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Fiji Climate Summary August 2019



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1. IN BRIEF

ENSO-neutral conditions currently persists in the tropical Pacific region.

Relatively suppressed rainfall conditions were experienced in August, with 88% of the stations recording *below average to well below average* rainfall.

The weather for August was mostly affected by semi-permanent ridges of high pressure system, the trade winds and a trough of low pressure system on the 23rd. Showers were mostly associated with the trades and were observed over the interior and eastern parts of the main islands. Rainfall was recorded across the country on the 23rd during the passage of a trough. Towards month end, showers were enhanced over the interior and eastern part of the larger islands with afternoon showers observed elsewhere.

The warmest days on average were recorded at Labasa Airport with 31.9°C, followed by 31.4°C at Rarawai Mill (Ba). The highest daily maximum air temperature during the month was reported at Keiyasi with 34.5°C on the 9th, followed by Rarawai Mill and Seaqaqa with both stations recorded 33.6°C on the 13th and 33.5°C at Labasa Airfield and Nacocolevu station on the 2nd and 11th respectively.

The mean minimum air temperatures were generally *above normal* with more than 90% of the stations rec-

orded anomalies equal to and above +0.6°C. The coolest night-time temperature of 12.2°C was recorded at Monasavu, followed by 12.5°C at Keiyasi, both reported on the 26th and 12.9°C at Nadarivatu on the 14th. Nadarivatu stations recorded less than 15.0°C on six other nights, which ranged between 13.3°C to 14.5°C.

Evaporation were slightly high in the Western Division, compared to the Central Division (Figure 6).

Slightly *above normal* sea surface temperatures and *normal* cloud cover were present within the Fiji region during the month (Figure 9 & 10).

East to southeasterly winds were quite dominant during the month at both Nausori and Nadi (Figure 8). However, for the NOAA surface wind anomalies, variable winds were being observed within the Fiji region (Figure 12).

Sea level anomalies of around -5.0cm to -10.0 cm were observed around Fiji waters.

2. WEATHER PATTERNS

August weather was dominated by semi-permanent ridges of high pressure system, a trough of low pressure including the southeasterly trade winds.

In the first week of August, the enhanced moist easterly trade winds resulted in enhance showers observed over the interior and eastern parts of the larger islands. Laucala-bay station recorded maximum 24-hr rainfall of 36.0mm, Tokotoko and Waimanu reported 58.6mm and 56.5mm respectively. Similarly, strong winds were observed over Fiji waters during this period. Strong wind warnings were issued till the 7th for Fiji waters, especially for the passage.

On the 8th, a high pressure system extends over the group, resulted in southeast wind flow till the 15th. Mainly fine weather prevailed across the country during this period.

Later on the 15th, a weak frontal system approached Fiji from the south, moved over the southern parts of the country on the 16th. Consequently, showers were reported over

the southern and eastern parts of Viti Levu, Kadavu, Lau, and Lomaiviti group. The frontal system moved away on the 18th allowing the trades to settle in.

On the 19th, a weak trough of low pressure lies to the north of Fiji. It gradually drifted southward, got enhanced on the 23rd, resulting in widespread rainfall observed across the country. The highest 24-hr rainfall of 58.3mm recorded at Vanuabalavu, 30.7mm in Vunisea and 30.0mm in Nacocolevu. A well established high pressure to the far south pushes this trough away on the 24th allowing southeast wind flow with fine weather conditions to settle in. On the 29th, the easterly trades got enhanced resulting in showers over the interior and eastern part of larger islands till month end.

Rotuma weather was mostly affected by a trough of low pressure during the start of the month and moist easterlies.

3. RAINFALL

August was rather quiet, in terms of significant rainfall events. As a result, the month was relatively dry, with majority of the stations recorded *below average* to *well below average* rainfall. Of the 26 rainfall recording stations, 14 stations recorded *below average* rainfall, 9 reported *well below average* rainfall, Rotuma and Vanuabalavu recorded *above average* rainfall, while Seaqaqa was the only station with *average* rainfall. (Table 2, Figures 1-5).

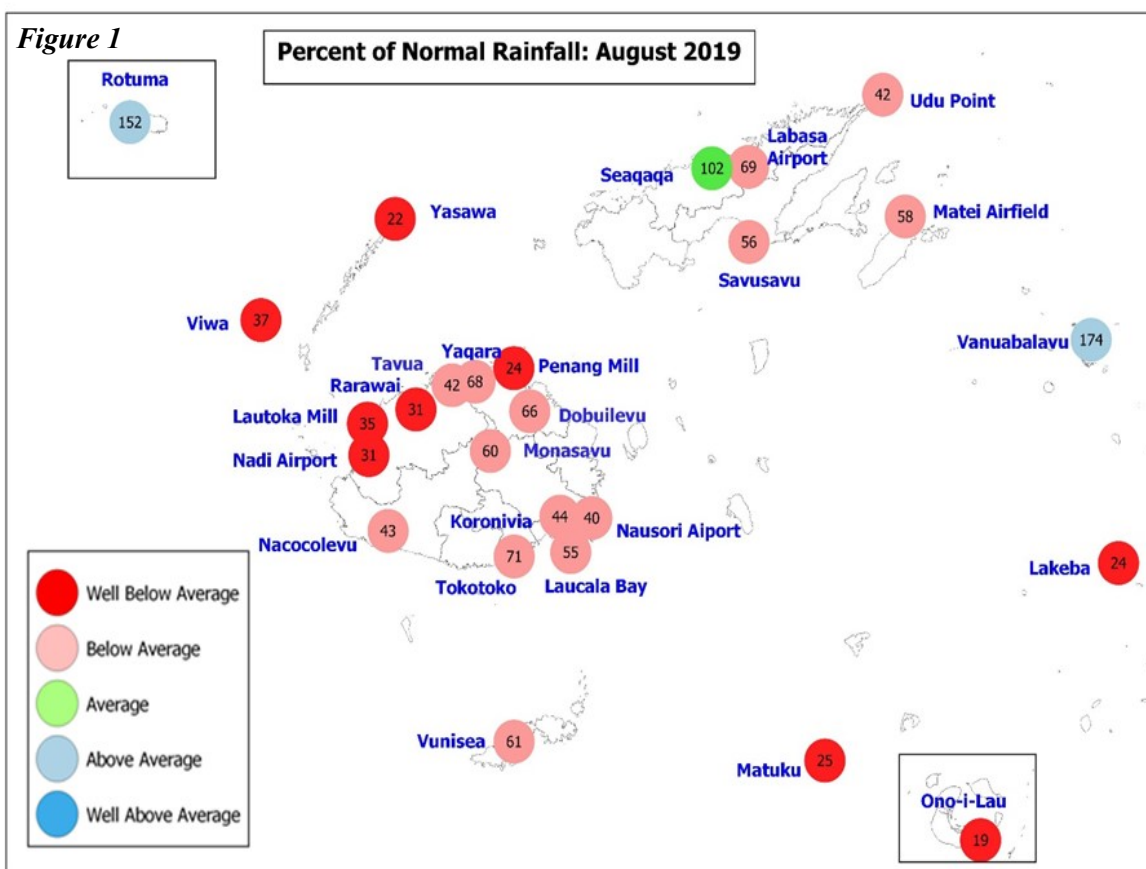
It was significantly dry across Viti Levu, most of Vanua Levu, the Yasawas and Mamanuca Groups including majority of the Eastern Division. Vanuabalavu was the only exception for the Eastern Division, which recorded 137.3mm (*above average*) of rainfall.

