



Typhoon Haima (Lawin) Report #3

20 October 2016, 9.00AM PHT

Manila Observatory

SUMMARY



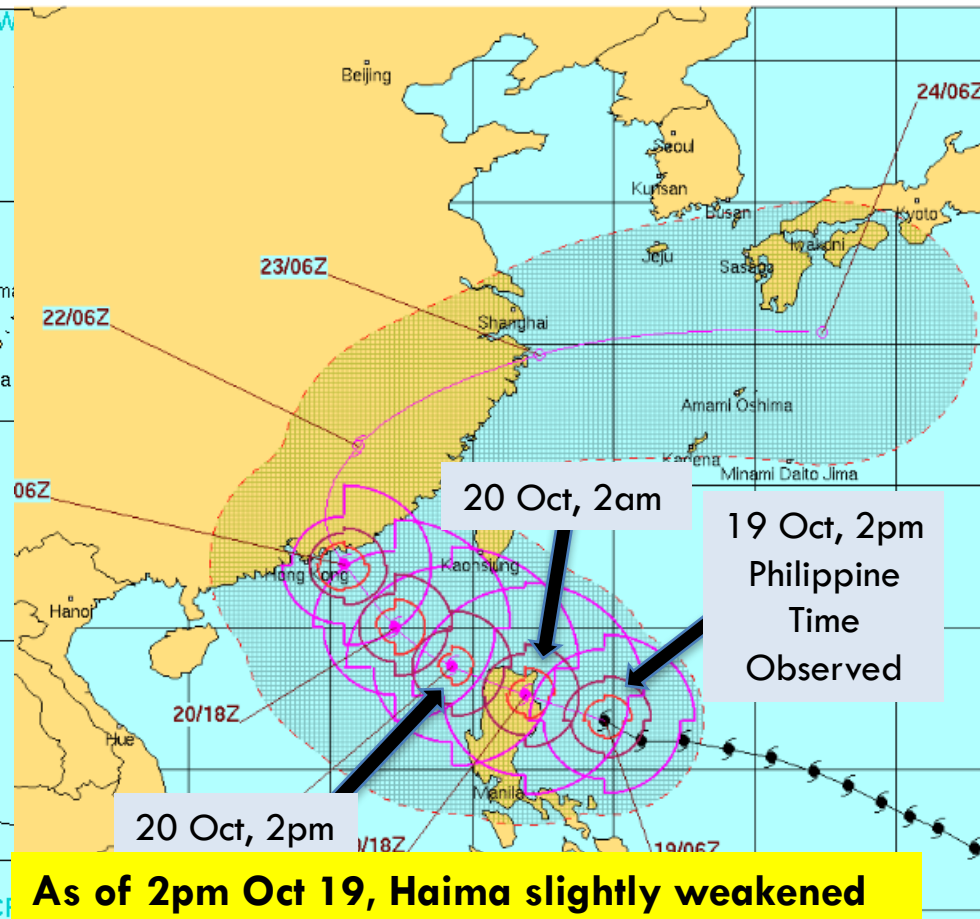
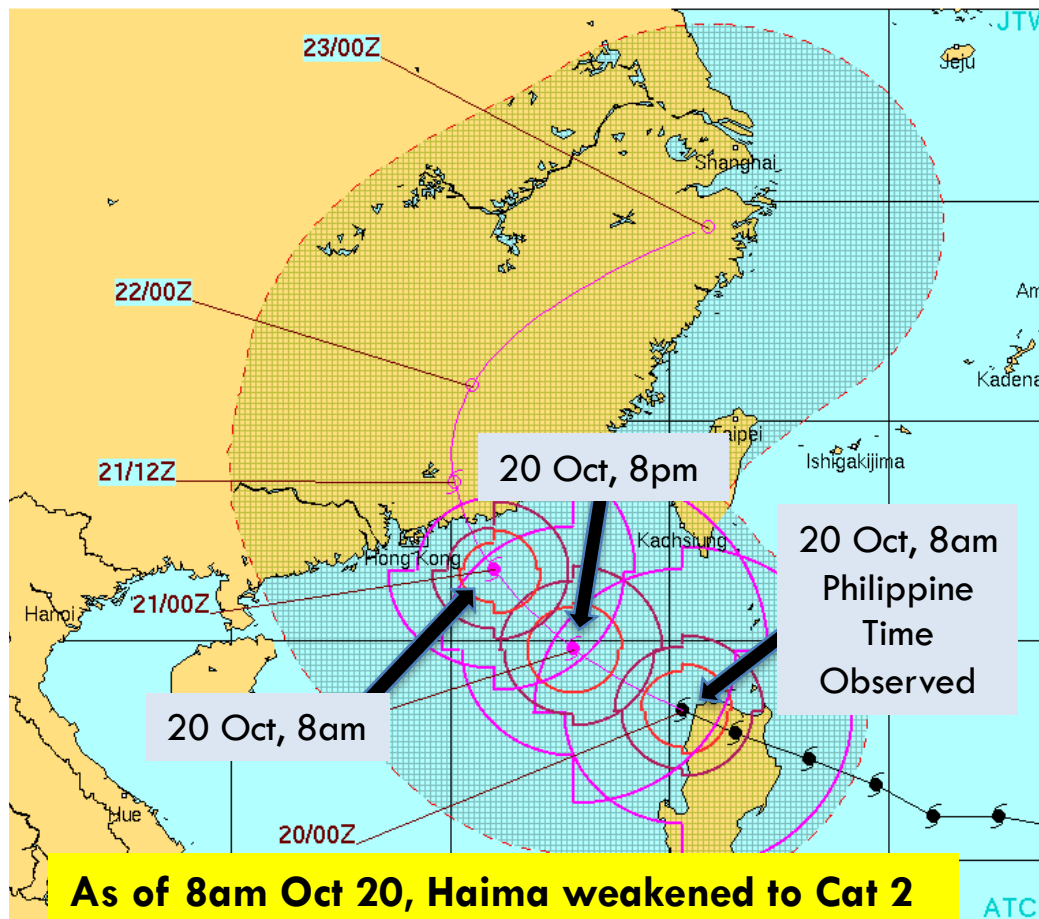
- PAGASA reports eye of Super Typhoon Haima (Bagyong Lawin) located at 18.4°N, 120.3°E (as of 7 AM Oct 20) with max 10-min sustained winds of up to 185 kph near center, gustiness of up to 230 kph. Haima is expected to move West Northwest at 22 kph forecast towards West of Basco, Batanes tomorrow morning, with estimated moderate to heavy rainfall within 700 km around TC center.
- Haima has made landfall over Penablanca, Cagayan around 2am Oct 20.
- Signal #3 over Ilocos Norte, Cagayan, Isabela, Apayao, Kalinga, Mt. Province, Ifugao, Abra, Ilocos Sur and Calayan Group of Islands; Signal #2 Batanes Group of Islands, La Union, Benguet, Nueva Vizcaya, Quirino, Pangasinan, Aurora, Tarlac, Nueva Ecija and Northern Zambales
- Multi-tracks show agreement in the track as it continues to move west-northwest.
- According to JTWC, Haima weakened to Cat 2 (max 1-min wind speed: 176 kph) with eye located near 18.4°N, 120.3°E (as of 8am Oct 20). Haima is forecast to leave PAR (with max winds of about 167 kph) over West Northwest of Luzon before 8pm Oct 20.
- As Typhoon Haima crossed Cagayan and Apayao, intense winds, rainfall associated with TC over surrounding areas. Other potential critical areas include vulnerable regions in CAR where TC rainfall may be enhanced by interaction with mountains.
- Satellite rainfall from 8.30AM-9:29AM 20 Oct shows intense rainfall of 25-30 mm/hr over Ilocos Norte, Ilocos Sur, La Union, Apayao, Abra and around eye of tropical cyclone
- Model forecast shows potentially heavy 1-day total rainfall (more than 240 mm) over Abra, Ilocos Sur
- Past destructive typhoons with similar tracks include TY Megi (Juan) (2010), TY Zeb (Iliang) (1998) and TY Sarika (Karen) (2016)

