

NEAR NORMAL 2025 WESTERN NORTH PACIFIC TYPHOON SEASON

Executive Summary

- The El Niño–Southern Oscillation (ENSO) is a major driver of oceanic and seasonal patterns. In El Niño years, we typically see more tropical cyclone activity in the Western North Pacific, while in La Niña years, there tends to be lower activity.
- The current La Niña phase is short-lived and weak. 2025 is likely to be an **ENSO-neutral** year.
- Based on a machine learning model Guy Carpenter co-developed in partnership with Fudan University in Shanghai and past observations, we expect the number of tropical cyclone **formations** and **intense typhoons** in the Western North Pacific will likely be near-normal.
- The number of **landfalls** in **northern** East Asia will likely be **below-normal**, while it is **below-normal to near-normal** in the southern regions.

Table 1: Forecast Number of Landfalling Tropical Cyclones in 2025, an ENSO-Neutral Year

Landfall Region	1991-2020 Normal	2025 Outlook
Japan and Korea	6.3	2-4 (below-normal)
Eastern Mainland China and Taiwan	4.9	3-4 (below-normal)
Southern Mainland China and Vietnam	7.3	5-7 (below to near-normal)
Philippines	5.3	3-5 (below to near-normal)

Source: Japan Meteorological Agency, Guy Carpenter, Fudan University

The Guy Carpenter GCAT Climate Centre Forecast

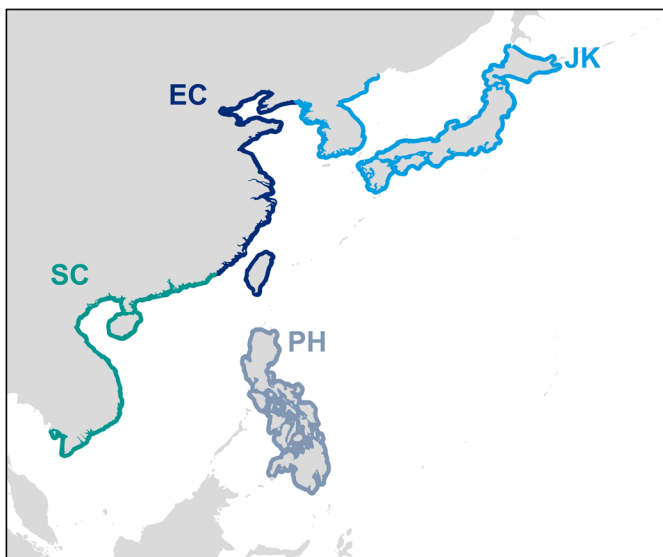
For more than 10 years, Guy Carpenter has been working closely with our academic partners in Greater China via the Guy Carpenter GCAT Climate Centre. Our goal is to provide insights regarding climate-related science for our clients and to help innovate solutions for the increasingly complex risk landscape in Asia.

As part of our ongoing commitment, we produce an annual tropical cyclone seasonal outlook, which considers current El Niño/La Niña conditions (known as the El Niño—Southern Oscillation, or ENSO) and provides insight into tropical cyclone frequencies and landfall rates for the Western North Pacific (WNP) basin.

The landfall forecast is made for the 4 regions listed below and shown in Figure 1:

- **JK:** Japan and Korea Peninsula
- **EC:** Eastern Mainland China and Taiwan
- **SC:** Southern Mainland China and Vietnam
- **PH:** Philippines

Figure 1: The 4 Regions in Which the Number of Tropical Cyclone Landfalls Are Predicted



Graphic: Guy Carpenter

El Niño–Southern Oscillation

El Niño and La Niña are the two opposite phases of El Niño–Southern Oscillation. ENSO is an irregular periodic variation in winds and sea surface temperatures over the tropical Pacific, and it is a major driver of seasonal changes in the global atmospheric and oceanic circulations.

