



Tropical Cyclone Beryl (AL022018)

Wind and Storm Surge

Event Briefing

Dominica, Montserrat and Haiti

**Final Briefing
20 July 2018**

1 SUMMARY

Beryl was the first tropical cyclone that reached the hurricane category in the 2018 Atlantic Hurricane Season. It formed as a tropical depression in the Atlantic Ocean on 5 July 2018 at 1500UTC and it became a tropical storm on 5 July at 1830UTC. It reached a hurricane category 1 on 6 July at 0900UTC and kept this intensity until 7 July at 1500UTC, when it was downgraded to a tropical storm. Just before making landfall on the Leeward Islands, the system became an open trough. Nevertheless, tropical-storm-force winds were present over Dominica, Guadeloupe and Montserrat on 9 July at 0000UTC.

The final runs of CCRIF's loss model for wind and storm surge generated zero government losses for Dominica and Montserrat for their Tropical Cyclone policies. While they generated government losses for Haiti, these losses were below the attachment point for its Tropical Cyclone policy. Although the Aggregated Deductible Cover (ADC) for Haiti's policy was activated because the modelled losses were less than the attachment point, there was no disaster alert declaration from ReliefWeb related to TC Beryl and therefore no payout is due.

According to the final runs of CCRIF's loss model, TC Beryl resulted in a reportable event for Dominica and Montserrat and a loss event for Haiti. Final calculations show that no payouts are due.

This event briefing is designed to review the impact and damages from wind and storm surge but not rainfall for CCRIF member countries. A separate report on rainfall impacts on affected CCRIF member countries will be issued if applicable.

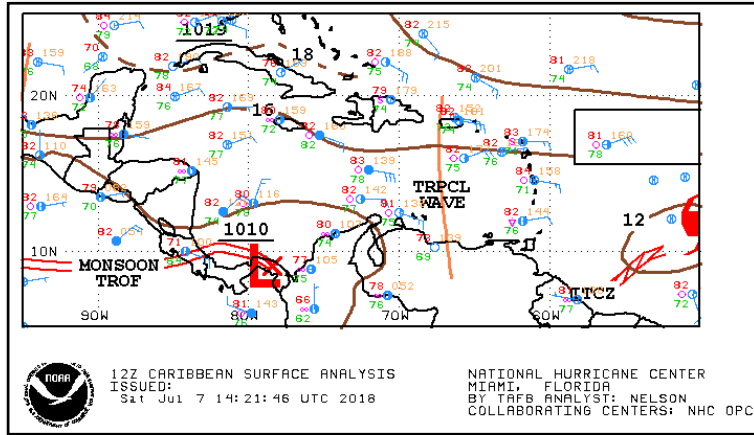
2 INTRODUCTION

On 5 July 2018 at 1500UTC, the US National Hurricane Center (NHC) reported that a small area of low pressure associated with a tropical wave in the central Atlantic Ocean (10.2N, 41.4W) became a tropical depression, with mid-level rotation in the convective clouds. In a few hours, the tropical depression showed a mid-level eye and a closed compact circulation at the surface and it was upgraded to a tropical storm and named Beryl. At 2100UTC of the same day, Tropical Storm Beryl was located at 10.3N, 42.8W and was moving towards the west at almost 16 mph (26 km/h). The maximum sustained winds were estimated at 50 mph (85 km/h) and the minimum central pressure was 1004 mb.

