

1. IN BRIEF

Generally wetter than normal conditions were observed at most of the rainfall recording stations during the month. Vunisea, Ono-Lau, Seaqaqa and Labasa Airport were the only exceptions, which experienced suppressed rainfall.

Overall, out of the 26 rainfall monitoring stations that reported in, in time for the compilation of bulletin, 2 recorded *well above average* rainfall, 12 recorded *above average*, 8 *average*, and 4 stations with *below average* rainfall (Table 2, Figures 1-5).

The highest monthly rainfall of 517.9mm was observed at Rotuma, followed by Monasavu with 286.2mm, Navua and RKS Lodonu both with 272.5mm, Yasawa-i-Rara with 237.7mm, Laucala Bay (Suva) with 234.3mm, Korolevu with 230.5mm, Nasinu with 226.0mm, Koronivia with 211.6mm, and Nausori Airport with 184.8.

Yasawa-i-Rara recorded its new highest July daily rainfall of 95.8mm, since observations began in 1950 (Table 1).

On temperatures, the highest day-time temperature of 33.4°C was observed at RKS Lodonu on the 2nd, followed by Keiyasi with 33.1°C on the 8th, Levuka and Labasa Airfield

both with 33.0°C on the 7th and 8th, respectively, Yasawa-i-Rara with 32.5°C on the 9th, and Seaqaqa with 32.3°C on the 8th.

Nausori Airport recorded its lowest daily maximum temperature of 21.0°C since observations began in 1950 (Table 1).

The lowest night time temperature of 9.5°C was recorded at Nadarivatu on the 1st, followed by Monasavu with 12.4°C on the 2nd, Keiyasi with 13.7°C on the 27th, Lomaivuna with 14.2°C on the 30th, and Sigatoka with 14.4°C on the 29th.

Southeasterly winds were dominant at both Nadi Airport and Nausori Airport during July (Figure 7).

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

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

2. WEATHER PATTERNS

The weather in July was dominated by the southeast trades and a series of troughs of low pressure systems.

A south to southeast wind flow prevailed over the country from the 1st to the 2nd. On the 3rd and the 4th, a weak trough of low pressure affected the group while lying to the north of Fiji. From the 5th to the 11th, the southeast trades became dominant over the group. This was enhanced by a high pressure system to the far southwest of the country which directed strong southeast winds over Fiji from the 12th to the 20th. The highest wind speed of 76km/hr maximum winds was recorded in Yasawa-i-Rara on the 19th. Coupled with this, a trough to the north of Fiji drifted southwards and affected the country from the 14th to the 21st bringing occasional rain over most parts of the country. The highest 24-hour rainfall amounts recorded for this period was in RKS with 88.0mm on the 18th and 95.8mm in Yasawa on the 20th.

A south to southeast wind flow again prevailed over Fiji thereafter from the 22nd to the 25th with a trough to the west of Fiji gradually moving over the group and affecting the country on the 26th and 27th with some showers.

By the 28th, the trough weakened and gradually moved to the north of Fiji.

A cool southerly wind flow then dominated the group from the 29th till the end of the outlook period. The lowest 24-hour temperature recorded was 10.4°C in Nadarivatu on the 31st.

Rotuma's weather was also affected by a series of troughs of low pressure systems and the moist east to southeast wind flow for the month of July. The highest 24-hour rainfall amount recorded on the island was 134.7mm on the 18th.

3. RAINFALL

Generally *average to well above average* rainfall were observed at most of the rainfall recording stations during the month. The exceptions were Vunisea, Ono-i-Lau, Labasa Airport, which recorded *below average* rainfall and Seqaqa recorded *well below average* rainfall. Rotuma and Viwa registered more than twice its normal monthly rainfall, while Yasawa-i-Rara registered more than five times its normal monthly rainfall.

Overall, out of the 25 rainfall monitoring stations that reported in, in time for the compilation of bulletin, 3 recorded *well above average* rainfall, 11 *above average*, 7 *average*, and 4 stations with below average rainfall (Table 2, Figures 1-5).

