CLIMATE SUMMARY OCTOBER 2019

Samoa Meteorology Division

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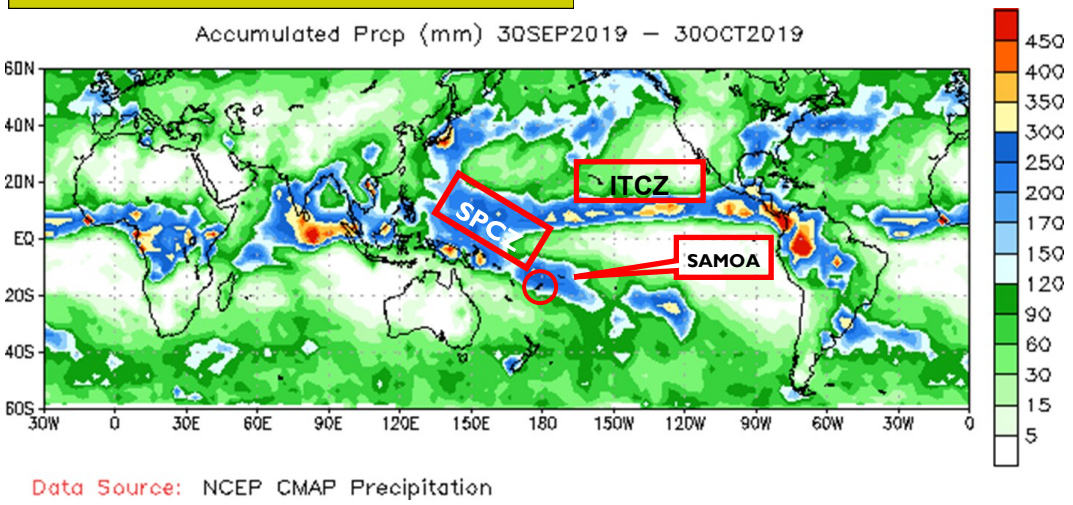
HIGHLIGHTS

- Generally, "average to below average" recorded in October 2019. **Pg 1 & 2**
- The warmest temperature of 32.0^{0}C was registered on the 25th at Saoluafata. **Pg 3**
- Easterly winds remain dominant for most of the areas with gentle winds (11—20 km/hr) mostly recorded throughout the month. **Pg 4 & 5**
- El Nino Southern Oscillation (ENSO) remains Neutral for the remainder of the year. **Pg 6**
- Warm sub surface temperatures have intensified by 1^{0}C in the equatorial region from 140E to 120W longitude. **Pg 6**

Figure 1: SPCZ Position in October 2019



GLOBAL SCALE OBSERVATIONS

The Inter-tropical Convergence Zone (ITCZ) is evident on the north of the equator across the Pacific. It is also connected to a mass convection that is located in the western region within the 10N and 150E. The South Pacific Convergence Zone (SPCZ) in the south Pacific is evident from Papua New Guinea (PNG) to the Solomon Islands; bisecting Fiji and Samoa and extending further southeast towards the southern Cook Islands.

LOCAL SCALE OBSERVATIONS

The rainfall status in October was generally 'below average' to 'average' recorded across the country. Lepa station registered the highest total of 367.5mm followed by the second highest total of 328.8mm at Saoluafata and 321.0mm at Laulii. The lowest monthly total was received at Aopo, Savaii with only 78.8mm and 124.9mm as the second lowest received at Faleolo station. The northern station registered their highest one day fall within 9th & 10th period while the southern stations experienced substantial rain within the period of 29th & 30th of October.

Table 1: Rainfall Statistics in October 2019

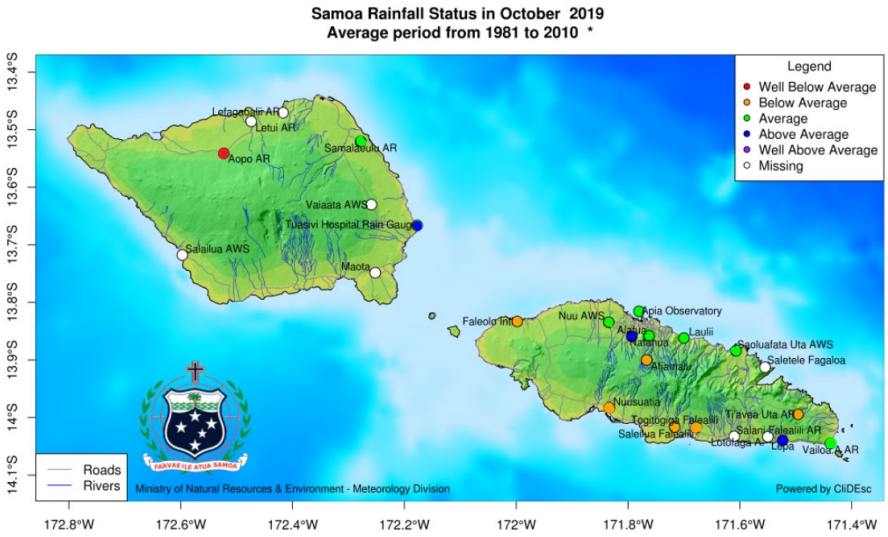
This table displays the rainfall status of all stations in the country in October 2019

