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Intergovernmental Oceanographic Commission

Ocean Decade Tsunami Programme (ODTP) Science Committee; January 2025

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19th Meeting of ICG/IOTWMS Steering Group, Jakarta, 17-19 June 2025

PROGRESS AND ACHIEVEMENTS ACROSS THE ODTP PILLARS

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INTERGOVERMENTAL OCEANOGRAPHIC COMMISION OF UNESCO

Meeting of Scientific Committee for the UN Ocean Decade Tsunami Programme

16-17 January 2025, UNESCO HQs. Paris, France

Meeting Room VII

Progress in Implementing the Ocean Decade Endorsed Actions Related to Costal Resilience Challenge 6 and ODTP

Summary

This document has been prepared to facilitate discussions during the 5th meeting of the ODTP-SC, focusing on the progress of implementing Ocean Decade Endorsed Actions associated with Coastal Resilience Challenge 6 of relevance to the ODTP (Part of agenda 4)

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Programme Specialist
UNESCO-IOC

The information in this document was provided by the Ocean Decade action leads.

1. PROJECT: COASTWAVE-STRENGTHENING THE RESILIENCE OF COASTAL COMMUNITIES IN THE NORTHEAST ATLANTIC, MEDITERRANEAN REGION TO THE IMPACT OF TSUNAMIS AND OTHER SEA LEVEL-RELATED COASTAL HAZARDS

- Challenge: Coastal Resilience
- Institution: IOC
- Host: UN31. The Ocean Decade Tsunami Programme
- Lead: Denis Chang Seng
- Country: France
- Start and End: 1 Sep- June 2024
- Basin: NEAM
- Project was implemented in 7 countries. Cyprus, Egypt, Greece, Malta, Morocco, Spain, and Türkiye

SUMMARY

The project seeks to build resilient communities through awareness and preparedness strategies that will protect life, livelihoods, and property from tsunamis in different regions. It will sustainably strengthen in-country community response capacity and preparedness and local alerting systems to act against coastal multi-hazards with its community-based actions in 7 countries of NEAM region. The project aims to do this by *establishing guidelines to mitigate, prepare for and respond* to tsunamis and working with the communities to help them meet the guidelines and ultimately become recognized as Tsunami ready by IOC.

Phase II of CoastWAVE Project (CoastWAVE 2.0)

Duration: July 2024-July 2026

Main thrust:

- Targeting additional TR communities in existing and new countries. Twinning of communities. Cities in TR
- Combining TR in exiting Resilient Cities initiative, Portugal
- Enhance detection and monitoring (sea level) rolling out affordable sea level devices based on the recommendations of the Evaluation Report
- Creating Dialogues on HILP in the context of MHEWS-co-design activities with other projects (INGV, DG ECHO project)
- Strengthen Partnership and collaboration
- Engage actively / direct participation of CPA -Broadening the stakeholders
- Stronger connection with OD and ODTP
- Strengthen ICG/NEAMTWS Community of Practice

2. PROJECT: GLOBAL REAL-TIME EARLY ALARM FOR TSUNAMI (GREAT)

- **Challenge 6:** Coastal Resilience
- **Challenge 7:** Ocean Observations
- **Institution:** Cardiff University
- **Host: UN31.** The Ocean Decade Tsunami Programme
- **Lead:** Usama Kadri
- **Country:** United Kingdom of Great Britain and Northern Ireland (UK)
- **Start and End:** 09/01/2013 -31/12/2030
- **Basin:** North Atlantic Ocean, South Atlantic Ocean, North Pacific Ocean, South Pacific Ocean, Indian Ocean, Southern Ocean, Mediterranean Sea

SUMMARY:
Tsunami warning relies on seismic measurements causing false alarms. which result in financial loss due to evacuation and business shutdown. Moreover. people's confidence reduces due to repeating false alarms leading to increased number of casualties in real tsunami. Reducing false alarms is an intergovernmental priority led by the UNESCO in accordance with SDG's Goal 11 to make cities inclusive. safe. resilient and sustainable. Therefore. we developed a real-time early tsunami warning technology based on analyzing fast travelling sound signals that carry information on tsunamis. The technology will be deployed in two NTWCs for operational validation. then it will be deployed in more centres to provide tsunami emergency response. The technology is built on years of research in the field bridging cutting-edge deep-sea observations to inverse modelling. AI and numerical modelling. Such a technology is complimentary and inclusive with the conventional tsunami detection techniques.

2. PROJECT: GLOBAL REAL-TIME EARLY ALARM FOR TSUNAMI (GREAT)

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Funding:

- Funding is one of the main challenges the project encounters. The main source of funding is the Impact Acceleration Award (IAA) which allows hiring a software engineer and pays for some travelling and miscellaneous expenses. The funding ends in January 2025.
- I applied for the next IAA award grant, which if granted should allow a continued funding until September 2025 at most. A third follow programme might allow further continuation.
- Currently, attention is focused on securing a large grant to keep the project running.

