BOTSWANA ENVIRONMENT STATISTICS
CLIMATE DIGEST

SEPTEMBER 2020

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STATISTICS BOTSWANA

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February 2021

PREFACE

This report is the second edition in the biannual climate statistics digest for the year 2020/21. The report represents Statistics Botswana's continued progress towards the focused monitoring of climate statistics, and the availing of data for climate trends analysis. The indicators covered in this report are guided in part by the United Nations Framework for the Development of Environment Statistics (UNFDES).

Climate statistics are useful for trends analysis and review of climate related performances in human livelihoods, health, social and economic activities. All aspects of life are affected directly by climate, which is the core determining factor of how people and other organisms live and interact on planet earth. Climate determines food availability and the habitability of regions and environments. Extreme climate events are recorded and monitored for better understanding and planning to ensure minimum casualties and disturbances to lives, as well as for adaptation strategies to climate change phenomena. Statistics Botswana strives to facilitate informed planning and decision making through trends analysis and climate statistics reporting in these submissions.

I would like to extend my gratitude and appreciation to stakeholders and data providers, particularly the Department of Meteorological Services and Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL) whose contributions were invaluable in the production of this Digest.

For more information and further enquiries, contact the Directorate of Stakeholder Relations at 3671300. All Statistics Botswana outputs/publications are available on the website at **www.statsbots.org.bw** and at the Statistics Botswana Resource Centre (Head-Office, Gaborone).

Dr. Burton S. Mguni
Statistician General
February 2021

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EXECUTIVE SUMMARY

During the period under study, from April to September 2020, Shakawe received the highest total rainfall in a month, recording 94.0 mm, followed by Goodhope recording 66.0 mm and Werda recording 46.2 mm, all in April 2020. The highest rainfall recorded in a 24 hour period is that for Shakawe at 32.0 mm followed by Goodhope at 29.0 mm, both in April 2020, and Werda at 20.2 mm, in September 2020. The wettest area was Shakawe, recording a total of 122.6 mm followed by Werda recording 74.4 mm and Goodhope recording 68.6 mm over the six months period.

The lowest mean monthly minimum air temperature is that for Werda at 0.3 °C and Tsabong at 0.7 °C both recorded in July 2020, followed by Werda at 0.9 °C recorded in June 2020. During the period April to September 2020, the lowest minimum temperatures were all recorded in Werda at -6.0 °C in July and in August, and -5.9 °C in May 2020.

The highest mean monthly maximum temperature recorded during the period April to September 2020 was for Tubu at 36.0 °C, followed by Mababe at 35.2 °C and Shakawe at 35.1°C all in September 2020. The highest maximum temperature for the period was recorded for Tubu at 42.0 °C followed by 41.9 °C also for Tubu, and Mababe at 41.0 °C, all recorded in September 2020.

During the period under study, winds were strongest in Goodhope, with the highest mean monthly maximum wind speed of 7.5 m/s during September 2020, followed by Mababe at 6.9 m/s in September 2020 and Goodhope at 6.8 m/s in August 2020. Shakawe had the lowest mean monthly maximum wind speed at 3.7 m/s in June 2020 followed by Werda and Shakawe both recording the mean monthly maximum wind speed of 3.8 m/s in May 2020.

The highest wind speed recorded for a 24 hour period during the period under study was 13.7 m/s for Tsabong and Goodhope, followed by 13.3 m/s for Goodhope, all recorded in September 2020. These wind speed recordings fall in the category of a strong breeze on the Beaufort scale.

The highest predominance of wind direction is that of Baines Drift where 43.7 percent of the winds were from the east north east, followed by Tubu where 36.3 percent of the winds were from the east, and Sowa where 30.6 percent of the winds were from the east south east.

Nationally, winds were predominantly from the east north east 20.9 percent of the days in September 2020, followed by predominance of 18.2 percent from the east south east in May 2020, and 18.1 percent from the east south east in July 2020.

The highest predominance by maximum wind speed is that for Shakawe and Baines Drift with 45.4 percent of the days recording strongest winds blowing from the south south east for Shakawe and east north east for Baines Drift, followed by Sowa with 42.6 percent of the days recording strongest winds blowing from the east south east.

During the study period, the strongest winds for each month for the country blew mainly from the east north east at 19.4 percent of the days in September 2020, followed by east south east at 18.4 percent of the days in July 2020 and east south east at 17.6 percent of the days, in May 2020.

Overall for the period, the strongest winds blew from the east north east at 14.4 percent of the time, followed by the east at 13.6 percent, and the east south east at 13.2 percent of the time.

1. INTRODUCTION

Climate is important to human livelihoods because it influences human life directly through wellbeing and health, and indirectly through human activities such as economic or agricultural practices. Climate is influenced by the El Nino and La Nina phases, which are a result of variations in oceanic temperatures.

Botswana is climatically classified as arid to semi-arid, and is drought prone, with highly erratic rainfall that ranges from 250mm in the southwest to around 650mm in the north. This report covers the period of April to September 2020, which was characterised by low rainfall and cold temperatures.

2. RAINFALL

The period under study is the dry season and is characterised by cold temperatures. Rainfall is very low during this period since it is outside the normal rainfall season. The normal rainfall season in Botswana is from October to March.

2.1. Monthly Rainfall

Table 1 shows the total monthly rainfall in millimetres (mm) for the stations with data. The period under review is the dry cold season with low rains marking the end of the rainy season. Therefore, the months from May to August normally have insignificant amounts of rainfall. Table 1 shows the total monthly rainfall in millimetres (mm) for the stations with data.

