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NATURAL CATASTROPHE AND CLIMATE REPORT Q1 2026

US Severe Convective Storm Losses

What sparked the abrupt rise in loss costs starting in 2008

Foreword from Warren Berkstresser

Head of North American Regional Property

Over the past two decades, US severe convective storm (SCS) losses have shifted from a historically manageable peril into one of the most persistent drivers of volatility for property portfolios.

Recent loss experience makes it clear that rising SCS costs have been driven less by abrupt changes in the hazard itself and more by non hazard factors, including construction and material cost inflation, exposure growth in SCS prone regions, building practices, and claims behavior.

In this challenging loss environment, peril scoring remains central to SCS risk selection and pricing.

The key for many cedants is identifying ways to integrate these tools into their pricing segmentation and rate filings, while also managing deductibles prevalent in the jurisdictions where they are competing.

In a softening market with declining retention and higher turnover, this segmentation is critical. Retaining the wrong cross section of risk can materially impact portfolio performance and balance sheet outcomes in the next market cycle.

In addition, aggregation management remains key, as better aggregate control results in a lower level of reinsurance capital required, as well as lower costs for that capital. Combined with disciplined risk selection and robust pricing segmentation, a thoughtful aggregation framework helps maximize profitability while optimizing returns on tangible book value.

Gallagher Re is helping its clients through three focused competencies: Avoiding adverse selection, Aggregation Management, and client View of Risk:

- SCS risk selection still begins with peril scoring, but results increasingly depend on how effectively those insights are embedded into pricing segmentation, rate filings, and deductible strategies across jurisdictions. With declining retention and elevated turnover, segmentation choices today have outsized consequences for future portfolio performance and balance sheet stability.
- Aggregation management is equally critical. Aggregates drive capital requirements and balance sheet efficiency, directly influencing the cost and amount of reinsurance capital required. When paired with rigorous risk selection and pricing discipline, a thoughtful aggregation framework supports stronger returns on tangible book value.
- Catastrophe models remain the currency of property cat risk, but their value depends on how well they reflect the realities of each carrier's underwriting, coverage structures, and claims experience. Applying model output without context can obscure risk rather than clarify it—making model understanding as important as the model itself.

Operating at the efficient frontier of portfolio returns and downside metrics, mature and data-wealthy cedants are better positioned to attract reinsurance capital to finance portfolio volatility.

Expanded risk appetite in the property cat reinsurance market makes aggregate and subsequent event coverages more readily available, and Gallagher Re expects many upcoming mid-year renewals to include additional protection relative to prior years.

This whitepaper, originally published as part of the Q1 Natural Catastrophe and Climate Report, explores the structural drivers behind rising US SCS losses in greater detail.

We hope the paper provides useful context as you consider portfolio construction, pricing, and reinsurance strategy in the current cycle.

If you'd like to continue the conversation, please get in touch – we look forward to hearing from you.

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Conversation Starter: Q1 2026

US Severe Convective Storm Losses: What sparked the abrupt rise in loss costs starting in 2008?

Summary

The sharp rise in US severe convective storm (SCS) losses beginning in 2008 cannot be explained by a sudden escalation in storm frequency or behavior, but by an accelerating shift toward a more volatile, non-hazard-driven loss environment. Rapid increases in construction and material costs tied to the 2008 energy crisis, continued housing growth in SCS-prone regions, denser residential development, and the widespread use of wind- and hail-sensitive roofing materials have increased loss severity from otherwise non-extreme thunderstorm events. In recent years, social inflation effects — such as peer-driven roof replacement ("neighboritis") — along with the growing presence of rooftop solar and the expansion of high-value data centers in SCS-exposed regions, have further amplified claim costs and complexity. While climate change remains an important long-term influence, insured losses are currently best understood as the outcome of economic conditions, development patterns, building practices, and emerging exposure types. This highlights the importance of effective underwriting, pricing, and long-term risk management.

