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ASSOCIATION OF CARIBBEAN STATES

XXI MEETING OF THE SPECIAL COMMITTEE ON DISASTER RISK REDUCTION

Port-of-Spain, Trinidad and Tobago, October 02, 2013

Final Report on the Project SHOCS, Phase 1

OPERATION COMPLETION REPORT

ICI Project

Strengthening Hydro-meteorological operations and Services in the Caribbean SIDS; SHOCS

MFA Intervention code: 89886501

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_____	_____
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1. AN OVERVIEW OF THE PROJECT IMPLEMENTATION

The SHOCS project was one in a series of several capacity building projects over the past decade having special focus on the Caribbean Small Island developing States (SIDS): The Caribbean SIDS Project in 2001-2004, funded by Finland and coordinated by the World Meteorological Organization (WMO), provided e.g. technology to automate weather observation and to establish databases, thus laying ground for long term monitoring of climate variability and change. In addition, in 2010-2012 four Institutional Cooperation Instrument (ICI) projects funded by the Ministry for Foreign Affairs of Finland (MFA) were completed by the Finnish Meteorological Institute (FMI) in the Caribbean.

1.1 Short description of the project

The idea of a new project to be named as "Strengthening Hydro-meteorological Operations and Services in the Caribbean SIDS (SHOCS) was initiated by Secretary General of the Association of Caribbean States during his visit in Finland in 2009. This ICI project was granted 0.5 million euros for the period of Sep 2010 – Dec 2012. The project focused on 16 Caribbean SIDS: Antigua & Barbuda, Bahamas, Barbados, Belize, Cuba, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Kitts & Nevis, Saint Lucia, St. Vincent & The Grenadines, Suriname, Trinidad and Tobago. Direct beneficiary institutes were the National Meteorological and Hydrological Services (NMHS) on these islands. The project consisted of several technical and training workshops and a round tour to visit the SIDS for the assessment of the capacities and needs of development particularly of Early Warning Services (EWS) and Disaster Risk Reduction (DRR).

The overall objective of the project was that **The Caribbean societies are better prepared for the adverse effects of natural disasters and harmful impacts of climate change.**

The project purpose *was* ***Enhanced capacity of Association of Caribbean States (ACS) on the strategic planning of the entire process of Disaster Risk Reduction, and enhanced capacity of the NMHSs and DRR agencies to provide services and preparedness against natural hazards****.*

The project team at FMI consisted of the Project Manager (Dr. Martti Heikinheimo) and three Experts on Aviation Meteorology Quality Management (Mr. Heikki Juntti, Mr. Alberto Blanco and Ms. Riikka Pusa) and of Ms. Minna-Kristiina Sassi as a project Assistant. The project team at ACS consisted of The Secretary General Mr. Luis Andrade (2010 – March 2012) continued by Dr. Alfonso Múnera (Apr-Dec2012), Director of Transport and DRR Mr. Eduardo Gonzalez, Project Coordinator Mr. Mathieu Fontanaud, Project Assistants Ms. Sandra Fonseca and Ms. Salome Buglass continued by Ms. Catalina Bastidas.

Members of the Project Board were: Ambassador Alfonso Munera, Secretary General ACS; Jeremy Collymore (chair) Executive Director CDEMA; Tyrone Sutherland, Coordinating Director Caribbean Meteorological Organization (CMO); Oscar Arango, WMO office for the North and Central America and The Caribbean; Harri Pietarila, Head of Consulting Services, FMI. The PB had altogether 6 meetings: two physical meetings and 4 meetings held virtually via Skype or by correspondence. Additionally a final PB meeting will be held to adopt this Completion Report

The project started with **a mission to Port of Spain in 1-8 September 2010** to hold a project kick-off and to prepare a detailed Annual Work Plan for 2010. The project document was then presented to the XVIII Meeting of the ACS Special Committee on Disaster Risk Reduction for official approval and for signing the Memorandum of Understanding (MoU). Approval was left on hold until written clarifications requested by the Committee were evaluated. Following the official

approval of the project document by the ACS Ministerial Meeting in January 2011, the MoU was finally signed by ACS on 4th March 2011 and by FMI on 30th March 2011.

1.2. Analysis of the purpose & results achieved

The Result areas as stated in the Project Document were:

Result 1*:* Completed feasibility study assessment on the Caribbean SIDS with recommendations and an action plan for concrete steps of development

Result 2: Improved capacity of the staff of ACS, NMHSs and the Civil Protection agencies in the ACS member states on MHEWS, DRR and Quality Managements Systems (QMS)

1.2.1. Recommendations and Action plan resulting from the feasibility assessment of the SIDS

The feasibility assessment resulted with recommendations and an action plan for concrete steps for development of specific aspects of the Multi-Hazard Early Warning (MHEWS) and Disaster risk reduction (DRR) process in the Caribbean. The survey and recommendations focused primarily on (1) capacities of the NMHSs to monitor and forecast severe weather situations, (2) incorporation of risk information with early warnings and (3) communication and co-operation between stakeholders. A consultant, Dr. Vernese Inniss, from Ecoisle Inc. from Barbados took part in the Assessment missions and prepared a background status assessment report, 16 country reports, 3 mission reports and a summary report (Ref I).

All 16 beneficiary SIDS participated in the assessment meetings with the number of participants totaling at 136. The capacity assessment was summarized as 5 major priority areas that can be used as a guideline for further execution of capacity building projects in the Caribbean.

