

## 1. IN BRIEF

The El Niño Southern Oscillation remained in neutral state, that is neither El Niño nor La Niña, during August 2017.

The rainfall pattern varied across the country during the month with drier than *normal* conditions experienced in some parts, while *normal* to wetter than *normal* conditions were recorded in others. Out of the 24 rainfall monitoring stations, 8 registered *below average* rainfall, 10 *average*, 5 *above average*, while Yasawa-i-Rara recorded *well above average* rainfall.

While some relieving rainfall was received during the month, most parts of the Western Division continued to record *below average* rainfall, a trend which has been persisting since April 2017. Consequently, majority of the locations in the Western Division were in a meteorological drought state affecting grasslands, shallow rooted plants and small water bodies (e.g. small water tanks, creeks and streams) at the end of August 2017.

Significant rainfall was recorded in the Central Division on the 24<sup>th</sup>, with Koronivia, Nausori Airport and Laucala Bay registering 110mm, 95mm and 63mm of rainfall, respectively. Consequently, there were media reports of flash flooding in Nausori town on the 24<sup>th</sup>.

Hailstorm, a rare meteorological phenomenon for Fiji, was

# 2. WEATHER PATTERNS

The weather in August was dominated by broad southeast Trade winds, a frontal system and troughs of low pressure.

For the first 10 days, a broad southeast wind flow dominated over Fiji with fine weather and cool nights prevailing, apart from brief Trade showers over the interior and eastern parts of the country.

A weak trough of low pressure affected the group with isolated showers from 11<sup>th</sup> to 12<sup>th</sup>. Following the passage of this trough, fine weather prevailed in most parts of the country with brief Trade showers over the interior and eastern parts on the 13<sup>th</sup>.

Another trough of low pressure moved over the group from the north and a frontal system approached the country from the west on the 15<sup>th</sup>. With the situation of frontal system over the group and a pre-frontal-trough ahead of it, a deep, cool southerly wind flow followed behind these two features, thus lowering the freezing level in the cumulonimbus clouds and producing hailstorm in Rakiraki and nearby

experienced over the northeast coast of Viti Levu and nearby islands in the Lomaiviti group on the 16<sup>th</sup>.

A notable period of hot condition was experienced during the last week of the month. Rarawai Mill recorded maximum temperature of 34.6°C on the 30<sup>th</sup>, followed by Keiyasi with 34.2°C on the 27<sup>th</sup> and Nacocolevu with 33.5°C on the 29<sup>th</sup>. New daily high temperature records for August were established at Vunisea and Matuku during this period. There were also new high mean monthly maximum and minimum temperature records for August set at Matei Airfield and Rotuma, respectively, during the month (Table 1).

Significantly cool condition was experienced at night on occasions during the month, especially between 17<sup>th</sup> to 19<sup>th</sup>. Nadarivatu registered minimum temperature of 8.6°C on the 18<sup>th</sup>, followed by Keiyasi with 11.1°C on the 18<sup>th</sup>, Rarawai Mill with 12.0°C on the 18<sup>th</sup> and Labasa Airport with 12.5°C on the 19<sup>th</sup>.

islands in the Lomaiviti Group. The trough and the frontal system moved east overnight on the 16<sup>th</sup> and broad southeast wind flow dominated over Fiji with fine weather and cool nights prevailing apart from brief trade showers over the interior and eastern parts.

From 20<sup>th</sup> to 25<sup>th</sup>, weak troughs of low-pressure affected parts of the group with cloud and showers before weakening and moving eastwards. Towards the end of the month, fine weather prevailed over most parts of the country apart from brief Trade showers over the interior and eastern parts.

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

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

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### 3. RAINFALL

The rainfall pattern varied across the country during August 2017 with *drier than normal* conditions experienced in some parts, while *normal* to *wetter than normal* conditions were recorded in others.

