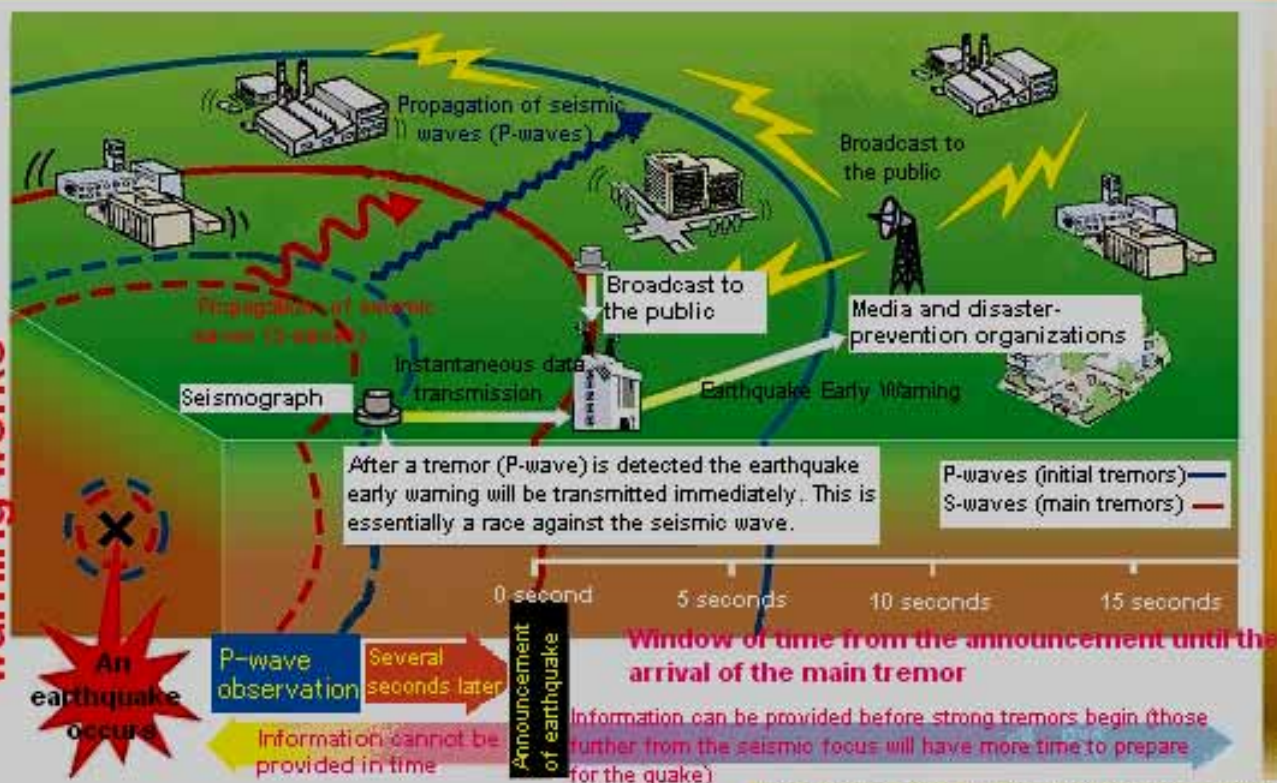


# Earthquake Early Warning: How can an earthquake alert be announced before tremors are felt?

## How the earthquake early warning works



- ▶ Tremors extend out from the seismic focus in a wave-like motion.
- ▶ There are two main types of seismic waves: P-waves, or initial tremors, and S-waves, or main tremors. P-waves are the first to travel outward. They are followed by S-waves, which cause stronger tremors. Most earthquake-induced damage results from these S-waves.

-Traveling speed of seismic waves-

- P-waves (cause rattling tremors): around 7km/s
- S-waves (cause larger, more powerful tremors): around 4 km/s

- ▶ The purpose of the earthquake early warning is to quickly announce to the public that an earthquake has occurred and to inform them of the estimated seismic intensity several seconds or more before the arrival of strong tremors caused by the quake. In those areas close to the focus of the earthquake, however, the earthquake early warning may not be transmitted before the tremors hit.

Hundreds of seismographs are installed in locations all around Japan, with the Japan Meteorological Agency maintaining around 200 of the devices and the National Research Institute for Earth Science and Disaster Prevention some 800. Using these devices, the location and size of an earthquake can be estimated immediately, followed by an approximation of the extent of the tremors (seismic intensity) expected to result from the quake.

Prompt warnings delivered using the latest information technology (Earthquake Early Warning)

## How to use the information

- ▶ In order to make effective use of the earthquake early warning, it is important to hold emergency response training so that you can take appropriate action as soon as you receive the warning.

—Examples of appropriate actions—

- Most important of all is to remain calm and not panic.
- If inside a home, move away from large appliances or pieces of furniture that could fall over and take cover under a sturdy table or other object that provides similar protection.
- When in other types of buildings, do not panic and do not rush for the exit or stairs.



Earthquake early warning  
Strong tremors are coming!  
(Tremor forecast)

Take cover!

The Japan Meteorological Agency is currently preparing to start the earthquake early warning system in order to warn the public as widely and as quickly as possible. The agency is also developing a planned course of action when people receive an alert in the variety of situation.



For more information about the earthquake early warning system, please contact the Administration Division of the Japan Meteorological Agency's Seismological and Volcanological Department or visit the agency's website.



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