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Fiji Climate Summary September 2020



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1. IN BRIEF

A weak La Niña event was established in the tropical Pacific during September. The South Pacific Convergence Zone was displaced southwest of its normal position closer to the Fiji Group.

The weather during the month in Fiji was affected by series of troughs of low pressure system. Consequently, majority of the stations in the Central, Eastern and Northern Divisions, including Rotuma, registered wetter than usual condition. Most of the places in the Western Division received near average rainfall.

Overall, out of the 27 rainfall monitoring stations, 2 recorded *well above average*, 15 *above average*, 8 *average* and 2 *below average*.

At least 4 widespread rainfall events were registered during September. The most significant event was on the 21st and 22nd, with some heavy rainfall registered in the Central, Northern and Eastern Divisions. Over a 24-hour period on the 21st, Matei Airfield, RKS, Levuka and Udu Point recorded 179mm, 98mm, 83mm and 82mm of rainfall, respectively.

Rotuma recorded more than twice the normal rainfall during the month, with the highest 24-hour rainfall of 149mm on the 8th.

Despite near average or above average rainfall recorded over most places during September, some places in the Western and Northern Division recorded substantial rainfall deficiency due to suppressed rainfall received during June to August.

Intense high pressure systems far south of Fiji resulted in occasional periods of strong and gusty winds over Fiji during the month. The highest wind gust was recorded at Rakiraki with 90km/hr on the 3rd, followed by Vanuabalavu with 77km/hr on the 7th and Udu Point with 74km/hr on the 4th.

While the mean monthly minimum air temperatures were generally above normal at most of the monitoring sites, occasional periods of cool condition were recorded during the month. The lowest night-time temperature during the month was recorded at Nadarivatu with 13.4°C on the 11th, followed by Monasavu with 13.6°C on the 5th and Keiyasi with 13.8°C on the 6th.

2. WEATHER PATTERNS

September was dominated by series of troughs and high pressure systems which brought showers and strong winds respectively over certain parts of the country.

The month began with a trough of low pressure over Fiji which brought some showers over parts of the group. A high-pressure system which was located to the far southwest of Fiji strengthened on the 2nd and directed southeasterly trade wind flow over the group pushing the trough to the east away from Fiji. On the 3rd, the trade winds strengthened and brought cool dry air and strong winds over parts of the group, which prevailed till the 8th.

On the 9th, a trough developed to the northeast of Fiji and another trough approached from the west. This enhanced the trade showers and rainfall was experienced over most places. The trough then quickly moved over the group on the 10th and exited to the east of Fiji.

A cool and dry south to southeasterly wind flow followed, directed by a strengthening east-northeastward moving high-pressure system to the far southwest of Fiji, which prevailed till the 16th. The high-pressure system was located to the far south of Fiji on the 17th and the easterly trades were slightly moistened by a trough located to the north of Fiji.

This brought some showers over the eastern parts of the larger islands with strong and gusty easterly winds continued to be experienced over parts of the country till the 20th.

On the 21st, the high pressure to the far south of Fiji weakened and the trough to the north of Fiji drifted onto the group. The trough continued to enhance the easterlies with rainfall experienced over most places. The trough then drifted to the east of Fiji on the 23rd.

Again, the southeast winds were directed over the group by the eastward moving high-pressure system to the far south of Fiji, which prevailed till the 28th.

On the 29th, the high pressure drifted to the far southeast of Fiji and the trough to the north of Fiji gradually drifted south, while another trough approached Fiji from the west. The approaching trough from the west brought moist northeasterly wind flow over the group. The trough moved over the group on the 30th and rainfall was experienced over most places.

Rotuma was affected by series of troughs during the month which brought rainfall on most of the days.

3. RAINFALL

Rainfall in September was *near average* or *above average* at most places around the country. While most parts of Fiji experienced wetter than usual condition during the month, rainfall in the Western Division was close to normal over most places. Out of the 27 rainfall monitoring stations, 2 recorded *well above average*, 15 *above average*, 8 *average* and 2 *below average* (Table 2, Figures 1-5).

At least 4 widespread rainfall events were registered during September. The most significant event was on the 21st and 22nd, with some heavy rainfall registered in the Central, Northern and Eastern Divisions. Over a 24-hour period on the 21st, Matei Airfield, RKS, Levuka and Udu Point recorded 179mm, 98mm, 83mm and 82mm of rainfall, respectively.

