



# EVERY DROP COUNTS

by Michelle Hartsliet



Image © Michael Rosskothien



◀ Scan the QR code or visit [https://youtu.be/vG3Bw\\_\\_l5Y8](https://youtu.be/vG3Bw__l5Y8) to watch the video: 'Weather Smart solutions'. Produced by Leanne Reichard.



Burchell's zebra (*Equus quagga*).  
Photo © Anke van Wyk

## THE CHALLENGE

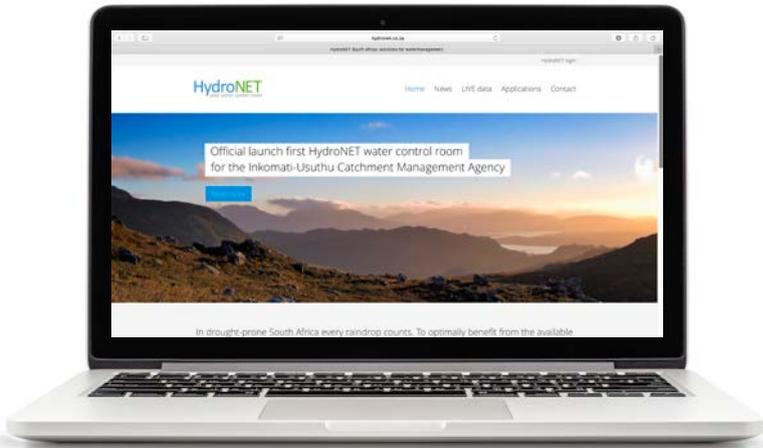
**B**y 2050 the world's population will reach 9.1 billion. Nearly all of this population increase will occur in developing countries. Urbanisation will continue at an accelerated pace, and about 70% of the world's population will be urban. To feed this larger, more urban population, food production must increase by an expected 70%. Water is the biggest limiting factor in the world's ability to feed a growing population. Climate change worsens both water scarcity and droughts. For 2012, the worldwide crop losses due to drought were estimated at 40 billion USD. The United Nations has stated that 3 billion people – more than half of the world's population – will suffer from water scarcity by 2025.



For more information, visit [www.fao.org](http://www.fao.org)



To read and download the report, *The impact of disasters on agriculture and food security*, visit [www.fao.org/3/a-i5128e.pdf](http://www.fao.org/3/a-i5128e.pdf)



**HydroNET was launched in the South African market in October 2016. Three products which together form the RainWatch suite of products were made available: RainMap App, Weather Stations App and Forecast App.**



◀ For more information, scan the QR code or visit [www.hydro.net.co.za](http://www.hydro.net.co.za)

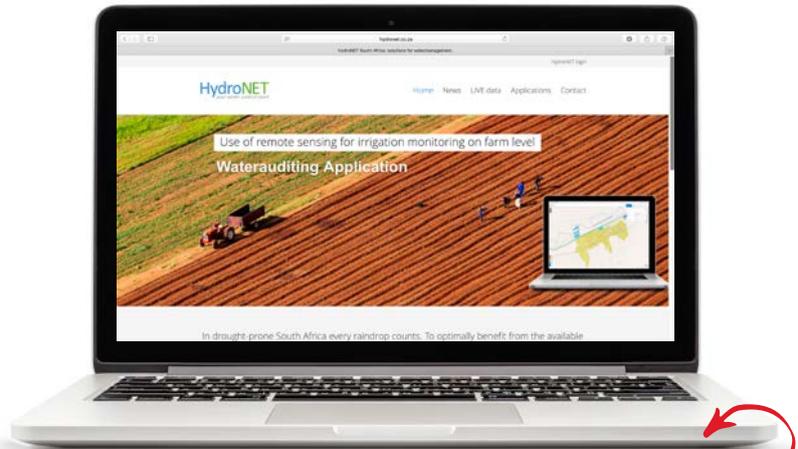
All farmers in Africa, large or small, need reliable information on historic, current and forecasted weather information to optimise crop growth and to generate income for society and their own families. For the entire African continent, a significant amount of weather-related data is available, ranging from manual readings, automatic gauges, weather radars and hydro-meteorological satellite data to numerical weather forecast models. These data sources are often not accessible for the water and agri-industry: not to individual farmers, not to government organisations, and not to those who play a key role in providing farmers with information, such as agricultural consultants, commercial organisations, application developers and commercial weather organisations. As a result, every year, for millions of farmers, crop production is unnecessarily limited due to non-availability or very limited essential weather data.

