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Fiji Climate Summary February 2020



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1. IN BRIEF

The El-Niño Southern Oscillation was neutral during February, but leaning towards a weak El-Niño. In a typical El-Niño like pattern, the South Pacific Convergence Zone was displaced to the northeast of its normal position, away from the Fiji Group. Enormous southeasterly wind anomalies of 3.5-4.5m/s were prevalent in the Fiji region during the month.

Below average to well below average rainfall was recorded at most of the places in Fiji during the month. Out of the 28 stations, 11 stations recorded *well below average* rainfall, 12 *below average*, 3 *near average* rainfall, while Monasavu was the lone station with *above average* rainfall.

Extended period of consecutive dry days (days with rainfall <0.1mm) were recorded at most places during the second half of the month. Labasa Airport, Matei Airfield and Sigatoka registered 12 straight days without any rainfall, followed by Nadi Airport and Momi with 11 and Kubulau with 10.

The driest station during the month was Momi with 25mm of total monthly rainfall, followed by Ono-i-Lau with 35mm, Nacocolevu with 47mm and Yasawa-i-Rara with 47mm..

It was driest February on record at Nabouwalu since observation began in 1918.

This was a second consecutive month with significantly drier than usual condition in most parts of the country. While *near average* or *above average* rainfall was received at most places during December due to the rainfall received through the passage of tropical cyclone Sarai and its predecessor tropical depression, TD 03F, in the last week, it was comparatively dry in the rest of the month. Furthermore, it was drier than *normal* in most parts of the country during November. As at end of February, a number of station in the Western, Northern and Central Divisions were in a meteorological drought state on a 3 and 6-month timescales.

A few new record high air temperatures for February were registered during the month. Yasawa-i-Rara and Viwa recorded new high mean monthly temperatures since observation began in 1950 and 1956, respectively. A new high daily maximum air temperature was registered at Labasa Airfield during the month with the observation spanning back to 1956. A record high daily minimum air temperature at Laucala Bay (Suva) for February was observed during the month since observation began in 1942 and a record high mean monthly minimum air temperature at Rotuma for February was registered since observation began in 1933

2. WEATHER PATTERNS

The weather in February was mostly influenced by a series of troughs of low pressure systems together with the moist easterlies and the southeast trades.

An easterly wind flow prevailed over Fiji on the 1st with brief showers over the interior and eastern parts of the main islands and fine weather apart from isolated afternoon showers over other parts of the country. Later on the 1st, a trough of low pressure with cloud and showers affected the group from the southeast till the 3rd when it cleared the group to the north. Significant 24 hour rainfall was recorded at Nadi with 64mm on the 2nd.

An east to southeast wind flow prevailed over Fiji from the 4th till 11th with cloudy periods and some showers over the interior and eastern parts of the larger islands and fine weather apart from isolated afternoon showers elsewhere.

A trough of low pressure with cloud and showers affected Vanua Levu, Taveuni and the eastern parts of the group from the 11th till 13th. Significant 24-hour rainfall was rec-

orded at Wainikoro with 112mm, Labasa Airport with 110mm and Vanuabalavu with 105mm on the 13th. Thereafter, an east to southeast wind flow prevailed over Fiji until the 15th. The winds became predominantly southeast from 16th till the 26th with fine weather apart from brief showers over most places.

A trough of low pressure affected the northern parts of Fiji on the 27th with the southeast wind flow continuing over the group thereafter till the 29th.

Rotuma's weather was mainly affected by a series of troughs and tropical depression 07F with maximum significant 24-hour rainfall recorded on the 22nd with 48mm.

3. RAINFALL

Generally *below average* to *well below average* rainfall were recorded at most of the places in Fiji during the month. Out of the 28 stations, 11 stations recorded *well below average* rainfall, 12 *below average*, 3 *near average* rainfall, while Monasavu was the lone station with *above average* rainfall (Table 2).

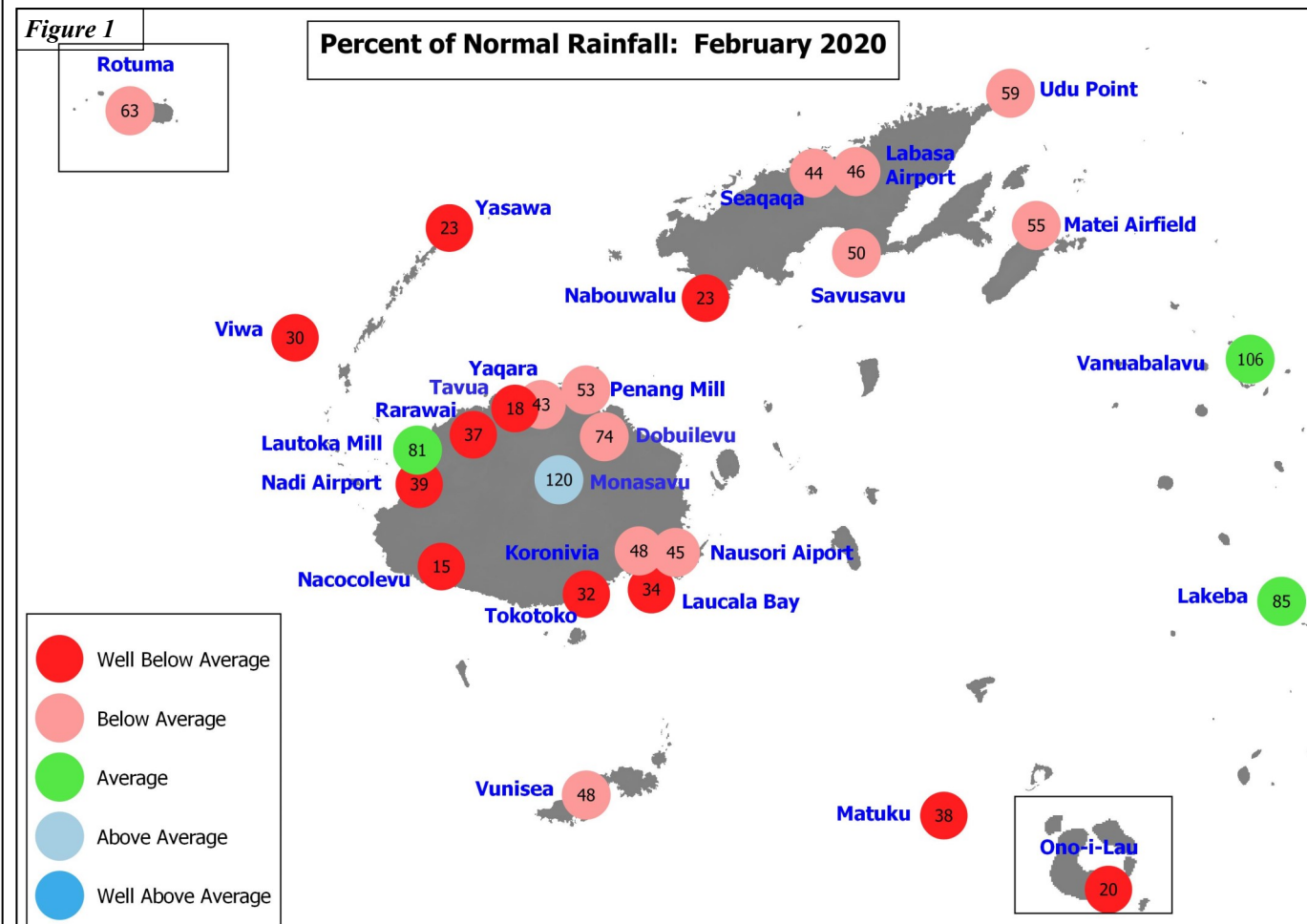
Vaturekuka (Labasa) and Wainikoro with both 228mm.