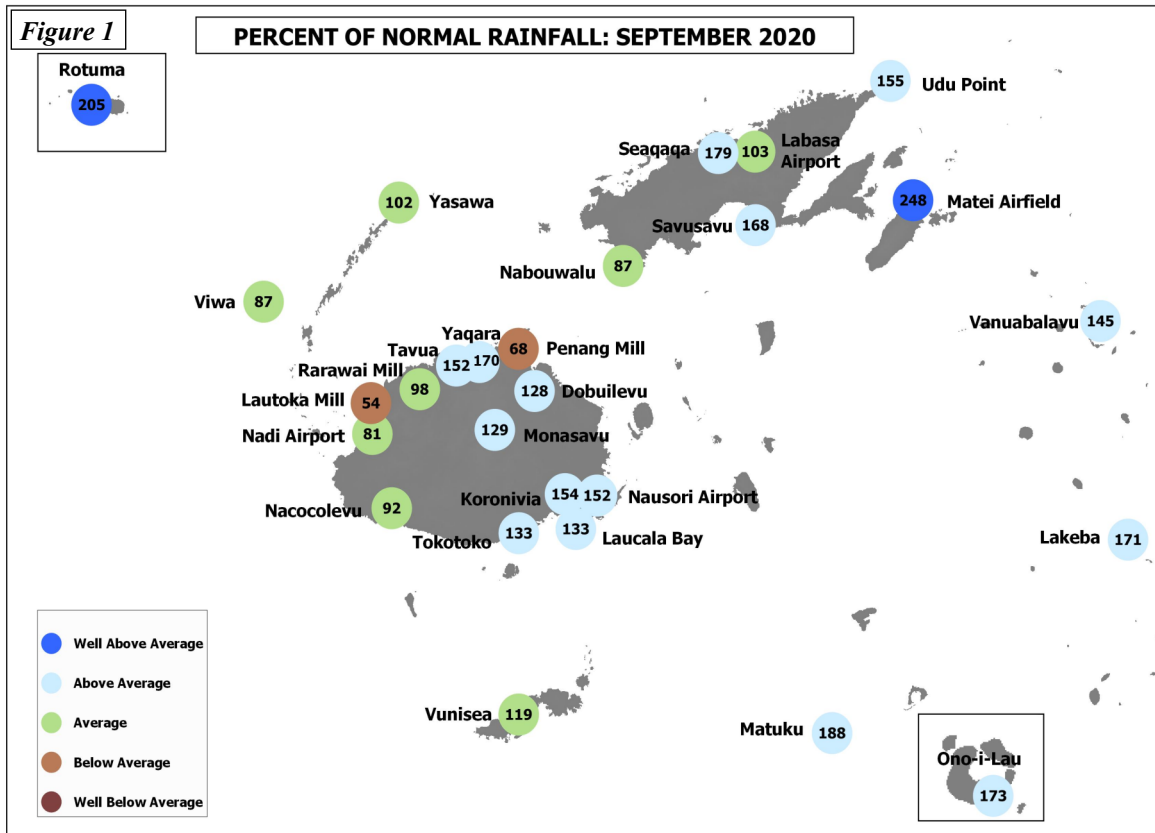
Rotuma recorded more than twice the normal rainfall during the month, with the highest 24-hour rainfall of 149mm was observed on the 8th.

The highest total monthly rainfall was received at Rotuma with 636mm of rainfall, followed by Monasavu with 348mm, Matei Airfield with 313mm, RKS Lodoni with 309mm, Tokotoko (Navua) with 295mm, Koronivia with 264mm, Nausori Airport with 247mm and Nasinu with 244mm. On the other hand, the lowest total monthly rainfall was registered at Lautoka Mill with 33mm of rainfall, followed by Nadi Airport and Penang Mill with both 51mm,

Viwa with 58mm, Momi with 63mm, Rarawai Mill (Ba) and Yasawa-i-Rara with both 66mm.

Rotuma recorded the highest number of rain days (rainfall ≥ 0.1 mm) with 26 days, followed by Monasavu with 25, Tokotoko (Navua) with 24, Vunisea (Kadavu) with 23, Koronivia, RKS Lodoni and Nasinu all with 22, both Lautoka Bay (Suva) and Nausori Airport with 21 rain days. In contrast, Lautoka Mill experienced only 3 rain days, followed by Rarawai Mill (Ba) with 4, Yasawa-i-Rara and Momi with both 5, and Nadi Airport and Tavua both with both 6.

There was no new rainfall record established during the month.



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 ≥ 0.1 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

The maximum air temperatures were generally *normal* or *above normal* at majority of the observing sites during September. Out of the 23 climate stations, 11 recorded anomalies $\geq +0.5^{\circ}\text{C}$, 10 recorded anomalies within $\pm 0.5^{\circ}\text{C}$, while Udu Point and Koronivia were the only 2 stations that recorded anomalies $\leq -0.5^{\circ}\text{C}$ (Table 2 & Figures 2-5).

The warmest days on average was recorded at Keiyasi with 32.1°C , followed by Labasa Airport with 31.2°C , Rarawai Mill (Ba) and Yasawa-i-Rara with both 31.1°C , Seaqaqa with 31.0°C , Viwa with 30.9°C , Lautoka Mill and Momi with both 30.6°C , and Yaqara with 30.3°C . In contrast, the coolest monthly average daytime temperature was registered at Monasavu with the maximum air temperature of 21.8°C , followed by Nadarivatu with 23.6°C , Ono-i-Lau with 25.9°C , Koronivia with 26.5°C , Vunisea (Kadavu) with 26.8°C and Matuku with 26.9°C .

The highest daily maximum air temperature during the month was registered at Keiyasi with 35.9°C on the 28th, followed by Yasawa-i-Rara with 34.4°C on the 30th, Viwa and Seaqaqa with both 34.2°C on the 1st and 2nd, respectively. On the other hand, the coolest daytime temperature was registered at Monasavu with the maximum air temperature of 19.0°C on the 4th, 14th and 17th, followed by Nadarivatu with 20.0°C on the 5th, Ono-i-Lau with 23.5°C on the 4th, Korolevu with 23.6°C on the 3rd, Koronivia with 23.9°C on the 3rd, Saqani with 24.1°C on the 22nd, Vunisea with 24.3°C on the 19th, and Tokotoko (Navua), Matuku and Wainikoro with all 24.5°C on the 3rd and 4th and 22nd, respectively.

There was no new maximum air temperature record during the month.

B. Minimum Night-time Air Temperatures

The minimum air temperatures were *above normal* at most of the observing sites during the month. Out of the 23 stations, 16 recorded anomalies $\geq +0.5^{\circ}\text{C}$, 6 were within $\pm 0.5^{\circ}\text{C}$, while Ono-i-Lau was the only station with anomaly of $\leq -0.5^{\circ}\text{C}$ (Table 2 & Figures 2-5).

The coolest monthly average night-time temperature was recorded at Nadarivatu with the mean monthly minimum air temperature of 16.4°C , followed by Monasavu with 16.8°C , Ono-i-Lau with 19.0°C , Rarawai Mill (Ba) with 19.2°C , Labasa Airport with 19.8°C , and Nacocolevu and Keiyasi with both 19.9°C . On the other hand, the warmest monthly average night-time temperature was recorded at Rotuma with the mean monthly minimum air temperature of 24.5°C , followed by Viwa with 24.4°C , Yasawa-i-Rara with 24.0°C , Udu Point with 23.4°C , Nabouwalu with 23.3°C , Lakeba with 23.2°C and Saqani with 23.0°C .

