

WORLD METEOROLOGICAL ORGANIZATION

REPORT OF THE STAKEHOLDER WORKSHOP TO IMPLEMENT THE WMO STRATEGY FOR SERVICE DELIVERY

ACCRA, GHANA, 30 May – 03 June 2016



FINAL REPORT

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Introduction

At the invitation of the Government and the Ghana Meteorological Agency (GMet), the Public Weather Services (PWS) Programme of the World Meteorological Organization (WMO) organized a workshop in Accra to assist GMet with a self-assessment of the current level of its service delivery and to prepare an Action Plan to gain a higher level of service delivery.

The WMO Strategy for Service Delivery, (WMO-No.1129), which is aligned with the WMO Strategic Plan, was approved by the Sixteenth Congress (Cg-XVI) (Geneva, May 2011). An Implementation Plan was subsequently prepared and approved by the WMO Executive Council. The Strategy explains the importance of service delivery; defines the four stages of a continuous, cyclic process for developing and delivering services and the elements necessary for moving towards a more service-oriented culture; and describes practices to strengthen service delivery across the entire WMO.

The Strategy reflects the desire of WMO Members for a more uniform and structured approach to service development and delivery. The goal of the Strategy is to help National Meteorological and Hydrological Services (NMHSs) raise standards of service delivery in the provision of products and services to users and customers. The Implementation Plan provides a flexible methodology to help Members evaluate their current service delivery practices, and to serve as high-level guidance for developing more detailed methods and tools that will enable Members to improve their service delivery process.

The Strategy is adaptable to the unique needs of Members from both developed and developing countries, regardless of who the users are and whether the products and services delivered are public or commercial. The WMO Secretariat and WMO constituent bodies are responsible for facilitating and coordinating the implementation of the Strategy. WMO Members who have already implemented a formal quality management system (QMS) are more likely to be focused on meeting user needs and to consider this a key aspect of service delivery. For Members who have not introduced a QMS, implementing a service delivery strategy along the lines described in the WMO Strategy for Service Delivery will be an excellent step towards improved organization-wide quality management.

For users who are sensitive to the impacts of weather and climate, the benefits of receiving high-quality services that fully meet their needs are wide-ranging. Members who provide high levels of service delivery through their public weather services (PWS) are likely to be viewed by their users and the organizations that fund them as a valuable return on the investment of public funds. This can help to ensure the sustainability of PWS.

The management of service-providing organizations must remain focused and committed to ensure that high-quality service delivery is achieved throughout their organizations.

To understand the concept of service delivery, one must understand what is commonly meant by “service”. This Strategy defines a service as a product or activity that meets the

needs of a user or can be applied by a user. To be effective services should be credible, available and timely, dependable and reliable, usable and useful, expandable, sustainable, responsive and flexible and authentic (Figure 1).

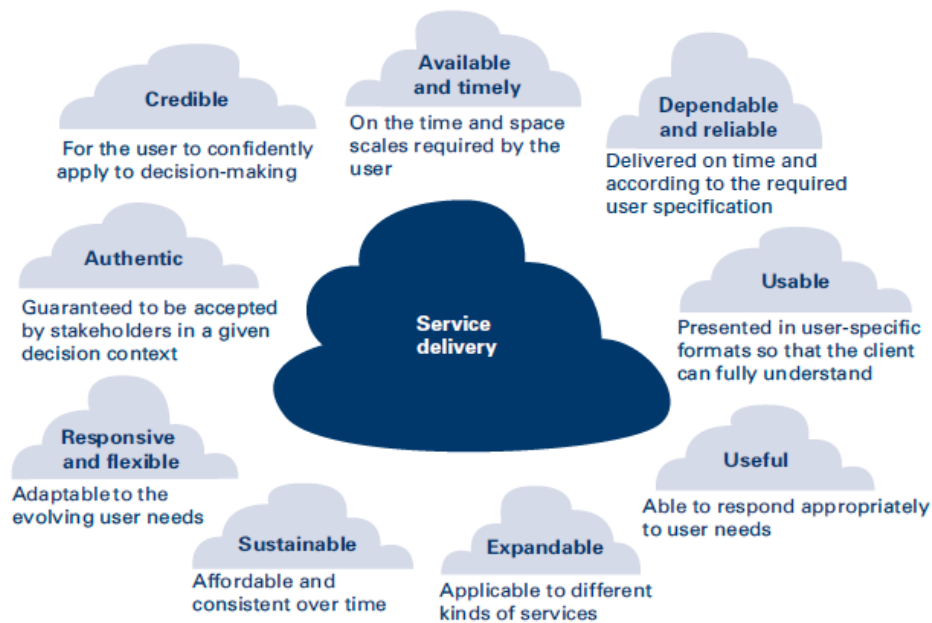


Figure 1: Effective service delivery

The Strategy describes a continuous cycle of four stages, which define the framework for service delivery (Figure 2).

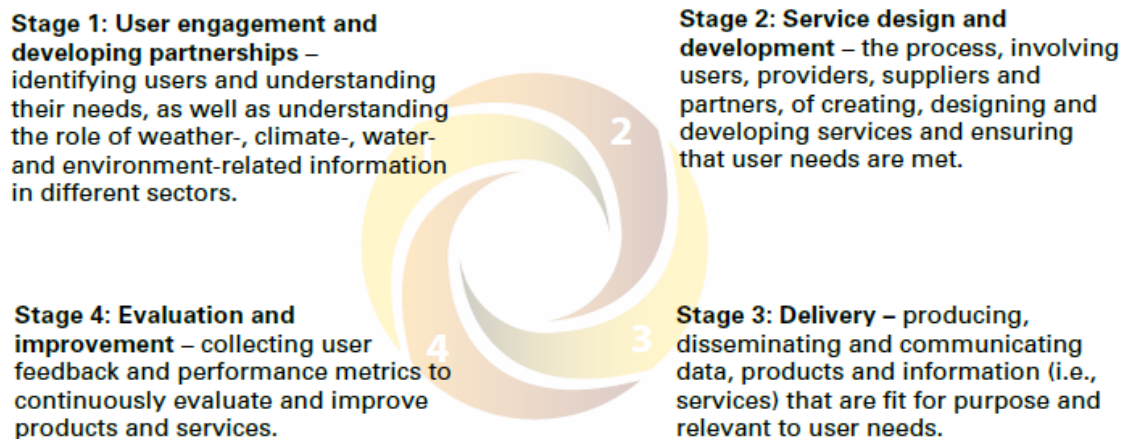


Figure 2: The four stages of a continuous, cyclic process for developing and delivering services.

Furthermore the strategy identifies six elements that describe the activities required for high-quality service delivery and the transition towards a more service-oriented culture (Figure 3).



Figure 3: Six elements of the WMO Service delivery strategy for moving towards a more service-oriented culture.

The management of service-providing organizations must remain focused and committed to ensure that high-quality service delivery is achieved throughout their organizations.

The Implementation Plan for the Strategy has been developed to help all Members assess and improve their service delivery irrespective of their current level and capacity. The key element of the implementation of the strategy at national level is the Service Delivery Progress Model (SDPM). Current levels of service delivery can be assessed either by the service providers themselves or with external assistance. The assessment should be made with the help of the SDPM which shows the type of activities and behaviours that are appropriate for service providers with a certain level of service delivery development. The SDPM guides Members on the actions and activities required to progress to higher levels of service delivery over the short, medium and long term.

Milestones for the implementation of the Strategy are set for the short term (2 years), medium term (6 years) and long term (10 years). The key deliverables resulting from the implementation of the Strategy over the short term will be:

- 1) an assessment of the current level of service delivery
- 2) putting in place the necessary action plan to start improving service delivery
- 3) an assessment of the resources required to implement the action plan

Other changes may require a series of actions over medium or long timescales, so it is important that they are documented and tracked through to completion. Over the medium term, the Implementation Plan aims to help a certain percentage of Members gain at least one level in their service delivery development and to document the process and share lessons learned with other Members. Over the long term, the aim of the Strategy is to develop or strengthen a service culture and facilitate the mainstreaming of service delivery in the programmes and activities of Members' service providers, resulting in a tangible improvement in the user's perception of their services.

The objective of the workshop was to work with GMet to assess their current capabilities in service delivery. The current practices were systematically reviewed against the definitions

provided in the SDPM. The answers to the questions of each of the six strategic elements justify the current status of the service delivery processes in the SDPM in an objective way. The user needs and requirements were collected during the stakeholder workshop. Gaps between the current service delivery level of GMet and the user needs and requirements were identified.

The second objective was for GMet to determine how they could improve their capacity for moving to a higher level in the SDPM, and to guide them in the preparation of an action plan on how to develop that capacity and what is needed in terms of resource and expertise. The results of the workshop form the baseline for the development of GMet in order to achieve modernization to a service-focused NMHS.

Workshop with GMet on Days 1 and 2

Participants

Ghana Meteorological Agency (GMet)

Mr Stephen Komla (Director, GMet)

Mr Andrew Nkansah (Deputy Director, GMet)

GMet staff (Participants list: Annex 2)

WMO Secretariat

Ms Haleh Kootval (Chief, Public Weather services)

Central Institute of Meteorology and Geodynamics, Austria (ZAMG)

Mr Andreas Schaffhauser (Head of Customer Service Division)

Mr Rainer Kaltenberger (Forecasting and Climatological Section)

Day 1 of the week long workshop started with a preparatory meeting between the GMet management and senior staff, WMO and ZAMG to discuss and agree on mission objectives, scope and anticipated outcome of the workshop. After a tour de table, the WMO SPDM was presented by WMO and ZAMG. GMet introduced itself emphasising their status to be an agency which allows them to charge fees for services and products. It became obvious that hitherto financial resources of GMet were mainly put into aviation meteorology thus lacking the development of other departments, like the research- and applied meteorology division.

GMet currently operates around 120 automatic weather stations of which 22 are synoptic weather stations, and 170 are manual weather stations. Until now not much attention was paid to data procession or real time data transmission. However there is a pilot project enabling a central near real time electronic data collection starting soon with some of the 22 synoptic weather stations. Apart from the 24-48h region-specific general weather forecast, a week long outlook, a seasonal forecast and warnings are the main forecasting products (examples see Annex 4).