The highest monthly total rainfall of 319.9mm was recorded at Rotuma, followed by 164.5mm at RKS Lodonu, 157.2mm at Monasavu, 144.4mm at Navua and 137.3mm at Vanuabalavu. On the other hand, the lowest total monthly rainfall was recorded at Rakiraki with 11.0mm, followed by 14.0mm at Yasawa.

For the maximum 24-hours rainfall, the highest of 105.0mm was recorded at Rotuma on the 6th, followed by 58.3mm at Vanuabalavu on the 24th and 53.0mm at RKS Lodonu on the 29th. The rest of the stations recorded below 50.0mm as their maximum 24-hours rainfall.

Navua recorded the highest number of rain days (≥ 0.1) with 23 days, followed by Rotuma with 22 days and Suva with 20 days. In contrast, Tavua experienced only 1 rain day, followed by Lautoka Mill, Rarawai Mill, Yaqara and Momi with only 2 rain days, and Labasa Airfield with 3 rain days.

Labasa was the lone station that is under a meteorological drought on the 3 and 6-months timescale, while Rotuma was the only station on meteorological drought on a 12-month timescale. However, most of the stations in the Western Division are currently under meteorological drought watch.



Normal: Long term average from 1971 to 2000
Well Below Average: Rainfall less than 40% of normal
Below Average: Rainfall between 40 to 79%
Rain Day: Rainfall ≥ 0.1 mm

Average: Rainfall between 80 to 119%
Above Average: Rainfall between 120 to 199%
Well Above Average: Rainfall greater than or equal to 200% of normal

4. AIR TEMPERATURES

A. Maximum Daytime Air Temperatures

The mean monthly maximum air temperatures were generally *above normal* across the country, with 17 out of the 22 stations recorded anomalies at $\geq +0.6^{\circ}\text{C}$, while the rest recorded anomalies within $\pm 0.5^{\circ}\text{C}$ (Table 2 & Figures 2-5).

The warmest days on average were observed at Labasa Airport with 31.9°C , followed by 31.4°C at Rarawai Mill (Ba), 31.2°C at Seaqaqa, 30.9°C at Keiyasi and 30.7°C at Yaqara. On the contrary, the coolest day-time temperatures on average was at Monasavu with 22.5°C , followed by Nadarivatu with 24.1 .

The highest daily maximum air temperature during the month was reported from Keiyasi with 34.5°C on the 9th, followed by Rarawai Mill and Seaqaqa with both 33.6°C on the 13th and 33.5°C at Labasa Airfield and Nacocolevu on the 2nd and 11th respectively. In contrast, the coolest day-time air temperature of 18.5°C was recorded at Monasavu on the 6th, followed by 21.4°C at Nadarivatu and 22.8°C at Koro Island, both on the 25th.

A new mean monthly maximum air temperature for August was set at Labasa Airport, registering 31.9°C , replacing a previous record established in 2008 and 2010 (Table 1).

B. Minimum Night-time Air Temperatures

The mean minimum air temperatures were generally *above normal* with more than 90% of the stations recording anomalies equal to and above $+0.6^{\circ}\text{C}$, while Labasa Airfield and Vanuabalavu were the only two stations with below normal anomalies. ($\leq -0.6^{\circ}\text{C}$). (Table 2 & Figures 2-5).

Nadarivatu recorded the coolest average night-time temperature of 16.1°C , followed by Monasavu with 16.3°C , 18.1°C at Labasa Airfield, 19.1°C at Keiyasi, 19.2°C at Nacocolevu, 19.6°C at Rarawai Mill (Ba) and 19.9°C at Sigatoka. Rotuma, on the other hand, reported the warmest average night-time temperatures with 25.3°C , followed by Yasawa with 24.0°C , 23.8°C at Udu Point and 23.5°C at Viwa.

The coolest night-time temperature of 12.2°C was recorded at Monasavu, followed by 12.5°C at Keiyasi, both on the 26th and 12.9°C at Nadarivatu on the 14th. Nadarivatu also managed to record less than 15.0°C on six other nights, which ranged between 13.3°C to 14.5°C . In contrast, the warmest daily minimum air temperature was registered at Rotuma with 27.2°C on the 11th, followed by 25.1°C at Udu Point on the 24th and 25.0°C at Lautoka, Yasawa-i-rara and Matei on the 4th, 11th and 28th respectively.

Rotuma's recorded its August new highest minimum temperature, replacing a previous record established in 2002. Savusavu recorded its new highest mean monthly minimum temperature, replacing a previous record established in 2007 and equaled in 2013 (Table 1).

