# State of the Climate Report 2024

**The Report Summary**

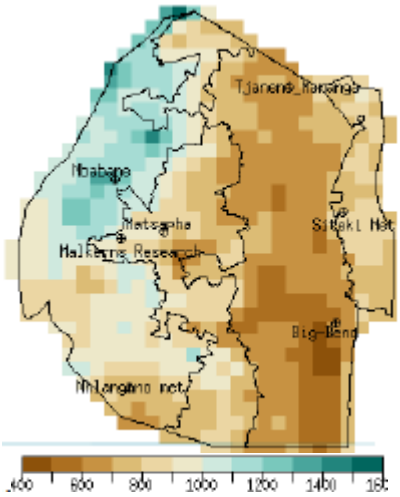

- **Climate trends show increasing temperature trends.**
- **Episodes of extreme weather events are projected in the future.**
- **2024 was the hottest year since 1981.**
- **Annual mean Temperature was 1.07 ◦ C above the 1991-2020 mean.**
- **Rainfall reported in the year was in the Below Normal category**
- **A significant number of extreme weather events were observed**


## 1. Eswatini's Changing Climate

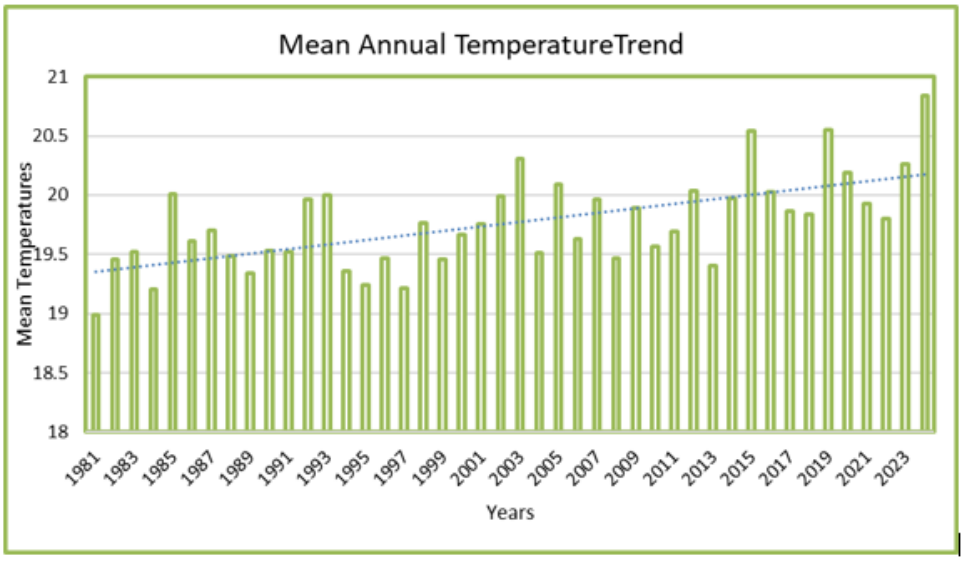
**Rainfall:** The mean precipitation over Eswatini is 850 mm/year with significant geographic variations between its agro-ecological zones. The Highveld experiences a mean precipitation of 1000 mm/year, 860 mm/year in the Middleveld, 670 mm/year in the Lowveld and 800 mm/year in the Plateau. Since 1981, the rainfall trend showed a negative but uncertain trend over the country.

The rainy season occurs between October and March with the onset occurring between the first Dekad of October and the first Dekad of November. The duration of the rainfall season is 132 days on average over the country

