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June 2005

Fiji Islands Weather Summary June 2005
Rainfall Outlook till September 2005

FIJI METEOROLOGICAL SERVICE

IN BRIEF

Exceptionally heavy rainfall was received almost throughout the country in the second week of June. Most of the rainfall occurred was during 6th to 12th which resulted from an active trough passing over the country. The rest of the month was exceptionally dry.

Western Division received average to well above average rainfall ranging from 86% - 268% of *Normal* rainfall. Central and Northern Division received average to above average rainfall. The Eastern Division received above average to well above average rainfall except Levuka which received only 57% of *Normal* rainfall.

Some sites around the country which received well above average rainfall were Lakeba, Yasawa-I-Rara, Viwa and Rotuma which received 316%, 268%, 254% and 220% of *Normal* rainfall, respectively.

Day-Time and Night-Time Air Temperatures were generally below average across the country with a new low Night-Time Air Temperature of 15.8ºC recorded at Ono-I-Lau on the 12th.
Below average Sunshine hours were recorded in Nadi and Laucala Bay, Suva. Nacocolevu received 102% of *Normal* sunshine.

In the latest survey of the General Circulation Models (GCM), ten models out of twelve favour neutral temperature patterns till November 2005.

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

Sites in the Central and Eastern Division are more likely to receive near average rainfall.

Inside this issue:

WEATHER PATTERNS

Relatively cool and dry southeast trades dominated most of June but were interrupted by an active trough which brought wet-season-like conditions with humid airflow and widespread heavy rain during the second week on the month. A few weak fronts also crossed the southern parts of the country but with no significant effect on the rainfall.

A ridge of high pressure extended over Fiji from the 1st to the 4th of June bringing dry southeast winds over the group. A trough developed to the northeast and moved over the country on the 7th, bringing widespread rain with heavy falls till the 10th. Vunisea reported the highest 24 hour rainfall of 147 mm on the 9th followed by Suva and Nabukulau with 143 mm on the 10th. A low pressure system developed within the trough and the whole system moved south east of Fiji on the 11th.

Another ridge extended over the group from the south from later on the 11th bringing fine weather and cool change until the 18th . The Eastern parts received light trade showers until the 15th. Another weak ridge dominated the country's weather from 20th till the 25th. A weak front moved close to Fiji on the 26th and caused light afternoon showers about the southern parts on the 27th. A ridge followed the front and dominated the country's weather with fine conditions from 29th till the end of the month.

June was another wet month for Rotuma as the convergence zone remained close to the island. Significant rain with more than 100mm of 24 hour rainfalls was recorded on the 1st , 8th and 11th of June. The highest 24 hourly rainfall recorded was 118 mm on 11th.

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TABLE 1: RAINFALL FROM APRIL TO JUNE 2005

Station	Actual Rainfall	Rainfall in the last three months (Below Average,	No. of Rain days in Apr 05	No. of Rain days in May 05	No. of Rain days in June 05
Penang Mill	660.0	Above Average	22 (84)	10 (01)	11 (15)
Monasavu Dam	1085.1	Average	28 (66)	17 (14)	14 (20)
Vatukoula Mine	506.0	Above Average	14 (74)	02 (01)	7 (25)
Rarawai Mill, Ba	482.3	Above Average	16 (80)	01 (0)	5 (20)
Yasawa-I-Rara	605.9	Above Average	17 (60)	07 (04)	6 (36)
Viwa Island	564.5	Above Average	17 (68)	03 (01)	5 (31)
Lautoka (FSC Res.)	539.3	Above Average	20 (83)	02 (01)	5 (16)
Nadi Airport	505.6	Above Average	19 (84)	02 (0)	6 (16)
Nacocolevu, Sigatoka	-	-	15	02	-
Tokotoko, Navua	929.8	Average	25 (67)	14 (09)	15 (24)
Laucala Bay, Suva	774.2	Average	26 (61)	15 (08)	19 (31)
Nausori Airport	646.8	Average	26 (61)	17 (11)	14 (28)
Nabouwalu	502.4	Average	26 (68)	17 (12)	16 (20)
Labasa Airport	421.4	Average	11 (70)	02 (02)	6 (28)
Savusavu Airport	369.6	Below Average	18 (63)	07 (06)	9 (31)
Udu Point	609.7	Average	24 (61)	15 (04)	15 (35)
Matei Airport	691.0	Average	22 (61)	09 (07)	12 (32)
Lakeba Is.	661.1	Above Average	22 (54)	15 (09)	8 (37)
Matuku Is.	340.5	Below Average	12 (40)	10 (15)	7 (45)
Ono-I-Lau Is.	-	-	17	08	-
Vunisea, Kadavu	1087.0	Well Above Average	24 (72)	12 (03)	15 (25)
Rotuma	1317.6	Above Average	28 (31)	21 (30)	21 (39)

