



# Caribbean Early Warning System Workshop

## Harmonization in Existing EWS

April 14-16, 2016

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Caribbean Institute for Meteorology and Hydrology

Husbands, St. James

Barbados

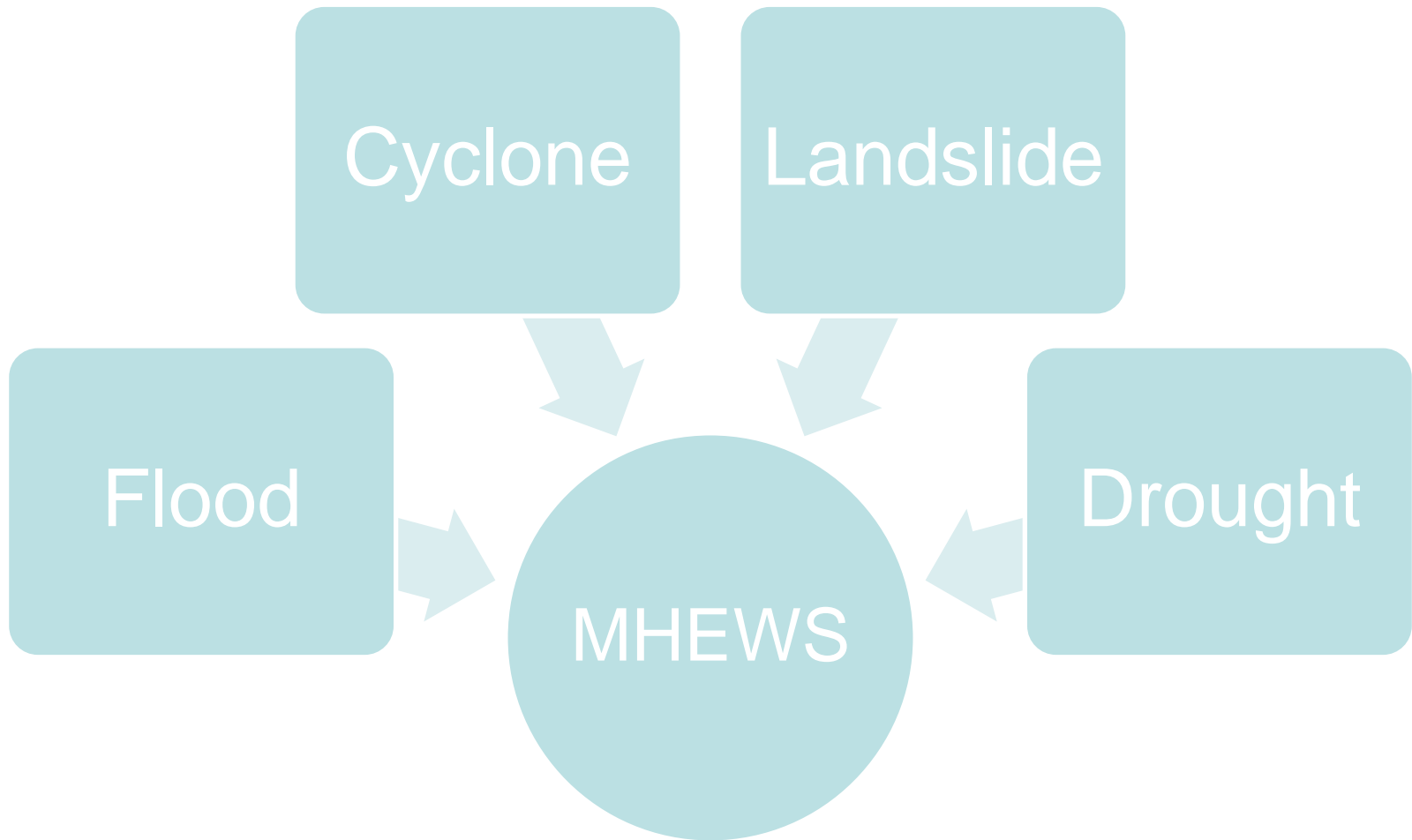
# Background

Between 2006 and 2007 a country-level survey conducted by WMO found that the hazards affecting the Caribbean are tropical cyclones, flash floods, thunderstorms, storm surges, coastal flooding, drought, landslides, strong winds, river flooding and earthquakes

# Background...cont'd

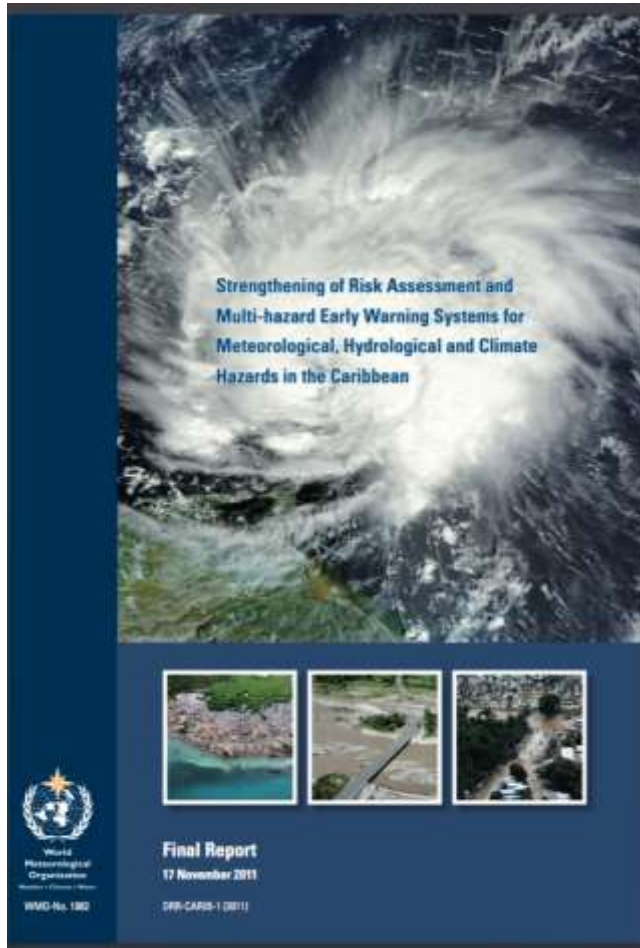
Between 1980 and 2007 WMO documented that nearly 98% of disasters, 99% of casualties and 99% of economic losses related to natural hazards were caused by recurrent meteorological, hydrological and climate related events primarily tropical cyclones, storm surges, floods and drought

# Harmonization



Multi-Hazard Early Warning  
Systems (MHEWS)

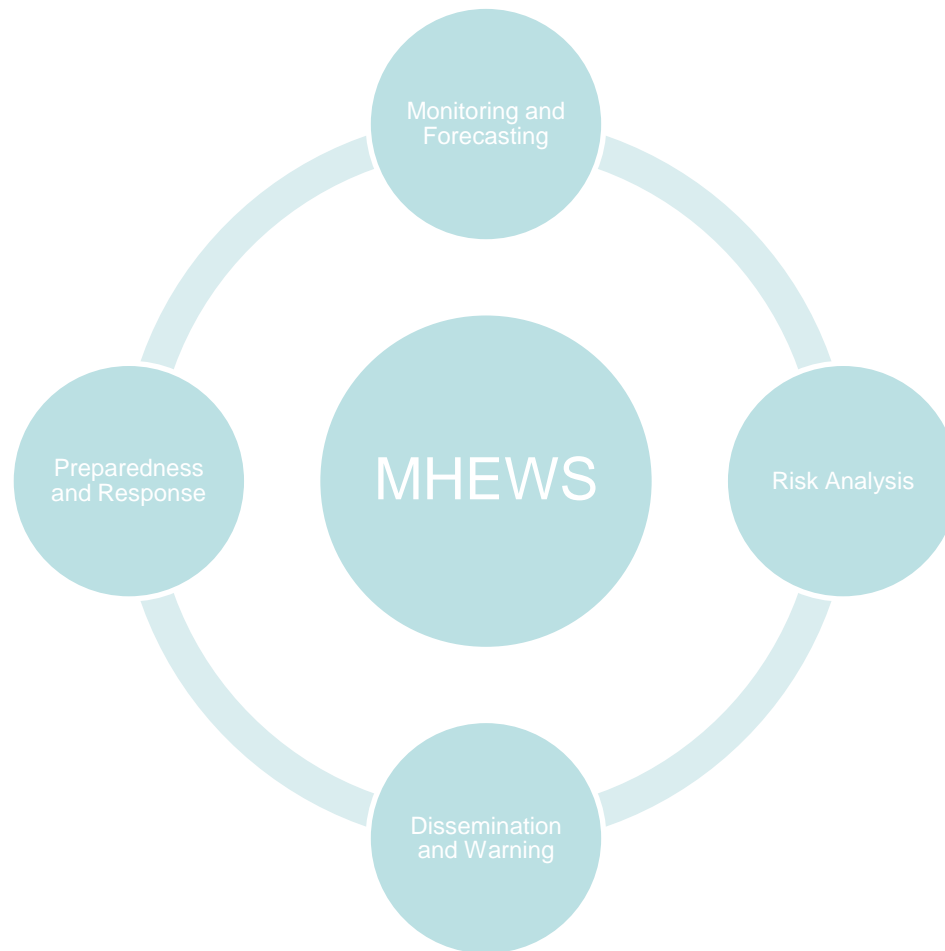
# Harmonization...cont'd



During 2010-2011 WMO with support from regional and international partners conducted a comprehensive assessment of the institutional and technical capacities and needs of the Caribbean region to support MHEWS.

