



Tropical Cyclone Fiona (AAL072022)

Wind and Storm Surge

Final Event Briefing

Leeward Islands

19 September 2022

1 SUMMARY

Tropical Storm Fiona was the sixth named tropical cyclone of the 2022 Atlantic Hurricane Season. On 16 and 17 September, Fiona passed over the Northern Leeward Islands. In particular, tropical-storm-force winds spread over Antigua and Barbuda, Montserrat and Saint Kitts and Nevis. At the time of writing this report, Fiona had just made landfall over the Dominican Republic as a hurricane and it was heading for the Turks and Caicos Islands.

The final runs of the CCRIF loss model for wind and storm surge produced government losses for Antigua and Barbuda, Montserrat and Saint Kitts and Nevis. For all three Tropical Cyclone policies, the government losses were below the attachment point. Therefore, no payouts under the policies for Antigua and Barbuda, Montserrat and Saint Kitts and Nevis are due.

The Aggregated Deductible Cover (ADC) feature for the Tropical Cyclone policies for Antigua and Barbuda, Montserrat and Saint Kitts and Nevis were not activated. For Antigua and Barbuda and Montserrat, the modelled losses were below 10% of the Minimum Payment of the policy for these countries' Tropical Cyclone policies. Therefore, no payments under the ADC feature are due for Antigua and Barbuda and Montserrat. For Saint Kitts and Nevis, 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 Saint Kitts and Nevis due to this tropical cyclone. Therefore, no payment under the ADC feature is due for Saint Kitts and Nevis.

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. Antigua and Barbuda, Montserrat and Saint Kitts and Nevis were the only CCRIF member countries for which the CCRIF loss model for wind and storm surge produced government losses due to Tropical Cyclone Fiona. A separate report on rainfall impacts on affected CCRIF member countries will be issued if applicable.

2 INTRODUCTION

On 14 September at 0150 UTC, the US National Hurricane Center (NHC) reported that a Tropical Storm named Fiona developed from a tropical depression located over the western central Atlantic Ocean. Its centre was approximately sited near latitude 16.8° north, longitude 52.0° west, about 640 mi (1030 km) E of the Northern Leeward Islands. The minimum central pressure was 1002 mb and the maximum sustained winds were estimated at 50 mph (85 km/h). The system moved towards the west with the estimated forward velocity of 14 mph (22 km/h). The storm was affected by a moderate to strong westerly-northwesterly wind shear, which caused the misalignment of the low-level circulation centre with the main convective mass. This feature persisted in the next two days and hindered a quick intensification of the system. Moreover, along its track towards the Northern Leeward Islands, Fiona went through a region characterized by dry air, which further interfered with the strengthening of the system.

The intensity and features of Tropical Storm Fiona were almost unchanged on 16 September at 2100 UTC, when tropical storm conditions spread across portions of the Northern Leeward Islands. The system centre was located about 20 mi (35 km) E-NE of Guadeloupe (16.4°N, 61.1°W) and presented a sheared shape, with the bulk of convective activity shifted to the east of the circulation centre. The maximum sustained winds were unvaried at near 50 mph (85km/h) and tropical-storm-force winds extended outward from the centre up to 140 miles (220 km).

In the next 6 hours, Fiona continued to move westward. During this period, its centre made landfall over Guadeloupe and, afterwards, it passed over the waters to the south of Antigua and Barbuda and Montserrat (Figure 1).

On 17 September at 0300 UTC, the system centre was located about 5mi (10km) S of Montserrat (16.6°N, 62.2°W). The environmental conditions began to be slightly more favourable for intensification of the storm, due to a gradual air moistening. As a result, the maximum sustained winds increased to 60 mph (95 km/h). Moreover, the satellite imagery showed a core of deep convection developing in the vicinity of the circulation centre, despite the fact that most of the convective activity was still displaced to its east (Figure 2). Due to the asymmetrical feature of the tropical storm, the highest winds affected mainly the north and east quadrants from the centre. Consequently, tropical-storm-force winds started to affect Antigua and Barbuda and Montserrat only at this time (Figure 3a). They persisted over these countries for the next 6 hours.

