INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
COMMISSION OCÉANOGRAPHIQUE INTERGOUVERNEMENTALE
COMISIÓN OCEANOGRÁFICA INTERGUBERNAMENTAL
МЕЖПРАВИТЕЛЬСТВЕННАЯ ОКЕАНОГРАФИЧЕСКАЯ КОМИССИЯ
اللجنة الدولية الحكومية لعلوم المحيطات
政府间海洋学委员会

UNESCO – 7 Place de Fontenoy - 75352 Paris Cedex 07 SP, France
http://ioc.unesco.org - contact phone: +33 (0)1 45 68 03 18
E-mail: v.ryabinin@unesco.org

IOC Circular Letter No 2948
(Available in English only)

IOC/VR/BA/ah
1 June 2023

To : ICG/PTWS and ICG/CARIBE-EWS Tsunami National Contacts (TNC) and Tsunami Warning Focal Points (TWFP)
ICG/PTWS and ICG/CARIBE-EWS Chairs and Vice-Chairs

Cc. : Official National Coordinating Bodies for liaison with the IOC Member States
Permanent Delegations/Observer Missions to UNESCO of IOC Member States
Permanent Delegates/Observer Missions to UNESCO and National Commissions for UNESCO of Brunei Darussalam, Cambodia, Federated States of Micronesia, Marshall Islands and Tokelau
National Commissions for UNESCO in IOC Member States
Permanent Observers to ICG/PTWS
Director, International Tsunami Information Center (ITIC)
Director, Pacific Tsunami Warning Center (PTWC)
IOC Officers

Subject: ITIC Training Programme-Hawaii (ITP-HAWAII) on Tsunami Early Warning Systems and the PTWC Enhanced Products, Tsunami Evacuation Planning and Tsunami Ready Programme, Honolulu, Hawaii, 7–18 August 2023

Through this circular letter, members of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS) and the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions Member States (ICG/CARIBE-EWS), and countries in other regions with tsunami warning and mitigation interests, are invited to participate in the above-mentioned activity.

This year, the training will be conducted by the International Tsunami Information Center (ITIC) in collaboration with the Pacific Tsunami Warning Center and technical and emergency management partners in Hawaii (USA). The ITP-Hawaii will demonstrate a working example of an end-to-end tsunami warning and mitigation system centred in Hawaii, with PTWC as its local tsunami warning centre. ITIC is hosted by the US National Oceanic and Atmospheric Administration and the Hydrographic and Oceanographic Service (SHOA) of Chile in partnership with the IOC of UNESCO.

Looking over history, we are reminded that globally 90% of the casualties of tsunamis (99% in the Pacific) have been caused by local or regional tsunamis that can hit in minutes. In this case, communities and individuals need to know in advance what to do and where to evacuate. Tsunami Warning Centres (TWC) must have clear standard operating procedures that can be quickly

executed in the event of a warning, and TWC staff must be well-trained and prepared to act quickly and decisively.

Recognizing that local tsunamis are the most challenging operation for countries, the 2023 ITP-Hawaii will focus on Standard Operating Procedures (SOP) for warning and emergency response as guided by the draft National Tsunami Warning Center Minimum Competency Levels and the Local-Source Tsunami Response Best Practice approved by the ICG/PTWS at its 28th session in 2019. The training will also focus on preparedness and will overview tsunami evacuation planning, including inundation and evacuation mapping, response planning and exercising, as indicators for the UNESCO-IOC Tsunami Ready Recognition Programme (IOC Manual and Guides 74, 2022). A goal of the IOC's Ocean Decade Tsunami Programme is *"make 100% of communities at risk of tsunami prepared for and resilient to tsunamis by 2030"* through initiatives such as the Tsunami Ready Programme.

On the last day of the training, a tsunami exercise will be conducted requiring country decision-making and action using national products supplemented by the PTWC Enhanced Products. The 2023 ITP-Hawaii programme description and provisional agenda for the 10-day training are attached.

ITP-Hawaii is open primarily to all country members of ICG/PTWS and ICG/CARIBE-EWS. Participants from other regional tsunami warning systems are also welcomed. On Day 1, participants are expected to give a 15-minute presentation on their country's tsunami warning and mitigation system, including their tsunami SOPs and plans for implementing Tsunami Ready or other similar initiatives.

