Operational Systems for the Purpose of Severe Weather and Flash Flood Forecasting

Zimbabwe Meteorological Services Department

139.2 mm measured

Record: 161.3 mm

Measured on
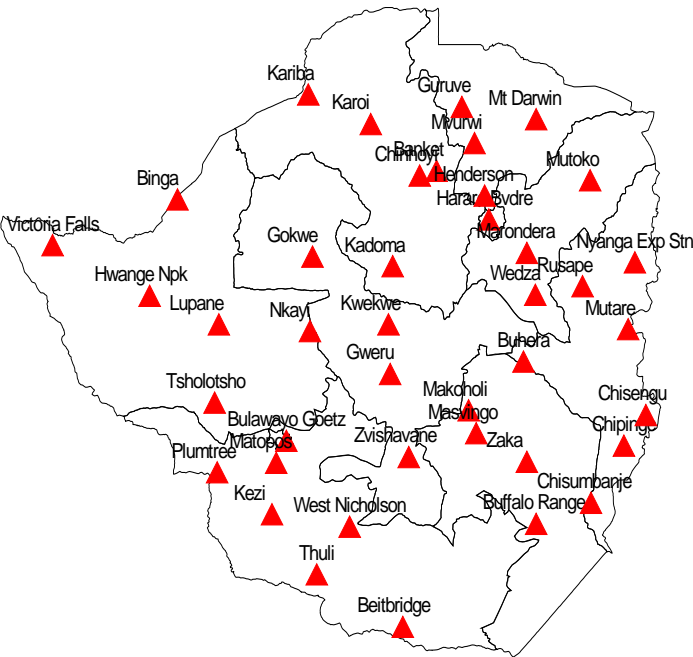
3 January 1958

NOTED SEVERE WEATHER EVENTS

- *EXTREME HEAT*
- *DROUGHTS*
- *WILD FIRES*
- *HEAVY PRECIPITATIO*
- *STRONG WIN*
- *HAIL*
- *LIGHTNING*

- **NMHS Headquarters**
  - Located in Harare capital city of Zimbabwe
  - Number of staff is ±240
  - Number of Meteorologists ±10

- **Field Offices**

Map labels: Kariba, Karoi, Guruve, Mt Darwin, Mvurwi, Chinhoyi, Banket, Henderson, Mutoko, Binga, Harare, Bvdre, Victoria Falls, Gokwe, Kadoma, Marondera, Nyanga Exp Stn, Hwange Npk, Wedza, Rusape, Lupane, Nkayi, Kwekwe, Mutare, Gweru, Buhera, Tsholotsho, Makoholi, Chisengu, Bulawayo Gbetz, Masvingo, Zvishavane, Zaka, Chipinge, Plumtree, Matopos, Kezi, West Nicholson, Buffalo Range, Chisumbanje, Thuli, Beitbridge

- Stations scattered across the whole country but scarce in conservancies .
- Station are manned by 1 to 3 staff
- No meteorologist/IT personnel at field stations
- Field stations have only have operational responsibility and some .administrative responsibility.
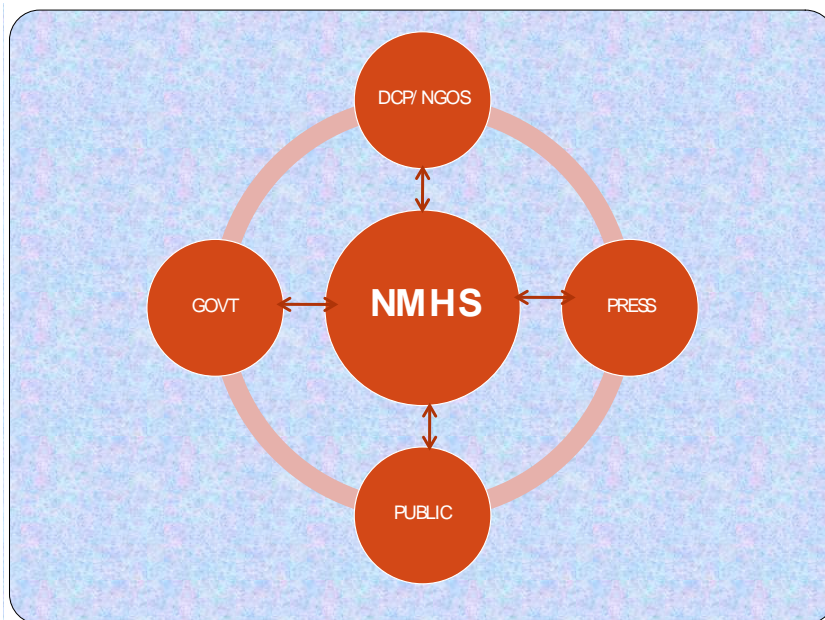
- **Systems description**
- Have four Radars but now unserviceable
- Satellite : eumetsat
- Lightning detector: one
- Surface Observation Networks
  - Real-time: 47 stations
  - ±10 AWS

