



Vanuatu Monthly Climate Summary

December 2019



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Volume 2, Issue 1

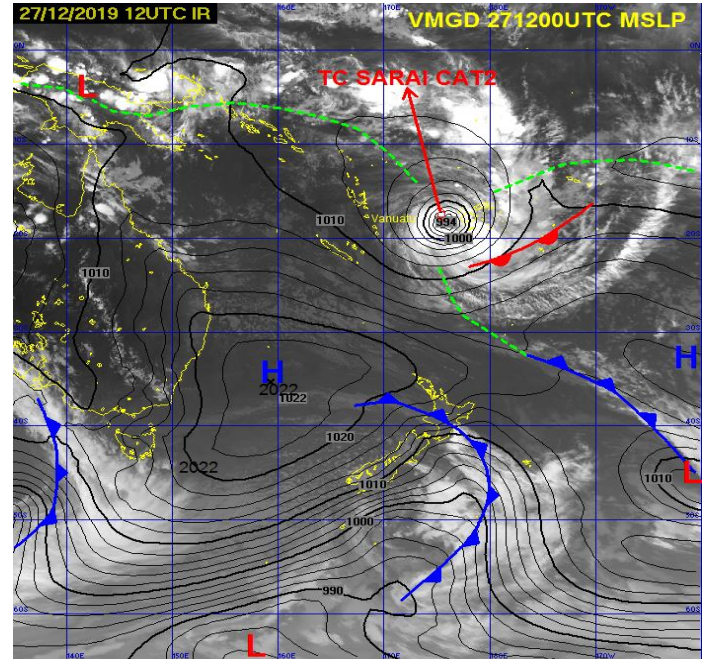
1. Highlights

Rainfall	<ul style="list-style-type: none"> Below normal rainfall recorded at Sola, Pekoa and Port Vila. While Aneityum recorded above normal rainfall.
Temperature	<ul style="list-style-type: none"> The highest temperature was 34.2°C, reported at Port Vila on the 19th. The lowest temperature was 17.3°, recorded at Aneityum on the 11th.
Significant Weather	<ul style="list-style-type: none"> TC Sarai began as a low depression northeast of Vanuatu on the 24th, before escalating into a Category 1 cyclone over Fiji. Associated rainfall were mostly experienced over the northern islands.
ENSO	<ul style="list-style-type: none"> Neutral State

2. Weather Patterns

A ridge of high pressure east of New Zealand pushed over New Caledonia to the west of Vanuatu on the 1st – 4th, which created mostly gentle (>5 knots - 11 knots) to moderate (>11 knots – 16 knots) south-easterlies during the first week of December. An active trough extended from a low pressure system just north of the Solomon caused unstable weather conditions over Vanuatu on the 5th and 6th. Another high pressure cell emerged from the Tasman Sea on the 8th which pushed the trough further northeast, allowing south-easterlies to resume over the country during the second week. Three tropical lows were embedded along an active trough on the 20th, which extended from Papua New Guinea and Solomon Islands, over the northern part of Vanuatu, and towards Samoa. The trough remained until the 21st, allowing the associated low pressure over Samoa to intensify into a tropical disturbance, and further developed into a low depression on the 22nd. The northern part of Vanuatu received much rain from this trough compared to the rest of the islands. Sola recorded its highest rainfall of the month at 52.5mm on the 20th. Another low pressure system which remained over Solomon Islands on the 20th shifted in an eastward direction before escalating into a tropical disturbance on the 24th. The system lingered northeast of Vanuatu (north of Fiji) for 2 days before developing into a tropical CAT 1 cyclone (TC Sarai) on the 26th, and further intensified to CAT 2 on the 27th. TC Sarai lasted for the remainder of the month and was finally downgraded to a tropical low on the 31st. TC Sarai mostly affected Fiji. There were no direct impact from the cyclone over Vanuatu.

Figure 1: Mean Sea Level Pressure at 5:00pm 27th/Dec/2019; Tropical Cyclone Sarai at its highest peak.



