



CLIMATE SUMMARY MARCH 2019

Samoa Meteorology Division

Ministry of Natural Resources and Environment



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HIGHLIGHTS

- ◆ Generally, “average to below average” recorded in March 2019. **Pg 1 & 2**
- ◆ The warmest temperature of 36.1⁰C was registered on the 20th at Vaiaata. **Pg 3**
- ◆ Evident southerly winds were registered at most stations with easterlies remaining dominant throughout March. **Pg 4 & 5**
- ◆ El Nino Southern Oscillation (ENSO) is still Neutral with an increased likelihood of 70%, raising the Outlook to “El Nino Alert”. **Pg 6**
- ◆ Although sub surface temperatures are weakening, March values for Nino Indices increased by 2⁰C. **Pg 6**

Figure 1: SPCZ Position in March 2019

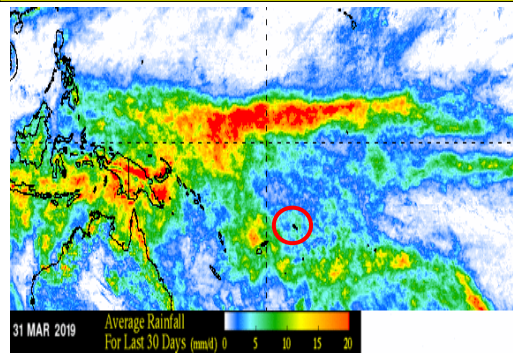
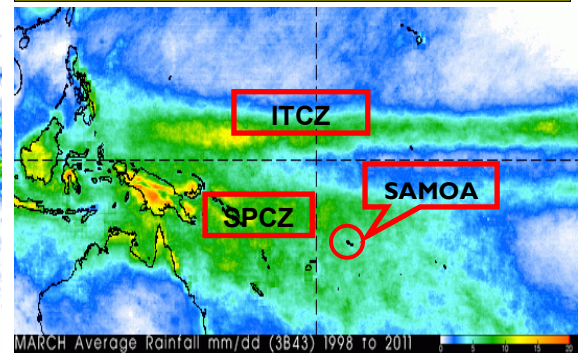


Figure 2: Normal Position of SPCZ in March



GLOBAL SCALE OBSERVATIONS

The South Pacific Convergence Zone dispositioned further south of its average March position, and fluctuated within Fiji Island vicinity. Along with the absence of the Madden Julian Oscillation (MJO), drier conditions were enhanced to a greater extent for the Samoa Islands, which is reflected by Table 1 in page 2. On the other hand, while maintaining its average March position, the Inter Tropical Convergence Zone (ITCZ) was seen to be immensely active due north of the equator.

LOCAL SCALE OBSERVATIONS

Overall the highest recorded rainfall of 474.6mm was registered at Lotofaga station, with the second highest of 451.8mm at Saleilua station. In addition, on the 22nd of March, the highest rainfall received in one day for March was recorded at Saleilua station. On the other hand, the driest station was Tuasivi having recorded only 20.4mm, with the second driest of 59.1mm at Apia station. Moreover, rainfall statistics showed ‘Above average’ rainfall for the southern stations, ‘average to above average’ for the highlands and ‘below average’ rainfall for the northern region in Samoa. With the wet season nearing its end, drier than normal conditions were experienced, with some stations such as Apia and Nafanua recording their driest March rainfall in their history since establishment.

Table 1: Rainfall Statistics in March 2019

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

Stations	March Rainfall (mm)	March 30 Year Long Term Average	% of Average	1 day fall (mm)	Date	# of Rainy Days	Rainfall Status
U P O L U							
Afiamalu	137.0	506	27	36.2	11 th	19	Well Below Average
Alafua	85.2	278	31	35.8	18 th	16	Well Below Average
Apia	59.1	339	17	29.2	18 th	12	Well Below Average
Faleolo	111.8	204	54	30.4	10 th	12	Below Average
Laulii	70.5	427	17	22.5	08 th	07	Well Below Average
Lepa	349.6	247	141	74.2	18 th	24	Above Average
Lotofaga	474.6	172	275	121.8	18 th	17	Well Above Average
Nafanua	67.9	375	12	28.0	18 th	13	Below Average
Nuusuatia	450.6	193	233	96.2	22 nd	27	Well Above Average
Saleilua	451.8	331	136	230.8	22 nd	18	Above Average
Saletele	133.3	274	49	27.0	06 th	25	Below Average
Saoluafata	89.8	428	21	13.6	11 th	21	Well Below Average
Ti'avea	259.6	261	99	68.0	07 th	22	Average
Vailoa.A	171.2	293	58	35.0	15 th	21	Below Average
S A V A I I							
Aopo	138.4	375	37	54.0	26 th	16	Well Below Average
Falelima	166.4	173	96	29.4	30 th	21	Average
Tuasivi	20.4	373	5	6.0	07 th	10	Well Below Average
Salailua	327.0	189	173	80.8	15 th	18	Well Above Average
Vaiaata	147.0	331	44	29.2	17 th	23	Below Average

