

Drought Monitoring in St Lucia.



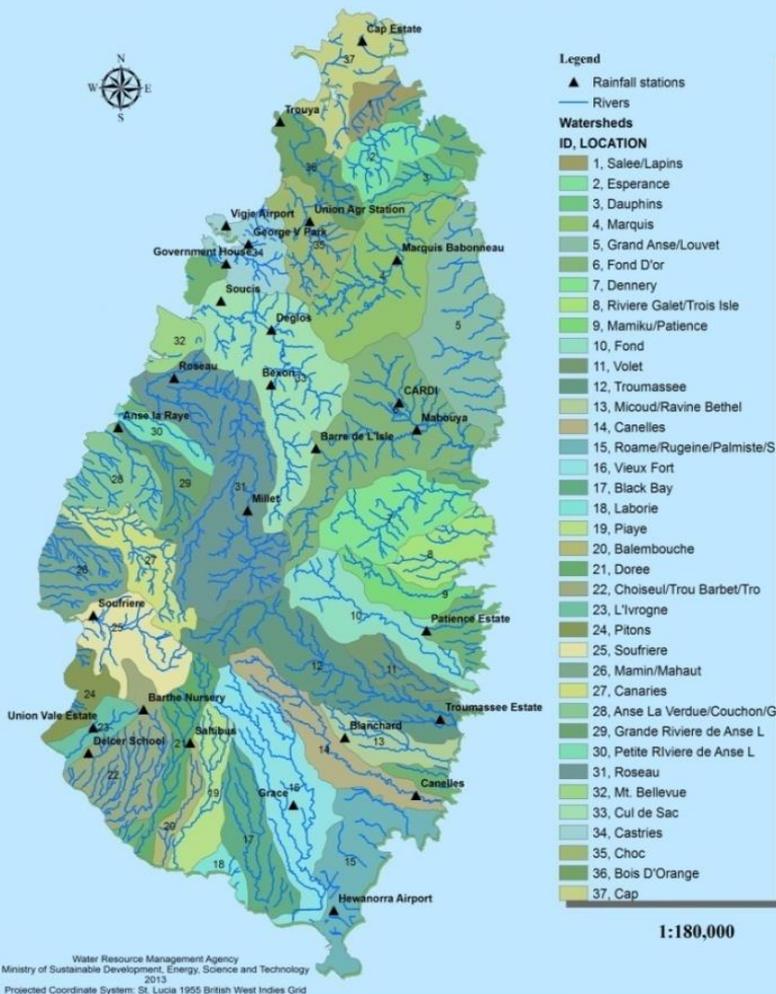
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St. Lucia



Hydrological Monitoring Network

MAP OF SAINT LUCIA SHOWING THE WATERSHEDS AND EXISTING HYDROLOGICAL MONITORING NETWORK



- Average rainfall for St Lucia is 1866-2000 mm year, most between June and December.
- St. Lucia has a hot and tropical climate, with an average annual temp. of 27°C /80° F.
- The island has gentle trade winds most of the year with a year round temp. between 21° - 32° C (70-90 °F).
- Humidity ranges from 66 - 94%.
- Summer temp. range from 23° - 35° C (75° - 95° F) and in the cooler months from 18 - 29 degrees C (65° - 85° F).

Background

- (CARICOM) Leaders met in Brazil on April 26, 2010 for the first ever CARICOM-Brazil summit.
- The aim of the Summit was to foster a closer collaboration and cooperation between Brazil and CARICOM.
- Strengthen their historical and cultural ties.

Project Objectives

- To foster best practices for the reduction of related risks i.e. drought and floods.
- To mitigate and respond to man-made and natural disasters.
- To assist with the rapid reconstruction efforts in the CARICOM members states.

Expected outcomes

- Development of a drought monitoring management programmes
- Provide rapid response deployment to CARICOM states for emergencies e.g. floods and droughts.
- Foster technical exchanges of expertise related to disaster risks reduction.
- To establish Community based safety programmes that would reduce members states vulnerability to disasters.

