



Republic of the Philippines
Department of Science and Technology



Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)

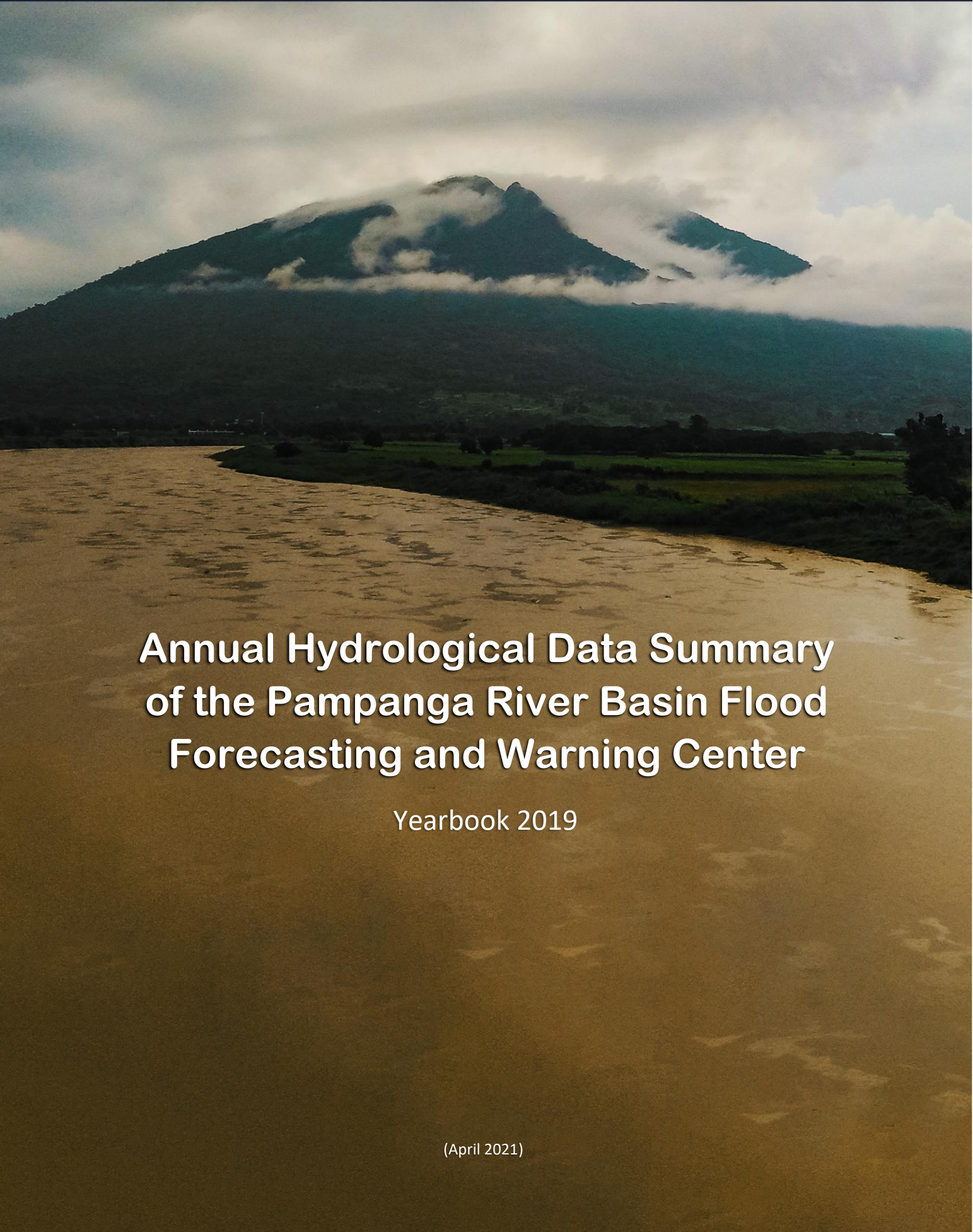
PAMPANGA RIVER BASIN FLOOD FORECASTING AND WARNING CENTER (PRFFWC)

DMGC DOST Reg.3 Compd, Brgy. Maimpis, CSF, Pampanga 2000

(045) 455-1701

prffwc@gmail.com

<http://prffwc.synthasite.com>



Annual Hydrological Data Summary of the Pampanga River Basin Flood Forecasting and Warning Center

Yearbook 2019

(April 2021)



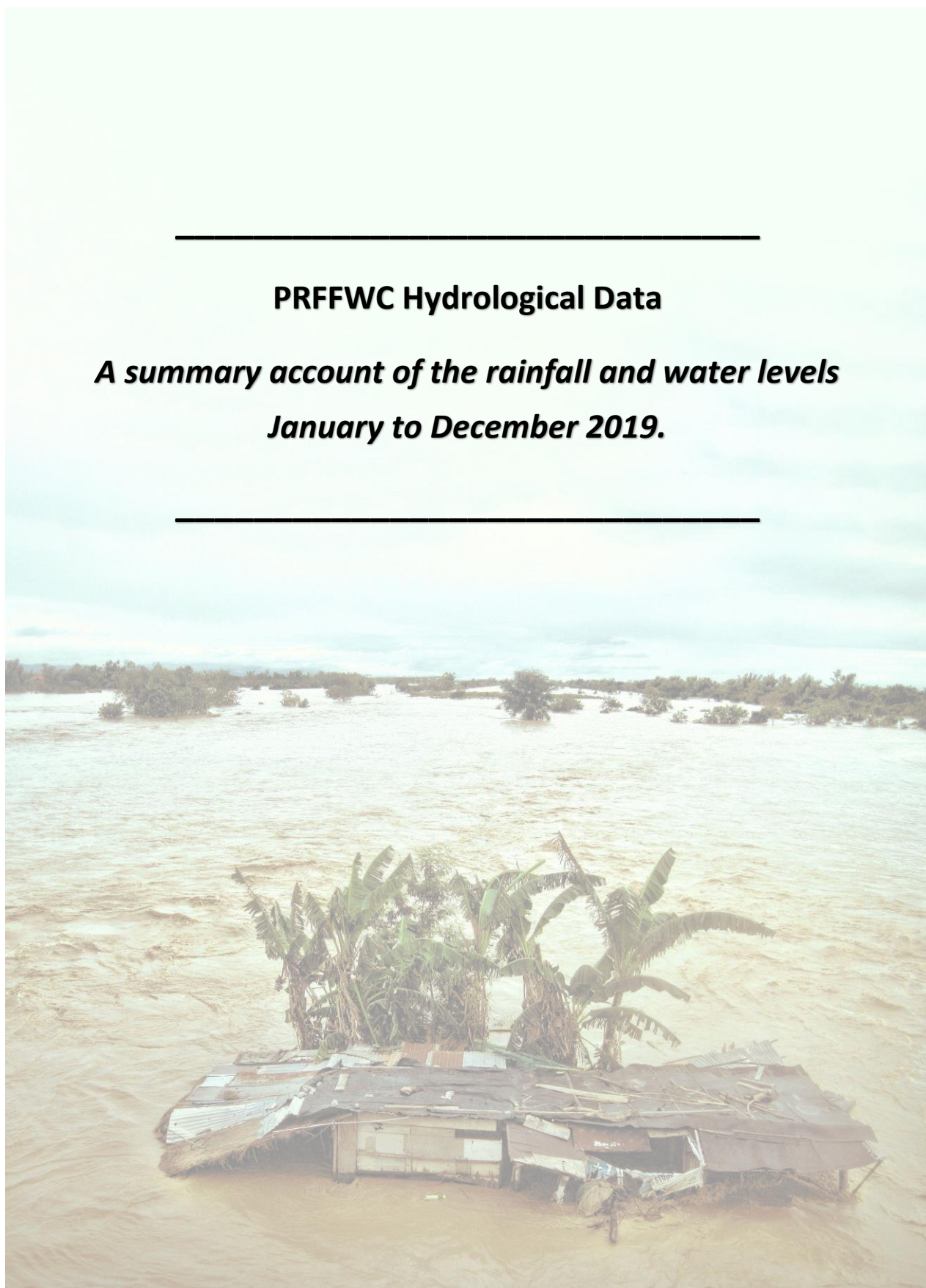
Front / Back Cover:

The mighty Pampanga River as seen upstream from San Agustin Bridge in Arayat, Province of Pampanga with the majestic partially cloud-covered Mt. Arayat in the background; July 31, 2019

Photograph: H. Hernando Edited by: M. Joson

PRFFWC Hydrological Data

***A summary account of the rainfall and water levels
January to December 2019.***



Acronyms & Abbreviations:

- CSFP – City of San Fernando, Pampanga
- D/S - downstream
- D/T - downtime
- FFWS – Flood Forecasting & Warning System
- FM – Flood Marker
- HMD – Hydro-Meteorology Division
- HMTS – Hydro-Met Telemetry Section
- LB – Left Bank
- LST – local standard time
- NIA-UPRIIS – National Irrigation Administration – Upper Pampanga River Integrated Irrigation System
- NCR-PRSD – National Capital Region – PAGASA Regional Services Division
- PAGASA – Philippine Atmospheric, Geophysical and Astronomical Services Administration
- PRB – Pampanga River Basin
- PRFFWC – Pampanga River Basin Flood Forecasting & Warning Center
- Q - discharge
- Racc – accumulated rainfall
- RB – Right Bank
- RR – Rainfall
- SG or S.G. – Staff Gauge
- TBM – Temporary benchmark
- U/S - upstream
- WL – Water Level
- X-sect – cross-section

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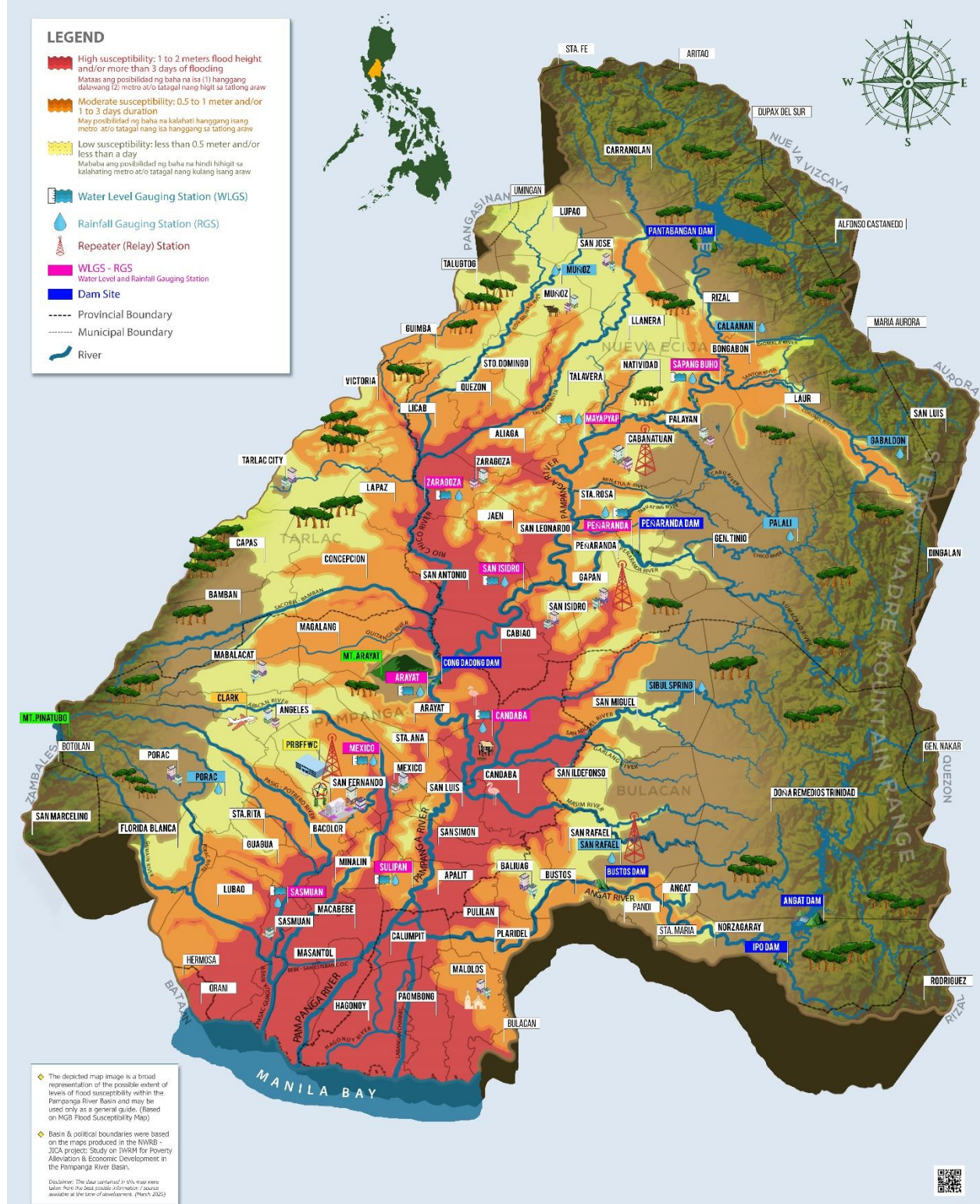
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The PRFFWC Telemetry Tower located in the City of San Fernando, Province of Pampanga.

PAMPANGA RIVER BASIN FLOOD SUSCEPTIBILITY MAP (ANTAS NG PAGBAHA SA PAMPANGA RIVER BASIN)



A geopictorial map of the generalized area flood susceptibility in the Pampanga River Basin with location of the PRFFWC telemetry stations (as of Feb 2020).

Yearbook Notes



Various entities involved in hydrological-related applications such as in the fields of infrastructure, research and development, agriculture, flood mitigation, water supply, and many other related aspects are all in need of hydrological data. The PRFFWC's hydrological observations are relevant to a lot of users who shares the same interests in the hydrological characteristics of the PRB. Having a dataset of organized information presented in a readily usable output is one of the reasons why a summary yearbook was first thought of. For PRFFWC having a set of validated and "reliable" hydrological record is a significant requirement in coming out with a sound river flow forecast.

The two important factors in producing a robust hydrological summary are the quantity and quality of the hydrological data. It would be quite ideal if both conditions represent the data series.

The year 2019 was originally considered as the initial starting point of the summary data series for several reasons. First, it was at the start of year 2020 that the PRFFWC did a more comprehensive hydrological data series quality checks starting with year 2019. Second, the timing was just right as central focus was given in completing the data summary report. It was done at a time when no major and regular activities were being handled by the center (during the Enhanced Community Quarantine period, March to May 2020). Third, it was also at a time when the center, finally, has had the will and the drive to finish a material that was already long overdue. At that point in time, the idea of working out the other yearbooks would have been going backwards, hopefully, completing the hydrological yearbooks of the PRFFWC. Eventually, this idea did not push through.

While best efforts were exerted to validate and complement the hydrological data series of each of the stations in the system, there still remain a substantial periods of gaps and breaks in the series particularly for water level data of several stations. A number of obvious erroneous data records were deleted from the series. Few attempts were made to fill-in the data gaps and breaks particularly only those that have relatively short gap periods of several hours.

Station Profile

Table of Rainfall and Water Level Stations of the PRFFWC

Station	Station Number	Station Type RR (rainfall) WL (Water Level)	Location	Coordinates (estimated)
	(DEC) 6301XX			
Muñoz	61	Telemetered RR	Within the compound of the Philippine Carabao Center in the Science City of Muñoz, N.E.	15°44'17"N, 120°57'38"E
Sapang Buho	62	Telemetered RR & WL	@ LB of Pampanga River in Bgy. Sapang Buho, Palayan City, Nueva Ecija	15°35'39"N, 121°07'09"E
Gabaldon	63	Telemetered RR	Around 450 meters above the natural ground elevation of Bgy. Malinao, Gabaldon, N.E.	15°29'55"N, 121°21'20"E
Zaragoza	64	Telemetered RR & WL	Along the Zaragoza – La Paz road (RB-D/S of the Rio Chico Bridge)	15°26'36"N, 120°45'03"E
Mayapyap	65	Telemetered RR & WL (defunct since 2015)	@ RB-D/S of Gen. Luna Bridge, (Bgys. Mayapyap & Valdefuente) Cabanatuan City, Nueva Ecija	15°30'52"N, 120°57'20"E
Mayapyap (NIA-UPRIIS)		Telemetered RR (transferred Oct. 2019)	In the front lawn within the NIA-UPRIIS Compound, Cabanatuan City	15°28'33"N, 120°57'30"E
Peñaranda	66	Telemetered RR & WL	@ LB-D/S side of the bridge, around 550 meters D/S of Peñaranda River Irrigation Dam at Bgy. Uno, Poblacion, Peñaranda, N.E.	15°21'14"N, 121°00'20"E
Calaanan	67	Telemetered RR	Inside the Pesa Elementary School compound, Purok 2, Bgy. Pesa, Bongabon, N.E.	15°38'53"N, 121°11'09"E
Palali	68	Telemetered RR	Within Nueva Ecija Stock Farm in Bgy. Nazareth, Gen. Tinio, N.E.	15°22'50"N, 121°9'41"E
San Isidro	71	Telemetered RR & WL	@ the RB-D/S side of the San Isidro-Jaen Bridge, San Isidro, N.E.	15°18'49"N, 120°54'09"E
Arayat	72	Telemetered RR & WL	@ RB-D/S side of San Agustin Bridge, Arayat, Pampanga	15°10'06"N, 120°46'56"E
Candaba	73	Telemetered RR & WL	Along Candaba-San Miguel road (Dukma) at Bgy. Paralaya, Candaba, Pampanga	15°06'56"N, 120°51'01"E
Sibul Spring	74	Telemetered RR	Bgy. Sibul, San Miguel, Bulacan	15°10'05"N, 121°03'33"E
Sasmuan	75	Telemetered RR & WL	Bgy. Sta. Lucia (Poblacion), Sasmuan, Pampanga	14°56'11"N, 120°37'23"E
Sulipan	76	Telemetered RR & WL	@ RB of Pampanga River at Bgy. Sulipan, Apalit, Pampanga	14°56'21"N, 120°45'39"E
Mexico	77	Telemetered RR & WL	LB-D/S of Mexico Bridge No. 2, Bgy. Sto. Rosario, Mexico, Pampanga	15°04'05"N, 120°43'51"E
Porac	78	Telemetered RR	Within the municipal compound property, Bgy. Cangatba, Porac, Pampanga	15°04'48"N, 120°32'43"E
San Rafael	90	Telemetered RR (Repeater)	NIA compound, Bgy. Sabang, Baliwag, Bulacan	14°58'05"N, 120°54'52"E
Cabanatuan	89	Repeater station (no hydrological data reporting)	Within the NIA-UPRIIS Compound, Cabanatuan City	15°28'33"N, 120°57'30"E
PRFFWC (CSFP)		Digital tipping-bucket / manually recorded	PRFFWC area compound besides DOST-3, DMGC, Bgy. Maimpis, CSFP	15°04'04"N, 120°39'22"E

Scope and Limitations

1. This Data Yearbook presents the hydrological data summary of the 18 rainfall stations and 9 water level stations of the PRFFWC for the year 2019.
2. The rainfall and water level dataset in this report covers the period starting from the past 1-hour observation ending at 0900H of January 01, 2019, and will end at 0800H of 01 January 2020.
3. Accordingly, it follows a 24-hour daily total (or average for WL) which starts at (almost) 0801H of the present day and ends at 0800H of the following day (meteorological day); Water level summary values for maximum data are reported as per instantaneous observed value from the dataset but the average value is taken using the same reporting time period as in total rainfall for a met day.
4. The shortest time period considered in this summary report is 1 hour.
5. Units used for some of the hydrological elements:
 - a. Rainfall – millimeters (mm)
 - b. Water Level (River Stage) – meters (m)
 - c. Cross-sectional area – square meter (m²)
 - d. River Discharge – cubic meters per second or cumecs (m³/sec)
 - e. Rainfall day – rain-days
6. The minimum rainfall amount for telemetry stations is 1 mm; and for the rainfall observations in PRFFWC in CSFP, the minimum is 0.25 mm;
7. Rain-day is considered as a day with at least 1 mm of rainfall for telemetry stations; and at least 0.25 mm for PRFFWC in CSFP station;
8. The hydrological data summary presented in this yearbook are the daily rainfall observations (met day total), monthly rainfall and average, maximum rainfall total of various periods, and total rain-days per month; the daily water level averages (met day), maximum stage for each month and other regular information that were extracted from the available data series of each station.
9. For the daily rainfall presentation table, yellow shaded cell indicates rainfall values between 1 to 60 mm for telemetry stations (0.25 to 60.0 for PRFFWC-CSFP station); pink shade cells from 61 to 180 mm (60.25 to 180.0 for PRFFWC-CSFP station); light-red shade cells for values greater than 180 mm. Likewise, for water level summary, cell shades are in a graded color scale from a white shade to a regular semi-orange shade that is relative to an increase in water level values. Thus, a “0.00” value (minimum) is white and maximum value within the table will be orange shaded. In the summary below the daily value tables (the daily rainfall and in the average daily water level tables) a green shaded cell indicates the maximum value in their respective rows.

