

1. IN BRIEF

Cool dry conditions traversed the country during the month, with very low rainfall and cool temperatures experienced at various parts of the country. However, there were heavy falls recorded in the Northern Division, together with some parts of the country.

Typical Dry Season rainfall continued to be experienced along the Western Division, together with the Eastern Division and parts of the Central Division. Vanua Levu, Monasavu and Dobuilevu were the only areas that experienced *above average* and *well above average* rainfall. The rainfall monitoring stations across western Viti Levu, Viwa and Vunisea 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 the bulletin, 6 recorded *well below average* rainfall, 7 *below average*, 5 *average*, 3 *above average* and 4 recorded *well above average* rainfall.

On temperatures, the highest day-time temperature was observed at Navua with 33.6°C on the 15th, followed by Lautoka Mill with 33.1°C on the 31st, Korolevu with 32.9°C on the 13th, and Yaqara with 32.6°C on the 31st.

The coolest night time temperature of 14.6°C was recorded at Nadarivatu on the 27th, followed by Rarawai Mill (Ba) with 15.5°C on the 9th, Monasavu with 16.5°C on the 27th, Labasa Airfield with 17.4°C on the 29th and Lomaivuna with 17.5°C on the 9th.

Southeasterly winds were dominant at Nadi Airport while easterly winds were the most observed winds at Nausori Airport during July, with light to moderate wind strength recorded at both stations (Figure 8).

Warmer than normal sea surface temperature anomalies were observed across most of the Fiji Group (Figure 9).

2. WEATHER PATTERNS

July weather was dominated by moist easterly wind flow, southeast trade winds and weak troughs of low pressure. Cools nights was experienced over most places mainly due to radiative cooling.

The month began with a weak trough of low pressure lying over the Northern and Eastern division. This trough lingered around the country till the 5th and affected the Eastern, Central and Northern Division from time to time with some showers. This trough moved further north on the 6th as the high-pressure system to the far south strengthened.

From the 6th till the 9th, moist easterly wind flow prevailed over the group producing some showers over the eastern parts and interior of larger islands.

A weak trough approached from the north and affected the northern and eastern division from the 10th to the 11th, producing some showers and isolated afternoon thunderstorms. This trough further weakened and dissipated on the 12th with east to southeast wind flow prevailing till the 15th.

On the 16th, a trough of low pressure moved over the group from the west and affected most parts of the country

with some showers till the 17th before moving eastwards further away from the country.

Easterly wind flow prevailed over the group from the 18th till the end of the month producing brief to some showers over the eastern parts and interior of larger islands. Elsewhere, isolated afternoon showers were experienced on some days. Isolated afternoon thunderstorms were also experienced on some days during this period.

Rotuma's weather was also affected by a series of troughs of low pressure systems, moist easterlies for the month of July.

3. RAINFALL

Typical Dry Season rainfall continued to be experienced at various parts of the country during the month. Vanua Levu, Monasavu and Doboilevu were the only exceptions as they experienced *above average* and *well above average* rainfall. The rainfall monitoring stations across western Viti Levu, Viwa and Vunisea registered less than half their *normal* monthly rainfall.

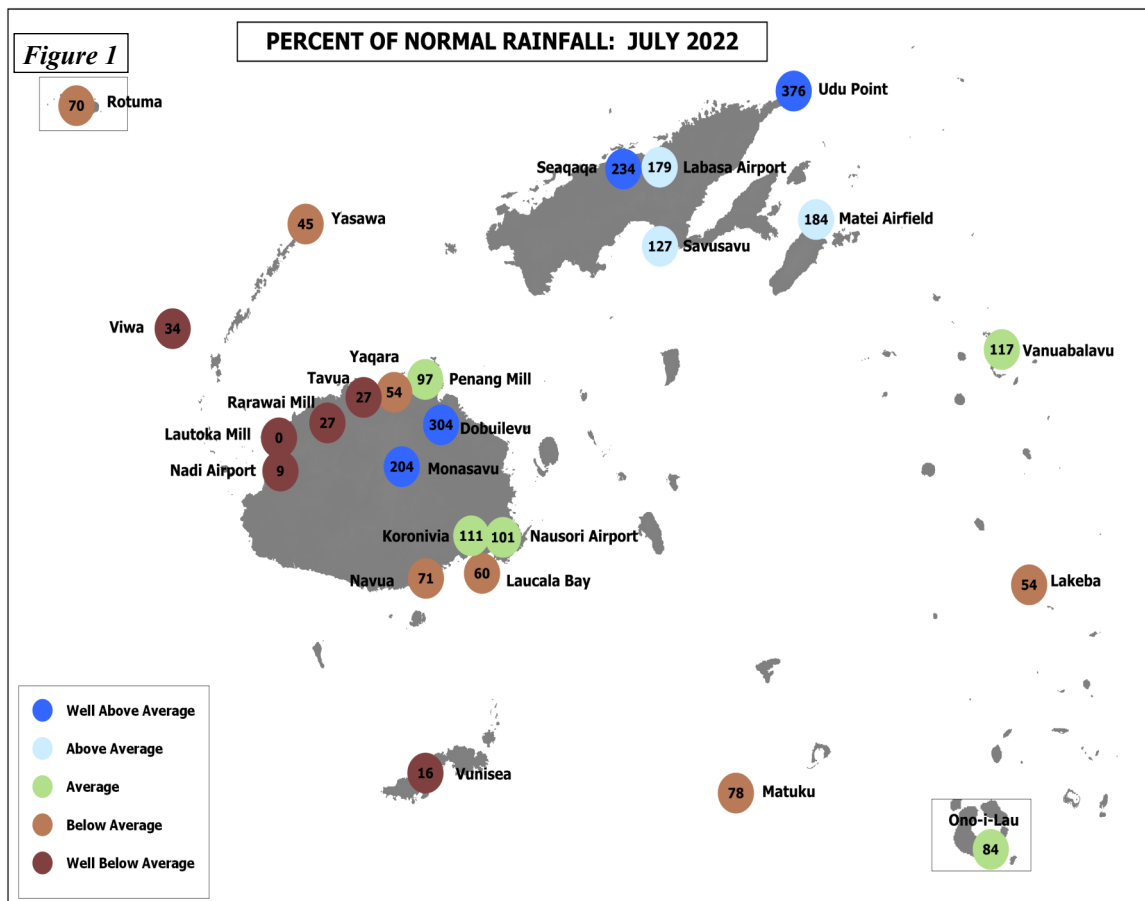
Overall, out of the 25 rainfall monitoring stations that recorded in, in time for the compilation of the bulletin, 6 recorded *well below average* rainfall, 7 *below average*, 5 *average*, 3 *above average* and 4 recorded *well above average* rainfall (Table 2, Figures 1-5).

