



Trough System (7-8 November 2014)

Excess Rainfall

Event Briefing

17 November 2014

1 INTRODUCTION

A low pressure trough, located over the northern Lesser Antilles brought heavy showers and thunderstorms to much of the British and US Virgin Islands and the Lesser Antilles from 7 to 8 November 2014. Anguilla and St. Kitts and Nevis were the only CCRIF member countries with Excess Rainfall policies¹ that were affected by the trough.

The Caribbean Rainfall Model indicated that Covered Area Rainfall Events (CAREs) were generated in Anguilla and St. Kitts and Nevis starting on 7 November 2014 and ending on 8 November 2014. The Excess Rainfall policies of both countries subsequently triggered, indicating that they are due a payout.

2 IMPACTS

Photographs on the Nevis Disaster Management Department Facebook page show that walls collapsed as a result of the torrential rain and some cars were damaged. Some roads were damaged and loader trucks had to be used to clear dirt and gravel that had accumulated on others. CCRIF is still awaiting official reports from Anguilla regarding any damage on the ground and actual rainfall measurements.

3 DAILY MODEL RAINFALL DATA

Anguilla

The rainfall produced by the Caribbean Rainfall Model (operated by Kinetic Analysis Corporation (KAC)) from 7 to 8 November 2014 in Anguilla, was concentrated in the north of the island. The model produced maximum accumulated rainfall over the two days of 267.86 mm in the north-central region of Anguilla. The area is mainly rural with a large quarrying operation as the most distinctive feature. At an elevation of ~30 m, this area drains west towards an uninhabited portion of coastline.

St. Kitts and Nevis

St. Kitts' Meteorological Services recorded 125 mm of rainfall over the period 8:00 pm on 6 November to 8:00 pm on 8 November (0000 UTC 7 November to 0000 UTC 9 November) at the Robert L. Bradshaw International Airport in the south of St. Kitts. The rainfall measurement, used as input to the Caribbean Rainfall Model, over the same period in the corresponding iTRMM Grid Cell in St. Kitts, was 168.27 mm. However, the Rainfall Model produced a maximum accumulated rainfall of 821.53 mm over this period which fell on the northern slope of Mount Liamuiga. The elevation is approximately 127 m and this mainly agricultural valley drains north into Saddlers Village. The discrepancy in rainfall amounts is due to the different

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.

precipitation measurement systems. Airports use a rain gauge while CCRIF's Rainfall Model is based on satellite remote sensed data. A rain gauge provides a single discrete rainfall measurement while CCRIF's model data are based on broad spatial coverage. In essence, the rain gauge registers data at one location at the airport, whereas CCRIF's Rainfall Model captures data for the entire ~1 km² grid cell (in this instance, the cell which includes the airport rain gauge).

Figure 1 shows the accumulated rainfall over Anguilla and St. Kitts and Nevis from 7 to 8 November 2014.