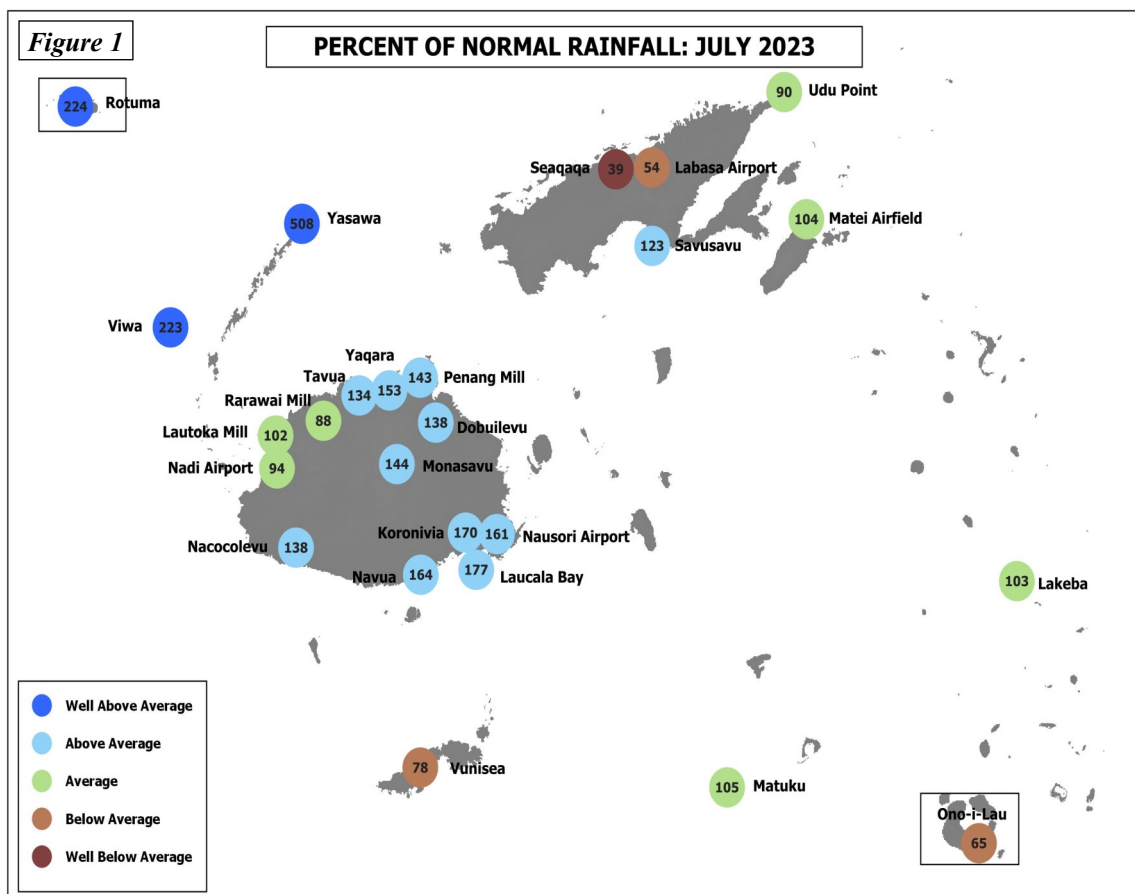
The highest monthly rainfall of 517.9mm was observed at Rotuma, followed by Monasavu with 286.2mm, Navua and RKS Lodoni both with 272.5mm, Yasawa-i-Rara with 237.7mm, Laucala Bay (Suva) with 234.3mm, Korolevu with 230.5mm, Nasinu with 226.0mm, Koronivia with 211.6mm, Nausori Airport with 184.8, and Levuka with 137.5mm. On the other hand, Seqaqa recorded the month's lowest total monthly rainfall of 18.0mm, followed by Vaturekuka (Labasa) with 23.5mm, Wainikoro with 26.0mm, Labasa Airport with 27.2mm, Rarawai Mill (Ba) with 42.1mm, Nadi Airport with 49.6mm, Lautoka Mill with 52.0mm, Saqani with 52.5mm, and Ono-i-Lau

with 58.0mm (Table 2).

A trough to the north of Fiji drifted southwards and affected the country from the 14th to the 21st, which resulted in RKS Lodoni, Rotuma and Yasawa-i-Rara recording their highest 24-hour rainfall of 88.0mm, 134.7mm and 95.8mm on the 17th, 18th and 20th, respectively.

Monasavu recorded the highest number of rain days (rainfall ≥0.1mm) with 23 days, followed Koronivia with 21 days, Navua, RKS Lodoni and Laucala Bay (Suva) all with 20 days, Nasinu and Savusavu Airfield both with 19 days, Nausori Airport with 18 days, Rotuma and Levuka both with 17 days, and Yasawa-i-Rara, Korolevu and Matei all with 16 days. Consequently, Lautoka Mill recorded the least number of rain days with 4 days, followed by Ono-i-Lau with 5 days, Wainikoro and Yaqara with 6 days, Seaqaqa, Rarawai Mill (Ba), Nadi Airport and Tavua all with 7 days, and Keiyasi and Vunisea both with 8 days.

Yasawa-i-Rara recorded its new highest July daily rainfall of 95.8mm, since observations began in 1950 (Table 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

Generally *near normal to below normal* day-time air temperatures were observed at most parts of the country during the month. Out of the 21 climate stations that reported in time for the analysis of data, 3 recorded anomalies $\geq +0.5^{\circ}\text{C}$, 11 within $\pm 0.5^{\circ}\text{C}$, and 7 with anomaly $\leq -0.5^{\circ}\text{C}$.

The warmest days on average were recorded at RKS Lodonni with 30.3°C , followed by Rotuma with 30.1°C , Seaqaqa with 29.3°C , Labasa Airfield with 29.1°C , Viwa with 29.0°C , Rarawai Mill (Ba) with 28.8°C , Lautoka Mill and Wainikoro both with 28.5°C , Yasawa-i-Rara with 28.3°C , and Saqani with 28.1°C . Consequently, Monasavu recorded the coolest days on average with 20.8°C , followed by Nadarivatu with 22.3°C , Navua with 25.8°C , Nausori Airport, Matuku and Vunisea all with 26.0°C , and Lomaivuna with 26.1°C .

The highest day-time temperature was observed at RKS Lodonni with 33.4°C on the 2nd, followed by Keiyasi with 33.1°C on the 8th, Levuka and Labasa Airfield both with 33.0°C on the 7th and 8th, respectively, Yasawa-i-Rara with 32.5°C on the 9th, and Seaqaqa with 32.3°C on the 8th. On the other hand, the coolest day-time temperature of 16.6°C was at Nadarivatu on the 15th, followed by Monasavu with 17.3°C on the 27th, Lomaivuna with 20.9°C on the 15th, Nausori Airport with 21.0°C on the 27th, and Nacocolevu with 21.2°C on the 15th.

Nausori Airport recorded its lowest daily maximum temperature of 21.0°C since observations began in 1950 (Table 1).

B. Minimum Night-time Air Temperatures

Generally *near normal to above average night-time* temperatures were recorded over most parts of the country during the month. Of the 21 stations, 7 recorded anomalies $\geq +0.5^{\circ}\text{C}$, 10 within $\pm 0.5^{\circ}\text{C}$, and 4 with anomaly $\leq -0.5^{\circ}\text{C}$.

The coolest days on average was at Nadarivatu with 14.5°C , followed by Monasavu with 15.6°C , Keiyasi with 17.2°C , Lomaivuna with 17.9°C , Rarawai Mill (Ba) with 18.3°C , Sigatoka with 18.5°C , Nacocolevu with 18.7°C , Navua with 19.1°C , Nausori Airport with 19.2°C , and Nadi Airport with 19.3°C . Consequently, on average, the warmest night-time temperatures were observed at Rotuma with 23.9°C , followed by RKS Lodonni with 22.7°C , Saqani and Viwa both with 22.5°C , Levuka, Udu Point, Savusavu and Koronivia all with 21.5°C , and Matuku with 21.3°C .

