

Tropical Cyclone Isaac (AL092018)

Wind and Storm Surge

Event Briefing

Dominica

15 September 2018

1 SUMMARY

Isaac was the fifth tropical cyclone that reached the hurricane category in the 2018 Atlantic Hurricane Season. It formed as a tropical depression over the eastern tropical Atlantic Ocean on 7 September 2018 at 2100UTC. Thereafter it strengthened, becoming a tropical storm on 8 September at 2100UTC and a hurricane on 10 September at 0300UTC. It kept this intensity for 24 hours, and then it was downgraded back to a tropical storm. Isaac made landfall on the Leeward Islands on 13 September at 1300UTC, affecting Dominica, Guadeloupe and Martinique with tropical-storm-force winds.

The preliminary runs of CCRIF's loss model for wind and storm surge generated government losses for Dominica, but these losses were below the attachment point for its Tropical Cyclone policy and therefore no payout is due. The Aggregated Deductible Cover (ADC) for Dominica's policy was not activated because the modelled losses were less than 50 per cent of the attachment point and there was no disaster alert declaration from ReliefWeb related to TC Isaac and therefore no payment under the ADC is due.

This event briefing is designed to review the impact and damages from wind and storm surge but not rainfall for CCRIF member countries. A separate report on rainfall impacts on affected CCRIF member countries will be issued.

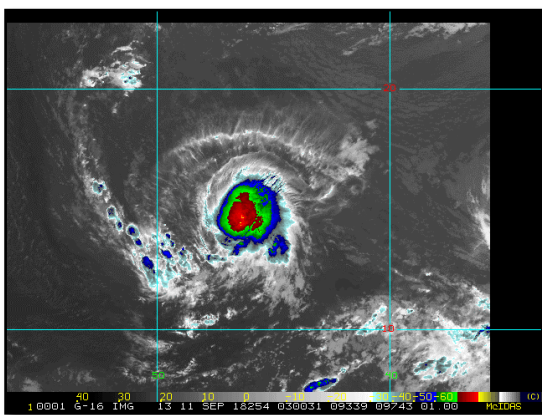
2 INTRODUCTION

On 7 September 2018 at 2100UTC, the US National Hurricane Center (NHC) reported that a small area of low pressure in the eastern tropical Atlantic Ocean (at 13.6N, 34.9W) became a tropical depression, with a well-defined centre and deep convection. The reduction of the vertical wind shear in the region allowed its gradual intensification and on 8 September at 2100UTC, the depression was upgraded to a tropical storm and it was named Isaac. At this time, Tropical Storm Isaac was located at 14.5N 36.6W and it presented a tiny size with maximum sustained winds of 40 mph (64 km/h). It was slowly moving westward at 7 mph (11 km/h) and the minimum central pressure was 1005 mb.

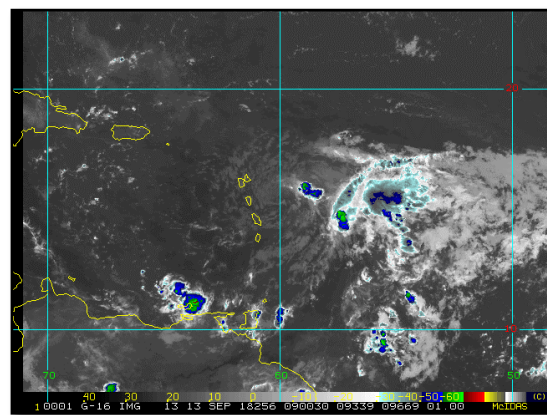
Isaac moved within very low vertical wind shear conditions and over a warm sea surface. These favourable conditions, as well as the small size of the cyclone, led to a rapid intensification of the system, which was further upgraded to hurricane category 1 on 10 September at 0300UTC. Hurricane Isaac presented a compact but well defined cluster of convection around its centre. Maximum sustained winds were approximately 75 mph (120 km/h) and the minimum central pressure fell to 993 mb. During the subsequent 24hours, its strength kept constant, while the system moved westward at 14 mph (22 km/h) in the direction of the Lesser Antilles.

On 11 September at 0300UTC, Hurricane Isaac started to encounter less conducive conditions: the vertical wind shear increased, firstly due to the strengthening of a trough over the central Atlantic and secondly due to the outflow from Hurricane Florence (located to the north-west of Isaac).

