



CLIMATE SUMMARY JANUARY 2020

Samoa Meteorology Division

Ministry of Natural Resources and Environment



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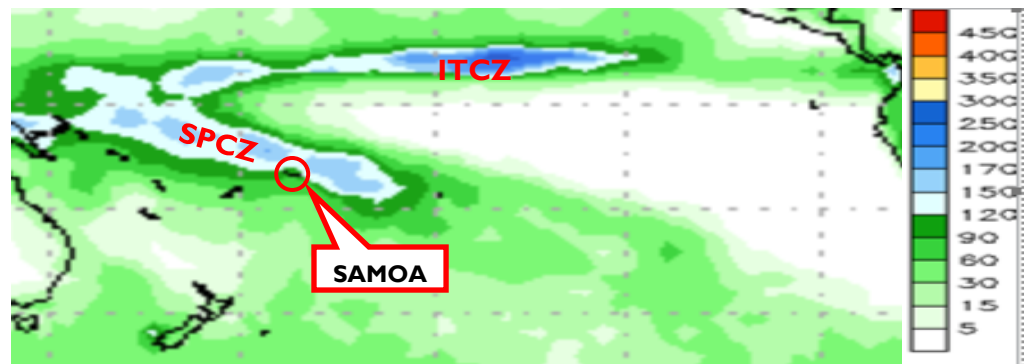


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HIGHLIGHTS

- ◆ 'Above Average' rainfall recorded in January 2020. **Pg 1 & 2**
- ◆ Highest daytime temperature of 33.6°C was recorded at Saoluafata station **Pg 3**
- ◆ Easterly winds remain dominant for most of the areas with north easterlies influencing the windward side of the islands **Pg 4 & 5**
- ◆ El Nino Southern Oscillation (ENSO) remains Neutral for January 2020. **Pg 6**
- ◆ Warmer than normal conditions experienced for Sea Surface Temperatures **Pg 6**

Figure 1: SPCZ Position in January 2020



GLOBAL SCALE OBSERVATIONS

The fluctuation of the South Pacific Convergence Zone (SPCZ) during the month of January showed its average position lying just north of the Samoa islands. Although less active and confined than the usual January SPCZ, the positioning was ideal to provide wetter than average conditions throughout the month, as reflected by Table 1 in Page 2. The Inter Tropical Convergence Zone (ITCZ) on the other hand remained centralized within the equatorial region, with moderate rainfall activities within its vicinity.

LOCAL SCALE OBSERVATIONS

Precipitation during January was observed to provide significant downpours, where 'above average' rainfall was recorded for most stations across the country. The highest monthly rainfall of 969.9mm was recorded at Afiamalu station, with the second highest of 825.0mm at Afulilo. In addition, the third week of the month observed heavy torrential downpours where the highest one day fall of 174.1mm at Afiamalu, and second highest rainfall of 171.6mm at Faleolo stations were both recorded on the 17th of January 2020. Conversely, the lowest monthly rainfall of 361.1mm was registered at Saleilua, with the second lowest of 378.6mm at Valiloa Aleipata station. Due to heavy rainfall activities, local flooding and minor landslides were experienced in some parts of the country during the month of January 2020.

Table I: Rainfall Statistics in January 2020

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

Stations	January Rainfall (mm)	January 30 Year Long Term Average	% of Average	1 day fall (mm)	Date	# of Rainy Days	Rainfall Status
U P O L U							
Afiamalulu	969.9	733	132	174.1	17 th	30	Above Average
Afulilo	825.0	604	136	106.0	17 th	31	Above Average
Alafua	733.6	449	163	113.6	17 th	27	Well Above Average
Apia	544.7	447	121	73.4	17 th	23	Above Average
Faleolo	476.7	312	152	171.6	17 th	22	Above Average
Laulii	620.2	529	117	140.3	22 nd	20	Average
Lepa	452.6	557	81	62.2	18 th	28	Average
Lotofaga	538.6	243	222	70.0	23 rd	29	Well Above Average
Nafanua	703.8	604	117	97.0	17 th	30	Above Average
Nuu	507.4	449	113	88.4	17 th	24	Above Average
Nuusuatia	545.0	307	177	80.0	17 th	27	Well Above Average
Saleilua	361.1	521	69	51.6	16 th	25	Below Average
Saoluafata	438.8	607	72	71.8	16 th	29	Below Average
Ti'avea	655.8	418	157	98.2	17 th	28	Well Above Average
Togitogiga	392.6	478	82	68.0	16 th	31	Average
Vailoa.A	378.6	319	118	55.0	23 rd	27	Average
S A V A I I							
Aopo	734.2	704	104	114.2	18 th	25	Average
Falelima	458.6	407	112	83.8	18 th	25	Average
Samalaeulu	624.4	460	135	84.2	17 th	28	Well Above Average
Tuasivi	565.0	407	138	98.0	17 th	28	Well Above Average

