

WORLD METEOROLOGICAL ORGANIZATION

FINAL REPORT OF THE WMO MISSION TO THE DIRECTION NATIONALE DE LA MÉTÉOROLOGIE

SEVERE WEATHER FORECASTING DEMONSTRATION PROJECT (SWFDP) COUNTRY VISIT

HAHAYA/MARONI, UNION OF COMORES, 18-19 OCTOBER 2012



FINAL REPORT

INTRODUCTION

The WMO mission to Comoros was conducted to gather information on the National Meteorological Service and its principal partner organizations as a basis for the development of a Comoros-specific implementation plan for the SWFDP-Southern Africa Project. The WMO delegation was welcomed by Mr Mohammed Ali Bay Poundja, Technical Director of the Direction de la Météorologie, who also currently serves as the Permanent Representative of Comoros with WMO. On the morning of 19 October 2012, the delegation met with Mr Bourhane Ahmed Bourhane, the newly appointed Director-General of the "Agence Nationale de l'Aviation Civil et de la Météorologie" (ANACM, in Moroni). Mr Bourhane, the immediate superior to Mr Poundja, is trained as an aircraft engineer, and appeared to be a very engaging and articulate individual.

The WMO delegation was comprised of two WMO Secretariat representatives, Mr Peter Chen (Chief, Data Processing and Forecasting System (C/DPFS) Division), Ms Haleh Kootval (Chief, Public Weather Services (C/PWS) Division), and Mr Prem Goolaup (from the Meteorological Service of Mauritius, who currently serves as the co-chair of the SWFDP-Southern Africa Regional Technical Implementation Team (RTIT)). The delegation arrived in Hahaya (the location of the operational forecast office (ASECNA - L'Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar - located on the Hahaya International Airport)) on 18 October and departed on 20 October 2012. Ms Hadidja Alimoundhir, an ASECNA forecaster who had participated at a SWFDP-Southern Africa training in 2009, greeted the delegation upon arrival.

The delegation was met by Mr Poundja at ASECNA offices in the afternoon of 18 October 2012. Due to delays in travel to, and late arrival into Comoros, the programme of the mission was adjusted accordingly. Following the opening remarks by Messrs Chen and Poundja in the presence of the ASECNA forecasters and meteorological staff of the National Meteorological and Hydrological Service the purpose of the mission was stated. The tentative programme for the 2-day mission was reviewed. A copy of this programme is attached as Annex 1 to this report. In addition to meteorological office staff (ASECNA and ANACM), there were representatives from the media (radio and journalist) and disaster management community present for the entire meeting. The list of participants is attached as Annex 2 to this report.

Mr Chen made an overview presentation on the SWFDP, noting that Comoros joined the SWFDP-Southern Africa Project expansion in 2008, and also described the new initiative of the development of the country-specific implementation plans for the SWFDP, and how it could be useful for Comoros. Mr Goolaup highlighted the role of the Public Weather Services in the SWFDP and the challenges of service delivery to different users.

The Union of Comoros is a member of the Indian Ocean Commission, but is not a member of the Southern African Development Community (SADC).

Purpose of the Mission

While not being a member of the Meteorological Association of Southern Africa (MASA), nor of SADC, Comoros was nevertheless invited to join the SWFDP-Southern Africa Project when it expanded in 2008, to include all 16 countries of the region. There has never been an appointed representative from Comoros to the SWFDP-Southern Africa Project RTIT. In the past, Mr Ibrahim Kassim (ASECNA), and Ms Alimoundhir (ASECNA) have participated in annual training workshops (2008-2010). Mr Charani Chamsoudine, a meteorologist from the ANACM, participated at the SWFDP-RTIT meeting for Comoros at Flic-en-Flac, Mauritius in July 2011, as a representative from Comoros. Mr Kassim has since left Comoros.

It had been decided to carry out this mission immediately following the mission to Madagascar, for similar purposes. It was believed that the Comoros NMS was seriously lacking in capacity, in both its technological infrastructure as well as in its staff numbers and expertise. It was therefore recognized that, in order to ensure successful implementation of the Project in all participating countries, especially those of lowest capacities, it was necessary to conduct missions to those Meteorological Services that have not shown full participation in the required and agreed activities. Over the several years of Comoros' unofficial participation in the Project, it has not submitted any progress reports. It was therefore unclear whether the targeted training had had any real effect on the forecasting capacity or on the delivery of warning services.

