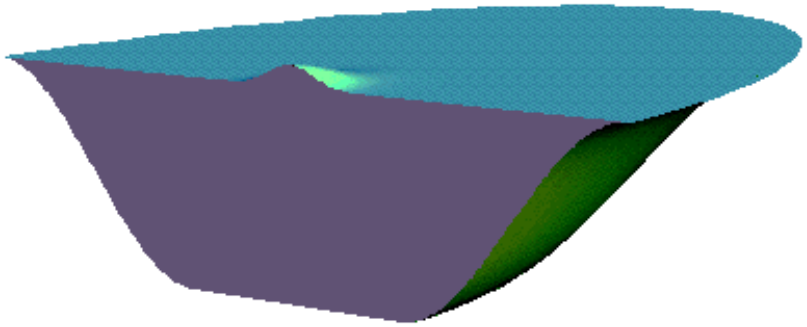


Ch 8.3 Tsunamis

Be able to explain a tsunami.

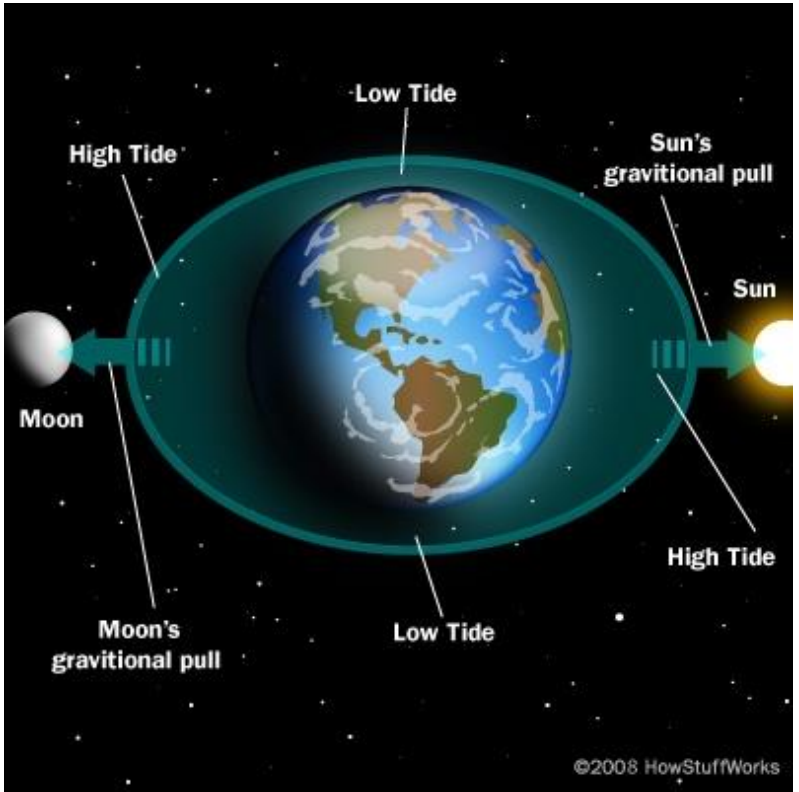
Be able to define liquefaction.

True or False?

Tsunamis, seismic sea waves, and tidal waves are all ways to name large, destructive rogue waves caused by the displacement of water.

FALSE

- Tidal waves are a name incorrectly given to tsunamis. Tidal waves are the waves produced by the pull of the moons gravity

