



cooperative  
governance

Department:  
Cooperative Governance  
REPUBLIC OF SOUTH AFRICA

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**UN SPIDER Bonn INTERNATIONAL CONFERENCE**  
**SPACE BASED SOLUTIONS FOR DRM IN SOUTH**  
**AFRICA AND REGION**  
**“SPACE BASED “TECHNOLOGY FOR EMERGENCY**  
**REPOSE AND MONITORING**

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Dechlan Liech Pillay | NDMC | 16-18 NOVEMBER 2021



# PRESENTATION OVERVIEW

1. Introduction

2. Legislative Thrust

3. Drivers of Information and Communication Technology

4. NDMC and the Use of Space Based Technology

5. Towards Online Information and Smart Mapping Capabilities

6. Disaster Operations: Embracing Big Data and Analytics

7. Global Network and Affiliations

8. Summary and Conclusion





# 1. INTRODUCTION

- South Africa faces increasing levels of disaster risk. It is exposed to a wide range of weather hazards, including drought, cyclones and severe storms that can trigger widespread hardship and devastation.

In addition, South Africa's extensive coastline and proximity to shipping routes present numerous marine and coastal threats.

Similarly, our shared borders with six southern African neighbors present both natural and human-induced cross-boundary risks, as well as humanitarian assistance obligations in times of emergency.

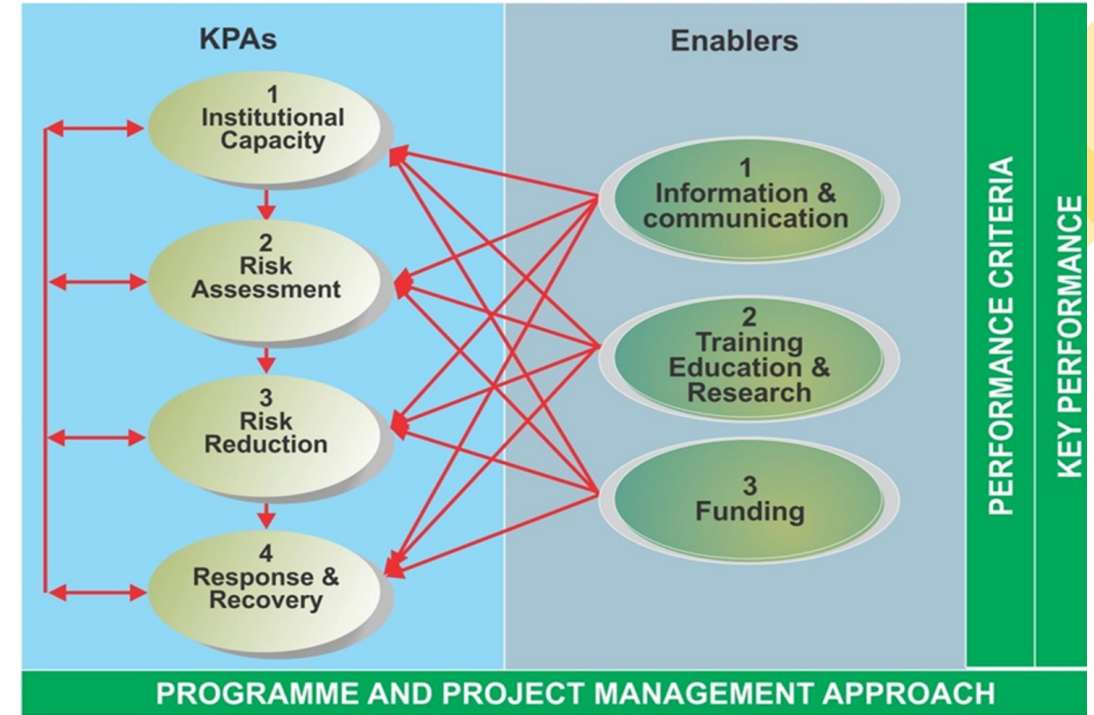
In addition to these natural and human-induced threats and despite ongoing progress to extend essential services to poor urban and rural communities, large numbers of people live in conditions of chronic disaster vulnerability – in underserved, ecologically fragile or marginal areas – where they face recurrent natural and other threats that range from drought to repeated informal settlement fires.

A sustained, committed and concerted efforts with regard to disaster risk management reform by the government and a wide range of stakeholders were reflected in the promulgation of the Disaster Management Act, 2002 (Act No. 57 of 2002) on 15 January 2003.



