



# Tsunami Early Warning System in India

## Why in News

According to experts from the [Indian National Centre for Ocean Information System \(INCOIS\)](#), India is much safer against tsunami threats than it was in 2004, due to the establishment of a state-of-the-art tsunami early warning system at INCOIS.

## Key Points

### ▪ Indian Tsunami Early Warning System:

- The Indian Tsunami Early Warning System (ITEWS) was **established in 2007** and is based at & operated by INCOIS, Hyderabad.
- It is an **integrated effort** of different organizations including the Department of Space (DOS), Department of Science and Technology (DST), the Council of Scientific and Industrial Research (CSIR), Survey of India (SOI) and National Institute of Ocean Technology (NIOT).
- ITEWS comprises a **real-time network of seismic stations**, tide gauges and a **24X7 operational tsunami warning centre** to detect tsunamigenic earthquakes, to monitor tsunamis and to provide timely advisories to vulnerable communities.
- Indian scientists can detect large undersea earthquakes in Indian Ocean in real-time and provide a tsunami warning in 10-20 minutes after the earthquake occurs.
  - In 2004, India didn't have any tsunami warning capability nor any public knowledge of tsunamis in the Indian Ocean.
- India is among the **first few centres to introduce quantitative tsunami forecasts**.
  - **Intergovernmental Oceanographic Commission (IOC)** of [UNESCO](#) (also known as UNESCO-IOC) accredited **Indian Tsunami Early Warning Centre (ITEWC)** as **Tsunami Service Provider (TSP)** for 28 [Indian Ocean Rim \(IOR\) countries](#), along with Indonesia and Australia in 2011, for issuing regional warnings.

### ▪ Recent Focus in Tsunami Warning Capability:

- The focus in recent times has been on **enhancing community awareness and response** through several **capacity building activities, biennial Indian Ocean wide tsunami drills** and **piloting of the [UNESCO-IOC Tsunami Ready initiative](#)**.
  - **Tsunami Ready is a community performance-based programme** to promote tsunami preparedness through active collaboration of public, community leaders, and national and local emergency management agencies.
  - The **main objective of this programme is to improve coastal community's preparedness for tsunami emergencies**, to minimize the loss of life and property and to ensure a structural and systematic approach in building community preparedness through fulfilling the best-practice indicators.
  - **Two villages of Odisha-** Venkatraipur in Ganjam district and Noliasahi in Jagatsinghpur district **are now 'Tsunami Ready'**.
- INCOIS is **establishing a network of 35 stations to estimate the tectonic plate's movements in real-time** and measure the vertical displacements under the sea directly.

## INCOIS

- INCOIS was **established in 1999** as an **autonomous body** under the **Ministry of Earth Sciences**.
- **INCOIS** through Indian Tsunami Early Warning Centre (ITEWC) is the **nodal agency to provide tsunami advisories to India**.
- It is coordinating with the Disaster Management Officials (DMOs) for implementation of **Tsunami Ready** programme in India.
- It conducts **IOWave Tsunami mock exercises biannually** to strengthen the readiness to handle the emergency situations with stakeholders.
- INCOIS also identifies the **Potential Fishing Zones (PFZ)** for the fishermen community.
- It has also **made improvement in overcoming the cloud cover** through usage of geostationary satellites and numerical modelling.
- INCOIS has also partnered with [Indian Space Research Organisation \(ISRO\)](#) and [Airports Authority of India \(AAI\)](#) to **develop a satellite based message broadcasting services** through the indigenous navigational satellite communication system '[NAVIC](#)'.

## Tsunamis

- These are a series of waves usually **generated by movement of the sea floor**. These movements are **caused by different types of geophysical phenomena** such as [earthquakes](#), [landslides](#) and **volcanic eruptions**.
- The word tsunami is a **Japanese word**, represented by two characters: tsu, meaning, "harbor", and nami meaning, "wave".
- The tsunami waves behave very differently in deep water than in shallow water as their **speed is related to the water depth**.
- They **frequently occur in the Pacific**, where dense oceanic plates slide under the lighter continental plates. When these plates fracture they provide a vertical movement of the seafloor that allows a quick and efficient transfer of energy from the solid earth to the ocean.

## Way Forward

- Initiatives like Tsunami Ready has to be replicated in other vulnerable coastal communities as it enhances ability to respond to cyclones and storm surges too.
- The best of warning systems could fail, if communities are not prepared, if they do not understand the official and natural warning signs of a tsunami, and if they do not take appropriate and timely response.

[Source: TH](#)

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