FIJI METEOROLOGICAL SERVICE

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Fiji Climate Summary January 2013

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Since : August 1980*

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1.0 IN BRIEF

January was drier than *normal* in most parts of Fiji. Rainfall ranged from *well below average* to *above average* across the country. Out of the 26 reporting stations, 5 recorded *well below average*, 14 *below average*, 6 *average* and 1 *above average* rainfall.

Rainfall in the Western Division ranged from 22% to 79% of *normal*, 54% to 95% in the Central Division, 43% to 91% in the Northern Division and 26% to 57% in the Eastern Division. Viwa Island recorded the least amount of total rainfall (56mm), which was ranked the 4th lowest for the station in its entire history.

Both the day and the night-time average temperatures were *normal* at majority of the sites and ranged between 30.0° C and 32° C.

A new high mean monthly daytime temperature of 31.7° C was established at Vanuabalavu, replacing the record set in 2005, of 31.4° C.

Most parts of Fiji experienced hot and humid conditions, particularly between the 12th to 18th, as well as the 31st, as day time temperatures exceeded 34°C.

Notably, four new high daily temperatures of 35.5°C, 35.0°C 34.9°C, and 34.8°C were recorded at Koronivia, Nausori Airport Savusavu Airport, and Vanuabalavu, respectively. The new records now replace the 1976, 1975, 1981 and 2005 records of 35.0°C, 34.4°C, and 33.4°C for the above respective stations.

El Niño-Southern Oscillation (ENSO) indicators in the tropical Pacific remain at neutral levels. The majority of the climate prediction models favour neutral ENSO conditions to continue at least through the first quarter of 2013.

Three tropical cyclone's have already formed in the Regional Specialised Meteorological Centre Nadi – Tropical Cyclone Centre (RSMC Nadi-TCC) Area of Responsibility (AOR). *Evan* and *Freda* were named on the 12th and 29th of December 2012, while *Garry*, on the 21st of January.

One to two tropical cyclones (TC) are anticipated to affect Fiji during this season, of which one may reach or exceed Category 3 status.

2.0 WEATHER PATTERNS

January's weather was influenced by the prevailing southeast trade flow, a series of troughs of low pressure and Tropical Depressions 08F and 11F.

On the first three days of the month, a ridge of high pressure from the south directed a southeast flow over Fiji causing brief showers over the eastern parts of the larger islands.

A trough approached Fiji from the west on the 4th and tarried over the group till the 8th. Rain was experienced over most places during this period, with Monasavu recording the highest 24-hour rainfall of 120mm on the 7th. The system cleared the country later on the 8th, with trade showers about the larger islands, till the 10th.

On the 11th, a Tropical Depression TD08F moved towards Fiji from the northeast but turned towards the south, just east of the group. The depression aided trade showers over the main islands till the 25th.

A ridge of high pressure gradually extended onto Fiji from the far south on 16th and directed a southeast wind flow, which prevailed until the 25th. Brief showers were experienced over the eastern parts of the country.

On the 26th, a second Tropical Depression TD11F developed to the south of Ono-i-lau and moved westwards. The depression lingered just south of the country till the end of the month, directing a west to southwest wind flow over the group and warranting a strong wind warning for the whole Fiji waters. Occasional showers were recorded especially over the western and southern parts of the country. During this period, Koronivia station reported the highest temperature for the month of 35.5°C.

Rotuma received most of its rain for January largely from the active SPCZ hovering near the island.

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

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3.0 RAINFALL

Rainfall during January ranged from *average* to *well below average* during the month, except for Rotuma, which recorded *above average* rainfall (Table 2 & Figures 2-5). Of the 26 reporting stations, 5 recorded *well below average* rainfall, 14 *below average*, 6 *average* and 1 *above average*.

Rainfall ranged from 22% to 83% of the *normal* in the Western Division, 54% to 95% in the Central Division, 43% to 91% in the Northern Division and 26% to 55% in the Eastern Division. Monasavu and Rotuma registered 83% and 133% of the *normal*, respectively.

Rainfall in the Western Division ranged from 56.3mm to 311.4mm, 200.2mm to 354.2mm in the Central Division, 163mm to 379.5mm in the Northern Division and 71.8mm to 123.0mm in the Eastern Division. Monasavu recorded 508.6mm, while Rotuma recorded 470.9mm of rainfall.