3. Rainfall

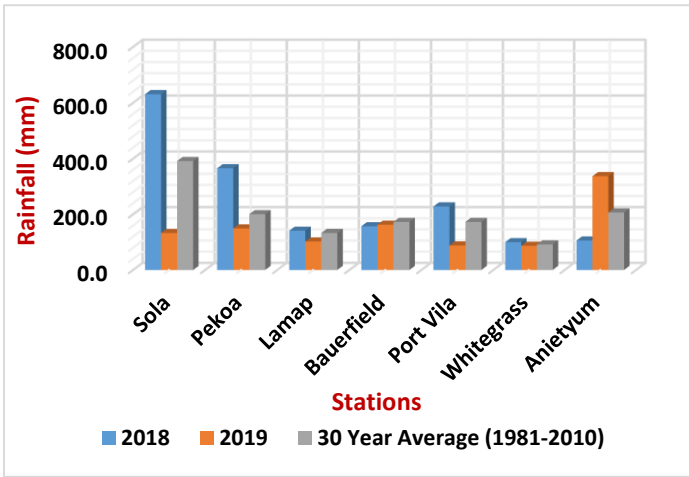
Below normal rainfall were still recorded for Sola, Pekoa and Port Vila. On the 17th, a trough extended from a sub-tropical frontal system over New Zealand passed over southern Vanuatu on the 17th, casting showers of rain to most of the southern islands. Aneityum recorded above normal rainfall, while Whitegrass recorded normal for the month of December.

Table 1: December 2019 Rainfall Summary for Vanuatu

Stations	Total Monthly Rainfall (mm)	Highest Daily Rainfall (mm)	Date of Daily Highest Rainfall Recorded	30 Year Monthly Average (mm) (1981-2010)	SCOPIC Rainfall Status
Sola	133.0	52.5	Friday 20 th	391.6	Below Normal
Pekoa	149.4	50.6	Thursday 5 th	200.5	Below Normal
Lamap (AWS)	102.5	40.5	Friday 6 th	133.1	Normal
Bauerfield	162.8	80.6	Monday 2 nd	172.8	Normal
Port Vila (AWS)	88.0	36.5	Thursday 19 th	172.9	Below Normal
Whitegrass	86.9	49.3	Thursday 5 th	91.9	Normal
Anelghaohat	337.3	61.0	Tuesday 17 th	206.4	Above Normal

*Note: AWS – Automatic Weather Station

Figure 2: December 2019 vs. December 2018 Rainfall compared to 30 Year Monthly Average



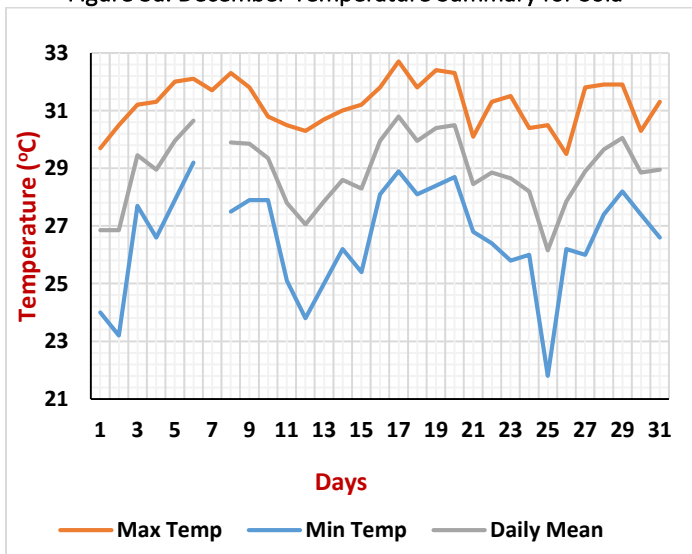
The month of December 2019 was drier than December the previous year. Rainfall recorded at Sola was well below average in 2019 compared to 2018. The same trend was observed at the other stations except at Anietyum.

