



# **Tropical Cyclone Elsa (AL052021)**

## **Fisheries Model**

### **Preliminary Event Briefing**

#### **Saint Lucia and Grenada**

**6 July 2021**

## 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.

The COAST<sup>1</sup> product for fisheries comprises two components: Adverse Weather – based on wave height and rainfall that occurs for at least 3 consecutive days; and Tropical Cyclone – based on wind and storm surge. The COAST policy is based on a 3-tier payment scheme that considers losses caused by Adverse Weather on fisherfolk and other stakeholders in the fisheries sector (Adverse Weather component linked to Tier 1) and the assessment of direct damages caused by tropical cyclones to fishing vessels, fishing equipment and fishing infrastructure (Tropical Cyclone component linked to Tiers 2 and 3).

This event briefing is designed to review the modelled losses due to TC Elsa calculated by CCRIF's fisheries model for both components of the COAST policy for Saint Lucia and Grenada<sup>2</sup>. Losses for Tiers 1, 2 and 3, computed for Saint Lucia and Grenada using the CCRIF fisheries model, were below the attachment point of each country's COAST policy. Therefore no payments under the policies for Saint Lucia or Grenada are due.

## 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 strengthened 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 of these 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 to 29 mph (46 km/h) and after 15 hours decreased to 26 mph (43 km/h).

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<sup>1</sup> Caribbean Oceans and Aquaculture Sustainability Facility (COAST)

<sup>2</sup> Saint Lucia and Grenada are the only two CCRIF member countries with coverage parametric insurance coverage for their fisheries sectors.

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 Saint Vincent and the Grenadines and Saint Lucia (about 5 miles (10 km) N of Saint Vincent). Maximum sustained winds were 75 mph (120 km/h) and minimum central pressure was 995 mb. Hurricane conditions continued throughout the Windward Islands.

During the next several hours, Hurricane Elsa continued moving to the west-northwest with a velocity ranging between 28 mph (45 km/h) and 30 mph (48 km/h), heading toward the eastern Caribbean Sea.

