

# Climate Change and Health Webinar

## *Early Warning Systems*

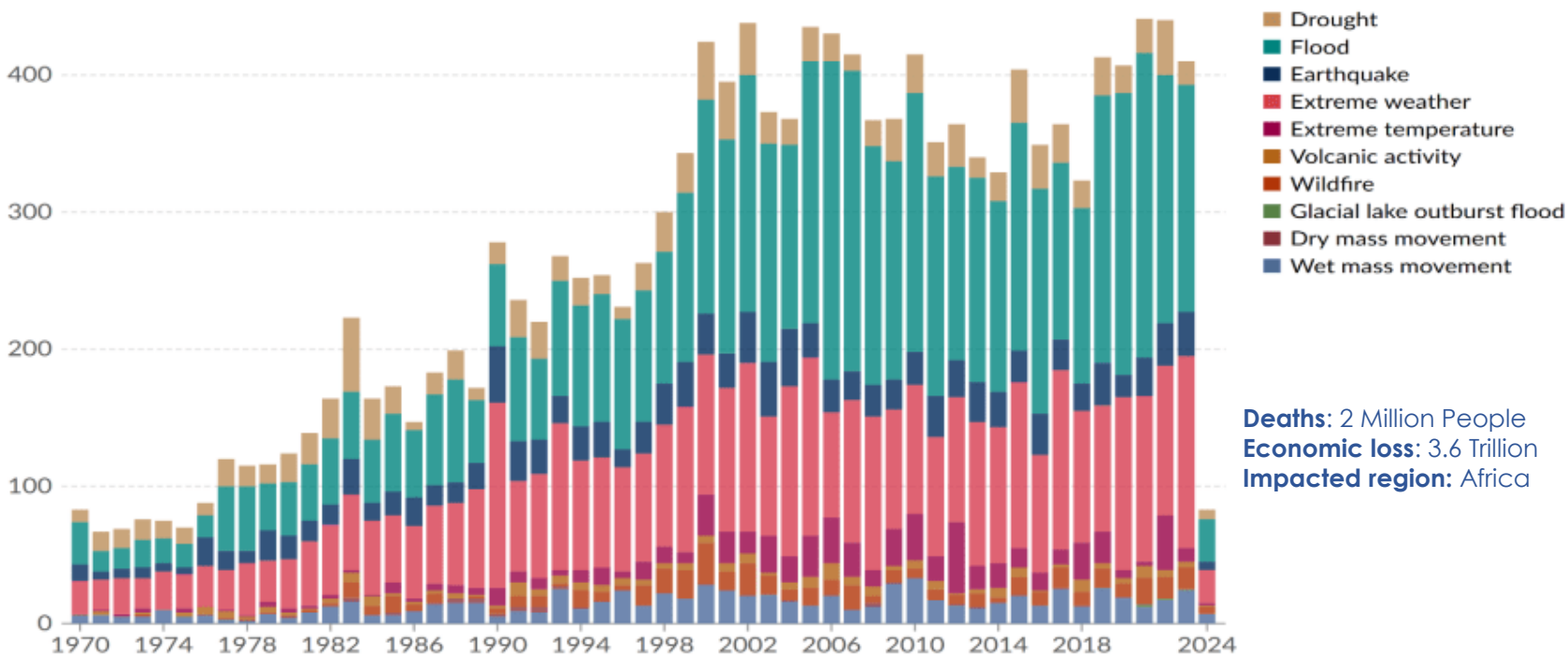
05 November 2024

# Introduction

Our World  
in Data

## Global reported natural disasters by type, 1970 to 2024

The annual reported number of natural disasters, categorised by type. The number of global reported natural disaster events in any given year. Note that this largely reflects increases in data reporting, and should not be used to assess the total number of events.



Data source: EM-DAT, CRED / UCLouvain (2024)

Note: Data includes disasters recorded up to April 2024.

OurWorldinData.org/natural-disasters | CC BY

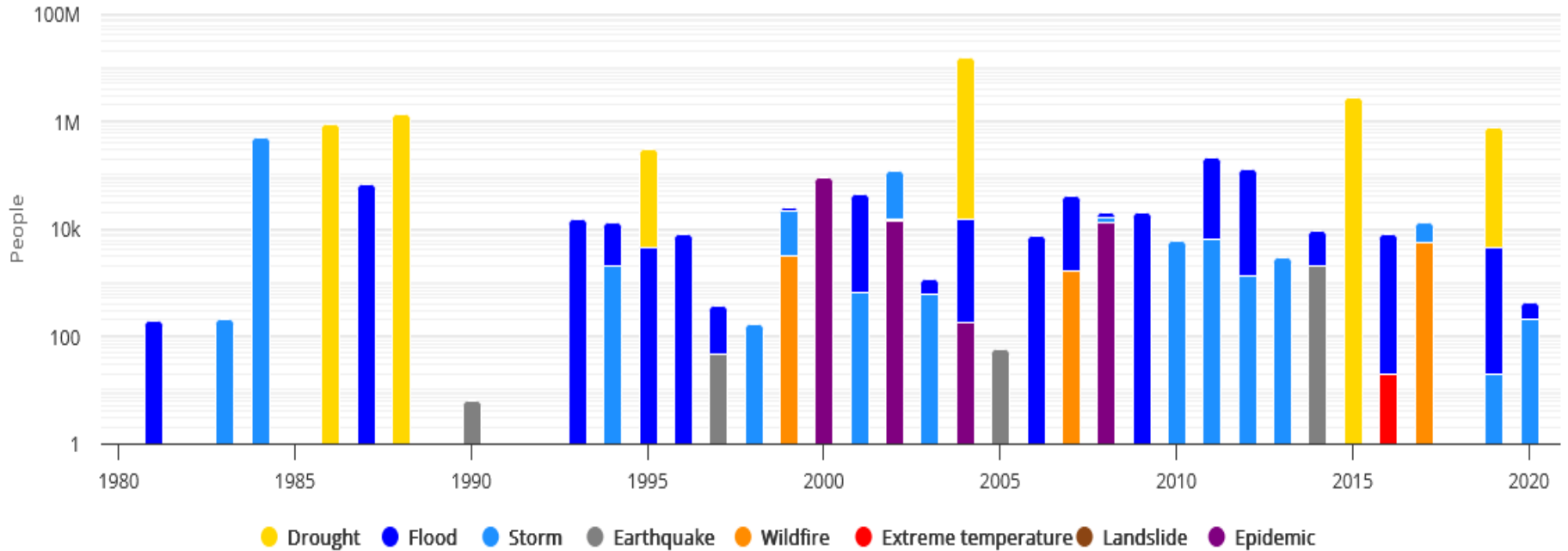


**South African  
Weather Service**

# Natural Disaster in South Africa

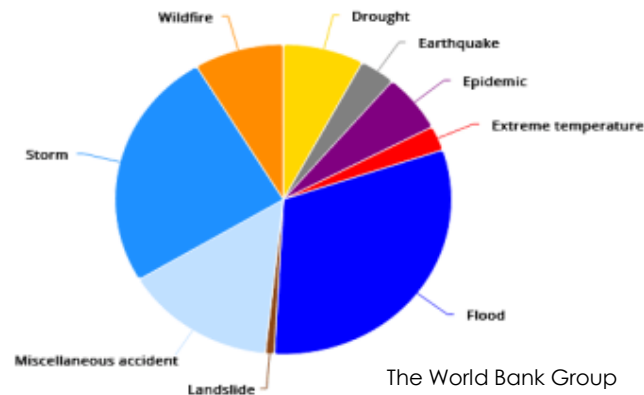
## Key Natural Hazard Statistics for 1980-2020

Number of People Affected



<https://climateknowledgeportal.worldbank.org/country/south-africa/vulnerability>

### Average Annual Natural Hazard Occurrence for 1980-2020

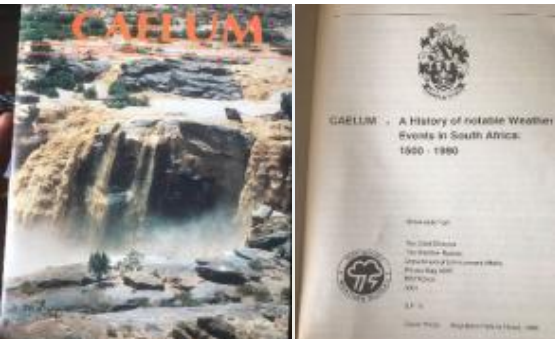


The World Bank Group



# Natural Disaster in South Africa

- ❑ The SAWS records and archives information on weather and climate extremes and their impacts in South Africa dating back to the 1500s in a publication called Caelum
- ❑ Over 5000 historical extreme weather events have been recorded



# Natural Disaster in South Africa

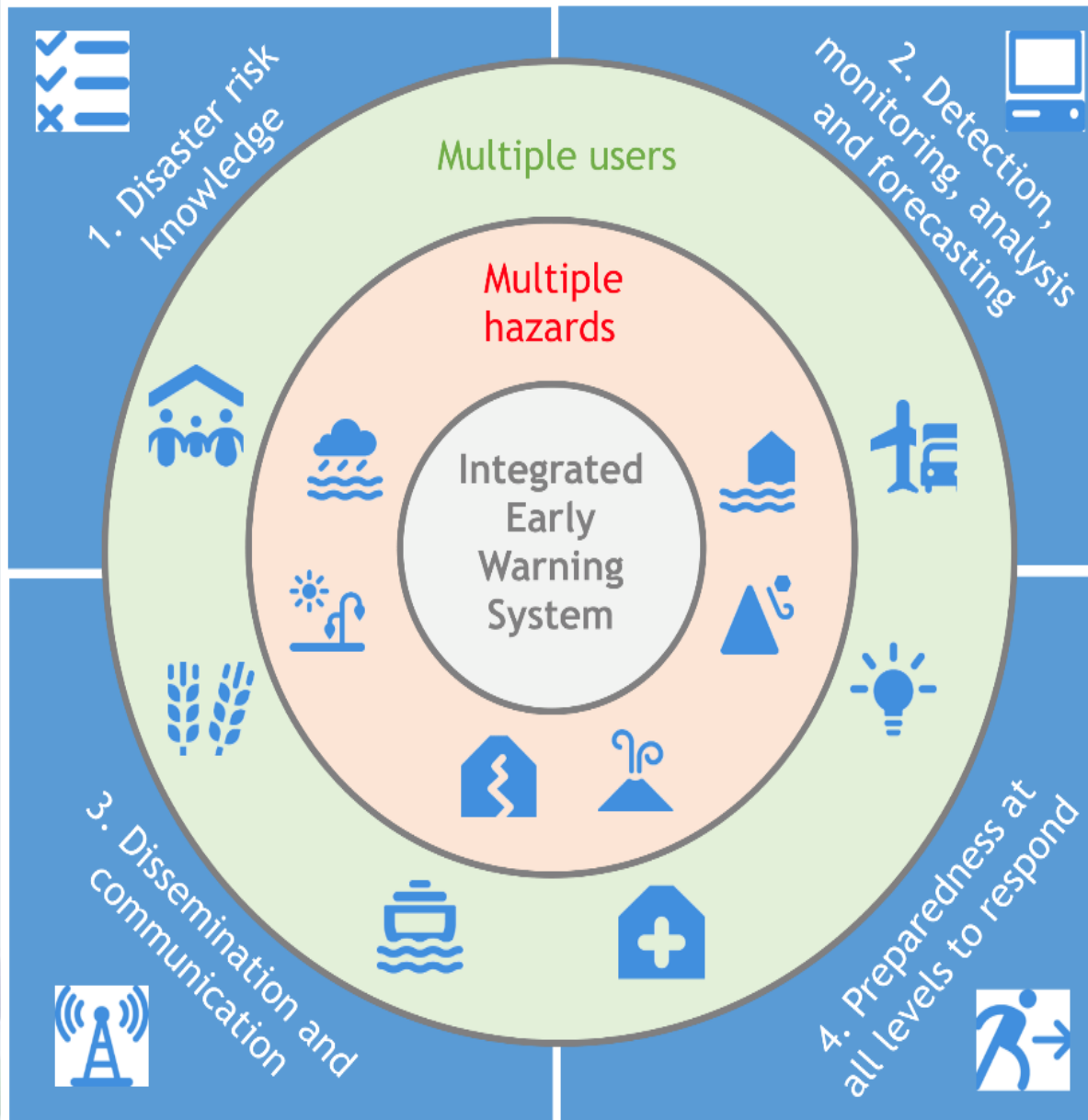
Date	Location	Event Description	Impact
28 October 2024	Limpopo & Mpumalanga	Severe weather, including heavy rain and flooding	More than 10 high schools were severely damaged, affecting matric exams. Destruction of house electricity lines, and loss of livestock.
21 October 2024	Limpopo	Severe weather, including heavy rain and flooding	More than 200 homes and electrical poles downed.
21-23 October 2024	Eastern Cape (Nelson Mandela Bay area)	Heavy rainfall leading to severe flooding	At least 10 fatalities, including four children; approximately 3,000 residents displaced; extensive infrastructure damage, including destroyed homes, roads, and bridges.
07-08 July 2024	Western Cape	Flooding	35,000 homes affected.
03 June 2024	Eastern Cape and KwaZulu-Natal	Flooding in Eastern Cape and tornado in KwaZulu-Natal	275 fatalities in Eastern Cape; over 1,200 people displaced in KwaZulu-Natal due to tornado.
April 2024	KwaZulu-Natal and North West	Heavy storms and flooding	1,395 people affected
January 2024	KwaZulu-Natal and Free State	Flooding	1,226 households and 6,418 people affected; 41 fatalities.
27 June 2023	KwaZulu-Natal	Severe thunderstorm with tornado	Property destruction and loss of life.
08-12 April 2022	KwaZulu-Natal	Flooding	Destruction amounting to R7 billion.



# Natural Disaster in South Africa...Cont



# Early Warning Systems



Africa is among the regions with the worst coverage of early warning systems (EWS), with 60% of the population lacking access



# Integrated Multi Early Warning Value Chain

INFCOM-3-d08-1(2)-WIGOS-GUIDE-AND-RWC-GUIDELINES-UPDATE-ANNEX-1-approved\_en

INFCOM-3/Doc. 8.1(2), ANNEX 1, APPROVED, p 151

The events list will facilitate the standardization of event terminology across various domains of applications. Event definitions can be referred to in the WMO relevant technical regulations.