Well Below Average
<40%

Below Average
40%-80%

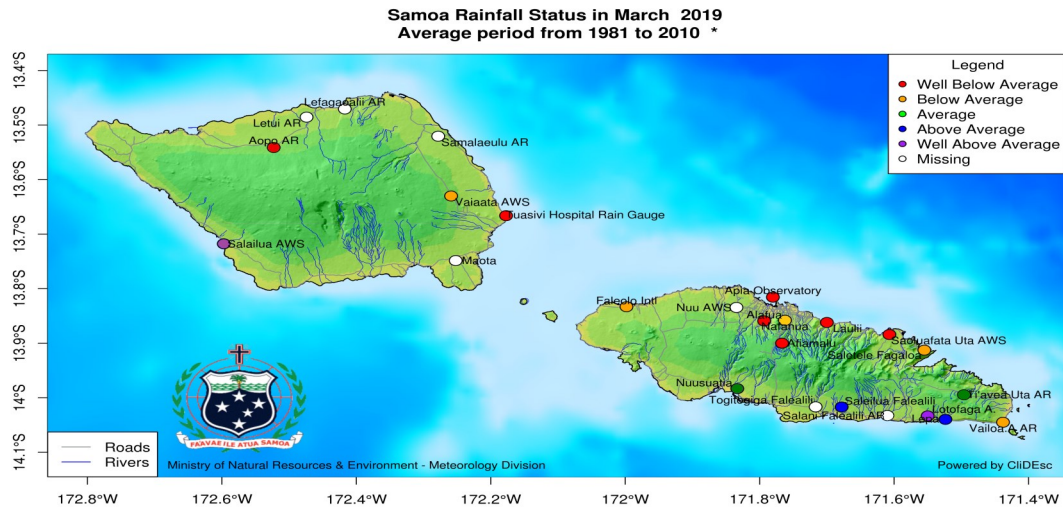
Average
80%-120%

Above Average
120%-160%

Well Above Average
>160%

Figure 3: Rainfall Status Map in March 2019

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 March 2019

Stations	Temperature (Degree Celsius)				
	Mean Daily Temperature (°C)	Extreme Temp Max (°C)	Date	Extreme Temp Min(°C)	Date
Afiamalu	N/A	N/A	N/A	15.5	04 th
Apia	28.0	34.0	11 th	22.6	05 th
Alafua	N/A	N/A	N/A	20.9	05 th
Faleolo	N/A	N/A	N/A	21.4	04 th
Saoluafata	27.6	33.6	31 st	21.4	05 th
Salailua	27.5	33.4	02 nd	19.8	04 th
N/A = Data Not Available					

Temperatures in March 2019 ranged from 27.5°C to 29.1°C with the highest recorded maximum temperature of 34.0°C at Vaiaata on the 11th. On the contrary, the lowest minimum temperature of 15.5°C was recorded on the 04th at the highland station Afiamalu.

ATMOSPHERIC PRESSURE

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

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

Station	Highest MSL Pressure (hPa)	Date	Lowest MSL Pressure (hPa)	Date	Average MSL Pressure (hPa)
Apia	1013.4	03 rd	1009.4	27 th	1011.1
Faleolo	1013.7	04 th	1011.3	01 st	1012.1

The highest MSL Pressure was registered at Faleolo on the 04th with 1013.7hPa while Apia station recorded the lowest MSL pressure of 1009.4 on the 27th.

(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 March.

