

# **Tropical Cyclone Humberto (AL092019)**

## **Wind and Storm Surge**

### **Event Briefing**

## **The Bahamas and the Turks and Caicos Islands**

**17 September 2019**

## 1 SUMMARY

Humberto was the ninth tropical cyclone in the 2019 Atlantic Hurricane Season. On 12 September it developed as a tropical depression over Bahamas Central<sup>1</sup> at a distance of approximately 350 km (217 mi) from the Turks and Caicos Islands. These islands were marginally affected by tropical-storm-force winds. In the following days, Humberto strengthened gradually, moving northwest and on 14 September it became a tropical storm. On the same day, it passed approximately 45 km (28 mi) from Great Abaco Island, The Bahamas, affecting The Bahamas North West region with tropical-storm-force winds.

Preliminary runs of the CCRIF loss model for wind and storm surge produced government losses for the Turks and Caicos Islands and The Bahamas North West. In both cases, these losses were below the attachment point of these countries' corresponding Tropical Cyclone policies. Therefore, no payout under the main policy is due for these countries.

The Aggregated Deductible Cover (ADC) for these countries' policy was not activated because the modelled losses were less than 50 per cent of the attachment point and there was no disaster alert declaration from ReliefWeb for these countries related to Tropical Cyclone Humberto. Therefore, no payment under the ADC is due.

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. The modelled losses due to rainfall for affected CCRIF member countries and the relationship of these losses to members' Excess Rainfall policies are described in a different event briefing.

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<sup>1</sup> The Bahamas Department of Meteorology defines geographic zones within The Bahamas for giving hurricane and severe weather alerts: North West, Central and South East. The Bahamas has a separate tropical cyclone policy for each zone.

## 2 INTRODUCTION

On 12 September at 2100UTC, the US National Hurricane Center (NHC) started to monitor a tropical depression that developed over Bahamas Central, with minimum central pressure estimated at 1008 mb. The tropical depression showed a very broad but closed circulation. The estimated centre of circulation was located at 23.42N, 74.48W approximately 217 mi (350 km) from the Turks and Caicos Islands, and about 235 mi (380 km) SE of Great Abaco Island (Bahamas North West). The maximum sustained winds were estimated at 30 mph (45 km/h) and the system presented a very slow forward velocity (2 mph, 4 km/h) toward the northwest.

At this time, the system was under the influence of a strong shear caused by an upper-level trough in the Gulf of Mexico, which hindered the intensification of the system. In the following 48 hours, the wind shear decreased, thus the tropical depression became more organized and the deep convection gradually increased.

On 14 September at 0300UTC, the NHC upgraded the tropical depression to a tropical storm, which was named Humberto. Its centre was located at approximately 25.6°N and 75.2°W, approximately 130 mi (210 km) ESE of Great Abaco Island. The maximum sustained winds were estimated at 40 mph (65 km/h), with tropical-storm-force winds extended outwards to 90 mi (150 km) from the centre. The storm moved northwest, towards The Bahamas North West, at 6 mph (9 km/h). On the same day at 1200UTC, the centre of Humberto passed 30 mi (45 km) E of Great Abaco Island (Figure 1 and Figure 2). Afterwards, the system moved towards the north-northwest heading away from The Bahamas. The forward velocity was low (7 mph, 11 km/h), thus tropical-storm-force winds affected Bahamas North West, mainly Great Abaco Island and Grand Bahama, for several hours. The satellite-based estimates reported in Figure 3 indicated that the strongest winds were located in the northeast quadrant of the tropical storm and that Bahamas North West was invested by winds between 23 mph (37 km/h) and 40 mph (74 km/h) from 14 September at 1200UTC to 16 September at 0000UTC. Afterwards, on 16 September at 0300UTC, the NHC reported that Humberto became a hurricane, while it was moving northeast over the western Atlantic Ocean. At the time of writing this report, Humberto is forecast to get close to Bermuda.

