



CLIMATE SUMMARY OCTOBER 2018

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HIGHLIGHTS

- ◆ The month of October generally received “Above Average.” rainfall. **Pg. 1 & 2**
- ◆ Temperatures as low as 17.2°C was recorded at Afiamalu station. **Pg. 3**
- ◆ Strong gustily winds travelling more than 40km/hr were recorded for most stations.
- ◆ Although the ENSO status is neutral, Sea Surface temperatures continue to warm towards El Nino thresholds. A 70% chance of such an event to happen puts the Bureau ENSO Outlook at “El Nino Alert” **Pg 6**
- ◆ Sub surface temperatures show a column of warm waters expanding to depths of 300 meters in the Central Equatorial region continue to strengthen, while cooler waters weakened significantly in the East. **Pg 6.**

ISSUED: NOVEMBER 2018

Figure 1: SPCZ Position in October 2018

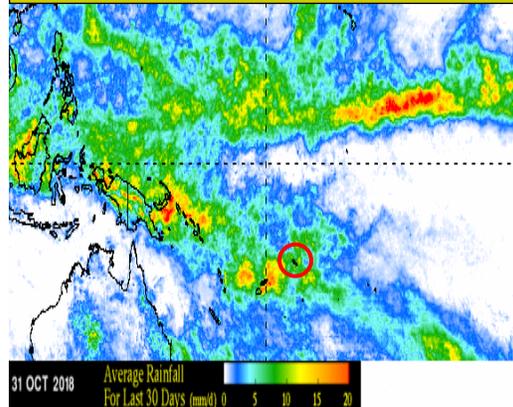
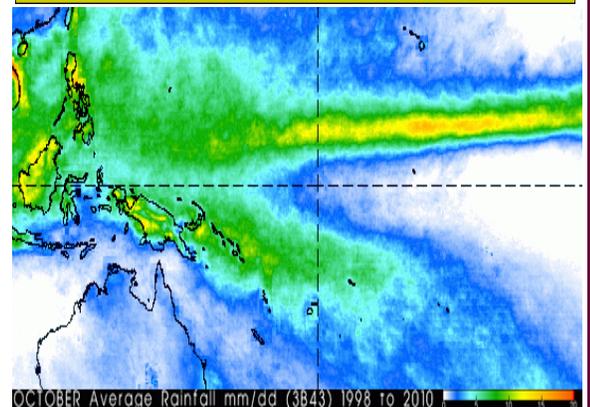


Figure 2: Normal Position of SPCZ in October



GLOBAL SCALE OBSERVATIONS

The Inter Tropical Convergence Zone was seen to be slightly more active than normal, and was generally positioned further north of the equator. The enhancement of dry surges both from the Eastern Equatorial region and the West helped confined the South Pacific Convergence Zone over our forecast zone, providing significant amount of rainfall for Samoa. . The weather summary also highlighted that although October was dominated by the Easterly Wind Flow, the fluctuation of the SPCZ northward and Southward of its normal axis helped intensify precipitation activity for our region.

LOCAL SCALE OBSERVATIONS

In contrast with the previous month, sufficient amount of rainfall was recorded for most station. The transition of the dry season to the wet season was evident for the month October, as seen on Table 1. The statistics showed Saleilua as the wettest station, having received 776.0mm of precipitation, with the second wettest station at Togitogiga, recording 740.2mm. An active convergence zone brought heavy downpours on the 21st, where Gagaifo Lefaga collected 238.8mm of rainfall in just 24 hours. On the other hand, the driest station was registered at Faleolo, receiving 99.9 mm, with the second driest at Salailua, receiving 142.8mm for the month of October. In addition, only 1 station recorded “Well Below Average”, 4 stations with “Below Average”, 4 other stations with “Average”, 3 stations registered “Above Average” with 5 more stations recording “Well Above Average” rainfall.

