

# Fiji Islands Weather Summary

## October 2005

### Rainfall Outlook till January 2006

#### FIJI METEOROLOGICAL SERVICE

#### IN BRIEF

Rainfall in October was generally average to below average in parts of the country.

Significant rainfall received at the end of the month resulted in flooding of low lying areas with landslides reported in the interior, eastern and southeastern parts of Viti Levu. Families living in flood prone areas were evacuated.

A record one-day high rainfall was measured at Vatukoula and Navua. Refer *table 2* on page 4 for details.

Day-time and night-time air temperatures were generally above average at all data recording sites used for this summary. New records in temperature were recorded. More

details are in table 2 on page 4.

Total sunshine hours were above average at all recording sites.

In the latest survey of the General Circulation Models (GCM), majority of the models predict neutral patterns to continue till March 2006.

Based on model predictions and current ocean and atmospheric conditions, most parts of the country can expect average to above average rainfall in the upcoming three months.

#### Inside this issue:

In Brief and Weather Patterns	1
Rainfall Table	
Rainfall in three Months Forecast Verification	2
Temperature and Rainfall Graphs (Nadi, Labasa and Suva)	3
Other Climatic variables and New Records Table	4
ENSO status and SOI Graph	5
Rainfall Predictions and Outlook Preliminary Climate data Summary	6
SCOPIC Site Specific Forecasts	7

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#### WEATHER PATTERNS

There were two rainfall heavy rainfall incidents during the month. During the second incident, rain activity was widespread with heavy falls resulting in flooding of low-lying areas and a few landslides. This event contributed towards most of the months rainfall. In Central Division it was also observed that during this transition month, the sub-tropical ridge of high pressure was relatively mobile, penetrating into Fiji latitudes on a few occasions and bringing fine or stable conditions with it.

In the first week of the month, a relatively moist southeast flow directed by an eastward-receding ridge of high pressure maintained fine conditions over the group except for some showers about the interior and southeastern parts of the larger islands. Following this and into the second week, a weak ridge gradually nudged its way across the group causing fine weather over most places. However, towards the end of the second week, a weak cold front gradually moved onto the group from the west. At the same time, a trough of low pressure lying just north of Fiji drifted onto the country producing some rain over most places with isolated squally thunderstorms, especially on the 18<sup>th</sup> and 19<sup>th</sup>. Certain places received hail from this situation whilst others experienced showers, particularly in the interior and southeastern parts of the main islands.

From the 22<sup>nd</sup>, the weak cold front drifted west of the country giving way to a weak ridge over Fiji. Around this time, a trough with associated active cloud and rain band was moving slowly towards the group from the north. By the 26<sup>th</sup>, the cold front which had become almost stationary to the west moved back onto the country to merge with this trough. As a result, widespread rain, heavy at times and accompanied by squally thunderstorms was recorded in most places. *Significant rain was recorded in Navua [111mm on 27<sup>th</sup> and 200mm on 28<sup>th</sup>], Yasawa 174m on 29<sup>th</sup>] and Nausori [124mm on 29<sup>th</sup>].* This caused flooding of low-lying areas and one or two landslides, particularly in the interior, eastern and southeastern parts of Viti Levu. Rain continued till the end of the month, though mostly over the northern half of Fiji, as the system responsible moved northwards.

Rotuma received rain almost throughout the month due to the convergence zone remaining slow moving near or over the island and westward-moving troughs moving across. A few thunderstorms were also recorded on the island, associated with these systems.