**Annual Rainfall (MM)**



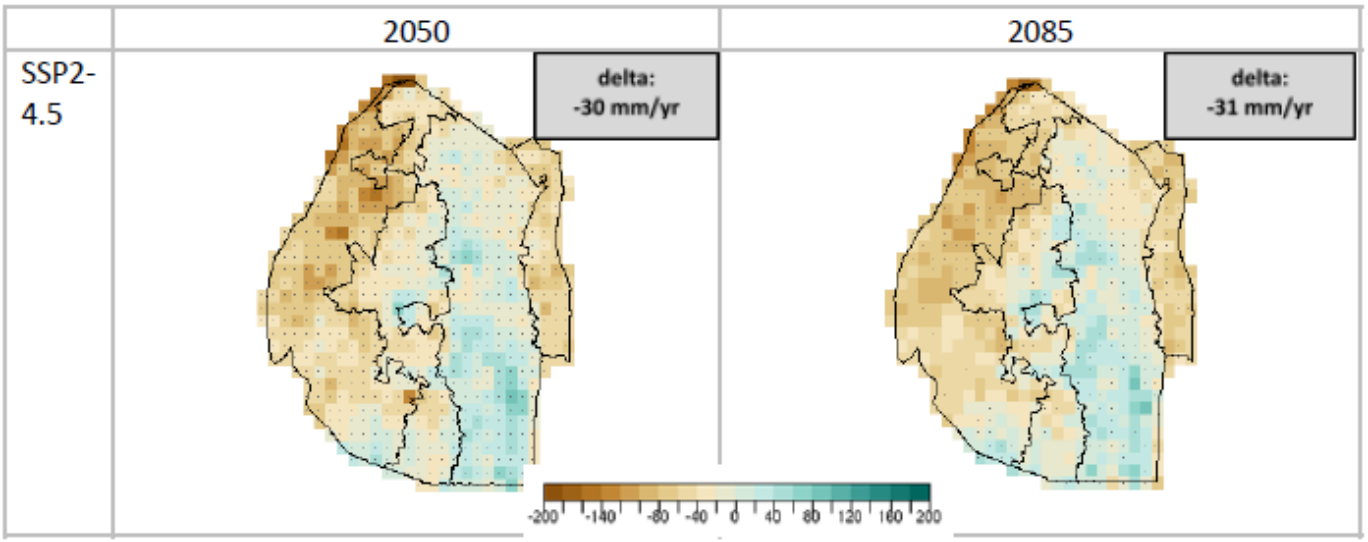

**Temperature:** Over the 1981 to 2024 , temperatures have increased over the country with the year 2024 being the hottest in the series. This trend is significant for minimum temperatures with an increase of 0.16◦C per decade. The temperature increases per decade for the agro-ecological regions are, Highveld: 0.17◦C/decade, Middleveld: 0.17 ◦C, Loveld: 0.16◦C/decade and Plateau:0.15◦C.




The positive trend in Minimum temperatures is not as significant and is 0.1◦C/decade. Increases in the Agro-ecological regions is as follows; Highveld: 0.15◦C/decade, Middleveld: 0.1 ◦C, Lowveld: 0.07◦C/decade and Plateau:0.07◦C.