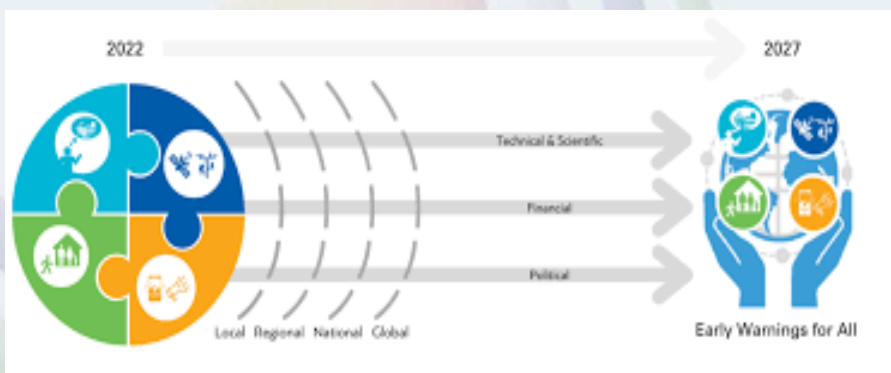
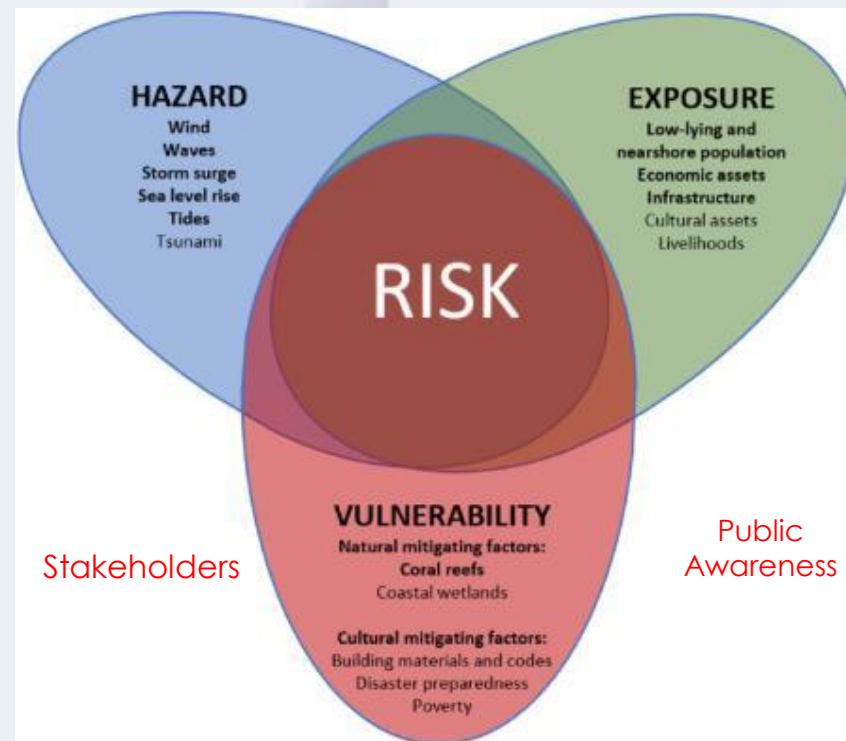
The "priority hazards" as identified by the Early Warnings for All initiative are marked in bold.

## LIST OF EVENTS

1. ----- Avalanche
2. ----- Cold wave
3. ----- **Drought/Dry spell**
4. ----- Dust storm/Sandstorm
5. ----- Extra-tropical cyclone
6. ----- **Flood**
7. ----- Fog
8. ----- Forest fire
9. ----- Freezing rain
10. ----- Frost
11. ----- Hail
12. ----- Haze/Smoke
13. ----- **Heatwave**
14. ----- High Seas/Rogue waves etc.
15. ----- High UV radiation
16. ----- Icing
17. ----- Landslide/Mudslide & Debris flow
18. ----- Lightning
19. ----- Pollen pollution/Polluted air
20. ----- Rain/Wet Spell
21. ----- Snow
22. ----- Snowstorm
23. ----- Space weather event
24. ----- Storm surge/Coastal flood
25. ----- **Thunderstorms/Squall lines**
26. ----- Tornado
27. ----- **Tropical cyclone**
28. ----- Tsunami
29. ----- Volcanic ash
30. ----- Wildland fire
31. ----- Wind

Priority Risk  
Hazards

The above WMO Event Types List contains a standard list of event types that can be potentially associated with hazardous events and can be considered by the regional associations when designing their RBN networks. Regional associations normally consider a small number of challenges to be addressed at the regional level when designing their RBN networks.



SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION 2015-2030		
7 GLOBAL TARGETS	<b>Reduce</b> <b>Mortality/</b> global population 2020-2030 Average << 2005-2015 Average	<b>Increase</b> Countries with national & local DRR strategies 2020 Value >> 2015 Value
	<b>Affected people/</b> global population 2020-2030 Average << 2005-2015 Average	<b>International                      cooperation</b> to developing countries 2030 Value >> 2015 Value
	<b>Economic loss/</b> global GDP 2030 Ratio << 2015 Ratio	<b>Availability and access</b> to multi-hazard early warning systems & disaster risk information and assessments 2030 Values >> 2015 Values
	<b>Damage to critical infrastructure                      &amp; disruption of basic services</b> 2030 Values << 2015 Values	



# Evolution of Integrated Multi hazard Early Warning Systems

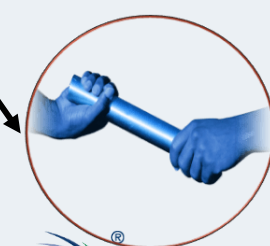
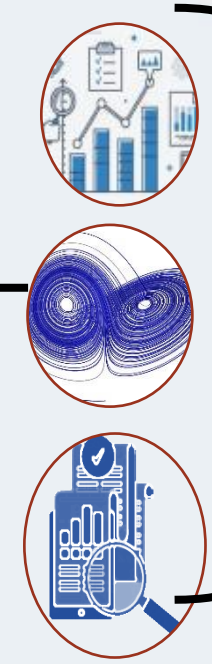
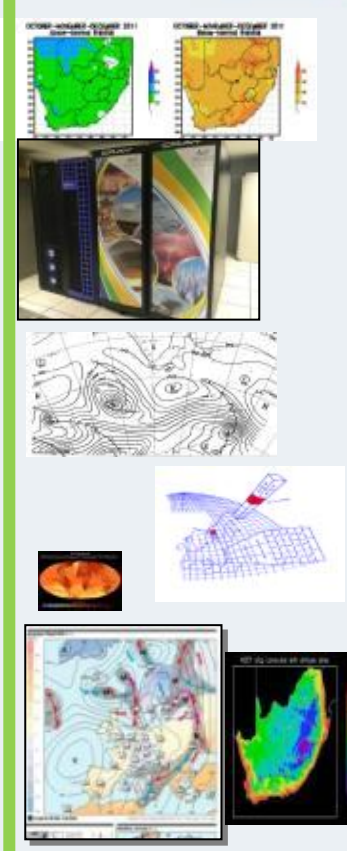
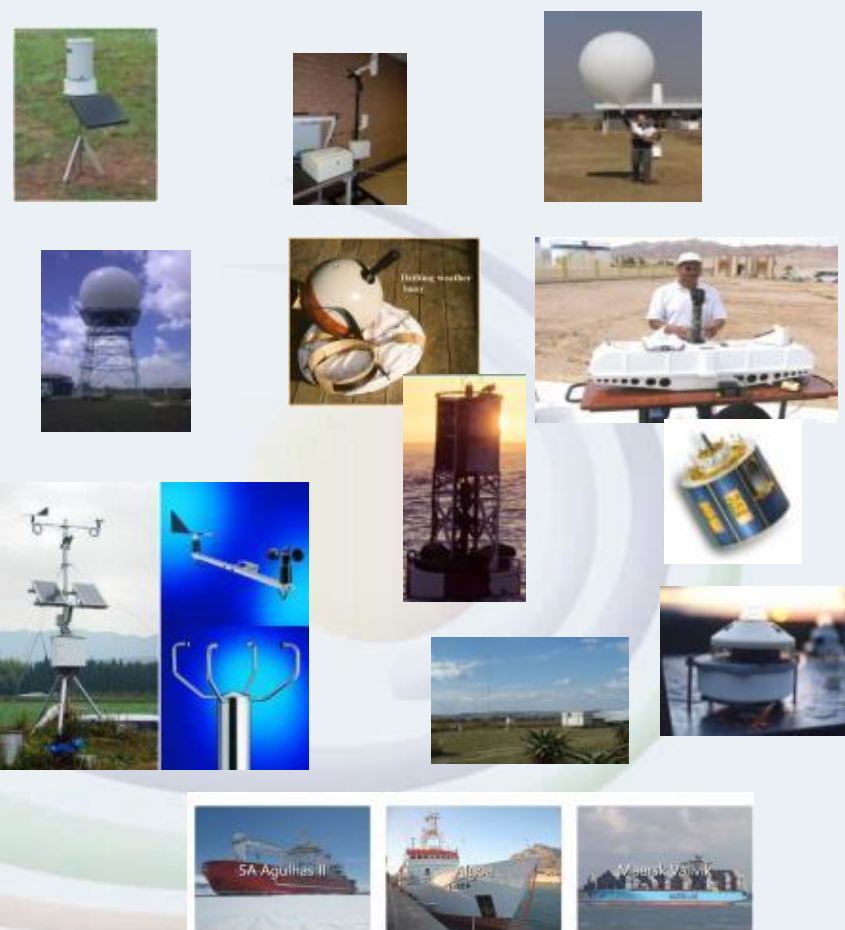
Infrastructure

Observations  
&  
Data  
Collection

Data Processing  
&  
Archiving

Products  
&  
Services

C  
l  
i  
e  
n  
t  
s



South African  
Weather Service

# SAWS Observation Footprint

1 National Forecasting Centre (NFC) in Pretoria

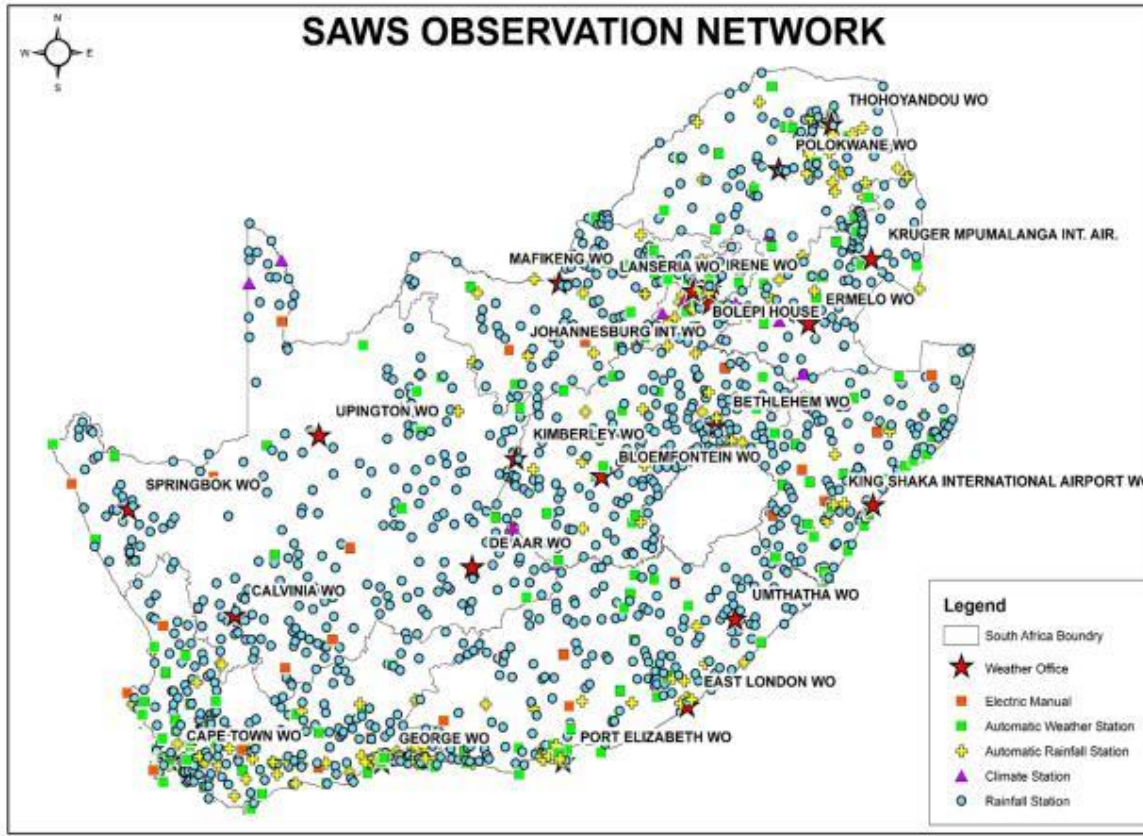
2 Dobson Ozone Spectrophotometer Stations (Irene & Springbok)

1277 Rainfall Stations (Observers -Manual)

214 Automatic Weather Stations (AWS)

13 Air Quality Measuring and Monitoring Stations (SAAQIS)

1 x Global Atmospheric Watch Station (Cape Point)



