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# UN Ocean Decade Tsunami Programme

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2021-2030 United Nations Decade  
of Ocean Science  
for Sustainable Development

# UN Decade of Ocean Science for Sustainable Development: 2021 - 2030

## VISION:

The Decade will harness, **stimulate and coordinate interdisciplinary research efforts** at all levels, in order to support **delivery of the information, action and solutions** needed to achieve the UN's 2030 Agenda for Sustainable Development.

## Goals:

### Goal 1

To generate **the scientific knowledge and underpinning infrastructure and partnerships** needed for sustainable development of the ocean.

### Goal 2:

To provide **ocean science, data and information to inform policies for a well-functioning ocean** in support of all SDG-2030 Agenda.

## SOCIETAL OUTCOMES:

1. **A Clean Ocean;**
2. **A Healthy and Resilient Ocean;**
3. **A Predicted Ocean;**
4. **A Safe Ocean;**
5. **A Sustainable harvested and productive ocean;**
6. **A “Transparent and Accessible” Ocean;**



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# The Vision of a Safe Ocean

**A Safe Ocean** is:

- **not** an ocean in which tsunamis do not occur;
- **is** an ocean in which tsunamis are understood, observed, and their impact is **accurately predicted before** they reach the coast;
- **is** an ocean in which those that live, work, and recreate along it are **armed with knowledge and prepared** to act before a tsunami strikes.



# EXISTING GLOBAL TSUNAMI WARNING SYSTEM

Intergovernmental Oceanographic Commission of UNESCO  
2021 [www.ioc-tsunami.org](http://www.ioc-tsunami.org)



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The services provided by the  
**US National Tsunami Warning Center**  
are outside the framework of the IOC  
coordinated tsunami warning systems

## CARIBE-EWS

Tsunamis and Other Coastal  
Hazards Warning System for the  
Caribbean and Adjacent Regions

Service provided by  
**PTWC**  
Pacific Tsunami Warning Center

Planned

## PTWS

Pacific Tsunami Warning  
and Mitigation System

**NWPTAC/JMA**  
Northwest Pacific Tsunami  
Advisory Center /  
Japan Meteorological Agency

**PTWC**  
Pacific Tsunami Warning Center

**SCSTAC/NMEFC**  
South China Sea Tsunami  
Advisory Center /  
National Marine Environmental  
Forecasting Center of P. R. China

## IOTWMS

Indian Ocean Tsunami  
Warning and Mitigation System

**InaRTSP**  
Indonesian Regional Tsunami Service Provider

**ITEWC**  
Indian Tsunami Early Warning Centre

**JATWC**  
Joint Australian Tsunami Warning Centre

Service is provided by the  
**InaTEWS**  
Indonesian Tsunami Early Warning System at  
the BMKG, outside the framework of the IOC-  
coordinated tsunami warning systems

