Republic of the Philippines
DEPARTMENT OF SCIENCE AND TECHNOLOGY
Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)
Weather Division

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BAGONG PILIPINAS

TROPICAL CYCLONE PRELIMINARY REPORT
Super Typhoon CARINA (GAEMI)

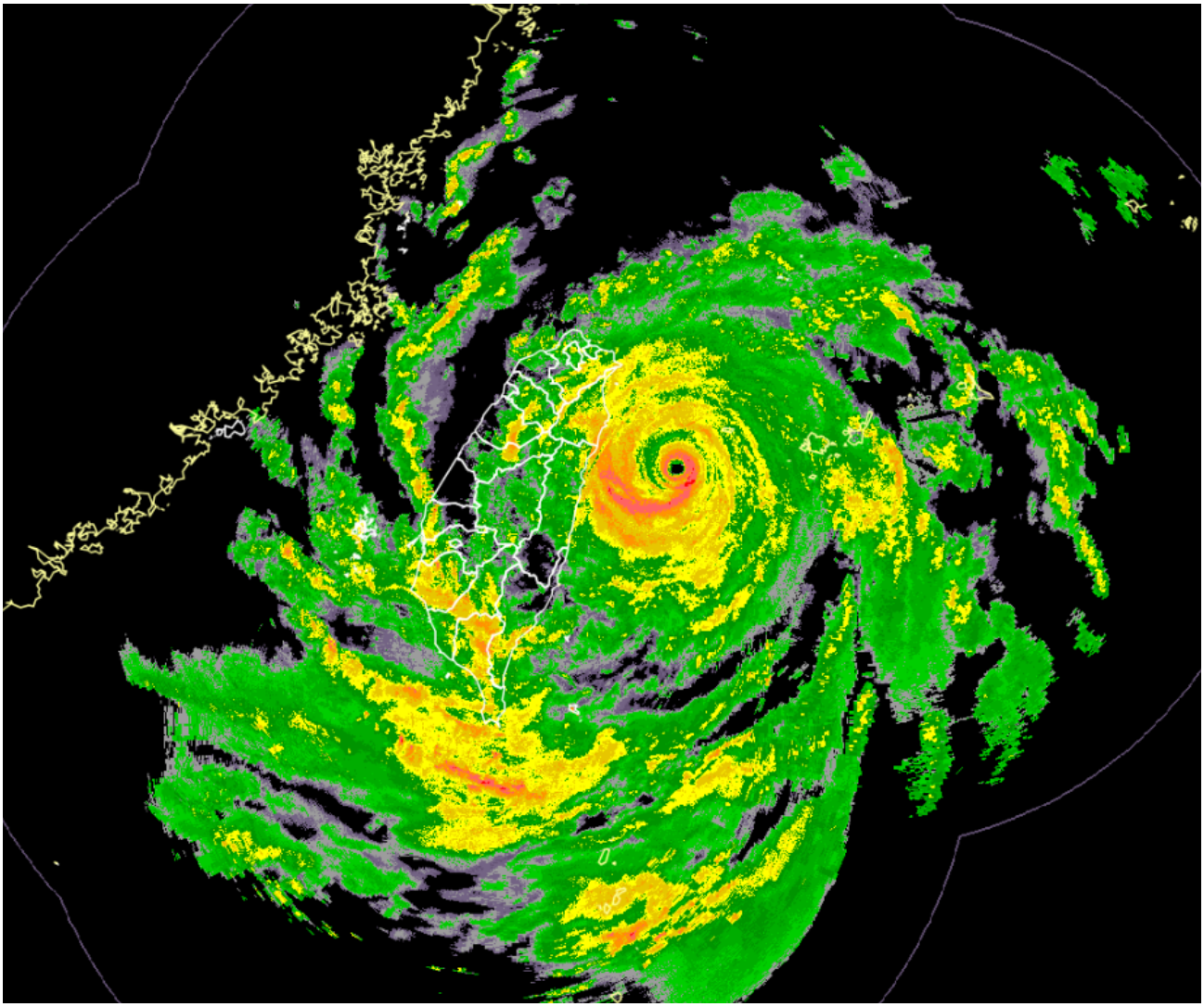

Fig. 1. Weather radar imagery of Super Typhoon CARINA during peak intensity at 0600 UTC on 24 July 2024. Image courtesy of the Central Weather Administration of Taiwan.

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Date Published: 31 December 2024

NOTE:
All information provided in this report is considered preliminary only and will be superseded by the information that will become available once the Annual Report on Philippine Tropical Cyclones (ARTC) is released.