4. Atmospheric Temperatures

Table 2: December 2019 Temperature Summary for Vanuatu

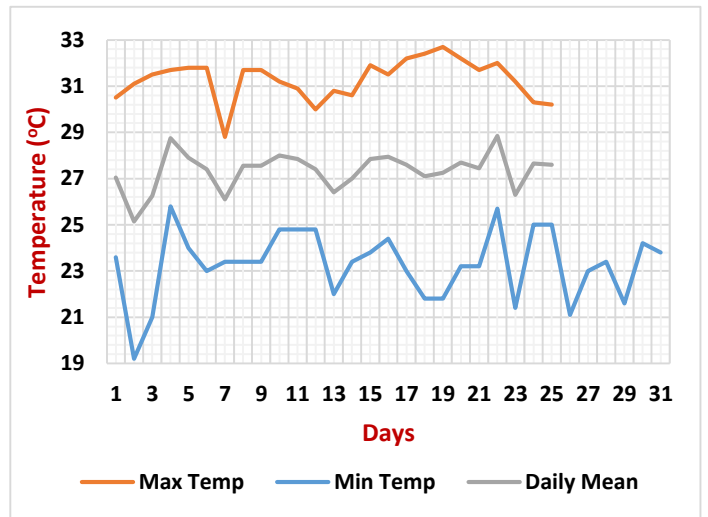
Region	Stations	Source	Mean Max Temp (°C)	Mean Min Temp (°C)	Daily Mean Temp (°C)
Northern	Sola	AWS	31.2	26.6	28.9
	Pekoa	Manual	31.3	23.3	27.3
	Lamap	AWS	-	-	-
Southern	Bauerfield	Manual	31.0	20.9	25.9
	Port Vila	AWS	31.3	23.3	27.3
	Whitegrass	Manual	30.2	21.8	26.0
	Anelgaohat	AWS	29.7	22.5	26.1

Figure 3a: December Temperature Summary for Sola



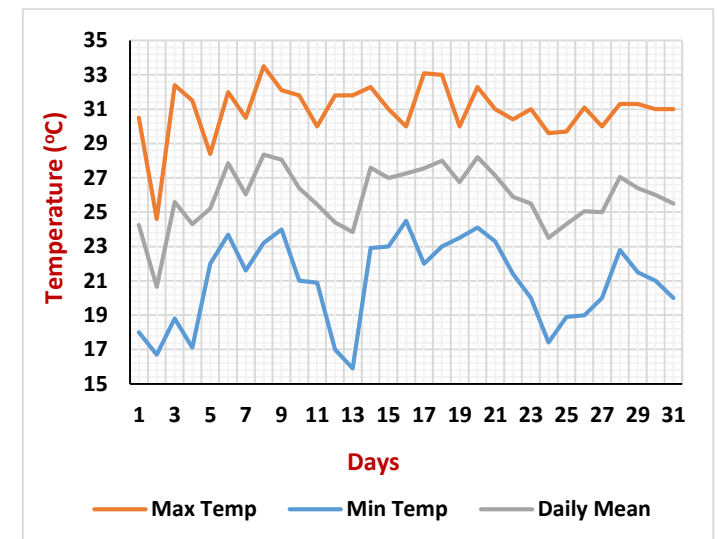
Sola recorded a total of 29 days where temperatures exceed 30.0°C. The highest temperature was 32.7°C recorded on the 17th. The lowest temperature was 21.8°C, recorded on 25th, Wednesday night.

Figure 3b: December Temperature Summary for Pekoa



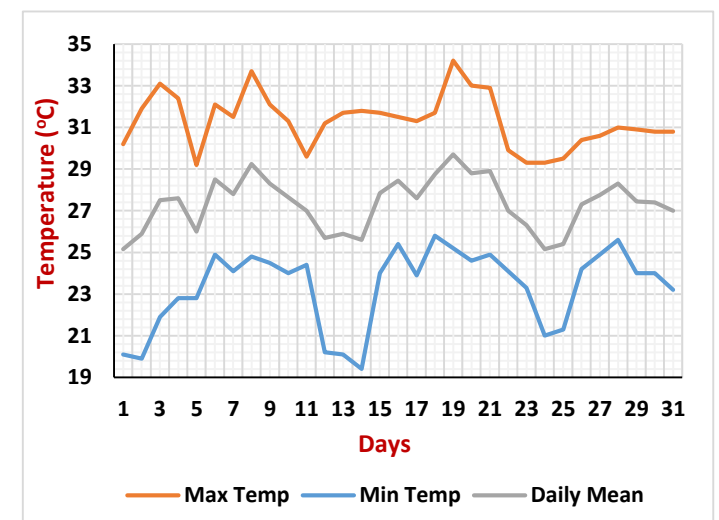
Pekoa recorded a total of 23 days where temperatures exceed 30.0°C. The highest temperature was 32.7°C recorded on the 19th. The lowest temperature was 19.2°C recorded on Monday night, the 2nd.