Table 1: Rainfall Statistics in October 2018

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

Stations	October Rainfall (mm)	October 30 Year Long Term Average	% of Average	1 day fall (mm)	Date	# of Rainy Days	Rainfall Status
UPOLU							
Afiamalu	464.1	348	133	88.0	10 th	22	Above Average
Alafua	209.0	162	129	55.8	10 th	22	Above Average
Apia	199.9	226	88	50.7	21 st	17	Average
Faleolo	99.9	160	62	30.4	21 st	10	Below Average
Gagaifo Lefaga	641.4	301	213	238.8	21 st	19	Well Above Average
Laulii	272.5	361	75	69.7	4 th	09	Below Average
Lepa	600.0	276	217	129.8	20 th	22	Well Above Average
Lotofaga	506.6	294	172	116.4	21 st	23	Well Above Average
Matautu Falelatai	245.8	348	71	84.7	21 st	16	Below Average
Nafanua	276.6	249	111	65	21 st	19	Average
Nuusuatia	600.0	347	173	137.2	20 th	20	Well Above Average
Saleilua	776.0	311	250	213.0	21 st	18	Well Above Average
Saletele	147.4	401	37	43.4	02 nd	24	Well Below Average
Togitogiga	740.2	496	149	192.4	21 st	29	Above Average
Savaii							
Aopo	196.6	235	84	34	26 th	16	Average
Maota	243.4	255	95	40	27 th	14	Average
Salailua	142.8	241	59	52.2	21 st	23	Below Average

Well Below Average
<40%

Below Average
40%-80%

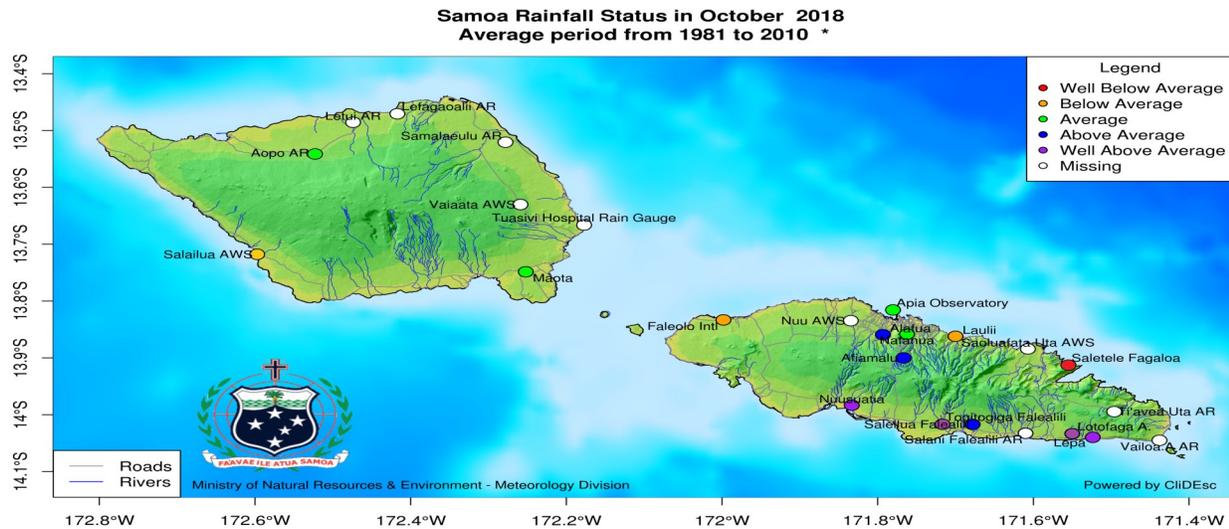
Average
80%-120%

Above Average
120%-160%

Well Above Average
>160%

Figure 3: Rainfall Status Map in October 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 October 2018

