



Lesotho Meteorological Services

MONTHLY METEOROLOGICAL BULLETIN

MARCH 2008

No.193 (03/2007)

WEATHER HIGHLIGHTS

(a) ***Weather Highlights in February 2008***

(b) ***Outlook for March 2008***

(c) ***Seasonal Outlook (January – March)***

(d) ***El-Nino Update***

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1. WEATHER SITUATION, FEBRUARY 2008

(a) Summary of the weather

Rainfall occurred for more days than long term average number of rainy days for each station in this month with the exception of Qacha's Nek and Mafeteng which both had the lowest of 9 rainy days. However, this rainfall resulted in below average monthly rainfall for most stations as only four stations recorded above average monthly rainfall. This brought a considerable decline in the rainfall patterns of the current rainy season regarding that the country has been receiving above average monthly rainfall since September 2007. In general, temperatures have been slightly warm as they were predominantly normal to above normal countrywide with a significant drop on the 10th & 11th.

Rainfall was generally below average as only Mohales'Hoek, Mokhotlong, Semonkong and Phuthiatsana recorded above average monthly rainfall. The highest monthly rainfall of 134.3mm was registered at Mohales'Hoek followed by Qacha's Nek and Quthing with 119.5mm and 101.1mm respectively. The rest of the places recorded rainfall ranging from 39.7mm at Mafeteng to 98.1mm at Phuthiatsana. Mokhotlong and Semonkong, being some of the stations with above normal rainfall, registered the highest daily rainfall occurrences as they both had 16 rainy days. Mafeteng and Qacha's Nek became the lowest with both 9 rainy days against a long term mean of 10 and 13 rainy days respectively. The highest daily rainfall of 40.0mm was recorded at Qachs'Nek on the 7th. The rest of the stations registered the highest daily rainfall ranging from 10.2mm (at Mejametalana) to 34.5mm (at Mohales' Hoek) *Refer to table 1 for rainfall figures and figure 1 and 2 for distribution maps.*

Slightly warm temperatures were experienced in this month as maximum temperatures were around average by the first half of the month and predominantly above average by the second half. Monthly mean maximum temperatures in the Lowlands were 26.0-26.7°C against a long-term mean of 25.6-27.8°C. In the Highlands monthly mean maximum temperatures were 18.0-24.5°C against a long term mean of 16.5-23.6°C. The highest daily maximum temperature of 30.6°C was registered at Mejametalana in the western Lowlands, on the 22nd followed by Mafeteng and Quthing in the southern Lowlands both with 30.5°C on the 1st and 2nd respectively. The rest of the stations recorded highest daily maximum temperatures in the range of 20.3-29.5°C. There were an equal number of stations with above average and below average monthly mean maximum temperatures in this month, each group accounting for 46% of the stations. The deviations from normal for stations that received above average monthly maximum temperature were 0.1-1.5°C while for stations that received below average monthly mean maximum temperature were 0.4-1.2°C.

Monthly mean minimum temperature were slightly above normal in this month for most stations with the exception of Mohale's Hoek and Mokhotlong which recorded below normal monthly mean minimum temperatures. In the Lowlands monthly mean minimum temperatures were 13.7- 15.0°C against a long term mean of 13.2-14.5°C while in the Highlands they were 6.7-12.6°C against a long term of 6.2-12.2°C. The deviation from average for monthly mean minimum temperature ranged from 0-1.4°C for the country. The 28th was the coldest night for the month as most stations attained their lowest daily minimum temperatures. In the Lowlands the lowest daily minimum temperature of 8.4°C

was recorded at Leribe while in the Highlands Oxbow recorded the lowest daily minimum temperature of 2.5°C.

(b) Weather Synopsis

The surface interior trough remained shallow and mostly confined to the west during this month. There was little moisture fed into the interior of the subcontinent. Tropical disturbances that developed over the southwest Indian Ocean late in January and early February led to considerable amount of moisture from the north whose usual trajectory at this time is towards the southern interior of the subcontinent to be diverted to areas in the east. Isolated evening thundershowers occurred over most areas. Intense thunderstorms were observed at Moshoeshoe I on the 5th and 6th in the early hours of the morning. Most precipitation, which occurred during this period, can be attributed to the development of heat lows (thermal lows) due to intense heating during the day and surface convergence. Low-level moisture advection from the east by the Indian Ocean Anticyclone (IOA) combined with orographic lifting also enhanced rainfall activities.

On the 1st and 2nd, isolated thundershowers occurred in the west due to little moisture convergence ahead of a cold front that was approaching the southern interior from the west. On the 3rd moist tropical air induced by the passage of cold front was fed into the southern interior. Coupled with thermal lows, afternoon surface convergence and orographic lifting, afternoon scattered thundershowers occurred through to the 7th.