HydroNET was launched in the South African market in October 2016. Three products which together form the RainWatch suite of products were made available: RainMap App, Weather Stations App and Forecast App.

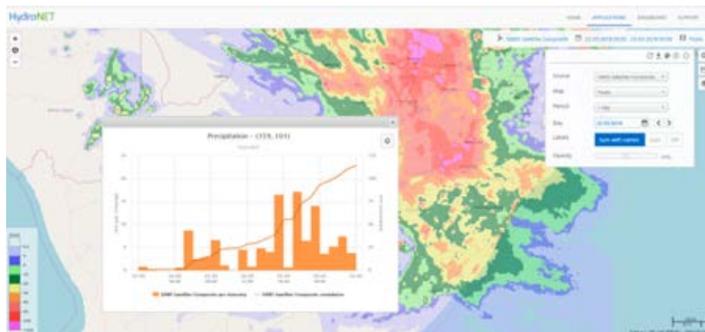
**1. RainMap**

Via the RainMap application, it is possible to request precipitation information per farm or per region. Via an interactive geographical map made available via web, email, Word or PowerPoint, the requested precipitation sum and precipitation intensity per time step can be

shown for any location within South Africa. To request time-specific precipitation information of a specific location like a farm, a graph can be visualised to complete the information source. The RainMap provides you with all relevant historical and current rainfall information from the South African Weather Service.



**RainMap Application.**



## 2. Weather Stations

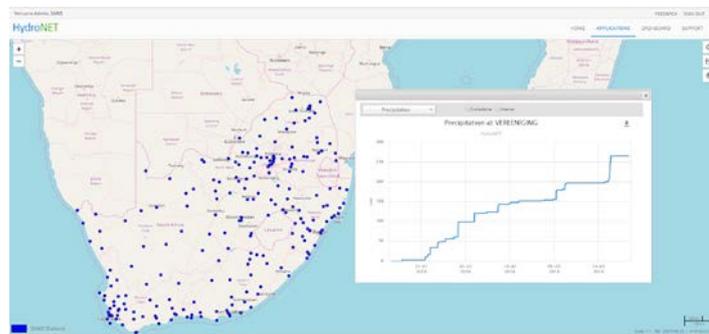
Via the Weather Stations application, the user can easily access historical and live weather data from the SAWS automatic weather stations. By selecting the requested period, variable and weather station, a graph with the requested information is visualised.



**Burchell's zebra (*Equus quagga*).**  
Photo © Villiers Steyn



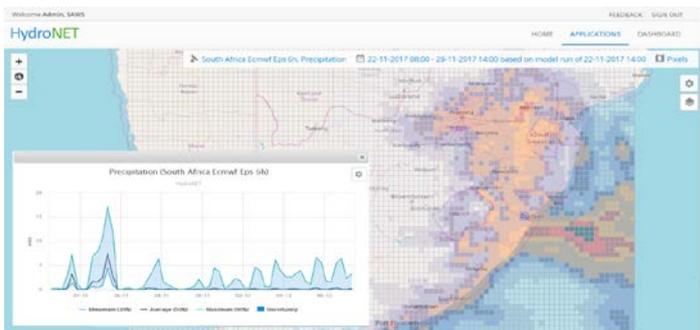
**Weather Stations Application.**



**Weather Forecast Application.**

## 3. Weather Forecast

The Weather Forecast Application allows users to easily access the weather forecast from the South African Weather Service. Via a geographical map available via web, email, word or PowerPoint, the weather forecast for any location in the country can be shown. By selecting a specific location, a graph with localised weather forecast can be visualised.



