



Cooperative Governance  
Traditional Affairs



# Department of Cooperative Governance

National Disaster Management Centre – South  
Africa

## Early Warning Systems

**B2B**  
**BACK TO BASICS**  
SERVING OUR COMMUNITIES BETTER

**Back to Basics**  
Serving Our Communities Better!

Putting people first and engaging with communities	Delivering basic services	Good governance	Sound financial management	Building capabilities
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Documents on the Back to Basics can be found here: <http://www.cogta.gov.za/summit2014/>



# Introduction

- “Disaster Management” – ‘a continuous and integrated multi-sectoral, multi-disciplinary process of planning and implementation of measures aimed at
  - Preventing or reducing the risk of disasters;
  - Mitigating the severity or consequences of disasters;
  - Emergency preparedness;
  - A rapid and effective response to disasters; and
  - Post-disaster recovery and rehabilitation’  
(Disaster Management Act 57 of 2002)
- Strategic Goal of the NDMC:
  - Strengthen coordination and support for effective integrated Disaster Management
- NDMC Mandate derived from
  - Disaster Management Act 57 of 2002
  - Disaster Management Framework 2005



# NDMC / SAWS Collaboration

- The NDMC and SAWS have a Memorandum of Understanding that underpins its collaborative efforts and projects.
- Main areas of collaboration are / have been
  - Risk and Vulnerability Profiling
    - Meteorological specialist input with regards to hazard assessments (Windstorm hazard assessment 2014/15)
    - Provision of historical data input data (CAELUM dataset, Snowfall Hazard assessment 2015/16)
    - Medium term seasonal forecasts which provide dynamic inputs to risk profiles.
  - Early Warning Systems
    - Primary source of weather related early warnings generation
    - Partner in distribution of early warnings to stakeholders
    - Multi Hazard Early Warning System
    - Flash Flood Guidance System
    - Fire Danger Index
  - Data and knowledge sharing

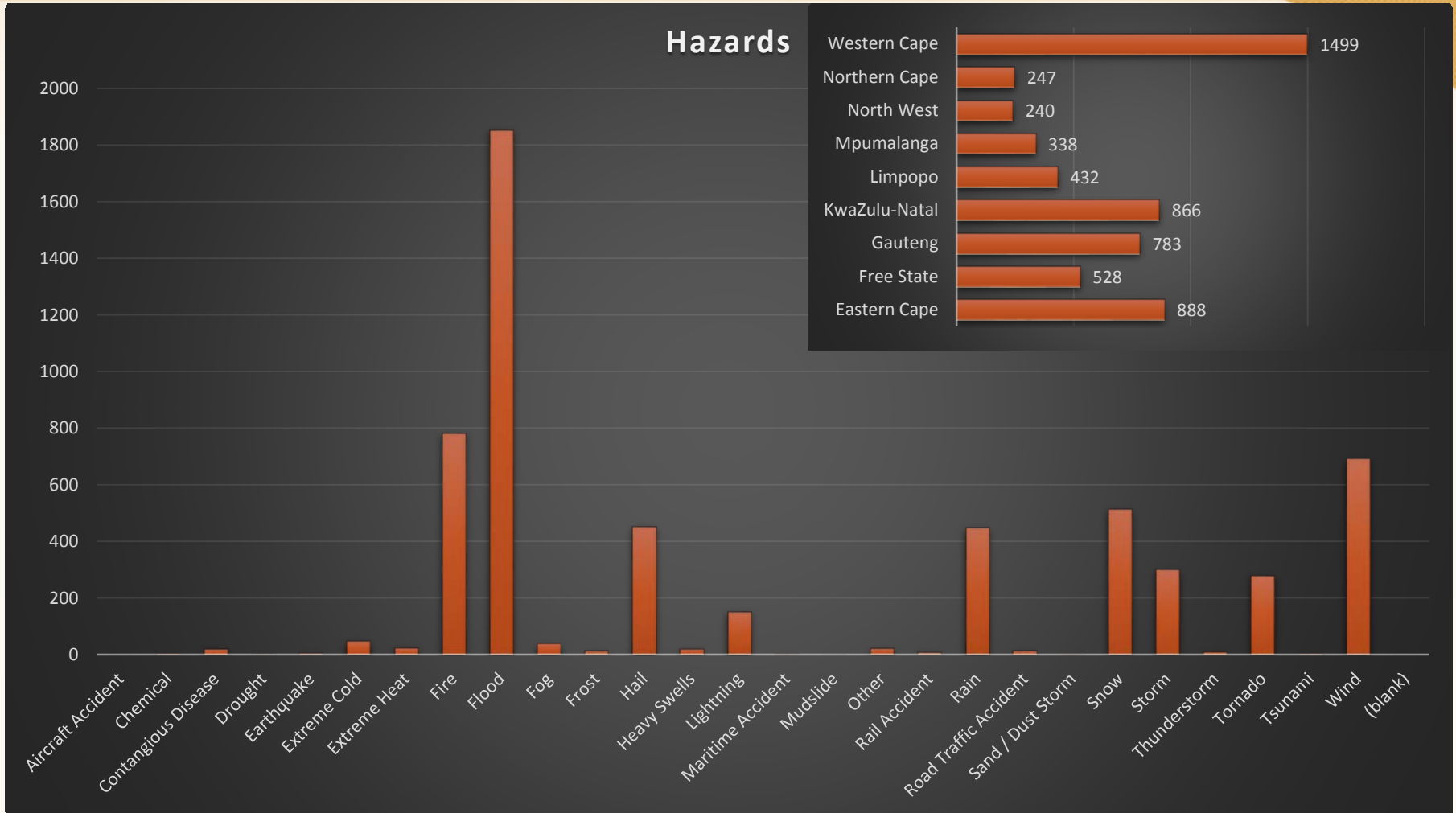


# NDMC / SAWS Collaboration

- Future identified projects
  - National Disaster Management Advisory Forum (NDMAF) task team for early warnings
  - Expansion of early warning catalog of services to identified stakeholders
  - Impact based early warning systems
  - Specialist inputs related to hazard quantification as part of risk profile generation.



