

Volume 5: Issue: 02
February 2005

Fiji Islands Weather Summary February 2005 Rainfall Outlook till May 2005

FIJI METEOROLOGICAL SERVICE

Inside this issue:

In Brief and Weather Patterns	1
Table and Rainfall in the last three months	2
Temp. and RR Graphs for Nadi Airport, Labasa & Laucala Bay	3
Other Climatic variables and New Records Table	4
SOI Graph and TC season statement	5
ENSO Status and Rainfall Outlook for on-coming three months	6
SCOPIC Rainfall forecast	7
Rainfall and Preliminary Climate data Summary	8

IN BRIEF

Rainfall during the month was significantly suppressed as the South Pacific Convergence Zone remained displaced to the north while intense high pressure systems in the Tasman Sea extended weak ridge directing dry airstream over the group for most of the month. A new low rainfall record was established at Lakeba which received only 20.5mm of rain for the entire month of February since 1955.

In the last three months, over 85 percent of the daily climate reporting sites have received below average rainfall including Ono-I-Lau, Penang Mill and Yasawa-I-Rara which received well below average rainfall.

Only two sites have recorded near average rainfall and the lone site, Udu Point received well above average rainfall.

Some moderate rainfall activity around the middle and towards the end of the month brought relief in many parts of the country but it was not sufficient enough to overcome the dry situation experienced especially to the Western, Northern and parts of Eastern Division.

Monthly average daytime temperatures were notably above average across the country. New one-day maximum air temperature records were set at Nabouwalu, Vatukoula, Monasavu and Ono-I-Lau. Records of new monthly mean daytime maximum temperatures were also recorded at some sites.

The night-time temperatures were generally average to above average at most sites. A new night-time high was recorded at Matei while equal high was recorded at Viwa. Vunisea and Laucala Bay recorded new monthly night time high temperatures during the month (refer Table on page 4).

Total sunshine hours were above average at all recording sites with all sites receiving above 127% of February sunshine.

The outlook for the next three months is for **average to below average** rainfall across the country. This means that while many places should be able to receive near average rainfall, there would be places that may end up with significantly below average rainfall.

WEATHER PATTERNS

A south to southeast airstream persisted over Fiji during February. There were two instances during the month when troughs brought significant rainfall over the country.

A south to southwest wind flow over the country maintained fine conditions from the 1st till the 5th. A weak trough drifted over Fiji from the north on the 9th and dissipated on the 12th. The trough brought showers and isolated thunderstorms to the northern and eastern parts of the country and afternoon

showers elsewhere. A second trough near Vanua Levu between the 23rd and the 28th again brought showers with isolated heavy falls over the northern and eastern parts, and afternoon showers elsewhere in the country.

Udu Point recorded 24 hour rainfall totals of 97mm and 100mm on the 10th and 23rd, respectively.

The rest of February was dominated by mainly fine weather conditions except for occasional moist south or southeast wind flow. This resulted in a few showers over the eastern and southern parts of the group while afternoon showers and thunderstorms occurred in the interior and western parts of the main islands.

The South Pacific Convergence Zone remained to the north of Rotuma during February and caused showers over the island on most days.

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 DECEMBER 2004 TO FEBRUARY 2005

<u>Station</u>	<u>Actual Rainfall (mm)</u>	<u>Rainfall in the last three months (Below average, average or above average)</u>	<u>No. of Rain days in Dec 04 (% of total rain)</u>	<u>No. of Rain days in Jan 05 (% of total rain)</u>	<u>No. of Rain days in Feb 05 (% of total rain)</u>
Penang Mill	382.4	Well Below Average	12 (11)	17 (69)	11 (20)
Monasavu Dam	1268.0	Below Average	26 (31)	28 (42)	23 (27)
Vatukoula Mine	608.7	Below Average	8 (18)	17 (73)	9 (9)
Rarawai Mill, Ba	531.3	Below Average	10 (18)	18 (69)	7 (13)
Yasawa-I-Rara	242.8	Well Below Average	6 (7)	13 (80)	4 (13)
Viwa Island	380.9	Below Average	8 (14)	14 (61)	9 (25)
Lautoka (FSC Res.)	419.9	Below Average	13 (19)	18 (58)	7 (23)
Nadi Airport	345.3	Below Average	12 (9)	18 (73)	7 (18)
Nacocolevu, Sigatoka	289.0	Below Average	11 (40)	-	8 (20)
Tokotoko, Navua	626.0	Below Average	23 (56)	21 (26)	16 (19)
Laucala Bay, Suva	741.0	Below Average	22 (50)	24 (32)	17 (18)
Nausori Airport	711.4	Below Average	16 (43)	23 (30)	16 (27)
Nabouwalu	576.8	Below Average	23 (22)	20 (30)	18 (48)
Labasa Airport	552.5	Below Average	10 (10)	14 (68)	10 (22)
Savusavu Airport	473.7	Below Average	15 (23)	18 (49)	13 (28)
Udu Point	1761.9	Well Above Average	22 (16)	17 (42)	18 (42)
Matei Airport	793.7	Average	13 (32)	18 (42)	15 (26)
Lakeba Is.	306.9	Below Average	13 (52)	10 (42)	9 (6)
Matuku Is.	330.5	Below Average	10 (24)	15 (71)	4 (5)
Ono-I-Lau Is.	112.8	Well Below Average	7 (37)	08 (42)	4 (21)
Vunisea, Kadavu	373.2	Below Average	20 (32)	19 (47)	16 (21)
Rotuma	811.1	Average	21 (40)	22 (41)	21 (19)

RAINFALL IN THE LAST THREE MONTHS**Rainfall in February**

Rainfall during the month was significantly suppressed as the SPCZ remained to the north of the group and intense high pressure systems extended weak ridge and directed dry airstream over the group for most of the month.