Stations	October Rainfall (mm)	October 30 Year Long Term Average	% of Average	1 day fall (mm)	Date	# of Rainy Days	Rainfall Status
UPOLU							
Afiamalu	230.7	326	71	49.8	09th	19	Below Average
Alafua	216.5	172	125	83.2	09th	17	Above Average
Apia	229.2	204	112	59.8	10th	17	Average
Faleolo	124.9	312	40	60.2	10th	12	Below Average
Laulii	321.0	346	93	90.9	09th	19	Average
Leauvaa	182.8	385	47	71.0	10th	151	Below Average
Lepa	367.5	294	125	122.4	29th	19	Above Average
Nafanua	221.6	242	92	86.6	09th	18	Average
Nuu	178.4	172	103	50.4	10th	11	Average
Nuusuatia	130.8	270	48	38.8	29th	17	Below Average
Saleilua	275.6	494	55	56.2	29th	19	Below Average
Saoluafata	328.8	389	84	85.6	17th	21	Average
Tanumapua	198.4	385	51	33.2	30th	25	Below Average
Ti'avea	206.2	317	65	50.6	10th	23	Below Average
Togitogiga	230.6	494	46	34.0	30th	31	Below Average
Vailoa.A	239.2	212	113	77.0	29th	15	Average
SAVAII							
Aopo	78.8	235	33	22.2	10th	10	Well Below Average
Falelima	139.2	150	93	53	22nd	17	Average
Samalaeulu	262.4	245	107	46.2	27th	21	Average
Tuasivi	223.2	160	139	53.4	27th	16	Above 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 2019

This rainfall map is generated using observation data from Table 1



TEMPERATURE

Table 2: Air Temperature Statistics

This table displays the temperature statistics recorded across stations in October 2019

Stations	Max Temperature (^{0}C)		
	Mean Daily Temperature (^{0}C)	Extreme Temp Max (^{0}C)	Date
Apia	27.2	31.1	25th
Saoluafata	26.8	32.0	25th
Nuu	25.8	31.4	5th

Stations	Min Temperature (^{0}C)	
	Extreme Temp Min(^{0}C)	Date
Apia	22.1	11th
Saoluafata	25.6	1st
Faleolo	21.7	5th
Afiamalu	**15.4**	3rd
Nuu	19.4	6th
Alafua	20.5	11th

The mean daily temperatures across the country in October ranges from 25.8^{0}C to 27.2^{0}C. The highest recorded maximum temperature was 32.0^{0}C at Saoluafata on the 25th. Similarly, Apia also recorded its highest maximum of 31.1^{0}C on the same date. Conversely, the lowest recording temperature reading was 15.4^{0}C at Afiamalu on the 3rd of October followed by 19.4^{0}C registered at Nuu on the 6th.

ATMOSPHERIC PRESSURE

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

This table displays the atmospheric statistics recorded across two stations in October 2019

Station	Highest MSL Pressure (hPa)	Date	Lowest MSL Pressure (hPa)	Date	Average MSL Pressure (hPa)
Apia	1015.4	1st	1008.2	31st	1012.5
Faleolo	1015.8	1st	1008.3	31st	1012.7

The highest MSL Pressure recorded at Faleolo on the 1st with 1015.8hPa with the lowest pressure registered at Apia station - 1008.2hPa on the 31st. The average MSL pressure of 1012.5hPa and 1012.7hPa recorded at Apia and Faleolo respectively.

(Note: Generally, 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 2019.

