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Fiji Climate Summary January 2017



**ISO 9001:2008
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Services**



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1. IN BRIEF

Generally normal to drier than normal conditions were experienced in January. Eleven sites recorded *below average* rainfall, eleven sites recorded *average* rainfall, while Vunisea recorded *above average* rainfall and Savusavu recorded *well below average* rainfall.

Low pressure systems, slow moving high pressure systems and broad southeast trade winds were the dominant drivers of weather during the month.

The daytime temperatures during January ranged from *normal* to *above normal*. A total of fourteen out of the twenty sites recorded temperature anomalies of $\geq 0.5^{\circ}\text{C}$, while 6 sites registered anomalies within $\pm 0.5^{\circ}\text{C}$.

The warmest days on average was recorded at Nacocolevu with 32.8°C , followed by Rarawai Mill with 32.5°C and Rotuma and Penang Mill both with 32.0°C . On the other hand, Nadarivatu recorded the coolest maximum temperature on average with 25.8°C , followed by Monasavu with 26.6°C .

A new mean monthly high maximum temperature record for January was set at Lakeba with 31.5°C , replacing the

2014 record of 31.4°C .

The night-time temperatures ranged from *below normal* to *above normal* during the month with 12 sites recording anomalies within $\pm 0.5^{\circ}\text{C}$, 4 sites recorded anomalies $\geq 0.5^{\circ}\text{C}$, while 5 sites recorded anomalies $\leq -0.5^{\circ}\text{C}$.

The coolest night on average was observed at Nadarivatu with 17.5°C , followed by Monasavu with 18.7°C . Conversely, the warmest night on average was experienced at Udu Point with 25.2°C , followed by Nabouwalu with 24.7°C , and Rotuma and Viwa with both 24.6°C .

The total monthly sunshine hours ranged from 100% to 114% of the *normal*.

The 9am average relative humidity ranged from 71% to 87% during the month.

2. WEATHER PATTERNS

The weather in January was dominated by couple of low pressure systems, slow moving high pressure systems and broad southeast trade winds.

During the first week, cloud and showers affected most parts of the group due to a slow moving trough of low pressure over Fiji. The trough was displaced northwards by a high pressure system from the south and cleared the group by the 7th. For this event, the highest 24-hour rainfall of 131.0mm was recorded at Rarawai Mill on the 2nd. Following this trough, a broad southeasterly wind flow prevailed over the country with generally fine weather apart from trade showers over the eastern parts and afternoon or evening thundery showers elsewhere.

Another trough of low pressure formed north of Fiji on the 11th and drifted south as the ridge of high pressure to the south weakened and affected mostly the northern, central and eastern parts of the group until the 15th. The trough migrated north as ridge extended from a developing high pressure system to the far southwest of Fiji on 16th. Trade wind flow was experienced over the country till the 18th.

On the 19th, a weak low pressure developed over Fiji and affected the group till the 21st as the system tracked southwards, directing northwest to southwest wind flow over the group.

The winds gradually changed direction from southwest to southeastwards as the high pressure system developed in the Tasman Sea. A trough of low pressure formed just north of Fiji on the 24th and gradually moved over the group on the 29th as the high pressure system in the Tasman sea receded.

Rotuma's weather was largely influenced by the South Pacific Convergence Zone, the associated bursts of northwesterly winds and the southeast wind. Showers were recorded on most of the days.

3. RAINFALL

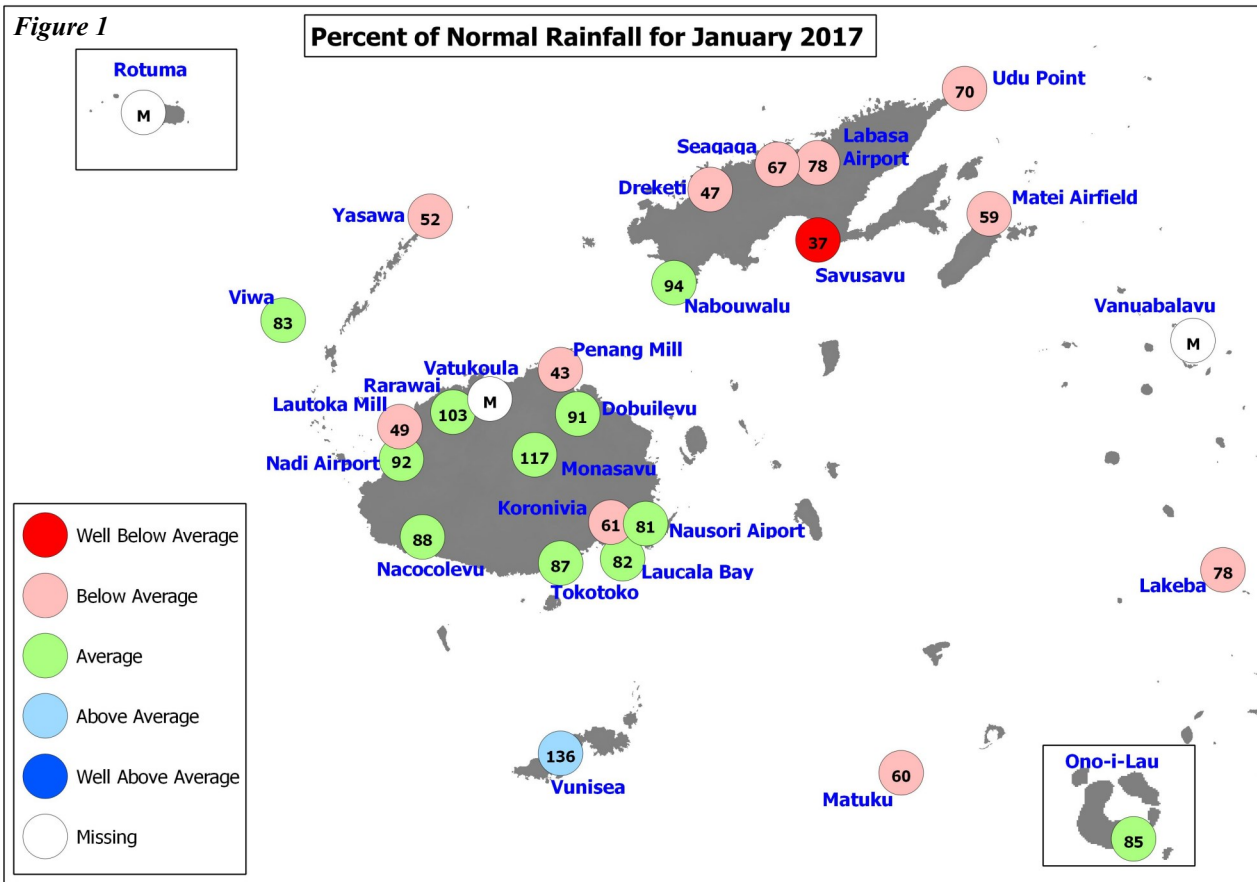
Generally normal to drier than normal conditions were experienced in January. Eleven sites recorded *below average* rainfall, another eleven sites recorded *average* rainfall, while Vunisea recorded *above average* rainfall and Savusavu recorded *well below average* rainfall.

