BOTSWANA ENVIRONMENT STATISTICS CLIMATE DIGEST

September 2021

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STATISTICS BOTSWANA

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Preface

This report is the second edition in the biannual climate statistics digest for the year 2021/22. 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.

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
January 2022

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EXECUTIVE SUMMARY

In the review period April to September 2021, Goodhope received the highest total rainfall in a month, recording 35.0 mm in April 2021, followed by Tsabong at 31.2 mm, also in April 2021 and Werda at 23.8 mm in September 2021. For the study period, the highest rainfall recorded in a 24 hour period was that for Tsabong at 28.8 mm in April 2021, followed by Werda at 23.8 mm, in September 2021, and Goodhope at 13.8 mm, in April 2021. The wettest area was Goodhope, recording a total of 65.4 mm followed by Werda at 49.6 mm and Tsabong 40.4 mm, over the six months period.

The lowest mean monthly minimum air temperature was that for Werda at -0.1°C and Tsabong at 0.0°C both recorded in July 2021, followed by Tshane at 3.1 °C, also recorded in July 2021. The lowest minimum temperature of -9.7 °C was recorded at Werda, followed by -8.4 °C still in Werda and lastly -7.70C recorded in Tsabong, all in July 2021.

The highest mean monthly maximum temperature during the period April to September 2021 was for Tubu at 38.8 °C followed by Mababe at 36.7 °C in September 2021 and Tubu at 34.7°C in August 2021. The highest maximum temperature for the period was recorded at 42.3 °C, followed by 41.7 °C, and 41.5 °C all for Tubu in September 2021.

During this period, winds were strongest in Goodhope, with the highest mean monthly maximum wind speed of 7.8 m/s and 7.0 m/s during September and August 2021 respectively, followed by Tsabong at 6.8 m/s in September 2021. Baines Drift had the lowest mean monthly maximum wind speed at 3.8 m/s and 3.9 m/s in June and May 2021 respectively, followed by Werda at 4.0 m/s in April 2021. The highest wind speed recorded for a 24 hour period was 13.5 m/s, followed by 13.3 m/s in August 2021 and 12.3 m/s in September 2021, all for Goodhope.

During the period under study the highest predominance of wind direction was that of Baines Drift where 51.4 percent of the winds were from the east north east, followed by Pandamatenga where 39.1 percent of the winds were from the east, and Sowa where 33.3 percent of the winds were from the east south east. Nationally, winds were predominantly from the east north east 22.3 percent of the days in August 2021, followed by a predominance of 20.0 percent from the north east in September 2021, and 19.4 percent from the east north east and the east south east in April and in September 2021.

The highest predominance of wind direction by maximum wind speed was that for Baines Drift with 41.0 percent of the days recording strongest winds blowing from east north east, followed by Tubu with 35.0 percent of the winds blowing from the east and Pandamatenga with 26.0 percent of the winds blowing from the north east.

The strongest winds for each month for the country blew mainly from the north east at 23.0 percent of the days in September 2021, followed by east at 22.2 percent of the days in April 2021and north east at 22.0 percent of the days, in August 2021. Overall for the period, the strongest winds blew from the north east at 16.2 percent of the time, followed by the east north east at 15.0 percent, and the east at 13.6 percent of the time.

In the period, the highest mean monthly relative humidity was recorded for Mababe at 63.8 percent followed by for Tubu at 62.0 percent and for Werda at 60.3 percent all in April 2021. The lowest mean monthly relative humidity was recorded for Tshane at 25.7 percent followed by Ghanzi at 26.5 percent and Werda at 28.6 percent, all in September 2021.

The highest relative humidity was recorded for Goodhope at 89.6 percent in June 2021, followed by Mahalapye at 87.6 percent and at 85.5 percent in May and April 2021 respectively. The lowest relative humidity of the month was recorded for Ghanzi at 46.2 percent in August 2021, followed by Mababe at 46.3 percent and Ghanzi at 47.8 percent in September 2021.

The lowest humidity extremes were recorded for Tshane at 12.9 percent in September 2021, followed by Pandamatenga at 14.2 percent in July 2021 and Tubu at 15.5 percent in August 2021.

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. 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 2021.

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

The period under review marks 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 April to September 2021

Station	April	May	June	July	August	September
Goodhope	35.0	0.0	6.0	0.0	9.0	15.4
Mahalapye	15.6	0.2	0.0	0.0	0.0	1.6
Werda	18.8	0.0	4.0	0.0	3.0	23.8
Pandamatenga	0.0	0.0	0.0	0.0	0.0	0.0
Tsabong	31.2	1.0	7.0	0.0	1.2	0.0
Tshane	0.0	0.0	0.0	0.0	0.0	0.0
Baines Drift	2.6	0.2	0.6	0.0	0.0	0.0
Tubu	5.3	0.4	0.0	0.0	0.0	2.4
Ghanzi	0.0	0.0	0.0	0.0	0.0	0.0
Mababe	0.0	0.0	0.0	0.0	0.0	0.0
Sowa	0.6	0.2	0.2	0.2	0.2	0.0

Source: Department of Meteorological Services and SASSCAL

Goodhope received the highest total rainfall in a month recording 35.0 mm in April 2021, followed by Tsabong recording 31.2 mm in April 2021 and Werda recording 23.8 mm in September 2021.