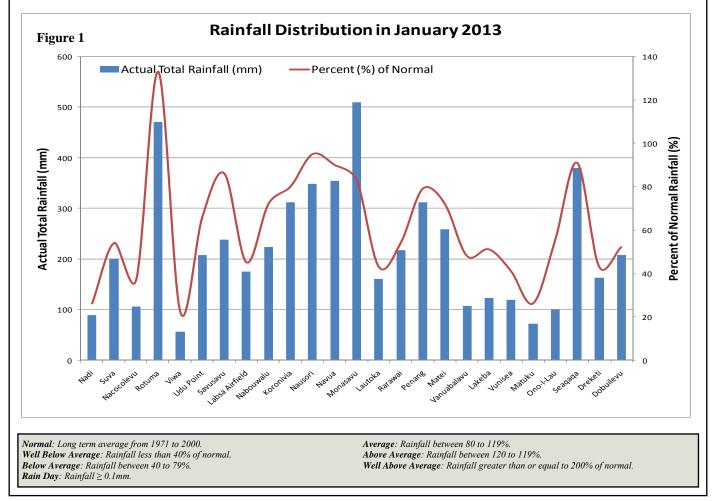
Monasavu recorded the highest total monthly rainfall of 508.6mm, followed by Rotuma with 470.9mm, Seaqaqa, 379.5mm, Navua, 354.2mm, and Nausori Airport, 347.6mm. On the other hand, the lowest total monthly rainfall was recorded at Viwa with 56.3mm, followed by Yasawa-i-rara, 70.1mm, then Matuku, 71.8mm, and Nadi Airport, 87.9mm (Figure 1).

Matei Airfield recorded the highest number of rain days (rainfall ≥ 0.1 mm) with 26 days, followed by Rotuma with 25, and Seaqaqa, 24. Conversely, the least number of rain days was observed at Nacocolevu with 5 days, followed by Yasawa-i-rara, 8, and Viwa, 12.

Using the 3 months Standardised Precipitation Index (SPI) method of drought monitoring, Koronivia, Labasa Air-field, Lakeba, Lautoka Mill, Nadi Airport, Tokotoko, Ra-rawai Mill, Laucala Bay, Vanuabalavu, Viwa and Vunisea are currently in drought warning stage. These locations can drift into meteorological drought conditions should the current *below average* rainfall trend continue in February.

However, it should be noted that at this stage, Matuku and Ono-i-lau are in meteorological drought conditions. Subsequently, rainfall at all locations will be closely monitored in the coming months, and updates provided.

For further information on SPI method, refer to ENSO Update at http://www.met.gov.fj/ENSO_Update.pdf.



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4.0 AIR TEMPERATURES

A. <u>Maximum Daytime Air Temperatures</u>

The average maximum temperatures were *normal* to *above normal* over the country, with 57% of the stations recording anomalies within $\pm 0.5^{\circ}$ C and 43% greater than 0.5°C (Table 2 & Figures 2-5

The highest monthly average temperature was recorded at Viwa with 32.7°C, followed by Labasa Airfield, 32.5°C, and Rarawai Mill, 33.1°C. Conversely, the lowest average temperature of 26.0°C was recorded at Monasavu.

The majority of the stations recorded extreme daily maximum temperatures greater than 33.0°C this month. The highest daily maximum temperature was recorded at Koronivia with 35.5°C, followed by Nausori Airport, 35.0°C, and Viwa, 34.9°C, on the 31^{st} . On the other hand, the lowest daytime temperature was observed at Monasavu with 27.6°C on the 27^{th} .

A number of stations recorded significant positive maximum temperature anomalies, with the highest of $+2.0^{\circ}$ C at Ono-i-lau, followed by Viwa and Vanuabalavu, $+1.6^{\circ}$ C, Penang and Kronivia, $+1.3^{\circ}$ C and $+1.0^{\circ}$ C at Rarawai Mill. Navua was the lone site that recorded a negative departure of -0.4° C.

New daily maximum temperature records were established at Savusavu (34.9°C), Koronivia (35.5°C), Nausori Airport (35.0°C) and Vanuabalavu (34.8°C). One new mean monthly maximum temperature record was established at Vanuabalavu (31.7°C) (Table 1).

B. <u>Minimum Night-time Air Temperatures</u>

The average minimum temperatures were *normal* to *above normal*, with 29% of the stations recording anomalies within $\pm 0.5^{\circ}$ C and 67% greater than 0.5°C (Table 2 & Figures 2-5).

