Earthquake Exploration Science

Earthquakes occur when stress builds up along faults in the Earth's crust, causing sudden, violent shaking. In the United States, the states most prone to severe earthquakes include California, Alaska, and Washington, due to their location along major tectonic plate boundaries.

California experiences frequent and destructive quakes because of the San Andreas Fault, where the Pacific and North American plates grind against each other. One of the most infamous events was the 1906 San Francisco earthquake, which caused devastating fires and widespread destruction.

Alaska is the most seismically active state. This means Alaska experiences more earthquakes than any other state because it sits along the Pacific Ring of Fire. The 1964 Great Alaska Earthquake (magnitude 9.2), the second-largest earthquake ever recorded. Alaska experiences far more earthquakes than California each year. Alaska has about 5 to 10 times more earthquakes than California annually, but due to Alaska's rural nature many are not noted.

.

Washington is also at risk due to the Cascadia Subduction Zone, which has the potential to produce a massive earthquake and tsunami similar to the 1700 event that affected both North America and Japan.

On average, the United States Geological Survey (USGS) records about 55 earthquakes per day worldwide. However, most of these are too small to be felt by people. This adds up to approximately 20,000 earthquakes per year across the globe.

The number varies depending on seismic activity in different regions. While major earthquakes (magnitude 7.0 or higher) happen less frequently—about 15-20 per year—smaller earthquakes (magnitude 2.5 or below) occur thousands of times daily, but they are usually only detected by seismographs.

People typically start feeling earthquakes at around magnitude 2.5 to 3.0, but it depends on factors like depth, location, and ground conditions. Here's a general guide:

- Below 2.5 – Usually not felt, but detected by seismographs.
- 2.5 - 3.9 – Might be felt by some people, especially if they are indoors or near the epicenter.
- 4.0 - 4.9 – Noticeable shaking, like a heavy truck passing by, but usually causes little to no damage.
- 5.0 - 5.9 – Stronger shaking, may cause minor damage to buildings.

LIVEWORKSHEETS

- 6.0 - 6.9 – Can cause significant damage in populated areas.
- 7.0 and above – Major earthquake, capable of severe destruction.

The intensity of shaking also depends on how deep the earthquake occurs and the type of ground material in the area. Soft soils, for example, can amplify shaking more than solid rock.

____1. Which of the following states is NOT among the most earthquake-prone in the United States?

A) California
B) Alaska
C) Mississippi
D) Washington

____2. Why does Alaska experience more earthquakes than any other U.S. state?

A) It is located near the San Andreas Fault.
B) It sits along the Pacific Ring of Fire.
C) It has the largest number of volcanoes.
D) It is affected by the New Madrid Seismic Zone.

____3. What was the magnitude of the 1964 Great Alaska Earthquake?

A) 7.8
B) 8.5
C) 9.2
D) 10.1

____4. At what magnitude do most people typically start feeling an earthquake?

A) 1.0 - 2.4
B) 2.5 - 3.9
C) 4.0 - 4.9
D) 5.0 - 5.9

____5. How many earthquakes does the United States Geological Survey (USGS) record worldwide per day on average?

A) 10
B) 25
C) 55
D) 100

LIVEWORKSHEETS

Exploration TIME!

Go to this site in order to answer the questions

This site will show you the activity of Earthquakes around the world in the last 24 hours. Use this site to help you answer the questions. You can click on the circles to view the (M) magnitude of the quake and where its located.

1. How many earthquakes have happened in the last 24 hours?

   _____

   _____

2. Where are most of the earthquakes happening?

   _____

   _____

3. What was the largest earthquake and where did it hit?

   _____

   _____

4. What was the smallest earthquake and where did it hit?

   _____

   _____

5. California is a US state that is known for earthquakes, however, Alaska has more. Why do you think California is better known for earthquakes?

   _____

   _____

LIVEWORKSHEETS

LIVEWORKSHEETS