Centre for Research on the Epidemiology of Disasters (CRED)

UCL Université catholique de Louvain

Annual Disaster Statistical Review 2013

The numbers and trends

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About CRED

The Centre for Research on the Epidemiology of Disasters (CRED) has been active for more than 40 years in the fields of: international disaster and conflict health studies, research and training activities linking relief, rehabilitation, and development. It was established in Brussels in 1973 at the School of Public Health of the Catholic University of Louvain (UCL) as a non-profit institution with international status under Belgian law. In 1980, CRED became a World Health Organization (WHO) collaborating centre as part of WHO's Global Program for Emergency Preparedness and Response. Since then, CRED has increased its international network substantially and collaborates closely with numerous UN agencies, inter-governmental and governmental institutions, non–governmental organizations, research institutes and universities.

Objective

The Centre promotes research and provides an evidence base to the international community on the burden of disease and related health issues due to disasters and conflicts, in order to improve preparedness and responses to these humanitarian emergencies. CRED trains field managers, students, relief personnel and health professionals in the management of short and long-term humanitarian emergencies.

CRED's focus

CRED's research focuses on all humanitarian and emergency situations with a major impact on human health. These include all types of natural and human-made disasters, such as earthquakes, floods and storms; longer-term disasters such as famines and droughts; and situations creating mass displacement of people such as civil strife and conflicts.

The Centre focuses on health aspects and the burden of disease arising from disasters and complex emergencies. CRED also promotes research on broader aspects of humanitarian crises, such as human rights and humanitarian law, socio-economic and environmental issues, early warning systems, the special needs of women and children, and mental health care.

The Centre is actively involved in stimulating debate on the effectiveness of various humanitarian interventions. It encourages scientific and policy discussions on existing and potential interventions and their impacts on acute and chronic malnutrition, human survival, morbidity, infectious diseases and mental health.

The CRED team works in four main areas:

- Natural disasters and their impacts
- Civil strife and conflict epidemiology
- Database and information support
- Capacity building and training

The CRED team

The Centre is composed of a multinational and multidisciplinary team that includes experts in medicine and public health, informatics and database management, psychology, nutritional sciences, sociology, economics and geography. The working languages are English and French.

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Executive Summary

In 2013, 330 natural triggered disasters[1] were registered. This was both less than the average annual disaster frequency observed from 2003 to 2012 (388), and represented a decrease in associated human impacts of disasters which were, in 2013, at their lowest level since 16 years. However, natural disasters still killed a significant number of people (21,610) but largely below the annual average between 2003-2012 (106,654) and 96.5 million people became victims worldwide, which was also below the 2003-2012 annual average (216 million) (see Figure 1). Like the other indicators, economic damages from natural disasters also show, in 2013, a decrease to average levels (2013 US $ 156.7 billion), with estimates placing the costs at US$ 118.6 billion.

Over the last decade, China, the United States, Indonesia, the Philippines and India constitute together the top 5 countries that are most frequently hit by natural disasters. In 2013, China experienced its highest number of natural disasters of the last decade. The country was affected by a variety of disaster types, including 17 floods and landslides, 15 storms, 7 earthquakes and one mass movement of geological origin, one drought and one period of extreme temperature.

Amongst the top 10 countries in terms of disaster mortality in 2013, five countries are classified as low income or lower-middle income economies (see World Bank income classification)[2]. These countries[3] accounted for 88% of global reported disaster mortality in 2013. Two disasters killed more than 1,000 people: the cyclone Haiyan in the Philippines, in November (7,354 deaths) and the monsoonal floods in June in India (6,054 deaths).

The low number of reported natural disasters in 2013 (330), when compared to the annual average occurrence from 2003 to 2012 (388), was mostly due to a smaller number of hydrological and climatological disasters (18% and 45% below their 2003-2012 annual average, respectively). Hydrological disasters (159) still had by far the largest share in natural disaster occurrence in 2013 (48.2%), followed by meteorological disasters (106; 32.1%), climatological disasters (33; 10%) and geophysical disasters (32; 9.7%).

In 2013, the number of people killed by disasters (21,610) was very far from the 2003-2012 annual average of 106,654 deaths. But this is mainly explained by the impact, on the decade's average, of three years (2004, 2008 and 2010) with more than 200,000 people reported killed and two years (2003 and 2005) with around 100,000 deaths, most of them having been killed by earthquakes.

At a more detailed level, it appears that, in 2013, the number of people killed by floods (9,819) was the highest of the decade and the number of those killed by storms (8,583) the second highest. Deaths from floods had the largest share of natural disaster fatalities in 2013, representing 45.4% of global disaster mortality, while deaths from storms accounted for 39.7%.

Most disaster victims in 2013 were sourced by cyclone Haiyan which affected 16.1 million people, by cyclone Phailin in India, in October (13.2 million) and by cyclone Utor/Labuyo in China, in August (8 million). Victims from these three cyclones accounted for 38.7 per cent of all natural disaster victims of 2013. Other disasters with severe human impact were reported in China (one drought with 5 million victims, one flood with 3.5 million and one earthquake with 2.2 million), in the

[1] Biological disasters are not included in this publication.

[2] *http://data.worldbank.org/about/country-classifications/country-and-lending-groups*. Accessed on 17 July 2014.

[3] High-income: Japan, United Kingdom, United States of America; Upper-middle income: China, Mexico; Lower-middle income: India, Pakistan, the Philippines, Vietnam; Low income: Cambodia.

Philippines (one earthquake with 3.2 million victims and one flood with 3.1 million), in Thailand (one flood with 3.5 million victims) and in Zimbabwe (one drought with 2.2 million victims).

The 2013 data juxtaposed with the figures from the annual average for the decade 2003 to 2012 (215.5 million) indicate that the number of victims (96.5 million) has decreased. This decrease is explained by the lower human impact of climatological disasters whose number of victims (8.2 million) was 88% below its 2003-2012 annual average, and of meteorological disasters with a number of victims (32.1 million) 70% below the decade's average. Conversely, the number of victims from meteorological disasters (49.2 million) was, in 2013, 60% above its 2003-2012 average.

In 2013, 51% of victims were from storms, 33% from floods, 8% from droughts and 7% from earthquakes. Only three countries accounted of 72.4 per cent of victims: China (28.5%), the Philippines (26.6%) and India (17.3%).

Flooding in the South and East Germany was the most costly natural disaster in 2013 with estimated economic damages of US$ 12.9 billion. Costs from cyclone Haiyan in the Philippines were estimated at US$ 10 billion. An earthquake in the Sichuan province in China (US$ 6.8 billion), the cyclone Fitow, also in China (US$ 6.7 billion), the Calgary flood in Canada (US$ 5.7 billion), tornadoes in May in the United States (US$ 5.5 billion), two floods in China, in Sichuan in July (US$ 4.6 billion) and in the North-East provinces in August-September (US$ 5 billion) and the hurricane Manuel in September in Mexico (US$ 4.2 billion) also added significantly to the total disaster damages of 2013.

The estimated economic losses from natural disasters in 2013 (US$ 118.6 billion) was 25% below the annual average damages from 2003 to 2012 (2013 US$ 156.7 billion). With the exception of storms, the decreasing rates of climatological and geophysical disasters is of greater importance. Conversely, damages from floods (US$ 53.2 billion) were, in 2013, 90% above their 2003-2012 annual average and were the second highest of the period. The flood in Germany was the third costliest since the flood in China in May-August 2010 (2013 US$ 19.2 billion) and the flood in Thailand in 2011 (2013 US$ 41.4 billion)

Damages from meteorological disasters (US$ 52.4 billion) were 21 % above their annual 2003-2012 average (2013 US$ 30.7 billion). The cyclone Haiyan, in the Philippines, was the second costliest disaster in 2013, but far behind Hurricane Katrina in 2005 (2013 US$ 149.1 billion) or Hurricane Sandy in 2012 (2013 US$ 50.7 billion).

Costs from geophysical disasters (US$ 9.1 billion) were 82% below their 2003-2012 annual average (2013 US$ 49.5 billion). The earthquake in the Sichuan province in China was the third costliest disaster of 2013. It ranks far from the exceptional costs from the earthquake and tsunami in Japan in 2011 (2013 US$ 217.5 billion) or damages from the May 2008 earthquake in China (2013 US$ 91.9 billion) or from the Honshu-Niigata earthquake in Japan in 2004 (2013 US$ 34.5 billion).

Damages from climatological disasters (US$ 3.9 billion) were 68 % below their decade's average (2013 US$ 12.5 billion). The costliest climatological disaster in 2013 was a drought in New Zealand (US$ 823 million). Such an amount is very far from the damages reported from the United States in the South- and Mid-West regions in 2012 (2013 US$ 20.3 billion) and in the South-West region in 2011 (2013 US$ 8.3 billion).

Looking at the geographical distribution of disasters, Asia was the continent most often hit by natural disasters in 2013 (40.7%), followed by the Americas (22.2%), Europe (18.3%), Africa (15.7%),

