

METEOROLOGICAL SERVICE of JAMAICA:

Developing Climate Products & Services

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Climate Branch



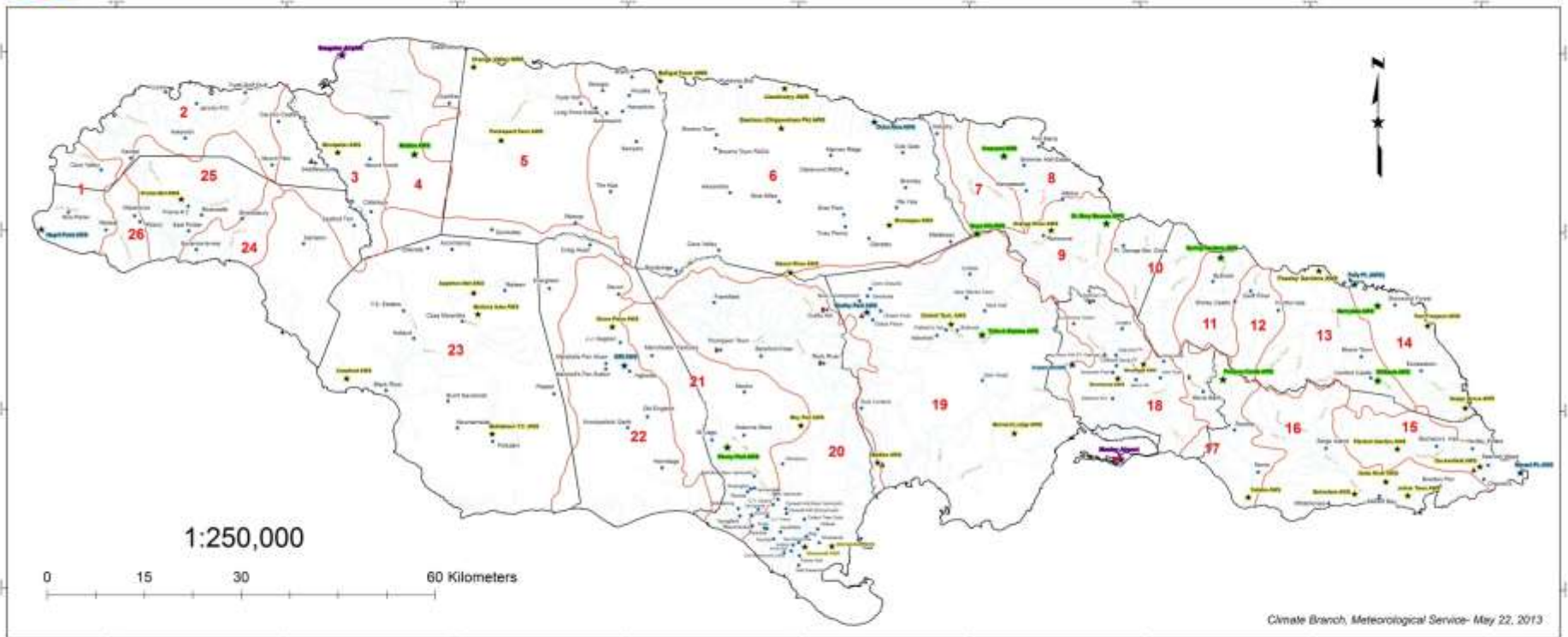
Outline

- Pre CAMI
- CAMI Project
- Services offered Post CAMI
- New Approaches to Climate Services at the national level
- ICCS and Climate Services
- Further Steps and Conclusion



METEOROLOGICAL SERVICE, JAMAICA

METEOROLOGICAL INSTRUMENTS NETWORK



1:250,000

0 15 30 60 Kilometers

Climate Branch, Meteorological Service- May 22, 2013

Legend

- ★ Automatic Weather Station (Microcomm)
- ★ Automatic Weather Station (Davis)
- ★ Automatic Weather Station (Neas)
- 24- hour Standard Raingauge
- ▲ Manual climatological station
- ▬ Rainfall logger
- ▭ Water Management Unit boundary

