Tropical Cyclone Grace (AL072021)

Wind and Storm Surge

Preliminary Event Briefing

Haiti

19 August 2021

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 (TC) Grace was the seventh tropical cyclone in the 2021 Atlantic Hurricane Season. Reported on 13 August as Potential Tropical Cyclone Seven, it was soon upgraded to Tropical Depression Seven and on 14 August it upgraded to Tropical Storm Grace which was first characterized as a small tropical storm. On the same day at 1500 UTC, it became stronger and resulted in stormy weather with heavy rainfall across the Lesser Antilles. On 15 August at 0300 UTC, a Tropical Storm Watch was issued for the entire coast of Haiti. Later that day, the US National Hurricane Center (NHC) reported that Tropical Storm Grace became a tropical depression again. On 16 August, with the centre located about 80 km (49.7 mi) south of Port-au-Prince, Haiti, this tropical depression brought heavy rainfall over the southern parts of Haiti, which continued to persist during the next day, when the Tropical Storm Watch for Haiti was discontinued.

Preliminary runs of the CCRIF loss model for wind and storm surge produced government losses for Haiti, 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) for this country's TC policy was not activated because there was no declaration of a Disaster alert for Haiti related to Tropical Storm Grace by ReliefWeb, and therefore, no payment under the ADC feature is due.

This event briefing is designed to review the modelled losses due to wind and storm surge calculated by CCRIF's SPHERA TC model for affected CCRIF member countries, to be analyzed with respect to members' tropical cyclone policies. Other Tropical Cyclone event briefing reports on TC Grace's impacts have been issued for CCRIF member countries: Montserrat, St. Kitts and Nevis, Jamaica and the Cayman Islands. A separate report on rainfall impacts on affected CCRIF member countries with excess rainfall policies will be issued if applicable.

2 INTRODUCTION

On 13 August at 1500 UTC, the US National Hurricane Center (NHC) reported a disturbance over the central tropical Atlantic which was named Potential Tropical Cyclone Seven. Its centre was near latitude 15.3 North, longitude 49.3 West. The disturbance was soon upgraded to Tropical Depression Seven. During the following 15 hours, this system moved toward the west with a velocity near 21 mph (33 km/h), maximum sustained winds were around 35 mph (55 km/h) with higher gusts and the estimated minimum central pressure was 1010 mb (29.83 inches).

On 14 August at 0900 UTC, the NHC reported that Tropical Depression Seven was upgraded to Tropical Storm Grace, characterized as a small tropical storm. Velocity was near 22 mph (35 km/h), maximum sustained winds were around 40 mph (65 km/h) with higher gusts and the estimated minimum central pressure was 1007 mb. At 1500 UTC Tropical Storm Grace became stronger as it moved quickly westward toward the Leeward Islands. Its centre was now located near latitude 16.2 North, longitude 57.9 West. Maximum sustained winds were near 45 mph (75 km/h), the estimated minimum central pressure was 1005 mb and velocity was near 23 mph (37 km/h). Despite its poor organization, the storm produced tropical-storm-force winds which extended outward up to 35 miles (55 km) from the centre. Over the next 9 hours, the system produced stormy weather with heavy rainfall which spread across the Lesser Antilles.

On 15 August at 0300 UTC, a Tropical Storm Watch was issued for the entire coast of Haiti. The centre of the poorly organized Tropical Storm Grace was located near latitude 16.8 North, longitude 62.4 West, and it moved toward the west-northwest with the velocity near 20 mph (31 km/h). Maximum sustained winds were near 40 mph (65 km/h) with higher gusts and the estimated minimum central pressure was 1010 mb. Tropical-storm-force winds extended outward up to 35 miles (55 km) from the centre. At 0900 UTC, the forward speed decreased to near 16 mph (26 km/h). Maximum sustained winds and minimum central pressure were unchanged and these conditions were sustained over the next 9 hours. At 2100 UTC, the NHC reported that Tropical Storm Grace became Tropical Depression Grace with its centre located near latitude 17.0 North, longitude 67.3 West. The depression moved toward the west with a velocity near 15 mph (24 km/h). Maximum sustained winds decreased to 35 mph (55 km/h) with higher gusts and the estimated minimum central pressure was 1011 mb. During the next 12 hours these parameters were largely unchanged.