141 Automatic Rainfall Stations (ARS)

40 Weather buoys (annually)

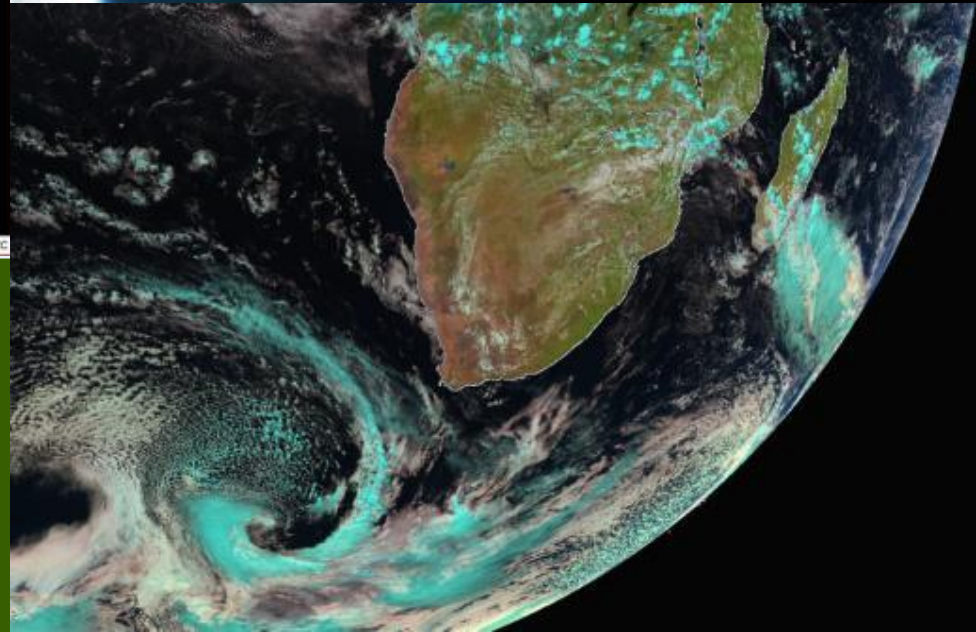
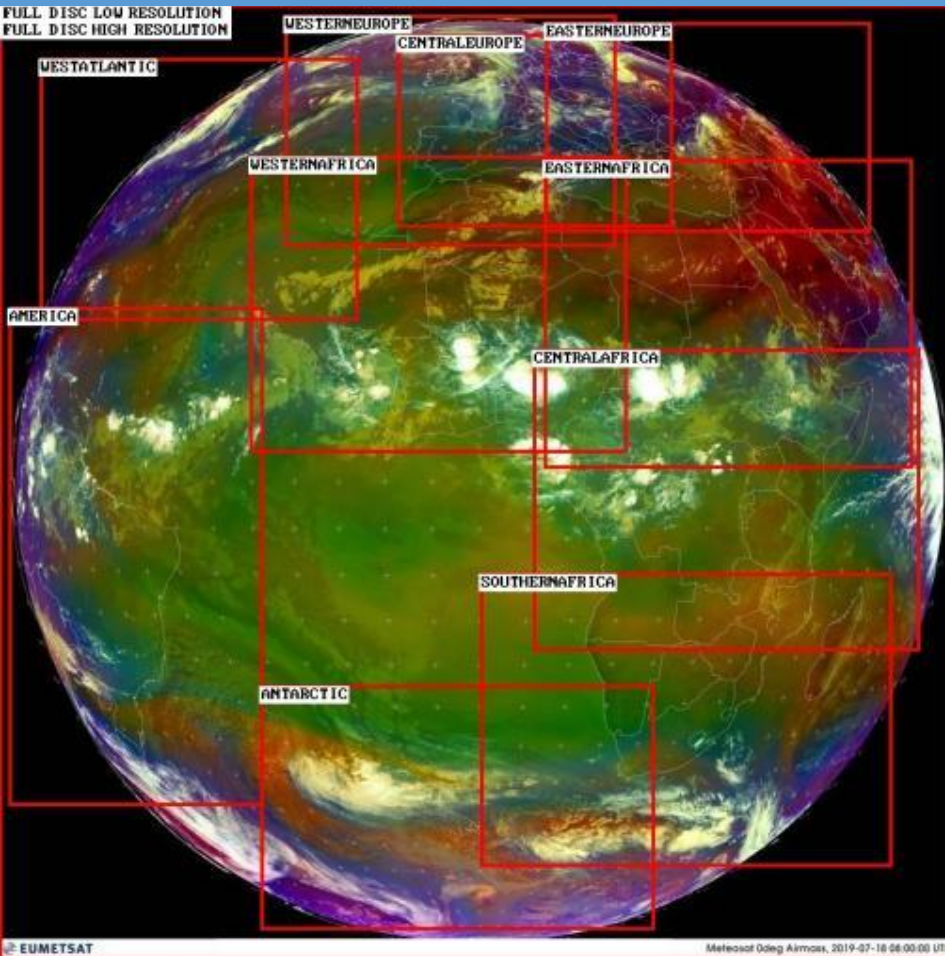
25 Climate Stations

24 Lightning Detection Network Sensors

14 Meteorological Radar Systems (C-, S- and X-Band)

11 Upper-Air Sounding Stations (Including Marion & Gough)

# Satellites

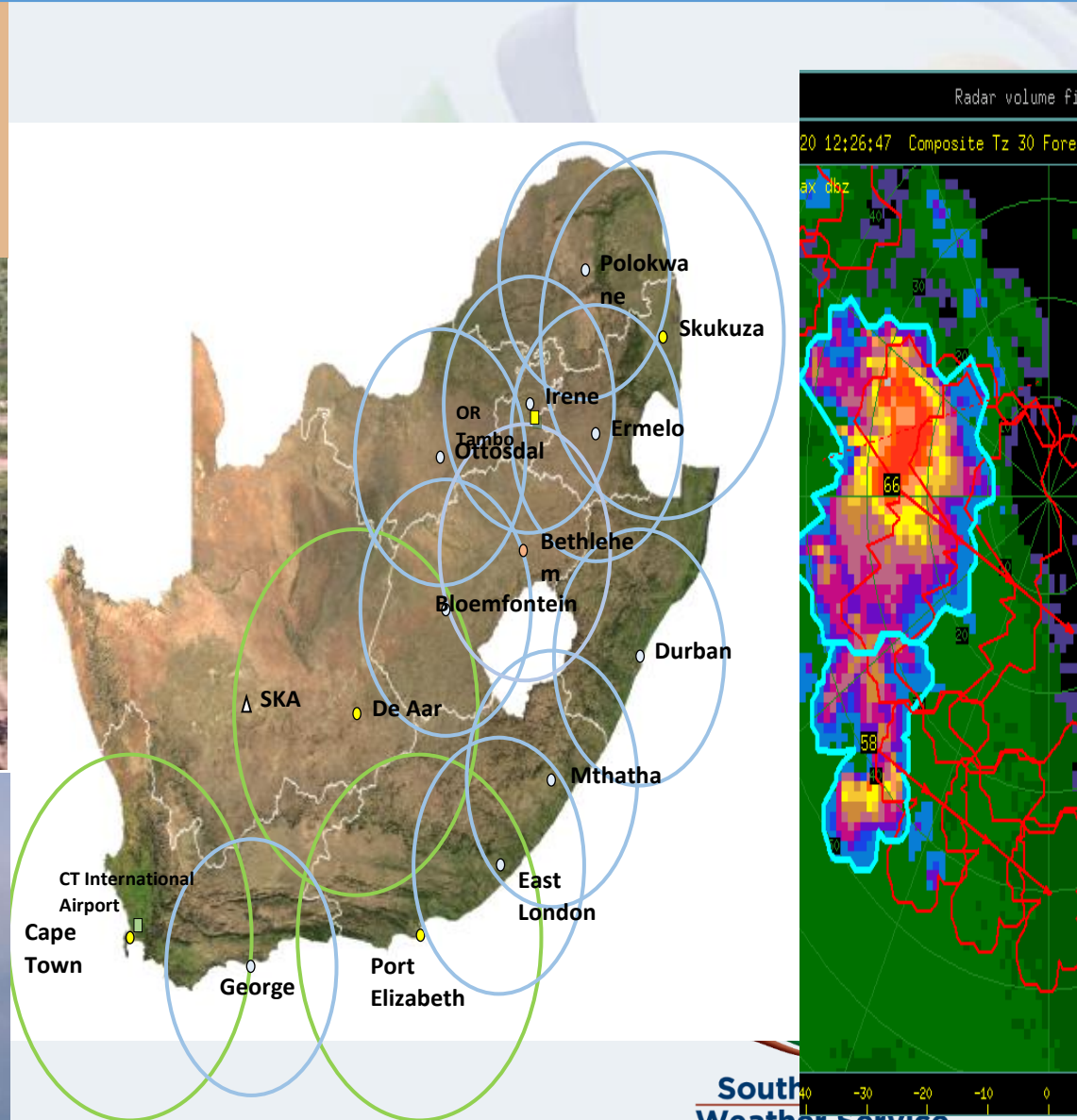


- ❑ EUMETSAT's Meteosat Second Generation (MSG) satellite or later (MTG)
- ❑ Provides 12 channels;
- ❑ Temporal resolution of 15 minutes
- ❑ Spatially, it covers the entire African continent

2024/11/06

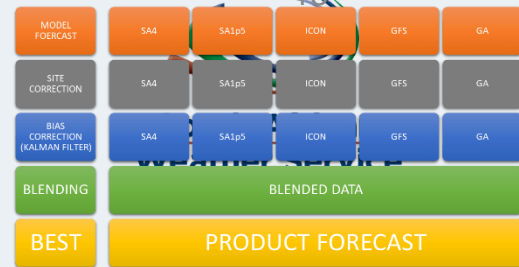
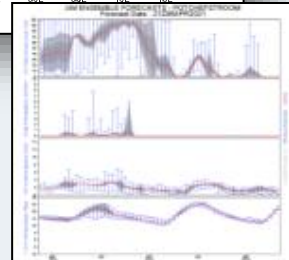
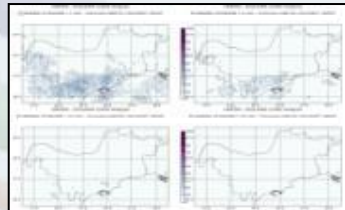
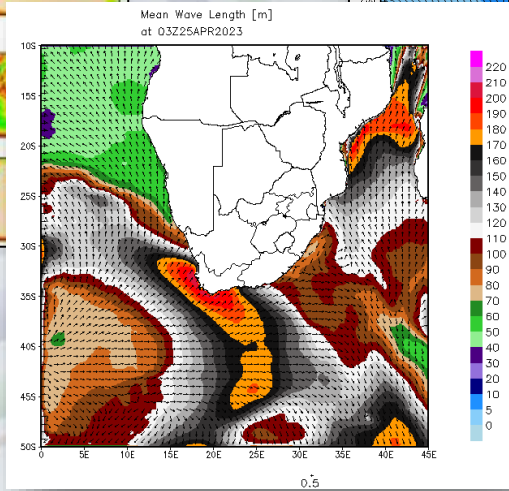
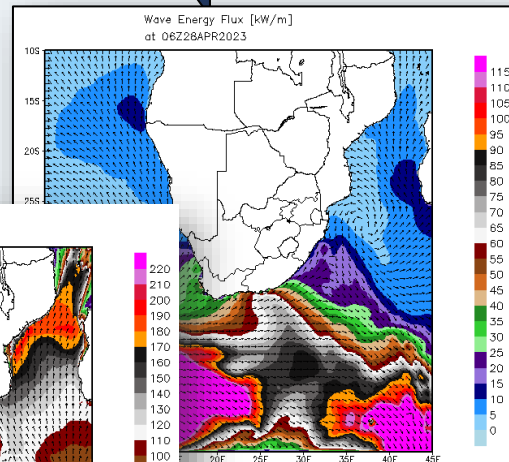
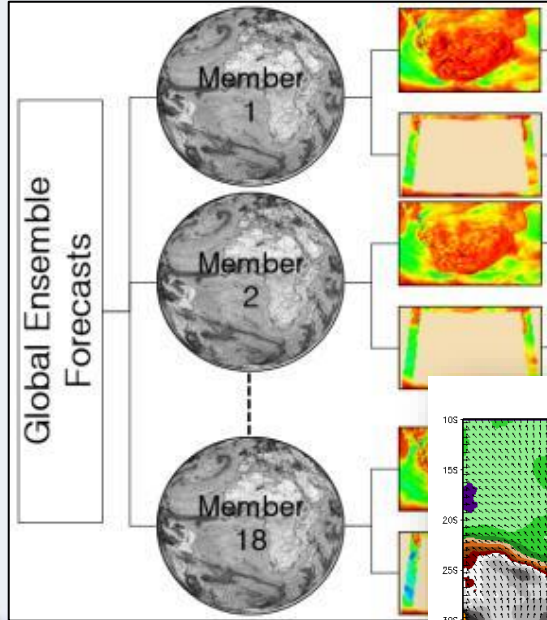
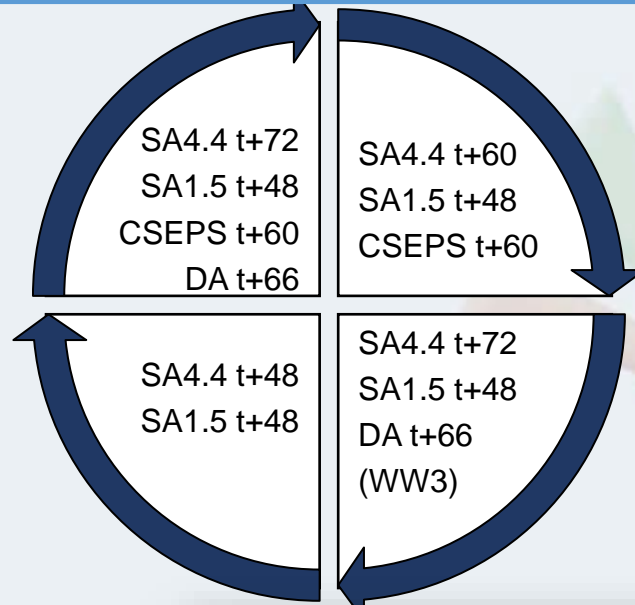
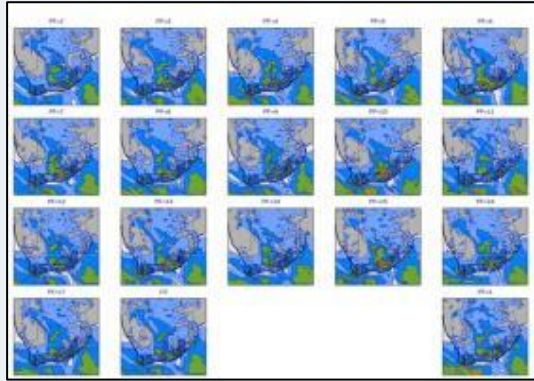
# Radar

- SAWS operate 12 radars
- Radar types: C and S-band
- Has a temporal resolution of 6 minutes
- Has a spatial range of 200km radius, scanning at 360 degrees