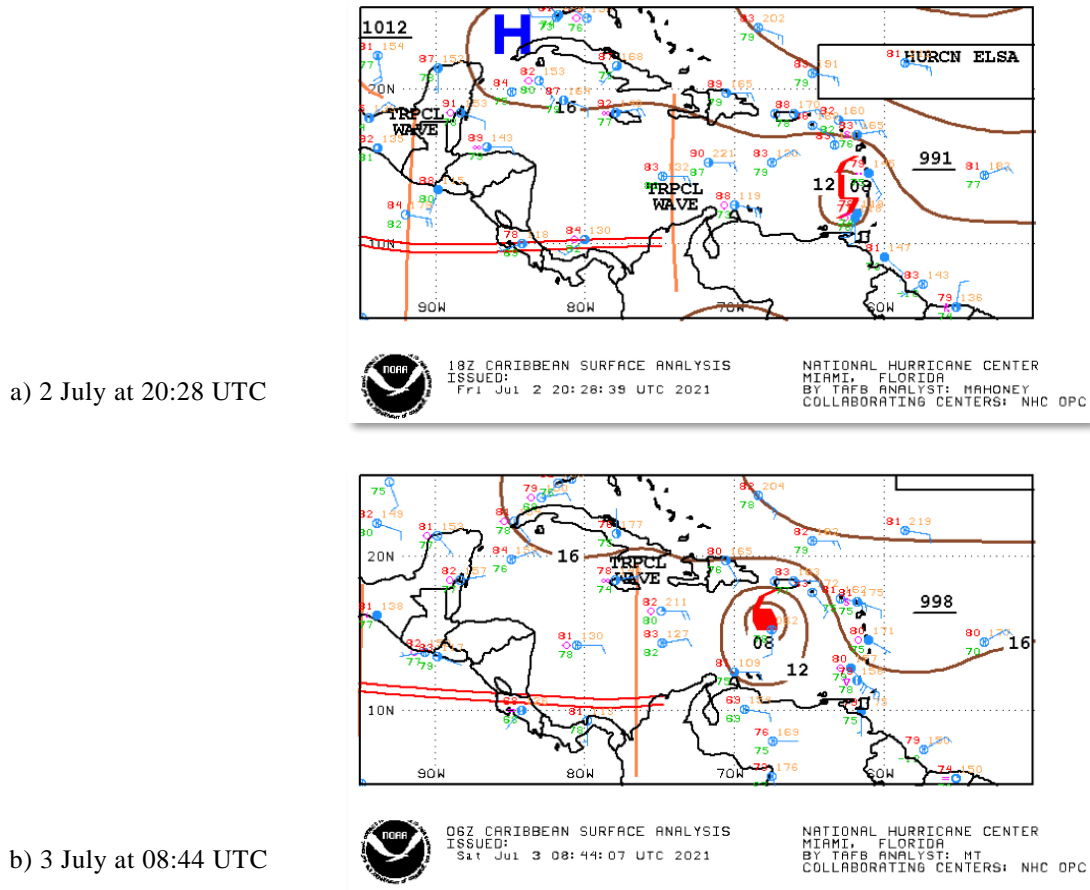
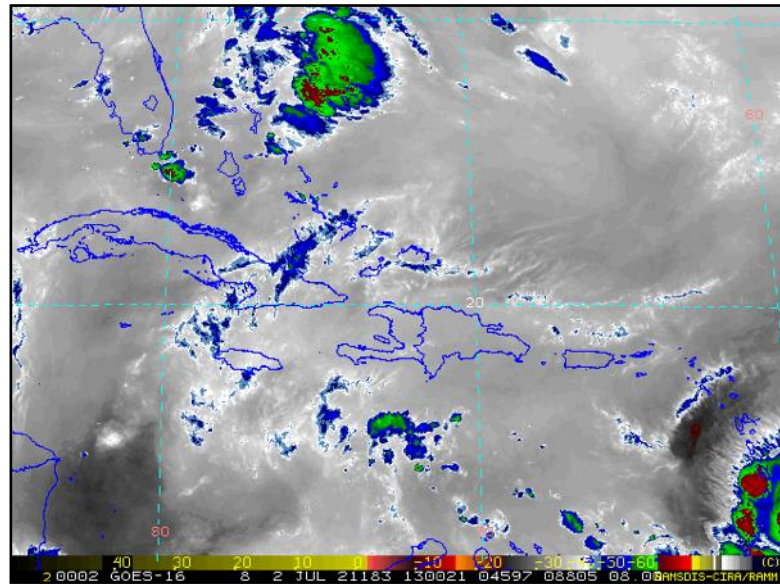


Figure 1 Surface analysis over the Caribbean area at different times as indicated by labels. Hurricane Elsa is visible over the waters of Windward Islands (a). Source: US National Hurricane Center<sup>3</sup>

<sup>3</sup> 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](https://www.nhc.noaa.gov/tafb/CAR_00Z.gif) and [https://www.nhc.noaa.gov/tafb/CAR\\_18Z.gif](https://www.nhc.noaa.gov/tafb/CAR_18Z.gif)

