



Superstorm Sandy

10 years on: key lessons for storm resilience



Photo: Wikimedia Commons

The perfect ‘franken-storm’

A deadly hurricane that took many by surprise, Superstorm Sandy claimed over 280 lives and is the third costliest hurricane in US history – early loss estimates for Hurricane Ian notwithstanding. On its 10-year anniversary, Allianz Global Corporate & Specialty (AGCS) experts look at what made this weather event so devastating and highlight five key steps to boosting companies’ storm resilience in preparation for future events.

On October 22, 2012, a tropical wave off the Caribbean coast of Nicaragua strengthened into a tropical depression. Two days later it had intensified to a Category 1 hurricane and made landfall in Kingston, Jamaica, before moving on to strike Cuba as a Category 3, with wind speeds of 105mph. The tempest then blew through the Bahamas and weakened a little before regrouping to take its infamous ‘left turn’ and slamming into New Jersey, US, on October 29.

On its deadly path, it left 70% of Jamaican residents¹ without power, caused catastrophic rain and mudslides in Haiti, inundated the streets of the Dominican Republic capital Santo Domingo, and damaged the historic city of Santiago in Cuba. Most of the Eastern Seaboard of the US was affected, with a storm surge in New York City that flooded the subway system and parts of Manhattan, Brooklyn, and Staten Island. The New York Stock Exchange closed for two days during prolonged power outages that lasted for weeks in some areas of the region, and the eerily dark skyline of Manhattan became an enduring image of the catastrophe.

¹ BBC News, One Person Killed as Hurricane Sandy Batters Jamaica, October 24, 2012



The National Guard aided relief efforts in West Virginia

\$19bn

Economic losses in New York City as a result of Superstorm Sandy

Top 10 costliest hurricanes in the US¹

Rank	Year	Hurricane	Estimated insured loss	
			Dollars when occurred	In 2021 dollars ²
1	2005	Hurricane Katrina	\$65bn	\$89.7bn
2	2021	Hurricane Ida	\$36bn	\$36bn
3	2012	Hurricane Sandy	\$30bn	\$35.1bn
4	2017	Hurricane Harvey	\$30bn	\$33.1bn
5	2017	Hurricane Irma	\$30.1bn	\$33bn
6	2017	Hurricane Maria	\$29.5bn	\$32.4bn
7	1992	Hurricane Andrew	\$16bn	\$30.8bn
8	2008	Hurricane Ike	\$18.2bn	\$22.5bn
9	2005	Hurricane Wilma	\$10.7bn	\$14.5bn
10	2018	Hurricane Michael	\$13.3bn	\$14.2bn

Hurricane Ian, which made landfall in Florida and South Carolina at the end of September 2022, could rise to second place in the list above if early loss estimates prove accurate. Insured losses could be as high as \$31bn to \$53bn, according to analytics firm CoreLogic³. Includes private and National Flood Insurance Program insured loss for storm surge and inland flood.

¹ Includes Puerto Rico and the US Virgin Islands and losses sustained by private insurers and government-sponsored programs such as the National Flood Insurance Program. Includes hurricanes that occurred through 2021. Subject to change as loss estimates are further developed. As of February 2, 2022. Ranked on insured losses in 2021 dollars.

² Adjusted for inflation by Aon using the US Consumer Price Index.

³ CoreLogic Analysis Shows Final Estimated Insured and Uninsured Damages for Hurricane Ian to be Between \$41 Billion and \$70 Billion, October 6, 2022.

Source: AON and Insurance Information Institute

With a monumental diameter of around 900 miles or 1,450km at its greatest extent, ‘Superstorm Sandy’ was the deadliest windstorm to occur in the north-eastern US for 40 years and is the third costliest hurricane in US history² (after Katrina in 2005 and Ida in 2021). It incurred around \$30bn insured losses and over \$60bn in economic damages³. But the human cost was even more devastating – more than 280 people died⁴, including at least 54 direct deaths in Haiti and over 70 in the US. Many thousands were left without shelter.

What made Superstorm Sandy so extraordinary?

A number of factors converged to make Hurricane Sandy a ‘superstorm’ – a term used for particularly intense storms that defy conventional classification – with some commentators going so far as to label it a ‘franken-storm’.

