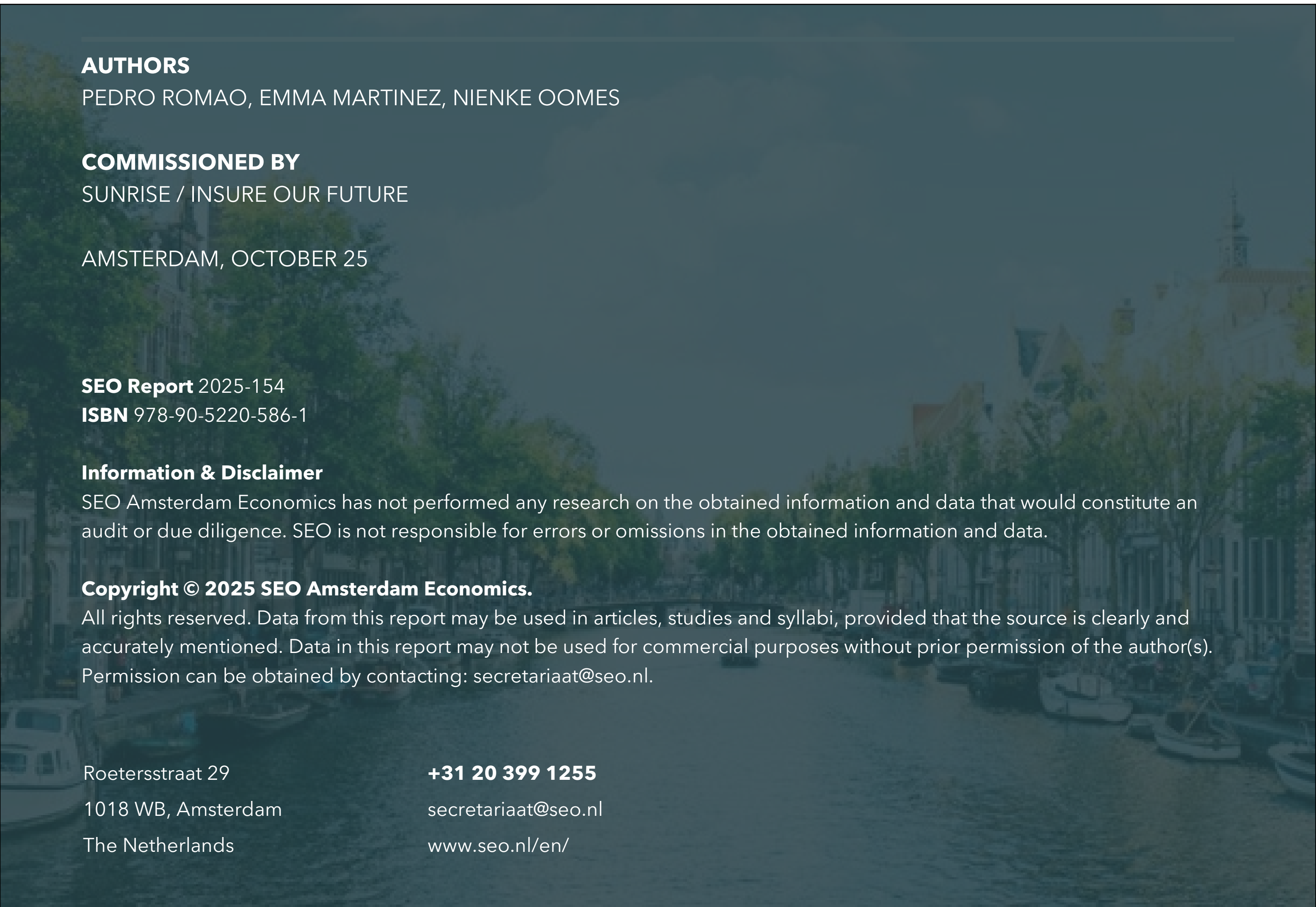
THE INSURANCE COSTS OF CLIMATE CHANGE

DETERMINING THE DIRECT COSTS OF CLIMATE CHANGE FOR INSURERS

FINAL REPORT

seo • amsterdam economics



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Executive Summary

The study

SEO Amsterdam Economics quantified the costs of climate change for insurers: the insured losses attributable to climate change worldwide. By combining industry estimates of weather related insured losses with state of the art climate research, we calculate how much of the insurance bill can be directly linked to anthropogenic climate change (i.e., climate change caused by humans). These estimates differ across regions and by type of natural hazard (such as forest fires, floods, and hurricanes). The results show that climate change has led to large and rising costs for insurers. The report also warns about the growing 'uninsurability' of houses in high risk areas, which can shift costs to households and governments.

Key findings

- **Insured losses attributable to climate change have nearly doubled since 2012.** They have grown on average at 6.5% per year, outpacing total insured loss growth (4.9% per year). Between 2002 and 2022, climate change cost insurers an estimated USD 475–720 billion – on average about USD 30 billion per year. This is equivalent to 34% of all natural hazard insured losses, or 37% of weather related losses.
- **Estimates of the 'Fraction of Attributable Risk' (FAR) can be used to attribute insurance losses to climate change**. This study shown that a FAR based framework, paired with clear reliability flags, offers a transparent, reproducible approach for insurers, supervisors and policymakers to track and communicate the direct insurance costs of climate change. This framework also helps to assess the implications for pricing and (lack of) insurance coverage.
- **The risk of an 'uninsurability crisis' warrants the attention of policy makers.** Given the rising insurance costs caused by climate change, there is a growing risk that homeowners will no longer be able to insure themselves against extreme weather related events. To reduce this risk, there is an urgent need for regulation and policy frameworks.

