



cooperative
governance

Department:
Cooperative Governance
REPUBLIC OF SOUTH AFRICA

Fire Services Indaba

Geospatial Products and Services for Fire Services

Decision Support

Mangaung | Dir: DRAEW | 27 February 2026

PRESENTATION OUTLINE

- Introduction: NDMC Directorate: Disaster Risk Assessment and Early Warnings
- Background: Legislative Mandate
- Geohub
- Products and Services in Support of Fire Services
 - Indicative Risk Profile for Fires (Mitigation)
 - Seasonal Hazard Profile (Mitigation)
 - Fire Danger Index (FDI) Tool (Early Warnings: Preparedness)
 - Fire Analysis Dashboard (Analysis: Preparedness)
 - FIRMS (Situational Awareness (Response and Analysis)
 - Disaster Charter Outputs (Response and Recovery)
 - Monitoring and Evaluation Tools (Mitigation)
- Closure and Recommendations

DIRECTORATE: DISASTER RISK ASSESSMENT AND EARLY WARNINGS

Function:

To promote, develop, evaluate and maintain National Risk & Vulnerability Profile, Disaster Management Early Warning Systems, Geographic Information Systems and Capability systems.

Key Performance Areas:

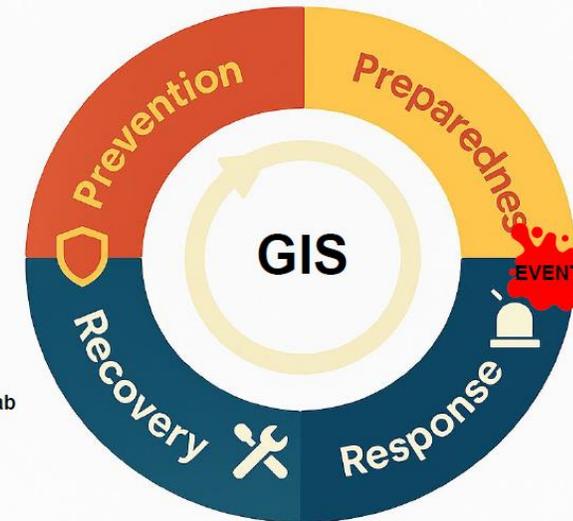
- National Indicative Risk Profile
Creation of Disaster Risk Knowledge base
- Early Warning Systems
Development, Coordination and Dissemination
- Geographic Information Systems (GIS)
Development, Maintenance and Dissemination of Disaster Management and Fire Services Spatial data.

Disaster Management Continuum

- Prevention & Mitigation**
- Scientific Hazard Analysis
 - Simulation & Modelling
 - Vulnerability Analysis
 - Risk Assessment Mapping
 - Structural: Infrastructure Assessment
 - Non Structural Measures
 - Awareness Campaigns / Training and capacity building

- Recovery, Reconstruction, Rehab**
- Spatial Planning
 - Infrastructure
 - Housing
 - Livelihoods
 - Transport
 - Security
 - Water
 - Communication
 - Agriculture

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- Preparedness**
- Resource Inventory
 - Stockpiling
 - Logistics Planning
 - Evacuation Planning
 - Needs Assessment
 - Communication Planning

- Prediction & Warning**
- Monitoring
 - Forecasting
 - Early Warnings
 - Scenario Identification

- Response**
- Situation Analysis
 - Crises Mapping
 - Decision Support
 - Evacuation and shelters
 - Dispatching and Resource Tracking
 - Early Damage Assessment

- Relief**
- Search and Rescue
 - Rubble / debris removal
 - Action Prioritization
 - Logistics
 - Relief Supply Tracking

Section 17 of Disaster Management Framework (2005)

Disaster management information system.—

- (1) The National Centre must act as a repository of, and conduit for, information concerning disasters and disaster management, and must for this purpose –
 - (a) collect information on all aspects of disasters and disaster management;
 - (b) process and analyze such information;
 - (c) develop and maintain an electronic database envisaged in subsection (2); and
 - (d) take steps to disseminate such information, especially to communities that are vulnerable to disasters.

The NDMC GeoHub aims to provide stakeholders access to spatial information products and services in relation to:

GENERAL TOOLS | EARLY WARNING SYSTEMS | HAZARD MONITORING SYSTEMS | RISK & VULNERABILITY | CLIMATE CHANGE | DISASTER MANAGEMENT TOOLS | STAKEHOLDER REPORTING | PDMC/MDMC | OTHER

NDMC - GEOHUB

Visualize, Analyse, and make informed decisions

GIS Application in Disaster Management

The Disaster Management Act 57 of 2002 calls for a "significantly strengthened capacity to track, collate, monitor and disseminate information on phenomena and activities..." Furthermore, it states that "a key to having good information systems is to invest in mechanisms and capacity for surveillance, monitoring and evaluation".

The power of GIS lies within its ability to answer questions posed in analyzing trends and displaying geographical data for decision making purposes. GIS act as consolidator of various kinds of data, spatial and non spatial, and is the best equipped tool for visualization of an emergency situation.

GIS plays a central role in the development of the National Disaster Management Center's (NDMC) enhanced National Disaster Management Information System (NDMIS). The system relates to various aspects such as Risk Assessments, Hazard Analysis, Vulnerability Assessment, Situational Awareness, Contingency Planning, Reporting Systems as well as Early Warning Systems.

Wind | Fire | Floods | Drought

- Early Warnings
- Risk and Vulnerability
- Situational Awareness
- Compliance Monitoring, Evaluation and Reporting capabilities