The lowest average monthly minimum temperature was recorded at Monasavu with 19.5°C, followed by Naco-colevu, 20.9°C, Navua, 22.2°C, and Labasa Airfield, 22.4°C. On the other hand, the warmest night on average was experienced at Viwa with 26.2°C, followed by Rotuma, 25.7°C.

The lowest daily minimum temperature was recorded at Monasavu with 17.0°C on the 29th. This was followed by Navua with 17.5°C on the 22^{nd} and 18.9°C at Nacocolevu on the 2^{nd} . In contrast, the highest daily minimum temperature was observed at Matei Airfield with 27.5°C on the 31^{st} , followed by Rotuma, 27.3°C, on the 21^{st} and Viwa, 27.1°C, on the 16^{th} .

The highest positive minimum temperature anomaly of $+1.3^{\circ}$ C was recorded at Laucala Bay, followed by $+1.2^{\circ}$ C at Viwa and $+1.0^{\circ}$ C at Nadi Airport and Rotuma. On the other hand, Nacocolevu, Matuku and Ono-i-lau were the only stations to record negative departures of -1.4° C, -0.5° C and -0.3° C, respectively.

Viwa and Rotuma recorded their new mean monthly minimum temperatures during the month (Table 1).

<u>Element</u>	Station	Observed (record)	<u>On</u>	<u>Rank</u>	<u>Previous</u> (record)	<u>Year</u>	<u>Records</u> <u>Began</u>
Daily Max Temperature	Savusavu Airfield	34.9°C	31st	New High	34.4°C	1981	1956
Daily Max Temperature	Koronivia	35.5°C	31st	New High	35.0°C	1976	1984
Daily Max Temperature	Nausori Airport	35.0°C	31st	New High	34.4°C	1975	1957
Daily Max Temperature	Vanuabalavu	34.8°C	25th	New High	33.4°C	2005	1985
Mean Mthly Max Temp.	Vanuabalavu	31.7°C	-	New High	31.4°C	2005	1985
Mean Mthly Min Temp.	Viwa	26.2°C	-	New High	26.1°C	2007	1978
Mean Mthly Min Temp.	Rotuma	25.7°C	-	New High	25.5°C	1990/98	1912

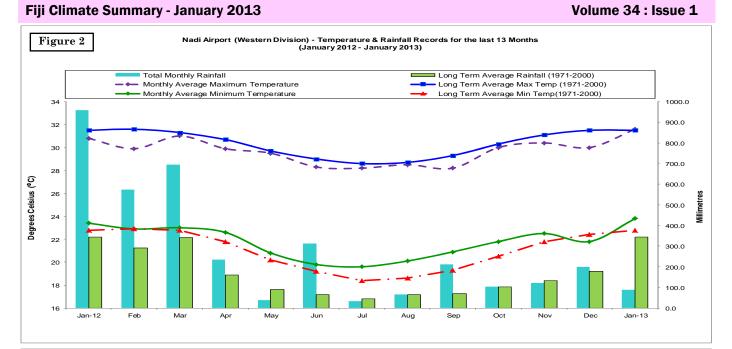
Note: All comparisons in this summary are with respect to "Climatic Normal". This is defined to be the average climate conditions over a 30-year period. Fiji uses 1971-2000 period as its "climatic normal" period unless stated otherwise.

TABLE 1. CLIMATE RECORDS ESTABLISHED IN JANUARY 2013 In <thIn</th> In

Fiji Climate Summary - January 2013 TABLE 2. DAILY CLIMATE REPORTING SITES: SUMMARY FOR JANUARY 2013