Various collaborations with governmental organisations exist, but rarely are documented in MoUs. After having a round-table discussion it was agreed to work through document templates provided by the WMO-publication on Service Delivery on day 2.



Figure 4: Round table discussion

Joint Assessment of GMets Current Stage of Service Delivery

In the afternoon a joint assessment of the GMet current stage of service delivery was carried out. Starting point was the products and services of GMet for the key sectors: Aviation, Water, Marine, Disaster Risk Management (DRM) and media/general public.

The current practices were systematically reviewed sector by sector against the definitions provided in the SDPM. Guidance was provided for each of the stages of the SDPM.

The answers to the questions of each of the six strategic elements justify the current status of the service delivery processes in the SDPM in an objective way. Results are summarised in tables 1 to 5.

Table 1: Joint assessment of GMets current stage of service delivery – Strategy Element 1: Evaluate user needs and decisions.

Strategy Element 1 Evaluate user needs and decisions	Comments	Determination of current level in the SDPM	
Q1a: Who uses the products and services you deliver?	<p>Aviation: Products: TAF, SIGMET, MoU is in place, Guidelines by WMO and ICAO are followed – user requirements are known and documented</p> <p>Water: MoU is in place with water river authority, but has to be reviewed and updated</p> <p>Marine: User and needs are known, MoU isn't in place yet</p> <p>DRM: User and needs are known, but no MoU is in place</p> <p>Public/Media: No MoUs with media houses (TV, Radio) in place yet, public survey done long time ago, media get met. data from GMet and present derived products</p> <p>GMet responsibilities are specified in Acts with the government, but not very detailed</p>	<p>Aviation: Level 4</p> <p>Water: Level 3</p> <p>Marine: Level 2</p> <p>DRM: Level 2</p> <p>Public: Level 3</p> <ul style="list-style-type: none"> • Government: Level 4 • Media: Level 2 	Level 2-3
Q1b: What processes do you have in place for engaging with your users?	<p>Aviation: Briefings with pilots, workshops but not on a regular basis</p> <p>Water: Last meeting to review the MoU, Users are able to contact on an ad hoc basis</p> <p>Marine: Two branches – fishing and navigation, currently: providing forecasts to marine navigation, harbour authorities provide them to users, aimed: to provide marine set of products for fishing as well</p> <p>DRM: Round tables when seasonal forecasts are issued, they call for meetings on an irregular basis, regular calls with some employees from GMet, no feedback after severe events</p> <p>Public: last event three years ago, irregular but proactive, students sometimes visit offices but purely on an academic basis</p>	<p>Aviation: Level 2</p> <p>Water: Level 2</p> <p>Marine: Level 2</p> <p>DRM: Level 2</p> <p>Public: Level 3</p>	Level 2
Q1c: How do your users contact you?	<p>Aviation: most engagement is from face to face contacts, but user contact is also possible via email/telephone</p> <p>Water: telephone, email and personal contact, sometimes also</p>	<p>Aviation: Level 3</p> <p>Water: Level 3</p> <p>Marine: Level 3</p>	Level 3

	<p>requests via client services section Marine: mostly via email DRM: they call for meetings on an irregular basis, regular calls with some employees from GMet Public: Contact form on the website, mails are read several times a day, others are calling, so far do not use social media channels</p> <p>Client services section is in charge of receiving emails/requests</p>	<p>DRM: Level 3 Public: Level 3</p>	
<p>Q1d: How are user requirements gathered and documented to facilitate the developments of products and services?</p>	<p>Aviation: MoU in two parts – financial and technical parts, user requirements are documented, changes are usually top-down from ICAO, additional information is provided in face-to-face meetings with GMet officers, needs are met after request Water: Engagement happens when MoU is updated, MoU is updated once every two years, but informal meetings/discussions on common platforms (e.g. projects) take place Marine: were asked what they want, sent the required parameters and technical document but no MoU exists as yet DRM: is informed first in case of weather warnings, not in a formalized written or agreed form, post-disaster information is theoretically available in a national database Public: Some of the TV stations and police require special forecasts, in case of police it was reviewed and the service was adapted</p>	<p>Aviation: Level 4 Water: Level 2 Marine: Level 3 DRM: Level 2 Public: Level 2</p>	<p>Level 2-3</p>

Joint Assessment Results Strategy Element 1: Level 2-3

Level 2: Development initiated. Users are known, but no process for user engagement exists. User requirements for service delivery are not well defined.

Level 3: Development in progress. Users are able to contact NMHSs and their feedback is recorded. There are some formal processes for integrating the feedback received into the development of services. User requirements are defined with limited documentation.

Table 2: Joint assessment of GMets current stage of service delivery – Strategy Element 2: Link service development and delivery to user needs.

Strategy Element 2 Link service development and delivery to user needs	Comments	Determination of current level in the SDPM	
Q2a: What documentation do you maintain to define the products and services you deliver?	Aviation: Defined by ICAO Water: Not specified Marine: No documentation of products yet DRM: Not specified Public: Some user requirements are recorded, but not yet brought into a document	Aviation: Level 3 Water: Level 2 Marine: Level 1 DRM: Level 1 Public: Level 1-2	Level 2
Q2b: How are users kept informed when products and services are changed?	Aviation: Not specified Water: Changes are made at the request of a user Marine: Not specified DRM: If there is new technology, it is presented Public: No press releases are made	Aviation: Level 4 Water: Level 2 Marine: Level 2 DRM: Level 2 Public: Level 1	Level 2

Joint Assessment Results Strategy Element 2: Level 2 – Development initiated. Services do not adapt to changing user needs and new technology. Products are documented with limited descriptive information.

Table 3: Joint assessment of GMets current stage of service delivery – Strategy Element 3: Evaluate and monitor services performance and outcomes.

Strategy Element 3 Evaluate and monitor services performance and outcomes	Comments	Determination of current level in the SDPM	
Q3a: How do you verify the accuracy, quality and effectiveness of the products and services you deliver to users?	Aviation: 1 st stage of QMS audit, currently ad-hoc but trying to implement TAF-verification scheme on linux platform Water: Provide data and forecast products on moisture levels, wind flow, ITCZ position, but the forecast products are not verified at the moment Marine: no verification yet as service is evolving DRM: GMet is able to assess/monitor outcomes (casualties through national database) but no systematic verification of the forecast is done yet Public: Phone calls on ad-hoc basis whether regional forecast was correct	Aviation: Level 2 Water: Level 1 Marine: Level 1 DRM: Level 1 Public: Level 1	Level 1
Q3b: How are the results of the verification of the accuracy, quality and effectiveness of service delivery used to improve the products and services you deliver to your users?	Aviation: Ad-hoc feedback from pilots Water: Not applicable Marine: Not applicable DRM: Not applicable Public: Not applicable	Aviation: Level 2 Water: Level 1 Marine: Level 1 DRM: Level 1 Public: Level 1	Level 1

Joint Assessment Results Strategy Element 3: Level 1 – Undeveloped. No measures are in place for assessing performance, either in terms of accuracy or service delivery.

Table 4: Joint assessment of GMets current stage of service delivery – Strategy Element 4: Sustain improved service delivery.

Strategy Element 4 Sustain improved service delivery	Comments	Determination of current level in the SDPM	
Q4a: Have you documented your service delivery (SD) process?	<p>Aviation: ISO9001 certification is on the way, WMO Quality Management Framework Document</p> <p>Water: No documentation to describe the SD process exists</p> <p>Marine: No documentation to describe the SD process exists</p> <p>DRM: No documentation to describe the SD process exists</p> <p>Public: Media: Rely on the guidelines by WMO but no internal documentation</p>	<p>Aviation: Level 3</p> <p>Water: Level 1</p> <p>Marine: Level 1</p> <p>DRM: Level 1</p> <p>Public: Level 1</p>	Level 1
Q4b: How do you use developments in science and technology to improve service delivery?	<p>Aviation: Intended to install windprofiler but not enough resources, following developments in science and technology</p> <p>Water: Worldbank/GFDRR installed a flood early warning system at Volta River → information is available to GMet, but it's not reviewed/used routinely</p> <p>Marine: Not specified, services in this sector are currently evolving</p> <p>DRM: Not specified</p> <p>Public: Media: Joint project with WMO/Met Office (UK), plans to update the website</p> <p><i>Pilot project which aims to gather near real-time observational data is on the way</i></p> <p><i>Ideas for improvements in public sector: Forecast</i></p>	<p>Aviation: Level 2</p> <p>Water: Level 2</p> <p>Marine: Level 2</p> <p>DRM: Level 2</p> <p>Public: Level 2</p>	Level 2

	<p><i>not just for 24h but for 72h mentioning uncertainty, weekly forecasts are only available to some users, but not published for the public, Introduce color-coded warnings – on going debate?</i></p> <p><i>Media/public is interested in transitional period rather than in other times of the year</i></p>		
Q4c: How do you communicate the changes in your service delivery process to your customers and users?	<p>Aviation: There are meetings between ATC and pilots, by letter and email</p> <p>Water: Are getting informed about changes</p> <p>Marine: Some changes are communicated</p> <p>DRM: If there are changes, they are done at commission level, some changes are communicated</p> <p>Public: Some changes are communicated</p>	<p>Aviation: Level 3</p> <p>Water: Level 2</p> <p>Marine: Level 2</p> <p>DRM: Level 2</p> <p>Public: Level 2</p>	Level 2

Joint Assessment Results Strategy Element 4: Level 2 – Development initiated. The concept of service delivery has been introduced and an assessment of current status has been undertaken.

Table 5: Joint assessment of GMets current stage of service delivery – Strategy Element 5: Development skills needed to sustain service delivery.

Strategy Element 5 Development skills needed to sustain service delivery	Comments	Determination of current level in the SDPM	
Q5a: Who is the service delivery champion within your National Meteorological or hydro-meteorological Service (NMHS)?	Process was started but not yet completed.	Level 2	Level 2
Q5b: What mechanisms are in place to enable your staff to be educated in the principles of service delivery	Ad-hoc training but limited to resources, reactive rather than proactive	Level 1-2	Level 1-2
Q5c: What mechanisms are in place for documenting the roles of staff and their individual training requirements?	Job description is in place for staff in aviation sector, but not yet in other sectors	Aviation: Level 3 Water: Level 2 Marine: Level 2 DRM: Level 2 Public: Level 2	Level 2
Q5d: How do you involve staff in improving service delivery?	Ad-hoc suggestions from staff to director within aviation, in other sectors just on informal basis	Aviation: Level 3 Water: Level 2 Marine: Level 2 DRM: Level 2 Public: Level 2	Level 2

Joint Assessment Results Strategy Element 5: Level 2 – Development initiated. No formal training in service delivery is provided, though service delivery principles are informally communicated.