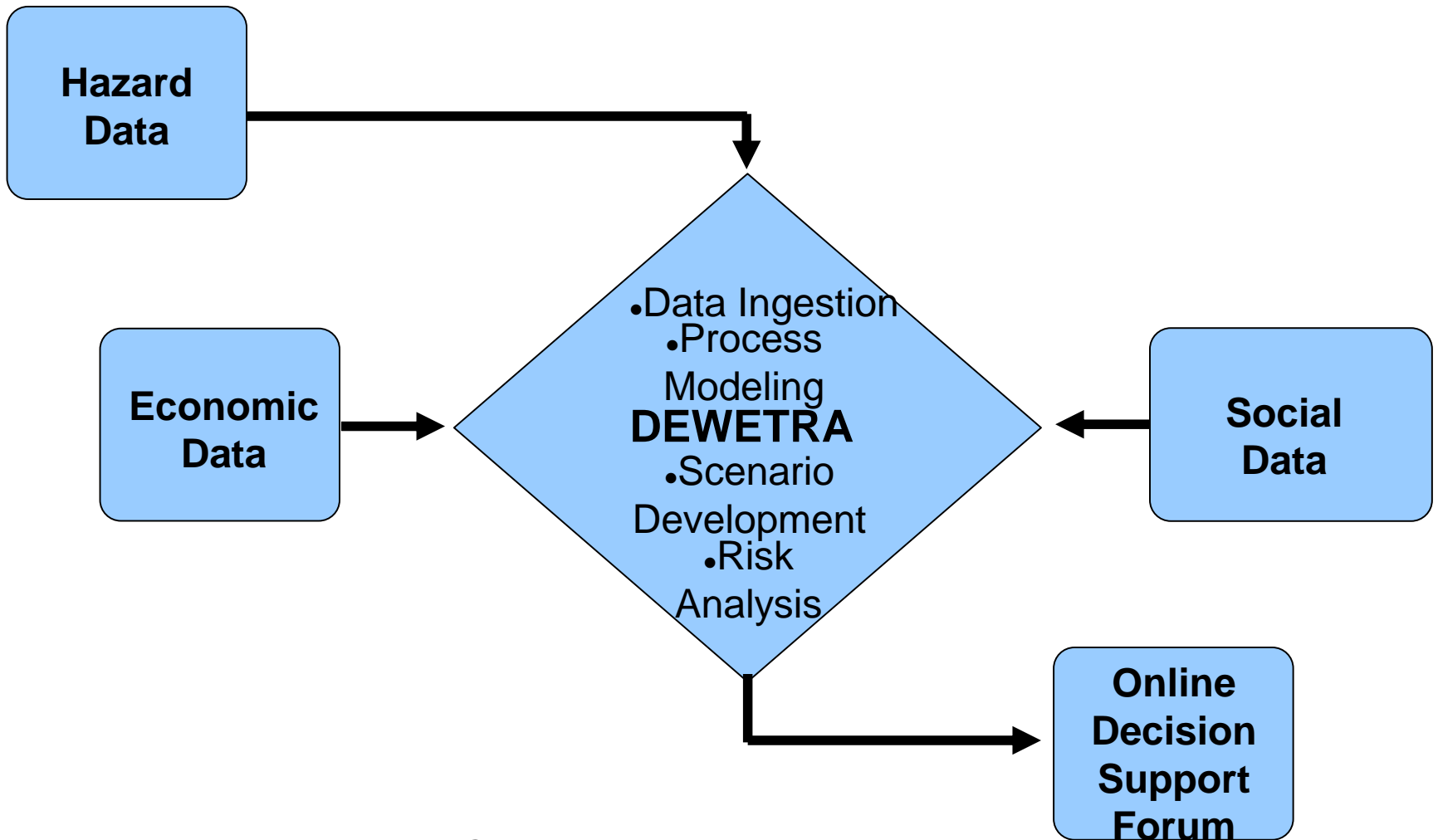
The outcomes of this assessment can be found in the document presented

# Harmonization...cont'd



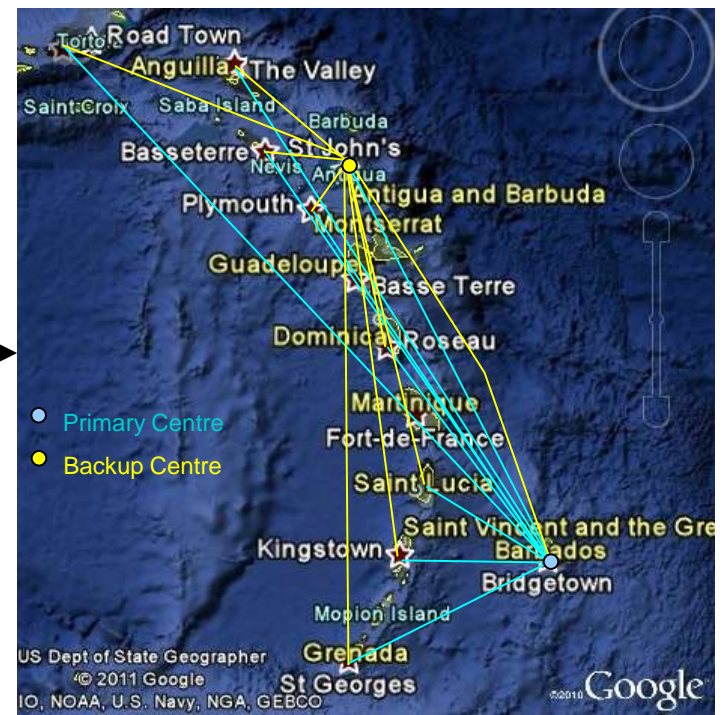
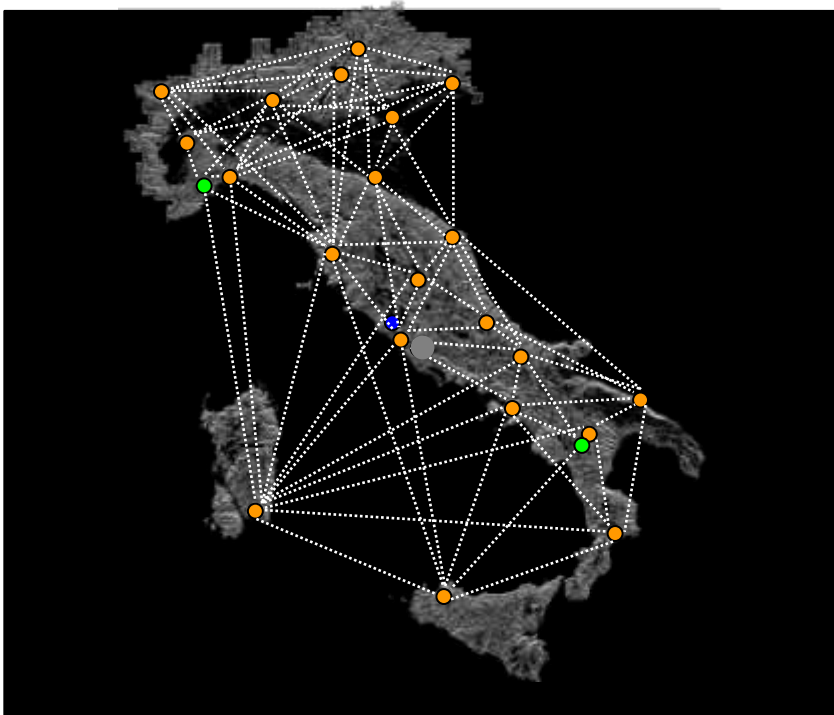
Components of Effective MHEWS

