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COMMISSION FOR BASIC SYSTEMS  
OPEN PROGRAMME AREA GROUP ON INTEGRATED OBSERVING SYSTEMS

INTER-PROGRAMME EXPERT TEAM ON SATELLITE UTILIZATION AND  
PRODUCTS

ITEM: I.1

SECOND SESSION

Original: ENGLISH

GENEVA, SWITZERLAND, 23-26 FEBRUARY 2016

### **Utilization of satellite data in Eastern Africa**

*(Submitted by Ignatius Gitonga Gichoni, KMD)*

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#### **Summary and Purpose of Document**

This document gives an example on the use of satellite-derived data in minimizing adverse weather impacts in Kenya.

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#### **ACTION PROPOSED**

The second session is invited to note the information provided in this document.:

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## **Satellite data used for minimizing impacts of heavy rains during the 2015 October-November-December (OND) El-Niño rains in Kenya**

### **Introduction**

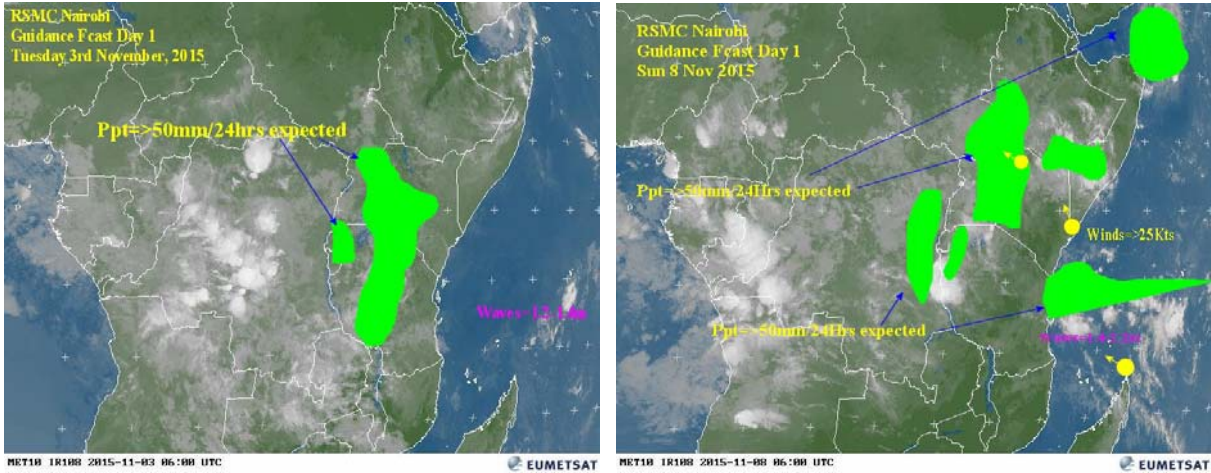
Satellite-derived data has become a major ingredient in forecasting and thus its application in bridging the gap between adverse weather and associated weather impacts to livelihood. Of great importance is satellite imagery, derived products like Multi-sensor Precipitation Estimates (MPE) and other satellite based initial boundary conditions data for NWP. During the recent October-November-December (OND) El-Niño related rains in Eastern Africa, application of satellite data went a long way in minimizing the impacts due to heavy rainfall.

Most of African countries are accessing satellite data via the SYNERGIE system. With the new version of the SYNERGIE system expected to be installed in the course of the year in Africa, the system is expected to continue being used in Africa for the next several years, thanks to EUMETSAT for providing the access to EUMETCast (and GEONETCast) data stream. Some of the EUMETCast data expected to continue being accessed via SYNERGIE include:

- Meteosat first generation image data
- Meteosat second generation image data
- GOES East and West image data
- MTSAT image data
- DCP and MDD in-situ forecast data
- EUMETSAT meteorological products
- Land and Ocean Sea Ice SAF products
- NOAA/NESDIS meteorological products
- NOAA/NESIS Ocean colour products
- DWDSAT products from DWD
- SPOT VEGETATION products from VITO
- Basic Meteorological Data (BMD) for WMO RA VI
- ERS SCAT and QuikSCAT products from KNMI

Kenya has actively been involved in the Severe Weather Forecast Demonstration Project (SWFDP) since the project began. The project involves the participation of the Eastern African countries namely: Kenya, Uganda, Tanzania, Rwanda, Burundi, Ethiopia and South Sudan. Rainfall in most areas in these countries is mainly determined by the seasonal oscillation of the Inter-tropical Convergence Zone (ITCZ) besides other local effects of the varying topography in the region such as Lake Victoria, Indian Ocean, the Rift Valley, and very high mountains: Mt. Kenya and Mt. Kilimanjaro, the Ruwenzori mountains, several mountain ranges etc. The ITCZ being a band of convection cloud clusters, satellite data is crucial for monitoring the convective developments owing to the sparse station data coverage in the region.

## Satellite imagery and Severe Weather Forecast Demonstration Project (SWFDP) heavy precipitation regions



The satellite images above represent only two days in the month of November 2015 when the seasonal rains were at their peak in Kenya. Precipitation reaching 50 mm in 24 hours is regarded as severe in the region and thus capable of causing floods and/or landslides.

## Impacts

1. School Closed Over Floods As Heavy Rain Pounds Nairobi and its surroundings



2. Nairobi and Mombasa cities flooded



### 3. Roads damaged



### 4. People lost lives.

Remains of a public transport bus swept by floods leaving 5 dead in Kenya. Other life losses through landslides reported in the country.



Despite these negative impacts, the government, through the advice of the weather services, had set aside funds for preparations necessary for averting worse incidences of heavy rainfall-related impacts. This included several warnings and alerts through relevant government channels including all the media avenues in the country. Otherwise things would have been much worse.

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