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# Fiji Climate Summary December 2016



**ISO 9001:2008  
certified Climate  
Services**



Winner - Fiji Business Excellence Prize  
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## 1. IN BRIEF

Neutral El Niño Southern Oscillation conditions persisted during December 2016, but some indicators, in particular sea surface temperatures in the equatorial Pacific, were leaning towards a weak La Niña condition. The South Pacific Convergence Zone was displaced to the south of its normal position while Tropical Depression, TD04F, was the significant weather feature for the month.

The trough of low pressure and active rain bands associated with TD04F, enhanced by moist easterly wind flow caused an overwhelming amount of rainfall in parts of the country from the 12<sup>th</sup> to the 20<sup>th</sup>.

Over a 24-hour period, Monasavu recorded rainfall as much as 287mm on the 17<sup>th</sup>, followed by Waimanu with 283mm on the 15<sup>th</sup> and Vatukaceveva with 279mm on the 19<sup>th</sup>.

From 12<sup>th</sup> to the 20<sup>th</sup>, Monasavu received 911mm of rainfall, followed by, Vatukaceveva, Navolau, Lomaivuna, Waimanu and Dobuilevu with 884mm, 846mm, 845mm, 843mm 743mm of rainfall, respectively. This led to severe flooding, in particular over the eastern half of Viti Levu and

parts of the Northern Division.

Rakiraki town was severely flooded, with Rewa River also breaking its bank. A number of landslides were reported resulting from prolonged heavy rainfall in various parts of the country with Qamea Island being badly affected.

As a result of TD04F, most parts of the country received *above average* to *well above average* rainfall this month. More than 2 times the *normal* December rainfall was recorded at Tokotoko, Laucala Bay, Penang, Dobuilevu, Matei, Nabouwalu and Lakeba, with 3 or more times the *normal* rainfall at Viwa, Koronivia, Nausori Airport and Nabouwalu. Yasawa-i-rara recorded more than 4 times the *normal* rainfall.

Record high total monthly rainfall for December was established at Koronivia, Nausori Airport, Laucala Bay, Navua and Viwa. Furthermore, a new daily high rainfall for December was set at Matei Airfield and Nabouwalu on the 17<sup>th</sup>.

## 2. WEATHER PATTERNS

The weather in December was dominated by a slow moving Tropical Depression, TD04F, semi permanent high pressure systems, broad southeast trade winds and a trough of low pressure.

During the first week, cloud and showers affected most parts of the group due to a slow moving trough of low pressure to the southwest of Fiji. The trough was pushed northwards by an intense high pressure system to the South of Fiji. 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 isolated afternoon or evening thundery showers elsewhere.

Another trough of low pressure moved over the group on the 9<sup>th</sup> as the high pressure system to the south relaxed. The trough affected most parts of the group with cloud and showers being experienced until the 12<sup>th</sup>.

On the 13<sup>th</sup>, a low pressure system that was slow moving near Rotuma intensified into a Tropical Disturbance and

was numbered TD04F, which was later upgraded to Tropical Depression. It remained slow moving just west of Fiji between 13<sup>th</sup> and 20<sup>th</sup> before picking up the speed and moving south from 21<sup>st</sup>. Associated active rain bands and trough of low pressure caused widespread heavy rain and flooding between 14<sup>th</sup> and the 21<sup>st</sup>. Heavy rain and flood warnings were issued for the whole of Fiji. Many locations recorded more than 100mm of rainfall in 24 hours with several locations receiving more than 250mm of rainfall in 24 hours.

After the passage of TD04F, the southeast winds re-established itself later on the 22<sup>nd</sup> and prevailed till the end of December. Fine weather was experienced over the Christmas weekend with trade showers confining to the eastern parts and isolated afternoon or evening showers elsewhere.

Rotuma's weather was largely influenced by the South Pacific Convergence Zone, the southeast wind and TD04F producing rain on most of the days.

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

### 3. RAINFALL

Significantly wetter than normal conditions were experienced during the month, with more than 50% of the stations reporting *well above average* (>200% of normal) rainfall.

Rain bands associated with TD04F brought intense rainfall over most parts of the country from 12<sup>th</sup> to the 20<sup>th</sup>. This was the only notable heavy rain event, thus, most of the stations recorded their maximum 24 hour rainfall during this period.

Over the 24-hour period, Monasavu recorded 287mm of rainfall on the 17<sup>th</sup>, followed by Waimanu with 283mm on the 15<sup>th</sup>, Vatukaceveceva with 279mm on the 19<sup>th</sup>, Navua with 255mm on the 15<sup>th</sup>, Matei with 254mm on the 17<sup>th</sup> and Nabouwalu with 253mm on the 17<sup>th</sup>.

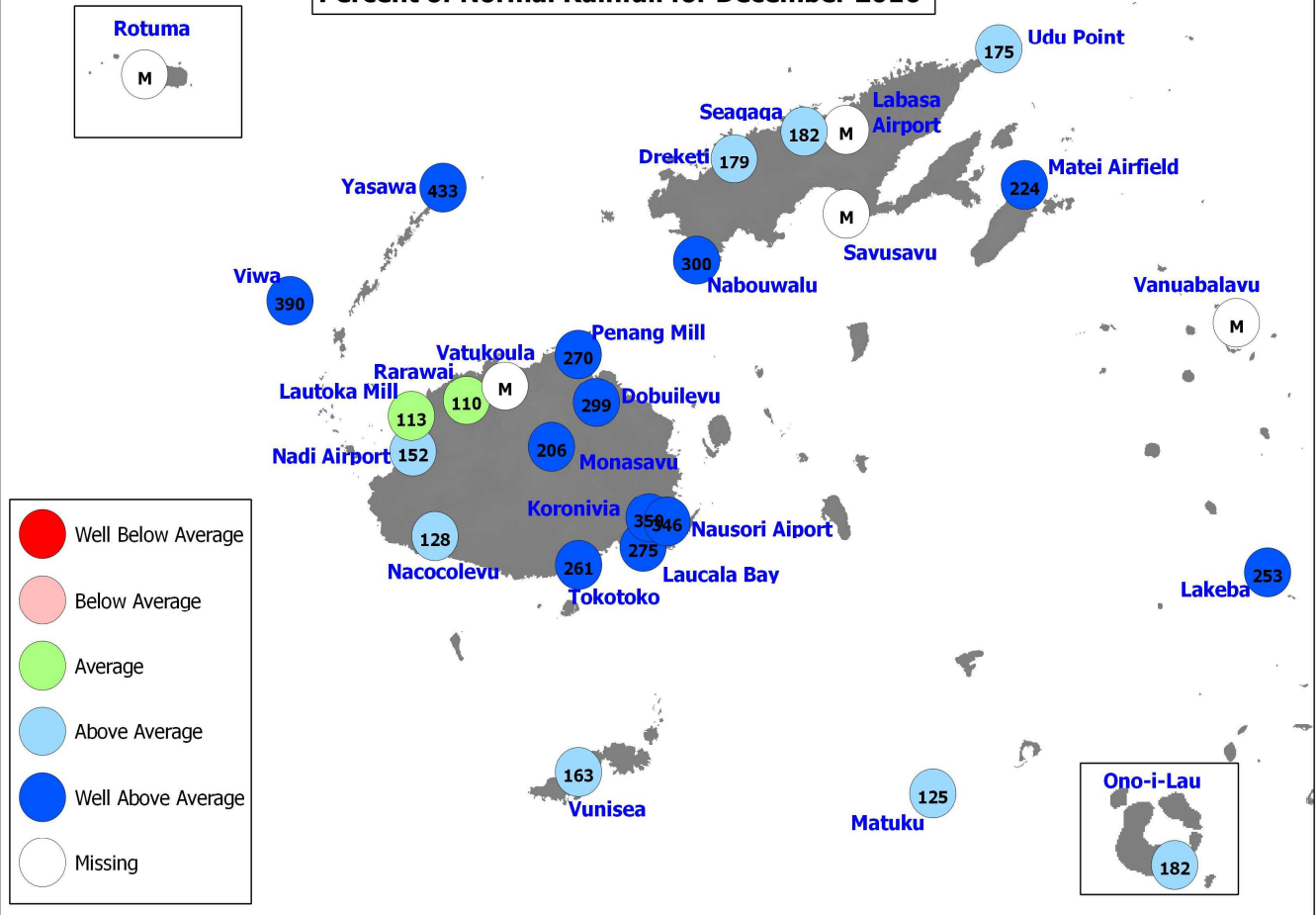
The highest monthly rainfall of 1103mm was recorded at Monasavu, followed by 1071mm at Lomaivuna (Naitasiri), 924mm at Nausori Airport, 918mm at Koronivia, 908mm at Tokotoko, and 765mm at Nabouwalu (Table 2).

