



**ACMAD**

African Center of Meteorological  
Applications for Development

Centre Africain pour les Applications  
de la Météorologie au Développement

<https://acmad.org>

## Meteosat Third Generation (MTG). Weather from Space: A Game Changer for Africa

### Operational use of MTG products at ACMAD

12 May 2026

Léon Guy Razafindrakoto





## **Content:**

1. ACMAD's Vision & Mission
2. Operational use of MTG products at ACMAD
3. Use of MTG-derived products
4. Challenges and Gaps



# 1. Vision and Mission

## Vision

To be a world-class continental operational Centre of excellence contributing to a prosperous Africa with its people who are well-resilient to extreme events and empowered to reduce climate change impacts

## Mission

To act as an African weather and climate watch centre and a centre of excellence for the Applications of meteorology for sustainable development

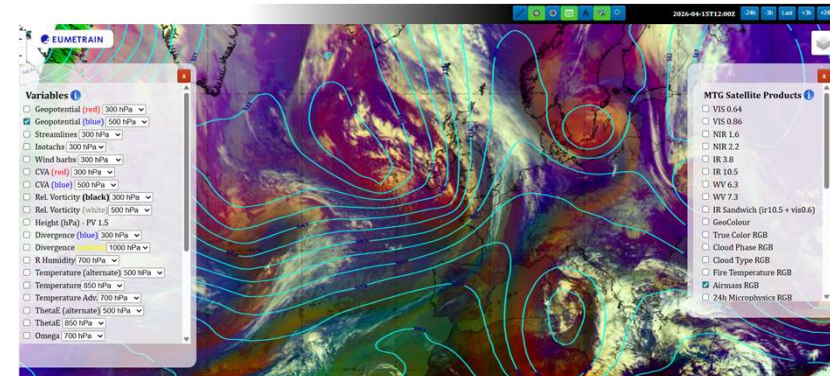
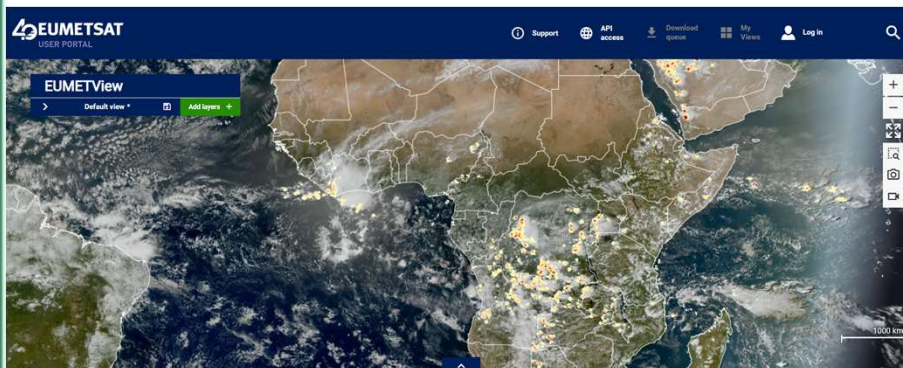
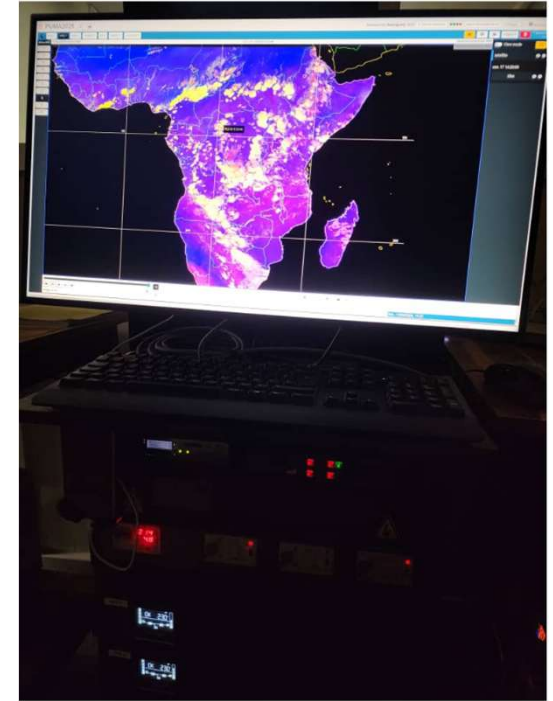
- **A Continental Weather and Climate Watch Centre for Africa** with Monitoring, forecasting and *early warning* for droughts, floods, tropical cyclones and other extreme events as functions
- **Institution of excellence for the Applications** of meteorology for sustainable development with capacity building, methods, tools and products development, contribution to global weather and climate programs, database , research and innovation as functions



## 2. Operational use of MTG products at ACMAD

### Data access:

- EumetCast Africa > PUMA2025
- Internet > Eumetview (<https://view.eumetsat.int>)
  - > EumeTrain (<https://www.eumetrain.org>)





## 2. Operational use of MTG products at ACMAD

### 1. Monitoring of deep convective systems with :

- Cloud type product
- Cloud phase product
- Convection product
- Lightning Accumulative Flash Area (LI – AFA)
- Rapidly Developing Thunderstorm (RDT)

