LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
AGRICULTURE AND RURAL DEVELOPMENT

Ref no: 14/3/1

National Agro-meteorological Committee (NAC) Advisory on the 2023 winter season
Statement from Climate Change and Disaster Management
July 2023

Limpopo Department of Agriculture and Rural Development is highly committed to excellent service delivery through new innovations and advanced technology with implementation of its strategic plan. The Division Disaster Risk reduction and vulnerability Management ensures optimum utilization of all-natural agricultural resources available such as Climate, land, water, etc. and to manage the renewable resources (rainwater and grazing) sound farming objectives. Long-term mitigation and adaptation strategies should be considered by implementing techniques to enhance in-field water harvesting by reducing run-off and improving infiltration. Reduced tillage methods are very important in this regard, as is basin tillage, to capture rainwater in the drier areas. **Users are advised to be on the look-out and act on the daily extreme weather warnings as well as the monthly advisory.**

SEASONAL CLIMATE WATCH: CURRENT CONDITIONS

Figure 1

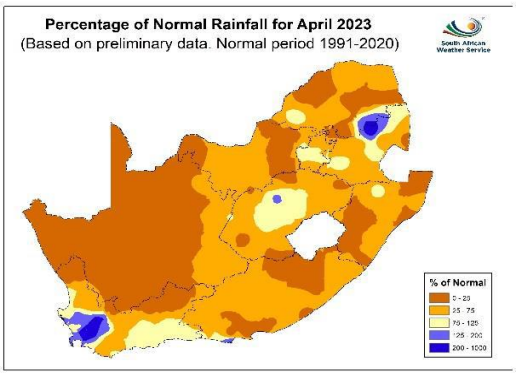


Figure 2

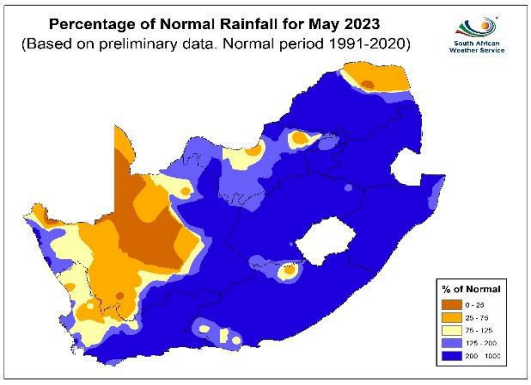


Figure 3

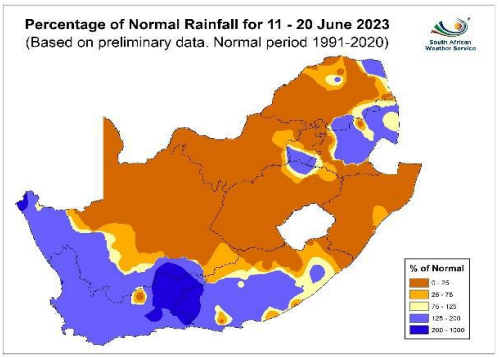
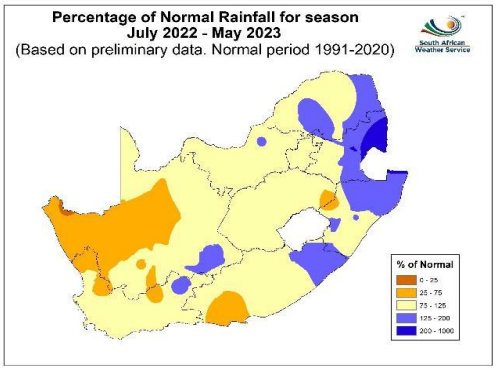
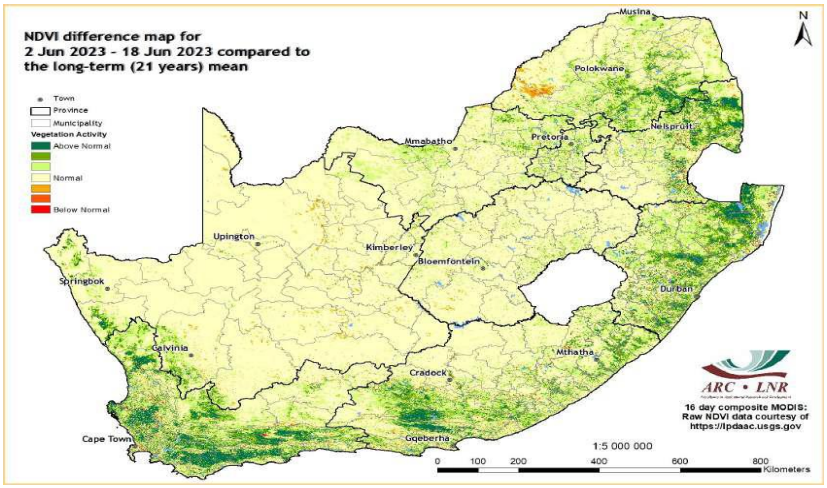


