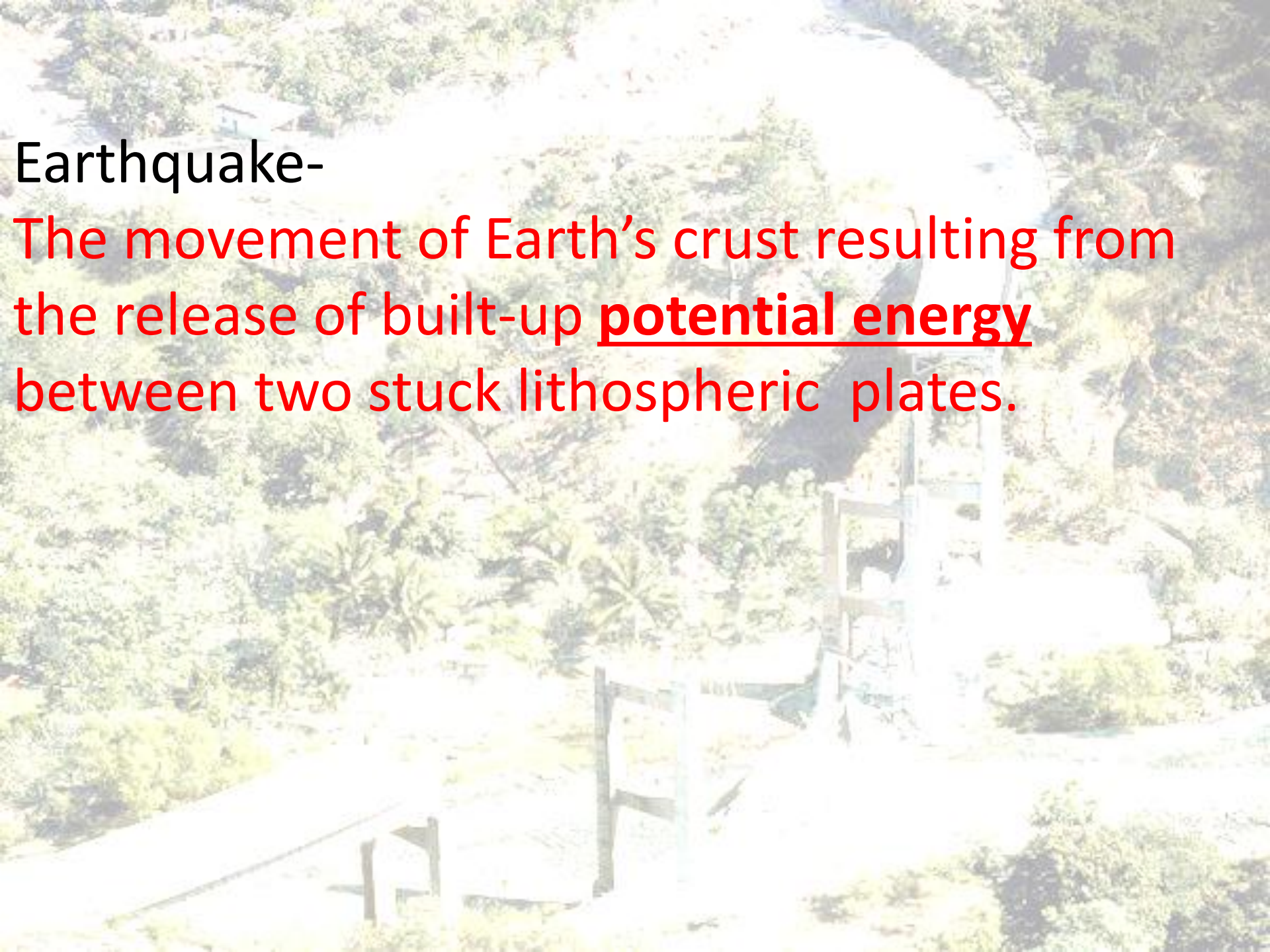


# EARTHQUAKES

- Please copy everything in red. Also highlight, circle or somehow mark all of the information that is underlined.



