CCRIF SPC
The Caribbean Catastrophe Risk Insurance Facility

Covered Area Rainfall Event (13/05/2025 to 13/05/2025)

Excess Rainfall

Event Briefing

The Bahamas
Extreme North

22 May 2025

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1 INTRODUCTION

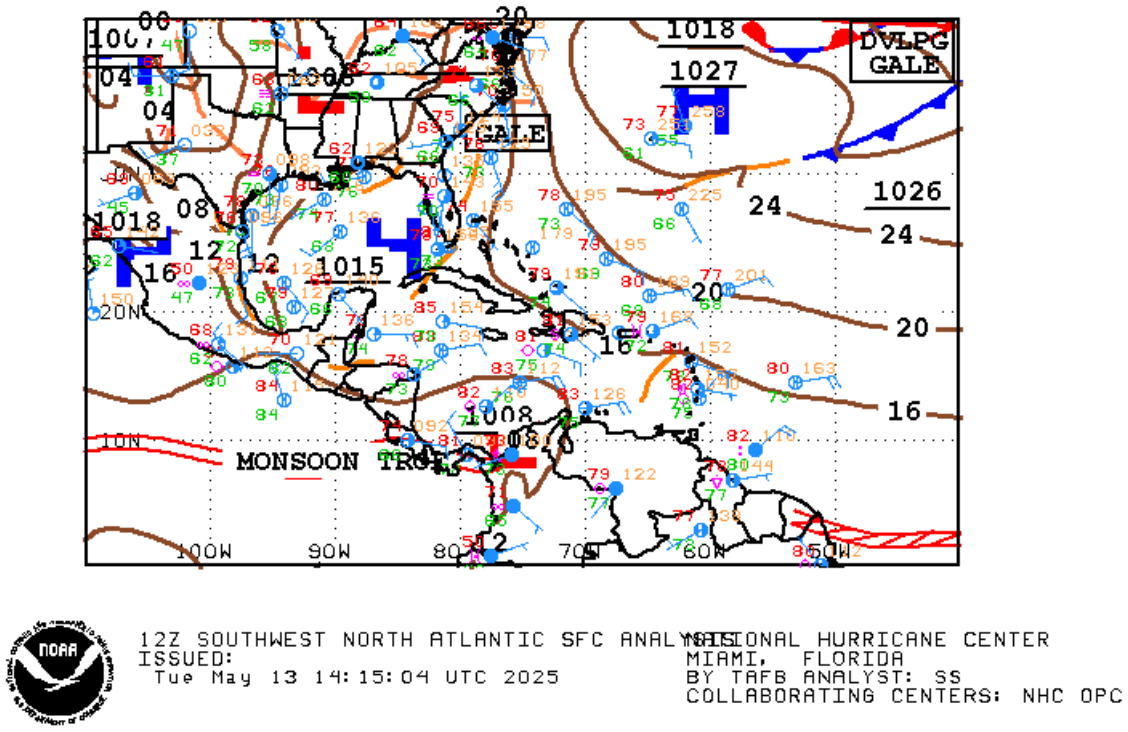
This event briefing describes the impact of rainfall on extreme north region of The Bahamas, which was associated with a Covered Area Rainfall Event (CARE) starting on 13 May 2025 and ending on 13 May 2025. The Rainfall Index Loss (RIL) for the Covered Area Rainfall Event was below the attachment point of The Bahamas' Excess Rainfall policy for the Extreme North[1], and therefore no payout is due to the Government of The Bahamas.

2 EVENT DESCRIPTION

On 13 May 2025, the northern portion of The Bahamas experienced a significant rainfall event associated with a surface trough extending in the vicinity of the Florida peninsula, from 31°North 79°West to southeast Florida near Palm Beach (Figure 1). The associated atmospheric instability in combination with the abundant tropical moisture fostered the development of scattered moderate to locally heavy convection ahead of the surface trough, specifically from the northwest Bahamas northward to beyond 31°North between 74°West and 80°West.

The convective activity intensified through the morning, supported by a broad upper-level trough over the Gulf of Mexico, with a peak rainfall over the Abaco Islands and Grand Bahama during the morning hours (Figures 2a and 2b). As the day progressed, the surface trough gradually lifted north-eastward, and by the evening, rainfall intensity diminished (Figure 2c).

