



Trough System (21-22 November 2014)

Excess Rainfall

Event Briefing

2 December 2014

1 INTRODUCTION

Interaction of the Tropical Upper Tropospheric Trough (TUTT) and the Inter-Tropical Convergence Zone (ITCZ) led to enhanced atmospheric instability and produced moderate to heavy showers with isolated embedded thunderstorms in the Eastern Caribbean on 21 and 22 November 2014. Barbados was the only CCRIF member country with an Excess Rainfall policy¹ that was affected by the trough. The event prompted the Barbados Meteorological Service to issue a flash flood warning that was in effect from 5:00 am through 4:30 pm (0900 UTC to 2030 UTC) on 21 November.

The Caribbean Rainfall Model² indicated that a Covered Area Rainfall Event (CARE) was generated in Barbados on 21 November 2014. Barbados' Excess Rainfall policy subsequently triggered, indicating that they are due a payout of US\$1,284,882.

2 IMPACTS

Following the issuance of a flash flood warning, schools across the island were closed for the day and residents in flood-prone areas were advised to take necessary precautions.

The Department of Emergency Management (DEM) reported considerable flooding of private residences in the parishes of Christ Church and St. Andrew. The flooding in the St. Andrew residence was caused by land slippage. Some private residences in St. Andrew and St. Philip were completely surrounded by water with the occupants unable to leave their homes.

On 22 November, teams from the Drainage Unit of the DEM were dispatched to flooded areas to pump out the excess water and personnel from the Soil Conservation Unit were deployed to assess the incidences of land slippage and flooding in St. Andrew.

All road damage reported to the DEM was referred to the Ministry of Transport and Works. One example was a road in Salters, St. George, which collapsed, leaving a hole filled with water which eventually caused a vehicle to lose two tyres. In Bush Hall, St. Michael, the persistent rain caused an underground natural gas pipe to become exposed. The National Petroleum Corporation sent a team to assess the situation in relation to the exposed gas pipe and prevent it from being broken by traffic that was diverted through that district to avoid flooding elsewhere.

3 DAILY MODEL RAINFALL DATA

Barbados' Meteorological Services recorded 151.5 mm of rainfall over the period 12:00 am on 21 November to 12:00 am on 23 November (0400 UTC 21 November to 0400 UTC 23

¹ Eight member countries have purchased Excess Rainfall policies. These are: Anguilla, Barbados, Dominica, Grenada, Haiti, Saint Lucia, St. Kitts and Nevis and St. Vincent and the Grenadines.

² The Caribbean Rainfall model is operated by Kinetic Analysis Corporation on behalf of CCRIF.

November) at the Grantley Adams International Airport in the south of the island. The rainfall measurement from satellite data used as input to the Caribbean Rainfall Model over the same period in the corresponding ~1 km² iTRMM Grid Cell in Barbados was 159.78 mm. However, the Rainfall Model produced maximum accumulated rainfall of 260.99 mm on the northern coast of Barbados in the parish of St. Peter between 21 and 22 November.

Figure 1 shows the accumulated rainfall over Barbados from 21 to 22 November 2014.