Well Below Average
<40%

Below Average
40%-80%

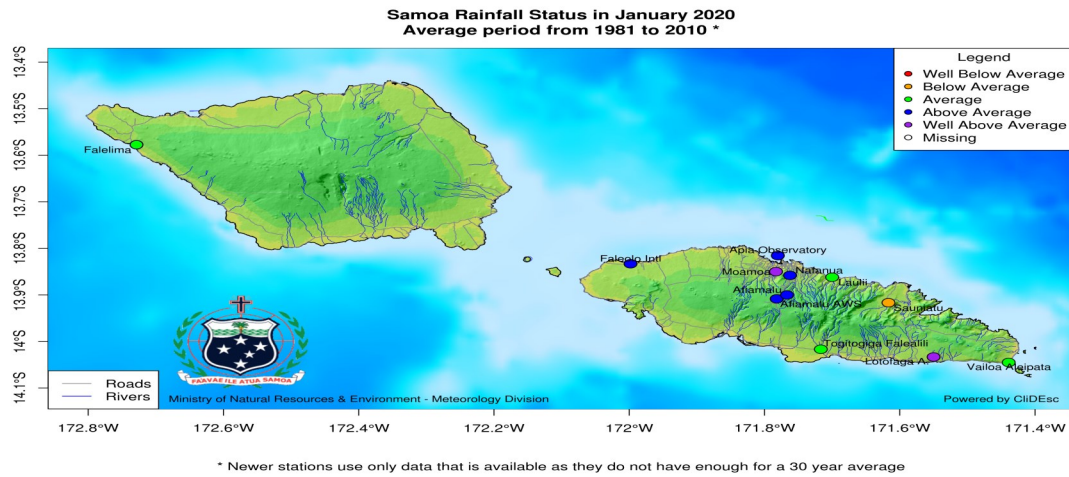
Average
80%-120%

Above Average
120%-160%

Well Above Average
>160%

Figure 3: Rainfall Status Map in January 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 January 2020

Stations	Max Temperature (°C)		
	Mean Daily Temperature (°C)	Extreme Temp Max (°C)	Date
Saoluafata	27.3	33.6	01 st
Nuu	25.3	32.0	10 th

Stations	Min Temperature (°C)	
	Extreme Temp Min(°C)	Date
Apia	23.0	03 rd
Saoluafata	21.4	03 rd
Faleolo	23.4	03 rd
Afiamalu	18.1	03 rd
Alafua	22.1	03 rd
Nuu	17.0	02 nd

Varying temperatures for January 2020 registered Saoluafata as the warmest station having recorded the highest day-time temperature of 33.0°C on the 01st of the month, with the coolest night time temperature of 17.0°C at Nu'u on the 02nd. The mean daily temperatures therefore alternated between 25.3°C-27.3°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 January 2020

Station	Highest MSL Pressure (hPa)	Date	Lowest MSL Pressure (hPa)	Date	Average MSL Pressure (hPa)
Apia	1012.3	31 st	1003.4	17 th	1008.2
Faleolo	1012.4	31 st	1003.4	17 th	1008.4

Between the two northern stations, Faleolo recorded the highest mean sea level (MSL) pressure of 1012.4 hPa on the 31st. However during mid-January 2020, both stations recorded their lowest of 1003.4 hPa on the 17th. Consequently, the weather during this period provided gusty winds and heavy downpours as seen in Table 1 in Page 2.

(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 2020.

