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Fiji Climate Summary March 2023

ISO 9001:2015 certified Climate Services

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1. IN BRIEF

Rainfall during March varied considerably, with the Western Division, interior of Viti Levu, the northern and parts of the Eastern Division receiving *average* to *above average* rainfall. These were due to the dominant moist northerly and easterly wind flows, active troughs of low pressure as well as rain bands extending from Severe Tropical Cyclone (STC) Kevin, experienced during the month.

Overall, out of the 25 rainfall monitoring stations that reported in, in time for the compilation of this bulletin, 5 recorded *above average* rainfall, 13 *average*, 5 *below average,* while Nausori Airport and Koronivia were the only two stations with *well below average* rainfall (Table 2, Figures 1-5).

The highest monthly rainfall of 1009.0mm was observed at Nadarivatu, followed by Rarawai Mill (Ba) with 495.9mm, Yaqara with 480.5mm, Monasavu with 476.6mm, Penang with 475.7mm, Viwa with 435.4mm, Keiyasi with 409.5mm, Dobuilevu with 400.0mm, Sigatoka with 381.0mm and Vaturekuka (Labasa) with 374.5mm.

On temperatures, the highest day-time temperature of 35.0° C was observed at Levuka and Keiyasi on the 3rd and 17th, followed by Yasawa-i-Rara and Lomaivuna, both with 34.7°C on the 16th and 28th respectively, Savusavu Airfield, Saqani and Koronivia all with 34.4°C on the 1st, 27th and 30th, respectively,

The coolest night-time temperature of 14.8°C was recorded at Nadarivatu on the 11th, followed by Monasavu with 16.7°C on the 19th, Keiyasi with 18.4°C on the 11th, Rarawai Mill (Ba) with 19.0°C on the 24th, and Vaturekuka (Labasa) and Wainikoro both with 19.3°C on the 11th.

Northerly winds were dominant at Nadi Airport while north-westerly winds were the most observed winds at Nausori Airport during March (Figure 7).

Warmer than normal sea surface temperature anomalies were observed across most of the Fiji Group during the month (Figure 8).

Above normal sea level anomalies persisted across most of the Fiji Waters during March 2023 (Figure 10)

2. WEATHER PATTERNS

The weather in March was dominated by moist northerly and easterly wind flows, active troughs of low pressure as well as rain bands extending from Severe Tropical Cyclone (STC) Kevin.

The month started with a northerly wind flow over the Fiji group, while Severe Tropical Cyclone Judy located over Vanuatu (or west of Fiji) and tropical depression TD09F developing to the far northwest of Vanuatu. Tropical disturbance, TD09F, intensified into a category 1 tropical cyclone and was named Kevin, close to Vanuatu, during the early morning of the 2nd with STC Judy maintained a south-southeastwards track to the southwest of Fiji, before exiting the Nadi RSMC area of responsibility on the 3rd to the south of Fiji.

The northerly wind flow continued to dominate the Fiji group. Meanwhile, STC Kevin rapidly intensified while drifting towards Vanuatu on the 3rd making brief land interaction, however on the 4th the system reached peak intensity as a category 4 system just southeast of Vanuatu. STC Kevin continued to track southeastwards to the southwest of Fiji on the 5th and the associated rain bands brought heavy rain with fresh to strong northerly winds over parts of the Fiji group from the 4th till the 7th. As a result, parts of the western division, mainly Rakiraki and Ba experienced flash flood induced by the active rain bands. Nadarivatu recorded the highest rainfall of the month with 227.5mm on the 5th. The rain band gradually weakened and drifted over the northern division on the 11th with another weak trough developed and lingered to the south of the Fiji group before it dissipated on the 24th. An east to northerly wind flow than prevailed over the group.

On the 26th, a trough of low pressure developed to the northeast of Fiji and brought some showers and isolated thunderstorms over Vanua Levu, Lau and Lomaiviti group before the system drifted eastwards away from Fiji. Finally, moderate easterly wind flow dominated the Fiji group and brief trade showers was experienced over the eastern parts of the main islands and isolated light afternoon showers and thunderstorms elsewhere. The trade showers prevailed till month end.

Rotuma was mainly affected by troughs of low-pressure system as well as easterly wind flow for most parts of the month.

3. RAINFALL

Typical wet season rainfall continued to be experienced at most parts of the country during the month, with generally *average* to *above average* rainfall recorded at various rainfall recording stations. The exceptions were Navua, Laucala Bay (Suva), Vanuabalavu, Lakeba, and Ono-i-Lau which recorded *below average* rainfall, while Nausori Airport and Koronivia registered less than half their normal monthly rainfall.

Overall, out of the 25 rainfall monitoring stations that recorded in, in time for the compilation of bulletin, 5 recorded *above average* rainfall, 13 *average*, 5 *below average,* while Nausori Airport and Koronivia were the only two stations with *well below average* rainfall (Table 2, Figures 1-5).