A new daily high rainfall for December was established at Matei Airfield and Nabouwalu on the 17<sup>th</sup>. Furthermore, new total monthly December rainfall records were established at Laucala Bay, Viwa, Nabouwalu, Navua, Yasawa and Dobuilevu (Table 1).

Tokotoko and Laucala Bay recorded the highest number of rain days (rainfall  $\geq 0.1\text{mm}$ ) with 27 days, followed by 26 days at Nadarivatu, 25 days at Lomaivuna, Nausori, Koronivia and Matei Airfield, 24 days at Monasavu and RKS, 21 days at Udu Point and Dobuilevu, and 20 days at Nabouwalu and Lakeba.

Figure 1

Percent of Normal Rainfall for December 2016



**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  $\geq 0.1\text{mm}$

**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

Generally *normal* daytime temperatures were recorded, with 76% (16 stations) of the stations recording anomalies within  $\pm 0.5^{\circ}\text{C}$  and 5 stations (24%) recorded anomalies  $\geq 0.6^{\circ}\text{C}$  (Table 2 & Figures 2-5).

The warmest days on average was at Rarawai Mill (Ba) with  $32.7^{\circ}\text{C}$ , followed by Nacocolevu with  $31.5^{\circ}\text{C}$  and Labasa Airfield with  $31.4^{\circ}\text{C}$ . On the other hand, Nadarivatu recorded the coolest maximum temperature on average, with  $25.2^{\circ}\text{C}$ .

On the daily temperatures, majority of the stations recorded their daily maximum temperature during the first week of the month. The highest daily maximum temperature of  $38.0^{\circ}\text{C}$  was recorded at Levuka on the 2<sup>nd</sup>, followed by Rarawai Mill with  $36.0^{\circ}\text{C}$  on the 8<sup>th</sup> and Lautoka with  $35.0^{\circ}\text{C}$  on the 20<sup>th</sup>.

The greatest positive mean monthly daytime temperature departure from the *normal* was recorded at Levuka with  $+1.2^{\circ}\text{C}$ , followed by Nabouwalu with  $+1.1^{\circ}\text{C}$  and  $+0.8^{\circ}\text{C}$  at Matei Airfield.

Viwa recorded a new lowest maximum daily temperature for December with  $25.5^{\circ}\text{C}$  on the 15<sup>th</sup> (Table 1).

### B. Minimum Night-time Air Temperatures

The night temperatures ranged from *normal* to *above normal* during the month with 13 sites recording anomalies  $\geq 0.6^{\circ}\text{C}$ , 5 within  $\pm 0.5^{\circ}\text{C}$  and 2 with anomalies  $\leq -0.6^{\circ}\text{C}$  (Table 2 & Figures 2-5).

The coolest night on average was at Nadarivatu with  $18.3^{\circ}\text{C}$ , followed by Monasavu with  $19.1^{\circ}\text{C}$ , Labasa Airfield with  $20.9^{\circ}\text{C}$  and Rarawai Mill with  $22.3^{\circ}\text{C}$ . Conversely, the warmest night on average was experienced at Udu Point and Nabouwalu with  $25.0^{\circ}\text{C}$ , followed by Viwa with  $24.9^{\circ}\text{C}$  and Laucala Bay with  $24.7^{\circ}\text{C}$ .

The coolest night was observed at Nadarivatu with  $15.0^{\circ}\text{C}$  on the 8<sup>th</sup>, followed by Labasa Airfield with  $17.0^{\circ}\text{C}$  on the 20<sup>th</sup>, Monasavu with  $17.6^{\circ}\text{C}$  on the 23<sup>rd</sup>, Ono-i-Lau with  $19.7^{\circ}\text{C}$  on the 31<sup>st</sup> and Rarawai Mill with  $19.9^{\circ}\text{C}$  on the 1<sup>st</sup>.

On the other hand, Rotuma recorded night-time temperature as high as  $27.5^{\circ}\text{C}$  on the 20<sup>th</sup>, followed by Vunisea with  $26.9^{\circ}\text{C}$  on the 2<sup>nd</sup>, Nabouwalu with  $26.8^{\circ}\text{C}$  on the 14<sup>th</sup> and Udu Point with  $26.7^{\circ}\text{C}$  on the 1<sup>st</sup>.

The greatest positive mean monthly night-time air temperature departure from the *normal* of  $+2.1^{\circ}\text{C}$  was recorded at Tokotoko, followed by  $+1.6^{\circ}\text{C}$  at Savusavu Airfield and  $+1.2^{\circ}\text{C}$  at Laucala Bay and Nadi Airport.

**TABLE 1. CLIMATE RECORDS ESTABLISHED IN DECEMBER 2016**

<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	Nabouwalu	253.1mm	17 <sup>th</sup>	New High	210.8mm	1958	1918
Daily Maximum Rainfall	Matei	254.1mm	17 <sup>th</sup>	New High	234.0mm	1995	1956
Total Monthly Rainfall	Laucala Bay (Suva)	761.8mm	-	New High	579.8mm	2014	1942
Total Monthly Rainfall	Yasawa-i-Rara	670.6mm	-	New High	412.0mm	1971	1950
Total Monthly Rainfall	Dobuilevu	811.5mm	-	New High	739.0mm	1944	1937
Total Monthly Rainfall	Viwa	561.6mm	-	New High	449.1mm	1988	1978
Total Monthly Rainfall	Nabouwalu	764.9mm	-	New High	661.2mm	1961	1918
Total Monthly Rainfall	Tokotoko	1060.4mm	-	New High	769.9	1992	1992
Total Monthly Rainfall	Nausori	924.2mm	-	New High	732.6mm	2014	1956
Daily Maximum Temp.	Viwa	25.5 $^{\circ}\text{C}$	15 <sup>th</sup>	New Low	25.7 $^{\circ}\text{C}$	1978	1978

*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 DECEMBER 2016**

	RAINFALL				AIR TEMPERATURES								SUNSHINE			
	TOTAL	RAIN		MAX.	AVERAGE DAILY				EXTREME		TOTAL					
	MM	%	* DAYS +	MM ON	MAX. °C	# °C	MIN. °C	# °C	MAX. °C	ON °C	MIN. °C	ON °C	HRS	*		
NADI AIRPORT	270	152	14	62	19	31.3	-0.2	23.6	1.2	32.7	9	22.4	17	203	89	
SUVA/LAUCALA BAY	762	275	27	186	15	30.0	-0.3	24.7	1.2	33.5	1	23.1	16	128	66	
NACOCOLEVU	231	128	15	46	19	31.5	0.6	22.3	0.7	34.3	3	20.2	8	213	116	
ROTUMA	INSUFFICIENT DATA				31.3	0.6	25.3	0.6	33.0	5	23.4	17				
VIWA	562	390	11	146	18	31.2	0.3	24.9	-0.1	33.8	7	22.0	29			
UDU POINT	460	175	21	106	16	30.4	-0.1	25.0	0.9	32.6	1	22.6	17			
SAVUSAVU AIRFIELD	SUSPICIOUS DATA				30.1	-0.1	24.6	1.6	33.1	1	23.0	27				
LABASA AIRFIELD	SUSPICIOUS DATA				31.4	-0.3	20.9	-0.8	33.0	1	17.0	20				
NABOUWALU	765	300	20	253	17	30.7	1.1	25.0	1.0	34.0	2	23.5	19			
KORONIVIA	918	350	25	165	17	29.8	-0.0	U/S		32.5	2	U/S				
NAUSORI AIRPORT	924	346	25	237	15	29.6	-0.1	22.8	0.2	34.0	1	20.3	1			
NAVUA/TOKOTOKO	908	261	27	255	15	29.8	-0.5	23.0	2.1	32.5	21	21.0	23			
MONASAVU	1103	206	24	287	17	25.2	0.2	19.1	0.6	29.6	3	17.6	23			
LAUTOKA AES	218	113	16	61	16	30.9	-0.1	23.9	0.6	35.0	20	22.0	31			
BA/RARAWAI MILL	248	110	14	71	19	32.7	0.4	22.3	0.6	36.0	8	19.9	1			
PENANG MILL	713	270	17	220	18	INSUFFICIENT DATA										
MATEI AIRFIELD	664	224	25	254	17	30.4	0.8	23.7	0.8	31.9	4	21.7	18			
VANUABALAVU	NO REPORT															
LAKEBA	454	253	20	184	14	30.2	0.5	23.7	-0.0	33.2	1	22.2	31			
LEVUKA	SUSPICIOUS DATA				31.0	1.2	23.6	-0.2	38.0	2	22.0	17				
VUNISEA	299	163	18	83	16	29.7	0.3	24.2	1.3	33.0	2	21.6	31			
MATUKU	193	125	12	41	16	29.2	-0.5	24.3	0.5	32.5	1	20.6	31			
ONO-I-LAU	274	182	16	147	20	28.5	-0.2	22.8	-0.7	31.1	2	19.7	31			
DREKETI	430	179	16	115	17											
SEAQAQA	553	182	22	149	17											
YASAWA-i-RARA	671	433	15	205	18											
VATUKOULA	STATION CLOSED															
DOBUILEVU	812	299	21	206	17											