As was noted by Fifteenth Session of the World Meteorological Congress (Cg-XV, Geneva, 7-25 May 2007), and with the current transition of the SWFDP-Southern Africa Project to its Continuous Development Phase (Phase 4), some participating countries required focused attention to improve on the benefits realized from the Project.

Organization of Meteorological Services, Union of Comoros

The Comoros NMS, known as the "Direction Technique de la Météorologie" or "Technical Department of Meteorology", falls within the ANACM, which is part of the "Ministry of Posts and Telecommunications, Promotion of New Technologies of Information, and Communication", and is headquartered in Moroni. Within the "Direction de la Météorologie", the operational functions (observing, telecom and forecasting) are part of the ASECNA – Comoros, and headquartered in Hahaya on the grounds of the International Airport, immediately adjacent the tarmac.

The ASECNA forecasting office, "Division Prévis", operates 24/7. Business hours at ASECNA are Monday to Friday, from 0730 to 1700 hours. It should be noted that normal general business hours in Comoros are Monday to Thursday, from 0730 to 1430 hours, on Friday 0730 to 1130 hours, and on Saturday from 0730 to 1200 hours.

While the main functions of the forecasting office is for aviation services, in collaboration with the forecasters of ANACM, they also support PWS, including near-shore marine and Search and Rescue (SAR) services.

Meteorological Operations

Observations

There are two (2) synoptic stations, which during the test of the real-time data exchange in 2011, showed performance at 95%. This is surprisingly high considering from what the delegation was able to deduce, since only the synoptic station at the Hahaya airport is fully functional. There are two (2) additional observational sites, both at airports, one on each of the other two main islands (Ouani Airport on Anjouan, and Mohéli Bandar es Eslam Airport on Mohéli).

Data transmission between the ASECNA centre in Hahaya and these two other observation sites have been broken for many years. Presently, on working days only, few synoptic observations, typically at 06, 12, 15 UTC, from Ouani (Anjouan), are sent by e-mail to the office in Hahaya. These two airports do produce METAR and SPECI observations, but no Terminal Aerodrome Forecast (TAF) is issued. From there the observations are up-linked to the Global Telecommunication System (GTS) via Madagascar, and via the dedicated Aeronautical Fixed Telecommunication Network ((AFTN). In addition, non-real-time observations include: 95 manual rain gauge stations (45 on Grand Comores, 37 on Anjouan and 13 on Moheili). There are no Automatic Weather Stations (AWS) in place. However, a network of five (5) AWS is planned to be installed

during the first half of 2012 via the United Nations Environment Programme (UNEP), at the following sites: two (2) in Grand Comoros, two (2) in Anjouan and one (1) in Moheli.

Hazards

Tropical cyclones and associated severe weather are the main hazards. Much of the forecasting programme deals with this hazard during the Tropical Cyclone (TC) season, typically November to the following May. Heavy rain events from severe thunderstorms, triggered by orographic effects (quasi-stationary), are also important. Heavy rains cause flooding and landslides. An active Volcano Karthala on Grand Comores had a major eruption in 2005.

Particularly damaging floods occurred following heavy rainfalls in both April 2009 and April 2012. It is believed that, at least in part, these floods have occurred due to the ash and dust loading from the major eruption of Karthala, which had produced heavy fine dust and ash loading believed to be several metres deep, and resulted in much reduced porosity of the surface soil layer over large areas, thereby increasing surface runoff especially in heavy rain episodes. The history of volcanic activity on Grand Comoros Island can be found at the following web-link: www.volcanolive.com/karthala.html .

It was strongly suggested that the Met Service undertake a comprehensive study of the heavy rain and flooding events of the period 24-27 April 2012, to improve the understanding of the nature of the rainfall and subsequent flooding, including the effectiveness of the delivery of warning services.