The highest monthly rainfall of 405.2mm was observed at Monasavu, followed by Lomaivuna with 310.0mm, Udu Point with 282.9mm, RKS Lodonu with 212.0mm, Doboilevu with 201.0mm, Saqani with 184.0mm, Matei Airfield with 175.8mm, Rotuma with 162.0mm, Koronivia with 137.8mm, Navua and Nasinu both with 118.5mm. On the other hand, Lautoka recorded no rainfall for the month, followed by Nadi Airport with 4.8mm, Rarawai Mill (Ba) with 12.9mm, Tavua and Ellington (Ra) both with 13.0mm, Sigatoka with 14.5mm, Vunisea with 17.3mm, Viwa with 20.0mm, Yasawa-I-Rara with 21.0mm and Yaqara with 22.5mm (Table 2).

Doboilevu recorded the highest 24-hour rainfall of 132.0mm on 26th which was due to the easterly wind flow experienced towards the end of the month.

Koronivia recorded its highest number of rain days (rainfall $\geq 0.1\text{mm}$) with 30 days, followed by Monasavu, and Lomaivuna both with 28 days, Savusavu Airfield with 27 days, Matei Airfield with 25 days, Nausori Airport and Saqani both with 24 days and Rotuma with 23 days. Consequently, Lautoka Mill recorded no rain days, followed by Momi, Rarawai Mill (Ba) and Nadi Airport all with 1 rain day, Tavua with 2 days, Yaqara and Viwa both with 4 days, Ellington (Ra) with 5 days, Sigatoka and Yasawa-I-Rara both with 7 days and Matuku with 10 days.

Doboilevu recorded its highest total monthly rainfall of 210.0mm and as well as its highest daily rainfall of 131.5mm on the 26th since observations began in 2008 (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 $\geq 0.1\text{mm}$

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 Day-time Air Temperatures

Above normal day-time air temperatures were observed across Fiji during the month. All 20 climate stations recorded anomalies at $\geq +0.5^{\circ}\text{C}$.

The warmest days on average were recorded at Rarawai Mill (Ba) with 31.7°C , followed by Lautoka Mill with 31.3°C , Ellington (Ra) with 31.0°C , Yaqara with 30.7°C , Nadi Airport and Labasa Airfield both with 30.6°C , Viwa with 30.5°C and Rotuma with 30.3°C . Consequently, Monasavu recorded the coolest days on average with 23.1°C , followed by Nadarivatu with 24.4°C , Ono-i-Lau with 27.6°C , Lomaivuna and Matuku both with 28.3°C and Savusavu Airfield with 28.5°C .

The highest day-time temperature was observed at Navua with 33.6°C on the 15th, followed by Lautoka Mill with 33.1°C on the 31st, Korolevu with 32.9°C on the 13th, and Yaqara with 32.6°C on the 31st. In contrast, the coolest day-time temperature of 21.0°C was at Monasavu on the 5th, followed by Nadarivatu with 22.8°C on the 9th, Ono-i-Lau with 26.0°C on the 4th and Lomaivuna with 26.2°C on the 26th.

Nadi Airport, Savusavu Airfield, Nausori Airport, Lautoka Mill and Rarawai Mill (Ba) recorded their highest monthly average maximum temperature since observations began in 1942, 1956, 1956, 1930 and 1925, respectively (Table 1).

B. Minimum Night-time Air Temperatures

Generally near normal to above normal night-time temperatures were recorded over most parts of the country during the month. Of the 20 stations, 17 recorded anomalies $\geq +0.5^{\circ}\text{C}$ and 3 within $\pm 0.5^{\circ}\text{C}$.

The coolest days on average was at Nadarivatu and Sigatoka both with 18.1°C , followed by Monasavu with 18.3°C , Rarawai Mill (Ba) with 18.5°C , Lomaivuna with 19.8°C , Labasa Airfield with 20.2°C , Nadi Airport with 20.5°C , Lautoka Mill and Momi both with 20.6°C . On the other hand, the warmest night-time temperatures on average were observed at Levuka with 24.0°C , followed by Matuku with 23.8°C , Yaqara and Viwa both with 23.5°C .

The lowest night-time temperature of 14.6°C was recorded at Nadarivatu on the 27th, followed by Rarawai Mill (Ba) with 15.5°C on the 9th, Monasavu with 16.5°C on the 27th, Labasa Airfield with 17.4°C on the 29th and Lomaivuna with 17.5°C on the 9th. On the other hand, the warmest night-time temperature of 25.3°C was at Saqani on the 15th, Laucala Bay and RKS Lodonni both with 25.1°C on the 2nd and 21st, respectively and Koronivia with 25.0°C on the 9th.