Table 1: Total monthly Precipitation (mm) April to September 2020

	April	May	June	July	August	September
Goodhope	66.0	0.0	1.2	0.0	0.2	1.2
Mahalapye	28.8	0.0	0.0	0.2	0.0	6.6
Werda	46.2	0.0	0.0	0.0	0.0	28.2
Pandamatenga	17.6	0.0	0.2	0.0	0.2	0.6
Lephephe	31.4	0.0	0.0	0.0	0.0	7.2
Tsabong	14.8	0.0	0.0	0.2	0.0	6.6
Tshane	0.0	0.0	0.0	0.0	0.0	0.0
Baines Drift	16.8	0.0	0.2	0.0	2.8	13.6
Tubu	45.4	0.0	0.0	0.0	0.0	0.0
Ghanzi	42.6	0.0	0.0	0.0	1.2	1.2
Shakawe	94.0	0.0	0.0	0.0	28.4	0.2
Mababe	0.0	0.0	0.0	0.0	0.0	0.0
Sowa	0.0	0.0	0.2	0.0	0.0	0.0

Source: Department of Meteorological Services and SASSCAL

In April 2020, Shakawe received the highest total rainfall in a month, recording 94.0 mm followed by Goodhope recording 66.0 mm and Werda recording 46.2 mm.

2.2. Rainfall Extremes

Table 2 shows the highest ten (10) daily rainfall recorded in a 24 hour period by station. For the study period, the highest rainfall recorded in a 24 hour period is that for Shakawe at 32.0 mm followed by Goodhope at 29.0 mm, both in April 2020, and Werda at 20.2 mm, in September 2020.

Table 2: Highest Ten Stations Rainfall (mm) Recorded In 24 Hours April to September 2020

Station	Rainfall (mm)	Month
Shakawe	32.0	April
Goodhope	29.0	April
Werda	20.2	September
Werda	19.8	April
Shakawe	19.2	August
Ghanzi	19.2	April
Ghanzi	18.8	April
Goodhope	17.2	April
Pandamatenga	16.8	April
Tubu	16.2	April

Source: Department of Meteorological Services and SASSCAL

Table 3 shows the total rainfall by station during the dry season from April to September 2020. The wettest area was Shakawe, recording a total of 122.6 mm followed by Werda recording 74.4 mm and Goodhope recording 68.6 mm over the six months period.

Table 3: Total Rainfall (mm) By Station April to September 2020

Station	Total Rainfall (mm)
Shakawe	**122.6**
Werda	**74.4**
Goodhope	**68.6**
Tubu	**45.4**
Ghanzi	**45.0**
Lephephe	**38.6**
Mahalapye	**35.6**
Baines Drift	**33.4**
Tsabong	**21.6**
Pandamatenga	**18.6**
Sowa	**0.2**
Mababe	**0.0**
Tshane	**0.0**

Source: Department of Meteorological Services and SASSCAL

3. TEMPERATURES

Botswana has a high diurnal temperature range and this is normal for semi-arid and arid climates. The temperatures vary spatially, with extremes common in the north-eastern and the south-western regions of the country.

3.1. Minimum Air Temperatures

Table 4 shows the mean monthly minimum air temperatures in degrees Celsius (°C). The period April to September is characterised by Botswana's lowest temperatures, mostly recorded during the months of June and July.

The coolest mean monthly minimum air temperature during the period April to September 2020 was recorded in the south-western parts of the country, where the diurnal temperature range is highest.

Table 4: Mean Monthly Minimum Air Temperatures (Degrees Celsius) April to September 2020

	April	May	June	July	August	September
Baines Drift	16.4	10.3	7.8	7.5	11.4	15.2
Ghanzi	14.5	6.7	3.5	2.8	7.4	13.2
Goodhope	13.1	7.7	4.1	3.6	6.5	12.1
Lephephe	13.8	6.9	3.5	2.3	6.7	13.1
Mababe	14.6	8.7	6.6	5.7	10.2	17.2
Mahalapye	15.2	8.8	5.9	4.7	9.3	14.5
Pandamatenga	15.7	11.6	10.2	8.5	11.7	16.9
Shakawe	-	-	-	-	-	14.7
Sowa	17.1	10.7	8.8	7.2	12.1	16.7
Tsabong	13.5	5.0	1.4	0.7	2.6	10.9
Tshane	13.6	6.9	3.6	2.7	5.5	12.2
Tubu	16.7	10.3	8.5	7.5	11.6	20.0
Werda	11.9	3.8	0.9	0.3	2.3	11.1

Source: Department of Meteorological Services and SASSCAL
(-) Dash shows no data

The lowest mean monthly minimum air temperature is that for Werda at 0.3 °C and Tsabong at 0.7 °C both recorded in July 2020, followed by Werda at 0.9 °C recorded in June 2020.

3.2. Minimum Temperature Extremes

Table 5 shows the lowest minimum air temperatures recorded for the stations during the period April to September 2020. The lowest minimum temperatures were all recorded in Werda at -6.0 °C in July and August, and -5.9 °C in May 2020.

Table 5: Lowest minimum temperatures recorded (degrees Celsius) April to September 2020

Temperature (°C)	Month	Station
-6.0	July	Werda
-6.0	August	Werda
-5.9	May	Werda

Source: Department of Meteorological Services and SASSCAL

3.3. Maximum Air Temperatures

Table 6 shows the mean monthly maximum temperatures for the period April to September 2020. This period is mostly cold and dry. The maximum air temperatures show the warmest parts of Botswana during the cold and dry season.

