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HYDROMETEOROLOGICAL SERVICE
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Report

**National Consultation on Climate Services
&
National Climate Outlook Forum**

Georgetown, Guyana

16-19 May, 2016

Executive Summary

The National Consultation on Climate Services (NCCS) and the National Climate Outlook Forum (NCOF) were hosted by the Hydrometeorological Service, Guyana. These activities were held in collaboration with the World Meteorological Organization (WMO) and through the kind generosity of the people of Canada. The workshop was held at the Pegasus Hotel, Guyana from May 16-17 and 19, 2016, respectively. The workshops saw attendance and participation from a broad spectrum of stakeholders. Participants include representatives from the Health, Energy Water and Agricultural Sectors, Drainage and Irrigation Authority, Disaster Risk Management, The Ministry of Public Infrastructure and Non-Governmental Organizations, amongst others.

The workshops were initiated to bridge the gap between the Hydrometeorological Service and its many stakeholders. In addition, to further ensure that information on climate and climate products, including their uncertainties and limitations, are understood by and communicated to users.

On May 18, a group of key stakeholders met in order to develop a Road Map and Action Plan for the implementation of a National Framework for Climate Services, based on presentations and discussions at the NCCS. Listed below in priority order are the three (3) areas which were recommended;

1. Coordination of inter-institutional collaboration
2. Capacity development
3. Review of the Legislative and Policy Framework governing the Hydrometeorological Service as well as those of relevant agencies.

The following are some of the recommendations which were made at the conclusion of both events:

- The continuation of the National Climate Outlook Forum (NCOF). NCOFs should be held before the start of May/June and November/December rainy seasons. These will serve as a mechanism to discuss and develop consensus based climate services and create a means of generating feedback and the evaluation of existing climate services.
- The streamlining of production, delivery and use of climate services in Guyana in order to avoid ad hoc or fragmented activities.
- Develop capacities to support efficient and effective production, delivery and utilization of climate services

Glossary of Acronyms and Abbreviations

ADRM	Agriculture Disaster Risk Management
CARICOF	Caribbean Climate Outlook Forum
CDC	Civil Defence Commission
CIMH	Caribbean Institute for Meteorology and Hydrology
DRM	Disaster Risk Management
EWS	Early Warning Systems
GFCS	Global Framework for Climate Services
GRDB	Guyana Rice Development Board
GWI	Guyana Water Incorporated
IICA	Inter-American Institute for Cooperation on Agriculture
NAREI	National Research and Extension Institute
NCCS	National Consultation on Climate Services
NCOF	National Climate Outlook Forum
PAHO	Pan-American Health Organization
TOR	Terms of Reference
WMO	World Meteorological Organization

Introduction

The Global Framework for Climate Services (GFCS), a United Nations (UN) initiative led by the World Meteorological Organization (WMO), guides the development and application of science-based climate information and services in support of decision-making in climate sensitive sectors. The GFCS empowers societies to better manage the risks arising from climate variability and change and aims to strengthen the interactions between climate service providers and those that make use of the services. The National Consultation on Climate Services (NCCS) and the First National Climate Outlook Forum (NCOF) were held at the Pegasus Hotel, Georgetown, Guyana from May 16-17 and 19, 2016, respectively and was hosted by the Hydrometeorological Service- Guyana in collaboration with the World Meteorological Organization (WMO). The NCCS addressed several aspects for the implementation and delivery of climate services at the national level. These included an overview of the Global Framework for Climate Services as it relates to the national context, climate services successes, needs, gaps, challenges and the existing institutional framework for climate services in Guyana.

This document seeks to summarize the main presentations and discussions that took place during the period May 16-19, 2016. An Action Plan Matrix as a Road Map for the implementation of a national framework for climate services in Guyana was also developed. The lessons learnt, recommendations and way forward for the Hydrometeorological Service, Guyana are discussed. The Action Plan will be an on-going process involving key stakeholders and to address the actions outlined in same the Plan.

The National Consultation on Climate Services, May 16-17, 2016

Day 1-May 16, 2016

Opening Session

The National Stakeholder Consultation **on Climate Services** held at the Pegasus Hotel, Guyana was chaired by Mrs. Haymawattie Danny-Budhram, Telecommunications Engineer, of the Hydrometeorological Service, Guyana. During the course of the two days, several presentations were made ranging from the applications and needs of climate services and a number of case studies were presented from various sectors. The following are summaries of the speeches and presentations made:

Dr. Garvin Cummings, Chief Hydrometeorological Officer (ag) welcomed the participants to the workshop expressed the hope that it will be one of collaborative effort between the stakeholders. He emphasized the importance and timely hosting of the workshop and implored the participants to let there be dialogue between the Hydromet Service and stakeholders and don't let it pass just as another event. He posited that in recent years, Hydromet has been seeking to build capacities and establish partnerships with other organizations.

