



CLIMATE SUMMARY JULY 2020

Samoa Meteorology Division

Ministry of Natural Resources and Environment



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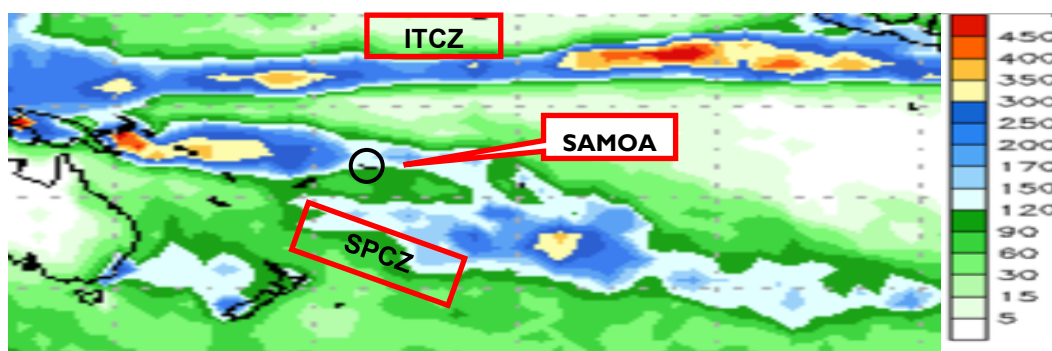


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HIGHLIGHTS

- ◆ “Above Average” rainfall recorded for July 2020. Pg 1 & 2
- ◆ The warmest day time temperature of 32.8°C registered on the 02nd Pg 3
- ◆ Slight breeze (1-10km/hr) generally dominated most stations. Pg 4 & 5
- ◆ Although the El Nino Southern Oscillation (ENSO) is at Neutral levels, there is a 70% chance of a La Nina to occur in the upcoming months, where the current ENSO status is at La Nina Alert. Pg 6
- ◆ Sea surface temperatures continue to be warmer than normal, with Nino indices cooling towards La Nina thresholds. Pg 6

Figure 1: SPCZ Position in July 2020



REGIONAL SCALE OBSERVATIONS

During the month of July, the South Pacific Convergence Zone (SPCZ) was rather active, and fluctuated mostly over the Samoa islands. In general, significant rainfall was experienced for the group in July as a consequent of the activeness and positioning of the SPCZ. Along the equatorial region, the Inter Tropical Convergence Zone (ITCZ) was seen to be slightly active in the Central Equatorial region while maintaining its normal July position.

LOCAL SCALE OBSERVATIONS

With the dominance of the easterly wind flow, other weather features such as the activeness of the SPCZ as mentioned above ensured rainfall activity to sustain throughout the month. Table 1 in Page 2 shows the highest rainfall received at Lotofaga of 741.0mm, with the second highest of 662.3mm at Lepa. Precipitation intensified during the third week of the month due to an active convergence zone, where Lotofaga registered 275.8mm as the highest daily rainfall, with Lepa close by with 228.4mm, both recorded on the 15th. However minimal rainfall was also experienced with the lowest of 135.0mm recorded at Aopo, with the second lowest of 171.8mm at Nuū station. Generally *above average* rainfall was registered across Samoa in July.