Figure 4a : Apia Station

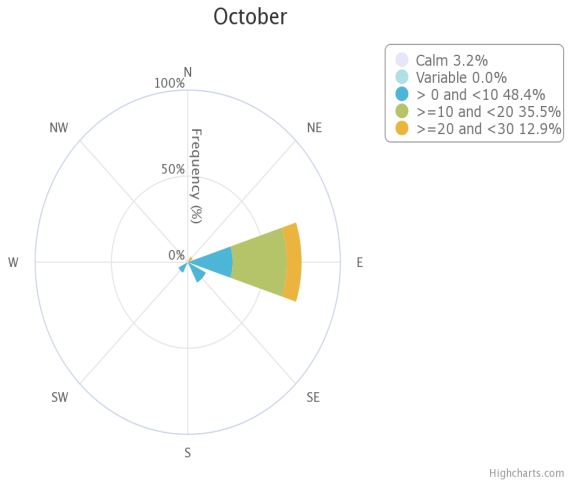
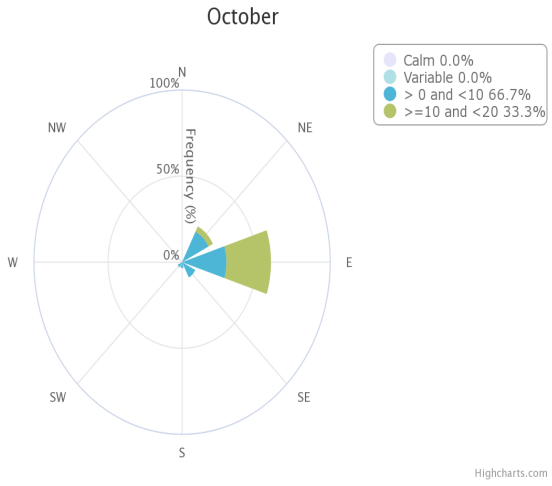


Figure 4b: Saoluafata Station



For October, the northern stations Apia and Saoluafata both experienced dominant easterly winds, with wind speeds of 1-10km/hr and 11-20km/hr occurring for most part of the month. Evidently, brief showers were recorded during the second and the third week of October due wind flow activities from the east.

