CCRIF SPC
The Caribbean Catastrophe Risk Insurance Facility

Tropical Cyclone Elsa (AL052021)

Wind and Storm Surge

Final Event Briefing

Windward Islands

14 July 2021

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1 SUMMARY

Hurricane Elsa was the fifth tropical cyclone in the 2021 Atlantic Hurricane Season. On 30 June it developed as Potential Tropical Cyclone Five and on the following day it was upgraded to Tropical Storm Elsa. On July 2 at 1145 UTC Tropical Storm Elsa intensified and became Hurricane Elsa, passing near Barbados, Saint Vincent and the Grenadines and Saint Lucia, spreading hurricane-force winds and tropical-storm-force winds over these countries.

Final runs of the CCRIF loss model for wind and storm surge produced government losses for Barbados, Saint Lucia, St. Vincent and the Grenadines, and Grenada. For Barbados, the government losses were above the attachment point of the county's tropical cyclone policy and therefore a payout under the policy is due. For Saint Lucia and St. Vincent and the Grenadines the government losses were below the attachment point of these countries' tropical cyclone policies and therefore no payout under the policy is due.

However, the Aggregated Deductible Cover (ADC) for the tropical cyclone policies for Saint Lucia and St. Vincent and the Grenadines were activated. Therefore, a payment under the ADC is due for each of these countries. Final calculations show that payments are due to each country as follows:

Tropical Cyclone Policy	Payment
Barbados	US$1,345,500
Saint Lucia (ADC)	US$136,469
St. Vincent and the Grenadines (ADC)	US$48,988

Although there was a disaster alert declaration for Grenada from ReliefWeb related to Hurricane Elsa, the ADC for Grenada's Tropical Cyclone policy was not activated because the modelled losses were below 10 per cent of the minimum payment of the policy and therefore no payment under the ADC is due.

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. A separate report on rainfall impacts on affected CCRIF member countries with excess rainfall policies will be issued if applicable.

2 INTRODUCTION

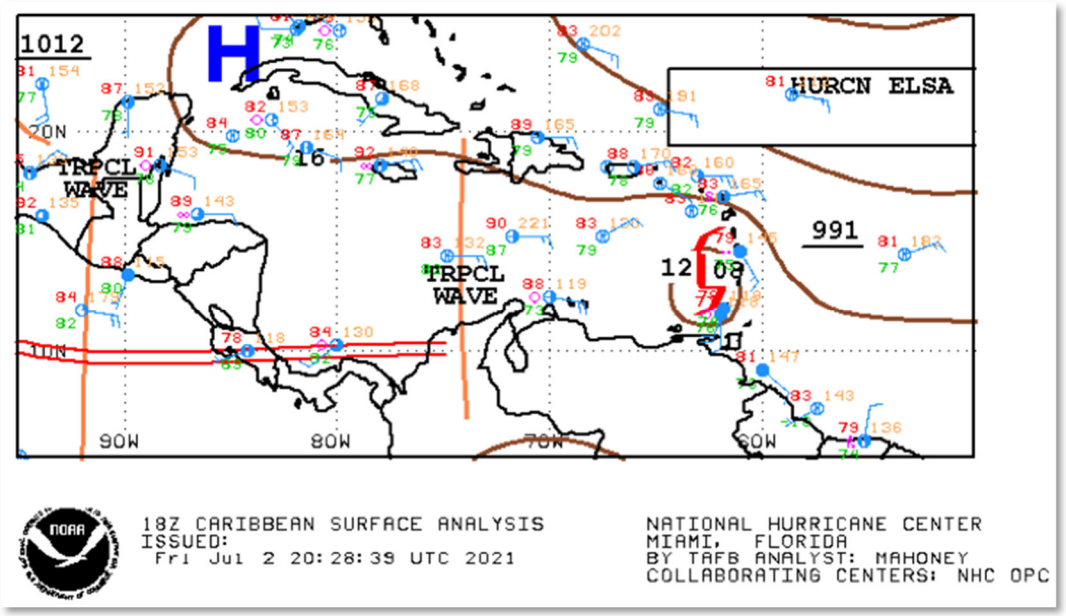
On 30 June at 2100 UTC, a tropical disturbance in the Atlantic was reported by the US National Hurricane Center (NHC). The centre of the tropical disturbance, named Potential Tropical Cyclone Five, was near latitude 9.6 North, longitude 43.7 West, moving toward the west-northwest with a velocity of almost 21 mph (33 km/h). The minimum central pressure was 1008 mb and the maximum sustained winds were 35 mph (55 km/h). Over the next 8 hours the maximum sustained winds and minimum central pressure were almost unchanged.