There was one major rainfall event during the month, which brought significant rainfall in the Northern Division and Northern Lau Group. Wainikoro, Labasa Airport, Vanuabalavu and Lakeba recorded a 24-hour rainfall of 112mm, 110mm, 105mm and 92mm, respectively, all on the 13th.

Extended period of consecutive dry days (days with rainfall <0.1mm) were recorded at most places during the second half of the month. Labasa Airport, Matei Airfield and Sigatoka registered 12 straight days without any rainfall, followed by Nadi Airport and Momi with 11 and Kubulau with 10. On the other hand, Monasavu recorded 24 rain days (day with rainfall ≥0.1mm) during the month, followed by Doboilevu with 22, and Nausori Airport and Tokotoko (Navua) with 21.

The driest station during the month was Momi with 25mm of total monthly rainfall, followed by Ono-i-Lau with 35mm, Nacocolevu with 47mm and Yasawa-i-Rara with 47mm. Furthermore, Nabouwalu registered its driest February on record during the month since observation began in 1918.

The highest total monthly rainfall was recorded at Monasavu with 624mm, followed by Lautoka Mill with 246mm, and



Normal: Long term average from 1981 to 2010
Well Below Average: Rainfall less than 40% of normal
Below Average: Rainfall between 40 to 79%
Rain Day: Rainfall ≥ 0.1mm

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

Normal to above normal mean monthly maximum air temperatures were recorded across the country during the month. Out of the 22 stations, 7 stations recorded *normal* (anomalies within $\pm 0.5^{\circ}\text{C}$) temperatures and 15 *above normal* ($\geq +0.5^{\circ}\text{C}$) (Table 2 & Figures 2-5).

Yasawa-i-Rara was the warmest station on average with the mean monthly maximum temperature of 34.6°C , followed by Keiyasi with 34.2°C , Viwa with 33.9°C and Seaqaqa with 33.7°C . On the other hand, the coolest station on average was Monasavu with 26.3°C , followed by Nadarivatu with 27.1°C and Rakiraki with 30.2°C .

Occasionally very warm daytime temperatures were experienced during the month with Yasawa-i-Rara registering the highest daily maximum temperature of 36.8°C on the 4th, followed by Keiyasi with 36.5°C on the 11th, Nacolevu with 35.9°C on the 9th and Seaqaqa with 35.6°C on the 6th. On the other hand, the lowest maximum air temperature was recorded at Nadarivatu with 23.2°C on the 18th, followed by Monasavu with 23.5°C also on the 18th and Labasa Airport with 28.0°C on the 13th.

A few new record high maximum air temperatures for February were registered during the month. Yasawa-i-Rara and Viwa recorded new high mean monthly temperatures since observations began in 1950 and 1956, respectively. A new high daily maximum air temperature was registered at Labasa Airfield during the month with the observation spanning back to 1956 (Table 1).

B. Minimum Night-time Air Temperatures

Normal to above normal night-time temperatures were recorded at most places during the month. Out of the 20 stations, 9 recorded anomalies $\geq +0.5^{\circ}\text{C}$ from the *normal* mean monthly minimum air temperature, 9 sites within $\pm 0.5^{\circ}\text{C}$, while Labasa Airport and Ono-i-Lau recorded anomalies $\leq -0.5^{\circ}\text{C}$ (Table 2 & Figures 2-5).

The coolest station on average was Nadarivatu with the mean monthly minimum temperature of 18.8°C , followed by Monasavu with 19.8°C , Labasa Airport with 21.6°C and Keiyasi with 22.2°C . On the other hand, the warmest nights on average was at Rotuma with 26.3°C , followed by Nabouwalu with 25.8°C , Viwa with 25.7°C and Laucala Bay (Suva) with 25.4°C .

A period of cool nights were experienced between 17th and 25th, with Nadarivatu recording 14.3°C on the 20th, followed by Monasavu with 16.2°C on the 21st, and Keiyasi with 18.6°C on the 20th. On the other hand, the warmest night during the month was registered at Vunisea (Kadavu) with 27.7°C on the 9th, followed by Rotuma with 27.6°C on the 7th and Viwa with 27.5°C on the 14th.

A record high daily minimum air temperature at Laucala Bay (Suva) for February was observed during the month since observation began in 1942 and a record high mean monthly minimum air temperature at Rotuma for February was registered since observation began in 1933 (Table 1).

