

The South African Weather Service weather and climate information

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FOCUS Africa External Stakeholders virtual Workshop

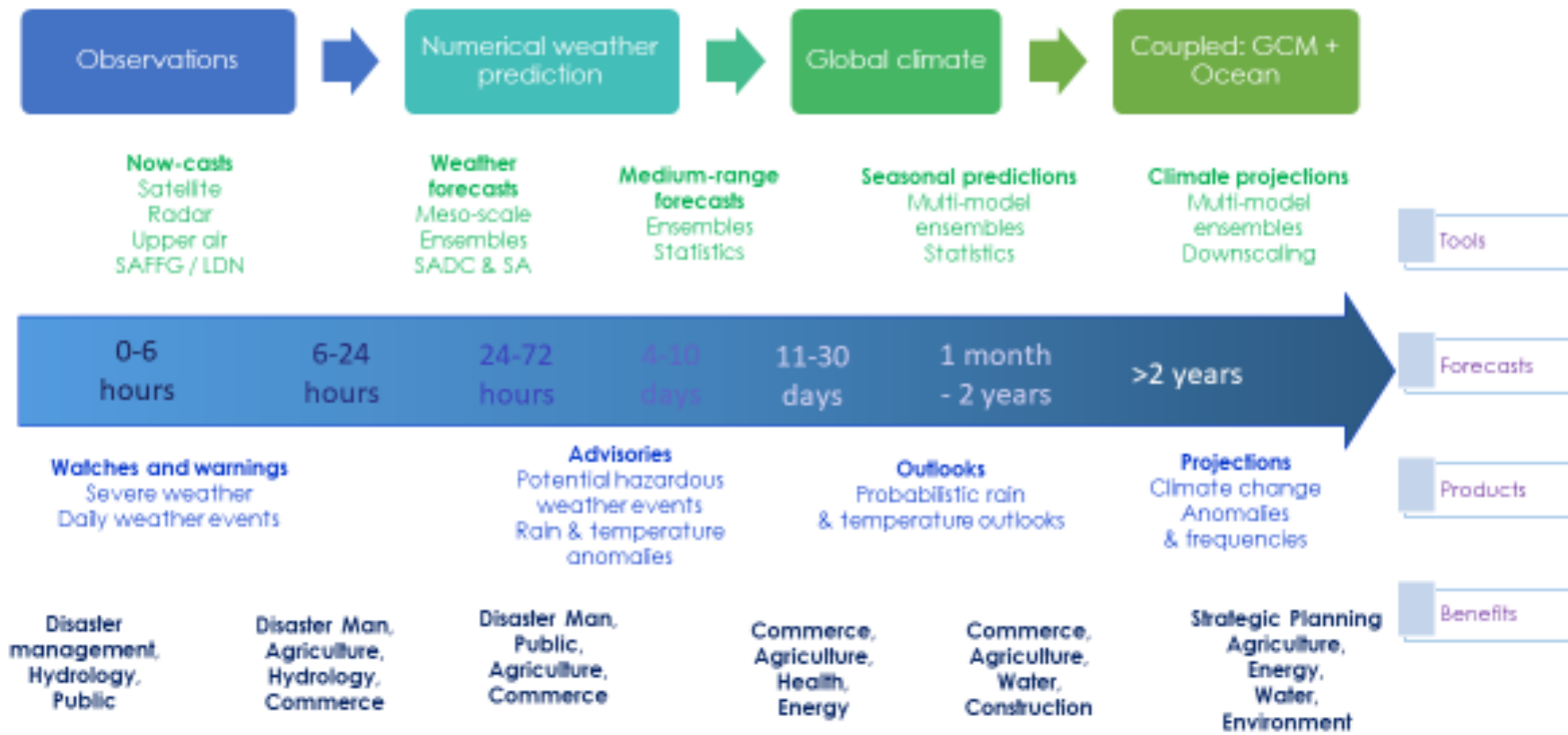
