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Fiji Climate Summary

October 2018



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1. IN BRIEF

Wetter than normal conditions were experienced at majority of the sites after being considerably dry, from the 2nd half of June 2018. Rainfall activity substantially picked up during the month of October with 10 recorded more than twice the *normal* rainfall and another 6 received more than thrice the *normal* rainfall this month.

New high total monthly rainfall record for October was established at Nabouwalu, Udu Point, Matei Airfield and Monasavu this month with observations at these stations beginning in 1918, 1946, 1956 and 1980, respectively. Furthermore, a new daily high rainfall record for October was recorded at Matei Airfield.

An extended period of widespread and significant rainfall was experienced from the 13th to the 20th. During this period, Monasavu received more than 100mm of rainfall on a daily basis from the 15th to the 19th, with the highest daily rainfall of 167mm recorded on the 16th. The received 689mm of rainfall in 5 days, which was more than twice the amount it usually gets in 2 months.

Some other stations also recorded notable 24-hour rainfall during the above rainfall event with Matei Airfield register-

ing 160mm on the 19th, Lomaivuna with 121mm on the 17th, Nabouwalu with 111mm on the 17th and RKS with 100mm on the 17th. Consequently, this led to flooding in parts of Northern Division and eastern half of Viti Levu. Later during the month, heavy and widespread rainfall was again experienced in the Central Division on the 25th with Nausori Airport, Laucala Bay, Koronivia, and Nasinu registering rainfall of 159mm, 143mm, 135mm and 116mm, respectively in 24 hours.

While a number of sites were in a meteorological drought at a 3-month timescale at the end of September, the rainfall received during October has broken the meteorological drought conditions in many places. However, some of the areas in the Western Division continues to be in a meteorological drought on a 3-month timescale.

Record high mean monthly maximum air temperature for October was recorded at Tokotoko and Ono-i-Lau during the month. Furthermore, a new daily high maximum air temperature for October was set at Ono-i-Lau. New high mean monthly minimum air temperature record for October were established at Nadi Airport, Nausori Airport, Tokotoko and Savusavu Airfield during the month.

2. WEATHER PATTERNS

The month began with a south-easterly wind flow over the group with a trough of low pressure over Rotuma.

A weak trough with cloud and showers developed just to the south-west of Fiji on the 2nd which was enhanced by the south-easterlies Trade Winds. The trough moved over the country on the 3rd whilst another weak trough developed to the west of Fiji. These series of troughs affected the Fiji region till 9th bringing much needed rain.

Trade showers due to the south-easterly wind flow than prevailed over the group from the 10th. Another trough of low pressure with cloud and rain drifted onto the group from the north which produced heavy rain over parts of Fiji from the 12th till the 16th. Monasavu Dam recorded the highest rainfall of 167mm on the 16th. This trough remained weak over Fiji till the 20th and continued to bring rain.

A high pressure to the far south of Fiji extended a ridge over southern parts of the group on the 21st which caused the trough to drift to the north of Fiji, resulting in an easterly wind flow over the group with a temporary break from rain and generally fine conditions.

The ridge weakened on the 25th and the trough of low pressure drifted back south over Fiji which affected parts of Fiji till the 28th. Matei Airfield recorded 121mm of rainfall on the 28th out of this trough. A cool south to south-easterly wind flow prevailed till end of the month and night-time temperature at Monasavu Dam dropped to 14.0°C on the 29th.

Rotuma was mainly affected by series of troughs moving over the island, which brought about showers for most parts of October.

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

3. RAINFALL

The rainfall during the month was *above average* to *well above average* across the country except at Rotuma. Out of the 25 rainfall monitoring stations, 16 recorded *above average* rainfall, 6 *above average*, 2 *average*, while Rotuma was the only station to record *below average* rainfall.

While it was substantially wet over most parts of the country during the month, notably Monasavu, Yaqara, Udu Point, Nabouwalu, Matei Airfield and Vanuabalavu recorded more than thrice the *normal* rainfall. Consequently, new high total monthly rainfall record for October was established at Nabouwalu, Udu Point, Matei Airfield and Monasavu since observations began at these stations in 1918, 1946, 1956 and 1980, respectively. Furthermore, a new daily high rainfall record for October was set at Matei Airfield during the month (Table 1).

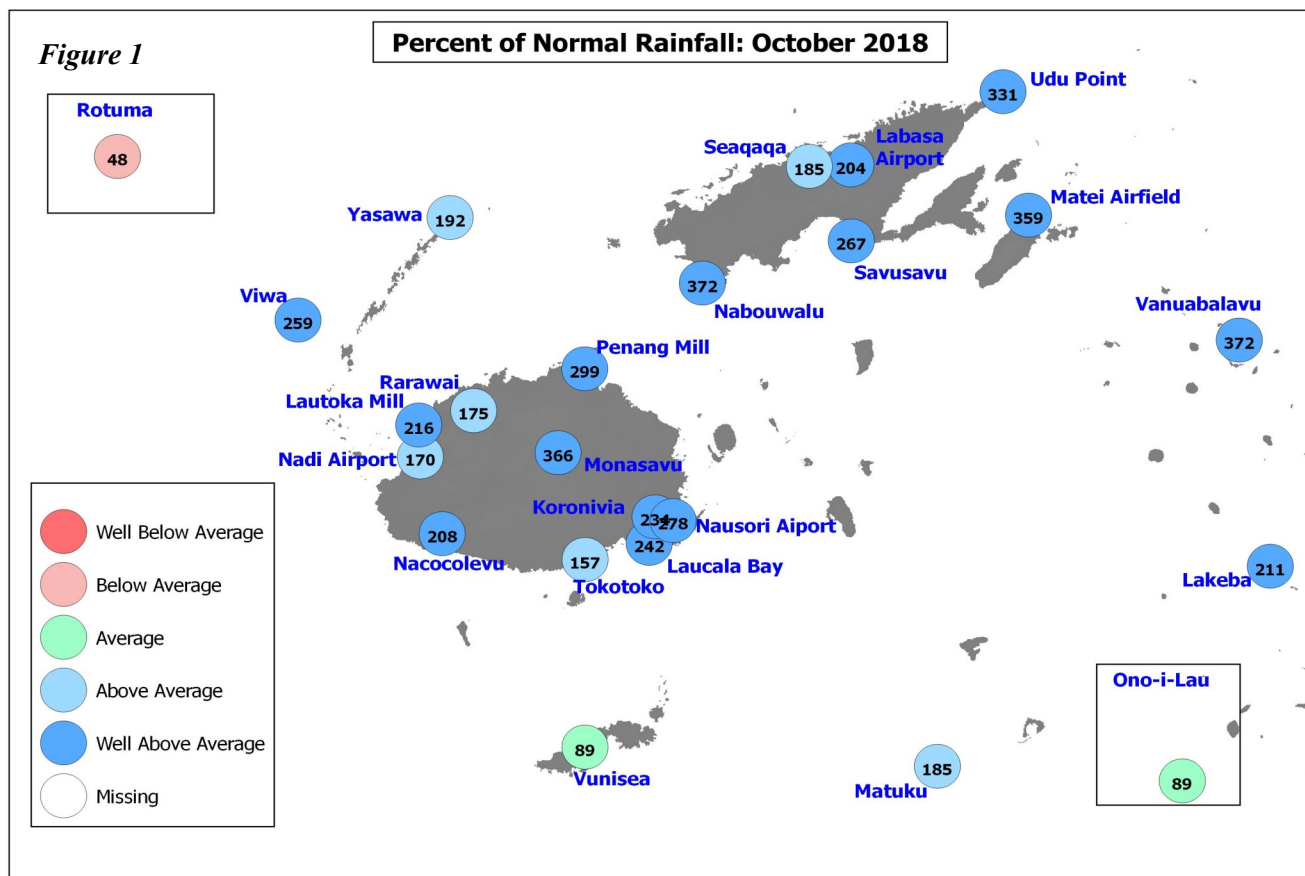
An extended period of widespread and significant rainfall was experienced from the 13th to the 20th. During this period, Monasavu received more than 100mm of rainfall on a daily basis from the 15th to the 19th, with the highest daily rainfall of 167mm recorded on the 16th. Monasavu received a total of 689mm in 5 days, which was more than twice the amount it usually gets in 2 months.