Most of the sites recorded their maximum 24-hour rainfall during the first week of the month due to a trough of low pressure system which remained slow moving over Fiji.

The highest 24-hour rainfall of 131.0mm was recorded at Rarawai Mill on the 2nd, followed by 116.4mm at Lakeba on the 4th, 116.2mm at Vunisea, 115.5mm at Nadarivatu and 114.5mm at Lomaivuna all on the 2nd (Table 2).

Monasavu was the wettest station during the month, with 711.6mm of total monthly rainfall, followed by Nadarivatu with 539.5mm, Lomaivuna with 459.5mm, Rarawai Mill with 415.0mm and Keiyasi with 392.0mm. In contrast, Savusavu registered the lowest total monthly rainfall of 101.5mm, followed by 122.0mm at Yasawa-i-Rara, 134.0mm at Tabua Sands and Momi, and 148.9mm at Ono-i-Lau.

The number of rain days (rainfall ≥ 0.1 mm) during the month ranged from 13 to 29 days. Monasavu recorded the greatest number of rainy days with 29 days, followed by 25 days at Matuku, 24 days at Nabouwalu, Koronivia, Lomaivuna, Keiyasi, Dobuilevu and Nadarivatu, 23 days at Viwa, 22 days at Dreketi, 21 days at Seaqqa and 20 days at Nausori and Laucala Bay (Suva).



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 ≥ 0.1 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 Daytime Air Temperatures

The daytime temperatures during January ranged from *normal* to *above normal*. Fourteen out of the twenty sites recorded positive temperature anomalies of $\geq 0.5^{\circ}\text{C}$, while 6 sites recorded anomalies within $\pm 0.5^{\circ}\text{C}$. (Table 2 & Figures 2-5).

The warmest days on average was at Nacocolevu with 32.8°C , followed by Rarawai Mill with 32.5°C and Rotuma and Penang Mill with both 32.0°C . On the other hand, Nadarivatu recorded the coolest maximum temperature on average, with 25.8°C , followed by Monasavu with 26.6°C .

The daily maximum temperatures ranged from 22.4°C to 34.4°C during January. The highest daily maximum temperature of 34.4°C was recorded at Nacocolevu on the 3rd, followed by Penang Mill with 34.2°C on the 25th and Rotuma with 34.0°C on the 31st.

The greatest positive mean monthly daytime temperature departure from the *normal* was recorded at Penang Mill with $+1.7^{\circ}\text{C}$, followed by Nacocolevu with $+1.6^{\circ}\text{C}$ and $+1.4^{\circ}\text{C}$ at Vunisea, Lakeba and Rotuma.

Lakeba recorded a new high mean monthly maximum temperature of 31.5°C , replacing the 2014 record of 31.4°C (Table 1).

B. Minimum Night-time Air Temperatures

The night temperatures ranged from *below normal* to *above normal* during the month with twelve sites recording anomalies within $\pm 0.5^{\circ}\text{C}$, 4 sites recorded anomalies $\geq 0.5^{\circ}\text{C}$ while 5 sites recorded anomalies $\leq -0.5^{\circ}\text{C}$ (Table 2 & Figures 2-5).

The coolest night on average was at Nadarivatu with 17.5°C , followed by Monasavu with 18.7°C . Conversely, the warmest night on average was experienced at Udu Point with 25.2°C , followed by Nabouwalu with 24.7°C , Rotuma and Viwa with 24.6°C and Laucala Bay with 24.5°C .

The coolest night was observed at Nadarivatu with 13.8°C on the 24th, followed by Monasavu with 15.8°C on the 21st, Labasa Airfield with 18.0°C on the 5th, and Rotuma and Rarawai Mill with 18.5°C on 18th and 26th, respectively. On the other hand, Rotuma recorded night-time temperature as high as 27.5°C on the 5th, followed by Laucala Bay and Matuku with 27.0°C on the 30th and 18th, respectively.

The greatest positive mean monthly night-time air temperature departure from the *normal* of $+1.1^{\circ}\text{C}$ was recorded at Tokotoko, while most notable negative departure of -0.9°C was recorded at Labasa Airfield.

TABLE 1. CLIMATE RECORDS ESTABLISHED IN JANUARY 2017

<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>
Mean Monthly Maximum Temperature	Lakeba	31.5	-	New High	31.4	2014	1955