Watershed Management Units

NO	NAME	NO	NAME	NO	NAME	NO	NAME
1.....	SOUTH NEGRIL- ORANGE RIVER	8.....	ORACABESSA- PAGEE RIVER	15.....	PLANTAIN RIVER	22.....	GUT- ALLIGATOR HOLE
2.....	LUCEA RIVER	9.....	WAGWATER RIVER	16.....	MORANT RIVER	23.....	BLACK RIVER
3.....	GREAT RIVER	10.....	PENCAR- BUFF BAY RIVER	17.....	YALLAHS RIVER	24.....	DEANS VALLEY
4.....	MONTEGO RIVER	11.....	SPANISH RIVER	18.....	HOPE RIVER	25.....	CABARITA RIVER
5.....	MARTHA BRAE RIVER	12.....	SWIFT RIVER	19.....	RIO COBRE	26.....	NEW SAVANNAH RIVER
6.....	RIO- BUENO WHITE RIVER	13.....	RIO GRANDE	20.....	RIO MINHO		
7.....	RIO NUEVO	14.....	DRIVERS RIVER	21.....	MILK RIVER		

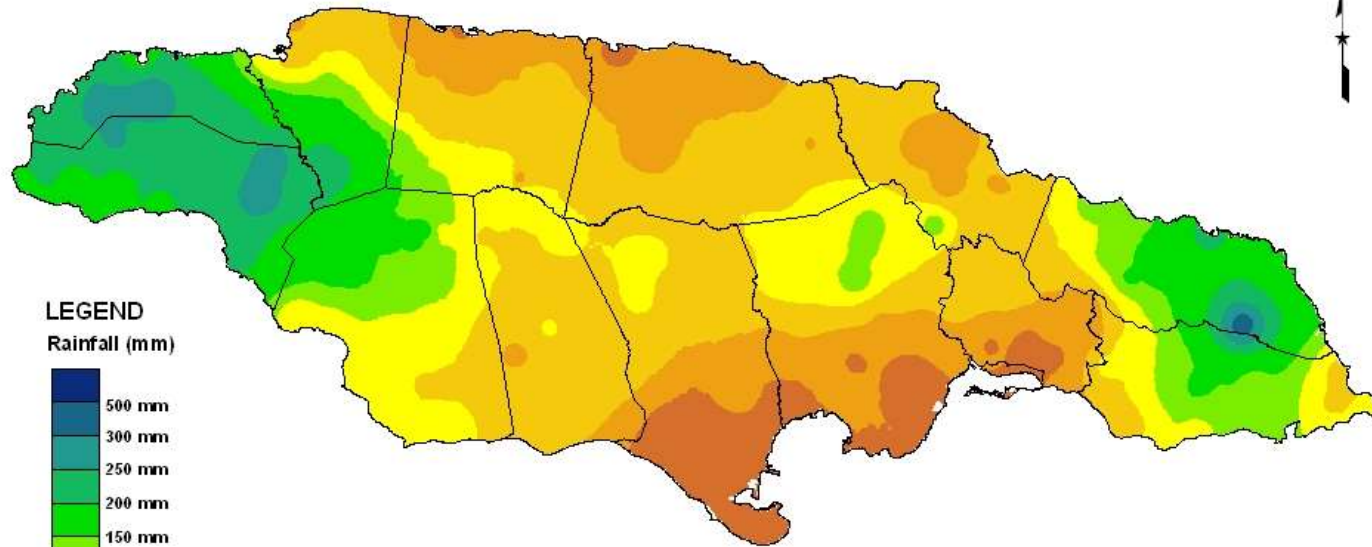
Products & Services

- Rainfall Summary
- Severe Weather Summary
- Hurricane Reports
- Specialised Reports
- GIS Maps
- Drought Information
- Astronomical products
- Data for Requests



METEOROLOGICAL SERVICE JAMAICA

MEAN ISLAND RAINFALL: July (1971-2000)



LEGEND Rainfall (mm)



JAMAICA RAINFALL ANALYSIS (mm)
Map produced from mean rainfall data (1971- 2000) for the month of July