1.2.2. Improved capacity to manage the MHEWS and DRR Process

Major events/workshops that contributed to achieving the results of SHOCS were:

- **ACS Special Committee Meetings on Disaster risk reduction:** (1) Santo Domingo Dominican republic 8-11 Sep 2010; (2) Bogotá Colombia 2-3 Aug 2011 and (3) Port of Spain Trinidad & Tobago 22-23 Dec 2012.
- **WMO technical workshop on MHEWS and DRR, Barbados 2-5 November 2010**
- **1st training workshop on QMS, 9-13 May 2011 at CIMH in Bridgetown, Barbados**
- **2nd training workshop on QMS, 5-9 Dec 2011, Gros Islet, Saint Lucia.**
- **SHOCS Final Workshop, Port of Spain Trinidad & Tobago, 20-21 Dec 2012**

The technical workshop, attaining an ample participation from the 16 beneficiary SIDS NMHSs and DMAs, resulted in understanding of the various components of the MHEWS and DRR process and specific recommendations for capacity building in future projects: the primary topics recommended for urgent capacity building included:

- **Strengthening Political recognition and legislation for MHEWS and DRR;**
- **Strengthening institutional capacity to increase the numbers of staff as well to acquire highly trained and professionally-trained staff to acquire the required financial resources.**
- **Strengthening methods and technical resources to enhance hazard detection, monitoring and forecasting.**
- **Improving capacity for methods of delivery, visualization and communicating of watches, warnings and advisories**

- **Increase training on basic skills in meteorology and disaster management of the staff of agencies and enhance understanding of the terminology used.**

The inter-linked training workshops on QMS for Aeronautical Meteorological Services resulted in a significant progress of institutes in completing their Quality Management Systems by the time of the target set at November 2012 by the International Civil Aviation Authority (ICAO): Altogether 21 Caribbean SIDS Meteorological Services/Offices participated in the two workshops. At the time of the first workshop in May 2011 only one institute had completed more than 66% and nine organizations being below 33% of the requirements of the ISO 9001:2008 standard, whereas in November 2012 the corresponding number of institutes above 66% was 12 and almost all others had more than 33% of requirements completed.

1.3 Assessment on crosscutting issues

To monitor Gender equality a target was set-up as 30% presence of women in workshops and meetings. The realized proportion of women in the two QMS workshops was 8/22 (36%) and 4/25 (16%), respectively, and in the 12 feasibility assessment meetings 37/136 (27%), thus the target was not quite achieved. This can be explained by taking that the nature of the workshops favoured participation of personnel at leader positions, such as Quality Managers or Section Directors (or higher), being less populated by women than men.

1.4 Lessons learned & Recommendations for the future

Several assessments on capacity building in hydro-meteorological operations and services in the Caribbean have been recently prepared by SHOCS, WMO and other instances. Participants in the SHOCS assessment felt that these assessments complement each other and reflect well the present capacities and needs for development. In other words sufficient guidance is now available for directing on-going projects and formulating new initiatives and proposals. A logical step forward should now be taken to concentrate on improvement of existing systems and implementation of new methods and technology according to the expressed needs. Active communication and coordination between the projects, often having very similar aims and parallel activities, is essential in order maximise synergy and sustainability.

During the first phase of SHOCS a Work Plan for the second phase (SHOCS II) was developed, circulated for comments and finally presented in the Final workshop of SHOCS in November 2012. In particular, the Project Board advised that SHOCS II should:

- Follow the Finnish Government developing policy, including emphasis on the specified cross cutting issues;
- Continue on what we was started and achieved in SHOCS I;
- Set priorities to create a unique space for the Finnish expertise while also complement, but not overlap, with planned/on-going initiatives; Give focus on non-routine activities;
- Take into account regional DRR etc. frameworks and strategies (e.g. St. Mark Action Plan, Disaster Management, etc.); Have a built in element of sustainability
- Contribute to specific needs of individual countries while at the same time benefit all through a regional component; Strengthen Institutional capacity building capacity of especially NMHSs and DMAs
- Enhance cooperation and communication between DMAs, NMHSs and other key agencies involved
- Keep live contact with individual SIDS, establish support and commitment of the directors of agencies involved

The ‘work plan’ was set as the final requirement of SHOCS Result 1 to provide a way-forward for the recommendations above. This ‘work plan’ took a form of a Concept Document for a continuing

project named SHOCS II, and was submitted for review (also translated in Spanish) by the ACS member states. The Work Plan included the following activities/topics:

- **Restoration of Automated Weather Stations, implementation of data Quality Control, storage and sharing**
- **Implementation of tools for analyzing, forecasting and preparing service products**
- **Enhancing communication of climate information to the Caribbean communities**
- **Capacity building on institutional governance through Quality Management**
- **Development and implementation of solutions for common presentation and communication of early warnings**
- **Enhancing presentation skills of Early Warning information to different sectors of the society - Training on a TV broadcasting solution**

2. ACHIEVEMENT OF RESULTS

PROJECT OVERALL OBJECTIVE **Caribbean societies are better prepared for the adverse effects of natural disasters and harmful impacts of climate change**

