

3.4 International Tsunami Information Center Caribbean Office (ITIC-CAR) Report



Hawaii



Puerto Rico



<https://youtu.be/siq0jMTVwyM>

Christa von Hillebrandt-Andrade

Deputy Director, ITIC
Manager ITIC Caribbean Office, USA NOAA

Lcdr. Matías I. Sifón

Associate Director, ITIC
Head Oceanography Dept, Chile SHOA

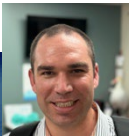
Dr. Laura Kong

Director, ITIC, USA NOAA

ITIC – Who we are



- ❑ **ITIC - established 1965 (IOC-IV.6), USA agreed to host**
- ❑ **Support Member States** (Technical improve TW (timely accurate), Capacity Building, Awareness, Event / Post-Tsunami data coll)



OFFICE - US NOAA NWS

- ❑ Director – Dr. Laura Kong
- ❑ Deputy Director, ITIC Caribbean Office - Christa von Hillebrandt-Andrade
Support CTIC, CARIBE-EWS (eff Sept 1 2021, former Caribbean Tsunami Warning Prog, est. 2010)
- ❑ Scientist (Oceanographer) – [vacant 2023](#)
- ❑ Technical Information Specialist – [vacant 2015](#)
- ❑ Information Technology Specialist – Tammy Fukuji
- ❑ Admin Support Assistant – [vacant 2024](#)
- ❑ Student interns (part, full-time): 1-2 year-round, 2-4 Summer

ASSOCIATE DIRECTOR – established 1974 (IOC/ITSU-IV.1, non-USA)

- ❑ Lcdr. [Matías I. Sifón](#) (Chile, SHOA Navy), 2023 (Chile since 1998)



ITIC-CAR STAFF 2024-2025



Irene Méndez Curbelo
Tsunami Ready Support
Graduate Student, Geology- UPRM



Christa G. von Hillebrandt-Andrade, MSc.
Deputy Director, ITIC
Manager, Caribbean Office
UNESCO - IOC/ NOAA



Kimberly Maisonet González
CARIBE WAVE Support
Undergrad Student, Geology - UPRM



Glorymar Gómez
Braille Products Support
Contractor for Tsunami Ready



Claudia Guzmán Soto
IT / Sea Level Support
Undergrad Student, Software
Engineering- UPRM



Desirée Bayouth Garcia
Tsunami Ready/CARIBEWAVE Support
Graduate Student, Geology- UPRM



Jelis Sostre
Tsunami Ready Support
Graduate Student, Geology- GT



Grace Lemoine
Tsunami Ready Support
Undergrad Student, International
Affairs & Geography- GW

Circled are
staff/contractors as
of April 30, 2025



ITIC Mandate (1977, 2005) – Activities

- ❑ **Monitor, recommend improvements**
 - Events – improving warning and response
 - Tsunami Warning Decision Support Tools
- ❑ **Assist in establish/strengthen national, regional systems**
 - Capacity Building, Training
 - IOC Wave Exercises
 - UN Decade for Ocean Science for Sustainable Development
- ❑ **Information resource - preparedness / education (create, compile, share)**
 - Guides, Manuals, Best Practices, Awareness materials
- ❑ **Information resource - historical tsunamis (collect, compile, share)**
 - Database, global and regional hazard, post-event surveys
- ❑ **Support the Caribbean Tsunami Information Center on request**
 - Training, Tsunami Ready, CARIBE WAVE, sensor tracking, E/O materials

www.tsunamiwave.org

<http://itic.ioc-unesco.org/index.php>



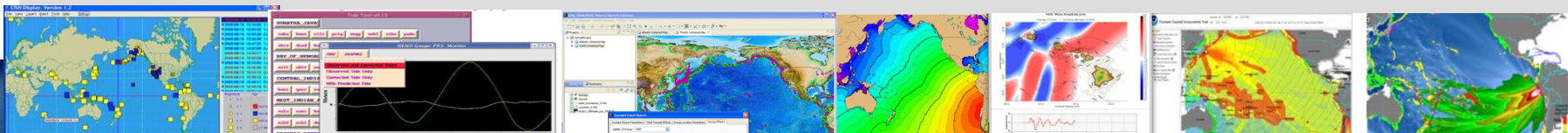


Tsunami Warning Decision Support Tools



ITIC-distributed, supported

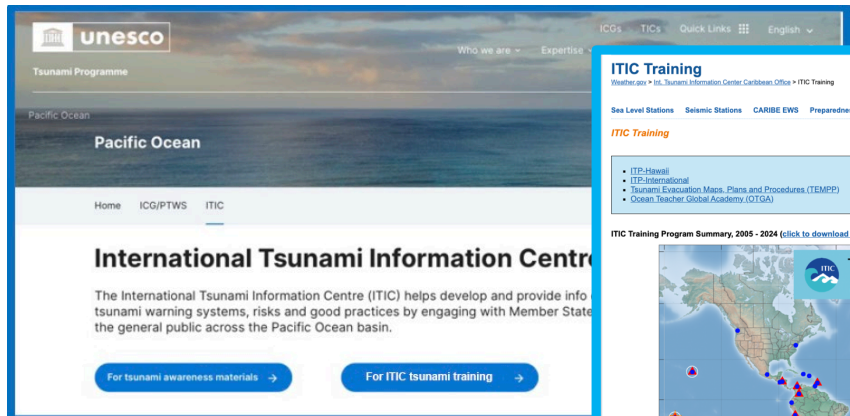
- ❑ **Tsunami Bull Board Listserv** (ITIC, 1995) **475** science/tsu/govt (2024)
ADDR FOR POSTING: tsunami_bb@list.woc.noaa.gov
- ❑ **Real time EQ Display** (CISN, USGS / NTHMP, 2005), 346+ **v3.15.070** (Apr 2025)
NO PTWC EQ Observatory message. NO registration code required so cannot track nbr users
- ❑ **Real-time Sea Level monitoring**
 - Tide Tool – TWC operations monitoring (PTWC, 2005) **v10.71**
 - IOC Sea Level Monitoring web site (IOC, 2008)
- ❑ **Tsunami Travel Time Software** (ITIC, NGDC, 2007) – **SDK4.0.1, with GUI for PC**
- ❑ **Tsunami Historical Database Online** (WDS-NCEI), **Offline** (TsuDig, NCEI, ITIC, 2009)
- ❑ **Tsunami Hazard Assessment Tools** (2017) – PMEL, ITIC
 - ❑ **ComMIT/MOST inundation modeling** => **OTGA hybrid late 2026**
 - ❑ **Tsu Coastal Assessment Tool** (TsuCAT v4.4, Aug 2024) => **PTWC messages from multiple countries, with community exercise injects, near-real time USGS earthquake ingest**