“Superstorm Sandy had been widely expected by weather modelers to travel north-east out into the Atlantic, which is generally typical of hurricanes in the region, rather than hitting the US,” says **Andrew Higgins, Technical Manager, Allianz Risk Consulting at AGCS**. “Instead, an unusual weather pattern forced it to pivot

‘left’ towards the coast, which maximized the winds and storm surge directed at the shores of Long Island, Connecticut, and New Jersey.

“Superstorm Sandy then hit the New York Metro area during high tide, which dramatically increased the height of the storm surge. On top of that, it was a full moon, which raises high tides along the Eastern Seaboard by about 20%. Finally, the storm was massive in geographical area, as well as slow-moving, meaning it could deliver more sustained damage over a large area.”

² Insurance Information Institute, Facts + Statistics: Hurricanes

³ Nature Communications, Economic Damages from Hurricane Sandy Attributable to Sea Level Rise Caused by Anthropogenic Climate Change, May 18, 2021

⁴ Met Office, Hurricane Sandy: New York and its History of Storms

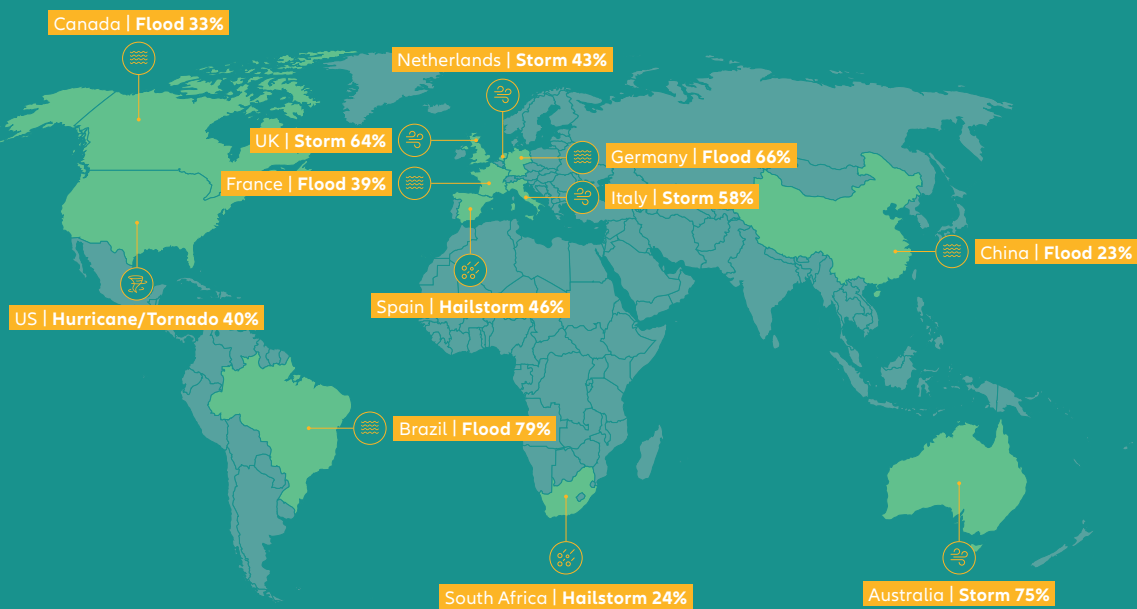
Hurricanes and storms top cause of natural catastrophe insurance claims in the US and globally

Analysis of more than 530,000 corporate insurance industry claims worth €88.7bn over the past five years by AGCS shows that natural catastrophes are the second top cause of losses globally for businesses overall, according to value of claims (15%), ranking behind only fire and explosion (21%). Download the [AGCS Global Claims Review](#).