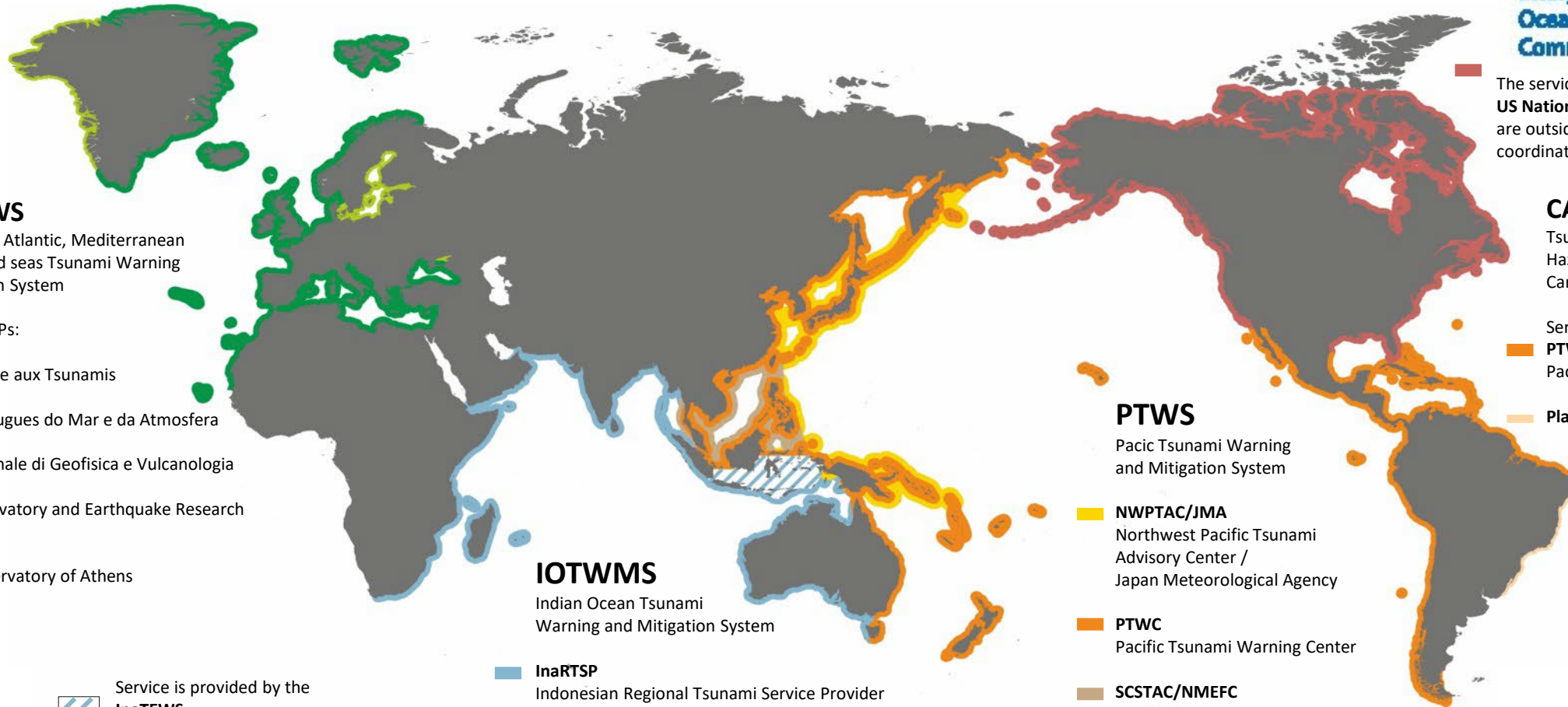
## NEAMTWS

North Eastern Atlantic, Mediterranean  
and connected seas Tsunami Warning  
and Mitigation System

Accredited TSPs:

- **CENALT**  
Centre d'Alerte aux Tsunamis
- **IPMA**  
Instituto Portugues do Mar e da Atmosfera
- **INGV**  
Istituto Nazionale di Geofisica e Vulcanologia
- **KOERI**  
Kandilli Observatory and Earthquake Research  
Institute
- **NOA**  
National Observatory of Athens