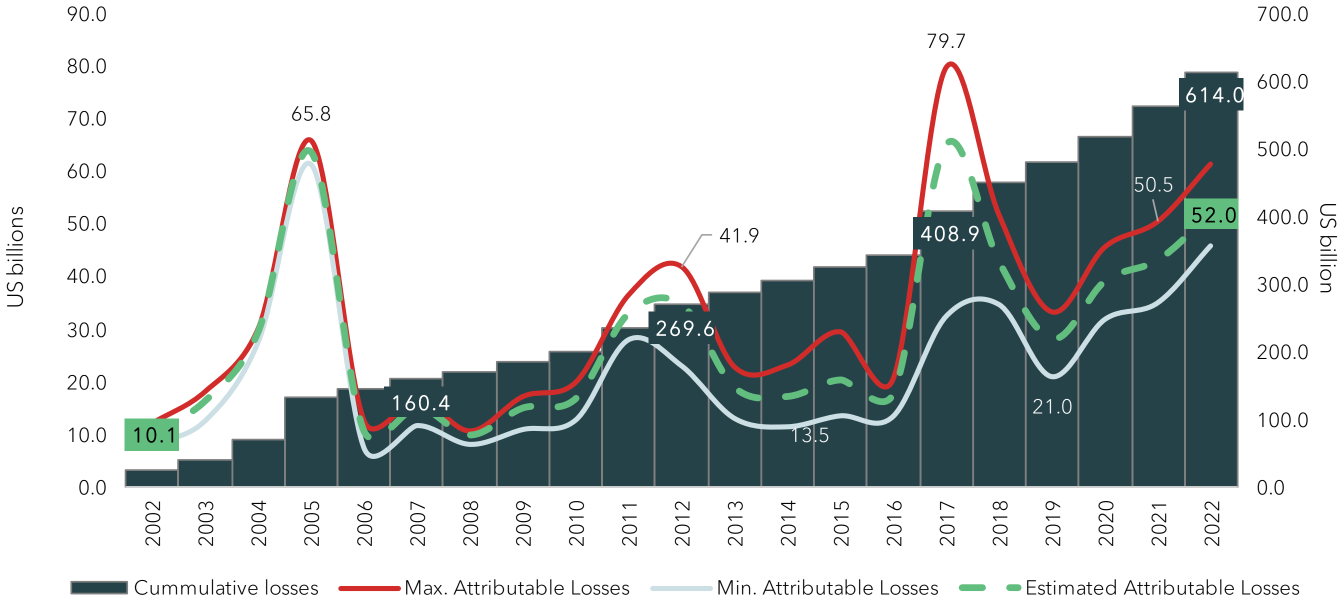
Methods

For this study, SEO collected and analysed data on reported insured losses from five leading insurance companies (Aon, Gallagher Re, Munich Re, Swiss Re, and Verisk) and combined these with peer reviewed scientific estimates of the Fraction of Attributable Risk (FAR), reported in Newman & Noy (2023). Triangulating these different sources, we then derived the climate attributable share of insured losses by event type and region. To support careful use, we also introduced a 'reliability score' based on statistical significance and confidence intervals, and we advised using global averages when regional estimates are weak or missing. As a cross check and to gain deeper insights into the global climate events landscape, we used the EM DAT comprehensive catastrophe database.

1 The rise of climate change attributable insured costs

Over the past two decades (2002-2022), climate change has directly cost insurers between $475 and $720 billion globally (Figure 1.1). This corresponds to roughly $30 billion per year and represents 34 percent of total reported natural hazard insured losses or 37 percent of weather-related insured losses. In other words, over one third of losses borne by insurers since the turn of the century can be directly attributed to climate change.

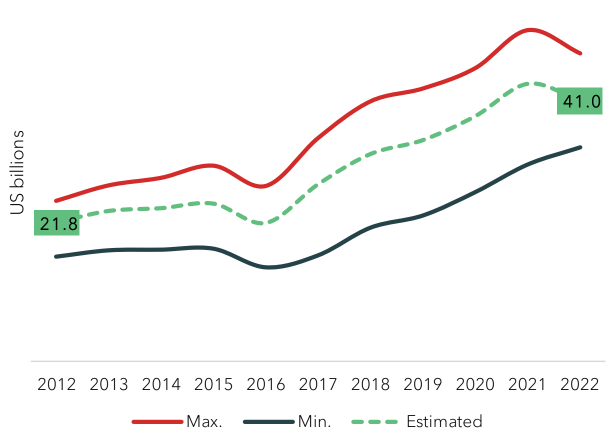
Figure 1.1 Two decades of global climate change attributable insured losses

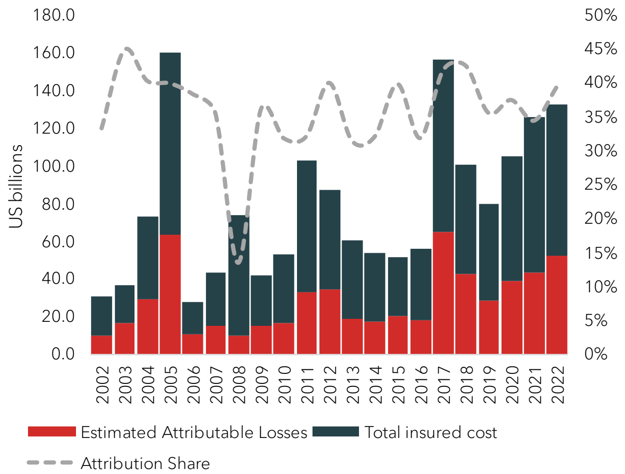


Source: SEO Amsterdam Economics, based on climate attribution extrapolations for every year (Newman and Noy, 2023) and estimated industry-wide insured losses.

Looking at the 5-year moving average of climate attributable insured losses, which helps to smooth out annual fluctuations, a worrying trend of intensifying losses emerges. As Figure 1.2a shows, the insured losses that are attributable to climate change have been growing at a whopping 6.5 percent on average per year, and have almost doubled between 2012-2022.