PROGRESS TOWARDS THE OBJECTIVE (Bullets I., II. etc. refer to indicators in the Project Document)	**COMMENTS ON OVERALL PROGRESS** **(critical issues, changes in project context)**
I. Decrease in the number of casualties and economic losses due to natural hazards in the Greater Caribbean region - These indicators can be assessed after a period of several years after the completion of the project. **II. Investments on early warning systems and rescue preparedness** - The MFA committed to ca. 1 million euro investments on capacity building and acquirement of methods and instruments during 2013-2015 in SHOCS II - Other investments are planned and partially initiated by WMO under its regional program for the Central and North America and the Caribbean[1] - Several on-going and emerging capacity building projects have been outlined in the SHOCS II Project document **III. Established authority of NMHSs and civil protection agencies as contributors to Disaster Risk Reduction (DRR)** - The authority of the NMHSs and DMAs as well as their legal position as regards, the being responsible agency of the Early warnings was a matter of utmost importance in all assessment meetings during the feasibility survey missions and in the workshops organized by SHOCS. The reports from these meetings can be used to improve the authority of the agencies in countries where the position is weak.	SHOCS Phase II Concept Document, generated as a key result of SHOCS (Phase I), represents an Action Plan to follow-up from the recommendations of SHOCS. This Action Plan was recognized by WMO RAIV at its 16 session in April 2013 as one of the 17 Strategic Projects in the region (ref. http://raiv-16.wmo.int/system/app/pages/search?scope=search-site&q=SHOCS) **Resource Mobilization and Strategic Partnerships RA IV** **Major Partnership - Regional Development Projects** Country / Title / Focus / Support / Year of Request / Completed Haiti — Weather and Climate Services to Reduce Vulnerability in Haiti — Canada — 2012 — ongoing Costa Rica — Early Warning System for Hydrometeorological Hazards Project" — World Bank-GFDRR — 2011 — ongoing SHOCs IIs — Phase II (SHOCS II) – Assoc Caribbean States — Finland — 2012 — 2013 Ibero-American Countries — Strengthening Hydrometeorological Operations and Services — Spain — ongoing 7 Central American Countries, Dominican Republic, Haiti — Central American Flash Flood Guidance System (CAFFGS) — USAID-OFDA — 2012 Pacific-Caribbean SIDs — Weather and Climate Services and South-South Cooperation. - SWFDP Pacific / Caribbean — Canada Fast Start — Commences 2013 Dominican Republic — Dominican Republic (CIFDP-DR) Phase II — Canada Fast Start — 2013 — Commences 2013 [1] WMO RAIV-16 Regional Meeting in Curacao and Hurricane Committee 35-

	session, Curacao April 2013: RA IV/HC-35/Doc. 7 and 8 http://www.wmo.int/pages/prog/www/tcp/HC-35.html http://raiv-16.wmo.int/documents-english

PROJECT PURPOSE: Enhanced capacity of ACS on the strategic planning of the entire process of Disaster Risk Reduction, and enhanced capacity of the NMHSs and DRR agencies to provide services and preparedness against natural hazards.

PROGRESS TOWARDS THE OBJECTIVE (Bullets I., II. etc. refer to indicators in the Project Document)	**COMMENTS ON OVERALL PROGRESS** **(critical issues, changes in project context)**
I. ACS has updated strategic plans for the Greater Caribbean on mitigating impacts of natural hazards and harmful impacts of climate change - The 'Saint-Marc' ACS Plan of Action, representing the present 'Strategy' was formulated in 2007. A new Plan of Action appeared as a result of the Fifth Summit of the Heads of State and/or Government of the ACS held 16 April 2013 in Pétition Ville in the Republic of Haiti. - Within the theme of Disaster Risk Reduction the summit listed the follow-up project, Phase II of SHOCS as 1st of the six priority Actions. SHOCS Phase II work plan was based on conclusions and Results of SHOCS Phase I taking into account other regional assessments and on-going initiatives in the region (Refs. I; V). It is notable that ACS has referred SHOCS II as the biggest project in the ACS history. - The emphases of Action within the theme of DRR were further discussed through points 23-27 of the 'Declaration of Pétitión Ville' highlighting that the Previous 'Saint-Marc' Action Plan, although requiring updating and revalidation, will still hold as the guide for the ACS in the area of DRR.	ACS Press releases 13 April 2010  ACS Secretary General meets with T&T Meteorological Services Port of Spain (April 13, 2010) – The Secretary General of the Association of Caribbean States (ACS), Ambassador Luis Fernando Andrade Falla met with Mr. Emmanuel Moolchan, Director, Trinidad & Tobago Meteorological Services on 8 April at the Association's Headquarters in Port of Spain. 4 March 2011  Signing of a Memorandum of Understanding between the Association of Caribbean States and the Finnish Meteorological Institute (FMI) Port of Spain (March 4, 2011) – The Secretary General Ambassador Luis Fernando Andrade Falla and the ACS Director of Disaster Risk Reduction and Transport Mr. Eduardo González signed a Memorandum of Understanding (MOU) involving the Association of Caribbean States (ACS), and the Finnish Meteorological Institute (FMI); Dr. Martti Heikinheimo, SHOCS Project Co-ordinator and Development Director signed on behalf of the FMI.

II. Increased capacity of NMHSs to provide services and products used by livelihoods that are sensitive to weather and/or climate variability and extremes

- Based on the feedback by the NMHSs, the training on QMSs, although having concentrated basically in Aeronautical Weather Services, has contributed positively to overall governance of NMHSs in their provision of all types of weather and climate services.

III. Roadmaps for NMHSs to certify aeronautical services according to ISO9001.

- All together 21 NMHS in the Caribbean attended the QMS workshops and progressed in their readiness for certification according to the ISO 9001 standard (certification itself was not set-up as an indicator).
- Significant progress was obtained from the time of the 1st workshop to the time of the 2nd workshop: For example the overall number of NMSs rated as starters (0-32% requirements completed) decreased from 45% to 5% and the number of 'most advanced' (67-100%) category increased from 5% to 32%. Further details of the progress achieved are given in the Progress column for Result 2 below.