a) 2 July at 1300 UTC



b) 2 July at 1530 UTC

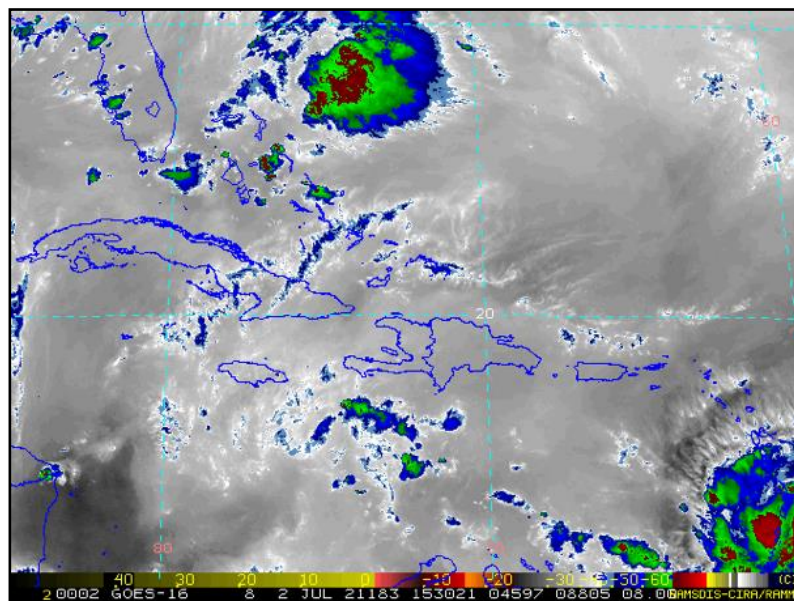


Figure 2 Satellite imagery at different times as indicated by labels from thermal infrared channel enhanced with colour. Blue/green colours represent high altitude clouds (top cloud temperature between  $-50^{\circ}\text{C}$  and  $-70^{\circ}\text{C}$ ), while the red/yellow colours represent very high altitude clouds (top cloud lower than  $-70^{\circ}\text{C}$ ). High altitude clouds indicate strong convection associated with intense precipitation. Source: NOAA, Satellite and Information Service<sup>4</sup>.

<sup>4</sup> RAMSDIS Online Archive, NOAA Satellite and Information Service, review date: 4 July 2021, available at: [https://rammb.cira.colostate.edu/ramsdisc/online/images/rmtc/rmtcsasec4ir304/rmtcsasec4ir304\\_20210702130021.gif](https://rammb.cira.colostate.edu/ramsdisc/online/images/rmtc/rmtcsasec4ir304/rmtcsasec4ir304_20210702130021.gif)  
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### 3 CCRIF FISHERIES MODEL TC COMPONENT OUTPUTS

Under the Tropical Cyclone (TC) component of CCRIF’s fisheries model, loss calculation protocol, a report is required for any tropical cyclone affecting at least one member country with winds greater than 39 mph (62.7 km/h). For Saint Lucia and Grenada, Tropical Cyclone Elsa qualified as a Loss Event<sup>5</sup> under the TC component of each country’s COAST policy.

The wind footprint (Figures 3 and 4) is one of two outputs from the TC component of CCRIF’s fisheries model, which show the regions affected by Tropical Cyclone Elsa in Saint Lucia and Grenada.

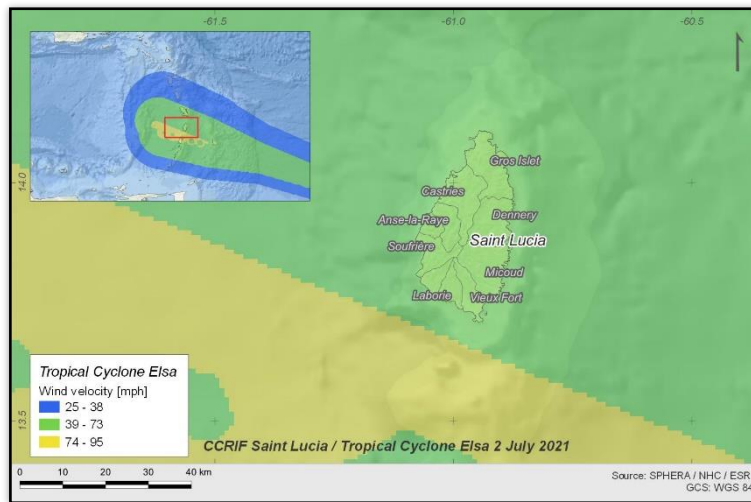


Figure 3 Map showing the wind field associated with Tropical Cyclone Elsa in Saint Lucia.  
Source: NHC & CCRIF’s fisheries model TC component

