CLIMATE SUMMARY JANUARY 2019

Samoa Meteorology Division

Ministry of Natural Resources and Environment

(+685) 20855/20856 www.samet.gov.ws

www.facebook.com/Samoa Meteorological Services

HIGHLIGHTS

- Generally, "average to below average" recorded in January 2019. **Pg 1 & 2**
- The warmest temperature of 34.6^{0}C was registered on the 12th at Vaiaata. **Pg 3**
- Easterly winds remain dominant for most of the areas with south westerlies influencing the southern side. **Pg 4 & 5**
- El Nino Southern Oscillation (ENSO) remains Neutral with 50% chance of developing into an El Nino in the coming months. **Pg 6**
- Warm sub surface temperatures retreated in January as it decreased by 2^{0}C in comparison to December 2018 values. **Pg 6**

ISSUED : FEBRUARY 2019

Figure 1: SPCZ Position in January 2019

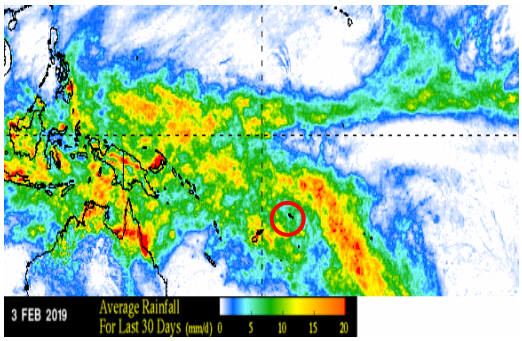
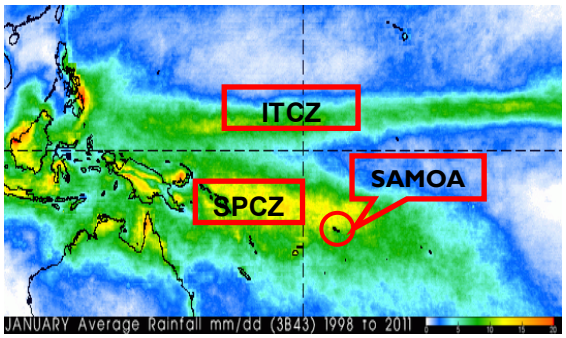


Figure 2: Normal Position of SPCZ in January



GLOBAL SCALE OBSERVATIONS

The Inter-tropical Convergence Zone (ITCZ) evidently enhanced west of the Date line with the South Pacific Convergence Zone (SPCZ) in the south Pacific split into two branches east of the Date Line. A segment of the SPCZ lied between Fiji and Samoa while the other branch located north of Samoa elongated towards French Polynesia. Some enhanced convection over New Guinea Islands, Solomon Islands, Fiji, Tokelau and Cook Islands was associated with a moderate strength pulse of the Madden-Julian Oscillation (MJO).

LOCAL SCALE OBSERVATIONS

The weather in January was dominated by wind flow feed in from the ridge of high pressure systems located in northeast of the island with the SPCZ making its mark briefly but significantly providing substantial amount of rainfall across the country especially on the 8th and 26th date. Afiamalu received the highest total rainfall of 821.1mm followed by 584.4mm at Aopo. Faleolo station registered 188.7mm as the lowest record of rain in January 2019 followed by Salailua with 218.6mm. The highest one - day fall was received at Afiamalu with amount of 104.6mm on the 8th of January when the SPCZ was in the vicinity of the group. Moreover, *'average to below average'* rainfall was recorded across the country in January 2019.

