

Fiji Islands Climate Summary

February 2008

Since: August 1980*

IN BRIEF

Wetter than normal conditions continued in the Western Division, northern parts of Vanua Levu and southern Lau Group in February. Elsewhere, rainfall was average to below average. In the Central Division, rainfall unexpectedly ranged from 53-71% of normal.

Two significant wet spells affected the country in February. The first spell was associated with *Tropical Cyclone (TC) Gene* located to the far southwest and moving further away from the country during the first week. The other was associated with the merging of the South Pacific Convergence Zone (SPCZ) and a frontal system approaching Fiji from the west during the last week of the month. The two systems brought a substantial amount of rainfall to many parts of the country which resulted in severe flooding in northwestern Viti Levu. Fine weather conditions prevailed for most days of the month apart from a few afternoon showers over the larger islands.

Over the last three months, rainfall has been *average to above average* except at Rotuma which experienced *below average* rainfall due to displacement of SPCZ south of the island.

Air temperatures were *average to below average* in most parts of the country. Sunshine hours ranged from *above average* at Rotuma, to *near average* in Suva and *below average* in Sigatoka and Nadi.

The 2007/08 *La Nina* continues and can be considered as being in a *mature* stage. The Southern Oscillation Index monthly value increased from +14 to +21 in February. The present ENSO status is highly likely to continue in the next three months and gradually become *Neutral* (probability 50%) in the later half of 2008.

For the three month period from March to May 2008, *average or above average* rainfall is favoured across Fiji except Rotuma where *average or below average* rainfall is likely. For the month of March alone, *drier than normal conditions* are expected as below average convective activity is forecast for the western South Pacific. The confidence level of the prediction is *moderate*.

It is possible additional tropical cyclones will affect the country during the two remaining months of the tropical cyclone season.

WEATHER PATTERNS

Two significant wet spells were experienced in February. Fine weather conditions prevailed for the rest of the month with afternoon showers confined mainly to the larger islands.

The weather during the first week was largely influenced by an active SPCZ to the west of the country and active rain bands associated with *TC Gene*. The positioning of the SPCZ directed north-westerlies over the Fiji Group bringing periods of heavy rainfall over northwestern Viti Levu that resulted in flooding around Nadi and Rakiraki.

By February 8, fine weather with afternoon showers set in and lasted until February 20 as a ridge of high pressure extended onto the Group from the southeast, displacing the SPCZ. A moist and unstable east to northeast winds flow dominated during the period

resulting in inland convection and afternoon showers.

Wet conditions were experienced from February 21-26 when the SPCZ merged with a frontal system over the country for a week. Consequently, continuous heavy rainfall was experienced in parts of the country with flooding experienced in most of western Viti Levu. Significant rainfall (>100mm in 24 hours) was recorded at several sites around the country with the highest rainfall being recorded at Vunisea, Kadavu (123mm). Fine weather conditions returned towards the end of the month as another ridge pushed in from the south.

Rotuma recorded rainfall on 23 days of the month, however the island failed to receive normal February rainfall. The SPCZ was displaced south of the island during most of the month.

RAINFALL IN RECENT MONTHS

Rainfall in February

Wetter than normal conditions (>119% of normal rainfall) continued in the Western Division, northern parts of Vanua Levu and southern Lau Group in February. Elsewhere rainfall was unexpectedly average to below average (119 to 40% of normal).

Torrential rainfall associated with the passage of Tropical Cyclone *Gene* resulted in severe flooding in most parts of Viti Levu during the first week of the month. Heavy rainfall between February 22 and 24 also resulted in flooding in the Rakiraki and Nadi regions. Notable falls were recorded at Vunisea, Kadavu (123mm), Nadi Airport & Lautoka Mill (112mm), Rarawai Mill, Ba (118mm), Nabouwalu (105mm) and Penang Mill, Rakiraki (103mm). Apart from these two periods, rainfall during the month was experienced mainly as afternoon showers over the larger islands.

Rainfall in the last three months

Rainfall for the December 2007 to February 2008 period was expected to be generally *above average* across the Northern & Western Divisions and Southern Lau Group. *Average* rainfall was expected in the Central Division, Northern Lau Group and Rotuma.