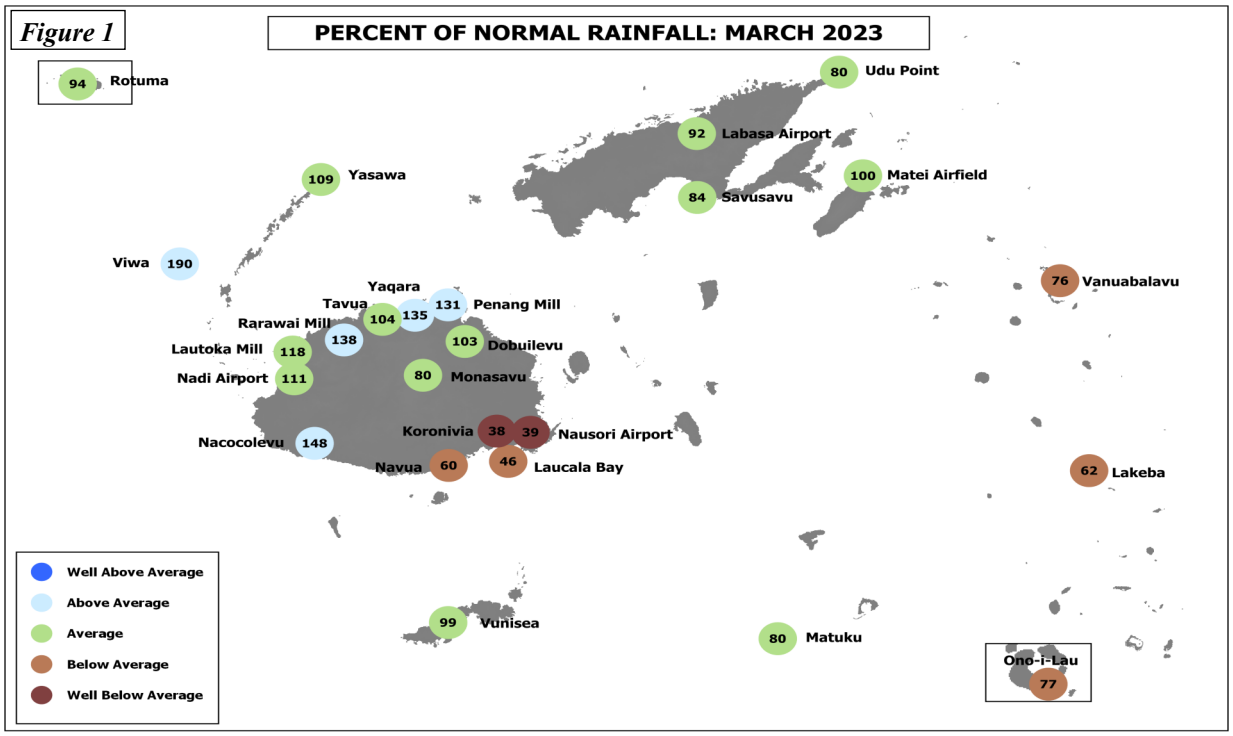
The highest monthly rainfall of 1009.0mm was observed at Nadarivatu, followed by Rarawai Mill (Ba) with 495.9mm, Yaqara with 480.5mm, Monasavu with 476.6mm, Penang with 475.7mm, Viwa with 435.4mm, Keiyasi with 409.5mm, Dobuilevu with 400.0mm, Sigatoka with 381.0mm and Vaturekuka (Labasa) with 374.5mm. On the other hand, Koronivia recorded the month's lowest total monthly rainfall of 139.6mm, followed by Nausori Airport with 140.4mm, Nasinu with 143.0mm, Korolevu with 149.0mm, Laucala Bay (Suva) with 157.2mm, Vanuabalavu with 167.0mm, Lakeba with 167.5mm and Ono-i-Lau with 172.4mm (Table 2).

Rain bands associated with Severe Tropical Cyclone Kevin brought heavy rain with fresh to strong northerly winds over parts of the Fiji group from the 4th till the 7th, which resulted in Nadarivatu recording its highest 24-hour rainfall of 227.5mm on the 5th.

Monasavu recorded the highest number of rain days (rainfall ≥0.1mm) with 28 days, followed by Labasa Airport and Vaturekuka (Labasa) both with 26 days, Penang Mill with 25 days, Nadarivatu with 23 days, Yaqara and Lomaivuna both with 22 days, Navua, Koronivia, Vunisea and Ono-i-Lau all with 21 days, and Keiyasi, Dobuilevu, Savusavu and Rotuma all with 20 days. Consequently, Vanuabalavu recorded the least number of rain days with 13 days, followed by Nadi Airport and Lautoka Mill both with 15 days, and Nasinu, Korolevu, Laucala Bay (Suva), Lakeba, Udu Point and Yasawa-i-Rara all with 17 days.

There was no new rainfall record established during the month.

Figure 1



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 Day-time Air Temperatures

Above normal day-time air temperatures were observed at most parts of the country during the month. Out of the 22 climate stations that reported in time for the analysis of data, 12 recorded anomalies ≥+0.5°C and 10 within ±0.5°C.

The warmest days on average were recorded at Keyasi with 32.6°C, followed by Labasa Airport, Lomaivuna both with 32.4°C, Saqani with 32.3°C, Viwa with 32.2°C, Yasawa-i-Rara and Korolevu both with 32.1°C, and Rarawai Mill (Ba) with 32.0°C. Consequently, Nadarivatu recorded the coolest days on average with 25.6°C, followed by Monasavu with 26.2°C, Ono-i-Lau with 30.3°C, Vaturekuka (Labasa) with 30.8°C, Matuku and Matei both with 30.9°C and Rotuma with 31.1°C.

The highest day-time temperature was observed at Levuka and Keiyasi both with 35.0°C on the 1st and 17th, respectively, followed by Yasawa-i-Rara and Lomaivuna both with 34.7°C on the 16th and 28th, respectively, Savusavu Airfield, Saqani and Koronivia all with 34.4°C on the 1st, 27th and 30th, respectively, Navua with 34.3°C on the 1st and Korolevu with 34.0°C on the 4th. On the other hand, the coolest day-time temperature of 21.6°C was at Monasavu on the 9th, followed by Nadarivatu with 22.3°C on the 6th, Matei with 26.9°C on the 8th, Levuka with 27.5°C on the 6th, Vaturekuka (Labasa) with 27.9°C on the 6th, and Yasawa-i-Rara with 28.0°C on the 19th.

There were no new day-time temperature records established during the month.

B. Minimum Night-time Air Temperatures

Generally *near normal* night-time temperatures were recorded over most parts of the country during the month. Of the 21 stations, 14 recorded anomalies within ±0.5°C, and 7 with anomaly ≤-0.5°C.

