



CLIMATE SUMMARY June 2018

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HIGHLIGHTS

- ◆ Generally, 'Below Average' rainfall was experienced for the month of June. **Pg. 1 & 2**
- ◆ The month of June was observed to have temperatures as low as 15.9°C. **Pg. 3**
- ◆ Easterlies remain the dominant wind direction with persisting light winds (1-10km/hr). **Pg 4 & 5**
- ◆ ENSO status still within neutral levels, however recent model suggests the highly likely possibility of an El Nino occurring late this year. **Pg 6**
- ◆ Underneath the Ocean surface, warm anomalies have completely displaced the cooler waters due to the continuous eastward propagation of warm waters from the west. **Pg 6**

ISSUED: JULY 2018

Figure 1: SPCZ Position in June 2018

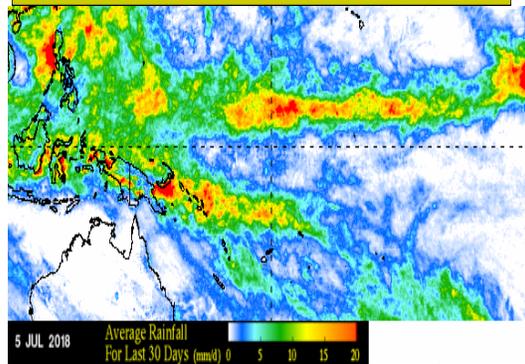
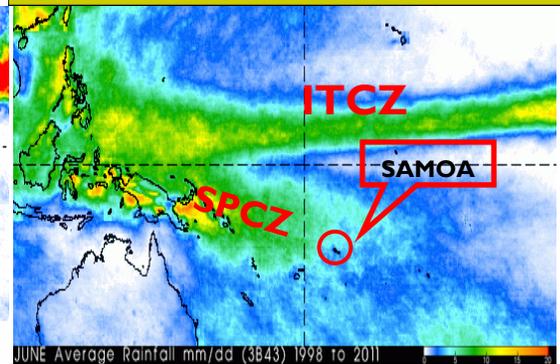


Figure 2: Normal Position of SPCZ in June



GLOBAL SCALE OBSERVATIONS

Prior to its normal June position, the ITCZ was observed to have shifted northward, while becoming more active over the Central Equatorial region. The South Pacific Convergence Zone (SPCZ), on the other hand was disorganised with most of its activities strengthening in the west. Hence why Samoa received minimal rainfall for the month of June.

LOCAL SCALE OBSERVATIONS

The Samoa Islands generally received below average rainfall. The highest precipitation of 192.4mm was recorded at Nuusuatia, with the second highest at Togitogiga with 191.2mm. In addition, Togitogiga station also received the highest one day fall of 83.2mm on the 29th, with the second highest of 53.8mm at Nuusuatia station. The driest station however was Falelima, with only 32.6mm, with the second lowest at Aopo of 53.0mm. Furthermore, Table 1 shows that 3 stations received "average" rainfall, 14 stations received "below average" rainfall, and 6 stations registered "well below average". A graph is displayed on page 7 where rainfall received in June 2017 is plotted against rainfall received in June 2018.

Table 1: Rainfall Statistics in June 2018

This table displays the rainfall status of all stations in the country in June 2018

