Monthly Drought Bulletin

September 2023

1. *Overview*

Rainfall received during September 2023 was near-normal to above-normal over large parts of the country except in central KwaZulu-Natal and in isolated areas of the Free State extending to adjacent areas of North-West where below-normal rainfall was received. Somewhat dry, with moderately dry conditions in small isolated areas, were experienced in KwaZulu-Natal extending to central and eastern parts of the Free State as well as in the southern to central parts of the North-West.

During the 3-month period from July to September 2023, below-normal rainfall was received in large parts of KwaZulu-Natal and North-West extending to adjacent areas of the Free State and Northern Cape. The remainder of the country received near-normal to above-normal rainfall in isolated areas. Somewhat dry conditions, with moderately dry conditions in small and isolated areas, were experienced over large parts of the Free State, North-West, KwaZulu-Natal, and the central and northern parts of the Northern Cape.

During the 6-month period from April to September 2023, somewhat dry to severely dry conditions were experienced in central to northern parts of the Northern Cape. Otherwise, somewhat dry conditions were experienced in large parts of North-West, eastern parts of the Free State, and the western parts of KwaZulu-Natal extending to the southern adjacent areas of Mpumalanga and Gauteng as well as northern parts of the Limpopo Province.

The 12- and 24-month SPI maps indicate areas where prolonged droughts exist, in other words, where below-normal rainfall occurred over one year or longer. On the 12-month SPI map, somewhat dry to severely dry conditions, are noticeable in the central to northern and northeastern parts of the Northern Cape, extending to adjacent areas of North-West. On the 24-month SPI map, somewhat dry conditions are noticeable over the Limpopo Province, but moderately dry to severely dry conditions were experienced in small, isolated areas over the Western Cape.

1. *Rainfall assessment (1- and 3-monthly maps)*

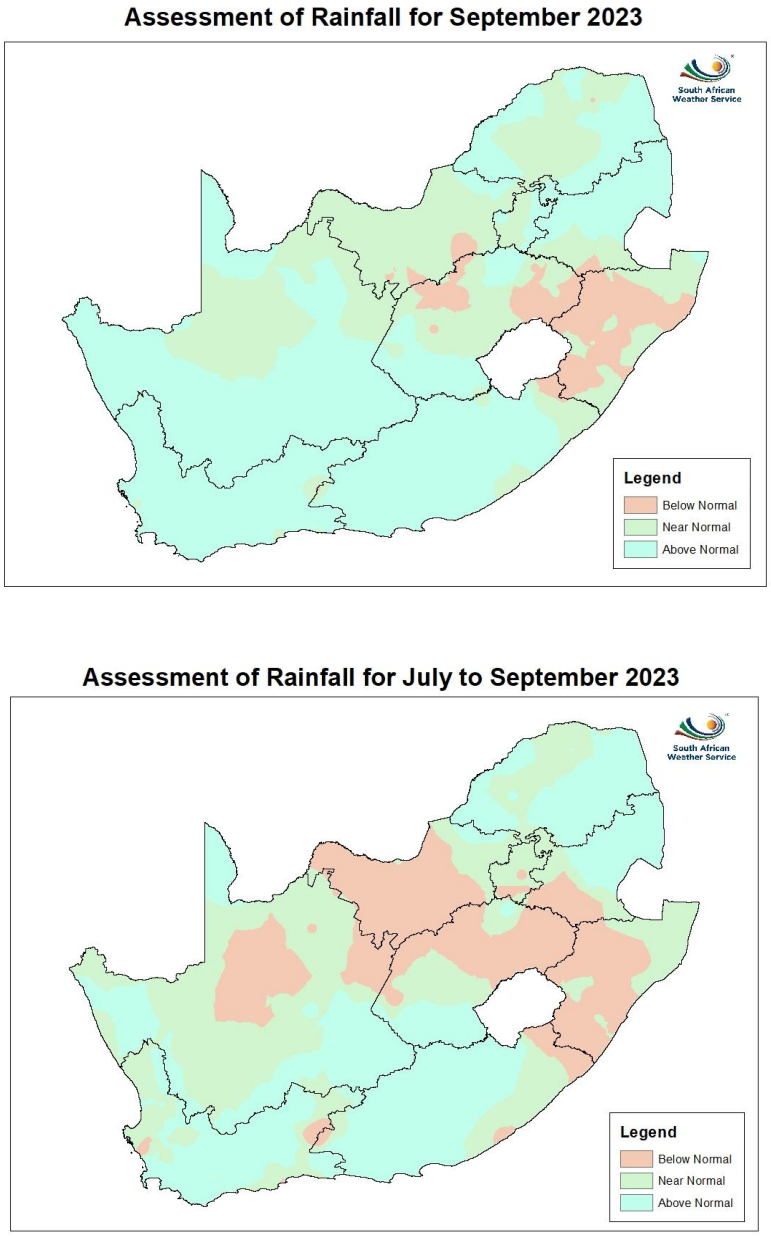

Figure 1: Assessment of rainfall maps for 1-month (September 2023; top) and for 3-month (July to September 2023; bottom)