Figure 1.2 (a) Climate attributable insured losses 5y moving average; (b) Attributable and total insured losses





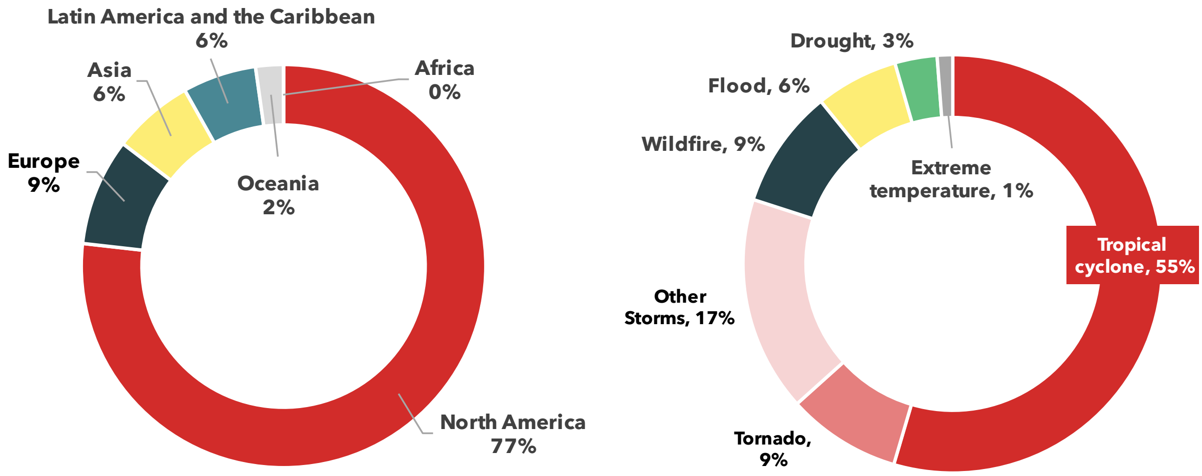
Source: SEO Amsterdam Economics. SEO Amsterdam Economics, based on climate attribution extrapolations for every year (Newman and Noy, 2023) and estimated industry-wide insured losses.

This growth rate is higher than the 4.9 percent recorded for total insured losses, supporting the increasing role of climate change as a key driver of a higher insurance burden. Indeed, while a variety of factors are linked with the trend of increasing insured losses—including rising construction costs, increased urbanisation, and growing concentrations of high-value assets in vulnerable areas— (see below), climate change stands out as another key driver behind it. Extreme weather events such as hurricanes, floods, wildfires, and other climate-related disasters are occurring with greater intensity and at unprecedented scales, underscoring the escalating financial toll climate change is imposing on insurers.

Recent events, such as Hurricanes Helene and Milton in the United States, exemplify this growing trend of climate-related losses. Moody's Risk Management Solutions Event Response (2024) estimates that the total insured losses in the U.S. private market from these hurricanes range between $30 billion and $50 billion.[1] Our climate attribution estimates suggest that approximately 40 percent of these losses can be directly linked to climate change, translating the climate attributable toll to around $16 billion.[2]

Climate attributable insured losses vary significantly per type of disaster and region, but are by far dominated by storm damages - and in particular tropical cyclones - in North-America. These patterns are consistent with the ones reported by insurers and are further developed below.

Figure 1.3 Share of climate attributed loses (a) per region and (b) type of event, 2002-2022



Source: SEO Amsterdam Economics, based on climate attribution extrapolations by year (Newman and Noy, 2023) and estimated industry-wide insured losses.

1 "Moody's RMS Event Response Estimates Private Market Insured Losses for Hurricane Milton." Rms.com, 2024, www.rms.com/newsroom/announcement/2024-10-17/moodys-rms-event-response-estimates-private-market-insured-losses-for-hurricane-milton. Based on the computed FAR for Storms in the America's of 0.43 and Moody's $37 billion "best estimate" for total losses (Accessed November 12th, 2024).

2 Rapid attribution studies for both Helena (Clark et al, 2024) and Milton (Sparks and Toumi, 2024) have set preliminary FAR estimates between 0.29-0.6 and 0.3-0.45, for each Hurricane respectively. Herein, we use the average regional FAR computed by Newman and Noy (2023) and explored below in 3.1 to showcase the potential use of this method to quickly inferring climate attribution in the absence of event-specific estimates.

Beyond the direct insured costs attributable to climate change, which we focus on in this report, there are also indirect costs. Some of these indirect costs are related to the fact that the growing severity of climate events is contributing to an insurability crisis. A striking example is the recent projection by State Farm, a large U.S. insurance company, which had predicted already prior to the LA wildfires that it might need to discontinue coverage for millions of homes by 2028. Such indirect costs, borne by homeowners, are becoming an increasingly significant aspect of the financial impact of climate change and should be considered together with the direct costs.[3]

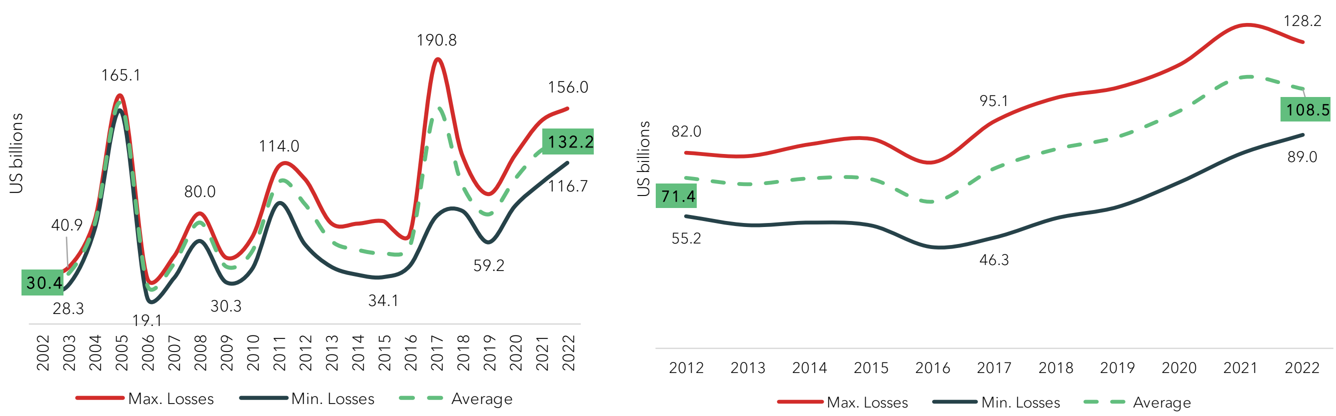
3 Munce, Megan Fan (2024). "State Farm Projects Big Decline in California Insurance Policies." San Francisco Chronicle, 25 Sept. 2024, www.sfchronicle.com/california/article/state-farm-insurance-19792469.php.