Stations	June Rainfall (mm)	June 30 Year Long Term Average	% of Average	1 day fall (mm)	Date	# of Rainy Days	Rainfall Status
UPOLU							
Afiamalu	145.6	185	79	35.0	17 th	20	Below Average
Alafua	101.9	103	99	44.1	28 th	14	Average
Apia	96.6	132	73	36.0	09 th	14	Below Average
Faleolo	72.7	85	86	18.0	22 nd	11	Average
Gagaifo Lefaga	180.8	290	62	45.6	17 th	14	Below Average
Laulii	88.8	171	52	24.1	23 rd	06	Below Average
Leauvaa	82.8	215	39	25.8	28 th	14	Well Below Average
Lepa	63.4	310	20	16.6	22 nd	17	Well Below Average
Lotofaga	151.4	265	57	20.8	29 th	23	Below Average
Nafanua	93.1	359	26	21.3	28 th	17	Well Below Average
Nuusuatia	192.4	323	60	53.8	17 th	14	Below Average
Saleilua	98.1	515	19	47.6	29 th	14	Well Below Average
Saoluafata	95.4	231	41	26.8	22 nd	24	Below Average
Savalalo	80.4	132	61	32.0	09 th	15	Below Average
Tiavea	133.0	315	42	28	08 th	24	Below Average
Togotogiga	191.2	347	55	83.2	29 th	23	Below Average
Vailoa	59.8	153	39	7.6	21 st	28	Well Below Average
Savaii							
Aopo	53.0	99	54	28.2	24 th	10	Below Average
Falelima	32.6	101	32	7.6	25 th	11	Well Below Average
Salailua	125.6	149	84	48.8	30 th	12	Average
Samalaeulu	112.8	142	79	15	21 st	21	Below Average
Tuasivi	64.0	148	43	17.2	19 th	13	Below Average
Vaiaata	153.8	267	58	25.4	19 th	25	Below Average

Well Below Average
<40%

Below Average
40%-80%

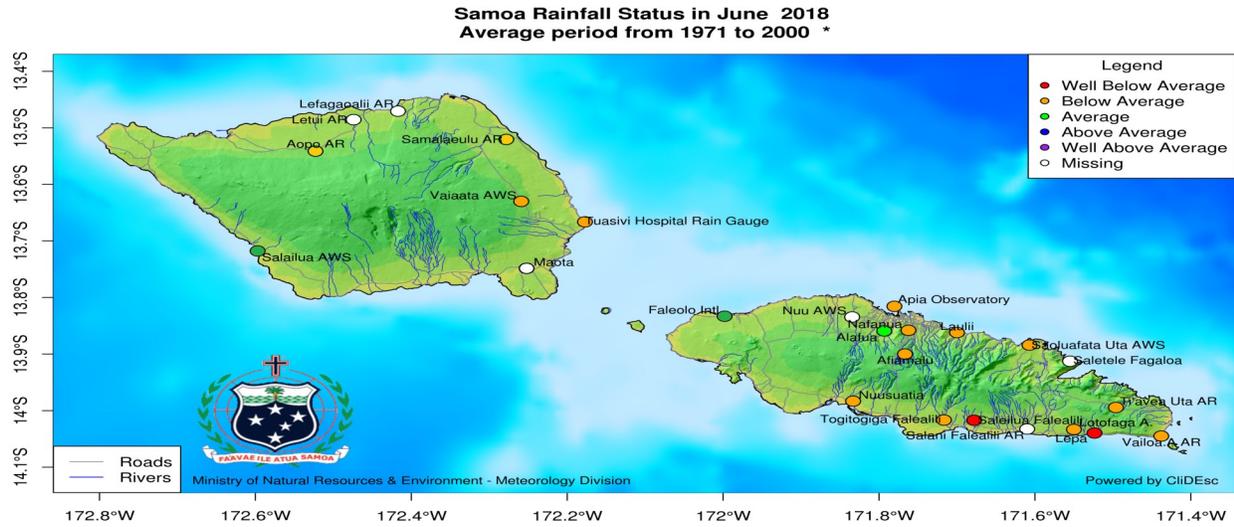
Average
80%-120%

Above Average
120%-160%

Well Above Average
>160%

Figure 3: Rainfall Status Map in June 2018

This rainfall map is generated using observation data from Table 1



* Newer stations use only data that is available as they do not have enough for a 30 year average

TEMPERATURE

Table 2: Air Temperature Statistics

This table displays the temperature statistics recorded across stations in June 2018

Stations	Temperature (Degree Celsius)				
	Mean Daily Temperature (°C)	Extreme Temp Max (°C)	Date	Extreme Temp Min(°C)	Date
Faleolo	N/A	N/A	N/A	21.5	14 th
Afiamalu	22.5	28.7	16 th	15.9	11 th
Apia	N/A	N/A	N/A	21.5	01 st
Alafua	27.2	33.0	21 st	17.5	16 th
Togitogiga	N/A	N/A	N/A	20.5	01 st
Vaiaata	27.9	32.5	08 th	21.9	27 th

N/A = Data Not Available

The warmest daytime temperature of 33°C was recorded on the 21st at Alafua station, with Vaiaata being the second warmest of 32.5°C. On the contrary, Afiamalu station registered the coolest night time temperature of 15.9°C on the 11th. Mean daily temperatures ranged from 22.5°C to 27.9°C for June 2018.