TABLE 1. CLIMATE RECORDS ESTABLISHED IN FEBRUARY 2020

<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>
Total Monthly Rainfall	Nabouwalu	63.4mm	-	New Low	67.6mm	1966	1918
Daily Maximum Temperature	Labasa Airport	35.0°C	9 th	New High	34.7°C	1991	1956
Mean Monthly Max Temperature	Viwa	33.9°C	-	New High	33.8°C	2003	1956
Mean Monthly Max Temperature	Yasawa-i-Rara	34.6°C	-	New High	33.2°C	2005/ 2010	1950
Daily Minimum Temperature	Laucala Bay	27.4°C	29 th	New High	27.2°C	2016	1942
Mean Monthly Min Temperature	Rotuma	26.3°C	-	New High	26.1°C	2016	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 1981-2010 period as its "climatic normal" period.

TABLE 2. DAILY CLIMATE REPORTING SITES: SUMMARY FOR FEBRUARY 2020

	RAINFALL				AIR TEMPERATURES						SUNSHINE				
	TOTAL	RAIN		MAX.	AVERAGE DAILY			EXTREME		TOTAL	*				
	MM	%	+ DAYS	MM ON	MAX.	#	MIN.	#	MAX.	MIN.	HRS	%			
NADI AIRPORT	117	39	12	64	2	32.5	0.9	24.0	0.9	34.6	13	22.1	20	262	140
SUVA/LAUCALA BAY	86	34	18	18	4	31.5	0.1	25.4	1.1	32.8	12	22.9	22	251	139
NACOCOLEVU	37	15	10	11	5	33.4	1.8	U/S		35.9	9	U/S		225	137
ROTUMA	195	63	20	48	22	31.8	0.9	26.3	1.5	33.9	11	24.4	24	142	88
VIWA	67	30	10	41	2	33.9	2.3	25.7	0.4	35.0	22	23.2	19		
UDU POINT	162	59	16	45	14	30.8	-0.3	25.2	0.5	32.5	7	23.2	3		
SAVUSAVU AIRFIELD	114	50	10	47	13	30.8	-0.1	24.6	0.7	31.6	26	21.0	18		
LABASA AIRFIELD	164	46	7	110	13	33.0	1.3	21.6	-1.0	35.0	9	19.0	2		
NABOUWALU	63	23	18	18	14	31.5	0.8	25.8	1.2	33.2	29	24.2	5		
KORONIVIA	133	48	19	24	17	31.1	0.2	23.8	0.4	32.2	27	20.5	20		
NAUSORI AIRPORT	119	45	21	16	4	31.4	0.5	24.1	0.7	33.0	12	20.6	20		
NAVUA/TOKOTOKO	94	32	21	17	3	U/S		U/S		U/S		U/S			
MONASAVU	624	120	24	103	6	26.3	0.5	19.8	0.3	30.0	12	16.2	21		
LAUTOKA AES	246	81	10	76	11	32.5	1.1	24.2	0.2	34.5	9	22.0	17		
BA/RARAWAI MILL	129	37	12	40	13	33.2	1.1	22.8	0.3	35.0	7	20.5	21		
PENANG MILL	177	53	20	47	26	31.7	0.7	24.6	0.9	33.0	13	20.8	25		
MATEI AIRFIELD	142	55	17	52	13	30.9	0.5	24.7	0.4	31.5	1	22.2	24		
VANUABALAVU	227	106	15	105	13	30.8	0.2	U/S		32.1	29	U/S			
LAKEBA	191	85	16	92	13	31.5	0.9	24.8	0.4	33.3	11	20.1	21		
YASAWA	47	23	9	17	9	34.6	3.5	24.9	0.2	36.8	4	23.6	4		
VUNISEA	104	48	20	34	4	31.0	0.4	25.1	1.3	32.3	21	21.6	24		
MATUKU	63	38	17	18	24	30.9	0.3	24.9	0.2	32.5	11	21.5	19		
ONO-I-LAU	35	20	15	6	7	31.3	1.1	23.7	-0.9	34.2	28	21.0	21		
YAQARA AWS	125	43	14	37	12	33.2		24.8		35.3	11	22.1	21		
LEVUKA AWS	187		15	78	25	U/S		U/S		U/S		U/S			
KEIYASI AWS	185		15	62	26	34.2		22.2		36.5	11	18.6	20		
LOMAIVUNA AWS	U/S					U/S		U/S		U/S		U/S			
NADARIVATU AWS	179		20	37	12	27.1		18.8		29.7	11	14.3	20		
RKS LODONI AWS	116		17	19	2	32.2		24.4		33.6	13	20.4	25		
MOMI AWS	25		9	7	10	33.7		24.6		35.2	26	21.8	20		
KOROLEVU AWS	U/S					U/S		U/S		U/S		U/S			
KORO ISLAND AWS	U/S					32.3		24.3		35.0	25	21.6	25		
SIGATOKA AWS	50		5	20	1	31.4		23.0		32.7	11	19.6	20		
RAKIRAKI AWS	227		18	54	2	30.2		24.0		32.5	26	22.3	21		
WAINIKORO AWS	228		14	112	13	32.5		22.9		34.8	11	20.2	22		
SAQANI AWS	106		16	47	13	32.8		25.2		34.5	26	23.9	21		
VATUREKUKA AWS	228		13	73	13	31.5		22.3		33.7	11	19.5	22		
KUBULAU AWS	73		14	23	14	31.2		24.2		32.2	13	21.3	22		
SEAQQA AWS	168		44	13	69	13	33.7		23.7	35.6	6	20.0	21		
DOBUILEVU TB3	227		74	22	53	26									
NASINU TB3	128		19	30	17										
TAVUA TB3	50		18	5	24	1									

