

# WEATHER FROM SPACE: A GAME CHANGER FOR AFRICA

Harnessing Meteosat Third  
Generation (MTG) for Zambia



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# Why MTG Matters: The Sum of Its Parts

## Coverage

Continuous, Africa-wide monitoring that captures fast-moving fronts and vast regional fire events without blind spots.

## Detection

Lightning spikes and RGB mapping provide literal, visual alarms for severe weather long before ground impacts occur.

## Speed

Near real-time data delivery (every 10 minutes) radically improves 0–6 hour nowcasting for faster, data-driven decisions.

## Access

Free data provision empowers national forecasting capacity, long-term climate research, and superior environmental stewardship.





## Anticipating the Next 6 Hours

From tracking regional tropical systems to pinpointing heavy local rainfall, MTG empowers critical Nowcasting (0-6 Hours).



### Convective Storms

Track rapid cloud development, thunderstorms, and moving tropical systems.



### Severe Hazards

Detect heavy rainfall potential and monitor real-time lightning activity to gauge storm intensity.



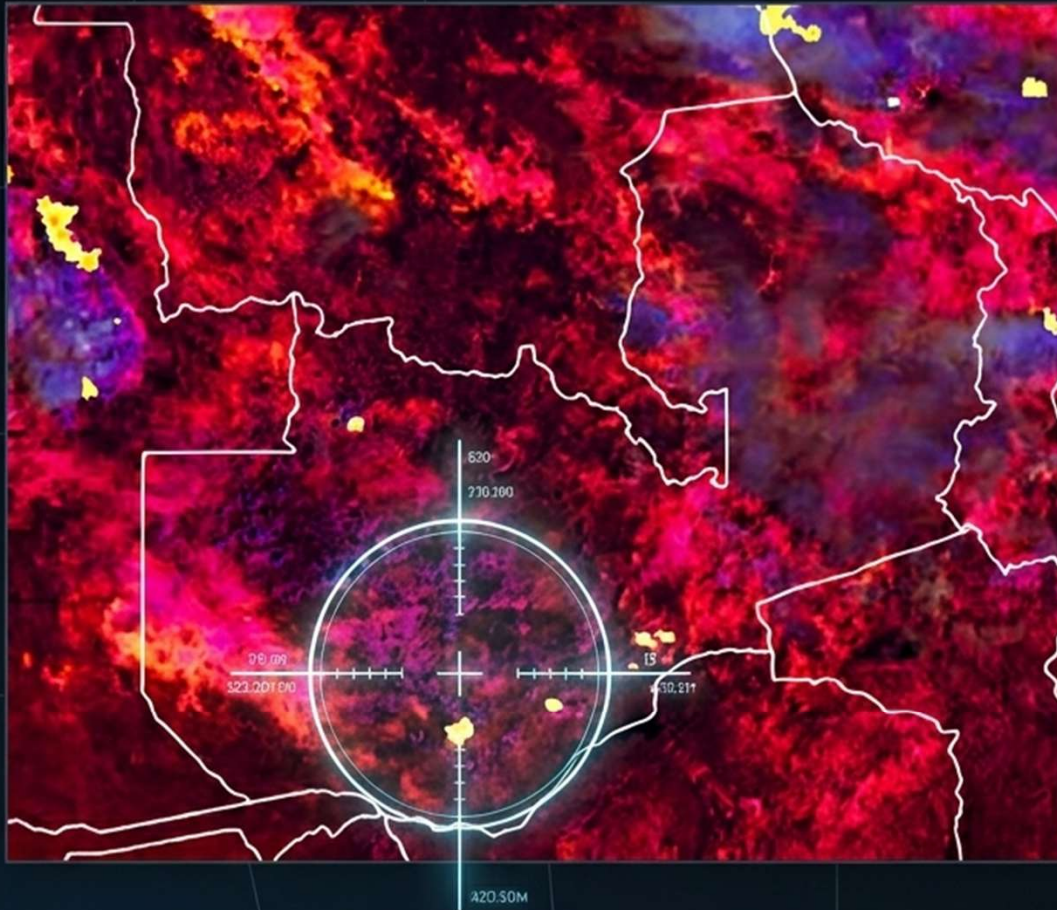
### Aviation Safety

Identify fog, stratus clouds, and low visibility conditions to improve flight safety and routing.



### Environmental Monitoring

Monitor bush fires and combine with vegetation data to map severe fire-risk areas.



# Case Study 1: The Storm

**Southern Province  
Flash Flood**

**February 7, 2026**

# The MTG Toolset: Seeing the Invisible

## Lightning Imager (LI)



### ⚡ What it does:

Detects lightning flashes in near real-time across a wide area.