ATMOSPHERIC PRESSURE

Table 3: Atmospheric Pressure at Mean Sea Level (MSL)

This table displays the atmospheric statistics recorded across two stations in June 2018

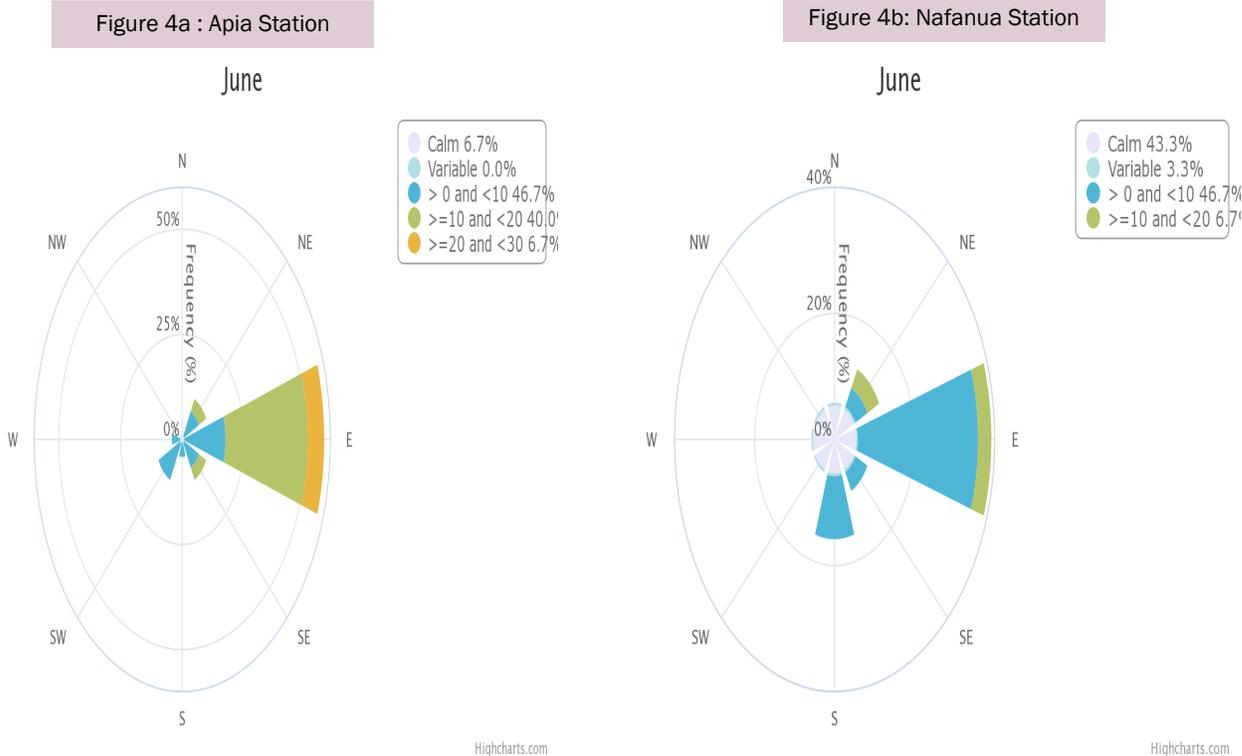
Station	Highest MSL Pressure (hPa)	Date	Lowest MSL Pressure (hPa)	Date	Average MSL Pressure (hPa)
Apia	1015.4	06 th	1011.1	03 rd	1013.7
Faleolo	1015.7	06 th	1011.5	03 rd	1014.0

Faleolo registered the highest MSL pressure of 1015.7 hpa on the 06th of June. On the other hand, the lowest MSL pressure of 1011.1 hPa was recorded on the 03rd at Apia station. (Note: High pressure systems associate with good weather conditions whereas low pressure systems associate with bad weather conditions)