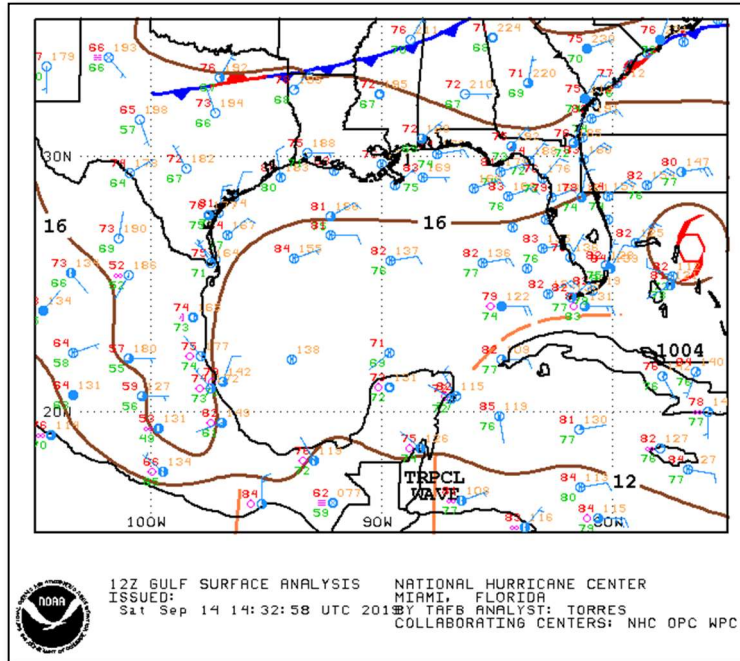


Figure 1 Surface analysis over the Gulf of Mexico area on 14 September at 1200UTC. The tropical storm is visible over Bahamas North West. Source: US National Hurricane Center (NHC)

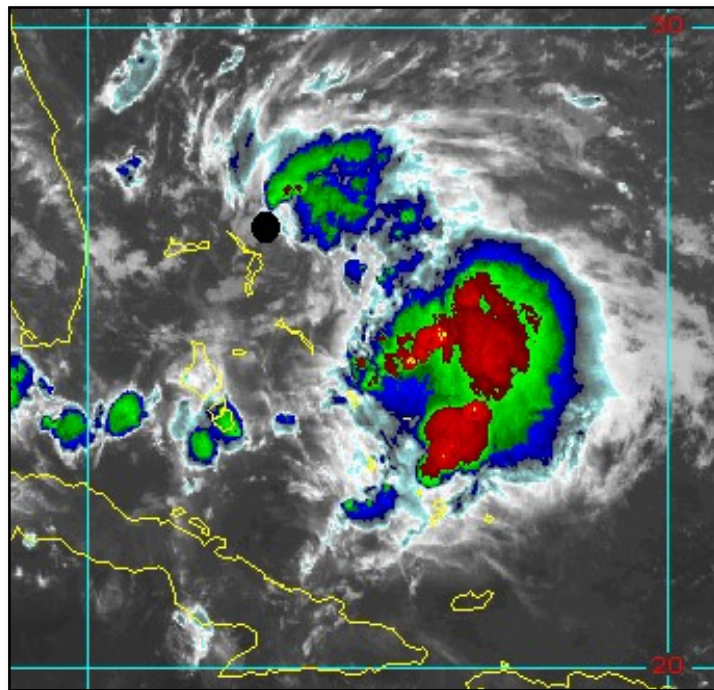
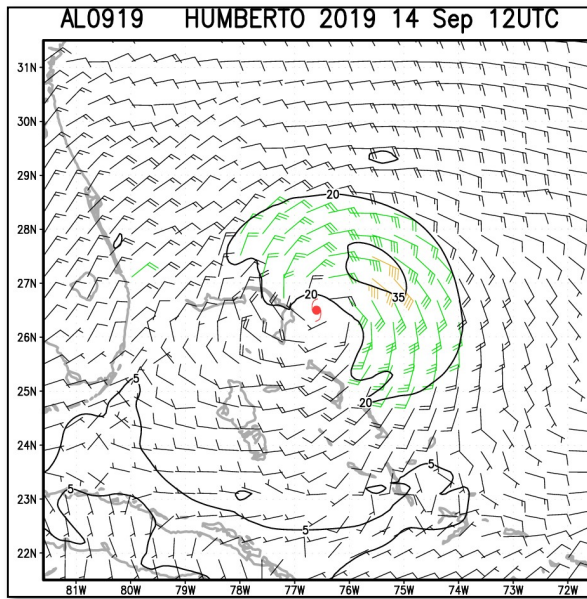
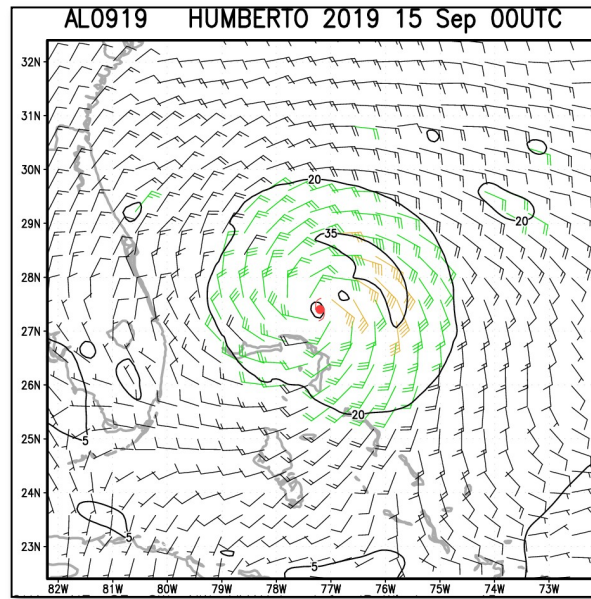