The following day, 1 July, Potential Tropical Cyclone Five was upgraded to Tropical Storm Elsa. At 0900 UTC, the centre of Tropical Storm Elsa was located near latitude 9.4 North, longitude 48.8 West. It continued movement toward the west at a velocity of near 25 mph (41 km/h), with increased maximum sustained winds to near 40 mph (65 km/h) with higher gusts, and with minimum central pressure of 1006 mb. Over the next 12 hours Tropical Storm Elsa was strengthening while approaching the Windward Islands. The maximum sustained winds increased to 45 mph (75 km/h) and the minimum central pressure remained almost unchanged. Both changed after 15 hours, with maximum sustained winds reaching 50 mph (85 km/h) and minimum central pressure decreasing to 1003 mb. The velocity increased up to 29 mph (46 km/h) and after 15 hours decreased to 26 mph (43 km/h).

On July 2 at 1145 UTC Tropical Storm Elsa intensified and became Hurricane Elsa. At 1230 UTC its centre was located near latitude 13.1 North, longitude 60.1 West, about 40 miles (65 km) W of Barbados, and about 75 miles (120 km) E of Saint Vincent and the Grenadines. The maximum sustained winds were 75 mph (120 km/h) and the minimum central pressure was 995 mb. Hurricane-force winds extended outward up to 25 miles (35 km) from the centre and tropical-storm-force winds extended outward up to 140 miles (220 km). At 1500 UTC the centre of Hurricane Elsa was reported to be at 13.4 North, 61.2 West, passing near St. Vincent and the Grenadines and Saint Lucia (about 5 miles (10 km) N of St. Vincent). Maximum sustained winds were 75 mph (120 km/h) and minimum central pressure was 995 mb. Hurricane conditions continued spreading throughout the Windward Islands.

During the next several hours, Hurricane Elsa continued moving to the west-northwest with the velocity ranging between 28 mph and 30 mph, heading toward the eastern Caribbean Sea.

a)