Rainfall was well below average both in the Western and the Eastern Divisions ranging from 13% to 39% of the normal February rain.

The Central Division continue to record below average rainfall with all sites receiving from 46% to 71% of normal rain. Rotuma also recorded below average rainfall.

Rainfall varied considerably in the Northern Division ranging from well below average to well above average.

Rainfall in the 3-months from December to February

The Rainfall Outlook for the period December to February in the November 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 high.

Out of the twenty two sites that reported in time for this summary, three sites received well below average rainfall, seventeen sites received below average, and only two sites reported receiving average rainfall. Udu Pt in the Northern Division was the only site that reported receiving well above average rainfall.

Figure A

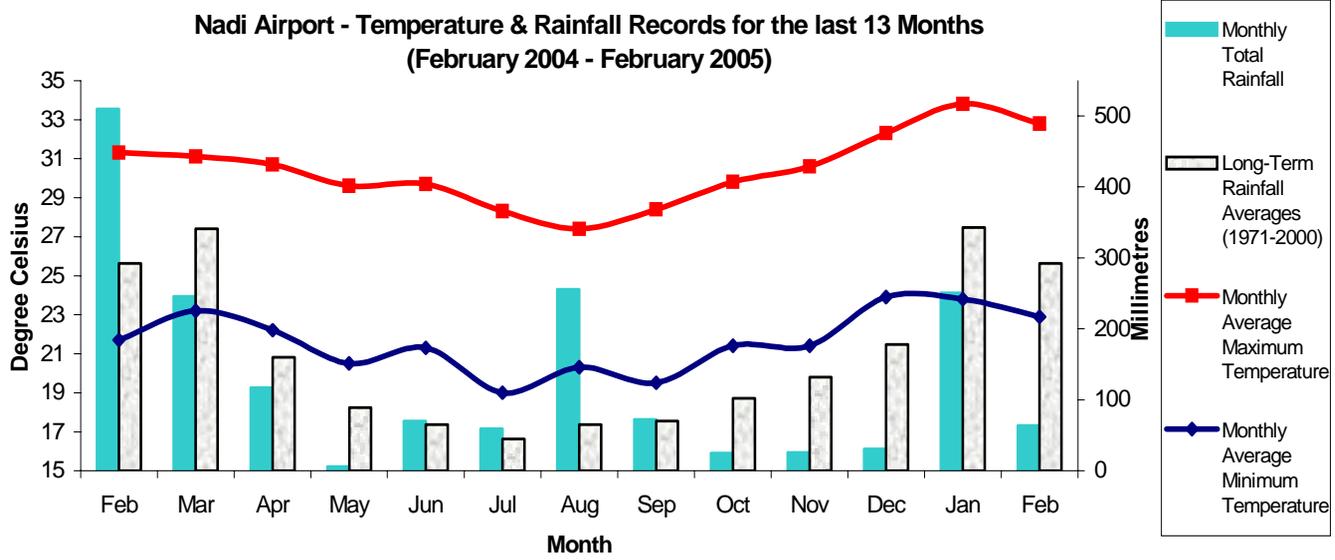


Figure B

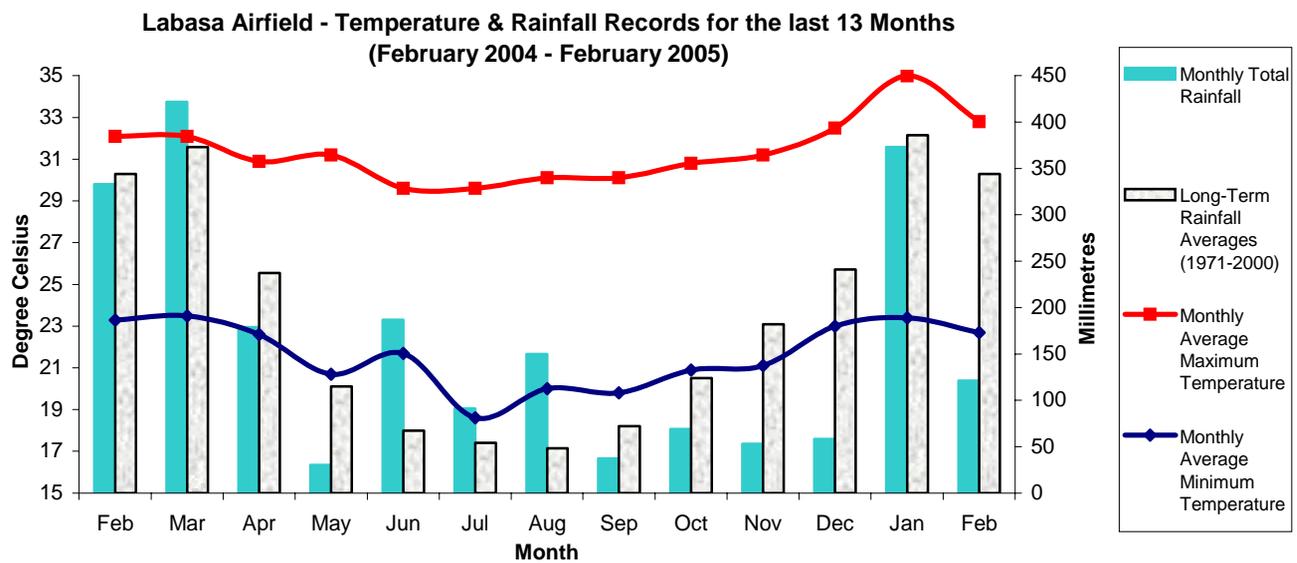
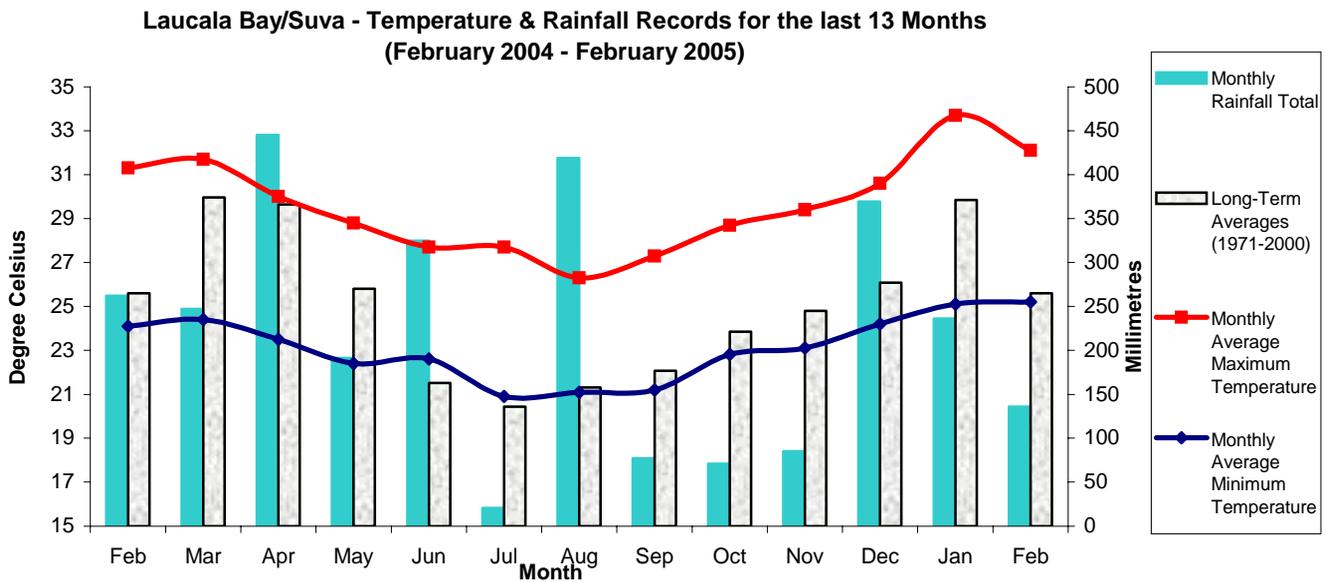


Figure C



Climate in February

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

Day-time temperatures were notably above average across the country. The greatest positive departure was recorded at Yasawa-I-Rara which recorded 2.5°C above normal followed by 1.9°C at Ono-I-Lau and 1.6°C at Rotuma. 14 sites in total reported 1.0°C above normal around the country.

Night-time temperatures were generally near average to above average at most sites. The greatest positive departures were recorded at Vunisea (1.5°C) Laucala Bay, Savusavu Airport and Lakeba which all recorded 1.2°C above normal.

SOIL MOISTURE AND RUNOFFS

In the Central Division, conditions were generally ample to moderate during the first half of the month then moderate to excessive for the rest of the month.

In the Western Division, conditions were limiting to dry for the first half of the month and then limiting to ample and then dry during the month except at Monasavu which recorded ample to excessive with brief spells of moderate soil moisture conditions.

The greatest negative departure was recorded at Penang Mill and Ono-I-Lau which recorded 0.9°C below normal.

Relative Humidity (RH) at 0900hrs was generally average to below average across the country. Matakau recorded highest negative departure of 14% while 11% at Rarawai and 10% at Lautoka and Yasawa-I-Rara respectively. The humidity was lowered as the dry airstream became predominant onto the group as a result of weak ridge extending over the country.