	TEMPERATURE( C)		HUMIDITY		WIND	SUN RAD		
	MEAN	DRY WET	RH% VP					
		(AVERAGE AT 9AM)			KT	%OF MJ/ POS SQ.M		
NADI AIRPORT	27.5	28.4	24.4	71	27.5	7.3	52	17.4
SUVA/LAUCALA BAY	27.4	27.8	24.9	78	29.1		33	18.1\$
NACOCOLEVU	26.9	27.6	25.2	96	30.3		54	22\$
ROTUMA	28.3	29.1	28.1	87	36.7	4.7		
VIWA	28.1	28.7	26.7	84	33.3	8.6		
UDU POINT	27.7	28.3	25.5	80	30.5	5.9		
SAVUSAVU AIRFIELD	27.4	28.1	25.5	80	30.5	5.3		
LABASA AIRFIELD	26.1	28.4	24.7	73	28.2			
NABOUWALU	27.9	28.6	25.9	80	31.3	8.0		
KORONIVIA	26.6	27.6	24.7	79	29.0			
NAUSORI AIRPORT	26.2	27.4	24.8	80	29.2	4.5		
NAVUA/TOKOTOKO	26.4	25.8	24.7	91	30.1			
MONASAVU	22.2	21.7	20.4	88	22.9			
LAUTOKA AES	27.4	28.9	25.5	75	30.0			
BA/RARAWAI MILL	27.5	29.0	25.1	72	28.7			
PENANG MILL	INSUFFICIENT DATA							
MATEI AIRFIELD	27.1	28.4	25.6	80	30.8			
VANUABALAVU	NO REPORT							
LAKEBA	26.9	28.0	25.4	81	30.5	6.8		
LEVUKA	27.3	27.7	INSUFFICIENT DATA					
VUNISEA	27.0	27.5	24.7	79	28.9	9.4		
MATUKU	26.7	27.1	24.0	76	27.4	7.6		
ONO-I-LAU	25.7	26.7	23.8	78	27.2	9.1		

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  
(December, 2015 - December, 2016)**