Forecasting Staff

There are currently four (4) ASECNA forecasters, the Chief of the Division Prévis in Hahaya, and two (2) ANACM forecasters in Moroni. The forecasters had obtained their education overseas (likely in Madagascar, Algeria, Niger, with refresher courses in La Réunion and France). Presently, only the ASECNA office forecasters have access to meteorological data in real-time, mainly to carry out aeronautical services (METAR, TAF, flight folders). NMS forecasters in Moroni are very much limited in what they can do, because they do not have access to meteorological data in real-time. However, they do go to Hahaya to monitor and work with ASECNA forecasters. They have Internet access.

Aside from aviation services / products, the daily output of the forecast office (ASECNA) and ANACM forecasters, includes one public forecast for the remainder of the day (day-1) and day-2 (sample attached at the end of this report). It is presumed that this public forecast is cleared by the NMS in Moroni, before being issued at 1800 hours daily, and distributed by e-mail (via Transmet, which is residing on the Synergie platform at ASECNA). In this understanding, the administrative production and clearance process for issuing any forecast / alerts / warnings / press release must be complex as the ASECNA staff is the technical producer, and the authority resides with the NMS / ANCAM.

The forecasting office appears to be using some of the available Numerical Weather Prediction (NWP)-based guidance, but not likely through the SWFDP (uncertain password access, and apparent lack of familiarity with products available through Regional Specialized Meteorological Centre (RSMC) Pretoria Website). Mr Chen gave a quick refresher of various Websites and Ensemble Prediction System (EPS)-based products, including the RSMC Pretoria Website, the UM SA12 and UM ALAM, European Centre for Medium-Range Weather Forecasts (ECMWF), National Centers for Environmental Prediction / Climate Prediction Center / Africa Desk (NCEP/CPC/Africa Desk). In particular, he showed the forecasters the NCEP forecast soundings which could be used to assess the changing vertical structure of the atmosphere, hence the

convective potential; currently there are none for Comoros (a request will be made to NCEP). The WMO mission was during the “dry season” just before the beginning of the “rainy season”, so forecasting during this season is essentially “persistence”, and of fair conditions.

The forecasters have requested two additional EPSgram sites for each of two other small island locations. Although there is no synoptic station, there are rain gauge stations at these locations. They also requested forecast soundings for two locations, from NCEP/CPC/Africa Desk Global Forecasts System (GFS), and, if possible, also from the UM SA102 LAM outputs.

Systems

The office appears to have three Meteo France International (MFI) Synergie workstation systems, one through African Monitoring of the Environment for Sustainable Development (AMESDPUMA 2010) for European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) products. They use a desktop PC to provide access to the Internet. Météo-France “Transmet” system is used for distribution of bulletins. In general, the Internet access seems reasonably good. It was noted that both Messrs Poundja and Bourhane use a cellular key for connecting their PC-Notebooks to the Internet.

There is no hydrological models for predicting floods. However, there is a hydrologist (or hydrometeorologist) working at the ANACM.

PWS component of the SWFDP Comoros

Disaster Preparedness and Risk Reduction: Early Warnings

1. The National Contingency Plan (2010) identifies the tropical cyclone / storm as the most important hazard to Comoros. In his presentation on Friday morning, the Mr Poundja described the “Plan de Secours Spécialisé CYCLONE”, emphasizing the impacts of these hazards on the Comoros Islands, namely the destruction of infrastructure such as roads and public buildings, houses, uprooting trees, coastal inundation due to sea level rise, loss of agricultural crops and livestock, injuries and loss of human lives.

2. The cyclone plan was revised in 2011, with the support of the United Nations based in Comoros, with a multi-stakeholders’ meeting comprising the participation of representatives from health, education, water, infrastructure, disaster management, etc. The cyclone warning system consists of five (5) phases defined as follows: 1.) vigilance cyclonique; 2.) yellow; 3.) orange; 4.) red; and, 5.) lifting of the warning. Similar phases of warnings are applicable for tsunamis. Each phase is well elaborated in the Contingency Plan detailed actions that need to be carried out and corresponding response from the population. According to the Mr Poundja, the colour codes for the different phases work well and the population knows how to respond to each phase. At the community level, even the mosque leaders warn the community with a flag corresponding to the phase of warning after receiving the appropriate advisory. A number of responses is also listed for each stakeholder in the warning system, for example, the health sector who has to attend to and treat injured patients must ensure the preparation of proper medical kits, preparation of logistics at the hospitals to receive the injured, etc. The list of response for telecom concerns being prepared to send group SMS to the population. These messages are prepared jointly by the Meteorological Service (ANACM) and the Civil Protection authorities and transmitted by the telecom.