Table 1: Rainfall Statistics in January 2019

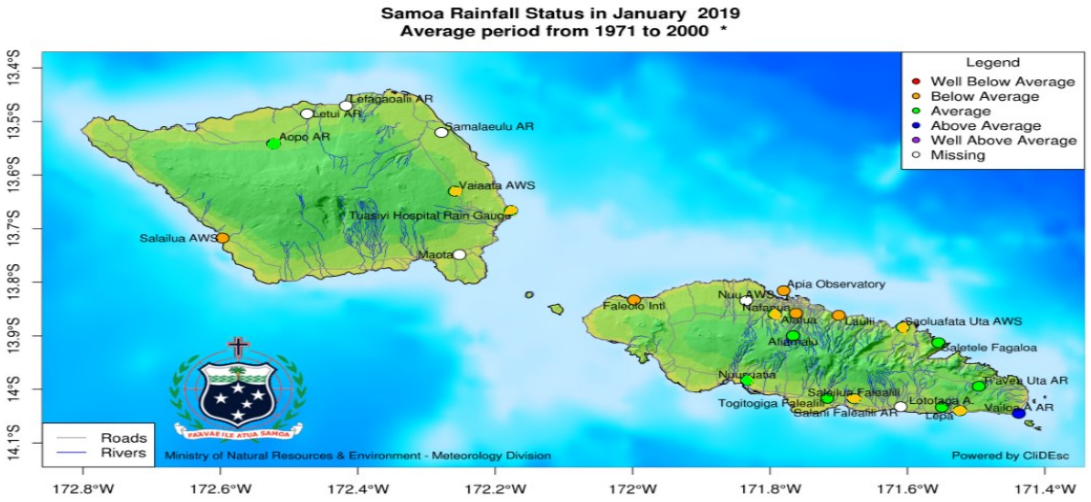
This table displays the rainfall status of all stations in the country in January 2019

Stations	January Rainfall (mm)	January 30 Year Long Term Average	% of Average	1 day fall (mm)	Date	# of Rainy Days	Rainfall Status
UPOLU							
Afiamalu	821.1	744	110	104.6	8th	29	Average
Alafua	382.8	426	90	73.0	8th	28	Below Average
Apia	238.7	486	49	57.3	8th	24	Below Average
Faleolo	188.7	345	54	59.0	8th	13	Below Average
Laulii	414.2	529	78	98.2	12th	19	Below Average
Lepa	398.2	557	71	54.6	26th	26	Below Average
Lotofaga	383.8	358	107	82.0	26th	23	Average
Leauvaa	334.4	833	40	56.6	2nd	26	Below Average
Matautu Falelatai	298.6	385	78	83.2	8th	29	Below Average
Nafanua	359.0	604	59	83.8	8th	28	Below Average
Nuusuatia	432.8	361	119	58.2	25th	27	Average
Saleilua	378.8	521	73	44.0	8th	26	Below Average
Saletele	433.0	627	69	44.1	12th	30	Below Average
Saoluafata	390.6	607	64	112.6	8th	26	Below Average
Ti'avea	497.0	524	94	86.2	8th	29	Average
Togitogiga	490.4	491	100	72.2	15th	30	Average
Vailoa.A	320.0	391	81	49.2	8th	25	Average
SAVAII							
Aopo	584.4	704	83	95.2	2nd	27	Average
Falelima	370.2	407	91	49.2	26th	27	Average
Tuasivi	238.0	407	58	74.8	26th	23	Below Average
Vaiaata	426.6	749	57	97.0	26th	28	Below Average
Salailua	218.6	313	70	67.2	12th	20	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 January 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 January 2019

Stations	Temperature (Degree Celsius)				
	Mean Daily Temperature (^{0}C)	Extreme Temp Max (^{0}C)	Date	Extreme Temp Min(^{0}C)	Date
Afiamalu	N/A	N/A	N/A	**18.6**	31st
Apia	28.2	32.3	20th	24.0	4th
Alafua	N/A	N/A	N/A	23.1	30th
Faleolo	N/A	N/A	N/A	23.9	31st
Saoluafata	27.7	34.0	20th	21.8	30th
Vaiaata	28.8	34.6	12th	23.6	31st
Salailua	28.1	33.7	7th	21.8	4th
N/A = Data Not Available					

The mean daily temperatures across the country in January ranges from 27.7 to 28.8^{0}C. The highest recorded maximum temperature was 34.6^{0}C at Vaiaata on the 12th. A ridge of high pressure in the northern area of the island brought stable and drier conditions with clear skies justified this value. Conversely, the lowest recording temperature reading was 18.6^{0}C at Afiamalu on the 31st in which Vaiaata also recorded its lowest of 23.6^{0}C on the same day brought by a southerly stable and drier wind flow which took over in the last day of the month.

ATMOSPHERIC PRESSURE

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

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

Station	Highest MSL Pressure (hPa)	Date	Lowest MSL Pressure (hPa)	Date	Average MSL Pressure (hPa)
Apia	1011.0	9th	1005.9	1st	1008.3
Faleolo	1011.4	9th	1005.5	28th	1008.3

The highest MSL Pressure recorded at Faleolo on the 9th with 1011.4hPa whilst 1005.5hPa on the 28th registered as the lowest pressure. Both stations recorded the same average MSL Pressure but different dates.

