



UNESCO/IOC – NOAA ITIC Training Program in Hawaii (ITP-TEWS Hawaii)
TSUNAMI EARLY WARNING SYSTEMS
AND THE PACIFIC TSUNAMI WARNING CENTER (PTWC) ENHANCED PRODUCTS
TSUNAMI EVACUATION PLANNING AND UNESCO IOC TSUNAMI READY PROGRAMME
15-26 September 2025, Honolulu, Hawaii

Tsunami Safety for the visually impaired population in the Caribbean

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ITIC



Pacific
Community
Communauté
du Pacifique

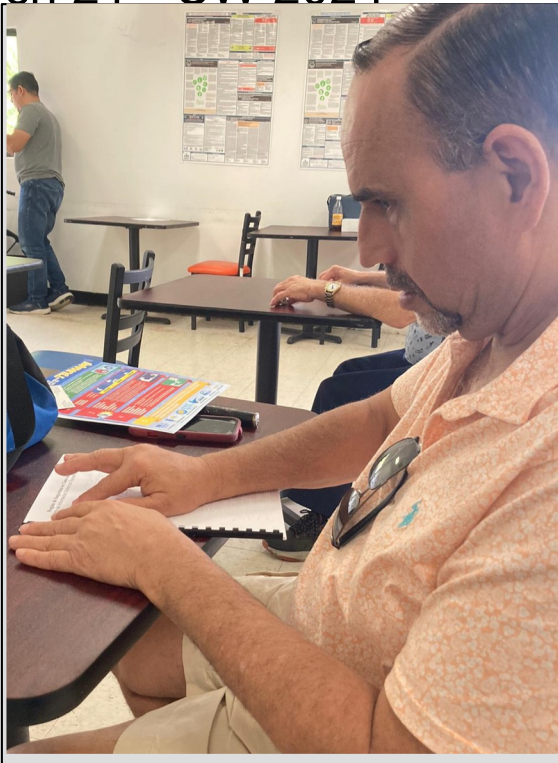
Statistics on Blindness in the Caribbean

- Blindness in the Caribbean is estimated at 1%, according to the Barbados Eye Study (BES), although this figure may be higher in poor countries, such as Haiti and slightly lower in the more developed territories.
(<https://www.eyecarecaribbean.com>)
- According to Orbis, there are more than 26 billion visually impaired people in Latin America (LAC), with 3.2 millions totally blind.
(<http://sgp.orbis.org/en/about-orbis>)
- Caribbean countries with the highest blindness prevalence:
 - **Cuba Shows a high prevalence of blindness, around 3.07% in 2020.**
 - **Grenada Also shows a high prevalence rate of 2.60% in 2020.**
 - **Dominican Republic Has a high rate of 2.49% in 2020.**



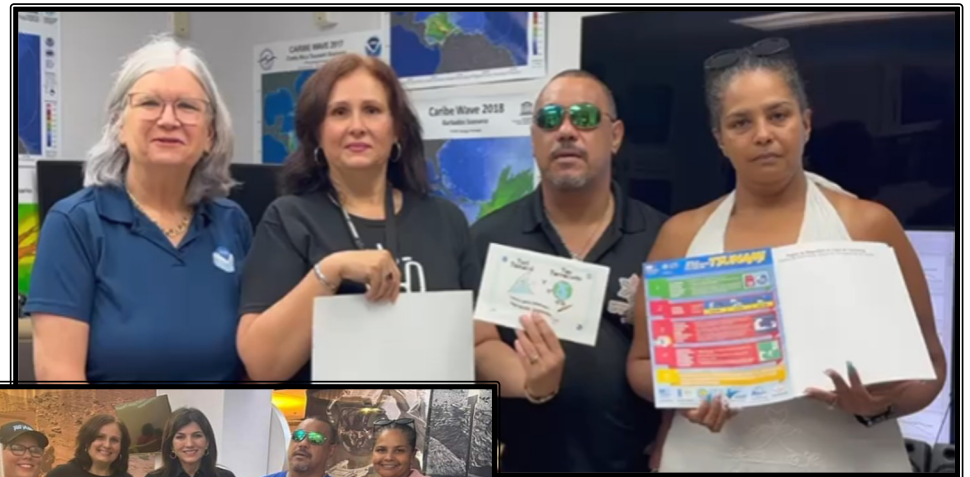
Initiatives in promoting the Tsunami Safety Rules guide in Braille

