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CLIMATE SERVICES CENTRE (SADC-CSC)

REGIONAL CLIMATE MONTHLY MONITOR

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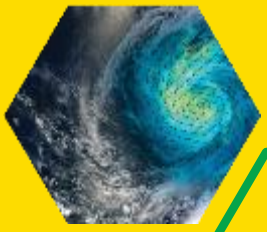

FINANCIAL RESOURCES

European Union

TECHNICAL PARTNERS:

WMO

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INTRA-ACP CLIMATE SERVICES AND RELATED APPLICATIONS PROGRAMME

An initiative of the Organisation of African, Caribbean and Pacific States funded by the European Union

BENEFICIARIES:

A. HIGHLIGHTS

- **Rainfall during the month of February 2024 was well below the monthly long-term average over most of the contiguous SADC region, except** over western Angola, western and southern parts of Tanzania, extreme north Mozambique, extreme north-eastern Zambia and Eswatini where it was above normal.

- **A very delayed agricultural rainfall season was observed over most of Botswana and Namibia with the recorded onset being observed in February.** In regions such as west Zambia, most of Namibia, Botswana, west Zimbabwe, and over central South Africa onset has been delayed by up to 5 dekads.

- **Persistent long term drought conditions continued over much of the central and western parts of** the sub-continent covering Namibia, southern Angola, Botswana, western Zambia, most of Zimbabwe and northern South-Africa

- **Extreme precipitation of around 100mm per day were recorded over the eastern fringes of Madagascar and over Mauritius,** mostly due to clouds bands associated with the tropical cyclone Eleanor.

- Minimum temperatures were above the long-term average over most parts of the SADC region. Some **parts of Namibia, east Botswana and some southern parts of Angola recorded 2-3 0C above the monthly average**.

- Except for eastern Tanzania, most of the congruous SADC region recorded **normal to above normal monthly mean maximum temperatures**.

- Maximum temperatures above the 95th percentile consecutively over a 3-day period (heatwaves) **were observed over southwestern DRC, north and southeastern Angola, west Zambia, south Malawi, northwestern Mozambique and over north and central Madagascar**.

1. REGIONAL RAINFALL PERFORMANCE

Rainfall during the month of February 2024 was below the monthly long-term average over most of the contiguous SADC region, except over northwestern and extreme western parts of Angola, western and southern parts Tanzania, extreme north Mozambique, extreme north-eastern Zambia and Eswatini where it was above normal. Over the central parts of Madagascar, the accumulated rainfall was close to above normal whereas elsewhere it was mostly slightly below normal. Southern Mozambique, Zimbabwe, South Zambia, most of Botswana, west Namibia, western fringes of South Africa were highly deficient in rainfall with less than 30% of the monthly mean precipitation (Figure 1).