Local Context

- ◉ Drought training workshop in Jamaica 22nd -24th May 2012.Sponsored by CARICOM/Brazil Cooperation.
- ◉ Initiated the development of Flood and Drought Mitigation Committee
- ◉ Pilot countries were made recipients of drought monitoring equipment.
- ◉ Training and installation with the assistance of CIMH.

Scope of work of the FDM Committee

- Provide a legal and policy framework for flood and drought management
- Adhere to the approved National Flood and Drought Plan
- The use of drought hazard maps
- Foster an integrated and coordinated approach to watershed management

- ◉ Engage Civil Society on Drought Management issues
- ◉ Develop and maintain a database on flood and drought events
- ◉ Report to the Cabinet of Ministers and NE Advisory Committee...

Goals of the Drought Monitoring Project

- ❑ To create a culture of drought monitoring in St Lucia so as to offset the impacts of climate change.
- ❑ Develop social, economic, environmentally sustainable measures that minimizes the risks of droughts.
- ❑ To develop drought indices for the St Lucia and determine their suitability to represent soil moisture
- ❑ To determine the effects of agriculture on surface and groundwater supply for St Lucia using the Soil and Water Assessment Tool (SWAT)
- ❑ To perform a Drought Frequency Analysis and determine surface water and irrigation deficits for the study sites on the island

Why should St Lucia Monitor Drought

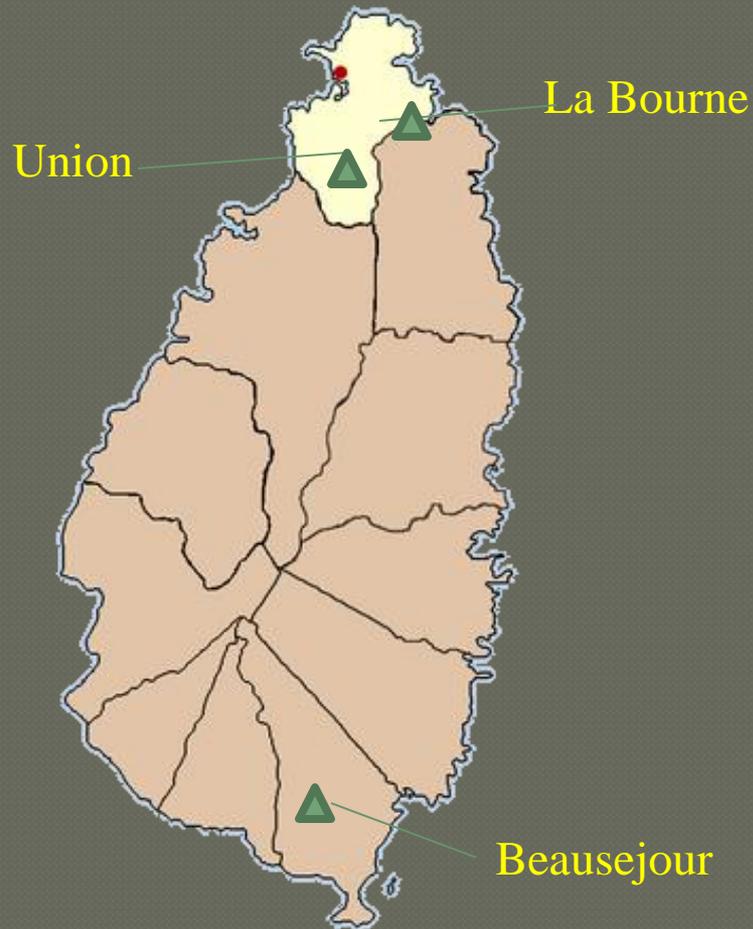
- ▣ Rainfall season/events has become erratic due to climate change
- ▣ Bad land management practices has place our water supply in a precarious position
- ▣ Allows for proactive interventions
- ▣ To reduce the vulnerability of the affected areas

Site Selection

- ◉ Monchy - Dry coastal area with strong easterly winds and normal to below rainfall
- ◉ Union - Moderate rainfall area
- ◉ Beausejour – Moderate to normal rainfall

These project sites are primarily situated in the North and South of the island.

Project Sites



- Soil probe and rain gauge were installed at the pilot project sites in December 2012.
- Soil probe was configured to capture data at 9 am daily...
- Statistically, correlation between rainfall and soil moisture data needs to be reviewed .