# Harmonization...cont'd



Caribbean Dewetra Platform

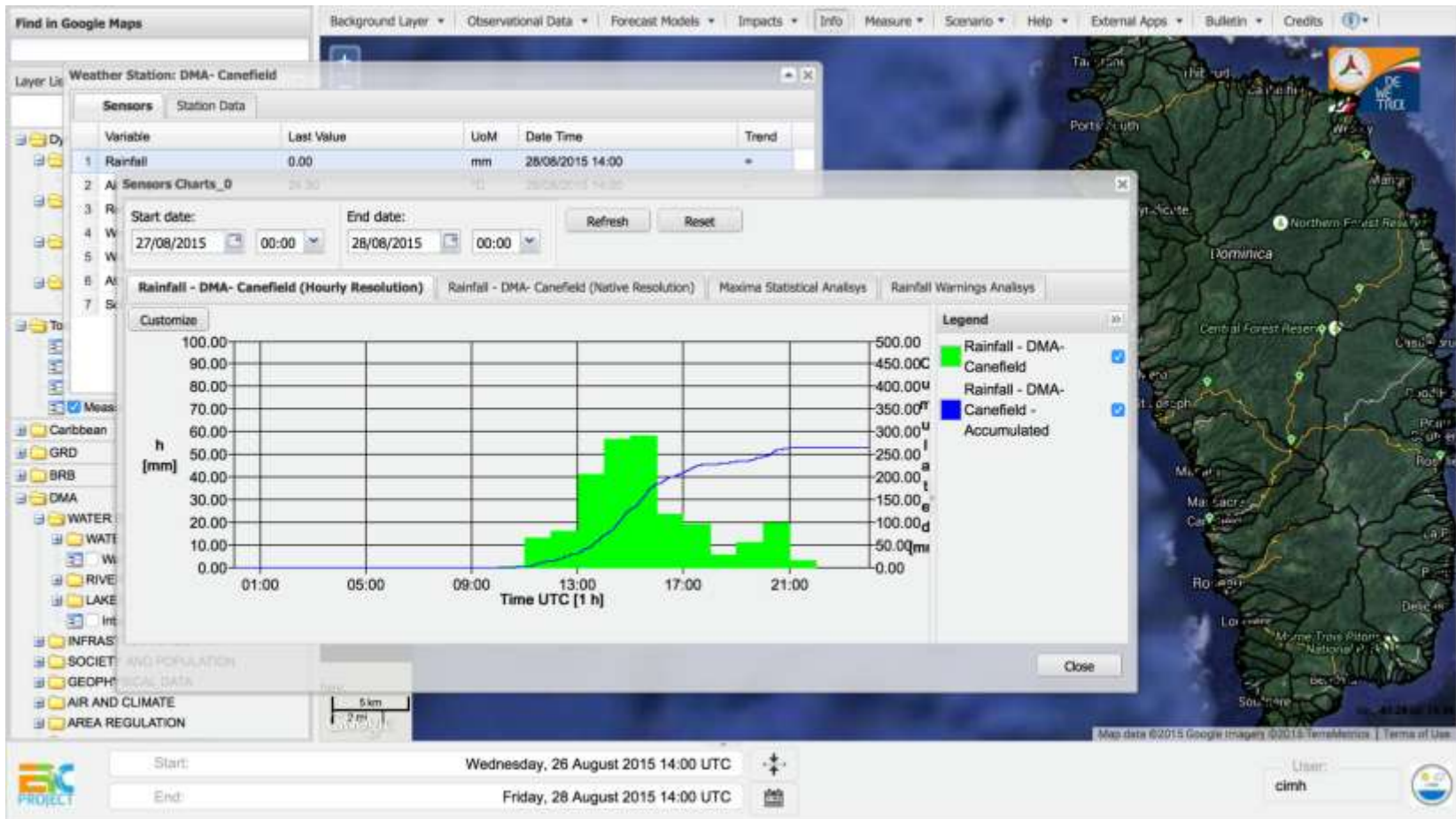
# Harmonization...cont'd



Caribbean Dewetra  
Platform Conceptualization

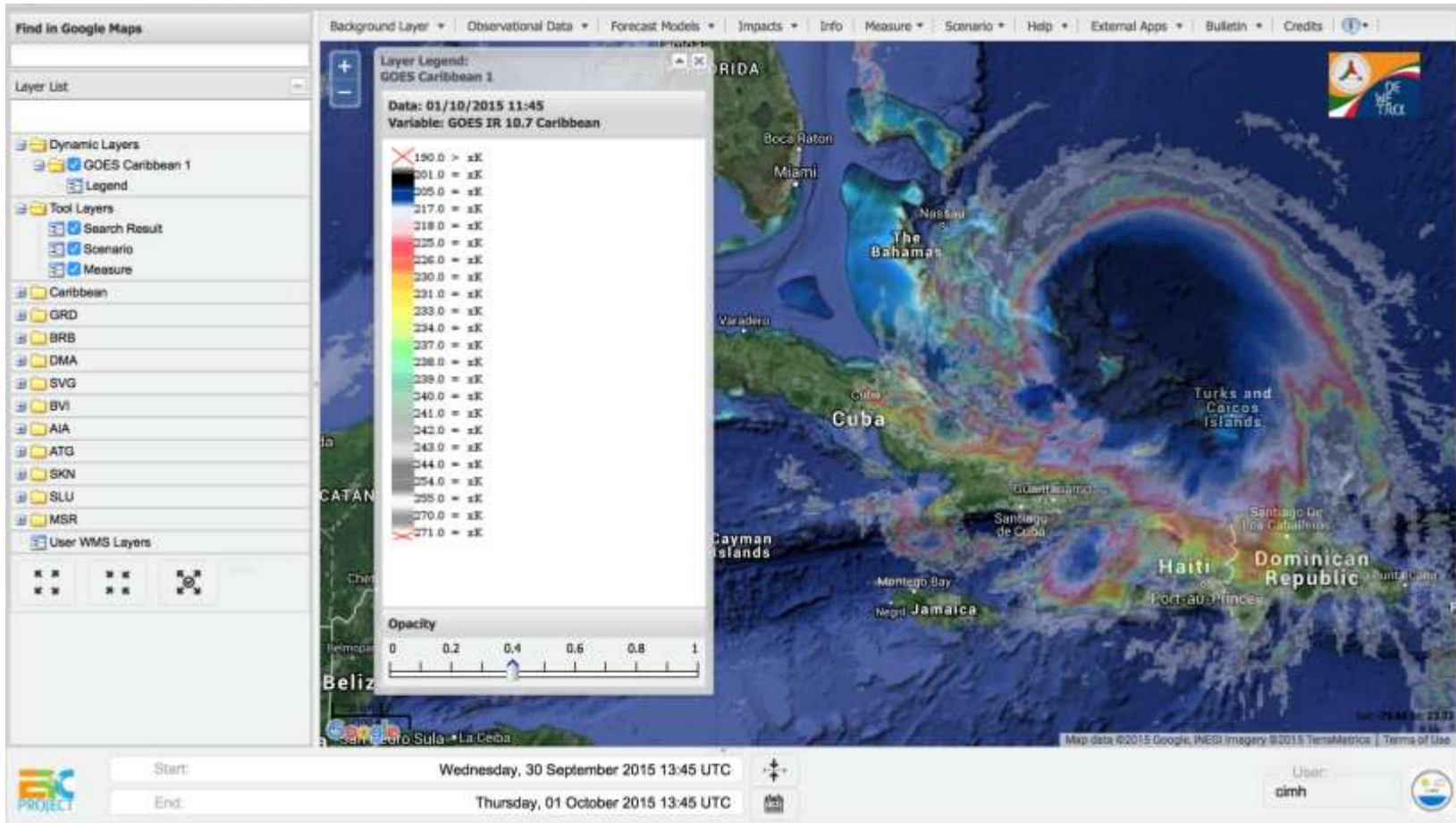


# MHEWS Components



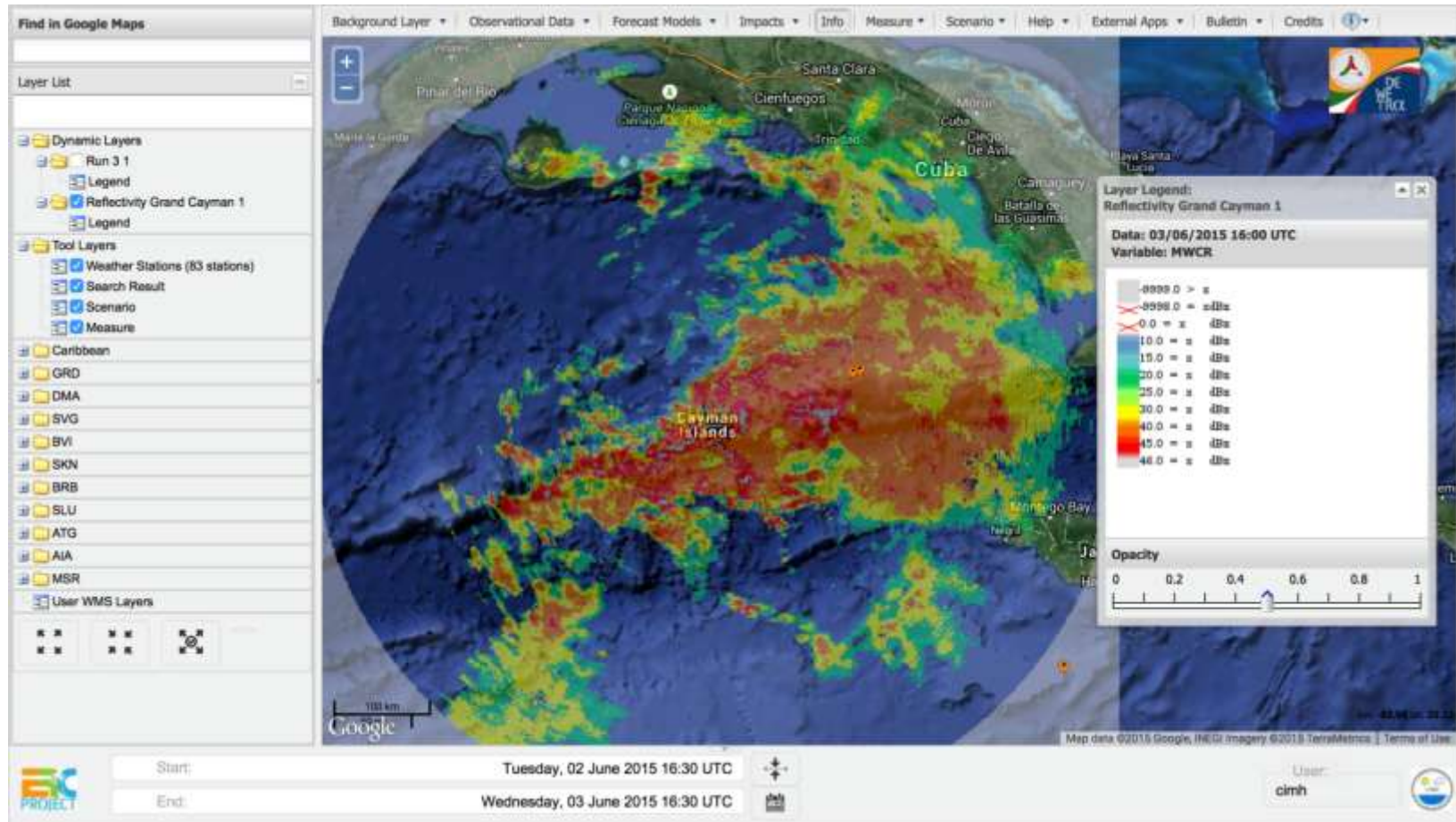
Weather Monitoring – Station Data

