



# **Tropical Cyclone Sara (AAL192024)**

## **Wind and Storm Surge**

## **Final Event Briefing**

## **Belize**

**28 November 2024**

## 1 SUMMARY

Tropical Cyclone Sara is the nineteenth named cyclone of the 2024 Atlantic Hurricane Season. On 16 and 17 November, tropical storm Sara crossed the Gulf of Honduras, making landfall near Belize City on 17 November at 1400UTC. Tropical-storm-force winds were detected near the coast of southern Belize for few hours around 16 November at 1800UTC, while in the next hours, despite the shorter distance from the system centre, less intense winds (lower than tropical-storm-force) affected the coastal regions of central and northern Belize. After making landfall, Sara weakened rapidly to tropical depression, moved inland over Belize and Guatemala, and dissipated over Yucatan Peninsula

Although the wind speed was above 39 mph in Belize, the final runs of the CCRIF tropical cyclone loss model for wind and storm surge have produced zero government losses for this country. For this reason, Tropical Cyclone Sara is considered a reportable event<sup>1</sup> for Belize.

The Aggregated Deductible Cover (ADC)<sup>2</sup> feature for the Tropical Cyclone policy for Belize has not been activated because the Modelled Losses are below 30% of the Attachment Point of the country's Tropical Cyclone policy. Therefore, no payout under the ADC feature is due for the Government of Belize.

The Localized Damage Index (LDI) component of the TC SPHERA model did not identify this event as a localized event<sup>3</sup> for Belize. Therefore, no payout is due under the LDI endorsement of the Tropical Cyclone policy for Belize.

This event briefing is designed to review the modelled losses due to wind and storm surge calculated by CCRIF's tropical cyclone model for affected CCRIF member countries, to be analyzed with respect to members' Tropical Cyclone policies. At the time of writing this report, Belize was the only CCRIF member country for which the CCRIF loss model for wind and storm surge produced government losses due to Tropical Cyclone Sara. A separate report on other CCRIF member countries affected by wind and storm surge, with respect to their Tropical Cyclone policies or rainfall impacts on affected CCRIF member countries will be issued if applicable.

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<sup>1</sup> Any named Tropical Cyclone event (i.e. one that reaches Tropical Storm status or higher) within a box bounded by the following – Latitude 4° and 34°N, Longitude 95° and 53°W – which produces modelled winds of at least 39 mph in one or more grid cells of at least one CCRIF policyholder country but does not generate a modelled loss greater than zero.

<sup>2</sup> The ADC is activated if the modelled loss value is between 30% and 50% of a country's policy Attachment Point and a Disaster Alert is issued by ReliefWeb within 7 days after the event. The ADC can also be activated if the modelled loss value is between 50% of the Attachment point and the Attachment point of the country policy.

<sup>3</sup> The LDI policy endorsement provides coverage for intense events that do not cause very large losses at a national scale but severely affect a relatively small part of a country. It is activated based on a Localized Index (LI), which compares the mean damage ratio computed for the most damaged areas and the mean damage ratio computed in the whole country. For an event to be covered by this endorsement the following conditions must be met:

- the TC local mean damage ratio computed for the local exposure must be greater than 1%
  - the TC global mean damage ratio computed for the whole country must be greater than 0.06%.
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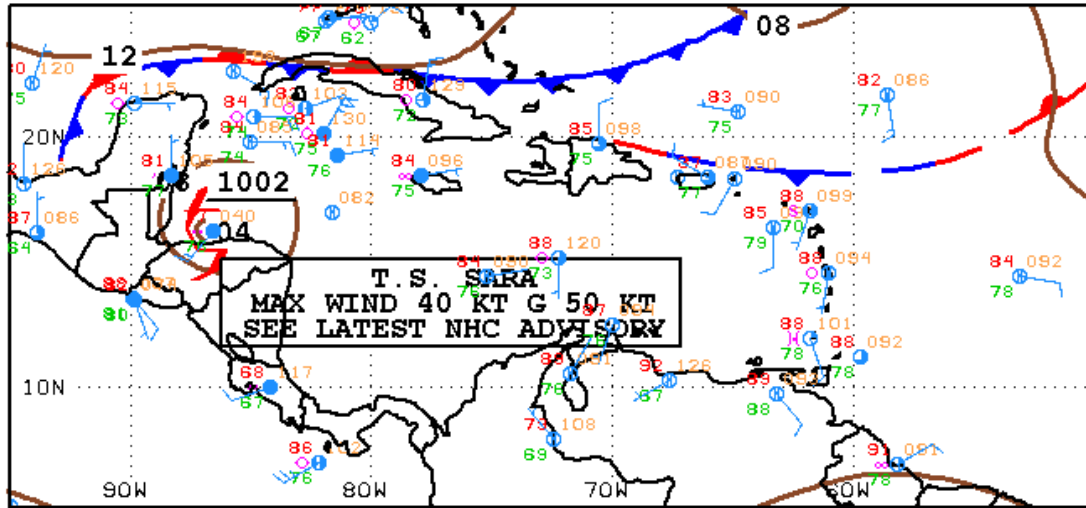
## 2 INTRODUCTION

