



CLIMATE SUMMARY OCTOBER 2020

Samoa Meteorology Division

Ministry of Natural Resources and Environment



(+685) 20855/20856



www.samet.gov.ws

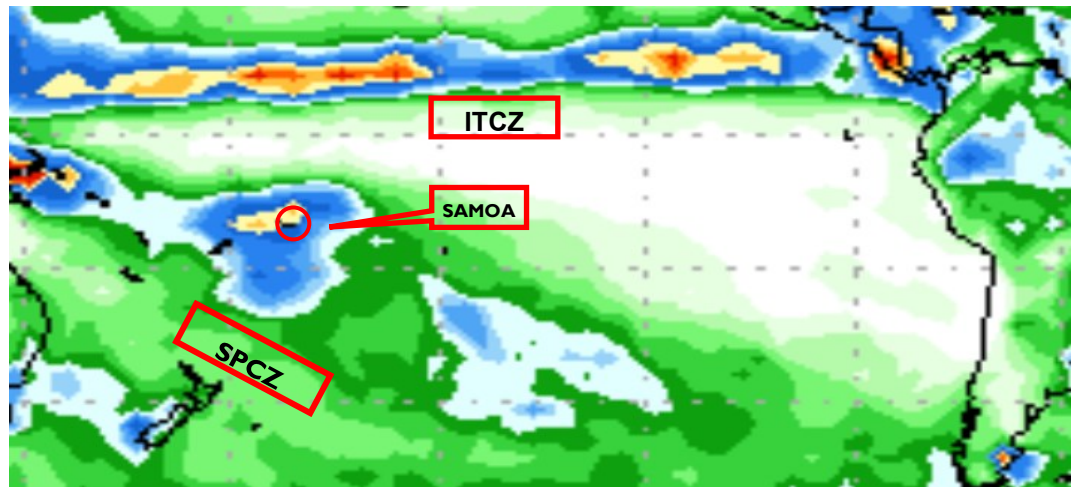


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HIGHLIGHTS

- ◆ Generally, “Above Average” rainfall recorded in October 2020 **Pg 1 & 2**
- ◆ The warmest temperature of 34.3⁰C was registered on the 24th at Nuu. **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) is now at La Nina. **Pg 6**
- ◆ Warm sub surface temperatures have cooled slightly since September 2020. **Pg 6**

Figure 1: SPCZ Position in October 2020



REGIONAL SCALE OBSERVATIONS

The South Pacific Convergence Zone (SPCZ) in the south Pacific is evident from Papua New Guinea (PNG) to the Solomon Islands, where it fragmented over Samoa and Fiji. Intense rainfall activity was observed during October due to the activeness of the SPCZ over our region. The Inter-tropical Convergence Zone (ITCZ) remained within its normal October positioning, and was also seen to be active for most part of the month.

LOCAL SCALE OBSERVATIONS

The rainfall status in October was generally ‘above average’ across the country, as we transition from the dry season to the wet season towards the end of every year. In addition, rainfall activities were observed to be intense, due to the ENSO phase, which is currently at La Nina, which had a significant influence on the climate of Samoa in 2020. According to rainfall statistics, Togitogiga station registered the highest total of 969.0mm followed by the second highest total of 837.8mm at Saleilua. The southern region was seen to experience heavy rainfall activities, where the highest one day fall of 295.0mm was observed at Togitogiga, with the second highest of 172.4mm recorded at Saleilua on the 30th of the month. The lowest monthly total was received at Aopo, Savaii with only 225.2mm and 284.8mm as the second lowest received at Lefagaolii station.

