



CLIMATE SUMMARY JANUARY 2021

Samoa Meteorology Division

Ministry of Natural Resources and Environment



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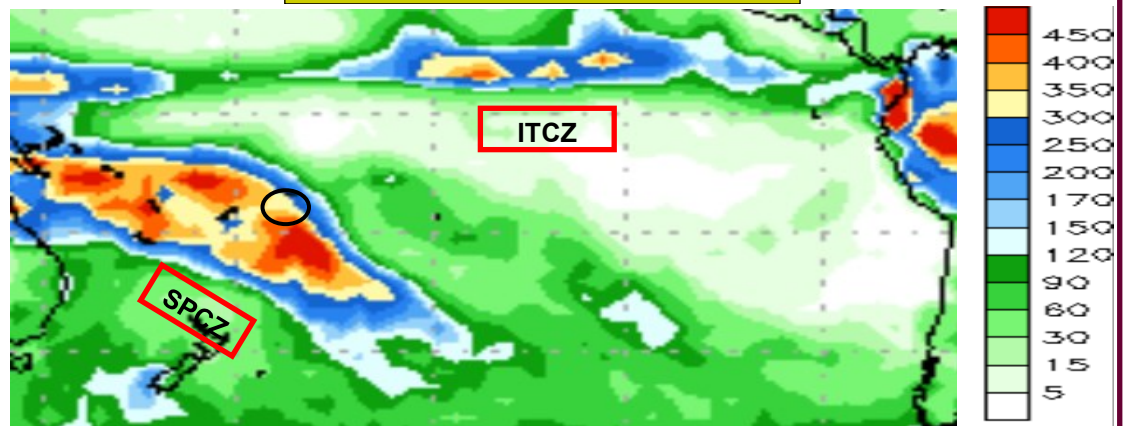


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HIGHLIGHTS

- ◆ Generally, “Average to Above average” was recorded in January 2021. **Pg 1 & 2**
- ◆ The warmest temperature of 31.4°C was registered on the 02nd at Le Piu Tai. Station **Pg 3**
- ◆ Easterly winds remain dominant for most of the areas with moderate breeze evident in January 2021. **Pg 4 & 5**
- ◆ El Nino Southern Oscillation (ENSO) remains within La Nina thresholds. **Pg 6**
- ◆ Warmer than average sea surface temperatures persists to the Western equatorial region, enhancing rainfall activities for most of the Western Pacific Islands. **Pg 6**

Figure 1: SPCZ Position in January 2021



GLOBAL SCALE OBSERVATIONS

Although the South Pacific Convergence Zone (SPCZ) was observed to be rather active in January, it was also seen to be displaced further south of Samoa, where rainfall activities significantly affecting Solomon Islands, Vanuatu and Fiji. Similar conditions were also experienced for Samoa as the SPCZ fluctuated over the islands for some part of the month. On the other hand, the Inter tropical Convergence Zone (ITCZ) remained within its normal position, and was observed to be less active over the equatorial region.

LOCAL SCALE OBSERVATIONS

Severe rainfall activities were observed for the month of January, due to the continuation of the La Nina phase in 2021. A number of low pressure systems which brought about heavy falls for most part of the month affected the group and have been the main source of deteriorating weather pattern for January. A statistical summary (Page 2) saw Afiamalu registering the highest monthly rainfall of 993.2mm, and the second highest of 850.9mm at Nafanua. A convergence zone which affected the group in the first week of the month brought about unstable weather conditions, where the highest one day fall of 265.0mm was recorded at Afiamalu, with the second highest of 243.4mm at Nafanua, both registered on the 06th of January. Regardless of rainfall activity, some areas experienced minimal rainfall, with the lowest of 291.2mm recorded at Vailoa Aleipata, and the second lowest of 293.6mm at Salani station. In general, *average to above average* rainfall was experienced for most of January 2021

