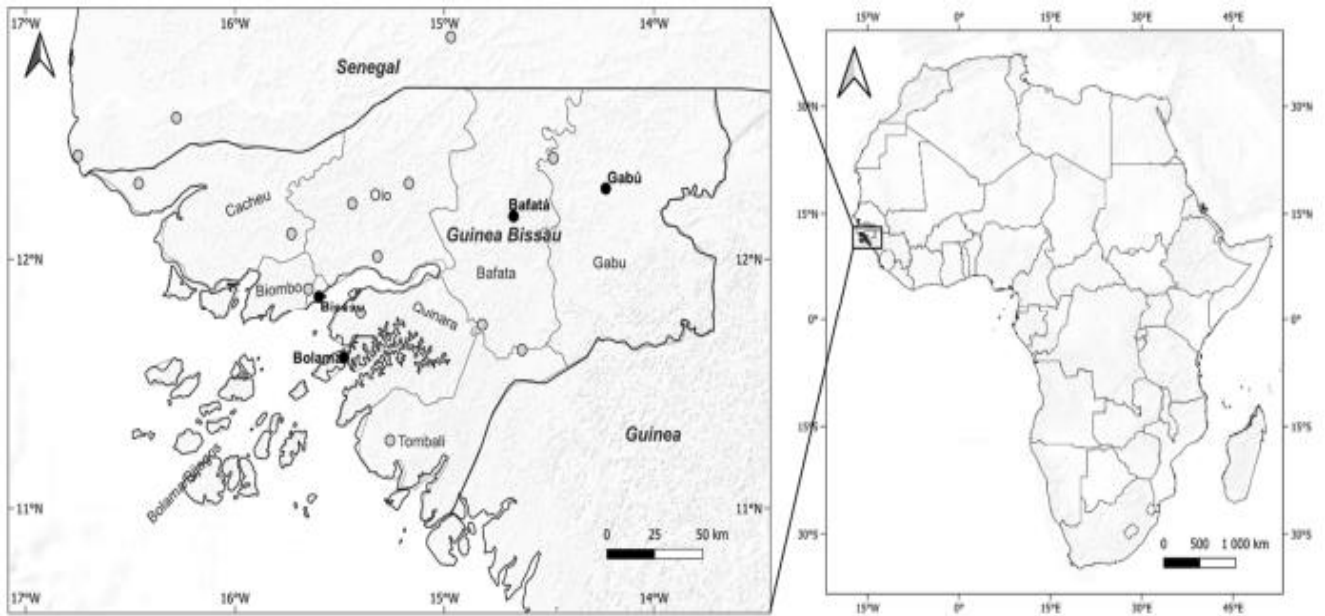




GOVERNO DA
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CLIMATOLOGICAL SITUATION OF 2023 IN GUINEA-BISSAU



INM-GB@Dezembro 2023

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1. INTRODUCTION

The Republic of Guinea-Bissau (Figure 1) is located in West Africa, limited to the North and East by the Republic of Senegal, South by the Republic of Guinea-Conakry, and West by the Atlantic Ocean, covering a total surface of 36,125 km².

The climate of Guinea-Bissau is tropical, and according to the Köppen climate classification, it is a tropical climate of the Aw type, with a rainy season in the summer and a dry season in the winter.

The annual precipitation regime is defined by two seasons, the dry season that begins in November and ends in late April or the first half of May and the rainy season that begins in late May and ends in October and sometimes in beginning of November.

This work aims to summarize the climatological situation of the year 2023 in relation to the most recent climatological average (1991-2020) as well as its comparison with the year 2022 regarding maximum and minimum temperatures and monthly and total annual precipitation.

2. Material and method

2.1. Data Used

In this study, the data of average temperature (maximum and minimum) and precipitation from the period 1991-2020 and data from the year 2023 and 2022 from 3 main meteorological stations representing the main regions of the country were used: the Bissau-Observatório station which represents the Center and North, the Bolama station represents the South Zone and islands and the Bafatá station represents the East Zone of the country.

2.2. Data processing tool

Microsoft Excel was used to calculate the monthly, annual and total annual and averages of temperatures and precipitation and to construct the graphs.