# MHEWS Components...cont'd



## Weather Monitoring - GOES

# MHEWS Components...cont'd

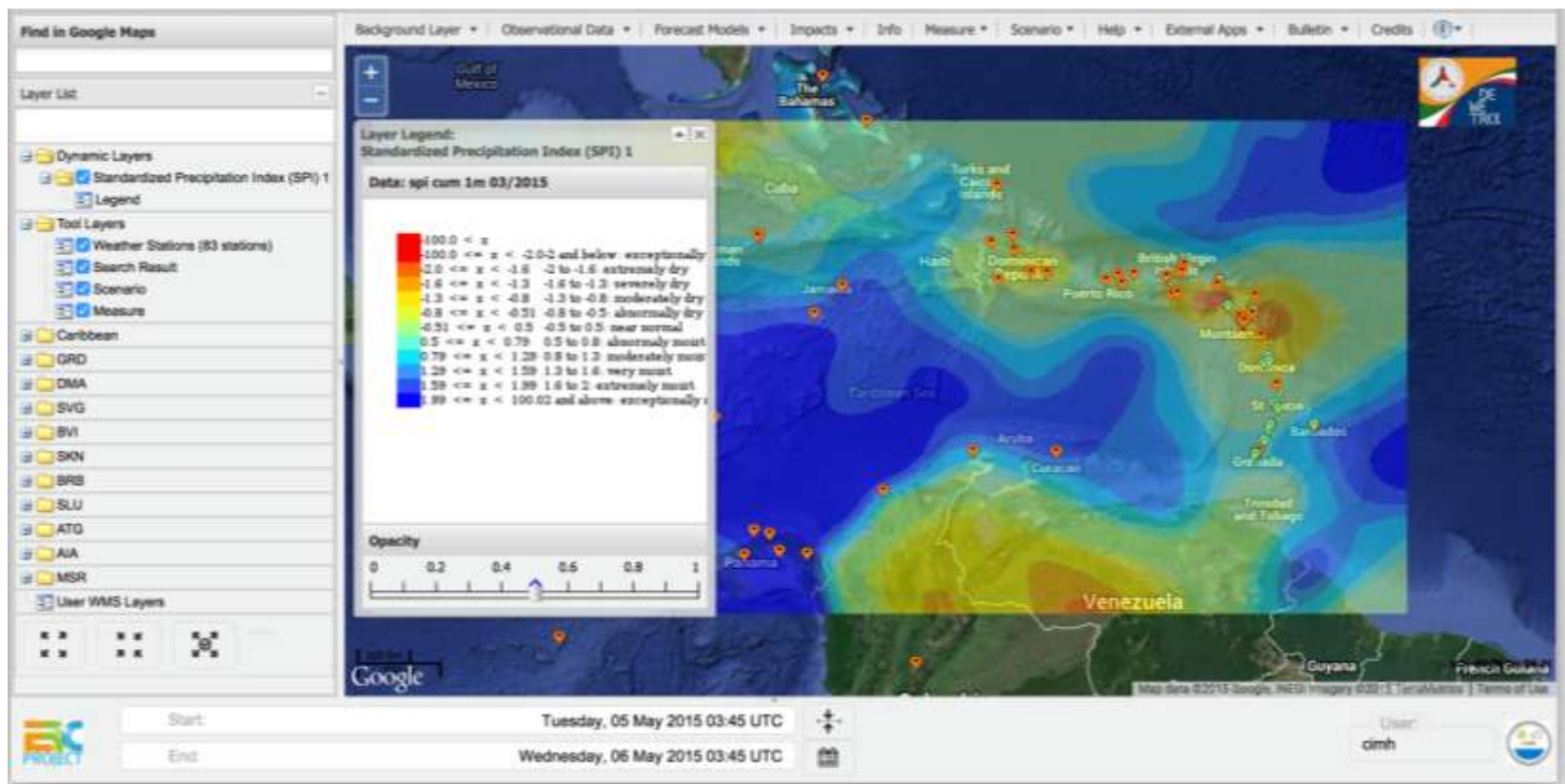


**Weather Monitoring – Weather Radar**



# MHEWS Components...cont'd

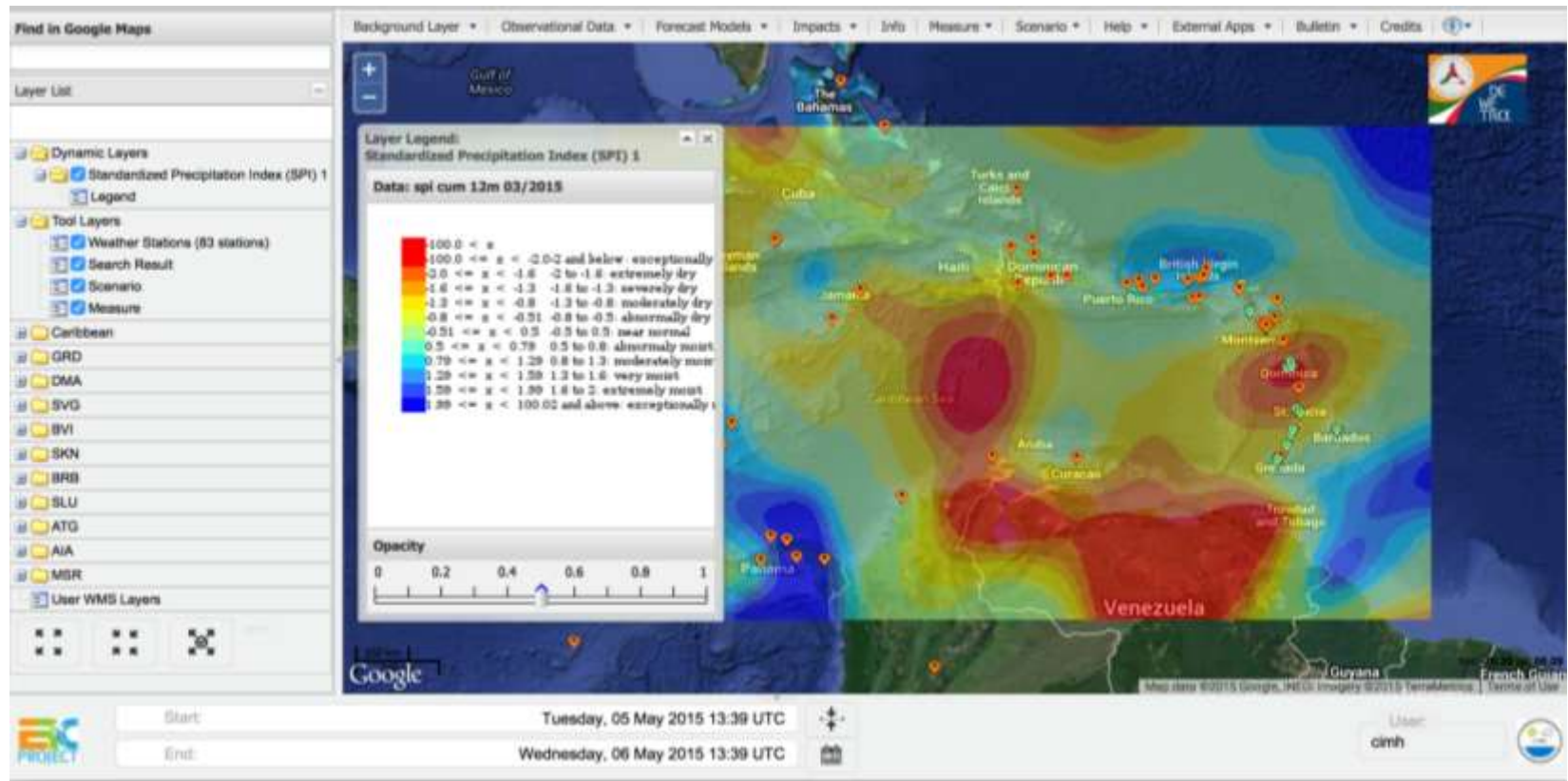
## Climate Monitoring – Drought Monitor (1 month SPI)