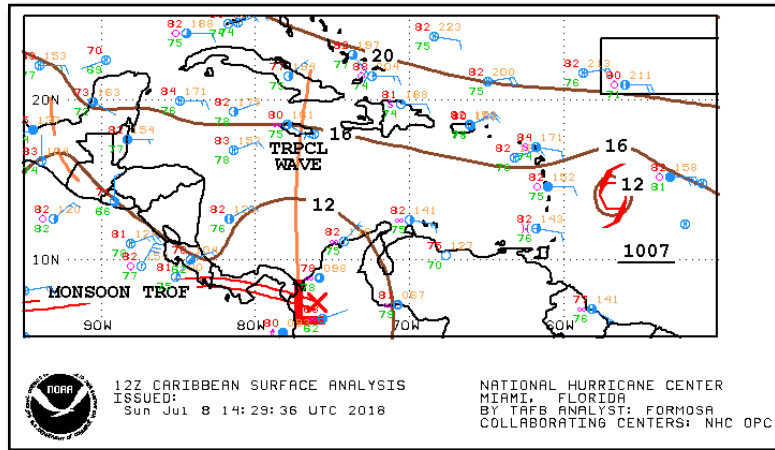
Beryl moved within very low vertical wind shear conditions and over a warm sea surface (about 26-27°C). These favourable conditions, as well as the small size of the cyclone, led to a very rapid intensification of the system, which was further upgraded to hurricane category 1 on 6 July at 0900UTC. Hurricane Beryl presented a compact but well defined cluster of convection around its centre. Maximum sustained winds were maintained at approximately 75-80 mph (120-130 km/h) until 7 July at 1200UTC (Figure 1a), and the minimum central pressure fell to 994-995 mb. During this time, the system moved towards the west-northwest at 14 mph (22 km/h) in the direction of the Lesser Antilles.

In the subsequent hours, Hurricane Beryl encountered less conducive conditions: the vertical wind shear increased due to the strengthening of both the low-level easterlies and the upper-level westerlies and the surrounding environment became drier and more stable. Therefore, Beryl's intensity decreased: the maximum sustained winds decreased to approximately 60 mph (95 km/h) and the minimum central pressure increased to 1007 mb. Thus, on 7 July at 1500UTC the cyclone was downgraded to a tropical storm. The cyclone continued to move west-north-westward at a slightly higher speed (16-17 mph, 26-28 km/h) toward the Leeward Islands (Figure 1b). The centre of the tropical storm was located at 12.1N, 51.1W with all the associated deep convection displaced to the east and southeast of it (Figure 2a).

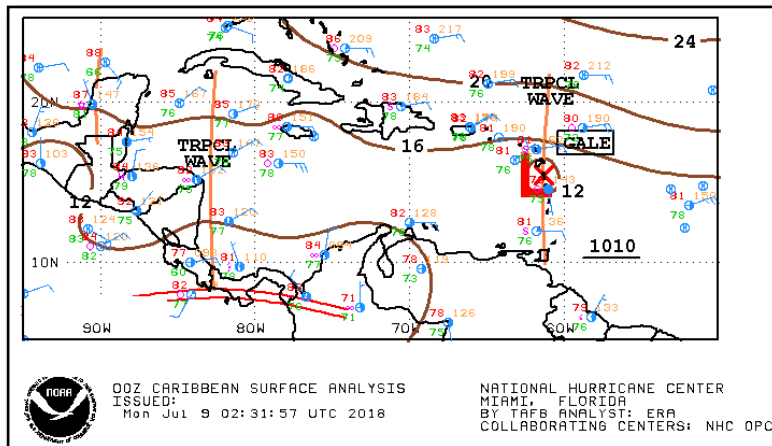
Due to the unfavourable environmental conditions, Beryl continued to weaken as it approached the Leeward Islands. On 8 July at 2100UTC it degenerated into an open trough of low pressure, just before landing in Dominica and Guadeloupe (landing occurred on 9 July at 0000UTC, Figure 1c). Even though the circulation was no longer a closed system, the maximum sustained winds were almost 45 mph (75 km/h) and tropical-storm-force winds extended outward up to 45 miles (75 km) mainly to the north and northeast of the remnants of the system centre. Dominica was affected by this wind intensity at the time of landing (Figure 1c). Deep convection was still active when the system passed over Dominica, Guadeloupe and Montserrat, leading to locally heavy precipitation over the islands and the surrounding waters (Figure 2b).