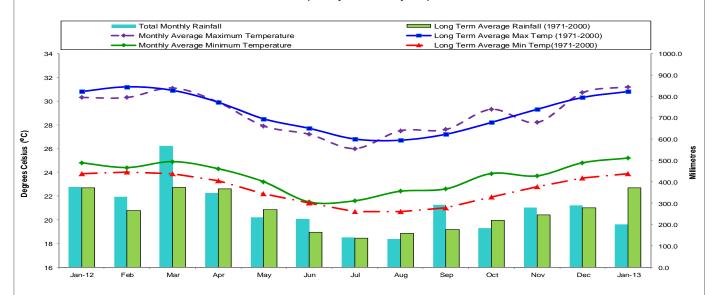
	RAINFALL TOTAL RAIN MAX. * DAYS FALL MM % + MM ON	AIR TEMPERATURES AVERAGE DAILY EXTREME MAX. # MIN. # MAX. MIN. C C C C C ON C ON	SUNSHINE TOTAL HRS %
NADI AIRPORT SUVA/LAUCALA BAY NACOCOLEVU ROTUMA VIWA UDU POINT SAVUSAVU AIRFIELD LABASA AIRFIELD NABOUWALU KORONIVIA NAUSORI AIRPORT NAVUA/TOKOTOKO MONASAVU LAUTOKA AES BA/RARAWAI MILL PENANG MILL MATEI AIRFIELD VANUABALAVU LAKEBA ST. JOHNS COLLEGE VUNISEA MATUKU ONO-I-LAU SEAQAQA DREKETI VATUKOULA DOBUILEVU YASAWA-I-RARA	88 26 13 21 4 200 54 22 49 15 106 37 5 40 2 471 133 25 88 3 56 22 12 26 6 208 66 16 76 3 238 86 17 80 15 174 45 18 49 4 223 72 17 55 6 311 80 21 57 15 348 95 23 69 15 354 90 19 107 6 509 83 23 120 7 160 43 13 48 12 217 54 18 37 11 311 79 20 94 4 258 72 26 85 8 106 48 17 31 3 123 51 21	31.6 0.1 23.8 1.0 34.2 12 19.9 10 31.2 0.4 25.2 1.3 34.0 31 22.7 29 31.6 0.4 20.9 -1.4 34.4 1 18.9 2 30.8 0.2 25.7 1.0 31.7 24 24.5 22 32.7 1.6 26.2 1.2 34.5 18 24.6 24 30.7 0.2 25.2 0.9 32.3 31 23.4 9 31.2 0.6 24.4 0.9 34.9 31 22.4 22 32.5 0.8 22.4 0.2 34.4 16 21.0 4 31.1 0.9 24.8 0.6 33.2 14 23.2 15 31.7 1.3 23.4 0.7 35.5 31 20.0 10 30.8 0.4 23.2 0.0 35.0 31 20.6 19 30.1 -0.4 22.2 0.8 31.8 3 17.5 22 26.0 0.5 19.5 0.5 27.6 27 17.0 29 I N S U F I C I E N T D A T A 33.1 1.0 22.8 0.7 34.5 12 19.6 10 31.6 1.3 24.2 0.2 33.2 12 20.7 29 30.6 0.5 25.0 0.9 31.9 19 23.6 7 31.7 1.6 25.3 0.9 34.8 25 24.6 1 30.6 0.5 24.9 0.9 32.6 31 21.8 20 S P E N D E D 30.4 0.5 24.3 0.9 31.5 19 21.5 28 30.2 0.0 23.9 -0.5 31.7 20 22.5 8 31.2 2.0 23.9 -0.3 33.6 31 20.5 27	251 119 202 105 225 126 151 89
LABASA AIRFIELD NABOUWALU KORONIVIA NAUSORI AIRPORT NAVUA/TOKOTOKO MONASAVU LAUTOKA AES BA/RARAWAI MILL PENANG MILL MATEI AIRFIELD VANUABALAVU LAKEBA ST. JOHNS COLLEGE VUNISEA MATUKU ONO-I-LAU MEAN TEMPERATURE I \$:SOLAR RADIATION AVERAGES (1971-200	26.2 26.1 24.0 84 2 22.8 22.3 20.9 87 2 I N S U F F I C I E 27.9 29.4 25.3 71 2 27.9 28.8 25.5 76 3 27.8 28.2 25.5 80 3 28.5 29.4 26.1 80 3 27.8 28.6 25.7 79 3 S U S P E N D E 27.3 28.1 25.2 78 2 27.1 27.2 24.1 76 2 27.5 28.6 25.0 74 2 S (MAX+MIN)/2; W CALCULATED FROM SUNS 0). + :NUMBER OF DAYS	VP %OF MJ/ M) KT POS SQ.M 8.2 5.9 64 23.6 9.9 52 23.3 0.4 58 23 2.7 4.3 40 19 3.2 1.3 8.3 0.2 0.3 0.9 8.8 9.5 9.7 2.7 8.4 3.5 N T D A T A 9.0 0.0 0.5 1.7 0.8 8.0 D 9.9 3.2	RS. NG-TERM