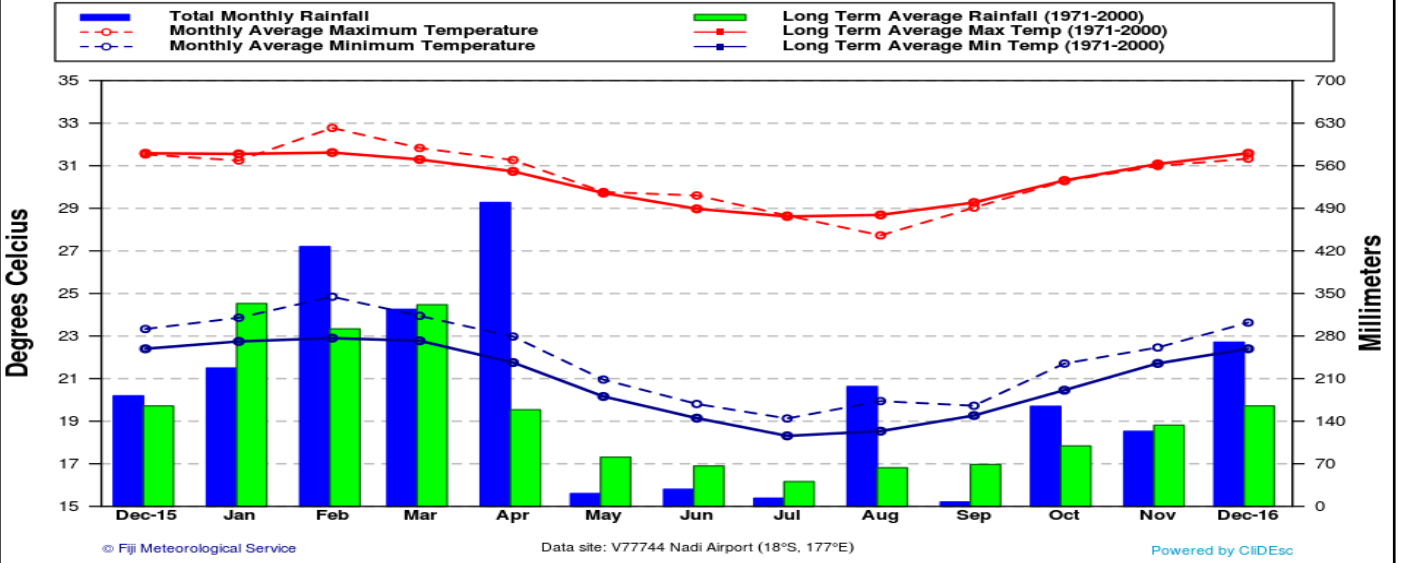


Figure 3

**Laucala Bay - Temperature & Rainfall for the last 13 Months  
(December, 2015 - December, 2016)**

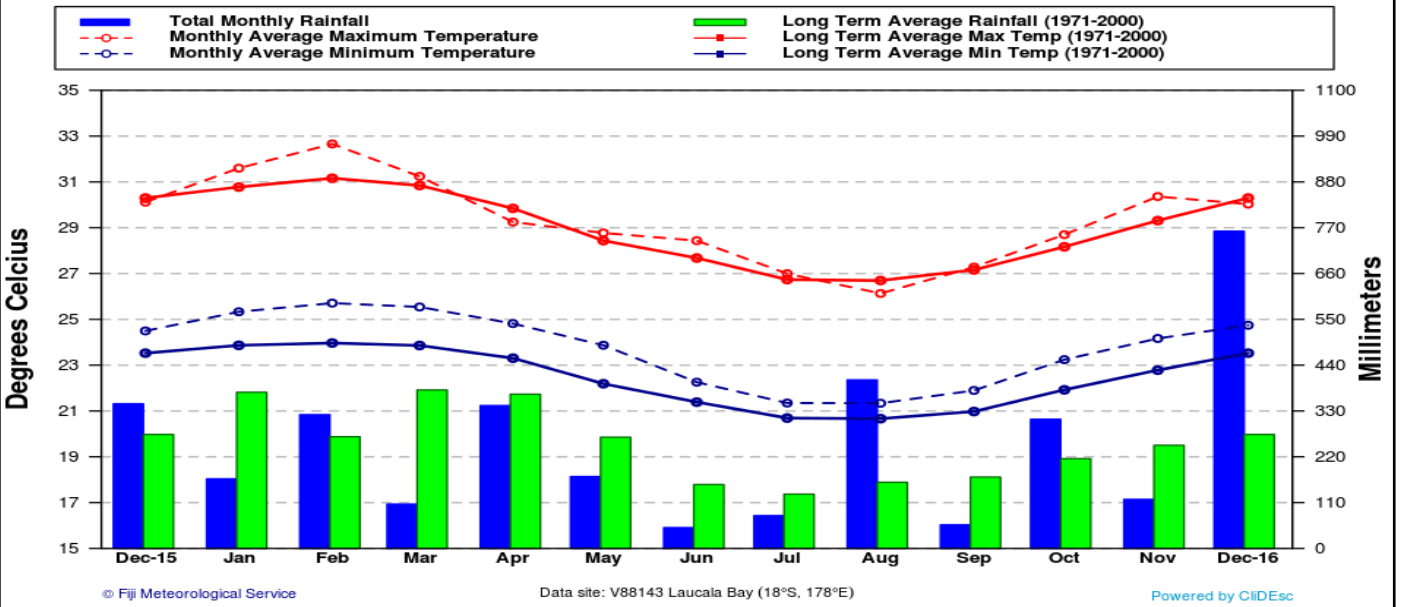


Figure 4

**Labasa Airfield - Temperature & Rainfall for the last 13 Months  
(December, 2015 - December, 2016)**

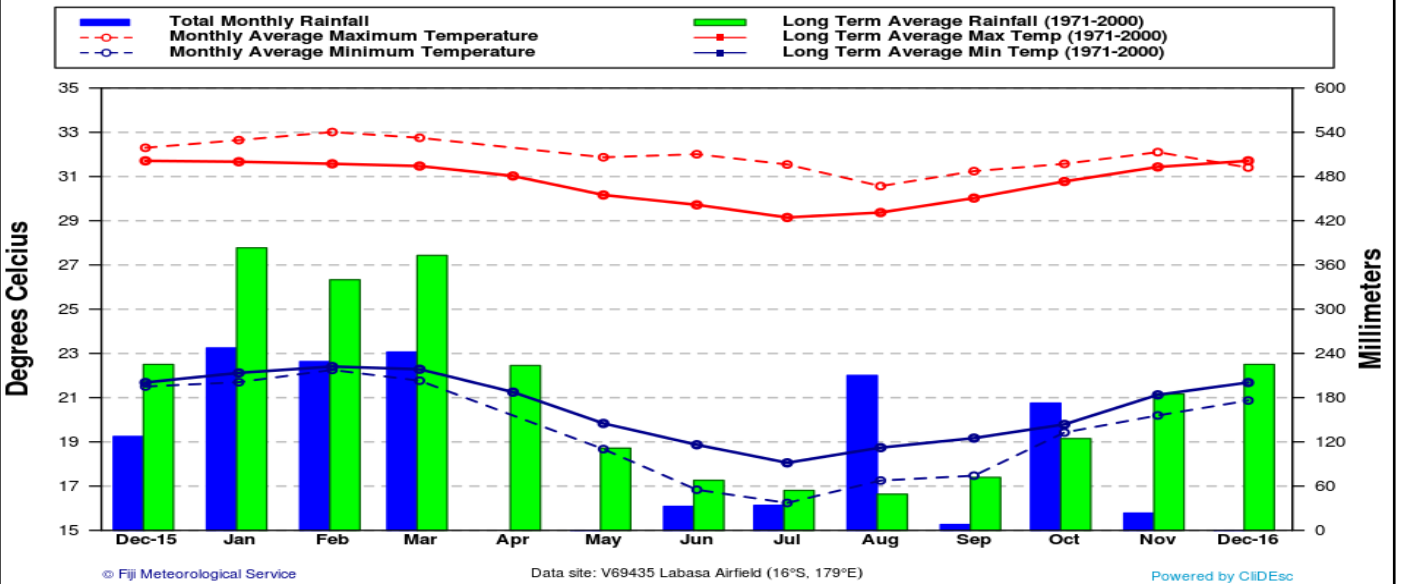
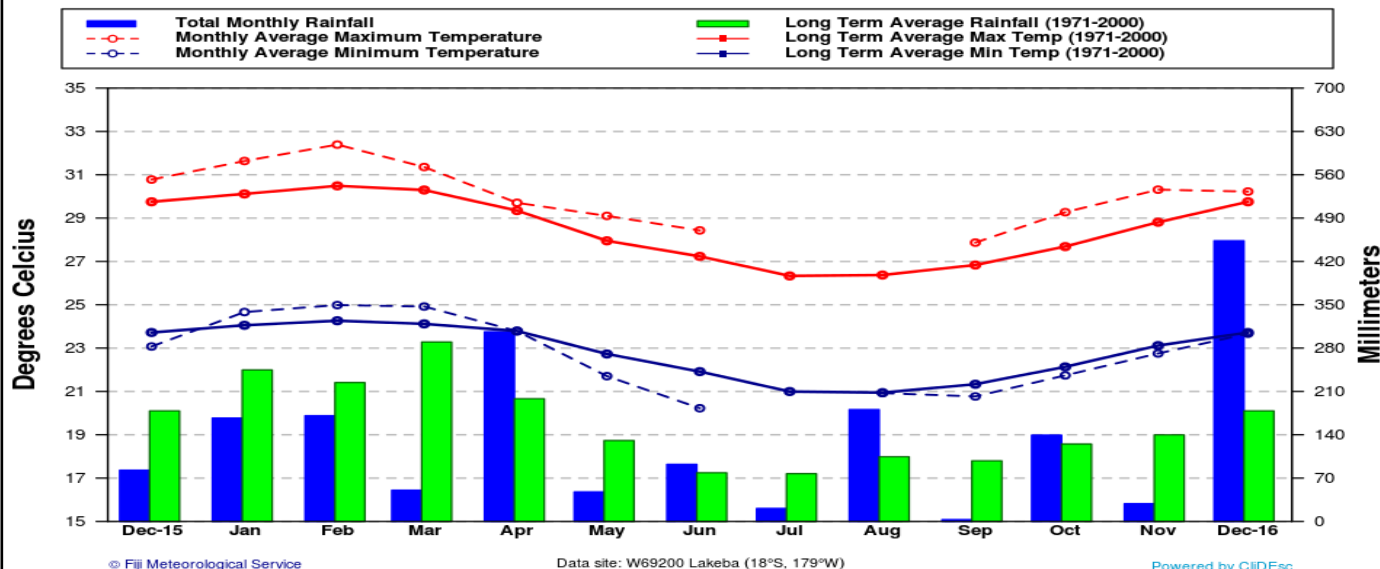




Figure 5

Lakeba - Temperature & Rainfall for the last 13 Months  
(December, 2015 - December, 2016)



## 5. RELATIVE HUMIDITY AT 0900HOURS

The 9am average relative humidity (RH) ranged from 71% to 91% during the month (Table 2).

The Western Division stations recorded daily average RH values between 71% and 96%. Significant positive mean monthly RH departures were observed at Nacocolevu and Viwa with +19% and +10% respectively, followed by +5% at Nadi Airport, +4% at Lautoka Mill and +1% at Rarawai Mill.

The Central Division stations recorded daily average RH values between 78% and 91%. Generally *normal* RH anomalies from mean were observed throughout the Division, with the most significant positive anomaly of 8% recorded at Tokotoko and the lowest of -1% registered at Laucala Bay (Suva).

Northern Division stations recorded daily average RH from 73% to 80%, while daily RH values ranged from 56% to 99%. Generally *normal* mean monthly RH were recorded, with the highest anomaly from mean of +3% recorded at Udu Point and Nabouwalu, +2% at Savusavu Airfield and -1% at Labasa Airfield.

The mean monthly RH in the Eastern Division ranged from 76% to 81%, with *normal* RH observed with no significant RH departures from *normal*. The highest mean monthly RH anomaly of +5% was recorded at Lakeba, followed by +2% at Matuku and Vunisea (Kadavu).

The daily average RH at Monasavu was 88%, while Rotuma recorded 87%.

## 6. SUNSHINE

Nacocolevu, Nadi Airport and Laucala Bay recorded 116%, 89% and 66% of the *normal* bright sunshine hours during the month, respectively (Table 2).

Nadi Airport recorded 203.3 hours of total bright sunshine, with a mean of 6.6 hours/day. More than 12 hours of bright sunshine was recorded on the 8<sup>th</sup> with 12.1 hours, followed by 11.9 hours on the 6<sup>th</sup>, 11.8 hours on the 5<sup>th</sup> and 23<sup>rd</sup> and 11.4 hours on the 7<sup>th</sup> and 22<sup>nd</sup>. More than 10 hours of sunshine were also recorded on 6 other days. On the other hand, overcast conditions persisted on the 10<sup>th</sup> and from 15<sup>th</sup> to 17<sup>th</sup>, with no bright sunshine hours recorded.

Laucala Bay recorded 128.1 hours of total monthly bright sunshine, with a mean of 4.1 hours/day. The longest duration of bright sunshine was 11.3 hours on the 31<sup>st</sup>, followed by 10.7 hours on the 8<sup>th</sup>. The rest of the stations

recorded less than 9.0 hours of sunshine. Overcast conditions were recorded on the 11<sup>th</sup> and from the 13<sup>th</sup> to the 19<sup>th</sup>.

The total monthly bright sunshine hours at Nacocolevu was 212.5 hours, with a daily mean of 6.9 hours. The station's highest daily bright sunshine of 12.0 hours was recorded on the 27<sup>th</sup>, followed by 11.5 hours on the 4<sup>th</sup> and 23<sup>rd</sup> and 11.0 hours on the 10<sup>th</sup>, 24<sup>th</sup>, 25<sup>th</sup> and 30<sup>th</sup>. On the other hand, overcast conditions were observed on the 15<sup>th</sup> to 19<sup>th</sup>, with no bright sunshine recorded.

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 December showed that easterly winds were predominant, accounting for 40.5% of the total observations, followed by westerly with 15.8% and south-easterly with 14.2% (Figure 6(a)). Calm conditions were recorded on 6.1% of the occasions. The 10-minute average wind speeds were gentle to moderate in strength (Figure 6 (b)).