Project Sites

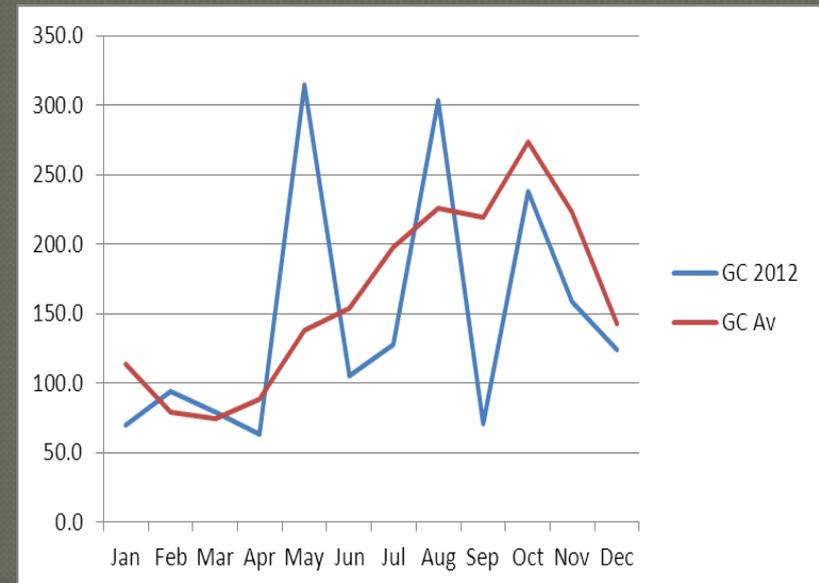
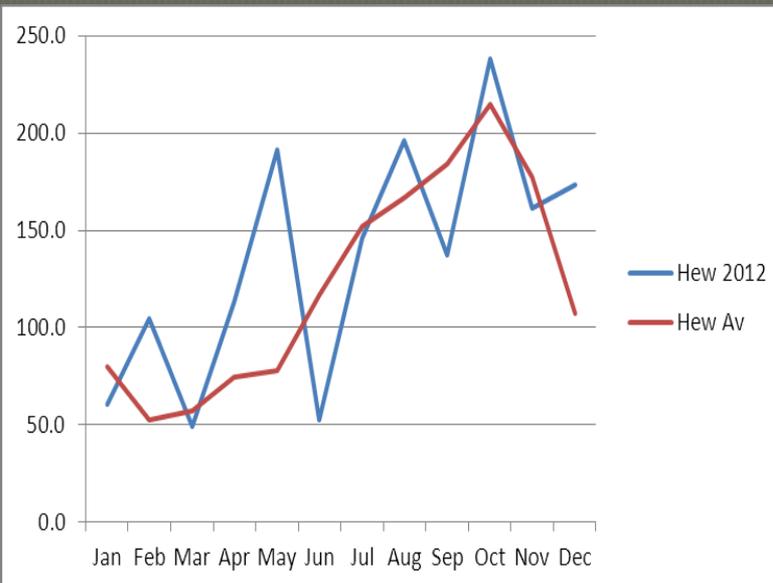


Need for Reliable Drought Data

- To facilitate a scientific analysis of drought events and put in place mitigative measures .
- To combat the effects of natural hazards such as droughts and to meet the growing demand for water
- The ability to confront impacts of drought and variabilities for sustainable development
- The recognition of the general need to strengthen capacity and practices of drought monitoring.

