Typhoon Committee - Hydrology Report

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INTRODUCTION:

The Philippines through the PAGASA has expanded its Flood Forecasting and Warning Services in the country covering the 18 Major River Basins (Figure 1 and Table 1) and the 421 Principal River Basins. Warning issuances has been categorized and customized according to the availability of the monitoring stations and personnel assigned for each telemetered river basins. Generally, Flood Bulletins were issued for the Major River Basins while General Flood Advisories were issued for the principal river basins where the information has been simplified due its limited monitoring facilities.

Figure 1. Location Map of 18 Major River

The 18 Major River Basins of the Philippines:

No.	River Basin	Location of Flood Forecasting and Warning Center (FFWC)	Drainage Area (Sq Km)	River Length (Km)	Island Group
1	Abulog	Luna, Apayao	3,372	175	Luzon
2	Cagayan	Tuguegarao City	27,280	505	Luzon
3	Abra	Vigan City	5,125	181	Luzon
4	Agno	Rosales, Pangasinan	5,952	206	Luzon
5	Pampanga	San Fernando, Pampanga	9,759	260	Luzon
6	Pasig-Marikina	Quezon City	4,678	78	Luzon
7	Bicol	Pili, Camarines Sur	3,771	136	Luzon
8	Panay	Roxas City	1,843	152	Visayas
9	Jalaur	Iloilo City	1,503	123	Visayas
10	Ilog-Hilabangan	Kabankalan City	1,945	178	Visayas
11	Agusan	Prosperidad, Agusan del Sur	10,621	350	Mindanao
12	Tagoloan	Tagoloan, Misamis Oriental	1,704	106	Mindanao
13	Cagayan de Oro	Cagayan de Oro City	1,521	90	Mindanao
14	Agus	Iligan City	1,645	36	Mindanao
15	Tagum-Libuganon	Tagum City	3,064	89	Mindanao
16	Davao	Davao City	1,623	150	Mindanao
17	Mindanao	Cotabato City	23,169	373	Mindanao
18	Buayan-Malungon	General Santos City	1,434	64	Mindanao

Table 1. Description 18 Major River Basins

Currently, PAGASA has completed to equipped the 13 Major River basins with telemetered hydrological network used for monitoring and warning while other remaining five(5) basins are under way to its project completion.

There were dams that are strategically located within the Major River Basins henceforth, the agency has been continuously collaborating with other national institutions involved in the implementation of flood warning and mitigation for Dam operations. There are six (6) major dams in Luzon that are being monitored by PAGASA, these are: Magat Dam within Cagayan River Basin; Ambuklao, Binga and San Roque Dams within Agno River Basin; and Pantabangan and Angat Dams within the Pampanga River Basin (see Figure 2).

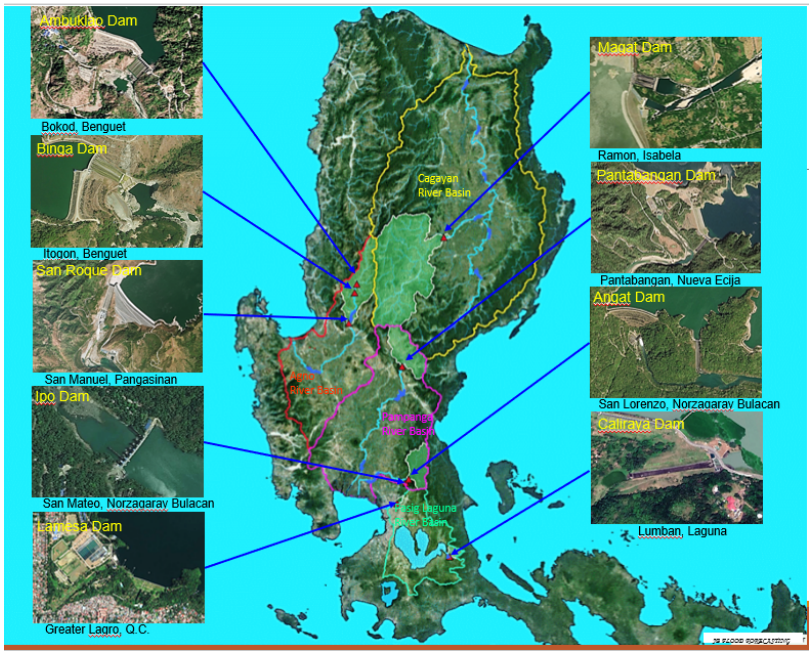


Figure 2. Location Major Dams in Luzon

HYDROLOGICAL ASSESSMENT:

1. FFWS Activities during the passage of Tropical Cyclone and other significant Weather Systems in 2019
2. FFWS Activities in 2020
3. Monitoring Activities for Dam Operation

1. FFWS Activities during the Passage of Tropical Cylones in 2019

There were six (6) Tropical Cyclones that entered the Philippine Area of Responsibility (PAR) in the last quarter of 2019. Three (3) of which made a landfall and brought heavy rainfall in different parts of the country. PAGASA through its Hydro-Meteorology Division (HMD) and PAGASA's Regional Services Division had activated its Flood Forecasting and Warning activities. Summaries are as follows:

A. Typhoon Perla (NEOGURI)

Typhoon Perla with an international name "Neoguri" started to develop into Tropical Depression on October 16 at 1,190 kilometers east of Baler, Aurora. It has maintained its strength as it moves West Northweast at 10 kph with maximum winds of 45 kph near the center and gustiness of up to 55 kph. On 18 October, Perla intensifies into a Tropical Storm and stayed almost stationary at 790 km East of Basco, Batanes. Perla did not cause significant damage to the county as it did not made a landfall in the Philippine land mass (Figure 3).

Various rain-bearing weather systems affected the country, hence, General Flood Advisories were issued for the month of October 2019 summarized in Table 2.