Summary Service Level Assessment

Table 6 provides an overview of the assessment results of GMet according to the WMO SDPM. The table contains the answers of the questions regarding the respective strategy elements and shows the different levels of service delivery within the SDPM.

Table 6: Overview of the assessment results (level 1: undeveloped, level 2: development initiated, level 3: development in progress, level 4: developed and level 5: advanced).

Strategy Element	Question	Aviation	Water	Marine	DRM	Public	Overall	Overall Element
Element 1 Evaluate user needs and decisions	1a	4	3	2	2	3 (4,2)	2-3	2-3
	1b	2	2	2	2	3	2	
	1c	3	3	3	3	3	3	
	1d	4	2	3	2	2	2-3	
Element 2 Link service development and delivery to user needs	2a	3	2	1	1	1-2	2	2
	2b	4	2	2	2	1	2	
Element 3 Evaluate and monitor services performance and outcomes	3a	2	1	1	1	1	1	1
	3b	2	1	1	1	1	1	
Element 4 Sustain improved service delivery	4a	3	1	1	1	1	1	2
	4b	2	2	2	2	2	2	
	4c	3	2	2	2	2	2	
Element 5 Development skills needed to sustain service delivery	5a	2	2	2	2	2	2	2
	5b	1-2	1-2	1-2	1-2	1-2	1-2	
	5c	3	2	2	2	2	2	
	5d	3	2	2	2	2	2	
Overall								Level 2

The overall assessment of GMet according the WMO SDPM results in **level 2: development initiated**.

Templates Workshop

After having jointly assessed the current level of GMets service delivery, the homepage of GMet, <http://www.meteo.gov.gh/>, which was developed and hosted by an external company based on an open-source Joomla-CMS, was shortly reviewed by the workshop participants. Recommendations of WMO and ZAMG can be found in Annex 5 of this document.

In the afternoon GMet, WMO and ZAMG worked through templates contained in the Implementation Plan including the feedback log, Memorandum of Understanding and Service Level Agreement, and completed specific examples for GMet. These are attached in Annex 1 to this report.



Figure 5: Breakout groups and presentations of completed templates.

Stakeholder Workshop on Days 3 and 4

On days 3 and 4 external stakeholders were invited to a workshop for an open dialogue between GMet and its stakeholders.

The aim was to share insights to stakeholders' operations, the impact of weather and climate on their responsibilities and operations, and give GMet feedback on the use of their products and services.

Stakeholders were asked to present on the above topics to the workshop. Presentations made by the stakeholders can be accessed at:

http://www.wmo.int/pages/prog/amp/pwsp/Stakeholders_Workshop_Service_Delivery_Ghana.htm



Figure 6: Presentation of GMet



Figure 7: Presentation of VRA – Volta River Authority.



Figure 8: Presentation of GCAA – Ghana Civil Aviation Association.



Figure 9: Open discussion

List of Stakeholders Attending Days 3 & 4

Agriculture

- Ministry of Food and Agriculture (MoFA)
- Esoko Ltd (provider of information and communication service for agricultural markets in Ghana)

Civil protection

- National Disaster Management Organisation (NaDMO)

Hydro Power and Hydrology

- Volta River Authority (VRA)

Transport

- Ghana Civil Aviation Authority (GCAA)
- Ghana Ports and Harbours Authority (GPHA)

Media

- Reporters from Ghana Broadcasting Corporation Television (GTV) (part time on day three)
- Reporters from a local newspaper (part time on day three)

Stephen Komla, Director General of GMet and Haleh Kootval (WMO) gave interviews to attending reporters about GMets activities and the workshop.

Stakeholder Feedback to GMET - Breakout Groups

Following the stakeholder presentations, breakout groups were formed with representatives from GMet and stakeholders, organised by sector (e.g. Agriculture, Disaster Risk Management and Transport). Discussions took place around specific needs, requirements, challenges and feedback in relation to each sector.

The feedback was collected in a template. An Example of a completed feedback log is contained in Annex 3.



Figure 10: Collecting feedback from stakeholders in breakout groups.



Figure 11: Presenting collected feedback from stakeholders in breakout groups.

Action Plan

Based on the joint assessment of the capacities regarding service delivery, feedback from stakeholders and the user needs and requirements, WMO, GMet and ZAMG carried out a gap analysis and worked on the development of the action plan (Tables 7 to 11). The objective of the action plan is to ensure that GMet can gain a higher level within the SDPM.

Key actions for each element in order to implement the WMO Strategy for Service Delivery and areas of focus are defined for the short and mid-term. Some of the actions can be implemented ad hoc, other changes may require a series of actions over medium or long timescales, so it is important that they are documented and tracked through to completion.

Over the medium term, the Implementation Plan aims to help GMet to gain at least one level in their service delivery development and to document the process and share lessons learned with other Members.

Over the long term, the aim of the Strategy is to develop or strengthen a culture or service and facilitate the mainstreaming of service delivery in the programmes and activities of GMet, resulting in a tangible improvement in the user's perception of its products and services.

Recommendations

Briefly summarised, it is strongly recommended to:

- intensify the interaction with the stakeholders through regular meetings
- revise, establish or update MoU, CSA, SLA or contracts at least with key users
- provide more accurate weather forecasts and warnings in a higher spatial and temporal resolution
- collect user feedback in a more formal way
- tailor products and services to requirements of users
- formalise internal processes and responsibilities regarding service delivery
- improve dissemination of products
- start simple verification processes
- establish a service-oriented culture, i.e. *act more proactive than reactive*

Table 7: Gaps and action plan regarding Element 1: Evaluating user needs and decisions

Strategy element	Current level	Gaps	Act-ID	Administrative actions	Lead manager administrative actions	Act-ID	Technical actions	Lead manager technical actions	Timetable for actions to be complete	Resources
Element 1: Evaluating user needs and decisions	2 – 3	No process for engagement	1-1	Annual formal meeting/workshop with stakeholders	DG				By January 2017	External: conference room or rooms of other gov. organizations provide refreshments/Internal staff
		User requirements not well defined								
		No structured user/customer contacts and services	1-2a	Establish contact with new users	Dpt. DG	1-2b	Maintain contact with new users	Client service department Carried out by responsible departments	Approach at least two new users by December 2016	Internal resources
		User/customer contact processes can be improved								
			1-3	Carry out a user survey	Initiated by Dpt. DG				By the end of 2016	WMO provides guidance, internal resources
			1-4	Revise, establish or update MoU, CSA, SLA or contracts at least with key users	DG				Revise MoU with GCAA, VRA by December 2016, Set up MoU with GPHA, GMA (Ghana Maritime Authority), set up SLA with GCAA (by the End of 2016), MoU with Esoko (by the End of 2016), Set up	Internal resources

Strategy element	Current level	Gaps	Act-ID	Administrative actions	Lead manager administrative actions	Act-ID	Technical actions	Lead manager technical actions	Timetable for actions to be complete	Resources
									SLA with GNPC (Ghana National Petroleum Company), SLA with GCAP (Worldbank Project)	
			1-5	Contact prospective customers in a structured manner					Set up internal strategy and set up product catalogue from now by the mid of 2017	Internal resources
			1-6	Assign contact persons to key users	DG				Assigned by September 2016	Internal resources
			1-7	Use feedback for product improvement and development.	Heads of divisions				Continuous	Internal resources
						1-8	Collect feedback for product improvement into an Excel-sheet	Client service department	Starting by September 2016	Internal resources
						1-9	Create/adopt existing user database -> needed for customer relationship management	Dpt. DG	By end of June 2016	Internal resources
						1-10	Maintenance of user database -> needed for customer relationship	Client Service Department	Ongoing, after June 2016	Internal resources
						1-11	Record needs/requirements of stakeholders/users and public	Client Service Department	By the end of 2016	Internal resources
						1-12	Set up a product catalogue (high priority!)	Client Service Department	By September 2016	Internal resources
						1-13	Conduct market /sector analysis	Client Service Department	Beginning with mid of 2017	Internal resources

Strategy element	Current level	Gaps	Act-ID	Administrative actions	Lead manager administrative actions	Act-ID	Technical actions	Lead manager technical actions	Timetable for actions to be complete	Resources
						1-14	Record user feedback in feedback log/digital format (maintenance)	Client Service Department	Ongoing	Internal resources

Table 8: Gaps and action plan regarding Element 2: Linking service development and delivery to user needs

Strategy element	Current level	Gaps	Act-ID	Administrative actions	Lead manager administrative actions	Act-ID	Technical actions	Lead manager technical actions	Timetable for actions to be complete	Resources
Element 2: Linking service development and delivery to user needs	2	Products are not recorded				2-1	Identify priority stakeholders and document the generation of key products in internal work instruction documents or SLA.	Dpt. DG to nominate Heads of divisions	By the end of 2016	Internal resources
		Users are informed only on an ad-hoc basis in case of changes of products and services				2-2a	Inform all users in case of changes of products and services, take information from user database	Dpt. DG to nominate Heads of divisions	By the beginning of July 2016 (when use database is ready)	Internal resources

Table 9: Gaps and action plan regarding Element 3: Evaluating and monitoring service performance and outcomes

Strategy element	Current level	Gaps	Act-ID	Administrative actions	Lead manager administrative actions	Act-ID	Technical actions	Lead manager technical actions	Timetable for actions to be complete	Resources
Element 3: Evaluating and monitoring service performance and outcomes	1	Processes for assessing performance, routine documentation and verification are not in place				3-1	Start simple verification processes like contingency tables on a daily bases			
						3-1a	<ul style="list-style-type: none"> Do verification on a daily basis by comparing forecasts and observations in a spreadsheet 	Officer in Charge of Forecasting	By the beginning of July 2016	Internal resources
Strategy element	Current level	Gaps				3-1b	<ul style="list-style-type: none"> TAF-verification via Hongkong software 	Officer in Charge of Forecasting	Beginning from 1st of August	Internal resources
Element 2: Linking service development and delivery to user needs	2	Products are not recorded Users are only ad hoc informed in case of changes of products and services				3-2	Document timeliness of products and services (within QMS-process)	Dir. of Synoptics and Forecasting	By 4th quarter of 2016	Internal resources
						3-3	Engage customers and explain products to them	Heads of departments	Ongoing	Internal resources