9 December 2020

**With contributions from: SAWS Research, Disaster Risk Reduction and
Communication Teams**

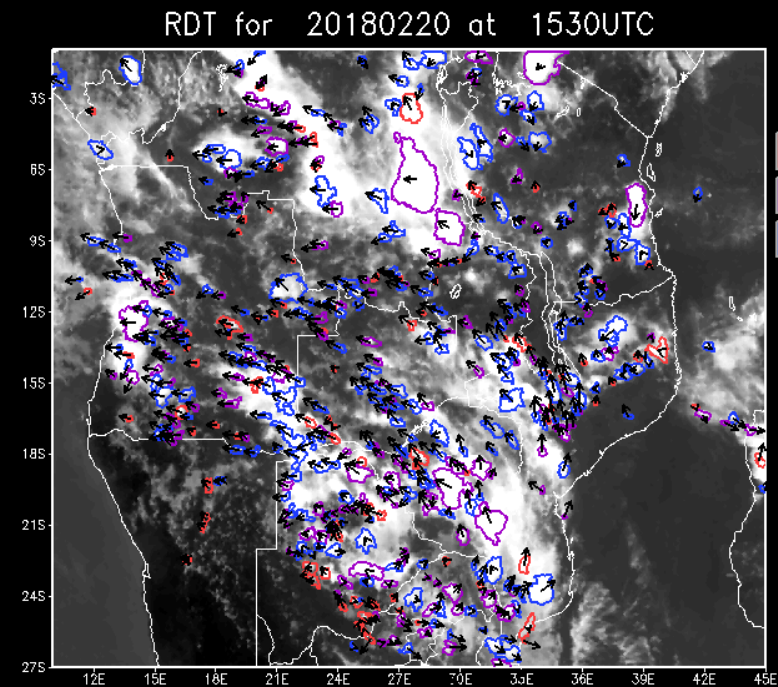
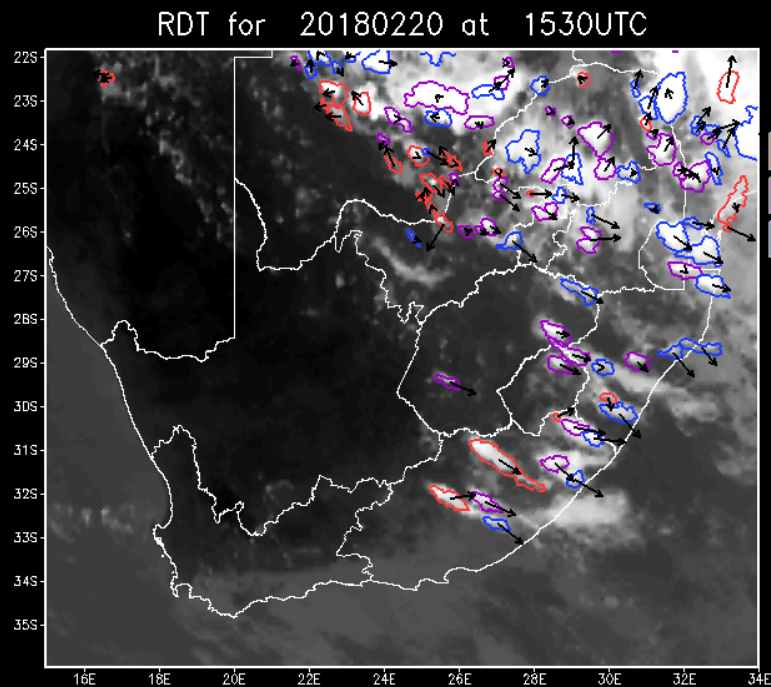