For decades the insurance industry viewed severe convective storms (tornadoes, hail, and straight-line winds) as a frequent but manageable peril for the United States. While losses were incurred every year, with some years being more volatile than others, it was not viewed as a dominant loss driver. That characterization began to abruptly shift in the late 2000s. In 2008, nominal SCS-related insured losses topped USD10 billion for the first time. This marked the beginning of a steadily more expensive trajectory that has now extended across nearly two full decades. Since 2008, the industry has incurred aggregate nominal (actual) losses above USD20 billion nine times, above USD30 billion five times, and above USD50 billion in the past three consecutive years (2023-2025).

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Drivers of Higher Loss Severity

The timing and suddenness of this shift has naturally raised questions about what caused it — most obviously, whether the change is linked to an evolution of storm behavior. While there may be some evidence of changes in the frequency or behavior of individual outbreaks in recent years, longer-term meteorological records do not yet show a clear increase in the overall annual total number of strong tornadoes (F/EF3+) or large hail (>2 inches / 5.1 centimeters) in the years since 2008. SCS variability can be high from year to year due to known linkages to the phase of ENSO, including that more storm activity typically occurs when La Niña conditions are present in the US. There is also growing evidence of more tornado touchdowns, a greater volume of large hail, and/or damaging non-tornadic wind reports on a per outbreak basis. Nevertheless, there is no clear signal to suggest that the change since 2008 has been primarily linked to atmospheric changes, as opposed to an evolution in macro/socioeconomic factors.

To state more clearly: 2008 marked a major shift in replacement and exposure costs, rather than any notable changes in the severe weather hazard itself. Gallagher Re analysis shows that 80% to 90% of the annual growth in US SCS losses (10% a year, nominally) during the past 25 years can be attributed to non-hazard related factors, as shown in Figure 10.

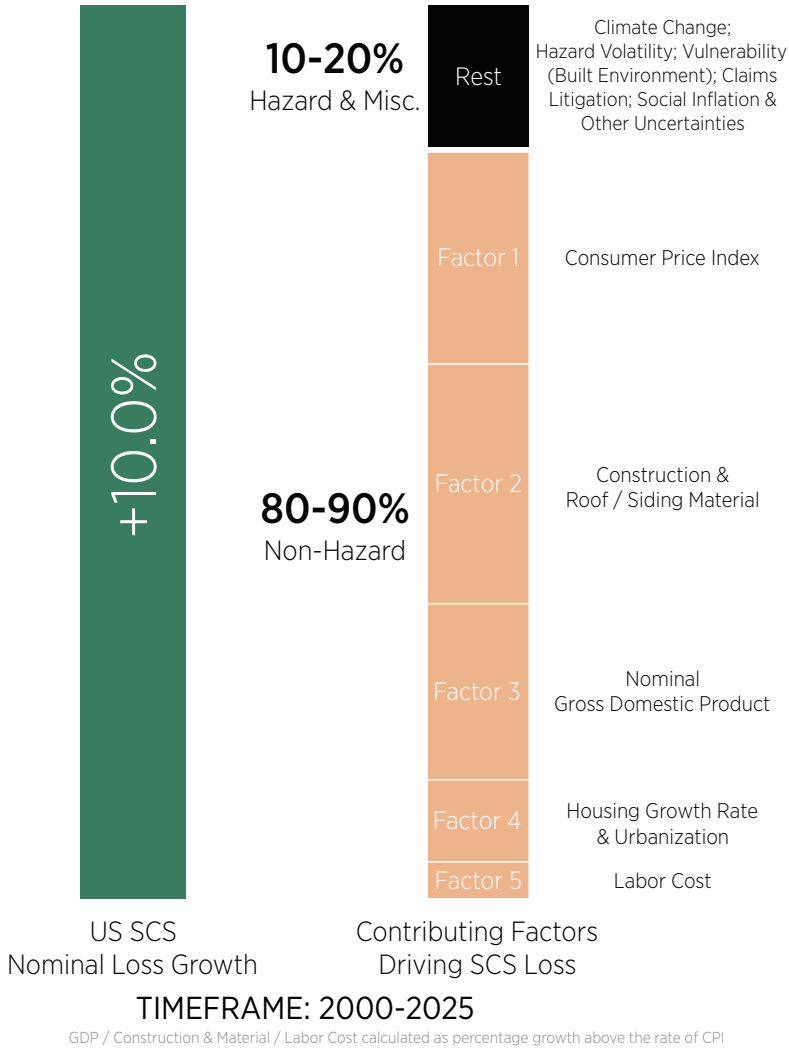

Figure 10: Drivers of US SCS nominal insured losses
Data: US Bureau of Labor Statistics / US Census Bureau **Graphic:** Gallagher Re