Table 10: Gaps and action plan regarding Element 4: Sustaining Improved service delivery

Strategy element	Current level	Gaps	Act-ID	Administrative actions	Lead manager administrative actions	Act-ID	Technical actions	Lead manager technical actions	Timetable for actions to be complete	Resources
Element 4: Sustaining Improved service delivery	2	Process documentation not in QMS system for all products				4-1	incorporate processes into QMS system, use aviation as example, user internal work instruction documents	Dir. of Synoptics and Forecasting	Incorporate PWS by the end of 2016 after aviation, Other divisions to be followed in 2017	Internal Resources External Resources for auditing
		Users are informed only on an ad-hoc basis in case of changes of service delivery process				4-1a	describe customer relationship management processes (workshops, surveys, visits) and integrate it into QMS	Dir. of Synoptics and Forecasting	By the end of 2016	Internal resources
		Development of science and technology are reviewed, but not implemented in the service delivery process								
Strategy element	Current level	Gaps				4-1b	Inform all users in case of changes of the service delivery process, take information from user database	Client Service Division upon advice of Head of divisions	Beginning from July 2016	Internal resources

Table 11: Gaps and action plan regarding Element 5: Developing skills needed to sustain service delivery

Strategy element	Current level	Gaps	Act-ID	Administrative actions	Lead manager administrative actions	Act-ID	Technical actions	Lead manager technical actions	Timetable for actions to be complete	Resources
Element 5: Developing skills needed to sustain service delivery	2	No service delivery champion in place	5-1	Nominate a service delivery champion for the different working areas (e.g. forecasting, climatology) <ul style="list-style-type: none"> • PWS: Felicity • Aviation: Michael Padi • Climatology and Agroclimatology: Kofi • Forecasting system improvement: Fred 	DG				Done	Internal Resources
		no service delivery relevant trainings in place								
		only informal process for staff suggestions exists.	5-2	Organize staff training in regards to service delivery	Director of Research and Applied Meteorology				Starting with beginning of July 2016, ongoing afterwards	Internal Resources
						5-3	Integrate formal process for staff suggestions into QMS	Dpt. DG	By the end of 2016	

Annex 1: Templates and Examples

Part 1: Service Level Agreement with NADMO (Example)

SERVICE -LEVEL AGREEMENT – Example

ARTICLE I. PARTIES

Describe the parties involved in the SLA.

Ghana Meteorological Agency (GMet) and National Disaster Management Organisation (NADMO)

ARTICLE II. SCOPE

Section 2.01 Scope

Describe the purpose and extent of the SLA.

To provide meteorological services for observing, monitoring, advisories forecast and weather warnings.

Section 2.02 Assumptions

Define any assumptions underlying the defined scope.

NADMO will be responsible for providing Disaster preparedness, reduction, management and response for the entire country.

Section 2.03 Goals and objectives

Describe what the parties are expecting to accomplish with the SLA.

To reduce the impact of severe weather and related hazard on the peoples live and property

ARTICLE III. ROLES AND RESPONSIBILITIES

Describe the role of each party involved in the SLA and the responsibilities they must assume to comply with the SLA and deliver the products and services defined therein.

GMet

- GMet is responsible for providing forecast and weather information
- GMet will make relevant staff available should there be the you need further clarification and guidance

NADMO

- NADMO should inform GMet about the impacts of the hazards
- Make their staff available for discussion

ARTICLE IV. EFFECTIVE DATE AND TERM

Indicate the date the agreement becomes effective and its duration.

This agreement will be effective from June 1, 2016 to December 31, 2018

ARTICLE V. DELIVERY AND PERFORMANCE

Describe in detail what each party is responsible for delivering and the key performance indicators to ensure compliance.

GMet

- GMet will install equipment, monitor and collect observation data
- GMet will provide 24 hour/daily twice at 3am and 3pm with an outlook for the next 48 hours each day
- GMet will provide seasonal forecast issued by March 15 each and updated by May, 20
- GMet will provide severe weather phenomenon warning as applicable

NADMO

- NADMO will make their staff available for discussion by phone or in person after the event

ARTICLE VI. REPORTING, REVIEWING AND AUDITING

Describe oversight and reporting on the agreement, when the agreement should be reviewed, and the points of contact for reporting.

This agreement will be reviewed after 24 months after the effective date

ARTICLE VII. COST/FUNDING AND PAYMENT

Document the costs associated with the SLA, who is responsible for paying or funding and when payment should be made. The cost may be broken down by specific line items, such as labour, supplies, equipment, travel, training, etc.

Both parties should make available relevant staff available for the review of the accuracy of the forecast and weather warnings.

GMet: Director General or representative

NADMO: National Coordinator or representative

- For a daily forecast a staff cost of 2 hours of time is required
- IT cost for the purposes of dissemination, telephone calls, email,
- Training of staff equals.....

Note: This is the cost break down but the cost will not be recovered from NADMO

ARTICLE VIII. CHANGES AND MODIFICATIONS

Describe the process by which changes or modifications can be made to the SLA and who is responsible for making such changes.

GMet: Director General or Representative

NADMO: National Coordinator or Representative

ARTICLE IX. TERMINATION

Describe the terms for termination and the procedure to follow.

Termination should be by mutual agreement upon given notice of at least three months

Part 2: MoU between GMet and GPHA (Example)

MEMORANDUM OF UNDERSTANDING
between

[Ghana Meteorological Agency]

and

[Ghana Ports And Harbours Authority]

THIS MEMORANDUM OF UNDERSTANDING (MOU), dated __31st May_ _____ [2016_],

IS BETWEEN

A. THE PARTICIPANTS

(1) [Ghana Meteorological Agency]

(2) [Ghana Ports and Harbours Authority]

B. BACKGROUND

- (a) Ghana Meteorological Agency is responsible for providing essential marine meteorological information to the community at large in Ghana.
- (b) Ghana Ports and Harbours Authority (GHAPPHA) is in need of marine weather and climate information.
- (c) The participants wish to enter into an MOU to document the understandings reached on the provision of marine weather and climate services.

1. DEFINED TERMS AND INTERPRETATION

The definitions and rules of interpretation in this paragraph apply to this MOU only.

Intellectual property rights	Intellectual property rights (IPRs) of all kinds, regardless of the form or medium on which they are stored, including all patents, rights to inventions, copyright and related rights, moral rights, trademarks and service marks, trade names and domain names, rights in getup, rights to goodwill or to sue for passing off or unfair competition, rights in designs, rights in computer software, database rights, rights in classified information (including know-how and trade secrets) and any other rights in the nature of IPRs, whether registered or unregistered and including all applications (or rights to apply) for, and renewals or extensions of, such rights and all similar or equivalent rights or forms of protection which subsist or will subsist in any part of the world, together with all rights of action in relation to the infringement of any of the above.
Memorandum	This MOU and any future variations to it which may be agreed upon by the participants.
Services	The services to be delivered by Ghana Meteorological Agency to Ghana Ports and Harbours Authority set out in Annex A of this MOU.

2. DURATION

This MOU will come into effect upon signature of both participants and will continue until terminated under the provisions of paragraph 10.

3. PURPOSE AND SCOPE

3.1 The purpose of this MOU is to set out the arrangements agreed upon by the participants in respect of the services.

3.2 The scope of this MOU is limited only to the services and does not extend to other activities carried out by the participants.

4. GHANA METEOROLOGICAL AGENCY COMMITMENTS

Ghana Meteorological Agency will carry out the services described in Annex A.

5. GHANA PORTS AND HARBOURS AUTHORITY COMMITMENTS

Ghana Ports and Harbour Authority will:

(a) pay the charges for the services set out in paragraph 7;

(b) respond to any reasonable request made by Ghana Meteorological Agency in respect of the delivery of the services.

6. PERFORMANCE OF THE SERVICES

6.1 The participants will form a **steering body** comprised of two **marine forecasters and two members of the Ghana Ports and harbour authority**. The members are to be nominated by the director general of the two organizations.

6.2 The steering body will be responsible for monitoring the performance of the services.

7. FINANCIAL MATTERS

7.1 The charges for the services are forty thousand Ghana Cedis monthly.

7.2 Payment will be made within fifteen (15) days of receipt of a correctly completed invoice.

7.3 The mode of payment shall be a cheque deposited to the Ghana Meteorological Agency's account as detailed below.

Accounts Name:

Bank Branch:

Accounts Number:

8. INTELLECTUAL PROPERTY RIGHTS

- 8.1 This MOU does not affect the ownership and control of a participant's IPR that existed prior to the date of this MOU. No license to use any IPR is granted or implied unless explicitly stated in this MOU.
- 8.2 Each participant will grant the other participant a license to use its pre-existing IPRs as necessary for the purpose of performing the services.
- 8.3 Ghana Meteorological Agency hereby grants Ghana Ports and Harbours Authority a nonexclusive, royalty-free license to use marine meteorological information for the purpose of sea navigation and safety at sea.

9. CONFIDENTIALITY

- 9.1 Each participant will treat as confidential all information considered as such and will not divulge such information to any person (except to the participant's own employees, government (including Parliament), or audit bodies that need this information) without the other participant's prior written consent. This paragraph does not extend to information which was rightfully in the possession of a participant prior to the establishment of this MOU, which was already public knowledge or will become so at a future date (unless resulting from a breach of this paragraph) or which is trivial or obvious. Each participant will ensure that its employees are aware of and comply with the provisions of this paragraph.

10. TERMINATION

- 10.1 The participants may terminate this MOU by mutual consent subject to the approval of Steering body.
- 10.2 Ghana Ports and Harbours Authority may terminate this MOU by giving 30 days' written notice if Ghana Meteorological Agency persistently fails to perform the services in accordance with the description set out in Annex A.

11. REVIEW OF THE MOU

- 11.1 This MOU will be reviewed every three years, starting no later than one year from the commencement date, which is the date indicated at the head of this MOU. In addition, a review may take place when any significant changes to policy or legislation are made, or when the Chief Executive or equivalent officer of either of the participants' organizations has changed.

