

Fiji Islands Weather Summary August 2005 Rainfall Outlook till November 2005

FIJI METEOROLOGICAL SERVICE

IN BRIEF

The dominant effect of ridge of high pressure that maintained cool and dry easterly airflow over the country saw cooler than normal conditions in August compared to the recent years. The country received notable rainfall in some locations as cold fronts migrated eastwards especially in the last two weeks.

Rainfall during the month was generally below average to average in most areas. Notably there were two occasions when the country received rainfall as fronts passed close to the Group. This resulted in some sites receiving average to above average rainfall in August. The only site that received well below average rainfall was the Labasa Airport while sites at Viwa, Lautoka Mill and Lakeba recorded above average rainfall.

The day-time air temperatures were average to below average at most locations around the country. A new day-time high of 32.0 °C was recorded at Udu Point equalling the record set in 1991.

The night-time air temperature was generally below average across the country. A new night-time record of 14.1°C was set at Matuku which replaced a 50-year record

that was set in 1955. The coolest nights were experienced across the country from 4th to the 7th when many sites recorded their lowest night-time temperatures this month.

Majority of the sites around the country experienced below average sunshine hours and winds were weaker than normal in August.

Despite most of the tropical Pacific Sea Surface Temperatures remaining somewhat warmer than normal, the situation across the Pacific basin is likely to remain in neutral ENSO conditions for the remainder of the year.

In the latest survey of the General Circulation Models (GCM), majority of the them favour neutral temperature patterns however three of them are predicting warm temperature patterns till December 2005.

Based on model predictions and current ocean and atmospheric conditions, most parts of the country is most likely to experience average or below average rainfall in the next three months.

WEATHER PATTERNS

August weather was dominated by ridges of high pressure that extended over the Fiji group from the southwest and gradually moved eastwards. Significant rain occurred on two occasions when cold fronts crossed the group from the west.

The month began with relatively dry easterly trades blowing over Fiji. A ridge pushed from the southwest on the 3rd, bringing southerly winds that dominated Fiji's weather till the 7th. On the 8th, a second ridge brought fine weather over most places till the 9th. On the 10th, cloud associated with a trough to the far west spread onto the country, bringing isolated light showers. However, a ridge extended over the country from the southeast, and maintained stable weather from the 11th till the 15th.

A cold front approached the group on the 16th, and moved over Fiji by the 17th. This caused rain, with isolated heavy falls, over the group till the 20th. As the front moved east and another ridge moved in bringing fine weather till the 24th. Then another cold front moved onto the group and slowed over Fiji on the 26th. Rain associated with this system affected the group till the 28th. Till the end of the month a ridge extended from the south and maintained fine weather over the country.

Rotuma experienced showers almost everyday of this month. However, significant falls were noted from 8th, 10th, 18th, and 26th when the SPCZ intensified in response to a cold front passing over Fiji from the west.

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

Further Information:

The Director
Fiji Meteorological
Service
Private Mail Bag NAP
0351
Nadi Airport
Fiji