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 was that for Tsabong at 28.8 mm in April 2021 followed by Werda at 23.8 mm, in September 2021, and Goodhope at 13.8 mm, in April 2021.

Table 2: Highest ten stations rainfall (mm) recorded in 24 hours April to September 2021

Station	Rainfall (mm)	Month
Tsabong	28.8	April
Werda	23.8	September
Goodhope	13.8	April
Goodhope	12.2	September
Werda	12.0	April
Goodhope	10.8	April
Goodhope	10.2	April
Mahalapye	9.6	April
Tsabong	7.0	June
Goodhope	5.8	June

Source: Department of Meteorological Services and SASSCAL

Table 3 shows the total rainfall by station during the dry season from April to September 2021. The wettest area was Goodhope, recording a total of 65.4 mm followed by Werda at 49.6 mm and Tsabong recording 40.4 mm over the six months period.

Table 3: Total rainfall (mm) by station April to September 2021

Station	Total Rainfall (mm)
Goodhope	65.4
Werda	49.6
Tsabong	40.4
Mahalapye	17.4
Tubu	8.1
Baines Drift	3.4
Sowa	1.4
Pandamatenga	0.0
Mababe	0.0
Ghanzi	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 2021.

Table 4: Mean monthly minimum air temperatures (degrees Celsius) April to September 2021

Station	April	May	June	July	August	September
Baines Drift	12.8	9.3	7.3	6.4	10.5	14.8
Ghanzi	12.1	8.1	7.2	3.4	8.9	13.9
Goodhope	12.5	7.5	6.1	3.3	8.6	13.2
Mababe	14.2	9.4	6.7	6.6	10.1	16.2
Mahalapye	12.4	8.4	7.0	4.6	9.4	13.9
Pandamatenga	15.1	10.5	8.5	7.8	11.6	16.5
Sowa	14.2	10.0	8.6	7.6	11.1	16.5
Tsabong	12.1	6.0	4.3	0.0	5.2	9.9
Tshane	13.5	7.8	6.5	3.1	7.7	12.9
Tubu	19.4	15.0	12.1	11.1	15.7	20.7
Werda	10.6	4.7	3.6	-0.1	5.1	10.9

Source: Department of Meteorological Services and SASSCAL

The lowest mean monthly minimum air temperature was that for Werda at -0.1°C and Tsabong at 0.0°C, followed by Tshane at 3.1 °C all recorded in July 2021.

3.2 Minimum Temperature Extremes

Table 5 shows the lowest minimum air temperatures recorded for the stations during the period April to September 2021. The lowest minimum temperature recorded was -9.7 °C, followed by -8.4 °C in Werda and -7.70C recorded in Tsabong all in July 2021.

Table 5: Lowest minimum temperatures recorded (degrees Celsius) April to September 2021

Temperature (°C)	Month	Station
-9.7	July	Werda
-8.4	July	Werda
-7.7	July	Tsabong

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 2021. 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 2021

Station	Apr	May	Jun	Jul	Aug	Sep
Baines Drift	30.1	26.9	25.1	23.0	26.5	29.8
Ghanzi	28.7	26.3	24.0	22.9	28.7	32.9
Goodhope	27.7	23.3	21.1	19.4	24.0	28.2
Mababe	32.1	30.2	27.8	27.4	32.4	36.7
Mahalapye	28.5	25.5	23.5	21.6	26.6	30.2
Pandamatenga	30.0	27.5	25.0	24.7	29.1	32.9
Sowa	30.9	27.9	25.4	24.8	29.7	33.5
Tsabong	30.8	26.1	24.2	22.1	25.4	31.4
Tshane	28.6	25.4	23.6	21.7	26.2	31.3
Tubu	34.6	32.4	30.2	29.3	34.7	38.8
Werda	30.1	25.8	24.1	22.0	26.2	31.8

Source: Department of Meteorological Services and SASSCAL

The highest mean monthly maximum temperature recorded during the period April to September 2021 was for Tubu at 38.8 °C followed by Mababe at 36.7 °C in September 2021and Tubu at 34.7°C in August 2021.

3.4 Maximum Temperature Extremes

Table 7 shows the highest maximum air temperatures recorded for the stations, during the period April to September 2021. The highest maximum temperature for the period was 42.3 °C followed by 41.7 °C and 41.5 °C, all for Tubu in September 2021.

Table 7: Highest maximum temperatures recorded (degrees Celsius) April to September 2021

Temperature (°C)	Month	Station
42.3	September	Tubu
41.7	September	Tubu
41.5	September	Tubu

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 2021.