12. DISPUTE RESOLUTION

- 12.1 The participants will use all reasonable endeavours to resolve any dispute amicably and in good faith in accordance with the procedures laid down in this paragraph.

- 12.2 Should any dispute or question arise between the participants in relation to this MOU or any matter relating to the affairs of the participants or the rights, duties or liabilities of any participant.
- (a) the steering body will discuss the dispute as soon as reasonably possible, with a view to finding a solution;
 - (b) if the steering body is unable to resolve the dispute after 28 days or a longer period agreed upon by the participants, the matter will be referred to the director generals of the two organizations.
- 12.3 In the event that the director generals are unable to resolve the matter, it will be referred to a mediating body acceptable to both participants for resolution.

13. VARIATION

No variation to this MOU will be effective unless agreed upon in writing and signed by an authorized representative of each participant.

14. CONTACT INFORMATION

Ghana Meteorological Agency

Technical contact:

Name:
Position:
E-mail address:
Tel.:

Administration:

Name:
Position:
E-mail address:
Tel.:

Ghana Ports and Harbour Authority

Technical contact:

Name:
Position:
E-mail address:
Tel.:

Administration:

Name:
Position:
E-mail address:
Tel.:

15. LEGAL STATUS

This MOU is not intended to be legally binding. However, it will be interpreted in accordance with the laws of Ghana and both participants are expected to meet the commitments made under it.

Signed by:) [signature here]
For and on behalf of:)
)
Job title:)
Date:)

Signed by:) [signature here]
For and on behalf of:)
)
Job title:)
Date:)

Annex A: Service description

Services to be provided

1. Sea surface temperature
2. Sea surface Heights
3. Wave Heights
4. Significant wave height
5. 6 days marine weather forecast(daily update 1000GMT)
6. Wind Direction and speed
7. Visibility
8. Weather warning (Thunderstorms/fog/mist/)
9. Tides
10. Ship route forecast

Feedback Log - Example

FEEDBACK REFERENCE	SOURCE OF FEEDBACK	CATEGORY	TYPE OF FEEDBACK	COMMENT	SPECIFIC PRODUCT REFERENCE	APPLICABLE ACTION REFERENCE
FBL001	FACE TO FACE	DISPATCH OFFICER	COMPLIMENT	The satellite imagery included in the flight folder was very helpful. It helped the pilot avoid a storm along the route.	1200Z RBG convection satellite imagery on 2016/05/31	ACT001
FBL002	Phone	Air traffic Controller	Complaint	Visibility value is poorer than predicted in the TAF	TAF 260300Z 2606/2712 Of May 2016	ACT002
FBL003	Phone	Air traffic controller	Complaint	Date of issue on SIGMET is not current	SIGMET 01 VALID 300300/30700Z	ACT003
FBL004	Phone	Citizen	Concern	Thick duststorm observed by a student	February 2 2016	ACT004
FBL005	Face to face	Dispatch officer	Explanation needed	Meaning of TAF short forms	March 2016	Verbal reply

Annex 2: Participants List

STAKEHOLDERS WORKSHOP TO IMPLEMENT WMO STRATEGY FOR CLIMATE SERVICE DELIVERY IN GHANA

MIKLIN HOTEL - ACCRA, GHANA

30 MAY TO 03 JUNE 2016

LIST OF PARTICIPANTS

NO	NAME	GENDER	INSTITUTION	DESIGNATION/ POSITION	ADDRESS	CONTACT CELL/TEL	EMAIL ADDRESS
1	Abel Ayamga Akurigo	M	GPHA	Assistant Project Engineer	P. O. Box 150. Tema	+233508981821	Aakuri@ghanaports.net
2	Philip Tetteh Padi	M	VRA	Engineer	VRA, ESD P. O. Box 77, Akuse	+233243565393	Philip.padi@vra.com
q	Kingsley K. Amoako	M	MOFA-DCS	Assistant Director	P. O. Box M37, Accra	+233244599596	kingkwaw@yahoo.com
4	Nathanael Nii-Odai Laryea	M	MOFA-DCS	Assistant Agric Officer	P. O. Box M37, Accra	+233546331820	niiodailaryea@gmail.com
5	Mohammed Issifu	M	Esoko	Agric Content Specialist	PMB CT 90 Cantonment	+233245007513	mohammed@esoko.com
6	Osei Bonsu KK	M	GCAA	COF: ATS	PMB KIA ACCRA	+233243207130	Kkob003@hotmail.com
7	Steve Nyarkotey Quao	M	GCAA	Aviation Meteorology Inspector	PMB KIA; ACCRA	+233208199039	snyarkotey@yahoo.co.uk
8	Setsiafia Elikem	F	GMet	Principal Meteorologist	Box 87, Legon Accra	+233277430067	setsoafiaelikem@gmail.com
9	James Dusu	M	GMet	Meteorologist	Box KA 9471 Accra	+233242544859	jaduyyz@gmail.com

10	Bashiru Yahaya	M	GMet	Assistant Meteorologist	Box KA 9471-Accra	+233242525315	b.yahaya@meteo.gov.gh
11	Charles Yorke	M	GMet	Director	P.O.Box LG(/; Legon -Accra	+233208153769	yorke_kacharles@yahoo.co.uk
12	Frederick Otu-Larbi	M	GMet	Assistant Meteorologist	Box KA 9471-Accra	+233233300009	Larbotu@ymail.com
13	John Bright Ayabilah	M	GMet	Assistant Meteorologist	P.O Box MP107,Accra	+233209344026	ayabilahbugri@yahoo.com
14	Joseph Portuphy	M	GMet	Principal Meteorologist	PO BOX KIA 9471 Accra	+233277413938	j.portuphy@meteo.gov.gh
15	Michael Padi	M	GMet	Forecaster	Box KA 9471-Accra	+233261242194	michaelpadi2000@gmail.com
16	Caleb Mensah	M	GMet	Forecaster	Box KA 9471-Accra	+233200989756	c.mensah@meteo.gov.gh / calnumic@gmail.com
17	Adom Derkye	M	GMet	Forecaster	Box KA 9471-Accra	+233243344276	apulolo@yahoo.com
18	Felicity Ahafianyoy	F	GMet	Forecaster	Box KA 9471-Accra	+233243267482	felicityahafianyoy@yahoo.com
19	Papa Nii Clegg	M	GMet	Public Relation Officer	Box KA 9471-Accra	+233277838087	niictegg@yahoo.com
20	Kofi Asare	M	GMet	Meteorologist	Box KA 9471-Accra	+233244980264	asarefi@yahoo.com
21	Richard Agyemang	M	GMet	Meteorologist	Box KA 9471-Accra	+233242386260	richmet06@gmail.com
22	Paulina Korasare	F	GMet	Met. Technician	Box KA 9471-Accra	+233243189396	pkorasare333@yahoo.com
23	John Ayabila	M	GMet	Assistant Meteorologist	Box KA 9471-Accra	+233209344026	ayabilahbugri@yahoo.com
24	James Duso	M	GMet		Box KA 9471-Accra	+233242544859 , +233242544859	j.duso@meteo.gov.gh
25	Nana Kofi Opoku	M	GMet	Meteorologist	Box KA 9471-Accra	+233207778546	n.opoku@meteo.gov.gh
26	Elikem Setsoafia	F	GMet	Principal Meteorologist	Box KA 9471-Accra	+233277430067	elikem_s@yahoo.com
27	Rainer Kaltenberger	M	ZAMG	Forecaster and Climatologist	Hohe Warte 38, 1190 Vienna, Austria	+431360262238	rainer.kaltenberger@zamg.ac.at
28	Andreas Schaffhauser	M	ZAMG	Head of Costumer Service, Meteorologist	Hohe Warte 38, 1190 Vienna, Austria	+431360262301	andreas.schaffhauser@zamg.ac.at

29	Haleh Kootval	F	WMO	Chief, PWS WMO	World Meteorological Organisation, 7 bis avenue de la Paix, 1211 Geneva, Switzerland	+41227308333	hkootval@wmo.int
30	Andrew Nkansah	M	GMet	Dep. Director General	Box KA 9471-Accra	+233277410493	a.nkansahq@meteo.gov.gh
31	Stephen Komla	M	GMet	Director General	Box KA 9471-Accra	+233208135896	stephenaokuma@hotmail.com
32	Francisa Martey	F	GMet	Principal Meteorologist	Box KA 9471-Accra	+233266370701	
33	Ayilari-Naa Juati	M	GMet	Director Forecasting	Box KA 9471-Accra	+233244747052	a.juati@meteo.gov.gh

Annex 3: Stakeholder Feedback

Feedback Group 1: NADMO (National Disaster Management Organisation) – Ghana Meteorological Agency (GMet)

Winfred Tesia (NADMO), Andrew Nkansah (GMet), Paul Juati (GMet), Elikem Setsoafia (GMet), Francisca Martey (GMet)

Thinking about the weather and climate information that you would like to receive in the future - Please complete

#	Institution providing feedback	Institution contact person	Weather & Climate Information need	Specific use	Communication method	Time period	Agreed action	Responsible Office GMet	GMet contact person
1	National Disaster Management Organisation (NADMO)	WINFRED TESIA	Thunderstorms (Rainstorms) Windstorms Fog,haze Critical Humidity threshold(15°&below) Temperature Drought	Civil protection Disaster risk reduction and recovery	Normal weather forecast(email) Severe weather warning(Telephone calls should be logged , emails)	24hour An outlook for 48hours	Service Level Agreement	Forecasting Division	Duty forecaster (office phone no/email)

Feedback Group 2: VRA (Volta River Authority) – Ghana Meteorological Agency (GMet)

Philip Tetteh Padi (VRA), Paulina Korasare (GMet), Michael Padi (GMet), Richard Yao Agyeman (GMet), Frederick Otu-Larbi (GMet)

Thinking about the weather and climate information that you would like to receive in the future - Please complete