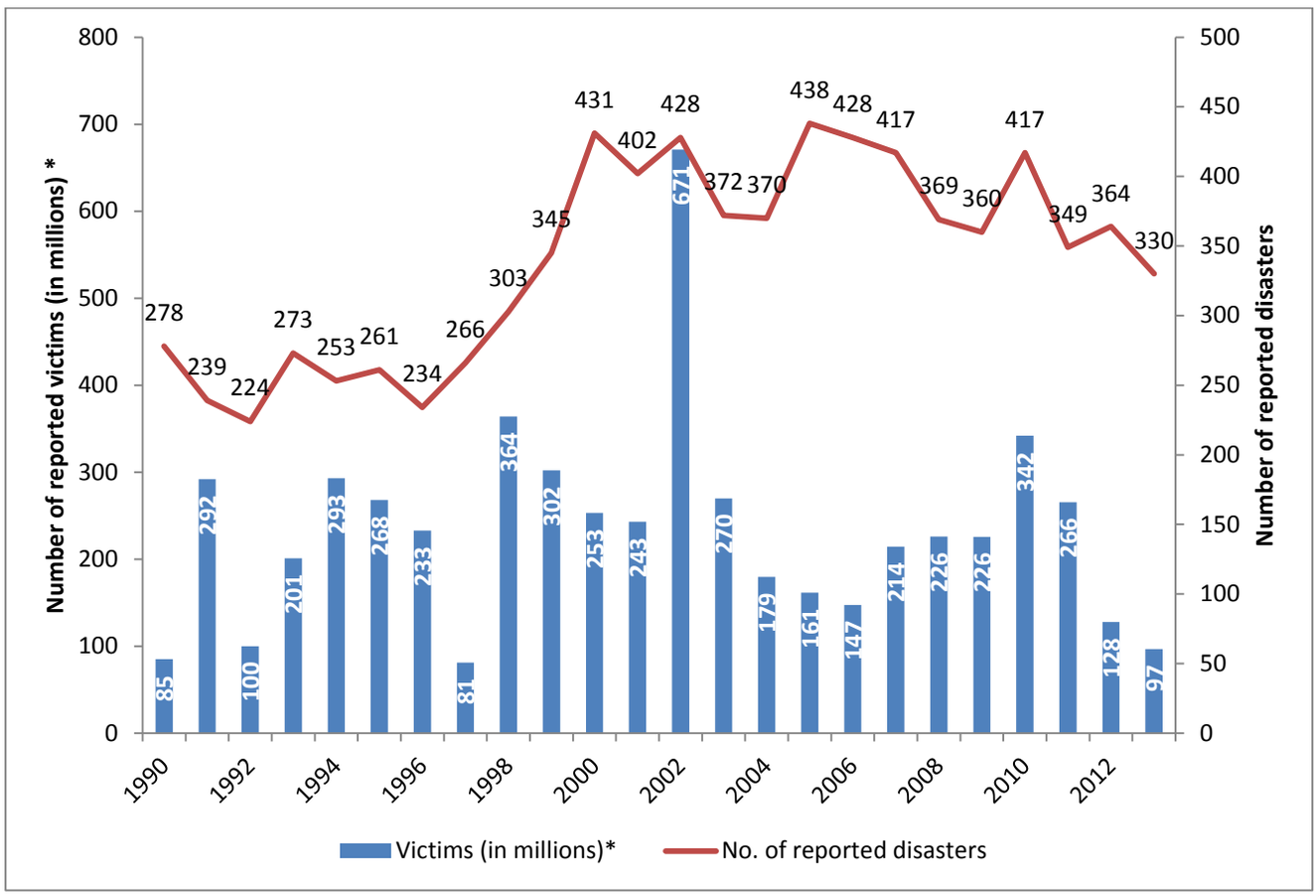
and Oceania (3.1%). This regional distribution of disaster occurrence resembles the profile observed from 2003 to 2012. In 2013, disaster occurrence in Asia (156) was similar to its 2003-2012 annual average (155). Inversely, numbers of disasters were below their decade's annual average in Africa (-38.6%), Oceania (-26.2%), the Americas (-19.8%) and Europe (-17.7%).

Asia accounted in 2013 for 90.1% of global disaster victims, followed by Africa (5.1%). Compared to their 2003-2012 annual averages, the number of victims in 2013 increased in Asia and Europe, decreased in Africa and the Americas, and remained stable in Oceania. On a more detailed note, hydrological disasters caused, proportionally, more victims in 2013 in Africa, the Americas, Europe and Oceania. Climatological disasters also created more victims in the Americas, Asia and Oceania; meteorological disasters in Asia and Europe and geophysical disasters in Asia.

In 2013, the regional distribution of disaster damages kept the main profile observed from 2003 to 2012, with Asia suffering the most damages (49.3% of global disaster damages), followed by the Americas (28.9%), Europe (18.8%), Oceania (2.75%) and Africa (0.2%). Damages were below their annual 2003-2012 average in all continents except Europe. The highest drop occurred in Africa (-80.6%) while the lowering was less sharp in the Americas (-48.1%), Oceania (-33.8%) and in Asia (-18.0%). Inversely, in Europe costs of natural disasters were 69.8% above their decade's annual average. More precisely, costs of climatological disasters were above their 2003-2012 average in Oceania and near their average in Africa. Damages from hydrological disasters were above their decade's average in the Americas, Asia and Europe and damages from meteorological disasters in Asia, Europe and Oceania. Hydrological disasters contributed most to the increased damages in Europe, mainly due to the flood in South and East Germany. In Europe, the increase in damages can largely be attributed to the two earthquakes in Italy.

EM-DAT's global approach to the compilation of disaster data continuously provides us with valuable information and trends on the occurrence of natural disasters and their impacts on society. However, the development of guidelines and tools for the creation of national and sub-national disaster databases for the compilation of reliable, standardised, interoperable disaster occurrence and impact data should be prioritised for more effective disaster risk reduction.

Figure 1 – Trends in occurrence and victims*



**Victims : Sum of deaths and total affected*

Chapter 1

About EM-DAT: The International Disaster Database

- What is EM-DAT?
- Database definitions, criteria and content
- Methodology
- Disaster classification

1. About EM-DAT: the International Disaster Database

1.1 What is EM-DAT?

Since 1988, with the sponsorship of the United States Agency for International Development's Office of Foreign Disaster Assistance (USAID/OFDA), CRED has maintained EM-DAT, a worldwide database on disasters. It contains essential core data on the occurrence and impacts of more than 13 000 natural and 7 000 technological disasters in the world dating from 1900 to the present. The data are compiled from various sources, including UN agencies, non-governmental organizations, insurance companies, research institutes and press agencies. Priority is given to data from UN agencies, followed by OFDA, governments and the International Federation of Red Cross and Red Crescent Societies. This prioritization is not only a reflection of the quality or value of the data, but it also reflects the fact that most reporting sources do not cover all disasters or have political limitations that can affect the figures. The entries are constantly reviewed for redundancy, inconsistencies and incompleteness. The database's main objectives are to assist humanitarian action at both national and international levels; to rationalize decision-making for disaster preparedness; and to provide an objective basis for vulnerability assessment and priority setting.

1.2 Database definitions, criteria and content

CRED defines a disaster as "a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering". EM-DAT distinguishes two generic categories for disasters, natural and technological. Technological disasters are not included in this publication. Table 1 shows the definitions of natural disaster subgroups and their main types. More disaster definitions can be found in Annex 1. For a disaster to be entered into the database, at least one of the following criteria must be fulfilled:

- 10 or more people reported killed;
- 100 or more people reported affected;
- declaration of a state of emergency;
- call for international assistance.

Table 1 – Natural disaster subgroup definition and classification

Disaster Subgroup	Definition	Disaster Main Types
Geophysical	Events originating from solid earth	Earthquake, Volcano, Mass Movement (dry)
Meteorological	Events caused by short-lived/small to meso scale atmospheric processes (in the spectrum from minutes to days)	Storm
Hydrological	Events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind set-up	Flood, Mass Movement (wet)
Climatological	Events caused by long-lived/meso to macro scale processes (in the spectrum from intra-seasonal to multi-decadal climate variability)	Extreme Temperature, Drought, Wildfire
Biological[4]	Disaster caused by the exposure of living organisms to germs and toxic substances	Epidemic, Insect Infestation, Animal Stampede

[4]Biological disasters are not included in this publication.

EM-DAT includes the following fields:

DISNO:	Unique disaster number for each disaster event (8 digits: 4 digits for the year and 4 digits for the disaster number – for example, 19950324).
Country:	Country (ies) in which the disaster occurred.
Disaster generic group:	Two groups are distinguished in EM-DAT – natural and technological disasters.
Disaster sub-group:	Five sub-groups of natural disasters have been defined: geophysical, meteorological, hydrological, climatological and biological.
Disaster main type and sub-type:	Description of the disaster according to a pre-defined classification (for example, type: flood; sub-type: flash flood).
Date (start and end):	Date when the disaster occurred and ended (month/day/year).
Killed:	Number of people confirmed dead and number missing and presumed dead.
Injured:	Number of people suffering from physical injuries, trauma or an illness requiring immediate medical treatment as a direct result of a disaster.
Homeless:	Number of people needing immediate assistance for shelter.
Affected:	Number of people requiring immediate assistance during a period of emergency; this may include displaced or evacuated people.
Total affected:	Sum of injured, homeless and affected.
Victims:	Sum of killed and total affected.
Estimated damage:	Global figure of the economic impact of a disaster; it is given in US dollars.
Additional fields:	Other geographical information (such as latitude and longitude, location), value and scale of the events (such as the Richter scale value for an earthquake), the international status (OFDA response, request for international assistance, disaster/emergency declaration), the aid contribution (in US dollars), and the different sectors affected.

1.3 Methodology

In EM-DAT and in this report, data are considered at the country level. This is for two reasons: first, it is at this level that they are usually reported; and second, it allows the aggregation and disaggregation of data. Annex 2 shows the list of countries per continent. In order to facilitate the comparison over time for the analyses of this report, the event start date has been used as the disaster reference date.

In EM-DAT, the number of people killed includes those confirmed dead and those missing and presumed dead. People affected are those requiring immediate assistance during a period of emergency (e.g. requiring basic survival assistance such as food, water, shelter, sanitation and immediate medical help). People reported injured or homeless are aggregated with those affected to produce the total number of people affected. In this report, the number of victims is used as a measure of the human impact of a disaster. The number of victims is equal to the sum of persons reported killed and the total number of persons reported affected.

The economic impact of a disaster usually consists of direct consequences on the local economy (e.g. damage to infrastructure, crops, housing) and indirect consequences (e.g. loss of revenues, unemployment, market destabilization). In EM-DAT, the registered figure corresponds to the estimated value of the direct damage occasioned by the event, expressed in current US dollars and, in this report, were converted into 2013 dollar values for easier comparison. Estimates of disaster damages must be treated with caution, because of (a) the financial value of infrastructures which is much higher in high-income countries than in middle- and low-income countries; and (b) the low reporting rates of direct losses which is however better for large disasters.

Droughts or food insecurities are often multi-year disasters; therefore, their impact over time has to be taken into account. Bearing in mind that data on deaths and economic damage from drought are infrequently reported, CRED has adopted, with this new edition of the Annual Disaster Statistical review, the following rules as regards data for multi-year droughts: (a) the total number of deaths reported for a drought is divided by the number of years for which the drought persists. The resulting number is registered for each year of the drought duration; (b) the same calculation is done for the reported economic damages; and (c) for the total number of people reported to be affected, CRED considers that the same number is affected each year that the disaster persists.