The coolest days on average was at Nadarivatu with 18.4°C, followed by Monasavu with 19.7°C, Koronivia with 20.8°C, Rarawai Mill (Ba) and Vaturekuka (Labasa) both with 22.3°C, Lomaivuna with 22.4°C, Nacocolevu and Sigatoka both with 22.5°C, Navua with 22.6°C, Keiyasi and Wainikoro both with 22.8°C, and Labasa and Korolevu both with 22.9°C. Consequently, on average, the warmest night-time temperatures were observed at Viwa with 25.3°C, followed by Levuka and Laucala Bay (Suva) both with 24.7°C, Saqani with 24.6°C, Ono-i-Lau with 24.5°C, Matuku and Lakeba both with 24.3°C, and Vunisea with 23.7°C.

The coolest night-time temperature of 14.8°C was recorded at Nadarivatu on the 11th, followed by Monasavu with 16.7°C on the 19th, Keiyasi with 18.4°C on the 11th., Rarawai Mill (Ba) with 19.0°C on the 24th, and Vaturekuka (Labasa) and Wainikoro both with 19.3°C on the 11th. On the other hand, the warmest night-time temperature of 28.2°C was recorded at Seaqaqa on the 5th, followed by Momi with 27.4°C on the 27th, Lakeba with 27.3°C on the 4th, Penang Mill with 27.2°C on the 4th, Ono-i-Lau with 27.0°C on the 2nd, and Keiyasi with 27.0°C on the 24th.

Nadi Airport recorded its highest daily minimum temperature since the observations began in 1942 (Table 1)

TABLE 1. CLIMATE RECORDS ESTABLISHED IN MARCH 2023

Element	Station	Observed (record)	On	Rank	Previous (record)	Year	Records Began
Daily minimum Temperature	Nadi Airport	26.6°C	1st	New High	26.5°C	1992	1942

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 MARCH 2023

	RAINFALL					AIR TEMPERATURES								SUNSHINE	
	TOTAL		RAIN	MAX.		AVERAGE DAILY				EXTREME				TOTAL	
		*	DAYS	FALL		MAX.	#	MIN.	#	MAX.		MIN.			*
	MM	%	+	MM	ON	C	C	C	C	C	ON	C	ON	HRS	%
NADI AIRPORT	360.2	111	15	90	5	31.4	0.1	23.4	0.3	33.5	30	21.5	12	218	112
LAUCALA BAY	157.2	46	17	55	6	31.5	0.3	24.7	0.4	33.5	4	23.1	13	169	94
NACOCOLEVU RESEARC	353.9	148	19	73	5	31.2	-0.4	22.5	-0.1	33.2	1	19.7	12	169	107
ROTUMA ISLAND	321.1	94	20	58	8	31.1	0.2	23.6	-1.3	32.8	30	22.1	7	160	101
VIWA ISLAND	435.4	190	19	150	22	32.2	0.8	25.3	0.1	33.5	17	24.2	23		
YASAWA-I-RARA	261.2	109	17	60	13	32.1	1.0	23.1	-1.5	34.7	16	21.0	6		
UDU POINT WEATHER	239.9	80	17	99	8	31.2	0.2	23.4	-1.2	32.4	1	21.6	21		
NABOUWALU	STATION TEMPORARILY CLOSED														
LABASA AIRFIELD	307.8	92	26	43	22	32.4	0.6	22.9	0.4	33.7	18	19.4	11		
SAVUSAVU AIRFIELD	200.3	84	20	50	5	31.6	0.7	U/S		34.4	1	U/S			
KORONIVIA RESEARCH	139.6	38	21	32	15	31.6	0.8	20.8	-2.6	34.4	30	20.8	31		
NAUSORI AIRPORT	140.4	39	19	32	6	31.6	0.9	23.4	0.1	33.6	3	20.1	10		
NAVUA (AWS)	228.0	60	21	45	9	31.6	0.7	22.6	0.4	34.3	1	21.3	10		
MONASAVU HYDRO DAM	476.6	80	28	82	5	26.2	0.4	19.7	0.3	28.9	29	16.7	19		
FSC LAUTOKA MILL	342.4	118	15	139	6	31.7	0.4	23.4	-0.6	33.1	31	21.2	11		
FSC RARAWAI MILL	495.9	138	18	126	5	32.0	-0.2	22.3	-0.2	33.5	30	19.0	24		
FSC PENANG MILL	475.7	131	25	100	6	31.6	0.5	23.6	-0.1	32.9	29	22.0	20		
MATEI AIRFIELD	281.0	100	18	88	7	30.9	0.3	23.2	-1.1	32.9	3	21.5	18		
VANUABALAVU	167.0	76	13	40	28	31.4	0.8	23.2	-1.8	32.6	31	21.7	9		
LAKEBA	167.5	62	17	51	20	31.1	0.6	24.3	0.0	32.5	3	21.6	19		
VUNISEA	309.2	99	21	55	5	31.5	1.1	23.7	0.0	32.6	1	20.4	8		
MATUKU	177.1	80	18	62	18	30.9	0.4	24.3	-0.3	32.1	18	23.2	12		
ONO-I-LAU	172.4	77	21	31	5	30.3	0.5	24.5	0.1	33.0	1	21.1	20		
YAQARA AWS	480.5	135	22	91	27	31.9		23.6		33.4	29	22.1	18		
LEVUKA AWS	240.5		18	48	5	31.8		24.7		35.0	1	23.3	14		
KEIYASI AWS	409.5		20	97	13	32.6		22.8		35.0	17	18.4	11		
LOMAIVUNA AWS	232.5		22	52	13	32.4		22.4		34.7	28	20.2	12		
NADARIVATU AWS	1009.0		23	228	5	25.6		18.4		28.1	31	14.8	11		
RKS LODONI AWS	MISSING OBSERVATION														
MOMI AWS	MISSING OBSERVATION														
SIGATOKA AWS	381.0		18	78	14	31.4		22.5		33.2	1	19.7	11		
VATUREKUKA AWS	374.5		26	43	7	30.8		22.3		32.7	30	19.3	11		
KOROLEVU AWS	149.0		17	43	16	32.1		22.9		34.0	4	20.9	1		
WAINIKORO AWS	U/S					31.9		22.8		33.6	27	19.3	11		
SAQANI AWS	U/S					32.3		24.6		34.4	27	22.9	13		
SEAQAQA AWS	MISSING OBSERVATION														
DOBUILEVU TB3	400.0	103	20	86	29										
NASINU TB3	143.0		17	41	20										
TAVUA TB3	301.0	104	19	70	5										