The coolest daily night-time temperatures were recorded mostly during the first and last week of the month. The lowest night time temperature of 9.5°C was recorded at Nadarivatu on the 1st, followed by Monasavu with 12.4°C on the 2nd, Keiyasi with 13.7°C on the 27th, Lomaivuna with 14.2°C on the 30th, Sigatoka with 14.4°C on the 29th and Nacocolevu with 14.5°C on the 29th, and Rarawai Mill (Ba) with 15.0°C on the 1st. On the other hand, the warmest night-time temperature of 25.7°C was recorded at RKS Lodonni on the 8th, followed by Rotuma with 25.5°C on the 10th, Viwa with 24.9°C , Saqani with 24.8°C , Koronivia with 24.5°C , all on the 8th, and Laucala Bay (Suva) with 24.3°C on the 11th.

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

TABLE 1. CLIMATE RECORDS ESTABLISHED IN JULY 2023

<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>
Daily Rainfall	Yasawa-i-Rara	95.8mm	20 th	New High	86.4mm	1973	1950
Daily Maximum Temperature	Nausori Airport	21.0°C	27 th	New Low	21.1°C	1997	1956

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 JULY 2023

	RAINFALL				AIR TEMPERATURES						SUNSHINE				
	TOTAL	RAIN		MAX.	AVERAGE DAILY			EXTREME		TOTAL	*				
	MM	%	DAYS	FALL	MAX.	#	MIN.	#	MAX.	MIN.	HRS	%			
NADI AIRPORT	49.6	94	7	19	15	27.9	-0.6	19.3	0.7	31.0	10	16.6	1	211	98
LAUCALA BAY	234.3	177	20	48	15	26.6	-0.3	20.7	-0.2	30.4	8	18.0	2	66	50
NACOCOLEVU RESEARCH	102.5	138	14	25	15	26.3	-1.3	18.7	0.8	30.6	8	14.5	29	129	84
ROTUMA ISLAND	517.9	224	17	135	18	30.1	0.7	23.9	-0.4	31.3	8	22.2	19	152	78
VIWA ISLAND	131.0	223	13	68	20	29.0	0.9	22.5	-0.2	31.3	9	20.0	30		
YASAWA-I-RARA	237.7	508	16	96	20	28.3	0.1	20.4	-1.9	32.5	9	17.5	29		
UDU POINT WEATHER	67.0	89	14	22	20	27.4	-0.8	21.5	-1.0	29.8	21	19.4	29		
NABOUWALU	STATION TEMPORARILY CLOSED														
LABASA AIRFIELD	27.2	54	10	15	20	29.1	-0.2	20.0	1.8	33.0	8	15.6	10		
SAVUSAVU AIRFIELD	108.6	124	19	15	2	26.4	-0.8	21.5	0.4	29.8	8	19.5	28		
KORONIVIA RESEARCH	211.6	170	21	31	15	26.3	-0.4	21.5	1.7	30.2	10	19.0	30		
NAUSORI AIRPORT	184.8	161	18	34	15	26.0	-0.3	19.2	-0.5	29.4	8	16.4	31		
NAVUA (AWS)	272.5	164	20	33	15	25.8	-0.9	19.1	0.3	29.5	9	15.9	2		
MONASAVU HYDRO DAM	286.2	144	23	55	17	20.8	-0.2	15.6	0.1	25.7	9	12.4	2		
FSC LAUTOKA MILL	52.0	102	4	24	20	28.5	0.0	19.6	-0.2	31.3	9	17.2	30		
FSC RARAWAI MILL	42.1	88	7	18	15	28.8	-0.7	18.3	1.2	32.0	7	15.0	1		
FSC PENANG MILL	76.8	143	9	31	20	27.3	-0.4	20.8	0.6	29.9	8	16.5	23		
MATEI AIRFIELD	99.0	104	16	33	18	27.1	-0.1	20.3	-1.3	29.3	8	17.6	28		
VANUABALAVU	OBSERVER ON LEAVE														
LAKEBA	77.8	103	13	36	20	26.3	-0.2	20.8	-0.3	28.9	8	17.4	28		
VUNISEA	85.4	77	8	37	20	26.0	0.1	19.4	-0.3	30.5	22	16.5	29		
MATUKU	87.6	105	11	53	20	26.0	-0.5	21.3	0.0	28.1	8	17.2	29		
ONO-I-LAU (AWS)	58.0	65	5	38	20	27.7	2.6	20.5	0.5	31.8	9	17.4	30		
YAQARA AWS	63.5	153	6	28	20	28.0		20.7		31.7	8	16.9	23		
LEVUKA AWS	137.5		17	44	17	27.0		21.5		33.0	7	18.0	28		
KEIYASI AWS	66.0		8	26	15	27.8		17.2		33.1	8	13.7	29		
LOMATIVUNA AWS	U/S					26.1		17.9		31.0	8	14.2	30		
NADARIVATU AWS	94.0		14	56	15	22.3		14.5		27.7	8	9.5	1		
RKS LODONI AWS	272.5		20	88	17	30.3		22.7		33.4	2	19.4	30		
MOMI AWS	MISSING OBSERVATIONS														
SIGATOKA AWS	U/S					26.2		18.5		29.3	7	14.4	29		
VATUREKUKA AWS	23.5		9	11	20	27.3		19.9		30.4	8	16.6	10		
KOROLEVU AWS	230.5		16	32	21	U/S		U/S		U/S		U/S			
WAINIKORO AWS	26.0		6	17	20	28.5		20.5		30.6	23	17.1	11		
SAQANI AWS	52.5		9	21	20	28.1		22.5		30.6	8	20.4	29		
SEAQAQA AWS	18.0	39	7	10	20	29.3		20.1		32.3	8	15.1	11		
DOBUILEVU TB3	91.5	138	11	39	15										
NASINU TB3	226.0		19	35	16										
TAVUA TB3	64.5	134	7	26	20										

