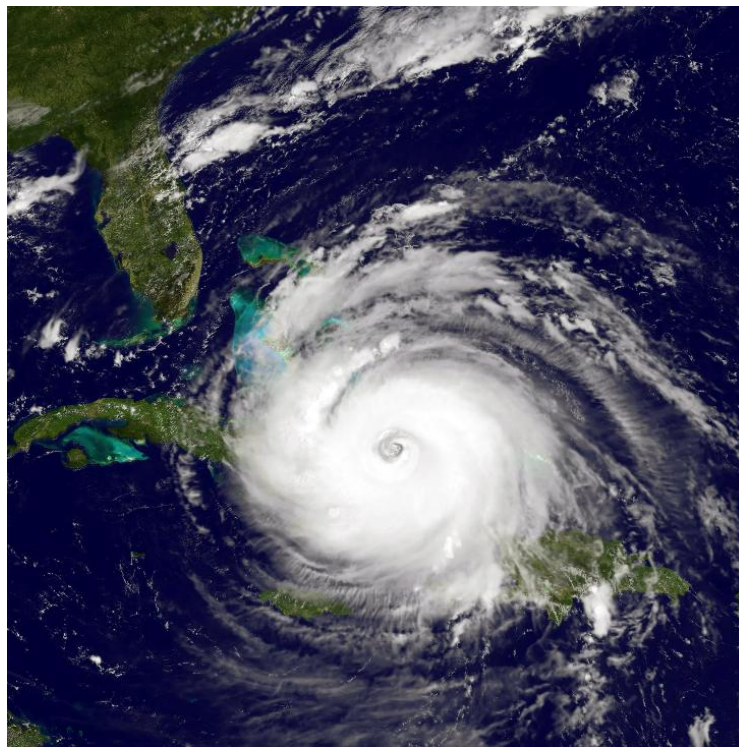


Hurricane Outlook, Season 2025



Solidum Partners AG
June / 2025

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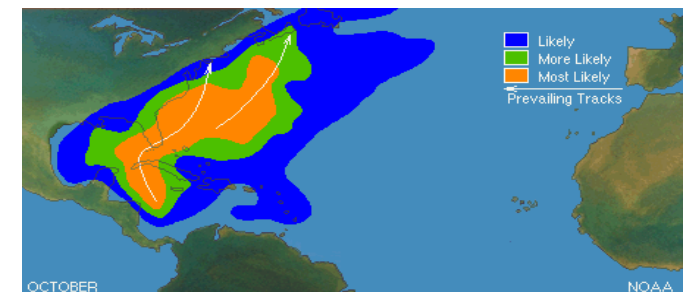
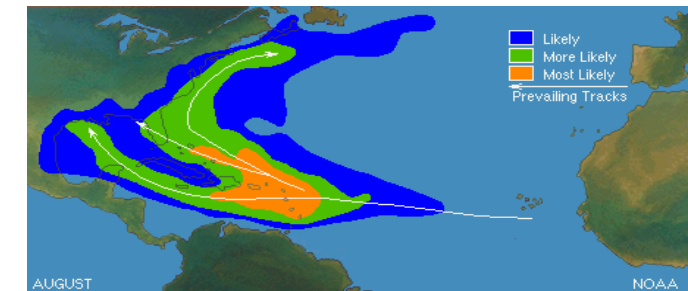
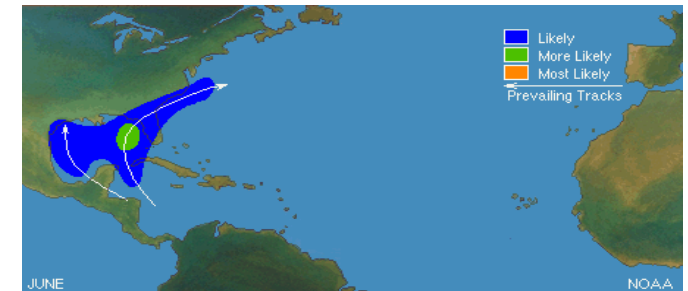
- ◆ **General information**
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General information: Necessary input factors for a thorough prognosis (1/2)

The pattern and type of hurricanes changes during the season:

- ♦ May – June: Hurricanes typically appear in the Gulf of Mexico
- ♦ July – October: Hurricanes typically emerge out of the Cap Verde storms in front of Africa, below the Bermuda high. During the move westwards, such hurricanes can “tank” a lot of energy in the Main Development Region (MDR, definition on the next page) and are therefore often strong hurricanes
- ♦ October – November: Hurricanes typically emerge again in the Gulf of Mexico.