	TEMPERATURE (C)				HUMIDITY	WIND	SUN RAD		
	MEAN	DRY	WET	RH%				VP	%OF MJ/
		(AVERAGE AT 9AM)							
NADI AIRPORT	28.2	29.5	25.0	68	28.1	6.6	72 20.7		
SUVA/LAUCALA BAY	28.4	29.2	25.9	76	31.0		69 12\$		
NACOCOLEVU	U/S	29.9	26.0	73	30.7		62 24\$		
ROTUMA	29.1	29.2	26.8	83	33.4		40 19\$		
VIWA	29.8	31.1	26.7	70	31.6				
UDU POINT	28.0	28.9	25.8	78	30.9				
SAVUSAVU AIRFIELD	27.7	28.8	25.7	78	30.7				
LABASA AIRFIELD	27.3	29.3	25.6	74	30.0				
NABOUWALU	28.6	29.5	26.0	75	31.0				
KORONIVIA	27.4	28.9	25.5	75	30.0				
NAUSORI AIRPORT	27.7	28.8	25.6	77	30.4	5.0			
NAVUA/TOKOTOKO	U/S								
MONASAVU	23.0	22.8	21.3	87	24.3				
LAUTOKA AES	28.3	30.6	26.4	71	31.1				
BA/RARAWAI MILL	28.0	29.4	25.2	70	28.7				
PENANG MILL	28.1	28.7	25.6	77	30.3				
MATEI AIRFIELD	27.8	29.0	25.9	77	31.0				
VANUABALAVU	26.2	28.5	25.3	77	29.9				
LAKEBA	28.1	29.2	25.9	76	30.8				
YASAWA	29.8	31.3	27.1	72	32.7				
VUNISEA	28.1	28.8	25.7	77	30.7				
MATUKU	27.9	29.0	25.4	74	29.6				
ONO-I-LAU	27.5	29.3	25.7	75	30.4				

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
(February, 2019 - February, 2020)**

