

WORLD METEOROLOGICAL ORGANIZATION
WMO SEVERE WEATHER FORECASTING DEMONSTRATION
PROJECT (SWFDP) MISSION TO THE BURUNDI
HYDROMETEOROLOGICAL DEPARTMENT, INSTITUT
GÉOGRAPHIQUE DU BURUNDI (BHMD / IGEBU)

BUJUMBURA, BURUNDI, 4-5 JUNE 2012



FINAL REPORT

1. INTRODUCTION

Background

The World Meteorological Organization (WMO) Severe Weather Forecasting Demonstration Project (SWFDP) Mission to Bujumbura, Burundi, was conducted from 4 to 5 June 2012. The aim of the mission was to gather information on Burundi, and the Burundi Hydrometeorological Department (BHMD), as a basis for developing a Burundi-specific implementation plan for the SWFDP-Eastern Africa Project. The WMO delegation included Mr Peter Chen, Chief of the Data Processing and Forecasting System (C/DPFS), Mr Samuel Muchemi, Scientific Officer, Public Weather Services (SO/PWS), Mr Jose Camacho, Scientific Officer, Agricultural Meteorology (SO/AgM) Programme, and Mr Mohamed Matitu (WMO Consultant). The delegation was welcomed by Mr Aloys Rurantije, Director of IGEBU, and Permanent Representative of Burundi with WMO.

The delegation met with Mr Rurantije, who was accompanied by Mr Ruben Barakiza, BHMD's focal point for the SWFDP-Eastern Africa Project, and other members of staff at the forecasting office, at the former WMO training facility "Centre de Formation des Personnels Techniques de l'Aeronautique et de la Météorologie", located on the Bujumbura International Airport grounds. The Director opened the meeting at 1045 hours and announced that he would participate for the entire two days of discussions. The Director General of IGEBU, Ms Renilde Ndayishimiye, accompanied by her advisor on hydrometeorological matters, Mr Evariste Sinarinzi, joined the meeting later in the day. Mr Sinarinzi was a former Director of BHMD and PR of Burundi with WMO for about 17 years.

The BHMD, which is headquartered in Gitega, is organizationally located within the IGEBU Department of Hydrometeorology and Agrometeorology.

The languages used among staff members are mainly the local language or French. All staff are also proficient in English. On this occasion, the discussions were conducted in both English and French.

Severe Weather in Burundi

Heavy rains are the most important severe weather phenomena in Burundi, as they cause flash and river floods and landslides. In addition to heavy rainfall, severe thunderstorms bring hail (in the highlands of the Nile / Congo Crest), destructive winds and lightning. Prolonged dry spells and drought are also considered severe weather.

At the time of this mission, Burundi was dry, and during the day it was hot and moderately humid. By mid-morning a lake breeze circulation developed from Lake Tanganyika and produced a stiff south wind onto Bujumbura.

Observing Networks

The observing networks include:

- Two 24-hour synoptic stations, one in Bujumbura (northern tip of Lake Tanganyika) and the other in Musinga (north-eastern region);

- 13 climatological stations measuring minimum and maximum temperatures T(max. and min.) and 24-hour precipitation. Observations are transmitted by telephone twice a day at 0800 and 1500 hours;
- 125 rainfall stations measuring daily rainfall; data are sent to the BHMD Headquarters once a month;
- 43 hydrometric stations on major rivers; and,
- Three Automatic Weather Stations (Campbell Scientific, Inc. (CSI)) measuring many parameters; data are offloaded to a memory device and mailed to the headquarters once a month.
- No agrometeorological weather stations are currently in operation.

Weather Forecasting at the BHMD

The Burundi Forecasting Office is located at the Bujumbura International Airport, and serves, nationally, both the aviation and public weather services components. There are eight weather forecasting staff, six of whom attended the meeting. Mr Barakiza is the head of the forecasting section. Out of those forecasters, four are “Class I”, and four are “Class II”, in addition to the Director. The forecasting staff is generally very engaging and enthusiastic. A number of them received forecasting training at the African Centre of Meteorological Applications for Development (ACMAD) in Niamey, Niger. One of the forecasters has a degree in Information Technology (IT) and is very helpful in the Forecast Office in maintaining electronic equipment and systems.