In general, a surface water temperature of at least 26.5 Celsius is needed in order for a hurricane to develop



General information: Necessary input factors for a thorough prognosis (2/2)

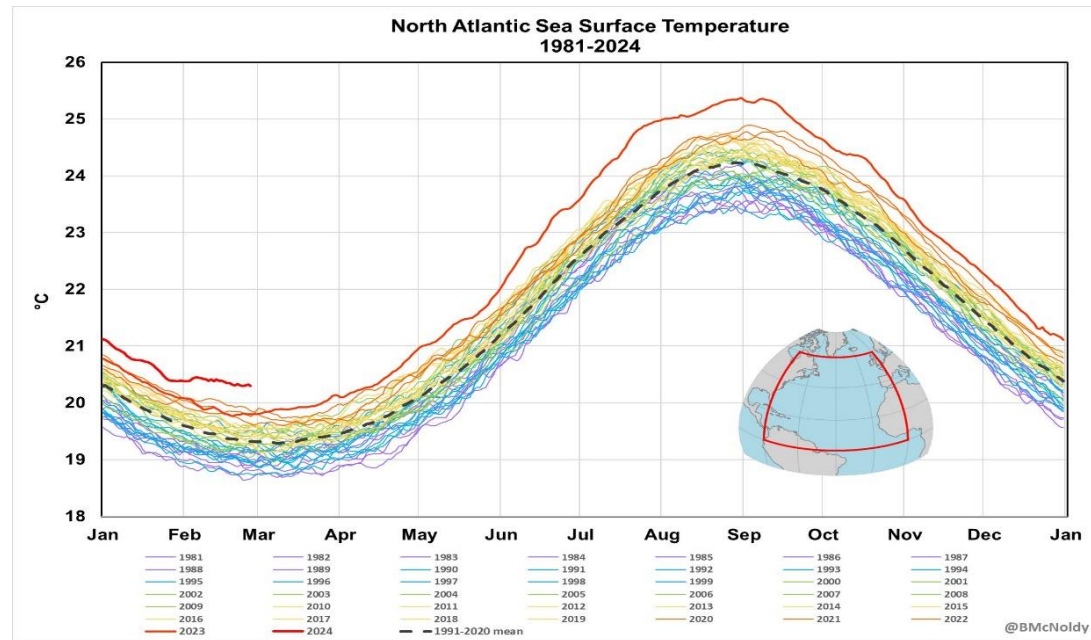
The most important input factors are:

- ♦ Makro: Sea Surface Temperatures (SSTs), especially in the Main Development Region (MDR). Warmer SSTs → more energy available for storm formation and intensification.
- ♦ Makro: Ocean Heat Content (OHC): Depth and volume of warm water (not just the surface). This is critical for sustaining strong hurricanes.
- ♦ Makro: El Niño–Southern Oscillation (ENSO): El Niño → tends to suppress Atlantic hurricanes (more wind shear).
 - La Niña → tends to enhance hurricane activity (less wind shear).
 - Vertical wind shear: The difference in wind speed / direction between lower and upper atmosphere. High shear tears storms apart; low shear allows development.
- ♦ Shorter term influence:
 - Atmospheric moisture (Mid-Level Humidity): Dry air (especially from the Saharan Air Layer) inhibits storm formation. Moisture supports convection and cyclone development.
 - Pre-Season storm activity: Any early-season storms can signal favorable conditions.
 - African easterly waves: These disturbances move off the African coast and often seed hurricanes. (Madden Julian oscillation)
 - General pressure systems in certain US areas and jet stream path
- ♦ Historical analogs: Past years with similar oceanic/atmospheric patterns are used for comparison.
- ♦ Global climate models: Complex simulations that forecast large-scale patterns months ahead.

