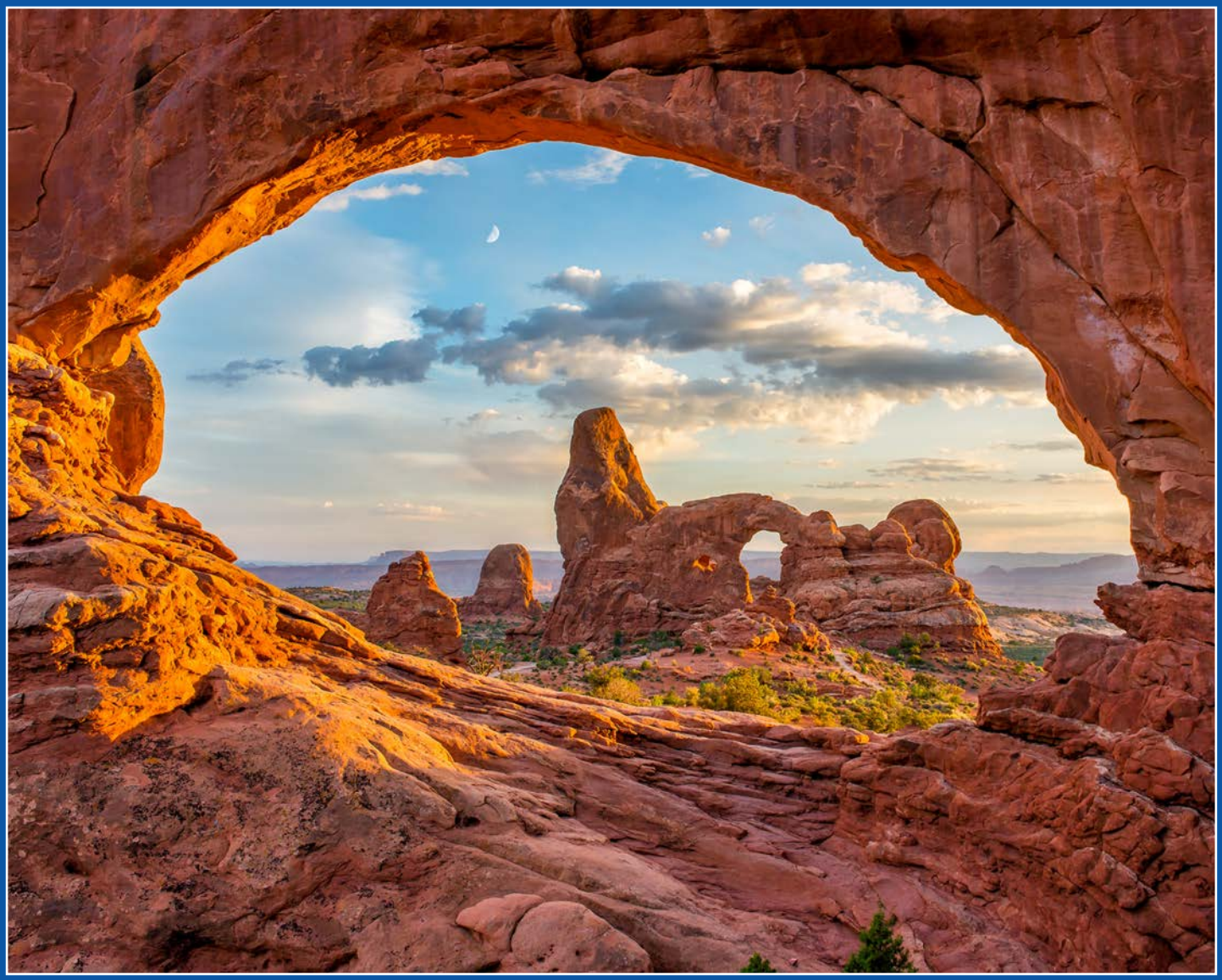
# GEOLOGY



TextProject **Background Builders**

*Rocks with layers like this one are called gneiss. The layers are called foliation*

# Foliation and Gneiss

Imagine you're hiking up a steep mountain, the sun shining bright overhead. As you climb, you spot a special rock among the others. It's not smooth like the ones in the river or rough like the volcanic rocks nearby. This rock is different. It's solid and strong, with layers that seem to sparkle in the sunlight. This kind of rock is called gneiss.

It's easy to notice gneiss because of its unique appearance. It's like a colorful puzzle with layers of dark and light stripes. These stripes are what we call foliation. Foliation is like the rock's signature pattern, showing how it changed over time. Some layers feel rough, while others are smooth. There may even be shiny specks that look like glitter!

Gneiss wasn't always a rock with layers. It started as a different kind of rock, maybe one that was made from sand or lava. But over a long time, it changed. It went through something called metamorphism, which is like a rock makeover. During metamorphism, the rock got squished and heated deep underground. As a result, it turned into the rock with the different layers that you see today.