Table 1: Rainfall Statistics in January 2021

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

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							
Afiamalu	993.2	733	135	265.0	06 th	30	Above Average
Alafua	725.6	449	162	177.8	06 th	31	Well Above Average
Apia	635.1	447	142	147.5	06 th	29	Above Average
Faleolo	344.6	312	110	66.0	06 th	22	Average
Lauli'i	505.1	529	95	48.7	22 nd	20	Average
Leauva'a	721.4	765	94	190.8	06 th	26	Average
Lepa	329.4	557	59	78.4	27 th	22	Below Average
Lotofaga	389.1	243	160	86.4	06 th	30	Well Above Average
Nafanua	850.9	604	141	243.4	06 th	30	Above Average
Nuusuatia	355.4	307	116	76.0	06 th	21	Average
Salani	293.6	243	121	90.0	06 th	29	Above Average
Saleilua	478.0	521	92	90.6	06 th	18	Average
Saoluafata	462.6	607	76	109.2	06 th	31	Below Average
Ti'avea	454.0	418	108	88.4	26 th	29	Average
Togitogiga	462.7	478	97	139.0	03 rd	26	Average
Vailoa.A	291.2	319	91	66.0	26 th	26	Average
S A V A I I							
Aopo	365.2	704	52	128.2	06 th	19	Below Average
Lefagaoolii	317.4	498	64	84.8	06 th	23	Below Average
Samalaeulu	463.2	460	101	83.8	06 th	30	Average
Tuasivi	393.8	407	97	100.8	06 th	27	Average

Well Below Average
<40%

Below Average
40%-80%

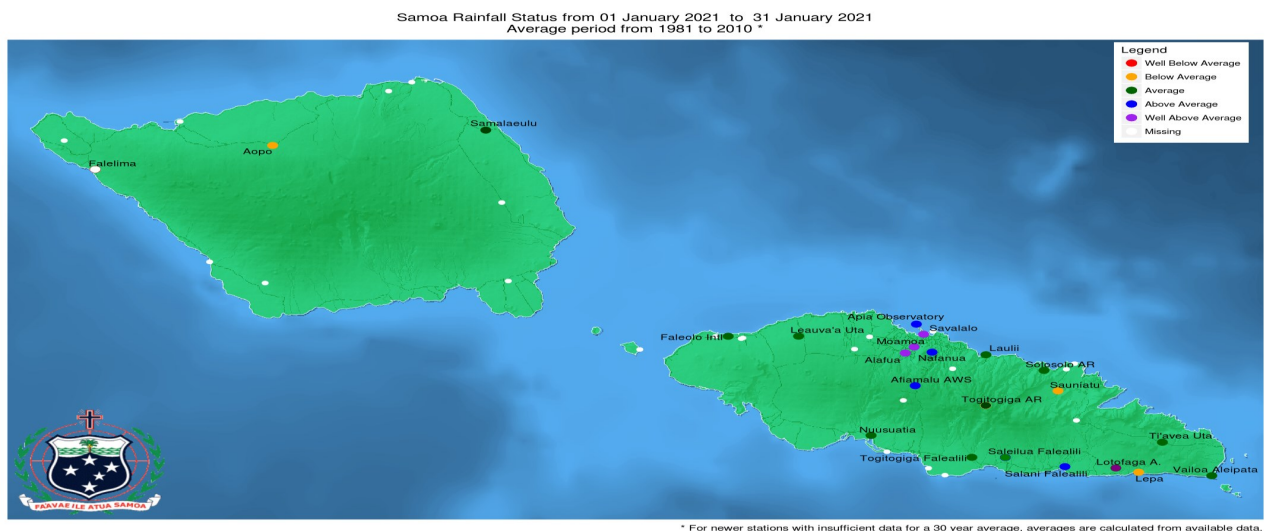
Average
80%-120%

Above Average
120%-160%

Well Above Average
>160%

Figure 3: Rainfall Status Map in January 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 January 2021