3. Indications of Drought

3.1. Standardized Precipitation Index (SPI)

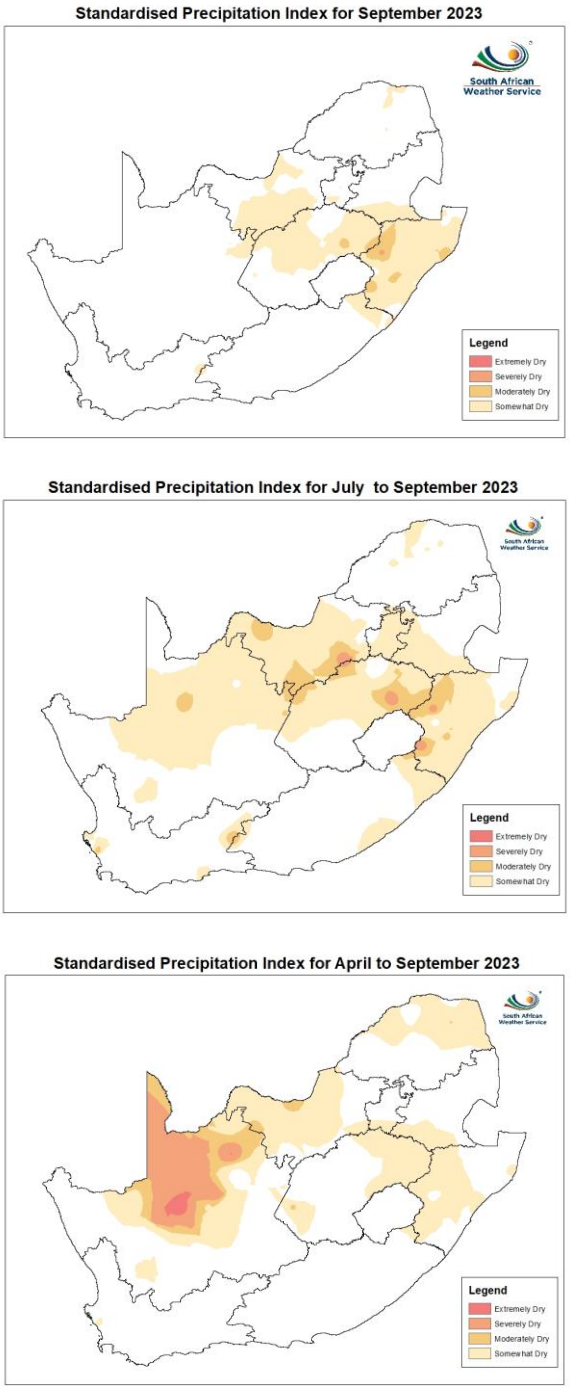

Figure 2: Short to medium-term SPI Maps for 1-month (September 2023; top), 3-month (July to September 2023; middle) and 6-month (April to September 2023; bottom)