ITIC Tsunami Training

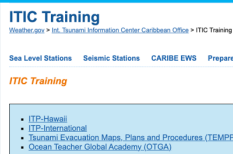
https://www.weather.gov/itic-car/itic_training

itictraining.org or tsunamitraining.org

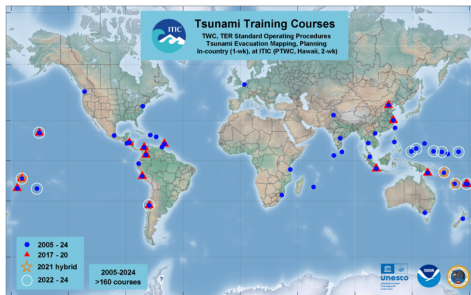


UNESCO

USA



ITIC Training Program Summary, 2005 - 2024 (click to download list)



ITIC Tsunami Training Locations, 2005-May 2024

As part of its mandate and functions under IOC Resolution X-23 (1977), the ITIC assists countries in establishing warning centers and improving preparedness, and for decades has annually conducted a training program. As an international center, ITIC also works to monitor and improve warning globally, and serves as an information resource for tsunami events (with WDC-MGO tsunamis), clearinghouse for education and awareness that encourages research that will improve mitigation practices.

The ITIC Training Program consists of a Hawaii-based training (ITP-Hawaii) where Hawaii is used as a working example of an end-to-end system response, and preparedness for both distant and local tsunamis, and an international training (ITP-International) where ITIC organizes a regional specific training. In 2018 and August 2024, the ITP-Hawaii (ITP-TWIS) took place in Chile and used Chile as the working example of the end-to-end 2018 training course was 1st time it has been conducted outside of Hawaii. In 2019 and 2023, the ITP-Hawaii returned to Hawaii. Future ITP explore hosting by other countries with working systems. The ITP-Hawaii emphasizes small classes where the actual practitioners can interact and share real-life experiences. The ITP-Int allows for international experts to visit a tsunami-prone country to engage a much larger and broader set of staff. Since the 2004 Indian Ocean tsunami, the ITIC has conducted more than 150 multi-day trainings around the world, training more than 3300 persons.

Topics have covered national early warning systems, warning and emergency response standard operating procedures, inundation modeling, evaluation planning, and exercises. Trainings typically target national warning and emergency response staff and stakeholders, as well as businesses and communities when there is interest.

The ITP-Hawaii is an example where a Tsunami Information Center (ITIC) works closely with the Pacific / Caribbean Tsunami Service Provider (TSP, PTWC) and its local emergency response and awareness, NOAA's State and Coastal Civil Defense and Pacific Tsunami Museum in context as a historic focused on



List of Alumni

Sea Level Stations Seismic Stations CARIBE EWS Preparedness/Education ITIC ITIC-CAR

List of Alumni

ITIC Tsunami Training (ITP) - International List of Alumni

ITP-Hawaii Participants

This page gives a summary of countries receiving ITP-Hawaii training, and between 1974 and 2024, it was known as the ITIC Visiting Scientist Program. It was initiated after 2011 to the ITIC Training Program (ITP) as

Since the 2004 Indian Ocean tsunami, interest and attendance increased from

Number of Trainees by country (2002 - 2024):

Country	Years Country Participated	Number of Trainees
Argentina	2024	1
Australia	2023	1
Antigua & Barbuda	2011	1
Barbados	2012, 2023, 2024	3
Belize	2024	1
British Virgin Islands	2018	1
Cayman Islands	2023	1
Chile	2003, 2010, 2011, 2012, 2014, 2018, 2019, 2023, 2024	35
China	2011, 2012, 2014, 2016, 2018, 2019, 2023	8
Colombia	2004, 2006, 2012, 2014, 2018, 2024	9
Cook Islands	2009, 2014, 2023	5
Costa Rica	2018, 2023	4
Dominica	2024	1
Ecuador	2002, 2008, 2007, 2010, 2011, 2014, 2023, 2024	10
El Salvador	2004, 2009, 2019	
Federated States of Micronesia	2007, 2009, 2012, 2014, 2023	
Fig	2009, 2011, 2018, 2023, 2024	
France	2018	
Germany	2019, 2024	
Grenada	2014, 2024	
Guatemala	2011	
Haiti	2014	
Honduras	2003, 2010, 2014, 2024	
Nicaragua	2018	
Italy	2011, 2023	
Republic of Korea	2011, 2014, 2023	
Kiribati	2007, 2009, 2011, 2012, 2018, 2023	
Malaysia	2019	
Malta	2014	
Marshall Islands	2014	
Mexico	2002, 2016, 2024	
Nauru	2016, 2018, 2024	
Nicaragua	2002, 2014, 2018	
Norway	2011, 2023	
Osaka	2014	
Panama	2014, 2024	

Tsunami Evacuation Maps, Plans and Procedures (TEMP)

TEMP PFI

TEMP Trainings

Community preparedness is vital

important because it enables a rapid appropriate response to both official warnings and the natural signal of a possible tsunami. This is critical for saving lives for all tsunami events, and it is even more essential for locally generated tsunamis which can arrive in minutes and before an official tsunami warning is issued by authorities.

Two important components of preparedness are tsunami-based inundation maps and community-developed tsunami evacuation maps and plans. Communities are best prepared when they are aware of their tsunami hazard, and together decide how they will be most ready for the next tsunami.



Preparedness for Community Tsunami Evacuations

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ITIC - OTGA UNESCO-IOC Tsunami Online Courses



unesco

Intergovernmental
Oceanographic
Commission



**International Tsunami
Information Centre (ITIC)**



THE OCEANTEACHER NETWORK
OF REGIONAL TRAINING CENTRES



**Scientific Knowledge
and Research**

Course topics include
Research data
management, OBIS, HAB



**Sustainable Use of
Marine Resources**

Course topics include
Marine Biodiversity Data
Management



**Marine Spatial
Planning**

Course topics include
Marine spatial planning,
GIS applications for ICZM.



**Marine and Coastal
Ecosystems**

Course topics include
Marine GIS applications,
Coastal mapping &
monitoring.



**UNESCO-IOC
PTWS TWC
Minimum Staff
Competency**

**Q2 -
2026**



**UNESCO-IOC
Tsunami
Awareness**

**Live
2024**



**UNESCO-IOC
Tsunami
Ready**

Live 2025



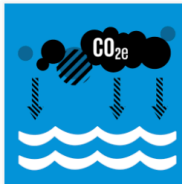
**Disaster Risk
Reduction**

Course topics include
Tsunami awareness, Storm
surge forecasting.



**Implement and
Enforce International
Sea Law**

Course topics include
Marine Scientific Research
under the UNCLOS.



