

## The Mechanism by which Earthquakes Occur

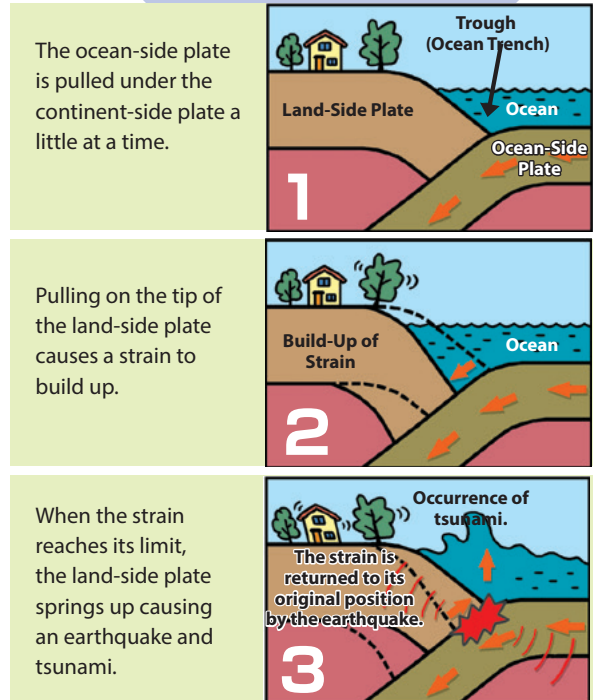
### Trench-related earthquake

Each year, several centimeters of the ocean-side plate is pushed under the continent-side plate upon which the Japanese archipelago sits. As a result, the continent-side plate is pulled, and a strain builds up along the plate boundary. When this has reached its limit it moves suddenly back into its original position, causing an earthquake. The March 11, 2011 Tohoku Earthquake and Tsunami was an ocean trench earthquake at the plate boundary.

### Active fault-related earthquake

The strain energy built up within the plate causes a breakage inside the plate, resulting in a fault forming and the occurrence of an earthquake. The 1995 Hanshin/Awaji Earthquake was an inland earthquake inside the plate. In Japan there are approximately 2,000 faults that have been active at various points in the last two million years and are believed to still be active (these are called "active faults").

### The Mechanism by which an Ocean Trench Earthquake Occurs



## Degree of Earthquake Shaking and Forecasted Damage (Created from the Japan Meteorological Agency Seismic Intensity Class Chart)

<p>Seismic Intensity <b>0</b></p> <p>People don't feel the shaking.</p>	<p>Seismic Intensity <b>5 Weak</b></p> <p>Most people will be fearful and will want to grab a hold of something.</p>
<p>Seismic Intensity <b>1</b></p> <p>Some people being still inside buildings will faintly detect the shaking.</p>	<p>Seismic Intensity <b>5 Strong</b></p> <p>People not holding on to anything will find it difficult to walk.</p>
<p>Seismic Intensity <b>2</b></p> <p>Most people being still inside buildings will feel the shaking.</p>	<p>Seismic Intensity <b>6 Weak</b></p> <p>In some cases wall tiles and window glass will break, and doors will not open.</p>
<p>Seismic Intensity <b>3</b></p> <p>Most people inside will feel the shaking.</p>	<p>Seismic Intensity <b>6 Strong</b></p> <p>Most unsecured furniture will move, and many will fall.</p>
<p>Seismic Intensity <b>4</b></p> <p>Electric lights and other hanging objects will swing greatly.</p>	<p>Seismic Intensity <b>7</b></p> <p>The number of wooden structures with low earthquake resistance that lean or collapse will increase.</p>

### Difference between magnitude and seismic intensity scale

The intensity of the energy of an earthquake is expressed in magnitude, and the seismic intensity is the number that represents the level or which an earthquake can be felt in a community. Magnitude expresses the scale of an earthquake. The March 11th Tohoku Earthquake and Tsunami was recorded at magnitude 9.0. From this earthquake, a seismic intensity of seven was observed in Miyagi Prefecture's Kurihara City. Centered on the three prefectures of Iwate, Miyagi, and Fukushima, shaking of seismic intensity of six-strong and above was felt in a wide area from Tohoku into Kanto.

