



FINNISH METEOROLOGICAL INSTITUTE



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Expert Mission Report

Strengthening Hydrometeorological Operations and Services in the Caribbean SIDS (SHOCS) (MFA intervention code: 89886501)

1st Workshop on the implementation of a QMS to Aeronautical Meteorological services

Bridgetown, Barbados
9–13 May 2011

prepared by

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1. Background

This was the first of two consecutive workshops being co-ordinated by the Finnish Meteorological Institute (FMI) and being part of the ICI project SHOCS. The project, funded by the Ministry for Foreign affairs of Finland, is carried out in partnership with the Association of Caribbean States (ACS) and FMI. The overall goal of SHOCS is to enhance the capacity of ACS on strategic planning of the entire process of Disaster Risk Reduction (DRR) and to enhance capacity of National Hydro-Meteorological Services (NMHSs) as well as DRR agencies to contribute to improved safety and preparedness against natural hazards.

Towards this goal, the project has defined the result area: ‘Improved capacity of the NMHSs in the beneficiary SIDSs to support development of Quality Managements Systems (QMS). The workshops and guidance provided to NMHSs in aeronautical meteorology is considered as the first building block for NMHSs to further expand standardized quality management principles into all activities of the agency. Building on the experience from these training workshops the feasibility of quality management on the delivery of early weather warnings will be also analysed within the beneficiary SIDS in the next phase of the project.

Majority of Caribbean Meteorological Institutes/Offices are providers of aeronautical meteorological services. These services are regulated by the International Civil Aviation Organisation (ICAO). ICAO has stated that also meteorological service providers should have a Quality Management System in place by year 2012 to guarantee the highest quality, particularly in terminal weather observations and weather forecasts.

The present and remaining Activities on QMS training as specified in the SHOCS Project Document are as follows:

- Activity 2.4** 1st QMS workshop on building a roadmap to the ICAO requirements (this mission)
- Activity 2.5** Evaluation of the documentation prepared by participating NMHSs and online assistance to NMHSs (to be carried out in May-November 2011)
- Activity 2.6** 2nd QMS workshop, review of assignments and conclusions (tentatively scheduled to 5-9 Dec 2011)

2. Objectives of the 1st QMS workshop

The objectives of this 1st workshop were to

- analyze the existing degree of the ISO 9001:2008 Quality Management System (QMS) implementation among participating organization;

- give practical training what QMS is and how to implement a QMS to weather services;
- plan next steps needed in organizations in QMS implementation.

3. Workshop arrangements and documentation

The workshop was held at the Caribbean Institute of Meteorology and Hydrology (CIMH), in Bridgetown, Barbados. The announcements of the workshop were sent in February-March 2011 widely to all Governments and National Meteorological Institutes/Offices of the 25 ACS member states. Full support for travel, accommodation and daily subsistence allowance was offered for the 16 beneficiary SIDS of the SHOCS-project. Participation from other countries was welcomed, but they were advised to seek funding from other sources.

NMSs were asked to nominate a Quality Manager to participate in the training and to fill in a questionnaire on their present status as regards quality management applied in their institute. The quality managers were also invited to work on assignments during the intermediate period of workshops in order to lead the development of a QMS according to the ISO 9001-2008 in their Institute/Office.

A questionnaire was sent in advance along with the invitation to perform a ‘Gap’ analysis on the state of QMS blocks at each participating Meteorological Institute/Office. This questionnaire will be recirculated during the intermediate period and at the end of the 2nd workshop to evaluate the progress achieved.

All together 19 meteorological services/offices from the Caribbean SIDS participated:

- Countries (15) supported by the SHOCS project were: **Antigua and Barbuda, Bahamas, Barbados, Belize, Cuba, Dominica, Dominican Republic, Grenada, Guyana, Jamaica, St Kitts and Nevis, St Lucia, St Vincent and Grenadines, Suriname and Trinidad and Tobago;**
- Participation of **Anguilla, British Virgin Islands and Cayman Islands** was supported by CMO.
- Participation of **Curacao** was supported by FMI.

