# What is the Tokai Earthquake?

### 1) The Tokai Earthquake Theory

In August 1976, the Tokai Earthquake theory was presented. This theory says that in the Tokai area, and Shizuoka in particular, **it would not be surprising if a huge earthquake happened tomorrow.** Considering the huge problem this poses for the community, Shizuoka prefecture began to make Tokai Earthquake countermeasures after this theory was presented.

The surface of the earth is made up of dozens of hard plates that are laid out like a jigsaw puzzle. These plates are not fixed, but rather move around the earth's surface. Depending on the motion of the layer of the



(provided by Mr. Tetsuzo Seno)

earth underneath them (called the mantle), these plates move up to 10 cm a year. It is thought that these plates bump into and slide underneath each other. At the boundaries of the plates, large mountain ranges and other landforms are created. These boundaries also produce earthquake and volcano activity.

#### 2) Reoccurring Big Earthquakes

Earthquakes occur over and over on the Pacific coast of the Japanese archipelago due to plates sliding under each other. In the waters that extend from the Tokai area to Shikoku, earthquakes reoccur in roughly the same place and with a similar magnitude in a cycle of about once every 100 to 150 years. After the Ansei-Tokai Earthquake in 1854, earthquakes occurred to the west of the Tokai area. During the Tonankai Earthquake in 1944 and the Nankai Earthquake in 1946, earthquake energy was released. The next earthquake in these areas is not expected to happen for quite a while. Since 1854 an earthquake has not occurred in the area between Suruga Bay and Omaezaki off the coast of Shizuoka Prefecture. It is believed that earthquake energy is building up in this area. Since this is a region with no recently observed earthquake activity, a massive earthquake is expected to occur in Shizuoka in the near future.



Past Earthquakes Occurring off the Pacific Coast and Their Estimated Epicenters

## - Magnitude and Seismic Intensity -

Magnitude represents an earthquake's overall energy and size. Seismic intensity represents the size of tremors that happen at a specific location.

To understand the differences between these two terms, think about a lightbulb. The total amount of light given off by a 40 watt or 100 watt lightbulb is its magnitude. However, whatever type of lightbulb you have, it will get darker the farther you are from it (because less energy is reaching you), and it will get lighter the closer you are to it (because more energy is reaching you). The light that hits at each spot is equivalent to an earthquake's seismic intensity.

## 3) Levels of Seismic Intensity

Seismic intensity is measured with seismic intensity. The following explanatory chart shows what kinds of things can be expected to happen for each level of seismic intensity.

Level	What will we feel?
0	People will not feel any tremors.
1	Some people who are indoors will feel a slight tremor.
2	Most people who are indoors will feel tremors. Some people who are sleeping will be woken up.
3	Almost everyone who is indoors will feel tremors. People may be frightened.
4	It will be quite scary, and some people will be concerned for their safety. Almost all people who are asleep will be woken up.
weak 5	Most people will be concerned for their safety. Some people will experience difficulty moving around.
strong 5	It will feel quite frightening. Most people will experience difficulty moving around.
weak 6	It will become difficult to remain standing.
strong 6	It will be impossible to stand. People will have to crawl in order to move.
7	People will be completely subject to the force of the tremors. It will be impossible for people to control their movements.