3. RESULTS ANALYSIS

3.1. Analysis of monthly average maximum minimum temperatures

The highest average maximum temperature (TX) of the year 2023 was observed in the month of April (36.2°C) and the lowest maximum temperature was observed in the month of August (31.1°C) while the climatological average 1991-2020, the highest average of maximum

temperature was on March (35.6°C) and August continues to be the month with the lowest maximum temperature value of the climatological average (30.2°C).

With the exception of March 2023, the average maximum temperature of 2023 was higher than the 1991-2020 climatological average, figure-1.

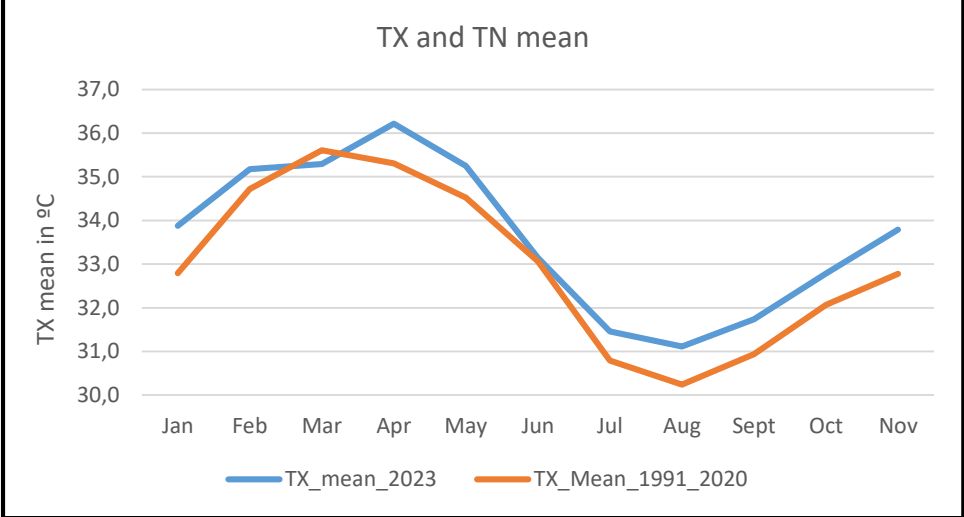


Figure 1. Average maximum temperature (TX) of 2023 and its climatological average 1991-2020

For the year 2023, the lowest average minimum temperature (TN) was observed in the month of January (18.7°C), slightly above the climatological average 1991-2020 for the same month (18.6) and the hottest months are months of May and June with the average temperature values is 24.8 and 24.5°C respectively and these values are higher than the climatological average 1991-2020 for the same months. In general, the average of minimum temperature of 2023 was higher than the climatological average 1991-2020 in all months of the year, figure-2.

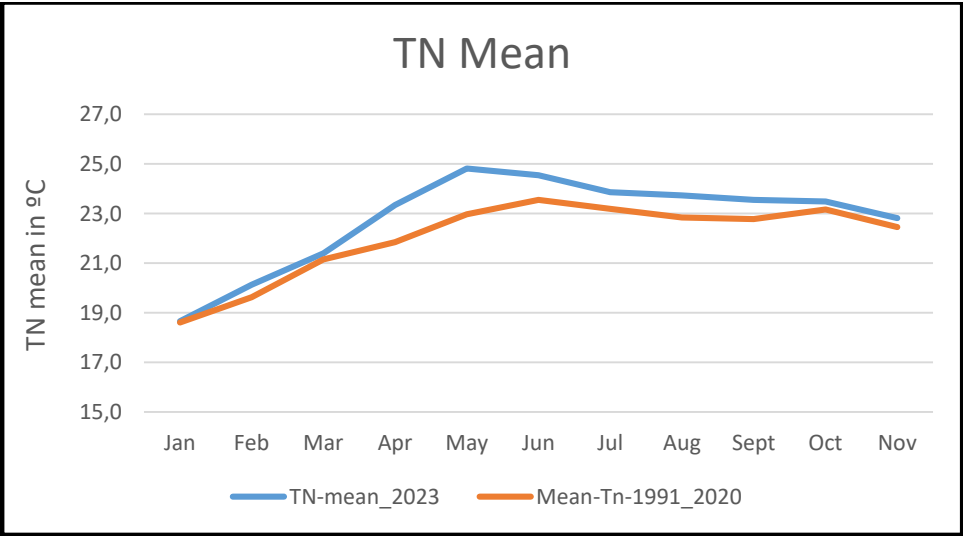


Figure-2. Average minimum temperature (TN) of 2023 and its climatological average 1991-2020