Table 1: Rainfall Statistics in July 2020

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

Stations	July Rainfall (mm)	July 30 Year Long Term Average	% of Average	1 day fall (mm)	Date	# of Rainy Days	Rainfall Status
U P O L U							
Afiamalu	356.6	200	178	133.2	15 th	28	Well Above Average
Alafua	254.7	150	170	126.2	15 th	21	Well Above Average
Apia	221.7	122	182	138.8	15 th	20	Well Above Average
Faleolo	243.5	87	280	76.1	13 th	19	Well Above Average
Laulii	347.2	115	302	132.0	15 th	14	Well Above Average
Leauvaa	223.6	190	118	108.6	15 th	18	Average
Lepa	662.3	520	127	228.4	15 th	23	Above Average
Lotofaga	741.0	183	405	275.8	15 th	31	Well Above Average
Matautu Falelatai	251.2	201	125	79.2	15 th	22	Above Average
Nafanua	266.7	146	183	138.0	15 th	22	Well Above Average
Nuu	171.8	150	115	92.6	15 th	20	Average
Nuusuatia	367.2	218	168	88.6	15 th	28	Well Above Average
Saleilua	642.6	364	177	118.6	15 th	27	Well Above Average
Saoluafata	319.8	232	138	108.6	15 th	26	Above Average
Tanumapua	199.1	150	133	24.0	04 th	25	Above Average
Ti'avea	618.6	296	209	199.6	15 th	29	Well Above Average
Togitogiga	543.4	366	148	110.0	05 th	30	Above Average
Vailoa.A	335.4	114	294	98.4	15 th	26	Well Above Average
S A V A I I							
Aopo	135.0	101	134	46.8	15 th	14	Above Average
Falelima	158.4	58	273	74.0	15 th	17	Well Above Average
Samalaeulu	437.2	124	353	85.6	15 th	23	Well Above Average
Tuasivi	326.8	184	178	157.0	15 th	23	Well Above Average

Well Below Average
<40%

Below Average
40%-80%

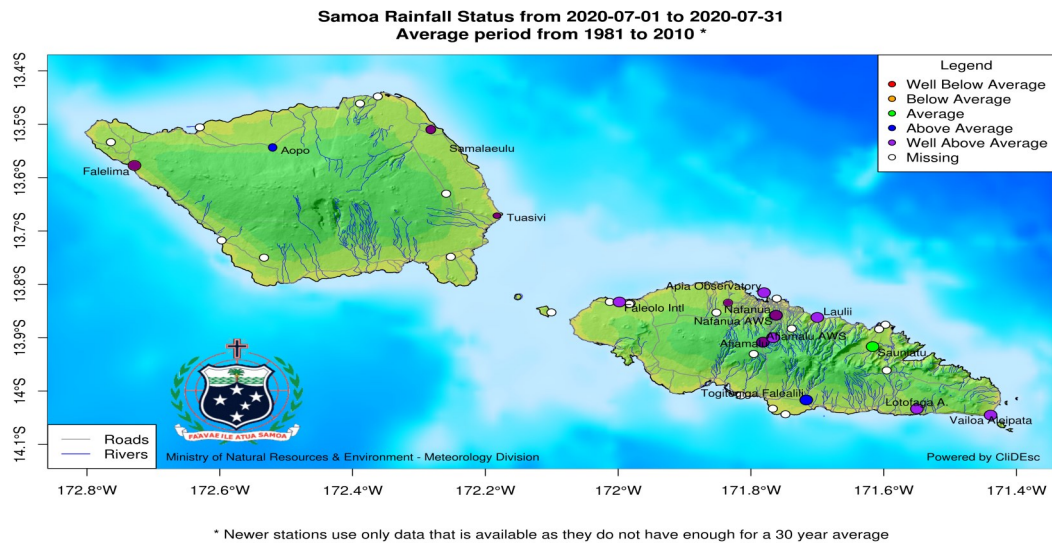
Average
80%-120%

Above Average
120%-160%

Well Above Average
>160%

Figure 3: Rainfall Status Map in July 2020

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 July 2020

Stations	Max Temperature (°C)		
	Mean Daily Temperature (°C)	Extreme Temp Max (°C)	Date
Afiamalu	20.9	27.6	01 st
Alafua	26.8	32.3	27 th
Nafanua	27.3	32.8	02 nd
Nuu	24.4	32.2	02 nd

Stations	Min Temperature (°C)	
	Extreme Temp Min(°C)	Date
Apia	21.7	09 TH
Saoluafata	21.1	22 nd
Faleolo	21.3	26 th
Afiamalu	16.2	31 st
Alafua	20.7	09 th
Nuu	15.8	22 nd

The warmest daytime temperature of 32.2°C was recorded at Nafanua station on the 02nd of July 2020. Mean daily temperatures were observed to be rather cool, ranging between 20.9°C to 27.3°C. Night time temperatures were recorded mostly on the second and third week of July, with the lowest of 15.8°C at Nuu on the 22nd.