Ph: (679) 672 4888
Fax: (679) 672 0430

Email: fms@met.gov.fj
Web Site: www.met.gov.fj

TABLE 1: RAINFALL FROM JUNE TO AUGUST 2005

Station	Actual Rainfall (mm)	Rainfall in the last three months (Below Average, Average or Above Average)	No. of Rain days in Jun05 (% of total rain)	No. of Rain days in Jul05 (% of total rain)	No. of Rain days in Aug05 (% of total rain)
Penang Mill	168.1	Below Average	11 (60)	08 (18)	05 (22)
Monasavu Dam	540.6	Below Average	14 (41)	17 (36)	18 (23)
Vatukoula Mine	220.1	Average	07 (57)	05 (18)	05 (25)
Rarawai Mill, Ba	212.4	Average	05 (45)	04 (25)	05 (30)
Yasawa-I-Rara	369.3	Above Average	06 (60)	03 (29)	04 (11)
Viwa Island	301.5	Above Average	05 (56)	03 (19)	06 (25)
Lautoka (FSC Res.)	230.1	Average	05 (38)	03 (23)	06 (39)
Nadi Airport	192.9	Average	06 (41)	04 (32)	06 (27)
Nacocolevu, Sigatoka	-	-	-	-	-
Tokotoko, Navua	572.9	Average	15 (40)	17 (34)	17 (26)
Laucala Bay, Suva	598.4	Above Average	19 (41)	20 (34)	16 (25)
Nausori Airport	503.2	Average	14 (36)	19 (46)	14 (18)
Nabouwalu	217.7	Below Average	16 (46)	14 (31)	15 (23)
Labasa Airport	156.0	Average	06 (76)	04 (22)	03 (02)
Savusavu Airport	191.6	Below Average	09 (59)	06 (13)	10 (28)
Udu Point	344.5	Average	15 (61)	09 (27)	09 (12)
Matei Airport	466.6	Above Average	12 (47)	07 (40)	12 (13)
Lakeba Is.	624.4	Well Above Average	08 (40)	14 (35)	12 (25)
Matuku Is.	272.3	Average	07 (56)	06 (25)	06 (19)
Ono-I-Lau Is.	-	-	-	-	-
Vunisea, Kadavu	452.8	Above Average	15 (60)	21 (25)	20 (15)
Rotuma	864.9	Above Average	21 (59)	18 (13)	24 (28)

RAINFALL IN THE LAST THREE MONTHS

Rainfall in August

Rainfall in August was generally below average to average across most of the country. There were two occasions later in the month when the country received significant rainfall when fronts passed close to the Group. This resulted in some sites receiving average to above average rainfall in the Western and Eastern Divisions. Apart from that, the month was relatively cool and dry. The only site that received well below average rainfall was Labasa Airport while sites at Viwa, Lautoka Mill and Lakeba recorded above average rainfall.

Rainfall varied considerably in the Eastern Division and ranged from 45% to 154% of *normal*. Rainfall in the Western Division ranged from 50%-129% of *normal*, and 63% to 94% of *normal* was in the Central Division. The Northern Division was the driest amongst all and re-

ceived 08% to 48% of *normal* rainfall this month. Rotuma was noted to be wetter than *normal* in August.

Forecast Verification

Rainfall in the 3-months from June to August 2005

The Rainfall Outlook for the period June to August in the May Fiji Islands Monthly Weather Summary was for rainfall to be *Average or Below* across most of the country. The confidence level of the forecast was *Low to moderate*.

Out of the twenty sites that reported in time for this summary, none received well below average, *four* sites received *below average* rainfall, *nine* sites received *average* rainfall and *six* sites received *above average* rainfall. Lakeba was the only site that received *well above average* rainfall.