20 10 0 20 40 60
Kilometres

ISLAND DROUGHT CONDITIONS: MAY to JUN 2013

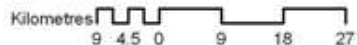


RAINFALL PERCENTILE RANKING

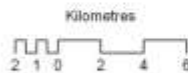
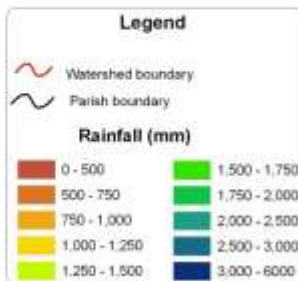
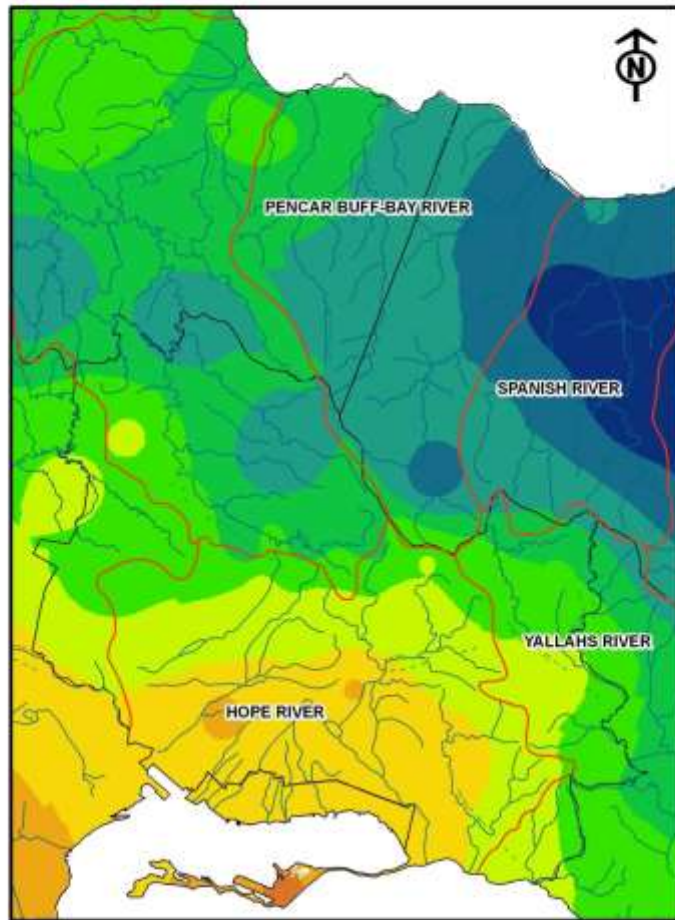
ABOVE 60%	NO DROUGHT
41-60%	NORMAL DROUGHT
21-40%	SEVERE DROUGHT
BELOW 20%	EXTREME DROUGHT

JAMAICA DROUGHT ANALYSIS

Map produced from a comparison of eight week rainfall
(May 01 to Jun 30) with the mean (1971- 2000) for each station.



Mean Rainfall (1971- 2000) for Selected Watersheds



WEATHER STATIONS IN MANCHESTER

Symbol	Type	Parameters	Frequency	Information
★	AWS	Max & Min Temp Pressure Wind speed & Direction Relative Humidity	Hourly Hourly Hourly Hourly	Established 2009 One year's continuous data in house
●	24 Hour Rain Gauge	Rainfall	Daily	Daily data from 1992 Mean rainfall data (1951-80 or 1971-2000)



Caribbean Agro-Meteorological Initiative (CAMI)

- Funded by the European Union's ACP Science and Technology Programme.
- Partnership between CIMH (Applicant), WMO, CARDI, Ten Meteorological Services.
- Ten NHMSs— Antigua & Barbuda, T&T, Dominica, Jamaica, Belize, Barbados, Guyana, Grenada, St. Vincent & the Grenadines and St. Lucia.