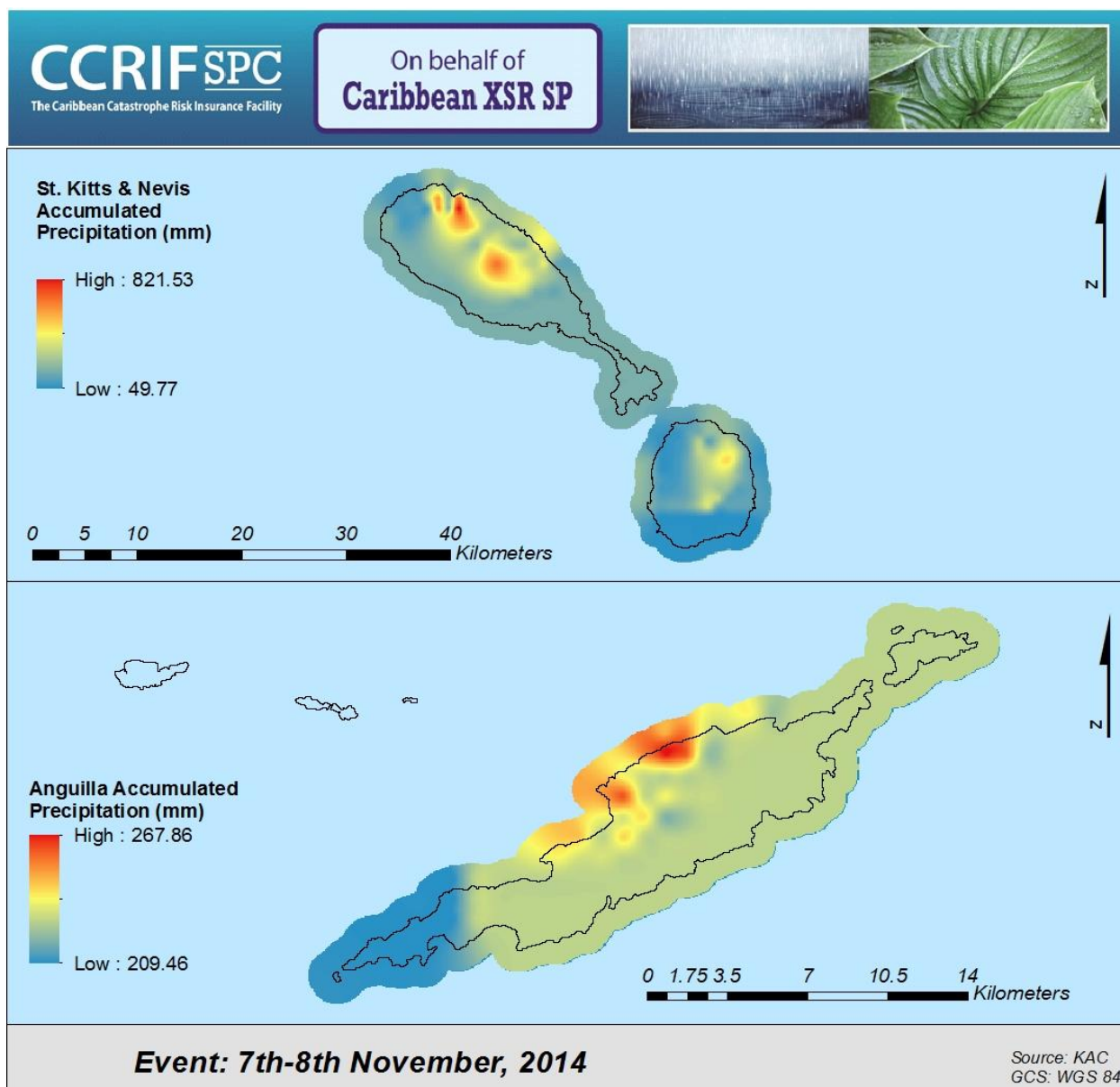


Figure 1 Map showing accumulated rainfall in Anguilla and St. Kitts and Nevis, 7 to 8 November 2014

3 RAINFALL MODEL OUTPUTS

The Caribbean Rainfall Model uses a 2-day running aggregate of rainfall measurements for both Anguilla and St. Kitts and Nevis 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 Anguilla, the Caribbean Rainfall Model produced Maximum Aggregate Rainfall of 267.86 mm on 7 November (this includes daily rainfall measurements from 7 to 8 November). The maximum number of ongoing iTRMM Grid Cell Events (iGCEs) was 114 (Anguilla's full complement).

In St. Kitts and Nevis, the model produced Maximum Aggregate Rainfall of 821.53 mm on 7 November 2014. The maximum number of ongoing iGCEs was 214.

4 TRIGGER POTENTIAL

Anguilla

The number of ongoing iGCEs in Anguilla exceeded the required threshold (109) to trigger the CARE on 7 November and fell below the threshold on 9 November.

It must be noted that a CARE is not considered complete 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 and its contributing iGCEs ended on 8 November.

The Rainfall Index Losses calculated for Anguilla's CARE exceeded the attachment point on its Excess Rainfall policy and therefore a payout of US\$559,249 is due.

St. Kitts and Nevis

The number of ongoing iGCEs in St. Kitts and Nevis exceeded the required threshold (186) to trigger the CARE on 7 November and fell below the threshold on 9 November. As in Anguilla's case, the CARE and its contributing iGCEs ended on 8 November.

The Rainfall Index Losses calculated for St. Kitts and Nevis's CARE exceeded the attachment point on its Excess Rainfall policy and therefore a payout of US\$1,055,408 is due.

These payouts reflect the application of policy conditions to the modelled government loss. Each member of CCRIF selects their own policy attachment point (equivalent to a deductible), exhaustion point (equivalent to the full policy value) and the level of premium they wish to pay. These three conditions then dictate what the payout will be relative to the Rainfall Index Loss.

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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>	<p>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:</p> <p>(a) 2-day aggregate - the total sum of rainfall on the day itself, and the day after; or</p> <p>(b) 3-day aggregate - the total sum of rainfall on the day itself, and the two following days.</p>
<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.