Stations	Temperature (Degree Celsius)				
	Mean Daily Temperature (°C)	Extreme Temp Max (°C)	Date	Extreme Temp Min(°C)	Date
Afiamalu	22.8	28.0	30 th	17.2	26 th
Apia	27.4	31.1	30 th	22.6	01 st
Alafua	N/A	N/A	N/A	20.5	08 th
Faleolo	N/A	N/A	N/A	21.0	08 th
Saolufata	26.7	32.5	31 st	20.6	01 st
Vaiaata	27.6	33.7	31 st	22.3	01 st

N/A = Data Not Available

Due to a cross equatorial northerly flow, the last week of October experienced warm temperatures and humid weather conditions, as seen in table 2. Nonetheless, mean daily temperatures ranged from 22.8°C to 27.6°C. Vaiaata station registered the warmest temperature of 33.7°C on the 31st. On the other hand, Afiamalu recorded the coolest of 17.2°C on the 26th of October.

ATMOSPHERIC PRESSURE

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

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

Station	Highest MSL Pressure (hPa)	Date	Lowest MSL Pressure (hPa)	Date	Average MSL Pressure (hPa)
Apia	1015.2	15 th	1010.9	22 nd	1012.9
Faleolo	1015.3	15 th	1009.7	23 rd	1013.0

Both stations registered their highest MSL pressure on the 15th of October, with the highest of 1015.3hPa at Faleolo station. The lowest pressure of 1009.7hPa was also recorded at Faleolo station. In addition, the weather summary stated that from the 21st to the 22nd, an active Convergence Zone migrating from the south brought sufficient torrential rainfall, triggered by an upper level trough. (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 October 2018.

Figure 4a : Apia Station

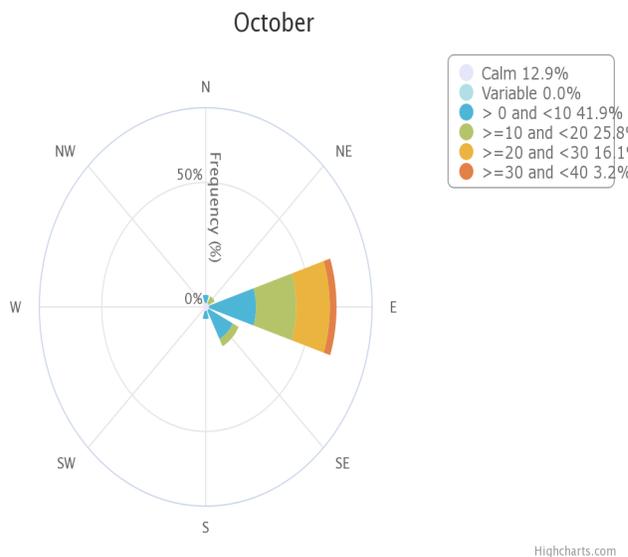


Figure 4b: Faleolo Station

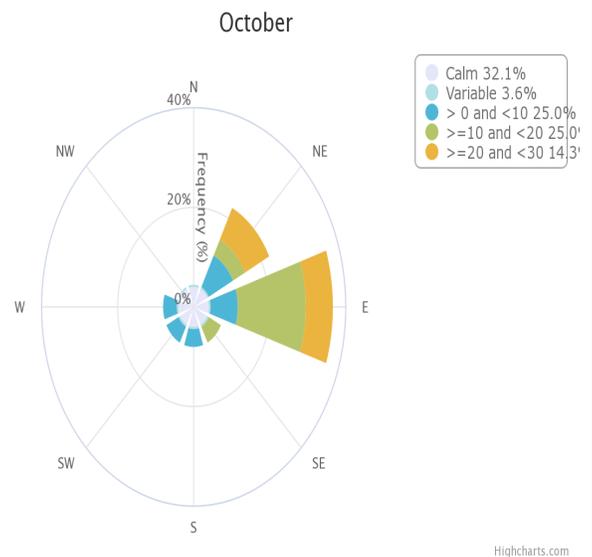


Figure 4a illustrates the dominance of the Easterlies for the month of October, with sustaining light winds (1-10km/hr). Moderate to Strong winds were also evident during the month for Apia station.