A photograph showing a wooden fence that has been severely damaged, likely by an earthquake. The fence is leaning and broken in several places. In the background, there is a house with a white roof and a dense forest of tropical trees, including palm trees. The scene is brightly lit, suggesting a sunny day.

Earthquake-

The movement of Earth's crust resulting from the release of built-up potential energy between two stuck lithospheric plates.

# Parts of an Earthquake

Focus-the point below the earth's surface where a rock breaks or slips and causes an earthquake

Epicenter-a point on Earth's surface right above the focus of an earthquake.

Fault-a region on Earth's surface that is broken and where movement occurs.

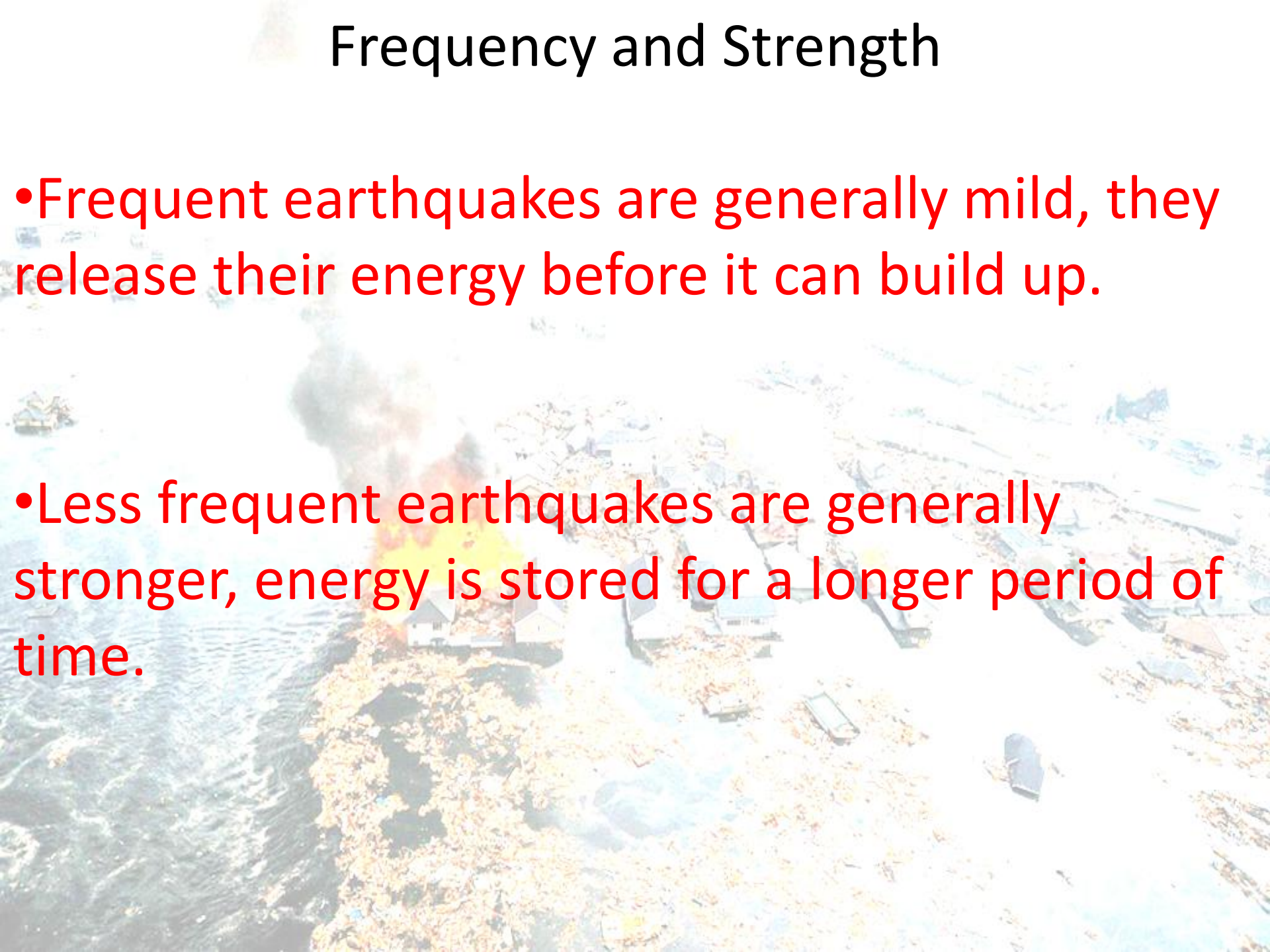
# Stick-slip Motion

## Three Conditions

1. Two objects that are touching each other, where at least one object can move.
2. A force (or forces) that cause the movement.
3. Friction strong enough to temporarily keep the movement from starting. *Friction* is a force that resists slipping when two objects rub against each other.