Oceanic Niño Index (ONI, Figure 2) is a principal measure for ENSO. It is defined as the 3-month running-mean sea surface temperature (SST) anomalies in the central and eastern tropical Pacific (the Niño 3.4 region in Figure 3). If ONI is -0.5°C or less, then it is in a La Niña phase; values of $+0.5^{\circ}\text{C}$ or higher signify an El Niño phase. ONI values between -0.5 and $+0.5^{\circ}\text{C}$ are considered neutral.

Typically, tropical cyclones are more active in WNP during El Niño years. They tend to form farther away from the East Asia coast and are more likely to recurve toward the seas near Japan. In contrast, during typical La Niña years, there are fewer tropical cyclones. They are more active in the seas west of Guam and more likely to move toward the seas near the Philippines.

2025 Season Outlook

An ENSO-Neutral Year

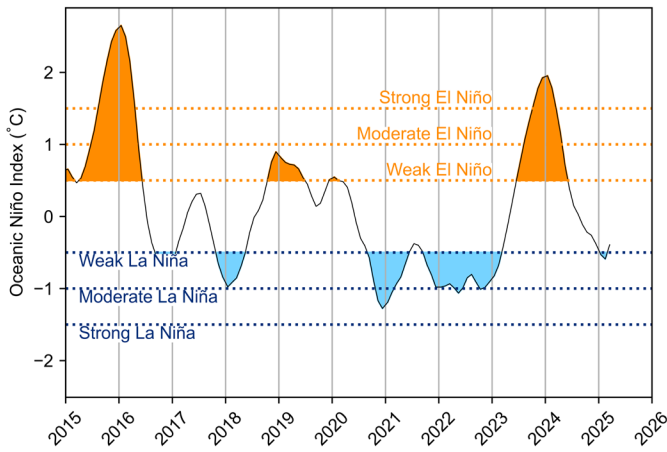
2025 is expected to be an ENSO-neutral year after a short-lived La Niña period.

The La Niña phase arrived unusually late and weak (Figure 2). The event failed to meet the criteria of the Australia Bureau of Meteorology, and the US National Oceanic and Atmospheric Administration (NOAA) only announced the beginning of the event in December, instead of in the usual autumn months, and the event ended by April.

The current atmosphere remains similar to La Niña conditions: anomaly easterly winds over the Central and Western Pacific and enhanced convections in parts of Southeast Asia. However, along tropical South America, ocean surface has been warmer than normal since February (Figure 3). Below-normal subsurface temperatures that persisted throughout 2024 have also vanished.

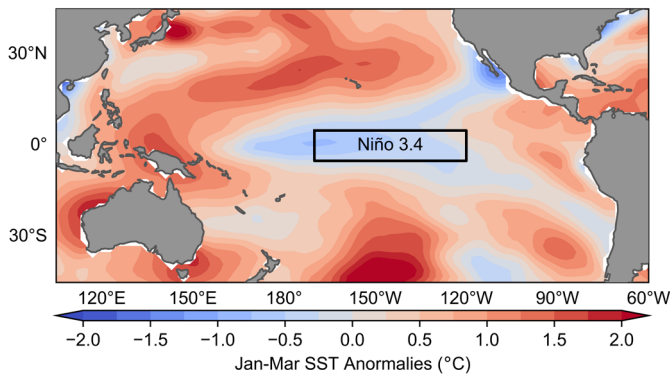
Most climate models predict that ENSO indices in the tropical Pacific will stay within the normal range at least until October. It becomes uncertain when considering the Northern Hemisphere winter, with a 43% chance of ENSO-neutral and a 38% chance of La Niña by January 2026.

Figure 2: Oceanic Niño Index from January 2015 to March 2025



Source: NOAA Climate Prediction Center / Graphic: Guy Carpenter

Figure 3: 3-Month Mean Sea Surface Temperature Anomalies (January to March 2025). The Niño 3.4 Region (Black Box) Is Commonly Used to Assess ENSO Phases.



Source: NOAA Climate Prediction Center / Graphic: Guy Carpenter

What Does ENSO-Neutral Mean for Western North Pacific Typhoon Activity?

