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Fiji Islands Climate Outlook

JANUARY 2008

Outlook to March 2008 (3 months)
Outlook to June 2008 (6 months)

***Volume 2: Issue 1**

Highlights

- ***La Niña* event is firmly established in the Pacific and all models predict the event to continue through March 2008 with more than 50% of models expecting the event to continue through the April to June period;**
- **Rainfall was *above average* across most of Fiji from October to December 2007and is expected to be *average to above average* across most of Fiji in the next three and six months ;**
- **Both maximum (day-time) and minimum (night-time) air temperatures are expected to be *below average* across most of Fiji in the next three months.**

Current Conditions

Current *El Niño Southern Oscillation* (ENSO) Status

The 2007/08 *La Niña* event is now firmly established in the Pacific ocean and atmosphere. Observations that support this include cooler than normal surface temperatures across most of the equatorial Pacific (Figure 1), cold subsurface water temperatures at depth in the eastern equatorial Pacific, stronger than average easterly Trade Wind flow at the equator and reduced cloudiness in the central equatorial Pacific. In addition the Southern Oscillation Index continues to become more positive with the December value being +14.4, (Figure 2) which is the highest monthly SOI value since April 2006. The five month running mean value centred on October is +7.

Closer to Fiji, the SPCZ is more active than normal and displaced southwest of its normal position, cloud cover over Fiji has been higher than normal, wind flow has been more northerly than normal and sea surface temperatures have been 0-1.5^{o}C higher than normal (Figure 1).

ENSO and Climate Outlook

El Niño Southern Oscillation and Atmospheric Circulation Features Forecast

All ENSO forecast models predict the currently moderate strength *La Niña* event to continue through the January to March period, with more than 50% of the models forecasting similar conditions during the April to June period. For the rest of the Wet Season the South Pacific Convergence Zone is expected to be more active than normal and displaced southwest of its normal position (resulting in higher than normal rainfall in the Fiji region). Afternoon thunderstorms are expected to be more frequent and intense than normal during the 2007/08 *Wet Season.* A northerly wind flow is expected to be dominant and sea surface temperatures are likely to be near average to warmer than normal in the Fiji region.

Three-month Rainfall Outlook

The SCOPIC Model Predictions (Table 1, Figure 3) from **January to March 2008** are as follows:
Western Division: Generally average to above average rainfall expected (Confidence - Moderate to High); **Central Division:** Equal chances of below, average and above average rainfall (Confidence - Low); **Eastern Division:** Generally average to above average rainfall expected in the Lau Group, above average at Rotuma and equal chances of below average, average and above average rainfall elsewhere (Confidence - Low to Moderate); **Northern Division:** Generally average to above average rainfall expected (Confidence - Low to Moderate).

Other Predictions Models (e.g. ECMWF, UKMO, IRI): Above average rainfall expected in the Fiji region.

Six-month Rainfall Outlook

The SCOPIC Model Predictions (Table 1, Figure 3) from **January to June 2008** are as follows:
Whole of Fiji: Generally average to above average rainfall expected (confidence levels similar to three-month outlook).

Summary Statement on Climate and Tropical Cyclone Predictions for the Fiji Islands

Generally average to above average rainfall is favoured over both the coming three- and six - month periods. At a majority of the sites, air temperatures are expected to be below average in the January to March period. There is an equal chance of air temperatures being above and below average in the January to June period (Table 2 and 3, moderate to high confidence). Near average (1-2) numbers of tropical cyclones are expected this season, with a higher than normal chance of the western and southern parts of Fiji being affected.

*Prior to July 2006, the Fiji Islands Climate Outlook was issued incorporated in the Fiji Islands Weather Summary

