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Fiji Climate Summary October 2023

ISO 9001:2015 certified Climate Services

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1. IN BRIEF

Typical El Niño like rainfall pattern was observed across the country, with *below average* to *well below average* rainfall experienced at most of the rainfall recording stations during the month. Rotuma was the only exception, which is located further up north of Vanua Levu, with *above average* rainfall.

Overall, out of the 24 rainfall monitoring stations that reported in, in time for the compilation of bulletin, 4 recorded *below average* rainfall, 19 stations with *well below average* rainfall, while Rotuma was the lone station with above average rainfall (Table 2, Figures 1-5).

Wainikoro (Vanua Levu) and Yasawa-i-Rara did not receive any rainfall during the month, followed by the month's lowest total monthly rainfall of 0.5mm at Tavua, 0.7mm at Vunisea, Saqani with 1.5mm, Penang Mill with 3.8mm, Matuku with 4.9mm, Lakeba with 7.0mm, Nacocolevu with 9.3mm, and Savusavu Airfield with 9.7mm. Matei Airfield and Savusavu Airfield recorded their new lowest ever October rainfall of 11.6mm and 9.7mm, since observations began in 1956, at both stations (Table 1).

On temperatures, the highest day-time temperature was observed at Rarawai Mill (Ba) with 34.0°C on the 31st, followed by Nadi Airport with 33.8°C on the 31st, and Saqani with 33.7°C on the 30th.

The lowest night-time temperature of 10.9°C was recorded at Nadarivatu on the 8th, followed by Monasavu with 12.9° C on the 11th, Rarawai Mill (Ba) with 13.0°C on the 7th, Seaqaqa with 13.8°C on the 7th, and Lomaivuna with 14.2° C on the 8th.

Southeasterly winds were dominant at Nadi Airport, Nausori Airport, Savusavu Airfield and Matei Airfield (Figure 7).

During the month, warmer than normal sea surface temperature anomalies were observed across most of the country (Figure 8). *Above normal* sea level anomalies persisted across most of the Fiji Waters during October 2023 (Figure 10).

2. WEATHER PATTERNS

The October weather was dominated by the occasional cool, dry southerly winds together with the dominant southeast tradewinds prevailing over the group and the troughs of low pressure systems. A southeast windflow prevailed over Fiji from the 1st to the 3rd. Brief showers were experienced over the interior and eastern parts of the larger islands with fine weather prevailing elsewhere.

A weak trough of low pressure affected the country on the 4th bringing cloudy periods with some showers over the interior and eastern parts of the larger islands with fine weather prevailing elsewhere. A ridge of high pressure dominated the group from the 6th to the 8th with a southeast wind flow. Fine weather prevailed across the country with brief showers over the interior and eastern parts of the larger islands. A frontal system affected the country on the 9th with some showers over the interior and eastern parts of the larger islands.

A cool and dry southeast wind flow prevailed over Fiji from the 10th to the 14th with generally fine conditions prevailing across the group apart from brief showers over the interior and eastern parts of the larger islands. A moist easterly wind flow prevailed thereafter on the 15th to the 17th. Cloudy periods with some showers were experienced over the interior and eastern parts of the larger islands, resulting in isolated afternoon or evening showers and thunderstorms with heavy falls, on the 18th. Fine weather prevailed elsewhere.

On the 21st, a dominant cool and dry southeast wind flow brought about fine weather over the country. Occasional showers prevailed over the interior and eastern parts of the larger islands on the 22nd and 23rd due to a moist east to southeast wind flow prevailing over the group.

Brief showers were experienced over the interior and eastern parts of the larger islands from the 24th to the 30th with a prevailing easterly wind flow. A weak trough of low pressure affected the country on the 31st with occasional showers over the eastern and interior parts of the larger islands. Fine weather conditions prevailed elsewhere with isolated afternoon showers and thunderstorms.

The weather for Rotuma was affected by a series of troughs of low pressure which brought occasional rain and few thunderstorms with heavy falls. The southeast trades and moist easterlies also dominated Rotuma which brought fine weather apart from brief showers over the island.

***Previously known as the Fiji Islands Weather Summary and Monthly Weather Summary**

3. RAINFALL

Typical El Niño like rainfall was observed across the country, with *below average* to *well below average* rainfall experienced at most of the rainfall recording stations during the month. The exception was Rotuma, with *above average* rainfall.

Overall, out of the 24 rainfall monitoring stations that reported in, in time for the compilation of bulletin, 4 recorded *below average* rainfall, 19 stations with *well below average* rainfall, while Rotuma was the lone station with *above average* rainfall (Table 2, Figures 1-5).

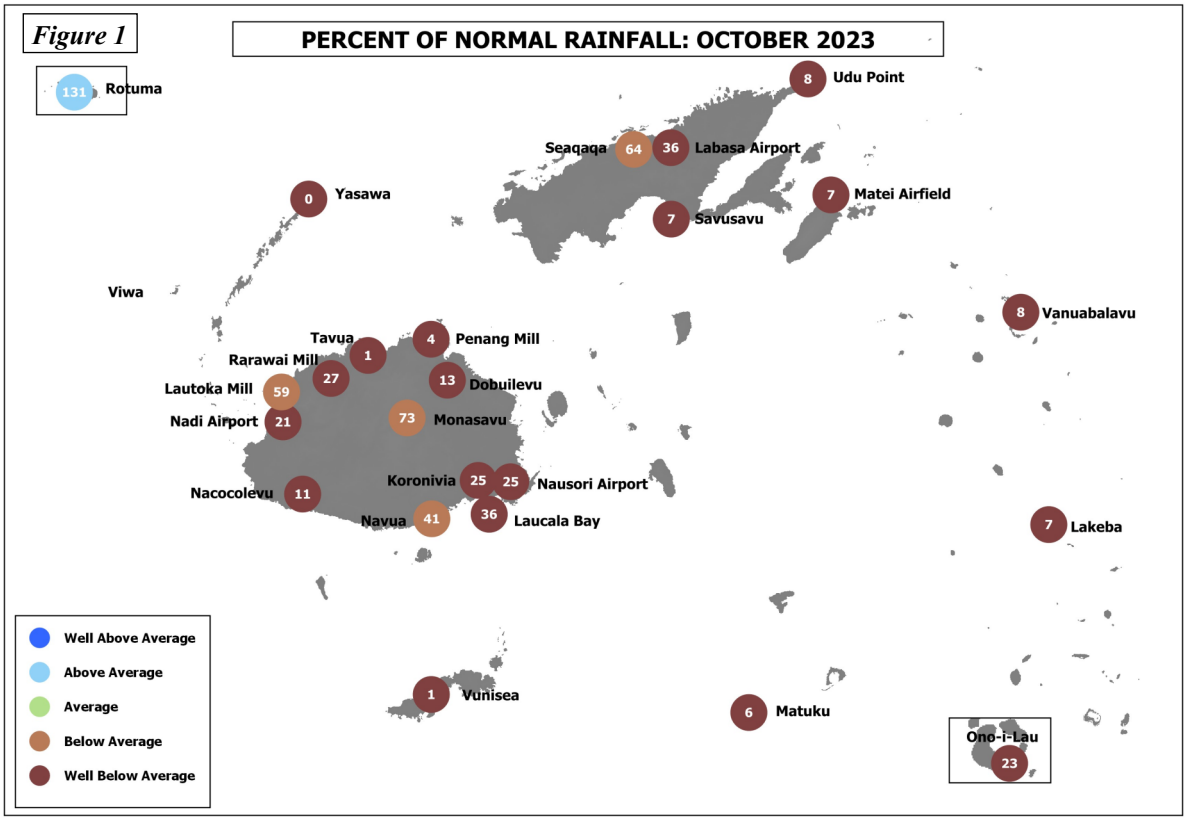
Wainikoro and Yasawa-i-Rara did not receive any rainfall during the month, followed by lowest total monthly rainfall observed at Tavua with 0.5mm, Vunisea with 0.7mm, Saqani with 1.5mm, Penang Mill with 3.8mm, Matuku with 4.9mm, Lakeba with 7.0mm, Nacocolevu with 9.3mm, and Savusavu Airfield with 9.7mm. On the other hand, Rotuma recorded the highest monthly rainfall of 467.4mm, followed by Monasavu with 248.2mm, Navua with 110.0mm, Laucala Bay (Suva) with 75.6mm, Lomaivuna with 75.0mm, Seaqaqa with 67.5mm, Koronivia with 51.7mm, Nausori Airport with 49.0mm, Lautoka Mill with 46.0mm, and Nadarivatu with 38.5mm (Table 2).