The lowest night-time temperature during the month was recorded at Nadarivatu with 13.4°C on the 11th, followed by Monasavu with 13.6°C on the 5th, Keiyasi with 13.8°C on the 6th, Rarawai Mill (Ba) with 14.9°C on the 1st and Ono-i-Lau with 16.2°C on the 10th. On the contrary, the warmest minimum air temperature during the month was recorded at Rotuma with 26.1°C on the 14th, followed by Viwa with 25.6°C on the 29th and 30th, Yasawa-i-Rara with 25.5°C on the 30th and Vanuabalavu with 25.1°C on the 2nd.

There was no new minimum air temperature record during the month.

TABLE 1. CLIMATE RECORDS ESTABLISHED IN SEPTEMBER 2020

There was no new record established during the month..

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 SEPTEMBER 2020

	RAINFALL				AIR TEMPERATURES								SUNSHINE		
	TOTAL MM	RAIN		MAX. FALL MM ON	AVERAGE DAILY				EXTREME		TOTAL HRS	*			
		%	DAYS +		MAX. C	# C	MIN. C	# C	MAX. C	MIN. C			ON	ON	
NADI AIRPORT	51	81	6	31	9	29.9	0.7	21.0	1.4	31.8	26	18.5	1	221	105
SUVA/LAUCALA BAY	232	133	21	75	30	27.3	-0.1	22.6	1.3	30.7	30	20.4	8	107	77
NACOCOLEVU	81	92	8	43	9	28.3	0.0	19.9	1.3	32.2	29	17.0	8	177	102
ROTUMA	636	260	26	149	8	29.9	0.3	24.5	0.2	32.1	24	22.5	19	147	80
VIWA	58	86	7	31	9	30.9	2.2	24.4	1.4	34.2	1	21.7	10		
UDU POINT	176	151	15	82	21	27.9	-1.0	23.4	0.7	30.3	30	20.9	5		
SAVUSAVU AIRFIELD	190	168	11	46	21	27.6	-0.0	21.1	-0.3	32.3	30	19.1	5		
LABASA AIRFIELD	67	103	8	26	9	31.2	0.9	19.8	0.2	33.0	14	17.0	7		
NABOUWALU	91	87	17	24	9	28.0	1.0	23.3	1.2	30.9	29	21.7	23		
KORONIVIA	264	154	22	68	9	26.5	-0.5	21.0	0.9	29.4	27	17.5	15		
NAUSORI AIRPORT	247	152	21	65	9	27.2	0.5	21.4	1.3	30.4	30	17.5	15		
NAVUA/TOKOTOKO	295	133	24	52	21	27.8	0.8	21.6	2.4	29.7	27	17.7	8		
MONASAVU	348	129	25	67	17	21.8	-0.3	16.8	1.0	25.5	1	13.6	5		
LAUTOKA AES	33	54	3	22	9	30.6	1.6	20.7	0.1	32.5	19	17.5	7		
BA/RARAWAI MILL	66	98	4	35	9	31.1	0.6	19.2	0.8	33.5	28	14.9	1		
PENANG MILL	51	68	11	27	9	28.8	0.4	22.5	1.3	32.0	1	21.0	5		
MATEI AIRFIELD	313	248	17	179	21	27.9	0.2	22.2	0.2	30.5	30	19.4	5		
VANUABALAVU	151	145	16	42	21	27.4	-0.1	22.0	-0.4	30.1	1	19.0	7		
LAKEBA	162	171	13	63	22	27.9	0.9	23.2	1.8	31.0	30	19.1	23		
YASAWA	66	102	5	54	9	31.1	2.2	24.0	1.6	34.4	30	21.7	10		
VUNISEA	134	110	23	47	1	26.8	0.5	21.3	1.3	30.5	30	18.6	11		
MATUKU	175	188	15	69	9	26.9	0.1	22.4	1.2	31.2	29	20.0	11		
ONO-I-LAU	160	173	10	77	30	25.9	0.3	19.0	-1.3	28.8	29	16.2	10		
YAQARA AWS	77	170	8	44	9	30.3		22.8		33.0	29	21.2	5		
LEVUKA AWS	188		18	83	21	29.5		22.5		33.5	30	20.2	14		
KEIYASI AWS	93		8	30	29	32.1		19.9		35.9	28	13.8	6		
LOMAIVUNA AWS	U/S					U/S		U/S		U/S		U/S			
NADARIVATU AWS	173		9	60	9	23.6		16.4		27.2	27	13.4	11		
RKS LODONI AWS	309		22	98	21	28.0		21.2		30.8	30	18.3	15		
MOMI AWS	63		5	37	9	30.6		21.3		32.6	6	19.0	6		
SIGATOKA AWS	113		14	41	9	27.5		20.3		29.8	25	17.4	6		
RAKIRAKI AWS	77		11	33	9	27.3		21.8		29.2	19	19.9	5		
WAINIKORO AWS	70		12	16	22	29.4		21.6		31.8	1	18.9	24		
SAQANI AWS	166		12	44	21	29.3		23.0		33.7	30	21.2	22		
VATUREKUKA AWS	110		11	36	21	28.4		20.4		31.5	2	17.5	24		
SEAQAQA AWS	108	179	10	35	9	31.0		21.1		34.2	2	17.0	6		
KOROLEVU AWS	163		16	39	9	27.9		21.0		31.3	28	18.8	11		
KORO ISLAND AWS	U/S					U/S		U/S		U/S		U/S			
KUBULAU AWS	U/S					27.2		22.6		30.1	30	19.5	23		
DOBUILEVU TB3	142	128	19	48	9										
NASINU TB3	244		22	77	9										
TAVUA TB3	77	152	6	42	9										