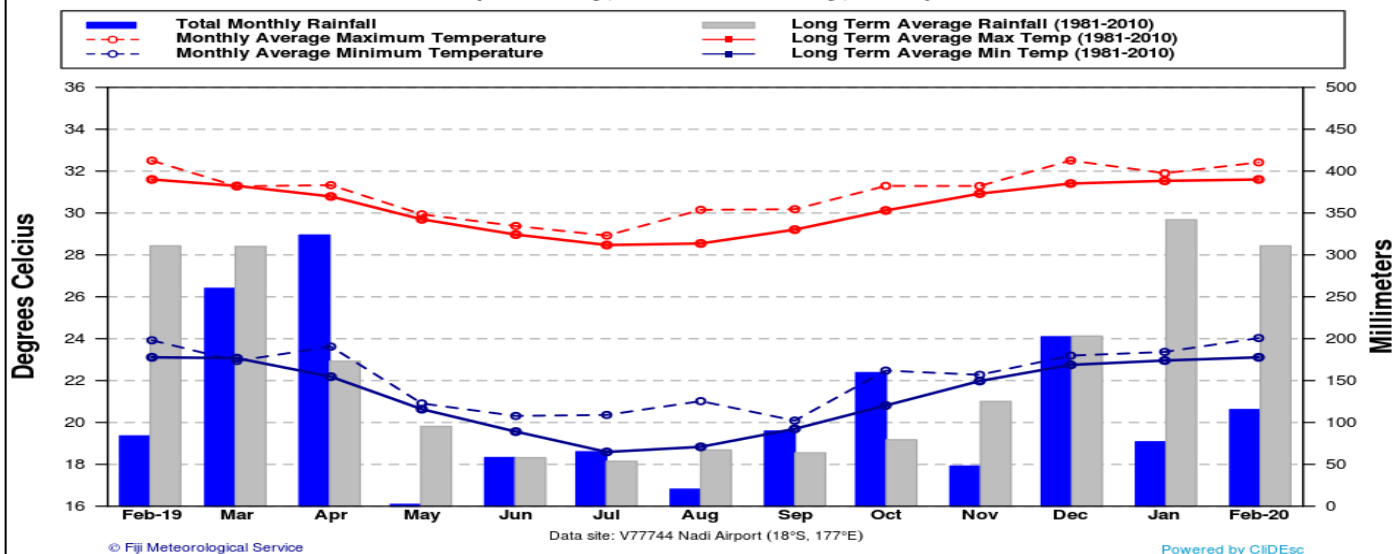


Figure 3

**Laucala Bay - Temperature & Rainfall for the last 13 Months
(February, 2019 - February, 2020)**

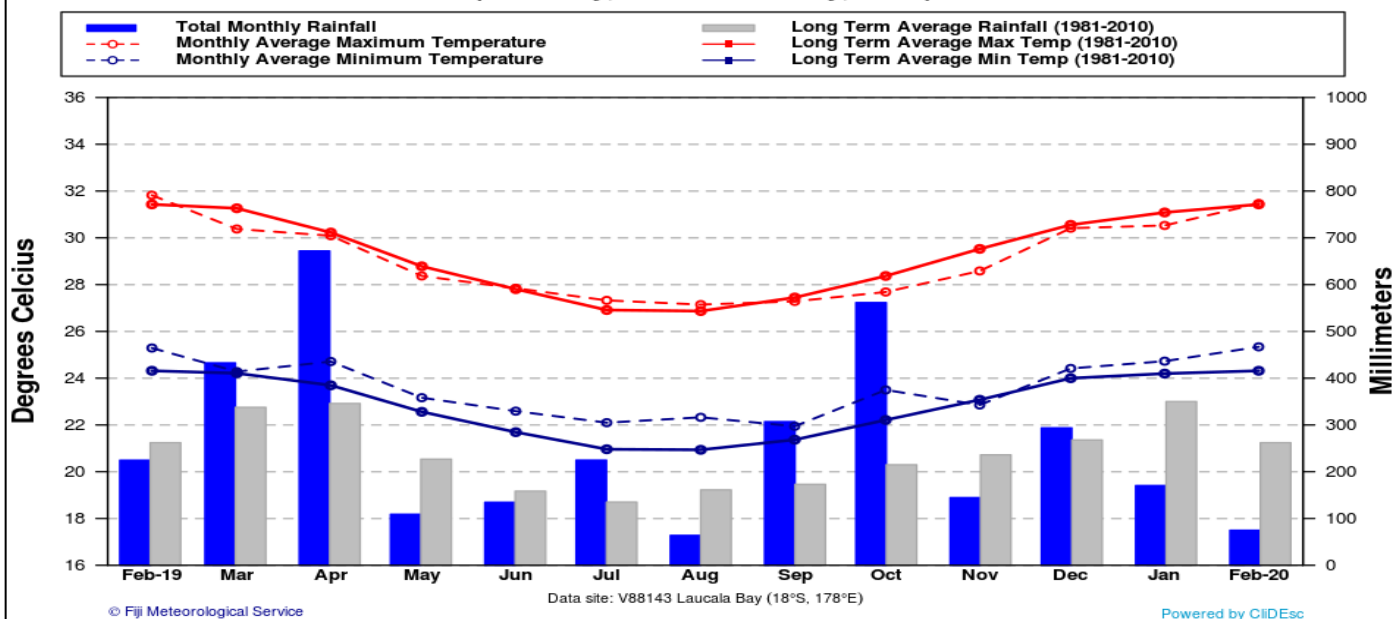


Figure 4

**Labasa Airfield - Temperature & Rainfall for the last 13 Months
(February, 2019 - February, 2020)**

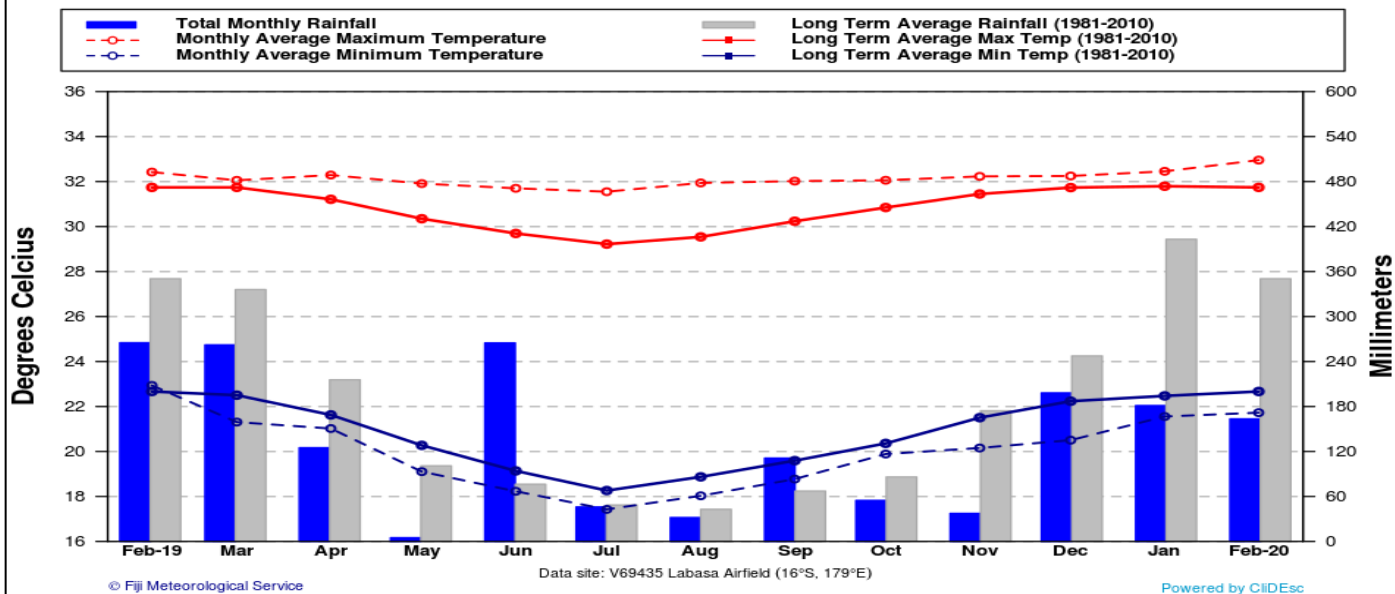
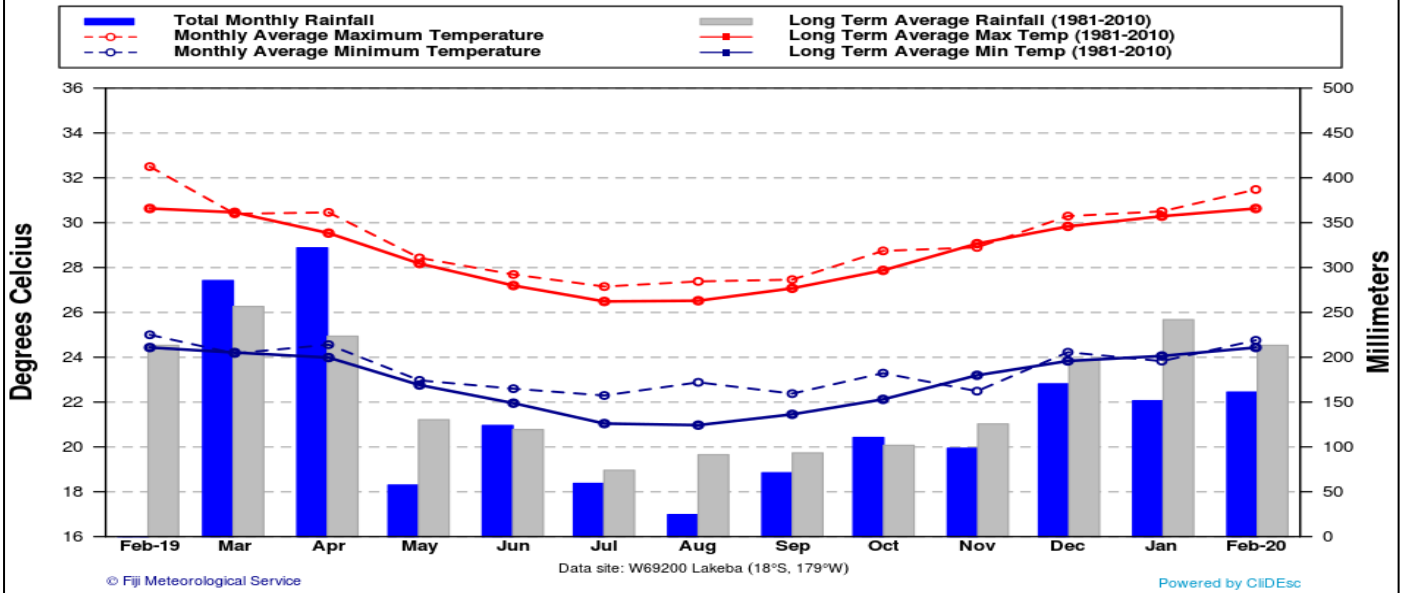