Of the 23 climate monitoring sites that reported in time for this summary, nineteen recorded *above average*, three *average* (Vunisea, Navua and Suva) and one *below average* (Rotuma) rainfall in the last three months.

The success/hit rate of the three-month prediction was >95%.

TABLE 1 : THREE MONTH RAINFALL : DECEMBER 2007 TO FEBRUARY 2008

<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 December 07 (% of total rain)</u>	<u>No. of Rain days in January 08 (% of total rain)</u>	<u>No. of Rain days in February 08 (% of total rain)</u>
Penang Mill, Rakiraki	2428.0	Above Average	20 (28)	26 (49)	19 (23)
Monasavu Dam	2249.4	Above Average	27 (18)	29 (63)	24 (19)
Rarawai Mill, Ba	1716.5	Above Average	16 (17)	22 (48)	25 (35)
*Nacocolevu	1111.8	Above Average	15 (21)	23 (54)	20 (25)
*Viwa Island	835.5	Above Average	12 (21)	13(42)	16(37)
Lautoka (FSC Res.)	1452.3	Above Average	18 (16)	24 (46)	22 (38)
Nadi Airport	1388.4	Above Average	18 (22)	18 (40)	24 (38)
Tokotoko, Navua	979.5	Average	20 (25)	25 (55)	14 (20)
Laucala Bay, Suva	816.9	Average	20 (30)	25 (53)	18 (17)
Koronivia	1086.2	Above Average	23 (29)	23 (53)	15 (18)
Nausori Airport	1071.1	Above Average	22 (26)	24 (57)	17 (17)
Nabouwalu	1298.6	Above Average	19 (28)	28 (48)	18 (24)
Labasa Airport	1864.2	Above Average	22 (25)	25 (50)	23 (25)
Savusavu Airport	1081.5	Above Average	12 (15)	26 (70)	15 (15)
Udu Point	1372.7	Above Average	22 (31)	25 (55)	21 (14)
Matei Airport	1485.6	Above Average	29 (30)	31 (58)	27 (12)
Vanua Balavu, Lau	836.5	Above Average	17 (28)	23 (53)	19(19)
Lakeba, Lau	992.6	Above Average	18 (41)	19 (48)	13 (11)
*Matuku, Lau	905.0	Above Average	11 (37)	18 (38)	11 (25)
*Ono-I-Lau, Lau	716.5	Above Average	12 (16)	18 (38)	13 (46)
*Levuka, Ovalau	1538.0	Above Average	22 (31)	26 (53)	19(16)
*Vunisea, Kadavu	748.5	Average	14 (21)	25 (43)	18 (36)
Rotuma	849.1	Below Average	20 (28)	26 (53)	23 (19)

* Some data missing (Between 1 to 5 days in a month)

TEMPERATURES RELATIVE HUMIDITY AND SUNSHINE IN FEBRUARY

Maximum Air Temperatures

Maximum air temperatures were generally *average* or *below average* in February. The greatest negative departures from normal were recorded at Nadi Airport (-1.4°C) and Rarawai Mill, Ba (-1.1°C). The greatest positive departure of 0.7°C was recorded at Laucala Bay, Suva and Nabouwalu.

Minimum Air Temperatures

Minimum air temperatures were generally *average* or *below average* across the country. The greatest negative departures were recorded at Viwa Island and St. Johns College in Levuka (-0.7°C). The greatest positive departures were recorded at Tokotoko, Navua (0.7°C) and Vunisea (0.6°C).

Relative Humidity at 0900hrs was generally *average* to *above average* in February. The greatest positive anomalies were recorded at Rarawai Mill in Ba (6.4%) and Nadi Airport (5.8%). The greatest negative anomalies were recorded at St. Johns College, Levuka (-4.8%) and Matuku Island (-4.5%).

Sunshine

Sunshine hours were *near average* at Laucala Bay, Suva. *Above average* at Rotuma and *below average* at Nacocolevu, Sigatoka and Nadi Airport.