SAWS Seamless Forecasting Research System overview

SAWS SEAMLESS FORECASTING SYSTEM

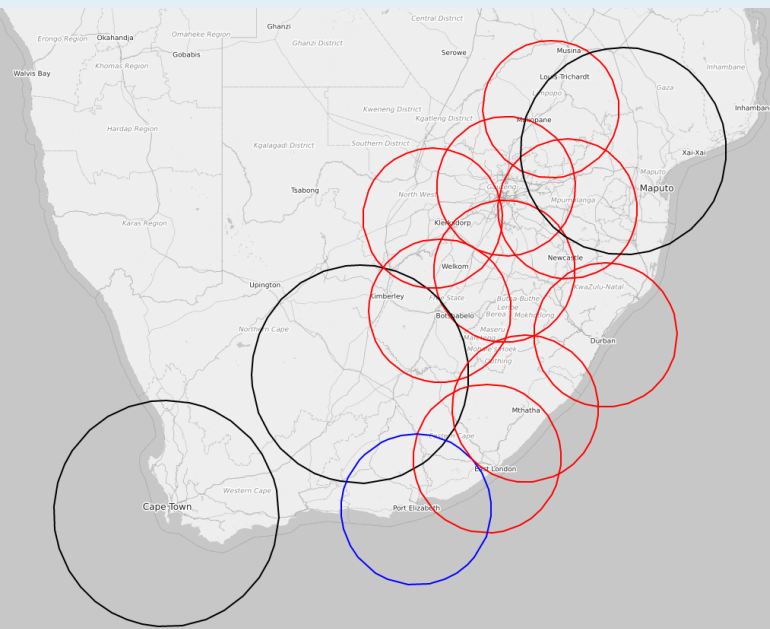


Satellite Product

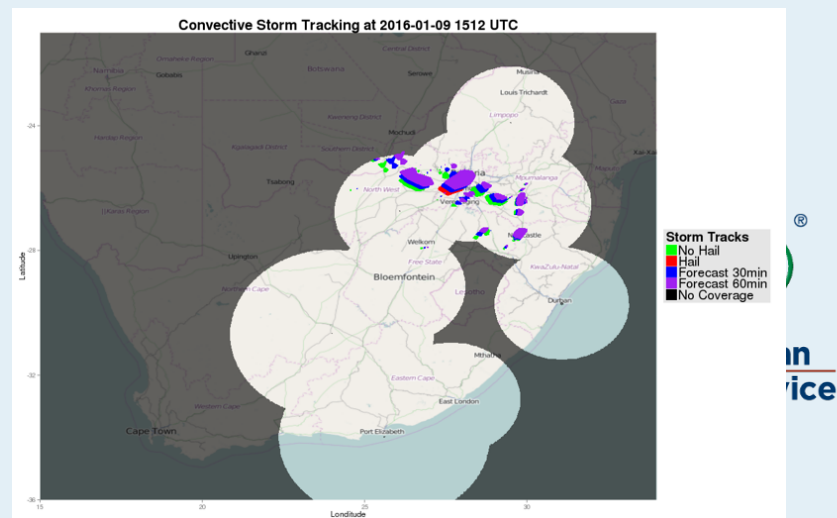
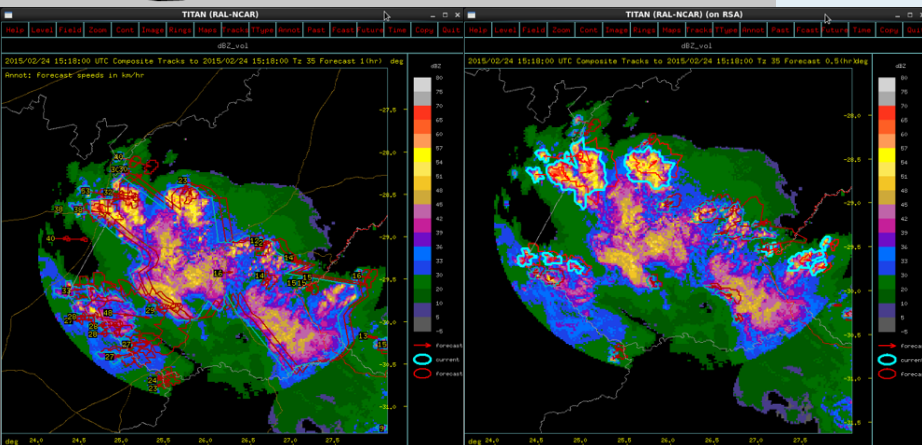
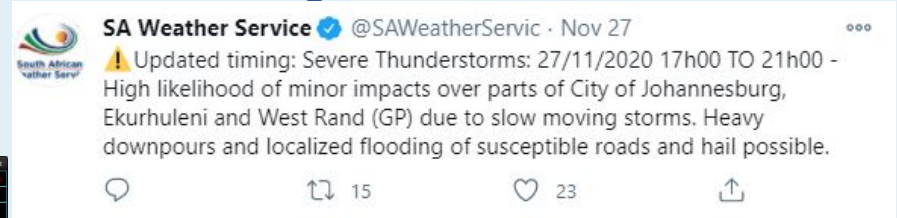