	TEMPERATURE(C)		HUMIDITY		WIND KT	SUN RAD %OF MJ/ POS SQ.M	
	MEAN	DRY WET (AVERAGE AT 9AM)	RH% VP				
NADI AIRPORT	25.5	26.5	21.6	64	22.1	10.1	64 16.8
SUVA/LAUCALA BAY	24.9	25.2	23.0	82	26.4		31 6\$
NACOCOLEVU	24.1	25.7	22.8	77	25.5		51 18\$
ROTUMA	27.2	27.8	25.5	82	30.8		42 17\$
VIWA	26.9	27.4					
UDU POINT	25.3	26.0					
SAVUSAVU AIRFIELD	24.3	25.5	22.9	80	25.9		
LABASA AIRFIELD	25.5	27.3	24.9	79	29.3		
NABOUWALU	25.7	26.0	22.7	75	25.1		
KORONIVIA	23.8	24.8	22.3	80	25.1		
NAUSORI AIRPORT	24.3	24.9	22.0	77	24.3	5.9	
NAVUA/TOKOTOKO	24.2	24.6	22.8	86	26.5		
MONASAVU	19.3	18.9	17.8	89	19.6		
LAUTOKA AES	25.6	27.8	23.1	66	24.6		
BA/RARAWAI MILL	25.2	26.9	22.2	66	23.2		
PENANG MILL	25.6	25.8	22.4	74	24.6		
MATEI AIRFIELD	25.0	26.2	23.4	78	26.7		
VANUABALAVU	24.7	25.4	23.2	82	26.7		
LAKEBA	25.3	25.9					
YASAWA	27.5	27.4					
VUNISEA	23.9	24.5					
MATUKU	24.6	24.9	22.8	83	26.1		
ONO-I-LAU	22.5	24.2	21.5	78	23.5		

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 - Temperature & Rainfall for the last 13 Months
(September, 2019 - September, 2020)**

