



CLIMATE SUMMARY OCTOBER 2021

Samoa Meteorology Division

Ministry of Natural Resources and Environment



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www.samet.gov.ws

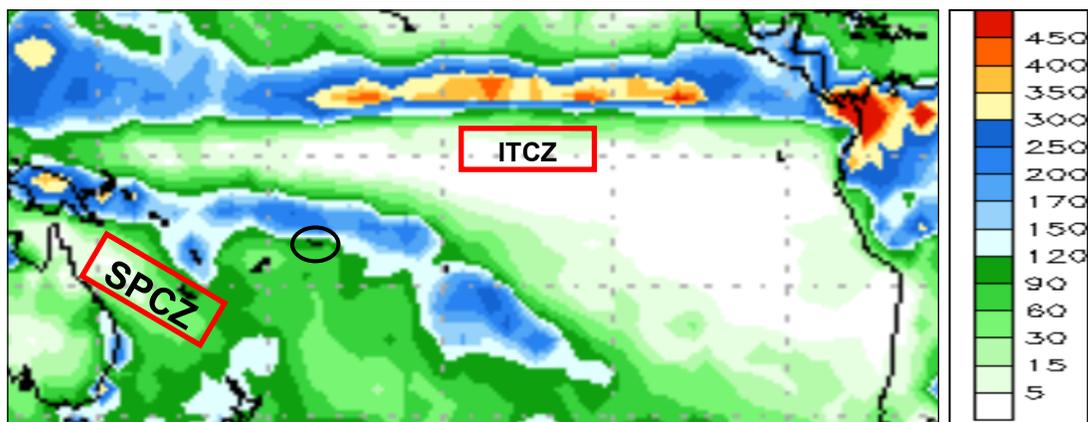


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HIGHLIGHTS

- ◆ Generally, "Average to Below average" was recorded in October 2021. **Pg 1 & 2**
- ◆ The coolest night time temperature of 14.3°C was registered on the 28th at Afiamalu station **Pg 3**
- ◆ Moderate Breeze (21-30km/hr) were evident at Faleolo station. **Pg 4 & 5**
- ◆ ENSO phase still remain Neutral, with a high chance of a La Nina to develop late in 2021. **Pg 6**
- ◆ Cooler SSTs observed for most of the Central Equatorial Region, indicating La Nina like conditions for the oceanic components of the ENSO state. **Pg 6**

Figure 1: SPCZ Position in October 2021



REGIONAL SCALE OBSERVATIONS

For the month of October 2021, the South Pacific Convergence Zone (SPCZ) was seen to be very active, and was significantly displaced from the western to the central part of the Pacific Ocean. Although rainfall activities in September was below average for most stations across Samoa, rainfall for October have slightly increased due to the movement of the SPCZ over Papua New Guinea, towards the southern Cooks. The Inter Tropical Convergence Zone (ITCZ) on the other hand remained within its average position, while being mostly active in the central part of the equatorial region.

LOCAL SCALE OBSERVATIONS

For the month of October, rainfall activities were minimum as it only reached 334.4 mm of rainfall recorded from Saleilua as the highest rainfall recorded. The calculated averages and rainfall statistics resulted mostly on Below Average statuses for the month of October with less Average statuses recorded. The summary of rainfall statistics in October indicates an increase of rainfall compared to September, due to the inactiveness of the SPCZ over Samoa last month. In addition, Aopo was recorded as the lowest recorded rainfall of 44.0mm on the 11th of October with the status of Well Below Average.

Table 1: Rainfall Statistics in October 2021

This table displays the rainfall status of all stations in the country in October 2021