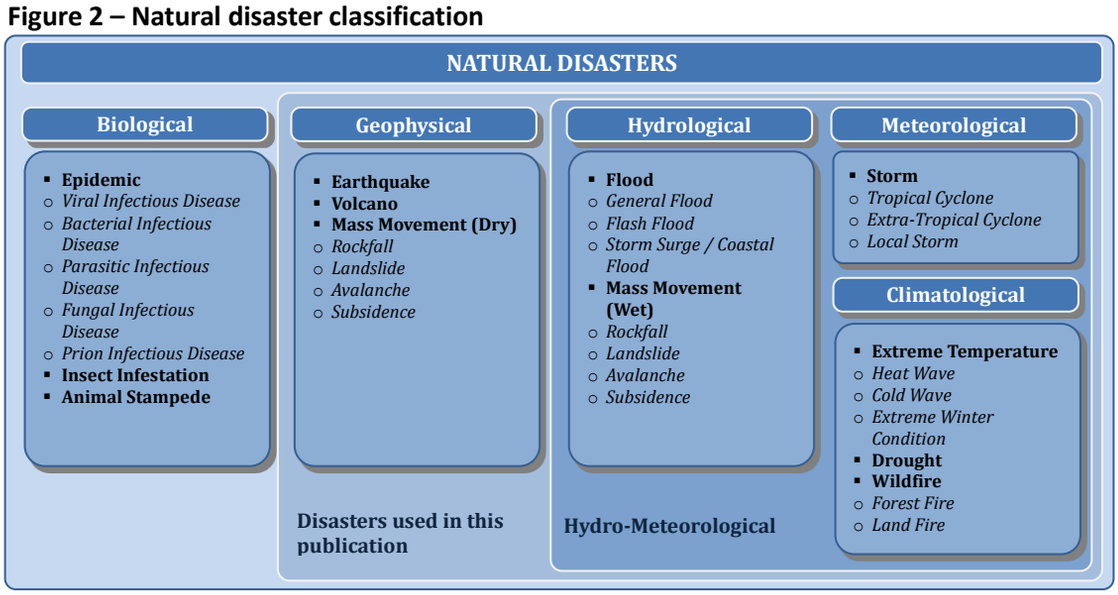
In the computation of annual averages, the fact that some disasters begin at the end of a year and may last some weeks or months into the following year as to be taken into account. In such case, CRED has adopted the following new rules: (a) regarding the number of people reported affected, the total number is recorded for both the start year and the end year; (b) for the numbers of people reported to be killed by sudden onset disasters (earthquakes, flash floods, landslides, etc..) all those killed are registered according to “start year” of the disaster; (c) for the numbers of people reported to be killed by slow-onset disasters, the total of all those killed is divided by two and a half is attributed to each year of persistence; (d) reported economic damages are always attributed to the end year of the disaster. This is because damage is related to both the strength of a disaster and its duration.

The CRED/EM-DAT team continuously strives to improve its data reporting methodologies and the EM-DAT database as a whole.

1.4 Disaster classification

EM-DAT distinguishes two generic categories for disasters (natural and technological), the natural disaster category is divided into 5 sub-groups, which in turn cover 12 disaster types and more than 30 sub-types (Figure 2). See "*http://www.emdat.be/classification*" for the complete classification and definitions.

Figure 2 – Natural disaster classification



Chapter 2

What did 2013 bring?

2. What did 2013 bring?

In the year 2013, natural disasters[5] once again had a devastating impact on human society. Worldwide, 330 reported natural disasters caused the death of more than 21,610 people, made 96.5 million victims and caused a record amount of US$ 118.6 billion of damages. A total of 108 countries were hit by these disasters. The five countries that were most often hit, China, the United States, Indonesia, the Philippines, and India accounted for 34.2% of total disaster occurrence in 2013 (see Figure 3). Year after year, these countries appear prominently in the list of countries experiencing the highest number of disaster events.

When considering the country top ten for the numbers of disasters, with 42 disasters in 2013, China had its worst year for the whole period from 2003 and the USA, with 28 disasters, the second worst year since 2006.

The main burden of disaster impacts was carried by a small number of countries in 2013. The countries that made up the top 10 ranking in terms of disaster mortality in 2013 represented 75.7% of global disaster mortality. Also, the top 10 countries for the number of victims and damages accounted for 62.3% and 53.9% respectively of the global reported number of victims and damages from natural disasters in 2013 (see Figures 4, 5 and 6).

Amongst the top 10 countries (in terms of disaster mortality in 2013), five countries are classified as low-income or lower-middle income economies and five as high-income or upper-middle income economies (see World Bank income classification)[6]. These countries[7] accounted for 88% of global reported disaster mortality in 2013. Two disasters killed more than 1,000 people: the cyclone Haiyan in the Philippines, in November (7,354 deaths) and the monsoonal floods in June in India (6,054 deaths).

Seven out of the top 10 countries (in terms of people killed by natural disasters) are located in Asia, and accounted for 82.3% of global reported disaster mortality, while two of the remaining countries were located in the Americas and the last in Europe. However, when looking at disaster mortality relative to the number of inhabitants in the country, the figure is less univocal. Three African countries (Somalia, South Sudan and Zimbabwe), two in the Caribbean (Saint Vincent and the Grenadines and Saint Lucia), two in South-East Asia (The Philippines and Cambodia), one in the Pacific region (Solomon Islands), one in Europe (United Kingdom) and one in South America (Bolivia). In both Saint Vincent and the Grenadines and Saint Lucia one flood killed 11.9 and 3.29 people per 100,000 inhabitants. In the Philippines, the 14 disasters which hit the country killed a total of 7.9 people per 100,000 inhabitants. Seven out of these top 10 countries[8] are classified as lower-middle income or low-income economies according to the World Bank income classification.

The Philippines, United Kingdom and Mexico featured in the top ten for the number of people killed, and had their most deadly year since 2003 while India, Japan and Cambodia had their second deadliest year.

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[5] Biological disasters are not included in this publication.

[6] *http://data.worldbank.org/about/country-classifications/country-and-lending-groups*. Accessed on 17 July 2014.

[7] High-income: Japan, United Kingdom, United States of America; Upper-middle income: China, Mexico; Lower-middle income: India, Pakistan, the Philippines, Vietnam; Low income: Cambodia.

[8] High-income: United Kingdom; Upper-middle income: Saint-Lucia, Saint-Vincent and the Grenadines; Lower-middle income: Bolivia, Philippines, Solomon Islands, South Sudan; Low income : Cambodia, Somalia, Zimbabwe.

The top 10 list in terms of disaster victims is shared by 9 Asian countries (4 in the South-East region, 3 in the Southern region, one in the Eastern region and one in the Western region) and one African country. But in totality, the nine Asian countries account for 79% of victims compared to 2.2% for the African country. With China having 27.5 million reported victims in 2013, it alone accounted for 23.9% of global disaster victims and the Philippines, having 25.7 million victims, accounted for 24.1%. The seven countries on the list show that low-income and lower-middle income economies dominate[9].South-East Asia is the most represented region of the world, in terms of victims as a proportion of total population size, mainly due to storms in the Philippines and floods in Cambodia and Laos. The highest proportion of victims per inhabitant (93.3%) was attributed to a flood in Saint Lucia. This category of top 10 countries includes six high-income and upper-middle income economies[10].

Among countries ranked for the number of natural disaster victims in 2013, the Philippines, Vietnam and Israel had their highest numbers of victims of the decade and Cambodia and Zimbabwe their second highest. However, despite its first place in the ranking, China had its lowest numbers of victims for the period between 2003-2013.

With reported damages from natural disasters costing US$ 118.6 billion, the year 2013 was below the 2003-2012 annual average of 157 US$ billion. Six countries in the top 10 list for total reported damages, are classified as higher and upper-middle income economies[11]. Four countries, China, Germany, the United States of America, and the Philippines accounted for 83.1% of all reported damages. China (US$ 35.4 billion) accounted for 29.9% of worldwide disaster costs. In this country, the total reported costs for floods was US$ 16.6 billion, storms US$ 10.8 billion and for earthquakes US$ 8 billion, with one earthquake, two floods and two storms accounting for 71% of total damages. In Germany, the reported damages are attributed to one flood (US$ 12.9 billion) and one storm (US$ 4.8 billion). In the USA, 83% of reported damages (US$ 17.6 billion) were due to storms of which half were caused by tornadoes. In the Philippines, cyclone Haiyan (US$ 10 billion) accounted for 80% of total reported damages.

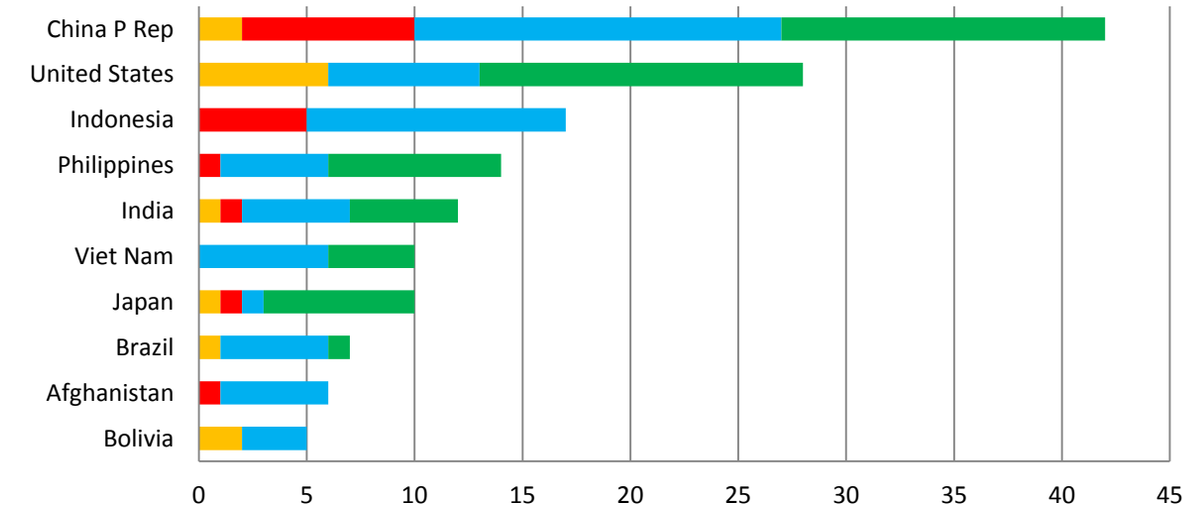
When comparing economic damages from natural disasters to the countries' Gross Domestic Product (GDP)[12], the figure is somewhat different, with seven low-income or lower-middle income economies appearing in the top 10 list[13]. The highest levels of damages relative to GDP occurred in four South-East Asian countries (Philippines, Cambodia, Laos and Vietnam) with damages from storms dominating in the Philippines and Vietnam and from floods in Cambodia and Laos. Most of the time a small number of major disasters explain the damages which are attributed to floods and storms.

[9] High-income: Israël; Upper-middle income: China, Thailand; Lower-middle income: India, Pakistan, Philippines, Vietnam; Low income : Bangladesh, Cambodia, Zimbabwe.
[10] High-income: Czech Republic, Israël; Upper-middle income: Marshall islands, Namibia, Saint-Lucia, Saint-Vincent and the Grenadines; Lower-middle income: Lao P. Dem. Rep., Philippines; Low income : Cambodia, Zimbabwe
[11] High-income: Australia, Canada, Germany, United States; Upper-middle income: China, Mexico; Lower-middle income: India, Indonesia, Pakistan, Philippines; Low income : none.
[12] GDP data from the World Bank. *http://databank.worldbank.org/ddp/home.do*. Accessed on July 7, 2014.
[13] High-income: Bahamas; Upper-middle income: Namibia, Seychelles; Lower-middle income: Armenia, Lao P. Dem. Rep. Pakistan, Philippines, Vietnam; Low income : Cambodia, Niger.

Within the top ten countries ranking amounts of damages in 2013, Germany, the Philippines and Canada knew their natural disaster costliest year of the decade and China its second costliest.

In 2013, the 10 most important disasters in terms of mortality, victims and damages accounted for 75.7%, 62.3% and 53.8% of total disaster figures, respectively (see Tables 2, 3 and 4). This clearly shows the impact that a few singular disaster events can have on human society, both in high-income and low-income countries.