TEMPERATURE(C) HUMIDITY WIND
 DRY WET RH% VP
 MEAN (AVERAGE AT 9AM) KT

NADI AIRPORT	23.6	23.3	20.5	78	21.4	6.1
LAUCALA BAY	23.6	24.0	22.3	86	22.3	5.8
NACOCOLEVU RESEARC	22.5	22.9	21.0	85	20.9	
ROTUMA ISLAND	27.0	28.2	25.6	82	28.6	
VIWA ISLAND	25.7	25.5	23.0	81	24.4	
YASAWA-I-RARA	24.3	25.1	22.4	80	23.8	
UDU POINT WEATHER	24.4	25.4	23.2	83	24.3	
NABOUWALU	STATION TEMPORARILY CLOSED					
LABASA AIRFIELD	24.6	25.3	22.4	78	24.1	9.7
SAVUSAVU AIRFIELD	24.0	24.6	22.2	81	23.1	8.6
KORONIVIA RESEARCH	23.9	23.4	21.5	84	21.5	
NAUSORI AIRPORT	22.6	23.0	21.1	84	21.0	4.1
NAVUA (AWS)	22.5					
MONASAVU HYDRO DAM	18.2	17.9	17.5	96	15.3	
FSC LAUTOKA MILL	24.1	23.7	23.3	98	21.9	
FSC RARAWAI MILL	23.6	23.6	21.2	81	21.8	
FSC PENANG MILL	24.1	24.1	21.4	79	22.4	
MATEI AIRFIELD	23.7	25.1	22.6	80	23.8	8.7
VANUABALAVU	22.9	24.1	21.4	78	22.4	
LAKEBA	23.5	24.5	21.8	79	23.0	
VUNISEA	22.7	23.6	20.8	78	21.8	
MATUKU	23.6	24.4	22.2	82	22.9	
ONO-I-LAU (AWS)	24.1					

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 (July 2022 - July 2023)