RAINFALL IN THE LAST THREE MONTHS

Rainfall in June

Rainfall in June was generally average to above average across the country except for Levuka, Ovalau which received only 57% of *Normal* rainfall.

Most of the month had fine weather except for some heavy rainfall received in the 2nd week of the month as a result of the trough which developed to the Northeast and moved over the country on the 7th, bringing widespread rain with heavy falls and moist northeasterlies till the 10th.

Rainfall in the Western Division ranged from 86%-268% of *Normal*, 142%-316% of *Normal* in the Eastern Division, 116%-150% of *Normal* in the Central Division and 97%-182% of *Normal* in the Northern Division.

Forecast Verification

Rainfall in the 3-months from April to June 2005

The Rainfall Outlook for the period April to June in the March Fiji Islands Weather Summary was for rainfall to be ***average to below average*** across most of the country. The confidence level of the forecast was ***moderate to low***.

Out of the twenty sites that reported in time for this summary, ***two*** sites received ***below average*** rainfall, ***eight*** sites received ***average*** rainfall and nine sites received ***above average*** rainfall and Vunisea was the only site that received ***well above average*** rainfall.

Figure A

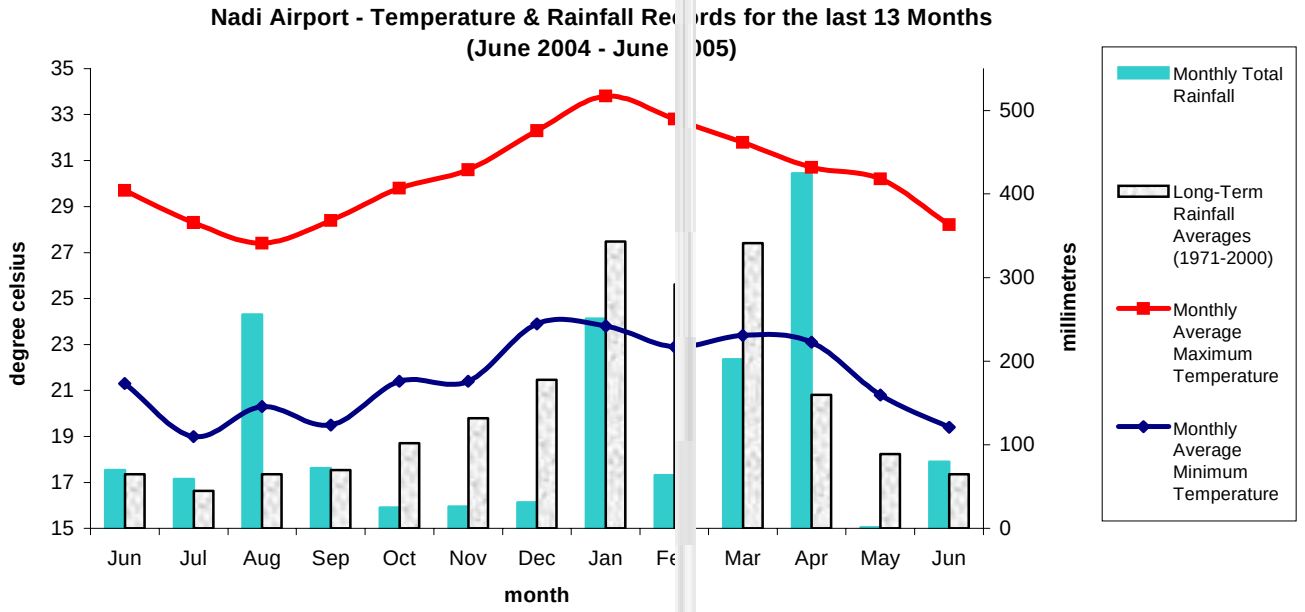


Figure B

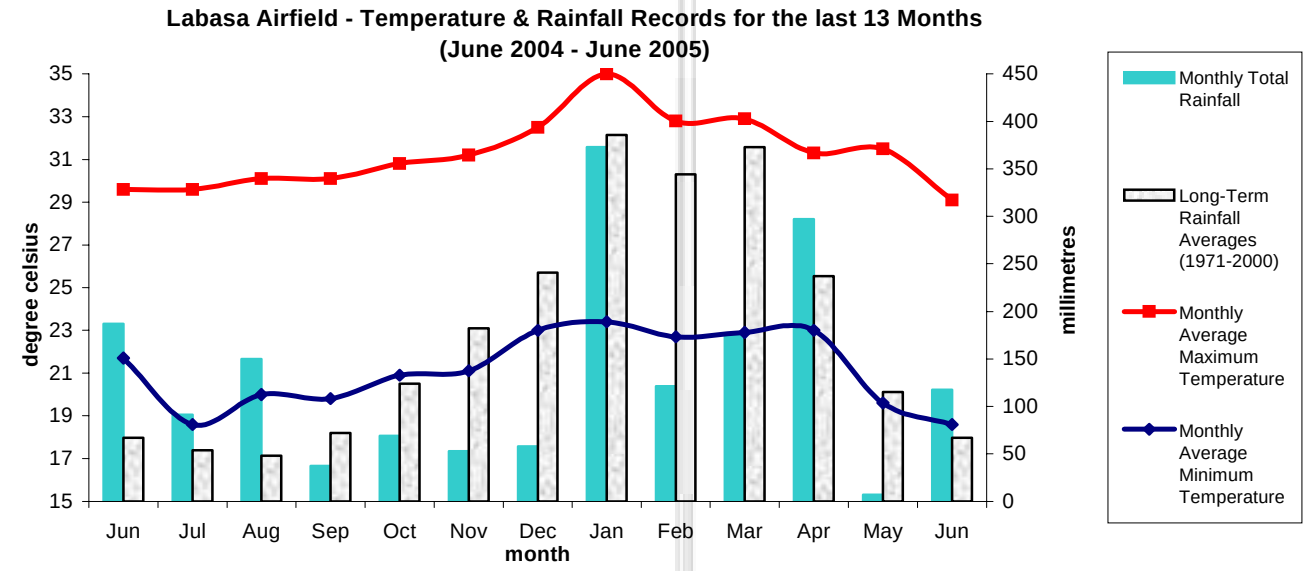
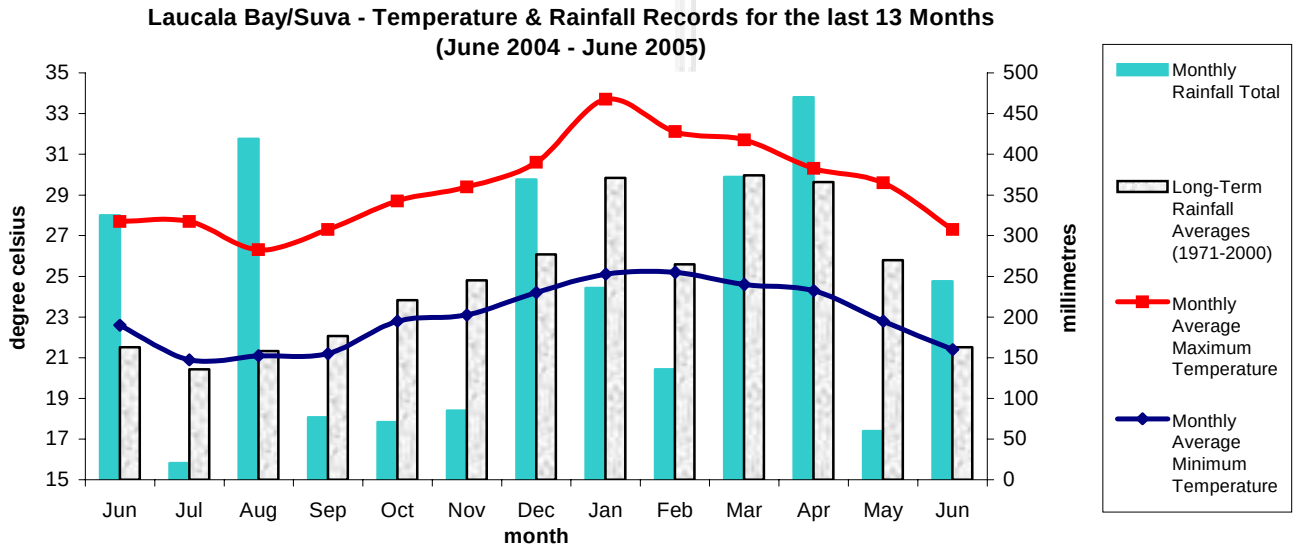