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	227.6	348	65	79.0	11 th	25	Below Average
Alafua	104.6	162	64	30.8	21 st	15	Below Average
Apia	110.4	226	49	26.0	21 st	14	Below Average
Faleolo	91.2	160	57	25.3	28 th	12	Below Average
Laulii	94.8	361	26	38.1	30 th	5	Well Below Average
Leauva'a	143.2	397	36	41.2	21 st	17	Well Below Average
Lotofaga	295.6	294	101	148.6	11 th	14	Average
Nafanua	114.2	249	46	37.0	21 st	18	Below Average
Nuusuatia	228.2	347	66	69.4	20 th	11	Below Average
Salani	221.8	294	75	55.2	11 th	21	Below Average
Saleilua	334.4	311	108	123.8	11 th	7	Average
Saoluafata	178.2	389	46	41.8	30 th	21	Below Average
Ti'avea	266.8	245	109	64.4	11 th	24	Average
Togitogiga	264.5	496	53	54.5	21 st	18	Below Average
Vailoa.A	98.8	216	46	25.2	11 th	19	Below Average
S A V A I I							
Aopo	44.0	235	19	24.8	11 th	9	Well Below Average
Falelima	137.2	245	56	43.6	11 th	14	Below Average
Samalaeulu	196.4	245	80	35.6	21 st	22	Average
Tuasivi	212.0	160	133	72.0	11 th	16	Above Average

Well Below Average
<40%

Below Average
40%-80%

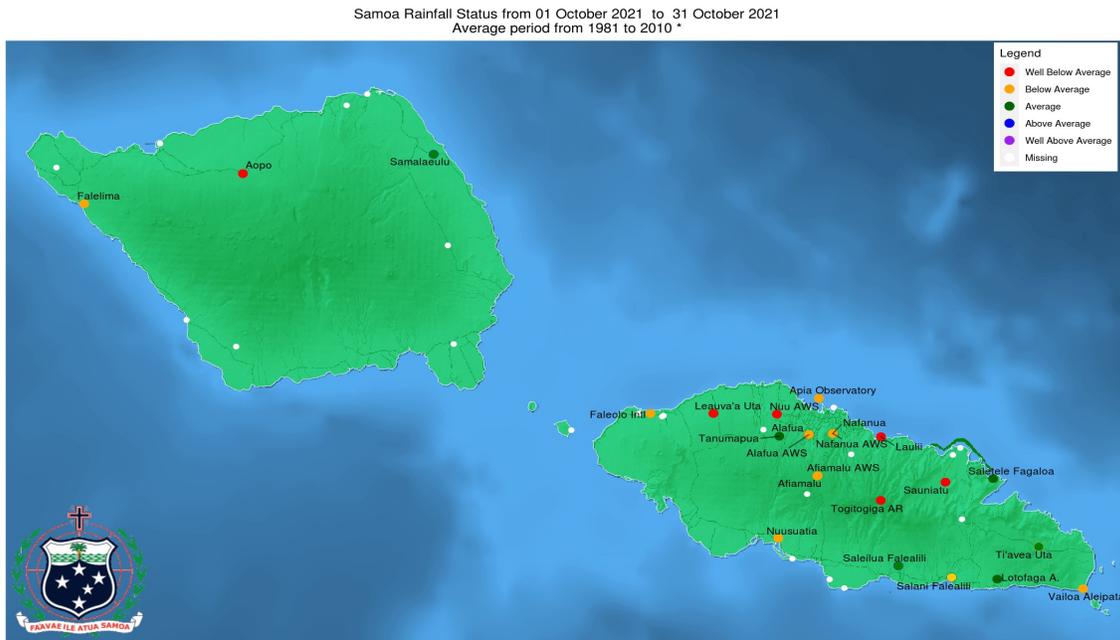
Average
80%-120%

Above Average
120%-160%

Well Above Average
>160%

Figure 3: Rainfall Status Map in October 2021

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 2021

Stations	Max Temperature (°C)		
	Mean Daily Temperature (°C)	Extreme Temp Max (°C)	Date
Nafanua	28.3	32.6	19 th
Nuu	24.5	33.3	20 th

Stations	Min Temperature (°C)	
	Extreme Temp Min(°C)	Date
Afiamalu	14.3	17 th
Alafua	19.5	12 th
Apia	21.2	25 th
Faleolo	20.1	25 th

Varying temperatures for October registered Nu'u as the warmest station having recorded the highest daytime temperature of 33.3°C on the 20th of the month, with the coolest night time temperature of 14.3°C at Afiamalu on the 17th. The mean daily temperatures therefore ranged from 24.5°C-28.3°C during the previous month.