Koronivia, Nausori Airport, Monasavu and Lakeba recorded their highest monthly average minimum temperature since observations began in 1950, 1956, 1980 and 1955, respectively, while Koronivia and Nausori Airport recorded their highest daily minimum temperature since observations began in 1905 and 1956, respectively (Table 1).

TABLE 1. CLIMATE RECORDS ESTABLISHED IN JULY 2022

Element	Station	Observed (record)	On	Rank	Previous (record)	Year	Records Began
Monthly Rainfall	Dobuilevu	201.0mm	-	New High	153.3mm	2019	2008
Daily Rainfall	Dobuilevu	131.5mm	26 th	New High	63.5mm	2018	2008
Monthly Average Maximum Temperature	Nadi Airport	30.6°C	-	New High	29.7°C	1948	1942
Monthly Average Maximum Temperature	Savusavu Airfield	28.5°C	-	New High	28.4°C	2011	1956
Monthly Average Maximum Temperature	Nausori Airport	28.8°C	-	New High	28.2°C	2021	1956
Monthly Average Maximum Temperature	Lautoka Mill	31.3°C	-	New High	31.1°C	2021	1930
Monthly Average Maximum Temperature	Rarawai Mill (Ba)	31.7°C	-	New High	31.1°C	1959	1925
Monthly Average Minimum Temperature	Koronivia	22.3°C	-	New High	21.4°C	2002 2021	1950
Monthly Average Minimum Temperature	Nausori Airport	22.1°C	-	New High	21.2°C	2020	1956
Monthly Average Minimum Temperature	Monasavu	18.3°C	-	New High	17.4°C	2021	1980
Monthly Average Minimum Temperature	Lakeba	23.0°C	-	New High	22.3°C	2013	1955
Daily Minimum Temperature	Koronivia	25.0°C	9 th	New High	24.9°C	2002	1905
Daily Minimum Temperature	Nausori Airport	24.4°C	1 st	New High	24.1°C	2020	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 2022

	RAINFALL			AIR TEMPERATURES								SUNSHINE			
	TOTAL	RAIN		MAX.		AVERAGE DAILY			EXTREME			TOTAL			
	MM	* %	DAYS +	MM	ON	MAX.	#	MIN.	#	MAX.	MIN.	C	ON	HRS	%
NADI AIRPORT	4.8	9	1	5	30	30.6	2.2	20.5	1.9	32.5	19	18.6	10	278	128
LAUCALA BAY	79.8	60	22	12	17	28.8	1.9	23.1	2.1	31.4	14	20.6	10	177	134
NACOCOLEVU RESEARCH	MISSING OBSERVATIONS														
ROTUMA ISLAND	162.0	70	23	20	7	30.3	0.9	U/S		31.2	31	U/S		208	107
VIWA ISLAND	20.0	34	4	18	20	30.5	2.4	23.5	0.8	31.5	31	22.7	21		
YASAWA-I-RARA (AWS)	21.0	45	7	8	6	30.1	1.8	22.8	0.6	32.2	14	22.2	19		
UDU POINT WEATHER	282.9	381	22	89	16	28.8	0.5	22.5	0.1	30.3	15	20.7	18		
NABOUWALU	MISSING OBSERVATIONS														
LABASA AIRFIELD	90.7	179	18	19	29	30.6	1.4	20.2	1.9	32.5	15	17.4	29		
SAVUSAVU AIRFIELD	111.6	126	27	27	1	28.5	1.3	21.4	0.3	31.5	31	19.5	28		
KORONIVIA RESEARCH	137.8	111	30	17	25	U/S		22.3	2.5	U/S		20.1	11	998	826
NAUSORI AIRPORT	116.4	101	24	17	31	28.8	2.5	22.1	2.4	30.6	11	19.5	9		
NAVUA (AWS)	118.5	71	16	26	31	29.6	2.9	22.3	3.5	33.6	15	19.4	29		
MONASAVU HYDRO DAM	405.2	204	28	78	6	23.1	2.1	18.3	2.8	26.0	27	16.5	27		
FSC LAUTOKA MILL	0.0	0	0	0	1	31.3	2.9	20.6	0.7	33.1	31	19.1	10		
FSC RARAWAI MILL	12.9	27	1	13	16	31.7	2.2	18.5	1.4	32.4	11	15.5	9		
FSC PENANG MILL	51.8	97	14	13	10	29.1	1.4	23.1	2.8	30.9	12	20.0	27		
MATEI AIRFIELD	175.8	184	25	27	2	28.7	1.5	22.5	0.9	30.1	15	21.5	24		
VANUABALAVU	100.1	117	13	37	29	28.6	1.7	22.3	0.2	31.1	5	20.9	17		
LAKEBA	40.8	54	11	18	11	28.9	2.4	23.0	2.0	30.5	14	21.0	16		
VUNISEA	17.3	16	13	14	6	29.0	3.2	21.4	1.6	31.6	15	19.5	9		
MATUKU	64.7	78	10	17	31	28.3	1.8	23.8	2.6	29.8	15	21.9	20		
ONO-I-LAU	75.4	84	21	49	31	27.6	2.4	22.6	2.6	30.7	14	21.0	5		
YAQARA AWS	22.5	54	4	21	26	30.7		23.5		32.6	31	20.9	28		
LEVUKA AWS	109.5		18	35	25	29.0		24.0		32.3	14	21.9	27		
KEIYASI AWS	MISSING OBSERVATIONS														
LOMAIVUNA AWS	310.0		28	94	26	28.3		19.8		31.2	14	17.5	9		
NADARIVATU AWS	86.5		15	47	26	24.4		18.1		26.5	25	14.6	27		
RKS LODONI AWS	212.0		22	52	26	29.9		23.2		31.5	31	20.5	27		
MOMI AWS	26.5		1	27	26	30.2		20.6		31.6	21	19.7	10		
SIGATOKA AWS	14.5		7	7	16	29.6		18.1		32.5	15	17.9	29		
ELLINGTON (RA) AWS	13.0		5	5	6	31.0		U/S		32.2	14	U/S			
VATUREKUKA AWS	94.5		19	25	16	28.7		20.8		30.9	15	18.3	18		
KOROLEVU AWS	66.5		13	22	16	30.0		23.0		32.9	13	19.8	16		
WAINIKORO AWS	34.0		17	6	6	28.8		21.4		31.4	15	19.9	29		
SAQANI AWS	184.0		24	41	16	29.4		23.4		31.3	12	22.6	24		
SEAQAQA TB3	109.0	234	13	51	26										
DOBUILEVU TB3	201.0	304	18	132	26										
NASINU TB3	118.5	71	16	26	31										
TAVUA TB3	13.0	27	2	7	16										