a) 7 July at 1200UTC



b) 8 July at 1200UTC



c) 9 July at 0000UTC

Figure 1 Surface analysis over the Caribbean area at three different times.
Source: National Hurricane Center (NHC)

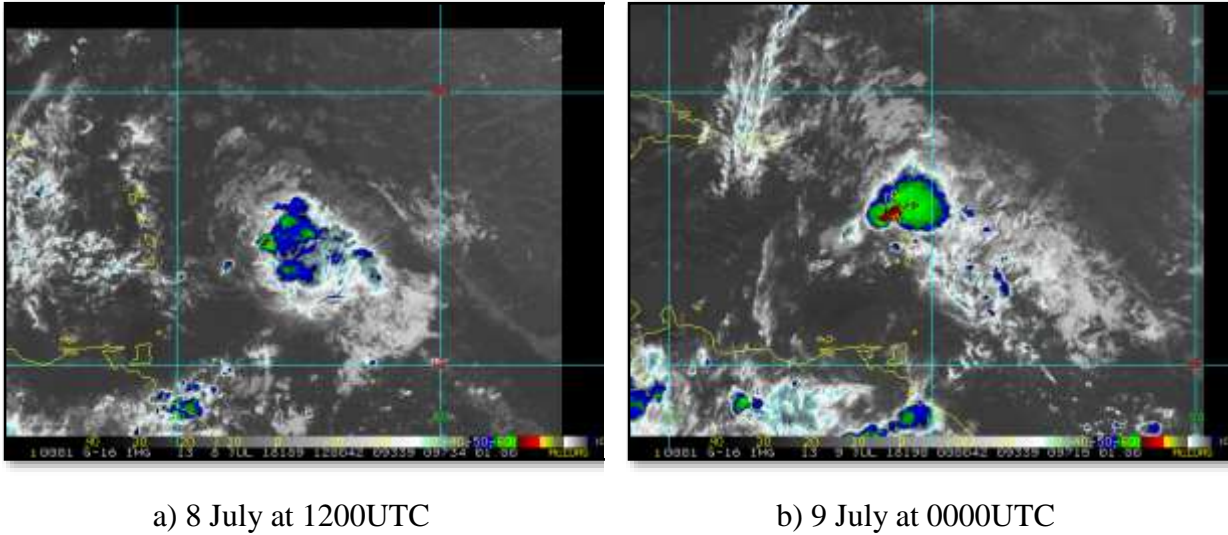
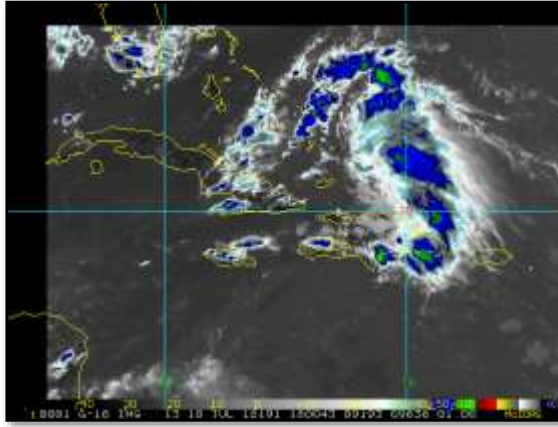


Figure 2 Enhanced infrared imagery over the western tropical Atlantic Ocean, collected at different times. Colours indicate the cloud canopy temperature, with yellow to red colours indicating the colder canopy and green to blue the warmer canopy. Cold cloud canopy indicates deep convection. Source: NOAA, National Environmental Satellite, Data and Information Service.