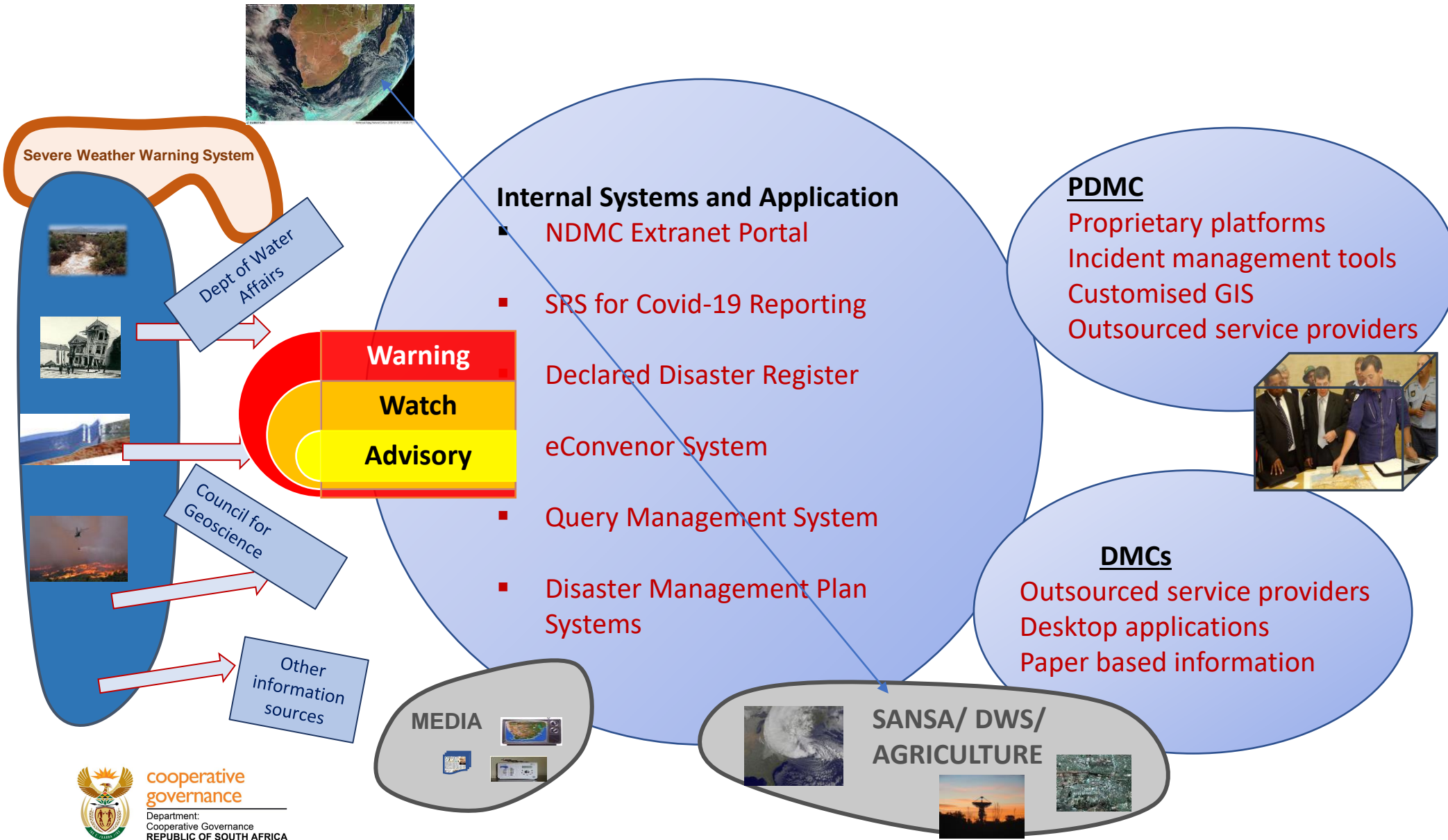
## 2. LEGISLATIVE THRUST

- National Disaster Management Centre's function is coordinated through the implementation of the Disaster Management Act, 2002 (Act no 57 of 2002) as amended, as well as the accompanying Disaster Management Framework, 2005 across the three spheres of government. The NDMC also administers fire legislation (Fire Brigade Services Act, 1987).
- **The objective of the National Centre is to promote an integrated and coordinated system of disaster management, with special emphasis on prevention and mitigation. by national, provincial and municipal organs of state, statutory functionaries, other role-players involved in disaster management and communities. (Section 9)**
- In addition to the National Centre, a disaster management center must be established in every Province and in every District & Metropolitan Municipality, to coordinate disaster management in its sphere of responsibility (Sec 8 ,29 & 43)
- <http://www.ndmc.gov.za/Pages/whatwedo.aspx>



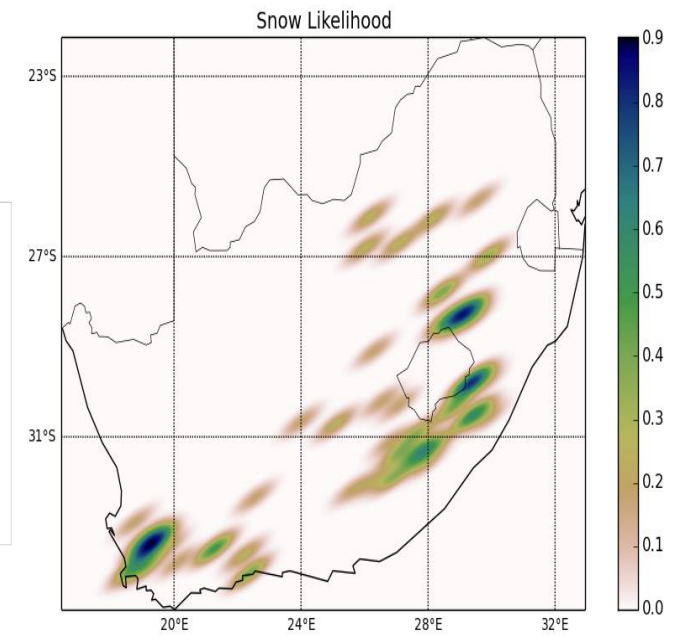
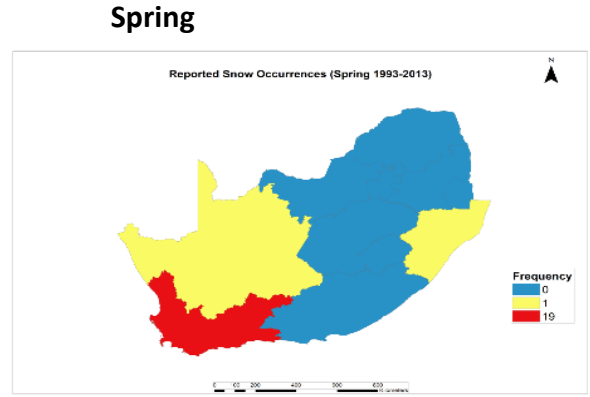
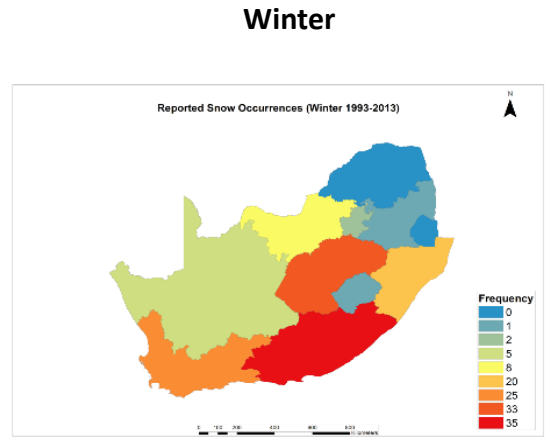
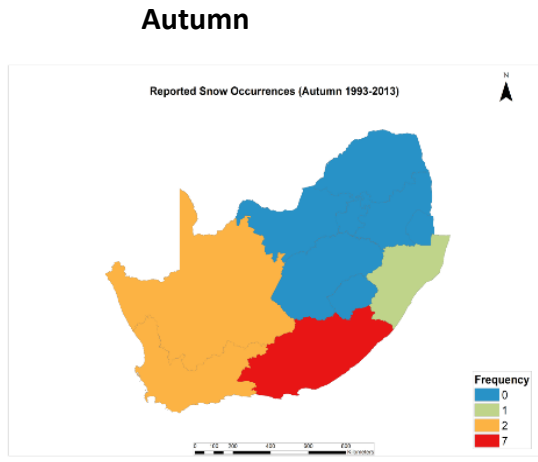
Enabler 1 focuses on priorities related to the establishment of an integrated and comprehensive information management and communication system for disaster risk management. More specifically, it addresses the information and communication requirements of each KPA and Enablers 2 and 3 and emphasises the need to establish integrated communication links with all disaster risk management role players in national, provincial and municipal spheres of government.