Table 8: Mean monthly maximum wind speed (m/s) April to September 2021

Station	April	May	June	July	August	September
Baines Drift	4.3	3.9	3.8	4.4	4.9	5.6
Ghanzi	5.3	4.7	5.4	5.3	5.7	5.8
Goodhope	5.1	4.6	5.3	5.4	7.0	7.8
Mababe	5.2	4.6	4.7	5.1	5.7	6.2
Mahalapye	4.6	4.1	4.5	4.8	5.8	6.3
Pandamatenga	4.9	4.4	4.5	5.0	5.4	5.8
Sowa	4.6	4.3	4.4	4.6	5.2	5.7
Tsabong	4.7	4.8	5.5	5.3	5.9	6.8
Tshane	4.2	4.1	5.1	4.7	5.4	5.6
Tubu	4.8	4.1	4.4	4.9	5.4	5.5
Werda	4.0	4.1	4.8	4.9	5.2	6.1

Source: Department of Meteorological Services and SASSCAL

During the period under study, winds were strongest in Goodhope, with the highest mean monthly maximum wind speed of 7.8 m/s and 7.0 m/s during September and August 2021 respectively, followed by Tsabong at 6.8 m/s in September 2021. Baines Drift had the lowest mean monthly maximum wind speed at 3.8 m/s and 3.9 m/s in May and June 2021, followed by Werda at 4.0 m/s in April 2021.

4.2 Highest Wind Speed Recorded

Table 9 shows the highest wind speed recorded during the period April to September 2021.

The highest wind speed recorded for a 24 hour period was 13.5 m/s, followed by 13.3 m/s in August 2021 and 12.3 m/s in September 2021, all for Goodhope. 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 2021

Speed m/s	*Beaufort classification	Month	Station
13.5	Strong Breeze	August	Goodhope
13.3	Strong Breeze	August	Goodhope
12.3	Strong Breeze	September	Goodhope

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

4.3 Wind Direction

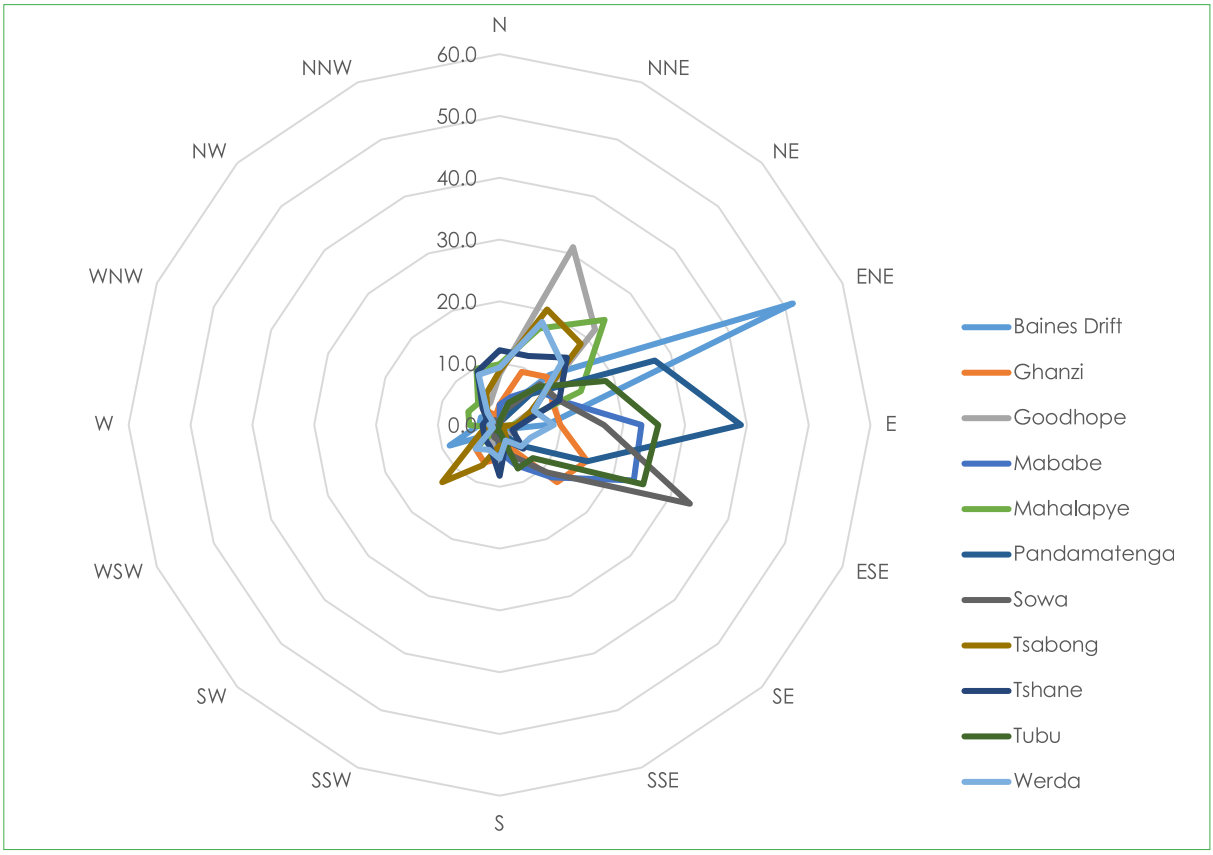
Table 10 shows the stations' predominant wind direction as a percentage of the days recorded between April and September 2021. The highest predominance is that of Baines Drift where 51.4 percent of the winds were from the east north east, followed by Pandamatenga with 39.1 percent of the winds from the east, and Sowa where 33.3 percent of the winds were from the east south east. **Figure 1** shows this graphically.