	TEMPERATURE(C)		HUMIDITY		WIND
	DRY	WET	RH%	VP	
	MEAN	(AVERAGE AT 9AM)			KT
NADI AIRPORT	27.4	27.6	24.9	80	27.6	6.4
LAUCALA BAY	28.1	28.4	25.8	81	28.9	5.4
NACOCOLEVU RESEARC	26.9	28.3	25.6	81	28.8	
ROTUMA ISLAND	27.3	29.0	26.7	84	30.0	
VIWA ISLAND	28.7	29.8	26.9	80	31.4	
YASAWA-I-RARA	27.6	28.7	26.5	85	29.4	
UDU POINT WEATHER	27.3	29.0	25.7	77	30.0	
NABOUWALU	STATION TEMPORARILY CLOSED					
LABASA AIRFIELD	27.7	28.6	25.7	79	29.3	
SAVUSAVU AIRFIELD	NA	28.4	25.6	80	28.9	
KORONIVIA RESEARCH	26.2	28.8	25.9	80	29.6	
NAUSORI AIRPORT	27.5	28.0	25.3	80	28.3	4.9
NAVUA AWS	27.1					
MONASAVU HYDRO DAM	22.9	22.8	22.4	97	20.7	
FSC LAUTOKA MILL	27.5	29.4	27.5	87	30.7	
FSC RARAWAI MILL	27.1	27.5	24.8	81	27.5	
FSC PENANG MILL	27.6	28.8	25.8	79	29.6	
MATEI AIRFIELD	27.0	29.1	26.0	78	30.1	
VANUABALAVU	27.3	29.4	25.9	75	30.7	
LAKEBA	27.7	29.2	26.1	78	30.3	
VUNISEA	27.6	27.9	25.2	81	28.1	
MATUKU	27.6	28.5	25.5	79	29.1	
ONO-I-LAU	27.4	28.6	25.6	78	29.3	

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 (1981-2010). + :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 (Western Division) - Temperature & Rainfall Records for the last 13 Months
(March 2022 - March 2023)

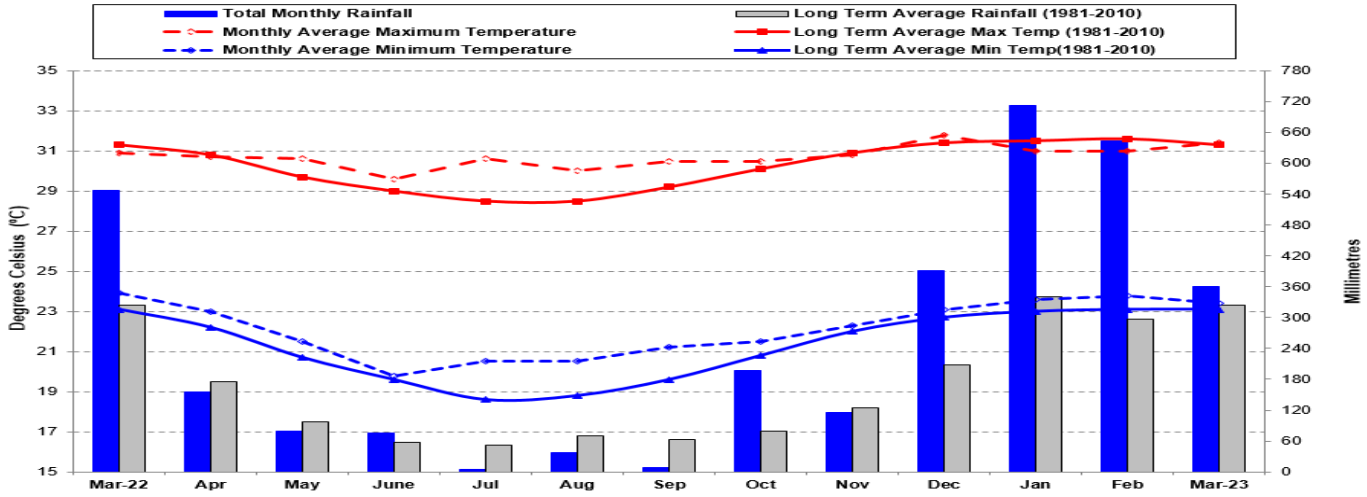


Figure 3

Laucala Bay - (Suva) (Central Division) - Temperature & Rainfall Records for the last 13 Months
(March 2022 - March 2023)