Some other stations also recorded notable 24-hour rainfall during this rainfall event with Matei Airfield registering 160mm on the 19th, Lomaivuna with 121mm on the 17th, Nabouwalu with 111mm on the 17th and RKS with 100mm on the 17th.

Heavy and widespread rainfall was again experienced in the Central Division on the 25th when Nausori Airport, Laucala Bay, Koronivia, and Nasinu received 159mm, 143mm, 135mm and 116mm of rainfall respectively.

The highest total monthly rainfall during the month was recorded at Monasavu with 1201mm, followed by Lomaivuna with 730mm and Matei Airfield with 717mm. On the other hand, Ono-i-Lau recorded the lowest total monthly rainfall with 76mm, followed by Vunisea with 126mm and Momi with 132mm.

Monasavu recorded 28 rain days during the month, followed by Koronivia and Lomaivuna with both 27 and Nasinu with 26. On the hand, Ono-i-Lau registered least number of rain days with 8, followed by Lautoka with 10 and Sigatoka with 12.



Normal: Long term average from 1971 to 2000
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 Daytime Air Temperatures

The mean monthly maximum air temperatures were *normal to above normal* during the month with 15 out of the 24 stations registering anomalies $\geq +0.5^{\circ}\text{C}$ and 9 stations within $\pm 0.5^{\circ}\text{C}$ (Table 2 & Figures 2-5).

Keiyasi, Rarawai Mill and Labasa Airport were warmest on average with 31.0°C , followed by Lautoka Mill with 30.8°C and Rotuma with 30.6°C . On the other hand, the coolest day-time temperatures on average was at Monasavu with 23.3°C , followed by Nadarivatu with 24.1°C and Laucala Bay & Koro Island with both 27.9°C .

It was significantly warm period between 4th to 7th when most of the stations recorded their highest daily maximum air temperature for the month. The highest daily maximum temperature was recorded at Levuka with 35.8°C on the 7th, followed by Keiyasi with 35.4°C on the 6th and Nacocolevu with 34.0°C on the 4th. On the other hand, the lowest daily maximum air temperature was recorded at Monasavu with 19.9°C on the 21st, followed by Nadarivatu with 20.0°C on the 27th and Levuka with 24.5°C on the 17th.

B. Minimum Night-time Air Temperatures

The mean minimum air temperatures were *above normal* over most parts of the country, with 18 out of the 23 stations recording anomalies $\geq +0.5^{\circ}\text{C}$, 3 stations within $\pm 0.5^{\circ}\text{C}$, and 2 $\leq 0.5^{\circ}\text{C}$ (Table 2 & Figures 2-5).

The coolest nights on average during the month was experienced at Nadarivatu with 17.6°C , followed by Monasavu with 18.2°C and Keiyasi with 17.3°C . On the other hand, Yaqara was warmest with 25.9°C , followed by Rotuma with 24.1°C and Udu Point with 23.7°C .

The period from 28th to 31st was particularly cool with majority of the stations recording their lowest minimum air temperature for the month during this period. The lowest daily minimum air temperature was recorded at Nadarivatu with 12.1°C on the 31st, followed by Monasavu with 14.0°C on the 29th and Rarawai Mill with 16.4°C on the 30th. On the other hand, the warmest daily minimum air temperature was registered at Tokotoko with 26.4°C on the 20th, followed by Rotuma with 26.0°C on the 30th, and Udu Point with 25.9°C on the 30th.

A record new high mean monthly minimum air temperature record for October was established at Nadi Airport, Nausori Airport, Tokotoko and Savusavu Airfield during the month (Table 1).

TABLE 1. CLIMATE RECORDS ESTABLISHED IN OCTOBER 2018

<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 Maximum Rainfall	Matei Airport	160.4mm	19 th	New High	142.8mm	1996	1956
Total Monthly Rainfall	Udu Point	546.1mm	-	New High	376.9mm	2013	1946
Total Monthly Rainfall	Nabouwalu	632.4mm	-	New High	539.7mm	1945	1918
Total Monthly Rainfall	Monasavu	1200.5mm	-	New High	794.2mm	2006	1980
Total Monthly Rainfall	Matei Airfield	717.2mm	-	New High	444.9mm	1971	1956
Daily Max. Temp.	Ono-i-Lau	32.7°C	6 th	New High	31.6°C	2008	1943
Mean Monthly Max. Temp.	Ono-i-Lau	28.9°C	-	New High	28.3°C	2008	1943
Mean Monthly Max. Temp.	Tokotoko	28.5°C	-	New High	28.4°C	2007	1992
Mean Monthly Min. Temp.	Nadi Airport	22.5°C	-	New High	22.2°C	1998	1942
Mean Monthly Min. Temp.	Nausori Airport	22.4°C	-	New High	22.2°C	2007	1956
Mean Monthly Min. Temp.	Tokotoko	23.2°C	-	New High	21.6°C	2007	1992
Mean Monthly Min. Temp.	Savusavu Airfield	23.4°C	-	New High	23.3°C	2002	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 1971-2000 period as its "climatic normal" period, unless otherwise stated.