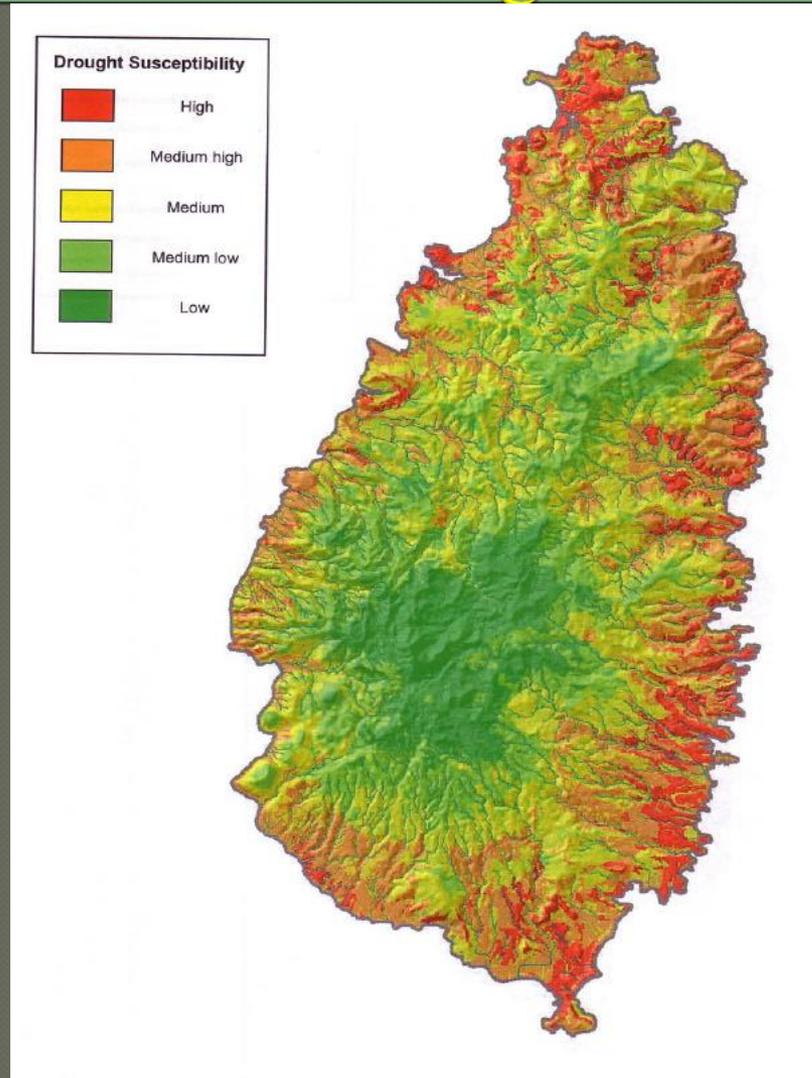
Rainfall

- 2012 was just above the long term mean in the south but below the mean in the north of the island.
- The North recorded its second lowest rainfall for September since 1967.
- The wettest month was October (237.8 mm) and the driest month was March (49.2 mm).



- ▣ A general trend of below average rainfall in the north of the island which started in June continued through December 2012
- ▣ The North entered into a drought event on the time scale of 1 month in September and the event also has continued through December.
- ▣ Using the SPI, calculated on a 1,3,6 and 12 month time scale- 1month impact generally was felt in the agricultural sector, whilst 3-12 months is now being reflective in the hydrological parameters such as reduced baseflows.
- ▣ SPI also revealed that drought events on time scales of 3 and 6 months started in November 2012.

Drought Intensity Categories



Key Variables For Monitoring Drought

- ◉ Climate data
- ◉ Soil moisture
- ◉ Stream flow
- ◉ Ground water
- ◉ Dam levels
- ◉ Meteorological forecasts
- ◉ Agricultural outlook.

Major Rivers (Dry Season Flows)