TABLE 1. CLIMATE RECORDS ESTABLISHED IN AUGUST 2019

<u>Element</u>	<u>Station</u>	<u>Observed (record)</u>	<u>On</u>	<u>Rank</u>	<u>Previous (record)</u>	<u>Year</u>	<u>Records Began</u>
Mean Monthly Max. Temperature	Labasa Airport	31.9°C	-	New High	31.1°C	2008 2010	1957
Mean Monthly Min. Temperature	Savusavu	23.1°C	-	New High	22.7°C	2007 2013	1956
Daily Min. Temperature	Rotuma	27.7°C	11 th	New High	26.8°C	2002	1933

Note: All comparisons in this summary are with respect to "Climatic Normals". This is defined to be the average climate condition over a 30-year period. Fiji uses 1971-2000 period as its "climatic normal" period, unless otherwise stated.

TABLE 2. DAILY CLIMATE REPORTING SITES: SUMMARY FOR AUGUST 2019

	RAINFALL				AIR TEMPERATURES						SUNSHINE		
	TOTAL	RAIN		MAX.	AVERAGE DAILY			EXTREME		TOTAL			
	MM	%	+ DAYS	MM ON FALL	MAX. C	# C	MIN. C	# C	MAX. C	MIN. C	HRS	%	
NADI AIRPORT	20	31	6	16	23	30.1	1.4	21.1	2.5	32.9	23	19.0	26
SUVA/LAUCALA BAY	87	55	20	15	17	27.1	0.4	22.4	1.7	31.2	23	21.0	19
NACOCOLEVU	37	43	8	30	23	29.2	1.7	19.2	1.3	33.5	11	14.5	26
ROTUMA	320	152	22	105	6	30.4	1.3	25.3	1.3	32.1	20	22.4	9
VIWA	22	37	5	14	23	29.9	2.1	23.5	1.1	32.1	23	22.1	14
UDU POINT	36	42	8	10	4	27.9	-0.2	23.8	1.6	30.8	24	21.9	6
SAVUSAVU AIRFIELD	66	56	12	15	28	27.1	-0.0	23.1	2.3	31.2	23	21.1	16
LABASA AIRFIELD	33	69	3	27	23	31.9	2.5	18.1	-0.6	33.5	2	16.0	7
NABOUWALU	OBSERVER ON ANNUAL LEAVE												
KORONIVIA	71	44	18	17	29	26.5	0.1	21.3	2.0	30.0	23	18.0	26
NAUSORI AIRPORT	59	40	17	18	29	27.0	0.8	21.1	1.5	30.5	23	19.4	26
NAVUA/TOKOTOKO	144	71	23	19	2	27.5	0.6	20.4	2.3	29.5	9	18.2	13
MONASAVU	157	60	19	31	30	22.5	1.2	16.3	0.7	26.0	9	12.2	26
LAUTOKA AES	25	35	2	15	30	30.3	2.0	21.3	1.3	33.0	23	14.0	13
BA/RARAWAI MILL	20	31	2	20	23	31.4	1.6	19.6	2.2	33.6	13	17.4	14
PENANG MILL	18	24	4	12	23	28.8	1.4	22.6	1.9	31.2	23	20.1	6
MATEI AIRFIELD	73	58	17	15	19	27.9	0.8	22.6	0.9	29.6	29	20.1	26
VANUABALAVU	137	174	14	58	24	27.6	0.8	20.4	-1.5	29.4	9	18.5	6
LAKEBA	25	24	13	11	23	27.4	1.0	22.8	1.8	29.4	23	19.2	25
YASAWA	14	22	2	14	23	30.1	2.3	24.0	1.8	33.2	23	22.7	26
VUNISEA	79	61	16	31	23	26.3	0.5	21.0	1.6	30.0	9	18.9	27
MATUKU	28	25	10	13	16	26.6	0.8	21.6	1.1	28.5	12	19.5	22
ONO-I-LAU	23	19	6	10	16	28.0	3.1	21.2	1.2	33.4	28	19.1	30
YAQARA AWS	47	68	4	42	23	30.7		22.7		33.4	23	21.2	26
LEVUKA AWS	72	66	15	15	1	U/S		U/S					
KEIYASI AWS	21		3	17	23	30.9		19.1		34.5	9	12.5	26
LOMAIVUNA AWS	122		17	27	30	U/S		U/S					
NADARIVATU AWS	35		10	14	23	24.1		16.1		27.2	9	12.9	14
RKS LODONI AWS	165		18	53	29	27.7		21.5		29.8	19	18.0	26
MOMI AWS	34		2	34	23	29.3		21.3		31.6	28	18.0	26
KOROLEVU AWS	U/S					U/S		U/S					
KORO ISLAND AWS	U/S					26.2		22.1		29.3	19	19.4	22
SIGATOKA AWS	U/S					27.4		19.9		31.5	23	16.3	27
RAKIRAKI AWS	11		4	8	29	U/S		U/S					
WAINIKORO AWS	37		7	16	23	U/S		U/S					
SAQANI AWS	27		9	13	24	U/S		U/S					
VATUREKUKA AWS	55		6	23	21	28.7		20.8		31.3	16	17.7	16
KUBULAU AWS	U/S					U/S		U/S					
SEAQQA AWS	57	102	10	20	24	31.2		21.3		33.6	13	17.6	13
DOBUILEVU TB3	53	66	11	26	23								
NASINU TB3	82		18	24	29								
TAVUA TB3	26	42	1	26	23								

	TEMPERATURE(C)		HUMIDITY		WIND	SUN RAD		
	MEAN	DRY WET	RH% VP	%OF MJ/				
	(AVERAGE AT 9AM)				KT	POS SQ.M		
NADI AIRPORT	25.6	26.0	22.0	70	23.4	6.4	71	15.4
SUVA/LAUCALA BAY	24.7	24.8	22.6	83	25.8		34	13.6
NACOCOLEVU	24.2	25.0	22.2	78	24.6		51	15
ROTUMA	27.8	27.9	25.6	83	31.0	8.8	53	17
VIWA	26.7	26.5	AWS DATA					
UDU POINT	25.8	26.3	AWS DATA					
SAVUSAVU AIRFIELD	25.1	25.5	23.3	83	27.0			
LABASA AIRFIELD	25.0	27.6	24.5	77	28.3			
NABOUWALU	OBSERVER ON A/L							
KORONIVIA	23.9	24.7	22.5	82	25.5			
NAUSORI AIRPORT	24.1	24.5	22.4	83	25.5	5.1		
NAVUA/TOKOTOKO	23.9	24.8	23.0	85	26.7			
MONASAVU	19.4	19.2	18.2	91	20.2			
LAUTOKA AES	25.8	28.0	23.3	66	25.0			
BA/RARAWAI MILL	25.5	25.9	22.2	72	23.9			
PENANG MILL	25.7	25.6	22.5	75	24.8			
MATEI AIRFIELD	25.3	26.3	23.7	80	27.5			
VANUABALAVU	24.0	25.7	23.4	82	27.2	6.8		
LAKEBA	25.1	25.5	22.8	79	25.8	5.2		
YASAWA	27.1	27.3	AWS DATA					
VUNISEA	23.6	23.7	21.4	81	23.8	8.0		
MATUKU	24.1	24.7	21.5	75	23.3	6.2		
ONO-I-LAU	24.6	23.7	AWS DATA					