ATMOSPHERIC PRESSURE

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

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

Station	Highest MSL Pressure (hPa)	Date	Lowest MSL Pressure (hPa)	Date	Average MSL Pressure (hPa)
Apia	1015.8	06 th	1010.2	15 th	1012.7
Faleolo	1015.7	24 th	1011.2	20 th	1013.0

The highest Mean Sea Level (MSL) pressure of 1015.8 hPa was recorded at Apia on the 06th, while the lowest of 1011.2 hPa were recorded at both Apia and Faleolo on the 15th and 20th of July 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 recorded daily at 9am across the country in July. Rainfall activities are associated with dominant wind directions and geographical locations of rainfall stations.

Figure 4a : Apia Station

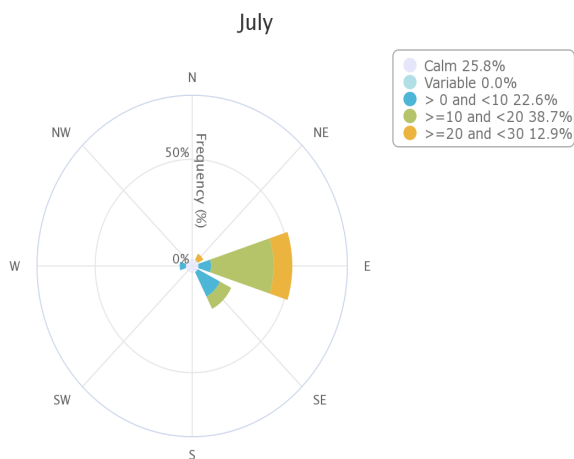


Figure 4b: Saoluafata Station

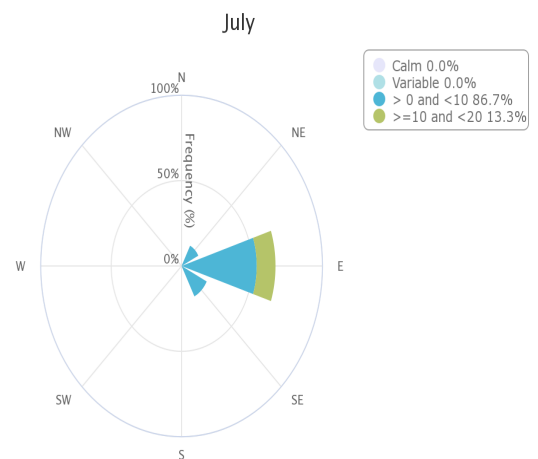


Figure 4a shows wind statistics for Apia, where the easterly remained dominant for July. The weather summary showed the highest gust of 48km/hr recorded at Apia on the second week due to a high pressure system to the south of the islands, directing moderate breeze (21km/hr –30km/hr) as well. Saoluafata (Figure 4b) also experienced similar conditions with the easterlies dominating 61% of the time in July, while calm conditions sustained throughout the month.