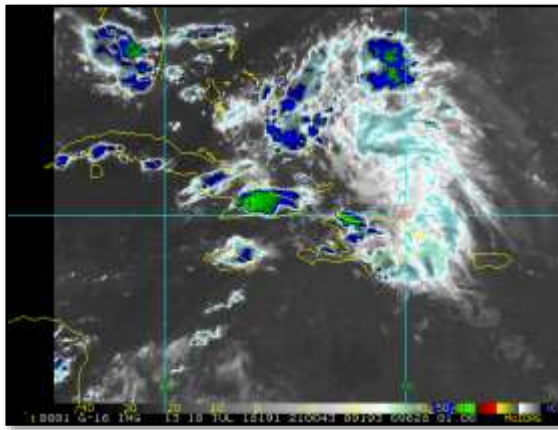
The remnants of Beryl continued to move west-north-westward at almost 26 mph (43 km/h). Along its track, it passed across the north-eastern Caribbean Sea to the south of the US and British Virgin Islands and Puerto Rico, spreading perturbed conditions with strong gusty winds and locally heavy rain over these regions.

On 10 July at 1200 UTC the tropical wave, into which the remnants of Beryl had evolved, started to affect Haiti. Figure 3 shows the cloud canopy associated with the system that was visible from the satellite at different times. In the free atmosphere (500-700mb), the system was clearly visible and associated with a broad cyclonic flow covering the NW Caribbean Sea. At the surface, the maximum winds were at approximately 30mph (48km/h) and widely scattered moderate to isolated strong rainshowers affected the Dominican Republic, Haiti and Cuba. The tropical wave and the associated perturbed conditions left Haiti on 11 July at 0600UTC.

a) 10 July at 1800UTC



b) 10 July at 2100UTC



c) 11 July at 0000UTC



Figure 3 Enhanced infrared imagery over the western tropical Atlantic Ocean, collected at different times. Colours indicate the cloud canopy temperature, with yellow to red indicating the colder canopy and green to blue the warmer canopy. Cold cloud canopy indicates deep convection.

Source: NOAA, National Environmental Satellite, Data and Information Service.

The tropical wave continued to move at approximately 23mph (37km/h) firstly towards the west and later towards the north and regenerated as a Tropical Storm over Bermuda on 14 July north of Bermuda.

3 CCRIF SPC MODEL OUTPUTS

Under CCRIF’s loss calculation protocol, a CCRIF Multi-Peril Risk Estimation System (MPRES) report is required for any tropical cyclone affecting at least one member country with winds greater than 39 mph (62.7 km/h). For Dominica and Montserrat, Tropical Cyclone Beryl qualified as a Reportable Event¹ and for Haiti, Tropical Cyclone Beryl, qualified as a Loss Event². The wind footprint for preliminary (Figure 4) and final run (Figure 5) from the CCRIF model are presented, which show the regions affected by certain magnitudes of wind speed trough Beryl’s track.

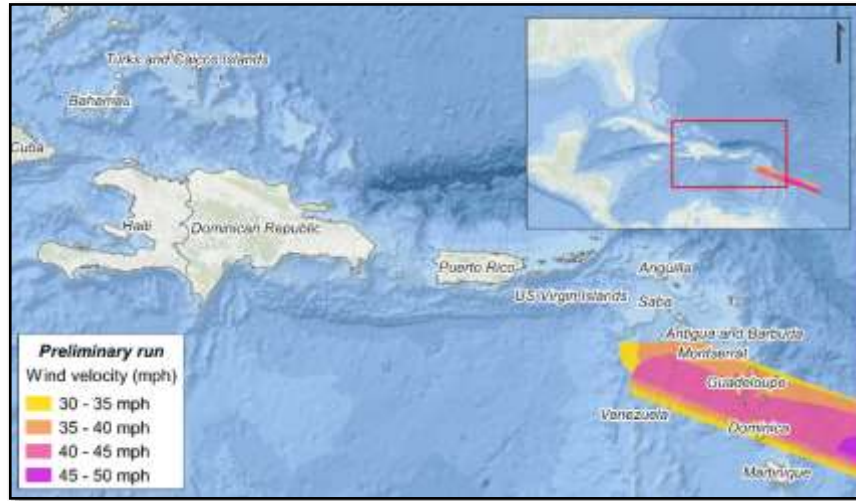


Figure 4 Map showing the wind field associated with the preliminary run on July 9