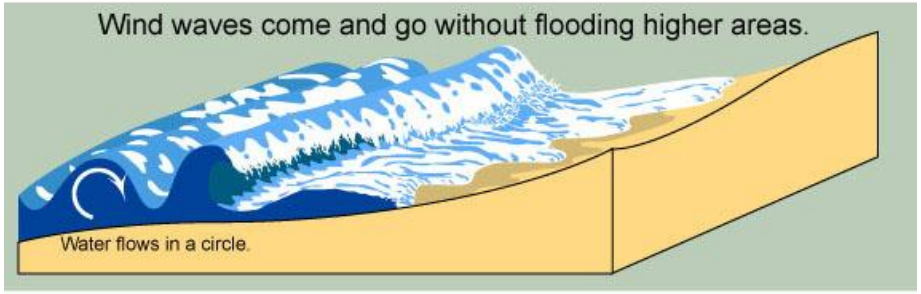


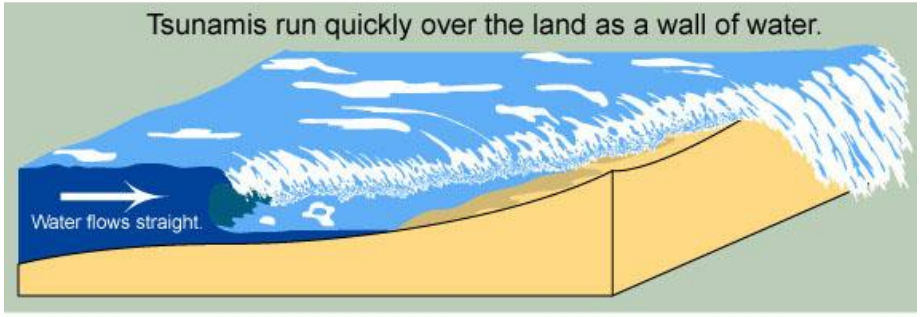
TSUNAMI

What is a Tsunami?

- A major earthquake with an epicenter on the ocean floor or landslide sometimes causes a giant wave called a **tsunami.**
- *Not a tidal wave*

Tsunamis are often no taller than normal wind waves, but they are much more dangerous.





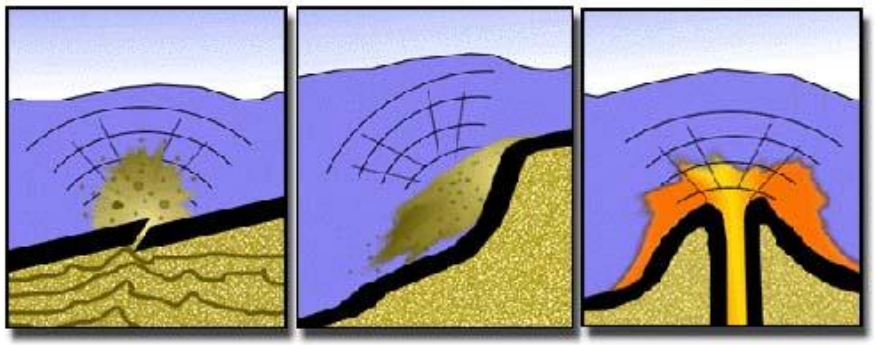
Even a tsunami that looks small can be dangerous!

Any time you feel a large earthquake, or see a disturbance in the ocean that might be a tsunami, head to high ground or inland.

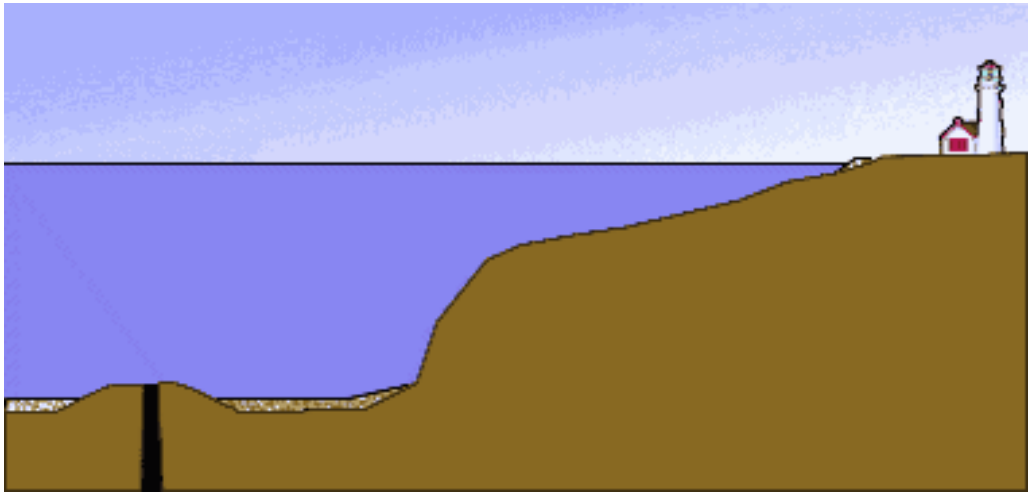
TSUNAMI

What causes a Tsunami?