Current status of Typhoon Haima (Lawin)



Observed track (black) and forecast (pink)
issued at **20 Oct, 11 AM**

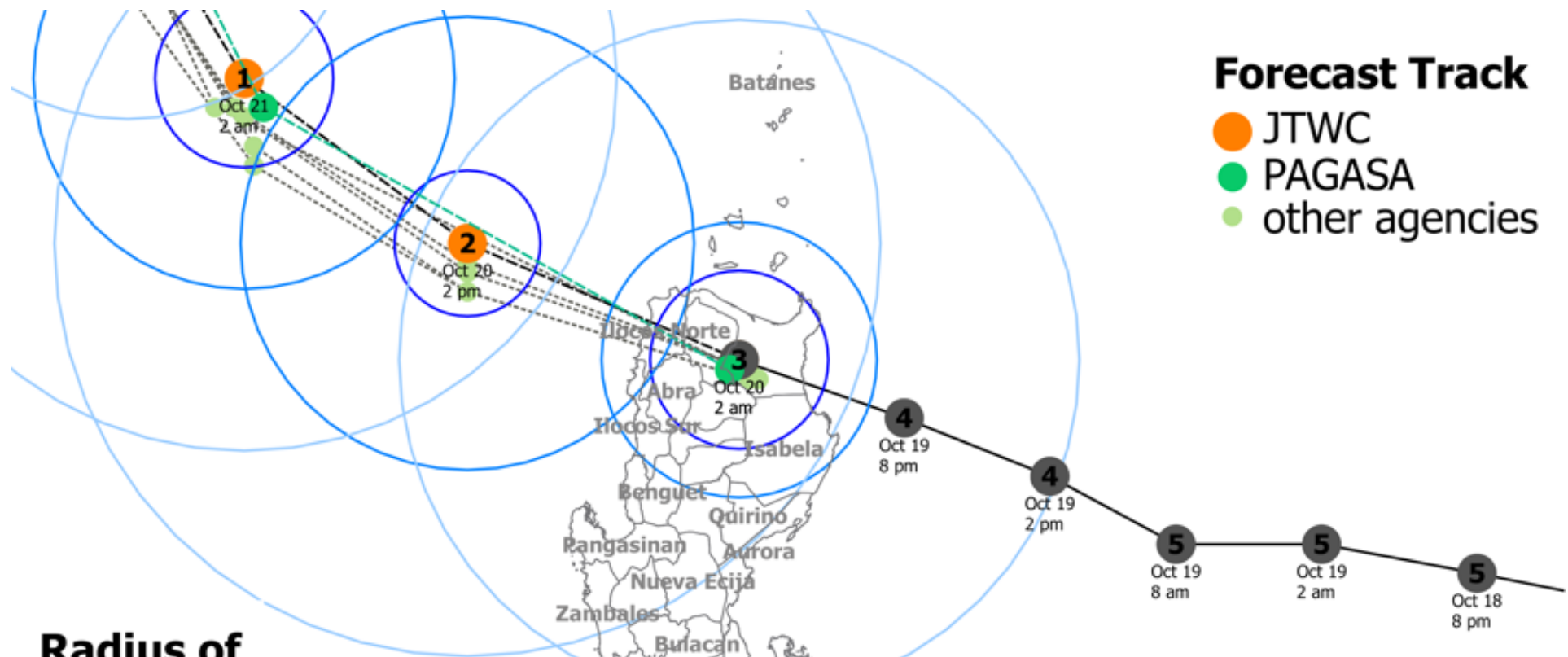
Previous forecast
issued at **19 Oct, 5PM**



Current status of Typhoon Haima (Lawin)



PAGASA reports eye of Super Typhoon Haima (Bagyong Lawin) located at 18.4°N, 120.3°E (as of 7 AM Oct 20) with max 10-min sustained winds of up to 185 kph near center, gustiness of up to 230 kph. Haima is expected to move West Northwest at 22 kph forecast towards West of Basco, Batanes tomorrow morning, with estimated moderate to heavy rainfall within 700 km around TC center. There is consensus in tracks of other agencies.