DISCLAIMER:
While we ensure the factual correctness and accuracy of the entries in this preliminary tropical cyclone report, readers are advised to report any information in this report which may require correction to **typhoon.ops@pagasa.dost.gov.ph** with the subject *"Prelim Report [Name of TC], [Year]: For Correction"*.

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Summary of Meteorological History

Based on PAGASA preliminary best track[1] position and intensities

First tracked as a low pressure area	1200 UTC, 18 July 2024 Over the Western North Pacific waters N of Palau
Developed into a tropical cyclone	1200 UTC, 19 July 2024 Over the Philippine Sea E of Eastern Visayas 760 km E of Catarman, Northern Samar (13.2ºN, 131.6ºE)
Weakened into a remnant low or transitioned into a post-tropical low	0000 UTC, 28 July 2024 In the vicinity of Yueyang City, Hunan Province, China 1,295 km NW of Extreme Northern Luzon (29.6ºN, 113.4ºE)
Peak intensity (lifetime[2])	100 kt (185 km/h), 920 hPa, Super Typhoon 0600 UTC, 24 July 2024
Period of occurrence (lifetime)	8 days and 12 hours
Entered the PAR region (as tropical cyclone)	Not applicable (developed within the PAR region)
Exited the PAR region (as tropical cyclone)	2220 UTC, 24 July 2024
Peak intensity (within the PAR)	100 kt (185 km/h), 920 hPa, Super Typhoon 0600 UTC, 24 July 2024
Period of occurrence (within the PAR)	5 days and 10.3 hours
Observed landfalls in the Philippines	None

[1] With preliminary best track as reference, the information provided in this report may be different from those reported during the warning period of the subject tropical cyclone.
[2] Lifetime is the period from the development into a tropical depression to its weakening into a remnant low or its transitioning into a post-tropical low.

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Extremes of Surface Weather Observations during Tropical Cyclone Days[3]

Based on reports from PAGASA manned surface weather stations

Table 1. Highest storm duration (19 to 24 July 2024) rainfall over land.

Location of weather station	Rainfall (mm)
Baguio City	650.6 mm
Science Garden, Quezon City	618.8 mm
Abucay, Bataan	596.7 mm
Cubi Pt., Subic	593.2 mm
Calayan, Cagayan	585.5 mm

Table 2. Highest 24-hour rainfall over land.

Location of weather station	Rainfall (mm)	Date
Calayan, Cagayan	342.8 mm	23 July 2024
Science Garden, Quezon City	323.9 mm	24 July 2024
Baguio City	294.0 mm	24 July 2024
Cubi Pt., Subic	282.7 mm	24 July 2024
Tanay, Rizal	262.0 mm	24 July 2024

Table 3. Lowest mean sea level pressure (MSLP) over land.

Location of weather station	Minimum MSLP (hPa)	Date (MM/DD) and Time (UTC)
Basco, Batanes	991.5	07/23 2100
Calayan, Cagayan	995.2	07/24 0800
Itbayat, Batanes	993.4	07/23 2200
		07/24 0000
Aparri, Cagayan	997.3	07/23 2100
Tuguegarao, Cagayan	999.2	07/23 0800

Table 4. Highest peak gust over land.

Location of weather station	Peak gust speed (m/s)	Peak gust direction	Date (MM/DD) and Time (UTC)
Basco, Batanes	28	SSW (200º)	07/25 0836
Calayan, Cagayan	26	WNW (290º)	07/23 1449
Itbayat, Batanes	20	S (180º)	07/24 2218
Aparri, Cagayan	15	-	07/24 bet. 0301 and 0600
Aparri, Cagayan	14	-	07/24 bet. 1501 and 1800

Note: Over land extremes for MSLP and peak gust only covered areas with hoisted Wind Signals to ensure that the extremes are more likely associated with the tropical cyclone itself. There may be lower MSLP and higher peak gust outside these coverage areas.

[3] Also called "storm duration", it refers to the meteorological days of occurrence of the tropical cyclone within the PAR region.