### 2. Sand and Dust Storm Monitoring

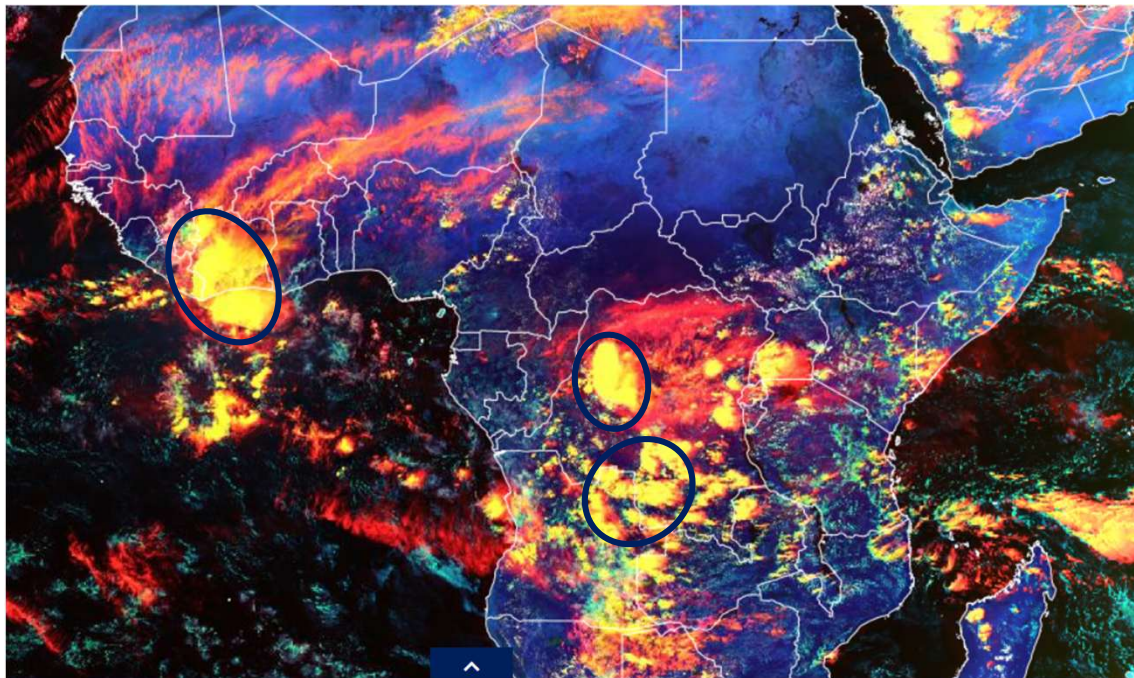
### 3. Fog/low cloud detection (low visibility)

### 4. Tropical Cyclone Monitoring











## 2. Operational use of MTG products at ACMAD

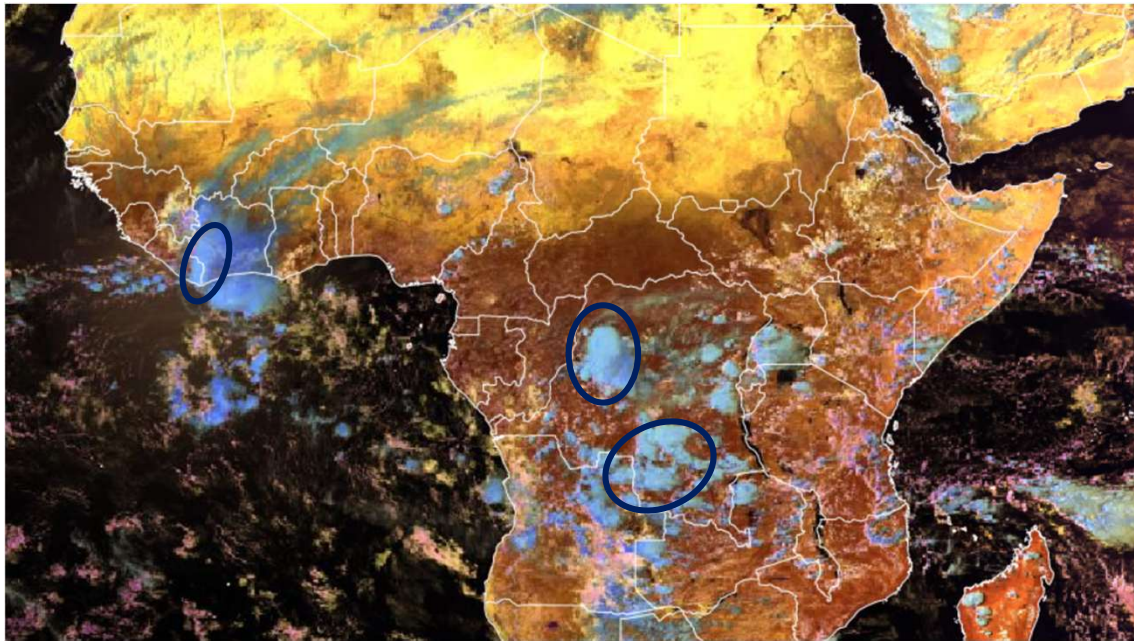
### Severe Weather Monitoring (Deep convective systems, strong wind)