Mr. Adrian Trotman Chief, Applied Meteorologist and Climatologist, Caribbean Institute for Meteorology and Hydrology (CIMH) in addressing the gathering noted the recent and still on-going drought conditions in parts of the Caribbean. Mr. Trotman questioned, "What will be the forecast of tomorrow, or of the rest of the year?" and "should we then be reducing the impact of these extremes? Are they not causing us thousands to millions of dollars, illnesses, and in some parts of the Caribbean where tourism is very important, causing some discomfort on guests?" Observing that climate extremities will continue to occur, he explained that "... the request here, starting today, and continuing tomorrow is that we strengthen our weather climate services, so that we can reduce the impact, those that are negative at least on our society, on our climate sensitive sectors, and just as importantly make the best that climate services bring." He pointed out however, that in making use of climate services, there has to be some entity providing the service. He then made an important point for the national Hydrometeorological Service, observing that "it is that national entity supported by regional and international entities that would provide stakeholders with the relevant services, to fight against climate extremities". He also indicated that Guyana was the fifth country to host the National Consultation on Climate Services in the Region and that it was to pave the way for Climate Services in Guyana.

Dr. Federico Gomez-Delgado, National Officer for North America, Central America and the Caribbean, WMO, paid sincere gratitude to the Government of Guyana for the opportunity to have the workshop hosted in Guyana. Dr. Gomez-Delgado noted that the appearance of droughts and floods can set back development efforts of many countries. He stressed the need

to tackle efficiently the impact of climate variability and change on agriculture, disaster risk reduction, energy, health and water among others. He also advised on the need for the development of proper mechanisms to adapt to seasonal/annual climate variation. He however, noted that current science-based capability is not yet being exploited to its full potential to benefit society. Dr. Gomez-Delgado observed that the major gaps in the demand for climate services and their current availability need to be addressed. He said investments are urgently required to strengthen existing climate observation systems, information management systems, research, and institutional and human capacity.

Mr. George Jervis, Permanent Secretary – Ministry of Agriculture welcomed the facilitators and participants and indicated that the purpose is to bridge the gap between the Hydromet. Service and stakeholders and hoped that whatever is shared will be used by all stakeholders. In his address, he observed that ‘failure to prepare is preparing to fail’. He noted that, “whilst it is clear that small countries such as ours can do very little to manipulate the weather, we can prepare to deal with its effects.” He emphasized that “the National Consultation on Climate Services and the National Climate Outlook Forum is a timely exercise.” Mr. Jervis wished the meeting a successful consultation and hoped what comes out of the meeting will be beneficial to all.

The following are the presentations that were made:

- Overview of the Global Framework for Climate Services (GFCS)- Rationale, objectives, key components and implementation priorities of the GFCS at the national level- Dr. Federico Gómez-Delgado (WMO)
- Developing user-driven climate services-Dr.Cédric J. Van Meerbeeck(CIMH)
- Status of Capacities and Provision of Climate Services at the Global and Regional Levels-Mr. Adrian Trotman (CIMH)
- Overview of existing Institutional Framework and Provision of Climate Services in Guyana, covering the five pillars of GFCS- Mr. Lyndon Alves (Hydromet)

- Ministry of Public Infrastructure-An application of science-based climate information-Mr. Kelvin Thorne.
- Inter-American Institute for Cooperation on Agriculture-Rainwater Harvesting Principles and Complimentary Practices-Mr. Arnold DeMendonca
- Guyana Rice Development Board (GRDB)-Application, Needs and Case study of Climate Data for Rice Farmers-Dr. Viviane Baharally
- Conservation International Guyana-Building Climate Resilience in the Rupununi Communities-Dr. David Singh.
- Fisheries Department-The Importance of Climate Services /Data to the Fisheries Sector in Guyana-Ms. Ingrid Peters.
- Pan-American Health Organization (PAHO)-Dr. Mariano Bonet.
- Civil Defence Commission-Applications and Needs of Climate Services/Data for Disaster Risk Reduction-Ms. Anita Wilson-Layne.

Closing Remarks

In his closing remarks, Dr. Cummings indicated that communication is important, not only what is communicated, but to whom information is being communicated. He indicated that the meeting came at an opportune time for Hydrometeorological Service's restructuring. This will include research to assist stakeholders and this is important for Hydromet as a Government entity. Dr. Cummings thanked everyone for their contributions and indicated that the presentations made will be put together to work on a way forward.

