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# Fiji Climate Summary September 2018



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## 1. IN BRIEF

The climate during September 2018 varied across the country, with 6 out of the 24 rainfall monitoring stations registering *well below average* rainfall, 6 *below average*, 5 *average* and 7 *above average*.

In general, rainfall activity picked up during the month after significantly dry July and August. The most significant rainfall of the month was registered at Laucala Bay on the 25<sup>th</sup> with 156mm of rainfall, which resulted in flash flooding in parts of Suva.

While some much needed rainfall was also registered in the Western Division, it was still significantly dry with less than half the *normal* total monthly rainfall recorded at majority of the stations. Rainfall in the Western Division ranged from 8mm to 63mm during September, while it normally gets 65mm to 115mm.

Extended period of dry days continued, with only 1 rainy day registered at Lautoka Mill, with Ba to Yaqara corridor

and as well as Momi and Yasawa-i-Rara registering less than 5 rain days.

Consequently, a number of places around the country continue to be in meteorological drought affecting grasslands, shallow rooted plants and small water bodies (e.g. small water tanks, creeks and streams) at the end of September 2018.

The air temperatures, that is, both daytime and night-time, were *above normal* over most parts of the country. In fact, record high mean monthly maximum air temperature for September was registered at Nacocolevu, Tokotoko and Ono-i-Lau. Furthermore, new daily high maximum air temperature for September was set at Laucala Bay, Lautoka Mill, Viwa and Ono-i-Lau. A new high mean monthly minimum air temperature record for September was established at Savusavu Airfield and Penang Mill, while a new daily high minimum air temperature record was set at Tokotoko.

## 2. WEATHER PATTERNS

The month began with a south easterly wind flow over the group. A weak trough on the 3<sup>rd</sup> established itself just to the southwest of Fiji which generally enhanced the dominant south easterlies. Further, a weak trough of low pressure on the 5<sup>th</sup> developed over the eastern parts of Fiji which brought showers over the Eastern Division.

The trough to the southwest than drifted over Fiji later on the 7<sup>th</sup> which brought some relieving showers from prolonged dry spell over the Western Division. The trough drifted to the north on the 8<sup>th</sup> resulting in cool dry south to south easterly wind flow till the 10<sup>th</sup>.

The trough drifted back south onto the group on the 11<sup>th</sup> and again trade showers were perceptible. Moderate to fresh easterly wind flow later prevailed over the group on the 12<sup>th</sup> as the weak trough slipped south-eastwards away from Fiji.

Trade showers on the 13<sup>th</sup> was again enhanced as a trough of low pressure developed just to the southwest, while an-

other closed in from the northeast. While this prevailed till the 17<sup>th</sup>, the high pressure to the far south continued to direct moderate to fresh and gusty easterlies over the group.

The trough again drifted onto the group on the 18<sup>th</sup>, resulting in isolated showers. A dominant dry southerly wind flow followed which prevailed till the 22<sup>nd</sup>.

Trade showers again perceptible on the 23<sup>rd</sup> as the trough drifted back onto the group. The trough drifted further over the southern parts of the group on the 25<sup>th</sup>, while another trough approached the group from the northeast. Rain were experienced over most parts of Fiji till the 29<sup>th</sup>.

The month ended with a high pressure system dominant over the group which brought fresh, strong and gusty south-easterlies consequently clearing the rain. The strongest wind was recorded at Yasawa-i-Rara with 45km/hr on the 30<sup>th</sup>.

Rotuma was affected by series of troughs moving over the

### 3. RAINFALL

Rainfall during the month varied across the country with 6 out of the 24 rainfall monitoring stations registering *well below average* rainfall, 6 *below average*, 5 *average* and 7 *above average*. However, the pattern of drier than usual conditions continued in the Western Division with less than half the *normal* rainfall registered at majority of the stations.

The lowest total monthly rainfall was recorded at Keiyasi with 8mm, followed by Yasawa-i-Rara with 13mm, Rarawai Mill with 17mm and Yaqara with 18mm. On the other hand, the highest total monthly rainfall was registered at Navua with 288mm, followed by Monasavu with 281mm, RKS with 267mm and Lomaivuna with 233mm (Table 2, Figures 1-5).

The highest daily rainfall during the month was recorded at Laucala Bay with 156mm on the 25<sup>th</sup>, followed by Matei Airfield with 121mm on the 28<sup>th</sup>, RKS with 98mm on the 26<sup>th</sup> and Ono-i-Lau with 96mm on the 16<sup>th</sup>.