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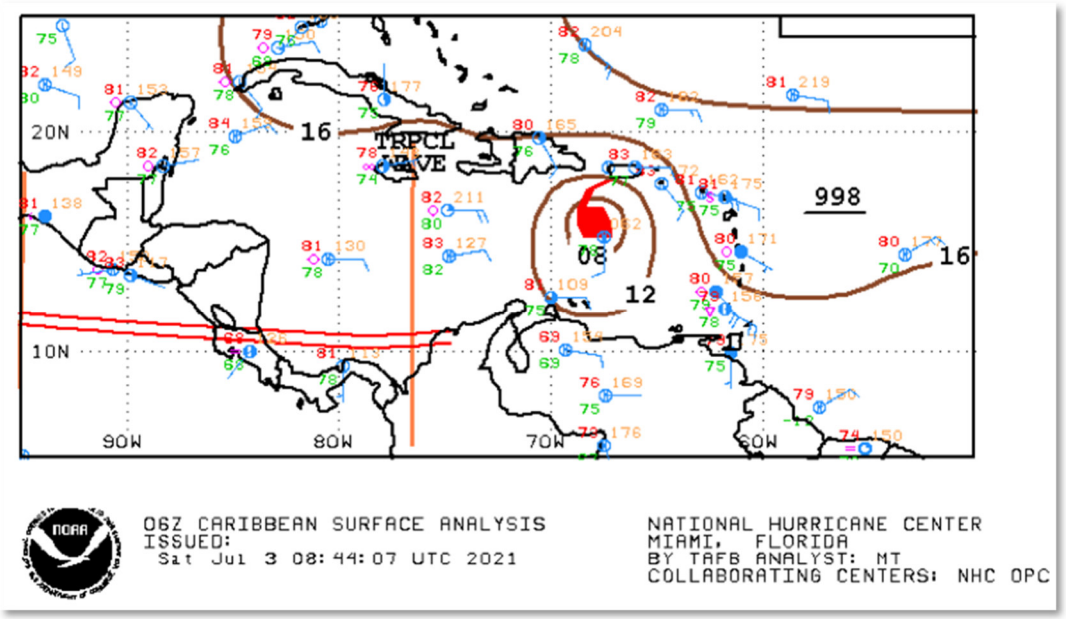
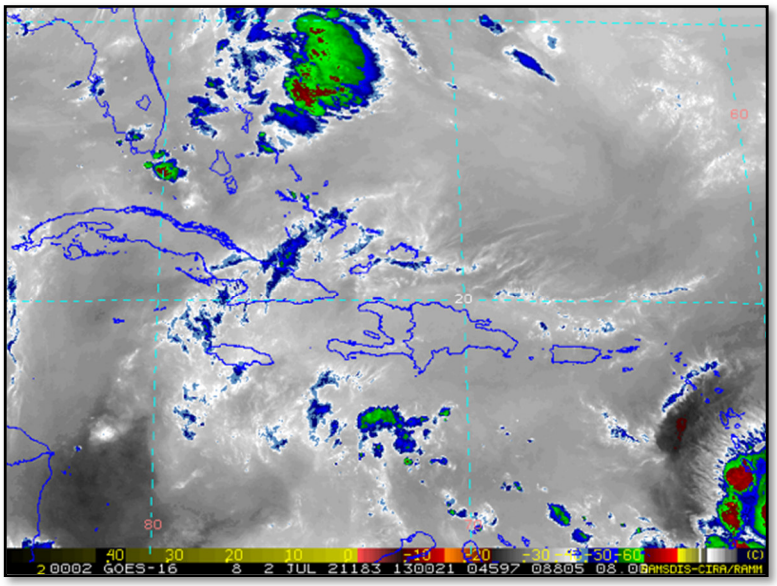


Figure 1 Surface analysis over the Caribbean area on 2 (a) and 3 July (b) at the different times as indicated by the labels. Hurricane Elsa is visible over the waters of Windward Islands (a).
Source: US National Hurricane Center[1]

[1] National Oceanic and Atmospheric Administration - FTP, National Hurricane Center, review dates: 2 and 3 July 2021, available at: *https://www.nhc.noaa.gov/tafb/CAR_00Z.gif* and *https://www.nhc.noaa.gov/tafb/CAR_18Z.gif*

a)



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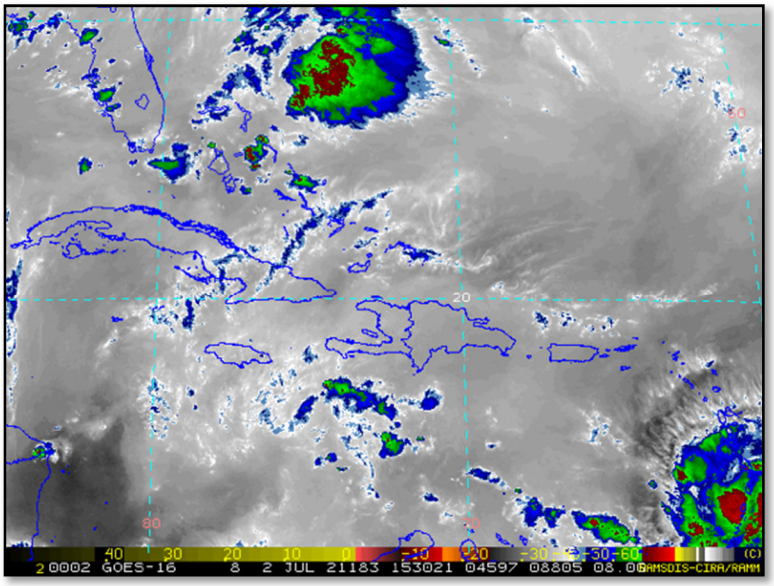