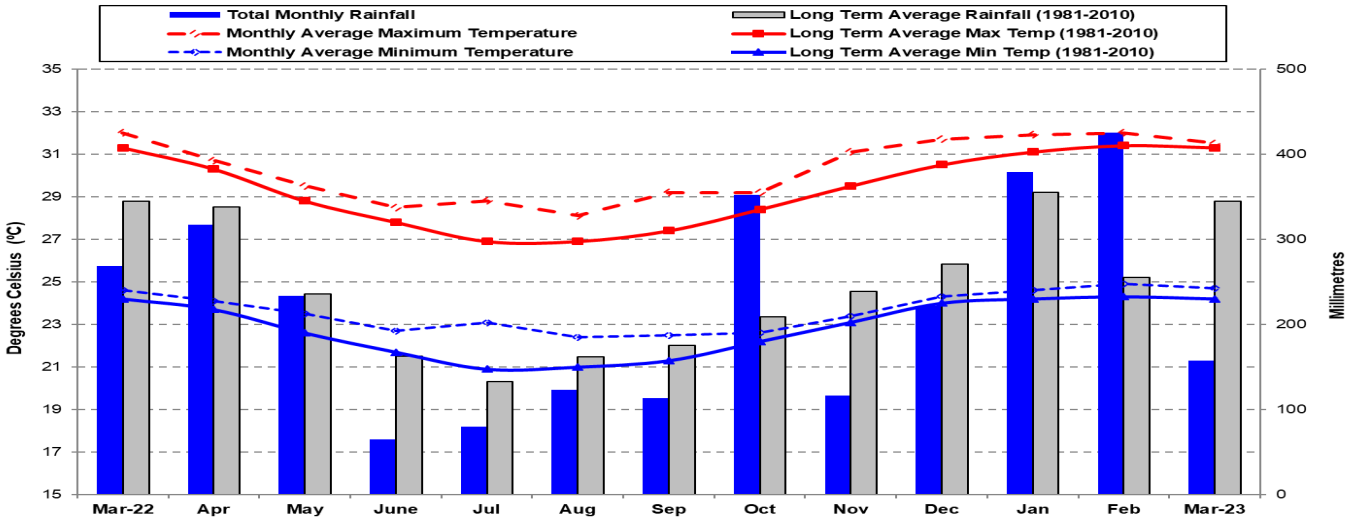


Figure 4

Udu Point (Eastern Division) - Temperature & Rainfall Records for the last 13 Months
(March 2022 - March 2023)

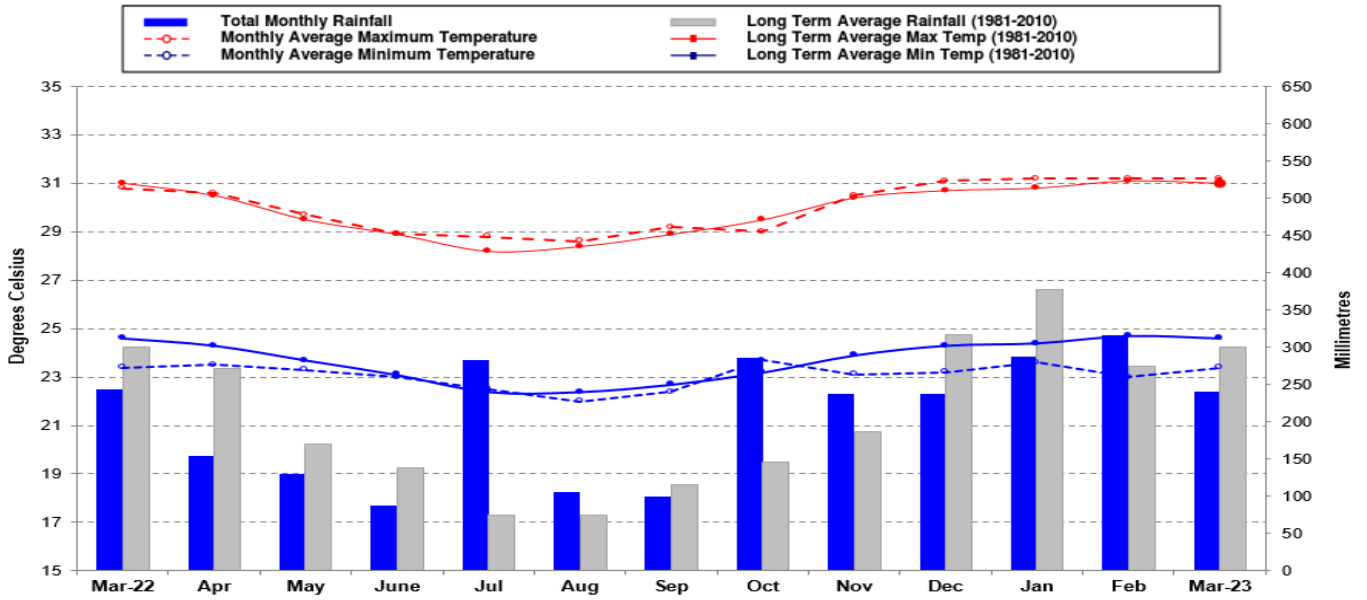
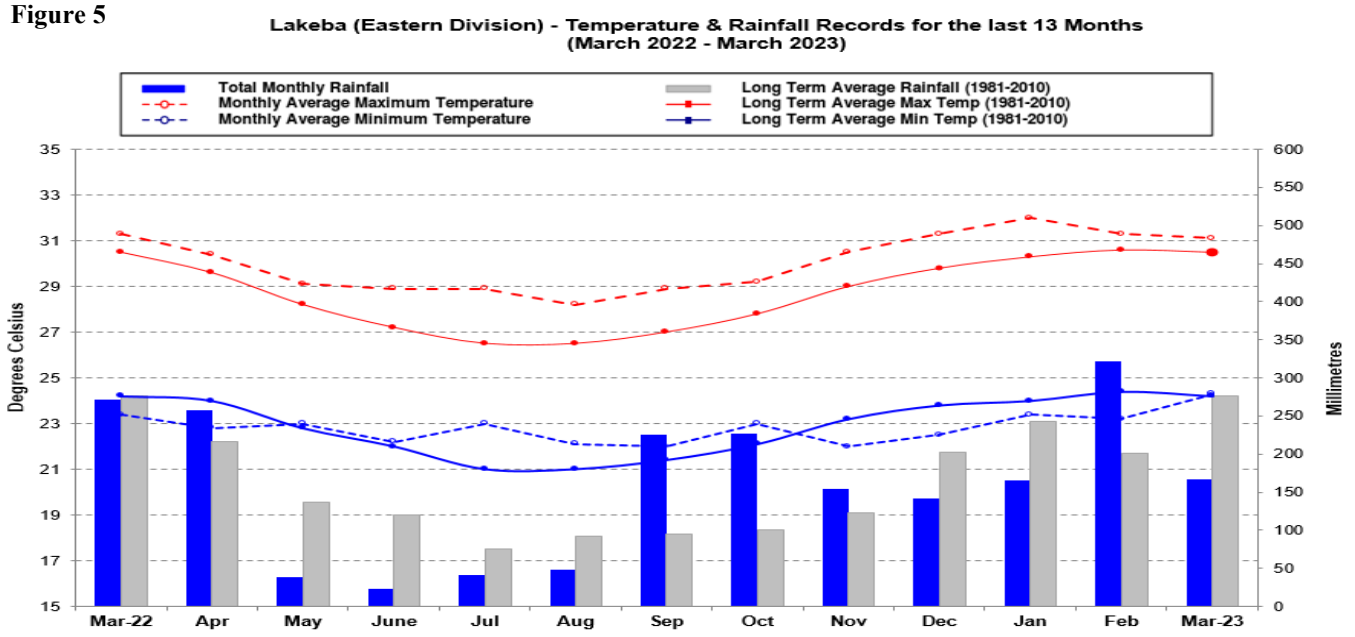