Participants are expected to provide their own travel funding. Organizations are kindly asked to confirm that funding is available to cover their participants to this course. Some funding is available to Pacific Island Country participants from National Tsunami Warning Centre and National Disaster Management Offices. The training will be conducted in English only.

Applications using the attached form should be sent together with a CV to the Associate Director of ITIC, Cdr. Carlos Zuniga (czuniga@shoa.cl), with a copy to the Director of ITIC, Dr Laura Kong (laura.kong@noaa.gov, fax: +1 808 725 6055) and to the ICG/PTWS Technical Secretary, Mr Bernardo Aliaga (b.aliaga@unesco.org). Applications should also be endorsed by the country TNC or TWFP. The deadline for applications is 14 June 2023. Successful candidates will be notified by 28 June 2023.

With the assurances of my highest consideration, I remain,

Yours sincerely,

[signed]

Vladimir Ryabinin
Executive Secretary

Enclosures (2): 1/ ITP-Hawaii 2023 Programme Description and Provisional Agenda
2/ ITP-Hawaii 2023 Application Form

1/ ITP-Hawaii 2023 Programme Description and Provisional Agenda

Session	Topic
	MONDAY, 7 AUGUST, DAY 1
	Opening, Country Presentations
1.1	Opening Welcome and Introductions
1.2	Programme Logistics – IRC Building, Local Transportation, Coffee/Tea/Lunch Breaks, Internet/Phone/Fax, Foreign Visitor Forms, etc.
1.3	Course Overview, Manual, Materials, including Awareness and TW Tools
2.1	Country Presentations (15 min each)
	Country Presentations, IOC, Tsunami Early Warning System Overview
2.1	Country Presentations (15 min each)
2.2	UNESCO IOC Global Tsunami System: Intergovernmental Coordination Group for the Pacific TsunamiWarning and Mitigation System (ICG/PTWS); Roles of Tsunami National Contacts, Regional Tsunami Service Providers and Tsunami Information Centers, Tsunami Warning Focal Points, National TsunamiWarning Centers
2.3	End-to-end Tsunami Warning – Stakeholder and their needs, Roles and Responsibilities, StandardOperating Procedures, and their linkages
	Earthquake Seismology and Tsunami Science
3.1	Earthquake Seismology - what, where, how, when, and damage earthquake causes
3.2	Tsunami Science (generation, propagation, and inundation) - where, what, where, how, when, and damage tsunami causes

	TUESDAY, 8 AUGUST, DAY 2
	End-to-End Tsunami Warning and Mitigation System – Hawaii example
3.3	Tsunami Warning and Mitigation Systems - Hawaii
3.4	Tsunami Hazard Risk Assessment: Modeling and Mapping of Tsunami for Inundation, Evacuation, andPorts and Harbor Response - Hawaii
3.5	Tsunami Mitigation: Designing buildings to withstand tsunamis - FEMA P646 docs, ASCE 7 2016 andInternational Building Code 2018. Tsunami Design Zone Maps and Vertical Evacuation - Hawaii
	Tsunami Warning Center and Emergency Response (TWC/TER) - Lessons Learned
4.1	Tsunami Warning Center Overview: What do Tsunami Warning Centers (TWCs) do? What do TWCsprovide to Tsunami Emergency Response (TER) agencies? Challenges in Detection and Tsunami Threat Assessment
4.2	Lessons Learned from Past Tsunamis - Warning (Hawaii 1946-1994; Chile 1960; Nicaragua 1992; Java 2006; Mentawai 2010; Sumatra 2004; Tonga 2006; Samoa/Tonga 2009; Chile 2010; Japan 2011; Bengkulu 2012; Haida Gwaii 2012; Kaikoura NZ 2016, Indonesia 2018, Tonga 2022), others
4.3	Tsunami Emergency Response Overview: What do TER agencies provide to the Public? Challenges inAlerting, Evacuation, Safe-to-Return (All-Clear), and Preparedness
4.4	Lessons Learned from Past Tsunamis - Response (Hawaii 1986, 1994; Samoa/American Samoa 2009; Chile 2010; Japan 2011, Palu Indonesia 2018)

