

Tropical Cyclone Joaquin (AL112015)

Wind and Storm Surge

Event Briefing

9 October 2015

1 SUMMARY

Tropical Cyclone Joaquin affected three CCRIF member countries: The Bahamas, Bermuda and the Turks and Caicos Islands. The preliminary runs of CCRIF's loss model indicate that none of the Tropical Cyclone policies for these countries triggered, therefore no payout is due.

Tropical Cyclone policies are designed to cover damages from wind and storm surge but not rainfall. Some of the countries affected by rainfall from Hurricane Joaquin do have policies for excess rainfall. A separate excess rainfall report will be issued.

2 INTRODUCTION

On 30 September 2015 Hurricane Joaquin became the tenth named hurricane of the 2015 Atlantic Hurricane Season. At 8:00AM AST (1200 UTC), a Hurricane Warning was in effect for Central Bahamas including Cat Island, the Exumas, Long Island and Rum Cay. A Hurricane Watch was in effect for Northwestern Bahamas including the Abacos, Berry Islands, Bimini, Eleuthra, Grand Bahama Island and New Providence, but excluding Andros Island.

At 11:00 PM AST (300 UTC) on 30 September 2015, Joaquin became a category 3 hurricane and was moving toward the central Bahamas with maximum sustained winds of 115 mph (185 km/h). The centre of Hurricane Joaquin was located near latitude 23.8° North and longitude 73.1° West.

By 2:00 PM AST (1800 UTC) on 1 October 2015, Joaquin became a category 4 hurricane, the centre of the storm was located near latitude 23.0° North and longitude 74.2° West (about 70 mi (115 km) SSE of San Salvador Bahamas) with maximum sustained winds of 130 mph (210 km/h). At that time the central Bahamas experienced hurricane force winds, storm surge and heavy rain.

At 8:00 AM AST (1200 UTC) on 2 October 2015, the centre of category 4 Hurricane Joaquin was located near latitude 23.4° North and longitude 74.8° West, moving slowly northwestward as it was affecting the central Bahamas. At that time, maximum sustained winds were near 130 mph (215 km/h) with higher gusts. The core of the strongest winds of Joaquin were located over portions of the central and northwestern Bahamas. Joaquin was drifting toward the northwest at almost 3 mph (6 km/h).

At 2:00 PM AST (1800 UTC) on 2 October 2015, the centre of Hurricane Joaquin (at that time a category 3 hurricane) was located near latitude 23.8° North and longitude 74.8° West (about 10 mi (15 km) of Rum Cay and about 25 mi (40 km) of San Salvador, Bahamas). Joaquin was moving toward the north at almost 5 mph (8 km/h).

By 8:00 PM AST (0000 UTC) on 2 October 2015, the centre of category 3 Hurricane Joaquin was located near latitude 24.3° North and longitude 74.3° West (about 25 mi (40 km) of San Salvador Bahamas and about 795 mi (1280 km) of Bermuda) with maximum sustained winds of 125 mph (205 km/h). Joaquin was moving toward the northeast at almost 7 mph (11 km/h), moving away from the central Bahamas.

At 8:00 AM AST (1200 UTC) on 3 October 2015, the eye of Hurricane Joaquin was located near latitude 25.6° North and longitude 72.5° West (165 mi (270 km) of San Salvador and about 660 mi (1060 km) of Bermuda). Joaquin was moving toward the northeast at 13 mph (20 km/h), moving away from The Bahamas with maximum sustained winds of 125 mph (205 km/h).

By 2:00 PM AST (1800 UTC) on 4 October 2015, the centre of Hurricane Joaquin (now category 2) was located near latitude 31.6° North and longitude 66.6° West (about 125 mi (200 km) of Bermuda) with maximum sustained winds of 105 mph (165 km/h). Joaquin was moving toward the north-northeast at 15 mph (24 km/h).

By 8:00 PM AST (0000 UTC) on 4 October 2015, the centre of Hurricane Joaquin (now category 1) was located near latitude 32.6° North, longitude 65.9° West (about 65 mi (110 km) of Bermuda) with maximum sustained winds of 100 mph (155 km/h), producing tropical storm conditions on Bermuda. Joaquin was moving toward the north-northeast at 14 mph (22 km/h).

