



REGIONAL TRAINING WORKSHOP OF TRAINERS ON END-TO-END PROCESSES ON THE FORECASTING AND THE EARLY WARNING FOR FLOODS AND DROUGHT

Current End-to-End Process(es) on the Forecasting and the Early Warning for floods

Case of: Ghana

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I. Introduction

Overview of flood events in the Ghana

- Floods are a common natural disaster in Ghana, especially during the rainy season, which typically lasts from April to October.
- In recent years, floods have become more severe and frequent in Ghana, resulting in the loss of lives, displacement of people, and destruction of properties and infrastructure. The most affected regions are the coastal areas and low-lying communities, including the Greater Accra Region, the Northern Region, and the Upper East Region.
- Currently there is an early warning system for White Volta & Oti Rivers (FEWS- OTI & FEWS-VOLTA)



ADAPTATION FUND

West Africa









II. Institutional framework for flood management Ghana

Components	Institutions	Roles/ Responsibilities
Data collection	 Ghana Hydrological Authority (HYDRO) Ghana Meteorological Agency (GMet) 	HYDRO collects hydrological data Gmet collects meteorological data
Flood modeling and forecasting	HYDRO	Develop a flood model forecast system
Dissemination of the warning	GMet,HYDRO, National Disaster Organization (NADMO)	
Decision support	GMet,HYDRO, NADMO	Usage of hydrographs
	NADMO, District Assemblies, NGO's (Ghana Red Cross Society), Ghana Fire Service, Ghana Police, Ghana Armed Forces, Ghana Ambulance Service, GMet, HYDRO, Disaster Voluntee Groups, Information Service Department, Ministry of Food and Agriculture (MoFA)	Responsible for Dissemination and response to warnings issued Global Water Partnership





- Institution(s) in charge
 - HYDRO: Water level, discharge, rainfall (TRMM and GPM)
 - GMet: Rainfall (Satellite and Insitu)
- In situ data collection network: its spatial coverage, tools used, etc.
 - HYDRO: Telemetric Systems in HYDRO's network record and transmit near real-time hydrological data across the country and manual staff gauges
 - GMet: Automatic Weather Station Network and Manual Raingauges measuring rainfall across the country with high density in the south
- Where the database is available? Freely accessible for EWS
 - Both database for GMet and HYDRO are located in the Headquarters and not freely accessible









III. Data collection

- Data collection challenges and needs
 - Maintenance of instruments
 - Theft
 - Internet
 - Inadequate spatial network coverage/ telemetry devices
 - Limited technical Staff strength











IV. Flood modeling and forecasting

- Methods/tools used for flood forecasting and their reliability
 - HYDRO: Sobek model 1D & 2D, HEC-HMS & HEC-RAS model
 - GMet: Poor mans ensemble, Satellite analysis, Synergy from the PUMA system
- Definition of warning thresholds



- Existence of Impact based forecasts
 - Yes



SIGNED: Central Analysis and Forecasting Office (CAFO)

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IV. Flood modeling and forecasting



- Forecasts' resolution
 - HYDRO: every two days
 - GMet: every 6 hours
- Verification of forecasts and consideration of uncertainties
 - Yes verification is done for GMet forecast
- How is the monitoring done?
 - Citizen science approach
 - Automatic Weather Stations and Rainguages that record precipitation to validate forecast
- For transboundary basins including that of the Volta, what is the mechanism for collaboration and data and experience with neighboring countries?
 - There is collaboration between Ghana and Burkina on spillage from the Bagre dam (water level and discharge)
 - For Meteorological collaboration for data, there is none









IV. Flood modeling and forecasting

- What are the modeling and forecasting challenges and needs?
- Inadequate data from on-site condition
- Inadequate On field verification after forecast is issued
- Inadequate staff strength
- Inadequate hydrological equipment for data collection.











V. Dissemination of the warning



- Actor(s) in charge of warning dissemination?
- Flood Warning, Communication and Dissemination Products?
- Effectiveness of warning products?
- Protocol and means of communication and dissemination of flood warnings
- Feedback
- Flood Warning Dissemination Challenges and Needs









VI. Decision support



- Response deployment decision process
 - Impact based maps for weather conditions
 - Hydrographs
 - Fanfar maps
- Collaboration between technician and decision-makers: taking into account the concerns of technicians

There is a strong collaboration between technicians and decision –makers

- Use of flood management plan? Yes
- Community involvement in the decision-making process? Yes
- Mobilizing resources for the response
- There is also a strong mobilization of resources for the response









VI. Decision support



- Communication and coordination guidelines
- It exist
- Difficulties and needs in terms of decision support
- No









VII. Response



- How is the preparation done in advance? Use of flood management plan? Yes
- Are there anticipatory actions? Yes If so why? To prevent the severity of flood on affected communities.
- How is the answer made? (emergency response and recovery)
- Formation of task forces. Search and rescue operations.
- Evacuation of rescue operations. Assessment of disaster and registration of victims.
- Evolving strategies for distribution of food, water clothing and medical relief. Provision of emergency shelter and protection of victims. Provision of medical relief and counselling services.









VII. Response



- Consequences of difficult access to the response
- Loss of lives and properties

- Where any feedback or review meeting done after the response phase?
- Yes









VI. Conclusion and Suggestions



- Assessment of the operation of the end-to-end system in place
- Yes
- Any project working on EWS in your country?
- Yes. FEWS-ODAW(Under the GARID project)
- Difficulties encountered in the implementation
- Inadequate legislative empowerment
- Inadequate budgetary allocation and late release of allocated resources
- Inadequate early warning systems etc.
- Inadequate resources to undertake timely post-disaster rehabilitation and resettlement











VI. Conclusion and Suggestions

- Suggestions/recommendations
- Effective inter-agencies coordination
- Robust and effective Early Warning Systems
- Adequate capacity building and training
- Acquisition of state-of-the-art equipment for data collection











Thank you for your attention

More information

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