	TEMPERATURE (C)		HUMIDITY		WIND	
	MEAN	DRY WET	RH%	VP	KT	
		(AVERAGE AT 9AM)				
NADI AIRPORT	25.6	25.4	22.3	76	24.3	5.9
LAUCALA BAY	25.9	26.2	24.1	85	25.4	9.5
NACOCOLEVU RESEARCH	MISSING OBSERVATIONS					
ROTUMA ISLAND	U/S	28.3	25.5	80	28.8	
VIWA ISLAND	27.0	27.8	24.6	77	27.9	
YASAWA-I-RARA (AWS)	26.5					
UDU POINT WEATHER	25.6	26.9	24.4	82	26.5	
NABOUWALU	MISSING OBSERVATIONS					
LABASA AIRFIELD	25.4	26.3	23.7	81	25.6	
SAVUSAVU AIRFIELD	25.0	25.9	24.0	85	25.0	
KORONIVIA RESEARCH	U/S	26.0	24.0	85	25.1	
NAUSORI AIRPORT	25.5	25.9	23.8	83	25.0	6.4
NAVUA (AWS)	MISSING OBSERVATIONS					
MONASAVU HYDRO DAM	20.7	20.1	19.4	93	17.6	
FSC LAUTOKA MILL	26.0	27.7	24.8	80	27.8	
FSC RARAWAI MILL	25.1	25.5	22.8	80	24.4	
FSC PENANG MILL	26.1	26.2	23.6	80	25.4	
MATEI AIRFIELD	25.6	26.6	24.3	83	26.0	
VANUABALAVU	25.5	26.7	23.7	78	26.2	
LAKEBA	26.0	26.9	23.9	77	26.5	
VUNISEA	25.2	26.0	23.7	83	25.1	
MATUKU	26.1	26.5	23.8	80	25.9	
ONO-I-LAU	25.1	25.7	22.8	78	24.7	

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 2021 - July 2022)

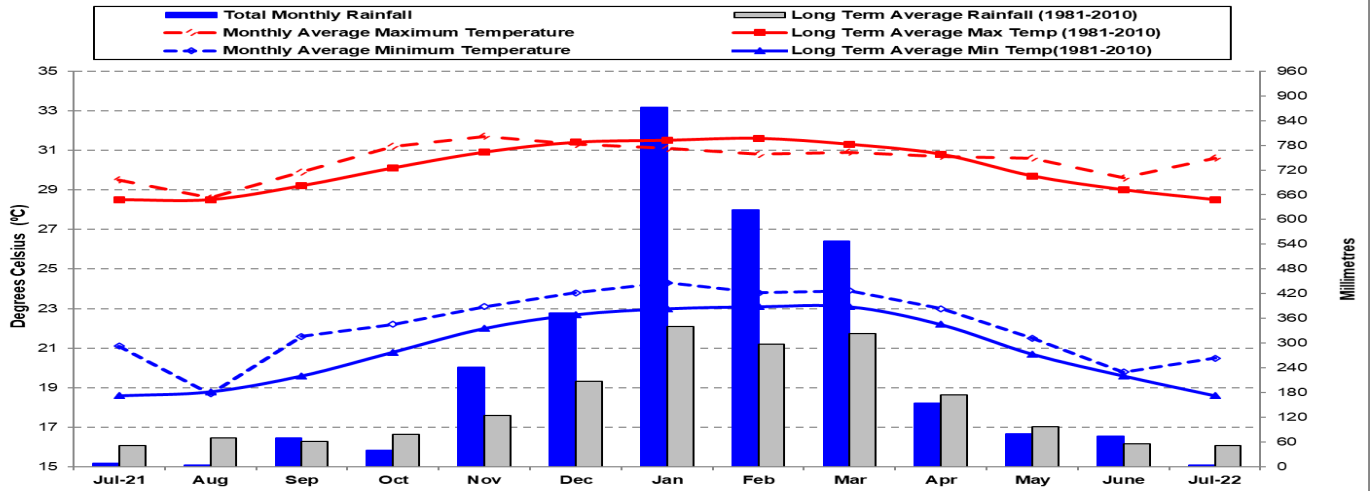


Figure 3

Laucala Bay - (Suva) (Central Division) - Temperature & Rainfall Records for the last 13 Months (July 2021 - July 2022)