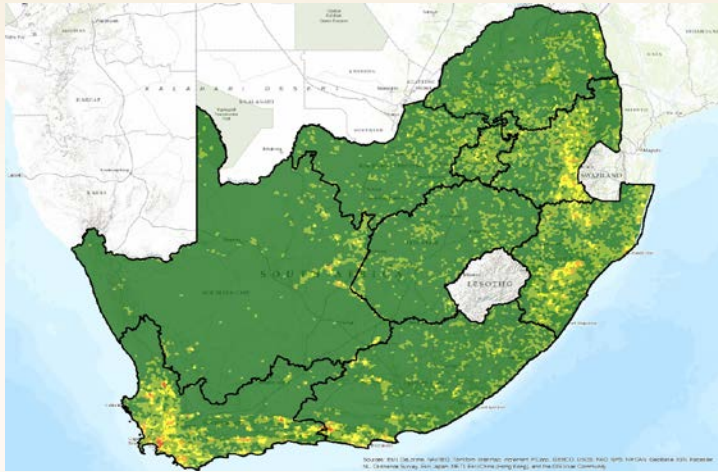
# Current State in South Africa



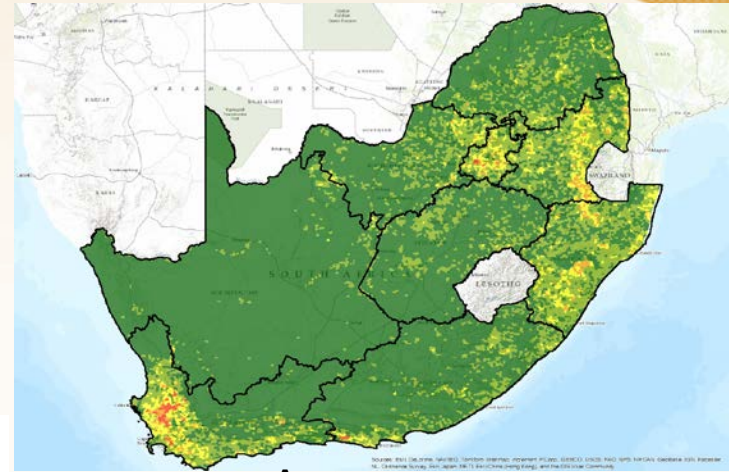
Number of events captured by SRS (NDMC) & Caelum (SAWS) databases (1647 – 2013) by hazard type and by province