Figure 3c: December Temperature Summary for Bauerfield



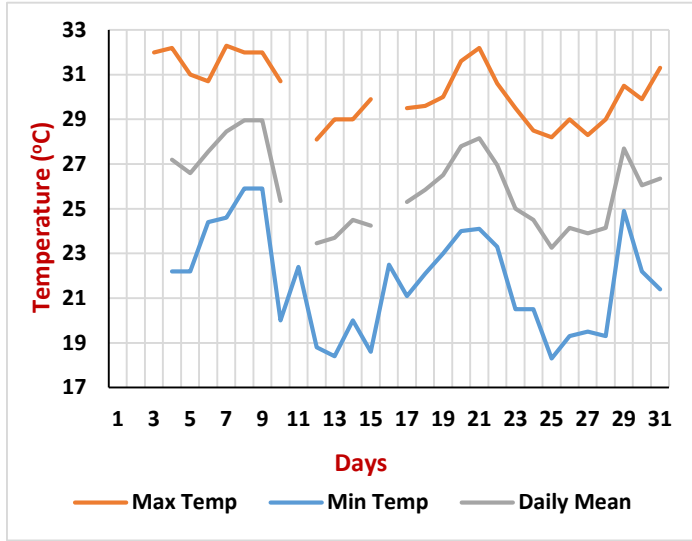
Bauerfield recorded a total of 23 days where temperatures exceed 30.0°C. The highest temperature was 33.5°C on Sunday 8th, and the lowest temperature recorded was 15.9°C on Sunday night, the 15th.

Figure 3d: December Temperature Summary for Port Vila



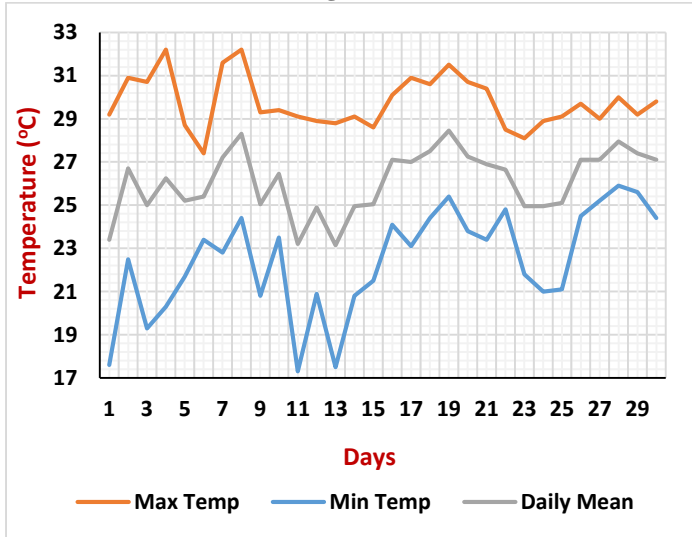
Port Vila recorded a total of 26 days where temperatures exceed 30.0°C. The highest temperature was recorded on the 19th at 34.2°C, and the lowest temperature was recorded on Saturday night, the 14th, at 19.4°C.

Figure 3e: December Temperature Summary for Whitegrass



Whitegrass recorded a total of 13 days where temperatures exceed 30.0°C. The highest temperature was recorded on Saturday 7th at 32.3°C, and the lowest temperature was recorded on 25th Wednesday night, at 18.3°C.