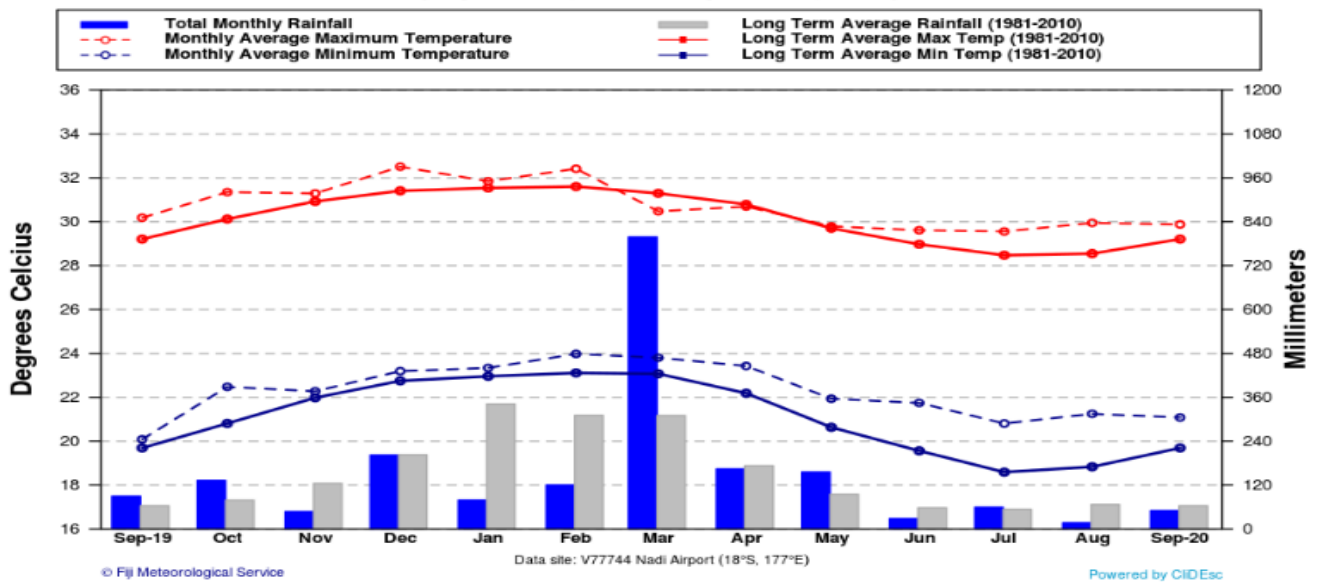


Figure 3

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

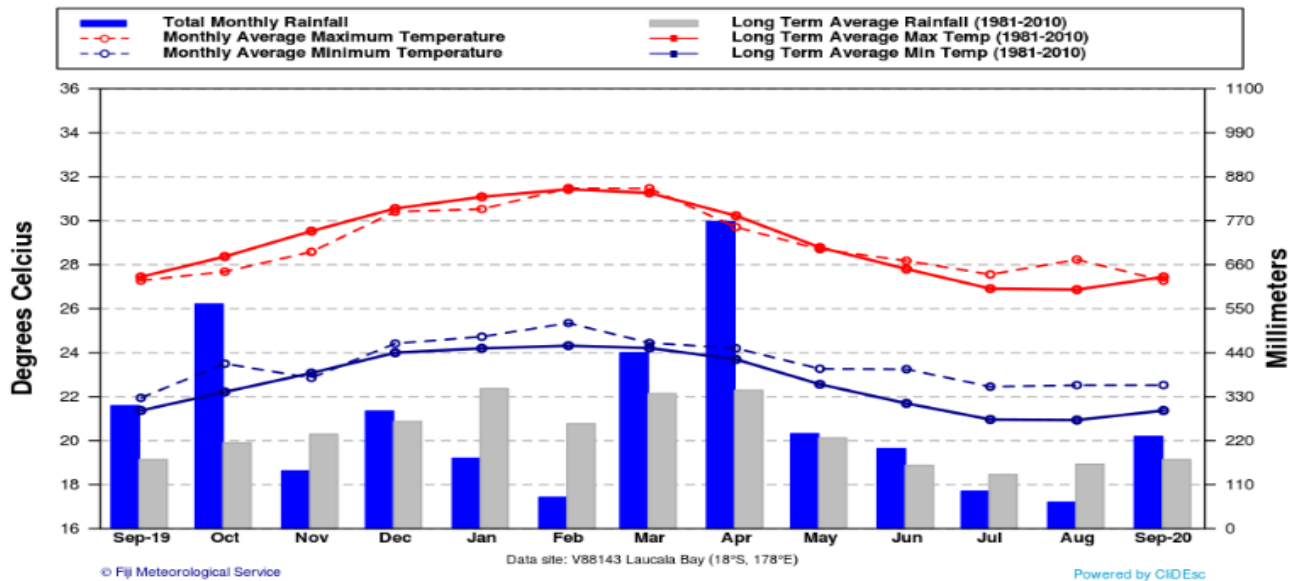


Figure 4

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

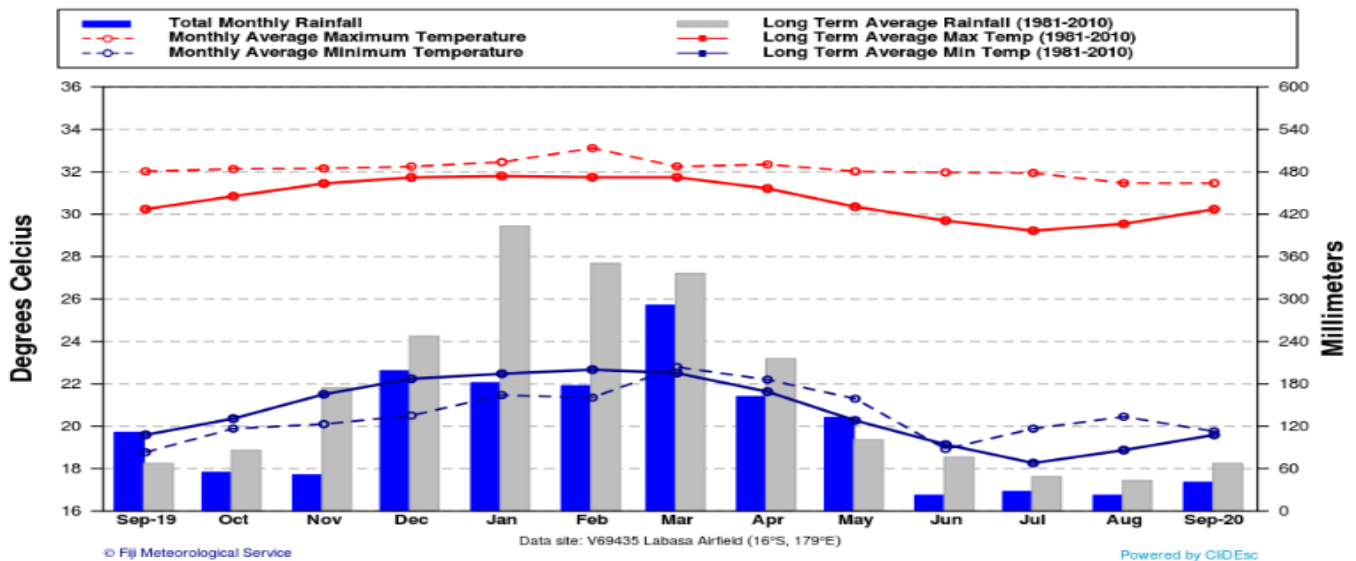
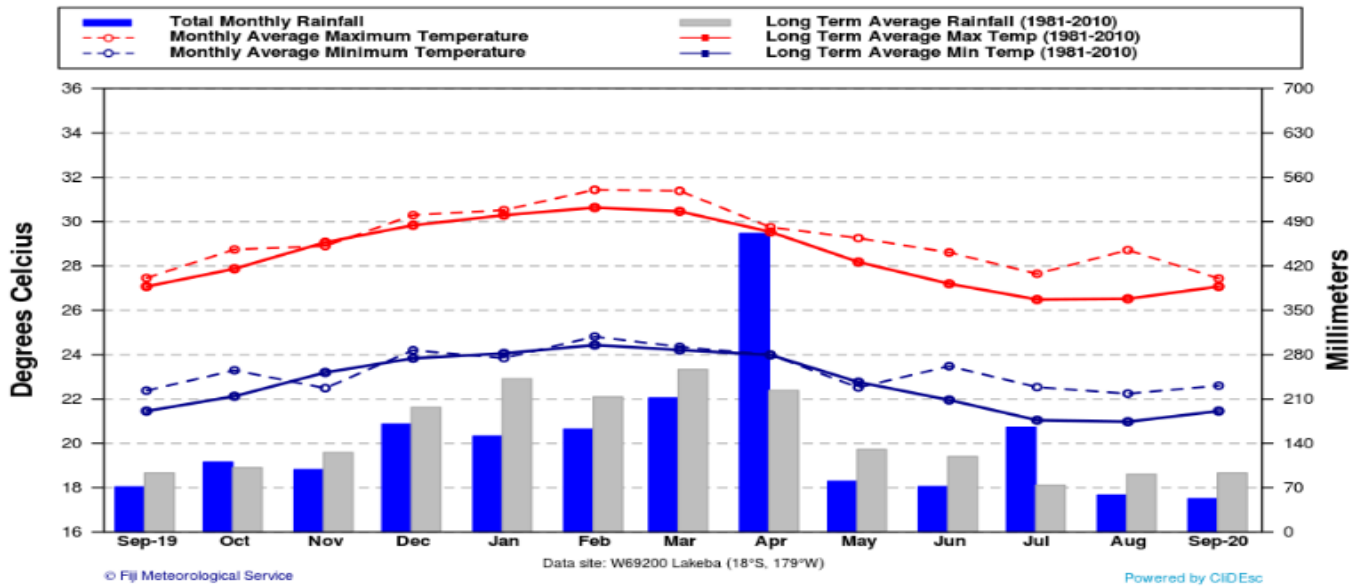