Ocean Acidification

Course topics include
Impacts of ocean
acidification.



Marine Pollution

Course topics include
Prevention and reduction of
marine pollution.

<https://classroom.oceanteacher.org/>

ITIC Training Programme (ITP-TEWS) – End-2-End, 2 wks

ITIC - SHOA organized (32 participants from 18 countries, 25 trainers)

10 Participants
from 9
CARIBE EWS
Member States



Video
English, 508-compliant, Spanish

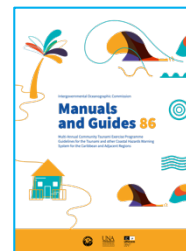
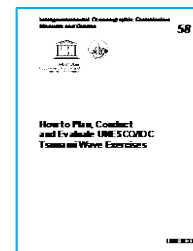
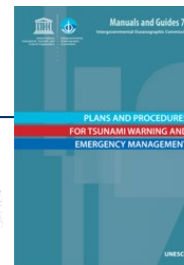


UNESCO/IOC-NOAA
International Tsunami Information Center

TWC-Minimum Staff Competencies

□ ITIC Standard Trainings based on IOC Manual and Guides

- TWC / TER SOP (MG 76);
- Inundation Maps to Evac Planning (TEMPP, MG 82)
- Wave Exercises (MG 58)
Multi-Annual Community Exercises (MG 86)



□ IOC Ocean Teacher Global Academy

Tsunami Awareness, Tsunami Ready - Available

<https://classroom.oceanteacher.org/>

TWC Minimum Staff Core Competencies – In process



Preparing for Community Tsunami Evacuations
From Inundation to Evacuation Maps, Response Plans, and Exercises ... communities knowing what to do and where to go

IOC ITIC Tsunami Evacuation Maps, Plans, and Procedures (TEMPP) Pilot
Capacity Building, Honduras and Central America, 2015-17



□ PTWC Products training videos (ENG, SP, FR)

UNESCO
Pacific Tsunami Warning Center (PTWC)
Product Staging from the earthquake, through data collection and analysis, to tsunami forecasting, and product generation and dissemination

Dr. Charles "Chip" McCreery
Director, PTWC



UNESCO
Pacific Tsunami Warning Center (PTWC)
Graphical Tsunami Forecast Products for the CARIBE-EWS

Dr. Charles "Chip" McCreery
Director, PTWC



ITIC-CAR support to CARIBE WAVE

Agenda 3.10 and 5.2 – CARIBE WAVE details

1. Member TT
2. Host Scenario Selection and Post-Exercise Eval tool (Survey Monkey)
3. For CW 25, facilitate Pre and Post Webinars
4. Support TT and Chair for compilation of CW General Guidelines Document and CW 25 Handbook, Presentations, Summary Reports, Publications
5. Promotion and track participation CW 25 (eg. Tsunami Zone)
6. Prep for CW 26



https://www.youtube.com/watch?v=vD_a8dOXr0Y



ITIC-CAR Support TRRP in Caribbean

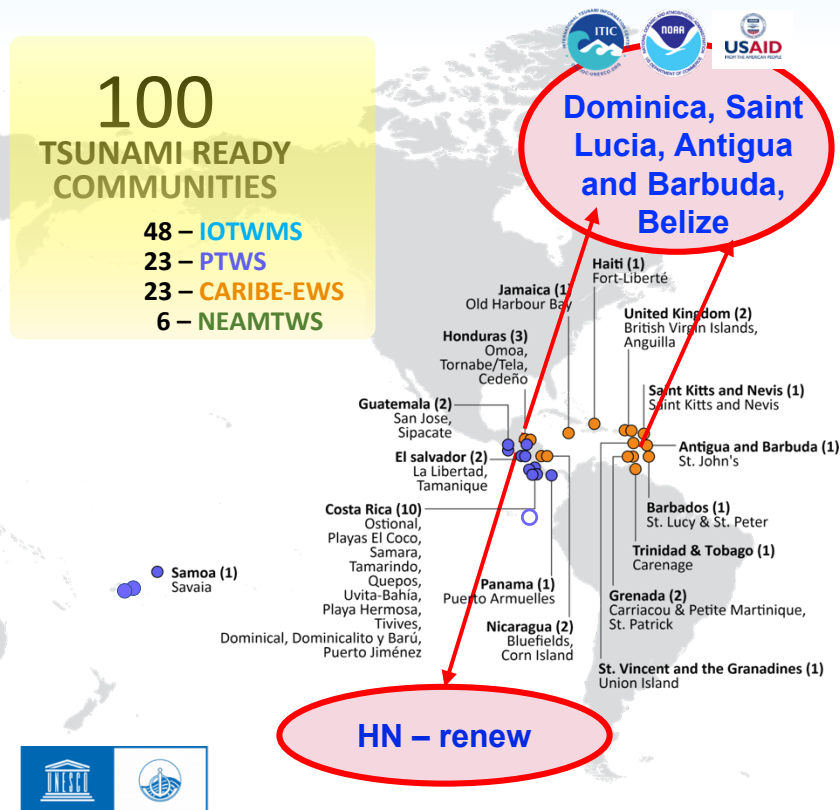
UNESCO-IOC TSUNAMI READY RECOGNITION PROGRAMME (TRRP)

MAJOR ACTIVITIES IN 2024+

- Completed Saint Lucia (Laborie); Dominica (Portsmouth)
- In Progress Renew Honduras (3), Review of Status, Virtual Training and Coordination Meetings
- In Progress Support New Antigua and Barbuda (national hazard assessment completed), Belize (virtual training and coordination) and Saint Lucia (national hazard assessment completed)
- CARIBE EWS TR TT – Agenda 3.11
- Pilot Survey on TR Implementation in ICG/CARIBE-EWS – Agenda 3.11
- Development of a global database (updating)
[Tsunami Ready Interactive Map Viewer](#)
- Tsunami Ready web site (support) (ongoing w/TRS)
- Tsunami Ready Toolkit (new, with TICs, TRS)
- IOC Manuals and Guides 74 (updating w/TICs, TRS)
«Standard Guidelines for TR Recognition Programme»

100
TSUNAMI READY
COMMUNITIES

48 – IOTWMS
23 – PTWS
23 – CARIBE-EWS
6 – NEAMTWS



Saint Lucia: Laborie



➤ TR Recognition Ceremony: Sept. 24, 2024

Implementation Approach - Stakeholders
National Emergency Management Organization, Fire Services,
Laborie Town Council



C. STANDARD OPERATING PROCEDURE FOR TSUNAMIS FOR LABORIE

LABORIE STANDARD OPERATING PROCEDURES FOR TSUNAMIS

Evacuation maps of Laborie have been prepared that indicate evacuation areas, evacuation routes and assembly point. People should be able to get out of the evacuation zone on foot within 15 minutes.