Radius of Max Wind

- 63 kph
- 93 kph
- 119 kph

PAGASA TCWS as of 8 am Oct 20

TCWS #3: Ilocos Norte, Cagayan, Isabela, Apayao, Kalinga, Mt. Province, Ifugao, Abra, Ilocos Sur and Calayan Group of Islands

TCWS #2 : Batanes Group of Islands, La Union, Benguet, Nueva Vizcaya, Quirino, Pangasinan, Aurora, Tarlac, Nueva Ecija and Northern Zambales

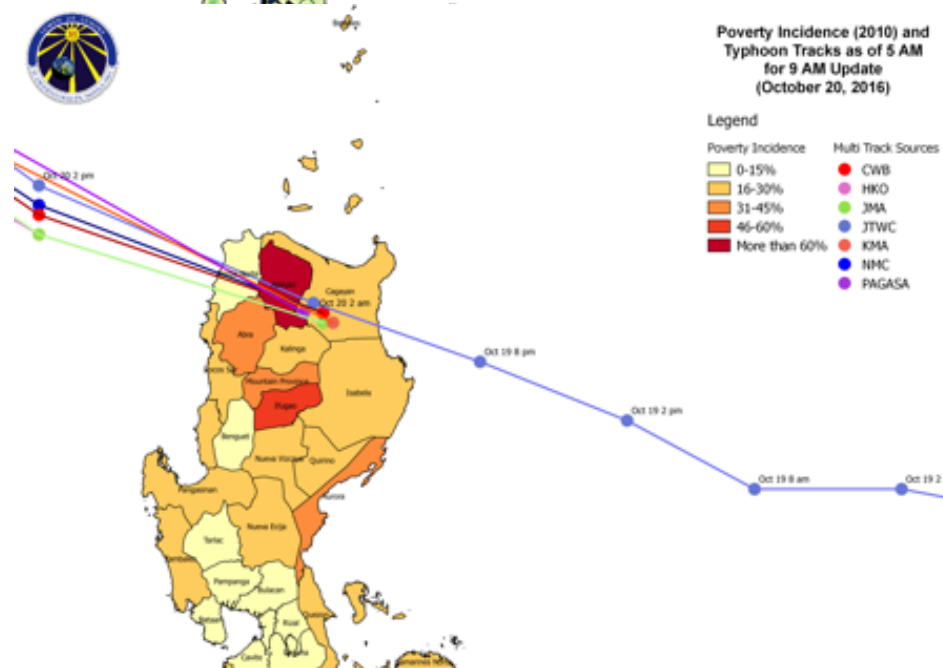
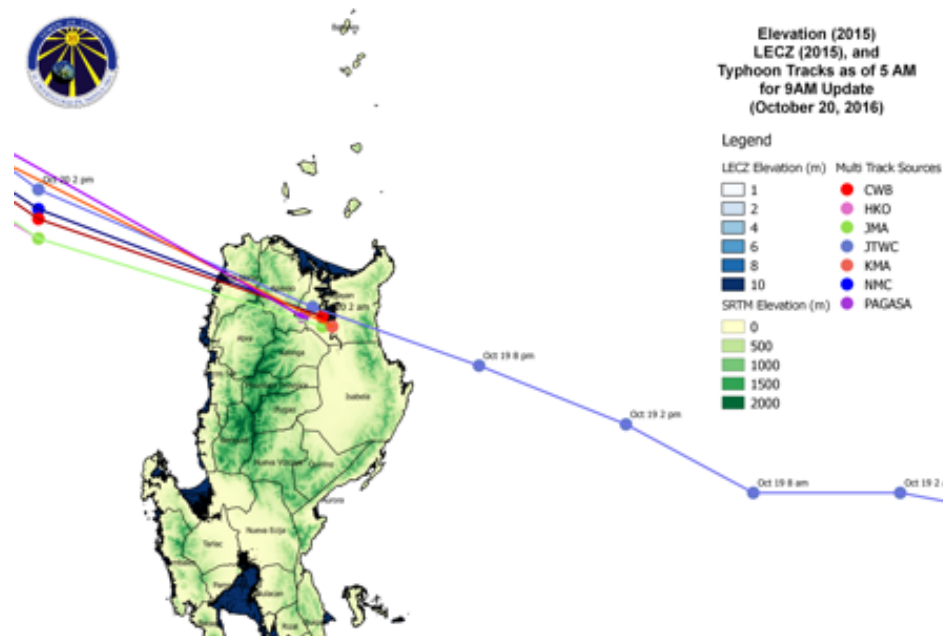
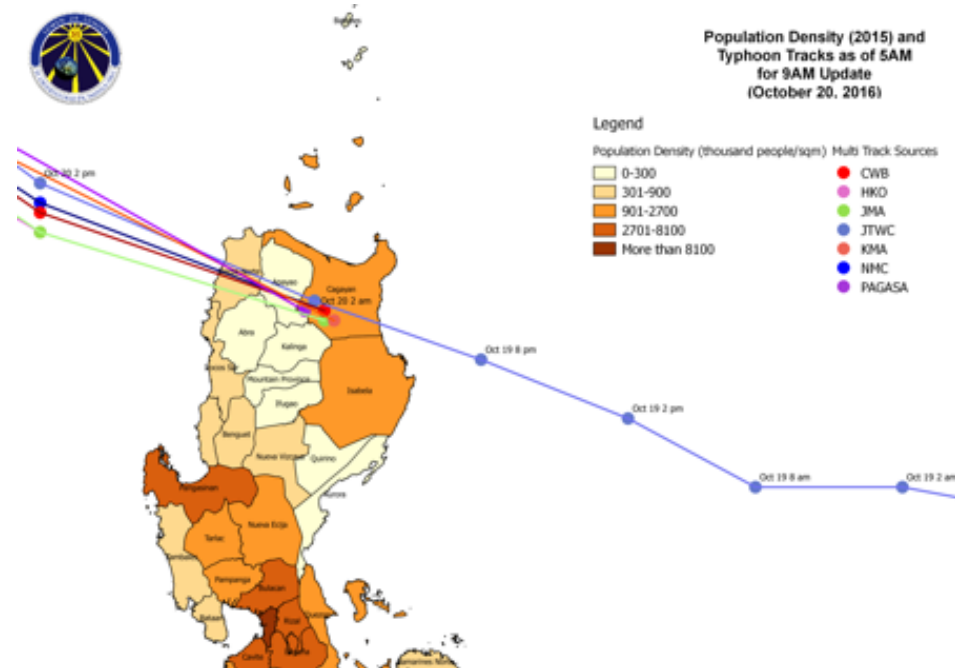
TCWS #1 : Rest of Zambales, Bulacan, Bataan, and Pampanga