Stations	Max Temperature (°C)		
	Mean Daily Temperature	Extreme Temp	Date
Manono	28.5	31.3	02 nd
Le Piu Tai	30.9	31.4	02 nd

Stations	Min Temperature (°C)	
	Extreme Temp Min(°C)	Date
Afiamalu	16.9	07 th
Apia	22.0	28 th
Alafua	21.2	07 th
Faleolo	20.7	22 nd

Mean January temperatures varied within warm conditions, with the highest daytime temperature of 31.4°C recorded at Le Piu tai station. Both stations seen in the table above recorded their warmest temperatures on the 02nd of the month. On the other hand, observations showed cool temperatures were recorded mostly for the 1st week and towards the end of January, where the lowest minimum temperature of 16.9°C was recorded at Afiamalu on the 07th. Other stations experienced similar cool conditions on the same day, while the northern stations such as Apia and Faleolo registered their lowest on the 28th and 22nd respectively.

ATMOSPHERIC PRESSURE

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

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

Station	Highest MSL Pressure (hPa)	Date	Lowest MSL Pressure (hPa)	Date	Average MSL Pressure (hPa)
Apia	1012.6	14 th	1007.6	29 th	1010.8
Faleolo	1012.9	08 th	1007.3	29 th	1010.9

The highest MSL Pressure was recorded at Faleolo on the 08th of 1012.9hPa while also recording the lowest MSL pressure of 1007.3hPa on the 29th of January 2021.

(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 January 2021. Rainfall activities are associated with dominant wind directions and geographical locations of rainfall stations.

Figure 4a : Apia Station

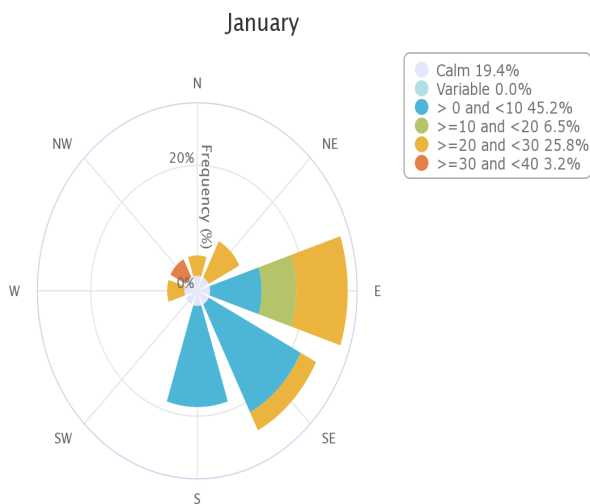
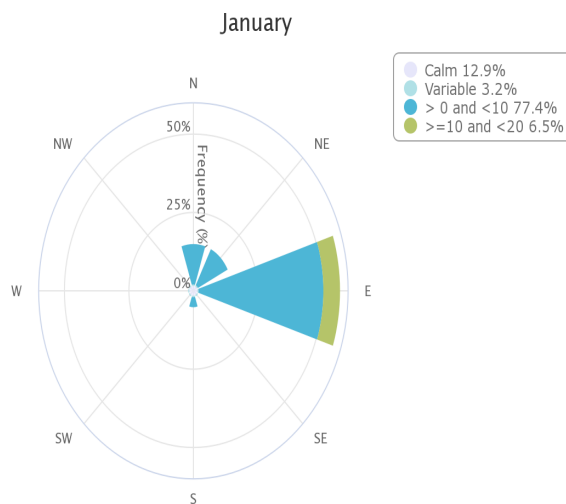


Figure 4b: Afiamalu Station



For Apia station (Figure 4a), predominant East to South Easterly winds were recorded, with wind speeds reaching up to 30km/hr. Moderate breeze was evident as well, travelling from the north and north western side of Samoa. Nonetheless, calm winds of 1-10km/hr were the dominant wind speeds at Apia. Faleolo station was dominated by easterly winds in January, with light breeze(1-10km/hr) occurring most of the month.