	WEDNESDAY, 9 AUGUST, DAY 3
	Hawaii State Emergency Management Agency visit, TWC Standard Operating Procedures (SOPs), PTWC SOPs
5.1	Visit HI-EMA: Response to PTWC Tsunami Products

6.1	IOC TWC and TER SOP Manual
6.2	SOPs and Checklists: TWC Templates and examples for Distant, Regional, and Local Tsunamis: Monitoring, Detection and Evaluation, Communications, Message Dissemination
6.3	Review & improve country TWC SOP / Checklists (especially for local/regional threat)
6.4	Pacific Tsunami Warning Center: Crisis Event SOPs: Earthquake and Sea Level Monitoring (Data networks and acquisition, quality-control/health status), Earthquake Analysis Methods, Threat Analysis, Forecasting, Products, Dissemination; Routine Operations SOPs: Quality Control and redundancy, contingency and backup
6.5	Visit PTWC - data networks and acquisition, monitoring, analysis, quality-control/health status, communication and dissemination, redundancy, contingency/backup, etc
	TWC Topics - Earthquake Source Characterization and Monitoring
7.1	TWC Operations: Real-time Earthquake Detection and Fast Source Characterization, Methods and Limitations: Locating Earthquakes (seismometers, seismic stations, sparse networks and hypocentral bias, etc.)
7.2	TWC Operations: Real-time Earthquake Detection and Fast Source Characterization, Methods and Limitations: Estimating Magnitudes (macroscopic intensity and instrumental)
7.3	TWC Operations: Real-time Earthquake Detection and Fast Source Characterization, Methods and Limitations: Determine Fault Mechanisms (Double-couple 1st motions to W-Phase Centroid Moment Tensors)
	THURSDAY, 10 AUGUST, DAY 4
	TWC Topics - Tsunami Monitoring, Decision Support Tools, Seismic and Sea Level Station visit
7.4	TWC Operations: Sea Level Monitoring - Methods, Instruments, Limitations, Challenges
7.5	Tsunami Warning Operations - Decision Support Tools Overview: Message Alerts, Real-Time Earthquake Display (CISN); Sea level monitoring (Tide Tool, IOC Sea Level Monitoring web site); Tsunami Databases (WDS/NCEI web tools, WinITDB, TsuDig), Tsunami Travel Time (TTT) calculation, Tsunami Coastal Assessment Tool (TsuCAT)
7.6	Tsunami Warning Decision-Support Tools - Demonstration, Installation, Use Message Alerts, (CISN, USGS web site (CMT, ShakeMap, PAGER, etc.), Sea level monitoring (Tide Tool, IOC Sea Level Monitoring web site); Global Historical Tsunami Databases (WDS/NCEI web tools), Tsunami Travel Time (TTT) calculation
7.6	Pacific Tsunami Warning Center (PTWC) New Enhanced Products SOPs - Why, What, Criteria, Staging of Products
8.1	Visit Seismic and Sea Level Station, University of Hawaii Sea Level Center
	FRIDAY, 11 AUGUST, DAY 5
	PTWC Enhanced Products, PTWC Tsunami Forecasting, Hazard Assessment Tool - TsuCAT
9.1	Pacific Tsunami Warning Center Enhanced Products - Why, What, Criteria : Explanation of Each Product: Public Text, Graphical Deep-Ocean Tsunami Amplitude, Coastal Tsunami Amplitude, Coastal Tsunami Amplitude Polygons, Tsunami Amplitude Statistics, Coastal Tsunami Amplitude KMZ file
9.2	Pacific Tsunami Warning Center Enhanced Products - Staging of Product

9.3	PTWC Operations: Travel Time and Wave Amplitude Forecasting – Methods (ATFM, SIFT, RIFT), Limitations, Uncertainty, Sensitivity Studies (Location, Depth, Magnitude)
9.4	PTWC Operations: Wave Amplitude Forecasting – Methods (ATFM, SIFT, RIFT), Limitations, Uncertainty, Sensitivity Studies (Location, Depth, Magnitude)
9.5	NTWC and TER Guidance on how to use PTWC New Enhanced Products for National Warnings and Evacuation - Land and Marine Threats and Public Safety: Flow Charts, Criteria Tables, Timeline-driven SOPs, Message Templates
9.6	Tsunami Coastal Assessment Tool (TsuCAT) - Demonstration, Installation, Use