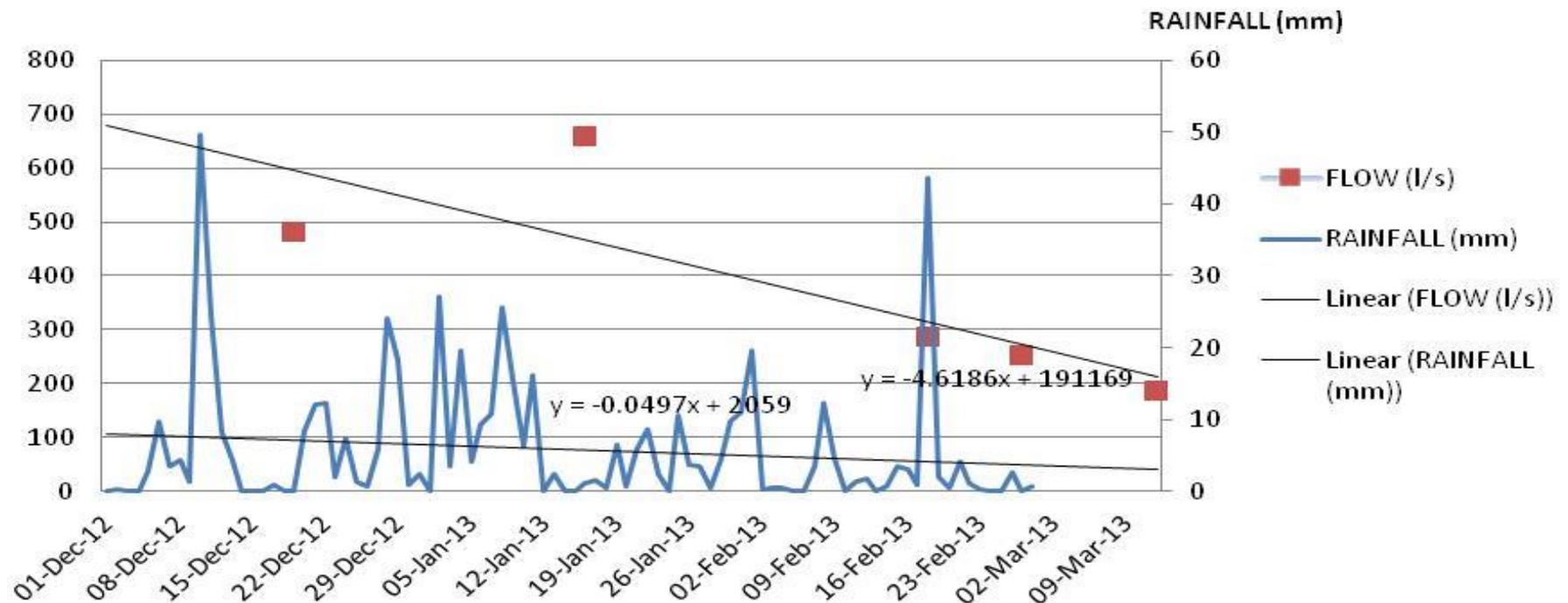
- Roseau 733 l/s
- Troumasse 498 l/s
- Cul-de-Sac 297 l/s
- Soufriere 246 l/s
- Vieux Fort 238 l/s
- Canaries 223 l/s
- Fond D'or 182 l/s
- Canelles 157 l/s
- Doree 149 l/s
- Fond 144 l/s

- Based on the Waterhed-River Analysis of St. Lucia by Professor Frank Dale Morgan and Burke J. Minsley (2011)