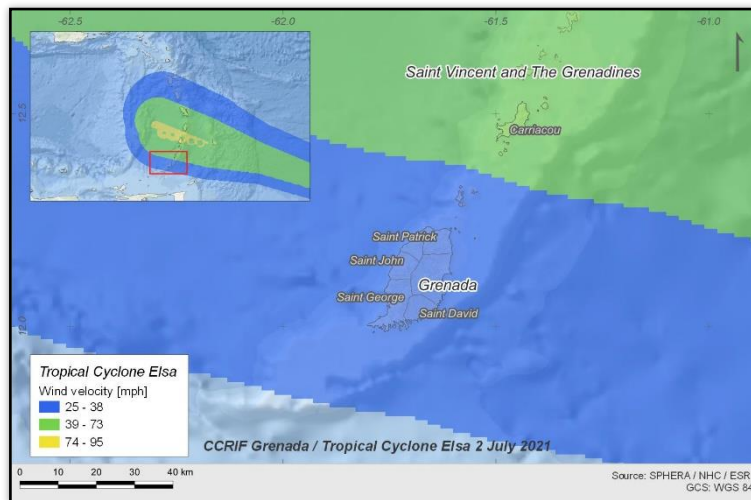


Figure 4 Map showing the wind field associated with Tropical Cyclone Elsa in Grenada.  
Source: NHC & CCRIF’s fisheries model TC component

<sup>5</sup> An event registers a loss in one or more policyholder countries but does not trigger the CCRIF policy in any policyholder country.

## 4 CCRIF FISHERIES MODEL AW COMPONENT OUTPUTS

Under the Adverse Weather (AW) component of the CCRIF fisheries model, an adverse weather event is defined as the occurrence of a maximum 24-hour-moving-window daily rainfall over any of the exposed assets above a pre-defined threshold, or of a maximum daily significant wave height close to any of the exposed assets<sup>6</sup> above a pre-defined threshold, for at least three consecutive days. With Tropical Cyclone Elsa, these conditions did not occur, and therefore the calculation of the losses was not triggered (i.e., this event did not generate adverse weather losses).

Figures 5 and 6 shows the daily time series of the country average maximum 24-hour accumulated rainfall (left) and country average maximum daily significant wave height (right) for Saint Lucia and Grenada respectively. These plots show the variation of these two variables before, during and after the event.

In Saint Lucia the maximum rainfall occurred on 2 July 2021, and the average value over the exposed assets was 76 mm. The maximum significant wave height occurred on 2 July 2021, and the average value close to the exposed assets was 4.6 m.

In Grenada the maximum rainfall occurred on 2 July 2021, and the average value over the exposed assets was 55 mm. The maximum significant wave height occurred on 3 July 2021, and the average value close to the exposed assets was 2.4 m.

The model has not reported any adverse weather events since the beginning of the policy year (June 1, 2021).

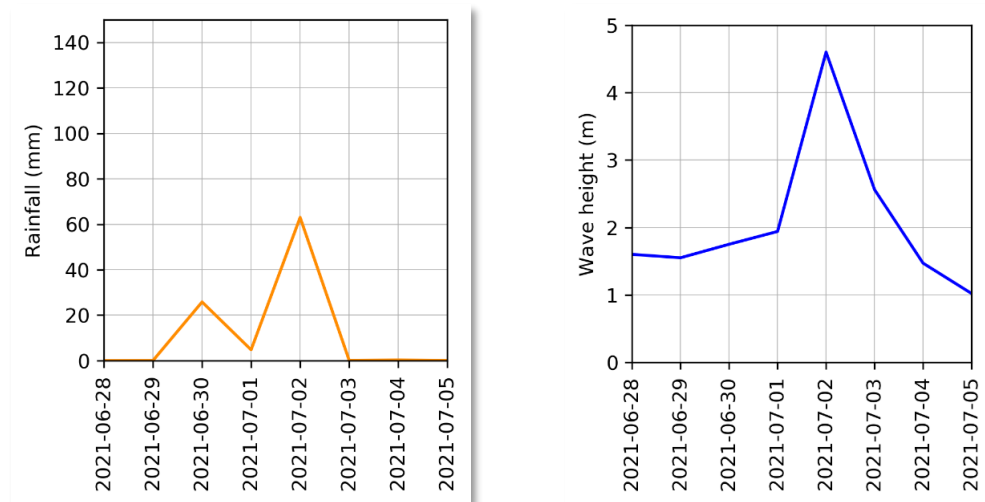


Figure 5 Daily time series of country average maximum 24-hour accumulated rainfall (left) and country average maximum daily significant wave height (right) for Tropical Cyclone Elsa in Saint Lucia

<sup>6</sup> If, for a given day, the value of the rainfall depth is above a rainfall threshold or the value of sea wave height is above a wave height threshold in a port or landing sites, all the revenues of the day are considered lost, i.e., the fisherfolk are unable to perform their usual activities.