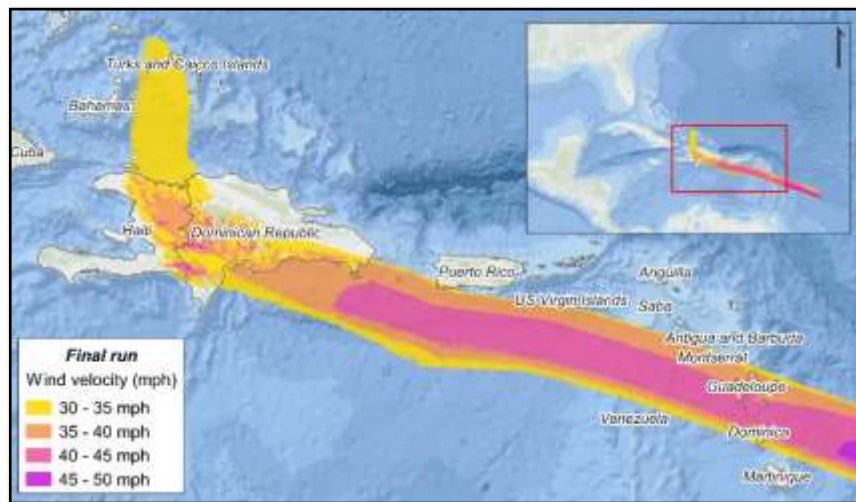


Figure 5 Map showing the wind field associated with the final run on July 19

¹ Any named Tropical Cyclone event (i.e. one that reaches Tropical Storm status or higher) which produces modelled winds of at least 39 mph in one or more grid cells of at least one CCRIF policyholder country but does not generate a modelled loss greater than zero.

² Any Tropical Cyclone event which produces a modelled loss greater than zero in one or more policyholder countries.

The wind footprint (Figure 6, Figure 7 and Figure 8) and surge field (Figure 9, Figure 10 and Figure 11) are two of the outputs from the CCRIF model, which show the regions affected by certain magnitudes of wind velocity and storm surge in each country.

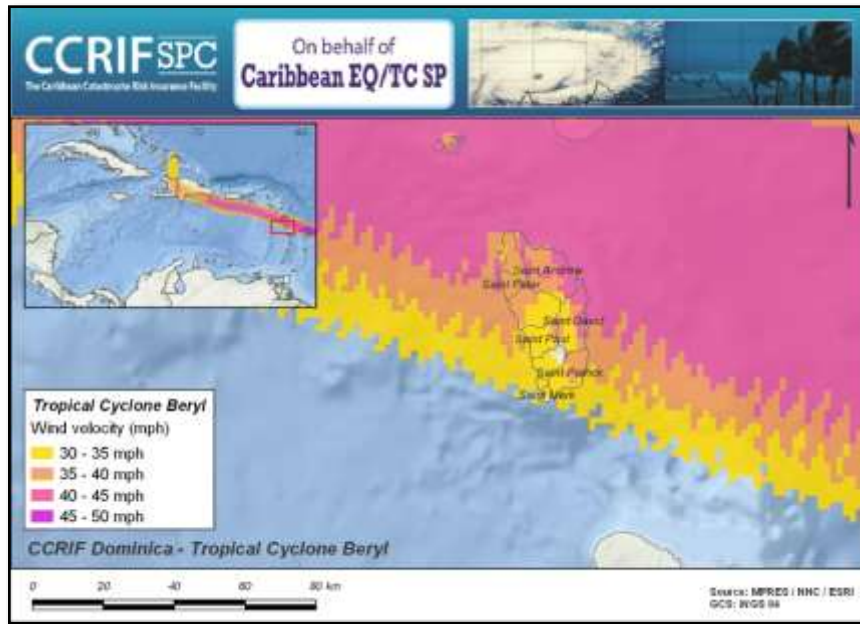


Figure 6 Map showing the wind field associated with Tropical Cyclone Beryl in Dominica.
Source: NHC & CCRIF/MPRES