3. Contingency plans are so far prepared for cyclone, tsunami and volcano eruptions. It appears that a contingency plan for health is currently being finalized. Health problems facing the country include malaria, cholera, typhoid and dengue fever.
4. There are simulation exercises held, normally in October prior to the start of the cyclone season.
5. There is a legal document signed by the minister responsible for meteorology, which gives the authority and power to the Met Service to issue guidance warnings. The Minister in charge of the civil defense authority is authorized to issue different types of alerting phases.

Media

6. There is a national radio and in addition each island has its own local radio. There are community radios as well in addition to the national radio station. The forecasts and warnings are sent to the radio and are read by a presenter. The contents and language need to be clearer so that the presenters themselves can understand the message they are conveying to the population. In the case of cyclones the Met Service sends the warnings to the civil protection, who then in turn disseminates the alerts. The Met Service also gives the special bulletins directly to the national radio. These are in both French and the local Comorian language. During cyclones, reporters come from both television (TV) and radio to interview the director at the civil protection office. From time-to-time, they also come to interview officials from the Department of Meteorology.

At the moment, there is no TV broadcast. A TV studio was procured under the WMO Voluntary Cooperation Programme (VCP) and the UK Met Office provided funding for installation and training by a specialist from the Kenya Meteorological Department (KMD), but there are problems with using the system. The forecasts are prepared at the airport office while the TV studio is at the headquarters of the Met Service in Moroni, several kilometers away. There is no connection between the two offices to transfer the forecasts to the HQ for preparation of TV bulletins. According to the Mr Poundja, this problem is being studied by technicians and it is hoped that it will be resolved soon. There is also the problem of connecting the TV studio at the Moroni office to the TV station, although with the provision of some additional equipment provided by the UK Met Office and carried by the WMO Secretariat to Comoros, this last problem should be solved. The reason to install the studio at the Moroni office rather than the airport office is due to some higher-level decisions.

Public Education and awareness

7. A guide was prepared in 2008 / 2009 for schools and has been reviewed for updating. Thus far, 2,000 copies have been printed and distributed to schools. In addition, training is done for schools and posters are prepared and distributed. The heavy rainfall event leading to severe flooding in April 2012 was the result of orographic effect and had no association with tropical cyclone. However, the population associates heavy rain with cyclones only and as such does not heed any warnings outside of that type of event. A research staff of the Met Service tried to explain to a committee on contingency plans the possibility of heavy rainfall not associated with cyclones but this was not taken seriously. It appears that management needs to intervene to explain this kind of phenomena. Mr Poundja informed that there is a plan to issue heavy rain warnings as well in the future. This kind of warning should be launched coupled with a public education campaign to ensure the full realization of the impact of the warning.

Feedback

8. There is a general feeling that the public does not have a lot of confidence in the forecasts and warnings issued by the Met Service. This could be due to the lack of observations and capability of models to show the fine features, especially those related to small scale orographic effects that lead to rainfall events which are not clearly pick up by numerical models. It seems public education needs to be strengthened and more efforts need to be made to explain the capabilities and limitations of the tools and technologies at the disposal of the Met Service. Only with increased understanding will the public be prepared to trust and listen to the advice and information issued by the Met Service.

Impressions

The general impression is that the forecasting capacity for non-aviation services is fairly low. The split of offices (ASECNA in Hahaya, and the NMS in Moroni) with limited communication between the two, is a disadvantage. There is presently no real-time data available to the Moroni offices. Therefore, all forecast production is essentially done in Hahaya, with final approval given at ANACM in Moroni. Forecasters in Moroni feel disadvantaged, while awaiting a solution.