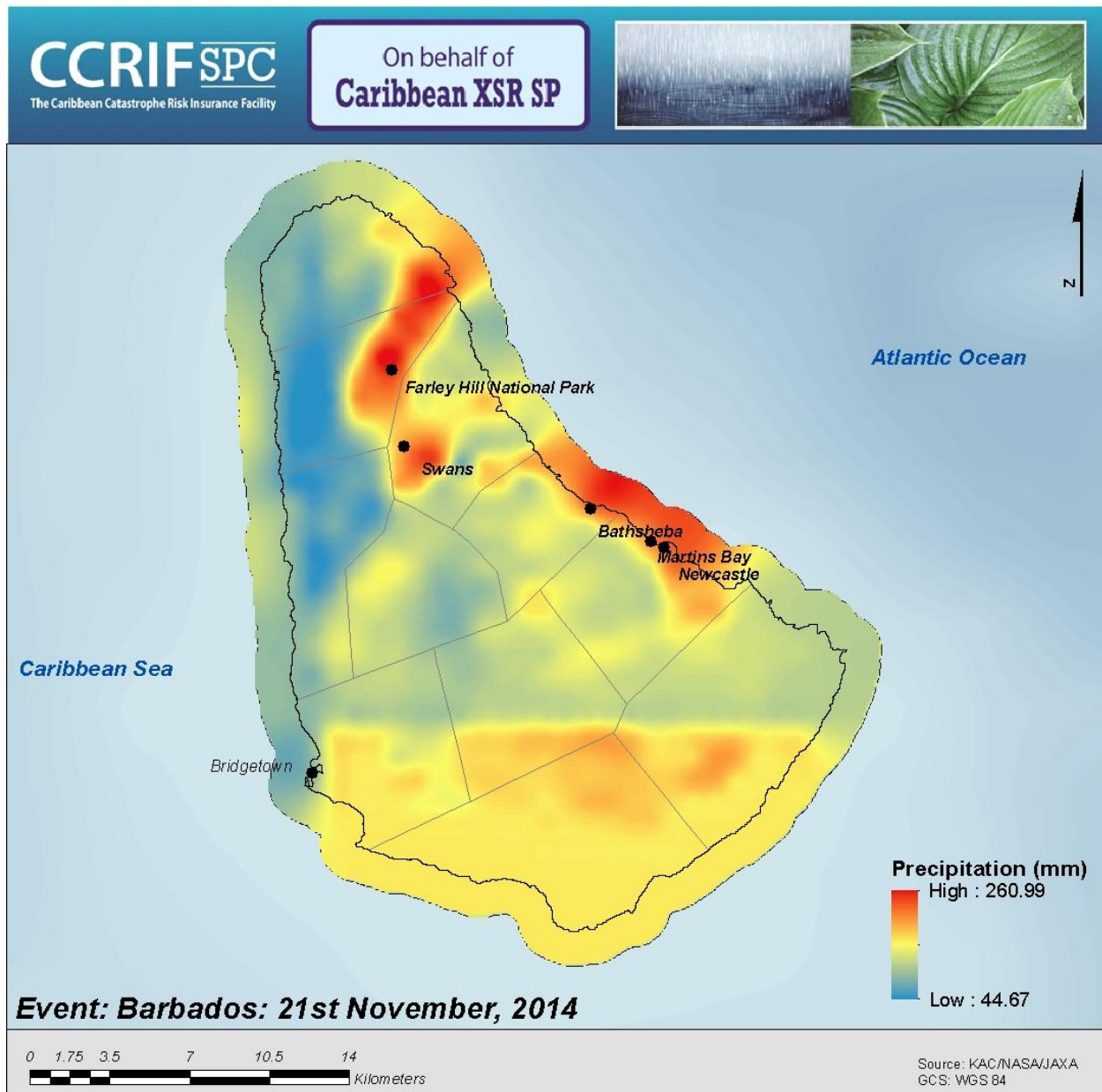


Figure 1 Map showing accumulated rainfall in Barbados, 21 to 22 November 2014

3 RAINFALL MODEL OUTPUTS

The Caribbean Rainfall Model uses a 2-day running aggregate of rainfall measurements for Barbados as a basis for determining Rainfall Index Losses, meaning that the rainfall attributed to a particular day is the total sum of the rainfall on that day itself and the following day.

For the CARE in Barbados, the Caribbean Rainfall Model produced Maximum Aggregate Rainfall of 260.99 mm on 21 November (this includes daily rainfall measurements from 21 and 22 November). The maximum number of ongoing iTRMM Grid Cell Events (iGCEs) was 492.

4 TRIGGER POTENTIAL

The number of ongoing iGCEs in Barbados exceeded the required threshold (403) to trigger the CARE on 21 November and fell below the threshold on 22 November.

It must be noted that the Rainfall Index Loss for a CARE cannot be determined until the Aggregate Rainfall in each iTRMM Grid Cell that had an ongoing iGCE that contributed to the CARE has fallen below 75 mm for at least 1 day (2 days in the case of those countries for which the model uses 3-day Aggregate Rainfall). In this instance, the CARE's contributing iGCEs ended on 22 November.

The Rainfall Index Losses calculated for Barbados' CARE exceeded the attachment point on its Excess Rainfall policy and therefore a payout of US\$1,284,882 is due.

For further information, please contact Caribbean Risk Managers Ltd., the CCRIF SPC Facility Supervisor.

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DEFINITIONS

<i>Active Percentage</i>	The percentage of the total number of iTRMM Grid Cells, within the Covered Area of the Insured, in which an iTRMM Grid Cell Event must be occurring to trigger a Covered Area Rainfall Event. The Active Percentage is defined in the Schedule.
<i>Aggregate Rainfall</i>	The value of Aggregate Rainfall, as measured in millimetres (mm), using the iTRMM Precipitation Data over the Covered Area and evaluated by the Calculation Agent as part of the Rainfall Index Loss Calculation Methodology. For a given day: (a) 2-day aggregate - the total sum of rainfall on the day itself, and the day after; or (b) 3-day aggregate - the total sum of rainfall on the day itself, and the two following days.
<i>Caribbean Rainfall Model</i>	The computer model used to calculate the iTRMM Grid Cell Event Loss and the Rainfall Index Loss.
<i>Covered Area Rainfall Event</i>	Any continuous period of days during which the number of iTRMM Grid Cell Events is greater than or equal to the product of (a) Active Percentage multiplied by (b) the total number of iTRMM Grid Cells within the Covered Area.
<i>Covered Area</i>	The territory of the Insured as represented in the Caribbean Rainfall Model.
<i>iTRMM Grid Cell (grid cell)</i>	The 30 arc-second by 30 arc-second grid of cells each of which is attributed with an exposure value and, for those with exposure value greater than zero, to which an Aggregate Rainfall Amount is attributed each day.
<i>iTRMM Grid Cell Event (cell event)</i>	Any continuous period of days during which the Aggregate Rainfall value equals or exceeds the Rainfall Event Threshold in an iTRMM Grid Cell. For Covered Areas that have 3-day aggregation periods, an iTRMM Grid Cell Event is only considered to be over once there have been two or more consecutive days where the Aggregate Rainfall does not exceed the Rainfall Event Threshold.

<i>Maximum Aggregate Rainfall</i>	The highest Aggregate Rainfall amount during an iTRMM Grid Cell Event for each iTRMM Grid Cell in which there is an iTRMM Grid Cell Event.
<i>Rainfall Event Threshold</i>	Aggregate Rainfall level which, when exceeded, starts an iTRMM Grid Cell Event.
<i>Rainfall Index Loss</i>	For any Covered Area Rainfall Event affecting the Insured, the US Dollar loss calculated by the Calculation Agent using the Caribbean Rainfall Model.