Figure A

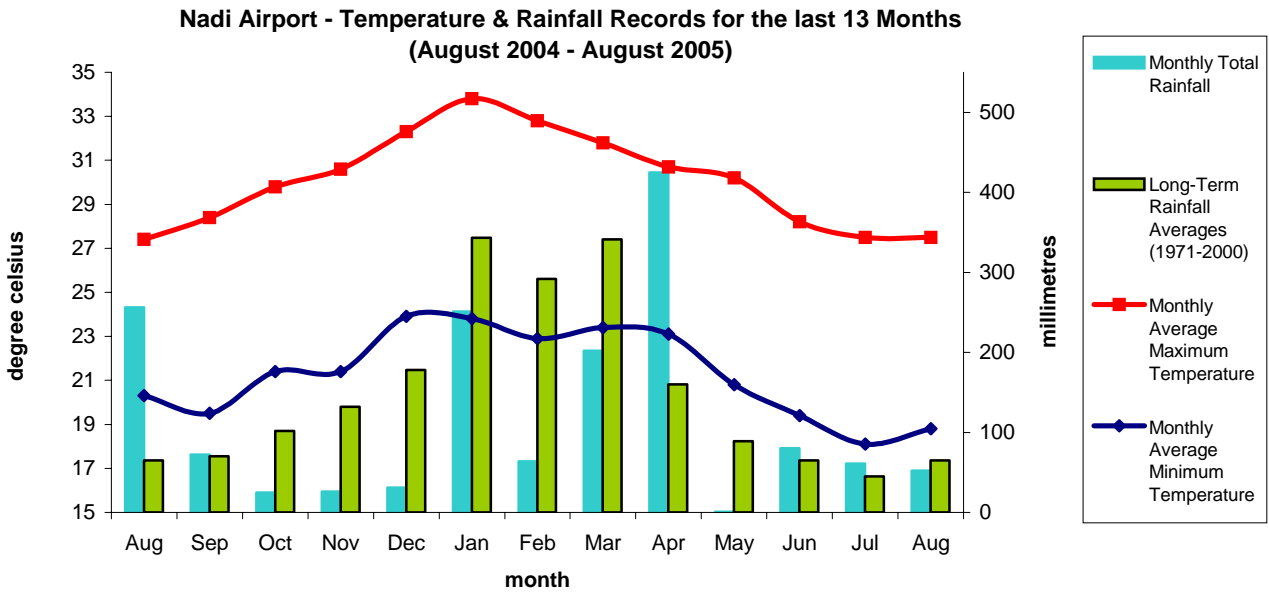


Figure B

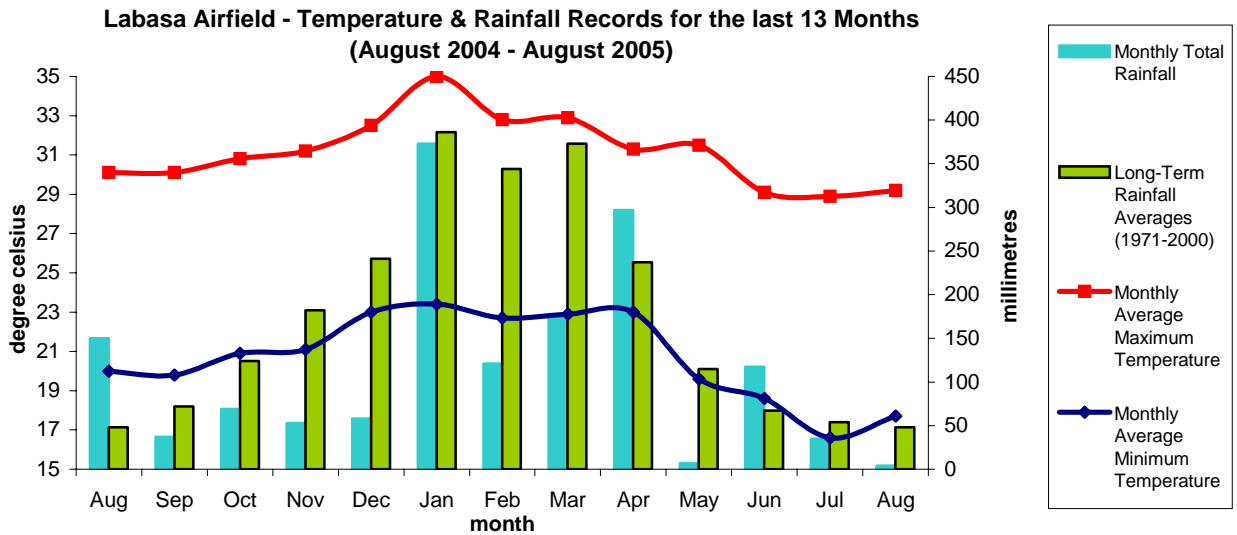
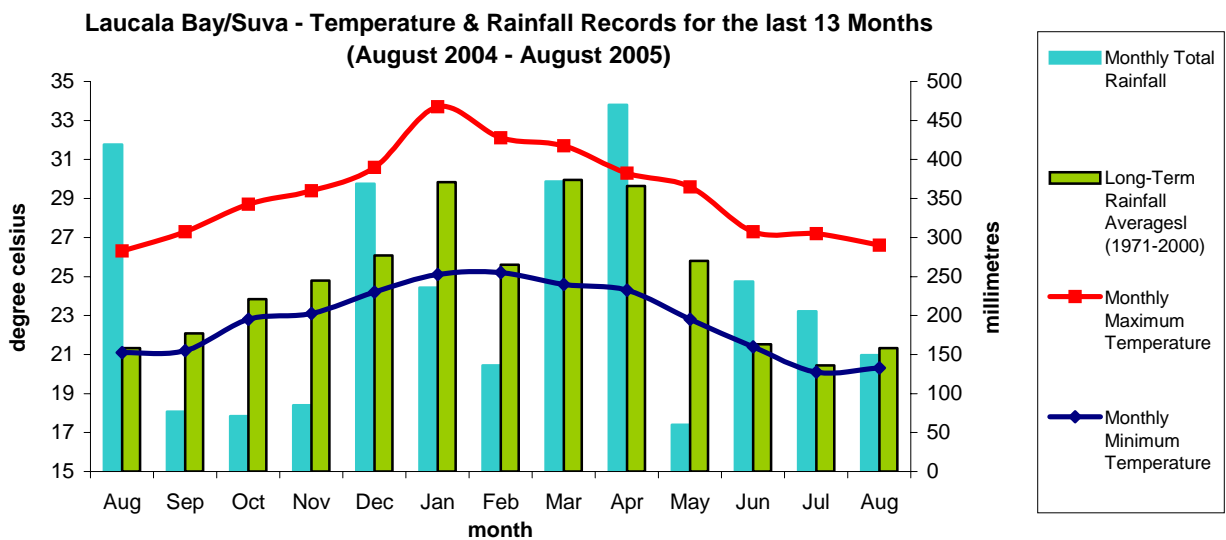