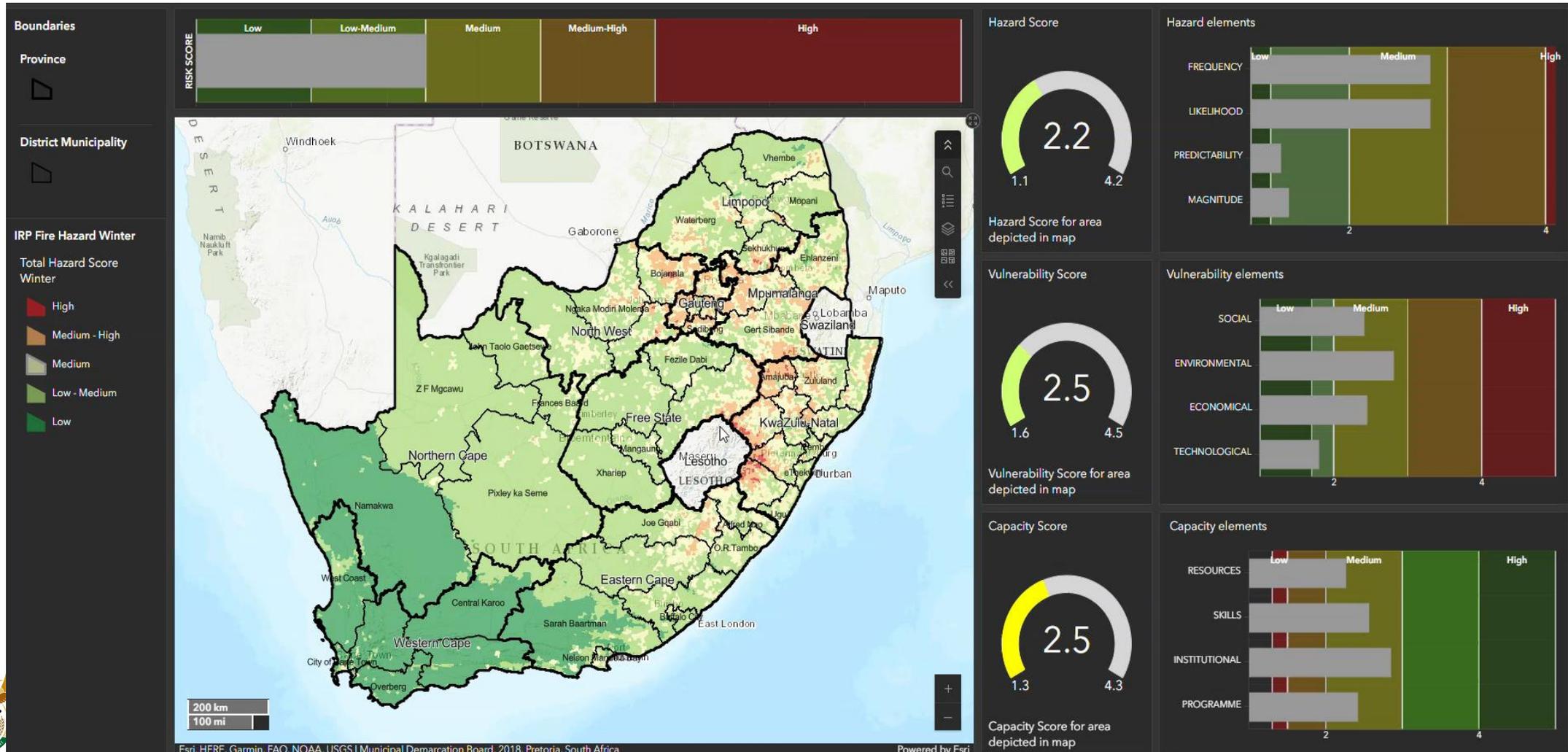
Consequently, providing viewing, analytical, information dissemination and decision support capabilities.

RISK REDUCTION (PRE-DISASTER PHASE)

Indicative Risk Profile (IRP) for Fires

This tool provides insights into the spatial and temporal (seasonal) nature of fire risk across South Africa.

Each contributor to Risk is quantified to provide insights into areas where DRR may be prioritized.



RISK REDUCTION (PRE-DISASTER PHASE)

Seasonal Hazard Profile

A Quarterly analysis of conditions leveraging the determined risk, combining this with near – real-time observations (vegetation conditions) and weather forecasting.

NDMC

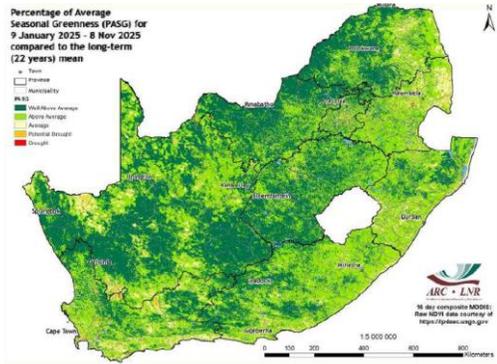
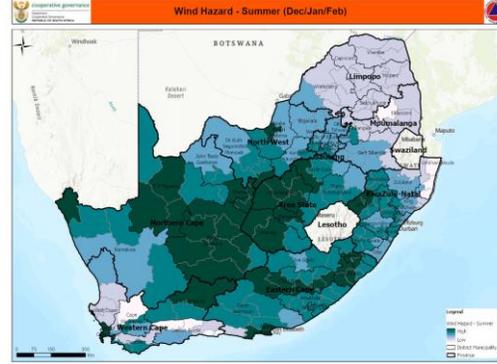
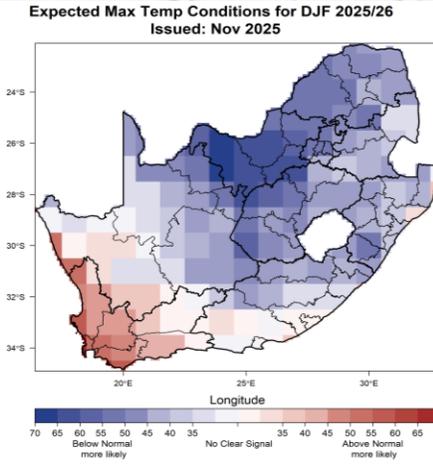
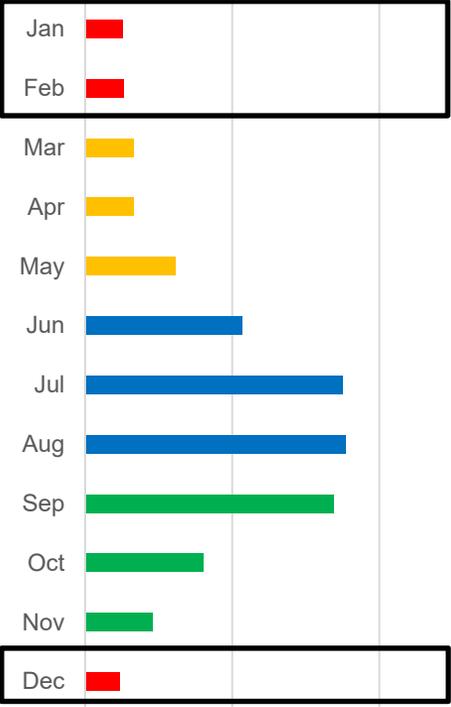
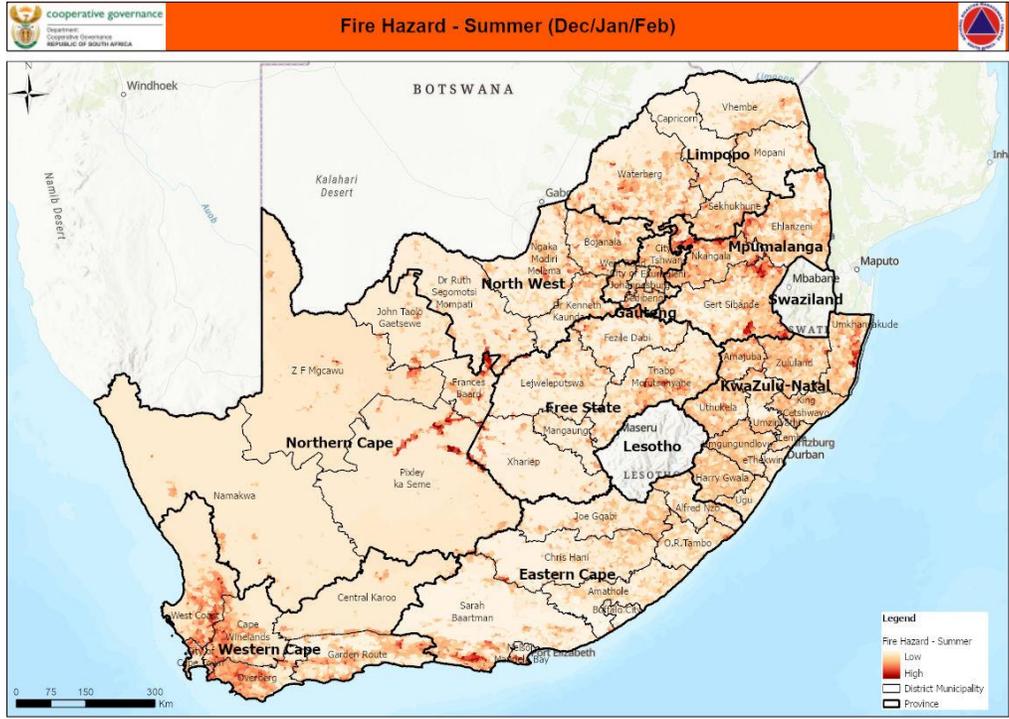
SEASONAL HAZARD PROFILE