At 8:00 AM AST (1200 UTC) on 4 October 2015, the centre of category 1 Hurricane Joaquin was located near latitude 34.6° North and longitude 64.6° West, maximum sustained winds were near 85 mph (140 km/h) with higher gusts. Joaquin was moving toward the north-northeast at 13 mph

(20 km/h) moving away from Bermuda.

Joaquin continued this trajectory as a category 1 hurricane over the Atlantic Ocean until 7 October 2015, located at 1030 mi (1660 km) of Bermuda. Joaquin disappeared over the Atlantic Ocean as a post-tropical cyclone at 11:00 PM AST (0300 UTC) on 7 October 2015.

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 of the member countries with winds of greater than 39 mph. Tropical Cyclone Joaquin qualified as a reportable event with three countries experiencing at least Tropical Storm force winds. The wind footprint (Figures 1 and 2) is one of the outputs from the CCRIF model.

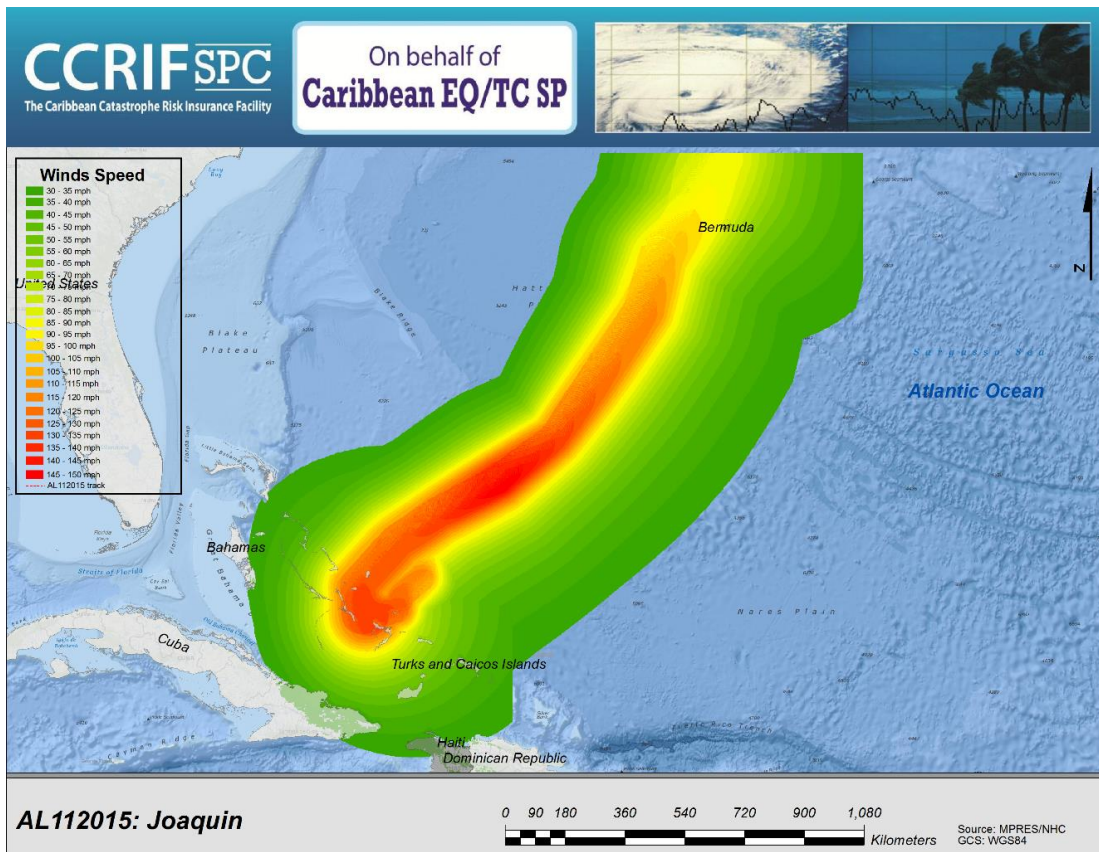


Figure 1: Map showing the path and wind field associated with Tropical Cyclone Joaquin. *Source: NHC & CCRIF KAC/MPRES*