Figure 4



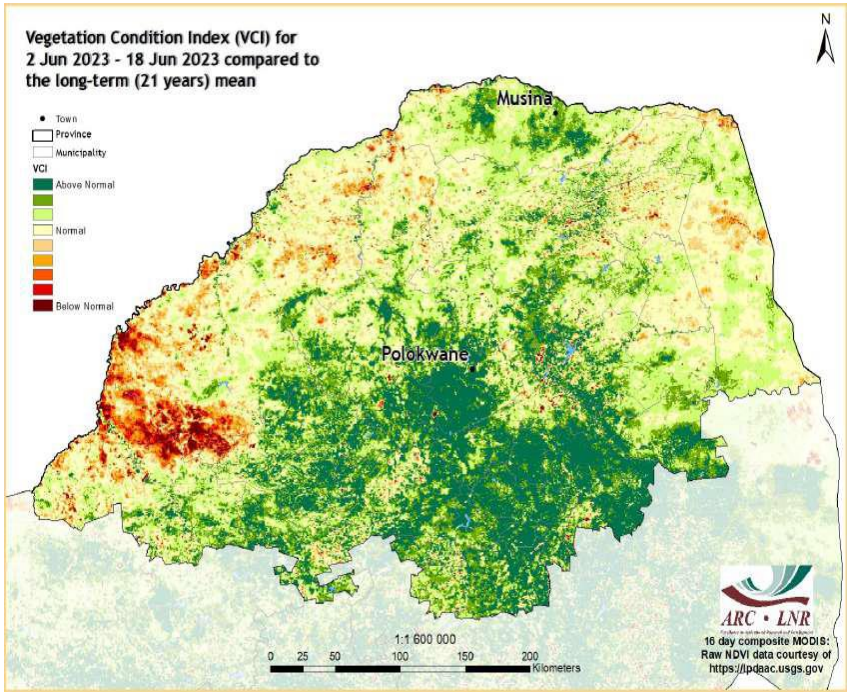
In April below normal rainfall received in the province with some with some area received normal to above rainfall average (**Figure 1)**.The entire province receive above normal rainfall with the exception of Vhembe receive below normal in may **(Figure 2)**, The province receive below normal rainfall on the western side of the province (Waterberg, Sekhukhune and Capricorn district), the remaining area in the extreme western side receive above normal rainfall average in June (**Figure 3)**. The season July 2022 to May 2023 the province received normal to above normal rainfall (**Figure 4).**

NDVI map; 02 June – 18 June 023 compared to the long-term mean.



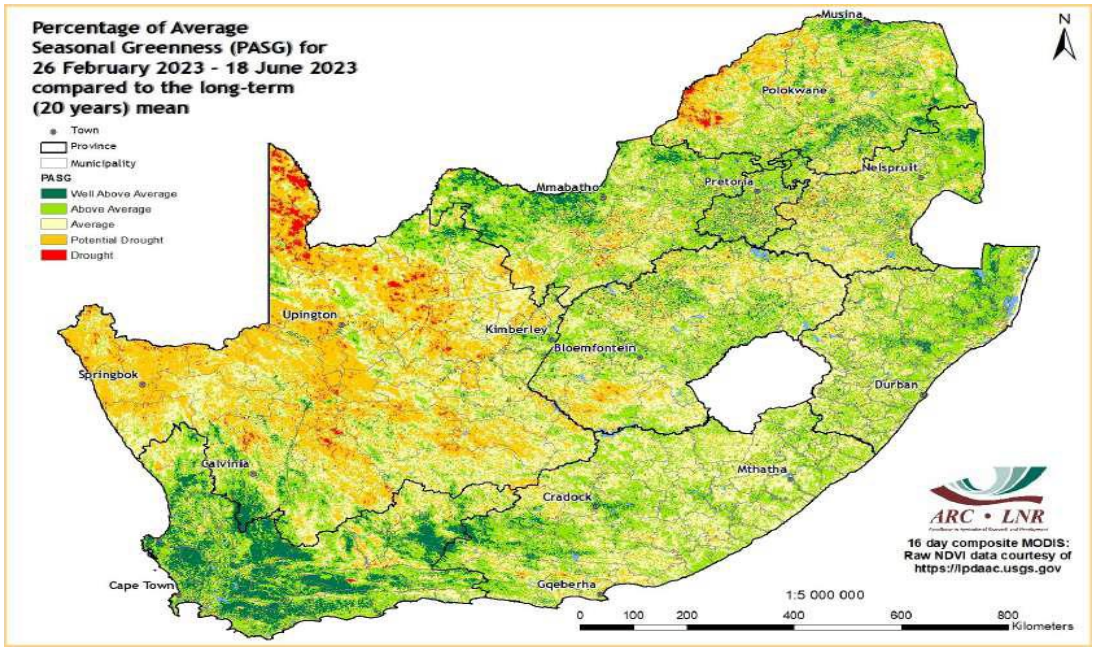
Compared to the historical averaged vegetation conditions, 16-day NDVI map for June shows a that most area in the province experience normal to above normal vegetation conditions with some pockets of below normal conditions activity in isolated areas.

VCI map: 02 June – 18 June 2023 compared to the long-term mean.

