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December 2005

Fiji Islands Weather Summary December 2005 Rainfall Outlook till March 2006

FIJI METEOROLOGICAL SERVICE

IN BRIEF

Rainfall in December varied considerably across the country. Several sites received above average rainfall while several others received well below average rainfall. Most of the notable falls occurred in the second half of the month as the South Pacific Convergence Zone (SPCZ) moved affected the country.

Sites in the Western Division generally recorded average rainfall except for Tavua/Rakiraki area which recorded well below average rainfall. The Central Division generally recorded below average rainfall. The northern part of Vanua Levu recorded above average rainfall while the sites in the southern part of Vanua Levu recorded below average to well below average rainfall. Labasa experienced flash floods on the 26th. Sites in the Eastern Division recorded well below average to above average rainfall with Ono-i-Lau being the driest.

A new low monthly rainfall total of 165.2 mm was recorded at Tokotoko, Navua.

Day-time air temperatures were above average at most of the recording sites with an equal high average temperature of 32.6 ºC recorded at Labasa Airfield.

Night-time air temperatures were mostly average to above average around the country with a new one day high of 27.3 ºC recorded at Viwa on the 21st.

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 January to March period is the peak of the Tropical Cyclone Season, there is a fairly high chance of a Tropical Cyclone or a Tropical Depression influencing Fiji's weather.

Inside this issue:

WEATHER PATTERNS

High pressure systems had dominant effect on Fiji's weather pattern during the first half of Decembe while the SPCZ was the major cause of rainfall during the second half. Afternoon thunderstorms were a typical feature over the main islands especially in the second half of the month.

A trough lying north of Fiji briefly moved onto the Group during 5-6 th and 12-13th resulting in some significant rainfall especially in the northern and eastern areas. The SPCZ itself had major effect over the country during 20th to 24th and 28th to 30th December resulting in more widespread rainfall. Many sites recorded moderate to heavy falls during the period.

For the rest of the month, Fiji was under the influence of a relatively stable south-east airstream caused by eastward-moving high pressure systems located south of the country.

Rotuma experienced another wet month due to the presence of the SPCZ nearby.

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TABLE 1: RAINFALL FROM OCTOBER TO DECEMBER 2005

Station	Actual Rainfall (mm)	Rainfall in the last three months (Below Average, Average or Above Average)	No. of Rain days in Oct 05 (% of total rain)	No. of Rain days in Nov 05 (% of total rain)	No. of Rain days in Dec 05 (% of total rain)
Penang Mill	257.8	Below Average	8 (21)	10 (37)	8 (42)
Monasavu Dam	1385.8	Average	17 (22)	29 (48)	23 (30)
Vatukoula Mine	600.1	Above Average	8 (30)	17 (59)	9 (11)
Rarawai Mill, Ba	476.2	Average	7 (15)	13 (37)	11 (48)
Yasawa-I-Rara	580.0	Above Average	6 (55)	11 (23)	8 (22)
Viwa Island	554.0	Below Average	10 (25)	15 (39)	12 (36)
Lautoka (FSC Res.)	422.3	Average	8 (24)	13 (34)	11 (42)
Nadi Airport	521.1	Above Average	5 (24)	09 (25)	11 (51)
Nacocolevu, Sigatoka	-	-	-	-	-
Tokotoko, Navua	923.7	Average	16 (54)	19 (28)	17 (18)
Laucala Bay, Suva	876.8	Average	17 (36)	24 (44)	22 (20)
Nausori Airport	953.3	Above Average	18 (44)	25 (33)	19 (23)
Nabouwalu	433.4	Below Average	13 (42)	22 (21)	17 (37)
Labasa Airport	619.9	Average	5 (10)	19 (38)	13 (52)
Savusavu Airport	335.4	Below Average	5 (34)	12 (43)	7 (23)
Udu Point	746.0	Average	13 (17)	22 (37)	17 (46)
Matei Airport	661.6	Average	9 (13)	22 (49)	16 (38)
Lakeba Is.	601.1	Above Average	10 (22)	10 (40)	11 (38)
Matuku Is.	149.3	Well Below Average	7 (36)	06 (26)	6 (38)
Ono-I-Lau Is.	258.9	Below Average	7 (45)	05 (38)	6 (17)
Vunisea, Kadavu	461.1	Average	12 (29)	15 (52)	15 (19)
Rotuma	1054.4	Average	22 (24)	26 (37)	28 (39)

RAINFALL IN THE LAST THREE MONTHS

Rainfall in December

Rainfall in December ranged from well below average to above average across most of the country. A number of troughs affected the Fiji Group during December .

