



# 海陸聯合地震觀測網

Integrated Real-Time Land-Sea Seismographic Network

# 智慧地震預警系統

Earthquake Early Warning System

# 強震警報公眾示警

Earthquake Early Warning for Public Notification

## 國家級警報

接收：14:44  
地震速報 Quake Alert  
09/18 14:44  
左右台東地區發生有感地震，慎防強烈搖晃。  
氣象署。  
Beware of probable shaking. CWA

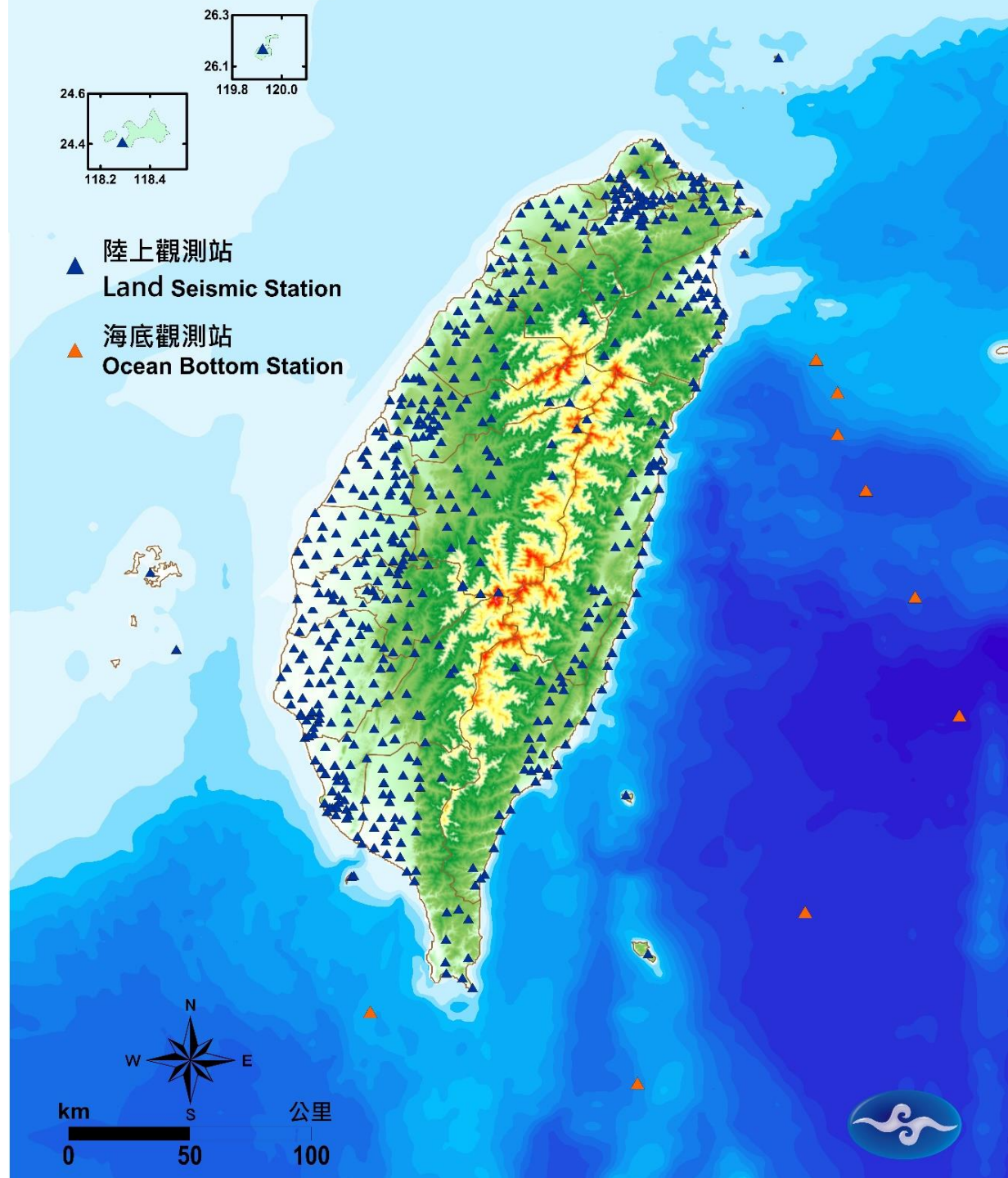


交通部中央氣象署  
Central Weather Administration