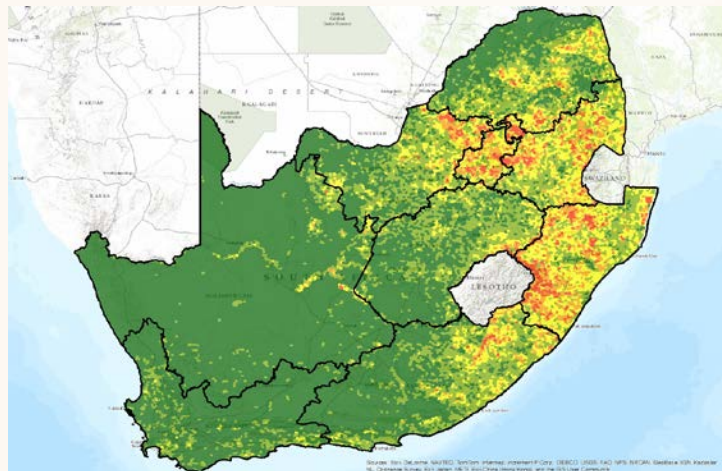
# Hazard Analysis - Fire



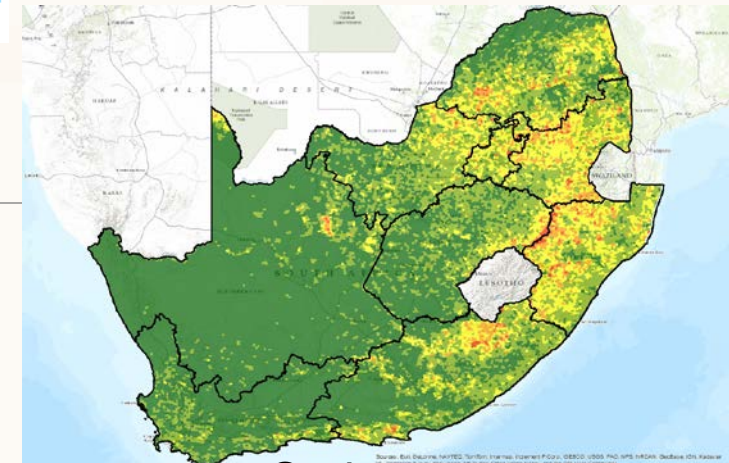
Summer



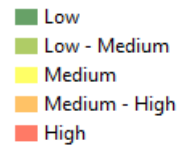
Autumn



Winter

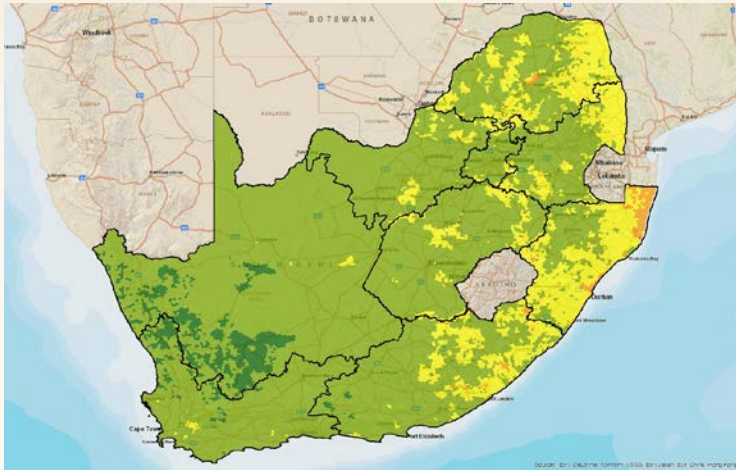


Spring

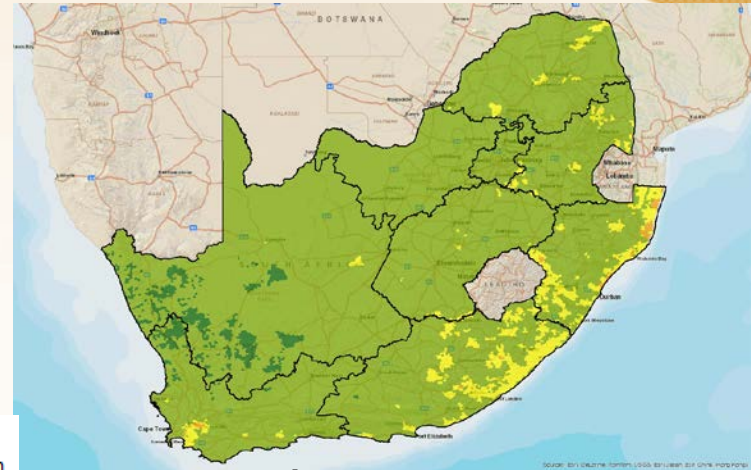


Hazard Analysis conducted for the Indicative Risk Profile 2015.