2 Triangulating reported insured losses for weather-related events

Insured losses attributed to weather related events have steadily risen in the past two decades, surging to more than $130 billion in 2022 (Figure 2.1a).[4] This marked the third-highest figure on record and represented more than a four-fold increase compared with 2003 levels. It was also the third consecutive year where global insured losses surpassed $100 billion: a pattern that has yet again been verified in 2023.

Looking at the 5-year moving average – to smooth out annual fluctuations –, reported insured losses reveal a persistent growth of 4.9 per cent yearly since 2012 (Figure 2.1b). This means that global insured losses for weather-related events are placing an ever-increasing toll on insurers' financial resources.

Figure 2.1 Range of Global Insured Losses due to weather-related events (a) levels and (b.) 5y Moving Average



Source: SEO Amsterdam Economics, based on annual natural disaster damage reports from Aon, Gallagher Re, Munich Re, Swiss Re, and Verisk. Note: Where disaggregated data for weather-related events was unavailable, a transformation was performed to remove non-weather-related losses. This involved computing the share of non-weather related losses for available reporters and applying it to reported global losses.

Interestingly, the gap between the maximum and minimum reported losses has been widening over the years, highlighting the increasing volatility in damage estimates. This suggests that as extreme weather events become more frequent and widespread, insurance companies are diverging in their assessments of which losses should be attributed to natural hazards. This divergence may reflect growing complexities in defining and accounting for (extreme) weather-related risks, particularly with the rise of secondary perils, which are smaller and more frequent events like hailstorms, wildfires, or flash floods.

4 These figures refer to insurance losses attributed to weather related events, regardless of whether these events are attributable to climate change

In terms of reporting patterns, Gallagher Re and Aon consistently report the highest insured losses, while Swiss Re, Munich Re, and Verisk (in descending order) tend to consistently report the lowest figures (see Annex A for detailed data). While differences in the reported losses may stem from variations in data collection or estimation methodologies, consistent patterns of under- or over-reporting may also reflect different approaches to weighing extreme weather-induced hazards.

Extreme whether events are a major contributor to the trend of increasing insured losses, and insurers link the increasing frequency of these weather events to climate change (Chapter 3 further analyses the climate attribution of extreme weather events). While rising construction costs, increased urbanisation, and growing concentrations of high-value assets in vulnerable areas are often identified as contributors to the rise in insured losses, all insurers link the increasing frequency and severity of extreme weather events to climate change. Insurers clearly underscore the escalating financial toll of climate change as a key risk for the future.[5]

Another main source of reported insurance losses is the Emergency Events Database (EM-DAT), which compiles data on the occurrence and impacts of over 26,000 disasters worldwide since 1900. As a global repository for natural disaster data, EM-DAT has played a critical role in monitoring, analysing, and understanding the economic and human impacts of major hazard events over time. Its standardised dataset serves as a valuable resource for researchers, policymakers, and insurers alike to assess trends in disaster frequency, severity, and associated losses.

For our analysis, we focused specifically on weather-related perils with reported insured losses since 2000, narrowing the dataset to 617 observations. As we further explore below, low(er) income countries are underrepresented in these observations, due to a combination of factors. On the one hand, there is lower data availability from lower income countries, where comprehensive disaster reporting and insurance data collection may be less reliable. On the other hand, insurance penetration rates are actually higher in developed economies, which contributes to this imbalance by increasing the volume of reported insured losses in wealthier regions.

When comparing EM-DAT data on insured losses from weather-related events to industry estimates, we find that the database generally tracks the fluctuations in reported losses well (Figure 2.2a). Notably, EM-DAT is particularly accurate in 2005 and 2017 losses, when two major hurricanes – Katrina and Harvey, respectively – generated massive and well-documented insured losses that were reflected in the data.

However, when comparing EM-DAT's 5-year moving average with the same estimated metric, EM-DAT reports on average approximately only 60 percent of losses, compared to industry estimates (Figure 2.2b.). Once again, these discrepancies are likely to arise from imperfect data availability. In particular, different reporting standards in different regions are sure to contribute to this imbalance. Moreover, the increasing importance of secondary perils, which do not tend to produce official data but that are still accounted for in major re-insurers, is also contributing to accentuate this discrepancy, highlighting the difficulty of comprehensively compiling disaster data.

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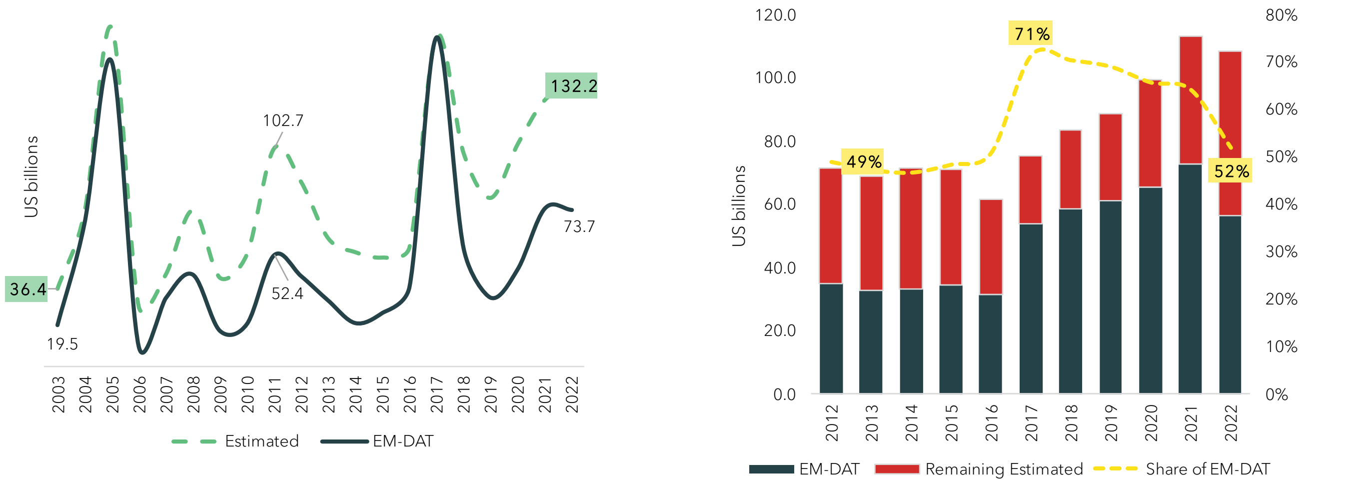
5 See, for example, Continued high losses from natural catastrophes in 2022 | Swiss Re.