# Frequency and Strength

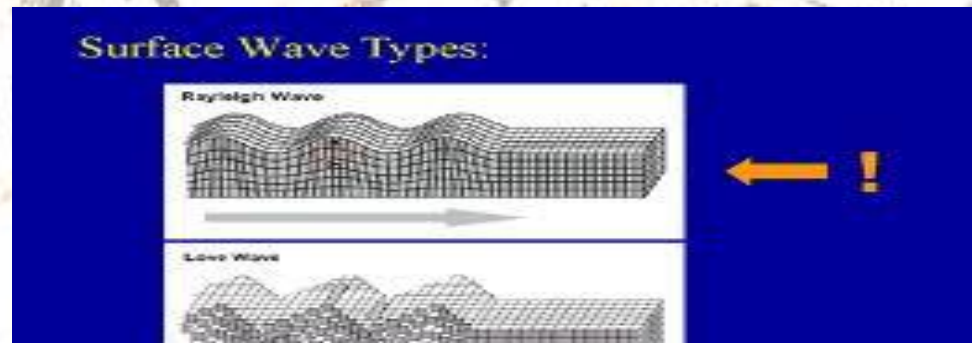
- Frequent earthquakes are generally mild, they release their energy before it can build up.
- Less frequent earthquakes are generally stronger, energy is stored for a longer period of time.



# Seismic Waves

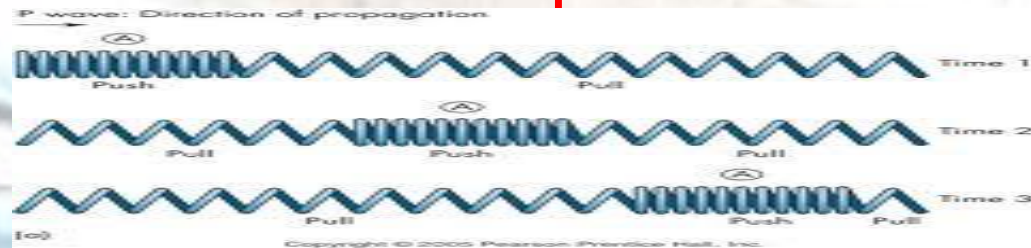
Body waves-seismic waves that travel through the earth's interior. There are 2 types of body waves, P waves and S waves.

Surface wave-waves that reach the earth's surface, slowest of all the waves, move up and down, and side to side & cause the most damage of all seismic waves.

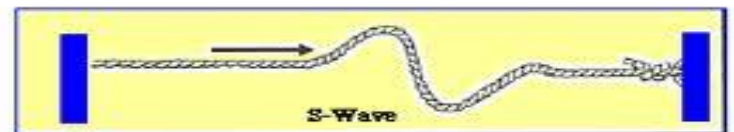


# Body Waves

P-wave- (primary wave) - fast, arrives first, wave travels in the same direction, compression wave, motion is a forwards and backwards motion (like a slinky). Travels through both solid and liquid.



S-wave (secondary)- slower wave, travels from side to side, transverse wave travels through solids but not liquid. More destructive than P waves but not as destructive as surface waves.



