How to Become Tsunami Ready, Tools
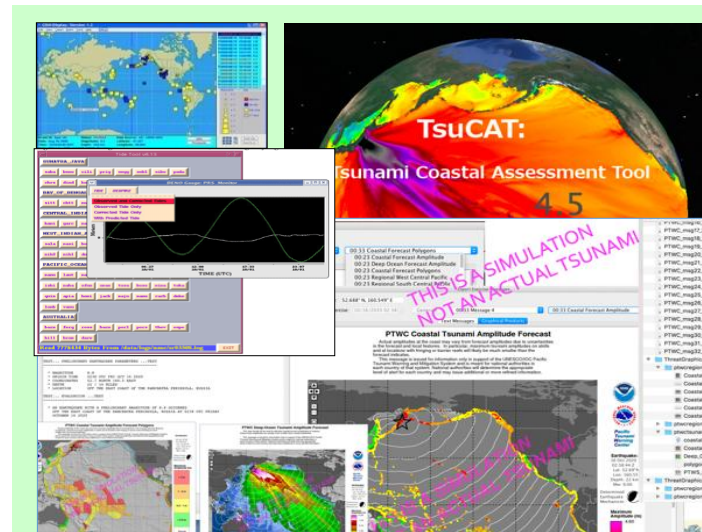
3.5 TR Available-Tools-and-Support International Tsunami Information Centre

Dr. Laura Kong
International Tsunami Information Centre (ITIC)
laura.kong@noaa.gov

Tsunami Ready Philippines National Workshop
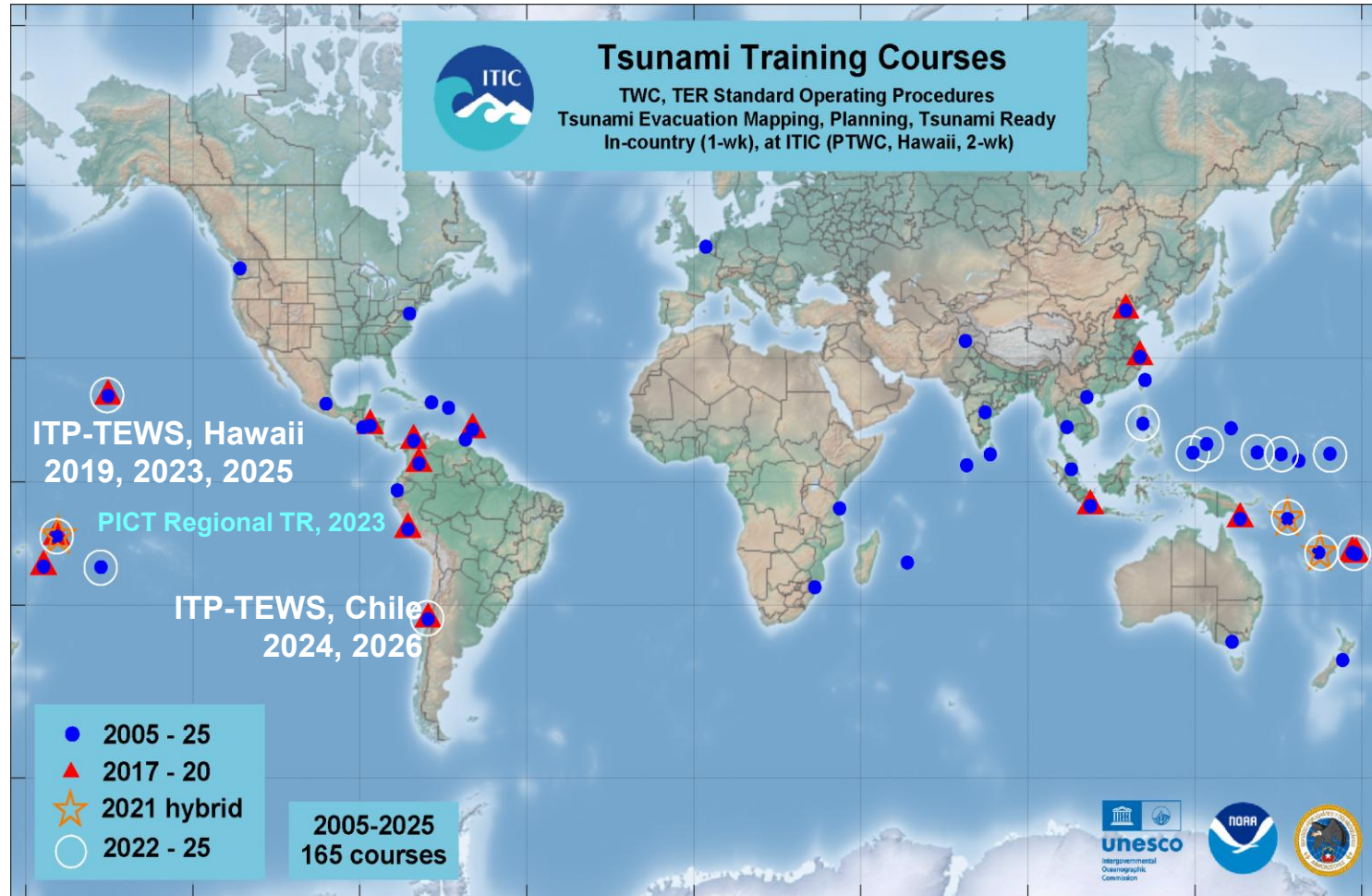*Park Inn North EDSA, Metro Manila, Philippines*
8 to 11 December 2025