Figure 3 – Top 10 countries by number of reported events in 2013



	Bolivia	Afghanistan	Brazil	Japan	Viet Nam	India	Philippines	Indonesia	United States	China P Rep
Climatological	2		1	1		1			6	2
Geophysical		1		1		1	1	5		8
Hydrological	3	5	5	1	6	5	5	12	7	17
Meteorological			1	7	4	5	8		15	15

Figure 4 – Top 10 countries in terms of disaster mortality in 2013 and distributed by disaster type

Country	Disaster distribution	No. of deaths	Country	Disaster distribution	Deaths per 100 000
Philippines		7750	St Vincent and the Grenadines		11.89
India		7119	Philippines		7.88
China P Rep		1395	St Lucia		3.29
United Kingdom		772	Solomon Is		1.78
Pakistan		730	Somalia		1.61
Japan		400	Cambodia		1.32
Mexico		223	Bolivia		1.27
United States		212	United Kingdom		1.20
Cambodia		200	Zimbabwe		0.88
Viet Nam		200	South Sudan		0.88

Figure 5 – Top 10 countries by victims in 2013 and distributed by disaster type

Country	Disaster distribution	No. of victims (millions)	Country	Disaster distribution	Victims / pop. (%)
China P Rep		27.47	St Lucia		93.27
Philippines		25.67	Philippines		26.09
India		16.72	Israel		24.85
Viet Nam		4.13	Zimbabwe		15.62
Thailand		3.52	Namibia		15.00
Zimbabwe		2.21	Czech Rep		12.36
Israel		2.00	Marshall Is		12.13
Pakistan		1.70	St Vincent and the Grenadines		11.98
Bangladesh		1.53	Cambodia		9.91
Cambodia		1.50	Lao P Dem Rep		8.48

Figure 6 – Top 10 countries by damages in 2013 and distributed by disaster type

Country	Disaster distribution	Damages (US$ bn.)	Country	Disaster distribution	% of GDP
China P Rep		35.41	Philippines		4.57
Germany		17.70	Cambodia		3.28
United States		17.58	Lao P Dem Rep		1.09
Philippines		12.42	Viet Nam		0.91
Canada		7.11	Niger		0.88
Mexico		5.70	Seychelles		0.73
Indonesia		3.13	Pakistan		0.68
India		2.38	Armenia		0.58
Australia		2.37	Bahamas		0.54
Pakistan		1.60	Namibia		0.51

Table 2 – Top 10 natural disasters by number of deaths

Event	Country	No. of deaths
Tropical cyclone (Haiyan), November	Philippines	7354
Flood, June	India	6054
Heat wave, July	United Kingdom	760
Heat wave, April-June	India	557
Earthquake, September	Pakistan	399
Heat wave, May-September	Japan	338
Flood, August	Pakistan	234
Flood, July	China P Rep	233
Earthquake, October	Philippines	230
Flood, September-October	Cambodia	200
	Total	**16359**

Table 3 – Top 10 natural disasters by number of victims

Event	Country	Victims (in millions)
Tropical cyclone (Haiyan), November	Philippines	16.1
Tropical cyclone (Phailin), October	India	13.2
Tropical cyclone (Utor/Labuyo), August	China P Rep	8.0
Drought, January-July	China P Rep	5.0
Flood, July	China P Rep	3.5
Flood, September-October	Thailand	3.5
Earthquake	Philippines	3.2
Flood, July	Philippines	3.1
Drought, December	Zimbabwe	2.2
Earthquake, April	China P Rep	2.2
	Total	60.01

Table 4 – Top 10 natural disasters by economic damages

Event	Country	Damages (in 2013 US$ bn.)
Flood, May-June	Germany	12.9
Tropical cyclone (Haiyan), November	Philippines	10.0
Earthquakes, April	China P Rep	6.8
Tropical cyclone (Fitow), October	China P Rep	6.7
Flood, June	Canada	5.7
Flood, August-September	China P Rep	5.0
Storm, July	Germany	4.8
Flood, July	China P Rep	4.6
Hurricane (Manuel), September	Mexico	4.2
Storm May	United States	3.1
	Total	63.8

Chapter 3

How different was 2013?

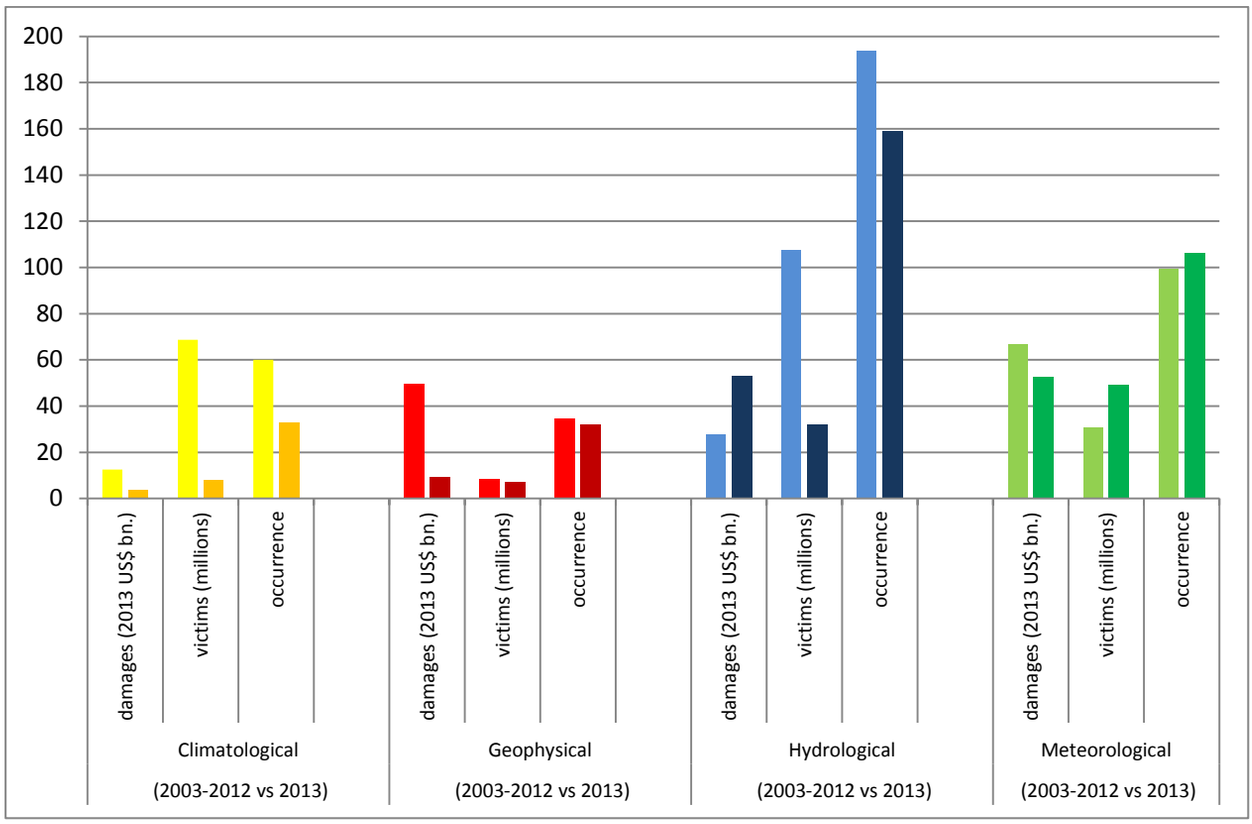
3. How different was 2013?

The number of reported natural disasters in 2013 (330) showed a decrease of 9.3% compared to 2012's number (364). Being the lowest for the last decade, it remained 14.9% below the annual average disaster occurrence for 2003-2012 (388). It confirmed the stabilization of the growth in the number of reported disasters observed in the previous decade and a possible slow decrease. More people were killed by disasters in 2013 (21,610) compared to 2012 (9,710), which was the less deadly year of the decade, and to the 2003-2012 annual average (106,653). This number of reported deaths is the fourth lowest since 2003, far below the peaks of 2010 (297,598), the year of Haiti's earthquake, 2004 (241,698) the year of the Indian Ocean tsunami and 2008 (235,293) when cyclone Nargis hit Myanmar. The number of reported victims in 2013 (96.5 million) is so far the lowest of the decade and was 24.5% below the number of victims of 2012 (127.8 million), which, already was the lowest since 2003. Compared to the decade's annual average of 215.9 million victims, their number was 55.3% below in 2013. The estimated economic losses from natural disasters in 2013 (US$ 118.6 billion) were 24.3% below the damages annual average for years 2003-2012. Damages in 2013 were the fifth lowest since 2003, far below 2011 (2013 US$ 382.5 billion), year of the tsunami in Japan and the large flood in Thailand and 2005 (2013 US$ 257.1 billion), year of the hurricane Katrina.

The low number of reported natural disasters in 2013 was mainly due to a strong decrease in the number of climatological disasters (- 45% compared to their annual 2003-2012 average), with the ten droughts and the thirteen extreme temperature incidences being at their lowest number since 2003. The number of hydrological disasters (159) also showed a decrease in 2013. It was the third lowest since 2003 and was 18% below the decade's average. The number of people killed by natural disasters in 2013 was the fourth lowest since 2003. But this figure hides contrasting patterns. Deaths from climatological (1,807) and, overall, from geophysical (1,166) disasters were largely below their annual 2003-2012 average (14,589 and 67,941 deaths respectively). Inversely, the number of deaths from meteorological disasters (8,583) was the second highest since the 138,000 deaths from cyclone Nargis in 2008, and the people killed by hydrological disasters (9,819), the highest since 2003. Compared to the 2003-2012 annual average, a decrease of the number of victims is observed, in 2013, for all disasters types except for storms whose number of victims was 60% above the average. The decrease in numbers was particularly strong for hydrological disasters (-70.2% compared to the 2003-2012 annual average) and climatological disasters (-87.3% compared to the 2003-2012 annual average).

Damages from natural disasters (US$ 118.6 billion) were, in 2013, the fifth lowest since 2003. Hydrological (US$ 53.2 billion) and meteorological (US$ 52.4 billion) disasters amounted for almost 90% of all costs. The flood in East and South Germany in May-June (US$ 12.9 billion) and cyclone Haiyan in the Philippines (US$ 10 billion) were the most damaging disasters in 2013. Inversely, damages from climatological (US$ 3.8 billion) and geophysical (US$ 9.1 billion) disasters, were significantly below their 2003-2012 annual average (2013 US$ 12.5 and 49.4 billion, respectively).