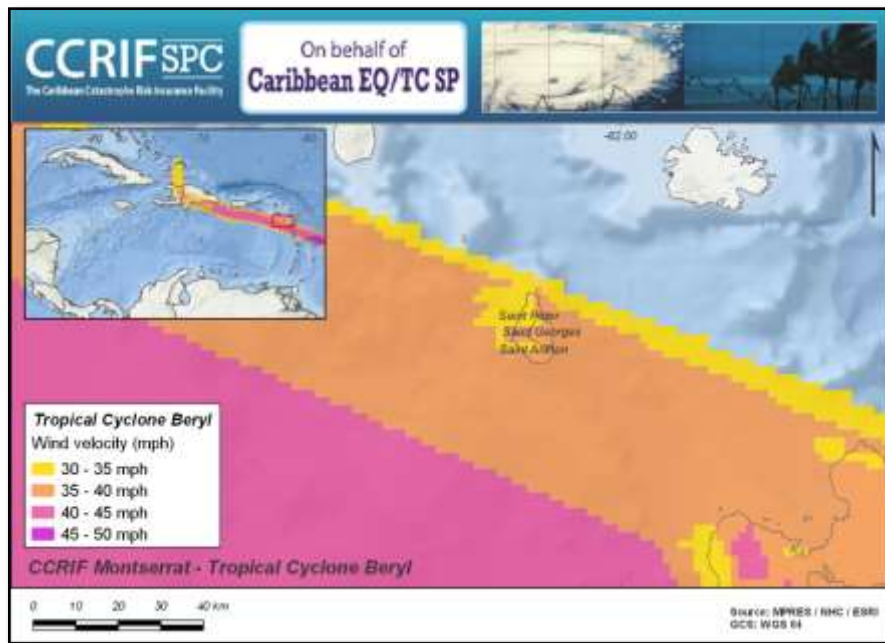


Figure 7 Map showing the wind field associated with Tropical Cyclone Beryl in Montserrat.
Source: NHC & CCRIF/MPRES

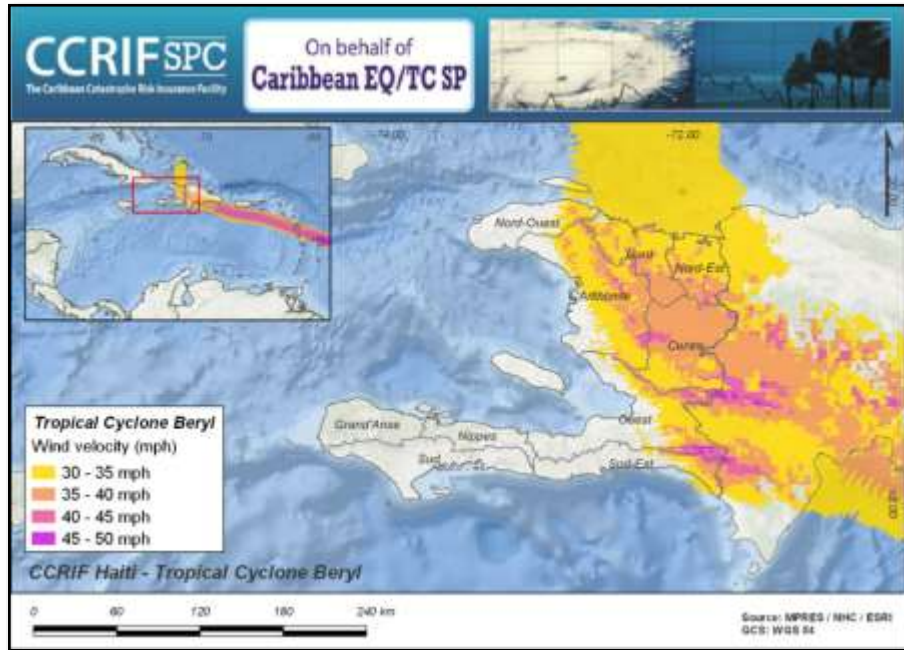


Figure 8 Map showing the wind field associated with Tropical Cyclone Beryl in Haiti.
Source: NHC & CCRIF/MPRES

