

CEDIM Forensic Disaster Analysis Group (FDA)
TYPHOON 09W "RAMMASUN" – Short Summary

18 July 2014 – Report No. 1 – 12:00 GMT - Update: 30 July 2014

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SUMMARY

Official Disaster Name	Date	Landfall UTC	Local	Duration (PHL)
Rammasun (Glenda, Philippines)	15/16-07	07 UTC	+8	12 hours
Rammasun (China, Vietnam)	18/19/20-07	06:30 UTC	+8	12 hours

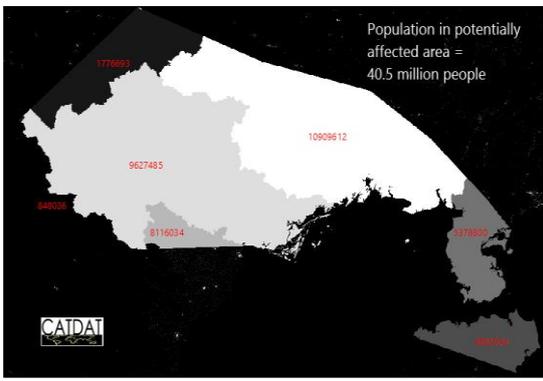
Preferred Hazard Information:

Path	Speed	Definition (Saffir-Simpson Scale)	Width (km)	Gust (Peak)	Landfall	Sustained
WNW (Philippines)	20 kph	Category 3 (15/7) Category 1 (16/7)	Max: 150	125 kt 232 kph	1st : 15.07., 15 LT	150 kph near center
NW (China, Vietnam)	25 kph	Category 4 (18/7), max. intensity 06 UTC	Storm warning area: 220 km	165 kt 306 kph (JTWC)		135 kt 250 kph (JTWC)

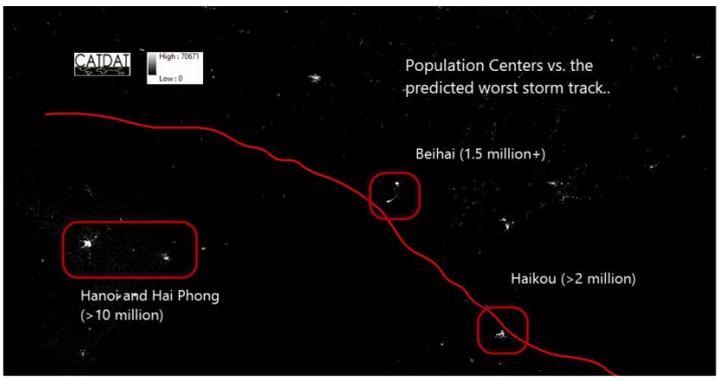
Location Information:

Country	ISO	Provinces/Regions	Highest Impact	Economic Exposure	HDI (2012)	Urbanity	Pop. affected
Philippines	PH		Samar, Masbate, Luzon, Mindoro	Not applicable	0.654	55%	Ca. 2 million
China and Vietnam	CN and VN	Hainan Guangdong Guangxi Yunnan	Hainan (including capital city Haikou, southern Guangdong (Leizhou Peninsula), south-eastern Guangxi	\$321.1 billion \$563 billion USD PPP	0.617		Hanoi Area >10 million, Haikou 3.8 million 40.5 million people potentially affected

Vulnerability and Exposure Metrics (Population, Infrastructure, Economic)



Population in potentially affected area = 40.5 million people



Population Centers vs. the predicted worst storm track.

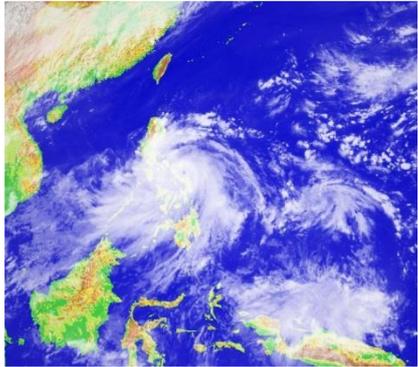
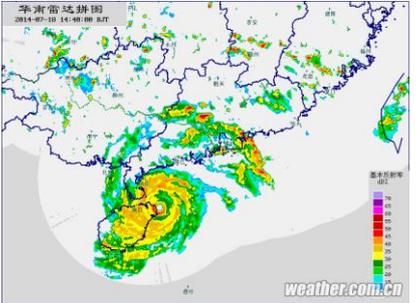
Beihai (1.5 million+)

Haikou (>2 million)

Hanoi and Hai Phong (>10 million)

- 40.5 million people potentially affected in China (23 million) and Vietnam (18 million)
- The total exposed value is \$321.1 billion USD, or approx. \$563 billion USD PPP (Purchasing Power Parity) In northern Vietnam, much less economic exposure (approx. 17%) is seen with around \$50 billion USD versus \$270 billion USD in China.

