



Trinidad and Tobago

Earthquake

7 December 2021

Final Event Briefing

18 December 2021

1 INTRODUCTION

A magnitude 5.1 earthquake occurred at 17:15:56 UTC on 7 December 2021, 19.7 km (12.2 mi) S of Güiria, Venezuela; 75 km (46.6 mi) W of Point Fortin, Trinidad and Tobago and 95.2 km (59.1 mi) W of San Fernando, Trinidad and Tobago. Estimates from the United States Geological Survey (USGS) located the epicentre of the event at 10.403°N, 62.328°W, and at a depth of 10.0 km (6.2 mi – Figure 1).

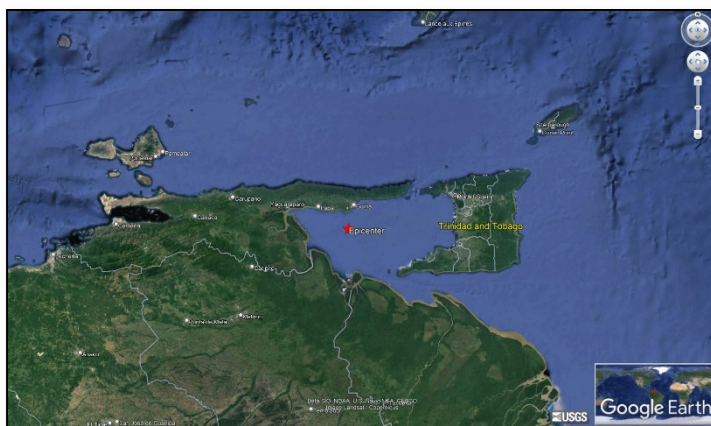


Figure 1 Information from the Earthquake Hazards Program of the United States Geological Survey regarding the earthquake event on 7 December 2021 at 17:15:56 UTC. Source: USGS¹

According to the USGS, the magnitude 5.1 earthquake was followed by an aftershock with the following characteristics:

Event	Date - Time [UTC]	Depth [km]	Lat [°N]	Long [°W]
M5.1 - 19 km SSW of Güiria, Venezuela	Dec 7, 19:43:50	10.0	10.405	62.343

This is considered to be aftershock of the magnitude 5.1 earthquake² within the CCRIF System for Probabilistic Hazard Evaluation and Risk Assessment (SPHERA) EQ model.

Event	Hypocentral Offset Distance from M 5.1 earthquake
M5.1 - 19 km SSW of Güiria, Venezuela	1.65 km

¹ Download Event KML, United States Geological Survey, review date: 17 December 2021, available at: <https://earthquake.usgs.gov/earthquakes/eventpage/us6000ga4p/executive>

² An Earthquake Event is defined as follows: An earthquake occurring during the Policy Period with a source moment magnitude of 5.0 or greater, in the Model Domain within a box bounded by the following – Latitude 4° and 34°N, Longitude 95° and 53°W, as reported by the Earthquake Reporting Agencies, provided that if multiple Earthquake Events occur within a specific 25-Day Period and within a radius of 50 kilometers of the location of the Earthquake Event that occurs at the beginning of the 25-Day Period, the Earthquake Event shall be the earthquake with the highest resulting Modelled Loss (EQ). The distance between two Earthquake Events shall be calculated using the formula defining Hypocentral Offset Distance.

Trinidad and Tobago was the only CCRIF member country where peak ground acceleration, computed with the SPHERA model, was greater than 0.01 g for this earthquake.

Final runs of CCRIF's loss model estimated no government losses for Trinidad and Tobago and therefore no payout under the country's earthquake policy is due.

2 CCRIF MODEL OUTPUTS

Under CCRIF's loss calculation protocol, a report using the CCRIF SPHERA model is produced for any earthquake with a magnitude greater than or equal to 5.0 that occurs within the region monitored by CCRIF and which generates a peak ground acceleration of at least 0.01 g in one or more grid cells of at least one CCRIF member country. Based on the SPHERA footprint for this earthquake, peak ground acceleration of up to 0.013 g was estimated in Trinidad (Figure 2), but under SPHERA, the earthquake generated a loss estimation of zero.