Table 10: Percentage predominant winds by station April to September 2021

Station	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
Baines Drift	2.2	3.3	11.5	51.4	7.7	1.6	0.5	1.1	1.1	0.5	2.2	8.7	3.3	3.3	0.0	1.6
Ghanzi	3.3	9.3	10.9	9.3	9.8	15.3	13.1	3.8	5.5	6.6	5.5	1.1	0.5	0.5	3.8	1.6
Goodhope	8.2	31.1	21.9	5.5	2.2	2.7	2.2	2.7	4.9	2.7	2.2	2.2	1.6	2.2	3.8	3.8
Mababe	3.3	4.9	8.2	10.4	23.0	23.5	12.0	7.1	4.4	1.1	0.5	1.1	0.5	0.0	0.0	0.0
Mahalapye	9.8	16.9	24.0	14.2	2.2	0.5	0.5	0.5	0.0	0.5	4.4	1.1	4.9	5.5	4.9	9.8
Pandamatenga	0.0	0.6	7.1	27.2	39.1	15.4	4.7	1.8	3.0	0.6	0.0	0.0	0.0	0.6	0.0	0.0
Sowa	0.0	2.7	9.3	10.4	16.9	33.3	10.9	5.5	2.7	2.2	1.1	2.2	1.1	0.0	1.1	0.5
Tsabong	8.7	20.2	18.6	5.5	2.7	0.5	1.1	3.8	3.3	7.1	13.1	3.3	1.6	2.2	2.7	5.5
Tshane	12.1	12.1	15.4	10.4	3.3	2.2	5.5	2.7	8.2	3.8	3.3	2.7	2.7	2.2	3.8	9.3
Tubu	0.5	3.8	8.7	18.6	25.7	25.1	7.7	7.7	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Werda	9.3	18.0	14.2	6.0	8.7	5.5	4.9	2.7	5.5	4.4	5.5	1.1	1.6	1.1	2.7	8.7

Source: Department of Meteorological Services and SASSCAL

Figure 1: Percentage predominant wind direction by station April to September 2021



4.4 National Wind Direction

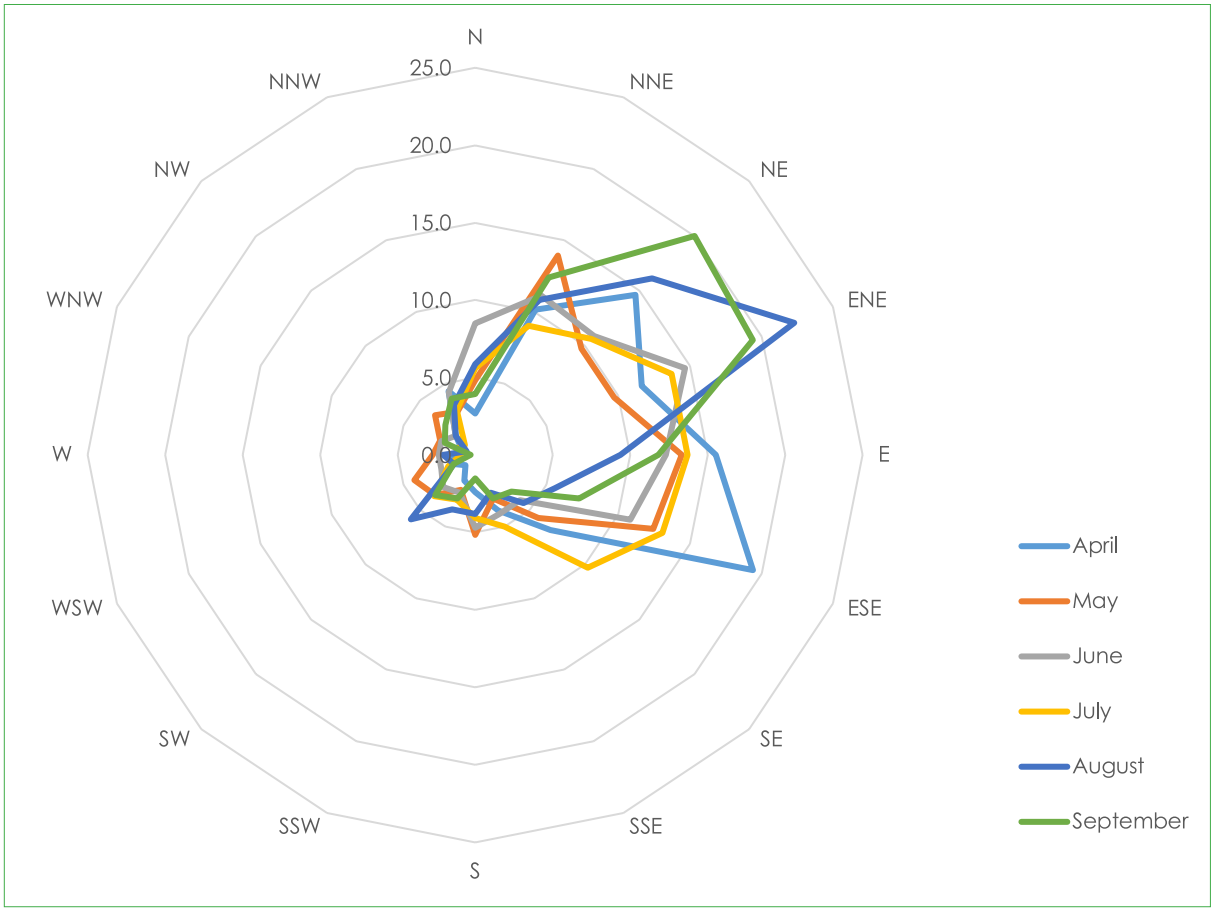
Table 11 shows the country's wind direction for the period April to September 2021 as a percentage of the total number of days for that period. Nationally, winds were predominantly from the east north east 22.3 percent of the days in August 2021. This was followed by a predominance of 20.0 percent from the north east in September 2021, and 19.4 percent from the east north east and the east south east in April and September 2021. **Figure 2** shows the country's predominant winds graphically.