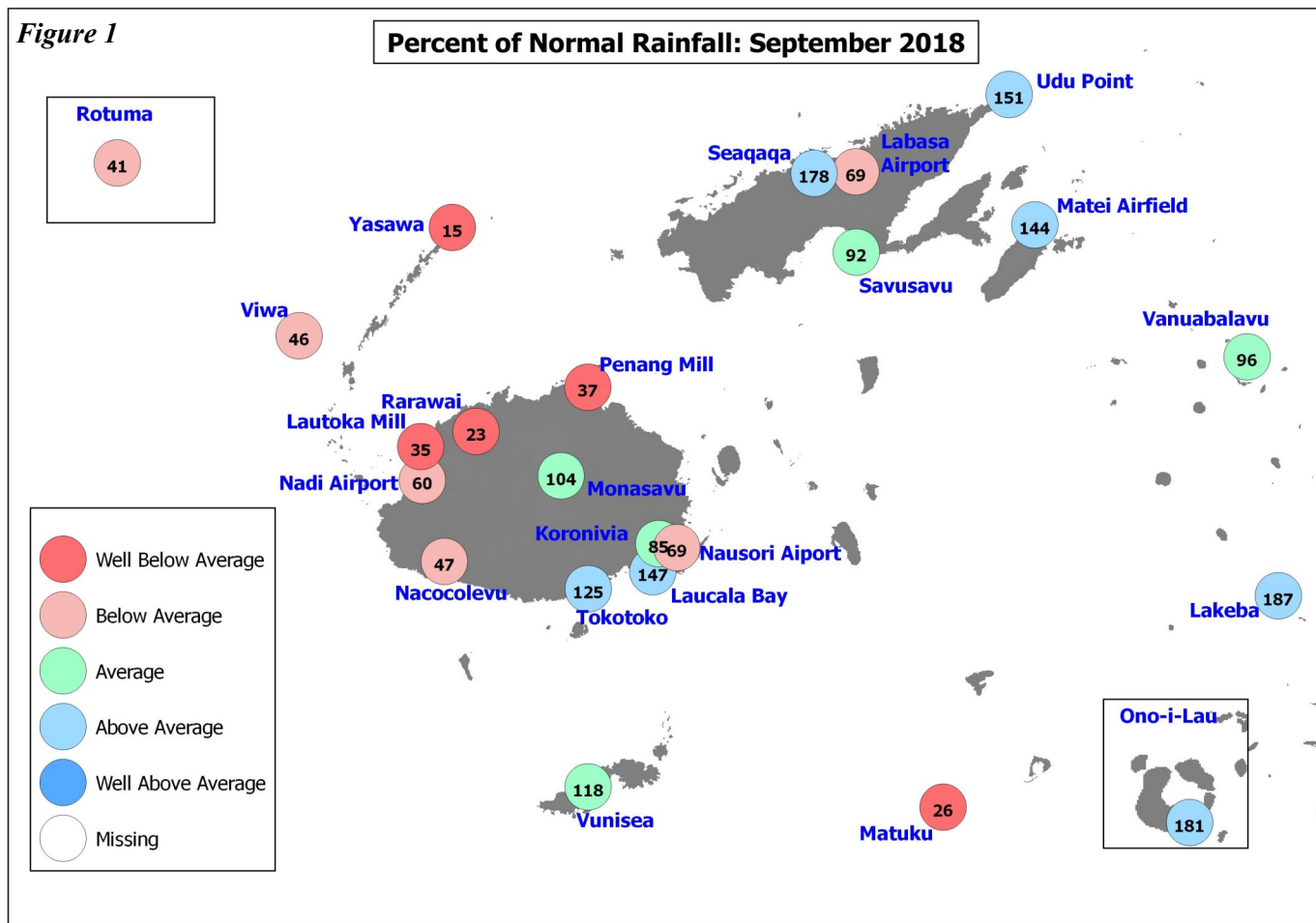
Lautoka Mill recorded only 1 rain day during the month,

followed by Momi, Rarawai Mill, Tavua, Yaqara, and Yasawa-i-Rara with all 4, and Nadi Airport, Nacocolevu, Keiyasi and Labasa Airport with all 6. On the other hand, Monasavu recorded the highest number of rain days with 25, followed by Rotuma with 22, Nausori Airport and Matei Airfield with both 21, and Vanuabakavu and Lomaivuna with both 20.

There was no new record rainfall during the month.

Figure 1

Percent of Normal Rainfall: September 2018



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 *above normal* across the country with all the stations recording anomalies  $\geq +0.5^{\circ}\text{C}$  (Table 2 & Figures 2-5).

Rarawai Mill recorded the warmest day on average with  $31.9^{\circ}\text{C}$ , followed by Labasa Airport and Yaqara with both  $31.7^{\circ}\text{C}$  and Yasawa-i-Rara with  $31.5^{\circ}\text{C}$ . On the other hand, the coolest day-time temperatures on average was at Monasavu with  $23.4^{\circ}\text{C}$ , followed by Nadarivatu with  $24.6^{\circ}\text{C}$  and Vunisea with  $27.1^{\circ}\text{C}$ .

The highest daily maximum air temperature during the month was registered at Lautoka Mill with  $36.4^{\circ}\text{C}$  on the 3<sup>rd</sup>, followed by Lomaivuna with  $35.2^{\circ}\text{C}$  on the 4<sup>th</sup> and Yaqara with  $34.2^{\circ}\text{C}$  on the 3<sup>rd</sup>. On the other hand, the lowest daily maximum air temperature was recorded at Monasavu with  $19.4^{\circ}\text{C}$  on the 14<sup>th</sup>, followed by Nadarivatu with  $20.5^{\circ}\text{C}$  on the 29<sup>th</sup> and Vunisea with  $23.9^{\circ}\text{C}$  on the 13<sup>th</sup>.

New highest September maximum daily temperatures were recorded at Laucala Bay, Lautoka Mill, Viwa and Ono-i-Lau during the month. Furthermore, new high mean monthly maximum air temperature record for September were set at Nacocolevu and Tokotoko (Table 1).

### 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  $\pm 0.5^{\circ}\text{C}$ , and 2  $\leq 0.5^{\circ}\text{C}$  (Table 2 & Figures 2-5).

The coolest nights on average during the month was Nadarivatu with  $16.5^{\circ}\text{C}$ , followed by Nacocolevu with  $16.9^{\circ}\text{C}$  and Monasavu with  $17.3^{\circ}\text{C}$ . On the other hand, Rotuma was warmest with  $24.2^{\circ}\text{C}$ , followed by Yasawa-i-Rara with  $23.7^{\circ}\text{C}$ , and Viwa and Udu Point with both  $23.6^{\circ}\text{C}$ .

The lowest daily minimum air temperature was recorded at Nadarivatu with  $13.0^{\circ}\text{C}$  on the 22<sup>nd</sup>, followed by Monasavu with  $14.5^{\circ}\text{C}$  on the 9<sup>th</sup> and Nacocolevu with  $15.0^{\circ}\text{C}$  on the 16<sup>th</sup>. On the other hand, the warmest daily minimum air temperature was registered at Tokotoko with  $26.8^{\circ}\text{C}$  on the 29<sup>th</sup>, followed by Penang Mill with  $25.5^{\circ}\text{C}$  on the 23<sup>rd</sup>, and Wainikoro with  $25.4^{\circ}\text{C}$  on the 2<sup>nd</sup>.

A new high daily minimum air temperature record for September was set at Tokotoko during the month. Furthermore, new high mean monthly minimum air temperature record for September was established at Savusavu Airfield and Penang Mill (Table 1).