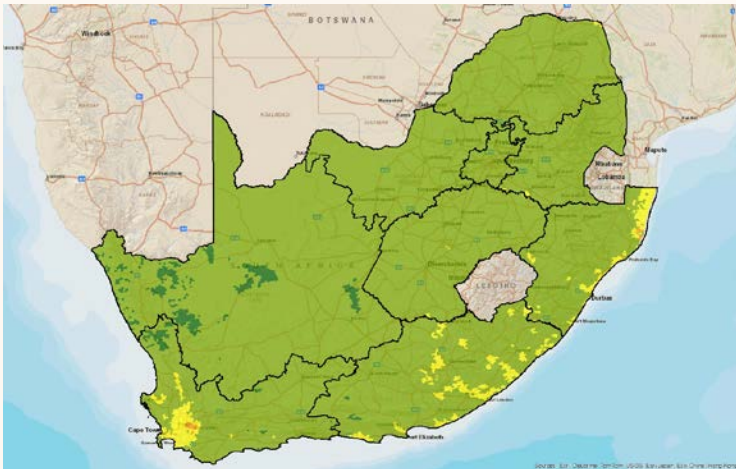
# Hazard Analysis - Flood



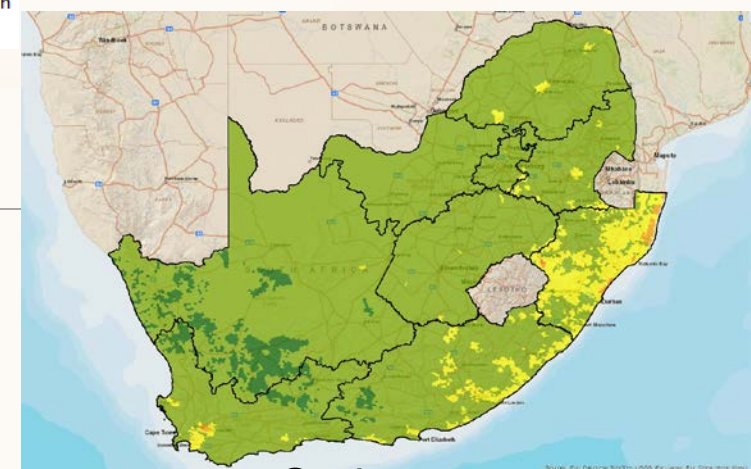
Summer



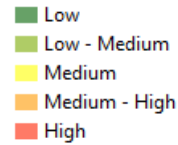
Autumn



Winter



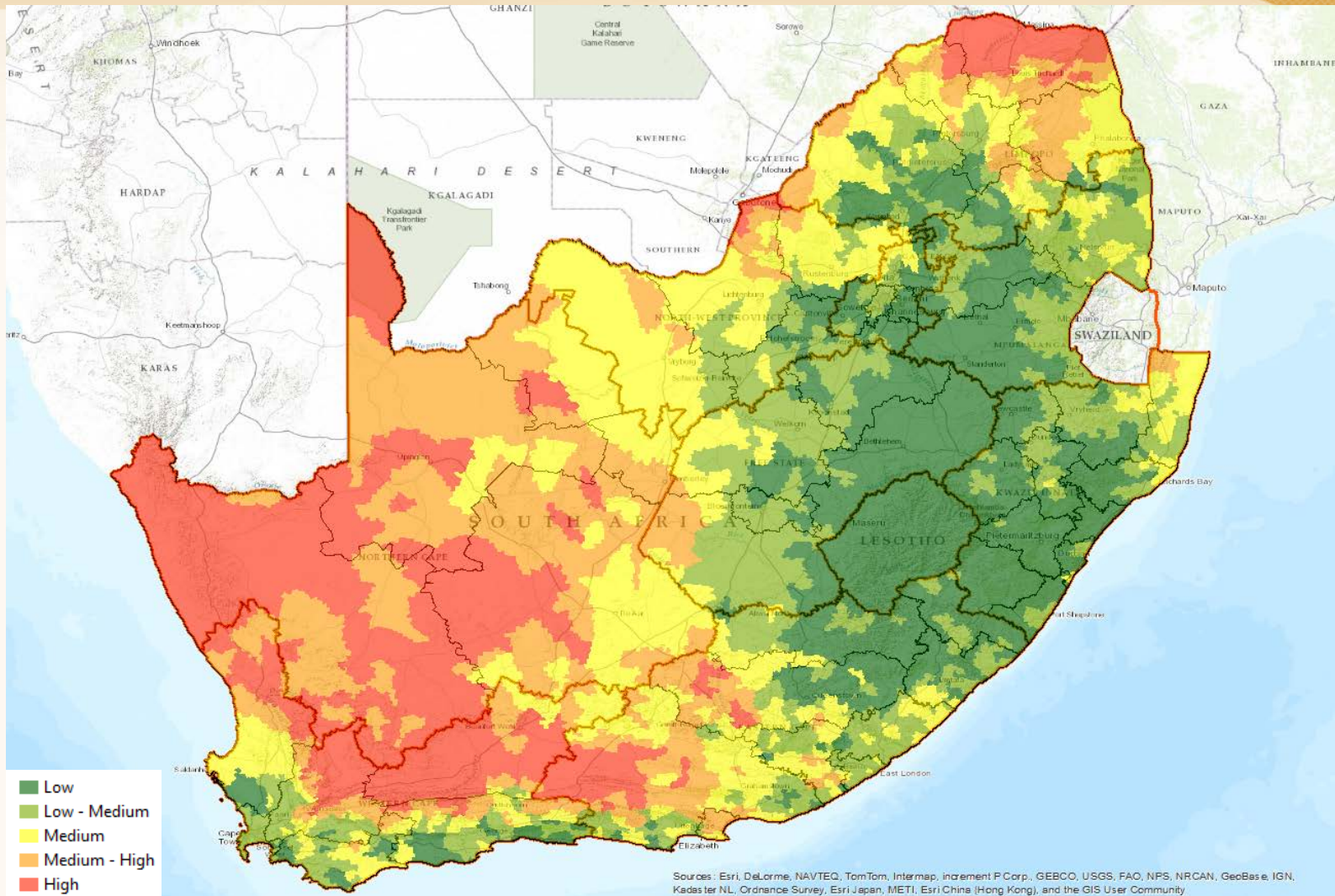
Spring



Hazard Analysis conducted for the Indicative Risk Profile 2012.



# Hazard Analysis - Drought

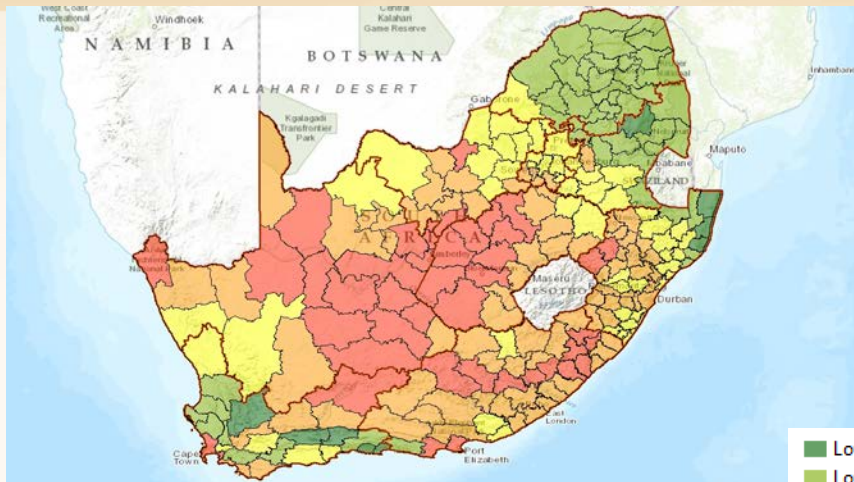


Hazard Analysis conducted for the Indicative Risk Profile 2013.

