

Modified Tropical Cyclone Warning System



TROPICAL CYCLONE GROUP
Marine Meteorological Services Section
Weather Division, DOST-PAGASA

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DOST-PAGASA

19 May 2022



- Decommissioning and replacement of tropical cyclone names from 2021
- Revised definition of the Super Typhoon (STY) category
- Modified Tropical Cyclone Wind Signal (TCWS) System
- Updated Tropical Cyclone Forecast Chart
- Changes to the Tropical Cyclone Forecast Areas




Decommissioned Name	Casualties (Dead / Injured / Missing)	Cost of Damage (Houses + Agri + Infra)	Replacement Name	Etymology of Replacement
JOLINA	20 / 33 / 4	PHP 1.413 billion	JACINTO	Filipino name
MARING	43 / 5 / 16	PHP 7.389 billion	MIRASOL	Sunflower (<i>Helianthus annuus</i>)
ODETTE	405 / 1,371 / 52	PHP 47.149 billion	OPONG	Filipino name

- The replacement names will be first introduced during the **2025 season**.
- A total of **47 names** has been decommissioned since the new naming scheme was introduced in 2001.
Furthermore, 71 names have been decommissioned since PAGASA started providing domestic names in 1963.

Revised definition of the Super Typhoon (STY) category



<div></div> <div>Philippine Atmospheric, Geophysical, and Astronomical Services Administration Marine Meteorological Services Section, Weather Division Comparison of Tropical Cyclone Categories of ESCAP/WMO Typhoon Committee Member Countries and Territories</div>									
10-min MXWD (kt)	< 34	34-47	48-63	64-80	81-84	85-99	100-104	105-120	>120
TC	TD	TS	STS	TY					
JMA	TD	TS	STS	Strong TY		Very Strong TY		Violent TY	
HKO	TD	TS	STS	TY	Severe TY		Super TY		
MMGB	TD	TS	STS	TY	Severe TY		Super TY		
CMA	TD	TS	STS	TY	Severe TY		Super TY		
CWB	TD	TS		Moderate TY			Intense TY		
KMA	TD	TS	STS	Strong TY		Very Strong TY		Super Strong TY	
JTWC	TD	TS		TY			Super TY		
PAGASA	TD	TS	STS	TY					Super TY
Beaufort Scale	6-7	8-9	10-11	12-13	14-15		16-17		
	Strong	Gale- Force	Storm- Force	Typhoon-Force					

TC	ESCAP/WMO Typhoon Committee
JMA	Japan Meteorological Agency
HKO	Hong Kong Observatory
MMGB	Macau Meteorological and Geophysical Bureau
CMA	China Meteorological Administration
CWB	Central Weather Bureau (Taiwan)
KMA	Korea Meteorological Administration
JTWC	Joint Typhoon Warning Center (US)
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration

Comparison of TC categories among warning centers within the ESCAP/WMO Typhoon Committee region (until February 2022)

Until February 2022, PAGASA had the **highest minimum intensity threshold (> 120 kt)** for the peak tropical cyclone category of any meteorological center within the Typhoon Committee region.

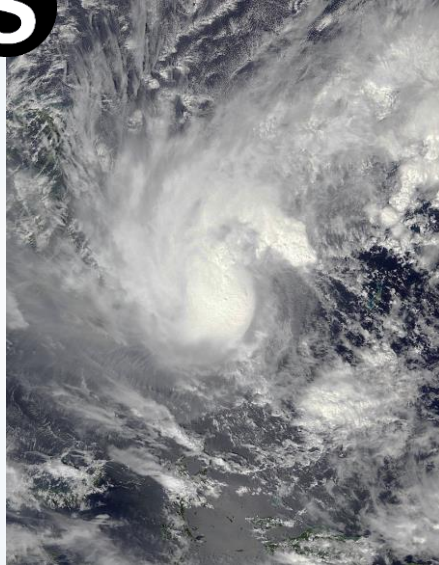
Revised definition of the Super Typhoon (STY) category