Typhoon Haima (Lawin): Exposure, and Vulnerability



TRACK, POTENTIAL EXPOSURE AND VULNERABILITY

Track forecast as issued at 5 AM, Oct 20



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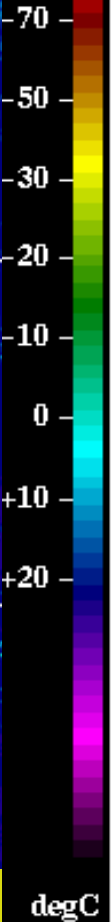
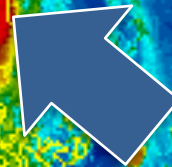
Potential rainfall associated with Typhoon Haima (Lawin)



Longwave Infrared Image, NHC Color Enhancement

As of 8.30AM, Oct 20

Areas of bright red (indicating active convection, heavy rainfall) over north Luzon and northwest of Luzon (over sea).



"NASA research has indicated that cloud top temperatures that reach or exceed the threshold of -52°C typically have heavy rainfall areas " (<http://www.nasa.gov/content/11-w-north-pacific-ocean/#.UgeFGBZCrbw>)

Satellite data via the University of Wisconsin Space Science and Engineering Center (SSEC) :
<http://tropic.ssec.wisc.edu/real-time/westpac/images/irngms.GIF> (cropped image displayed here)

Potential rainfall associated with Typhoon Haima (Lawin)

JAXA Realtime Rainfall Watch

世界の雨分布リアルタイム

日本語

Last Update: 20 Oct 2016 01:33:42 UTC



衛星全球降水マップ
GSMaP
GLOBAL SATELLITE MAPPING OF PRECIPITATION



Date: 2016 / 10 / 20 00:30-01:29 UTC Submit

« Prev

Latest

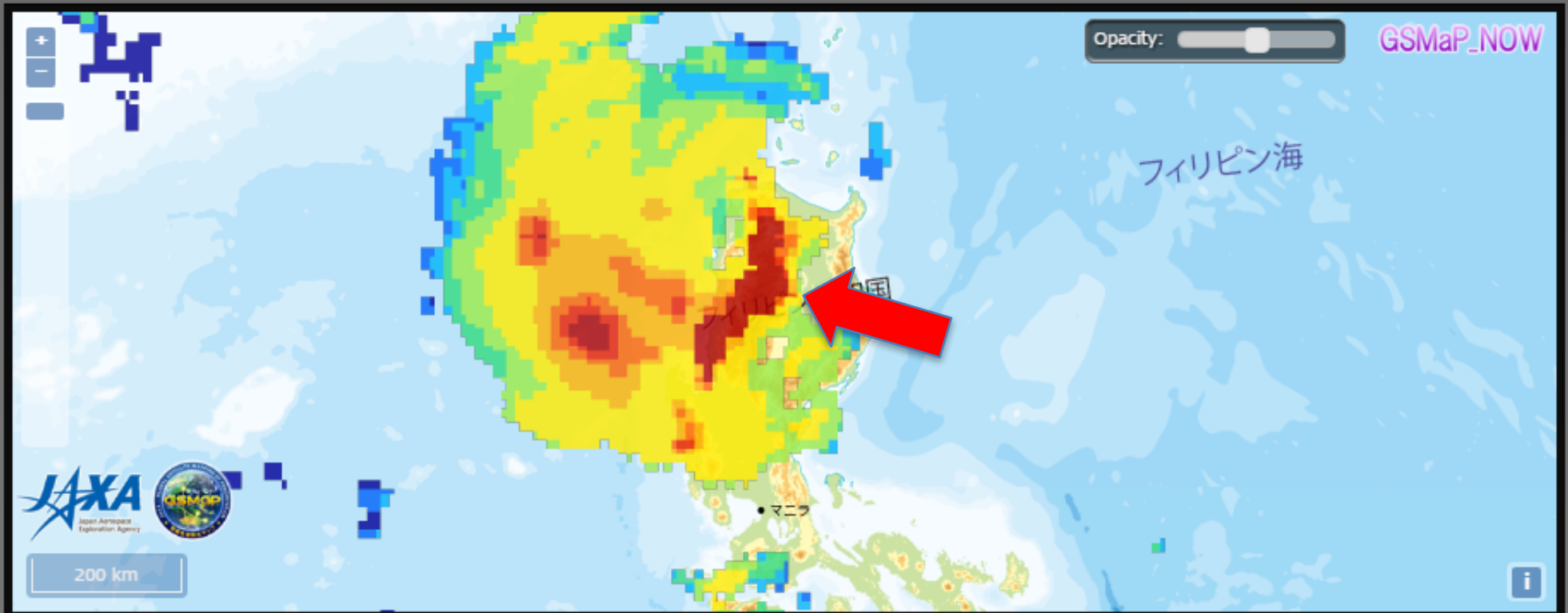
Next »

Full Screen

Normal

Opacity:

