

# 17<sup>th</sup>

## SESSION IOCARIBE

# INTRODUCING COSTA: TRACKING MARINE OIL SPILL USING SATELLITES IN THE AMERICAS



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Intergovernmental  
Oceanographic  
Commission

Sub-Commission for the Caribbean  
and Adjacent Regions

Subcomisión para el Caribe y  
Regiones Adyacentes

XIAOFANG 'BONNIE' ZHU, US NOAA

Bogotá, Colombia  
May 08 - 11, 2023



GOBIERNO DE COLOMBIA



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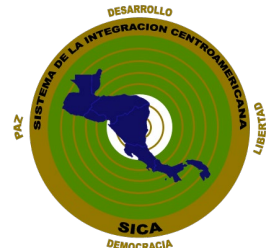


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# What is COSTA

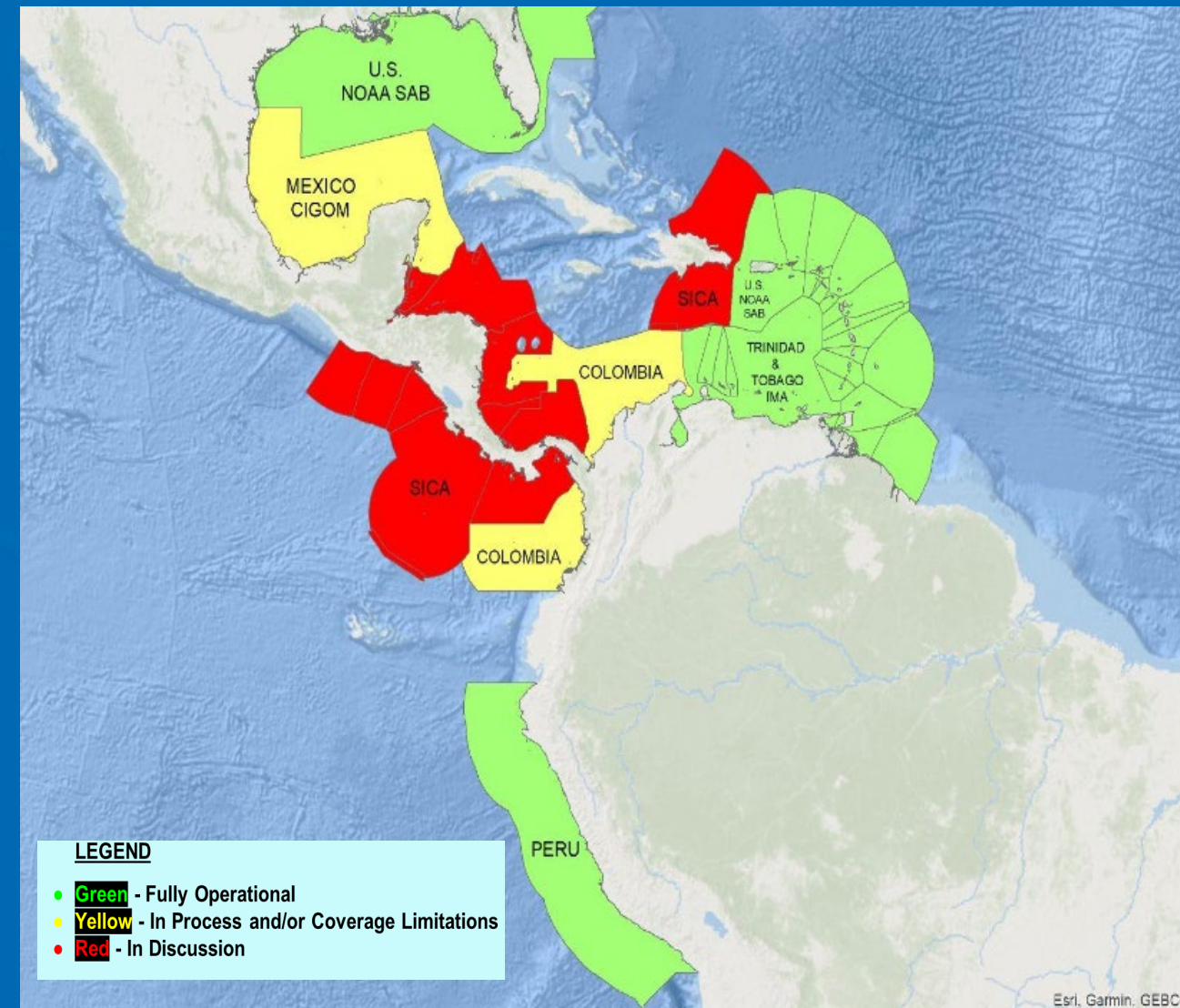
COSTA (Collaboration for Oil Satellite Tracking in the Americas ) is an international effort to enable nations in the Americas to stand up satellite oil monitoring and analysis capabilities in the Gulf of Mexico, Caribbean and adjacent oceans.

