Saint Lucia Monthly Agro-Met Bulletin

Issue 6 December 2013

Monthly Theme–

Unexpected rain

The dry season in Saint Lucia is usually from December/January to May, December being considered as a transition month. The downpour of rain on 24th December was unexpected but not entirely unprecedented; the last record of December rainfall close to the total experienced this month is in 1989 with maximum rainfall of 168 mm recorded at Saltibus roughly half the total experienced in 2013 at the same station.

Glossary

Drought - is a deficiency of moisture that results in adverse impacts on people, animals, or vegetation over a sizeable area

Riparian Buffer Zone– an area of trees, usually accompanied by shrubs and other vegetation along a stream or river which helps in reducing pollution and erosion of the river bank.

Rainfall Intensity– measure of the amount of rain that falls over time.

Inside this issue:

Effects of the Christmas Eve Trough

On Christmas Eve, Saint Lucia experienced between 82 and 324 mm of recorded rainfall due to a trough, its intensity greatest between 4:00 pm and 10:00 pm ranging from 27 mm/hr in Cap Estate to 133 mm/hr in Saltibus.

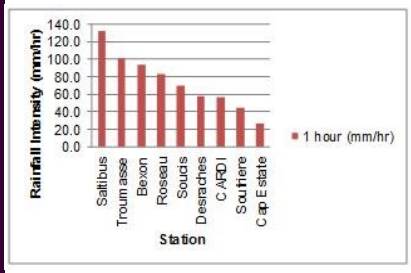

Fig. 1. Maximum hourly rainfall intensities for selected stations during trough event

Our rivers gushed and overflowed with water- destroying homes, crops and even taking a few precious lives. The aftermath of the trough is a strong reminder of the fact that water is a force to be reckoned with and efforts should be taken to reduce its negative impacts on our livelihoods and on society as a whole.

Many farmers lost crops and banana plants located along river banks due to overflow in the flood plain area of the river. Planting shallow rooted crops along river banks causes the river bank to be more vulnerable to erosion in times of high rainfall and increases vulnerability of the crops to flooding.

Fig 2. Troumassee river post-trough

It is therefore recommended that a riparian buffer zone of 5-10 metres, on either side of the river consisting of natural vegetation or tree crops such as mango, breadfruit and citrus trees, is maintained in order to:

(1) *reduce excessive sedimentation of the river;*
(2) *reduce erosion of the river banks;*
(3) *filter soluble nutrients and pesticides and reduce entry into the river; and*
(4) *prevent crop losses.*

This event has also further enforced the need for flood early warning systems. The Water Resource Management Agency, has launched a project funded by the Australian Government to install flood early warning systems in three flood prone communities. The stations will be installed and be functioning by December 2014.

Consultations and desktop studies are currently being conducted to determine the communities of highest priority for flood early warning that will also serve to fulfill hydro-meteorological data requirements of the country.

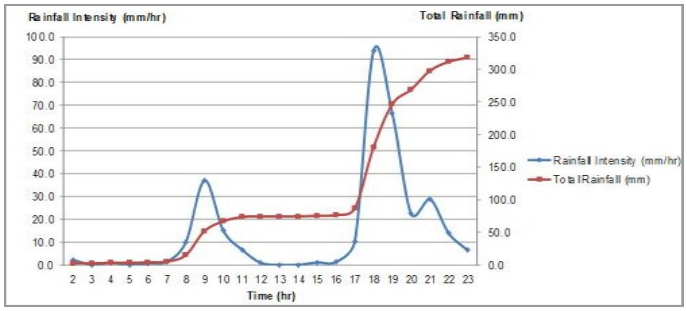

Fig. 3. Hourly rainfall intensity and total rainfall on 24th December from 2:00 am to 11:00 pm at Bexon

Weather Summary

Rainfall for December this year was exceptionally high. This was as a result of a trough system which affected the island on the 24th December and dumped in excess of 300 mm of rainfall in 24 hours over various parts of the island. Both Hewanorra and George Charles Met. Offices recorded values well above the long term means. Rainfall was poorly distributed throughout the month. At the Hewanorra Met. Office, the mean minimum and absolute maximum temperatures and the relative humidity were higher than the long term means while the mean maximum and absolute minimum temperatures were lower than the long term means.