GSMaP_NOW



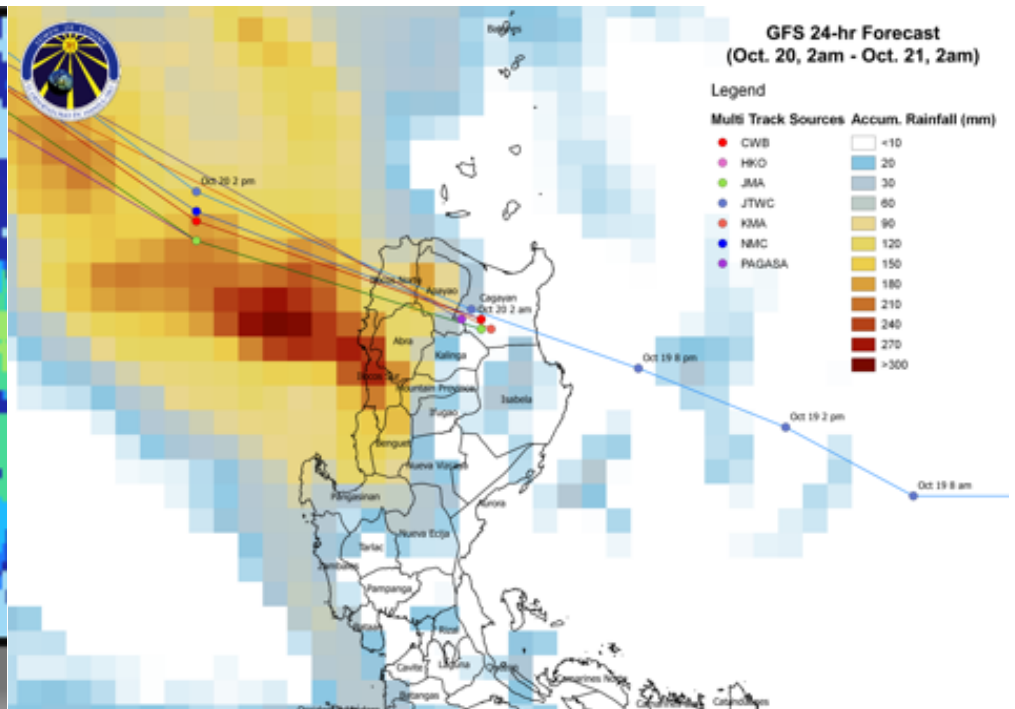
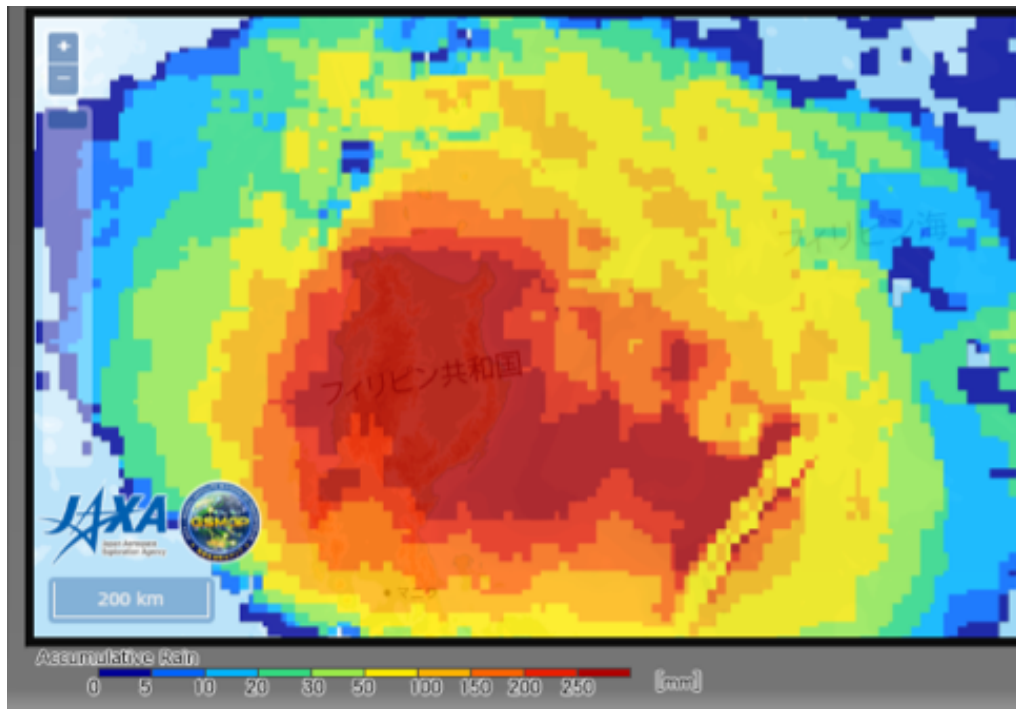
Satellite rainfall from 8:30AM-9:29AM 20 Oct shows intense rainfall of 25-30 mm/hr over Ilocos Norte, Ilocos Sur, La Union, Apayao, Abra and around eye of tropical cyclone.

http://sharaku.eorc.jaxa.jp/GSMaP_NOW/

Potential rainfall associated with Typhoon Haima (Lawin)



Potentially heavy 1-day total rainfall (more than 240 mm) over Abra and Ilocos Sur