Day 2- May 17, 2016

Day two of the National Consultation on Climate Services began with a presentation by Mr. Esan Hamer, Engineer of the Hydromet Service. He was tasked with giving a review of the presentations which were made on day one.

The following presentations were made;

- Guyana Sugar Corporation-Applications And Needs Of Climate Services /Data For The Sugar Industry-Mr. Ashely Adams .
- Inter-American Institute for Cooperation on Agriculture- Investigation of the effects of rainfall (Climate Change) on pineapple production in Essequibo Tri-Lakes Area-Mr. Arnold DeMendonca.

- University of Guyana-Incorporating Climate Data In The Development Plan Of An Urban Area: A Case Study Of Lethem In Region 9, Guyana -Ms. Denise Simmons
- Guyana Forestry Commission -Mr. Dwayne Griffith
- Mangroves Restoration Project-Mr. Rudolph Adams
- National Agricultural Research And Extension Institute- Climatic Data Needs For Potato Cultivation In Guyana-Mr. David Fredericks.
- United Nations Development Programme (UNDP)-Climate Services/ Data And UNDP Projects-Ms. Astrid Lynch.
- Guyana Energy Agency- Ms. ShevonWood
- Ministry Of Tourism- Ms. Joyanne Ramnauth

Working Groups Questions

In order to guide the group discussions the questions below were provided to the participants.

1. What are the key climate services needs of your sector?
 - Type of parameters (temperature, rainfall, wind, rainfall intensity, onset of rainfall...)
 - Temporal and spatial resolution (daily, monthly, for a district, a region,...)
2. What are the key obstacles in accessing and using climate information?
 - How are you accessing information to date? Is that good enough? If not, why not? What are the obstacles preventing you from accessing this information?
 - How are you using climate information? Is it useful in your decision making? If so, why? If not, what are the obstacles?
3. What processes would you like to see improved for you to better access and utilize climate information?
 - (i.e. regular meetings, clear roles and responsibilities/mandates, a web portal, an SMS service, training by met service staff to better understand the terminology, a glossary...)

Group 1 Discussion-Agriculture

Group 1 comprised of stakeholders from the Guyana Rice Development Board (GRDB), the Inter-American Institute for Cooperation on Agriculture (IICA), The Food and Agricultural Organization (FAO), a Farmer and the Office of Climate Change. Discussion from the group highlighted the need for the Hydromet Service to provide simpler, user friendly weather and

climate forecasts for livestock holders, fisher folks, cash crops farmers and sugar cane farmers in order to assist them in improving their productivity and planning of harvesting. The need for building capacities of the Extension Services in the use and interpretation of weather/climate forecast and data to support farmers was emphasized. Proper packaging of climate information / products tailored to different endusers groups was noted. Also coming out of the discussion was the importance of finding an effective and efficient mode of delivery of the Hydromet's products to the stakeholders. One of the major constraints identified was the lack of timely delivery of weather and climate information.

Group 2 Discussion-Disaster Risk Reduction

The discussions from this group highlighted the need for hydrometeorological data from remote areas in Guyana. The need for data on temperature and rainfall variations was highlighted by the stakeholders. The farmers in the group raised the need for the implementation of mechanisms in order for daily weather forecasts to be disseminated. It was noted that the daily forecast was broadcasted on 560 on the AM Band. The general consensus of the group was that there was a great need for data. Suggestions for the development of a weather App was made.

Group 3 Discussion-Energy

The members of group three made specific reference to the need for seasonal precipitation outlooks especially to assists farmers in their decision making. Specific mention was made of the need for water level data, historical climatological data, temperature forecasts, sunshine hours, drought forecasts, wet spell forecasts, etc. Many of the representatives in the group alluded to the fact that only the head of their organization was privy to many of the products disseminated by the Hydromet Service. The barriers relating to the interpretation of data and information was highlighted in addition to the need for user friendly data. The establishment of an online platform for data accessibility was suggested. Decentralizing data accessing information from the Hydromet Head Office to regions was also proposed.

Group 4 Discussion-Health

Coming out of the discussions of this group was the need for key climate data and information such as wind speed intensity and direction, barometric pressure, rainfall data, temperature data, river flow data evapotranspiration rate, maps showing the likelihood of disease outbreak and also oceanic data. The need for capacity development and training so that better weather predictions can be made was also emphasized. Members of this group stressed the need for regular meetings with staff members of the Hydromet Service in order to discuss seasonal forecasts.