MEAN TEMPERATURE IS (MAX+MIN)/2; WIND IS MEAN SPEED AT 06,12,18,24 HOURS.
 \$:SOLAR RADIATION CALCULATED FROM SUNSHINE DURATION. # :DEPARTURE FROM LONG-TERM AVERAGES (1971-2000). + :NUMBER OF DAYS WITH 0.1 MM OR MORE RAIN. * :PERCENT OF LONG-TERM AVERAGES.
 BLUE FONT: MISSING RECORDS OF LESS THAN OR EQUAL TO 5 DAYS. U/S: UNSERVICEABLE

Figure 2

**Nadi Airport - Temperature & Rainfall for the last 13 Months
(August, 2018 - August, 2019)**

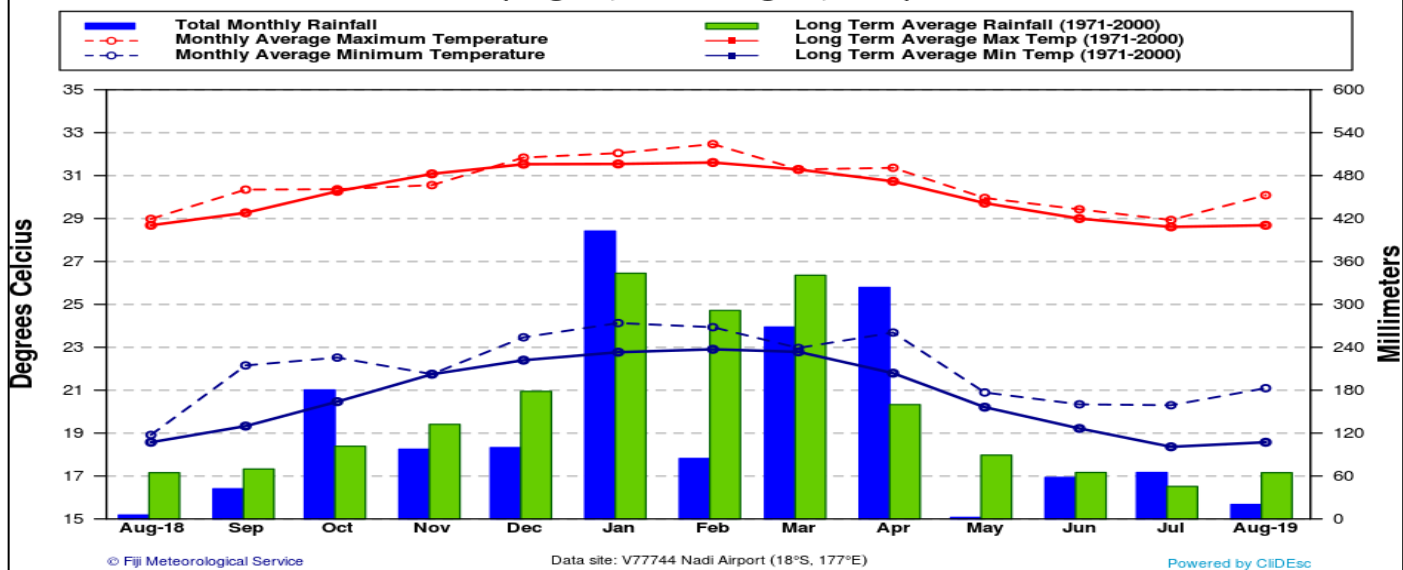


Figure 3

**Laucala Bay - Temperature & Rainfall for the last 13 Months
(August, 2018 - August, 2019)**

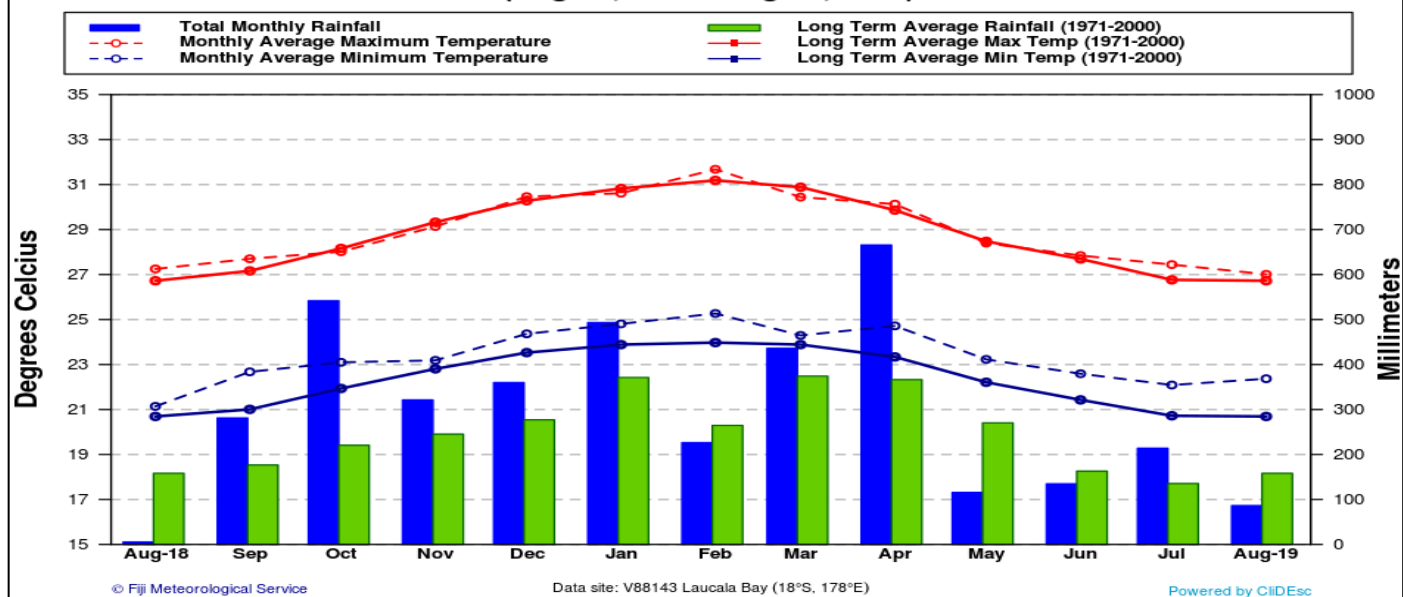


Figure 4

**Labasa Airfield - Temperature & Rainfall for the last 13 Months
(August, 2018 - August, 2019)**

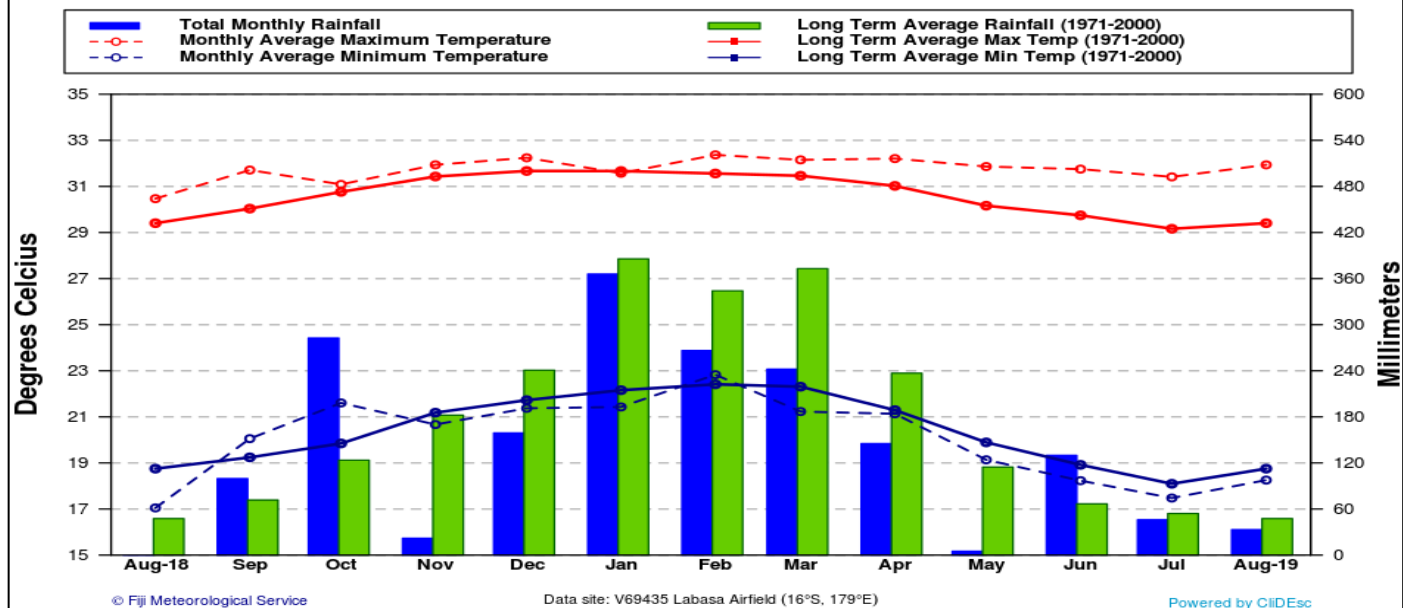
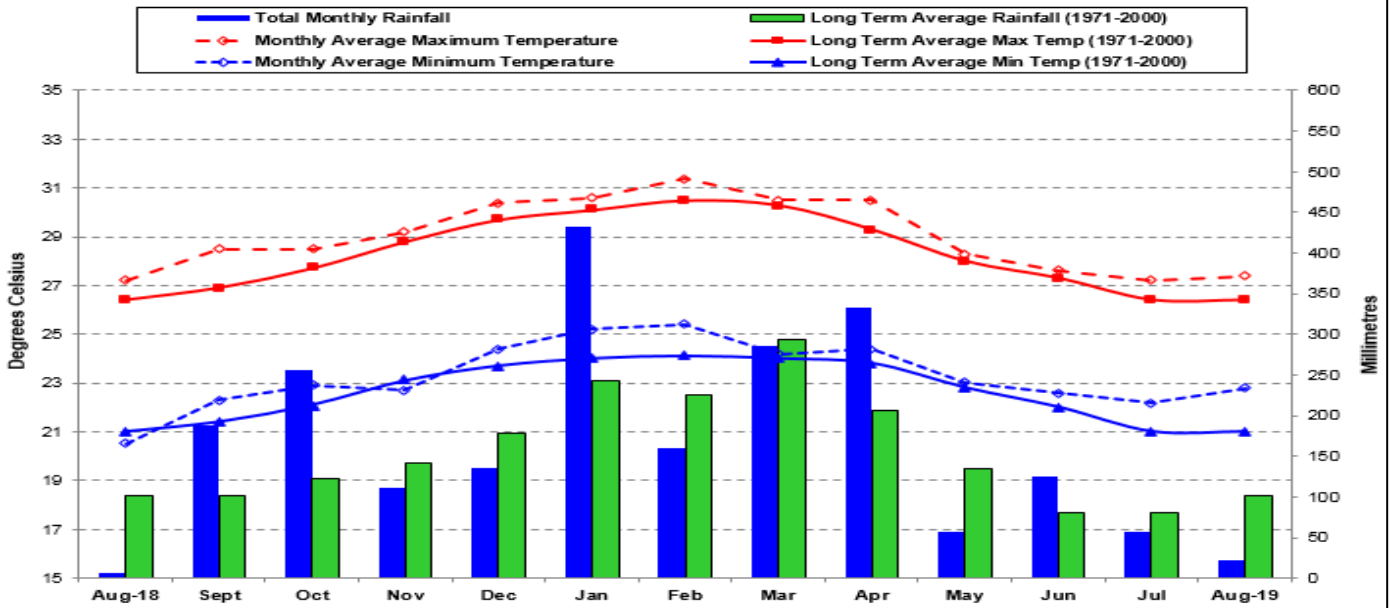