**Hippopotamus (*Hippopotamus amphibius*).**  
Photo © Villiers Steyn

**THE RAIN4AFRICA PROJECT**

Within the Rain4Africa project, the HydroNET solutions are further optimised to meet the needs of a vulnerable industry: agriculture. With many subsistence farmers battling the elements on a daily basis, farmers do not have access to information that can improve their output and reduce their input costs. Via the Rain4Africa (R4A) project, the South African Weather Service, Agricultural Research Centre, HydroNET, eLEAF, Weather Impact and several other Dutch partners, the Rain4Africa (R4A) Project will make a significant contribution to empowering the most important actors in the food production chain: the farmers. The project aims at providing the correct information at the right moment to food producers, to help improve the quality and quantity of food production in a sustainable manner, thus ensuring local food security. Information from in-situ monitoring, earth observations with satellites, geo-data and modelling will be translated into agricultural advice. This will be accessible via the web and mobile technologies (computers, cellular telephones and tablets) and facilitates higher crop yields and more efficient use of seed, water, pesticides and fertiliser.

R4A envisages one central entrance for all historical, actual and forecast weather and climate information in Africa through an online portal supported by an operational data stream; a straightforward connection to any meteorological data sources such as weather radars, satellites and weather stations. Applications for integrating weather data from the South African Weather Service with expert agricultural knowledge from the Agricultural Research Council will be developed and made accessible at an affordable price to farmers, national weather services,

added-value providers and other potential clients in South Africa.

**TARGET USER GROUP**

Smallholder farmers will be engaged via a participatory model and will receive data and information for free. The project's services will meet the information needs of a number of differentiated users, including national weather services, local commercial and subsistence smallholder farmers, input providers and financial service providers. Applications will be tailored to provide user-specified information to these diverse user groups.

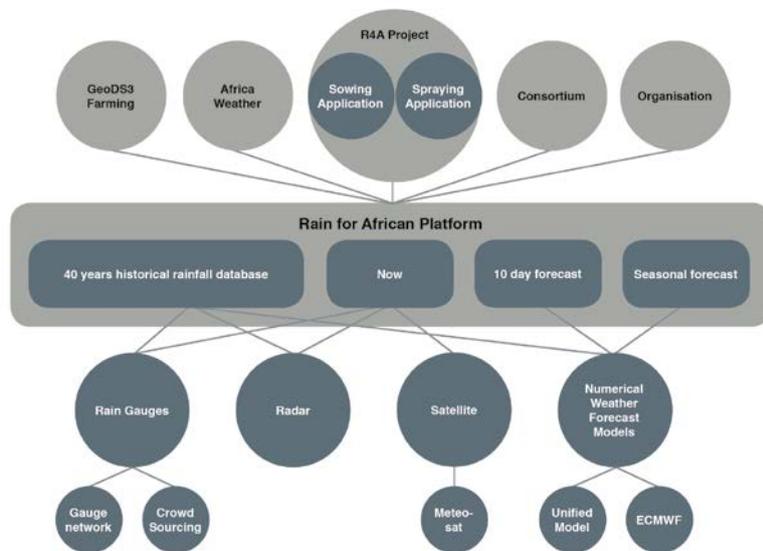
**BUSINESS PROPOSITION**

The co-creation business model of HydroNET (the IT engine of the system) encourages companies, institutions and governments to jointly develop, distribute and maintain information services to a wide range of users through web technologies, a web portal and

mobile device applications. The HydroNET platform is currently operational and licensed to 3 000 users in 12 countries, including South Africa, Swaziland and Mozambique. Within the R4A project, the HydroNET platform will be customised to meet the requirements of the specific applications and will be further developed, implemented and validated in South Africa. The project aims to reach 125 000 smallholder farmers, to increase their income by 10% and to also decrease their input.