Disclaimer: The dataset summary presented herein have been processed and validated through several steps using the best possible means available to the PRFFWC at the time of processing. However, still it is possible that results may contain inadvertent errors such as typographical in nature, errors resulting from possible misuse of excel formulae, and other similar factors. The summary information in this yearbook report may be revised as new analyses emerge.

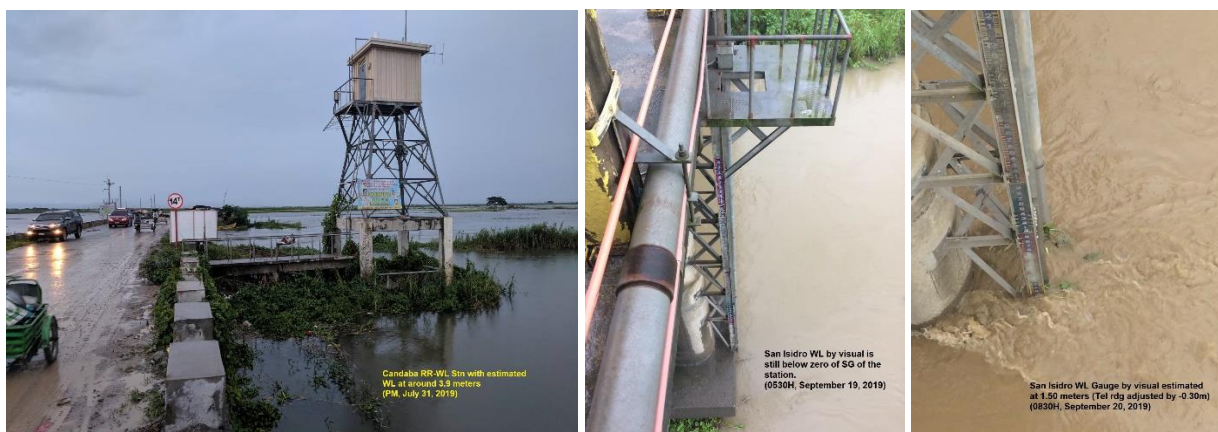
Users noting any errors that they may have encountered in this report are requested to inform the PRFFWC (e-mail: prffwc@gmail.com). Furthermore, users may use the information contained herein at their own risk.

Data Series Issues of 2019

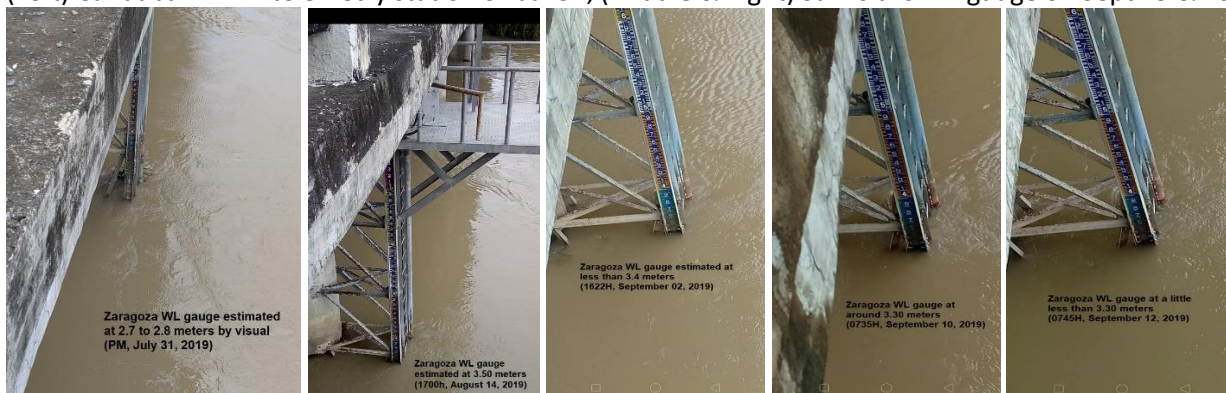
1. January: Candaba WL cannot go below 2.85 m (?) and all the record starting 0000H, 08 were deleted from the series; Zaragoza WL long periods of 1.35 or below readings may already be at zero gauge or below (deleted from the series starting 0000H, 24).
2. February: Candaba WL record was not included in the data series; Peñaranda & San Isidro WL are zero for the whole month; Several RR stations have zero totals for the month; Zaragoza WL have some unreliable points along the series (deleted from start of month to 0000H, 05); Sasmuan WL have some erratic observations but were not adjusted.
3. March: Candaba WL record was not included in the data series; Peñaranda & San Isidro WL are zero for the whole month; Several RR stations have zero totals for the month; Zaragoza WL have may some unreliable points along the series.
4. April: Candaba WL record was not included in the data series; Peñaranda & San Isidro WL are zero for the whole month; Zaragoza WL have some filled-in points by eye-fit (0800H-1000H, 15) and some points that were deleted from the series (from 1500H, 18 to 0900H, 27).
5. May: San Isidro WL is zero for the whole month; Candaba WL record was deemed erroneous and was not included in the data series; portions of Zaragoza WL were also deleted from the series.
6. June: Peñaranda & San Isidro WL are zero for the whole month; Candaba WL record was deemed erroneous and was not included in the data series; Zaragoza WL may have some unreliable data in the data series (deleted portions in the data series)
7. July: San Isidro WL is zero for the whole month; Zaragoza WL have erratic and unreliable readings – portions were deleted; Candaba WL series was not included until 0900H, 17 after which all readings adjusted by -0.30m; Zaragoza WL have many unreliable readings and portions were deleted from the series. Sulipan RR may seem unreliable starting 0001H, 29.
8. August: Sulipan RR may seem unreliable at beginning until 2nd day of the month; San Isidro WL is zero for the whole month; Zaragoza WL adjusted by -0.50m as per validated WL undertaken on 1700H, 14; Zaragoza WL sensor replaced and readings corrected starting 1700H, 23; Candaba WL adjusted by -0.30m.
9. September: Sulipan RR had some doubtful observations from 2200H, 02 to 1700H, 03 but no adjustments carried-out; San Isidro WL adjusted by -0.30m from 0300H, 19 to 0400H, 22 based from validated picture; Zaragoza WL have several validating pictures during the month (data verified)
10. October: Candaba WL starting at 0800H, 02 all data disregarded until end of month; San Isidro WL is zero for the whole month; **Mayapyap RR restored and relocated at NIA-UPRIIS compound, observations started 1200H, 16**; Sasmuan WL with some erratic readings (not adjusted).
11. November: Candaba restored on 1400H, 21; San Isidro WL out-of-order starting 1200H, 18 due to bridge rehabilitation at the gauging site. Zaragoza WL at 0.11 or below for a relatively long period may be at zero gauge or even way further below (portions were deleted).
12. December: San Isidro WL out-of-order whole month; Zaragoza WL at 0.11 or below for a relatively long period may be at zero gauge or way further below (parts were deleted from the series).

Data Validation by pictures (2019)

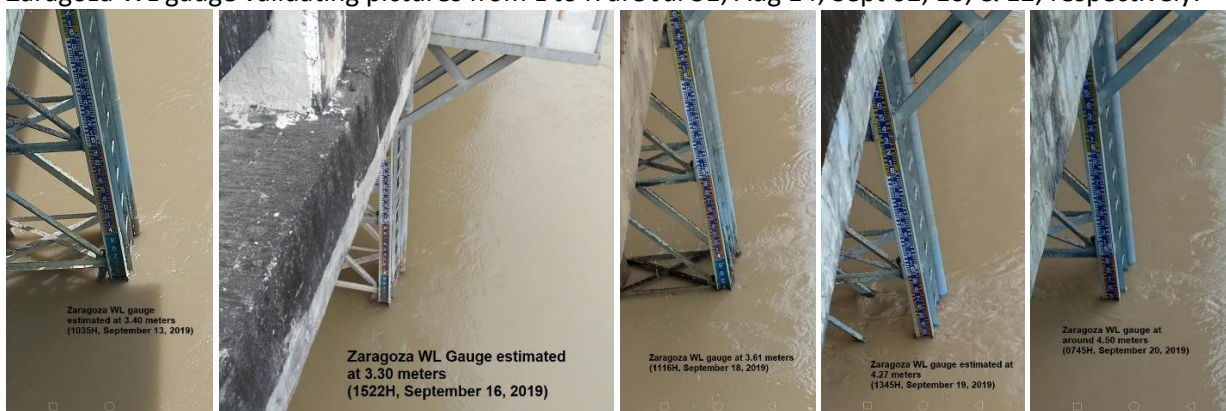
WL data are validated by pictures (photos) of the station's SG that were taken during field trips. This is the most practical way of filling-in gaps and breaks, correcting / adjusting the WL data series. For RR data, the only means of filling-in the gaps and breaks, and mainly correcting data distribution in the supervisory dataset is by referring to the stations' data loggers. Below are the validating pictures of some WL stations of PRFFWC:



(Left) Candaba RR-WL telemetry station on Jul 31; (Middle & Right) San Isidro WL gauge on Sept 19 & 20.



Zaragoza WL gauge validating pictures from L to R are Jul 31; Aug 14; Sept 02, 10, & 12, respectively.



Zaragoza WL gauge validating pictures from L to R, Sept. 13, 16, 18, 19, & 20, respectively. (some pictures were provided by the Zaragoza MDRMO)

A. RAINFALL Data Summary Presentation



Daily Point Rainfall in millimeters

2019	Station: Muñoz											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	29	0	0	0	0	0	14	25	8	0	4	0
2	0	0	0	0	4	0	0	38	1	52	3	0
3	7	0	0	7	0	0	0	0	2	9	0	18
4	0	0	0	0	0	0	0	20	16	10	41	2
5	0	0	0	0	2	0	6	7	4	0	15	0
6	0	0	0	0	5	0	0	44	1	0	6	0
7	0	0	0	0	0	0	8	5	1	0	1	0
8	0	0	0	0	1	0	8	25	3	0	0	0
9	0	0	0	0	15	0	46	7	17	0	30	0
10	0	0	0	0	10	9	2	2	2	12	0	0
11	0	0	0	5	5	12	0	9	2	0	2	0
12	0	0	0	0	4	52	0	6	19	0	0	0
13	0	0	0	9	0	7	0	134	9	0	0	0
14	0	0	0	3	0	5	16	18	1	0	0	0
15	0	0	0	0	0	2	0	4	3	0	0	0
16	0	0	0	0	0	0	34	0	3	0	0	0
17	0	0	0	0	0	0	4	0	43	0	0	0
18	0	0	0	0	0	0	0	0	58	0	0	0
19	0	0	0	0	0	0	0	0	10	2	0	2
20	0	0	0	0	5	0	4	0	5	0	59	1
21	0	0	0	0	0	0	0	6	0	0	0	0
22	0	0	0	0	0	20	1	0	0	2	0	0
23	0	0	0	0	0	0	0	40	0	0	0	0
24	0	0	0	0	0	65	0	11	0	0	0	0
25	0	0	0	0	0	3	50	8	0	0	0	0
26	0	0	0	0	63	0	1	21	0	0	0	1
27	0	0	0	0	44	2	35	5	0	0	0	0
28	0	0	0	0	3	4	1	2	0	1	0	0
29	0		0	0	0	0	8	3	0	0	0	0
30	0		0	0	0	4	3	6	127	0	0	0
31	0		0		0		8	47		0		0

Monthly Total	36	0	0	24	161	185	249	493	335	88	161	24
Average	1.16	0.00	0.00	0.80	5.19	6.17	8.03	15.90	11.17	2.84	5.37	0.77
Max daily rain	29	0	0	9	63	65	50	134	127	52	59	18
Day of Max Daily	1			13	26	24	25	13	30	2	20	3
No. of Rain days	2	0	0	4	12	12	18	24	21	7	9	5
Max 1-hr rain	7	0	0	6	32	32	38	80	37	27	25	9
Day of max 1-hr	1			3	27	24	9	13	30	2	4	3

Total rain for the year

1756

Total rain days for the year

114

Daily Point Rainfall in millimeters

2019

Station:

Sapang Buho

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	21	0	0	0	0	0	7	3	2	0	0	0
2	0	0	0	0	33	0	1	29	2	3	0	0
3	2	0	0	0	0	0	0	1	18	7	0	19
4	0	0	0	0	1	0	0	5	1	2	1	0
5	0	0	0	0	42	0	0	2	8	0	7	1
6	0	0	0	0	9	0	0	58	12	8	1	0
7	0	0	0	0	0	0	1	3	31	0	5	0
8	0	0	0	0	29	0	0	38	5	0	0	0
9	0	0	0	0	4	6	0	10	20	0	12	0
10	0	0	0	0	22	1	2	29	0	0	1	0
11	0	0	0	5	0	17	5	4	3	0	0	0
12	0	0	0	3	0	42	0	3	24	0	0	0
13	0	0	0	0	11	15	0	7	0	0	0	0
14	0	0	0	0	0	3	23	1	38	0	0	0
15	0	0	0	0	0	6	0	1	3	0	0	0
16	0	0	0	0	0	19	41	22	0	0	0	0
17	0	0	0	0	0	0	28	7	33	0	0	0
18	0	0	0	0	0	0	1	0	43	0	0	0
19	0	0	0	0	0	0	6	0	2	0	10	1
20	0	0	0	0	0	0	37	0	29	0	60	1
21	0	0	0	0	17	7	48	62	0	0	0	0
22	0	0	0	0	0	4	26	0	0	0	0	0
23	0	0	0	0	2	1	0	3	0	0	0	0
24	0	0	0	0	0	80	0	7	0	0	0	0
25	0	0	0	0	0	0	5	7	0	0	0	0
26	0	0	0	0	44	26	1	18	5	0	0	6
27	0	0	0	0	2	9	11	5	0	1	0	0
28	0	0	0	0	29	0	11	3	5	4	0	0
29	0		0	0	2	16	19	4	1	6	0	0
30	0		0	0	0	0	5	17	1	5	0	0
31	0		0		0		35	42		0		0

Monthly Total	23	0	0	8	247	252	313	391	286	36	97	28
Average	0.74	0.00	0.00	0.27	7.97	8.40	10.10	12.61	9.53	1.16	3.23	0.90
Max daily rain	21	0	0	5	44	80	48	62	43	8	60	19
Day of Max Daily	1			11	26	24	21	21	18	6	20	3
No. of Rain days	2	0	0	2	14	15	20	27	21	8	8	5
Max 1-hr rain	6	0	0	4	30	41	42	41	29	8	16	4
Day of max 1-hr	1			12	5	24	21	6	14	6	20	3

Total rain for the year

1681

Total rain days for the year

122

Daily Point Rainfall in millimeters

2019	Station: Gabaldon											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	103	0	0	0	0	0	28	53	10	0	5	0
2	1	0	0	0	20	0	2	0	9	3	22	0
3	37	7	0	0	2	0	10	2	11	28	0	167
4	1	0	0	0	11	0	1	7	0	0	9	29
5	0	0	0	0	34	6	37	11	3	0	21	1
6	1	0	0	0	55	0	0	20	1	1	16	0
7	0	0	0	0	0	0	42	12	15	0	1	0
8	1	0	0	0	41	0	23	50	21	0	0	0
9	0	0	0	0	34	0	0	22	18	0	26	0
10	0	0	0	0	18	0	0	6	1	0	1	0
11	0	0	0	0	0	1	1	3	3	0	0	0
12	0	9	0	0	1	4	0	17	29	0	0	0
13	0	5	2	0	0	1	0	12	1	0	0	0
14	0	0	0	0	0	23	1	13	12	0	0	1
15	3	0	0	0	0	6	2	4	4	0	1	0
16	0	0	0	0	0	0	65	4	1	0	0	1
17	0	0	0	0	0	0	4	2	23	0	0	0
18	0	0	0	0	0	0	12	5	36	0	0	2
19	0	0	0	0	0	0	3	0	4	0	0	21
20	0	0	0	0	11	0	3	0	23	0	26	7
21	0	0	0	0	23	1	0	45	0	0	0	0
22	0	0	0	0	0	0	14	7	0	0	3	0
23	0	0	0	0	24	6	1	2	0	0	0	0
24	0	0	0	0	0	4	1	11	0	0	1	0
25	0	0	0	0	1	0	28	2	0	0	0	19
26	0	0	0	0	19	51	10	3	0	0	1	15
27	0	0	0	0	0	21	24	8	0	0	1	0
28	0	0	0	14	1	1	10	5	0	39	0	5
29	0		0	0	1	2	17	5	27	12	2	0
30	0		0	0	0	6	1	18	1	8	0	0
31	0		0		0		5	26		1		0