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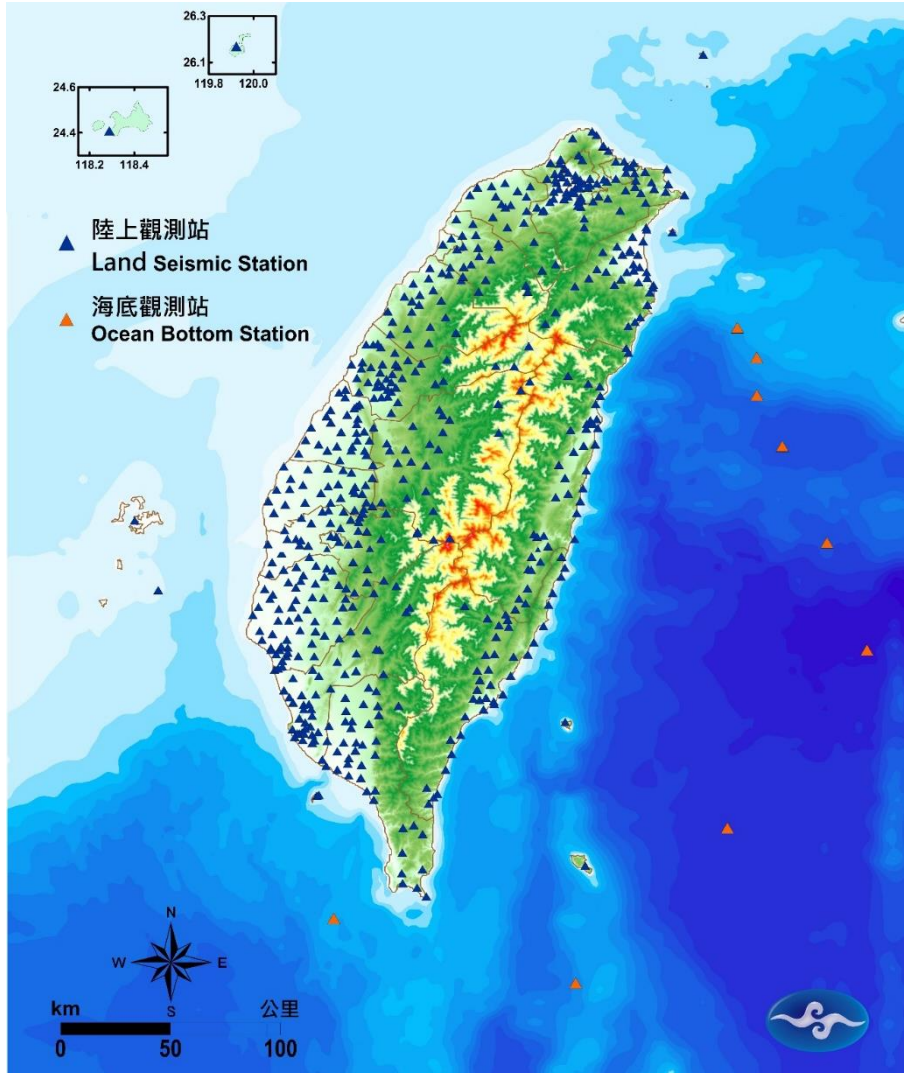
臺灣位處環太平洋地震帶，為能24小時不中斷偵測地震活動，並於有感地震發生後立即發布地震資訊，降低災害損失與加速應變效能，交通部中央氣象署在政府「強地動觀測計畫」科技預算與「民生公共物聯網計畫」前瞻預算支持下，建置高測站密度的海陸地震聯合觀測網。測站類型包括地表地震站、井下地震站與海底地震站，總數超過600站，為全世界密度最高的地震觀測網之一。地震儀安裝的種類包括短週期地震儀、強震儀與寬頻地震儀，可以完整記錄強震、微震、遠震的地震波形。所有地震站的連續觀測資料，皆透過穩定安全的傳輸網路，即時傳回氣象署的資料處理中心，嚴密監控臺灣陸地與附近海域的地震活動，守護人民生命與財產安全。