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 JANUARY 2017

	RAINFALL					AIR TEMPERATURES								SUNSHINE		
	TOTAL	RAIN		MAX.		AVERAGE DAILY				EXTREME				TOTAL	*	
	MM	%	+	MM	ON	MAX.	#	MIN.	#	MAX.	C	ON	MIN.	C	ON	HRS
NADI AIRPORT	314	92	16	97	5	31.5	0.0	22.8	0.0	33.5	3	20.5	21	240	114	
SUVA/LAUCALA BAY	305	82	20	68	2	31.3	0.5	24.5	0.6	33.1	12	21.6	20	192	100	
NACOCOLEVU	253	88	18	43	8	32.8	1.6	21.7	-0.6	34.4	3	19.4	25	179	100	
ROTUMA	140	39	15	29	31	32.0	1.4	24.6	-0.1	34.0	25	18.5	18			
VIWA	209	83	23	78	2	31.9	0.8	24.6	-0.4	33.1	31	21.8	26			
UDU POINT	218	70	15	91	24	30.7	0.2	25.2	0.9	32.2	31	22.5	25			
SAVUSAVU AIRFIELD	102	37	13	35	11	30.8	0.2	24.2	0.7	33.4	3	22.3	19			
LABASA AIRFIELD	301	78	19	86	4	31.6	-0.1	21.3	-0.9	33.2	31	18.0	5			
NABOUWALU	292	94	24	44	9	31.3	1.1	24.7	0.5	33.7	13	22.8	25			
KORONIVIA	235	61	24	41	4	U/S		22.5	-0.2	U/S		18.7	30			
NAUSORI AIRPORT	296	81	20	86	4	31.1	0.7	22.9	-0.3	33.0	10	19.5	20			
NAVUA/TOKOTOKO	344	87	19	60	17	31.0	0.5	22.5	1.1	32.6	14	19.5	20			
MONASAVU	712	117	29	92	31	26.6	1.1	18.7	-0.3	28.9	9	15.8	21			
LAUTOKA AES	182	49	15	77	2	31.4	0.4	23.6	-0.1	32.5	11	21.0	26			
BA/RARAWAI MILL	415	103	15	131	2	32.5	0.4	21.7	-0.4	33.5	8	18.5	26			
PENANG MILL	171	43	21	83	2	32.0	1.7	23.4	-0.6	34.2	31	20.2	21			
MATEI AIRFIELD	210	59	25	61	15	31.0	0.9	23.4	-0.7	32.5	24	21.5	21			
VANUABALAVU	TEMPORARILY CLOSED															
LAKEBA	229	95	13	116	4	31.5	1.4	23.5	-0.5	33.3	13	20.4	17			
LEVUKA	SUSPICIOUS DATA															
VUNISEA	393	136	19	116	2	31.3	1.4	23.9	0.5	32.5	10	21.6	17			
MATUKU	166	60	15	59	2	31.1	0.9	24.1	-0.3	33.0	10	21.5	21			
ONO-I-LAU	149	85	15	28	21	30.2	1.0	23.4	-0.8	32.2	8	20.1	1			
DREKETI	180	47	22	34	31											
SEAQAQA	277	67	21	80	30											
YASAWA-I-RARA	122	52	13	36	18											
VATUKOULA	STATION CLOSED															
DOBUILEVU	359	91	24	72	31											

	TEMPERATURE (C)		HUMIDITY		WIND	SUN	RAD
	MEAN	DRY	WET	RH% VP			
		(AVERAGE AT 9AM)					
NADI AIRPORT	27.2	28.7	24.6	71	27.8	5.7	61 20.2
SUVA/LAUCALA BAY	27.9	28.6	25.3	76	29.7		49 21.2
NACOCOLEVU	27.3	28.5	25.5	78	30.5		51 21
ROTUMA	28.3	29.3	26.6	87	35.6	2.2	12
VIWA	28.2	30.1	26.8	76	32.6	3.5	
UDU POINT	28.0	28.6	25.8	80	31.1	4.1	
SAVUSAVU AIRFIELD	27.5	28.8	25.4	75	29.8		
LABASA AIRFIELD	26.5	29.0	25.1	72	28.9		
NABOUWALU	28.0	28.9	26.2	80	31.9	3.6	
KORONIVIA		28.6	25.8	79	31.2		
NAUSORI AIRPORT	27.0	27.7	25.1	81	30.0	3.2	
NAVUA/TOKOTOKO	26.8	26.7	24.5	83	29.1		
MONASAVU	22.7	23.1	21.1	83	23.4		
LAUTOKA AES	27.5	29.7	25.5	71	29.4		
BA/RARAWAI MILL	27.1	28.3	25.6	80	30.7		
PENANG MILL	27.7	29.3	25.5	73	29.8		
MATEI AIRFIELD	27.2	28.9	25.5	75	30.0		
VANUABALAVU	TEMPORARILY CLOSED						
LAKEBA	27.5	28.7	25.7	78	30.9	3.5	
LEVUKA	SUSPICIOUS DATA						
VUNISEA	27.6	28.5	25.6	79	30.6	4.6	
MATUKU	27.6	28.9	25.2	73	29.1	4.1	
ONO-I-LAU	26.8	28.2	24.9	76	29.0	5.4	

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 (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.