A critical part of that shift can be traced to a considerable impact on global energy markets. In the years leading up to 2008, global crude oil prices (WTI) spiked to historic highs. As shown in Figure 11, this spike fed directly into an immediate rise in asphalt material prices, which are tightly linked to petroleum economic metrics. Unlike many other consumer prices, asphalt costs did not fully retreat after the 2008 global financial crisis. What resulted was a change in oil production behavior that saw greater emphasis on higher-margin fuels at the expense of asphalt production, which further tightened supply even as demand remained elevated. The same was true for other roofing / building materials (such as lumber), which saw yet another spike during the COVID-19 pandemic and have yet to decline. The result was a "new normal" pricing level for roofing materials that consumers became accustomed to paying. It also meant that the insurance industry was forced to grapple with this new reality.

This shift was crucial, given that the damage from hail and straight-line winds disproportionately affects roofs. A modest increase in hail size or wind speed (or a combination of more frequent wind-driven hail) can generate a high volume of partial or total claims costs that are ultimately linked to the price of shingles, other construction material(s), and labor.

As asphalt prices rose higher in the mid-2000s, the per-claim cost rose along with them. Even when oil prices fell after 2008, as previously noted, roofing and other construction costs failed to return to pre-financial crisis levels. This embedded a higher loss expectancy for the insurance industry. SCS outbreaks that would have produced more modest losses in the 1990s or early 2000s now routinely drive billion-dollar insured loss payouts because damaged properties are more expensive to repair.

Broader construction cost inflation, including general inflation and labor, reinforced this shift. Construction material producer price indices were noted to have begun outpacing general inflation prior to 2008. This was tied to rising input costs, tightening labor markets, and other regulatory factors influencing the building sector. SCS events create more sensitivity to these pressures. Unlike perils that produce total losses in a smaller number of locations, SCS events can generate high volumes of partial damage claims spread across several states. These claims often quickly aggregate to drive significant quarterly earnings losses for primary insurance carriers. This was particularly the case during the hard reinsurance market of the early 2020s, when many reinsurers became less willing to offer more affordable aggregate coverage options for cedants.