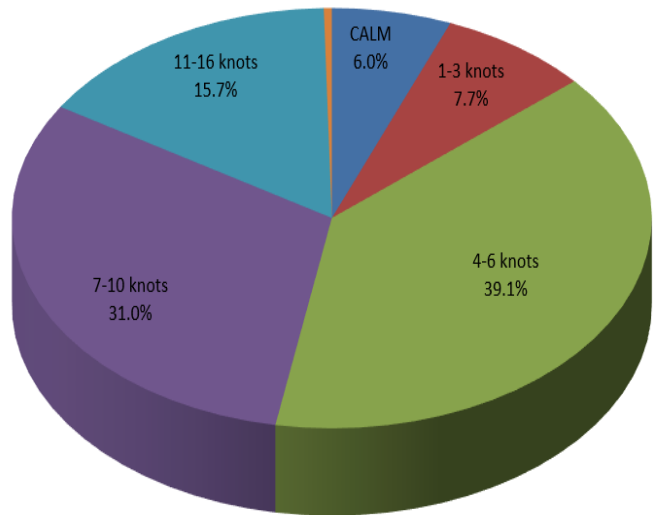
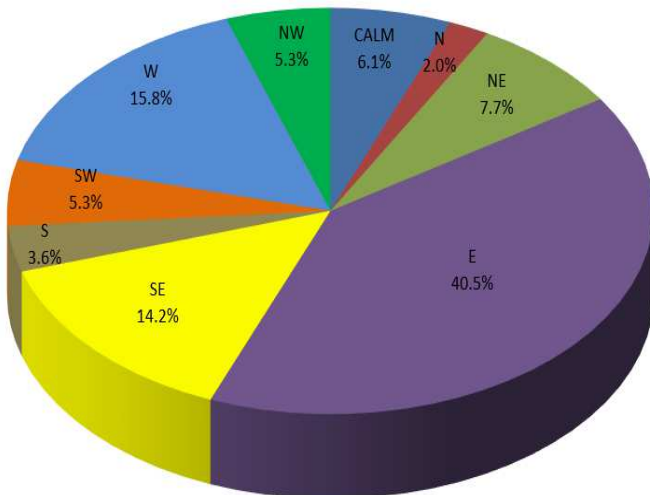
The wind anomalies map on the NOAA website show north westerly wind anomalies of up to 2m/s in the Fiji region during the month (Figure 13).

At Nausori Airport, calm conditions accounted for 38.3% of the observations, followed by easterly winds with 17.8% and southeasterly at 16.6% (Figure 7(a)). The wind speeds ranged from light to moderate 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

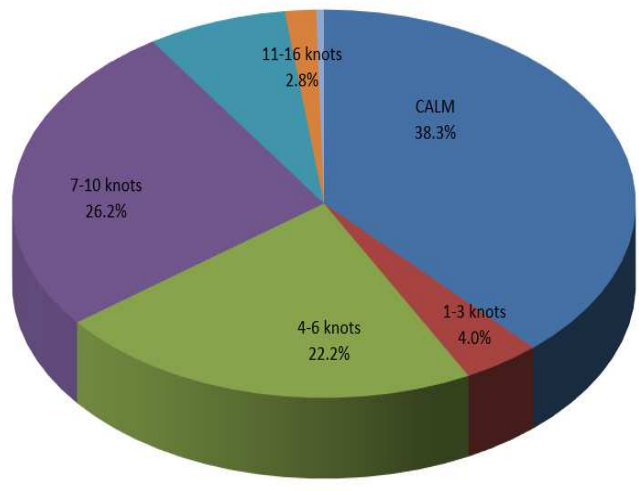
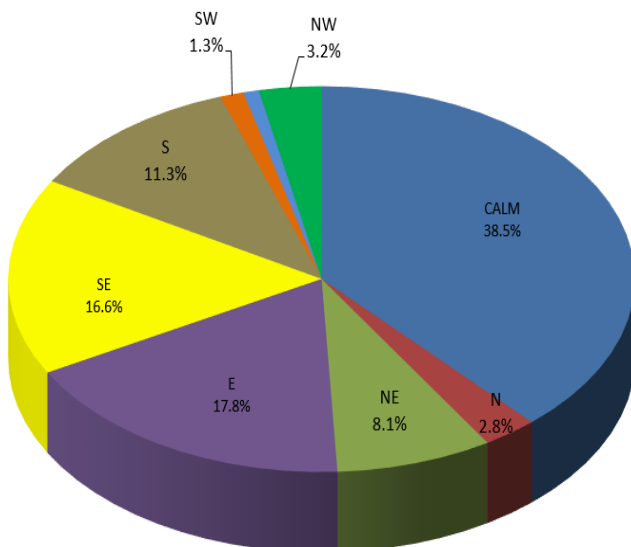
**Figure 6(a) Surface Wind Direction for Nadi Airport, Fiji. (WMO 91680 Lat 17°45'35"South Long 177°26'42"East Height above MSL 22m)**

**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)**

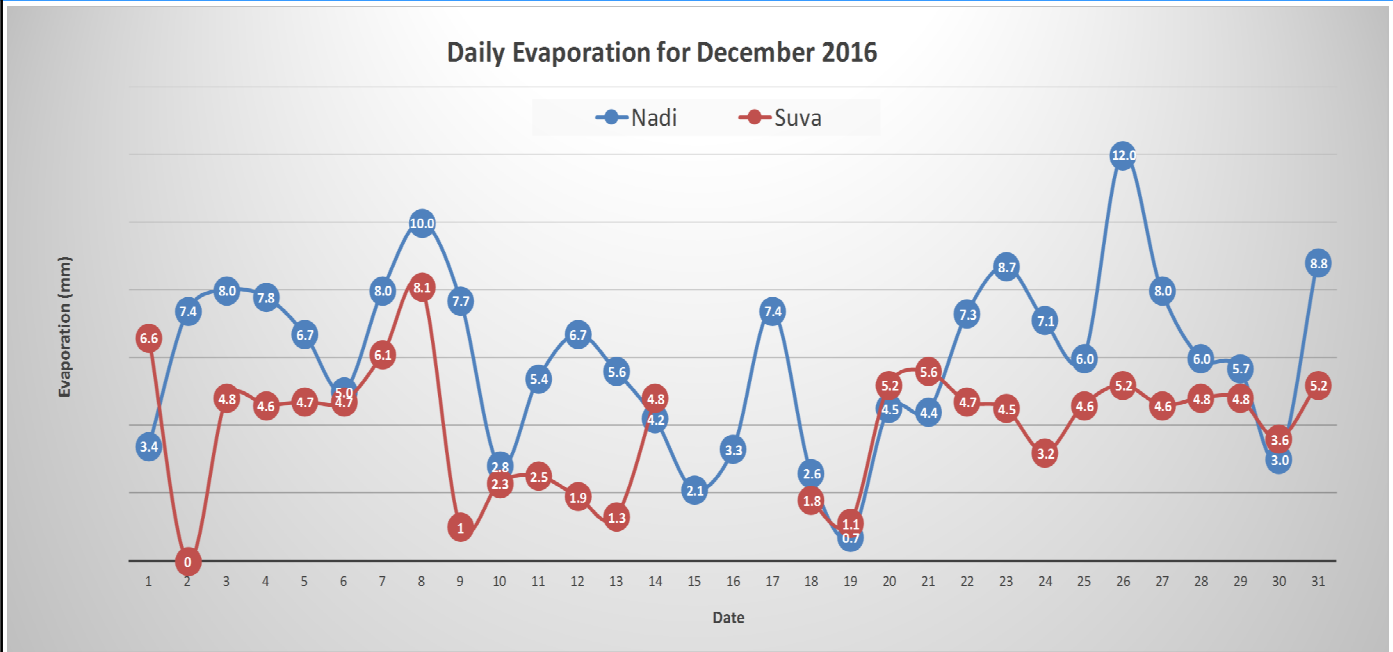


**Figure 7(a) Surface Wind Direction for Nausori Airport, Fiji. (WMO 91683 Lat 18°02'47"South Long 178°33'33"East Height above MSL 3m)**

**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



The total monthly raised pan evaporation at Nadi Airport was 177.5mm, while Laucala Bay recorded 107.1mm. Nadi Airport recorded the highest daily evaporation of 12.0mm on the 26<sup>th</sup>, while Laucala Bay registered the highest of 8.1mm on the 8<sup>th</sup>.