While all these inputs are of importance, the SST in MDR, the OHC and the ENSO are the most relevant factors

General information: OHC and sea surface temperature

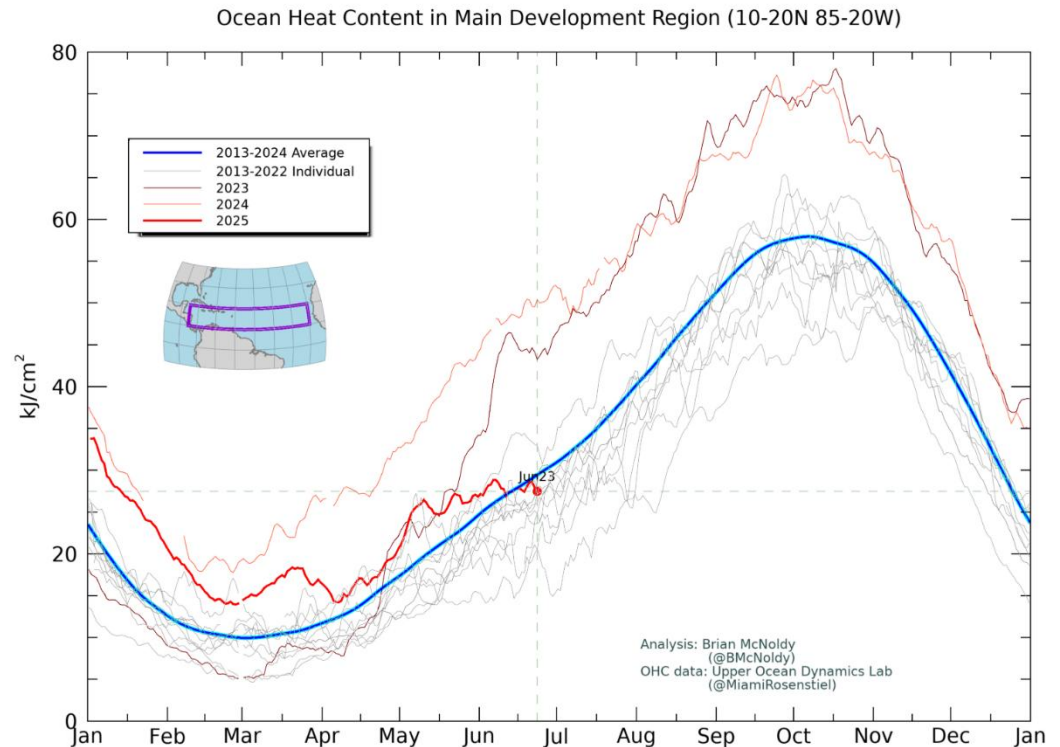
- ◆ The “booster” for hurricanes is the so-called oceanic heat content (OHC) in the Atlantic ocean . It measures the amount of thermal energy stored in the upper layers of the ocean. It is measured from the surface to a specific depth.
- ◆ It is measured in kilo joules per square centimeter. The higher this value is, the more likely a strong hurricane season. The deeper and warmer the water, the more sustained energy is available for a storm.
- ◆ The chart below shows clearly that the temperatures have, in general, risen over the years. Every line represents a year. Recent years have shown significantly higher temperatures.



Courtesy of Brian McNoldy (using data from NOAA)