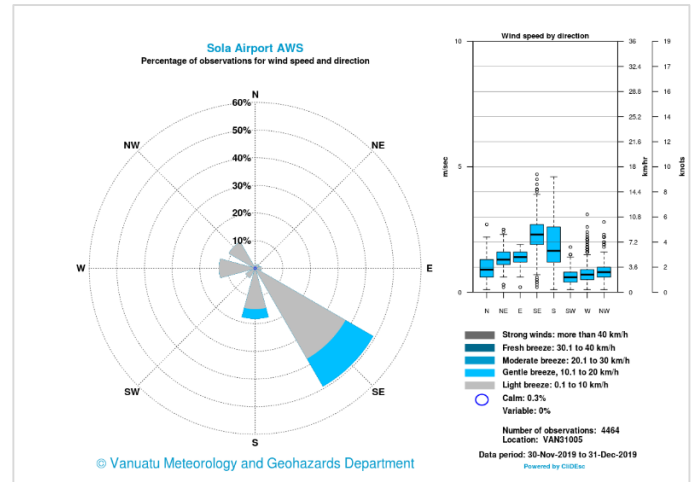
Figure 3f: December Temperature Summary for Anelghaohat



Anelghaohat recorded a total of 11 days where temperatures exceed 30.0°C. The highest temperature was recorded on Sunday 8th at 32.2°C, and the lowest temperature was recorded on Wednesday night, the 11th, at 17.3°C.

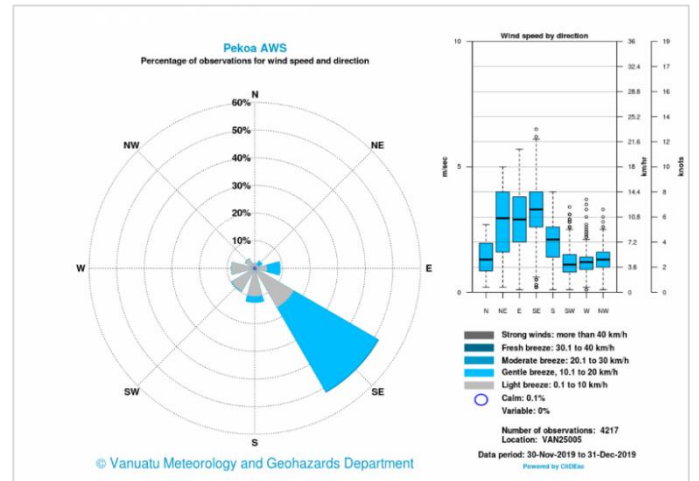
5. Wind

Figure 4a: Sola Airport WindRose AWS



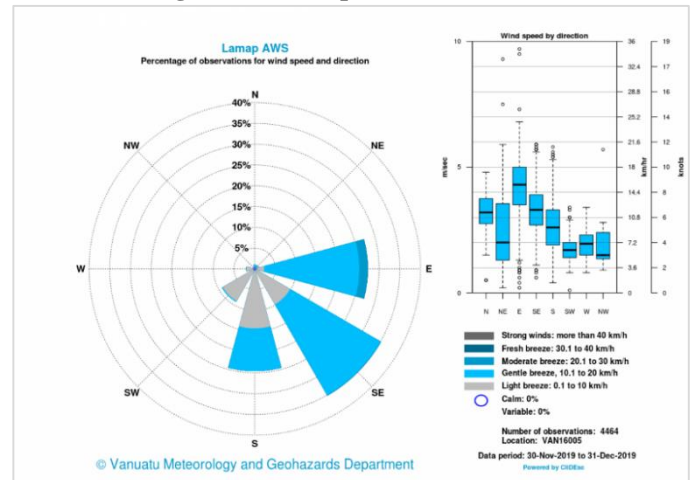
Light (0 – 5 knots) to gentle (>5 – 11 knots) southeasterlies dominated Sola in December.

