SOUTHERN AFRICAN DEVELOPMENT COMMUNITY

CLIMATE SERVICES CENTRE (SADC-CSC)

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INTRA-ACP CLIMATE SERVICES AND RELATED APPLICATIONS PROGRAMME

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BENEFICIARIES

A. HIGHLIGHTS

- **The rainfall during December 2024 was well above the monthly long-term average** over most of the contiguous SADC region, except over the extreme southwest covering southern Angola, western Namibia, western South Africa and norther DRC. The central part of the subcontinent located in Botswana was very wet.
- **Persistent long term drought conditions continued** over most of the sub-continent, specifically over the western side of the sub-continent. However, most parts of Tanzania, eastern DRC, and central parts of the sub-continent near Botswana were moderately wet.
- **Dry days:** Less than 4 consecutive dry days were observed in most of the central parts of the subcontinent located DRC, Angola, northeastern South Afrina and central Madagascar.
- The **minimum temperature anomalies** of above **3ºC** were recorded everywhere including in Madagascar, but not within some parts in south Africa, Tanzania and DRC.
- Positive **maximum temperatures anomalies of above 4ºC,** were recorded almost everywhere within the subcontinent, during the month of December 2024, except within Tanzania, and everywhere within the region where null anomalies were conspicuous.
- Day time heat waves of more than 26 days were recorded within most of the region, especially within the central parts of the region in December. Night-time heatwaves of around 25-30 days were recorded within parts of the eastern DRC, the western Madagascar, Zambia and Zimbabwe.
- Rainfall and temperature outlook: Most of the subcontinent expected above normal rainfall. Temperature outlook shows that most of the region will record high average temperatures in December, except the central parts of the region.

1. Regional Rainfall Performance

The rainfall during December 2024 was considerable over most areas of the SADC region, particularly in northwest South Africa, Botswana, Zimbabwe, Zambia, Angola, the bulk of DRC, Mozambique and Madagascar. However, other areas such as western of South Africa, western Namibia and northern DRC, southern Mozambique and eastern of Madagascar, recorded very poor precipitation, [Figure 1 left]. Anomalies of total precipitation shows that despite this rainfall records, the bulk of the region, including the islands, continued relatively dry, except the northeastern South Africa, Botswana, southern Zimbabwe, isolated parts of western Namibia and Angola and the northeastern of Tanzania were considerably wet, with the precipitation above the long-term average, [Figure 1 right].

