



United Nations  
Educational, Scientific and  
Cultural Organization



Intergovernmental  
Oceanographic  
Commission



2021  
2030 United Nations Decade  
of Ocean Science  
for Sustainable Development

# UPDATE: UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT AND DECADE TSUNAMI PROGRAMME

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UN Ocean Decade Tsunami Programme Science Committee

7 Mar 2023

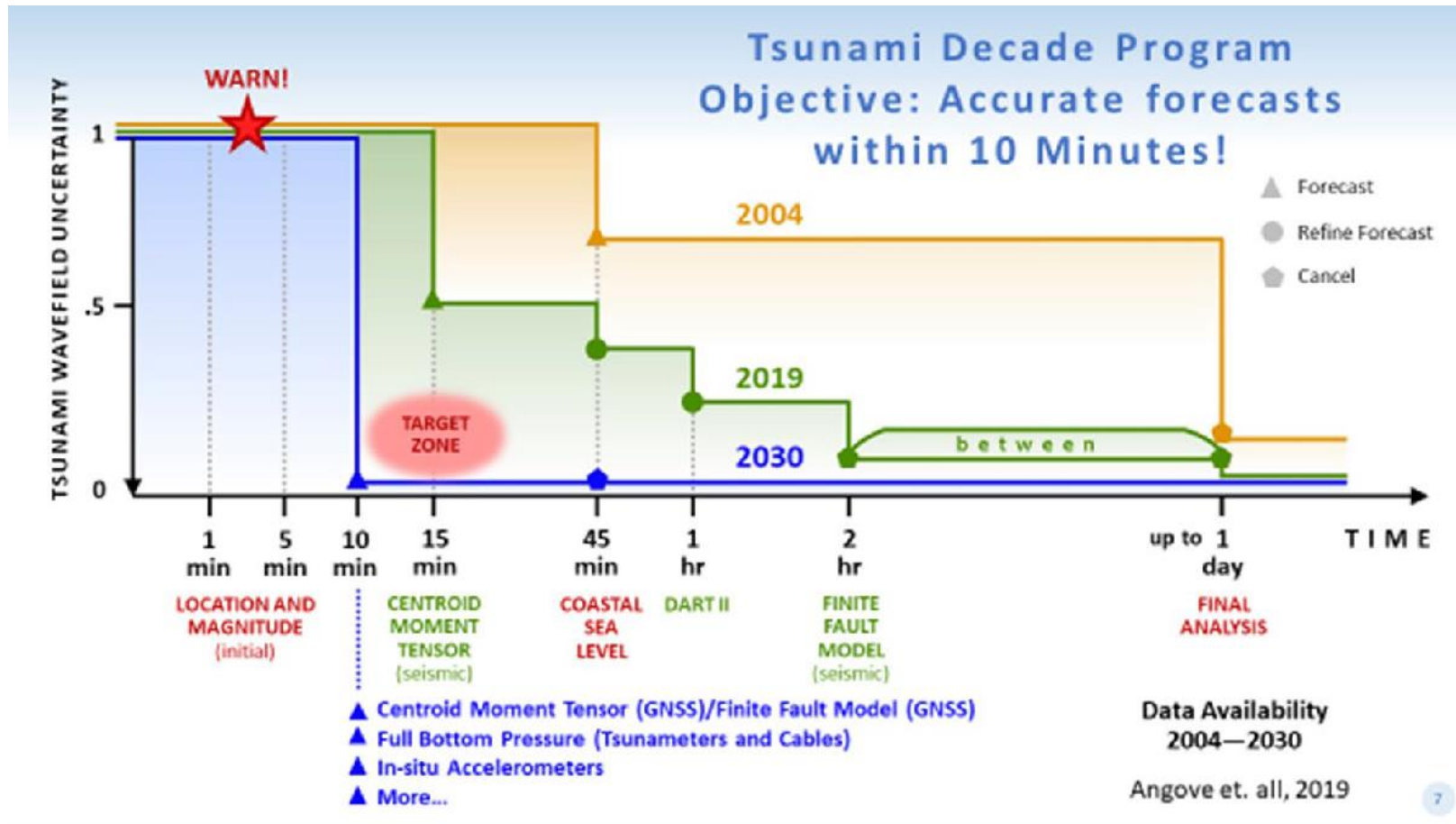
# Question: What do at-risk populations need out of tsunami alerts?

- Timely: Alerts are issued in sufficient time for Emergency Managers and the public to take appropriate actions to preserve life and property.
- Relevant: The alerts and the associated actions must correspond to the actual threat.
- Accurate: Overestimating the threat can strain the usually limited emergency management resources available at short notice and cause ancillary safety concerns. Underestimating the threat—or worse, not anticipating any threat at all—can have obvious catastrophic consequences.