At 0900 UTC, Fiona's centre was located approximately 75mi (121km) SW of Montserrat, over the northeastern Caribbean Sea. The system maintained its westward movement, with unchanged forward velocity. The estimated intensity was unvaried. Starting from this time, tropical-storm-force winds spread over Saint Kitts and Nevis and continued for the next three hours (Figure 3b).

In the next day, Fiona crossed the northeastern Caribbean Sea heading for Puerto Rico, and it became a hurricane on 18 September at 1500UTC, when its centre was located 50 mi (80km) S of Puerto Rico. At the time of writing this report, Fiona had just made landfall on the Dominican Republic as a category 1 hurricane and was heading towards the Turks and Caicos Islands.

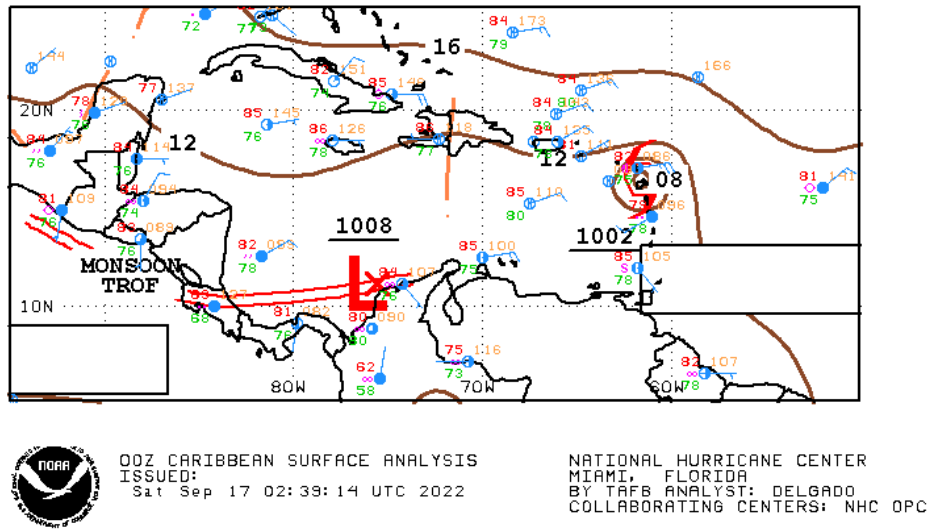


Figure 1 Surface analysis over the Caribbean area on 17 September at 0000UTC. Tropical Cyclone Fiona was located over the Northern Leeward Islands. Source: US National Hurricane Center¹

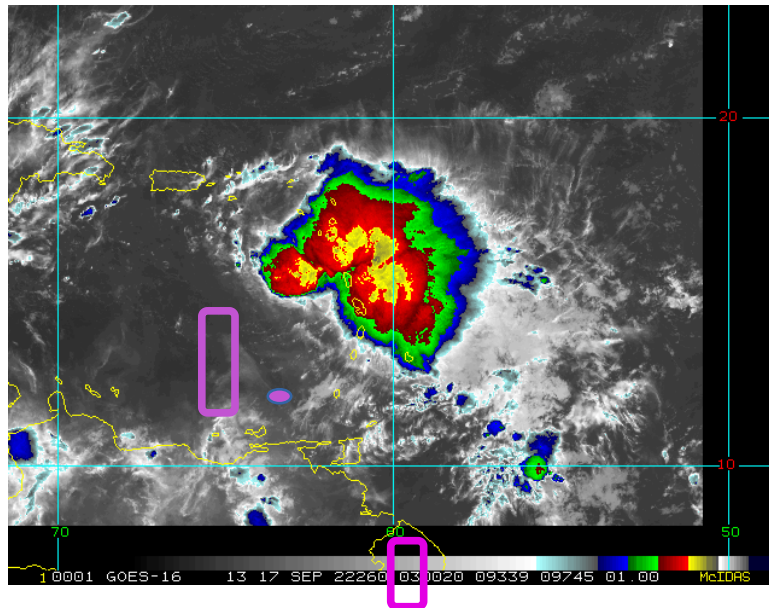


Figure 2 Satellite imagery on 17 September at 0300UTC from thermal infrared channel enhanced with colour. Blue/green colours represent high altitude clouds (top cloud temperature between -50°C and -70°C), while the red/yellow colours represent very high altitude clouds (top cloud lower than -70°C). High altitude clouds indicate strong convection associated with intense precipitation. The circulation centre is indicated by the violet point, while Antigua and Barbuda, Montserrat and Saint Kitts and Nevis are surrounded by a violet square. Source: NOAA, National Environmental Satellite, Data and Information Service².