A series of troughs of low pressure brought occasional rain and few thunderstorms with heavy falls in Rotuma. This brought significant 24 hour rainfall over the island on the 3rd with 105.1mm and 24th with 105.3mm.

Monasavu recorded the highest number of rain days (rainfall ≥0.1mm) with 22 days, followed by Rotuma and Lomaivuna both with 18 days, Nausori Airport with 16 days, Koronivia with 13 days, Navua and Laucala Bay (Suva) both with 12 days, and Savusavu Airfield with 11 days. Consequently, Wainikoro and Yasawa-i-Rara did not record any rain days, followed by Tavua, Rarawai Mill (Ba), Momi and Lautoka Mill, all with 1 day of rain, Vunisea, Saqani and Nadi Airport, all with 2 days, Penang Mill, Nacocolevu and Vanuabalavu, all with 4 days and Sigatoka and Labasa Airfield both with 5 days.

Matei Airfield and Savusavu Airfield recorded its new lowest October rainfall of 11.6mm and 9.7mm, since observations began in 1956, respectively (Table 1).

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

Generally *near normal* to *below normal* day-time air temperatures were observed at most parts of the country during the month. Out of the 20 climate stations that reported in time for the analysis of data, 2 recorded anomalies ≥+0.5°C, 14 with anomalies within ±0.5°C and 4 with anomalies ≤-0.5°C.

The warmest days on average were recorded at both Rarawai Mill (Ba) and Seaqaqa with 31.3°C, followed by Saqani with 30.8°C, Rotuma with 30.3°C, Nadi Airport with 30.2°C, Yasawa-i-Rara and Lautoka Mill, both with 30.1°C, Wainikoro with 30.0°C, Penang Mill and Momi, both with 29.6°C, Nacocolevu and Udu Point, both with 28.8°C, Nausori Airport and Matei Airfield, both with 28.5°C and Vanuabalavu with 28.4°C. Consequently, Monasavu recorded the coolest days on average with 23.0°C, followed by Nadarivatu with 24.4°C, Ono-i-Lau with 27.0°C, Vunisea with 27.5°C, Navua and Koronivia, both with 27.7°C and Lakeba with 27.8°C.

The highest day-time temperature was observed at Rarawai Mill (Ba) with 34.0°C on the 31st, followed by Nadi Airport with 33.8°C on the 31st, Saqani with 33.7°C on the 30th, and Wainikoro with 33.6°C on the 30th. On the other hand, the coolest day-time temperature of 18.6°C was at Monasavu on the 5th, followed by Nadarivatu with 20.3°C on the 5th, Koronivia with 20.6°C on the 21st, and Ono-i-Lau with 22.8°C on the 4th.

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

B. Minimum Night-time Air Temperatures

Generally *near normal to below average night*-time temperatures were recorded over most parts of the country during the month. Of the 21 stations, 4 recorded anomalies ≥+0.5°C, 8 within ±0.5°C, and 9 with anomalies ≤-0.5°C.

The coolest nights on average were at Nadarivatu with 15.6°C, followed by Monasavu with 16.7°C, Lomaivuna with 19.0°C, Rarawai Mill (Ba) with 19.5°C, Korolevu with 19.9°C, Ono-i-Lau and Sigatoka, both with 20.0°C, and Nacocolevu and Vunisea, both with 20.1°C. Consequently, on average, the warmest night-time temperatures were observed at Rotuma with 23.9°C, followed by Udu Point with 23.8°C, Saqani with 23.0°C, Laucala Bay (Suva) with 22.5°C, Savusavu Airfield with 22.1°C, Lakeba and Koronivia, both with 22.0°C and Penang Mill with 21.5°C.

The lowest night-time temperature of 10.9°C was recorded at Nadarivatu on the 8th, followed by Monasavu with 12.9°C on the 11th, Rarawai Mill (Ba) with 13.0°C on the 7th, Seaqaqa with 13.8°C on the 7th, Lomaivuna with 14.2°C on the 8th, Labasa Airport with 14.4°C, Vaturekuka (Labasa) with 14.5°C, Wainikoro with 14.8°C, all on the 8th, respectively. On the other hand, the warmest night-time temperature of 25.5°C was recorded at Laucala Bay (Suva) on the 31st, followed by Udu Point with 25.3°C on the 30th, Rotuma with 25.1°C on the 14th, Savusavu Airfield with 25.0°C on the 31st, and Saqani with 24.9°C on the 31st.