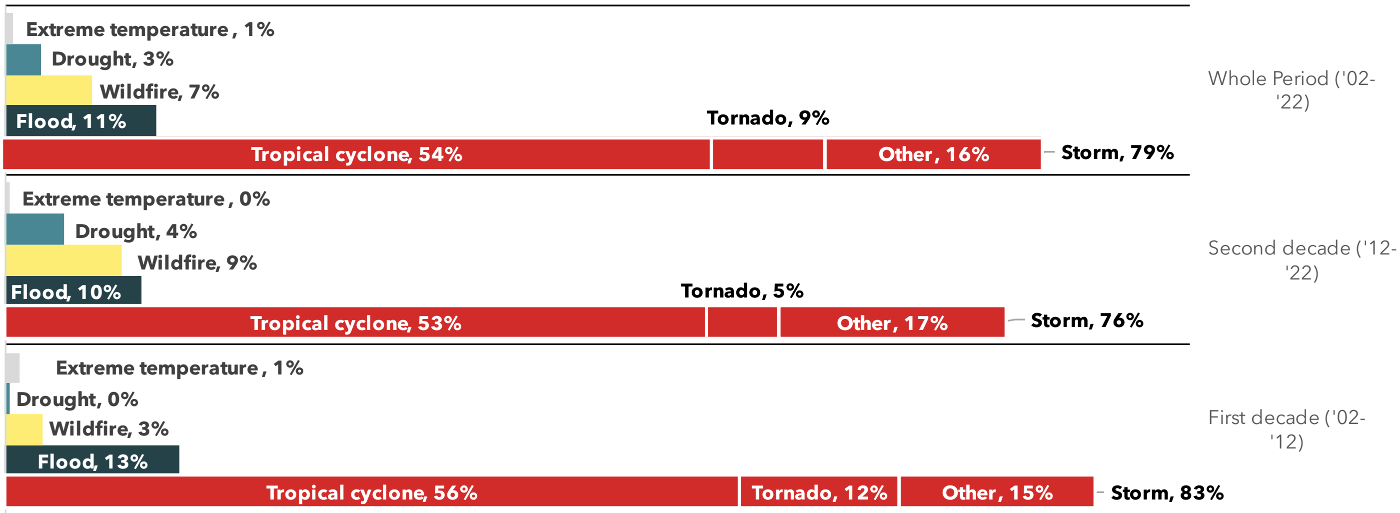
Figure 2.2 Estimate insured losses compared with EM-DAT data: (a) in USD and (b) 5-year moving averages.



Source: SEO Amsterdam Economics, based on estimated global insured losses attributed to extreme weather events, compared with EM-DAT global insured losses attributed to extreme weather events.

The distribution of insured losses across disaster types reveals that storms are consistently the largest cause of insured losses globally, accounting for nearly 80 percent of the total across the entire period (2002–2022) (Figure 2.3). This aligns with long-term estimates reported by insurers and reflect the immense damage caused by storms, which include events like hurricanes, tornadoes, and thunderstorms. In particular, tropical cyclones are responsible for over half of global reported insured losses. Prominent examples are Hurricanes Katrina, Harvey and Ian (in decreasing order), which are amongst the top 3 largest extreme-weather events ever recorded with insurers bearing extreme damages in affected areas.

Figure 2.3 Reported insured losses by type of weather-related natural hazard



Source: SEO Amsterdam Economics, based on EM-DAT data (Accessed October 2024). Note: Insured losses rose from $727 billion to just over $1 trillion between the first and second decades, respectively.

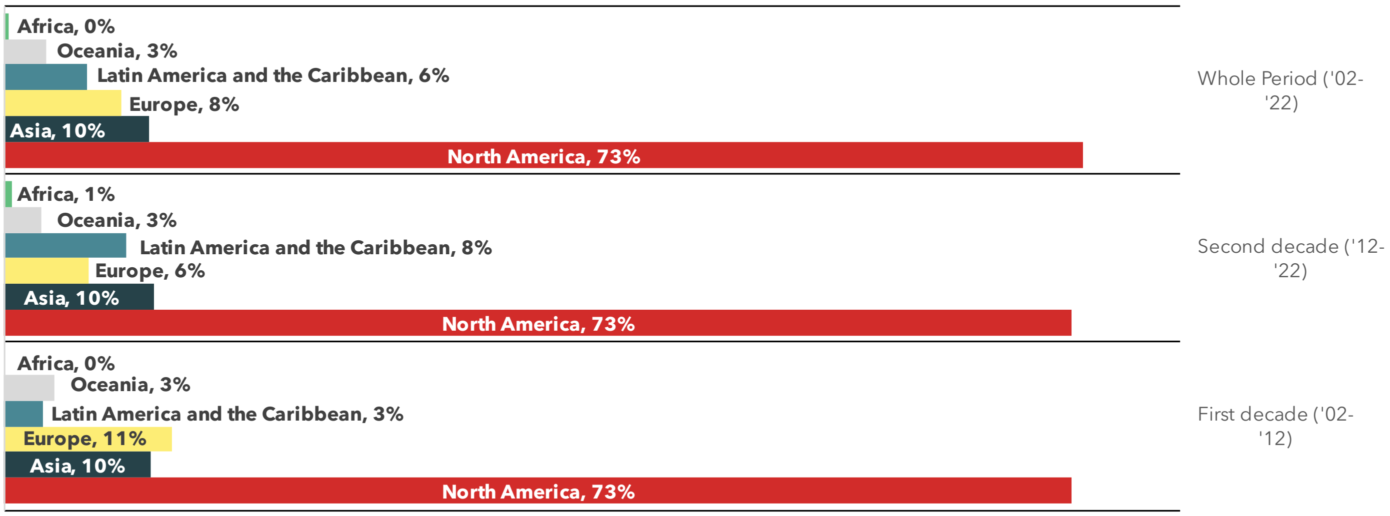
Another notable trend is the rise of wildfire damages over the past two decades. The share of insured losses attributed to wildfires has tripled from 3 to 9 percent over the past decade. This rise mirrors the growing frequency and intensity of wildfires, particularly in regions such as the western United States and Australia. Here, prolonged droughts and higher temperatures have increased wildfire risks substantially.

