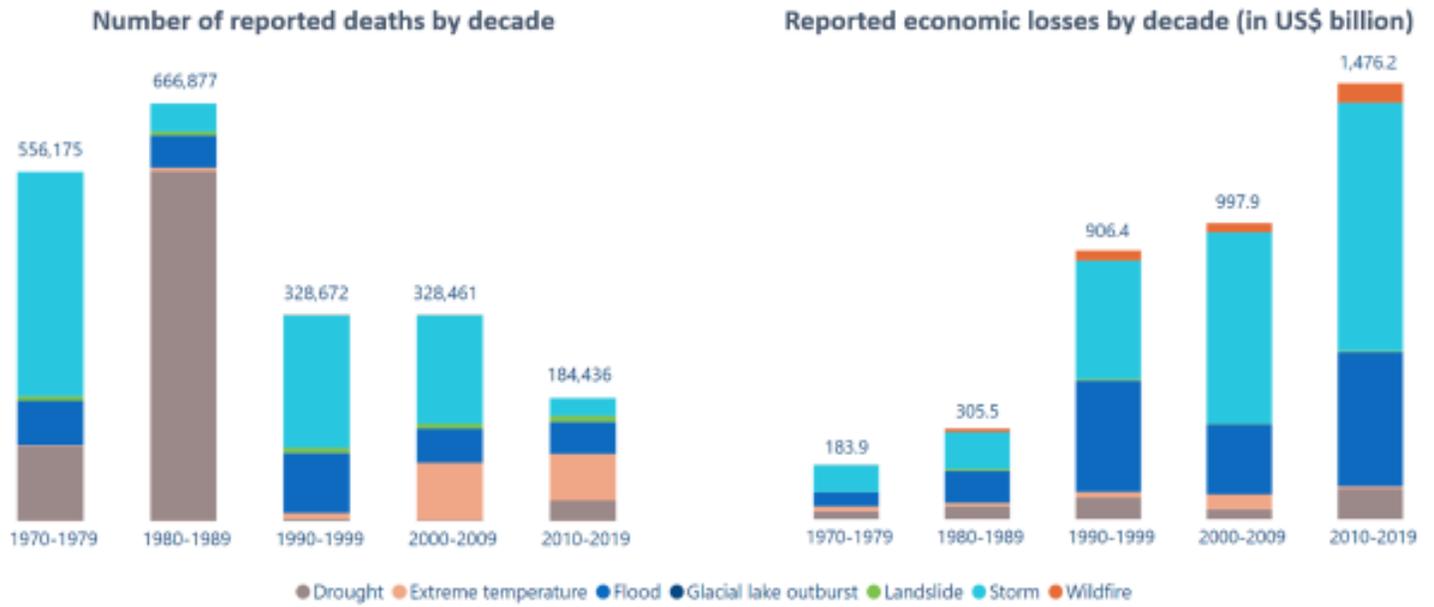
The mortality from weather, climate and water-related extremes has been decreasing over the last half of a century, mostly due to the implementation of multi-hazard early warning systems.



Economic losses attributed to weather, climate and water extremes continue to increase.



Economic losses were reported for **only 37% of all weather-, climate- and water-related disasters** and might therefore be underestimated.



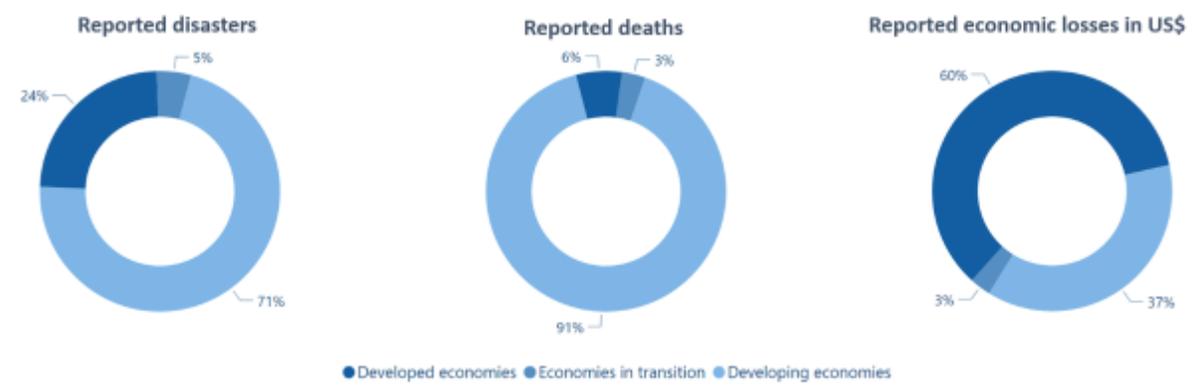
Reported disasters and related impacts by United Nations country classification



Over 90% of reported deaths worldwide occurred in developing economies.



60% of economic losses due to weather-, climate- and water-related disasters were reported for developed economies.

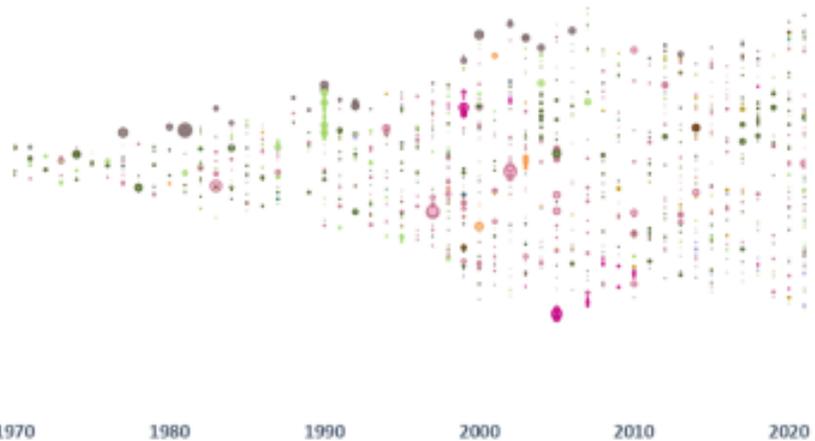


Reported economic losses as a % of developed economies' Gross Domestic Products (1970-2021)

2 824 disasters were reported in developed economies, yet economic losses were reported for 51% (1438 disasters) only.

In developed economies, 84% of disasters with reported economic losses had an impact equivalent to less than 0.1% of the gross domestic products (GDP) of the respective economies.

No disasters were reported with economic losses greater than 3.5% of GDP.



- Avalanche
- Cold wave
- Drought
- Extra-tropical storm
- Flood (general flood, flash flood, riverine flood, coastal flood)
- Forest fire
- General storm
- Hail
- Heat wave
- Land fire (Brush, Bush, Pasture)
- Landslide
- Lightning/Thunderstorms
- Mudslide
- Severe winter conditions
- Tornado
- Tropical cyclone
- Winter storm/Blizzard

Sources:

Centre for Research on the Epidemiology of Disasters, 2022: EM-DAT: The International Disaster Database, <https://emdat.be>

The World Bank, 2023: Data, GDP (current US\$), <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>

Note: the hazard classification is based on EM-DAT hazard type; the bubbles are event-specific; the size of a bubble relates reported economic losses from weather-, climate- and water-related extremes to countries' annual Gross Domestic Products.

Reported economic losses as a % of Least Developed Countries' Gross Domestic Products (1970-2021)

2 086 disasters were reported in Least Developed Countries, yet economic losses were reported for **13%** (280 disasters) only.

In LDCs, 38% of disasters with reported economic losses had an impact equivalent to less than 0.1% of the respective GDPs.

7% of disasters for which economic losses were reported had an impact equivalent to more than 5% of the respective GDPs, with several disasters causing economic losses up to nearly 30%.