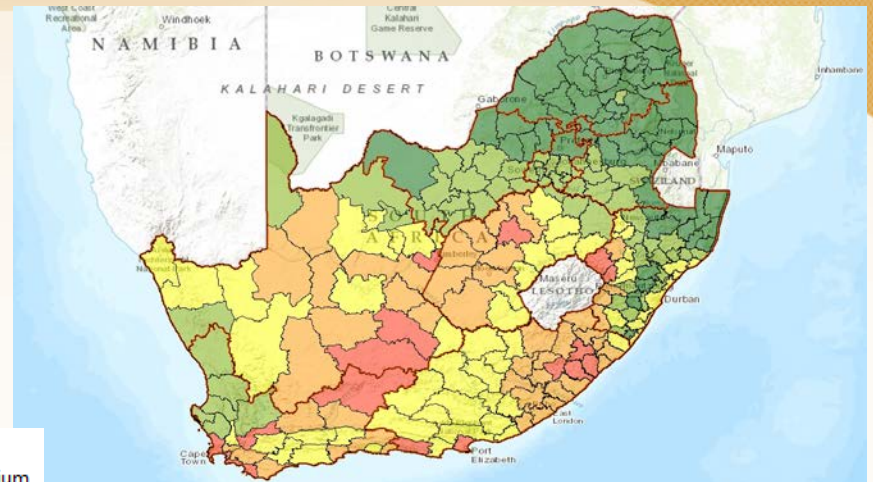




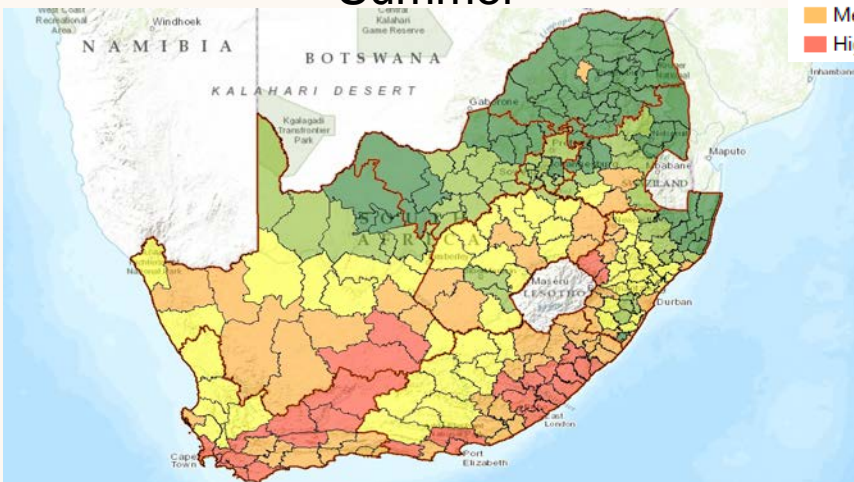
# Hazard Analysis - Wind



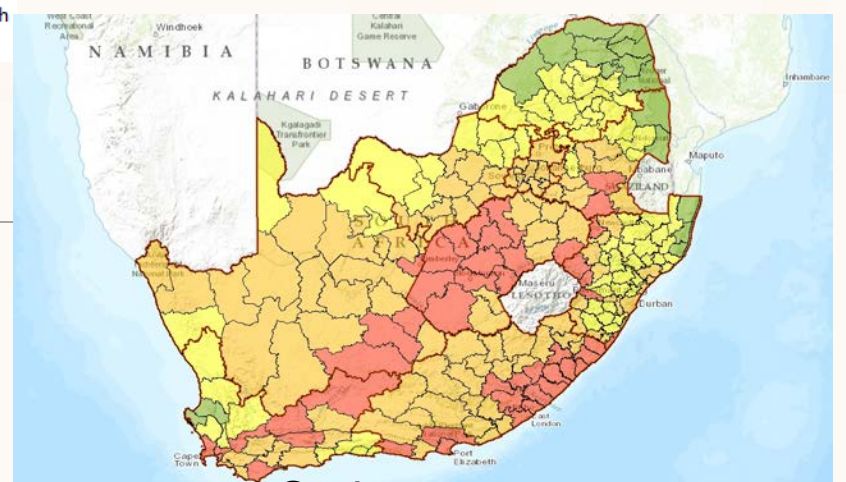
Summer



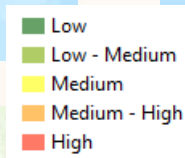
Autumn



Winter



Spring

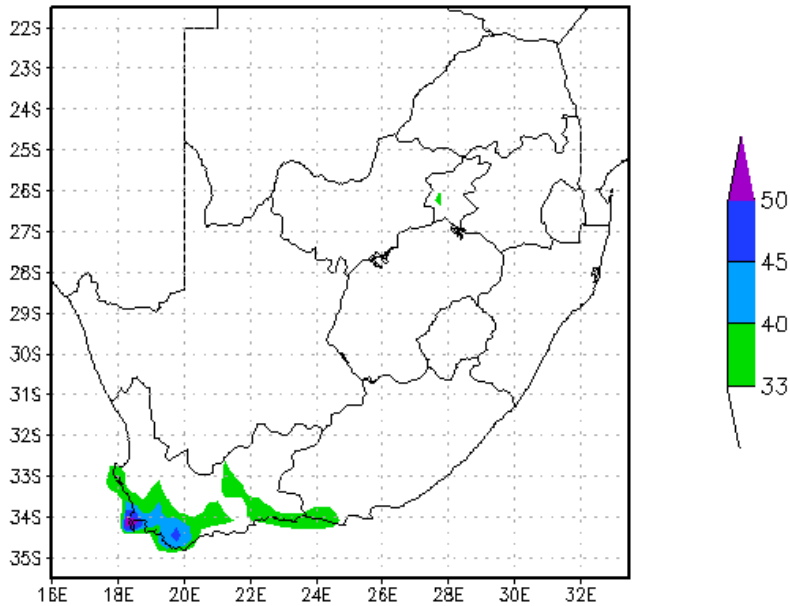


Hazard Analysis conducted for the Indicative Risk Profile 2014.

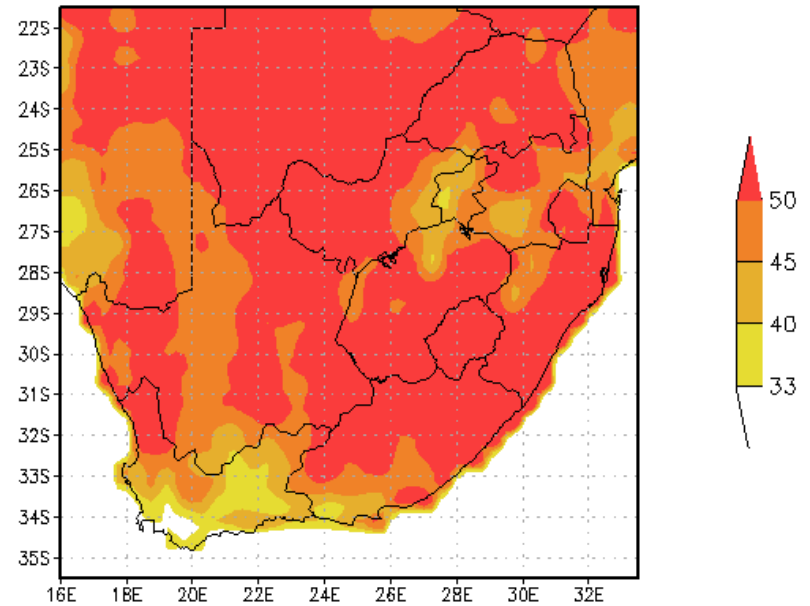


# Seasonal Forecasts

DECEMBER–JANUARY–FEBRUARY  
Above–Normal Rainfall



DECEMBER–JANUARY–FEBRUARY  
Below–Normal Rainfall



# Early Warnings

## Early Warning

Timely & effective information, through identified institutions, that allow individuals, households, areas and communities exposed to a hazard to take action to avoid or reduce the risk and prepare for effective response.

## Early Warning Systems

A system that allows for directing and forecasting impending extreme events to formulate warnings on the basis of scientific knowledge, monitoring and consideration of the factors that affect disaster severity and frequency.

Early Warning systems include a chain of concerns, namely:

- Understanding and mapping the hazard
- Monitoring and forecasting impending events
- Processing and disseminating understandable warnings
- Undertaking appropriate and timely actions in response to these warnings

(DM Framework: 2005)



# Multi Hazard Early Warning System

The Multi Hazard Early Warning (Web Service) System will become the central entry point for Disaster Stakeholders to access early warnings related to Fires, Flash Floods, Seismic Activities, and Severe Weather. Stakeholders can register and gain Early Warnings via text or e-mail.