Out of the 24 rainfall monitoring stations, 8 registered *below average* rainfall during the month, 10 *average*, 5 *above average*, while Yasawa-i-Rara recorded *well above average* rainfall (Table 2 & Figures 1-5).

August saw two notable rainfall episode (14<sup>th</sup> to 16<sup>th</sup> and 20<sup>th</sup> to 24<sup>th</sup>) associated with the passage of the low pressure systems over the Fiji Group. These rainfall events provided temporary relief from the dry conditions in the Western Division. However, the rainfall received was not enough to overcome the rainfall deficiencies that has been accumulated since April 2017. Consequently, majority of the locations in the Western Division continued to be in meteorological drought state as at end of August 2017.

The highest total monthly rainfall of 242.5mm was recorded at RKS, followed by Rotuma with 220.8mm, Ono-i-Lau with 214.4mm, Monasavu with 203.7mm and Lomaivuna with 200.0mm.

On the other hand, Lautoka Mill was the driest station with total monthly rainfall of 28.7mm followed by Yaqara and Momi with both 37.5mm and Tavua with 38.0mm.

The highest 24 hour rainfall of 116.0mm was recorded at Rotuma on the 14<sup>th</sup>, followed by Koronivia with 109.8mm on the 24<sup>th</sup>, Matei Airfield with 106.7mm on the 23<sup>rd</sup>.

Monasavu recorded the highest number of rain days (rainfall  $\ge 0.1$  mm) with 26 days, followed by Lomaivuna with 23, Suva, Rotuma, Koronivia and Matei with all 21, and Nausori and Navua with both 20. In contrast, least number of rain days was experienced at Yaqara with 4 days, followed by Labasa Airport and Rarawai with both 5, and Lautoka and Momi with both 6.

No new rainfall record was established during August 2017.



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### 4. **AIR TEMPERATURES**

#### A. **Maximum Daytime Air Temperatures**

The maximum air temperatures were generally above nor*mal* over the country during the month, with 17 out of the 21 stations recording anomalies  $\geq 0.5^{\circ}$ C, while 4 sites recorded anomalies within  $\pm 0.5^{\circ}$ C (Table 2 & Figures 2-5).

The warmest days on average was experienced at Rarawai Mill and Yaqara with both 30.7°C, followed by Labasa Airport with 30.5°C, and Keiyasi and Rotuma with both 30.1°C. On the other hand, Monasavu recorded the coolest maximum temperature on average of 22.2°C, followed by Nadarivatu with 23.0°C and Ono-i-Lau with 25.9°C.

A notable period of hot daytime condition was experienced during the last week of August form the 26<sup>th</sup> to the 31<sup>st</sup> with majority of the observing stations recording their highest daily maximum temperature for the month during this period. The highest of this was recorded at Rarawai Mill with 34.6°C on the 30<sup>th</sup>, followed by Keiyasi with 34.2°C on 27<sup>th</sup>, Nacocolevu with 33.5°C on the 29<sup>th</sup> and Yaqara with 33.4°C on the 31<sup>st</sup>. Consequently, a new daily high maximum temperature record for August was established at Vunisea and a new high mean monthly maximum temperature record was established at Matei Airfield (Table 1).

On the other hand, most of the stations recorded their low-est daily maximum between 16<sup>th</sup> to 21<sup>st</sup>. Monasavu recorded the lowest daytime temperature of 18.4°C on the 7<sup>th</sup>, followed by Nadarivatu with 20.1°C on the 7<sup>th</sup> and Vunisea with 22.9°C on the  $16^{\text{th}}$ 

Majority of the stations recorded positive mean monthly maximum temperature departure from the normal, with Nabouwalu, Penang Mill, Matei Airfiled and Vuniea all recording highest anomaly of +1.3°C. On the other hand, Navua and Udu Point were the only stations to record negative anomalies with -04°C and -0.1°C, respectively.