CAMI Objectives

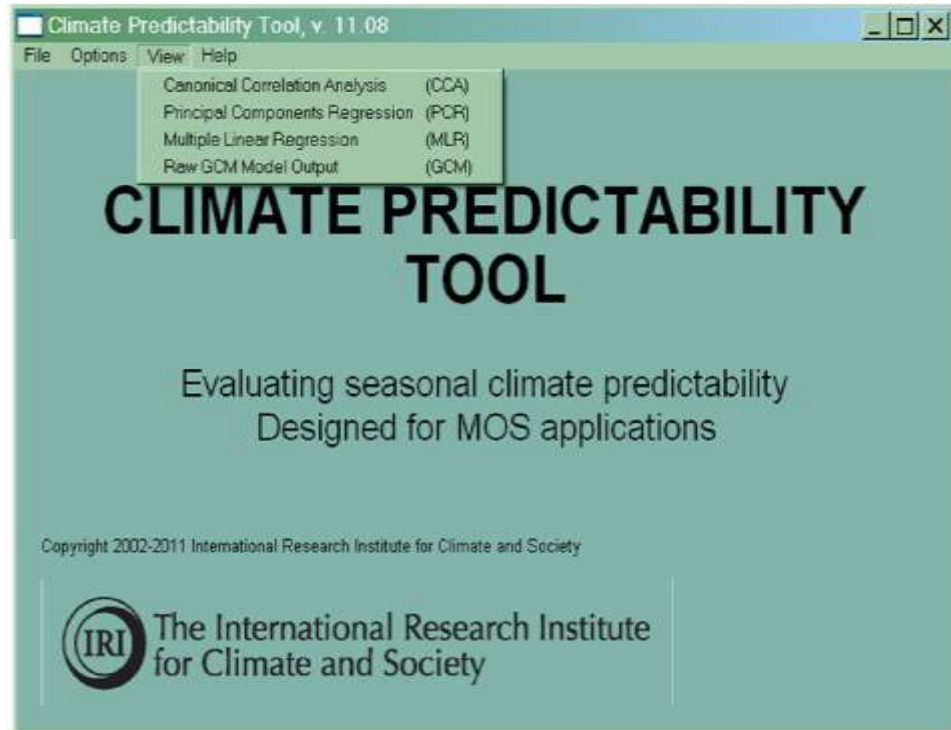
- Increase applications of weather and climate with regards to agriculture.
- Increase and sustain agricultural productivity.
- Target group is small and large scale farmers with emphasis on small farmers.

New Products from CAMI project

- Farmers Bulletin
- Precipitation outlook
- Additional index to monitor drought
- Five day forecast
- Website dedicated to agricultural interests
www.jamaicacclimate.net
- Pest and disease database for early detection

Climate Predictability Tool and SPI

- The Climate Predictability Tool (CPT) developed by the International Research Institute (IRI)
- Produces seasonal forecast for precipitation
- It can be used to forecast temperatures as well



Precipitation Outlook- April to June

Climate Predictability Tool (CPT) Station Outlook.











Stations	Below (B) %	Normal (N) %	Above (A) %
Manley (Kingston)	30	36	34
Sangster (St. James)	32	33	35
Sav. (Westmoreland)	31	35	34
Beckford (Clarendon)	31	34	35
Serge Island (St. Thomas)	30	36	34
Cave Valley (St. Ann)	31	34	35
Tulloch Estate (St. Cath)	31	34	35
Y.S. Estate (St. Elizabeth)	32	35	33
Hampstead (St. Mary)	31	35	34
Orange Valley (Trelawny)	32	35	33
Jamaica	31	35	34

Customized Forecast – Five days

Kingston Weather

Current hour is 17/Jul/2013 09:37:00 am

The selected place is: Kingston

Time	Tmp	Rainfall	Pressure	Windspd	Winddir	Weather
Wed 01:00 pm	32 °C	0.0 mm	1015 mb	20 kts	SE	
Thu 01:00 am	23 °C	0.0 mm	1015 mb	5 kts	NW	
Thu 01:00 pm	32 °C	0.0 mm	1015 mb	20 kts	SE	
Fri 01:00 am	23 °C	0.0 mm	1014 mb	4 kts	NW	
Fri 01:00 pm	32 °C	0.0 mm	1015 mb	20 kts	SE	
Sat 01:00 am	23 °C	0.0 mm	1015 mb	6 kts	NW	
Sat 01:00 pm	33 °C	0.0 mm	1015 mb	20 kts	SE	
Sun 01:00 am	23 °C	0.0 mm	1015 mb	6 kts	NW	
Sun 01:00 pm	34 °C	0.0 mm	1015 mb	20 kts	SE	
Mon 01:00 am	23 °C	- mm	0 mb	0 kts	N	

Jamaica Climate

Enhancing farming through weather and climate information!