Figure 5

Lakeba - Temperature & Rainfall for the last 13 Months
(February, 2019 - February, 2020)



5. DAILY RAISED PAN EVAPORATION

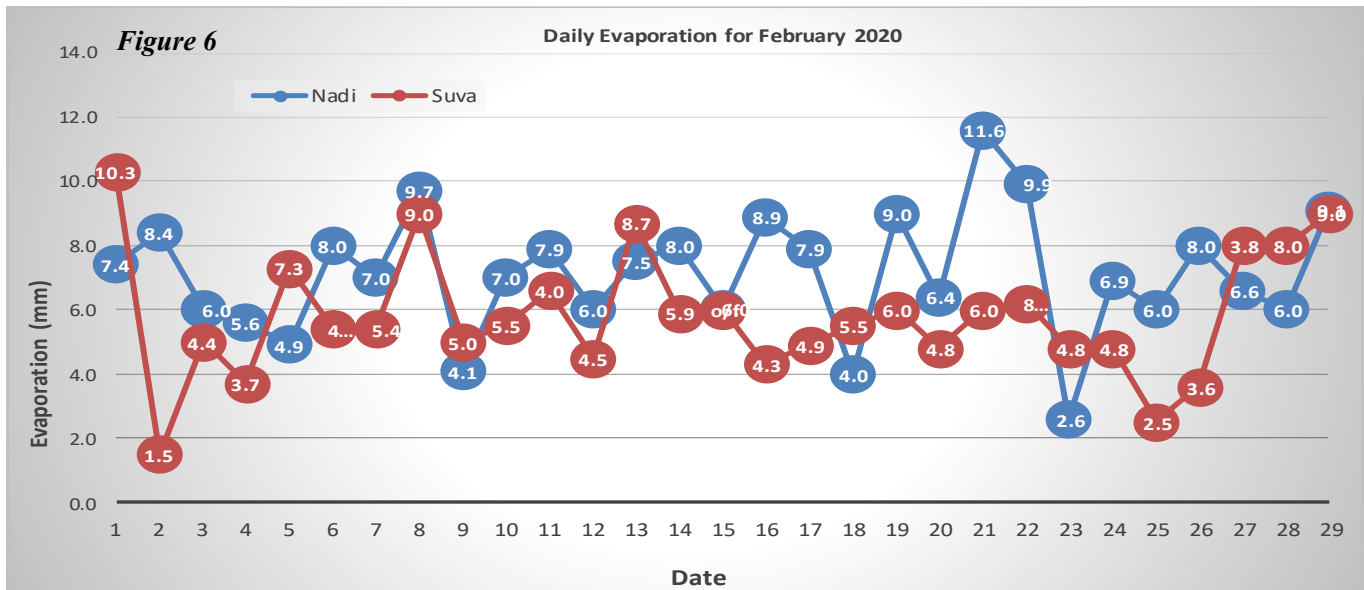


Figure 6: The total monthly raised pan evaporation at Nadi Airport was 206.4mm, with the highest daily evaporation of 11.6mm recorded on the 21st. Laucala Bay (Suva) recorded total monthly raised pan evaporation of 168.2mm, with the highest daily evaporation of 10.3mm on the 1st.

6. SOLAR RADIATION

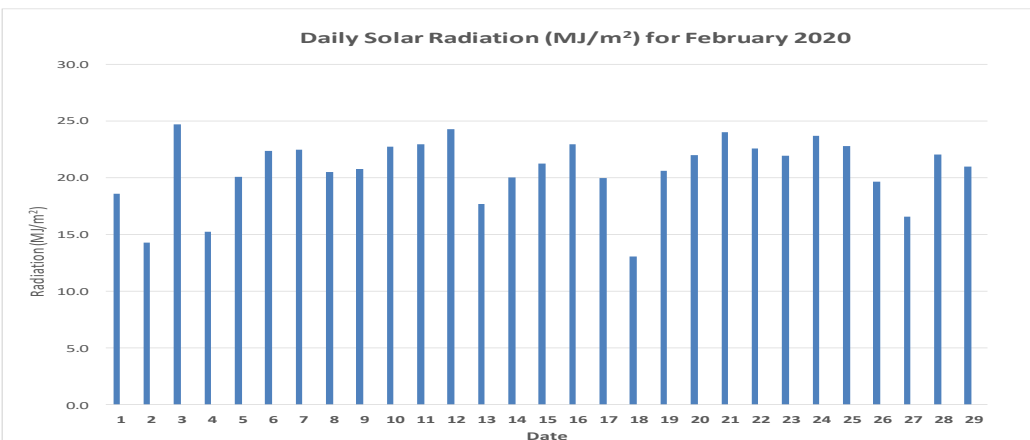


Figure 7:

The mean daily solar radiation at Nadi Airport during February 2020 was 20.7MJ/m² compared to 20.2MJ/m² over 30 year average (1981-2010).