# 3. THE DRIVERS OF THE NDMC INFORMATION PLATFORM



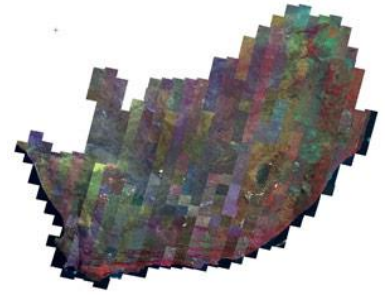
# 4. NDMC AND THE USE OF SPACE BASED INFORMATION

- In Feb of 2013 , the NDMC envisioned the use of space-based data products to understand its use in disaster management.
- Moderate Resolution Imaging Spectroradiometer (MODIS) snow product data was used with a techniques, machine learning to produce a hazard potential map for snow.



- In November 2013, SANSA and the Airbus Defense and Space Systems signed the SPOT Data Receiving Station Supply, Reception and Distribution (DRS) Agreement.
- NDMC received a national coverage of high-resolution data to be used as base layers for operational projects within a GIS environment.
- Informal Settlement in terms of vulnerability and access to basic services.

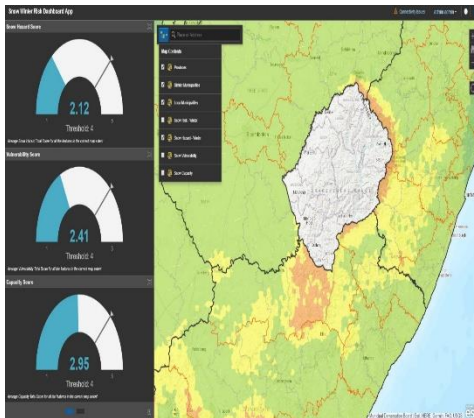
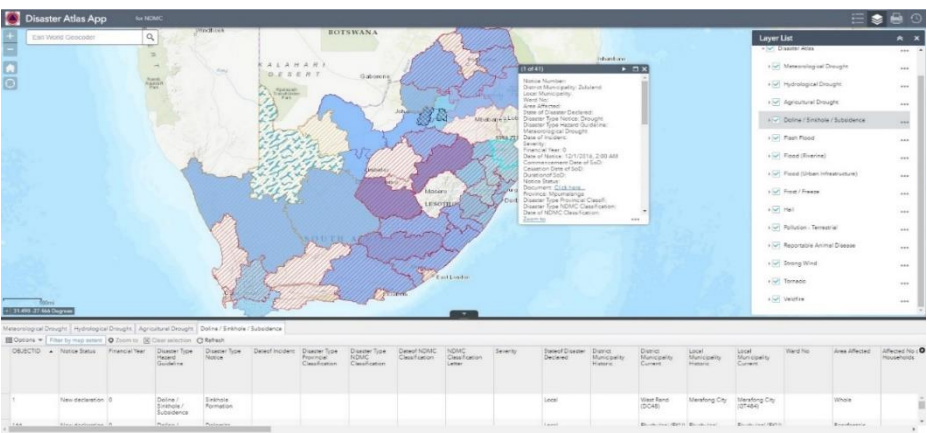
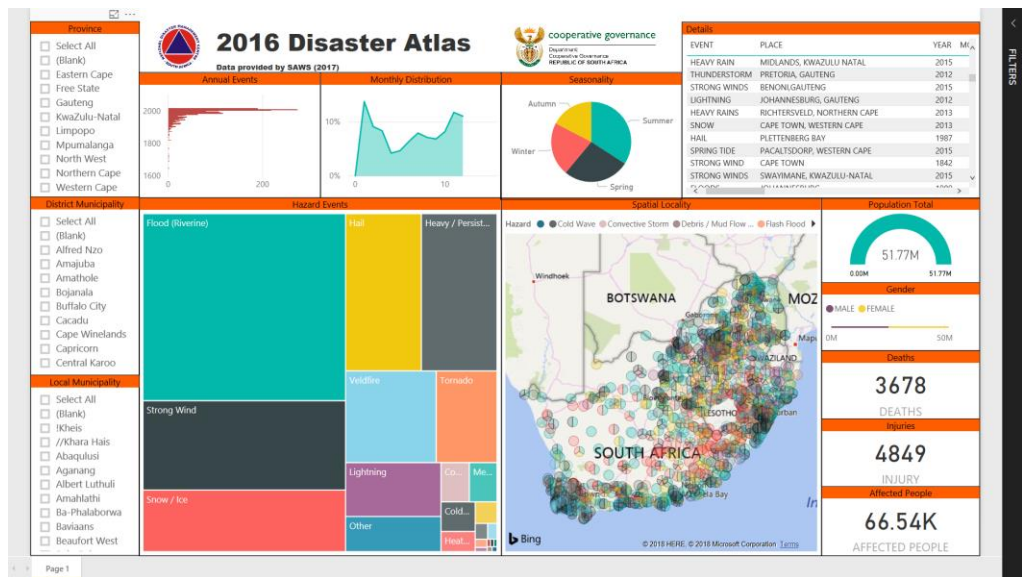
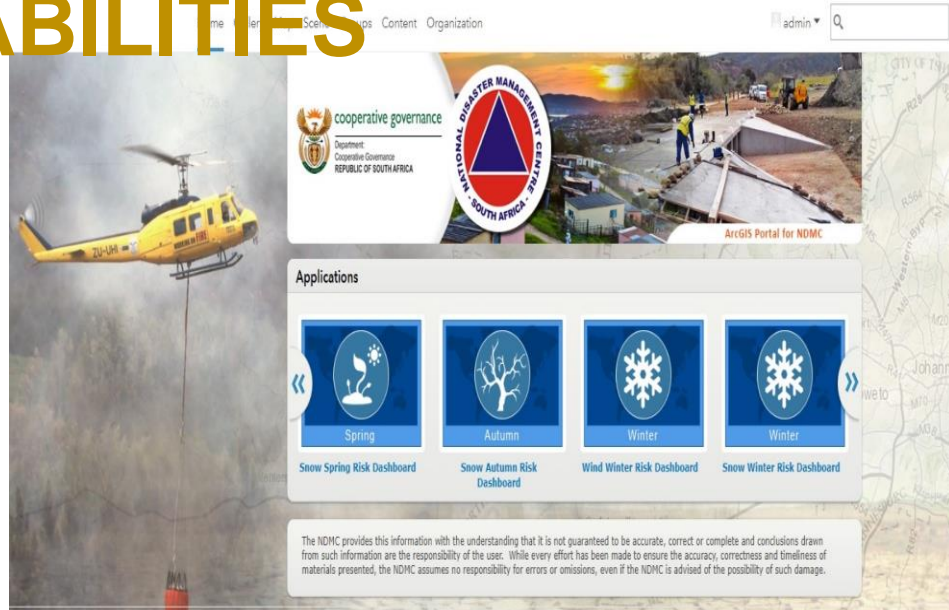
485 footprints cover the whole of South Africa