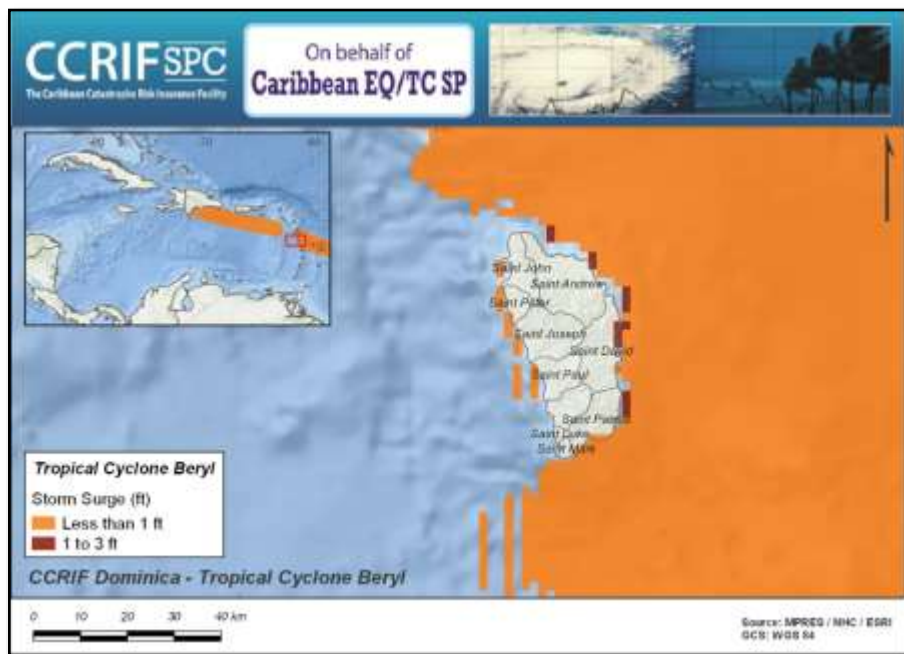


Figure 9 Map showing the storm surge field associated with Tropical Cyclone Beryl in Dominica.
Source: NHC & CCRIF/MPRES