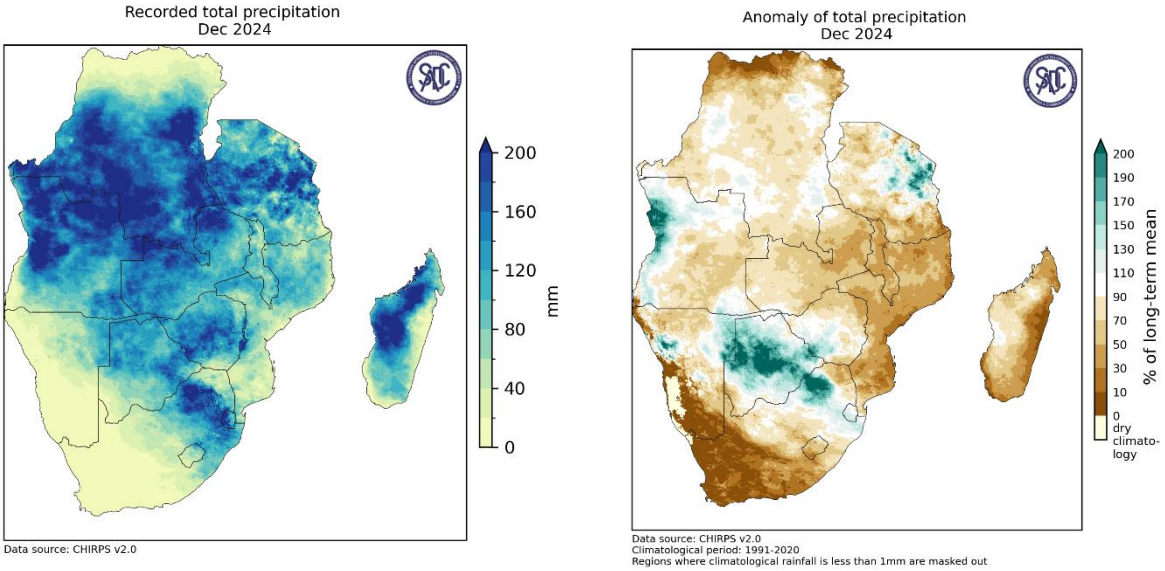

Figure 1: Observed rainfall (left) and rainfall anomaly (right) for the month of December 2024

1.1 Drought Monitoring

1.1.1 Seasonal and Annual Drought Assessment

Despite improvement in precipitation by comparison with the previous months, drought conditions defined by 12-month SPI (SPI-12), show that extremely dry conditions were prevalent over the whole region, except over Tanzania, and within isolated areas of the central parts of the subcontinent, where near normal conditions prevailed, [Figure 2 left].

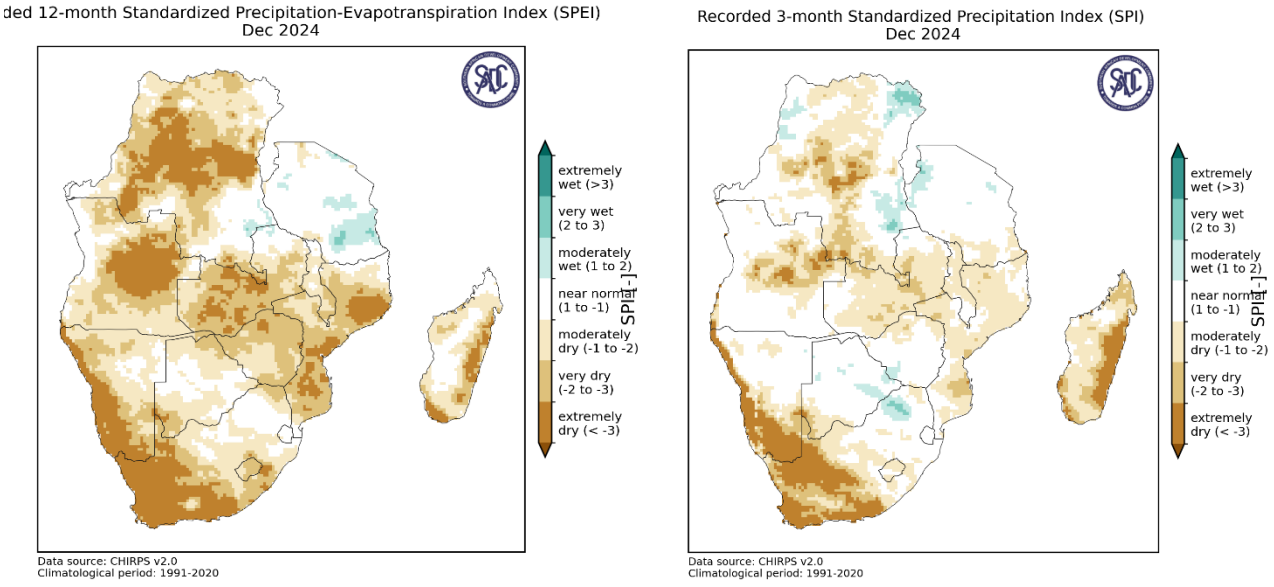

Figure 2: Drought assessment: SPI for 12-months (left) and 3-months SPI (right)

The recorded 3-month SPI shows that the recently recorded precipitation has improved considerably the soil conditions mainly within Tanzania, the central parts of the SADC region, and parts of western and eastern DRC, where the soils conditions vary generally from near normal to extremely very wet, [Figure 2 right].

