



# **Tropical Cyclone Eta (AL292020)**

## **Wind and Storm Surge**

## **Final Event Briefing**

## **Cayman Islands**

**18 November 2020**

## **1 SUMMARY**

Tropical Cyclone Eta was the twenty-ninth and most powerful tropical cyclone of the 2020 Atlantic Hurricane Season. Eta developed from a powerful tropical wave moving across the eastern Caribbean Sea, which evolved into a tropical depression on 31 October. On 1 November, it strengthened into a tropical storm while it was over the central Caribbean Sea. On 2 November, Tropical Storm Eta rapidly intensified, becoming a major hurricane, and on 3 November it made landfall in Nicaragua as a category 4 hurricane. While moving inland, Eta quickly lost intensity, downgrading to become a tropical depression. On 5 November, it crossed Honduras and on 6 November, it emerged over the northwestern Caribbean Sea. On 7 November Eta regained tropical storm strength in the vicinity of the Cayman Islands. Tropical-storm-force winds extended over this country. At the moment of writing this report, Nicaragua, the Cayman Islands and The Bahamas North West were the only CCRIF member countries where wind speeds, computed with the CCRIF SPHERA model, were greater than 39 mph (62.7 km/h) due to Hurricane Eta. This report describes the performance of the CCRIF models on the Cayman Islands due to Eta. Other reports will be provided for Nicaragua and The Bahamas.

The final runs of the CCRIF loss model for wind and storm surge produced government losses for the Cayman Islands, which were below the attachment point of this country's Tropical Cyclone policy. Therefore, no payout under this policy is due.

The Aggregated Deductible Cover (ADC) feature for the Cayman Islands' Tropical Cyclone policy was not activated because the modelled losses were below 10 per cent of the minimum payment of the policy. Therefore, no payment under the ADC feature is due for the Cayman Islands.

This event briefing is designed to review the modelled losses due to wind and storm surge calculated by CCRIF's models for affected CCRIF member countries, to be analyzed with respect to members' Tropical Cyclone policies. A separate report on rainfall impacts on affected CCRIF member countries will be issued if applicable.

## 2 INTRODUCTION

On 31 October 2020 at 2100UTC, the US National Hurricane Center (NHC) reported that a tropical depression formed over the central Caribbean Sea, approximately 214 mi (340 km) S of Haiti (15.0°N, 73.2°W). It originated from an intense tropical wave moving westward across the Caribbean Sea, which developed a low-level closed circulation. Six hours later, on 1 November at 0300UTC, the tropical depression was upgraded to a tropical storm and it was named Eta. The minimum central pressure was 1005 mb and the maximum sustained winds were estimated at 40 mph (65 km/h). The system moved towards the west with an estimated forward velocity of 15 mph (24 km/h).

The weak vertical wind shear, the moisture abundance and the high oceanic heat content (due to a sea surface warmer than 29°C) supported a steady and very rapid intensification of the tropical storm. On 2 November at 1800UTC, Eta became a major hurricane, with maximum sustained winds of 120 mph (195 km/h) and minimum pressure of 957 mb. At this time, the centre of Eta was at 14.7°N 82.0°W, at a distance of approximately 87 mi (140 km) from the closest coast of Nicaragua. The hurricane further decreased its forward velocity to 9 mph (15 km/h) and steered towards the west-southwest, due to a mid-level ridge over the south-central United States. In the next six hours, Eta continued to intensify and on 3 November at 0000UTC it reached the category 4 strength. The same day at 2100UTC, Eta made landfall in Nicaragua (at 13.8°N 83.5°W). Maximum sustained winds were estimated near 140 mph (220 km/h) with higher gusts.

After the landfall, Eta rapidly weakened due to the interaction with the inland areas and 12 hours later, on 4 November at 0900UTC, it was downgraded to tropical storm strength. On 5 November at 0000UTC, Eta weakened to become a tropical depression, while its centre (sited at 14.1°N 86.1°W) left Nicaragua and moved to Honduras. The depression steered towards the northwest and later towards the north, crossing Honduras and returning to the Caribbean Sea on 6 November at 0000UTC. At this time, the centre of the system was over the southern Gulf of Honduras at 16.0°N, 87.8°W and it was heading towards the north-northwest at almost 8 mph (13 km/h). In the next 24 hours, Eta gradually steered towards the northeast, as it moved along the east side of a trough over the Gulf of Mexico, heading towards Cuba.