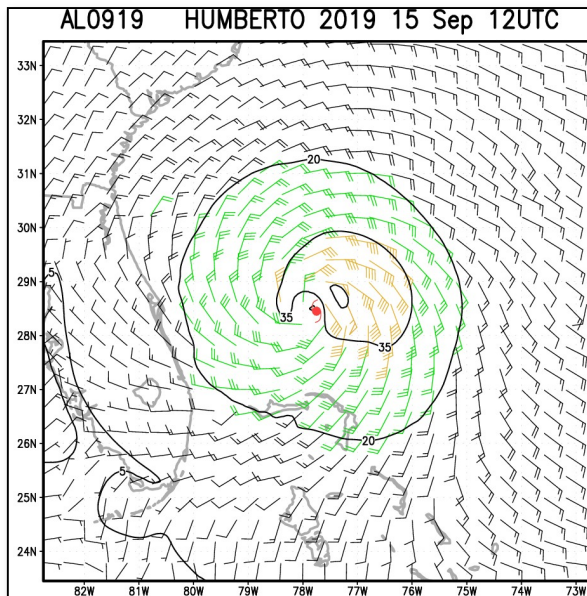
Figure 2 Satellite imagery on 14 September at 1200UTC from thermal infrared channel enhanced with colour. Blue/green colours represent high altitude clouds (top cloud temperature between  $-50^{\circ}\text{C}$  and  $-70^{\circ}\text{C}$ ), while the red colour represents very high altitude clouds (top cloud lower than  $-70^{\circ}\text{C}$ ). High altitude clouds indicate strong convection associated with intense precipitation. The centre of Tropical Storm Humberto is indicated by the black dot. Source: NOAA – Satellite and Information Service.



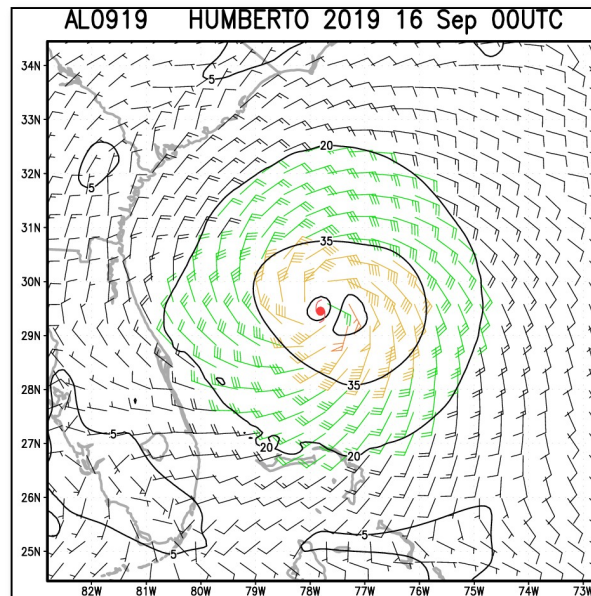
a) 14 September at 1200UTC



b) 15 September at 0000UTC



c) 15 September at 1200UTC



d) 16 September at 0000UTC

Figure 3 Multi-platform satellite surface wind analysis estimated at different times as indicated by the labels. Contouring indicates wind intensity at 20 kn (23 mph, 37 km/h), 35 kn (40 mph, 64 km/h), 50 kn (57 mph, 93 km/h). Source: NOAA, National Environmental Satellite, Data and Information Service

### 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). Tropical Cyclone Humberto qualified as a Loss Event<sup>2</sup> for The Bahamas North West and the Turks and Caicos Islands.