Winds

Below average surface winds were recorded at Nabouwalu and Vunisea, *near average* at Rotuma Island and *above average* at Nadi and Nausori Airports.

NO NEW CLIMATE RECORDS ESTABLISHED IN FEBRUARY 2008

Figure 1

**Nadi Airport - Temperature & Rainfall Records for the last 13 Months
(February 2007 - February 2008)**

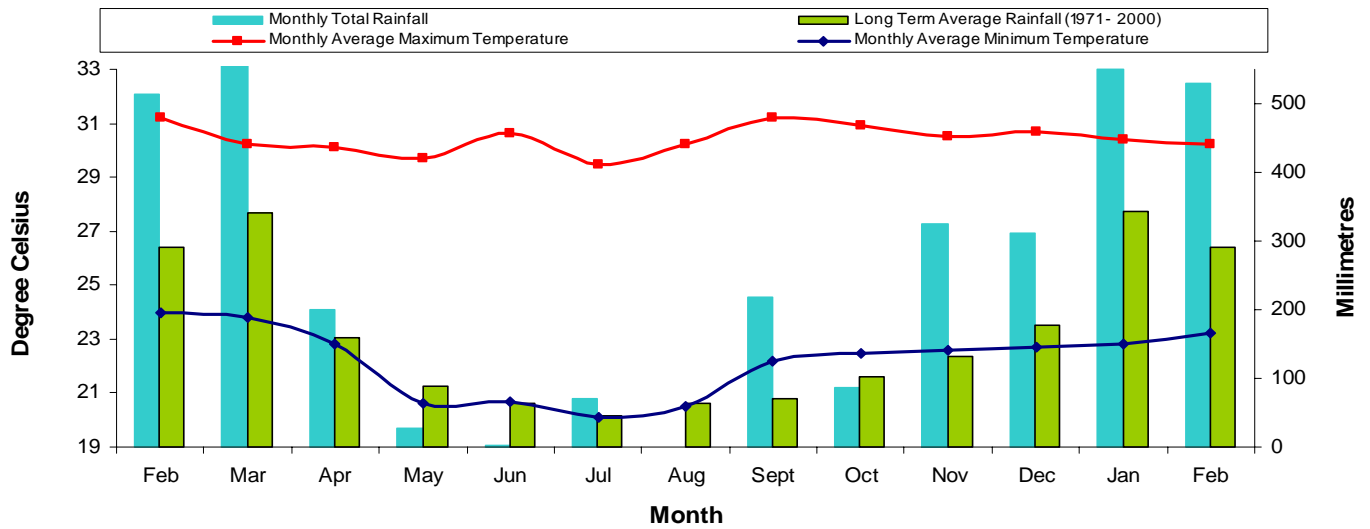


Figure 2

**Labasa Airfield - Temperature & Rainfall Records for the last 13 Months
(February 2007 - February 2008)**

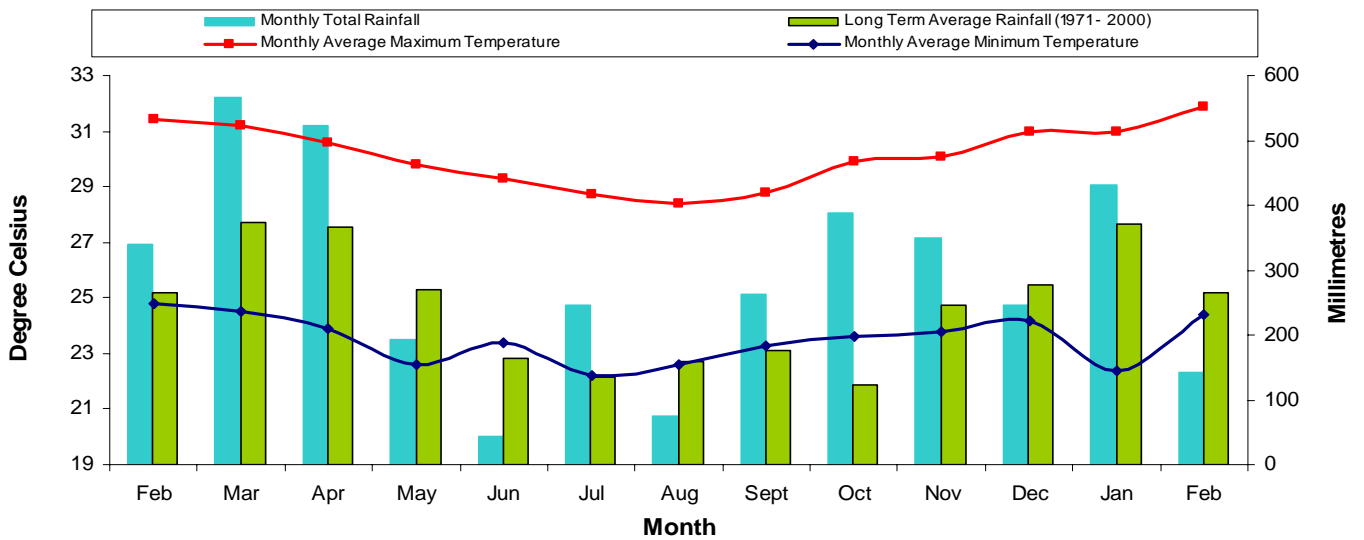
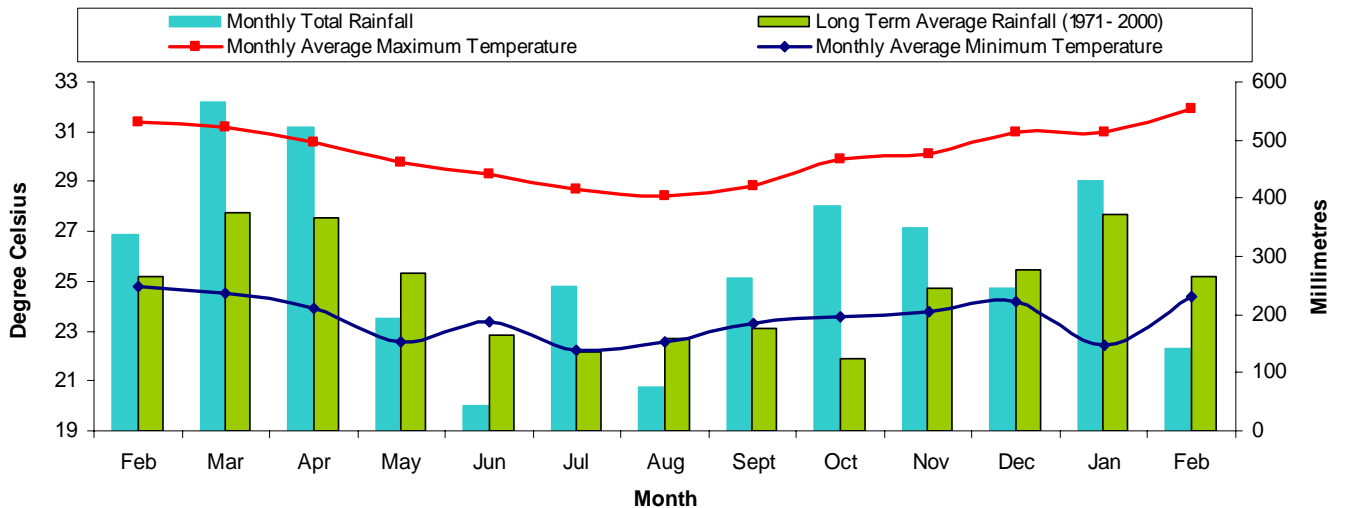