Table 6: Mean monthly maximum air temperatures (degrees Celsius) April to September 2020

Station	April	May	June	July	August	September
Baines Drift	29.5	27.1	23.6	23.1	26.1	28.2
Ghanzi	29.4	27.1	23.4	23.4	27.1	32.0
Goodhope	25.0	23.7	19.8	20.7	23.1	27.4
Lephephe	29.2	26.5	22.7	22.7	27.0	30.3
Mababe	31.1	28.7	25.7	25.6	29.5	35.2
Mahalapye	27.9	25.6	21.9	21.7	25.5	28.8
Pandamatenga	30.4	27.9	24.8	24.5	28.6	31.9
Shakawe	-	-	-	-	-	35.1
Sowa	31.7	28.4	25.0	24.9	28.7	32.9
Tsabong	29.2	26.7	22.4	23.0	23.5	30.2
Tshane	27.8	25.9	22.4	22.7	24.7	30.3
Tubu	30.2	27.9	24.6	24.1	28.6	36.0
Werda	27.6	26.3	22.4	23.0	25.0	30.5

Source: Department of Meteorological Services and SASSCAL
Dash (-) shows no data

The highest mean monthly maximum temperature recorded during the period April to September 2020 was for Tubu at 36.0 °C, followed by Mababe at 35.2 °C and Shakawe at 35.1°C all recorded in September 2020.

3.4. Maximum Temperature Extremes

Table 7 shows the highest maximum air temperatures recorded for the stations, during the period April to September 2020. The highest maximum temperature for the period was recorded for Tubu at 42.0 °C followed by 41.9 °C also for Tubu, and Mababe at 41.0 °C, all recorded in September 2020.

Table 7: Highest maximum temperatures recorded (degrees Celsius) April to September 2020

Speed m/s	*Beaufort classification	Month
42.0	September	Tubu
41.9	September	Tubu
41.0	September	Mababe

Source: Department of Meteorological Services and SASSCAL

4. WIND SPEED AND DIRECTION

Wind speed is measured in metres per second (m/s) while wind direction is expressed in degrees. Wind direction is expressed in terms of the direction that the wind is blowing from. For example, northerly winds blow from the north to the south.

4.1. Monthly Maximum Wind Speed

Table 8 shows the mean monthly maximum wind speed for the period April to September 2020.

Table 8: Mean monthly maximum wind speed (m/s) April to September 2020

Stations	April	May	June	July	August	September
Baines Drift	4.6	4.2	4.4	4.7	4.9	5.7
Ghanzi	5.1	5.1	4.9	5.8	5.7	6.2
Goodhope	6.2	4.5	4.9	5.8	6.8	7.5
Lephephe	5.5	4.8	5.1	6.0	6.1	6.3
Mababe	4.7	5.1	4.7	6.0	5.8	6.9
Mahalapye	5.2	4.4	4.7	5.4	5.4	6.2
Pandamatenga	4.4	4.5	4.6	5.1	5.1	5.9
Shakawe	4.1	3.8	3.7	4.2	4.0	4.4
Sowa	4.7	4.5	4.5	5.2	5.3	5.9
Tsabong	5.7	4.1	4.8	5.2	5.4	6.3
Tshane	4.7	3.9	4.2	4.9	5.4	5.4
Tubu	4.6	5.1	4.6	5.3	5.2	5.8
Werda	4.5	3.8	4.2	4.6	5.0	5.5

Source: Department of Meteorological Services and SASSCAL

4.2. Highest Wind Speed Recorded

Table 9 shows the highest wind speed recorded during the period April to September 2020.

The highest wind speed recorded for a 24 hour period was 13.7 m/s for Tsabong and Goodhope, followed by 13.3 m/s for Goodhope, all recorded in September 2020. These wind speed recordings fall in the category of a strong breeze on the Beaufort scale. (See Table 14 in appendix)

Table 9: Maximum wind speed (m/s) April to September 2020

Speed m/s	*Beaufort classification	Month	Station
13.7	Strong Breeze	September	Tsabong
13.7	Strong Breeze	September	Goodhope
13.3	Strong Breeze	September	Goodhope

*See table 14 in appendix
Source: Department of Meteorological Services and SASSCAL

4.3. Wind Direction

Botswana's winds are predominantly easterly to north easterly except for the south west of the country where northerly winds are dominant. (Department of Meteorological Services: 2003).