Figure C



Climate in June 2005

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

Day-Time Air Temperatures were generally below average across the country. The greatest negative departure of -0.8°C was recorded at Nadi Airport, followed by Udu Pt. and Ono-I-Lau which recorded 0.7ºC below Normal. The greatest positive departure of 0.3ºC was recorded at Viwa.

The Night-Time Air Temperatures were generally below average with a new low Night-Time temperature of 15.8ºC recorded on the 12th at Ono-I-Lau. The greatest negative departures were recorded at Ono-I-Lau, Udu Point and Nausori Airport which recorded 2.1ºC, 1.6 ºC and 1.1ºC respectively below average.

Relative Humidity (RH) at 0900hrs were mostly below normal across the country. The greatest negative departures from *Normal* were recorded at Rarawai Mill -7%, Laucala Bay, Suva -5% and Lautoka Mill -4%. The greatest positive departures were recorded at Matuku +5% , Nacocolevu +3% and Viwa +2%.

SOIL MOISTURE AND RUNOFFS

Soil moisture conditions varied throughout the month. The beginning and ending of the month were drier.

In the Western Division conditions were generally limiting to dry at the beginning and end of the month and excess to ample in the middle of the month. This pattern was common for most sites except Monasavu which recorded excess to ample conditions throughout the month.

In the Central Division and Northern Divisions soil moisture conditions were limiting to dry at the beginning of the month, excess to ample in the middle of the month and ample to moderate at the end of the month.

In the Eastern Division soil moisture conditions at the beginning on the month were generally limiting to dry. Excess to ample conditions prevailed in the middle of the month and ample to moderate conditions at the end of the month.

Rotuma had excess to ample soil moisture conditions throughout the month.

Runoffs during the month were recorded at most of the sites around the country. Significant runoffs during the month were recorded at Rotuma (428.1mm), Vunisea (171.1mm), Monsavu (159.1mm), Lakeba (147.4mm), Laucala Bay, Suva (140.5mm), Yasawa-I-Rara (128.0mm) and Tokotoko, Navua (120.4mm).

SUNSHINE, RADIATION & WINDS

Total sunshine hours were below average at Nadi Airport (95%) and Laucala Bay (94%). The only site that recorded above average sunshine was Nacocolevu which recorded 102%.

Global Solar Radiation (average per day) recorded at Rotuma was 18 MJ/M^2, Nacocolevu recorded 13 MJ/M2, Nadi Airport recorded 12.4 MJ/ M^2, Suva recorded 12.3 MJ/ M^2.

Monthly average wind speed was well below average to above average during the month. Nadi and Nausori Airport above average winds. Vunisea and Nabouwalu and Rotuma recorded below average winds.