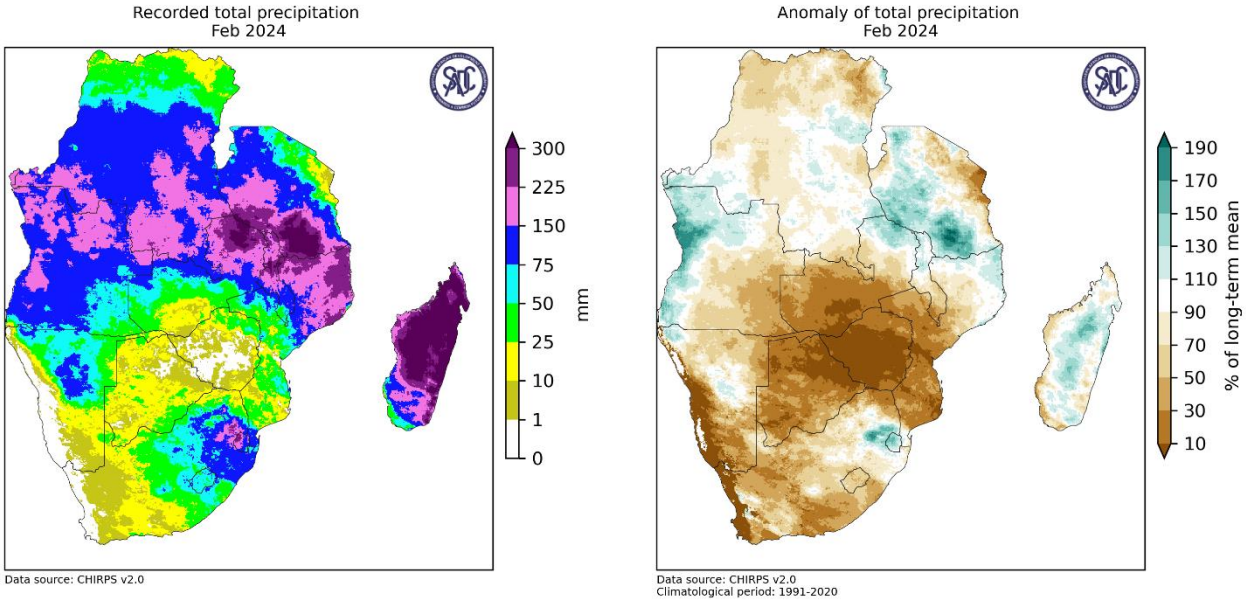

Figure 1: Observed rainfall (left) and rainfall anomaly (right) for the month of February 2024

1.1 Onset of the Rainfall Season

The onset of the 2023/24 season is defined here from agricultural perspective as accumulation of at least 20mm of rainfall over three days, which are not followed by a dry spell in the next 10 days (i.e. there is at least one rainfall event in the next 10 days). According to this definition, the agricultural rainy season was triggered during the month of October over north-western parts of the SADC region and south-eastern coastal areas (such as in South Africa, Lesotho, Eswatini, parts of Mozambique and over eastern parts of Zimbabwe) and some eastern and northern parts of Tanzania. The region of rainfall onset expanded to most of Mozambique, over central Angola, and some parts of Zambia during the month of November and covered the rest of Tanzania and Malawi in December. By late December and January onset was also triggered over the extreme northern part of Namibia and southwestern Zambia, the rest of Zimbabwe, some parts of Botswana and northern parts of South Africa. (Figure 2).

Very delayed agricultural rainfall season was observed over most of Botswana and Namibia with the recorded onset being observed in February. The anomaly map shows that in southern Angola, west Zambia, most of Namibia, Botswana, west Zimbabwe, central South Africa onset has been delayed by up to 5 dekads.