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Summary of Tropical Cyclone Product Issuances

Issued by the Weather Division, DOST-PAGASA

Tropical Cyclone Products:

- Tropical Cyclone Advisories: None issued
- Tropical Cyclone Bulletins:
  - First issuance: 11:00 PM, 19 July 2024
  - Last issuance: 11:00 PM, 25 July 2024
  - Total issued: 25
- Tropical Cyclone Warnings for Shipping:
  - First issuance: 11:00 PM, 19 July 2024
  - Last issuance: 11:00 PM, 25 July 2024
  - Total issued: 25
- WC SIGMET
  - First issuance: 4:45 PM, 20 July 2024
  - Last issuance: 10:45 AM, 23 July 2024
  - Total issued: 12

Tropical Cyclone Wind Signals:

- Highest level of wind signal hoisted: Wind Signal No. 2
- Number of provinces where wind signals had been hoisted: 8
- Timeline of hoisting/lifting of wind signals:
  - 11:00 PM, 21 July 2024: Initial hoisting of Wind Signal No. 1
  - 11:00 AM, 23 July 2024: Initial hoisting of Wind Signal No. 2
  - 5:00 AM, 25 July 2024: Lifting of all hoisted Wind Signal No. 2
  - 11:00 PM, 25 July 2024: Lifting of all hoisted Wind Signals

Other Pertinent Information

- The National Disaster Risk Reduction and Management Council (NDRRMC) reported that a total of 6,498,918 individuals were affected by the Southwest Monsoon heavily enhanced by CARINA (*and to certain degree in northeastern Luzon, directly affected by CARINA*). A total of 48 dead, 16 injured, and 5 missing individuals were reported by disaster managers. Cost of damage to agriculture, infrastructure, housing, and other assets amounted to PHP 10.372 billion.
- The international name “GAEMI” (meaning: ant) was contributed by the Republic of Korea.

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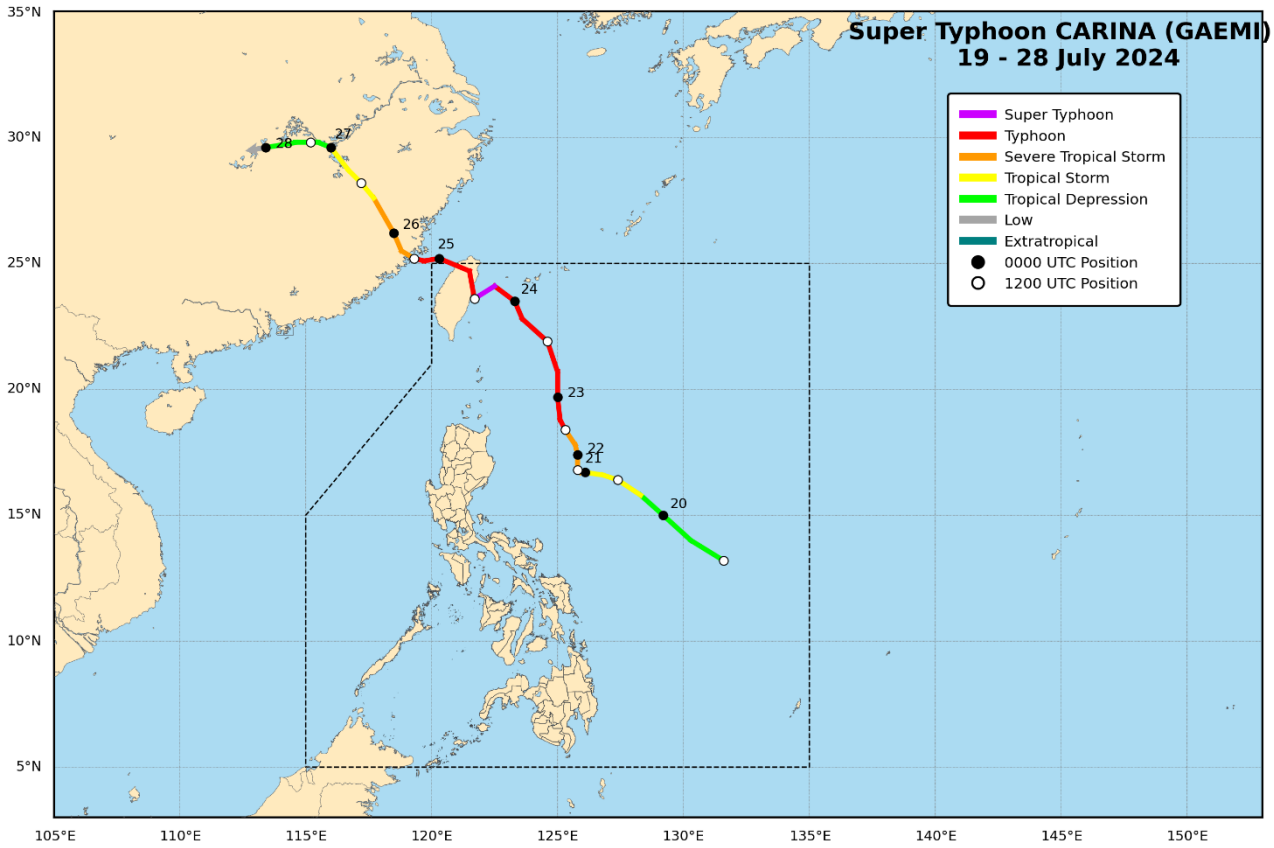