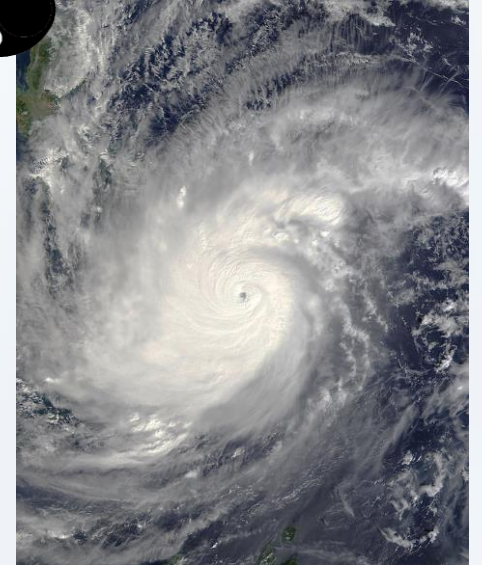
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Tropical Depression (TD)	Tropical Storm (TS)	Severe Tropical Storm (STS)	Typhoon (TY)	Super Typhoon (STY)
Less than 62 km/h Less than 17.2 m/s Less than 34 kt	62-88 km/h 17.2-24.4 m/s 34-47 kt	89-117 km/h 24.5-32.6 m/s 48-63 kt	118-184 km/h 32.7-51.2 m/s 64-99 kt	185 km/h or higher 51.3 m/s or higher 100 kt or higher
Highest TCWS: 1	Highest TCWS: 2	Highest TCWS: 3	Highest TCWS: 4	Highest TCWS: 5
Basis: Tropical Cyclone Programme Report No. TCP-23 / WMO/TD-No. 196: Typhoon Committee Operational Manual (Meteorological Component, 2022 Edition)				Basis: commonly-used threshold of peak typhoon category within the region

Modified Tropical Cyclone Wind Signal (TCWS) System



TCWS No.	Wind Threat		Warning Lead Time (Hours before onset of wind threat)	Issued for what TC categories?	Potential Impacts
	Old	New			
1	30-60 km/h	39-61 km/h (Beaufort 6-7) 22-33 kt, 10.8-17.1 m/s	36 hours	TD or higher	Minimal to minor threat to life and property
2	61-120 km/h	62-88 km/h (Beaufort 8-9) 34-47 kt, 17.2-24.4 m/s	24 hours	TS or higher	Minor to moderate threat to life and property
3	121-170 km/h	89-117 km/h (Beaufort 10-11) 48-63 kt, 24.5-32.6 m/s	18 hours	STS or higher	Moderate to significant threat to life and property
4	171-220 km/h	118-184 km/h (Beaufort 12) 64-99 kt, 32.7-51.2 m/s	12 hours	TY or higher	Significant to severe threat to life and property
5	Greater than 220 km/h	185 km/h or higher (Beaufort 12) 100 kt or higher, 51.3 m/s or higher	12 hours	STY	Extreme threat to life and property

Modified Tropical Cyclone Wind Signal (TCWS) System







Existing wind warning procedures of several meteorological centers within the Typhoon Committee Region are directly based on the WMO Beaufort Scale.

T1 Standby Signal No. 1	3 Strong Wind Signal No. 3
8 No. 8 Southeast Gale or Storm Signal SE 東南	8 No. 8 Southwest Gale or Storm Signal SW 西南
8 No. 8 Northeast Gale or Storm Signal NE 東北	8 No. 8 Northwest Gale or Storm Signal NW 西北
9 Increasing Gale or Storm Signal No. 9	10 Hurricane Signal No. 10

HKO TC Warning Signal System

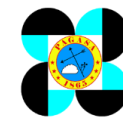
Weather Warnings/Advisories issued by JMA			
Emergency Warnings			
Storm	Snow-storm	Heavy rain	Heavy snow
Storm surge	High waves		
Warnings			
Storm	Snow-storm	Heavy rain	Heavy snow
Storm surge	High waves	Flood	
Advisories			
Gale and snow	Gale	Heavy rain	Heavy snow
Dense fog	Thunderstorm	Dry air	Avalanche
Ice (snow) accretion	Frost	Low temperature	Snow-melting
Storm surge	High waves	Flood	