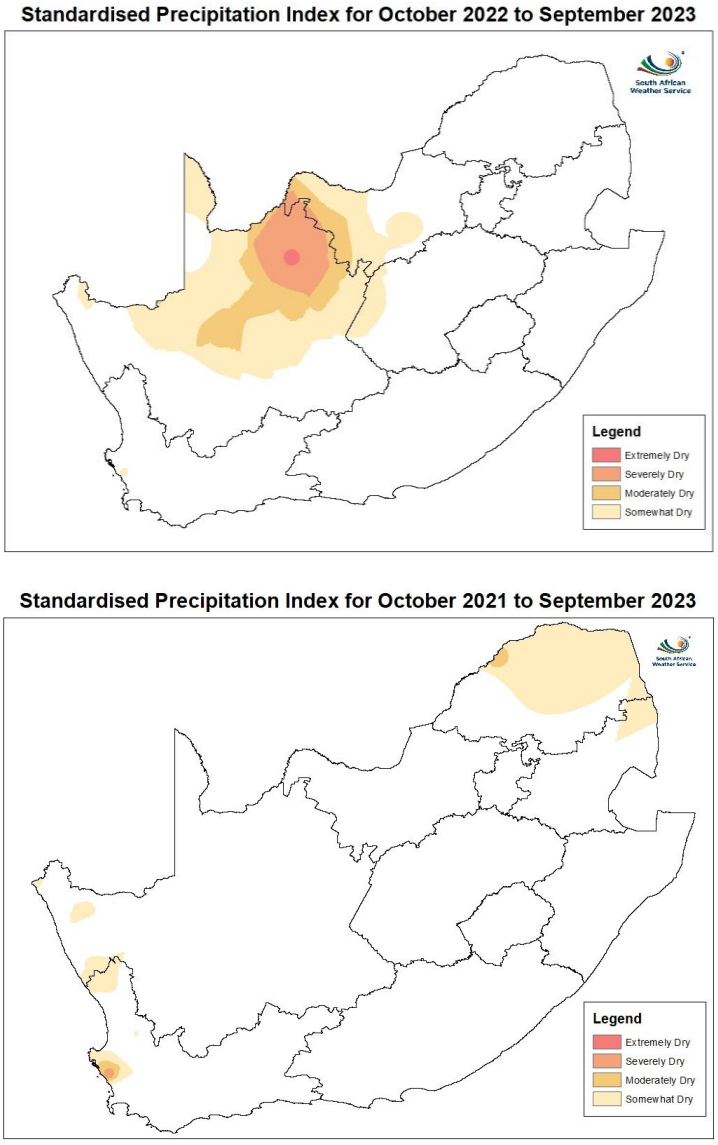

Figure 3: Long-term 12-month SPI map (October 2022 to September 2023; top) and 24-month SPI map (October 2021 to September 2023; bottom).

3.2 Vegetation Condition Index (VCI) and Temperature Condition Index (TCI)

The use of VCI and TCI help to monitor the severity of drought by comparing the current vegetation state with the same period the previous year. Low and high values indicate bad and good vegetation state conditions respectively.

Figure 4 show the state of vegetation in South Africa. The Northern Cape, Free State, North West, Gauteng, Limpopo and Mpumalanga and isolated parts of KwaZulu-Natal are experiencing stressed vegetation conditions compared to the same period the previous year. The rest of the country is showing improved vegetation conditions compared to the same period the previous year.

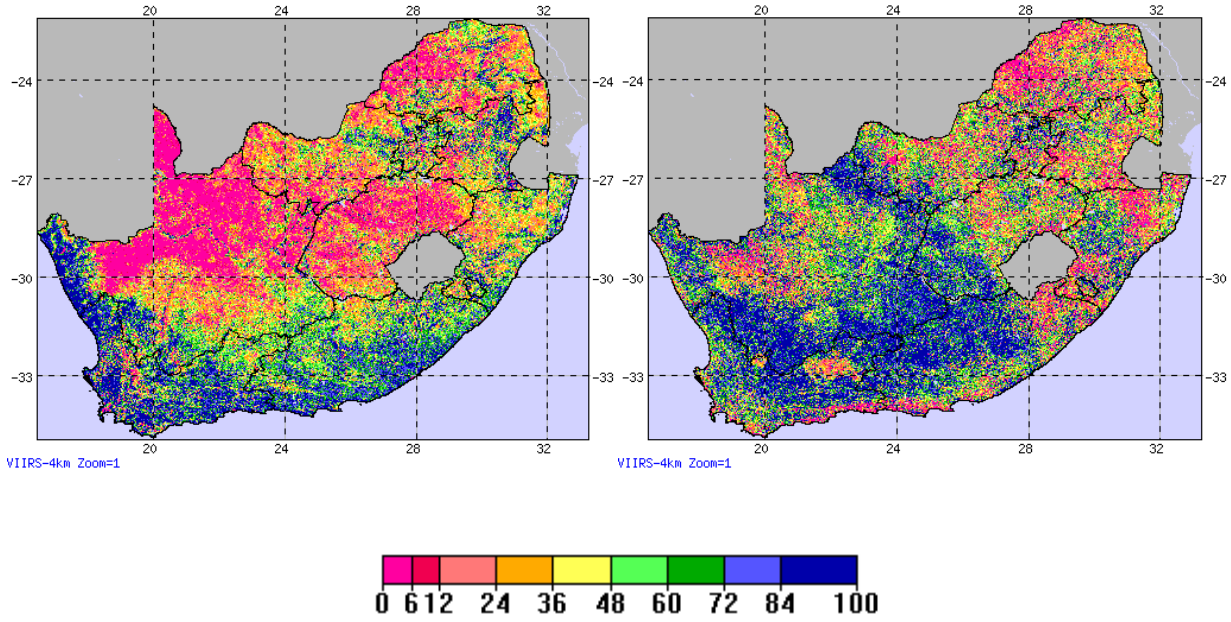

Figure 4: VCI (left) and TCI (right) in the week of the 9th of October 2023

4. Drought stricken regions

4.1 SPI and SPEI

Based on the SPI maps shown in Figure 3, dry conditions persist in the Northern Cape and Western Cape. Figure 5 presents 12- and 24- months SPI at Deben, representative of the northern parts of the Northern Cape. This region is experiencing moderately to extremely dry conditions. Figure 6 presents 12- and 24- months SPI at Darling, representative of the north-western parts of the Western Cape. This region continues to experience some-what dry to severely dry conditions.