■ **Planned**



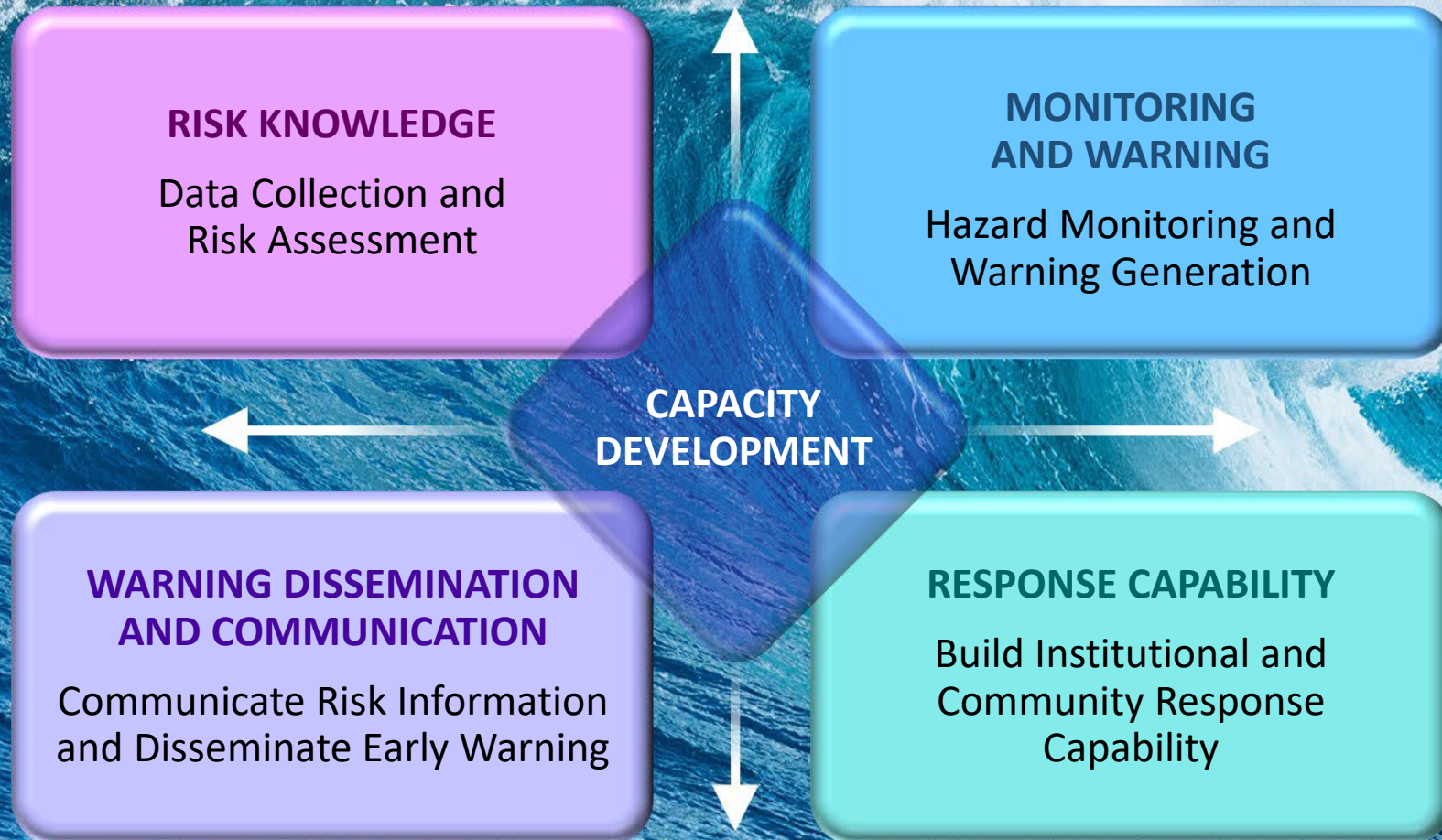


# PEOPLE-CENTRED GLOBAL TSUNAMI WARNING AND MITIGATION SYSTEM



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Adapted from ISDR  
Platform for the  
Promotion of Early  
Warning, 2006



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31<sup>st</sup> Session (14-25 June 2021) of the Assembly for the UNESCO Intergovernmental Oceanographic Commission (IOC) approved the establishment of the **Ocean Decade Tsunami Programme**, including:

- **Scientific Committee** to prepare a **10-Year Research, Development and Implementation Plan**
- **Tsunami Ready Coalition** to help enhance community preparedness

*“...this programme will seek to ensure that a country's ability to prepare for, defend against and recover from the tsunami threat is not dependent on what it can afford.”*

*Alexander Frolov, Jul 2021*



# OCEAN DECADE TSUNAMI PROGRAMME: Seeking Major Advances in SCIENCE and PREPAREDNESS



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**GOAL 1:** New observational and analysis technologies to move from a **high-uncertainty** assumption-based capability to a **low-uncertainty** dynamic-based capability

**RESILIENCE!**

Communities respond to tsunami threats by combining accurate **real-time impact forecasts** with **deep community preparedness**.  
Tsunami disaster impacts are minimized, enabling rapid restoration of critical infrastructure and services

**GOAL 2:** Comprehensive institutional & community preparedness and capacity building efforts aimed at achieving **IOC Tsunami Ready** designation across all socio-economic categories