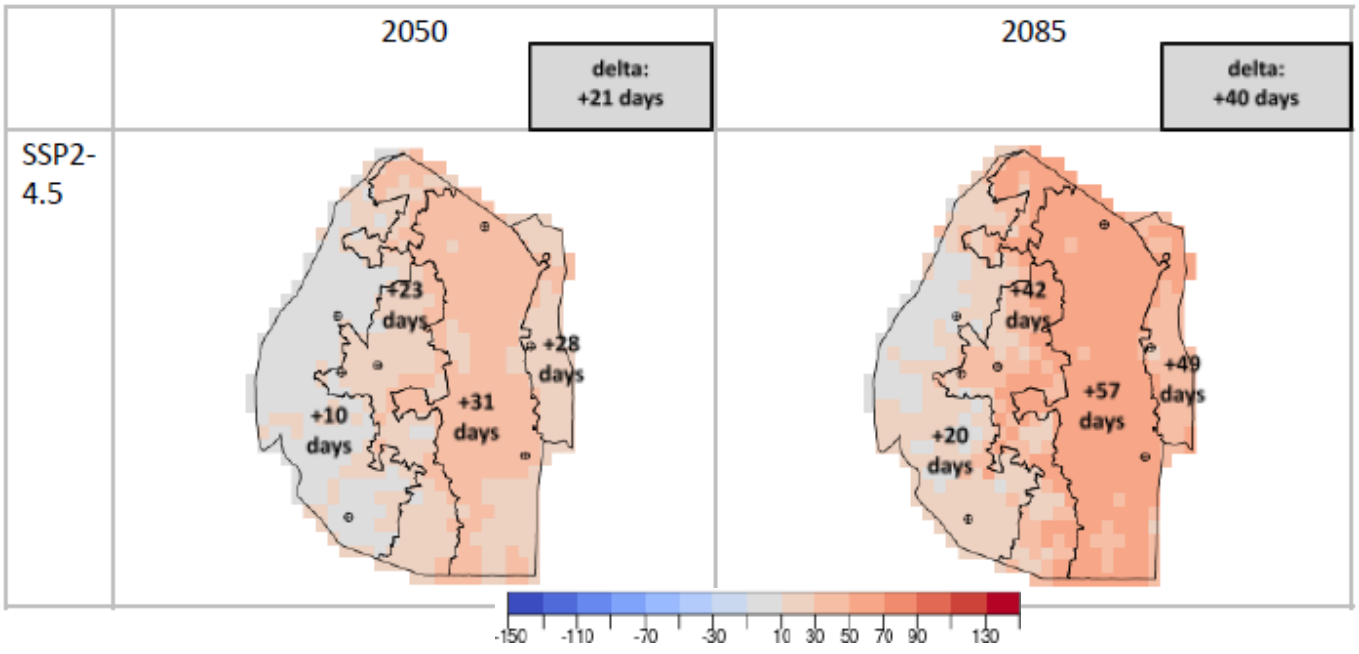
## 2. The Future Climate of Eswatini

**Rainfall:** Climate models predict a **decrease** in the amounts of rainfall in the country. Biggest decreases in rainfall will be experienced in the Highveld which will see a reduction of annual rainfall of up to **150 mm/year**. The Lubombo Plateau and the Middleveld will also experience a reduction in annual rainfall. The southern parts of the Lowveld, which currently records the least annual rainfall will experience a **significant increase** (up to 20%) in the annual rainfall. Number days recording rainfall in excess of 50 mm are also expected to increase countrywide except for the Highveld where a drop is expected. Drought episodes are expected to increase in all the regions in the Kingdom except in the Lowveld where it is expected to decrease.




**Evolution of the annual precipitation (mm/year) in 2050 (left) and 2085 (right)**

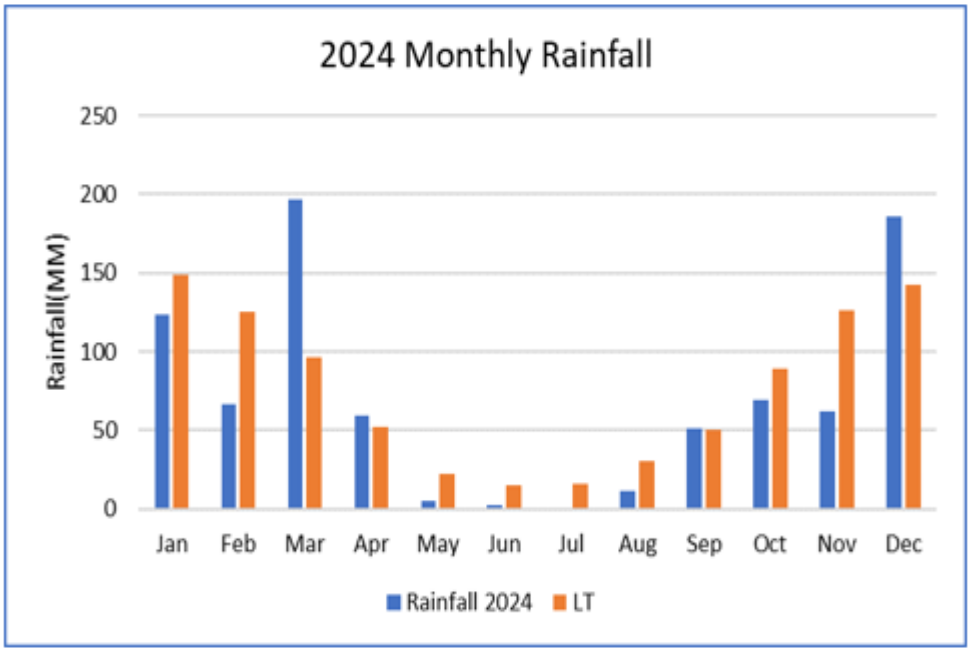
**Temperature:** A homogeneous increase in temperatures countrywide is projected by models. This increase will be more profound for maximum temperatures than it will be for minimum temperatures. The frequency and duration of heat waves is also projected to increase in the future. Frosty days, a seldom occurrence in the country, are also expected to diminish.




