



# **Tropical Cyclone Maria (AL152017)**

## **Wind and Storm Surge**

### **Preliminary Event Briefing**

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

**23 September 2017**

## 1 SUMMARY

Maria is the fifteen named storm of the 2017 Atlantic Hurricane Season. It formed as a tropical storm on 16 September at 2100UTC, east-southeast of the Lesser Antilles and it was upgraded to hurricane status on 17 September at 2100UTC. Maria intensified moving across the Atlantic Ocean and reached the Leeward Islands near Dominica as a major hurricane (category 5) on 18 September at approximately 2345UTC.

This report presents the impacts of Maria on CCRIF member countries the Turks and Caicos Islands and The Bahamas.

The preliminary runs of CCRIF's loss model for wind and storm surge produced government losses for the Turks and Caicos Islands above the attachment point for its Tropical Cyclone (TC) policy. Preliminary calculations show that a payout of US\$419,372 is due. In the case of The Bahamas, the preliminary runs of CCRIF's loss model for wind and storm surge produced no government losses, and therefore no payout is due.

This event briefing is designed to review the CCRIF modelled losses from wind and storm surge but not rainfall. Separate briefings that address loss and damages from excess rainfall will be issued.

## 2 INTRODUCTION

On 16 September 2017 at 2100UTC, the US National Hurricane Center (NHC) reported that a tropical storm named Maria had developed over the far eastern Atlantic, with maximum sustained winds of 50 mph (85 km/h). In the next 24 hours, Maria moved toward the west-northwest at almost 15 mph (24 km/h) and it rapidly intensified due to the favourable thermodynamic environment: low-shear, humid layers and the passage over warm sea. At that time Maria was upgraded to a category 1 hurricane on the Saffir-Simpson Hurricane Wind Scale and was located at 13.8N, 57.5W. It featured maximum sustained winds of 75 mph (120 km/h), and the estimated minimum pressure was 982 mb (Figure 1).

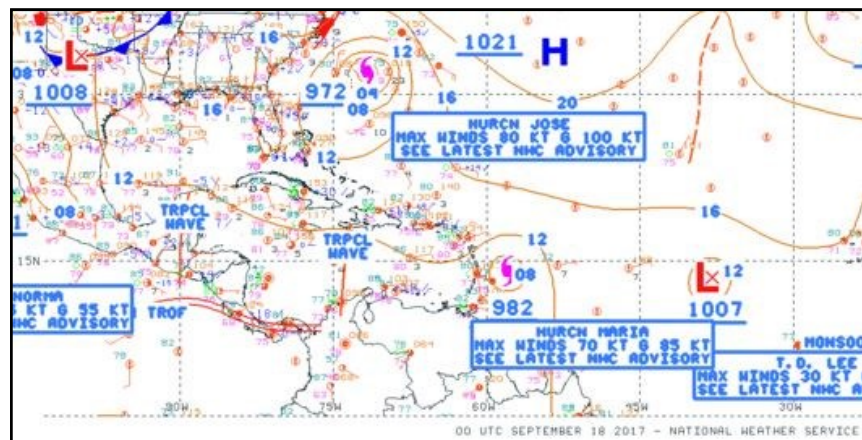


Figure 1 Surface analysis of the tropical Atlantic on 18 September 00UTC. Source: NOAA Ocean Prediction Center

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On 22 September at approximately 0000UTC, Maria, , headed towards the eastern part of the Turks and Caicos Islands with maximum sustained winds of 125 mph (205 km/h) reported by a US Air Force reconnaissance plane. At that time, the eye of the hurricane was located near 20.9N, 70.0W surrounded by a ring of deep convection (Figure 2b and Figure 2c).