Figure C



Climate in August 2005

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

Day-time air temperatures were generally average to below average across the country. The greatest negative departure of 1.2°C was recorded at Nadi Airport, followed by 1.0°C at Savusavu and 0.8°C at Lakeba below normal. The highest positive departure of 0.4°C above *normal* was recorded at Monasavu.

The night-time air temperatures were generally below average at many location around the country. A new low night-time temperature of 14.1°C and 15.0°C was recorded on the 06th and 04th at Matuku and Ono-I-Lau respectively. The

greatest negative departure of 2.0°C followed by 1.7°C and 1.3°C below normal was recorded at Penang Mill, Ono-I-Lau and Nausori Airport respectively.

Relative Humidity (RH) at 0900hrs were mostly average to below average across the country except at Nadi Airport, Levuka and Ono-I-Lau which recorded above *normal*. The greatest negative departures were recorded at Rarawai Mill 6%, Laucala Bay (Suva) and Monasavu both 5% below *normal*.

SOIL MOISTURE AND RUNOFFS

Soil moisture conditions were generally limiting to dry for the first three weeks at all sites across the country except for Rotuma and Monasavu.

In the Western Division, soil moisture condition was limiting to dry at Nadi Airport, Yasawa, Vatukoula, Rarawai and Penang Mill. Conditions were moderate to limiting at Viwa and moderate to ample and then ample to excess at Monasavu. Lautoka experienced ample to moderate soil moisture conditions during the later part of the month.

In the Central Division soil moisture conditions were generally limiting to dry for the first three weeks and then ample to excessive during the last week of the month.

Eastern Division experienced generally limiting to dry con-

ditions almost throughout the month except at Lakeba where the conditions were excess to ample over the last 12 days of the month. Conditions at Ono-I-Lau were moderate to limiting in the first week then limiting to dry and then excess to ample over the last week of the month.

The soil moisture conditions were generally limiting to dry in the Northern Division almost throughout the month.

In Rotuma, the soil moisture conditions were excess to ample during the entire month.

Only significant runoff 114.3mm was recorded at Rotuma during the month however small runoff were also experienced at Lakeba (37.0mm), Monasavu (30.6mm) and Suva (20.7mm).

SUNSHINE, RADIATION & WINDS

Laucala Bay, (Suva) was the only site that recorded above average sunshine hours around the country. Rotuma and Nadi Airport recorded 86% and 76% of normal.

Global Solar Radiation (average per day) recorded at Rotuma was 17.0 MJ/M², Nadi Airport recorded 14.8 MJ/M² and Nacocolevu recorded 15.0 MJ/M².

Solar radiation data from Laucala Bay (Suva) is not available this month.

Monthly average wind speed were below average at all wind recording sites around the country.