International Tsunami Information Centre

☐ Serve as OTGA Specialized Training Center – Tsunamis

☐ PTWS TIC - est 1965 (IOC-IV.6), hosted by US NOAA

    Chile SHOA provides Associate Director

    Co-located with PTWC in Honolulu

    ITIC Caribbean Office (Puerto Rico) supports CTIC/CARIBE-EWS

☐ Support Member States: Recommend TW improvements (timely accurate), Capacity Building, Decision support tools, Tsunami Ready, PacWave exercises, Awareness, Event / Post-Tsunami data coll

ITIC - IOC Tsunami Capacity Building

Tsunami Ready
unesco
Intergovernmental Oceanographic Commission

ITIC
Tsunami Training Courses
TWC, TER Standard Operating Procedures
Tsunami Evacuation Mapping, Planning, Tsunami Ready
In-country (1-wk), at ITIC (PTWC, Hawaii, 2-wk)

ITP-TEWS, Hawaii
2019, 2023, 2025

PICT Regional TR, 2023

ITP-TEWS, Chile
2024, 2026

Legend:
- ● 2005 - 25
- ▲ 2017 - 20
- ☆ 2021 hybrid
- ○ 2022 - 25

2005-2025
165 courses

unesco
Intergovernmental Oceanographic Commission
NOAA

Current Focus, 2022+

1. **Tsunami Ready (TR)**
   - ➤ Recognize communities
     - ❖ 2 OTGA: Awareness, TR

2. **Capacity Building - TEWS**
   - ➤ TWC/TER SOPs, TEMPP
   - ❖ 1 OTGA multiple-modules: TWC Staff Competencies

In Country:
- **Awareness (1 day) <= OTGA**
- Tsunami Early Warning Systems (TEWS) (1 wk)
- Tsunami Warning & Emergency Response Standard Operating Procedures (SOPs), Tsu Decision Support Tools (TWTools) (1 wk)
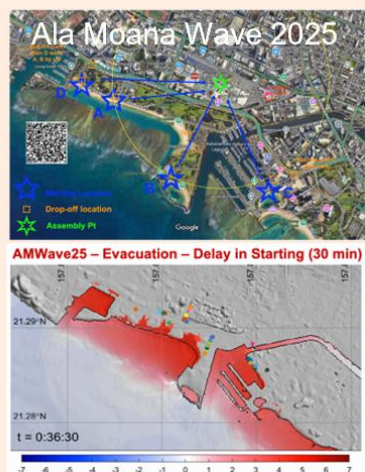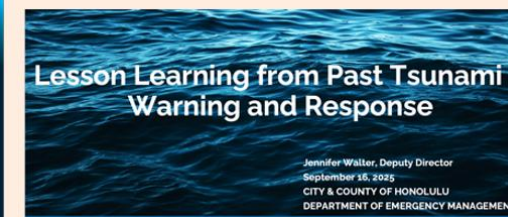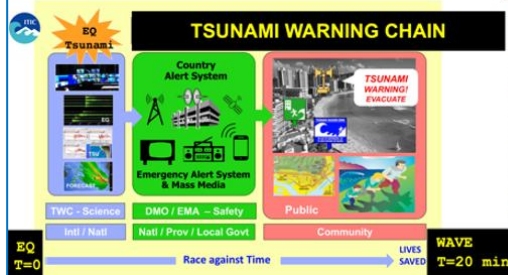- Tsunami Evacuation Maps, Plans, Procedures (TEMPP) (5 1-wk)