Lessons Learnt

The National Consultation on Climate Services (NCCS) provided a unique opportunity for the Hydromet Service to interact with its various stakeholders and to understand what their needs are and what challenges they are facing. Below is a list of some of the lessons learnt during the course of the consultation;

- Stakeholders are not aware of some of the services offered and the capabilities of the Hydromet Service, namely: the daily weather forecasts/updates, the Hydromet Website, etc.
- There is a need to build capacity amongst stakeholders in the interpretation and use of weather and climate data.
- There is a need to strengthen the Human Resources Capacity of the Hydrometeorological Service of Guyana in order to provide tailored products to meet the demands of the various sectors.
- Information is disseminated by the Hydromet Service, but it does not reach key stakeholders.

**Table 1: MINISTRY OF AGRICULTURE- HYDROMETEOROLOGICAL SERVICE
GUYANA
ROAD MAP PLAN OF ACTION**

PRIORITY AREAS	RATIONALE	ACTIVITIES	KEY ACTORS/ STAKEHOLDERS	TIMELINES
1.Coordination of inter-institutional collaboration	<ul style="list-style-type: none"> • Streamline production, delivery and use of climate services in Guyana in order to avoid ad hoc/fragmented activities • To ensure effective development, uptake and feedback on climate services 	<ul style="list-style-type: none"> • Establish a coordinating committee on CS-CDC EWS committee • Review of climate data other organizations collect • Development of data sharing - policy • Review and update of Climate Data Management System • Establishment of a platform for dialogue and engagement of stakeholders on climate services-inclusive of climate forums • Collaborative tailoring of products and services-HYMS and stakeholders • Collaborative tailoring of communications and outreach 	<ul style="list-style-type: none"> • NCOF • Hydromet Service,Min.of Public Health, GWI,GEA Min of Natural Resources and the Environment, Min of Public Infrastructure, Min of Agriculture, Tourism, NGO's 	Ongoing
2.Capacity development	<ul style="list-style-type: none"> • Developing capacities to support efficient and effective production 	<ul style="list-style-type: none"> • Gap analysis on human and technical resources in each agency • Resource mobilization to 	<ul style="list-style-type: none"> • All sectors 	Ongoing

	<ul style="list-style-type: none"> delivery and utilization of climate services 	<ul style="list-style-type: none"> address the gaps Awareness building in general public inclusive of communication strategy- communication specialist 		
<p>3. Review HydrometGuyana Legislation and Policy Framework as well as those of relevant agencies</p>	<ul style="list-style-type: none"> Legislations Currently no standing national group that focuses directly on climate services Challenges in the execution of functions and the broadening of the mandate nationally, regionally and internationally Mandate to protect livelihoods and property based on international 	<ul style="list-style-type: none"> Review of legislation to make changes that will support climate services deliveries Update and develop regulatory policies, procedures and administration of climate services Setup technical cross-functional team or expand the mandate EWS sub-committee under the DRR platform to establish TOR for consultancy (recommended) to review and update legislation and policy documents and collaborate with consultant Stakeholder engagement/consultations Establish monitoring and evaluation framework- for the work of the technical team, establish baseline and monitor/evaluate during and after five years 	<ul style="list-style-type: none"> Hydromet Service Ministry of Public Infrastructure Ministry of Legal Affairs Ministry of Foreign Affairs Ministry of Finance WMO WMO-RTC Ministry of Agriculture <p>For consultation activities:</p> <ul style="list-style-type: none"> Public sector Private sector Academia NGO's <p>Sectors:</p> <ul style="list-style-type: none"> Energy Water Tourism Disaster Management Transport Health Finance Agriculture 	<ul style="list-style-type: none"> 2017 (recommend consultancy) <p>September 2016</p>

	conventions by WMO	<ul style="list-style-type: none">• Review existing Hydromet Strategic Plan to ensure climate services agenda is included• Review of existing related policies, legislations and strategic plans to ensure climate services agenda is included (e.g. ADRM, DRM)• Submit recommendations to Ministry for ratification of reviewed legislation if necessary		
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The National Climate Outlook Forum (NCOF) May 19, 2016

The First National Climate Outlook Forum (NCOF) was held on May 19, 2016 at the Pegasus Hotel, Guyana. The main objectives of the Forum were;

- To ensure that climate information and products, including their uncertainties and limitations, are understood by and communicated to users.
- To discuss user views on how to make the climate information accessible, user-friendly and applicable.
- To strengthen and enhance the interface for inter-agency coordination of policies, sectoral plans, and an ongoing process of understanding and responding to risks or opportunities brought about by past, current, and future climatical conditions.

The Meeting commenced at 9:30 am and was chaired by Dr. Garvin Cummings, Chief Hydrometeorological Officer (ag). Dr.Cummings also delivered the welcome address.