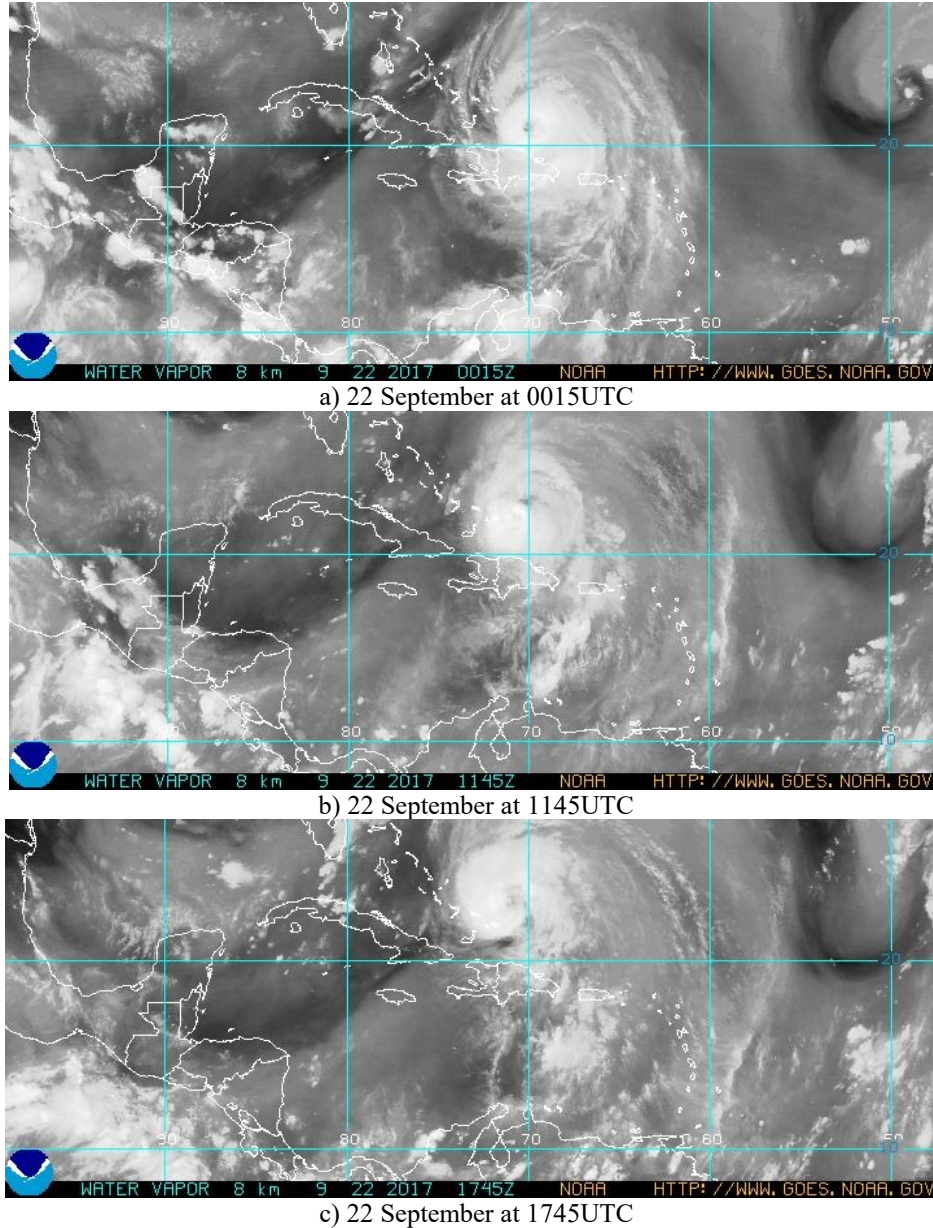


Figure 2 Maria's evolution over Greater Antilles. Source: <https://www.goes.noaa.gov/>

At 1145UTC, Maria, as a category 3 hurricane, was located north north-east of Grand Turk Island and north of the Dominican Republic with maximum sustained winds of almost 125 mph (205 km/h) with higher gusts. The system was moving toward the northwest at almost 7 mph (11 km/h) and the minimum central pressure reported by the Air Force Reserve Hurricane Hunter was 959 mb (Figure 3).