At ITIC: TEWS using Hawaii or Chile as example (ITP-TEWS, 2-wk)

2018 ITP
International Tsunami Information Center
Training Programme
Valparaiso, Chile, 1 August 2018

ITP-HAWAII IN CHILE, 2018   PEACE CORPS, SUVA   ITP-FIJI, 2017   ITP-PNG, 2018   ITP-TONGA, 2019   ITP-INDONESIA, 2020   TWC & TWC SOPs, SOLOMONS, 202
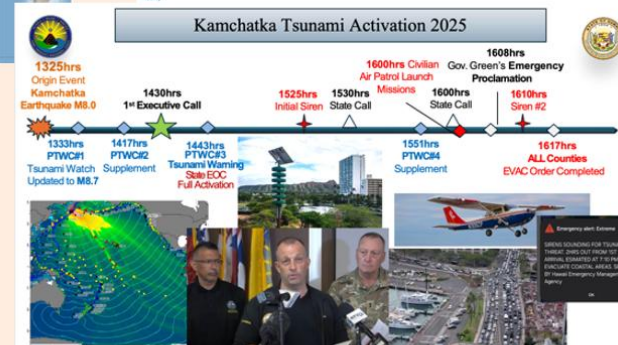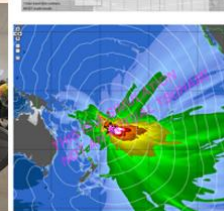
ITIC Training Programme (ITP-TEWS) – Hawaii 2025

31 participants from 22 countries

18 trainers (ITIC, IOTIC, PTWC, NOAA, Univ Hawaii, Hawaii State and Honolulu County EM)

ITIC Training Programme (ITP-TEWS) – End-2-End, 2 wks
ITIC - SHOA organized (tot: 68 participants from 26/18 countries, 44 trainers)

2023 Hawaii system

2024 Chile system

Video
English, 508-compliant, Spanish

English, 508-compliant

ITIC, IOTIC Training - TWC / TER SOPs

- ## Tsunami Warning Center and Tsunami Emergency Response Standard Operating Procedures (TWC TER SOPs)
  IOC MG 76 (English)

Plans and Procedures for Tsunami Warning and Emergency Management, Guidance for countries in strengthening tsunami warning and emergency response through the development of Plans and Standard Operating Procedures for their warning and emergency management authorities (2017)
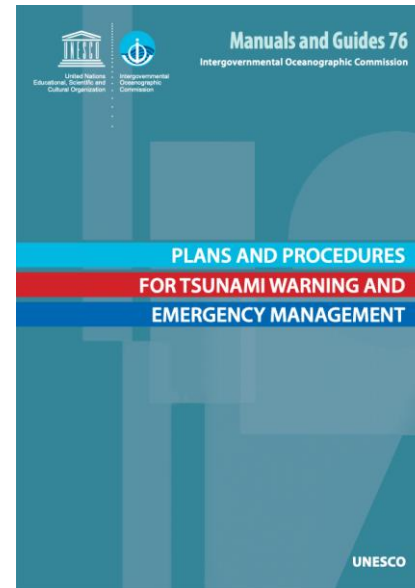
ITIC Training – TWC SOPs

PTWS NTWC Minimum Staff Competencies Training - Pilot

- **PTWS NTWC Minimum Staff Competencies Training**
  - ITIC to create training, with advanced TWC country partners
  - Funding: US funding, IOC Ocean Training Interns (2024, Tonga, Indonesia)

- **Series of courses - from self-paced to in-person housed under OTGA**
  - In order to take next Course, must pass previous Course.
    Start with OTGA UNESCO-IOC Tsunami Awareness and Tsunami Ready
  - Modules (individual OTGA courses, or US COMET MetEd courses)
    1. Core Science (multiple Lessons)
    2. Core Operations (multiple Lessons)
    3. Core Agency (multiple Lessons) – National actions
  - Final training will be in-person (3-4 weeks at ITIC/PTWC)