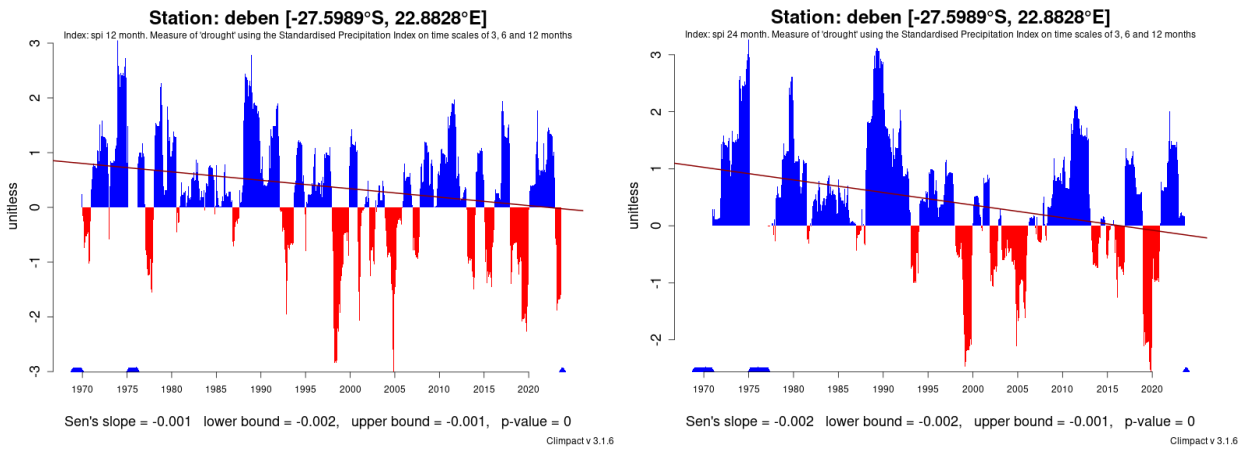

Figure 5: Time series plots for Deben-pol weather station for 12- and 24-month SPI.

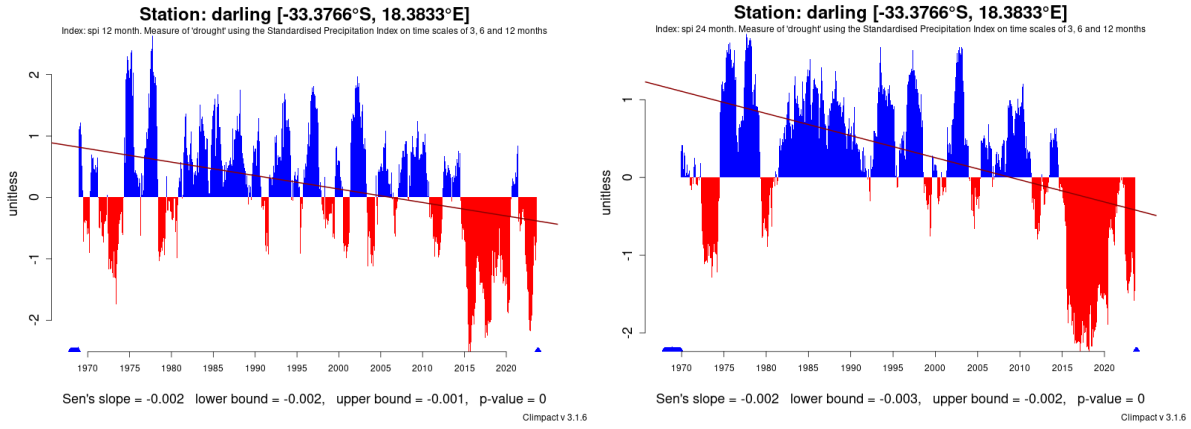

Figure 6: Time series plots for Darling weather station for 12- and 24-month SPI.

5. Dam levels

The table below shows the average dam level per province for the week of 09th of October 2023 compared to the same period the previous year. The Western Cape, Eastern Cape, North-West, Mpumalanga and KwaZulu Natal have shown an increase of 21.9%, 11.0%, 9.5%, 2.5% and 1.1% respectively.

Table: Provincial Dam levels in the week of the 9th of October 2023 and for the same period in 2022. (Source: DWS).

Provinces	% Of Full Capacity	
	Last Year	This Week
	2022/10/09	2023/10/09
Eastern Cape	73.3	84.3
Free State	95.3	93.5
Gauteng	96.2	95.6
Kwazulu-Natal	83.9	85
Limpopo	83.9	83.3
Mpumalanga	90.3	92.8
Northern Cape	94	88.6
Northwest	72.6	82.1
Western Cape	72.9	94.8

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