Sources:

Centre for Research on the Epidemiology of Disasters, 2023. EM-DAT: The International Disaster Database. <https://emdat.be>

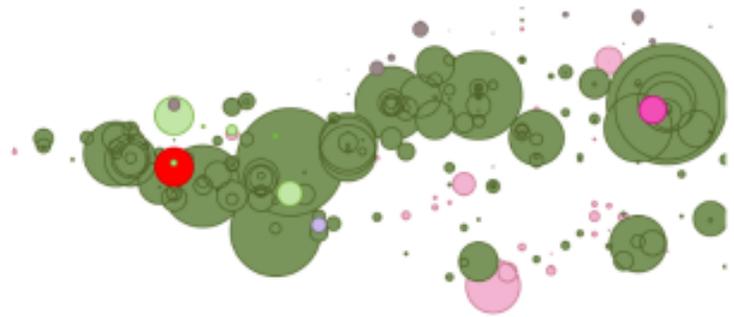
The World Bank, 2023. Data, GDP (current US\$). <https://data.worldbank.org/indicator/NY.GDP.MKZF.CD>

Note: the hazard classification is based on EM-DAT hazard type; the bubbles are event-specific; the size of a bubble relates reported economic losses from weather-, climate- and water-related extremes to countries' annual Gross Domestic Products.

Reported economic losses as a % of Small Island Developing States' Gross Domestic Products (1970-2021)

840 disasters were reported in Small Island Developing States between 1970 and 2021, yet economic losses were reported for **38%** (319 disasters) only.

20% of disasters with reported economic losses led to an impact equivalent to more than 5% of the respective GDPs, with some disasters causing economic losses above 100%.



Sources:

Centre for Research on the Epidemiology of Disasters, 2023. EM-DAT: The International Disaster Database, <https://www.emdat.be>
 The World Bank, 2023. Data, GDP (current US\$), <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>

Note: the hazard classification is based on EM-DAT/hazard type; the bubbles are event-specific; the size of a bubble relates reported economic losses from weather-, climate- and water-related extremes to countries' annual Gross Domestic Products.

Regional Association 1 - Africa



In Africa, **1 839 disasters** attributed to weather, climate and water extremes were reported between 1970 and 2021. They caused **733 585 deaths and US\$ 43 billion** in economic losses.



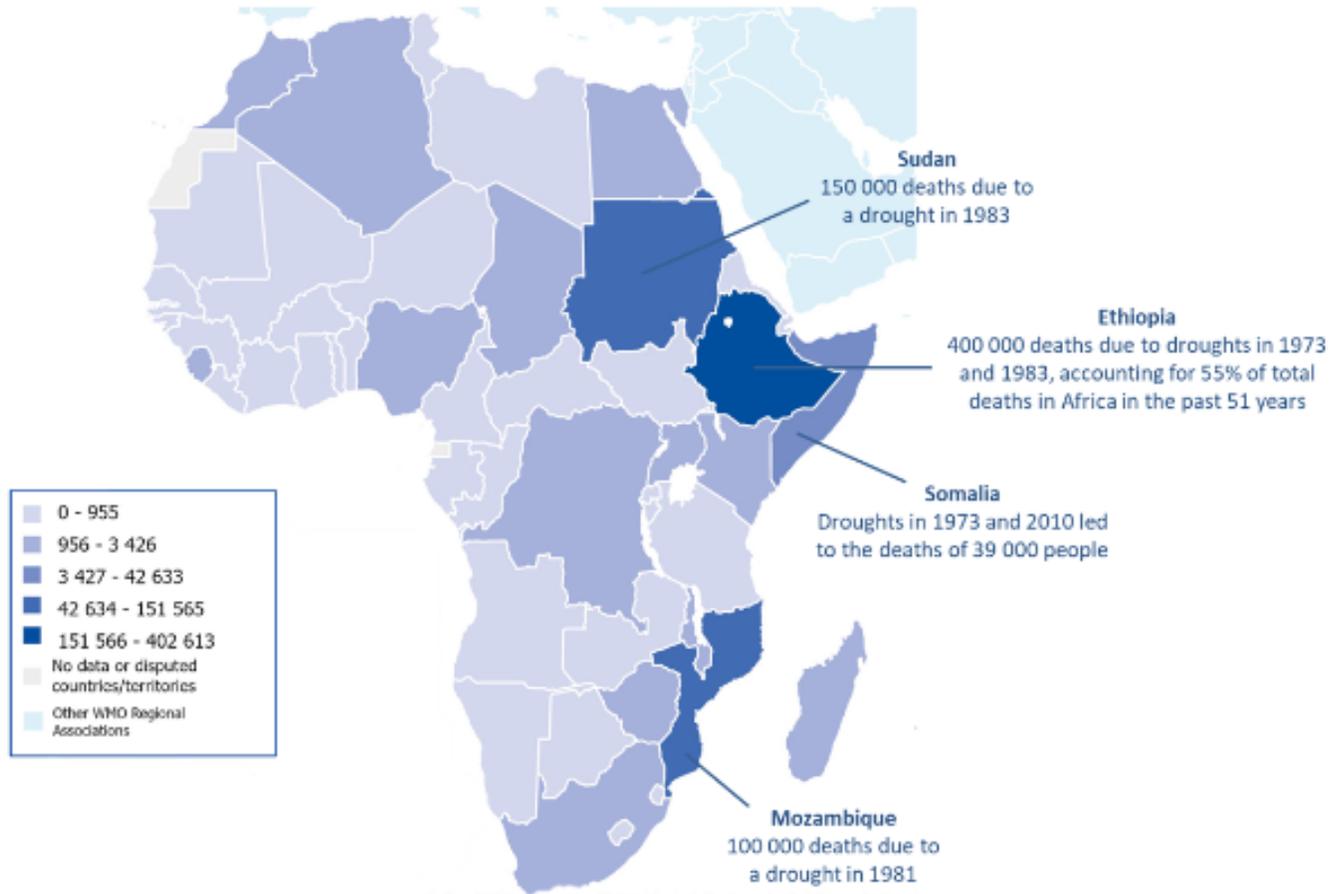
Droughts accounted for **95% of reported deaths** in the Africa.



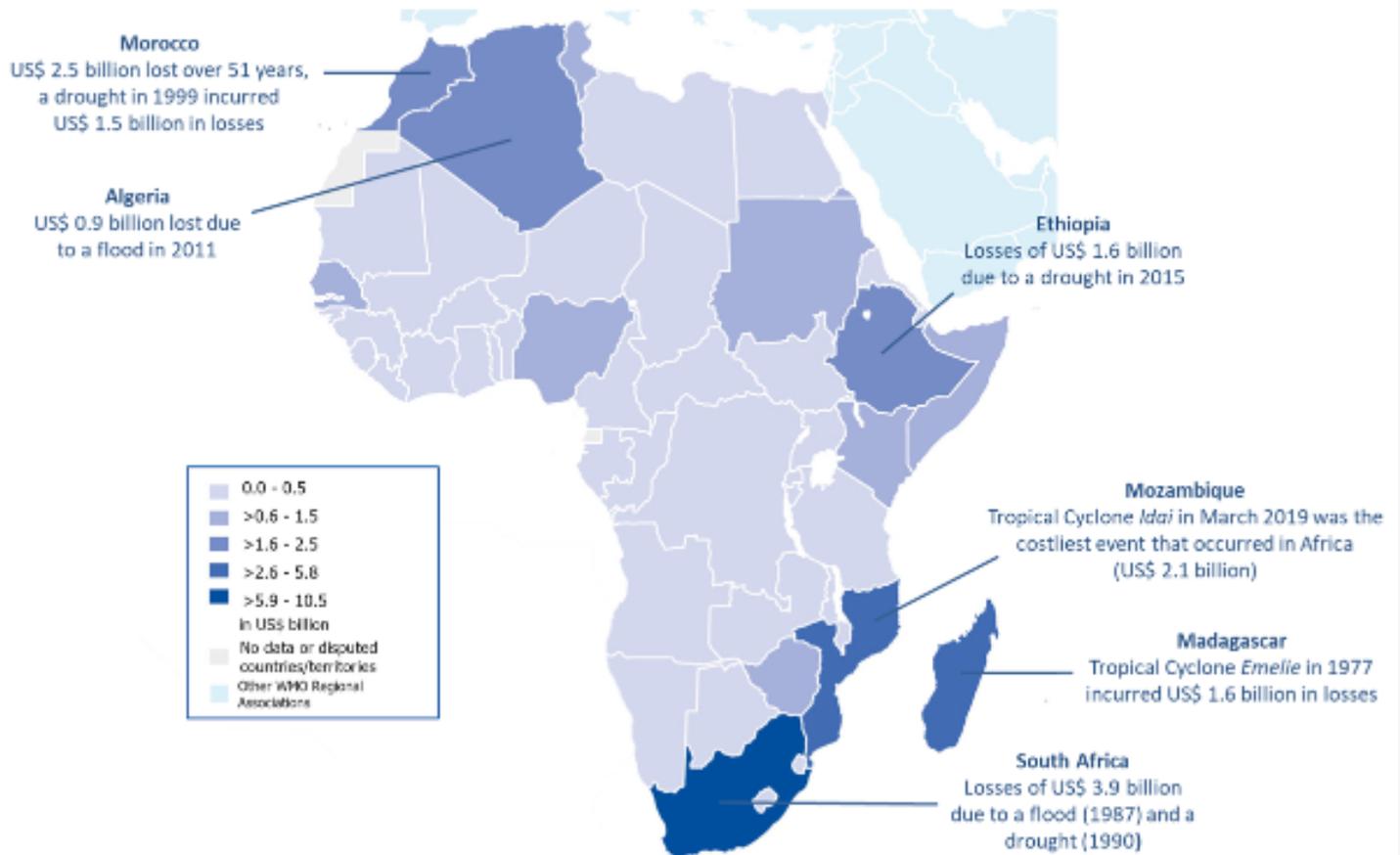
Between 1970 and 2021, **US\$ 43 billion in economic losses** were attributed to weather, water and climate extremes - 1% of reported losses worldwide.