The material related to the workshop is organised in the Appendices as follows:

Appendix 1 Agenda

Appendix 2 List of participants

Appendix 3. Article on The Barbados Advocate

Appendix 4. Photos

During the opening session addresses were delivered by the following speakers:

- Dr. David Farrell; Principal Caribbean Institute of Meteorology and Hydrology
- Ambassador Pasi Patokallio, Ministry of Foreign Affairs of Finland
- Mr. Hampden Lovell, Director of Meteorological Department, Government of Barbados
- Mr. Eduardo Gonzalez; Director of Transport and Disaster Risk Reduction, ACS
- Dr. Herbert Puempel, Chief of Aeronautical Meteorology Division, WMO
- Mr. Alain Boisvert, Chief of Quality Management, Meteorological Service of Canada
- Dr. Martti Heikinheimo, SHOCS project co-ordinator, FMI
- Mr. Heikki Juntti, Quality Manager, FMI

A press release was prepared in co-operation with FMI and ACS and the event was notified in next day's paper of The Barbados Advocate.



4. QMS situation in participating organizations

In the gap analysis the QMS implementation was divided 26 blocks. Each country estimated its level of readiness (0-10) in each block. Based on the questionnaire sent to the participants, an overall situation of the state of the QMS implementation is summarized in Table 1. At the bottom line of Table 1 the average stages of each block is given in percentages maximum possible. Similarly the average fulfilments of the blocks for each NMSs is indicated in the right most column of the table. This gives an estimate of the overall degree of implementation also indicated with different colours. This is a rough estimate, however, as the blocks are not similar in workload.

Table 1. Gap analysis on the state of QMS blocks at each participating Meteorological Institute/Office based on a questionnaire filled in prior to the workshop, (0 = element not started...10 = element completed/ in full use).

Country	Customer requirements are known and described in written format	Directors are committed to use Quality Management principles, e.g. managing activities through processes?	Your organisation has nominated a Quality Manager?	Quality policy exists and it is communicated through the organization	Quality objectives have been defined and written in Quality Manual	Process descriptions have been completed	Interaction between processes have been described	Customer communication process exists	Corrective and preventive action process is described and working	Corrective actions have been followed up and their effectiveness measured	Purchasing process is in control It means that you have specified requirements for data (observations, model output etc) and services you need for your production	Personnel competence requirements have been defined and the personnel meets them (e.g. for observers and forecasters minimum requirement is WMO 258 + supplement requirements)	Organization chart has been drawn	Responsibilities for each task/position have been defined	Management review (look at ISO 9001 standard, chapter 56) is in active use	Audit plan exist and Internal audits are used as management tool	Control of documents is described and is working in practice	Work instructions are documented and maintained Procedures and responsibilities for maintenance	Records required by the standard exists and are maintained	Quality Manual is written and communicated	Quality measures have been defined They are consistent with quality policy and measurable	Your organization measures customer satisfaction	You have specified indicators to measure the quality of products and services	Human resources to support QMS are allocated	Training on QMS issues is in control (ie your managers, staff, auditors etc are trained for their tasks)	Financial resources to develop/maintain QMS are allocated	Need for external consultancy to establish QMS in your organisation	
Anguilla	7	5	10	7	8	8	8	9	7	4	4	6	10	6	4	5	6	6	0	6	3	2	4	5	3	3	4	56
Antigua & Barbuda	5	10	10	2	7	5	5	9	1	5	5	10	10	5	0	0	2	2	4	0	0	2	5	10	5	0	0	46
Bahamas	5	10	10	0	0	0	0	0	0	0	6	6	10	10	3	0	2	0	0	0	3	0	0	10	3	5	10	32
Barbados	5	5	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Belize	7	7	10	0	0	2	0	8	2	0	5	8	10	9	0	0	4	5	2	0	0	0	0	0	0	0	0	30
British Virgin Islands	5	10	10	6	8	5	5	5	5	0	8	8	10	6	5	6	8	8	8	5	6	6	8	6	6	6	6	65
Cayman Islands	1	8	10	5	3	5	0	5	0	0	0	9	8	7	0	4	4	6	7	2	4	0	4	4	4	9	0	42
Curacao	5		0	0	5	5	5	0	0	0	0	0	5	5	0	0	0	5	0	0		0	0	5	0	5	5	19
Cuba	8	10	0	8	8	10	7	10	0	0	0	10	10	10	0	0	0	6	5	0	0	0	5	0	0	0	0	41
Dominica	4	8	3	5	0	4	0	5	1	1	0	10	8	0	0	0	0	5	0	0	5	5	0	0	1	1	0	25
Dominican Republic	10	10	10	8	7	7	8	8	10	10	10	10	10	8	10	10	10	10	9	7	8	10	10	8	8	8	8	90
Grenada	5	4	8	0	0	0	0	6	0	0	1	6	9	4	0	0	0	8	0	0	0	0	0	0	2	0	5	20
Guyana	7	10	10	8	10	5	8	5	5	5	10	10	10	7	4	3	4	3	4	1	5	0	5	6	4	0	3	59
Jamaica	5	10	10	0	0	0	0	2	0	0	6	8	8	0	0	0	2	3	5	0	0	0	4	5	2	6	5	29
St Kitts & Nevis	8	0	2	8	0	0	0	3	4	4	2	9	2	0	0	0	0	8	5	0	0	0	0	0	0	0	0	21
St Lucia	6	10	0	8	0	0	0	5	0	0	0	0	8	0	0	0	0	3	3	0	0	0	6	6	10	10	25	
St Vincent & Grenadines	8	10	10	8	10	7	8	0	3	4	0	10	10	10	4	0	7	10	7	8	10	7	9	0	0	1	0	62
Suriname	0	0	0	10	0	0	0	8	0	0	0	10	10	2	2	2	2	2	2	2	2	8	0	8	10	0	0	31
Trinidad & Tobago	5	9	5	5	5	3	3	3	3	3	5	7	8	8	2	1	2	2	2	3	2	1	1	2	1	5	9	37
	56	76	67	46	37	35	30	53	22	19	33	72	87	51	18	16	28	51	33	18	27	22	29	36	29	31	36	39