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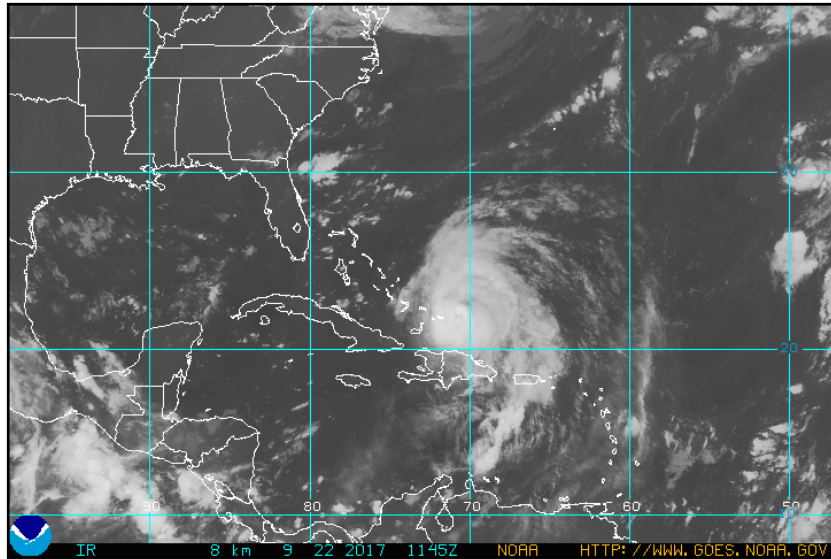


Figure 3 GOES infrared satellite image on 22 September at 1145UTC. Source: <https://www.goes.noaa.gov/>

After 12 hours, at 0000UTC, the centre of Maria passed over Greater Antilles, affecting the Turks and Caicos Islands and Puerto Rico with hurricane-force winds. Maria affected the south-eastern Bahamas, Dominican Republic and Leeward Islands with tropical-storm-force winds; an unmanned aerial vehicle launched from the NOAA P3 aircraft reported that the maximum sustained winds were almost 125 mph (205 km/h) (Figure 4).

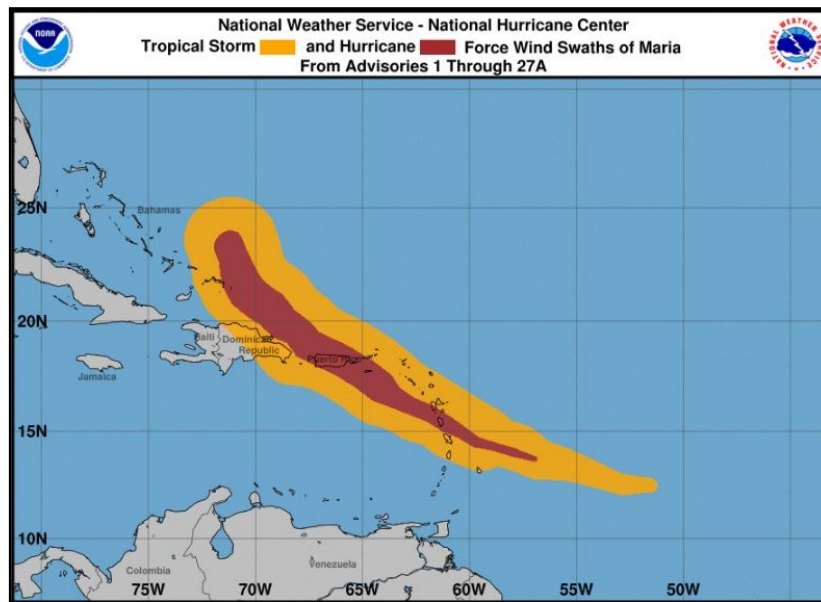


Figure 4 Maria's track and contouring of the wind speed intensity. Source: NHC

At the time of this report, Maria is forecasted to affect the coast of North Carolina, United States, before becoming a tropical storm in the next two days.

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### 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 the Turks and Caicos Islands, Tropical Cyclone Maria qualified as a Triggering Event<sup>1</sup> and for The Bahamas, Tropical Cyclone Maria qualified as a Reportable Event<sup>2</sup>.