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

TABLE 1. CLIMATE RECORDS ESTABLISHED IN OCTOBER 2023

Element	Station	Observed (record)	On	Rank	Previous (record)	Year	Records Began
Monthly Rainfall	Matei Airfield	11.6mm	-	New Low	32.2mm	1994	1956
Monthly Rainfall	Savusavu Airfield	9.7mm	-	New Low	12.4mm	1995	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 OCTOBER 2023

	RAINFALL				AIR TEMPERATURES								SUNSHINE	
	TOTAL	*	RAIN DAYS	+	MAX. FALL		AVERAGE DAILY MAX.	#	MIN.	#	EXTREME MAX.		EXTREME MIN.		TOTAL	*
	MM	%			MM	ON	C	C	C	C	C	ON	C	ON	HRS	%
NADI AIRPORT	16.6	21	2		16	15	30.2	0.1	20.9	0.1	33.8	31	16.2	6	255	109
LAUCALA BAY	75.6	36	12		67	22	27.9	-0.5	22.5	0.3	31.5	21	19.8	9	211	128
NACOCOLEVU RESEARC	9.3	11	4		5	31	28.8	-0.5	20.1	0.5	31.5	26	16.5	2	219	128
ROTUMA ISLAND	467.4	131	18		105	24	30.3	0.3	23.9	-0.5	31.6	22	22.0	25	179	91
VIWA ISLAND	MISSING OBSERVATIONS															
YASAWA-I-RARA	0.0	0	0		0	1	30.1	0.6	20.7	-2.2	33.1	31	18.0	2		
UDU POINT (AWS)	11.0	8	6		8	31	28.8	-0.7	23.8	0.6	31.1	22	21.6	6		
NABOUWALU	STATION TEMPORARILY CLOSED															
LABASA AIRFIELD	31.1	36	5		17	31	U/S		20.2	-0.1	U/S		14.4	8		
SAVUSAVU AIRFIELD	9.7	7	11		4	14	28.1	-0.2	22.1	0.1	30.2	31	19.3	8		
KORONIVIA RESEARCH	51.7	25	13		18	22	27.7	-0.1	22.0	1.2	30.8	1	18.4	1		
NAUSORI AIRPORT	49.0	25	16		13	22	28.5	1.0	21.1	0.1	31.3	30	16.2	9		
NAVUA (AWS)	110.0	41	12		29	13	27.7	-1.0	20.9	1.0	30.7	29	17.0	8		
MONASAVU HYDRO DAM	248.2	73	22		121	14	23.0	-0.1	16.7	0.2	27.6	31	12.9	11		
FSC LAUTOKA MILL	46.0	59	1		46	15	30.1	0.3	21.0	-0.6	31.7	28	14.9	7		
FSC RARAWAI MILL	21.7	27	1		22	15	31.3	0.0	19.5	-0.1	34.0	31	13.0	7		
FSC PENANG MILL	3.8	4	4		2	19	29.6	0.2	21.5	-0.6	32.4	30	17.0	9		
MATEI AIRFIELD	11.6	7	10		3	21	28.5	0.3	21.3	-1.2	31.0	30	18.0	9		
VANUABALAVU	10.8	8	4		6	16	28.4	0.3	21.0	-2.0	32.5	6	18.6	6		
LAKEBA	7.0	7	7		4	31	27.8	0.0	22.0	-0.1	31.0	31	16.5	9		
VUNISEA	0.7	1	2		0	30	27.5	0.4	20.1	-0.9	31.6	29	16.9	6		
MATUKU	4.9	5	6		2	4	28.0	0.3	21.4	-0.7	30.8	8	18.0	3		
ONO-I-LAU	15.2	23	8		5	2	27.0	0.4	20.0	-1.2	31.9	31	17.5	1		
YAQARA AWS	MISSING OBSERVATIONS															
LEVUKA AWS	U/S				U/S		U/S		U/S		U/S		U/S			
KEIYASI AWS	U/S				U/S		U/S		U/S		U/S		U/S			
LOMAIVUNA AWS	75.0		18		11	14	28.3		19.0		32.8	30	14.2	8		
NADARIVATU AWS	38.5		6		30	14	24.4		15.6		27.1	31	10.9	8		
RKS LODONI AWS	U/S				U/S		U/S		U/S		U/S		U/S			
MOMI AWS	30.5		1		31	15	29.6		21.2		32.6	31	15.9	7		
SIGATOKA AWS	16.5		5		6	4	28.3		20.0		30.2	20	16.5	1		
VATUREKUKA AWS	U/S				U/S		20.5		U/S		14.5	8				
KOROLEVU AWS	28.0		6		16	31	28.1		19.9		32.0	29	17.1	12		
WAINIKORO AWS	0.0		0		0		30.0		21.0		33.6	30	14.8	8		
SAQANI AWS	1.5		2		1	23	30.8		23.0		33.7	30	20.1	2		
SEAQAQA AWS	67.5	64	7		41	31	31.3		20.2		33.6	14	13.8	7		
DOBUILEVU TB3	17.5	13	8		8	14										
NASINU TB3	37.5		10		15	22										
TAVUA TB3	0.5	1	1		1	15										

	TEMPERATURE(C)			HUMIDITY	WIND
	DRY	WET		RH%	VP
	MEAN	(AVERAGE AT 9AM)			KT
NADI AIRPORT	25.6	26.6	21.9	65	26.0 7.8
LAUCALA BAY	25.2	25.8	22.3	73	24.8 7.3
NACOCOLEVU RESEARC	24.5	27.3	22.5	66	27.1
ROTUMA ISLAND	27.1	28.6	26.4	85	29.3
VIWA ISLAND	MISSING OBSERVATIONS				
YASAWA-I-RARA	25.4	26.9	22.8	70	26.5
UDU POINT (AWS)	26.3				
NABOUWALU	STATION TEMPORARILY CLOSED				
LABASA AIRFIELD	U/S	28.1	23.0	65	28.4 12.2
SAVUSAVU AIRFIELD	25.1	26.2	22.8	74	25.4 9.6
KORONIVIA RESEARCH	24.9	25.7	22.3	74	24.7
NAUSORI AIRPORT	24.8	25.6	22.2	73	24.5 7.2
NAVUA (AWS)	24.3				
MONASAVU HYDRO DAM	19.8	19.4	19.1	98	16.8
FSC LAUTOKA MILL	25.5	25.2	23.2	85	24.0
FSC RARAWAI MILL	25.4	27.5	22.6	66	27.5
FSC PENANG MILL	25.5	26.9	23.0	69	26.5
MATEI AIRFIELD	24.9	26.8	23.2	73	26.4 14.0
VANUABALAVU	24.7	26.3	22.6	73	25.6
LAKEBA	24.9	26.2	22.2	71	25.4
VUNISEA	23.8	25.4	21.6	72	24.3
MATUKU	24.7	25.3	22.2	77	24.1
ONO-I-LAU	23.5	25.5	21.7	71	24.4

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 (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
(October 2022 - October 2023)