The 8th and the 9th saw further advection of low-level moisture by the IOA and convergence of winds, and this led to enhanced rainfall activities countrywide. On the 9th tropical moist air was being fed into the interior of the subcontinent where some areas especially in the north received significant amounts of rainfall. A cold front approached from the west coupled with afternoon convergence, and extended to the upper levels as it traversed over the southern parts of the subcontinent, inducing moist tropical air to be fed into the interior of the subcontinent. This led to widespread rains on the 10th and 11th accompanied by a drop in temperatures.

. On the 12th the cold front progressed eastwards and moisture circulation continued with rainfall. Advection fog was observed in the morning of the 12th burning off by mid-morning. On the 13th there was an afternoon convergence which led to isolated thundershowers especially in the west and in the south. On the 14th tropical moist air was fed into the interior resulting in some areas receiving significant rainfall.

Pre-frontal cloud band resulted in isolated afternoon thundershowers in the west ahead of the cold front. Otherwise, dry air was in circulation on the 15th as a cold front approached from the west. On the 16th a cold front passed south of the subcontinent inducing tropical moist air to be fed into the southern interior of the subcontinent and continued to the 17th. This gave some isolated to scattered thundershowers. On the 18th a cold front brushed over the southern tip of the subcontinent resulting in isolated thundershowers. Low-level moisture advection continued on the 19th and resulted in isolated thundershowers. On the 20th dry air was in circulation resulting in no precipitation.

On the 21st convergence in the southern parts of the subcontinent resulted in moisture flow from the north into those areas where moderate to intense thundershowers resulted. Moisture convergence extended to the northwestern parts on the 22nd resulting in the

continuation on thundershowers. On the 23rd, moist air advection from the Indian Ocean paired with convergence in the south further induced scattered thundershowers in the south areas. On the 24th there was convergence of winds ahead of the deep low which was due to develop and advance southwards the following day. On the 25th widespread rain and thundershowers were observed due to a steep upper level trough associated with a low at the surface sitting over the southern interior. At the same time a cold front was brushing the southern tip of the subcontinent. Tropical air was being fed into the interior of the subcontinent with convergent winds covering our entire area.

On the 26th the atmosphere was still wet and unstable with precipitable water increased. The interior surface low was deepening and progressing further to the South. Moist air continued to be poured into the southern interior resulting in continuous widespread thundershowers. The upper level trough was still deep and progressing slowly to the east. On the 27th the wet-bulb potential temperature dropped with the atmosphere drying. Convergence was located over the eastern parts over our area with dry air circulating to the west. Isolated thundershowers ensued. On the 28th precipitable water indicated a very dry and stable atmosphere with a weak cold front passing far off the south coast. On the 29th dry air was still in circulation resulting in dry, stable atmosphere and settled weather.

2. FEBRUARY 2008 RAINFALL

Table 1: Rainfall Figures, February 2008

STATION NAME	Monthly Total (mm)			Number of Rain Days		Highest 24-Hrs Precipitation (mm)		
	2008	Highest on Record	Normal	2008	Average	2008	Date of Record	Highest on Record
Phuthiatsana	98.1	272.5	97.2	10	10	22.7	26 th	31.9
Butha-Buthe	59.2	383.4	114.1	11	11	15.5	25 th	130.8
Oxbow	89.6	305.4	136.5	15	14	19.0	25 th	100.0
Leribe	64.8	307.8	111.4	13	11	23.5	9 th	118.0
Mafeteng	39.7	352.0	105.5	9	10	15.7	11 th	75.5
Mejametalana	53.4	224.0	98.0	13	11	10.2	26 th	89.6
Moshoeshoe I	84.0	213.5	114.3	13	13	16.0	14 th	97.4
Mohale's Hoek	134.3	326.6	104.0	15	10	34.5	11 th	107.7
Mokhotlong	96.8	176.7	82.2	16	12	15.6	16 th	51.0
Qacha's Nek	119.5	333.5	143.4	9	13	40.0	8 th	78.4
Quthing	101.1	351.5	107.5	15	10	30.6	11 th	112.0
Thaba-Tseka	46.8	278.8	102.9	15	12	11.7	17 th	48.6
Semonkong	94.4	199.0	80.0	16	10	19.6	25 th	59.4