PUBLIC APPLICATION	<b>MHEWS</b>				
<b>SECURITY LEVEL: REGISTRATION REQUIRED</b>					
CLOSED APPLICATION	FDI	FFGS	SWEWS	SEISMIC WATCH	OTHER EWS
HAZARD	FIRE	FLOOD	STORM HAIL FROST SNOW EXTR TEMP	SEISMIC MOVEMENT	
SENSORS / DATA	1. MODIS 2. MSG 3. FDI	1. RADAR 2. SATELLITE 3. WEATHER STATIONS 4. DAM GAIGES	1. RADAR 2. SATELLITE 3. WEATHER STATIONS 4. MODIS	1. SEISMOGR AM	
PARTNERS	1. EUMETSAT 2. CSIR 3. SAWS	1. SAWS 2. DWA	1. EUMETSAT 2. SAWS 3. ARC	1. CGS	



# Multi Hazard Early Warning System

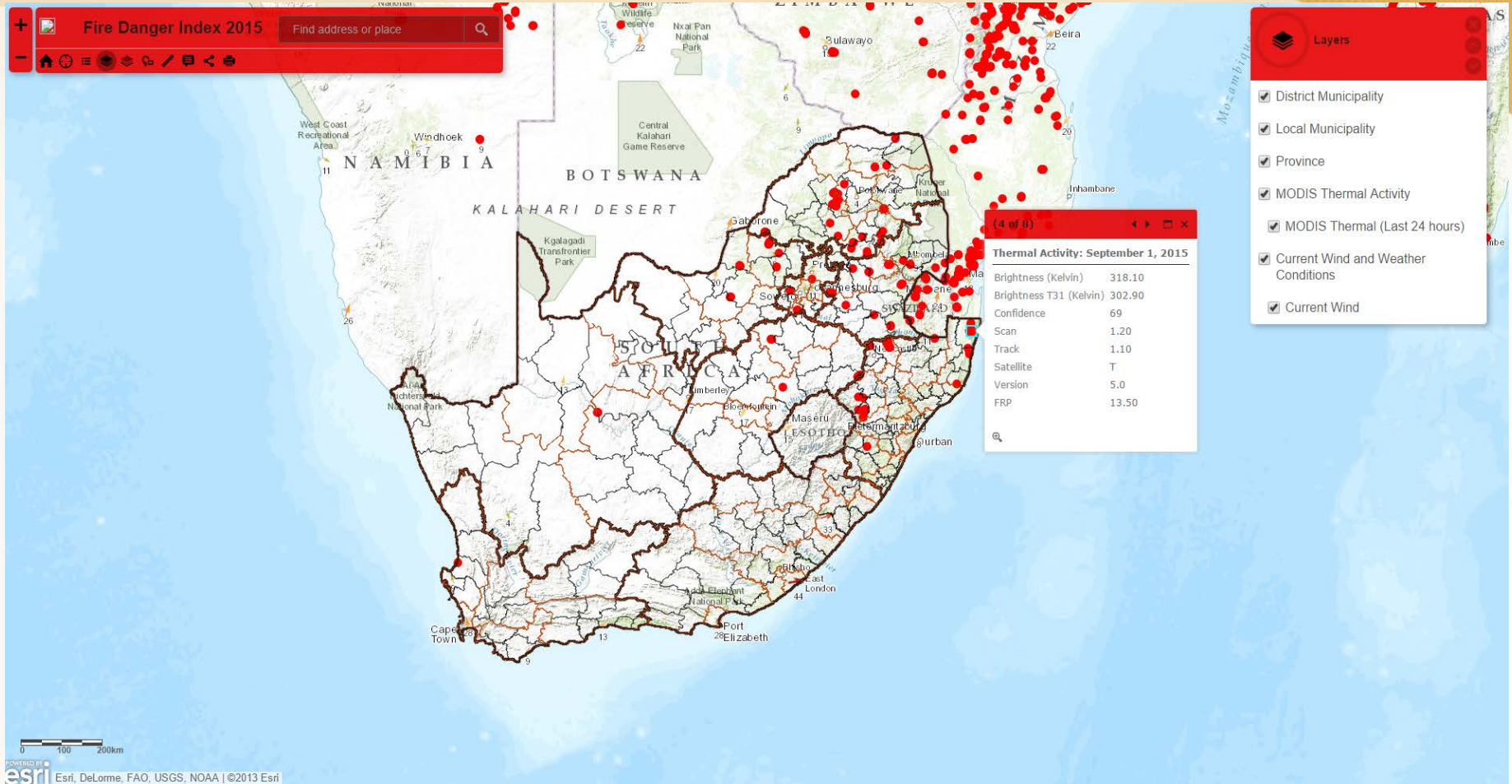
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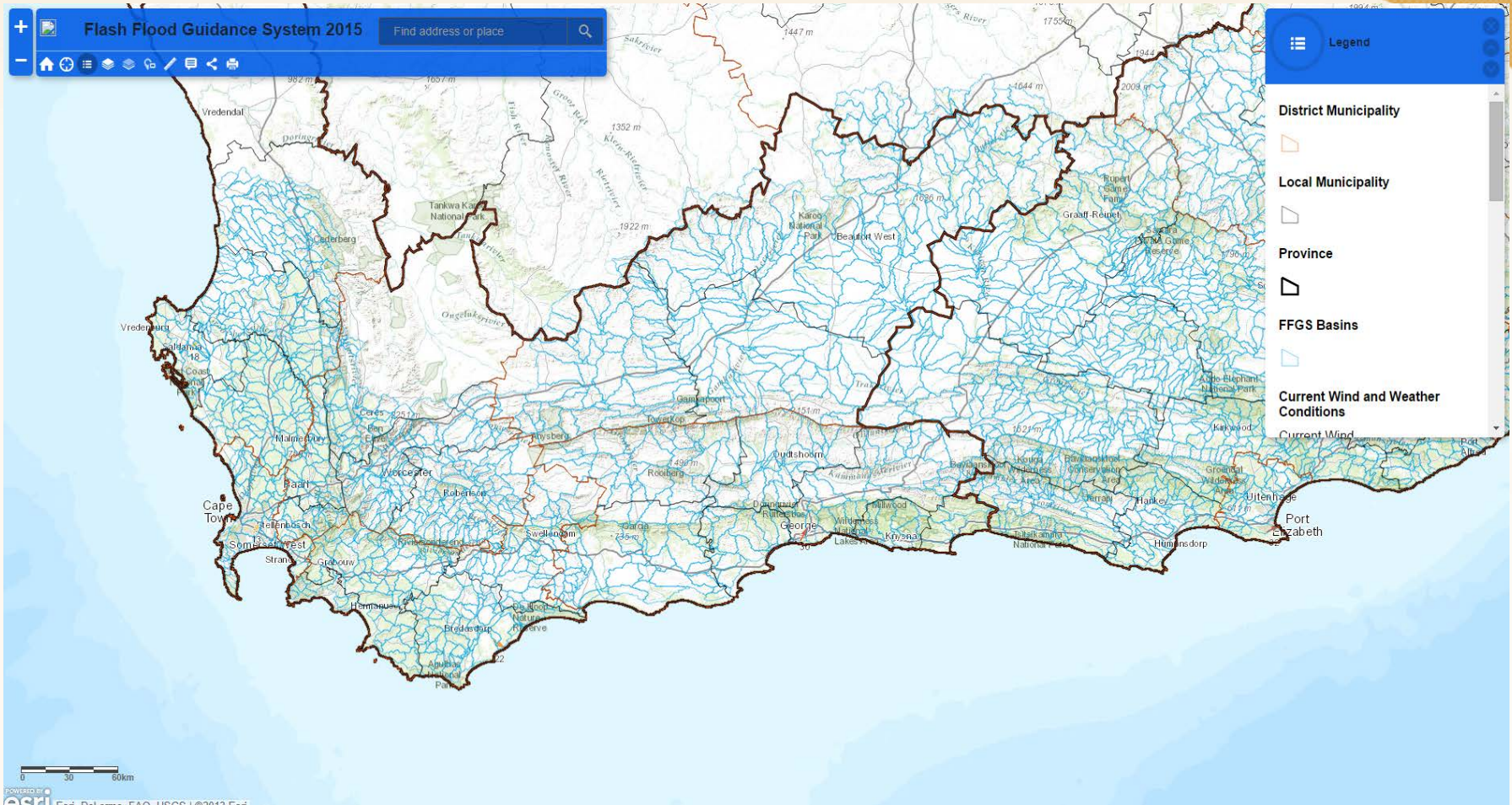