Sites in the Western Division recorded below average to above average rainfall. Vatukoula was the only site that recorded well below average rainfall of 28%. Rainfall ranged from 28% to 148% of *Normal* rainfall.

Central Division recorded generally below average rainfall except Nausori which recorded average rainfall. Rainfall ranged from 44% to 82% of *Normal* rainfall.

Eastern Division recorded well below average to above average rainfall that ranged from 30% to 144% of *Normal* rainfall.

Northern Division recorded well below average to above average rainfall. Rainfall ranged from 30% to 133% of *Normal* rainfall.

Forecast Verification

Rainfall in the 3-months from October to December 2005

The Rainfall Outlook for the period October to December in the September Fiji Islands Monthly Weather Summary was for rainfall to be generally ***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, Matuku received ***well below average*** rainfall, ***five*** sites received ***below average*** rainfall, ***ten*** sites received ***average*** rainfall and ***five*** sites received ***above average*** rainfall in

Figure A

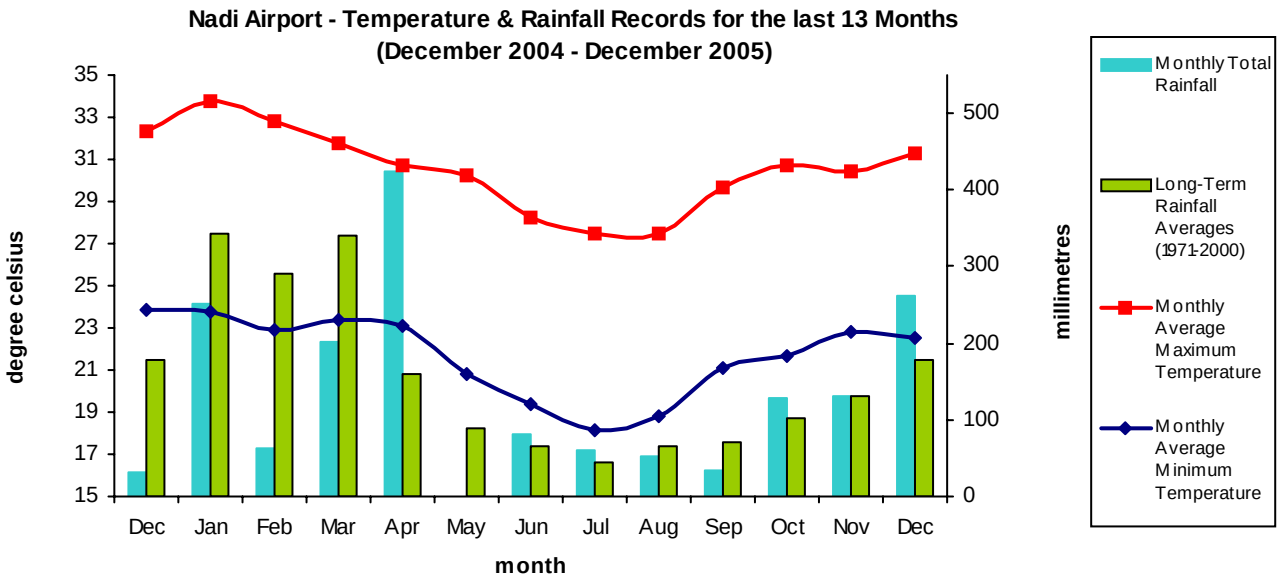


Figure B

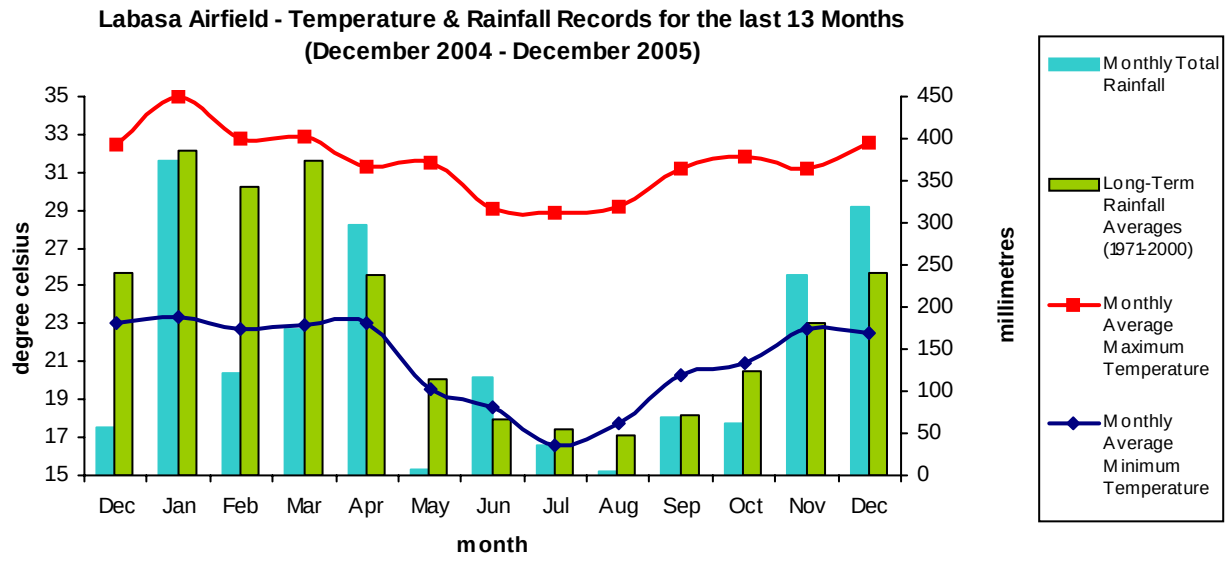
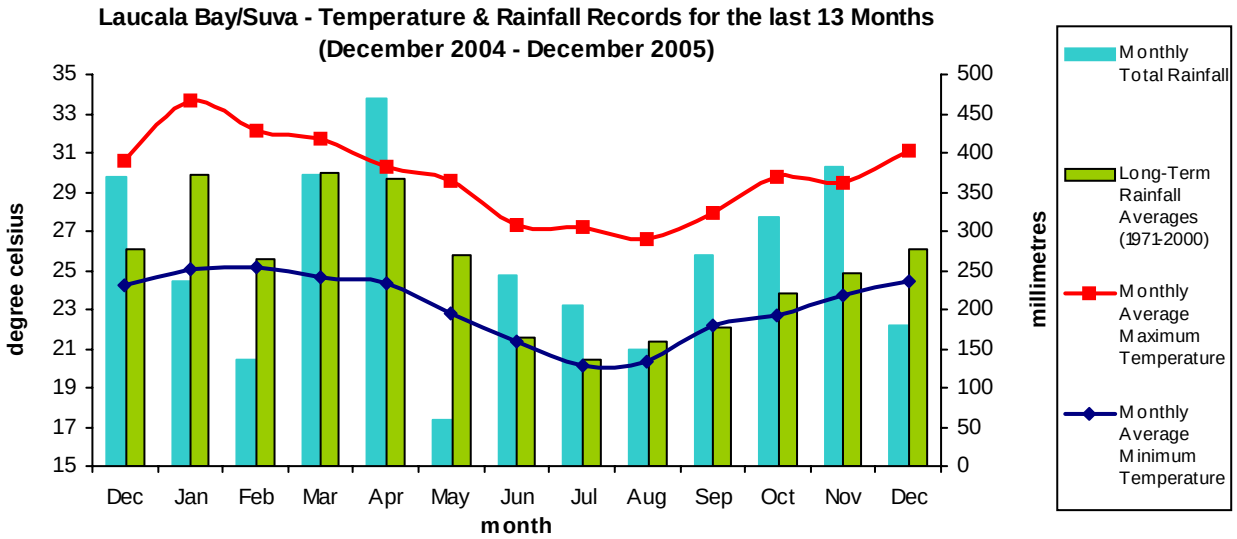