ATMOSPHERIC PRESSURE

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

This table displays the atmospheric statistics recorded across two stations in October 2021

Station	Highest MSL Pressure (hPa)	Date	Lowest MSL Pressure (hPa)	Date	Average MSL Pressure (hPa)
Apia	1015.8	19 th	1009.7	12 th	1013.0
Faleolo	1015.9	19 th	1009.7	11 th	1013.0

The highest Mean Sea Level (MSL) pressure of 1015.9hpa was recorded on the 19th of the month at Faleolo station. On the same date, Apia’s MSL was slightly close to Faleolo’s pressure which was 1015.8hpa. Low pressure systems affecting the group early into the month registered the lowest MSL pressure of 1009.7 on the 11th of October at Faleolo and 12th of October at Apia station.

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 recorded daily at 9am across the country in October 2021. Rainfall activities are associated with dominant wind directions and geographical locations of rainfall stations.

Figure 4a : Apia Station

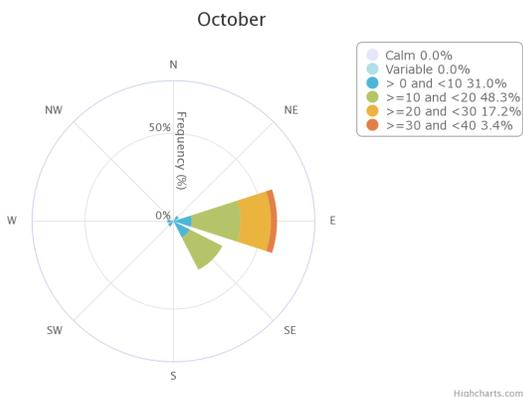
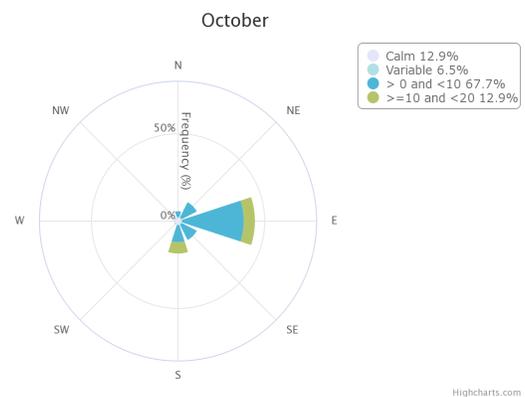


Figure 4b: Afiamalu Station



The above images showcase the dominance of the easterly winds for the month of October. Apia station (Figure 4a) shows wind speeds from 1-10km/hr, 11-20 km/hr, 20-30km/hr and 30-40km/hr at times within the month of October. Highland station Afiamalu shows only slight breeze winds of 1-10km/hr recorded in October.