In the Eastern Division, the soil conditions were generally limiting to dry except at Vunisea where ample to moderate conditions prevailed for a brief period. Rotuma recorded excessive to ample conditions throughout the month.

In the Northern Division, limiting to dry conditions prevailed except at Udu Point where ample to excessive soil moisture conditions were experienced for most of the month.

Significant runoffs were recorded at Udu Point (546.9mm), Monasavu (240.7mm), and Nabouwalu (115.6mm).

SUNSHINE, RADIATION & WINDS

Total sunshine hours were above average at all recording sites in February. Nadi Airport received 138%, Laucala Bay/Suva 128% and Nacocolevu 135%. The Global Solar Radiation recorded were 21.3, 23.6 and 24.0 MJ/ M² (average per day).

Monthly average wind speed as below average at Rotuma while above average wind speeds were recorded at Nadi Airport, Nabouwalu and Nausori Airport during the month.

RECORDS SET IN FEBRUARY 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>
Mly Rainfall (mm)	Lakeba	20.5	-	New High	36.0	1992	1955
Dly Max. Temp (°C)	Nabouwalu	34.7	6th	New High	34.5	1986	1956
Dly Max. Temp (°C)	Vatukoula	35.4	13th	New High	35.0	1994	1984
Dly Max Temp (°C)	Monasavu	35.4	6th	New High	30.0	2003	1980
Dly Max Temp (°C)	Ono-I-Lau	33.7	5th	New High	33.6	1949	1943
Dly Min Temp (°C)	Viwa	28.7	5th	Equal High	28.7	2002	1978
Dly Min Temp (°C)	Matei Airport	27.4	10th	New High	27.4	2002	1952
Mly MaxTemp (°C)	Nadi Airport	32.8	-	New High	32.6	1980	1942
Mly MaxTemp (°C)	Nacocolevu	32.6	-	Equal High	32.6	1997	1938
Mly MaxTemp (°C)	Rotuma	32.2	-	New High	31.8	2003	1933
Mly MaxTemp (°C)	Labasa Airport	32.8	-	New High	32.5	2003	1956
Mly Max Temp (°C)	Nabouwalu	31.7	-	New High	31.6	2002	1956
Mly Max Temp (°C)	Yasawa-I-Rara	33.1	-	Equal High	33.1	2003	1950
Mly Max Temp (°C)	Vatuloula	33.1	-	New High	33.0	1998	1984
Mly Max Temp (°C)	Ono-I-Lau	31.7	-	New High	31.4	2001	1943
Mly Min Temp (°C)	Laucala Bay	25.2	-	New High	24.8	1987	1942
Mly Min Temp (°C)	Vunisea	25.1	-	New High	24.9	1957	1947

Tropical Cyclone Season - November 2004 to April 2005

The South Pacific Tropical Cyclone Season officially began on 1st November and will continue till 30th April 2005.

The chances of a cyclone affecting Fiji this season are moderate to high especially with sea surface temperatures in the western and central Pacific being on the *Warmer* side of *Neutral*. The mean number of cyclones that affect Fiji in a season (including pre-season events) since 1969/70 is between 1 and 2. season.