Figure 2 Satellite imagery at 1300 UTC (a) and 1530 UTC (b) on 2 July as indicated in the label from thermal infrared channel enhanced with colour. Blue/green colours represent high altitude clouds (top cloud temperature between -50°C and -70°C), while the red/yellow colours represent very high altitude 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, review date: 4 July 2021, available at: *https://rammb.cira.colostate.edu/ramsdis/online/images/rmtc/rmtcsasec4ir304/rmtcsasec4ir304_20210702130021.gif*
https://rammb.cira.colostate.edu/ramsdis/online/images/rmtc/rmtcsasec4ir304/rmtcsasec4ir304_20210702153021.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 Cyclone Elsa qualified as a Triggering Event[3] for Barbados, as a Triggering Event by Aggregated Deductible Cover[4] (ADC – Endorsement) for Saint Lucia and St. Vincent and the Grenadines and as a Loss Event[5] for Grenada.

The wind footprint (Figures 3, 4, 5 and 6) and surge field are two of the outputs from the CCRIF model, which show the regions affected by certain extents of Tropical Cyclone Elsa in each country. 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 maps.

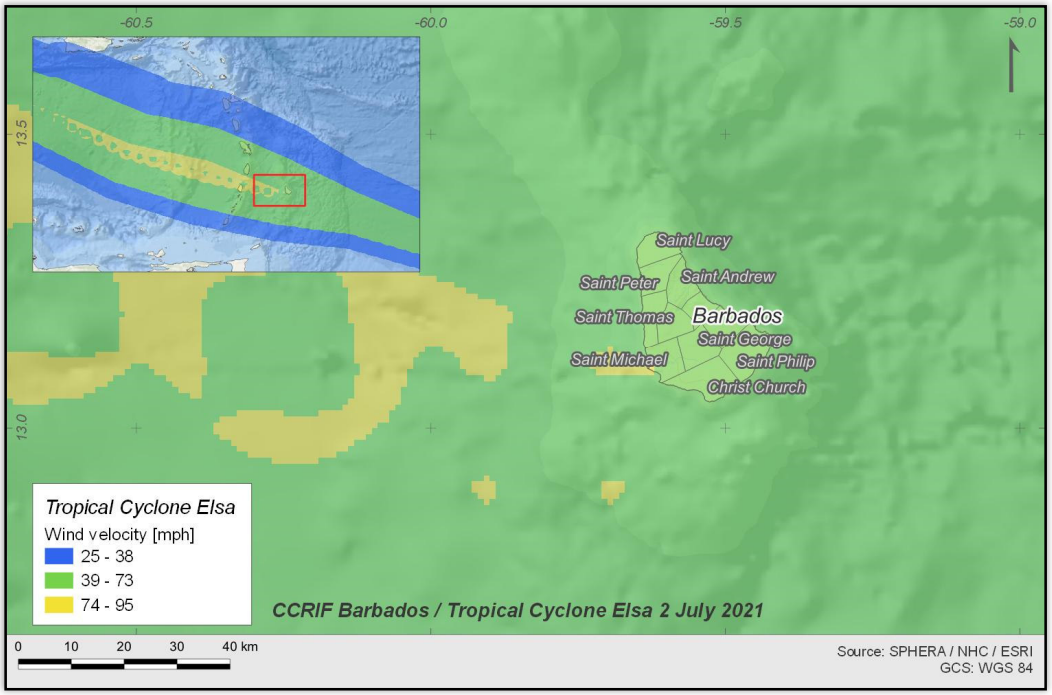

Figure 3 Map showing the wind field associated with Tropical Cyclone Elsa in Barbados.
Source: NHC & CCRIF/SPHERA

[3] Any Tropical Cyclone event which produces a modelled loss sufficiently high to trigger a payout under the CCRIF policy conditions as in force on the date of the event in one or more policyholder countries.