Figure 4a : Apia Station

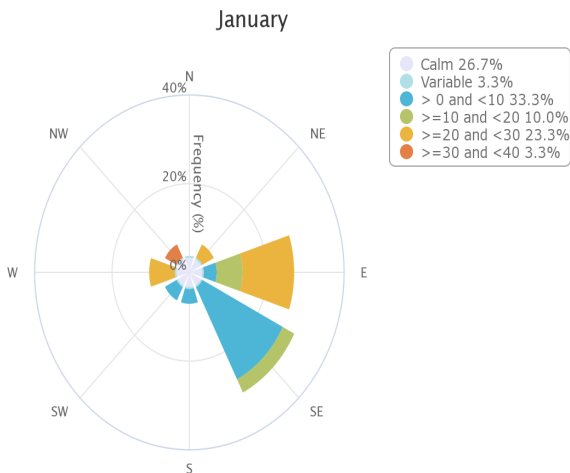
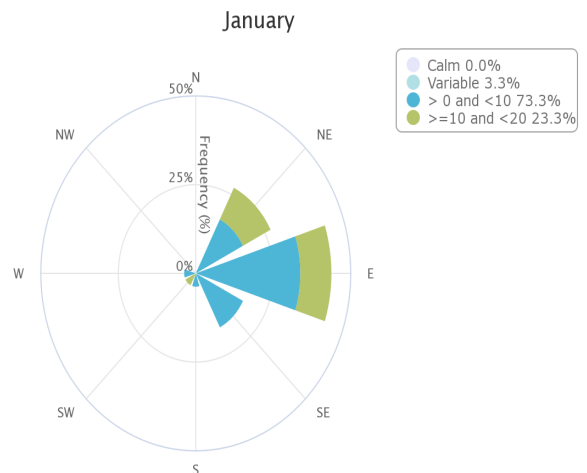


Figure 4b: Saoluafata Station



South easterlies possessed approximately 30% of the time in January as recorded at Apia station. Although slight breeze (1-10km/hr) wind speeds were dominant, moderate easterly breeze (21-30km/hr) and westerly winds were evident, verifying low pressure systems that were located west of the group during January. Saoluafata was dominated by easterly winds, having occurred 43% of the time, with persisting slight breeze (1-10km/hr) as the dominant wind speeds.