Figure 7 – Natural disaster impacts by disaster sub-group: 2013 versus 2003-2012 annual average



Hydrological disasters (floods and wet mass movements) still took the largest share in natural disaster occurrence in 2013 (48.2%). Hydrological disasters caused 32 million victims, or 33.2% of total disaster victims, and were responsible for 46.5% of the total reported number of people killed and 44.9% of total damages. The number of hydrological disasters (159) increased slightly compared to 2012 (154) but was below the 2003-2012 annual average (194). The number of victims from hydrological disasters decreased by 70.2% compared to their decade's annual average. Damages (US$ 53.2 billion) were 90.4% above to their decade's annual average (2013 US$ 27.9 billion). The most expensive flood (US$ 12.9 billion) occurred in East and South Germany but its amount was far below the estimated 2013 US$ 41.4 billion of damages for the major flood which hit Thailand in 2011 and was the most expensive hydrological disaster ever registered.

Meteorological disasters (storms) represented 32.1% of the total disaster occurrence in 2013. One hundred and six meteorological disasters were reported, more than the 2003-2012 annual average of 100. This evolution reflected a sharp increase in the human impacts from these disasters, compared to the annual averages from 2003 to 2012, as the numbers of victims increased by 60%. However, damages were 21.7% above their decade's annual average. Meteorological disasters accounted in 2013 for 39.7% of total reported fatalities, 50.9% of total victims and 44.2% of total damages from natural disasters.

Climatological disasters (extreme temperatures, droughts and wildfires) took in 2013 a 10% share of total disaster occurrence, below the share of 15.5% per year on average for 2003-2012. Out of the 33 climatological disasters, 13 were extreme temperatures, mainly extreme winter conditions; along with 10 droughts and 10 wildfires. With 8.2 million victims, climatological disasters took a

share of only 8.5% of total disaster victims in 2013 compared to a 13.7% annual average for the period 2003-2012. Such a difference in the proportions corresponds to a decrease of 88.1% in the number of victims. In 2013, the reported damages from climatological disasters (US$ 3.9 billion) decreased by 68.8% compared to the 2003-2012 annual average damages from these disasters (2013 US$ 12.5 billion). Extreme winter conditions cost US$ 1 billion in Chile and two droughts in New Zealand and Brazil more than US$ 500 million. Such amounts were far from the costliest climatological disasters: extreme winter conditions in China in 2008 (2013 US$ 22.8 billion) and a drought in the USA in 2012 (2013 US$ 20.3 billion). It should be noted that reported damages from climatological disasters are often underestimated due to a lack of standardized methods for quantifying and reporting losses.

In 2013, 32 **geophysical** disasters (earthquakes/tsunamis, volcanoes and dry mass movements) were registered, representing a share of 9.7% of total disaster occurrence, close to its decade's annual average of 8.9%. However, deaths from geophysical disasters (1,166) were extremely low in 2013 and accounted for only 5.4% of total reported deaths from natural disasters, compared to a share of 63.7% per year on average for 2003-2012. Geophysical disasters caused 7.1 million victims, less than their annual average from 2003 to 2012 (8.3 million victims). Geophysical disasters took a share of 7.7% of total damages caused by natural disasters in 2013, compared to a share of 31.6% per year on average from 2003 to 2012. In absolute terms, damages decreased from an annual average of 2013 US$ 49.4 billion for 2003-2012 to US$ 9.1 billion in 2013.

Compared to their annual distributions from 2003 to 2012, the proportions, in occurrence, of climatological, geophysical, hydrological and meteorological disasters appear, in 2013, relatively stable. Inversely, the contribution of each of the four disasters types to numbers of people killed, numbers of victims and amounts of damages vary considerably from one year to another, reflecting the high variability and diversity of disaster's impact over time.

Chapter 4

Regional analysis

- **Africa**
- **Americas**
- **Asia**
- **Europe**
- **Oceania**

4. Regional analysis

In 2013, Asia was most often hit by natural disasters (47.3%), followed by the Americas (22.4%), Europe (13.6%), Africa (13.3%) and Oceania (3.3%). This regional distribution of disaster occurrence is somewhat different to the profile observed from 2003 to 2012 (see Table 5): the number of disasters remained stable in Asia in 2013, but decreases in numbers were significant in the Americas, Europe and Oceania and especially in Africa. In totality, all continents except Asia showed numbers of disasters below their 2003-2012 average. However, in 2013, Asia and Europe suffered a number of meteorological disasters largely superior to the preceding decade's average. Climatological disasters were also more frequent in Oceania.

Asia accounted in 2013 for 90.13% of worldwide reported disaster victims (against 81.5% for the 2003-2012 decade's average), while Africa accounted for 5.1% (against 14% for the 2003-2012 average). According to their respective contribution to the total number of victims, the ranking of the continents is, in 2013, similar to their ranking according to the 2003-2012 average. Compared to the annual average number of victims from 2003 to 2012, the total number of victims decreased in all continents except Europe where hydrological and meteorological disasters affected more people. In Asia the reported number of victims of meteorological disasters also increased dramatically.

Table 5 - Natural disaster occurrence and impacts : regional figures *

No. of natural disasters	Africa	Americas	Asia	Europe	Oceania	*Global*
Climatological 2013	4	15	6	4	4	33
Avg. 2003-12	14	13	12	21	1	60
Geophysical 2013	0	4	25	1	2	32
Avg. 2003-12	3	7	21	2	2	34
Hydrological 2013	34	32	75	16	2	159
Avg. 2003-12	46	39	83	20	6	194
Meteorological 2013	6	23	50	24	3	106
Avg. 2003-12	9	34	39	12	6	100
Total 2013	44	74	156	45	11	330
Avg. 2003-12	72	92	155	55	15	388

Some totals in the table may not correspond to the cells addition due to rounding.

No. of victims (millions)	Africa	Americas	Asia	Europe	Oceania	*Global*
Climatological 2013	2.54	0.53	5.07	0.01	0.01	8.16
Avg. 2003-12	26.72	1.54	40.18	0.31	0.00	68.75
Geophysical 2013	0.00	0.07	7.04	0.00	0.02	7.13
Avg. 2003-12	0.07	0.95	7.19	0.02	0.07	8.3
Hydrological 2013	2.18	1.76	26.65	1.41	0.05	32.05
Avg. 2003-12	2.95	4.34	100.17	0.18	0.08	107.72
Meteorological 2013	0.2	0.41	48.22	0.32	0.01	49.16
Avg. 2003-12	0.35	2.17	28.07	0.09	0.04	30.72
Total 2013	4.92	2.77	86.98	1.74	0.08	96.5
Avg. 2003-12	30.09	9.00	175.61	0.6	0.19	215.49

Some totals in the table may not correspond to the cells addition due to rounding.

Damages (2013 US$ bn)	Africa	Americas	Asia	Europe	Oceania	*Global*
Climatological 2013	0.06	2.64	0.00	0.00	1.19	3.89
Avg. 2003-12	0.05	4.87	3.59	3.76	0.2	12.47
Geophysical 2013	0.00	0.00	9.03	0.00	0.05	9.08
Avg. 2003-12	0.71	4.44	39.67	2.04	2.58	49.45
Hydrological 2013	0.14	9.86	25.97	17.2	0.00	53.17
Avg. 2003-12	0.4	4.2	18.45	3.56	1.31	27.93
Meteorological 2013	0.03	21.83	23.45	5.09	2.02	52.42
Avg. 2003-12	0.08	52.65	9.55	3.75	0.83	66.86
Total 2013	0.23	34.33	58.45	22.29	3.26	118.57
Avg. 2003-12	1.24	66.16	71.26	13.11	4.92	156.71

Some totals in the table may not correspond to the cells addition due to rounding.

* Percentages < or = 0.05 are displayed as zeros.

4.1 Africa

The distribution of disaster frequency in Africa in 2013 presented a similar profile to the one seen over the last decade. Hydrological disasters represented 77.3% of occurrence, followed by meteorological disasters (13.6%) and climatological (9.1%). No geophysical disasters were recorded in 2013.

The number of victims (4.92 million) was largely below the annual average number of disaster victims during 2003-2012 (30.1 million), mainly due to the low number of victims of climatological disasters, the lowest for the period. With 2.2 million of victims, one drought in Zimbabwe accounted for 87% of the total number of climatological disasters victims in 2013. Hydrological disasters are the second contributors to the total numbers of victims and is affecting more than 1.5 million people. Six floods in South Sudan, Sudan, Mozambique, Niger and Senegal accounted for 71 % of hydrological disasters victims. With more than 140,000 victims, the cyclone 3A in Somalia was the meteorological disaster with the most severe human impact in Africa during 2013.

The estimation of natural disaster damages in Africa remains extremely challenging as data are often poorly reported or lacking altogether. In 2013, reported damages from natural disasters amounted to only one fifth of the annual average of the 2003-2012 period. The damages reported included: 6 floods in Niger (US$ 64 million), Kenya (US$ 36 million), Mozambique (US$ 30 million), Sudan (US$ 7 million), Uganda (US$ 3.1 million) and Ethiopia (US$ 2.2 million); one drought in Namibia (US$ 64 million); a tropical cyclone Haruna in Madagascar (US$ 25 million) and one tropical depression in Seychelles (US$ 9.3 million).

4.2 Americas

The Americas suffered in 2013 from 74 natural disasters, a number below the 2003-2012 annual average of 92 disasters. Hydrological disasters (43.2%) and meteorological disasters (31.1%) occurred most often, followed by climatological (20.3%) and geophysical (5.4%) disasters. Compared to their occurrence in the decade 2003-2012, geophysical disasters were 42.8% less frequent in 2013, meteorological disasters were 32.3% less and hydrological disasters were 17.9% less as well. Only climatological disasters had a small increase in their number.

In 2013, the total number of victims from natural disasters decreased by 70% compared to their 2003-2012 annual average. More precisely, the number of victims of hydrological disasters decreased by 60% and the number of geophysical disasters by 93%. These decreases in the numbers of victims were superior to those of the numbers of disasters. On average, each disaster made less victims. The most severe disaster was a flood in Argentina which affected 350,000 people. This value is less than the minimum of one million victims observed each year for the most severe disasters between 2003 and 2012 – with 2006 as exception. Hydrological disasters made 63.3% of all victims, whereas a share of 48.2% per year on average was observed from 2003 to 2012. Victims of geophysical disasters amounted to 19.1% of the total numbers of victims, a proportion near the 2003-2012 average of 17.1%. Inversely, meteorological disasters in 2013 were responsible for 14.9% of total disaster victims in the Americas, compared to a share of 24.1% per year on average during the past decade. For geophysical disasters the proportion of victims in 2013 (2.7%) is also far below its 2003-2012 annual average of 10.6%.

In 2013, disaster damages in the Americas (US$ 34.3 billion) were almost half of their annual average from 2003 to 2012 (2013 US$ 66.2 billion). Such a decrease was observable for damages from meteorological and climatological disasters. Damages reported for meteorological disasters in the Americas in 2013 (US$ 21.8 billion) were not the lowest of the decade, but they are significantly lower than the five costliest years during 2003-2012. The most severe meteorological disaster was hurricane “Manuel”, in Mexico, which cost US$ 4 billion, far from the amounts of damages from hurricanes like Katrina (2013 US$ 149 billion) or Sandy, Ike , Ivan , Rita, Charley or Wilma which costs went from US$ 17 billion to 50 billion. Damages from climatological disasters (US$ 2.6 billion) were below the annual 2003-2012 average (2013 US$ 4.9 billion), contrasting with the high amounts of damages reported in 2011 and 2012, caused by two severe droughts in the USA which cost 2013 US$ 8.3 billion and 20.3 billion, respectively.