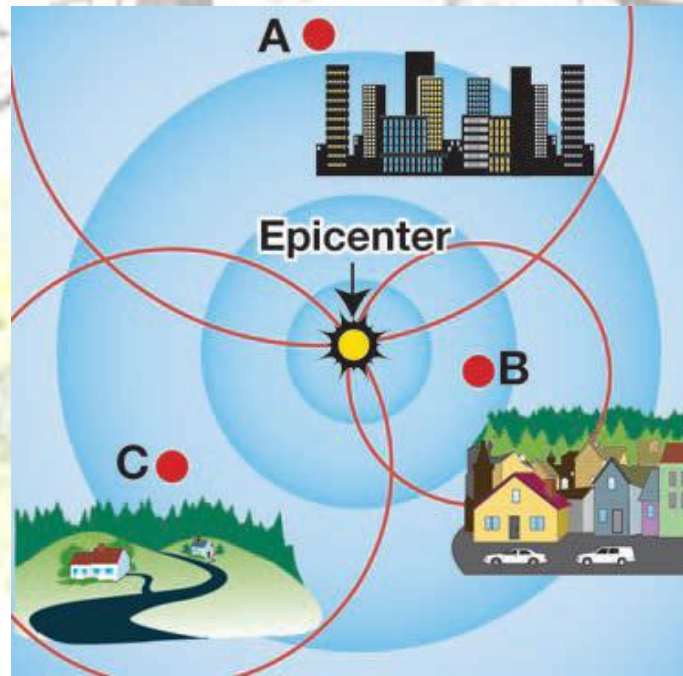
# More Vocabulary

- **Foreshock** – a small burst of shaking that occurs before a large earthquake.
- **Aftershock**- a small tremor that follows an earthquake.
- **Moment magnitude scale** – A scale that rates the total energy released by an earthquake.
- **Seismograph**-an instrument that measures and records seismic waves.



# Epicenter Location

- P- and S-wave lag time equates to distance seismometer is from epicenter, not direction.
- The Intersection of three readings from seismic stations determines epicenter.



# Measuring Earthquakes

- **Richter Scale**- a scale that ranks earthquakes according to the size of the seismic waves. Each ranking is 10 times that of the previous. Ex: a 4 on the Richter scale is ten times stronger than a 3, and 100 times stronger than a 2 (you don't need to copy the chart)

## The Richter scale

<b>Level</b>	<b>Magnitude</b>	<b>Description of what may occur</b>
Micro	Less than 2.0	Barely felt, but recorded by seismographs
Very minor	2.0–2.9	Recorded but not felt by most people
Minor	3.0–3.9	Little damage but felt by people
Light	4.0–4.9	No serious damage, objects shake
Moderate	5.0–5.9	Major damage to poorly-designed buildings
Strong	6.0–6.9	Serious damage over a 100-km area or less
Major	7.0–7.9	Serious damage over a larger area
Great	8.0–8.9	Serious damage over several hundred km
Rare great	9.0 or greater	Serious damage over several thousand km

• **Modified Mercalli Scale**- a scale that rates the damage experienced by buildings, the ground, and people during an earthquake (you do not need to copy chart)

### The Modified Mercalli scale

<b>Category</b>	<b>Effects</b>	<b>Richter scale(approximate)</b>
I. Instrumental	Not felt	1-2
II. Just perceptible	Felt by only a few people, especially on upper floors of tall buildings	3
III. Slight	Felt by people lying down, seated on a hard surface, or in the upper stories of tall buildings	3.5
IV. Perceptible	Felt indoors by many, by few outside; dishes and windows rattle.	4
V. Rather strong	Generally felt by everyone; sleeping people maybe awakened	4.5
VI. Strong	Trees sway, chandeliers swing, bells ring, some damage from falling objects	5
VII. Very strong	General alarm; walls and plaster crack	5.5
VIII. Destructive	Felt in moving vehicles; chimneys collapse; poorly constructed buildings seriously damaged	6
IX. Ruinous	Some houses collapse; pipes break	6.5
X. Disastrous	Obvious ground cracks; railroad tracks bent; some landslides on steep hillsides	7
XI. Very disastrous	Few buildings survive; bridges damaged or destroyed; all services interrupted (electrical, water, sewage, railroad); severe landslides	7.5
XII. Catastrophic	Total destruction; objects thrown into the air;	