¹National Oceanic and Atmospheric Administration - FTP, National Hurricane Center, review date: 17 September 2022, available at: https://www.nhc.noaa.gov/tafb/CAR_00Z.gif

²RAMSDIS Online Archive, NOAA Satellite and Information Service, available at:

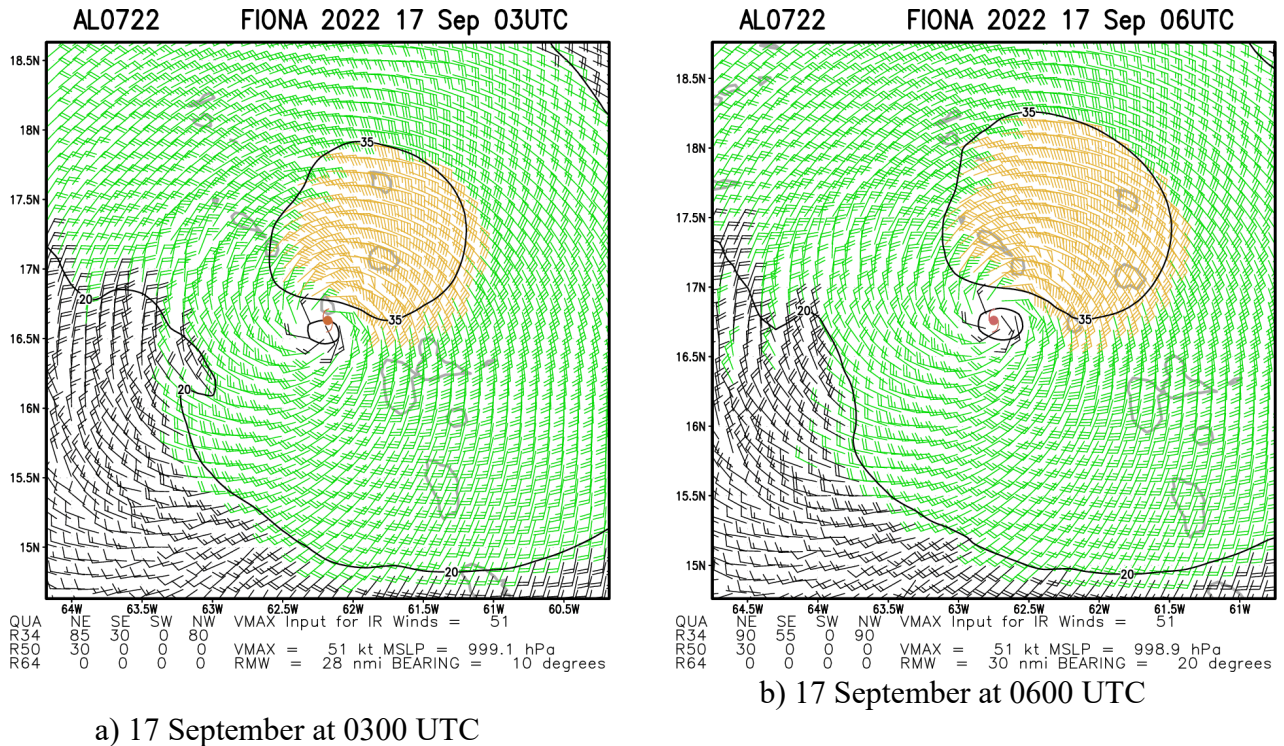


Figure 3 Multiplatform satellite based tropical cyclone surface wind analysis estimated on 17 September at different times as indicated in the labels. Contouring indicates wind intensity at 20 kn (23 mph, 37 km/h) and at 35 kn (40mph, 65km/h). Source: NOAA, National Environmental Satellite, Data and Information Service³

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). Antigua and Barbuda, Saint Kitts and Nevis and Montserrat were affected by Tropical Cyclone Fiona, which qualified as a Loss Event⁴.