Figure 4c : Alafua Station

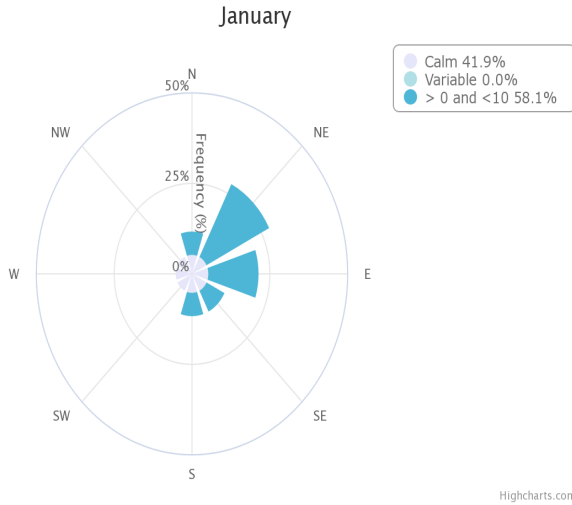


Figure 4d: Nafanua Station

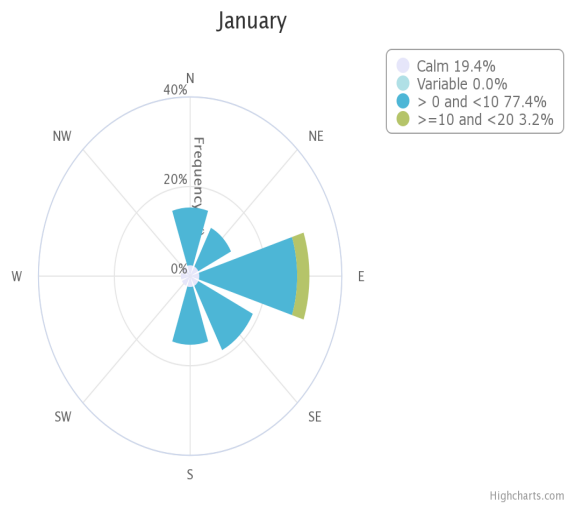
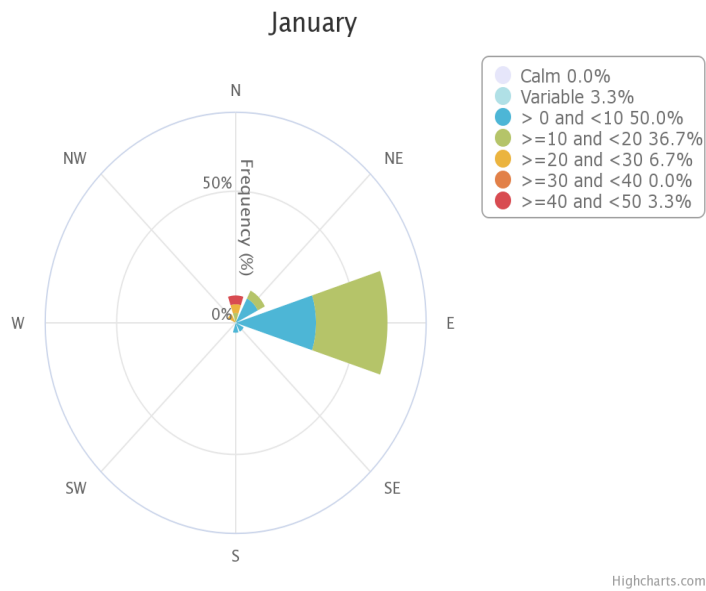


Figure 4e : Faleolo Station



Easterly winds remained the dominant wind direction for Nafanua and Faleolo station, due to a strengthening in trade winds activity for the month of January. Alafua station was dominated by north easterly winds in January. Calm breeze of 1-10km/hr were most occurring across the three stations, with noticeable strong winds (41-50km/hr).