With the availability of high resolution, publicly available satellite imagery, routine oil spill monitoring can provide the first warning of a spill or intentional vessel oil discharge, help inform and direct spill response resources during major spills, and help countries find and target chronic leak sources.



## ***COSTA partners and coverage***

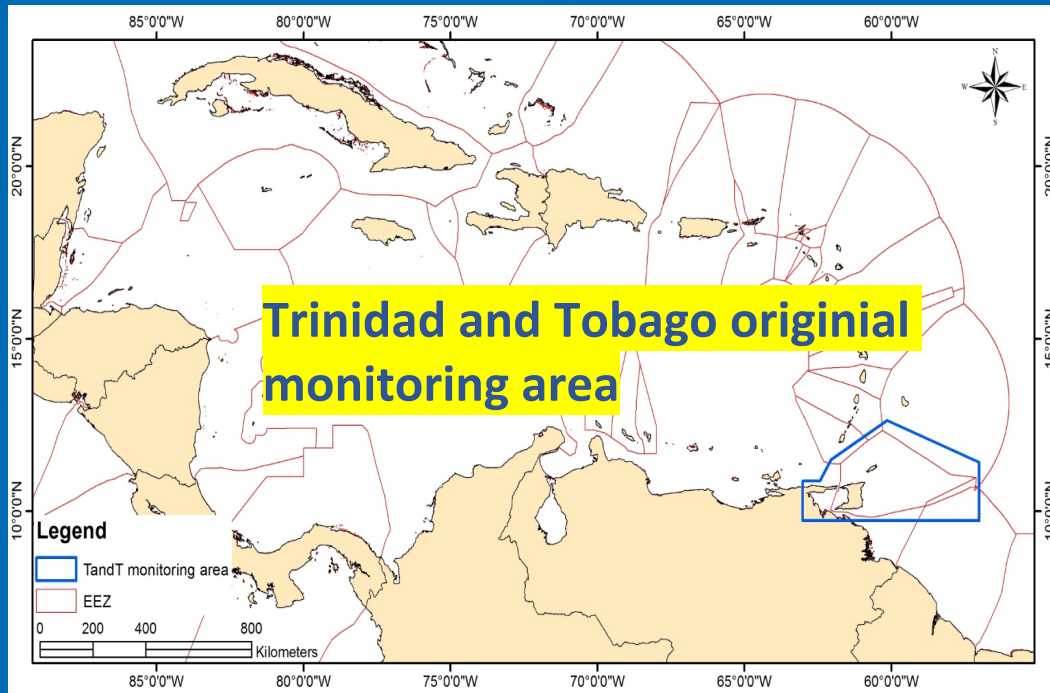
- **US** Since 2009, US National Oceanic and Atmospheric Administration (NOAA)'s Satellite Analysis Branch (SAB) has established a 24/7 satellite marine pollution program to monitoring marine oil spills in the US EEZ in near real time.
- **Trinidad and Tobago.** Connected through IOCaribe and GEO Blue Planet, TT is the first Caribbean country trained by NOAA and has fully establish their operational oil monitoring program since July 2021. They expanded to cover Eastern and Southern Caribbean in March 2023. NOAA, UNEP and RAC-REMPEITC are helping them connect and engage with countries in the newly engaged region for oil spill report distribution and collaboration.
- **Mexico and Peru** has finished their training in mid 2022, and have transitioned to near real-time monitoring. Mexico is currently monitoring in Southern GOM.
- **Colombia is the latest country to join COSTA.** Training starts in a week.
- **Central American countries through Central America Integration System (SICA)** has shown interest to join COSTA.