In 2020 and 2021, droughts were the leading cause of economic losses.

Distribution of reported deaths in Africa (1970-2021)



Distribution of reported economic losses in Africa (1970-2021)



Regional Association 2 - Asia



Between 1970 and 2021, **3 612 disasters** attributed to weather, climate and water extremes were reported.

They resulted in **984 263 deaths** and incurred **US\$ 1.4 trillion** in economic losses.



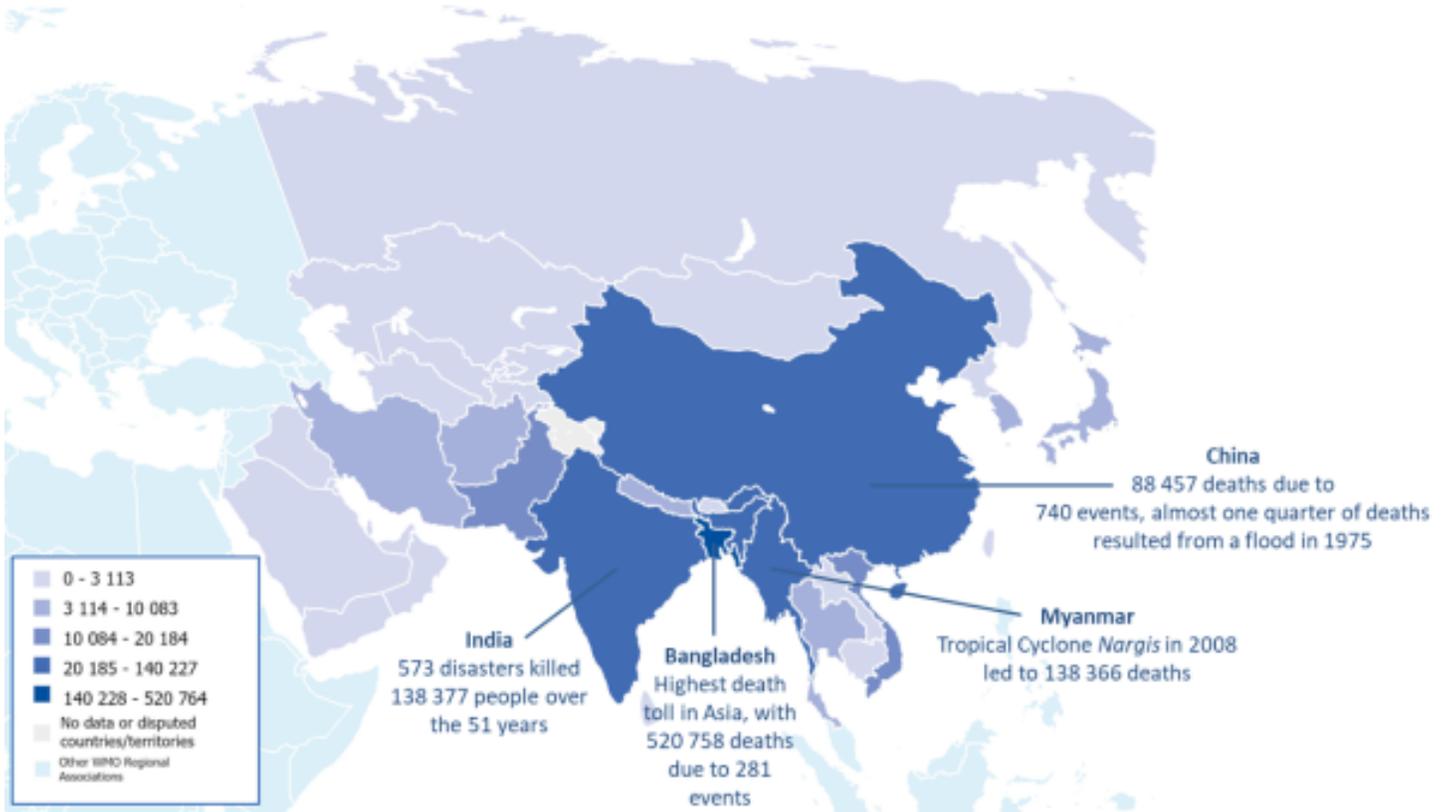
Between 1970 and 2021, Asia accounted for **47% of all reported deaths worldwide**, with tropical cyclones being the leading cause of reported deaths.



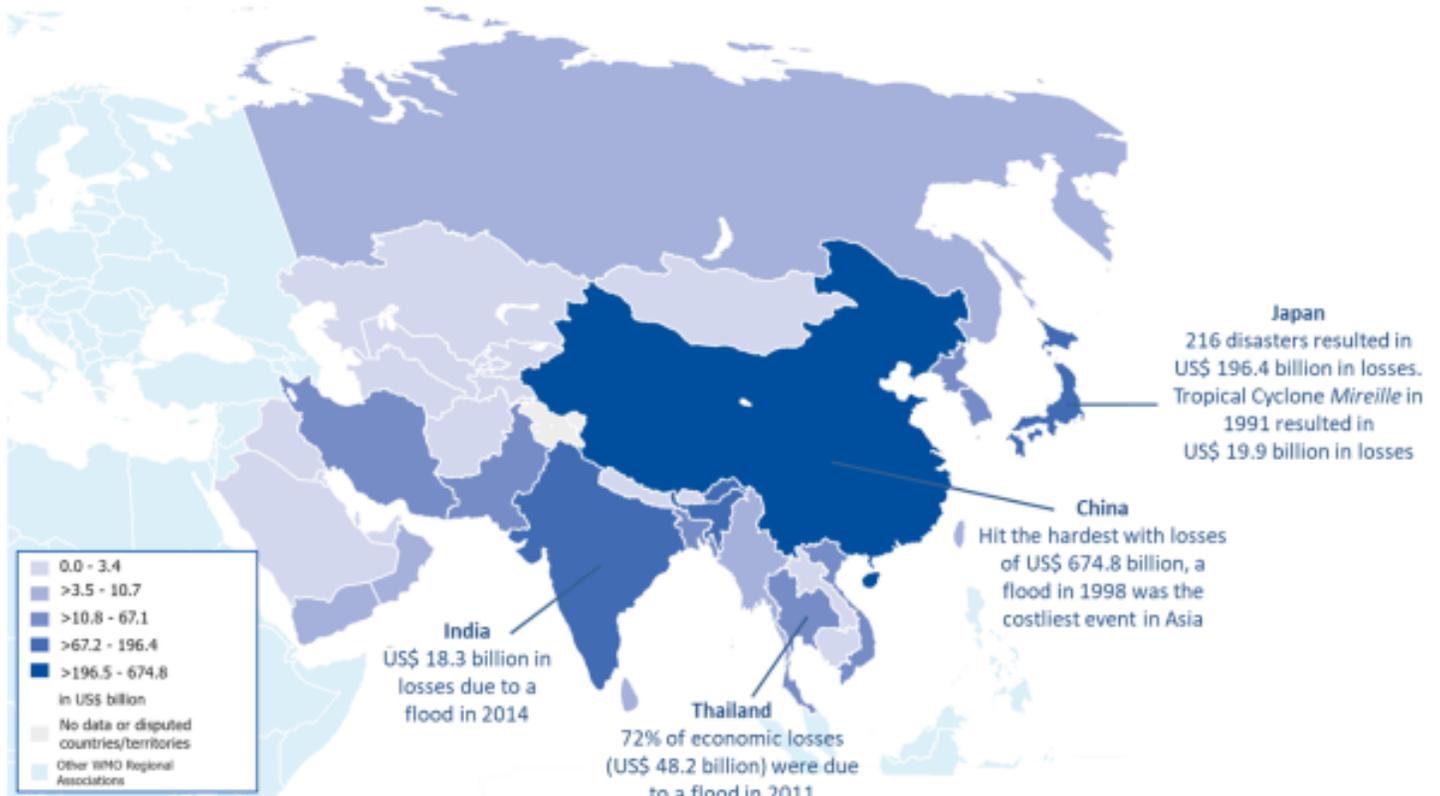
Between 1970 and 2021, **US\$ 1.4 trillion in economic losses** were attributed to weather, water and climate extremes – 33% of reported losses worldwide.