The wind footprint (Figures 4 and 5) and surge field are two of the outputs from the CCRIF model, which show the regions affected by certain magnitudes of Tropical Cyclone Humberto in each country.

Given that Humberto reached as a tropical storm close to the ESE of Great Abaco Island on September 14, and that Humberto’s trajectory was far from a member country, the storm surge values computed by the model were lower than 20 cm, which are too low to be represented on a hazard map.

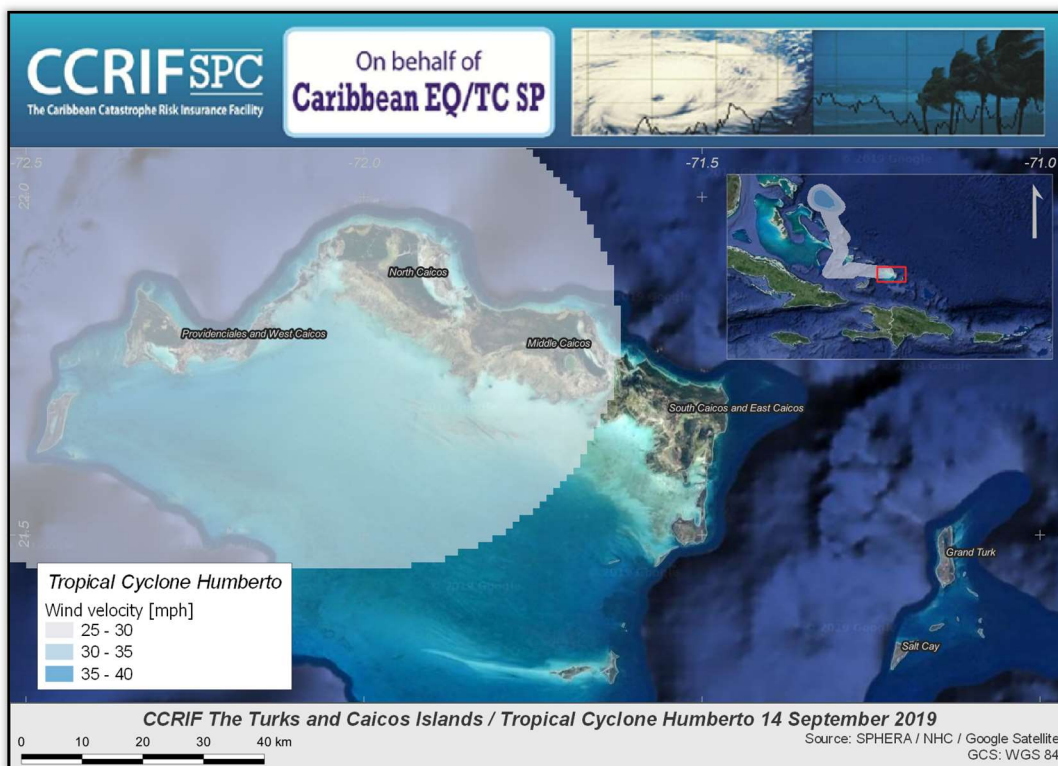


Figure 4 Map showing the wind field associated with Tropical Cyclone Humberto in the Turks and Caicos Islands. Source: NHC & CCRIF/SPHERA