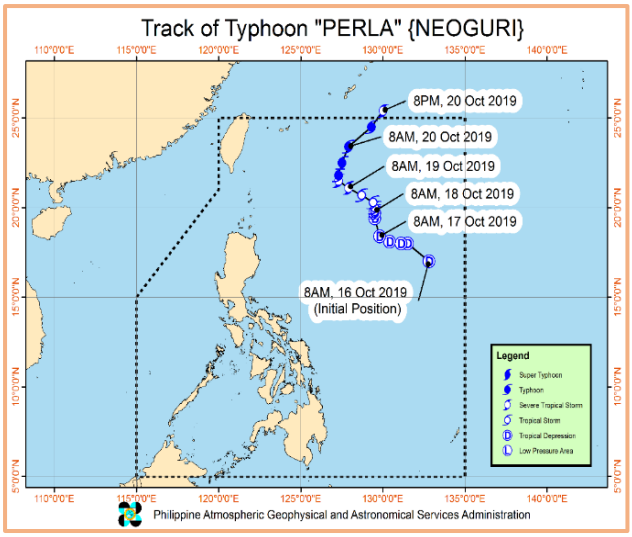


Figure 3. Typhoon Track of TY Perla

General Flood Advisory	
REGION	No. Issued
IV-B	4
VI	6
VII	6
VIII	7
X	6
XI	3
XII	3
XIII	7

Table 2. Flood Warning Issuances for Principal River Basin

B. Tropical Cyclones in the Month of November

Two (2) consecutive TCs were developed within the Philippine Area of Responsibility and one (1) just outside in the span of one (1) month. These were Typhoon Quiel (NAKRI) on 05 – 09 November, Typhoon Ramon (KALMAEGI) on 12 – 20 November 2019 and Tropical Storm Sarah (FUNG WONG) on 19 – 23 November 2019 (Figure 4).

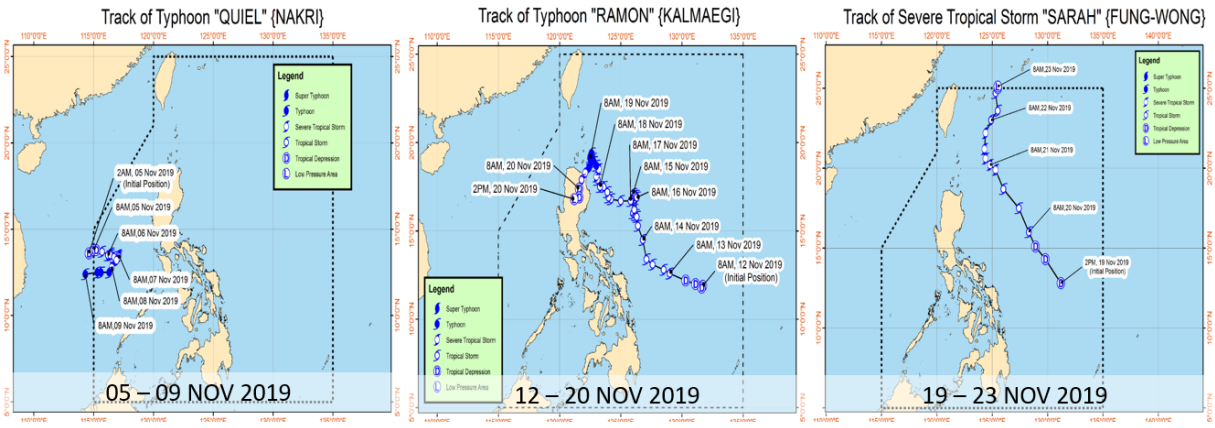


Figure 4. Tracks of Tropical Cyclone developed inside the PAR for the month of November 2019

Quiel entered the PAR in the morning of 5 November as tropical depression located at West Southwest of Iba, Zambales. It has intensified into Tropical Storm the following day with maximum winds of 65 kph near the center and gustiness of up to 80 kph. It moves eastward at the speed of 10 kph. During the time of its occurrence, Frontal System was also affecting Northern Luzon area and brought heavy rainfall to the Provinces of Zambales, Bataan, Mindoro, Romblon, Palawan including Western Visayas.

Three (3) days after TY Quiel left the country, another typhoon developed in the country and was named "Ramon" with an international name NAKRI. Initially on the 12th of November, the LPA located at east of Virac, Catanduanes developed into Tropical Depression. 24-hours later TD Ramon intensifies into Tropical Storm at 385 KM East Northeast of Borongan City, Eastern Samar with

maximum sustained winds of up to 65 kph near the center and gustiness of up to 80 kph. It was moving West Northwest at 15-20 kph. TS Ramon had occurred together with the Northeast Monsoon. These weather systemsbrought heavy rainfall that had affected different areas of the countryparticularly the eastern portion of the country in the provinces of Cagayan, Isabela, Camarines Norte, Camarines Sur and Catanduanes. As it further moves northwestward towards Northern Cagayan it had intensified further and continues to increase threat to other provinces such as Ilocos Norte, Ilocos Sur, Abra, Apayao, Kalinga and Mountain Province.

Ramon remained in the eastern pacific for almost 8 days before its landfall in Santa Ana, Cagayan at around 12:20 AM of 20 November. It has slightly weakened after its landfall moving Southward at 15 kph and significantly impacted in the western section of the country before it finally weakens into LPA on the same day.

While Ramon was still in the PAR, another LPA was developed at East of Borongan City on 19 November 2020 and was named Tropical Depression Sarah. Initially it had forecasted to follow the track of Ramon providing flood warning almost the same area as issued during the passage of Typhoon Ramon. On the next day 20 November, TD Sarah change its course as it intensifies and accelerates moving Northwestward at 35 kph. Sarah started to weaken on the 22nd of November as it continuously moving Northward and no longer bring significant rainfall activity of the county.