Summer 2025/26

Prepared by:



Directorate: Disaster Risk Assessment and Early Warning
December 2025

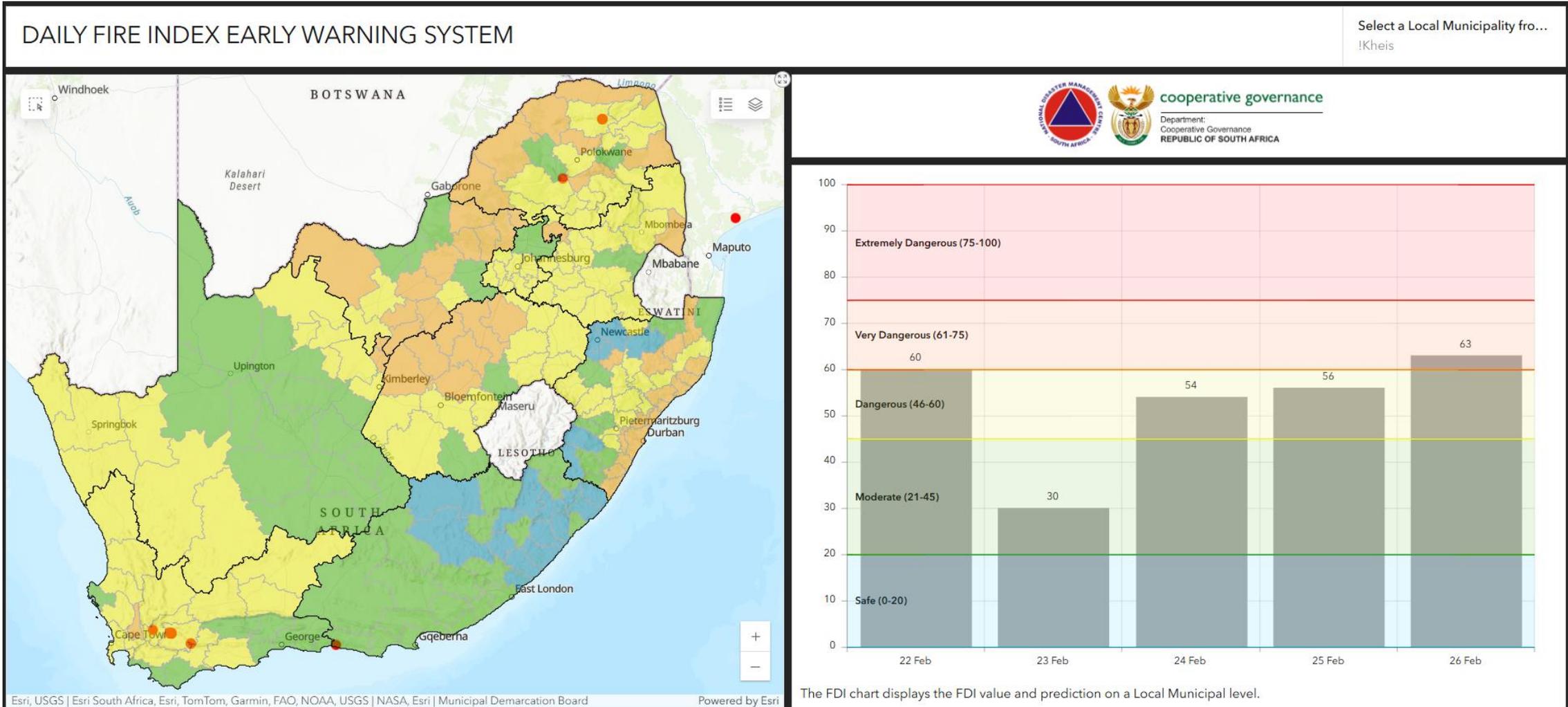


RISK REDUCTION (PRE-DISASTER PHASE)

Daily Fire Danger Index

Daily analysis and forecasting providing early warnings for fire propensity at local municipal level.