#### B. **Minimum Night-time Air Temperatures**

The minimum air temperatures were above normal over most parts of Fiji, with 16 out of 21 sites registering anomalies of  $\geq 0.5^{\circ}$ C and 5 within  $\pm 0.5^{\circ}$ C (Table 2 & Figures 2-5).

The coolest nights on average was experienced at Nadarivatu with 15.0°C, followed by Monasavu with 16.3°C, Keivasi with 17.5°C and Rarawai Mill with 18.0°C. On the other hand, Rotuma registered warmest nights on average with 25.3°C, followed by Udu Point with 22.8°C and Viwa with 22.7°C.

Significantly cool conditions were experienced at night on occasions, especially between 17<sup>th</sup> to 19<sup>th</sup>, with the lowest daily night-time temperature of 8.6°C recorded at Nadarivatu on the 18<sup>th</sup>, followed by Keivasi with 11.1°C on the 18<sup>th</sup>, Rarawai Mill with 12.0°C on the 18<sup>th</sup> and Labasa Airport with 12.5°C on the 19<sup>th</sup>. On the other hand, the warmest night was at Rotuma with 26.7°C on the 26<sup>th</sup>, followed by Viwa and Matuku with both 25.6°C on 30<sup>th</sup> and 27<sup>th</sup>, respectively.

The greatest positive mean monthly night-time air temperature departure from the normal of +1.6°C was recorded at Navua, followed by  $+1.3^{\circ}$ C at Rotuma. On the other hand, Labasa Airport was the lone site that registered negative anomaly  $(-0.3^{\circ}C)$ .

A new daily high and a new mean monthly minimum temperature records for August were established at Matuku and Rotuma, respectively, during the month (Table 1).

TABLE 1. CLIMATE RECORDS ESTABLISHED IN AUGUST 2017								
<u>Element</u>	<u>Station</u>	<u>Ob-</u> <u>served</u> (record)	<u>On</u>	<u>Rank</u>	<u>Previous</u> (record)	<u>Year</u>	<u>Records</u> <u>Began</u>	
Mean Monthly Maximum Temperature	Matei Airfield	28.4°C	-	New High	28.3°C	2007	1956	
Daily Maximum Temperature	Vunisea	30.8°C	29 <sup>th</sup>	New High	30.7°C	19852	1947	
Mean Monthly Minimum Temperature	Rotuma	25.3°C	-	New High	25.2°C	2012	1933	
Daily Minimum Temperature	Matuku	25.6°C	27 <sup>th</sup>	New High	25.3°C	2008	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.