TABLE 2 : RECORDS SET IN JUNE 2005

Element	Station	Observed (record)	On	Rank	Previous (record)	Year	Records Began
Dly Rainfall	Viwa	98.7 mm	10th	New One Day High	72.7 mm	1992	1978
Dly Rainfall	Vunisea	146.6 mm	9th	New One Day High	116.0 mm	1984	1943
Min Temp	Udu Point	21.5ºC	-	New Low Mly Average	22.1ºC	1990	1951
Min Temp	Ono-I-Lau	15.8ºC	12th	New Night Time Low	16.5ºC	1987	1943
Min Temp	Ono-I-Lau	19.3	-	New Low Mly Average	19.5	1994	1943

ENSO status and Rainfall Outlook to September 2005

ENSO UPDATE
EL NIÑO - SOUTHERN OSCILLATION

The Southern Oscillation Index (SOI) for June was 2.6 (April was –14.2) with the five-month running mean of –10 centred on April (March was –11) (see Figure D below). After strong signals were observed in a number of El Niño indicators during February, March brought a general easing in the tropical Pacific atmosphere and to a lesser extent on ocean surface temperatures. The change in the atmosphere saw a rapid rise in the SOI becoming positive during early April and then falling through May but in June the SOI has risen again gaining positive values.

Sea surface Temperature (SST) data for June show weakly positive anomalies across most of the tropical Pacific, though no area along the equator has SST anomalies above 1°C. During late April, a rapid warming in the eastern Pacific resulted in response to the surface Kelvin wave, however SST anomalies in the Pacific displayed a general cooling trend as the impact of Kelvin wave in April declined. In contrast the SST's in the central Pacific have showed little change during June.

Positive anomalies generally in order of +0.5°C to +1.0°C range are evident across much of equatorial Pacific and in the tropical Pacific to the south of equator, especially to the east. Recently, in the far-eastern equatorial Pacific, areas of negative anomalies along the coast of South America have increased slightly in size, whilst on the equator, small areas of positive anomalies greater than +1.0°C have developed.

The sub-surface temperature data for June suggests that negative anomalies in the eastern Pacific have propagated to the east. The preliminary analysis for June shows no positive anomalies in the subsurface in the far-east. However, during late June these negative anomalies in the eastern Pacific have further weakened and decayed.