1.1.2 Short term drought (dry spells)

Consecutive number of dry days ranging from 25 to 30 were recorded over most of the southwestern parts of the subcontinent located in west Namibia western and southwest South Africa, eastern Madagascar and around the northernmost part of DRC. This is also true within the bulk of the eastern Tanzania and inconspicuous parts of Mozambique, Botswana and Madagascar. The rest of the subcontinent located in DRC, bulk of Angola, northeastern South Africa, Zambia, west Tanzania and central Madagascar, recorded less than 4 dry days, [Figure 3].

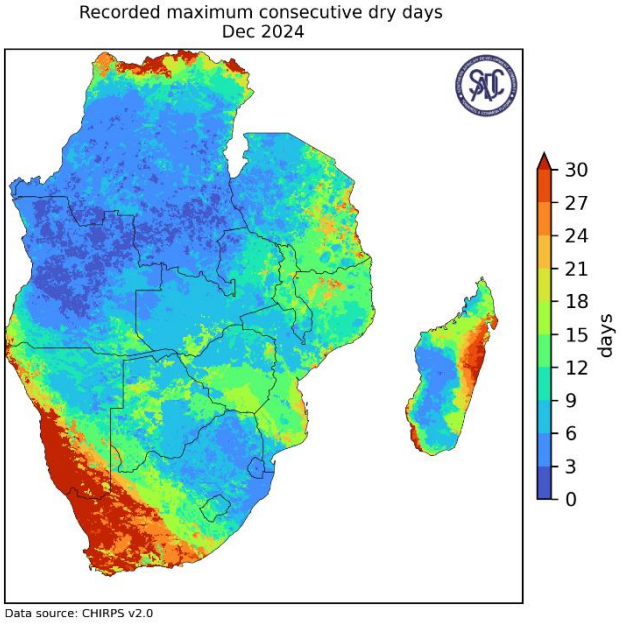

Figure 3: Dry spells prevalence during the month of December 2024

1.2 Extreme Rainfall

The whole subcontinent recorded no extreme precipitation in a single day period, except in isolated areas within Tanzania and South Africa, where precipitation reached 90mm/day. Many countries, including Madagascar recorded precipitation between 25 and 50mm in one day. The rest of the subcontinent, mainly the western and northern parts, recorded null precipitation [Figure 4].

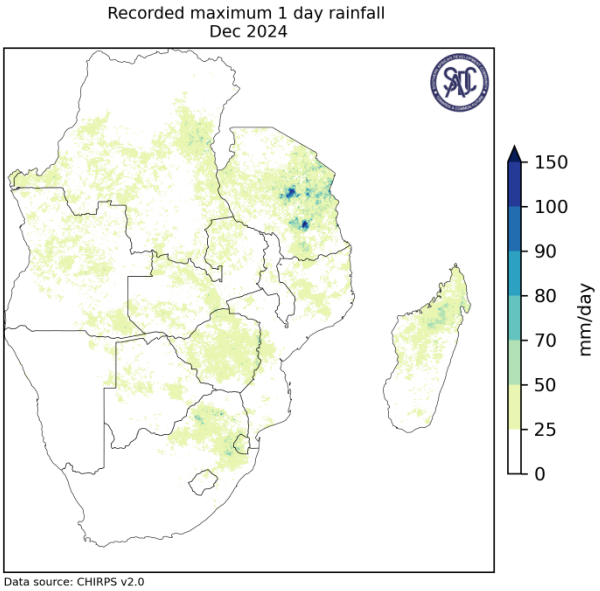

Figure 4: Maximum rainfall recorded over a one-day period during the month of December 2024

2. REGIONAL TEMPERATURE

2.1 Minimum Temperature

Average minimum of daily temperatures of above 25^{0}C were recorded within most of the region except within most of South Africa, and the southwestern fringe of Namibia, where the minimum temperatures below 11^{0}C persisted, [Figure 5 left].
The absolute anomaly of minimum temperatures shows that in December there were positive signals above 3^{0}C over most of the region including the western part of the island of Madagascar.
The western tip of southwestern South Africa recorded negative anomalies of minimum temperatures of -1^{0}C or less. Nevertheless, inconspicuous isolated areas with null minimum temperature anomalies were found everywhere in the subcontinent, [Figure 5 right].