Figure 4a : Apia Station

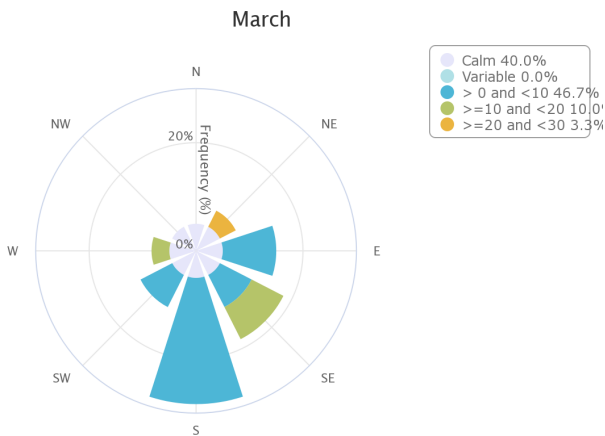
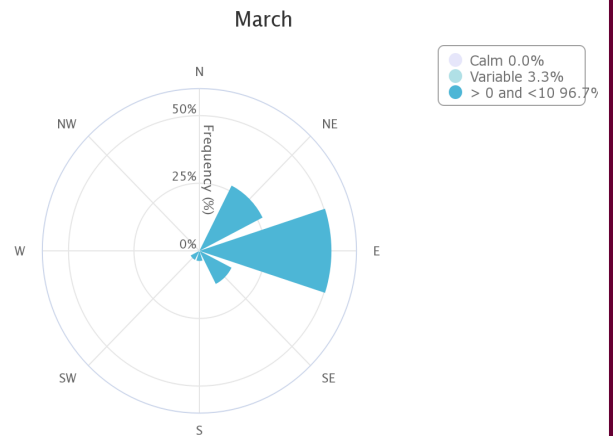


Figure 4b: Saoluafata Station



For the month of March, Southerlies dominated Apia station with some noticeable variable winds as well. Calm winds were predominant with some noticeable moderate breeze. Saoluafata on the other hand, experienced easterlies majority of the time with registering slight breeze (0-10km/hr). (Geographical location—

Figure 4c : Afiamalu Station

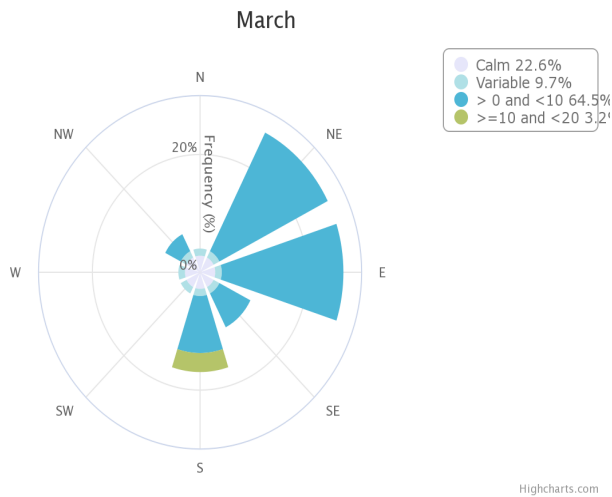


Figure 4d: Nafanua Station

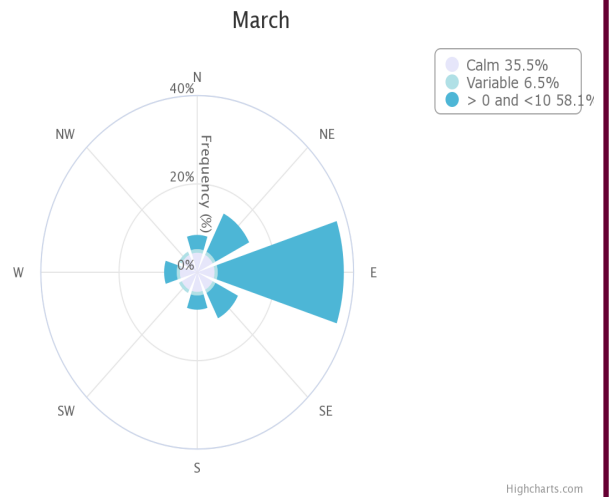
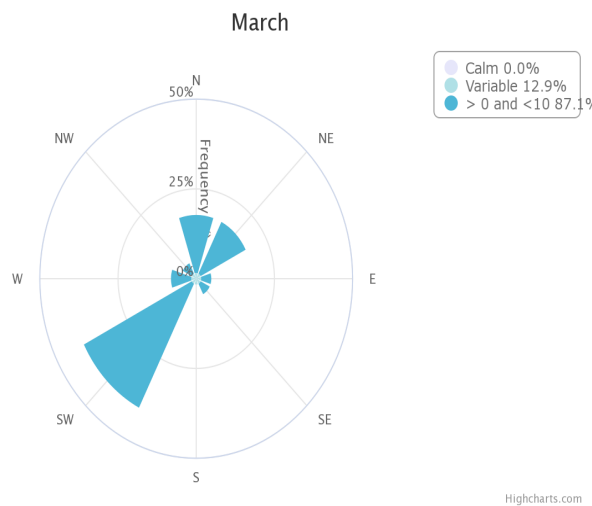