Table 11: National wind direction by percentage of days April to September 2021

Station	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
April	2.7	10.1	14.6	11.6	15.5	19.4	6.9	3.9	2.4	1.8	0.9	1.5	1.5	0.9	1.8	4.5	**100.0**
May	4.8	13.9	9.7	9.7	13.3	12.4	5.8	3.0	5.2	2.4	3.6	4.2	2.7	2.4	3.6	3.0	**100.0**
June	8.5	11.1	10.9	14.7	12.3	10.9	4.1	4.1	4.7	2.6	2.9	2.3	2.3	2.3	1.8	4.4	**100.0**
July	5.6	9.0	10.6	13.7	13.7	13.1	10.3	5.0	4.0	3.1	3.7	1.9	0.9	1.2	0.9	3.1	**100.0**
August	5.9	10.9	16.1	22.3	9.4	5.6	4.4	2.6	3.8	3.8	5.9	1.5	2.1	0.6	1.8	3.5	**100.0**
September	3.9	12.4	20.0	19.4	11.8	7.3	3.3	3.0	1.5	3.0	3.6	1.5	0.3	2.1	2.7	3.9	**100.0**

Source: Department of Meteorological Services and SASSCAL

Figure 2: National predominant wind direction (percentage days) April to September 2021



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, recorded during the period April to September 2021. It is a percentage of the number of days the strongest winds blew in the direction.

Table 12: Percentage maximum wind speed directions by station April to September 2021

Station	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Mababe	3.8	13.1	14.2	18.6	18.6	6.6	8.7	4.9	3.3	3.8	0.5	0.5	0.5	0.5	0.5	1.6	**100.0**
Mahalapye	3.3	14.8	21.9	15.3	10.4	7.1	2.2	3.8	1.1	2.2	3.3	2.2	2.7	1.1	8.2	0.5	**100.0**
Pandamatenga	0.6	8.9	26.0	22.5	23.1	6.5	4.7	2.4	2.4	0.6	0.0	0.6	0.0	0.0	1.2	0.6	**100.0**
Sowa	2.2	4.4	11.5	14.8	12.0	16.4	3.8	2.7	0.5	1.1	2.7	9.3	3.3	6.0	6.0	3.3	**100.0**
Tsabong	4.9	21.9	14.2	4.9	3.8	7.7	1.1	3.3	2.7	4.9	8.2	3.3	3.8	3.3	4.9	7.1	**100.0**
Tshane	8.8	6.0	12.1	8.2	7.7	6.6	2.2	6.0	4.9	3.3	3.3	2.2	2.7	3.3	7.1	15.4	**100.0**
Tubu	0.5	8.7	21.3	16.9	35.0	1.6	7.7	4.9	2.2	0.0	0.0	0.0	0.0	0.0	0.0	1.1	**100.0**
Werda	11.5	18.6	10.4	4.9	6.6	8.2	2.2	0.0	3.8	5.5	4.4	4.4	3.3	4.4	2.7	9.3	**100.0**
Ghanzi	2.7	10.4	7.1	11.5	19.7	14.8	11.5	3.8	7.1	4.9	1.1	2.2	0.5	0.5	2.2	0.0	**100.0**
Baines Drift	7.1	3.8	15.3	41.0	12.6	0.5	0.0	1.1	0.5	1.1	2.2	4.4	3.3	1.6	2.2	3.3	**100.0**
Goodhope	5.5	19.1	25.1	6.6	1.1	1.1	4.9	2.2	3.8	2.2	4.9	4.9	7.1	3.3	3.8	4.4	**100.0**

Source: Department of Meteorological Services and SASSCAL

The highest predominance by maximum wind speed is that for Baines Drift with 41.0 percent of the days recording strongest winds blowing from east north east, followed by Tubu with 35.0 percent of the winds blowing from the east and Pandamatenga with 26.0 percent of the winds blowing from the north east.