Figure 5



5. DAILY RAISED PAN EVAPORATION

Figure 6

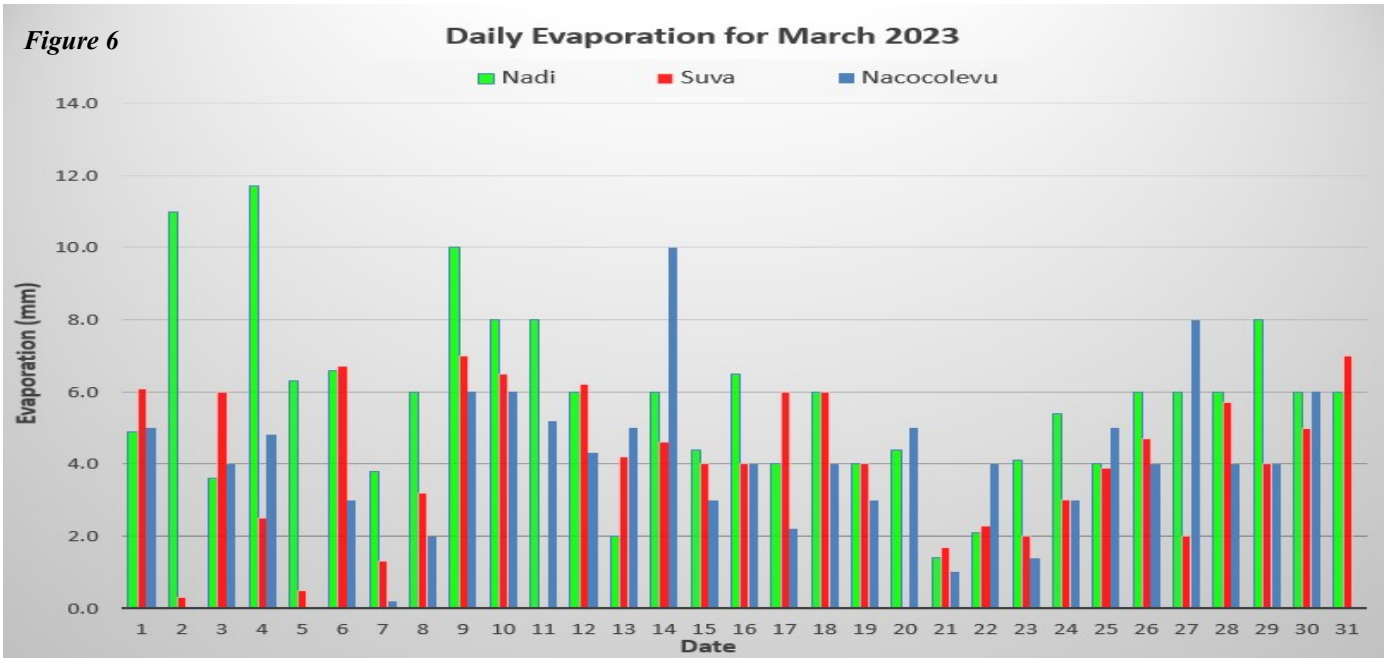


Figure 6: The total monthly raised pan evaporation at Nadi Airport, Laucala Bay (Suva) and Nacocolevu (Sigatoka) were 178.2mm, 120.4mm and 117.1mm respectively. Nadi's highest daily evaporation was 11.7mm on the 4th, with Suva's highest daily evaporation of 7.0mm on 9th and 31st and Nacocolevu (Sigatoka) recorded its highest of 10.0mm on the 14th.

6. SOLAR RADIATION

The Nadi solar radiation instrument became unserviceable during the month of March 2023.