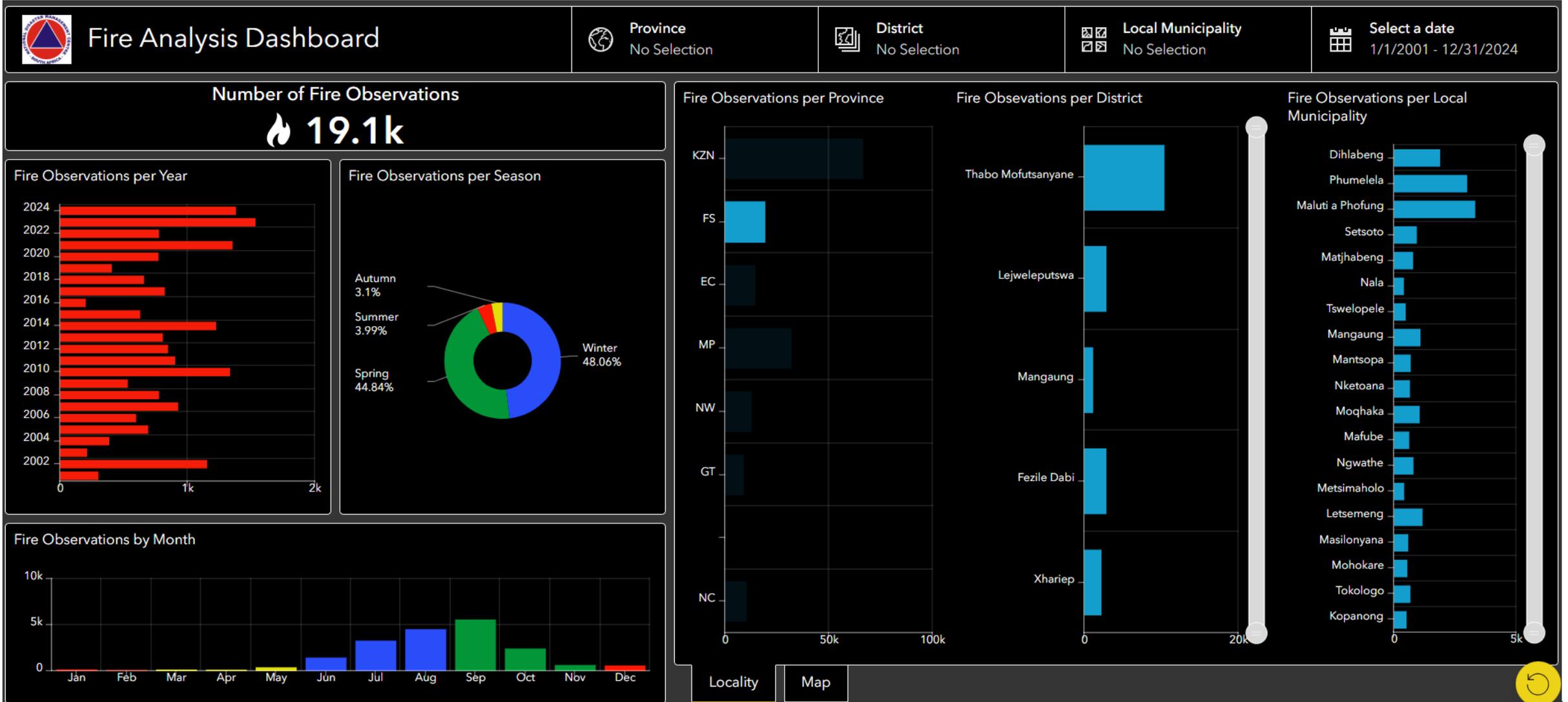
Updated Daily, provides a 5-day forecast



RISK REDUCTION (PRE-DISASTER PHASE)

Fire Analysis Dashboard (Analysis, Preparedness)

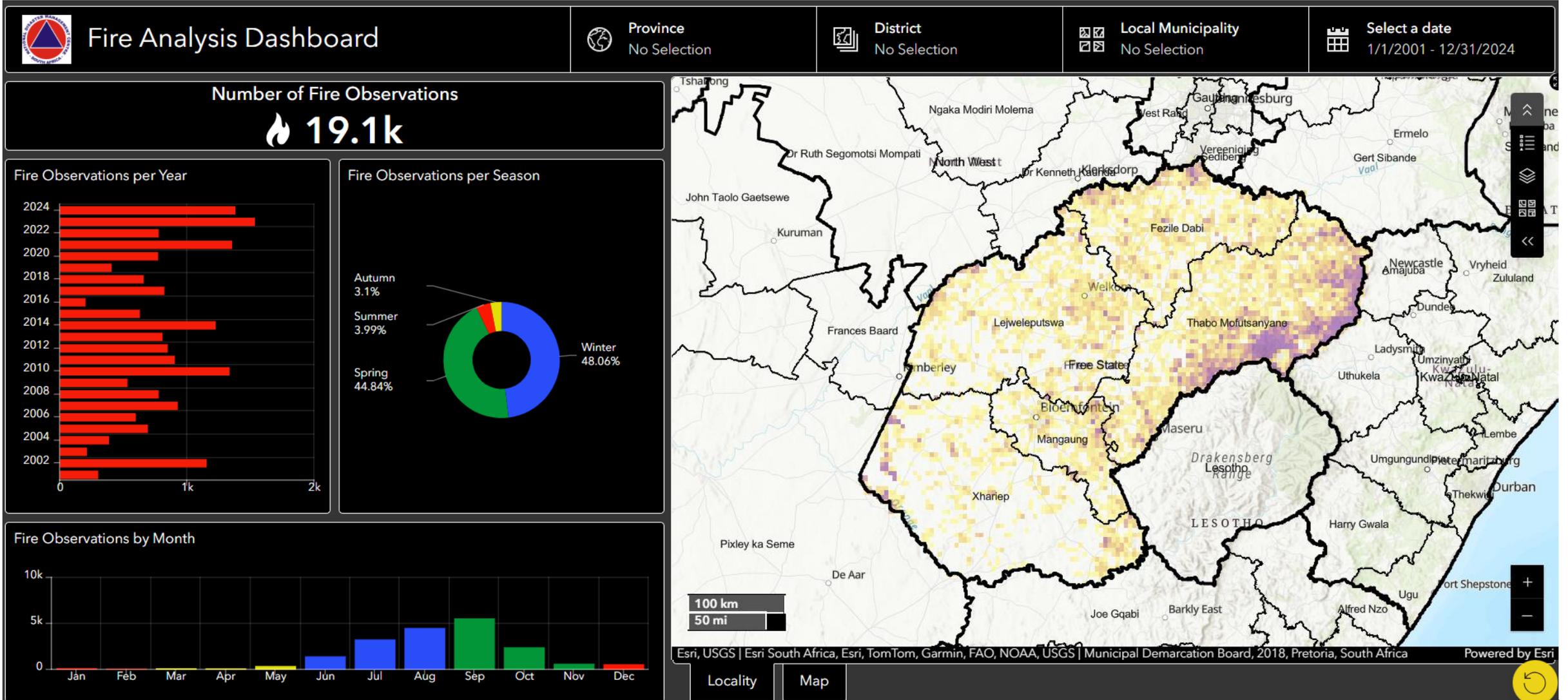
Leveraging historical satellite observations to illustrate temporal and spatial fire frequency across South Africa



