

# How Often Do Earthquakes Occur?

**Earthquakes are always happening somewhere.**

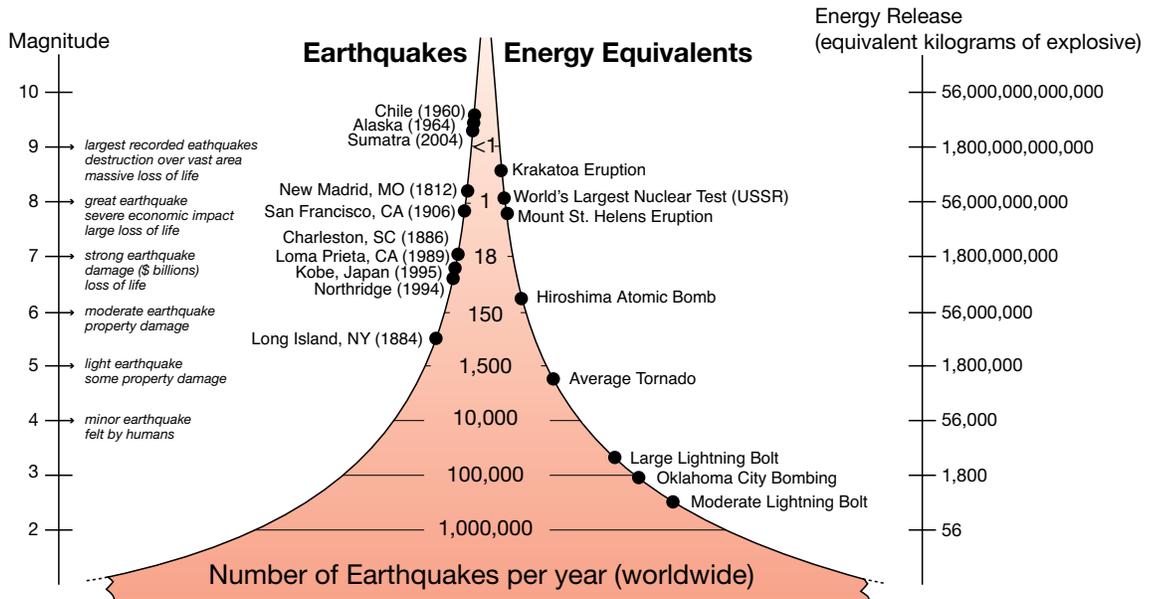
Worldwide, strong earthquakes happen more than once per month. Smaller earthquakes, such as magnitude 2 earthquakes, occur several hundred times a day. To create a mountain system might take several million medium sized earthquakes over tens of millions of years.

*IRIS is a university research consortium dedicated to monitoring the Earth and exploring its interior through the collection and distribution of geophysical data.*

*IRIS programs contribute to scholarly research, education, earthquake hazard mitigation, and the verification of the Comprehensive Test Ban Treaty.*

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*This figure was produced in cooperation with the US Geological Survey, and the University of Memphis*



We describe the size of an earthquake by its magnitude, shown on the left hand side of the figure above. The larger the number, the bigger the earthquake. The scale on the right hand side of the figure represents the amount of high explosive required to produce the energy released by the earthquake.

The 1994 earthquake in Northridge, California, for example, was about magnitude 6.7. Earthquakes this size occur about 20 times each year worldwide. Although the Northridge earthquake is considered moderate in size, it caused over \$20 billion in damage. The earthquake released the energy equivalent to almost 2 billion kilograms of explosive, about 100 times the amount of energy that was released by the atomic bomb that destroyed the city of Hiroshima during World War II.

In 2004 a very large earthquake in Sumatra, Indonesia measuring around magnitude 9.3, caused a tsunami that caused vast amounts of damage. Large earthquakes over a magnitude 8 are called “great earthquakes”. Great earthquakes happen on average once every 1.5 years. The energy released by the Sumatra earthquake is greater than any man-made equivalent. Because great earthquakes release so much energy, the three largest earthquakes are responsible for almost half of the total energy released by all earthquakes in the last century.