## 9. RADIATION

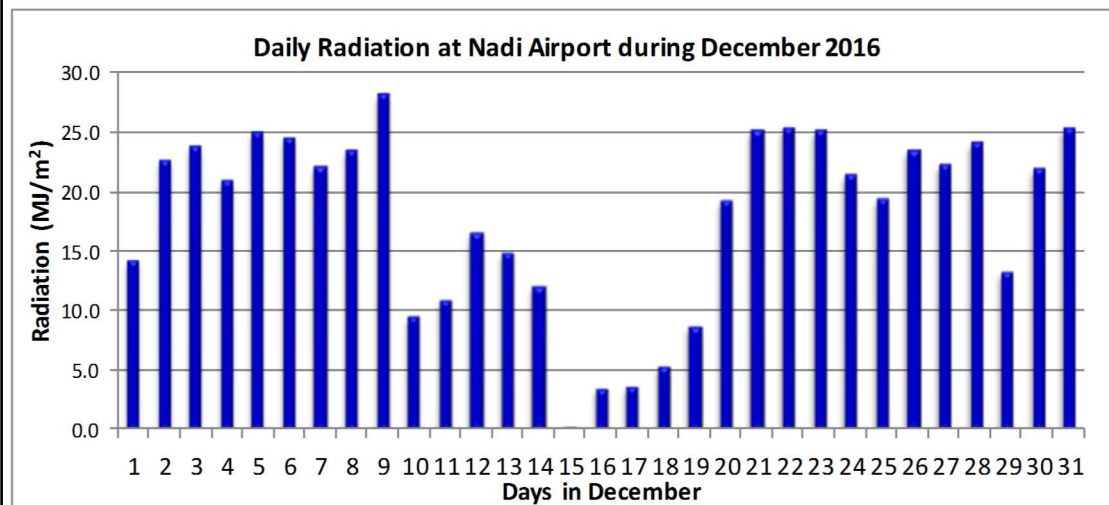


Figure 9:

The mean daily solar radiation at Nadi Airport during December 2016 was 17.9MJ/m<sup>2</sup>, compared to 22.3MJ/m<sup>2</sup> over 30 year average (1971-2000).

## 10. SEA SURFACE TEMPERATURE (SST)

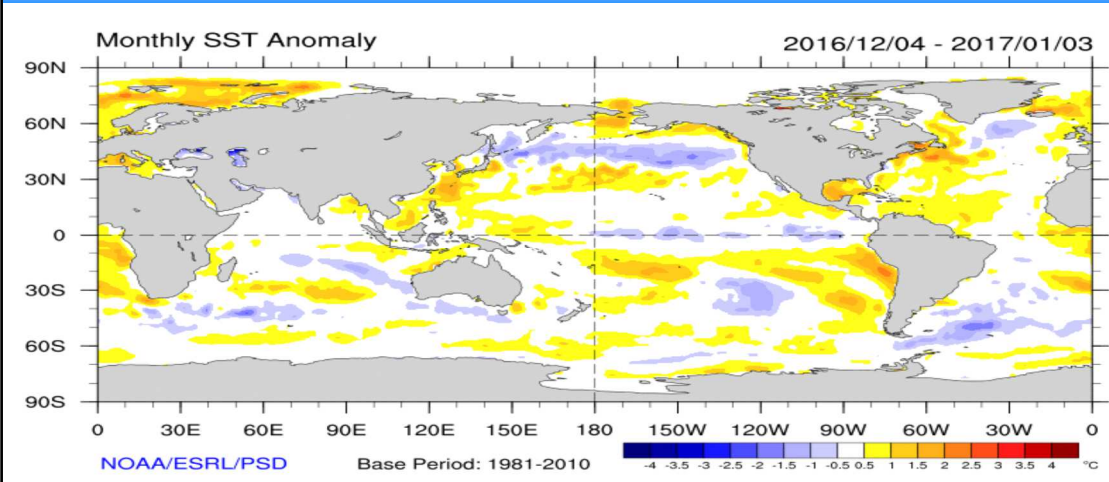


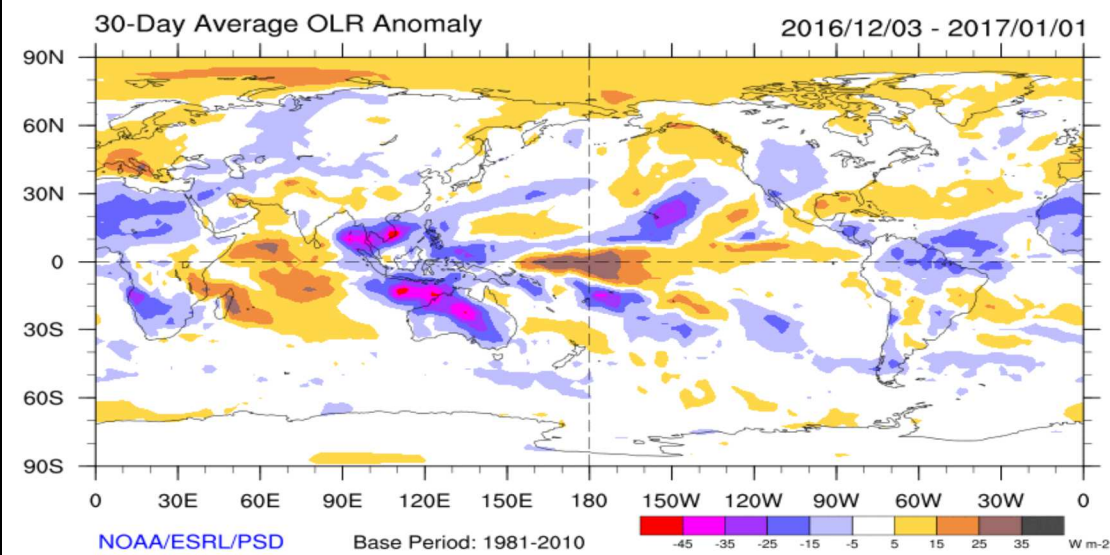
Figure 10:

SSTs were *above normal* in most of the Fiji region during December 2016 (base period: 1981-2010).

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



### 11. CLOUD COVER

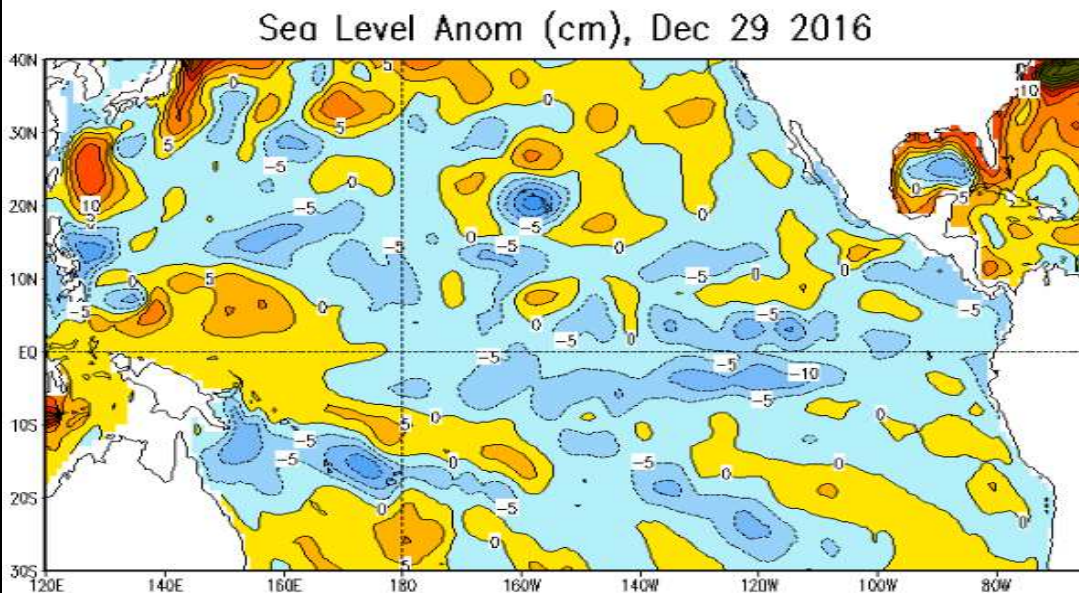


**Figure 11:**

OLR anomalies indicate presence of *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

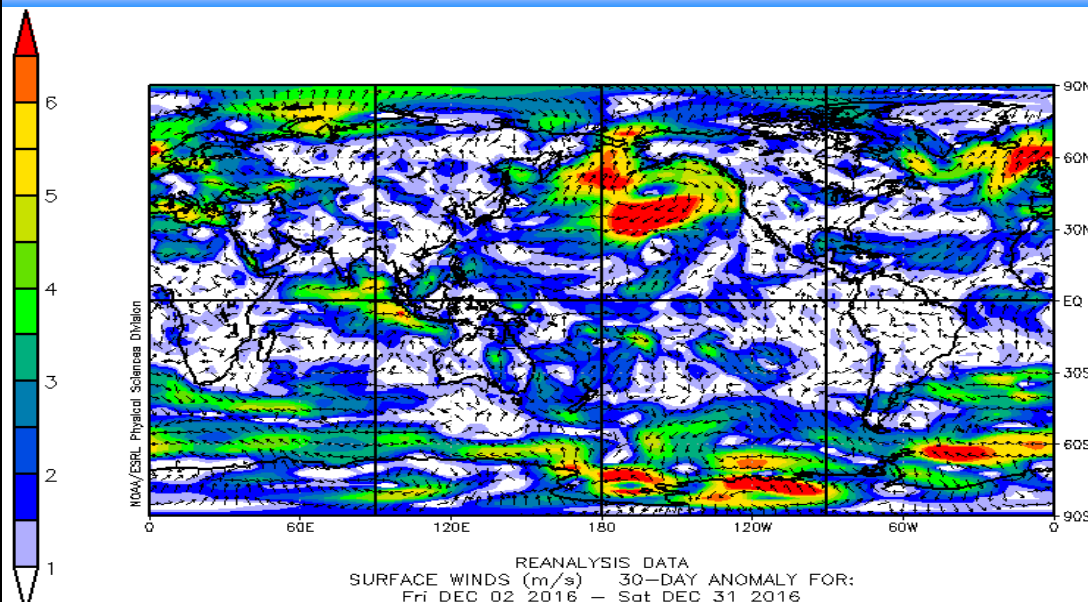


**Figure 12:**

Below normal sea level continues to persist in the Fiji waters, with -5 to -15cm anomalies (base period: 1981-2010).