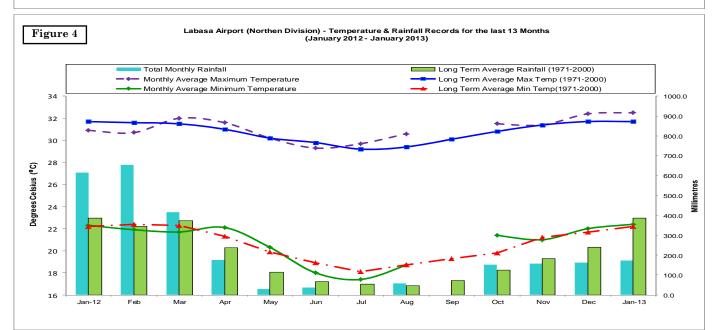
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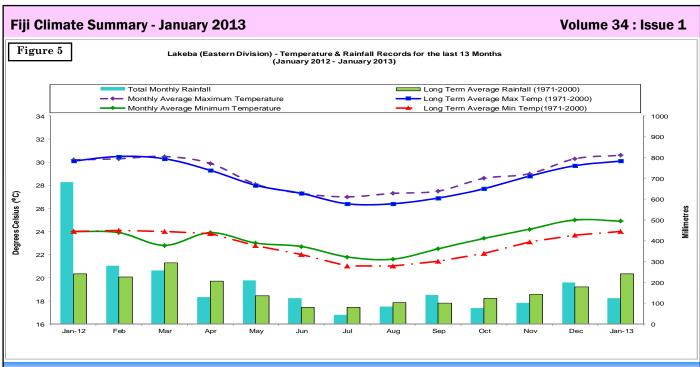


Laucala Bay - (Suva) (Central Division) - Temperature & Rainfall Records for the last 13 Months (January 2012 - January 2013)





5



5.0 RELATIVE HUMIDITY AT 0900HOURS

The 0900am average relative humidity (RH) was generally *normal* to *below normal*. The average relative humidity ranged from 71% to 87% (Table 2), with the daily range from 51% to 99%.

The stations in the Western Division recorded daily average relative humidity in the range of 71% to 87%. Positive RH departure from the *normal* of +1.7% was recorded at Monasavu, while Penang and Rarawai Mills recorded negative departures of -10.3% and -6.2%, respectively.

The Central Division stations recorded daily average relative humidity in the range of 76% to 84%. Navua recorded a positive departure of +1.2%, while Koronivia, Laucala Bay and Nausori Airport recorded negative departures of -4.4%, -2.9% and -1.5%, respectively.

The daily average relative humidity in the Northern Division ranged from 76% to 81%. With the exception of Udu Point (+0.5%), all other stations in the Division recorded positive departures from the *normal*, with the highest of +3.3% recorded at Savusavu Airfield.

The Eastern Division stations recorded daily average relative humidity in the range of 74% to 80%. Ono-i-lau (-4.4%), Matuku (-1.2%) and Vunisea (-1.0%) recorded negative departures, while Lakeba (+1.2%) and Vanuabalavu (+2.0%) recorded positive departures.

The daily average relative humidity at Rotuma was 83% and recorded a positive departure of +2.5% from normal.