7. WIND SUMMARY

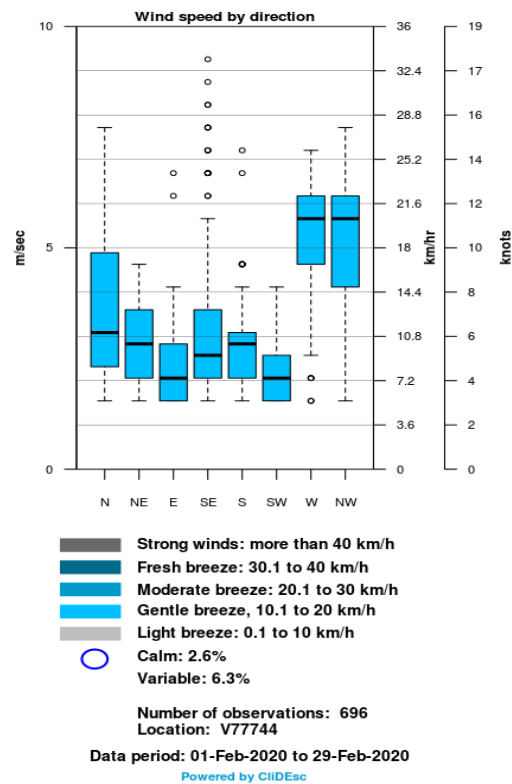
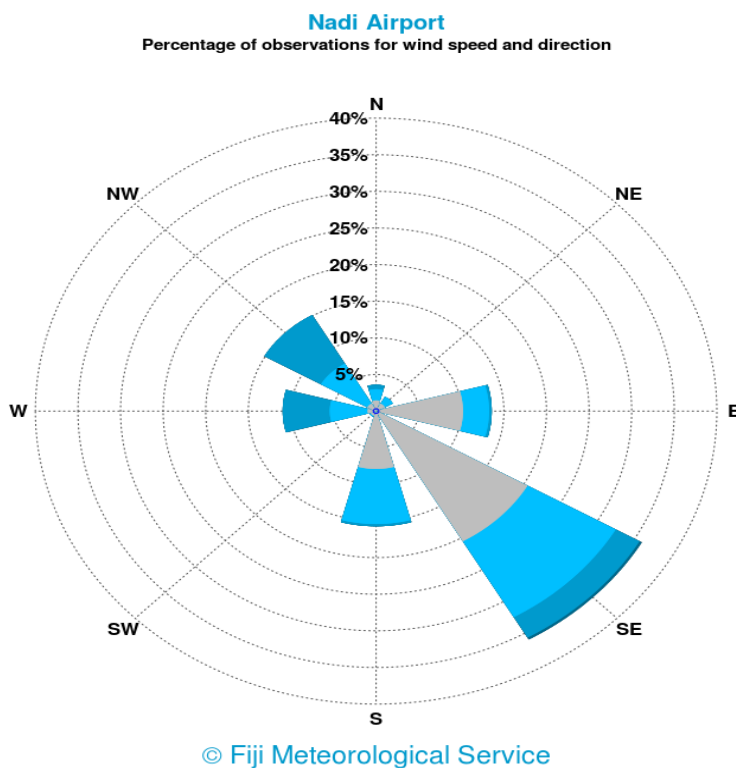


Figure 8a: The hourly wind observations at Nadi Airport during the month showed winds from southeast were most dominant, followed by winds from south and northwest. The wind strength were light to fresh at Nadi Airport during the month.

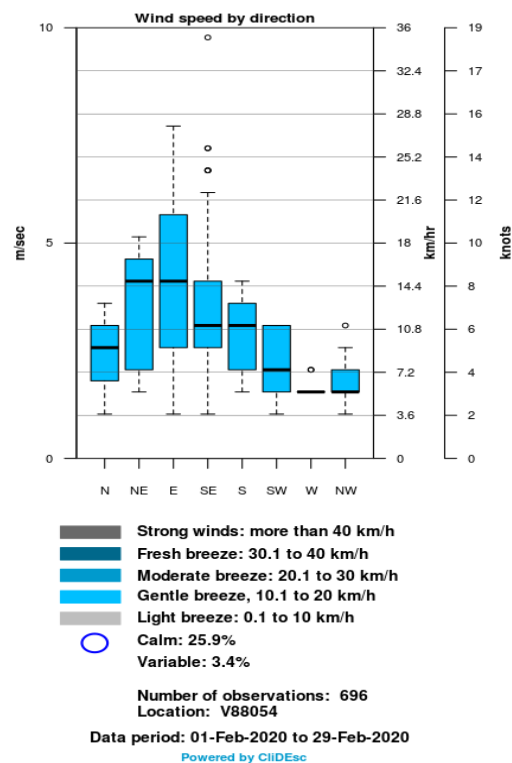
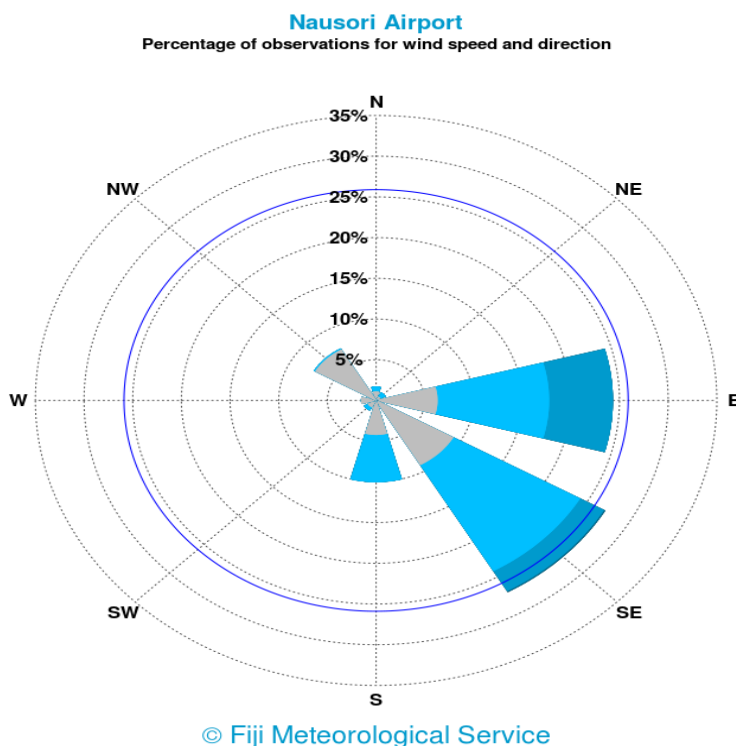


Figure 8b: The hourly wind observations at Nausori Airport during the month showed that winds from southeast winds were dominant, followed by east then south. Generally, light to moderate breeze were observed at the station during the month.