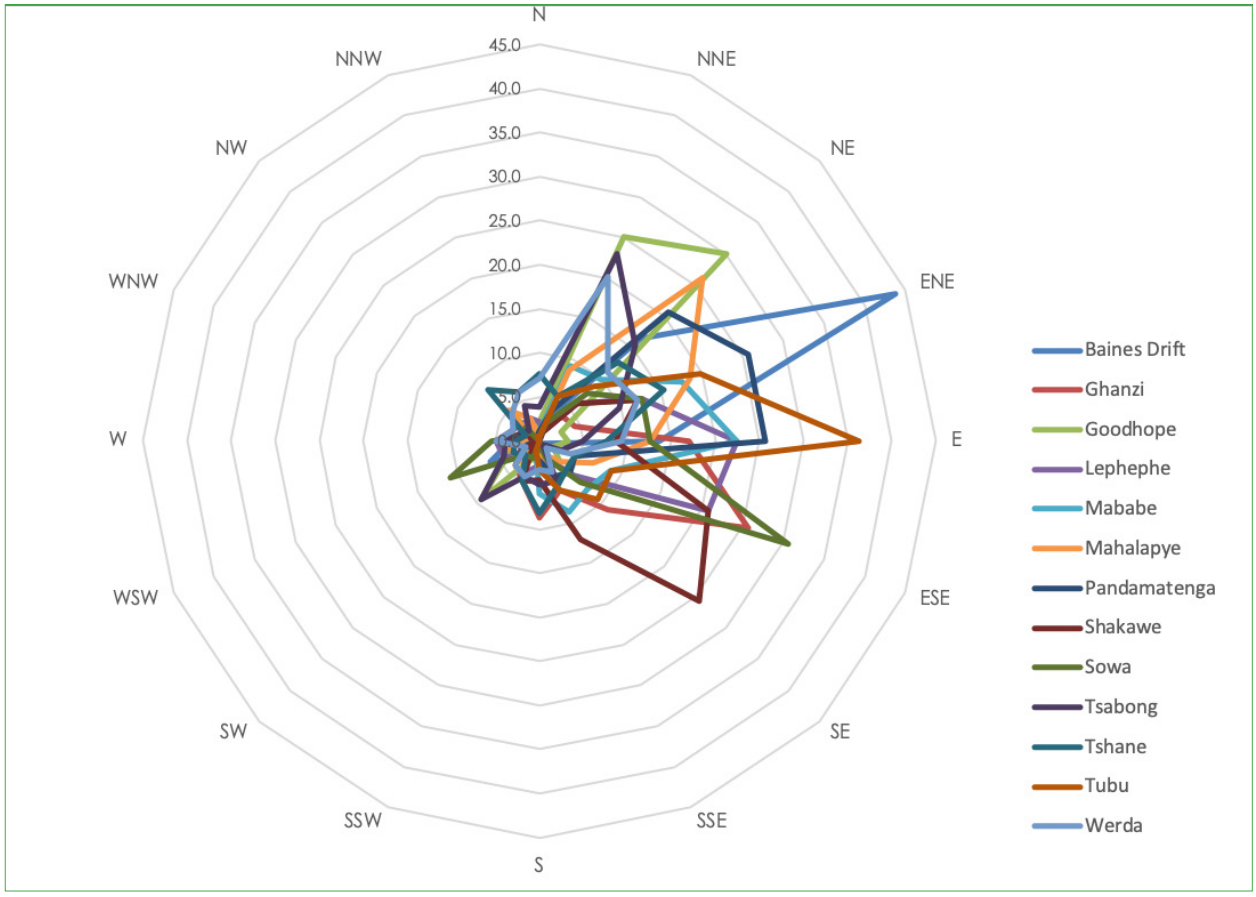
Table 10 shows the stations' predominant wind direction as a percentage of the days recorded between April and September 2020. The highest predominance is that of Baines Drift where 43.7 percent of the winds were from the east north east, followed by Tubu where 36.3 percent of the winds were from the east, and Sowa where 30.6 of the winds were from the east south east. **Figure 1** shows this graphically.

Table 10: Percentage predominant wind direction by station April to September 2020

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
Baines Drift	1.6	3.3	16.4	43.7	13.7	0.5	0.5	1.1	0.0	1.6	2.2	6.0	3.3	2.2	2.2	1.6
Ghanzi	2.2	2.7	3.8	4.4	16.9	25.7	10.9	6.0	8.7	4.9	3.8	2.2	2.7	0.5	2.7	1.6
Goodhope	2.2	25.1	30.1	2.7	3.3	1.6	3.3	2.7	2.7	2.2	9.3	3.8	3.3	3.3	3.8	0.5
Lephephe	2.2	1.1	6.0	12.6	22.4	20.8	5.5	2.2	2.7	3.8	2.7	4.4	4.9	3.3	2.7	2.7
Mababe	1.1	9.3	9.8	17.5	22.4	8.7	7.7	8.7	6.0	1.1	2.2	1.1	1.1	1.6	1.1	0.5
Mahalapye	0.5	8.7	26.2	18.6	12.6	6.6	3.3	1.6	2.7	0.5	3.3	3.3	3.8	0.5	4.9	2.7
Pandamatenga	1.1	3.8	20.8	25.7	25.7	4.4	4.9	4.4	2.2	1.6	0.5	2.2	0.5	1.1	0.5	0.5
Shakawe	0.0	1.1	6.0	12.0	8.7	20.8	25.7	12.0	4.4	4.9	1.1	1.1	0.0	1.1	0.5	0.5
Sowa	0.5	2.2	7.7	12.6	12.6	30.6	6.6	2.2	0.5	2.2	2.2	10.9	5.5	1.6	2.2	0.0
Tsabong	3.8	23.0	15.3	9.8	4.9	2.7	0.5	4.9	4.9	4.4	9.3	4.4	3.8	2.2	1.6	4.4
Tshane	7.7	5.5	12.6	15.3	7.7	4.4	4.4	5.5	8.2	4.9	2.2	3.3	2.7	1.6	8.2	6.0
Tubu	0.5	5.5	8.8	19.8	36.3	8.8	9.3	6.0	3.3	1.1	0.0	0.0	0.0	0.0	0.0	0.5
Werda	7.1	20.2	10.9	12.0	9.3	3.8	1.1	3.8	3.3	4.4	3.8	1.6	4.9	3.3	4.4	6.0

Source: Department of Meteorological Services and SASSCAL

Figure 1: Percentage predominant wind direction by station April to September 2020