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# TABLE 2. DAILY CLIMATE REPORTING SITES: SUMMARY FOR AUGUST 2017

	RAINFALL TOTAL RAIN MAX. * DAYS FALL MM % + MM ON	AIR TEMPERATURES AVERAGE DAILY EXTREME MAX. # MIN. # MAX. MIN.	SUNSHINE TOTAL *				
NADI AIRPORT SUVA/LAUCALA BAY NACOCOLEVU ROTUMA VIWA UDU POINT SAVUSAVU AIRFIELD LABASA AIRPORT NABOUWALU KORONIVIA NAUSORI AIRPORT NAVUA/TOKOTOKO MONASAVU LAUTOKA AES BA/RARAWAI MILL PENANG MILL MATEI AIRFIELD VANUABALAVU LAKEBA LEVUKA VUNISEA MATUKU ONO-I-LAU SEAQAQA YASAWA-I-RARA	61 93 7 27 20 150 95 21 63 24 57 67 10 23 20 221 105 21 116 14 94 158 10 47 14 142 168 13 56 23 87 75 8 44 21 80 167 5 40 23 103 98 16 48 23 193 119 21 110 24 169 115 20 95 24 150 74 20 30 23 204 78 26 33 24 29 41 6 9 24 40 62 5 19 14 49 67 12 22 16 187 150 21 107 23 STATION TEMPORARILY 82 80 16 35 23 AWS U/S 123 95 19 41 24 104 94 18 19 14 214 182 14 57 24 42 75 8 14 14 127 200 10 88 21 94 116 17 27 14	29.0 0.3 19.8 1.2 32.4 29 13.6 18 26.9 0.2 21.6 0.9 29.6 31 18.8 4 28.7 1.2 18.7 0.8 33.5 29 13.9 18 30.1 1.0 25.3 1.3 31.5 28 22.5 15 28.8 1.0 22.7 0.3 30.1 28 19.5 4 28.0 -0.1 22.8 0.6 31.0 29 17.9 17 27.8 0.7 21.6 0.8 32.0 29 17.1 18 30.5 1.1 18.4 -0.3 32.5 21 12.5 19 27.6 1.3 22.2 0.6 29.6 28 18.9 6 27.0 0.6 20.3 1.0 29.4 27 14.8 18 27.0 0.8 20.3 0.7 29.5 26 14.5 19 26.5 -0.4 19.7 1.6 30.0 31 15.0 19 22.2 0.9 16.3 0.7 25.3 30 12.6 17 29.5 1.2 20.6 0.6 32.0 30 15.5 18 30.7 0.9 18.1 0.7 34.6 30 12.0 18 28.7 1.3 21.0 0.3 30.7 27 15.5 4 28.4 1.3 22.4 0.7 29.5 20 19.1 18 CLOSED 27.1 1.3 20.4 1.0 30.8 29 16.4 19 26.4 0.6 21.1 0.6 28.8 24 16.5 17 25.9 1.0 20.1 0.1 28.6 11 17.5 9	219 95 148 103 192 104 175 84				
DOBOILEVO	94 116 17 37 14 TEMPERATURE(_C)HUMIC	DITY WIND SUN RAD					
N	DRY WET RH% 1EAN (AVERAGE AT 9A	VP %OF MJ/ M) KT POS SQ.M					
NADI AIRPORT SUVA/LAUCALA BAY NACOCOLEVU ROTUMA VIWA UDU POINT SAVUSAVU AIRFIELD LABASA AIRPORT NABOUWALU KORONIVIA NAUSORI AIRPORT NAVUA/TOKOTOKO MONASAVU LAUTOKA AES BA/RARAWAI MILL PENANG MILL MATEI AIRFIELD VANUABALAVU LAKEBA LEVUKA VUNISEA MATUKU ONO-I-LAU	24.4 25.0 21.2 70 2 24.2 24.8 22.6 82 2 23.7 24.3 21.4 77 2 27.7 27.9 25.1 80 2 25.8 26.6 23.4 76 2 25.4 25.9 23.6 82 2 24.7 25.0 22.5 80 2 24.5 26.5 22.6 71 2 24.9 25.7 22.8 77 2 23.7 24.4 21.9 80 2 23.6 24.0 21.8 82 2 23.1 23.3 21.7 86 2 19.2 18.8 17.5 88 1 25.1 26.2 21.8 67 2 24.4 25.6 21.7 70 2 24.8 25.0 22.1 77 2 25.4 26.3 23.0 75 2 STATION TEMPORARILY 24.2 25.3 22.5 78 2 AWS U/S 23.7 24.3 21.4 76 2 23.0 24.1 20.8 73 2	2.2 6.0 64 14.8 5.7 44 14.4\$ 3.4 56 16.1\$ 9.8 50 16.5\$ 6.4 6 7.5 4.6 5.5 5.5 4.6 5.5 5.5 4.6 5.5 5.5 4.5 5.5 5.5 4.6 5.5 5.5 5.5 4.6 5.5 5.5 4.6 5.5 5.5 5.5 5.5 5.5 5.5 5.5 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.							





The 9am average relative humidity (RH) ranged from 67% to 88% during the month (Table 2).