Figure 3: Percentage maximum wind speed direction by station April to September 2021

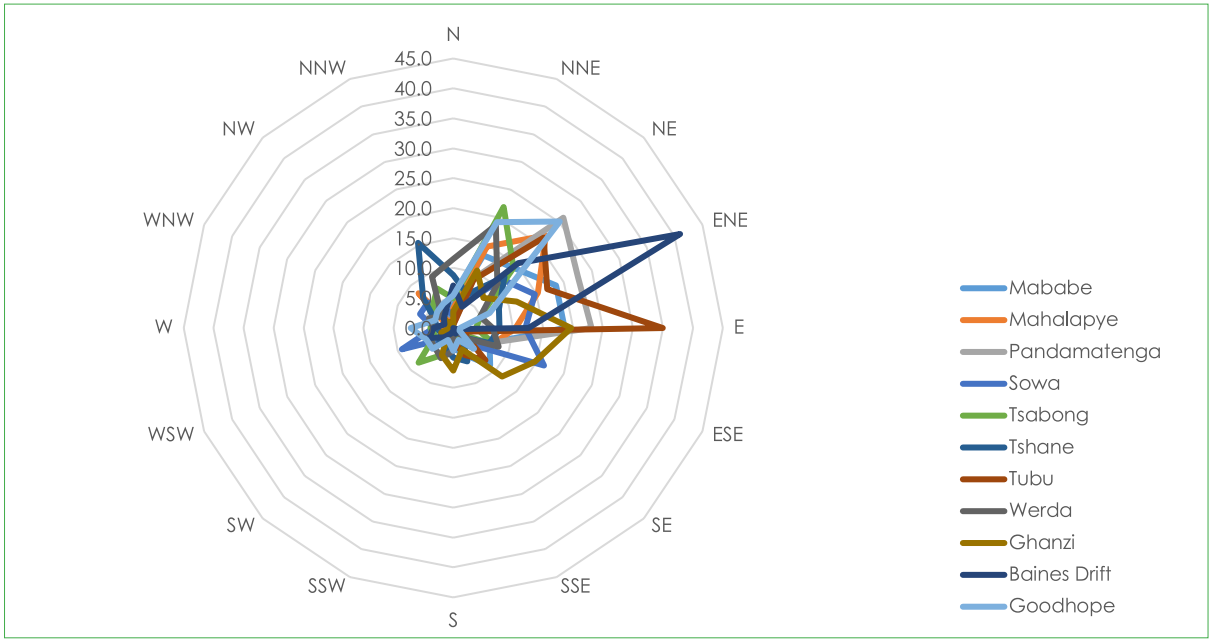


Table 13 and **Figure 4** show the maximum wind speed directions for the country as a percentage of the days recordings were taken by month, for the period April to September 2021.

Table 13: National percentage maximum wind speed directions April to September 2021

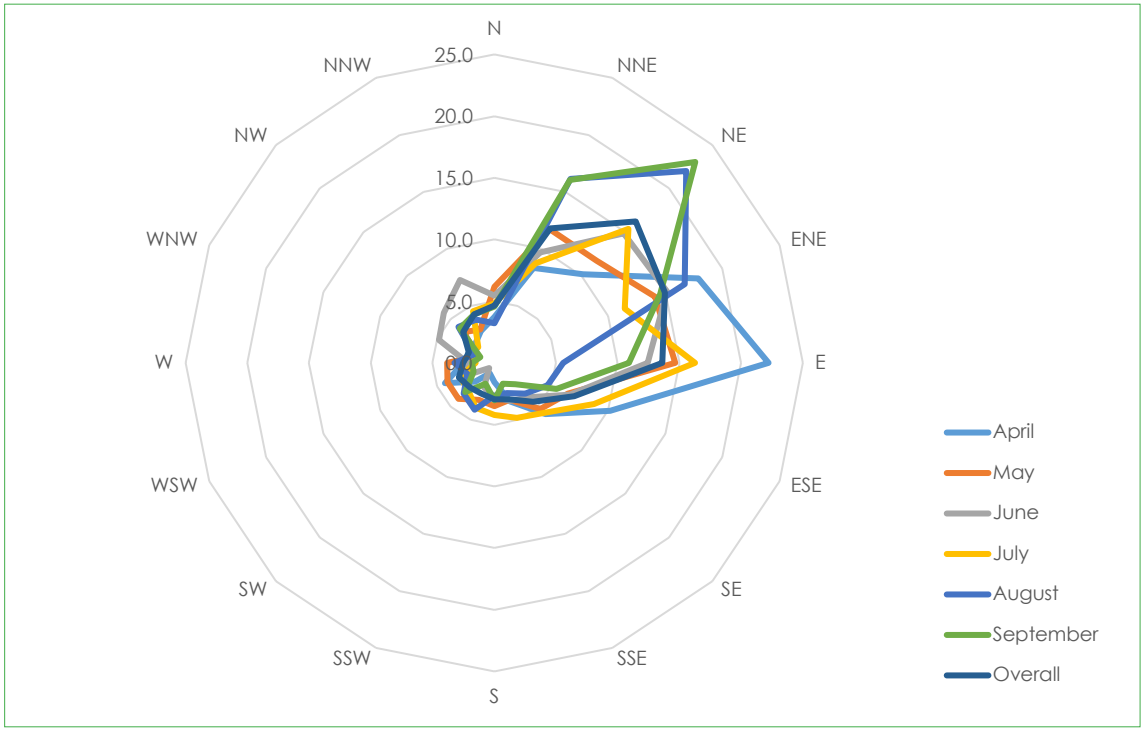
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
April	3.7	8.3	10.2	17.9	22.2	10.2	5.9	3.4	1.5	0.9	2.2	4.3	2.5	1.9	2.2	2.8	**100.0**
May	6.2	11.7	11.7	14.1	14.7	6.5	5.3	3.2	3.5	3.2	4.1	4.1	3.8	1.5	3.5	2.9	**100.0**
June	5.5	9.7	14.8	15.2	12.4	6.7	3.9	3.3	2.7	2.1	0.6	3.0	2.1	4.8	5.8	7.3	**100.0**
July	4.8	8.7	15.4	11.4	16.3	8.7	5.7	4.8	4.2	3.9	3.0	3.0	1.5	2.1	1.8	4.5	**100.0**
August	3.2	16.1	22.0	16.7	5.6	4.7	3.5	2.6	2.6	4.1	3.5	2.3	3.2	1.8	4.1	3.8	**100.0**
September	4.5	16.1	23.0	14.5	10.9	5.5	2.4	1.8	3.0	1.8	3.3	1.8	1.8	1.2	3.9	4.2	**100.0**
Overall	4.7	11.8	16.2	15.0	13.6	7.0	4.5	3.2	3.0	2.7	2.8	3.1	2.5	2.2	3.6	4.3	**100.0**