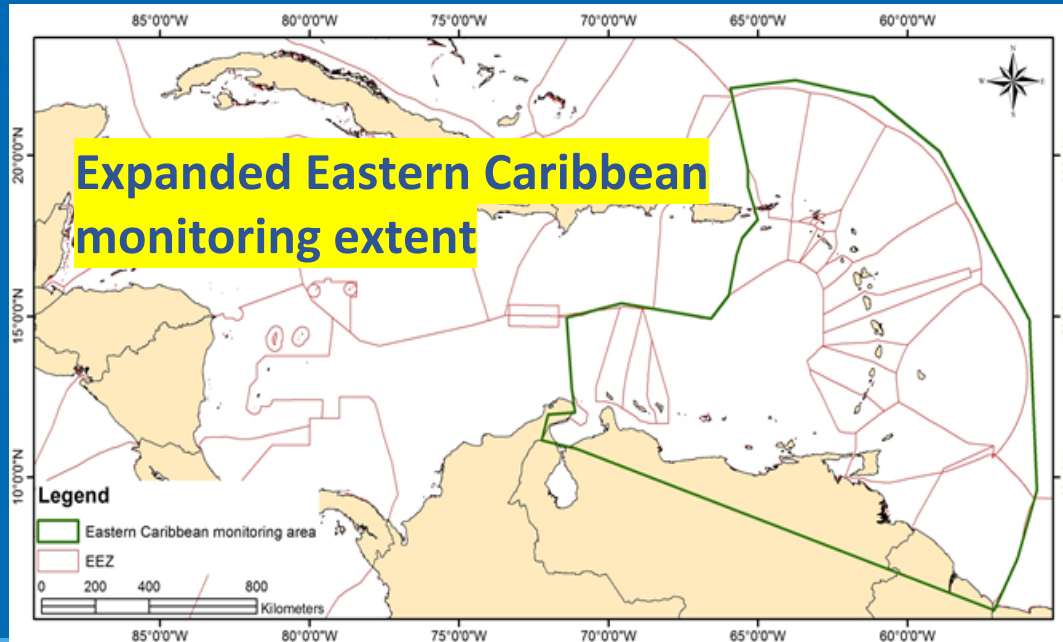


**Countries proposed to be included in the IMA monitoring area**

Country/territory name	
British Virgin Islands	
Saint-Martin	
Sint Maarten	
Saint-Barthélemy	
Sint Eustatius	
Saba	
Anguilla	
Saint Kitts and Nevis	
Antigua and Barbuda	
Montserrat	
Guadeloupe	
Dominica	
Martinique	
Saint Vincent and the Grenadines	
Saint Lucia	
Barbados	
Grenada	
Venezuela	
Aruba	
Bonaire	
Curacao	
Guyana	



**Trinidad and Tobago original monitoring area**



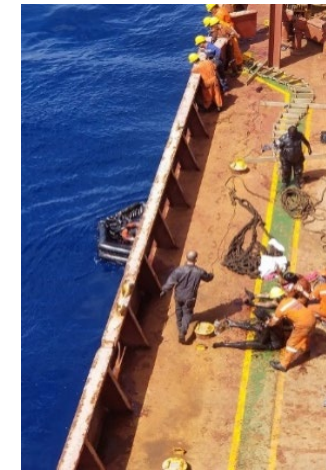
**Expanded Eastern Caribbean monitoring extent**

# COSTA Oil Reports and Notable Oil Spill Events Supports

## Satellite Oil Spill Report from Trinidad and Tobago

## 2021 Trinidad and Tobago Guaracacara oil spill

## 2022 Sunken Tanker M/V CETUS Oil Spill in Aruba



Crews were being rescued,  
covering in oil

Picture of the oil spill

**MARINE POLLUTION SURVEILLANCE REPORT**  
Ministry of Energy and Energy Industries  
Analysis by: Trinidad and Tobago Oil Spill Monitoring Group

