CCRIF SPC
The Caribbean Catastrophe Risk Insurance Facility

Tropical Cyclone Fiona (AAL072022)

Wind and Storm Surge

Final Event Briefing

Turks and Caicos
Haiti
The Bahamas South-East

30 September 2022

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1 SUMMARY

Hurricane Fiona was the sixth named tropical cyclone of the 2022 Atlantic Hurricane Season. On 20 September, Fiona made landfall on the Turks and Caicos Islands as a major hurricane, with hurricane-force winds affecting this country and the nearby islands of The Bahamas South-East. [1]Moreover, tropical-storm-force winds also affected Haiti. At the time of writing this report, Fiona was heading for the western North Atlantic Ocean.

The final runs of the CCRIF loss model for wind and storm surge produced government losses for the Turks and Caicos Islands, Haiti and The Bahamas South-East. For all three Tropical Cyclone policies, the government losses were below the attachment point. Therefore, no payouts under the policies for the Turks and Caicos Islands, Haiti and The Bahamas South-East are due.

However, the Aggregated Deductible Cover (ADC) for the tropical cyclone policy for the Turks and Caicos Islands was activated because a disaster alert declaration for this country from ReliefWeb was issued related to Tropical Cyclone Fiona and the modelled losses were above 10% of the Minimum Payment for this country's Tropical Cyclone policy. Therefore, a payment under the ADC is due for the Turks and Caicos Islands. Final calculations show that payout is due to the country policy as follows:

Tropical Cyclone Policy	ADC Payment
Turks and Caicos Islands	US$668,856.90

Although there was a disaster alert declaration for The Bahamas from ReliefWeb related to Tropical Cyclone Fiona, the Aggregated Deductible Cover (ADC) for the Tropical Cyclone policy for The Bahamas, South-East, was not activated because the modelled losses were below 10% of the Minimum Payment of the policy for the Tropical Cyclone policy for The Bahamas South-East. Therefore, no payment under the ADC is due for The Bahama, South-East.

Finally, the Aggregated Deductible Cover (ADC) feature for the Tropical Cyclone policy for Haiti was not activated. For Haiti, the modelled loss amount was between 10% of the Minimum Payment and 50% of the Policy Attachment Point. However, at the time of issuing this final event briefing, a disaster alert was not reported by ReliefWeb for Haiti due to Tropical Cyclone Fiona. Therefore, no payment under the ADC feature is due for Haiti.

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.

[1] The Government of Bahamas has three Tropical Cyclone policies: one for The Bahamas South East, one for The Bahamas Central and one for The Bahamas North West.

2 INTRODUCTION

On 17 September, Tropical Cyclone Fiona made landfall as a tropical storm on Guadeloupe, spreading tropical-storm conditions over the northern Leeward Islands. The next day, on 18 September, Fiona crossed the northeastern Caribbean Sea towards Puerto Rico. Over the Caribbean Sea, the warm sea surface temperature and the sufficient mid-level moisture favoured the intensification of the system and on 18 September at 1500UTC it became a hurricane, with its centre located near latitude 17.3°N, longitude 66.5°W, approximately 50 mi (80km) S of Puerto Rico. A few hours later, at 1920UTC, Fiona eye made landfall on the Dominican Republic as a category 1 hurricane. Hurricane conditions spread over the Dominican Republic and Puerto Rico.

On 19 September at 1800UTC, Hurricane Fiona left the northern coast of the Dominican Republic and moved into the northern Atlantic Ocean. At this time, the hurricane eye was sited near latitude 19.6° North, longitude 69.5° West, approximately 160 mi (270 km) SE of Grand Turks Island, Turks and Caicos Islands. The minimum central pressure was 975 mb and the maximum sustained winds were estimated at 90 mph (150 km/h). The system moved towards northwest with an estimated forward velocity of 9 mph (15 km/h), proceeding along the southwest periphery of a subtropical high-pressure system. Fiona was affected by a moderate south-westerly wind shear, which caused a slight misalignment of the low-level circulation centre with the main convective mass.

The environmental conditions over the water to the north of the island of Hispaniola (comprising Haiti and the Dominican Republic) were particularly favourable for a further reinforcement of the hurricane (sea surface temperature greater than 20°C, abundance of upper-level moisture), and on 20 September at 0600UTC, Fiona strengthened, becoming a major hurricane (Figure 1). The estimated maximum sustained winds were at near 115 mph (185 km/h), with hurricane-force winds extending outward up to 30 miles (45 km) from the centre and tropical-storm-force winds extending outward up to 150 miles (240 km). At this time, Fiona's centre was located near latitude 20.9° North, longitude 70.8° West, about 45 mi (70 km) SE of Grand Turks Island, Turks and Caicos Islands (Figure 2). The Turks and Caicos Islands were already affected by tropical-storm-force winds, which became hurricane-force winds starting from 0900UTC (Figure 3a). At this time, the northern coast of Haiti and The Bahamas South-East, also started to be affected by tropical-storm-force winds.