Droughts have also seen a slight increase in their share of insured losses, rising from 0 percent in the first decade to 4 percent in the second decade. While drought figures might be more imprecise than others, this increase can be linked to prolonged periods of drought, particularly in regions dependent on agriculture, where crop failures and reduced water availability contribute to economic losses that may be insured.

Interestingly, extreme temperatures remain largely absent from the data on insured losses, with only 1 percent reported in the first decade and 0 percent in the second decade. While these events are ever-increasing in frequency and intensity, direct economic damages from extreme temperatures are difficult to measure and are often not included. Indeed, extreme heat or cold may disrupt economic activity by causing labour shortages, power outages, or damage to infrastructure, but these effects are typically not covered by private insurance policies.

Looking at the regional distribution of insured losses, North-America consistently dominates weather-related insured losses, with 73 percent of global losses attributed to this region (Figure 2.4). North America is often fustigated by hurricanes, which carry the largest damage potential of all, as well as severe wildfire seasons (see above). The region's susceptibility to these large-scale, high-intensity events, coupled with high insurance penetration rates and robust data coverage, means that North American losses are well documented, although these factors may slightly overestimate the region's share relative to other parts of the world.

Figure 2.4 Reported insured losses by region



Source: SEO Amsterdam Economics, based on EM-DAT data (Accessed October 2024).

Interestingly, insured losses in Latin America and the Caribbean have experienced a sharp rise over the past two decades, increasing from 3 to 8 percent between 2002 and 2022. This rise likely reflects the increasing intensity and frequency of severe hurricanes in the Caribbean and Central America, as well as floods and wildfires elsewhere (specially in Brazil and Argentina). A gradual expansion in the insurance market in South-America is also positively impacting losses.

In contrast, Asia, Oceania, and Africa have reported relatively stable shares of global insured losses. Asia consistently holds 10 percent of global losses, reflecting the region's regular exposure to typhoons and floods, while Oceania maintains a steady 3 percent, driven primarily by cyclones and wildfires, particularly in Australia. Africa, however, continues to account for only 0-1 percent of global insured losses, largely due to low insurance penetration and underreporting, despite being vulnerable to droughts and floods.

3 Climate attribution of extreme weather events

Climate attribution science is a recent but rapidly evolving field looking to understand the role of climate change in the frequency and intensity of natural hazards. In particular, Extreme Event Attribution (EEA) is a methodological approach that uses climate modelling tools to determine the degree to which anthropogenic greenhouse gas emissions have changed the likelihood of an extreme weather event occurring.

This concept is most commonly and intuitively explained through the Fraction of Attributable Risk (FAR). The FAR can then directly be used to derive the Climate Change cost (CCcost). We explore both concepts in detail below in Box 3.1.

Box 3.1 Explaining the Fraction of Attributable Risk (FAR) and the Climate Change cost (CCcost)

The fraction of attributable risks (FAR) is used to measure the effects of climate change on extreme weather events. It is a valuable tool to illustrate the portion of the risk of the extreme weather event for which anthropogenic climate change is accountable for. In this scenario, anthropogenic climate change refers to the greenhouse gases (GHG) which have been caused by human activity.

The following formula is used to calculate the FAR:

$$FAR_i = 1 - \frac{P_0}{P_1}$$

P_0 – probability of a climate event without anthropogenic GHG

P_1 – probability of a climate event with anthropogenic GHG

FAR = 1 can be interpreted as an event that would not have taken place in the case without anthropogenic climate change. FAR = 0 indicates that climate change had no effect on the probability of an event being carried out. A negative FAR denotes that climate change has made an event less likely.

As suggested by Allen (2003) and adopted in Newman and Noy (2023), the Climate Change cost (CCcost) can directly be calculated as described below:

$$CCcost_i = FAR_i * Cost_i$$

Source: SEO Amsterdam Economics, based on Newman and Noy (2023).

For this research, we draw heavily from Newman and Noy (2023) who built the most comprehensive extreme weather climate attribution and losses database events to date. In this seminal work, *"The global costs of extreme weather that are attributable to climate change"*, the authors exhaustively combined available EEA data and economic damages for 185 extreme weather events to ultimately determine the share of global natural hazards losses attributable to climate change.

The authors found that anthropogenic climate change is responsible for $2.86 trillion in damages from 2000-2019, or 53 percent of total losses record. This translates to an average of $143 billion annually, of which roughly 60 percent – or $90 billion – correspond to damages related to loss of life and the remaining 40 percent – or $53 billion – to direct economic losses. These figures were extrapolated (both globally and regionally) from the examination pool of 185 events, for which a total of $260.8 billion in economic damages could be attributed to climate change.

At the event level, the authors found that 83 percent of the events had an increased risk due to anthropogenic climate change. Through 2000-2019, out of the 185 collected studies, 154 of the events had an increased risk due to GHG, while 24 events were linked to a decreased risk, and the risk for the 7 remaining events remained unchanged (with a FAR=0). The paper emphasises that 77 percent of these events took place after 2013, due to the increasingly frequent EEA studies being performed.

Extreme temperatures phenomena have seen the highest share of attributable climate change risk, followed by wildfires, drought and storms. Floods seem to be less impacted by climate change, while episodes of extreme cold tend to be considerably less frequent. This information is summarised in Table 3.2.