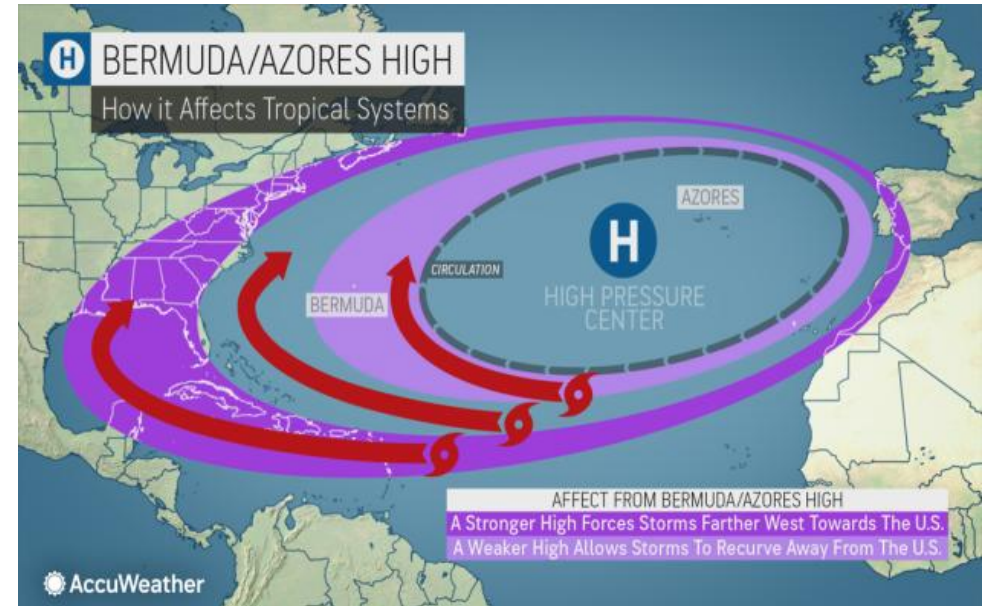
General information: OHC in MDR

- ◆ Rather than measuring the temperature of most of the mid Atlantic, there is a much more relevant “main development region” (MDR). The OHC in this region is highly relevant for the prognosis of the hurricane season.
- ◆ The MDR is generally defined as the region between latitudes 10°N to 20 °N and longitudes 20 °W to 60 °W.
- ◆ As one can see, 2024 in particular has been a very warm year. A season with more and stronger hurricanes was likely.
- ◆ The first prognosis is typically made by Colorado State University and the UK Met Office in April. These forecasts use global climate models and oceanic patterns, especially from the Main Development Region (MDR)
- ◆ More refined forecasts appear from organizations like the NOAA (National Oceanic and Atmospheric Administration), often in late May. These are more reliable, using updated data on sea surface temperatures in the MDR, wind shear patterns, Saharan dust activity and ENSO (El Niño-Southern Oscillation) status



General information: What impacts the path of a hurricane

- ◆ The information on the previous slides showed the factors influencing whether a strong hurricane season can be expected.
- ◆ These factors do not determine whether a hurricane will make landfall. Hurricanes turning back to the Atlantic obviously don't create damage. Therefore, it is important to also gain information about the likelihood of such landfalls.
- ◆ The high-pressure system over Bermuda or the Azores—often called the Bermuda High or Azores High—plays a critical role in determining the track and landfall of Atlantic hurricanes.
- ◆ The Bermuda high is a semi-permanent subtropical high-pressure system in the North Atlantic.
 - It shifts seasonally between being centred near the Azores (in the eastern Atlantic) and Bermuda (in the western Atlantic).
 - This high creates a clockwise circulation that influences trade winds and large-scale weather patterns across the Atlantic basin.
 - When the high is strong and extends westward, storms are pushed westward toward the Caribbean, Gulf of Mexico, or U.S. mainland.
 - When it is weaker or positioned farther east, storms tend to curve northward and recurve out to sea (avoiding landfall).



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- ◆ General information
- ◆ **Review season 2024**
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- ◆ Update frequency and outlook

Review Season 2024: Insured loss and total loss

- ◆ As per the Sigma report of Swiss Re, the insured damage caused by natural catastrophes in 2024 is estimated to be USD 137 Mn.
- ◆ It is therefore in line with the “new normal” and in the area of the results of years since 2021.
- ◆ Total economic losses accounted for more than USD 300 Bn. The percentage of uninsured losses varies significantly by region.

Figure 2

Growth in global natural catastrophe insured losses (USD bn, 2024 prices)