OFFICIAL TSUNAMI ALERTS AND MESSAGES

In the event of a tsunami, NEMO or the Saint Lucia Meteorological Services will issue the following types of alerts/messages:

• A **tsunami watch** means a tsunami may have been generated and could reach within three hours. A full evacuation or just marine evacuation will be ordered.

• A **tsunami warning** means a tsunami has not yet been verified but could exist and is more than three hours away. The tsunami watch will be upgraded to a tsunami warning or discontinued.

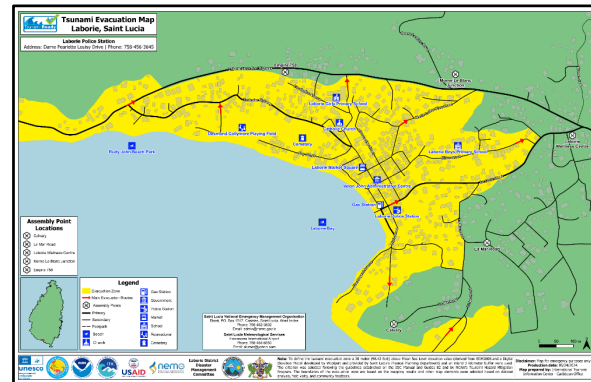
• A **tsunami information** means there is no tsunami threat and will be issued when there has been an earthquake, but because of its location or size it is understood that it was not capable of generating a tsunami. In very few cases a tsunami watch or warning is issued later for the same event.

Discontinuation if a watch or warning has been issued, this message is issued once the threat has passed. If there has been no tsunami or other impact associated with the earthquake people may return to the evacuated areas.

Alert is issued by NEMO in the case there has been tsunami or earthquake associated impact, and it is safe to return.

NEMO/MET/FIRE will send the alerts to Laborie via:

- Laborie Police Station via Radio and Telephone
- Laborie District Disaster Management Committee (LDDMC) via Email and WhatsApp (Chairperson and Vice Chairperson)
- Fire Station (Vieux Fort) via Radio and Telephone

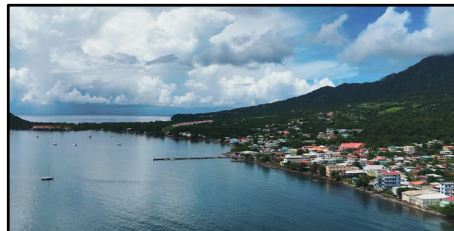
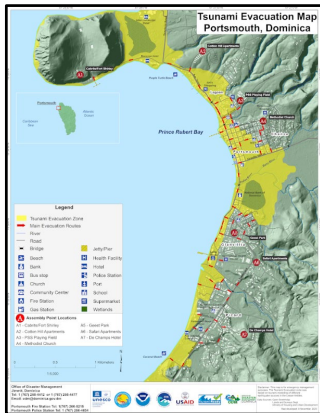
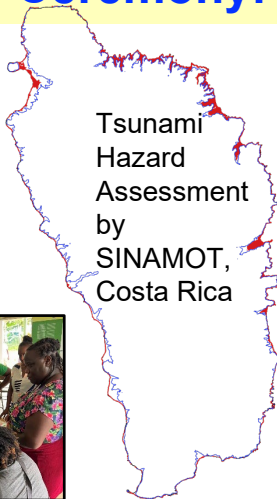


Dominica: Portsmouth

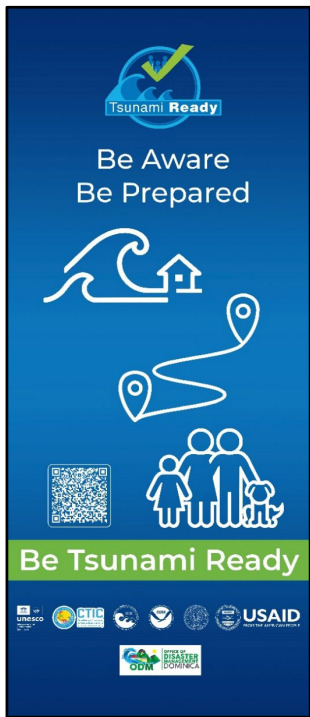


➤ TR Recognition Ceremony: Sept. 26, 2024

Implementation Approach - Stakeholders
Office of Disaster Management, Portsmouth Town Council



https://www.youtube.com/playlist?list=PLVuF658wCrzWVSSgT6o0_hVsVD4ZEifl



OBJECTIVES

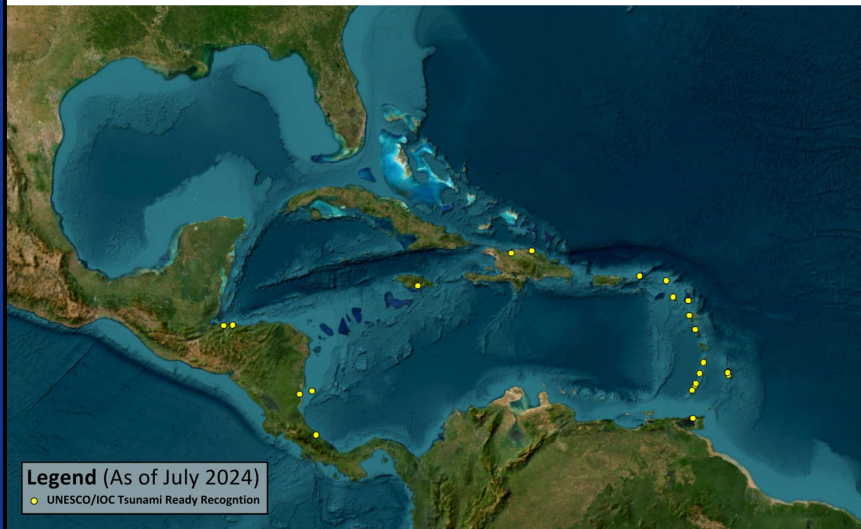
Benchmark
the current
effectiveness
of the
recognition
program