**BENEFITS OF R4A FOR APPLICATION AND ADDED-VALUE SERVICE PROVIDERS**

When developing an added-value application or service, developers spend a lot of time researching, collecting and analysing the right weather information as input for their agri-services (for example sowing, irrigation and spraying advice). The HydroNET provides one single access point for all



◀ Scan the QR code or visit <https://youtu.be/GNAIgzZ6EU> to watch the video: 'Rain for Africa Project (R4A)'. Produced by HydroLogic NL.



Photo © Ian Scammell

weather, climate and agricultural information developed within the R4A project. It allows application providers to set up an operational data feed (automatic exports) or to automatically connect to the data products via an Application Programming Interface (API) or web service. Benefits of R4A for application providers:

- Easy access to the best available weather and climate information: usually it takes a lot of time to find out the best available weather sources in a specific country. HydroNET provides one centralised access point to R4A data products for application/added-service providers.
- Minimum in-depth knowledge required on weather data sources: after identifying the right information source, it usually takes a lot of time to interpret the raw data and to translate these data sources into valuable information. The HydroNET platform directly provides the right information in the right format, saving time and reducing costs for application development.
- Availability of a Software

Development Kit (SDK), which allows application developers to easily develop added-value applications. The SDK can greatly reduce the development time of a new application or a service.

#### R4A FOR INDIVIDUAL FARMERS

Agriculture in southern Africa is a particularly vulnerable industry. With many subsistence farmers battling the elements on a daily basis, farmers do not have access to information that can improve their output and reduce their input costs. The impacts of climate change and variable and extreme weather make it crucial to plant, spray, irrigate and harvest at the exact right time. The Rain for Africa project focuses on translating weather, water and agricultural data and information from in-situ monitoring, earth observations with satellites, geo-data and modelling into agricultural decision support services for individual farmers. Via the HydroNET platform, farmers can easily subscribe to services that include for example:

**Sowing advice:** this service give up to three months' insight ahead of time on the best possible sowing dates, based on seasonal weather forecasts.

**Spraying advice:** this service gives up to 15 days' insight ahead of time on the expected disease pressure and advises the farmer on which dates spraying would be extremely beneficial.

**Localised weather forecast:** this service gives localised weather forecasts up to 15 days ahead for farmers.

**Weather impact alert:** this service informs its users in a timely fashion when heavy rainfall is forecasted.

**My Weather Report:** With Weather Report, a farmer will receive an automated daily weather report for the farm with tailored information to empower him or her to make the right decisions.

**'Radar Merge Map':** this service gives a radar animation (in case of radar coverage) up to two hours ahead.

Depending on the type of farmer and the availability of a smartphone, the information can be provided via a smartphone application (accessible via Apple or Android stores), a web-based application or a simple text message (USSD/SMS).

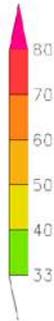
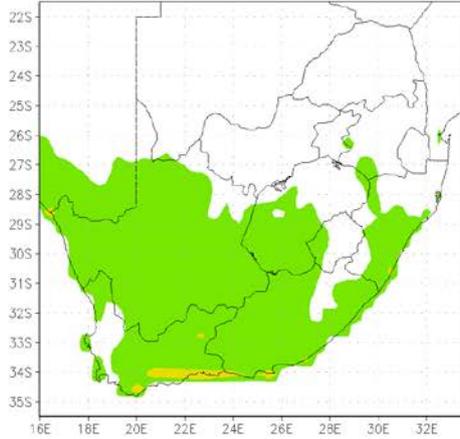


For more information, visit:  
[www.hydronet.co.za/projecten/rain-for-africa-project-r4a/](http://www.hydronet.co.za/projecten/rain-for-africa-project-r4a/)