Fig. 2. Preliminary best track positions and intensities (as categories) of Super Typhoon CARINA. Line color indicates the category of tropical cyclone. Shaded circles with date labels indicated 00 UTC positions while open circles indicate 12 UTC positions.

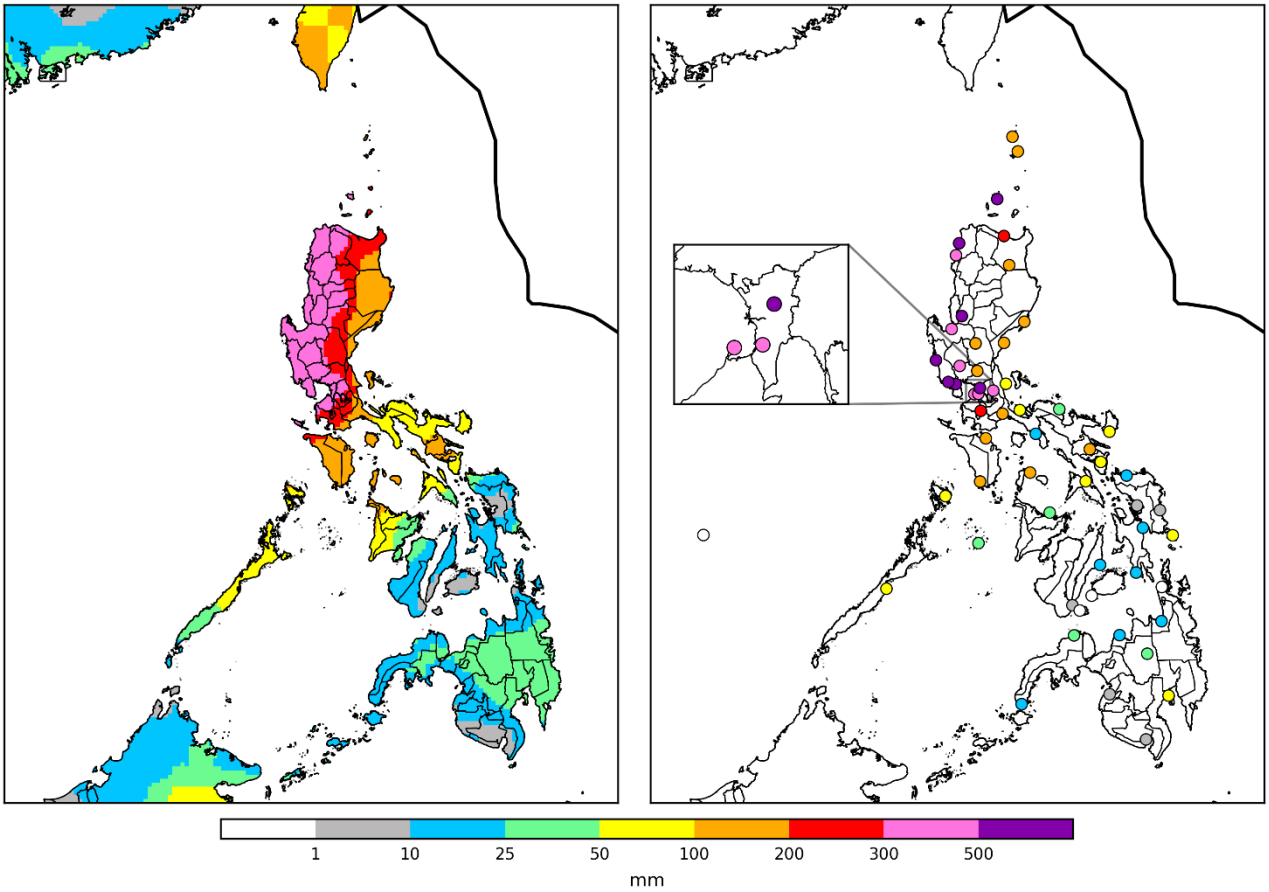

Fig. 3. Nationwide satellite-derived estimates and corresponding gauge observations from PAGASA manned surface weather stations of accumulated rainfall for the period of 19 to 24 July 2024. The preliminary best track of CARINA is shown as thick black line.