- Nowcasting Satellite Application Facility: Meteosat Second Generation
- Rapidly Developing Thunderstorms
- Southern Africa: Regional Specialized Meteorological Centre
- Share through RSMC Pretoria site: <http://rsmc.weathersa.co.za/login.php>
- Southern African Regional Flash Flood Guidance

Radar Products

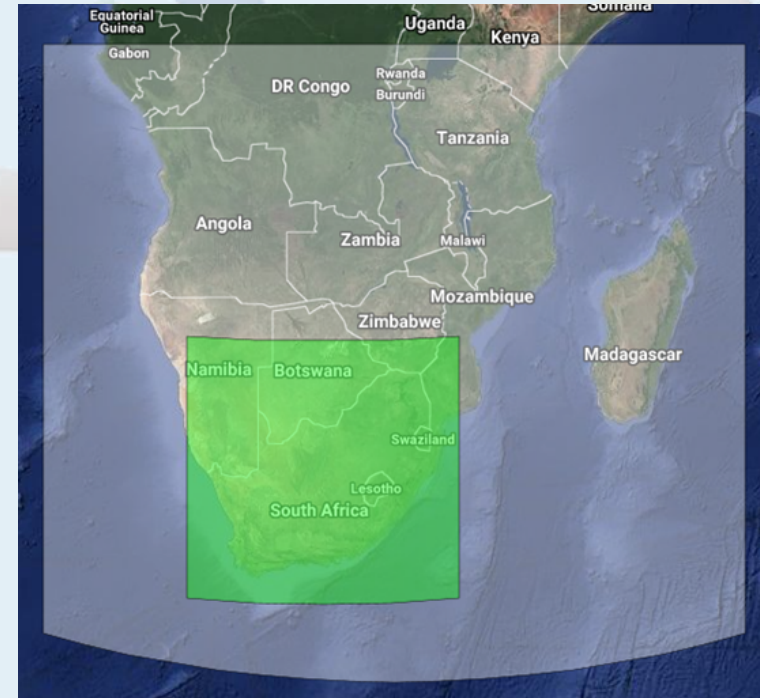


- S-band, C-band and X-band radars
- Quantitative Precipitation Estimates
- Storm tracks
- Hail tracking