Figure 3

**Laucala Bay/Suva - Temperature & Rainfall Records for the last 13 Months
(February 2007 - February 2008)**



PRELIMINARY CLIMATOLOGICAL SUMMARY FOR FEBRUARY 2008

	RAINFALL				AIR TEMPERATURES								SUNSHINE		
	TOTAL	RAIN	MAX.	FALL	AVERAGE DAILY				EXTREME				TOTAL	*	
	* DAYS	MM	MM		ON	MAX.	#	MIN.	#	MAX.	MI N.	C	ON		HRS
	MM	%	+	MM	ON	C	C	C	C	C	ON	C	ON	%	
NADI AIRPORT	529	181	24	112	22	30.2	-1.4	23.2	0.3	32.0	16	21.5	28	151	80
SUVA/LAUCALA BAY	141	53	18	59	21	31.9	0.7	24.4	0.4	33.6	21	23.4	1	182	104
NACOCOLEVU	279	122	20	85	21	32.0	0.5	23.1	0.5	34.0	27	21.0	9	133	81
ROTUMA	164	51	23	39	28	31.2	0.6	25.0	0.3	32.1	14	23.8	29	197	122
VIWA	309	127	16	68	23	31.0	-0.3	24.6	-0.7	32.3	15	21.5	1		
UDU POINT	191	77	21	43	24	30.5	-0.3	24.5	0.0	32.0	21	22.5	25		
SAVUSAVU AIRFIELD	157	64	15	31	21	30.6	-0.1	23.1	-0.6	32.5	11	22.0	2		
LABASA AIRFIELD	466	135	23	92	24	31.2	-0.4	22.9	0.5	34.5	13	21.2	29		
NABOUWALU	310	112	18	105	24	31.1	0.7	---	---	33.3	21	20.4	17		
KORONI VIA	200	67	15	34	22	31.3	0.5	23.5	0.6	32.7	26	22.3	28		
NAUSORI AIRPORT	185	69	17	46	22	31.2	0.4	23.2	-0.1	32.4	21	21.8	28		
NAVUA/TOKOTOKO	200	71	14	41	8	30.7	-0.3	22.3	0.7	31.8	21	20.5	29		
MONASAVU	425	82	24	78	13	25.4	-0.3	19.2	-0.2	28.4	14	15.4	28		
LAUTOKA AES	554	184	23	112	22	30.4	-0.7	23.6	-0.3	32.7	28	21.0	3		
BA/RARAWAI MILL	605	174	25	118	24	30.9	-1.1	22.5	0.2	33.0	14	19.8	28		
PENANG MILL	570	170	19	103	24	30.7	0.2	23.4	-0.5	32.7	28	21.6	28		
MATEI AIRFIELD	184	64	27	30	20	30.3	-0.1	24.7	0.5	31.5	22	23.0	3		
VANUABALAVU	161	79	19	42	2	30.8	0.1	24.9	0.2	32.1	20	22.0	3		
LAKEBA	111	49	13	27	2	30.0	-0.5	23.6	-0.5	31.0	14	21.6	19		
ST. JOHNS COLLEGE	250	94	19	61	24	30.5	-0.1	23.7	-0.7	32.0	22	22.0	7		
VUNI SEA	267	116	18	123	24	30.8	0.4	24.2	0.6	33.1	16	22.4	26		
MATUKU	229	124	11	84	1	29.7	-1.0	---	-0.0	31.9	13	---	---		
ONO-I-LAU	329	170	13	79	25	29.9	0.1	24.2	-0.4	32.5	17	21.2	5		

RAINFALL OUTLOOK FOR FIJI ISLANDS - MARCH TO MAY 2008

The 2007/08 *La Niña* event continues to exist in the central and eastern equatorial Pacific. The atmospheric coupling has enhanced with an increase in the Southern Oscillation Index value from +14.1 to +21.3 in February. Basin-wide features are now typical of a mature *La Nina* event, evident by substantially below average sea surface temperatures (SSTs) in the central and eastern equatorial Pacific and reduced equatorial heat content. Sea surface anomalies are below 2°C throughout much of the central equatorial Pacific. Most dynamical and statistical ENSO models forecast continued *La Niña* conditions, but gradual weakening of the strong *La Nina* through the March to May 2008 period. The probability of ENSO neutral conditions in the later half of 2008 is around 50%.

Based on current and predicted ocean and atmospheric conditions, **average or above average** rainfall is favoured across most of the Fiji from March to May 2008 except at Rotuma where **average or below average** rainfall is most likely over the three month period. The confidence level of the prediction is *moderate*.

(More detailed climate predictions will follow in the 'Fiji Islands Climate Outlook' to be released around mid February).