The following presentations were made;

- Mr. K. Dhiram - NCOF Objectives and Outcomes.
- Dr. Federico Delgado- the importance of NCOFs in the global context and the development of the National Climate Outlook Forum.
- Mr. A. Trotman - CARICOF and its links to NCOFs. Mr. K.Dhiram did a presentation on the Status of Climate Service in Guyana
- Mr. D. Lanferman-the Hydromet Service -the Farmer's Monthly Bulletin.
- Mr. Eron McPherson who represented the Hydromet Service did a presentation on the Review of Recent Seasonal and National Climate Outlook.
- Dr. Cedric Van Meerbeeck did a presentation on Communicating and Interpreting Uncertainties in Seasonal Climate Outlooks. This dealt with Climate Forecast and its implications as persons interpret the same.

Following the presentations the participants were divided into groups and were asked to discuss the implications of the seasonal forecasts for the May/ July Season.

Points Raised During Discussion

- Ms. Denise Simmons of the University of Guyana enquired about the establishment of the stakeholders/committee and whether stakeholders will meet once per year. Dr. Cummings recommended they meet twice per year in the form of NCOFs.
- Participants asked about the climate services provided, for example, the Agromet Bulletin and Newsletters by the Hydromet Service. Dr. Cummings indicated to the stakeholders that the Hydromet Service is working on re-introducing the monthly bulletin and would like to have feedback when these bulletins are issued.
- Recommendations were made by some of the stakeholders to have the bulletin tailored to meet the needs of Farmers. It was also recommended that NAREI Extension Officers link with the Hydromet Service in order to have the bulletin tailored to suit the Farmers.
- Mr. Trotman suggested that parts of the bulletin be packaged for the different sectors such as Water and Health.
- Dr. Dindyal Permaul congratulated the Hydromet Service on its timely issuance of the bulletin that is received every month by the Guyana School of Agriculture. He stated that he would also like to see an improvement in terms of Agromet to enhance Agriculture in Guyana to help build capacity. He looks forward to working with the Hydromet Service and to help build capacity.
- The Farmers also requested the bulletin be improved in terms of Agrometeorology so as to be easily understood by them.

Closing Remarks

Mr. Trotman thanked everyone for attending and wished the Hydromet Service all the best on the way forward. In summing up, Mr. Trotman made some recommendations on the way forward for the Hydromet Service. He advised that Hydromet publicize its products via daily website, emails. In addition he recommended that Hydromet develop new products and ensure stakeholder responsibility to make use of same and work along with Extension Officers to see this done. Mr. Trotman also stated that Climate is a long term event and there is need to look at what is taking place at present and prepare for the future in terms of Climate Change. He also advised Stakeholders to have discussions when seeking data from the Hydromet Service in order to be issued with the right products for their needs.

Mr. Alves and Mrs. Danny-Budhram thanked the participants for attending and the facilitators for hosting the workshop.

Recommendations

- Timely dissemination of Hydrometeorological products.
- Products must be presented in a manner that is easily understood by lay persons eg. Framers, Extension Officers etc.
- Speedy implementation of the Road Map and Action Plan for the improvement of the Hydrometeorological Service.
- Digitalization of historical Hydrometeorological Data and analysing of same.

Annex 1

Table 2: Agenda-National Consultation on Climate Services (NCCS) May 16-17, 2016

DAY 1			
Time	Activity	Responsible	Chair
08:30 – 09:00	Registration	Ms. Donessa David	
Introduction			
09:00 – 09:20	Welcome speeches	Mr. George Jarvis (PS-Ministry of Agriculture) Dr. Garvin Cummings (Hydromet) Mr. Adrian Trotman (CIMH) Dr. Federico Gómez-Delgado (WMO)	Mrs. Haymawattie Danny-Bodhram
Part 1: Climate Services			
09:20 – 09:40	- Overview of the Global Framework for Climate Services (GFCS) - Rationale, objectives, key components and implementation priorities of the GFCS at the national level	Dr. Federico Gómez-Delgado (WMO)	Mrs. Haymawattie Danny-Bodhram
09:40 – 10:00	Developing user-driven climate services	<i>Dr. Cédric J. Van Meerbeeck (CIMH)</i>	
10:00 – 10:10	Open discussion	All Participants	
10:10 – 10:30	Coffee Break & Group Photo		
Part 2: Context and Provision of Climate Services			
10:30 – 10:50	Status of Capacities and Provision of Climate Services at the Global and Regional Levels	Mr. Adrian Trotman (CIMH)	Mrs. Haymawattie Danny-Bodhram
10:50 – 11:10	Overview of existing Institutional Framework and Provision of Climate Services in Guyana, covering the five pillars of GFCS	Mr. Lyndon Alves (Hydromet)	
11:10–11:20	Open discussion	All Participants	
Part 3: Applications and Needs of Climate Services for Key Sectors			
11:20 – 11:40	Presentation	Ministry of Public Infrastructure	
11:40 – 12:00	Presentation	Guyana Water Incorporated	