Figure 5

Lakeba (Eastern Division) - Temperature & Rainfall Records for the last 13 Months (August 2018 - August 2019)



5. DAILY RAISED PAN EVAPORATION

Figure 6

Daily Evaporation for August 2019

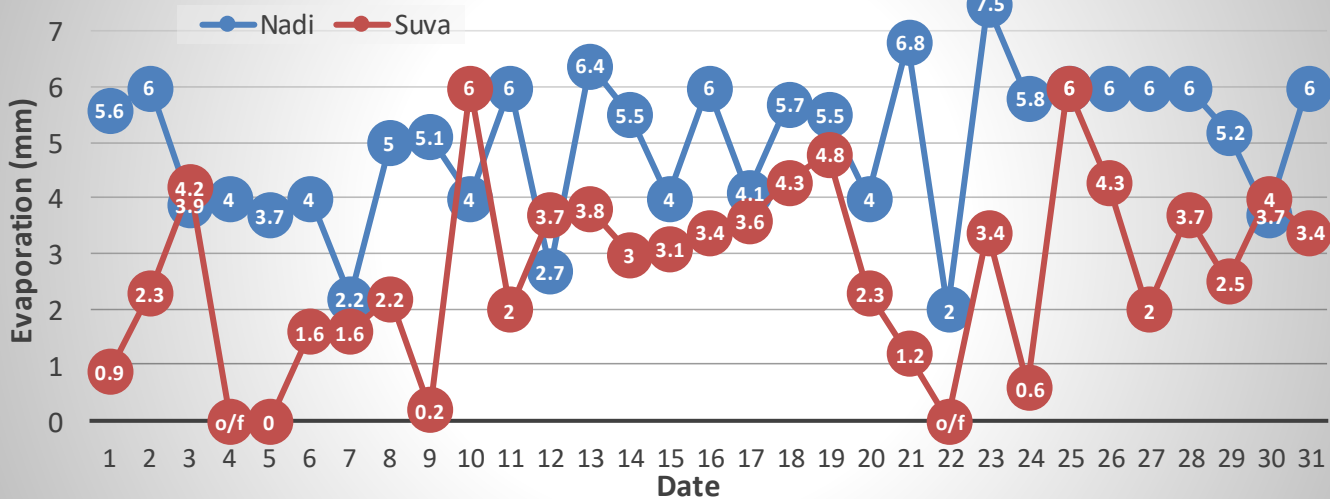


Figure 6: The total monthly raised pan evaporation at Nadi Airport was 154.4mm, with the highest daily evaporation of 7.5mm recorded on 23rd. Laucala Bay recorded total monthly evaporation of 84.4mm, with the highest daily evaporation of 6.0mm on the 10th and 25th accordingly.

6. SOLAR RADIATION

Daily Solar Radiation (MJ/m²) for August 2019

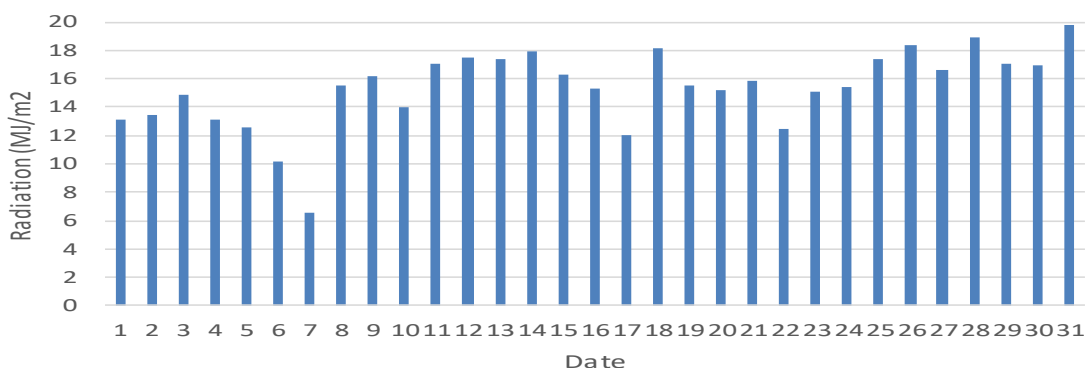


Figure 7:

The mean daily solar radiation at Nadi Airport during August 2019 was 15.4MJ/m² compared to 16.8MJ/m² over 30 year average (1971-2000).