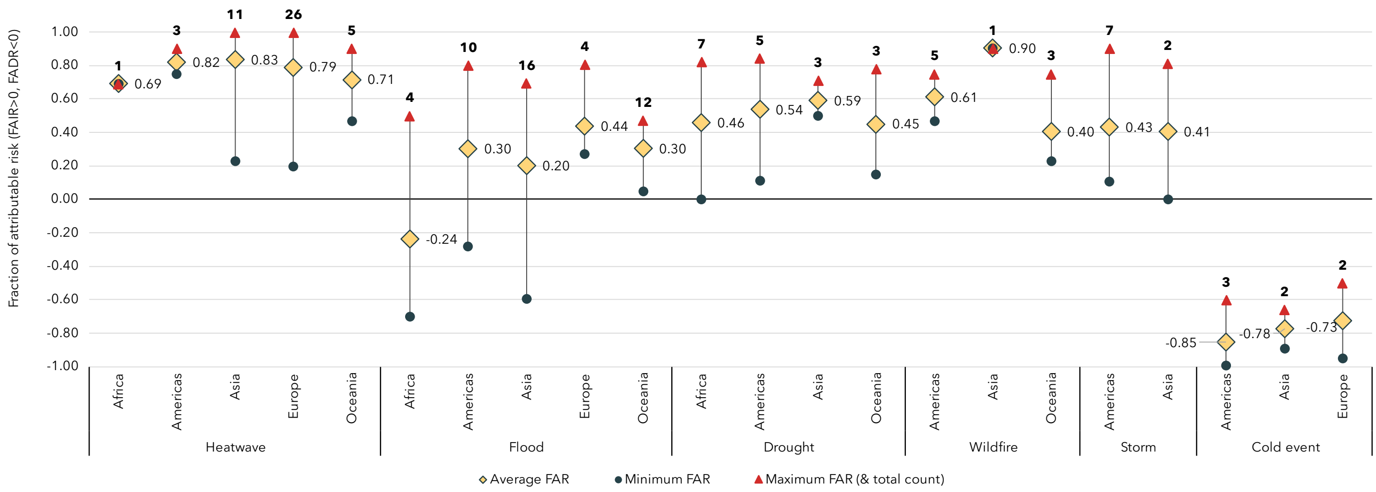
Table 3.2 Global FAR estimates across types of event

Event Type	FAR	p-Value	95% CI Lower	95% CI Upper	Rel. Score
Heatwave	0,8	0,0	0,7	0,8	✓
Flood	0,2	0,0	0,1	0,3	✓
Drought	0,5	0,0	0,4	0,6	✓
Wildfire	0,6	0,0	0,4	0,8	✓
Storm	0,4	0,0	0,2	0,7	✓
Cold wave	-0,8	0,0	-1,0	-0,6	✓

Source: Newman and Noy (2023), adapted. Note: To assess the statistical validity of the presented averages, we performed a double-sided t-test against the null hypothesis that the average FAR is zero ($H_o = 0$). The resulting p-values and standard 95 percent confidence intervals bounds are displayed accordingly. The scoring system shown was built by SEO Amsterdam Economics to indicate the reliability of each of the derived estimates, under three categories: Green (Reliable) - p-value < 0.05, Yellow (Moderately Reliable) – 0.05 < p-value < 0.1, Red (Unreliable) – p-value >0.1.

Disaggregating FARs across regions and types of events is a useful way to understand how climate change is affecting different regions and phenomena (Figure 3.1). Indeed, it is possible to identify some degree of variability across different regions for the same event type and vice-versa. This data also provides a powerful tool in extrapolating climate attribution to future events.

Figure 3.2 FAR estimates across regions and types of events



Source: SEO Amsterdam Economics, based on Newman and Noy (2023).

Nevertheless, as the authors discuss, due to limited spatial and temporal data availability, applying these figures to attribute damages to climate change should be done with caution. In particular, for estimates where few observations are available or the variability is high, using regional estimates might not be appropriate.

In this spirit, we developed a reliability score that allows the public to use the different available estimates with adequate context. To assess the statistical validity of the presented averages, we performed a double-sided t-test against the null hypothesis that the average FAR is zero ($H_0 = 0$). The resulting p-values and standard 95 percent confidence intervals bounds are displayed in Table 3.3. The scoring system shown was built by SEO Amsterdam Economics to indicate the reliability of each of the derived estimates, under three categories: Green (Reliable) - p-value <0.05, Yellow (Moderately Reliable) – 0.05 < p-value < 0.1, Red (Unreliable) – p-value >0.1. When estimates are deemed moderately reliable, unreliable or are missing, users should opt to use the global average provided in Table 3.2.

Table 3.3 FAR estimates across regions and types of events with an associated reliability score

Event Type	Region	FAR	p-Value	95% CI Lower	95% CI Upper	Rel. Score
Heatwave	Africa	0.7				✗
	Americas	0.82	0.00	0.63	1.01	✓
	Asia	0.82	0.00	0.64	1.00	✓
	Europe	0.78	0.00	0.70	0.86	✓
	Oceania	0.71	0.00	0.50	0.93	✓
Flood	Africa	-0.24	0.42	-1.06	0.58	✗
	Americas	0.30	0.04	0.01	0.59	✓
	Asia	0.20	0.06	-0.01	0.42	!
	Europe	0.44	0.04	0.04	0.83	✓
	Oceania	0.30	0.00	0.23	0.38	✓

Event Type	Region	FAR	p-Value	95% CI Lower	95% CI Upper	Rel. Score
Drought	Africa	0.46	0.01	0.18	0.74	✓
	Americas	0.54	0.02	0.15	0.92	✓
	Asia	0.59	0.01	0.32	0.86	✓
	Oceania	0.45	0.13	-0.34	1.23	✗
Wildfire	Americas	0.61	0.00	0.46	0.76	✓
	Asia	0.90				✗
	Oceania	0.40	0.14	-0.34	1.15	✗
Storm	Americas	0.43	0.01	0.13	0.73	✓
	Asia	0.41	0.50	-4.74	5.55	✗
Cold wave	Americas	-0.85	0.02	-1.40	-0.31	✓
	Asia	-0.78	0.09	-2.24	0.69	!
	Europe	-0.73	0.19	-3.58	2.13	✗

Source: Newman and Noy (2023), adapted. Note: To assess the statistical validity of the presented averages, we performed a double-sided t-test against the null hypothesis that the average FAR is zero ($H_0 = 0$). The resulting p-values and standard 95 percent confidence intervals bounds are displayed accordingly. The scoring system shown was built by SEO Amsterdam Economics to indicate the reliability of each of the derived estimates, under three categories: Green (Reliable) - p-value <0.05, Yellow (Moderately Reliable) – 0.05 < p-value < 0.1, Red (Unreliable) – p-value >0.1.