CURRENT STATUS OF RIVERS

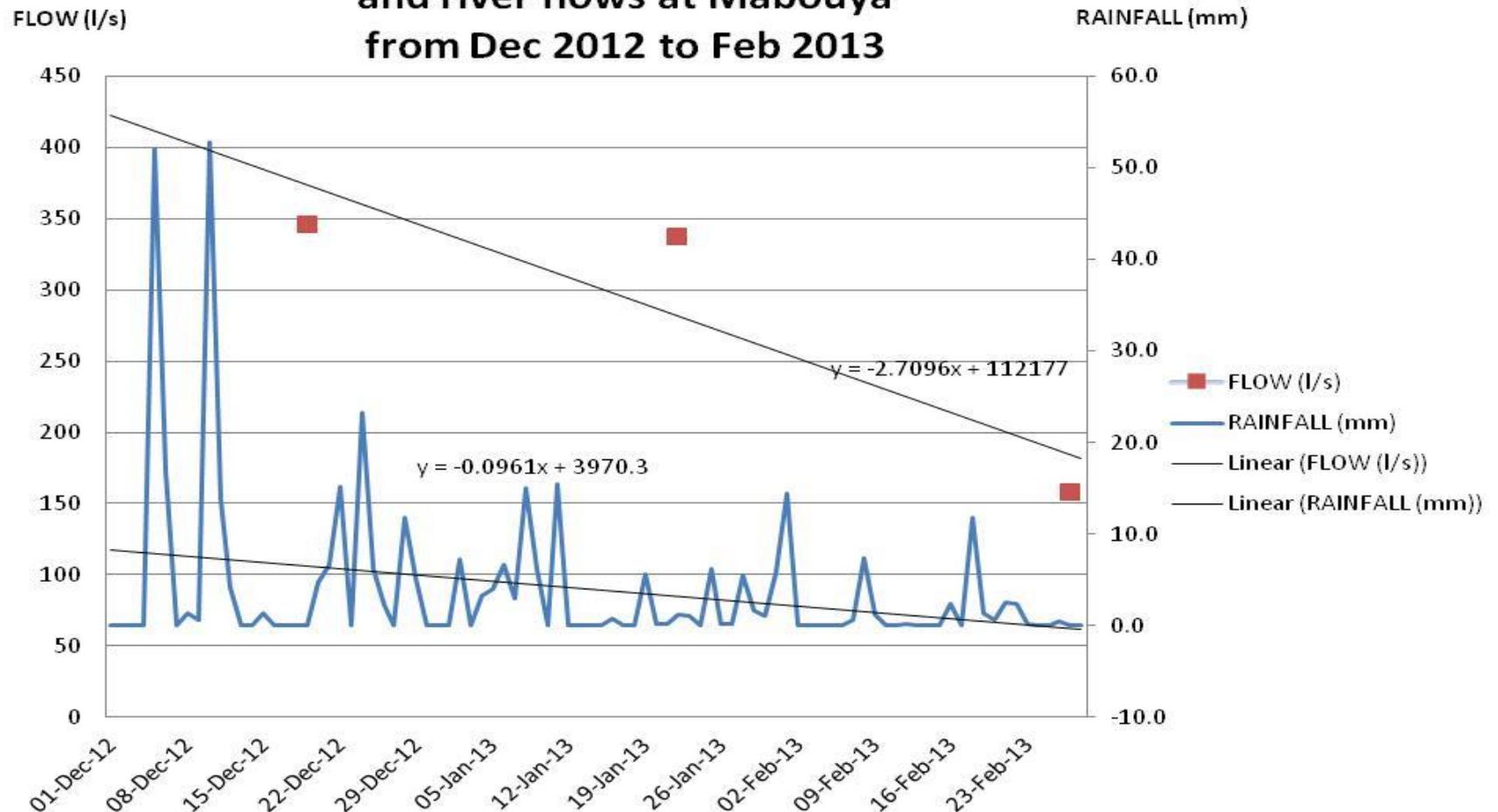
Comparison of rainfall and river flows at Deglos from Dec 2012 to Feb 2013

FLOW (l/s)