The forecasting office operates seven days a week from 0730 to 1730 hours. Forecasting staff work on rotation of two shifts a day. There are two forecasters on duty during the weekends. The office is equipped with a number of PC-based systems, including desktops and laptops, and one African Monitoring of Environment for Sustainable Development (AMESD) / Preparation for Use of MeteoSat Second Generation (MSG) in Africa (PUMA) satellite receiver station (since 2010) for acquiring EUMETSAT and a limited number of Numerical Weather Prediction (NWP) products. The office has a very good Internet connection, with no problem noted in accessing the Regional Specialized Meteorological Centre (RSMC) Nairobi and the Regional Forecasting Support Centre (RFSC) Dar Es Salaam Websites for participating in the SWFDP Project.

The National Meteorological Centre (NMC) produces public forecasts every day, only for the next day. The product includes:

- a map of 15 districts, using one of seven predetermined choices of pictogrammes that best depicts the prevailing weather conditions (one chart for the morning of the next day, and one chart for the afternoon of the next day);
- a text table, listing eight locations, each with max. and min. temperatures of the previous day, and forecast max. and min. temperatures for the next day; and,
- a list of short worded descriptions of forecast conditions for the next day, for nine named regions.

This product is not updated before the new forecast is issued at noon the following day. The Centre also produces general forecasts for up to day-3 for occasional special requests, such as a special government or political event. Warnings are issued, however a need for the Service to develop a fixed criteria and procedures for issuing warnings was detected.

The NMC also produces aviation forecasts for the Bujumbura terminal for Air Traffic Control (ATC) as well as for flight planning folders.

Forecast Guidance Products

Forecasters use various NWP guidance products, which have been largely made available via the SWFDP Project, at the RSMC Nairobi Website, as follows: NOAA NCEP, ECMWF, Met Office UK, LAM-COSMO (Nairobi) and LAM-WRF (Nairobi). They also access Center for Ocean-Land-Atmosphere Studies (COLA) which provides graphical products based on NOAA data. During the meeting, access to the RFSC Dar Es Salaam Website was provided, through which many more high-resolution NWP and other products could be useful for forecasting in Burundi. The Centre accesses EUMETSAT satellite products via the AMESD / PUMA station. There is no radar coverage over Burundi.

To forecast the development of severe thunderstorms, forecasters monitor low-level moisture convergence as an essential ingredient. As much of the territory is high terrain, the moisture field and the convergence zones at 850 hPa are important fields to track. The Convective Available Potential Energy (CAPE) and K-index diagnostics and the MSG water vapour channel images are also used to track day-to-day progression of column precipitable water from either of the following source regions: Congo airmass to the west, or the western Indian Ocean to the east. They are aware of the two locations for forecast soundings provided by the National Centers for Environmental Prediction (NCEP) Climate Prediction Center (CPC) / Africa Desk Website.

Forecasters are particularly interested in NWP guidance for 24-h and 10-day accumulated precipitation forecasts. It was recommended that they plan to issue a 7-day precipitation outlook.

While ECMWF EPSgrams are provided for ten locations, verifying data in real-time are only available for the two operating synoptic stations, at Bujumbura and Musinga. During the dry season, the EPSgrams provide useful T max/min guidance for predicting sparse showers.