The wind footprint (Figure 5 and Figure 7) and surge field (Figure 6 and Figure 8) are two of the outputs from the CCRIF model. These figures show the regions affected by different magnitudes of wind velocity and storm surge in each country.

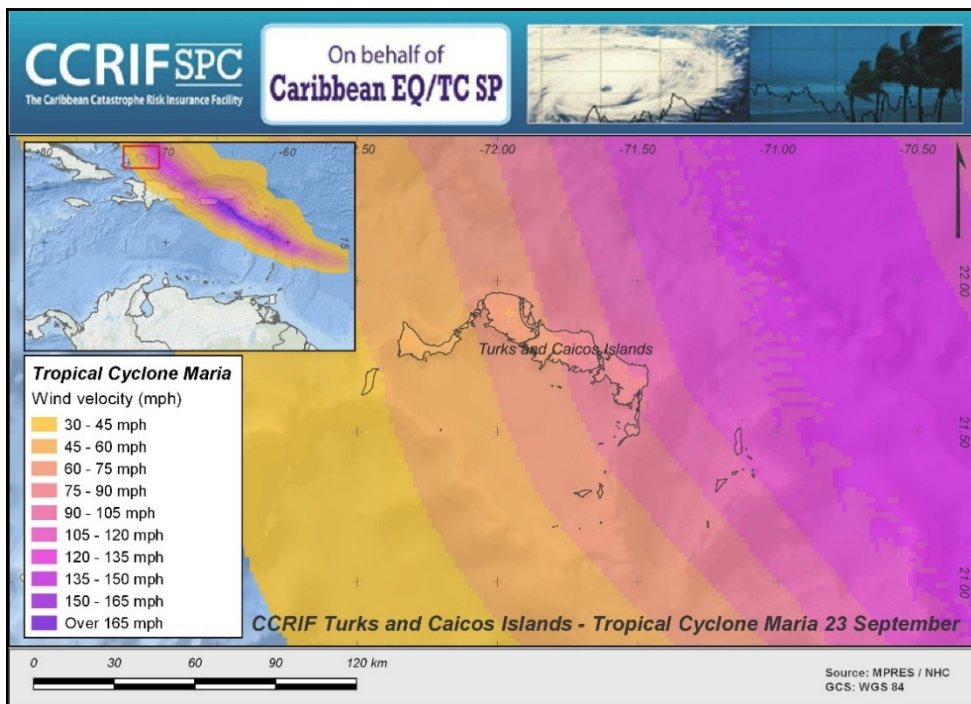


Figure 5 Map showing the wind field associated with Tropical Cyclone Maria on Turks and Caicos Islands.  
Source: NHC & CCRIF/MPRES

<sup>1</sup> An event occurs and triggers one or more policies.

<sup>2</sup> An event occurs but does not register a loss in any CCRIF country within the MPRES loss model.