# 海陸聯合地震觀測網

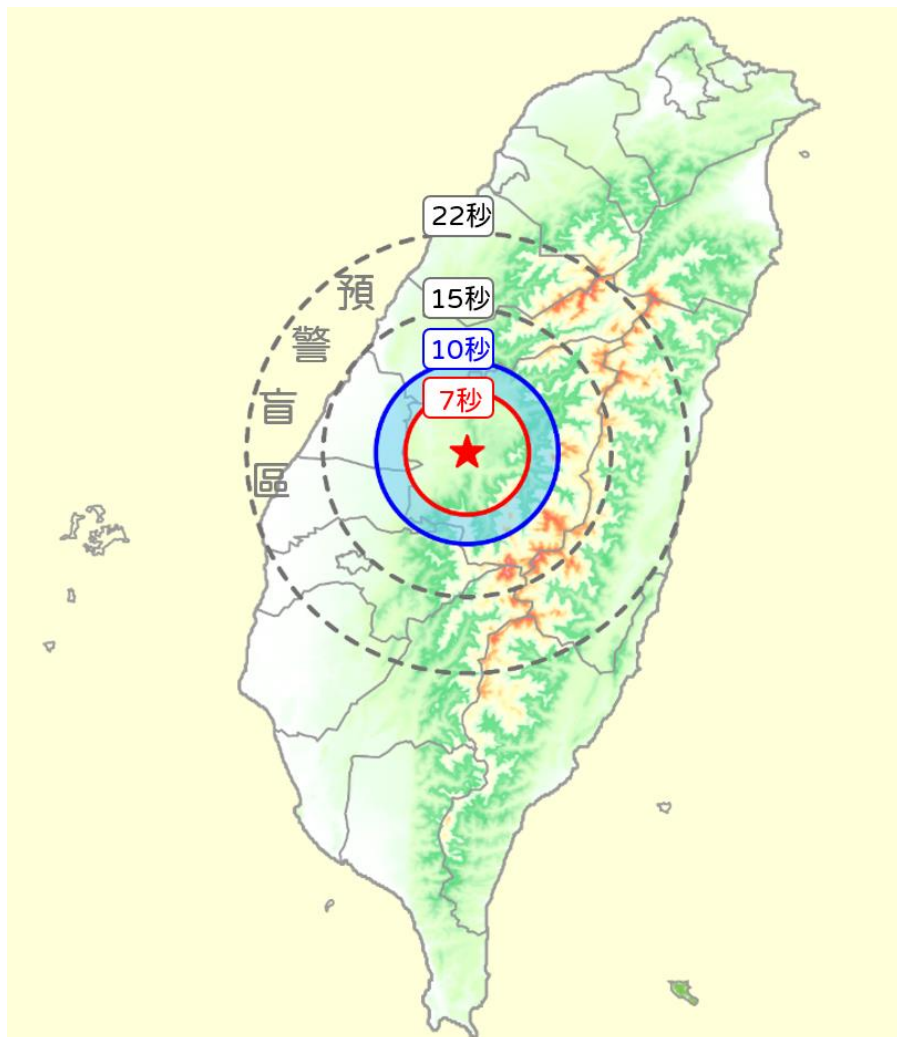
Integrated Real-Time Land-Sea Seismographic Network



Taiwan is located in the Circum-Pacific Seismic Belt. In order to closely monitor the seismic activities, and timely report the information after a felt earthquake, reducing earthquake losses and enhancing response efficiencies. With budget support by the Taiwan government, a high station density real-time seismographic network has been implemented by the Central Weather Administration (CWA). There are more than 600 stations distributed over the entire Taiwan Island, some offshore islands, and off eastern Taiwan. The station types constructed include surface station, downhole station, and ocean bottom station. Short-period seismometers, strong-motion seismometers, and broadband seismometers are installed comprehensively, therefore, waveforms of microearthquakes, felt earthquakes, and teleseismic earthquakes can be recorded completely. All the observation data of seismic stations are real-time communicated to the headquarters at CWA through a stable and secure transmission network. Hence, while a strong earthquake occurs in land or near offshore, the earthquake information can be provided quickly to achieve emergent response actions, helping to secure the civil life and properties.