On 16 August at 1200 UTC, minimum central pressure decreased to 1008 mb) as Tropical Depression Grace was approaching the Dominican Republic and Haiti. At 1800 UTC, a decrease in velocity was observed. Tropical Depression Grace moved toward the west-northwest with the velocity near 12 mph (19 km/h), maximum sustained winds were near 35 mph (55 km/h) with higher gusts and the estimated minimum central pressure was 1007 mb. These conditions resulted in heavy rainfall over the southern parts of Haiti. At 2100 UTC, the centre of Tropical Depression Grace was located near latitude 17.9 North, longitude 72.4 West, about 80 km south of Port-au-Prince Haiti (Figures 1 and 2a). Tropical Depression Grace moved toward the west-northwest with a velocity near 13 mph (20 km/h). Maximum sustained winds were near 35 mph (55 km/h) with higher gusts and the estimated minimum central pressure was 1007 mb. Heavy rains continued to

persist over the portions of Haiti, especially near Tiburon Peninsula.

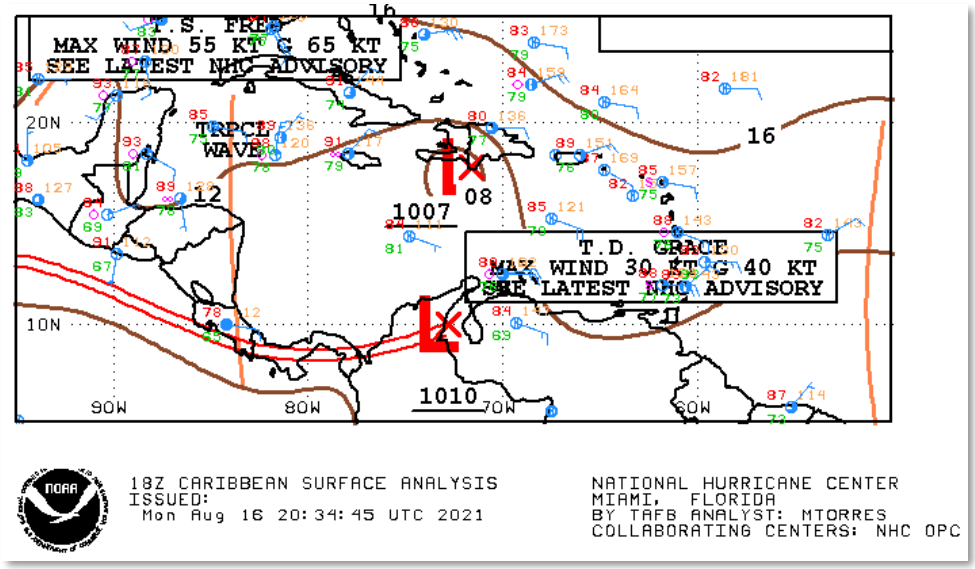
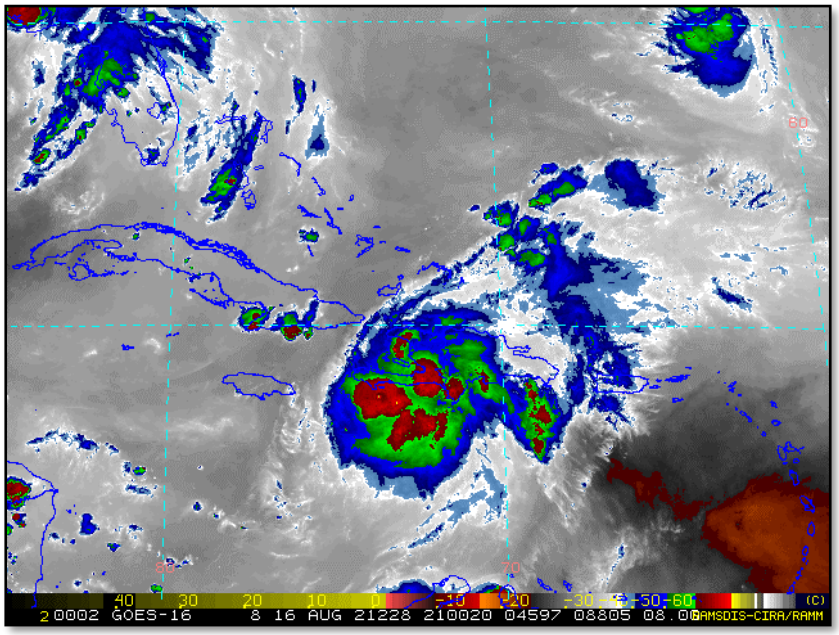