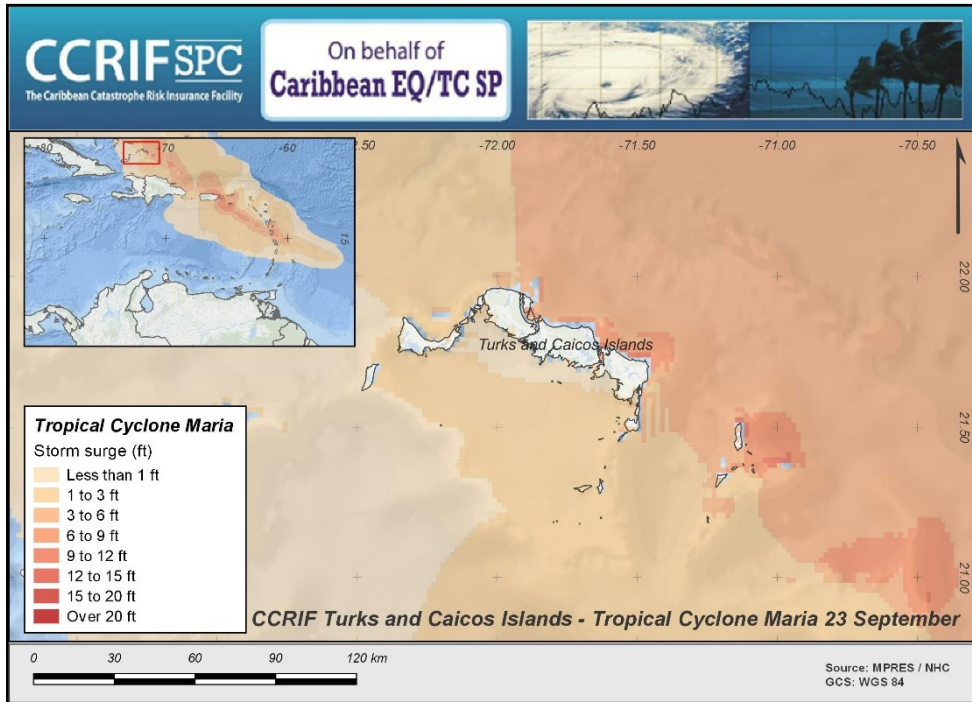


Figure 6 Map showing the storm surge field associated with Tropical Cyclone Maria on Turks and Caicos Islands.  
Source: NHC & CCRIF/MPRES

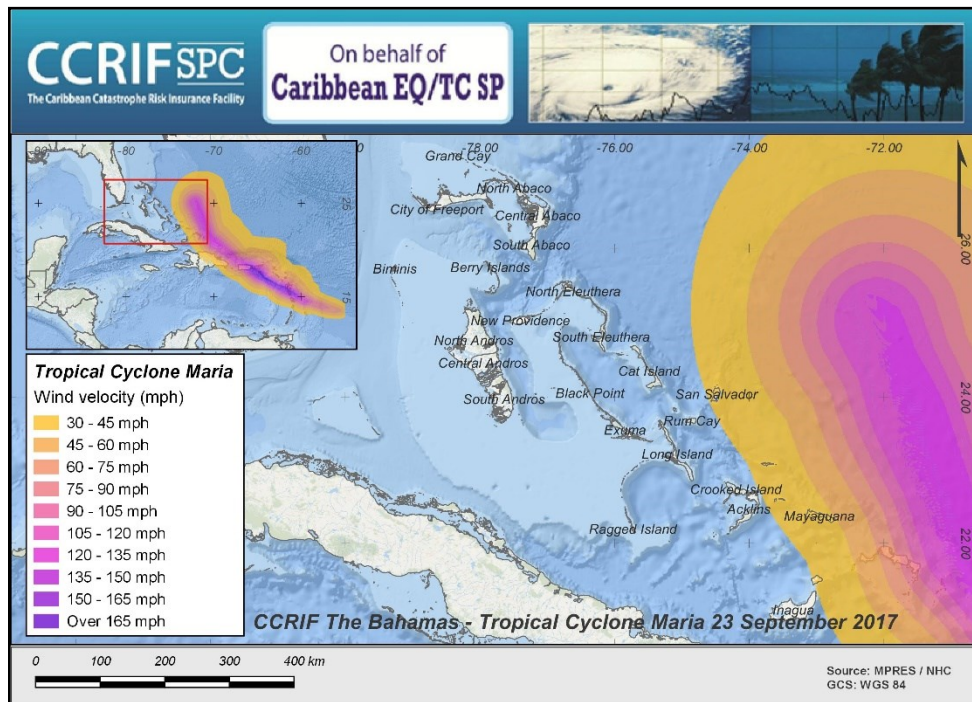


Figure 7 Map showing the wind field associated with Tropical Cyclone Maria on The Bahamas.  
Source: NHC & CCRIF/MPRES

