



Extended Range Forecast for Northwest Pacific Typhoon Activity in 2009

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Forecast Summary

TSR anticipates the 2009 Northwest Pacific typhoon season will see activity ~20% below average.

The TSR (Tropical Storm Risk) consortium presents their extended range forecast for Northwest Pacific typhoon activity in 2009. The forecast spans the full Northwest Pacific season from 1st January to 31st December 2009 (95% of typhoons occur historically after 1st May) and is based on data available through the end of February 2009. The forecast includes deterministic and probabilistic projections for overall basin activity, and deterministic projections for the ACE index and numbers of intense typhoons, typhoons and tropical storms. TSR anticipates that activity will be about 20% below the long term climate norm. TSR's main predictor at this lead for overall activity is the February surface pressure in the central northern tropical Pacific (region 10-20°N, 145-165°W). Monthly updated forecasts will be issued from early May through to early August.

NW Pacific ACE Index and System Numbers in 2009

		ACE Index	Intense Typhoons	Typhoons	Tropical Storms
TSR Forecast (±FE)	2009	247 (±89)	6.7 (±2.6)	16.0 (±3.4)	25.6 (±3.9)
44yr Climate Norm (±SD)	1965-2008	300 (±98)	8.6 (±3.0)	16.7 (±3.6)	26.6 (±4.3)
Forecast Skill at this Lead	1965-2008	17%	22%	13%	19%

Key: ACE Index = Accumulated Cyclone Energy Index = Sum of the Squares of 6-hourly Maximum Sustained Wind Speeds (in units of knots) for all Systems while they are at least Tropical Storm Strength. ACE Unit = $\times 10^4$ knots².

Intense Typhoon = 1 Minute Sustained Wind > 95Kts = Hurricane Category 3 to 5
 Typhoon = 1 Minute Sustained Wind > 63Kts = Hurricane Category 1 to 5
 Tropical Storm = 1 Minute Sustained Wind > 33Kts
 SD = Standard Deviation
 FE (Forecast Error) = Standard Deviation of Errors in Cross-Validated Hindcasts 1965-2008
 Forecast Skill = Percentage Reduction in Mean Square Error Afforded by Cross-Validated Hindcasts 1965-2008 over Hindcasts Made with the 1965-2008 Climate Norm.
 Northwest Pacific = Northern Hemisphere Region West of 180°W Including the South China Sea. Any Tropical Cyclone (Irrespective of Where it Forms) Which Reaches Tropical Storm Strength Within this Region Counts as an Event.

There is only a 14% probability that the 2009 Northwest Pacific typhoon season ACE index will be above average (defined as an ACE index value in the upper tercile historically (>342)), a 40% likelihood it will be near-normal (defined as an ACE index value in the middle tercile historically (238 to 342) and a 46% chance it will be below-normal (defined as an ACE index value in the lower tercile historically (<243)). The 44-year period 1965-2008 is used for climatology.

Key: Terciles = Data groupings of equal (33.3%) probability corresponding to the upper, middle and lower one third of values historically (1965-2008).

Key Predictors for 2009

Following a review of seasonal predictability for the extended 1965-2008 period of reliable data, the TSR predictors are as follows. Tropical storm and typhoon numbers are forecast before May using the Niño 3 sea surface temperature (SST) from the prior September; from May they are forecast using April surface pressure over the region 17.5°N-35°N, 160°E-175°W. Intense typhoon numbers and the ACE index are forecast before May using the February surface pressure in the central northern tropical Pacific region 10°N-20°N, 145°W-165°W; from May they are predicted from the forecast value for the August-September Niño 3.75 index (5°S-5°N, 140°W-180°W). Above average (below average) Niño 3.75 SSTs are associated with weaker (stronger) trade winds over the region 2.5°N-12.5°N, 120°E-180°E. These in turn lead to enhanced (reduced) cyclonic vorticity over the Northwest Pacific region where intense typhoons form.

Further Information

Further information about the TSR forecasts, verifications and hindcast skill as a function of lead time may be obtained from the TSR website (<http://www.tropicalstormrisk.com>). The next TSR forecast update for the 2009 Northwest Pacific typhoon season will be issued on the 5th May 2009. Further monthly updates will follow through to early August 2009.