4.4. National wind direction

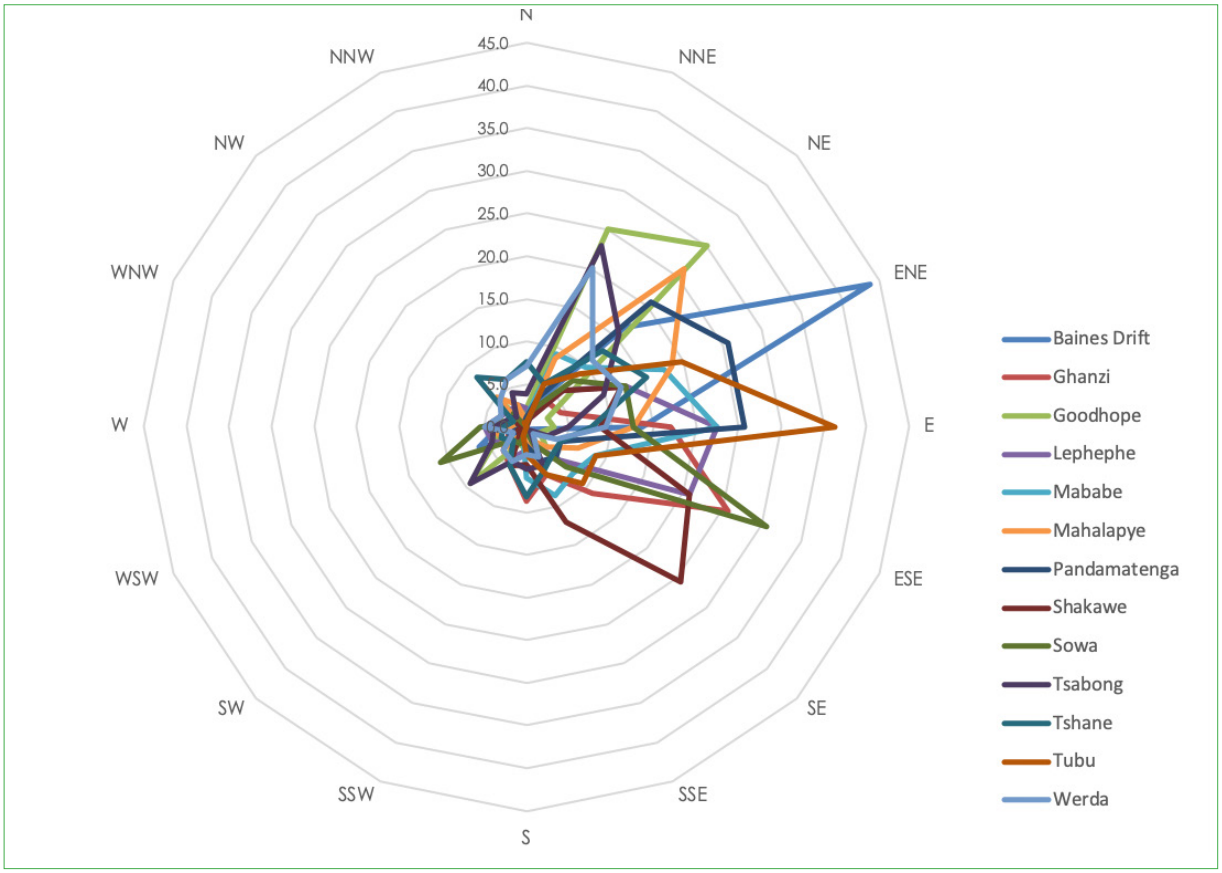
Table 11 shows the country's wind direction for the period April to September 2020 as a percentage of the total number of days for that period. Nationally, winds were predominantly from the east north east 20.9 percent of the days in September 2020, followed by a predominance of 18.2 percent from the east south east in May 2020, and 18.1 percent from the east south east in July 2020. Figure 2 shows the country's predominant winds graphically.

Table 11: National wind direction by percentage of days April to September 2020

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
April	3.7	10.2	11.7	16.4	13.4	10.4	7.9	6.2	3.0	2.7	3.0	3.0	2.7	1.7	2.7	1.2	**100.0**
May	2.8	7.9	9.2	11.0	16.2	18.2	6.9	8.5	3.1	2.1	3.8	2.8	2.6	1.3	2.6	1.0	**100.0**
June	1.8	5.9	13.1	14.2	12.9	16.0	11.1	9.8	2.6	1.5	3.4	2.8	2.3	0.8	0.8	1.0	**100.0**
July	1.7	6.0	11.4	12.2	16.1	18.1	11.9	7.9	3.7	2.7	2.0	1.5	1.2	0.7	0.7	2.0	**100.0**
August	4.8	7.2	10.9	13.3	9.0	6.4	7.2	5.0	7.7	7.2	5.3	3.4	2.1	2.9	2.1	5.6	**100.0**
September	2.8	9.3	14.2	20.9	15.5	11.1	4.1	4.9	3.4	5.2	2.8	1.6	1.0	1.0	0.8	1.3	**100.0**

Source: Department of Meteorological Services and SASSCAL

Figure 2: National predominant wind direction (percentage days) April to September 2020



4.5. Maximum wind speed by direction

Maximum wind speed by direction is an indication of the direction of the maximum wind speed recorded. It indicates the direction of the strongest winds for the stations and the country.

Table 12 and **Figure 3** show the percentage maximum wind speed directions for the stations, taken during the period April to September 2020. It is a percentage of the number of days the strongest winds blew in the direction.