In the next few hours, Fiona gradually turned toward the north with unchanged forward velocity, moving along the western periphery of the subtropical ridge. It presented unvaried intensity and features. Its eye passed a few kilometers away from the Turks and Caicos Islands, where hurricane-force winds persisted until 21 September at 0000UTC (Figure 3b), while The Bahamas South-East was affected by hurricane-force winds from 20 September at 1800 to 21 September at 0000UTC (Figure 3b).

On 21 September at 0000 UTC, Fiona moved away from the waters surrounding the Turks and Caicos Islands and the hurricane conditions gradually ceased over this country. Afterwards, Fiona continued to proceed over the North Atlantic Ocean as a major hurricane and at the time of writing

this report it was in the vicinity of Bermuda.

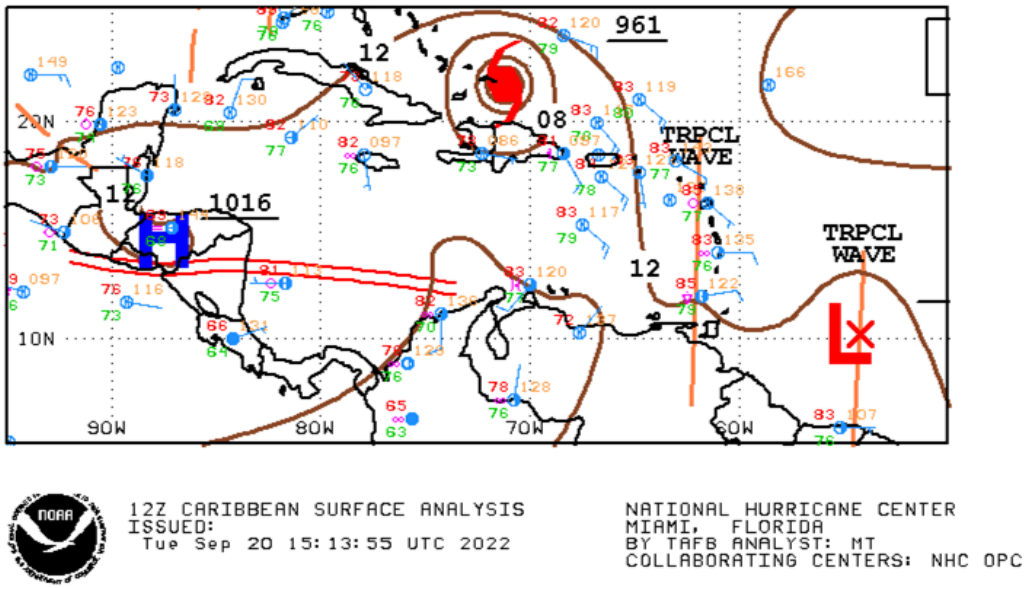

Figure 1 Surface analysis over the Caribbean area on 20 September at 1200UTC. Tropical Cyclone Fiona was located over the Turks and Caicos Islands. Source: US National Hurricane Center[2]

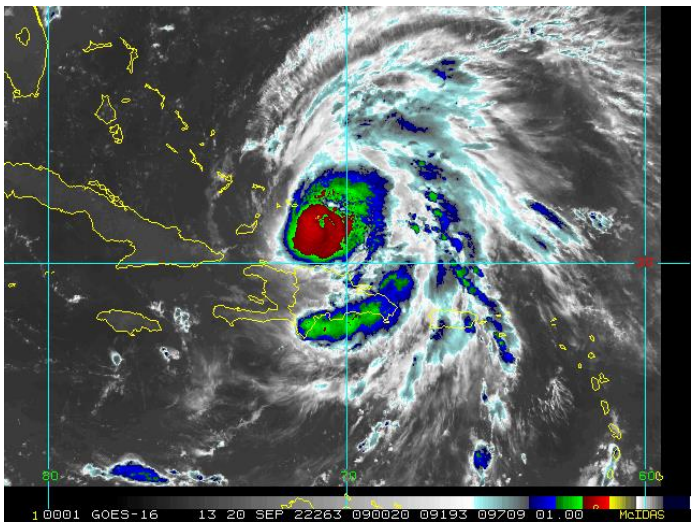

Figure 2 Satellite imagery on 20 September at 0900UTC from thermal infrared channel enhanced with colour. Blue/green colours represent high altitude clouds (top cloud temperature between -50°C and -70°C), while the red/yellow colours represent very high altitude clouds (top cloud lower than -70°C). High altitude clouds indicate strong convection associated with intense precipitation. Source: NOAA, National Environmental Satellite, Data and Information Service3.

