Extender Range Forecast for Northwest Pacific Typhoon Activity in 2025

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by Dr Adam Lea
EuroTempest Ltd, London, UK

TSR predicts that Northwest Pacific typhoon activity in 2025 will be around 10% below the 1991-2020 30-year norm.

Summary: The TSR (Tropical Storm Risk) early May forecast for Northwest Pacific typhoon activity in 2025 anticipates a season with below-norm activity. TSR uses the strong link (R^2 = 0.80; 1993-2024) between the annual Northwest Pacific ACE index and August-September-October (ASO) ENSO combined with trade wind anomaliess across the western equatorial Pacific through April, activity to-date and the Pacific Decadal Oscillation (PDO). Although sizable uncertainties remain and the forecast skill at this range is historically low, TSR anticipates there is only a 25% likelihood that Northwest Pacific ACE in 2025 will be above the 1991-2020 climate norm.

1. TSR May 2025 Northwest Pacific Seasonal Typhoon Activity Forecast

Further information on the TSR statistical prediction models and adjustments that are used to generate the forecasts below can be found in Section 2 of Supplementary Information.

1.1 Forecast Northwest Pacific ACE Index and System Numbers in 2025:

		ACE Index	Intense Typhoons	Typhoons	Tropical Storms
TSR Forecast	2025	266	8	15	25
30-yr Climate Norm	1991-2020	301	9.3	16.0	25.5
10-yr Climate Norm	2015-2024	250	8.4	14.2	24.0
Forecast Skill at this Lead	2015-2024	26%	20%	0%	0%

The forecast tercile probabilities (1991-2020 data) for the 2025 Northwest Pacific typhoon season ACE index are as follows: a 25% probability of being upper tercile, a 32% likelihood of being middle tercile and a 43% chance of being lower tercile.

1.2 Forecast Probability of Exceedance Plot for the Northwest Pacific ACE index in 2025:

See Section 3 in the Supplementary Information for the motivation behind the probability of exceedance chart. Figure 1 displays our current forecast for the 2025 Northwest Pacific ACE index in terms of PoE. The forecast PoE curve is computed using the robust method described in Section 3 of Saunders et al. (2020) while the climatology PoE curve is computed directly from observations. The figure specifies the current chance that a given ACE index will be reached in 2025 and how this chance compares to climatology.

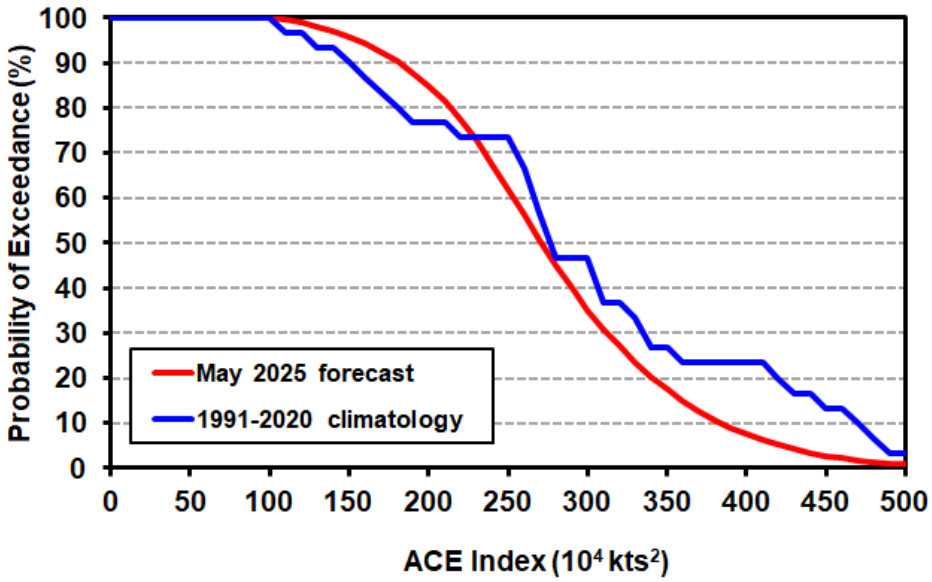

Figure 1. Forecast probability of exceedance (PoE) plot for the Northwest Pacific ACE index in 2025. The plot displays two sets of PoE data comprising the TSR forecast PoE curve issued in early May and the 1991-2020 climatology PoE curve.

2. Factors Influencing the May 2025 TSR Forecast

ENSO: The consensus forecast value for ASO ENSO ONI that we employ is 0.1°C which corresponds to neutral ENSO conditions. We do not currently believe ENSO will be a significant factor influencing NW Pacific typhoon activity in 2025.

Equatorial Zonal Wind Speed: There is a small correlation (Pearson r^2=0.28) between the April zonal wind speed anomaly across the region 5°S-5°N, 140°E-180°. Stronger than normal easterly winds across this region is linked to below-average NW Pacific typhoon activity. The April 2025 wind anomaly is -2.6 ms^{-1} i.e. stronger easterlies than normal, which would be consistent with a below-average NW Pacific typhoon season in 2025.

Activity-to-date: There is a small correlation (Pearson r^2=0.18) between the ACE index through the year up to the 6th May and total seasonal NW Pacific ACE index. The 2025 ACE index to-date is zero which is consistent with a below-average NW Pacific typhoon season. However, when looking at historical years back to 1965 where no activity had occurred up to the 6th May, the total seasonal ACE index ranged from 149 to 307 with a mean of 223, so whilst a lack of activity to-date implies a higher-than-normal chance of a below-average season overall, a near-average season is still possible.

Pacific Decadal Oscillation: The Pacific Decadal Oscillation (PDO) is often described as a long-lived El Niño pattern of Pacific climate variability. Warm phases of the PDO are linked to enhanced typhoon activity and vice-versa. Through April 2025 the PDO has been in a negative phase which historically tends to suppress typhoon activity, however the correlation between April PDO and upcoming typhoon activity over the period 1965-2023 is weak (Pearson $r^2 \sim 0.05$). The PDO may have a small suppressing effect on NW Pacific typhoon activity in 2025.

3. Confidence and Uncertainties

ENSO: Our expectation for neutral conditions through ASO 2025 has moderate confidence. Most of the model forecasts provided by IRI are forecasting near-neutral ENSO conditions during ASO 2025. Earlier this year, the IRI model consensus tended to be split between cold-neutral and weak La Niña conditions; however, in recent updates, the models have come into closer agreement for neutral ASO ENSO conditions. Only a small number of the model forecasts provided by IRI are predicting either weak El Niño or weak La Niña conditions, therefore, neutral conditions through ASO are currently most likely.

Skill: Historically the skill from early May forecasts for Northwest Pacific typhoon activity is low (see Section 4b in the Supplementary Information). This is due to the typical sizeable uncertainty in the ASO ENSO ONI value at this four-month lead and because even if the ASO ONI value is anticipated correctly a spread in ACE levels can still ensue. Favourable or unfavourable intra-seasonal factors which cannot be predicted can also influence overall activity.

4. Forecast Archive and Next Forecast

The archive of all the TSR publicly released Northwest Pacific seasonal typhoon forecasts (from 2000 to 2025) may be viewed at *https://www.tropicalstormrisk.com/for_typh.html*. A TSR forecast update for the 2025 Northwest Pacific typhoon season will be issued on Monday 7th July, 2025. A summary of the 2025 NW Pacific typhoon season and verification of the TSR seasonal forecasts will be issued in early January 2026.