Figure 4c : Afiamalu Station

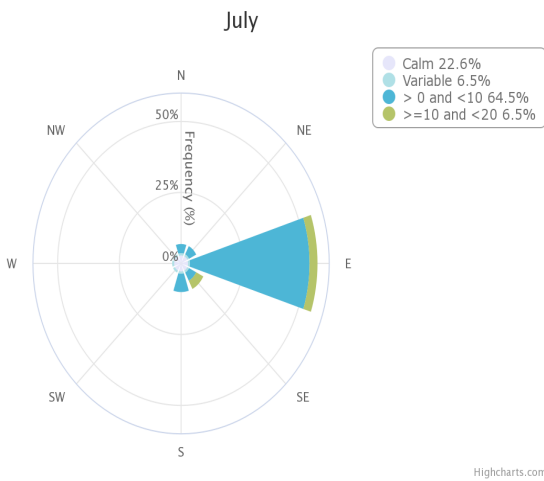


Figure 4d: Nafanua Station

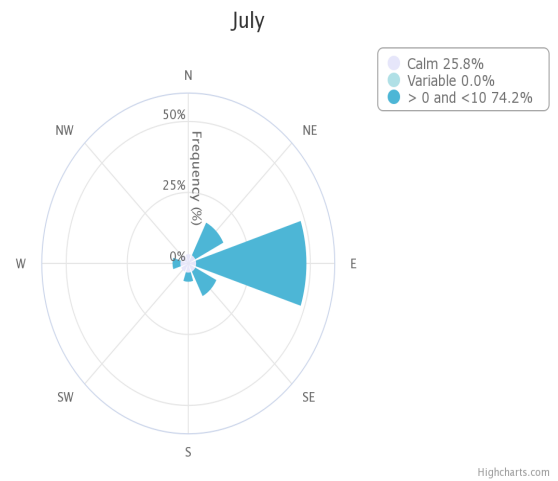


Figure 4e : Alafua Station

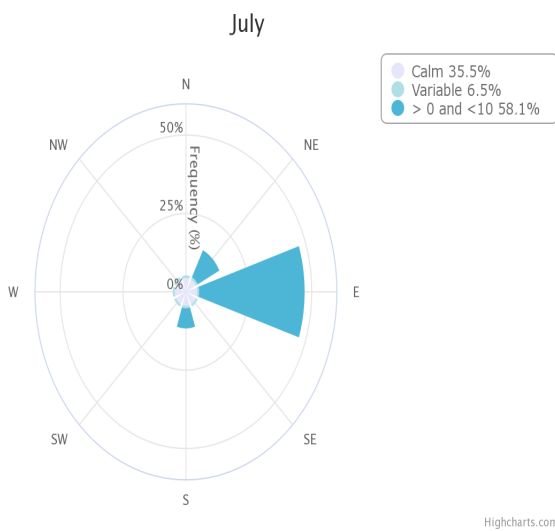
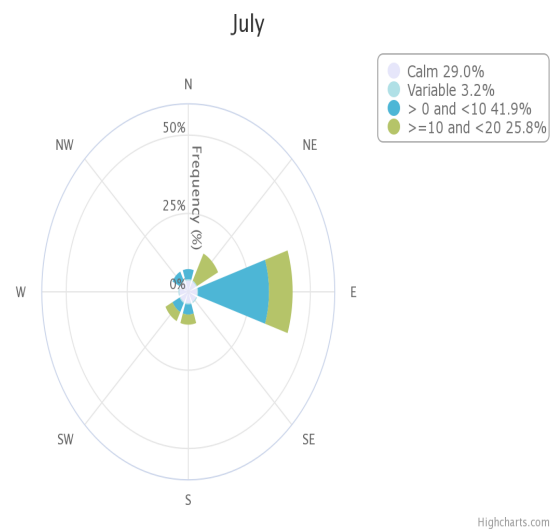


Figure 4f : Faleolo Station



Calm conditions were observed for most stations as seen in the above figures. Easterlies remained dominant as well, with a few south easterlies recorded, mainly influenced by a high pressure system located to the south of Samoa. High swells of up to 3m were also observed as an impact of the same high pressure system.

EL NINO SOUTHERN OSCILLATION (ENSO)

CURRENT ENSO STATUS

The status for the EL Nino Southern Oscillation (ENSO) has remained within neutral thresholds for quite some time. However La Nina conditions have been observed recently with climate models suggesting a high possibility of a La Nina to occur in the next couple of months.