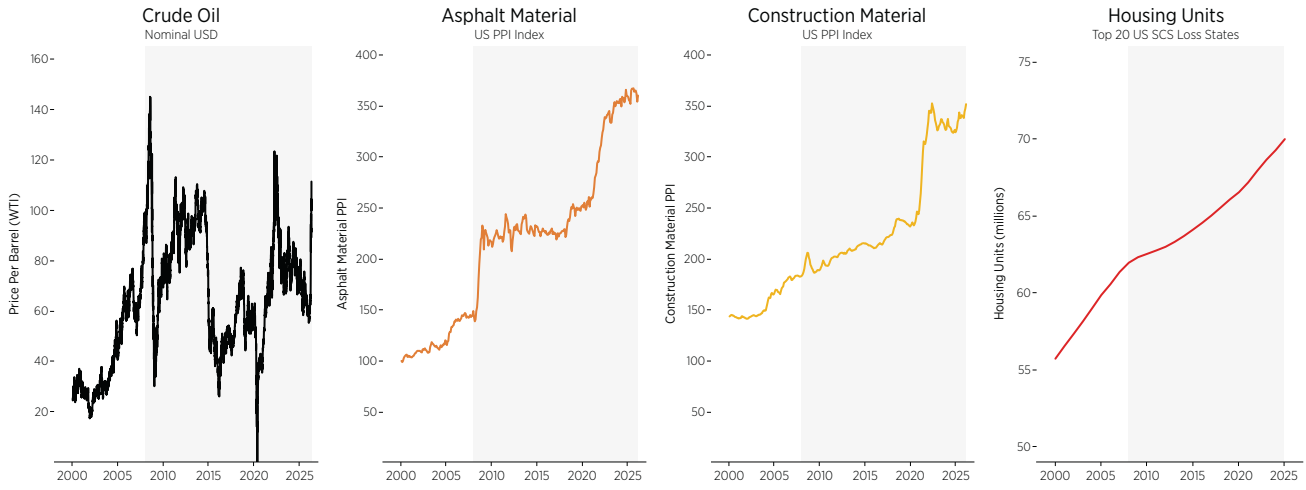

Figure 11: Various non-hazard indices relevant to US SCS insured losses dating to 2000 **Data:** US Bureau of Labor Statistics / US Census Bureau **Graphic:** Gallagher Re

Increasing nominal SCS costs were compounded by the ongoing rapid growth of population / exposure (housing units) into some of the most vulnerable thunderstorm areas in the United States. As also seen in Figure 11, the top 20 states with highest SCS insured losses have experienced an increase of 14.3 million new housing units from 2000 to 2025. Much of that growth is in the state of Texas, which has accounted for more than 20% of all US SCS insured losses since 2000, and where more than 4.5 million new homes have been built during that time alone. Nearly all the top 20 costliest SCS states are concentrated in hail- and wind-prone regions of the central and southern United States. As US homes continue to trend larger and more expensive, this also brings a higher insured value price tag.

The growth in more vulnerable exposure is tied to one highly common construction trend that is extremely popular in the United States: the scale and dominance of asphalt shingles as the primary residential roofing material. Few other countries rely on asphalt shingles as extensively as the US. North America accounts for a substantial share of the global market (42%), with the US comprising an overwhelming majority of that demand (82%). This means that US housing stock is dominated by roofing materials that are cost-effective and easy to install, but often more vulnerable to physical damage. In many international markets, residential roofs are more commonly constructed using clay tile, slate, concrete, or metal. Each of those types generally offer greater resistance to hail impact and have longer lifespans.

Beyond materials and exposure growth, the post-2008 SCS loss environment has also been influenced by claims inflation and constraints within the labor market. In hail-prone regions of the US, roof damage claims are usually driven by a combination of a high volume of claims being filed right after an event and the quick mobilization of contractors. This has coincided with a notable rise in assignment of benefits (AOB) agreements that see policyholders handing over their assessment and claim filing responsibilities to a third-party provider. As has been widely reported, regulators and industry groups are warning of a notable industry challenge taking shape, arising from a combination of increasing per-claim costs, more claims litigation, a rise in fraudulent claims, and greater settlement costs. While regulatory reforms in certain states (notably Florida) have significantly reduced or eliminated AOB activity, the broader point is that non-hazard behavior has played a big role in higher claims costs. This is a major reason why Loss Adjustment Expense (LAE) costs have seen a corresponding rise, too.

In more recent years, the rapid expansion of rooftop and exterior technologies (e.g., rooftop solar) has led to a further elevation of SCS loss potential. This may also be expected to drive a greater share of losses in the years to come. The principal technologies involved include solar panels (PV), battery storage systems, electric vehicle charging equipment, satellite / communication hardware — all of which did not exist years ago on residential or commercial properties. 2025 data from the US government showed that solar and wind technology accounted for a record 17% of US electrical generation. These assets are often highly vulnerable to hail and wind damage and there has already been a noted uptick in claims filings, especially in hail-prone states such as Texas, Colorado, Nebraska, Kansas, and Oklahoma. A unique feature of these new technology losses is that even if an underlying structure only incurs moderate physical damage, the impacts to solar panels or other mechanisms can enhance claims costs or extend business interruption losses.

Yet another emerging area of potential future SCS loss risk can be linked to the rapid investment and expansion of data centers across the country. Many of these facilities are being built in some of the most SCS-prone regions of the US, as seen in Figure 12. Q1 2026 data indicated that hundreds of new data centers were targeted to be built in Texas, Illinois, Iowa, Indiana, Ohio, and Pennsylvania. While these facilities are often engineered to high design standards, they are still exposed not only to SCS-related sub-perils but all weather / climate / natural catastrophe risk. Such events may damage both the facilities themselves, and/or the critical electrical grids and other utility lifelines that support these centers. Any disruption could bring further outages, cooling failures (air conditioning or water availability), and service interruption.