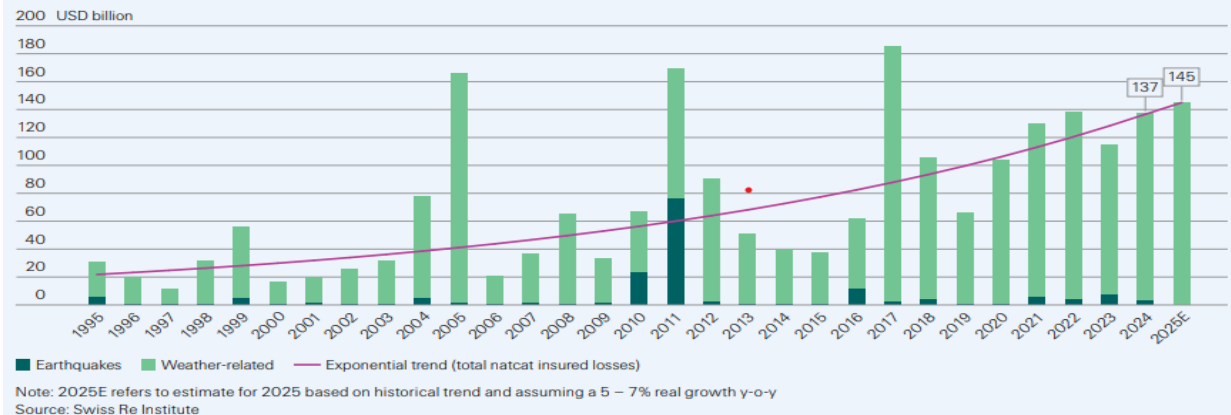
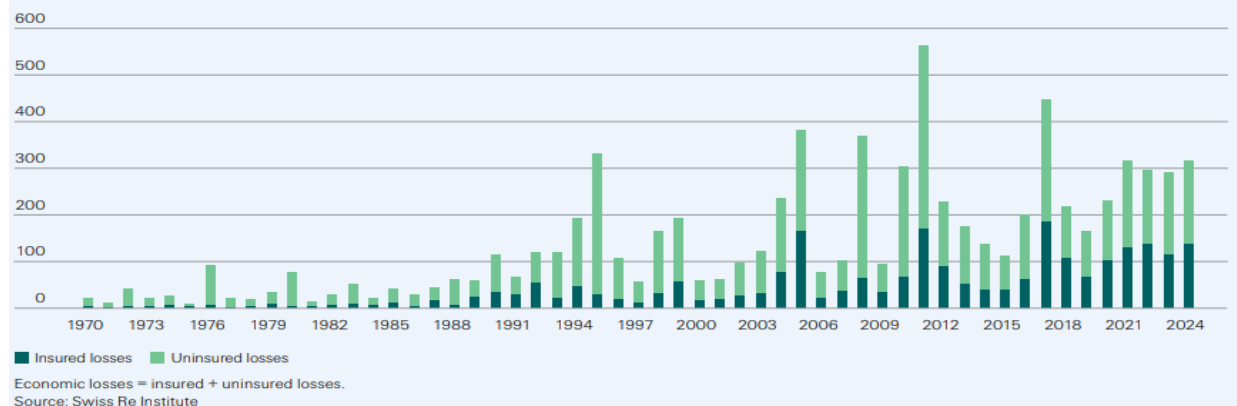