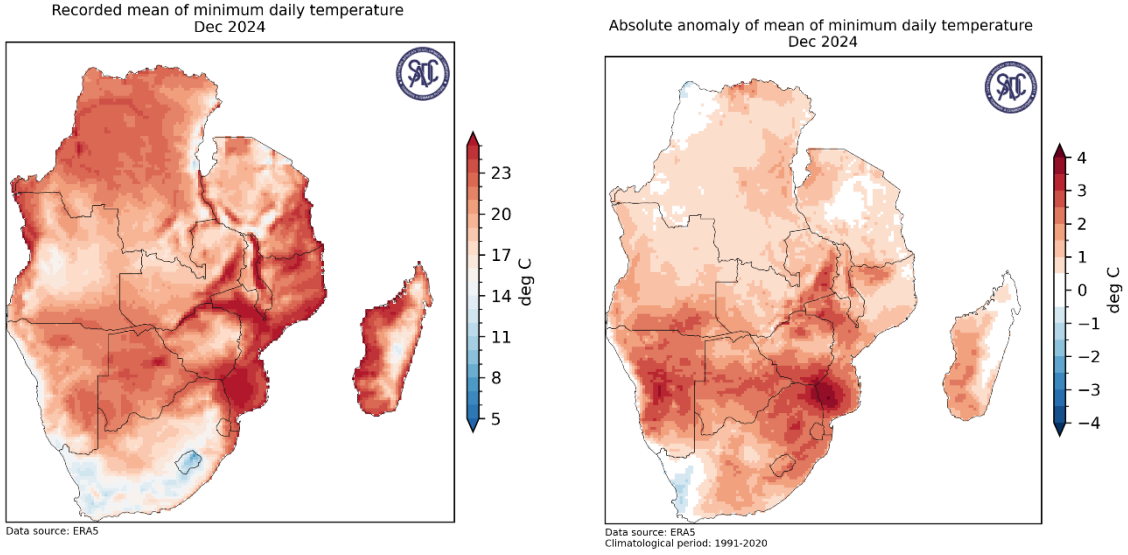

Figure 5: Observed average minimum temperature (left) and anomalies (right) for December 2024

2.2 Maximum Temperature

The average of maximum temperatures in December, peaked to above 36^{0}C over the central part of the sub-continent and western Madagascar, northern DRC, most of Mozambique and southern Tanzania. Other regions covering the southern DRC, northern Zambia, northwest Tanzania, central

and northern Angola, coastal fringes of South Africa and most of east Madagascar recorded maximum temperatures around 25ºC [Figure 6 left]. Positive absolute of maximum temperatures anomalies above 4ºC were recorded over most of the subcontinent and Madagascar, but not in most of the Tanzanian territory. Regions of null anomalies of maximum temperatures are also inconspicuous in some parts, indicative of poor variability in relation to the average in those area, [Figure 6 right].