The PWS Component of the SWFDP

The role of the PWS component of the SWFDP is to improve delivery of forecast, alert and warning services to the public and other users. The main focus of the visit to Burundi, as regards the PWS component of the Project, was to assist the BHMD develop the capacity to deliver services by taking the following actions:

- a) Identifying a team to carry out PWS activities, and availing them the opportunity to train on service delivery skills including:
 - Criteria for issuing warnings and alerts;
 - How to formulate a warning, including the essential attributes of a warning message;
 - Effective use of the different dissemination channels for warnings including mobile technology, radio, RANET, television (TV), etc.;
 - Using the Website effectively to deliver severe weather-related services;
 - Working with the media;

- Working with the disaster community;
 - Building a severe weather database that would include alerts issued by the BHMD, severe weather events for which no alerts were issued, and the feedback on actions taken by users; and,
 - Public education and outreach.
- b) Engaging users:
- Identifying users and making contacts to establish a dialogue;
 - Establishing user needs; and,
 - Responding to user needs in the generation of products and delivery of services.
- c) Monitoring and Evaluation (M&E):
- Building feedback mechanisms to inform the BHMD how products and services are put to use, and their impacts;
 - Carrying out surveys to establish the level of satisfaction of the users;
 - Reviewing the service delivery process with a view to applying lessons learnt to future processes; and,
 - Compiling quarterly reports using the template provided under the Project.

The PWS Team

It was agreed that a team would be identified to carry out PWS matters and their names would be communicated to the WMO Secretariat.

Status PWS Service Delivery in Burundi

- The “Bulletin de Prévision Météo” is issued by noon everyday as a Portable Document Format (PDF) file document that is transmitted by e-mail using an e-mail list that includes external users notably the Disaster Management and Civil Protection Authorities (DMCPAs), the media and various socio-economic sectors through telephone and e-mail. Participants stated that these means are insufficient and that there was a need to develop other means of dissemination such as Internet, mobile phone technology, radio and TV;
- The BHMD does not have a weather presentation studio for television. They expressed a great need for a studio, as it would enhance weather information dissemination to the public;
- The BHMD issues weather alerts and warnings to the public. Annex III to this report, entitled “*Avis de pluies fortes et torrentielles*”, which means “Alert for heavy torrential rain”, is an example of an alert issued on 21 December 2011. However, it was reported that the Service had a challenge in issuing warnings because they did not

have sufficient confidence in the accuracy of the forecasts. This is because NWP models sometimes fail to forecast convective weather accurately;

- There is a need to train the PWS staff in many areas such as working with media, writing press releases, carrying out user satisfaction surveys, etc.;
- The BHMD does not have an operational website and this was recognized as a need that should be addressed urgently. It was agreed that the WMO Secretariat would assist the BHMD start a Website through the RANET Internet Presence Initiative (RIPI) of RANET Project;
- During the sessions, awareness was raised on the importance of establishing permanent contact between the BHMD and DMCPAs for rapid intervention in case of extreme weather event. In this regard, a need was established to develop the necessary capacities and skills to identify, approach, and engage users, especially for the delivery of services associated with extreme weather. This includes skills to develop Memoranda of Understanding (MoUs) and Standard Operating Procedures (SOPs) between the BHMD and users such as the media and the DMCPAs; and,
- It was reported that the United Nations Development Programme (UNDP) had organized and financed training workshops on risk reduction for meteorological staff, together with DMCPA personnel. The workshops raised awareness of the impacts of severe weather and demonstrated the need for the meteorological community to work together with the DMCPAs.

Communicating Warnings

A session on how to develop and communicate warnings was held, and the following points were the outcome of these discussions:

- Emphasis was laid on the need for forecasters and the PWS staff to appreciate the importance of issuing alerts and warnings, since saving lives and property is the primary role of a National Meteorological or Hydrometeorological Service (NMS);
- Participants were informed of how they could develop criteria for issuing warnings, based on intensity thresholds of weather and on probable impacts; and,
- The attributes of a good warning message, in terms of its title, content, attribution of origin, the period of validity, expected intensity, location, and advice to users on the actions they could take were emphasized upon. The structure of a warning message should include the following attributes:
 - The heading stands alone and stands out;
 - The components of the message are clearly defined;
 - The message is simple;
 - The message personalizes the event, the consequences and the actions required;
 - The most important message should be placed first;

- Allowance should be made for shortening of the message by broadcasters; and,
- The area for which the alert message is issued should be defined in terms of the well-known place names. Specifying in terms of latitude and longitude, or citing directions may be done, but it is better to add the name of the place as well.