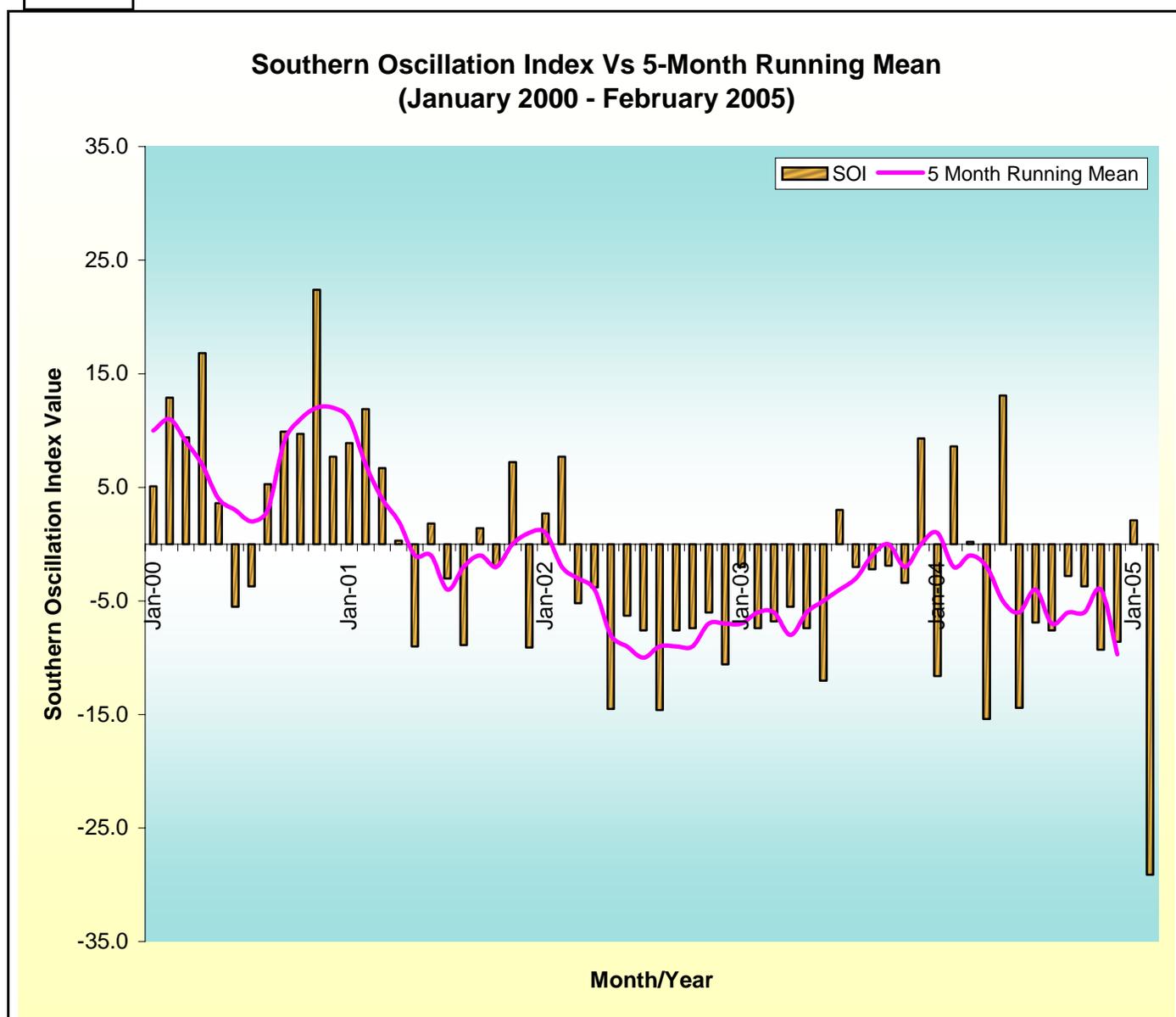
Historical records of tropical cyclones affecting Fiji since the 1969/70 season show that 8 cyclones have affected Fiji in February with one of them causing severe damage. The years were 1973, 78, 83, 86, 88, 93 (2 events) and 2001.

However, there have been as many as 6 events such as during the 1996/97.

To date there have been Seven tropical cyclones forming in the SW Pacific this season and a total of four this month. They are TC *Judy, Kerry, Lola, Meena, Nancy, Olaf and Percy*. The later four formed in February. The north-eastward shift of the SPCZ and six of the tropical cyclones forming to the east of the dateline, shows the typical El Nino pattern of tropical cyclone formation and movement. The average number of tropical cyclones that form in a season is between 9-10 in this region.

Warnings, advisories, and other information during actual tropical cyclone events can be accessed from Fiji Meteorological Service Website: <http://www.met.gov.fj>, via weather fax 6721227 (polling fax), via fax 6720190 or phone 6724888 or recorded weather on 3301642.

Figure D



ENSO status and Rainfall Outlook to May 2005

EL NIÑO - SOUTHERN OSCILLATION UP- DATE

The **Southern Oscillation Index (SOI)** for February was -29.1 (January was +1.8) with the five-month running mean of -4 centred on November (October was -6) (Figure D). The sharp drop in the SOI was largely due to north-eastward displacement of the SPCZ and subsequent formation of four intense tropical cyclones to the east of the Dateline, which moved generally south-eastwards thus affecting the atmospheric pressures at Tahiti.

The tropical Pacific ocean has continued to gradually cool over the past month, particularly in western areas where the positive anomalies Sea Surface Temperatures (SST's) had been strongest. However, slightly positive anomalies still exist in the Central Pacific.

Despite the cooling in SSTs, the atmospheric conditions continued to show "El Nino like" conditions. The north-eastward movement of the SPCZ and the formation of majority of tropical cyclones to the east of Dateline this season is an indicative of a weak El Nino to be still in place. Its impact on climate patterns in the region is likely to be felt for yet a while.

A majority of climate prediction models indicate "neutral conditions" in the tropical Pacific in the next 5-month period (to *July*) as well as 8-month period (to *October 2005*). However, models have not probably fully factored into their calculations a strong westerly wind burst in February that has produced +5°C anomalies on the thermocline around the Dateline. A down-welling Kelvin wave will propagate these anomalies to the east during the next two to three months.

2004 saw other ENSO indicators move only partially towards typical El Niño values such as subsurface temperatures and the SOI, while others generally oscillated about their long-term averages such as cloud and wind in the central Pacific.

El Nino-like indicators are mostly apparent west of about 160W, and include the shift of the west Pacific SST warm pool to the near-equatorial Dateline that occurred around the middle of 2004, and less than usual cloudiness with high atmospheric pressure about much of Southeast Asia and far-northern Australia. Since early January, very active convection has persisted through much of the western to central Pacific, and over the last three weeks, the areas east of Dateline have also been active. Low level westerly wind anomalies have been evident west of this connectivity active area.