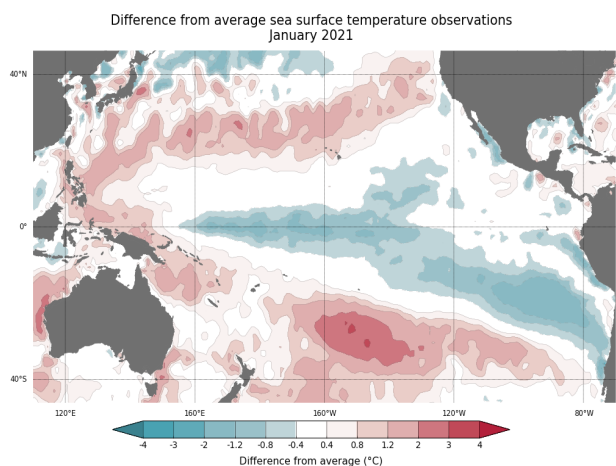
EL NINO SOUTHERN OSCILLATION (ENSO)

CURRENT ENSO STATUS

Climate indicators are still within La Nina thresholds, where the current ENSO phase remain at La Nina. Models suggest that this phase will likely to weaken in mid 2021.

Oceanic Indicator of ENSO

Figure 5: Sea Surface Temperature in December 2020

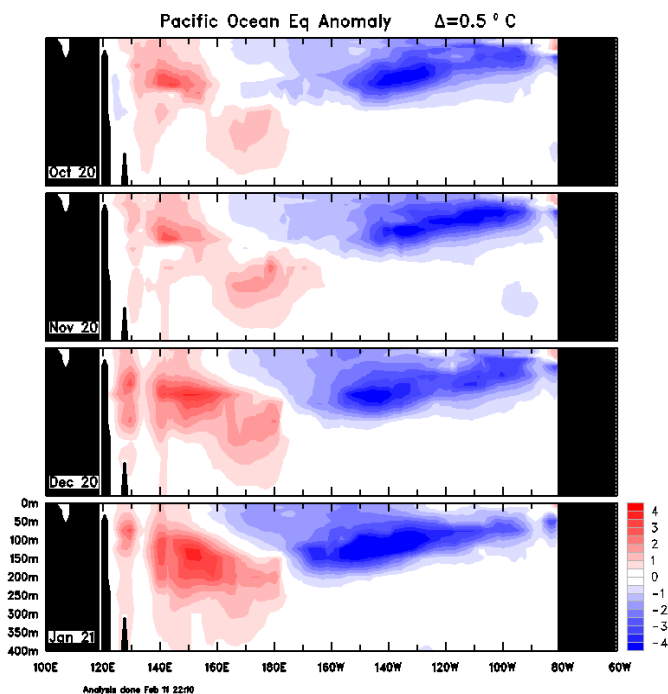


Data: BOM SST
 Climatology baseline: 1961 to 1990
 © Commonwealth of Australia 2021, Australian Bureau of Meteorology
 Monthly average: January 2021
 http://www.bom.gov.au/climate Created: 15/02/2021

The SST map for January shows below average SSTs extending along the equator in the western and central tropical Pacific Ocean, extending into the tropics south of the equator in the east of the basin. The strength of these anomalies has decreased in eastern parts of the basin compared to December but has increased in the western half of the basin.

In addition, a slight warming of Nino indices since December is experienced, with Nino 3 value at -0.4°C , Nino 3.4 at -0.8°C and Nino 4 at -0.9°C .

Figure 6: Sub-surface Temperature



The four-month sequence of equatorial Pacific sub-surface temperature anomalies (to 31 January) shows cooler than average water extending across the top 200 m of the sub-surface of the equatorial Pacific east of around 160°E . The strength and spatial extent of cooler than average water has remained fairly consistent since September, with some strengthening in January.