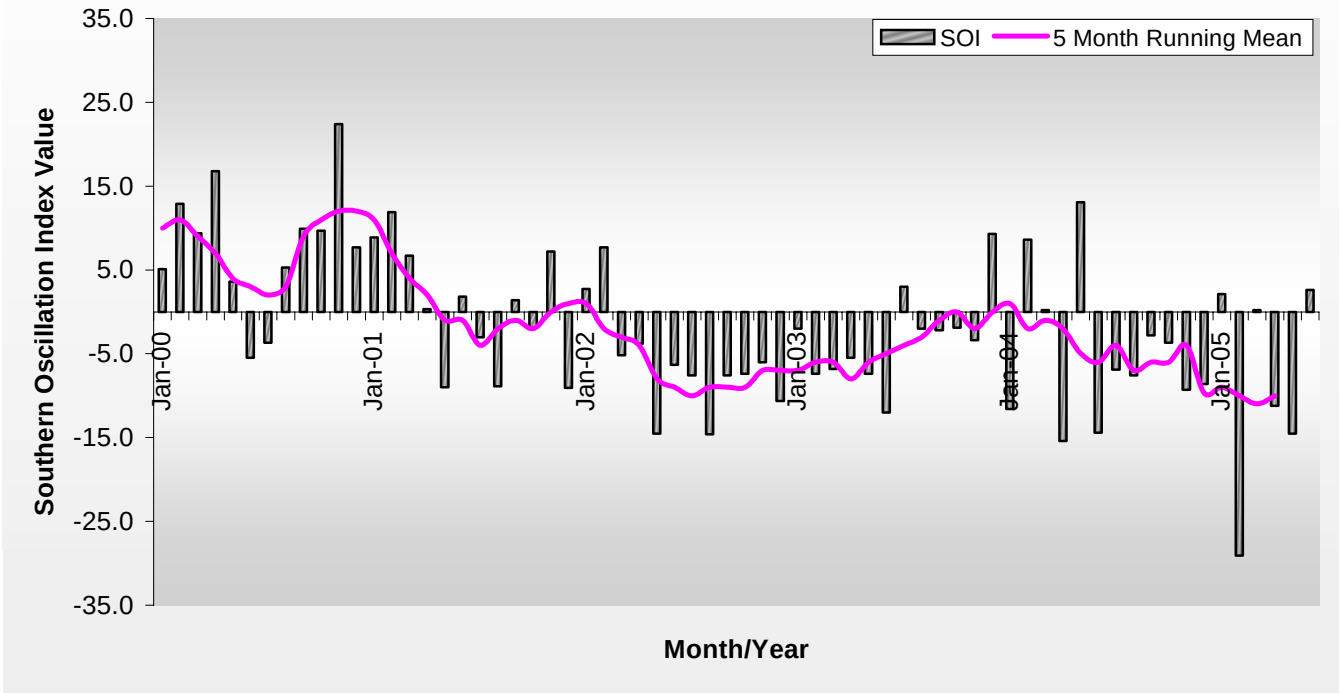
Despite moderating some of the indicators, the SST remain warmer than average in most parts of the tropical Pacific, however SOI has displayed a steady rising trend. Conditions in the equatorial Pacific Ocean and its overlying atmosphere continue to suggest that, while some (but not all) indicators remain near El Niño thresholds, there is little sign of development of a basin wide event for the rest of the dry season. Moreover, history shows that the risk of an El Niño occurring during the remainder of the year will reduce rapidly.

In the latest survey of General Circulation Models (GCM), ten favours neutral temperature patterns till November 2005, one suggests warm (El Niño) conditions, with one predicting cold 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.

For more information visit website http://www.bom.gov.au/climate/tropnote/tropnote.shtml. Please contact the FMS for interpretation. (The ENSO Update is provided by the Australian Bureau of Meteorology and visit the website http://www.bom.gov.au) for a detailed

Figure D

Southern Oscillation Index Vs 5-Month Running Mean (January 2000 - June 2005)



RAINFALL PREDICTIONS

FMS currently uses "The Seasonal Climate Outlook for Pacific Island Countries (SCOPIC) Model" for seasonal rainfall guidance which has replaced FMS Model (Figure E): *Predictions from this refined model are expected to be much better than the previous FMS model.*

*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 that rainfall is most likely to be ***below average*** in the *Western* and *Northern* Divisions while rainfall is likely to be ***below average to average*** in the Central and *Eastern Division* for the upcoming three months.

The model is giving a higher probability for rainfall to be ***above average*** for Rotuma for the upcoming three months.

(See figure E for site specific forecast and Figure F for their locations).

RAINFALL OUTLOOK FOR FIJI ISLANDS JULY TO SEPTEMBER 2005

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

Sites in the Central and Eastern Division are more likely to receive near average rainfall.