#	Institution providing feedback	Institution contact person	Weather & Climate Information need	Specific use	Communication method	Time period	Agreed action	Responsible Office GMet	GMet contact person
1	VRA	Ing. Philip Tetteh Padi	1. Decadal rainfall data for 16 stations	1. Inflow forecasting from decadal rainfall data	Emails, phone calls and Presentations	1. Daily rainfall transmitted every ten days.	MoU in place.	1. Client Service	1. Ms. Paulina Korasare 0307010019 client@meteo.gov.gh info@meteo.gov.gh
			2. Weekly weather update	2. Short term insight of the atmospheric conditions over the catchment area for planning.		2. Weekly		2. Forecast Office (KIAMO)	2. Mr. James Dusu 0302777172 kiamo.meteo.gov.gh
			3. Seasonal forecast twice a year.	3. Medium to Long term insight of the atmospheric conditions over the catchment area for		3. Biannual	Monthly seasonal forecast update	3. Research Unit.	3. Mr. Charles K. Yorke info@meteo.gov.gh 0307010019

				planning.					
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Feedback Group 3: Ministry of Food and Agriculture (MoFA) – Esoko Ltd. – Ghana Meteorological Agency (GMet)
Nathaniel Laryea (MoFA), Mohammed Issifu (Esoko Ltd.), Kofi Asare (GMet), Nana Opoku Kofi (GMet), Felicity Ahafiany (GMet), Charles Yorke (GMet)

Thinking about the weather and climate information that you would like to receive in the future - Please complete

#	Institution providing feedback	Institution contact person	Weather & Climate Information need	Specific use	Communication method	Time period	Agreed action	Responsible Office GMet	GMet contact person
1	MoFA	Kingsley Amoako Environment and CC unit 0244599596 kingkwaw@yahoo.com	24 hour forecast locate specific forecast	For planning and decision making (land, crop and livestock management)	1. SMS to farmers directly on their phones 2. email to MOFA	2017 cropping season	MoU Service level agreement	Agro-Met Dpt.	Kofi Asare Felicity Ahafiany
2			Seasonal forecast according to agro ecological zones	For planning and decision making throughout the week	1. SMS to farmers directly on their phones 2. email to MOFA	Pilot for the minor season for 2016 and begin formally in 2017 cropping season	MoU Service level agreement	Agro-Met Dpt.	Kofi Asare Felicity Ahafiany
3			Climate change projection for 5 years	To influence policy	email to MOFA	2017 cropping season	MoU Service level	Agro-Met Dpt.	Kofi Asare Felicity Ahafiany

							agreement		
4									
5	Esoko Ltd.	Mohammed Issifu 0245007513 mohammed@esoko.com	Seasonal forecast for each agro ecological zone. Specify period of possible flood, drought Specific onset date, cessation and duration	to project and plan for the season. (onset , cessation duration etc)	SMS to farmers directly on their phones	2017 cropping season	MoU	Agro-Met Dpt.	Kofi Asare Felicity Ahafiany
6			Location-specific 24 hour forecast	For planning and decision making throughout the week	SMS to farmers directly on their phones/ Web base platform online	2017 cropping season	MoU	Agro-Met Dpt.	Kofi Asare Felicity Ahafiany
7			Web-based forecast	For planning and decision making throughout the week	Web-based platform online	2017 cropping season	MoU		Kofi Asare Felicity Ahafiany
8			Historical climate information(start of the rain, Duration and cessation)	For planning and decision making throughout the week		2017 cropping season	MoU		Kofi Asare Felicity Ahafiany
9			Risk information			2017 cropping season	MoU		

Feedback Group 4: Ghana Ports and Harbours Authority (GPHA) – Ghana Meteorological Agency (GMet)

Abel Ayamga Akurigo (GHAPOHA), Caleb Mensah (GMet), John Bright Ayabilah (GMet), Adom Derkye (GMet), Bashiru Yahaya (GMet)

Thinking about the weather and climate information that you would like to receive in the future - Please complete

#	Institution providing feedback	Institution contact person	Weather & Climate Information need	Specific use	Communication method	Time period	Agreed action	Responsible Office GMET	GMet contact person
1	Ghana Ports and Harbours Authority (GHAPOHA)	Abel Ayamga Akurigo 0508981821 aakurigo@ghanaports.net	Visibility	Safe berthing of vessels	Email & calls	Daily	Follower up by management for an MoU	Marine Dpt	Adom Derkye Caleb Mensah Bashiru Yahaya John B Ayabilah 0508485444 apulolo@yahoo.com kiameteo@gmail.com
2			Wind speed and direction			Daily		Marine Dpt	
3			Sea surface temperature			Daily		Marine Dpt	
4			Tide			Daily		Marine Dpt	
5			Wave forecast			Daily		Marine Dpt	

Feedback Group 5: Ghana Civil Aviation Authority (GCAA) – Ghana Meteorological Agency (GMet)

Rev. Quao (GCAA), Osei Bonsu (GCAA), Joe Portuphy (GMet), James Dusu (GMet), Papa Nii Clegg (GMet)

Thinking about the weather and climate information that you would like to receive in the future - Please complete

#	Institution providing feedback	Institution contact person	Weather & Climate Information need	Specific use	Communication method	Time period	Agreed action	Responsible Office GMet	GMet contact person
1	GCAA	Rev. Quao	Aeromet Information (Aerodrome Reports, TAF, SIGMET, etc)	Safe Air Navigation Services	AWOS, AFTN, Phone,	Daily (Half hourly) as and when the phenomena occurs	MoU Established Between GCAA & GMet (needs revision)	Areonautical Met Office (GMet)	Joe T. Portuphy
2	GCAA & GMet	Osei Bonsu J. T Portuphy	Service Level Agreement	Contract	Letter	By end of year 2016	Service Level Agreement needed to be signed between ATC & GMet	GCAA & GMet	Osei Bonsu, J. T Portuphy
3	GCAA	GCAA Service Regulator	Ensure Implementation of QMS	Ensure Quality of service delivery	QMS Certification	7 November 2016	Yet to be completed	GMet	Paul Juati
4	GCAA	GCAA Service Regulator	Review of Authorisation of Met Documents	Ensure valid documentation	Revised Documents	7 November 2016	Yet to be completed	GMet	Paul Juati
5	GMet	Atoklo Boye	Timely commitment of Cost Recovery redemption	To cover cost of service provided	Invoicing, Letters and verbal communication	Quarterly	Yet to be completed	GCAA, GACL	Grp. Capt. Komla

Annex 4: Examples of Forecasting Products Delivered by GMet



GHANA METEOROLOGICAL AGENCY
24-HOUR FORECAST FOR GHANA
VALID FROM 7AM TODAY



SUMMARY: The entire Country will be partly cloudy this morning with sunny intervals, however becoming sunny after midday. Scattered cases of thunderstorms and rain activities will later in the evening occur over places in the Middle sector (Brong Ahafo, Ashanti, Eastern and Volta Regions) and Parts of the Coastal sector. The day will be relatively warm while the night will be relatively cool over the entire country.

SECTOR FORECAST

REGIONS	TEMPERATURE		WEATHER
	MINIMUM(°C)	MAXIMUM(°C)	
NORTHERN	25	35	PARTLY CLOUDY/SUNNY/COOL
MIDDLE	24	33	PARTLY CLOUDY/ SUNNY / SCATTERED TSRA
COASTAL	25	31	PARTLY CLOUDY/SUNNY/COOL

SPECIAL WEATHER INFORMATION: NIL

ISSUED AT 0300 UTC

DATE 31/05/2016

BY GHANA METEOROLOGICAL AGENCY, FORECAST DIVISION, KOTOKA INTERNATIONAL AIRPORT, ACCRA, FAX/TEL: 0302-777172, E-mail: kiameteo@gmail.com


 FREDERICK OTU-LARBI
 (DUTY FORECASTER)

Figure 12: 24h public weather forecast for three sections of Ghana (Northern, Middle and coastal part)



GHANA METEOROLOGICAL AGENCY
24-HOUR FORECAST FOR GHANA
VALID FROM 7AM TODAY



SUMMARY: The entire Country will be partly cloudy this morning with sunny intervals, however becoming sunny after midday. Scattered cases of thunderstorms and rain activities will later in the evening occur over places in the Middle sector (Brong-Ahafo, Ashanti, Eastern and Volta Regions) and Parts of the Coastal sector. The day will be relatively warm while the night will be relatively cool over the entire country.

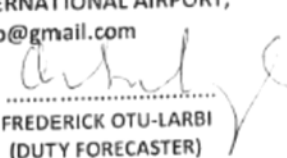
REGIONAL FORECAST

REGION	MIN TEMP/°C	MAX TEMP/°C	WEATHER
UPPER EAST	25	35	PARTLY CLOUDY/SUNNY/COOL
UPPER WEST	25	35	PARTLY CLOUDY/SUNNY/COOL
NORTHERN	25	35	PARTLY CLOUDY/SUNNY/COOL
BRONG AHAFO	24	32	PARTLY CLOUDY/ SUNNY / SCATTERED TSRA
ASHANTI	24	32	PARTLY CLOUDY/ SUNNY / SCATTERED TSRA
EASTERN	24	33	PARTLY CLOUDY/ SUNNY / SCATTERED TSRA
VOLTA	24	33	PARTLY CLOUDY/ SUNNY / SCATTERED TSRA
WESTERN	25	30	PARTLY CLOUDY/SUNNY/COOL
CENTRAL	25	30	PARTLY CLOUDY/SUNNY/COOL
GREATER ACCRA	26	31	PARTLY CLOUDY/SUNNY/COOL

ISSUED AT 0300 UTC

DATE.....31/05/2016

BY GHANA METEOROLOGICAL AGENCY, FORECAST DIVISION, KOTOKA INTERNATIONAL AIRPORT,
 ACCRA. FAX /TEL: 0302764926/0302777172 E- mail: kiameteo@gmail.com



 FREDERICK OTU-LARBI
 (DUTY FORECASTER)

Figure 13: 24h public weather forecast for 10 regions of Ghana



GHANA METEOROLOGICAL AGENCY
24-HOUR FORECAST FOR GHANA POLICE SERVICE
VALID FROM 7AM TODAY



SUMMARY: The entire Country will be partly cloudy this morning with sunny intervals, however becoming sunny after midday. Scattered cases of thunderstorms and rain activities will later in the evening occur over places in the Middle sector (Brong Ahafo, Ashanti, Eastern and Volta Regions) and Parts of the Coastal sector. The day will be relatively warm while the night will be relatively cool over the entire country.