JMA Weather Warnings and Advisories

Level	Name	Sign	Meaning
IV	Blue typhoon alert 台风蓝色预警信号		Within 24 hours, it may or may have been affected by tropical cyclones. The average wind power on the coast or land is above 6, or the gust above 8 and may continue.
III	Yellow typhoon alert 台风黄色预警信号		Within 24 hours, it may or may have been affected by tropical cyclones. The average wind power on the coast or land is above 8, or the gust above 10 and may continue.
II	Orange typhoon alert 台风橙色预警信号		Within 12 hours, it may or may have been affected by tropical cyclones. The average wind power on the coast or land is above 10, or the gust above 12 and may continue.
I	Red typhoon alert 台风红色预警信号		Within 6 hours, it may or may have been affected by tropical cyclones. The average wind power on the coast or land is above 12, or the gust above 14 and may continue.

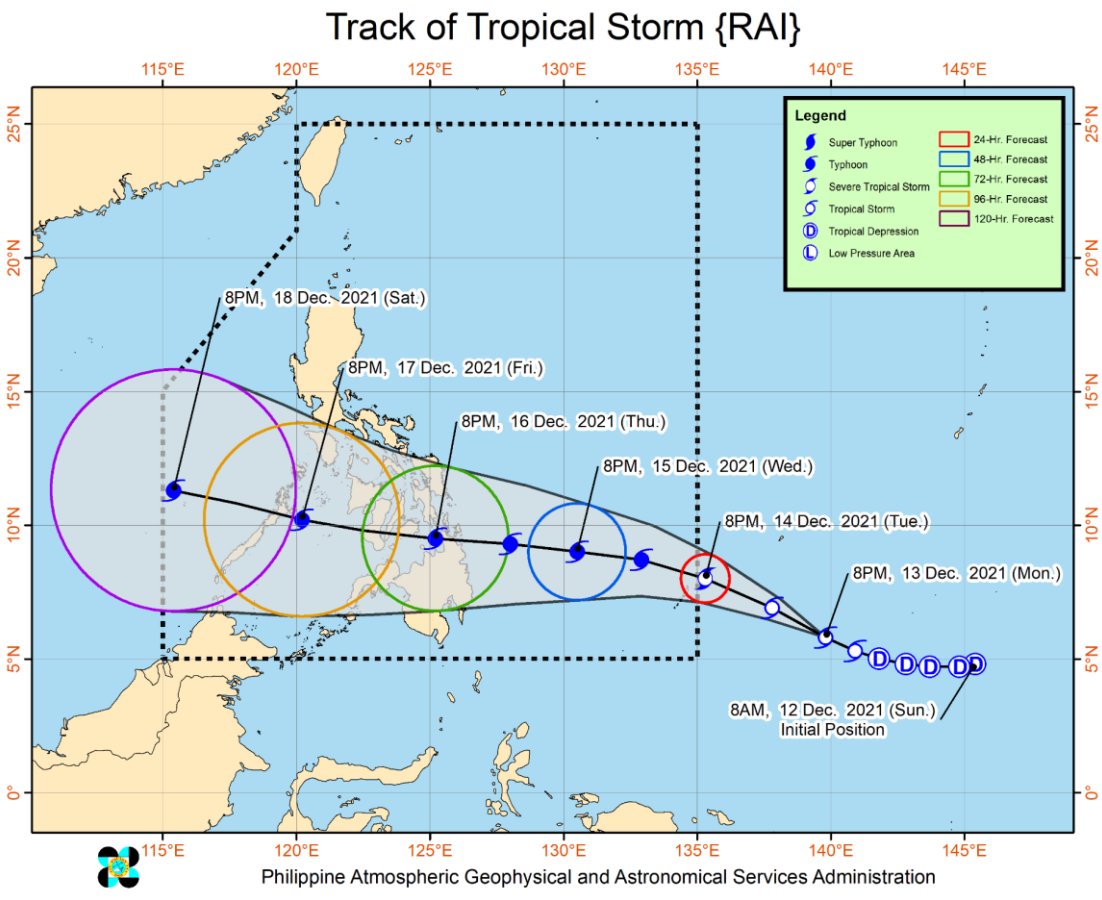
CMA Typhoon Alert System
(Uses extended BF scale with levels 13 and 14)