- ±500 rainfalls stations
- Flood Gauges: hydrology to answer
- Volunteers/ Weather Spotters (if appropriate) : ±400 stations
  - Weather Spotters are trained.
  - Trained by meteorological officers for a day and given handouts,
  - Reports are receive from voluntary observers or public reports, through phones.
  - We receive reports through social media:: e.g., Facebook, Twitter, etc. ?

- We use forecast models from International Centre.
    - Models are down scaled from:
        - NOAA, NCEP, ECMWF, UNIFIED model from UK etc
        - To a large extent the models meet our needs.
        - Improvements would be by way of having own area model.
- Dissemination systems descriptions
    - Forecast and warning dissemination systems is good. Use print and electronic medias, ICT, local leaders.
    - Communication systems between operational offices is good. Use landlines and cell phones
    - The NMSD inform Emergency Management Services authorities who then call for emergency meeting with media, NGOs and other civil players.
    - Mobile phones are used to warn the public.
    - Social media is also used to warn e.g. the recent high temperature episode.

Diagram of how data flow

Purpose of the Systems Described Above
- DCP: Coordinate activities
- GOVT: Provide resources
- PUBLIC: follow instructions to save life and properties
- PRESS: Inform the public in affected areas
- NGOs: Provide resources

Area of observation covered
- DCP: local leaders in the communities
- GOVT: information provision of the areas
- PUBLIC: local areas
- PRESS: the whole country.
- NGOs: Local areas

The priorities of the systems in terms of ongoing and emergency repair/maintenance support.
(1) Public (2) DCP (3) Govt (4) Press (6) NGOs

Gap Filling Capabilities
- Gaps in observational networks
  o Network sparse in the valleys and conservancies
  o Information missing: Observation network poor
  o More radio sonde stations
- Efforts are underway or planned to fill observational gaps by installing AWS, more to be launched

Operational Activities

• The routine products issued by our NMHS:
  • Morning weather update, Lunchtime weather report and forecast, evening weather forecast
  • These are issued daily
  • The stakeholders include farmers, general public, NGOs, Govt
• The non-routine products issued by your NHMS are advisories, warnings, alerts.
  • The stakeholders of non-routine products are the public, NGOs, Govt, EMS, farmers

Identification of Stakeholders

• The affected and those who intervene in times of disasters
• Farmers need long term and short term forecasts; NGOs need long term and short forecasts and now forecasting.
  • Up to 20 Meteorologist/Hydrologists/ IT personnel involved in developing/disseminating warnings?

Location of our Physical Systems (Radar, Computers, Weather Sensors, etc)

•Computers at all meteorological stations. Map as given above

Resources needed for system operations

•Resources needed to continue system operations with our present level of service: radars, AWS, fast internet connectivity , radio sondes

•Resources needed to support system operations in levels of service with planned improvements/upgrades over the next five years: training, local models, denser station network

Training Needs/Requirements

•Our anticipated training needs/requirements for the new systems being implemented: training in ICT, NWP modeling,

Outreach/Education Requirements

•Types of outreach and education efforts planned to help support the implementation of this system. Include the following:

  •Internal: NMHS staff

  •External:

    oMedia

    oFarmers

    oAgricultural Extension officers

    oEmergency Services

    oPublic

THANK YOU

12/01/2012 11:56 AM

MSD