Figure C



Climate in December 2005

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

Day-time air temperatures were above average at most of the recording sites. Greatest positive departures were recorded at Penang Mill and Yasawa-I-Rara, which recorded 1.8ºC and 1.5ºC above *Normal* respectively. Matuku and Nabouwalu recorded 1.3ºC above *Normal.*

Night-time air temperatures were mostly average to above average around the country. The notable departures were at Ono-I-Lau (0.8ºC), Navua (0.6ºC), Monasavu (0.6ºC) and Savusavu (0.4ºC) above *Normal.*

Relative Humidity (RH) at 0900hrs were below average across most of the country. The greatest negative departures were recorded at Penang Mill (-9.7%), Labasa Mill (-9.6%), Savusavu Airfield (-8.2%), Matuku (-6.4%) and Tokotoko-Navua (-4.7%).

The four sites that recorded positive departures were at Nacocolevu (+1.6%), Udu Pt. (+0.8%), Rotuma (+0.7%) and Lakeba (+0.4%).

SOIL MOISTURE AND RUNOFFS

Soil moisture conditions were variable throughout the month.

In the Western Division, the soil moisture condition was mostly moderate to dry for most of the month except at Monasavu which recorded excessive to ample conditions throughout the month.

In the Central Division, soil moisture conditions were generally excessive to ample during most of the month.

Sites in the Eastern Division experienced generally limiting to dry conditions during the month. Lakeba recorded generally ample soil moisture conditions

Northern Division experienced generally limiting to dry soil moisture conditions at the beginning of the month than mostly excessive to ample in the second half of the month.

In Rotuma, the soil moisture conditions were excessive to ample most of the month except mid month when conditions were generally moderate.

Significant runoff was recorded at Monasavu (294.0 mm), Rotuma (249.1 mm), Udu Pt. (194.6 mm), and Nadi Airport (128.2 mm).

SUNSHINE, RADIATION & WINDS

The total sunshine hours were below average at Nacocolevu (92%) and Rotuma (86%), average at Laucala Bay-Suva (100%) and Nadi Airport (101%).

Global Solar Radiation (average per day) was 22.0 MJ/ M^2 at Nacocolevu, 21.6 MJ/ M^2 at Nadi Airport, 20.7 MJ/M^2 at Laucala Bay– Suva and 19.0 MJ/ M^2 at Rotuma.

Monthly average wind speed was mostly below average at most of the wind recording sites around the country. The only site that recorded above average wind speed was Rotuma which recorded 0.5 knots above *Normal.*

TABLE 2 : RECORDS SET IN DECEMBER 2005

Element	Station	Observed (record)	On	Rank	Previous (record)	Year	Records Began
Monthly Rainfall	Tokotoko,Navua	165.2 mm	-	New Low	178.7 mm	1998	1992
Av. Mly Max Temp	Labasa Airport	32.6 ºC	-	Equal High	32.6 ºC	1997	1956
Daily Min Temp	Viwa	27.3 ºC	21st	New High	27.2 ºC	1987/2003	1978

ENSO STATUS AND SOI GRAPH

ENSO UPDATE
EL NIÑO - SOUTHERN OSCILLATION

The Southern Oscillation Index (SOI) for December was 0.6 (November was –2.7) with the five-month running mean of +1 centred on October (September was +1). (see Figure D below).

The overall ENSO pattern remains neutral, although with some features of a weak La Niña. This is particularly evident in the cold subsurface waters of the east Pacific, and the reduced cloudiness in the central Pacific.