[4] The Aggregated Deductible Cover (ADC) is a special feature of CCRIF's tropical cyclone (TC) and earthquake (EQ) parametric insurance policies. The ADC is designed to potentially provide a payment for TC and EQ events that are objectively not sufficient to trigger the country's main policy because the modelled loss is below the Underlying Policy Attachment Point.

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

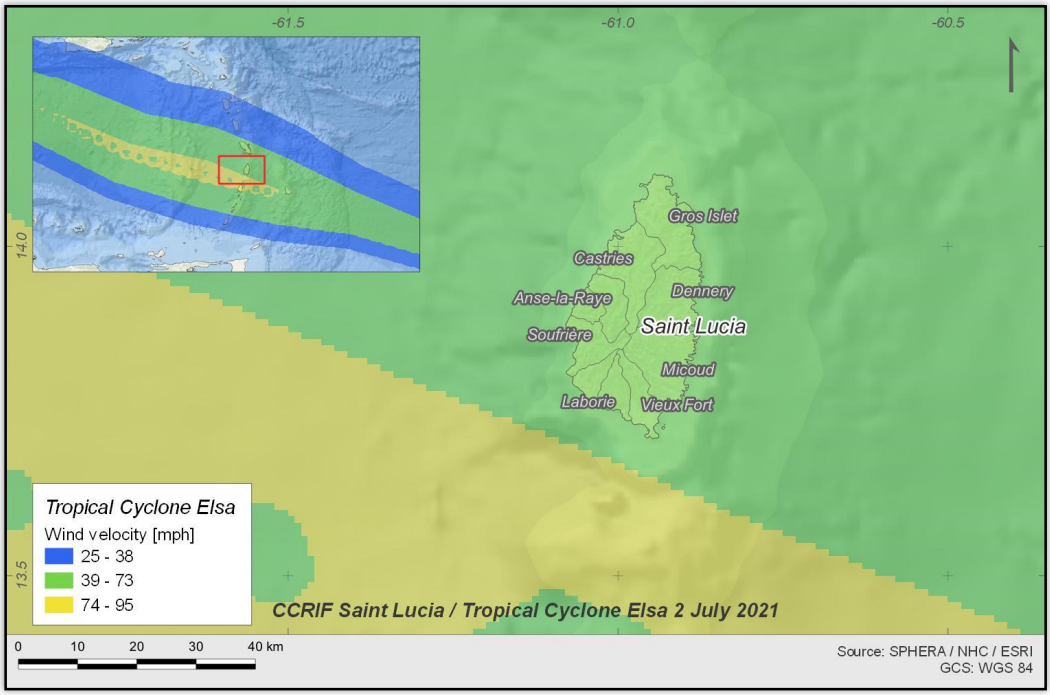

Figure 4 Map showing the wind field associated with Tropical Cyclone Elsa in Saint Lucia.
Source: NHC & CCRIF/SPHERA