(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 January

Figure 4a : Apia Station

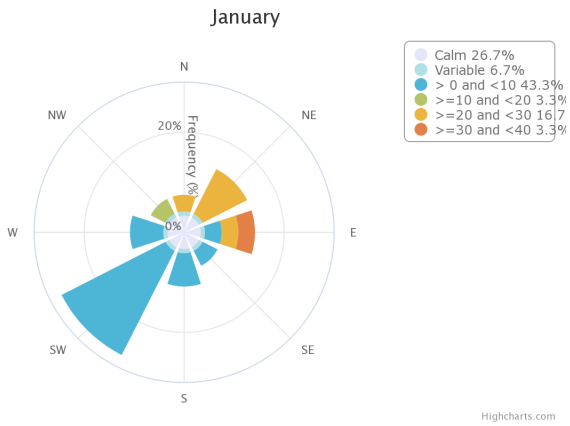
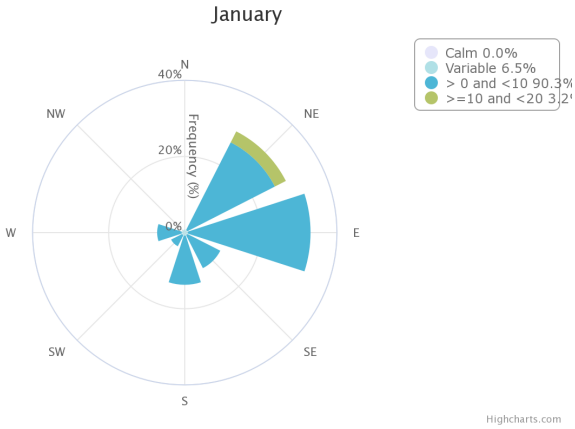


Figure 4b: Saoluafata Station



South westerlies possessed approximately 43% of the time in January as recorded at Apia station. Light winds of 1—10km/hr are frequently recorded with moderate winds of 20 to 30km/hr registered from the east for some time. Saoluafata on the other hand, experienced easterlies majority of the time registering light winds.