3.2. Analysis of maximum and minimum temperatures of 2023

The annual average of maximum temperature of 2023 was 33.6°C higher than the annual climatological average 1991-2020 which was 33.0°C and is slightly higher than the annual average of 2022 which was 33.5°C. On the other hand, the annual average of minimum temperature of 2023 was higher than the 1991-2020 average (22.8 and 22.0°C) and slightly lower than that annual average of minimum temperature of 2022 (22.9°C), figure - 3.

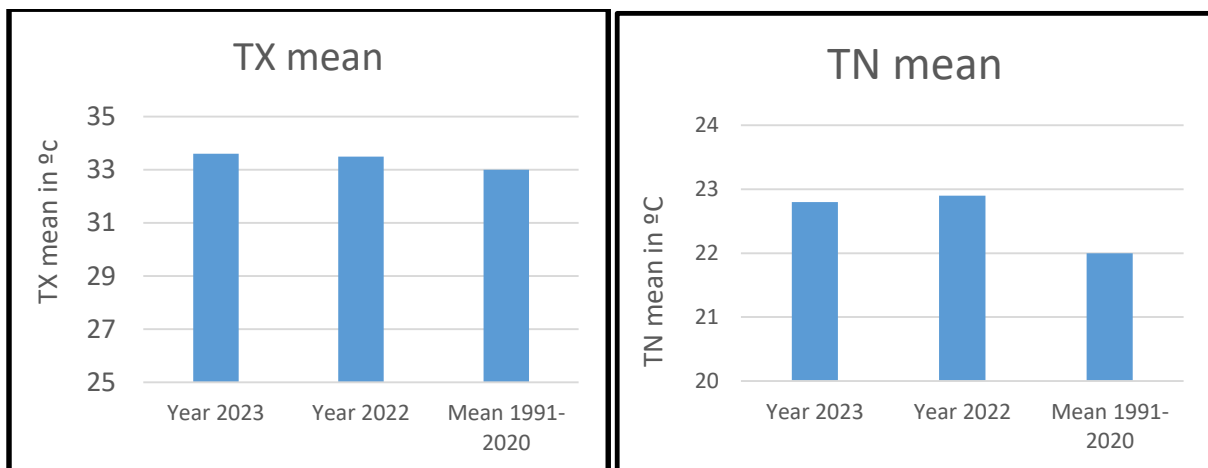


Figure-3. Maximum and minimum temperatures of 2023

3.3. Difference between TX and TN of 2023 and its thermal amplitude

The temperature ranges between TX and TN are between 10-15°C in the dry season and between 7-10°C in the rainy season.

The greatest amplitude is in the months of January and February (15°C) and the lowest amplitude is in the month of August (7 °C), figure-4-5.