TABLE 2: RECORDS SET IN AUGUST 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 Maximum Temperature	Udu Point	32.0 °C	26th	Equal High	32.0 °C	1991	1950
Daily Minimum Temperature	Matuku	14.1 °C	06th	New Low	14.2 °C	1955	1950
Daily Minimum Temperature	St. Johns Levuka	23.0 °C	13th	New High	20.0 °C	1988	1984
Average Minimum Temperature	Tokotoko, Navua	18.3 °C	06th	New Low	18.5 °C	1993	1992
Average Minimum Temperature	Ono-I-Lau	18.3 °C	04th	New Low	18.7 °C	1982	1949

ENSO STATUS AND SOI GRAPH

ENSO UPDATE

EL NIÑO - SOUTHERN OSCILLATION

The Southern Oscillation Index (SOI) for August was -6.9 (July was +0.9) with the five-month running mean of -6 centred on June (May was -4) (see Figure D below).

A varying combination of El Niño like and neutral ENSO indicators persisted through the later part of 2004 and early months of 2005. The carrying forward of some of these indicators over the early dry season caused some concern regarding the potential for an El Niño event to develop. With moderation of some of the oceanic and atmospheric indicators in the recent months and despite drop in the SOI and trade wind strength, together with some warming along the equatorial Pacific, the situation across the Pacific Basin remains neutral overall. The model guidance and the historical precedence suggest that neutral conditions will continue for the remainder of the year.

Most of the tropical Pacific remains somewhat warmer than average however eastern equatorial Pacific warmed by about 0.5°C during August. The current patterns of subsurface cooling spreading into the central and eastern Pacific and cloud patterns remaining near-normal, the falling SOI and weakened trade winds are likely to be only temporary fluctuations.

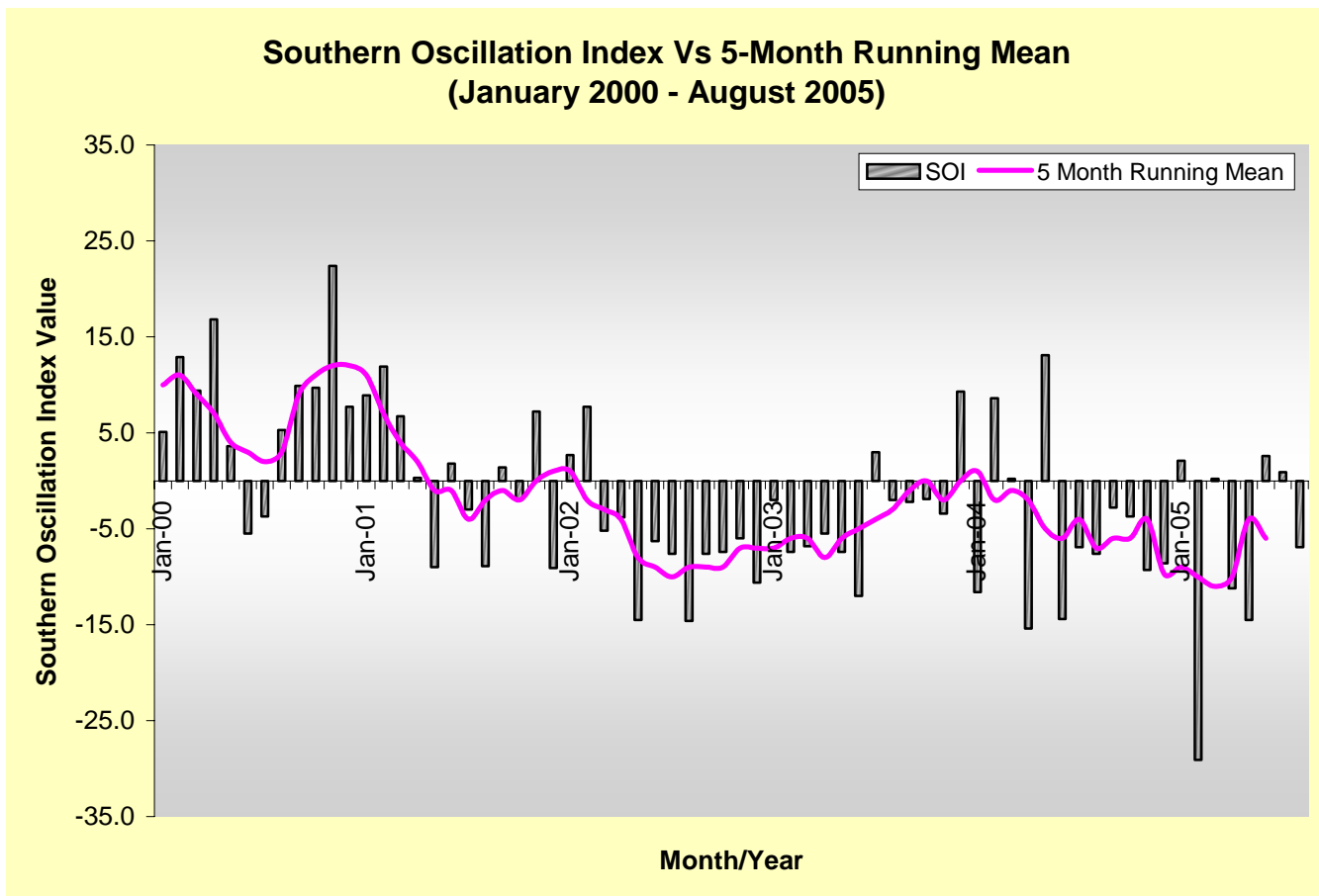
Sea surface Temperature (SST) data for August show weak positive anomalies across most of the tropical Pacific areas near and west of the dateline. Generally there was a cooling trend of +0.1°C to +0.2°C in the anomalies from July to August.