On 14 November 2024 at 1800UTC, the National Hurricane Center (NHC) reported that a tropical storm formed just east of Honduras, and it was named Sara. The centre of the tropical cyclone was located near latitude  $15.7^{\circ}$  North and longitude  $82.9^{\circ}$  West, about 50 mi (85km) NE of Cabo Gracias A Dios on the Nicaragua/Honduras border. The cyclone was steered by a mid-level ridge to the north, making it to progress westward at 12 mph (19 km/h) towards Central America. Over the next two days, 15 and 16 November, Sara decreased its forward motion and tracked west-northwest, passing almost parallel to the northern coast of Honduras with a short entrance inland. During this period, Sara maintained almost unvaried intensity.

On 16 November at 1800UTC, Tropical Storm Sara was located near latitude  $16.3^{\circ}$  North, longitude  $86.8^{\circ}$  West, about 125mi (200km) SE of Belize City, Belize. It presented maximum sustained winds of 45 mph (72 km/h) and a minimum central pressure of 1002 mb (Figure 1). The satellite imagery revealed a fairly disorganized convective structure, with a broken curved band on the northwest side, and low convection near the center of circulation (Figure 2). Tropical-storm-force winds extended outward up to 105 miles (165 km) on the west side from the centre, while less intense winds extended over the northern sector of the tropical storm (Figure 3a and 3b). At approximately this time, tropical-storm-force winds were detected near the coast of southern Belize for few hours (Figure 3a and 3b).

During the next 24hours, Sara remained a poorly organized tropical storm, with the most significant banding features in the northern semicircle well away from the low-level centre. The system maintained a slow forward motion of 5mph (7km/h) towards west-northwest, heading for Belize. Despite the short distance from Belize, the strongest winds, less intense than tropical-storm-force, remained generally confined offshore, affecting marginally the coastal area of northern Belize (Figure 3c). On 17 November at 1400UTC, Tropical Storm Sara made landfall near Belize City, with maximum sustained winds of 40 mph (65 km/h) and a minimum central pressure of 1003 mb. Strong winds, but less intense than tropical-storm-force, persisted over the coastal area of northern Belize for a short time after landfall (Figure 3d), as Sara weakened rapidly to a tropical depression.

During the late hours of 17 November and the first hours of 18 November, the depression moved inland, crossing Belize and Guatemala, and eventually degenerated into a trough of low pressure over the Yucatán Peninsula on 18 November at 0900 UTC.



18Z CARIBBEAN SURFACE ANALYSIS  
ISSUED:  
Sat Nov 16 20:28:24 UTC 2024

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

Figure 1 Surface analysis over the Caribbean area on 16 November 2024 at 1800 UTC. Source: US National Hurricane Center<sup>4</sup>

<sup>4</sup> National Oceanic and Atmospheric Administration - FTP, National Hurricane Center, review date: 16 November 2024, available at: [https://www.nhc.noaa.gov/tafb/CAR\\_18\\_Z.gif](https://www.nhc.noaa.gov/tafb/CAR_18_Z.gif)