Cloud Type RGB 20260414 13:10UTC

-  Thin cirrus clouds over land and sea (darker red over the seas)
-  Thick ice clouds (multi-layered clouds with ice on top)
-  Land
-  Low to mid-level water clouds
-  Mixed phase clouds (at low and mid-levels)
-  High and thin water clouds (more orange if ice is present)
-  Super-cooled water clouds
-  Snow and ice on the ground

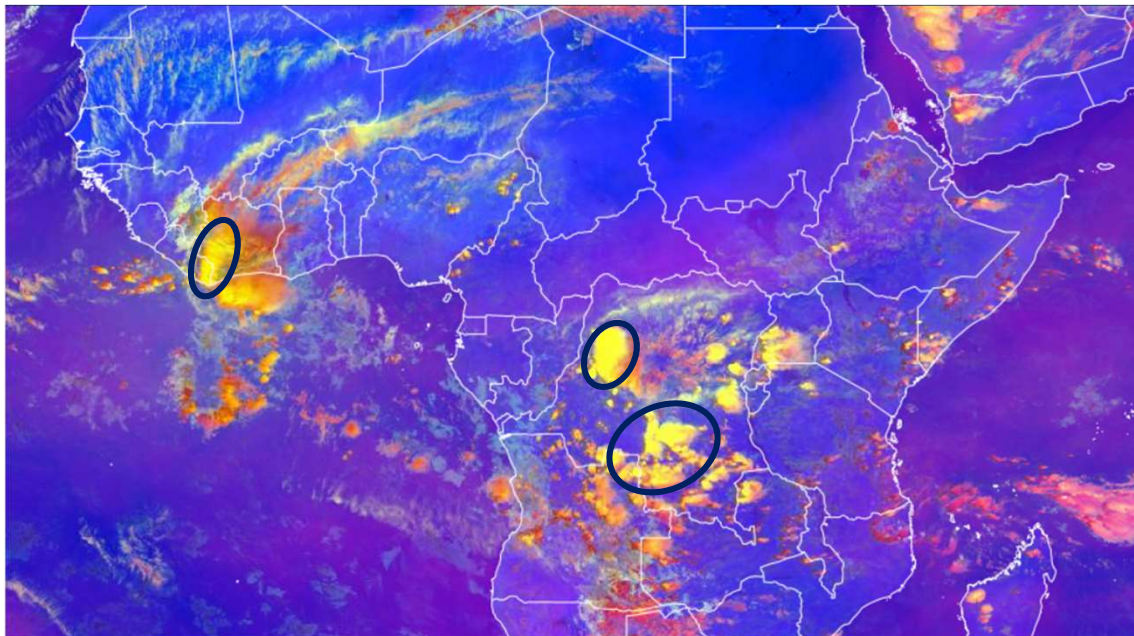
## Monitoring of Deep Convective Systems









**Cloud Phase** RGB 20260414 13:10UTC

-  Thick ice clouds, large particles
-  Thick ice clouds, small particles
-  Thin ice clouds
-  Thick water clouds, small droplets
-  Thick water clouds, larger droplets (larger the droplets are darker pink)
-  Thick water clouds, extreme large droplets (or thick mixed phase clouds)
-  Thin water clouds over sea
-  Vegetated land (snow free)
-  Sea (ice free)
-  Desert
-  Snow on ground or sea ice

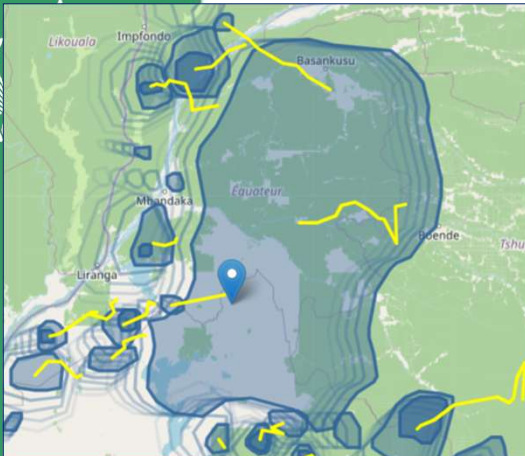
## Monitoring of Deep Convective Systems