7. WIND SUMMARY

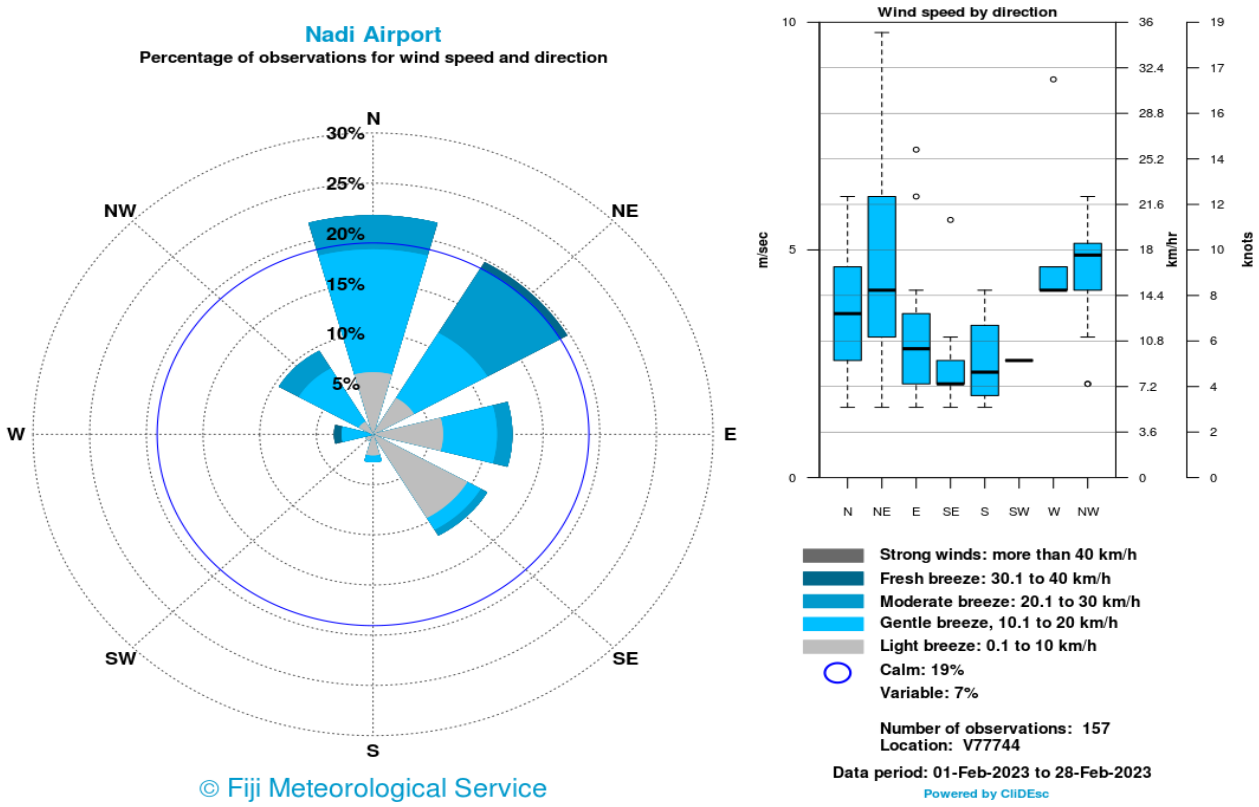


Figure 7a: Looking at Nadi's 3hourly observations, northerly winds were most dominant during the month, followed by north-easterly and easterly winds. Wind strength ranged from fresh to light breeze, with calm winds observed during 19% of the time.

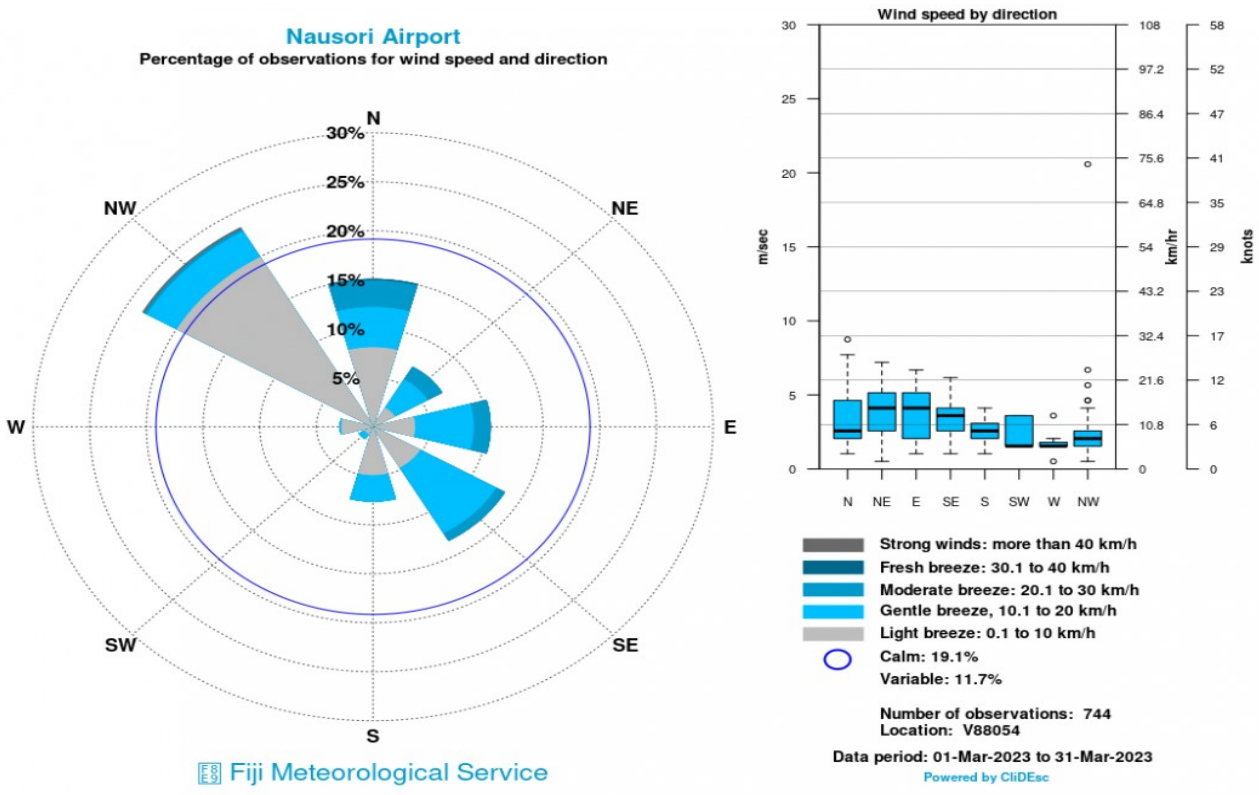


Figure 7b: For Nausori Airport's hourly wind observations, northwesterly winds were dominant followed by southeast-erly, then easterly winds. Wind strength ranged from moderate to light breeze, while 19.1% of observations accounted for calm winds.