Modified Tropical Cyclone Wind Signal (TCWS) System

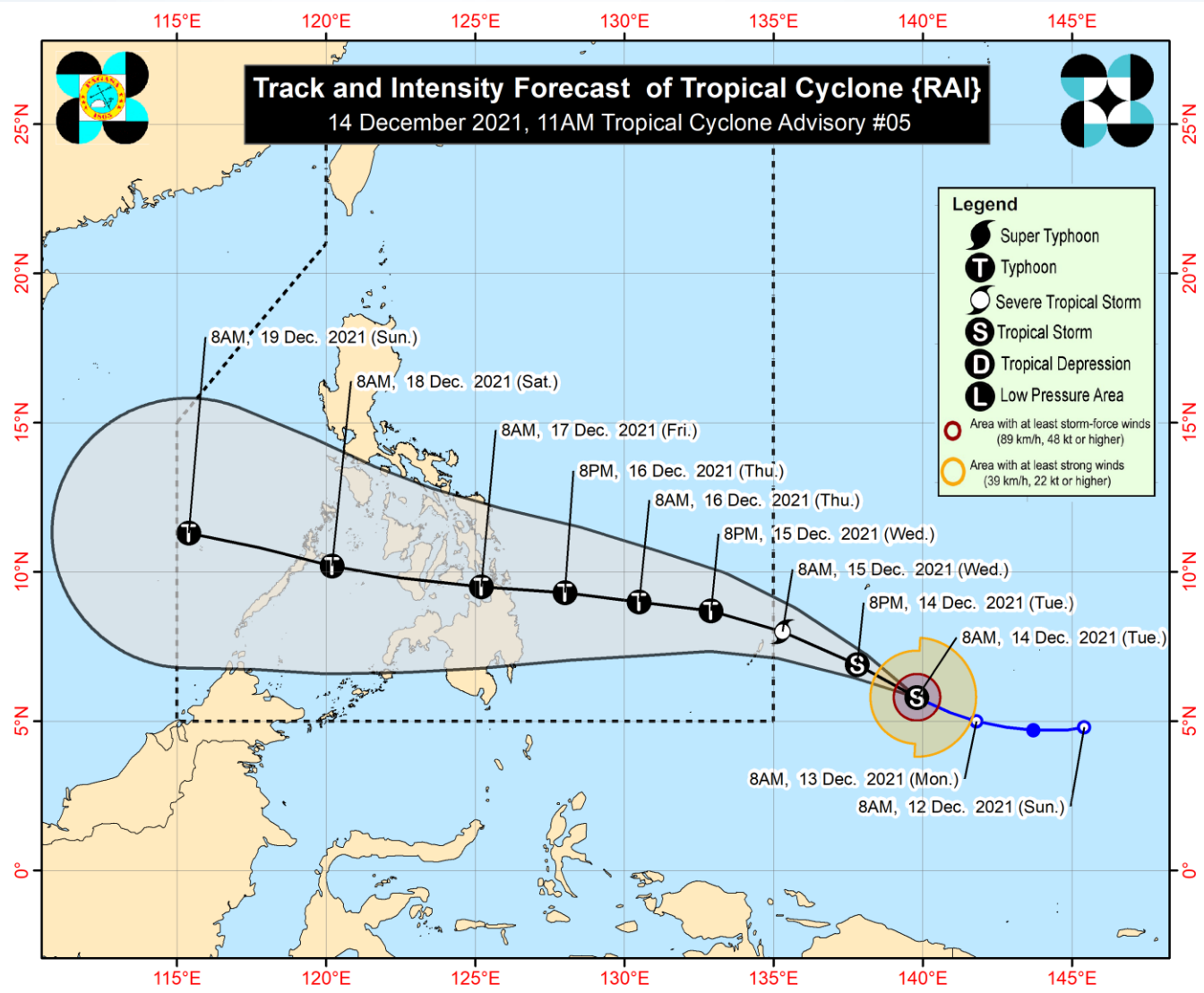


TCWS No.	Wind Threat	Comparable land wind warnings of other meteorological centers
1	39-61 km/h Beaufort 6-7 22-33 kt, 10.8-17.1 m/s	HKO: Strong Wind Signal No. 3 CMA: Blue Typhoon Alert
2	62-88 km/h Beaufort 8-9 34-47 kt, 17.2-24.4 m/s	HKO: No. 8 NE/SE/SW/NW Gale or Storm Signal CMA: Yellow Typhoon Alert JMA: Gale Advisory NHC: Tropical Storm Watch or Tropical Storm Warning
3	89-117 km/h Beaufort 10-11 48-63 kt, 24.5-32.6 m/s	HKO: Increasing Gale or Storm Signal No. 9 CMA: Orange Typhoon Alert JMA: Storm Warning or Storm Emergency Warning NHC: Tropical Storm Watch or Tropical Storm Warning
4	118-184 km/h Beaufort 12 64-99 kt, 32.7-51.2 m/s	HKO: Hurricane Signal No. 10 CMA: Red Typhoon Alert JMA: Storm Warning or Storm Emergency Warning NHC: Hurricane Watch or Hurricane Warning
5	185 km/h or higher Beaufort 12 100 kt or higher, 51.3 m/s or higher	HKO: Hurricane Signal No. 10 CMA: Red Typhoon Alert JMA: Storm Warning or Storm Emergency Warning NHC: Extreme Wind Warning