REGIONS	WEATHER PHENOMENON
UPPER EAST	PARTLY CLOUDY/SUNNY/COOL
UPPER WEST	PARTLY CLOUDY/SUNNY/COOL
NORTHERN	PARTLY CLOUDY/SUNNY/COOL
BRONG AHAFO	PARTLY CLOUDY/ SUNNY / SCATTERED TSRA
ASHANTI	PARTLY CLOUDY/ SUNNY / SCATTERED TSRA
VOLTA	PARTLY CLOUDY/ SUNNY / SCATTERED TSRA
EASTERN	PARTLY CLOUDY/ SUNNY / SCATTERED TSRA
WESTERN	PARTLY CLOUDY/SUNNY/COOL
CENTRAL	PARTLY CLOUDY/SUNNY/COOL
GREATER ACCRA	PARTLY CLOUDY/SUNNY/COOL

SPECIAL WEATHER WARNING: NIL

ISSUED AT 0300 UTC

DATE.....31/05/2016

**BY GHANA METEOROLOGICAL AGENCY, FORECAST DIVISION, KOTOKA
 INTERNATIONAL AIRPORT, ACCRA FAX /TEL: 0302764926, 0302777172
 E- mail: kiameteo@gmail.com**

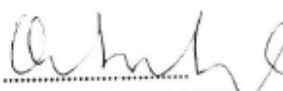

FREDERICK OTU-LARBI
(DUTY FORECASTER)

Figure 14: 24h weather forecast and special weather forecast for Ghana Police Service

GHANA METEOROLOGICAL AGENCY
WIENCO WEATHER REPORT

Date: 19/05/2016

	Northern	Transition	Forest	Coast
Next 24hrs				
Temp(Min, Max)	25, 36	23, 35	23, 33	25, 32
EXPECTED WEATHER	Isolated Rain	Isolated Rain	Isolated thunderstorm/ Rain	Isolated Rain
Humidity	High	High	High	High
Cloud cover	Few Clouds	Few Clouds	Partly Cloudy	Few Clouds
Next 48hrs				
Temp.(Min, Max)	24, 35	23, 34	23, 33	25, 32
EXPECTED WEATHER	Isolated Thunderstorm/ Rain	Isolated Thunderstorm/ Rain	Isolated Thunderstorm / Rain	Isolated Thunderstorm/ Rain
Humidity	High	High	High	High
Cloud cover	Few Clouds	Few Clouds	Partly Cloudy	Partly Cloudy

RAINFALL IN THE PAST 24 HRS (mm)**Northern:** Nil**Transition:** Kete Krachi 3.2**Forest:** Koforidua 0.6, Ho 5.0, Akim Oda 16.2, Abetifi 0.6, Sefwi Bekwai 0.1, Boso 23.4, Asamankese 7.3, Twifo Praso 30.3**Coast:** Tema Tr, Saltpond 33.3, Takoradi 5.0, Axim 0.2,

Issued by the Ghana Meteorological Agency
Forecast Division, KIAMO, Airport, Accra
TELL...0302764926, E- mail: kiamo@gmail.com

INSEL TEL NO 0289523534


DAVID OWUSU-KESSE
(DUTY FORECASTER)

Figure 15: 48h weather forecast for Wienco (state TV-broadcaster) for evening weather show (issued by GMET at around 2 pm)



GHANA METEOROLOGICAL AGENCY
24-HOUR COASTAL FORECAST FOR GHANA
(UP TO 60KM INTO THE SEA FROM THE COAST)



VALIDITY:310600UTC MAY - 010600UTC JUNE, 2016.....

SURFACE WIND.....25005KT BECOMING 18015KT IN THE AFTERNOON.....

VISIBILITY.....10KM

TEMPERATURES..... MIN. 25°C..... MAX. 31°C.....

Weather: The coast is expected to be partly cloudy this morning with sunny intervals, however becoming sunny after midday. Cases of thunderstorms and rain activities will occur later in the evening. The day will be relatively warm with the night being relatively cool.

ISSUED AT 0300 UTC

DATE.....31/05/2016

BY GHANA METEOROLOGICAL AGENCY, FORECAST DIVISION, KOTOKA INTERNATIONAL
AIRPORT, ACCRA

FAX/TEL: 0302 764926, 0302777172



.....
FREDERICK OTU-LARBI
(DUTY FORECASTER)

Figure 16: 24h coastal weather forecast for Ghana



**GHANA METEOROLOGICAL AGENCY
AREA FORECAST FOR GHANA
VALID FROM 310600-312400 MAY, 2016**



GENERAL SITUATION: Mean ITB position: 13.5⁰N with respect to Ghana.

<u>LEVELS (m)</u>	<u>WIND-DIR (°)/ SPEED (KT)</u>	<u>TEMP (° C)</u>
600.....	.....25005.....	.....PS 25.....
900.....	.....25005.....	.....PS 22.....
1500.....	.....14010.....	.....PS 19.....
2100.....	.....08020.....	.....PS 15.....
3000.....	.....05030.....	.....PS 10.....
6000.....	.....15005.....	.....MS 05.....
9000.....	.....03020.....	.....MS 30.....
12000.....	.....34015.....	.....MS 53.....

CLOUDS: SCT/BKN1000-2000FT, FEW 2500-3000ftCB, SCT/BKN2500 -10000

SURFACE VISIBILITY: 10km

0° ISOTHERM 4773m /15659ft

SUMMARY: The entire Country will be partly cloudy this morning with sunny intervals, however becoming sunny after midday. Scattered cases of thunderstorms and rain activities will later in the evening occur over places in the Middle sector (Brong Ahafo, Ashanti, Eastern and Volta Regions) and Parts of the Coastal sector. The day will be relatively warm while the night will be relatively cool over the entire country.

ISSUED AT 0300 UTC

BY GHANA METEOROLOGICAL AGENCY, FORECAST DIVISION, KOTOKA INTERNATIONAL AIRPORT, ACCRA. FAX/TEL: 0302 764926/0302 777172

E- mail: kiameteo@gmail.com

DATE: 31/05/2016

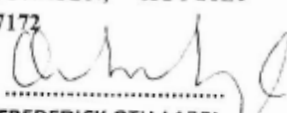

 FREDERICK OTU-LARBI
 (DUTY FORECASTER)

Figure 17: Weather forecast for Ghana Airforce



THERE IS A THUNDERSTORM APPROACHING GHANA FROM THE EAST WHICH IS CURRENTLY OVER BENIN.

IT IS EXPECTED TO CAST CLOUDY CONDITIONS WITH RAINSHOWERS / THUNDERSTORMS OVER MOST PLACES. IT WILL SWEEP ACROSS THE COUNTRY AFFECTING MOST PARTS OF THE COUNTRY (PARTS OF THE NORTH, MIDDLE AND SOUTHERN BELT).

IT WILL BE ACCOMPANIED BY GUSTY WINDS (15-25KTS)

ETA:

0800GMT_ EASTERN BORDER (KINKANGU, YENDI, HO, AKATSI, SOGAKOPE, BOSO, KPONG, AKUSE, ADA, TEMA)

0830GMT_ ACCRA, KOFORIDUA, AGOGO, WIASE, YEJI

0930GMT_ TAMALE, TOLON

1000GMT_ KUMASI, SUNYANI, EJURA, CHIRANDA, WENCHI

TIME OF ISSUE: 0430 GMT

DATE: 28/05/2016

DUTY FORECASTER: P. LAMPTEY

**BY GHANA METEOROLOGICAL AGENCY, FORECAST DIVISION,
KOTOKA INTERNATIONAL AIRPORT, ACCRA**

FAX /TEL: +2330302764926, E- mail: kiameteo@gmail.com

Figure 18: Weather warning bulletin sent out to media, police, NADMO (civil protection) and a number of other clients



Weather Warning Cancellation



VALID 28/05/2016

At 0430UTC (4:30 am), a thunderstorm which was situated over Benin was forecast to move west and affect most places in Ghana this morning between 0800UTC and 1000UTC (8am to 10am).

Kindly note that based on the latest satellite images and analysis, we believe that the said thunderstorm is dissipating and is therefore **NOT LIKELY** to affect the country as forecast earlier.

However, we will continue to keep watch and update the public if the storm were to re-energize and intensify.

ISSUED AT 0700UTC

DATE: 28/05/2016

BY GHANA METEOROLOGICAL AGENCY, FORECAST DIVISION, KOTOKA INTERNATIONAL AIRPORT, ACCRA

FAX/TEL: 0302 764926, E- mail: kiameteo@gmail.com

.....
Frederick Otu-Larbi
(DUTY FORECASTER)

Figure 19: Weather warning cancellation

Annex 5: Ad-hoc Feedback to GMet Homepage

<http://www.meteo.gov.gh>

- 1.) Remove blind links (referral to pages which doesn't exist)
- 2.) Add information on expected timing of weather to regional forecasts, e.g. partly cloudy in the morning, afterwards sunny with isolated rain showers (Figure 1)
- 3.) Add information on date/time of issuance and validity of forecast next to it
- 4.) Remove referrals to Facebook/Twitter as long as social media channels are not maintained/filled with actual information. For more information on how to deal with social media consult WMO (2012): Guidelines on the Strategies for use of Social Media by National Meteorological and Hydrological Services, WMO-No. 1086, http://www.wmo.int/pages/prog/amp/pwsp/publicationsguidelines_en.htm)

The screenshot shows the GMET Ghana Meteorological Agency homepage. The main content area is titled "Regional Weather - Greater Accra Region". It features a "LOCAL WEATHER" section with a weather icon and a temperature of 32°C. A box labeled "1" highlights the "Regional Forecast" link in the main menu. A box labeled "2" highlights the weather conditions: "Partly cloudy", "Sunny", and "Isolated rain". A box labeled "3" highlights the temperature "32" and the low temperature "Lo: 25°C". A box labeled "4" highlights the "Follow Us On" section with social media icons for Facebook and Twitter.