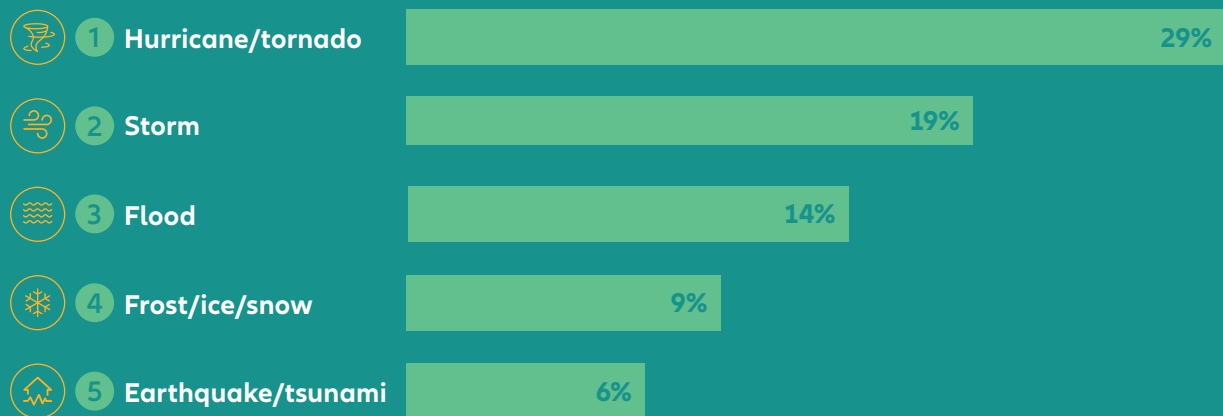
A deeper look at the major causes of natural catastrophe losses, based on analysis of more than 20,000 such claims around the world with an approximate value of €13.7bn, shows that hurricanes/tornados rank top, accounting for 29% of the value of all claims. A major driver is the fact that two Atlantic hurricane seasons out of the previous five (2017 and 2021) are now among the top three most active and costliest seasons on record. Windstorm ranks second (19%), meaning storm activity accounts for close to 50% of the value of nat cat claims globally over the past five years. Flooding ranks third (14%).

Losses continue to rise with climate change, higher property and asset values, more complex supply chains and changes to exposures (such as increasing economic activity in natural catastrophe zones). Soaring inflation will only challenge claims costs further. Property and construction insurance claims, in particular, are exposed to higher inflation, as rebuilds and repairs are linked to the cost of materials and labor, while shortages and longer delivery times inflate business interruption values.

Top causes of loss by total value of natural catastrophe claims (selected countries)



Global: top causes of loss by total value of natural catastrophe claims



Source: Allianz Global Corporate & Specialty (AGCS). Based on analysis of natural catastrophe claims between January 1, 2017, and December 31, 2021, in the following countries: Australia (373 claims worth €285mn); Brazil (117 claims worth €24mn); Canada (1,039 claims worth €276mn); China (431 claims worth €61mn); France (375 claims worth €178mn); Germany (1,897 claims worth €676mn); Italy (138 claims worth €30mn); Netherlands (162 claims worth €33mn); South Africa (409 claims worth €28mn); Spain (399 claims worth €57mn); UK (458 claims worth €297mn); and the US (10,881 claims worth €8bn). Claims total includes the share of other insurers in addition to AGCS.



Photo: Adobe Stock

Power outages plunged parts of New York into darkness

Claims support and challenges

In the aftermath of the storm, Allianz handled around 900 customer claims, ranging from damaged cargo to flooded premises, and estimated the total impact at the time to be \$590mn (€455mn). Economic losses in the city of New York alone were estimated to be \$19bn (€14bn)⁵.

“Gaining access to loss sites to evaluate damages was a major challenge,” remembers **Thomas Tesoriero, Executive General Adjuster at AGCS**. “Traffic was limited by local authority restrictions along the coast, subway lines weren’t running because a lot of underground lines were damaged, and many buses had been flooded where they were stored during the storm. Power outages meant gas stations had problems pumping gas, which led to long lines and delayed truck deliveries, and with so many offices closed, communication with our customers and colleagues was difficult. Many companies suffered infrastructure and technology damage. Some found their backup sites were too close to the damage location.”

20%

Percentage by which a full moon increases high tides along the Eastern Seaboard

How things have changed. Today, drones could provide aerial shots of property damage from a safe distance, news media and ‘citizen journalists’ could quickly upload video footage from phones or security devices, and video conferencing or social media could gather key personnel in a group call or chat.