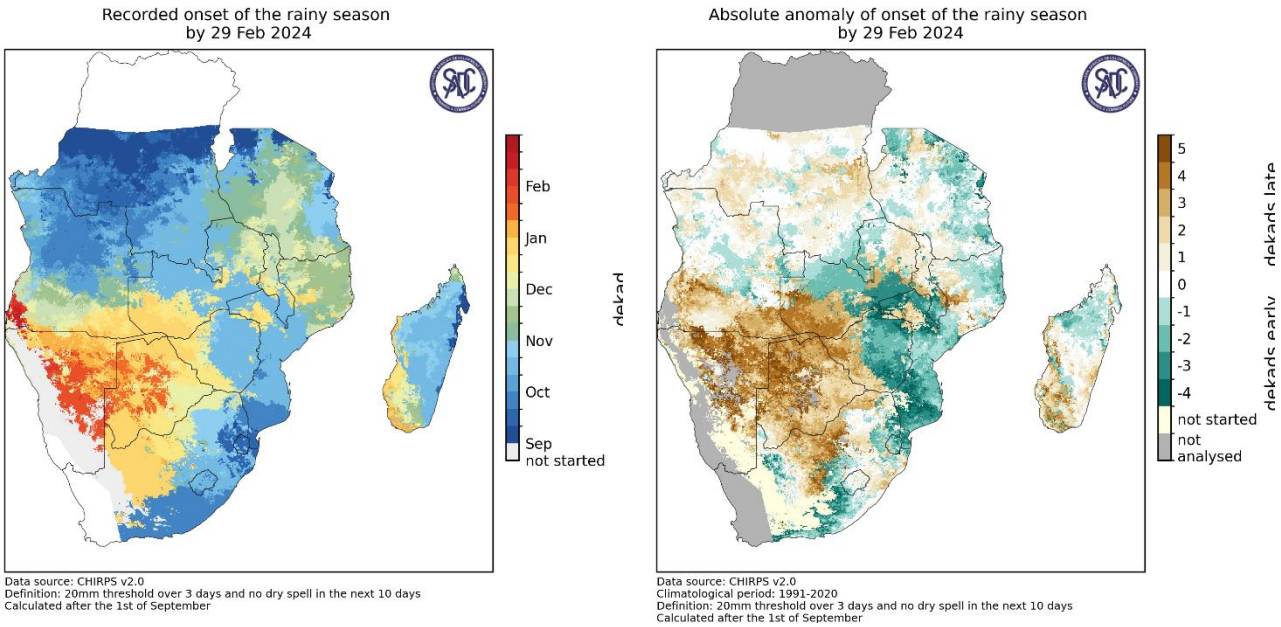

Figure 2: Onset of the 2023/24 rainfall season over the SADC region

1.2 Drought Monitoring

1.2.1 Seasonal and Annual Drought Assessment

Persistent drought conditions, defined by 12-month SPI (SPI-12) continued over much of the central and western parts of the sub-continent covering Namibia, southern Angola, Botswana, western Zambia, most of Zimbabwe and northern South-Africa ((Figure 3).

The 3-month Standardized Precipitation Index (SPI-3) is a meteorological drought indicator to monitor precipitation anomalies over 3-month accumulation periods and is a proxy indicator for immediate impacts of droughts including reduced soil moisture. Such short term drought of moderate dryness, was detected over most of the central and western parts of the SADC region stretching from central Angola, west Zambia, central Mozambique, all the way down to South Africa. However, the 3-month SPI also indicated extreme dryness over some region of central Angola, western Namibia, and extreme western and southern fringes of South Africa. Northern DRC, Western and southern fringes of Madagascar is also experiencing moderate dry condition as shown in Figure 3.

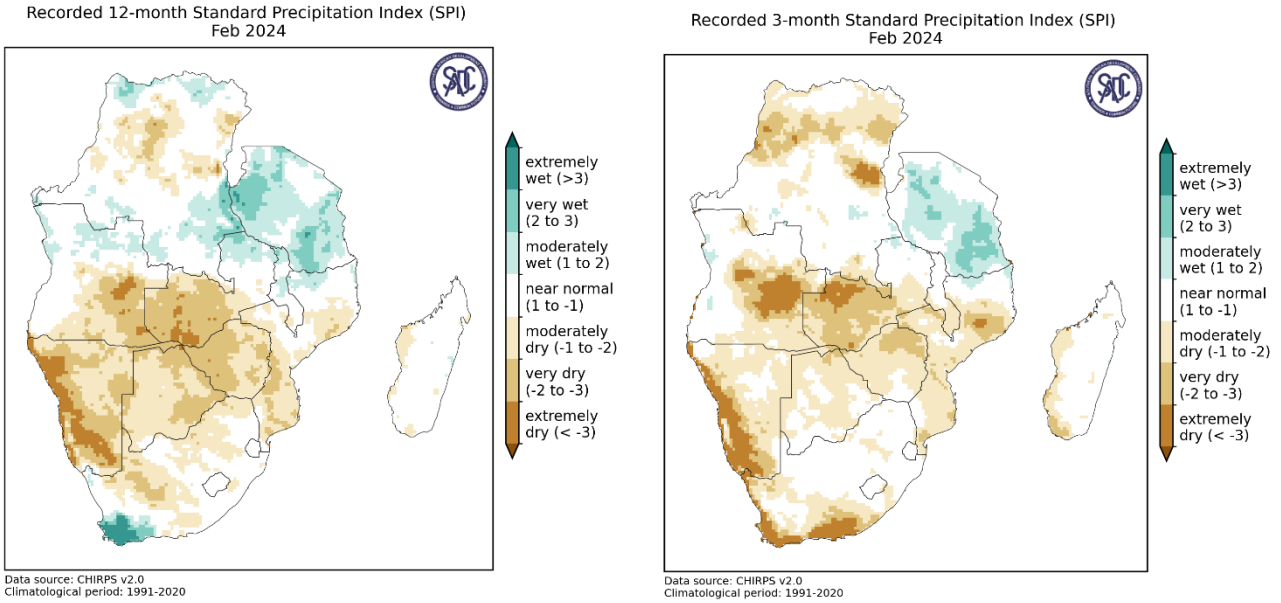

Figure 3: Drought assessment: SPI for 3-months (left) and 12-month SPI (right)

1.2.2 Short term drought (dry spells)

Figure 4 shows that the consecutive number of dry days were ranging from 25 to 30 over western and southern Namibia, western half of South Africa, east Botswana, most of Zimbabwe, south Mozambique and southern parts of Zambia indicating an extended short-term dry spell with no rainfall events almost through the entire month of February 2024.