Figure 2

**Nadi Airport - Temperature & Rainfall for the last 13 Months
(January, 2016 - January, 2017)**

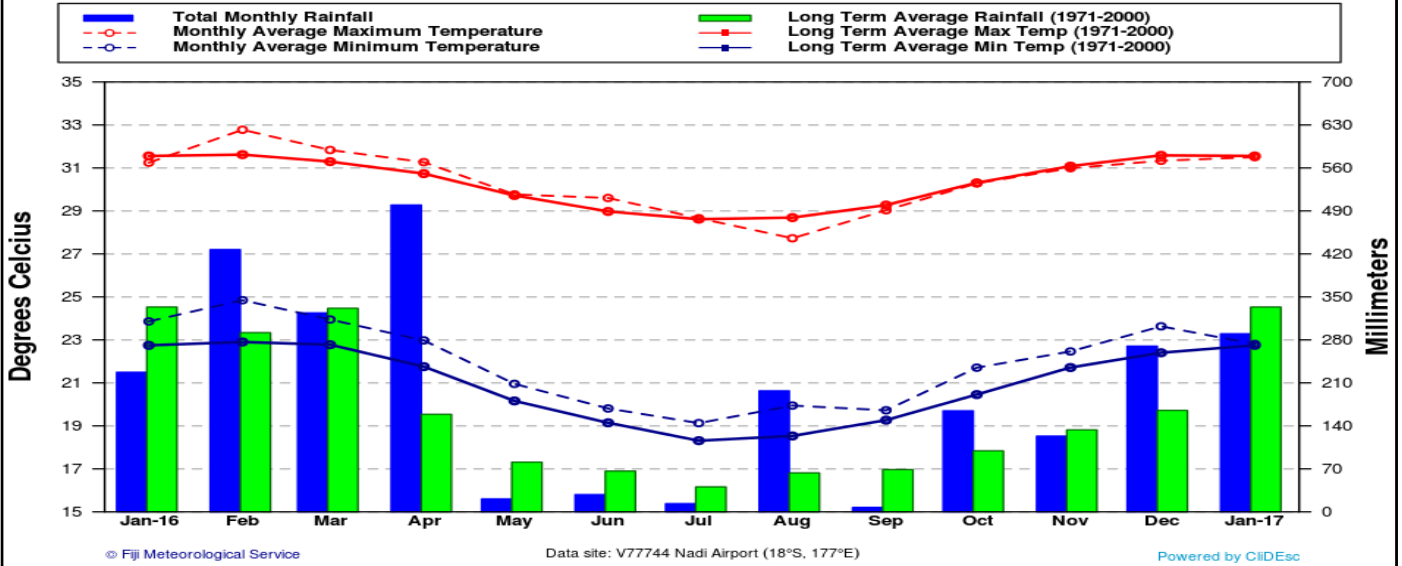


Figure 3

**Laucala Bay - Temperature & Rainfall for the last 13 Months
(January, 2016 - January, 2017)**

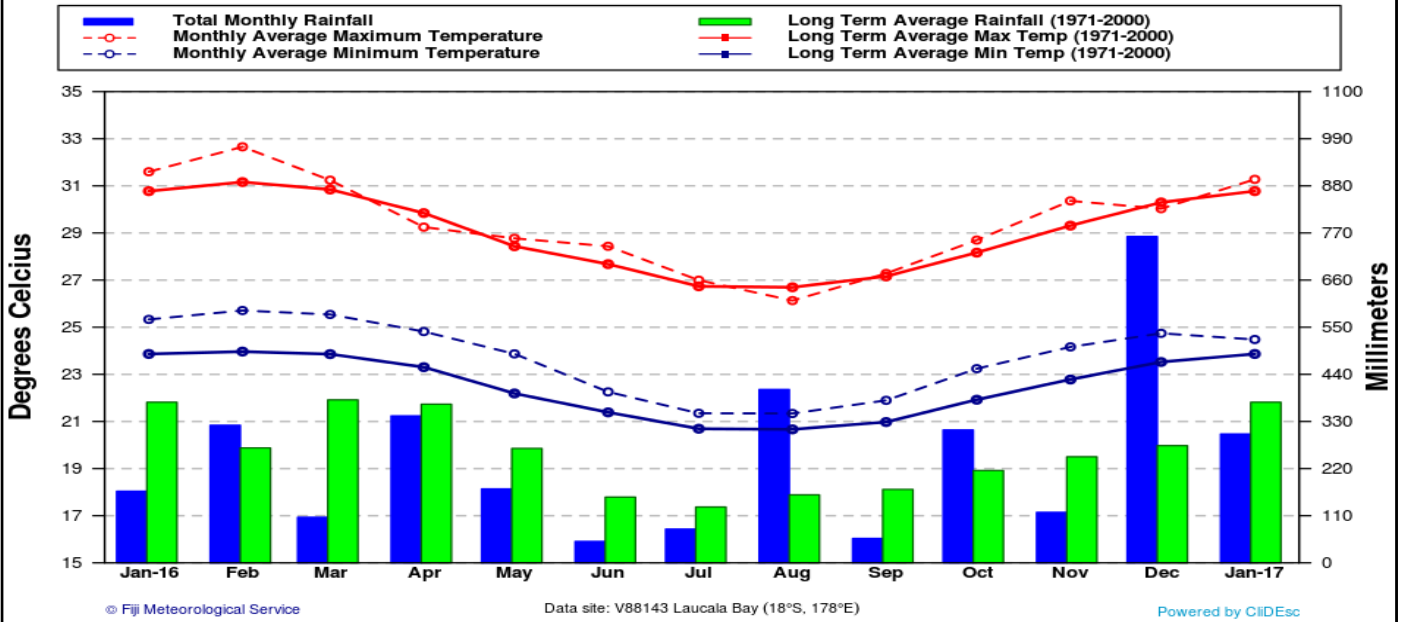


Figure 4

**Labasa Airfield - Temperature & Rainfall for the last 13 Months
(January, 2016 - January, 2017)**

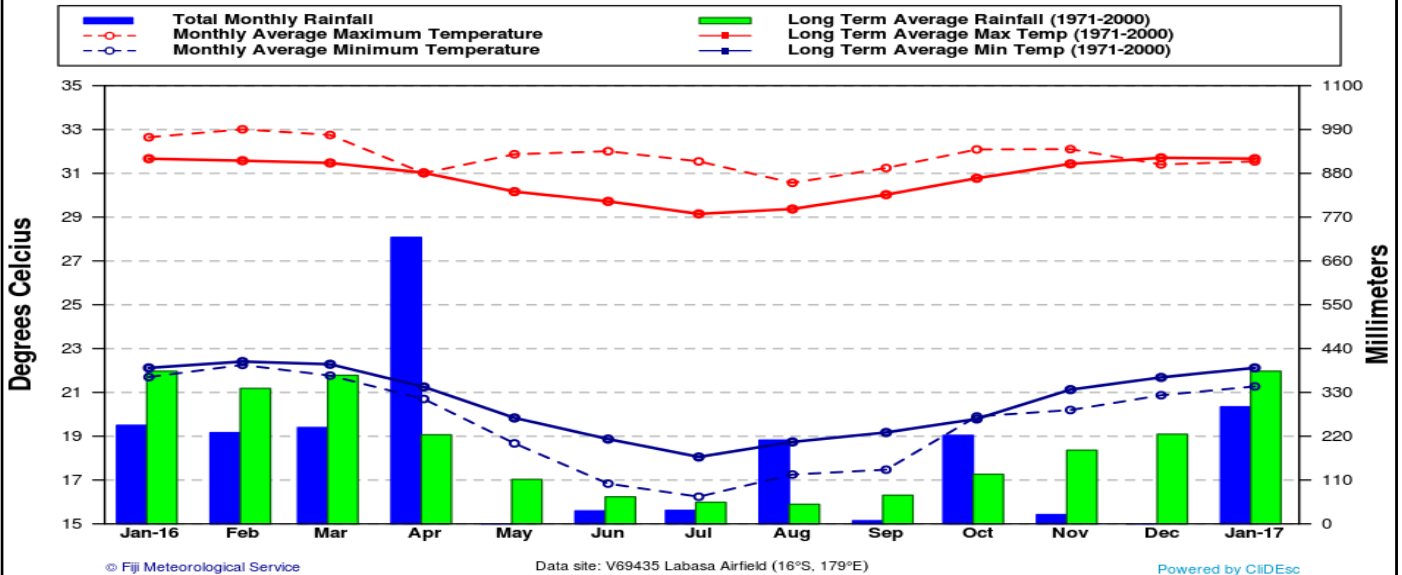
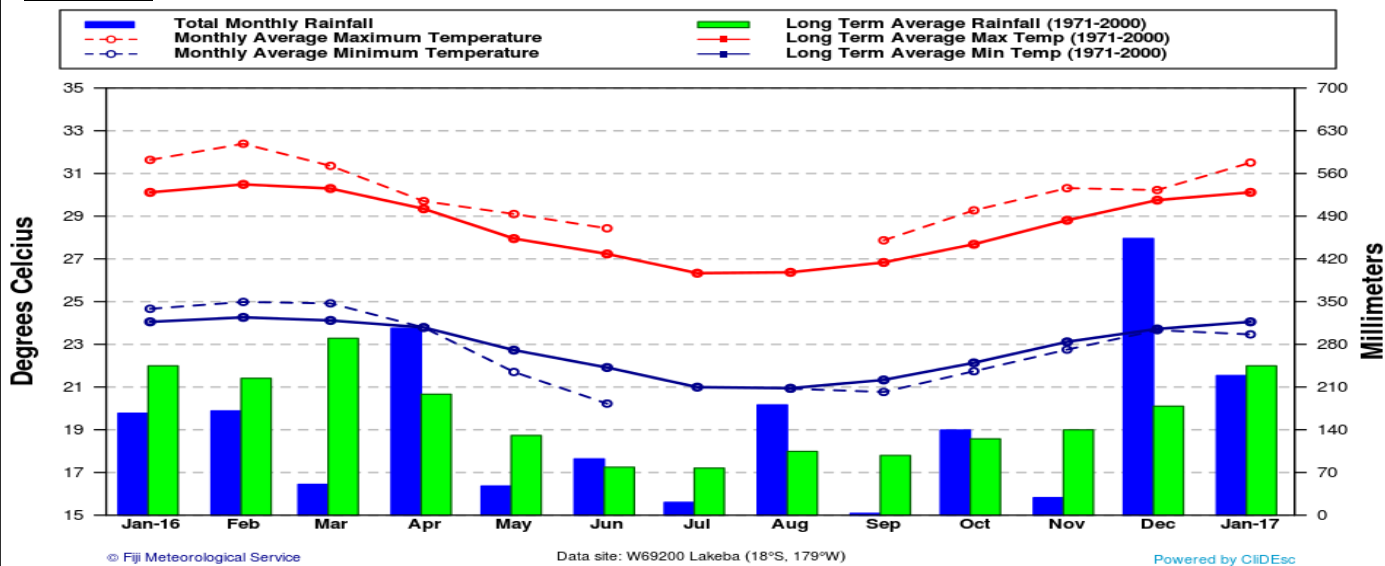