3. PROJECT: SEA LEVEL STATION MONITORING FACILITY

- **Challenge 6:** Coastal Resilience
- **Challenge 7:** Ocean Observations
- **Institution:** Flanders Marine Institute (VLIZ)
- **Host: UN31.** The Ocean Decade Tsunami Programme
- **Lead:** Francisco Hernandez
- **Country:** Belgium
- **Start and End:** 01/01/2023 -31/12/2026
- **Basin:** North Atlantic Ocean, South Atlantic Ocean, North Pacific Ocean, South Pacific Ocean, Indian Ocean, Arctic Ocean, Southern Ocean, Mediterranean Sea, Black Sea

SUMMARY:
The Sea Level Station Monitoring Facility (SLSMF) is an information and display service connecting 1034 real-time sea-level stations in a global and regional network (ioc-sealevelmonitoring.org) of 170 global data providers. The SLSMF provides a free online service for quick inspection of the raw data stream from individual sea level stations. This data is crucial for the provision of early warning of rapid onset sea-level hazards. Additionally. we will support capacity building opportunities to ensure equal warning capabilities and support resilience of coastal and maritime communities. The stations are part of IOC programmes i.e. (i) the Global Sea Level Observing System Core Network and (ii) the networks under the regional tsunami warning systems in the Indian Ocean (IOTWS). Northeast Atlantic & Mediterranean (NEAMTWS). Pacific (PTWS) and the Caribbean (CARIBE-EWS)

4. TSUNAMI & CLIMATIC RISK REDUCTION AT PROTECTED AREAS IN COSTA RICA

- **Challenge 5**: Unlock ocean-based solutions to climate change
- **Challenge 6:** Coastal Resilience
- **Challenge 8:** Create a digital representation of the Ocean
- **Institution:** National University Costa Rica (UNA) – Costa Rica
- **Host:** SINAMOT Program
- **Lead:** Silvia Chacon-Barrantes
- **Country**: Costa Rica
- **Start and End:** 01/01/2022 -31/12/2024
- **Basin**: North Pacific Ocean, and Caribbean Sea

Summary:
The goal is to enhance tsunami and climatic preparedness on Wildlife Protected Areas (WPAs) through the interdisciplinary construction of tsunami inundation and evacuation maps; preparedness and response plans and action plans to decrease climatic and psychosocial vulnerability. The team at the National University is working closely with the National Emergency Commission on Risk Prevention and Emergency Response and the National System of Conservation Areas.

5. INTEGRATING COASTAL HAZARD WARNING SYSTEMS FOR TAC, NORTH ATLANTIC OCEAN/ CARIBBEAN SEA

- **Challenge 6:** Enhance multi-hazard early warning services for all geophysical, ecological, biological, weather, climate and anthropogenic related ocean and coastal hazards, and mainstream community preparedness and resilience.
- **Challenge 7:** Ensure a sustainable ocean observing system across all ocean basins that delivers accessible, timely, and actionable data and information to all users.
- **Challenge 10:** Ensure that the multiple values and services of the ocean for human wellbeing, culture, and sustainable development are widely understood, and identify and overcome barriers to behaviour change required for a step change in humanity's relationship with the ocean.
- **Institution:** IOCARIBE
- **Lead:** Dr. Lorna Inniss, Head of IOCARIBE (l.inniss@unesco.org).
- **Country:** N/A
- **Start and End:** 2022-2030
- **Basin:** Caribbean Sea, Tropical Western Atlantic and Eastern Pacific

6. PROJECT: SEA LEVEL STATION MONITORING FACILITY

- **Challenge 6:** Coastal Resilience
- **Challenge 8:** Digital Representation of the Ocean
- **Challenge 9:** Capacity Development
- **Institution:** NOAA Pacific Marine Environmental Lab
- **Host:** Not yet defined
- **Lead:** Kevin O'Brien
- **Country:** USA
- **Start and End: 01/03/2022 -01/03/2030**
- **Basin: North Atlantic Ocean, South Atlantic Ocean**

SUMMARY:
The Open Access to GTS (Open-GTS) project aims to ease the exchange of marine data and increase the amount of data available for real-time forecasts. The ability of Open-GTS to accept multiple data format types is significant and promising. The application of the Open-GTS workflow will increase the exchange of marine data while retaining data quality and integrity, and its framework will increase transparency and encourage participation from other marine interests, including the commercial shipping industry.

7. PROJECT: SEA LEVEL STATION MONITORING FACILITY

- **Challenge**: Challenge 6 Coastal Resilience
- **Institution**: Agency of Meteorology, Climatology, and Geophysics
- **Host:** Not known yet
- **Lead:** Sugeng Pribadi
- **Country**: Indonesia
- **Start and End**: 01/03/2021-30/11/2021
- **Basin**: Indian Ocean

SUMMARY
Historically, the Sunda Strait has experienced tsunamis due to the volcanic, eruption, earthquake tectonics and underwater landslides which have the potential for future recurrences. The most recent event was the Sunda Strait Tsunami, 22 December 2018. Although there have been several writings on Mount Anak Krakatau (GAK) but the results are not satisfactory. Therefore, this study proposes that tsunami modeling be carried out based on bathymetric survey data so that the source and impact of the tsunami due to the 2018 GAK can be reconstructed so as to help mitigation efforts in the Banten and Lampung areas in the future.

On going Proposal: SUSTAIN (tSUnami reSilient criTicAl INfrastucture

- **Challenge**: Challenge 6 Coastal Resilience
- **Institution**: ITERA
- **Host:**
- **Lead:** Harkunti Pertiwi Rahayu
- **Country**: Indonesia, Srilanka
- **Start and End**:
- **Basin**: Indian Ocean

SUMMARY:

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THANK YOU