22 November 2011 	SHOCS Capacity Assessment Meeting (Port of Spain, November 21st – 22nd 2011) After signing a MOU in March 2011, the Association of Caribbean States and the Finnish Meteorological Institute have been jointly implementing the project, Strengthening of Hydro-Meteorological Operations and Services in the Caribbean SIDS (SHOCS) in order to improve and strengthen Early Warning Systems to prevent hurricane related risks in the region.

EXPECTED RESULT 1: Completed feasibility study assessment on the Caribbean SIDS with recommendations and an action plan for concrete steps of development

PROGRESS ACHIEVED (Bullets I., II. etc. refer to indicators in the Project Document)	**COMMENTS ON OVERALL PROGRESS,** **(Capacity building (CB) methods used, critical issues, comments on project environment)**
I. Detailed work plan adopted by stakeholders - The work plan for the feasibility assessment was discussed in the 2nd and 3rd PB meetings and finalized though correspondence with the stakeholders.	- Work plans for the preparation and execution phases of the feasibility assessment were submitted for discussion and approval by the Project Board. These discussions led to valuable tuning of the way the assessment meeting were held.
II. Positive feedback from the beneficiary agencies - All 16 beneficiary SIDS participated in the assessment meetings with the number of participants totaling at 136. - All beneficiary agencies accepted the role as hosts for the assessment meetings and were active to invite their local stakeholders to attend the meetings. The number of stakeholders per meeting varied from 3 (Jamaica) to 11 (Bahamas) being typically between 5 and 10. The assessment reports were generally accepted 'as is', only some editorial corrections were suggested.	- The feedback received orally regarding the meetings was generally very positive. Some participants commented, however, that there was repetition because of similar assessment by WMO carried out in close proximity. - The previous assessment by WMO was benefited by making it more focused on the identified structure of the Early Warning Disaster Risk Reduction process as demonstrated in Result 2, Indicator II below.
III. Conclusions and recommendations adopted by project beneficiaries and stakeholders as a basis for further actions The capacity assessment was summarized as 5 major priority areas that can be used as a guideline for further execution of capacity building projects in the Caribbean. The assessment further led to the formulation of an Action Plan as a way-forward to continue SHOCS with Phase II to implement some concrete elements within the priority areas listed below.	

The key conclusions of the assessment were

1. **Strengthening Political recognition and legislation for MHEWS and DRR**; specifically for those countries which had not yet done so. Legislation needs to be developed so that it clearly identifies those agencies that must be involved in the MHEWS and DRR, with definitions of their respective roles and responsibilities. Those countries that already had a legislation and recognition saw the need for revisions to include important aspects that were not considered at the time the legislation was developed.
2. Strengthening **institutional capacity** specifically in terms of MHEWS and DRR**.** Ten (10) out of the sixteen (16) countries involved in the assessment prioritized this need. The main requirements were to increase the numbers of staff as well to acquire highly trained and professionally-trained staff to work at the national, local and community levels. As a prerequisite, increased financial resources are required to build this capacity.
3. Strengthening **methods and technical resources to enhance hazard detection, monitoring and forecasting.** This is needed particularly to increase the number of automatic weather stations (AWS) across the region, include control of data quality and to allow for transmission observation data in real time. Technical resources are also needed provide access to high resolution numerical weather prediction (NWP) data and to acquire software for monitoring, forecasting and transmitting data for services to meet specific needs of localized areas and sectors of the society.
4. The capacity for **communicating watches, warnings and advisories** was examined specifically as it relates to the consistency and clarity of warning messages and the extent to which they link risk information to the appropriate response actions that should be taken. First, the available technologies and methodologies should be benefited to display and disseminate information in a timely manner and to reach all citizens threatened by the severe phenomena. Second, messages need to be delivered in a language that is understood by the people; the information must relate to all populations including the language of indigenous peoples, remote

Feed-back and comments given during the Final Workshop (summary is based on audio recording):

- Judy Thomas, DMA Barbados. Congratulated Mrs. Inniss on the assessment: 'The report is very much in line with the understanding of the needs and how the needs are captured. How can we reduce the priority areas? SHOCS should now pick some of the doable priority needs so we can drop them from the list. This report is wide in that it's does not limit itself to the activities of SHOCS, but also captures almost every needs area recognized e.g. by CDEMA at present.
- Barbados: We need to ensure that the priorities selected gain ownership also outside the organizations. Quite a bit of progress made here. We want to guard the gains made. Need to take every opportunity to seek capacity in the region. This could be an opportunity to focus on internal issues within the institutes, but as well focus on those of the region. Since at the public sector we always see limited resources. So those ingredients to be implemented should be long reaching, rather than mainly create new challenges on top the existing ones.
- The discussion went on to the problem of rotation of staff from duties where they have specifically received training. A practical example was given on keeping the knowhow on the EMWIN-system; because trained staff have left their positions. CIMH/Farrell: Representative of CIMH noted that they can organize EMWIN courses as needed. He also questioned whether the order of priorities presented was based on associated risk involved or assessment on potential damage and loss.