REPORT DATE/TIME: 30/10/2021 1935 (UTC)  
DATA SOURCE: SENTINEL2B  
MODE: Multispectral  
RESOLUTION: 10 meter  
IMAGE DATE/TIME: 10/30/2021 1437 (UTC)

**UNCONFIRMED AS OIL**  
"Possible Oil" depicts area that satellite analyst believes might contain oil but this is unconfirmed


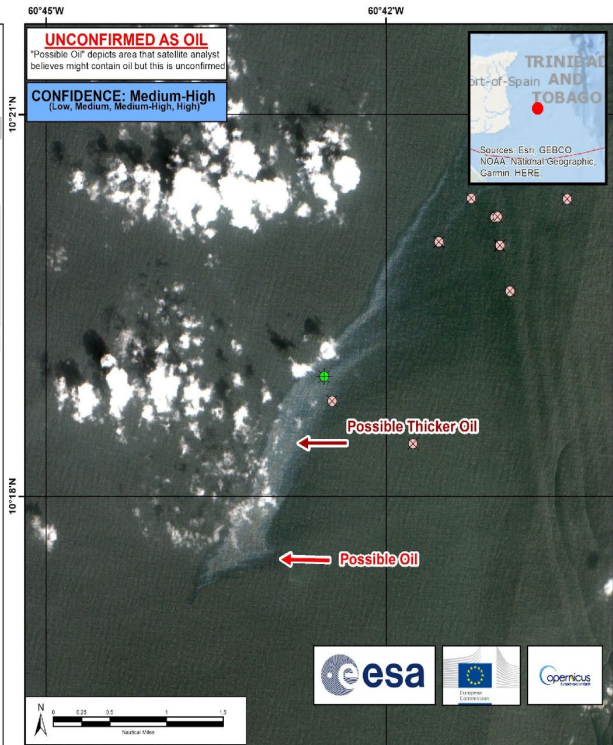
**CONFIDENCE: Medium-High**  
(Low, Medium, Medium-High, High)

3.65 km<sup>2</sup> Total Area of Possible Oil

AREA/BLOCK: Teak Samaan Poui 113

REMARKS: Possible oil was observed in satellite imagery. This anomaly is unconfirmed as oil. The anomaly seemed to be mainly thick oil with small areas of regular oil at the edges. The thick oil was approximately 3.90 NM long and 0.33 NM at its widest. The regular oil was approximately 4.18 NM long and 0.42 NM at its widest. The anomaly was approximately 15.70 NM east of Point Radix, and ran in a north easterly direction. The wind at the time of the observation was approximately 7 knots from the east north east.

UNCERTAINTIES: The suspected point source may have been one of the nearby facilities, however this was difficult to confirm.

**MARINE POLLUTION SURVEILLANCE REPORT**  
Ministry of Energy and Energy Industries  
Analysis by: Trinidad and Tobago Oil Spill Monitoring Group

REPORT DATE/TIME: 11/08/2021 0530 (UTC)  
DATA SOURCE: SENTINEL1B  
MODE: Interferometric Wide (IW) VV  
RESOLUTION: 20 meter  
IMAGE DATE/TIME: 8/10/2021 2217 (UTC)

**UNCONFIRMED AS OIL**  
"Possible Oil" depicts area that satellite analyst believes might contain oil but this is unconfirmed


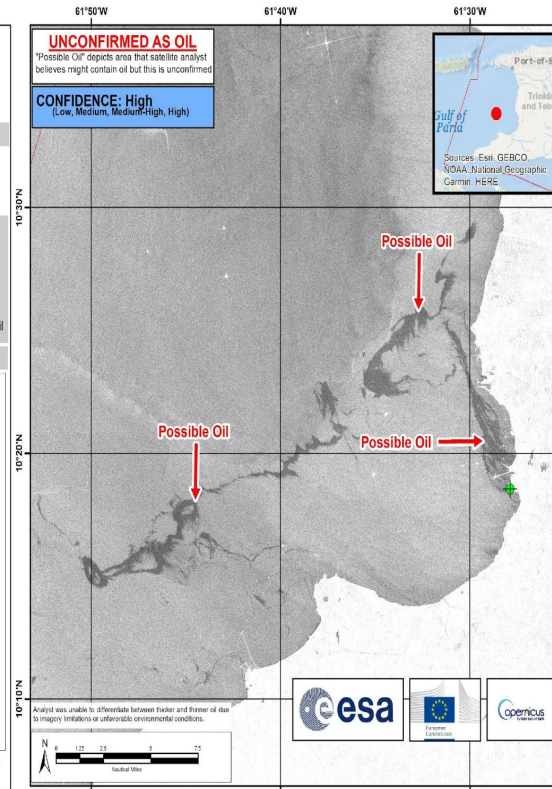
**CONFIDENCE: High**  
(Low, Medium, Medium-High, High)