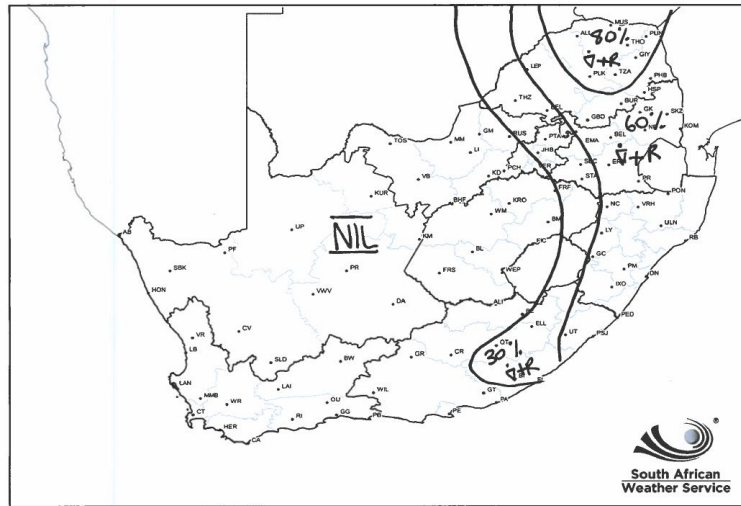
Numerical Weather Prediction

- SAWS HPC System – for large operational jobs
 - ❖ CRAY XC-30 system with 168 nodes
 - ❖ 1.7 PB Lustre system
- Fail-over: CHPC system
- Operational atmospheric forecast model: Unified Model (Met Office)
- 4.4 km – initialised 4 times a day
 - ❖ 00Z and 12Z for 72 hours
 - ❖ 06Z for 48 hours
 - ❖ 18Z for 60 hours
- 1.5 km – initialised 4 times a day
 - ❖ 00Z, 16Z, 12Z, 18Z for 48 hours
- Multi-model ensemble system – 5 days

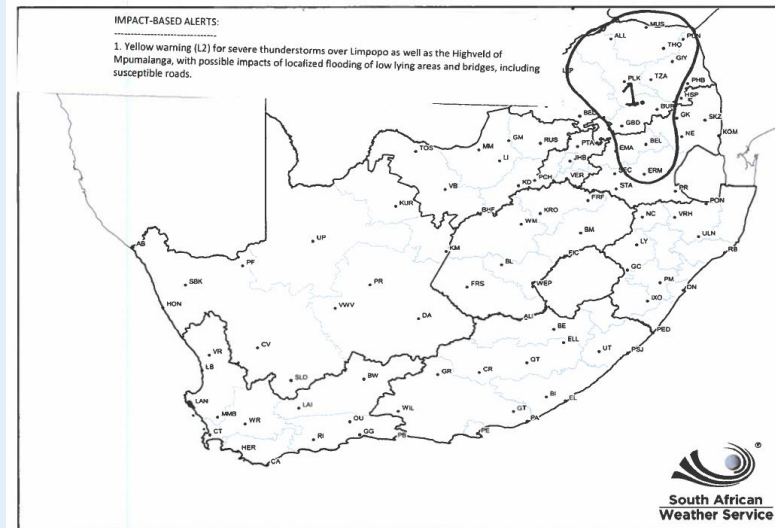


Forecasts

Rainfall chart for tomorrow (probability) Date issued: 24/11/2020 16h00SAST



Severe Weather Alerts : for tomorrow Date issued: 24/11/2020 16h00SAST



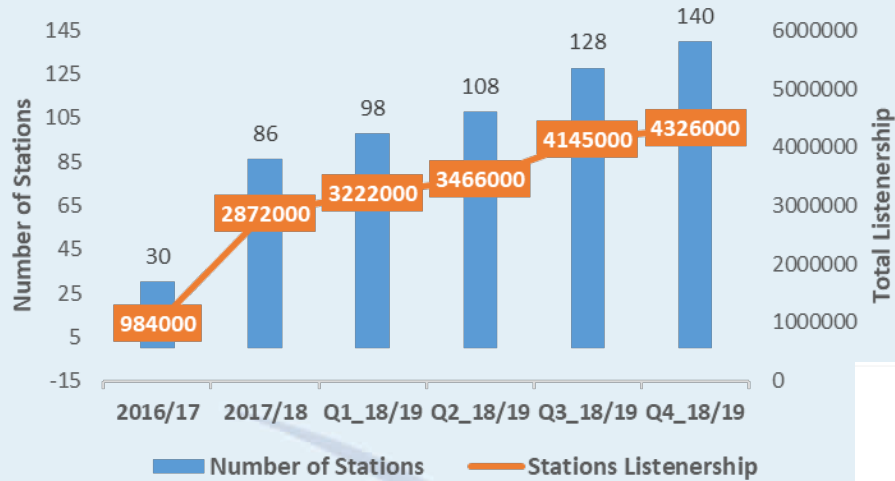
- Rainfall Forecasts sent to media
- Impact Based Severe Weather Warnings

