



Extended Range Forecast for Northwest Pacific Typhoon Activity in 2003

Issued: 5th March 2003

by Drs Adam Lea and Mark Saunders

Benfield Greig Hazard Research Centre, UCL (University College London), UK

Forecast Summary

TSR anticipates the 2003 Northwest Pacific typhoon season will see activity close to the 10-year and 30-year climate norms.

The TSR (Tropical Storm Risk) consortium presents their extended range forecast for Northwest Pacific typhoon activity in 2003. The forecast spans the full Northwest Pacific season from 1st January to 31st December 2003 and is based on data available through the end of February 2003. We include for the first time forecasts of the NOAA Accumulated Cyclone Energy (ACE) Index for the Northwest Pacific. The ACE Index is a measure of total cyclone wind energy. Our main predictor is the forecast anomaly in August-September Niño 4 sea surface temperature (SST) which we anticipate will be $0.01 \pm 0.42^\circ\text{C}$ warmer than normal this summer. Monthly updated forecasts will be issued through to early August.

NW Pacific ACE Index and System Numbers in 2003

		ACE Index	Intense Typhoons	Typhoons	Tropical Storms
TSR Forecast (\pm FE)	2003	296 (\pm 100)	8.5 (\pm 2.9)	16.6 (\pm 4.5)	26.2 (\pm 5.1)
10yr Climate Norm (\pm SD)	1993-2002	300 (\pm 113)	9.1 (\pm 3.2)	17.2 (\pm 4.7)	27.8 (\pm 5.0)
30yr Climate Norm (\pm SD)	1973-2002	285 (\pm 97)	8.0 (\pm 3.0)	16.6 (\pm 3.7)	26.3 (\pm 4.3)
Forecast Skill at this Lead	1988-2002	13%	8%	7%	2%

- 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 1993-2002
- Forecast Skill = Percentage Improvement over Running 10-year Prior Climate Norm from Simulated Real Time Forecasts 1988-2002
- 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.

Key Predictor for 2003

The key factor behind our forecast for an average Northwest Pacific typhoon season in 2003 is the anticipated near neutral Niño 4 (150°W-160°E, 5°S-5°N) SST. Our forecast anomaly (1973-2002 climatology) for August-September 2003 Niño 4 SST is $0.01 \pm 0.42^\circ\text{C}$. Forecast skill for this predictor at this lead is 15% (assessed using replicated real-time forecasts over the last 15 years).

Forecasts and New Developments for 2003

For the 2003 Northwest Pacific typhoon season, TSR will be: (1) Issuing monthly updated forecasts for basin tropical storm, typhoon and intense typhoon numbers and additionally for the ACE Index. The latter reflects a combination of intensity and duration for all storms each season and may be linked more closely to total losses and disruption than the individual number of tropical storms, typhoons or even intense typhoons; (2) Providing real-time forecasts through the TSR Storm Tracker for active Northwest Pacific storm systems. These forecasts are updated every 6-12 hours and provide the best available information on storm strength, track and track uncertainty all with various levels of zoom. A unique feature to be included soon is current and forecast 2-dimensional windfields for systems of at least typhoon force.

Further Information

Further information on the TSR forecast methodology, the TSR simulated real-time forecast skill 1987-2001 as a function of lead time, and on TSR in general, may be obtained from the 'Extended Range Forecast for Northwest Pacific Typhoon Activity in 2002' document issued on the 6th March 2002. Our next monthly forecast update for the 2003 Northwest Pacific typhoon season will be issued on the 6th April 2003. Further regular monthly updates will follow through to early August 2003.

Appendix - Predictions from Previous Months

NW Pacific ACE Index and System Numbers 2003					
		ACE Index	Tropical Storms	Typhoons	Intense Typhoons
Average Number (\pm SD) (1993-2002)		300 (\pm 113)	27.8 (\pm 5.0)	17.2 (\pm 4.7)	9.1 (\pm 3.2)
Average Number (\pm SD) (1973-2002)		285 (\pm 97)	26.7 (\pm 4.3)	16.6 (\pm 3.7)	8.0 (\pm 3.0)
TSR Forecast (\pm FE)	5th March 2003	297 (\pm 100)	26.2 (\pm 5.1)	16.6 (\pm 4.5)	8.5 (\pm 2.9)

