RGB Experts

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RGB Products

- Mountain range:
  - ✔ The Rif mountains
  - ✔ The Atlas mountains

- Used products in nowcasting:
  - ✔ Convection RGB
  - ✔ HRV Severe storms
  - ✔ EView (HRV Clouds)

- Benefits
  - Identification of intense updrafts that indicate strong convection
  - Give better color contrast about high altitude clouds
RGB Products

- Morocco has large desert areas, especially in the south.
- Used products in nowcasting:
  - ✔ Dust RGB
  - ✔ 24H Microphysics RGB
  - ✔ Natural Color
- Benefits
  - ❖ Detection of dust
  - ❖ Distinction of water clouds from ice clouds
• Fog:
  ✔ Night Microphysics
  ✔ HRV Fog

• Benefits
  ❖ Detection of fog/low clouds

• Airmass:
  ✔ Airmass

• Benefits
  ❖ Indication of jet streams and deformation zones
  ❖ Discrimination of mid to high level clouds
Challenging RGB Products

- Forest Fire:
  - ✔ MPEF Fire Product
- Challenges
  - ❖ Delayed in anticipating
  - ❖ Low resolution
- Fog:
  - ✔ Night Microphysics RGB
  - ✔ HRV FOG
- Challenges
  - ❖ Distinction between the fog and low clouds
  - ❖ Low resolution
Integration RGB with other data

- All RGB products are developed in C language based on Eumetsat algorithms

- Shell scripts to launch executables
Integration RGB with other data

- **VDS** a remote sensing data visualization application:
  - Satellite Products
  - NWC SAF Products
  - Lightnings
  - Radar Weather

- Developed in:
  - JavaScript Frameworks
  - Python
Integration RGB with other data

- A lot of informations
  - Severity Type
  - Status
  - Next Move after 1h
  - Severity Type
  - Status
  - Precipitation rate
  - lightning intensity
  - Cloud Top
Value of RGB products

- Some Partners:
  - Natural Risk Management Directorate (FFND)
  - Ministry of Equipment, transport logistics and
  - General directorate of Civil Protection
  - National Agency for water and Forests
  - Insurance
IMTR/Kenya- Central and East Africa
• RGBs used in West, Central and East Africa depend on the hazard: mainly convection
• Thus RGB’s that give information on Cloud Top Temperatures, Cloud development and the decay, trajectory and the rate of development of convective systems are essential
Useful RGBs in East Africa – Day Microphysics RGB
Useful RGBs in East Africa – Ppt rate at Ground

Moderate sea conditions are expected with significant waves height of (1.2-2.1m) wind speeds of (12-23 knots) expected Kwale and Mombasa. Small boats and crafts advised to venture with caution.

Moderate to rough sea conditions are expected with significant waves height of (2.1-2.4m) wind speeds of (17-27 knots) expected Kilifi and Lamu in the afternoon. Small boats and crafts advised NOT to venture in the sea in the afternoon.

There are heavy rains in Lamu and warnings of rough seas. Yesterday 2 boats capsized today no one was allowed to venture at sea including fishermen.
Useful RGBs in East Africa – Day Microphysics RGB
Useful RGBs in East Africa – Convection RGB
Useful RGBs in East Africa – Tropical Airmass RGB
Precipitation Rate
Useful RGBs in East Africa – Dust RGB
Useful RGB's in East Africa

• RGBs used in East Africa depend on the regional hazards experienced: mainly convection
• Informal Assessment of RGBs that forecasters use; use IR 10.8 and HRV?
• RGB’s mainly used in research etc
• RGBs are not fully utilized. Why?
• Challenges in RGB interpretation?
• Not really applicable to the region’s needs?
• Forecaster comfortable with what he/she knows and thus always the go to e.g. IR 10.8, HRV?
ARE RGBs USEFUL IN EAST AFRICA? VERY MUCH!

RGB’s especially for EA allow forecasters and research to

- Carry out cloud analysis: Cloud height, development and the decay
- Identify and monitor areas of convection, fog
- Determine the Cloud Top Temperatures
- Monitor the trajectory/steering of convective systems and the rate of development of convective systems
- Allows forecasters to carry out nowcasting in combination with other available data; observations/model data
Integrating RGBs with other data sources
RGBs useful in East Africa/Africa...what next?

RGB’s very important; what can we do to improve/strengthen RGBs utilization?

- Follow up after training forecasters; challenges faced to implement the knowledge gained in operational duties
- Strengthen the visibility of RGBs; share success stories, engage stakeholders and sectoral partners
- More training; not only on interpretation, but also the technical aspects of RGBs
SAWS/South Africa - Useful RGB’s in Southern Africa
1. Day Natural Colours RGB

Benefits:
- Colours are easy to look at
- Ideal for identifying convection
- Gives a good contrast between thick ice clouds vs layered water clouds
- Contrasts between land and water bodies
- Great at depicting snow on the ground.
2. Day Microphysics RGB

Benefits:
- Also provides a great contrast between ice and water clouds
- Great in depicting snow on the ground
- Used to detect wildfires
3. Convective storms RGB

Benefits:
- Used in monitoring storms
- It is ideal in identifying very cloud top temperatures (clouds covered by small ice crystals)
- Highlights the different convective cloud phases
4. Airmass RGB

Benefits:
- Identification of air-masses
- Relatively easy to identify jet streams and dry stratospheric air intrusion.
- Therefore inferring cyclogenesis and areas of high Potential Vorticity
- It’s perfect in identifying large /synoptic scale systems, i.e COLD FRONTS, COL and Tropical Cyclones

NB: All RGBs have their own limitations, so most forecasters focus on RGBs strengths.
- RGBs with a reflective elements are used mostly during the day and those that do not are looked at at night time.
- The Overshooting tops RGB is one that is not useful to forecasters. It doesn’t offer enough colour contrast and makes it hard for one to interpret.
Integrating RGBs with other data sources

A. Rapidly developing thunderstorms
B. Flash flooding guidance
C. Radar hail-storm tracker
D. A zoomed in image from the radar hail-storm tracker (Showing north-western KZN and eastern Free State)
**Common Themes**

**Benefits**
- Colour contrast highlights weather elements
- Storm intensity/movement/development
- Cloud phase/type/height
- Nowcasting

**Challenges**
- Spatial/Temporal Resolution
- Low cloud or Fog (NMP)
- Pre-fire environment (pre-fog environment??)
- RGBs not applicable to regional needs
- Interpretation

1. **Convection**
   a. Severity
   b. Location

2. **Fog detection**
   a. Timing
   b. Dissipation
   c. Thickness

3. **Dust RGB**
   a. Location, Thickness, Movement

4. **Airmass RGB/Weather Systems**
   a. Location
   b. Movement

5. **Data Fusion**
   a. Overlay NWP, Remote Sensing

6. **Satellite Derived Products**
What questions should we be asking about RGBs??

1. How do RGBs and Impact Based Forecasting work together?
2. Are we effectively integrating NWP with RGBs to harness maximum combined value? Do forecasters fully understand what the RGBs are depicting? (physics and dynamics of the atmosphere)
3. How to we optimize MTG data and visualization?
4. What are the training needs and how do we address them?
Thank you