2. COMMUNICATION CHANNELS OPEN TO THE BHMD

Discussions were held with the participants regarding various communication channels for forecasts, alerts and warnings.

Television (TV)

Most of the people living in urban areas of Burundi have access to TV. TV is therefore an important channel of communication of forecasts and warnings in Burundi. Due to the fact that there have been no TV weather presentation activities at the BHMD, there is a need to establish the capacity and capability in terms of establishing a TV weather studio and training staff on skills for weather presentation on television.

Website

As pointed out above, at present, the BHMD does not have a functional Website. However, once action has been taken as indicated above, and a website is realized, it was agreed that in addition to uploading forecasts on the Site, that the BHMD would provide a prominent “Alerts” link. The link would provide:

- Easy access to any alerts and warnings issued;
- Information on what the alerts and warnings mean in terms of how they are presented, both as text and as colour coded icons depicting expected intensities; and,
- General advice on what actions users could take in response to the different possible warnings.

RANET Project

The RANET Project provides communication solutions to rural and other isolated communities. It was noted that Burundi, through the BHMD, had joined the RANET Project initiative, which would add a new channel of communication for the rural community. When established, RANET would be used for warning services in addition to the other functions of communicating weather and climate information to users.

Mobile Technology

In recognition of the dominance of the mobile technology for communication in rural and urban areas of Burundi, it was agreed to investigate the different communication options that could be suitable to the BHMD, such as:

- Developing website layouts adapted for use on ordinary (non-smart) mobile phones and also for smart mobile phone platforms. It was recognized that smart phones possession rate in Burundi was growing steadily, hence, it was necessary for the BHMD to ready itself to serve the needs this technology will generate in the future. In this regard, the development of an application for smart phones should be kept in view, in the medium-term;
- The use of SMS technology; and,
- The use of social media, including Facebook, Twitter and YouTube was discussed and considered as the way to go in the future.

3. USER-ENGAGEMENT SESSION

A session was held on user-engagement, which included the staff of the BHMD, and participants from the media and the disaster community. There was a healthy exchange of ideas on how the BHMD could better serve the media and the disaster community alike. Representatives of the disaster community and the media expressed the wish for improvement in the way information was communicated to them in terms of timeliness and in a format they could readily understand. A need was expressed to establish a feedback mechanism for informing the BHMD how the users were making use of the information as follows:

- The BHMD should organize meetings and training events aimed at enhancing delivery of warning services to the DMCPAs and the media;
- The BHMD and the DMCPAs on the one hand, and the BHMD and the media organizations on the other, should formalize collaborative relations through signing MoUs, defining the responsibilities of the parties, the products, training, etc.;
- It would be essential to develop SOPs between the BHMD and users, which would define the procedures to follow when warnings were issued;
- It was found necessary to hold cross-training sessions between the BHMD and the media. This would equip the BHMD staff with skills on how to work effectively with the media in, for example, writing press releases, organizing press conferences and handling press interviews. The media would understand forecasts better and thus be able to communicate weather information more accurately; and,
- It was found necessary for the BHMD to assess, through periodic surveys, the level of satisfaction of the media and the DMCPAs, with the services the BHMD delivered to them, so that the BHMD could use results of the assessments to improve service delivery and products.

