DOUG'S GEOLOGY JOURNAL

Episode 5: Red Rock Rising
Learning Guide for the Classroom

Topics

Geology of Red Rock Country
Subterranean salt and erosion
Subduction
Sedimentary rock formation
Canyon formation
Ancestral Puebloan dwellings and art
Volcanic activity
Earth's largest landslide

Earth Images Foundation

The Story

This episode explores the colorful geologic wonderland of Red Rock Country on the Colorado Plateau. The process of the subduction of the Pacific Plate under the continental North American Plate uplifted the plateau. A layered cake analogy shows why many of our national parks are geologically related. Successive sedimentary layers built up extremely slowly over millions of years, and then, as the plateau was lifted up, water and wind eroded canyons, both massive and extremely narrow, into the rocks. Ancestral Puebloan people built cliff dwellings and created rock art on desert varnish surfaces hundreds of years ago. Volcanic activity has occurred extensively in Red Rock Country, and the largest landslide ever known on Earth shifted a huge pile of hardened lava and ash tens of miles to the south, about 23 million years ago.

Engagement Questions

a. What do you think created the colorful canyons of Red Rock country?
b. Can small streams and wind carve solid rock over a long time?

Focus Questions for Viewing

1. How did the salt layer embedded in the Colorado Plateau help create the unusual rock formations seen in Arches National Park?
2. Why is a layer cake a good analogy for describing the rock layers in Red Rock Country?
3. When the Pacific Plate subducted under the continent, what did it do to the land that is now known as the Colorado Plateau?

4. What do the Grand Canyon, and extremely narrow slot canyons, have in common?
5 If you were a giant walking down the Grand Staircase, which sites would you descend through as you walk from the top to the bottom?
6. What evidence is there that the indigenous people who live in Red Rock Country have lived there for many hundreds of years?

Vocabulary

Erosion
Plateau
Uplift
Sandstone and limestone
Subduction
Pacific Plate
North American Plate
Earth's mantle
Sediments
Arches
Fins
River downcutting
Slot canyon
Petroglyphs
Desert varnish
Hot springs
Volcanic ash
Landslide

Geologically important places featured in the video

Red Rock Country
Colorado Plateau
Arches National Park
Behind the Rocks Wilderness Area
Grand Canyon
Colorado River
Virgin River
Rocky Mountains
Book Cliffs
Grand Staircase-Escalante National Monument
Bryce Canyon National Park
Zion National Park
San Rafael Swell
Comb Ridge
Bears Ears National Monument
Bluff, Utah
Valley of the Gods
San Juan River
Goosenecks State Park
San Francisco Volcanic Field
Monroe, Utah
Marysvale Volcanic Field

Web Links

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

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