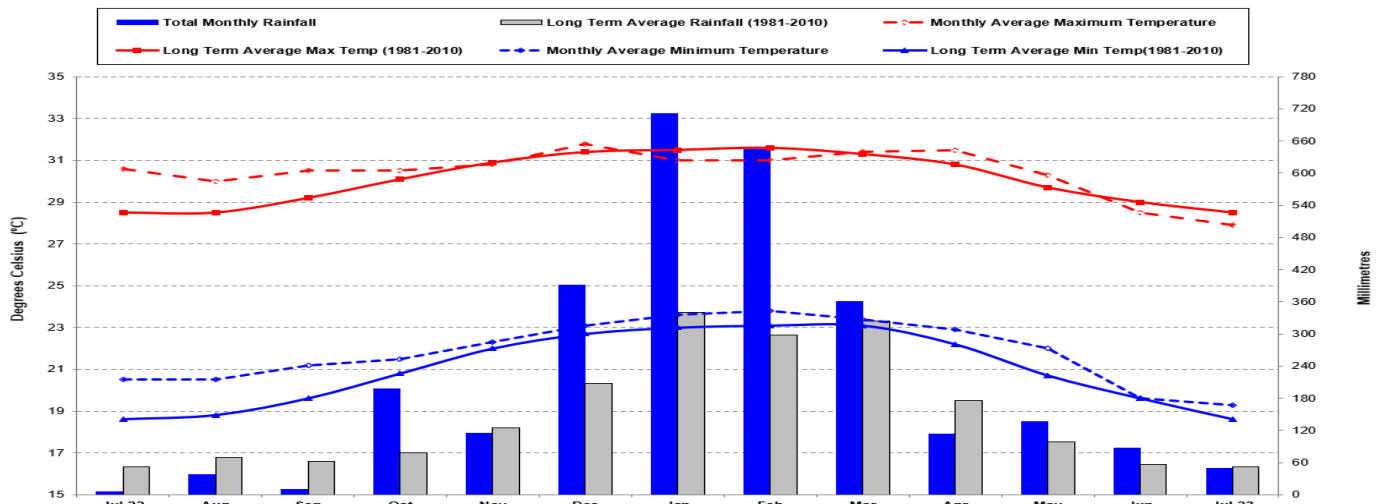


Figure 3

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

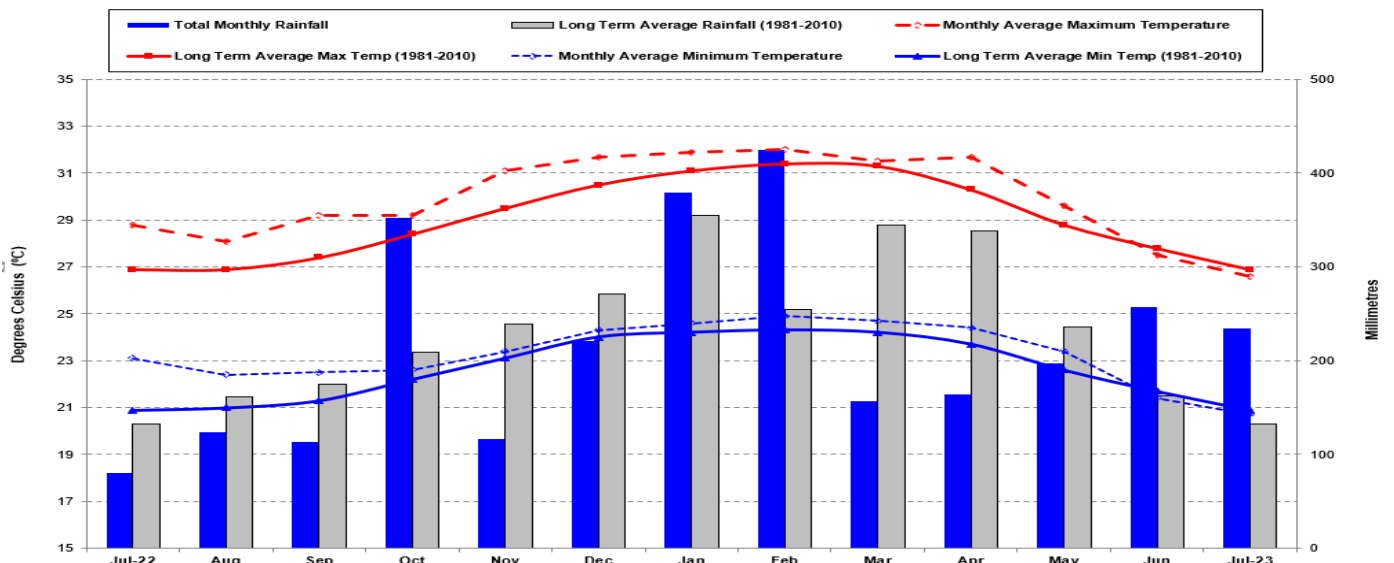


Figure 4

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

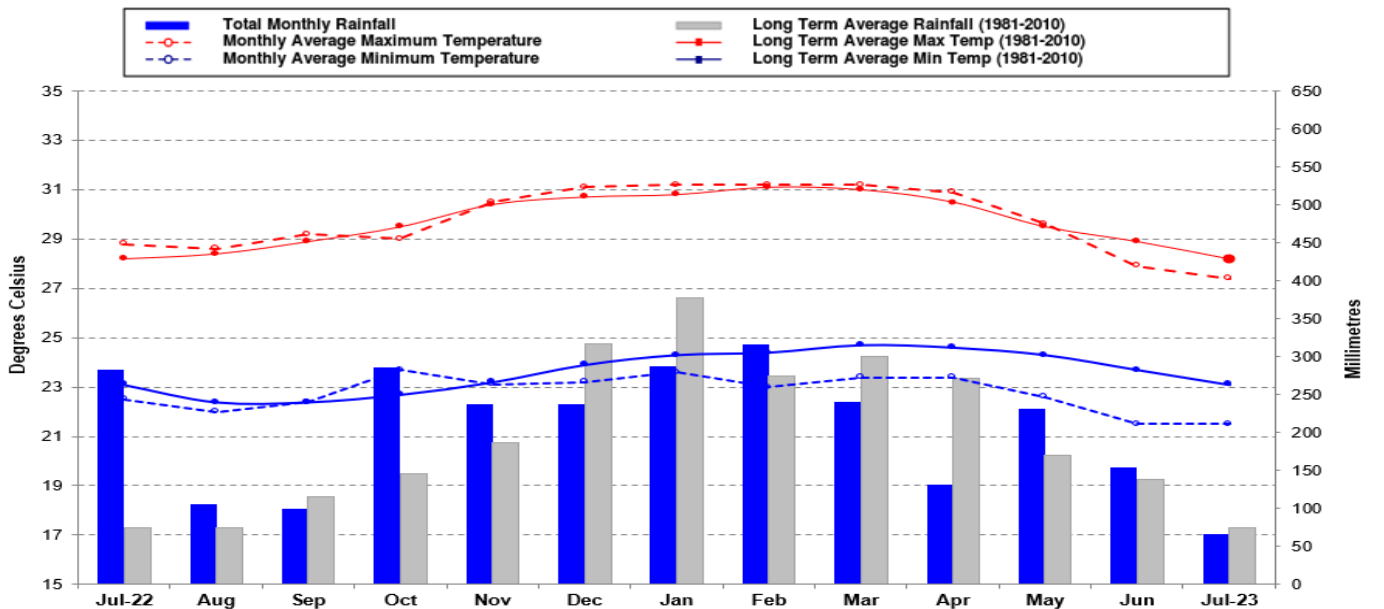
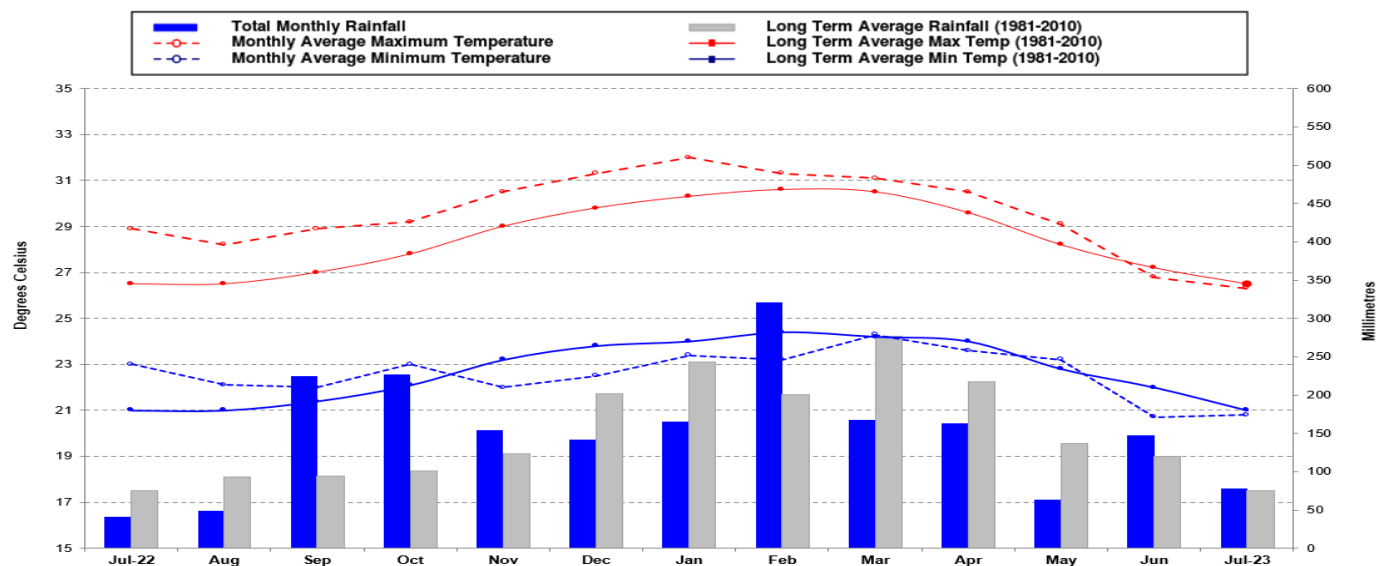