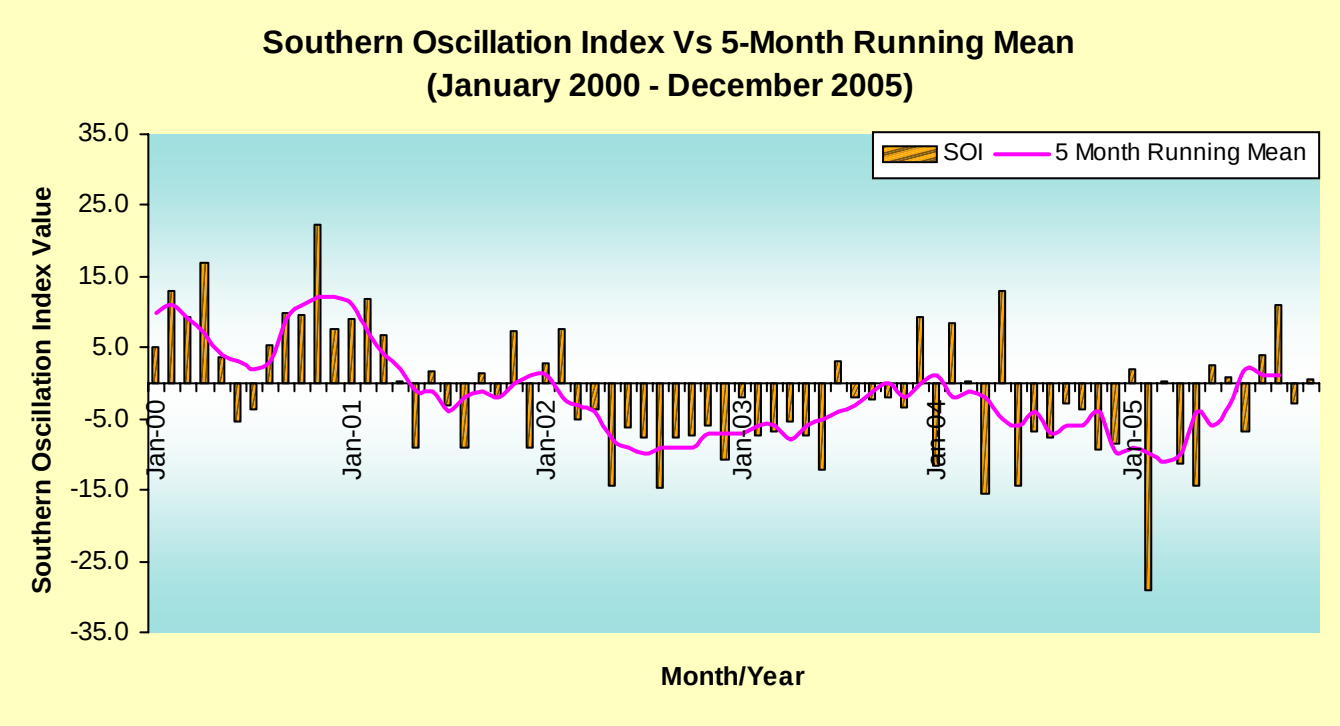
On the other hand, the SOI remains neutral, sea surface temperatures are a little cooler than normal and Trade Wind patterns are mixed.

There is a chance that with further cooling, the pattern might develop into a La Niña for a brief period, although most computer predictions of ocean temperatures indicate a continuation of neutral conditions until the middle of 2006.

Consistent with this, the trade winds over the same region have mostly been stronger than average in recent months, a pattern that persisted in December.

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 MARCH 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 generally *average* to *above average* across the country.

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

RAINFALL OUTLOOK FOR FIJI ISLANDS JANUARY TO MARCH 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*.