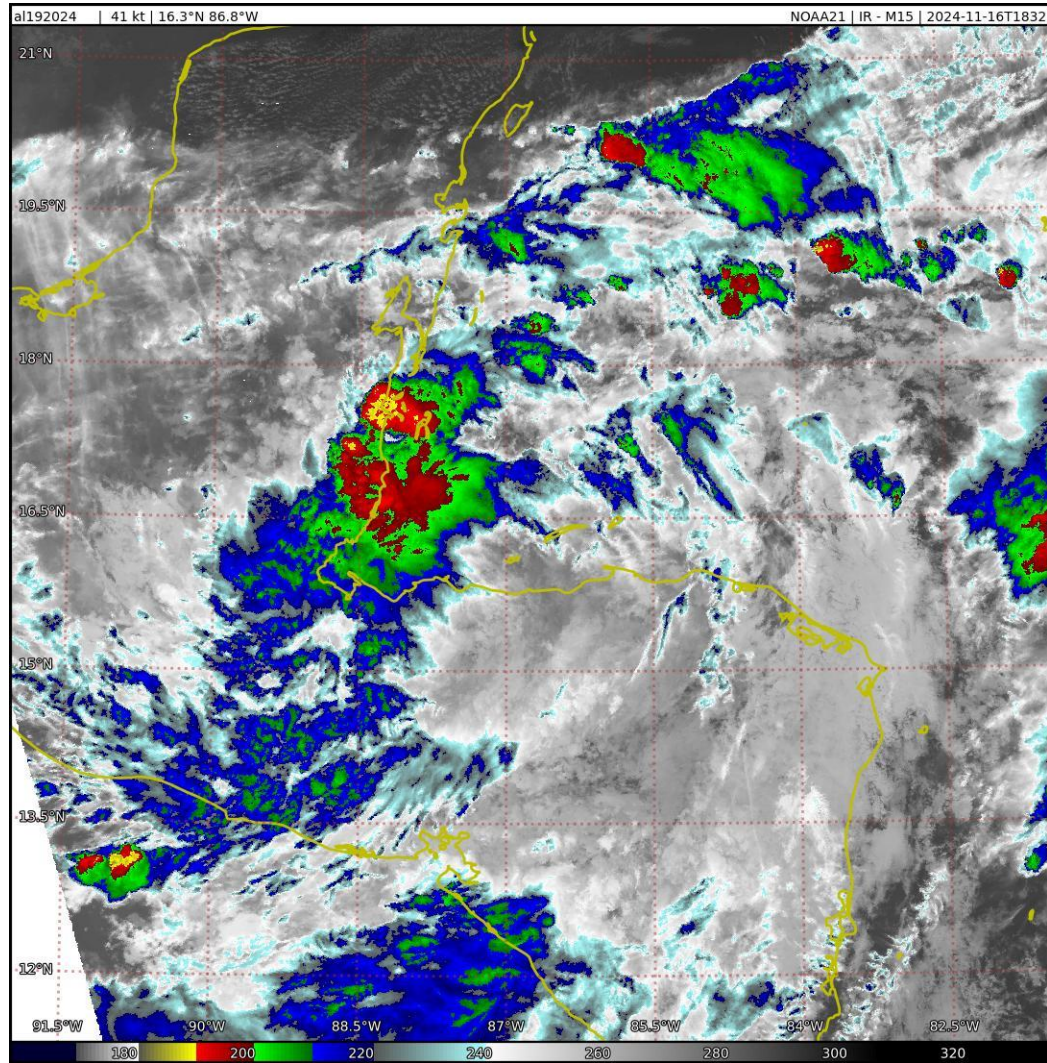


Figure 2 Satellite imagery on 16 November, 2024 at 1800 UTC from the thermal infrared channel enhanced with colour. Blue/green colours represent high altitude clouds (top cloud temperature between -50°C and -70°C), while the red/yellow colours represent very high altitude clouds (top cloud lower than -70°C). High altitude clouds indicate strong convection associated with intense precipitation. Source: NOAA, National Environmental Satellite, Data and Information Service <sup>5</sup>.

<sup>5</sup> RAMSDIS Online Archive, NOAA Satellite and Information Service, available at: [https://rammb-data.cira.colostate.edu/tc\\_realtime/storm.asp?storm\\_identifier=al192024](https://rammb-data.cira.colostate.edu/tc_realtime/storm.asp?storm_identifier=al192024)

