

# MSM OCEAN Tsunami

**MSM's Tsunami Early Detection and Warning System** is an advanced technology system which detects a tsunami event, processes it, and sends the information to a Control Centre with web platform, where an alarm is generated automatically. All this done in less than a minute.

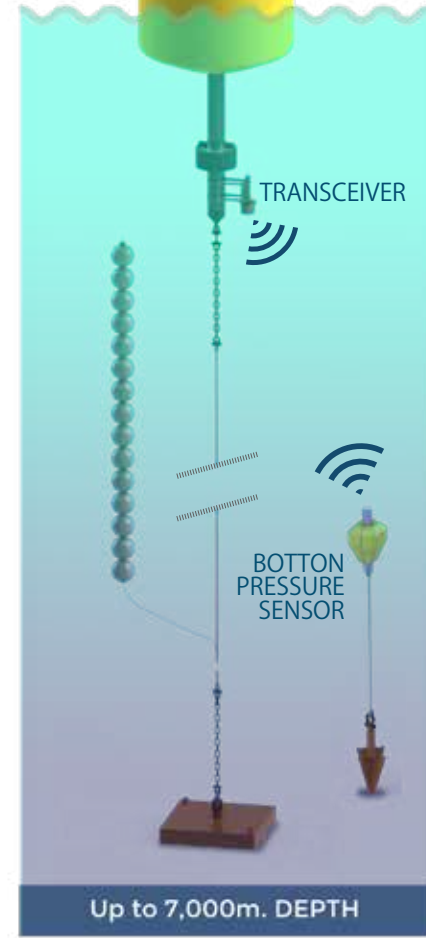
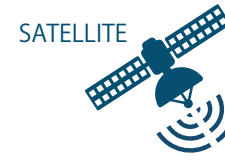
We are **specialists** in the manufacturing of Oceanographic Buoys and Tsunami Detection and Early Warning Systems.

Our team of experts offers **comprehensive custom-made solutions** for any project.

# Fast and reliable detection of tsunami



- **Float** manufactured with closed-cell polyethylene solid foam sheet (no water absorption) and with a coloured polyurethane elastomer coating, providing an unsinkable buoy resistant to collisions.
  - **Buoy highly conspicuous** during day and night for a safe navigation, equipped with a marine lantern, a radar reflector, a top mark and an integrated AIS transponder.
  - Message compatible and integrable with the **NOAA** Tsunami Early Warning System.
  - **Highly available and reliable system** with redundant satellite communication.
  - **Anti-vandal security systems** to maintain the integrity of the buoy, including impact sensor with automatic alarm to the Control Centre.
  - **Web application** installed in two dedicated servers, with a user-friendly interface for displaying and monitoring water pressure measurements and all the buoy's parameters.
- Designed according to IALA Recommendations.**



## System operation

A pressure sensor, deployed at water depth of up to 7,000 meters, detects height variations on the water surface. Our specially-designed buoy communicates acoustically with the sensor and operates as an interface between it and the web platform onshore in the Control Centre.

# TWO CASE STUDIES ON THE RELIABLE OPERATION of the Tsunami Early Warning and Detection System



Our System is capable of detecting a tsunami event caused by a perturbation of more than 10,000 kilometers of distance and generating an alert in seconds after its detection.



## Tsunami buoys located off the coasts of Manta and Esmeraldas in Ecuador

**January 15<sup>th</sup>, 2022:** promptly and effectively registered and alerted in **less than 35 seconds** the wave generated by the violent eruption of the Hunga-Tonga submarine volcano (South Pacific), originated more than 10 thousand kilometers away.

**March 4<sup>th</sup>, 2021:** promptly and effectively registered the wave generated by the magnitude 8.1 earthquake in the Pacific Ocean, near the Kermadec Islands, New Zealand, immediately, autonomously and automatically generating the alert in **less than 60 seconds** after its detection, to the National Tsunami Warning Center of Ecuador.

These buoys are managed by the Navy's Oceanographic and Antarctic Institute (INOCAR).

MORE INFORMATION



**Mediterráneo Señales Marítimas, S.L.**

P. I. Mas de Tous - C/ Oslo, 12 / 46185 La Pobla de Vallbona - VALENCIA (SPAIN)  
Tel.: +34 96 276 10 22 / [ocean@msmocean.com](mailto:ocean@msmocean.com) / [www.msmocean.com](http://www.msmocean.com)