August Forecast Update for Northwest Pacific Typhoon Activity in 2006

Issued: 4th August 2006

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

Forecast Summary

TSR anticipates the 2006 Northwest Pacific typhoon season will see activity slightly above the 1965-2005 norm.

The TSR (Tropical Storm Risk) August forecast update for Northwest Pacific typhoon activity in 2006 anticipates activity 5-10% above the long-term norm. The forecast spans the full Northwest Pacific season from 1st January to 31st December 2006 (95% of typhoons historically occur after 1st May) and is based on data available through the end of July 2006. 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 for overall activity is the forecast anomaly in August-September 2006 Niño 3.75 sea surface temperature (SST). We anticipate this will be 0.24±0.30°C warmer than normal and thus slightly enhancing for activity. This is the final TSR monthly forecast update for the 2006 Northwest Pacific typhoon season. A verification of all forecasts will be issued in early January 2007.

NW Pacific ACE Index and System Numbers in 2006

		ACE Index	Intense Typhoons	Typhoons	Tropical Storms
TSR Forecast (±FE)	2006	325 (±77)	9.3 (±2.5)	18.6 (±2.9)	29.0 (±3.7)
41yr Climate Norm (±SD)	1965-2005	305 (±98)	8.6 (±3.0)	16.9 (±3.6)	26.7 (±4.4)
Forecast Skill at this Lead	1965-2005	38%	33%	37%	32%

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 = $x10^4$ $knots^2$.
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 1965-2005
Forecast Skill = Percentage Reduction in Mean Square Error Afforded by Cross-Validated Hindcasts 1965-2005 over Hindcasts Made with the 1965-2005 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 34% probability that the 2006 Northwest Pacific typhoon season ACE index will be above average (defined as an ACE index value in the upper tercile historically (>357)), a 52% likelihood it will be near-normal (defined as an ACE index value in the middle tercile historically (242 to 357) and only a 14% chance it will be below-normal (defined as an ACE index value in the lower tercile historically (<242)). The 41-year period 1965-2005 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 (1965-2005).

Key Predictors for 2006

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 TSR forecast anomaly (1965-2005) climatology) for August-September Niño 3.75 is 0.24±0.20°C (down from 0.50±0.30°C last month). The forecast skill (1965-2005) for this predictor at this lead is 91%. The slight decrease in forecast typhoon activity from a month ago is due solely to the 0.26°C decrease in forecast August-September Niño 3.75 SST compared to last month.

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*). A summary of the 2006 Northwest Pacific typhoon season and a verification of the TSR seasonal forecasts will be issued in early January 2007.

Appendix - Predictions from Previous Months

a) Deterministic forecasts

NW Pacific ACE Index and System Numbers 2006					
		ACE Index ($x10^4$ knots^2)	Intense Typhoons	Typhoons	Tropical Storms
Average Number (±SD) (1965-2005)		305 (±98)	8.6 (±3.0)	16.9 (±3.6)	26.7 (±4.4)
TSR Forecasts (±FE)	4th August 2006	325 (±77)	9.3 (±2.5)	18.6 (±2.9)	29.0 (±3.7)
	5th July 2006	349 (±82)	10.0 (±2.4)	18.6 (±2.9)	29.0 (±3.7)
	7th June 2006	315 (±84)	9.0 (±2.6)	18.6 (±2.9)	29.0 (±3.7)
	5th May 2006	326 (±80)	9.3 (±2.6)	18.6 (±2.9)	29.0 (±3.7)
	7th March 2006	298 (±92)	8.4 (±2.7)	17.1 (±3.3)	27.1 (±4.0)
Chan Forecast	23rd June 2006	-	-	18	28
	24th April 2006	-	-	17	27

b) Probabilistic forecasts

NW Pacific Total ACE Index 2006				
		Tercile Probabilities		
		below normal	normal	above normal
Climatology 1965-2005		33.3	33.3	33.3
TSR Forecasts	4th August 2006	14	52	34
	5th July 2006	10	44	46
	7th June 2006	19	50	31
	5th May 2006	15	50	35
	7th March 2006	26	47	27