Figure 4b: Pekoa WindRose AWS



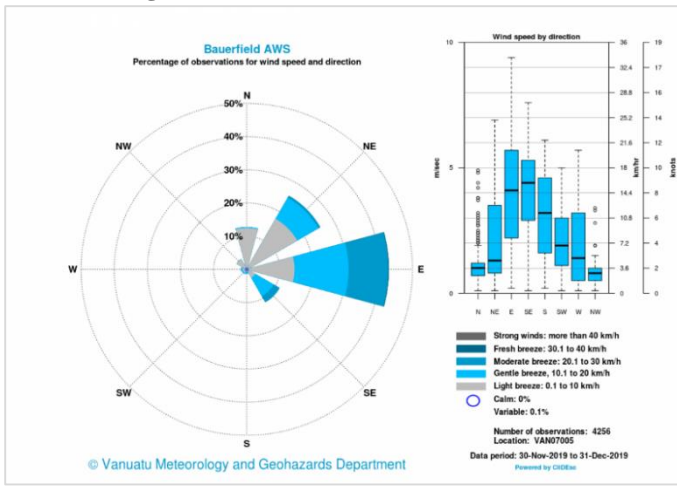
Gentle (>5 – 11 knots) SE winds dominated Pekoa in December.

Figure 4c: Lamap WindRose AWS



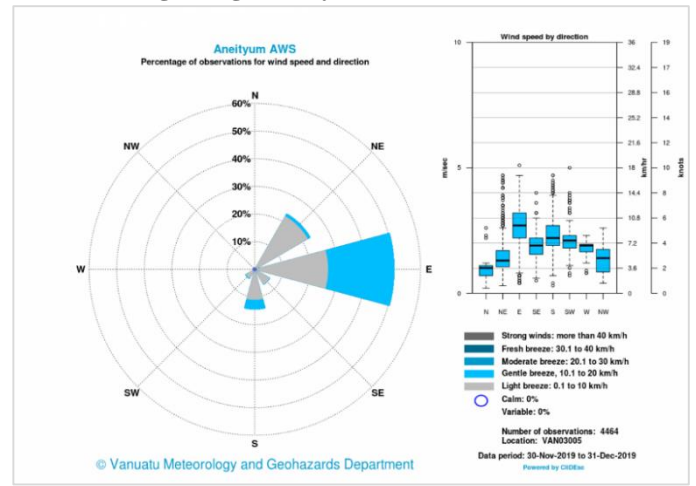
Gentle (>5 – 11 knots) south-easterlies dominated Lamap in December. Max wind speed experienced were moderate (>11 – 16 knots) east winds.

Figure 4d: Bauerfield WindRose AWS



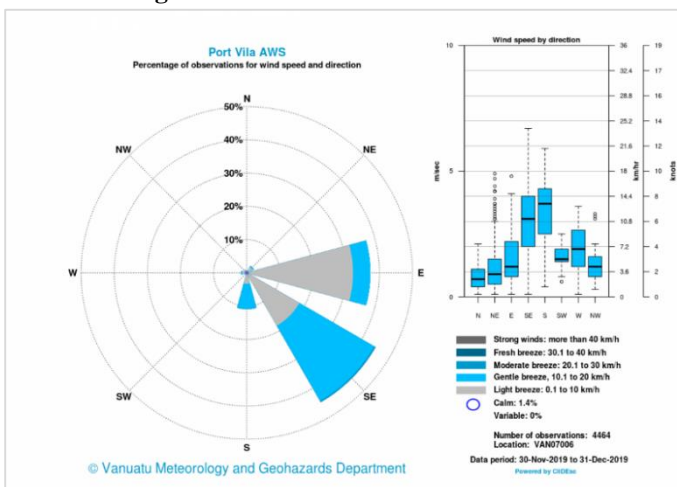
Wind speed varies from light (0 – 5 knots) to moderate (>5 – 11 knots), mostly from the east followed by northeast winds.