Monthly Total	147	21	2	14	296	133	345	375	253	92	136	268
Average	4.74	0.75	0.06	0.47	9.55	4.43	11.13	12.10	8.43	2.97	4.53	8.65
Max daily rain	103	9	2	14	55	51	65	53	36	39	26	167
Day of Max Daily	1	12	13	28	6	26	16	1	18	28	9	3
No. of Rain days	7	3	1	1	16	14	25	28	21	7	15	11
Max 1-hr rain	18	3	1	11	33	36	38	41	21	18	18	23
Day of max 1-hr	1	13	13	28	6	26	7	1	29	28	10	3

Total rain for the year	2082
Total rain days for the year	149

Daily Point Rainfall in millimeters

2019

Station:

Zaragoza

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	13	0	0	0	0	0	34	8	4	4	1	0
2	0	0	0	0	0	0	3	2	1	13	1	0
3	1	0	0	0	7	0	0	1	20	0	0	24
4	0	0	0	0	7	0	0	0	0	30	0	1
5	0	0	0	0	13	0	0	7	0	8	33	0
6	0	0	0	0	10	0	0	29	7	2	10	0
7	0	0	0	0	1	0	0	8	19	0	1	13
8	0	0	0	0	2	0	5	14	25	0	0	0
9	0	0	0	0	8	0	30	6	43	25	0	0
10	0	0	0	0	1	0	0	5	0	1	0	0
11	0	0	0	6	4	2	0	1	0	0	1	0
12	0	0	0	0	0	0	0	1	12	0	0	0
13	0	0	0	0	0	1	0	5	0	0	0	0
14	0	0	0	36	0	0	9	0	8	0	0	0
15	0	0	3	1	0	2	0	0	15	0	0	0
16	0	0	0	0	0	0	10	0	0	0	0	0
17	0	0	0	0	0	5	5	25	8	1	0	0
18	0	0	0	0	0	0	0	0	25	0	0	0
19	0	0	0	0	0	0	2	0	10	35	0	1
20	0	0	0	0	3	0	26	10	6	8	14	0
21	0	0	0	0	16	33	3	27	0	0	0	0
22	0	0	0	0	0	53	2	30	0	0	4	0
23	0	0	0	0	0	0	0	7	0	6	0	0
24	0	0	0	0	0	2	126	24	0	0	0	0
25	0	0	0	0	8	0	19	5	0	0	0	4
26	0	0	0	0	2	1	2	1	0	0	0	2
27	0	0	0	0	21	4	0	1	0	0	0	0
28	0	0	0	0	1	22	2	1	0	5	0	0
29	0		0	0	0	4	23	1	17	8	0	0
30	0		0	0	0	3	4	1	0	2	0	0
31	0		0		0		25	43		0		0

Monthly Total	14	0	3	43	104	132	330	263	220	148	65	45
Average	0.45	0.00	0.10	1.43	3.35	4.40	10.65	8.48	7.33	4.77	2.17	1.45
Max daily rain	13	0	3	36	21	53	126	43	43	35	33	24
Day of Max Daily	1		15	14	27	22	24	31	9	19	5	3
No. of Rain days	2	0	1	3	15	12	18	25	15	14	8	6
Max 1-hr rain	5	0	3	19	16	52	94	25	19	25	13	12
Day of max 1-hr	1		15	15	21	22	24	22	8	18	5	7

Total rain for the year

1367

Total rain days for the year

119

Daily Point Rainfall in millimeters

2019	Station: Mayapyap											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1											0	0
2											4	0
3											0	37
4											9	5
5											32	0
6											12	0
7											9	0
8											1	0
9											0	0
10											0	0
11											0	0
12											0	0
13											0	0
14											0	0
15											0	0
16										0	0	0
17										0	0	0
18										0	0	0
19										0	0	0
20										6	36	0
21										0	1	0
22										0	2	0
23										0	0	0
24										0	0	0
25										0	0	2
26										0	0	11
27										0	0	0
28										3	0	0
29										10	0	0
30										7	0	0
31										0		0

Monthly Total										26	106	55
Average										1.63	3.53	1.77
Max daily rain										10	36	37
Day of Max Daily										29	20	3
No. of Rain days										4	9	4
Max 1-hr rain										6	29	15
Day of max 1-hr											5	3

Total rain for the year

187 *

Total rain days for the year

17 *

* RR station was relocated to NIA-UPRIIS compound; observations started Oct 2020.

Daily Point Rainfall in millimeters

2019	Station: Peñaranda											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	26	0	0	0	0	0	18	15	16	0	0	0
2	0	0	0	0	2	0	5	4	9	0	2	0
3	2	0	0	0	4	0	0	0	13	2	0	21
4	0	0	0	0	0	0	13	0	0	11	0	11
5	0	0	0	0	0	0	5	18	1	5	7	1
6	0	0	0	0	32	0	2	4	1	0	40	0
7	0	0	0	0	0	0	0	4	7	0	3	0
8	0	0	0	0	4	0	15	32	1	0	3	0
9	0	0	0	0	0	0	6	10	19	0	0	0
10	0	0	0	0	52	3	15	1	0	3	0	0
11	0	0	0	5	0	21	0	1	2	1	0	0
12	0	0	0	2	0	1	0	1	15	0	0	0
13	0	0	0	0	0	1	0	14	0	0	0	0
14	0	0	0	1	12	6	53	22	15	0	0	0
15	0	0	0	0	0	12	0	0	0	0	0	0
16	0	0	0	0	0	6	20	28	16	0	0	0
17	0	0	0	0	31	0	1	4	32	0	0	0
18	0	0	0	0	0	0	13	0	38	0	0	0
19	0	0	0	0	0	1	0	4	44	0	0	3
20	0	0	0	0	2	1	10	15	4	0	125	1
21	0	0	0	0	6	8	39	37	0	0	0	0
22	0	0	0	0	0	1	1	4	0	0	8	0
23	0	0	0	0	12	16	6	1	0	0	0	0
24	0	0	0	0	18	2	16	14	0	0	0	0
25	0	0	0	0	0	0	37	5	0	0	0	17
26	0	0	0	0	3	5	10	2	0	0	0	6
27	0	0	0	0	10	8	4	5	0	0	7	0
28	0	0	0	3	28	4	9	3	0	7	0	0
29	0		0	0	0	27	10	30	6	9	0	0
30	0		0	0	0	2	5	4	1	11	0	0
31	0		0		0		9	13		0		0

Monthly Total	28	0	0	11	216	125	322	295	240	49	195	60
Average	0.90	0.00	0.00	0.37	6.97	4.17	10.39	9.52	8.00	1.58	6.50	1.94
Max daily rain	26	0	0	5	52	27	53	37	44	11	125	21
Day of Max Daily	1			11	10	29	14	21	19	4	20	3
No. of Rain days	2	0	0	4	14	18	24	27	18	8	8	7
Max 1-hr rain	6	0	0	5	28	20	41	27	28	10	51	9
Day of max 1-hr	1			11	10	29	14	16	19	4	20	26

Total rain for the year	1541
Total rain days for the year	130

Daily Point Rainfall in millimeters

2019	Station: Calaanan											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	26	0	0	0	0	0	17	1	1	0	0	0
2	0	0	0	0	45	2	2	28	3	39	2	0
3	3	0	0	0	0	0	0	2	24	2	0	54
4	2	0	0	0	0	0	0	2	1	1	5	3
5	0	0	0	0	30	0	24	0	1	0	7	0
6	0	0	0	0	24	0	1	66	16	1	1	0
7	0	0	0	0	3	0	1	2	24	0	7	0
8	0	0	0	0	71	0	0	42	4	0	0	0
9	0	0	0	0	17	0	1	27	19	0	33	0
10	0	0	0	0	16	0	1	33	0	5	2	0
11	0	0	0	0	1	15	5	3	5	0	0	0
12	0	0	0	0	1	10	0	12	31	0	0	0
13	0	0	0	0	0	29	0	9	0	0	0	0
14	0	0	0	0	0	5	0	5	8	0	0	0
15	0	0	0	0	0	1	1	1	4	0	0	1
16	0	0	0	0	18	1	47	43	1	0	0	4
17	0	0	0	0	0	0	35	0	23	0	0	0
18	0	0	0	0	16	0	2	1	62	0	0	0
19	0	0	0	0	0	0	4	0	3	0	0	14
20	0	0	0	0	2	0	18	0	74	0	82	0
21	0	0	0	0	11	20	24	33	0	0	0	0
22	0	0	0	0	7	0	3	1	0	0	0	0
23	0	0	0	0	8	11	0	11	0	0	0	0
24	0	0	0	0	0	31	0	9	0	0	1	0
25	0	0	0	0	0	0	23	0	0	0	0	2
26	0	0	0	0	5	21	5	19	33	0	0	1
27	0	0	0	0	0	19	25	6	0	6	0	0
28	0	0	0	0	33	0	27	2	5	2	0	0
29	0		0	0	1	8	33	19	4	5	0	0
30	0		0	0	0	5	7	31	1	3	0	0
31	0		0		0		31	18		0		0

Monthly Total	31	0	0	0	309	178	337	426	347	64	140	79
Average	1.00	0.00	0.00	0.00	9.97	5.93	10.87	13.74	11.57	2.06	4.67	2.55
Max daily rain	26	0	0	0	71	31	47	66	74	39	82	54
Day of Max Daily	1				8	24	16	6	20	2	20	3
No. of Rain days	3	0	0	0	18	14	23	26	22	9	9	7
Max 1-hr rain	6	0	0	0	53	27	29	36	52	17	26	14
Day of max 1-hr	1				8	13	17	6	20	2	20	3

Total rain for the year	1911
Total rain days for the year	131

Daily Point Rainfall in millimeters

2019	Station: Palali											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	22	0	0	0	5	0	19	13	31	0	6	0
2	0	0	0	0	31	0	0	4	8	2	22	0
3	2	1	0	0	10	0	0	0	12	0	0	63
4	0	0	0	0	0	0	3	2	2	33	7	66
5	0	0	0	0	1	1	0	23	2	1	10	0
6	0	0	0	0	32	0	2	24	2	0	5	2
7	0	0	0	0	0	0	19	13	7	0	11	0
8	0	0	0	0	42	0	26	26	1	0	2	0
9	0	0	0	0	1	0	1	4	10	0	0	0
10	0	0	0	0	89	0	12	2	2	0	0	0
11	0	0	0	0	0	1	0	1	2	0	0	0
12	0	0	0	0	0	0	0	4	22	2	0	0
13	0	0	0	0	48	2	0	8	2	0	0	0
14	0	0	0	0	0	2	0	1	55	0	0	0
15	0	0	0	0	0	0	10	0	0	0	0	0
16	0	0	0	0	0	0	33	12	2	0	0	0
17	0	0	0	0	0	0	1	50	14	0	0	0
18	0	0	0	0	0	0	5	4	31	0	0	0
19	0	0	0	0	0	0	9	9	73	7	0	6
20	0	0	0	0	32	0	2	0	15	0	65	0
21	0	0	0	0	33	2	23	28	0	0	0	0
22	0	0	0	0	0	0	3	15	0	0	3	0
23	0	0	0	0	0	17	0	1	0	0	0	0
24	0	0	0	0	25	53	4	22	2	0	0	0
25	0	0	0	0	0	1	31	4	0	5	0	19
26	0	0	0	0	39	17	58	9	0	0	0	55
27	0	0	0	0	18	10	15	6	0	1	0	0
28	0	0	0	2	16	2	15	0	2	15	0	0
29	0		0	0	0	5	14	8	30	16	0	0
30	0		0	0	0	0	2	9	2	10	0	0
31	0		0		0		4	14		0		0

Monthly Total	24	1	0	2	422	113	311	316	329	92	131	211
Average	0.77	0.04	0.00	0.07	13.61	3.77	10.03	10.19	10.97	2.97	4.37	6.81
Max daily rain	22	1	0	2	89	53	58	50	73	33	65	66
Day of Max Daily	1	3		28	10	24	26	17	19	4	20	4
No. of Rain days	2	1	0	1	15	12	23	27	23	10	9	6
Max 1-hr rain	5	1	0	2	45	27	26	47	58	31	30	33
Day of max 1-hr	1	4			10	24	27	17	19	4	20	5

Total rain for the year	1952
Total rain days for the year	129

Daily Point Rainfall in millimeters

2019	Station: San Isidro											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	19	0	0	0	0	0	15	6	57	0	0	0
2	0	0	0	0	2	0	8	4	8	14	0	0
3	0	0	0	0	4	0	0	0	12	0	0	24
4	0	0	0	0	0	0	0	0	0	0	4	0
5	0	0	0	0	0	0	0	15	0	3	6	2
6	0	0	0	0	37	0	1	3	2	0	3	1
7	0	0	0	0	0	0	1	4	5	0	2	0
8	0	0	0	0	1	0	7	40	2	0	31	0
9	0	0	0	0	0	10	5	7	25	0	0	0
10	0	0	0	0	10	0	32	0	1	4	0	0
11	0	0	0	1	0	62	0	0	1	0	0	0
12	0	0	0	0	0	0	0	4	11	0	0	0
13	0	0	0	19	0	1	0	17	0	0	0	0
14	0	0	0	0	0	7	35	7	2	0	0	0
15	0	0	0	0	0	26	0	0	0	0	0	0
16	0	0	0	0	0	1	15	2	19	0	0	0
17	0	0	0	0	0	19	2	4	24	0	0	0
18	0	0	0	0	44	0	2	0	50	0	0	0
19	0	0	0	0	0	1	0	0	6	0	0	3
20	0	0	0	0	10	0	0	0	3	0	34	1
21	0	0	0	0	0	0	67	47	0	0	0	0
22	0	0	0	0	0	8	3	5	0	0	4	0
23	0	0	0	0	6	1	0	0	0	0	0	0
24	0	0	0	0	0	3	18	17	0	0	0	0
25	0	0	0	0	0	1	45	7	0	0	0	14
26	0	0	0	0	18	13	0	12	1	0	0	1
27	0	0	0	0	9	31	3	1	0	0	3	0
28	0	0	0	1	0	2	6	3	0	6	0	0
29	0		0	0	0	29	28	8	1	12	0	0
30	0		0	0	0	14	25	3	0	6	0	0
31	0		0		0		13	14		0		0

Monthly Total	19	0	0	21	141	229	331	230	230	45	87	46
Average	0.61	0.00	0.00	0.70	4.55	7.63	10.68	7.42	7.67	1.45	2.90	1.48
Max daily rain	19	0	0	19	44	62	67	47	57	14	34	24
Day of Max Daily	1			13	18	11	21	21	1	2	20	3
No. of Rain days	1	0	0	3	10	17	20	22	18	6	8	7
Max 1-hr rain	5	0	0	19	42	34	58	20	36	9	24	5
Day of max 1-hr	1			13	18	11	21	21	1	2	8	3

Total rain for the year	1379
Total rain days for the year	112

Daily Point Rainfall in millimeters

2019	Station: Arayat											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	7	0	0	0	0	0	40	31	9	0	2	0
2	0	0	0	0	0	0	1	13	5	33	0	0
3	0	0	0	0	31	0	0	0	20	44	0	42
4	0	0	0	0	0	0	0	1	0	0	15	0
5	0	0	0	0	0	0	0	22	11	0	12	0
6	0	0	0	0	31	0	0	1	3	0	17	0
7	0	0	0	0	0	0	0	5	6	0	6	0
8	0	0	0	0	0	0	0	26	5	0	7	0
9	0	0	0	0	2	11	15	15	34	0	0	0
10	0	0	0	0	70	0	2	13	2	0	0	0
11	0	0	0	5	15	0	0	0	19	8	4	0
12	0	0	0	0	0	0	1	0	9	0	0	0
13	0	0	0	50	0	18	0	1	0	0	0	0
14	0	0	0	0	0	1	20	0	24	0	0	0
15	0	0	0	0	0	2	0	0	3	0	1	0
16	0	0	0	0	0	0	7	0	2	0	0	0
17	0	0	0	4	0	47	10	0	10	0	1	0
18	0	0	0	0	0	0	5	22	44	0	5	0
19	0	0	0	0	0	0	3	22	10	1	0	1
20	0	0	0	0	1	0	12	0	4	0	71	0
21	0	0	0	0	4	0	1	28	0	0	0	0
22	0	0	0	0	0	0	2	19	0	0	13	0
23	0	0	0	0	0	0	0	0	0	0	1	0
24	0	0	0	0	0	0	36	41	0	0	1	0
25	0	0	0	0	1	0	13	13	0	0	0	7
26	0	0	0	0	15	8	0	116	0	0	0	24
27	0	0	0	0	1	1	3	0	0	0	0	1
28	0	0	0	3	0	13	9	1	0	6	0	0
29	0		0	0	0	16	34	13	13	4	0	0
30	0		0	0	0	16	17	1	1	0	0	0
31	0		0		0		16	33		0		0

Monthly Total	7	0	0	62	171	133	247	437	234	96	156	75
Average	0.23	0.00	0.00	2.07	5.52	4.43	7.97	14.10	7.80	3.10	5.20	2.42
Max daily rain	7	0	0	50	70	47	40	116	44	44	71	42
Day of Max Daily	1			13	10	17	1	26	18	3	20	3
No. of Rain days	1	0	0	4	10	10	20	21	20	6	14	5
Max 1-hr rain	3	0	0	25	39	37	30	84	18	40	19	23
Day of max 1-hr	1			14	10	17	24	26	11	3	20	26