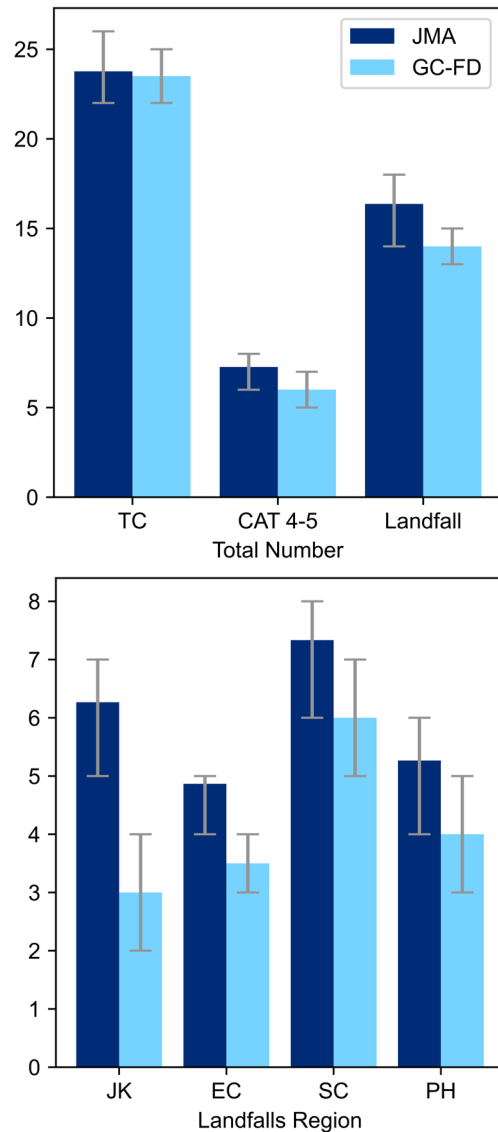
As the ENSO is shifting from La Niña to neutral in 2025, we may expect this typhoon season to share some of the characteristics of both neutral and La Niña years.

Our machine-learning model (GC-FD) predicts the number of tropical cyclones formed during the 2025 season will be 22 to 25, which is near-normal (23.8). 13 to 15 tropical cyclones are expected to make landfall in East Asia, just below the climatological mean. There may also be slightly fewer category 4 or 5 typhoons, as is typical for La Niña seasons.

Regionally, the number of landfalls in the northern East Asia (JK and EC) are expected to be below-normal, while in the south it is expected to be marginally below-normal to normal.

The full model prediction is shown in Figure 4.

Figure 4: 1991-2020 JMA Climatological Mean (Dark Blue Bars) and 2025 Seasonal Outlook (Light Blue Bars).



Whiskers in the JMA Bars Indicate the Climate Normal Range; in the GC-FD Bars, They Represent the Predicted Range.

Source: Japan Meteorological Agency, Guy Carpenter / Graphic: Guy Carpenter

Historical Typhoon Season During ENSO-Neutral

To compare 2025 with relevant historical records, we identified 4 previous ENSO-neutral years (1996, 2001, 2012 and 2017) when ONI was in the La Niña phase in March, neutral in June and October.

In these 4 La Niña to ENSO-neutral seasons, the number of tropical cyclones was between 25 and 27, within the climate normal. There were often less intense typhoons than usual, while the number of landfalls largely varied from 12 to 23.

Across East Asia, tropical cyclones often made more than usual landfalls in the southern regions, as there has no below-normal year in SC and PH. While in the north, the JK region often experienced below-normal tropical cyclone landfalls (Figure 5).

While past observations can be seen as a reference of what to expect for 2025, these characteristics are not guaranteed, because each typhoon season is unique, and our model prediction also has some deviations from these 4 years. Furthermore, ENSO-neutral means that this upcoming typhoon season is less predictable as other climate drivers, such as Madden-Julian Oscillation, may have stronger influence. Nevertheless, it is fair to expect below-normal to normal activity in general.