Figure 5

Lakeba (Eastern Division) - Temperature & Rainfall Records for the last 13 Months (July 2022 - July 2023)



5. DAILY RAISED PAN EVAPORATION

Figure 6

Daily Evaporation for July 2023

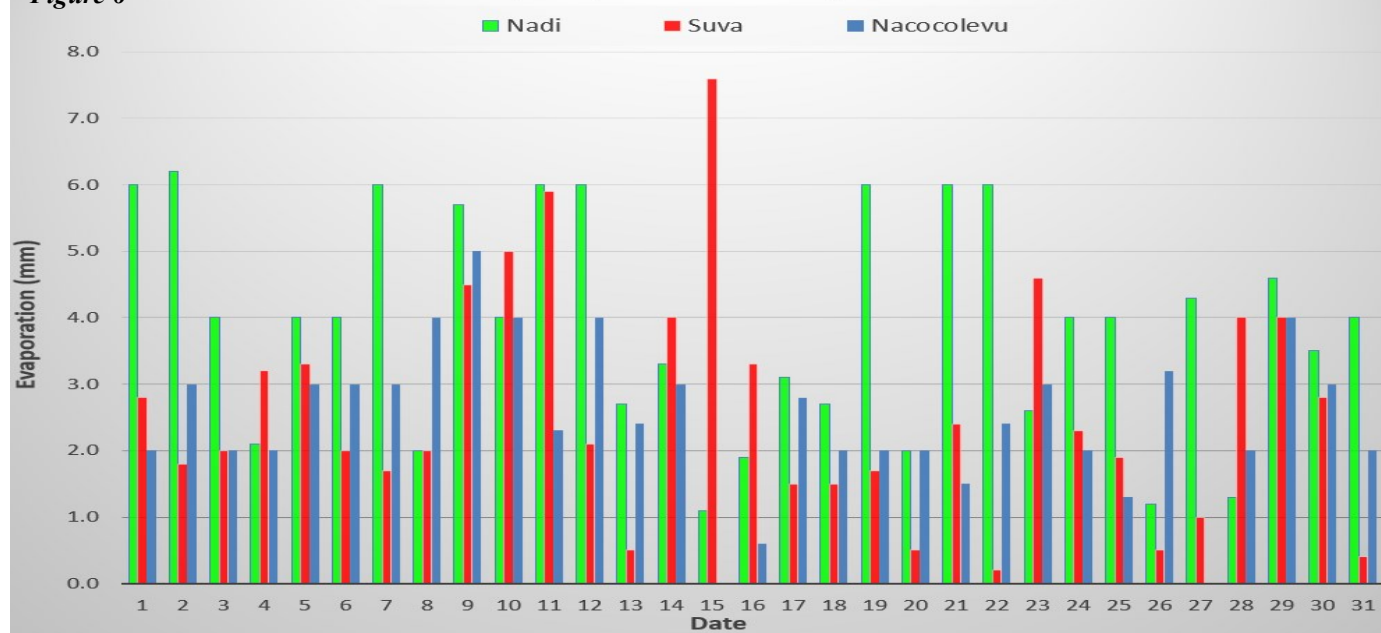


Figure 6: The total monthly raised pan evaporation at Nadi Airport, Laucala Bay (Suva) and Nacocolevu (Sigatoka) were 120.3mm, 81.0mm and 76.5mm respectively. Nadi’s highest daily evaporation was 6.2mm on the 2nd, with Suva’s highest daily evaporation of 7.6mm on 15th and Nacocolevu (Sigatoka) recorded its highest of 5.0mm on 9th.

6. SOLAR RADIATION

The Nadi solar radiation instrument was unserviceable during the month of July 2023.