The SHOCS Project resulted in a concrete action plan in a form of a Concept Document of SHOCS Phase II submitted to the ACS member states and presented in the Final Workshop and ACS Special Committee on Disaster Risk Reduction

communities, and the general public. 5. **Training in basic skills in meteorology and disaster management** (risk awareness communicating with the media, risk assessment). In this category the main needs were for training in the use of modern technologies available in the hydrological and meteorological sciences, and training of meteorological and disaster management personnel in communicating early warning information between the agencies and to both the media the general public. .	The Actions specified were outlined in the Concept Document of SHOCS II as: - Restoration of Automated Weather Stations, implementation of data Quality Control, storage and sharing - Implementation of tools for analyzing, forecasting and preparing service products - Enhancing communication of climate information to the Caribbean communities - Capacity building on institutional governance through Quality Management - Development and implementation of solutions for common presentation and communication of early warnings - Enhancing presentation skills of Early Warning information to different sectors of the society - Training on a TV broadcasting solution

EXPECTED RESULT 2 : Improved capacity of the staff of ACS, NMHSs and the Civil Protection agencies in ACS member states on MHEWS, DRR and QMS

PROGRESS ACHIEVED (Bullets I., II. etc. refer to indicators in the Project Document)	**COMMENTS ON OVERALL PROGRESS,** (methods used, critical issues, comments on project environment)
I. Success of project meetings The Project Board meetings were held as planned and the results reported in the progress reports and mission reports. The PB had 2 physical meetings and 4 virtual meetings via Skype or by correspondence. The schedule of the PB meetings and key decisions are highlighted in Chapter 5 below. A Final PB meeting will be held to adopt the present Completion Report. Other Administrative meetings included participation of Project Manager in the 52th CMO Directors meeting held as part of the Session of the Caribbean Meteorological Council in Rodney Bay, Saint Lucia 14th Nov 2012. In this meeting the results of SHOCS were	The SHOCS II initiative, which appeared in a form of a Concept Document, was submitted to ACS in November 2012. The document was cited and summarized on 5 pages in the report of the Coordinating Directors' meeting of Caribbean Meteorological Council in its 52nd sessions in Rodney Bay, Saint Lucia, 15-16 November 2012. (Ref., **CMC52**, DOC 10, pages 3-8).

referred explicitly regarding the progress of the QMS developments at NMHSs. This meeting also highlighted several themes that were relevant for the preparation of the 2nd Phase of the Project. The SHOCS Phase II Concept Document, i.e. the work plan for the next phase of SHOCS, was presented to the CMO audience. The SHOCS Final Workshop was organized in co-operation with the FMI and ACS at the Ballroom of Hotel Hilton Trinidad starting at 9:00 am 21st Nov and ending at 12 am 22nd Nov 2012. Altogether 35 participants were listed of which 4 (11%) were women, 7 representing Caribbean Disaster Management Organizations, 19 representing Caribbean Hydro-meteorological organizations, 1 Project consultant, 1 representing MFA, 4 representing ACS and 3 representing FMI.	
II. Success of the MHEWS technical workshop - **WMO technical workshop on Multi-Hazard Early Warning System and Disaster Risk Reduction, Barbados 2-5 November (ref. III):** The workshop was highly successful in that it concluded on the capacities and future development needs within Caribbean SIDSs to provide effective Multi-Hazard Early Warnings Systems/Services MHEWS in support of Disaster Risk Reduction (DRR). This was done through a sequence panel sessions addressing the different themes. The sessions consisted of presentations by invited panelists, panel discussion and discussions carried out in three parallel working groups. The mission report prepared by SHOCS PM highlighted the major findings of this workshop. A complementary report was published by WMO as a result of the conclusions by the working groups and a survey carried out by visiting a few of the NMHSs of the SIDS and other meetings with the regional organizations[1].	The workshop was financially supported by SHOCS, NOAA and UNDP. A total of 34 experts from the Caribbean SIDS representing NMHSs and DMAs participated. Of these 26 participants from the Caribbean Region were supported by Finland/SHOCS. These included participants from NMHSs and DMAs of Antigua & Barbuda, Bahamas, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Netherland Antilles & Aruba, Saint Lucia, Saint Vincent & the Grenadines; Trinidad &Tobago; CCCCC and CMO. The mission report prepared by SHOCS PM highlights the major findings of this workshop. A more comprehensive report was published as a WMO Document (WMO –No.1082)

[1] World Meteorological Organization (WMO), 2011 : Strengthening of Risk Assessment and Multi-Hazard Early Warning Systems for Meteorological , Hydrological and Climate Hazards in the Caribbean, November 2011, WMO-No.1082

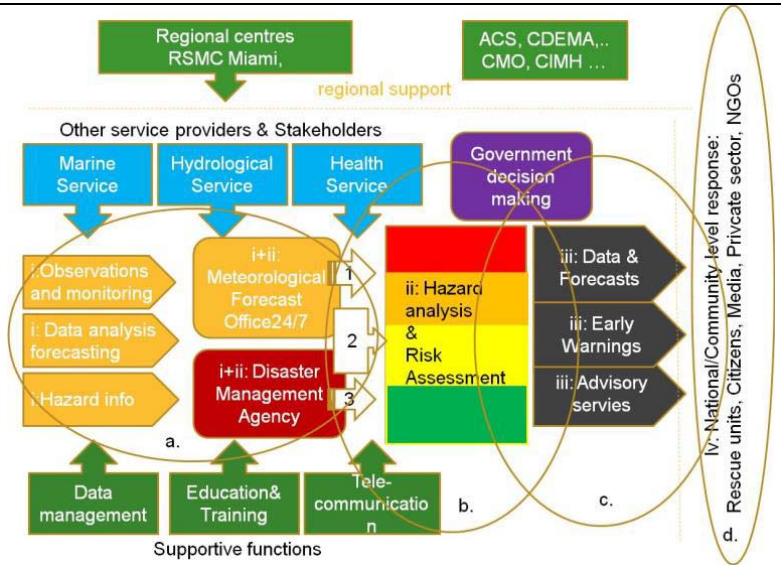
The workshop concluded on four basic sub-areas of development of the MHEWS and DRR process (see Figure on the right):

a. Methods and technical resources for hazard detection, monitoring and forecasting

b. Hazard analysis and Risk assessment

c. Methods and techniques to disseminate watches, warnings and advisories.

d. **Communication of watches, warnings and advisories especially in regard of consistency and clarity and to reach out to different sectors of the society**



III. Success of the Training workshop on Quality Management Systems on aviation weather services (ref. III)

Significant progress was obtained from the time of the 1st workshop to the time of the 2nd workshop: For example the overall number of NMSs rated as starters (0-32% requirements completed) decreased from 45% to 5% and the number of 'most advanced' (67-100%) category increased from 5% to 32%.