During the duration of these events, General Flood Advisories were issued to the affected regions and Flood Bulletins were disseminated to warn the people living in the low-lying areas on the possible over flow of the rivers. In addition, PAGASA had commenced its Flood Forecasting and Warning for Dam Operation (FFWSDO) particularly over Magat River due to the operation of the spillway gates of Magat Dam in Ramon, Isabela to prevent further effects of flooding. The month of November were summarized as follows (Table 3):

General Flood Advisory	
REGION	No. Issued
CAR	15
I	18
II	22
III	11
IV-A	24
IV-B	18
V	21
VI	2
VIII	18
IX	5
X	3
XIII	3

GFA / Flood Bulletin	
REGION	No. Issued
Bicol	10
Cagayan	24

Dams in Spilling Operation	
DAM	Date
Magat	14-16 November

Table 3. Flood Warning Issuances for Principal River Basin for the month of November

C. Typhoon Tisoy (KAMMURI)

Typhoon Tisoy with an international named Kammuri is the 15th tropical cyclone that entered to the PAR in 2019. It entered as Typhoon category on November 30 with a

maximum sustain winds of 150 kph near the center and gustiness of 185 kph. Tisoy moves at westward direction with a speed of 15-20 kph initially affecting the south east section of the country (Figure 5). As precautionary measures, the HMD and the river centers issued General Flood Advisories and Flood Bulletins for the provinces located at the Region 5 and Region 8.

As Tisoy accelerated further as it headed towards the Philippines, additional flood warnings were raised at Central Luzon, Provinces of Mindoro, Marinduque, Romblon, Palawan Aurora, Bataan, Zambales, Quezon, Laguna, Batangas, Rizal Area. These areas experienced heavy rainfall which causes flooding to the low-lying areas.

D. Typhoon Ursula (Phanfone)

Before the year end, another tropical cyclone entered the PAR and was named Tropical Storm Ursula with an international name "Phanfone". On 23 December, it is initially located at 900 km East of Hinatuan, Surigao del Sur with maximum sustained winds of up to 65 kph near the center and gustiness of up to 80 kph. Generally, the typhoon is tracked to moved West Northwest and crosses its path to the island of the Philippines (Figure 6). It had affected almost the same Region as with the Typhoon Tisoy. Hence, issuances of Flood Advisories were made similar with the Flood Advisories issued for the said Typhoon.

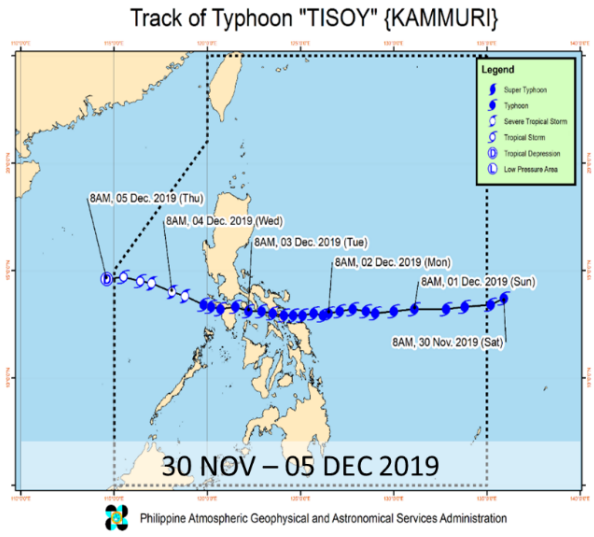


Figure 5. Typhoon Track of TY Tisoy

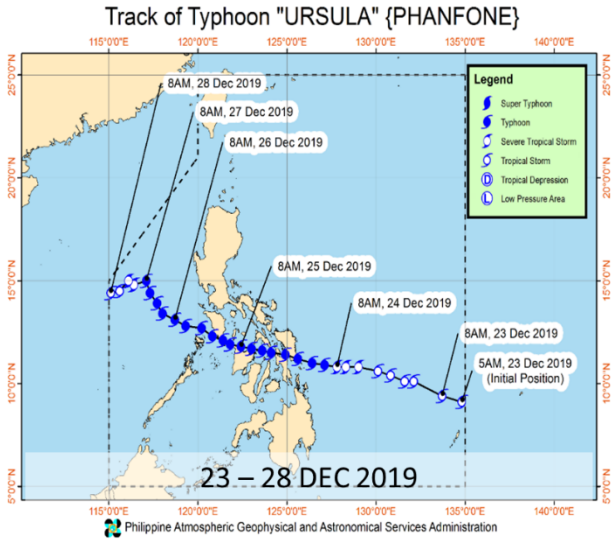


Figure 6. Typhoon Track of TY Ursula

Aside from the two (2) TCs that occurred in the country for the month of December, various rain-bearing weather systems affected different Regions which had prompted to issue a total of 169 General Flood Advisories, 35 Flood Bulletins for the Major River Basins and the activation of Flood Forecasting and Warning System for Dam Operation at Magat Dam. Warning Issuances are summarized below in Table 4.

General Flood Advisory	
REGION	No. Issued
NCR	3
CAR	6
II	12
III	10
IV-A	10
IV-B	9
V	12
VI	4
VII	8
VIII	22
IX	4
X	3
XI	8
XII	8
XIII	24

GFA / Flood Bulletin	
REGION	No. Issued
Cagayan	10
Pampanga	8
Bicol	17

Dams in Spilling Operation	
DAM	Date
Magat	6-8

Table 4. Flood Warning Issuances for the month of December

2. FFWS Activities in 2020

Tropical Cyclone affecting the country started on the later part of the first half of the year. However, various weather system such as Northeast Monsoon, Tail-End of Cold Front, Intertropical Convergence Zone and Easterlieshadbrought severe thunderstorm and heavy rainfall in the country. Henceforth, the PAGASA-HMD had issued General Flood Advisories as summarize in the Table 5provided below.