8. SEA SURFACE TEMPERATURE (SST)

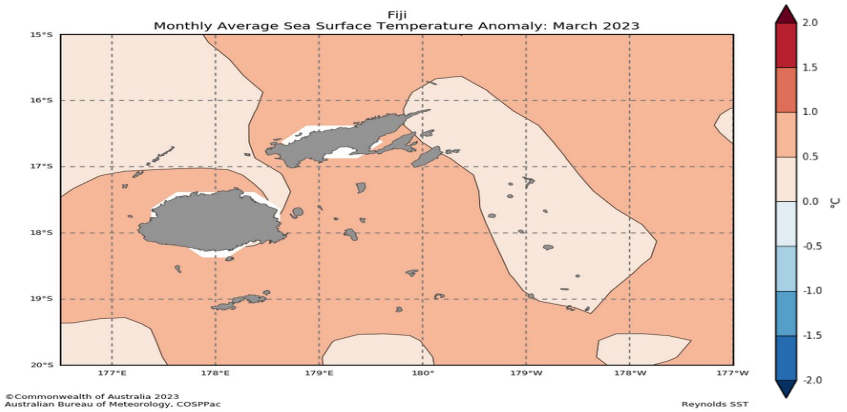


Figure 8:
Warmer than normal sea surface temperature anomalies were observed across most of the Fiji Waters.

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

9. CLOUD COVER

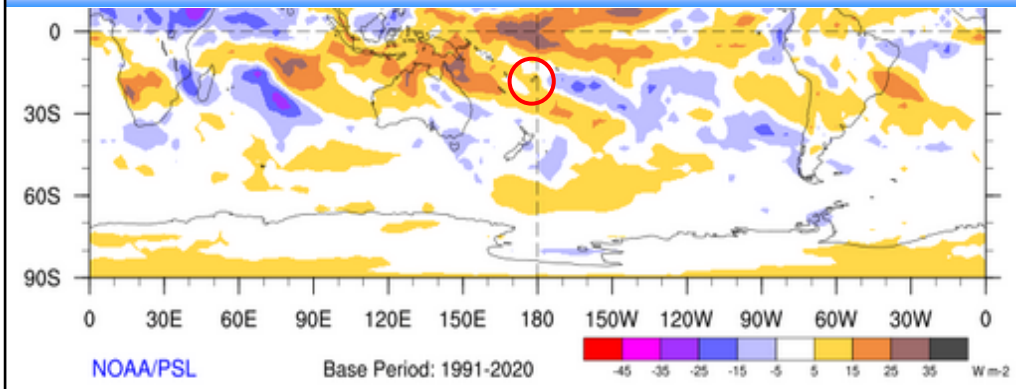


Figure 9:
Slightly below normal cloud cover was present over the Fiji Group during March (*Fiji in red circle).*

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

10. SEA LEVEL

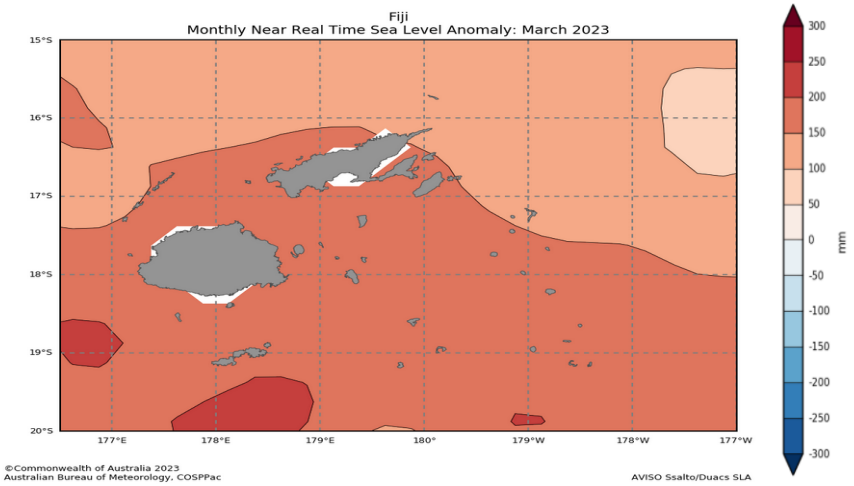


Figure 10:
Above normal sea level anomalies persisted across most of the Fiji Waters during March.

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

11. WIND ANOMALIES

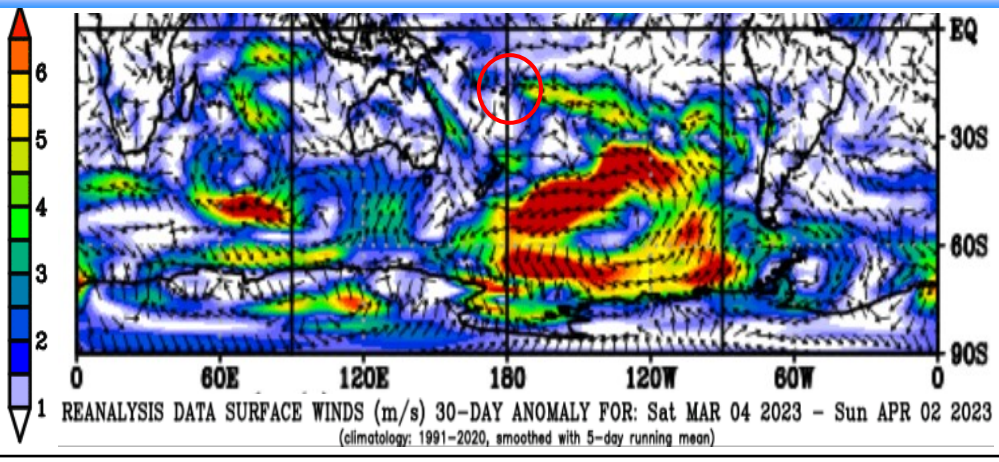


Figure 11:

Northeasterly wind anomalies were generally observed over the Fiji Group 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