Figure 1: Actual rainfall distribution for February 2008

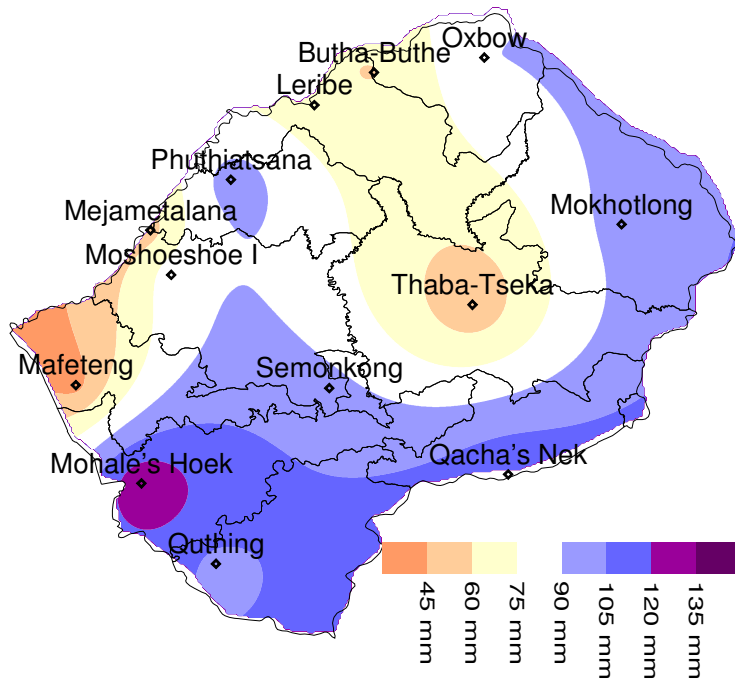
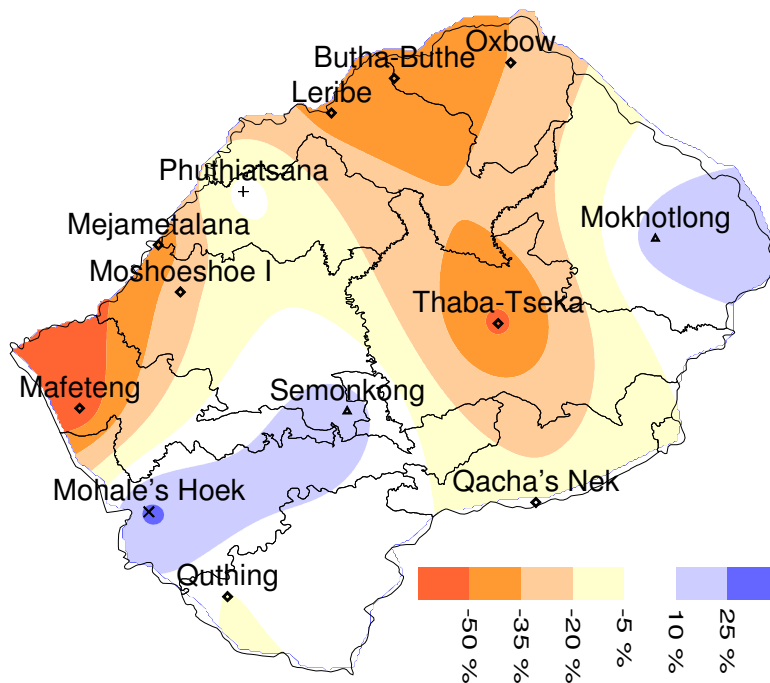


Figure 2: Percentage rainfall departure from normal for February 2008



3. FEBRUARY 2008 TEMPERATURES

Table 2: Maximum Temperatures

STATION NAME	Monthly Mean Maximum Temperature (°C)			Highest 24-Hrs Maximum Temperature (°C)		
	2008	Highest on Record	Long-Term Mean	2008	Date of Record	Highest on Record
Phuthiatsana	26.6	28.2	26.0	30.4	29 th	33.5
Butha-Buthe	26.0	28.9	25.6	29.0	17 th	37.7
Oxbow	18.0	20.2	16.6	20.3	3 rd	24.2
Leribe	26.1	29.7	26.7	29.5	22 nd	35.5
Mafeteng	26.7	30.3	26.7	30.5	1 st	36.4
Mejametalana	27.0	32.7	27.6	30.6	22 nd	36.0
Moshoeshoe I	26.0	29.5	26.4	29.5	16 th	34.6
Mohale's Hoek	26.6	30.3	27.8	31.0	1 st	36.0
Mokhotlong	24.4	26.4	23.1	29.0	3 rd	32.7
Qacha's Nek	24.5	27.2	23.6	29.2	3 rd	34.0
Quthing	26.0	30.3	27.2	30.5	2 nd	34.2
Thaba-Tseka	23.6	25.9	23.5	26.4	20 th & 24 th	31.7
Semonkong	21.5	24.8	22.4	24.0	16 th	30.4