Figure 4g: Aneityum WindRose AWS



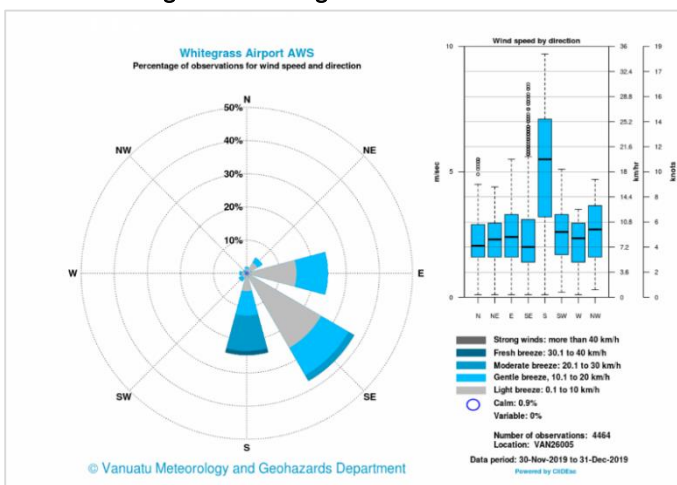
Light (0 – 5 knots) to Gentle east breeze (>5 – 11 knots) dominated Aneityum in December, followed by light NE winds.

Figure 4e: Port Vila WindRose AWS



SE gentle breeze (>5 – 11 knots) dominated Port Vila for most of December followed by light east breeze (0 – 5 knots).

Figure 4f: Whitegrass WindRose AWS



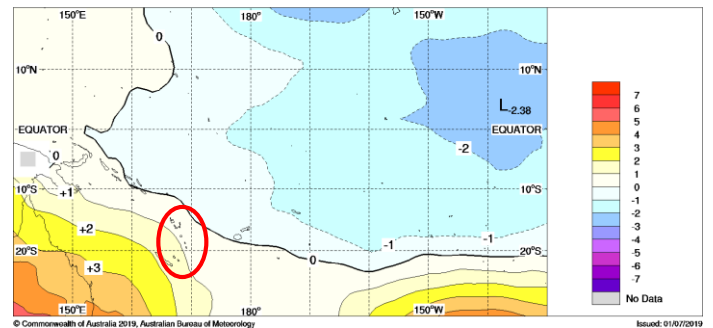
Whitegrass experienced up to fresh breeze (>16 – 22 knots) in December. Dominant wind direction was SE, followed by south winds and east winds.

6. Mean Sea Level Pressure (MSLP)

The MSLP anomaly map (Figure 5) shows positive anomalies increases towards Australia’s interior, and negative anomalies increases towards to the eastern Pacific. MSLP anomalies were neutral over Vanuatu. No tropical cyclones were active within the Vanuatu area of responsibility in December hence normal MSLP was observed.

Figure 5: Mean Sea Level Pressure Anomaly

MSLP 2.5X2.5 ACCESS OP. ANAL-NCEP2 (hPa) 20190601 0000'20190630 0000



Source: <http://www.bom.gov.au/cgi-bin/climate/cmb.cgi?variable=mslp&area=spac&map=anomaly&time=lat est>

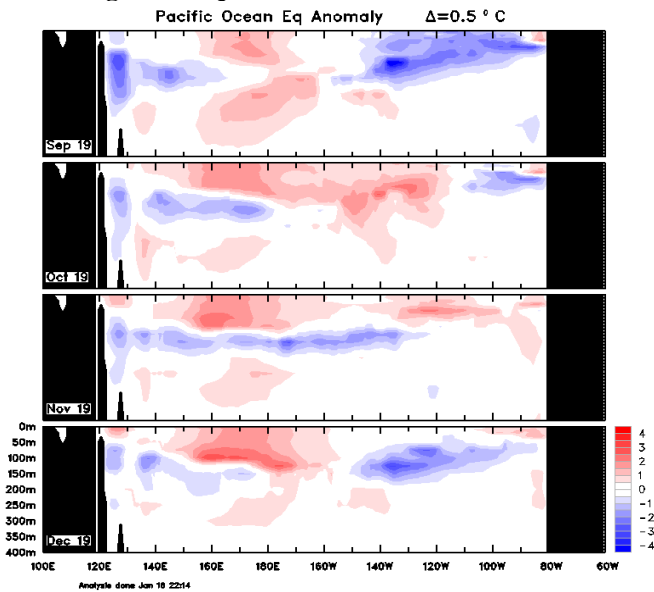
7. El Niño Southern Oscillation (ENSO)

The surface of the ocean remained warmer than average across much of the western equatorial Pacific Ocean during December, and in a thin band along the equator in the east. The surface of the ocean was also warmer than average around much of the north, west, and south of Australia during December, and near average to the east.