WIND

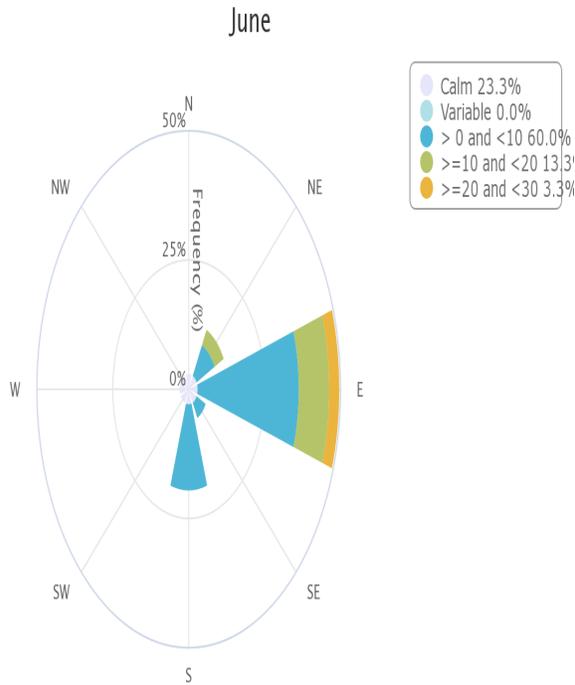
Figure 4: Wind Speed and Directions

The following diagrams show the different wind speed and direction that recorded daily at 9am across the country in June 2018.



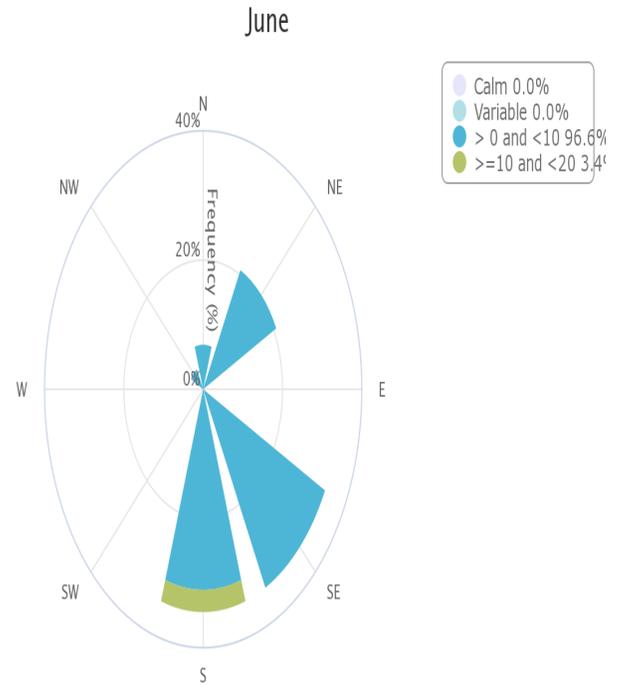
Easterly winds were observed to be the dominant wind directions for both Apia (Figure 4a) and Nafanua (Figure 4b) stations. There were also noticeable South and North Easterly winds throughout the month of June. Moreover, calm winds (1-10km/hr) were the predominant wind speeds for both Apia and Nafanua station.

Figure 4c : Afiamalu Station



Highcharts.com

Figure 4d: Vaiaata Station



Highcharts.com

June statistics show Easterly winds as the dominant wind direction at Afiamalu station (Figure 4c), with predominant light winds (1-10km/hr).

On the other hand, Vaiaata station, recorded South to South Easterly winds as the dominant wind directions, with some North to North Easterly winds registered for the month of June. In addition, light winds were registered as the most occurring wind speed at Vaiaata station.

EL NINO SOUTHERN OSCILLATION (ENSO)

CURRENT ENSO STATUS

Although the current El Niño Southern Oscillation remains at neutral state (Neither El Niño nor La Niña), climate models suggest a high probability (approximately a 50% chance) of a weak El Niño developing in the coming months, later on this year.