JANUARY 2020

General Flood Advisory	
REGION	No. Issued
IV-A	3
V	7
VI	2
VIII	2
XI	3
XII	3
XIII	3

GFA / Flood Bulletin	
REGION	No. Issued
Tagum-Libuganon	3

FEBRUARY 2020

General Flood Advisory	
REGION	No. Issued
IV-A	4
V	2
VI	7
VII	12
VIII	11
IX	4
X	8
XI	13
XII	3
XIII	10
BARMM	2

MARCH 2020

General Flood Advisory	
REGION	No. Issued
IV-B	2
V	6
VI	4
VII	3
VIII	6
IX	6
X	6
XI	3
XII	3
XIII	6
BARMM	6

APRIL 2020

General Flood Advisory	
REGION	No. Issued
V	3
XI	4
XII	2

Note: No Tropical Cyclones within the PAR for the Months of January, February, March and April 2020.

Table 5–Summary of Flood Warning Issuances

- Typhoon “Ambo” (VONGFONG)

On May 10, theLow-Pressure Area east of Mindanao has developed into Tropical Depression and was named “Ambo”. It further intensifies into a Tropical Storm while moving west-northwestward in the afternoon of May 13 with a maximum sustained wind of 95 kph near the center and gustiness of up to 115 kph. Ambo has made a landfall as Typhoon over San Policarpo, Eastern Samar at 12:15 PM of May 14. The said Typhoon had traverses the country in a Northwestward direction at 15 to 25 kph that brought heavy to intense rainfall in various part of the country (Figure 7). This had causedsevere flooding and landslides in various areas of the country. Flood Warning issuances are summarized in Table 6.

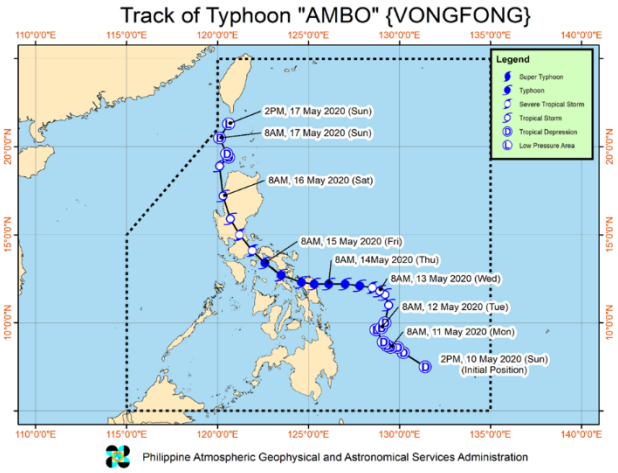


Figure 7. Typhoon Track of TY Ambo

General Flood Advisory	
REGION	No. Issued
CAR	4
I	4
II	5
III	6
IV-A	6
IV-B	4
V	6
VIII	10
IX	2
X	3
XI	4
XIII	3
BARMM	2

GFA / Flood Bulletin	
REGION	No. Issued
Pampanga	6
Bicol	6
Pasig-Marikina-Tullahan	2

Table 6. Flood Warning Issuances for the month of May

- Tropical Storm “Butchoy” (NURI)

Another LPA was developed into Tropical Depression in the afternoon of June 11 and was named “Butchoy”. TD Butchoy was initially estimated made a landfall over Polillo and Infanta, Quezc Central Luzon area as it moves West Northwest at 25 kph towards the West Philippine sea. Moderate to intense heavy rains were experienced over the Zambales, Bataan, Bulacan, Pamapanga, northern portion of Palawan including Calamian and Cuyoisalands. On the morning of June 12, Butchoy, slightly intensify as it continues to move away the country (Figure 8).

General Flood Advisories were issued to the affected regions while the three (3) of the Major River Basins in Luzon namely Pampanga, Bicol and Pasig-Marikina issued Flood Bulletins (Table 7).

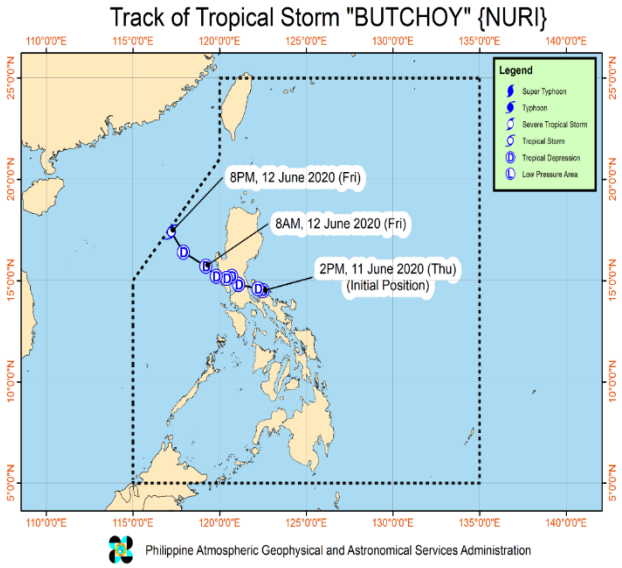


Figure 8. Typhoon Track of Tropial Storm Butchoy

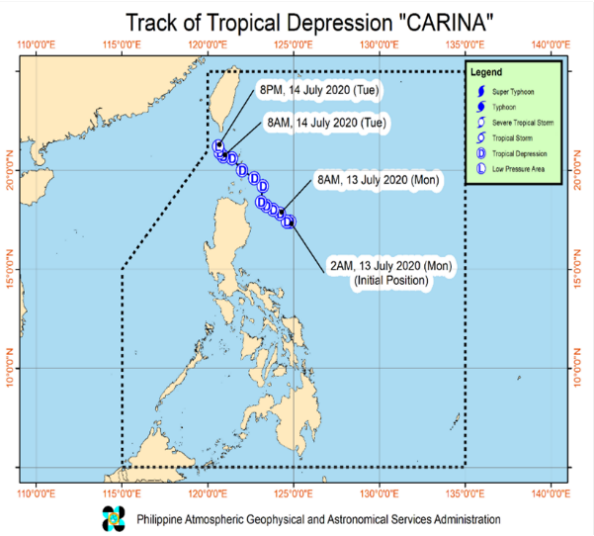
General Flood Advisory	
REGION	No. Issued
CAR	3
I	5
II	3
III	6
IV-A	6
IV-B	9
V	5
VI	5
VII	4
VIII	7
IX	6
X	5
XI	3
XIII	5

