



# Summary of 2014 NW Pacific Typhoon Season and Verification of Authors' Seasonal Forecasts

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## Summary

The 2014 NW Pacific typhoon season was characterised by activity slightly below the long-term (1965-2013) norm. The TSR forecasts over-predicted activity but mostly to within the forecast error.

The Tropical Storm Risk (TSR) consortium presents a validation of their seasonal forecasts for the NW Pacific basin ACE index, numbers of intense typhoons, numbers of typhoons and numbers of tropical storms in 2014. These forecasts were issued on the 6th May, 3rd July and the 5th August 2014. The 2014 NW Pacific typhoon season ran from 1st January to 31st December.

## Features of the 2014 NW Pacific Season

- Featured 23 tropical storms, 12 typhoons, 8 intense typhoons and a total ACE index of 273. These numbers were respectively 12%, 25%, 0% and 7% below their corresponding long-term norms. Seven out of the last eight years have now had a NW Pacific ACE index below the 1965-2013 climate norm value of 295.
- The peak months of August and September were unusually quiet, with only one typhoon forming within the basin (Genevieve formed in the NE Pacific and crossed into the NW Pacific basin as a hurricane). Since 1965 no NW Pacific typhoon season has seen less than two typhoons develop within the NW Pacific basin during August and September. This lack of activity in 2014 was in part caused by an unusually strong and persistent suppressing phase of the Madden-Julian Oscillation.
- Typhoon Rammasun was one of the most intense typhoons ever to strike China. Its 1-minute sustained winds at landfall were near 130 kts (150 mph). Rammasun caused 64 deaths and estimated economic losses of US\$ 6.25bn.

## Verification of Forecasts

NW Pacific ACE Index and System Numbers in 2014					
		ACE Index ( $\times 10^4$ knots <sup>2</sup> )	Intense Typhoons	Typhoons	Tropical Storms
Average Number ( $\pm$ SD) (1965-2013)		295 ( $\pm$ 104)	8 ( $\pm$ 3)	16 ( $\pm$ 4)	26 ( $\pm$ 5)
Actual Number 2014		273	8	12	23
TSR Forecasts ( $\pm$ FE)	5 Aug 2014	328 ( $\pm$ 82)	9 ( $\pm$ 2)	16 ( $\pm$ 3)	26 ( $\pm$ 4)
	3 Jul 2014	335 ( $\pm$ 89)	9 ( $\pm$ 2)	16 ( $\pm$ 3)	26 ( $\pm$ 4)
	6 May 2014	375 ( $\pm$ 86)	11 ( $\pm$ 3)	17 ( $\pm$ 3)	27 ( $\pm$ 4)
Shanghai Typhoon Institute	5 May 2014	-	-	-	26-28

The TSR forecasts over-predicted NW Pacific typhoon activity in 2014. This over-prediction was due to two factors. The first was the expectation that a moderate El Niño event would develop by August-September-October. El Niños are associated typically with above-norm typhoon activity. However a moderate El Niño did not develop and this was reflected in the later (and more accurate) TSR forecasts issued in early July and early August.

The second factor was the unprecedented lack of NW Pacific typhoon activity in August, which is normally one of the most active months for such activity. Only one tropical storm developed in the basin in August which is the lowest number of basin storm formations since at least 1951. The lack of activity in August and to a lesser extent in September 2014 was in part due to a persistent unfavourable phase of the Madden-Julian Oscillation which caused widespread subsidence and drying of the atmosphere across the basin. These conditions acted to hinder the development of deep convection and storm development.

## Tropical Storm Catalogue 2014

<b>NW Pacific Individual Storm Summary 2014</b>					
No.	Name	Dates	Peak wind (kts) <sup>x</sup>	Typhoon category	Landfall country and storm category at landfall*
1	Lingling	18-19 Jan	35	-	-
2	Kajiki	30 Jan-1 Feb	35	-	Philippines (TS)
3	Faxai	28 Feb-6 Mar	75	1	-
4	Peipah	3-10 Apr	35	-	-
5	Tapah	27 Apr-1 May	65	1	-
6	Mitag	9-12 Jun	40 <sup>xx</sup>	-	-
7	Hagibis	14-17 Jun	45	-	China (TS)
8	Neoguri	3-10 Jul	135	4	Japan <sup>+</sup> (TS)
9	Rammasun	12-19 Jul	135	4	Philippines (3), China (4)
10	Matmo	17-23 Jul	85	2	Taiwan (2)
11	Halong	28 Jul-10 Aug	140	5	Japan <sup>+</sup> (TS)
12	Nakri	2-3 Aug	40	-	-
13	Genevieve	7-14 Aug	140	5	-
14	Fengshen	7-9 Sep	60	-	-
15	Kalmaegi	10-16 Sep	70	1	Philippines (1), China (1)
16	Fung Wong	17-23 Sep	50	-	Philippines (TS), Taiwan (TS), China (TS)
17	Kammuri	24-29 Sep	55	-	-
18	Phanfone	28 Sep-6 Oct	130	4	Japan <sup>+</sup> (1)
19	Vongfong	2-14 Oct	155	5	Japan <sup>+</sup> (TS)
20	Nuri	31 Oct-6 Nov	155	5	-
21	Sinlaku	26-29 Nov	55	-	Vietnam (TS)
22	Hagupit	1-12 Dec	155	5	Philippines (3)
23	Jangmi	28-31 Dec	45	-	Philippines (TS)

<sup>x</sup> 1-min sustained winds.

\* Landfall is defined as the intersection of the surface centre of a tropical storm with a coastline.

<sup>+</sup> Mainland only.

<sup>xx</sup> 10-minute average.

TD = Tropical Depression, TS = Tropical Storm, 1-5 = Saffir-Simpson hurricane scale.

## Forecasts for 2015

TSR outlooks for 2015 NW Pacific typhoon activity will be issued on the 6th May, 7th July and 5th August 2015. Forecasts will be deterministic and probabilistic.