Likelihood	High		2	6	10
	Medium		1	5	9
	Low			4	8
	Very Low			3	7
		Minimal	Minor	Significant	Severe
		Impact			

Impact-Based Forecasting: RAINFALL Impact Table				
Minimal	Minor	Significant	Severe	
Business as usual	Localised Business as usual	Localised Short term strain on emergency personnel	Widespread Prolonged strain on emergency personnel	
<ul style="list-style-type: none"> Some pooling of water on roads or in formal/informal settlements Day to day activities not disturbed Wet roads and reduced visibility Minimal traffic congestion Isolated mudslides and rockfalls 	<ul style="list-style-type: none"> Localised flooding of susceptible formal/informal settlements or roads, low-lying areas and bridges Major roads affected but can be used, increased travel times Difficult driving conditions on dirt roads Minor motor vehicle accidents due to slippery roads and/ reduced visibility Closure of roads crossing low water bridges 	<ul style="list-style-type: none"> Flooding of roads and settlements (<i>formal and informal</i>) Danger to life (fast flowing streams / deep water) Displacement of affected communities Some communities temporarily not accessible/cut-off Damage to property, infrastructure, loss of livelihood and livestock Major disruption of traffic flow due to major 	<ul style="list-style-type: none"> Widespread flooding of roads and settlements Danger to life (fast flowing streams / deep water) Large communities not accessible/cut-off for a prolonged period Widespread displacement of affected communities Widespread damage to property, buildings and loss of livelihoods and livestock Widespread transport routes and travel services severely affected 	