Figure 5

Lakeba - Temperature & Rainfall for the last 13 Months
(January, 2016 - January, 2017)



5. RELATIVE HUMIDITY AT 0900HOURS

The 9am average relative humidity (RH) ranged from 71% to 87% during the month (Table 2).

The Western Division stations recorded daily average RH values between 71% and 80%. Significant negative mean monthly RH departure was observed at Penang Mill with -13%, followed by Lautoka Mill with -4%. Rarawai Mill was the lone site that recorded positive departure of +3%. The rest of the sites recorded normal RH for the month with the departures ranging between -1% to -2%.

The Central Division stations recorded daily average RH values between 76% and 83%. Generally normal RH anomalies from mean were observed throughout the Division, with the most significant negative anomaly of -5% recorded at Laucala Bay (Suva).

Northern Division stations recorded daily average RH from 72% to 85%. Notable negative departure from nor-

mal was recorded at Labasa Airfield with -6% followed by Savusavu Airfield with -4%, while positive departure of +4% was recorded at Matei Airfield. Udu Point and Nabouwalu recorded anomalies of -1% and +1%, respectively.

The mean monthly RH in the Eastern Division ranged from 73% to 79%. Negative departures of -4% and -3% was recorded at Matuku and Ono-i-Lau, respectively, while Lakeba and Vunisea recorded normal RH.

The daily average RH at Monasavu was 83%, while Rotuma recorded 87%.

6. SUNSHINE

Nadi Airport recorded 114% of the normal bright sunshine hours, while both Nacocolevu and Laucala Bay (Suva) recorded 100% of the normal bright sunshine hours during the month (Table 2).

Nadi Airport recorded 240.1 hours of total bright sunshine, with a mean of 7.7 hours/day. More than 10 hours of bright sunshine was recorded on a number of days with the highest daily sunshine hours of 12.2 hours recorded on the 23rd, followed by 12.1 hours on 1st and 21st, 11.9 hours on the 22nd, 11.8 hours on 24th, 10.9 hour on the 27th and 10.5 hours on the 28th. On the other hand, overcast conditions was observed on the 17th, with nil hours of bright sunshine.

Laucala Bay (Suva) recorded 192.2 hours of total monthly bright sunshine, with a mean of 6.2 hours/day. The longest duration of bright sunshine was 11.4 hours on the 26th, followed by 10.8 hours on the 23rd and 10.4 hours on the

1st. Overcast condition was observed on the 17th, with nil hours of bright sunshine

The total monthly bright sunshine hours at Nacocolevu was 178.5 hours, with a daily mean of 6.4 hours. The station's highest daily bright sunshine of 10.8 hours was recorded on the 2nd, followed by 10.0 hours on the 8th. NB: Nacocolevu had missing daily sunshine record from 20th to 22nd.

Rotuma's sunshine analysis is not presented in this summary due to missing observations.

7. WIND SUMMARY

The 10-minute average wind statistics recorded every three hours at Nadi Airport in January showed that easterly winds were predominant, accounting for 41.9% of the total observations, followed by westerly with 14.9% and south-easterly with 12.9% (Figure 6(a)). Calm conditions were recorded on 8.1% of the occasions. The 10-minute average wind speeds were light to gentle breeze in strength (Figure 6(b)).

The wind anomalies map on the NOAA website show persistence of south westerly wind anomalies of up to 1.5m/s in the Fiji region (Figure 13).

At Nausori Airport, calm conditions accounted for 51.6% of the three hourly observations, followed by south easterly winds with 12.2% and southerly winds at 9.8% (Figure 7(a)). The wind speeds ranged from calm to gentle in strength (Figure 7(b)).