Atmospheric Indicator of ENSO

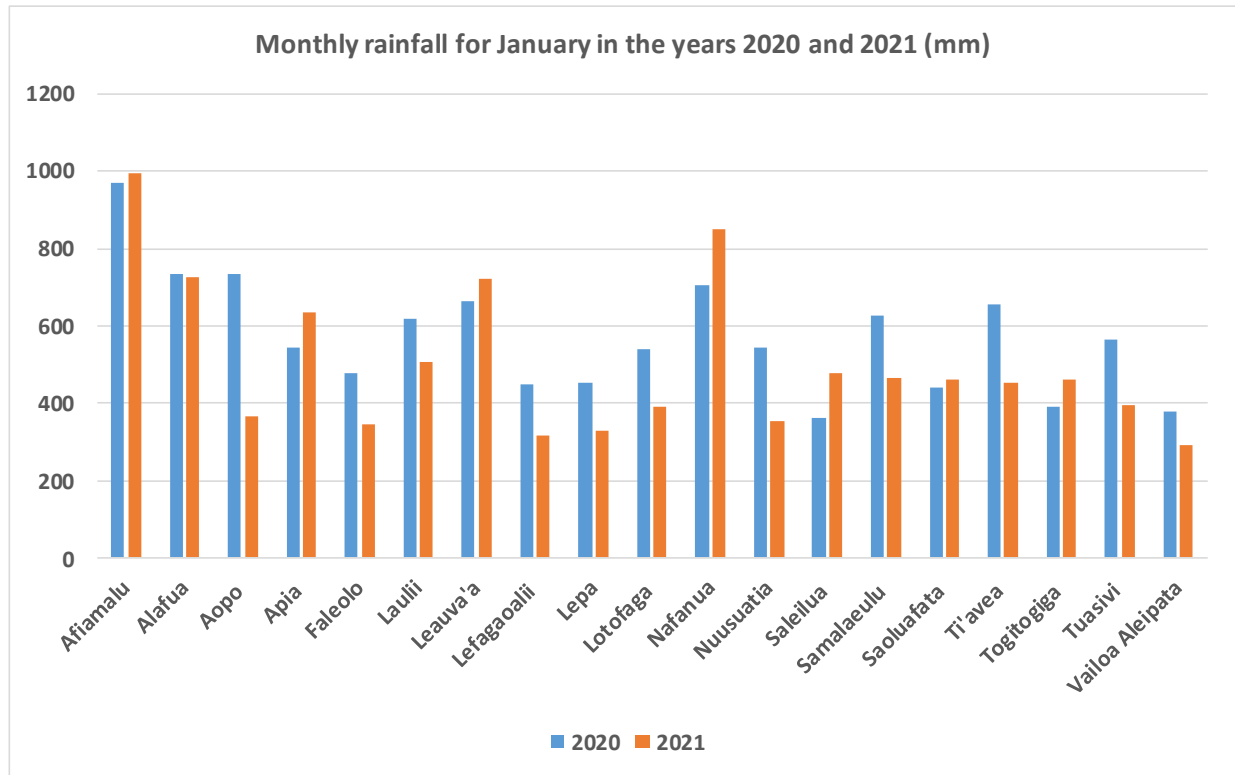
Southern Oscillation Index (SOI)

The approximate 30-day and 90-day Southern-Oscillation Index (SOI) values to 14th February were +13.3 and +15.3 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 2020 vs January 2021 in all rainfall stations.



Despite having experienced similar weather conditions, January 2020 seemed to have received more rainfall activities than the later year. An active SPCZ which was displaced south of the islands meant rainfall activity restrained to the southern coast. The weather summary showed a number of low pressure systems mainly to the south of the islands provided significant showers for Samoa, where a constant issuance of Severe Weather Information was valid for the first few weeks of the month.

Observations continue to show the persistence of the La Nina phase well into 2021, which can greatly enhance rainfall activity for the second half of the wet season.