Floods were the leading cause of reported economic losses.

Distribution of reported deaths in Asia (1970-2021)



Distribution of reported economic losses in Asia (1970-2021)



Regional Association 3 - South America



Between 1970 and 2021, **943 disasters** attributed to weather, climate and water extremes were reported in South America, with floods accounting for 61% of reported disasters in the region.

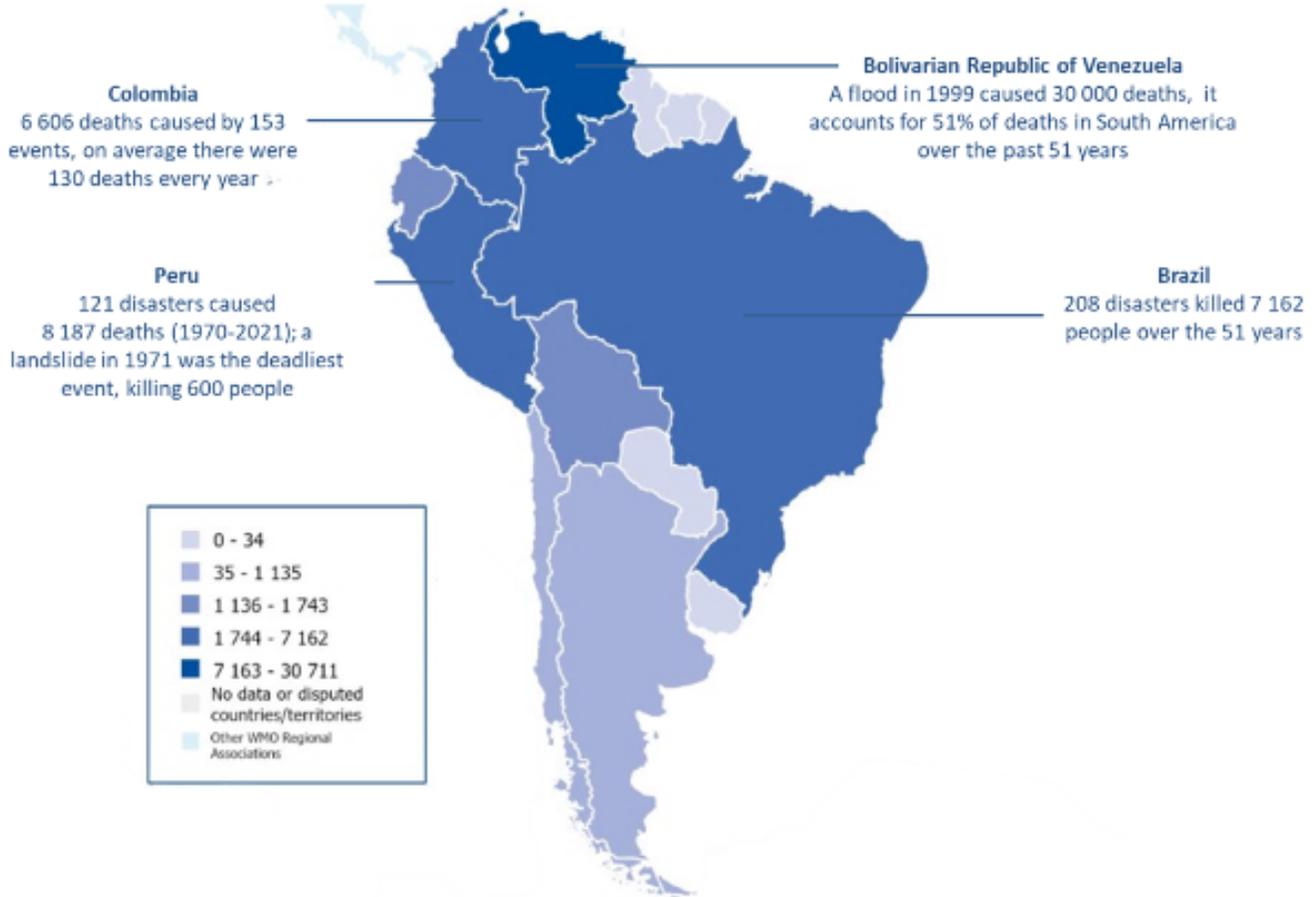
These disasters resulted in **58 484 deaths** and **US\$ 115.2 billion** in economic losses.



Between 1970 and 2021, South America accounted for **3% of globally reported deaths.**

Floods were the leading cause of reported deaths.

Distribution of reported deaths in South America (1970-2021)



Distribution of reported economic losses in South America (1970-2021)



Regional Association 4 - North America, Central America and the Caribbean



In North America, Central America and the Caribbean, **2 107 weather-, climate- and water-related** were reported between 1970 and 2021.

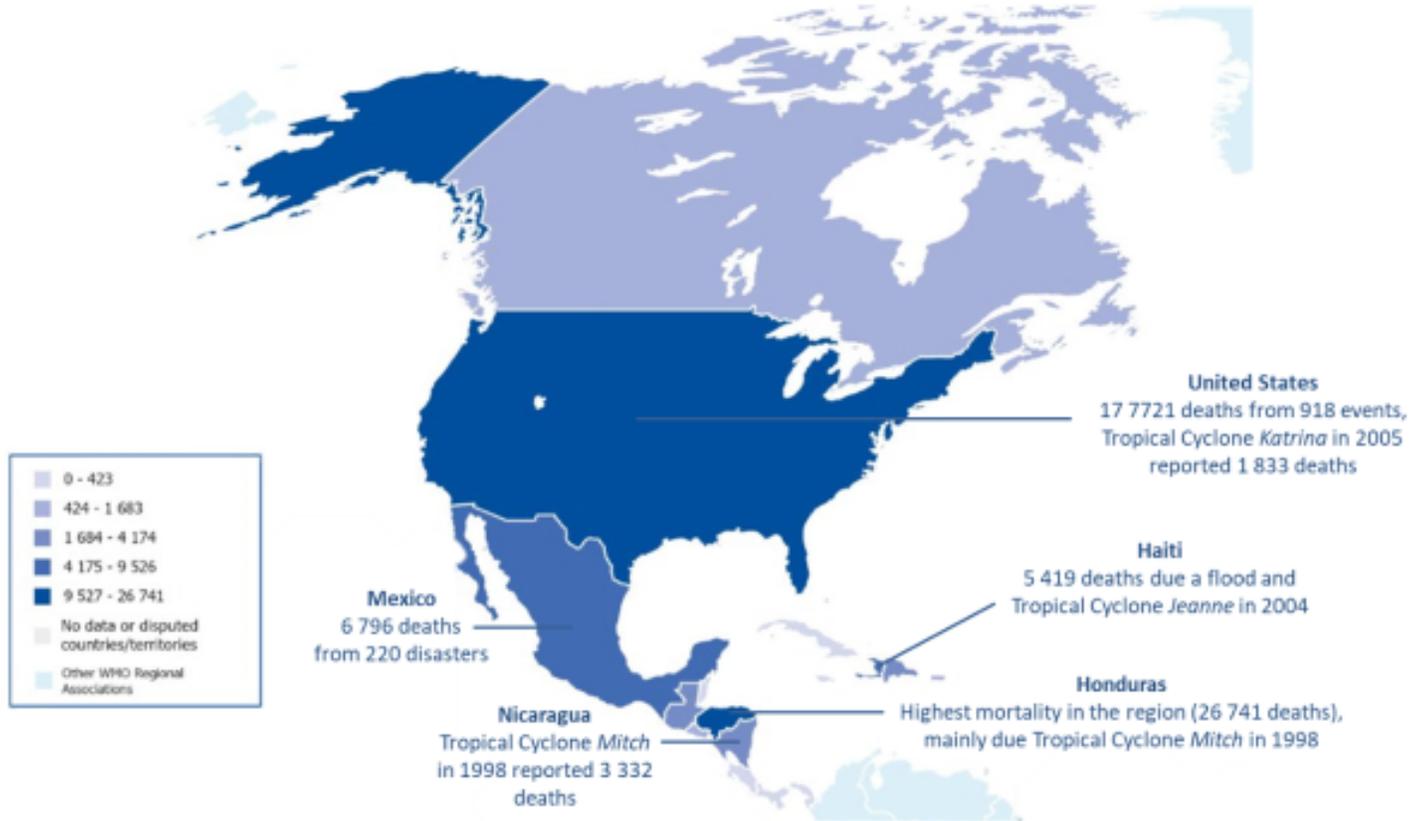
These disasters resulted in **77 454 deaths** and incurred **US\$ 2.0 trillion** in economic losses.



