



August Forecast Update for Northwest Pacific Typhoon Activity in 2008

Issued: 5th August 2008

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

Forecast Summary

TSR continues to anticipate the 2008 Northwest Pacific typhoon season will see activity close to average.

The TSR (Tropical Storm Risk) August forecast update for Northwest Pacific typhoon activity in 2008 anticipates a season with near-average activity. The forecast spans the full Northwest Pacific season from 1st January to 31st December 2008 (95% of typhoons historically occur after 1st May) and is based on data available through the end of July 2008. 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 2008 Niño 3.75 sea surface temperature (SST). We anticipate this will be $0.30 \pm 0.21^\circ\text{C}$ cooler than normal.

NW Pacific ACE Index and System Numbers in 2008

		ACE Index	Intense Typhoons	Typhoons	Tropical Storms
TSR Forecast (\pm FE)	2008	277 (\pm 76)	7.8 (\pm 2.4)	18.2 (\pm 2.9)	28.3 (\pm 3.7)
43yr Climate Norm (\pm SD)	1965-2007	303 (\pm 97)	8.7 (\pm 3.0)	16.8 (\pm 3.6)	26.6 (\pm 4.4)
Forecast Skill at this Lead	1965-2007	38%	34%	34%	29%

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 1965-2007
 Forecast Skill = Percentage Reduction in Mean Square Error Afforded by Cross-Validated Hindcasts 1965-2007 over Hindcasts Made with the 1965-2007 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 an 18% probability that the 2008 Northwest Pacific typhoon season ACE index will be above average (defined as an ACE index value in the upper tercile historically (>348)), a 49% likelihood it will be near-normal (defined as an ACE index value in the middle tercile historically (243 to 348)) and a 33% chance it will be below-normal (defined as an ACE index value in the lower tercile historically (<243)). The 43-year period 1965-2007 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 (1965-2007).

Key Predictors for 2008

Following a review of seasonal predictability for the extended 1965-2007 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 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.

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>). This is the final TSR monthly forecast update for the 2008 Northwest Pacific typhoon season. A summary of the 2008 Northwest Pacific typhoon season and a verification of the TSR seasonal forecasts will be issued in early January 2009.

Appendix - Predictions from Previous Months

a) Deterministic forecasts

NW Pacific ACE Index and System Numbers 2008					
		ACE Index ($\times 10^4$ knots ²)	Intense Typhoons	Typhoons	Tropical Storms
Average Number (\pm SD) (1965-2007)		303 (\pm 97)	8.7 (\pm 3.0)	16.8 (\pm 3.6)	26.6 (\pm 4.4)
TSR Forecasts (\pm FE)	5th Aug 2008	277 (\pm 76)	7.8 (\pm 2.4)	18.2 (\pm 2.9)	28.3 (\pm 3.7)
	4th Jul 2008	268 (\pm 82)	7.5 (\pm 2.4)	18.2 (\pm 2.9)	28.3 (\pm 3.7)
	6th May 2008	274 (\pm 79)	7.7 (\pm 2.5)	18.2 (\pm 2.9)	28.3 (\pm 3.7)
	10th Mar 2008	237 (\pm 90)	6.4 (\pm 2.9)	-	-
Chan Forecasts	24th Jun 2008	-	-	19	30
	18th Apr 2008	-	-	19	30

b) Probabilistic forecasts

NW Pacific Total ACE Index 2008				
		Tercile Probabilities		
		below normal	normal	above normal
Climatology 1965-2007		33.3	33.3	33.3
TSR Forecasts	5th Aug 2008	33	49	18
	4th Jul 2008	38	45	17
	6th May 2008	35	48	17
	10th Mar 2008	53	36	11