Faleolo station (Figure 4b) registered variable wind directions, with predominant Easterly winds. Light (1-10km/hr) to moderate (11-20 km/hr) wind speed were observed to influence the station for most of October.

Figure 4c : Afiamalu Station

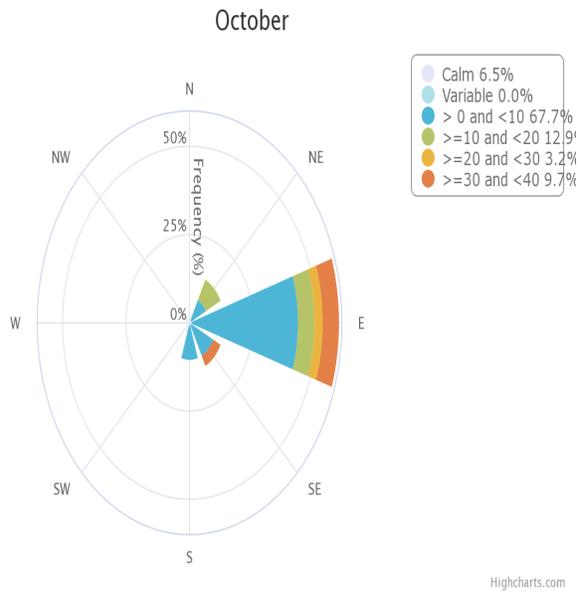
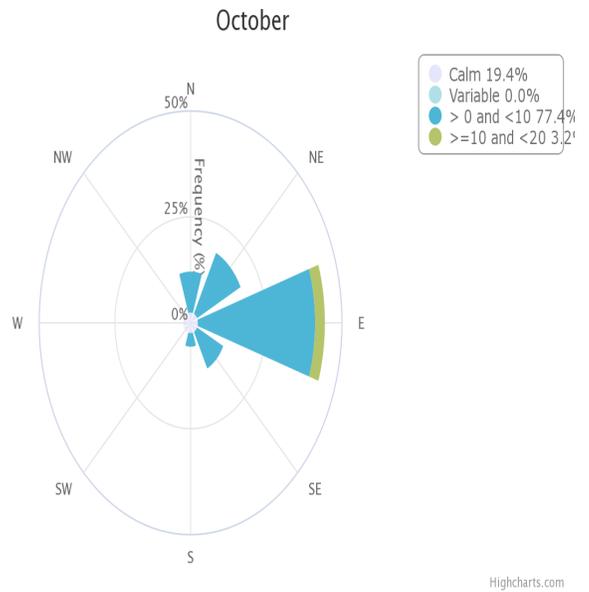


Figure 4d: Nafanua Station



Easterly winds were recorded as the most occurring wind direction at Afiamalu station (Figure 4c). In spite of experiencing gusts of more than 30km/hr, light winds (1-10km/hr) were still dominant for the highland station.

On the other hand, Nafanua station noted variable wind directions, with the dominance of easterly winds (Figure 4d) . We can also extract from the graph that Light winds (1-10km/hr) were registered as the most occurring wind speeds at Nafanua station. Convective activities with some low pressure systems that developed over the islands provided sufficient rainfall and strong winds of up to 40km/hr.

EL NINO SOUTHERN OSCILLATION (ENSO)

CURRENT ENSO STATUS

Our ENSO status as of now still remains neutral. As observed in the previous months, Sea Surface temperatures continue to warm towards El Nino thresholds, sustaining the Bureaus ENSO Outlook at 'El Nino Alert' in the coming months.