Total rain for the year	1618
Total rain days for the year	111

Daily Point Rainfall in millimeters

2019	Station: Candaba											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	6	0	0	0	0	9	48	20	19	0	7	0
2	0	0	0	0	2	0	2	5	3	2	0	0
3	0	0	0	0	3	19	0	1	11	4	14	40
4	0	0	0	0	1	0	2	0	0	0	4	0
5	0	0	0	0	0	0	0	0	18	0	3	0
6	0	0	0	0	4	0	0	1	4	9	10	0
7	0	0	0	0	0	0	0	9	5	0	6	0
8	0	0	0	0	1	8	0	7	11	0	1	0
9	0	0	0	0	3	11	9	9	50	0	0	0
10	0	0	0	0	25	0	0	9	2	2	0	0
11	0	0	0	1	27	1	0	0	5	0	0	0
12	0	0	0	1	0	0	1	0	10	0	0	0
13	0	0	0	14	0	0	1	1	6	0	0	0
14	0	0	0	0	0	1	23	0	5	0	0	0
15	0	0	0	0	0	0	0	1	3	0	1	1
16	0	0	0	0	0	3	5	0	4	0	0	0
17	0	0	0	0	0	6	2	2	5	0	0	0
18	0	0	0	0	0	0	3	0	29	0	22	0
19	0	0	0	0	0	3	8	34	13	0	0	0
20	0	0	0	0	3	0	0	0	3	0	0	0
21	0	0	0	0	19	15	0	32	0	0	5	0
22	0	0	0	0	0	0	6	6	0	0	12	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	11	33	0	0	2	0
25	0	0	0	0	8	1	19	1	0	0	0	3
26	0	0	0	0	14	6	7	49	0	0	0	2
27	0	0	0	0	28	5	1	1	0	0	1	0
28	0	0	0	12	0	11	8	1	0	19	0	0
29	0		0	0	0	11	41	7	2	3	0	0
30	0		0	0	2	13	10	1	0	1	0	0
31	0		0		1		5	8		1		0

Monthly Total	6	0	0	28	141	123	212	238	208	41	88	46
Average	0.19	0.00	0.00	0.93	4.55	4.10	6.84	7.68	6.93	1.32	2.93	1.48
Max daily rain	6	0	0	14	28	19	48	49	50	19	22	40
Day of Max Daily	1			13	27	3	1	26	9	28	18	3
No. of Rain days	1	0	0	4	15	16	20	22	20	8	13	4
Max 1-hr rain	2	0	0	11	27	19	19	29	19	13	21	18
Day of max 1-hr	2			14	11	3	14	21	1	29	18	3

Total rain for the year	1131
Total rain days for the year	123

Daily Point Rainfall in millimeters

2019

Station:

Sibul Springs

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	12	0	0	0	2	0	56	38	22	0	7	0
2	1	0	0	0	5	0	1	4	3	3	0	0
3	1	0	0	0	2	0	0	1	26	0	1	54
4	0	0	0	0	0	0	14	0	1	3	7	2
5	0	0	0	0	3	0	41	19	21	0	9	2
6	1	0	0	0	22	0	2	11	1	0	18	7
7	0	0	0	0	0	0	13	18	0	0	12	0
8	0	0	0	0	21	0	9	18	63	0	19	0
9	0	0	0	0	1	24	30	23	18	0	1	0
10	0	0	0	0	82	1	1	11	3	0	0	0
11	0	0	0	0	4	0	1	0	0	0	0	0
12	0	2	0	21	0	3	0	0	16	0	0	0
13	0	1	0	0	0	6	5	1	22	2	0	0
14	0	0	0	0	5	4	12	0	49	0	0	0
15	0	0	5	0	0	1	1	0	1	0	0	0
16	0	0	0	0	0	0	24	0	0	0	0	0
17	0	0	0	0	0	0	15	24	12	0	0	0
18	0	0	0	0	0	0	5	0	37	0	27	0
19	0	0	0	0	0	0	44	10	7	1	0	9
20	0	0	0	0	0	12	0	47	3	0	58	5
21	0	0	0	0	0	1	0	16	4	0	0	0
22	0	0	0	0	0	3	8	8	0	0	7	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	4	28	85	32	0	0	4	0
25	0	0	0	0	3	0	36	8	0	0	0	57
26	0	0	0	0	36	109	1	46	0	0	0	0
27	0	0	0	0	19	5	4	2	0	0	1	0
28	0	0	0	13	3	11	18	1	0	25	0	0
29	0		0	0	0	8	15	16	31	7	0	0
30	0		0	0	0	8	6	3	1	9	0	0
31	0		0		0		16	15		5		0

Monthly Total	15	3	5	34	212	224	463	372	341	55	171	136
Average	0.48	0.11	0.16	1.13	6.84	7.47	14.94	12.00	11.37	1.77	5.70	4.39
Max daily rain	12	2	5	21	82	109	85	47	63	25	58	57
Day of Max Daily	1	12	15	12	10	26	24	20	8	28	20	25
No. of Rain days	4	2	1	2	15	15	26	23	20	8	13	7
Max 1-hr rain	3	1	3	21	32	51	59	46	30	11	23	22
Day of max 1-hr	1		16	12	11	26	24	20	14	28	18	25

Total rain for the year

2031

Total rain days for the year

136

Daily Point Rainfall in millimeters

2019	Station:						Sasmuan					
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	0	0	0	0	0	78	53	9	1	7	0
2	0	0	0	0	0	0	0	39	12	17	1	0
3	1	0	0	0	1	0	0	26	6	11	0	45
4	0	0	0	0	0	0	0	0	0	0	2	0
5	0	0	0	4	0	0	0	3	16	0	21	0
6	0	0	0	0	0	0	0	21	0	0	13	0
7	0	0	0	0	0	0	0	13	3	0	2	0
8	0	0	0	0	0	0	0	12	27	0	0	0
9	0	0	0	0	5	0	0	9	64	0	0	0
10	0	0	0	0	0	0	1	5	3	0	0	0
11	0	0	0	7	20	0	0	1	5	0	0	0
12	0	0	0	1	0	0	1	2	5	0	0	0
13	0	1	0	29	0	8	0	11	1	0	0	0
14	0	0	1	0	0	6	4	3	4	0	0	0
15	0	0	0	2	0	20	0	0	39	0	0	0
16	0	0	0	0	0	0	4	1	6	0	0	0
17	0	0	0	0	0	1	19	0	2	0	0	0
18	0	0	0	3	0	0	7	0	30	0	0	0
19	0	0	0	1	0	0	3	0	5	0	0	0
20	0	0	0	0	0	0	2	0	18	0	17	0
21	0	0	0	0	0	2	34	0	0	0	0	0
22	0	0	1	0	0	0	0	1	0	0	5	0
23	0	0	0	0	0	0	0	5	0	8	0	0
24	0	0	0	0	0	1	1	98	0	0	0	0
25	0	0	0	0	0	7	16	5	0	0	0	7
26	0	0	0	0	5	8	0	16	0	0	0	0
27	0	0	0	0	1	3	1	19	8	0	0	9
28	0	0	0	0	0	60	3	6	0	0	0	0
29	0		0	0	0	21	32	19	0	0	0	0
30	0		0	0	0	32	11	0	0	0	0	0
31	0		0		0		17	22		0		0

Monthly Total	1	1	2	47	32	169	234	390	263	37	68	61
Average	0.03	0.04	0.06	1.57	1.03	5.63	7.55	12.58	8.77	1.19	2.27	1.97
Max daily rain	1	1	1	29	20	60	78	98	64	17	21	45
Day of Max Daily	3	13	14	13	11	28	1	24	9	2	5	3
No. of Rain days	1	1	2	7	5	12	17	23	19	4	8	3
Max 1-hr rain	1	1	1	15	20	19	20	23	19	6	12	17
Day of max 1-hr	3			14	11	28	21	24	9	2	6	3

Total rain for the year	1305
Total rain days for the year	102

Daily Point Rainfall in millimeters

2019	Station: Sulipan											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	0	0	0	2	2	79	31	12	0	4	0
2	0	0	0	0	0	0	1	18	0	7	1	0
3	0	0	0	0	1	1	0	23	0	39	0	23
4	0	0	0	0	0	0	0	3	0	0	9	0
5	0	0	0	11	0	0	0	5	9	0	16	0
6	0	0	0	0	0	2	4	2	6	0	2	0
7	0	0	0	0	0	0	0	20	0	0	18	0
8	0	0	0	0	0	0	0	23	26	0	2	0
9	0	0	0	0	0	0	3	4	10	0	0	0
10	0	0	0	0	0	0	15	0	0	26	0	0
11	0	0	0	14	2	0	0	0	8	0	0	0
12	0	0	0	0	0	0	1	0	0	0	0	0
13	0	0	0	43	0	1	0	0	0	0	0	0
14	0	0	0	0	0	2	3	0	4	0	0	0
15	0	0	0	0	3	8	1	0	2	0	0	0
16	0	0	0	0	0	0	2	0	6	0	0	0
17	0	0	0	0	0	0	20	0	2	0	0	0
18	0	0	0	0	0	10	2	0	10	0	1	0
19	0	0	0	0	0	0	5	0	2	0	0	1
20	0	0	0	0	0	2	0	0	2	0	9	0
21	0	0	0	0	0	3	7	1	0	0	0	0
22	0	0	0	0	0	1	5	0	0	0	2	0
23	0	0	0	0	0	0	1	0	0	0	0	0
24	0	0	0	0	0	4	0	7	0	0	0	0
25	0	0	0	0	0	0	15	0	0	0	0	7
26	0	0	0	0	14	12	31	0	0	0	0	9
27	0	0	0	0	1	14	1	9	0	0	0	1
28	0	0	0	6	3	53	12	2	0	2	0	0
29	0		0	0	0	21	30	8	0	0	0	0
30	0		0	0	1	22	19	0	0	1	0	0
31	0		0		0		18	0		1		0

Monthly Total	0	0	0	74	27	158	275	156	99	76	64	41
Average	0.00	0.00	0.00	2.47	0.87	5.27	8.87	5.03	3.30	2.45	2.13	1.32
Max daily rain	0	0	0	43	14	53	79	31	26	39	18	23
Day of Max Daily				13	26	28	1	1	8	3	7	3
No. of Rain days	0	0	0	4	8	16	22	14	13	6	10	5
Max 1-hr rain	0	0	0	42	6	14	21	14	12	32	14	20
Day of max 1-hr				13	26	30	1	8	8	3	5	3

Total rain for the year	970
Total rain days for the year	98

Daily Point Rainfall in millimeters

2019	Station: Mexico											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	0	0	0	0	6	56	30	25	0	8	0
2	0	0	0	0	0	0	0	5	5	21	0	0
3	0	0	0	0	2	0	0	1	8	38	0	21
4	0	0	0	0	0	2	2	0	0	0	0	0
5	0	0	0	0	0	0	0	1	17	0	7	0
6	0	0	0	0	0	0	0	5	8	0	16	0
7	0	0	0	0	0	0	0	8	12	0	3	0
8	0	0	0	0	0	0	0	16	17	0	15	0
9	0	0	0	0	16	0	0	15	28	0	0	0
10	0	0	0	0	0	0	0	17	3	0	0	0
11	0	0	0	0	1	0	0	0	21	0	0	0
12	0	0	0	0	0	0	0	1	7	0	0	0
13	0	0	0	27	0	5	0	0	0	0	0	0
14	0	0	0	2	0	2	1	0	11	0	0	0
15	0	0	0	0	0	2	0	0	3	0	0	0
16	0	0	0	0	0	0	3	0	0	0	0	0
17	0	0	0	0	0	1	9	0	5	0	0	0
18	0	0	0	0	0	0	7	0	42	0	5	0
19	0	0	0	0	0	0	14	2	2	0	0	0
20	0	0	0	0	0	0	1	0	2	0	17	0
21	0	0	0	0	0	0	0	2	0	0	0	0
22	0	0	0	0	0	0	1	0	0	0	5	0
23	0	0	0	0	0	1	0	1	0	0	1	0
24	0	0	0	0	0	6	3	49	0	0	0	0
25	0	0	0	0	0	1	7	20	0	0	0	0
26	0	0	0	0	2	19	5	19	0	0	0	8
27	0	0	0	0	0	1	0	1	0	0	0	24
28	0	0	0	0	0	14	6	1	0	5	0	0
29	0		0	0	0	11	35	11	8	0	0	0
30	0		0	0	0	13	12	1	0	0	0	0
31	0		0		0		11	38		1		0

Monthly Total	1	0	0	29	21	84	173	244	224	65	77	53
Average	0.03	0.00	0.00	0.97	0.68	2.80	5.58	7.87	7.47	2.10	2.57	1.71
Max daily rain	1	0	0	27	16	19	56	49	42	38	17	24
Day of Max Daily	1			13	9	26	1	24	18	3	20	27
No. of Rain days	1	0	0	2	4	14	16	21	18	4	9	3
Max 1-hr rain	1	0	0	15	16	11	11	30	18	31	11	19
Day of max 1-hr	2			14	9	26	1	31	1	3	5	27

Total rain for the year	971
Total rain days for the year	92

Daily Point Rainfall in millimeters

2019	Station:						Porac					
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	2	0	0	0	0	0	129	54	25	8	3	0
2	0	0	0	0	9	17	1	28	35	9	1	0
3	1	0	0	5	21	0	0	9	22	47	4	37
4	0	0	0	1	21	0	1	0	0	0	1	0
5	0	0	0	5	20	0	0	3	8	0	45	0
6	0	0	0	0	2	0	0	13	5	14	8	2
7	0	0	0	0	0	0	0	12	4	0	3	0
8	0	0	0	0	1	0	0	78	32	0	0	0
9	0	0	0	0	35	0	0	18	68	0	0	0
10	0	0	0	0	0	0	0	9	1	0	0	0
11	0	0	0	1	59	0	0	0	49	27	1	0
12	0	0	0	0	0	0	5	7	5	0	0	0
13	0	1	0	3	0	1	0	1	11	0	0	0
14	0	0	0	39	0	5	20	0	10	0	0	0
15	0	0	0	40	3	1	0	0	3	0	0	0
16	0	0	1	58	1	0	4	0	5	0	0	0
17	0	0	0	0	34	0	14	0	8	0	0	0
18	0	0	0	0	0	0	6	0	57	0	0	0
19	0	0	0	0	0	0	6	4	10	1	0	0
20	0	0	0	0	0	0	3	7	8	1	28	0
21	0	0	0	0	0	0	29	0	0	0	0	0
22	0	0	0	0	25	0	1	2	0	0	1	0
23	0	0	0	0	0	0	15	1	0	0	0	0
24	0	0	0	0	0	0	2	53	0	0	2	0
25	0	0	0	0	0	16	3	66	0	0	0	4
26	0	0	0	0	1	2	1	10	0	0	0	0
27	0	0	0	0	0	1	12	1	0	0	1	6
28	0	0	0	0	0	42	16	1	0	0	0	0
29	0		0	0	0	32	43	10	1	0	0	1
30	0		0	0	0	28	13	0	0	0	0	0
31	0		0		0		33	45		0		0

Monthly Total	3	1	1	152	232	145	357	432	367	107	98	50
Average	0.10	0.04	0.03	5.07	7.48	4.83	11.52	13.94	12.23	3.45	3.27	1.61
Max daily rain	2	1	1	58	59	42	129	78	68	47	45	37
Day of Max Daily	1	13	16	16	11	28	1	8	9	3	5	3
No. of Rain days	2	1	1	8	13	10	21	22	20	7	12	5
Max 1-hr rain	1	1	1	39	51	18	15	34	32	26	18	11
Day of max 1-hr	2			15	11	28	1	25	11	11	5	3

Total rain for the year	1945
Total rain days for the year	122

Daily Point Rainfall in millimeters

2019	Station: San Rafael											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	0	0	0	0	0	100	45	0	0	10	0
2	0	0	0	0	0	0	0	9	7	1	0	0
3	1	0	0	0	0	9	0	15	11	1	25	78
4	0	0	0	0	0	8	0	0	0	0	4	0
5	0	0	0	1	0	0	1	5	12	0	3	0
6	0	0	0	0	28	0	0	7	10	3	11	0
7	0	0	0	0	0	0	0	22	0	0	10	0
8	0	0	0	0	2	35	13	16	8	0	0	0
9	0	0	0	0	0	9	19	40	30	0	24	0
10	0	0	0	0	3	6	14	18	1	40	0	0
11	0	0	0	0	1	0	0	1	20	1	0	0
12	0	0	9	12	0	0	1	0	9	0	0	0
13	0	0	0	1	5	0	2	0	2	0	0	0
14	0	0	0	0	0	2	22	1	25	0	0	0
15	0	0	0	0	0	5	0	0	13	0	0	0
16	0	0	0	0	0	6	3	0	9	0	0	0
17	0	0	0	2	0	0	20	0	14	0	0	0
18	0	0	0	0	0	4	3	0	17	0	9	2
19	0	0	0	0	0	0	6	0	4	13	0	1
20	0	0	0	0	0	0	0	10	1	0	52	0
21	0	0	0	0	0	0	2	1	0	0	0	0
22	0	0	0	0	0	27	8	0	0	0	5	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	4	23	83	2	0	0	0
25	0	0	0	0	17	16	74	10	0	0	1	4
26	0	0	0	0	14	1	0	25	0	0	0	0
27	0	0	0	0	4	15	2	2	0	1	0	1
28	0	0	0	5	10	37	22	1	0	10	0	0
29	0		0	0	2	32	15	14	0	1	0	0
30	0		0	0	0	12	19	0	7	3	0	0
31	0		0		0		9	43		4		0

Monthly Total	2	0	9	21	86	228	378	368	202	78	154	86
Average	0.06	0.00	0.29	0.70	2.77	7.60	12.19	11.87	6.73	2.52	5.13	2.77
Max daily rain	1	0	9	12	28	37	100	83	30	40	52	78
Day of Max Daily	1		12	12	6	28	1	24	9	10	20	3
No. of Rain days	2	0	1	5	10	17	21	20	19	11	11	5
Max 1-hr rain	1	0	8	11	26	34	54	36	12	37	25	38
Day of max 1-hr	1		17	12	6	8	25	31	11	10	3	3