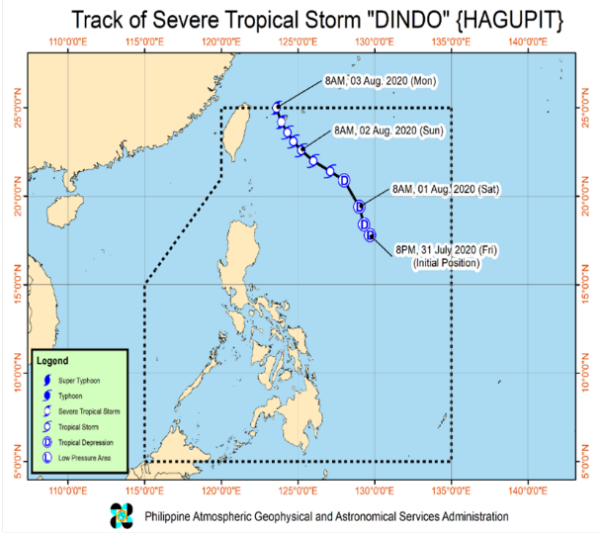
GFA / Flood Bulletin	
REGION	No. Issued
Pampanga	3
Bicol	3
asig-Marikina-Tullahan	5

Table 7. Flood Warning Issuances for the month of June

- Tropical Cyclone developed in the Month of July

There were two Tropical Cylone developed in the PAR in the month of July. These are Tropical Depression “Carina” and Tropical Storm “Dindo” with an international name Hagupit(Figure 9) . Both TC did not traverse the landmass which had lasted for 2 days and 4 days respectively. Aside from the TCs, there were other Weather Systems which brought heavy rainfall to some parts of the country. The enhanced Southwest Monsoon affected the North-Western section of the country to which they experienced moderate to heavy rainfall. Hence, HMD issued General Flood Advisories for the Region I, II, III, IV-A, IV-B, V, VIII and CAR and Flood Advisory for the Pasig-Marikina-Tullahan River Basin (Table 8).





GFA / Flood Bulletin	
REGION	No. Issued
Pasig-Marikina-Tullahan	3

General Flood Advisory	
REGION	No. Issued
CAR	2
I	2
II	6
III	5
IV-A	6
IV-B	6
V	6
VIII	7

Table 8. Flood Warning Issuances for the month of July

- Tropical Cylone developed in the Month of August

Similar with the previous month, the TCs that was developed in the month of August does not have a direct impact in the country (Figure 10). These were named as Tropical Storm Enteng (17-18 August), Tropical Depression Ferdie (21-22 August) and Tropical Depression Gener (28-31 August). These TCs remains to the PAR within 2-4 days and did not traversed the landmass of the country.

Flood Warning issuances for the month was due to the presence of Southwest Monsoon which brought moderate to heavy rains in the various part of the country. To prevent damage brought about by flooding, General Flood Advisories were issued at Region III, IV-A, IV-B, V, VI, VIII, IX, X, XI, XII ad XIII while Flood Bulletins were issued at Bicol, Davao, Tagum-Libuganon, Buayan-Malungon River Basins.

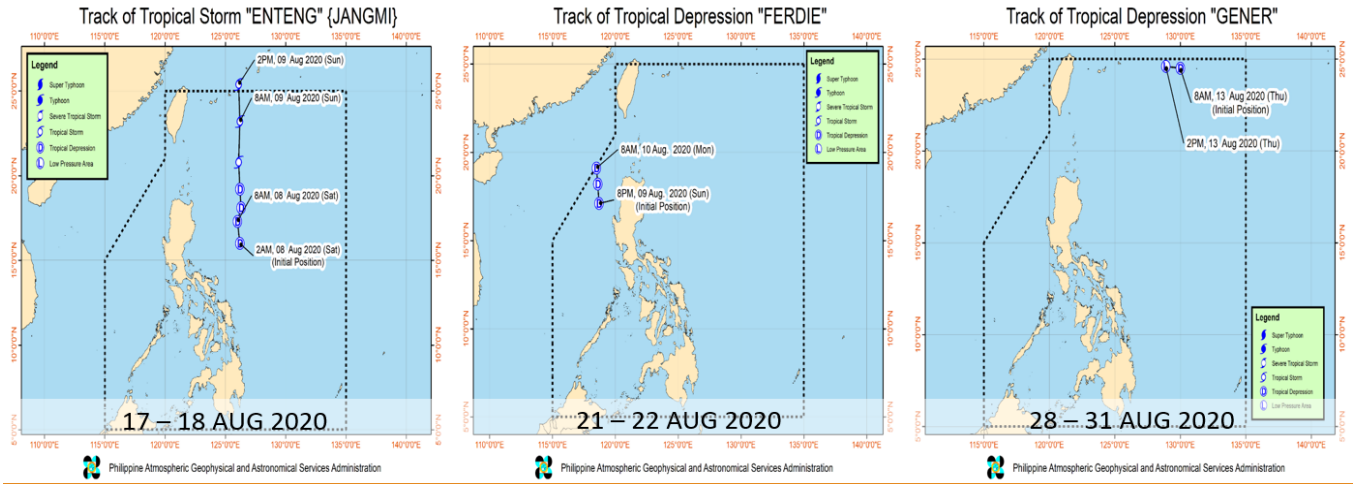


Figure 10. Track of Tropical Cyclones developed in the month of August

GFA / Flood Bulletin	
REGION	No. Issued
Bicol	3
Davao	5
Tagum-Libuganon	11
Buayan-Malungon	2