Table 1: Three (Jan to Mar 08) and Six month (Jan to June 08) Rainfall Outlooks

Station (Locations shown in Figure 3)	Dry	33 %	Normal	67 %	Wet
	(%)	(mm)	(%)	(mm)	(%)
Western Division					
Dobuilevu (3-months)	17	976.6	40	1184.4	43
Dobuilevu (6-months)	20	1470.0	37	1754.5	43
Penang Mill (3-months)	16	1030.1	40	1256.0	44
Penang Mill (6-months)	15	1415.7	43	1744.5	42
Yasawa-I-Rara (3-months)	6	625.8	54	905.0	40
Yasawa-I-Rara (6-months)	4	998.8	46	1328.1	50
Vatukoula Mine (3-months)	16	946.0	39	1421.3	45
Vatukoula Mine (6-months)	13	1369.0	41	1793.3	46
Rarawai Mill (3-months)	17	967.9	32	1275.6	51
Rarawai Mill (6-months)	15	1281.0	40	1658.1	45
Lautoka Mill (3-months)	17	821.3	41	1085.7	42
Lautoka Mill (6-months)	17	1187.6	33	1525.6	50
Nadi Airport (3-months)	23	801.8	35	1046.4	42
Nadi Airport (6-months)	19	1113.5	42	1403.5	39
Nabou Pine (3-months)	21	689.5	38	1071.1	41
Nabou Pine (6-months)	12	992.9	45	1396.6	43
Lomawai (3-months)	12	690.3	44	1014.6	44
Lomawai (6-months)	16	952.0	33	1343.2	51
Olosara (3-months)	18	608.4	29	809.3	53
Olosara (6-months)	16	897.9	40	1218.6	44
Nacocolevu (3-months)	23	665.0	48	971.0	29
Nacocolevu (6-months)	16	1014.0	48	1298.0	36
Monasavu Dam (3-months)	33	1436.4	53	1886.8	14
Monasavu Dam (6-months)	39	2647.2	22	2908.3	39
Central Division					
Navua (3-months)	33	926.8	50	1253.1	17
Navua (6-months)	33	1873.4	49	2128.1	18
Lami (3-months)	42	1010.7	32	1308.8	26
Lami (6-months)	27	1987.4	44	2383.5	29
Laucala Bay, Suva (3-months)	35	862.4	31	1085.9	34
Laucala Bay, Suva (6-months)	24	1629.5	38	1881.5	38
Koronivia (3-months)	34	931.7	32	1176.1	34
Koronivia (6-months)	20	1674.6	49	1978.0	31
Nausori Airport (3-months)	27	888.2	40	1066.5	33
Nausori Airport (6-months)	24	1603.7	39	1821.1	37
Naduruloulou (3-months)	44	990.1	28	1194.0	28
Naduruloulou (6-months)	27	1776.9	43	2103.0	30
Eastern Division					
Levuka (3-months)	33	760.0	30	1047.8	37
Levuka (6-months)	15	1366.6	42	1762.0	43
Lakeba (3-months)	25	649.8	30	851.4	45
Lakeba (6-months)	14	1074.0	26	1268.3	60
Ono-I-Lau (3-months)	26	516.3	35	687.7	39
Ono-I-Lau (6-months)	16	896.6	47	1177.3	37
Matuku (3-months)	28	571.6	31	765.9	41
Matuku (6-months)	22	997.8	46	1254.5	32
Vunisea (3-months)	37	677.7	27	859.1	36
Vunisea (6-months)	25	1189.3	38	1447.1	37

The Fiji Meteorological Service uses the Seasonal Climate Outlook for Pacific Island Countries (SCOPIC) Model for predicting climate on a three to six months timescale. SCOPIC basis its calculations on there being a strong correlation between sea surface temperatures and rainfall/air temperatures. For some parts of Fiji e.g. the middle of the Dry Zone, this link is very strong. For others e.g. Suva, the link is not as strong, but still provides a useful indicator.

When calculating rainfall for example for the upcoming three month period (e.g. June to August 2007), SCOPIC uses measurements from the current three month period (in this case March to May 2007) to look for similar ocean patterns in the historical record. The rainfall for the following three month periods are then used to calculate the probabilities for the outlook period.

Table 1 cont.: Three (Jan to Mar 08) and Six month (Jan to June 08) Rainfall Outlooks