The sub-surface temperature data for August show that, in comparison with July, negative anomalies on the thermocline have intensified and spread into the central to eastern Pacific. The subsurface temperature anomalies are relatively weak, making the overall pattern neutral.

In the latest survey of General Circulation Models (GCM), eight favours neutral temperature patterns till December 2005, three suggests warm (El Niño) conditions, with one predicting cold conditions. By March 2006, only one model predicts the continuation of warm conditions with none predicting the development of cool conditions. There is roughly an even split between models indicating the central Pacific remaining on the warm side of average and those predicting cooler than normal temperatures during the remainder of the year.

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



RAINFALL PREDICTIONS AND OUTLOOK TO NOVEMBER 2005

FMS currently uses "The Seasonal Climate Outlook for Pacific Island Countries (SCOPIC) Model" for seasonal rainfall guidance. *above average* for Rotuma from September to November.

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 is giving mixed results and it is broadly suggesting that the rainfall is expected to be near average in the Western Division while the Northern, Eastern and Central Divisions may end up receiving Average or Below normal rainfall.

The model is giving a higher probability for rainfall to be

RAINFALL OUTLOOK FOR FIJI ISLANDS
SEPTEMBER TO NOVEMBER 2005

Based on model predictions and current ocean and atmospheric conditions, most parts of the country can expect rainfall to be *Average or Below* for the next three months.

This prediction can be significantly affected if there is a tropical depression tropical cyclone affecting or passing close to the country as the forecast period leads into the cyclone season. November to April is the cyclone season. The cyclone season begins in November and ends at the end of April.

NOTE: The model has lower skills through transition period, therefore, the confidence level of this prediction is *low to moderate*.