Provide
insight into
the
program's
strengths
and
deficiencies

Promote
and
improve the
program
collectively

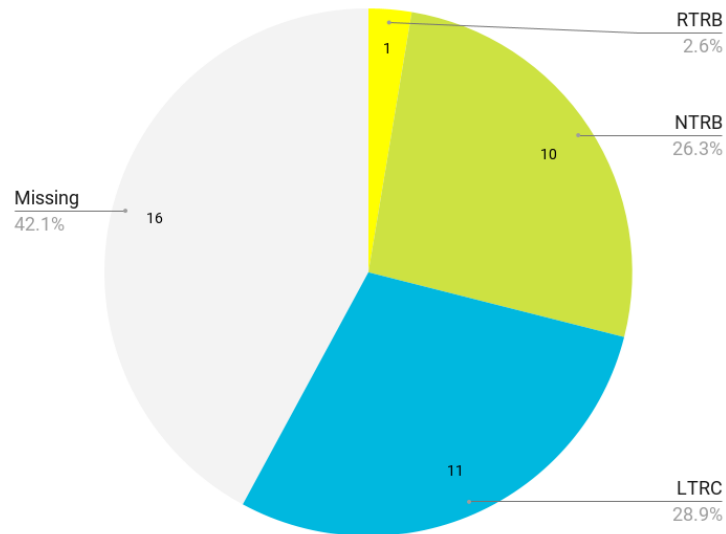


Tsunami Ready Communities
Caribbean and Adjacent Regions



Pilot Feedback Survey on the Implementation of Tsunami Ready in ICG/CARIBE-EWS

ICG/CARIBE-EWS Survey Sample



Work supported by Grace Lemoine, NWS Lapenta Scholar

IOC - ITIC Awareness materials **update** (some hard copy stock)



- ❑ **Tsunami Glossary 2019** (5 UN languages) => **updated 2025 (TOWS-WG-XVI)**
- ❑ **Tsunami Warning! Comic**
Amer Samoa (en) (IOC/INF1223) and English (update 2020)
- ❑ **Tsunami Great Waves, Surviving Tsunamis Lessons Learned** (1960, 2010 Chile)
Where the First Wave Arrives in Minutes (2004, 2006 Indonesia)
Tsunamis on the Move, Sensing a Tsunami
- ❑ **Tsunami Safety flyer – BRAILLE, Large Format – ITIC-CAR 2024, 2025**
- ❑ **Update of Tsunami Guide and Tsunami Rules (Eng, Sp) with CTIC, WG4**



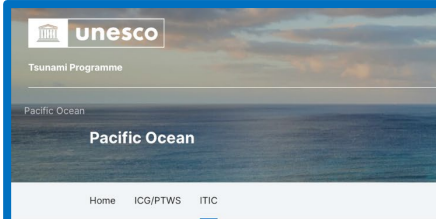
ITIC Tsunami Awareness Materials

https://www.weather.gov/itic-car/tsunami_awareness_materials

UNESCO

tsunamiteacher.org

USA



International Tsunami Information Center

The International Tsunami Information Center (ITIC) helps disseminate tsunami warning systems, risks and good practices to the general public across the Pacific Ocean basin.

For tsunami awareness materials →

ITIC Tsunami Awareness and Education Materials

Weather.gov > ITIC Tsunami Information Center Caribbean Office > ITIC Tsunami Awareness and Education Materials

Sea Level Stations Seismic Stations CARIBE EWS Preparedness/Education ITIC ITIC-CAR

ITIC Tsunami Awareness and Education Materials

- Tsunami, The Great Waves
- Surviving a Tsunami - Lessons from Chile, Hawaii, and Japan
- Where the 1st Wave Arrives in Minutes
- Tsunami Glossary
- Remembering the 1945 Makran Tsunami
- Niutoukupu, Tsunami (Tongan Survivor Accounts)
- Tsunami Warning! comic book
- Tsunami Safety Flyers
- Tsunami on the Move Poster
- Tsunami Kids (Hawaii and General)

OVERVIEW

In the aftermath of the 26 December 2004 Indian Ocean Tsunami, many excellent tsunami awareness materials were developed, to inform the public and decision-makers on tsunami hazards, risks, preparedness, and mitigation. In this DVD, the ITIC offers a small set of basic tsunami awareness materials that can be used to support the needs of government agencies, emergency managers and education materials were originally developed to support countries of the Pacific Tsunami Warning & Mitigation System (PTWS) during the 1990s then revised and updated after the 2004 catastrophe to emphasize tsunamis as a global hazard requiring a global early warning system.

For ITIC-authored materials Tsunami, the Great Waves, Tsunami Warning!, and the International Tsunami Safety posters and flyers are them to be customized in order to meet the needs, cultures, and languages of countries and local communities. Tsunami Glossary 20 request. These formats, including the text and figures, are provided for your copying and free use; we ask that you retain the logos at IOC-ITIC, and the credits to the individual authors and/or agencies, but you may also add your agency information and print and distribute-free-of-charge. Upon modification, we ask that you provide the ITIC with electronic and print copies of your revision. Your sharing will with others.

The pdf files, in both low and high resolution (created in Adobe Acrobat), were created from the originals for both online and print use in high resolution, however, due to size limitations only low resolution versions may be on this DVD. If you require high resolution versions (the ITIC Tsunami @ NOAA.gov). The .doc files (created in Microsoft Word) are intended for easy translation into other languages, or to allow information. The .ai files (created in Adobe Illustrator CS) are the original files used to create the product and can be modified to suit. The ITIC would be happy to work with you to finalize and make your materials publication-ready with the same design layout as in the.

In general, our goal is to have all basic materials available in at least English, French, Spanish. Selected materials are also available. These have been contributed by Member States, and ITIC has received copies of their translated materials.

All files are available by DVD from ITIC on request, or available for download from the ITIC web site (this webpage), see below.

We regret that we are unable to offer the full range and breadth of the materials that are available in this 1-DVD compilation. Please (the ITIC Tsunami @ NOAA.gov) if you have other requests or need further information or examples. We very much welcome your additional collection!

CONTENTS OF DVD

1) Tsunami, The Great Waves (general information booklet)

- English - IOC Brochure 2012-4, IOC, ITIC, LDC (France), NOAA, Revised 2014
- Spanish - IOC, ITIC, LDC (France), NOAA, SHOA, Revised 2014
- French - IOC Brochure 2012-4, IOC, ITIC, LDC (France), NOAA, Revised 2012
- Chinese Traditional, Chinese Simplified - National Marine Environment Forecasting Centre (NMEFC), State Oceanic Administration China and Hong Kong Observatory (HKO), June 2006

2) Tsunami Glossary (technical, includes science and warning systems)

- English - IOC Technical Series 85, ITIC, Revised 2019
- Arabic - IOC Technical Series 85, UNESCO/IOC, Revised 2019

Int. Tsunami Information Center Caribbean Office

Tsunami Alerts

tsunamikids.org
(Hawaii and general)

Tsunami Warning and Great Waves

Tsunami Safety Flyers

Tsunami on the Move Poster

Tsunami Kids (Hawaii and General)

Tsunami Glossary 2019

Surviving a Tsunami - Lessons from Chile, Hawaii, and Japan

Where the First Wave Arrives

ITIC Tsunami Awareness and Education Materials

Weather.gov > ITIC Tsunami Information Center Caribbean Office > ITIC Tsunami Awareness and Education Materials