Figure 4c : Afiamalu Station

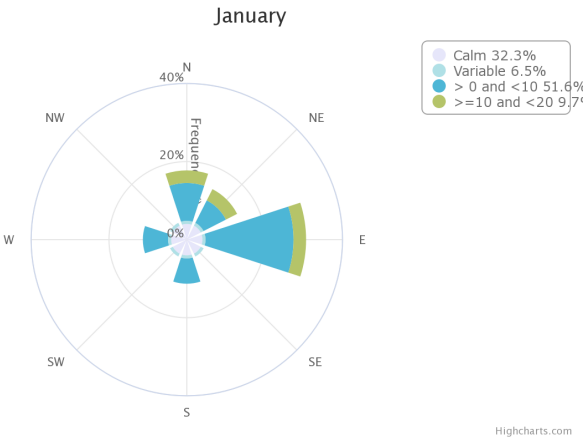


Figure 4d: Nafanua Station

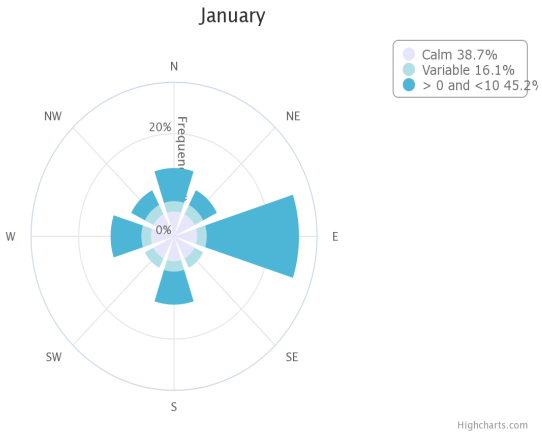


Figure 4e : Vaiaata Station

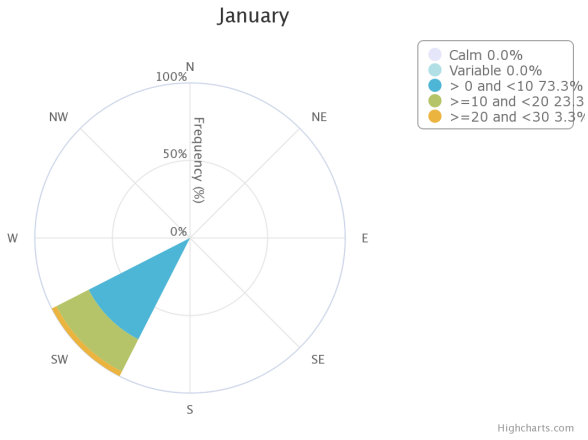
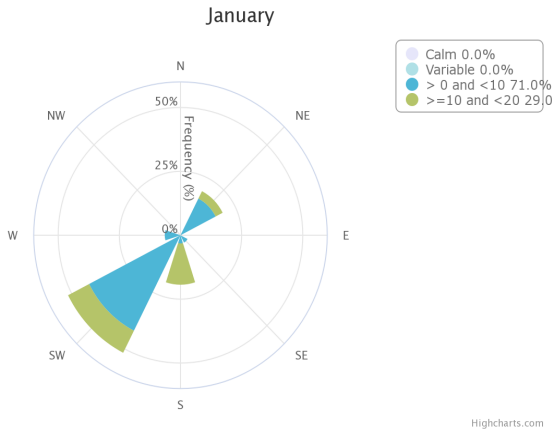


Figure 4f : Salailua Station



Afiamalu, Nafanua were influenced mainly by the light easterlies wind with a mixture of gentle winds (10 - 20km/h) throughout January. Evidently, approximately 32—39% of the time Afiamalu and Nafanua recorded calm conditions respectively. However, the stations located in Savaii island recorded south westerlies to be dominant.

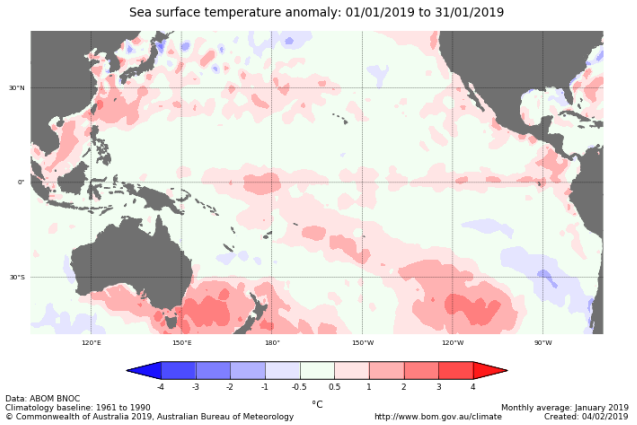
EL NINO SOUTHERN OSCILLATION (ENSO)

CURRENT ENSO STATUS

Currently 'Neutral' as all parameters weakening with 50% chance for El Nino to kick in during the southern hemisphere winter months starting in June 2019.

Oceanic Indicator of ENSO

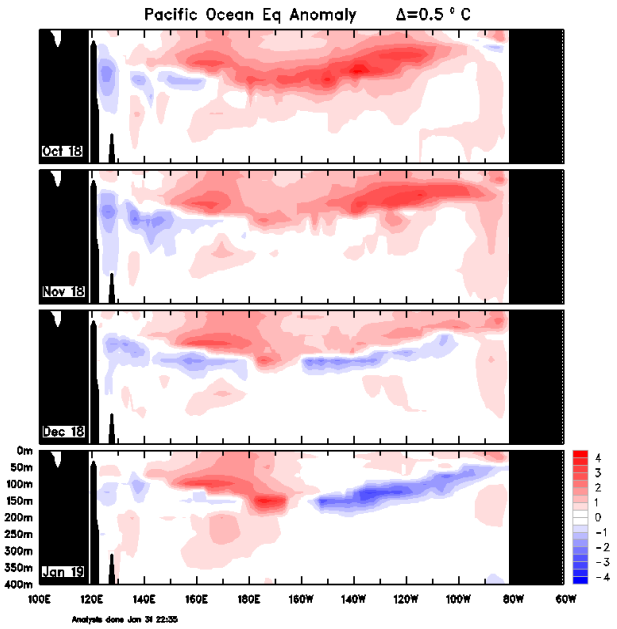
Figure 5: Sea Surface Temperature in January 2019



Warmer than average sea surface temperature (SST) were recorded in the equatorial region in January. It is also noticeable in the Southern Pacific region near the Date line as well as south of Australia, across the Tasman Sea and to the east of New Zealand.

However, the January values were decreased by 2^0C in comparison to December 2018 values. January values for Nino 3 were $+0.5^0$C, Nino 3.4 $+0.5^0$C and Nino 4 $+0.7^0$C.