Note:
 light air: 1-3 knots, light breeze: 4-6 knots, gentle breeze: 7-10 knots, moderate breeze: 11-16 knots, fresh breeze: 17-21 knots, strong breeze: 22-27 knots, near gale: 28-33 knots; gale: 34-40 knots; strong gale: 41-47 knots

Figure 6(a) Surface Wind Direction for Nadi Airport, Fiji. (WMO 91680 Lat 17° 45'35"South Long 177° 26'42"East Height above MSL 22m)

Figure 6(b) Surface Wind Speed for Nadi Airport, Fiji. (WMO 91680 Lat 17° 45'35"South Long 177° 26'42"East Height above MSL 22m)

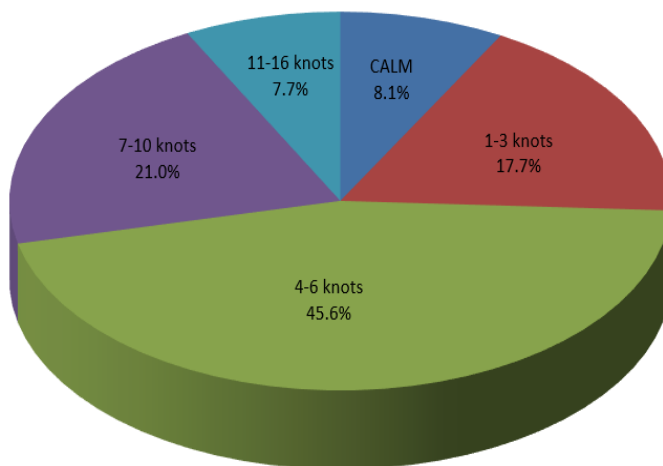
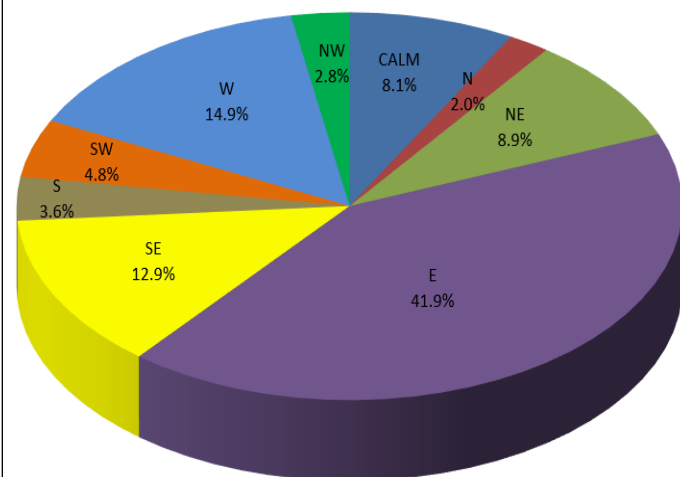
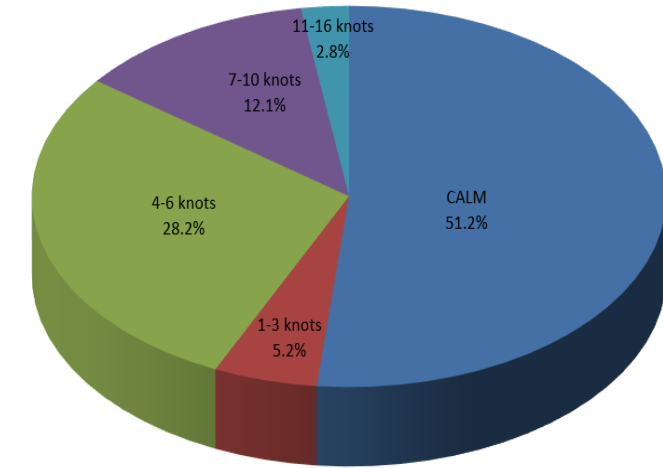
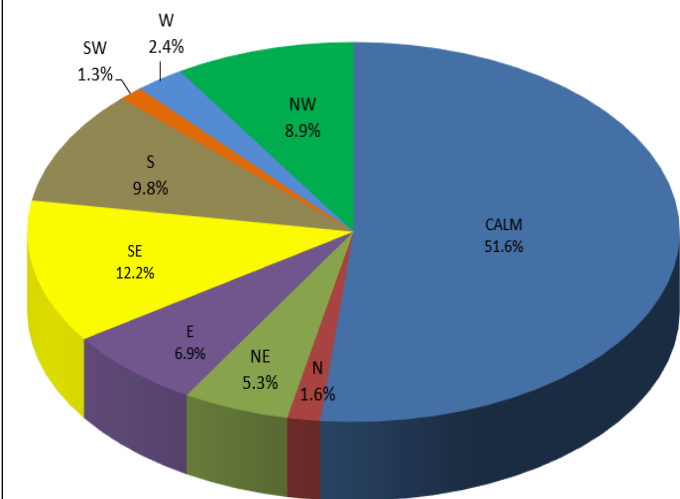


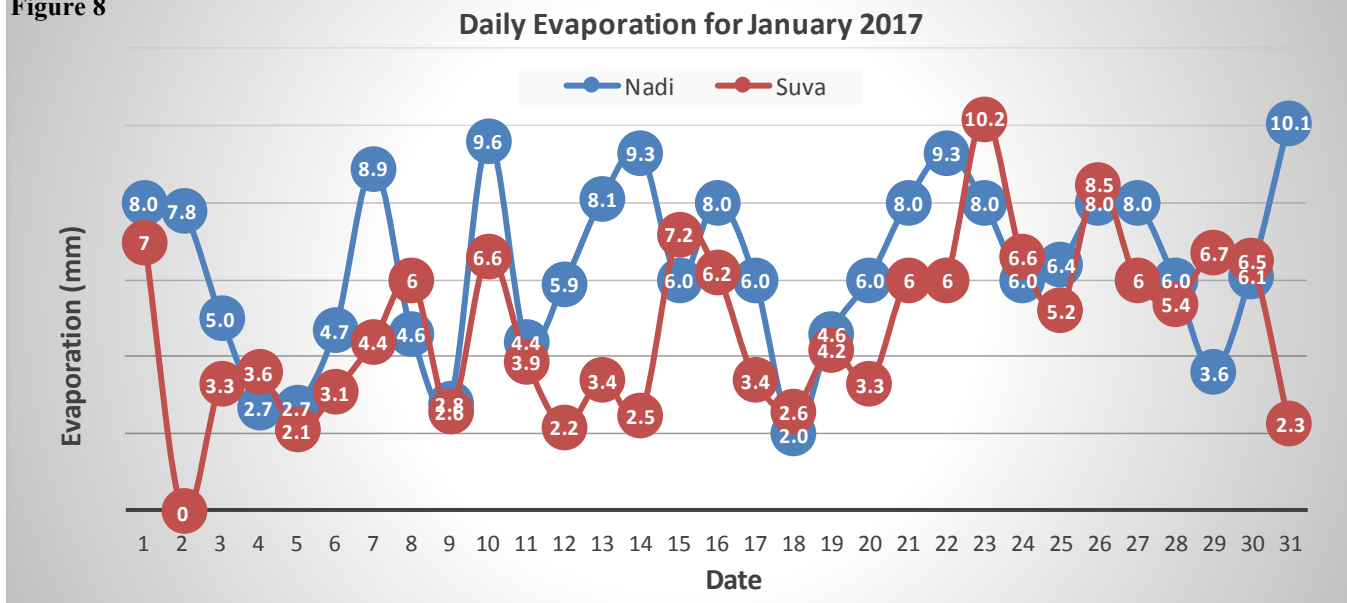
Figure 7(a) Surface Wind Direction for Nausori Airport, Fiji. (WMO 91683 Lat 18° 02'47"South Long 178° 33'33"East Height above MSL 3m)