Short-term conditions (soil moisture, plant stress)

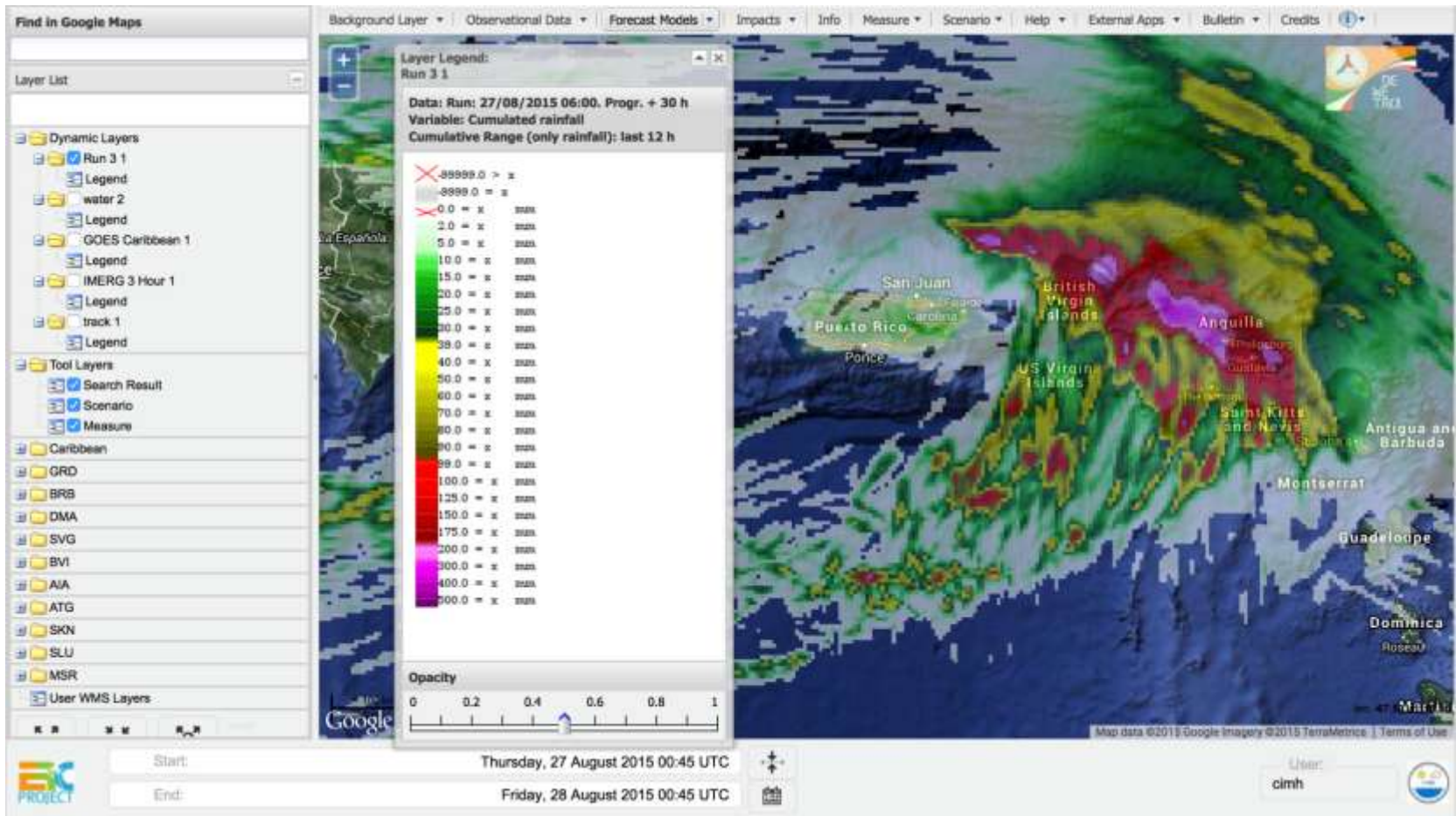
# MHEWS Components...cont'd

## Climate Monitoring – Drought Monitor (12 month SPI)



Long-term conditions (river flows, reservoirs)