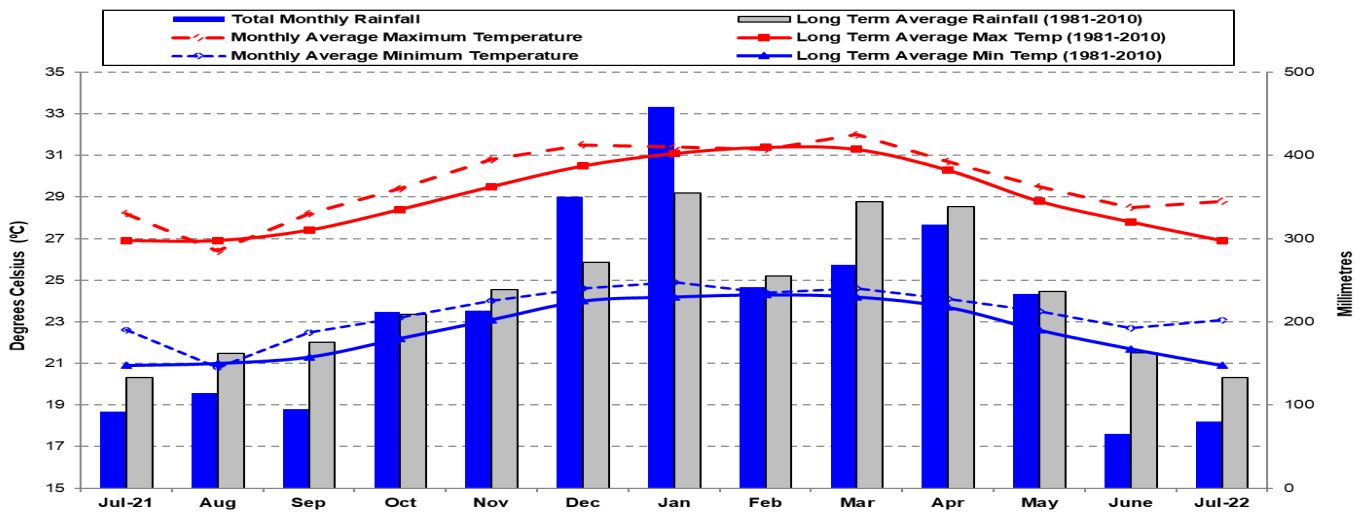


Figure 4

Udu Point (Eastern Division) - Temperature & Rainfall Records for the last 13 Months (July 2021 - July 2022)

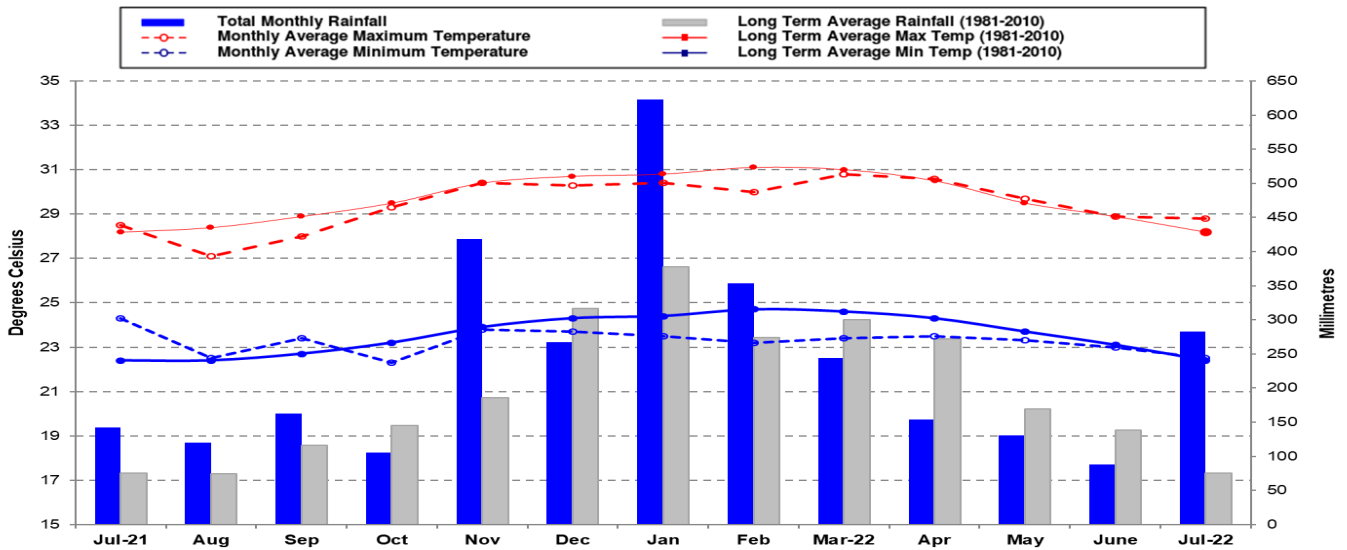
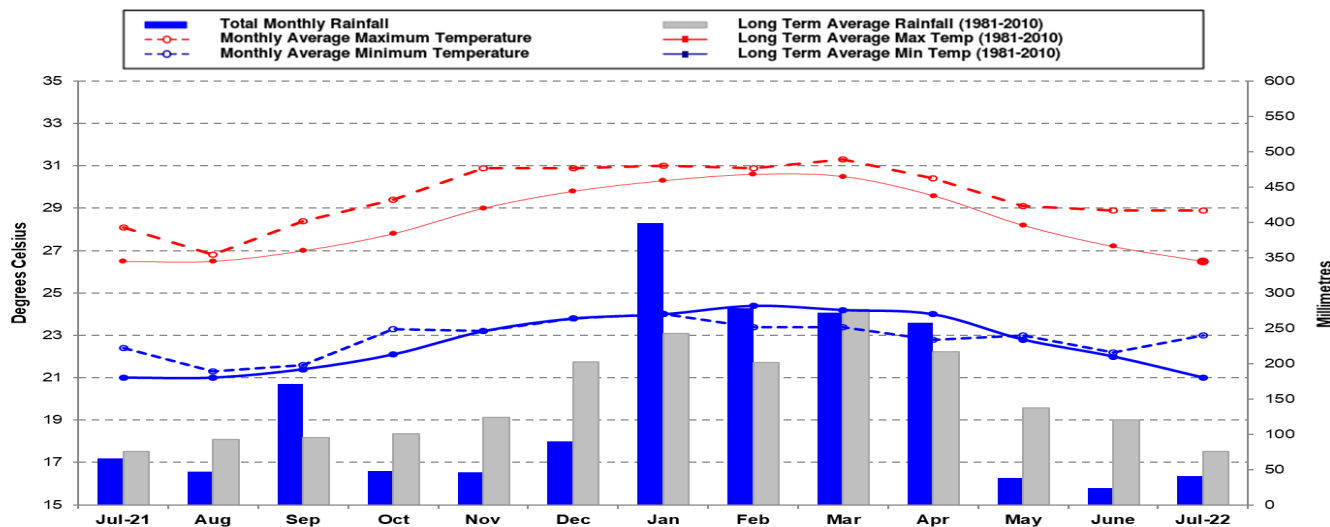