Figure 7(b) Surface Wind Speed for Nausori Airport, Fiji. (WMO 91683 Lat 18° 02'47"South Long 178° 33'33"East Height above MSL 3m)



8. EVAPORATION

Figure 8



The total monthly raised pan evaporation at Nadi Airport was 186.5mm, while Laucala Bay recorded 144.7mm. Nadi Airport recorded the highest daily evaporation of 10.1mm on the 31st, while Laucala Bay registered the highest of 10.2mm on the 23rd.

9. RADIATION

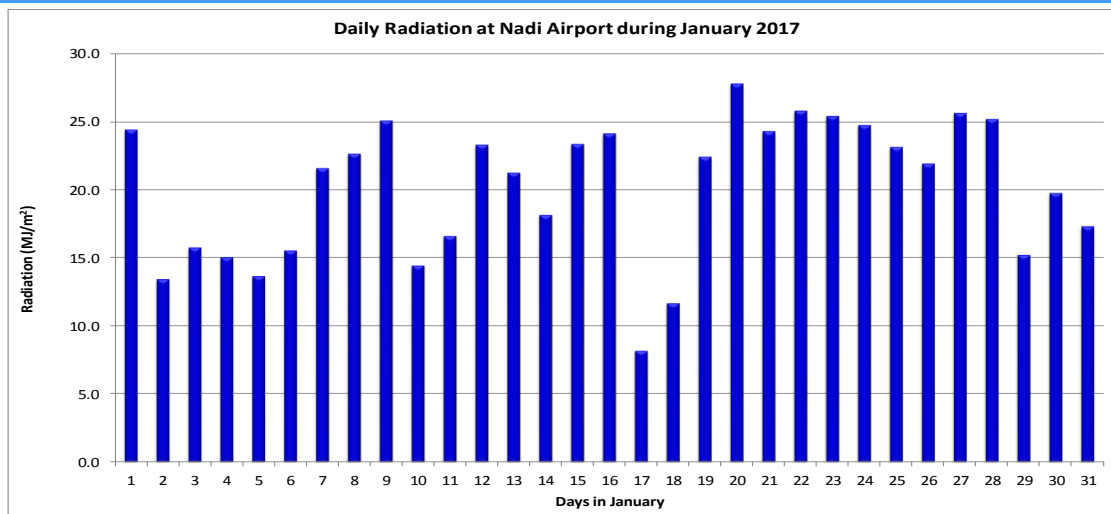


Figure 9:

The mean daily solar radiation at Nadi Airport during January 2017 was 20.2MJ/m², compared to 21.2MJ/m² over 30 year average (1971-2000).

10. SEA SURFACE TEMPERATURE (SST)

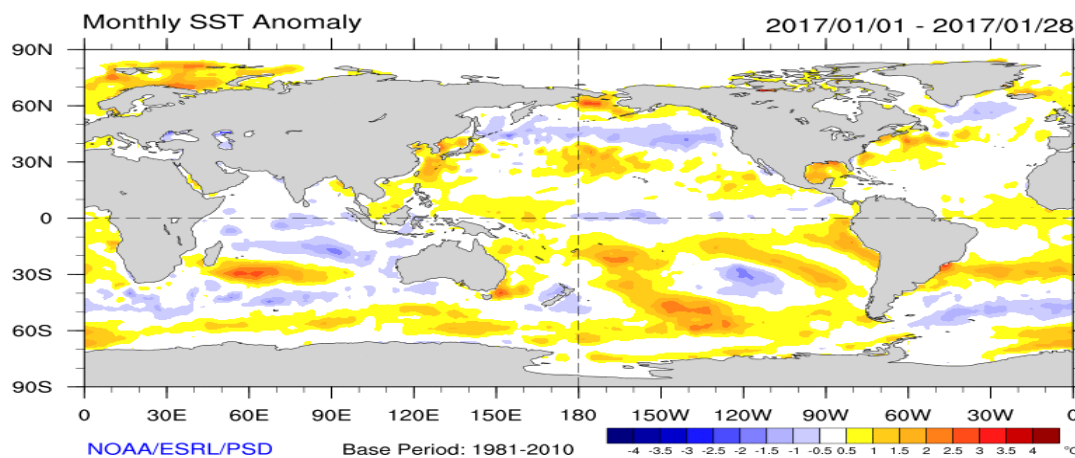


Figure 10:

SSTs were *above normal* in the Fiji region during January 2017 (base period: 1981-2010).