http://sharaku.eorc.jaxa.jp/GSMaP_NOW/

* Cropped image is displayed

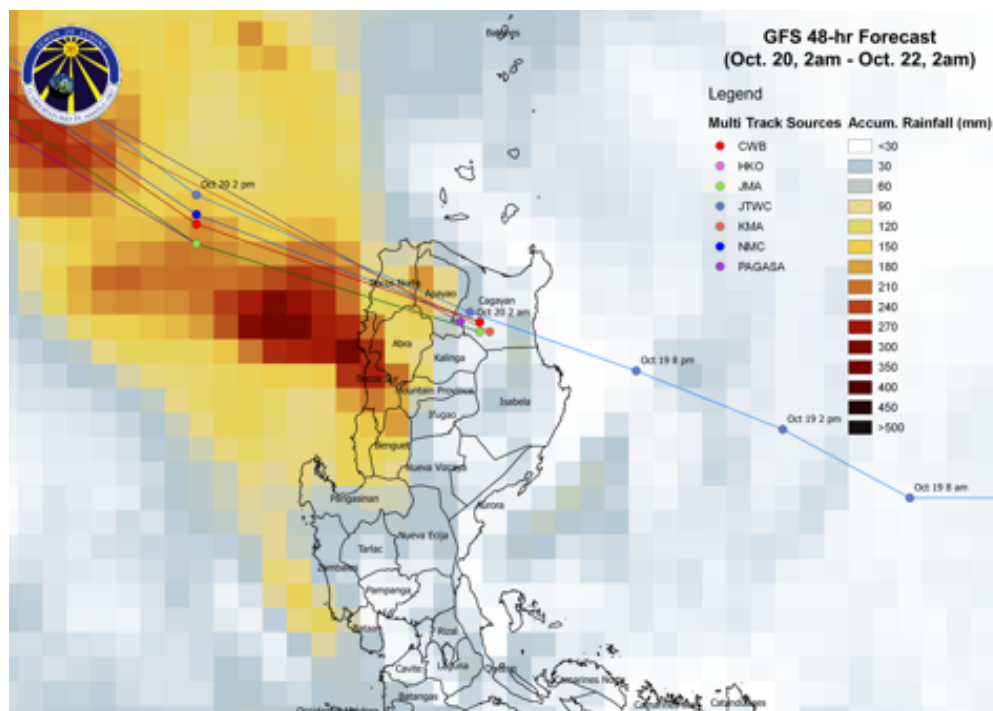
Observed 24-hour satellite-based rainfall,
from Oct 19 9:29AM – Oct 20 9:29AM

24-hour Model forecast from the NCEP
Global Forecasting System for accumulated
rainfall from Oct 20 2am – Oct 21 2am

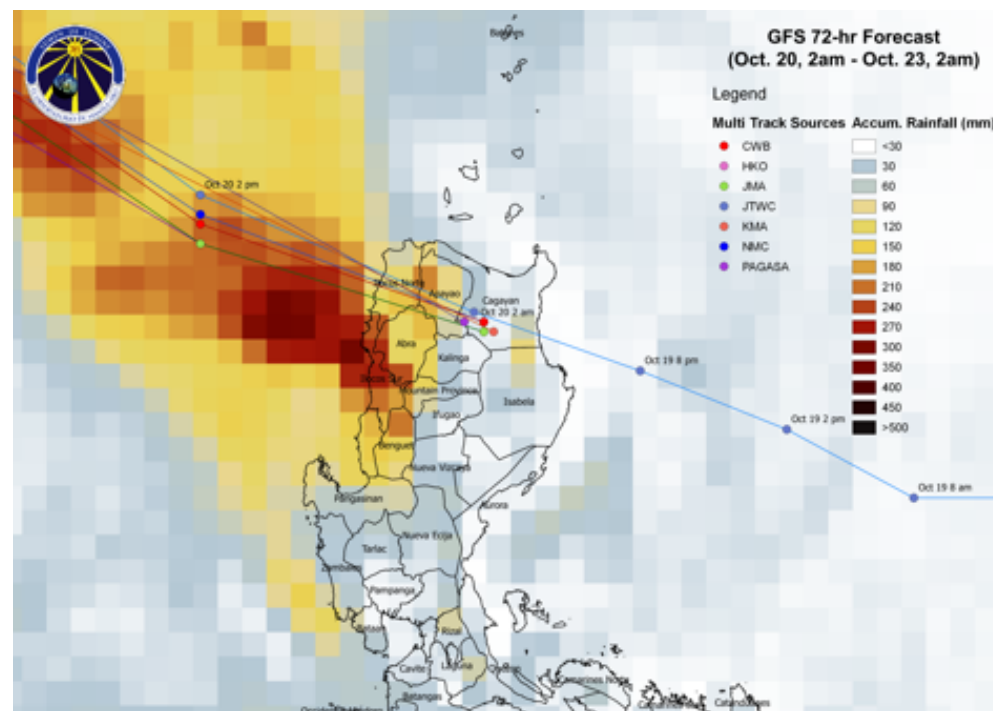
Potential rainfall associated with Typhoon Haima (Lawin)



Potentially extreme 2- and 3-day accumulated rainfall over CAR (Apayao, Abra, Benguet), Ilocos region (Ilocos Norte, Ilocos Sur) as Haima exits via Ilocos Norte



2-day Model forecast from the NCEP Global Forecasting System for accumulated rainfall from Oct 20 2am – Oct 22 2am