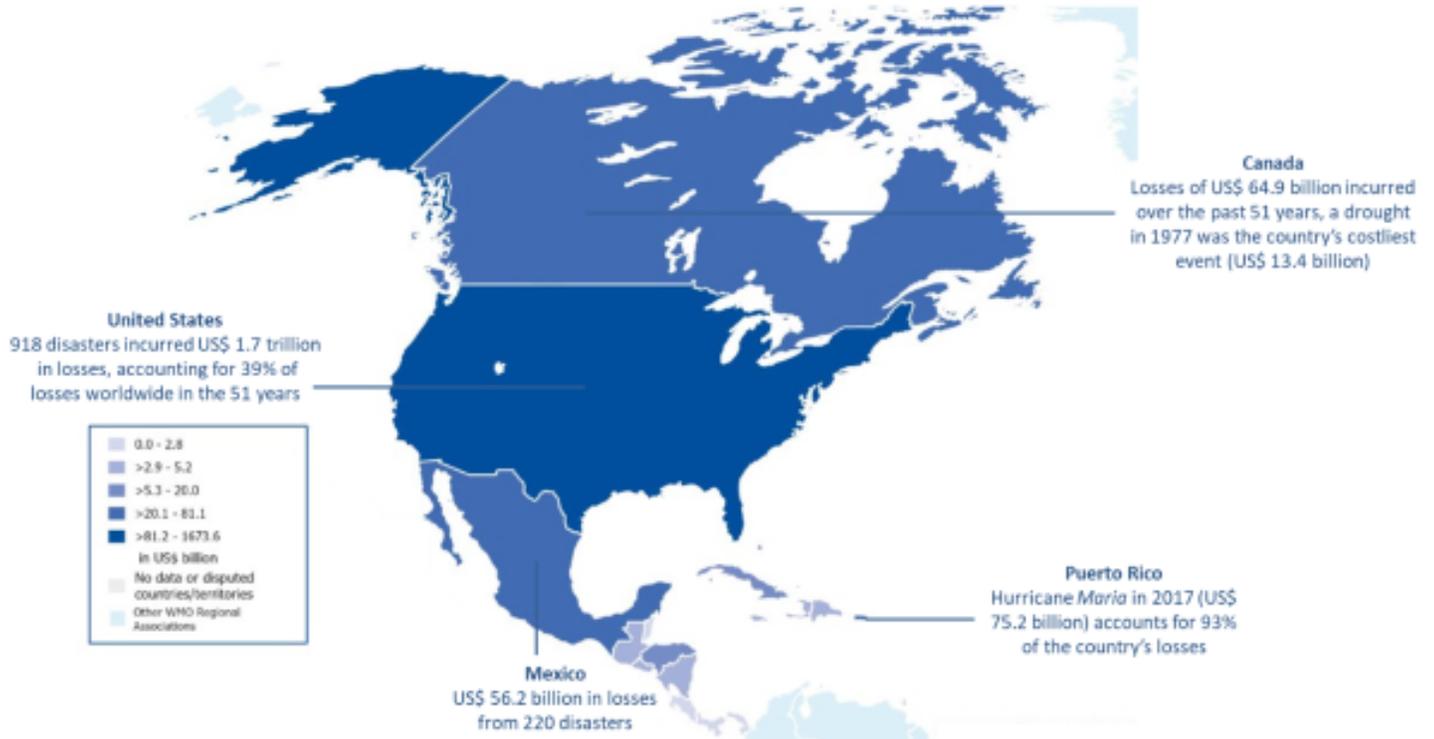
Between 1970 and 2021, North America, Central America and the Caribbean accounted for **46% of reported economic losses worldwide.**

Most of the reported economic losses were attributed to storm-related disasters, and more specifically, to tropical cyclones.

Distribution of reported deaths in North America, Central America and the Caribbean (1970-2021)



Distribution of reported economic losses in North America, Central America and the Caribbean (1970-2021)



Regional Association 5 - South-West Pacific



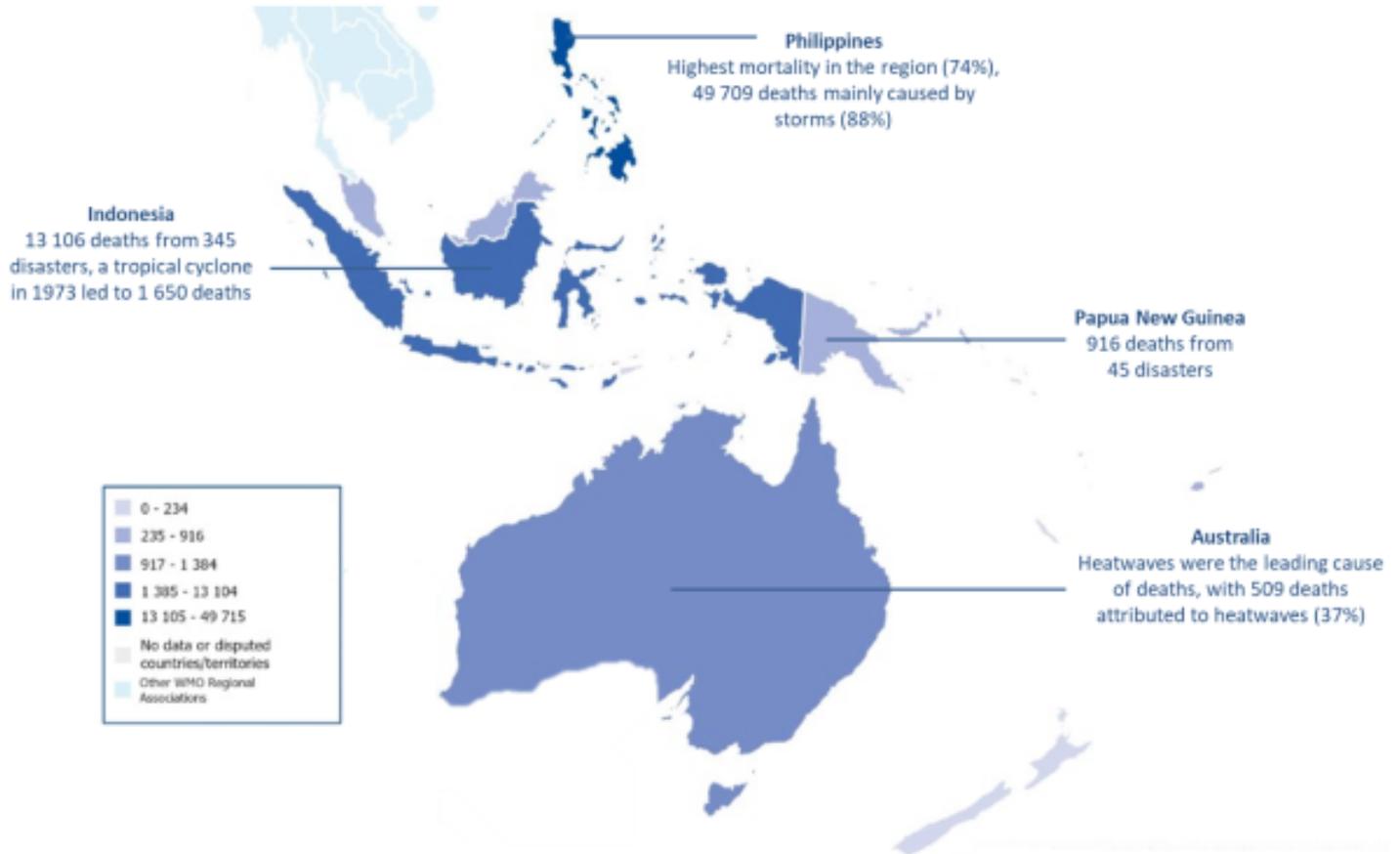
Between 1970 and 2021, **1 493 disasters** due to weather, climate and water extremes were reported in South-West Pacific.