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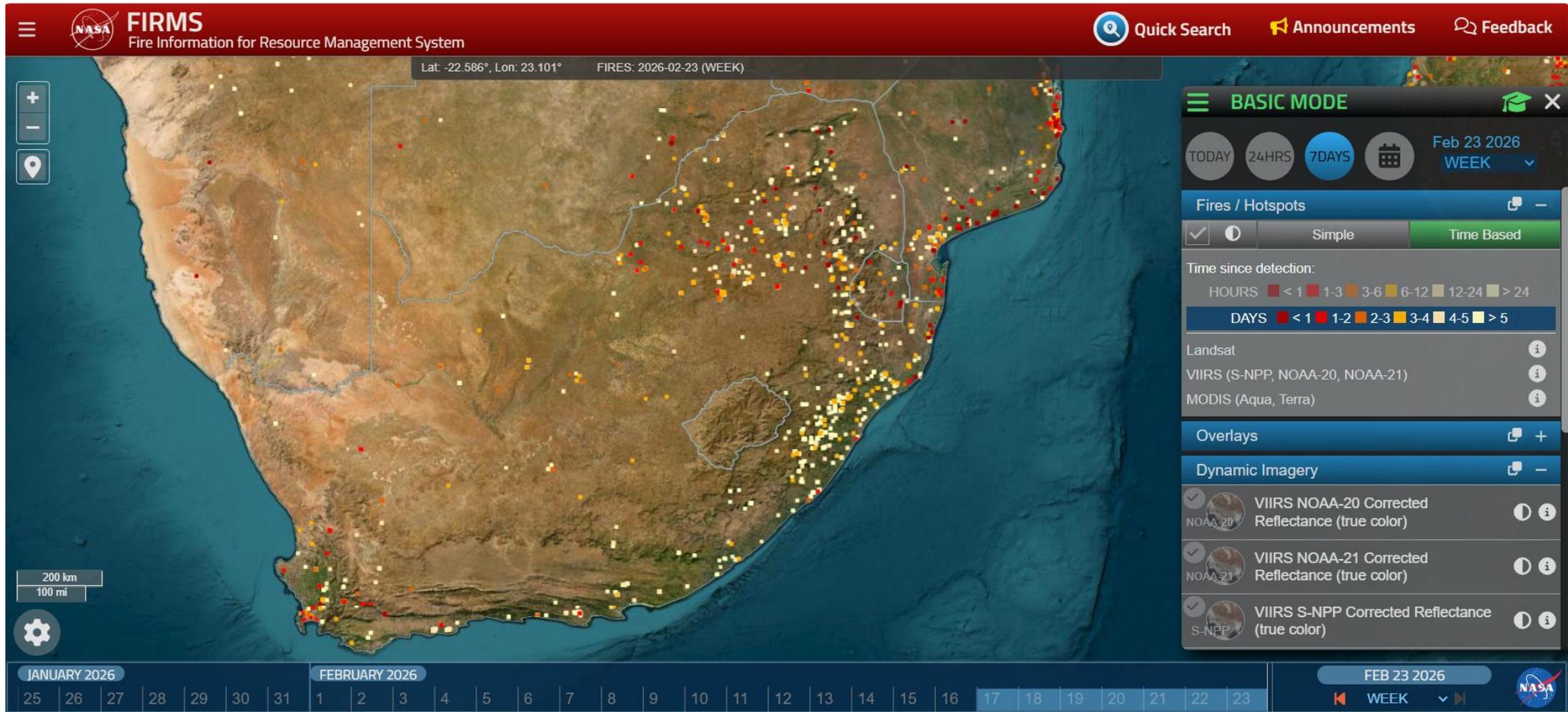
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RESPONSE AND RECOVERY (POST-EVENT PHASE)

Fire Information for Resource Management System – FIRMS (Situational Awareness, Analysis)

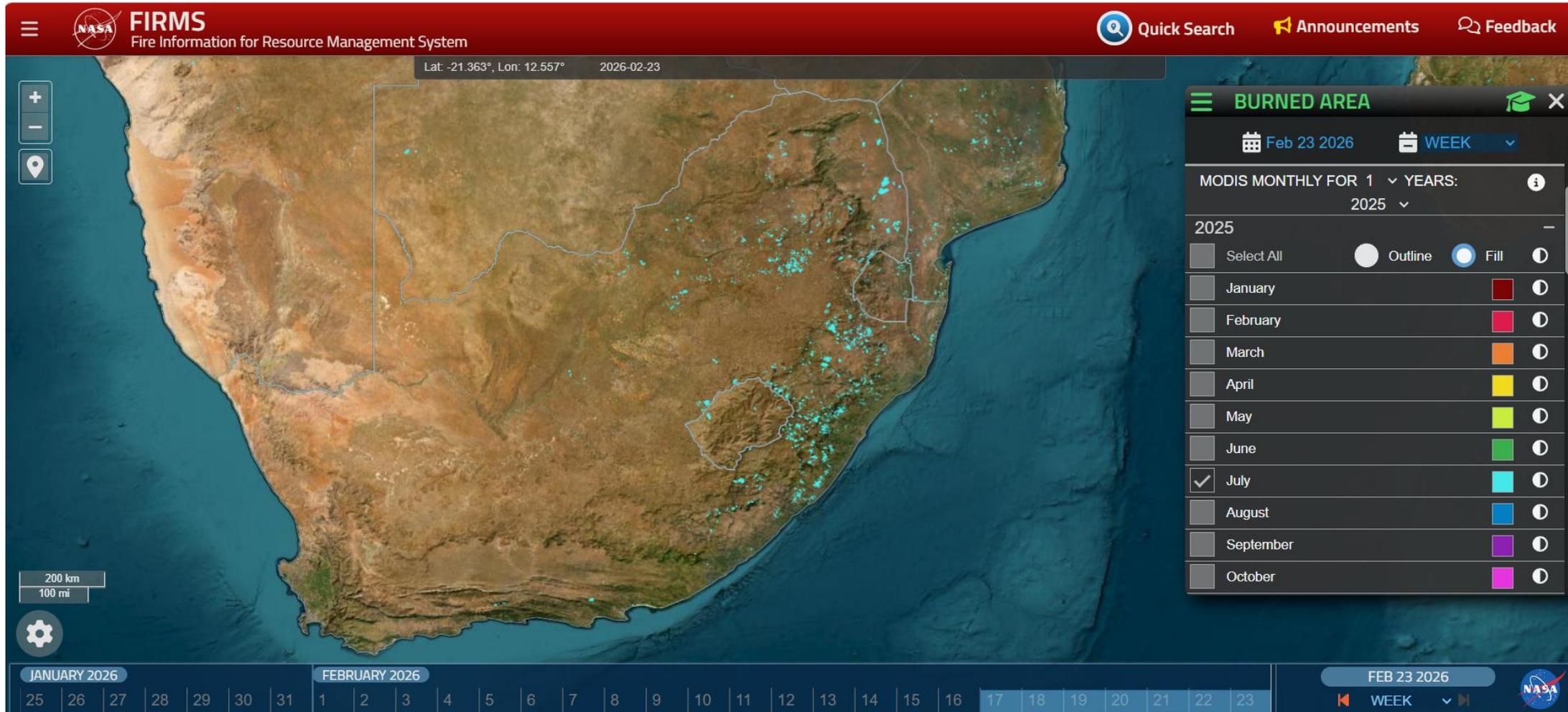
Distributes near real-time satellite data on active fires detected by MODIS and VIIRS sensors. These observations, collected by multiple international satellites, are made available globally within approximately three hours of detection.