Sea Level Stations Seismic Stations CARIBE EWS Preparedness/Education ITIC ITIC-CAR

ITIC Tsunami Awareness and Education Materials

Tsunami, The Great Waves

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- Tsunami Glossary (technical, includes science and warning systems)
- English - IOC Technical Series 85, ITIC, Revised 2019
- Arabic - IOC Technical Series 85, UNESCO/IOC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, LDC (France), NOAA, Revised 2019
- Chinese - IOC Technical Series 85, IOC, ITIC, LDC (France), NOAA, Revised 2019
- Chinese - IOC Technical Series 85, IOC, ITIC, LDC (France), NOAA, Revised 2019
- Spanish - IOC, LDC, 2019
- Arabic - IOC, LDC, 2019

- Tsunami Warning! (Tsunami's Caribbean Coast) poster book for children to distribute in schools
- English - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019

- Tsunami Safety Flyers
- English - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019

- Tsunami on the Move Poster
- English - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019

- Tsunami Kids (Hawaii and General)
- English - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
- Spanish - IOC Technical Series 85, ITIC, Revised 2019
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Tsunami Safety rules in Braille for the visually impaired communities in the Caribbean



The screenshot shows the ITIC website with a focus on the 'Tsunami Safety Rules' section. The page includes a search bar, navigation links, and a detailed description of the Braille safety rules. A sidebar on the right lists various ITIC services and resources. The main content area highlights the 'Tsunami Safety Rules in Braille' and provides a link to the full document.

ITIC International Tsunami Information Center

Tsunami Safety Rules

I. ALWAYS BE PREPARED. A TSUNAMI

MAY OCCUR ANYTIME

Tsunami Safety Rules in Braille

NEWS FEATURE

Tsunami Safety Flyers

Tsunami Safety Rules in Braille

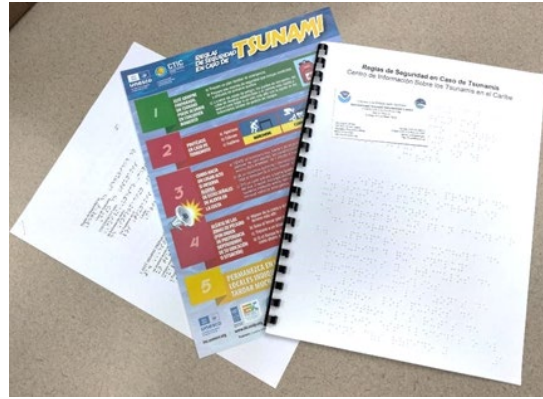
"Inclusive and multi-hazard early warning systems that close the 'last mile' are among the best risk reduction methods in the face of climate-related hazards and geophysical hazards such as tsunamis... it is a moral imperative as well," said Mami Mizutori, Special Representative of the Secretary-General for Disaster Risk Reduction and Head of UNDRR (2019-2024). In that spirit and upon the request of the government of Saint Lucia, the International Tsunami Information Center Caribbean Office (ITIC-CAR) has developed an English-Spanish Braille translation of the Tsunami Safety Rules flyer of the Caribbean Tsunami Information Center. This is the first time tsunami information has been made available in Braille. The priority is to distribute to the visually impaired community in the Caribbean, but also share globally. The package includes a Braille Tsunami Safety Rules 5 page booklet, a printed translation, the original color printed flyer and ITIC-CAR contact information. Saint Lucia requested these materials as part of the implementation of the UNESCO/IOC Tsunami Ready Recognition Programme in this Small Island Developing State in the Caribbean. According to CCB Eye Care Caribbean, blindness in the Caribbean is estimated at 1% according to a 2020 population analysis (<https://www.eyecarecaribbean.com/site/wp-content/uploads/2021/04/caribbean-caribbean-situation-analysis-2020.pdf>). Mrs. Freeman of the News Blind Light and Visually Impaired Society commented, "It is so wonderful to have this material in Braille, I miss reading very much". ITIC CAR will be seeking feedback regarding the value of the content, feasibility, usefulness, and other parameters. This initiative has been funded by the United States Agency for International Development. For more information, to request these booklets (English-Spanish) or provide feedback, please email itic.tsunami@noaa.gov.

Tsunami Safety Rules in Braille January 2024

Tsunami Safety Rules (English) 126 KB

Tsunami Safety Rules (Spanish) 128 KB

Safety flyers are available in a number of languages. Please contact ITIC for more information or localization to your country and language (itic.tsunami@noaa.gov).



Glorymar Gomez presenting at WTAD, UN, NYC



ITIC CAR Manager – other support IOC TRS and CARIBE EWS

- ❑ Chair of UNESCO/IOC WG 3, Member of WG 2 and 4 and TT CARIBE WAVE and Tsunami Ready
- ❑ UN Ocean Decade Tsunami Programme Scientific Committee – Member
- ❑ 2nd Global Tsunami Symposium, 20th Anniv of 2004 IO Tsunami with Chair Gerard Metayer, 2024
- ❑ CISOS and UN Immersed in Change, Costa Rica, 2025
- ❑ TR Recognition Cahuita, Costa Rica
- ❑ OD Tsunami Capacity Development Facility, Member
- ❑ IOCARIBE Ocean Decade Task Force
- ❑ Planning team CARIBE EWS English Sea Level Training (Date TBD), MG 86 Multiannual Exercises
- ❑ Updates TNC, NTWC, TWFP database
- ❑ Organizing Committee - 32nd International Tsunami Symposium (ITS2025)



ITIC-CAR Website - <https://www.weather.gov/itic-car>

International Tsunami Information Center Caribbean Office

[Weather.gov](#) > [Int. Tsunami Information Center Caribbean Office](#)

Int. Tsunami Information Center Caribbean Office
National Program

[Sea Level Stations](#) [Seismic Stations](#) [CARIBE EWS](#) [Preparedness/Education](#) [ITIC](#) [ITIC-CAR](#)

Tsunami Evacuation Maps

[Puerto Rico](#) - [U.S. Virgin Islands](#) - [British Virgin Islands](#)

PTWC Users' Guide for Tsunami Products

CARIBE-EWS - [PDF](#)

Puerto Rico and Virgin Islands - [PDF](#)

PTWC Graphical Tsunami Forecast Products - [Video](#)

Email christa.vonh@noaa.gov to request password.