They resulted in **66 951 deaths** and **US\$ 185.8 billion** in economic losses.

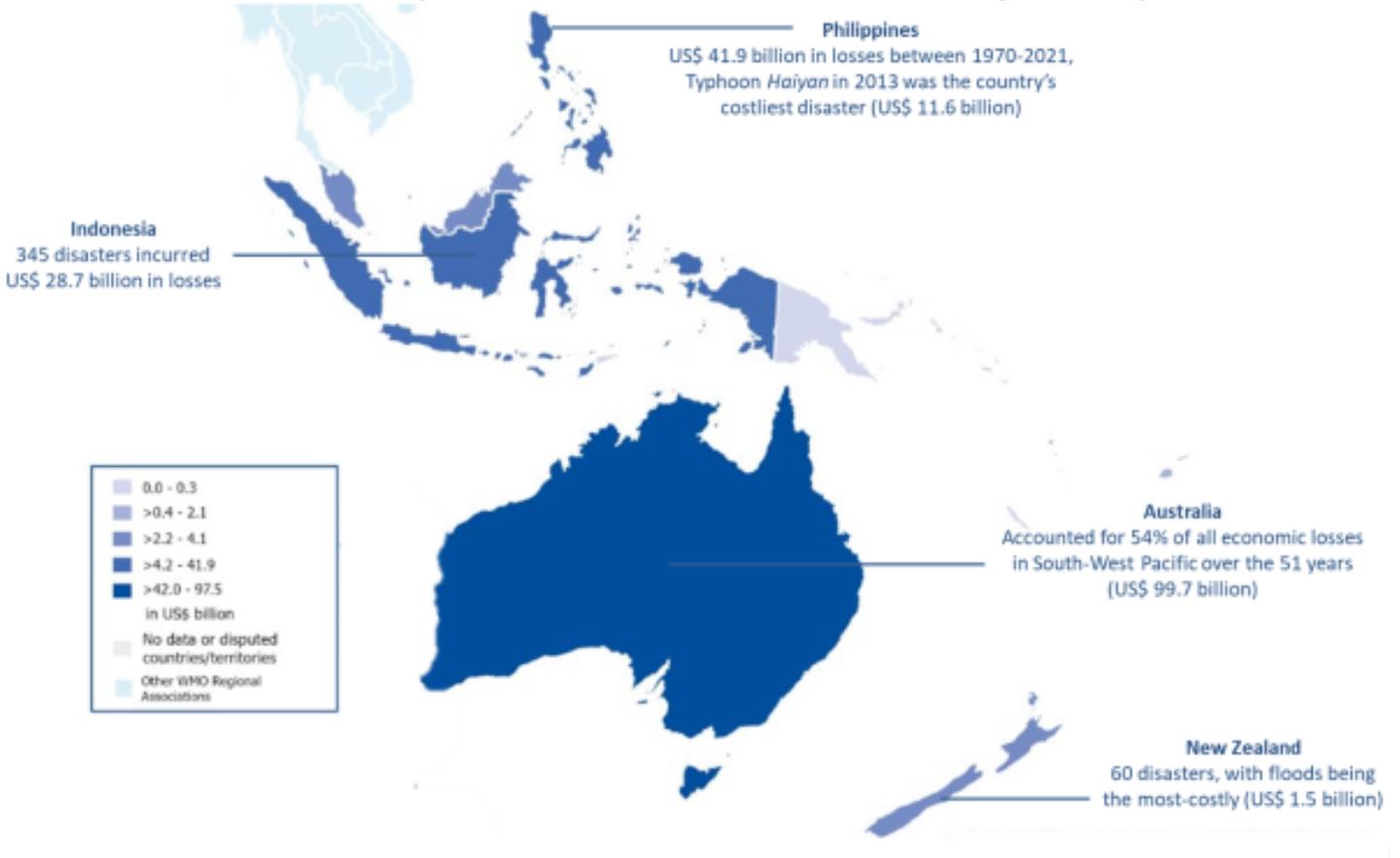


Between 1970 and 2021, **tropical cyclones were the leading cause** of reported deaths.

Distribution of reported deaths in South-West Pacific (1970-2021)



Distribution of reported economic losses in South-West Pacific (1970-2021)



Regional Association 6 - Europe



In Europe, **1 784 disasters** attributed to weather, climate and water extremes were reported between 1970 and 2021, with flood-related disasters being the most prevalent.

These disasters caused **166 492 deaths** and **US\$ 562.0 billion** in economic losses.



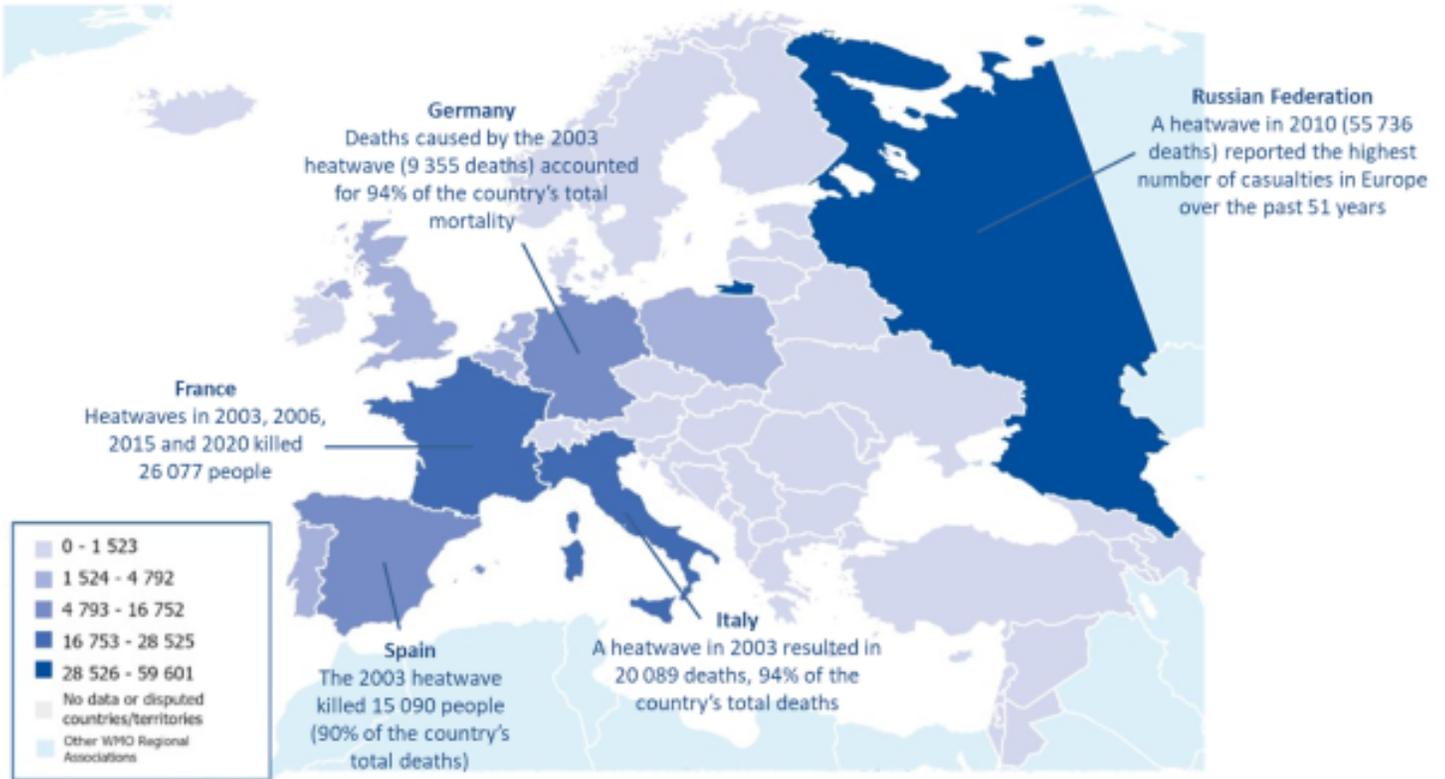
Between 1970 and 2021, Europe accounted for **8% of reported deaths worldwide.**

Extreme temperatures were the leading cause of reported deaths.