Despite the large availability of heat content from the warm sea surface, Eta did not re-strengthen rapidly due to the presence of a southwesterly vertical wind shear. It regained tropical storm strength on 7 November at 1500UTC, when its centre was located at 19.6°N, 81.8°W, approximately 45 mi (70 km) WNW from the Cayman Islands (Figures 1 and 2). The estimated maximum sustained winds were almost 40 mph (65 km/h) with higher gusts. Tropical-storm-force winds extended outward up to 60 miles (95 km) from the centre, affecting the Cayman Islands. One hour later, at 1600UTC, the NHC reported that the maximum sustained winds increased to 50 mph (80 km/h). At this time, the distance between Eta's centre and this country was at its minimum (i.e. about 30 mi (50 km) from the island of Grand Cayman). In the next hours, the tropical storm continued to progress towards the northeast at an increasingly fast velocity (17 mph, 28 km/h), moving away from the Cayman Islands. Tropical-storm-force winds continued to affect this country until 2100UTC, when the centre of the system was 85 mi (135km) NNE of Grand Cayman.

In the next hours, Eta proceeded towards Cuba, making landfall on 8 November as a tropical storm. Subsequently, Eta emerged over the eastern Gulf of Mexico, made landfall on the Florida coast on 12 November and dissipated off the Eastern United States the next day.

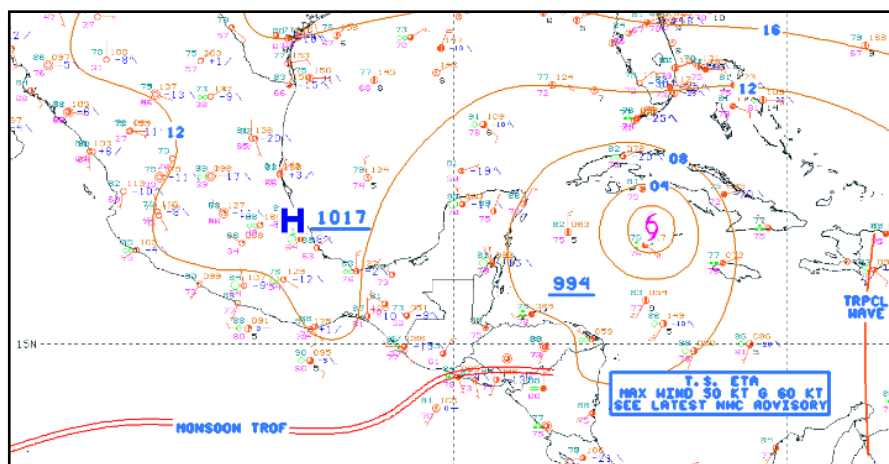


Figure 1 Surface analysis over the Caribbean area on 7 November at 1800UTC. Tropical Storm Eta was located west-northwest of the Cayman Islands. Source: US National Hurricane Center<sup>1</sup>

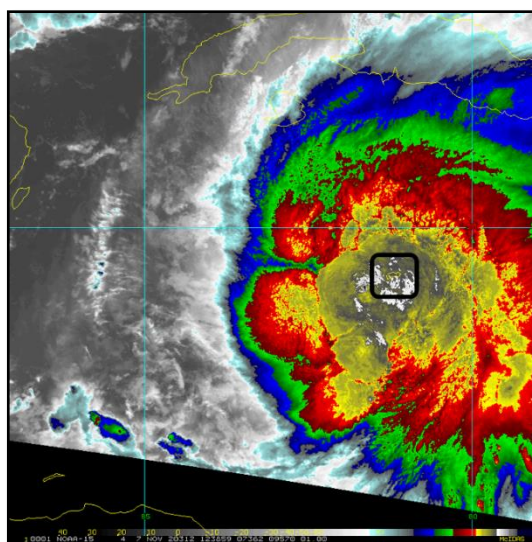


Figure 2 Satellite imagery on 7 November at 1238UTC from thermal infrared channel enhanced with colour. Blue/green colours represent high altitude clouds (top cloud temperature between  $-50^{\circ}\text{C}$  and  $-70^{\circ}\text{C}$ ), while the red/yellow colours represent very high altitude clouds (top cloud lower than  $-70^{\circ}\text{C}$ ). High altitude clouds indicate strong convection associated with intense precipitation. The island of Grand Cayman is indicated by the black square. Source: NOAA, National Environmental Satellite, Data and Information Service<sup>2</sup>.