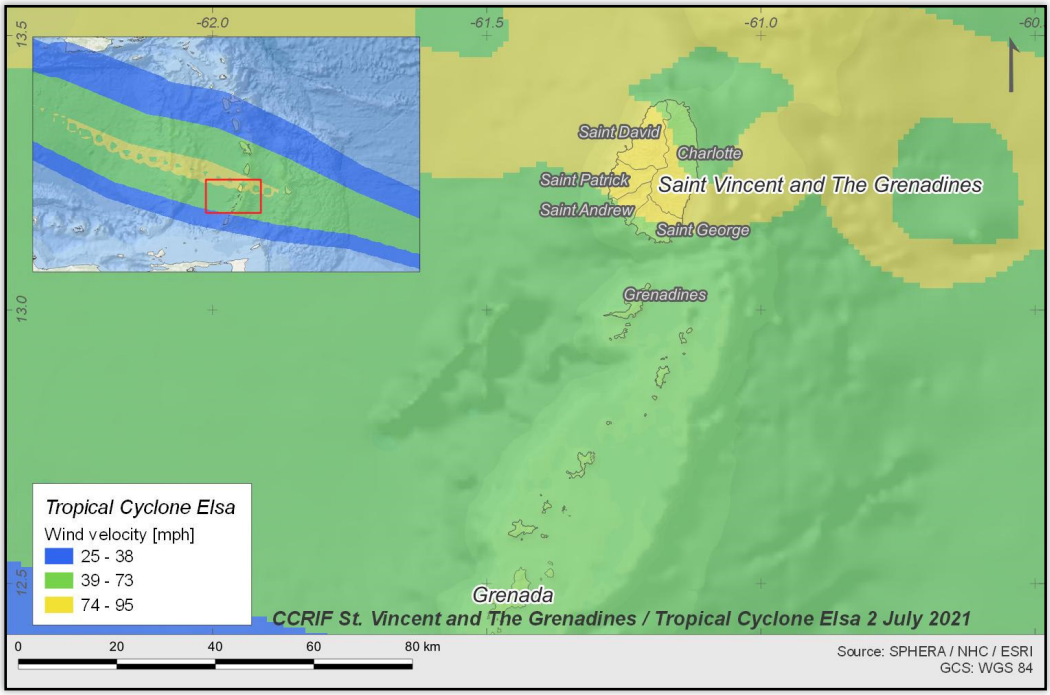

Figure 5 Map showing the wind field associated with Tropical Cyclone Elsa in St. Vincent and the Grenadines.
Source: NHC & CCRIF/SPHERA

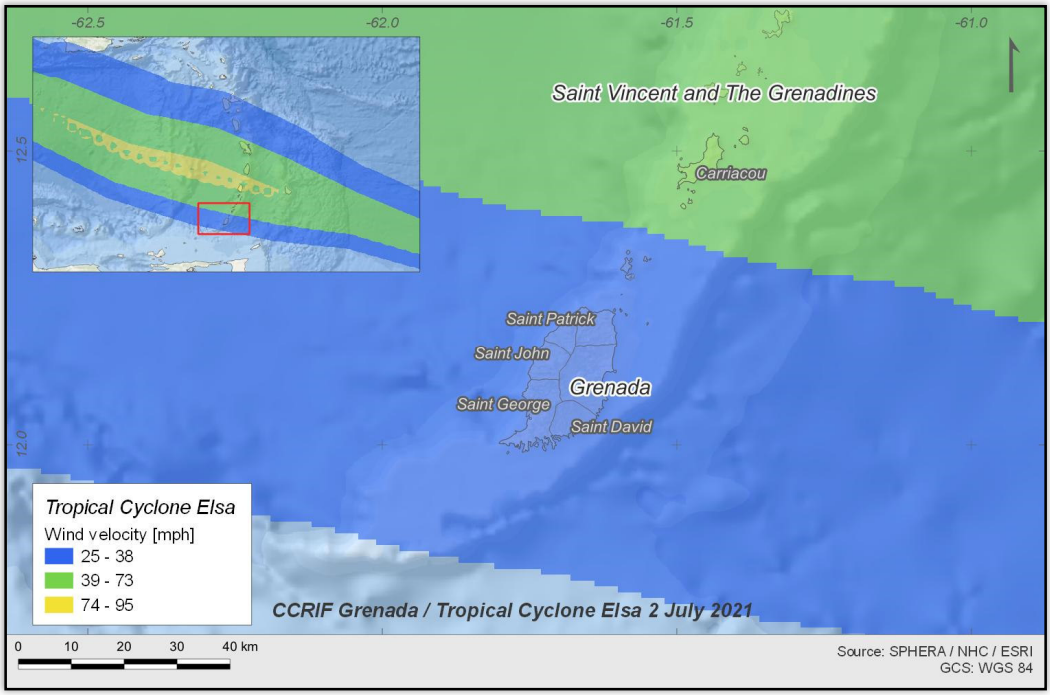

Figure 6 Map showing the wind field associated with Tropical Cyclone Elsa in Grenada.
Source: NHC & CCRIF/SPHERA

4 IMPACTS

Barbados

Barbados' Minister of Home Affairs, Information and Public Affairs, Wilfred Abrahams, reported that "We have been significantly affected. There is widespread damage to property. There are roofs that have come off, roofs have collapsed, houses have collapsed. There are downed power lines across Barbados, live power lines, downed trees, some roads are impassable". Barbados' Prime Minister, Mia Amor Mottley, reported that there was no loss of life or major injuries caused by the passage of Tropical Storm Elsa.

