WEATHER FORECASTING IN EAST AFRICA: CURRENT PRACTICE

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Background

- Organized Weather Forecasting in Eastern Africa started when organized meteorological services in Eastern Africa were first established in 1929 as a result of the East African Conference of Governors.
- NMHSs have played and will continue to play an increasingly vital role in protecting life and property.
The NMHSs are mandated to 
- forewarn, advise and protect their national communities 

From the threat of 
- floods, droughts, forest fires, severe storms and other weather related natural disasters; and
Mandate of NMHSs cont.....

- enhance the reliability and productivity of agriculture and hence food security;
- manage their water, energy and other resources in an efficient manner;
- underpin the safety and efficiency of travel by air, land and sea;
Mandate of NMHSs cont.....

and anticipate and move to avert or minimize the impacts of

- desertification,
- ozone layer depletion,
- acid rain,
- climate change and other threats to the global environment.
Acquisition of Weather Information

- **Surface measurements** (surface weather stations)
  - Land (more than 10,000 stations)
  - Ocean (ships, buoys, drifting automatic stations)
- **Upper air data**: radiosondes, aircraft, satellites
Collection and Exchange of Weather Information

- **The World Meteorological Organization (WMO)** – UN agency, 175 nations, standardization and exchange of data.

- **World Meteorological Centers**: Melbourne, Moscow, Washington D.C.

- **National Meteorological and Hydrological Services (NMHSs)**:
  - Data analysis, preparation of weather maps, prediction of the weather over the country.
  - Advisories and warnings for severe weather
    - **Advisory**: less hazardous conditions due to wind, dust and fog
    - **Watch**: atmospheric conditions favor hazardous weather, actual location and timing of occurrence is uncertain
    - **Warning**: hazardous weather is imminent or actually occurring
Global Data-processing and Forecasting Systems

- The NMSs perform Forecasts under the auspices of the World Meteorological Organization’s initiated Global Data-processing and Forecasting Systems (GDPFS).

- The main purpose of the GDPFS is to prepare and make available to members in the most cost-effective way meteorological analyses and forecast products.
The design, functions, organizational structure and operations of the DPFS is in accordance with members' needs and their ability to contribute to and benefit from the system.

The GDPFS has two functions, namely: real-time and non-real time functions.
Components of DPFS

- Pre-processing of data;
- Preparation of Weather analyses;
- Preparation of forecast products;
- Preparation of ensemble prediction system products;
- Preparation of specialized products;
- Monitoring of observational data quality;
- Post-processing of NWP data;
- Archival of data and DPFS products;
- Product research and development;
- Climate related diagnosis; and
- Data exchange.
Real time DPFS

- Pre-processing of data, including retrieval of data stored in a database, decoding, and quality control, for use in analyses preparation;
- Monitoring of out-going observational data quality.
- Preparation of analyses of the four-dimensional structure (that is x, y, z, and t) of the atmosphere over Africa and surrounding regions;
Real time DPFS .... Cont...

- Preparation of forecast products (fields of basic and derived atmospheric parameters) over East African region regions for one to 3 days ahead;
- Preparation of medium and long range forecasts
- Tailored products for mainly aviation, Agriculture, water, shipping industry and the general public
Non-real time DPFS

- functions focus on
- preparation of special products for climate-related diagnosis (i.e. 10-day or 30-day means, summaries, frequencies and anomalies) on a regional scale and
- inter-comparison of analysis and forecast products
Long range products - ICPAC

Greater Horn of Africa Consensus Climate Outlook for July to September 2011

Rainfall Anomalies during July to September 1999 – analogue year
FORECAST FOR THE NEXT FOUR DAYS FROM 5TH TO 8TH JULY 2011

- The Lake Victoria Basin, Highlands west of the Rift Valley Central and south Rift Valley
- (Kitale, Kakamega, Kisumu, Kisii, Migori, Nyamira, Kericho, UasinGishu, Nakuru, Narok, Nyandarua counties etc) will experience mainly sunny intervals in the morning and afternoon/night
- Showers over several places reducing to few places in the second half of the forecast period. The
- Showers are expected to be with reduced intensity.
Skills of forecasts