



# July Forecast Update for Northwest Pacific Typhoon Activity in 2007

Issued: 4th July 2007

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

## Forecast Summary

**TSR slightly raises its forecast and anticipates the 2007 Northwest Pacific typhoon season will see activity near-norm.**

The TSR (Tropical Storm Risk) July forecast update for Northwest Pacific typhoon activity in 2007 anticipates a season with near-norm activity. The forecast spans the full Northwest Pacific season from 1st January to 31st December 2007 (95% of typhoons historically occur after 1st May) and is based on data available through the end of June 2007. The forecast includes deterministic and probabilistic projections for overall basin activity, and deterministic projections for the numbers of tropical storms, typhoons and intense typhoons. TSR's main predictor at this lead for overall activity is the forecast anomaly in August-September 2007 Niño 3.75 sea surface temperature (SST). We anticipate this will be near-neutral with an anomaly of  $-0.01 \pm 0.29^\circ\text{C}$  thus favouring near-norm activity. The final forecast update for intense typhoon numbers and the ACE index will be issued in early August 2007.

## NW Pacific ACE Index and System Numbers in 2007

		ACE Index	Intense Typhoons	Typhoons	Tropical Storms
TSR Forecast ( $\pm$ FE)	2007	306 ( $\pm$ 81)	8.7 ( $\pm$ 2.4)	16.9 ( $\pm$ 2.9)	26.8 ( $\pm$ 3.7)
42yr Climate Norm ( $\pm$ SD)	1965-2006	305 ( $\pm$ 97)	8.7 ( $\pm$ 3.0)	16.8 ( $\pm$ 3.6)	26.7 ( $\pm$ 4.4)
Forecast Skill at this Lead	1965-2006	30%	36%	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 = $\times 10^4$ knots <sup>2</sup> .
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 1965-2006		
Forecast Skill	=	Percentage Reduction in Mean Square Error Afforded by Cross-Validated Hindcasts 1965-2006 over Hindcasts Made with the 1965-2006 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 28% probability that the 2007 Northwest Pacific typhoon season ACE index will be above average (defined as an ACE index value in the upper tercile historically ( $>354$ )), a 46% likelihood it will be near-normal (defined as an ACE index value in the middle tercile historically (253 to 354)) and a 26% chance it will be below-normal (defined as an ACE index value in the lower tercile historically ( $<253$ )). The 42-year period 1965-2006 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 (1965-2006).

## Key Predictors for 2007

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. The reason for the forecast NW Pacific typhoon activity in 2007 rising from 10% below-norm (June forecast) to near-norm (July forecast) is that August/September Niño 3.75 sea surface temperatures are expected to be warmer than thought previously.

## 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 final TSR monthly forecast update for the 2007 Northwest Pacific typhoon season will be issued on the 6th August 2007.

## Appendix - Predictions from Previous Months

### a) Deterministic forecasts

<b>NW Pacific ACE Index and System Numbers 2007</b>					
		ACE Index ( $\times 10^4$ knots <sup>2</sup> )	Intense Typhoons	Typhoons	Tropical Storms
Average Number ( $\pm$ SD) (1965-2006)		305 ( $\pm$ 97)	8.7 ( $\pm$ 3.0)	16.8 ( $\pm$ 3.6)	26.7 ( $\pm$ 4.4)
TSR Forecasts ( $\pm$ FE)	4th July 2007	306 ( $\pm$ 81)	8.7 ( $\pm$ 24)	16.9 ( $\pm$ 2.9)	26.8 ( $\pm$ 3.7)
	4th June 2007	269 ( $\pm$ 82)	7.5 ( $\pm$ 2.6)	16.9 ( $\pm$ 2.9)	26.8 ( $\pm$ 3.7)
	3rd May 2007	281 ( $\pm$ 79)	7.9 ( $\pm$ 2.6)	16.9 ( $\pm$ 2.9)	26.8 ( $\pm$ 3.7)
	6th March 2007	264 ( $\pm$ 91)	7.3 ( $\pm$ 2.7)	14.8 ( $\pm$ 3.2)	24.3 ( $\pm$ 3.9)
Chan Forecasts	25th June 2007	-	-	14	24
	23rd April 2007	-	-	14	25

### b) Probabilistic forecasts

<b>NW Pacific Total ACE Index 2007</b>				
		Tercile Probabilities		
		below normal	normal	above normal
Climatology 1965-2006		33.3	33.3	33.3
TSR Forecasts	4th July 2007	26	46	28
	4th June 2007	42	43	15
	3rd May 2007	36	46	18
	6th March 2007	45	39	15