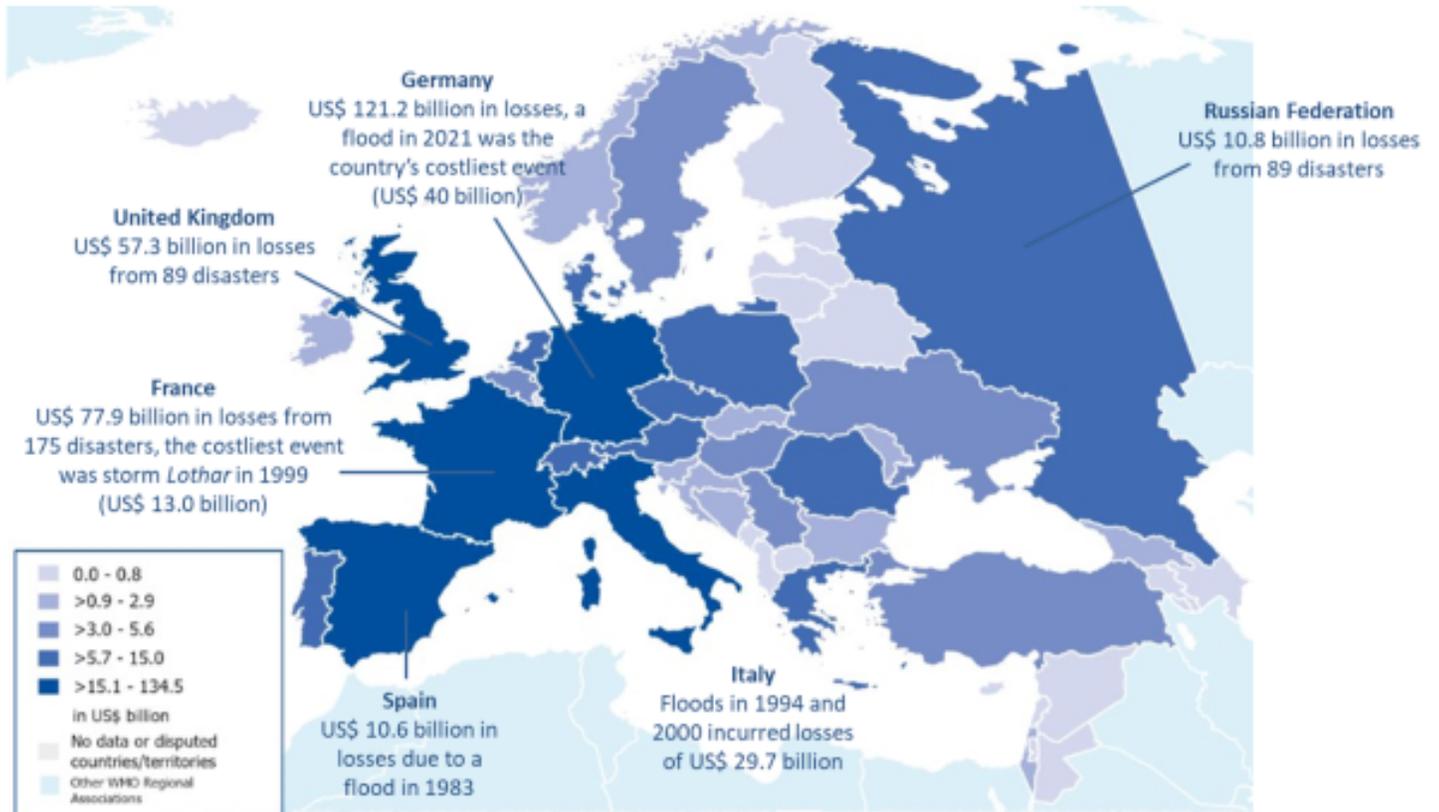


Between 1970 and 2021, floods were the leading cause of economic losses in Europe.

Distribution of reported deaths in Europe (1970-2021)



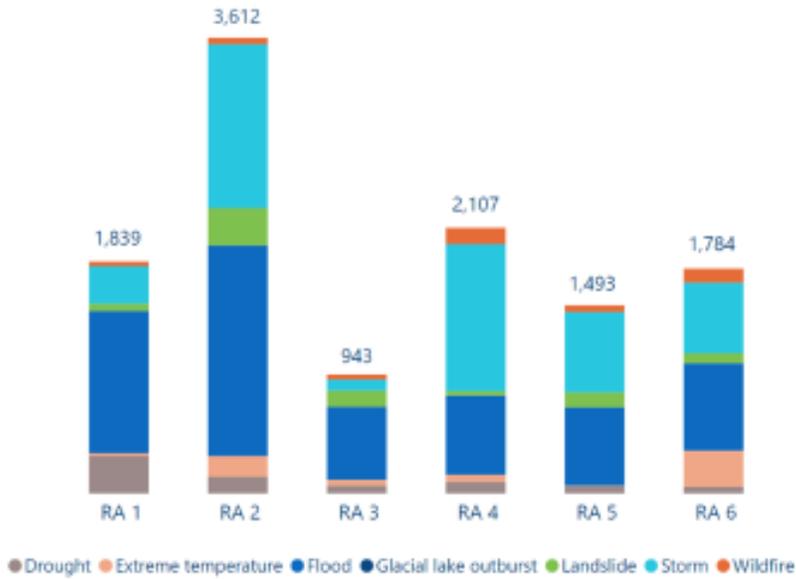
Distribution of reported economic losses in Europe (1970-2021)



Inter-regional overview (1970-2021)

Reported disasters

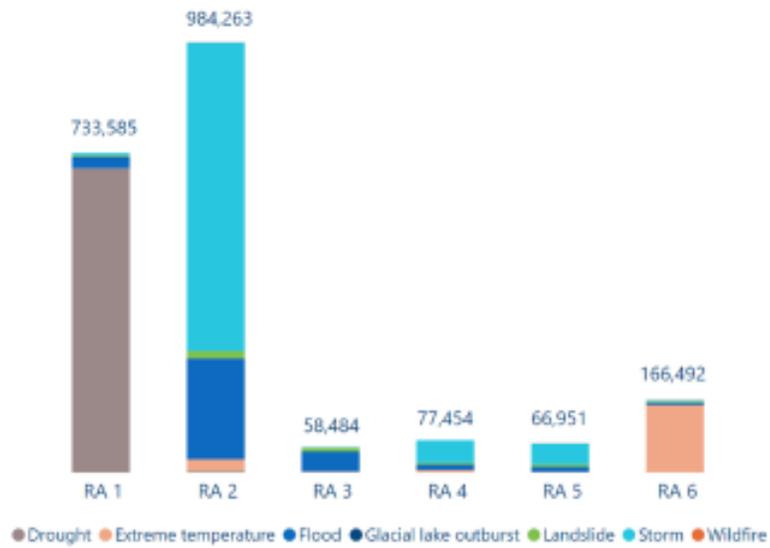
Number of reported disasters by WMO regional association



Between 1970 and 2021, **31% of globally reported disasters** occurred in Asia (RA2).