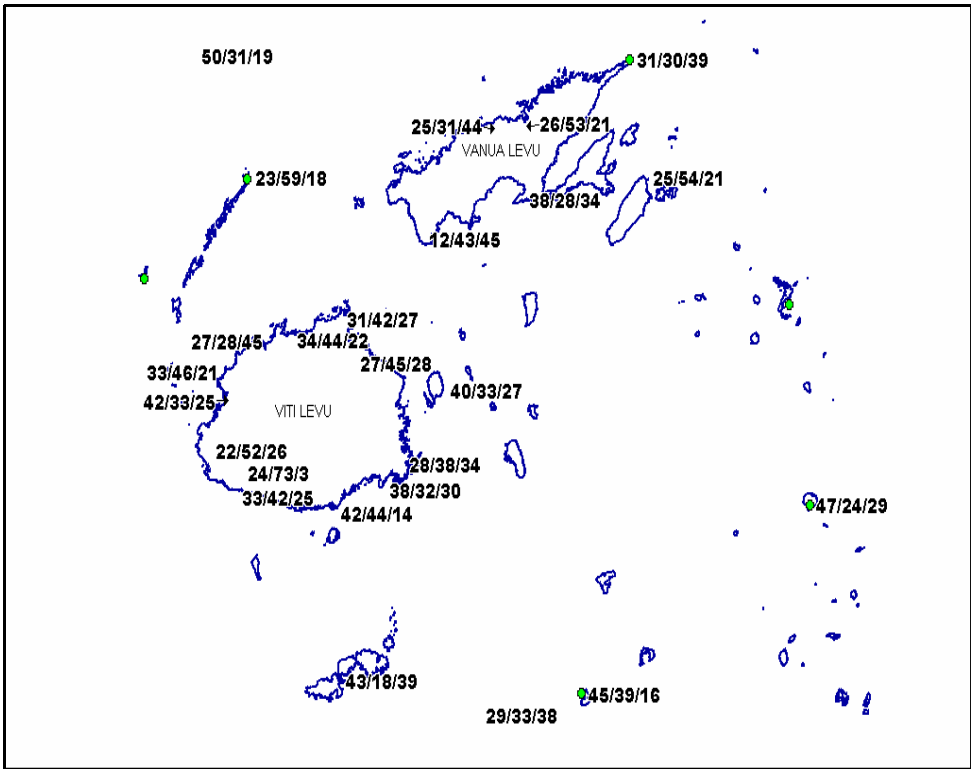
PRELIMINARY CLIMATOLOGICAL SUMMARY FOR DECEMBER 2005

PRELIMINARY CLIMATOLOGICAL DATA FOR MONTH 12 , 2005 : SUMMARY FOR DAYS 1 TO 31

	RAINFALL					AIR TEMPERATURES								SUNSHINE	
	TOTAL		RAIN DAYS *	MAX. FALL		AVERAGE DAILY MAX.	#	AVERAGE DAILY MIN.	#	EXTREME MAX.		EXTREME MIN.		TOTAL	*
	MM	%	+	MM	ON	C		C		C	ON	C	ON	HRS	%
NADI AIRPORT	263	148	11	65	22	31.3	-0.2	22.5	0.1	34.3	22	19.8	3	230	101
SUVA/LAUCALA BAY	179	79	22	57	20	31.1	0.8	24.4	0.9	32.8	20	23.0	16	195	100
NACOCOLEVU	81	42	7	42	22	31.7	0.8	22.4	0.8	34.7	22	19.4	5	168	92
ROTUMA	410	144	28	80	29	31.4	0.7	25.2	0.5	32.9	14	23.6	30	157	86
VIWA	197	137	12	65	30	31.8	0.9	25.0	0.0	34.4	23	23.5	26		
UDU POINT	346	132	17	82	21	31.5	1.0	24.9	0.8	33.4	21	22.5	24		
LABASA AIRFIELD	320	133	13	57	5	32.6	0.9	22.5	0.8	34.6	21	18.0	3		
NABOUWALU	160	63	17	52	30	30.9	1.3	24.4	0.4	33.3	17	22.5	16		
SAVUSAVU AIRFIELD	77	30	7	46	30	30.7	0.5	22.7	-0.4	32.0	13	20.0	1		
MATEI AIRFIELD	253	83	16	48	30	30.4	0.8	23.8	0.0	31.5	14	20.5	3		
YASAWA-I-RARA	128	82	8	52	28	31.9	1.5	24.6	0.2	35.5	17	22.9	31		
VATUKOULA	66	28	9	15	5	32.5	0.4	21.8	0.4	34.6	20	19.0	3		
MONASAVU	409	78	23	59	6	25.5	0.6	17.8	-0.6	29.4	17	14.4	17		
NAUSORI AIRPORT	218	82	19	76	13	30.2	0.5	22.4	-0.2	32.2	21	19.1	2		
NAVUA/TOKOTOKO	165	44	17	40	30	29.7	0.2	22.2	-0.6	31.5	14	19.5	3		
ST. JOHNS COLLEGE	190	70	12	86	24	30.1	0.3	24.2	0.6	32.5	17	22.0	4		
LAKEBA	231	129	11	80	28	30.1	0.4	24.2	0.5	31.9	21	20.5	2		
MATUKU	57	37	6	17	5	31.0	1.3	25.0	1.2	32.2	19	22.5	6		
VUNISEA	88	53	15	38	29	29.6	0.2	24.1	1.2	32.5	22	21.5	17		
ONO-I-LAU	44	30	6	16	14	29.9	1.2	22.7	-0.8	31.8	22	19.6	3		
BA/RARAWAI MILL	229	101	11	86	24	32.7	0.4	21.5	-0.2	34.5	20	17.6	3		
LAUTOKA AES	178	92	11	52	20	31.5	0.5	23.2	-0.1	34.0	19	19.0	16		
PENANG MILL	108	41	8	51	28	32.1	1.8	23.4	-0.1	34.5	21	18.0	17		