The monthly average RH in the **Western Division** ranged between 67% and 88%, while the daily values were between 49% to 98%. The mean monthly RH anomalies were generally *near normal*, with anomalies ranging with  $\pm 5\%$ . The highest departure from the *normal* of -5% was recorded at Penang Mill, followed by -3% at Rarawai Mill, Lautoka Mill and Nacocolevu, while Nadi Airport and Viwa recorded anomaly of +1%.

The monthly average RH in the **Central Division** ranged between 80% and 84%, with the daily values between 53% to 100%. The mean monthly RH anomalies from the *normal* were within  $\pm 2\%$ . Laucala Bay and Navua recorded positive anomaly of  $\pm 2\%$ , while Nausori Airport registered  $\pm 1\%$ . On the other hand, Koronivia recorded negative anomaly of -2%.

The monthly average RH in the **Northern Division** ranged from 75% to 82%, with daily values from 47% to 97%. Significant negative mean monthly RH anomaly from the *normal* of -7% was recorded at Matei, while the most notable positive anomaly of +6% was recorded at Udu Point.

The mean monthly RH in the **Eastern Division** ranged from 73% to 82%, with the daily values between 45% to 98%. Vunisea recorded greatest mean monthly RH anomaly from the *normal* of +5%, followed by Lakeba with +3% and Matuku with +2%. On the other hand, Ono-i-Lau registered negative anomaly of -1%.

The mean monthly RH at **Rotuma** was 89%, with an anomaly of +1%.

# 7. SUNSHINE

Nacocolevu, Laucala Bay, Nadi Airport, and Rotuma recorded 104%, 103%, 95% and 84% of the *normal* bright sunshine hours during the month, respectively (Table 2).

Nadi Airport recorded 219.1 hours of total bright sunshine, with a mean of 7.1 hours/day. The station recorded more than 10 hours of bright sunshine on a number of occasions with the longest hours of bright sunshine of 11.0 hours recorded on  $17^{\text{th}}$  and  $18^{\text{th}}$ . On the other hand, the shortest duration of bright sunshine of 0.1 hours (6 minutes) was registered on the  $16^{\text{th}}$  and  $21^{\text{st}}$ .

Laucala Bay recorded 148.4 hours of total monthly bright sunshine, with a mean of 4.8 hours/day. The longest duration of bright sunshine of 10.3 hours was recorded on the  $26^{\text{th}}$ . In contrast, cloudy and overcast conditions were experienced from the  $22^{\text{nd}}$  to  $24^{\text{th}}$ , with no bright sunshine observed.

The total monthly bright sunshine at Nacocolevu was 192.0 hours, with a daily mean of 6.2 hours. The station's highest daily bright sunshine of 10.5 hours was on the  $29^{th}$ , followed by 10.3 hours on  $1^{st}$  and  $19^{th}$ . On the other hand, the shortest duration of bright sunshine was recorded on  $21^{st}$  with 0.2 hours (12 minutes).

Rotuma recorded 175.1 hours of the total monthly bright sunshine, with a mean of 5.6 hours/day. The longest duration of bright sunshine of 10.3 hours was recorded on the  $6^{\text{th}}$ , followed by 10.0 hours on the  $7^{\text{th}}$ . On the other hand, the shortest duration of bright sunshine was recorded on  $15^{\text{th}}$ ,  $17^{\text{th}}$  and  $22^{\text{nd}}$  with 0.5 hours each day (30 minutes).





The total monthly raised pan evaporation at Nadi Airport during August 2017 was 144.8mm while Laucala Bay recorded 88.6mm. Nadi Airport recorded the highest daily evaporation of 8.0mm on the 31<sup>st</sup>, while Laucala Bay registered the highest of 9.3mm on the 18<sup>th</sup> (Figure 8).

# 10. RADIATION

0

30S

60S

90S

0

30E

NOAA/ESRL/PSD

60E

90E

120E

150E

Base Period: 1981-2010

180

150W

120W

90W

-0.5 0

60W

30W

2.5 3 3.5

0



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



(NCEP Reanalysis climatology data: 1981-2010, smoothed with 5-day running mean)

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