TABLE 1: RAINFALL FROM AUGUST TO OCTOBER 2005

Station	Actual Rainfall (mm)	Rainfall in the last three months (Below Average, Average or Above Average)	No. of Rain days in Aug 05 (% of total rain)	No. of Rain days in Sept 05 (% of total rain)	No. of Rain days in Oct 05 (% of total rain)
Penang Mill	204.5	Below Average	05 (18)	10 (56)	8 (26)
Monasavu Dam	818.2	Average	18 (15)	24 (48)	17 (37)
Vatukoula Mine	322.5	Above Average	05 (17)	07 (27)	8 (56)
Rarawai Mill, Ba	174.0	Below Average	05 (36)	07 (23)	7 (41)
Yasawa-I-Rara	464.9	Above Average	04 (09)	09 (23)	6 (68)
Viwa Island	356.9	Above Average	06 (21)	09 (40)	10 (39)
Lautoka (FSC Res.)	224.6	Average	06 (40)	06 (14)	8 (46)
Nadi Airport	214.0	Average	06 (24)	04 (16)	5 (60)
Nacocolevu, Sigatoka	295.0	-	-	-	-
Tokotoko, Navua	1165.2	Above Average	17 (13)	17 (44)	16 (43)
Laucala Bay, Suva	735.1	Above Average	16 (20)	23 (37)	17 (43)
Nausori Airport	1002.4	Above Average	14 (09)	22 (49)	18 (42)
Nabouwalu	296.8	Below Average	15 (17)	15 (21)	13 (62)
Labasa Airport	133.8	Below Average	03 (03)	05 (51)	5 (46)
Savusavu Airport	208.6	Below Average	10 (26)	13 (20)	5 (54)
Udu Point	309.6	Average	09 (13)	13 (47)	13 (40)
Matei Airport	269.8	Below Average	12 (23)	14 (46)	9 (31)
Lakeba Is.	465.3	Above Average	12 (34)	12 (38)	10 (28)
Matuku Is.	191.4	Below Average	06 (27)	11 (45)	7 (28)
Ono-I-Lau Is.	358.5	Average	13 (35)	14 (32)	7 (33)
Vunisea, Kadavu	295.4	Below Average	20 (23)	18 (32)	12 (45)
Rotuma	710.7	Average	24 (34)	18 (31)	22 (35)

## RAINFALL IN THE LAST THREE MONTHS

### Rainfall in October

Rainfall in October was generally average to below average across most of the country. A cold front that had merged with a trough brought significant rainfall towards the end of the month.

Generally below average to above average rainfall was received in the Western Division except at Viwa and Yasawa-I-Rara which recorded well above average rainfall of 211% and 301% respectively. Rainfall ranged from 48% to 301%.

Central Division recorded generally above average rainfall except Nausori Airport which recorded well above average rainfall of 203%. Rainfall ranged from 143% to 203%.

Eastern Division recorded generally average rainfall except Matuku which recorded below average rainfall of 47% and Ono-I-Lau which recorded above average rainfall. Rainfall

ranged from 47% to 136%.

Northern Division recorded below average rainfall except Nabouwalu where average rainfall was recorded. Rainfall ranged from 44% to 108%.

### Forecast Verification

#### Rainfall in the 3-months from August to October 2005

The Rainfall Outlook for the period August to October in the July Fiji Islands Monthly Weather Summary was for rainfall to be generally *Below Average* for most parts of the country. The confidence level of the forecast was *Low to moderate*.

Out of the twenty one sites that reported in time for this summary, *eight* sites received *below average* rainfall, *six* sites received *average* rainfall and *seven* sites received *above average* rainfall. *None* of the sites received *well below or well above average* rainfall in the past 3 months.