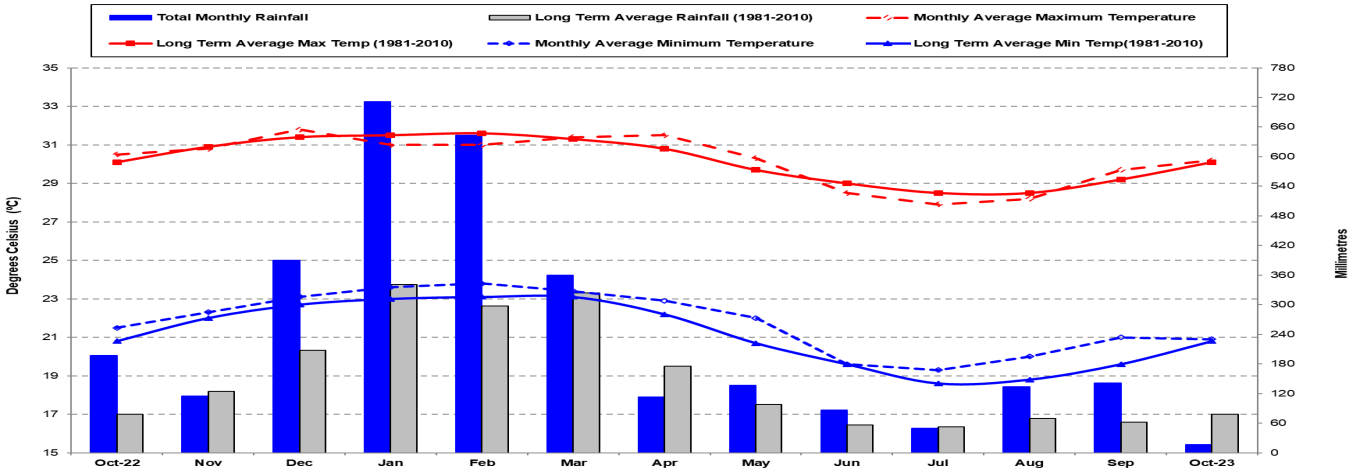


Figure 3

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

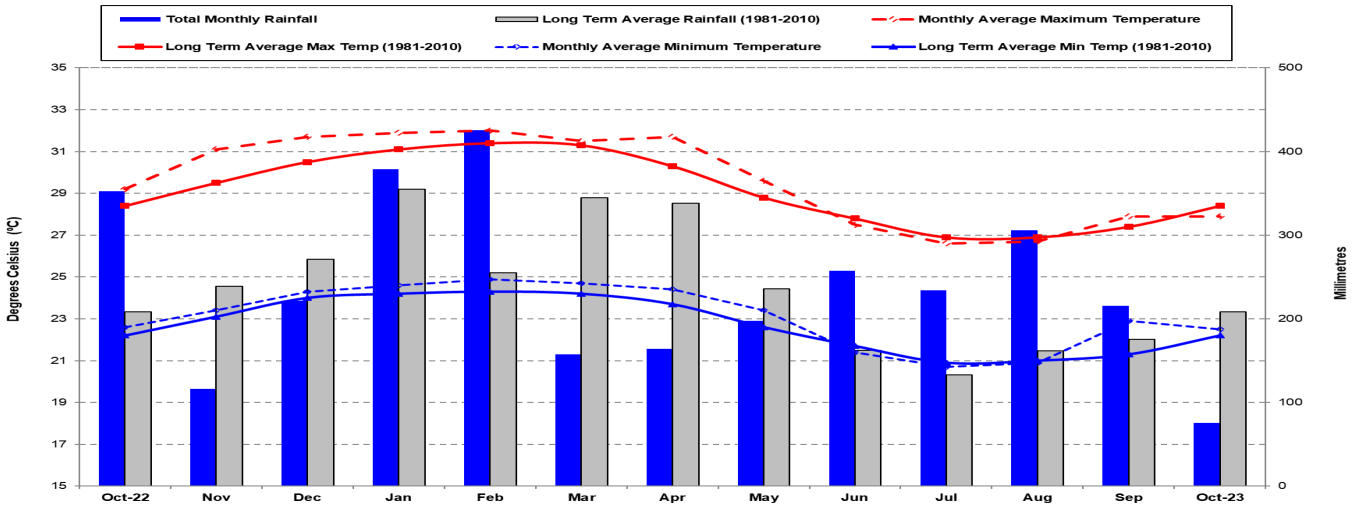


Figure 4

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

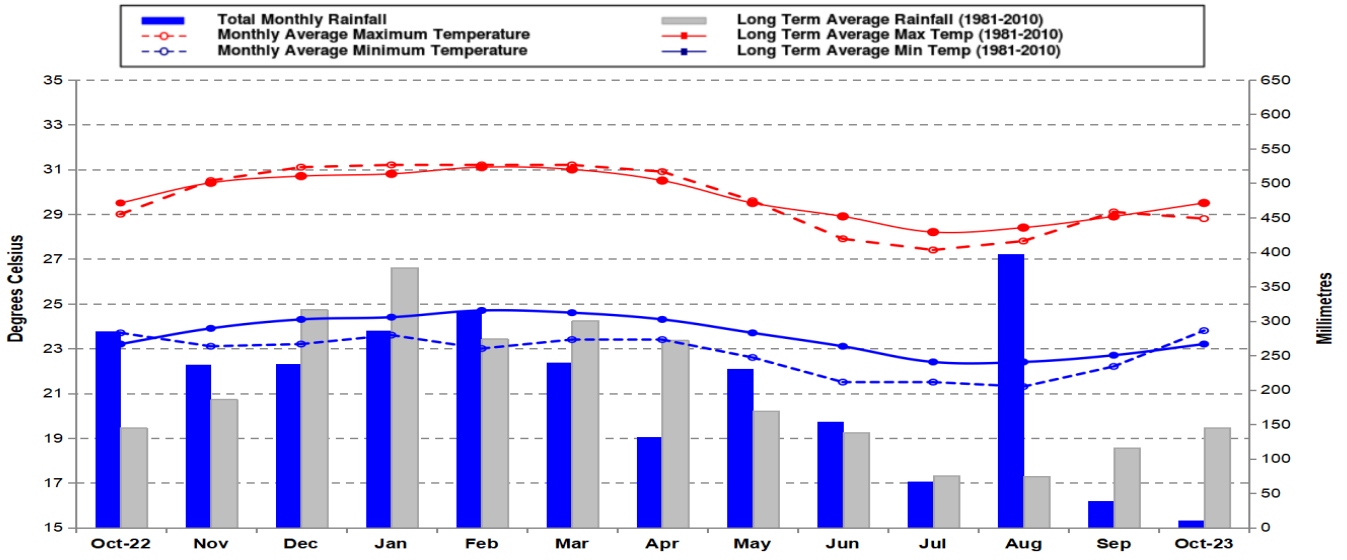
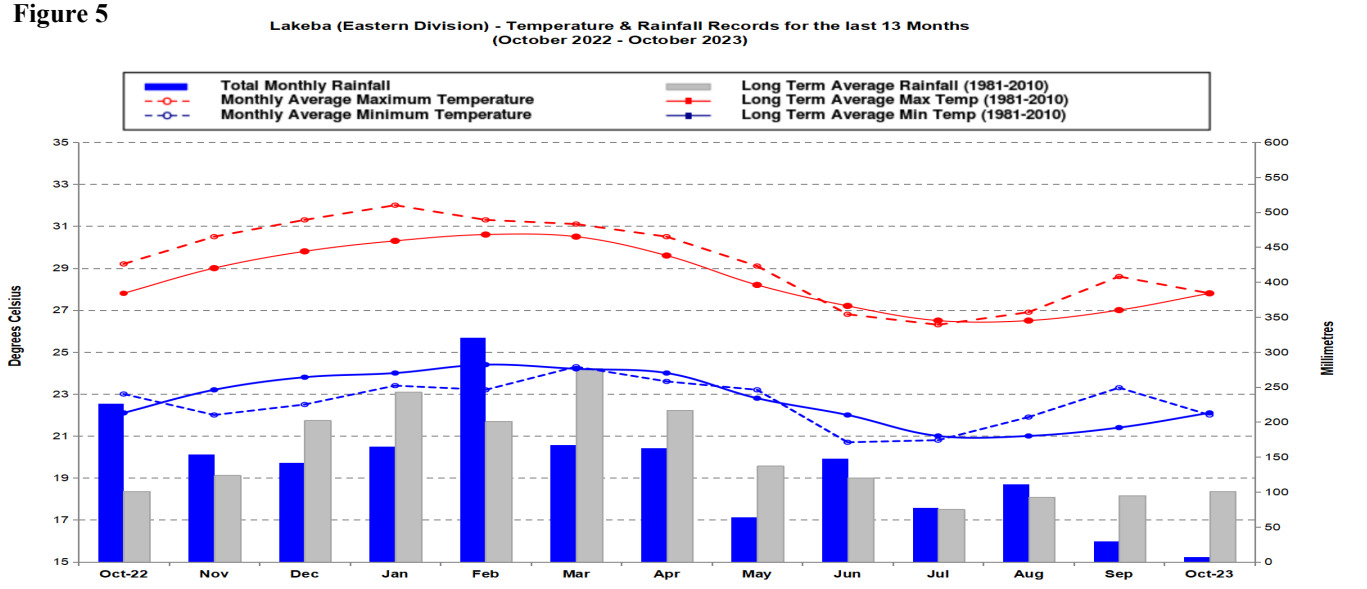