# 5. TOWARDS ONLINE INFORMATION AND SMART MAPPING CAPABILITIES

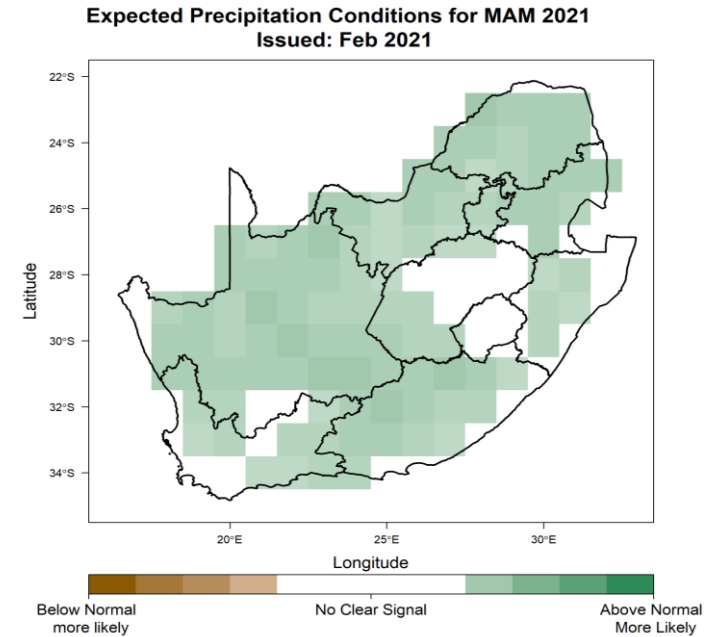
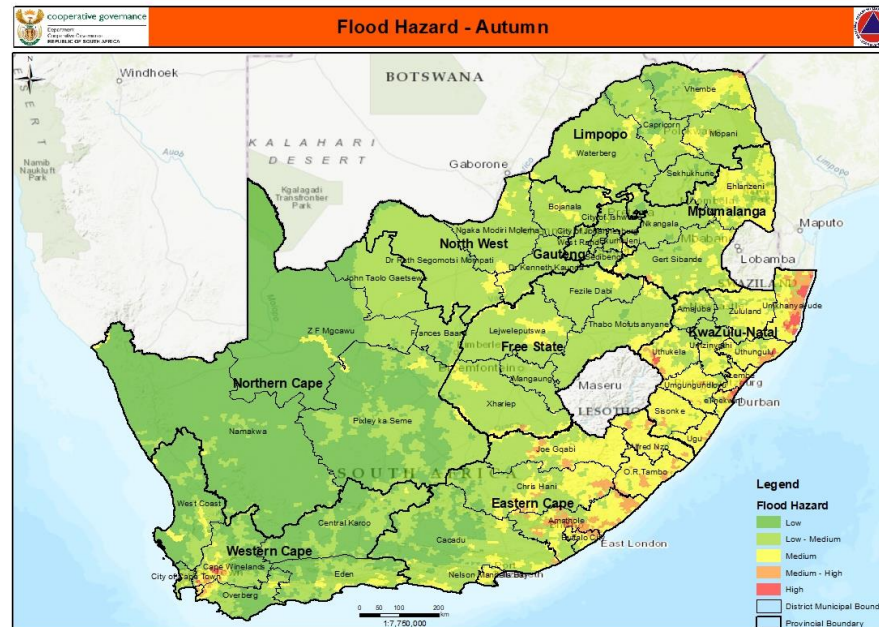
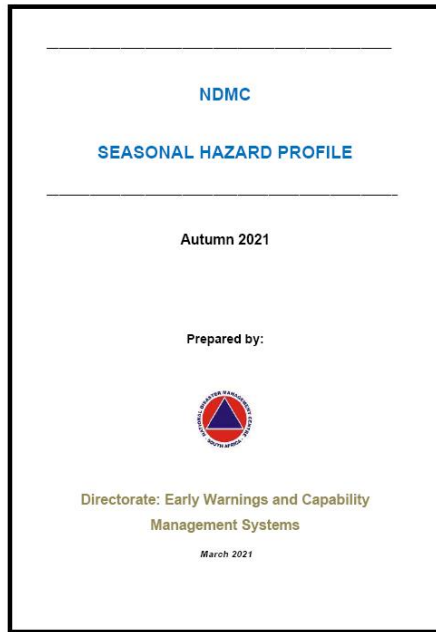
- NDMC GIS Portal is a singular entry point for all spatial and non-spatial disaster, risk and vulnerability and early warnings information for DM stakeholders
- Distribution of the Indicative Risk Profile via Web Services hosted on NDMC Portal Platform
- <https://gis-portal.ndmc.gov.za/portal/home/>
- Aligned to this is the a Business Intelligence tool that renders information in a fit for purpose and modular fashion



Disaster Atlas Application illustrates declared states of disasters spatially since 2006

The outputs from the Indicative Risk Profile for various hazards (Drought, Windstorms, snow and Flooding) continue to guide risk profiling and medium term planning.

The quarterly Seasonal Hazard Profile presented at the National Disaster Management Advisory Forum (NDMAF) and subsequently distributed to a broad range of disaster management stakeholders provides information for the forthcoming season.