TABLE 2. DAILY CLIMATE REPORTING SITES: SUMMARY FOR OCTOBER 2018

	RAINFALL				AIR TEMPERATURES						SUNSHINE				
	TOTAL	RAIN	MAX.	FALL	AVERAGE DAILY			EXTREME		TOTAL	*				
	MM	%	MM		MAX.	#	MIN.	#	MAX.	MIN.		HRS			
NADI AIRPORT	173	170	16	35	7	30.4	0.1	22.5	2.0	33.5	4	17.9	30	148	63
SUVA/LAUCALA BAY	534	242	24	143	25	27.9	-0.3	23.0	1.1	31.6	4	20.4	31	79	48
NACOCOLEVU	196	208	15	44	4	30.2	1.1			34.0	4			120	63
ROTUMA	165	48	24	30	3	30.6	0.9	24.1	-0.1	31.5	12	20.5	21	154	79
VIWA	171	259	13	80	14	30.5	1.2	23.1	-0.5	33.5	14	20.6	28		
UDU POINT	546	331	24	149	9	29.0	-0.3	23.7	0.8	31.9	5	21.2	10		
SAVUSAVU AIRFIELD	456	267	19	87	18	28.5	0.3	23.4	1.5	31.0	29	21.0	30		
LABASA AIRFIELD	253	204	16	60	11	31.0	0.2	21.8	2.0	33.5	13	19.0	2		
NABOUWALU	632	372	24	111	17	29.0	1.3	23.5	0.9	31.9	4	20.4	1		
KORONIVIA	524	234	28	135	25	28.5	0.7	22.2	1.7	31.0	6	18.5	31		
NAUSORI AIRPORT	542	278	25	159	25	28.2	0.6	22.4	1.5	31.5	4	19.3	30		
NAVUA/TOKOTOKO	439	157	24	89	12	28.5	0.2	23.2	3.9	32.3	25	20.5	2		
MONASAVU	1201	366	27	167	16	23.3	0.2	18.2	1.6	27.6	6	14.0	29		
LAUTOKA AES	221	216	10	57	20	30.8	1.3	21.5	-0.1	33.5	4	18.5	30		
BA/RARAWAI MILL	187	175	18	38	4	31.0	-0.2	21.3	1.7	33.3	6	16.4	30		
PENANG MILL	341	299	23	56	19	29.3	0.4	23.1	0.9	32.7	6	19.6	30		
MATEI AIRFIELD	717	359	24	160	19	28.9	0.7	23.5	1.1	30.4	6	21.5	28		
VANUABALAVU	443	372	19	79	15	28.8	0.8	21.5	-1.3	31.3	5	18.5	28		
LAKEBA	259	211	19	83	13	28.5	0.8	22.9	0.8	31.7	6	20.1	2		
YASAWA	265	192	14	77	27	30.2	2.4	23.6	1.3	33.0	7	21.0	28		
VUNISEA	126	89	20	29	10	28.3	1.1	22.7	1.9	30.9	4	19.1	30		
MATUKU	213	185	17	91	27	28.2	0.8	22.6	0.8	31.0	6	18.5	30		
ONO-I-LAU	76	89	8	60	28	28.9	2.5	22.5	1.1	32.7	6	20.5	17		
LEVUKA AWS	U/S					29.4	1.6	22.2	-0.1	35.8	7	19.4	9		
YAQARA AWS	223	314	14	56	4	30.2		25.9		33.3	6	19.8	31		
KEIYASI AWS	335		16	71	7	31.0		21.1		35.4	6	16.5	31		
LOMAIVUNA AWS	730		27	121	17	U/S									
NADARIVATU AWS	470		21	105	4	24.1		17.6		27.8	6	12.1	31		
RKS LODONI AWS	661		25	100	17	28.0		21.9		31.6	4	17.5	31		
MOMI AWS	132		16	44	4	30.0		22.8		32.5	13	19.5	30		
KOROLEVU AWS	170		18	36	17	28.8		21.8		31.8	5	17.3	31		
KORO ISLAND AWS	U/S					27.9		22.4		31.3	4	19.9	30		
SIGATOKA AWS	223		12	59	17	28.5		21.6		31.0	5	16.5	30		
RAKIRAKI AWS	452		19	81	19	28.6		23.2		30.8	13	20.2	31		
WAINIKORO AWS	U/S														
SAQANI AWS	U/S														
VATUREKUKA AWS	U/S					30.2		22.6		33.6	6	19.9	31		
KUBULAU AWS	U/S														
SEAQAQA TB3	267	185	20	49	7										
NASINU TB3	471		26	116	25										
TAVUA TB3	222		13	52	27										

	TEMPERATURE (C)		HUMIDITY		WIND	SUN RAD	
	MEAN	DRY WET	RH%	VP		POS	%OF MJ/SQ.M
NADI AIRPORT	26.4	27.3 23.3	71	25.5	5.7	43	15.5
SUVA/LAUCALA BAY	25.5	25.9 23.7	83	27.7		23	15.4
NACOCOLEVU	25.3	27.0 24.1	79	27.8		35	17.0\$
ROTUMA	27.4	28.4 25.2	76	29.5		44	18.8\$
VIWA	26.9	28.3 25.1	76	29.4			
UDU POINT	26.3	26.7 24.6	84	29.3			
SAVUSAVU AIRFIELD	25.9	26.6 24.5	84	29.1			
LABASA AIRFIELD	26.4	27.8 24.4	75	27.9			
NABOUWALU	26.3	26.6 24.4	83	28.9			
KORONIVIA	25.4	25.8 23.9	85	28.1			
NAUSORI AIRPORT	25.3	25.8 23.6	83	27.5	5.8		
NAVUA/TOKOTOKO	25.9	26.4 24.3	85	28.9			
MONASAVU	20.8	20.8 19.6	89	21.9			
LAUTOKA AES	26.1	28.6 24.3	69	27.1			
BA/RARAWAI MILL	26.1	27.5 24.8	79	29.2			
PENANG MILL	26.1	26.3 23.8	81	27.6			
MATEI AIRFIELD	26.2	27.2 25.1	84	30.2			
VANUABALAVU	25.1	26.7 23.9	79	27.6			
LAKEBA	25.7	27.0 24.2	79	28.0			
YASAWA	26.9	27.1 24.8	82	29.5			
VUNISEA	25.5	25.9 23.6	82	27.3			
MATUKU	25.4	25.9 23.3	80	26.6			
ONO-I-LAU	25.7	25.5					