Figure 5

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



5. DAILY RAISED PAN EVAPORATION

Figure 6

Daily Evaporation for September 2020

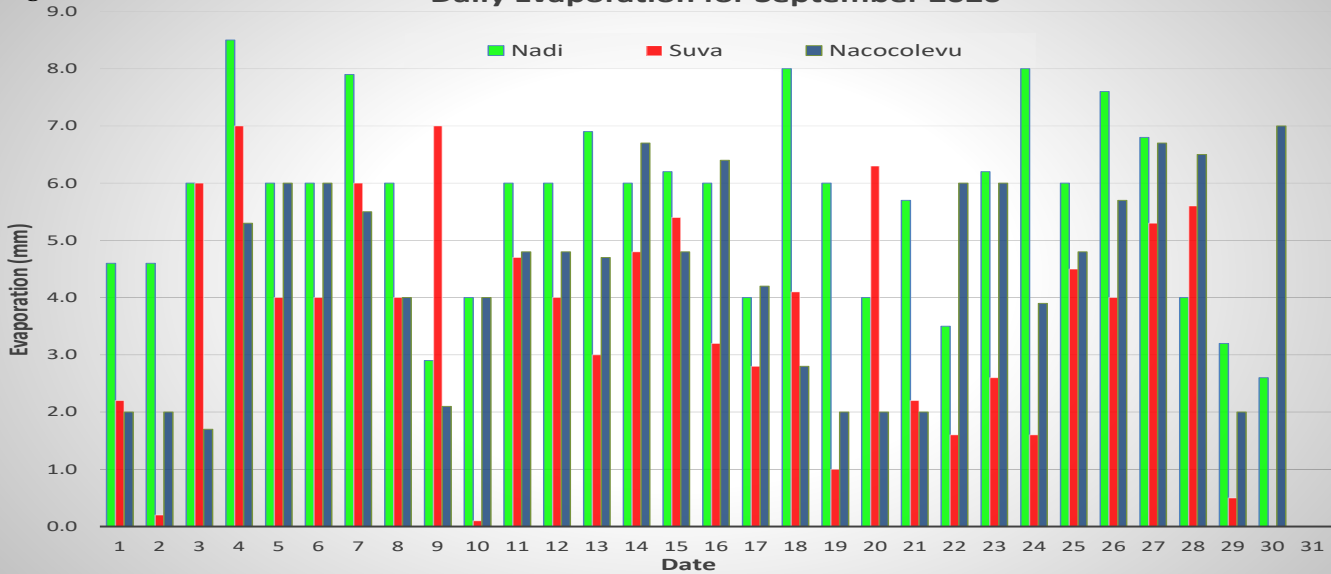


Figure 6: The total monthly evaporation at Nadi, Laucala Bay and Nacocolevu were 169.2mm, 107.7mm and 132.4mm, respectively. Nadi recorded the highest daily evaporation of 8.5mm on the 4th, with Laucala Bay’s highest evaporation of 7.0mm on the 9th, and Nacocolevu also with 7.0mm on the 30th.

6. SOLAR RADIATION

Figure 7

Nadi's Daily Solar Radiation (MJ/m²) for September 2020

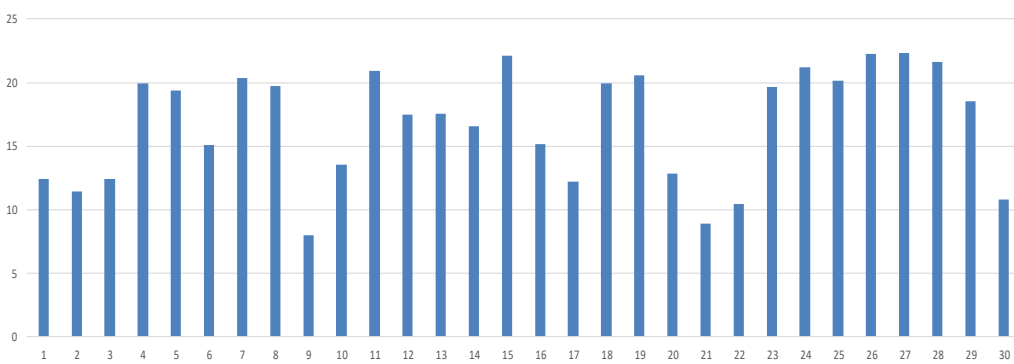


Figure 7:

The mean daily solar radiation at Nadi Airport during the month was 16.8MJ/m² compared to 18.8MJ/m² over 30 year average (1981-2010).