Region	Weather	Max (Temp) °C
Upper East		36
Upper West		35
Northern		34
Brong Ahafo		32
Ashanti		32
Volta		32
Eastern		32
Western		32
Central		31
Greater Accra		32

Figure 20: GMET-Homepage Feedback (1)

Seasonal forecast:

- 1.) Fix bugs on Seasonal Forecast page
- 2.) Add information on date/time of issuance and validity of outlook
- 3.) Update graphics/legend, add information on what is shown (e.g.: Probability for rainfall amount to be above (climate) normal/normal/below normal (percentage) in period April to October 2016)

The screenshot shows the GMET Ghana Meteorological Agency homepage. At the top, there is a navigation menu with links for Weather, Climate Change, Research, Services, About Us, Latest News, Map Room, Contact Us, and Home. A search bar is located in the top right corner. The main content area is divided into several sections:

- Main Menu:** A vertical list of links: Weather, Climate Change, Research, Services, About Us, Latest News, Map Room, Contact Us, Home.
- Resources:** A vertical list of links: Weather Information, Seasonal Forecast, FAQs.
- 24-Hour Forecast For Ghana:** A table showing weather forecasts for various regions. The table has columns for Region, Weather (represented by icons), and Max (Temp) in °C. The data is as follows:

Region	Weather	Max (Temp) °C
Upper East		36
Upper West		35
Northern		34
Brong Ahafo		32
Ashanti		32
Volta		32
Eastern		32
Western		32
Central		31
Greater Accra		32

Issued: 03/06/2016 | More
- Seasonal Forecast:** A section with a document icon and the title "Seasonal Forecast".
- Documents:** A section with a dropdown menu for "Order by" (Name, Date, Hits) and "Ascendant". It lists two documents:
 - Seasonal Forecast for Northern Ghana, 2016:** Date added: 04/27/2016, Date modified: 04/27/2016, Filesize: 296.23 kB, Downloads: 79. Buttons for "Download" and "Details" are present.
 - Seasonal Forecast for May-June, 2015:** Date added: 01/13/2016, Date modified: 01/13/2016, Filesize: 177.15 kB, Downloads: 0. Buttons for "Download" and "Details" are present.
- Ghana Rainwatch - Downloads:** A section with a map titled "2014 MONSOON RAINWATCH OVER GHANA FROM MAY 1 TO SEPTEMBER 10, 2014". The map shows rainfall patterns across Ghana with various stations marked. Below the map, there is a link "Ghana Rainwatch - Downloads" and a "Click to Download" button.
- Follow Us On:** Social media icons for Facebook and Twitter.

A large blue-bordered box highlights a feedback area containing five identical error messages: "Warning: Creating default object from empty value in /home/meteogo/public_html/website/administrator/components/com_docman/classes/DOCMAN_model.class.php on line 133" (or 236). A cursor is visible over the last message.

Figure 21: GMet-Homepage Feedback (2)

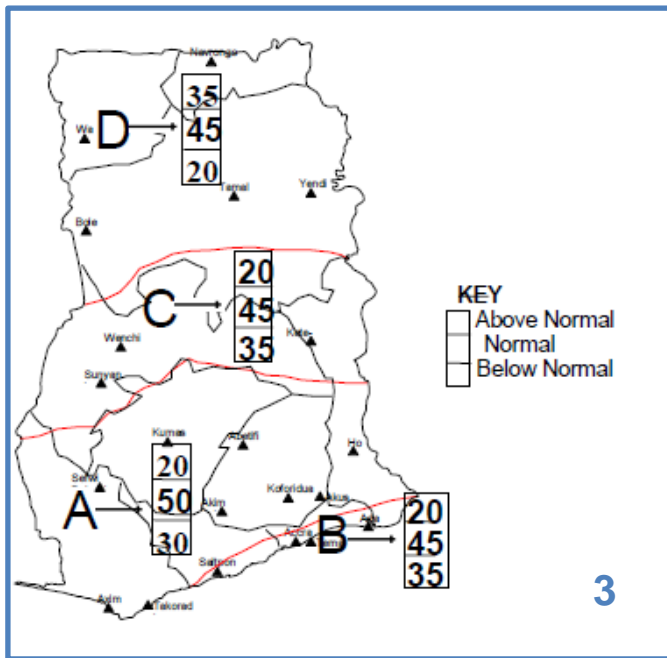


GHANA METEOROLOGICAL AGENCY

RAINFALL SEASONAL FORECAST FOR 2016 **2**

SEASONAL FORECAST

Observed atmospheric conditions over land and oceans and outputs from major World forecast Centers like International Research Institute for climate and Society (IRI), USA, Climate Prediction Centre (CPC), USA and European Centre for Medium Range Weather Forecast (ECMWF) Reading, UK, together with output of the Agency’s model, do suggest that the April to October rainy season over the country is expected to be as below;



LONG TERM MEAN AND EXPECTED RAINFALL AMOUNTS IN 2016 OVER THE NORTHERN SECTOR OF THE COUNTRY

Sectors	Normal Seasonal Rainfall (mm)	Expected Seasonal Rainfall (mm)
Northern Region	740 - 1230	520 - 1110
Upper(East & West) Region	710 – 1180	560 - 930

Figure 22: GMet-Homepage Seasonal Forecast Feedback

Annex 6: Workshop Programme

WORLD METEOROLOGICAL ORGANIZATION

WDS/PWS/SHW-WMO -SSD/Doc.1

**STAKEHOLDERS WORKSHOP TO IMPLEMENT
THE WMO STRATEGY FOR SERVICE DELIVERY
FOR THE GHANA METEOROLOGICAL AGENCY
(GMET)**

ACCRA, GHANA, 30 MAY – 3 JUNE 2016

ORIGINAL: ENGLISH

PROVISIONAL PROGRAMME

DAY 1 (WORKING HOURS: 0900-1700)			
TIME(S):	TITLE(S) / SUBJECT(S):	PRESENTER(S):	TIME(S):
WELCOME AND INTRODUCTION			
0900-1200	Meeting of the mission with GMET to discuss and agree on: <ul style="list-style-type: none"> • Mission objectives • Mission scope • Sectors to be studied • Responsibilities of each party • Anticipated outcome 	Mr Stephen Komla (Director, GMET and PR of Ghana with WMO) Senior staff of GMET Ms Haleh Kootval (WMO) Mr Andreas Schaffhauser (ZAMG) Mr Rainer Kaltenberger (ZAMG)	0900-1200
The above meeting will be held on the first day between GMET, WMO and ZAMG to clearly state the expected outcome of the mission and the activities that will be carried out in order to achieve the outcome.			
Lunch			

1300-1700	<p>Joint assessment with GMET, WMO and ZAMG of GMET's current service delivery level in the Service Delivery Progress Model (Annex 1 of the WMO Strategy for Service Delivery). The assessment will include:</p> <ul style="list-style-type: none"> • Joint assessment with GMET of their current user engagement processes • Joint assessment with GMET of their current service design and development processes • Joint assessment with GMET of their current production and delivery processes • Joint assessment with GMET of their current evaluation and Monitoring processes 	<p>Mr Stephen Komla (GMET)</p> <p>Senior staff of GMET</p> <p>Ms Haleh Kootval (WMO)</p> <p>Mr Andreas Schaffhauser (ZAMG)</p> <p>Mr Rainer Kaltenberger (ZAMG)</p>	1300-1700
DAY 2 (WORKING HOURS: 0900-1700)			
0900-1200	<p>This activity will continue from Day 1:</p> <p>Joint assessment with GMET, WMO and ZAMG of GMET's current service delivery level in the Service Delivery Progress Model (Annex 1 of the WMO Strategy for Service Delivery). The assessment will include:</p> <ul style="list-style-type: none"> • Joint assessment with GMET of their current user engagement processes • Joint assessment with GMET of their current service design and development processes • Joint assessment with GMET of their current production and delivery processes <p>Joint assessment with GMET of their current evaluation and Monitoring processes</p>	<p>Mr Stephen Komla (GMET)</p> <p>Senior staff of GMET</p> <p>Ms Haleh Kootval (WMO)</p> <p>Mr Andreas Schaffhauser (ZAMG)</p> <p>Mr Rainer Kaltenberger (ZAMG)</p>	0900-1200
Lunch			
1300-1700	Provide guidance to GMET on how to organize and run stakeholder workshops	<ul style="list-style-type: none"> • WMO • ZAMG 	1300-1700
	Preparation for the Stakeholders Workshop including development of detailed agenda for Days 3 and 4	<ul style="list-style-type: none"> • WMO • ZAMG 	

DAY 3 (WORKING HOURS: 0900-1700)			
0900-1200	Workshop with the participation of all stakeholders: <ul style="list-style-type: none"> • Presentation to stakeholders of the purpose of the workshop and the WMO Strategy for Service Deliver • Presentations by stakeholders on their sector activities; how the sector is impacted by weather; how they get information and services from GMET; and what improvements in services they require. 	<ul style="list-style-type: none"> • WMO • ZAMG • Stakeholders • GMET • WMO • ZAMG 	0900-1200
Lunch			
1300-1700	Workshop with the participation of all stakeholders: <ul style="list-style-type: none"> • Presentations by stakeholders on their sector activities; how the sector is impacted by weather; how they get information and services from GMET; and what improvements in services they require. (continued)	<ul style="list-style-type: none"> • Stakeholders • GMET • WMO • ZAMG 	1300-1700
DAY 4 (WORKING HOURS: 0900-1700)			
0900-1200	Workshop with the participation of all stakeholders: <ul style="list-style-type: none"> • Presentations by stakeholders on their sector activities; how the sector is impacted by weather; how they get information and services from GMET; and what improvements in services they require. (continued)	<ul style="list-style-type: none"> • Stakeholders • GMET • WMO • ZAMG 	0900-1200
Lunch			

1300-1700	Session with stakeholders on conclusions and outcomes of the workshop.	<ul style="list-style-type: none"> • Stakeholders • GMET • WMO • ZAMG 	1300-1700
DAY 5 (WORKING HOURS: 0900-1700)			
0900-1700	<p>Report on the level of development of GMET, jointly produced by WMO, ZAMG and GMET</p> <p>Development of an Action Plan including level of resources, milestones, and types of actions for short, medium and long term, to start improving the Service Delivery level</p>	<ul style="list-style-type: none"> • GMET • WMO • ZAMG <ul style="list-style-type: none"> • GMET • WMO • ZAMG 	0900-1700
	Closure of the workshop		

GMET: Ghana Meteorological Agency

ZAMG: The Central Institute for Meteorology and Geodynamics, Austria

WMO: World Meteorological Organization