March to June is known as "predictability" barrier and model skill is at its lowest predicting across this span of months.

Information on **Interseasonal Patterns including the Madden-Julian Oscillation** can be found on the Australian Bureau of Meteorology website <http://www.bom.gov.au/climate/tropnote/tropnote.shtml> This information is part of the 'Weekly Tropical Climate Note' and is updated each Tuesday at 0330 UTC. For more information or interpretation please contact the Fiji Meteorological Service. (The ENSO Update is kindly provided by the Australian Bureau of Meteorology and can be found on their website <http://www.bom.gov.au>)

RAINFALL PREDICTIONS

The FMS Rainfall Prediction Model has been replaced by the Seasonal Climate Outlook for Pacific Island Countries (SCOPIC) Model (Figure E): Predictions from this refined model are expected to be much better than the previous FMS model. However, since it is being tested right now, please use these predictions with caution.

The model predicts rainfall to be *below average to average* in the **Western Division**

In the Central and Eastern Divisions rainfall is expected to be *near average or below*.

In the Northern Division rainfall is expected to be *below average* except at Matei where rainfall is expected to be near average or below.

Average to Below average rainfall is forecast for Rotuma.

RAINFALL OUTLOOK FOR FEBRUARY TO APRIL 2005

Based on the above, Fiji's rainfall for the next three months is likely to be *average to below average* across the country. This means that while many places should be able to receive near average rainfall, there would be places that may end up with significantly below average rainfall in the coming three months.

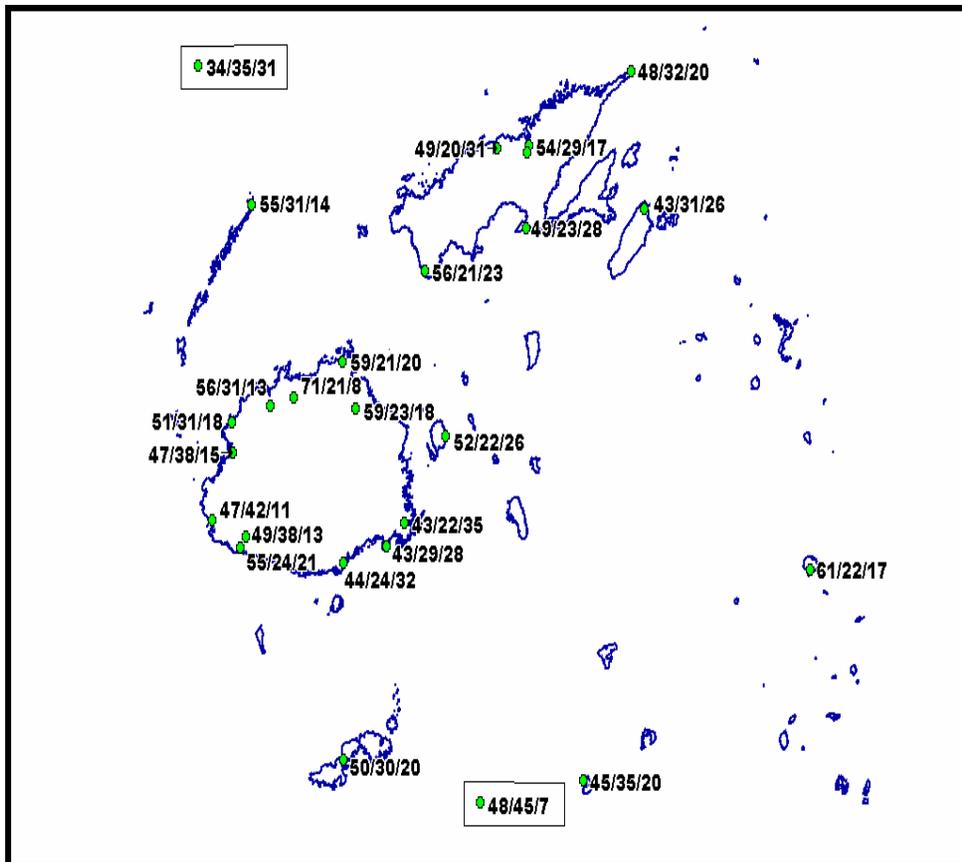
It should be noted that much of the rainfall received at this time of the year is very much dependent on the number and effect of tropical disturbances (cyclones, depressions, etc) on the Fiji Group. This prediction can significantly change if there is a tropical depression or a tropical cyclone affecting or passing close to the country.