# The UNODTP will address these challenges in these areas:

- **Tsunami Risk Assessment**: Understanding the physical processes that govern the generation, propagation, and inundation of tsunamis as well as the assessment of the tsunami hazard and risk for specific locations are of crucial importance for an effective development tsunami risk reduction.
- **Detection and Warning**: A dense observation network plays a crucial role in tsunami detection. Based on observations, the warning system determines whether communities are to be evacuated from the tsunami-prone areas, and if so, when they should be allowed to return.
- **Warning Dissemination**: Tsunami warnings and evacuation advice are only effective when it reaches a person on the coast in time before a destructive wave hits. Both the dissemination (its timeliness and reliability) and the communication of the advice (what the message says) must be successful and actionable, or lives may be unnecessarily lost.
- **Preparedness and Response Capabilities**: As disasters are foremost local, coastal communities will suffer the brunt of the impact from the next tsunamis. Adding to the challenge, ocean-wide tsunamis are infrequent. In order to be successful, we will need continuing and enhanced engagement from governments, research institutes and universities, industry, communities, the media, and other interested parties.
- **Tsunami Warning in a Multi-Hazard Framework**: it is important to consider the potential for cascading impacts in locations that are vulnerable to these kinds of processes in pertinent investigations.
- **Capacity Building**: Alongside the development of technical solutions, individual and institutional capacity is required. A Goal of the ODTP is therefore to ensure investment in capacity development for the different stakeholders including the generators and the users of the tsunami early warning system.
- **Governance**: Services associated with the global tsunami warning system are governed by the 4 ICGs, and advocated for by the Inter-ICG Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation System (TOWS WG).
- **Implementation**: The IOC tsunami programme will oversee the overall implementation of the ODTP through contributions and engagement of Member states, in coordination with the ICGs, and with the collaboration of academic institutions, researchers, industry, philanthropic organizations and other stakeholders

# Challenge 1: Reduce Tsunami Impact Uncertainties



Tsunami Source	Initial indicators (TAO)	Tsunami Detected (TAO)	Tsunami constrained (time before impact)
Earthquake	3 min	10 min	45 mins
Non-earthquake (known)	10 mins	45 mins	60 mins
Non-earthquake (unknown)	Varies	60 mins	120 mins

Table 1 Specific aspirational targets of the ODP related to tsunami detection, analysis and forecasting

# TSUNAMI WARNING: LIFECYCLE STAGES

Initial Indicators: Identification of geophysical event that has potential to create tsunami

Action: **Initial Alert**—initiate emergency response

Confirmation: Positive identification that a significant tsunami was created by event

Action: **Verified Alert**—continue with prescribed action or stand down

Forecast: Enough observations collected to support initial hydrodynamic tsunami forecast

Action: Initial production of expected impacts (timing, amplitude)

Validation: Enough coastal observations to verify or scale tsunami forecast

Action: Verification and adjustment of impact forecast

Cancelation: Enough verifying data to determine when threat has passed

Action: All-clear given based on low-uncertainty fit.

What High Certainty info can be delivered in each stage?