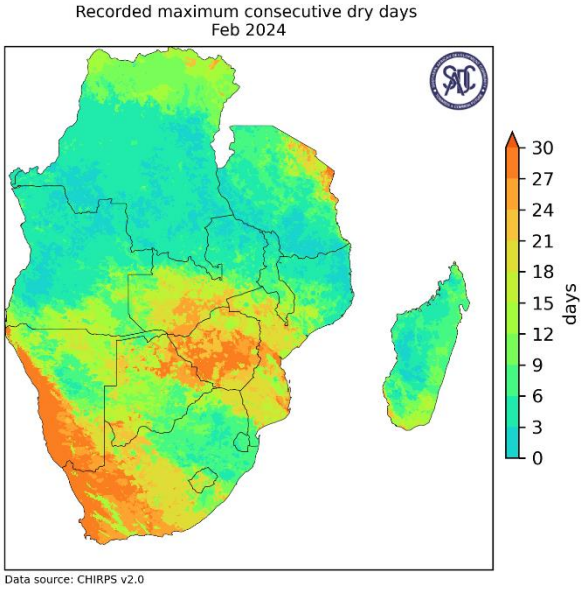

Figure 4: Dry spells prevalence during the month of February 2024

1.3 Extreme Rainfall

Sporadic rainfall events of 25-50mm were recorded over eastern Zambia, Malawi, southern Tanzania, north Mozambique, eastern part of South Africa and some parts of Lesotho and Eswatini (Figure 5). Over most of Madagascar the recorded maximum one day rainfall was of the order of 25mm. The latter also recorded extreme precipitation of around 100mm in 24 hours over the eastern fringes of the island. Most of this precipitation was due to clouds bands associated with the tropical storm Eleanor which was evolving to the east of the island. This tropical system also poured extreme rainfall of over the island of Mauritius.

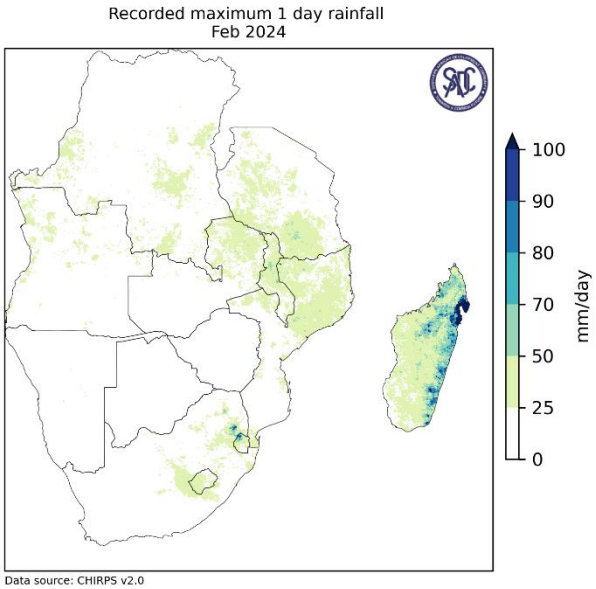

Figure 5: Maximum rainfall recorded over a one-day period during the month of February 2024

2. REGIONAL TEMPERATURE

2.1 Minimum Temperature

Except for Lesotho and the central parts of South Africa, most of the SADC region recorded mean minimum temperatures of above 20^{0}C. Over most of DRC, Mozambique. Malawi, north Zimbabwe Botswana, Namibia, western Angola, and most of Madagascar the mean minimum temperatures hiked to 25 ^{0}C.

The minimum temperature anomalies were of the order 3 ^{0}C above the long-term average over central Namibia, west Botswana and locally over extreme northern Zimbabwe (Figure 6).