**TABLE 1. CLIMATE RECORDS ESTABLISHED IN SEPTEMBER 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 Max. Temperature	Laucala Bay	$32.5^{\circ}\text{C}$	20 <sup>th</sup>	New High	$32.1^{\circ}\text{C}$	1943	1942
Daily Max. Temperature	Viwa	$33.7^{\circ}\text{C}$	20 <sup>th</sup>	New High	$33.0^{\circ}\text{C}$	1996	1978
Daily Max. Temperature	Lautoka Mill	$36.5^{\circ}\text{C}$	3 <sup>rd</sup>	New High	$34.4^{\circ}\text{C}$	1955	1930
Daily Max. Temperature	Ono-i-Lau	$31.1^{\circ}\text{C}$	4 <sup>th</sup>	New High	$30.9^{\circ}\text{C}$	2008	1943
Mean Monthly Max. Temperature	Nacocolevu	$31.3^{\circ}\text{C}$	-	New High	$30.7^{\circ}\text{C}$	2010	1938
Mean Monthly Max. Temperature	Tokotoko	$27.9^{\circ}\text{C}$	-	New High	$27.8^{\circ}\text{C}$	2007	1992
Daily Min. Temperature	Tokotoko	$26.8^{\circ}\text{C}$	29 <sup>th</sup>	New High	$26.0^{\circ}\text{C}$	2007	1992
Mean Monthly Min. Temperature	Savusavu Airfield	$23.2^{\circ}\text{C}$	-	New High	$23.1^{\circ}\text{C}$	2001	1956
Mean Monthly Min. Temperature	Penang Mill	$23.0^{\circ}\text{C}$	-	New High	$22.9^{\circ}\text{C}$	2007	1930