For non-TC-related severe weather, it is not clear if there are any warning procedures.

LIST OF ANNEXES AND SAMPLES TO THE REPORT

- ANNEX 1:** Programme
- ANNEX 2:** List of Participants
- ANNEX 3:** Proposed Action Plan for Inclusion in the Comoros Implementation Plan
- Annex 3.1:** Comoros Direction de la Météorologie (of ANACM) Severe Weather Forecasting Action Plan
- Annex 3.1:** Matrix for Implementation of the Public Weather Service (PWS) component of the SWFDP
- SAMPLE:** Daily Public Forecasts Issued at 18h Every Day
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**SEVERE WEATHER FORECASTING DEMONSTRATION
PROJECT (SWFDP) WMO MISSION TO COMOROS**

18 October (Early Afternoon) - 19 October 2012

PROGRAMME

18 October 2012 (Early Afternoon)

1. Meet the officials of the Comoros Met Service
 - a. Discussion on purpose of visit and expected results
 - b. General introduction of SWFDP to forecasting and staff carrying out PWS duties
 - c. Country specific implementation plan for Comoros
2. Introduction to Comoros Met operations
 - a. Observing and telecommunications system
 - b. Forecasting systems (demonstration of the forecasting process)
 - c. 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.

19 October 2012

1. Establishing service delivery baseline: Current status of disseminating of forecasts, alerts and warnings and verification
2. Communication channels
 - a. Website
 - b. TV and Radio
 - c. Mobile phone
 - d. RANET
3. Developing and communicating warnings
 - a. Difference between warnings and ordinary forecasts
 - b. Meteorological hazards and warning structure
 - c. Criteria for issuing a warning (thresholds)
 - d. Essential elements of an effective warning including issuing advise

4. 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. disaster managers and
 - e. the media

 5. Duties and expectations:
 - a. The role of forecasters in SWFDP
 - b. The role PWS staff
 - i. Communicating forecasts
 - ii. Keeping the extreme events database
 - iii. Public education
 - iv. Carrying out surveys

 6. Discussion on the way forward
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ANNEX 2

NAME:	ORGANIZATION:	DESIGNATION:	TELEPHONE AND E-MAIL:
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Proposed Action Plan for inclusion in the Comoros Implementation Plan

Annex 3.1: Comoros Direction de la Météorologie (of ANACM) Severe Weather Forecasting Action Plan			
Objective:	Strategy:	Action to be taken:	Timeline:
Strengthen weather forecasting capacity at the ANACM	Identify ANACM focal point(s) for SWFDP	Name its member to the SWFDP Regional Technical Implementation Team (RTIT)	-Overdue -Done
	Training for forecasters	<ul style="list-style-type: none"> - Name candidates for the MASA / WMO SWFDP Training (Pretoria, November 2012) - Name candidates for the ECMWF annual training October 2013 - Name candidates for the MASA / WMO SWFDP Training Q4 2013 	-Overdue / realized -July 2013 -August 2013
		<ul style="list-style-type: none"> - Organize and conduct annual internal training workshop(s) to transfer new knowledge, skills gained from the above training / workshops, possibly with assistance from MASA or WMO expert(s) 	-Q4 / 2013 (before onset of rainy season)
		Develop a daily forecasting process through consensus among NMHS / ASECNA forecasters, with assistance from a MASA or WMO expert	Q1 / 2013
	Establish and adopt daily forecasting process and routine activities	<ul style="list-style-type: none"> - preferred expert from SWFDP participating centres - document 	
		Develop a prototype on-line “forecasting dashboard” for ANACM, hosted at the SWFDP-Southern Africa Web-portal	Q3 / 2013
Increase lead-time of alerts and warnings	Daily assessment of potential severe weather for d1-d3	<ul style="list-style-type: none"> - Develop a spread-sheet for recording severe weather potential d1-d3 - Assign daily duty of assessing and recording potential severe weather to forecaster 	January 2013