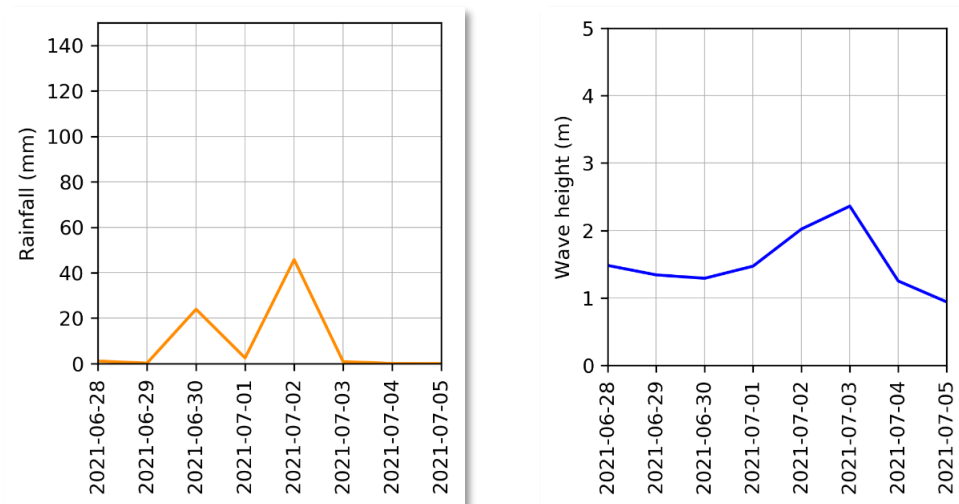


Figure 6 Daily time series of country average maximum 24-hour accumulated rainfall (left) and country average maximum daily significant wave height (right) for Tropical Cyclone Elsa in Grenada

## 5 IMPACTS

### Saint Lucia

According to the Caribbean Disaster Emergency Management Agency (CDEMA) and with information published in the news<sup>7</sup>, following the passage of Tropical Cyclone Elsa across Saint Lucia, one person died in Soufrière<sup>8</sup>. The major physical 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 but agriculture was the most affected sector.

Saint Lucia's Prime Minister, Allen Chastanet, reported that the greatest amount of damage was in agriculture<sup>9</sup>. Several houses including the state-owned housing project in the heart of the capital, Castries, were damaged by Hurricane Elsa.

### Grenada

At the time of this report, no information was available related to damages or losses on the fisheries sector in Grenada due to Tropical Cyclone Elsa. According to the Caribbean Disaster Emergency Management Agency (CDEMA) and with information published in the local news<sup>10</sup> due to heavy rainfall, several parts in St. Andrew and St. George were flooded. Several

<sup>7</sup> CBC Radio-Canada, review date: 4 July 2021, available at: '[Tropical storm Elsa leaves at least 3 dead in Caribbean, heads toward Cuba, Florida](#)'

<sup>8</sup> 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](#)'

<sup>9</sup> Jamaica Observer, review date: 6 July 2021, available at: '[St Lucia reports significant losses in agricultural sector as a result of Elsa](#)'

<sup>10</sup> NOW Grenada, review date: 6 July 2021, available at: '[Severe flooding in St Andrew and St George](#)'

landslides in different parts of Grenada were reported. No damages were reported within the agricultural sector.

Prior to the arrival of Tropical Storm Elsa, Grenada's authorities took precautionary measures such as activating a Tropical Storm Watch. Also as precautionary measure the Maurice Bishop International Airport temporarily interrupted air traffic.

## **6 CCRIF FISHERIES MODEL TC COMPONENT**

The modelled losses for the TC component (Tiers 2 and 3), computed for Saint Lucia and Grenada using the CCRIF fisheries model, were below the Tier 2 attachment point for each country's policy (and hence below the Tier 3 attachment point), therefore no payments are due under the TC component.

## **7 CCRIF FISHERIES MODEL AW COMPONENT**

For Saint Lucia and Grenada the sum of the losses caused by adverse weather for each country since the start of the policy year are below the attachment point (Tier 1) of each country's policy and therefore no payments are due.

For additional information, please contact CCRIF SPC at: [pr@ccrif.org](mailto:pr@ccrif.org)