Station (Locations shown in Figure 3)	Dry	33 %	Normal	67 %	Wet
	(%)	(mm)	(%)	(mm)	(%)
Northern Division					
Nabouwalu (3-months)	10	828.0	40	1053.0	50
Nabouwalu (6-months)	11	1324.0	35	1736.0	54
Seaqaqa (3-months)	14	978.8	40	1395.2	46
Seaqaqa (6-months)	18	1445.0	39	1856.8	43
Labasa Airfield (3-months)	15	973.0	45	1296.4	40
Labasa Airfield (6-months)	19	1359.9	32	1788.8	49
Savusavu Airfield (3-months)	24	674.5	37	869.2	39
Savusavu Airfield (6-months)	18	1203.7	29	1458.5	53
Wainigata (3-months)	27	796.3	46	928.3	27
Wainigata (6-months)	23	1310.0	35	1535.5	42
Udu Point (3-months)	25	805.7	12	1018.6	63
Udu Point (6-months)	14	1307.8	34	1658.9	52
Matei Airfield (3-months)	26	793.0	40	1075.7	34
Matei Airfield (6-months)	17	1403.0	50	1739.5	33
Rotuma (3-months)	24	914.8	32	1160.7	44
Rotuma (6-months)	24	1745.6	36	2046.1	40

Table 2: Three (Jan to Mar 08) and Six month (Jan to June 08) Max. Air Temp. Outlooks

Station (Locations shown in Figure 3)	Cool	Median (average)	Warm
	(%)	(^{o}C)	(%)
Selected Sites			
Laucala Bay, Suva (3-months)	53	30.7	47
Laucala Bay, Suva (6-months)	37	29.5	63
Nadi Airport (3-months)	74	31.4	26
Nadi Airport (6-months)	60	30.6	40
Labasa Airfield (3-months)	76	31.6	24
Labasa Airfield (6-months)	59	30.9	41
Nabouwalu (3-months)	45	30.1	55
Nabouwalu (6-months)	41	29.0	59
Vunisea (3-months)	39	29.9	61
Vunisea (6-months)	33	28.8	67
Lakeba (3-months)	53	30.2	47
Lakeba (6-months)	34	29.1	66
Rotuma (3-months)	54	30.6	46
Rotuma (6-months)	50	30.3	50

Table 3: Three (Jan to Mar 08) and Six month (Jan to June 08) Min. Air Temp. Outlooks

Station (Locations shown in Figure 3)	Cool	Median (average)	Warm
	(%)	(^{o}C)	(%)
Selected Sites			
Laucala Bay, Suva (3-months)	63	23.7	37
Laucala Bay, Suva (6-months)	44	23.0	56
Nadi Airport (3-months)	54	22.8	46
Nadi Airport (6-months)	47	21.7	53
Labasa Airfield (3-months)	46	22.4	54
Labasa Airfield (6-months)	39	21.3	61
Nabouwalu (3-months)	70	24.4	30
Nabouwalu (6-months)	63	23.8	37
Vunisea (3-months)	43	23.6	57
Vunisea (6-months)	43	22.6	57
Lakeba (3-months)	79	24.1	21
Lakeba (6-months)	76	23.4	24
Rotuma (3-months)	60	23.6	40
Rotuma (6-months)	51	22.8	49