PRELIMINARY CLIMATOLOGICAL SUMMARY FOR AUGUST 2005

FIJI METEOROLOGICAL SERVICE

DATE 02/09/2005

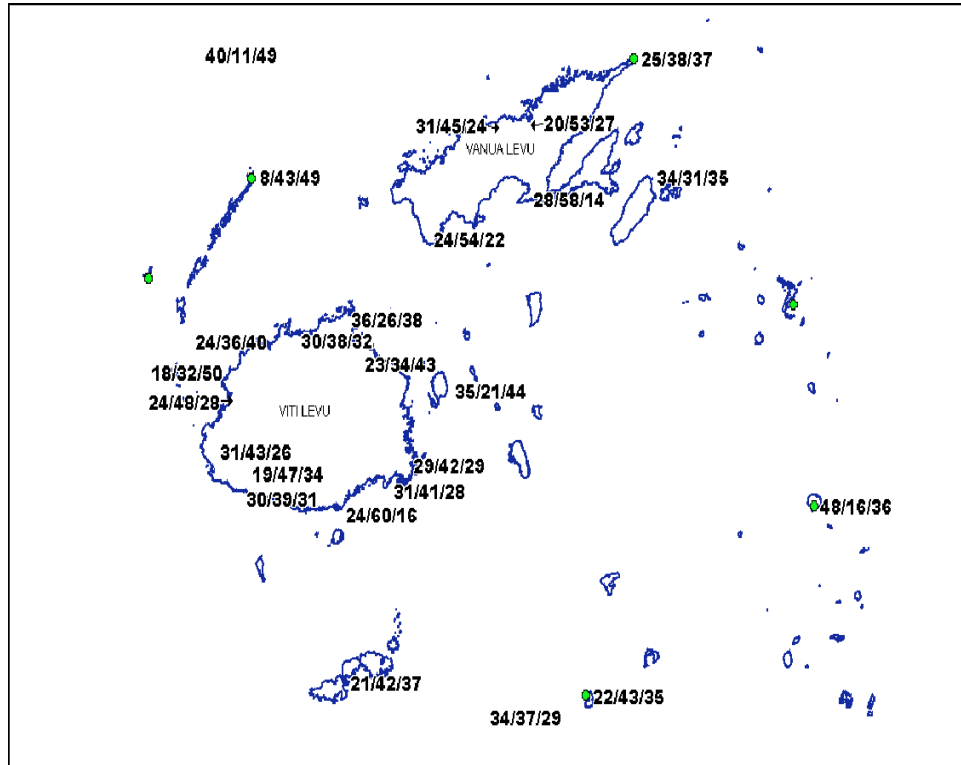
PRELIMINARY CLIMATOLOGICAL DATA FOR MONTH 8 , 2005 : SUMMARY FOR DAYS 1 TO 31

	RAINFALL				AIR TEMPERATURES								SUNSHINE	
	TOTAL	RAIN	MAX.		AVERAGE DAILY				EXTREME				TOTAL	*
	MM	%	+	MM ON	MAX.	#	MIN.	#	MAX.	MIN.	C	ON	HRS	%
NADI AIRPORT	52	80	6	29 19	27.5	-1.2	18.8	0.2	30.4	16	14.5	21	198	86
SUVA/LAUCALA BAY	149	94	16	43 26	26.6	-0.1	20.3	-0.4	29.0	14	16.1	6	161	112
NACOCOLEVU	56	67	4	30 19	26.9	-0.6	18.6	0.7	31.2	11	9.9	6	140	76
ROTUMA	245	117	24	65 10	29.3	0.2	24.0	0.0	31.1	29	22.8	9	187	90
VIWA	75	126	6	40 19	27.8	0.0	22.1	-0.3	29.7	7	19.9	6		
UDU POINT	41	48	9	14 18	27.6	-0.5	21.5	-0.7	32.0	20	18.0	7		
LABASA AIRFIELD	4	8	3	2 18	29.2	-0.2	17.7	-1.0	31.7	15	12.0	6		
NABOUWALU	51	48	15	14 27	26.3	-0.0	21.1	-0.5	29.5	25	17.4	22		
SAVUSAVU AIRFIELD	54	47	10	24 27	26.1	-1.0	20.8	0.0	28.0	7	16.5	6		
MATEI AIRFIELD	61	48	12	30 19	26.7	-0.3	21.1	-0.6	28.3	14	19.0	22		
YASAWA-I-RARA	42	67	4	16 27	27.9	0.1	21.6	-0.6	29.5	26	20.0	5		
VATUKOULA	56	82	5	27 19	29.0	-0.4	18.3	0.8	31.2	17	14.8	6		
MONASAVU	126	53	18	25 19	21.5	0.4	14.6	-0.5	25.2	7	10.3	22		
NAUSORI AIRPORT	92	63	14	26 27	25.8	-0.4	18.3	-1.3	28.1	25	14.3	5		
NAVUA/TOKOTOKO	149	64	17	30 26	25.8	0.2	18.3	-1.1	29.5	28	14.0	6		
ST. JOHNS COLLEGE	94	101	13	24 19	26.1	-0.6	20.6	-0.7	28.5	15	17.5	6		
LAKEBA	157	154	12	56 19	25.6	-0.8	20.3	-0.7	28.5	18	14.1	6		
MATUKU	51	45	6	20 19	25.9	0.1	21.4	0.9	27.7	9	14.1	6		
VUNISEA	68	55	20	29 19	25.4	-0.4	19.8	0.4	27.9	15	16.6	6		
ONO-I-LAU	125	106	13	63 19	24.9	-0.0	18.3	-1.7	28.7	16	15.0	4		
BA/RARAWAI MILL	63	96	5	26 19	29.2	-0.6	16.8	-0.6	32.0	11	12.0	5		
LAUTOKA AES	91	129	6	38 19	27.7	-0.6	19.5	-0.5	30.4	30	15.3	5		
PENANG MILL	36	50	5	16 19	27.7	0.3	18.7	-2.0	30.2	16	12.3	22		