Figure 5

Lakeba (Eastern Division) - Temperature & Rainfall Records for the last 13 Months (July 2021 - July 2022)



5. DAILY RAISED PAN EVAPORATION

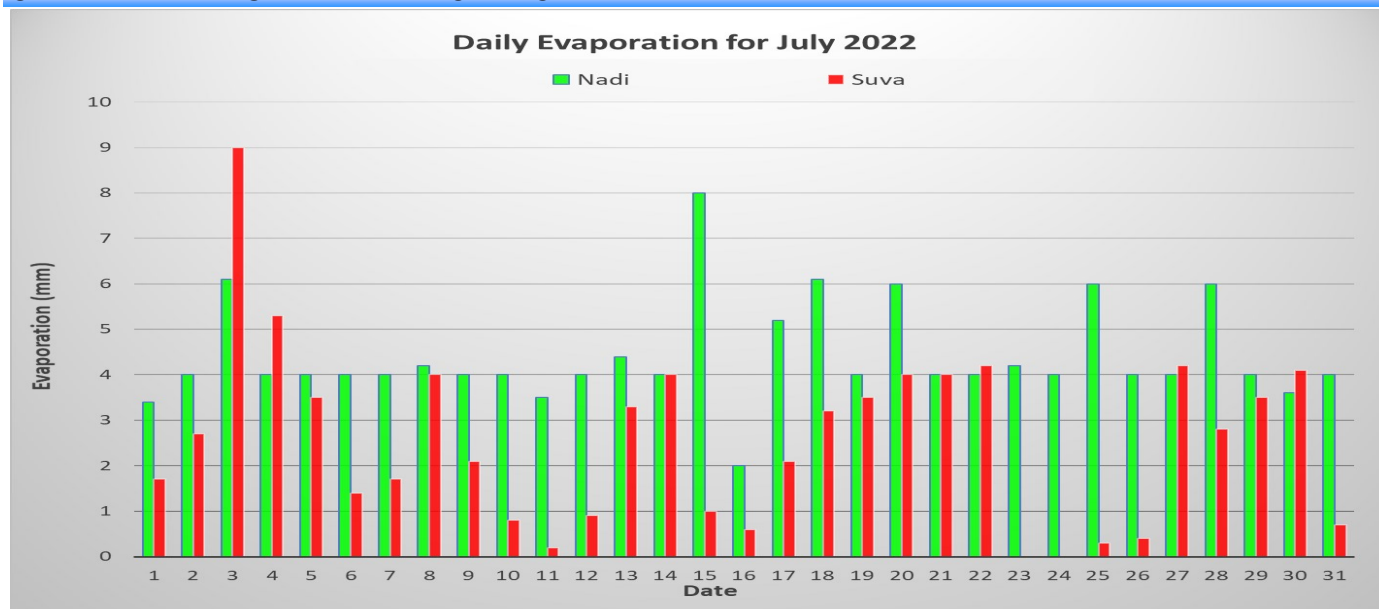


Figure 6: The total monthly evaporation at Nadi Airport and Laucala Bay (Suva) were 136.7mm and 79.2mm, respectively. Nadi's highest daily evaporation was 8.0mm on the 15th, with Suva's highest daily evaporation of 9.0mm on the 3rd.

Note Nacocolevu's evaporation could not be analysed due to missing observation data.

6. SOLAR RADIATION

The Nadi solar radiation instrument became unserviceable during the month of July 2022.