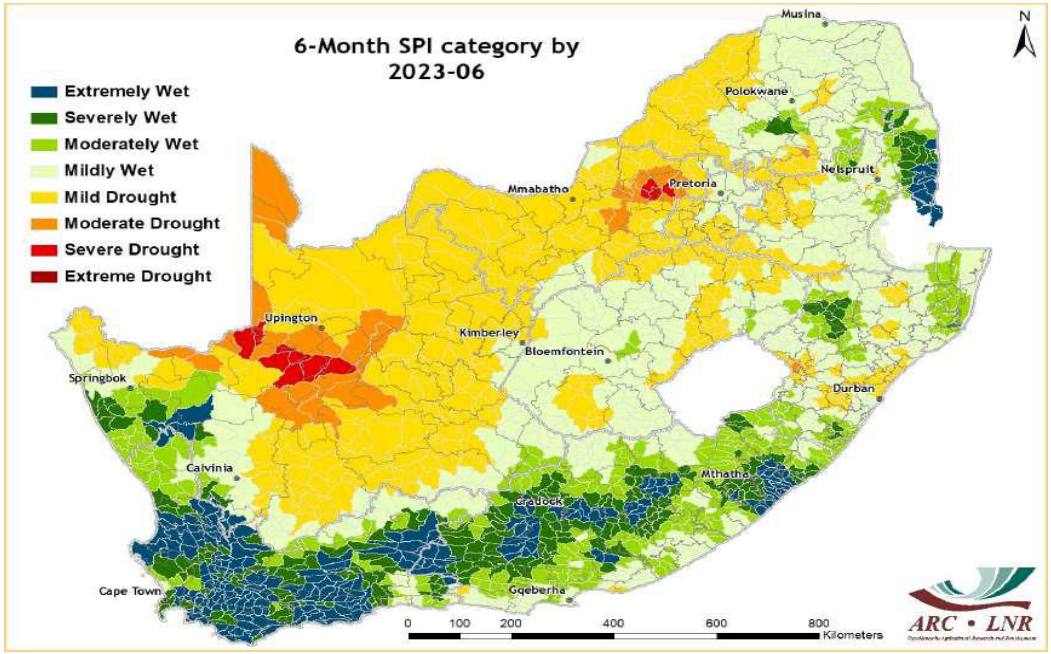


The 16-day VCI map for June 2023 indicates below-normal vegetation conditions occurred over the western and eastern parts of Limpopo, while above normal conditions were observed over central parts of the province.

(The VCI is a better indicator of water stress that the NDVI).



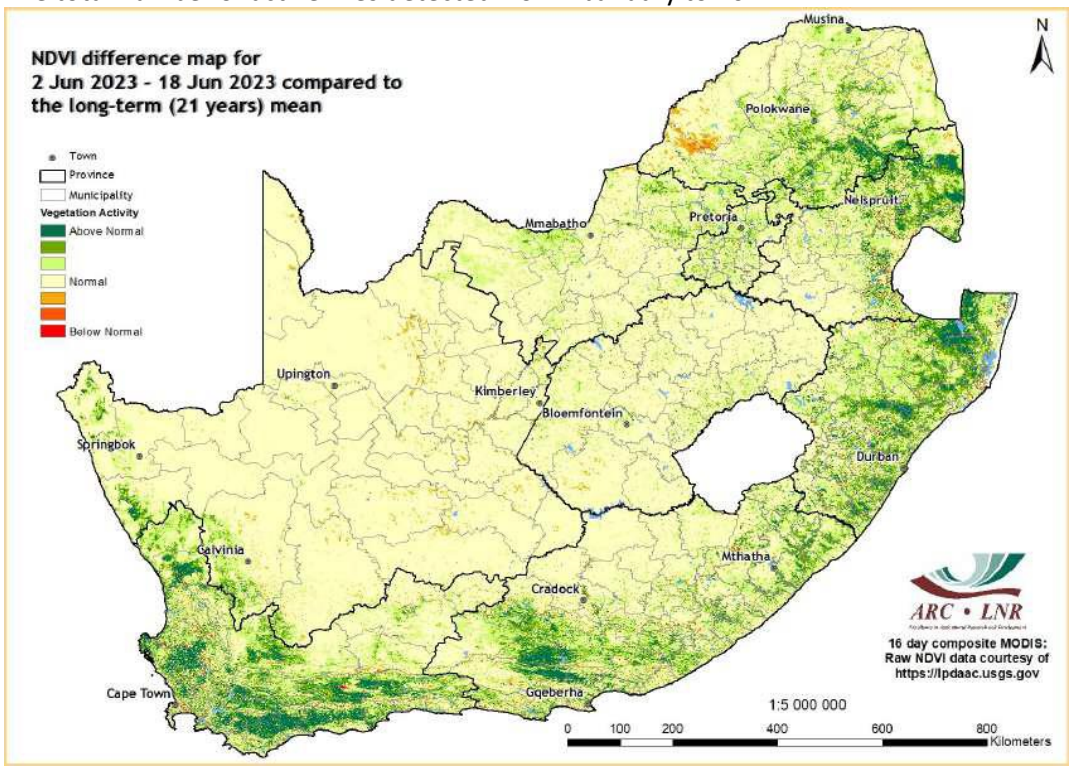
The Percentage of Average Seasonal Greenness (PASG) map for the past 4 months, compared to the long-term mean, shows that above normal seasonal vegetation greenness occurred in many parts of the Province, except for most of the Waterberg and Sekhukhune and a few other remote areas which experienced potential drought such as Capricorn and Vhembe



The SPI maps revealing short-term (6-month), medium term (12-month) and long-term (24- and 36 month) drought conditions ending in June 2023 are shown in Figures 5. The short-term SPI map indicates, predominantly near normal conditions, ranging from mild drought to mildly wet, across most parts of the country. However, mild to severe drought conditions can be observed in certain areas.