Further progress was evaluated by inquiring the status of completion of the QMS requirements at the time of the Final Workshop in Nov 2012: 8 NMHSs out of 12 present in the meeting reported nearly full completion of the requirements.

In conclusion: The Progress for completion of the QMS requirements was estimated by self-evaluation at three consecutive stages:

1, 1st QMS workshop (May 2011)
2: 2nd QMS workshop (Dec 2011)
3: At the time of Final workshop and the target set by ICAO for completion of the QMS requirements (Nov 2012)

Two inter-linked training workshops on establishing QMSs for Aeronautical Meteorological Services in the Caribbean Hydro-Meteorological Institutes were organized in May and Dec 2011 with participation from altogether 21 Caribbean SIDS Meteorological Services/Offices. Online consultation was made available to participating countries in-between the workshops.

Financial support to organise the workshops was received from various sources:

- participation from the 16 beneficiary SIDSs NMHSs, and the general arrangements of the workshop were supported by the SHOCS-project,
- 3 SIDS were supported by CMO
- 1 SIDS was supported by FMI,
- WMO provided support for 2 SIDS

The results are highlighted in the Table below, where the column numbers refer to the stages of evaluation and the colors to the categories of completion:

Degree of Completion of the requirements for the ISO 9001_2008 Standard
0 – 33 %
33 – 65 %
66 – 100 %

Participating NMHSs from	1	2	3
Anguilla	56	58	61
Antigua & Barbuda	46	54	95
Aruba		84	
Bahamas	32	58	90-95
Barbados	15	36	50-55
Belize	30	51	55-60
British Virgin Islands	65	74	
Cayman Islands	42	58	
Curacao	48	63	
Cuba	41	70	90
Dominica	25	41	45
Dominican Republic	90	76	100
Grenada	20	57	90
Guyana	59		70
Jamaica	29	18	95
St Kitts (& Nevis)	21	34	80
St Lucia	25	57	62
St Maarten		57	
St Vincent & Grenadines	62	76	85
Suriname	31	76	50-70
Trinidad & Tobago	37		80-85

- CIMH provided the venue for the 1st workshop as an in-kind support.

The results of the SHOCS QMS Training Workshops were cited in the documentation of the 52nd Meeting of the Caribbean Meteorological Council; Rodney Bay, Saint Lucia, 14th Nov 2012 (ref. DMS2012, Doc 5, Page 15): as

> Citation from DMS2012, Doc 5, Page 15:
>
> ***B. Quality Management System***
> *7. During 2011, the Finland funded Project, "Strengthening Hydro-meteorological Operations and Services in the Caribbean SIDS (SHOCS)," held two (2) workshops on the "Implementation of a QMS to aviation weather services." The first was held at the Caribbean Institute for Meteorology and Hydrology (9-13 May) and the second was held in Saint Lucia (5-9 December).*
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> *8. The report which was produced at the conclusion of the second workshop indicated that most of the countries which participated had improved in their level of preparedness towards seeking ISO 9001:2008 Quality Management Systems certification as shown in **Figure 1**. (see left)*

The experiences of the participants and trainers of the QMS workshops can be summarized as follows:

- It is beneficial to have an officially named person (normally a quality manager) responsible for QMS issues within the organization
- Senior managers and executive directors need to be well informed and committed on how to use the QMS efficiently;
- Participants of these workshop acquired sufficient knowledge to carry out the QMS Implementation in their services. There is no need for further training workshops, however, some countries will still need targeted hands-on guidance for implementation.
- It appears that issues related to organization culture may hinder

- The satisfaction ratings for the 1st and 2nd workshops rated by participants were 4.4 and 4.1 (out of 5) respectively. - The participants were informed about the next steps in terms of continuation of training during the foreseen next phase of the project and by urging NMHSs to start implementation of Actions specified in their QMS documentation, and performing Internal Audits. This would be a required next phase step, already included as one Activity in the next phase of SHOCS, necessary before External Auditing and certification of the QMS.	- If an organization uses an external consultant for QMS implementation, one must ensure that the consultant really tailors QMS to reflect the business/mission of the particular meteorological organization. **Conclusion of the SHOCS QMS Training Workshops:** Without SHOCS and the capacitation it offered, many Caribbean SIDS would have ended up in a very complicated situation in reference to the firm requirements by ICAO to set-up the QMSs as a precondition for continued operations by international air traffic.
IV. More than 30% of the workshop participants are female - The realized proportion of women in the two QMS workshops was 8/22 (36%) and 4/25 (16%), respectively, and in the 12 feasibility assessment meetings 37/136 (27%), thus the target was not quite achieved. - In the MHEWS –DRR workshop organized jointly by SHOCS, WMO and UNDP there where 48 participants of which 13 (27%) were women. - All PB members were men, the project teams at ACS and FMI consisted of 3 men and two women per institute, the hired consultant was a woman. - Of the ACS staff assisting in meeting arrangements 4 were women and 1 was a man - Of the 36 SHOCS Final meeting participants 32 were men and 4 women, in addition 5 women participated as meeting assistants	The result can be explained by taking that the nature of the workshops favoured participation of personnel at leader positions, such as Quality Managers or Section Directors (or higher), being less populated by women than men. A promotion for Gender sensitivity was included in the ACS Declaration of the 'Pétition Ville', Haiti 26 April 2013 as: *29. Promote and make an appeal for the incorporation of gender, as cross-cutting themes, into the policies, plans and actions related to the priority programs of the ACS* .