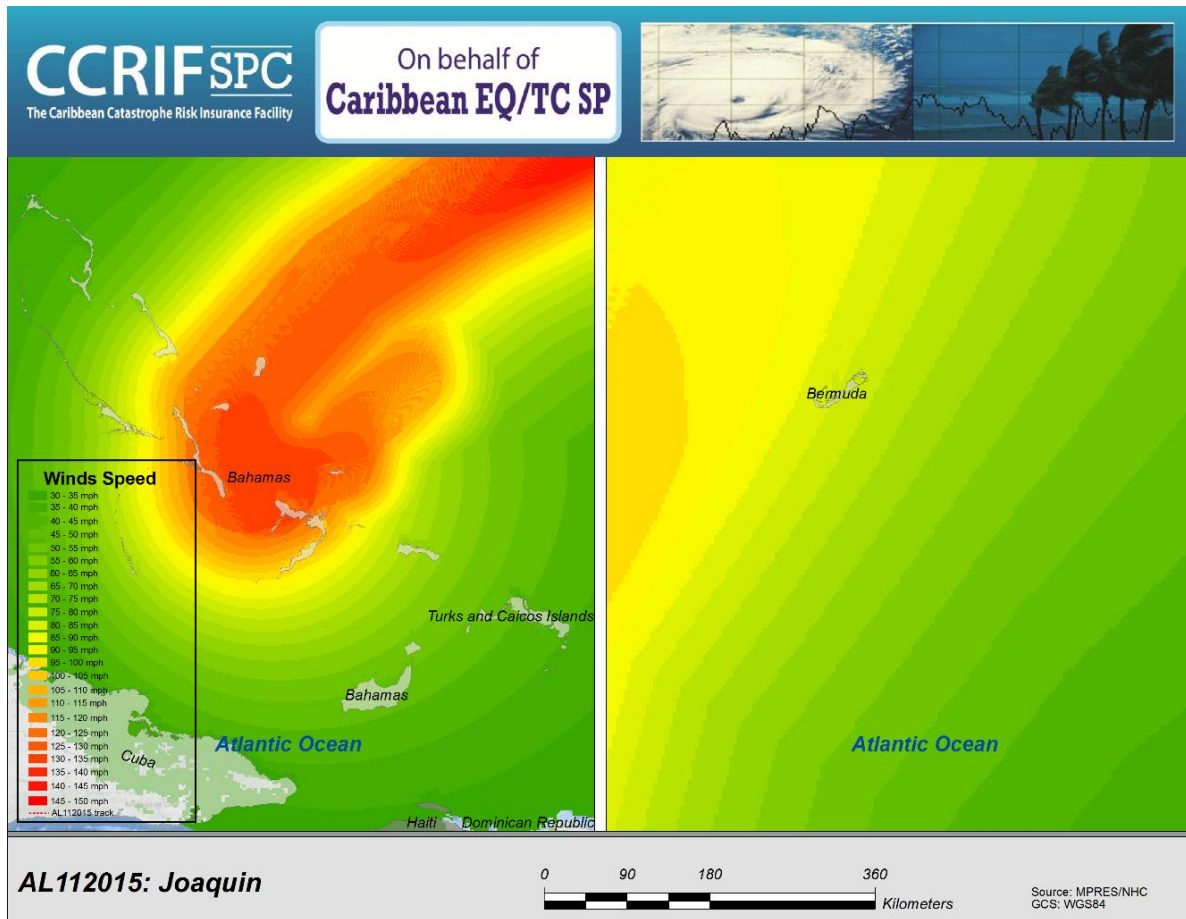


Figure 2: Map showing the path and wind field associated with Tropical Cyclone Joaquin. Source: NHC & CCRIF KAC/MPRES

4 IMPACTS

Based on the MPRES footprint, the CCRIF member countries affected by at least Tropical Storm force winds from Joaquin were: The Bahamas, Bermuda and Turks and Caicos Islands.

According to the initial reports and assessments provided by the Caribbean Disaster Emergency Management Agency (CDEMA), the following impacts occurred:

The Bahamas

Hurricane Joaquin affected the southern and central islands of The Bahamas.

