Ocean Decade Tsunami Programme: Advancing End-to-End Tsunami Early Warning and Mitigation through International Cooperation

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Abstract

Tsunamis are among the most destructive oceanic hazards, capable of impacting entire ocean basins within minutes to hours. The catastrophic Indian Ocean tsunami of 26 December 2004, which claimed over 230,000 lives, led to the establishment of coordinated regional tsunami warning systems under the mandate of UNESCO's Intergovernmental Oceanographic Commission (IOC). While significant progress has been made in the last two decades, challenges remain in improving forecast accuracy, reducing warning timelines, and ensuring community-level preparedness. The Ocean Decade Tsunami Programme (ODTP) endorsed by the IOC assembly in 2021 under the UN Decade of Ocean Science for Sustainable Development 2021-2030 (UN Ocean Decade) provides a global collaborative framework to enhance tsunami early warning and mitigation systems.

The main objectives of the ODTP are (i) to develop the warning systems' capability to issue actionable and timely tsunami warnings for tsunamis from all identified sources to 100% of coasts at risk and (ii) 100% of communities at risk to be prepared and resilient to tsunamis by 2030 through programmes like the UNESCO IOC Tsunami Ready Recognition Programme. The ODTP Research, Development and Implementation Plan (RDIP), prepared by the ODTP Scientific Committee and endorsed by the IOC Assembly at its 32nd session in June 2023, outlines pathways to achieve these goals through improved risk knowledge, detection and forecasting, warning dissemination, and preparedness. The plan also highlights capacity development needs, governance aspects and international cooperation.

To date, over 25 actions have been endorsed under the Ocean Decade in support of the ODTP. These initiatives span real-time monitoring systems, tsunami modeling, community preparedness, submarine cable observatories, and integrated multi-hazard frameworks. This presentation will highlight ODTP's strategic vision, scientific priorities, and implementation pathways, inviting collaboration to co-design innovative solutions that secure coastal safety and resilience in the face of tsunami threats.

Keywords: Tsunami Preparedness, Tsunami Early Warning Systems, SMART, Ocean Decade Tsunami Programme, Risk Reduction, Community Resilience, Tsunami Ready Recognition Programme, Multi-Hazard Framework