7. WIND SUMMARY

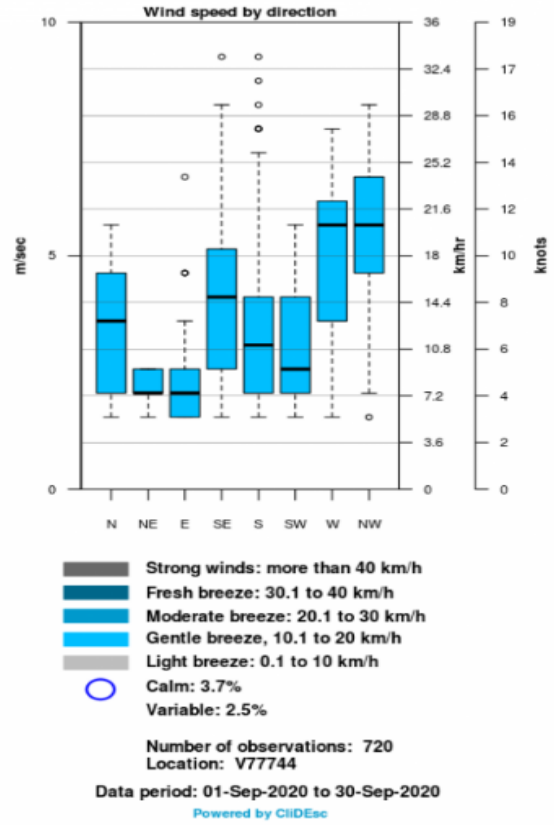
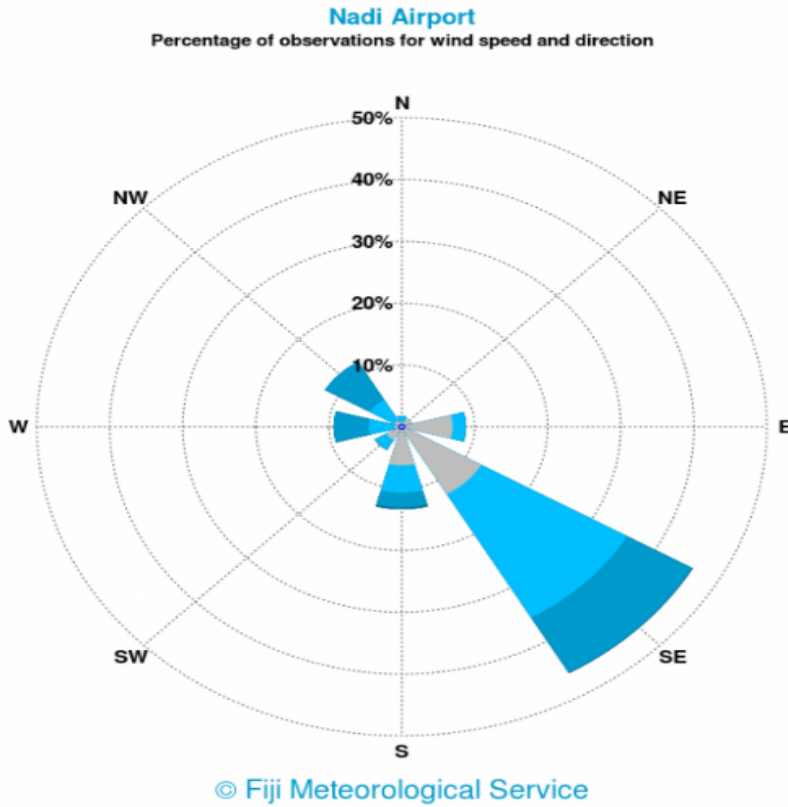


Figure 8a: The hourly winds at Nadi Airport during the month was dominated by winds from southeast, followed by south and then northwest. The wind strengths were generally light to moderate, but occasionally fresh breeze were also experienced.

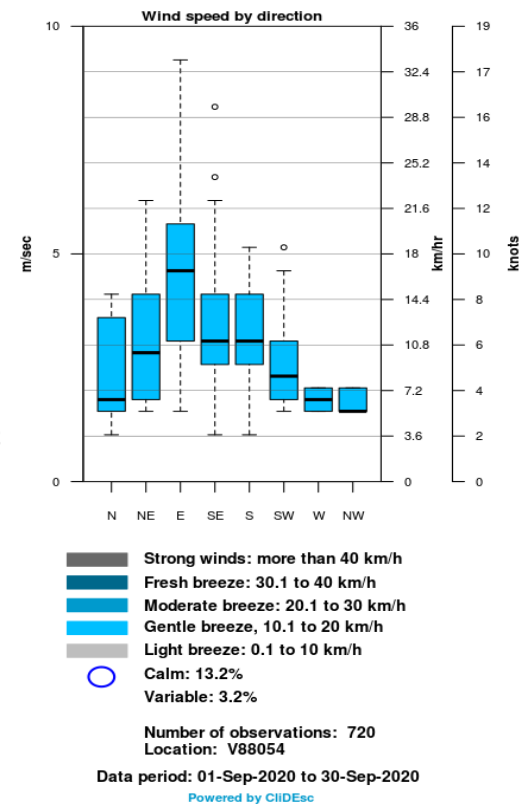
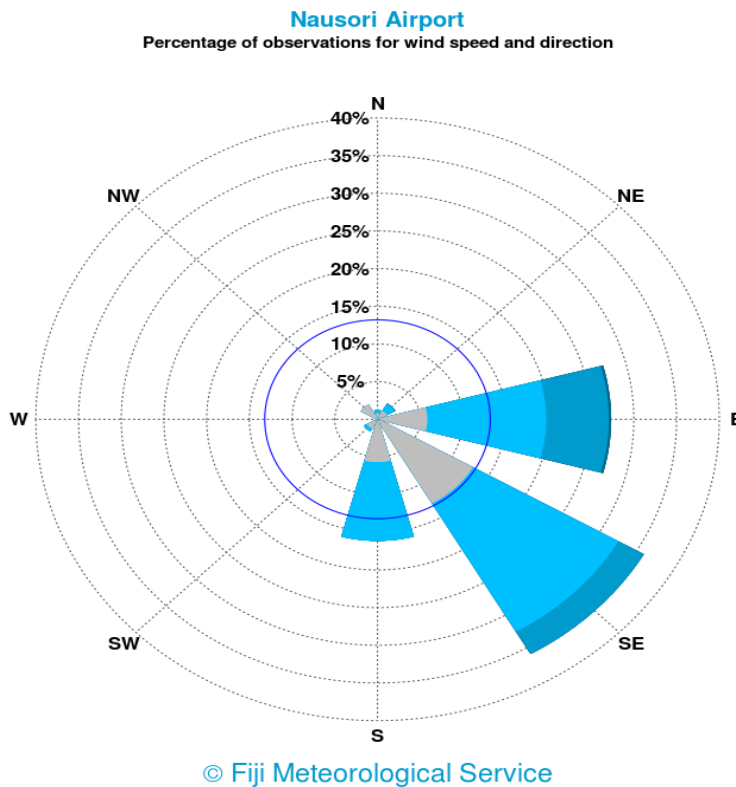


Figure 8b: The hourly winds at Nausori Airport during the month was dominated by winds from the southeast, followed by east and then south. The wind strengths were generally light to moderate, but occasionally fresh breeze were also experienced.