61.79 km<sup>2</sup> Total Area of Possible Oil

AREA/BLOCK: Unavailable Acreage 150

REMARKS: Possible oil was observed in satellite imagery. This anomaly is unconfirmed as oil. The anomaly was approximately 22nm in a east to west direction, and 12nm in a north to south direction. It was located just offshore from Point-a-Pierre to Orange Valley. The oil slick showed strong contrast with the surrounding waters. This appears to be oil from the spill originating at the mouth of the Guaracara River. Winds were out of the ESE at approximately 7 kn.

UNCERTAINTIES: There are some other oil facilities in the southern area towards La Brea which are also leaking and possibly contributing smaller quantities of oil.

**MARINE POLLUTION SURVEILLANCE REPORT**  
Ministry of Energy and Energy Industries  
Analysis by: Trinidad and Tobago Oil Spill Monitoring Group

REPORT DATE/TIME: 6/4/2022 1606 (UTC)  
DATA SOURCE: SENTINEL2B  
MODE: Multispectral  
RESOLUTION: 10 meter  
IMAGE DATE/TIME: 6/20/2022 1528 (UTC)

**UNCONFIRMED AS OIL**  
"Possible Oil" depicts area that satellite analyst believes might contain oil but this is unconfirmed


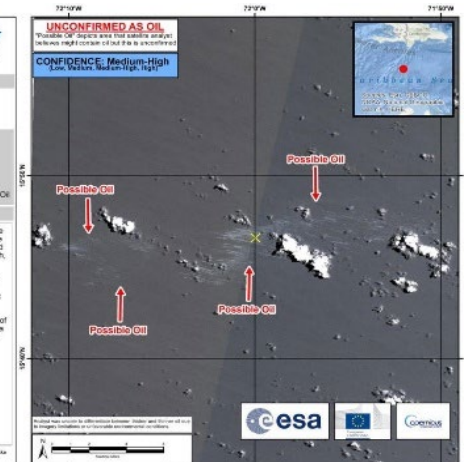
**CONFIDENCE: Medium-High**  
(Low, Medium, Medium-High, High)

16.59 km<sup>2</sup> Total Area of Possible Oil

AREA/BLOCK: N/A

REMARKS: Possible oil was observed in satellite imagery. This anomaly is unconfirmed as oil. The suspected oil slick could possibly have originated from the oil tanker CETUS that sank on May 22th, 2022. This slick was located approximately 218.40km westward of Aruba. The slick was spread out over an area of 20.10nm by 3.48nm. The slick exhibited strong contrast with the surrounding waters. Winds were out of the SE at approximately 15kn.

UNCERTAINTIES: Cloud obscured some areas of the slick. Due to a large number of reports over a large slick which was not mapped, but a general area used to demarcate the extent of the spill.



# Recommendations

- We encourage member countries in the Wider Caribbean region(WCR) to support and benefit from the IMA's monitoring effort in the Eastern and Southern Caribbean region.
- COSTA program are interested in partner agencies or regional organizations who can stand up long term oil spill monitoring program, and cover a large geographic area. We also encourage WCR countries and territories to engage with COSTA about establishing a regional oil spill monitoring program where currently there are none (e.g., Bahamas, Turks and Caicos and near the Great Antilles region).
- The COSTA program is also gauging the region's interest in other environmental satellite monitoring such as vessel detection, marine debris, fire and methane detection.

**THANK YOU** 

**MUCHAS GRACIAS** 

**MERCI BEAUCOUP** 