General Flood Advisory	
REGION	No. Issued
III	13
IV-A	10
IV-B	13
V	7
VI	4
VIII	6
IX	5
X	2
XI	8
XII	5
XIII	13

Table 9. Flood Warning Issuances for the month of August

- Tropical Cyclone developed in the Month of September

Another three (3) short lived TCs were developed in the Philippine Area of Responsibility in the month of September. These were named as Typhoon “Kristine” with international name HAISHEN (4-5 September), Tropical Storm “Leon” (15-17 September) and Tropical Storm “Marce” with international name DOLPHIN (20-21 September). Kristine and Marceboth developed at the Eastern part of the country affecting parts of Extreme Northern Luzon.

Tropical Storm Leon was developed at the Western Philippine Sea as shown in the track provided in Figure 11. TS Leon and the presence of Southwest Monsoon broughtheavy rains particularly in the Eastern section of Luzon. To protect the people from the damage brought by these event Flood Bulletins were issued at the Major River basins of Luzon namely the Pampanga and Agno River Basins

Since there were other rain-causing weather systems experienced in various parts of the country, PAGASA had issued flood warning to the other areas in the form of Flood Bulletins for Major River Basins and General Flood Advisories for the principal river basins. Summaries are shown in Table 10.

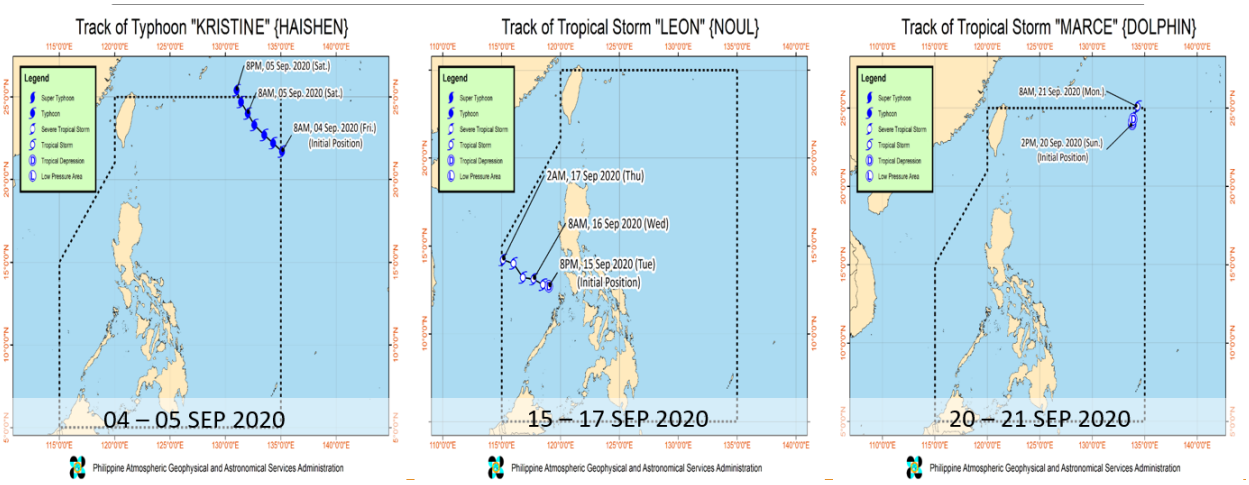


Figure 11. Track of Tropical Cyclones developed in the month of September

GFA / Flood Bulletin	
REGION	No. Issued
Pampanga	13
Agno	7
Cagayan	2
Tagum-Libuganon	2
Davao	3

General Flood Advisory	
REGION	No. Issued
IV-B	11
VIII	2
XI	3
XII	3
ARMM	3

Table 10. Flood Warning Issuances for the month of September

3. Monitoring Activities for Dam Operation

It was known that around 50% of water supply comes from the rain brought by TCs that traverses in our country. The two (2) TCs that crosses the Philippines in the latter part of 2019 had taken the advantage of replenishing the water in the Major Dams of Luzon. The purpose of Dams is mainly for Power Generation, Irrigation and Water Supply servicing major sectors and populace in Luzon. During the earlier months of 2019most of the dams in Luzon had been struggling with low water level during the summer until the 3rd quarter of the Month.During this month water rationing has been implemented while various Government and Private Sectors in charge in water management had done their shares in finding solutions to mitigate the effect of the water shortage.

PAGASA has continuously monitoring hydro-meteorological condition of these dams. Trend of theWaterlevel of the dams for the past 10 years are presented below.

A. Angat Dam

Angat Dam located at Norzagaray, Bulacan which main purpose is to provide water for domestic use (90% Metro Manila), power generation and irrigation. The reservoir water level has dropped below its operation critical level of 180m starting latter part of April and dropped to its lowest in the month of July which is almost the same as the lowest recorded in 2010 of 157.56 m (Figure 11). Hence, the main reason for water scarcity in Metro Manila and nearby provinces. It was shown in the trend, that the waterlevel of the Angat dam normally recovered in the last quarter of each year and reached the targeted Rule Curve elevation of 212 m. Reaching targeted elevation will ensure the dams purpose of providing adequate water supply particularly during the dry season.However, It was clearly manifested in the 2019 trend that dam waterlevel failed to reach its Rule Curveand started the year low for 2020.