⁵ NYC, Impact of Hurricane Sandy



Hurricanes and climate change – what we know now

The meteorological conditions that boosted the power of Superstorm Sandy turbocharged the debate about climate change back in 2012. While it is still hard to prove the effect of climate change on the frequency of hurricanes, there is now broader consensus that global warming is increasing their intensity and therefore the damage they can cause. A modeling study⁶ from 2021 attributed some of the economic damages wrought by Superstorm Sandy to rising sea levels caused by human-induced climate change and even put a figure on it – \$8.1bn.

Karen Clark & Company (KCC) has also linked climate change to increasing insurance damages from hurricanes⁷. The risk modeler says its analysis shows losses are 11% higher today than they would have been if global temperatures had not increased. It notes that a 1°C increase in temperature likely results in a 2.5% increase in hurricane wind speeds and therefore the 1.1°C increase in global temperature since 1900 might have caused a 2.75% increase in wind speeds, leading to exponentially higher losses. Karen Clark wrote recently⁸ that “Climate change and increasing property values in coastal areas will continue to accelerate the annual increases in hurricane risk and insured loss potential. Social inflation is also putting upward pressure on hurricane losses. The percentage of litigated claims is rising with each storm and the cost of a litigated claim is multiples of a non-litigated claim.”

Thomas Varney, Regional Manager for Allianz Risk Consulting, North America, at AGCS, adds: “We are all vulnerable to climate-related risks, and climate change is starting to play a critical role in terms of risk management. The latest **Allianz Risk Barometer** survey shows how the lines are blurring between natural catastrophe, which was ranked third overall in the list of corporate risks, and climate change, which rose to its highest-ever position at sixth. The extreme impact of nat-cat events and their occurrence in locations or at times of year previously deemed ‘safe’ is creating challenges for businesses and insurance carriers.

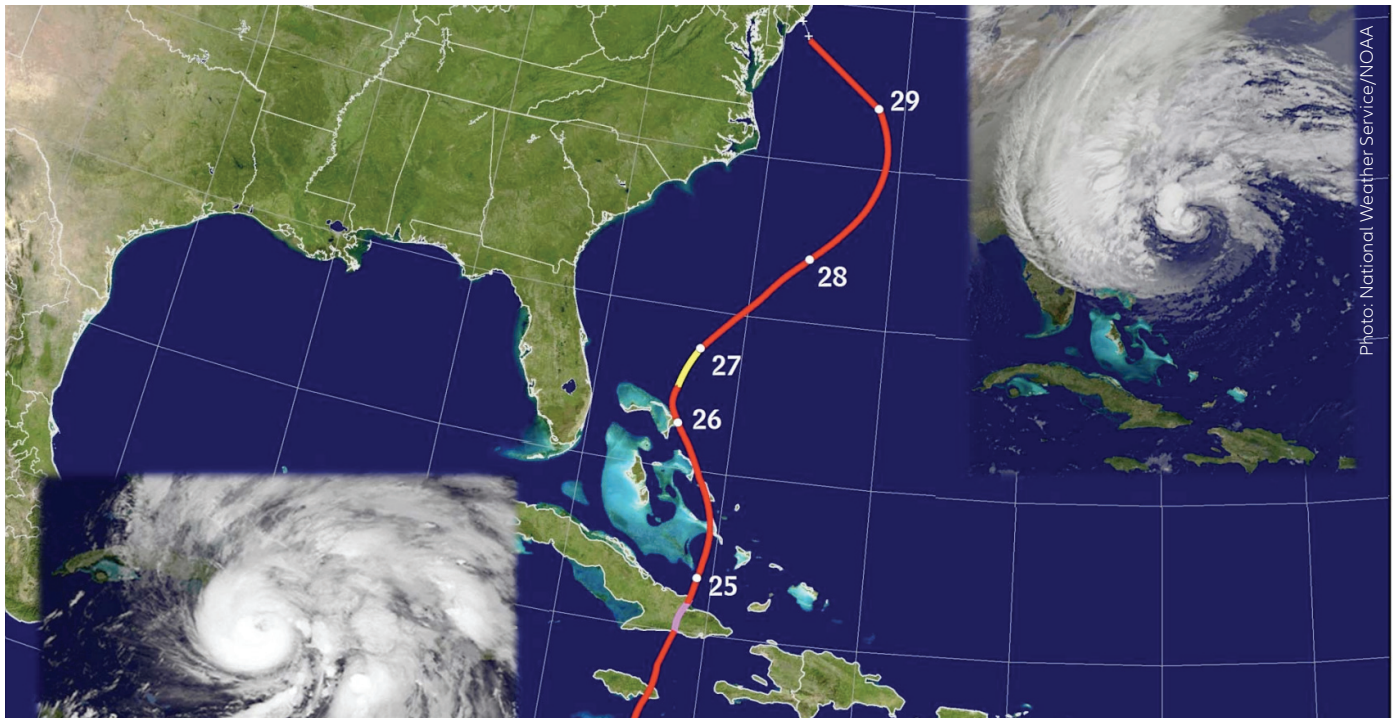
“As a result of climate change, we are seeing increases in three main areas – physical loss impact, supply chain impact, and operational impact. These can play out as increased property damages from extreme weather events, business interruption caused by delays in supply chains, or higher costs for heating, cooling or possibly relocating operations.