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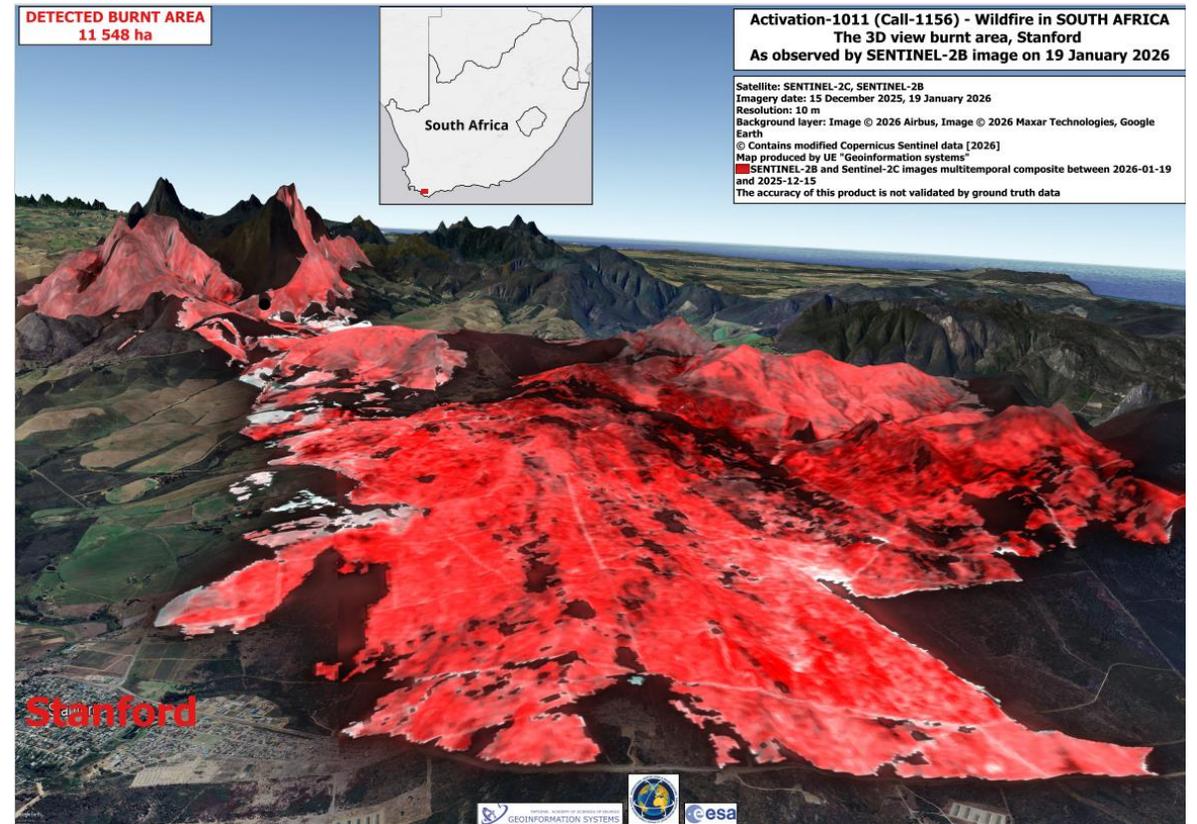
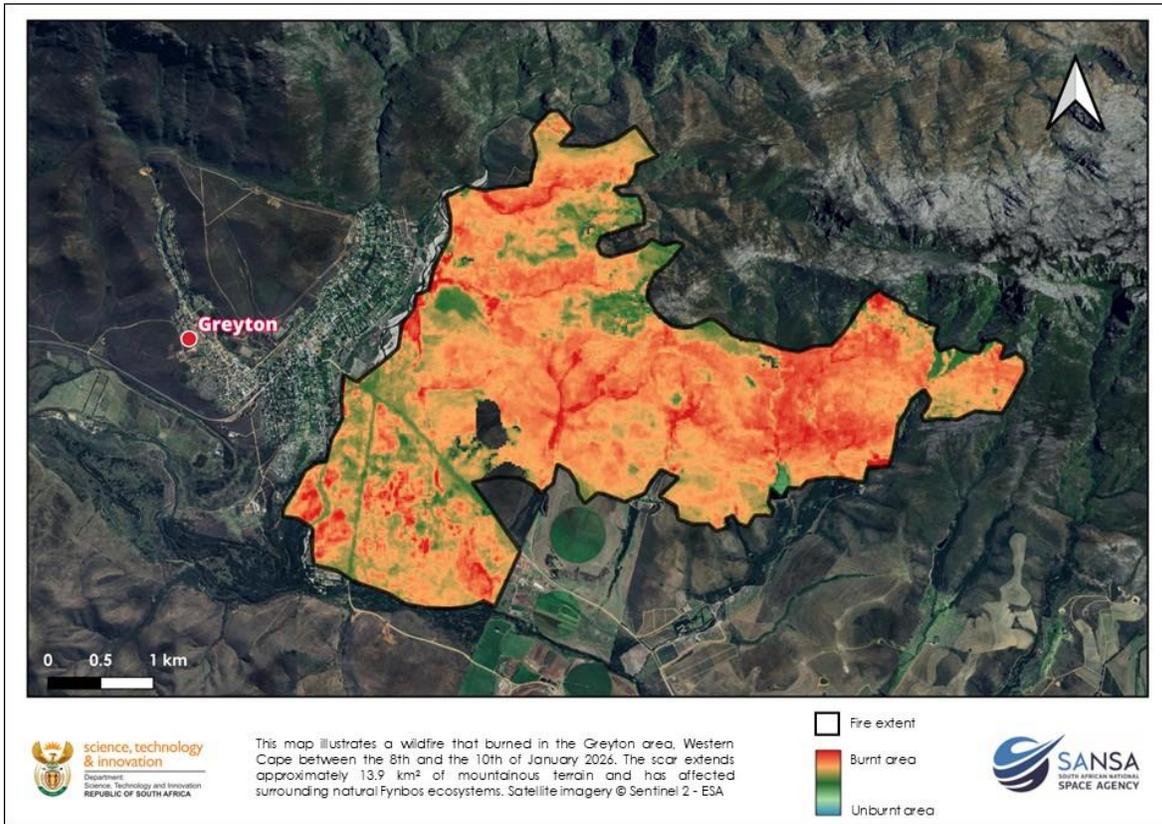
Additionally, provides historical post fire analysis (Burn Scars).