Veld Fire in the province

The total number of active fires detected from 1 January to 26



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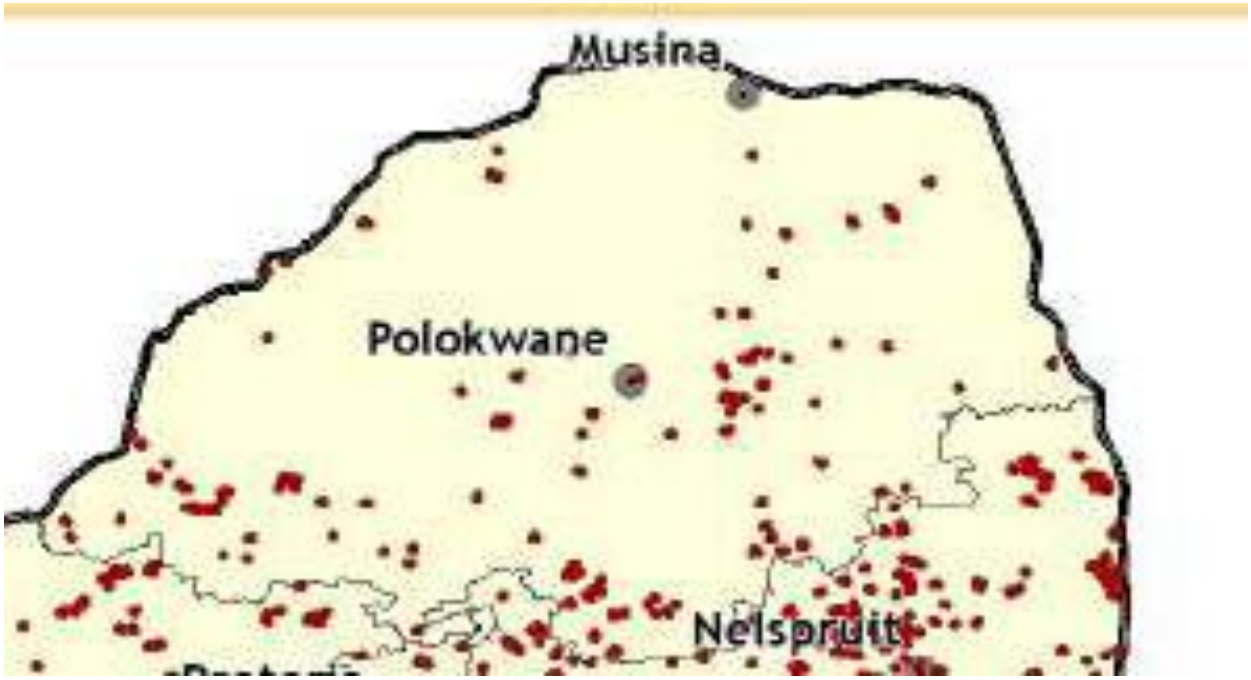
June 2023 per province. Fire activity was higher in Waterberg, Sekhukhune and Capricorn compared to the long-term average.



AGRICULTURAL MARKETS

Livestock domestic markets

ABSA stated that despite a reprieve in load-shedding intensity in June, demand for red meat remains soft and carcass prices continued its downward trend apparent since the start of the year. Local lamb and mutton carcass prices have started to pick up over the past month. Higher prices are usually associated with winter months, but the trend has been more muted in comparison to previous years. Porker prices continued a downward trend pressured by lower beef prices over the past weeks. Local poultry prices remain firm on the back of a weak exchange rate and elevated global prices. Being an affordable meat protein, poultry is also likely to benefit from increased demand in favour of higher-priced meat protein products such as red meat.

Producer prices for selected livestock commodities	Beef	Mutton	Pork	Poultry
Open market: Class A / Porker / Fresh whole birds (R/kg)	53.50	-	29.19	35.92
Open market: Class C / Baconer / Frozen whole birds (R/kg)	4502	61.57	28.83	35.43
Contract: A2/A3* / IQF (*includes fifth quarter) (R/kg)	50.94	88.10	-	32.40
Import parity price (R/kg)	-	-	-	-
Weaner Calves / Feeder Lambs (R/kg)	29.86	41.93	-	-

ABSA: 26/06/23

Major grain commodities

According to ABSA, weekly SAFEX maize prices followed the increasing global price trend, increasing by 1.8% and 2.6% for yellow maize and white maize respectively. Wheat prices followed a decreasing global price trend for the week ending June 15th, decreasing by 0.9% week on week and by 2.0% compared to a month ago. Soybean prices followed the global price trend, increasing by 1.3% for the week ending June 15th. They were 0.3% lower compared to a month ago and 14.6% lower year on year.

Future Prices (2023/06/27) R/ton					
Commodity	Jul-23	Sep-23	Dec-23	Mar-24	Jul-24
White maize	3 801.00	3 886.00	3 969.00	4 033.00	4 097.00
Yellow maize	3 876.00	3 957.00	4 032.00	4 067.00	4 040.00
Wheat	6 661.00	6 608.00	6 438.00	6 563.00	n/a
Sunflower	8 367.00	8 580.00	8 740.00	8 674.00	n/a
Soybeans	7 975.00	8 138.00	8 346.00	8 340.00	8 335.00

SAGIS: 2023/06/01

SADC REGION

The June Famine Early Warning Systems Network (FEWS NET) reported that most households across the region are engaging in harvesting, which is improving household food access and diet diversity. Staple food supplies have particularly improved in parts of the region where rainfall performance was average to above average, including surplus-producing areas of Lesotho, northern parts of Zimbabwe, central and northern Malawi, northern and central Madagascar, and northern Mozambique. In these areas, households are experiencing Minimal (IPC Phase 1). However, in southern and central Zimbabwe and southern Mozambique, dry spells in January and February resulted in significant production losses, and most poor

households are likely Stressed (IPC Phase 2). However, Crisis (IPC Phase 3) outcomes persist in cyclone Freddy-affected areas of Mozambique and Malawi, the grand south of Madagascar, and conflict-affected areas of Mozambique and DRC. From June to September, there will likely be an increase in the number of households experiencing Stressed (IPC Phase 2) and Crisis (IPC Phase 3) outcomes as household food stocks decline through the dry season.

FEWS-NET further reported that staple food prices have declined in most markets following increased market supplies from the main harvest, improving household access to food. However, prices remain higher than last year and the five-year average. In areas with below-average production, prices are likely to rise in August and September, earlier than normal, as more households increase their reliance on market purchases and their food stocks decline. In Zimbabwe and DRC, local currency instability and depreciation are driving commodity price increases in local currencies, negatively impacting the ability of poor households to access food. Poor households in areas with below-average harvests are earning additional incomes for staple food purchases by increasing participation in casual labour activities in neighbouring surplus areas, including harvesting, cutting, and selling grass for thatching, brick moulding, and petty trading. In areas with an effective second season, like Zimbabwe, Malawi, and Lesotho, households also earn additional income from agricultural labour activities, including cultivating and planting short-cycle maize, winter wheat, sweet potatoes, and vegetables. Conflict-related insecurity continues driving food insecurity in Mozambique and DRC. Isolated attacks in North Kivu involving M23 and Mai-Mai armed groups continue to disrupt the return of households to their homes and their ability to participate in agricultural activities. Around 1.4 million people are newly displaced in eastern DRC at the end of the B agricultural season. In Cabo Delgado, Mozambique, there has been a decline in insurgent attacks prompting more households to return to their areas of origin for better agricultural and livelihood opportunities.

