Tropical Cyclone Ian (AAL092022)

Wind and Storm Surge

Preliminary Event Briefing

Cayman Islands

29 September 2022

Registered Office: CCRIF SPC c/o Sagicor Insurance Managers Ltd., 198 North Church Street
2nd Floor Sagicor House, P.O. Box 1087, Grand Cayman KY1-1102, Cayman Islands
Email: ccrif@ccrif.org | Website: ccrif.org | Twitter: @ccrif_pr | Facebook: CCRIF SPC

1 SUMMARY

Tropical Cyclone Ian was the eighth named tropical cyclone and the fourth hurricane of the 2022 Atlantic Hurricane Season. On 26 September, Hurricane Ian passed near the Cayman Islands, spreading tropical-storm-force winds over this country for several hours. At the time of writing this report, Ian had made landfall in Florida as a major hurricane and was moving toward the Atlantic Ocean.

The preliminary 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 the policy is due.

The Aggregated Deductible Cover (ADC) feature for the Tropical Cyclone policy for the Cayman Islands was not activated. The modelled losses were below 10% of the Minimum Payment of the policy for this country' Tropical Cyclone 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. The Cayman Islands was the only CCRIF member country for which the CCRIF loss model for wind and storm surge produced government losses due to Tropical Cyclone Ian. A separate report on rainfall impacts on affected CCRIF member countries will be issued if applicable.

2 INTRODUCTION

On 26 September at 0900UTC, the US National Hurricane Center (NHC) informed that Tropical Storm Ian, located over the northwestern Caribbean Sea, strengthened into a category 1 hurricane. In the previous days, Ian moved through the Caribbean Sea as a tropical storm, but over the northwestern Caribbean Sea the environmental conditions were very favourable for a rapid intensification of the system, due to the low deep-layer shear and the high oceanic heat content.

At this time, Hurricane Ian presented a well organized shape, with a defined eye and rainbands in all quadrants (Figure 1). Its centre was approximately sited near latitude 18.2° North, longitude 82.0° West, about 90 mi (150 km) SW of Grand Cayman, in the Cayman Islands. The system was proceeding with estimated forward velocity of 14 mph (22 km/h) towards the northwest, as it was moving along the western side of a high pressure area located over the central Atlantic Ocean (Figure 2). The minimum central pressure was 983 mb and the maximum sustained winds were estimated at 75 mph (120 km/h). Hurricane-force winds extended outward up to 15 miles (30 km) from the centre, while tropical-storm-force winds extended outward up to 90 miles (150 km). Starting at this time, the Cayman Islands were affected by tropical-storm-force winds.

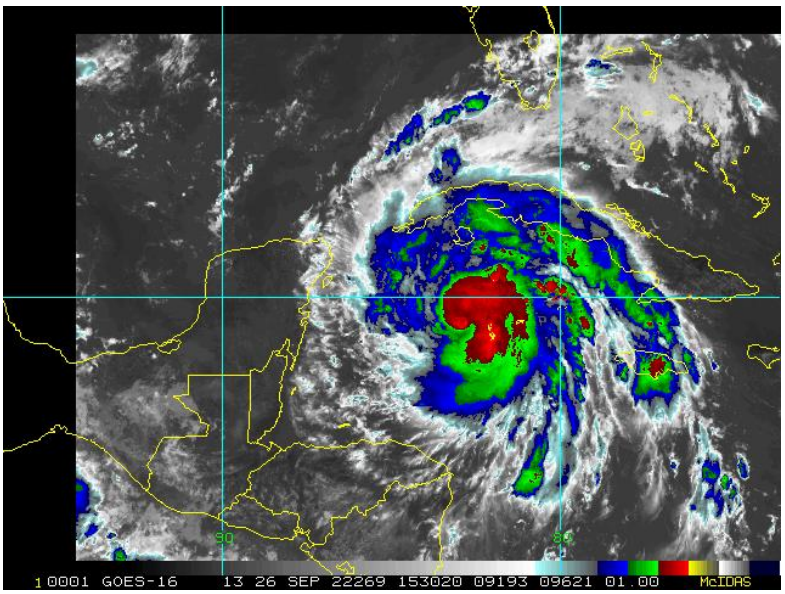

Figure 1 Satellite imagery on 26 September at 1530UTC from thermal infrared channel enhanced with colour. Blue/green colours represent high altitude clouds (top cloud temperature between -50°C and -70°C), while the red/yellow colours represent very high altitude clouds (top cloud lower than -70°C). High altitude clouds indicate strong convection associated with intense precipitation. Source: NOAA, National Environmental Satellite, Data and Information Service1.