7. WIND SUMMARY

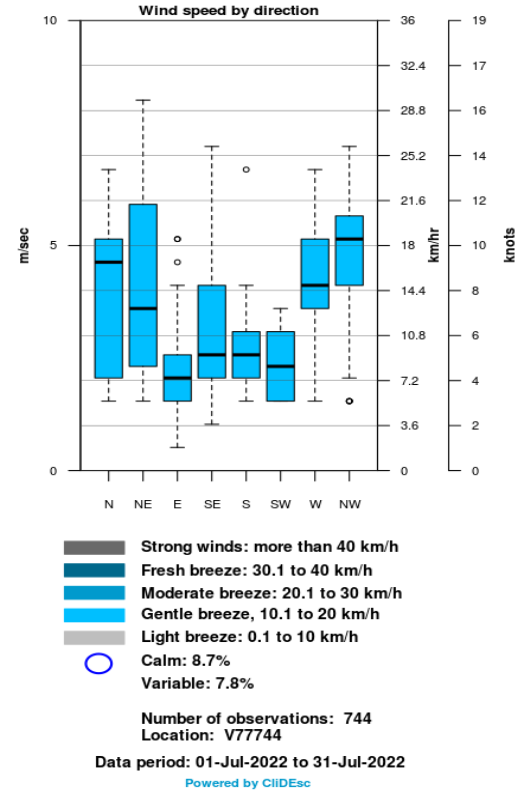
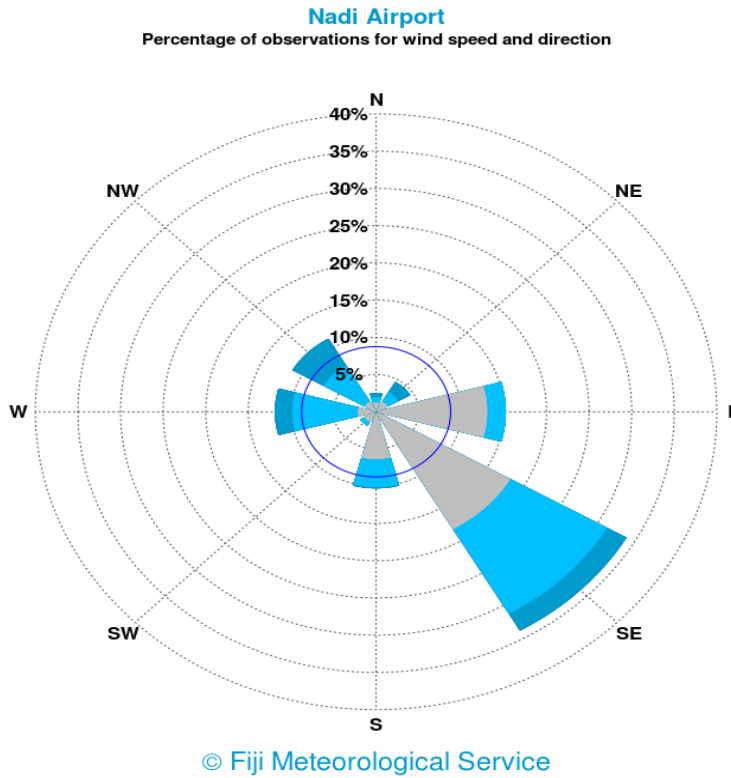


Figure 8a: Southeasterly winds were most dominant at Nadi Airport during the month, followed by easterly and westerly winds. Wind strength ranged from light to moderate during this period.

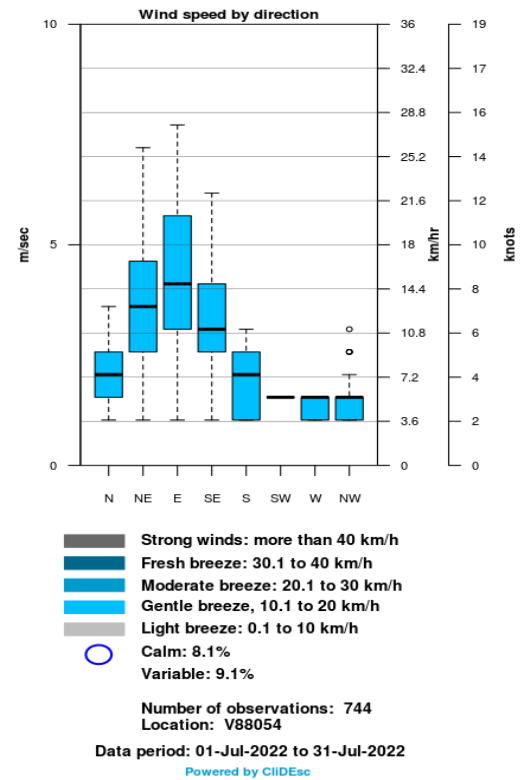
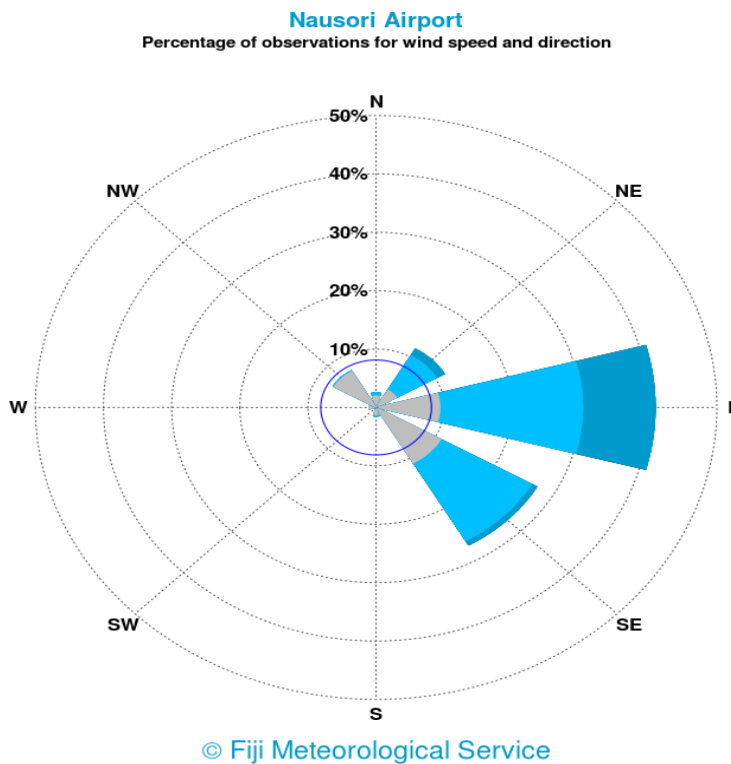


Figure 8b: Easterly winds were dominant at Nausori Airport, followed by southeasterly, then northeasterly winds. Wind strength ranged from light to moderate during this period.