In the 2020 trend, it was shown that the effort made by the Government and other water sectors became successful because they were able to maintain the dam elevation to its rule curve despite of the low level in the start of the year and the large demand of water supply due to the pandemic.

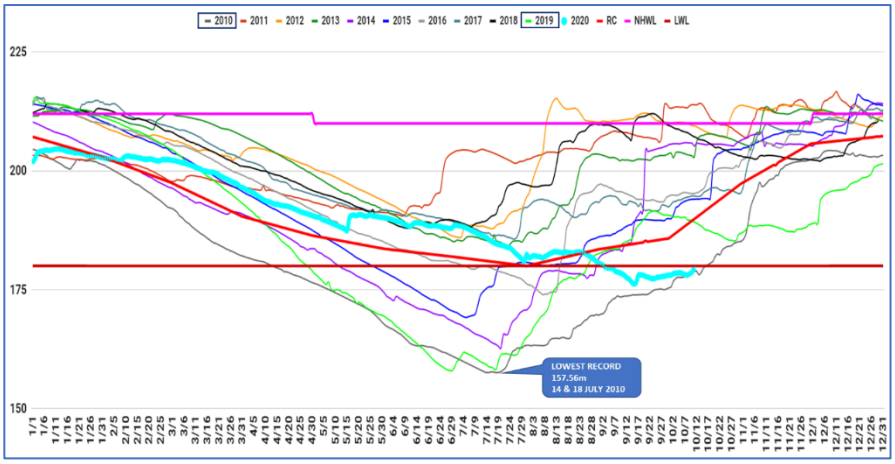


Figure 12. Reservoir Water Level Trend of Angat Dam 2010-2020

B. Pantabangan Dam

Pantabangan Dam is one of the largest dams in Southeast Asia located in Pantabangan, Nueva Ecija. It is a multi-purpose dam which major function is to supply water for irrigation and for power generation.It was shown in the graph for the past ten (10) years, Pantabangan Dam had recorded the lowest waterlevel of 159.29 meters on July 2020 for the past 10 years.

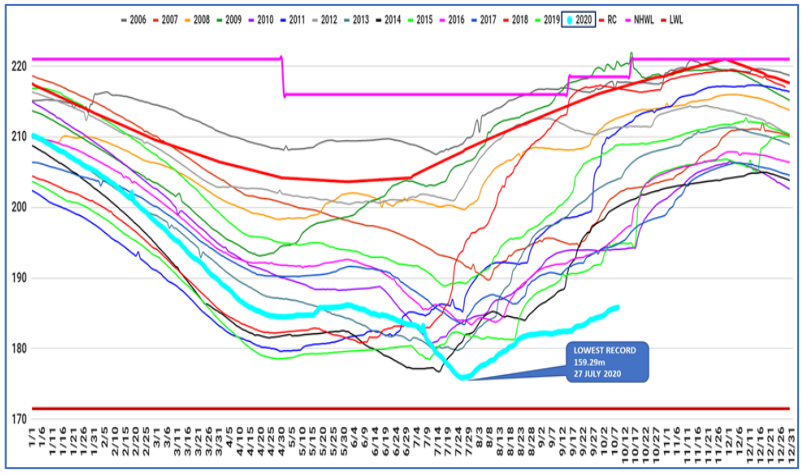


Figure 13. Reservoir Water Level Trend of Pantabangan Dam 2010-2020

C. San Roque Dam

San Roque Dam is a dam operated under San Roque Multipurpose Project and the largest dam in the Philippines found in San Manuel, Pangasinan. A gated spillway protects the dam from overtopping and during wet season, the water run-off is stored for later release through water turbines to generate power and irrigate farms. Trend in 2019 follows the annual trend which has its lowest in July and will significantly rise during the peak of Southwest Monsoon in August-September. In this period, it even exceeded its spilling level causing the dam to operate and activate Flood Forecasting and Warning System for Dam Operation.

The trend for 2020 is quite unusual because the waterlevel in the dam was way below to its Rule Curve. This can be attributed due to the Tropical Cyclone that enter to the PAR in the month of August – September which failed to have a direct effect in the country. In addition, the Southwest Monsoon that it present during the said months were not enhanced by these TCs henceforth lesser rains within the San Roque Watershed had been experienced.

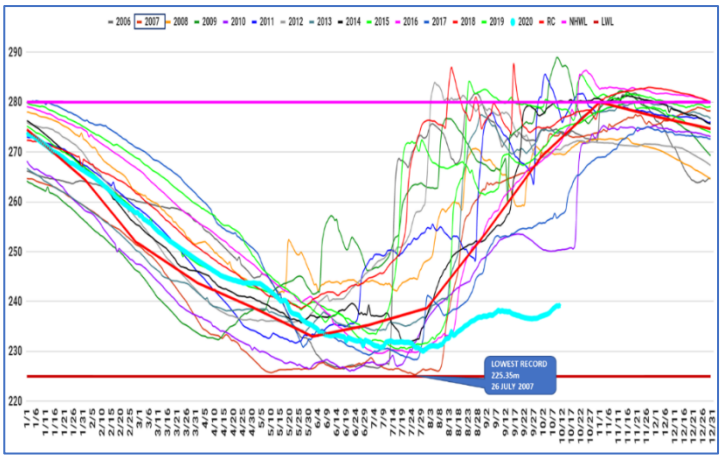


Figure 14. Reservoir Water Level Trend of San Roque Dam 2006-2020

D. Magat Dam

Magat Dam is a large rock-fill dam located in Ramon, Isabela. It is situatedalong Magat River, a major tributary of Cagayan River. It is amulti-purpose dam which is used primarily for irrigating about 85, 000 hectares of agricultural lands in Luzon, flood control and power generation through the Magat Hydroelectric Power Plant. As mentioned in the previous sections, the Magat Dam is the only Major Dam in Luzon that had activated its FFWSDO in the last quarter of 2019. This is due to the presence of the Northeast Monsoon and Typhoon Ramon as discussed earlier. Annual trend shows two dropped of waterlevel happened for the year. These are during the month of March and July. Lowest recorded elevation for the past 15 year was recorded in 30 March 2010 with 148.62 meter.