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

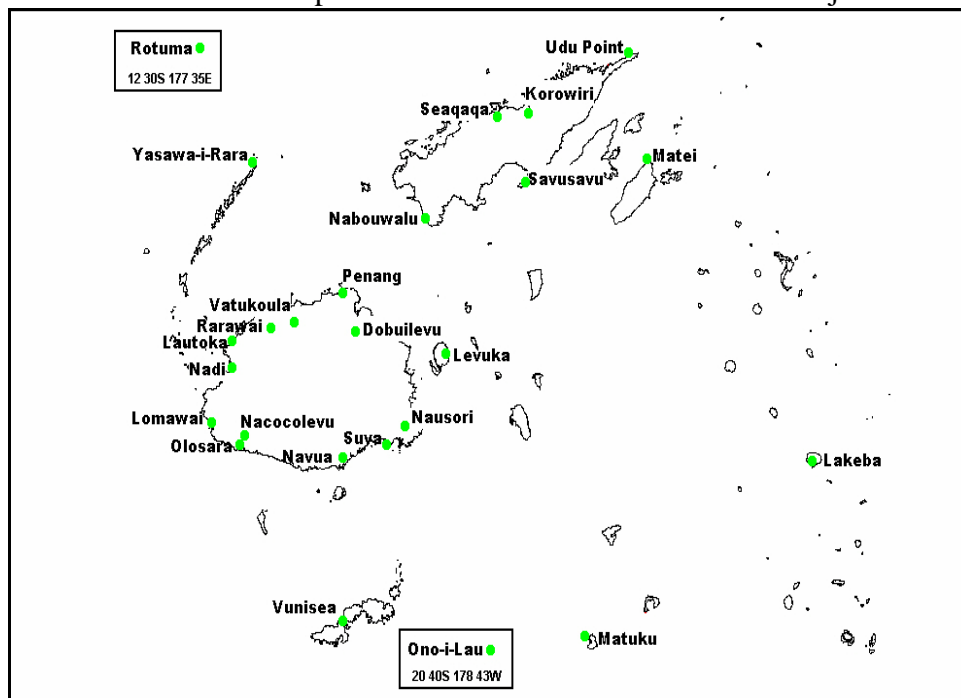
FIGURE E
 Three Month Forecast for Selected Stations in Fiji using the SCOPIC Model

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)
Western Division		
Dobuilevu	366	541
Vatukoula	195	354
Rarawai	204	374
Penang	276	383
Lautoka	189	337
Nadi	211	343
Lomawai	182	320
Nacocolevu	241	361
Olosara	228	344
Yasawa	190	354

Central Division		
Navua	644	938
Suva	441	744
Nausori	432	698
Eastern Division		
Levuka	355	546
Lakeba	298	391
Matuku	233	369
Ono-I-Lau	197	340
Vunisea	315	421

Northern Division		
Labasa Mill	281	384
Seaqaqa	287	442
Nabouwalu	330	542
Savusavu	372	507
Udu Point	376	557
Matei	477	664
Rotuma	729	929

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.