- **Finish Training and pilot in 2026 with 1 small cohort (PIC)**
- **Consult with PTWS WG 2 and PICT WG Task Team on Capacity Development**
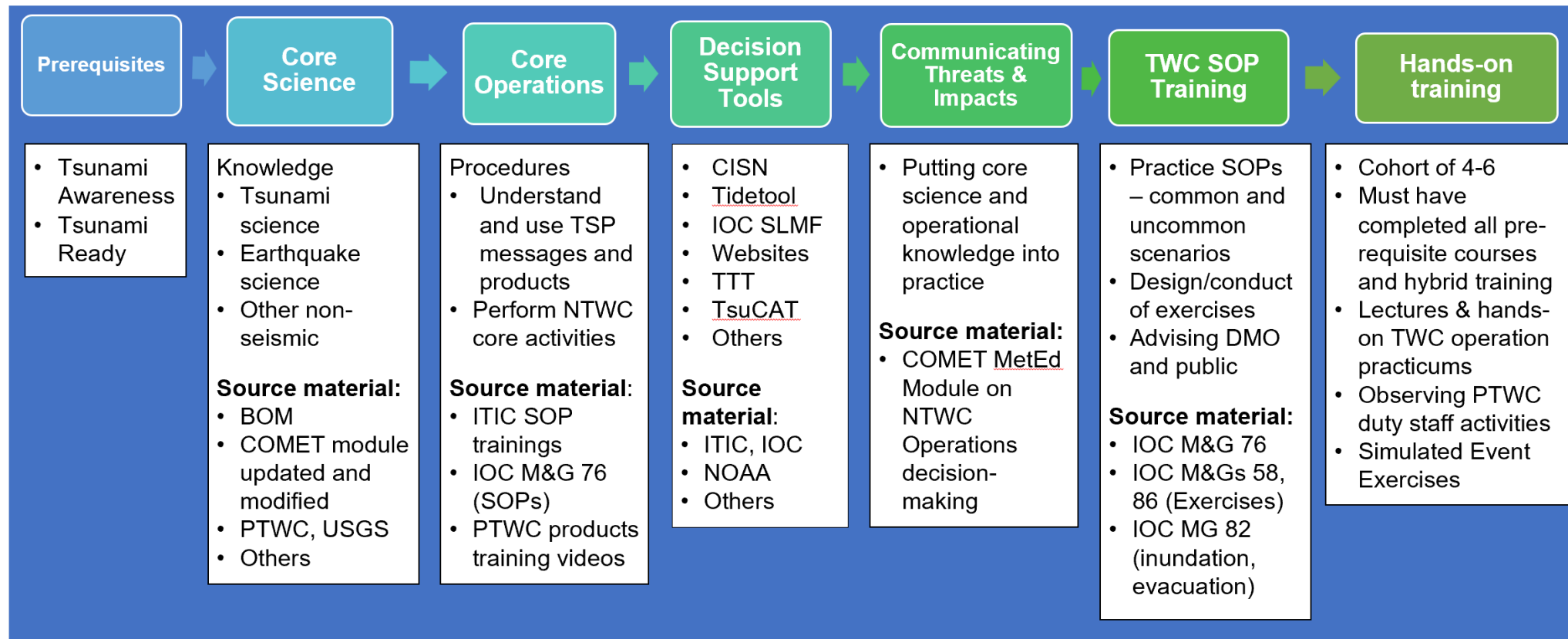
https://classroom.oceanteacher.org/