Figure 20

Insured vs uninsured losses, 1970 – 2024, in USD billion at 2024 prices



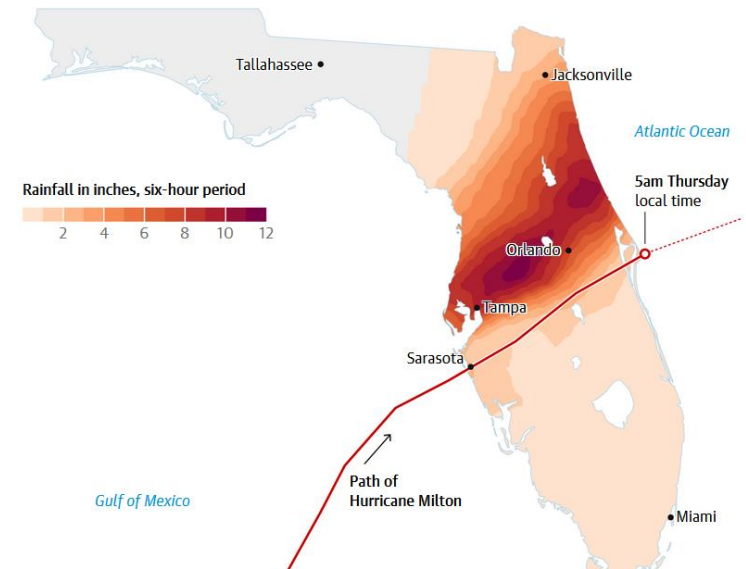
Review Season 2024

- ◆ The 2024 Atlantic hurricane season was as severe as anticipated, characterized by a high number of intense storms and substantial economic and human impacts. The combination of favorable environmental conditions and climate-related factors contributed to a season that will be remembered for its severity.
- ◆ Accumulated Cyclone Energy (ACE) was very high. ACE is a metric used to express the total energy a tropical cyclone (or an entire season's worth of storms) generates over its lifetime. It measures frequency, intensity and duration of storms.
- ◆ The season showed:
 - 18 named storms (average 14)
 - 11 Hurricanes (average 7)
 - 5 major hurricanes (Cat 3 or higher)
 - Accumulated cyclone energy (ACE) was 34% over the annual average
- ◆ Major hurricanes:
 - Beryl: The earliest recorded Cat 5 hurricane, causing significant damage in the Caribbean
 - Helene: Resulted in over 200 fatalities and approximately USD 49 Bn. in economic damages, particularly impacting the southeastern US
 - Milton: Reached wind speeds of 290km/h, ranking among the strongest Gulf of Mexico hurricanes by wind speed

In retrospect, the prediction of a significantly above-average hurricane season 2024 has proven to be correct. However, it also showed once again that high hurricane activity does not automatically lead to catastrophic years for the re-insurance industry.

Review Season 2024: Hurricane Milton; evaluation before landfall

- ◆ Hurricane Milton's impact was (much...) less severe than initially hyped, largely due to specific atmospheric conditions that altered the storm's trajectory and structure.
- ◆ Jet Stream Influence: A strengthening jet stream played a pivotal role in steering Milton away from Tampa Bay. This upper-level wind pattern accelerated the hurricane toward Florida's western coast, causing it to make landfall south of Tampa, near Sarasota
- ◆ Wind Shear and Dry Air: As Milton neared land, it encountered increased wind shear and pockets of dry air. These conditions disrupted the hurricane's internal structure, weakening its intensity and causing it to become asymmetrical. The northern half of the storm, which affected Tampa Bay, experienced reduced rainfall and wind intensity.
- ◆ Offshore Winds and Reverse Storm Surge: Due to the storm's altered path, Tampa Bay experienced offshore winds—winds blowing from land to sea—on the northern side of the hurricane. This resulted in a "reverse storm surge," where water was pushed out of the bay, sparing the area from the catastrophic flooding that was initially anticipated.



In summary, the combination of atmospheric conditions, including the influence of the jet stream and wind shear, played a crucial role in diverting Hurricane Milton's path and mitigating its impact on the Tampa Bay area.

Review Season 2024: Hurricane Milton, evaluation before landfall

- ◆ A hurricane without those disturbances is, all other factors equal, stronger. As you can see in the picture at the right, those hurricanes have a perfectly shaped eye and a very round shape.
- ◆ Hurricane Milton instead, looked different. The pre – described factors lead to a shape which still made him a strong hurricane. However, Milton was downgraded from Cat 5 to Cat 3 before landfall.
- ◆ In addition, due to the counterclockwise turning, in combination with an eastward path and therefore, wind coming from the landside, Milton was only a Cat 2 in many areas. It reached Cat 3 only in certain sectors.
- ◆ On a tactical level (and in spite of panic in the news...), Solidum's team was reasonably relaxed since our own estimations four days before landfall showed a high likelihood of reduced damages



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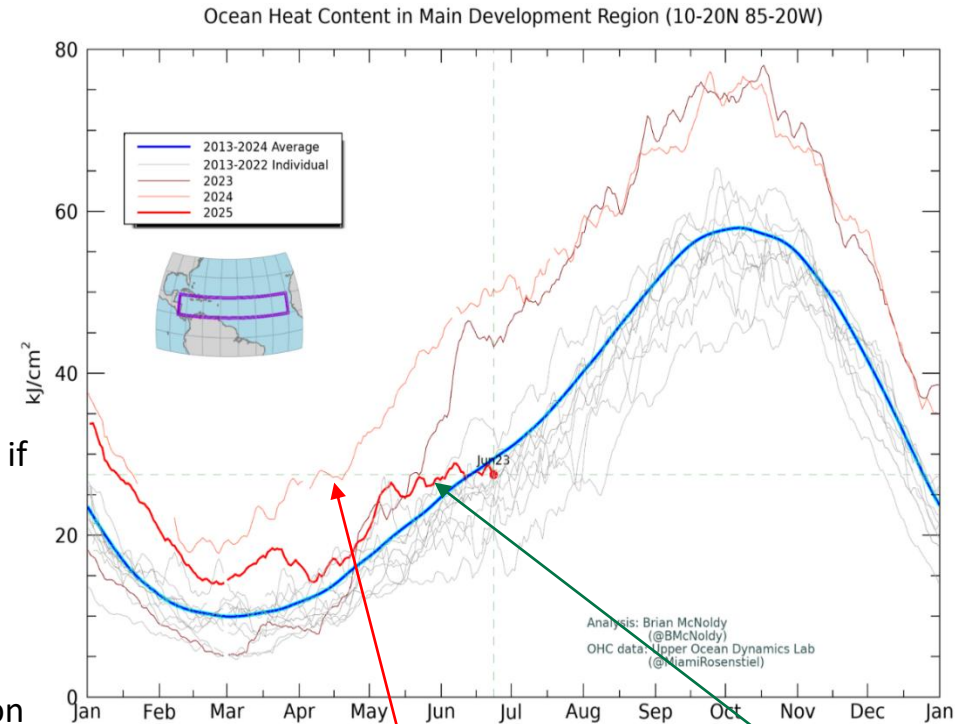
Review positioning 2024 and outlook 2025