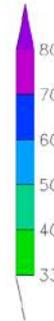
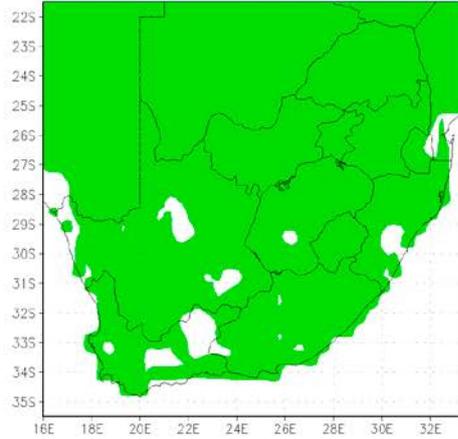
**SEASONAL CLIMATE WATCH: APRIL 2018 – AUGUST 2018**

**Note:** The indicators on the right of each diagram refer to the percentage likelihood of occurrence.

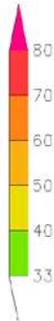
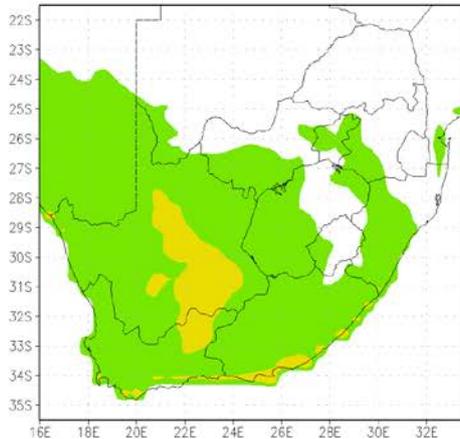
APRIL–MAY–JUNE  
Above–Normal Max Temp



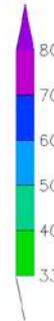
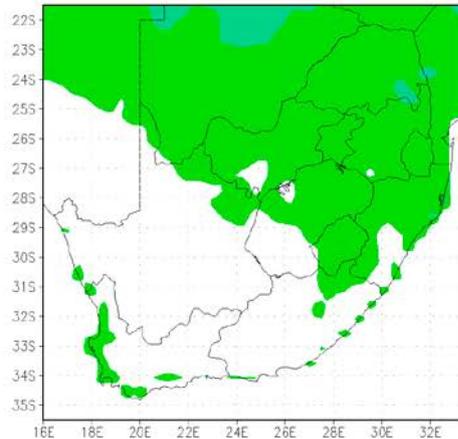
APRIL–MAY–JUNE  
Below–Normal Max Temp



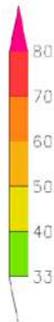
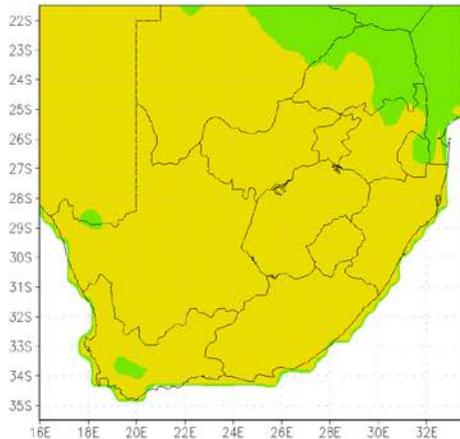
MAY–JUNE–JULY  
Above–Normal Max Temp



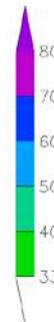
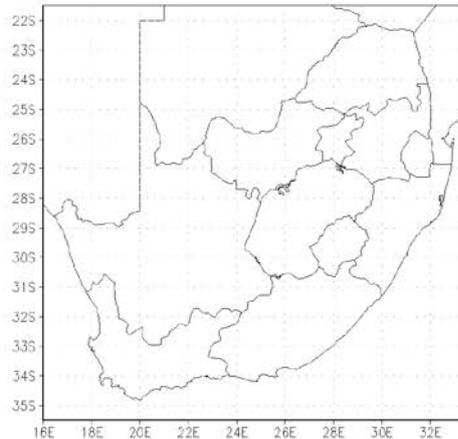
MAY–JUNE–JULY  
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JUNE–JULY–AUGUST  
Above–Normal Max Temp