ITIC Training – TWC SOPs

PTWS NTWC Minimum Staff Competencies Training - Pilot

Self-paced, online ………………….. => *Hybrid* ……………………….…… => *In-person*

| Prerequisites	Core Science	Core Operations	Decision Support Tools	Communicating Threats & Impacts	TWC SOP Training	Hands-on training
• Tsunami Awareness • Tsunami Ready	Knowledge • Tsunami science • Earthquake science • Other non-seismic **Source material:** • BOM • COMET module updated and modified • PTWC, USGS • Others	Procedures • Understand and use TSP messages and products • Perform NTWC core activities **Source material:** • ITIC SOP trainings • IOC M&G 76 (SOPs) • PTWC products training videos	• CISN • Tidetool • IOC SLMF • Websites • TTT • TsuCAT • Others **Source material:** • ITIC, IOC • NOAA • Others	• Putting core science and operational knowledge into practice **Source material:** • COMET MetEd Module on NTWC Operations decision-making	• Practice SOPs – common and uncommon scenarios • Design/conduct of exercises • Advising DMO and public **Source material:** • IOC M&G 76 • IOC M&Gs 58, 86 (Exercises) • IOC MG 82 (inundation, evacuation)	• Cohort of 4-6 • Must have completed all pre-requisite courses and hybrid training • Lectures & hands-on TWC operation practicums • Observing PTWC duty staff activities • Simulated Event Exercises

ITIC, IOTIC Training

- ☐ **Training to achieve TR Indicators**

- ☐ **Tsunami Evacuation Maps, Plans, and Procedures (TEMPP, IOC MG 82)**
  Preparing for Community Tsunami Evacuations: from inundation to evacuation maps, response plans and exercises (2020)

- ☐ Manual (English, Spanish)

- ☐ Supplement 1 (Detail Module Explanations, Guidance) (English)

- ☐ Specialized Documents

UNESCO IOC TSUNAMI READY INDICATORS

I	ASSESSMENT (ASSESS)
1	ASSESS-1. Tsunami hazard zones are mapped and designated
2	ASSESS-2. The number of people at risk in the tsunami hazard zone is estimated
3	ASSESS-3. Economic, infrastructural, political, and social resources are identified

II	PREPAREDNESS (PREP)
4	PREP-1. Easily understood tsunami evacuation maps are approved
5	PREP-2. Tsunami information is publicly displayed
6	PREP-2. Outreach and public awareness and education resources are available and distributed
7	PREP-3. Outreach or educational activities are held at least three times a year
8	PREP-4: A community tsunami exercise is conducted at least every two years

III	RESPONSE (RESP)
9	RESP-1. A community tsunami emergency response plan (ERP) is approved
10	RESP-2. The capacity to manage emergency response operations during a tsunami is in place
11	RESP-3. Redundant and reliable means to timely receive 24-hour official tsunami alerts are in place
12	RESP-4. Redundant and reliable means to timely disseminate 24-hour official tsunami alerts to the public are in place
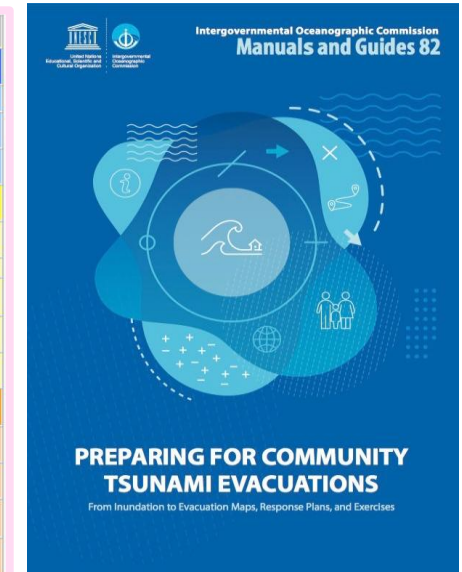
Intergovernmental Oceanographic Commission
Manuals and Guides 82

PREPARING FOR COMMUNITY TSUNAMI EVACUATIONS
From Inundation to Evacuation Maps, Response Plans, and Exercises