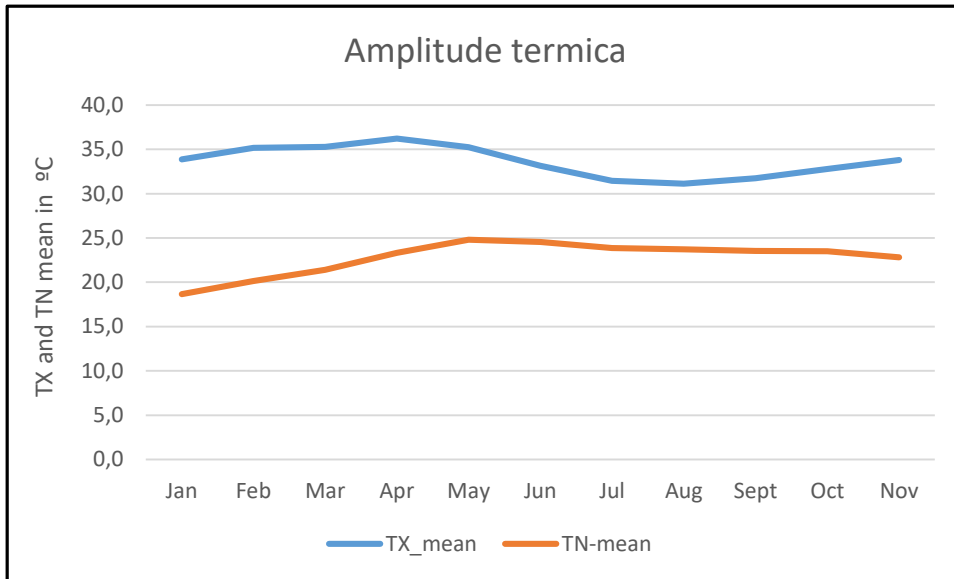


Figure-4. TX and TN monthly average 2023

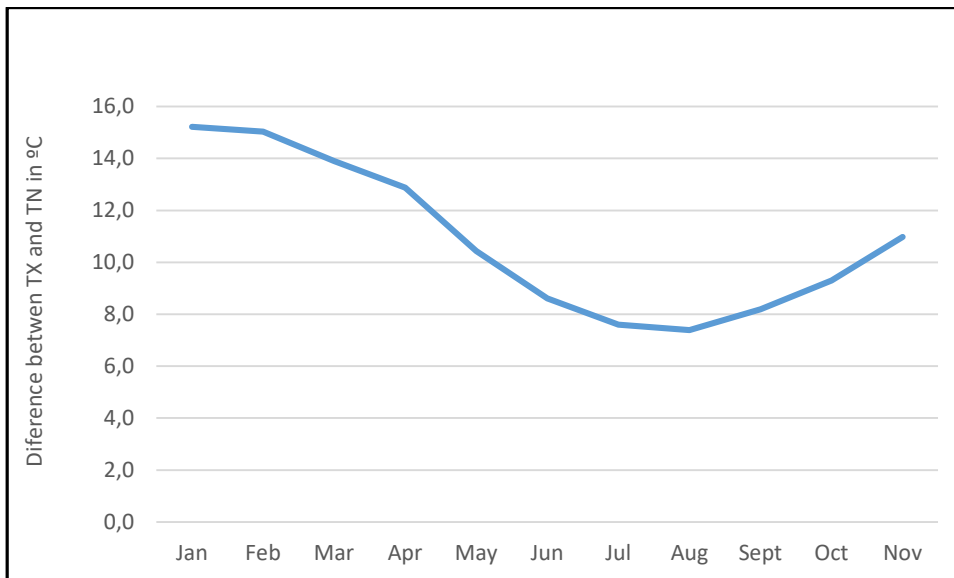


Figure-5. Diference between TX and TN Monthly Average 2023

3. 4. Precipitation Analysis

With the exception of June, monthly rainfall in 2023 was lower than the 1991-2020 climatological average. However, the month of August continues to be the rainiest month both in the year 2023 and also in the 1991-2020 climatological average, figure -6.

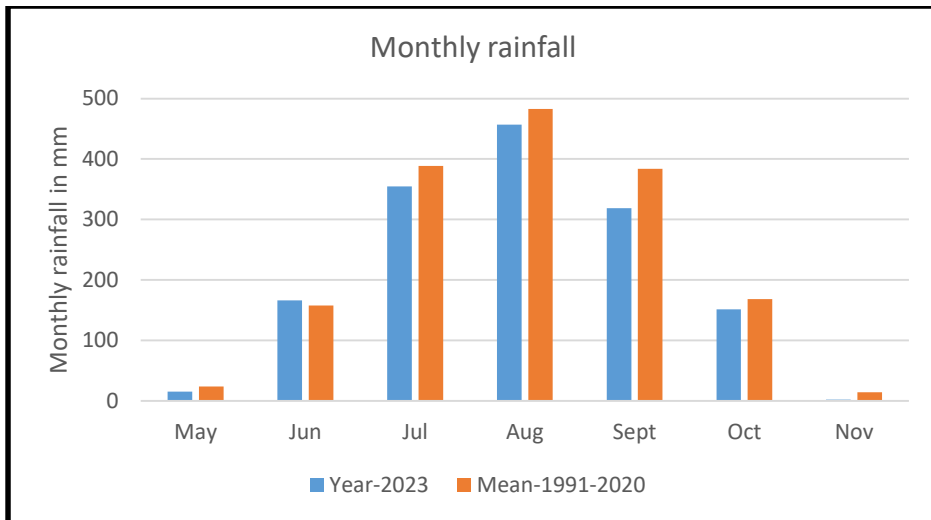


Figure-6. Distribution of monthly precipitation in 2023 in relation to the 1991-2020 average

The total annual precipitation in 2023 was deficient (1502.2mm) in relation to the climatological average of the period 1991-2020 (1625.5mm) and much lower than 2022, which was 1840.8mm, figure-7.