“Something is changing across the globe in terms of the types and severity of losses we are seeing,” Varney adds. “Until Hurricanes Fiona and Ian in September, the 2022 hurricane season had got off to a very quiet start, but we still expect to see another above-average season, with forecasters predicting up to 10 hurricanes in the Atlantic. Businesses have a responsibility to their customers, shareholders, and stakeholders to mitigate this risk.”

⁶ Nature Communications, Economic Damages from Hurricane Sandy Attributable to Sea Level Rise Caused by Anthropogenic Climate Change, May 18, 2021

⁷ Karen Clark & Company, Climate Change Impacts on Hurricanes and Insured Wind Losses, November 6, 2021

⁸ NU Property Casualty 360°, Hurricane Andrew Anniversary Provides Risk, Prep Lessons, May 10, 2022



A graphic showing the path of Superstorm Sandy and its infamous 'left turn' on October 29

Are businesses adequately prepared?

"The north-east portion of the US is susceptible to tropical storms and hurricanes, even if they occur infrequently," says Higgins. "We know that sea level rise is increasing the severity of storm surge along the Atlantic and Gulf Coasts of the US. With hurricanes, the primary sources of damage are from high winds and wind-driven water – storm surge – and between those two, it's storm surge that generally causes the most damage."

Higgins notes that enhancements can be made to buildings to withstand high winds relatively easily, but improvements made to increase a building's resilience to storm surge can be more costly, time-consuming, and complicated to implement. Looking ahead is key.

"Some of our clients have made changes that enable them to react quickly if their region is hit by a hurricane and flooding," says Varney. "For example, one customer provides temporary on-site housing for essential staff members whose homes might be affected by flooding. Another large client has placed trailer-mounted generators in various locations which can be despatched to provide power backup in the case of an electricity outage. We also have a client that entrenches training by having its 200 employees back their vehicles into parking spaces daily so that if evacuation is needed, it can be done in an orderly fashion and without delays.

"One of our manufacturing clients is using storm tracking capability to prepare for the aftermath of a hurricane. It overlays the storm path as it relates to their internal critical facilities and key suppliers. These proactive approaches have minimized or eliminated impacts to production after the storm."

Despite such measures being taken by some companies, Higgins adds that most are still not fully prepared for the effects of these storms. "If businesses have never been impacted by one of these infrequent events, it can be easy for them to lose focus on maintaining a quality emergency preparedness plan. The question is not whether an extreme weather event will affect a business but when."

Beyond the US

Hurricanes may be associated most strongly with the US, but of course businesses elsewhere in the world have to face the peril of storm and typhoon activity and guard against storm and flood damage. In July 2021, Storm Bernd caused major flooding in Western and Central Europe, causing 200 deaths and incurring⁹ insured losses of \$13bn. The same month, floods caused by record-breaking rainfall in Henan Province, China, saw 300 people lose their lives and resulted in around¹⁰ \$2bn insured losses. This year, Australia suffered its third costliest extreme weather event in February and March, when flooding in Queensland and New South Wales¹¹ caused \$4.8bn in insured damages.