Functions of the PWS Team

Discussions were held on the duties of the PWS Team of the SWFDP. It was understood that they were expected to carry out the following functions:

- Ensure issuance of warnings to specific users (emergency responders, media, etc.);
- Develop a severe weather database, including a record of:
 - severe weather events and the warnings issued (intensity, location, severity);
 - severe weather events, even if no warnings had been issued;
 - outcomes of warnings (did the severe weather occur (yes / no)), intensity, etc.;
- Participate in the development of MoUs between the BHMD and users;
- Participate in the development of internal SOPs streamlining the warning procedures within the BHMD;
- Participate in the development of SOPs, linking the BHMD to users;
- Carry out user satisfaction surveys;
- Respond to user needs in terms of new products and changes in service delivery; and,
- Complete all the parts relevant to PWS of the “Quarterly Report of the SWFDP SubProject” template, which is provided on the SWFDP Website managed from Nairobi, Kenya. This information may be accessed at the following web-link: <http://www.meteo.go.ke/rsmc/index.php> .

4. AGROMETEOROLOGY

Overview in Relation to Agricultural Meteorology

Agrometeorological services are based in Gitega, 100 km from Bujumbura in the plateau around 1,600 to 1,700 meters Above Sea Level (ASL). The Agrometeorological Unit had, in the past, good staff in numbers and qualification. However, today it has only one expert, Ms Liliane Hatungimana, who was in China on training at the time of the WMO mission. A hydrologist with some agriculture training attended the meeting.

There are no specific agrometeorological weather stations operated by the BHMD. The weather station at the Bujumbura airport has thermometers to measure extreme temperatures near the soil, insolation, evaporimetric tank, global solar radiation, total rainfall and rainfall intensity measurement instruments.

There are six main climatic or agro ecological zones in Burundi ranging from the shores of Lake Tanganyika (about 700 meters ASL) to a mountainous range with peaks near 3,000 meters ASL that divides the Nile and Congo basins. There is a high altitude mountainous range in Congo parallel to Lake Tanganyika that shapes the climate and weather in Burundi.

Forecasts are issued every day for those different ecological zones, so there is a base to develop agrometeorological forecasts. There are currently no specific products for agriculture and fisheries produced.

Civil protection experts indicated that floods are sometimes associated with some land management practices. In terms of agricultural management, it is important to differentiate river floods from flash floods, as a river flood could be a part of an agricultural cycle. Flash floods are most clearly related with disaster prevention and reduction.

Relationships with the Media

On the second day of the meeting, there were external participants, which included two journalists, two civil protection managers and one agriculture researcher. One of the journalists has had exposure to Weather and Climate Broadcast and publishing initiatives in Eastern Africa. In the future, he could provide support in conducting meetings with the media, farmers and meteorologists to improve broadcasting of agrometeorological information.

Work Plan for Agrometeorology

Discussions with the PR of Burundi with WMO and other BHMD Officers indicated that the elements to be included in the Agromet Component of SWFDP are as follows:

- a) The Lake Victoria Mobile Weather Alert (MWA) Pilot Project, which deals with alerting fishermen was presented and it raised interest among the BHMD staff. A similar project would be needed for Lake Tanganyika fisheries and transport sectors;
- b) Questions about communication channels with farmers were asked. As future actions, links with other WMO projects such as the MWAs and METAGRI should be established;
- c) Currently, no specific products for Agrometeorology are being made. Specific forecasts on temperatures and expected rainfall for the next seven days in the main agricultural zones are needed. It would be desirable to establish a structure in the BHMD that would make use of the improved seasonal forecasts for application to agriculture. Development of crop observations, soil and air moisture and evaluation of evapotranspiration need to be done;
- d) No formal relation with Ministry of Agriculture has been developed. Steps towards developing such a relationship, including drafting a MoU, should be encouraged;
- e) Drought was mentioned as a phenomenon that was not managed well. Slow reaction due to late knowledge and lack of proper planning was cited. Drought monitoring has several elements including: medium-range forecasts, seasonal forecasts, soil moisture and vegetation status. Drought management involves production of bulletins, creation of broadcast channels, institutional collaboration and planning;
- f) It is urgent to install the first agrometeorological weather station in Gitega, to start developing procedures and products;
- g) Once installed, a crop model should be implemented for the main crops at that region; and,

- h) The use of remote-sensing products on agrometeorology should be promoted for monitoring of vegetation status (NDVI, others), soil moisture and rainfall totals.