South  
Weather Service

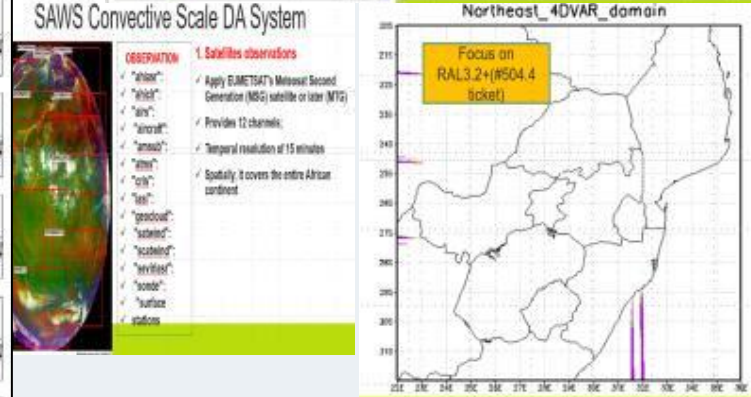
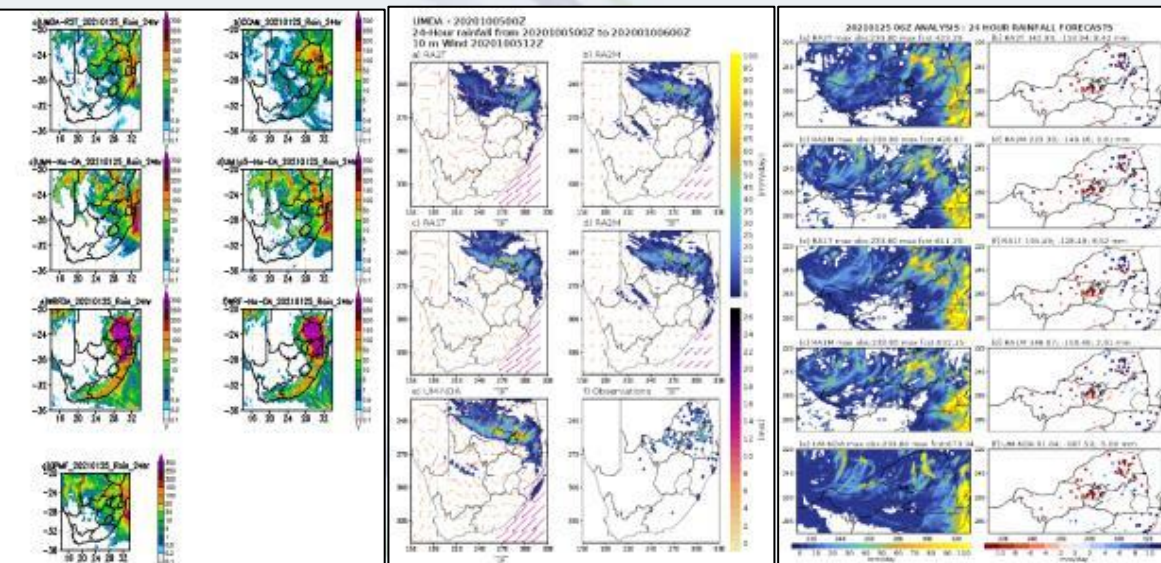
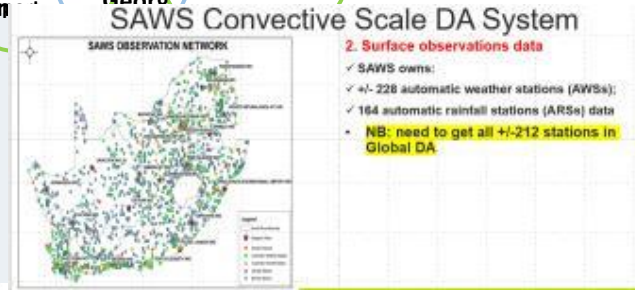
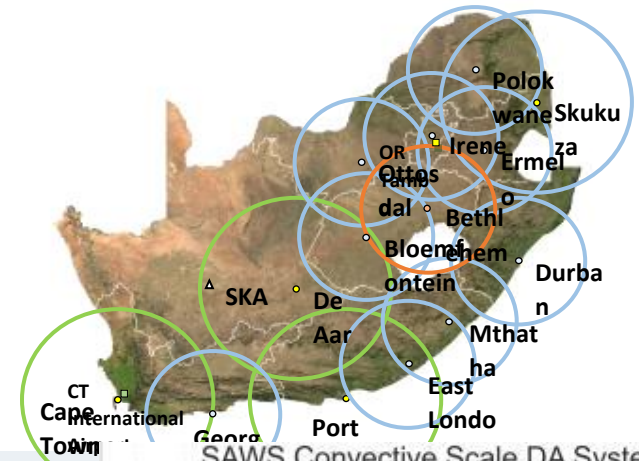
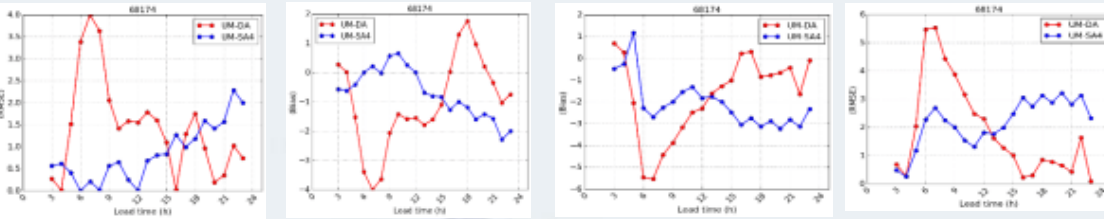
# Models-Numerical Weather Prediction



# Models-NWP Continue...

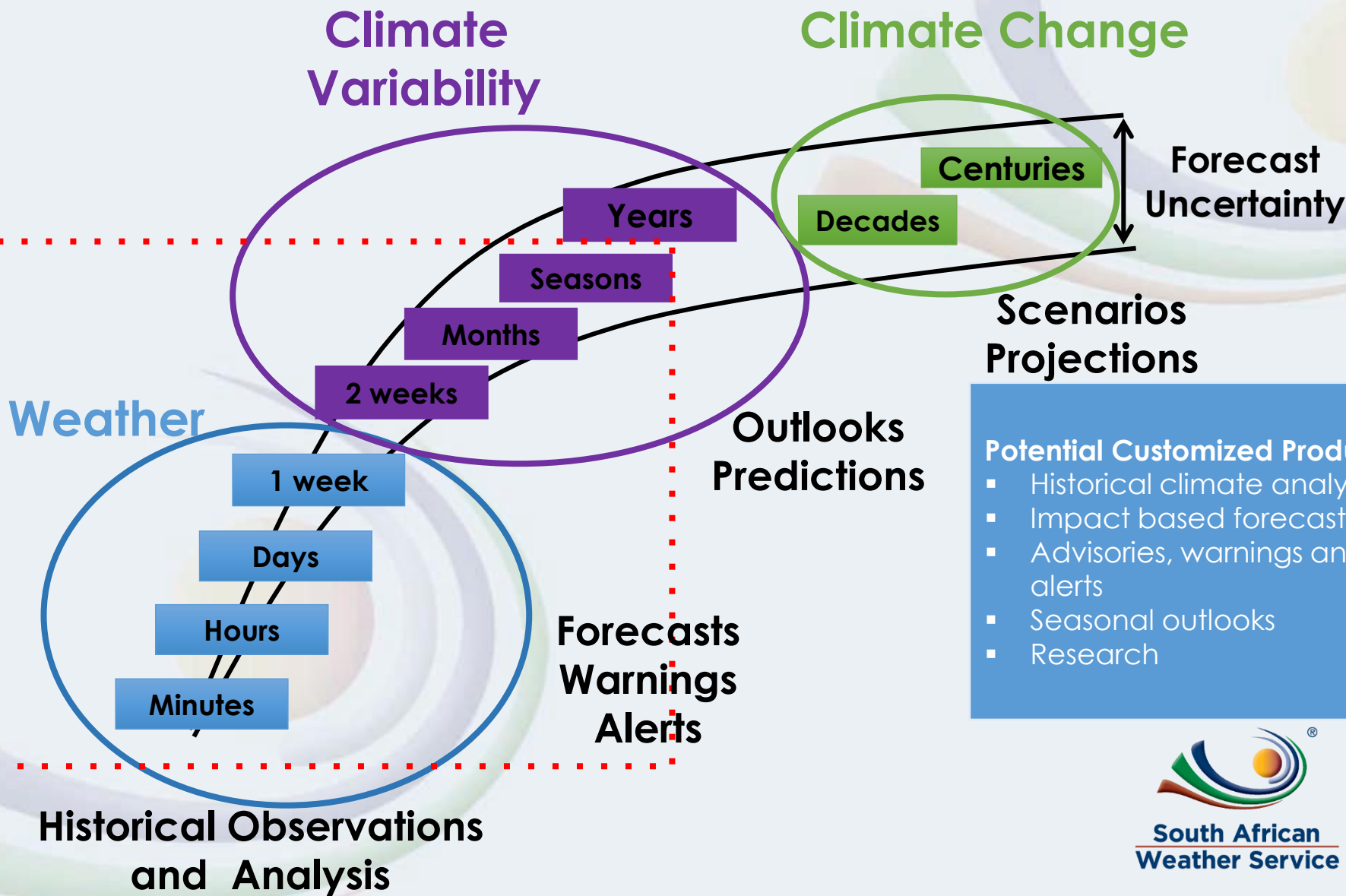
## Data Assimilation

- SAWS runs a Convective-Scale Data Assimilation Common Test Framework (CSDA-CTF)
- The system runs with SA observations
- 4DVAR system incorporate radar data
- This system is the first regional DA being developed with radar data in Africa



**South African Weather Service**

# Weather Climate Service Timescales



# Impact-based Server Weather Warning Service

Moving from:

What the weather will **be**:  
(Meteorological thresholds)

- 50mm in 24 hours
- 35 knot winds



To:

What the weather will **do**:  
(Impact Warnings)

- Roads flooded
- Communities cut off



David Johnson





# Impact-based Server Weather Warning Service

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



## Severe Thunderstorms Impact Table

Minimal	Minor	Significant	Severe
Business as usual	Business as usual	Short term strain on emergency personnel	Prolonged strain on emergency personnel
<b>General population also to flooding, wind and hail:</b> <ul style="list-style-type: none"> <li>Localized damage to infrastructure, settlements, personal property, vehicles, livestock and livestock.</li> <li>Localized and short term disruption to food and other essential services (education, health, communication and power supply).</li> <li>Localized loss of agricultural production.</li> </ul>	<b>General to population also to flooding, wind and hail:</b> <ul style="list-style-type: none"> <li>Damage to and danger to the infrastructure, settlements (formal and informal), property, vehicles, livestock and livestock.</li> <li>Major travel disruptions from road, rail, air and maritime.</li> <li>Disruption of municipal and other essential services (education, health, communication and power supply).</li> <li>Loss of agricultural production.</li> </ul>	<b>General to population also to flooding, wind and hail:</b> <ul style="list-style-type: none"> <li>Widespread damage or loss of infrastructure, property, vehicles, livestock and livestock.</li> <li>Widespread major travel disruptions from road, rail, air and maritime.</li> <li>Widespread disruption of municipal and other essential services (education, health, communication and power supply).</li> <li>Widespread loss of agricultural production.</li> </ul>	<b>General to population also to flooding, wind and hail:</b> <ul style="list-style-type: none"> <li>Widespread damage or loss of infrastructure, property, vehicles, livestock and livestock.</li> <li>Widespread major travel disruptions from road, rail, air and maritime.</li> <li>Widespread disruption of municipal and other essential services (education, health, communication and power supply).</li> <li>Widespread loss of agricultural production.</li> </ul>
<b>Flooding:</b> <ul style="list-style-type: none"> <li>Spillover flooding of water in regions, resulting in minimal traffic, local disruption.</li> <li>Day to day activities not disrupted.</li> </ul>	<b>Flooding:</b> <ul style="list-style-type: none"> <li>Localized flooding of low-lying areas, resulting in minimal traffic and local disruption.</li> <li>Minor service disruptions.</li> </ul>	<b>Flooding:</b> <ul style="list-style-type: none"> <li>Flooding of roads, low-lying areas, resulting in minimal traffic and local disruption.</li> <li>Disruption of affected communities.</li> <li>Danger to life and property.</li> </ul>	<b>Flooding:</b> <ul style="list-style-type: none"> <li>Widespread flooding of low-lying areas, resulting in minimal traffic and local disruption.</li> <li>Disruption of affected communities.</li> <li>Danger to life and property.</li> </ul>
<b>Hail:</b> <ul style="list-style-type: none"> <li>Small hail or small amount of wet hail.</li> </ul>	<b>Hail:</b> <ul style="list-style-type: none"> <li>Large amounts of small hail over a populated area.</li> <li>Large hail over a populated area.</li> <li>Localized damage to vehicles.</li> <li>Localized structural damage (homes, car parks, etc).</li> </ul>	<b>Hail:</b> <ul style="list-style-type: none"> <li>Large amounts of small hail over a populated area.</li> <li>Large hail over a populated area.</li> <li>Damage to vehicles.</li> <li>Structural damage (homes, car parks, etc).</li> </ul>	<b>Hail:</b> <ul style="list-style-type: none"> <li>Large amounts of small hail over a populated area.</li> <li>Large hail over a populated area.</li> <li>Localized damage to vehicles.</li> <li>Widespread structural damage (homes, car parks, etc).</li> </ul>
<b>Waves:</b> <ul style="list-style-type: none"> <li>Day to day activities not disrupted.</li> </ul>	<b>Waves:</b> <ul style="list-style-type: none"> <li>Localized damage to settlements, low-lying areas.</li> <li>Minor service disruptions.</li> <li>Localized disruption to ferry services.</li> </ul>	<b>Waves:</b> <ul style="list-style-type: none"> <li>Damage to settlements or structures over a populated area (homes, low-lying areas).</li> <li>Minor service disruptions.</li> <li>Disruption to ferry services.</li> </ul>	<b>Waves:</b> <ul style="list-style-type: none"> <li>Widespread damage to settlements, low-lying areas.</li> <li>Widespread service disruptions.</li> <li>Disruption to ferry services.</li> </ul>
<b>Lightning:</b> <ul style="list-style-type: none"> <li>Day to day activities not disrupted.</li> </ul>	<b>Lightning:</b> <ul style="list-style-type: none"> <li>Localized lightning strikes to power lines.</li> <li>Localized service disruption due to power supply interruptions.</li> <li>Localized injury, property and structural damage to property.</li> </ul>	<b>Lightning:</b> <ul style="list-style-type: none"> <li>Fire incidents (power lines, etc).</li> <li>Disruption of services due to power supply interruptions.</li> <li>Damage to the structure and infrastructure damage to property.</li> </ul>	<b>Lightning:</b> <ul style="list-style-type: none"> <li>Widespread lightning strikes to power lines.</li> <li>Widespread service disruption due to power supply interruptions.</li> <li>Damage to the structure and infrastructure damage to property.</li> </ul>