	SATURDAY-SUNDAY, 12–13 AUGUST – FREE DAYS

	MONDAY, 14 AUGUST, DAY 5
	Tsunami Emergency Response (TER)
10.1	SOPs and Checklists: Warning Plans and Templates for TER Coordinated Information Flow and Evacuation
10.2	SOPs and Checklists: Case Studies (New Zealand, Hawaii, Japan Wakayama)
10.3	Communication technologies for the transmission of tsunami warnings to local governments and communities – robustness, reliability, redundancy criteria for emergency communications, "Downstream" Communications Process, Social Media
10.4	Learning Activity: Improving Response – Tsunami Warning Chain for Local Scenario - What Happens When
	LUNCH (TW Tools installation as needed)
10.5	Tourist amd Hotels, Special Needs Populations, Business Readiness
10.6	Roles of Media and Social Media in Warning: Case Studies
10.7	Learning Activity: Improving Response - Managing Information Flow during an Event: Reliable and Unreliable Information
10.8	Mitigation: Ports and Harbors, and Marine Sector Readiness
	COFFEE / TEA BREAK
	UNESCO IOC Tsunami Ready
11.1	Implementing Tsunami Ready programs to recognize community readiness - Guidelines, Recognition Process (IOC MG 74)
11.2	Building Awareness and Community Preparedness - Tsunami Evacuation Planning - considerations and requirements. Preparing for Community Tsunami Evacuations: from inundation to evacuation maps, response plans and exercises (IOC MG 82)

	TUESDAY, 15 AUGUST, DAY 6
	UNESCO IOC Tsunami Ready : Hazard Assessment, Inundation Mapping
11.3	TR ASSESS-1 : Tsunami Preparedness and Risk Assessment - Methods, Techniques

11.4	Global Historical Tsunami Hazards - Pacific, Caribbean, Mediterranean, Indian Ocean; Probabilistic Tsunami Hazard
11.5	IOC Regional Efforts on Tsunami Seismic Sources - Caribbean, Central and South America, South China Sea, Tonga-Kermadec meeting outcomes, and upcoming plans
11.6	Use of Tsunami modeling for hazard and risk assessment - overview
11.7	Case Study: Using ComMIT / MOST for hazard assessment and TsuCAT for response planning and exercise development
	UNESCO IOC Tsunami Ready: Evacuation Mapping
11.8	TR PREP-1: Making Community-based Evacuation Maps, Routes, and Signage - guidance
11.9	Create Community Evacuation Map - paper and pencil
11.10	Create Community Evacuation Map, including routes, signage – computer using QGIS

	WEDNESDAY, 16 AUGUST, DAY 8
	UNESCO IOC Tsunami Ready: Response Planning, Awareness
11.11	TR RESP-1 and PREP-5: Making Community Response Plans and Conducting Drills - guidance, How-to, and templates
11.12	Building Awareness and Community Preparedness - strategies and examples, Caribbean PAE Strategy and Philippines Development Process, ITIC available materials, Hawaii examples
11.13	TR PREP-3: Creating Public Awareness poster, including evacuation
11.14	Country Sharing: Public Awareness poster

	THURSDAY, 17 AUGUST, DAY 9
	Tsunami Exercises
12.1	Building Awareness and Community Preparedness - Tsunami Exercises and Drills, IOC Tsunami Exercise Guidelines (IOC MG 58, IOC MG 86), examples
12.2	Exercise Hawaii Wave 2023 (EHW-23) Tsunami Exercise, Decision-making using PTWC Enhanced Products - Introduction, Format, Conduct
12.3	EHW-23 Tsunami Exercise Preparation - 'Country' TWC / TER SOPs, Criteria Tables, Response Plans, Alerting, Media, Cancellation, etc.
	Exercise Hawaii Wave 2019 (EHW-19)
12.4	EHW-23 Tsunami Exercise - setup and last instruction
12.5	EHW-23 Tsunami Exercise - Decision-making using PTWC Enhanced Products - Local Scenario
12.6	EHW-23 Tsunami Exercise Hotwash - preparation for Press Conference