---

<sup>1</sup> National Oceanic and Atmospheric Administration - FTP, National Hurricane Center, review date: 7 November 2020, available at: [https://www.nhc.noaa.gov/tafb/EPAC\\_18Z.gif](https://www.nhc.noaa.gov/tafb/EPAC_18Z.gif)

<sup>2</sup> RAMSDIS Online Archive, NOAA Satellite and Information Service, available at: [https://rammb-data.cira.colostate.edu/tc\\_realtime/storm.asp?storm\\_identifier=a1292020](https://rammb-data.cira.colostate.edu/tc_realtime/storm.asp?storm_identifier=a1292020)

---

### 3 CCRIF SPC MODEL OUTPUTS

Under CCRIF's loss calculation protocol, a CCRIF System for Probabilistic Hazard Evaluation and Risk Assessment (SPHERA) report is required for any tropical cyclone affecting at least one member country with winds greater than 39 mph (62.7 km/h).

Based on the SPHERA footprint for this tropical cyclone, wind speeds between 39.9 mph (64.2 km/h) and 43.7 mph (70.4 km/h) were estimated across the Cayman Islands. The wind footprint (Figure 3) and surge field are two of the outputs from the CCRIF model, which show the regions affected by certain extents of Tropical Cyclone Eta in the Cayman Islands. Due to the physical conditions of Tropical Cyclone Eta across the Cayman Islands, the storm surge was insignificant, did not contribute to the damage, and is therefore not shown on a hazard map.

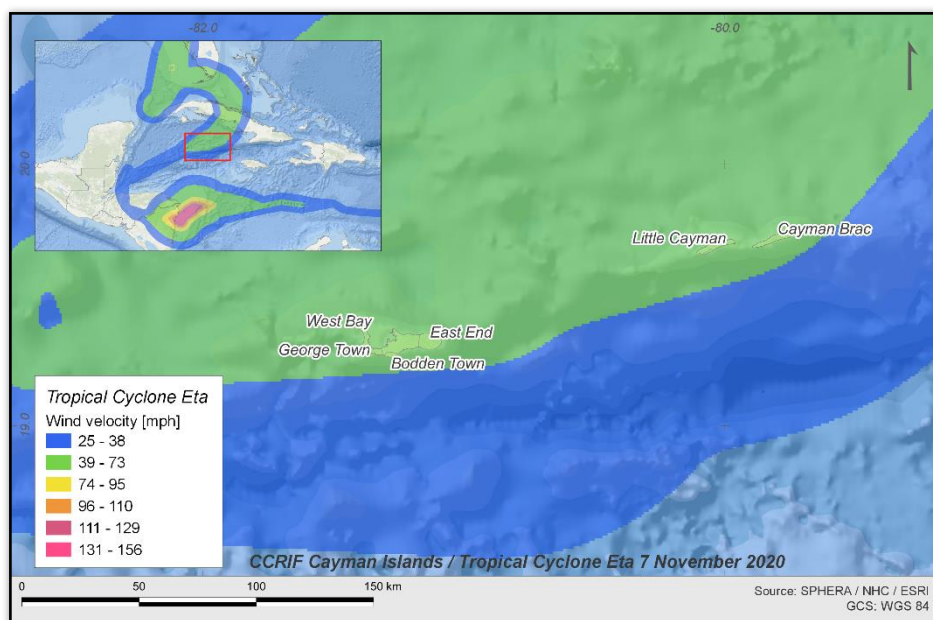


Figure 3 Map showing the wind field associated with Tropical Cyclone Eta in the Cayman Islands.  
Source: NHC & CCRIF/SPHERA

### 4 IMPACTS

Ten days after the passage of Tropical Cyclone Eta and according to a government statement<sup>3</sup>, Deputy Governor Franz Manderson reported that “We are very sorry that some of our residents suffered from the effects of Tropical Storm Eta, whether it was through flooding or any damage their homes or yards received or whether they lost power or water supply temporarily. However, we are indeed grateful to God that the majority on Grand Cayman have been spared the worst of the damage that could have been possible from Tropical Storm Eta”.

<sup>3</sup> All News – Cayman Islands Government, ‘Grand Cayman All Clear Issued’ (As if 7 November 2020), review date: 9 November 2020, available at: <https://www.gov.ky/all-news>



According to information published in the local news<sup>4</sup>, due to the Tropical Storm Eta, flooding, downed power lines and uprooted trees generated the greatest damage in Grand Cayman, resulting in interruptions of electric power that affected approximately 20,000 households. Multiple households were evacuated and remained in shelters. Due to the passage of Eta some sections of beach on the western coast of Grand Cayman were eroded. On the Sister Islands (Cayman Brac and Little Cayman), Eta caused flooding and power outages, but no structural damage was reported.

