



# August Forecast Update for Northwest Pacific Typhoon Activity in 2004

Issued: 4th August 2004

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## Forecast Summary

**TSR continues to anticipate the 2004 Northwest Pacific typhoon season will see above average activity.**

The TSR (Tropical Storm Risk) August forecast update for Northwest Pacific typhoon activity in 2004 continues to anticipate an above average season. The forecast spans the full Northwest Pacific season from 1st January to 31st December 2004 (95% of typhoons historically occur after 1st May) and is based on data available through the end of July 2004. TSR anticipates that activity will lie in the above average tercile historically to 70% probability. Average activity is likely to 25% probability and below average activity has only a 5% chance of occurring. TSR's main predictor is the forecast anomaly in August-September Niño 4 sea surface temperature (SST) which we anticipate will be  $0.63 \pm 0.14^\circ\text{C}$  warmer than normal this summer. This predictor influences cyclonic vorticity (the spinning up of storms) in the main typhoon formation region.

## NW Pacific ACE Index and System Numbers in 2004

		ACE Index	Intense Typhoons	Typhoons	Tropical Storms
TSR Forecast ( $\pm$ FE)	2004	373 ( $\pm$ 84)	11.0 ( $\pm$ 1.7)	18.5 ( $\pm$ 3.6)	27.7 ( $\pm$ 4.8)
34yr Climate Norm ( $\pm$ SD)	1970-2003	292 ( $\pm$ 95)	8.4 ( $\pm$ 3.1)	16.9 ( $\pm$ 3.9)	26.9 ( $\pm$ 4.4)
Forecast Skill at this Lead	1989-2003	50%	73%	37%	24%

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 1994-2003  
 Forecast Skill = Percentage Improvement over Running 10-year Prior Climate Norm from Simulated Real Time Forecasts 1989-2003  
 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 70% probability that the 2004 Northwest Pacific typhoon season ACE index will be in the upper tercile historically (defined as an ACE index value >331), a 25% likelihood it will be in the middle tercile (defined as an ACE index value between 237 and 331) and only a 5% chance it will be in the lower tercile (defined as an ACE index value <237). The 34-year period 1970-2003 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 (1970-2003).

## Key Predictor for 2004

The key factor behind our forecast for an above average Northwest Pacific typhoon season in 2004 is the anticipated warmer than normal summer Niño 4 (150°W-160°E, 5°S-5°N) SST. Above average summer Niño 4 SSTs are associated with weaker trade winds over the region 2.5°N-12.5°N, 120°E-180°E. These in turn lead to enhanced cyclonic vorticity (i.e. more storms are spun up) over the Northwest Pacific region where intense typhoons and typhoons form. Colder than normal summer Niño 4 SSTs have the opposite effect. The TSR forecast anomaly (1974-2003 climatology) for August-September 2004 Niño 4 SST is  $0.63 \pm 0.14^\circ\text{C}$  (up from  $0.32 \pm 0.23^\circ\text{C}$  last month). Forecast skill for this predictor at this lead is 93% (assessed using replicated real-time forecasts over the last 15 years).

## Further Information

Further information on the TSR forecast methodology, the TSR simulated real-time forecast skill 1988-2002 as a function of lead time, and on TSR in general, may be obtained from the TSR website (<http://tropicalstormrisk.com>). A summary of the Northwest Pacific typhoon season and a verification of our seasonal forecasts will be issued in early January 2005.

## Appendix - Predictions from Previous Months

<b>NW Pacific ACE Index and System Numbers 2004</b>					
		ACE Index	Tropical Storms	Typhoons	Intense Typhoons
Average Number ( $\pm$ SD) (1970-2003)		292 ( $\pm$ 95)	26.9 ( $\pm$ 4.4)	16.9 ( $\pm$ 3.9)	8.4 ( $\pm$ 3.1)
TSR Forecasts ( $\pm$ FE)	4 Aug 2004	373 ( $\pm$ 84)	27.7 ( $\pm$ 4.8)	18.5 ( $\pm$ 3.6)	11.0 ( $\pm$ 1.7)
	5 Jul 2004	336 ( $\pm$ 85)	27.0 ( $\pm$ 5.0)	17.6 ( $\pm$ 4.0)	9.8 ( $\pm$ 2.2)
	4 Jun 2004	317 ( $\pm$ 81)	26.6 ( $\pm$ 4.9)	17.1 ( $\pm$ 3.9)	9.2 ( $\pm$ 2.3)
	11 May 2004	296 ( $\pm$ 71)	26.1 ( $\pm$ 4.8)	16.6 ( $\pm$ 3.6)	8.6 ( $\pm$ 2.1)
	6 Apr 2004	286 ( $\pm$ 92)	25.9 ( $\pm$ 5.1)	16.3 ( $\pm$ 4.0)	8.2 ( $\pm$ 2.6)
	9 Mar 2004	309 ( $\pm$ 91)	26.4 ( $\pm$ 5.1)	16.9 ( $\pm$ 4.1)	9.0 ( $\pm$ 2.6)
Chan Forecasts	18 Jun 2004	-	29	18	-
	1 May 2004	-	29	18	-