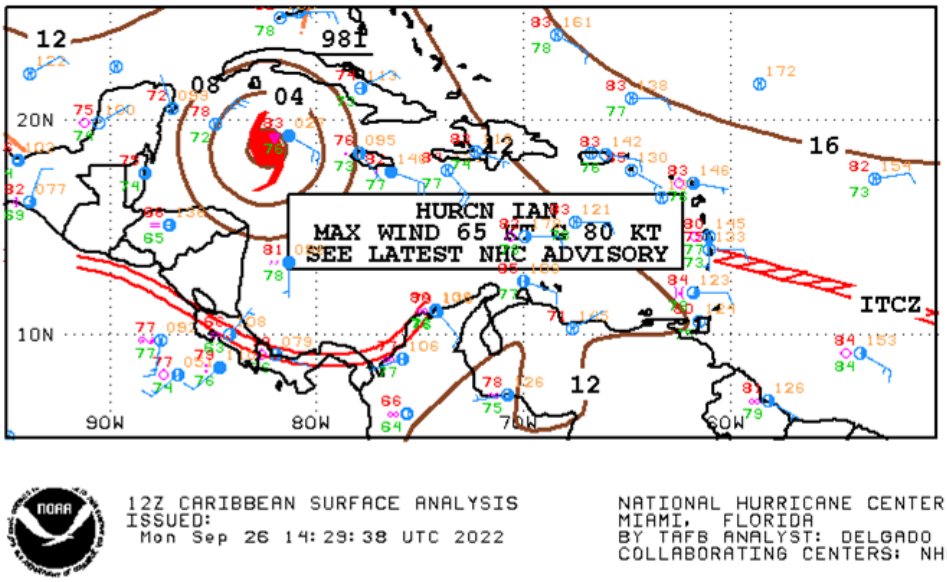

Figure 2 Surface analysis over the Caribbean area on 26 September at 1200UTC. Tropical Cyclone Ian was located near the Cayman Islands. Source: US National Hurricane Center[2]

[1]RAMSDIS Online Archive, NOAA Satellite and Information Service, available at: https://rammb-data.cira.colostate.edu/tc_realtime/storm.asp?storm_identifier=al092022

[2]National Oceanic and Atmospheric Administration - FTP, National Hurricane Center, review date: 17 September 2022, available at: *https://www.nhc.noaa.gov/tafb/CAR_12Z.gif*

Three hours later, at 1200UTC, the eye of Hurricane Ian was located near latitude 18.7° North, longitude 82.4° West, about 81 mi (130 km) WSW of the Grand Cayman, the Cayman Islands. The hurricane intensity and movement was unvaried. Over the Cayman Islands, tropical-storm-force winds were still active.

On 26 September at 1500UTC, Ian intensified further. The maximum sustained winds increased to 80 mph (130 km/h), with higher gusts. Hurricane-force winds extended outward up to 25 miles (35 km) from the centre, while tropical-storm-force winds extended outward up to 115 miles (185 km). Due to the very favourable environmental conditions, Ian continued to rapidly strengthen and three hours later, at 1800UTC, the maximum sustained winds increased to 85 mph (135 km/h), with higher gusts. At this time, Ian's centre was approximately sited near latitude 19.7° North, longitude 83.0° West, about 120 mi (190 km) WNW of Grand Cayman. Tropical-storm-force winds were still affecting the Cayman Islands, but starting from this time they gradually ceased (Figure 3). The system proceeded towards the north-northwest, heading for western Cuba, moving away from the waters surrounding the Cayman Islands.