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 (1971-2000). + :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 (October, 2017 - October, 2018)

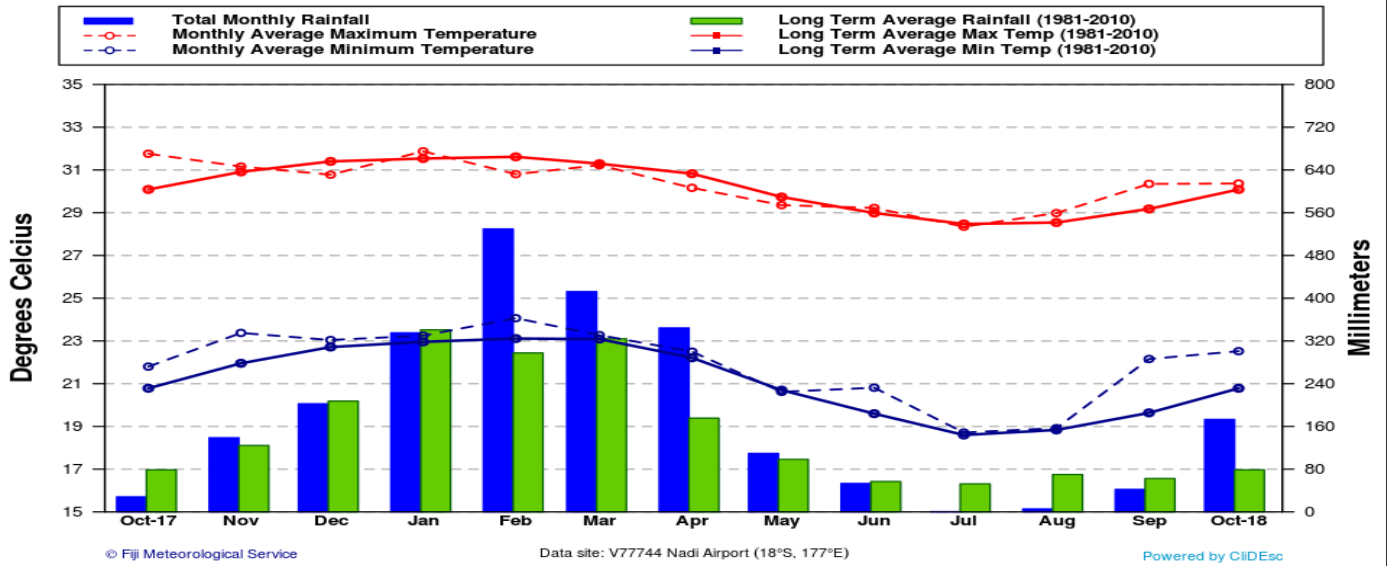


Figure 3 Labasa Airfield - Temperature & Rainfall for the last 13 Months (October, 2017 - October, 2018)

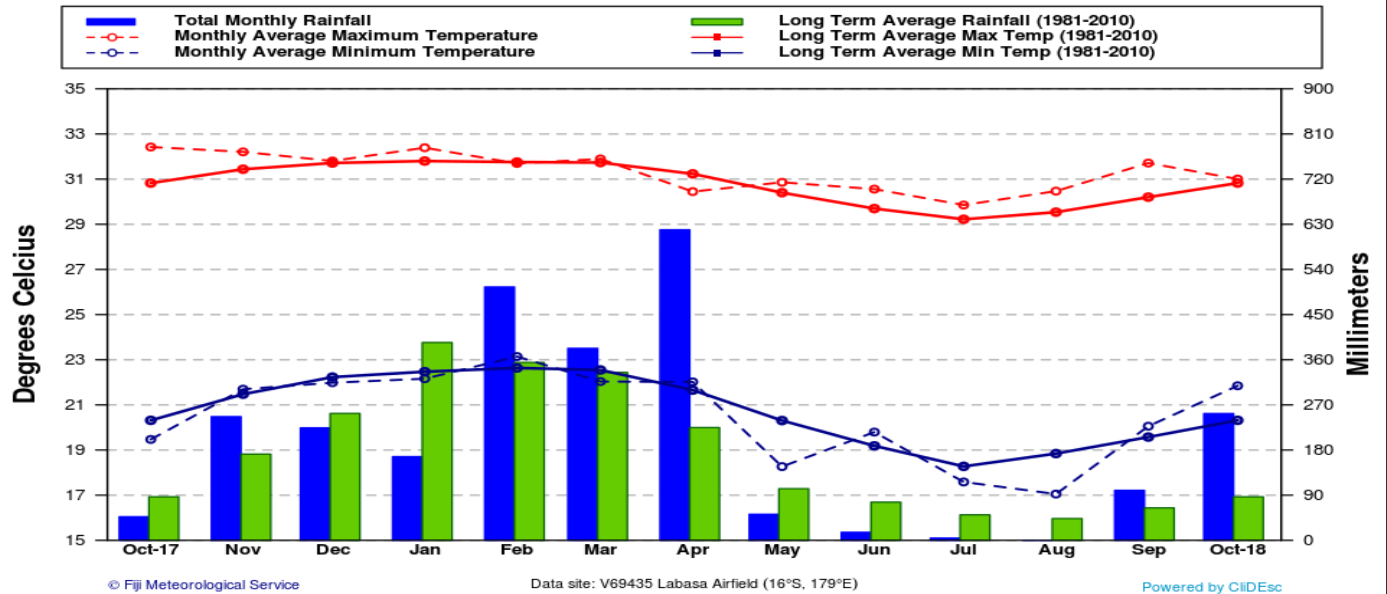


Figure 4 Laucala Bay - Temperature & Rainfall for the last 13 Months (October, 2017 - October, 2018)