- Home
- Seasonal Forecast
- Farmers Bulletin
- Rainfall Summary
- Weather Map
- Forecast
- Warnings



Climate Branch / Meteorological Service

Navigation

Kingston Wed 1am Wed 1pm

TEMP 24°C 29°C

Wind E 2kts ESE 6kts

Rainfall 0.0 mm/h 1.0 mm/h

<http://agrilinkja.com>

- Seasonal Forecast
- Farmers Bulletin
- Rainfall Summary
- Astronomical Data
- Weather Map
- Forecast
- Warnings

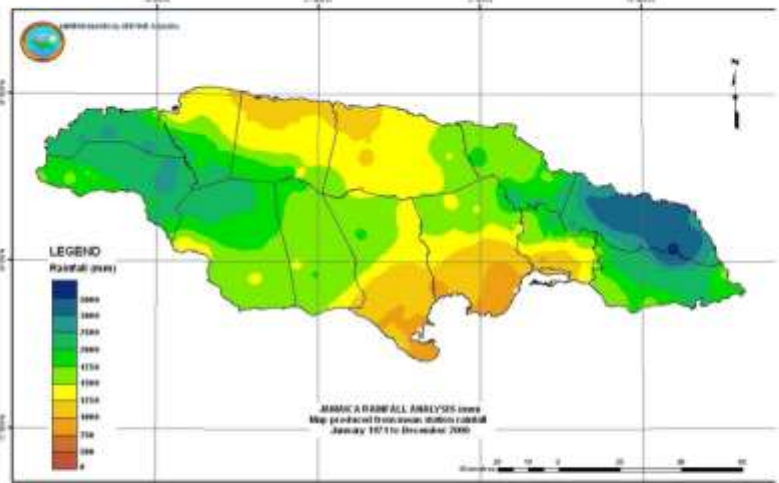
Eliminate Fats, Oil, Grease

www.lakepointgroup.com

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JAMAICA CLIMATE

JAMAICA: MEAN RAINFALL (1971-2000)



Human induced climate change, and increasing climate variability, as well as other environmental issues such as land degradation threaten the ability of the Caribbean nations to meet the needs of its population for food.

To address these challenges it is important to integrate the issues of climate variability and climate change into resource use and development decisions.

Decreasing the vulnerability of agriculture to natural climate variability is a key issue for small islands like Jamaica, and introducing seasonal forecasts into management decisions can reduce this vulnerability of agriculture to droughts and floods.

Therefore, short and long term precipitation forecasts as well as drought monitoring products will assist in making critical decisions about the growing season for crops as well as irrigation.

Common name: Citrus Psyllids
Class: Insecta
Order: Hemiptera
Suborder: Sternorrhyncha
Superfamily: Psylloidea
Family: Psyllidae
Scientific names: *Diaphorina citri*
Host Gen: Citrus

Why Citrus Psyllid?

These pests are vectors for one of the most devastating types of citrus diseases, Huanglongbing. Affected trees bear small, asymmetrical fruit which are partially green and are unsaleable because of their poor size and quality.

Model Description

As commonly used for the analysis of biological development of living organisms, the proposed model is based on the effect of temperature on citrus psyllid development, reproduction and longevity. The model proposed by Logan et al. (1976) as described by Lactin et al. (1995) was used to analyse temperature-dependent developmental rate of different stages.

Lactin D L, Holliday N J, Johnson D L, Craigen R. 1995. Improved rate of model of temperature-dependent development by arthropods. *Environmental Entomology* 24:68-75.
Logan L A, Walkind D G, Hoyt S C, Tanigoshi L K. 1976. An analysis model for description of temperature dependent rate phenomena in arthropods. *Environmental Entomology* 5:1133-1140.