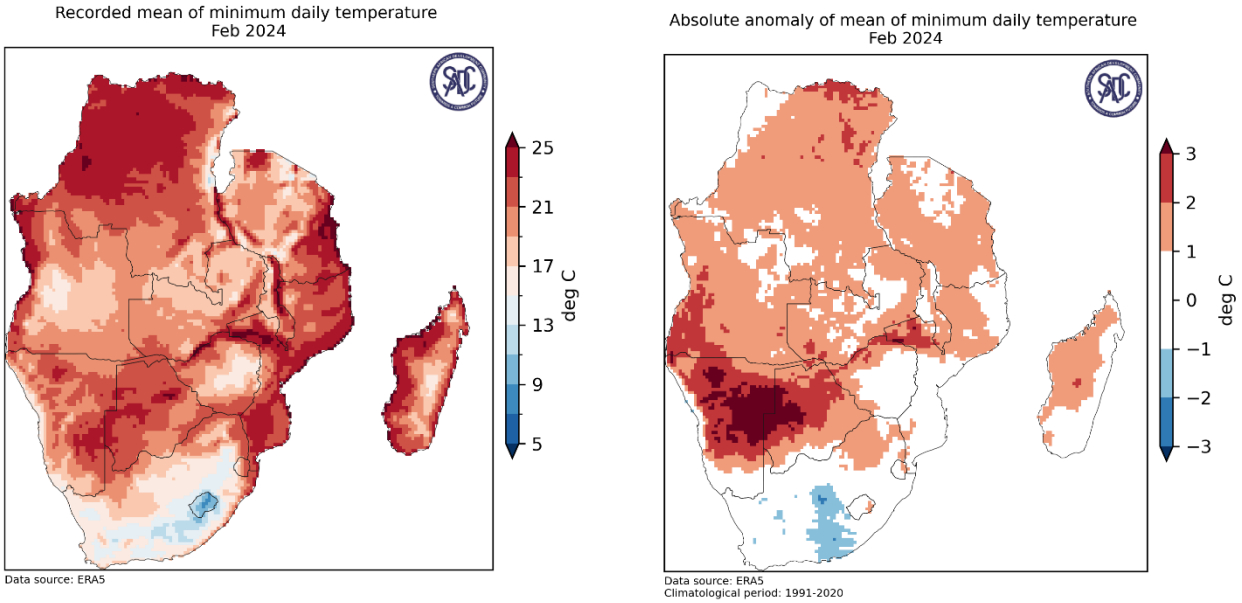

Figure 6: Observed average minimum temperature (left) and anomalies (right) for February 2024

2.2 Maximum Temperature

The average maximum temperatures peaked to 36^{0}C over north DRC, most of Namibia, most of Botswana, extreme northern western parts of South Africa and locally over extreme northern parts of Zimbabwe. Maximum temperatures, 3-4 ^{o}C above average, were recorded locally over north and west DRC, south Angola, west and south Zambia, central Mozambique, most of Botswana, central South Africa and most of Namibia. The rest of the SADC region recorded close to slight above normal temperature during the month of February 2024 (Figure 7).