RESPONSE AND RECOVERY (POST-EVENT PHASE)

Disaster Charter (Response and Recovery)

The International Charter “Space and Major Disasters” (commonly called the Disaster Charter) is a global collaboration of space agencies that provides free satellite data and mapping support to countries affected by major disasters.

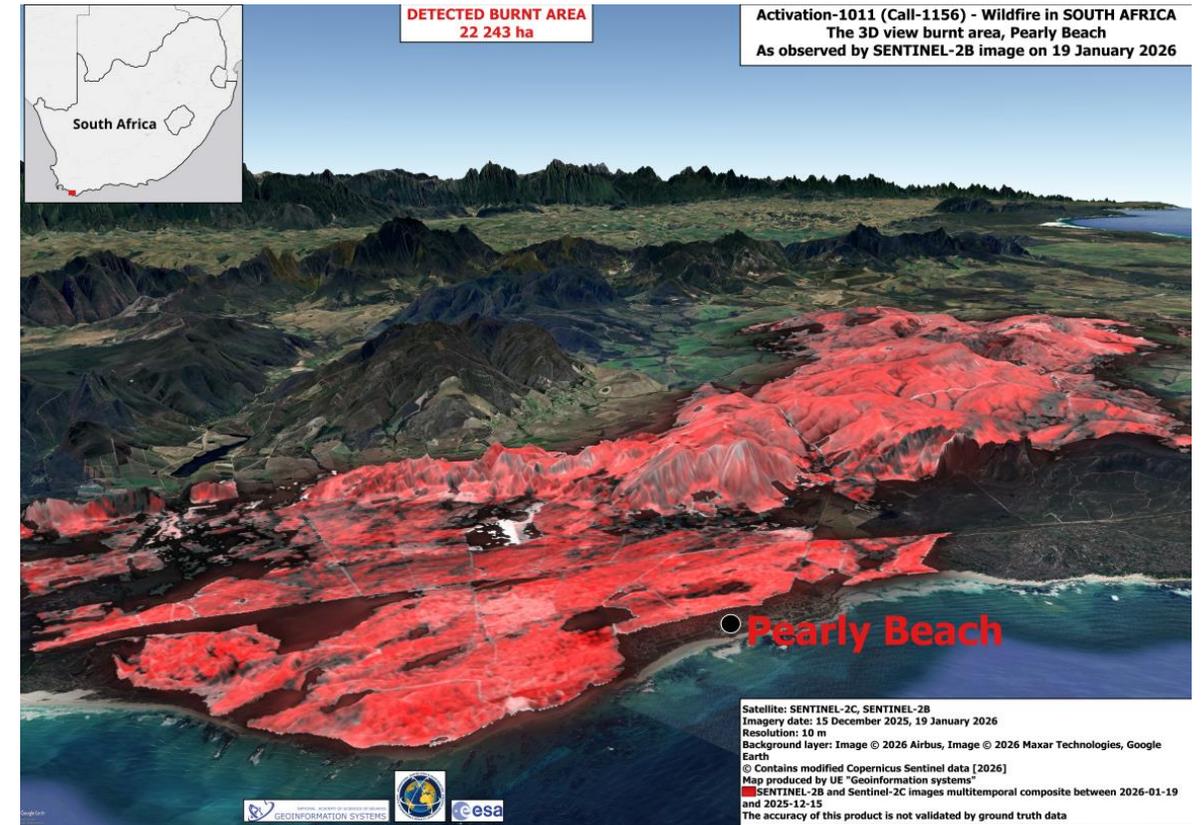
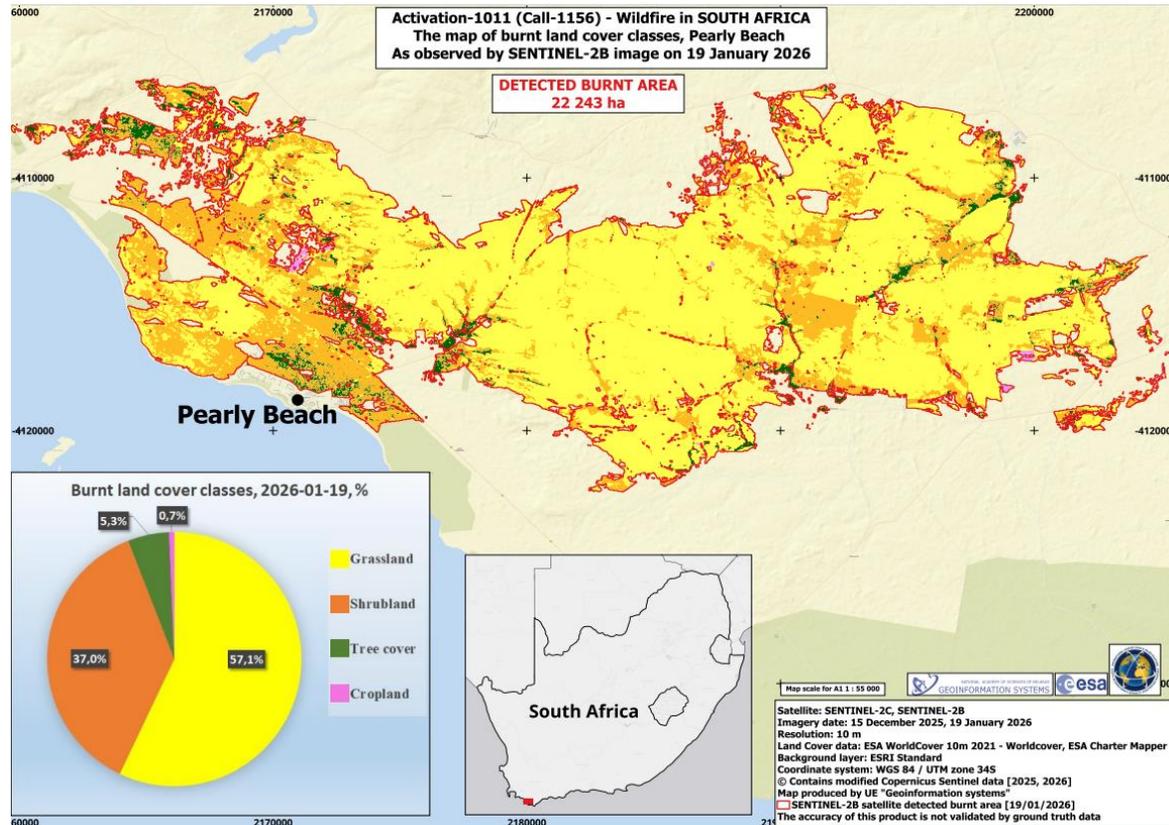