Updated Tropical Cyclone Forecast Chart



Old Format



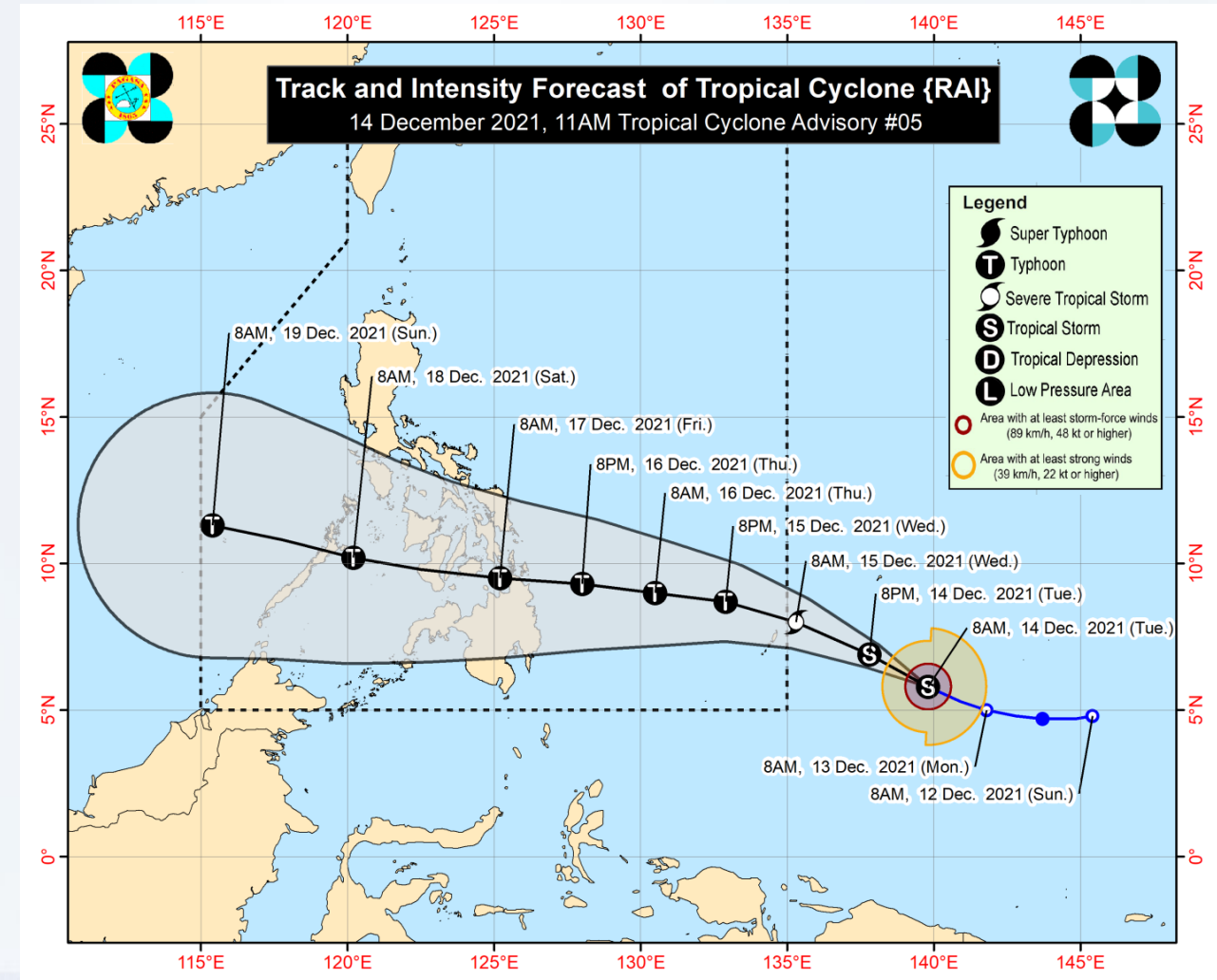
New Format

Updated Tropical Cyclone Forecast Chart

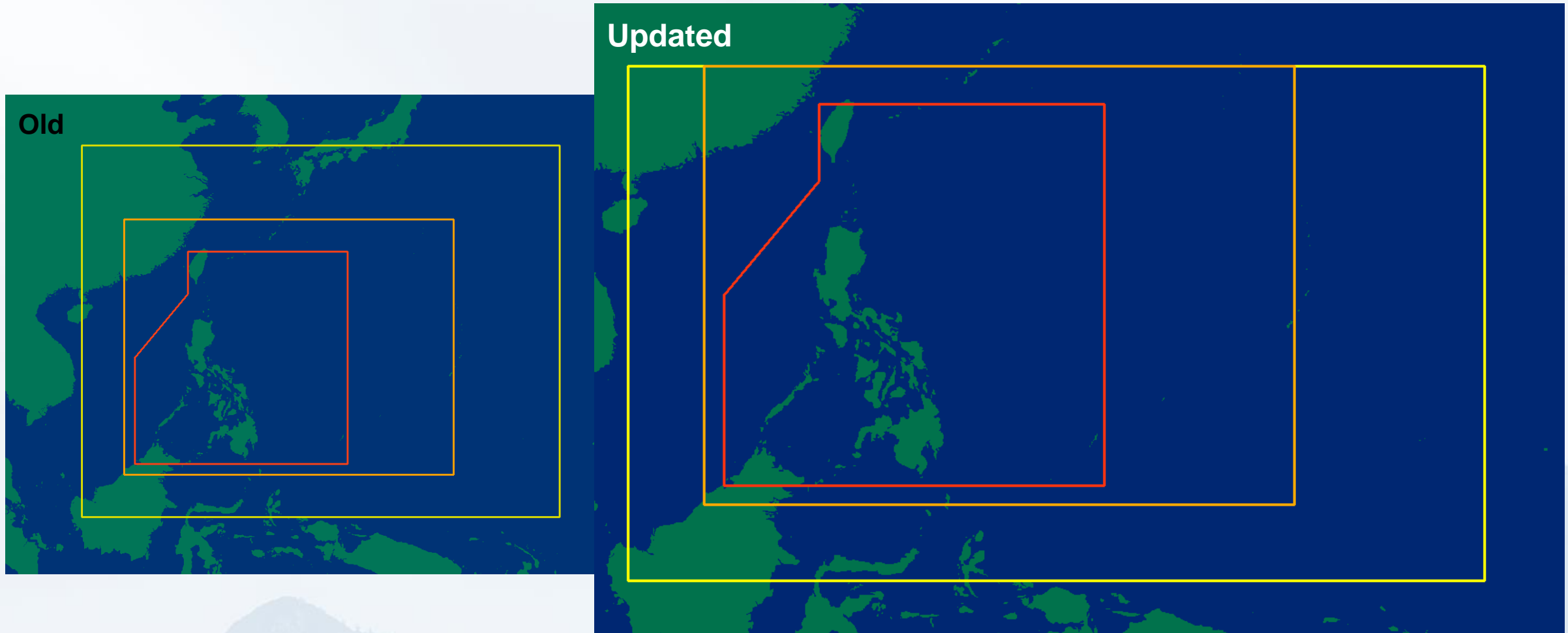


List of Changes

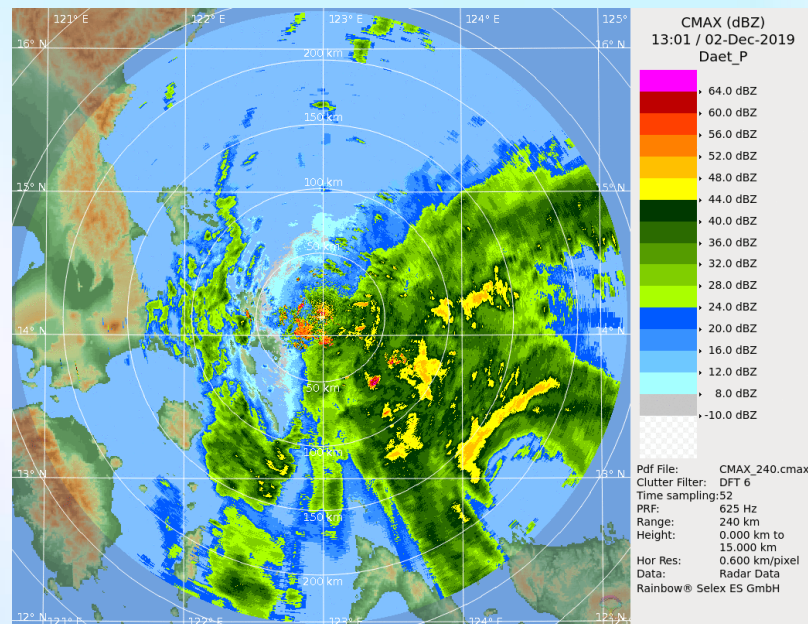
- Improved the depiction of the probability cone.
- Added areas with at least strong winds (yellow-orange region) and at least storm-force winds (maroon region)