12:00 – 13:00	Lunch Break		
13:00 – 13:20	Presentation	Inter-American Institute for Cooperation on Agriculture	Mrs. Haymawattie Danny-Bodhram
13:20 – 13:40	Presentation	Guyana Rice Development Board (GRDB)	
13:40 – 14:00	Presentation	Conservation International Guyana	
14:00 – 14:20	Presentation	National Agricultural Research and Extension Institute (NAREI)	
14:20– 14:30	Coffee Break		
14:30– 14:50	Presentation	Fisheries Department	
14:50 – 15:10	Presentation	University of Guyana	
15:10 – 15:30	Presentation	Pan-American Health Organization(PAHO)	
15:30 – 15:50	Open discussion	All Participants	
15:50 – 16:00	Closing Remarks	Dr. Garvin Cummings	

Day 2			
Time	Activity	Responsible	Chair
09:00 – 09:10	Summary of Applications and Needs of Climate Services for Key Sectors	Mr. Esan Hamer	Mrs. Haymawattie Danny-Bodhram
Part 4: Local Case Studies			
09:10 – 09:30	Local Case Study 1	Inter-American Institute for Cooperation on Agriculture	Mrs. Haymawattie Danny-Bodhram
09:30 – 9:50	Local Case Study 2	Mangroves Restoration Project	
9:50 – 10:10	Local Case Study 3	Guyana Sugar Corporation	
10:10– 10:20	Open Discussion	All Participants	
10:20– 10:40	Coffee Break		
10:40– 11:00	Local Case Study 4	Guyana Forestry Commission	Mrs. Haymawattie Danny-Bodhram
11:00 – 11:20	Local Case Study 5	United Nations Development Programme(UNDP)	
11: 20 – 11:40	Local Case Study 6	Guyana Energy Agency(GEA)	
11:40– 12:00	Open Discussion	All Participants	
12:00– 13:00	Lunch Break		

13:00– 13:20	Local Case Study 7	National Drainage and Irrigation Authority(NDIA)	
Part 5: Working Groups			
13:20 – 13:30	Establishment of Working Groups		Mr.Adrian Trotman(CIMH)
13:30 – 14:15	Working Groups Discussion		
Part 5: Reports from Working Groups (WG)			
14:15 – 14:25	Presentation: Working Group 1	WG1 Spokesperson	Mr.Adrian Trotman(CIMH)

14:25 – 14:35	Presentation: Working Group 2	WG2 Spokesperson	Mr.Adrian Trotman(CIMH)
14:35 – 14:45	Presentation: Working Group 3	WG3 Spokesperson	
14:45 – 14:55	Presentation: Working Group	WG4 Spokesperson	
14:55 – 15:10	Open Discussion	All participants	
15:10-15:20	Coffee Break		
Part 6: Way forward			
15:20 – 15:30	Discussion on key priorities to be addressed	All participants	Mr.Adrian Trotman(CIMH)
15:30 – 15:50	Discussion on the way forward and key actions to be undertaken: - To improve Climate Services for climate	All participants	

	<p>sensitive sectors in Guyana</p> <ul style="list-style-type: none"> - To streamline Climate Services into the decision making in climate sensitive sectors in Guyana - To build capacities at the Hydrometeorological Service, Guyana - To build Climate Services capacities in key sectors over the next two years 		
15:50 – 16:00	<p>Closing of meeting Vote of thanks on behalf of the organizers and Consultation Closure</p>	<p>Dr. Federico Gómez-Delgado (WMO) Mr. Adrian Trotman (CIMH) Dr. Garvin Cummings (Hydromet)</p>	<p>Mrs.Haymawattie Danny-Bodhram</p>

Annex 2

Table 3: Agenda - Meeting for the development of a Road Map and Plan of Action for Climate Services in Guyana- May 18, 2016