[The Integrated Food Security Phase Classification (IPC) is a set of standardized tools that aims at providing a "common currency" for classifying the severity and magnitude of food insecurity.]
Source: http://www.fews.net/southern-africa

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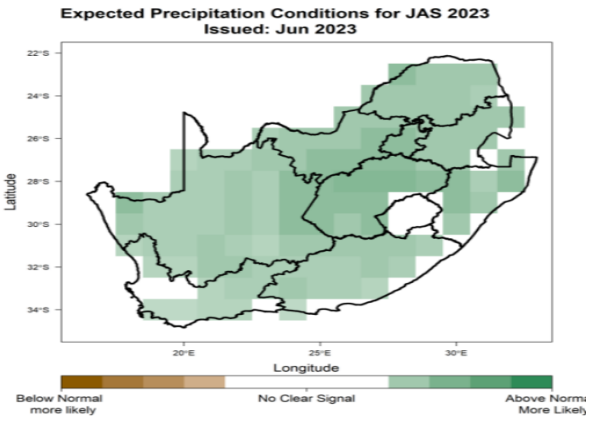
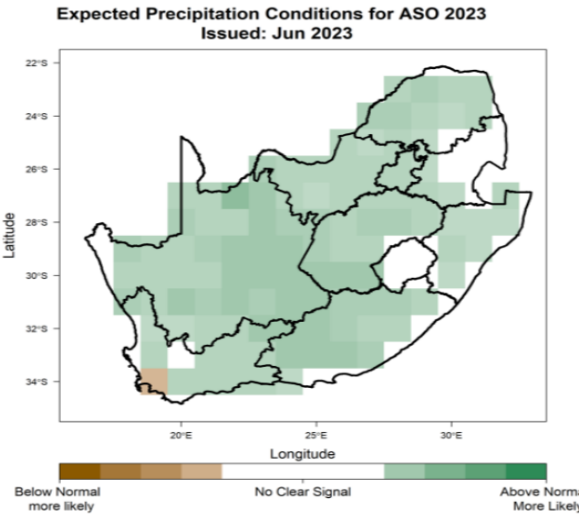
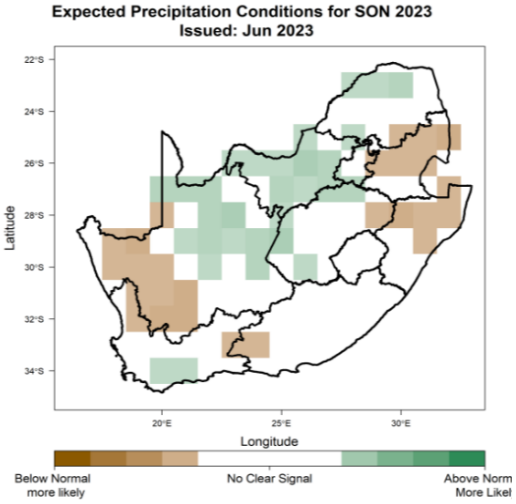
MONTHLY CLIMATE OUTLOOK

Seasonal Climate Watch: June to November 2023: Rainfall



The multi-model rainfall forecast indicates mostly above-normal rainfall in the province for all predicted seasons. (JAS), through to early spring (ASO). with below-normal rainfall predicted over parts of the country in the west and the east during mid-Spring.

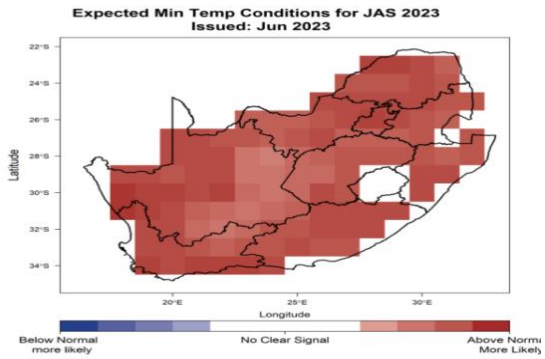


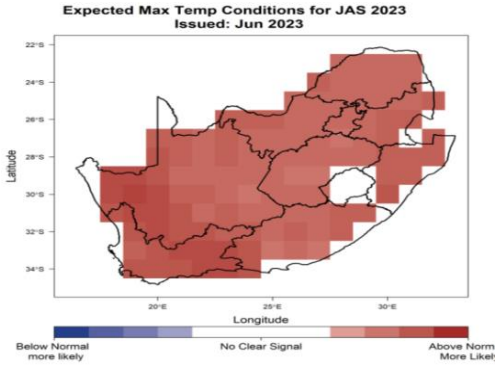


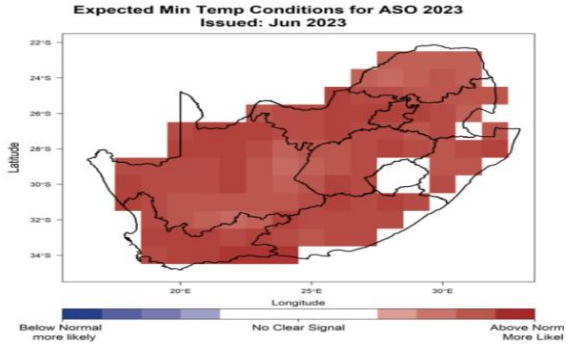
State of Climate Drivers

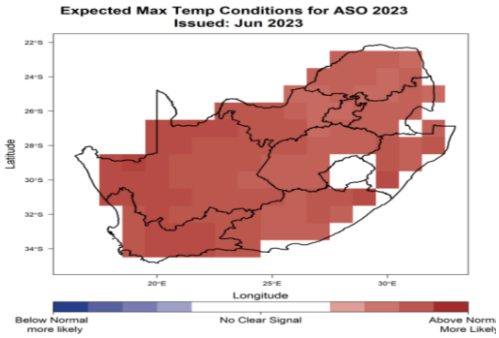
The El Niño-Southern Oscillation (ENSO) is currently transitioning into warm El Niño-like conditions and is moving into an El Niño state which according to the latest predictions is expected to persist through most of the summer months. It is still too early to indicate whether the this El Niño event will persist through the whole of the summer season, and therefore the close monitoring of ENSO is advised in the coming months. ENSO's impact is still limited for the current forecast period until the summer season starts which will likely be impacted by a moderate to strong El Niño state if early predictions are correct.