# 智慧地震預警系統

Earthquake Early Warning System



## 區域型地震預警系統

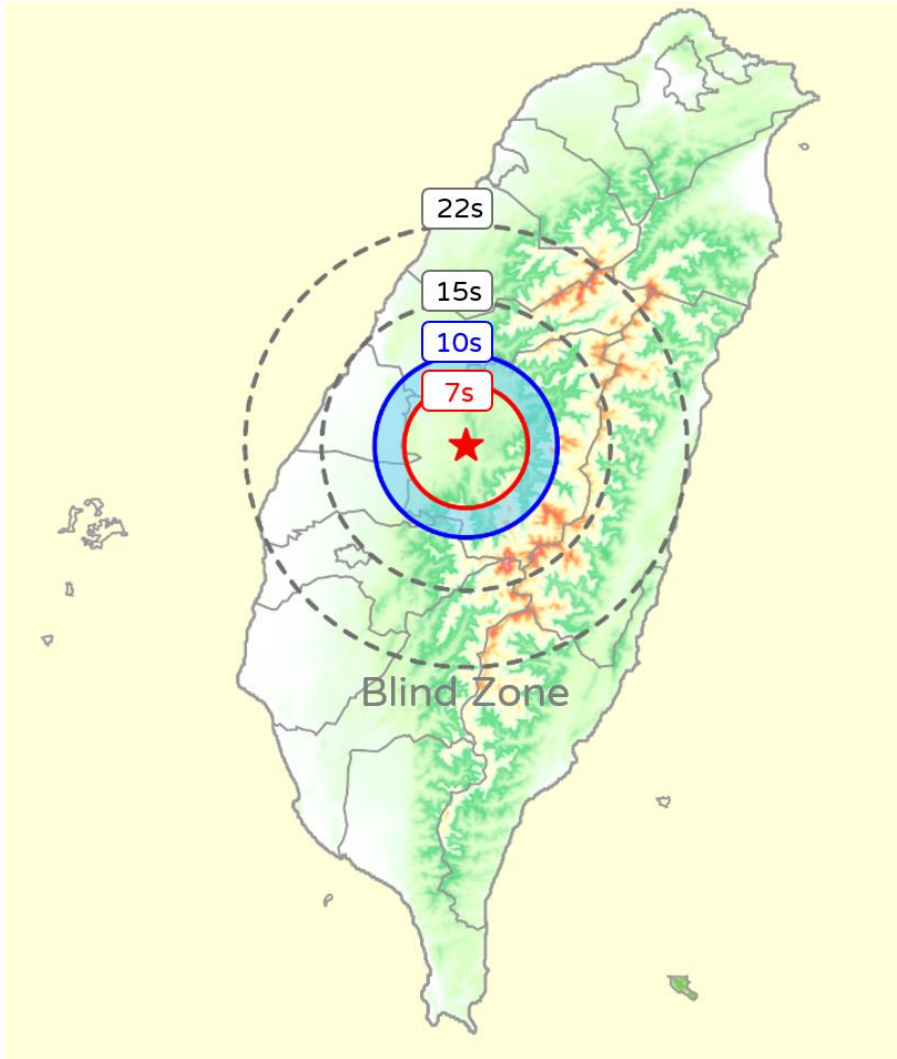
區域型地震預警系統接收海陸地震聯合觀測網的即時資料，在強震發生後，分析震央附近少數測站所偵測地震初達波訊號，預估強烈地震波對於全臺各地造成的震度與到達時間，並據此發布強震即時警報。2014年該系統正式啟用，近年來由於大幅增加即時地震站數量，同時導入新演算法，2020年達成臺灣本島及附近海域發生強震，可於地震後10秒發布警報之成果。

## 都會區客製化地震預警系統

2021年起，引進現地型預警技術與發展人工智慧AI模型，逐步建置客製化都會區地震預警系統，進一步提升強震預警防災效益。系統建置目標針對發生於都會區中大規模淺層地震，將強震警報時間進一步縮短至地震後7秒，將無法提前收到警訊的盲區縮小至25公里內。

# 智慧地震預警系統

## Earthquake Early Warning System



## Regional earthquake early warning system

The regional EEW system receives real-time data of the CWA integrated land-sea seismographic network. While a significant felt earthquake occurs, by analyzing few initial seismic waves recorded near the epicenter, the system estimates seismic intensities and arrival times of strong seismic wave for the entire Taiwan, and give warnings to the high risk areas accordingly. The EEW system has begun in operation in 2014. Recent years, by means of upgrading more off-line to real-time stations, and improving the algorithm of computation modules. Since 2020, the CWA EEW system can issue the warning message in about 10 seconds after a strong earthquake occurring in or very near Taiwan.

## Customized urban earthquake early warning system

Starting from 2021, in order to further enhance the benefit of EEW to the practical earthquake hazard mitigation, the CWA has begun to develop the customized urban EEW system. By means of introducing the on-site earthquake early warning methods, and developing the artificial intelligence models. The systems, particularly for the big urban shallow earthquake, aim to further shorten the time of EEW to 7 seconds. That means it can give warning to the areas about 25 km away from the epicenter, and more people could be alerted before the destructive shaking.