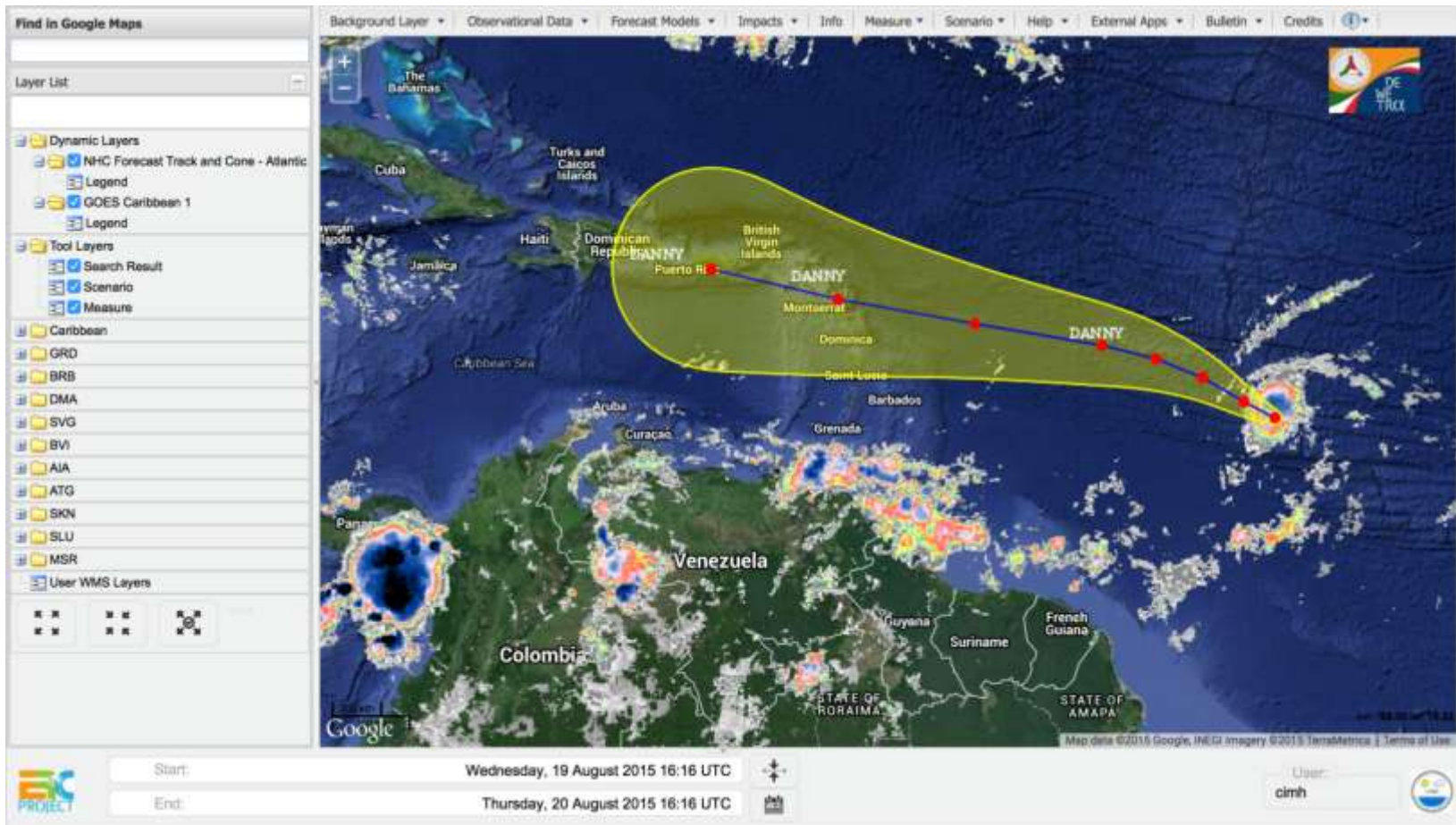
# MHEWS Components...cont'd



**Weather Forecasting - WRF**

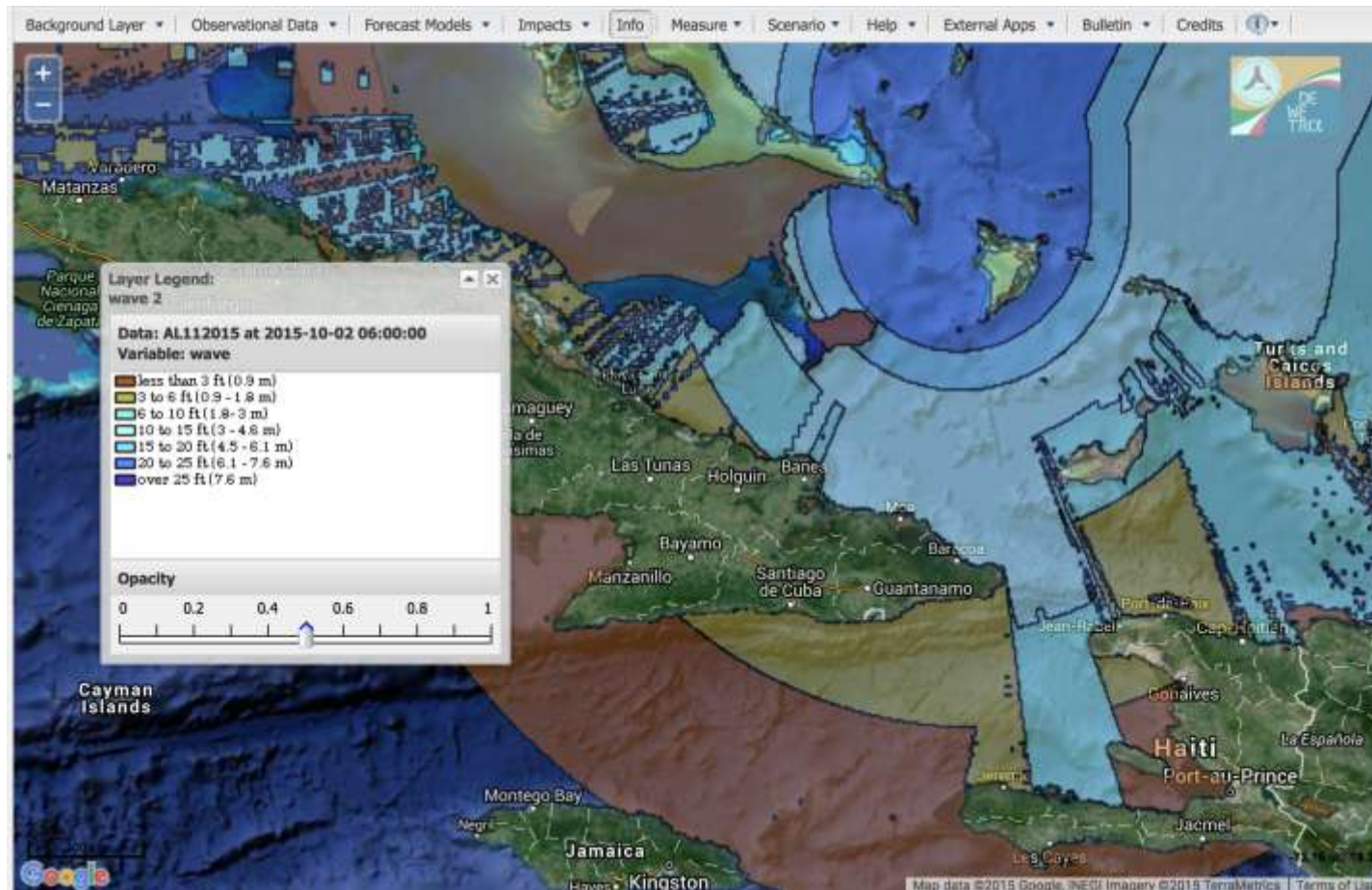


# MHEWS Components...cont'd



**Weather Forecasting – NHC Forecast Track & Cone**

# MHEWS Components...cont'd

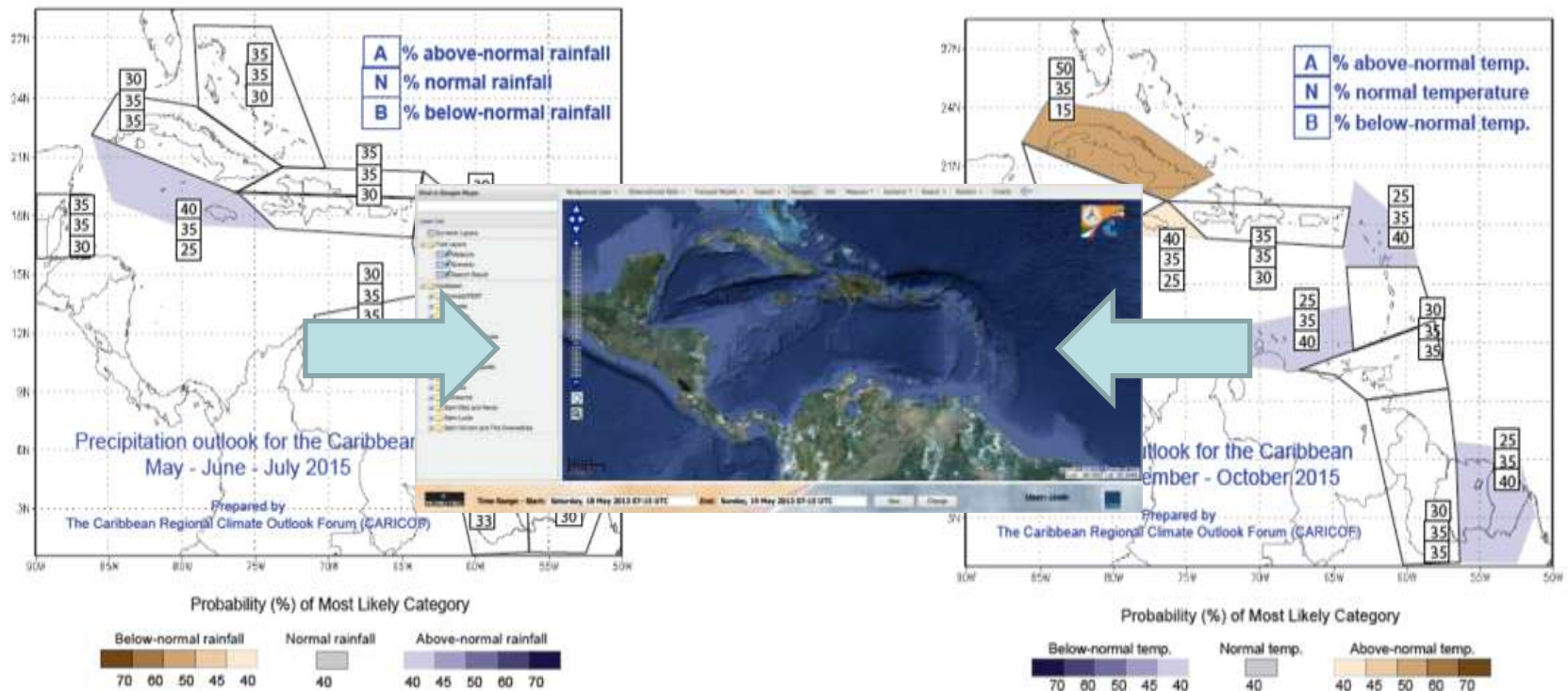


**Wave Height Forecasting – TAOS**



# MHEWS Components...cont'd

## Climate Prediction – Outlooks



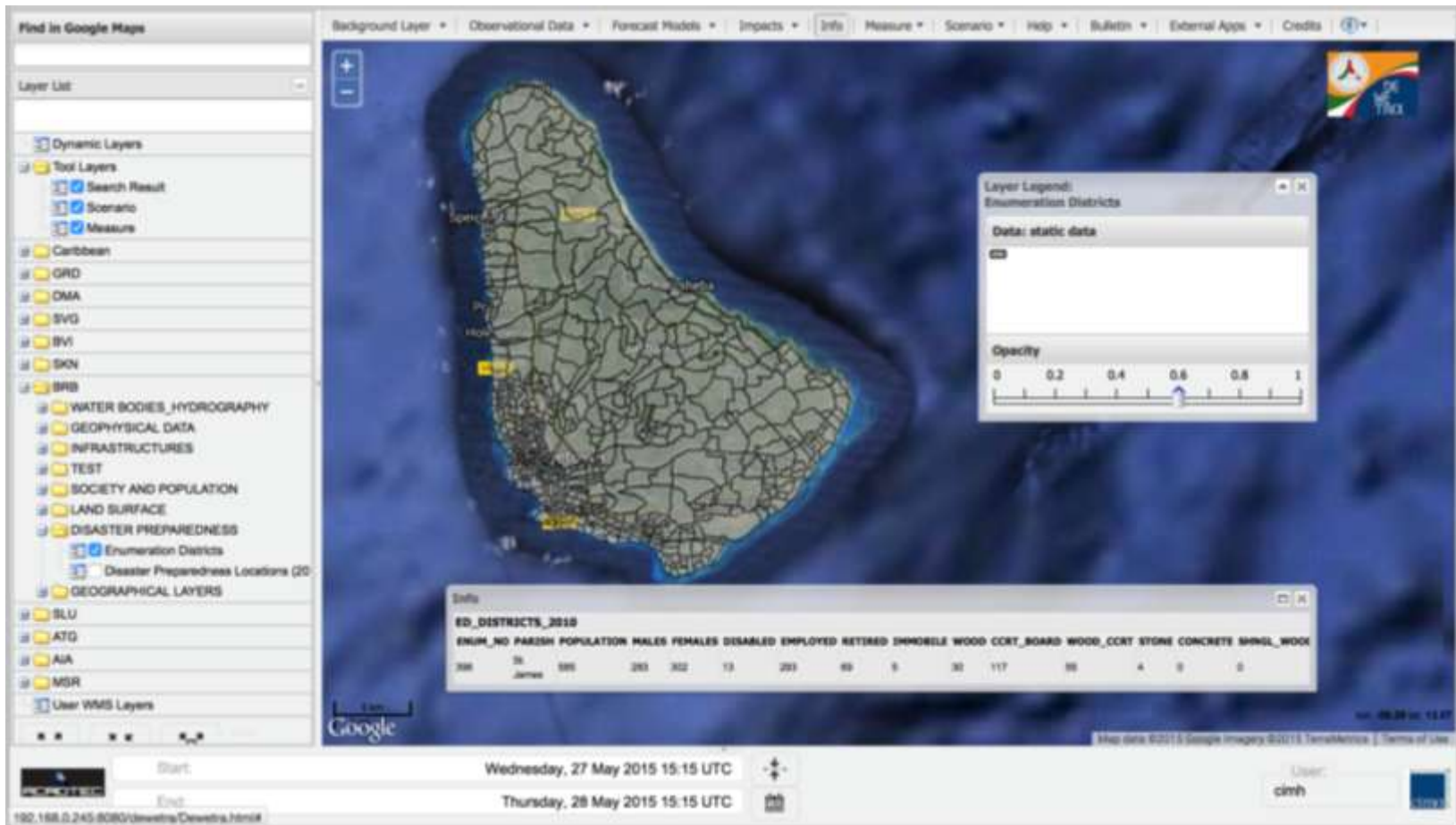
*Work in progress*