*Evolution of the number of days with maximum temperature exceeding 33°C in 2050 (left) and 2085 (right)*

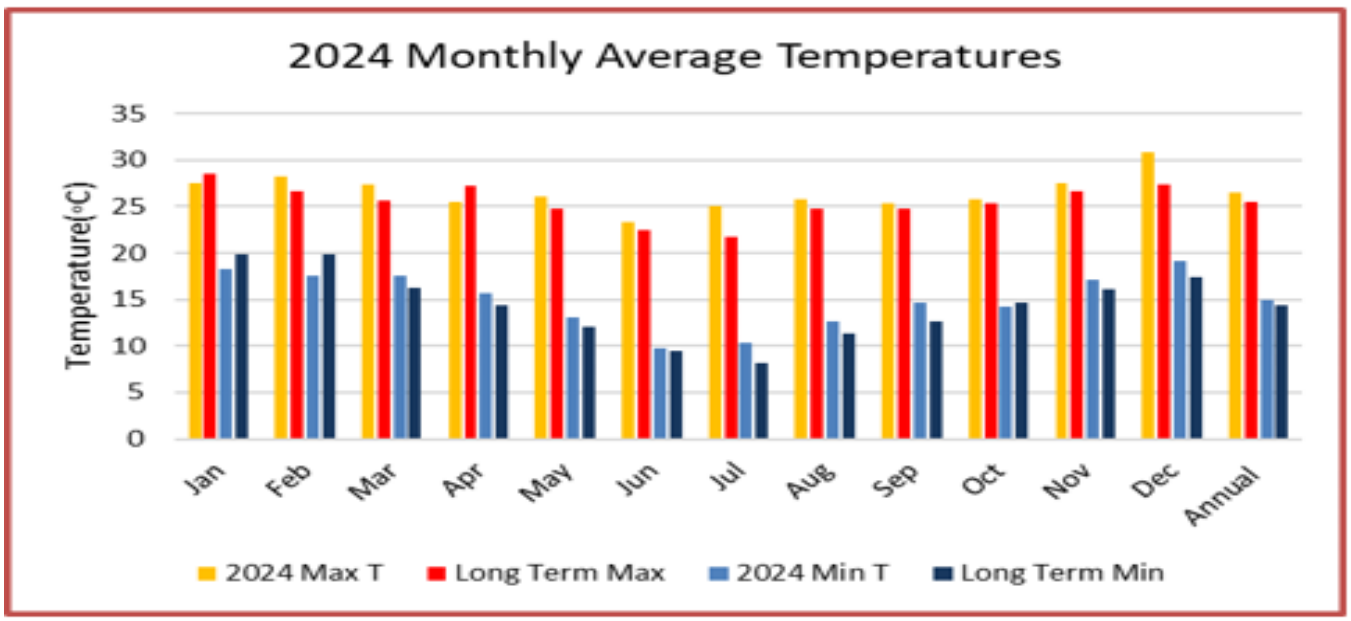
## 3. The Climate in 2024

**Rainfall:** The annual average rainfall for the year was **783 mm**, which is **85% of normal** average rainfall per year. There were periodic dry spells and periods of excessive rainfall through out the year. March, April, September and December reported above average rainfall, with the month of December recording the highest monthly rainfall at 185 mm. The winter months of the year were very dry, with the month of July reporting no rainfall at all. The highest monthly accumulation of rainfall was recorded at Mangcongco In the month of December and it was 411 mm.




Climate records dating back to 1981 show that the year 2024 was at number **37 out of the 43** years, making it one of the driest years. The trend that the Lowveld gets more rainfall in the second half of the season continued as **Sithobelweni** reported the highest amount of rainfall in January of **193mm.**

**Temperatures:** The year 2024 was the **hottest year** in the records beginning in 1981. The mean annual temperature was 20.8 ◦C, and was **1.07 ◦C** hotter than normal. This is in line with the global trends as 2024 was also the hottest year globally reaching 1.55◦C above pre-industrial levels. The Month of **December** was the hottest in the year with a country average maximum temperature of **30.8 ◦C.** With the exception of January, all the months in the year were warmer than Normal. The trend with night time temperatures was also the same with all the months, except January and February reporting warmer than normal temperatures.



## 4. Extreme weather Events in 2024

Weather-related hazards in the country have shown a consistent increase over the past few years, with this trend persisting into 2024. In addition to heavy rainfall, strong winds and severe thunderstorms, the past year witnessed a notable rise in the frequency and severity of heat waves, particularly toward the end of the year. Early in the year, a more direct impact from tropical cyclones was observed, with intense tropical storm Filipo causing heavy rainfall and strong winds.