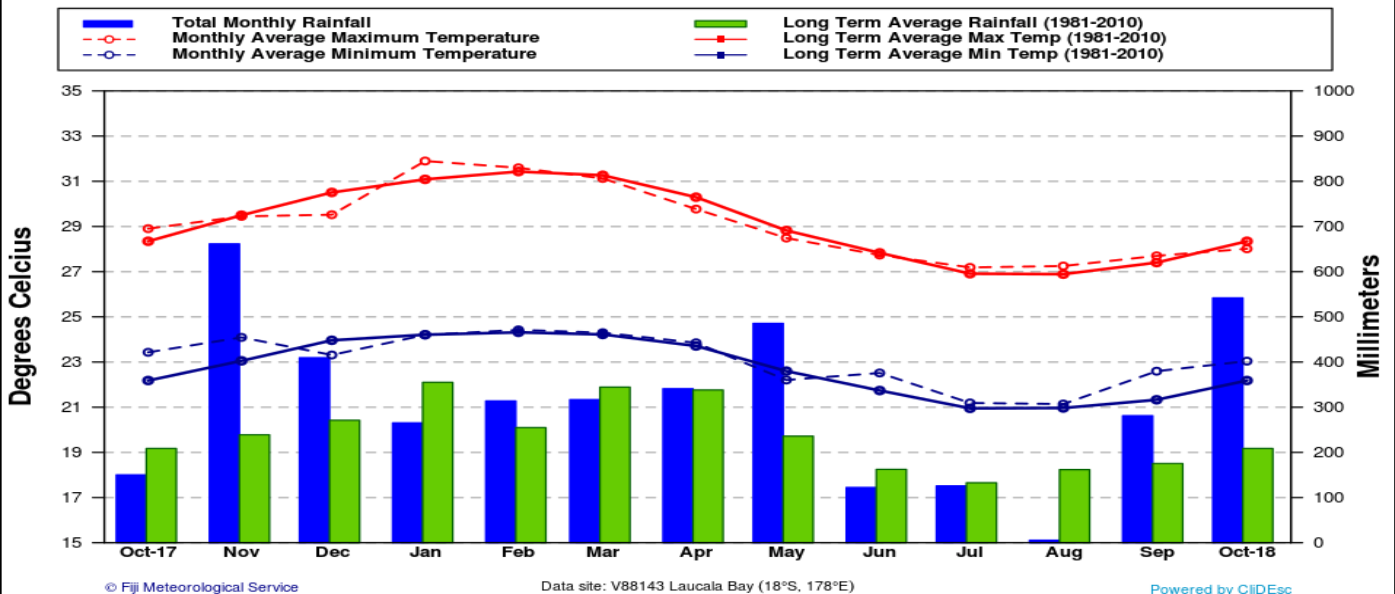
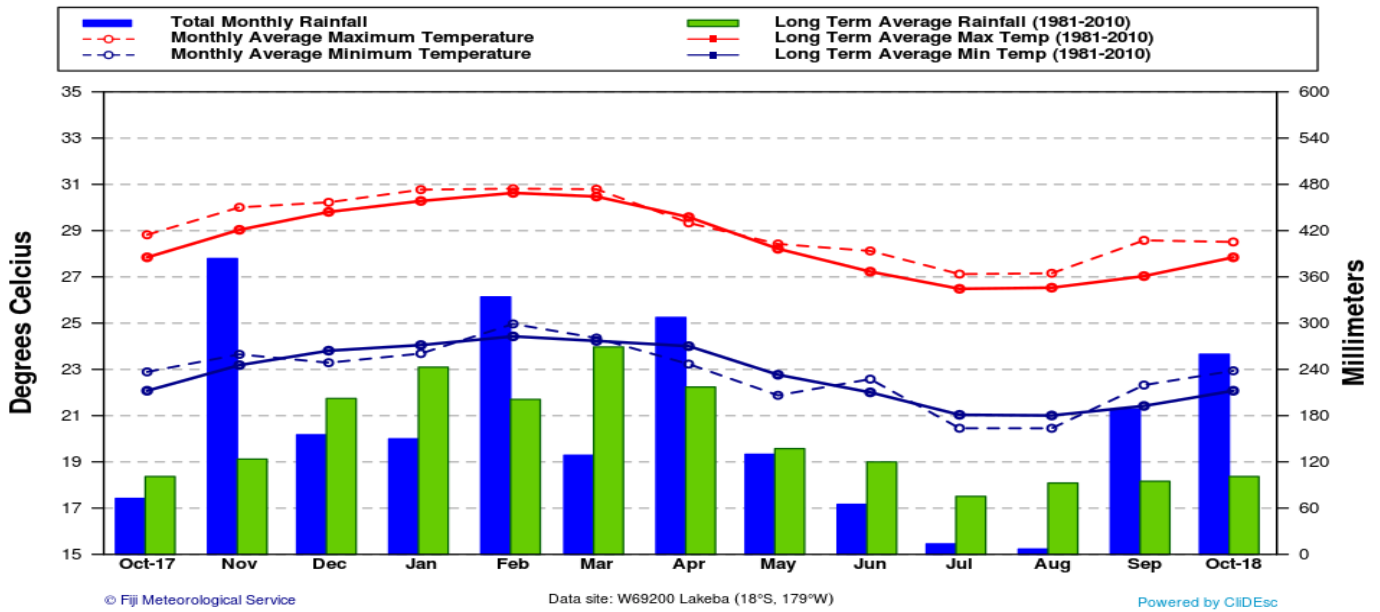


Figure 5

Lakeba - Temperature & Rainfall for the last 13 Months
(October, 2017 - October, 2018)