Community radio

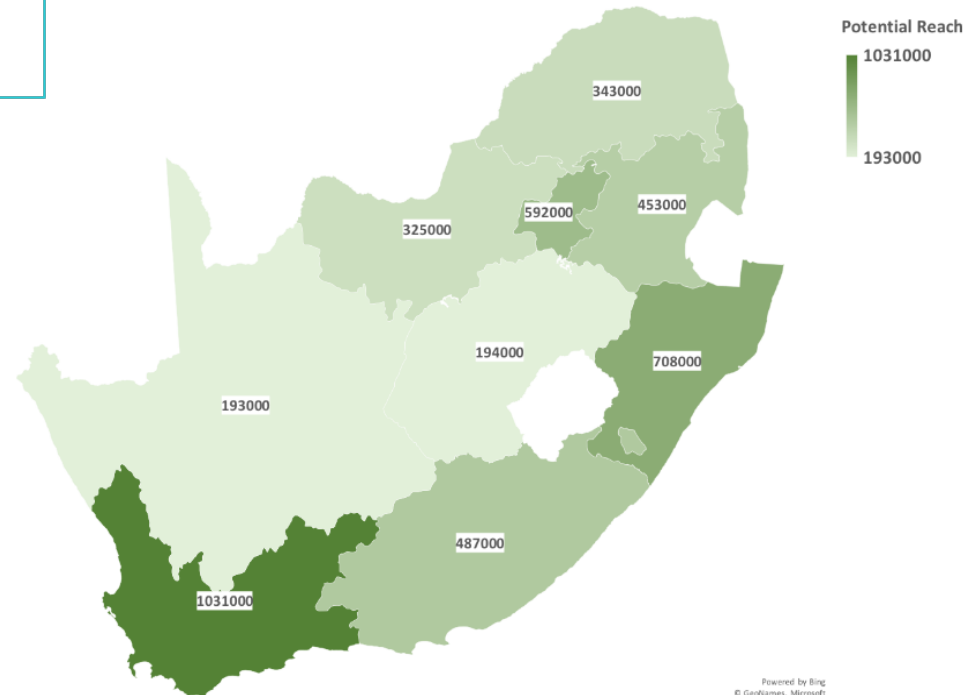
Stations Receiving Information



*Potential Reach based on stations' total listenership and broadcast area

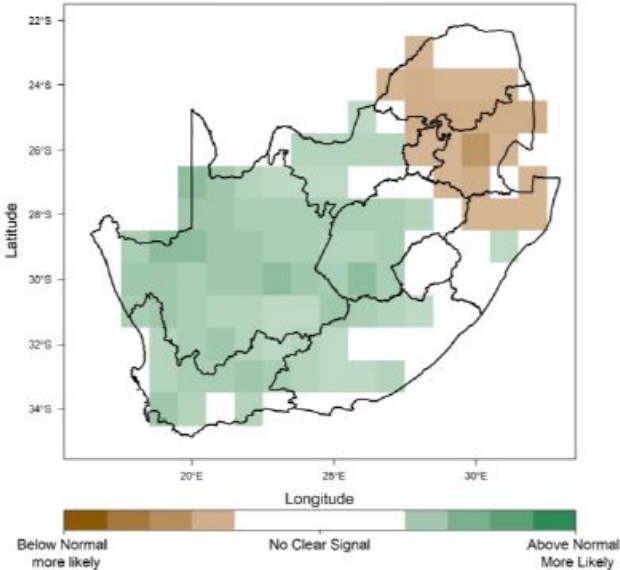
- At least *140 community stations receiving information daily from SAWS
- Stations have a total listenership of 4.3million
- SAWS has potential to reach 4.3m people daily via community radio stations
- More than 30m people reached via SABC Radio

Potential Reach

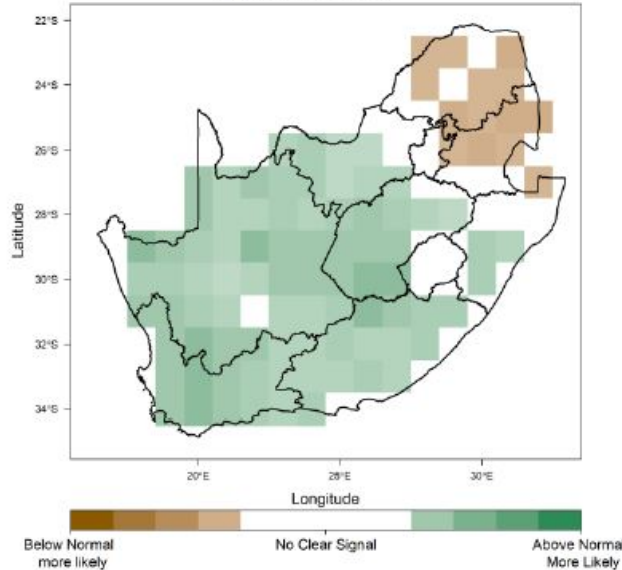


Seasonal Forecasting

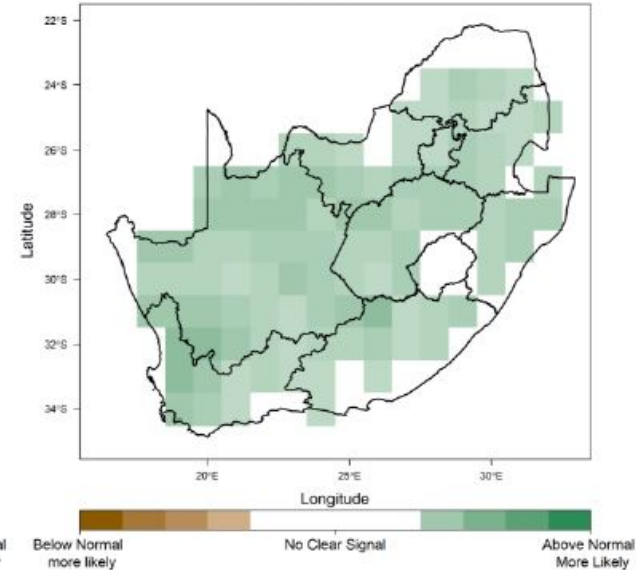
Expected Precipitation Conditions for DJF 2021
Issued: Nov 2020



