# Extended Range Forecast for Northwest Pacific Typhoon Activity in 2010

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## Forecast Summary

**TSR anticipates the 2010 Northwest Pacific typhoon season will see activity close to the 1965-2009 climate norm.**

The TSR (Tropical Storm Risk) consortium presents their extended range forecast for Northwest Pacific typhoon activity in 2010. The forecast spans the full Northwest Pacific season from 1st January to 31st December 2010 (95% of typhoons occur historically after 1st May) and is based on data available through the end of February 2010. The forecast includes deterministic and probabilistic projections for overall basin activity, and deterministic projections for the ACE index and numbers of intense typhoons, typhoons and tropical storms. TSR anticipates that activity will be close to the long term climate norm. TSR's main predictor at this lead for overall activity is the February surface pressure in the central northern tropical Pacific (region 10-20°N, 145-165°W). Updated forecasts will be issued in early May, early July and early August.

### NW Pacific ACE Index and System Numbers in 2010

| | | ACE Index | Intense Typhoons | Typhoons | Tropical Storms |
|---|---|---|---|---|---|
| TSR Forecast (±FE) | 2010 | 284 (±88) | 8.1 (±2.6) | 14.8 (±3.3) | 24.2 (±3.8) |
| 45yr Climate Norm (±SD) | 1965-2009 | 299 (±97) | 8.6 (±3.0) | 16.6 (±3.6) | 26.6 (±4.3) |
| Forecast Skill at this Lead | 1965-2009 | 18% | 23% | 14% | 20% |

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 Cross-Validated Hindcasts 1965-2009
Forecast Skill = Percentage Reduction in Mean Square Error Afforded by Cross-Validated Hindcasts 1965-2009 over Hindcasts Made with the 1965-2009 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 30% probability that the 2010 Northwest Pacific typhoon season ACE index will be above average (defined as an ACE index value in the upper tercile historically (>338)), a 43% likelihood it will be near-normal (defined as an ACE index value in the middle tercile historically (238 to 338) and a 27% chance it will be below-normal (defined as an ACE index value in the lower tercile historically (<238)). The 45-year period 1965-2009 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 (1965-2009).

## Predictors for 2010

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 before May using the February surface pressure in the central northern tropical Pacific region 10°N-20°N, 145°W-165°W; from May they are predicted 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://www.tropicalstormrisk.com*). The next TSR forecast update for the 2010 Northwest Pacific typhoon season will be issued on the 5th May 2010.