[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)

### 13. WIND ANOMALIES



**Figure 13:**

Reanalysis data show north westerly wind anomalies of up to 2m/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](http://www.esrl.noaa.gov/psd/map/images/rnl/sfcwnd_30a.rnl.gif)

### 14. Tropical Depression - TD04F

A tropical depression, TD04F, resulted in significant amount of rainfall over the eastern half of Viti Levu and Northern Division during the month. This led to severe flooding with a number of landslides being reported around the country.

On the 11<sup>th</sup>, a low pressure system near Rotuma was analyzed. This system remained slow moving near Rotuma and on the morning of the 13<sup>th</sup>, it was upgraded to a Tropical Disturbance and numbered TD04F. Subsequently, a heavy rain alert was issued for the whole of Fiji at 9am on the 13<sup>th</sup> and was upgraded to heavy rain warning on the 14<sup>th</sup>.

TD04F remained slow moving just west of Fiji as it got in the middle of the slow moving near equatorial ridge to the northeast and subtropical ridge to the south, meaning TD04F lacked any dominant steering.

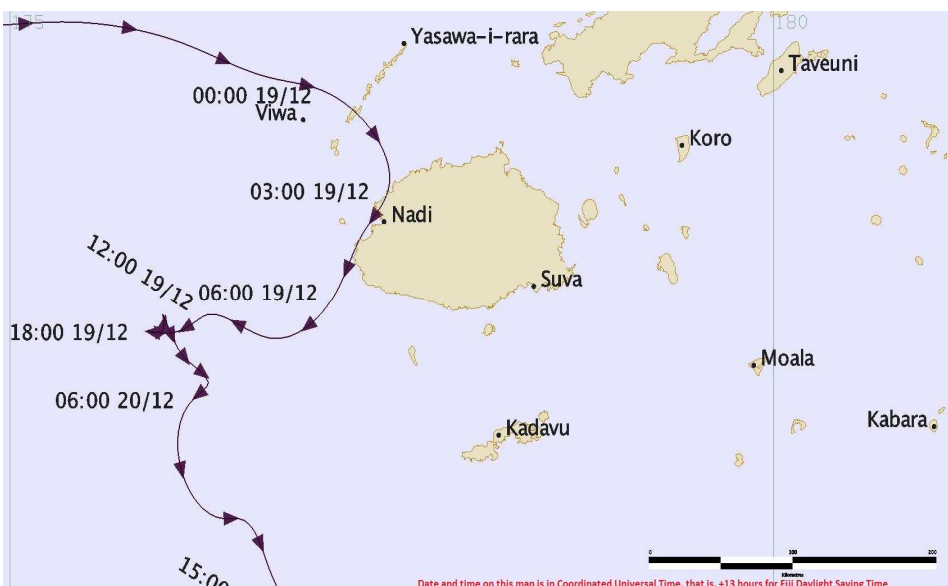


Figure 14: Track map of TD04F as it approached main islands of Fiji.

Situated in a favourable environment, TD04F was upgraded to a Tropical Depression on the early hours of the 15<sup>th</sup>.

As TD04F gradually moved southwards, the increasing wind shear prevented further intensification into a tropical cyclone. Strong wind shear displaced convection from the center to east and over Fiji. The trough of low pressure and active rain bands associated with TD04F, enhanced by moist easterly wind flow caused heavy rainfall over most parts of Fiji between 12<sup>th</sup> to the 20<sup>th</sup>.

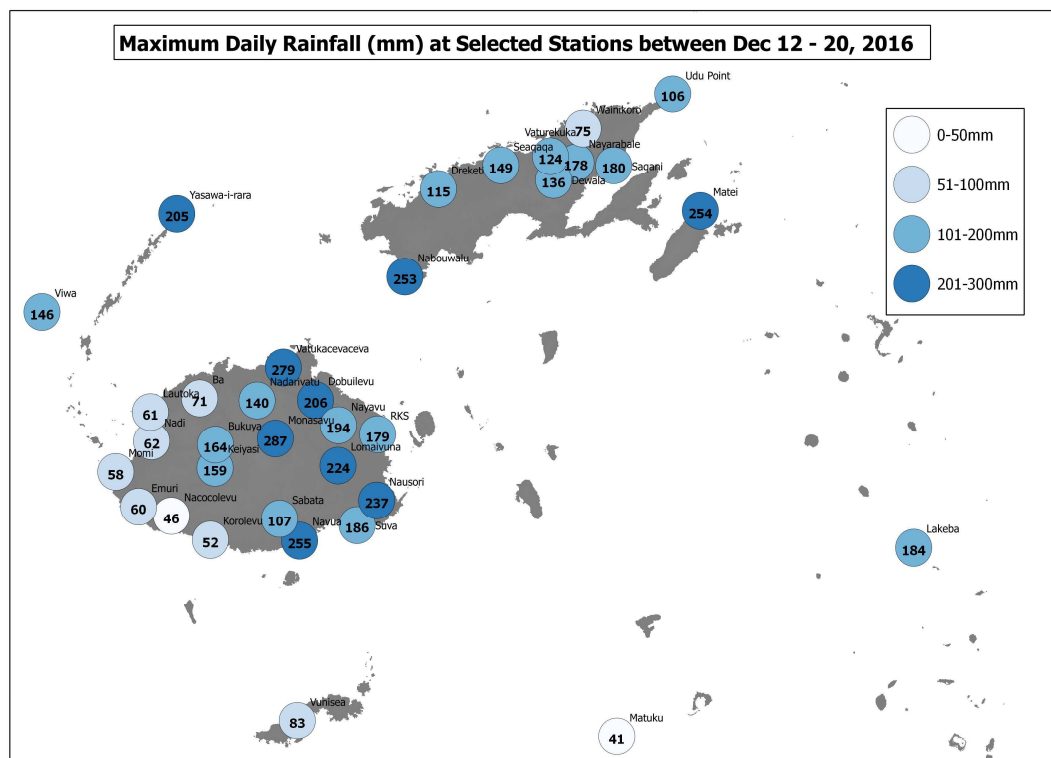


Figure 15: Maximum daily rainfall (24-hour) between 12<sup>th</sup> and 20<sup>th</sup>.

TD04F resulted in some record breaking rainfall. A new daily high rainfall for December was established at Matei Airfield and Nabouwalu on the 17<sup>th</sup>. Furthermore, a new high total monthly rainfall record for December was set at Viwa, Tokotoko, Laucala Bay, Koronivia, Nausori Airport and Nabouwalu (Table 1).