Figure 5



5. DAILY RAISED PAN EVAPORATION

Figure 6

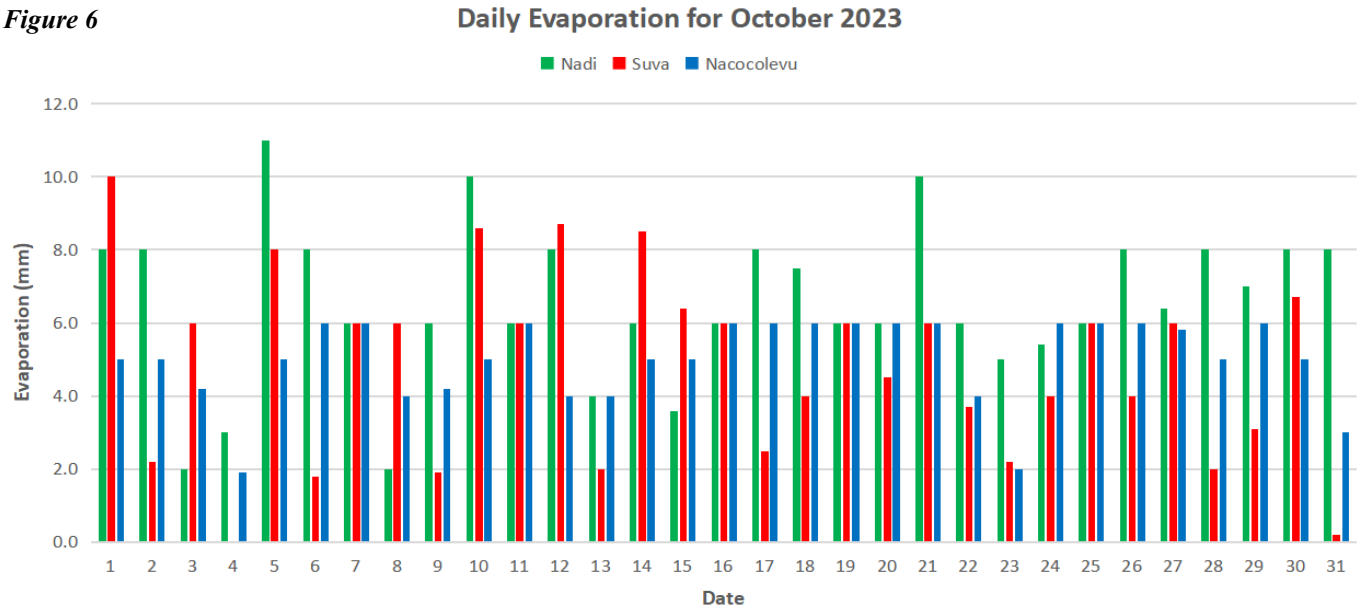


Figure 6: The total monthly raised pan evaporation at Nadi Airport, Laucala Bay (Suva) and Nacocolevu (Sigatoka) were 202.9mm, 149.0mm and 155.1mm, respectively. Nadi's highest daily evaporation was 11.0mm on the 5th, with Suva's highest daily evaporation of 10.0mm on 1st and Nacocolevu (Sigatoka) recorded its highest of 6.0mm on 6th, 7th, 11th, 16th to 21st, 24th to 26th and 29th.