8. SEA SURFACE TEMPERATURE (SST)

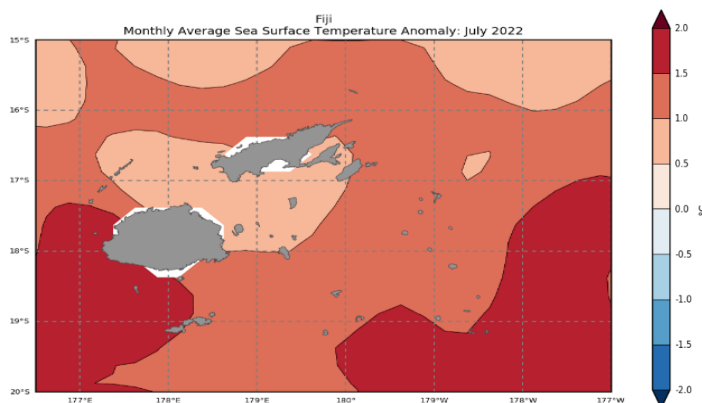


Figure 9: Warmer than normal sea surface temperature anomalies were observed across most of the Fiji Waters.

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

9. CLOUD COVER

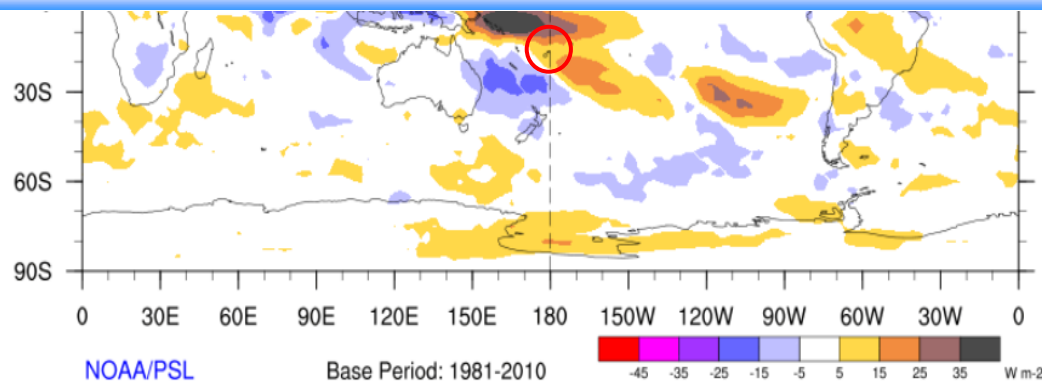


Figure 10: Below normal cloud cover was present over the Fiji Group during July (Fiji in red circle).

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

10. SEA LEVEL

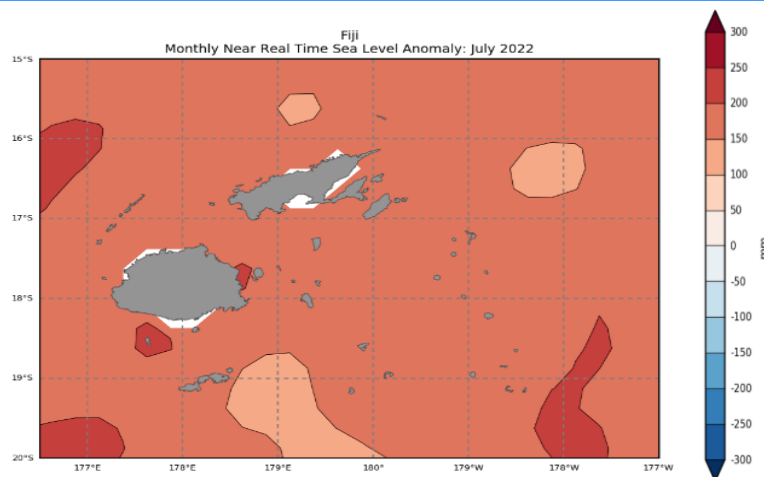


Figure 11: Above normal sea level anomalies (between 15-20cm) persisted across most of the Fiji Waters during July.

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

11. WIND ANOMALIES

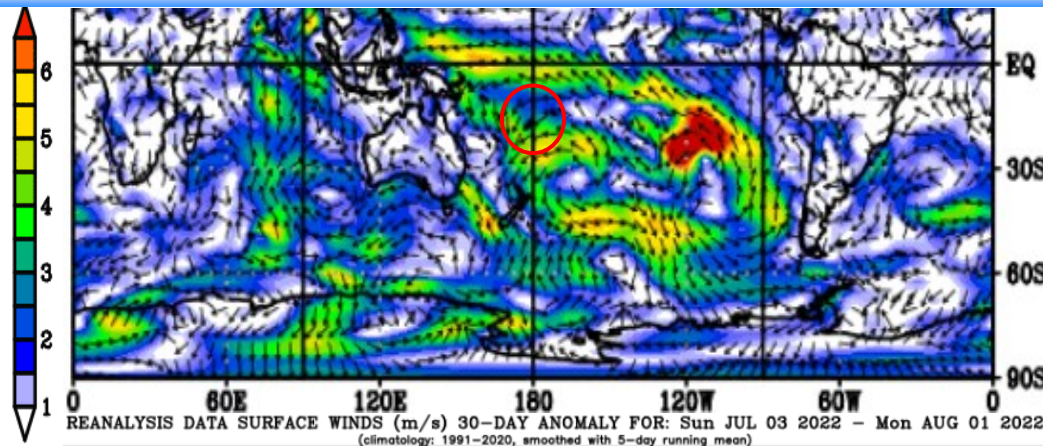


Figure 12: Easterly wind anomalies were generally observed over the Fiji Group during the month (base period: 1981-2010) (Fiji in red circle).

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