



May Forecast Update for Northwest Pacific Typhoon Activity in 2009

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by Dr Adam Lea and Professor Mark Saunders
Aon Benfield UCL Hazard Research Centre, UCL (University College London), UK

Forecast Summary

TSR raises its forecast and anticipates the 2009 Northwest Pacific typhoon season will see activity close to average.

The TSR (Tropical Storm Risk) May forecast update for Northwest Pacific typhoon activity in 2009 anticipates a season with near-average activity. The forecast spans the full Northwest Pacific season from 1st January to 31st December 2009 (95% of typhoons historically occur after 1st May) and is based on data available through the end of April 2009. The forecast includes deterministic and probabilistic projections for overall basin activity, and deterministic projections for the numbers of tropical storms, typhoons, intense typhoons and the ACE index. TSR's main predictor at this lead for overall activity is the forecast anomaly in August-September 2009 Niño 3.75 sea surface temperature (SST). We anticipate this will be $0.16 \pm 0.44^\circ\text{C}$ warmer than normal. Monthly updated forecasts for intense typhoon numbers and the ACE index will be issued in early July and August 2009.

NW Pacific ACE Index and System Numbers in 2009

		ACE Index	Intense Typhoons	Typhoons	Tropical Storms
TSR Forecast (\pm FE)	2009	319 (\pm 80)	9.1 (\pm 2.5)	17.6 (\pm 3.0)	27.5 (\pm 3.8)
44yr Climate Norm (\pm SD)	1965-2008	300 (\pm 98)	8.6 (\pm 3.0)	16.7 (\pm 3.6)	26.6 (\pm 4.3)
Forecast Skill at this Lead	1965-2008	34%	28%	31%	22%

- 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 Simulated Real Time Forecasts 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 a 38% 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 46% likelihood it will be near-normal (defined as an ACE index value in the middle tercile historically (238 to 342)) and a 16% chance it will be below-normal (defined as an ACE index value in the lower tercile historically (<238)). 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

The TSR predictors for seasonal Northwest Pacific tropical cyclone activity 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 in March and April using the February surface pressure in the central northern tropical Pacific region 10°N-20°N, 145°W-165°W; from May they are forecast 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. The TSR forecast has increased since mid March due to La Niña conditions weakening, the increasing likelihood that La Niña will not return during the summer, and to a more skillful forecast model being used from early May.

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://tropicalstormrisk.com>). The next TSR monthly forecast update for the 2009 Northwest Pacific typhoon season will be issued on the 6th July 2009.

Appendix - Predictions from Previous Months

a) Deterministic forecasts

NW Pacific ACE Index and System Numbers 2009					
		ACE Index ($\times 10^4$ knots ²)	Intense Typhoons	Typhoons	Tropical Storms
Average Number (\pm SD) (1965-2008)		300 (\pm 98)	8.6 (\pm 3.0)	16.7 (\pm 3.6)	26.6 (\pm 4.3)
TSR Forecasts (\pm FE)	7th May 2009	319 (\pm 80)	9.1 (\pm 2.5)	17.6 (\pm 3.0)	27.5 (\pm 3.8)
	16th Mar 2009	247 (\pm 89)	6.7 (\pm 2.6)	16.0 (\pm 3.4)	25.6 (\pm 3.9)
Chan Forecast	20th Apr 2009	-	-	18	27

b) Probabilistic forecasts

NW Pacific Total ACE Index 2009				
		Tercile Probabilities		
		below normal	normal	above normal
Climatology 1965-2007		33.3	33.3	33.3
TSR Forecasts	7th May 2008	16	46	38
	16th Mar 2008	46	40	14