# 強震警報公眾示警

Earthquake Early Warning for Public Notification

## 國家級警報民眾示警

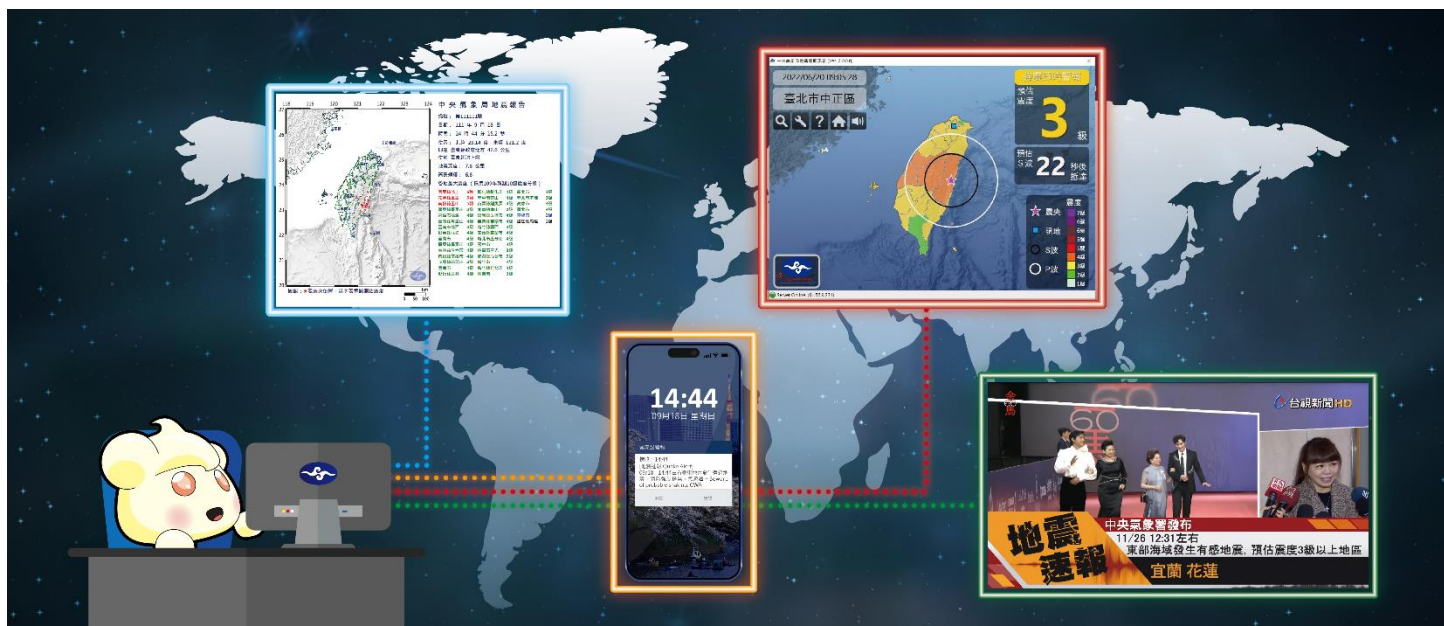
配合政府建置災防告警細胞廣播系統（Public Warning System, PWS）計畫，開發地震速報細胞廣播服務，民眾透過手機已經可以迅速收到地震訊息，第一時間採取緊急應變「趴下、掩護、穩住」。PWS於2016年4月開始啟用，隨後該年5月12日臺東海域發生規模6.1地震，首次對民眾廣播災防告警訊息。

## 網路警訊推播校園防護

2013年推動「強化地震速報作業系統之應用」計畫，與教育部、各縣市教育局處跨單位合作，全面於校園內安裝地震資訊接收軟體，透過網際網路即時接收氣象署發布的警報，提供校園師生緊急地震防護。

## 電視臺即時蓋台插播

與民間電視台合作，於電視台蓋台插播強震訊息，提醒民眾注意。蓋台插播地震訊息的服務從2016年8月開始，截至2023年底，已有12家電視台與氣象局完成密切連線合作。



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## Cell broadcasting on Mobile Device

Since 2016, the CWA has issued EEW warning through the Public Warning System (PWS) to the mobile phones of the general public. The PWS was developed and constructed by government in cooperation with the telephone companies, which base on the Cell Broadcast Service (CBS) on 4G network. Therefore, all the people in high risk area can receive the warning at the same time.

## Push notification on Internet for campus

Since 2013, the CWA has begun to issue the EEW directly to all the public schools in Taiwan. By means of installing the dedicated receiving software at sites, the campuses can receive the CWA EEW message immediately through the Internet. The quick earthquake alert notification can provide students and teachers in campus to take action to protect themselves (Drop, Cover, and Hold on).

## Instant live pop-up on TV

The CWA has collaborated with TV companies to deliver instant live pop-up messages during the transmission of programmes since 2016. Currently, 12 TV stations are in cooperation with CWA. While the EEW is issued, the TV stations will display the pop-up message automatically, and the viewers can immediately catch the information to take actions.