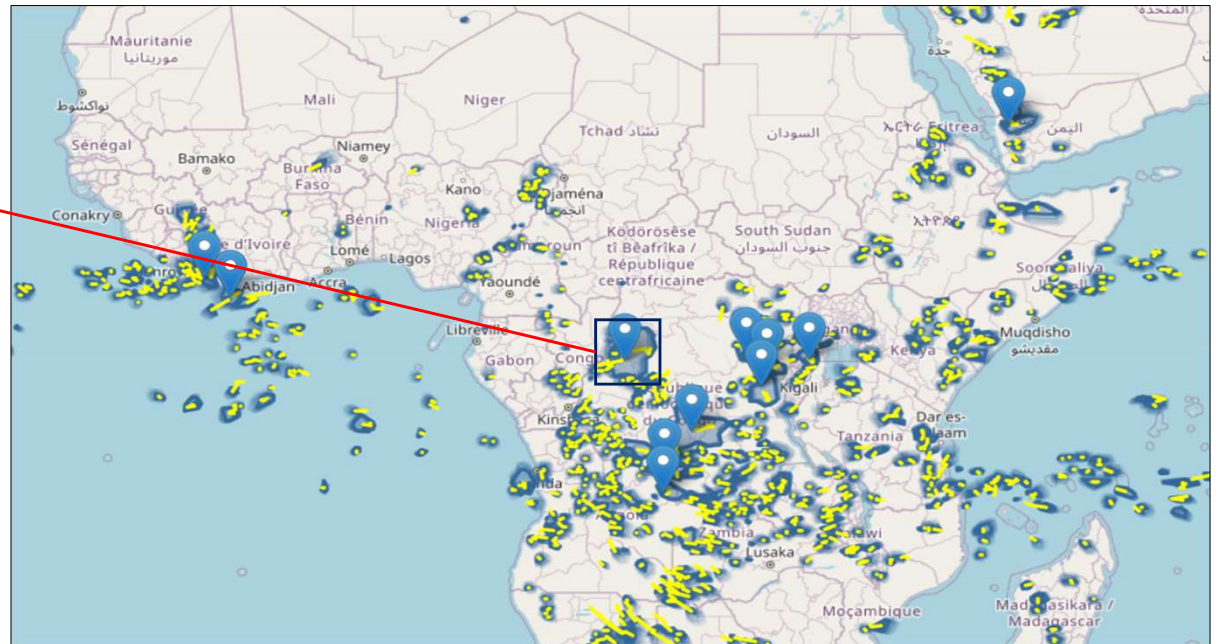
**Convection RGB 20260414 13:10UTC**

-  Thick ice cloud with small ice crystals on the top and/or very cold cloud top (Shades of yellow)
-  Thick ice cloud with large ice crystals on the top and/or not very cold cloud top (Shades of red)
-  Thin ice cloud with large ice crystals (Shades of pink/violet depending on the transparency)
-  Thin ice cloud with small ice crystals (Shades of mauve depending on particle size and cloud transparency)
-  Super-cooled water cloud (Greyish with some green-yellow shades if very cold)
-  No mid or high cloud (Shades of blue or magenta)

## Monitoring of Deep Convective Systems

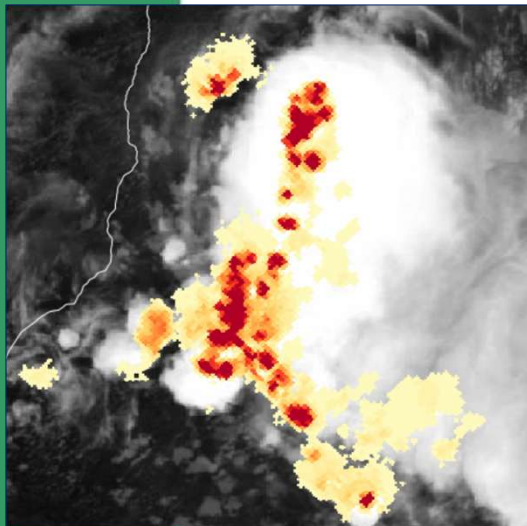
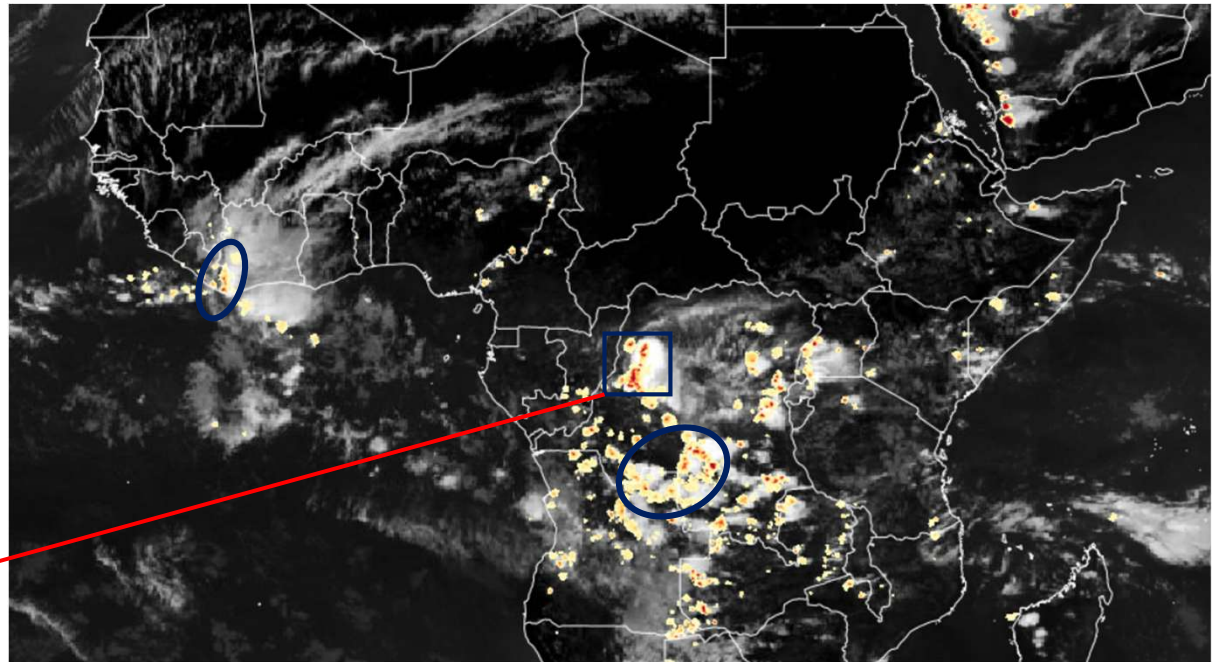