7. WIND SUMMARY

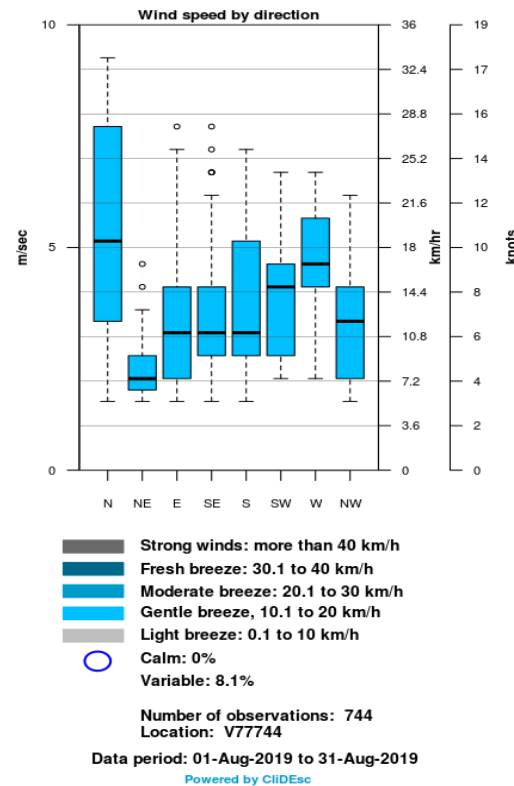
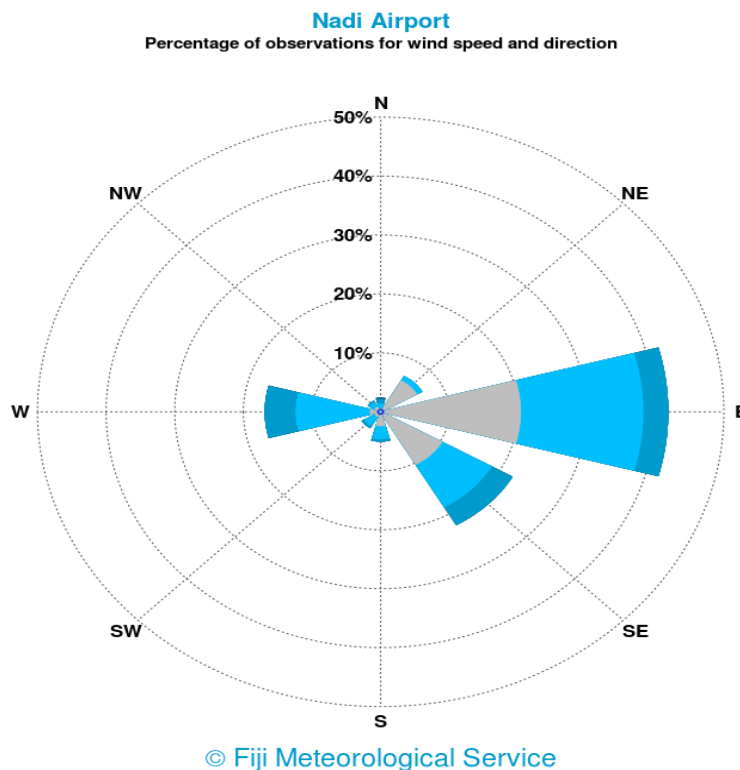


Figure 8a: The hourly wind observations at Nadi Airport during the month showed easterly winds as dominant winds, followed by southeasterly then westerly winds. Wind speeds were light to moderate in strength.

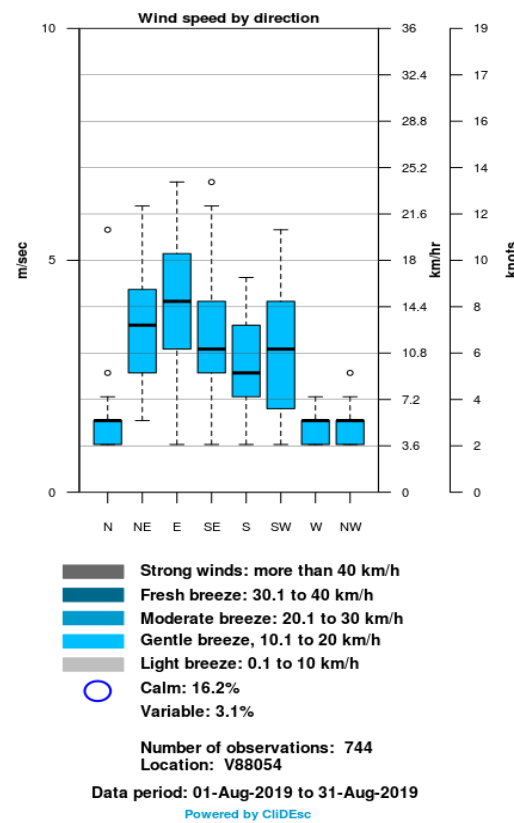
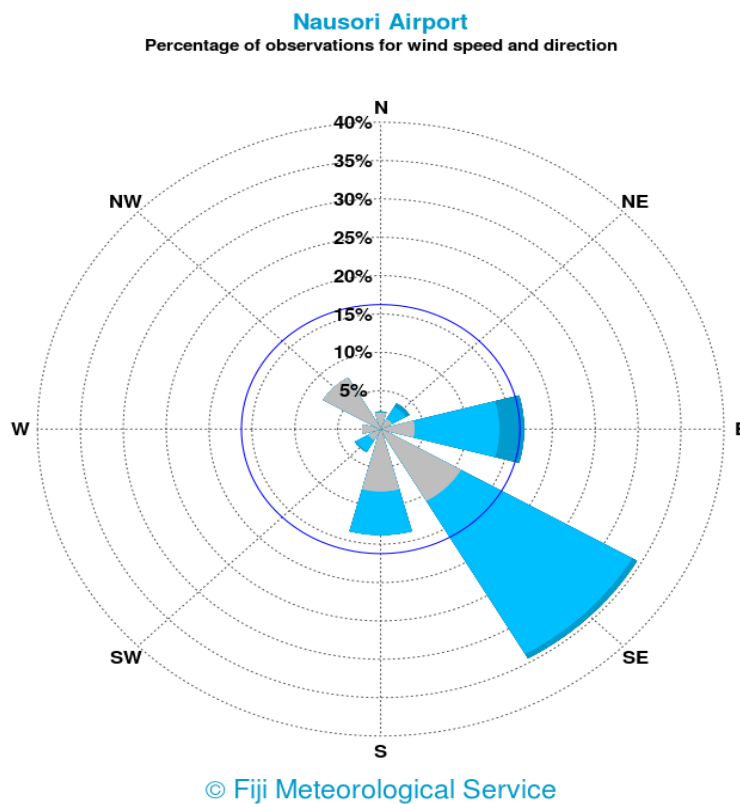


Figure 8b: The hourly wind observations at Nausori Airport during the month showed southeast winds were dominant, followed by easterly then southerlies. Wind speeds were generally light to moderate in strength.

8. SEA SURFACE TEMPERATURE (SST)

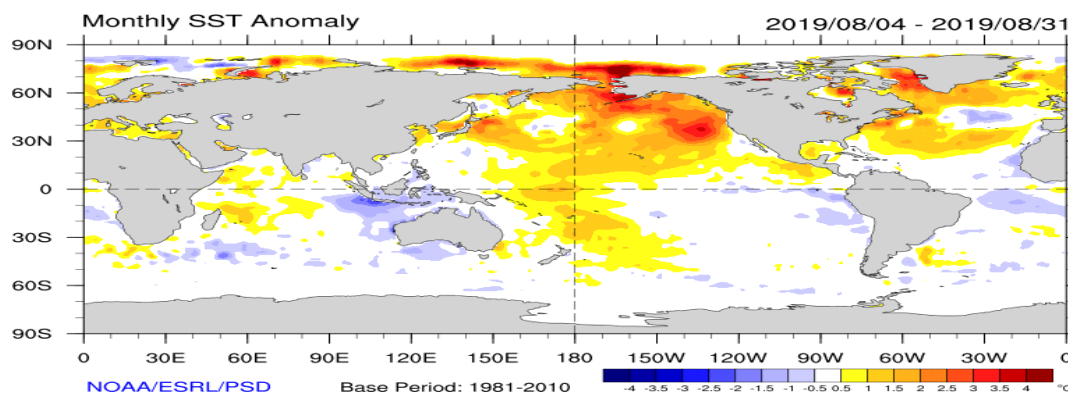


Figure 9: Above normal SSTs were present in the Fiji region during August 2019 (base period: 1981-2010).