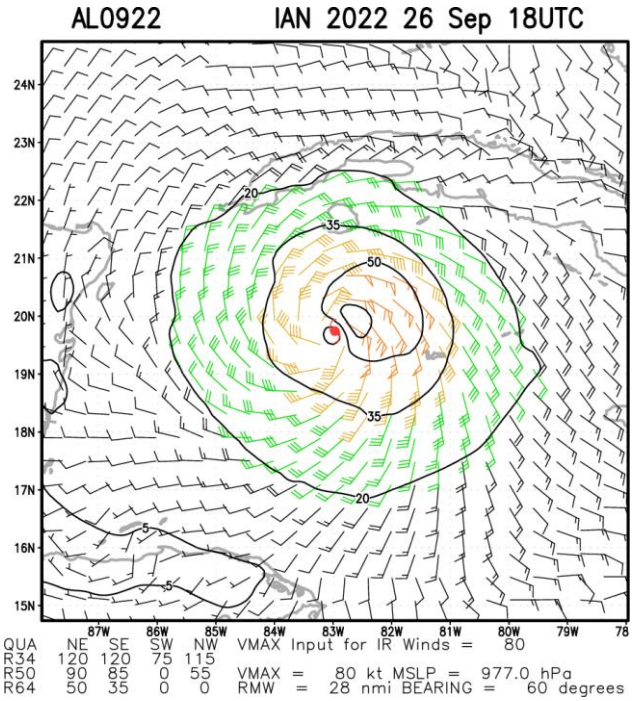

Figure 3 Multiplatform satellite based tropical cyclone surface wind analysis estimated on 26 September at 1800UTC. Contouring indicates wind intensity at 20 kn (23 mph, 37 km/h), at 35 kn (40mph, 65km/h) and 50kn (56mph, 92km/h). Source: NOAA, National Environmental Satellite, Data and Information Service[3]

In the subsequent hours, Ian continued to quickly intensify, becoming a category 3 hurricane before making landfall in Cuba. At the time of writing this report, Ian had crossed the eastern Gulf of Mexico and made landfall in Florida as a major hurricane.

[3]RAMSDIS Online Archive, NOAA Satellite and Information Service, available at: https://rammb-data.cira.colostate.edu/tc_realtime/storm.asp?storm_identifier=al092022

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). The Cayman Islands was affected by Tropical Cyclone Ian, which qualified as a Loss Event[4].

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 around the Cayman 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.

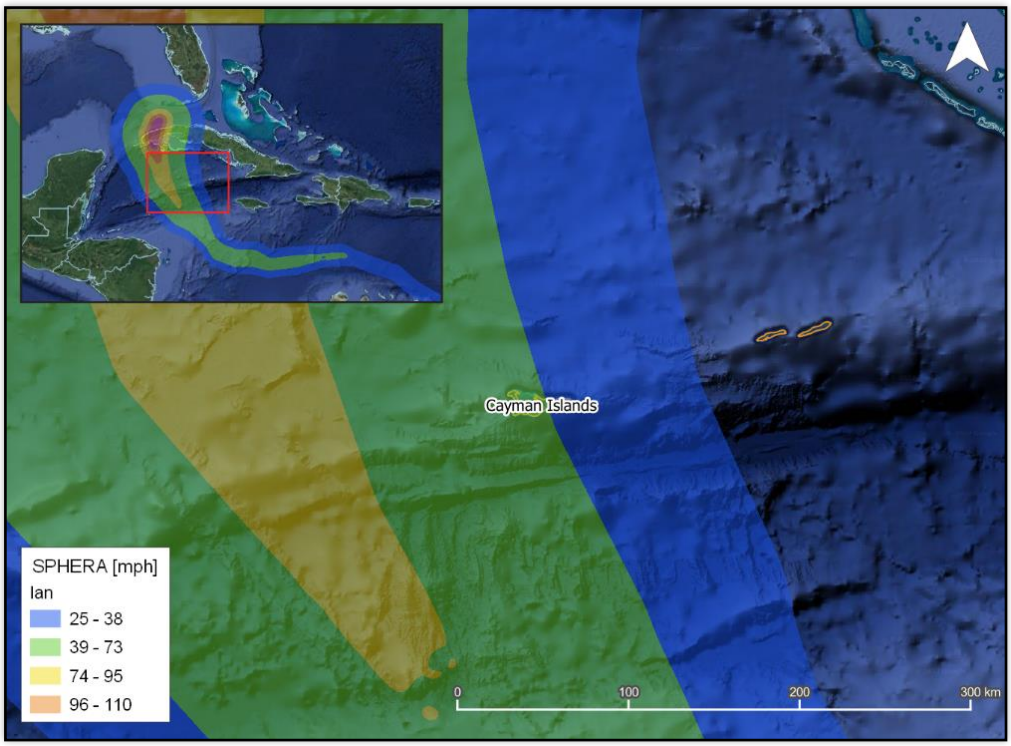

Figure 4 Map showing the wind field associated with Tropical Cyclone Fiona around the Cayman Islands.
Source: NHC & CCRIF/SPHERA

4 IMPACTS

At the time of writing this report, the National Emergency Operations Centre (NEOC) [5] had issued the All Clear for the Cayman Islands but residents were encouraged to continue monitoring official channels. There was no further information for damages or loss in the Cayman Islands due to Ian.

[4] Any Tropical Cyclone event which produces a modelled loss greater than zero in one or more policyholder countries.
[5] GOVKY - Cayman Islands Government - For Information and Service

5 CCRIF LOSS MODEL

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