***Concept: Each Stage has unique instrumentation and analysis needs***

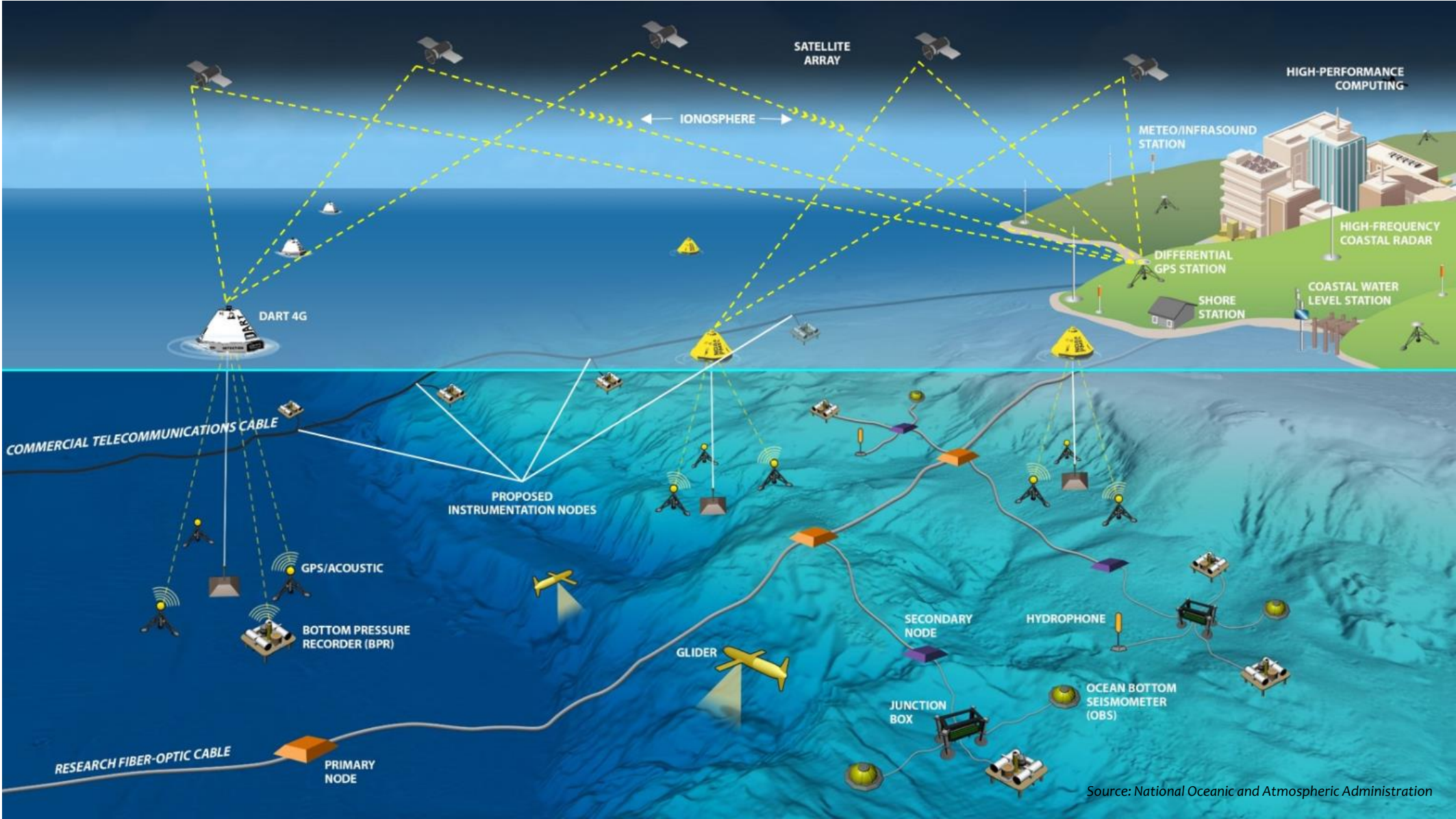
# Pathway to Implementation

Introduction. The UNOD Tsunami Programme is designed to be implemented by contributing Member states, academic institutions, industry and philanthropic organizations. The purpose of the implementation plan is to describe the range of opportunities to advance the global tsunami warning system according to metrics established within the various **Lifecycle Stages** of the tsunami warning process, as well as contributions that support member state capacity to establish robust readiness protocols.

Optimal Network Design. Before an improved tsunami observations and detection network can be implemented an **optimal network must be designed** based on the Tsunami Lifecycle Stages considering both seismic and non-seismic sources. Once this is completed individual activities will have the opportunity to contribute resources or project initiatives per the optimal network design parameters.