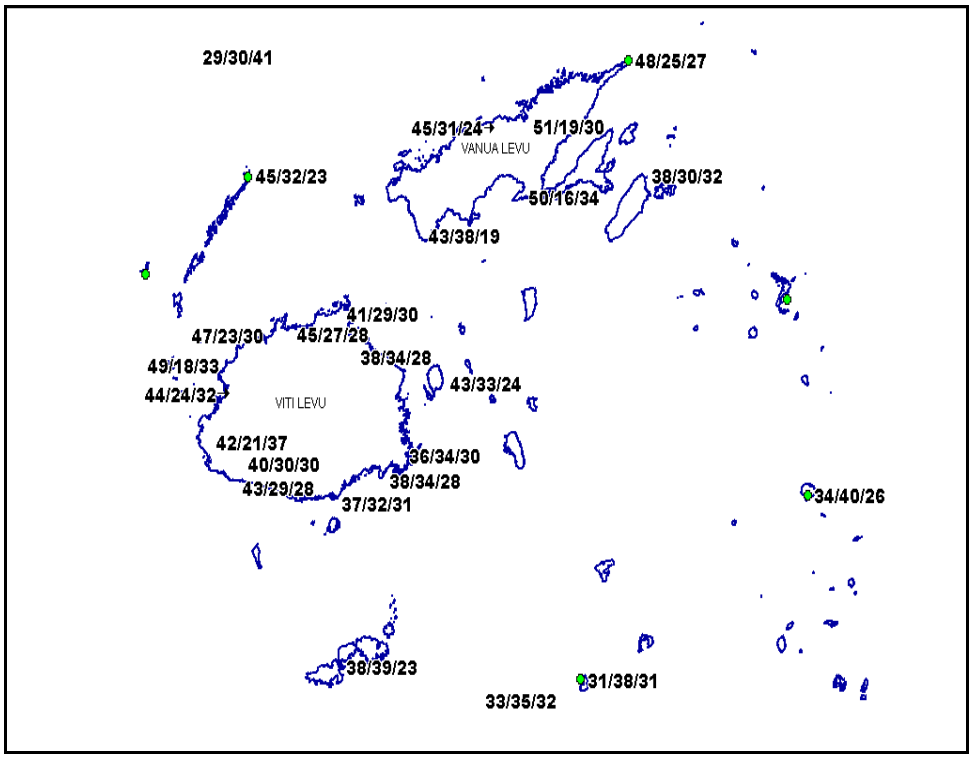
NOTE: The confidence level of this prediction is low to moderate.

PRELIMINARY CLIMATOLOGICAL SUMMARY FOR JUNE 2005

	RAINFALL					AIR TEMPERATURES								SUNSHINE	
	TOTAL		RAIN	MAX.		AVERAGE DAILY				EXTREME				TOTAL	
		*	DAYS	FALL		MAX.	#	MIN.	#	MAX.		MIN.			*
	MM	%	+	MM	ON	C	C	C	C	C	ON	C	ON	HRS	%
NADI AIRPORT	80	123	6	54	10	28.2	-0.8	19.4	0.2	30.2	1	15.5	17	195	95
SUVA/LAUCALA BAY	244	150	19	143	10	27.3	-0.4	21.4	0.0	29.9	25	17.7	18	131	94
NACOCOLEVU	49	65	8	21	9	27.9	-0.5	19.2	0.5	32.0	26	14.6	17	151	102
ROTUMA	514	220	22	118	11	29.7	0.1	24.5	-0.2	31.4	5	22.6	12		
VIWA	171	254	5	99	10	28.7	0.3	23.3	0.1	29.8	4	20.5	18		
UDU POINT	212	182	15	85	9	28.0	-0.7	21.5	-1.6	29.7	22	19.4	10		
LABASA AIRFIELD	118	175	6	64	9	29.1	-0.6	18.6	-0.3	31.4	26	14.4	17		
NABOUWALU	101	103	16	42	9	27.3	0.2	22.6	0.0	28.7	19	20.5	17		
SAVUSAVU AIRFIELD	114	97	9	53	9	27.3	-0.6	22.0	0.4	31.0	12	20.0	30		
MATEI AIRFIELD	218	176	12	98	9	27.6	-0.4	22.2	0.0	29.5	21	19.0	15		
YASAWA-I-RARA	220	268	6	88	10	28.4	0.1	22.5	-0.6	30.2	20	20.2	16		
VATUKOULA	125	171	7	56	10	29.3	-0.4	19.1	0.6	31.5	24	15.4	17		
MONASAVU	221	86	14	85	10	21.4	-0.4	15.7	-0.4	25.0	24	11.2	17		
NAUSORI AIRPORT	181	120	14	120	10	26.8	-0.4	19.4	-1.1	29.1	25	15.0	17		
NAVUA/TOKOTOKO	227	116	15	120	10	26.3	-0.5	19.4	-0.8	29.5	12	14.3	17		
ST. JOHNS COLLEGE	92	57	14	50	10	u/s		21.3	-0.9	u/s		18.0	17		
LAKEBA	246	316	8	108	11	26.6	-0.6	21.4	-0.6	28.5	12	16.3	17		
MATUKU	154	142	7	63	9	26.7	-0.2	22.7	1.0	29.0	25	19.6	5		
VUNISEA	273	218	15	147	9	26.0	-0.6	20.4	-0.1	28.6	25	16.5	17		
ONO-I-LAU	106	119	8	44	9	25.2	-0.7	19.3	-2.1	27.1	26	15.8	12		
BA/RARAWAI MILL	97	108	5	44	10	29.5	-0.5	17.5	-0.5	32.0	24	13.4	16		
LAUTOKA AES	88	122	5	59	10	28.4	-0.4	20.2	-0.5	30.2	4	16.8	16		
PENANG MILL	101	102	11	47	10	27.9	0.2	20.1	-1.3	29.6	1	17.4	15		