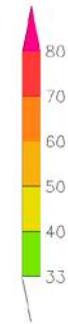
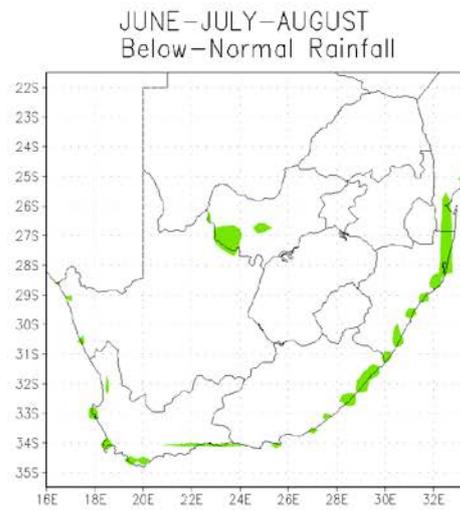
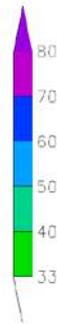
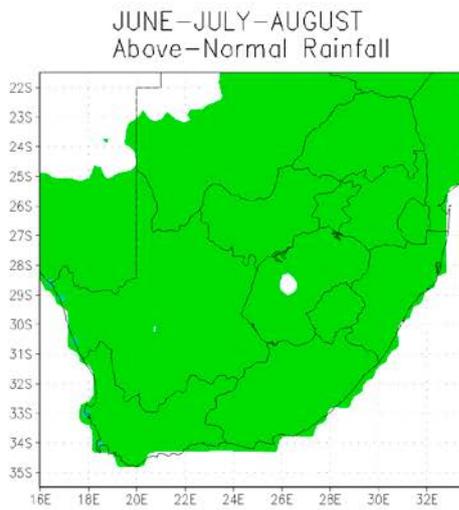
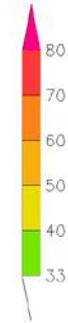
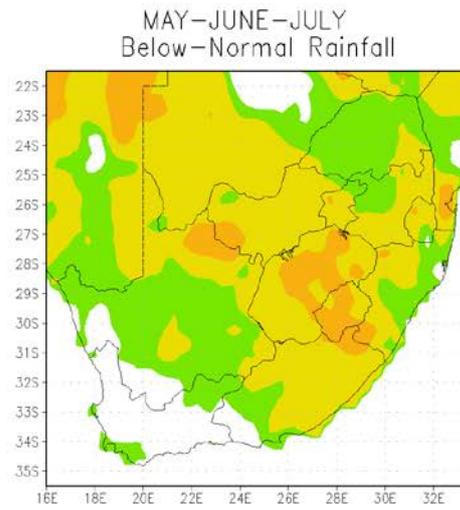
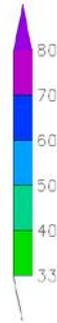
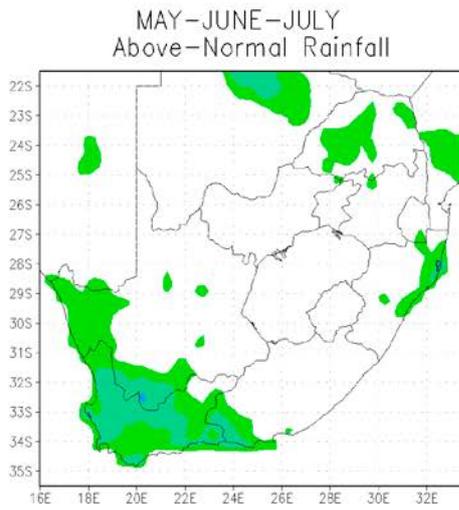
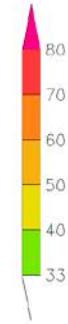
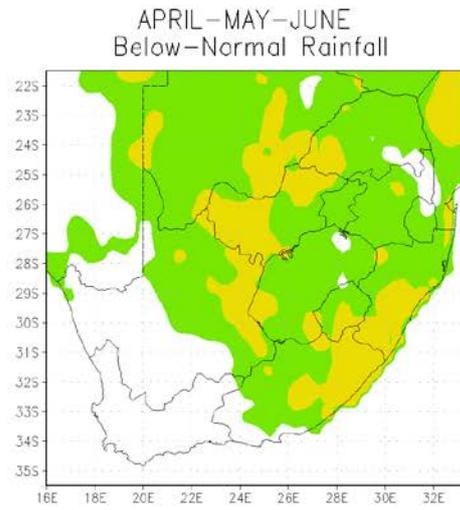
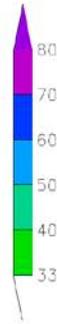
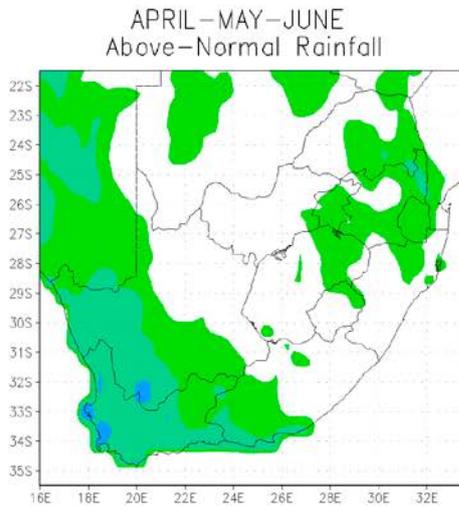