	Increase lead-time of daily forecasts	- Develop / design daily forecasts for d1-d3, harmonized with other issued forecasts	January 2013
	Establish forecasting criteria for heavy rain and strong winds	Develop forecasting criteria for heavy rainfall and strong winds for d1-d3, through consensus among NMHS forecasters	March 2013
Monitoring and Evaluation	SWFDP Event Evaluation Form	Complete this form (RSIP Annex E) within a day after each severe weather event	Ongoing
	SWFDP 6-monthly Reports	- Complete and submit NMHS biannual report to RSMC Pretoria, using template from RSIP, including annex of all severe weather events, and a case study from the period	2013: May, November

Annex 3.1: Matrix for Implementation of the Public Weather Service (PWS) component of SWFDP			
Objective:	Strategy:	Action to be Taken:	Timeline:
Establish or strengthen PWS capacity within NMS to deliver services	Identify core PWS Team	<p>Choose a team of about two (2) people who show the aptitude to develop the following competencies:</p> <ul style="list-style-type: none"> - skills in public relations; - skills in communication; - ability to use simple oral and written language to communicate messages; and, - good presentation skills to impress an audience. 	<p>By first week of November</p> <p>Done</p>
	Have the PWS Team trained so that they can have the necessary skills	<p>By availing the PWS team members training opportunities and materials as follows:</p> <ul style="list-style-type: none"> - The SWFDP training workshops organized by WMO; - Other PWS training workshops organized by the WMO PWS Programme; - The NMS is encouraged to organize PWS cross-training locally, in collaboration with users (e.g., disaster community and media organizations); and, - Read and practice guidance information provided in the PWS guidelines which are freely accessible on the WMO PWS Website at: http://www.wmo.int/pages/prog/amp/pwsp/publicationsguidelines_en.htm <p>Note: Training in PWS is wide, however, basic training would include the topics mentioned in section 3.3 above.</p>	<p>One person to be trained at Pretoria in November 2012</p> <p>Done</p>

	<p>Establish an NMS website (if there is none) and provide a “warnings” link on the home page</p>	<p>If an NMS does not have a functional Website, make it a priority to have one (WMO will help if requested). On the Website, provide a link dedicated to warnings. The link would provide:</p> <ul style="list-style-type: none"> - A highly visible announcement whenever there is a warning. It could be colour coded and in the form of a map; - Simple advice accompanying warnings; - Provide links to more detailed explanation of the warning and actions recommended; - Provide general information on warnings; - As a good example, see the UK met Office website: http://www.metoffice.gov.uk/ 	<p>By Q1 2013 Site to be developed</p>
<p>Engage users</p>	<p>Identify users and the products and services each user would require</p>	<ul style="list-style-type: none"> - Organize to meet potential users such as the national media and other media organizations (TV, radio and print), DMCPA (e.g., the relevant government ministry dealing with disasters, Red Cross and Red Crescent Society, agricultural sector representatives); - Before meeting users, ensure to be prepared with well presented information showing how the user could benefit by working with you; - Initiate discussions on the needs of the user and what products the NMS could produce; - Exchange names and contacts of staff for ease of communication; - Draw a Memorandum of Understanding (MOU) defining the responsibilities of each party; and, - At the working level, develop the Standard Operating Procedures (SOPs) defining the mechanics of services would be delivered; 	<p>Ongoing, but needs to be strengthened</p>