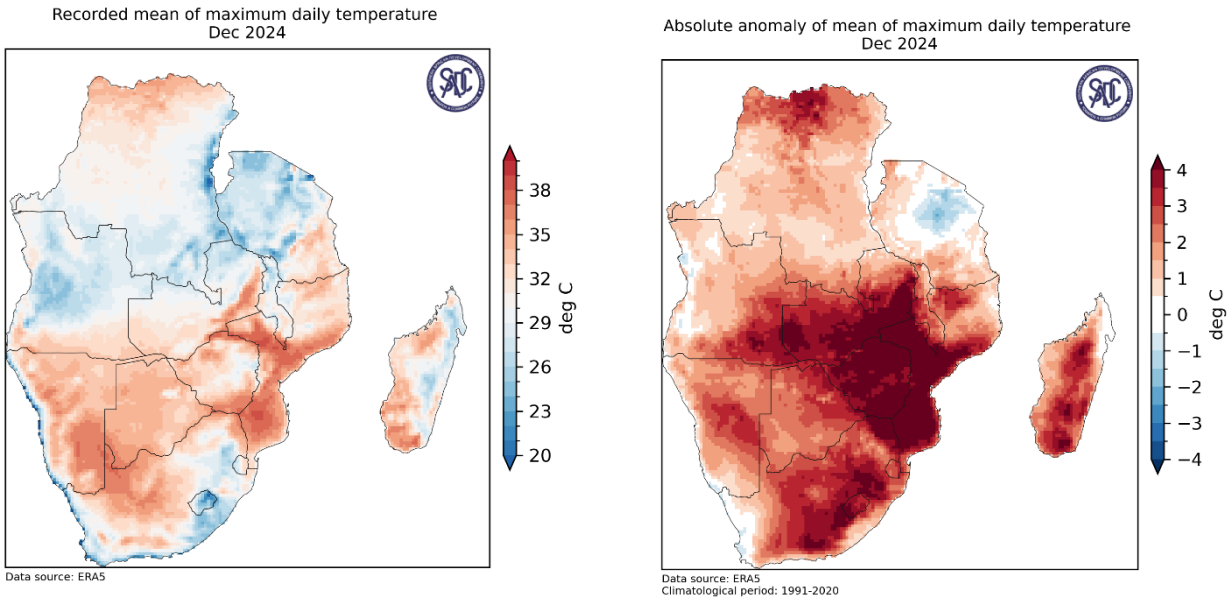

Figure 6: Observed maximum average temperature (left) and anomalies (right) for December 2024

2.3 Heatwaves

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.

Daytime heat waves of more than 26 days were recorded within the northernmost parts of the DRC, Zambia, Zimbabwe, Botswana, Mozambique and central Madagascar [Figure 7 left].

Night-time heatwaves of around 25-30 days were recorded within parts of the eastern DRC, the western Madagascar, Zambia and Zimbabwe. The whole subcontinent recorded nighttime heat waves of about 03 days, [Figure 7 right].