V. Final recommendations and implementation project plans adopted ACS, the beneficiaries and the stakeholders **SHOCS Final Workshop and 20th ACS Special Committee on Disaster Risk Reduction – Final Session, Discussion Notes:**

Note: the comments were given either on the completed SHOCS Phase I or proposed Phase II or both.

Dominican Republic:

- *Presentation on the SHOCS results was important and the continuation of SHOCS will strengthen the monitoring system. We are now working with private companies to improve AWS performance. We will give all our support to this project. Especially important is the software proposed to improve product development that facilitates the weather services.*

Jamaica:

- *ODPEM (Jamaican Disaster Management Agency) has gained a lot from the SHOCS project I. We have been able to identify caps in our early warning systems and to identify possible upgrades in that regard. SHOCS also provided the opportunity to learn from the CAP analysis and experiences from other countries, it helped us to identify potential priorities for policy legislative and institutional capacity strengthening. We give welcome to SHOCS II.*

Mexico:

- *All support for SHOCS. Thanks to Finland and ACS for this important project.*

Guadalupe:

- *Congratulates Finland for the two projects and gives full support for the continuation. These projects are taking us from the basic level to be a leader. This is an example for others. What Finland is doing it very well. It must be noted that natural disasters retard development, because you have to use your budget to recover from disaster rather than to develop your country.*

Antigua & Barbuda:

- *Proposal for Phase II: unlike some other project there seem to be a strong effort for sustainability. Capacity building builds potential for establishment common platform for issuing the service products. The project also aims strongly for the maintenance of standards.*

Cuba:

- *The cooperation projects unit the Caribbean and lift us to a new level in DRR. This will lead us to increased capacity. The project from Finland will strengthen the cooperation ties exchange of information and ability to train our experts. We have a process of sustainability on a long/medium term. Support the continuation of the project.*

Trinidad and Tobago

- *T&T endorse the project and the proposal. We have already embarked in the newspaper and expressed an interest for a comprehensive population alert system. The component will be integrated into our intelligent early warning systems. Highly appreciate the advance to be provided by the hydromel applications by the SHOCS project in the next phase.*

Guatemala:

- *We now have a project which everyone is interested. Ambassador Andrade was the initiator of the SHOCS project.*

All commentators thanked ACS, the Government and the delegation of Finland for their achievements and support.

Final note by the Chair: Gave his deepest thanks to Finland, both MFA and FMI. *'I am convinced that this has been an ideal project. We need continuing projects'*

3. USE OF EXPERT WORKING DAYS

NAME OF EXPERT	FIELD OF EXPERTISE	ROLE IN COOPERATION	NUMBER OF WORKING DAYS
Martti Heikinheimo	Assessment of Early Warning Systems	Project Manager	157
Heikki Juntti	Quality Management Systems	Lead Trainer on QMS	44.5
Alberto Blanco	Quality Management Systems	Lead Trainer on QMS	33.5
Harri Pietarila	Project Coordination at FMI	Member of Project Board	8
Juha A. Karhu	Climate Services	Planning of Phase II	5
Riikka Pusa	Quality Management Systems	Assistant	15
Minna Kristiina Sassi	Assistant for Project Management	Assistant	13.5

4. PURCHASE OF EQUIPMENT OR SERVICES

EQUIPMENT / SERVICE	COST	PROCUREMENT METHOD (For any item over 15 000 Euro)
LapTop Computers and Monitors for ACS section of Disaster Risk Reduction (4 peace)	5591.37 €	

5. PROJECT BOARD MEETINGS

Description of schedule and key decisions:

Meeting	date	Location	Decisions
1st PB Meeting	11th Sep 2010	Santo Domingo, Dominican Republic	- Organization of the PB
2nd PB Meeting	1st Apr 2011	Via Skype	- Adoption of Progress reports 2010 - -Adoption of annual Plan 2011
3rd PB Meeting	16th Feb 2012	Via Skype	- Adoption of Progress reports 2011

			- Adopt Annual Plan 2012 - Purchase 4 Lap-Tops to ACS DRR team - - Prepare Project leaflet
4th PB Meeting	20-21 Jun 2012	Helsinki, Finland	- Adoption of progress reports 2012 - Decisions on the schedule of events and submission of documents for the final phase od SHOCS - Prepare guidelines for the 2nd Phase of SHOCS
Extraordinary PB meeting	5th Oct 2012		- Adoption of ToR for a planning meeting in Geneva
Extraordinary PB meeting	5th Dec 2012		- Adoption of progress reports 2012
5th PB Meeting	tbd	by correspondence	- Adoption of the Final report

6. OTHER ISSUES

6.1 List of Project Documents

Appendix I	Project Document, Action Plans, Declaration and Contracts	ACS_Haiti_Declaration_25IV2013.pdf ACS_PlanAction_16Apr2013.pdf Amendments_to_assignment.pdf App_I_-_SHOCS_I_-PD_ActionPlans_and_Contracts.zip ICI-SHOCS-Project-Doc-ACS-FMI_27062010.doc MFA_SHOCS_Assignment.doc SHOCS-ICI- MoU_31Jan2011.doc
Appendix II	Minutes of PB Meetings	Extraordinary_PB_meeting_5Dec2012_SHOCS.doc Extraordinary_PB_meeting_SHOCS_5Oct2012.doc Minutes of 1st PB Meeting.doc Minutes of 2nd PB Meeting v11.doc Minutes of 3rd PB Meeting v10.doc