**OPIC\_SAT\_20260414131500\_06838\_globeM**  
 Level: BT  
 ContourTemp: -70(°C) / Tmin: -93.1(°C)  
 Surface: 79925(km2)  
 Duration: 210 (min)  
 Stage: Mature  
 Severity: 3  
 Mvt: 10.9 (m/s) 270 (deg/North)  
 CoolingRate: 3.4 (°C/h)  
 ExpansionRate: 38786(km2/h)  
 TopPressure: 100 (hPa)  
 CloudPhase: glace  
 IceCrystalRisk: 1  
 MaxRainRate: 10 (mm/h)  
 Lightning: Pos(145) Neg(0) Intra(0:0+,0-) Sat(4454)  
 LightningJump: non SatLghJump: observe



**Rapidly Developing Thunderstorm (RDT) 20260414 13:10UTC**

## Monitoring of Deep Convective Systems

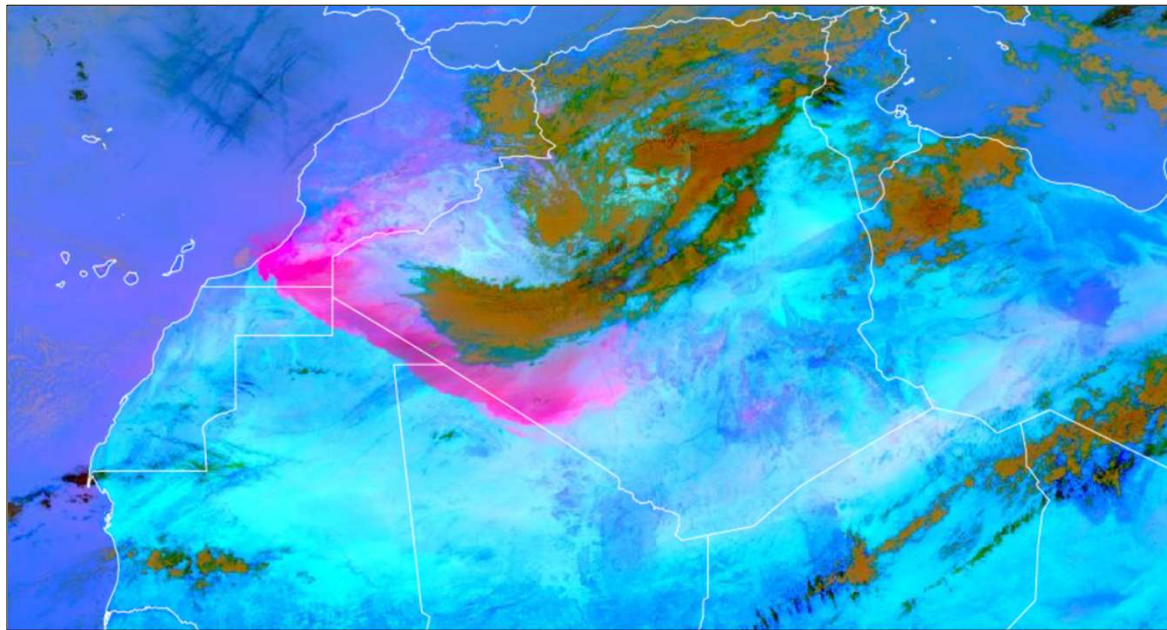


**Lightning Accumulated Flash Area (LI-AFA, L2) 20260414 13:10UTC**

*For Africa, MTG's high temporal resolution, advanced spectral capabilities, and continuous lightning detection significantly enhance the detection, monitoring, and evolution of convective systems, which are critical for severe weather forecasting.*