Figure 4c : Alafua Station

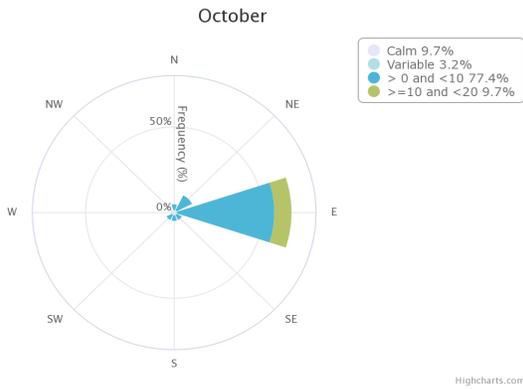


Figure 4d: Nafanua Station

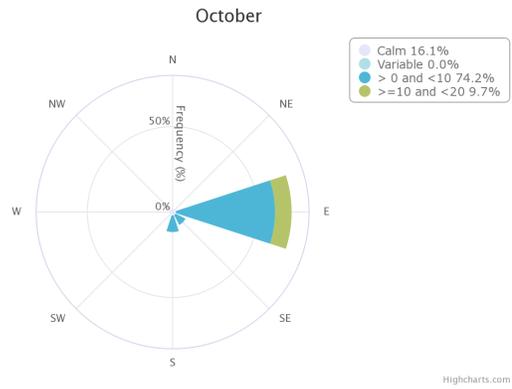
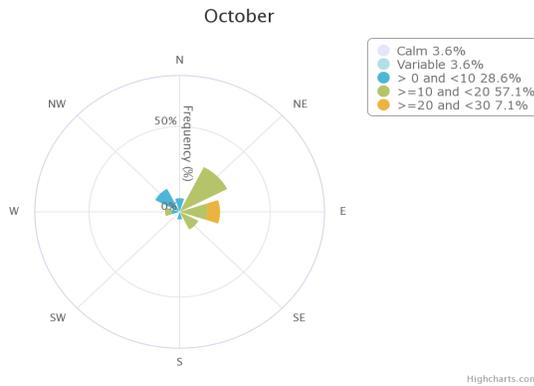


Figure 4e : Faleolo Station



The above Figures show Alafua (Figure 4c) and Nafanua (Figure 4d) recorded prevailing easterly winds for October 2021. Both Alafua and Nafanua stations experienced mostly slight breeze (1-10km/hr) and gentle breeze (11-20km/hr). Gentle breeze (11-20km/hr) were observed to be the most occurring wind speeds at Faleolo station, with the persistence of the north easterly winds.

EL NINO SOUTHERN OSCILLATION (ENSO)

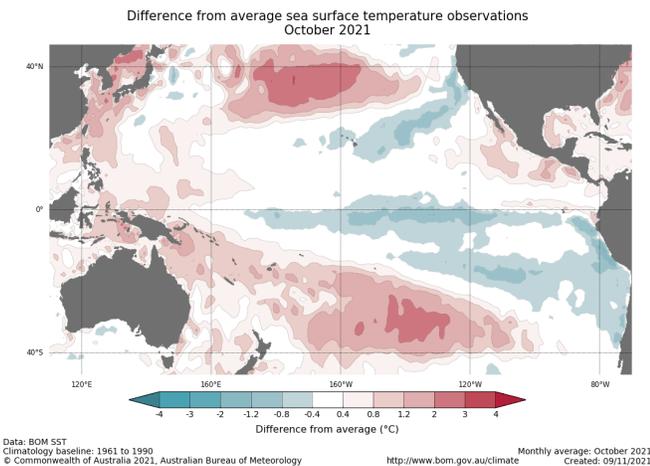
CURRENT ENSO STATUS

Despite Atmospheric indicators breaching La Nina values in previous months, October observations shows both Atmospheric and Ocean values are within neutral levels, while still leaning towards La Nina for the outlook. The ENSO status as of the 31st of October was La Nina Alert, suggesting a 70% chance of a La Nina event to occur in the upcoming months.



Oceanic Indicator of ENSO

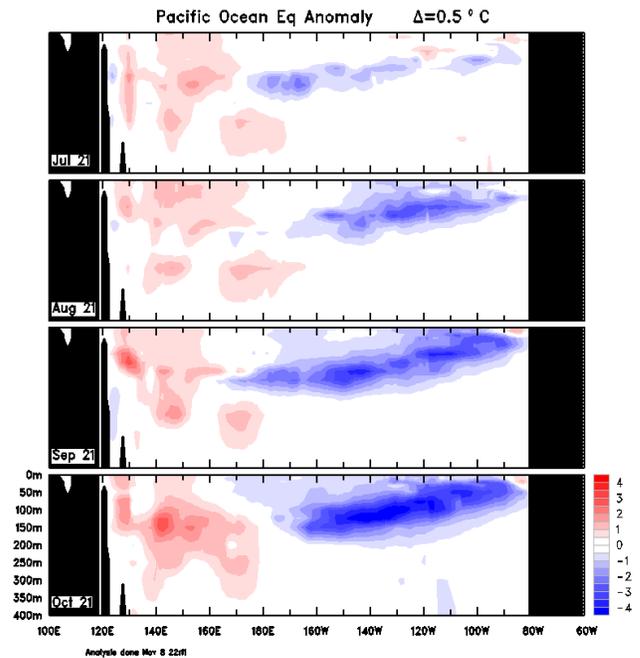
Figure 5: Sea Surface Temperature in October 2021



Weak cool SST anomalies were observed in much of the central to eastern equatorial Pacific in October 2021, while typically weak warmer than average SSTs were present in waters near the north of Australia and the Maritime Continent.