Figure 6: Sub-surface Temperature



The four-month sequence of sub-surface temperature anomalies (to January) shows warm anomalies across most of the top 200 m of the western half of the equatorial Pacific sub-surface, and cool anomalies in the sub-surface of the eastern half, rising from about 150 m depth in the centre, to just below the surface in the very east of the basin.

Atmospheric Indicator of ENSO

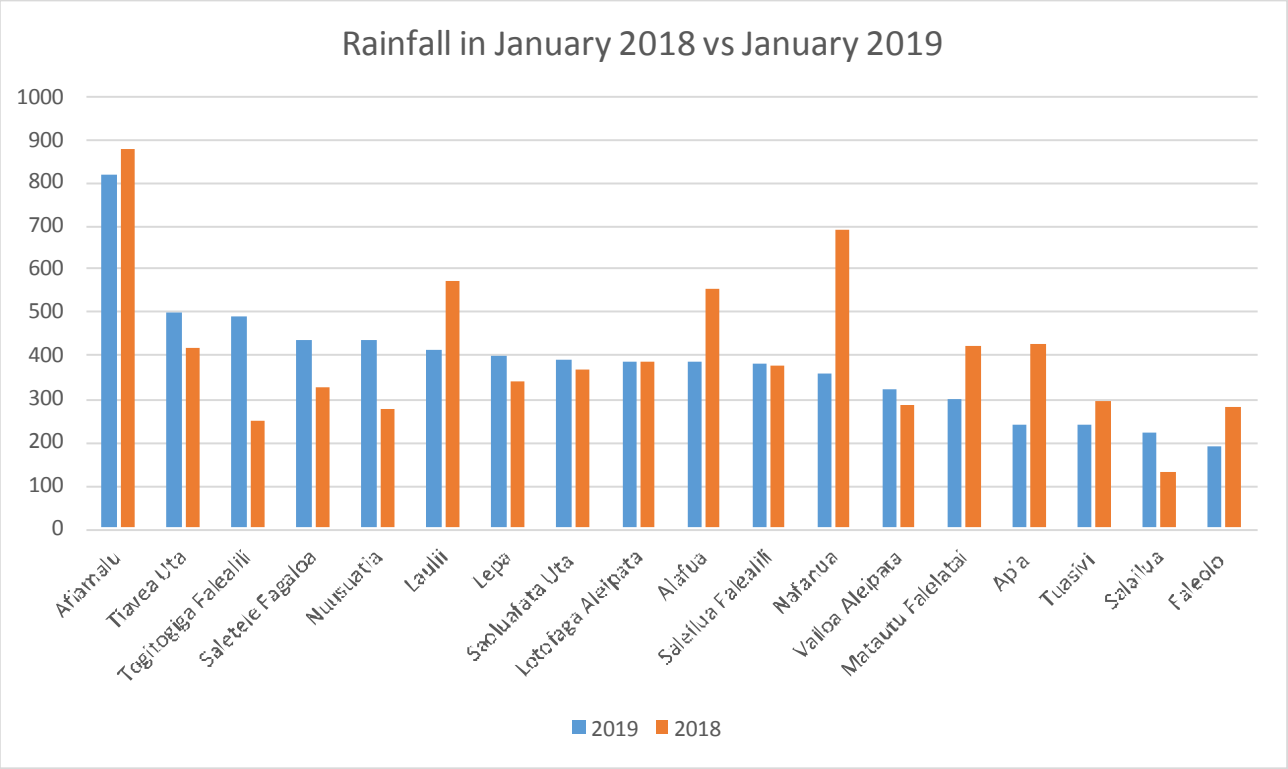
Southern Oscillation Index (SOI)

The approximate 30-day and 90-day Southern-Oscillation Index (SOI) values to 20 January were -0.1 and +3 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 January 2018 vs January 2019 in all rainfall stations.



In comparison of activities of January 2018 with January 2019, the rainfall fell within the range of 800mm - 200mm. It is evident that in 2018, stations in the northern side of the country received more rainfall compared to the rainfall registered in the same stations in 2019 such as Afiamalu, Laulii, Alafua, Nafanua, Matautu Falelatai, Apia, Faleolo and Tuasivi, Savaii. The state of the ENSO during this time was a weak La Nina weakening, and the impact of La Nina over Samoa is more rainfall.

On the other hand, the southern stations registered slightly more rainfall in 2019 than 2018. This is a result of the SPCZ enhanced activity fluctuating northward between Fiji and Samoa islands bringing sufficient rainfall for the country.