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

11. CLOUD COVER

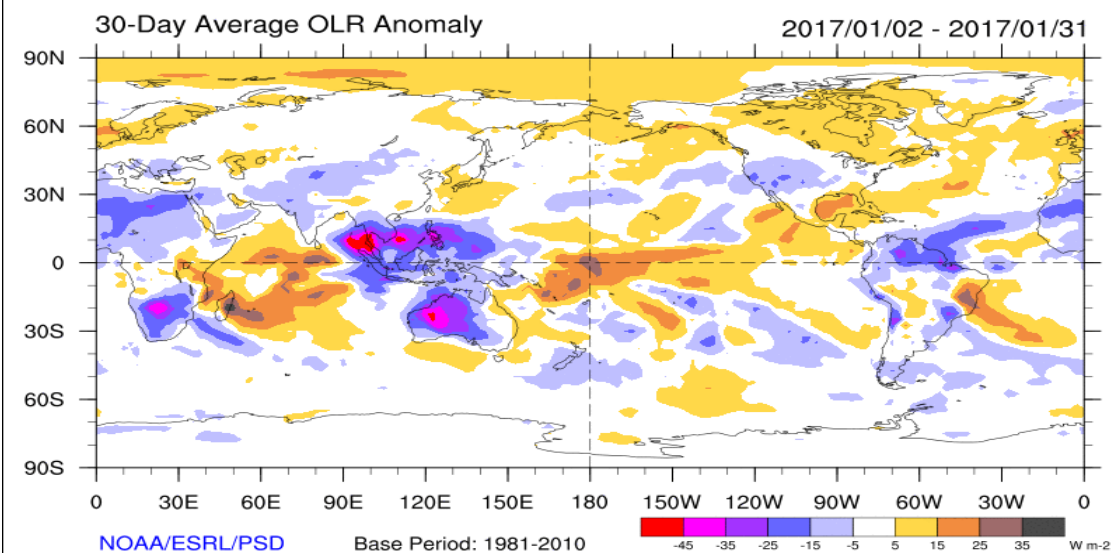


Figure 11:

OLR anomalies indicate presence of normal to slightly above normal cloud cover in the Fiji region (Fiji: ~17°S, 180°) (base period: 1981-2010).

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

12. SEA LEVEL

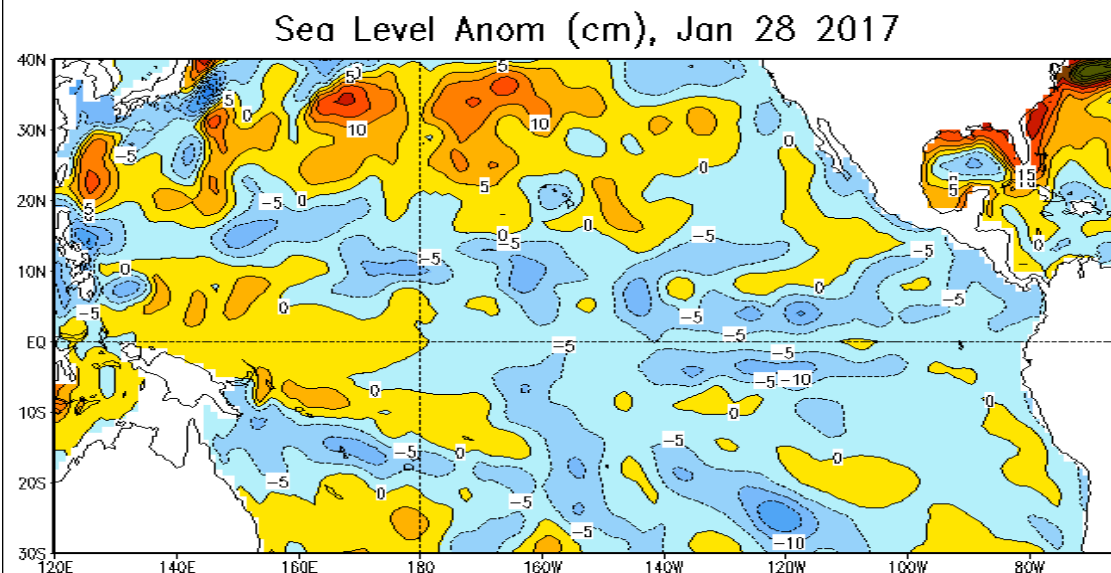


Figure 12:

Below normal sea level continues to persist in the Fiji waters, with -5 to -10cm anomalies (base period: 1981-2010).

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

13.. WIND ANOMALIES

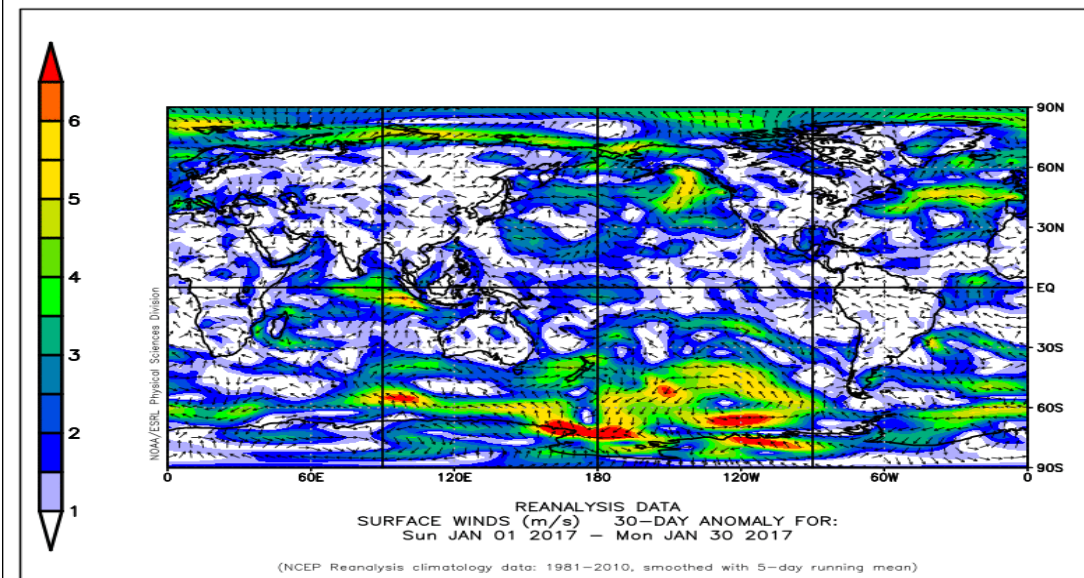


Figure 13:

Reanalysis data show south westerly wind anomalies of up to 1.5m/s in the Fiji region (Fiji: ~17°S, 180°) (base period: 1981-2010).

http://www.esrl.noaa.gov/psd/map/images/rnl/sfcwnd_30a.rnl.gif