5. Results of the activity

After this 1st workshop it was expected that the participating organizations have good knowledge about the structure of the ISO 9001:2008 standard and ideas on how it has been implemented at other NMS. The organizations have also started making a project plan or a roadmap on actions needed to achieve their stated goal for a QMS.

Countries at starting stage in QMS implementation are:

- Barbados
- Curacao
- Dominica
- Grenada
- Jamaica
- St. Kitts (and Nevis)
- St. Lucia

Countries that have done some work, but are still at an early stage of QMS implementation, are:

- Antigua and Barbuda
- Bahamas
- Belize
- Cayman Islands
- Cuba
- Suriname
- Trinidad and Tobago

Countries that have started QMS, but less than half of it has been completed, are:

- Anguilla
- British Virgin Islands
- Guyana
- St Vincent and Grenadines

Of the countries participated, only Dominican Republic was nearly ready for certification.

6. Feedback from workshop participants

Based on an evaluation questionnaire delivered after the workshop, the feedback from participants was overall very positive in the covered aspects. On the other hand, participants commented on 'too fast pace' of the training and expressed their frustration on the 'very long transport time' from the accommodation to the training site. The overall ratings (using scaling: 1=poor ... 5= excellent) in different categories are illustrated in Figures 1 and 2. and the summary data is presented in the Table 3.

Table 3. Results on workshop evaluation.

		1	2	3	4	5		
	Question	use- less	poor	useful	good	excel- lent	aver- age	ans- wers
1	Pace of training (1=too slow, 5= too fast)			3	13	1	3,9	17
2	Logical order of the lectures			1	13	3	4,1	17
3	Usefulness of excises		1		8	8	4,4	17
4	Possibility to apply ideas learnt during the workshop			2	9	5	4,2	16
5	Fulfillment of my expectations		1	1	6	9	4,4	17
6	Skill of trainers				5	12	4,7	17
7	Level of lectures			1	8	8	4,4	17
8	Level of materia delivered			1	5	11	4,6	17
9	Overall value of the workshop for QMS development			1	5	10	4,6	16
Average							4,4	
	Question	use- less	poor	useful	good	excel- lent	aver- age	ans- wers
10	Quality of accommodation			4	11	2	3,9	17
11	Quality of catering services				8	9	4,5	17
12	Quality of transportation			1	7	9	4,5	17
13	Quality of venue			4	9	4	4,0	17
14	Overall quality of arrangements				12	5	4,3	17
Average							4,2	