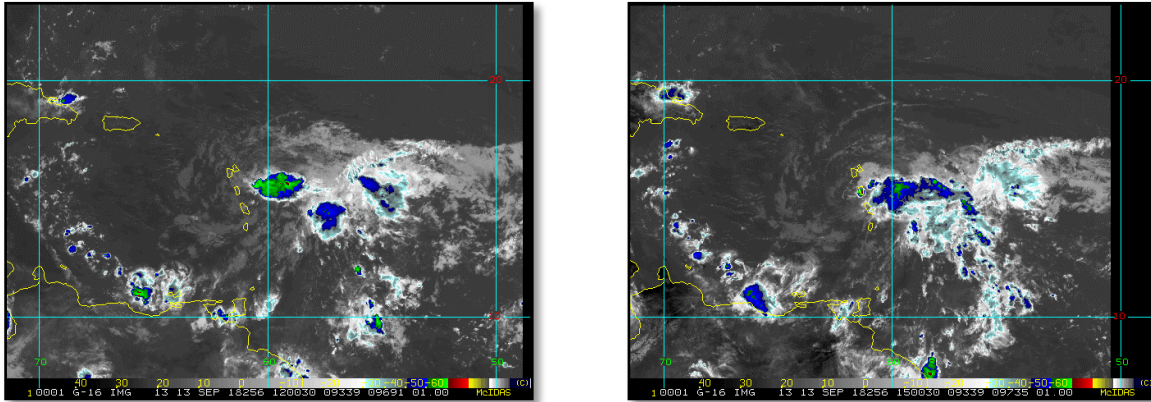
Therefore, Isaac was downgraded to a tropical storm. The maximum sustained winds fell to approximately 70 mph (110 km/h) and the minimum central pressure increased to 997 mb. The cyclone continued to move westward at a slightly higher speed (16 mph, 27 km/h) toward the Leeward Islands. Its centre was located at 14.5N 46.9W on the western side of the central dense overcast (Figure 1a).



a) 11 September at 0300UTC



b) 13 September at 0900UTC

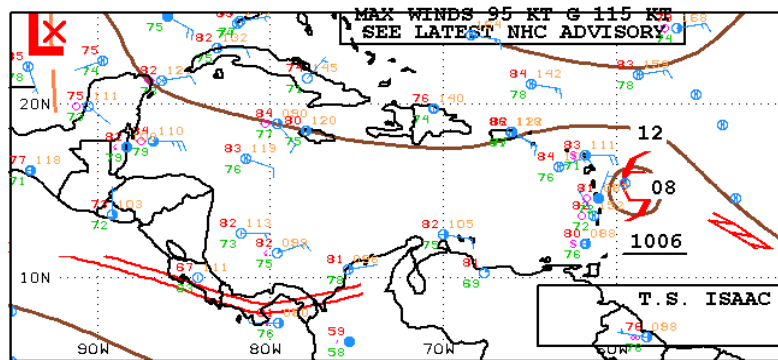


c) 13 September at 1200UTC

d) 13 September at 1500UTC

Figure 1 Enhanced infrared imagery over the western tropical Atlantic Ocean, collected at different times. Colours indicate the cloud canopy temperature, with yellow to red colours indicating the colder canopy and green to blue the warmer canopy. Cold cloud canopy indicates deep convection. Source: NOAA, National Environmental Satellite, Data and Information Service

Due to the unfavourable environmental conditions, Isaac continued to weaken as it approached the Leeward Islands. On 13 September at 0900UTC Isaac was located at 15.4N 59.7W (Figure 2) at about 105.6 miles (170 km) east of the Leeward Islands. The maximum sustained winds were approximately 45 mph (75 km/h) with higher gusts and the minimum central pressure was at 1006 mb. At this time tropical-storm-force winds started to affect Dominica, Martinique and Guadeloupe. Tropical Storm Isaac continued its movement toward the west with a speed 17 mph (28 km/h) and its centre passed over Dominica and Martinique at 1300UTC of the same day. At this time, Isaac was a poorly organized tropical storm, with very shallow and fragile circulation and deep convection appearing intermittently (Figure 1b, c and d). Little change in strength was observed as Isaac moved through the Leeward Islands. In the subsequent hours, the cyclone experienced a gradual weakening, while moving through the eastern Caribbean.