Figure 5: Sea-surface Temperature

Sea surface temperature anomaly: 01/06/2018 to 30/06/2018

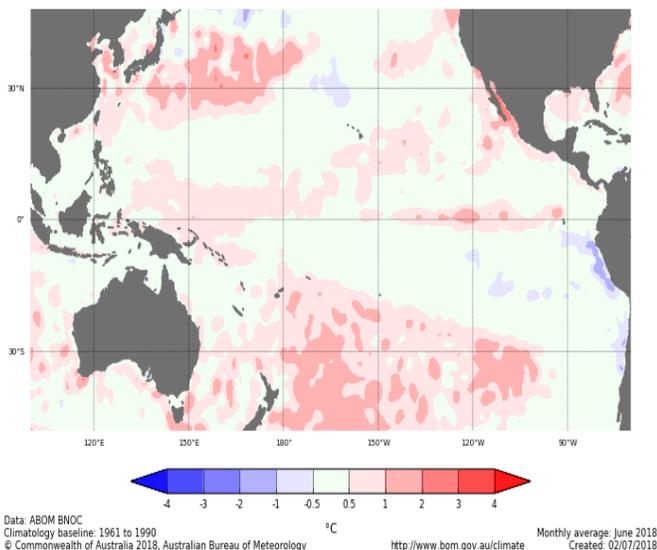
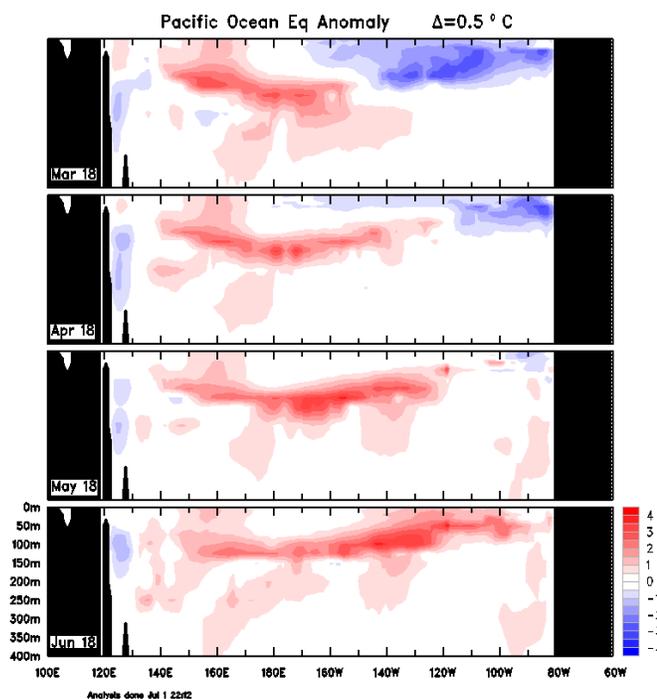


Figure 6: Sub-surface Temperature



Atmospheric Indicator of ENSO

Southern Oscillation Index (SOI)

For June, the 30 day Southern Oscillation value to the 1st of July was -6.2 , with the 90 day value of -0.8 . Both values are within neutral level, but slightly leaning towards El Niño values.