6. SOLAR RADIATION

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

7. WIND SUMMARY

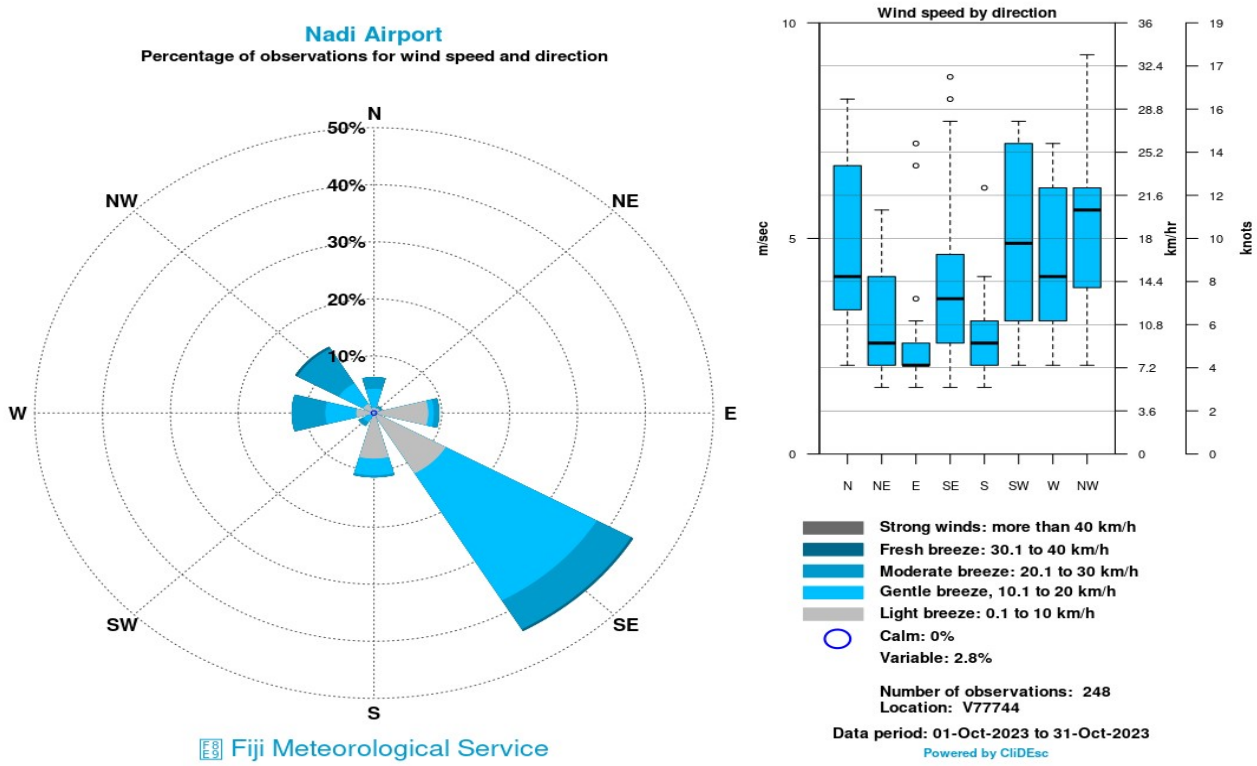


Figure 7a: Looking at Nadi's 3 hourly observations, southeasterly winds were most dominant during the month, followed by northwesterly and then westerly winds. Wind strength ranged from light to fresh breeze, while none of the observations accounted for calm winds.

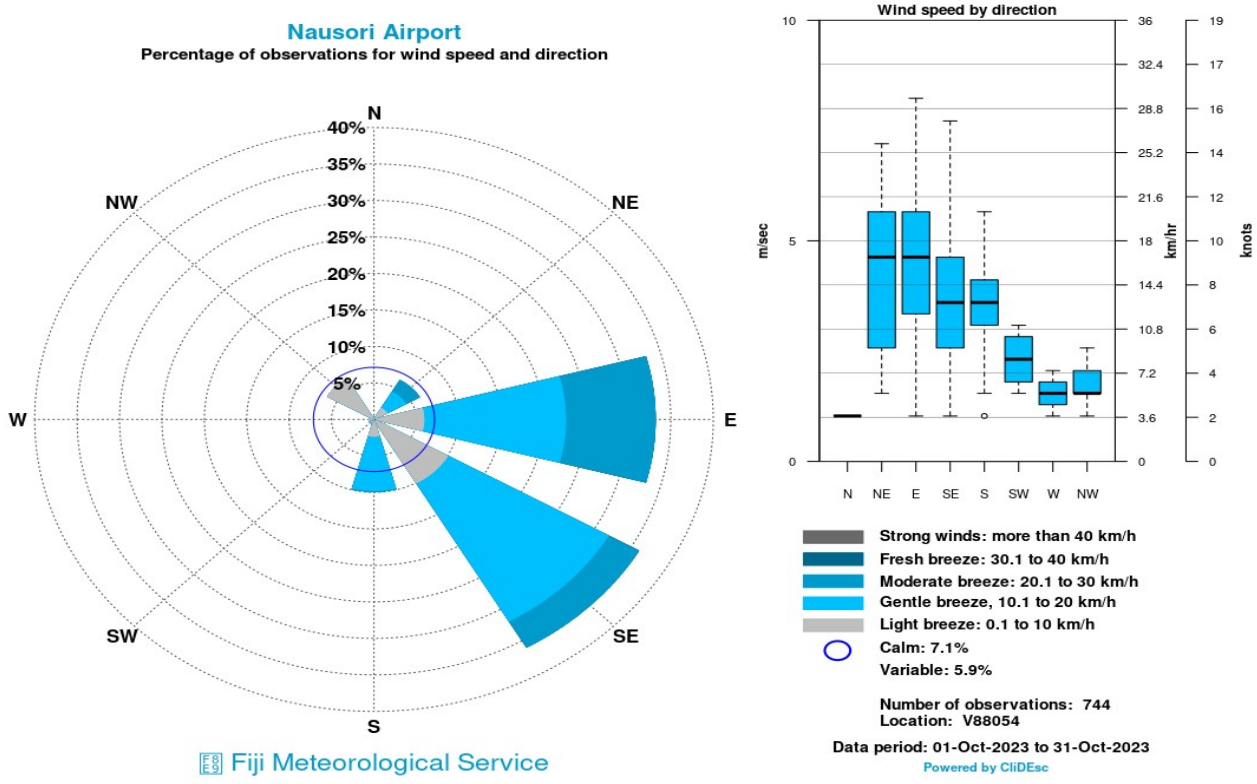


Figure 7b: For Nausori Airport's hourly wind observations, southeasterly winds were dominant followed by easterly and then southerly winds. Wind strength ranged from light to moderate breeze, while 7.1% of observations accounted for calm winds.