		Minutes of 4th PB Meeting v10.doc
Appendix III	Mission Reports	2ndQMS_WS_StLucia_Report_v1-1.pdf FMI ICI SHOCS Expert Mission Report 13-14Oct2010.doc FMI_ICI_SHOCS_Expert_Mission_Report_30Aug-13Sep2010.pdf Mission Report 2-5Nov2010.pdf Mission Report 28Feb-9Mar2011.doc Mission_Report_SHOCS_10-25XI2012_v10.doc SHOCS_1st_QMS_WS_report.pdf
Appendix IV	Semi-Annual progress reports	ProgressReport_SHOCS_Q2-2011.doc ProgressReport_SHOCS_Q2-2012.doc ProgressReport_SHOCS_Q4-2011.doc ProgressReport_SHOCS_Q4-2012.doc ProgressReport_SHOCS_Q4_2010.doc FMI-SHOCS - SemiAnnual_report_Q2-2011.doc FMI-SHOCS - SemiAnnual_report_Q2-2012_v10 .doc FMI-SHOCS - SemiAnnual_report_Q4-2011.doc FMI-SHOCS - SemiAnnual_report_Q4-2012_19XII.doc FMI-SHOCS - SemiAnnual_report_Q42010.doc
Appendix V	Feasibility Assessment Reports	Report_Review_Capacity Assessment for MHEWS_DRR.pdf SHOCS_EWSDRR_Assessment_Summary_Report_3VIII2012.pdf Mission 1 Report_v10.pdf Mission 2 Report_v10.pdf Mission 3 Report_v10.pdf Country_Report_Antigua_v10.pdf

		Country_Report_Bahamas_v10.pdf Country_Report_Barbados_v10.pdf Country_Report_Belize_v10.pdf Country_Report_Cuba_v10.pdf Country_Report_Dominica_v10.pdf Country_Report_Dominican_Republic_v10.pdf Country_Report_Grenada_v10.pdf Country_Report_Guyana_v10.pdf Country_Report_Haiti_v10.pdf Country_Report_Jamaica_v10.pdf Country_Report_Saint_Lucia_v10.pdf Country_Report_St_Kitts_and_Nevis_v10.pdf Country_Report_St_VincentGrenadines_v10.pdf Country_Report_Suriname_v10.pdf Country_Report_TrinidadTobago_v10.pdf

7. FINANCIAL COMPLETION REPORT

Budget lines	Budgeted	Total costs	Variance
A1. Assignment fees Finnish government expert	150 653 €	213 385	62 732
A2. Allowances, partner experts	147 345 €	53 549	-93 796
A3. Travel costs	83 700 €	97 200	13 500
A4. Accommodation	23 490 €	46 725	23 235
A5. Travel allowances for Finnish experts	10 596 €	9 154	-1 442
A6. Subcontracted work assignment	20 000 €	20 000	0
B. Administrative costs in partner country	22 600 €	18 946	-3 654
C. Fixed assets	0 €		0
D. Contingency costs (max 10%)	31 616 €	31 616	0
Total costs (Euros)	**490 000 €**	**490 574**	**574**

Comment/explanation
A1. The excess expenditure of assignment fees concerned mainly the period Q2-2012 and was approved by the PB
A2.-A3. The Budgeted amount for A2. was based on an UNDP rate which includes Accommodation. The costs of 'partner experts' accommodation totalled 33 462 € bringing the balance of this budget line down to -60 344 €, to be labeled as savings in travel costs. As there was 13500 € surplus expenditure in A3. the overall savings in travels (including allowances and accommodation) was on the order of 47 000€.
D. The Contingency consisted of costs of (1) PC laptops purchased for ACS, (2) travel costs of the consultant and (3) excess administrative costs (pending for approval by the PB)

8. List of Abbreviations

ACS	*Association of Caribbean States*
CARICOM	Caribbean Community
CCCCC	Caribbean Community Climate Change Centre
CDEMA	*Caribbean Disaster Emergency Management Agency*
CIMH	Caribbean Institute for Meteorology and Hydrology
CMO	Caribbean Meteorological Organisation
DMA	Disaster Management Agency
DRM	Disaster Risk Management
DRR	*Disaster Risk Reduction*
EWS	Early Warning System
FMI	Finnish Meteorological Institute
ICAO	International Civil Aviation Organization
ICI	Institutional Cooperation Instrument
ISDR	(United Nations) International Strategy for Disaster Risk Reduction
IT	Information Technology
MFAF	Ministry for Foreign Affairs of Finland
MHEWS	Multi-Hazard Early Warning System
MoU	Memorandum of Understanding
NMHS	National Meteorological and Hydrological Service
PB	Project Board
PM	Project Manager
QC	Quality Control
QMS	Quality Management System
RAIV	Regional Association IV
SIDS	Small Island Developing State
UNEP	United Nations Environment Programme
UNESCO	U.N. Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WMO	World Meteorological Organization
WMO-RAIV	WMO Region IV (Central and North America and the Greater Caribbean)

ASSESSMENT PRESENTED BY THE FACILITATION CONSULTANT (ICI –CONSULTANT)

Does the REPORT fulfil the requirements as specified in the agreement and general guidelines?

Specific remarks:

Date and place:

Signature:

<name>