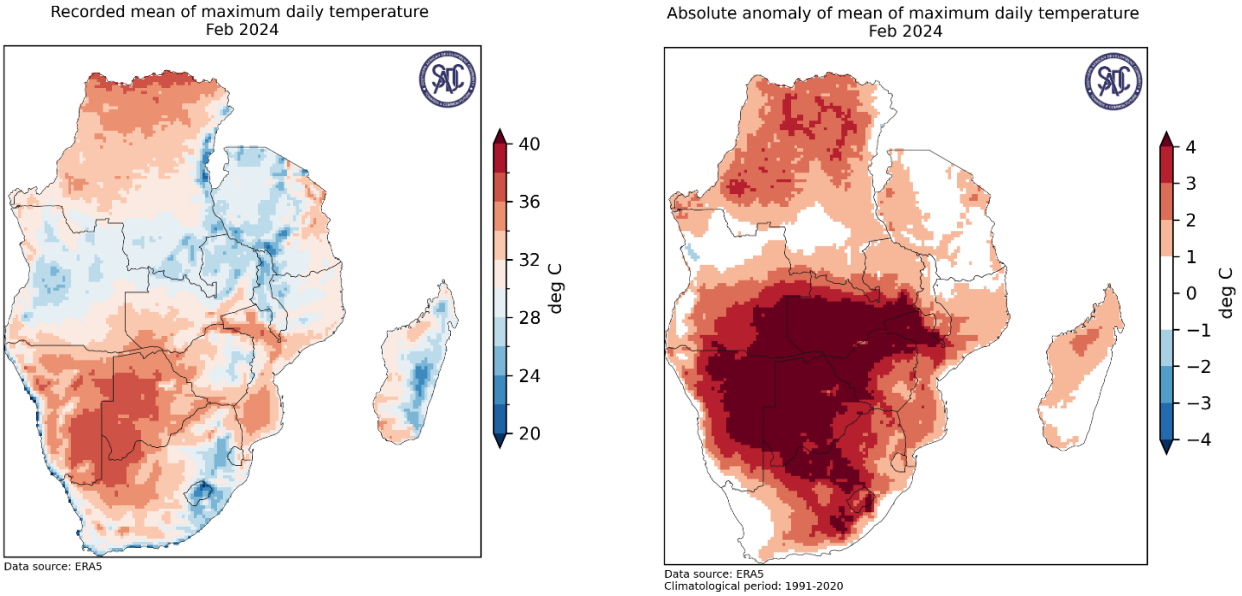

Figure 7: Observed maximum average temperature (left) and anomalies (right) for February 2024

2.3 Heat waves

We distinguish here two types of heatwaves which differ in economic and human health impacts – daytime defined based on maximum temperature recorded during daytime, and night-time, defined based on minimum temperature recorded during nighttime. Approach to derive these indices is described in the Appendix.

Daytime heat waves were recorded over central DRC and over most of the central contiguous SADC region which included southeastern Angola, most of Zambia, south Malawi up to central Mozambique, north Zimbabwe, most of Botswana and Namibia. These regions including north Madagascar had recorded 15-20 days of daytime heat wave conditions in February (Figure 8).
Night-time heatwaves were recorded for over 15 days over most of the contiguous SADC region except for South Africa, southern Zimbabwe and centra Tanzania. North Madagascar as well recorded around 15 nighttime heat wave events. (Figure 8).

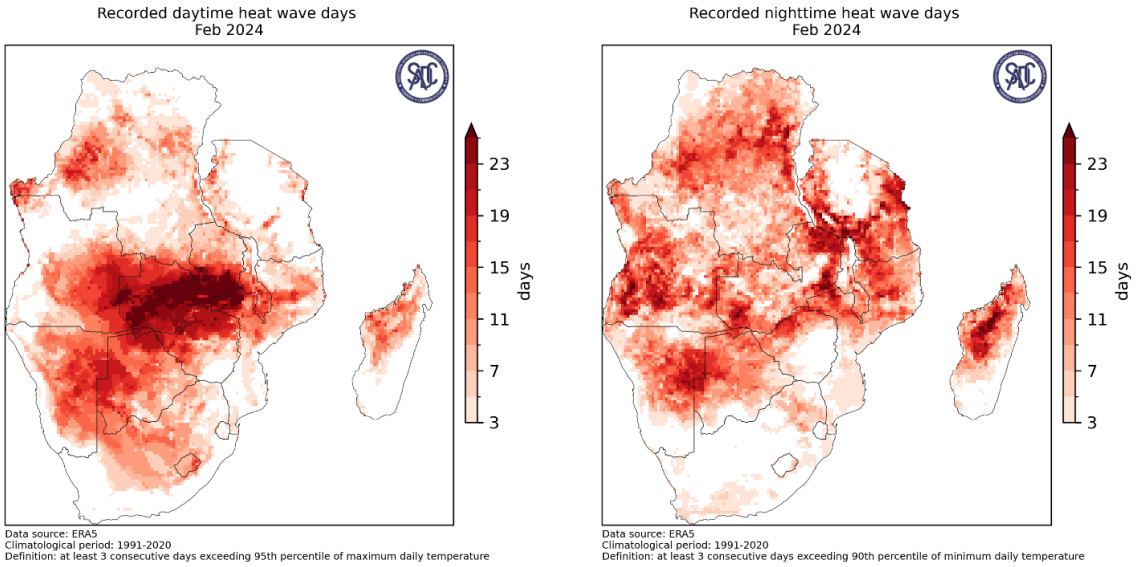

Figure 8: Heatwaves detected during the month of February 2024

NOTE:

This bulletin used CHIRPS and ERA5 data. While these datasets are considered broadly representative to local conditions over the SADC region, the results presented here may differ from those derived using local observations from Member States.

Users are therefore, urged to consult the local National Meteorological and Hydrological Services (NMHSs) for local conditions and detailed interpretation of the contents of this bulletin.

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