Analysis by AGCS (see chart on page 4) shows storm to be the top cause of nat cat loss by total value of claims in countries such as the UK, Netherlands, Italy, and Australia, while hailstorms have produced some of the most expensive claims in Spain and South Africa in recent years. Flood is the top cause of nat cat loss in France, Germany, China, Canada, and Brazil.

⁹ Aon, 2021 Weather, Climate and Catastrophe Insight, January 2022

¹⁰ Aon, 2021 Weather, Climate and Catastrophe Insight, January 2022

¹¹ Insurance Council of Australia, 2022 Flood Now Third Costliest Natural Disaster Ever, June 28, 2022



Wind-driven water usually causes more damage than high winds

Five steps to boost storm resilience

Give your business the best chance of withstanding and recovering from an extreme weather event by putting the following procedures in place:

1 Update and test your emergency preparedness plans: Preparation before the storm minimizes property damage and reduces business interruption. Ensure your business has a comprehensive written emergency response plan for extreme weather events, including high winds and flood. A good plan has the support of senior management, site-specific recommendations and clear delineation of responsibilities.

2 Test and update business continuity plans annually: The crucial role of business contingency plans has become more apparent as a result of recent natural catastrophes. Superstorm Sandy hit the Northeast on a Monday, which made it difficult for employees to develop and implement business contingency plans while preparing their homes and families for the storm. A well-developed contingency plan provides businesses with the tools to get back up and running as quickly as possible.

3 Understand your insurance policy: Business owners should take the time to read their current policy and discuss with their brokers what is covered and where there may be gaps. Determine if the limits of liability are in line with the current dollar value of the cost to repair or replace the damage. Consider adding an extended period of indemnity clause to the business interruption coverage to support the business until it returns to its pre-loss financial condition.

4 Know what to prepare for: Planning for a wind event involves different preparation than planning for flooding. In the case of Superstorm Sandy, the majority of preparation was based on a high wind event, leaving many businesses unprepared for the flooding caused by the storm surge. As more sophisticated tracking models are introduced, more accurate information will be available.

5 Consider making improvements to the building and site: The following enhancements could help your business withstand the high winds and flooding that can accompany a windstorm.

- Emergency generators for loss of power
- Floodgates and flood doors
- Raising critical equipment above highest anticipated flood levels
- Protecting the building 'envelope' from high winds (this refers to the physical boundaries between the interior and exterior of a building, such as the roof, windows, and doors). This could include measures such as using impact resistant doors and glass, or providing additional securement of the roof covering system to the roof deck.

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Further reading

Visit **National Hurricane Preparedness** for more information about how to determine your risk and develop an evacuation plan.

Allianz Risk Consulting also publishes a series of risk bulletins and checklists to help you protect your people, property, and business, including:

- Windstorm Checklist
- Flood Checklist
- Water Damage During Construction
- Water Damage Prevention Solutions
- Hailstorm Checklist
- Business Continuity Planning Best Practice

About Allianz Global Corporate & Specialty

Allianz Global Corporate & Specialty (AGCS) is a leading global corporate insurance carrier and a key business unit of Allianz Group. We provide risk consultancy, Property-Casualty insurance solutions and alternative risk transfer for a wide spectrum of commercial, corporate and specialty risks across nine dedicated lines of business and six regional hubs.

Our customers are as diverse as business can be, ranging from Fortune Global 500 companies to small businesses. Among them are not only the world's largest consumer brands, financial institutions, tech companies and the global aviation and shipping industry, but also satellite operators or Hollywood film productions. They all look to AGCS for smart solutions and global programs to their largest and most complex risks in a dynamic, multinational business environment and trust us to deliver an outstanding claims experience.

Worldwide, AGCS operates with its own teams in more than 30 countries and through the Allianz Group network and partners in over 200 countries and territories, employing around 4,250 people. As one of the largest Property-Casualty units of Allianz Group, we are backed by strong and stable financial ratings. In 2021, AGCS generated a total of €9.5 billion gross premium globally.

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Cover image: Casino Pier, New Jersey, after the storm

Images: Adobe Stock

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