Figure 1 Surface analysis over the Caribbean area on 16 August 2021 at 2034 UTC.
Source: US National Hurricane Center[1]

During the following several hours, Tropical Depression Grace continued to move toward the west with velocity varying between 13 mph (20 km/h) and 16 mph (20 km/h), with ever increasing maximum sustained winds reaching 50 mph (85 km/h) and with constantly decreasing minimum central pressure to 1005 mb and below. On 17 August at 0600 UTC, the NHC reported that Tropical Depression Grace upgraded to a tropical storm again. At 1500 UTC (Figure 2b) heavy rains were still present over parts of Haiti, spreading westward and moving toward the Cayman Islands with a velocity near 15 mph (24 km/h). At 1800 UTC the Tropical Storm Watch for Haiti was discontinued.

[1] National Oceanic and Atmospheric Administration - FTP, National Hurricane Center, available at: *https://www.nhc.noaa.gov/tafb/CAR_18Z.gif*

a)



b)

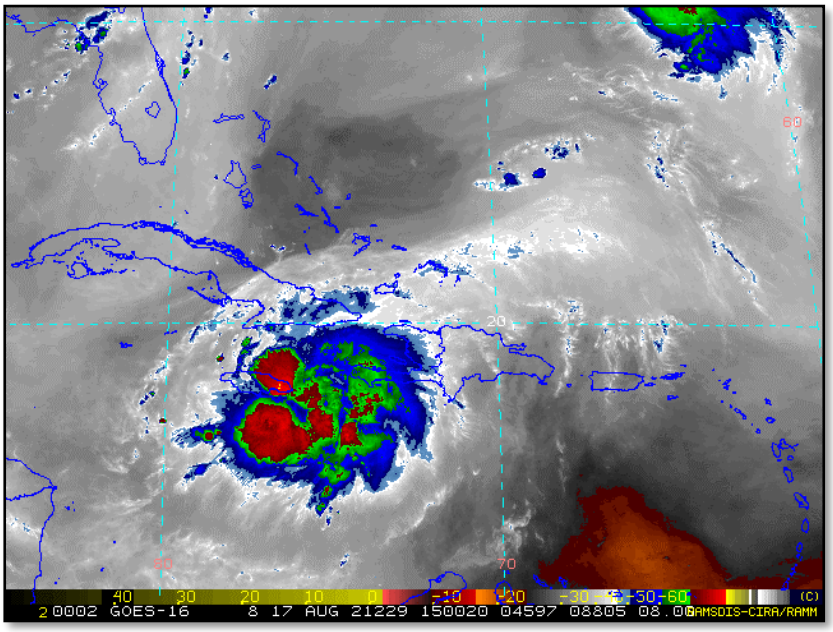


Figure 2 Satellite imagery on 16 August at 2100 UTC (a) and on 17 August at 1500 UTC (b) as indicated in the label from thermal infrared channel enhanced with colour. Blue/green colours represent high altitude clouds (top cloud temperature between -50°C and -70°C), while the red/yellow colours represent very high altitude clouds (top cloud lower than -70°C). High altitude clouds indicate strong convection associated with intense precipitation. Source: NOAA Satellite and Information Service[2].

[2] RAMSDIS Online Archive, NOAA Satellite and Information Service, available at:
https://rammb.cira.colostate.edu/ramsdis/online/images/rmtc/rmtcsasec4ir304/rmtcsasec4ir304_20210816210020.gif
https://rammb.cira.colostate.edu/ramsdis/online/images/rmtc/rmtcsasec4ir304/rmtcsasec4ir304_20210817150020.gif

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). Tropical Storm Grace, although it did not exceed winds greater than 39 mph (62.7 km/h), qualified as a Loss Event[3] for Haiti.