*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.*

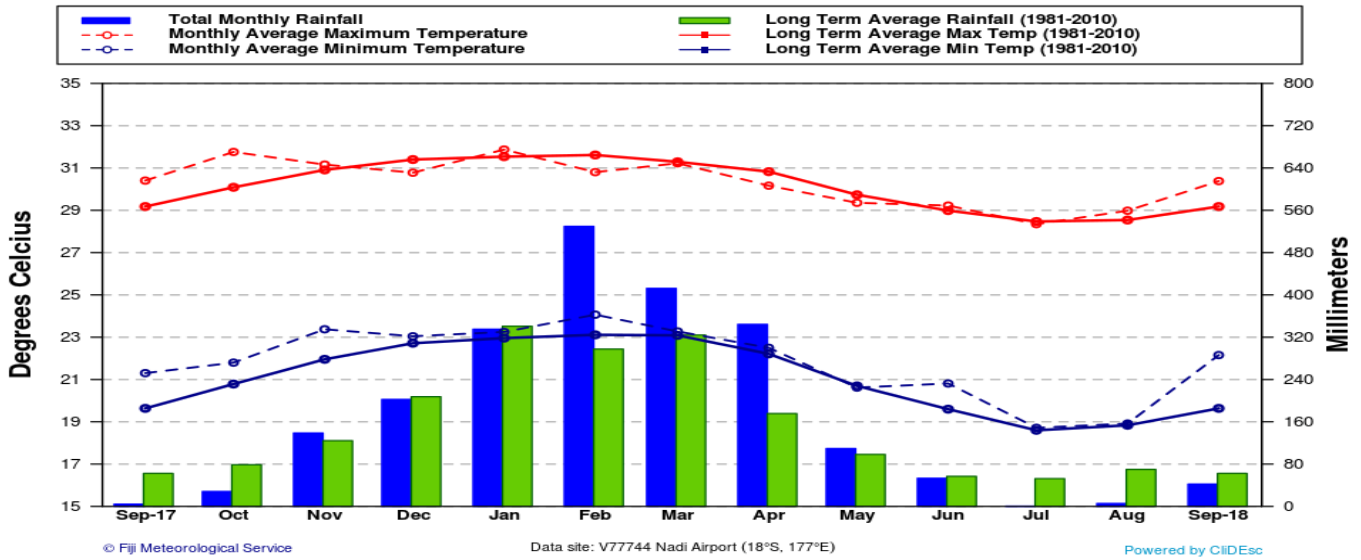
**TABLE 2. DAILY CLIMATE REPORTING SITES: SUMMARY FOR SEPTEMBER 2018**

	RAINFALL				AIR TEMPERATURES								SUNSHINE			
	TOTAL	RAIN	MAX.	FALL	AVERAGE DAILY				EXTREME				TOTAL	*		
	MM	%	+		MM	ON	MAX.	#	MIN.	#	MAX.	MIN.	C	ON	HRS	%
NADI AIRPORT	42	60	6	41	7	30.4	1.1	22.2	2.9	33.9	6	18.2	9	177	84	
SUVA/LAUCALA BAY	260	147	17	156	25	27.8	0.6	22.4	1.4	32.5	20	19.0	21	95	70	
NACOCOLEVU	44	47	6	32	7	31.3	3.4	16.9	-1.5	33.9	16	15.0	16	124	72	
ROTUMA	98	41	22	17	30	30.2	0.9	24.2	0.1	30.8	28	23.4	23			
VIWA	29	46	7	9	26	31.2	3.0	23.6	0.9	33.7	20	19.8	10			
UDU POINT	171	151	16	91	28	29.1	0.5	23.6	1.1	30.9	26	18.5	6			
SAVUSAVU AIRFIELD	122	92	16	26	28	28.2	0.8	23.2	2.0	31.5	17	21.4	5			
LABASA AIRFIELD	50	69	6	19	18	31.7	1.6	20.0	0.7	33.5	4	17.0	5			
NABOUWALU	DATA NOT AVAILABLE															
KORONIVIA	146	85	18	44	26			21.0	1.2			17.7	10			
NAUSORI AIRPORT	114	69	21	44	26	27.4	0.8	21.6	1.6	30.6	18	17.6	10			
NAVUA/TOKOTOKO	288	125	18	85	25	27.9	0.5	21.3	2.9	30.8	6	18.5	1			
MONASAVU	281	104	25	39	30	23.4	1.1	17.3	1.4	27.2	27	14.5	9			
LAUTOKA AES	26	35	1	26	7	31.4	2.7	21.0	0.3	36.5	3	18.0	9			
BA/RARAWAI MILL	17	23	4	11	7	31.9	1.5	20.1	1.9	33.9	5	15.3	9			
PENANG MILL	35	37	8	15	7	30.0	2.0	23.0	1.8	32.5	18	20.5	22			
MATEI AIRFIELD	228	144	21	121	28	28.7	1.2	23.4	1.6	30.0	3	22.0	9			
VANUABALAVU	82	96	20	22	5	28.8	1.5	21.8	-0.5	30.4	18	20.1	11			
LAKEBA	189	187	14	71	15	28.5	1.6	22.3	0.9	30.7	1	19.1	9			
YASAWA	13	15	4	8	28	30.8	3.7	23.7	1.9	33.2	7	21.2	12			
VUNISEA	160	118	15	49	25	27.1	1.0	21.5	1.7	30.6	4	17.9	10			
MATUKU	25	26	10	12	6	28.4	2.0	22.3	1.5	31.3	18	17.5	10			
ONO-I-LAU	195	181	10	96	16	28.1	2.7	21.3	0.9	31.1	4	17.0	13			
LEVUKA	U/S					U/S		21.9	0.1			19.4	9			
YAQARA AWS	18	34	4	10	7	31.7		23.3		34.2	3	20.9	9			
KEIYASI AWS	8		6	4	7	U/S		19.9		U/S		17.1	9			
LOMAIVUNA AWS	233		20	63	25	30.6		21.3		35.2	4	18.1	9			
NADARIVATU AWS	52		13	23	7	24.6		16.5		29.1	17	13.0	22			
RKS LODONI AWS	267		14	98	26	27.5		21.2		29.4	18	18.2	9			
MOMI AWS	20		4	15	7	29.9		22.3		32.1	27	18.3	9			
KOROLEVU AWS	123		12	39	25	28.5		20.9		34.1	6	17.9	9			
KORO ISLAND AWS	U/S					28.2		22.3		31.7	7	19.5	9			
SIGATOKA AWS	55		13	21	11	27.8		21.0		31.1	6	18.0	10			
RAKIRAKI AWS	63		8	22	28	29.0		23.3		31.4	23	20.7	9			
WAINIKORO AWS	U/S					30.7		22.1		33.4	22	18.1	10			
SAQANI AWS	144		14	76	28	29.9		23.5		31.6	3	21.1	10			
VATUREKUKA AWS	112		10	55	28	31.2		22.7		33.9	18	20.6	10			
KBULAU AWS	U/S															
SEAQAQA TB3	145	178	8	76	28											
NASINU TB3	185		18	55	25											
TAVUA TB3	20		4	14	7											

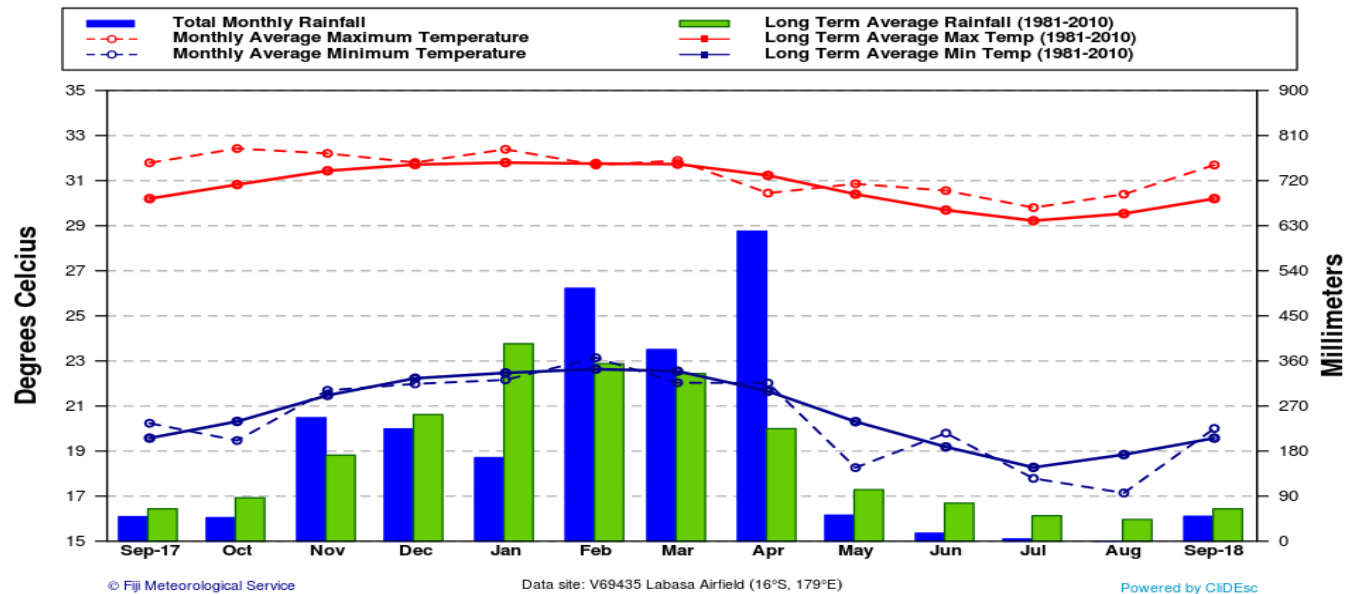
	TEMPERATURE (C)		HUMIDITY		WIND	SUN RAD	
	MEAN	DRY WET	RH%	VP		POS	%OF MJ/ SQ.M
NADI AIRPORT	26.3	27.1 22.5	66	23.8	7.0	51	15.8
SUVA/LAUCALA BAY	25.1	25.4 22.8	80	25.9		27	14.2\$
NACOCOLEVU	24.1	26.3 23.2	76	26.0		36	15.4\$
ROTUMA	27.2	28.4 25.3	77	29.7			
VIWA	27.4	27.7					
UDU POINT	26.4	27.0					
SAVUSAVU AIRFIELD	25.7	25.9 23.8	84	28.0			
LABASA AIRFIELD	25.8	28.4 24.1	69	26.6			
NABOUWALU	DATA NOT AVAILABLE						
KORONIVIA	24.4	25.2 23.1	84	26.7			
NAUSORI AIRPORT	24.5	25.0 22.8	82	26.0	4.9		
NAVUA/TOKOTOKO	24.6	25.2 23.2	84	27.0			
MONASAVU	20.3	19.8 18.7	90	20.7			
LAUTOKA AES	26.2	28.7 23.8	65	25.7			
BA/RARAWAI MILL	26.0	27.5 23.9	73	26.9			
PENANG MILL	26.5	26.7 23.0	73	25.4			
MATEI AIRFIELD	26.1	27.0 24.3	79	28.4			
VANUABALAVU	25.3	26.6 23.7	78	27.1			
LAKEBA	25.4	26.5 23.8	79	27.4			
YASAWA	27.2	27.6 24.5	77	28.4			
VUNISEA	24.3	24.6					
MATUKU	25.3	25.2					
ONO-I-LAU	24.7	24.3					

