

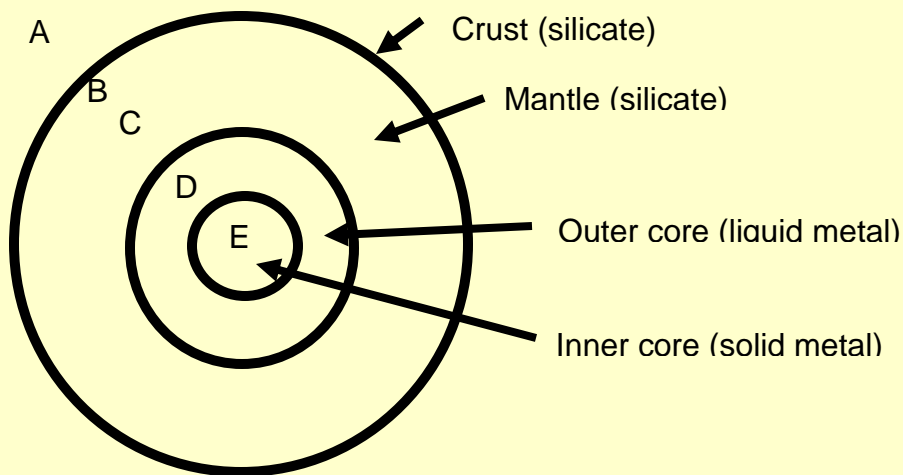
Volcanoes—Common Q/A

Earth Science Essentials
by Russ Colson

Does lava come from the Earth's core?

Despite all the movies and books that show lava at the Earth's core, and despite the very common idea that lava comes from there, it, in fact, does not. Magma is only called lava once it reaches the Earth's surface. The Earth's core is metal, as we learned in a previous unit. The Earth's outer core is indeed liquid (we'll talk in a few days about how we know that to be true), but the liquid metal is far too dense to ever rise up to the Earth's surface and erupt.

Some people think that lava comes from Earth's molten mantle. However, most of Earth's mantle is solid, not liquid. The mantle only melts in a few places and then it only partly melts. This partial melting usually happens near the mantle/crust boundary. This molten material then rises up through the crust and erupts to the surface or lodges as magma chambers in the crust, where it might cool slowly into a coarse-grained igneous rock.



Which of the locations, A-E, do you think most lava originates from? Commonly, students go with D (because it's liquid), or C (because they think the mantle is liquid), or E (because it's the Earth's core). Sometimes students think it's A (falling out of the sky?). However, most commonly, magma originates near the very top of the mantle or in the lower crust (B).

Is it possible to go down into the Earth in a volcano?

Not for very far. The rock of the Earth is not strong enough to hold open a deep cavern or passageway. Under great pressure and temperature, and over long periods of time,

the rock of the Earth behaves viscously—like very sugar-rich sugar water. Under the weight of all the overlying rock, a cavern will either fill up due to viscous flow of the surrounding rock, or the surrounding rock will break and fall in. Either way, caverns and passageways deep into the Earth are not possible. Caves only exist at the very thin outer skin of the Earth's already-thin crust.

However there is a volcano in Iceland in which the magma has drained from the passageways and it is possible to go inside and explore! You can check out this and other amazing places on Earth at

http://earthscienceissues.net/MyChallenges/Earth_Science_Travel_List.htm

Last updated June 2, 2015. Pictures and text property of Russ Colson.