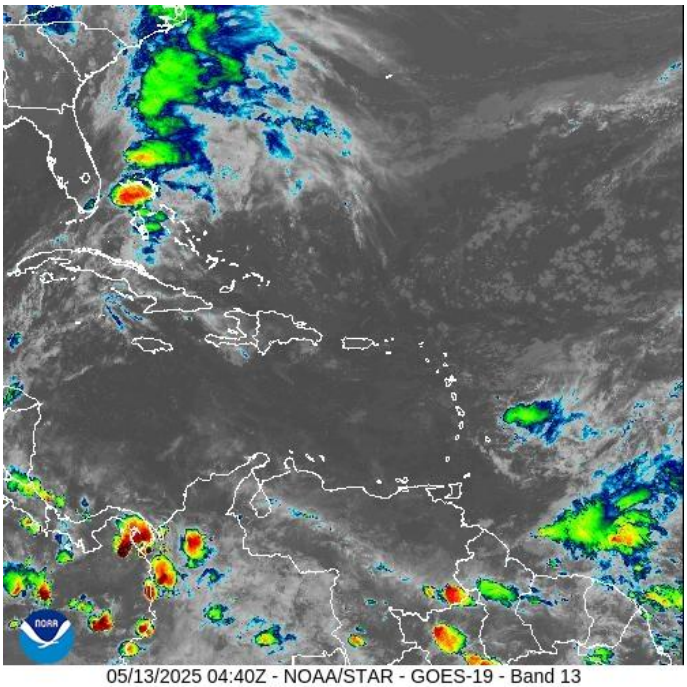
[1] The Bahamas has 4 XSR policies: The Bahamas - Southeast, The Bahamas – Central, The Bahamas – North and The Bahamas – Extreme North. No CAREs were identified in other regions of The Bahamas.



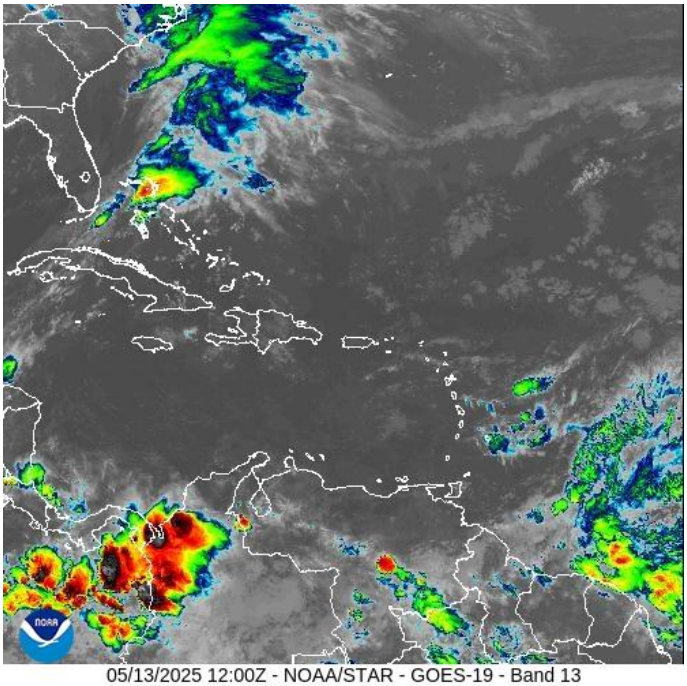
13 May at 1200UTC

Figure 1. Surface analysis over the Caribbean Sea and western Atlantic Ocean on 13 May 2025 at 1200 UTC. Source: US National Hurricane Center[2]

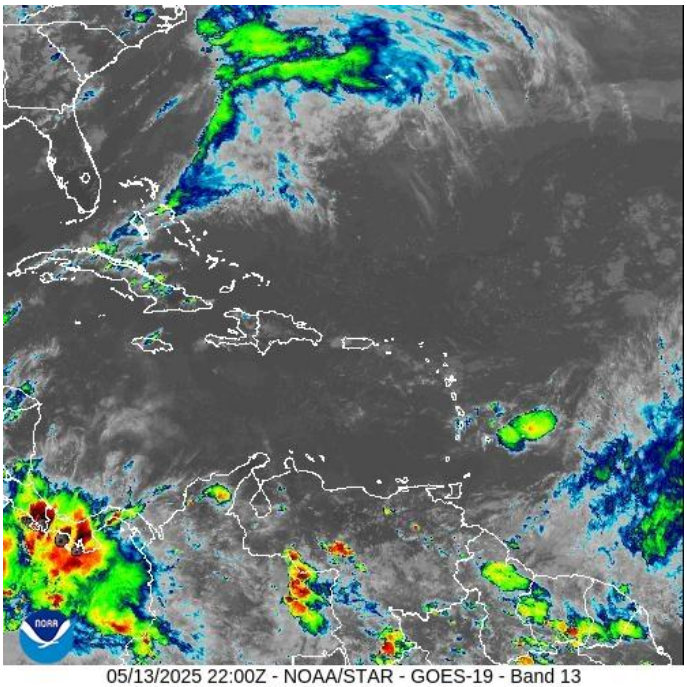
[2] National Oceanic and Atmospheric Administration - FTP, National Hurricane Center, review dates: 13 May 2025, available at: https://www.nhc.noaa.gov/tafb/WATL_12Z.gif