Figure A

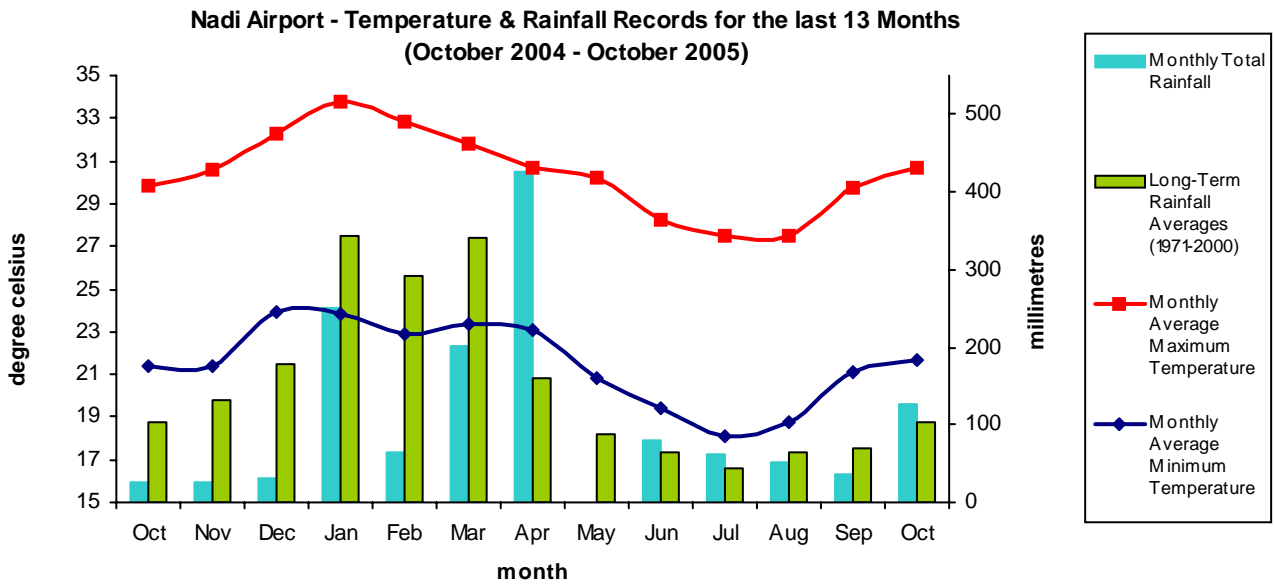


Figure B

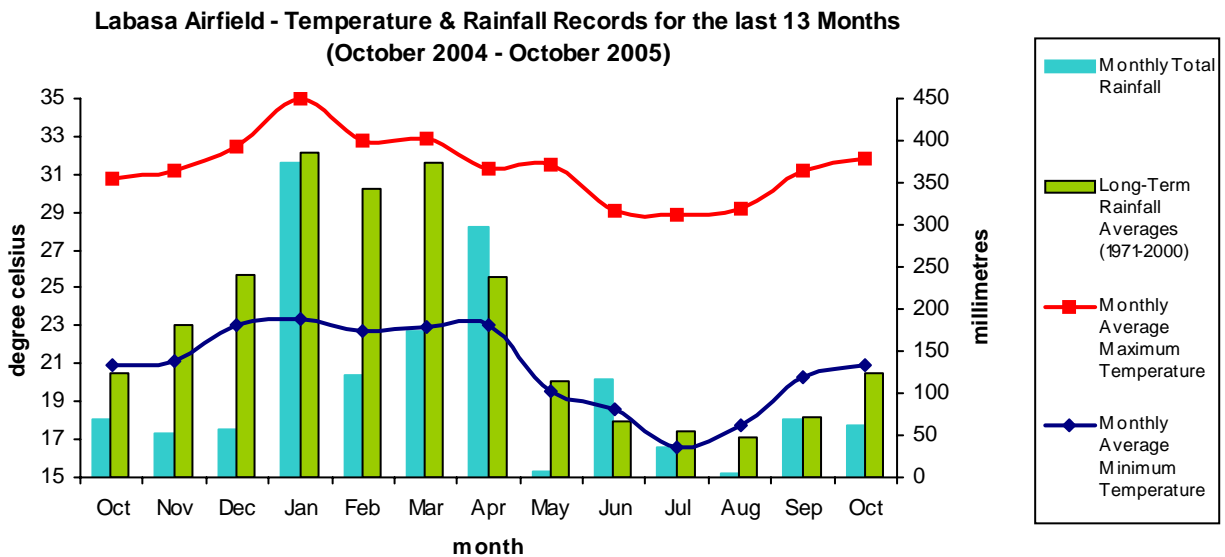
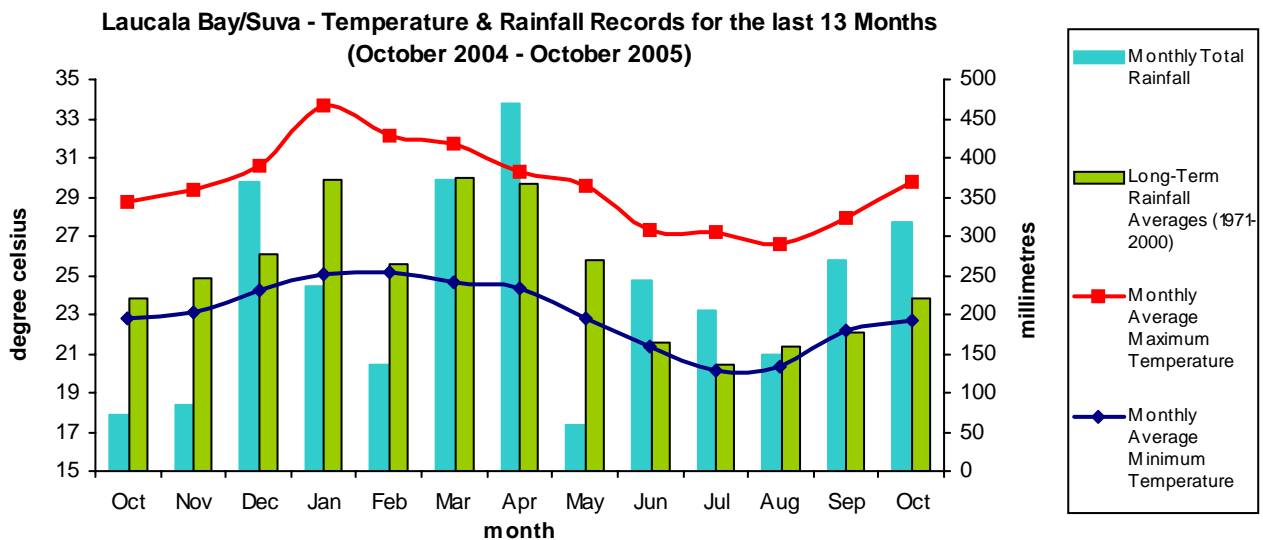