Oceanic Indicator of ENSO

Figure 5: Sea Surface Temperature in July 2020

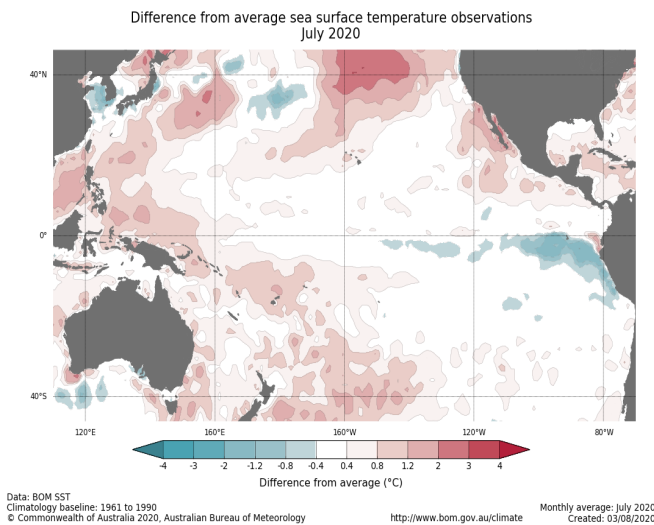


Figure 5 illustrates the average ocean conditions in terms of Sea Surface Temperature (SSTs) for the month of July in the Pacific Ocean. Warmer anomalies continue to remain over the western parts of the ocean, with cooler anomalies sustaining to the east and extending to the central equatorial region, similar to a typical La Nina conditions. The July 2020 Nino values were slightly warmer for two (2) indices, while the other one gradually cooled. Therefore, July values for Nino 3 were -0.3°C , Nino 3.4 at 0.0°C and Nino 4 at $+0.2^{\circ}\text{C}$.

Figure 6: Sub-surface Temperature

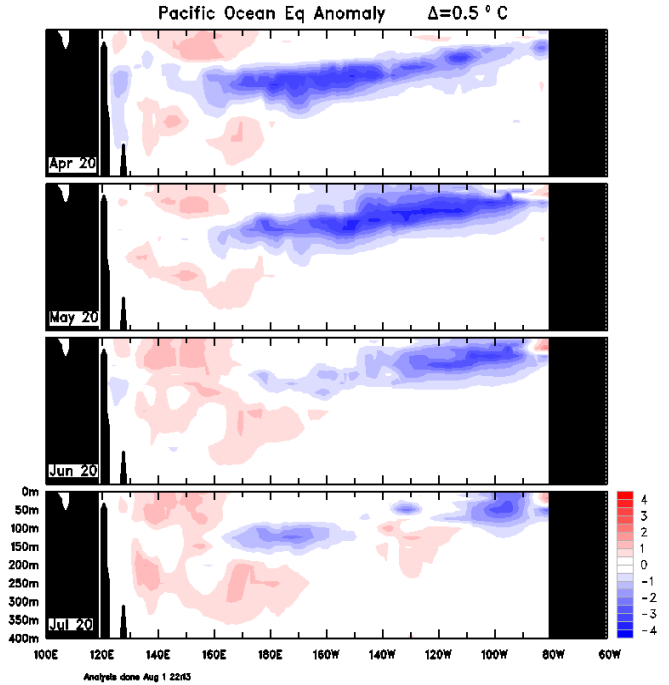


Figure 6 shows the four-month sequence of sub-surface temperature anomalies (to July) across the equatorial Pacific region. Cooler anomalies in the eastern and central equatorial region seen in early 2020 intensified in recent months. However in July, warmer anomalies along the western Pacific have gradually strengthened to depth of 350m. The activeness of the SPCZ in recent months is defined by the suppressing of warmer waters over our region, as reflected by table 1 in page 2.