Figure 4c : Afiamalu Station

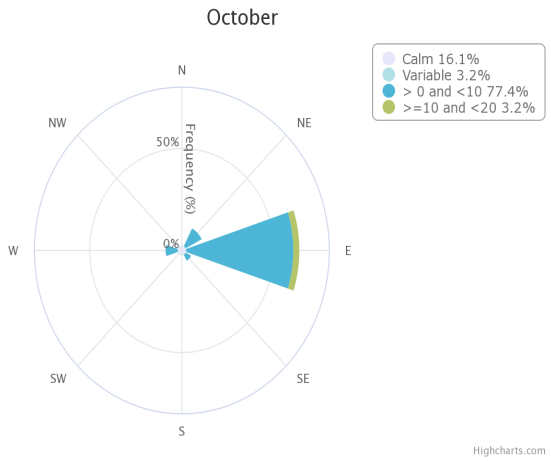


Figure 4d: Nafanua Station

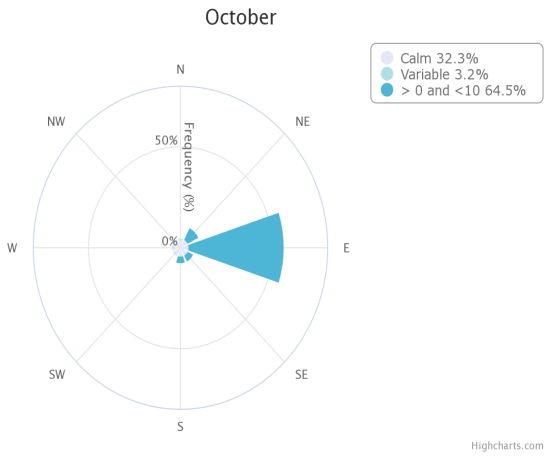


Figure 4e : Alafua Station

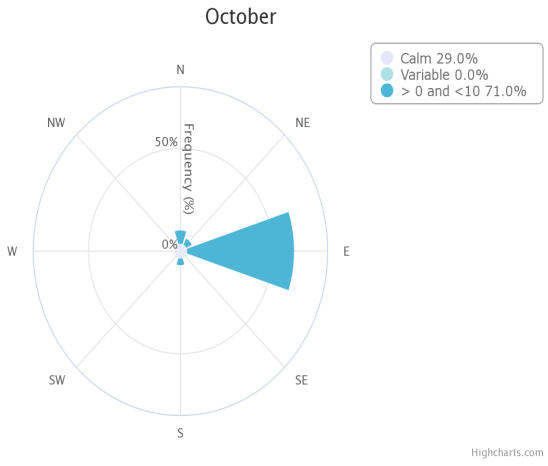
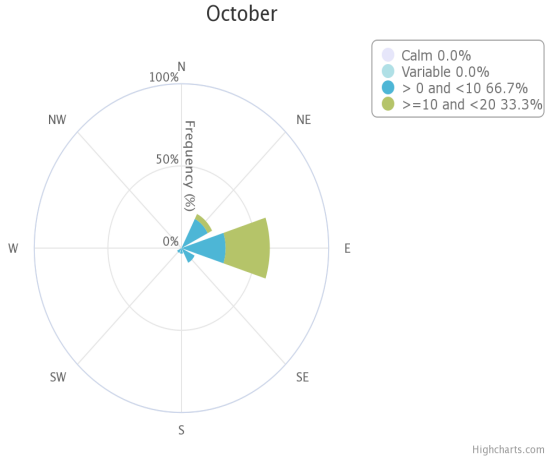


Figure 4f : Salailua Station



Afiamalu, Nafanua were influenced mainly by the light easterlies wind with a mixture of gentle breeze (11 - 20km/h) throughout October. According to observations, approximately 16—32% of the time Afiamalu and Nafanua recorded calm conditions respectively. Alafua station experienced similar conditions as well, having experienced slight breeze (1-10km/hr) 71% of October. In Savaii, Salailua station generally registered easterlies as well, with noticeable north easterlies as well. Although slight breeze (1-10km/hr) were presiding in October, gentle breeze (11-20km/hr) were also noticeable during the month.

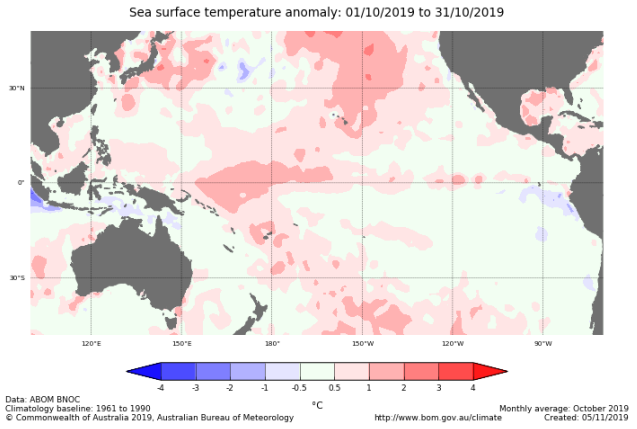
EL NINO SOUTHERN OSCILLATION (ENSO)

CURRENT ENSO STATUS

The neutrality of the El Nino Southern Oscillation (ENSO) persists for the month of October. Climate models indicate that the status will remain so for months to come, but will continue to monitor during the wet season.

Oceanic Indicator of ENSO

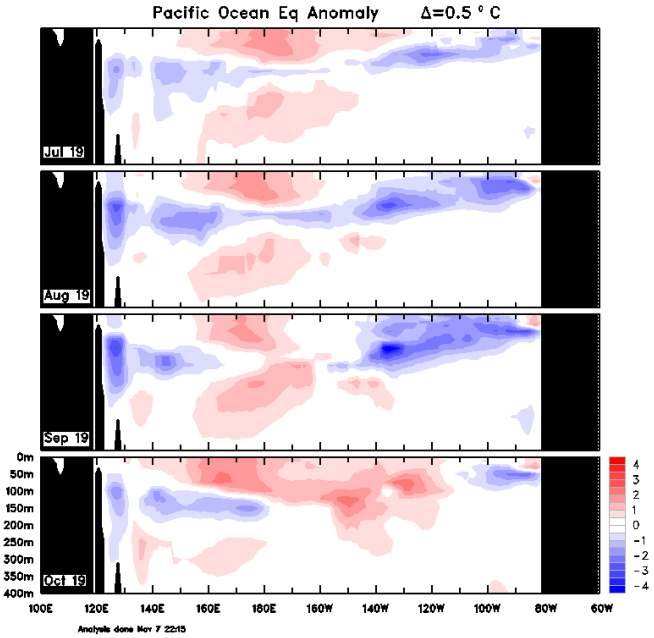
Figure 5: Sea Surface Temperature in October 2019



Warmer than average sea surface temperature (SST) were recorded in the equatorial region for October. An enhancement of these warm anomalies concentrated mostly to the western part of the equatorial region, affecting islands such as Vanuatu and Solomon Islands, and partially extending southward towards Fiji and Samoa. Despite the recent warming of SSTs, indicators still show that they are within neutral ENSO thresholds.