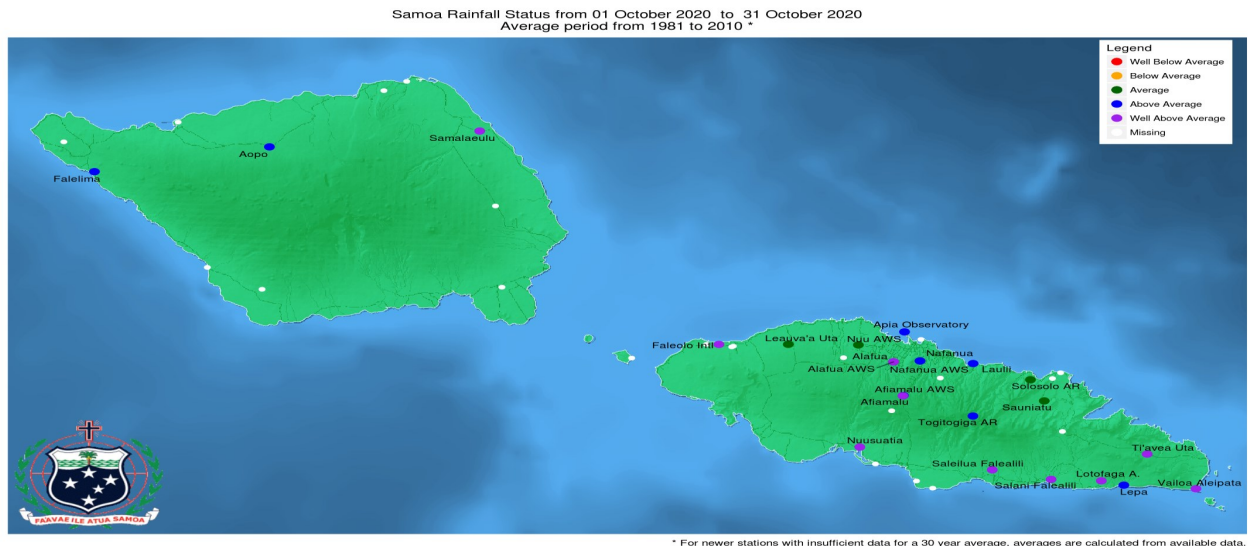
Table 1: Rainfall Statistics in October 2020

This table displays the rainfall status of all stations in the country in October 2020

Stations	October Rainfall (mm)	October 30 Year Long Term Average	% of Average	1 day fall (mm)	Date	# of Rainy Days	Rainfall Status	
U P O L U								
Afiamalu	467.7	326	143	79.6	28 th	26	Above Average	
Alafua	365.6	172	212	63.0	17 th	24	Above Average	
Apia	302.4	204	148	56.7	08 th	23	Above Average	
Faleolo	288.1	312	92	42.2	08 th	24	Average	
Laulii	518.6	361	144	155.5	09 th	20	Above Average	
Leauvaa	461.8	397	116	94.2	17 th	23	Average	
Lepa	423.2	276	153	60.2	15 th	26	Above Average	
Lotofaga	705.0	217	325	92.0	17 th	30	Well Above Average	
Matautu Falelatai	722.6	326	222	157.6	16 th	21	Well Above Average	
Nafanua	367.2	242	152	56.2	17 th	25	Above Average	
Nuu	313.0	172	182	44.6	08 th	25	Well Above Average	
Nuusuatia	727.8	270	270	114.8	30 th	29	Well Above Average	
Salani	575.6	217	265	94.6	30 th	30	Well Above Average	
Saleilua	837.8	311	269	172.4	30 th	23	Well Above Average	
Saoluafata	471.2	389	121	59.2	08 th	29	Above Average	
Ti'avea	727.2	317	229	106.2	30 th	30	Well Above Average	
Togitogiga	969.0	494	196	295.0	30 th	30	Well Above Average	
Vailoa.A	473.4	212	223	101.0	30 th	26	Well Above Average	
S A V A I I								
Aopo	225.2	235	96	50.8	03 rd	22	Average	
Falelima	292.8	150	195	47.4	19 th	27	Well Above Average	
Lefagaoolii	284.8	204	140	50.4	03 rd	21	Above Average	
Samalaeulu	567.6	245	232	72.4	03 rd	27	Well Above Average	
Tuasivi	531.4	160	332	60.8	03 rd	28	Well 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 2020

This rainfall map is generated using observation data from Table 1



* For newer stations with insufficient data for a 30 year average, averages are calculated from available data.

TEMPERATURE

Table 2: Air Temperature Statistics

This table displays the temperature statistics recorded across stations in October 2020

Stations	Max Temperature (°C)		
	Mean Daily Temperature (°C)	Extreme Temp Max (°C)	Date
Alafua	27.0	32.2	24 th
Nuu	24.7	34.3	24 th

Stations	Min Temperature (°C)	
	Extreme Temp Min (°C)	Date
Apia	22.7	22 nd
Saoluafata	21.6	18 th
Faleolo	22.4	14 th
Afiamalu	17.4	24 th
Nuu	16.5	16 th
Alafua	21.7	24 th

The mean daily temperatures across the country in October ranges from 24.7.°C to 27.0°C. The highest recorded maximum temperature was 34.3°C at Nu'u on the 24th. Similarly, Alafua also recorded its highest maximum of 32.2°C on the same date. Conversely, the lowest recording temperature reading was 16.5°C at Nu'u on the 16th of October with the second lowest of 17.4°C registered at Afiamalu on the 24th.