The positioning depends on three factors:

- ◆ Strategic positioning:
 - General outlook for the hurricane season (strong season or not so strong season)
- ◆ Mid term positioning:
 - Likelihood for impact in exposed areas (among other factors: Bermuda high)
- ◆ Tactical positioning:
 - Hurricane is in the water, estimated damage and if necessary, short-term tactical counter measures (from “fire sale” to “buy”)

For the season 2024, this meant:

- ◆ Record high heat content in the MDR, so expectation of a very strong hurricane season
- ◆ Much stronger than usual Bermuda high at a position steering hurricanes westward toward the Caribbean and the U.S. East Coast



2024

2025 (see next pages)

Review positioning 2024 and outlook 2025 (cat bond fund)

- ◆ Because all indicators (see pages before) showed a high likelihood for a very strong hurricane season, Solidum had actively reduced the risk in its portfolio pre hurricane season in 2024.
- ◆ While the expected loss of the cat bond market (and most of our competitors) was at 2.2%, Solidum has reduced the expected loss in its cat bond fund to 1.8% pre season. It is worth to mention that the cat bond fund's expected loss is generally lower than the one of the index, but it has been reduced further.
- ◆ In spite of the fact that 2024 was a very strong hurricane season, the insured losses were in line with the previous years.
- ◆ In a Milton worst case scenario, the insured losses could have been at USD 100 Bn. or even higher, which is a sharp contrast to the insured loss of USD 20 Bn. (current best estimation)
- ◆ The slightly more conservative positioning of the Solidum Cat Bond and ILS portfolios during the 2024 hurricane season led to an estimated forgone profit contribution of approx. 1.0%. As a consequence, the cat bond fund returned 14.3% instead of 15.3%

This contrasts with an avoidance of very significant capital losses if hurricane Milton had caused an insured market loss of USD 80 Bn. (or higher), a figure not inconceivable had Milton tracked a path 75 km further north and upheld its structural integrity in the absence of the strong sheer winds to its north.

Review positioning 2024 and outlook 2025 (1/3)

- ◆ As per early June, the OHC in the MDR is significantly lower in 2025 than in 2024. As discussed, this is a highly important factor. However, one also has to include a prognosis for the development of the OHC in the MDR for the next months.
- ◆ The prediction of the Bermuda high is still not clear. As of today, it is too early in the season to make a statistically significant assumption. As per End of June, we will include the Bermuda high into our considerations and provide an update to all investors.
- ◆ The ENSO model predictions are neutral. This means that ENSO will not reduce the hurricane risks in 2025.