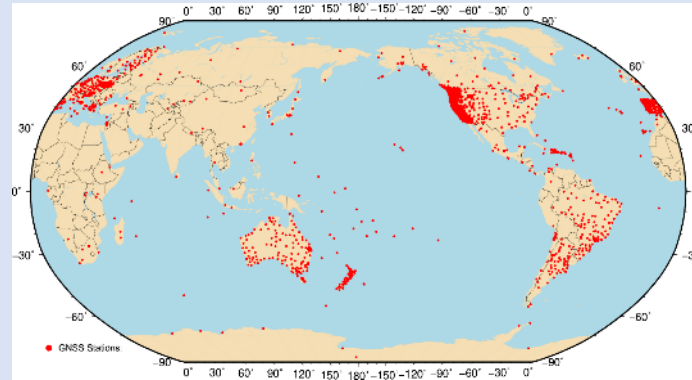
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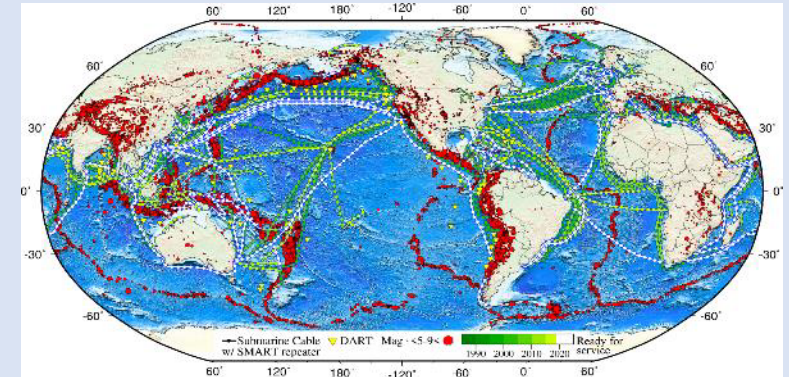
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Includes a **Science Plan** being developed for tsunami warning & mitigation system development. The **Vision** is based on two over-arching aspects:

- Explore technological and observational advances to **lower uncertainties and improve timeliness of tsunami detection and warnings.**
- Match these capability advancements with improved community preparedness efforts, including striving for **100% Tsunami Ready or comparable recognition of all at-risk coastlines.**



Eg use of Global Navigation Satellite System (**GNSS**)



Eg instrumentation of sub-sea communication (**SMART**) cables



Establish Tsunami Ready Coalition



# UN OCEAN DECADE TSUNAMI PROGRAMME

## Draft Science Plan

Table 1, Specific **aspirational** targets of the UNODTP related to tsunami detection, analysis and forecasting are as follows:

Tsunami Source	Initial indicators (time after origin)	Source partially constrained (time after origin)	Source fully constrained (time after origin)
Earthquake	3min	10min	45 mins
Non-EQ (known)	10mins	45mins	1hr
Non-EQ (unknown)	45 mins	1hr	90mins

Achieving the aspirational goals in Table 1 will require investigation of four focus areas including:

- (1) Maximizing current capabilities and instrumentation;
- (2) expanding current instrumentation grid;
- (3) Identify capabilities that exist but are not currently applied to tsunami and
- (4) Identifying new capabilities that require development.

For each focus area it will be necessary to estimate the quantitative improved accuracy and timeliness in relation to the aspirational targets to justify implementation.

# UNESCO-IOC Tsunami Ready Recognition Programme

## Community performance-based programme

**Active collaboration** of the public (community), community leaders, local and national emergency management agencies, and the national tsunami warning centre.

## Based on 12 Indicators

Developed from **best practices and lessons learnt** worldwide.



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 including signage is publicly displayed.
6	PREP-3. Outreach and public awareness and education resources are available and distributed.
7	PREP-4. Outreach or educational activities are held at least 3 times a year.
8	PREP-5. A community tsunami exercise is conducted at least every two years
III RESPONSE (RESP)	
9	RESP-1. A community tsunami emergency response plan 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.





# OCEAN DECADE TSUNAMI PROGRAMME:



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## THE MAIN SOCIAL OUTCOME

TO MAKE  
**100%**

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

BY  
**2030**