Oceanic Indicator of ENSO

Figure 5: Sea Surface Temperature in October 2018

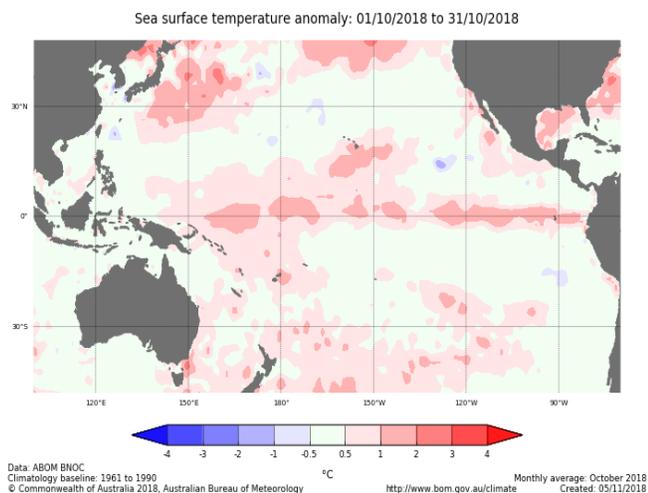
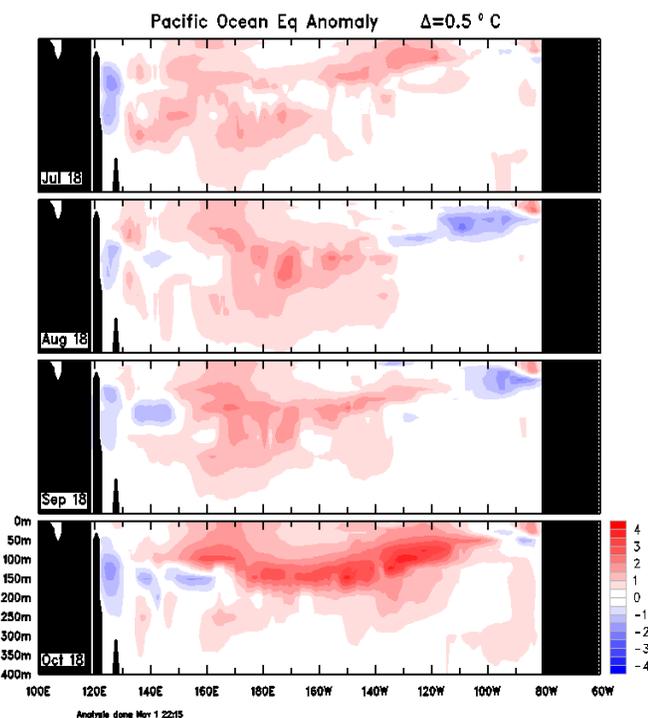


Figure 6: Sub-surface Temperature



Atmospheric Indicator of ENSO

Southern Oscillation Index (SOI)

The 30 day Southern Oscillation Index (SOI) to the 5th of November was +3.0, with the 90 day value of -4.3. these values indicate that a trigger for an El Nino to occur is still absent, due to an unclear signal from the SOI.