Rainfall comparison 2012 and 2013

Source: www.malff.com/

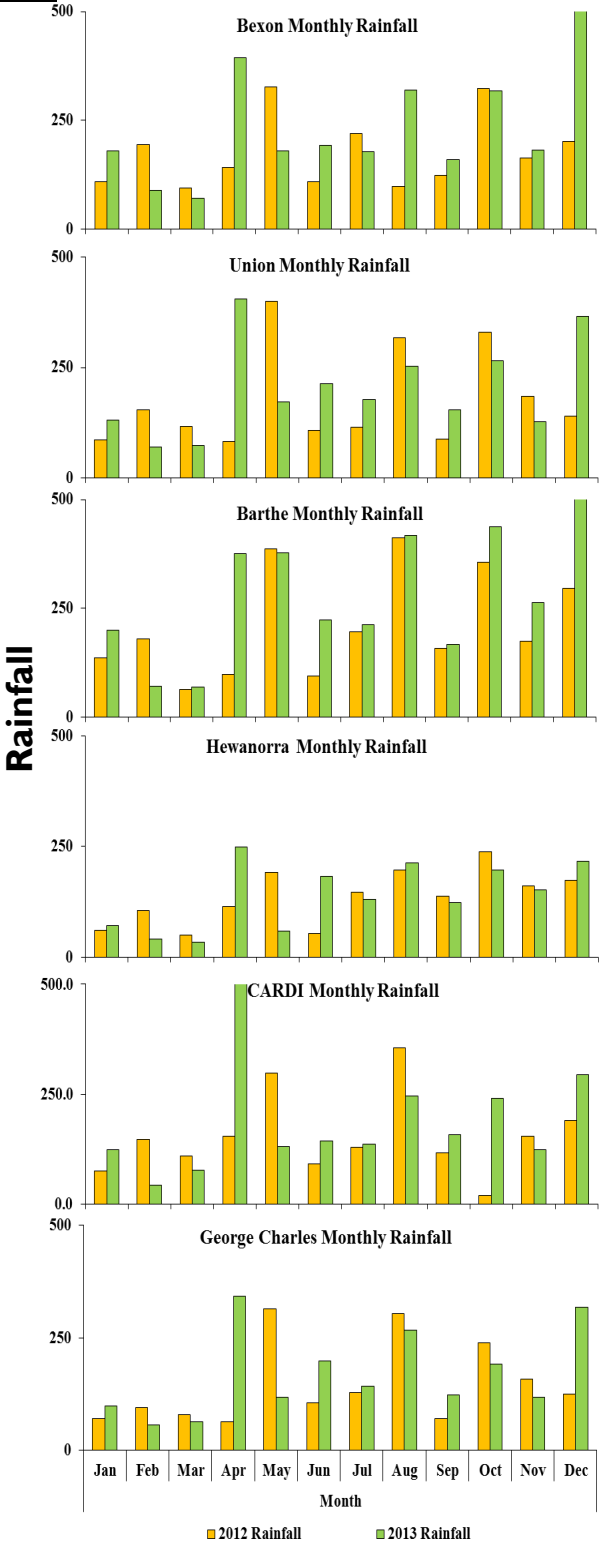

Fig. 4 summarizes 2012 and 2013 monthly rainfall. The rainfall for both years, up to October followed a similar trend, with a dry season from January to May, followed by the rainy season.

The rainfall associated with the trough of 24th December 2013 caused a significant difference between the 2012 and 2013 rainfall totals for the month of December for all stations. The rainfall was up to 30% higher in December 2013 compared to December 2012 in Barthe, however Hewanorra showed only a 2% increase in December 2013 compared to December 2012.