ATMOSPHERIC PRESSURE

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

This table displays the atmospheric statistics recorded across two stations in October 2020

Station	Highest MSL Pressure (hPa)	Date	Lowest MSL Pressure (hPa)	Date	Average MSL Pressure (hPa)
Apia	1014.6	31 st	1008.8	28 th	1011.6
Faleolo	1014.5	31 st	1009.3	27 th	1011.9

The highest MSL Pressure recorded at Apia on the 31st was 1014.6hPa with the lowest pressure of 1011.6 hPa recorded also at Apia station. Observations also show most stations around the country recorded their highest one day fall during the last week of the month, due to low pressure systems experienced during that time. Both stations experienced similar MSL pressure throughout the month of October 2020, as seen in Table 3.

(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 2020.

Figure 4a : Apia Station

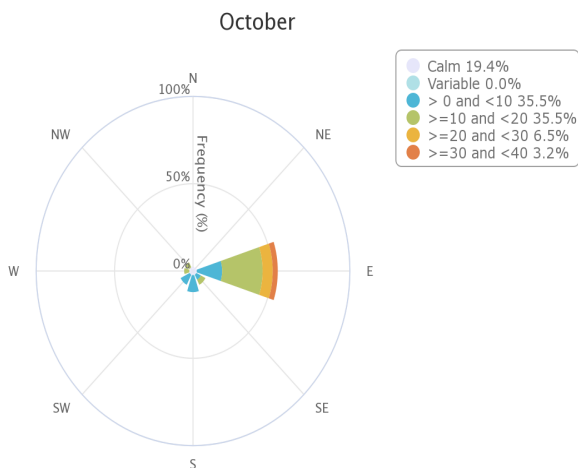
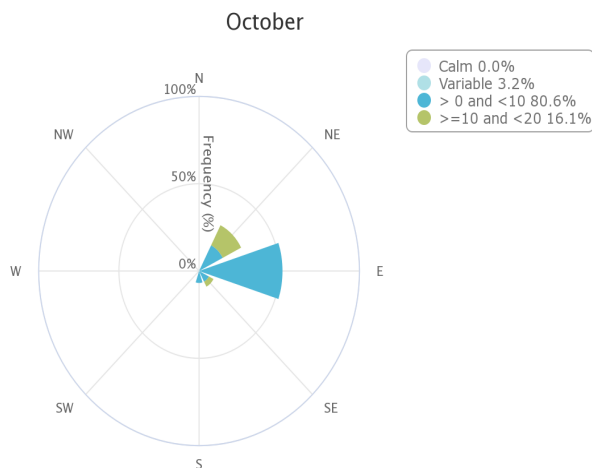


Figure 4b: Saoluafata Station



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. An active convergence zone during the third week of the month provided fresh breeze (31-40km/hr) in Apia, as seen in Figure 4a.