Acklins Island:

- Roads were reported flooded in areas and difficult to pass.
- Island communication was severely hampered and was possible by satellite phone only. There was no broadcast radio on the island.
- The island's main road was compromised in 2 areas - at Lovely Bay (sections of the road were damaged) and south of the high school in Pompey Bay (impassable due to flood waters, and accessible only to trucks).
- The telecommunications cell tower of Bahamas Telecommunications Company (BTC) was offline.
- Approximately 90 per cent of the houses in Lovely Bay, Chester and Snug Corner were severely damaged or completely destroyed.
- No deaths, or injuries were reported on Acklins Island.

Crooked Island:

- Movement from the East to the West of the island was constrained by a wide settlement of water 3-4 feet deep, passable only by large trucks.
- The roofs of all houses in the areas assessed to 8 October on the eastern side of the island were severely damaged.
- The primary school in the area was severely damaged.
- The main port was inoperable.
- There were no deaths reported on Crooked Island.
- The satellite clinic at Colonel Hill was destroyed.
- The satellite tower collapsed across part of the clinic compound.

Long Island:

- Health clinics in the south of the island were damaged.
- From Sand Pond to Clarence Town the impact was most significant. The main cause of damage to buildings was high winds. In flooded low-lying areas, several houses were damaged due to the high water level.
- From Stella Maris to Salt Pond there was minor damage to housing, roads and power poles. Power lines were damaged in some areas due to broken power poles.

Rum Cay:

- Power poles and lines were damaged.

San Salvador:

- Power poles and lines were damaged.
- The roof of the power station was damaged.

Coastal Assessment in Long Island

- The southern portion of the island (i.e. south of Salt Pond) around Clarence Town was damaged by storm surge.
- Preliminary indications were that the local fishing fleet in Clarence Town was essentially destroyed.
- Damage to coastal infrastructure including dock damage and flooded homes was evident in Salt Pond, Grays, Deadman's Cay, Petty's and Scrub Hill.
- Environmental impacts reported were: beach erosion; damage and some displacement of mangrove vegetation; deposit of seagrass on the shoreline; and, the deposit of debris consisting mainly of building material along the coastline.

The following islands suffered no major impacts: Abaco, Andros, Eleuthera, Ragged Island, Bimini, Berry Islands, Mayaguana.

Turks and Caicos Islands

- Storm surge and torrential rainfall resulted in flooding and damage to infrastructure throughout the islands.
- Essential roadways in some areas were partially to fully obstructed (Causeway/Bypass, Fish Pond Road Middle Caicos, heading into Five Cays Providenciales, Front Street Grand Turk). Damage to roadways is reported at approximately 90 per cent of the total damage and loss.
 - North Caicos to Middle Caicos Causeway: suffered minor damage.
 - North Caicos to Middle Caicos Bypass: suffered moderate damage. Sections of the bypass were washed away. The Bypass was subsequently closed for approximately two days until the severe weather passed to allow for temporary repairs.
 - Dean's Dock, Salt Cay and Belfield Landing North Caicos: suffered minor to moderate damage to docks.

- The Grand Turk Seawall / retaining wall on Front Street: partially collapsed. Continued undermining/deterioration occurred due to storm surges and extensive wave action. This compromised existing historical buildings, churches and the Parliament building that line Front Street. Front Street was closed from the Lime building to the Tourist Board.
- Several homes and buildings in coastal areas were flooded.
- The Providenciales International Airport was closed for approximately two days. This was due to damage to the airport's weather station.
- In North Caicos, the agricultural sector was affected with minor damages, as the Government farm lost plants and crops as a result of flooding.
- Initial assessments in the agricultural sector indicated loss of crops.
- There was coastal erosion in: Grand Turk (Governors' Beach to Front Street), Providenciales (Long Bay) and Salt Cay.

Bermuda

Hurricane Joaquin lost strength and became a category 1 hurricane west of Bermuda, with strong winds, rain and storm surge. According to press briefings, Joaquin caused power cuts and minor damage in Bermuda. Roadways were obstructed by debris and floodwaters, the historic Commissioner's House at the Bermuda Maritime Museum lost the last of its original roof, which was heavily damaged by Hurricanes Fay and Gonzalo in October 2014. In general, property damage across the island was minor.

5 CCRIF LOSS MODEL

Modelled losses and any subsequent payouts are based on the conditions of the countries' tropical cyclone policies. Preliminary runs of the CCRIF loss model did not generate government losses due to wind and storm surge damage in any of the affected countries and therefore no payout is due.

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