- A tsunami is a series of ocean waves generated by sudden displacements in the sea floor, landslides, or volcanic activity.
  - *In the deep ocean, the tsunami wave may only be a few inches high.*
  - *The tsunami wave may come gently ashore or may increase in height to become a fast moving wall of turbulent water several meters*

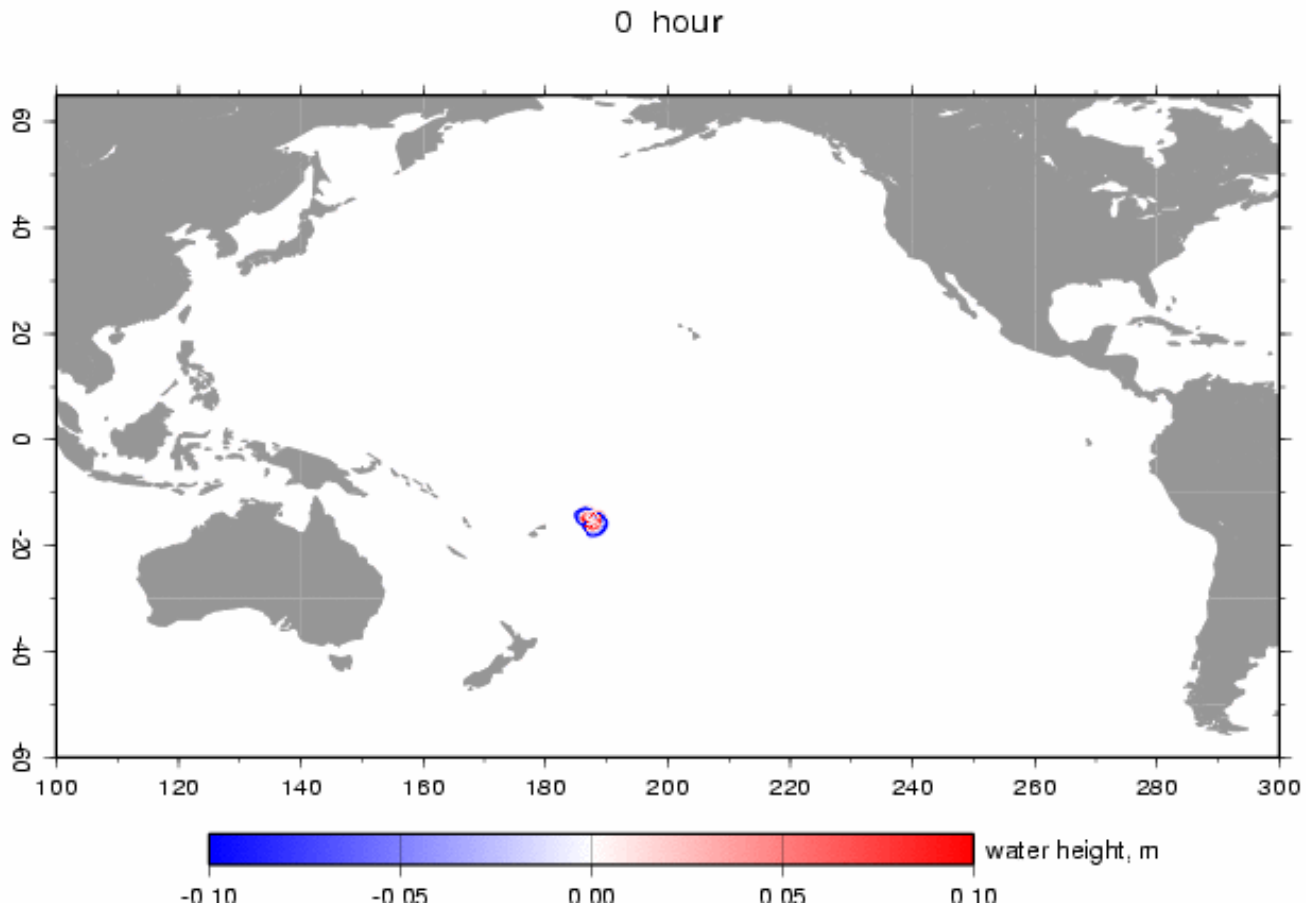


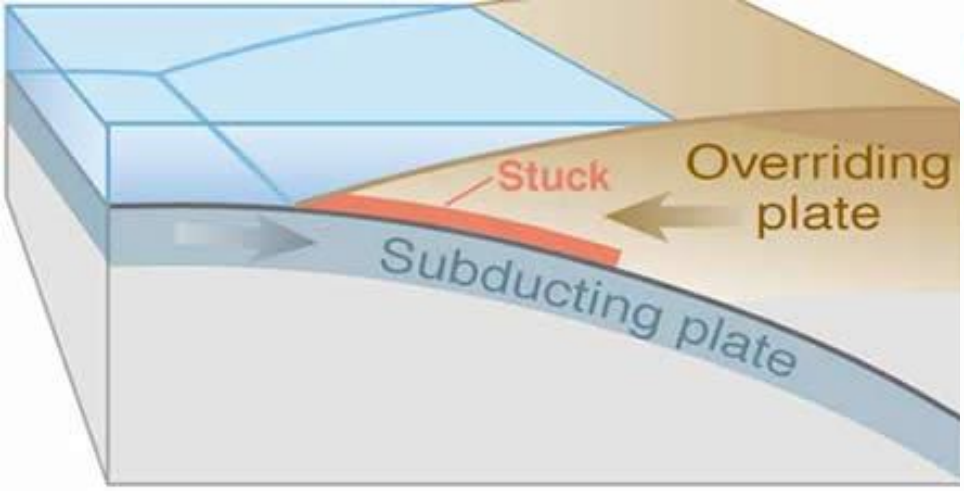
EARTHQUAKES ----------LANDSLIDES----------VOLCANOES

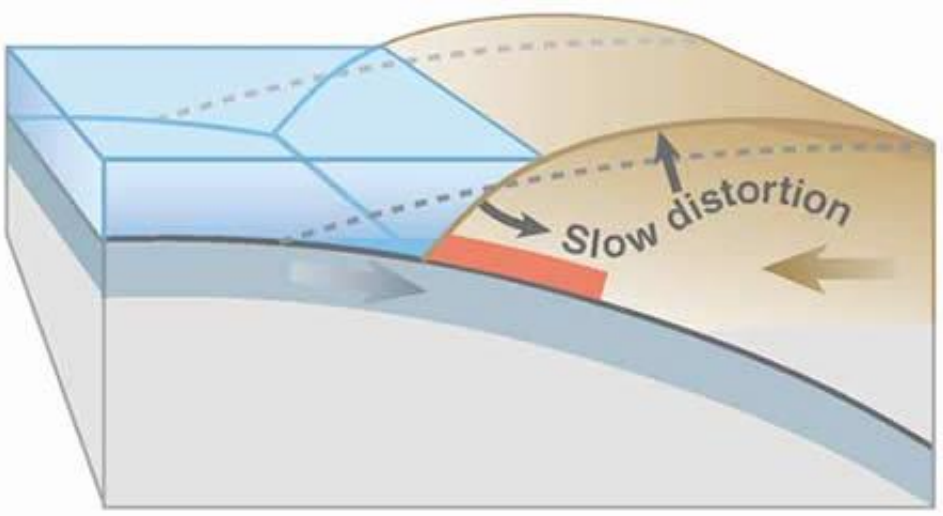


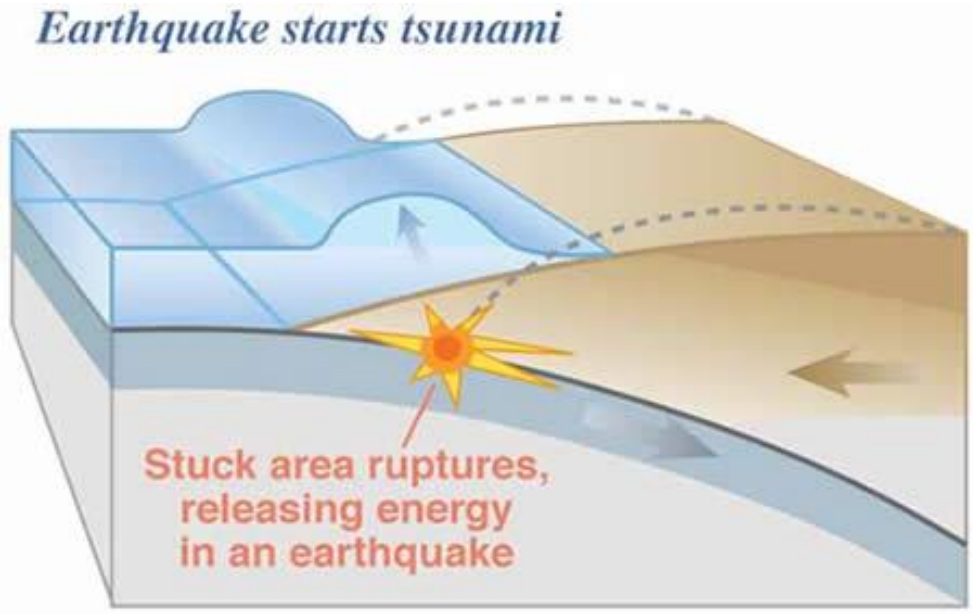
How do Tsunamis Travel?