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

Seasonal Climate Outlook for Pacific Island Countries Model (beta testing version)

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

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	697.3	881.6
Vatukoula	609.4	857.6
Rarawai	585.9	815.4
Penang	665.3	912.0
Lautoka	524.3	688.3
Nadi	500.9	670.1
Lomawai	458.3	629.6
Nacocolevu	453.0	632.8
Olosara	480.3	611.4
Yasawa	457.9	643.4

Central Division		
Navua	955.9	1225.4
Suva	861.2	1069.3
Nausori	813.3	1078.7

Eastern Division		
Levuka	713.5	972.2
Lakeba	530.6	721.8
Matuku	479.0	637.3
Ono-I-Lau	381.7	652.9
Vunisea	623.6	747.8

Northern Division		
Labasa Mill	618.5	917.4
Seaqaqa	628.0	849.1
Nabouwalu	691.1	926.0
Savusavu	588.6	802.4
Udu Point	594.1	811.7
Matei	600.7	904.4
Rotuma	832.6	1027.4

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

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

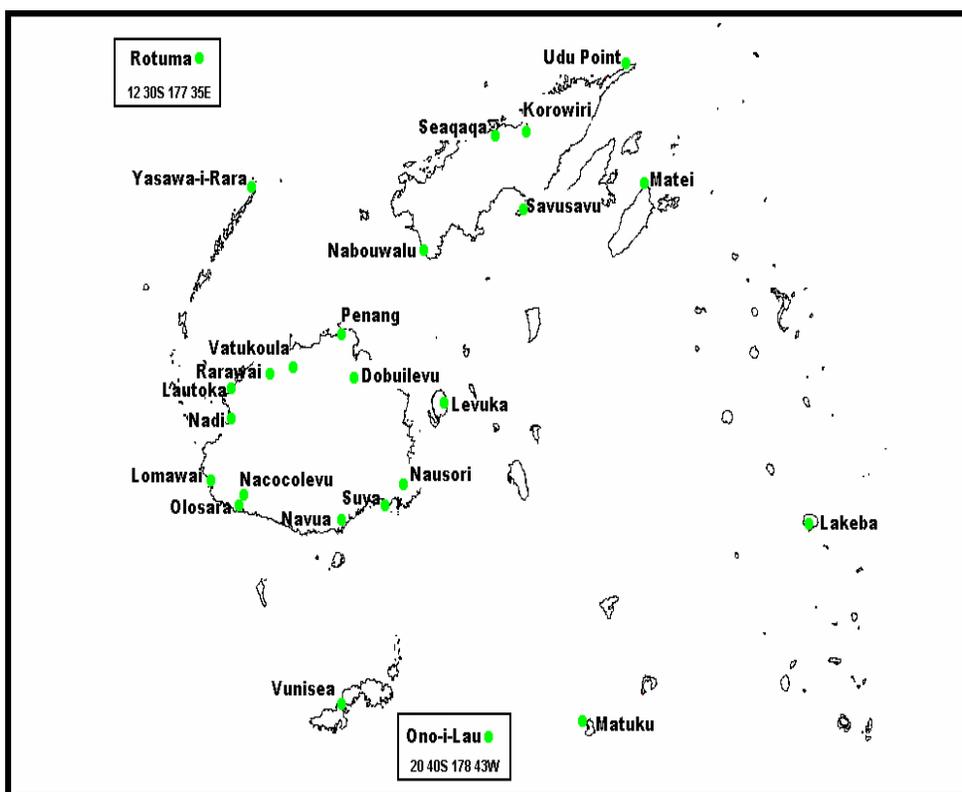
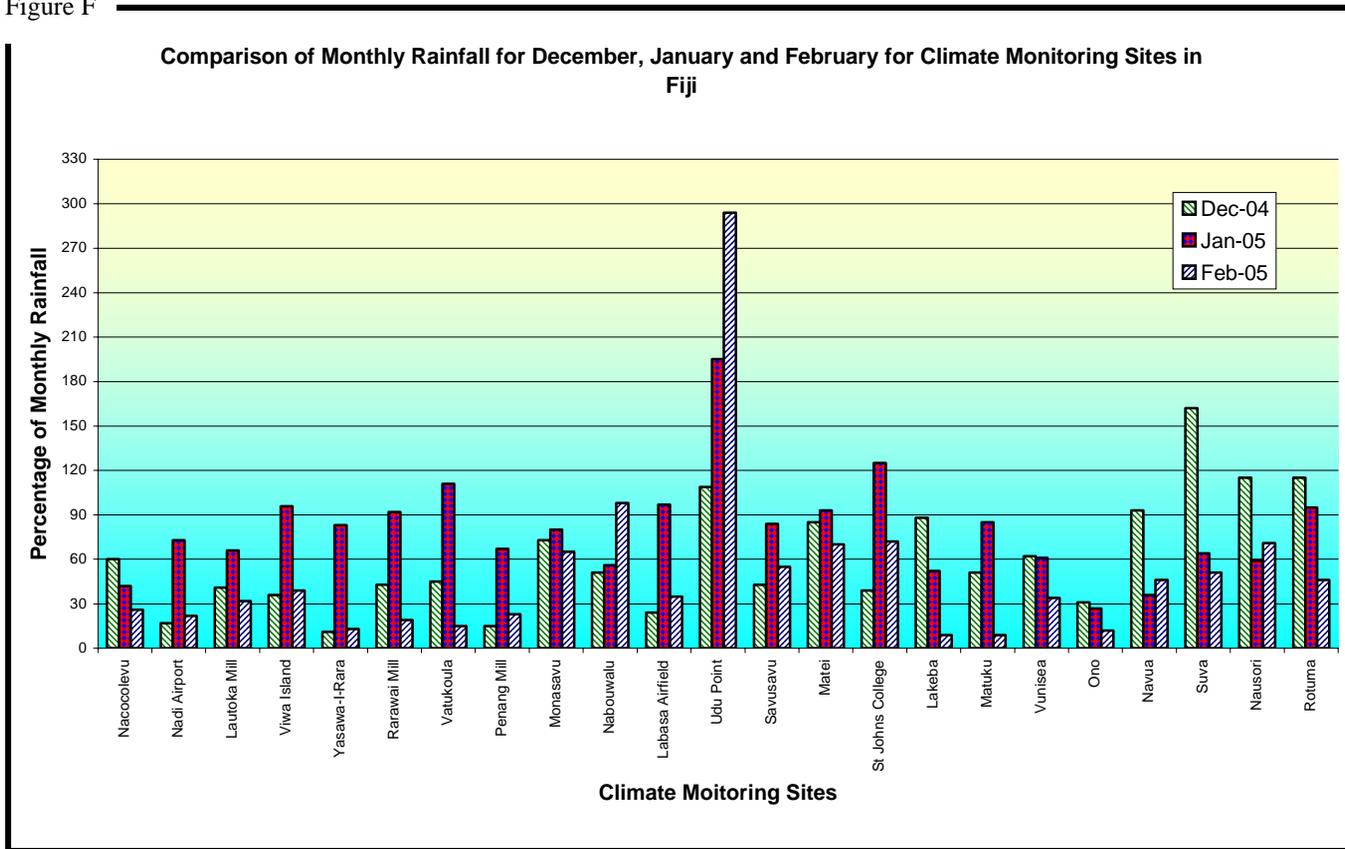