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 (September, 2017 - September, 2018)**



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



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

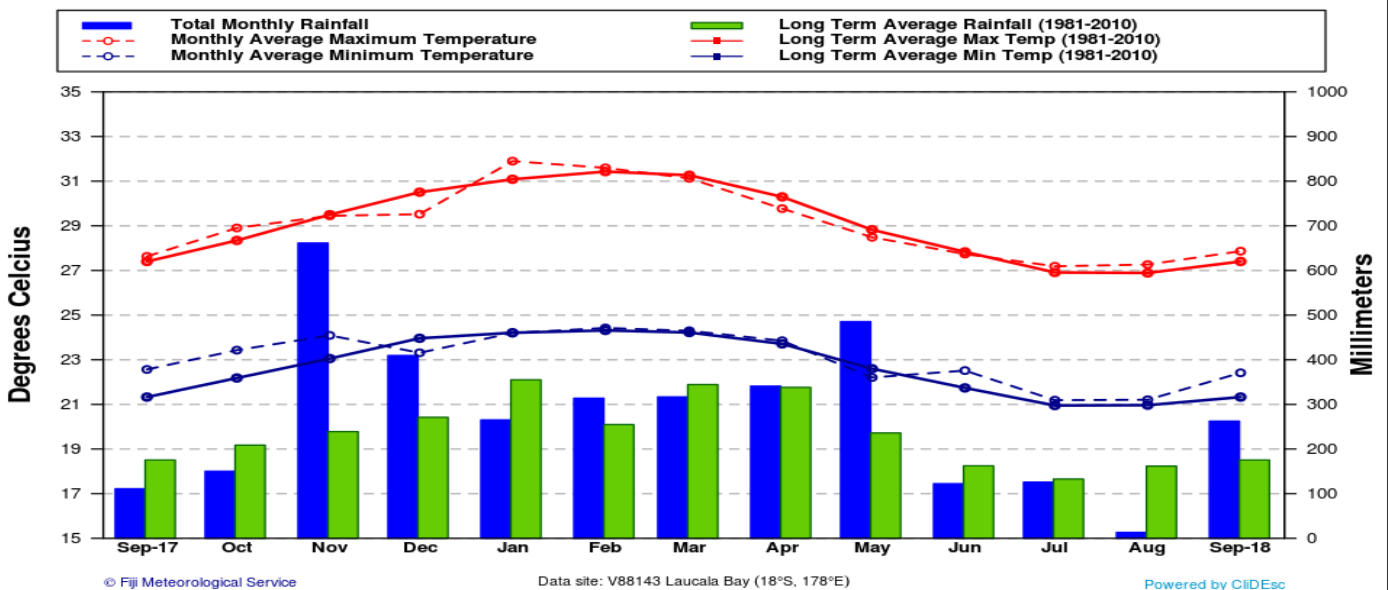
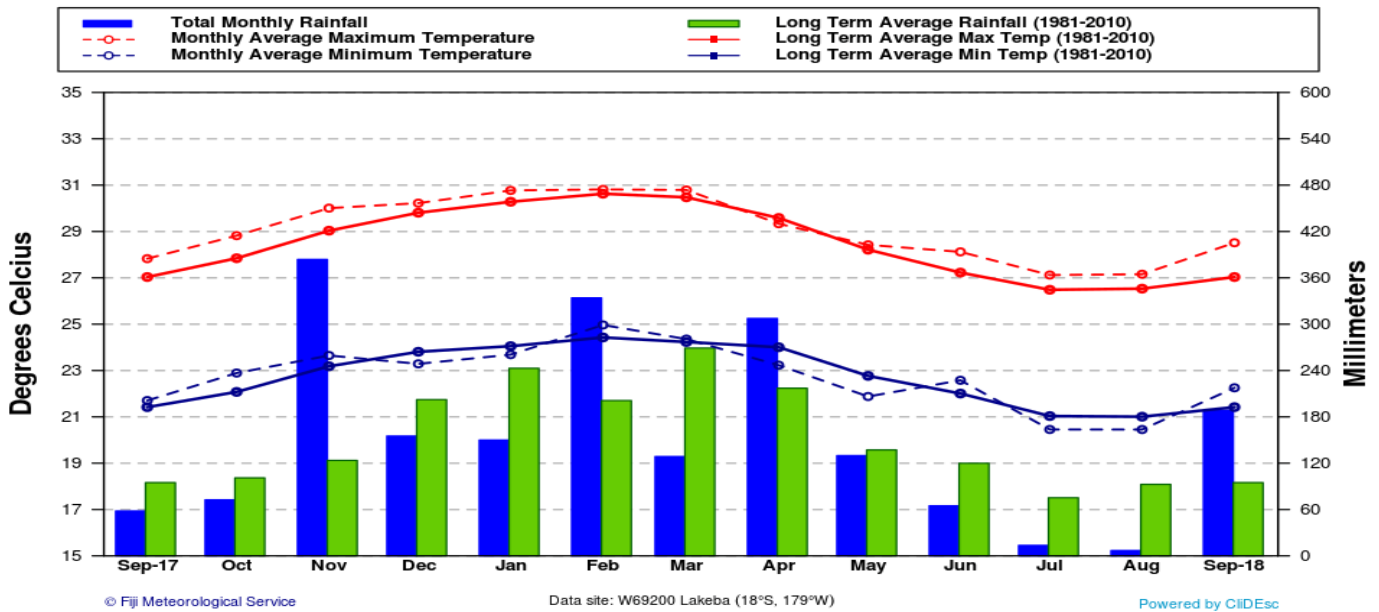