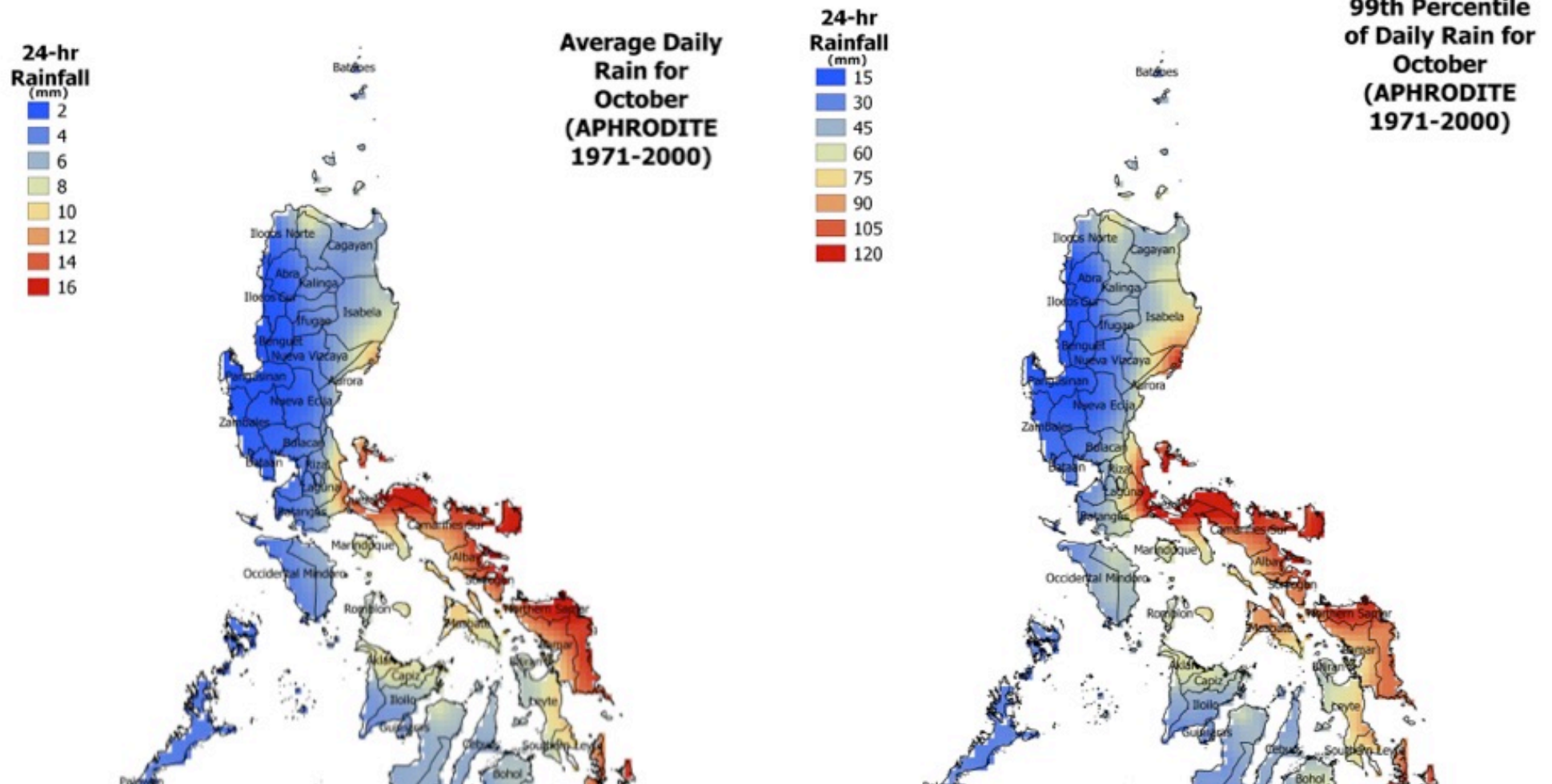


3-day Model forecast from the NCEP Global Forecasting System for accumulated rainfall from Oct 20 2am – Oct 23 2am

Historical daily average and extreme rainfall (October)



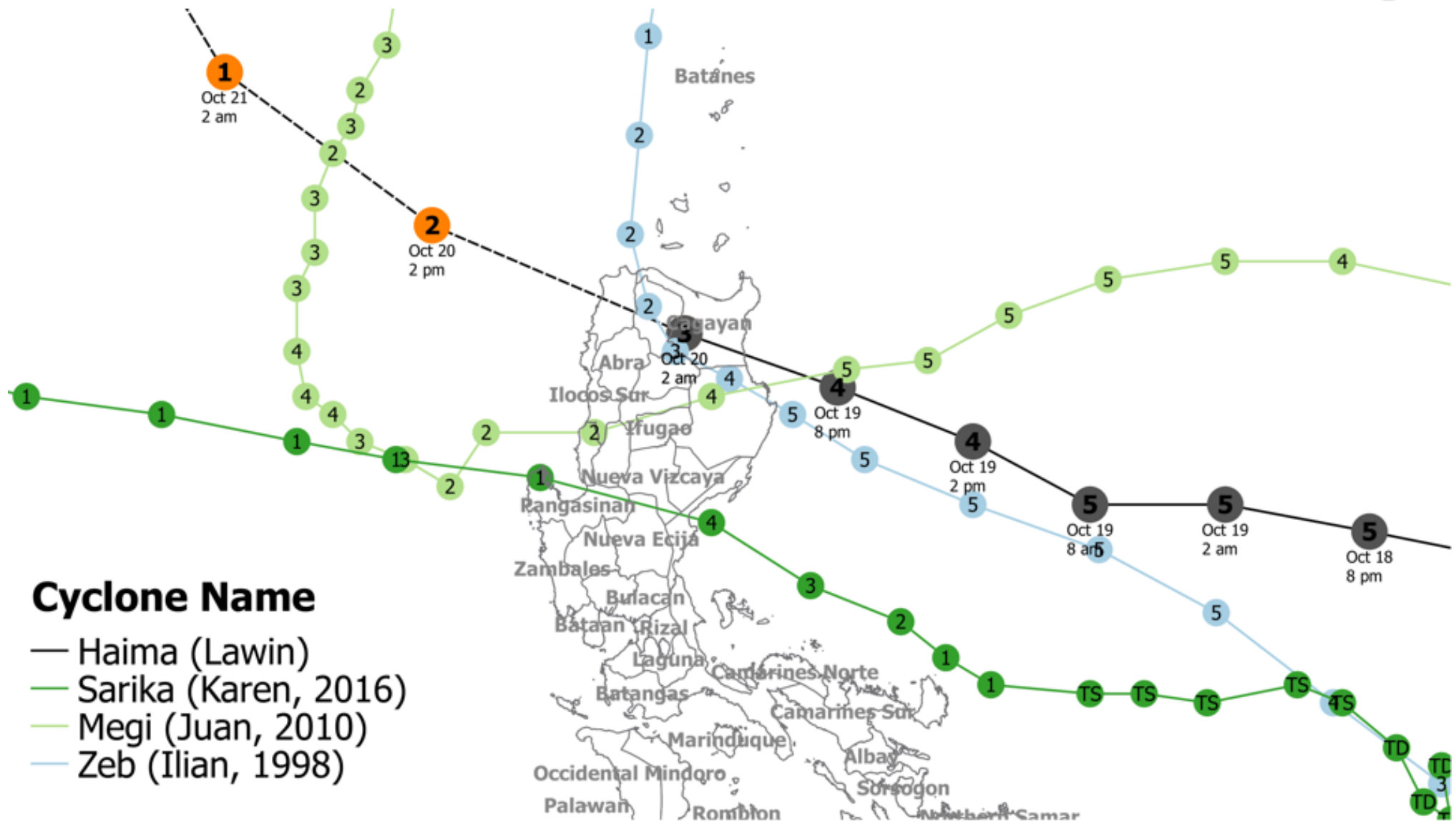
In October, Parts of Quezon, Bicol region, and Samar can receive more than 10 mm/day rainfall on average, with extreme rainfall days of above 100 mm rainfall.