5. DAILY RAISED PAN EVAPORATION

Figure 6

Daily Evaporation for October 2018

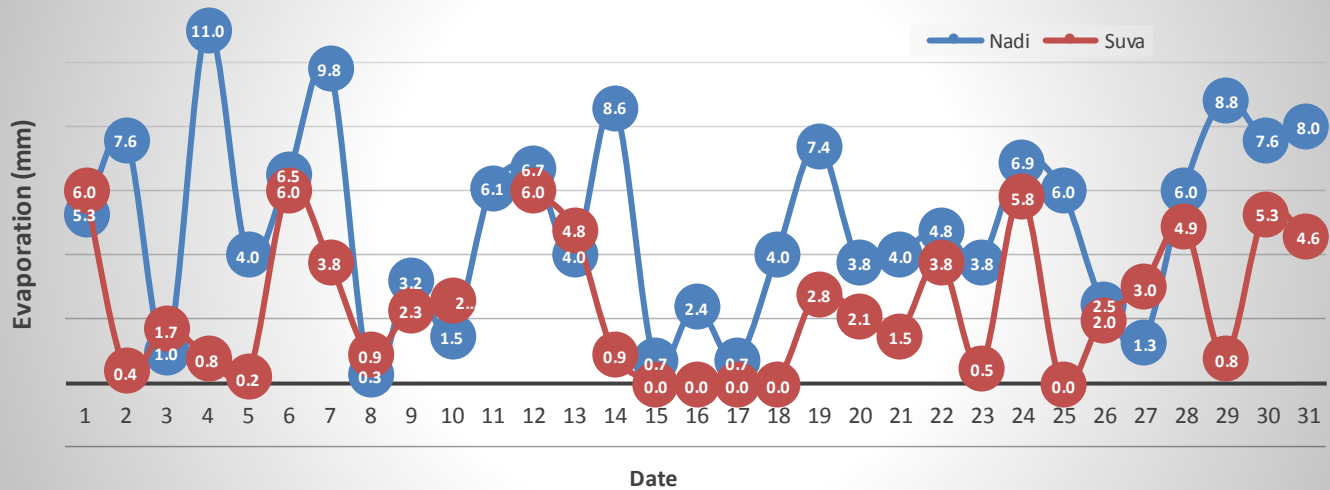


Figure 6: The total monthly raised pan evaporation at Nadi Airport was 154.3mm, with the highest of 11.0mm recorded on the 4th. Laucala Bay recorded total monthly evaporation of 73.5mm, with the highest daily evaporation of 6.0mm on the 1st, 6th and 12th.

6. SOLAR RADIATION

Daily Solar Radiation (MJ/m²) - October 2018

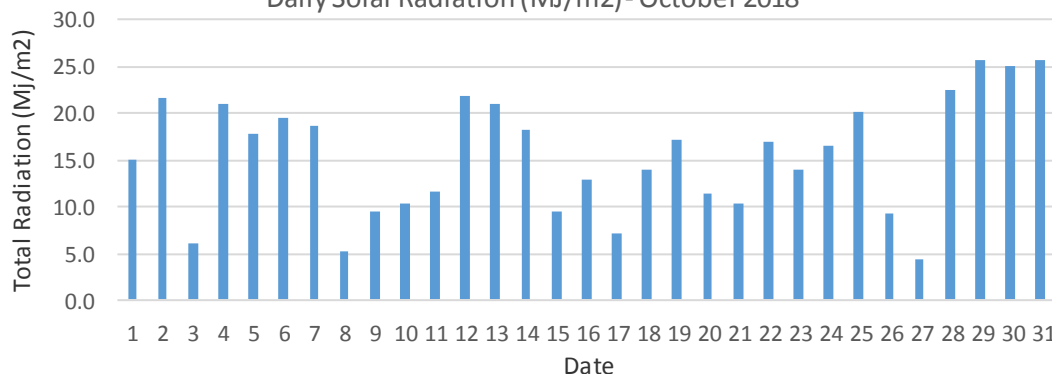
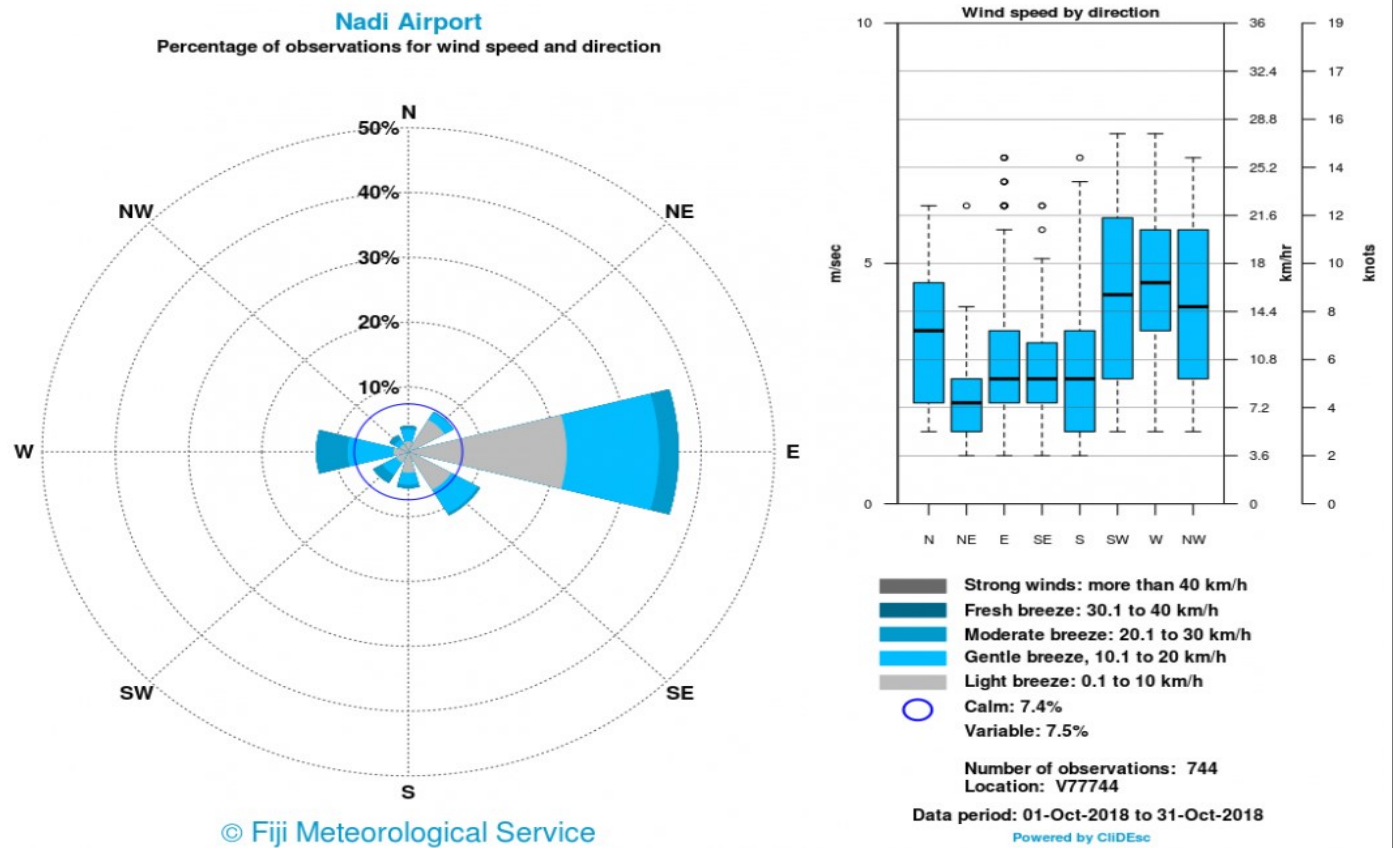