Figure C



## Climate in October 2005

### MEAN DAY-TIME AND NIGHT-TIME AIR TEMPERATURES AND RELATIVE HUMIDITY AT 0900HRS.

Day-time air temperatures were above average at all recording sites used for this summary. Greatest positive departures were recorded at Monasavu and Penang Mill which recorded 1.9°C and 1.7°C respectively.

Night-time air temperatures were generally above average around the country except at Ono-I-Lau and Penang which recorded 0.6°C and 0.1°C respectively below normal.

Relative Humidity (RH) at 0900hrs were generally around average across the country. The greatest negative departures were recorded at Matuku (9.1%) and Rarawai Mill (4%).

The highest positive departures were recorded at Ono-I-Lau (13%) and Lakeba (4%).

### SOIL MOISTURE AND RUNOFFS

Soil moisture conditions were generally limiting to dry for most of the month. Excessive to ample conditions at the end of the month for most sites due to the heavy rainfall received.

In the Western Division, the soil moisture condition was generally limiting to dry for most of the month. Monasavu recorded ample to moderate conditions for the first 3 weeks then excessive over the last week of the month.

In the Central Division, soil moisture conditions were generally excessive to ample over the first and last week of the month. Mid month had generally ample to moderate conditions.

Sites in the Eastern Division experienced generally limiting to

dry conditions. The last few days of the month experienced excessive to ample conditions.

Northern Division experienced dry to limiting soil moisture conditions for most of the month. Due to the rainfall received over the last few days of the month most sites received excessive to ample conditions

In Rotuma, the soil moisture conditions were excessive to ample throughout the month.

Significant runoff was recorded at Navua (365.8 mm), Nausori Airport (283.3 mm), Laucala Bay-Suva (183.4 mm) and Yasawa -I-Rara (174.4 mm).

### SUNSHINE, RADIATION & WINDS

The total sunshine hours were above average at all recording sites. Laucala Bay,-Suva, Nacocoloevu, Nadi Airport and Rotuma recorded 120%, 114%, 110% and 101% respectively.

Global Solar Radiation (average per day) was 23.0 MJ/M<sup>2</sup> at Nacocolevu, 20.6 MJ/ M<sup>2</sup> at Nadi Airport and Rotuma recorded 21.0 MJ/ M<sup>2</sup>.

Monthly average wind speed was below average for the third consecutive month at all wind recording sites around the country.

**TABLE 2: RECORDS SET IN OCTOBER 2005**

<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 Rainfall	Vatukoula	78.4 mm	19th	New High	68.6 mm	1989	June 1984
Daily Rainfall	Tokotoko, Navua	200.0 mm	28th	New High	127.5 mm	2003	Jan 1992
Av. Mly Max Temp	Matuku	28.9 °C	-	New High	28.8 °C	1998	Jan 1955
Av. Mly Max Temp	Nabouwalu	29.2 °C	-	New High	29.0 °C	1974/75	Jan 1956
Av. Mly Max Temp	Monasavu	24.7 °C	-	New High	24.2 °C	1989/02	Mar 1980
Av. Mly Max Temp	Tokotoko, Navua	28.3 °C	-	New High	27.9 °C	1995	Jan 1992
Daily Max Temp	Laucala Bay, Suva	33.0 °C	24th	New High	32.4 °C	1997	Jan 1942
Daily Max Temp	Monasavu	28.9 °C	22nd	New High	28.2 °C	1992	Mar 1980
Daily Max Temp	Labasa Airport	34.7 °C	24th	New High	34.5 °C	1959	Aug 1956
Daily Max Temp	Lakeba	34.3 °C	13th	New High	32.4 °C	1997	Jan 1955
Daily Max Temp	Matuku	31.9 °C	26th	New High	31.8 °C	1992	Jan 1955
Daily Max Temp	Vunisea	32.5 °C	23rd	New High	31.7 °C	1948/55	Jan 1947
Daily Min Temp	Viwa	27.0 °C	26th	New High	26.0 °C	1999/03	Aug 1978
Daily Min Temp	Matei	26.0 °C	9th	New High	25.8 °C	1976	Aug 1956
Av. Mly Min Temp	Vunisea, Kadavu	22.6 °C	-	New High	22.5 °C	1974	Jan 1947