Data accessed from <http://www.chikyu.ac.jp/precip/index.html> (APHRODITE dataset).

Note the difference in the color scales.

Destructive typhoons with similar tracks to Haima (2016)





IMPACTS OF DESTRUCTIVE TYPHOONS (IN OCTOBER) WITH SIMILAR TRACKS TO HAIMI 2016

Megi was CAT5 at landfall
on October 18, 2010
in Palanan, Isabela.
2 million persons affected
\$255.1 million in damages

- Haima Forecast Track (JTWC)
- Haima Past Track (JTWC)
- TC Megi (Juan) 2010
- TC Sarika (Karen) 2016
- TC Zeb (Iliang) 1998

Sarika was CAT4 at landfall
on October 16, 2016
in Baler, Aurora.
80,458 persons affected
\$41.7million in damages

Zeb was CAT5 at landfall
on October 14, 1998
in Palanan, Isabela.
925,000 persons affected
\$576million in damages

SOURCES:
PhilGIS
JTWC
NDRRMC



0 100 200 300 400 km

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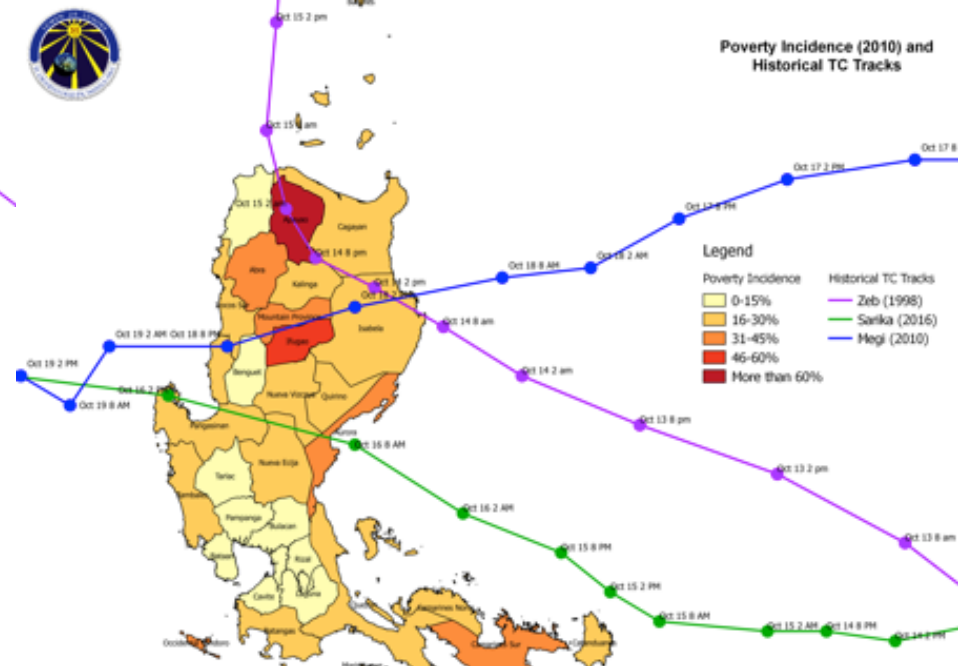
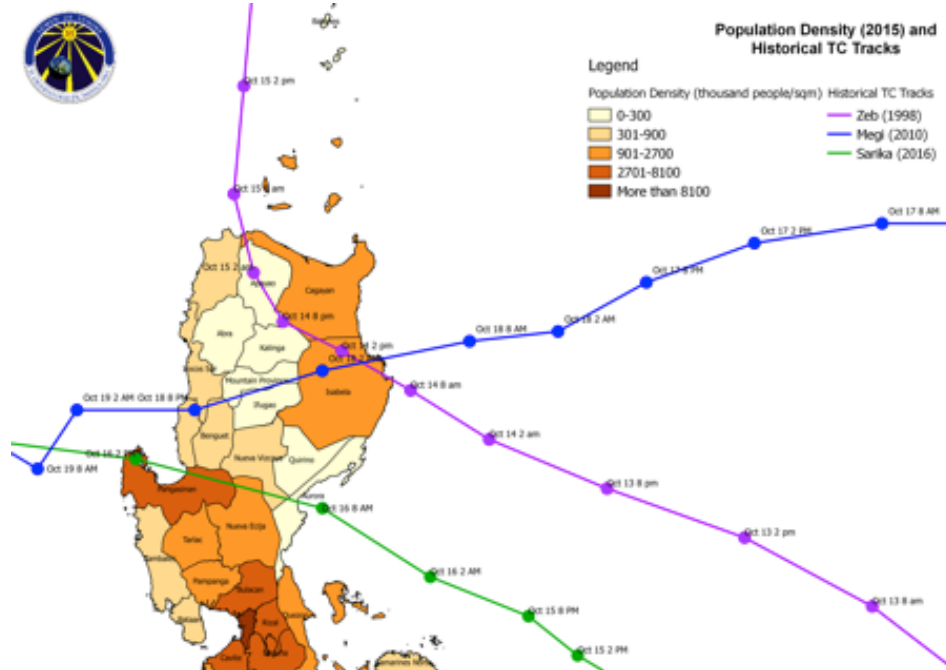
<http://blogs.reuters.com/photo/files/2010/10/RTXTMFS.jpg>

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http://cnnphilippines.com/news/5qdxij-Baler_ty-karen_CNNPH.jpg/alternates/FREE_640/Baler_ty-karen_CNNPH.jpg

Destructive typhoons with similar tracks to Haima (2016)



Elevation (2015)
LECZ (2015), and
Historical TC Tracks

Legend

LECZ Elevation (m) SRTH Elevation (m)

- 1
- 2
- 4
- 6
- 8
- 10
- 0
- 500
- 1000
- 1500
- 2000

Historical TC Tracks

- Zeb (1998)
- Megi (2010)
- Sarika (2016)