Expected Precipitation Conditions for JFM 2021
Issued: Nov 2020



Expected Precipitation Conditions for FMA 2021
Issued: Nov 2020



- WMO Global Producing Centre of Long Range Forecasting
- Running ECHAM4.5-MOM system
- Forecasts shared on SAWS website and email

3. Summary implications to various economic sector decision makers

Water and Energy

The anticipated above-normal rainfall in the Northern Cape, Western Cape parts of the Eastern Cape, Free State and the North West provinces provides an opportunity for recovery of water reservoirs, during both early- and mid-summer seasons. Water reservoirs are likely to significantly recover during the late-summer season, across the country. Such recoveries might not be relieving communities in Limpopo, KwaZulu-Natal and the Eastern Cape provinces, given that most dams in these provinces are on average below 60% full storage capacity, based on the information from the Department of Water and Sanitation, and also due to the fact that some of the provinces were projected to experience below normal rainfall during the early- and mid-summer seasons. In addition, the expected above-normal rainfall conditions pose the risk of flash flooding and urban localized flooding, particularly in areas prone to flooding like in Gauteng, particularly in the late summer season. Hence there is a need for citizens to watch out for short-term forecasts and warnings as the summer season progresses.

Energy: The normal to above normal temperatures in parts of provinces like Limpopo and Mpumalanga, while the mostly uncertain and below normal temperatures in the rest of the provinces will slightly increase the demand for heating and cooling.

Health

The predicted above-normal maximum temperatures in Limpopo and Mpumalanga provinces might lead to prolonged and intense exposure to high solar ultraviolet radiation (UV) and hot temperatures that have the potential to cause UV and heat-related illnesses. The relevant decision-makers are therefore encouraged to advise the public to take appropriate sun protection measures to reduce overexposure by staying in the shade, using sunscreen and wearing protective clothing, particularly during the mid-day period. Skin and eye allergies are likely to increase because of greater pollen released into the air and increased ambient heat during this time. Also, most foodborne pathogens are likely to grow rapidly during high temperatures. The public is, therefore encouraged to practice good food hygiene. Additionally, the above-normal rainfall forecast for the most part of the country with exception to Limpopo, Mpumalanga and Kwa-Zulu Natal provinces might increase waterborne diseases such as diarrhoea.

Agriculture

The seasonal rainfall forecasts show that there is higher likelihood of above-normal rainfall over the provinces of Free State, North-West, Eastern Cape, Northern Cape and Western Cape, which is likely to be favourable for the agricultural sector. Decision makers may advise farmers to practice soil and water conservation, and establish good drainage systems. However, the mid and late-summer rainfall forecast for Limpopo, Gauteng, KwaZulu-Natal, and Mpumalanga provinces indicate higher likelihood of below-normal rainfall (please note the uncertainty highlighted in the overview section). As a result, the relevant decision makers are encouraged to advise farmers to adopt soil and water conservation practices and water harvesting and storage. Farmers are also encouraged to approach the season with caution, especially in areas that have been experiencing dry conditions constantly.

- Summary for different sectors now included in seasonal outlook



**South African
Weather Service**

Final Remarks

- Early warnings – an important part of adapting to the changing climate
- Huge infrastructure investments to produce forecasts:
 - High Performance Computing systems
 - Ground observations
- More needs to be done to reach everyone
- Twitter: @SAWeatherServic
- Facebook: South African Weather Service/
@WeatherServic
- Download our weatherSMART app
 - For Apple Smartphones:
<https://apps.apple.com/za/app/weathersmart/id1045032640>
 - For Android Smartphones:
<https://play.google.com/store/apps/details?id=za.co.africis.saws.droid.activity&gl=ZA>

Thank you