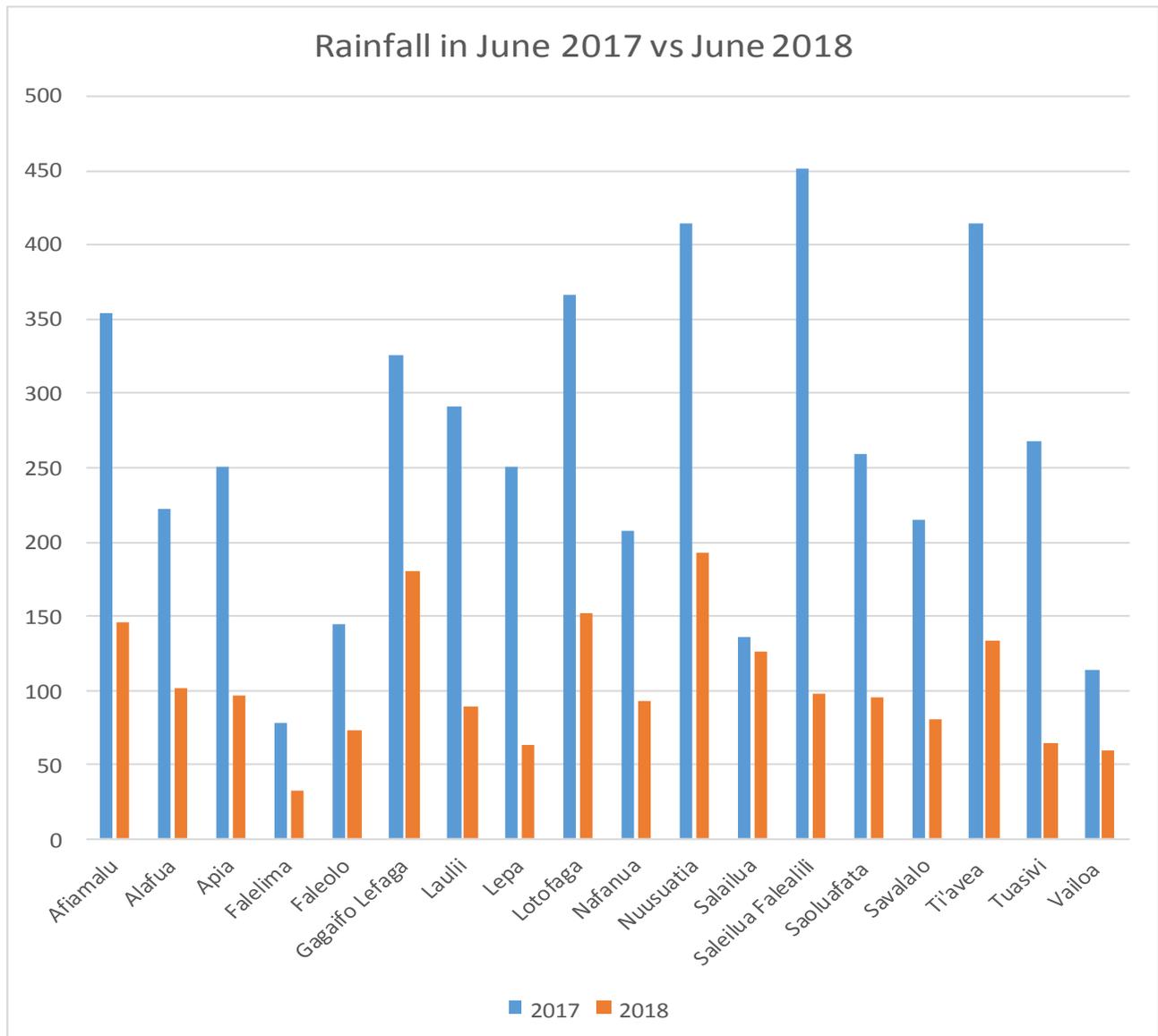
(Sustained positive values of the SOI above +7 indicate La Niña. Whereas sustained negative values below -7 indicate El Niño. Values within -7 and +7 shows neutral conditions.)

Figure 5 shows cooler than normal anomalies observed in the past month continue to weaken in the East Equatorial Pacific region due to warmer sea surface anomalies propagating eastward in the South Pacific region. Most of the warm anomalies concentrate between the 180° to the 100° W longitudes, South of the equator. The June value for NINO3 was $+0.4^\circ$ C, NINO3.4 was $+0.3^\circ$ C and NINO4 was $+0.4^\circ$ C.

When referred to Figure 6, the 4 month sequence of Sub Surface temperatures illustrates the eastward movement of warmer than normal anomalies. The continuous movement of warm waters below the sea surface have completely displaced the cooler waters in the Central and Eastern Equatorial region. This phenomenon will likely link to an El Niño developing in the coming months.

APPENDIX

Figure 7: Graphical representation of total monthly rainfall in June 2017 vs June 2018 in all rainfall stations.



A graphical representation of the comparison between precipitation received in June 2017 vs June 2018 clearly shows that June 2017 experienced more rainfall activity.