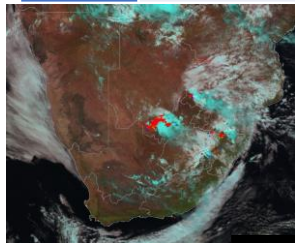
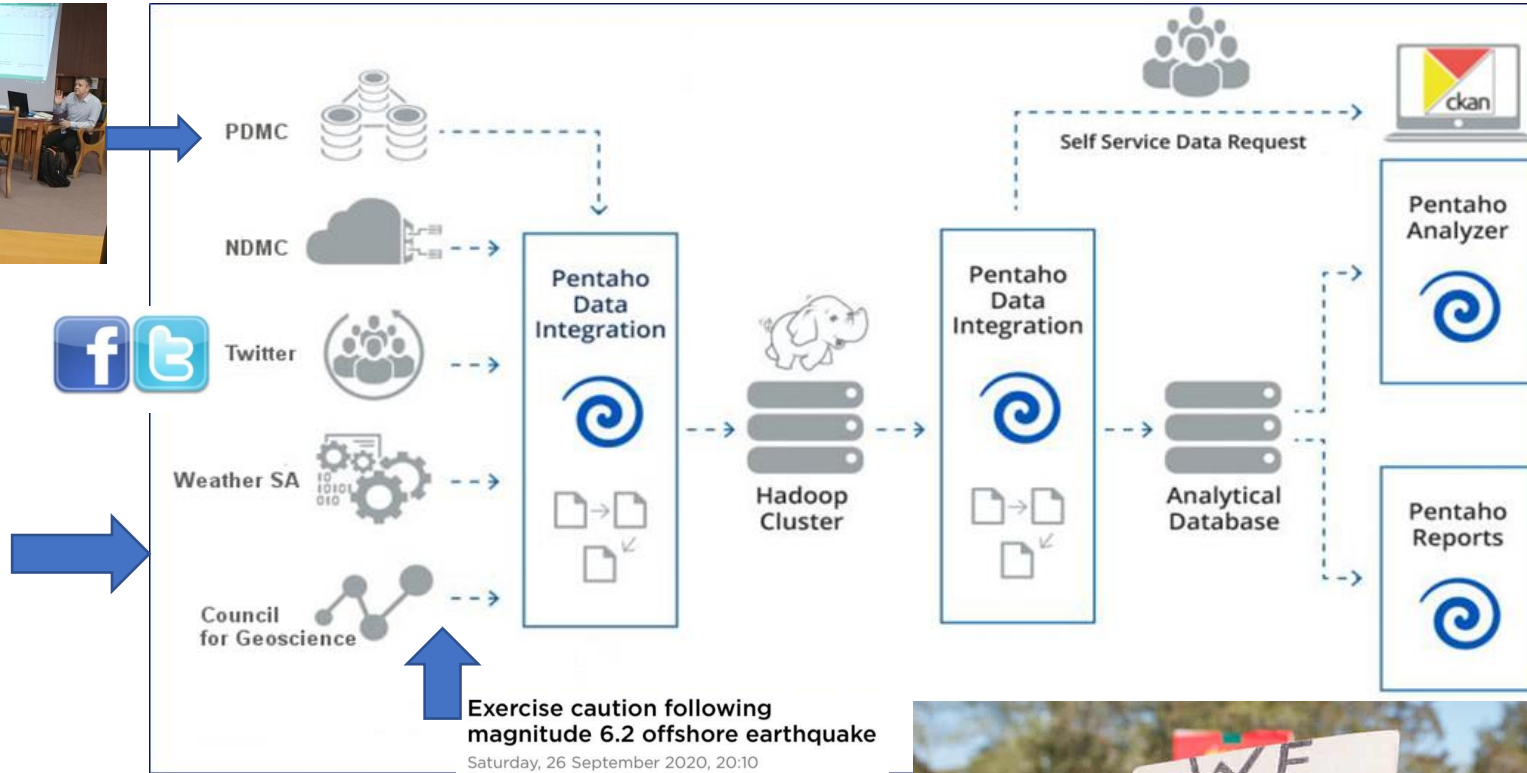
Additionally, outputs derived from the Indicative Risk Profile contribute to understanding of potential impacts related to Impact Based Early Warning Systems.



# 6. DISASTER OPERATIONS: COVID -19 AND NDMC BIG DATA PLATFORM



WEATHER OUTLOOK	GAUTENG issued 2021/05/31 @ 12:36
Forecast issued by:	JM Modika
Outlook Period	Outlook period From: Monday 31 May 2021 To: Sunday 06 June 2021
Possible Warning(s)	None
Weather Outlook	Partly cloudy and cold conditions expected over Gauteng today and tomorrow with a small chance of rain showers tomorrow morning. It will remain fine to partly cloudy with cool daytime temperatures for the rest of the week with no further rain expected.



Type of Early Warning	Lead time	Alert Category		
Severe Weather, Extreme Weather	> 3 days	Nil	Advisory	
Severe Weather, Extreme Weather, Veldt Fire, Flash Flood, Maritime	2-3 days	Nil	Advisory	Watch
Severe Weather, Extreme Weather, Thunderstorm, Veldt Fire, Flash Flood, Maritime, Aviation	24 hours	Nil	Watch	Warning

**Level:** Advisory  
**Location:** South Africa  
**Category:** Earthquake


Members in South Africa in the coming hours should exercise caution after a magnitude 6.2 offshore earthquake struck at approximately 19.10 (local time) on 26 September. According to the US Geological Survey, the tremor originated approximately 994 miles (1,600km) south-east of the country, at a depth of six miles (10km). There are no immediate reports of casualties or damage, and no tsunami warning has been issued.