In contrast, reported damages from hydrological disasters (US$ 9.9 billion) were two times higher than their annual 2003-2012 average (2013 US$ 4.2 billion) and the third highest of the period, after the peaks of 2008 and 2011. The flood in Canada (US$ 5.7 billion) was the second costliest since the US flood of 2008 (2013 US$ 10.8 billion). Damages superior to one billion US$ were also reported for two other floods, in the USA (US$ 1.9 billion) and in Argentina (US$ 1.3 billion).

4.3 Asia

The number of disasters in Asia in 2013 (156) was similar to their annual average disaster occurrence during 2003-2012 (155) but these main figures hide differences between disaster types. In 2013, the number of climatological disasters (6) halved compare to the annual 2003-2012 average (12) and the number of hydrological disasters showed a slight decrease (75 vs 83 for the annual 2003-2012 average). In the contrary, the number of geophysical disasters included a small increase (25 vs 21 the annual 2003-2012 average) but overall, the number of meteorological disasters (50) increased 28% compared to its decennial average (39).

The number of victims in Asia in 2013 (86.9 million) was far below the 2003-2012 annual average (175.6 million). Compared to their annual averages for this period, the number of victims in Asia decreased in 2013 by 89% for climatological disasters but almost all victims suffered from one drought in China. The number of victims of hydrological disasters decreased by 75% compared to its 2003-2012 annual average and 2013 was the year with the lowest number of victims of such disasters. In 2013, the biggest floods made each, in China, Thailand and the Philippines, had more than 3 million victims. But this number is far less than the tens of millions victims of floods from

previous years. The number of victims from geophysical disasters was similar to its decade's average but this average is biased by the earthquake which made 45 million of victims in China in 2008. In fact the number of victims from geophysical disasters was, in 2013, the second highest of the decade, after the peak of 2008. Two earthquakes in the Philippines and Indonesia made, both, around 3.2 million of victims and accounted for 77% of all victims of geophysical disasters. On the contrary, the number of victims of meteorological disasters was 71% higher than the annual 2003-2012 average and was the third highest since 2003. Cyclones Haiyan in the Philippines (16 million victims) and Phailin in India (13 million victims) were fourth and fifth for their number of victims in meteorological disasters since 2003. Tropical cyclones were responsible of 92% of meteorological disaster victims in Asia in 2013.

In Asia, 18 disasters – 8 floods, 7 storms, 2 earthquakes and one drought – made, at least, more than one million victims each, for a total of 72.8 million or 83% of all Asian victims. Thirty-one percent of all victims lived in China, 29% in the Philippines and 19% in India.

Disaster damages in Asia in 2013 (US$ 58.5 billion) were below their annual average for years 2003 to 2012 (2013 US$ 71.3 billion) but this overall figure hides different phenomena. No damages were reported for climatological disasters. Those from geophysical disasters were 77 % lower than their annual 2003-2012 average, accounting only for 15% of all reported damages against 56% for the decade's average. Conversely, costs from hydrological disasters were 41% higher than their decade's average and, above all, damages from meteorological disasters were 145% higher than their 2003-2012 average. Their respective share to the total costs was of 44% for hydrological disasters (versus 26% for the 2003-2012 period) and 40% for meteorological ones (versus 13% for the decade).

In 2013, an earthquake in China cost US$ 6.8 billion but such an amount is below the 2013 US$ 217.5 billion of the tsunami in Japan in 2011, and from damages from earthquakes in China in 2008 (2013 US$ 91.9 billion), in Japan in 2004 (2013 US$ 34.5 billion) and in 2007 (2013 US$ 14 billion).

Damages from hydrological disasters are, in 2013, the third highest since 2003, after the peaks of 2011 and 2010 (2013 US$ 54 and 34 billion, respectively). However, the highest damages reported in 2013 (two floods in China costing US$ 4.9 and 4.6 billion) were significantly below those reported for the floods in Thailand in 2011 and in China and Pakistan in 2010 (2013 US$ 41.4 billion, 19.2 billion and 10.1 billion, respectively). The number of hydrological disasters with costs superior to US$ one billion (8) has to be noticed. It is the highest of the period surpassing the previous record of 2012 (5).

In 2013, damages from meteorological disasters (US$ 23.4 billion) were, in Asia, the highest since 2003, above the peak of 2004 (2013 US$ 23.1 billion), and 97% of these costs originated in tropical cyclones. Three of them, Haiyan in the Philippines (US$ 10 billion), Fitow (US$ 6.7 billion) and Utor (US$ 2.1 billion) in China, amounted for 80% of all meteorological disaster's damages. Haiyan and Fitow were, after Songda in 2004 (2013 US$ 11.1 billion) the second and third costliest meteorological disasters in Asia since 2003.

4.4 Europe

The number of reported disasters in Europe (45) was below the annual average disaster occurrence from 2003 to 2012 (55). However, when looking at types of disasters, the figure is somewhat different. There was only one geophysical disaster, against two for the annual 2003-2012 average, but such events are infrequent. The number of hydrological disasters (16) was 25% below its

decade's average (20) but this one is affected by the high numbers of floods of years 2005 (39), 2006 (30) and 2010 (24). In 2013, climatological disasters showed a 81% decrease compared to their 2003-2012 average. The explanation is in the number of extreme temperatures (3) and wildfires (1), which were at their second lowest since 2003, compared to the peaks of 39 in 2012 for extreme temperatures and 10 in 2007 for wildfires. Inversely, the number of meteorological disasters (24) was twice their annual 2003-2012 average. It was the second highest of the decade, after the peak of 26 storms in 2006. The impact of extra-tropical cyclones Christian, Dirk and Xaver on numerous countries explain the 2013 number.

In 2013, the increase in the number of victims (1.74 million) compared to their 2003-2012 annual average (0.60 million) is explained by the increase of their number in meteorological disasters (multiplied by a factor of 3.6 in 2013 compared to the 2003-2012 annual average) but overall in hydrological disasters (multiplied by a factor of 7.8 in 2013 compared to the 2003-2012 annual average). The low numbers of victims of geophysical and climatological disasters are linked to the rarity of such disasters in 2013. Hydrological disasters took the largest share of total disaster victims in Europe (81%), of which 74% were attributable to the flood in Czech Republic in June (1.3 million victims). A storm in the Ural region of Russia, in February, was the meteorological disaster which made the most victims (300,000) in 2013.

Damages from natural disasters in Europe in 2013 (US$ 22.3 billion) were the fourth highest of the decade, near those reported for 2012 (2013 US$ 24.6 billion), 2007 (2013 US$ 23.8 billion) and 2003 (2013 US$ 23.1 billion) but, on the contrary to these years, costs from climatological and geophysical disasters were not reported. The share of hydrological disasters in 2013 total damages is of 77%, against their 27% annual average for years 2003-2012, and damages from meteorological disasters accounted for 23% of all damages, versus an average share of 29% for the decade. The costs from the East and South Germany flood (US$ 12.9 billion), in May-June, were the second highest of the decade after those from the Ferrare earthquake in Italy in 2012 (2012 US$ 16 billion). For meteorological disasters, the damages from the hailstorm in Germany in July (US$ 4.8 billion) were, since 2003, the second highest after those attributable to the extra-tropical storm Kyrill in Germany in 2007 (2013 US$ 6.2 billion). Cost from the German flood and hailstorm accounted for 77% of all disaster damages in 2013.

4.5 Oceania

In 2013, the number of disasters (11) was largely below their 2003-2012 annual average (15). Four climatological disasters were reported, which is largely over the 2003-2012 annual average (1). Such a number was only found in 2004. Two geophysical disasters were reported which correspond to the decade's average. However the number of meteorological disasters (3) corresponded to the half of the annual average and was the second lowest since 2003, far below the peak of 9 in 2008. The number of hydrological disasters (2) corresponded to the third of the annual 2003-2012 average and was the third lowest since 2003, strongly lower than the high numbers of 2003 (11) and 2004 (13).

The number of victims from natural disasters in 2013 in Oceania (77,739) is higher than its 2003-2012 annual average (187,506). This number is, for the half part, explained by a flood in Papua New Guinea which made 35,000 victims. This flood with another in Solomon Islands which made 10,227 victims, explain the over-representation of hydrological disasters victims in Oceania. But we are far from the highest numbers of victims from floods since the one which had 200,000 victims in Papua New Guinea in 2012 and the Australian flood of 2010-2011 which had 175,000 victims.

The number of geophysical disaster victims (17,179) is the fifth lowest since 2003 and, for the most part, comes from an earthquake in July in New Zealand which had 13,840 victims. This number is not comparable to the more than 300,000 victims from two earthquakes, both, in Christchurch in New Zealand in 2010 and 2011. The other 2013 geophysical disaster reported in Oceania was a tsunami which had 3,339 victims in Solomon Islands.

The number of victims from climatological disasters (7,827) was the second highest after 2009 (12,481 victims). A drought in Marshall Islands had 6,384 victims and two wildfires in Australia also had, respectively, 992 and 451 victims.

The number of victims of meteorological disasters (7,506) was the third lowest since 2003, far from the 2003-2012 annual average (40,591) and, especially, from the 162,312 victims of the tropical cyclone Guba in Papua New Guinea in 2007. All the 2013 victims are connected to the tropical cyclone Oswald which hit the Eastern coast of Australia.