The 2012 total dry season rainfall from January to May ranged between 519 and 865 mm or between 32% and 43% of the totals for the six stations. The 2012 totals from January to December ranged from 1450 to 2256 mm.

The 2013 dry season (January to May) and the rainfall totals from January to December ranged from 450 to 1092 mm and 1662 to 3319 mm, respectively.

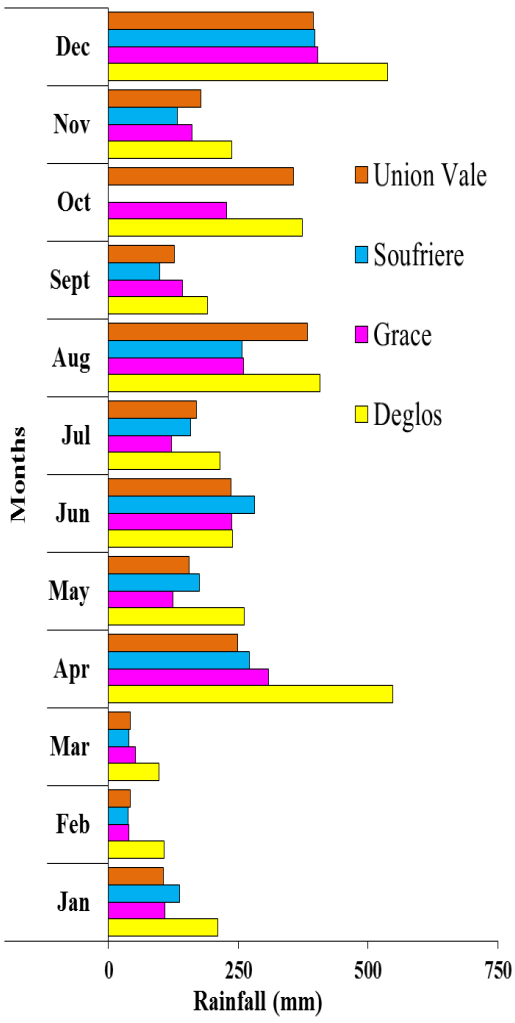

Fig 5. 2013 Monthly rainfall

Fig. 5 provides graphical representation of the 2013 monthly rainfall for an additional 4 rainfall stations in the south and central of the island. Deglos continues to indicate higher rainfall than the other three stations. Of the 4 stations, Deglos recorded the highest rainfall throughout the year of 2013 with its total of 3425 mm.

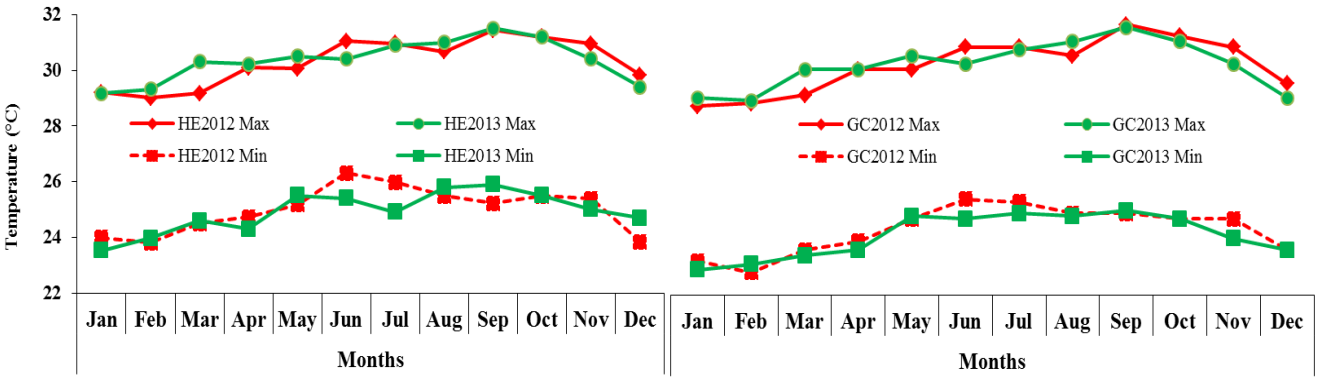

Fig.6 2012 and 2013 Mean monthly min and max temperatures for Hewanorra (HE) and George Charles (GC)