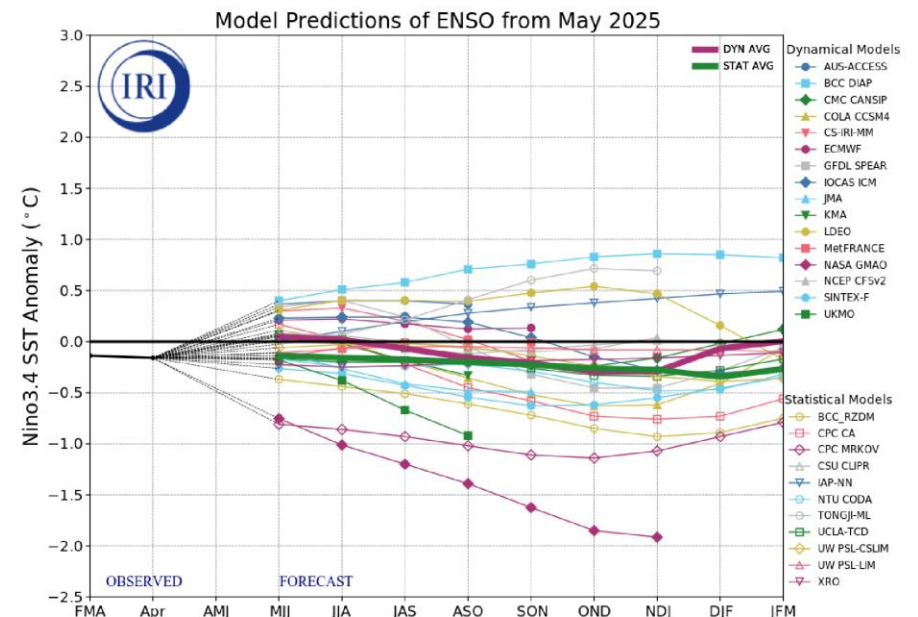


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure updated 19 May 2025 by the International Research Institute (IRI) for Climate and Society.

Review positioning 2024 and outlook 2025 (2/3)

- ◆ A very important forecast is coming from NOAA (National Oceanic and Atmospheric Administration). NOAA runs various climate models, uses most advanced weather models and has a deep understanding of the factors creating hurricanes.
- ◆ While a number of factors are still at normal levels, NOAA expects an above normal hurricane season. Above normal means above long-term average, but below the 2024 levels. While ENSO conditions are still neutral, NOAA predicts increasing water temperatures, weak wind shear, and the potential for higher activity from West African Monsoon, a primary starting point for Atlantic hurricanes.
- ◆ This hurricane season also features the potential for a northward shift of the West African monsoon, producing tropical waves that seed some of the strongest and most long-lived Atlantic storms.
- ◆ NOAA's outlook for the 2025 Atlantic hurricane season, which goes from June 1 to November 30, predicts a 30% chance of a near-normal season, a 60% chance of an above-normal season, and a 10% chance of a below-normal season. The prediction probability is seen at 70%
- ◆ While OHC is currently at normal levels in the MDR, NOAA expects water temperatures to increase to slightly above average values during the Aug – Sep – Oct period. This view is supported by other research institutes.

→ **Considering all the factors, Solidum expects an above normal, but lower than 2024 hurricane season.**

Review positioning 2024 and outlook 2025 (3/3)

- ◆ For 2025, our outlook is different than in 2024. As shown on page 14, the heat content in the MDR is much lower than in 2024, approaching longer time average levels. The sea is cooler and therefore there is less “fuel” to boost hurricanes.
- ◆ However, other factors (see NOAA report summary on page 17) will most likely influence the OHC in the critical months of August, September and October. While no research institute expects new records, most agree on a slight to moderate increase of the OHC during this period.
- ◆ The impact of the Bermuda high is still difficult to predict and for the time being, will be carefully monitored. Its evolution will additionally guide our discussions a positioning pre season.
- ◆ Considering the relative impact of various factors, Solidum plans to slightly increase the hurricane risk component in its cat bond fund. The current expected loss is at around 1.7%, due to the fact that certain cat bonds reached maturity. However, we will (and have already started) to increase this number in the following weeks. We plan to be closer, but still below the expected loss of the index.
- ◆ With the current increase (and remaining below index), we reflect the current forecasts of a higher than average, but lower than 2024 hurricane season outlook by various research institutes.
- ◆ General comments:
 - Please always keep in mind that the cat bond portfolio is a diversified portfolio. Hurricane risks are one exposure of the fund, and it goes without saying that it is an important one. However, there are other exposures that diversify the portfolio.

The same diligence, attention, processes and in-depth analysis are applied and given to any other exposure of our portfolio.

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Update frequency and outlook

- ◆ It is part of the service offering of Solidum to update clients regularly about important developments in the market. The hurricane outlook is just one of these updates.
- ◆ We are always available for “on demand” requests for our clients, both via video call or in person.