# MHEWS Components...cont'd



**Risk Analysis - Elements at Risk**

# MHEWS Components...cont'd



## Risk Analysis – Population Demographics

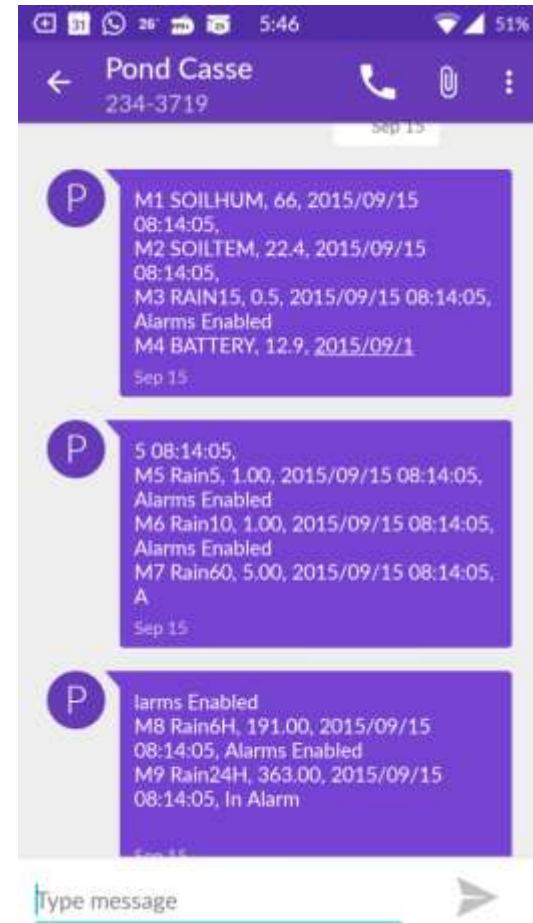


# MHEWS Components...cont'd



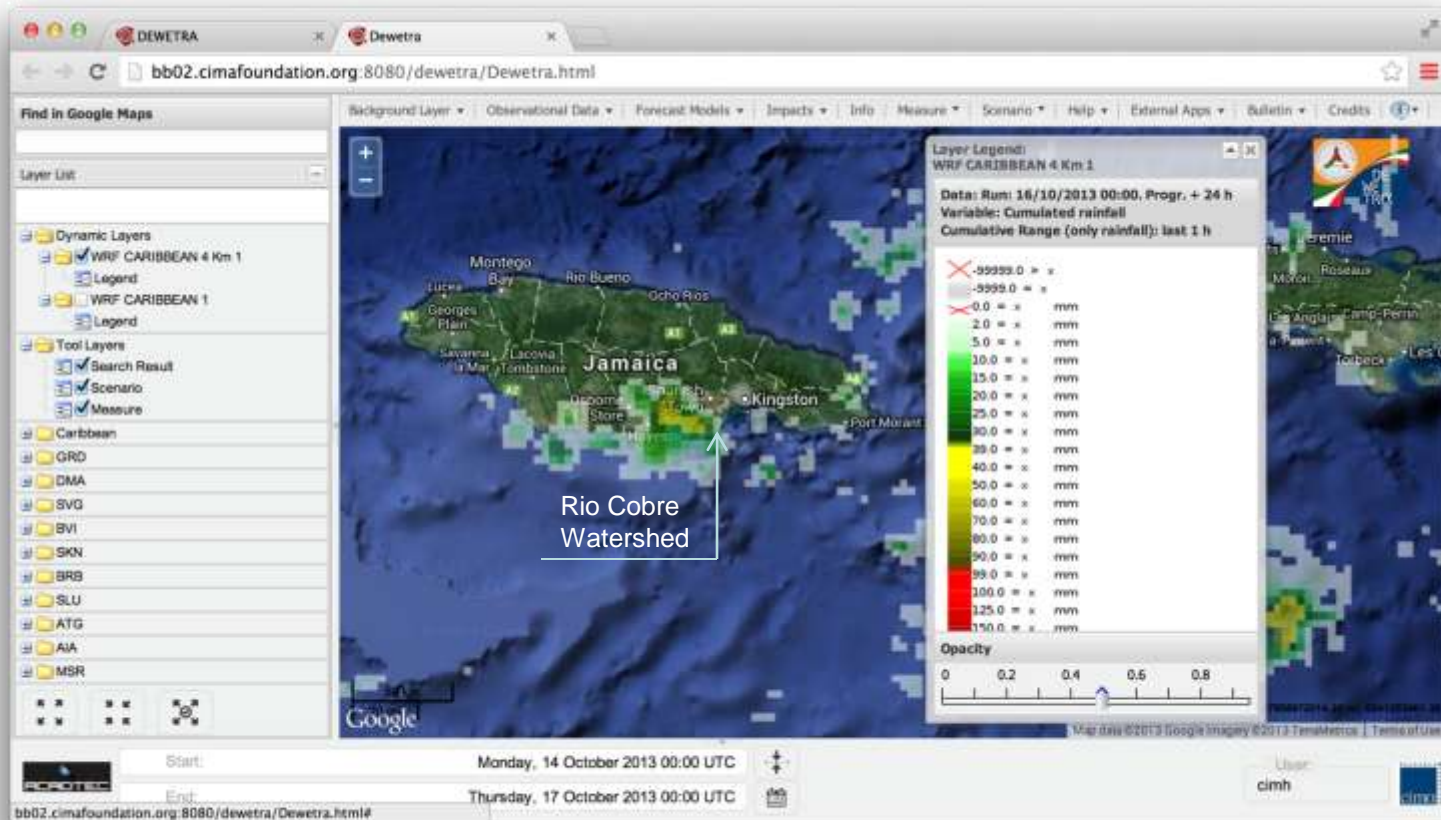
# MHEWS Components...cont'd

- Warning Level 1 (Alert Stage)
  - Flood is possible but the condition does not pose any imminent danger to the residents.
- Warning Level 2 (Preparation Stage)
  - It is very likely that the flood may take place.
- Warning Level 3 (Evacuation Stage)
  - Flood is absolutely very dangerous for the people.