Values of the three key NINO indices for October 2021 were: NINO3 -0.4 °C, NINO3.4 -0.6 °C, and NINO4 -0.3 °C.

Figure 6: Sub-surface Temperature



Cool anomalies have emerged in the sub-surface of the central to eastern equatorial Pacific, with a substantial increase in September and October compared to prior months, according to a four-month sequence of equatorial Pacific sub-surface temperature anomalies (through October 2021). Waters were up to three degrees cooler than average across a vast region, and up to four degrees cooler than average at 150°W and 150 m deep in the middle equatorial Pacific.

Atmospheric Indicator of ENSO

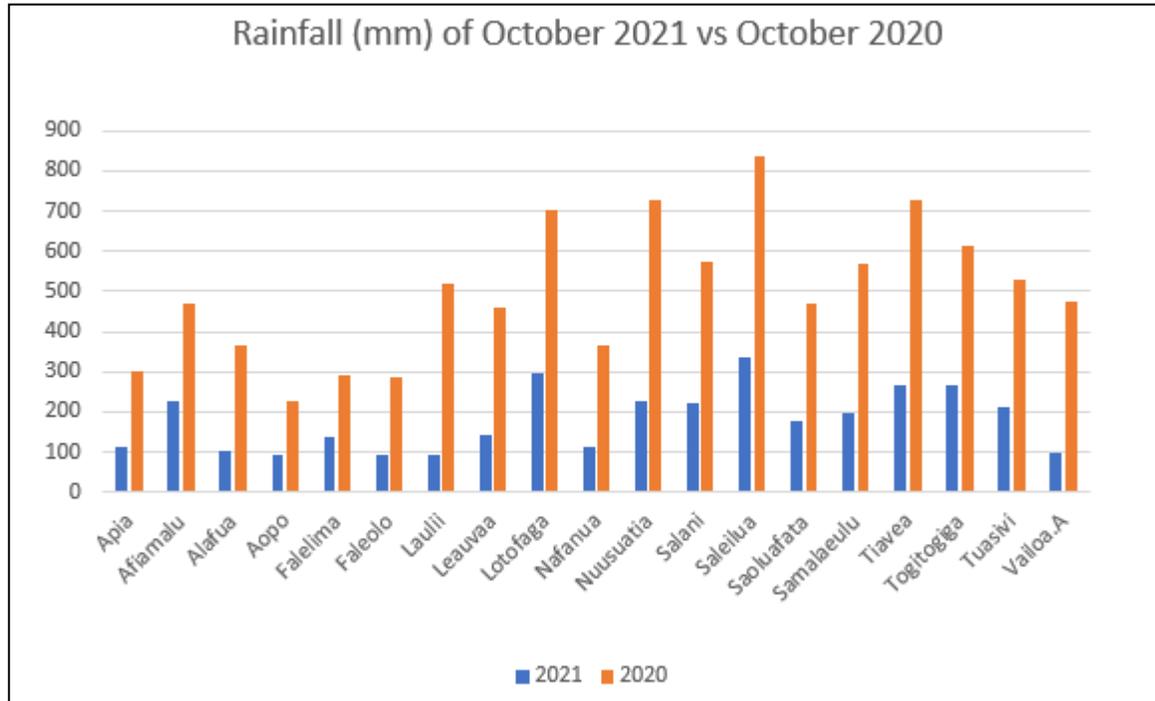
Southern Oscillation Index (SOI)

The 30-day Southern Oscillation Index (SOI) for the 30 days ending 7 November 2021 was +6.8. The 90-day SOI value was +7.9.

(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 2020 vs October 2021 in all rainfall stations.



The graph shown with the comparison of October 2020 and October 2021 shows a gap on the differences of rainfall statistics recorded in these years. An increase of rainfall recorded in October 2020 as La Nina event bring sufficient rainfall for most of the Pacific Islands during that period. In October 2021, the dominance of high pressure systems have limited precipitation causing less rainfall statistics recorded in most areas. Therefore, most parts of Samoa experienced “Below Average” statuses in the areas shown.