OSZ CARIBBEAN SURFACE ANALYSIS
ISSUED:
Thu Sep 13 08:35:12 UTC 2018

NATIONAL HURRICANE CENTER
MIAMI, FLORIDA
BY TAFB ANALYST: FORMOSA
COLLABORATING CENTERS: NHC OPC

Figure 2 Surface analysis over the Caribbean area at 13 September at 0600UTC Source: National Hurricane Center

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 Dominica, Tropical Cyclone Isaac qualified as a Loss Event¹. The wind footprint (Figure 3) and surge field (Figure 4) are two of the outputs from the CCRIF model, which show the regions affected by certain magnitudes of wind velocity and storm surge in Dominica.

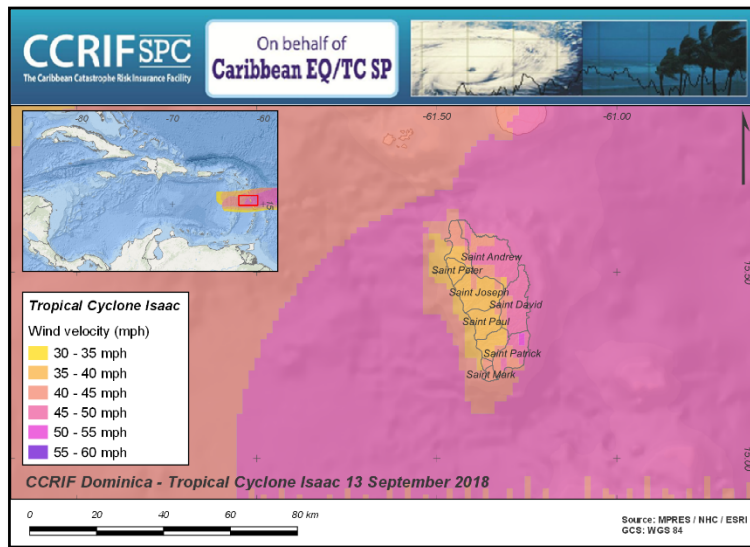


Figure 3 Map showing the wind field associated with Tropical Cyclone Isaac in Dominica.
Source: NHC & CCRIF/MPRES

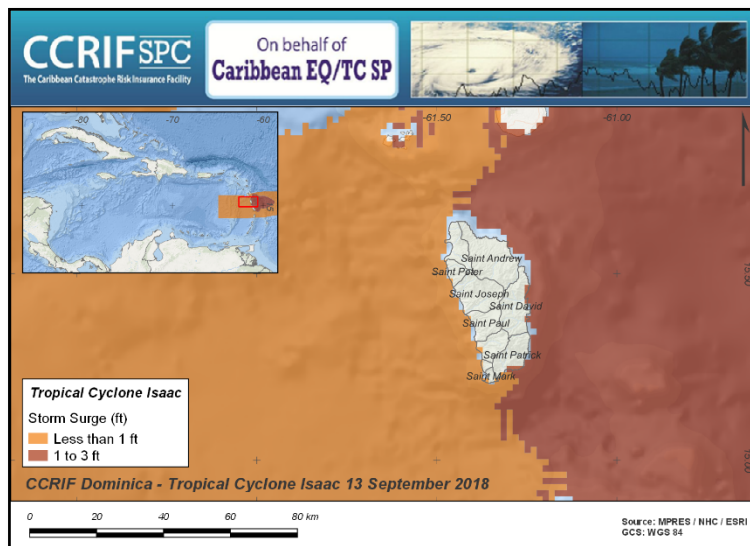


Figure 4 Map showing the storm surge field associated with Tropical Cyclone Isaac in Dominica.
Source: NHC & CCRIF/MPRES

¹ Any Tropical Cyclone event, which produces a modelled loss greater than zero in one or more policyholder countries.

4 IMPACTS

According to Dominica's Prime Minister, the preliminary assessments showed no significant impacts for Dominica following the passage of Tropical Storm Isaac, except in Geneva where a bridge was undermined and a few minor slides reported on the E.O. Leblanc Highway.

Prior to the arrival of Tropical Storm Isaac, the authorities in Dominica carried out precautionary measures, including:

- The opening of nineteen shelters. Three hundred and forty-four persons were checked into shelters.
- The National Emergency Operating Center was activated on 12 September and Government offices, schools and health centres closed.

5 CCRIF LOSS MODEL

The preliminary runs of CCRIF's loss model for wind and storm surge generated government losses for Dominica, but these losses were below the attachment point for its Tropical Cyclone policy and therefore no payout is due. The Aggregated Deductible Cover (ADC) for Dominica's policy was not activated because the modelled losses were less than 50 per cent of the attachment point and there was no disaster alert declaration from ReliefWeb related to TC Isaac and therefore no payment under the ADC is due.

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

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