Source: Department of Meteorological Services and SASSCAL

During the period under review, the strongest winds for each month for the country blew mainly from the north east at 23.0 percent of the days in September 2021, followed by east at 22.2 percent of the days in April 2021and north east at 22.0 percent of the days, in August 2021.

Overall for the period, the strongest winds blew from the north east at 16.2 percent of the time, followed by the east north east at 15.0 percent, and the east at 13.6 percent of the time.

Figure 4: National percentage maximum wind speed direction April to September 2021



5. RELATIVE HUMIDITY

Relative humidity is a measure of the amount of water vapour in the air in relation to the maximum amount of vapour or moisture the air can hold at a given temperature, expressed as a percentage. The higher the temperature, the higher the amount of vapour or moisture the air can hold. Moisture is added to the air by evaporation and removed from the air by condensation.

Humidity has an effect on human wellbeing through the prevalence of microorganisms that need moisture in the air, such as dust mites, which in turn can lead to allergies and disease such as asthma. Extremely low humidity can cause dryness of the eyes and the skin, exacerbating conditions such as eczema. Humidity also determines how comfortable or uncomfortable the weather feels.

5.1 Mean Monthly Relative Humidity

Table 14 shows the mean monthly relative humidity for the period from April to September 2021.

Table 14: Mean Monthly relative humidity April to September 2021

Station	April	May	June	July	August	September	Station average
Pandamatenga	57.2	50.0	46.1	39.9	37.9	32.3	43.9
Mababe	63.8	58.8	54.0	46.6	40.3	32.8	49.4
Tubu	62.0	56.0	51.7	45.1	37.4	33.3	47.6
Sowa	45.9	45.5	44.5	40.8	37.2	33.6	41.2
Ghanzi	57.9	50.3	45.6	39.2	30.1	26.5	41.6
Baines Drift	55.9	55.0	53.9	50.2	52.5	43.3	51.8
Mahalapye	59.9	58.3	54.1	49.5	48.3	40.7	51.8
Tshane	55.4	47.8	42.7	36.5	31.3	25.7	39.9
Werda	60.3	58.6	52.2	41.0	35.8	28.6	46.1
Goodhope	58.2	53.8	51.6	43.1	43.5	36.4	47.8
Monthly Average	57.7	53.4	49.6	43.2	39.4	33.3	46.1

Source: Department of Meteorological Services and SASSCAL

The highest mean monthly relative humidity was recorded for Mababe at 63.8 percent followed by for Tubu at 62.0 percent and for Werda at 60.3 percent all in April 2021. The lowest mean monthly relative humidity was recorded for Tshane at 25.7 percent followed by Ghanzi at 26.5 percent and Werda at 28.6 percent, all in September 2021.

5.2 Highest Relative Humidity

Table 15 shows the highest relative humidity recorded for each station by month, during the period April to September 2021.