Over the 24-hour period, Monasavu recorded 287mm of rainfall on the 17<sup>th</sup>, followed by Waimanu with 283mm on the 15<sup>th</sup>, Vatukeyevaceva with 279mm on the 19<sup>th</sup>, Navua with

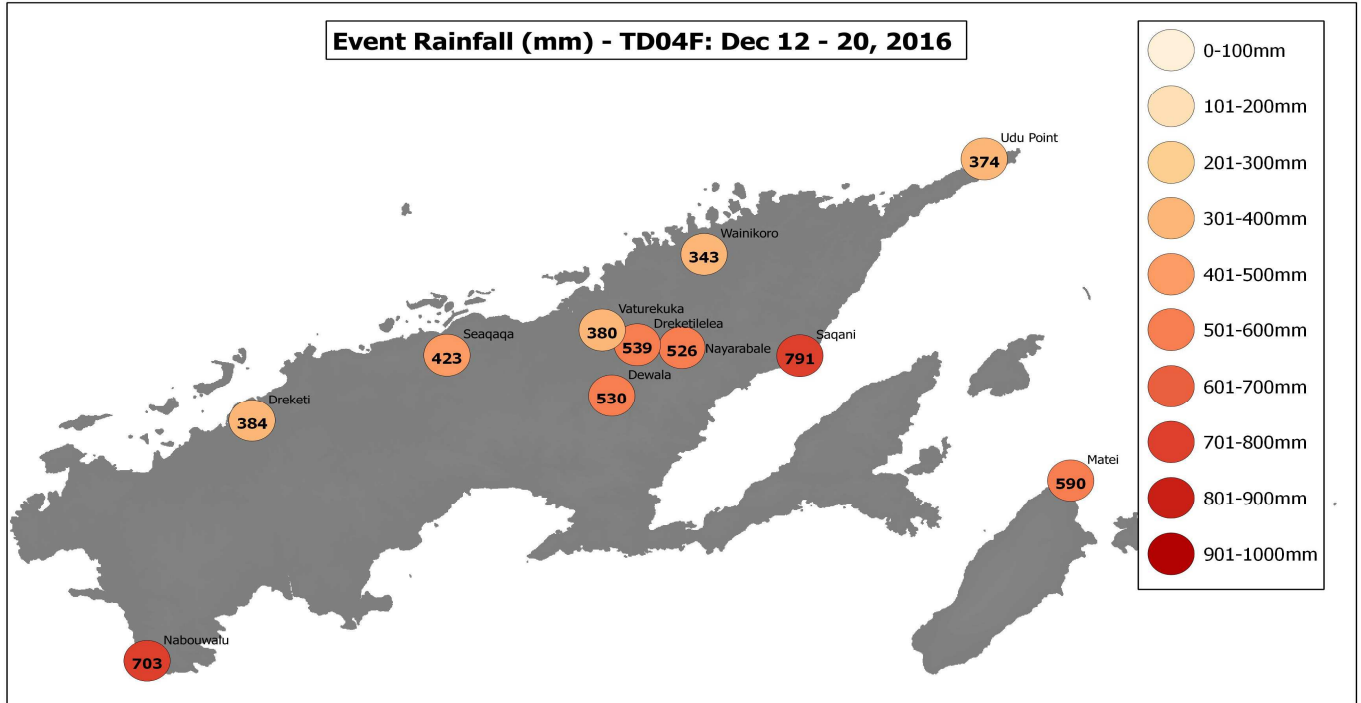
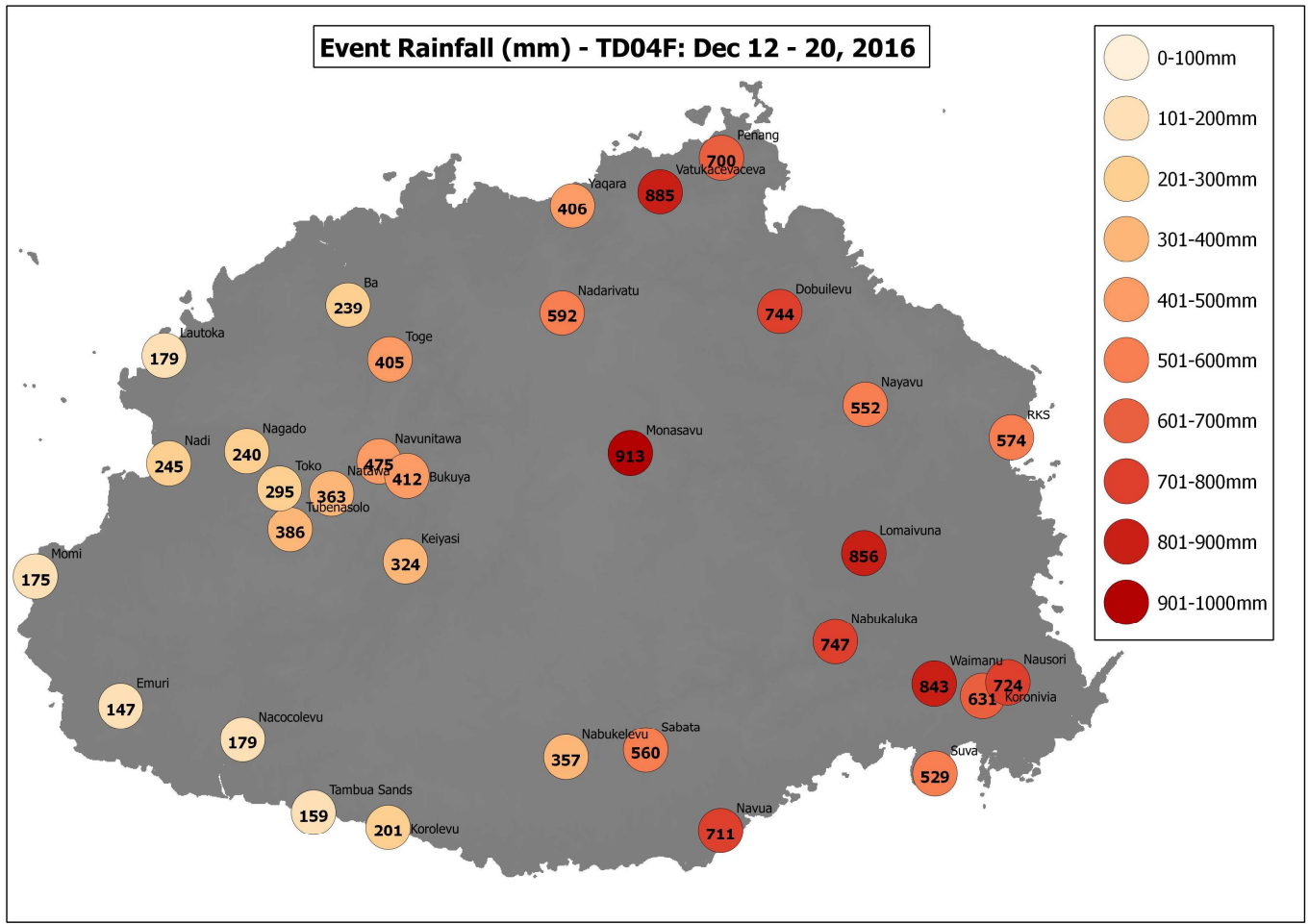


Figure 16: Accumulated rainfall from 12<sup>th</sup> to the 20<sup>th</sup>.

255mm on the 15<sup>th</sup>, Matei with 254mm on the 17<sup>th</sup> and Nabouwalu with 253mm on the 17<sup>th</sup> (Figure 15). From 12<sup>th</sup> to the 20<sup>th</sup>, Monasavu received 911mm of rainfall, followed by, Vatukaceveva, Navolau, Lomaivuna, Waimanu and Dobuilevu with 884mm, 846mm, 845mm, 843mm 743mm of rainfall, respectively (Figure 16).



The depression also resulted in strong to near-gale force winds in parts of the country. Rakiraki recorded sustained winds of up to 67 km/hr and gusts of up to 86 km/hr on the 17<sup>th</sup>, followed by Udu Point with maximum sustained winds of 50 km/hr and gusts of 78 km/hr on the 19<sup>th</sup> (Table 3).

Station	Date	Max. Sustained Wind (km/hr)	Max. Gust (km/hr)
Rakiraki	Dec 17 <sup>th</sup>	67	86
Udu Point	Dec 19 <sup>th</sup>	50	78
Koro Island	Dec 17 <sup>th</sup> & 18 <sup>th</sup>	50 (17/12)	66 (18/12)
Viwa	Dec 18 <sup>th</sup>	48	72
Yaqara	Dec 19 <sup>th</sup>	46	63
Nadarivatu	Dec 19 <sup>th</sup>	44	91

Table 3: Maximum sustained winds and gusts at selected stations during the passage of TD04F.

TD04F resulted in severe flooding in parts of the country, in particular over the Western & Central Divisions. Rakiraki town was inundated, with Rewa River also breaking its bank, but luckily Nausori town was not flooded (Figure 17). Parts of Ba and Sigatoka towns also got flooded. A number of landslides were also reported. In one such event, a landslide at Dreketi village on Qamea Island destroyed a school, health centre, community hall and 12 residential dwellings as per the reports received at the time of this publication (Source: NDMO).



Figure 17: Flooded Rakiraki town during the passage of TD04F (Picture Source: Fiji TV).

This event resulted in the activation of more than 90 evacuation centers with a peak population of the evacuees at 2692. The preliminary cost of damages was estimated to be over FJD10 million. However, this cost is expected to rise as further damage assessment reports are consolidated.

This Summary is prepared as soon as ENSO, climate and oceanographic data is received from recording stations around Fiji and Meteorological Agencies around the World. Delays in data collection, communication and processing occasionally arise. While every effort is made to verify observational data, the Fiji Meteorological Service does not guarantee the accuracy and reliability of the analyses presented, and accepts no liability for any losses incurred through the use of this information and its contents. The information can be freely disseminated provided the source is acknowledged.

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