Preferred Hazard Information Description:

Philippines Category 1-3	China (Hainan and Guangdong) Category 4	Guangxi and Northern Vietnam Category 2-3
<p>On 15/16 July</p> <ul style="list-style-type: none"> The Japan Meteorological Agency put Rammasun's central pressure at 965mb at 06Z (2am EDT) Tuesday, then dropped it to 945mb at 09Z (5am EDT) as the storm was making landfall. The storm weakened while crossing Luzon Gusts around 90-125 kt (167-232 kph) near center of storm The typhoon passed over the most heavily populated part of Luzon including Manila. Rammasun passed Manila at around 22 UTC within 40 miles of the city, gusts at that time 170 kph Flooding has occurred in Manila, and expected flood and wind damage in the city has the potential to make Rammasun one of the top ten most expensive natural disasters in Philippine history 		
<p>On 18 July</p> <ul style="list-style-type: none"> Landfall at 06:30 UTC northeastern tip of Hainan (cities of Wenshan and Qinghai) Maximum intensity of Rammasun (06 UTC), 1 min sustained 135 kt, gusts 165 kt (JTWC), central pressure 935 hPa (Nat. Met. Center, China) Rain expected in excess of 300 mm/24 in Hainan, southern Guangdong and southeastern Guangxi “Red” (highest level) and “orange” warnings in effect in southern China 		
<p>Outlook (+48h)</p> <ul style="list-style-type: none"> Final landfall expected in southern Guangxi close to Vietnamese/Chinese border between July 18 UTC and 19 July 06 UTC as a category 2-3 typhoon Rapid weakening on 19 July and complete dissipation on 20 July 2014 Storm tracking with high confidence Intense rainfall and flooding in northern Vietnam and the very south of China's province of Yunnan Damage due to storm and storm surge along coastlines of Guangxi and Vietnam 		
<p><i>Satellite image on 16 July 2014, 08:00 UTC; credit: digital-typhoon.org</i> <i>Radar image on 18 July 2014, 06:40 UTC; credit: weather.com.cn</i></p>		

What have been the largest comparable damaging events (Philippines) in the past?

Date - Name	Impact Size (1 min sustained)	Location	fatalities	Economic Loss in Philippines
2013 Haiyan	Typhoon (315 kph)	Leyte, Samar, Tacloban	6340 (confirmed)	\$9-17b UDS (CEDIM estimate)
2012 Bopha	Typhoon (280 kph)	Southern PH	1146, 834 missing	\$1.04b USD (42b PHP)
1990 Mike	Typhoon (280 kph)	Central PH	748	\$879m USD (2013 adj.)
1995 Angela	Typhoon (150-170 kph)	Manila	936	\$315m USD (1995 unadj.)

Impacts on Transportation System and Lifelines

<p>Typhoon Rammasun has some minor impacts on transportation systems in the region:</p> <ul style="list-style-type: none"> As of 16 July 2014, 06:00 pm, a total amount of 165 domestic and 89 international flights have been cancelled due to bad weather conditions. As of 17 July 2014, 06:00 am, a total of 1,193 passengers, 23 vessels, 176 rolling cargoes and 15 motor bancas were stranded at the ports. As of 17 July 2014, 06:00 am, 19 roads and 3 bridges in Philippine regions III, IV-A, IV-B, V and VIII were rendered impassable due to incurred damage and flooding. As of 17 July 2014, 06:00 am, 84% of the Metro Manila has been restored. <p>Typhoon Rammasun caused damage to lifelines:</p> <ul style="list-style-type: none"> A total of 4 Provinces in Region V (Camarines Norte, Masbate and Albay), four provinces in Region IV-A (Cavite, Batangas, Rizal and Quezon) and sixty-five municipalities/city in Regions III, IV-A, IV-B, V, VIII and NCR reported power interruption since 15 July 2014 As of 17 July 2014, 06:00 am, there are no reported damages to electricity generation facilities in Southern Luzon.