# Rethinking Ocean Observations:

Reducing Uncertainty in Global Tsunami Forecasts



Source: National Oceanic and Atmospheric Administration

## OCEAN DECADE TSUNAMI PROGRAMME:

# Challenge 2: TSUNAMI READY!

TO MAKE  
**100%**

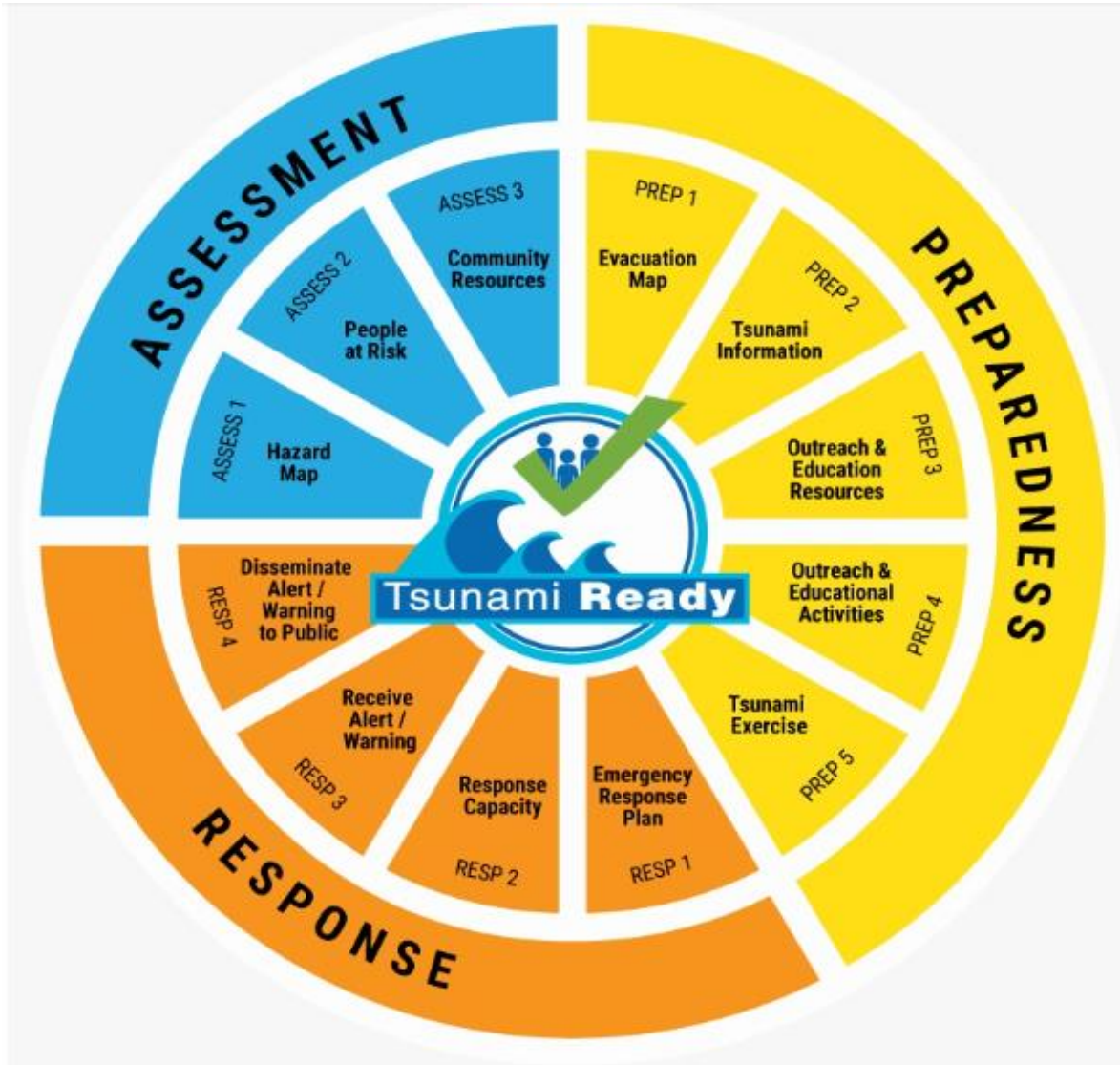
OF COMMUNITIES AT RISK OF TSUNAMI  
PREPARED FOR AND RESILIENT TO TSUNAMIS

BY  
**2030**



# UN OCEAN DECADE TSUNAMI PROGRAMME:

## 100% AT-RISK COMMUNITIES TSUNAMI READY



- ❑ **STRATEGY:**  
Be Aware, Be Prepared
- ❑ **FRAMEWORK:**
  - Harmonized global guidelines UNESCO IOC Tsunami Ready
  - Performance-based Community Recognition
- ❑ **ACTION:**
  - National programs empower Communities,
  - Communities demand national actions
- ❑ **GLOBAL MEASURE**

# Capacity Development, Governance and Accountability

- Ensure investment in capacity development for the different stakeholders involved in the tsunami warning and dissemination processes
  - Individual and Institutional
  - Generators and Users
  - Regional, national and local levels
  - Equitable and inclusive, leaving no one behind
  - Prioritize SIDS and LDC
- Governance
  - Explore opportunities and establish connections with Decade programmes, projects, contributions, Collaboration Centers and Communities of Practice
  - Balanced platform for gender and generational participation
  - New international cooperation, through an international Science Committee and International Tsunami Ready Coalition while renewing and strengthen existing cooperation with partners.
- Develop and operationalize a transparent performance monitoring system based on international norms, standards and agreements



# INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION of UNESCO

3<sup>rd</sup> SC-ODTP Meeting, 18-20 January 2023, UNESCO HQ, Room VI

## PROVISIONAL AGENDA

1. Welcome and opening

2. Introducing the revised timeline and new editing responsibilities for ODTP R&D Plan

3. Writing parallel sessions: development of Chapter 6, 7.2. and 7.7\*

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6. Introductory remarks and discussion with Ocean Decade Coordination Unit (DCU)

7. Thorough review of all chapters - part 1

8. Thorough review of all chapters - part 2

9. Final discussion and editing session

10. SC-ODTP Briefing on feedbacks received from TNC/TWFPs

11. Incorporation of suggestions in ODTP R&D Plan

12. Key action items and next steps before TOWS-WG XVI and IOC 32nd Assembly

13. Remaining Items

14. Closure and Group Photo

*\*Chapter 6- CD and attention to LDCs and SIDS  
Chapter 7.2. Inclusiveness, Gender Diversity and Youth Involvement  
Chapter 7.7. Legal, National Policy, Regulatory Aspects*

*We are here*

*ICG Review and feedback*