Table 12: Percentage maximum wind speed direction by station April to September 2020

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Mababe	1.6	3.8	6.0	8.2	16.4	27.9	14.2	9.3	5.5	1.1	0.5	1.1	2.7	0.5	0.5	0.5	**100.0**
Mahalapye	7.1	13.1	32.2	20.8	1.1	0.5	0.0	0.0	1.1	0.5	2.7	4.4	4.9	2.7	4.4	4.4	**100.0**
Pandamatenga	0.5	2.7	1.6	21.3	35.0	18.6	6.6	4.4	4.4	0.5	1.1	0.5	0.5	1.1	0.5	0.5	**100.0**
Shakawe	1.6	3.3	2.2	4.9	4.9	6.6	18.6	45.4	8.2	0.5	1.1	1.1	0.5	0.0	0.5	0.5	**100.0**
Sowa	0.5	1.1	4.4	6.6	12.6	42.6	14.8	3.3	4.4	4.4	1.1	1.6	1.1	1.1	0.5	0.0	**100.0**
Tsabong	4.9	16.9	27.9	6.0	3.8	1.6	3.8	0.5	2.2	8.2	11.5	4.4	2.7	1.6	1.1	2.7	**100.0**
Tshane	3.8	10.4	18.6	17.5	7.7	3.8	3.3	3.8	8.7	7.1	2.7	0.0	1.6	2.7	3.3	4.9	**100.0**
Tubu	1.1	1.1	5.5	10.4	20.3	28.6	17.0	8.8	2.2	1.1	0.5	1.1	0.5	0.0	0.0	1.6	**100.0**
Werda	4.4	14.8	15.8	16.9	10.9	7.7	2.2	3.3	3.8	6.6	3.8	1.1	1.1	3.3	2.2	2.2	**100.0**
Ghanzi	2.2	4.9	4.9	7.1	7.7	19.7	18.6	7.1	2.7	8.7	7.1	3.3	2.7	0.5	1.6	1.1	**100.0**
Baines Drift	2.7	1.1	6.6	45.4	21.9	1.6	0.5	1.6	0.5	1.1	3.8	6.0	4.9	1.1	0.5	0.5	**100.0**
Lephephe	2.2	2.2	1.6	12.6	35.0	13.7	4.4	0.5	2.2	3.3	3.8	6.6	3.3	3.3	3.3	2.2	**100.0**
Goodhope	4.9	25.1	24.6	11.5	2.2	0.5	2.7	3.8	4.9	3.3	4.4	2.2	0.0	1.1	3.3	5.5	**100.0**

Source: Department of Meteorological Services and SASSCAL

The highest predominance by maximum wind speed is that for Shakawe and Baines Drift with 45.4 percent of the days recording strongest winds blowing from south south east for Shakawe and east north east for Baines Drift, followed by Sowa with 42.6 percent of the days recording strongest winds blowing from the east south east.

Figure 3: Percentage maximum wind speed direction by station April to September 2020