- Simplified the observed track segment to ensure that disaster managers and public focus on the track and intensity forecast.
- Placed the agency and DOST logos within the map area to prevent other end-users from cropping the image and using them without proper attribution.
- Added information on what tropical cyclone product the chart is associated with to prevent misuse of the chart.
- Resizing of the probability cone (buffer sizes at each forecast time TBA).



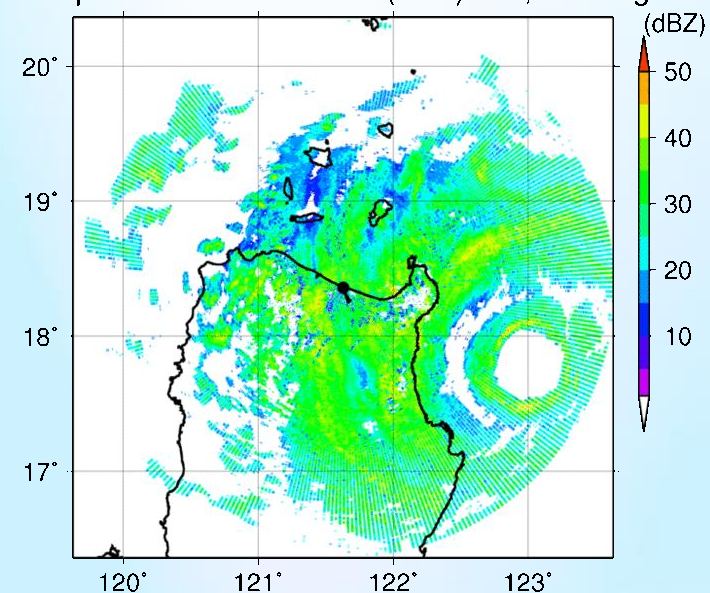
Changes to the Tropical Cyclone Forecast Areas



Northernmost limits of TC Advisory Domain and TC Information Domain were moved southward to **27°N**



Aparri radar 09/15 0005 (PST) PPI;0010deg



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