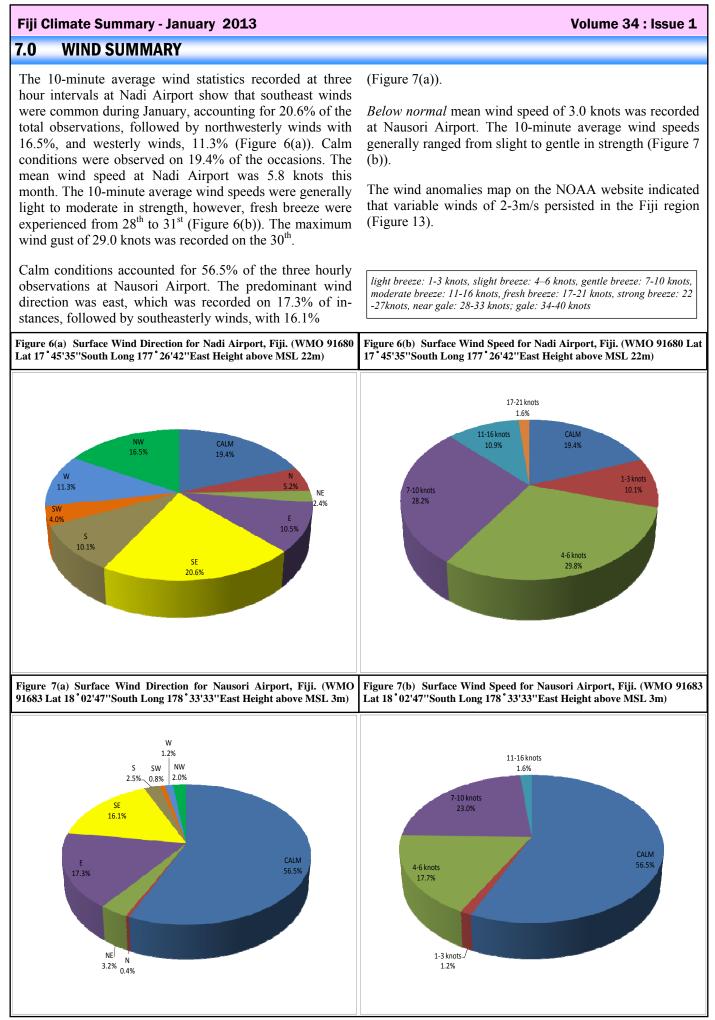
6.0 SUNSHINE

Nacocolevu, Nadi Airport, Laucala Bay and Rotuma recorded 126%, 119% 105% and 89% of *normal* bright sunshine hours during the month respectively, (Table 2).

Nadi Airport recorded 251.0 hours of bright sunshine, with a mean of 8.1 hours per day. More than 10 hours of bright sunshine was recorded on a number of days, with the highest being 11.7 hours, observed on the 10^{th} . The least amount of bright sunshine was recorded on the 3^{rd} (0.5 hours).

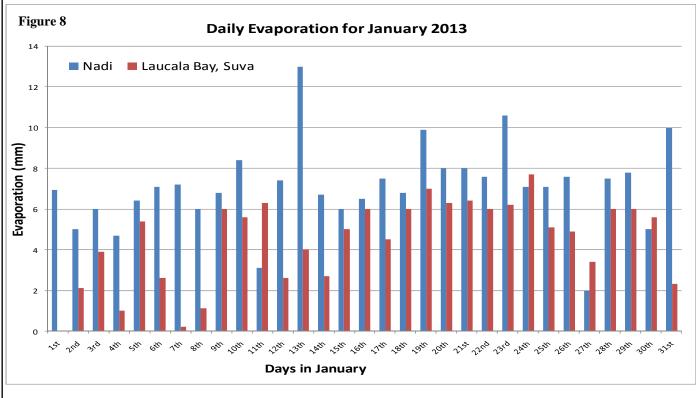
Laucala Bay recorded 202.0 hours of bright sunshine during January. The mean daily bright sunshine for the month was 6.5 hours. The longest duration of bright sunshine (11.3 hours) at the station was observed on the 18th, while overcast conditions were experienced on 7th and 8th. Nacocolevu recorded 224.7 hours of bright sunshine during January. The mean daily bright sunshine for the month was 7.2 hours. The longest duration of bright sunshine (12.3 hours) at the station was observed on the 9th, while the overcast conditions were experienced on the 7th.

Rotuma received 150.8 hours of bright sunshine during the month, with the daily mean of 4.9 hours. More than 10 hours of bright sunshine was recorded on the 22nd and 23rd. For the rest of the month, hours of bright sunshine was under 10 hours, including the 10th, 15th, 16th, 28th and 29th, which were overcast days. The 10th and 16th were overcast days, with no bright sunshine recorded.



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8.0 **EVAPORATION**



The total monthly evaporation at Nadi Airport was 219.8mm, while Suva recorded 137.9mm. The highest evaporation at Nadi Airport of 10.6mm was recorded on the 23rd, while the highest of 7.7mm at Laucala Bay (Suva) was recorded on the 24th.