Figure 5

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



5. DAILY RAISED PAN EVAPORATION

Figure 6

Daily Evaporation for September 2018

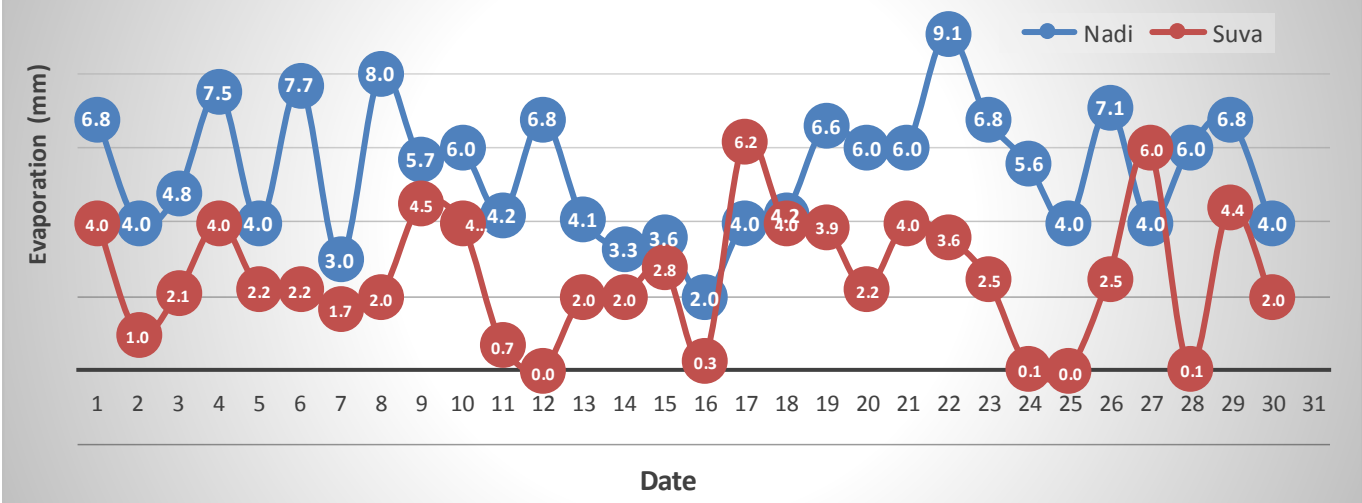


Figure 6: The total monthly raised pan evaporation at Nadi Airport was 161.7mm, with the highest of 9.1mm recorded on the 22<sup>nd</sup>. Laucala Bay recorded total monthly evaporation of 77.0mm, with the highest daily evaporation of 6.2mm on the 17<sup>th</sup>.

6. SOLAR RADIATION

Daily Solar Radiation (MJ/M2) - September 2018

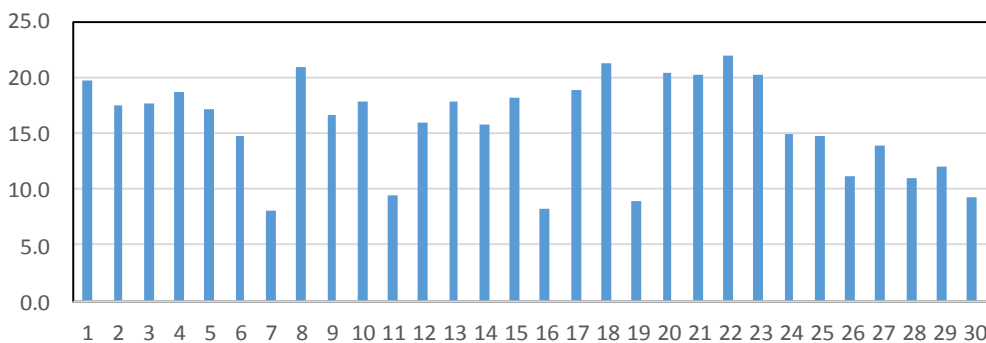
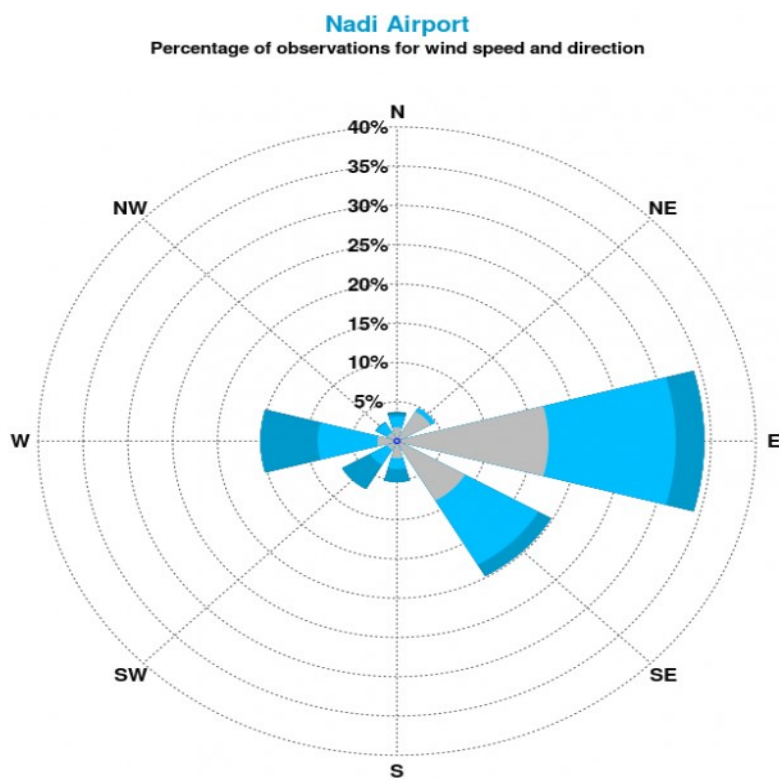


Figure 7: The mean daily solar radiation at Nadi Airport during September 2018 was 15.7MJ/m<sup>2</sup> compared to 19.1MJ/m<sup>2</sup> over 30 year average (1971-2000).