GTS

  
South African  
Weather Service

  
Council for Geoscience

1. Evaluate & Advise
2. Generate Standard E-mail template for public
3. Scientific Evaluation

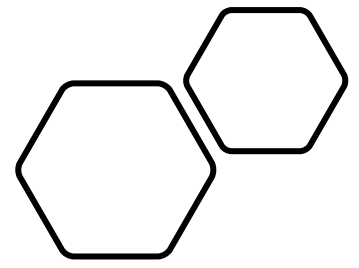
  
NATIONAL DISASTER  
MANAGEMENT  
CENTRE





1. Evaluate data
2. Issue & Disseminate Alert Level
3. Liaise with Media

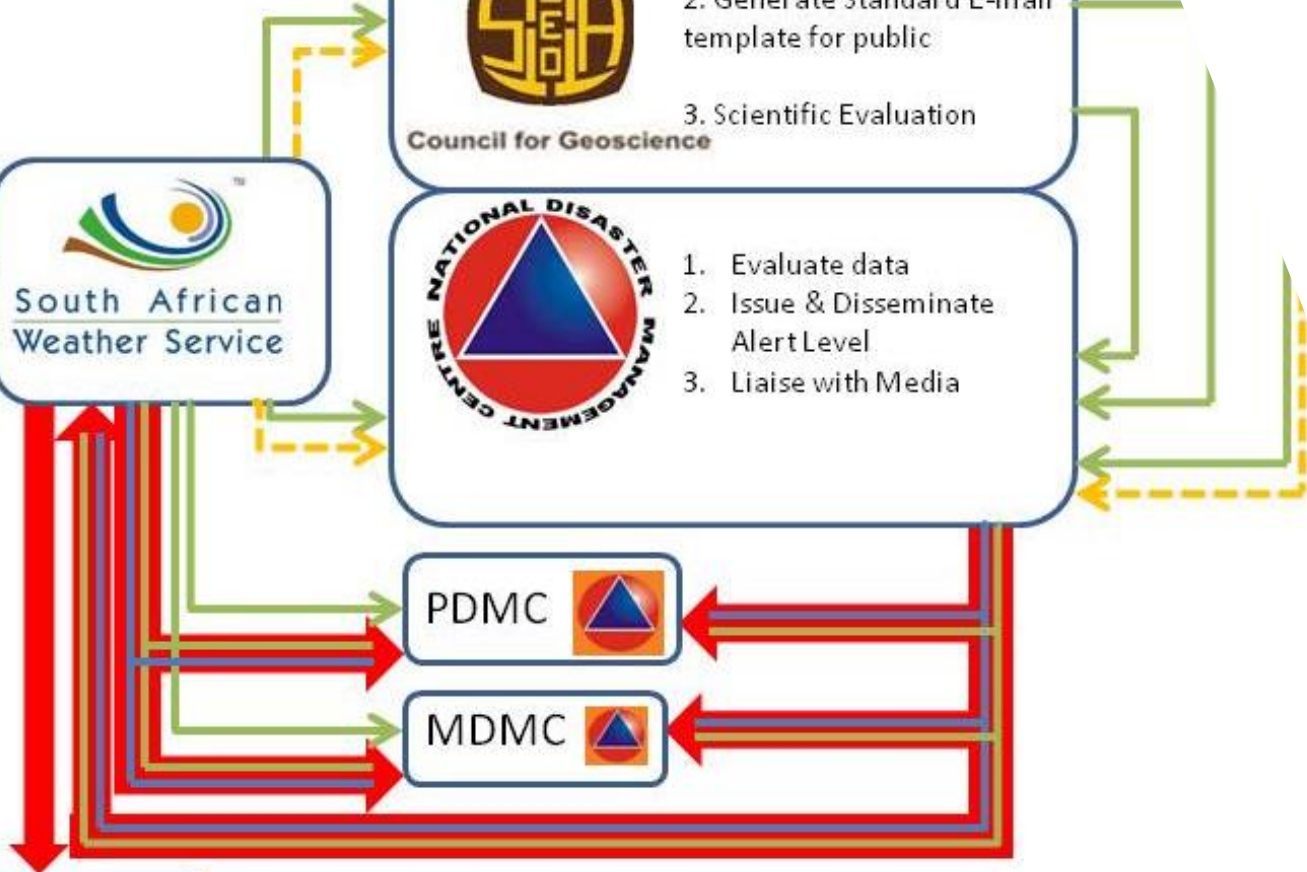
PDMC 

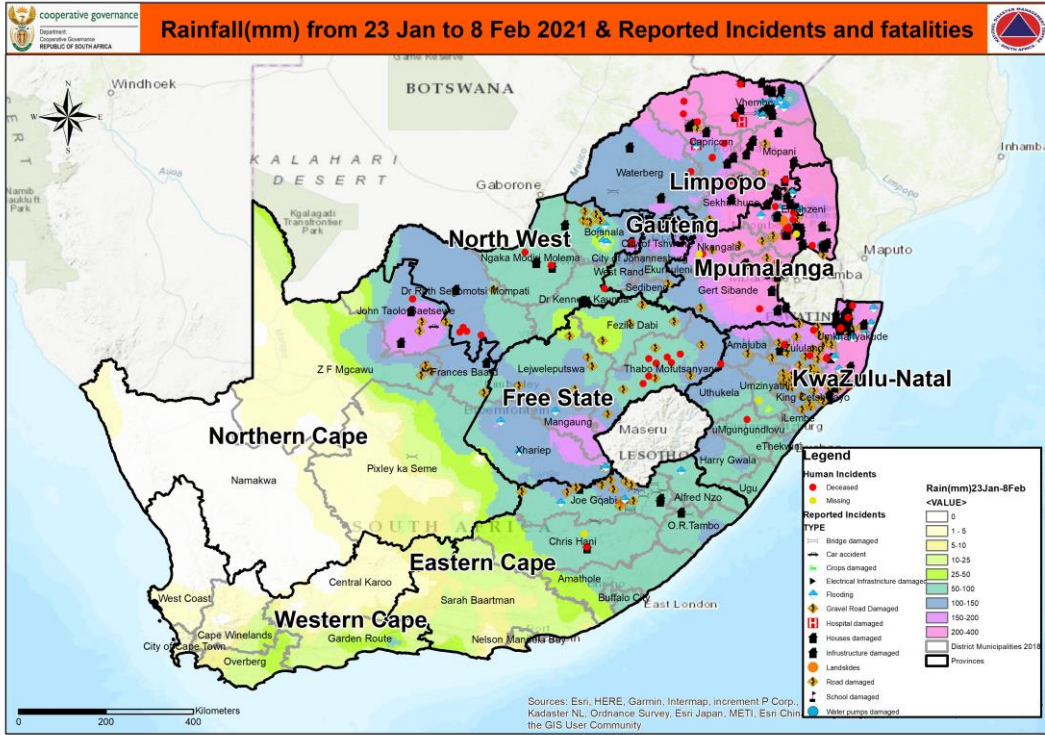
MDMC 

MEDIA



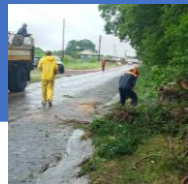
-  SMS
-  E-Mail
-  Telephonic
-  Advisory/ Watch/ Warning