# Fire Danger Index (FDI)



The application includes daily fire danger ratings for South Africa as well as near real-time fire locations; Information related to Fire Frequency Analysis (monthly and seasonally) and Fire Indicative Risk Profile outputs.

# Flash Flood Guidance System(FFGS)



The application includes near real-time flash flood predictions and aligns with early warnings issued by SAWS

# Early Warning dissemination

## COMMON ALERTING PROTOCOL (CAP)

### E-mail

Please find included Severe Weather Warning Service information issued for the Eastern Cape

Hazard	Alert Level	Valid From (SAST)	Valid To (SAST)
Veld Fire Conditions	Warning	07/09/15 11h00	07/09/15 15h00

in the Camdeboo, Inxuba Yethemba, Great Kei, Tsolwana, Lukanji, Emalahleni, Amahlati, Inkwanca, Intsika Yethu, Engcobo and Sakhisizwe districts of the Eastern Cape.

#### Description: Dangerous veld/bush fire conditions

Whenever there are prolonged periods of little and no rain coupled with warm dry winds, veldt or bush fires can easily be sparked and will spread rapidly in strong winds.

#### Precautions: Dangerously Dangerous veld/bush fire conditions

Don't make fires in the open and/or leave fires unattended. Don't throw cigarette butts out of cars or in the open veldt. Don't throw bottles in the veldt as they can magnify the sun's rays and start fires. Prepare and maintain fire breaks in controlled manner. In the case of a large fire report it immediately and move away from the area to let the professionals deal with it. Never throw water onto a fire started by an electrical fault or fires started by oil or paraffin lamps. In this case sand or a blanket should be used to smother the fire. Listen to the radio or TV for warnings and obey the instructions from disaster management officers.

### Web



### SMS





# Early Warning – Situational Awareness

## Today - Mosselbay

Forecast for Thu 10 Sep 2015	Min Temp	Max Temp	Max Hum	Min Hum	Rain	Moon Rise	Moon Set	Moon phase	High Tide	Low Tide	Sun Rise	Sun Set
<b>Mosselbay</b>	11°C	16°C	95%	65%	5mm	04:48	15:58	Waning Crescent	02:02 14:25	08:14 20:35	06:37	18:19
Time	Temp C	Visibility	Weather	Wind (KPH)	Gusts (KPH)	Off-Shore Swell	AppTemp	FDI				
02:00	11	Good	Partly cloudy	SW 9	NSG	SW 4 m	N/A	N/A				
08:00	11	Good	Partly cloudy	SW 19	NSG	SW 4.5 m	8.9	N/A				
14:00	13	Good	Partly cloudy	SW 28	NSG	SW 4.5 m	12.2	41				
20:00	11	Moderate	Slight rain	SSE 19	NSG	SW 4.5 m	N/A	N/A				