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

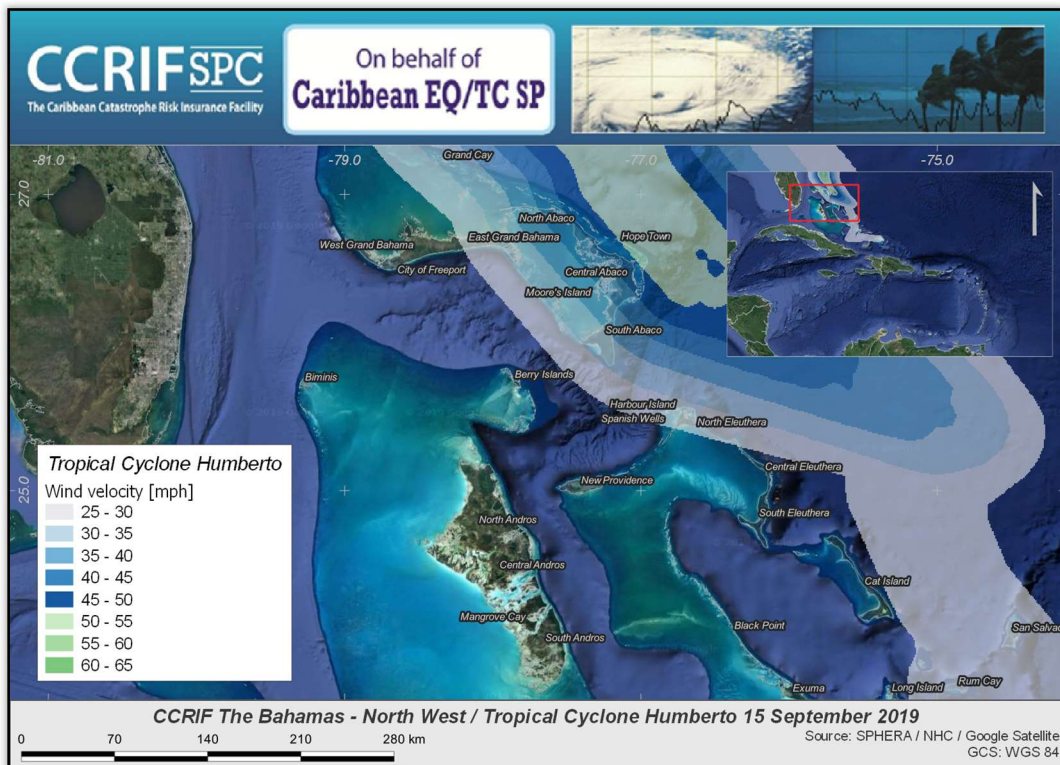


Figure 5 Map showing the wind field associated with Tropical Cyclone Humberto in The Bahamas North West. Source: NHC & CCRIF/SPHERA

## 4 IMPACTS

### The Bahamas North West

In The Bahamas North West, it is difficult to evaluate the impacts of Tropical Storm Humberto and to differentiate those from the catastrophic impacts of Hurricane Dorian. The passage of Dorian, the most powerful Atlantic Ocean hurricane in recorded history in The Bahamas, left total devastation with regards to these islands a few days earlier on 2-4 September as reported by authorities in The Bahamas.

Before the arrival of Tropical Storm Humberto, The Bahamas had suffered 50 official deaths and damage to 90 per cent and 60 per cent of housing and buildings structures on Grand Bahama and Great Abaco, respectively, which was caused by Hurricane Dorian in the days before.

At the time of this report and according to the reports and assessments provided by the National Emergency Management Agency (NEMA), the Grand Bahama International Airport had limited access for commercial flights. On 13 September, due to the passage of Hurricane Dorian, 16 shelters offered services to 2,151 citizens. Prior to the arrival of Tropical Cyclone Humberto, the authorities in The Bahamas carried out precautionary measures such as issuing:

- A Tropical Storm Warning.
- Temporary Flight Restriction for Grand Bahama and Abaco

### **Turks and Caicos Islands**

At the time of this writing, no information was available related to damage or loss in the Turks and Caicos Islands due to Tropical Cyclone Humberto.

A subsequent version of this report may be produced with updated information obtained from official reports or communications that are issued by the governments of these countries.

## **5 CCRIF LOSS MODEL**

For the Turks and Caicos Islands and The Bahamas North West, the preliminary runs of CCRIF's loss model for wind and storm surge generated government losses, but these losses were below the attachment point for the Tropical Cyclone policies and therefore no payout under the main policy is due. The Aggregated Deductible Cover (ADC) for these countries' policies were not activated because the modelled losses were less than 50 per cent of the attachment point and there was no disaster alert declaration for the Turks and Caicos Islands or The Bahamas from ReliefWeb related to Tropical Cyclone Humberto. Therefore, no payment under the ADC is due to these countries.

CCRIF expresses sympathy with the Government and people of The Bahamas for the impacts on communities and infrastructure caused by this event, especially at this vulnerable time as they recover from Hurricane Dorian.

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

### ***Evaluación de Riesgos Naturales***

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