a) 13 May at 0440UTC



b) 13 May at 1200UTC



c) 13 May at 2200UTC

Figure 2 Satellite imagery on 13 May 2025 at different times as indicated in the labels. Blue/green colours represent high altitude clouds (top cloud temperature between -50°C and -70°C), while the red/yellow colours represent very high-altitude clouds (top cloud lower than -70°C). High altitude clouds indicate strong convection associated with intense precipitation. Source: NOAA, National Environmental Satellite, Data and Information Service[3].

3 REPORTED IMPACTS

At the time of writing this report, there is no information about damages in the The Bahamas due to this Covered Area Rainfall Event during the indicated period.

4 RAINFALL MODEL OUTPUTS

All data sources used by the XSR 3.0 model, CMORPH, IMERG, WRF5, WRF7, WRF11 and WRF15[4], detected the occurrence of precipitation over The Bahamas and the surrounding

[3] RAMSDIS Online Archive, NOAA Satellite and Information Service, available at: https://cdn.star.nesdis.noaa.gov/GOES16/ABI/SECTOR/pr/11/

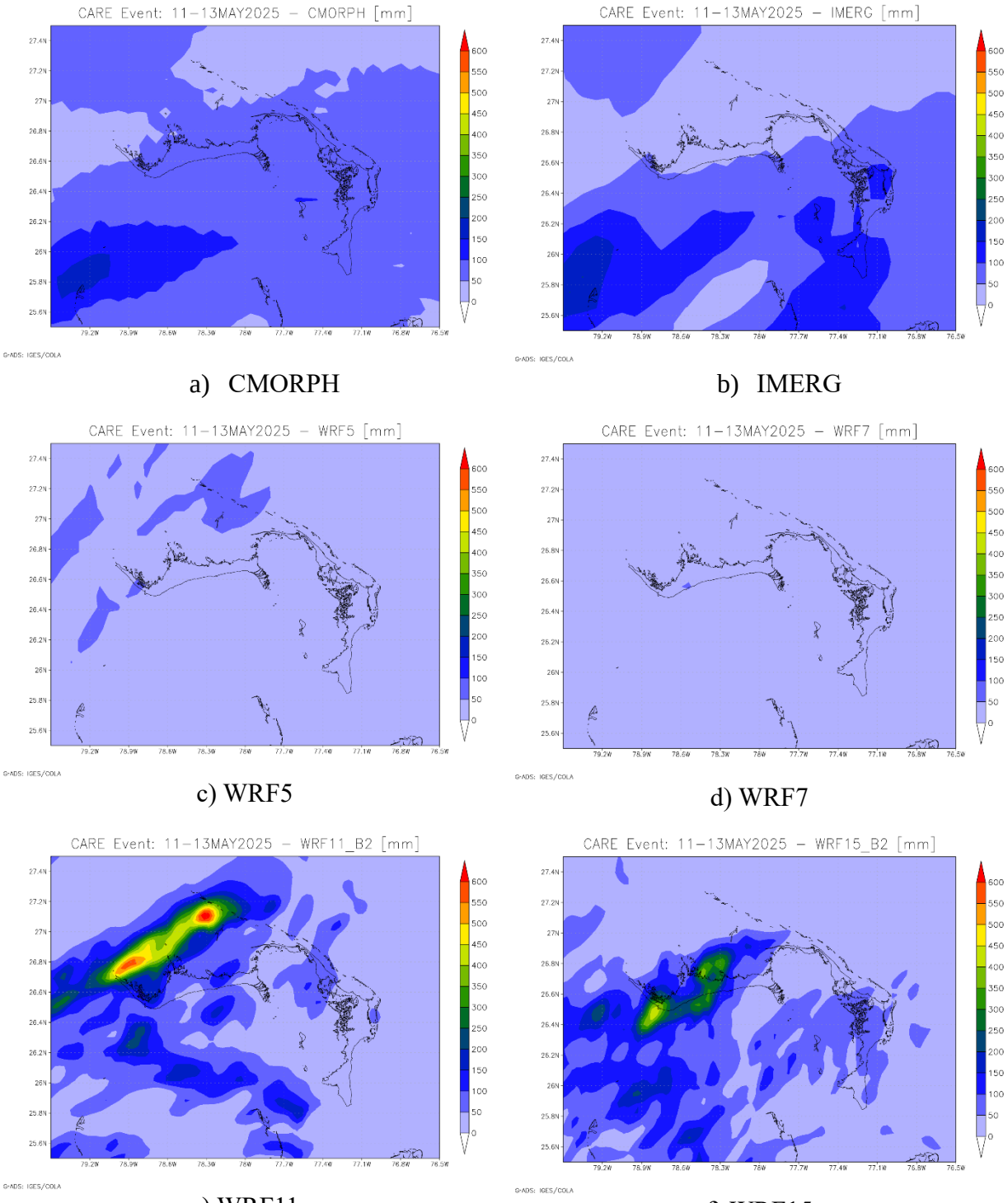
[4] CMORPH Model: the satellite-based rainfall precipitation estimates provided by the NOAA Climate Prediction Center (CPC) using the so-called Morphing Technique *http://www.cpc.ncep.noaa.gov/products/janowiak/cmorph_description.html*. Further details are provided in the Definitions section of this report