## ENSO STATUS AND SOI GRAPH

### ENSO UPDATE

#### EL NIÑO - SOUTHERN OSCILLATION

The Southern Oscillation Index (SOI) for October was 10.9 (September was 3.9) with the five-month running mean of 2 centred on August (July was -3) (see Figure D below).

A varying combination of El Niño like and neutral ENSO indicators persisted through the later part of 2004 and most of 2005. The latest observations of key ENSO indicators from the tropical Pacific continue to indicate a neutral climate pattern. Historically, neutral climate conditions this late in the season tend to remain neutral until at least the end of the calendar year. Current climate model outlooks also suggest neutral conditions to persist for the remainder of 2005, and likely to continue through the summer.

The sea surface temperature pattern in the tropical Pacific ocean displays a typical climatological pattern with key Niño

regions showing a mix of small warm and cool anomalies. The subsurface temperatures are slightly cool, but still close to their long term mean.

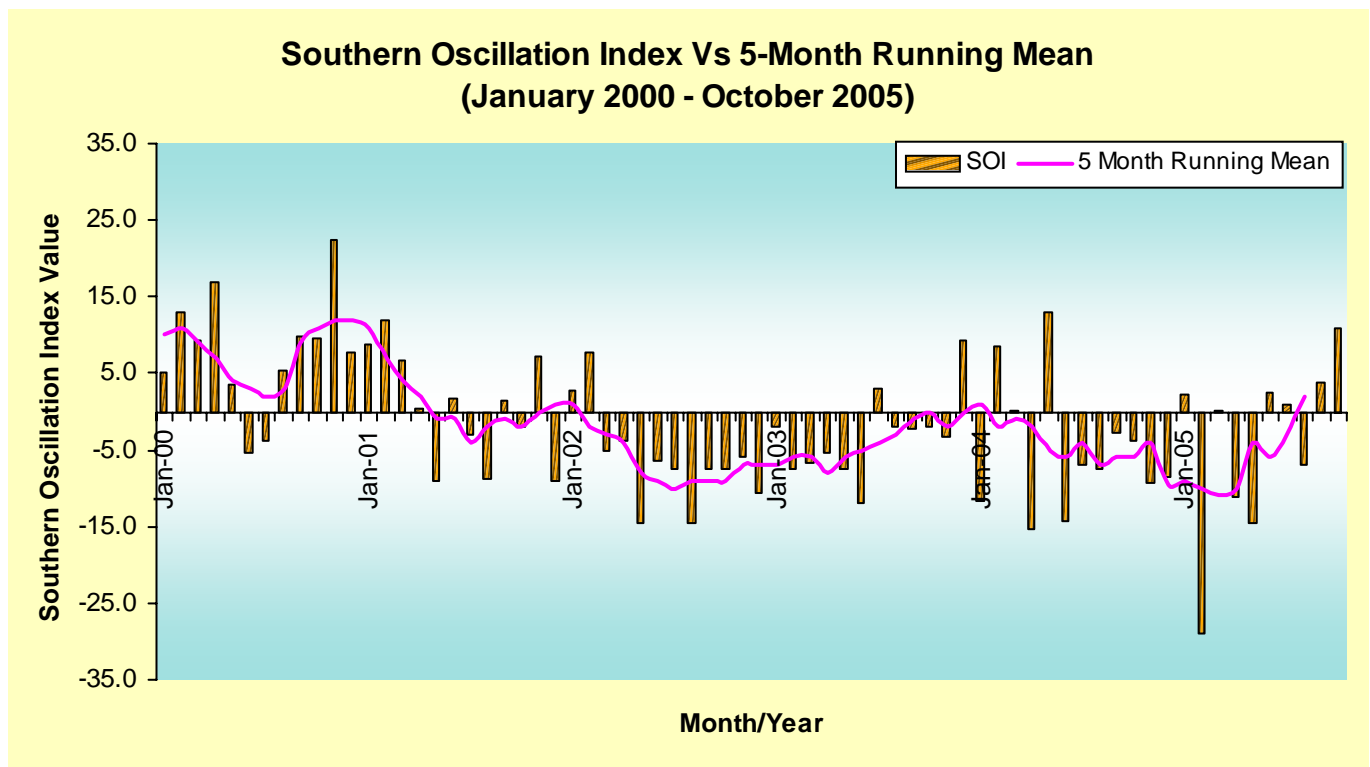
Observations from the Pacific region show Trade Winds near the equator being averaged close to their long term values during October.