2007/2008 TROPICAL CYCLONE SEASON

The 2007/08 Southwest Pacific Tropical Cyclone season began on November 1, 2007 and will continue until April 30, 2008.

To date, three tropical cyclones have directly or indirectly affected Fiji this season. *Tropical Cyclone (TC) Daman*, passed over Cikobia Island and close to Vanua Levu from December 5-9. *TC Funa* affected the western and the southern parts of Fiji from January 16-19. *TC Gene*, developed to the north east of Vanua Levu on January 28 and followed a northeast to southwest track over the Lomaiviti Group then over northern Viti Levu and through the Yasawa and Mamanuca Groups into Coral Sea on January 31. *TC Gene* passed over Fiji as a category 1 cyclone with damaging winds of 50 knots at the centre and gusts of 70 knots. Damage associated with *TC Gene* is estimated to be in excess of \$45 million (Additional information on Page 5).

It is possible additional tropical cyclones will affect the country during the two remaining months of the tropical cyclone season. The areas most vulnerable remain the western and southern parts of Fiji due to the current *La Niña* event.

Normal - Long term average from 1971 to 2000.

Average - Rainfall between 80 to 119%.

Well Below Average - Rainfall less than 39%.

Above Average - Rainfall between 120 to 199%.

Below Average - Rainfall between 40 to 79%.

Well Above Average - Rainfall more than 200%.

This summary is prepared as soon as possible following the end of the month, once climate data is received from various recording stations around Fiji and ENSO information is received from various Meteorological Agencies around the World. Delays in data collection, communication and processing occasionally arise. While every effort is made to verify observational data, the Fiji Meteorological Service does not guarantee the accuracy and reliability of the analysis and rainfall predictions presented, and accepts no liability for any losses incurred through the use of this summary and its contents. The contents of the summary may be freely disseminated provided the source is acknowledged. All requests for data should be directed to the Fiji Meteorological Service HQ in Namaka, Nadi.

SPECIAL FEATURE: TROPICAL CYCLONE GENE

Tropical Cyclone *Gene* was the fourth cyclone to form in RSMC Nadi's area of responsibility and fifth to occur in the South Pacific region during the 2007/2008 Tropical Cyclone Season. TC *Gene* originated as a Tropical Depression north of the island of Futuna on January 27. The system moved southwestwards approaching the north-eastern parts of Vanua Levu early on Monday January 28 and followed a south-westerly track with the centre passing close to the southern coast of Vanua Levu between Savusavu and Nabouwalu. Close to Nabouwalu around 6p.m on January 28 the system was named a Tropical Cyclone with 10-minute average winds exceeding 35 knots. TC *Gene* subsequently moved onto Viti Levu with its low level centre passing over Rakiraki, Vatukoula, inland areas of Ba and Lautoka and over Nadi overnight and during the early hours of Tuesday January 29. However, the core of the system went over Fiji's *Central Division* and the *Western Division* only started to experience damaging winds and active rainbands once the centre had gone past. The effect of mountain ranges of Viti Levu seemed to have a major influence on the cyclone circulation, winds and rainfall distribution.

The path of the cyclone became more westerly and the cyclone intensified as it moved off Viti Levu. It gained *Category 2* status with destructive *Storm Force* winds early on January 29, over the Mamanuca Group, and *Category 3* status with very destructive *Hurricane Force* winds during the evening of January 30. It intensified a little further but maintained its *Category 3* status for about 18 hours as the cyclone neared the Vanuatu southern islands of Tanna and Aneityum. TC *Gene* curved sharply southwards with its centre passing just east of Aneityum early on February 1. Thereafter, *Gene* curved south-southeast and later southeast as it weakened slowly but maintained storm force winds for another three days before transforming into a depression well south of Fiji.

The effect of the cyclone was felt in many parts of the country as damaging gale force winds destroyed weak structures and uprooted vegetation. The effects were compounded by continuous heavy rainfall and subsequent floods in most parts of Viti Levu. A preliminary damage survey estimated losses exceeding \$40 million and this figure is expected increase once a full assessment is completed.