waters during the period 11 to 13 May 2025. Each data source reported a specific distribution and accumulation of rainfall, as discussed below and shown in Figure 3. A CARE for The Bahamas-Extreme North was activated on 13 May and lasted only that day. The CARE was activated due to the use of the 12-hour and the 48-hour aggregation intervals for precipitation[5] and thus the period considered by the XSR 3.0 model for the loss estimate based on the accumulated precipitation in The Bahamas-Extreme North was 11 to 13 May 2025. No CAREs were activated for other regions of The Bahamas for this rainfall event.

CMORPH	CMORPH reported total accumulated values of precipitation between 50mm and 100 mm over The Bahamas-Extreme North.
IMERG	IMERG reported total accumulated values of precipitation of less than 100 mm over Grand Bahama and northern Great Abaco, while central and southern portions of Great Abaco showed higher amounts, with accumulations ranging from 100 mm to 150 mm.
WRF5	WRF5 showed total accumulated values of precipitation between 50 mm and 100 mm over Grand Cay and a small area in western Grand Bahama, while lower values were reported over the rest of The Bahamas-Extreme North
WRF7	WRF7 showed total accumulated values of precipitation lower than 50 mm across the entire territory of The Bahamas-Extreme North, except for a small area in Grand Bahama where values ranged from 50 mm to 100 mm.
WRF11	WRF11 showed total accumulated values of precipitation higher than 50 mm over most of Grand Bahama and northern Great Abaco, with the maximum values between 400 mm and 450 mm showed along the extreme western edge of Grand Bahama. Grand Cay also reported values higher than 100 mm, with localized maxima between 350 mm and 400 mm. Lower rainfall values were reported across the remainder of The Bahamas-Extreme North.
WRF15	WRF15 reported accumulated values of precipitation higher than 100 mm across most of Grand Bahama, with maximum values between 400 mm and 450 mm in the far western portion of the island. Over southern Great Abaco, precipitation values ranged from 50 mm to 100 mm, while lower values were reported over the rest of the region.

IMERG Model: The satellite-based rainfall estimation model developed by NASA, expressed in mm, derived by aggregating the IMERG 30-minute Rainfall Data at 10km spatial resolution and available at *https://jsimpsonhttps.pps.eosdis.nasa.gov/imerg/late*. Further details in the Definitions section of this reportWRF5, WRF7, WRF11 and WRF15 Models: the Weather Research and Forecasting Model weather model-based Configuration #1 and #2 data *https://www.mmm.ucar.edu/weather-research-and-forecasting-model*. These data are initialised by the NCEP FNL dataset. (NCEP FNL Operational Model Global Tropospheric Analyses [*http://rda.ucar.edu/datasets/ds083.2/*]). Further details are provided in the Definitions section of this report.