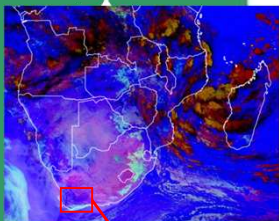


## Sand & Dust Storm Monitoring

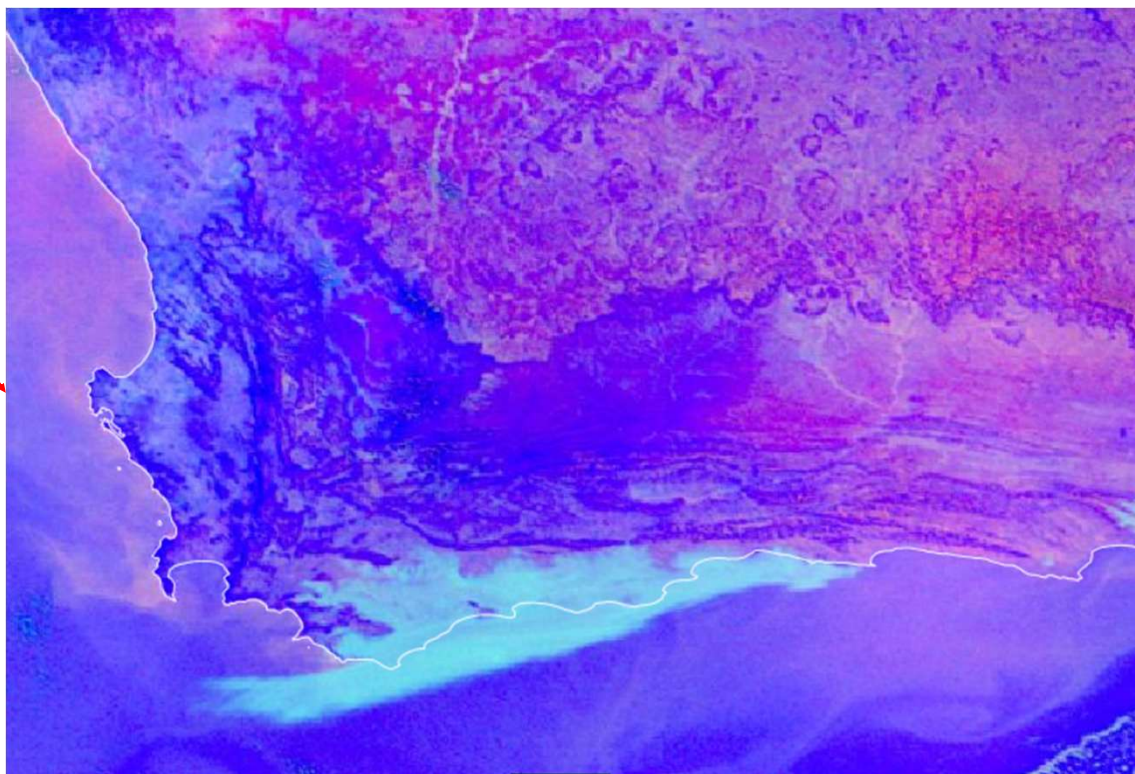


- Dust storm**
- Low, water cloud
- Thick, mid-level cloud
- Thin, mid-level cloud
- Cold, thick cloud
- Ocean
- Warm desert
- Cold desert
- Warm land

**Dust RGB 20260330 12:00UTC**



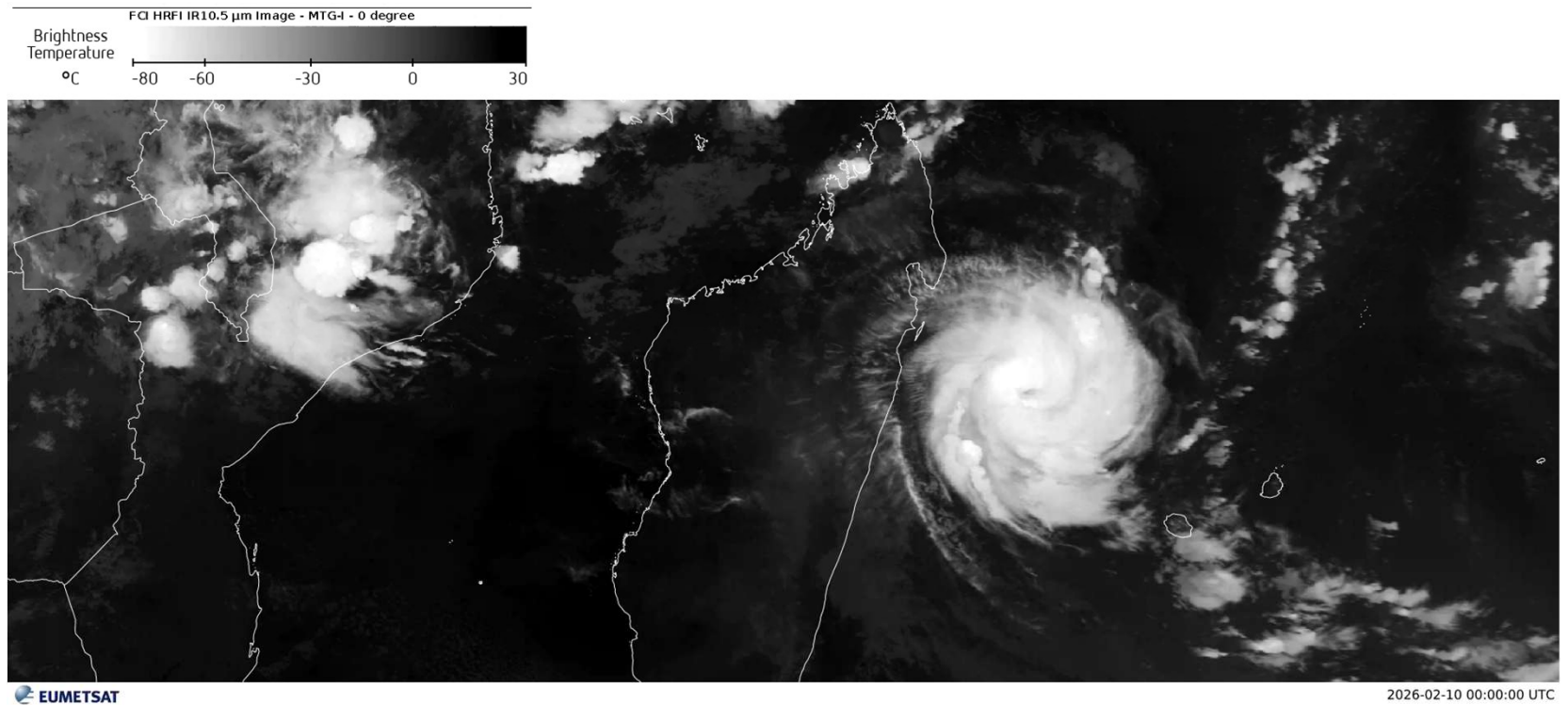
## Fog/low cloud detection (low visibility)