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

IOC Manual and Guide 82 (2019) - TEMPP

PREPARING FOR COMMUNITY TSUNAMI EVACUATIONS: FROM INUNDATION TO EVACUATION MAP, RESPONSE PLANS, AND EXERCISES

1 Inundation Mapping → 2 Evacuation Mapping → 3 Response Plan → 4 Exercises
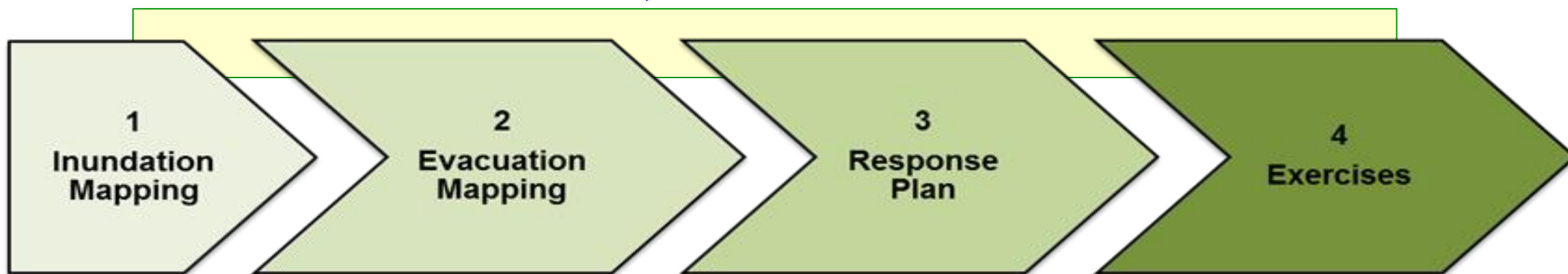
4 Foundation Blocks

- *Key element of tsunami response involves evacuation, including self-evacuation of exposed people & key assets to safer areas*

- *Effective and successful evacuations require proper planning by relevant authorities.*
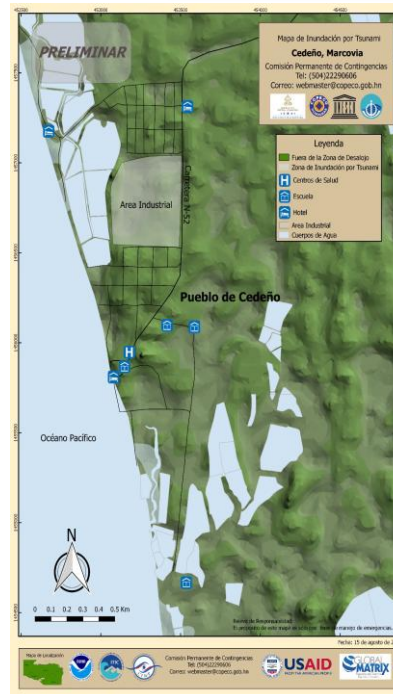
Module 1 – Inundation Mapping