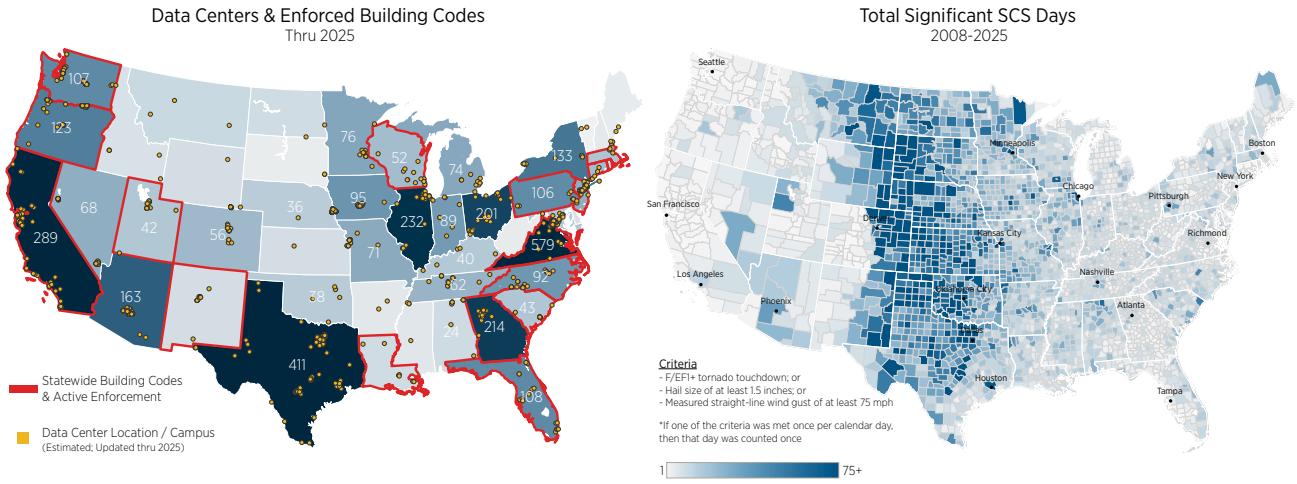

Figure 12: Number of data centers per state & highlight of states with enforced building codes (left) and total "significant storm days" for SCS per county since 2008 (right) **Data:** Pacific Northwest National Laboratory & US Department of Energy; NOAA **Graphic & Analysis:** Gallagher Re

> **Changes in residential development patterns have additionally increased SCS loss potential through a greater concentration of exposed roof area.**

Structural and Behavioral Drivers of Loss Growth

Adding further price pressure in recent years is a persistent shortage of manual labor in the construction and roofing trades. Industry surveys suggest that many US construction firms are having a difficult time filling skilled labor positions. This is driving longer repair timelines, higher wages, and more reliance on less experienced workers. These constraints can translate into higher repair estimates and an extended duration in temporary housing arrangements that bring additional living expenses (ALE) for insurers. All these labor factors drive higher replacement costs.

The concept of social inflation in relation to physical structure material costs is yet another emerging topic within the residential roofing market. Using hail as a key example, after an event occurs, initial roof replacements — which are often driven by non-insurer approved assessors or contractors directly communicating with policyholders — can trigger a broader peer response within affected neighborhoods. Such a dynamic is commonly referred to as "neighboritis." Once homeowners observe nearby properties receiving full roof replacements, it causes a shift in expectations, and additional claims by third-party contractors are filed even when physical damage is modest.

This behavior has shortened roof replacement cycles and increased claim frequency. Such cumulative effects are driving higher aggregate loss costs and putting more upward pressure on local / regional premium rates. Although this phenomenon has been particularly visible in states such as Texas, similar patterns are increasingly evident across other markets.