## 7. WIND SUMMARY



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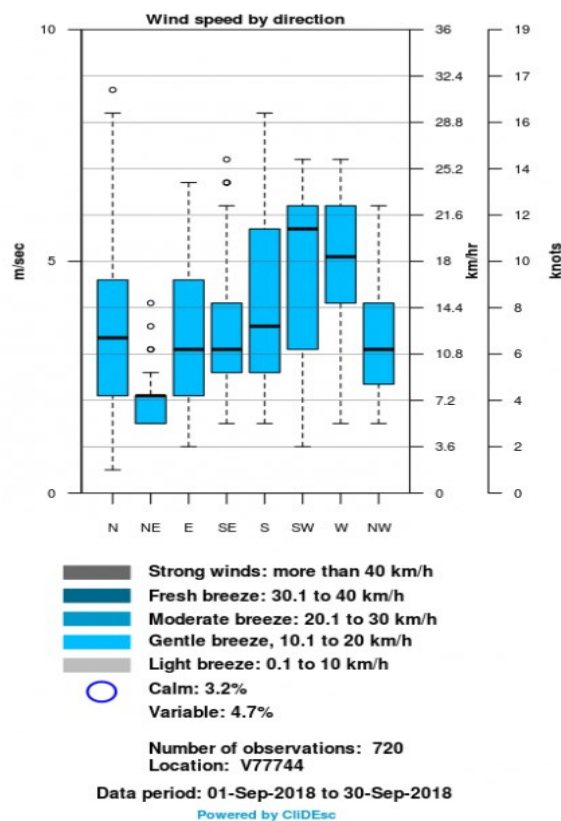
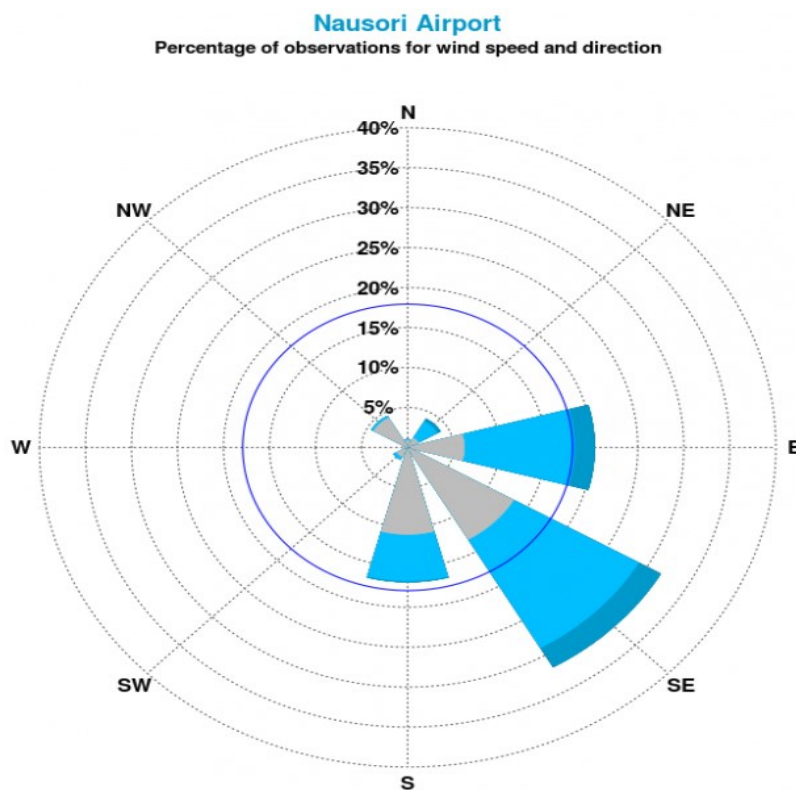


Figure 8a: The hourly wind observations at Nadi Airport during the month showed easterly winds were most dominant, followed by south easterly and westerly. Wind strengths varied from light to moderate.



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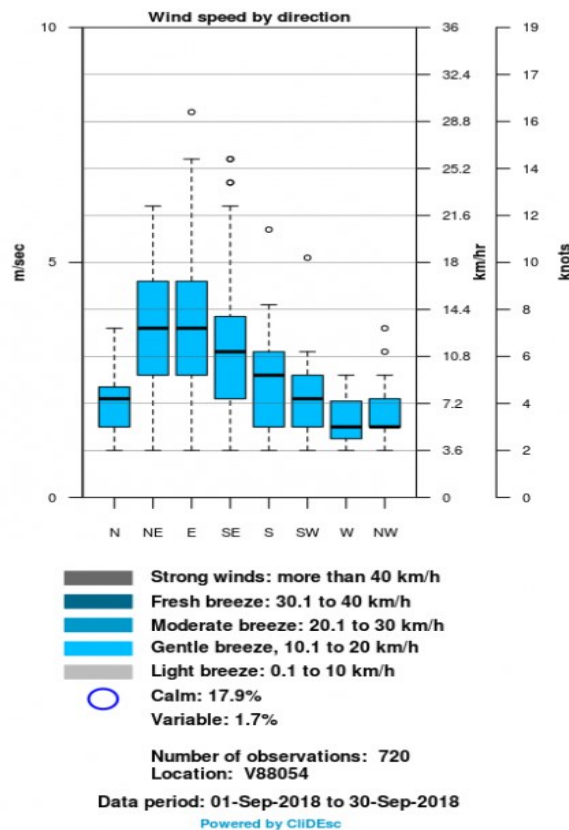
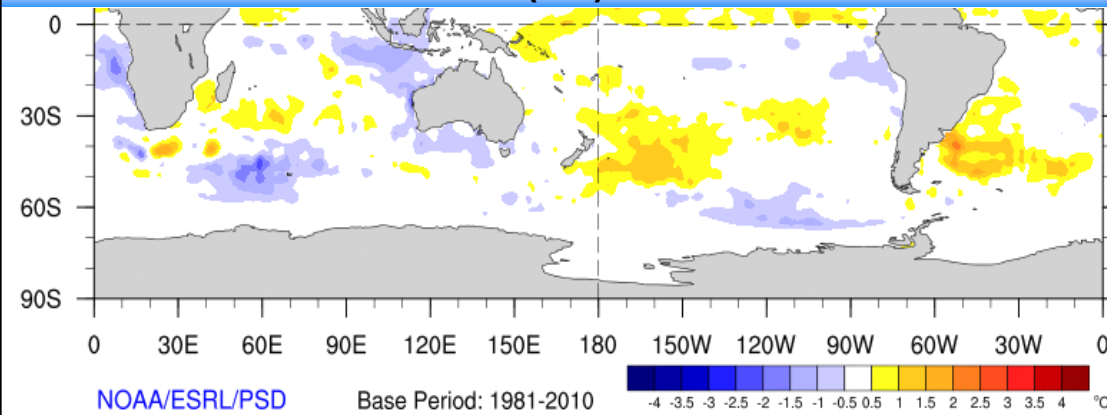