Figure 4f : Salailua Station



Slight easterly breeze (1-10km/hr) were predominant over at Afiamalu and Nafanua station, with some evident southerlies and north easterlies as well. For our Savaii station, Salailua registered south westerlies as the most influential wind direction, with dominant slight breeze (1-10km/hr) conditions.

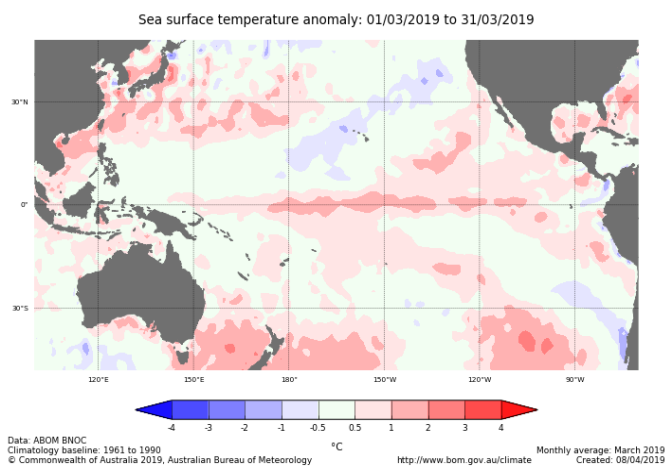
EL NINO SOUTHERN OSCILLATION (ENSO)

CURRENT ENSO STATUS

Current ENSO status remains neutral for March. While the sea surface temperatures leaning towards El Nino thresholds, atmospheric conditions continue to deny the coupling effects for such a phenomenon to occur. Hence the outlook is now at El nino Alert

Oceanic Indicator of ENSO

Figure 5: Sea Surface Temperature in March 2019



Sea surface temperatures were seen to be warmer than average substantially across the equatorial region. Warmer anomalies were also extended from the southern region of East Australia to most part of New Zealand.

In addition, the March values has increased since February by 2°C. The values for March shows Nino 3 at +0.7°C, Nino 3.4 +0.8°C and Nino 4 +0.8°C.

Figure 6: Sub-surface Temperature

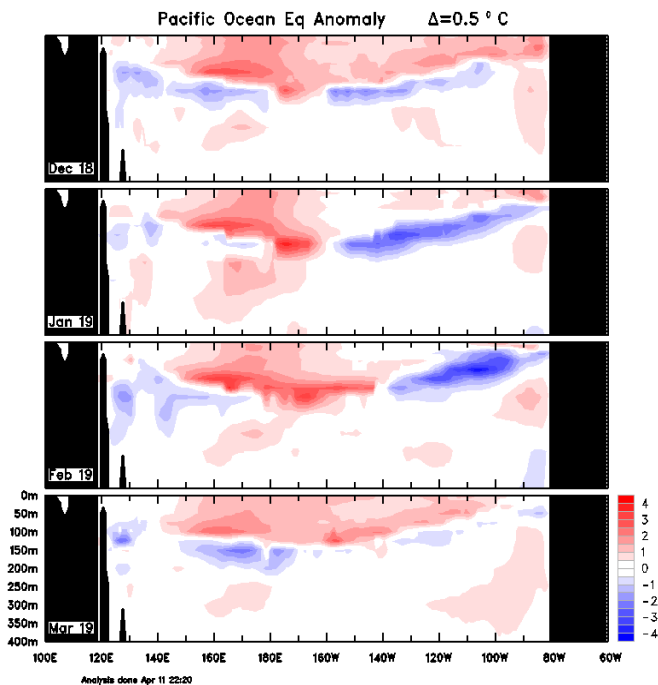


Figure 6 shows sub surface temperatures in the last 4 months. Warm anomalies have weakened significantly through the months as well as cooler anomalies due east of the equatorial region. So and so, the above figure shows the sub surface temperatures are still warmer than average.