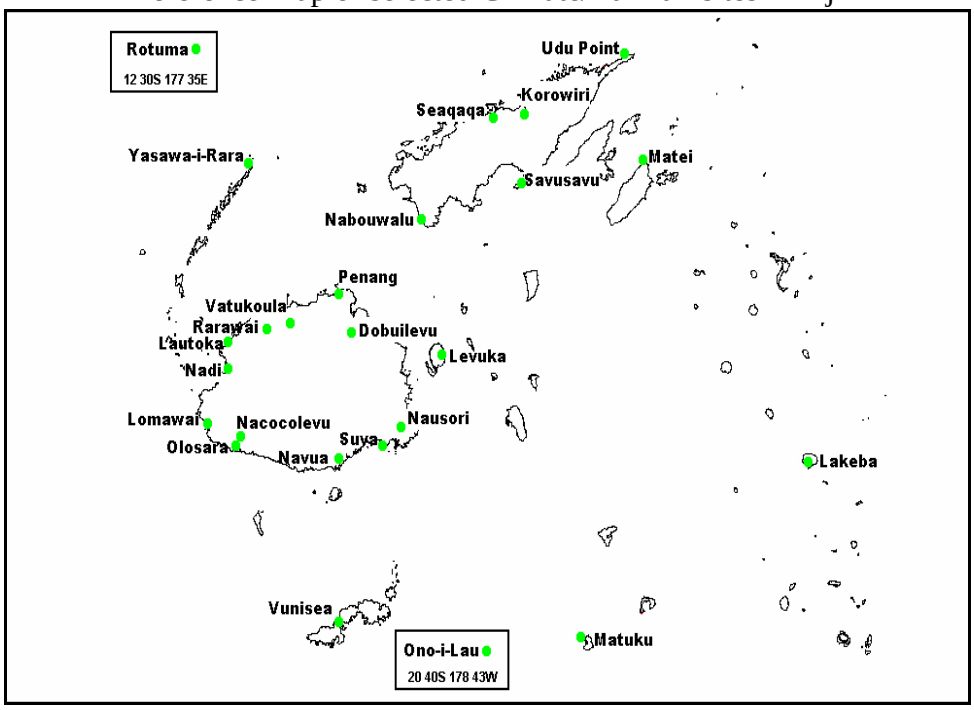
SCOPIC Model
(Seasonal Climate Outlook for Pacific Island Countries Model)

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	987.2	1201.2
Vatukoula	951.5	1434.0
Rarawai	968.0	1275.6
Penang	1034.4	1268.1
Lautoka	821.3	1074.6
Nadi	818.6	1046.4
Lomawai	694.9	1014.6
Nacocolevu	695.0	967.7
Olosara	626.1	833.5
Yasawa	688.3	938.5
Central Division		
Navua	933.6	1253.1
Suva	867.1	1109.7
Nausori	893.5	1077.4
Eastern Division		
Levuka	760.0	1047.8
Lakeba	657.0	874.1
Matuku	585.8	772.8
Ono-I-Lau	528.9	709.7
Vunisea	677.7	843.0
Northern Division		
Labasa Mill	950.8	1344.3
Seaqaqa	978.8	1376.7
Nabouwalu	835.1	1057.3
Savusavu	676.2	871.5
Udu Point	793.7	1012.5
Matei	833.0	1075.7
Rotuma	914.8	1160.7