Figure 4c : Afiamalu Station

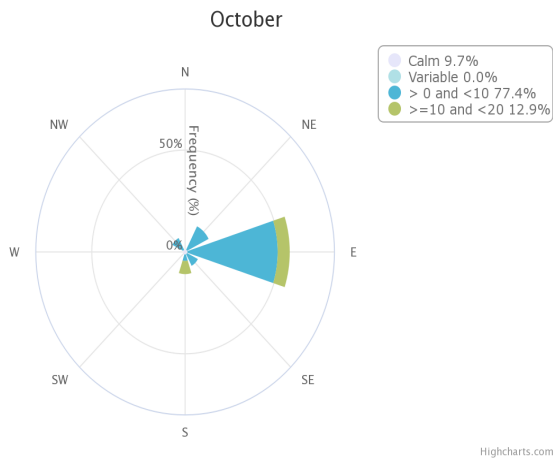


Figure 4d: Nafanua Station

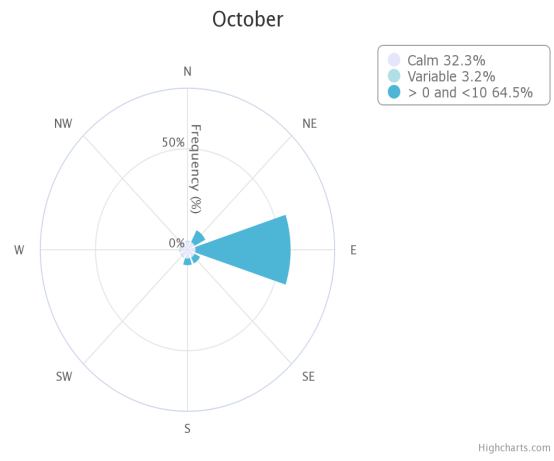
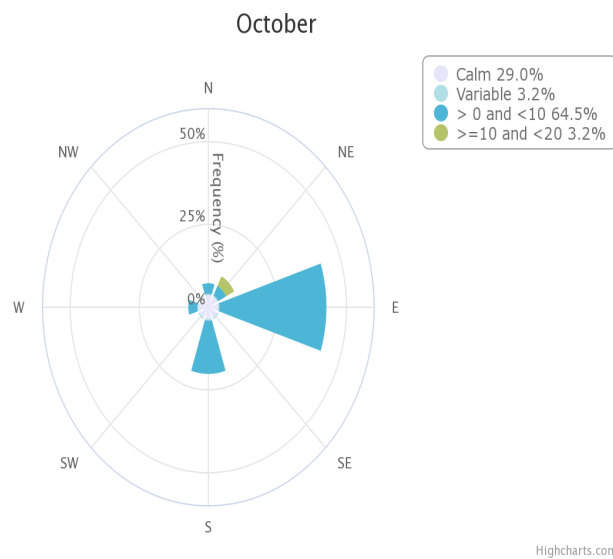


Figure 4e : Alafua Station



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 10—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) 64% of October. Observations during November showed easterlies strengthening for most part of the month, as the climate transitions into a La Nina as anticipated by most climate models.

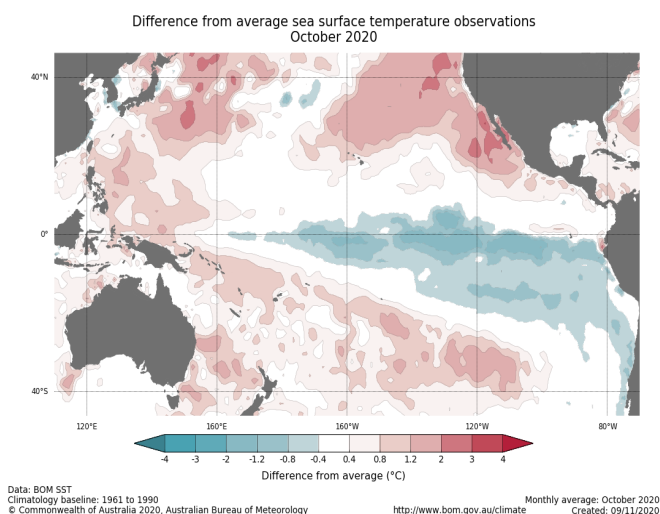
EL NINO SOUTHERN OSCILLATION (ENSO)

CURRENT ENSO STATUS

La Nina thresholds have now been breached, as anticipated in recent months. Climate models continue to agree the sustaining of La Nina for early next year, and expecting to peak in February 2021.

Oceanic Indicator of ENSO

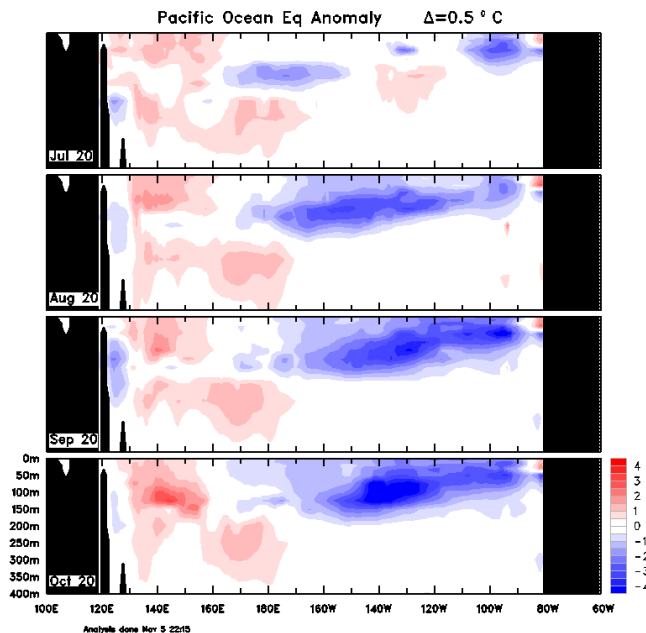
Figure 5: Sea Surface Temperature in October 2020



The SST map for October shows below average SSTs extending along the equator in the central and eastern tropical Pacific Ocean, and into the tropics south of the equator in the east of the basin. The extent of these cool anomalies has increased in central parts of the basin, as well as along the Chilean coast. Warmer than average SSTs were evident in the far western equatorial Pacific and in the Tasman Sea.