Prior to the arrival of Tropical Storm Eta, the Cayman Islands' authorities took precautionary measures such as activating the National Emergency Operations Centre (NEOC); putting into effect Tropical Storm, Marine and Flood Warnings as well as a Small Craft Advisory. As additional prevention measures the authorities closed some hospitals, ports, some government offices, supermarkets and schools; opened some emergency shelters; and temporarily suspended sea and air traffic.

Figure 4 shows some of the wind and storm surge damage caused by Tropical Storm Eta in the Cayman Islands.

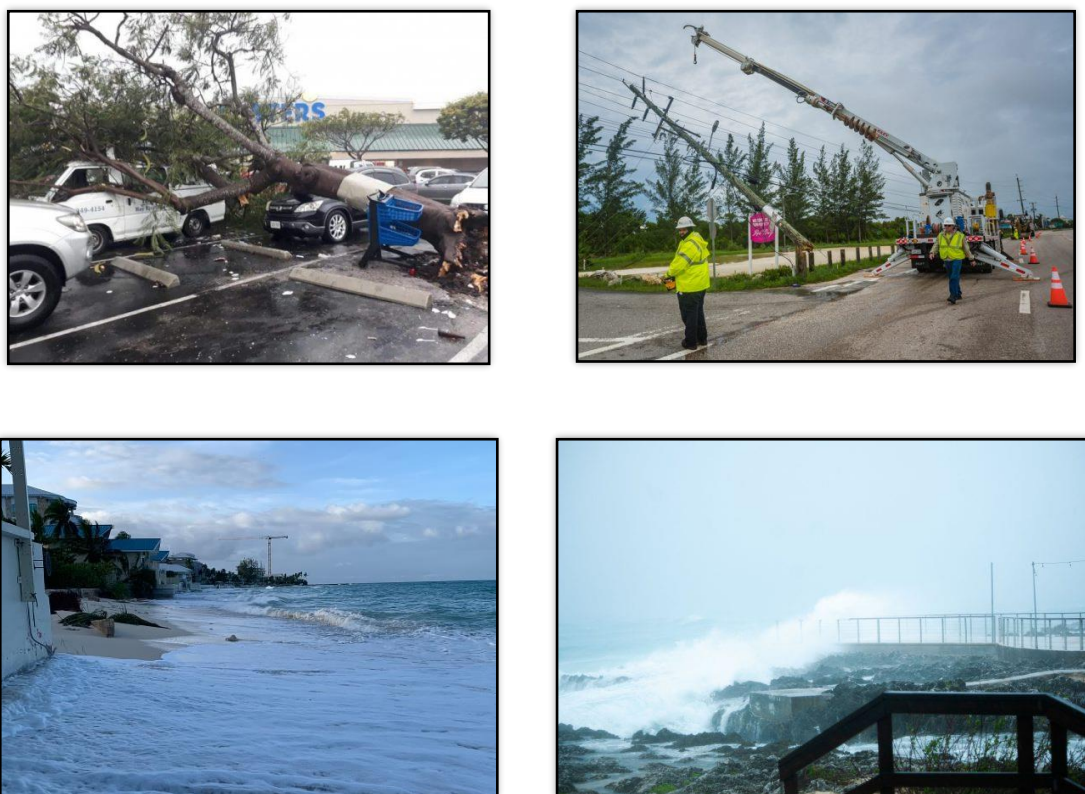


Figure 4 Some of the wind damage caused by Tropical Storm Eta in the Cayman Islands – November, 2020.  
Source: Cayman Compass

---

<sup>4</sup> Cayman Compass, 'TS Eta: Evacuees return to their homes, clean-up continues', review date: 9 November 2020, available at: <https://www.caymancompass.com/>

---

## **5 CCRIF LOSS MODEL**

For the Cayman Islands, the final runs of CCRIF's loss model for wind and storm surge generated government losses, but these losses were below the attachment point of the country's Tropical Cyclone policy and therefore no payout under the policy is due. The Aggregated Deductible Cover (ADC) for the policy was not activated because the modelled losses were below 10 per cent of the minimum payment. Therefore, no payment under the ADC feature for the Cayman Islands' Tropical Cyclone policy is due.

For additional information, please contact CCRIF SPC at: [pr@ccrif.org](mailto:pr@ccrif.org)