Cloud patterns in the tropical Pacific reflect weak patterns in the ocean temperatures, and are generally near normal.

Most computer models predict neutral eastern Pacific conditions till March 2006.

*For more information and interpretation, please contact Fiji Meteorological Service. (The ENSO Update is provided by the Australian Bureau of Meteorology and visit the website <http://www.bom.gov.au> for a detailed information).*

**Figure D**



#### Tropical Cyclone Season—November 2005 to April 2006

The south Pacific Tropical cyclone Season officially began on 1st November and will continue till 30th April 2006.

Fiji's chances of being hit by a Tropical Cyclone (TC) is slightly higher in the neutral ENSO phase compared to El Niño phase and significantly reduced in a La Niña phase. It can be said that the chance of being hit would be higher this season than in the recent past.

Based on statistical information, Fiji can expect to be hit by 10 to 15 TCs in a decade of which 2 to 4 could do severe damage. Since 1995, the only major damage was done by TC

Gavin (1997—Western and South Western parts of Fiji) and TC Ami (2003—Northern and Eastern parts of Fiji). Therefore the chance of a big hit is rather high.

Due to neutral conditions, we are anticipating an average TC season with 7 to 9 TCs forming in the South-West Pacific region as a whole, based on statistics again. Once a TC forms only then will we be able to tell whether it will threaten Fiji or not.

Given the trend of more and more extreme events occurring in different parts of the world, one should always prepare for a worse one yet to come.

**RAINFALL PREDICTIONS AND OUTLOOK TO JANUARY 2006**

*FMS currently uses "The Seasonal Climate Outlook for Pacific Island Countries (SCOPIC) Model" for seasonal rainfall guidance.*

*The SCOPIC software system analyses the current sea surface temperature patterns across the Pacific Ocean and then finds the most similar patterns experienced throughout the available historical period.*

*For a particular location, the subsequent rainfall received in historical period is then used to construct a rainfall forecast for the next three month period in a form of a tercile probability distribution. It also allows for the predictor period to be varied to produce the maximum skills.*

The SCOPIC model predicts rainfall to be average to above average across the country.

The model is predicting rainfall to be below average rainfall at Rotuma.

**RAINFALL OUTLOOK FOR FIJI ISLANDS  
NOVEMBER 2005 TO JANUARY 2006**

**With the current neutral state of ocean & atmospheric conditions rainfall is likely to be average to above average across the country over the next three months.**

As this is the Tropical Cyclone Season Fiji can expect above average rainfall if a tropical disturbance or tropical cyclone affects the Group or passes close to the Group.