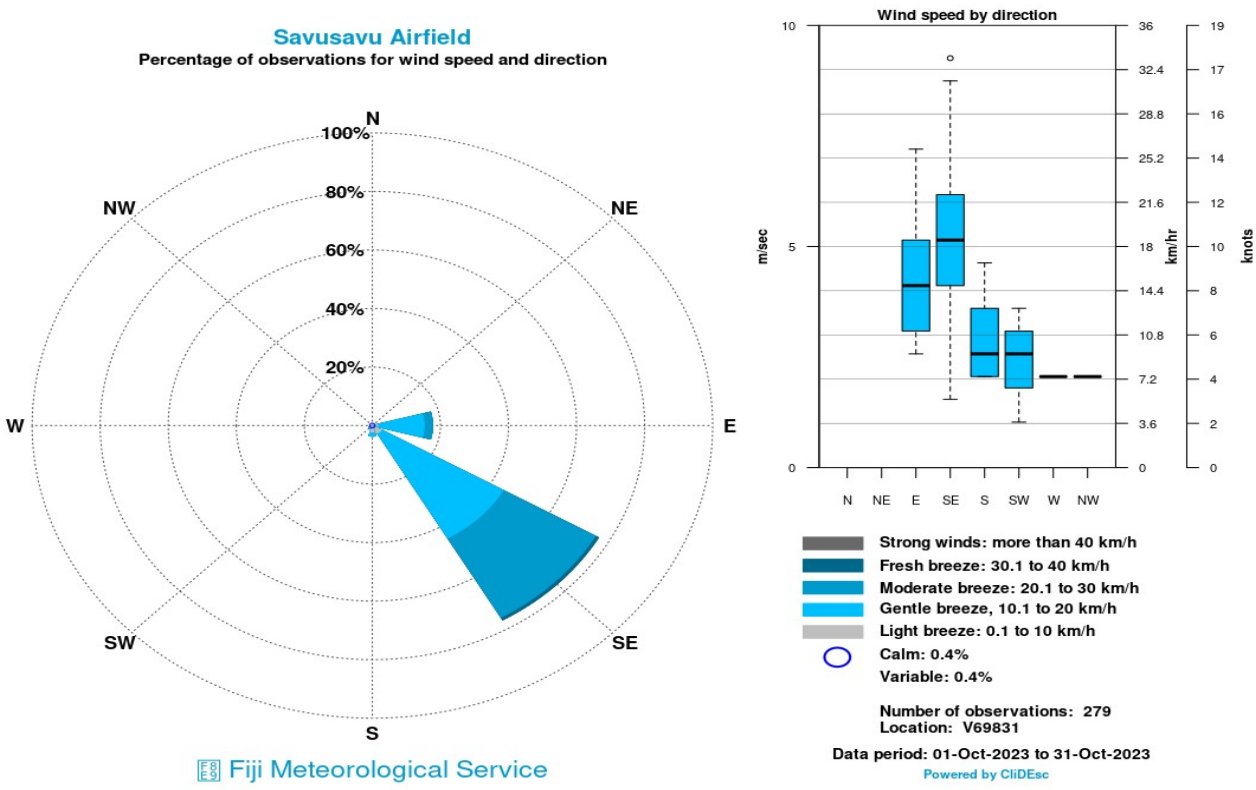


Figure 7c: For Savusavu Airfield's hourly observations (0800hrs to 1600hrs), southeasterly winds were most dominant during the month, followed by easterly and then southerly winds. Wind strength ranged from light to fresh breeze, with calm winds observed during 0.4% of the time.

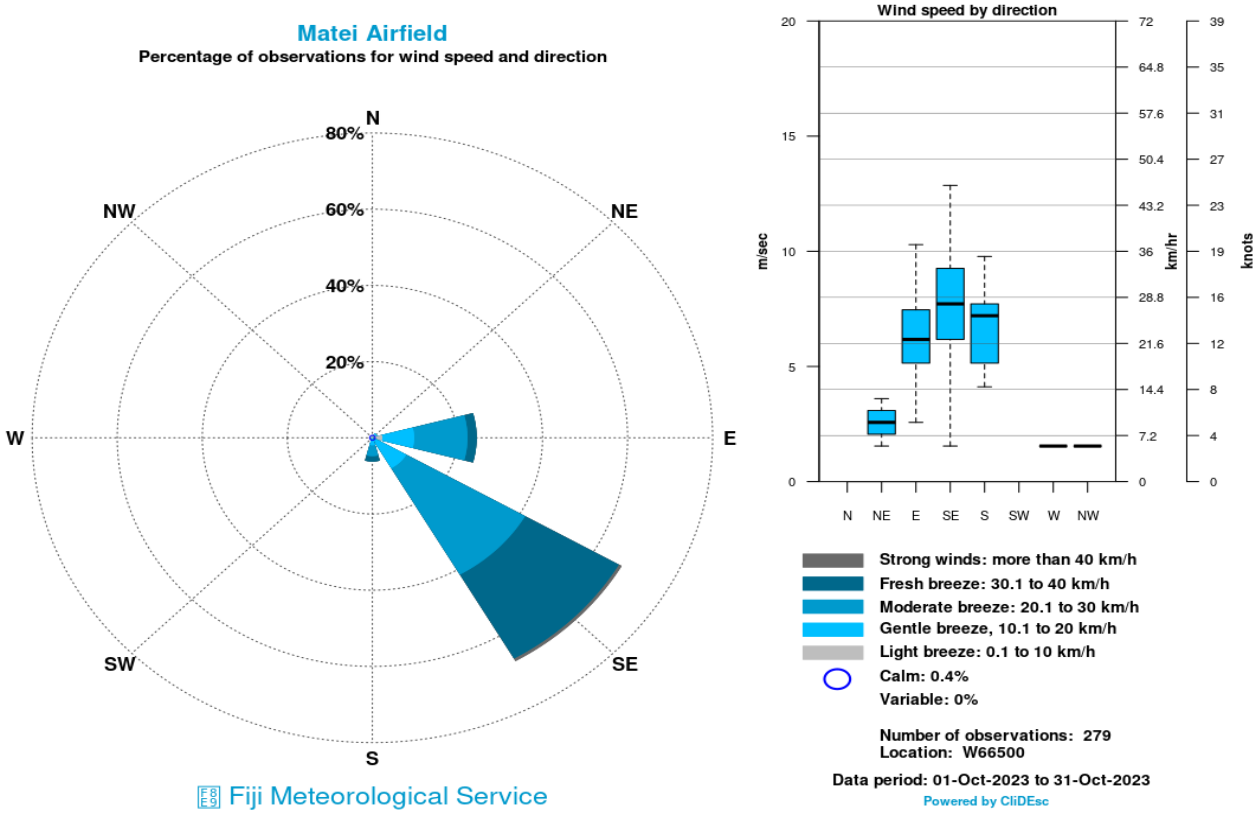


Figure 7d: For Matei Airfield's hourly wind observations (0800hrs to 1600hrs), southeasterly winds were dominant followed by easterly and then southerly winds. Wind strength ranged from light to fresh breeze, with calm winds observed during 0.4% of the time.