	FRIDAY, 18 AUGUST, DAY 10
	EHW-23 Pres Conference, Emerging Tools and Technologies, Logistics wrap-up
12.7	EHW-23 Tsunami Exercise Hotwash - Press Conference
13.1	Improving Tsunami Warning - Emerging Techniques and Technologies: Earthquake Finite Fault Modeling, PTWC real-time GNSS/GPS detection of co-seismic deformation

13.2	Improving Tsunami Warning – Non-seismic sources, including Tsunami Generated by Volcano, Meteotsunamis
13.3	Improving Tsunami Warning - Emerging Tools and Technologies: ITU/WMO/IOC SMART Subsea Cables for Observing the Ocean
14.3	ITP-Hawaii 2023 Logistics wrap-up, Ship Course Materials
	Summary and Next Steps, Closing
15.1	2023-2024 Calendar: ICG and TOWS Action Items and Priorities
15.2	Summary Discussion (Way Forward, Next Steps, Gaps and Needs)
16	Presentation of Certificates and Closing Ceremony

	FRIDAY–SATURDAY, 18–19 AUGUST, DAY 10-11
	Hotel Checkout – Depart for home country

2/ ITP-Hawaii 2023 Application Form

UNESCO/IOC – NOAA International Tsunami Information Center

ITIC TRAINING PROGRAMME (ITP) – HAWAII
7–18 AUGUST 2023

APPLICATION FORM

APPLICATION DEADLINE: FRIDAY, 7 JUNE 2023

Please type or write in BLOCK letters in English
Please submit by E-MAIL or FAX to:

E-MAIL: czuniga@shoa.cl (SHOA)
laura.kong@noaa.gov (ITIC)
b.aliaga@unesco.org (IOC)

FAX (ITIC): +1 808 725 6055

1. PERSONAL INFORMATION

NAME	
TITLE	☐ DR. ☐ PROF. ☐ MR. ☐ MS. ☐ others _____
SEX	☐ MALE ☐ FEMALE
NATIONALITY	
HOME ADDRESS	
TELEPHONE NUMBER	
FAX NUMBER	
EMAIL ADDRESS	

2. PROFESSIONAL BACKGROUND

OFFICE/ ORGANIZATION	
POSITION	
ADDRESS	
TELEPHONE NUMBER	
FAX NUMBER	
EMAIL ADDRESS	

3. EDUCATIONAL BACKGROUND

LEVEL	SCHOOL	DEGREE	YEAR GRADUATED
COLLEGE			
MASTER			
DOCTORAL			
POST DOCTORAL			

4. TSUNAMI- RELATED TRAININGS ATTENDED

TITLE OR SUBJECT	CONDUCTED BY	DATES

5. OTHER RELATED TSUNAMI-RELATED JOB EXPERIENCE

OFFICE / ORGANIZATION JOB DESCRIPTION	POSITION	DATES

6. TRAVEL INFORMATION

NAME ON PASSPORT	
PASSPORT COUNTRY	
PASSPORT NUMBER	
BIRTHDAY (DD-MM-YYYY)	
DATE OF ISSUE	
PLACE OF ISSUE	
EXPIRY DATE	
COUNTRY OF BIRTH	
COUNTRY OF CITIZENSHIP	
NAME OF NEAREST INTERNATIONAL AIRPORT	

7. OTHER

ENGLISH LANGUAGE PROFICIENCY	☐ Excellent ☐ Good	☐ Fair ☐ Poor
SPANISH LANGUAGE PROFICIENCY	☐ Excellent ☐ Good	☐ Fair ☐ Poor

DO YOU REQUIRE TRAVEL FUNDING	☐ Yes, Full Funding ☐ Yes, Partial Funding, Amount USD ____ ☐ No, Self-funded

STATEMENT OF INTEREST:

Why are you interested in attending this training?

What topics are you most interested in?

What additional topics you would like to learn about?

After the Training, where and how will the experience gained in the Training will be used?

PLEASE ALSO SUBMIT SEPARATELY YOUR CURRICULUM VITAE (CV).

_____

PRINTED NAME

_____

SIGNATURE

_____

DATE

ENDORSED BY TSUNAMI WARNING FOCAL POINT OR TUNAMI NATIONAL CONTACT:

_____

PRINTED NAME

_____

SIGNATURE

_____

ORGANIZATION

_____

DATE