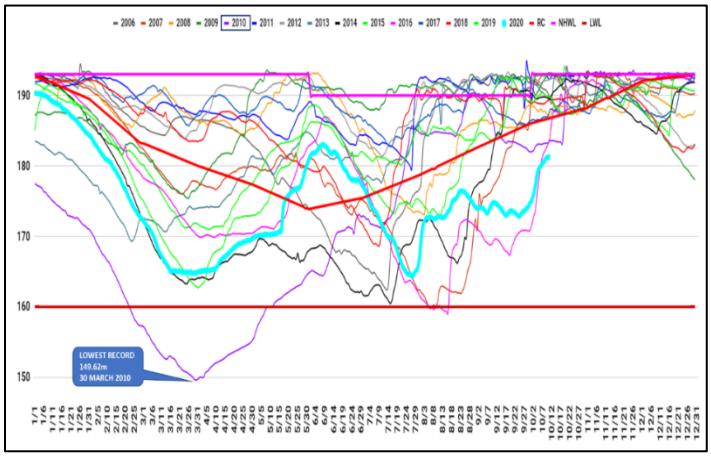


Figure 15. Reservoir Water Level Trend of Magat Dam 2006-2020

PROGRESS IN KEY AREAS (Project Status)

1. Continue the activities for the Establishment of Flood Forecasting and Warning System/ Center for Major River Basins

Establishment of Flood Forecasting and Warning Systems (FFWS) in the Philippines

No.	River Basin	Location of Flood Forecasting and Warning Center (FFWC)	Island Group	Status of the Construction of FFWC	Status of the Installation of	Remarks
1	Abulog	Luna, Apayao	Luzon	On-going	On-going	Not yet operational
2	Cagayan	Tuguegarao City	Luzon	Completed	Completed	Operational
3	Abra	Vigan City	Luzon	Completed	Completed	Operational
4	Agno	Rosales, Pangasinan	Luzon	Completed	Completed	Operational
5	Pampanga	San Fernando, Pampanga	Luzon	Completed	Completed	Operational
6	Pasig-Marikina	Quezon City	Luzon	Completed (HMD MOC)	Completed	Operational
7	Bicol	Pili, Camarines Sur	Luzon	Completed	Completed	Operational
8	Panay	Roxas City	Visayas	Completed	Completed	Operational
9	Jalaur	Iloilo City	Visayas	Completed (Iloilo RADAR)	Completed	Operational
10	Ilog-Hilabangan	Kabankalan City	Visayas	Completed	On-going	Not yet operational
11	Agusan	Prosperidad, Agusan del Sur	Mindanao	On-going	On-going	Not yet operational
12	Tagoloan	Tagoloan, Misamis Oriental	Mindanao	On-going	Completed	Operational
13	Cagayan de Oro	Cagayan de Oro City	Mindanao	Completed	Completed	Operational
14	Agus	Iligan City	Mindanao	Completed	On-going	Not yet operational
15	Tagum-Libuganon	Tagum City	Mindanao	Completed	Completed	Operational
16	Davao	Davao City	Mindanao	Completed	Completed	Operational
17	Mindanao	Cotabato City	Mindanao	On-going	On-going	Not yet operational
18	Buayan-Malungon	General Santos City	Mindanao	Completed	Completed	Operational

Summary	Completed:	14	Completed:	13	Operational:	13
	On-going:	04	On-going:	05	Not yet operational:	05
	Total:	18	Total:	18	Total:	18

2. To further enhanced flood warning capability of PAGASA the installation of X-Band Radars in the Major River Basinsare being prioritized.

Installation of X-Band RADARs in the Major River Basins of the Philippines

No.	River Basin	Location of RADAR	Island Group	Progress as of 08 September 2020
1	Cagayan	Isabela State University Echague, Isabela	Luzon	98.39%
2	Panay	Roxas City	Visayas	33.92%
3	Ilog-Hilabangan	Kabankalan City	Visayas	33.92%
4	Agusan	Esperanza, Agusan del Sur	Mindanao	41.31%
5	Tagum-Libuganon and Davao	Panabo City	Mindanao	51.95%
6	Mindanao	University of Southern Mindanao Kabacan, Cotabato	Mindanao	50.89%
7	Davao	Davao City	Mindanao	For Site Inspection (Schedule: 12 Oct 2020)
	PAGASA Control Room at HMD-MOC			47.60%

ACTIVITIES DURING THE COVID-19

The Covid-19 Pandemic has significantly affected the provision of Flood Forecasting and Warning Services in the whole world. PAGASA being the lead in delivering operational hydrological services in the country, had adjusted to the "*New Normal*"prescribed by the government to avoid the spread of the virus. To ensure the continuity of the service, the following are adopted by the agency:

1. Hydrologists and Hydro Aides Work from Home with one Technician reporting to office assigned to monitor the equipment.
2. Skeletal Force – 50% are working at home while 50% work at the office. Limited staffs are permitted to report to the office and strictly follows minimum health protocols. These are wearing of mask and face shields during the stay in the office. Social Distancing and Disinfection are strictly encouraged.
3. All meetings are done through online.
4. Hydrologists were advised to take online trainings.

The most affected activities of PAGASA is the projects being implemented within the river basins. Implementation activities such as construction of the river centers, shipments and installation of monitoring equipment, securing permits from the Local Governments for the installation and movement of PAGASA personnel to monitor the status of project are stalled. Hence, it is expected that there will be no project that will be completed this year.