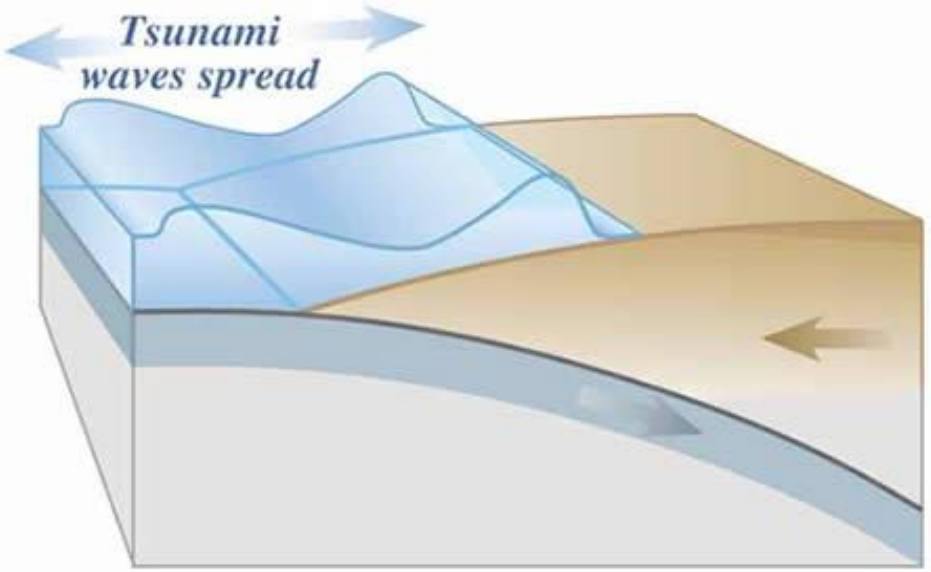
- Tsunamis often exceed 100 miles in length in the deep ocean.
- Where they can travel as fast as 500 miles per hour.
- Tsunamis are often preceded by a rapid drop in local sea level, similar to an unu