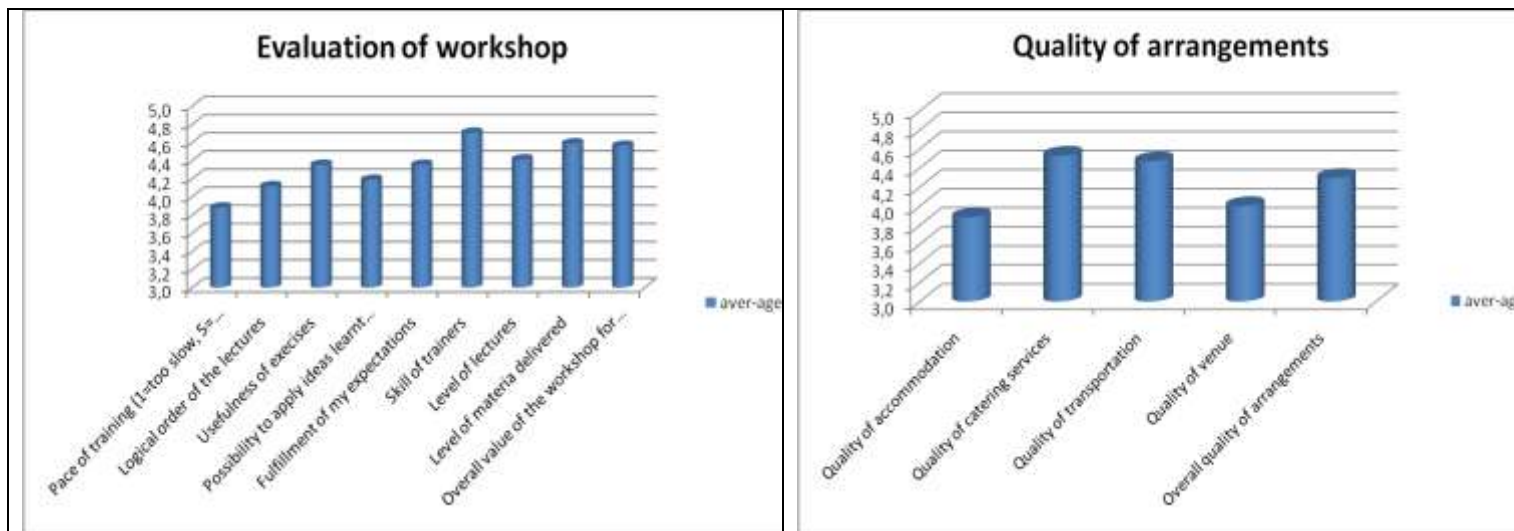


Figure 1. Overall satisfaction on the training.

Figure 2. Overall satisfaction on the arrangements.

Main findings from the evaluation are as follows (+ positive, - to improve):

- + **exercises**
- + **group work**
- + **exchange of opinions with others**
- + **expertise of trainers**
- + **presentations, easy to understand, practical**
- **air condition in classroom**
- **journey from hotel to training place**
- **internet connection slow**

Wishes for next workshop were:

- **Timing 4-6 months + possibility consultation before that**
- **Same format as now**

- **Some other island (proposed locations: St Lucia, Dominica)**
- **1 week workshop**

7. Support still needed and plans to continue the activity

There are still some basic elements of QMS, which were not included in the 1st workshop. In the coming 2nd workshop, these elements will be covered and more in-depth attention will be given to those quality management blocks that are most demanding to implement.

Based on the gap reports given by the participating organizations, it seems that the least covered areas in QMS implementation are:

- Corrective actions have been followed up and their effectiveness measured
- Management review is in active use
- Audit plan exist and internal audits are used as management tool
- Quality Manual is written and communicated
- Corrective and preventive action process is described and working
- Control of documents is described and is working in practice
- Quality measures have been defined and they are consistent with quality policy and measurable
- Organization measures customer satisfaction
- Organization has specified indicators to measure the quality of products and services
- Training on QMS issues is in control (managers, staff, auditors etc. are trained for their tasks)

Next steps in this part of project are as follows:

- **New gap analysis done by the organizations by July 2011**
- **Project plan / roadmap to implementation by August 2011**

On line support will be given to the organizations to produce these as well as advising them how to go on during the time between workshops 1 and 2.