Total rain for the year	1612
Total rain days for the year	122

Daily Point Rainfall in millimeters

2019	Station:					PRFFWC (CSFP)						
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	3.0	0.0	0.0	0.0	0.0	1.8	74.4	59.7	26.9	0.0	8.9	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3	10.2	9.7	0.3	51.8
3	0.5	0.0	0.0	0.0	10.4	0.0	0.0	4.1	11.2	56.6	0.3	0.0
4	0.0	0.0	0.0	0.0	0.5	0.0	3.6	1.5	0.0	0.0	3.3	0.0
5	0.0	0.0	0.0	10.2	1.8	0.0	0.0	4.8	24.9	0.0	12.4	0.0
6	0.0	0.0	0.0	0.0	0.8	0.0	0.0	10.2	7.6	1.3	6.4	0.0
7	0.0	0.0	0.0	0.0	0.0	1.8	0.0	11.9	4.3	0.0	0.8	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3	26.7	0.0	3.0	0.0
9	0.0	0.0	0.0	0.5	31.5	0.0	0.0	22.6	69.6	0.3	2.3	0.0
10	0.0	0.0	0.0	0.0	3.8	0.0	0.0	26.9	1.8	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	34.0	0.0	0.0	0.0	37.1	0.0	0.0	0.0
12	0.0	0.0	0.0	0.3	0.0	0.0	1.8	1.5	6.1	0.0	0.0	0.0
13	0.0	0.3	0.0	10.7	0.0	0.8	0.3	0.5	0.8	0.0	0.0	0.0
14	0.0	0.0	0.0	2.8	0.0	0.0	4.6	0.0	19.6	0.0	0.0	0.0
15	0.0	0.0	0.0	1.5	0.0	0.0	0.3	0.3	5.1	0.0	0.0	0.0
16	0.0	0.0	0.0	1.3	0.0	0.3	4.8	0.0	3.8	0.0	0.0	0.0
17	0.0	0.0	0.0	0.8	0.5	0.0	19.6	0.0	15.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.0	46.2	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	12.7	6.6	8.6	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	21.1	0.0	16.8	0.0	0.5	0.0	39.1	0.0
21	0.0	0.0	0.0	0.0	1.0	0.0	15.7	1.3	0.0	0.0	0.5	0.0
22	0.0	0.0	0.0	0.0	41.7	0.0	5.1	1.8	0.0	0.0	2.3	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	2.5	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	1.0	52.6	0.0	0.0	3.8	0.0
25	0.0	0.0	0.0	0.0	0.0	5.6	5.8	42.9	0.0	0.0	0.0	3.0
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59.2	0.0	0.0	0.0	1.0
27	0.0	0.0	0.0	0.0	1.8	2.5	4.1	3.0	0.0	0.0	0.0	9.4
28	0.0	0.0	0.0	0.0	0.3	20.8	21.8	4.6	0.0	4.6	0.0	0.3
29	0.0		0.0	0.0	0.0	28.2	41.1	10.9	0.0	0.0	0.0	0.0
30	0.0		0.0	0.0	1.0	22.9	22.4	0.0	1.8	0.0	0.0	0.0
31	0.0		0.0		0.0		19.6	65.8		0.8		0.0

Monthly Total	3.6	0.3	0.0	27.9	150.1	84.6	280.9	429.8	327.7	73.2	85.9	65.5
Average	0.11	0.01	0.00	0.93	4.84	2.82	9.06	13.86	10.92	2.36	2.86	2.11
Max daily rain	3.0	0.3	0.0	10.7	41.7	28.2	74.4	65.8	69.6	56.6	39.1	51.8
Day of Max Daily	1	13		13	22	29	1	31	9	3	20	2
No. of Rain days	2	1	0	8	14	9	20	24	20	6	14	5
Max 1-hr rain	2.3	0.3		10.2	30.5	14	16.8	32.3	18.8	31.5	12.7	13.5
Day of max 1-hr	1	13		6	9	28	20	31	1	3	21	2

Total rain for the year	1529.3
Total rain days for the year	123

Table 1.

Rainfall summary of PRFFWC stations for 2019													Total for the year *	Total rain days *	Max 24-hr rain
PRB Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
Muñoz	36	0	0	24	161	185	249	493	335	88	161	24	1756	114	134
Sapang Buho	23	0	0	8	247	252	313	391	286	36	97	28	1681	122	80
Gabaldon	147	21	2	14	296	133	345	375	253	92	136	268	2082	149	167
Zaragoza	14	0	3	43	104	132	330	263	220	148	65	45	1367	119	126
Mayapyap										26	106	55	187	17	37
Peñaranda	28	0	0	11	216	125	322	295	240	49	195	60	1541	130	125
Calaanan	31	0	0	0	309	178	337	426	347	64	140	79	1911	131	82
Palali	24	1	0	2	422	113	311	316	329	92	131	211	1952	129	89
San Isidro	19	0	0	21	141	229	331	230	230	45	87	46	1379	112	67
Arayat	7	0	0	62	171	133	247	437	234	96	156	75	1618	111	116
Candaba	6	0	0	28	141	123	212	238	208	41	88	46	1131	123	50
Sibul Spring	15	3	5	34	212	224	463	372	341	55	171	136	2031	136	109
Sasmuan	1	1	2	47	32	169	234	390	263	37	68	61	1305	102	98
Sulipan	0	0	0	74	27	158	275	156	99	76	64	41	970	98	79
Mexico	1	0	0	29	21	84	173	244	224	65	77	53	971	92	56
Porac	3	1	1	152	232	145	357	432	367	107	98	50	1945	122	129
San Rafael	2	0	9	21	86	228	378	368	202	78	154	86	1612	122	100
PRFFWC	3.6	0.3	0.0	27.9	150.1	84.6	280.9	429.8	327.7	73.2	85.9	65.5	1529.3	123	74.4
* red value indicates incomplete data															

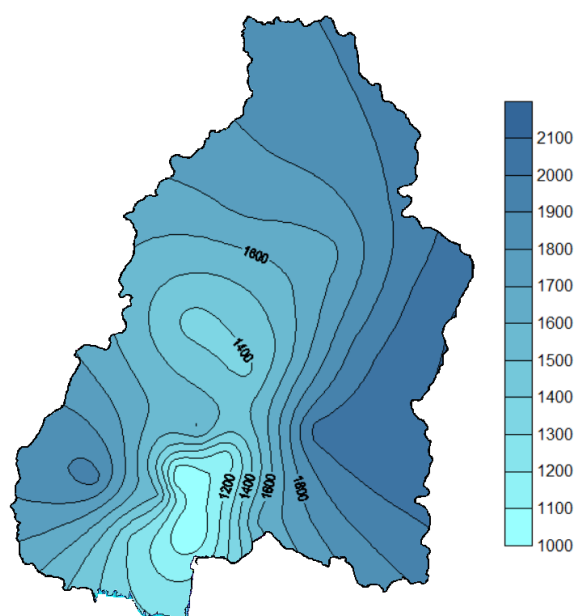


Figure 1a. The estimated Isohyet annual rainfall for year 2019 in the Pampanga River Basin

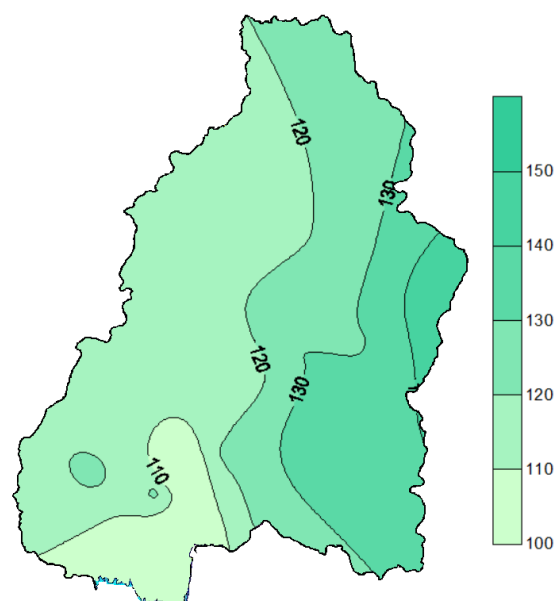


Figure 1b. Estimated rainfall days distribution (2019) in the Pampanga River Basin

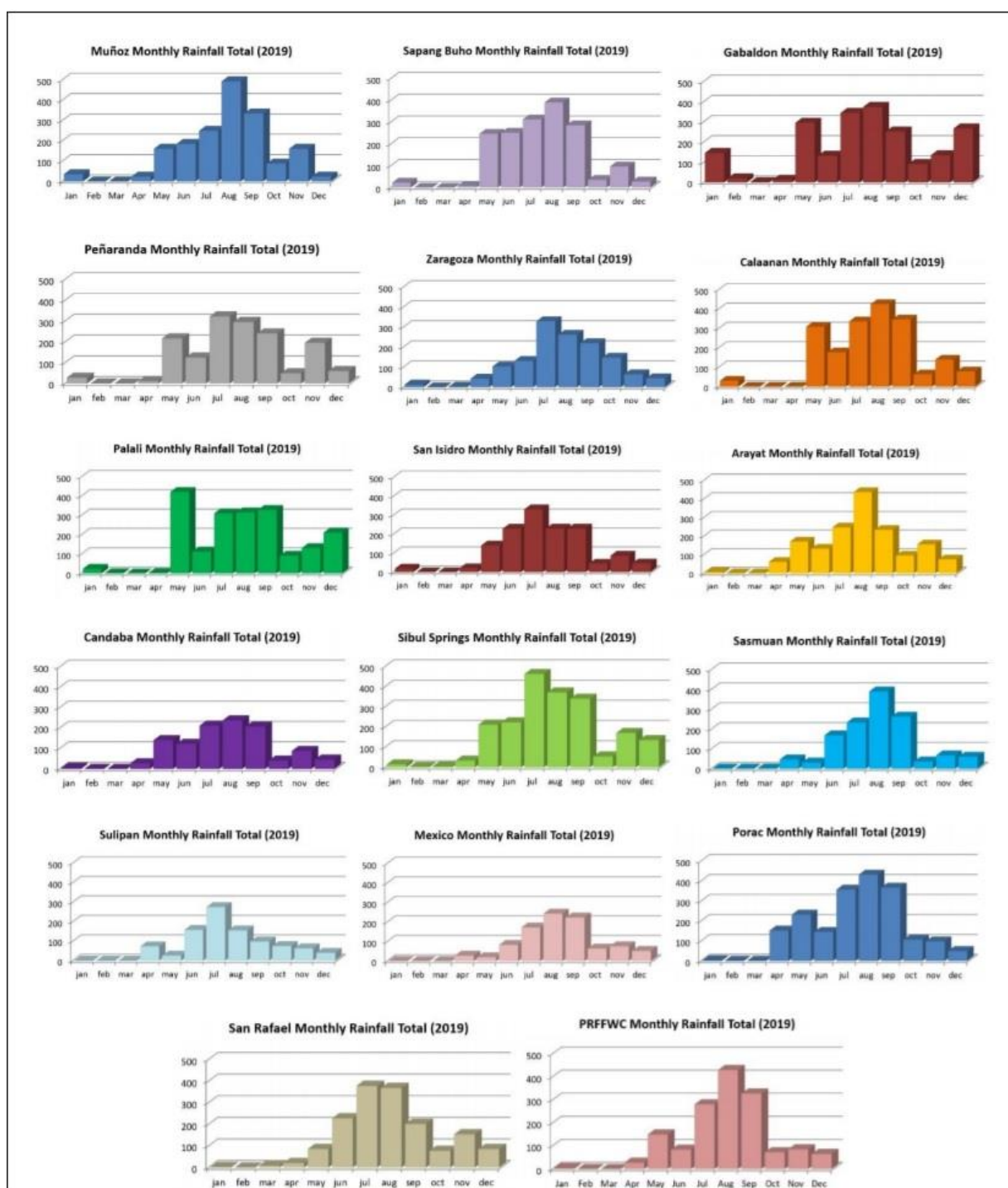


Figure 2. Monthly Rainfall distribution (hyetograph) of each monitoring station of PRFFWC within the Pampanga River Basin for the year 2019.

B. WATER LEVEL Data Summary Presentation

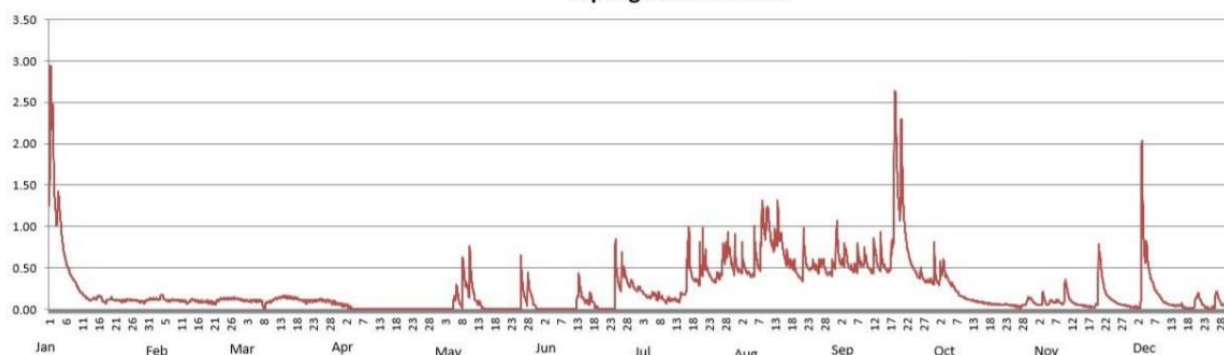


Water Level in meters (Daily Average)

2019	Station: Sapang_Buho											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	2.23	0.13	0.11	0.05	0.00	0.00	0.25	0.48	0.65	0.38	0.06	0.03
2	1.77	0.13	0.11	0.05	0.00	0.00	0.23	0.52	0.56	0.40	0.05	0.03
3	1.19	0.12	0.10	0.03	0.00	0.00	0.19	0.50	0.67	0.50	0.14	0.72
4	1.11	0.16	0.10	0.00	0.00	0.00	0.15	0.44	0.52	0.41	0.07	0.83
5	0.91	0.15	0.10	0.00	0.03	0.00	0.15	0.43	0.50	0.37	0.08	0.73
6	0.54	0.10	0.10	0.00	0.21	0.00	0.18	0.67	0.49	0.29	0.09	0.39
7	0.43	0.11	0.08	0.00	0.09	0.00	0.14	0.53	0.59	0.23	0.10	0.28
8	0.36	0.11	0.04	0.00	0.32	0.00	0.15	0.87	0.54	0.18	0.09	0.20
9	0.30	0.11	0.09	0.00	0.32	0.00	0.11	0.99	0.64	0.15	0.09	0.15
10	0.22	0.10	0.10	0.00	0.33	0.00	0.11	1.14	0.51	0.13	0.29	0.09
11	0.18	0.10	0.12	0.00	0.29	0.00	0.12	0.85	0.46	0.12	0.13	0.07
12	0.14	0.08	0.14	0.00	0.11	0.07	0.12	0.81	0.67	0.11	0.09	0.05
13	0.11	0.10	0.15	0.00	0.08	0.27	0.10	0.96	0.53	0.10	0.06	0.05
14	0.13	0.11	0.15	0.00	0.03	0.14	0.14	0.86	0.61	0.09	0.05	0.04
15	0.13	0.10	0.14	0.00	0.00	0.10	0.18	0.67	0.51	0.09	0.04	0.04
16	0.16	0.09	0.14	0.00	0.00	0.12	0.40	0.59	0.46	0.08	0.04	0.04
17	0.11	0.09	0.14	0.00	0.00	0.10	0.55	0.55	0.61	0.07	0.03	0.02
18	0.09	0.09	0.13	0.00	0.00	0.03	0.37	0.51	1.76	0.06	0.03	0.01
19	0.12	0.09	0.11	0.00	0.00	0.00	0.36	0.44	1.60	0.06	0.05	0.02
20	0.13	0.08	0.10	0.00	0.00	0.00	0.45	0.38	1.60	0.06	0.47	0.13
21	0.11	0.09	0.09	0.00	0.00	0.00	0.57	0.61	1.16	0.06	0.43	0.15
22	0.10	0.12	0.10	0.00	0.00	0.00	0.52	0.55	0.75	0.06	0.22	0.06
23	0.10	0.13	0.10	0.00	0.00	0.00	0.42	0.49	0.58	0.06	0.15	0.02
24	0.11	0.13	0.10	0.00	0.00	0.30	0.36	0.54	0.49	0.05	0.11	0.01
25	0.11	0.13	0.12	0.00	0.00	0.33	0.37	0.49	0.42	0.04	0.09	0.02
26	0.11	0.13	0.11	0.00	0.25	0.40	0.40	0.51	0.42	0.03	0.07	0.12
27	0.10	0.13	0.10	0.00	0.17	0.43	0.57	0.58	0.37	0.03	0.06	0.13
28	0.10	0.12	0.10	0.00	0.23	0.31	0.69	0.46	0.34	0.06	0.05	0.06
29	0.09		0.08	0.00	0.19	0.32	0.71	0.44	0.35	0.10	0.04	0.05
30	0.09		0.07	0.00	0.06	0.26	0.54	0.50	0.42	0.13	0.03	0.02
31	0.11		0.06		0.00		0.55	0.76		0.08		0.01

Max WL observed	2.94	0.18	0.17	0.07	0.76	0.85	1.00	1.32	2.64	0.61	0.79	2.04
Day of Max WL	1	4	15	1	11	24	17	13	19	4	20	4

Sapang Buho WL 2019



Water Level in meters (Daily Average)

2019

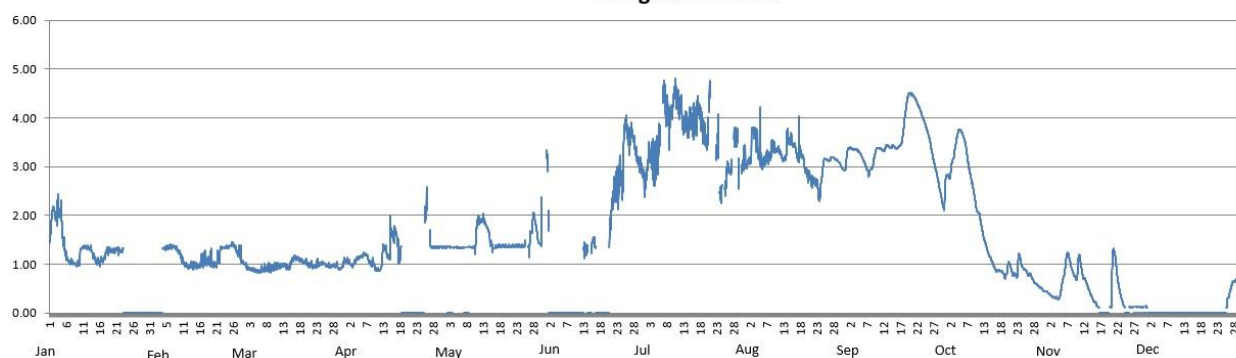
Station:

Zaragoza

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1.70		1.01	1.07	1.34		2.78	3.55	3.33	2.79	0.40	0.12
2	2.08		0.92	1.02	1.35		3.09	3.62	3.37	2.83	0.34	
3	2.06		0.89	0.98	1.35		3.20	3.66	3.35	3.17	0.31	
4	1.99	1.32	0.87	1.07	1.34		2.88	3.85	3.32	3.54	0.30	
5	1.69	1.33	0.86	1.10	1.34		3.10	3.73	3.27	3.64	0.41	
6	1.12	1.35	0.87	1.17	1.34		3.60	3.56	3.07	3.63	0.88	
7	1.04	1.36	0.88	1.18	1.34		4.38	3.67	2.90	3.34	1.18	
8	1.02	1.33	0.91	1.06	1.35		4.05	3.67	2.95	2.91	0.95	
9	0.99	1.24	0.90	0.99	1.34		4.03	3.90	3.19	2.58	0.75	
10	1.18	1.10	0.93	0.90	1.33		4.49	3.83	3.38	2.19	0.95	
11	1.34	0.98	0.94	0.87	1.85		4.31	3.84	3.36	1.99	0.95	
12	1.34	0.94	0.95	1.14	1.87	1.29	4.17	3.66	3.34	1.65	0.70	
13	1.31	0.96	0.98	1.29	1.89	1.32	3.84	3.80	3.42	1.39	0.54	
14	1.19	0.97	0.93	1.13	1.75	1.35	3.82	4.05	3.39	1.17	0.36	
15	1.06	0.95	0.98	1.63	1.49	1.45	3.95	4.00	3.42	1.03	0.23	
16	1.05	1.03	1.11	1.67	1.33	1.40	3.96	3.85	3.39	0.88	0.14	
17	1.10	1.07	1.12	1.19	1.35		4.08	3.78	3.46	0.87		
18	1.24	1.05	1.09	1.31	1.36		4.07	3.71	3.84	0.84		
19	1.29	1.10	1.04		1.37		3.79	3.44	4.36	0.76		
20	1.27	0.98	1.02		1.36	1.59	3.61	3.30	4.50	0.99	0.25	
21	1.31	1.10	0.98		1.36	2.11	4.40	3.19	4.44	0.83	1.22	
22	1.28	1.31	0.95		1.37	2.56		3.19	4.31	0.77	0.78	
23	1.28	1.34	1.00		1.37	2.66	3.58	2.45	4.15	1.08	0.38	
24		1.35	1.00		1.37	2.72	2.57	2.80	3.96	0.96	0.16	
25		1.39	1.01		1.38	3.77	2.59	3.14	3.75	0.88		0.12
26		1.36	0.96		1.37	3.61	2.86	3.13	3.48	0.78	0.11	0.35
27		1.25	0.94	1.35	1.49	3.67	2.93	3.19	3.14	0.73	0.12	0.59
28		1.09	0.96	1.35	1.90	3.41	3.64	3.16	2.85	0.61	0.13	0.66
29			0.96	1.35	1.72	3.13	3.64	3.10	2.51	0.54	0.12	0.66
30			0.90	1.35	1.42	2.98	2.55	3.00	2.23	0.50	0.13	0.59
31			0.99				3.06	2.97		0.45		0.52

Max WL observed	2.44	1.45	1.18	2.59	2.05	4.05	4.81	4.03	4.52	3.76	1.32	0.70
Day of Max WL	4	26	17	26	28	26	11	17	20	5	21	29

Zaragoza WL 2019

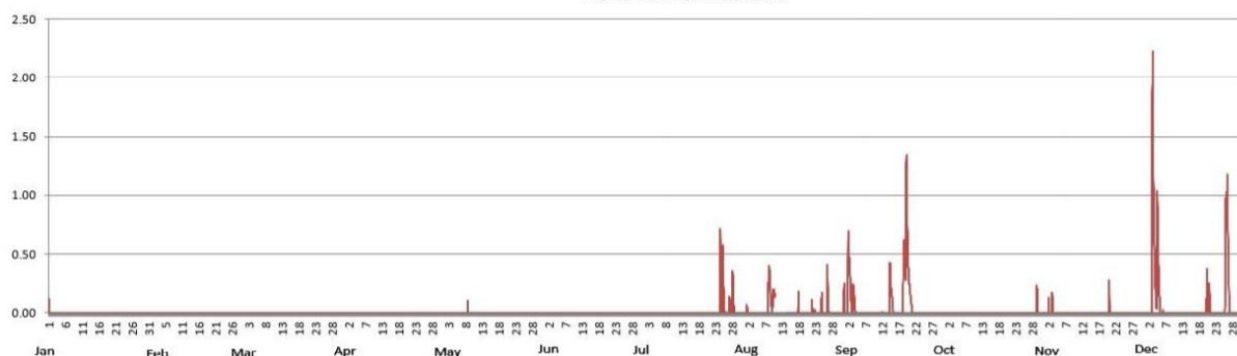


Water Level in meters (Daily Average)

2019		Station: Peñaranda										
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.14	0.00	0.00	0.00
2	0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.27	0.00	0.01	0.00
3	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.02	0.85
4	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
5	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.19	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.03	0.10
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.00	0.04
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.04	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.14
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.75
27	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.02
28	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00
29	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
30	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00		0.00		0.00		0.00	0.05		0.00		0.00

Max WL observed	1.41	0.00	0.00	0.00	0.10	0.00	0.71	0.41	1.34	0.23	0.28	2.23
Day of Max WL	1				9		25	26	19	29	20	4

Peñaranda WL 2019

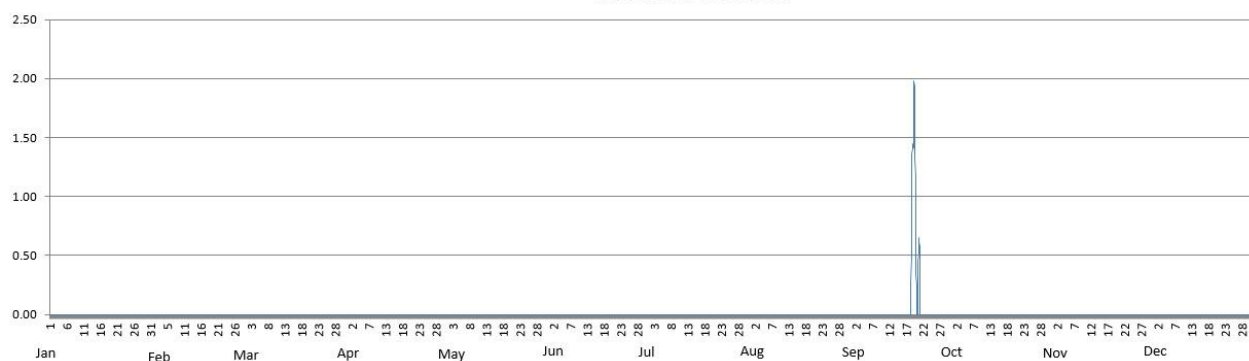


Water Level in meters (Daily Average)

2019	Station: San_Isidro											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.85	0.00		
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	0.00		
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54	0.00		
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
29	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
30	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
31	0.00		0.00		0.00		0.00	0.00		0.00		

Max WL observed	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	0.00	0.00	
Day of Max WL	2								20			

San Isidro WL 2019

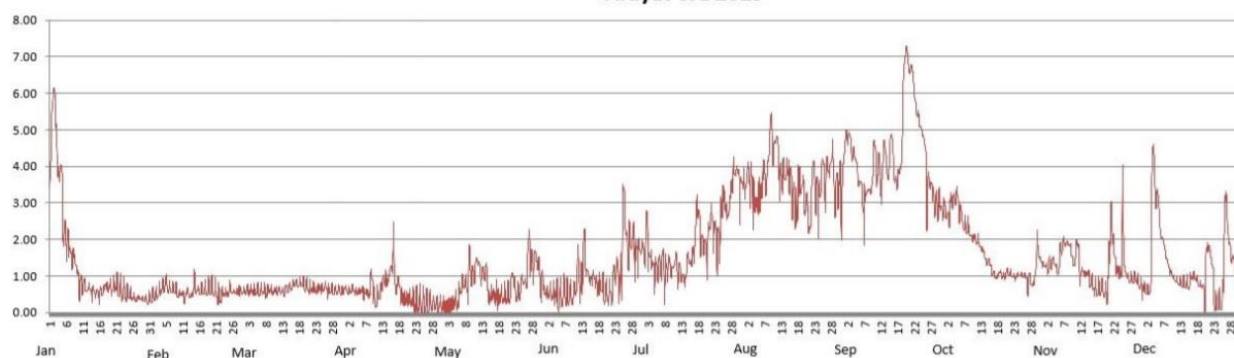


Water Level in meters (Daily Average)

2019		Station: Arayat										
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	4.46	0.42	0.57	0.65	0.19	0.55	1.78	3.51	4.79	2.81	1.28	0.65
2	5.95	0.43	0.59	0.58	0.16	0.51	2.20	3.83	4.81	2.64	1.29	0.58
3	4.26	0.55	0.59	0.63	0.19	0.51	1.51	3.55	4.36	2.96	1.35	0.94
4	3.84	0.68	0.60	0.58	0.24	0.53	1.25	3.05	4.18	3.08	1.30	4.20
5	3.04	0.73	0.59	0.58	0.26	0.43	1.22	3.03	3.87	3.13	1.25	3.68
6	1.87	0.64	0.57	0.59	0.57	0.42	1.27	3.19	3.18	2.71	1.75	2.43
7	1.62	0.62	0.60	0.54	0.76	0.55	1.41	3.85	3.12	2.40	1.90	1.96
8	1.53	0.60	0.54	0.49	0.70	0.45	1.09	3.86	3.35	2.33	1.88	1.52
9	1.17	0.47	0.61	0.90	1.32	0.47	1.32	5.10	3.63	2.14	1.64	1.18
10	0.74	0.51	0.56	0.33	1.04	0.57	1.16	4.48	4.41	2.02	1.44	0.98
11	0.71	0.41	0.57	0.44	1.31	1.20	1.45	4.65	4.01	1.97	1.79	0.87
12	0.62	0.53	0.59	0.65	1.22	0.84	1.12	3.64	3.66	1.83	1.08	0.81
13	0.64	0.47	0.55	0.94	1.06	1.73	0.96	3.68	4.44	1.67	1.08	0.78
14	0.58	0.69	0.64	0.87	1.10	1.10	1.01	3.86	3.93	1.39	1.03	0.77
15	0.55	0.61	0.68	1.20	0.42	0.89	1.45	3.69	4.75	1.35	0.82	0.79
16	0.53	0.60	0.76	1.25	0.55	0.95	1.56	3.00	3.66	1.07	0.67	0.97
17	0.61	0.61	0.80	0.80	0.44	0.76	2.25	2.94	3.69	0.97	0.61	0.93
18	0.70	0.64	0.80	0.49	0.35	0.71	2.67	3.56	4.47	1.10	0.63	0.77
19	0.70	0.64	0.79	0.36	0.43	0.57	1.93	3.36	6.84	0.99	0.57	0.69
20	0.69	0.58	0.70	0.34	0.44	0.48	1.82	2.89	6.93	1.05	0.88	1.01
21	0.74	0.46	0.65	0.34	0.48	0.54	2.05	2.45	6.67	1.07	2.32	1.74
22	0.61	0.40	0.65	0.25	0.93	1.00	2.60	3.92	5.97	0.99	1.70	1.27
23	0.58	0.51	0.60	0.25	0.58	1.17	2.28	3.34	5.38	0.96	1.17	0.20
24	0.49	0.49	0.65	0.24	0.53	0.84	1.90	3.12	5.03	1.02	1.16	0.23
25	0.47	0.65	0.62	0.25	0.84	2.86	2.81	4.03	4.65	1.02	1.97	0.39
26	0.42	0.56	0.69	0.25	0.79	1.95	3.00	3.71	3.37	0.96	0.99	2.75
27	0.36	0.55	0.58	0.27	1.78	1.94	2.72	3.96	3.45	0.89	0.92	2.07
28	0.40	0.58	0.59	0.25	1.33	2.00	3.33	4.13	3.03	0.76	0.91	1.52
29	0.36		0.59	0.21	1.55	1.59	3.84	3.21	2.92	1.27	0.88	1.33
30	0.36		0.62	0.19	1.29	1.73	3.89	3.59	2.96	1.65	0.74	1.24
31	0.38		0.56		0.74		3.44	3.54		1.35		0.96

Max WL observed	6.14	1.19	1.00	2.48	2.30	3.52	4.26	5.47	7.29	3.45	4.06	4.62
Day of Max WL	2	14	20	16	28	25	29	9	20	5	25	4

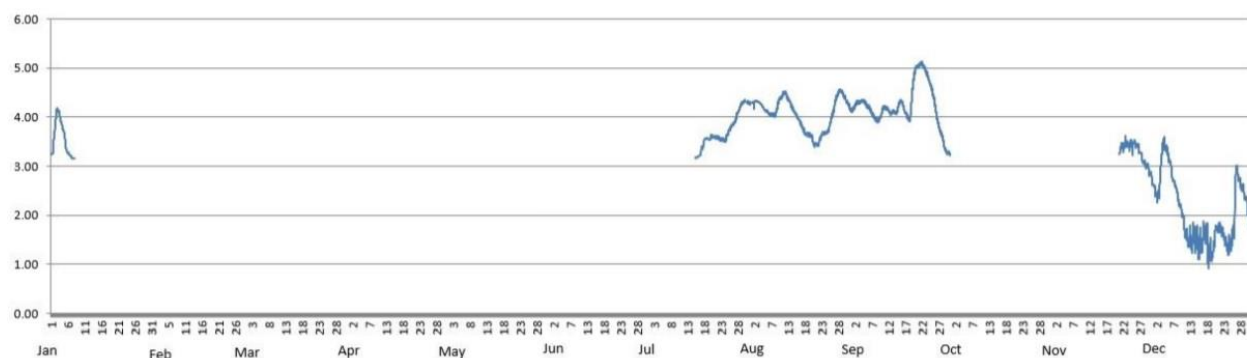
Arayat WL 2019



Water Level in meters (Daily Average)**2019****Station:****Candaba**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	3.04							4.28	3.87	3.21		2.64
2	3.65							4.30	3.98			2.43
3	3.76							4.31	4.00			2.68
4	3.50							4.26	4.02			3.43
5	3.32							4.21	3.99			3.39
6	2.95							4.10	3.87			3.10
7	2.88							4.05	3.74			2.75
8								4.04	3.64			2.53
9								4.21	3.68			2.23
10								4.40	3.85			1.96
11								4.49	3.88			1.59
12								4.41	3.80			1.52
13								4.27	3.81			1.51
14								4.13	3.80			1.46
15								4.01	3.97			1.37
16								3.87	3.96			1.51
17							3.33	3.71	3.77			1.61
18							3.53	3.65	3.67			1.20
19							3.55	3.63	4.26			1.24
20							3.59	3.48	4.69			1.70
21							3.58	3.43	4.76		3.36	1.76
22							3.57	3.57	4.76		3.41	1.67
23							3.54	3.66	4.64		3.46	1.44
24							3.53	3.69	4.45		3.43	1.35
25							3.68	3.88	4.22		3.47	1.51
26							3.80	4.13	3.86		3.42	2.50
27							3.91	4.42	3.52		3.30	2.76
28							4.09	4.53	3.29		3.11	2.56
29							4.25	4.44	3.03		3.01	2.36
30							4.31	4.32	2.96		2.86	2.07
31							4.29	4.19				1.84

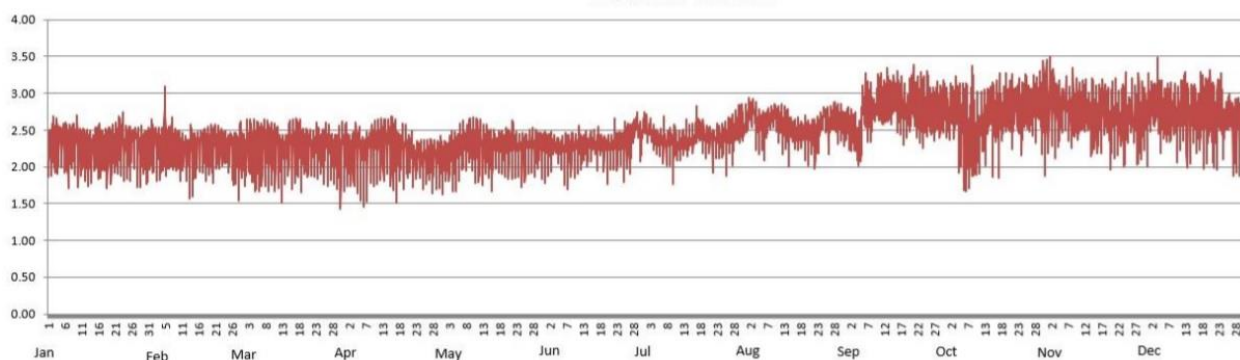
Max WL observed	4.19						4.35	4.57	4.82	3.26	3.62	3.59
Day of Max WL	3						30	28	22	1	23	5

Candaba WL 2019

Water Level in meters (Daily Average)