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 in the Leeward Islands. 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.

https://rammb-data.cira.colostate.edu/tc_realtime/storm.asp?storm_identifier=al072022

³RAMSDIS Online Archive, NOAA Satellite and Information Service, available at:

https://rammb-data.cira.colostate.edu/tc_realtime/storm.asp?storm_identifier=al072022

⁴ Any Tropical Cyclone event which produces a modelled loss greater than zero in one or more policyholder countries.

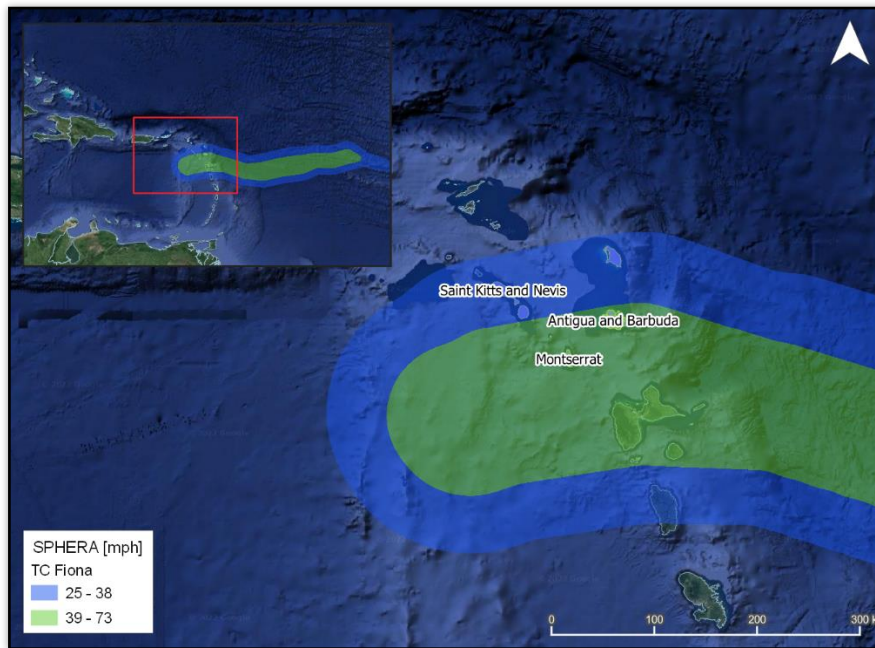


Figure 4 Map showing the wind field associated with Tropical Cyclone Fiona in the Leeward Islands.
Source: NHC & CCRIF/SPHERA

4 IMPACTS

According to District Disaster Coordinators in Antigua and Barbuda, there were a few uprooted and downed trees, which brought down power lines, and the roof of a basketball stand in Freetown was blown off. Approximately 20 persons stayed in public shelters⁵.

At the time of writing this report, no further information was available related to damage or loss in Antigua and Barbuda, Saint Kitts and Nevis and Montserrat due to the passing of TC Fiona.

5 CCRIF LOSS MODEL

Final runs of the CCRIF loss model for wind and storm surge produced government losses for Antigua and Barbuda, Saint Kitts and Nevis and Montserrat, which were below the attachment point of each country's tropical cyclone policy and therefore, no payouts under these policies are due.

The Aggregated Deductible Cover (ADC) feature for the Tropical Cyclone policies for Antigua and Barbuda, Montserrat and Saint Kitts and Nevis were not activated. For Antigua and Barbuda and Montserrat, the modelled losses were below 10% of the Minimum Payment of the policy for these countries' Tropical Cyclone policies. Therefore, no payments under the ADC feature are due

⁵ [Minimal reports of damage to properties following TS Fiona \(antigua.news\)](https://www.antigua.news/minimal-reports-of-damage-to-properties-following-ts-fiona)

for Antigua and Barbuda and Montserrat. For Saint Kitts and Nevis, 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 Saint Kitts and Nevis due to this tropical cyclone. Therefore, no payment under the ADC feature is due for Saint Kitts and Nevis.

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