8. SEA SURFACE TEMPERATURE (SST)

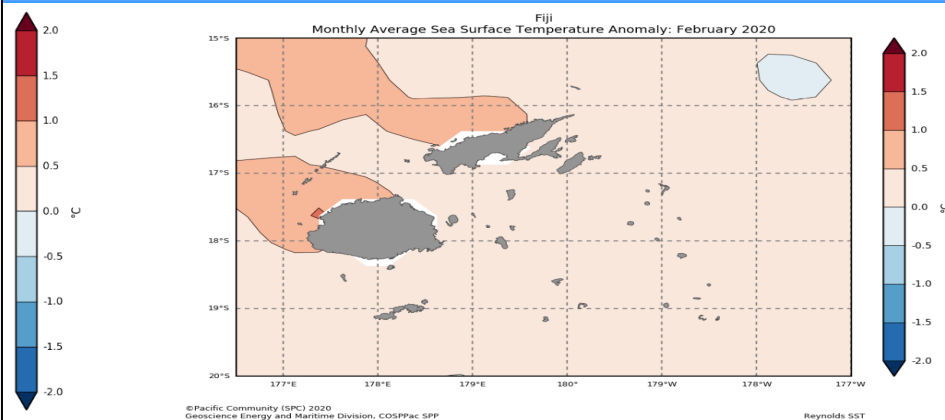


Figure 9:

Near normal SSTs were present in most of the Fiji Waters, but an area of warm SSTs were present to the west of Viti Levu and north of Vanua Levu.

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

9. CLOUD COVER

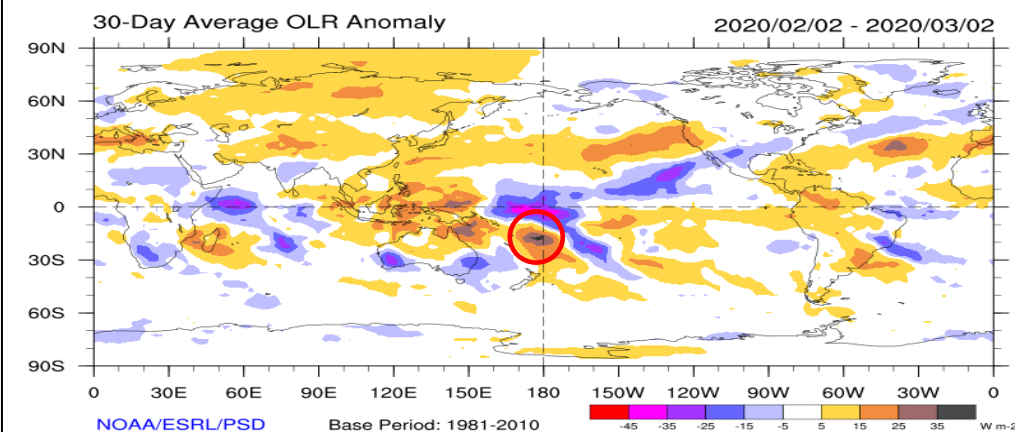


Figure 10:

Below normal cloud cover were present over the Fiji region during the month (Fiji in red circle).

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

10. SEA LEVEL

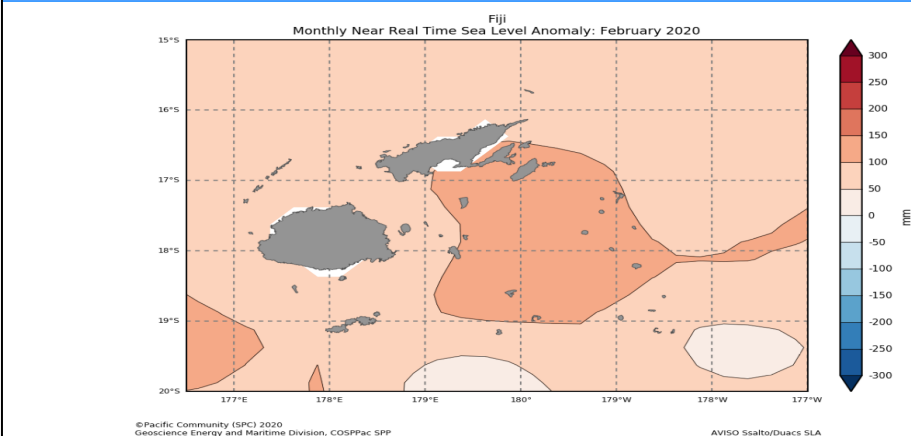


Figure 11:

Sea level anomalies of around 0 to 15cm were observed in the Fiji Waters during the month.

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

11. WIND ANOMALIES

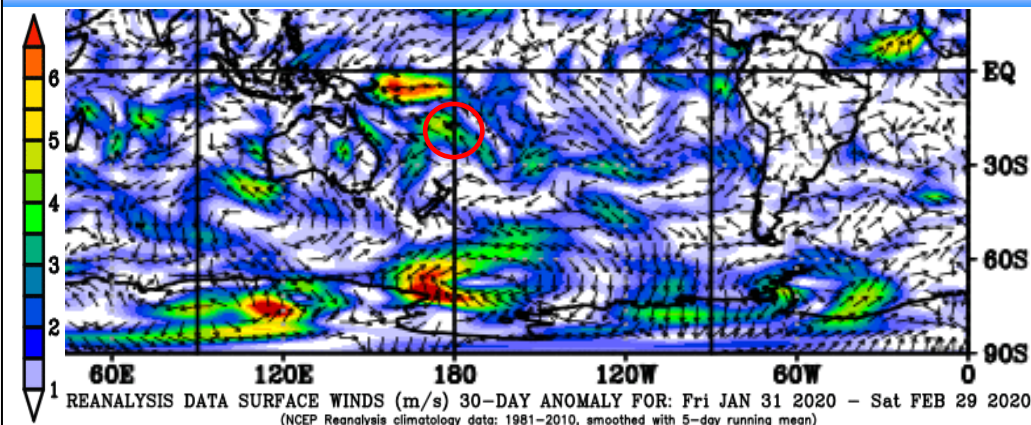


Figure 12:

South-easterly wind anomalies of around 3.5-4.5m/s were recorded in the Fiji region during the month (base period: 1981-2010) (Fiji in red circle).

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