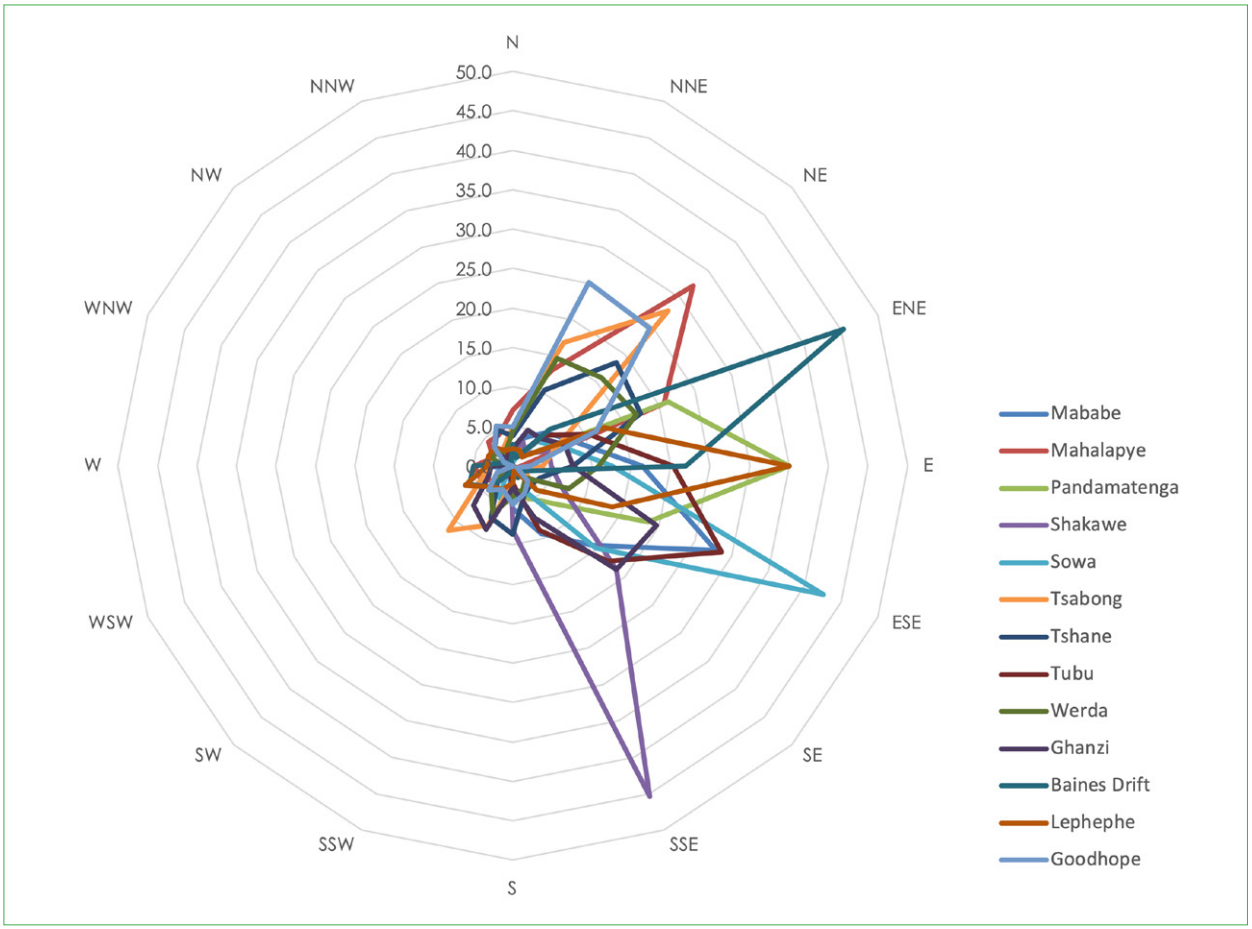


Table 13 and Figure 4 show the maximum wind speed directions for the country as a percentage of the days recordings were taken by month, for the period April to September 2020.

Table 13: National percentage maximum wind speed direction April to September 2020

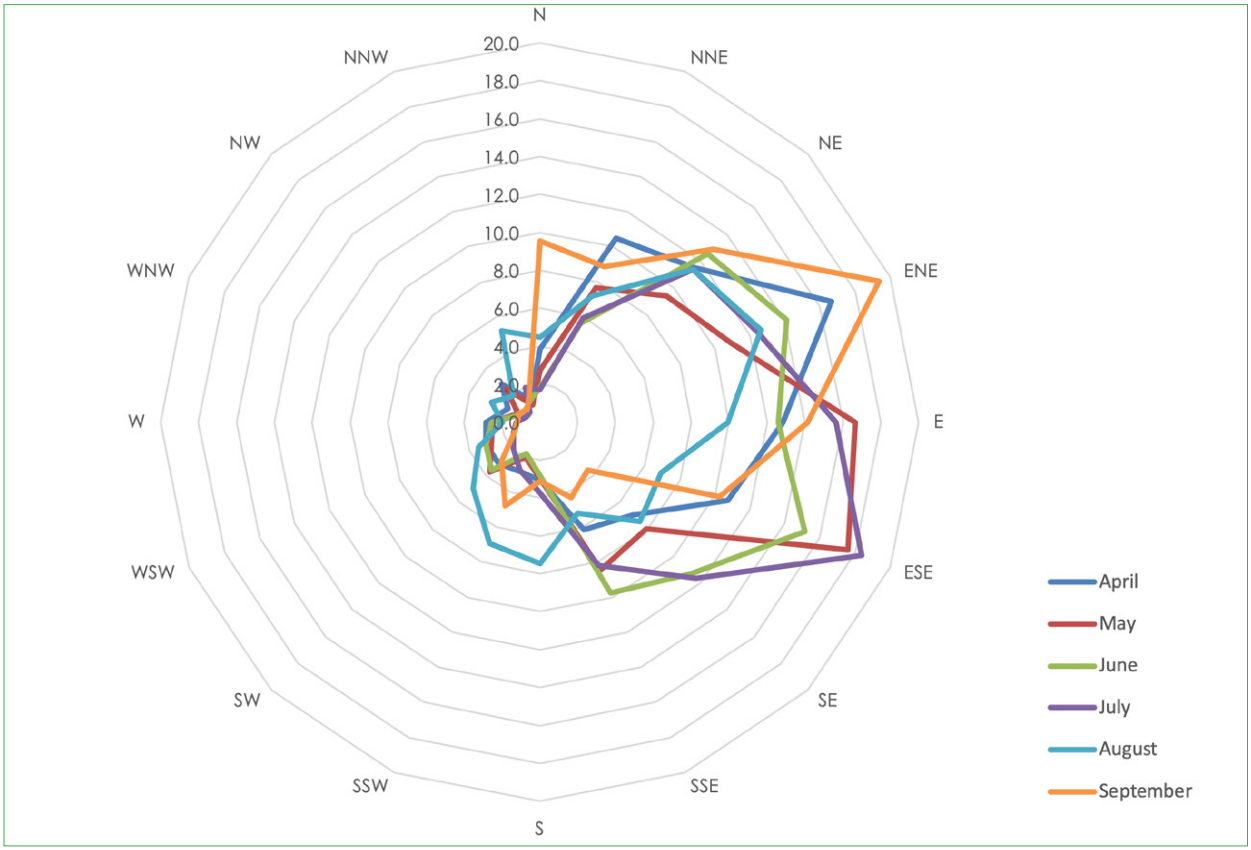
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
April	3.8	10.5	11.5	16.7	12.8	10.8	6.9	6.2	3.1	2.8	3.1	3.1	2.8	1.8	2.8	1.3	**100.0**
May	2.7	7.7	9.4	10.9	16.6	17.6	7.9	8.4	3.0	2.0	3.7	2.7	2.5	1.2	2.5	1.0	**100.0**
June	1.8	5.6	12.6	14.1	12.6	15.1	11.3	9.7	2.8	1.8	3.6	3.1	2.6	1.0	1.0	1.3	**100.0**
July	1.7	6.0	11.4	12.4	15.6	18.4	11.7	8.2	3.7	2.7	2.0	1.5	1.2	0.7	0.7	2.0	**100.0**
August	4.5	7.2	11.4	12.7	9.9	6.9	7.4	5.2	7.4	6.9	5.0	3.5	2.0	2.7	2.0	5.2	**100.0**
September	9.6	8.9	12.9	19.4	14.1	10.3	3.6	4.3	3.1	4.8	2.9	1.4	1.2	1.2	1.0	1.4	**100.0**
Overall	4.1	7.6	11.5	14.4	13.6	13.2	8.1	7.0	3.9	3.5	3.4	2.5	2.0	1.5	1.7	2.0	**100.0**

Source: Department of Meteorological Services and SASSCAL

During the study period, the strongest winds for each month for the country blew mainly from the east north east at 19.4 percent of the days in September 2020, followed by east south east at 18.4 percent of the days in July 2020 and east south east at 17.6 percent of the days, in May 2020.