Industries for the Blind, Cabo Rojo March 21 - CW 2024



International Tsunami Information

NFB PR EcoExploratorio Museum

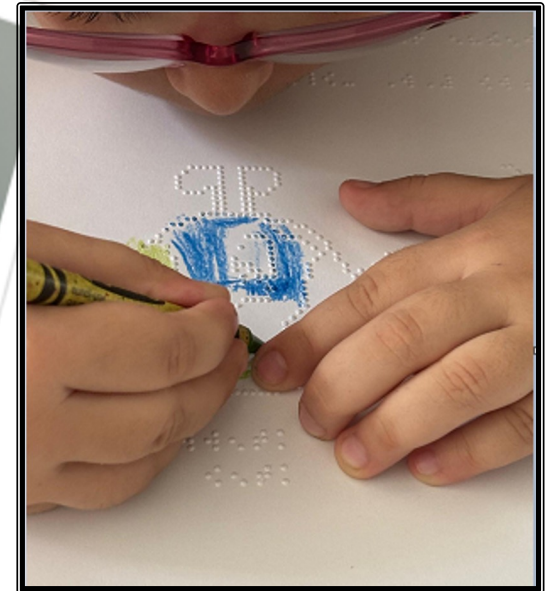


Coloring book in Braille for visually impaired children

Tori & Teo/Tommy & Ernie- coloring book in Braille explaining earthquakes and tsunamis to children, how to recognize the natural alerts, and how to react appropriately to save lives. **(audio and video coming soon)**



UNESCO/IOC-NOAA SHOA
International Tsunami Information



International White Cane Day - October 15, 2024



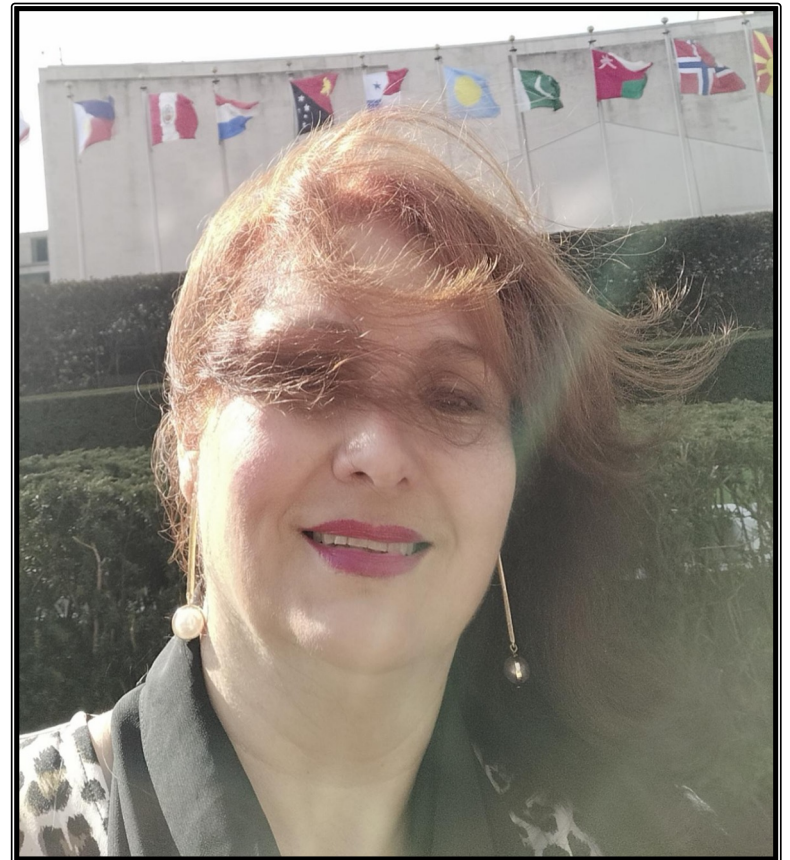
UNESCO/IOC-NOAA SHOA
International Tsunami Information

United Nations, NY World Tsunami Awareness Day 2024

- November 5, 2024
- Commemoration of the 20th anniversary of the Indian Ocean tsunami occurred on 2004



UNESCO/IOC-NOAA SHOA
International Tsunami Information



World Blindness Summit 2025 in Sao Paulo, Brasil

- Over 1,500 visually impaired people from 190 countries
- The World Blindness Union meet every four years to
 - discuss advances in inclusion, public policies, accessibility and new assistive technology for the visually impaired.



Testing the structure and content of the Tsunami Safety Rules guide in Braille (Spanish)



- Ages of people interviewed ranged from 20 to 50+
- Braille reading level: Excellent, good, fair
- How would you prefer to learn about tsunami safety?
 - Braille combined with experts to clarify doubts
 - Described audio
 - Digital apps, shorter content
 - Digital format accessible for screen readers
 - Audio dramatization
 - QR codes in different textures

Cuestionario sobre la impresión del documento de Reglas de Seguridad por Tsunami en Braille

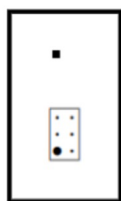
B I U ↺ ↻

Este cuestionario nos ayudará identificar si ha sido útil y relevante para la comunidad ciega, la reproducción impresa en Braille de las Reglas de Seguridad por Tsunamis.

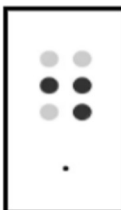
Findings on the Spanish Braille document :

- The Spanish document uses English Braille symbology and signs which makes it hard to read to Braille learners.
 - Although the content was correct in Spanish, it did not comply with the Spanish Braille writing rules.

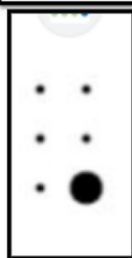
Ex. Correct dot at end of a sentence (Sp. Braille).