2019	Station: Sasmuan											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	2.29	2.37	2.22	2.26	2.17	2.29	2.56	2.63	2.57	2.77	2.94	2.78
2	2.36	2.31	2.25	2.21	2.15	2.28	2.47	2.72	2.52	2.79	2.91	2.82
3	2.36	2.29	2.27	2.26	2.23	2.24	2.44	2.77	2.47	2.83	2.80	2.79
4	2.35	2.30	2.25	2.23	2.20	2.27	2.39	2.58	2.34	2.92	2.67	2.81
5	2.36	2.37	2.29	2.23	2.23	2.26	2.38	2.56	2.48	2.78	2.73	2.78
6	2.35	2.28	2.24	2.20	2.32	2.23	2.38	2.54	2.82	2.61	2.84	2.75
7	2.33	2.32	2.29	2.21	2.33	2.24	2.35	2.66	2.75	2.34	2.77	2.69
8	2.35	2.26	2.34	2.27	2.26	2.25	2.33	2.68	2.76	2.44	2.84	2.71
9	2.37	2.25	2.27	2.30	2.35	2.28	2.34	2.72	2.83	2.43	2.85	2.82
10	2.31	2.25	2.31	2.34	2.32	2.27	2.36	2.70	2.87	2.42	2.74	2.62
11	2.26	2.25	2.28	2.32	2.37	2.30	2.30	2.61	2.88	2.51	2.88	2.70
12	2.27	2.24	2.21	2.31	2.29	2.28	2.31	2.58	2.88	2.56	2.81	2.88
13	2.25	2.25	2.23	2.37	2.26	2.30	2.30	2.61	2.91	2.64	2.76	2.65
14	2.26	2.26	2.25	2.35	2.32	2.32	2.31	2.49	2.85	2.79	2.66	2.64
15	2.33	2.29	2.33	2.35	2.25	2.33	2.36	2.50	2.92	2.72	2.73	2.85
16	2.30	2.30	2.31	2.29	2.26	2.29	2.39	2.45	2.89	2.71	2.73	2.67
17	2.27	2.29	2.30	2.25	2.25	2.33	2.51	2.44	2.84	2.72	2.81	2.69
18	2.29	2.28	2.32	2.24	2.31	2.29	2.48	2.46	2.75	2.74	2.78	2.73
19	2.30	2.31	2.28	2.25	2.27	2.26	2.44	2.50	2.73	2.88	2.66	2.81
20	2.32	2.30	2.27	2.25	2.28	2.26	2.40	2.45	2.86	2.83	2.68	2.77
21	2.35	2.31	2.27	2.19	2.29	2.28	2.42	2.47	2.89	2.85	2.73	2.66
22	2.37	2.28	2.27	2.14	2.29	2.31	2.37	2.44	2.85	2.91	2.65	2.71
23	2.34	2.28	2.27	2.15	2.27	2.28	2.40	2.48	2.79	2.81	2.73	2.82
24	2.30	2.26	2.29	2.11	2.26	2.31	2.39	2.67	2.78	2.83	2.72	2.54
25	2.28	2.26	2.29	2.11	2.28	2.30	2.41	2.69	2.88	2.88	2.69	2.70
26	2.32	2.20	2.33	2.14	2.27	2.33	2.37	2.59	2.76	2.86	2.73	2.70
27	2.36	2.26	2.27	2.14	2.29	2.37	2.43	2.67	2.73	2.85	2.71	2.59
28	2.28	2.26	2.22	2.13	2.28	2.55	2.46	2.69	2.86	2.84	2.69	2.55
29	2.31		2.24	2.13	2.28	2.52	2.60	2.64	2.79	2.88	2.65	2.57
30	2.30		2.24	2.18	2.29	2.41	2.62	2.60	2.83	2.85	2.75	2.66
31	2.30		2.25		2.29		2.54	2.56		2.81		2.56

Max WL observed	2.74	3.09	2.66	2.69	2.67	2.75	2.85	2.94	3.39	3.46	3.50	3.48
Day of Max WL	24	5	17	15	10	29	31	2	21	31	1	4

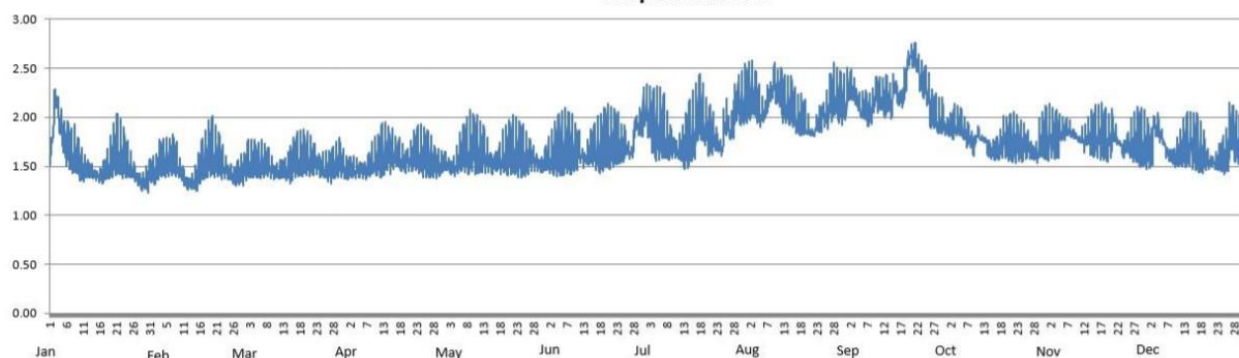
Sasmuan WL 2019

Water Level in meters (Daily Average)

2019	Station: Sulipan											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1.65	1.44	1.47	1.46	1.54	1.54	2.07	2.18	2.27	1.88	1.78	1.67
2	2.06	1.45	1.53	1.46	1.51	1.56	1.96	2.19	2.29	1.86	1.78	1.65
3	2.11	1.51	1.53	1.47	1.49	1.58	1.89	2.21	2.24	1.94	1.78	1.84
4	1.92	1.54	1.52	1.46	1.49	1.60	1.85	2.13	2.16	1.91	1.78	1.90
5	1.84	1.54	1.51	1.46	1.51	1.62	1.85	2.10	2.12	1.91	1.81	1.86
6	1.68	1.54	1.51	1.46	1.58	1.66	1.85	2.05	2.07	1.86	1.85	1.75
7	1.62	1.56	1.51	1.45	1.62	1.68	1.81	2.12	2.02	1.80	1.86	1.65
8	1.61	1.53	1.50	1.48	1.63	1.66	1.74	2.23	2.08	1.79	1.83	1.60
9	1.56	1.47	1.48	1.53	1.68	1.67	1.72	2.32	2.20	1.73	1.82	1.58
10	1.48	1.42	1.44	1.54	1.67	1.64	1.69	2.29	2.20	1.79	1.78	1.62
11	1.46	1.34	1.44	1.56	1.66	1.66	1.66	2.26	2.19	1.81	1.78	1.65
12	1.46	1.32	1.46	1.61	1.65	1.59	1.66	2.14	2.14	1.78	1.75	1.68
13	1.45	1.33	1.45	1.64	1.62	1.58	1.66	2.11	2.19	1.74	1.79	1.70
14	1.42	1.36	1.45	1.63	1.59	1.61	1.71	2.08	2.12	1.67	1.77	1.73
15	1.40	1.42	1.45	1.64	1.53	1.63	1.78	2.07	2.31	1.67	1.81	1.71
16	1.40	1.51	1.54	1.62	1.53	1.64	1.83	1.99	2.22	1.66	1.79	1.68
17	1.42	1.56	1.57	1.58	1.54	1.65	1.96	1.95	2.20	1.69	1.80	1.63
18	1.48	1.60	1.57	1.56	1.54	1.67	1.98	1.96	2.26	1.75	1.77	1.59
19	1.53	1.61	1.56	1.55	1.59	1.72	1.93	1.93	2.51	1.76	1.74	1.57
20	1.59	1.57	1.56	1.56	1.59	1.72	1.84	1.87	2.63	1.75	1.77	1.54
21	1.63	1.55	1.55	1.57	1.62	1.72	1.81	1.83	2.62	1.75	1.81	1.54
22	1.61	1.50	1.54	1.60	1.64	1.72	1.81	1.88	2.53	1.74	1.76	1.54
23	1.56	1.47	1.52	1.61	1.63	1.72	1.74	1.93	2.40	1.72	1.72	1.55
24	1.52	1.44	1.49	1.60	1.62	1.68	1.70	2.02	2.32	1.69	1.68	1.59
25	1.48	1.41	1.48	1.61	1.61	1.71	1.81	2.03	2.24	1.70	1.72	1.61
26	1.45	1.38	1.46	1.59	1.60	1.65	1.91	2.09	2.06	1.71	1.73	1.74
27	1.39	1.42	1.46	1.58	1.59	1.65	1.85	2.15	2.00	1.65	1.72	1.82
28	1.36	1.46	1.50	1.53	1.57	1.87	1.94	2.20	1.97	1.65	1.74	1.73
29	1.34		1.54	1.52	1.55	1.90	2.11	2.12	1.94	1.69	1.72	1.71
30	1.36		1.56	1.53	1.52	1.90	2.11	2.10	1.95	1.75	1.71	1.66
31	1.41		1.51		1.51		2.09	2.13		1.76		1.63

Max WL observed	2.29	2.01	1.88	1.95	2.08	2.14	2.48	2.58	2.76	2.14	2.15	2.15
Day of Max WL	3	20	17	13	9	20	31	3	22	4	18	26

Sulipan WL 2019



Water Level in meters (Daily Average)

2019	Station: Mexico											
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.23	0.14	0.00	0.05	0.02	0.13	0.61	0.15	0.76	0.36	0.16	0.00
2	0.18	0.17	0.00	0.06	0.04	0.14	0.23	0.31	0.64	0.28	0.16	0.00
3	0.17	0.16	0.02	0.28	0.06	0.12	0.00	0.18	0.66	0.28	0.15	0.11
4	0.17	0.14	0.06	0.26	0.12	0.06	0.04	0.01	0.54	0.38	0.14	0.00
5	0.14	0.14	0.07	0.22	0.16	0.06	0.05	0.01	0.52	0.30	0.27	0.00
6	0.05	0.14	0.09	0.09	0.15	0.00	0.00	0.00	0.46	0.18	0.25	0.00
7	0.17	0.14	0.10	0.00	0.11	0.00	0.00	0.00	0.43	0.09	0.20	0.00
8	0.20	0.13	0.11	0.00	0.08	0.00	0.00	0.34	0.41	0.03	0.25	0.00
9	0.21	0.11	0.11	0.00	0.01	0.00	0.00	0.12	0.89	0.00	0.19	0.00
10	0.21	0.11	0.11	0.00	0.00	0.00	0.00	0.06	0.74	0.00	0.16	0.00
11	0.20	0.09	0.10	0.00	0.23	0.00	0.00	0.02	1.02	0.00	0.17	0.00
12	0.19	0.18	0.10	0.01	0.03	0.00	0.00	0.00	0.96	0.00	0.15	0.00
13	0.20	0.16	0.11	0.08	0.00	0.01	0.00	0.00	0.83	0.00	0.11	0.00
14	0.18	0.16	0.09	0.19	0.05	0.02	0.00	0.01	0.74	0.00	0.09	0.00
15	0.18	0.16	0.09	0.43	0.16	0.06	0.00	0.00	0.72	0.00	0.03	0.00
16	0.21	0.15	0.05	0.00	0.10	0.05	0.00	0.00	0.70	0.19	0.00	0.00
17	0.21	0.14	0.00	0.00	0.00	0.04	0.00	0.00	0.62	0.26	0.00	0.00
18	0.20	0.13	0.01	0.00	0.12	0.05	0.00	0.00	0.84	0.23	0.00	0.00
19	0.19	0.13	0.00	0.00	0.00	0.05	0.00	0.18	0.92	0.20	0.04	0.00
20	0.21	0.13	0.00	0.00	0.00	0.01	0.00	0.01	0.76	0.21	0.21	0.00
21	0.17	0.13	0.00	0.00	0.09	0.00	0.22	0.08	0.69	0.20	0.37	0.00
22	0.15	0.12	0.00	0.00	0.06	0.00	0.00	0.00	0.61	0.18	0.16	0.00
23	0.15	0.13	0.00	0.00	0.00	0.05	0.00	0.00	0.64	0.18	0.19	0.00
24	0.14	0.09	0.01	0.00	0.00	0.02	0.00	0.46	0.50	0.21	0.14	0.00
25	0.13	0.01	0.08	0.00	0.04	0.01	0.00	0.33	0.40	0.25	0.08	0.01
26	0.13	0.00	0.08	0.01	0.10	0.00	0.08	0.49	0.33	0.22	0.00	0.04
27	0.13	0.00	0.07	0.01	0.10	0.00	0.03	0.55	0.28	0.20	0.01	0.16
28	0.13	0.00	0.06	0.03	0.09	0.09	0.00	0.47	0.19	0.21	0.00	0.10
29	0.14		0.06	0.03	0.09	0.17	0.02	0.45	0.19	0.20	0.00	0.07
30	0.14		0.06	0.02	0.08	0.00	0.03	0.45	0.11	0.17	0.00	0.03
31	0.14		0.08		0.07		0.05	0.70		0.17		0.00

Max WL observed	0.26	0.25	0.12	1.75	0.76	0.43	1.17	1.17	1.69	1.11	0.69	0.38
Day of Max WL	1	12	9	15	11	29	1	9	11	1	6	4

Mexico WL 2019

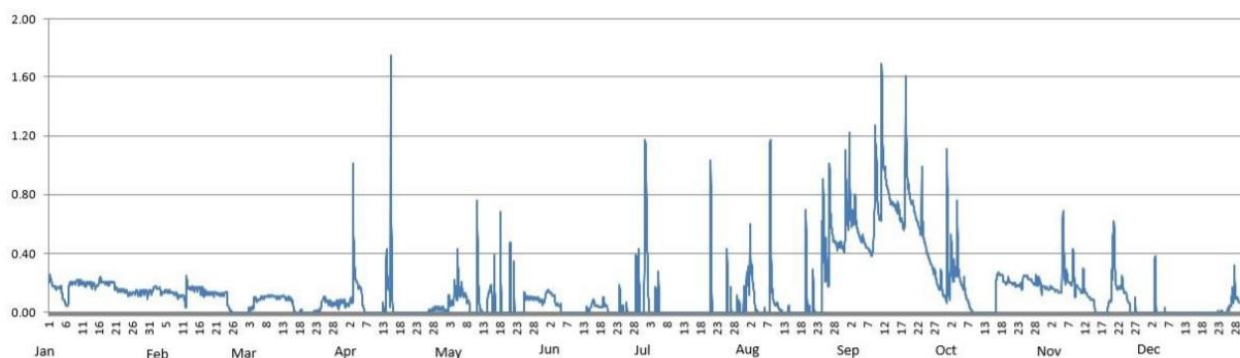


Table 2. Monthly Maximum WL recorded per station for the year 2019

Maximum WL recorded per station for the year 2019

Station	January	February	March	April	May	June	July	August	September	October	November	December
Sapang Buho	2.94	0.18	0.17	0.07	0.76	0.85	1.00	1.32	2.64	0.61	0.79	2.04
Zaragoza	2.44	1.45	1.18	2.59	2.05	4.05	4.81	4.03	4.52	3.76	1.32	0.70
Mayapyap												
Penaranda	1.41	0.00	0.00	0.00	0.10	0.00	0.71	0.41	1.34	0.23	0.28	2.23
San Isidro	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	0.00	0.00	
Arayat	6.14	1.19	1.00	2.48	2.30	3.52	4.26	5.47	7.29	3.45	4.06	4.62
Candaba	4.19						4.35	4.57	4.82	3.26	3.62	3.59
Sasmuan	2.74	3.09	2.66	2.69	2.67	2.75	2.85	2.94	3.39	3.46	3.50	3.48
Sulipan	2.29	2.01	1.88	1.95	2.08	2.14	2.48	2.58	2.76	2.14	2.15	2.15
Mexico	0.26	0.25	0.12	1.75	0.76	0.43	1.17	1.17	1.69	1.11	0.69	0.38

Note: Shaded cell indicates maximum WL recorded during year per station



C. ANNEX

Table A-1.

Maximum Rainfall for a given sliding time period during the year 2019																
Sliding time period (minimum time period of 1 hour)	Rainfall Stations															
	Munoz	Sapang Buho	Gabalton	Zaragoza	Peñaranda	Calaanan	Palali	San Isidro	Arayat	Candaba	Sibul Spring	Sasmuan	Sulipan	Mexico	Porac	San Rafael
1 hr	80	42	41	94	51	53	58	58	84	29	59	23	42	31	51	54
2 hrs	119	54	50	116	84	63	66	65	115	48	97	38	43	36	73	65
3 hrs	125	70	64	121	96	71	79	67	115	48	104	50	43	37	79	73
4 hrs	126	78	86	123	102	71	84	67	115	48	105	52	43	38	79	73
5 hrs	127	80	103	123	110	71	85	67	115	49	106	63	46	38	79	73
6 hrs	129	80	114	125	111	71	87	67	115	49	107	72	52	38	79	74
7 hrs	130	80	126	126	113	74	89	67	115	49	109	73	53	38	79	77
8 hrs	131	80	138	126	116	76	89	67	115	49	109	77	54	38	79	78
9 hrs	131	80	144	126	121	81	89	67	115	49	109	79	56	39	85	78
10 hrs	131	80	149	126	123	82	89	67	115	49	109	82	57	39	86	78
11 hrs	131	80	153	126	124	82	89	67	115	49	109	91	58	41	89	82
12 hrs	131	80	155	126	124	82	89	67	116	49	109	92	61	46	94	85
18 hrs	133	80	166	126	125	82	89	68	116	50	109	101	78	55	122	101
24 hrs	134	80	169	126	125	82	93	68	116	55	112	102	83	63	139	110
48 hrs (2 days)	152	110	196	145	126	98	129	77	145	62	137	111	101	69	157	115
72 hrs (3 days)	180	114	197	147	133	155	137	93	170	83	141	131	122	88	189	144
96 hrs (4 days)	188	131	197	147	133	162	138	99	171	84	149	191	180	94	231	187
120 hrs (5 days)	198	145	197	169	134	170	180	133	189	90	159	194	190	95	233	196
144 hrs (6 days)	198	172	199	176	146	173	180	133	217	122	197	202	201	114	235	197
240 hrs (10 days)	268	210	216	211	166	228	221	204	262	158	253	217	206	170	271	244
480 hrs (20 days)	437	339	323	302	262	383	327	287	363	261	354	340	268	291	441	350
Meteorological day (8 am to 8 am)	134	80	167	126	125	82	89	67	116	50	109	98	79	56	129	100
Max monthly total	493	391	375	330	322	426	422	331	437	238	463	390	275	244	432	378

The maximum monthly total values for some stations may be smaller than their 480 hours (20 days) of unrestricted sliding time total. This means that the 20-day total transcends 2 adjacent months. Likewise, the 24-hour unrestricted sliding time period will be much larger than the meteorological day (fixed 8am to 8am) total.