Fig. 6 depicts the mean monthly max. and min. temperatures for 2012 and 2013 for HE and GC. The 2012 mean monthly minimum and maximum temperatures for HE were 25.0 and 30.3°C while for 2013 the values were 24.9 and 30.4° C, respectively. For GC the values were similar, 24.3 and 30.2°C in 2012 and 24.1 and 30.2°C in 2013, respectively. In 2012 the monthly maximum temperature gradually increased from 29.2°C in January to 31.4°C and subsequently decreased to 29.8°C in December. The 2012 monthly minimum followed a similar trend, increasing from January to June but began decreasing from June to December. In 2013 the mean monthly maximum temperature continued to rise up to September. For the month of December maximum temperatures were lower than December 2012, while the minimum temperatures for December 2013 were greater than or equal to December 2012.

Effects on Agriculture

In a previous edition of this bulletin, we alluded to the phenomena of climate change and called upon our farmers to take heed. The phenomena of climate change is certain to create a number of firsts and the effects of the trough on December 24th, 2013 certainly created a first. We have never experienced such a volume of rain in a single day in December especially just before Christmas.

The trough has created problems to the farming and fishing community, the effects of some are yet to be felt, for example to pot fishers. To date there are still are some farmers who still experience great difficulty getting to their farms, because either bridges or roads have been washed away or they have experienced massive land slides.

The effects of the trough were numerous. Banana farmers lost their crops and with the effects of Black Sigatoka this loss was further compounded. Livestock farmers, e.g. broiler and swine producers in the Marc area lost their animals. Vegetable farmers also suffered greatly especially in areas such as Black Bay, Marquis, Marc, Micoud and along the Canaries river just to name a few. The new Mexico Model G/H also suffered considerable damage. Both structures got flooded and the entire growing medium has been contaminated.

If one lesson is to be learnt from the December 24th weather system is that climate change is with us and we must always factor in the effects of extreme weather conditions in the formulations of our plans. The climate situation has changed and therefore we will continue to experience first time extreme weather conditions in the future.

It would be prudent for our farmers to factor adverse weather conditions in the planning process. For example in the recent past, we have experienced heavy rains during the month of April, which should be the middle of the dry season. In carrying out land preparation for crops that will remain in the ground until April, consideration should be given to removing excess moisture in the event that heavy rains do come during the designated dry season.

Nevertheless we encourage our farmers in the important task of securing the food supply of the nation. To you all we wish a productive 2014.

Weather and Climatic outlook

In Saint Lucia, January is one of the early months of the dry season and it is generally drier than December. Monthly rainfall figures for January range from 5.1 mm to 204.8 mm at Vieux-Fort and from 18.5 mm to 270.5 mm at George Charles. Most of the rains are produced by trough systems and diffuse frontal systems. At Hewanorra, the mean maximum temperature is 28.9 °C and range from 28.0 °C to 30.0 °C while the mean minimum temperature is 23.5 °C and range from 22.0 °C to 25.0 °C.

The seasonal precipitation outlook for the January, February and March period indicate the likelihood for rainfall to be in the normal to below normal categories or to range from 28 mm to 214 mm in Vieux-Fort and from 79.3 mm to 307 mm in Castries.

However, for the April, May and June period, the precipitation outlook is for rainfall to be in the normal to above normal category ranging from 185 mm to 670 mm in the Vieux-Fort area and from 272mm to 920 mm in the Castries area.