Fog/Low Clouds RGB 20260311 03:00UTC

-  Cloud free sea and land  
(Shades of blue or pink depending on temperature and water vapour content)
-  Warm, thick fog/low cloud, with small droplets (Shades of aqua)
-  Cold, thick fog/low cloud  
(Greenish in case of small droplets; pinkish grey in case of large droplets or thin cloud)
-  Thick mid-level cloud  
(Shades of tan)
-  Thick ice cloud  
(Reddish brown)
-  Very cold thick ice cloud  
(Reddish brown with green dots)
-  Thin cirrus  
(Shades of dark blue)
-  Very thin cirrus  
(Shades of magenta depending on the transparency and the type of underlying surface)
-  Clouds during daytime  
(Shades of magenta, red or blue)

## Animation for Tropical Cyclone Track



Tropical Cyclone GEZANI: 20260210 00:00 – 20260211 06:00UTC



### 3. Use of MTG-derived products

MTG Data

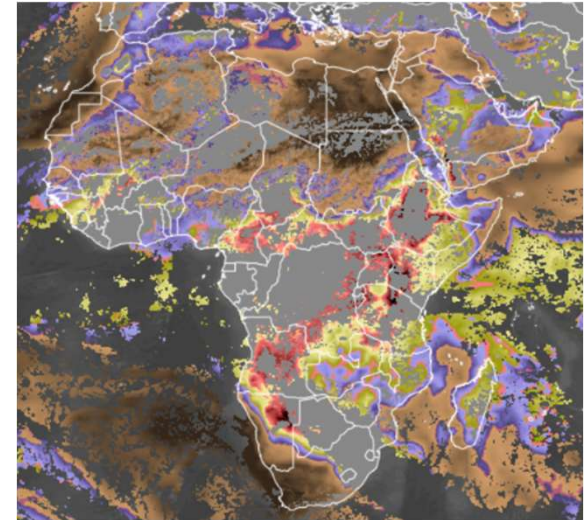
NWP products

SAFNWC-GEO products (*Global Instability K-indexes, Precipitable water, Cloud Height, RFE, ...*)  
*(With AMSAF)*