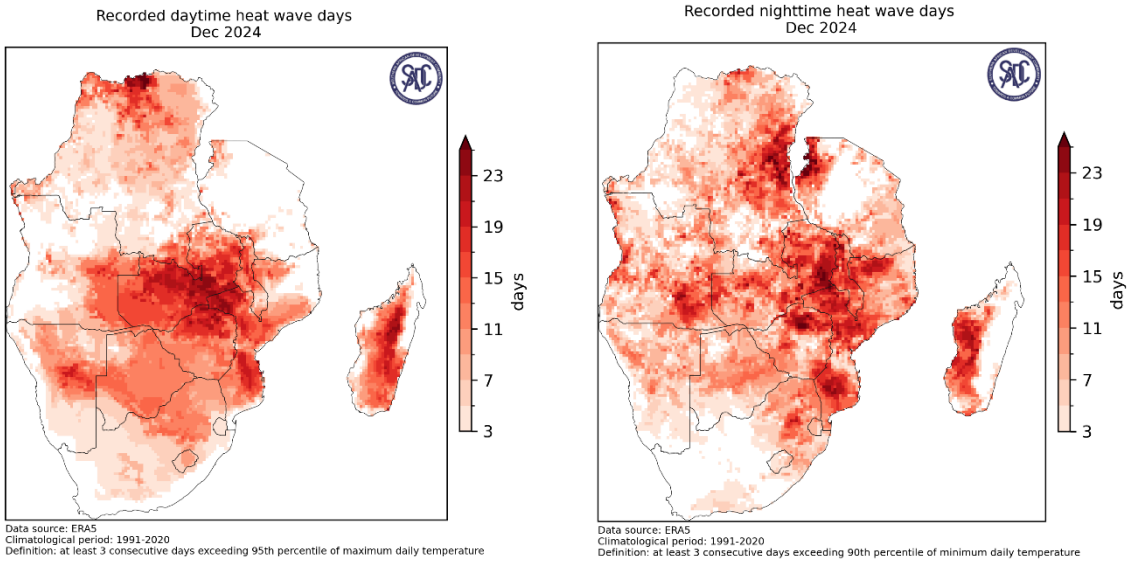

Figure 7: Heatwaves detected during the month of December 2024

3. REGIONAL MONTHLY OUTLOOKS

3.1 Rainfall Outlook

There is an increased probability for above normal rainfall over eastern Botswana, southwestern and southeastern DRC. Above normal rainfall is also further expected in most of Tanzania, Mozambique, Malawi, Zimbabwe, Namibia, southern half of Angola, northern parts of South Africa including Lesotho and northern Madagascar, [Figure 8].

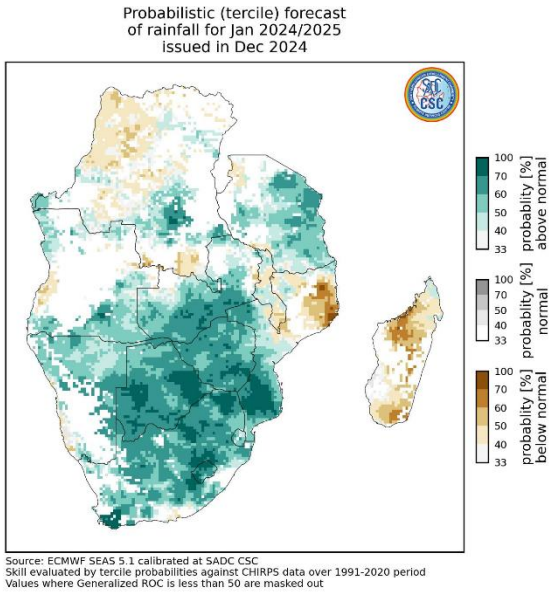

Figure 8: Rainfall probabilistic forecast for January 2025

3.2 Temperature Outlook

Much above normal temperatures are expected over most of DRC, Madagascar, parts of northern Mozambique and eastern Zimbabwe. Most of SADC region will experience above normal temperatures except for parts of northern Namibia, southern Angola, northern Botswana and northern Zambia together with southwestern parts of Tanzania and southeastern DRC where below normal temperatures can be expected, [Figure 9].

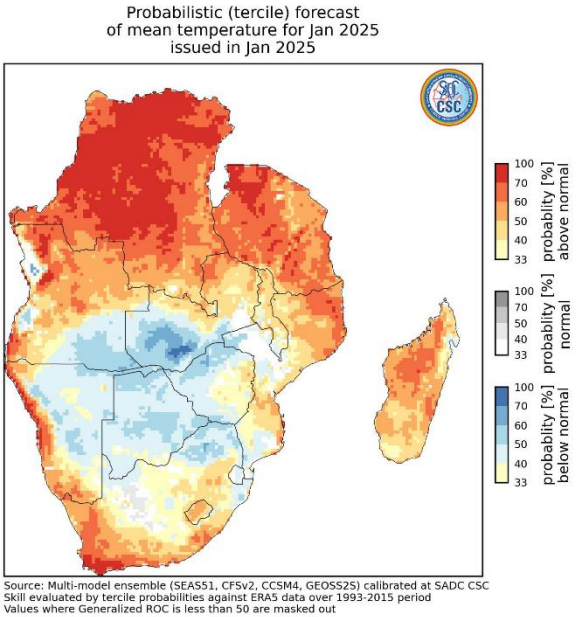

Figure 9: Temperature probabilistic forecast for January 2025

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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