**Heavy Rainfall:** In 2024, like in the recent past there were heavy rainfall days reporting an excess of 50 mm within 24 hours across most stations. Notably, the impacts of heavy rainfall were pronounced in March, driven by the passage of intense tropical storm Filipo. One station (Siteki) in the Eastern part of the country where there were significant impacts recorded 314 mm of rainfall within 24 hours on the 12th of March.


Waterlogged Mlindazwe Primary School (12 March 2024), courtesy of Times of Eswatini.

**Strong winds:**
In the month of June, there were strong winds in some areas of the country with Mbabane in the Highveld recording about 105 km/h and the Eswatini Electricity Company reporting to having received over 2800 faults. Furthermore over 150 hectares of forest trees were destroyed by fires, worsened by the strong winds, leading to financial losses amounting to millions of Emalangeni.


Roof that was blown down by strong winds that accompanied severe thunderstorms in June, courtesy of Times of Eswatini

**Severe Thunderstorms:** In January, there were three consecutive days of severe thunderstorms producing hail on the 10th, 11th, and 12th .On October 26, severe thunderstorms brought small to medium-sized hail and strong winds to various parts of the country, One of the most severe hail-producing thunderstorms occurred on December 6, 2024, leaving significant destruction in its wake, particularly in the western regions of Eswatini. Golf ball-sized hailstones caused extensive damage to crops, houses, and vehicles, and even killed livestock .

A golf ball-sized hail on December 6th,this is becoming a common occurrence in Eswatini courtesy picture.

**Heat Waves:** During 2024, there were several heat waves that greatly affected crops and water resources. In November, there were two main heat waves: one during the first week of the month and the other during the last week. However, the strongest occurred in December, between the 10th and the 13th. This December heat wave broke the historical temperature records for the month in many areas. For instance, Mbabane in the Highveld recorded 36.2 °C, which broke the previous record of 33.9 °C.

By the end of the strong heat wave water resources had been severely strained in the rivers and dams and the country was on a verge of a drought. The prevailing situation was rescued by the heavy rainfall which were experienced at the end of the year.

Drying Luphohlo dam by mid-December 2024, courtesy picture

## Table of Extreme Weather Events

| Event Type | Start of Event | End of Event | Event details |
|---|---|---|---|
| Intense tropical storm – severe flooding | 12 March | 13 March | Siteki recorded 373 mm which was the highest accumulated rainfall for the two days. |
| Strong Winds | 4 June | 5 June | wind speed (gust) of 105 km/h on 4 June. |
| Strong winds | 5 July | 10 July | wind speed (gust) of 95 km/h on 9 July. |
| Severe thunderstorms (Strong winds and hail) | 28 October | 28 October | hail stones |
| Severe thunderstorms (Hail and strong winds) | 6 December | 6 December | Large hailstones. |
| Heat wave | 10 December | 13 December | Mbabane highest daily maximum temperature ever recorded for the month of December (33.9 °C) was broken and a new value was set at 36.2 °C |

# 5.Socio-Economic Impact of 2024 Climate

| Dates | Event Description | Economic Loses |
|---|---|---|
| 13/03/2024-16/03/2024 | Eswatini Eastern regions and the far eastern part of South Africa experienced heavy rainfall, subject to the tropical storm | Damage to infrastructure and household structures. Source: National Disaster Management Authority(NDMA |
| 6/07/2024-30/07/2024 | Wild fires destroying houses, rangelands and forest plantations | Loss of about E2 Billion. Loss of more than 150 hectors of land, structures and forest plantations. Source:NDMA |
| 8/12/2023 | The country experienced devastating hailstorm on the 8th December 2023, causing extensive damage to households, schools, health facilities businesses and critical infrastructure | The hailstorm event resulted in an estimated economic loss of E720 675 500.00 attributed to the destruction and damages inflicted upon households and critical infrastructure. Source:NDMA |
| 12/01/2024 | 12th January 2024 which was also characterized by heavy rainfall, strong winds and destructive hail. This storm wreaked havoc, causing extensive damage, particularly to residential areas. | E 5 680 000 was the estimated cost of the storm as it affected more than 80 households. Source:NDMA |

## Some Definitions

Normal: Long term Average (1991-2020)

NB: Climate projections are based on the SSP 2 –4.5 Scenario (The world follows a path in which social, economic, and technological trends do not shift markedly from historical patterns)

## Acknowledgments:

1. Eswatini National Adaptation Plan Readiness Project-Climate Projections
2. National Disaster Management Authority-Economic Losses Estimates
3. Times of Eswatini-Courtesy Pictures

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