Table 3: Minimum Temperatures

STATION NAME	Monthly Mean Minimum Temperature (°C)			Lowest 24-Hrs Minimum Temperature (°C)		
	2008	Lowest on Record	Long-Term Mean	2008	Date of Record	Lowest on Record
Phuthiatsana	14.7	13.4	13.3	12.1	12 th & 13 th	7.2
Butha-Buthe	13.7	10.1	13.2	8.5	28 th	4.9
Oxbow	6.7	4.5	6.2	2.5	29 th	-1.5
Leribe	14.1	9.8	13.3	8.4	28 th	-0.5
Mafeteng	14.4	10.7	13.6	10.0	10 th	3.0
Mejametalana	14.9	0.5	14.4	9.5	28 th	3.5
Moshoeshoe I	14.5	11.8	14.5	9.9	28 th	3.5
Mohale's Hoek	13.9	11.5	14.1	8.5	28 th	5.5
Mokhotlong	10.8	5.8	11.1	6.5	29 th	2.2
Qacha's Nek	12.6	9.8	12.2	9.4	28 th	3.5
Quthing	15.0	10.4	14.3	10.6	29 th	4.0
Thaba-Tseka	10.8	8.8	10.8	7.1	4 th	0.4
Semonkong	8.6	6.4	8.5	3.2	28 th	-3.0

4. CLIMATE FOR THE MONTH OF MARCH

(a) Summary

The month of March normally experiences warm temperatures with good rainfall. Rainfall varies from the lowest of 74.5mm in the eastern Highlands to 158mm in the northern Highlands, while the rest of the other areas have rainfall of 90-120mm. However monthly rainfall can exceed 250mm in most parts of the country, going even up to nearly 400mm in the northern parts. Daily rainfall can be as high as 90mm in 24 hours. Number of rain days ranges from 9 in the southern Lowlands to 16 days in the northern Highlands.

Mean monthly maximum temperatures are 22-25°C in the Lowlands and 15-21°C in the Highlands. Daily maximum can rise as high as 34°C in the Lowlands and 30°C in the Highlands. Mean monthly minimum range between 11°C and 13°C in the Lowlands and 5-10°C in the Highlands. Daily temperatures can go as low as 0°C in the Lowlands and -5°C in the Highlands. Frost begins to occur on the mountains and can also occur in the Lowlands. Light snowfall can occur over high lying areas.

(b) Statistics for the month

Table 4: Precipitation Statistics for March

Station Name	Mean Rainfall (mm)	Mean Number of Rain Days	Mean Maximum Temperature (°C)	Mean minimum temperature (°C)
Phuthiatsana	102.7	10	22.0	16.4
Botha-Bothe	117.3	10	24.3	11.0
Oxbow	158.7	16	15.8	5.0
Leribe	102.4	10	24.3	11.9
Mafeteng	99.9	9	22.2	12.9
Mejametalana	97.2	10	25.0	12.6
Moshoeshoe I	121.6	12	23.5	12.9
Mohale's Hoek	103.3	9	24.0	12.2
Mokhotlong	74.5	11	21.1	9.6
Qacha's Nek	112.1	11	21.4	11.2
Quthing	111.2	10	24.5	12.0
Thaba-Tseka	84.6	11	20.9	9.9
Semonkong	93.3	10	20.7	6.4

5. WEATHER OUTLOOK, MARCH 2008

(a) General

Weather patterns for March (autumn) still favour good rainfall (active surface interior trough responsible for advection of tropical moist air from the north, moisture advection from the east by the Indian Ocean Anticyclone. The influx of moist airmass from the Congo Basin is expected to continue. Occasional intrusion and passage of cold fronts in the southern interior will also enhance rainfall activities. However the frequency of tropical disturbances development over the South West Indian Ocean will also determine rainfall activities over our area. Temperatures will be average but are expected to cool slightly between the 10th and the 21st.

(b) Weather forecast for the period 1st –10th

Mostly partly cloudy and warm to hot with isolated to scattered rain showers and thundershowers.

(c) Weather forecast for the rest of the month 11th - 31st

Mainly isolated rain with thundershowers is still anticipated becoming scattered at times. It will remain warm but cool at times.

(d) Seasonal outlook (January – March 2008)

Rainfall is expected to be normal to below normal and temperatures to remain average to above average.

6. EL-NINO UPDATE

Atmospheric and oceanic conditions during February 2008 continued to reflect a strong La Niña. These oceanic and atmospheric conditions are similar to those accompanying the last strong La Niña episode in 1998-2000. Recent dynamical and statistical SST forecasts for the Niño 3.4 region continue to indicate a moderate-to-strong La Niña through March 2008, and a weaker La Niña through April-May-June 2008. The expected La Niña conditions impacts during March-May 2008 include a continuation of above-average precipitation over the country.