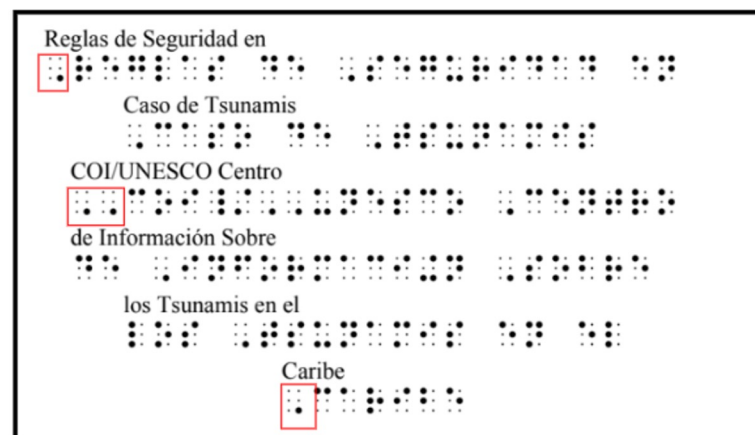
The document is using the dot for math equations.



Correct capital letter in Braille Spanish.



Capital letter in Braille English.



Feedback on the Spanish Braille Tsunami Safety document

- The vast majority found the content very useful
- Instead of dots to identify subdivisions, use a hyphen or format (a, b, c)
- Recommend to print Braille on plastic or sticker over the printed document.
 - Braille dots flatten over time. If they get wet, they're useless.
- Braille material is useful, but it should be available in other audible or digital formats as well.
- The **website** format is incorrect according to Spanish Braille.

Survey results for Spanish speakers reading the Spanish guide...

- Mostly everyone indicated that the language used is clear, precise, and easy to understand.
- The majority responded that “somewhat” the document structure makes it easy to read.
- All, but one, indicated that it is very important to have tsunami safety information printed in Braille.
- Everyone would recommend this document to other blind people.
- Were you aware of this information before reading the document?
 - Yes – 2
 - No – 4
 - Somewhat – 3

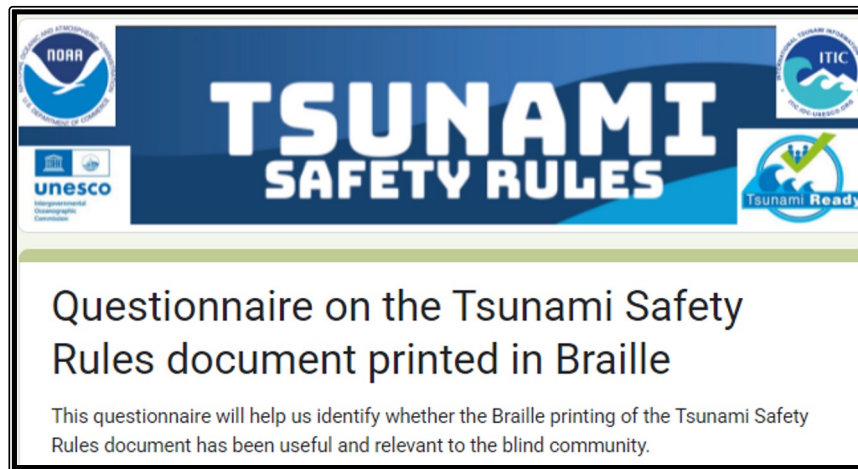
Braille Tsunami Safety in English...

☐ Everyone agreed on:

- the importance of having tsunami safety material printed in Braille
- recommend this document to other blind people
- feeling more prepared after reading the document
- it'll be worth to continue reproducing this material
- there are realistic actions included for blind people

☐ Were you aware of this information before reading the document?

- Yes-1
- No-2



Tsunami Safety Rules in English

- All people interviewed indicated that the content and structure were correct, and found the information to be excellent.
- Recommend to summarize at the beginning what the content is about.
- Braille reading level: **Excellent and good**.
- Everyone coincides that the language used was clear, precise, and easy to understand.
- Everyone agrees that the document structure made it easy to read.
- How would you prefer to learn about tsunami safety?
 - Braille and email, QR code in different textures
 - Braille and app
 - Audio rail or an app on my phone

Document survey in enlarged print



Cuestionario sobre documento de Reglas de Seguridad en caso de Tsunamis impreso en letra agrandada

B I U ↺ ↻

Sus respuestas nos ayudarán a evaluar si es útil y viable continuar reproduciendo este material para personas con discapacidad visual.

Questionnaire on the Tsunami Safety Rules document printed in enlarged letters

B I U ↺ ↻

Your responses will help us evaluate whether it is useful and viable to continue reproducing this material for people with visual impairments.

- ☐ It all depends on each person's remaining vision.
- ☐ Some of the participants are albinos.
- ☐ The color contrast is excellent.
- ☐ The earthquake protection image, with **gray contrast on white**, is much better than the one with a dark background.
- ☐ The **introduction** is in **very small print**, as are the **websites**. It is very difficult for people with visual impairments to read.
- ☐ Advantage for people with visual impairments: they can use the **zoom out** feature.



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Thank You

Name
Organization



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