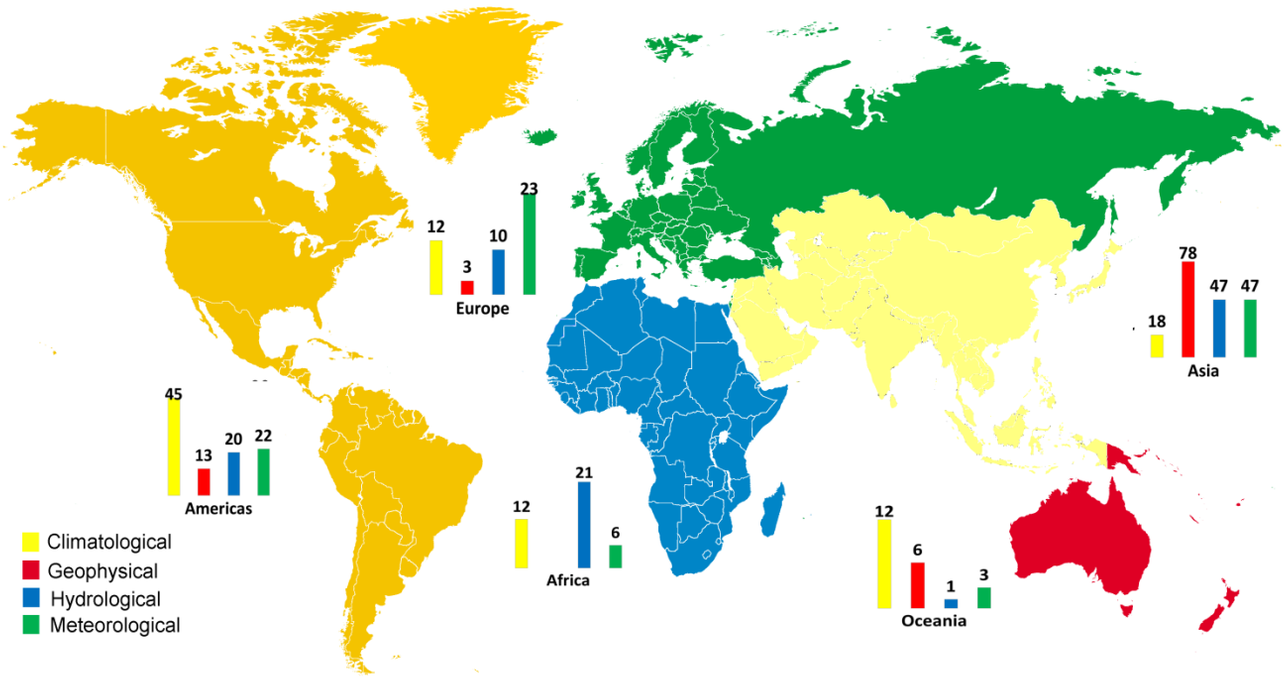
In 2013, disaster damages in Oceania (US$ 3.3 billion) were below their 2003-2012 annual average (2013 US$ 4,92 billion). Meteorological disasters took the largest share of damages (US$ 2 billion), more than two times their 2003-2012 average of 2013 US$ 0.8 billion. These 2013 damages are attributed to the tropical cyclone Oswald that hit Australia in January and were the second highest for meteorological disaster since 2003, after those from the tropical cyclone Yasi in Australia in 2011 (2013 US$ 2.5 billion).

Three climatological disasters occurred in 2013, with US$ 1.2 billion damages in Oceania, which is almost 6 times higher than the 2003-2012 annual average (2013 US$ 0.2 billion). One drought in New Zealand cost US$ 823 million and was the second costliest climatological disaster of the decade since the 2013 US$ 1.3 billion damages of a wild fire in Australia in 2009. Two wild fires, in Australia, with damages of US$ 268 and 98 million, respectively, complete the total climatological damages of 2013.

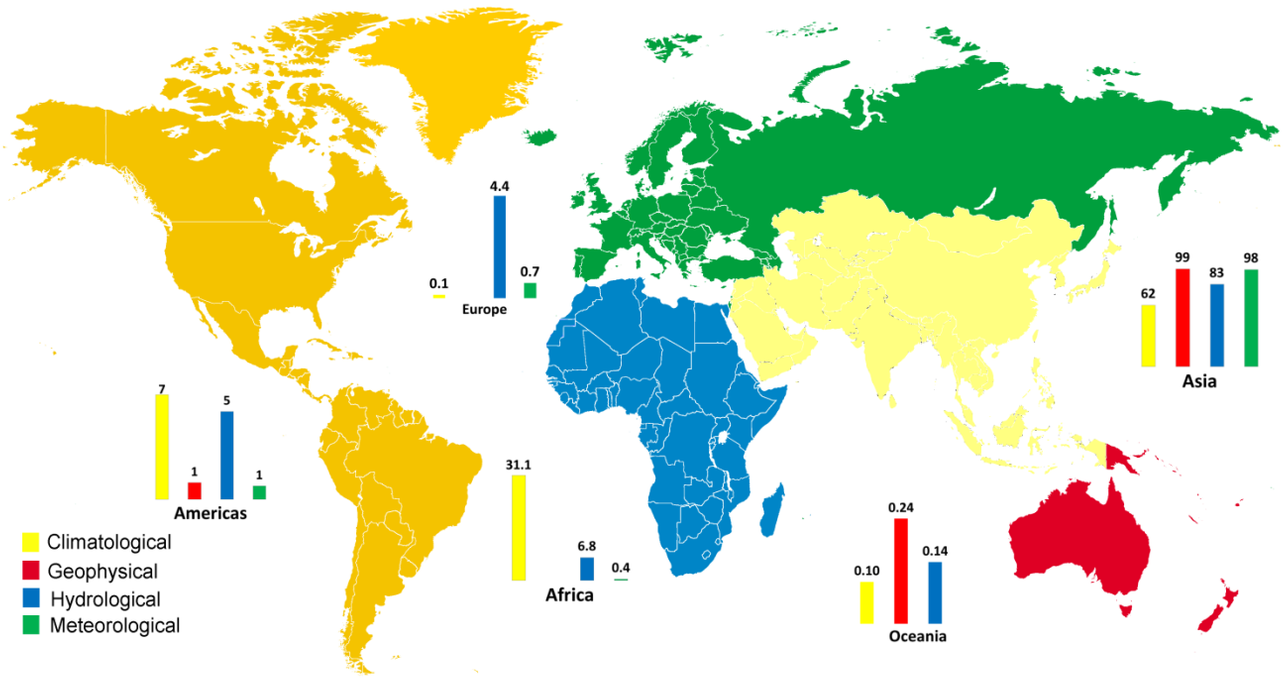
For geophysical disasters the reported damages amounted to US$ 50 million in Oceania, and were estimated for an earthquake in New Zealand. This amount is far from those reported, in 2010 and 2011 for the two New Zealand Christchurch earthquakes which cost 2013 US$ 6.9 and 15.5 billion, respectively.

A comparison between continents of the occurrence and impacts of natural disasters in 2013 is shown in Maps 1, 2 and 3. Geophysical disasters were most frequent in Asia (78.1%). Meteorological disasters were, essentially, distributed between Asia (47.2%), Europe (22.6%) and the Americas (21.7%). Hydrological disasters occurred mainly in Asia (47.2%), in Africa (21.4%) and in the Americas (20.1%). Climatological disasters occurred most often in the Americas (45.5%) and in Asia (18.2%). The human impact, measured in terms of the number of victims, was essentially concentrated in Asia, with shares of 98.7%, 98.1% and 83.2% for geophysical, meteorological and hydrological disasters, respectively. Victims of climatological disasters were, principally, distributed between Asia (62.2%) and Africa (31.1%). Almost all damages from geophysical disasters occurred in Asia (99.4%). Reported damages from climatological disasters were the most important in the Americas (67.8%) and in Oceania (30.6%). Most damages from meteorological disasters occurred in Asia (44.7%) and in the Americas (41.6%). Damages from hydrological disasters were distributed between Asia (48.8%), Europe (32.3%) and the Americas (18.6%).

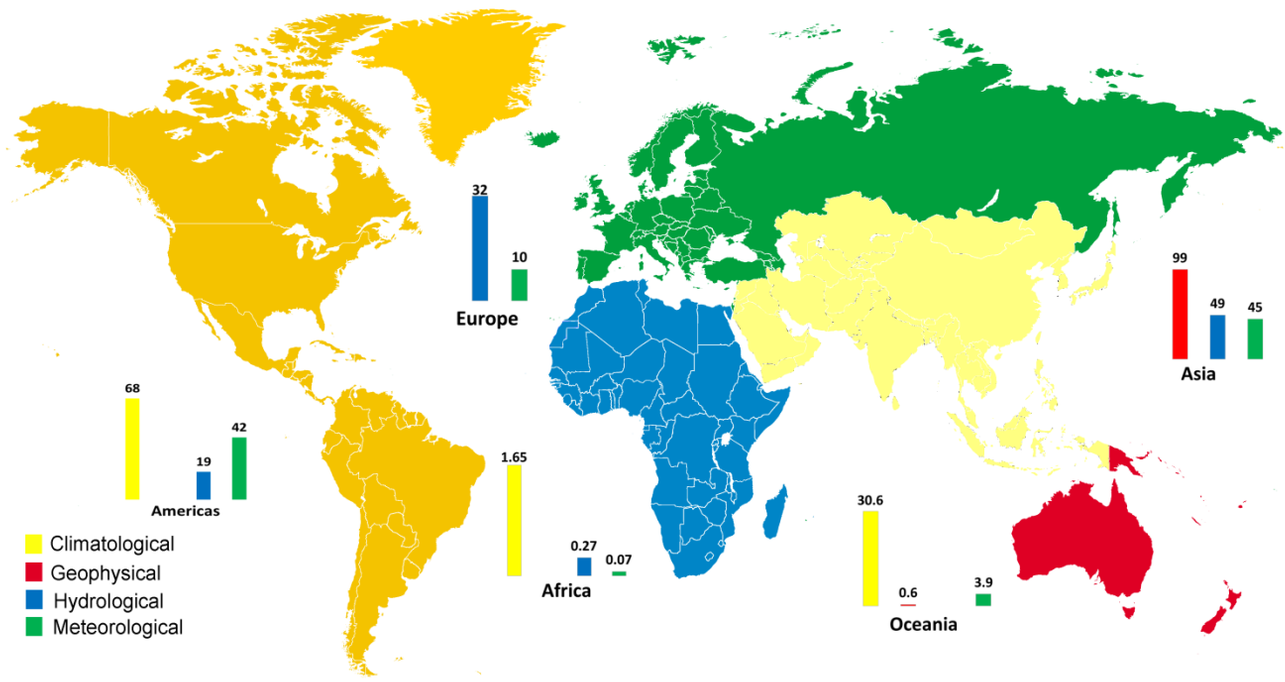
Map 1 – Percent share of reported occurrence by disaster sub-group and continent in 2013



Map 2 – Percent share of reported victims by disaster sub-group and continent in 2013*



Map 3 – Percent share of reported economic damages by disaster sub-group and continent in 2013*



*Percentages ≤ 0.05 are displayed as zeros

ANNEX 1: Definitions[16]

Avalanche: Avalanche describes a quantity of snow or ice that slides down a mountainside under the force of gravity. It occurs if the load on the upper snow layers exceeds the bonding forces of the entire mass of snow. It often gathers material that is underneath the snowpack like soil, rock etc. (debris avalanche). Any kind of rapid snow/ice movement.

Biological Disasters: Disasters caused by the exposure of living organisms to germs and toxic substances.

Climatological Disasters: Events caused by long-lived/meso to macro scale processes (in the spectrum from intraseasonal to multidecadal climate variability).

Cold wave: A cold wave can be both a prolonged period of excessively cold weather and the sudden invasion of very cold air over a large area. Along with frost it can cause damage to agriculture, infrastructure, and property. Damage caused by low temperatures.

Drought: Long-lasting event triggered by a lack of precipitation. A drought is an extended period of time characterized by a deficiency in a region's water supply that is the result of constantly below average precipitation. A drought can lead to losses in agriculture, affect inland navigation and hydropower plants, and cause a lack of drinking water and famine.