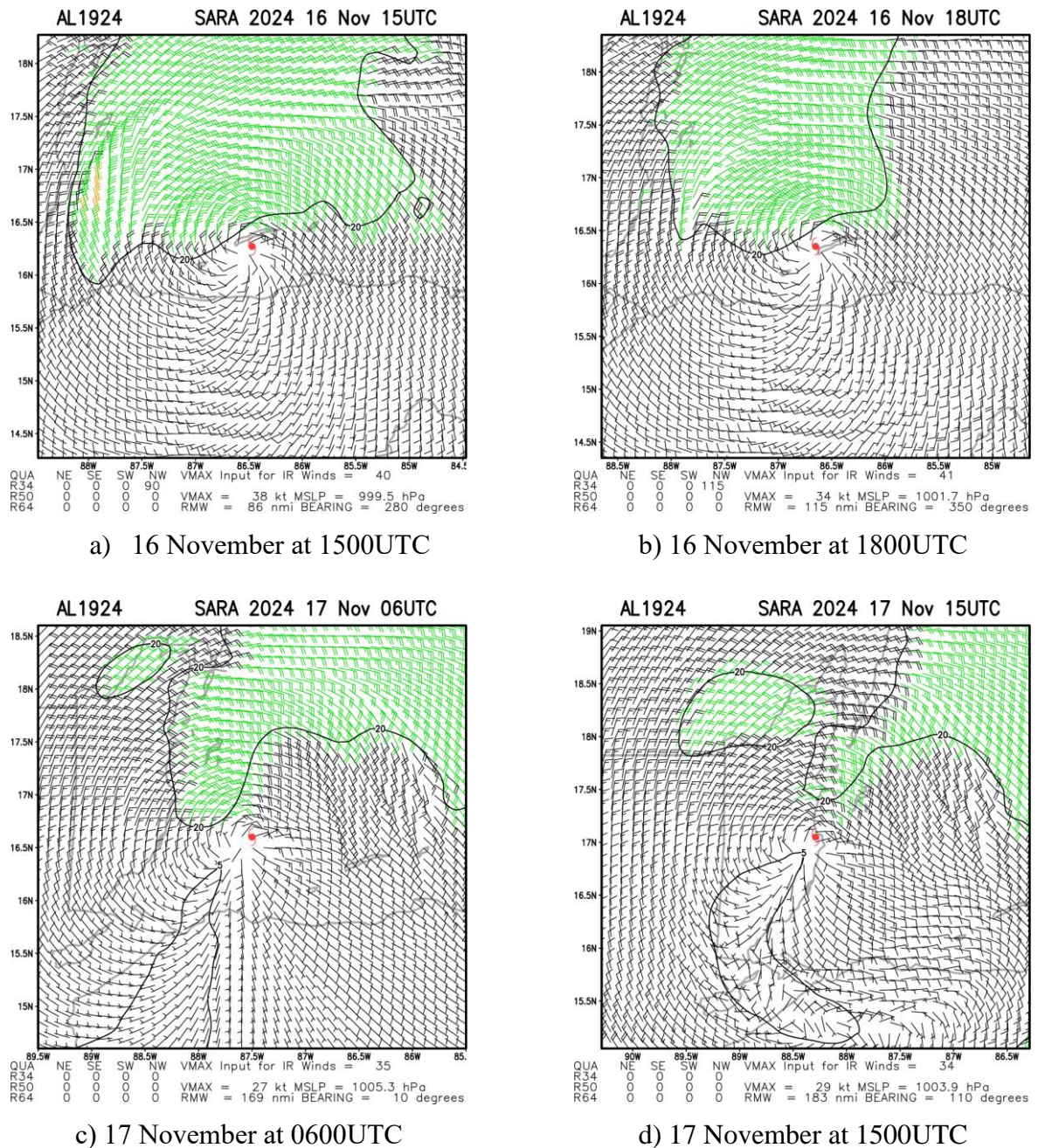


Figure 3 Multi-platform satellite based tropical cyclone surface wind analysis estimated on 16 and 17 November, 2024 at different times as indicated by the labels. Contouring indicates wind intensity at 20 kn (23 mph, 37 km/h), at 35 kn (40 mph, 65 km/h), 50 kn (57mph, 93 km/h) and 65 kn (74mph, 120 km/h). Source: NOAA, National Environmental Satellite, Data and Information Service<sup>6</sup>

<sup>6</sup> RAMSDIS Online Archive, NOAA Satellite and Information Service, available at: [https://rammb-data.cira.colostate.edu/tc\\_realtime/storm.asp?storm\\_idenfier=al192024](https://rammb-data.cira.colostate.edu/tc_realtime/storm.asp?storm_idenfier=al192024)

### 3 CCRIF SPC MODEL OUTPUTS

A CCRIF System for Probabilistic Hazard Evaluation and Risk Assessment (SPHERA) report is issued for any tropical cyclone affecting at least one member country with winds greater than 39 mph (62.7 km/h). Several countries were affected by Tropical Cyclone Sara. For Belize it qualifies as a Reportable Event<sup>7</sup>.

The wind footprint is one of the outputs from CCRIF's model. Figure 4 shows the wind footprint for the regions affected by Tropical Cyclone Sara.



Figure 4 Map showing the wind field associated with Tropical Cyclone Sara around Belize.  
Source: NHC & CCRIF/SPHERA

### 4 REPORTED IMPACTS

At the time of writing this report, the available information on damage in Belize due to Tropical Storm Sara is shown below.

On November 16, authorities in Stann Creek District ordered all businesses to close. They reported some flooding in Belize City, and several roads, bridges, and ferry services were closed, also the Philip S. W. Goldson International Airport was closed.<sup>8</sup>

According to ReliefWeb<sup>9</sup> authorities report no casualties.

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<sup>7</sup> Any named Tropical Cyclone event (*i.e.* one that reaches Tropical Storm status or higher) within a box bounded by the following – Latitude 4° and 34°N, Longitude 95° and 53°W – which produces modelled winds of at least 39 mph in one or more grid cells of at least one CCRIF policyholder country but does not generate a modelled loss greater than zero

<sup>8</sup> Crisis24: [Belize: Tropical Storm Sara](#)

<sup>9</sup> ReliefWeb: [Central America: Tropical Storm Sara](#)

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## **5 TRIGGER POTENTIAL**

The final runs of the CCRIF loss model for wind and storm surge did not produce any government losses for Belize, although tropical-storm-winds were shown over portions of these countries. Therefore, no payouts under the Tropical Cyclone policies of these countries are due.

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