### ⚠ Why it matters:

More lightning flashes indicate a stronger, more dangerous storm. LI lets forecasters track storm intensity as it happens.

### 🔔 The Analogy:

The Smoke Alarm

Alerts forecasters to dangerous storm intensification before the worst of the weather hits the ground.

## RGB Cloud Phase Imagery



### ↔ What it does:

Reveals cloud phases (ice or water) and the sizes of the cloud particles.

### ⚠ Why it matters:

Ice clouds at high altitudes signal dangerous, towering storms capable of producing heavy rain and hail.

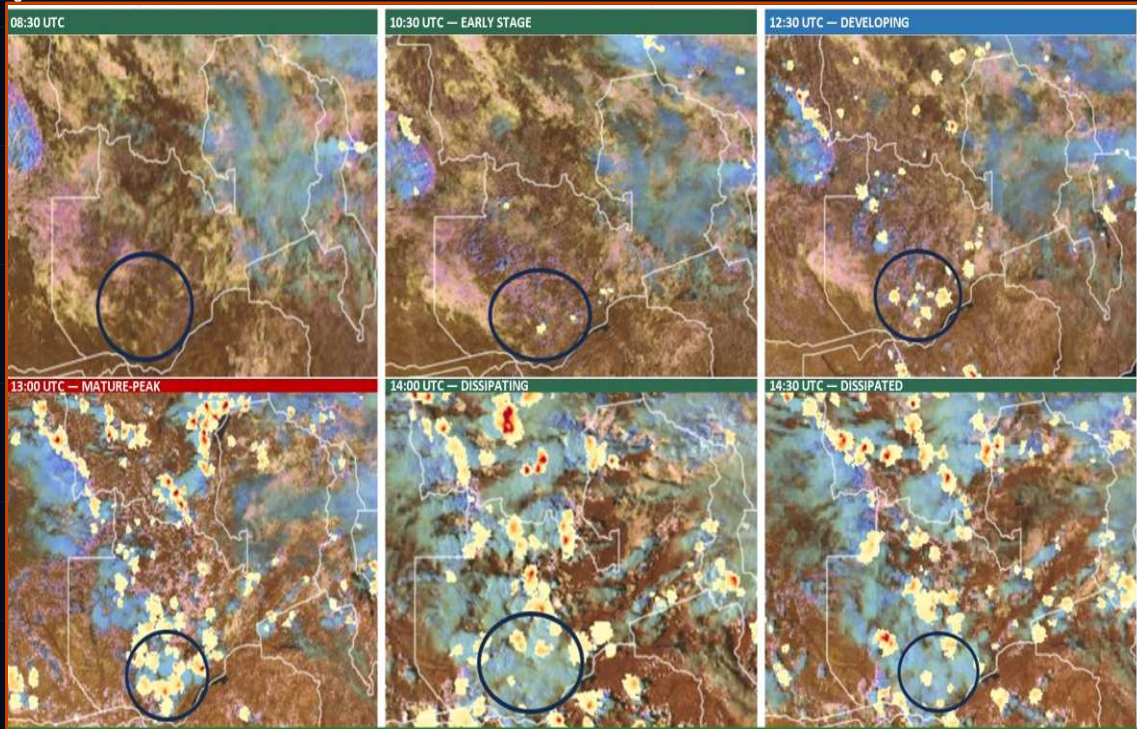
### ✖ The Analogy:

The Color X-Ray

Reveals internal storm structure and severe weather potential that is completely invisible to the naked eye.

# Storm Progression — Southern Province Flash Flood

## 07 February 2026 | 08:00 – 14:30 UTC



### 10:30 UTC | Early Stage

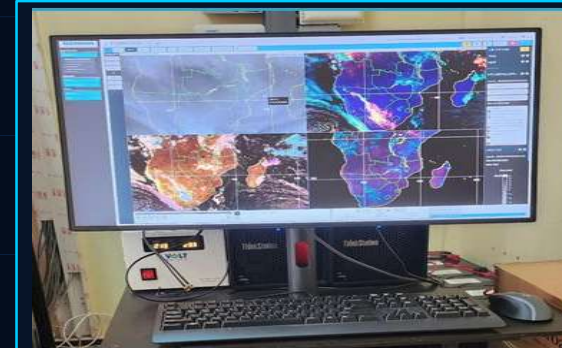
Mixed-phase clouds forming over Southern Province. Low lightning detected. Storm cell organizing.

### 12:30–13:00 UTC | Mature Peak

Province-wide ice clouds. Lightning surges to maximum. Widespread flooding. Rain over Namwala & Choma.

### 14:00–14:30 UTC | Dissipated

Lightning drops. Clouds thin and clear. Storm weakens across the province.