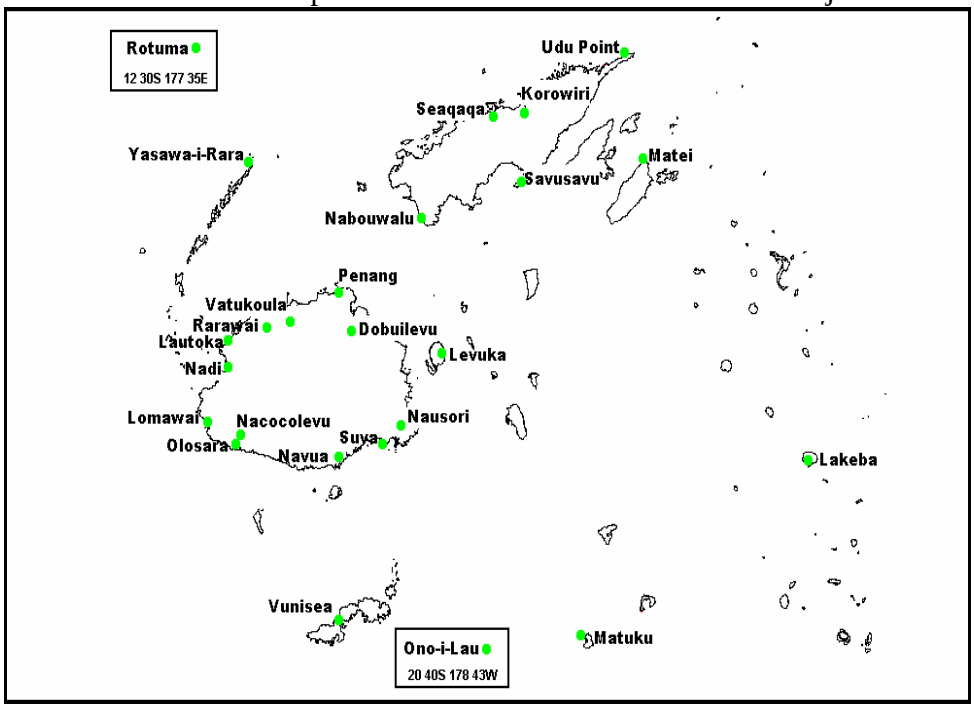
SCOPIC Model
(Seasonal Climate Outlook for Pacific Island Countries Model)

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



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



The forecast probabilities are presented as

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	207	287
Vatukoula	124	212
Rarawai	105	215
Penang	148	232
Lautoka	109	218
Nadi	129	205
Lomawai	137	245
Nacocolevu	193	273
Olosara	199	316
Yasawa	121	191
Central Division		
Navua	515	683
Suva	384	514
Nausori	363	527
Eastern Division		
Levuka	282	437
Lakeba	196	307
Matuku	213	334
Ono-I-Lau	237	330
Vunisea	290	400
Northern Division		
Labasa Mill	103	209
Seaqaqa	118	241
Nabouwalu	213	375
Savusavu	249	336
Udu Point	218	338
Matei	287	399
Rotuma	577	775

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.