The December values for NINO3 were +0.4 °C, NINO3.4 +0.4 °C, and NINO4 +0.8 °C. All three NINO indices cooled compared to November.

The four-month sequence of equatorial sub-surface (Figure 6) temperature anomalies (to December) shows the top 150 m of the western to central equatorial Pacific is warmer than average, with cooler than average waters at a depth of around 50 to 200 m in the east. Small volumes of water reach more than 2 degrees warmer/cooler than average in each region respectively.

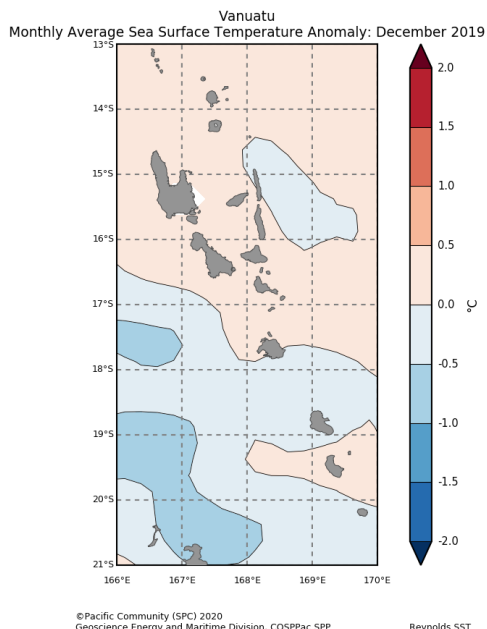
Figure 6: Equatorial Sub-surface anomalies



Source: <http://www.bom.gov.au>

8. Sea Surface Temperatures (SSTs)

Figure 7: Vanuatu Average Sea Surface Temperature Anomaly for December 2019



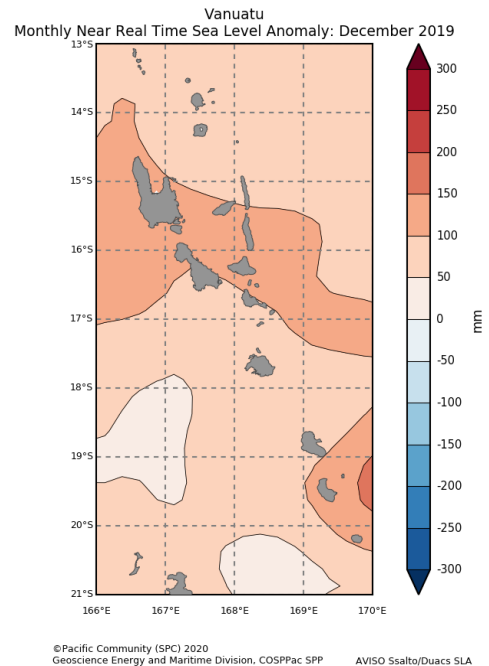
©Pacific Community (SPC) 2020
Geoscience Energy and Maritime Division, COSPPac SPP
Reynolds SST

Source: <http://oceanportal.spc.int/portal/app.html#climate>

Over Vanuatu, SSTs remain at +0.5°C for much of December. Waters to the west of Vanuatu and around the central and southern islands were much cooler than average.

9. Sea Level (SL)

Figure 8: Vanuatu Average Sea Level Anomaly for December 2019



Source: <http://oceanportal.spc.int/portal/app.html#sealevel>

Sea level was higher than normal around the country with parts of Sanma, Penama, Malampa and Tafea reaching up to 150 mm above the normal height.

For further information please contact:

**The Director
Vanuatu Meteorology and Geo-Hazards
Department**

Mail: Private Mail Bag 9054, Port Vila, Efate

Phone: 678 23866, Fax: 678 22310

Website: <http://www.vmgd.gov.vu>

Email: climate@meteo.gov.vu

Information presented in this summary is based in data available at the time of publication