	<p>Enhance Public Weather Service through the Media</p>	<ol style="list-style-type: none"> 1. Outline strategies for dissemination of weather forecasts and warnings to TV, radio and print media; 2. Develop a clear communication channel; 3. The PWS team should have media skills such as: <ul style="list-style-type: none"> - How to write press releases and information notes; - How to prepare press briefs and press conferences; and, - How to handle press interviews. 4. Adopt the right attitude for working with the media and respect the “do’s” and “don’ts” of the media such as: <p><u>Do’s:</u></p> <ul style="list-style-type: none"> - Get to know the media and be familiar with their deadlines and needs; - Be available to journalists, even when you are busy; - Be helpful with their requests; - Be friendly, even when they are not; - Use laymen’s language whenever possible and explain the jargon when you must use it; <p><u>Don’ts:</u></p> <ul style="list-style-type: none"> - Don’t ignore media requests, but respond to every call; - Don’t lie or be evasive. If you do not know the answer to a question, find out and get back to the reporter; and, - Don’t use acronyms or technical jargon without explanation. 	<p>Training to be done in Pretoria in November 2012. Consideration to be given in-country training.</p>
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	Provide improved PWS products and services	<p>Use the SWFDP improved forecasts to develop improved products and services as required by users, as follows:</p> <ul style="list-style-type: none"> - Well structured, well written, forecasts and warnings without jargon; and, - Making sure that dissemination of forecasts and warnings is timely. 	Need to be strengthened
Monitoring and Evaluation	Build Feedback Mechanism	Develop a feedback template form tailored to different users to be completed by users at agreed intervals of time or after every severe event for which a warning has been issued	Need to be developed further
	Conduct self assessment surveys	<p>1. Provide a page for user comments on the NMS Website and ensure to read and record useful comments;</p> <p>2. Carry out surveys on users and the public (about once a year). Develop the right skills for this by consulting the PWS guidelines which are freely available at:</p> <p>http://www.wmo.int/pages/prog/amp/pwsp/surveys.htm .</p> <p>3. survey questions may include:</p> <ul style="list-style-type: none"> - How accurate do people think warnings and forecasts are? - Are people receiving warnings and forecasts on time? - How do people get their forecast and warning information? - Do people understand what the forecasts and warnings mean? - What are the most important weather-related decisions people make? - In which weather elements are people most interested? - What new services would people like? 	<p>To include feedback page on website to be developed by 2013</p> <p>Survey need to be done following the launch of TV presentation and start may be with University students.</p>

	<p>Review service delivery process with a view to factor in lessons learnt in future processes</p>	<p>A good survey will provide information that will shape future operations of an NMS such as:</p> <ul style="list-style-type: none"> - Perhaps some improved methods for forecasting rain need to be developed; - If television or radio is the most popular way for receiving forecasts, then work on ensuring you have an effective relationship with the relevant media; - If most people listen to the forecast in a particular time of the day, then make sure to issue your forecasts at that time in order to capture a large audience; - If people do not understand the meaning of the forecast, simplify the language, or conduct some public education; and, - Has the investment in new technology and research led to users being more satisfied? If not, think why not? Perhaps you need to re-prioritize your resources. 	<p>Survey need to be done following the launch of TV presentation and start may be with University students.</p>
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SAMPLE: DAILY PUBLIC FORECASTS ISSUED AT 18H EVERY DAY

BULLETIN METEOROLOGIQUE

Rédigé le 18/10/2012 à 18H00
VALABLE DU 18/10/2012 AU 19/10/2012

SITUATION GENERALE DU JOUR: Ciel localement nuageux sur l'archipel cet après-midi, Vent du Sud-ouest, faible à modérés; Mer peu agitée.

PRÉVISION POUR LA NUIT: Ciel peu nuageux, Vent variable faible; Mer belle.

PREVISION POUR LE LENDEMAIN: Ciel localement nuageux avec possibilité d'averses faibles sur les hauteurs. Vent d'Est faible en matinée, devenant Sud-ouest faible à modéré l'après-midi; Mer peu agitée.

Marées du 19/10/2012:

Haute mer	Hauteur	Basse mer	Hauteur
à 06h 34	4m 85	à 00h 18	0m 90
à 19h 00	4m 30	à 12h 56	0m 95

TEMPERATURES EXTRÊMES RELEVÉES le 18/10/2012 entre 00h et 18h locales

Températures en °C	Hahaya	Ouani	Bandar	Moroni
Minimale	22	22	X	X
Maximale	32	32	X	X

HAUTEUR DE PLUIE RECEUILLIE DU 17/10/2012 à 12h AU 18/10/2012 à 12h loc.

	Hahaya aéroport	Ouani	Bandar	Moroni
Hauteur en mm	néant	néant	X	X

LEVER ET COUCHER DU SOLEIL : le 19/10/2012

	Moroni	Bandar Salam	Ouani
Heure du lever	05h 40	05h 38	05h 35
Heure du coucher	18h 05	18h 02	18h 00