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Appendix A

To compute an estimate of weather-related insured losses, data from five leading companies was collected and compiled. Where disaggregated data for weather-related events was unavailable, a transformation was performed to remove non-weather-related losses. This involved computing the share of non-weather related losses for each year and applying it to reported global losses. Table A.1 presents the final estimated figures for all reporters, as well as the simple average, which is our best estimate of global insured losses. Graph A.1 presents the visualisation of the same data.

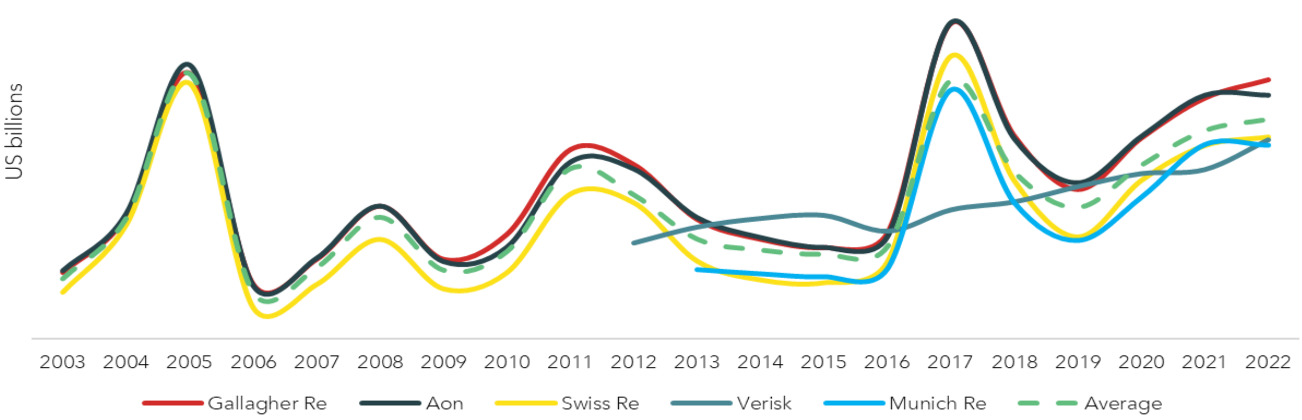
Table A.1 Insured weather-related damages – estimates and reported, by company

	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11
Gallagher Re				40	74	160	33	48	80	48	63	114
Aon*	26	26	37	41	75	165	32	48	80	46	55	107
Swiss Re	15	18	24	28	69	154	19	33	60	30	40	87
Verisk*												
Munich Re*												
Average	**20**	**22**	**30**	**36**	**73**	**160**	**28**	**43**	**73**	**42**	**53**	**103**

	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22
Gallagher Re	105	72	60	55	64	190	122	90	121	145	156
Aon*	102	73	61	55	62	191	120	94	122	147	147
Swiss Re	82	47	36	34	47	170	95	62	96	117	122
Verisk*	58	67	73	74	65	78	83	92	100	102	120
Munich Re*		42	39	37	42	150	82	59	85	117	117
Average	**87**	**60**	**54**	**51**	**56**	**156**	**100**	**79**	**105**	**126**	**132**

Source: SEO Amsterdam Economics, based on annual natural disaster damage reports from Aon, Gallagher Re, Munich Re, Swiss Re, and Verisk. Note: Entries with an * denote estimated losses derived from aggregate global insured losses.

Figure A.1 Insured weather-related damages – estimates and reported, by company



Source: SEO Amsterdam Economics, based on annual natural disaster damage reports from Aon, Gallagher Re, Munich Re, Swiss Re, and Verisk.

Appendix B

Table B.1 FAR best estimates – all observations

Disaster Type	Continent	FAR
Storm	Americas	0.14
		0.69
		0.33
		0.71
		0.90
		0.14
		0.11
	Asia	0.81
		0.00
Wildfire	Americas	0.75
		0.47
		0.67
		0.67
		0.50
	Asia	0.90
	Oceania	0.23
		0.23
		0.75
Cold wave	Americas	-0.99
		-0.97
		-0.60
	Asia	-0.66
		-0.89
	Europe	-0.5
		-0.95
Drought	Africa	0.56
		0.30
		0.81
		0.26
		0.00
		0.45
		0.82
	Americas	0.84
		0.80
		0.12
		0.33
		0.60
	Asia	0.71
		0.56
		0.50
	Oceania	0.15
		0.42
		0.78

Disaster Type	Continent	FAR
Flood	Africa	-0.39
		-0.70
		-0.37
		0.50
	Americas	0.8
		0.67
		0.33
		0.49
		0.36
		0.17
		0.53
		-0.28
		-0.50
		0.45
	Asia	0.50
		0.20
		0.35
		0.38
		0.50
		0.32
		0.33
		0.33
		0.70
		0.38
		-0.47
		-0.34
		-0.60
		0.67
		-0.33
		0.31
	Europe	0.27
		0.30
		0.37
		0.80
	Oceania	0.30
		0.30
		0.30
		0.30
		0.47
		0.10
		0.05
		0.30
		0.40
		0.35
		0.40
		0.35

Disaster Type	Continent	FAR
Heatwave	Africa	0.69
	Americas	0.8
		0.90
		0.75
	Asia	0.98
		0.99
		0.23
		0.98
		1.00
		0.97
		0.38
		0.79
		0.79
		0.96
		0.97
	Europe	0.86
		0.52
		0.72
		0.97
		0.80
		0.80
		1.00
		0.50
		0.70
		0.78
		0.77
		0.70
		0.75
		0.99
		0.80
		0.91
		0.20
		0.86
		0.98
		0.86
		0.86
		0.86
		0.86
		0.36
		0.98
		0.90
	Oceania	0.69
		0.86
		0.65
		0.47
		0.9

Source: Newman and Noy (2023)