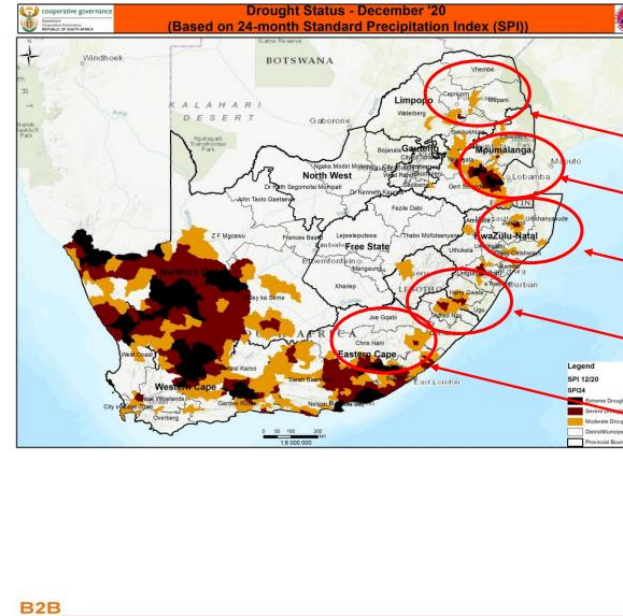
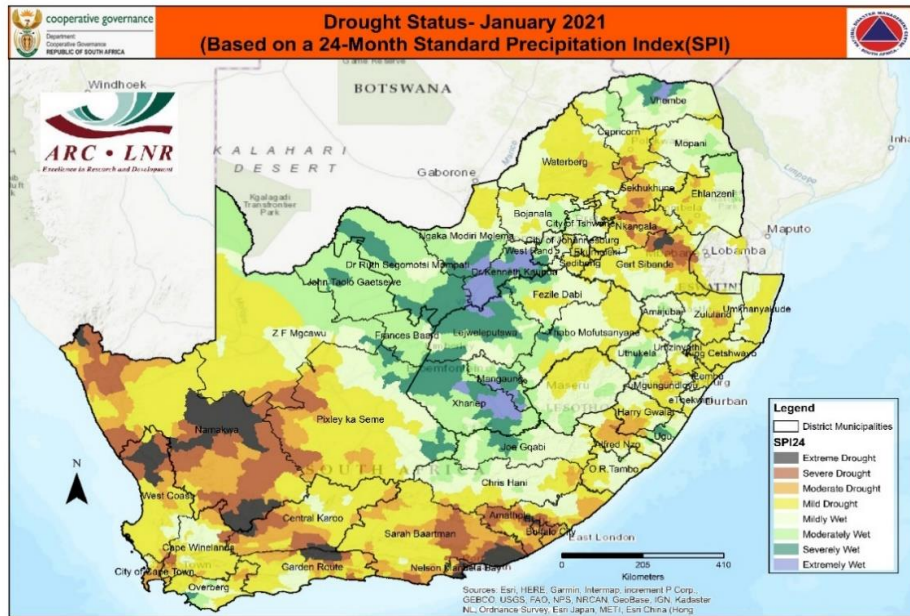




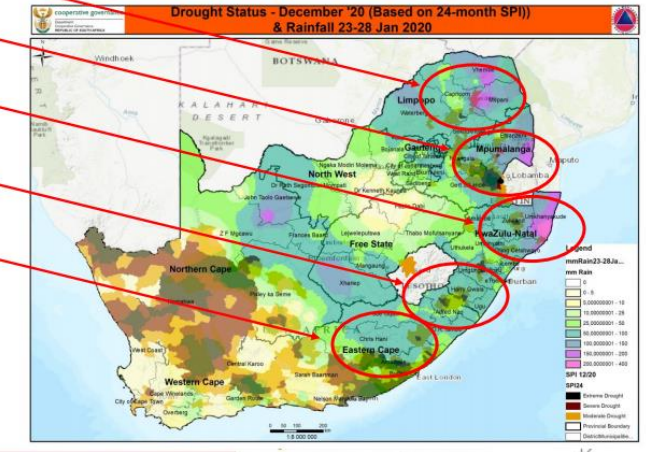
Tropical Storm arrived in South Africa via its entry from Mozambique on the 23<sup>rd</sup> Jan 2021.

Impact of Tropical Eloi





Provinces with drought areas (left) are compared with areas that received in excess of 50mm of rainfall as a result of tropical Storm Eloise.

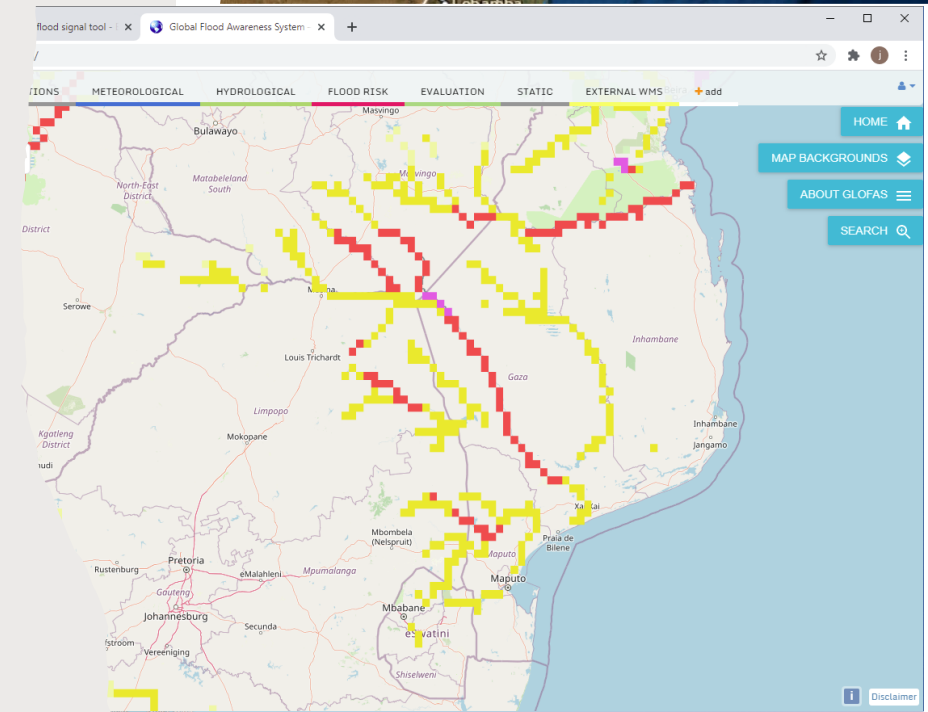
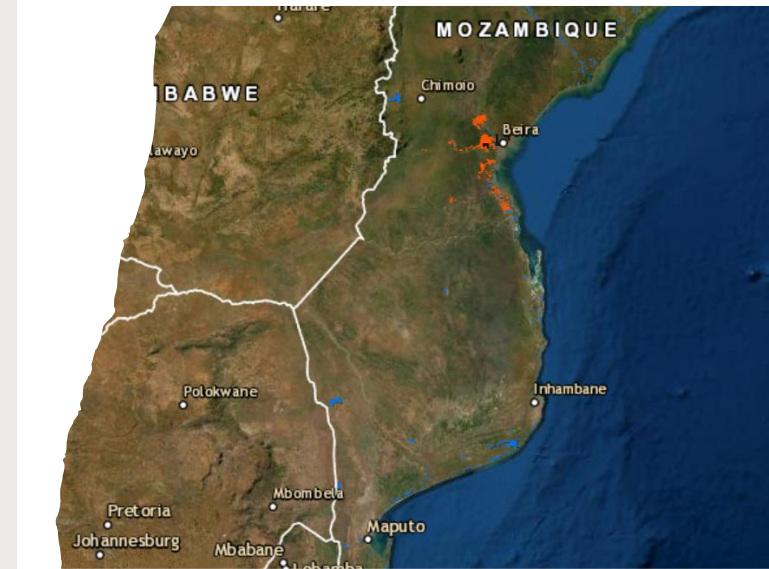