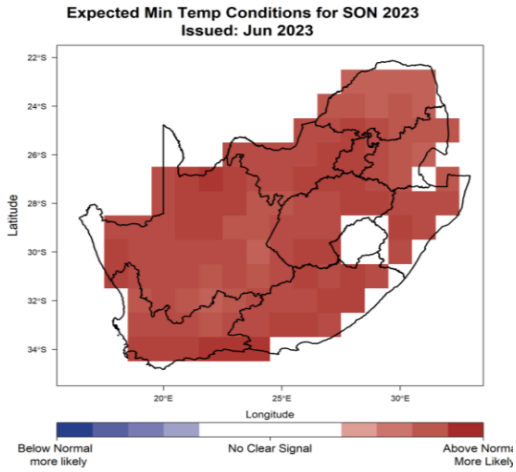
Temperature minimum and maximum

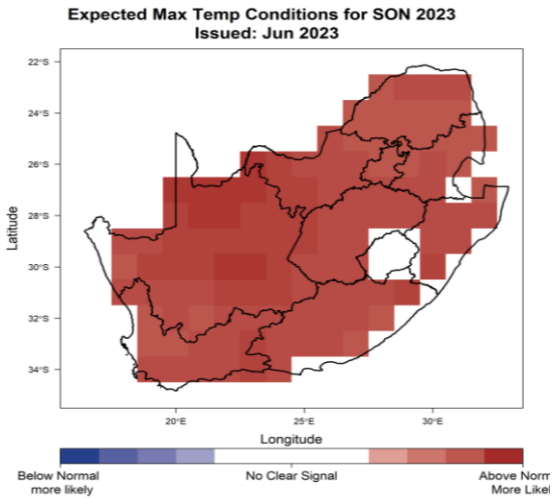












Minimum and maximum temperatures are expected to be mostly above normal countrywide for the forecast period.

In summary, above-normal rainfall and above-normal temperatures are anticipated during the winter seasons (Jul-Aug-Sep) through to early-spring (Aug-Sep-Oct).. Both minimum and maximum temperatures are expected to be above normal. Farmers are encouraged to continually check updates i.e., seasonal forecasts and utilize 7-day weather forecasts for short term planning.

Take into consideration the above forecast, the following strategies were recommended.

SUGGESTED STRATEGIES

A. Winter crops: Rain-fed crop production

Soil choice:

- **Choose suitable soil type.**

- Suitable soil and land use management practices that would control wind and water erosion in cultivated lands are suggested.
- Avoid marginal soils - shallow and low water holding capacity soils.
- Rather plant in soils with high water holding capacity or with shallow water table.

    - Ascertain that the soil profile has enough water when planting commences.
    - Roughen the soil surface to minimize evaporation.
    - Minimise compaction by reducing the passing of heavy machinery in the field.

Land preparation:

- Avoid where possible soils with pronounced plough pans.
- Consider practicing conservation agriculture such as zero or minimum tillage.
- Cover soil with organic matter or cover crops.
- Practice crop rotation.
- Do not expand land under crop production unnecessarily.
- Prioritise fallow land**.**

Crop choice and planting:

- Choose drought resistant cultivars.
- Provide flexibility and diversification.
- Stick to normal planting windows if appropriate and follow the weather and climate forecast regularly to make informed decisions.
- Consider staggered planting spreading over weeks.
- Do not experiment with new and unknown cultivars and also avoid unnecessary capital investments.
- Lay out planting rows parallel to the prevailing direction of the cold air flow.
- Keep air drainage pathways open to insure good air drainage and elimination of frost pockets.

Crop management

- Adjust planting density accordingly.
- Consider mulching to minimize evaporation.
- Control weeds regularly.
- Consider a conservative fertilizing strategy during dry conditions.
- Consider organic fertilization.
- Scout for pests and diseases regularly and control where necessary.
- Practice water harvesting techniques e.g. construction of basins, contours, ridges.

B. Irrigation farming

The current drought is having a negative impact on irrigation.

- Remove all weeds containing seeds but keep other vegetative rests on the land because that will reduce evaporation.
- Check and repair all tools and machinery especially where there are water leaks.

- Obtain the relevant seeds to be planted considering the climate forecast.
- Be aware of the state of regional water resources and whether it will be adequate for irrigation.
- Irrigate with the correct amount, never over-irrigate.
- Timing of irrigation - rather late afternoon or early evening to reduce evaporation.
- Be aware of current and expected weather conditions and re-look at the area to be planted as there are already water restrictions in some areas.
- Manage irrigation so that the plant receives water only when needed.
- Consider using drip irrigation as it saves water by allowing it to drip slowly straight to the roots.
- Avoid over irrigation because that can create problems e.g. water logging and diseases.

C. Domestic and home garden water use

- Conserve existing water supplies.
- Eradicate water weeds.
- Limit water waste and losses.
- Repair leaking pipes.
- Re-use water and retain high quality.
- Harvest water during rainy days.