Figure 8b: The hourly wind observations at Nausori Airport during the month showed that southeasterly winds were dominant, followed by easterly and southerly winds. Wind speeds ranged from light to moderate in strength.

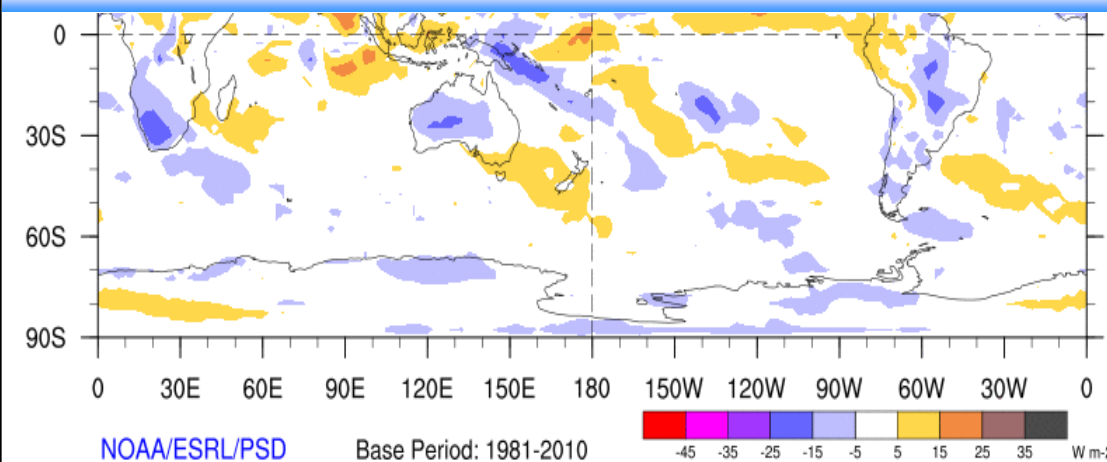
### 8. SEA SURFACE TEMPERATURE (SST)



**Figure 9:** Near normal to 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>

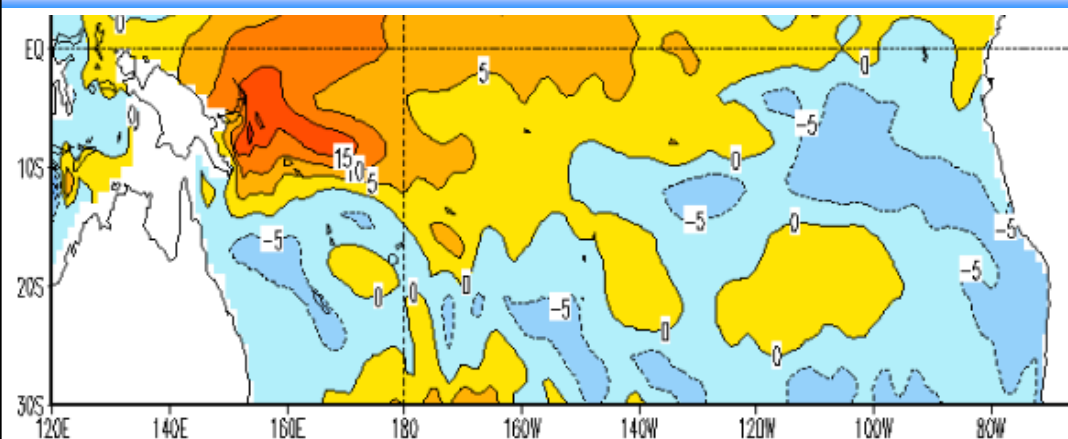
### 9. CLOUD COVER



**Figure 10:** Normal to 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>

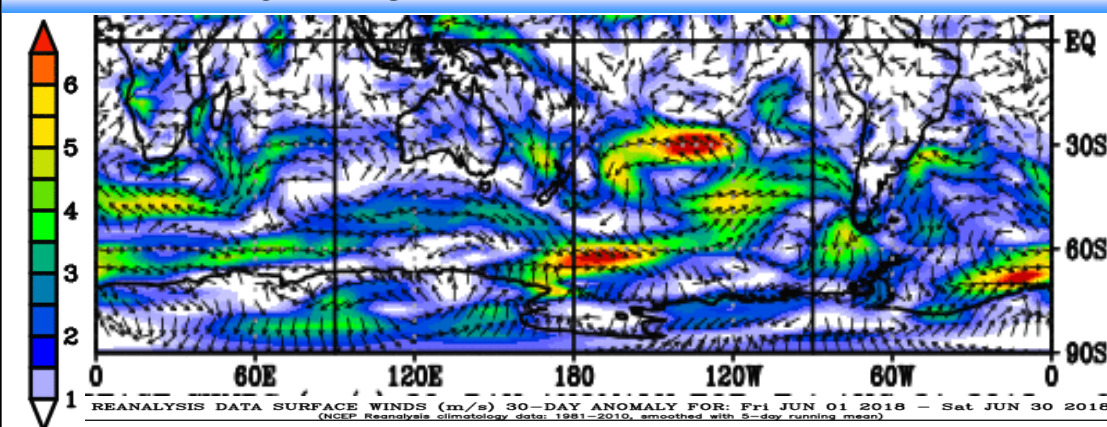
### 10. SEA LEVEL



**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](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 1-2m/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](https://www.esrl.noaa.gov/psd/map/images/rnl/sfwnd_30b.rnl.html)