[5] The two aggregation periods correspond to the Rainfall Aggregation Period #1 and Rainfall Aggregation Period #2, as indicated in the Schedule. Further details in the Definitions section of this report.



a) CMORPH

b) IMERG

c) WRF5

d) WRF7

e) WRF11

f) WRF15

Figure 3 Total accumulated precipitation during the period 11 to 13 May, 2025 estimated by CMORPH (a), IMERG (b), WRF5 (c), WRF7 (d), WRF11 (e), WRF15 (f). Source: CCRIF SPC

Daily rainfall maps by CMORPH, IMERG, WRF5, WRF7, WRF11 and WRF15 over the exposure map of XSR 3.0 are not included here and they can be downloaded at the following links for 12-hour aggregation and 48-hour aggregation respectively:

https://wemap.ccrif.org/OUTPUT/CCRIF/XSR/Events/BHS/BHS_EN/CARE_3_2024/daily_prec_short.mp4

https://wemap.ccrif.org/OUTPUT/CCRIF/XSR/Events/BHS/BHS_EN/CARE_3_2024/daily_prec_long.mp4

The Rainfall Index Loss (RIL) was above the loss threshold for The Bahamas-Extreme North for four of the data sources used by XSR3.0: CMORPH, IMERG, WRF11 and WRF15. The RIL was the highest for WRF15.

The final RIL (RIL_{FINAL}) was calculated as the average of the four RILs from CMORPH, IMERG, WRF11 and WRF15. The RIL_{FINAL} was below the attachment point of the Excess Rainfall policy for The Bahamas - Extreme North, and thus the policy was not triggered. Therefore, no payout is due under this Excess Rainfall policy to the Government of The Bahamas.

The Wet Season Trigger (WST) endorsement of the XSR3.0 model did not identify this CARE as a "Wet Season" event[6]. Therefore, no payment is due under the Wet Season Trigger endorsement of The Bahamas' Excess Rainfall policy for the Extreme North.

5 TRIGGER POTENTIAL

The Rainfall Index Loss calculated for this Covered Area Rainfall Event (CARE) was below the attachment point of The Bahamas' Excess Rainfall policy for the Extreme North and therefore no payout is due.

For additional information, please contact CCRIF SPC at: pr@ccrif.org

[6] The WST endorsement is designed to provide a predetermined payout for rainfall events occurring amidst already saturated soil conditions, effectively capturing the heightened risk of flooding and landslides. It is activated based on two factors: the Wet Index (the average 1-month Standardized Precipitation Index for all grid cells in the country) and Wet Periods (the period of time where the Wet Index exceeds 1, which indicates that the soil is wetter than its long-term average and serves as an indicator of soil saturation). The WST policy endorsement provides a payment when one or more CAREs with a modelled loss greater than zero occur within a Wet Period and the corresponding value of the Wet Index during the Wet Period exceeds a predetermined threshold. Wet season event (WE). Any period of consecutive days, during which the Wet Index (WI) is equal or greater than 1.

DEFINITIONS

Active Exposure Cell Percentage Threshold	The percentage of the total number of XSR Exposure Grid Cells within the Covered Area of the Insured, that must be exceeded to trigger a Covered Area Rainfall Event.
Active Exposure Grid Cells	The XSR Exposure Grid Cells for which in the same single day the Aggregate Rainfall #1 value computed using the CMORPH-based Rainfall Estimate equals or exceeds the Rainfall Event Threshold #1 or the Aggregate Rainfall #2 value computed using the CMORPH-based Rainfall Estimate equals or exceeds the Rainfall Event Threshold #2.
Aggregate Rainfall #1	The rainfall amount accumulated over the Rainfall Aggregation Period #1 (as defined in the Schedule) measured in millimeters (mm) in any of the XSR Exposure Grid Cells in the Covered Area of the Insured. For a given day and a Rainfall Aggregation Period #1 of n hours, the Aggregate Rainfall #1 is the maximum amount of rainfall accumulated over any of the n-hour windows that intersect the day itself considering a time interval of 3 hours.
Aggregate Rainfall #2	The rainfall amount accumulated over the Rainfall Aggregation Period #2 (as defined in the Schedule) measured in millimeters (mm) in any of the XSR Exposure Grid Cells in the Covered Area of the Insured. For a given day and a Rainfall Aggregation Period #2 of n hours, the Aggregate Rainfall #2 is the maximum amount of rainfall accumulated over any of the n-hour windows that intersect the day itself considering a time interval of 3 hours.
Calculation Agent	Entity charged with undertaking the primary calculation of the Rainfall Index Loss.
CMORPH-based Maximum Aggregate Rainfall #1	The maximum value during the Covered Area Rainfall Event of the Aggregate Rainfall #1 computed using the CMORPH-based Rainfall Estimates in any given XSR Exposure Grid Cell over the Covered Area of the Insured.
CMORPH-based Maximum Aggregate Rainfall #2	The maximum value during the Covered Area Rainfall Event of the Aggregate Rainfall #2 computed using the CMORPH-based Rainfall Estimates in any given XSR Exposure Grid Cell over the Covered Area of the Insured.