Urgent Actions of the Agrometeorological Component of the SWFDP

- a) The BHMD to define a weather alerts project for fishing and transport sectors in Lake Tanganyika in relation to strong winds, thunderstorms and waves. WMO to provide links to the Uganda MWA Pilot Project in Lake Victoria, and with the developments in the southern shore of Lake Victoria in the United Republic of Tanzania;
- b) WMO to provide assistance for the installation of one agrometeorological weather station in Gitega using available funds. The BHMD to install the weather station accordingly;
- c) WMO to provide an expert in agrometeorology, preferably from the Region, for a 3- to 5- day mission in Burundi, working together with the PR to assess the advantage of developing agrometeorological services. That report should be submitted to the National Authorities. The expert would also perform training activities; and,
- d) WMO and EUMETSAT to invite one expert from the BHMD to the joint “WMO-EUMETSAT Training Course on Satellite Products Application to Agrometeorology”, to be held in Niamey, Niger, 19-24 November 2012.

Action Plan for Implementation of the SWFDP in the BHMD

A session was held in which participants agreed to certain actions aligned to specific objectives and strategies towards the implementation of the SWFDP in the BHMD. Below is a table that summarizes the Plan.





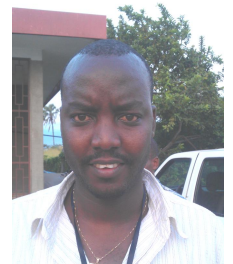

Action Plan for Implementation of the SWFDP in BHMD			
Objective:	Strategy:	Action taken or, to be taken:	Timeline:
Strengthen capacity within a NMS in forecasting	Organize training	Annual SWFDP training	19-24 November 2012 (Forecasting)
		ECMWF	26-30 November 2012 (PWS and Agromet)
	Transfer new knowledge to forecasting team	NMS to organize internal training	8-12 October 2012
	In-country training by experts in forecasting methods at the forecast office	WMO to explore possibility of when this could be done	End-October 2012

	Increasing lead-time of forecasts	Start doing 3-day forecasts on a daily basis	<ul style="list-style-type: none"> - Test to start immediately (June 2012) - Start to issue forecasts to public after skill is developed and reviewed
Strengthen capacity within the Burundi Hydromet Department to deliver services	Identify core PWS Team	BHMD to choose a PWS Team	July 2012
	Identify core Agromet Team	BHMD to choose an Agromet team, including a representative from the Ministry of Agriculture	July 2012
	Have the PWS and Agromet Teams trained so that they can have the necessary skills	Annual SWFDP training	November 2012
		BHMD to organize internal training for PWS Team and users	For about three days in September 2012
		Visit by Agromet expert to make assessment, training and helping in liaising with users	One week (First week of November 2012)
	Establish a BHMD Website and provide a “warnings” link on the home page	Use the RIPI initiative of RANET project	August 2012
Engage users	Identify users and the products and services each user would require	<p>Agromet core team to contact fishing sector to define a product requirement similar to L. Victoria Pilot Project</p> <p>To do the same with agricultural sector to define a product related to onset of rainy season</p>	September 2012
	Enhance Public Weather Service through the Media	TV Studio – WMO to explore a possible donor	August 2012

Monitoring and Evaluation (M&E)	Monitoring on: a) Forecasting process b) The actual occurrence of severe weather c) Impacts of the event	Report after occurrence of every event whether or not a warning was issued	Every time a severe weather event occurs
	Monitoring implementation of the project	Progress Report on the project	Quarterly reports
	PWS monitoring	Do quarterly reports on PWS	End-September 2012, and every quarter thereafter
	Build Feedback Mechanism	Provide a comments page on the website Report by users (PWS part) after a severe event	
	Conduct self assessment surveys	Questionnaire to users	July 2013
	Review service delivery process with a view to factor in lessons learnt in future processes	Carry out survey analysis and factor in lessons learnt	September 2013