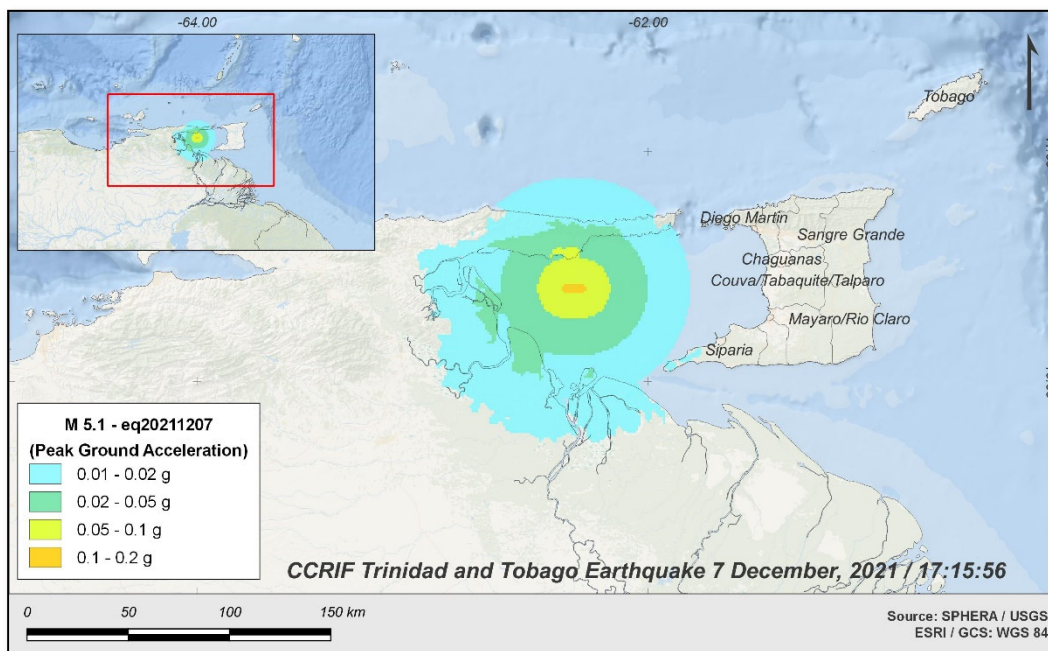


Figure 2 Map showing the peak ground acceleration in Trinidad and Tobago computed using the SPHERA model following the magnitude 5.1 earthquake³ on 7 December at 17:15:56 UTC.

Source: *USGS & CCRIF SPHERA EQ Model.*

³ USGS, review date: 17 December 2021, available at: '[M5.1 - 19 km S of Güiria, Venezuela](#)'

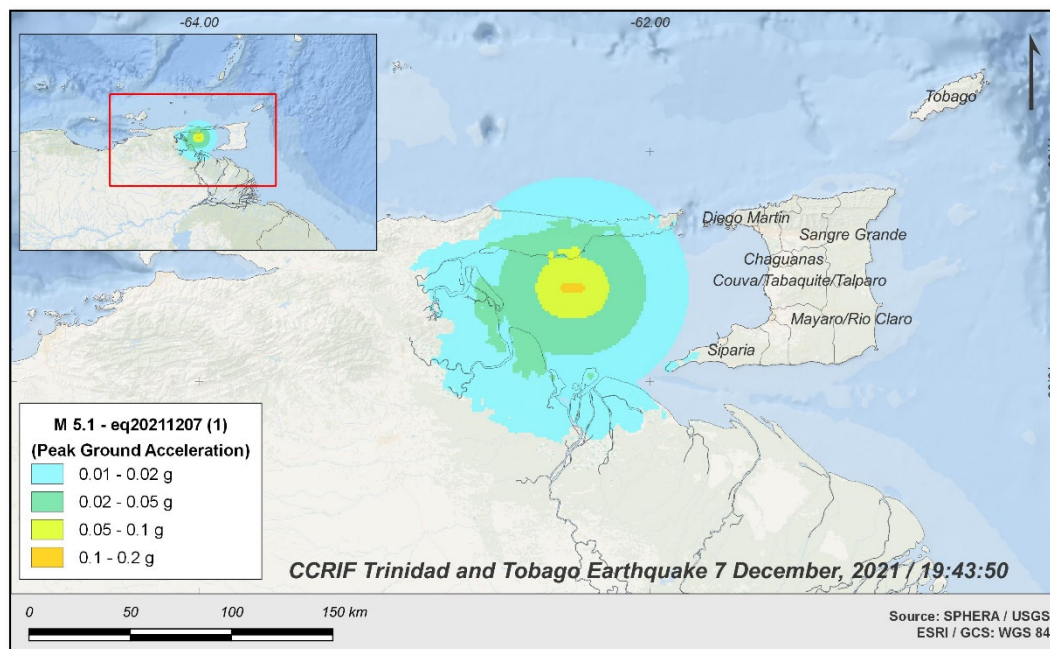


Figure 3 Map showing the peak ground acceleration in Trinidad and Tobago computed using SPHERA model following the earthquake aftershock⁴ of magnitude 5.1 on 7 December at 19:43:50 UTC. Source: *USGS & CCRIF SPHERA EQ Model*.

3 IMPACTS

Ten days after the earthquake’s occurrence, no information was available related to damages or loss in Trinidad and Tobago due to the magnitude 5.1 earthquake event.

According to the USGS “*Did You Feel It?*” online tool⁵, 7 persons in Trinidad and Tobago within a radius of 194 km (120.5 mi) from the epicentre reported the magnitude 5.1 earthquake as being a “no shake with no damage” to “weak shake with no damage” (Mercalli intensities: I - III).

4 TRIGGER POTENTIAL

Final runs of CCRIF’s loss model generated no government losses for Trinidad and Tobago for this earthquake and therefore no payout is due under the country’s CCRIF earthquake policy.

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

⁴ USGS, review date: 17 December 2021, available at: ‘[M5.1 - 19 km SSW of Güiria, Venezuela](#)’

⁵ Did You Feel It?, United States Geological Survey, review date: 18 December 2021, available at: <https://earthquake.usgs.gov/earthquakes/eventpage/us6000ga4p/dyfi/responses>