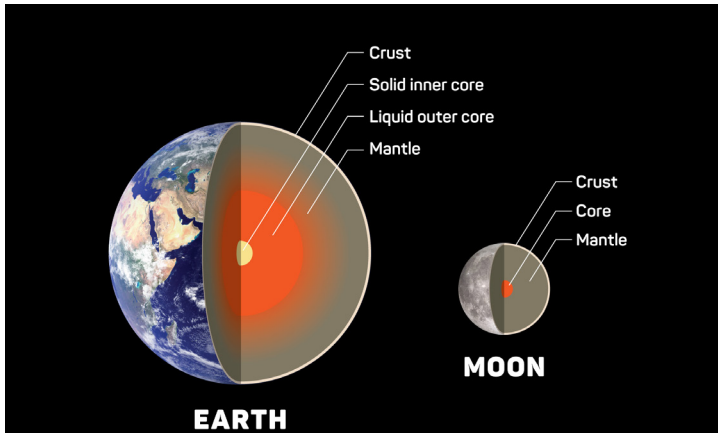


The Four Types of Moonquakes

Moonquakes have different causes.



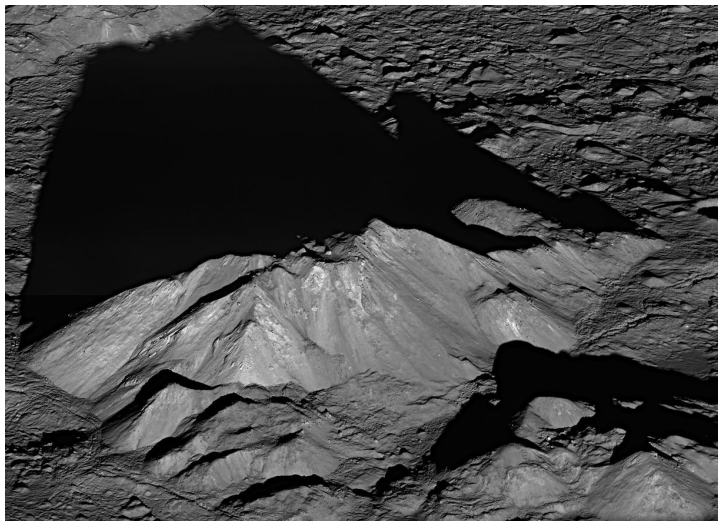
Deep moonquakes originate hundreds of kilometers below the surface. These deep-seated moonquakes are likely caused by tidal forces. Just as the Moon tugs on the Earth's surface and causes ocean tides here, the Earth pulls on the Moon and deforms it. Researchers think that deep moonquakes are probably caused by the Moon continuously stretching and relaxing.



Shallow moonquakes originate just a few tens of kilometers below the surface. Scientists think that shallow moonquakes are probably the result of the Moon shrinking over time. The Moon is getting smaller because its interior is cooling. This shrinkage—imagine a grape drying into a raisin—creates stress within the Moon, which triggers moonquakes near the surface. Shallow moonquakes often last longer and are more powerful than other types of moonquakes.



Moonquakes can be caused by impacts. When an asteroid, comet, or meteoroid strikes the Moon's surface, they can trigger moonquakes. Earth's relatively thick atmosphere causes most space debris to burn up from friction before it strikes our planet's surface. But the Moon isn't so lucky. Because there is almost no atmosphere, most space debris heading toward the Moon impacts its surface, sometimes causing giant craters and moonquakes.



Moonquakes can be caused by the Moon's surface thawing after a long night. Days and nights on the Moon are much longer than they are on Earth—each lasts about two weeks. During the night, the Moon's surface freezes. And during the day, its surface thaws. This cycle of freezing and thawing results in stress, which triggers moonquakes.

Bonus cause of moonquakes: Spacecraft landing on the lunar surface, including Apollo landers!