**SEVERE WEATHER FORECASTING DEMONSTRATION
PROJECT (SWFDP) WMO MISSION TO BURUNDI
(BUJUMBURA, BURUNDI, 4-5 JUNE 2012)**

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**SEVERE WEATHER FORECASTING DEMONSTRATION
PROJECT (SWFDP) WMO MISSION TO BURUNDI
(BUJUMBURA, BURUNDI, 4-5 JUNE 2012)**

PROGRAMME

4 June 2012: Morning (0900 - 1230 hours)

1. Meet the Permanent Representative of Burundi with WMO
 - a. Discussion on purpose of visit and expected results
 - b. General introduction of SWFDP with staff of Burundi Met Service responsible for forecasting, PWS duties and Agrometeorology
 - c. Country-specific Implementation Plan for Burundi
2. Introduction to Burundi Met operations
 - a. Observing and telecommunications system
 - b. Forecasting systems (demonstration of the forecasting process)
 - c. Agricultural meteorology
 - d. Service delivery
 - e. Identification of gaps
3. Practical session on forecasting and weather dissemination: Discussion on status of forecasting and improvements needed in the operations, forecast lead times and developing warnings, etc.

4 June 2012: Afternoon (1400 - 1730 hours)

1. (Continued) Practical session on forecasting and weather dissemination: Discussion on status of forecasting and improvements needed in the operations, forecast lead-time and developing warnings, etc.
2. Agriculture sector: farmers, fishermen and shepherds
3. Establishing service delivery baseline: Current status of disseminating of forecasts, alerts and warnings and verification
4. Developing and communicating warnings
 - a. Meteorological hazards
 - b. Criteria for issuing a warning (thresholds)
 - c. The structure of a warning message including essential elements of an effective warning including issuing advise
 - d. Communicating warnings for specific sectors (agricultural, fisheries and herders)
5. Communication channels
 - a. Website
 - b. Radio and TV
 - c. Mobile phone
 - d. RANET Network

5 June 2012: Morning (0900 - 1230 hours)

1. Session on user engagement (interactive). To enact a step by step implementation of procedures for working with the media, the disaster community and the general public. Participants to include:

- a. Senior Met management
- b. Forecasters
- c. PWS staff
- d. Agriculture Extension Service Officers from Ministry of Agriculture
- e. Disaster Managers
- f. The Media

5 June 2012: Afternoon (1400 - 1730 hours)

1. Development of a strategy for a Warnings Service for Burundi Meteorological Service

2. Duties and expectations, in particular the role of the:

- a. Forecasters in the SWFDP
- b. PWS staff
 - i. Communicating forecasts
 - ii. Keeping the extreme events database
 - iii. Public education and outreach
 - iv. Carrying out surveys
- c. Agromet staff

Closure of the Meeting/Mission

**INSTITUT GEOGRAPHIQUE DU BURUNDI
DEPARTEMENT DE METEOROLOGIE**

Avis de pluies fortes et torrentielles le 22 et 23/12/2011

Mercredi 21 décembre 2011 11h26

De:

Cet expéditeur a été certifié DomainKeys.
"Amna Météo" <meteo_bdi@yahoo.com>
Ajouter l'expéditeur dans les contacts

À:

nibijamaru@yahoo.fr, nduwimana.deogratias@yahoo.fr, banyankiye@yahoo.fr,
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La Service Météorologique de l'Institut Géographique du Burundi porte à la connaissance du Public que des pluies torrentielles s'abattront sur les régions Sud du pays notamment Makamba, Mabanda et Nyanza-Lac Jeudi le 22/12/2011.

La situation similaire va s'étendre sur les régions avoisinantes notamment la région de Moso, Kirimiro et la région de Mugamba le vendredi 23/12/2011.

Par endroits, les pluies torrentielles seront accompagnées de vents forts et pourront causer des inondations dans les régions mentionnées.

La population est conseillée d'éviter la traversée des rivières en périodes de crues.

Le service de la Prévision Météorologique
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