D. Stock farming

- Keep stocking rates conservative and even lower to protect grazing.
- Never exceed carrying capacity of plant associations.
- Provide lots of drinking points where possible.
- Provide additional fodder and enhance nutritional value of dry grazing/feed with licks:
- Phosphorous deficiency is a major problem.
- Licks should (in most cases) provide:

- Phosphorous.
- Urea (to help with the break-down of dry vegetation).
- Salt.
- Molasses.

- Deficiencies differ according to vegetation composition/soil properties/climate.
- Analysis of vegetation/soil samples can benefit the decision for supplement composition.
- Sell mature, marketable animals (to help prevent overstocking/ overgrazing).
- If grazing is in danger, herd animals into pens where different animals can be segregated and fed separate

E. Grazing

- Subdivide your grazing area into camps of homogeneous units (in terms of species composition, slope, aspect, rainfall, temperature, soil and other factors) to minimise area selective grazing as well as to provide for the application of animal management and veld management practises such as resting and burning.
- Determine the carrying capacity of different plant associations.
- Calculate the stocking rate of each, and then decide the best ratios of large and small animals, and of grazers or browsers.
- Provide periodic full growing-season rests (in certain grazing areas) to allow veld vigour recovery in order to maintain veld productivity at a high level as well as to maintain the vigour of the preferred species.
- Do not overstock at any time to avoid overgrazing.
- Eradicate invader plants.
- Periodically reassess the grazing and feed available for the next few months and start planning in advance.

F. Pests and diseases

Crops

- Fruit crop farmers should regularly scout for pests and diseases and contact the local agricultural office for advice on best control measures. Farmers should further implement phytosanitary measures.
- Irrigation farmers should monitor for pests and diseases especially those associated with humid and hot conditions.

Livestock

- Follow the vaccine routine and consult with the local veterinarian.

G. Veld fires

NOTE: Farmers are advised to maintain firebreaks in all areas. An owner of the land who is obliged to prepare and maintain a firebreak must ensure that, with due regard to the weather, climate, terrain and vegetation of the area, the following is taken care of in terms of installing firebreaks (Chapter 4 of the National Veld and Forest Fire Act No. 101 of 1998):

- It has to be wide enough and long enough to have a reasonable chance of preventing a veld fire from spreading to or from neighbouring land.
- It does not cause soil erosion and
- It is reasonably free of inflammable material capable of carrying a veld fire across it.
- Firebreaks may be temporary or permanent.
- Firebreaks should consist of fire-resistant vegetation, inflammable materials, bare ground or a combination of these.
- Firebreaks must be located in such a way as to minimize risk to the resources being protected.
- Erosion control measures must be installed at the firebreak.

Firebreaks can be made through the following methods:

- Mineral earth firebreak:
- ✓ Through ploughing, grading, other earth movement.
- Use of herbicides.
- Use animals to overgraze specifically to minimise fuel.
- Strategic placement of burned areas,
- ✓ Not to be done on days with fire hazard (windy and dry/hot).
- Plant fire resistant plants.
- Plant species selected for vegetated firebreaks must be non-invasive and capable of retarding the spread of fire.

Maintaining firebreaks:

- Mow, disk, or graze vegetative firebreaks to avoid a build-up of excess litter and to control weeds.
- Inspect all firebreaks for woody materials.
- Inspect firebreaks at least annually and rework bare ground firebreaks as necessary.
- Repair erosion control measures as necessary.
- Access by vehicles or people must also be controlled.
- Bare ground firebreaks, which are no longer needed must be stabilized i.e. o Sow grass.

What to do when conditions favourable for veld fire are forecast:

- Prohibit fires in the open-air during periods of high fire hazard and establish a fire control committee.

- To control fires, an alarm system, fire fighting teams, and beaters must be organized in advance and plans prepared.
- Livestock should be moved out of grazing land to a safe place.

What to do during a veld fire:

- Water is generally not available in sufficient quantities or at adequate pressure for the control of major fires; however, sand or other loose mineral soil material can be an effective method of control.
- Tree branches can be used to beat fire.

H. Flooding

Heavy rainfall raises the water level. When the water level is higher than the riverbanks or the dams, water flows out from the river and flooding occurs**.**

Preventive measures:

- Construction of proper drainage systems. Drains must be cleaned constantly as they ensure proper water irrigation.
- Mechanical land treatment of slopes such as contour ploughing or terracing to reduce the runoff coefficient.
- Construction of small water and sediment holding areas.
- Construction of floodways (man-made channels to divert floodwater).
- Terracing hillsides to slow flow downhill.
- Water pumps in rivers likely to be affected should be lifted from the riverbanks when a warning for heavy rain has been issued**.**

What to do when flooding is forecasted:

Avoid:

- Cutting grass in the rainy season as this can result in nutrient depletion.
- Appling fungicides and pesticide (plants and animals).
- Applying Nitrogen fertilizer as this can burn plants. Dumping fertilizer in one spot can cause the roots below the fertilizer to be burnt and die.
- Irrigation, this can result in waterlogging leading to nutrient depletion.

    - **Other measures to implement**:

- Cover Urea licks to prevent them from becoming toxic.
- Provide shelter for animals (young ones can die easily).
- Leave cultivated areas coarse.
- Relocate/ move animals to a safe place.
- Be extra cautious for pest and diseases after rain has fallen, as high moisture content and high temperatures may trigger these.
- Assume that flood water contains sewage and might be harmful for human and livestock consumption.
- Before leading livestock across a river, check whether the water level is rising. This is especially necessary if it is already raining.

Wind Erosion/ Water Erosion

Erosion is the wearing away of soil and rocks by the action of natural forces, for example, water and wind. The loose and dissolved materials move from one location to another. Erosion therefore may reduce agricultural production potential.