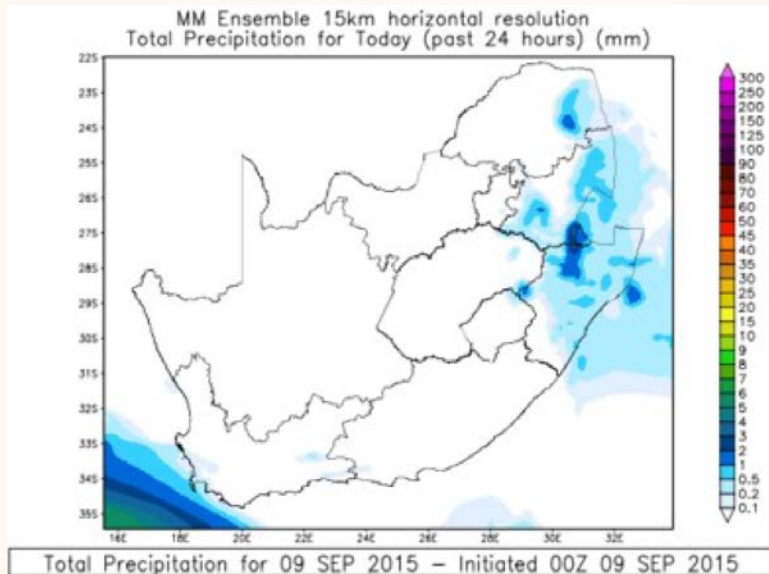
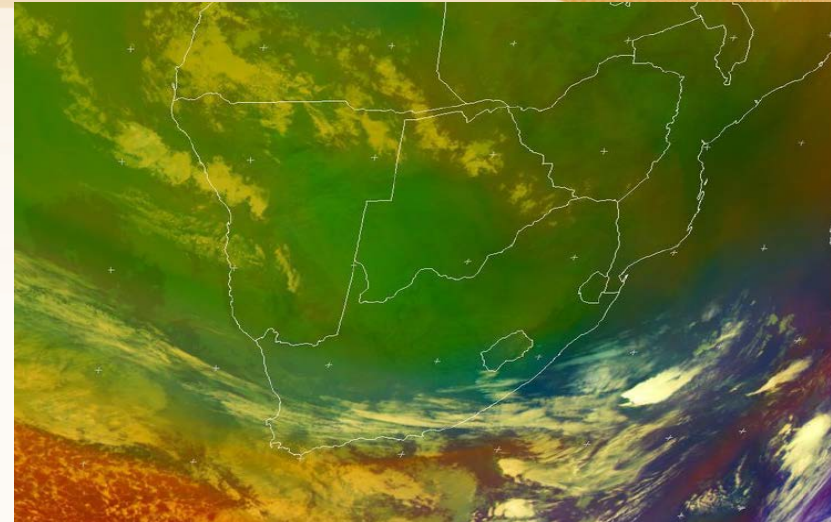
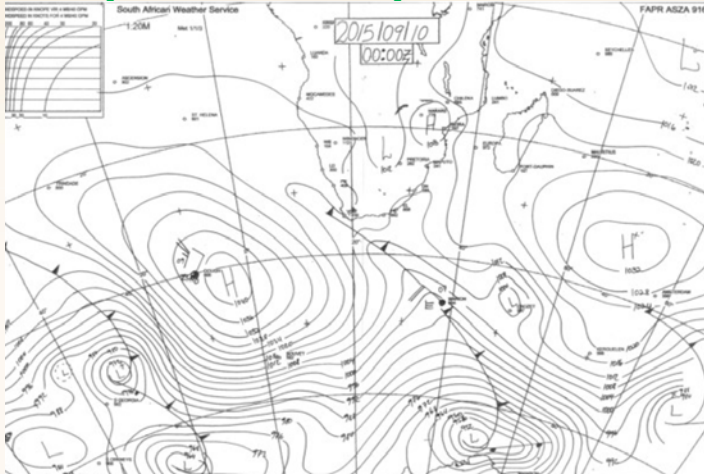
## Forecast - Mosselbay

<b>Fri 11 Sep 2015</b>
The cold front passes over the Cape during the early morning with a high pressure system ridging in south of the country behind the front. Cloudy, cold and rainy conditions will set in early morning over the south-western parts of the Western Cape spreading to the south coast during the day.
<b>Sat 12 Sep 2015</b>
The high pressure system continues to ridge in south of the country. The weather clears over the western parts of the Western Cape, but cloudy conditions and a few morning showers still expected along the south coast and adjacent interior of the Western Cape.
<b>Sun 13 Sep 2015</b>
Upper air Cut-off low pressure develops to the west of the country bringing isolated showers and thundershowers over the central and eastern interior of the Northern and Western Cape, otherwise partly cloudy conditions with strong south-easterly winds expected for the south west coast.

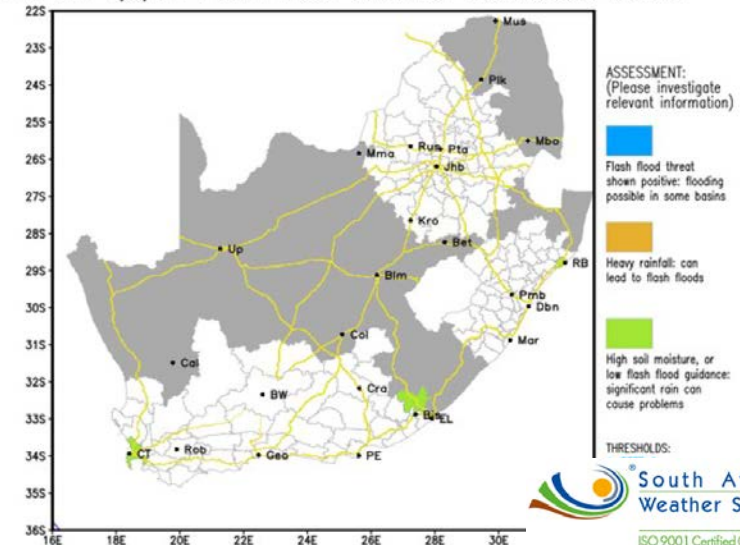


# Early Warning – Situational Awareness

Today - Mosselbay



SAFFG: LM 1,3,6hr Flash Flood Overview 20150909 23UTC



# Disaster Management Requirements

- Even closer collaboration on projects related to weather hazards and risks
- Renewed focus on data sharing and streamlined dissemination
  - Easily consumable products
  - Greater variation in terms of format.
  - E.g. GeoRSS feeds, spatial data
- Innovative products tailored for operational disaster management practitioners
- Improved lead-time and accuracy of early warnings
- Crowdsourcing
- Partner in getting timeous early warnings over “the last mile”

# Thank you



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Traditional Affairs**