Time	Activity	Responsible
09:00-9:05	Brief Introduction on the Importance of the development of a National Action Plan and Road Map for Climate Services	Dr. Federico Gómez-Delgado (WMO)
09:05 – 09:15	Brief Summary of some of the findings of the National Consultation on Climate Services	Ms. Donessa David(Hydromet)
09:15 – 10:45	<p>Discussion on the actions to be taken in the short to long-term:</p> <ul style="list-style-type: none"> • Key Priority Areas -Rationale -Activities -Key Actors/ Stakeholders -Timeline <p>Possible areas for discussion:</p> <ul style="list-style-type: none"> • Gaps analysis e.g. Capacity gaps • Capacity development • Coordination of inter-institutional collaboration • Types of Services Needed and other Needs 	All Participants
10:45 – 10:55	Discussion on the way forward	All Participants
10:55-11:05	Closing Remarks	Dr. Garvin Cummings(Hydromet)

Annex 3

Agenda-First National Climate Outlook Forum (NCOF) May 19, 2016

Time	Activity	Responsible	Chair
08:30 – 09:00	Registration	Ms. Donessa David	
Introduction			
09:00 – 09:20	Welcome speeches	Dr. Garvin Cummings(Hydromet) Mr. Adrian Trotman(CIMH)	Mrs. Haymawattie Danny-Budhram
09:20 – 09:30	Statement from WMO - Importance of NCOFs in the global context	Dr. Federico Gómez-Delgado (WMO)	
09:30 – 9:50	CariCOF and its links to NCOFs	Mr. Adrian Trotman (CIMH)	
9:50 – 10:00	NCOF objectives and outcome	Mr.Komalchand Dhiram(Hydromet)	
10:00 – 10:15	Coffee Break		
10:15-10:50	Status of Climate Services in Guyana	Mr. KomalchandDhiram(Hydromet)	
10:50 – 11:00	Open Discussion	All Participants	
Part 1: Application of climate outlooks in key sectors			
11:00 – 11:20	Agriculture	Mr. D. Lanferman (Hydromet)	Mrs.Haymawattie Danny-Budhram
11:20–11:40	Review of recent Seasonal Outlooks	Mr. Eron McPherson (Hydromet)	
11:40–12:00	Open Discussion	All Participants	
12:00 – 13:00	Lunch Break		

Part 2: National Seasonal Climate Outlook			
13:00 – 13:20	Communicating and interpreting uncertainties in Seasonal Climate Outlooks	Dr.Cédric J. Van Meerbeeck (CIMH)	Mrs.Haymawattie Danny-Budhram
13:20– 13:35	National Climate Outlook (3 Months/6 Months)	Mr. Eron McPherson (Hydromet)	
Part 3: Sectorial preparation based on the Climate Outlook			
13:35 – 14:10	Establishment of Working Groups and discussion on the usefulness and interpretation of the Seasonal Climate Outlook information and preparedness measures for the upcoming season: - WG I Agriculture - WG II Disaster Risk Reduction - WG III Energy and Water - WG IV Health	Group Chair (to be identified by each group)	Mrs.Haymawattie Danny-Budhram
14:10 – 14:50	Working groups presentations to start at 14:10 (10 min per group)	WGs spokesperson	
14:50 – 15:00	Open discussion	All participants	
15:00 – 15:10	Coffee Break		
Part 4: The way forward			
15:10 - 15:25	Summary, Wrap Up and Way Forward	Mr.Lyndon Alves(Hydromet)	
15:25 - 15:30	Closing of the Meeting (Vote of Thanks)	Mr. Lyndon Alves and Mrs-Hymawatties Danny-Budhram(Hydromet)	

Annex 4

Table 4: List of Participants

#	Name	Organization	Designation
1	Dr. Federico Gomez-Delgado	World Meteorological Organization(WMO)	Officer for NCAC
2	Adrain Trotman	Caribbean Institute of Meteorology and Hydrology	Applied Meteorologist/ Chief Climatologist
3	Dr. Cedric Van Meerbeeck	Caribbean Institute of Meteorology and Hydrology	Climatologist
4	Garvin Cummings	Hydrometeorological Service	Chief Hydrometeorological I Officer (ag)
5	Donessa David	Hydrometeorological Service	Agronomist
6	Komalchand Dhiram	Hydrometeorological Service	Engineer
7	Haymawattie Danny	Hydrometeorological Service	Engineer
8	Esan Hamer	Hydrometeorological Service	Engineer
9	Dwayne Lanferman	Hydrometeorological Service	Agricultural Field Assistant
10	Derk Critchlow	Hydrometeorological Service	Agrometeorological Technician
11	Romaldo Hector	Hydrometeorological Service	Agrometeorological Technician
12	Lisa Peters	Hydrometeorological Service	Crop Extension Assistant
13	Lyndon Alves	Hydrometeorological Service	Meteorologist
14	Bridget Roberts	Hydrometeorological Service	Senior Meteorological I Technician
15	Syed Khan	Hydrometeorological Service	Hydrological Technician
16	Courtney Crandon	Hydrometeorological Service	Hydrological Technician
17	Althea Hiliman	Hydrometeorological Service	Administrative Assistant
18	Gavin Ramnarain	Guyana Sugar Corporation Inc	Head Researcher
19	Ashley Adams	Guyana Sugar Corporation Inc	Agronomy Manager
20	Pooran Seeraj	Guyana Rice and Development Board	Regional Superintendent
21	Viviane Baharally	Guyana Rice and Development Board	Entomologist
22	Dahasrat Narain	Guyana Rice and Development Board	Regional Superintendent
23	Deoram Prahalad	Guyana Rice and Development Board	Regional Superintendent
24	Vitus Spencer	National Agricultural Research and Extension Institute	Regional Coordinator
25	Orison Sealy	National Agricultural Research and Extension Institute	Regional Coordinator
26	Marvin Richmond	National Agricultural Research and Extension Institute	Regional Coordinator
27	Kene Moseley	National Agricultural Research and Extension Institute	Project Coordinator
28	Rudolph Adams	National Agricultural Research and Extension Institute	Monitoring Officer
29	Quincy Bentick	National Agricultural Research and Extension Institute	District Crop Extension Officer
30	David Fredericks	National Agricultural Research and Extension	Research Scientist