(Insured) Loss Estimates:

First estimate of potential exposed stock losses:

In the Philippines (as of 18 July):

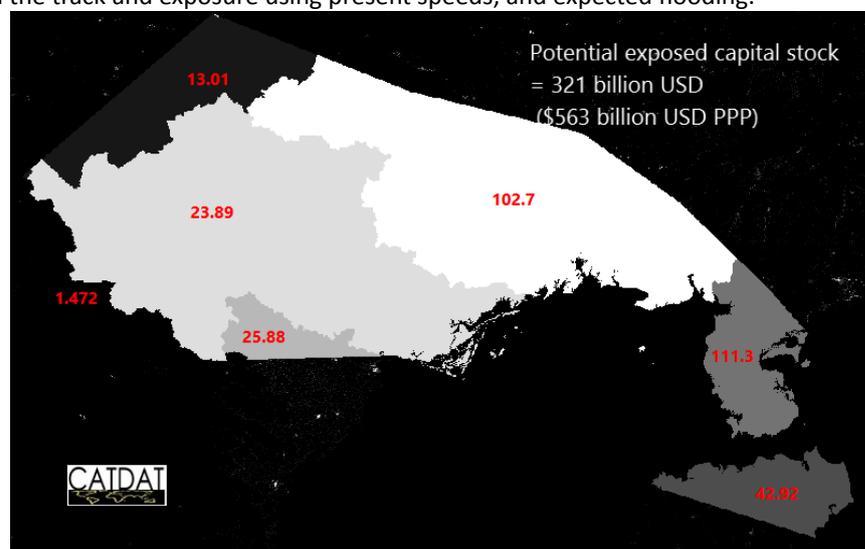
- 882,326 persons affected, thereof 525,791 persons displaced and served inside 1,200 evacuation centers
- 26,259 houses damaged (7,002 totally, 19,257 partially)
- 54 death, 100 injured people, 3 missing

Cost of damage:

- **INFRASTRUCTURE:** A total of PhP 892,011,600 (\$20.5 million USD) damage to infrastructure was reported in Regions III, V, VIII and NCR
- **AGRICULTURE:** a total of PHP4,529,620,307 (\$104 million USD) damage to rice, corn, high valued cash crops (HVCC), livestock and agricultural facilities was reported in Regions III, IV-B, V and CAR

In China and Vietnam:

- Typical 13-14 (42-46m/s) scale approaching 15-16 (50-55m/s) have had 0.5-2% damage ratios in the past over the central part going over the coast before dissipating over land.
- The total exposed value is \$321.1 billion USD, or approx. \$563 billion USD PPP.
- For reconstruction capital stock multiply by 1.5-1.9 depending on the location, given a huge difference in building typologies across the region.
- Preliminary capital stock losses could be in the order of at least \$7-18 billion USD (reconstruction therefore 1.5-1.9 times this) given the track and exposure using present speeds, and expected flooding.



Losses

- approx. \$4.2 billion USD direct losses
- First guess direct losses in **Haikou**: \$1.5 billion USD (government)
- Over \$2.5 billion counted so far, but expected to increase further
- **Guangxi**: 209,100 people evacuated, 125,700 in need of livelihood assistance. 822 houses collapsed, 872 houses with severe damage, 23,809 houses with some damage. ca \$250 million USD losses
- Guangdong: 119,000 people evacuated or need emergency life rescue, nearly 20,000 rooms collapsed or damaged. Crop area affected 796,200 hectares, on Leizhou Peninsula large areas of bananas, sugar cane and other crops destroyed.

This summary report was produced in conjunction with the CATDAT database, earthquake-report.com, and wettergefahren-fruehwarnung.de and with information from NDRRMC, JTWC data and the Chinese National Weather Service.
<http://www.ndrrmc.gov.ph/attachments/article/1234/Executive%20Summary%20Updates%20on%20TY%20GLENDA%20as%20of%2018%20JULY%20214,%206AM.pdf>