Figure 4c : Afiamalu Station

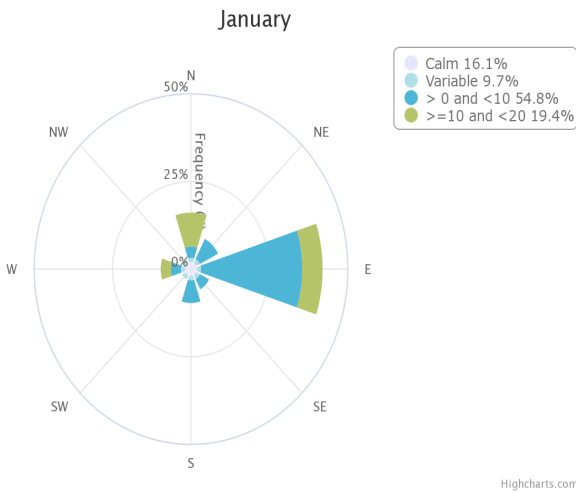


Figure 4d: Nafanua Station

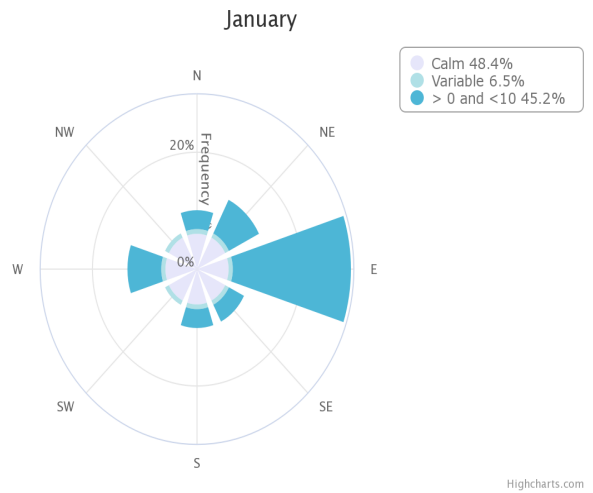


Figure 4e : Alafua

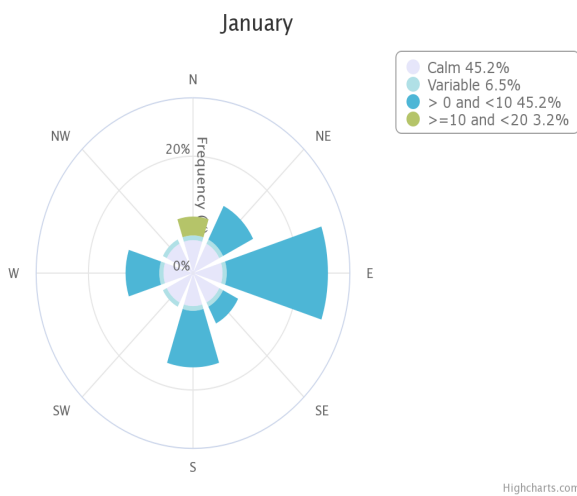
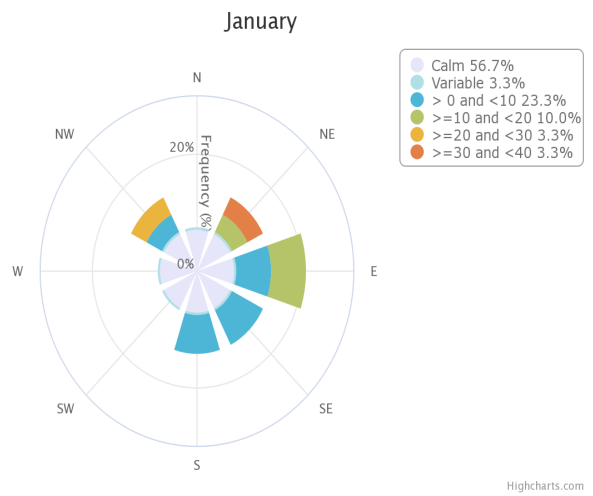


Figure 4f : Faleolo



Afiamalu and Nafanua were influenced mainly by light easterly breeze (1-10km/hr) throughout the month. Wind activities therefore for these stations during the month were observed to be rather calm, whereas Alafua and Faleolo experienced some varying wind directions. Moreover, wind speeds of up to 30km/hr were also recorded at Faleolo.

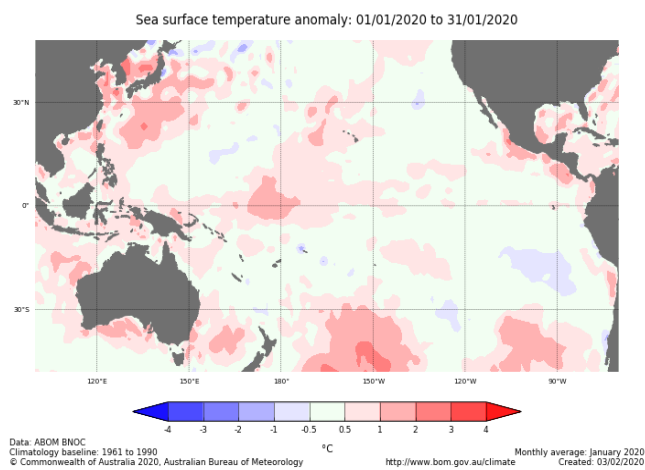
EL NINO SOUTHERN OSCILLATION (ENSO)

CURRENT ENSO STATUS

El Nino Southern Oscillation (ENSO) status remain neutral entering 2020. January climate indicators were all within neutral thresholds by the end of last month, with models suggesting the continuation of this ENSO state towards the end of the wet season.

Oceanic Indicator of ENSO

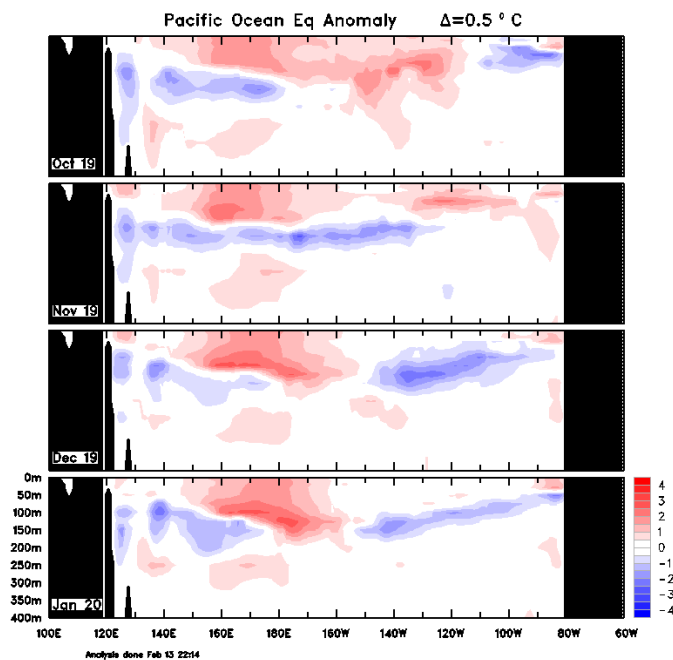
Figure 5: Sea Surface Temperature in January 2020



Sea Surface Temperatures (SSTs) were observed to be warmer than normal in the South Pacific Ocean. Between the 170°W and 130°W longitudes recorded most of the warm SSTs, with some noticeable surface warming along the Australian coast.