Earthquake: Shaking and displacement of ground due to seismic waves. This is the earthquake itself without secondary effects. An earthquake is the result of a sudden release of stored energy in the Earth's crust that creates seismic waves. They can be of tectonic or volcanic origin. At the Earth's surface they are felt as a shaking or displacement of the ground. The energy released in the hypocenter can be measured in different frequency ranges. Therefore there are different scales for measuring the magnitude of a quake according to a certain frequency range. These are: a) surface wave magnitude (Ms); b) body wave magnitude (Mb); c) local magnitude (ML); d) moment magnitude (Mw).

[16] These definitions have been established by MünichRe/Geo Risks Research Department and CRED. More information on definitions can be found on the EM-DAT website in the "Glossary" section.

Epidemic: Either an unusual increase in the number of cases of an infectious disease that already exists in the region or population concerned, or the appearance of an infection disease previously absent from a region.

Extreme winter condition: Damage caused by snow and ice. Winter damage refers to damage to buildings, infrastructure, traffic (especially navigation) inflicted by snow and ice in the form of snow pressure, freezing rain, frozen waterways, etc.

Flash flood: Rapid inland floods due to intense rainfall. A flash flood describes sudden flooding with short duration. In sloped terrains the water flows rapidly with a high destruction potential. In flat terrains the rainwater cannot infiltrate into the ground or run off (due to small slope) as quickly as it falls. Flash floods typically are associated with thunderstorms. A flash flood can occur at virtually any place.

Flood: Significant rise of water level in a stream, lake, reservoir or coastal region.

Forest fire: Fires in forests that cover extensive damage. They may start by natural causes such as volcanic eruptions or lightning, or they may be caused by arsonists or careless smokers, by those burning wood, or by clearing a forest area.

General flood: Gradually rising inland floods (rivers, lakes, groundwater) due to high total depth of rainfall or snowmelt. A general flood is caused when a body of water (river, lake) overflows its normal confines due to rising water levels. The term general flood additionally comprises the accumulation of water on the surface due to long-lasting rainfall (water logging) and the rise of the groundwater table above surface. Furthermore, inundation by melting snow and ice, backwater effects, and special causes such as the outburst of a glacial lake or the breaching of a dam are subsumed under the term general flood. General floods can be expected at certain locations (e.g. along rivers) with a significantly higher probability than at others.

Geophysical disasters: Events originating from solid earth.

Heat wave: A heat wave is a prolonged period of excessively hot and sometimes also humid weather relative to normal climate patterns of a certain region.

Hydrological Disasters: Events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind set-up.

Insect infestation: Pervasive influx and development of insects or parasites affecting humans, animals, crops and materials.

Landslide: Any kind of moderate to rapid soil movement including lahar, mudslide and debris flow. A landslide is the movement of soil or rock controlled by gravity and the speed of the movement usually ranges between slow and rapid. It can be superficial or deep, but the materials have to make up a mass that is a portion of the slope or the slope itself. The movement has to be downward and outward with a free face.

Local Windstorm (orographic storm): Local windstorm refers to strong winds caused by regional atmospheric phenomena which are typical for a certain area. These can be katabatic winds, foehn winds, Mistral, Bora etc.

Meteorological disasters: Events caused by short-lived/small to meso scale atmospheric processes (in the spectrum from minutes to days).

Rockfall: Quantities of rock or stone falling freely from a cliff face. It is caused by undercutting, weathering or permafrost degradation.

Storm surge: Coastal flood on coasts and lake shores induced by wind. A storm surge is the rise of the water level in the sea, an estuary or lake as result of strong wind driving the seawater towards the coast. This so-called wind setup is superimposed on the normal astronomical tide. The mean high water level can be exceeded by five and more metres. The areas threatened by storm surges are coastal lowlands.

Subsidence: Downward motion of the Earth's surface relative to a datum (e.g. the sea level). Dry subsidence can be the result of geological faulting, isostatic rebound, human impact (e.g. mining, extraction of natural gas). Wet subsidence can be the result of karst, changes in soil water saturation, permafrost degradation (thermokarst), etc.

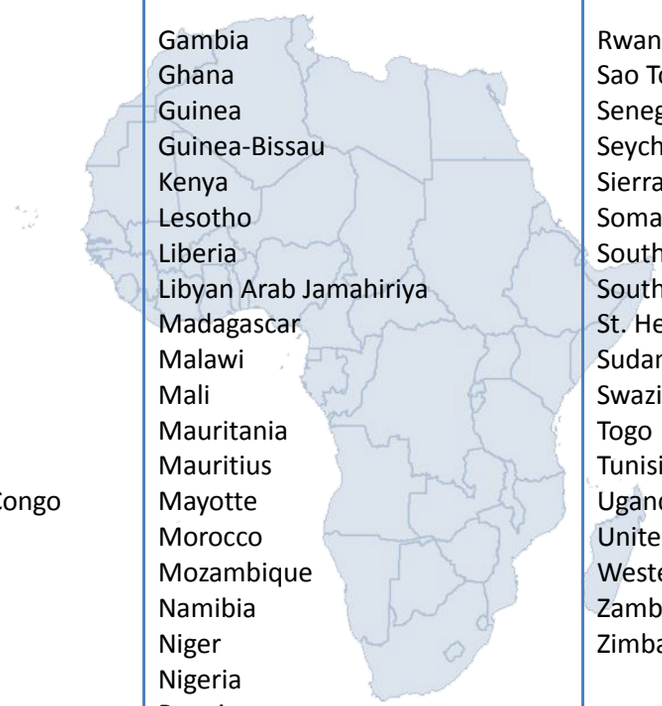
Tropical cyclone: A tropical cyclone is a non-frontal storm system that is characterized by a low pressure centre, spiral rain bands and strong winds. Usually it originates over tropical or sub-tropical waters and rotates clockwise in the southern hemisphere and counter-clockwise in the northern hemisphere. The system is fuelled by heat released when moist air rises and the water vapour it contains condenses ("warm core" storm system). Therefore the water temperature must be >27°C. Depending on their location and strength, tropical cyclones are referred to as hurricane (western Atlantic/eastern Pacific), typhoon (western Pacific), cyclone (southern Pacific/Indian Ocean), tropical storm, and tropical depression (defined by wind speed; see Saffir-Simpson-Scale). Cyclones in tropical areas are called hurricanes, typhoons and tropical depressions (names depending on location).

Volcanic eruption: All volcanic activity like rock fall, ash fall, lava streams, gases etc. Volcanic activity describes both the transport of magma and/or gases to the Earth's surface, which can be accompanied by tremors and eruptions, and the interaction of magma and water (e.g. groundwater, crater lakes) underneath the Earth's surface, which can result in phreatic eruptions. Depending on the composition of the magma, eruptions can be explosive and effusive and result in variations of rock fall, ash fall, lava streams, pyroclastic flows, emission of gases etc.

Wildfire: Wildfire describes an uncontrolled burning fire, usually in wild lands, which can cause damage to forestry, agriculture, infrastructure and buildings.

ANNEX 2: List of countries per continent

AFRICA		
Algeria	Gambia	Rwanda
Angola	Ghana	Sao Tome and Principe
Benin	Guinea	Senegal
Botswana	Guinea-Bissau	Seychelles
Burkina Faso	Kenya	Sierra Leone
Burundi	Lesotho	Somalia
Cameroon	Liberia	South Africa
Cape Verde	Libyan Arab Jamahiriya	South Sudan
Central African Republic	Madagascar	St. Helena
Chad	Malawi	Sudan
Comoros	Mali	Swaziland
Congo	Mauritania	Togo
Cote d'Ivoire	Mauritius	Tunisia
Democratic Republic of Congo	Mayotte	Uganda
Djibouti	Morocco	United Republic of Tanzania
Egypt	Mozambique	Western Sahara
Equatorial Guinea	Namibia	Zambia
Eritrea	Niger	Zimbabwe
Ethiopia	Nigeria	
Gabon	Reunion	



AMERICAS		
Anguilla	Dominican Republic	Panama
Antigua and Barbuda	Ecuador	Paraguay
Argentina	El Salvador	Peru
Aruba	Falkland Islands (Malvinas)	Puerto Rico
Bahamas	French Guiana	St. Barthélemy
Barbados	Greenland	St. Kitts and Nevis
Belize	Grenada	St. Lucia
Bermuda	Guadeloupe	St. Martin (French part)
Bolivia	Guatemala	St. Pierre and Miquelon
Brazil	Guyana	St. Vincent and the Grenadines
British Virgin Islands	Haiti	Suriname
Canada	Honduras	Trinidad and Tobago
Cayman Islands	Jamaica	Turks and Caicos Islands
Chile	Martinique	Uruguay
Colombia	Mexico	Venezuela
Costa Rica	Montserrat	United States of America
Cuba	Netherlands Antilles	United States Virgin Islands
Dominica	Nicaragua	

ASIA

Afghanistan
Armenia
Azerbaijan
Bahrain
Bangladesh
Bhutan
Brunei Darussalam
Cambodia
China
Cyprus
Georgia
Hong Kong (China)
India
Indonesia
Iran
Iraq
Israel
Japan
Jordan
Kazakhstan
Korea (Dem Rep)
Korea (Rep)
Kuwait
Kyrgyzstan
Laos
Lebanon
Macau (China)
Malaysia
Maldives
Mongolia
Myanmar
Nepal
Palestine (West Bank)
Oman
Pakistan
Philippines
Qatar
Saudi Arabia
Singapore
Sri Lanka
Syrian Arab Republic
Taiwan (China)
Tajikistan
Thailand
Timor-Leste
Turkey
Turkmenistan
United Arab Emirates
Uzbekistan
Viet Nam
Yemen

EUROPE

Aland Islands
Albania
Andorra
Austria
Belarus
Belgium
Bosnia and Herzegovina
Bulgaria
Channel Islands
Croatia
Czech Republic
Denmark
Estonia
Faroe Islands
Finland
France
Germany
Gibraltar
Greece
Guernsey
Holy See
Hungary
Iceland
Ireland
Italy
Jersey
Latvia
Liechtenstein
Lithuania
Luxembourg
Macedonia, FYR
Malta
Man, Isle of
Moldova
Monaco
Montenegro
Netherlands
Norway
Poland
Portugal
Romania
Russian Federation
San Marino
Serbia
Slovakia
Slovenia
Spain
Svalbard & Jan Mayen Islands
Sweden
Switzerland
Ukraine
United Kingdom

OCEANIA		
American Samoa Australia Cook Islands Federated States of Micronesia Fiji French Polynesia Guam Kiribati Marshall Islands	Nauru New Caledonia New Zealand Niue Norfolk Island Northern Mariana Islands Palau Papua New Guinea Pitcairn	Samoa Solomon Islands Tokelau Tonga Tuvalu Vanuatu Wallis and Futuna

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