7. WIND SUMMARY

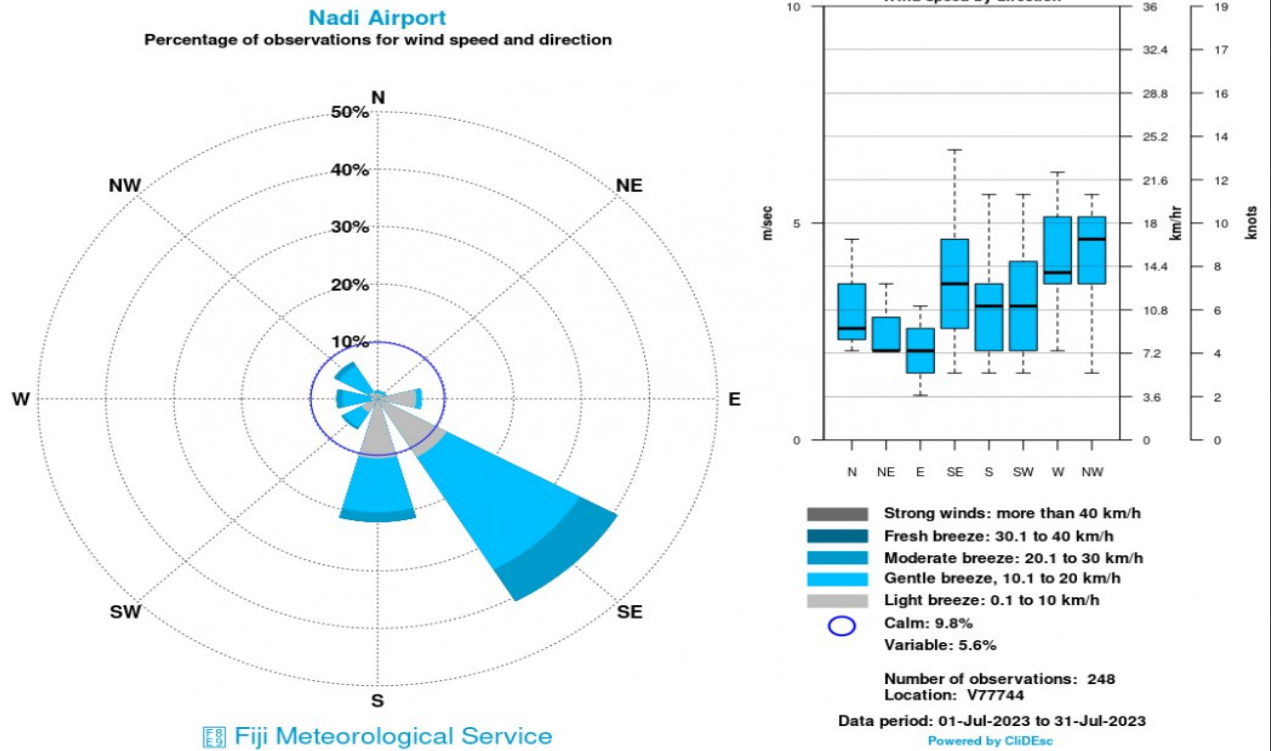


Figure 7a: Looking at Nadi’s 3hourly observations, southeasterly winds were most dominant during the month, followed by southerly and then northwesterly winds. Wind strength ranged from light to moderate breeze, with calm winds observed during 9.8% of the time.

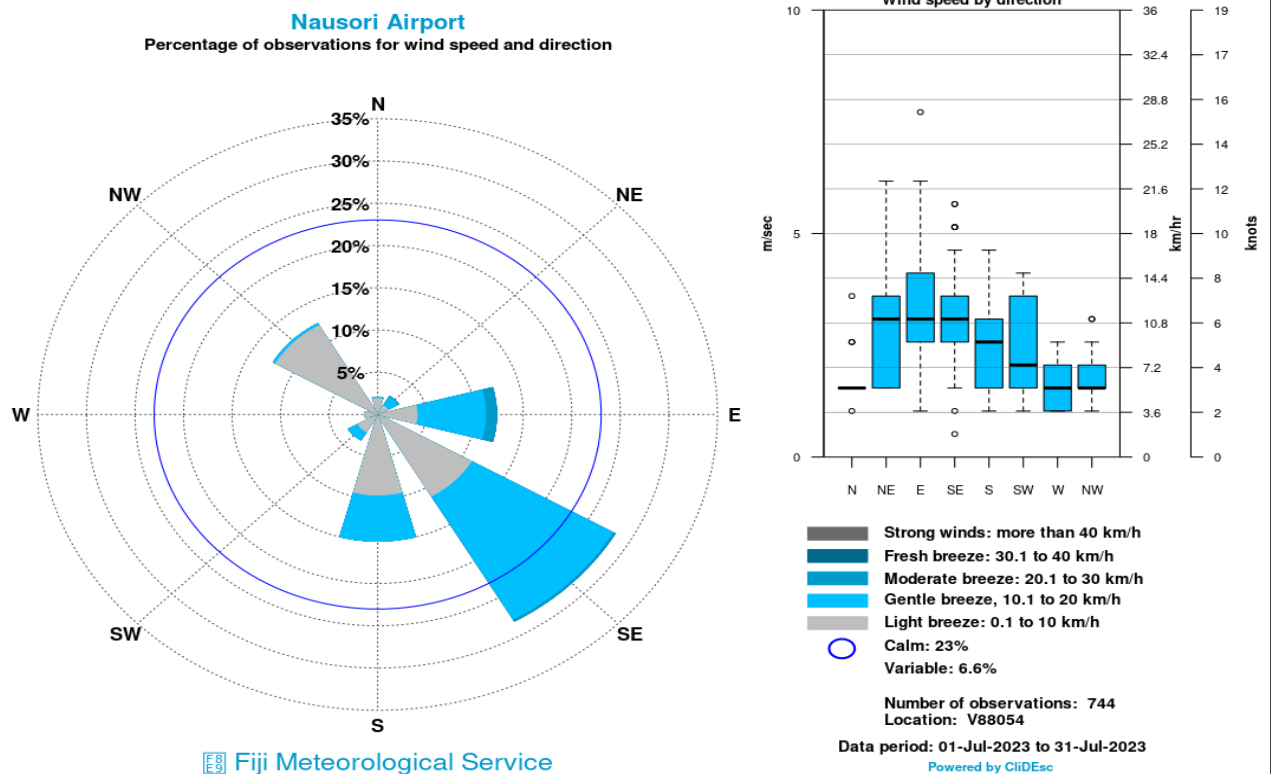


Figure 7b: For Nausori Airport’s hourly wind observations, southeasterly winds were dominant followed by southerly and then easterly winds. Wind strength ranged from light to moderate breeze, while 23% of observations accounted for calm winds.