- The drought status map from January 2021 (Right) indicates the cumulative impact on drought areas in the central and northern parts of South Africa which is partly due to Tropical Storm Eloise

- Tropical Storm Eloise did have a rainfall positive effect on areas within several provinces that we experiencing drought conditions (left).
- The figure on the left indicates an analysis perform on areas of drought as depicted in December 2020 and areas that received excessive rainfall during the storm.
- Products from the UN SPIDER platform will assist in the future to quantify large scale rainfall.

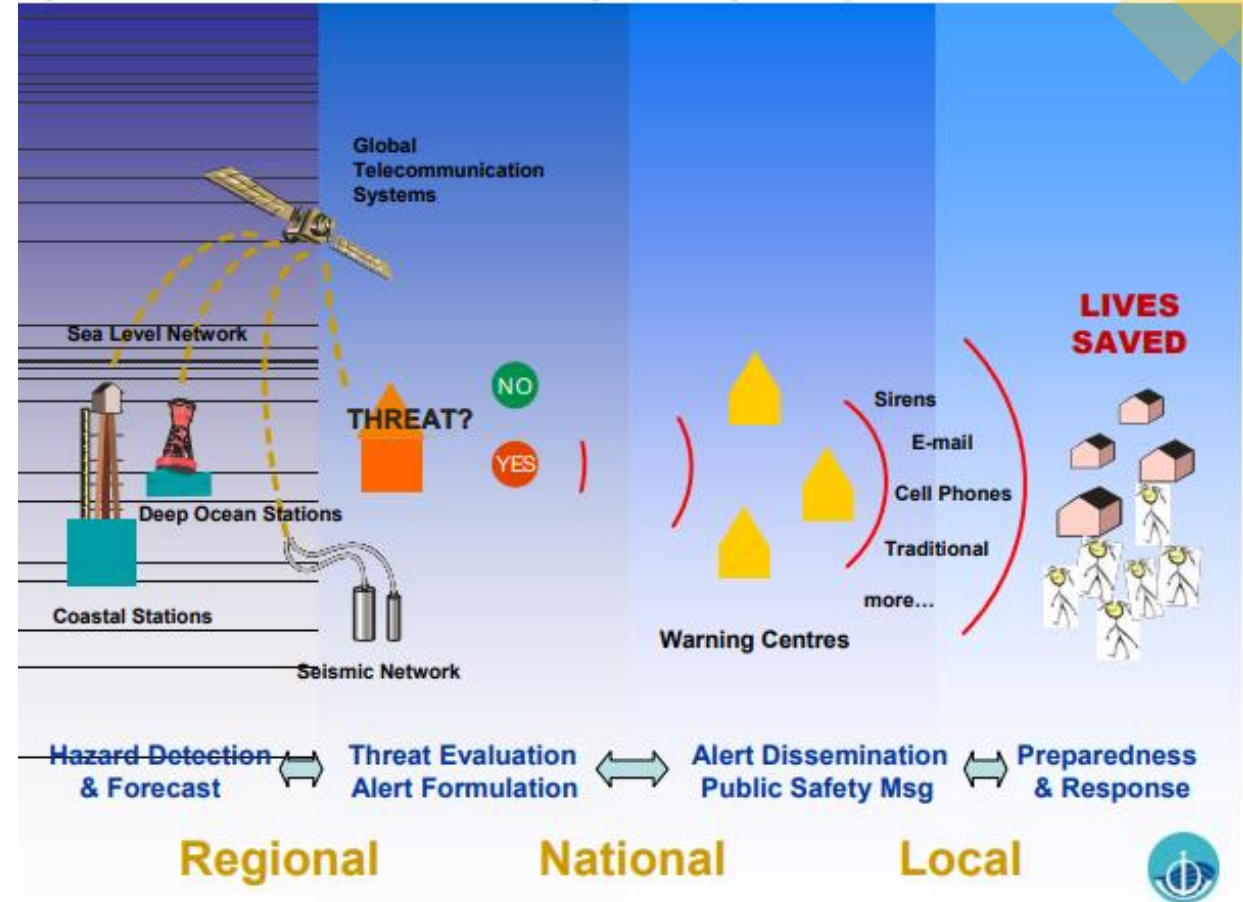
# 7. Global Network: SA International Charter Affiliation

- Tropical Storm Eloise and the non activation of the Charter prompted SANSA and NDMC towards completion of the registration and activation of the Charter.
- SANSA and NDMC registered their interest in the GLOFAS platform and received a refresher on the International Charter activation.
- End of Nov 2021 sees a simulation exercise being completed by NDMC recreating a disaster and completion the activation process.
- SANSA and the DCoG/ NDMC has renewed their interests in a new MoU to explore products, services and projects to use space based information



# Global Network: PARTNERS AND PROJECTS

- NDMC continues its collaborative work with international partners and with international project platforms.
- In the 2021-2024 operational years, the NDMC envisions the following network and partner establishments:
  - Fully functional tsunami early warning portal.
  - National Impact Based forecast System
  - International Charter for Space and major Disaster User with dedicated project management partner





## 8. Summary And Conclusion

- Disaster management risk reduction in South Africa and the region requires a wide array of specialized fit for purpose data products and services.
- Large scale and updated information sources are critical to successful disaster operations.
- The NDMC/ SANSa will work closely with international partner like UN SPIDER to ensure that space-based information is used in all levels of decision making.
- The current registered interest in project like GLOFAS will ensure that South Africa's land areas are subjected to Space based monitoring to reduce large scale disaster impacts.
- SADC affiliation to the International Charter for Space and Major Disaster will be promoted through the NDMC for the regional access and allocation of regional project management agencies.





**THANK YOU**

THANK YOU

Ngiyabonga | Re a leboga | Ndo livhuwa | Nndza nkhensa | Ke a leboha haholo | Dankie | Enkosi