Figure 1. Sea Surface Temperature - December 2007

Source: http://www.bom.gov.au/climate/enso/surf_dec.gif

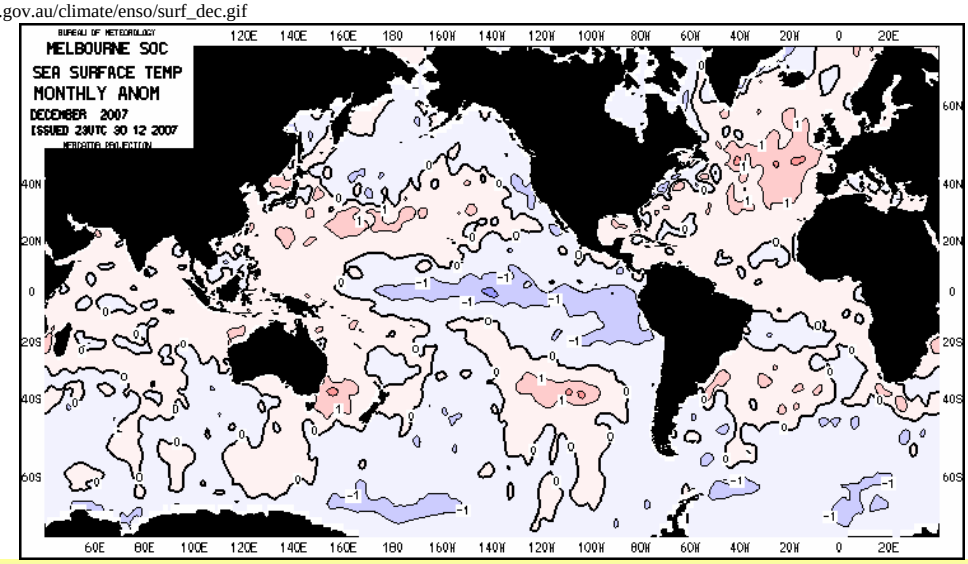


Figure 2. Southern Oscillation Index - January 2000 to December 2007

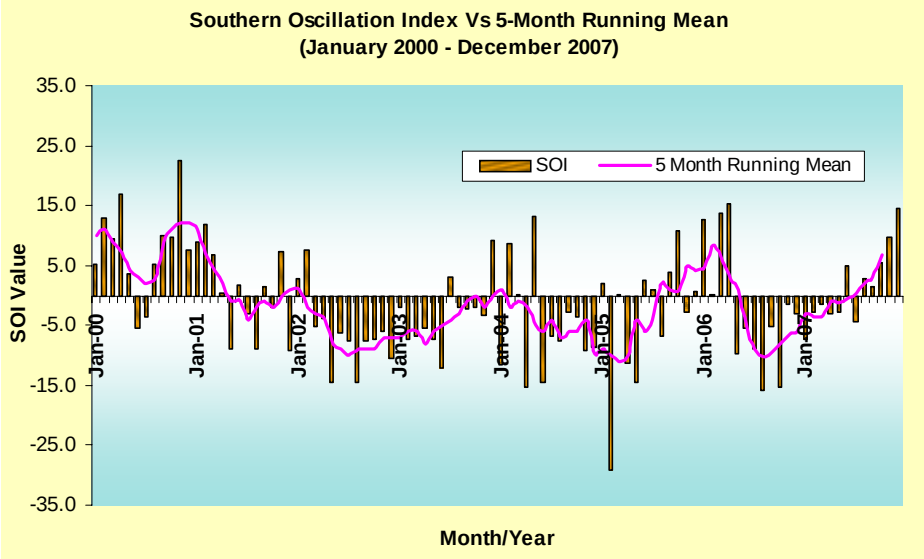
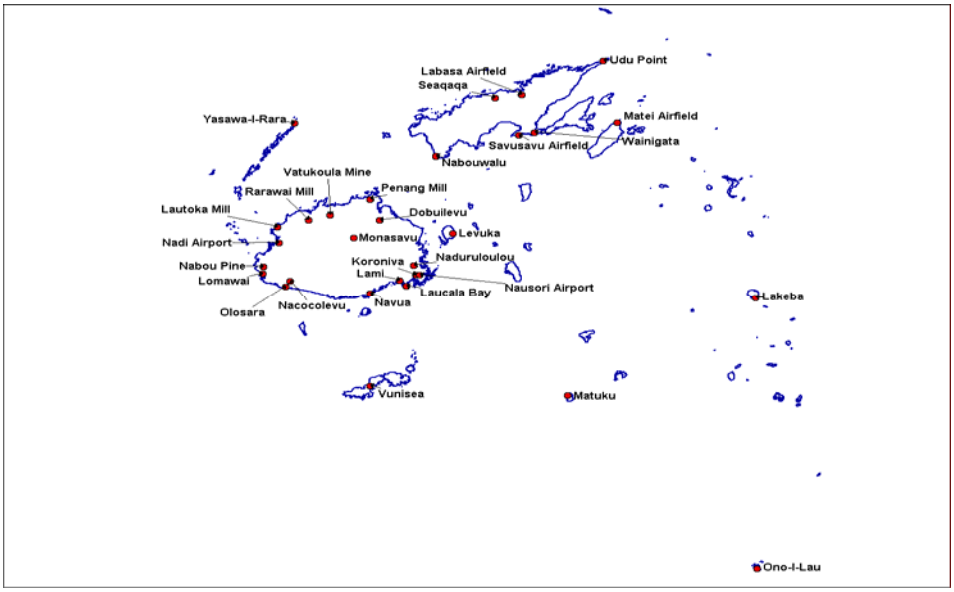


Figure 3. Location of Climate and Rainfall Stations in the Fiji Islands



This summary is prepared as soon as ENSO, climate and oceanographic data is received from recording stations around Fiji and 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 analyses 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.