CMORPH-based Covered Area Rainfall Parameters	The CMORPH Model information provided on a continuous basis by the XSR Model Data Reporting Agency used by the Calculation Agent to obtain the CMORPH-based Rainfall Estimates using the XSR Rainfall Model. Parameters are drawn from XSR Exposure Grid Cells within the Covered Area of the Insured, by their respective latitude and longitude. Measurement units and precision of data ingested by the XSR Rainfall Model are identical to those provided by the XSR Model Data Reporting Agency and are further elaborated in the Attachment entitled 'Calculation of Rainfall Index Loss and Policy Payment'.
CMORPH Model	The satellite-based rainfall estimation model provided by NOAA CPC as described in the Rainfall Estimation Models section of the Policy.
Covered Area	The territory of the Insured as represented in the XSR Rainfall Model.
Covered Area Rainfall Event	Any period of days, with an interruption less than or equals to the Event Tolerance Period, during which the number of Active Exposure Grid Cells is greater than or equal to the product of (a) Active Exposure Cell Percentage Threshold multiplied by (b) the total number of XSR Exposure Grid Cells within the Covered Area.
Country Disaster Alert	An official disaster alert issued by ReliefWeb (*http://reliefweb.int/*) for the country in question for one of the following types of events: tropical cyclone, flood, flash flood and severe local storm. Any disaster alert issued later than seven (7) days after the completion of the Covered Area Rainfall Event (CARE) event will not be considered. The Disaster Alert description issued by ReliefWeb and/or its attached documentation must include specific reference to the CARE dates with a tolerance period of 2 calendar days.
Maximum Aggregate Rainfall #1	The highest value during a Covered Area Rainfall Event of the Aggregate Rainfall #1 amount in any of the XSR Exposure Grid Cells in the Covered Area of the Insured computed.
Maximum Aggregate Rainfall #2	The highest value during a Covered Area Rainfall Event of the Aggregate Rainfall #2 amount in any of the XSR Exposure Grid Cells in the Covered Area of the Insured computed.

Rainfall Event Threshold #1	Aggregate Rainfall #1 level as defined in the Schedule which should be exceeded to trigger an Active Exposure Cell.
Rainfall Event Threshold #2	Aggregate Rainfall #2 level as defined in the Schedule which should be exceeded to trigger an Active Exposure Cell.
Rainfall Aggregation Period #1	The number of hours over which the Aggregate Rainfall #1 is computed for all XSR Exposure Grid Cells during a Covered Area Rainfall Event.
Rainfall Aggregation Period #2	The number of hours over which the Aggregate Rainfall #2 is computed for all XSR Exposure Grid Cells during a Covered Area Rainfall Event.
Rainfall Index Loss	For any Covered Area Rainfall Event affecting the Insured, the US Dollar loss calculated by the Calculation Agent using the XSR Rainfall Model, as described in the Attachment entitled 'Calculation of Rainfall Index Loss and Policy Payment'. The Rainfall Index Loss can only be calculated once the Covered Area Rainfall Event is completed.
WRF5 Model	The weather research and forecasting rainfall model by NOAA with Configuration #5 data initialized with and assimilating the data provided by the National Center for Environmental Prediction as described in the Rainfall Estimation Models and in the Input Data to the Rainfall Estimation Models sections of this Attachment.
WRF7 Model	The weather research and forecasting rainfall model by NOAA with Configuration #7 data initialized with and assimilating the data provided by the National Center for Environmental Prediction as described in the Rainfall Estimation Models and in the Input Data to the Rainfall Estimation Models sections of this Attachment.
XSR Rainfall Model	The computer model used to calculate the Rainfall Index Loss, as described in the Attachment entitled 'Calculation of Rainfall Index Loss and Policy Payment'.
XSR Exposure Grid Cells	The 30 arc-second by 30 arc-second grid of cells each of which is attributed with an XSR Grid Cell Exposure Value greater than zero.

XSR Grid Cell Exposure Value	The value, used to calculate the CMORPH-based Exposure Grid Cell Loss, the WRF5-based Exposure Grid Cell Loss, and the WRF7-based Exposure Grid Cell Loss.