MTG Data

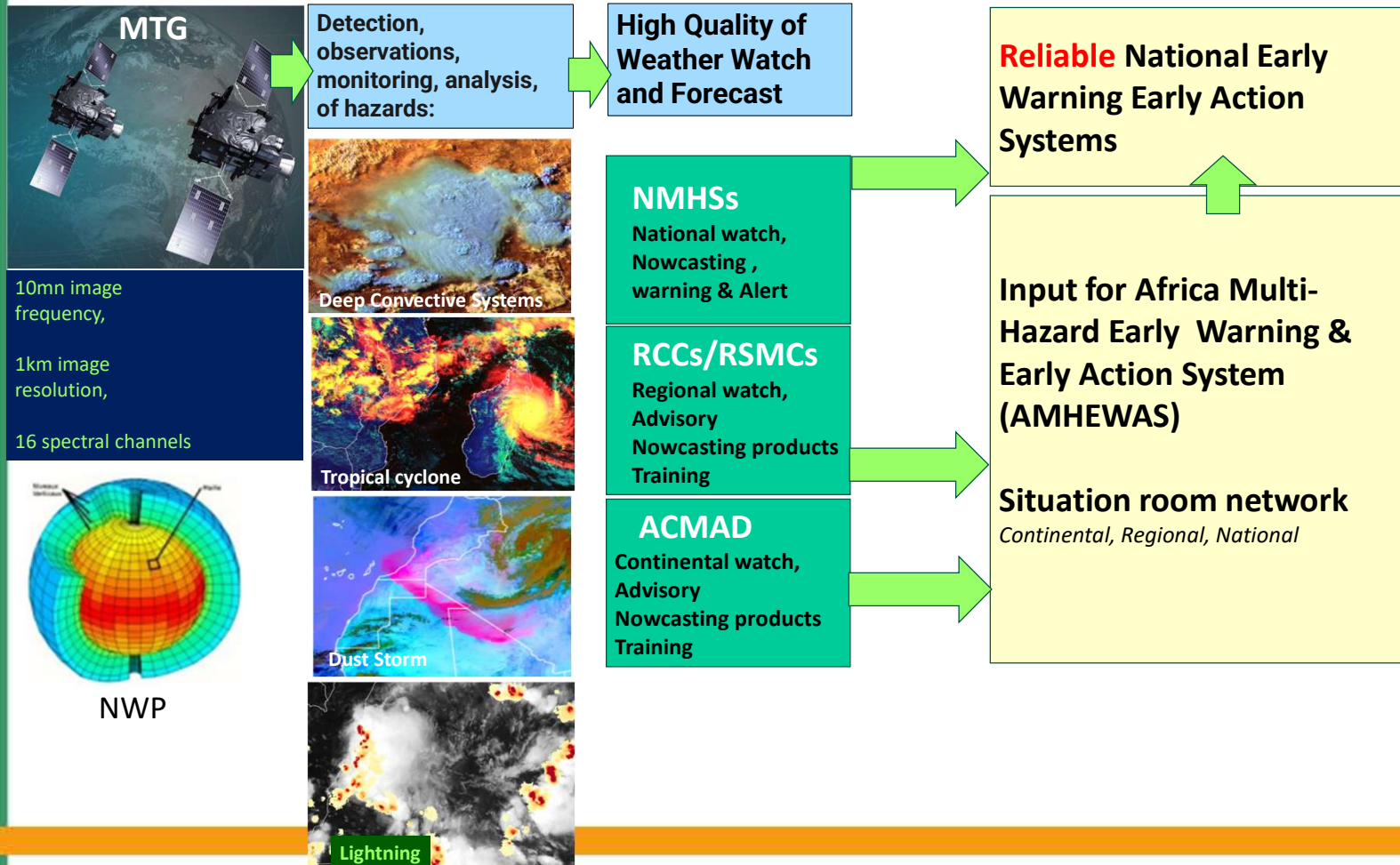
AI/ML

AI-driven nowcasting model output *(with Stormscope project)*





## 4. Integration of MTG data in Early Warning & Early Action Systems



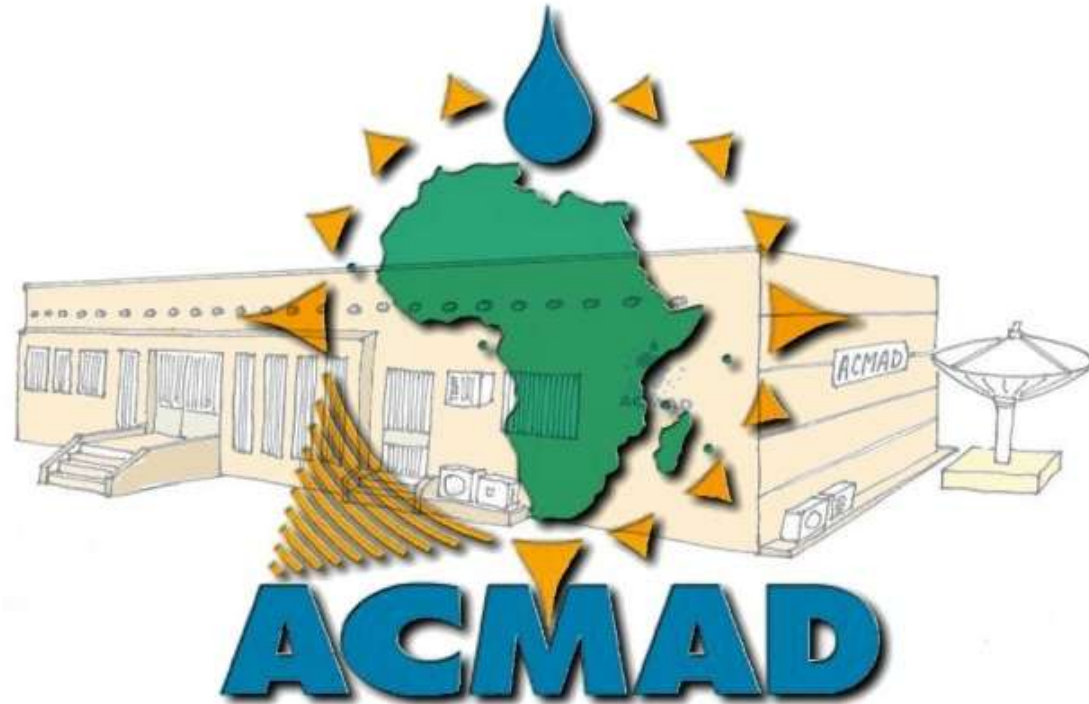


## 5. Challenges and Gaps

- Limited technical expertise on MTG products
- Need for:
  - Reading (access to documentation)
  - Case studies
  - Enhanced practical, *hands-on operational use of PUMA-2025*
  - Share best practices
  - Training



# *THANK YOU*



**FOLLOW US ON :**

**Website: [www.acmad.org](http://www.acmad.org), X: [@ACMAD\\_org](https://twitter.com/ACMAD_org), LinkedIn: [ACMAD](https://www.linkedin.com/company/ACMAD), Facebook: [ACMAD](https://www.facebook.com/ACMAD)**