8. SEA SURFACE TEMPERATURE (SST)

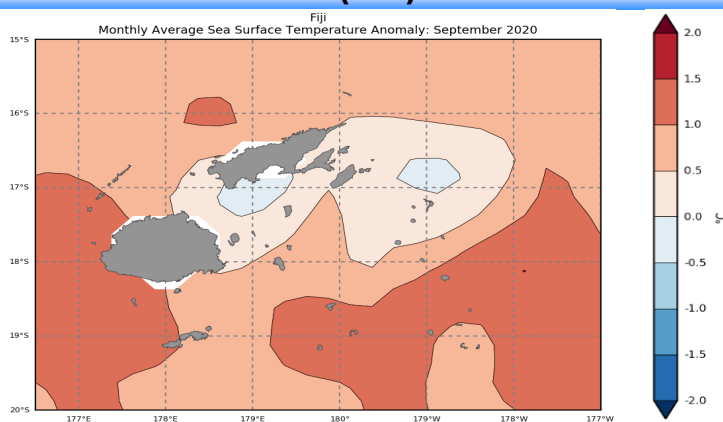


Figure 9:
SSTs were *above normal* in most of the Fiji Waters during the month, with anomalies of more than 1.0°C in waters to west of Viti Levu and southern Lau Group.

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

9. CLOUD COVER

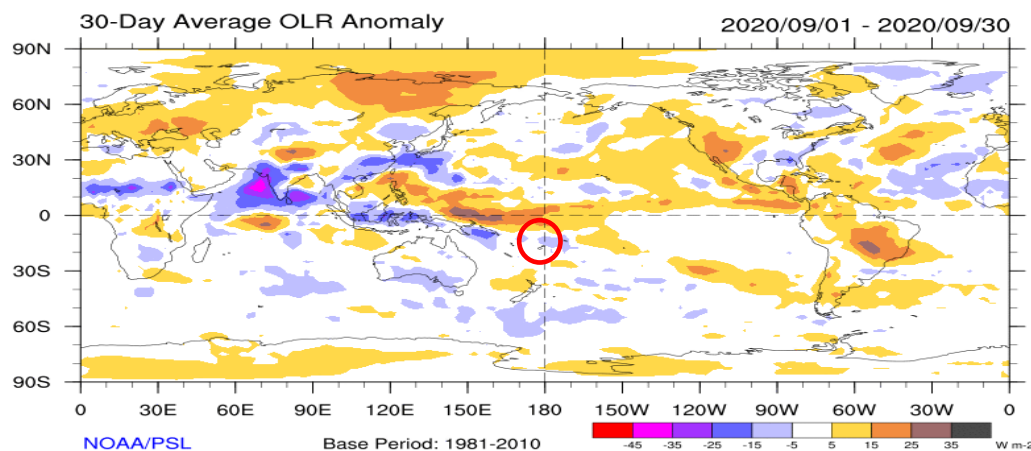


Figure 10:
Near normal to slightly above normal cloud cover was present over the Fiji region during the month (Fiji in red circle).

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

10. SEA LEVEL

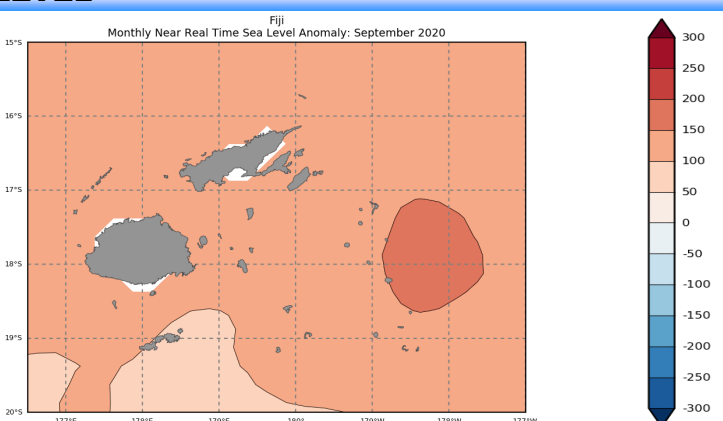


Figure 11:
Positive sea level anomalies were present in most of the Fiji Waters, with anomalies of +10-15cm.

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

11. WIND ANOMALIES

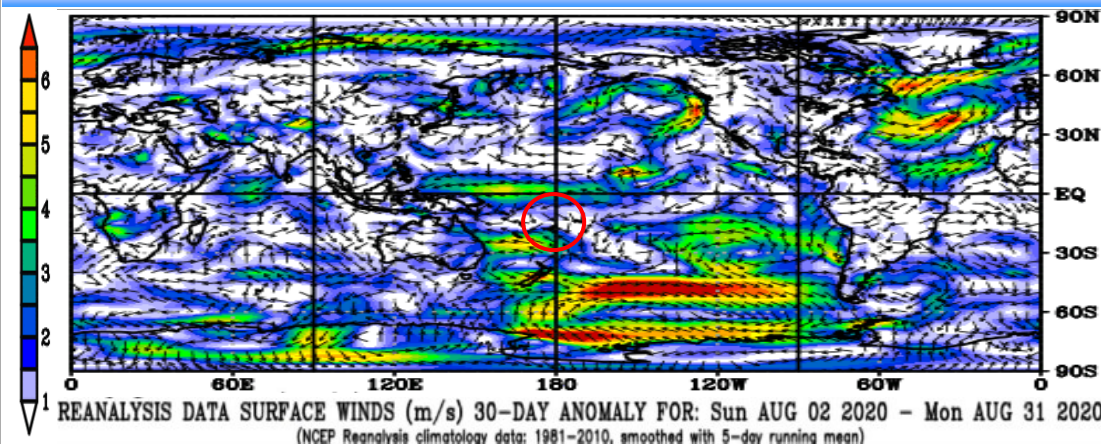


Figure 12:
Variable wind anomalies of up to 2.0m/s were recorded in the Fiji region during the month (base period: 1981-2010) (Fiji in red circle).

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