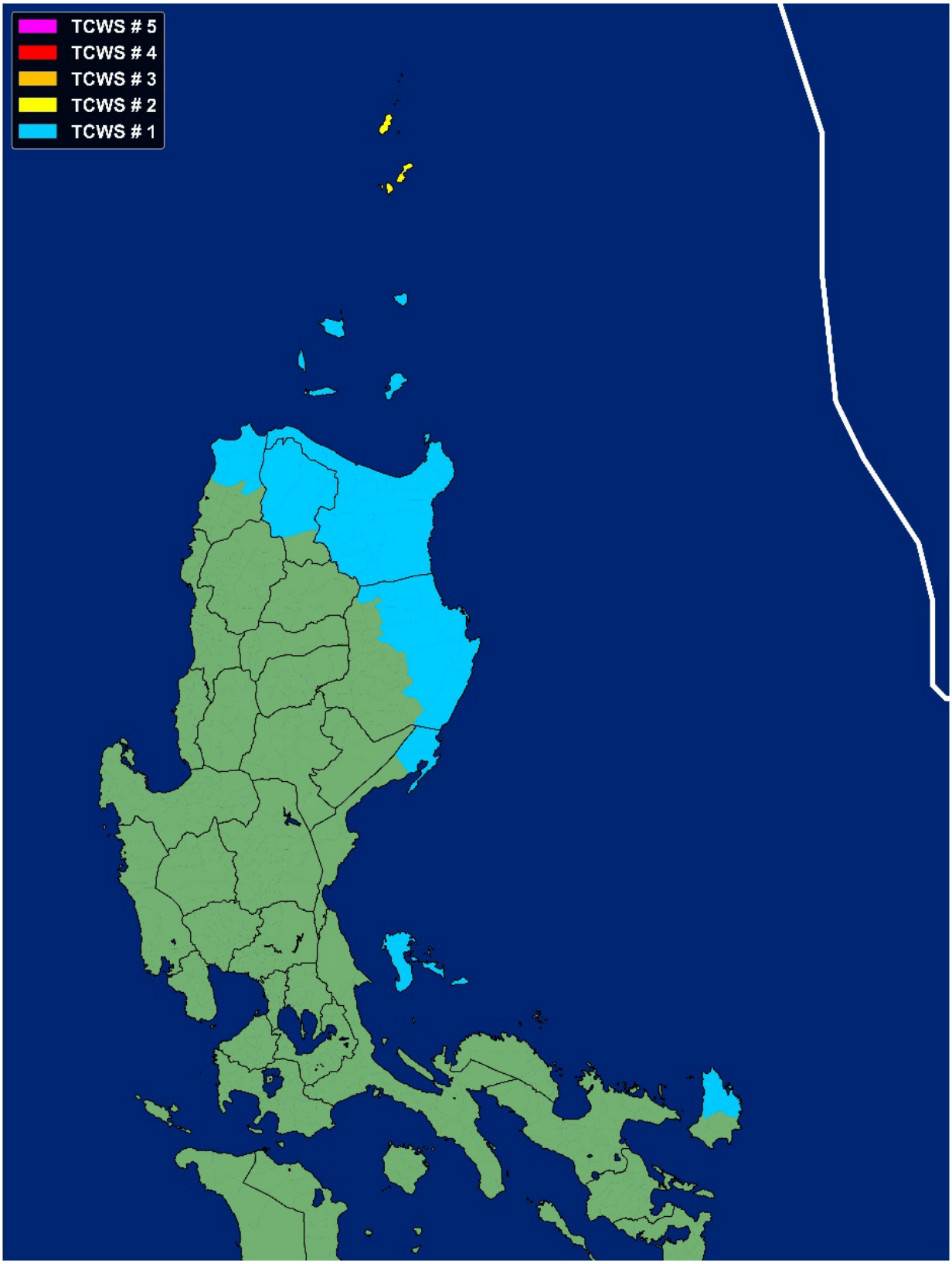

Fig. 4. Highest level and maximum extent of hoisted wind signals during the occurrence of Super Typhoon CARINA. The preliminary best track of the tropical cyclone is shown as thick white line.

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