Reported deaths

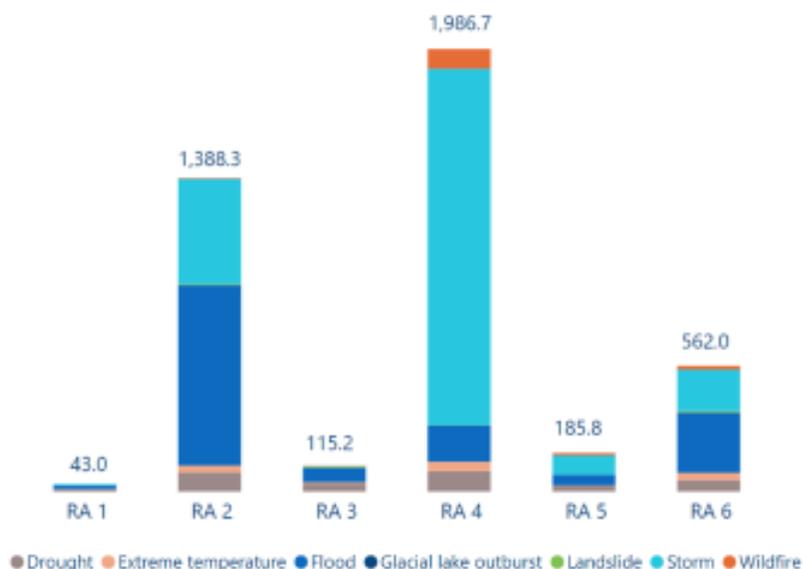
Number of reported deaths by WMO regional association



Between 1970 and 2021, Africa (RA1) and Asia (RA2) reported the largest number of deaths – **82% of reported death worldwide.**

Reported economic losses

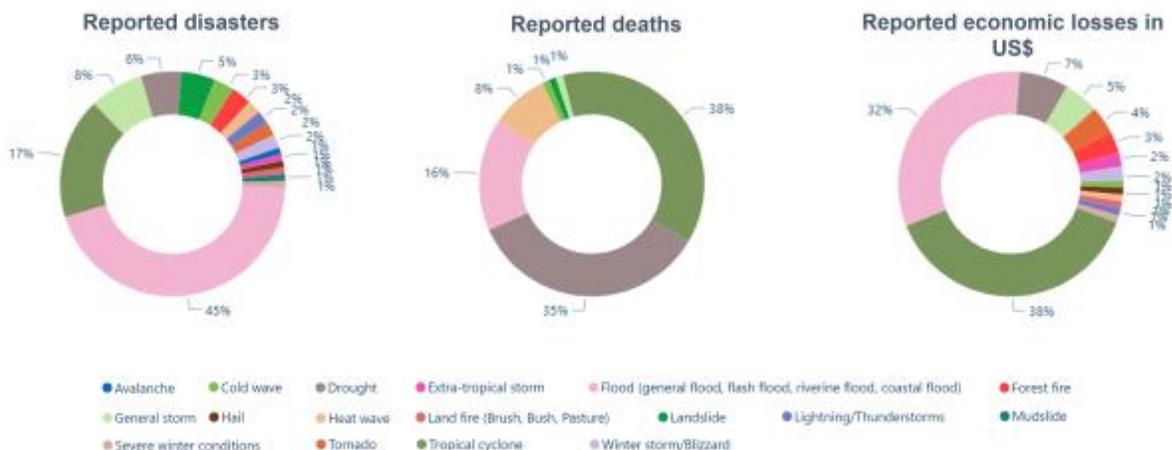
Reported economic losses in US\$ billion by WMO regional association



Between 1970 and 2021, 79% of economic losses worldwide were reported in Asia and North America, Central America and the Caribbean.

Hazards overview

Globally, flood-related disasters were the most prevalent, however in terms of impact, tropical cyclones were the leading cause of both reported human and economic losses worldwide between 1970 and 2021.



Tropical cyclones



Between 1970 and 2021, **2 050 disasters** attributed to tropical cyclones were reported worldwide.

38% of globally reported tropical cyclones occurred in Asia.

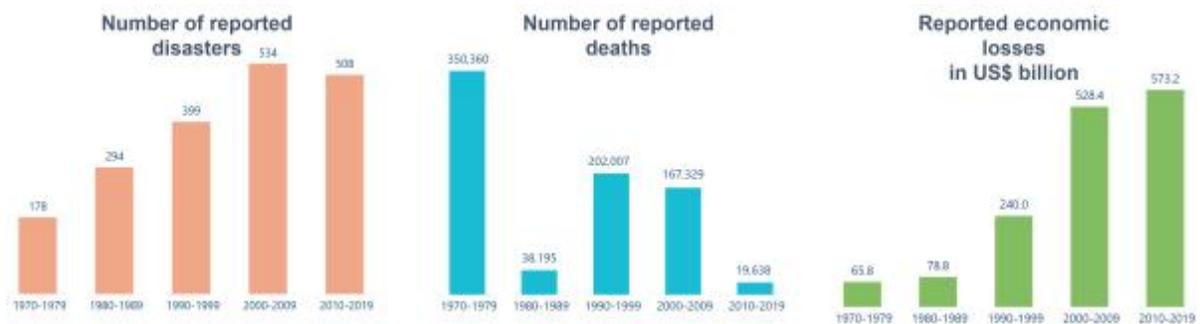


Between 1970 and 2021, **780 210 reported deaths** were attributed to tropical cyclones – 37% of all globally reported deaths.



Between 1970 and 2021, globally reported tropical cyclones caused **US\$ 1.6 trillion in economic losses**.

North America, Central America and the Caribbean reported the most economic losses (US\$ 1.1 trillion) due to tropical cyclones.



Floods



5 312 flood-related disasters were reported between 1970 and 2021, representing 45% of all reported disasters worldwide.

The highest number of flood-related disasters occurred in Asia, accounting for 31% of all disasters attributed to floods.

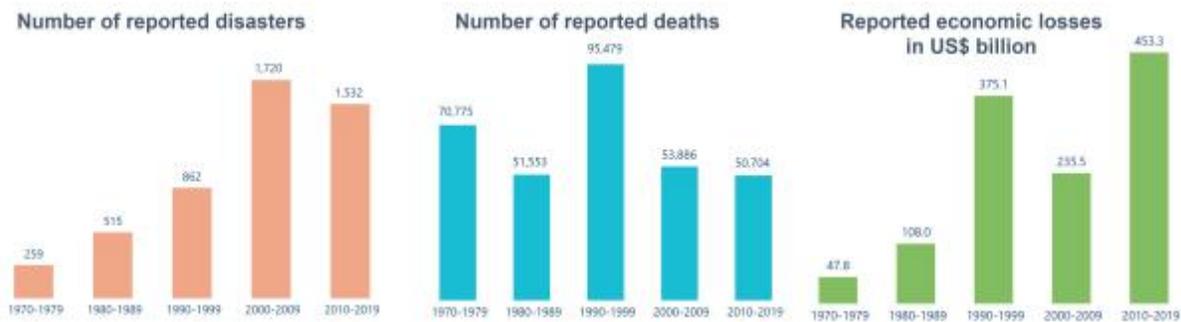


Between 1970 and 2021, floods accounted for 16% of reported deaths worldwide, causing **332 748 deaths**.



US\$1.3 trillion in economic losses were attributed to floods between 1970 and 2021.

Asia incurred the most economic losses due to floods, with flood related disasters causing 59% of reported economic losses.



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Emili Vilamala. Mammatacumulus from the rooftop, WMO 2022 Calendar Competition, Vic, Barcelona, Spain.

Joohyoung Kim. 5898, WMO 2023 Calendar Competition, Gwangju-si, Gyeonggi-do, Republic of Korea.

Josh Estey/CARE International. A lone mother with a baby on her back walks along a flooded street after Tropical Cyclone Idai (2019) devastated the port city of Beira, Mozambique on 14 March 2019.

Juan Paolo Josue. Cimmerian, WMO 2021 Calendar Competition Entries, Burgos, Ilocos Norte, Philippines.

Kyle Russell Allen G. Epic Tornado Within Epic Structure, WMO 2022 Calendar Competition, Dora, New Mexico, USA.

Matej Štegar. Floods, WMO 2020 Calendar Competition, Starše, Slovenia.

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Muhammad Amdad Hossain. 5793, WMO 2023 Calendar Competition, Sunamganj, Bangladesh.

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Disclaimer: The maps are based on data provided by the Emergency Events Database CRED,

2020: EM-DAT: The international Disaster Database. <https://emdat.be>

Data EM-DAT

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