Atmospheric Indicator of ENSO

Southern Oscillation Index (SOI)

The approximate 30-day and 90-day Southern-Oscillation Index (SOI) values to 14 April were -2.0 and -5.8 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 March 2018 vs March 2019 in all rainfall stations.

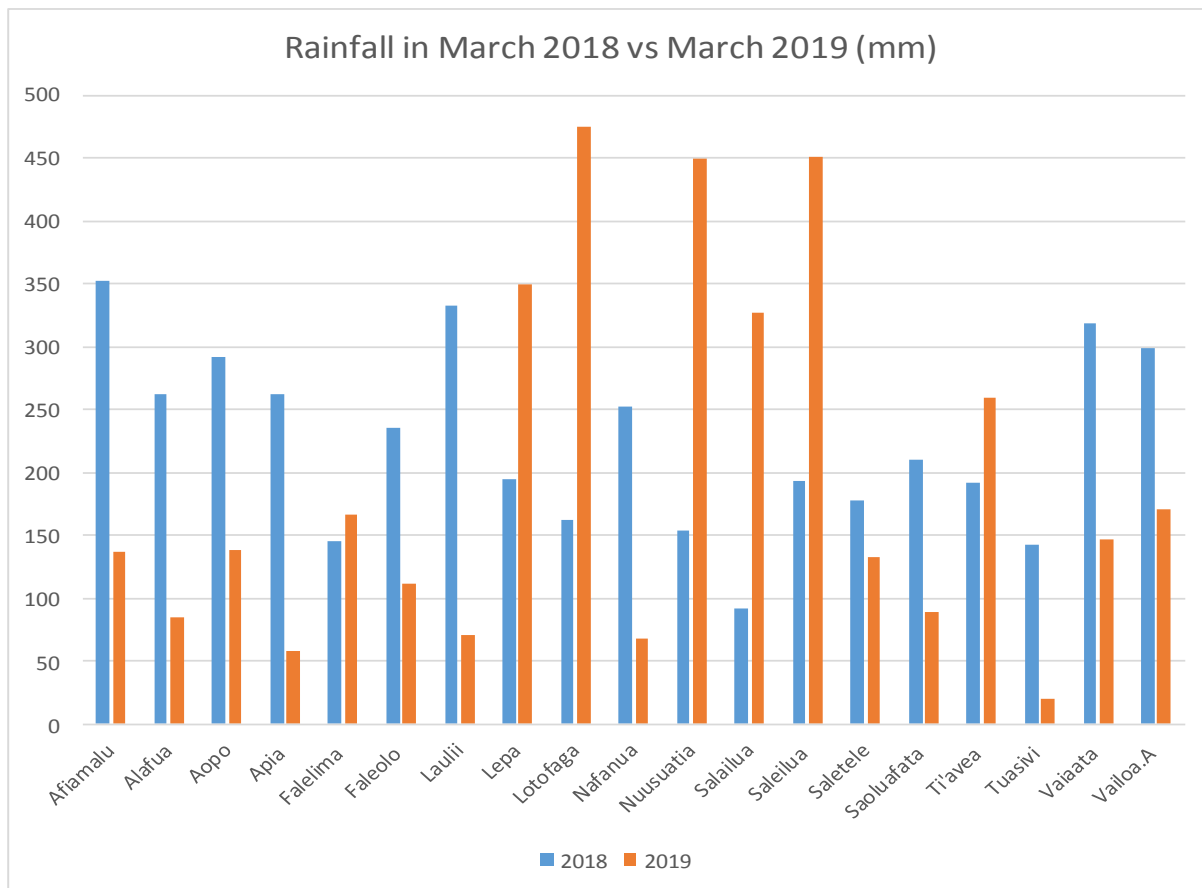


Figure 7 illustrates the side by side graphical representation of rainfall received in March 2018 and March 2019. The difference is evident among the regions of Samoa, with the southern stations such as Lepa, Lotofaga, Nuusuatia and Salailua to name a few, receiving rainfall above 300mm in 2019.

The northern region however were observed to be very dry in March 2019, with stations such as Apia and Tuasivi receiving less than 100mm of rainfall for the whole month. The weather summary highlights the lack of synoptic activity during March, together with the SPCZ lying far north to the group has provided very dry conditions for the Samoa Islands.