

CH2. - EARTHQUAKES (pp. 30 - 71)

Catastrophic Earthquakes - Lessons Learned

1. The consequences of an earthquake depend on a combination of factors: _____

2. The most dangerous earthquakes tend to be _____ in depth.

3. Building _____ and zoning regulations can greatly reduce earthquake damage to buildings, but only where these codes exist and are _____.

2.1 4. A measure of the amount of energy released during an earthquake is called the _____.

5. A measure of the effects of ground motion on people and their structures is called the _____.

6. **Moment magnitude** is determined from an estimate of the _____ that ruptured along a fault plane during an earthquake, the amount of movement or _____ along the fault, and the _____ of the rocks near the focus of the quake.

7. Although some news reports still refer to the "_____ **Scale**," it is no longer in common use by _____.

8. Magnitude scales are _____, where ground displacement during a magnitude 6 is _____ as great as during a magnitude 5 earthquake.

9. Magnitude 6 - 6.9 quakes are called _____, 7 - 7.9 are called _____, and 8 - 8.9 are considered _____ earthquakes.

10. Great earthquakes occur about _____ per year, while magnitudes less than 3 are too

small to be _____.

11. An instrument that records ground motion is called a

_____.

12. Though an M7 quake produces ten times as much _____

as an M6, the M7 releases _____ times as much energy!

13. The Modified Mercalli scale is used to indicate earthquake _____.

14. The Mercalli scale is based on how people perceive the shaking during the quake, and also

on the extent of _____ to manmade _____.

15. In parts of the U.S. west, seismograph networks produce high quality information immedi-

ately after an earthquake. Called instrumental _____, this information

rapidly produces maps showing intensity and potential damage called

_____ maps, which are vital to emergency personnel.

2.2 16. Earthquakes usually occur along the _____ of lithospheric plates,

but can also occur within plates.

17. Movement along faults is slowed by _____ between the rocks. The long-

term rate of movement is called the _____.

18. Faults not visible at the surface, called _____ faults, make risk evaluation dif-

ficult.

19.

Fault Classification	Last Known Movement
Active	~ 10,000 years
	~ 2,000,000 years
	> 2,000,000 years

20. Gradual movement along a fault, is called _____,

producing _____ earthquakes, which are not felt.

21. When primary or _____-waves reach the surface and are transmitted to the air, some

people may _____ them, but the sound is more likely from vibrating _____.

22. The complex rolling motions of _____ - waves, including L - waves, cause much of the damage to buildings, bridges and roads near the _____.

2.3 23. The three factors that determine the shaking you will experience:

1. earthquake _____

2. your _____ in relation to the epicenter and fault

3. local _____ and _____ conditions.

24. The deeper the focus of the earthquake, the _____ shaking that will occur.

25. The least intense shaking generally occurs where the ground consists of _____.

Unconsolidated sediments generally slow seismic waves and transfer their energy upward toward the surface, causing _____ shaking. Stream deposits of sand and gravel, called _____, often have a high _____ content. In an earthquake, these deposits can become fluid, called _____.

2.4 26. The idea that there is a drop in elastic strain after a quake, followed by an increase in strain, is called the _____.

27. Stress can produce temporary deformation along a fault called _____ strain. When strain is released as a fault ruptures, elastic _____ occurs, replacing deformation with displacement.

28. A typical quake has 3-4 stages:

1st Stage: a long period of _____.

2nd Stage: accumulated elastic strain produces _____.

3rd Stage: sometimes, small _____ may occur just before:

4th Stage: the _____ and its _____.

29. An aftershock is a _____ earthquake that occurs anytime from a few _____ to a _____ or so after the mainshock.

2.5 30. Geographic regions at highest risk in the U.S. include the Pacific coastal areas, Hawaii, and the territories of _____.

31. _____ earthquakes have also occurred far from plate boundaries.

Areas of the U.S. where such large events have occurred include

_____.

2.6 32. Earthquakes are often linked with other natural hazards including liquefaction, regional changes in land _____, _____, _____

and _____.

2.8 33. Humans have caused earthquakes by building _____ for reservoirs, injecting liquid _____ deep into the ground, and through nuclear _____.

2.9 34. The reason quakes often cause great damage and loss of life is that they

_____.

35. The United States Geological Survey's maps of seismic hazard give us information on the

_____ of earthquakes happening. This information is

helpful in establishing _____ restrictions and

_____ rates.

36. Short-term prediction of earthquakes may someday be possible, based on such observa-

tions as ground _____, areas in active zones that have not experienced activity in a long time (called seismic gaps), and _____

and _____ phenomena.

37. A warning system in the planning stages would use _____ waves to

warn distant areas as much as minutes in advance immediately after a quake begins.

2.10 38. Steps we can or should take to adjust to quake hazards include:

1) Locating critical facilities such as _____
_____ in low-risk areas.

2) Adopting, and _____, building codes with quake-resistant design.

3) Inspecting and strengthening _____.

4) Public _____, training and drills.

- 5) Increased _____ and relief measures. Barely _____ of Californians have earthquake insurance, and unlike flood insurance, there is no federally subsidized _____.
39. A home safety check should include checking _____ and _____ for reinforcement and the security of _____, such as _____, that could fall over.
40. Knowing what to do during an earthquake includes teaching your family to “_____ under sturdy furniture, and _____.”
41. It’s safer to be _____ than _____ during a quake, but if you are indoors, do not stand in a _____ or other building structure which could collapse. Move to an inner corner, away from breaking _____ and from large or high objects that could _____.
42. An earthquake can last from seconds to about _____.
43. Injuries are more likely if you try to _____ to a different location or if you try to _____ the building. Once the shaking stops, turn off the _____, and do not _____.
- Move outdoors, away from power lines, buildings or _____ that might fall.
44. Though quakes are generally less likely in the eastern U.S., we need to be aware because quake-resistant construction is less _____ here.