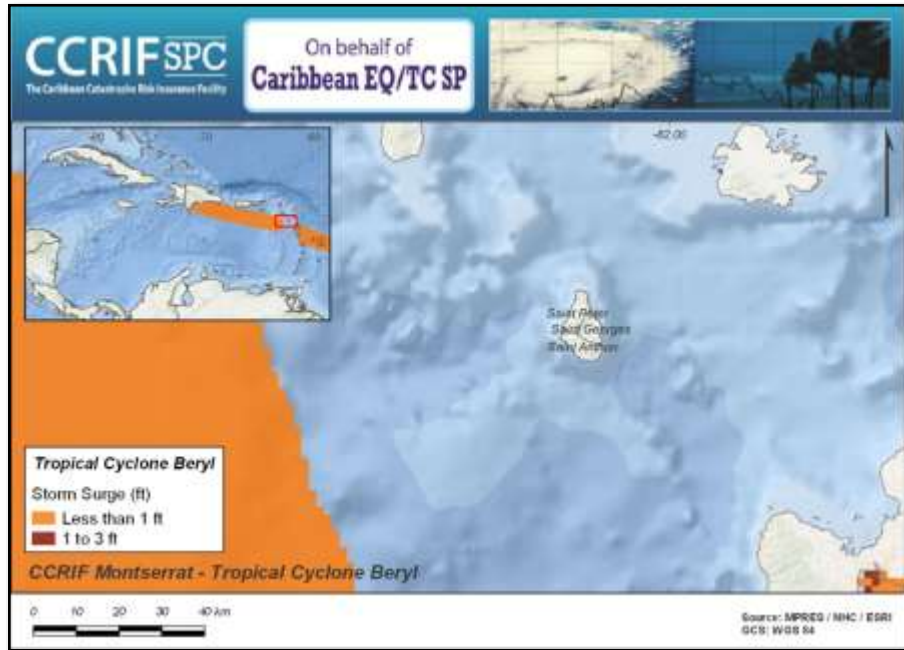


Figure 10 Map showing the storm surge field associated with Tropical Cyclone Beryl in Montserrat.
Source: NHC & CCRIF/MPRES

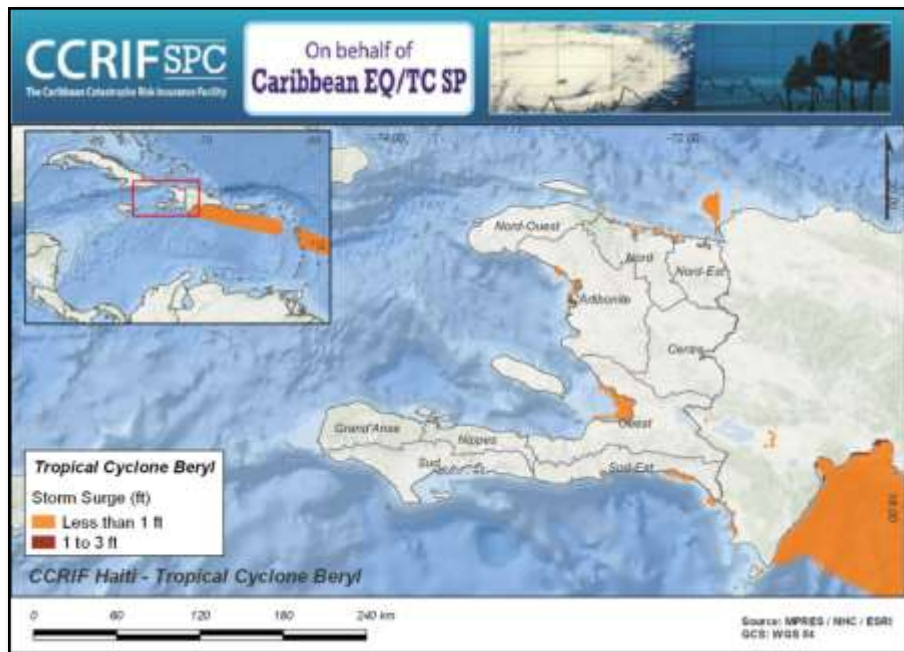


Figure 11 Map showing the storm surge field associated with Tropical Cyclone Beryl in Haiti.
Source: NHC & CCRIF/MPRES

4 IMPACTS

Ten days after the passage of Tropical Cyclone Beryl, no information was available related to damages or losses due to the storm for Dominica and Montserrat.

Prior to the arrival of Tropical Cyclone Beryl, the authorities in Dominica and Montserrat carried out precautionary measures such as temporarily suspending air and maritime traffic. The temporary interruption of commercial services was also implemented.

Haiti

At the time of this report, and according to the Director of the Office for Civil Protection, Dr. Jerry Chandler, no damages from the remnants of Beryl were reported in Haiti. Light winds and rains were felt in some regions of the country without causing substantial damage.

5 CCRIF LOSS MODEL

The lack of impact reports corroborates the final runs of CCRIF's loss model that generated no government losses for Dominica and Montserrat related to TC Beryl. For Haiti, the final run of CCRIF's loss model produced government losses that were far below the attachment point for its Tropical Cyclone policy. The Aggregate Deductible Cover (ADC) for the policy was not activated because there was no disaster alert declaration from ReliefWeb related to TC Beryl. Therefore, no payouts are due for these countries related to their Tropical Cyclone policies.

For further information, please contact ERN-RED, the CCRIF SPC Risk Management Specialist.

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