**Dissemination and Warning**

# MHEWS Components...cont'd



Predicted rainfall intensity 2013/10/16 23Z – 2013/10/17 00Z

# MHEWS Components...cont'd

From: [rtff.cimh@yahoo.com](mailto:rtff.cimh@yahoo.com) To: [[sboyce@cimh.edu.bb](mailto:sboyce@cimh.edu.bb),  
[dfarrell@cimh.edu.bb](mailto:dfarrell@cimh.edu.bb)] Date: Thu Oct 17 22:24:03 2013

Subject: Rainfall Intensity Alert

//TEST// The WRF hourly rainfall intensity has exceeded 50 mm/hr in the Rio Cobre watershed. Flash flooding is a possibility in the next 48 hrs //TEST//

**Dissemination and Warning**

# MHEWS Components...cont'd

The screenshot shows the MHEWS Reports website. At the top, there is a navigation bar with 'HOME', 'REPORTS', 'SUBMIT A REPORT', and 'CONTACT US'. The 'REPORTS' tab is active. Below the navigation bar, there is a header section with the 'PROJECT' logo (Enhancing Resilience to Reduce Vulnerability in the Caribbean) and a search bar. A 'SUBMIT A REPORT' button is visible on the right. The main content area displays a list of reports from Dec 31, 2013, to Apr 30, 2015. The reports are filtered by date range and show 1-5 of 140 reports. The reports listed are:

- Cuba Assessment** (16:50 Apr 30, 2015): A storm dumped over 188mm (7.4 inches) of rain on Havana, Cuba, during 30 April 2015, leaving 3 dead and causing several buildings to collapse...
- Haiti Assessment** (06:50 Apr 09, 2015): At least six people have died and several thousand homes flooded as Haiti's rainy season continues to bring suffering on the people of...
- Antigua Assessment** (15:27 Feb 26, 2015): Potworks Dam capacity falls below 33%. (Photo taken on February 10th, 2015)
- Dominican Republic Assessment** (15:12 Feb 26, 2015): Heavy rains and floods over the past few days affected in particular northern Dominican Republic. A Red alert is maintained in the provinces...

On the right side, there is a 'Filter Reports By' section with the following categories and counts:

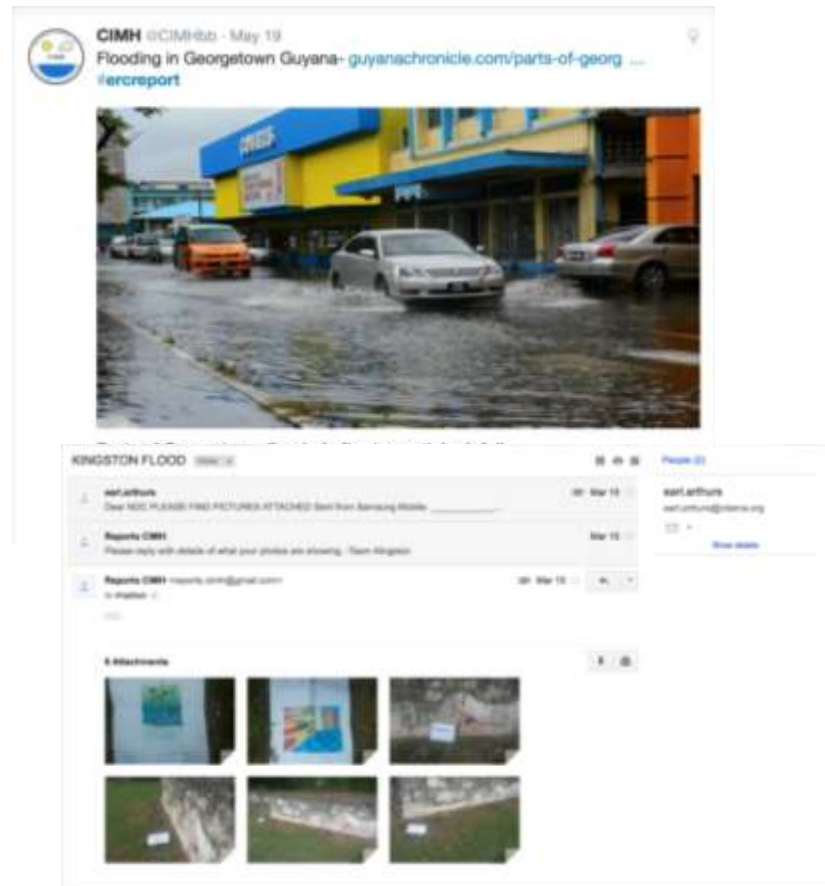
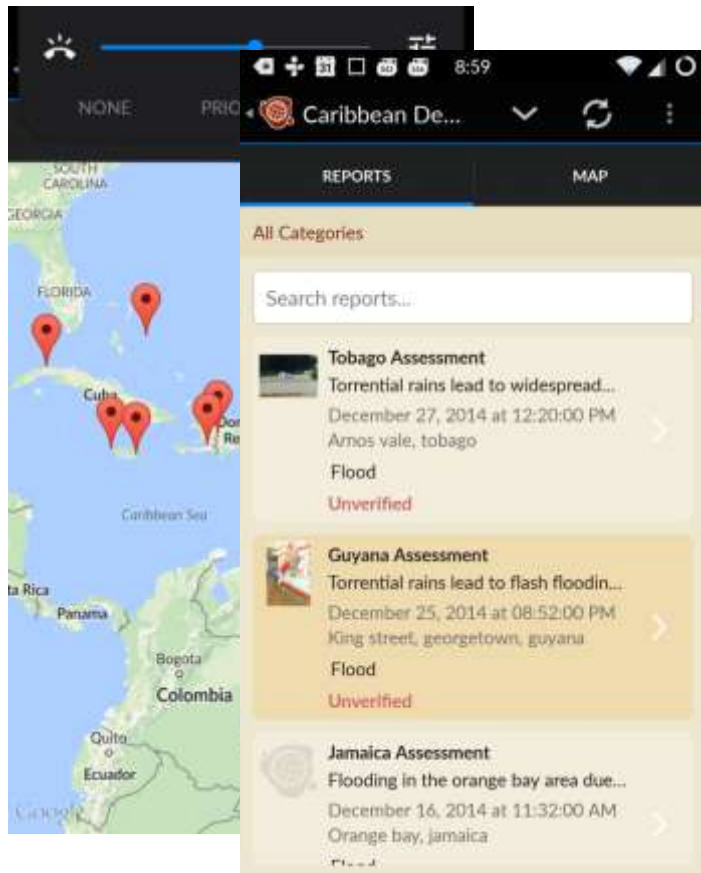
Category	Count
All Categories	149
Pending	0
Flood	74
Landslide	15
Wildfire	0
Storm surge	0
Earthquake	0
Hurricane	0
Strong Wind	3
Other	36

Below the categories, there are sections for 'Location' and 'Type', both with 'Clear' buttons.

**Weather/Climate Impacts Reporting – Crowd Sourcing**

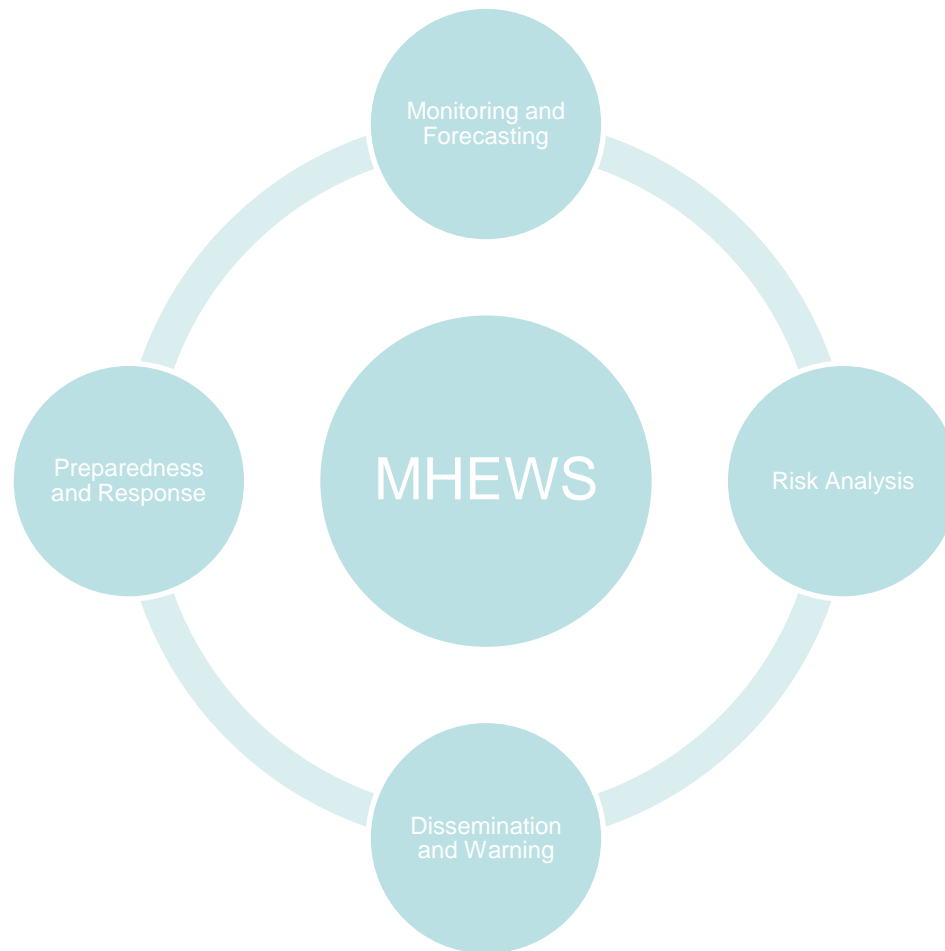


# MHEWS Components...cont'd



**Weather Impacts Reporting – Crowd Sourcing**

# Summary



Components of Effective MHEWS

# Thank You

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YouTube: [www.youtube.com/user/CIMHTV](http://www.youtube.com/user/CIMHTV)