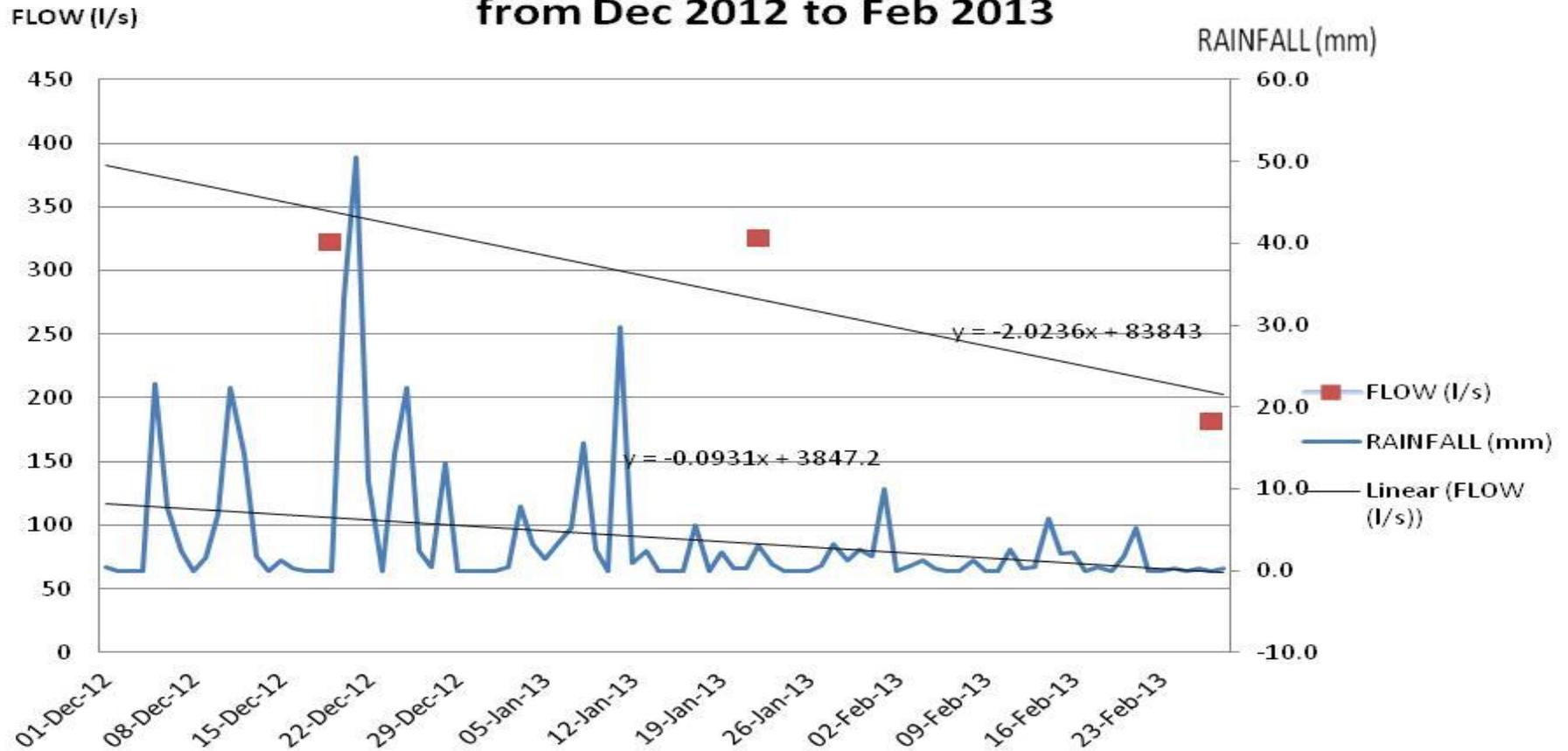
CURRENT STATUS OF RIVERS

Comparison of rainfall and river flows at Mabouya from Dec 2012 to Feb 2013



CURRENT STATUS OF RIVERS

Comparison of rainfall and river flows at Canelles from Dec 2012 to Feb 2013



Recommended Policy for Drought events

- ◉ Provide short term assistance to entities/households to cope with the impact.
- ◉ Develop a contingency plan to deal with the water related issues
- ◉ Establish and enhance early warning and mitigation systems
- ◉ Develop the network to implement an integrated drought monitoring at the community levels primarily through education and advocacy.

Lessons Learnt

- Development of a Drought Susceptibility Map to analyze and include all factors that may contribute to the drought.
- Development of a Drought Vulnerability Map
- Enhance the database management capabilities
- Importance of training to produce a cadre of qualified persons in drought monitoring.

- ◉ Encourage inter-agency linkages
- ◉ Need to increase investment in the project's development value-added products and services...
- ◉ Need to strengthen competences and to broaden its scope with:
 - equipment and software acquisition, installation, maintenance and operation
 - institutional, organizational, and human resources development.

- Need to increase focus on quality assurance of data implementing a Quality Management System (QMS)
- Need to improve network sustainability and maintenance, particularly in the project implementation and post-project stages
- Need to replicate to project in other communities.

Challenges

- ◉ Impact of Climate Change
- ◉ Urbanization
- ◉ Insufficient groundwater data
- ◉ Technical expertise in drought monitoring

Why is public awareness strengthening important in St Lucia?

- Drought and the usage of the available water resources is an issue which involves the entire population. It is thus necessary to strengthen the public awareness regarding drought hazards.
- To understand the policies options during a drought situation
- To reinforce mitigative responses amongst stakeholders
- To educate the next generation of water users.



Thank You