The preliminary agenda of the 2nd workshop will include at least the following topics:

- **Progress of participating organizations**
- **Roadmaps of organizations**
- **Audits**
- **Customer satisfaction**
- **Improving (measures, handling of nonconformities etc.)**
- **Comparison of the QMSs between the organizations**

The 2nd workshop will be held at the beginning of December on one the Caribbean islands. For the successful implementation of QMS it is considered essential that the participating countries send the same persons who were present at the 1st workshop to participate the 2nd workshop. At the 2nd workshop the venue and accommodation will be at the same location, eliminating the need for daily transport and creating an atmosphere of unity.

Appendix 1. Workshop agenda

1st Workshop on the implementation of a QMS to Aeronautical Weather Services

Agenda

Caribbean Institute of Meteorology and Hydrology
Bridgetown, Barbados 9–13 May 2011

Refreshment breaks: Tea/coffee 10:30 Lunch 13:00-13:45 Tea/coffee 15:00

<p>Monday 9 May 09:00 – 16:30</p> <ul style="list-style-type: none"> • Opening remarks • Group photo • Introduction of participants • About FMI and QMS, Mr. Heikki Juntti, FMI • Roles of international organizations in QMS implementation, Dr. Herbert Puempel, WMO • Experiences on a QMS at Meteorological Service Canada, Mr. Alain Boisvert, MSC • Participant presentations on the status of QMS in the Caribbean NMSs (15 min/country): <p>18:30 Ice Breaker (BBQ Buffet) at Hotel Accra Beach Fig Tree restaurant</p>	<p>Thursday 12 May 09:00 – 15:00</p> <p>Training sessions and working groups:</p> <ul style="list-style-type: none"> • Monitoring and measuring (30 min) • Case example: handling of nonconformities and improvements in Environment Canada, Mr. Alain Boisvert • Internal audits • Management review • Continuous improvement • Documentation in QMS • GAP analysis of NMS situation against ISO 9001:2008 certification requirements • Planning to fill the gaps for each country and writing a roadmap <p>Time for sightseeing, shopping etc. in Bridgetown</p>
<p>Tuesday 10 May 09:00 – 16:30</p> <p>Training sessions and working groups:</p> <ul style="list-style-type: none"> • What is the Quality Management System (QMS)? • How to implement ISO 9001 QMS to weather services? • Customer focus 	<p>Friday 13 May 09:00 – 14:30</p> <p>Conclusions and preparing the roadmap:</p> <ul style="list-style-type: none"> • Internal audit exercise • Roadmap to future. How to go on? • Workshop feedback • Workshop closure
<p>Wednesday 11 May 09:00 – 16:30</p> <p>Training sessions and working groups:</p> <ul style="list-style-type: none"> • <u>Invited presentation</u>: Applying QMS in extreme weather warning services; Mr. Patrick Van Grunderbeeck, Météo-France, Inter-Régional pour les Antilles et la Guyane • Quality policy and quality objectives • Competence requirements • Processes • Management commitment • Production 	<p>Acronyms:</p> <p>ACS= Association of Caribbean States QMS = Quality Management System NMS = National Meteorological Service FMI = Finnish Meteorological Institute DRR = Disaster Risk Reduction EWS= Early warning Service MSC= Meteorological Service Canada CIMH= Caribbean Institute of Meteorology and Hydrology CMO= Caribbean meteorological Organisation</p>

Appendix 1. Workshop agenda

Contact info of organisers:

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<p>Ms. Sandra Fonseca Workshop Secretary Directorate for Transport and Disaster Risk Reduction Association of Caribbean States 5-7 Sweet Briar Road P.O. Box 660 Port of Spain Trinidad and Tobago E-mail: sfonseca@acs-aec.org Tel: +868 622 9575 Ext 251 Fax: +868 622 1653 (Stay at Hotel Accra Beach)</p>	<p>Caribbean Institute for Meteorology and Hydrology (CIMH) Bridgetown - RTC Barbados Husbands, St. James, P.O. Box 130 BRIDGETOWN, Barbados, W.I. Tel: 246 425-1362/65 FAX: 246 424 4733 Principal: Dr. David Farrell Email: dfarrell@cimh.edu.bb</p>

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Appendix 2. List of Participants, trainers and secretariat

List of participants, trainers and secretariat.