**NOTE:**

**The confidence level of this prediction is moderate.**

**PRELIMINARY CLIMATOLOGICAL SUMMARY FOR OCTOBER 2005**

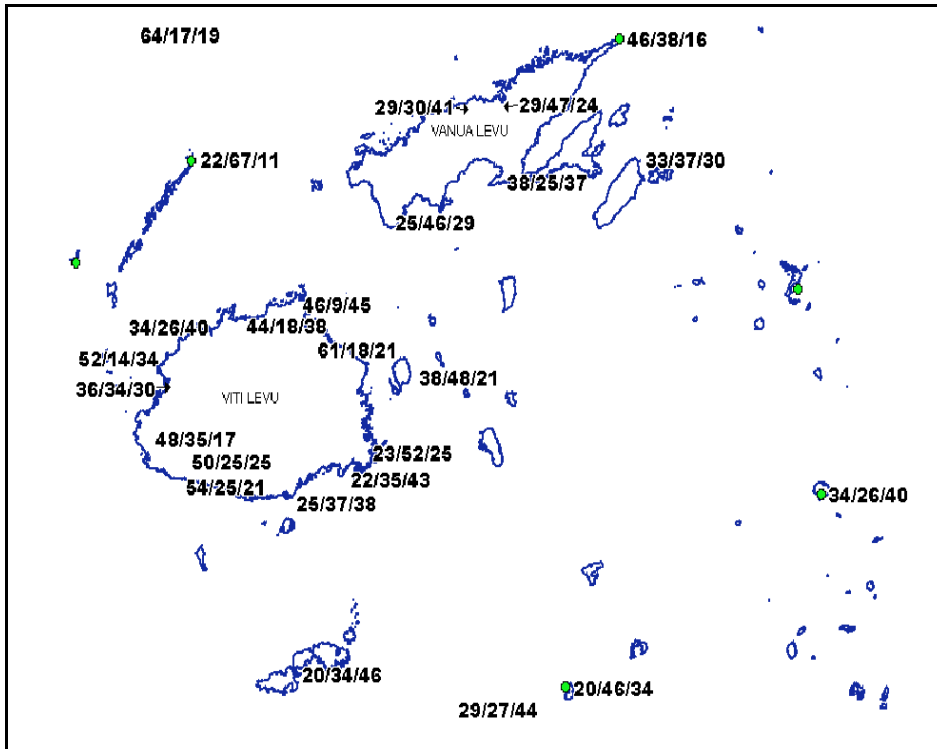
PRELIMINARY CLIMATOLOGICAL DATA FOR MONTH 10 , 2005 : SUMMARY FOR DAYS 1 TO 31

	RAINFALL				AIR TEMPERATURES						SUNSHINE			
	TOTAL		RAIN MAX.		AVERAGE DAILY			EXTREME			TOTAL			
	MM	%	* DAYS +	FALL MM ON	MAX. C	# C	MIN. C	# C	MAX. C	MIN. C	ON	HRS	* %	
NADI AIRPORT	127	125	5	79 30	30.7	0.4	21.7	1.2	34.2	23	18.5	4	259	110
SUVA/LAUCALA BAY	317	143	17	91 29	29.8	1.6	22.7	0.8	33.0	24	20.9	20	196	120
NACOCOLEVU	91	93	6	48 30	30.5	1.4	21.6	1.9	33.3	20	18.5	4	218	114
ROTUMA	249	73	22	48 15	30.7	1.0	24.7	0.5	32.0	19	22.9	13	197	101
VIWA	139	211	10	41 1	30.6	1.3	24.2	0.6	33.5	24	20.1	2		
UDU POINT	124	75	13	55 27	29.9	0.6	23.8	0.9	32.0	9	21.7	3		
LABASA AIRFIELD	63	50	5	27 18	31.8	1.0	20.9	1.1	34.7	24	15.0	3		
NABOUWALU	183	108	13	34 30	29.2	1.5	23.2	0.6	32.3	22	21.2	5		
SAVUSAVU AIRFIELD	114	66	5	60 27	29.1	0.9	22.4	0.5	32.0	8	19.0	31		
MATEI AIRFIELD	85	44	9	28 19	29.0	0.8	23.2	0.7	31.0	24	21.0	1		
YASAWA-I-RARA	316	301	6	174 29	30.1	1.2	23.5	0.5	32.4	21	21.7	19		
VATUKOULA	180	182	8	78 19	31.9	0.8	20.9	1.8	34.6	18	17.9	1		
MONASAVU	303	92	17	84 29	24.7	1.9	16.8	0.5	28.9	22	12.6	4		
NAUSORI AIRPORT	417	203	18	124 29	28.7	1.1	21.0	0.1	32.0	24	17.1	2		
NAVUA/TOKOTOKO	499	179	16	200 28	28.3	1.4	20.8	0.1	30.5	20	18.0	4		
ST. JOHNS COLLEGE	141	103	19	45 28	28.4	0.7	23.0	0.7	30.5	25	19.5	2		
LAKEBA	130	105	10	61 18	28.9	1.2	22.8	0.7	34.3	13	18.5	4		
MATUKU	54	47	7	13 30	28.9	1.5	23.1	1.3	31.9	26	21.6	22		
VUNISEA	134	98	12	83 27	28.5	1.4	22.6	1.8	32.5	23	18.8	4		
ONO-I-LAU	117	136	7	35 19	28.0	1.6	20.8	-0.6	30.9	24	17.0	6		
BA/RARAWAI MILL	72	67	7	29 29	32.4	1.2	20.4	0.8	34.7	25	16.5	1		
LAUTOKA AES	103	101	8	41 29	30.7	1.2	22.3	0.7	33.4	15	19.0	1		
PENANG MILL	54	48	8	22 30	30.6	1.7	22.1	-0.1	33.9	24	17.5	3		