Atmospheric Indicator of ENSO

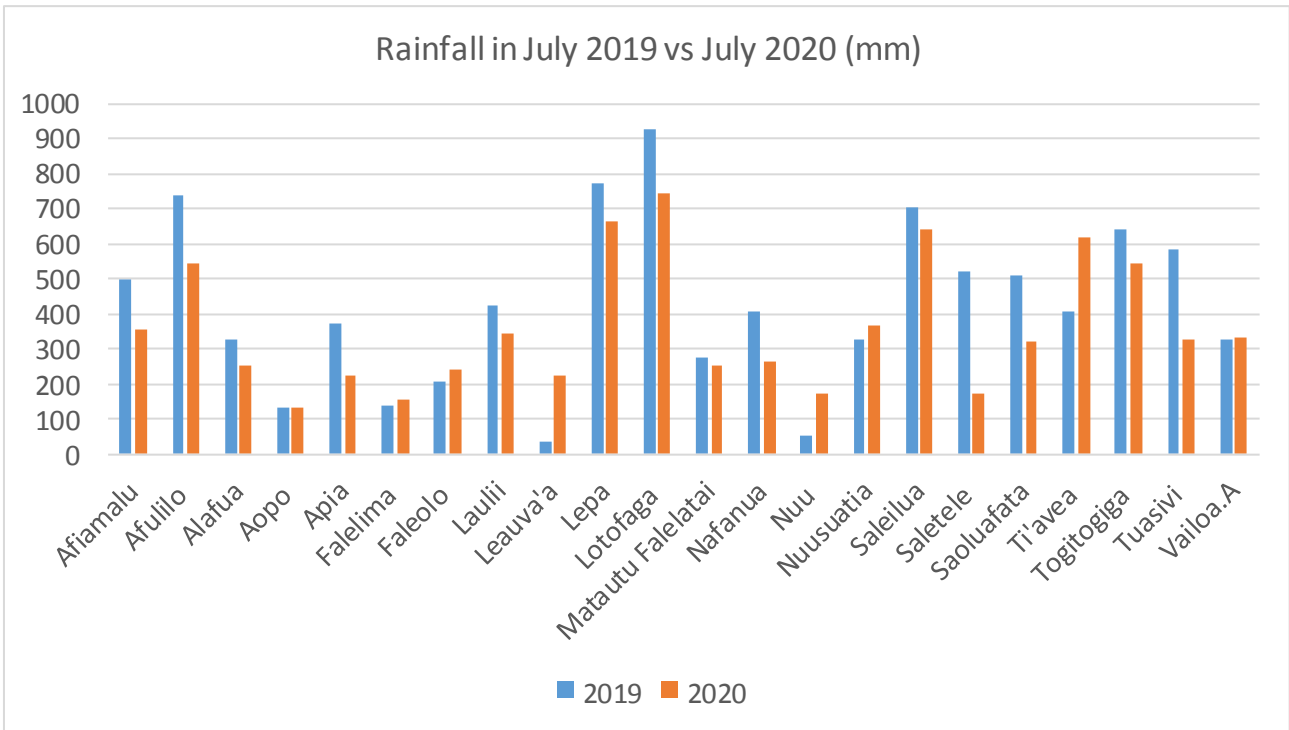
Southern Oscillation Index (SOI)

The approximate 30-day and 90-day Southern-Oscillation Index (SOI) values ending 16th of August were +5.6 and +0.3 respectively. Both values were within neutral range

(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: Graphic representation of total monthly rainfall in July 2019 vs July 2020 in all available rainfall stations.



Records show that despite being in the dry season in Samoa, both years for the month of July were seen to experience significant torrential downpours, with 2019 being the wetter year. The activeness of the SPCZ were the major climate influence, and having an average positioning over Samoa contributed to these conditions. The highlands and the southern region as portrayed by the above graph clearly experienced more rainfall activity for Samoa, with the northern region receiving minimal.