[2]National Oceanic and Atmospheric Administration - FTP, National Hurricane Center, review date: 20 September 2022, available at: *https://www.nhc.noaa.gov/tafb/CAR_12Z.gif*

[3]RAMSDIS Online Archive, NOAA Satellite and Information Service, available at: https://rammb-data.cira.colostate.edu/tc_realtime/storm.asp?storm_identifier=al072022

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). Turks and Caicos, Haiti and The Bahamas South-East were affected by Tropical Cyclone Fiona, which qualified as a Loss Event[4] for the three countries.

The wind footprint and surge field are two of the outputs from CCRIF´s model. Figure 4 shows the wind footprint for the regions affected by Tropical Cyclone Fiona. Due to the relatively low wind speeds, storm surge was insignificant and did not contribute to the damage. Therefore, storm surge is not shown on the hazard map.

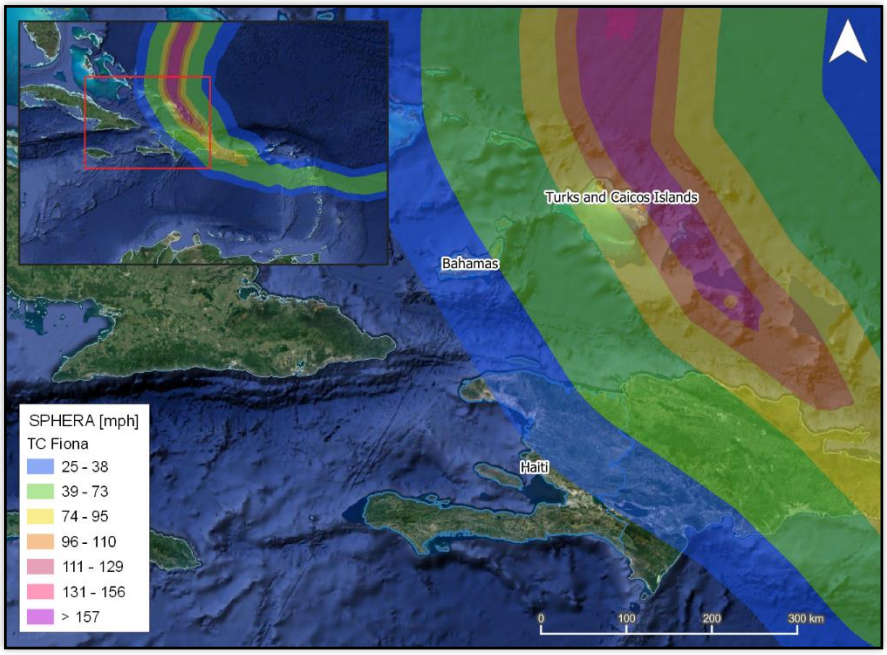

Figure 4 Map showing the wind field associated with Tropical Cyclone Fiona.s.
Source: NHC & CCRIF/SPHERA

4 IMPACTS

According to local news[5], in the Turks and Caicos Islands, officials urged people to flee flood-prone areas since the storm surge could raise water levels. They reported a few downed trees and electric post and that telecommunications were affected. No loss of life was reported.

At the time of writing this report, no further information was available related to damage or loss in Haiti and The Bahamas South-East due to the passing of TC Fiona.

[4] Any Tropical Cyclone event which produces a modelled loss greater than zero in one or more policyholder countries.
[5] Fiona Swipes Turks And Caicos, Puerto Rico Faces Big Cleanup - Bloomberg

5 CCRIF LOSS MODEL

Final runs of the CCRIF loss model for wind and storm surge produced government losses for Turks and Caicos, Haiti and The Bahamas South-East, which were below the attachment point of each country's tropical cyclone policy.

For Turks and Caicos, the Aggregated Deductible Cover (ADC) feature for the Tropical Cyclone policy was activated and a payment is due. This additional coverage was triggered because (i) a Disaster Alert (51322) for the Turks and Caicos Islands from ReliefWeb related to Tropical Cyclone Fiona was issued and (ii) the modelled losses were above 50 per cent of the attachment point for this country's Tropical Cyclone policy.

For Haiti, the Aggregated Deductible Cover was not activated. The modelled loss was between 10 per cent of the minimum payment and 50 per cent of the attachment point, but at the time of writing this report no Disaster Alert was issued for Haiti by ReliefWeb due to Tropical Cyclone Fiona.

For The Bahamas South-East, the Aggregated Deductible Cover (ADC) feature for the Tropical Cyclone policy was not activated although there was a disaster alert declaration for The Bahamas from ReliefWeb related to Tropical Cyclone Fiona the modelled losses were below 10 per cent of the Minimum Payment of the policy for this country. Therefore, no payments under the ADC feature are due for The Bahamas South-East.

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