In addition, the October values have increased by more than 3^0C in comparison to September 2019 values. October values for Nino 3 were $+0.3^0$C, Nino 3.4 $+0.6^0$C and Nino 4 $+1.0^0$C.

Figure 6: Sub-surface Temperature



The four-month sequence of sub-surface temperature anomalies (to October) shows warm anomalies strengthening across most of the top 200 m of the central equatorial Pacific sub-surface, and cool anomalies weakening in the eastern part of the region towards the end of the 4 month period.

As of now, the behavior of the SSTs and Sub Surface temperatures have yet to lean towards El Nino nor La Nina levels in the last couple of months.

Atmospheric Indicator of ENSO

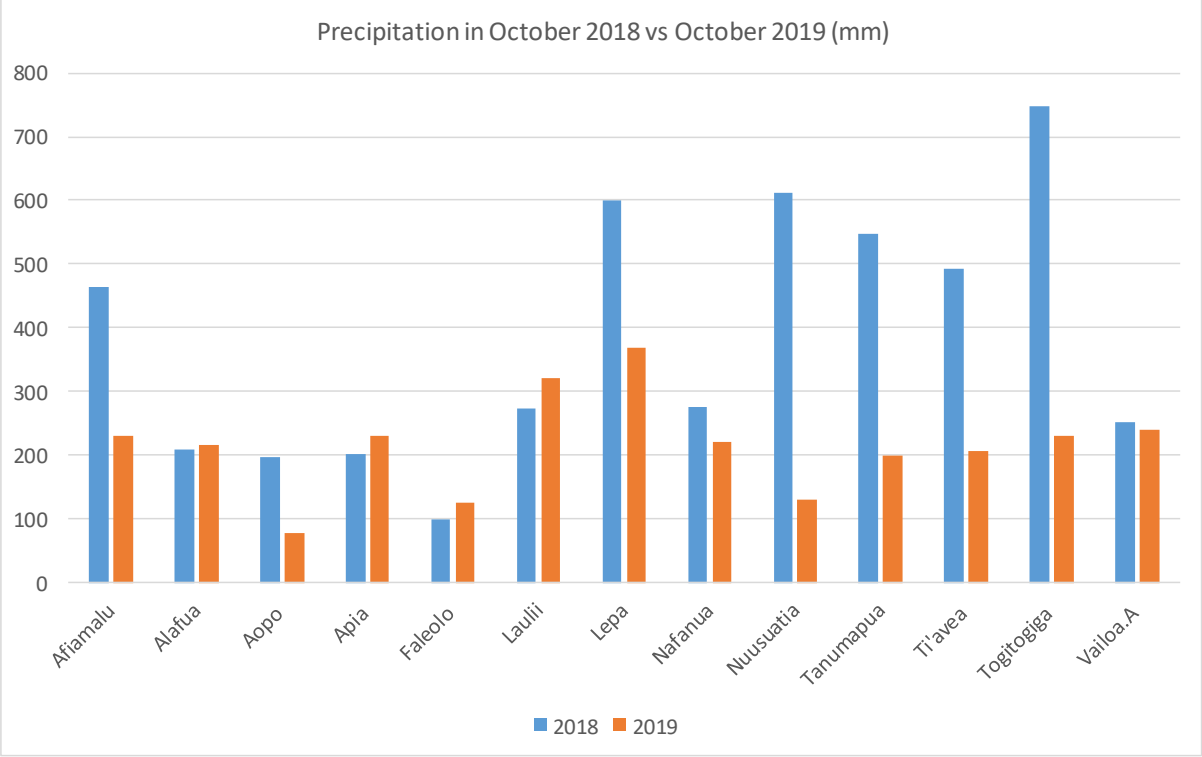
Southern Oscillation Index (SOI)

The approximate 30-day and 90-day Southern-Oscillation Index (SOI) values to 10 October were –5.7 and –9.1 respectively.

(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.)

APPENDIX

Figure 7: Graphical representation of total monthly rainfall in October 2018 vs October 2019 in all rainfall stations.



According to Figure 7, the comparison of the two years showed October 2018 as the wetter month. It is also evident that in 2018, stations in the highlands and southern side of the country received more rainfall compared to the rainfall registered in the same stations in 2019 such as Lepa, Nuusuatia and Togitogiga.

On the other hand, stations situated in the northern region received relatively similar rainfall activity in both 2018 and 2019. The fluctuating of the South Pacific Convergence over the islands has provided a fair amount of rainfall during the month of October 2019.