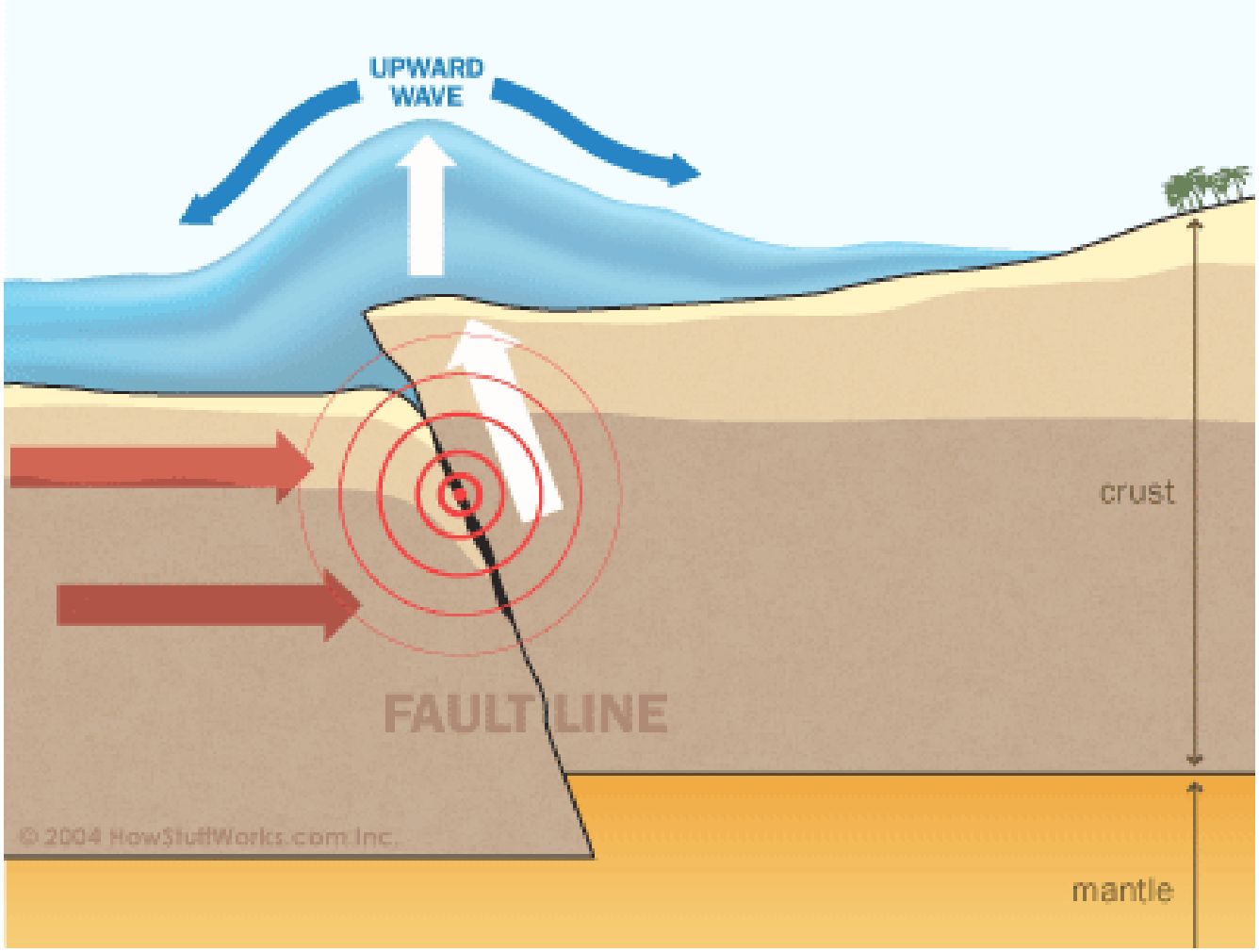

Stuck
Overriding plate
Subducting plate


Slow distortion


Earthquake starts tsunami
Stuck area ruptures, releasing energy in an earthquake


Tsunami waves spread

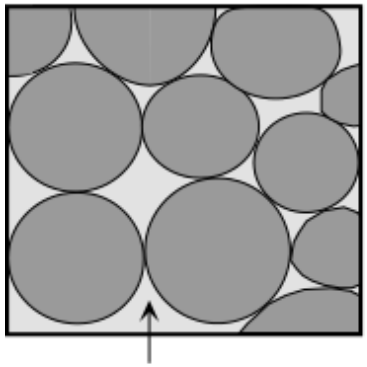
How Tsunamis Work: Tsunamigenesis



Liquefaction

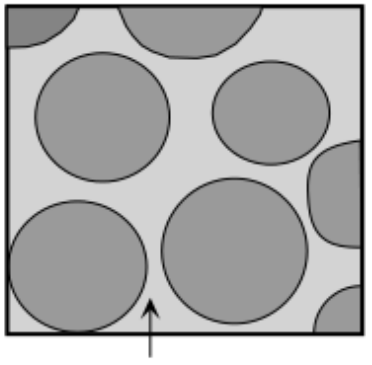
- The process when stable soil turns into a liquid
- Caused by seismic waves
- Its like squeezing a sponge-forcing the water out of the soil

Water-Saturated Sediment



Water fills in the pore space between grains. Friction between grains holds sediment together.

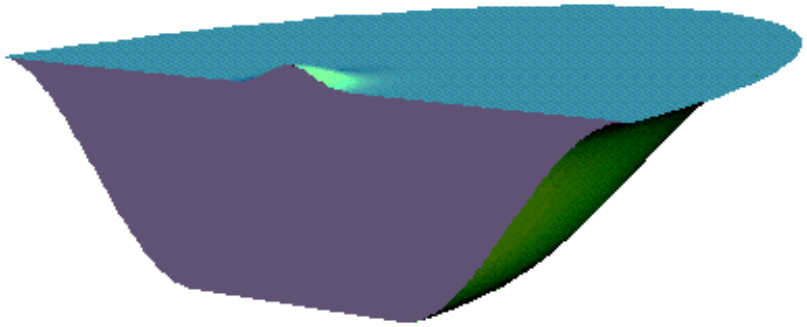
Liquefaction



Water completely surrounds all grains and eliminates all grain to grain contact. Sediment flows like a fluid.

Liquefaction Damage

- Structures are not able to support themselves once the soil is liquid
- They collapse into the soil
- Underground structures may be pushed to the surface like water tanks and sewer lines



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