### PUMA Workstation

Real-time satellite monitoring system used to track and analyze this storm event.

08:30

10:30

12:30

13:00

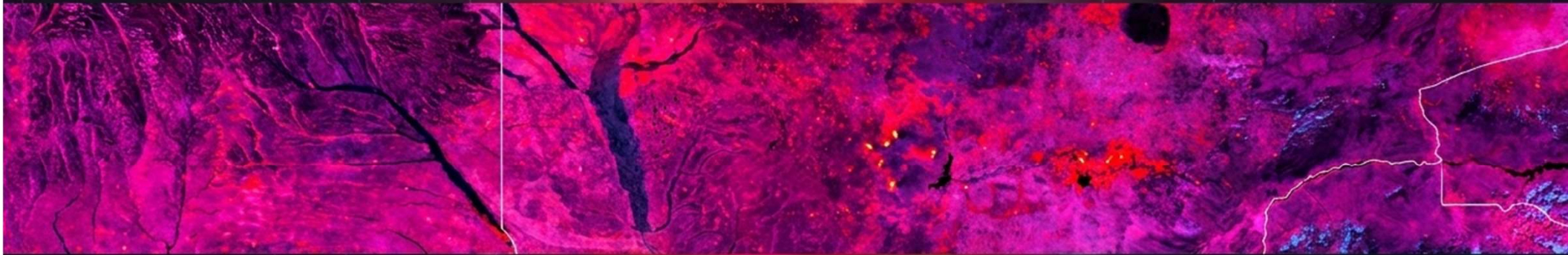
14:00

14:30

# Case Study 2: The Fire

## Southern Africa Wildfire Peak Season

### August 7, 2025



# Reading the Two Images Together

Neither image alone tells the full story. Together, they dictate the emergency response within minutes.

Multi-Product Analysis  
= Complete Situational  
Awareness.

## Fire Temperature RGB (The Source)

- Locates hotspots precisely; colour saturation reveals intensity.
- **Brighter Red** = Hotter active fire.
- **Observation:** Dense fire clusters detected in the north (upper-left); scattered hotspots across the centre and east.

## True Colour RGB (The Impact)

- Confirms smoke plumes and regional haze.
- **Grey Haze** = Air quality impact.
- **Observation:** Smoke confirmed drifting aggressively eastward over the Southern Province.

# MTG Supporting Zambia's Early Warning Systems

## **Nowcasting** 0-6 Hour Forecasting

MTG's 10-minute scan cycle provides ZMD forecasters with near-real-time storm tracking across Zambia's diverse .

### **Key outputs:**

- Rapid convective initiation alerts Zambia
- Lightning Imager data for storm cell intensity tracking
- High-impact weather for **aviation, agriculture, transport and Public.**

## **Daily Weather Forecasting** 24-72 Hour Forecast

ZMD forecasters integrate MTG data with NWP model output to produce sharper, spatially accurate daily bulletins for all 10 provinces of Zambia.

### **Key outputs:**

- High-impact weather advisories for agriculture, transport and health
- Public bulletins broadcast across national media channels

## **Flash Flood Monitoring** Rapid Onset Flood Detection

Zambia's rainy season brings intense convective systems. MTG tracks storm evolution of storms, enabling hour-by-hour flood guidance.

### **Key outputs:**

- Real-time monitoring of Kafue, Luangwa and Zambezi flood-prone basins
- Timely alerts to DMMU and the public.

## **Fire Monitoring** Wildfire Detection

Zambia's dry season sees widespread fires across the country. MTG's Fire temperature RGB product provides - Near-real-time active fire hotspot detection.

### **Key outputs:**

- Smoke plume tracking for air quality and public health alerts.
- High-impact weather for **wildlife, agriculture, transport and Public.**

## CONCLUSION

# MTG: A Transformative Tool for Zambia's Weather Resilience

### Real-Time Awareness

MTG's 10-minute scan cycle and Lightning Imager deliver the speed ZMD needs to track fast-moving storms, flash floods, and wildfires as they develop across Zambia.

**Key outcome:** Faster, more accurate alerts to save lives and protect livelihoods.

### Proven in the Field

The Southern Province Flash Flood and the Southern Africa Wildfire case studies demonstrate MTG's ability to track complex, high-impact events with precision and clarity.

**Key outcome:** Confidence in MTG data to support operational decision-making at ZMD.

### A Future-Ready Partnership

ZMD's collaboration through the PUMA Workstation positions Zambia at the forefront of African meteorological services, ready for increasingly extreme weather.

**Key outcome:** A stronger, more resilient early warning system for all Zambians.

**"Weather from Space is no longer the future — it is Zambia's operational reality today."**

**Thank You for your attention**  
**Merci pour votre attention**

**Question and Comments**

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