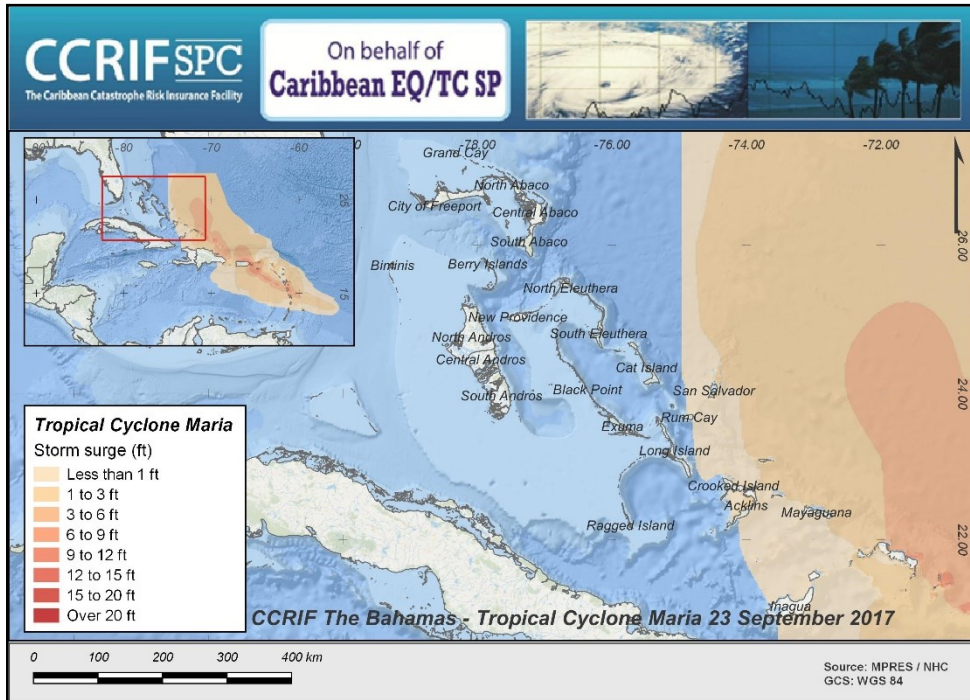


Figure 8 Map showing the storm surge field associated with Tropical Cyclone Maria on The Bahamas.  
Source: NHC & CCRIF/MPRES

## 4 IMPACTS

### Turks and Caicos Islands

According to the Foreign Office, the passage of Hurricane Maria added to the extensive damage caused by Hurricane Irma, as this was the second major storm to affect the region in the last two weeks.

At the time of this report, the local and regional news<sup>3</sup> reported that some houses had been destroyed.

Prior to the arrival of Hurricane Maria, Turks and Caicos Islands' authorities took precautionary measures, including closing businesses on 22 September.

Figure 9 shows the damage caused by Hurricane Maria in the Turks and Caicos Islands.



Figure 9 Damage caused by Hurricane Maria in the Turks and Caicos Islands – September 2017.  
Source: *Cable News Network*

### The Bahamas

At the time of this writing there are no reports of damage for this TC in The Bahamas. Prior to the arrival of Hurricane Maria, The Bahamas' authorities took precautionary measures, including opening shelters, partially activating the National Emergency Operations Centre (NEOC) and activating Level II of the Standard Operating Procedures of the disaster plan.

Prime Minister, Dr. the Hon. Hubert A. Minnis, said via radio, television, Live Stream and other social media to get his message of preparedness out to Bahamians, other residents and visitors.

<sup>3</sup> CNBC, available in: <https://www.cnbc.com/>



## **5 CCRIF LOSS MODEL**

Modelled losses due to wind and storm surge and any resultant payouts are based on the conditions selected by member countries for their Tropical Cyclone policies.

The preliminary runs of CCRIF's loss model for wind and storm surge produced government losses for the Turks and Caicos Islands above the attachment point for its Tropical Cyclone (TC) policy. Preliminary calculations show that a payout of US\$ 419,372 is due. In the case of The Bahamas, the preliminary runs of CCRIF's loss model for wind and storm surge produced no government losses, therefore no payout is due.

CCRIF expresses sympathy with the Government and people of Turks and Caicos Islands for the impacts on communities and infrastructure caused by this event.

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

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