Overall for the period, the strongest winds blew from the east north east at 14.4 percent of the time, followed by the east at 13.6 percent, and the east south east at 13.2 percent of the time.

Figure 4: National percentage maximum wind speed direction April to September 2020

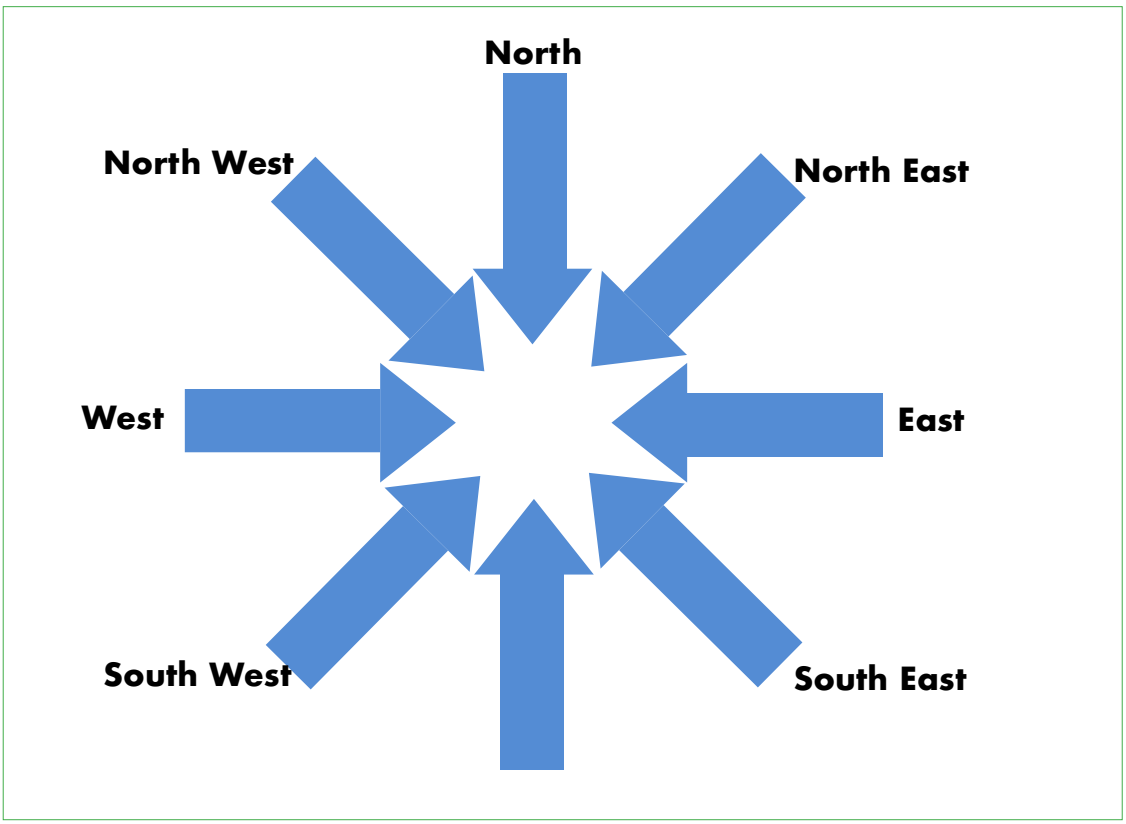


5. APPENDIX

Table 14: Wind Scale

m/s	Km/h	Beaufort scale	Label	Effects
0 - 0.2	1	0	Calm	Calm. Smoke rises vertically.
0.3-1.5	1-5	1	Light Air	Wind motion visible in smoke.
1.6-3.3	6-11	2	Light Breeze	Wind felt on exposed skin. Leaves rustle.
3.4-5.4	12-19	3	Gentle Breeze	Leaves and smaller twigs in constant motion.
5.5-7.9	20-28	4	Moderate Breeze	Dust and loose paper raised. Small branches begin to move.
8.0-10.7	29-38	5	Fresh Breeze	Branches of a moderate size move. Small trees begin to sway.
10.8-13.8	39-49	6	Strong Breeze	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic garbage cans tip over.
13.9-17.1	50-61	7	Near Gale	Whole trees in motion. Effort needed to walk against the wind. Swaying of skyscrapers may be felt, especially by people on upper floors.
17.2-20.7	62-74	8	Gale	Twigs broken from trees. Cars veer on road.
20.8-24.4	75-88	9	Severe Gale	Larger branches break off trees, and some small trees blow over. Construction/ temporary signs and barricades blow over. Damage to circus tents and canopies.
24.5-28.4	89-102	10	Storm	Trees are broken off or uprooted, saplings bent and deformed, poorly attached asphalt shingles and shingles in poor condition peel off roofs.
28.5-32.6	103-117	11	Violent Storm	Widespread vegetation damage. More damage to most roofing surfaces, asphalt tiles that have curled up and/or fractured due to age may break away completely.
>32.7	>118	12	Hurricane	Considerable and widespread damage to vegetation, a few windows broken, structural damage to mobile homes and poorly constructed sheds and barns. Debris may be hurled about.

Figure 5: Winds Direction illustration



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