Volcanoes

Volcanoes are geological structures formed where molten rock, known as magma, forces its way through the Earth's crust. The Earth consists of several layers: the inner core, outer core, mantle, and crust. The crust is divided into tectonic plates that are constantly — though very slowly — moving. Volcanoes typically form at the boundaries of these plates, either where they collide and one is forced downward, or where they pull apart and magma wells up to fill the gap. Some volcanoes, however, form over "hot spots" — unusually warm areas of the mantle — far from any plate boundary. Hawaii is a well-known example.

The type of eruption a volcano produces depends partly on the composition of its magma. Magma with low viscosity flows freely and produces relatively gentle eruptions with fast-moving lava. High-viscosity magma is thick and sticky, trapping gases that build up enormous pressure, resulting in violent, explosive eruptions that hurl ash, pyroclastic material, and volcanic bombs great distances.

The consequences of major eruptions can be global. The 1815 eruption of Mount Tambora in Indonesia was so powerful that it ejected enough ash and gas into the atmosphere to lower global temperatures, causing widespread crop failures the following year — a period known as the "Year Without a Summer."

Volcanologists monitor seismic activity, ground deformation, and gas emissions to forecast eruptions and help protect vulnerable communities worldwide.

Questions

1. Name the four layers of the Earth in the correct order from the centre outward.
2. What happens at a tectonic plate boundary where plates collide?
3. What is a "hot spot"?
4. Give an example of a volcano that formed over a hot spot.
5. What does the word "viscosity" mean in relation to magma?
6. What type of eruption does high-viscosity magma tend to produce?
7. What are pyroclastic materials?
8. In which country is Mount Tambora located?
9. What is the "Year Without a Summer" and what caused it?
10. The text says volcanologists monitor seismic activity and ground deformation. Why do you think the ground around a volcano might change shape before an eruption?

Text D Quiz

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