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¹ Invited as a SHOCS beneficiary country. Could not participate.

Meteorological services embark on training

By Tanya Lightbourne

METEOROLOGICAL services throughout the Caribbean region are working towards being ISO (International Organisation for Standardisation) certified by 2012.

To achieve this, officials are

meeting this week at the Caribbean Institute of Meteorology and Hydrology in Husbands, St. James to take part in the first of two workshops initiated through a new project which was signed between the Association of Caribbean States (ACS) and the

Finnish Meteorological Institute in March this year.

During the opening ceremony yesterday, it was explained that the first workshop will aim at building capacity meteorological institutes and offices with the 20 Caribbean Small Island Developing States (SIDS), to

establish a Quality Management System (QMS) for their Aeronautical Meteorological Services.

According to Dr. Hampden Lovell, Director of the Barbados Meteorological Services, the region has been urged to receive this certification by next year.

He acknowledged that SHOCS, as it is called, will be strengthening the hydro-meteorological operations and services in the Caribbean SIDS. "These QMS training workshops will be carried out in

WORKSHOPS on Page 4

4 • Tuesday May 10, 2011

The Barbados Advocate

Implications for aviation safety

WORKSHOPS from Page 1

co-operation with the World Meteorological Organisation (WMO), the Caribbean Meteorological Organisation (CMO) and

the International Civil Aviation Organisation (ICAO), as they help to build the road map towards a standardized QMS as required by the civil aviation providers by 2012," he said.

Dr. Lovell pointed out that the objective of a meteorological service to air navigation is to contribute toward the safety, regularity and efficiency of air navigation.

"A major component of

the WMO Quality Management Framework is therefore the close co-operation with the International Civil Aviation Organisation, in ensuring that the Meteorological Services

provided for air navigation are the highest quality, particularly Terminal Weather Observations and Terminal Weather Forecasts."

He further noted that during the workshop par-

ticipants will also look at GAP analysis of the various Meteorological Services so as to evaluate the present systems and how best to move these towards international standards.

Finland aids in strengthening regional meteorological operations

THE Government of Finland, through the Finnish Meteorological Institute (FMI), continues to help strengthen the operations of meteorological services in the Caribbean region.

Their commitment was once again signalled yesterday by Ambassador Pasi Patokallio, Special Representative of the Minister for Foreign Affairs, during the opening of the first of two workshops organised by the FMI, being held at the Caribbean Institute of Meteorology and Hydrology, Husbands St. James.

Addressing the regional participants, Ambassador Pasi recalled that his country's support to the Caribbean goes back ten years, with projects initiated at improving weather observation networks.

According to the Ambassador, training and capacity building is at the heart of all the FMI's projects supported by Finland.

He acknowledged that the Strengthen Hydro-meteorological Operations and Services in the Caribbean SIDS (SHOCS) project being embarked on this week is an important endeavour.

"An important part of the SHOCS project will be assistance in setting up a quality management system for aviation weather services. Such a system will soon be an International Civil Aviation Organisation (ICAO) requirement. The training offered under SHOCS starting this week, will go a long way towards meeting the ICAO requirement," he explained.

The Ambassador further indicated how important aviation and the attendant weather services are to this region's unique meteorological conditions, which include storms, hurricanes, flooding and even earthquakes.

"A quality management system (QMA) is a necessary tool to ensure that weather warnings, for example, are received and properly interpreted, and broadcasted to the general public in a timely fashion. It plays a key role in the broader context of early warning and disaster management," he stated. (TL)



From left: Dr. Hampden Lovell, Director of the Barbados Meteorological Services, speaking with Principal of the Caribbean Institute of Meteorology and Hydrology, Dr. David Farrell, during the first workshop on the implementation of Quality Management System (QMS) for Aviation weather services, yesterday at the Institute.



From left: Ambassador Pasi Patokallio, Special Representative of the Minister for Foreign Affairs, and Dr. Hampden Lovell, Director of the Barbados Meteorological Services, during the first workshop on the implementation of Quality Management System (QMS) for Aviation weather services, yesterday at the Institute.

Appendix 4. Photos



Appendix 4. Photos