8. SEA SURFACE TEMPERATURE (SST)

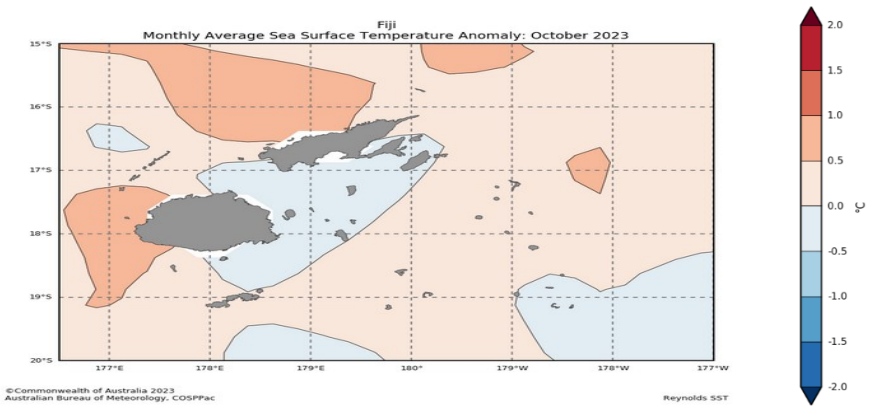


Figure 8:
Warmer than normal sea surface temperature anomalies were observed across most of the Fiji Waters, with anomalies 0.5 - 1.0°C, west of Viti Levu and north west of Vanua Levu. Cooler than normal SST anomalies were observed across the Vatu-I-Ra Passage, Lomaiviti Group and some parts of the southern Lau Group.
Source: http://oceanportal.spc.int/portal/app.html#climate

9. CLOUD COVER

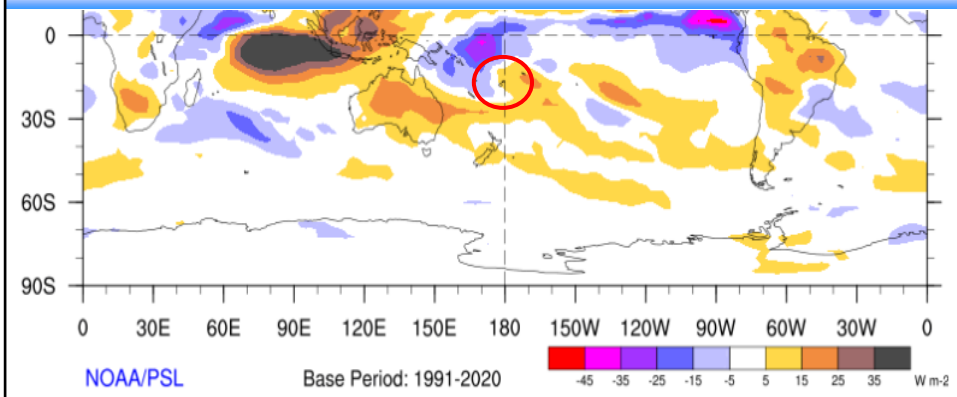


Figure 9:
Normal to *below normal* cloud cover was present over the Fiji Group during October (*Fiji in red circle).*

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

10. SEA LEVEL

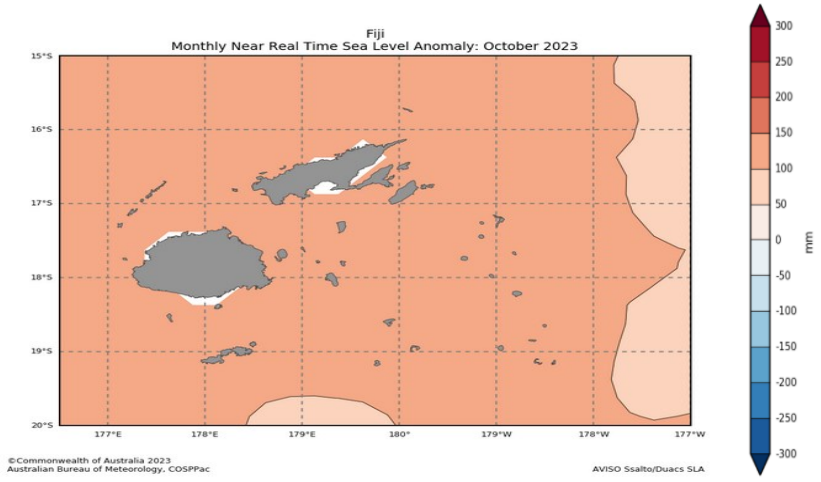


Figure 10:
Above normal sea level anomalies persisted across most of the Fiji Waters during October.

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

11. WIND ANOMALIES

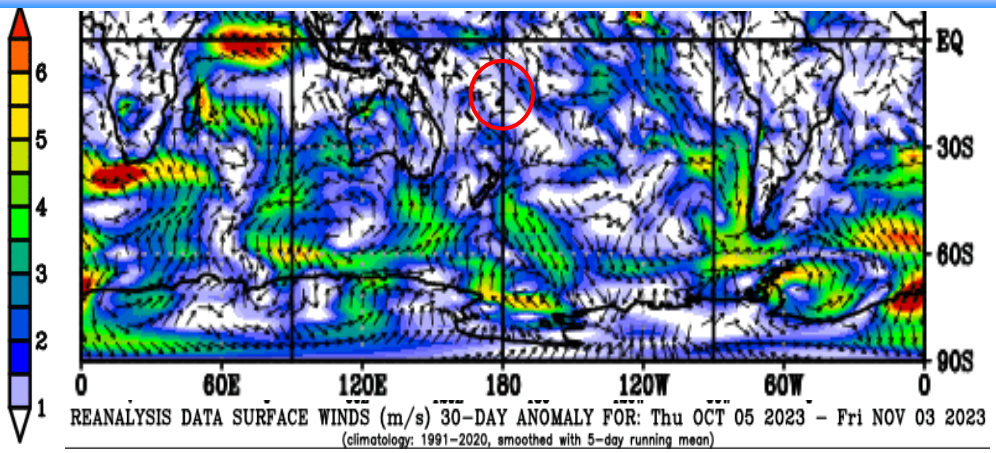


Figure 11:

Southeasterly 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

EXPLANATORY NOTES

Anomalies - denote the departure of an element (rainfall, temperature, sea surface temperature, cloud cover, sea level and wind) from its long-period average value for a particular location.

Trough - an elongated area of low atmospheric pressure that is associated with a cyclone, or low. Sometimes referred to as a 'trough of low pressure'.

Rain - Liquid precipitation in the form of water droplets. Rain falls from dense, continuous clouds, called 'stratiform' clouds.

Shower - precipitation from individual clouds, often characterised by the sudden beginning or ending. Showers fall from 'lumpy looking', 'cauliflower' clouds, called 'cumuloform' clouds.

Trade Winds - the trade winds are the east to southeasterly winds (in the Southern Hemisphere) which affect tropical and subtropical regions.

High pressure systems or anticyclones are atmospheric circulations that rotate anti-clockwise in the Southern Hemisphere. Anticyclones are areas of higher pressure and are generally associated with lighter winds and fine and settled conditions.

Low pressure systems or mid-latitude cyclones are atmospheric circulations that rotate clockwise in the Southern Hemisphere (anti-clockwise in the Northern Hemisphere). Cyclones are areas of lower pressure and generally associated with stronger winds, unsettled conditions, cloudiness and rainfall.

Sea Surface Temperature (SST) - the temperature of the water's surface. It is usually measured using buoys, ship data, and satellites.