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The Saint Lucia Meteorological Services uses the Standardized Precipitation Index (SPI) to monitor the likelihood of drought on the island. The SPI is a simple index which uses only precipitation amounts as input. The SPI calculation for any location is based on the long term precipitation record for a desired period. Positive SPI values indicate greater than median precipitation while negative values indicate less than median precipitation. A drought event occurs when the SPI becomes negative and less than -1 and ends when the SPI value becomes positive. SPI value on time scales of 1 month and 3 months for Hewanorra and George F.L.Charles.

Representations for George Charles and Hewanorra are shown in figures 7a and 7b below for the period November 2012 to December 2013. Fig. 7a shows that a drought event on a time scale of 1 and 3 months occurred between September 2012 and March 2013 at George Charles (GC). The figures also show that on a one month time scale, the SPI has alternated between positive and negative from April to December 2013 for both Hewanorra and George Charles. The one month and three month SPI values for George Charles for December are1.93 and 0.03 respectively. The high rainfall values for December have ended the drought event which started in the north of the island in November 2013.

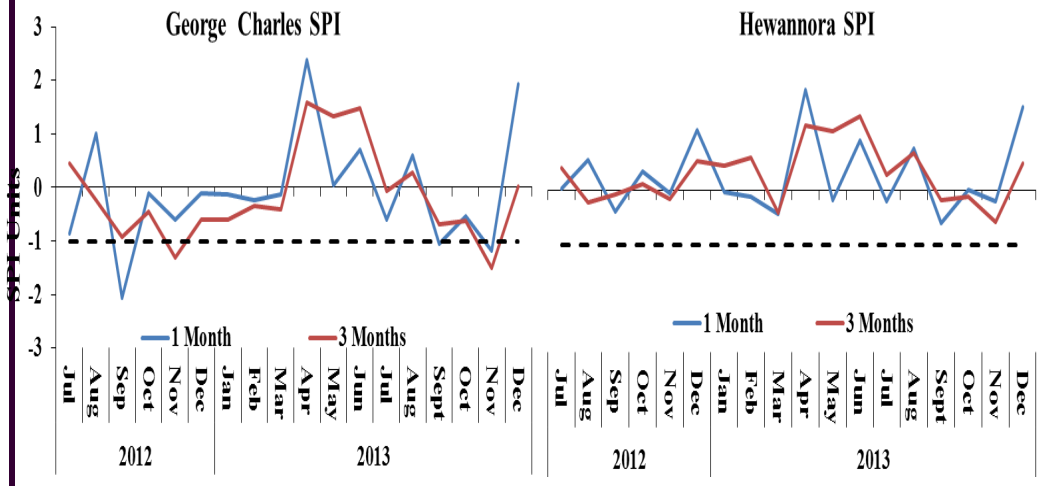

Fig. 7a & 7b—SPI for George Charles and Hewannora over July 2012 to November 2013

Table 1 SPI intensity index

SPI ≥2	Extremely wet	-1.0 to -1.49	Moderatel dry
1.5 to 1.99	Very Wet	-1.5 to -1.99	Severely dry
1.0 to 1.49	Moderately wet	SPI≤ -2	Extremely dry
-0.99 to 0.99	Near Normal		

Notices

1. The Agricultural Engineering Service Division (AESD) provides free technical assistance to the agrarian community in Irrigation, Drainage, Soil conservation and pond construction. Persons requiring assistance can contact the AESD Office at Union or call 758-468-5618.

2. The propagation units of the Ministry of Agriculture presently has on sale a wide range of plants. For further information contact the Union and Barthe offices at 758-450-3212, 457474, respectively.

3. If water is being abstracted from any river, spring or groundwater well for agricultural purposes, please contact that Water Resource Management Agency in order to apply for an abstraction licence as this is required by law. Contact numbers are 758-468-5664 and 450-3540.