

DOUG'S GEOLOGY JOURNAL

Episode 1: A Whole Lotta Lava Learning Guide for the Classroom

Topics

Volcanoes
Mantle Plumes
Eruptions
Lava Flows
Rifting Plates
Glaciers
Waterfalls
Geothermal Energy



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The Story

Iceland is an island where geology dominates the scenery. Volcanoes erupt frequently for two reasons: 1. Iceland sits on a mantle plume, and 2. The island is being split in two as two tectonic plates are moving apart from each other. Rocks made of hardened lava, called basalt, cover 90% of the landscape. Geysers are plentiful, and giant ice caps and glaciers cover much of Iceland. Moving ice has sculpted the landscape, and melting ice has created rivers and waterfalls, which further sculpt the landscape. Due to the hot magma under the surface of the island, geothermal energy is used widely as an energy source.

Engagement Questions

- a. What do you know about Iceland?
- b. What would you like to know about the formation of Iceland and its physical features?

Focus Questions for Viewing

1. How are the basalt rocks in Iceland formed?
2. Why is the lava from Icelandic volcanoes very special?
3. What is the relationship between Iceland's volcanic activity, and its unique position, a. over mantle plume, and, b. on top of the mid-Atlantic ridge?
4. Why does Iceland have geysers?
5. How have glaciers and the melted water from glaciers helped sculpt the landscape?
6. Usually you can't see what is beneath the surface of a hardened lava flow. But sometimes erosion reveals a distinct geometrical pattern in the cooled lava. What is it?
7. What is geothermal energy?

Vocabulary

Lava	Tectonic Plates
Magma	North American Plate
Basalt	Eurasian Plate
Columnar Basalt	Mid-Atlantic Ridge
Ash	Ice Age
Mantle plume	Geyser
Earth's Core	Glacier
Earth's Mantle	Iceberg
Earth's Crust	Geothermal energy

Geologically important places featured in the video

Fagradallsfjall volcano
Kirkjufell mountain
Þingvellir National Park
Geysir
Vatnajökull National Park
Columnar basalts near town of Vik
Jökulsárlón lagoon
Gullfoss waterfall
Fjadrargljúfur canyon
Eldhraun lava field
Seljalandsfoss waterfall

Web Links

Series web site: <https://dougsgeology.com>

Series on PBS web site: <https://www.pbs.org/show/dougs-geology-journal/>

Learning Guide produced by Diana Curiel

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