## SCOPIC Model (Seasonal Climate Outlook for Pacific Island Countries Model)

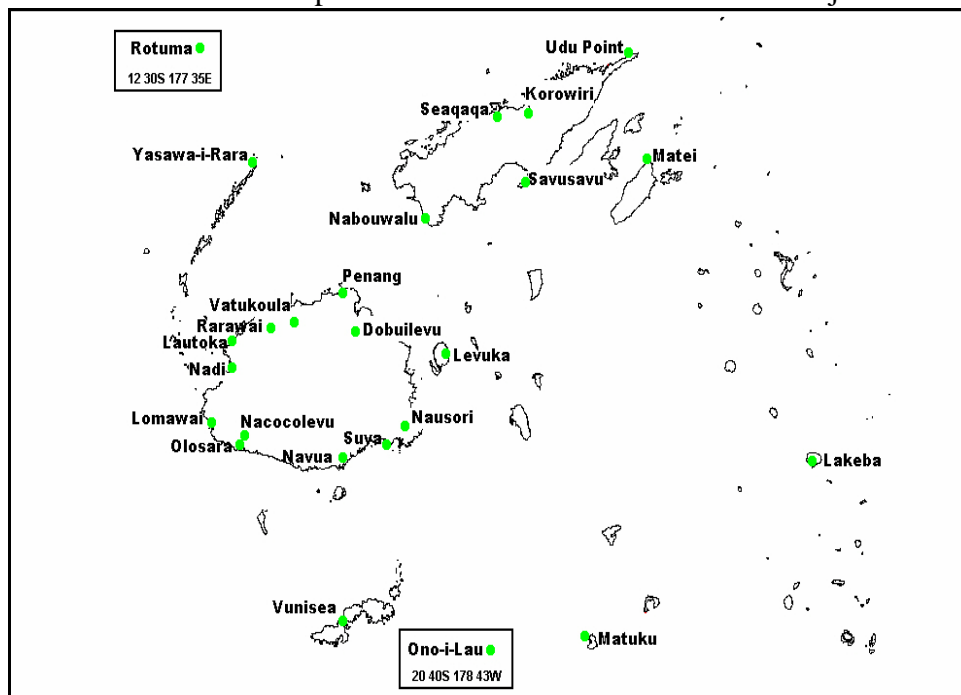
**FIGURE E**  
 Three Month Forecast for Selected Stations in Fiji using the SCOPIC Model

The forecast probabilities are presented as



Please note that the probabilities are listed beside the corresponding station marker or dot.

**FIGURE F**  
 Reference Map of selected Climate/Rainfall sites in Fiji



**DRY/NORMAL/WET**  
 'DRY' range refers to rainfall less than 33rd percentile.

'NORMAL' (average) range refers to rainfall between 33rd and 67th percentiles.

'WET' range refers to rainfall above 67th percentile.

### Reference Table for 33rd and 67th Percentile

Station	33% (mm)	67% (mm)
<b>Western Division</b>		
Dobuilevu	669.7	985.3
Vatukoula	512.9	905.5
Rarawai	535.4	844.2
Penang	573.1	944.4
Lautoka	485.1	743.5
Nadi	432.1	729.4
Lomawai	378.2	674.2
Nacocolevu	438.9	717.5
Olosara	329.2	601.9
Yasawa	398.5	616.7
<b>Central Division</b>		
Navua	872.0	1134.6
Suva	676.0	1036.0
Nausori	715.4	1005.4
<b>Eastern Division</b>		
Levuka	536.6	789.1
Lakeba	465.0	651.8
Matuku	366.6	587.7
Ono-I-Lau	269.1	521.2
Vunisea	471.5	643.3
<b>Northern Division</b>		
Labasa Mill	688.6	966.2
Seaqaqa	732.3	956.0
Nabouwalu	654.2	885.1
Savusavu	589.6	717.6
Udu Point	691.0	883.5
Matei	766.8	964.3
<b>Rotuma</b>	<b>839.8</b>	<b>1071.1</b>

**Note:** This summary is prepared for rapid dissemination as soon as possible following the end of the month. The quantitative data are obtained daily on the phone or radiotelephone from a network of climate stations reporting 9 am observations; these data must be treated as provisional. FMS does not guarantee accuracy and reliability of the forecast information presented in this summary but the Department should be sought for expert advice, any clarification or additional information. Any person wishing to re-print any information provided in this summary must seek permission from the Director of Meteorology.