## Wind Impact Table

Minimal	Minor	Significant	Severe
Business as usual	Localized	Localized	Widespread
Business as usual	Business as usual	Short term strain on emergency personnel	Prolonged strain on emergency personnel
<ul style="list-style-type: none"> <li>A few transport routes affected by difficult driving conditions.</li> <li>Loose debris downwind.</li> <li>Blowing sand and dust.</li> <li>Risk of rapid spreading of fire.</li> </ul>	<ul style="list-style-type: none"> <li>Localized damage to settlements (formal and informal).</li> <li>Localized loss of agricultural production.</li> <li>Some transport routes and businesses affected by wind, falling trees or dust storms.</li> <li>Some journeys require longer travel times.</li> <li>Some disruption to road, rail, air and maritime.</li> <li>Localized problems for high structures on prone routes e.g. ducts cross winds in exposed high level road/bridges.</li> <li>Localized power and communication interruptions.</li> <li>Localized damage to temporary structures.</li> <li>Localized reduced visibility due to dust storms.</li> <li>Risk of localized runway fire.</li> </ul>	<ul style="list-style-type: none"> <li>Injury and danger to life from flying debris.</li> <li>Damage to settlements (formal and informal).</li> <li>Loss of agricultural production.</li> <li>Some structural damage.</li> <li>Transport routes and businesses affected by wind, falling trees or dust storms.</li> <li>Longer journey times expected.</li> <li>Disruption to road, rail, air and maritime.</li> <li>Closure of some susceptible key routes (e.g. some submarine bridges).</li> <li>Interruptions to power, communication and other utilities and services.</li> <li>Damage to temporary structures.</li> <li>Reduced visibility due to dust storms.</li> <li>Large areas of runway fire.</li> </ul>	<ul style="list-style-type: none"> <li>Widespread danger to life from flying debris.</li> <li>Widespread damage to settlements (formal and informal).</li> <li>Widespread loss of agricultural production.</li> <li>Widespread structural damage.</li> <li>e.g. roofs blown off, falling trees, and power lines brought down.</li> <li>Widespread transport routes and businesses affected for a prolonged period by wind, falling trees or dust storms.</li> <li>Disrupted travel delays.</li> <li>Closure of most bridges, road and rail networks in many areas, and significant disruptions at airports.</li> <li>Widespread and prolonged disruption to power, communication and other utilities and services.</li> <li>Widespread damage to temporary structures.</li> <li>Widespread downlisting runway fire.</li> </ul>
<ul style="list-style-type: none"> <li>Limited build-up of sand on coastal routes.</li> <li>General disruption of ports and harbour but manageable intensity.</li> <li>Localized difficulty in navigation (e.g. Humpston progress due to strong winds).</li> </ul>	<ul style="list-style-type: none"> <li>Build-up of sand on coastal routes.</li> <li>Localized disruption of small harbours and a port for a short period of time.</li> <li>Small vessels at risk of being immobilised and capsizing in a bay.</li> <li>Difficulty in navigation (e.g. Humpston progress due to strong winds).</li> </ul>	<ul style="list-style-type: none"> <li>Major build-up of sand on coastal routes.</li> <li>Disruption of ports and small harbours.</li> <li>Risk to moderate/large vessels of dragging anchor and breaking moorings.</li> <li>Change to navigation (e.g. Humpston progress due to strong winds).</li> <li>Difficulty in navigation (e.g. Humpston progress due to strong winds).</li> </ul>	<ul style="list-style-type: none"> <li>Widespread build-up of sand on coastal routes causing traffic disruption for a prolonged period.</li> <li>Closure of ports and small harbours.</li> <li>Widespread danger to navigation for small vessels and at risk of capsizing (see).</li> <li>Medium to large vessels blown ashore (in harbour).</li> </ul>

## Fog Impact Table

Minimal	Minor	Significant	Severe
Business as usual	Localized	Localized	Widespread
Business as usual	Business as usual	Short term strain on emergency personnel	Prolonged strain on emergency personnel
<ul style="list-style-type: none"> <li>Some pooling of water in roads or in transitional settlements.</li> <li>Day to day activities not disrupted.</li> <li>Minor road and reduced safety.</li> <li>Minor traffic congestion.</li> <li>Minor accidents and incidents.</li> </ul>	<ul style="list-style-type: none"> <li>Localized flooding of roads and settlements (formal and informal).</li> <li>Change to life (day to day activities not disrupted).</li> <li>Minor road and reduced safety.</li> <li>Minor traffic congestion.</li> <li>Minor accidents and incidents.</li> </ul>	<ul style="list-style-type: none"> <li>Localized flooding of roads and settlements (formal and informal).</li> <li>Change to life (day to day activities not disrupted).</li> <li>Minor road and reduced safety.</li> <li>Minor traffic congestion.</li> <li>Minor accidents and incidents.</li> </ul>	<ul style="list-style-type: none"> <li>Localized flooding of roads and settlements (formal and informal).</li> <li>Change to life (day to day activities not disrupted).</li> <li>Minor road and reduced safety.</li> <li>Minor traffic congestion.</li> <li>Minor accidents and incidents.</li> </ul>

## Rainfall Impact Table

Minimal	Minor	Significant	Severe
Business as usual	Localized	Localized	Widespread
Business as usual	Business as usual	Short term strain on emergency personnel	Prolonged strain on emergency personnel
<ul style="list-style-type: none"> <li>Some pooling of water in roads or in transitional settlements.</li> <li>Day to day activities not disrupted.</li> <li>Minor road and reduced safety.</li> <li>Minor traffic congestion.</li> <li>Minor accidents and incidents.</li> </ul>	<ul style="list-style-type: none"> <li>Localized flooding of roads and settlements (formal and informal).</li> <li>Change to life (day to day activities not disrupted).</li> <li>Minor road and reduced safety.</li> <li>Minor traffic congestion.</li> <li>Minor accidents and incidents.</li> </ul>	<ul style="list-style-type: none"> <li>Localized flooding of roads and settlements (formal and informal).</li> <li>Change to life (day to day activities not disrupted).</li> <li>Minor road and reduced safety.</li> <li>Minor traffic congestion.</li> <li>Minor accidents and incidents.</li> </ul>	<ul style="list-style-type: none"> <li>Localized flooding of roads and settlements (formal and informal).</li> <li>Change to life (day to day activities not disrupted).</li> <li>Minor road and reduced safety.</li> <li>Minor traffic congestion.</li> <li>Minor accidents and incidents.</li> </ul>

# Heat Waves

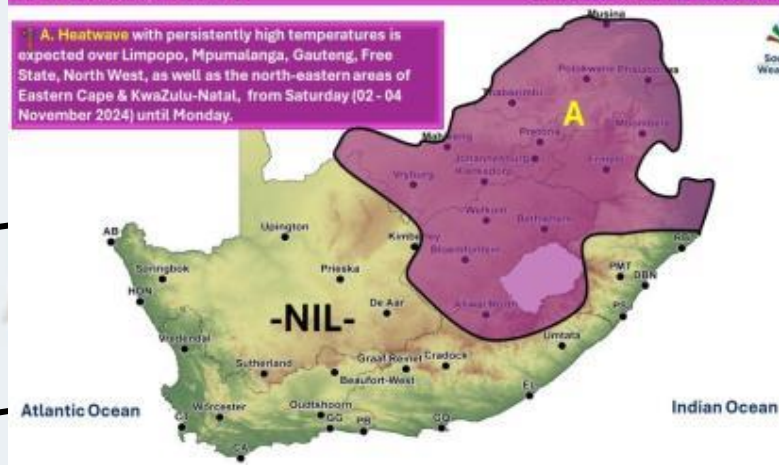
1. Impact-based Heat wave Advisories
2. Discomfort Index 72-Hour forecast

Weather Advisory: Heatwave

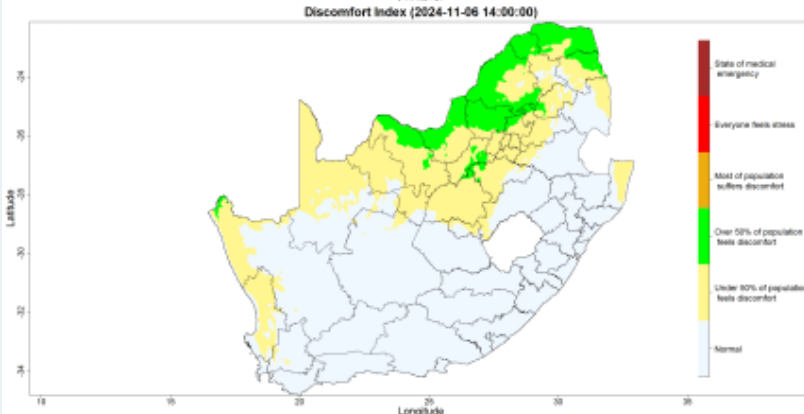
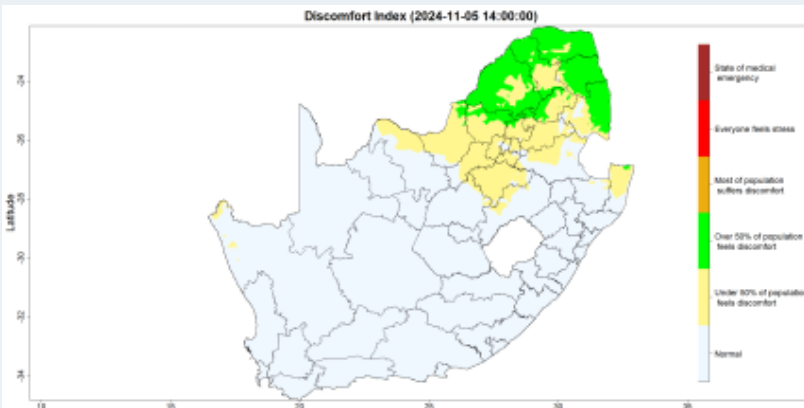
Issued: 02 November 2024 @ 09:00 SAST



A, Heatwave with persistently high temperatures is expected over Limpopo, Mpumalanga, Gauteng, Free State, North West, as well as the north-eastern areas of Eastern Cape & KwaZulu-Natal, from Saturday (02 - 04 November 2024) until Monday.



Forecasts  
Warnings  
Alerts



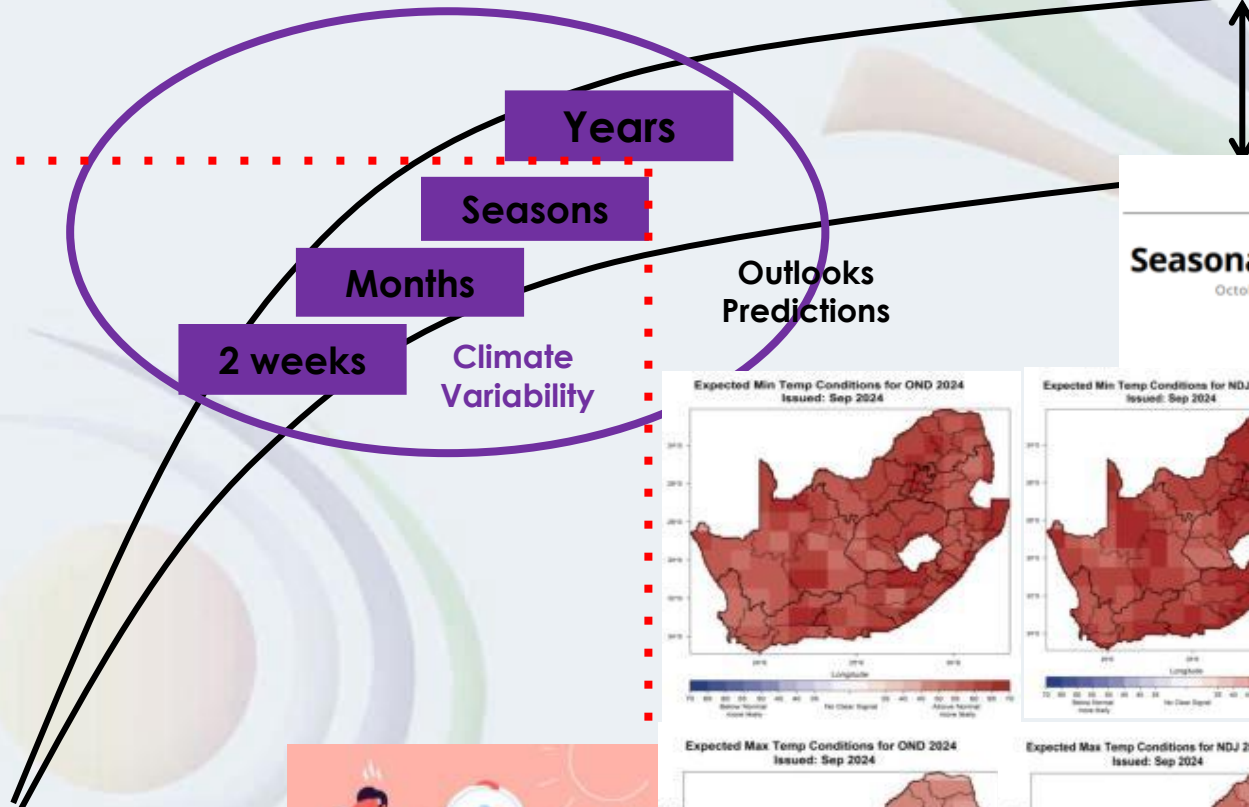
2024/11/06

# Min & Max Temperatures

## Seasonal Forecasts of

- Max Temperature (Tx) and
- Minimum Temperature (Tn)

- Minimum and maximum temperatures are expected to be mostly **above-normal** countrywide for the forecast period.
- North-eastern parts will be drier and extremely hot – may lead to **intense heatwaves**