The [CARIBE WAVE 25](#) exercise will be held on March 20, 2025

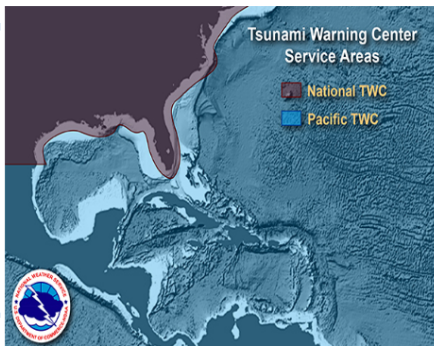
The International Tsunami Information Center (ITIC) is operated by the National Oceanic and Atmospheric Administration (NOAA's) National Weather Service (NWS) Pacific Region Headquarters. It serves as a national and international tsunami resource assisting U.S. States/Territories/ Commonwealths, U.S. Compact of Free Association countries, and countries throughout the world for the protection of lives and securing economic prosperity of at-risk coastal communities.

The ITIC Caribbean Office (ITIC-CAR), located in Mayagüez, Puerto Rico, focuses on national and international tsunami warning services and programs in the Caribbean and adjacent regions. It organizes and participates in exercises, training sessions and provides impact decision support as well as briefings and materials for use by the general public, government, scientists and broadcast media. Activities aim at strengthening and sustaining the tsunami observational and warning system as well as the continued enhancement of tsunami outreach, education and response, including the implementation of the US TsunamiReady® program and the international UNESCO/IOC Tsunami Ready Recognition Programme.

Within NOAA, it works closely with the U.S. Tsunami Warning Centers (PTWC and NITWC) which provide domestic warning services, and in the case of PTWC, also serve as the Tsunami Service Provider for the Pacific Tsunami Warning and Mitigation System (PTWS) and for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (CARIBE-EWS); the NWS Weather Forecast Offices, particularly San Juan which is responsible for disseminating tsunami products to Puerto Rico and the U.S. Virgin Islands; the National Ocean Service for water level monitoring and the Center for Tsunami Research at the Pacific Marine Environmental Lab for tsunami hazard assessments and detection, analysis and forecasting tools.

Internationally, ITIC-CAR coordinates efforts with the Caribbean Tsunami Information Center (Barbados) and works closely with the operators of seismic, sea level and GNSS stations and networks as well as the officially designated National Tsunami Warning Focal Points, National Tsunami Warning Centers and Tsunami National Contacts in the region.

The ITIC-CAR was established in 2010 by the U.S. National Weather Service. It is co-located with the Puerto Rico Seismic Network at the University of Puerto Rico.



Status of Sea Level Data Availability

[Weather.gov](#) > [Int. Tsunami Information Center Caribbean Office](#) > Status of Sea Level Data Availability

Int. Tsunami Information Center Caribbean Office
National Program

[Sea Level Stations](#) [Seismic Stations](#) [CARIBE EWS](#) [Preparedness/Education](#) [ITIC](#) [ITIC-CAR](#)

Sea Level Stations (read-only excel files)

2025

- January - [map1](#) | [map2](#)
- February - [map1](#) | [map2](#)
- March - [map1](#) | [map2](#)
- April - [map1](#) | [map2](#)

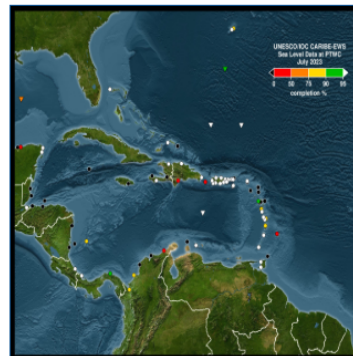
2024

- January - [map1](#) | [map2](#)
- February - [map1](#) | [map2](#)
- March - [map1](#) | [map2](#)
- April - [map1](#) | [map2](#)
- May - [map1](#) | [map2](#)
- June - [map1](#) | [map2](#)
- July - [map1](#) | [map2](#)
- August - [map1](#) | [map2](#)
- September - [map1](#) | [map2](#)
- October - [map1](#) | [map2](#)
- November - [map1](#) | [map2](#)
- December - [map1](#) | [map2](#)
- [Final Report](#)

2023

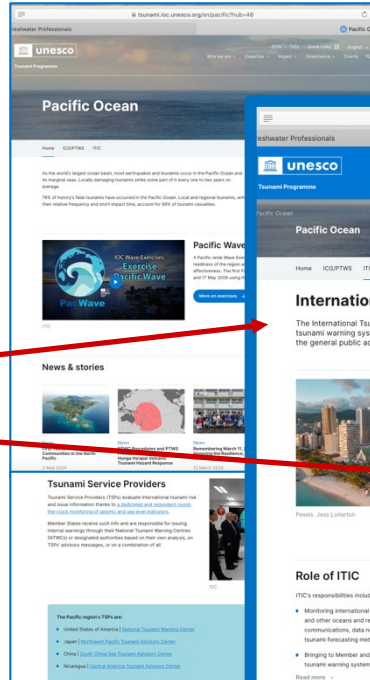
- January - [map1](#) | [map2](#)
- February - [map1](#) | [map2](#)
- March - [map1](#) | [map2](#)
- April - [map1](#) | [map2](#)
- May - [map1](#) | [map2](#)
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- October - [map1](#) | [map2](#)
- November - [map1](#) | [map2](#)
- December - [map1](#) | [map2](#)
- [Final Report](#)