Table 15: Highest relative humidity (Percentage) of month by station April to September 2021

Station	April	May	June	July	August	September	Station average
Pandamatenga	73.1	74.1	64.2	54.4	55.7	49.4	61.8
Mababe	80.4	75.8	64.2	66.5	52.5	46.3	64.3
Tubu	80.8	69.5	63.3	69.3	49.1	48.5	63.4
Sowa	72.8	71.6	61.6	71.3	60.0	63.4	66.8
Ghanzi	77.3	65.4	60.1	62.8	46.2	47.8	59.9
Baines Drift	77.7	76.3	72.8	74.1	76.0	70.1	74.5
Mahalapye	85.5	87.6	84.0	81.7	85.1	69.9	82.3
Tshane	77.4	62.2	59.0	53.0	55.9	53.4	60.2
Werda	78.0	70.0	79.6	61.3	62.2	56.6	68.0
Goodhope	83.3	77.1	89.6	71.2	73.3	68.2	77.1
Monthly average	**78.6**	**73.0**	**69.8**	**66.6**	**61.6**	**57.4**	**67.8**

Source: Department of Meteorological Services and SASSCAL

The highest relative humidity was recorded for Goodhope at 89.6 percent in June 2021, followed by Mahalapye at 87.6 percent and 85.5 percent in May and April 2021 respectively. The lowest relative humidity of the month was recorded for Ghanzi at 46.2 percent in August 2021 followed by Mababe at 46.3 percent in September 2021 and Ghanzi at 47.8 percent in September 2021.

5.3 Lowest Relative Humidity

Table 16 shows the lowest relative humidity recordings for the stations, during the period April to September 2021. The lowest humidity extremes were recorded for Tshane at 12.9 percent in September 2021, followed by Pandamatenga at 14.2 percent in July 2021 and Tubu at 15.5 percent in August 2021.

Table 16: Lowest relative humidity (Percentage) of month by station April to September 2021

Station	April	May	June	July	August	September	Station average
Pandamatenga	36.8	35.6	25.7	14.2	20.9	18.0	25.2
Mababe	53.7	42.5	42.2	18.3	18.5	16.5	32.0
Tubu	49.1	43.9	38.7	17.8	15.5	16.9	30.3
Sowa	31.5	33.5	27.3	16.0	21.3	17.1	24.5
Ghanzi	43.1	40.1	32.6	21.2	18.2	15.9	28.5
Baines Drift	37.3	35.4	32.1	19.1	28.9	26.2	29.8
Mahalapye	39.0	40.8	30.4	19.7	24.1	21.3	29.2
Tshane	40.3	35.9	27.9	25.6	17.3	12.9	26.7
Werda	44.1	42.9	36.1	28.0	20.8	17.6	31.6
Goodhope	33.1	37.8	27.5	24.0	21.4	17.3	26.9
Monthly average	**40.8**	**38.8**	**32.1**	**20.4**	**20.7**	**18.0**	**28.5**

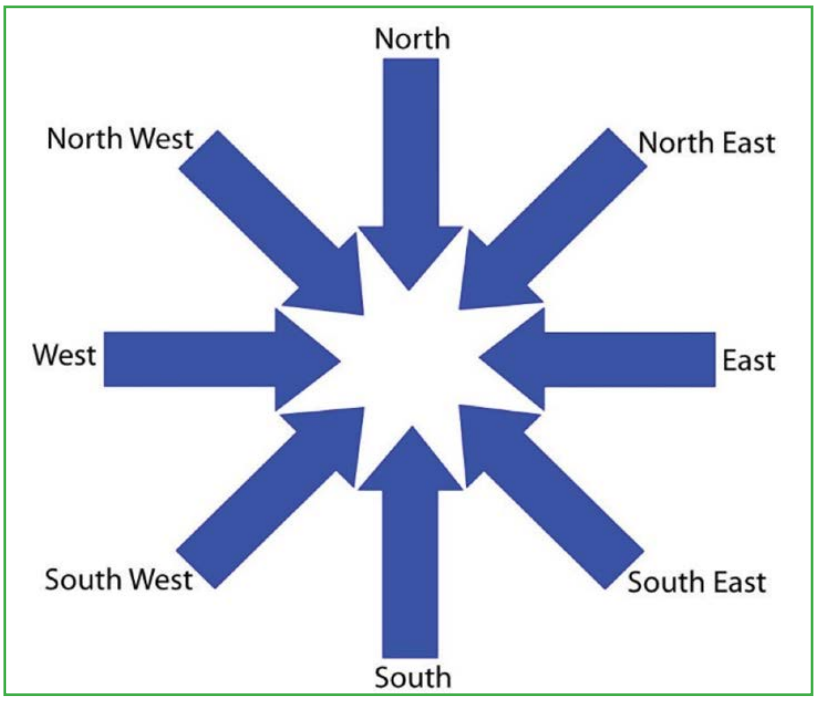
Source: Department of Meteorological Services and SASSCAL

APPENDIX

Table 17: 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	29-38	4	Moderate Breeze	Dust and loose paper raised. Small branches begin to move.
8.0-10.7	50-61	5	Fresh Breeze	Branches of a moderate size move. Small trees begin to sway.
10.8-13.8	62-74	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	75-88	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	89-102	8	Gale	Twigs broken from trees. Cars veer on road.
20.8-24.4	103-117	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	>118	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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