1 Establish the required information

2 Learn the basics of tsunami science and numerical modelling

3 Conduct tsunami modelling or no modelling
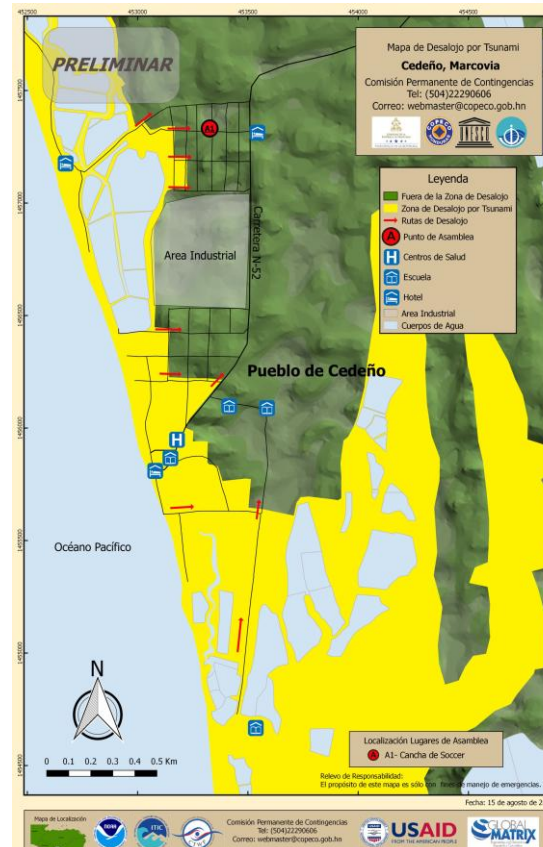
4 Create an inundation map

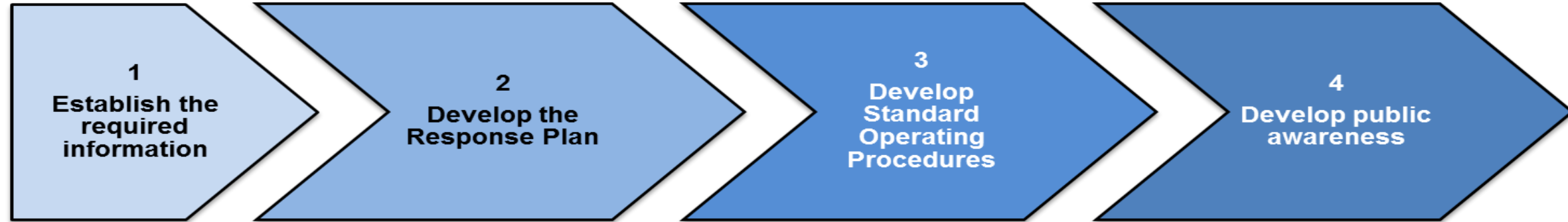Inundation/flooding map developed for Cedeño, Honduras.

Module 2 – Evacuation Mapping

| 1 Acquire required information | 2 Identify Evacuation Zone | 3 Identify Evacuation Sites, Assembly Areas, and Routes | 4 Engage Community | 5 Finalise Evacuation Map and Signage | 6 Obtain Official Approval |

Evacuation map developed for Cedeño, Honduras.

Module 3 – Tsunami Response Planning

TSP Notification	Earthquake	Wave forecast	ETA	NTWC Alert Level	Emergency Response Action
Tsunami Threat Message	**Magnitude:** >7.0 **Depth:** <100km	≥ 1 m	<3 hrs	WARNING	Evacuate xxx zones
			3 - 6 hrs	WATCH	Prepare to evacuate
			>6 hrs	INFORMATION	Monitor for subsequent forecasts
		0.3 to 1 m	<3 hrs	ADVISORY	Evacuate beaches and harbours
			3 - 6 hrs	WATCH	Prepare to evacuate
			>6 hrs	INFORMATION	Monitor for subsequent forecasts
		< 0.3 m	-	INFORMATION	Monitor for subsequent forecasts

Module 4 – Evacuation Exercising

1 Establish the required information → **2** Plan the exercise → **3** Conduct the exercise → **4** Evaluate the exercise → **5** Implement recommen-dations
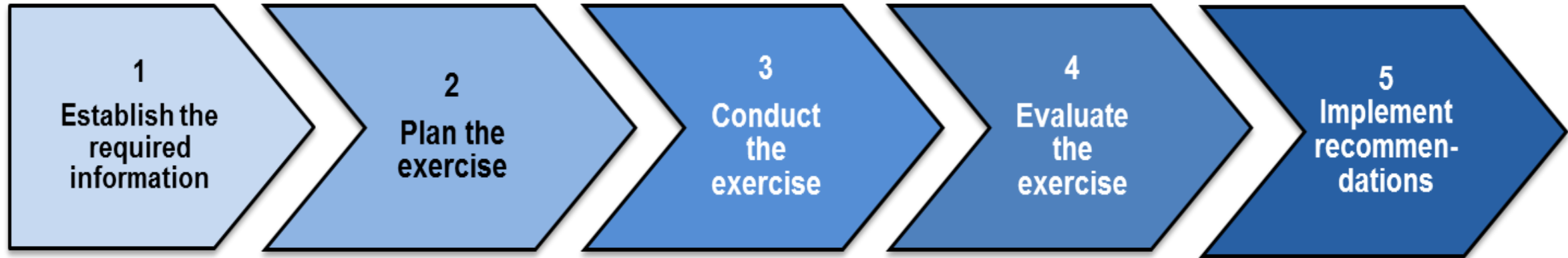
PHASES OF A TSUNAMI DRILL

1 ALARM PHASE:
1 minute alarm signifying a strong earthquake.

2 REACTION:
People do the response procedure during the earthquake such as the "duck, cover and hold"

3 EVACUATION PHASE:
Residents quickly move out of their houses to go to designated evacuation areas

4 ASSEMBLY PHASE:
Families from the same area or puroks should group together to better facilitate headcount/ accounting of residents

5 HEADCOUNT PHASE:
How many are expected to arrive based on barangay population information?

6 DRILL TERMINATION:
The drill master should inform the participants that the drill has ended

7 POST-DRILL EVALUATION:
Assessing the conduct of drill is important for improving future activities