At the same time, changes in residential development patterns have additionally increased SCS loss potential through a greater concentration of exposed roof area. New housing construction in many communities today is much denser than in past decades. In fact, an analysis showed that from 2014-2024, the densest 20% of US counties accounted for 80% of all new homes built. This pattern not only squeezes more properties into high-risk areas, given much of this growth occurred in SCS-prone states, but also means much more exposed roof surfaces and insured value. It means that tornado / hail / non-tornadic wind swaths have a greater chance of impacting exposed property today than in years past. Such growth in Texas in the last nearly 20 years helps explain why that state has seen such an explosion in annual SCS loss costs.

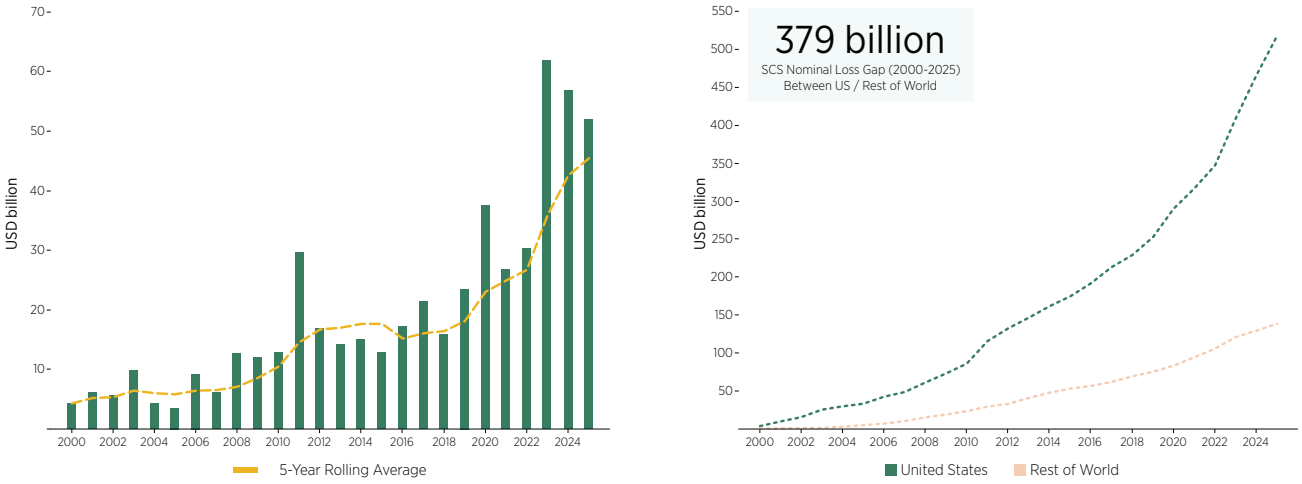

Figure 13: Nominal US SCS insured losses since 2000 (left) and cumulative SCS insured losses for the US vs rest of the world (right) **Data & Graphic:** Gallagher Re

When taking the energy market, construction, and social inflation / exposure pattern factors together it becomes clear what prompted the initial jump in SCS losses after 2008. It also illuminates why losses have only grown more prolific. However, none of these factors are meant to suggest that climate change does not play a growing role in SCS risk — despite noted uncertainty in the scientific literature. Ongoing research continues to explore how a warming atmosphere may influence seasonal volatility, the intensity of storms, the size of hail, and the height at which the tallest thunderstorm tops extend into the atmosphere (which would promote stronger updrafts and downdrafts for hail size / speed).

This is in addition to previously highlighted emerging signals of more reports of tornadoes, large hail, or straight-line winds on a per-event basis. The focus on hail is considerable because the sub-peril typically accounts for 50% to 80% of thunderstorm-related claims in the US on an annual basis. When looking at historical US SCS loss data in just the past decade (2016-2025), this would amount to average insured losses tied to hail in the range of USD20 billion to USD30 billion per year.

As alluded to previously in this piece, and seen in Table 3, the phase of ENSO does show some correlation with US SCS activity and losses. Years which featured months that had either La Niña or ENSO-neutral conditions showed higher losses than those with El Niño conditions. The fact that there have been more months with La Niña conditions (108 months) than El Niño conditions (33 months) since 2008 suggests another possible environmental link to increased loss costs on a per-month basis.