		Institute	
31	Osbert Nurse	Guyana School of Agriculture	Lecturer/ Farm Manager
32	Ingrid Peters	Ministry of Agriculture Fisheries Department	Senior Fisheries Officer
33	Cosmo Browne	Guyana Marketing Commission	Agricultural Officer
34	Denise Simmons	University of Guyana (SEES)	Lecturer
35	Arnold De Mendonca	Inter-American Institute for Cooperation on Agriculture	Rural Development Specialist
36	Richard Blair	Inter-American Institute for Cooperation on Agriculture	Coordinator Caribbean Regional Agenda
37	Jermaine Joseph	Inter-American Institute for Cooperation on Agriculture	Field Technician
38	Ramchand Jonlal	Guyana Water Incorporation	Director IPI
39	Richard Hoyte	Guyana Water Incorporation	Program Coordinator
40	Joyanne Rammnauth	Ministry of Tourism	Tourism Development Officer
41	Shevon Wood	Guyana Energy Agency	Economist
42	Jermy Siyl	Guyana Forestry Commission	Management Trainee
43	Dwayne Griffith	Guyana Forestry Commission	Project Officer
44	Adstrid Lynch	United Nations Development Programme	Programme Analyst
45	Asafo Jones	Government Information Agency	Cameraman
46	Namela Henry	Government Information Agency	Editor
47	Shamdeo Persaud	Ministry of Public Health	Chief Medical Officer
48	J.Cameron	MOH	Public Relations Officer
49	Angela Alleyne	Food and Agricultural Organization	Assistant FAO Rep.
50	George Jervis	Ministry of Agriculture	Permanent Secretary
21	Clifford Van Doiran	GCAA	ATCO
52	Camille Adams	Environmental Protection Agency	Senior Environment Officer
53	Shane Singh	Office of Climate Change	Technical Officer
54	John Flores	Maritime Administration Department	Consultant
55	Ryan Smith	Guyana Geology and Mines Commission	R/Officer
56	Oleta Williams	Guyana Lands and Survey Commission	Land Use Planner
57	Mariano Bonet G.	Pan American Health Organization(PAHO)	Consult. Epid/EA
58	Mahendra Sayweek	Ministry of Natural Resources	Technical Officer
59	Brontnor Maynard	MMA/ADA	SOW
60	Leroy Hamer	Buxton Friendship	Chairman
61	Calvin Holder	163 Friendship	Farmer
62	Ronaldo Roberts	Friendship	Farmer
63	Wilbert Castello	Friendship	Farmer
64	Leroy Hamer	Friendship	Farmer

Annex 5- Photos of the NCCS and NCOF



Fig 1: The Chief Hydrometeorological Officer (ag) Dr. G. Cummings making his opening remarks. Seated at the table from left to right are: Mr. Adrian Trotman(CIMH), Dr. Federico Gomez Delgado(WMO), Dr. Cedric Vanmerberk(CIMH) and Mr. George Jarvis (Permanent Secretary-Ministry of Agriculture, Guyana).



Fig 2: Participants of the National Consultation looking on at a presentation.



Fig 3: Dr. Federico Gomez Delgado of the World Meteorological Organisation (WMO) making his opening remarks.



Fig 4: One of the working groups during the Consultation.



Fig 5: Presentation of the discussions of one of the working groups.



Fig 6: The representative of the Guyana Forestry Commission making his presentation.