In addition, Nino values for January 2020 were seen to be rather similar to that of December 2019 values. January values for Nino 3 were +0.3°C, Nino 3.4 +0.5°C and Nino 4 +0.8°C.

Figure 6: Sub-surface Temperature



The four-month sequence of equatorial sub-surface temperature anomalies (to January) shows the top 150 m of the equatorial Pacific is warmer than average between about 160°E and 160°W, reaching more than two degrees warmer than average. Slightly cooler than average waters are present at a depth of around 50 to 150 m across most of the remainder of the equatorial Pacific

Atmospheric Indicator of ENSO

Southern Oscillation Index (SOI)

The approximate 30-day and 90-day Southern-Oscillation Index (SOI) values to 02nd of February were +0.8 and -4.1 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 2019 vs January 2020 in all rainfall stations.

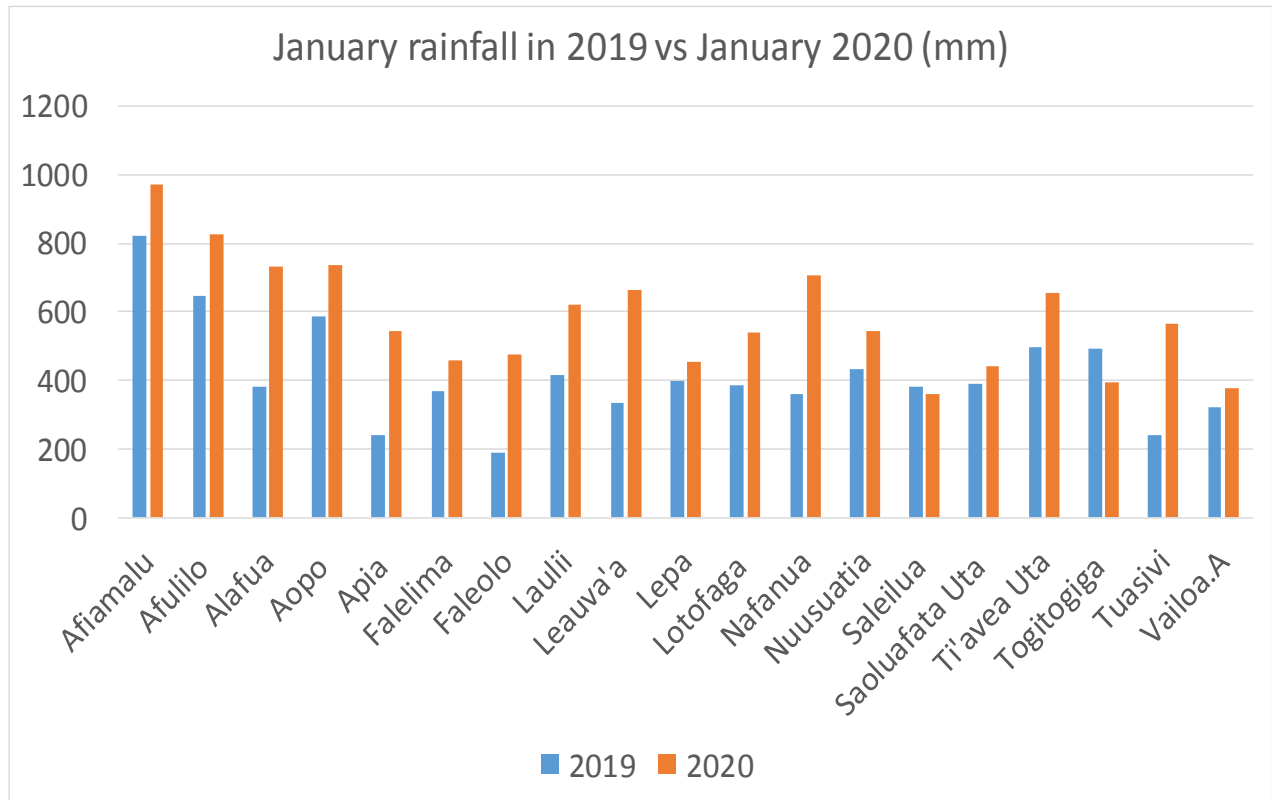


Figure 7 shows rainfall activities registered for the years 2019 and 2020 for the month of January, where the January 2020 was seen to be wetter than the previous year. With precipitation mostly varying between 400mm to 600mm, the SPCZ during the month was clearly active, hence most climate rainfall stations registered *above average* conditions for January 2020