9.0 RADIATION



SEA SURFACE TEMPERATURE (SST)

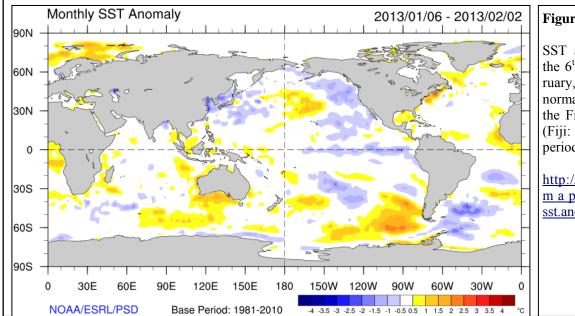
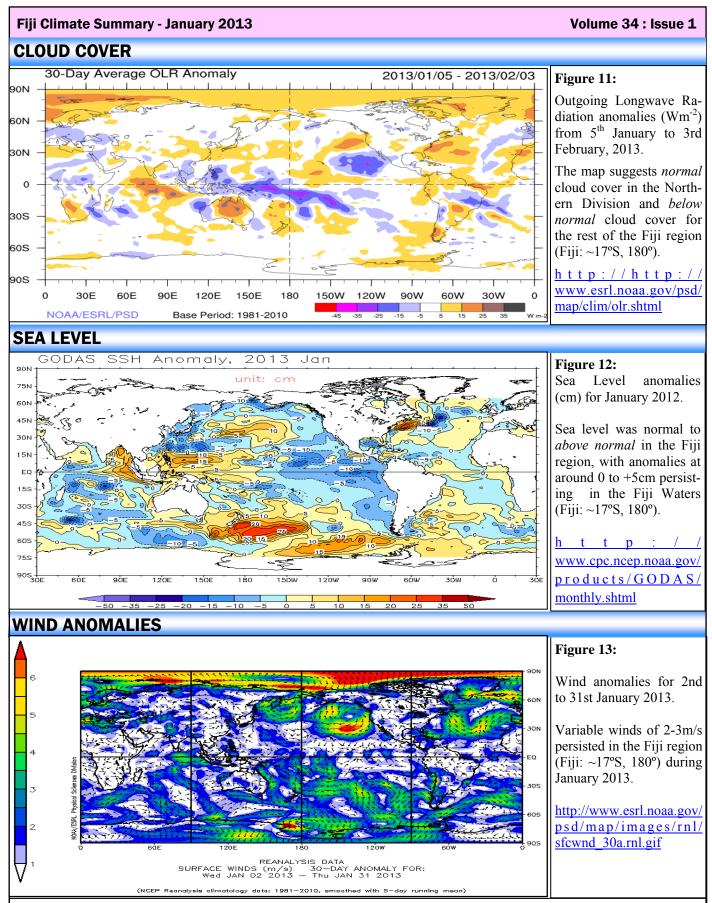


Figure 10:

SST anomalies (°C) from the 6th January to 2nd February, 2013. SST was near normal to above normal in the Fiji region in January. (Fiji: ~17°S, 180°), (base period : 1981-2010).

http://www.cdc.noaa.gov/ map/images/sst/ sst.anom.month.gif



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 may be freely disseminated provided the source is acknowledged.

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Quality Management System Customer Products and Services Survey Form

As part of our ongoing commitment to meet our customer needs for climate products and services, the Climate Services Division (CSD) maintains a Quality Management System to meet World Meteorological Organisation (WMO) standards.

In this effort, customer feedback will assist us to ensure that customer needs are addressed and continual improvement of our systems are maintained. Please take this opportunity to make your say in this Costumer Feedback Survey.

	CUSTOMER	SATISFACTION FEEDBACK	FORM	File Ref:
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FULL NAME: _____

FULL CONTACT ADDRESS:

PHONE NO:

FAX NO:

EMAIL:

Survey Questions

- 1. Did the product or services meet your expectations? Yes/No
- 2. Was the product or service delivered in a timely manner? Yes/No
- 3. Are you a regular user of this product? Yes/No
- 4. What section/s or aspects of the product do you mostly use?

5. Are there ways you think we can improve this product? Explain.

- 6. Please comment on ways and means that CSD could better service your needs, improve products and/or service your needs more effectively?
- 7. General Comments

(Please send survey forms to: The Director, Fiji Meteorological Service, Private Mail Bag (NAP 0351) Nadi Airport, Fiji Islands; Fax +679-6724050; fms@met.gov.fj or climate@met.gov.fj)

Please note that any data request and use means an obligation on the part of the user to also submit a copy of the results of the analysis or work where FMS data has been used and to abide by all terms of the data request agreement.