The wind footprint (Figure 3) and surge field are two of the outputs from the CCRIF model, which show the regions affected by Tropical Cyclone Grace in Haiti. Due to the relatively low wind speeds, storm surge was insignificant, did not contribute to the damage, and is therefore not shown on the hazard map.

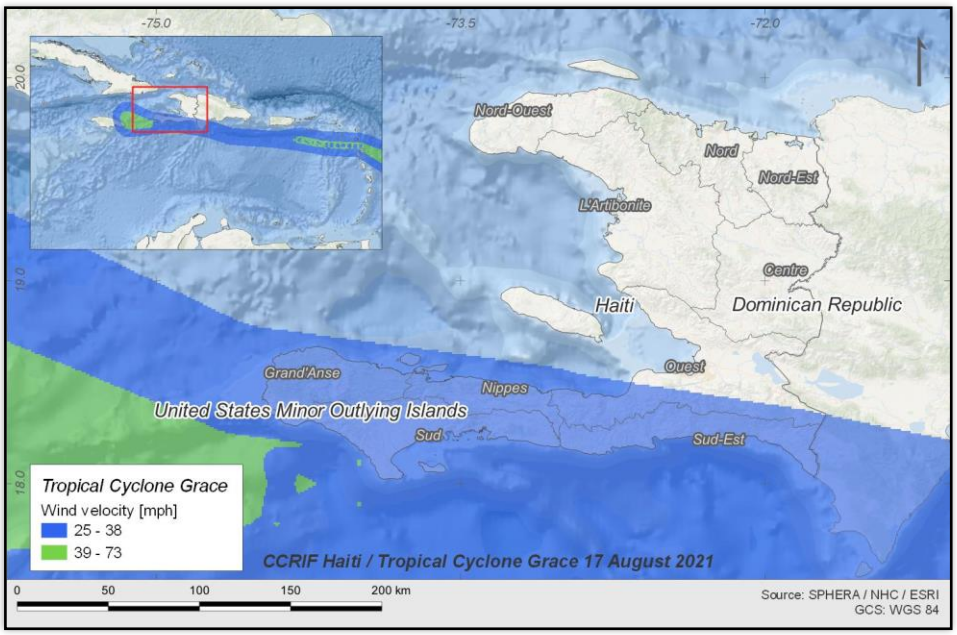


Figure 3 Map showing the wind field associated with Tropical Cyclone Grace in Haiti.
Source: NHC & CCRIF/SPHERA

4 IMPACTS

According to the initial reports and assessments provided by the Caribbean Disaster Emergency Management Agency[4] (CDEMA), the most affected area was the Sud-Est Department where four persons died due to Tropical Storm Grace. The communes most affected were Cayes-Jacmel and Marigot. A total of 615 houses in the Department were flooded, including 500 in Marigot. The majority of the impacts were related to flooding and landslides across the southern regions of Haiti.

[3] Any Tropical Cyclone event which produces a modelled loss greater than zero in one or more policyholder countries.
[4] CDEMA - Caribbean Disaster Emergency Management Agency, Situation Report No. 2 (As of 4:00 PM on August 19, 2021), review date: 19 August 2021, available at: '*Tropical Storm Grace*'

Prior to the arrival of Tropical Storm Grace, the Hydro-meteorological Unit and the Permanent Secretariat for Risk and Disaster Management activated a yellow alert due to Tropical Storm Grace[5]. Additionally, a Tropical Storm Watch was put into effect for entire coast of Haiti.

5 CCRIF LOSS MODEL

Preliminary runs of the CCRIF loss model for wind and storm surge produced government losses for Haiti, which were below the attachment point of the country's tropical cyclone policy and therefore no payout under the policy is due.

The Aggregated Deductible Cover (ADC) for this country's TC policy was not activated because there was no declaration of a Disaster Alert for Haiti related to Tropical Storm Grace by ReliefWeb, and therefore, no payment under the ADC feature is due.

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

[5] Haiti Libre, review date: 19 August 2021, available at: '*Haiti - FLASH : The tropical depression «Grace» will affect the South of Haiti*'