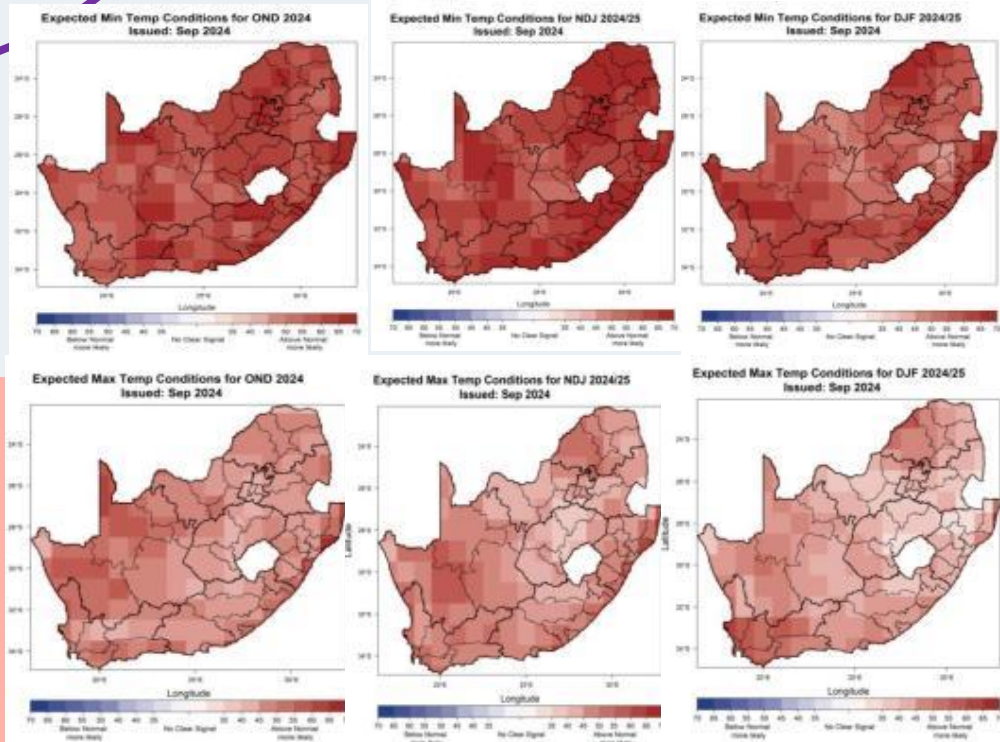
Forecast Uncertainty

South African Weather Service

### Seasonal Climate Watch

October 2024 to February 2025

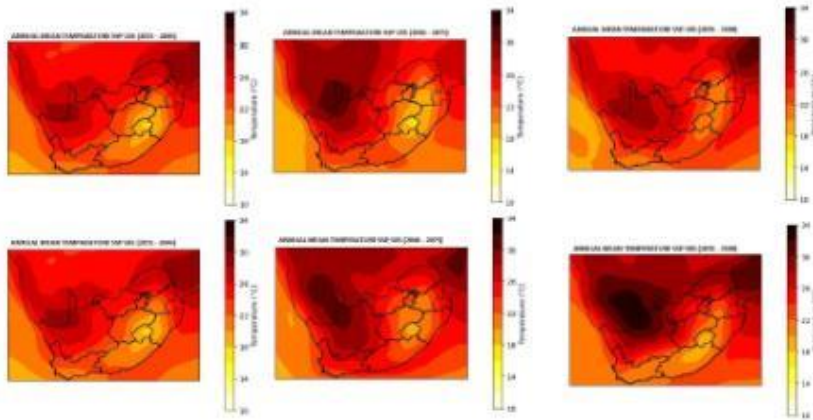
Date issued: 03 October 2024



# Min & Max Temperatures

## 6. CMIP 6 CLIMATE CHANGE PROJECTIONS

### 6.1. Annual mean temperature and Annual total rainfall change



## Climate Change

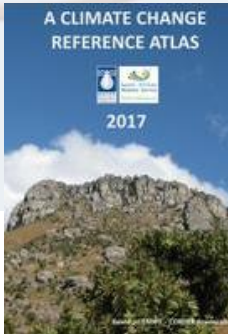
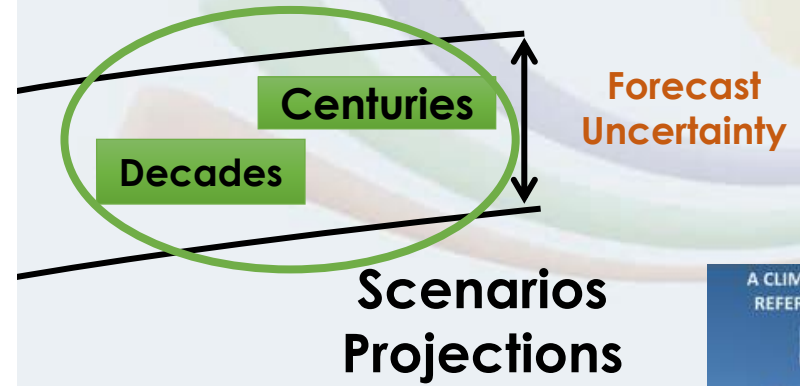
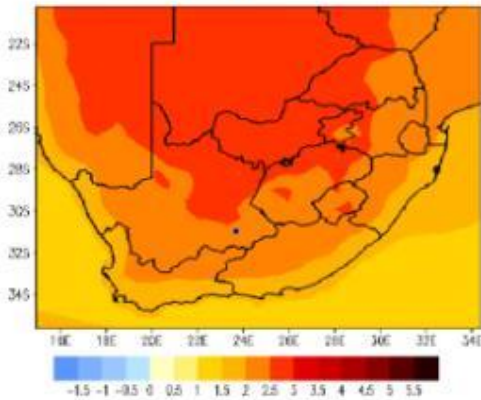


Figure 4: Annual mean near-surface temperature (°C) projected for 2015-2045 (1<sup>st</sup> column), 2046-2075 (2<sup>nd</sup> column) and 2076-2100 (3<sup>rd</sup> column), relative to historical period (1976-2005), under conditions of the SSP 245 (1<sup>st</sup> row) and SSP 585 (2<sup>nd</sup> row).

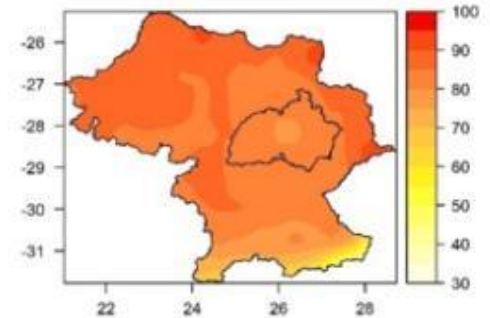
### National



### Provincial



### District

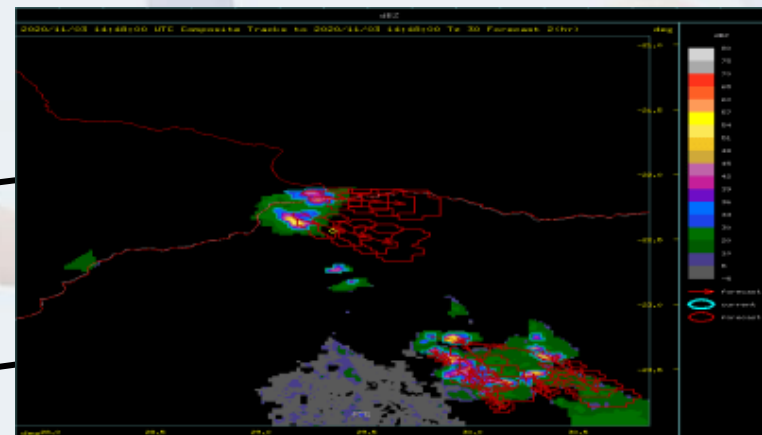


# Observation: Radar Monitoring

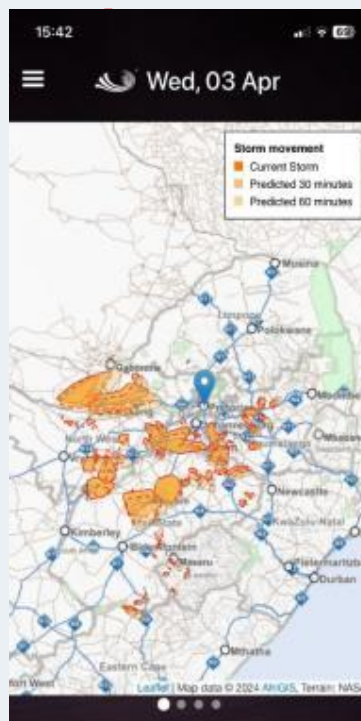
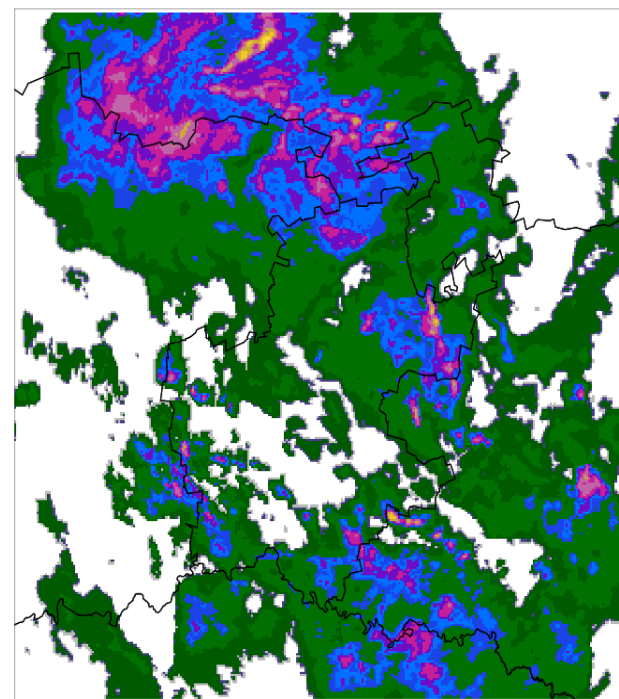
1. Thunderstorm identification, tracking, analysis and nowcasting
2. Nowcasting of storms for the next few hours



Forecast  
Uncertainty



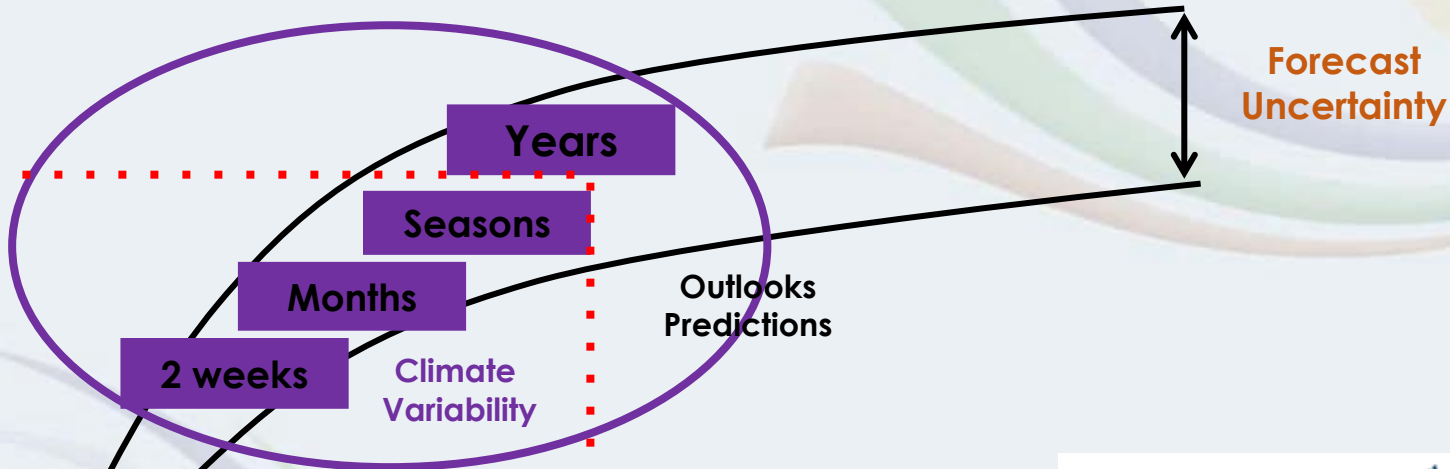
SWIRLS Radar dBZ forecast for 20211213 at 1154 UTC



# Rainfall

Seasonal Forecasts of rainfall,

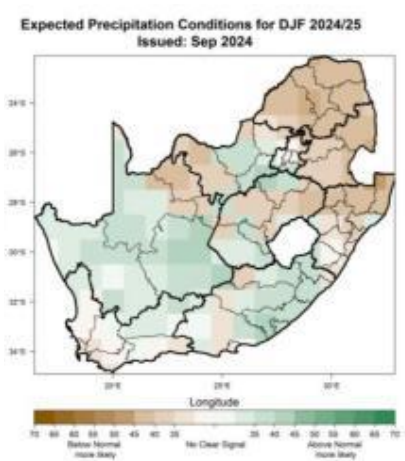
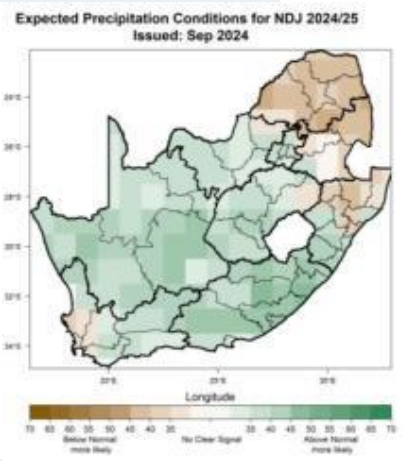
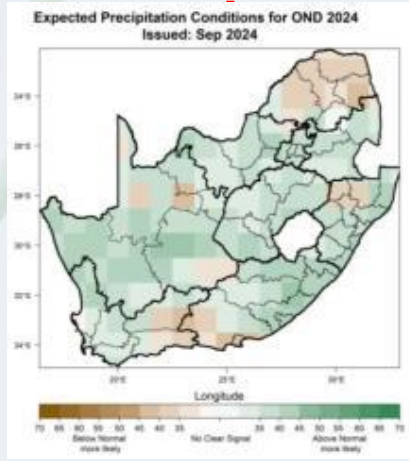
**Wetter conditions** over the interior of the country. The north-eastern parts indicate **drier conditions** extending through to the mid-summer period



### Seasonal Climate Watch

October 2024 to February 2025

Date issued: 03 October 2024



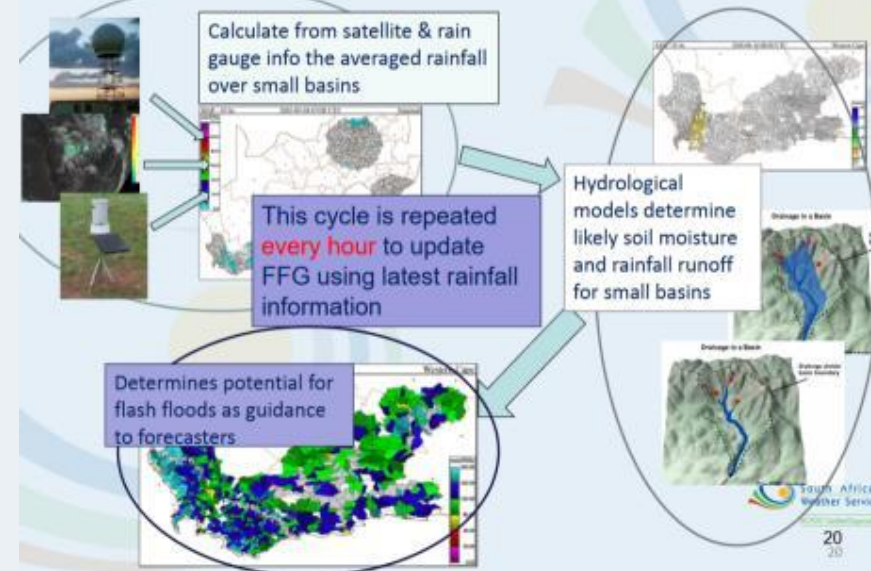
# South Africa Flash Flood Guidance (SAFFG)

The WMO Flood Forecasting Initiative (FFI), established by Resolution 21 (CG-XV in 2007), supports and oversees the WMO flood forecasting programmes and projects, including FFGS and its associated activities.