In addition, the October values have slightly cooled since September 2020. October values for Nino 3 were -0.8°C , Nino -1.0°C and Nino 4 -0.5°C .

Figure 6: Sub-surface Temperature



The four-month sequence of sub-surface temperature anomalies (to October) shows warm anomalies strengthening towards the western equatorial region, with cooler anomalies that developed in mid 2020 dominating the central and eastern equatorial region.

As of now, the behavior of the SSTs and Sub Surface temperatures have are showing conditions similar to that of a La Nina.

Atmospheric Indicator of ENSO

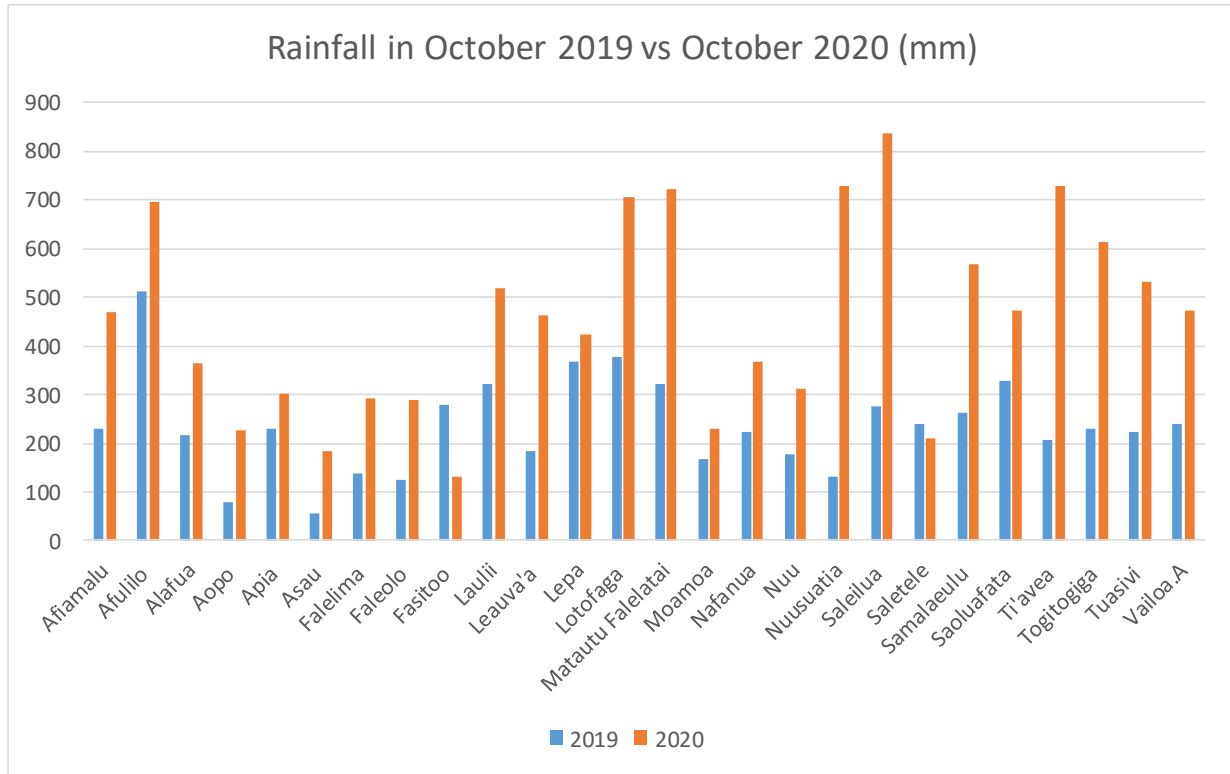
Southern Oscillation Index (SOI)

The approximate 30-day and 90-day Southern-Oscillation Index (SOI) values to 8 October were $+2.4$ and $+7.2$ 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 2019 vs October 2020 in all rainfall stations.



Due to the activeness of the SPCZ, October 2020 clearly showed wetter conditions than that of October 2019, where most of the stations recorded above average rainfall. Climate indicators continue to show La Nina behaviour, which is anticipated to influence the climate of Samoa in the upcoming months.