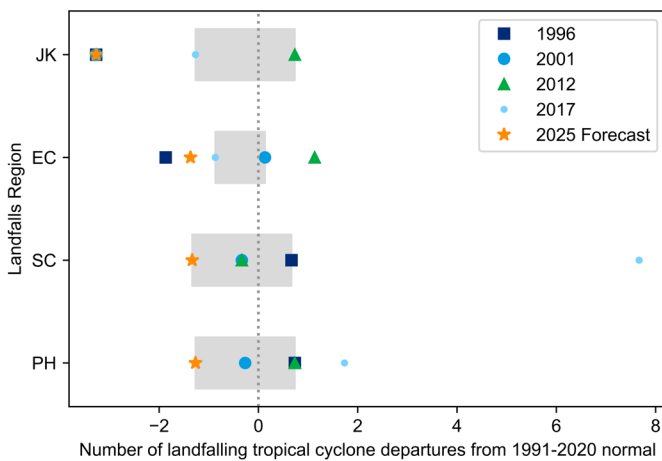
How Guy Carpenter Can Help

Companies looking to respond faster to catastrophe events, underwrite more profitably and create robust portfolio management strategies can leverage the power of GC AdvantagePoint™, our geospatial analytics and exposure management platform.

The platform enables users to be more proactive in their event response protocols, allowing them to offer a better claims experience to policyholders, improve their loss control, reduce loss adjustment expenses (LAE) and engage reinsurance markets faster.

The underwriting offering brings actionable risk information into a single app and API service suite, enabling carriers to improve their risk selection and underwrite more consistently and profitably. The platform’s advanced technologies and geospatial data analytics enable companies to own their view of risk, unlocking insights to better manage their exposure and grow their portfolios profitably. Please reach out to the contacts on this page, or your local Guy Carpenter team, for more information.

Figure 5: Differences of the Numbers of Landfalling Tropical Cyclones from the 1991-2020 JMA Normal for La Niña seasons.



The Dotted Line at Zero Represents the JMA Normal. Shading Indicates the Range Considered Near-Normal.

Source: Japan Meteorological Agency, Guy Carpenter / Graphic: Guy Carpenter

Contacts

Stella Geng

Head of Climate Solutions,
Asia Pacific
Stella.Geng@guycarp.com

Mark Weatherhead

Head of Global Analytics and Advisory,
Southeast Asia
Mark.Weatherhead@guycarp.com

Kitty Bao

Head of Global Analytics and Advisory,
Asia Pacific
Kitty.Bao@guycarp.com

Charlie Lok

Senior Tropical Cyclone
Model Developer
Charlie.Lok@guycarp.com

About Guy Carpenter

Guy Carpenter, a business of Marsh McLennan (NYSE: MMC), is a leading global risk advisory and reinsurance specialist and broker. Marsh McLennan is a global leader in risk, strategy and people, advising clients in 130 countries across four businesses: Marsh, Guy Carpenter, Mercer and Oliver Wyman. With annual revenue of \$24 billion and more than 90,000 colleagues, Marsh McLennan helps build the confidence to thrive through the power of perspective. For more information, visit guycarp.com, or follow on LinkedIn and X.

Guy Carpenter & Company, LLC provides this report for general information only. The information contained herein is based on sources we believe reliable, but we do not guarantee its accuracy, and it should be understood to be general insurance/reinsurance information only. Guy Carpenter & Company, LLC makes no representations or warranties, express or implied. The information is not intended to be taken as advice with respect to any individual situation and cannot be relied upon as such. Statements concerning tax, accounting, legal or regulatory matters should be understood to be general observations based solely on our experience as reinsurance brokers and risk consultants, and may not be relied upon as tax, accounting, legal or regulatory advice, which we are not authorized to provide. All such matters should be reviewed with your own qualified advisors in these areas.

Readers are cautioned not to place undue reliance on any historical, current or forward-looking statements. Guy Carpenter & Company, LLC undertakes no obligation to update or revise publicly any historical, current or forward-looking statements, whether as a result of new information, research, future events or otherwise. The trademarks and service marks contained herein are the property of their respective owners.