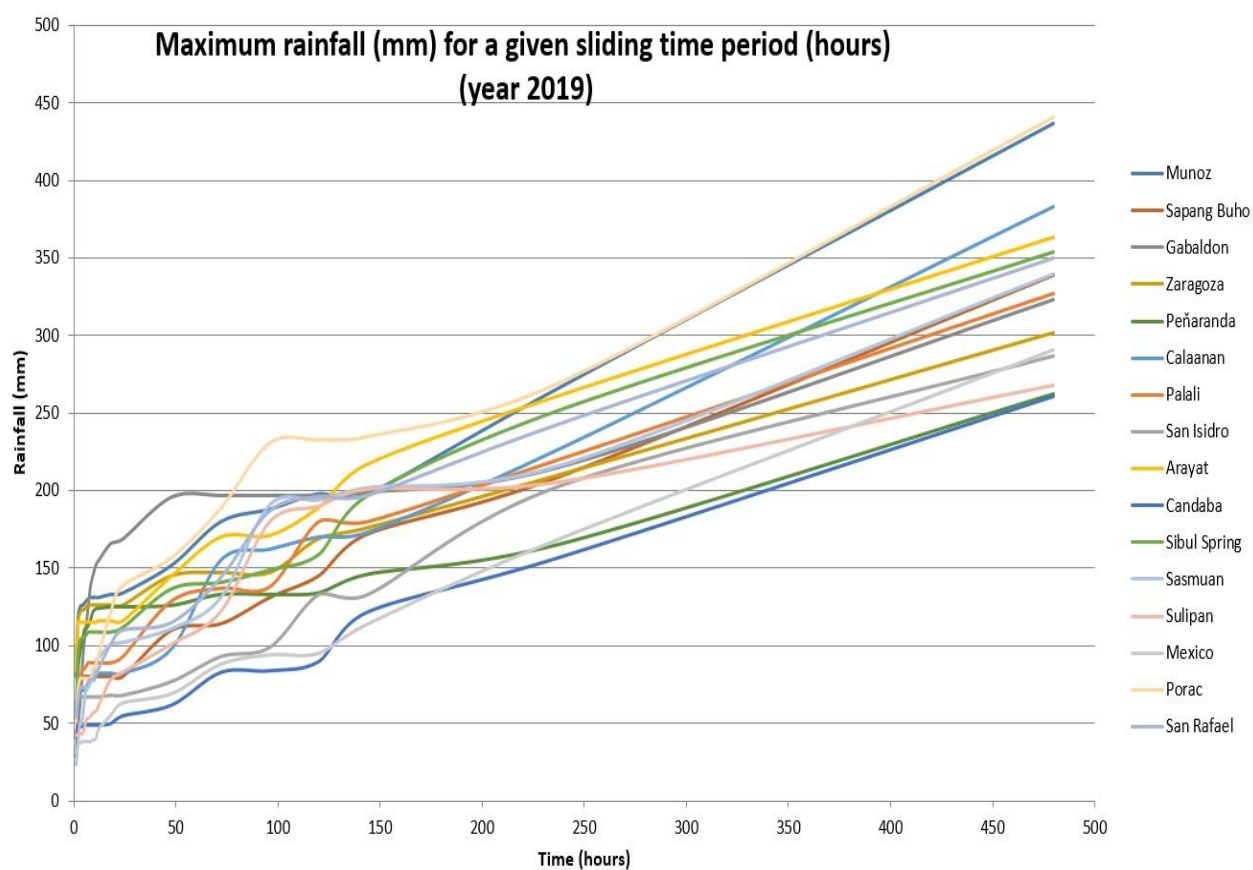


Figure AA-1. The sliding time period per station graph.

Table A-2. PRFFWC Existing Flood Warning Assessment Levels (SG in meters)

Color code	YELLOW	ORANGE	RED
STATION	ALERT	ALARM	CRITICAL
Sapang Buho	3.70	4.50	6.50
Mayapyap	3.00	3.50	4.50
Zaragoza	2.50	3.50	4.50
Penaranda			
San Isidro +	3.20	4.50	6.00
Arayat	5.00	6.00	8.50
Candaba	3.00	4.50	5.00
Mexico			
Sasmuan +			3.00
Sulipan	2.60	3.20	3.80

+ for updating of assessment levels

Table A-3. Water Level Station notes

Water Level Station	Elevation of "0" of Staff Gauge (m) (as of Aug. 2009)	Rating Curve (RC) Equation as of April 2009	RC range of applicability
Sapang Buho	50.212	$Q = 4.015 (H - (-2.94))^2$	$0 < H \leq 3.4$
Zaragoza	10.213	$Q = 12.111 (H - 0.0)^2$	(for validation)
Peñaranda	22.498**	$Q = 2.30 (H - (-1.20))^2$	$0 < H \leq 4.0$
San Isidro	9.585	$Q = 15.2 (H - (-1.70))^2$	$0 < H \leq 8.0$
Arayat	0.077	$Q = 9.106 (H - (-0.39))^2$	$0 < H \leq 9.0$
Candaba	-0.157	$Q = 1.80 (H - (-1.30))^2$	$0 < H \leq 2.0$
Sasmuan	-1.147	$Q = 1.50 (H - (-2.0))^2$	$0 < H \leq 2.0$
Sulipan	-0.062	$Q = 9.50 (H - (-0.4))^2$	$0 < H \leq 3.0$
Mexico	5.933**	$Q = 11.0 (H - (-0.50))^2$	$0 < H \leq 3.0$

Notes: RC equations by JICA Consultants

* - based on x-section of March 2000 (by PRFFWC)

** - based on temporary markers (TBM)

Above table are still the latest information for PRFFWC streamgaging sites. Rating curve equations remains the latest available for now. The RCs should be updated on a regular basis.

Water Level Percent Duration Curves of some stations

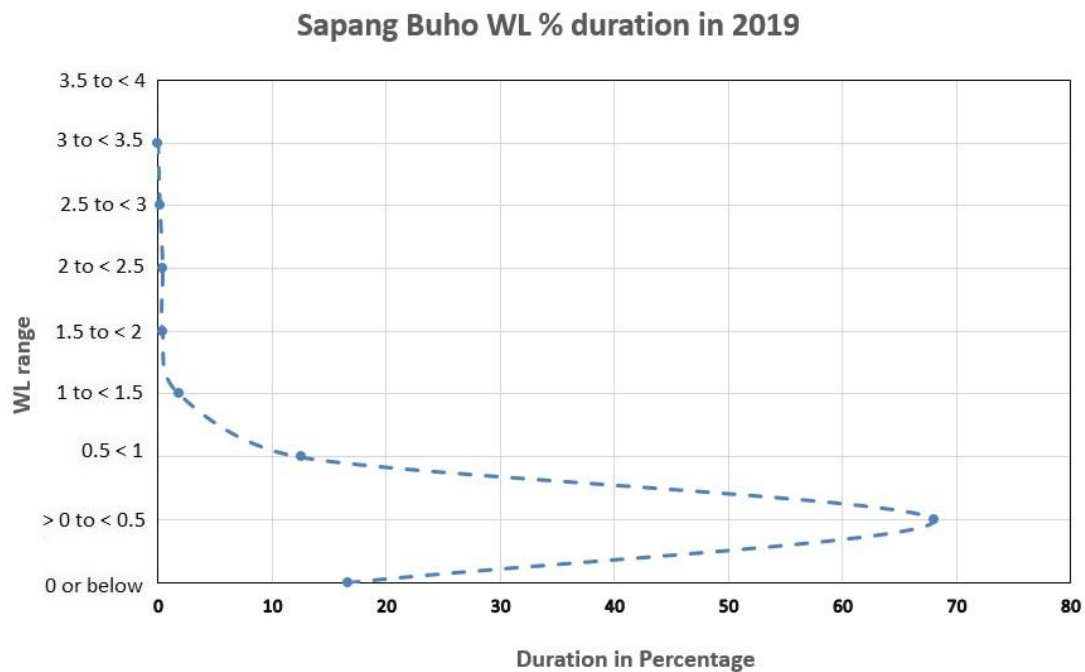


Figure AA-2. Sapang Buho WL percent duration curve (2019)

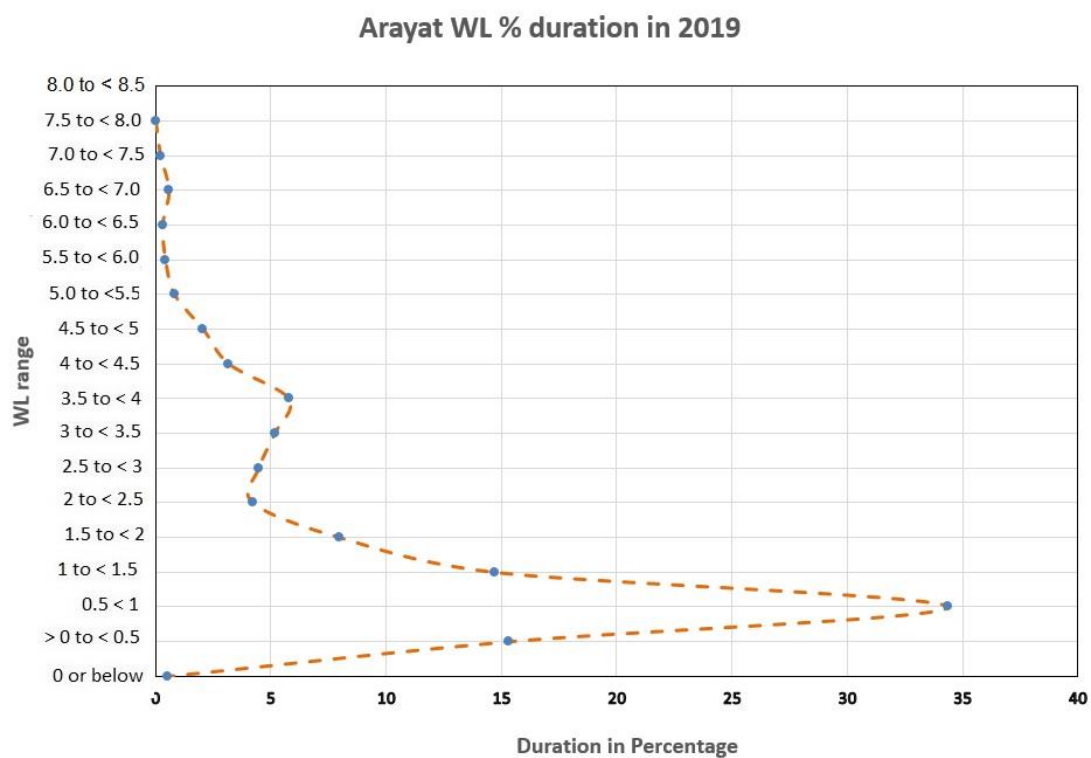


Figure AA-3. Arayat WL percent duration curve (2019)

Sulipan WL % duration in 2019

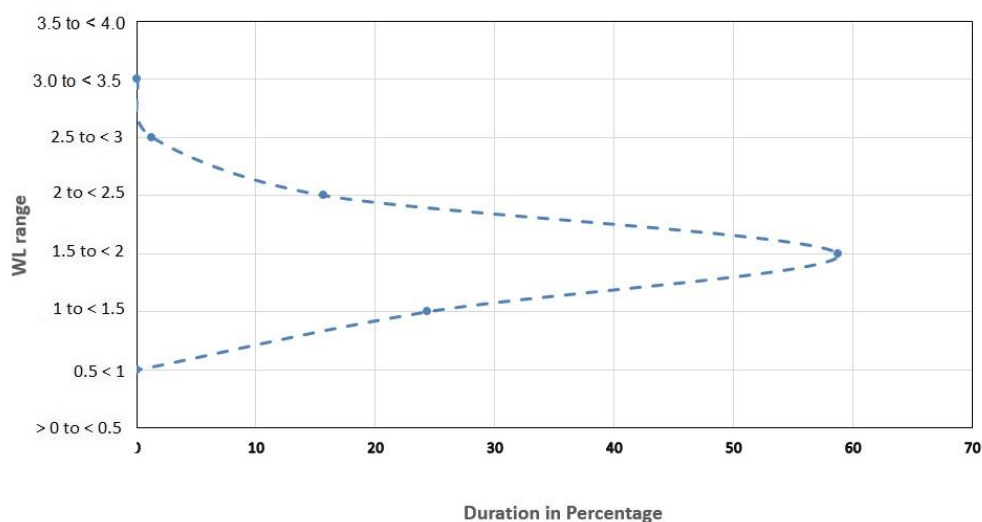


Figure AA-4. Sulipan WL percent duration curve (2019)

Mexico WL % duration in 2019

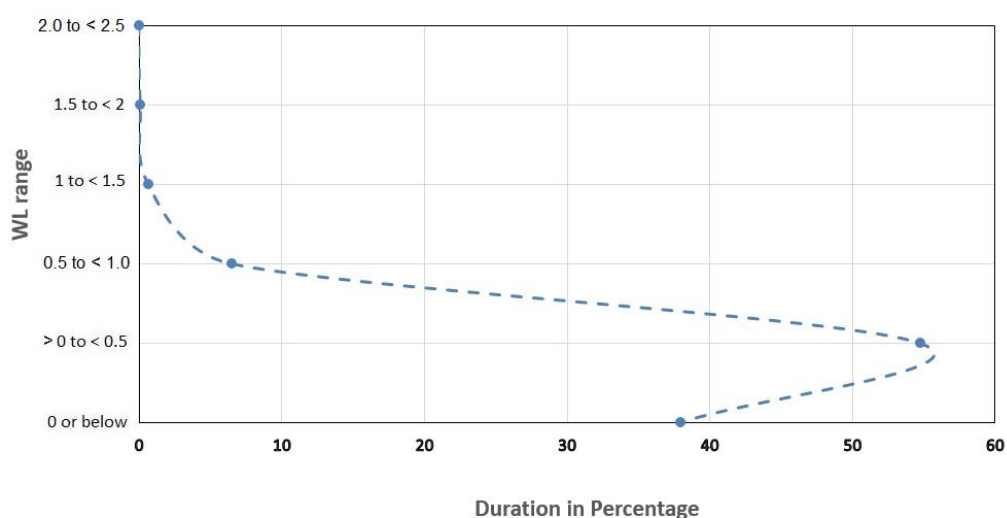
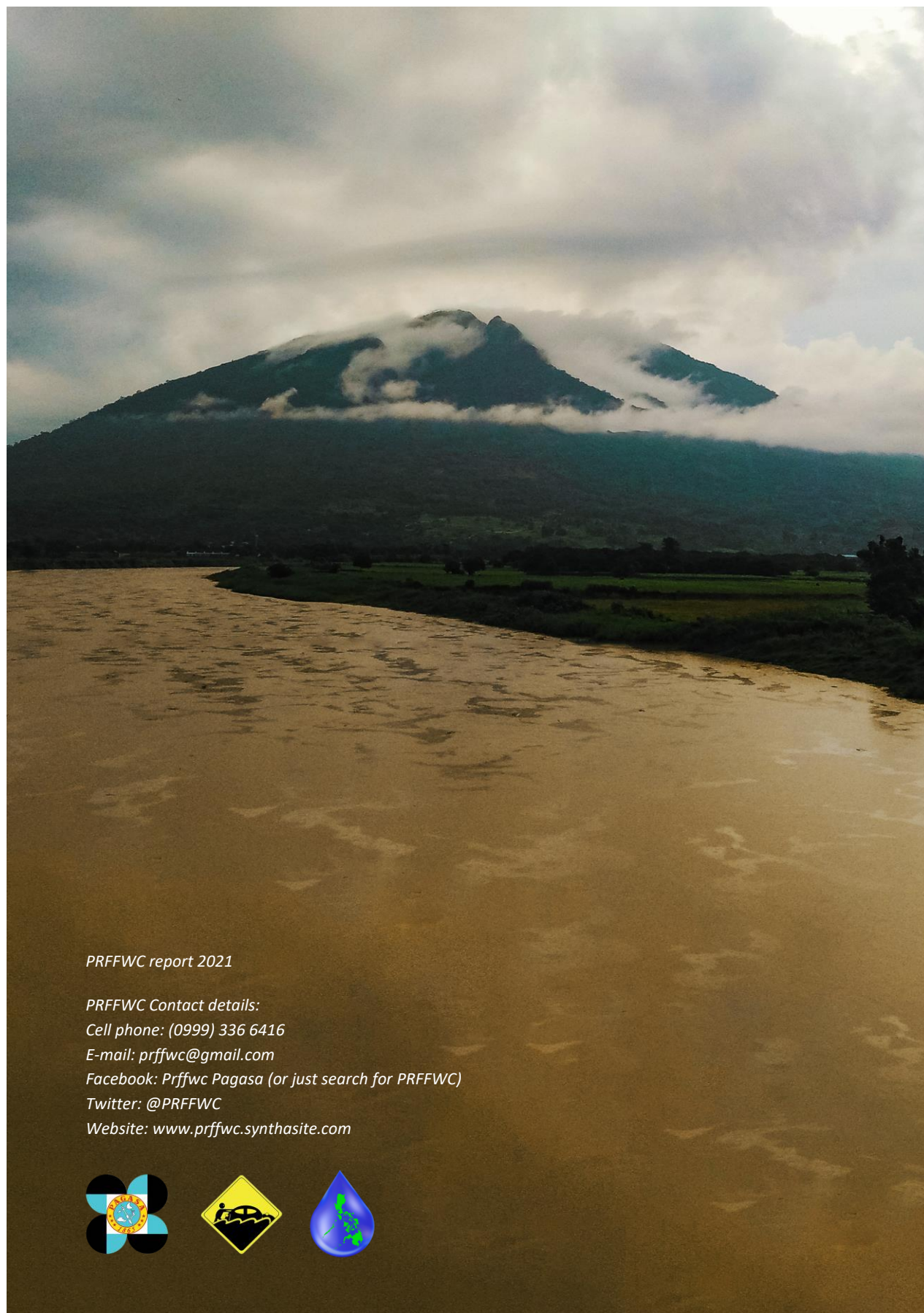


Figure AA-5. Mexico WL percent duration curve (2019)

Note: Water Level percent duration curves for some of the streamgaging stations for the year 2019 were produced. San Isidro, Peñaranda, Zaragoza, Sulipan and Candaba streamgaging stations were not included due to non-continuity of river stage information during the year. San Isidro and Peñaranda stations' have many "0" gage readings and gauge should be lowered further, say 1 to 2 meters down, to have more low flow observations. Likewise, Sapang Buho and Mexico stations' gages should also be adjusted further below its present "0" gage reading. On the other hand, Zaragoza, Sasmuan and Candaba have quite a number of gaps and breaks, and erroneous records that were deleted from the data series.



PRFFWC report 2021

PRFFWC Contact details:

Cell phone: (0999) 336 6416

E-mail: prffwc@gmail.com

Facebook: [Prffwc Pagasa](#) (or just search for PRFFWC)

Twitter: [@PRFFWC](#)

Website: www.prffwc.synthasite.com