New Approaches to Climate Services

- Threat of Climate Change demands a more thorough approach to providing services from NMHSs.
- We are building on our experience in providing weather and climate information to create **customized services targeted at specific groups or users**.
- In this way, **climate services** make it possible to incorporate science-based information and prediction into planning, policy and practice to achieve real benefits for society.

International Conference on Climate Services (ICCS)

- Will be held in Montego Bay in December 2013.
- **Goal** of the conference is to initiate a dialogue between experienced climate information providers and those who currently use or wish to use such information.
- **Objective** of the ICCS is to ultimately establish a climate services pilot program or network, with support from an international set of partners with experience in the implementation, design or use of climate information and services.

Multi-sectoral approach to Developing Climate Services in Jamaica

- Agriculture sector was chosen as the first group since it could build on the existing products coming out of the CAMI project.
- For the Agriculture sector a working group consisting of representatives from the RADA, CARDI, the Jamaica Meteorological Service, ADCI-VOCA, and guests from USAID, International Research Institute for Climate and Society (IRI) and the Climate Service Partnership has been established.
- The objective of the working group is to **advance national agricultural climate services, targeting the needs of smallholder farmers and commercial agriculture in managing climate related risks, especially drought**

Proposed Activities of the Working Group

1. Development of a new system for predicting drought conditions, based on the Standardized Precipitation Index (Seasonal predictions of rainfall and drought conditions)
2. Training of Extension Staff-
 - a) Improving communication and awareness of agricultural climate risk management practices
 - b) Develop capacity on how to utilize climate information and climate services products to inform agriculture planning and advisory
3. Revise CAMI Bulletins- work with RADA on the delivery of information and associated advisories to the local farming communities developed from the CAMI Bulletin

Proposed Activities of the Working Group

4. Investigate extending SPI to the forecasting of soil moisture conditions, and other conditions more directly relevant to agricultural risks and outcomes.
5. For the areas of South St Elizabeth, Christiana/ Manchester and Guys Hill, develop a regional climate monitoring and prediction information system tailored to local conditions and needs particularly in relation to pest forecasting.

Global Framework for Climate Services

- To assure the provision of actionable climate information in all countries, governments and organizations are working together to build the Global Framework for Climate Services (GFCS). This United Nations- wide initiative, is currently led by the World Meteorological Organization,

Global Examples of Climate Services

United Kingdom- Climate Information

- The Met Office's National Climate Information Centre (NCIC) - an accessible catalogue of UK weather and climate information going back hundreds of years, used by technical experts as well as the general public as a definitive source of historic climate information for the UK.
- The Hunger and Climate Vulnerability Index produced by climate scientists from the Met Office Hadley Centre working with World Food Programme experts.
- The Met Office's work with Egypt's Nile Forecasting Centre through the Danish Hydrological Institute has created climatological and hydrological tools and provided the necessary information to help water management in the Nile Basin.

United Kingdom

Value-added services

- The Regional Climate Change Tool is a new prototype online application developed for the Ministry of Defence now available to all government departments for viewing climate change projections. The tool helps to visualise regional changes in climate by region across the globe.

Expert advice

- As delivered for Britain's National Rail Network to guide climate-informed decision-making for strategic investment, works maintenance, contingency planning and day-to-day operations in future decades.
- A partnership involving the Department for International Development (DFID) and the Met Office Hadley Centre is working with African stakeholders to advance scientific understanding of African climate now and in the future and apply the latest science.

Challenges to provision of Climate information/services

- **Salient**: How do we ensure that climate information (e.g., content, scale, format, timing) and advisory services are relevant to the decisions of stakeholders, in a manner that can be scaled up?
- **Accessible**: How can we provide timely climate services access to all stakeholders with very little required by them to access it (e.g. communications tech, cost etc.)
- **Legitimate**: How do we ensure that stakeholders own climate services, and shape their design and delivery?
- **Equitable**: How do we ensure that women, poor and socially marginalized groups are served?
- **Integrated**: How do we connect climate services with other interventions to enable management of climate- related risk at the smallest levels?

Websites

- www.metservice.gov.jm
- www.jamaicacclimate.net
- www.agrilinksja.com
- <http://63.175.159.26/~cimh/cami/>
- Email: datarequest@metservice.gov.jm