Stations Map

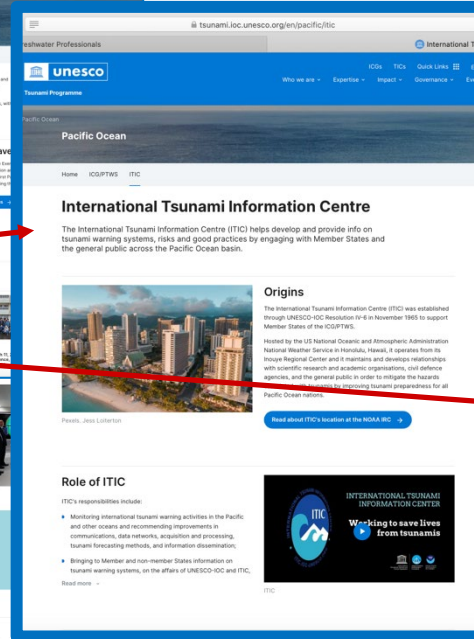


UNESCO/IOC-NOAA
International Tsunami Information Center

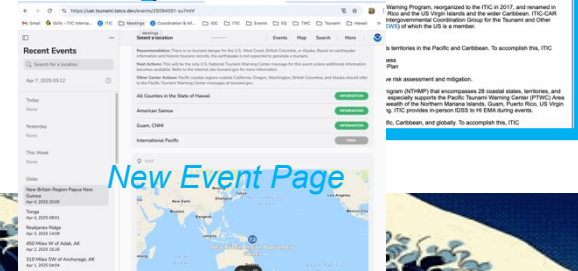
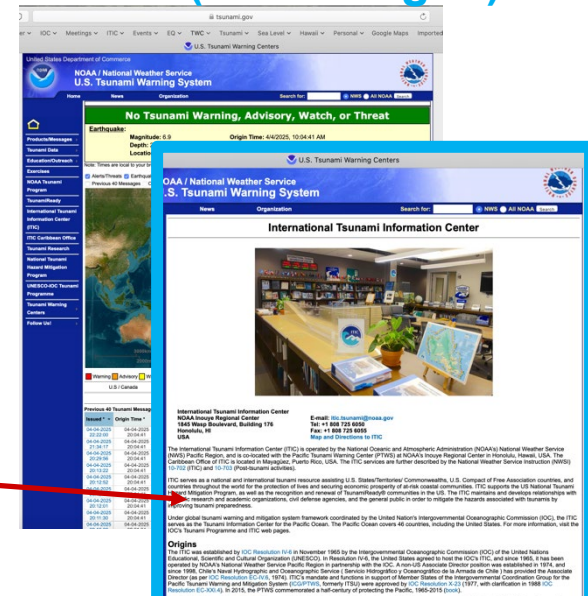
ITIC web sites – transitioning (to UNESCO, USA)



UNESCO



USA (tsunami.gov)



UNESCO/IOC-NOAA
International Tsunami Information Center

Other

1. Publication on observations of Hunga-Tonga Hunga Ha'apai tsunami in CARIBE EWS

1. Lead: Jelis Sostre, ITIC-CAR UPRM student contractor, now at Georgia Tech; Co-Authors: Elizabeth A. Vanacore, Christa von Hillebrandt-Andrade, Roy A. Watlington, Valerie Clouard, Silvia Chacón-Barrantes, Francisco Dourado, Octavio Gómez-Ramos, Erouscilla P. Joseph, Raphael Paris
2. 2 years of meetings and data sharing and analyzing
3. Publication in Ocean and Coastal Research
<https://doi.org/10.1590/2675-2824073.23202>

2. Feb. 8, 2025 in and post event support

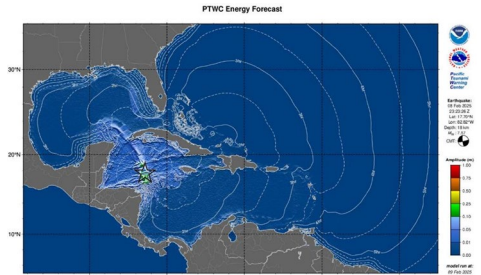
3. With PTWC monthly maps of Sea Level and Seismic Data Availability

Characterizing sea level and barometric disturbances in the Caribbean and adjacent regions from the Hunga-Tonga-Hunga Ha'apai 2022 eruption

Jelis J. Sostre-Cortés^{1,2,*}, Elizabeth A. Vanacore³, Christa von Hillebrandt-Andrade⁴, Roy A. Watlington⁵, Valerie Clouard⁶, Silvia Chacón-Barrantes⁷, Francisco Dourado⁸, Octavio Gómez-Ramos⁹, Erouscilla P. Joseph¹⁰, Raphael Paris¹¹

¹University of Puerto Rico-Mayaguez (259 Av. Alfonso Valdés Colón – Mayaguez, 00980 – Puerto Rico).
²Georgia Institute of Technology (311 First St NW – Atlanta, GA 30332 – USA).
³Puerto Rico Seismic Network – University of Puerto Rico-Mayaguez – Building D UPRM – Mayaguez, 00980 – Puerto Rico.
⁴International Tsunami Information Center-Caribbean Office (ITIC-CAR) (259 Alfonso Valdés – Building D UPRM – Mayaguez, 00980 – Puerto Rico).
⁵CARICOLS, Inc. UPRM R AD Center (Road 108, KM 1.0, Bo. Miradero – Mayaguez, 00980 – Puerto Rico).
⁶GETCAMP Univ Toulouse (14 avenue Edouard Belin – 31400 Toulouse – France).
⁷FINANCT, Universidad Nacional Campus Ormaiztegui – Costa Rica.
⁸Universidade do Estado do Rio de Janeiro – Centro de Pesquisa e Estudos sobre Desastres (Rua São Francisco Xavier, 524 – Sala 408F – Rio de Janeiro – 20550-013 – RJ – Brazil).
⁹Instituto de Geofísica (UNAM) – Circuito de la Investigación Científica (In. C.U.) – Cuernavaca, 04150 CDMX – Mexico).
¹⁰Seismic Research Center – University of the West Indies (Gordon St. – Trinidad and Tobago).
¹¹Laboratoire Magmas & Volcans (Campus universitaire des Cezeaux – 6 Av. Blaise Pascal – 63170 Aubiere – France).

* Corresponding author: josostre@gaia.com



ITIC-CAR – 2025-2026 Work plan

- ❑ **Monitor, recommend improvements**
 - Events – improving warning and response – faster, more accurate
 - Tsunami Warning Decision Support Tools (TsuCAT hazard assessment, exer) and services
- ❑ **Assist in establish/strengthen national, regional systems**
 - Capacity Development, TEWS-SOP-TEMPP Training
 - CARIBE WAVE Exercise
 - UN Decade for Ocean Science for Sustainable Dev–
100% sources detect (forecast for local tsu), Resilient prepared communities
- ❑ **Information resource - preparedness / education (create, compile, share)**
 - IOC Man & Guides, Best Practices, Hist Tsunami Effects, Awareness materials
- ❑ **Information resource - historical tsunamis (collect, compile, share)**
 - Global database (WDS/NCEI), Post-event surveys



ITIC Work plan – Resource Challenges - Help Welcome !

- ❑ **Staff** - currently 2 (Hawaii), 1 FT and 2 PT (Puerto Rico), 1 part-time (Chile). 3 Hawaii vacant but due to US budget all may not be filled, temporary
- ❑ **Funding** - US, Chile provide office and person support, but no project or activity support, e.g., no funding for training, technical visits, Tsunami Ready, etc
- ❑ **Time** – Not enough due to no staff to be get ahead on Work plan
- ❑ **Solutions**
 - More Staff (MS detail/second, Interns (ex, IOC Ocean Training, U/Tokyo Ocean Alliance), Students – (few mon -1 yr; remote OK, ex UPRM)
 - More Funding (conduct in-country training visits, provide awareness materials- design, print)
 - Do less – what to not do or delay?



Thank you

Christa von Hillebrandt-Andrade

Deputy Director, ITIC
Manager ITIC Caribbean Office, USA NOAA

Lcdr. Matías I. Sifón

Associate Director, ITIC
Head Oceanography Dept, Chile SHOA

Dr. Laura Kong

Director, ITIC, USA NOAA