The main objective of the FFGS/WGC is to advance the capacity of NMHSs to forecast the potential occurrence of hydrometeorological hazards, namely flash flooding, and related secondary hazards, such as rainfall induced landslides, to save lives, alleviate human suffering and reduce social and economic impacts of these hazards.

The SAFFG uses the quantitative rainfall estimates of the previous hours from:

- radar,
- satellite and
- rain gauges



# Min & Max Temperatures

## Climate Change

Centuries  
Decades

Forecast  
Uncertainty

Scenarios  
Projections

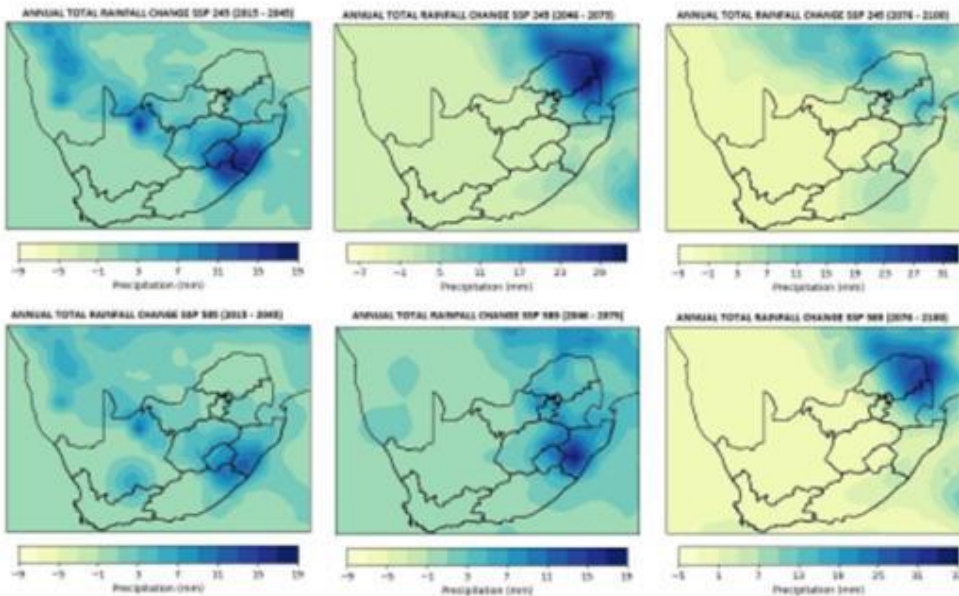


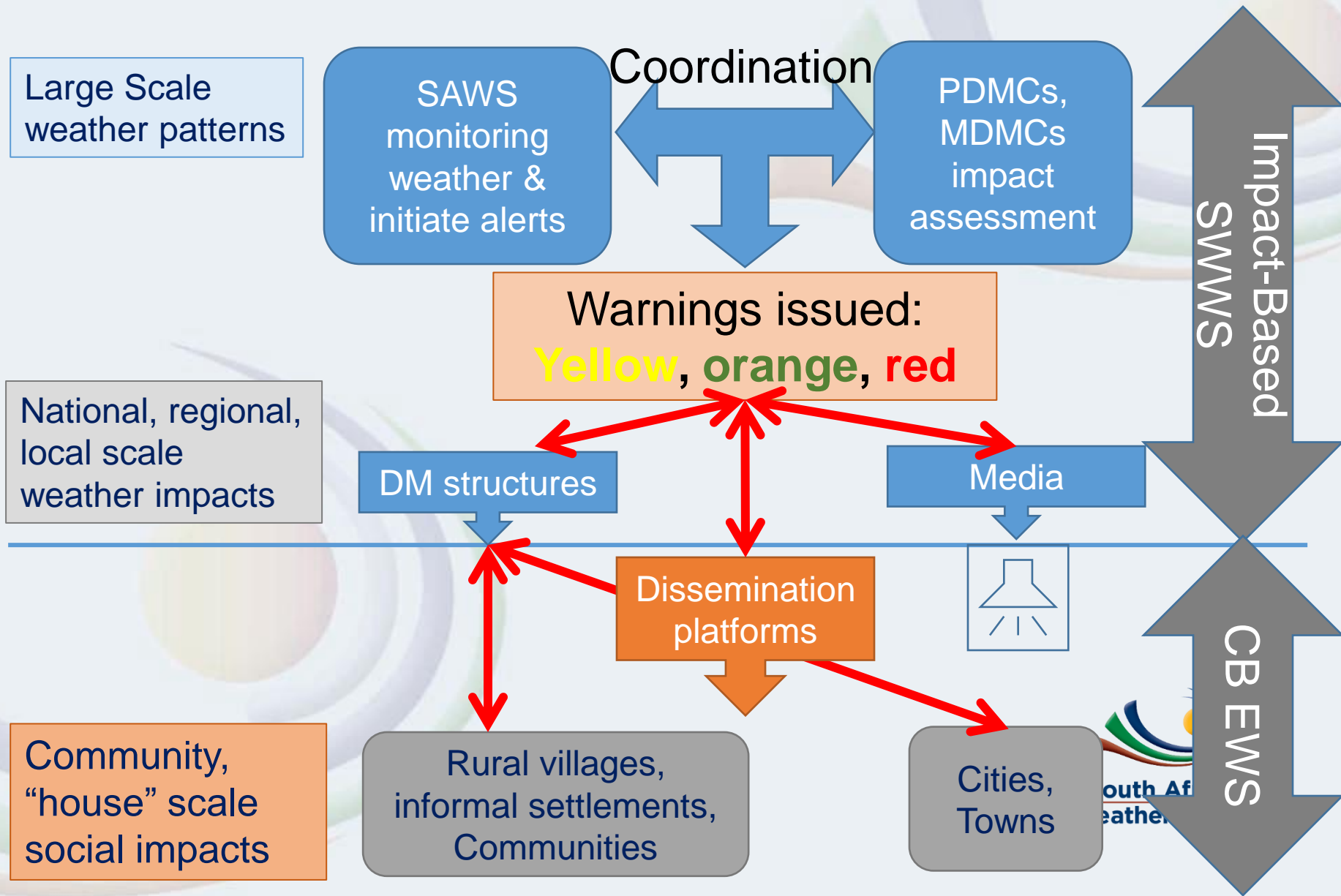
Figure 5: Annual total rainfall (mm per year) change projected for 2015-2045 (1<sup>st</sup> column), 2046-2075 (2<sup>nd</sup> column) and 2076-2100 (3<sup>rd</sup> column), relative to historical period (1976-2005), under conditions of the SSP 245 (1<sup>st</sup> row) and SSP 585 (2<sup>nd</sup> row).



**South African  
Weather Service**



# Communication & Dissemination: Integrated “end-to-end” EWS



# Dissemination Platforms

Impact Based Weather Warnings for Eastern Cape: Yellow Level 2: Severe Thun...

1/14/2022

Please find included the **Impact Based Warning** for the Eastern Cape

**Legal notice**  
 This warning from SA Weather Service must be communicated as received and may not be altered under any circumstances. If used for broadcast or communicated in its entirety and no portion hereof may be replicated or copied and distributed.

Hazard	Alert Level	Affected Area/Qualities	Valid from (SAST)	Valid to (SAST)
Severe Thunderstorms	Yellow(L2) (High likelihood of Minor Impact)	Amathethi, Blue Crane Route, Dr Beyers Naude - Graaff-Reinet, Dr Beyers Naude - Jansenville, Dunder, Ermathien, Engcobo, Enoch Magjima - Kamas, Enoch Magjima - Matibeni, Enoch Magjima - Tarkenton, Yethu, Isakuba Vethenika, Matatula, Mkhondo, Raymond Mkhabe - Adkins, Raymond Mkhabe - Fort Beaufort, Sekhazane, Senzo, Umzimvubu, Walter Sisulu - Sanyasi, Walter Sisulu - Jansenville	15/01/22 12h00	15/01/22 19h00

Discussion: A deep surface trough over Namibia that extend to western interior of the country with an upper air perturbation these system will result showers and thundershowers across the province with possible severe thunderstorms with a high likelihood of minor impacts could be expected in places over Joe Gqob DM, Chris Hani DM, Raymond Mkhabe LM, Amathethi LM, Blue Crane LM, Iwezi LM and Camdeboo LM.

Impact: Localised flooding of roads, low lying areas, settlements and bridges resulting in traffic disruptions and damage to infrastructure. Severe roof and some could result in roof tile and satellite. Power

Port Elizabeth Weather Office  
 Weather Office  
 Roof Top, Deansburg Hall Port  
 Makena Drive  
 Port Elizabeth  
 E-Mail: [ip@saweather.co.za](mailto:ip@saweather.co.za)  
 Tel: 041 581 474

**1 likelihood**

**IMPACT**

**IMPACT BASED WARNING** Issue: 06:55 on Fri 14 Jan 2022

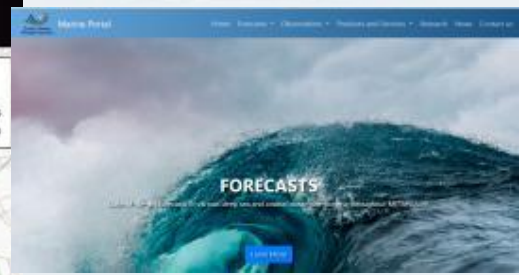
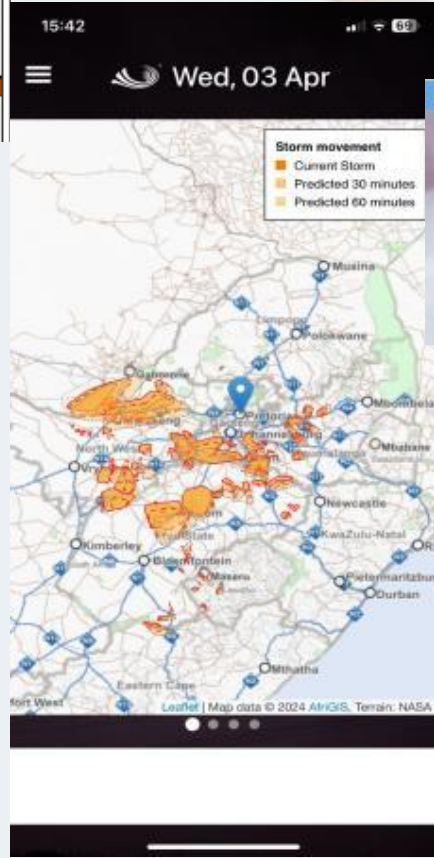
**LEVEL 2 for Severe Thunderstorms**  
 WARNING valid Sat 15 Jan 12:00 Until Sat 15 Jan 23:00

**Affected DM / LM / Metro area**  
 Amathethi, Blue Crane Route, Dr Beyers Naude - Graaff-Reinet, Dr Beyers Naude - Jansenville, Dunder, Ermathien, Engcobo, Enoch Magjima - Kamas, Enoch Magjima - Matibeni, Enoch Magjima - Tarkenton, Yethu, Isakuba Vethenika, Matatula, Mkhondo, Raymond Mkhabe - Adkins, Raymond Mkhabe - Fort Beaufort, Sekhazane, Senzo, Umzimvubu, Walter Sisulu - Sanyasi, Walter Sisulu - Jansenville

**Short Message**  
 Severe thunderstorms with heavy falls of rain, resulting in localised flooding that could result in damage to properties and roadways are expected in places over Joe Gqob DM, Chris Hani DM, Raymond Mkhabe LM, Amathethi LM, Blue Crane LM, Iwezi LM and Camdeboo LM.

**Discussion**  
 A deep surface trough over Namibia that extend to western interior of the country with an upper air perturbation these system will result showers and thundershowers across the province with possible severe thunderstorms with a high likelihood of minor impacts could be expected in places over Joe Gqob DM, Chris Hani DM, Raymond Mkhabe LM, Amathethi LM, Blue Crane LM, Iwezi LM and Camdeboo LM.

**Impacts**  
 Localised flooding of roads, low lying areas, settlements and bridges resulting in traffic disruptions  
 Localised damage to property/infrastructure  
 Disruption of power could result in satellite and satellite.



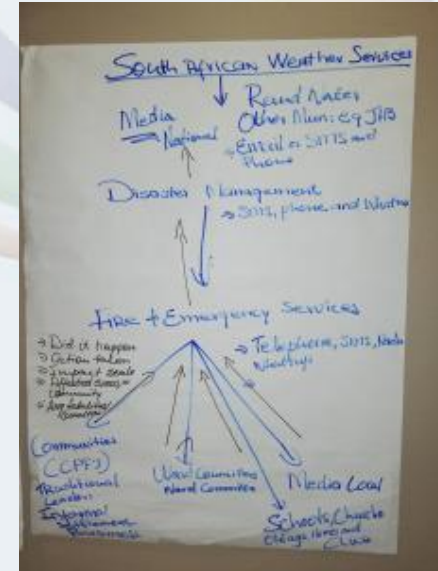
Friday 13:15

Yellow(L2) Service: Damaging Waves: 22/01/2022 16h00 TO: 22/01/2022 23h00 - Damaging waves that could result in small vessels being at risk of taking on water and capsizing in a locality, are expected between Plettenberg Bay and Cannon Rocks from Saturday late afternoon to midnight.. Refer to e-mail for details:SAWS