Source: <http://www.esrl.noaa.gov/psd/map/clim/sst.shtml>

9. CLOUD COVER

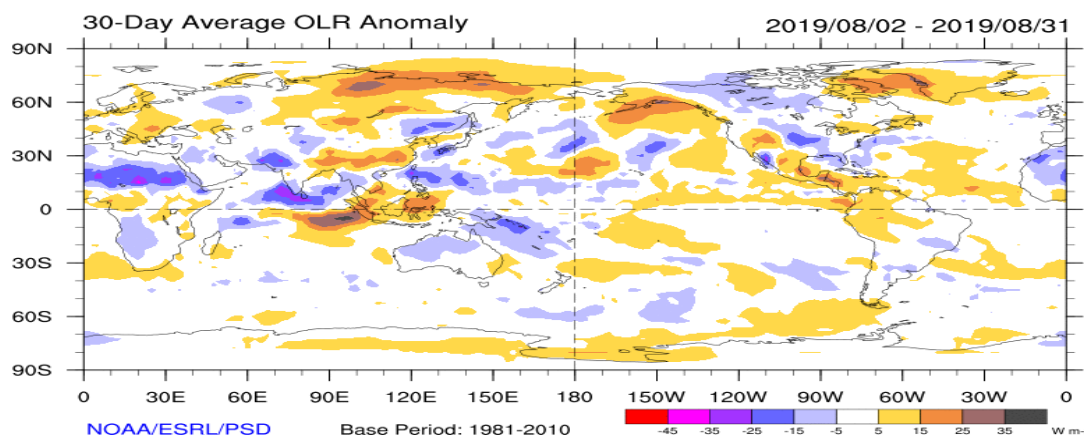


Figure 10: Normal cloud cover was present over most of the Fiji region during the month (base period: 1981-2010).

Source: <http://www.esrl.noaa.gov/psd/map/clim/olr.shtml>

10. SEA LEVEL

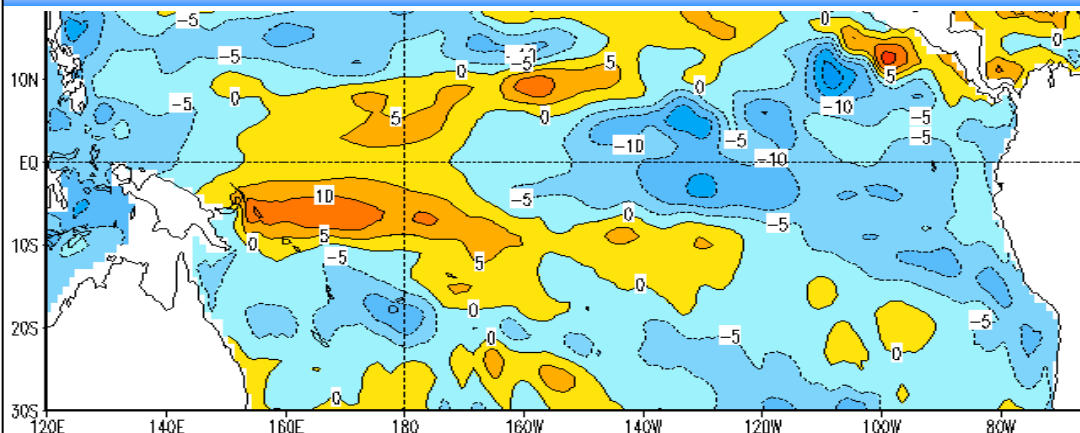


Figure 11: Sea level anomalies of around -5cm to -10cm were observed in most of the Fiji Waters (base period: 1981-2010).

Source: http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ocean/weeklyenso_clim_81-10/wksl_anm.gif

11. WIND ANOMALIES

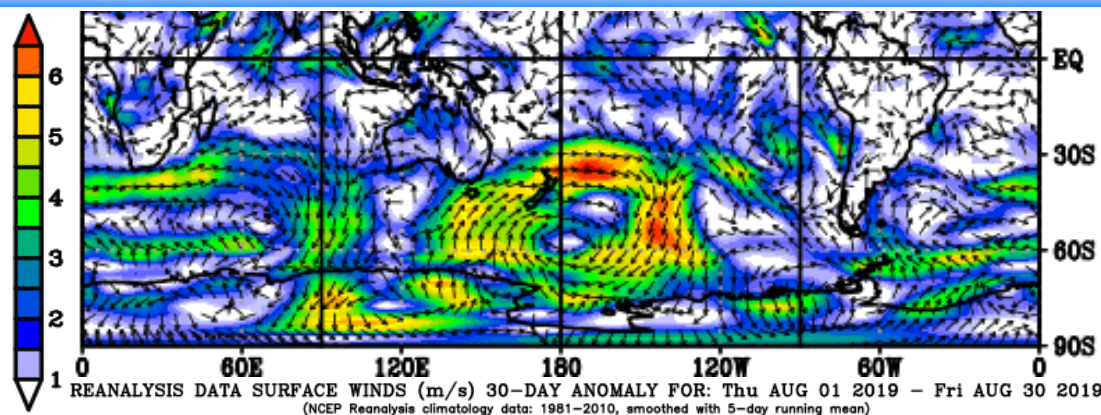


Figure 12: Variable wind anomalies of around 1-2m/s were recorded in the Fiji region (base period: 1981-2010).

Source: https://www.esrl.noaa.gov/psd/map/images/rnl/sfcwnd_30b.rnl.html