Figure 7:

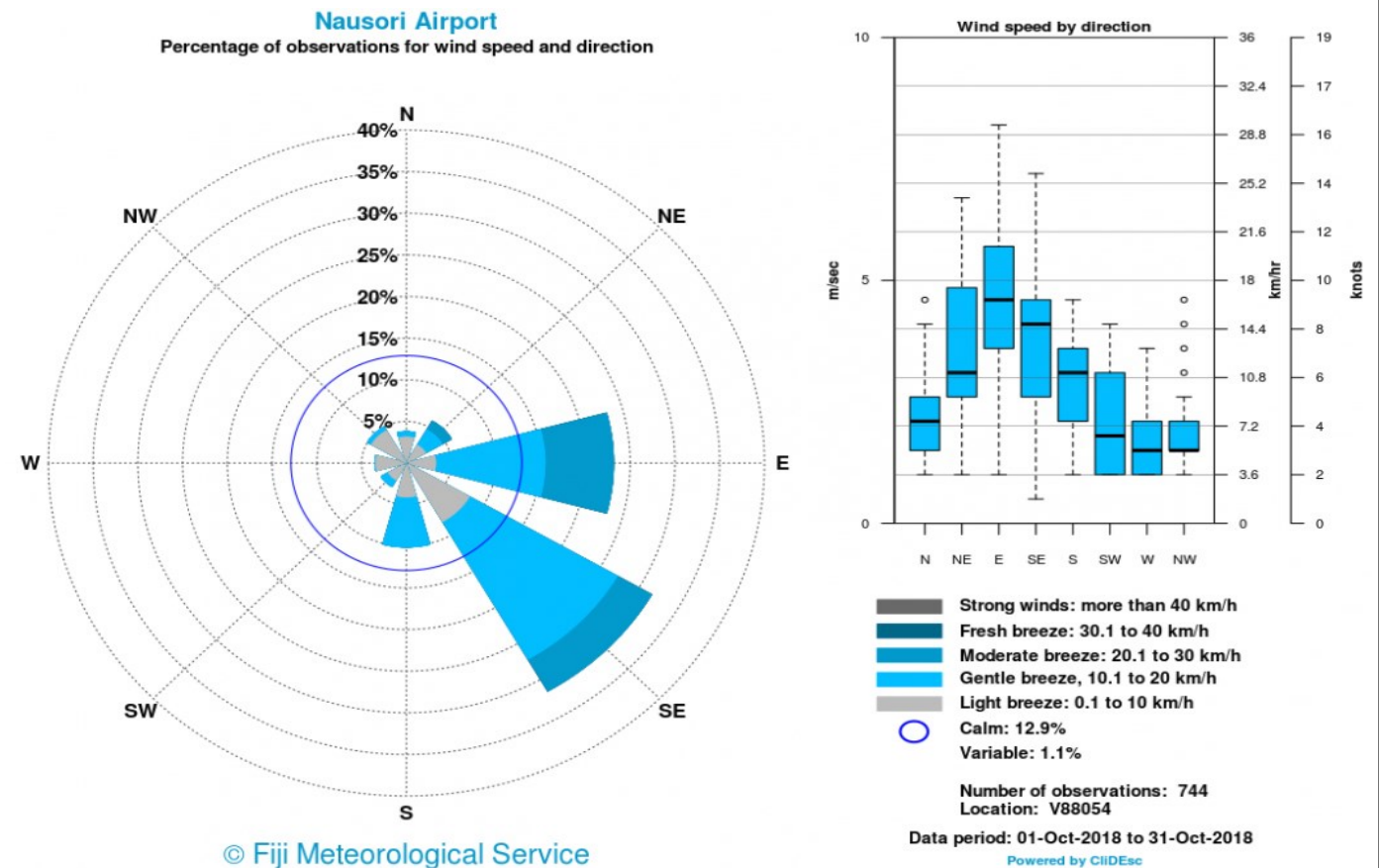
The mean daily solar radiation at Nadi Airport during October 2018 was 15.5MJ/m² compared to 20.5MJ/m² over 30 year average (1971-2000).

7. WIND SUMMARY



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Figure 8a: The hourly wind observations at Nadi Airport during the month shows easterly winds were most dominant, followed by westerly and south-easterly winds. Wind strengths varied from light to moderate.



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Figure 8b: The hourly wind observations at Nausori Airport during the month shows that south-easterly winds were dominant, followed by easterly and southerly winds. Wind speeds ranged from light to moderate in strength.

8. SEA SURFACE TEMPERATURE (SST)

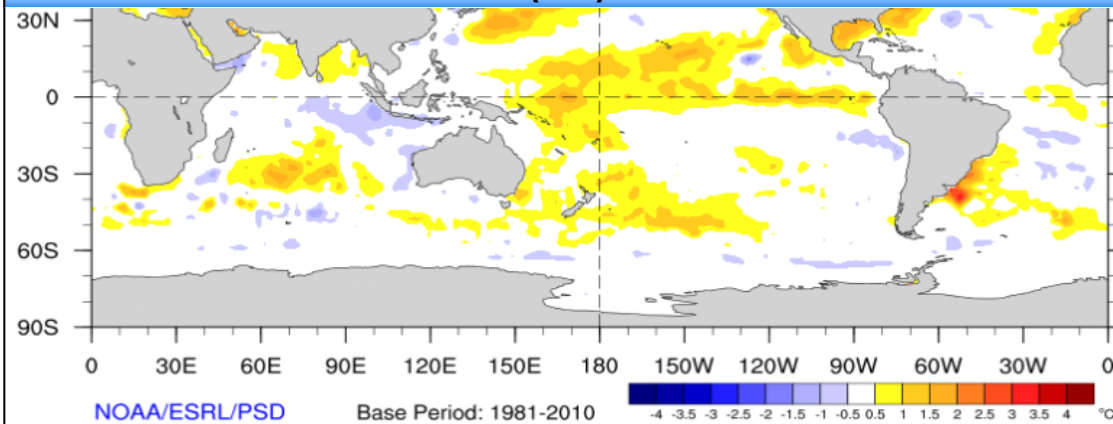


Figure 9: Above normal SSTs were present in the Fiji region during the month (base period: 1981-2010).