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

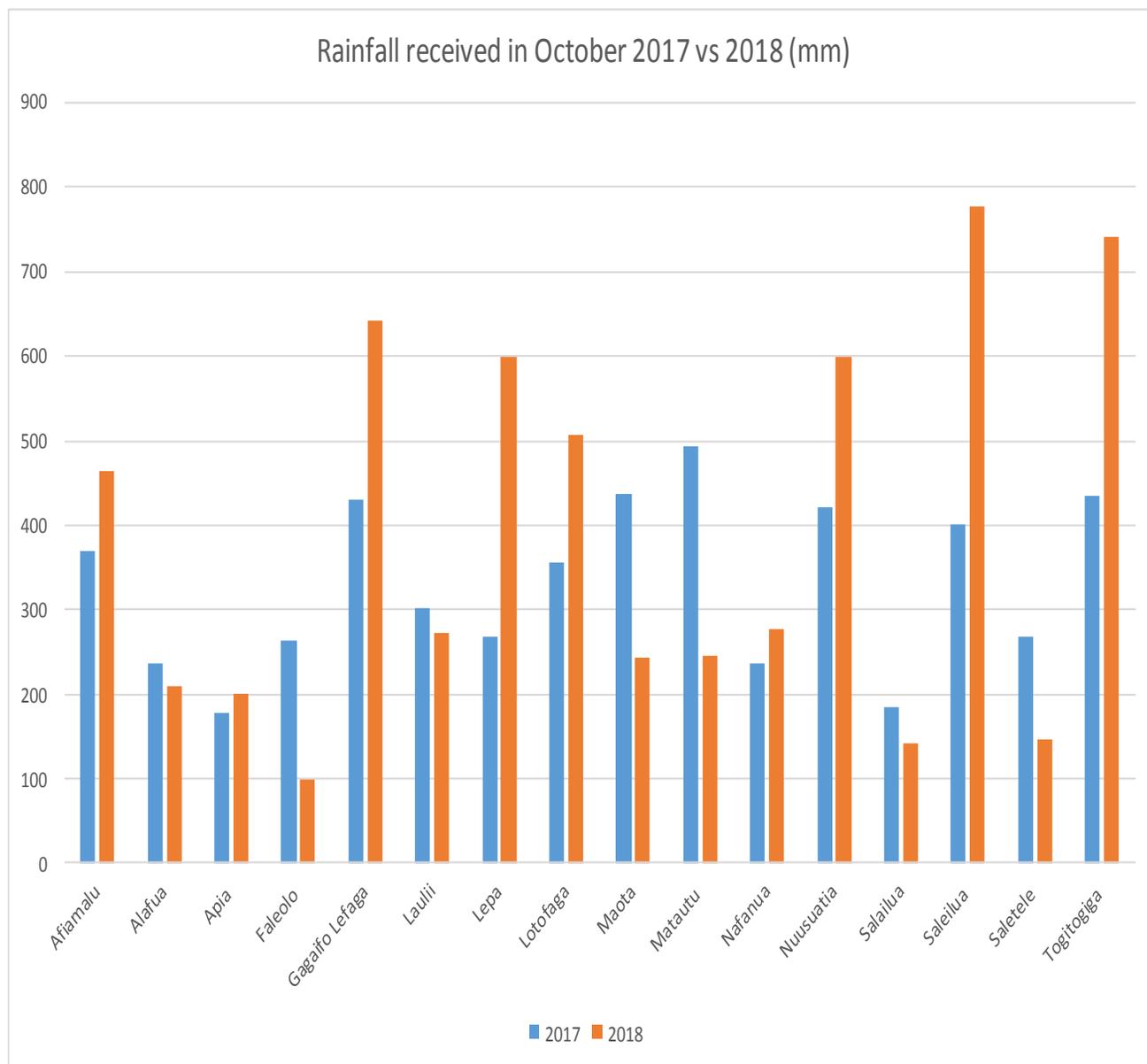
Sea surface temperatures for the month of October were seen to be warmer than normal along the equatorial region, and on both sides for the equator as well. The South Pacific region also experienced warmer anomalies throughout the month.

Our Nino Indices showed a slight increase in temperature, with Nino 3 at + 0.8°C, Nino 3.4 at +0.8°C and Nino 4 at +0.9°C.

A significant increase in warm anomalies were observed for the month of October. In Figure 6, the 4 month sequence showed the enhancement of warm anomalies in the Equatorial region, and continue their Eastward propagation. On the contrary, cooler anomalies have notably weakened in the Eastern Equatorial region. Models therefore still suggest the possibility of an El Nino to occur later on this year, or early 2019.

APPENDIX

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



A comparison between precipitation received in the previous year and the current showed that October 2018 was wetter than 2017. according to the weather summary for October 2018, an active cloud band with the association of a surface convergence contributed to a fair amount of rainfall in the first week of the month.