NOAA research shows a higher frequency of hailstorms and tornadoes in highly populated areas in parts of the Plains and Midwest; signaling the importance of how ENSO phase can shift the temporal and spatial scales of when / where SCS activity may occur. Nevertheless, it must be stated that variability, volatility, and uncertainty within annual SCS activity means that any trends that may be connected to ENSO cannot necessarily be solely explained by an ENSO influence on sub-peril frequency or behavior.

ENSO Phase (Total Months: 2008-2025)	Insured Loss Total (Today's Dollars)	Insured Loss Avg (Today's Dollars)	Tornadoes (F/EF1+ Per Month)	Hail (≥1.5 inches Per Month)	Straight-Line Winds (≥75 mph Per Month)
El Niño (33)	72 billion	2.2 billion	35	191	11
Neutral (75)	236 billion	3.1 billion	53	281	19
La Niña (108)	271 billion	2.5 billion	50	211	20

Table 3: US SCS insured losses and sub-peril frequency per ENSO phase **Peril Data:** NOAA **Loss Data & Analysis:** Gallagher Re

Final Thoughts

Moving forward, the insurance industry must continue to broaden its lens to account for more macroeconomic, socioeconomic, geopolitical, and scientific factors when assessing SCS loss potential in the US. This is also increasingly true internationally as SCS losses grow in Europe, Asia, and Oceania. Energy markets, construction practices, exposure growth, vulnerable roofing types, and claims behavior have become sizeable drivers of the financial consequences of weather and climate events. These factors are even beginning to rival the influence of the thunderstorm hazard itself, from a loss perspective. Recognizing and incorporating these hugely important factors will remain central to effective underwriting, pricing, and portfolio management. How we limit future loss volatility will depend as much on building smarter and more resilient structures, as it does on understanding the scientific facts of the peril.

For the insurance industry, particularly outside the United States, these dynamics carry important implications for SCS risks of today and in the future. Many international markets remain behind the trends seen in the US during the past two decades, but are already registering growth in insured property values, modernized building stock, and an increasing adoption of roof mounted technologies (such as solar panels). While nominal SCS losses are comparatively modest by US loss performance standards, the underlying structural non-hazard conditions that have driven US loss costs since 2008 are increasingly present elsewhere. This suggests that future loss growth in these regions may arise less from abrupt changes in hazard frequency and more from gradual shifts in exposure, construction practices, and claims outcomes.

From an underwriting and risk management perspective, the experience of the US offers a valuable reference point. SCS risk cannot be solely defined by where thunderstorms occur or how intense they are, but by what sits underneath each individual thunderstorm or broader SCS outbreak swath. This elevates the importance of monitoring the costs of new or retrofitted properties, the density of what physical assets are being developed, the range of economics linked to repair costs, and claims behavior — in addition to traditional risks from the SCS peril itself. For insurers and reinsurers, incorporating these structural signals earlier into underwriting practices — rather than reacting after losses have occurred — may prove critical to avoiding prolonged periods of underpricing and unexpected volatility as SCS risk continues to evolve globally. This also opens the door to more non-traditional insurance products, such as parametrics, to provide more coverage options.

How we limit future loss volatility will depend as much on building smarter and more resilient structures, as it does on understanding the scientific facts of the peril.

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With special thanks to:

Hani Ali, Jay Apfel, Emma Bergin, Desmond Carroll, Danling Chai, Roy Cloutier, Mark Cobley, Harriett Copestake, Kat Couperwhite, Philip Cunningham, Natasha Denn, Bill Dubinsky, Marie Ekström, Graham Felce, Tim Fewtrell, Josie Fix, Eric Föhrenbacher, Mona Hemmati, Krystelle Ho, Andy Hulme, Zahra Jasmin-Uddin, Robbie Jones, Josh Knapp, Valentina Koschatzky, Joseph Lawther, Hsin Lim, Nipun Mapara, Elisa Murillo, Hemant Nagpal, Junichi Sakai, Junaid Seria, Sara Sienkiewicz, Hannah Stringfellow, Shigeko Tabuchi, Hui Yen Tai, Juivy Tan, Charlie Thomas, Michael Thomas, Yaan Wang, Paul Welsh, Steve Wong, Koji Yamamoto, Francesco Zovi, Francesco Zuccarello

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