JUNE–JULY–AUGUST  
Below–Normal Max Temp



**SEASONAL CLIMATE WATCH: APRIL 2018 – AUGUST 2018**

**Note:** The indicators on the right of each diagram refer to the percentage likelihood of occurrence.





**Leopard (*Panthera pardus*).**  
Photo © Villiers Steyn



**Gemsbok (*Oryx gazella*).**  
Photo © Kirill Trubitsyn



**African bush elephant (*Loxodonta africana*).**  
Photo © Villiers Steyn



**Seasonal forecast**

The El Niño-Southern Oscillation (ENSO) is expected to weaken from a moderate La Niña phase to a neutral phase through to late winter (Jul-Aug-Sep). Interestingly the La Niña phase has strengthened over the last month against most models' expectations. However, its impact on South Africa is usually marginal past late summer (Jan-Feb-Mar) and is thus not expected to play much of a role until the next summer season.

**Interestingly the La Niña phase has strengthened over the last month against most models' expectations.**

During late autumn (Apr-May-Jun) and early winter parts of the south-western cape regions can expect above-normal rainfall. This is consistent with predictions earlier this month, which communicates a little bit more confidence than usual for these parts. However, predictions for mid-winter (Jun-Jul-Aug) see the above-normal prediction lose the minor confidence from the previous seasons.



**Burchell's zebra (*Equus quagga*).**  
 Photo © Anke van Wyk



**CAUTION!**

Caution is advised however that skill levels remain relatively low for the south-western parts of the country from the forecasting system, and it is advised that future forecasts be monitored to identify whether there is any consistency of above-normal forecasts.

The number of rainfall days is expected to be higher than normal over parts of the interior for late autumn, and also higher than normal over the far south-western parts of the country during early winter. However, both rainfall days and totals decrease drastically over the most of the country, with an exception of the far south-west where it starts to increase during early winter.

Temperatures are still expected to be lower in general during late

autumn and early winter for the north-eastern parts of the country, but warmer during mid-winter. The south-western parts are expected to have higher temperatures on average throughout late autumn, early and mid-winter.

The South African Weather Service will continue to monitor and provide updates of any future assessments that may provide more clarity on the current expectations for the coming seasons.

For SAWS commercial products, e-mail Michelle Hartsliel: [Michelle.Hartsliel@weathersa.co.za](mailto:Michelle.Hartsliel@weathersa.co.za)

For more information and commercial products, visit [www.weathersa.co.za](http://www.weathersa.co.za)

*Wildlife Ranching* will include a seasonal forecast in each issue, so that you can plan ahead.  
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