✓ **Preventative measures for wind/ water erosion:**

- Do not burn vegetation.
- Keep vegetation cover – e.g. shrubs, grass, small trees; a cover crop may be used to increase organic material and increase soil structure.
- Plant permanent vegetation e.g. perennial grasses where possible.
- Maintain any remaining vegetative cover, e.g. maize stubble during winter wheat sowing, as it can act as blanket, trap eroded particles and reduce wind speed at ground level.
- Plant evergreen trees growing densely and perpendicular to typical wind direction during winter and spring as wind breaks.
- Increase water infiltration by correct management of soil – e.g. reduce frequency of plough and use minimum tillage.
- Mulch: to increase infiltration, reduce evaporation, and reduce raindrop impact as well as wind erosion.
- Construct retaining walls around gardens.
- Avoid soil compaction by roughening the soil surface

Furrows and tillage ridges can trap loose soil

- Farm along contours as this reduces slope lengths
- Prevent over grazing.
- Practice conservation farming
- Maximize retention of crop residues.

J.Cold spells (snowfall and frost)

When temperatures plunge below zero, livestock and crops need to be given extra attention. Prevention is key in dealing with hypothermia, and other cold weather injuries in livestock and crops. Following are several concerns and recommendations:

Livestock:

- Hypothermia and dehydration are a serious concern in animals during cold and wet conditions. Wind-chill also adds greatly to the cold stress for animals.
- Livestock should be provided with windbreak, roof shelter and monitored for signs of discomfort (extensive shivering, weakness, lethargy, etc.)
- It is very important that livestock be provided with extra hay/forage/feed to double the calories for normal body heat maintenance during extremely cold conditions.
- It is critical that livestock have access to drinking water. Usual water sources may freeze in low temperatures and dehydration becomes a life-threatening factor. In general, livestock tend to drink less water in extremely cold conditions.
- Special attention should be paid to very young and old animals because they may be less able to tolerate temperature extremes.
- Do not shear Angora goats. Also, take extra time to observe livestock, looking for early sign of diseases and injuries.
- Severe cold-weather injuries or death primarily occur in the very young or in animals that are already debilitated.

- Cases of cold weather-related sudden death in calves often result when cattle are suffering from undetected infection, particularly pneumonia.
- Livestock suffering from frostbite don't exhibit pain. It may be up to two weeks before the injury becomes evident as freeze-damaged tissue starts to slough away. At that point, the injury should be treated as an open wound and a veterinarian should be consulted.

Crops:

- Prune out the lower portions of windbreaks to allow air to pass through to avoid the formation of a frost pocket.
- Wrapping the trunks with materials such as newspaper, cardboard, aluminium foil will prevent much of frost damage.
- With more severe frosts, canopy death can occur and trunk coverings need to extend up beyond the graft union, so the tree can reshoot from undamaged buds above the graft once the wraps are removed.
- Use heating devices such as orchard heaters to raise temperatures in plantings

Summer crops are being harvested, and preparations and planting of winter crops is taking place. The veld and livestock are in reasonable to good condition in most areas. Above normal rainfall is anticipated in winter rainfall areas and temperatures are expected to be above normal countrywide

With the seasonal forecast in mind, winter crop farmers in winter rainfall areas are advised to wait for sufficient moisture before planting and stay within the normal planting window. Although above normal rainfall is expected in these areas, not all areas might receive the anticipated above normal rainfall that is well distributed. Farmers using irrigation should reduce the planting area in line with water restrictions in their zones. The weather and climate forecasts should be followed regularly to make informed decisions. Farmers must continually conserve resources in accordance with the Conservation of Agricultural Resources Act 1983, (Act No. 43 of 1983).

As winter progresses, the veld will continue drying out in many areas and therefore livestock should be kept in balance with carrying capacity of the veld and provided with additional feed such as relevant licks. Also, the livestock should be provided with enough water points on the farm as well as shelter during bad weather conditions including during very cold conditions. As the veld has recovered in many summer rainfall areas, it continues to dry out during winter thereby increasing the risk of veld fires. Therefore, the creation and maintenance of fire belts should be prioritized as well as adherence to veld fire warnings. Episodes of cold spells and localized flooding resulting from frontal systems are likely during winter and measures should be in place. Farmers are encouraged to implement strategies provided in the early warning information issued.

The users are urged to continuously monitor, evaluate, report and attend to current Disaster Risk Reduction issues. It is very important and mandatory for farming communities to always implement disaster risk measures and maintain good farming practices.

N.B. The climate advisory should be disseminated widely. Users are advised to be on the look-out and act on the daily extreme weather warnings as well as the monthly advisory. Information sharing groups are encouraged especially among farming communities for sustainable development. In general, effective communication among all stakeholders in the sector will enhance effective implementation of risk reduction measures/early warning services. It is the responsibility of farmers to implement disaster risk measures.

The Disaster Management Act 2002, (Act No. 57 of 2002) urges Provinces, individuals, and farmers, to assess and prevent or reduce the risk of disasters using early warning information.

For more information contact Provincial Disaster Risk Management and Vulnerability:

Ms Makananisi FM 060 978 2175

Mrs Mashamaite MD 060 967 4027

DALRRD, Directorate: Climate Change and Disaster Risk Reduction Private Bag X250 Pretoria 0001 Tel: 012 319 6775/ 6794 Email: MittaA@Dalrrd.gov.za agriculture, forestry & fisheries Department: Agriculture, Forestry and Fisheries REPUBLIC OF SOUTH AFRICA	SAWS: Private Bag X097 Pretoria 0001 Tel: 012 367 6000 Fax: 012 367 6200 http://www.weathersa.co.za South African Weather Service ISO 9001 Certified Organisation	ARC: Institute for Soil, Climate and Water Private Bag X79 Pretoria 0001 Tel: 012 310 2500 Fax: 012 323 1157 Email: iscwinfo@arc.agric.za, http://www.arc.agric.za LNR • ARC