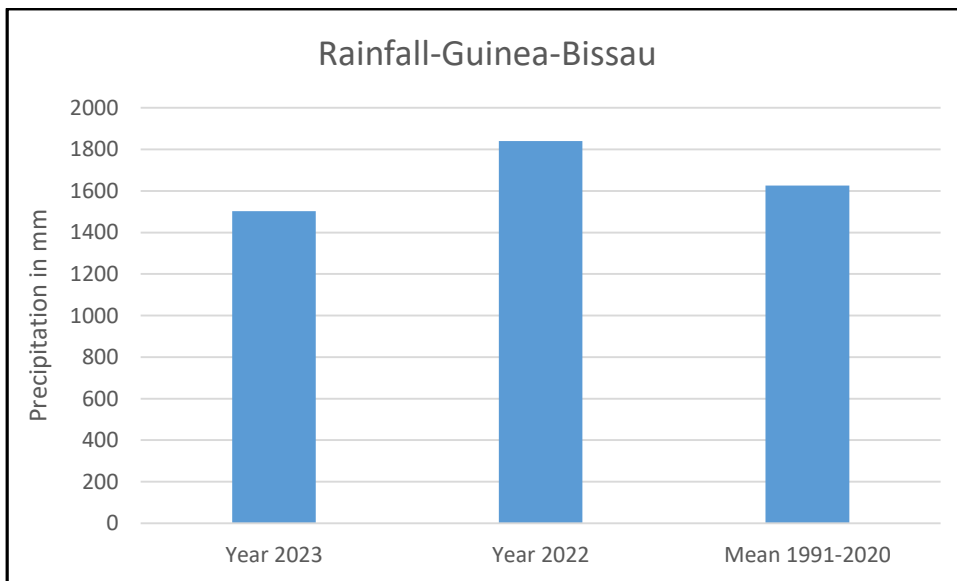


Figure-7. Precipitation of 2023, 2022 and the 1991-2020 average

General summary table of the climatological situation in 2023

Parameter	2023	2022	Mean 1991-2020	Situation in 2023 in relation to the 1991-2020 average	ituation of 2023 in relation to 2022
Average maximum temperature (TX)	33,6	33,5	33,0	Increase of +1.8%	Increase of +0.30%
minimum temperature (Tn)	22,8	22,9	22,0	Increase of +3,6%	Reduction of - 0.44%
Rainfall	1502,2	1840,8	1625,5	Reduction of -7,6%	Reduction of -18.4%

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The annual average of maximum temperatures for the year 2023 had an increase of 1.8% (33.6°C) in comparison with the climatological average 1991-2020 which was 33.0°C while the average of 2022 was increase at 0.30%.

As for the average annual minimum temperatures in 2023, there was an increase of 3.6% in relation to the climatological average of 1991-2020 (22.8°C against 22.0°C) and a decrease of 0.44%°C in relation to the year 2022.

Regarding total precipitation in 2023, this was below the climatological average (1502.2mm against 1625.5 mm), that is, a reduction of 7.6% and in relation to 2022, the reduction was 18.4%, and the monthly rainfall in 2023 was lower than climatological average the 1991-2020, with the exception of the month of June.

It should be noted that this analysis did not take into account data from December in both periods.

5.2. Recommendation

Due to the difficulties that the National Institute of Meteorology (INM-GB) faces in collecting data, it was only possible to collect data from 3 main stations in the country for this study and the following is recommended to the WMO:

- Support INM-GB with means of data collection to prepare the next bulletin climatology of the year.

- Help INM-GB in the maintenance and rehabilitation of Meteorological Stations (Bissau, Bafatá and Bissorâ).