International Charter for Space and Major Disasters: Greyton and Stanford Burn Scar and 3D modelling: January 2026

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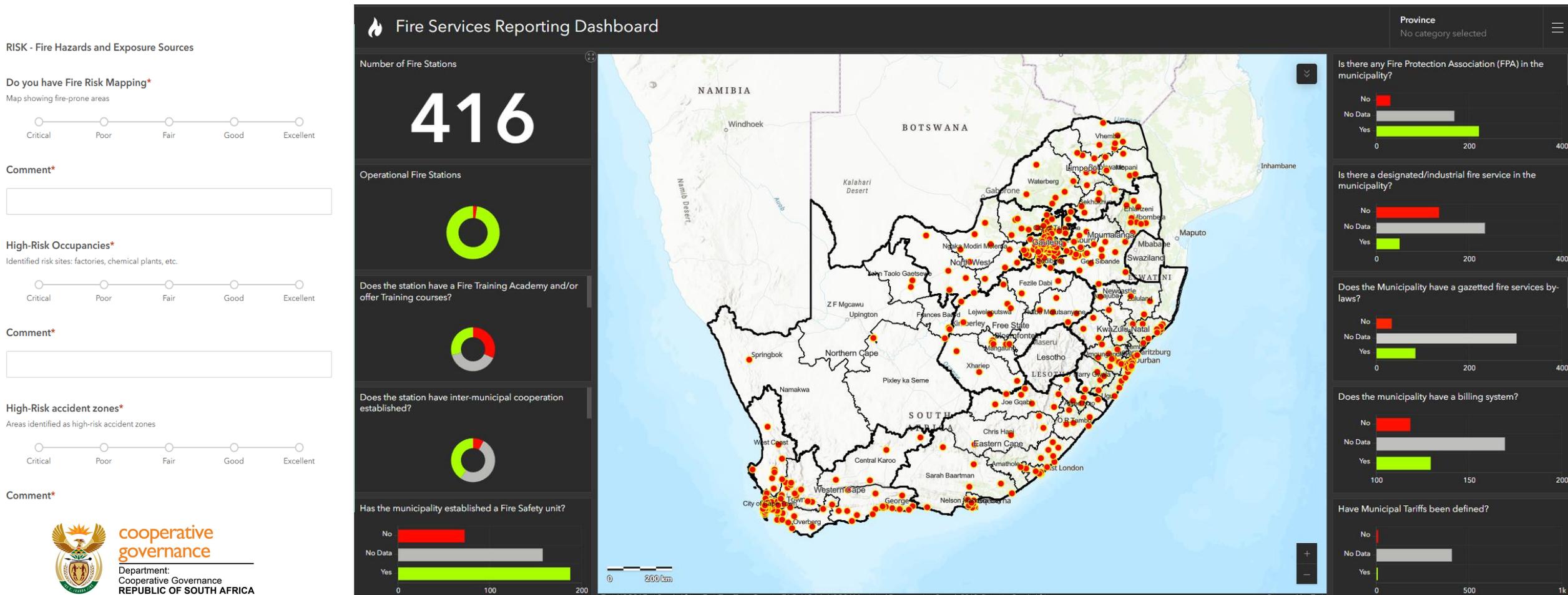


International Charter for Space and Major Disasters: Pearly Beach Burn Scar 19 January 2026

MONITORING AND EVALUATION

Reporting, Compliance, Monitoring and Evaluation (Planning)

The development of a structured national fire services information capability was initiated in response to the lack of a consolidated National Fire Services Information System. Data related to various compliance aspects is sourced by means of mobile application and presented in an executive dashboard.



CLOSURE AND RECOMMENDATIONS

The difference between a 2-hectare burn and a 2 000-hectare disaster is often time and information. The tools are available. The satellite layers, live dashboards, incident maps, and risk overlays are accessible. The real question is not whether we have capability — but whether we embed it into operational routines.

To this end we recommend:

- Conducting **training** for fire officers on portal functionality.
- Use GIS dashboards in **Joint Operations Centres** during incidents.
- **Standardize** incident reporting formats to improve spatial analysis.
- Further development, consultation and dissemination on **pre-season risk maps**.
- Closer alignment of portal outputs with **municipal disaster risk reduction plans**.

THANK YOU

Mark van Staden
Disaster Risk Assessments & Early Warnings
National Disaster Management Centre
markv@ndmc.gov.za
012 848 4625

NDMC EARLY WARNING CONTACT REGISTRATION

Registrations for Impact Based Early Warnings Contact List

- NDMC GIS Web Portal
 - <https://arcg.is/jy1G9>



Early Warnings Registrations

Use this tool to register for early warnings from the NDMC and SAWS

First Name*

Surname*

Organization
Which organization do you represent?

Organization Designation
Job Title / Position

E-mail address*

Cellphone / Mobile Number

Warnings for provinces*

Please select for which area you would like to receive warnings.

<input type="checkbox"/> Eastern Cape	<input type="checkbox"/> Free State	<input type="checkbox"/> Gauteng
<input type="checkbox"/> KwaZulu-Natal	<input type="checkbox"/> Limpopo	<input type="checkbox"/> Mpumalanga
<input type="checkbox"/> North West	<input type="checkbox"/> Northern Cape	<input type="checkbox"/> Western Cape

THE PROTECTION OF PERSONAL INFORMATION ACT (POPI):