Figure F



PRELIMINARY CLIMATOLOGICAL SUMMARY FOR FEBRUARY 2005

	RAINFALL				AIR TEMPERATURES						SUNSHINE				
	TOTAL MM	RAIN %	MAX.		AVERAGE DAILY				EXTREME		TOTAL				
			DAYS +	FALL MM ON	MAX. C	# C	MIN. C	# C	MAX. C	MIN. C	ON	ON	HRS	%	
NADI AIRPORT	64	22	7	33	12	32.8	1.2	22.9	0.0	34.9	24	21.2	21	259	138
SUVA/LAUCALA BAY	136	51	17	44	25	32.1	0.9	25.2	1.2	33.9	9	23.2	1	223	128
NACOCOLEVU	60	26	8	29	12	32.6	1.1	22.5	-0.1	34.0	11	19.2	21	220	135
ROTUMA	148	46	21	24	11	32.2	1.6	25.4	0.7	33.4	18	23.9	21		
VIWA	95	39	9	48	10	32.7	1.4	25.5	0.2	34.0	13	21.8	6		
UDU POINT	732	294	18	100	23	32.2	1.4	24.2	-0.3	33.9	5	22.5	25		
LABASA AIRFIELD	121	35	10	42	10	32.8	1.2	22.7	0.3	34.3	11	19.6	22		
NABOUWALU	272	98	18	69	27	31.7	1.3	25.2	0.8	34.7	6	23.8	24		
SAVUSAVU AIRFIELD	134	55	13	42	26	31.2	0.4	24.9	1.2	32.4	8	23.2	23		
MATEI AIRFIELD	200	70	15	29	25	30.9	0.5	24.5	0.3	32.5	14	22.2	1		
YASAWA-I-RARA	32	13	4	18	10	33.1	2.5	25.5	0.7	34.7	18	23.7	23		
VATUKOULA	60	15	9	27	18	33.1	1.3	22.9	0.8	35.4	13	20.5	22		
MONASAVU	347	65	23	76	27	26.6	0.9	19.2	-0.1	30.5	6	16.7	1		
NAUSORI AIRPORT	189	71	16	70	10	31.2	0.4	23.4	0.1	33.0	9	20.7	22		
NAVUA/TOKOTOKO	117	46	16	36	10	31.2	1.2	23.1	0.1	32.5	5	20.8	8		
ST. JOHNS COLLEGE	192	72	18	40	9	31.0	0.4	25.1	0.9	32.5	6	23.0	1		
LAKEBA	21	9	9	6	10	30.7	0.2	25.3	1.2	31.7	11	21.9	20		
MATUKU	17	9	4	7	17	31.6	0.9	25.1	0.4	33.0	11	23.0	1		
VUNISEA	78	34	16	32	10	31.0	0.6	25.1	1.5	33.0	6	22.6	7		
ONO-I-LAU	24	12	4	11	16	31.7	1.9	23.7	-0.9	33.7	5	22.0	22		
BA/RARAWAI MILL	66	19	7	37	11	33.5	1.4	22.2	-0.1	35.4	4	20.0	22		
LAUTOKA AES	96	32	7	56	12	32.6	1.5	23.8	-0.1	34.2	17	22.4	20		
PENANG MILL	78	23	11	28	12	31.8	1.3	23.0	-0.9	33.9	17	20.7	6		

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.