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

9. CLOUD COVER

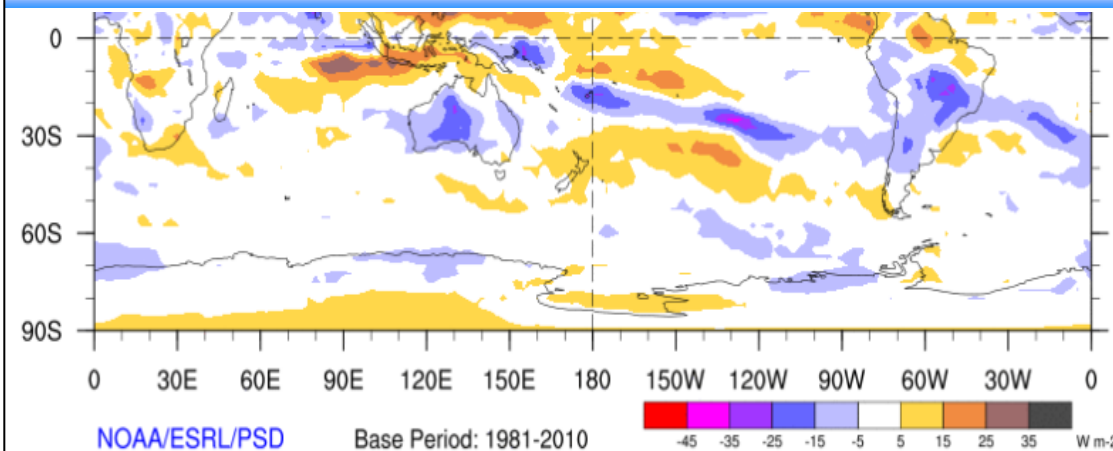


Figure 10: Above normal cloud cover was present in the Fiji region during the month (Fiji: ~17°S, 180°) (base period: 1981-2010).

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

10. SEA LEVEL

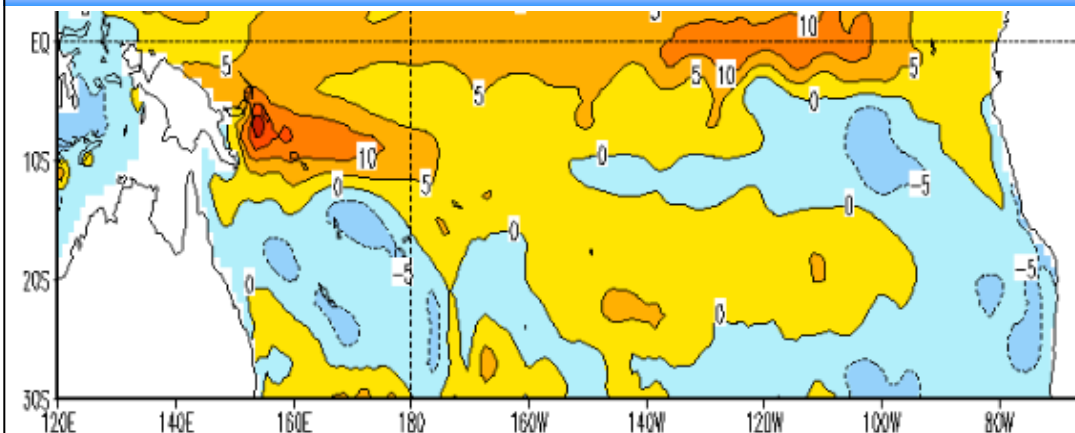


Figure 11: Near normal sea level anomalies were present in most of the Fiji Waters (base period: 1981-2010).

Source: http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ocean/weeklyenso_clim_81-10/wksl_anm.gif

11. WIND ANOMALIES

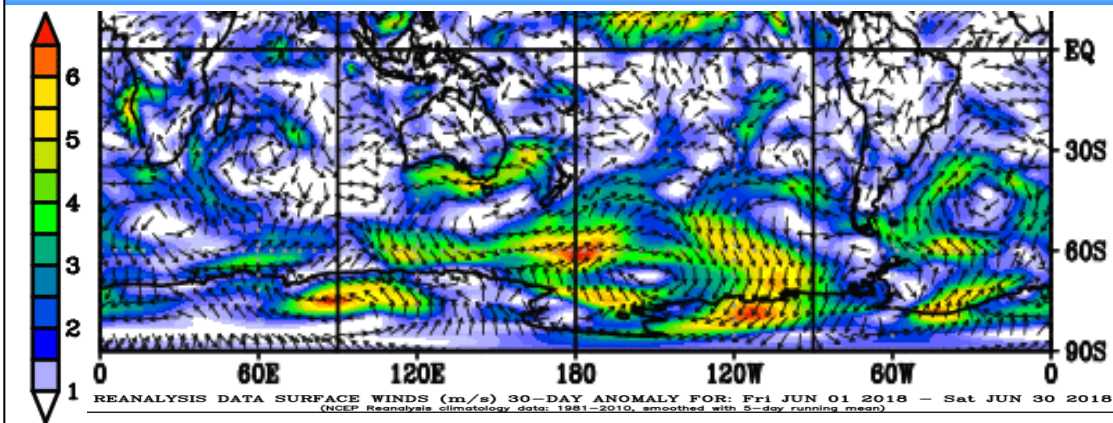


Figure 12: Variable winds anomalies of 1-1.5m/s were present in the Fiji region (Fiji: ~17°S, 180°) (base period: 1981-2010).

Source: https://www.esrl.noaa.gov/psd/map/images/rnl/sfwnd_30b.rnl.html