# The “final mile” challenge

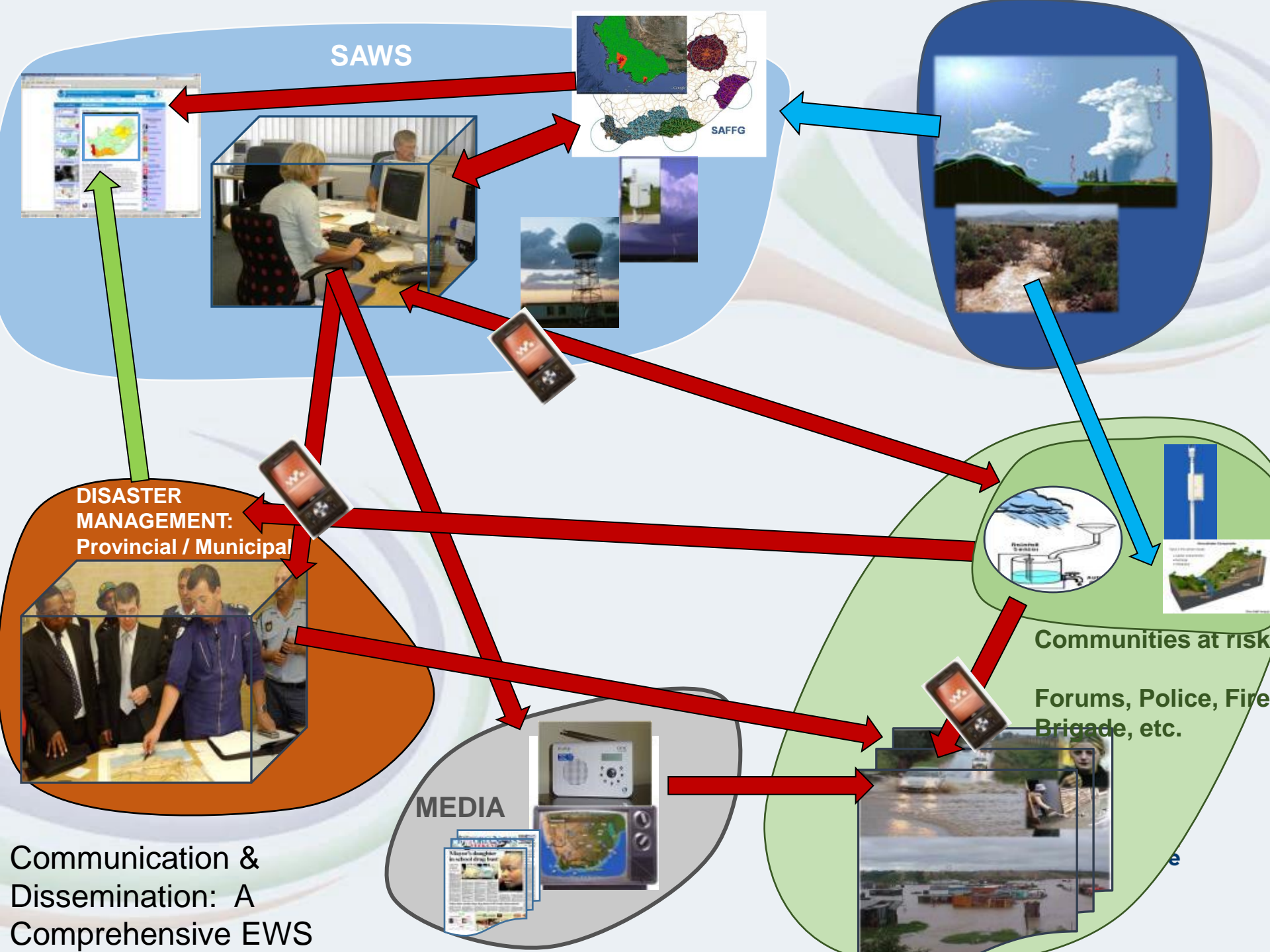
- In order to reach the “final-mile”, we need to engage with more communities and develop methods to disseminate warnings and make sure they reach the most vulnerable
- Outreach workshops have proven to be very successful thus far
  - Identify the hazards in the community
  - Develop communication chains (using traditional and modern methods)
  - Create warning messages
  - Develop response mechanisms



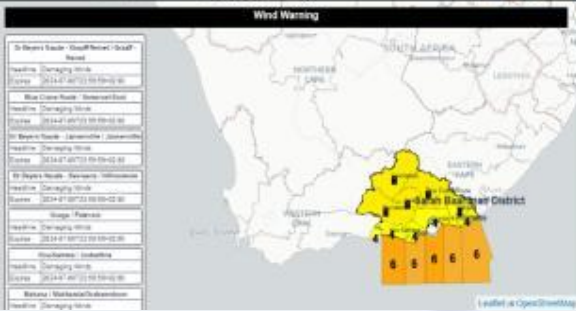
**Thunderstorms** - Drawing (Drawing) / Drawing / Drawing

Informal Settlements	<ul style="list-style-type: none"> <li>- Rising sewage</li> <li>- Reinforce housing</li> <li>- make beds/livestock</li> <li>- Put Wastes</li> <li>- Stay away from food</li> </ul>
Schools	<ul style="list-style-type: none"> <li>- Kids leaving off</li> <li>- Spirit disruption/safety</li> <li>- Children coming</li> <li>- children avoid crossing streets</li> </ul>
Road users	<ul style="list-style-type: none"> <li>- Stay away from</li> <li>- Flood prone roads / roads</li> <li>- Drive with headlights</li> <li>- Avoid of trees falling</li> </ul>
Properties next to the river	<ul style="list-style-type: none"> <li>- Pack: sand bags</li> <li>- make high ground</li> <li>- Make furniture</li> </ul>
Major events	<ul style="list-style-type: none"> <li>- Temporarily stop work</li> <li>- outdoor activities (lightning/hail)</li> </ul>





# Dissemination Platforms



Product Navigator

Current rainfall estimates from radar.

Rainfall forecast from model for next 2-3 hours..

TARP conditions

**Venetia Mine Weather Display**

- Home
- Radar Products
- Storms
- Forecast Products
- Multi model Ensemble
- Convective Scale Ensemble
- Lightning Products
- Alerts
- Lightning Images
- Station Products
- Subsidiary
- Subsidiary Products
- Subsidiary Images
- Subsidiary
- Station

Radar Rainfall for 20231017 at 145400UTC

LM CONVECTIVE SCALE ENSEMBLE - Probability of Rainfall (convective)

Forecast issued: 162100Z 27 2023 Valid for: 162100Z 2023

2023-10-17 14:54:00

Rain Forecast (>5mm)

**Current Status**

Open Water Closed

**TARP Legend**

- Green: No Rainfall Expected
- Yellow: Potential of rain (0.5-1.0mm)
- Orange: Potential of rain (1.0-2.0mm)
- Red: Potential of rain (>2.0mm)

Alarm Sound

Alert validity time.

Status and action.

# Translation to Local Language & Capacity Building

## South African Weather Service (SAWS) Terminology Book

Language: Xhosa

**CONTACT INFORMATION**  
 To request support or any other related enquiries please contact us directly below:  
 National Freecall: 07 12 367 8000  
 National Freecall: 07 12 367 8000  
 Email: [helpdesk@sa.gov.za](mailto:helpdesk@sa.gov.za)  
 Website: [www.sawss.gov.za](http://www.sawss.gov.za)

### Foreword

The South African Weather Service (SAWS) has embarked on an initiative of translating weather-related terms into all official South African languages. The project is currently in its final stages of completion and will be disseminated to different media platforms and be made available to the public in due course. The highlight here is in the translation of the SAWS terminology book into Xhosa.



## South African Weather Service (SAWS) Terminology Book

Language: isiZulu

**CONTACT INFORMATION**  
 To request support or any other related enquiries please contact us directly below:  
 National Freecall: 07 12 367 8000  
 National Freecall: 07 12 367 8000  
 Email: [helpdesk@sa.gov.za](mailto:helpdesk@sa.gov.za)  
 Website: [www.sawss.gov.za](http://www.sawss.gov.za)

### Foreword

The South African Weather Service (SAWS) has embarked on an initiative of translating weather-related terms into all official South African languages. The project is currently in its final stages of completion and will be disseminated to different media platforms and be made available to the public in due course. The highlight here is in the translation of the SAWS terminology book into isiZulu.



## South African Weather Service (SAWS) Terminology Book

Language: Sesotho

**CONTACT INFORMATION**  
 To request support or any other related enquiries please contact us directly below:  
 National Freecall: 07 12 367 8000  
 National Freecall: 07 12 367 8000  
 Email: [helpdesk@sa.gov.za](mailto:helpdesk@sa.gov.za)  
 Website: [www.sawss.gov.za](http://www.sawss.gov.za)

### Foreword

The South African Weather Service (SAWS) has embarked on an initiative of translating weather-related terms into all official South African languages. The project is currently in its final stages of completion and will be disseminated to different media platforms and be made available to the public in due course. The highlight here is in the translation of the SAWS terminology book into Sesotho.



## South African Weather Service (SAWS) Terminology Book

Language: Setswana

**CONTACT INFORMATION**  
 To request support or any other related enquiries please contact us directly below:  
 National Freecall: 07 12 367 8000  
 National Freecall: 07 12 367 8000  
 Email: [helpdesk@sa.gov.za](mailto:helpdesk@sa.gov.za)  
 Website: [www.sawss.gov.za](http://www.sawss.gov.za)

### Foreword

The South African Weather Service (SAWS) has embarked on an initiative of translating weather-related terms into all official South African languages. The project is currently in its final stages of completion and will be disseminated to different media platforms and be made available to the public in due course. The highlight here is in the translation of the SAWS terminology book into Setswana.



## South African Weather Service (SAWS) Terminology Book

Language: Afrikaans

**CONTACT INFORMATION**  
 To request support or any other related enquiries please contact us directly below:  
 National Freecall: 07 12 367 8000  
 National Freecall: 07 12 367 8000  
 Email: [helpdesk@sa.gov.za](mailto:helpdesk@sa.gov.za)  
 Website: [www.sawss.gov.za](http://www.sawss.gov.za)

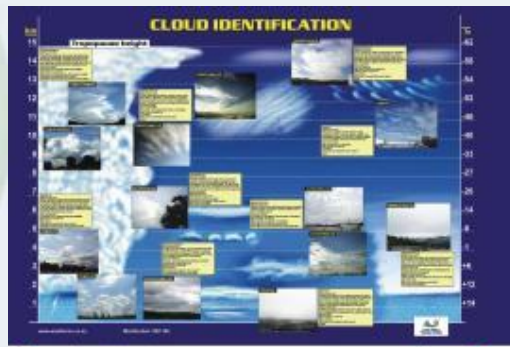
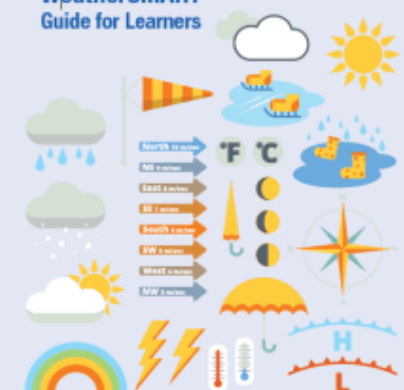
### Foreword

The South African Weather Service (SAWS) has embarked on an initiative of translating weather-related terms into all official South African languages. The project is currently in its final stages of completion and will be disseminated to different media platforms and be made available to the public in due course. The highlight here is in the translation of the SAWS terminology book into Afrikaans.

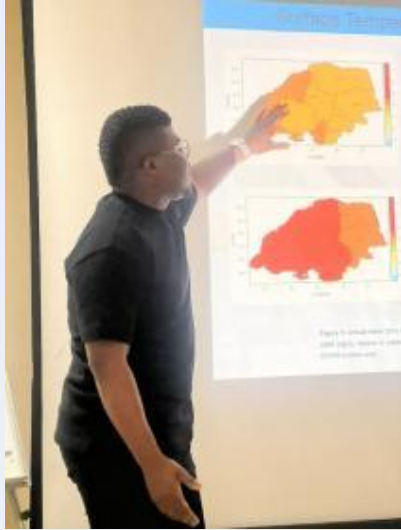


## South African Weather Service

### WeatherSMART Guide for Learners



# Training & Capacity Building

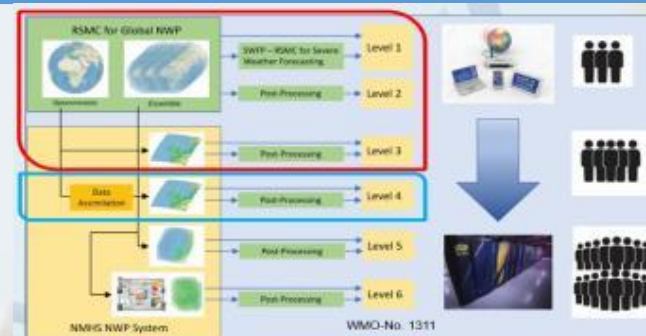


**South African  
Weather Service**

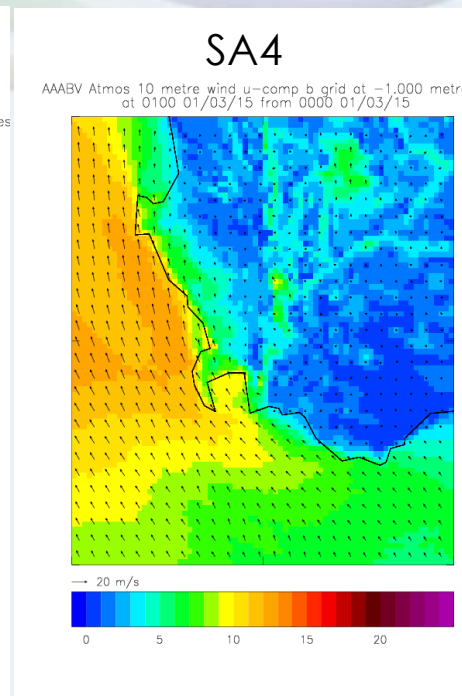
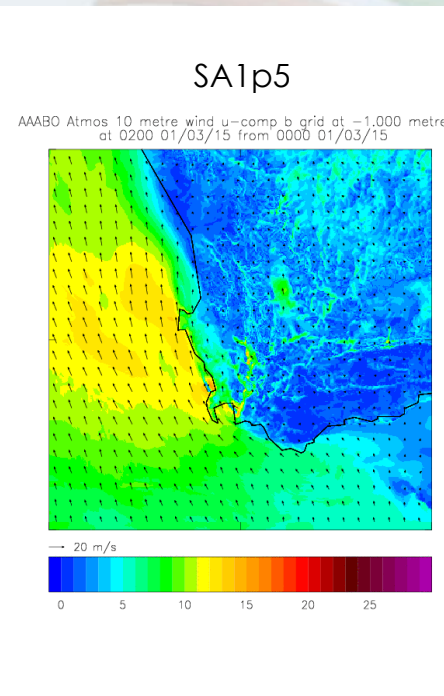
# Final Considerations

## Other key hazards

- UV radiation
- UHI
- Lightning
- Poor Air quality



<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Early warning to risks</li> <li>• Established partnerships and collaborations</li> <li>• Some of the risk information</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Funding resources</li> <li>• Human Capacity</li> <li>• Lack of coordination and communication</li> <li>• Observation and ICT Infrastructure</li> <li>• Data Availability</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Lessons learned, self learned and from other countries</li> <li>• Collaboration</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Community capacity building</li> <li>• Damage infrastructure</li> <li>• Data limitation ineffective untimely forecasting</li> </ul>







# Thank you