The entire country was affected in some way by wind and rainfall due to Tropical Storm Elsa, with the most significant impacts due to wind. According to the assessments provided by the Caribbean Disaster Emergency Management Agency (CDEMA)[6] and media news[7] [8], the impact in Barbados was reported as described below:

[6] Caribbean Disaster Emergency Management Agency (CDEMA), Situation Report No. 3 (As of 4:00 PM on July 6, 2021), review date: 6 July 2020, available at: *Tropical Storm Elsa*
[7] CBC Radio-Canada, review date: 4 July 2021, available at: '*Tropical storm Elsa leaves at least 3 dead in Caribbean, heads toward Cuba, Florida*'
[8] Emergency Response Coordination Centre (ERCC), review date: 4 July 2021, available at: '*The Caribbean - Hurricane ELSA*'

- 1,233 houses were damaged; 114 collapsed
- several schools and government buildings were damaged
- there were 74 downed trees
- there were 27 downed electricity poles and wires
- There were 4 gas leaks

Prior to the arrival of Tropical Storm Elsa, Barbados' authorities took precautionary measures such as activating the National Emergency Operations Centre (NEOC). Also as a precautionary measure, essential businesses were closed. Six shelters were opened, which were used by a total of 34 occupants.

Figure 7 Some damage caused by Tropical Storm Elsa in Barbados – July 2021.
Source: *ABC NEWS* and *REUTERS*

Saint Lucia

According to the Caribbean Disaster Emergency Management Agency (CDEMA) and with information published in the news[9], following the passage of Tropical Cyclone Elsa across

[9] CBC Radio-Canada, review date: 4 July 2021, available at: '*Tropical storm Elsa leaves at least 3 dead in Caribbean, heads toward Cuba, Florida*'

Saint Lucia; one person died in Soufrière[10]. The major impact was from wind damage: roofs, three government buildings and a secondary school were damaged. Telecommunications and water infrastructure were damaged. Falling trees damaged power lines and homes, leaving 30% of the population without service. Impacts were observed across the agriculture and fisheries sectors.

Saint Lucia's Prime Minister, Allen Chastanet, reported that the greatest amount of damage was in agriculture. Several houses including the state-owned project in the heart of the capital, Castries, were damaged due to Hurricane Elsa.

St. Vincent and the Grenadines

According to information published in the news[11], as a result of Tropical Storm Elsa, several towns in St. Vincent and the Grenadines were affected by wind and rainfall with the main impacts due to wind; about 40 homes and three police stations were damaged. The storm also resulted in fallen power poles, which affected roads and other infrastructure.

Figure 8 Some damage caused by Tropical Storm Elsa in St. Vincent and The Grenadines – July 2021.
Source: *CBC Radio-Canada*

Grenada

Twelve days after the passage of Hurricane Elsa, no information was available on damage or loss due to wind and storm surge in Grenada by tropical cyclone Elsa.

A subsequent version of this report may be produced with updated information obtained from official reports or communications that are issued by the governments of these countries.

[10] Caribbean Disaster Emergency Management Agency (CDEMA), Situation Report No. 2 (As of 4:00 PM on July 3, 2021), review date: 4 July 2020, available at: '*Tropical Storm Elsa*'
[11] CBC Radio-Canada, review date: 4 July 2021, available at: '*Tropical storm Elsa leaves at least 3 dead in Caribbean, heads toward Cuba, Florida*'

5 CCRIF LOSS MODEL

The final runs of the CCRIF loss model for wind and storm surge produced government losses for Barbados, Saint Lucia, St. Vincent and the Grenadines and Grenada. For Barbados, the government losses were above the attachment point of the country's tropical cyclone policy and therefore a payout under the policy is due. For Saint Lucia and St. Vincent and the Grenadines the government losses were below the attachment point of these countries' tropical cyclone policies and therefore no payout under the policy is due.

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