8. SEA SURFACE TEMPERATURE (SST)

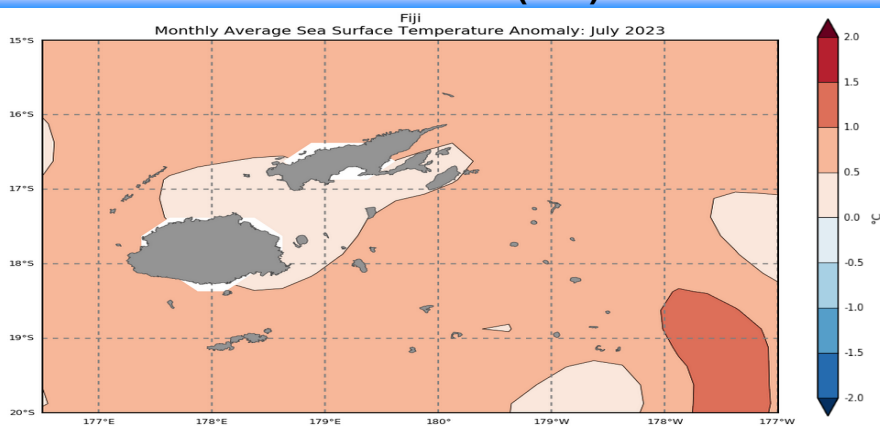


Figure 8: Warmer than normal sea surface temperature anomalies were observed across most of the Fiji Waters.

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

9. CLOUD COVER

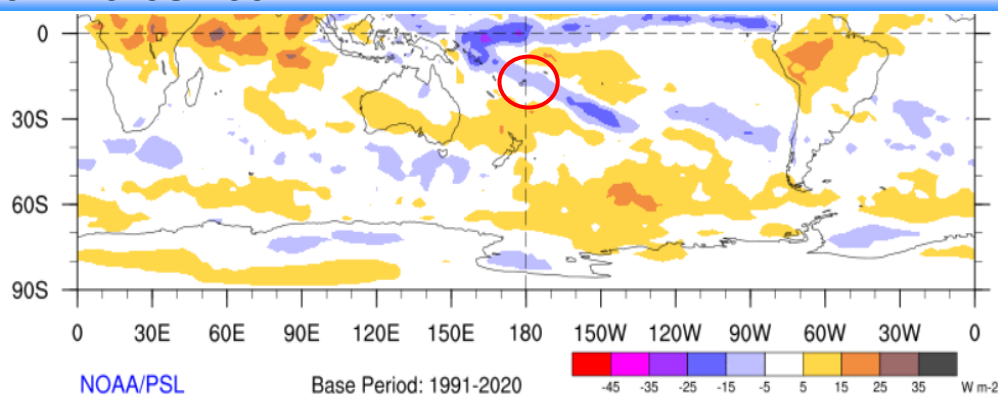


Figure 9: Slightly above normal cloud cover was present over the Fiji Group during July (Fiji in red circle).

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

10. SEA LEVEL

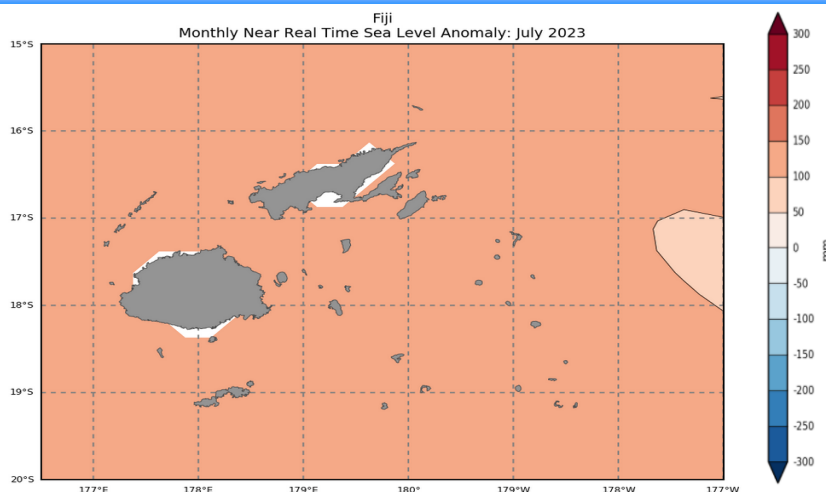


Figure 10: Above normal sea level anomalies persisted across most of the Fiji Waters during July.

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

11. WIND ANOMALIES

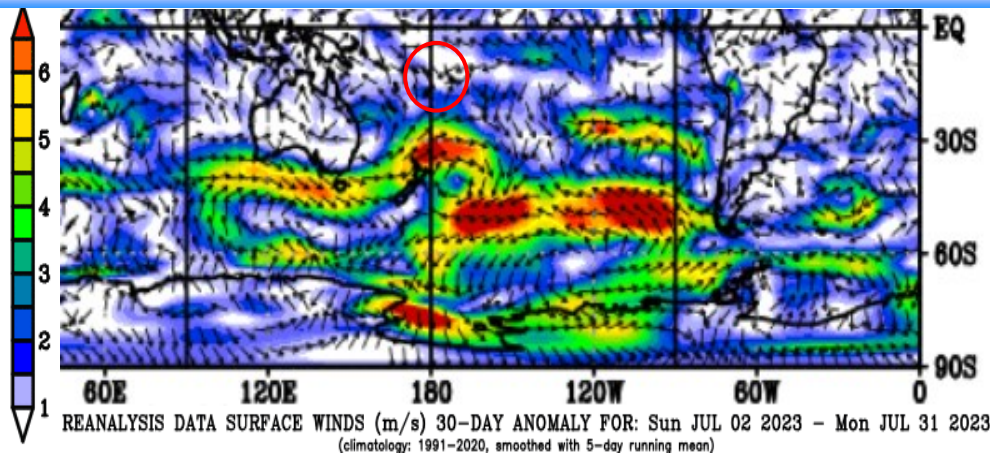


Figure 11: North-westerly wind anomalies were observed over the Fiji Group during the month (base period: 1981-2010) (Fiji in red circle).

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

12. LANDSLIDE

Heavy rain experienced overnight led to a landslide at Wailoku Road, Suva on the 27th, July. Soil, massive rocks, fallen trees, and debris lying on the road, resulted in half road closure for motorists (Figure 12). Fortunately, there were no casualties reported.



Figure 12: Massive rocks, soil and debris lying on the roadside due to the landslide on 27th July, 2023. Source: Fiji Roads Authority