*This view of the earth from outer space shows the San Andreas fault, where two plates are alongside one another*

# Tectonic Plates

Picture the Earth as a big puzzle made up of huge pieces. These pieces are called tectonic plates. They're like giant slabs that fit together but can also move around. When these plates move, it's called tectonic activity.

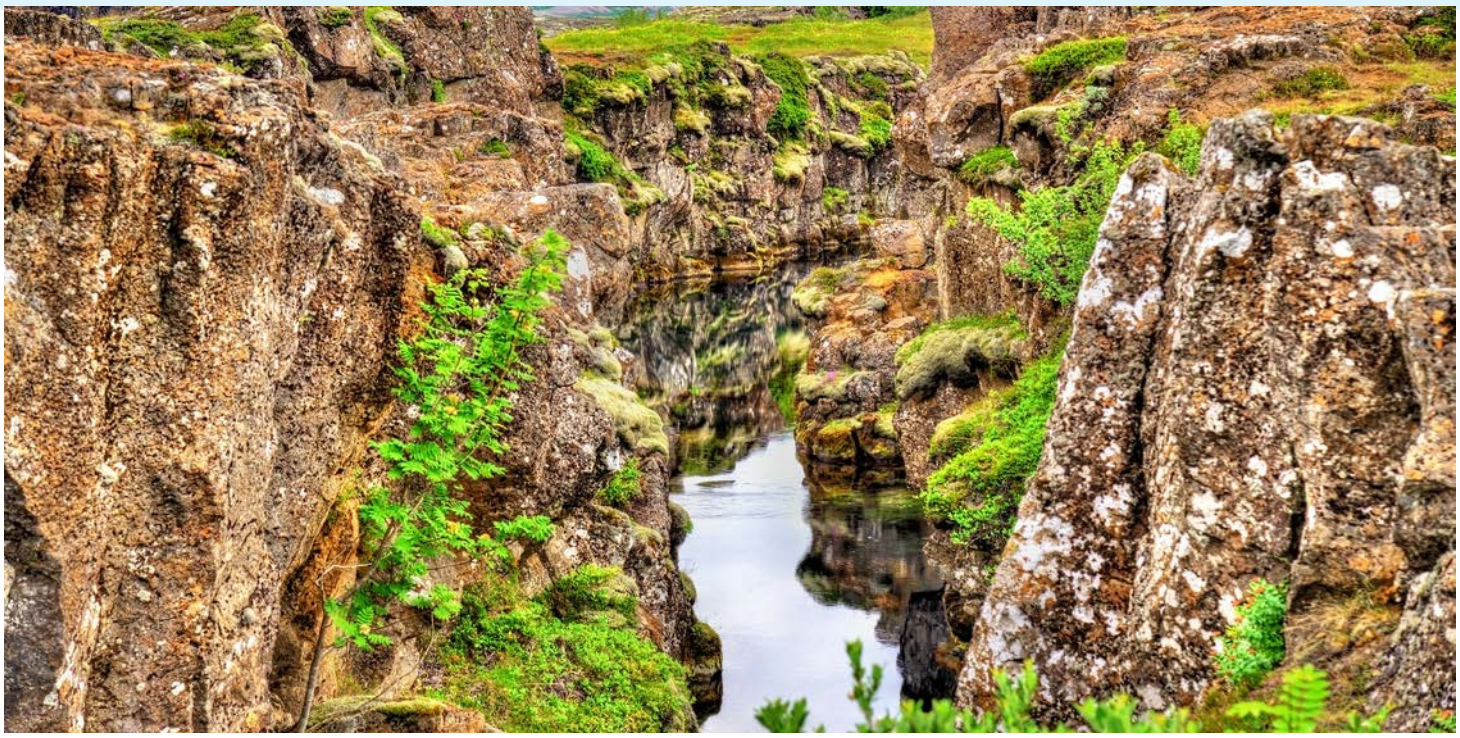
These plates are always moving, very slowly, like slow-motion bumper cars. Sometimes, they move apart from each other, and new land forms in-between. Other times, they crash into each other, and that's when we get things like mountains. And sometimes, one plate slides under another, causing big earthquakes.

*Over time, tiny, little rocks can stick together to form a conglomerate rock.*

## Conglomerate Rock

Think about what would happen if you used superglue to put these rocks together. You'd have a ‚Äúconglomerate‚Äù rock. Nature doesn't use superglue but there are ways in which rocks get stuck together to form conglomerate rocks.

Usually, conglomerate rocks are form from tiny rocks that have been broken off of bigger rocks by water or wind. The little rocks are carried away by water and eventually settle into a riverbed or beach. As more layers of little rocks are added, the weight presses the little rocks at the bottom closer and closer. Over time, the minerals in the water act like cement. The little rocks are stuck together and become one big rock called a conglomerate rock

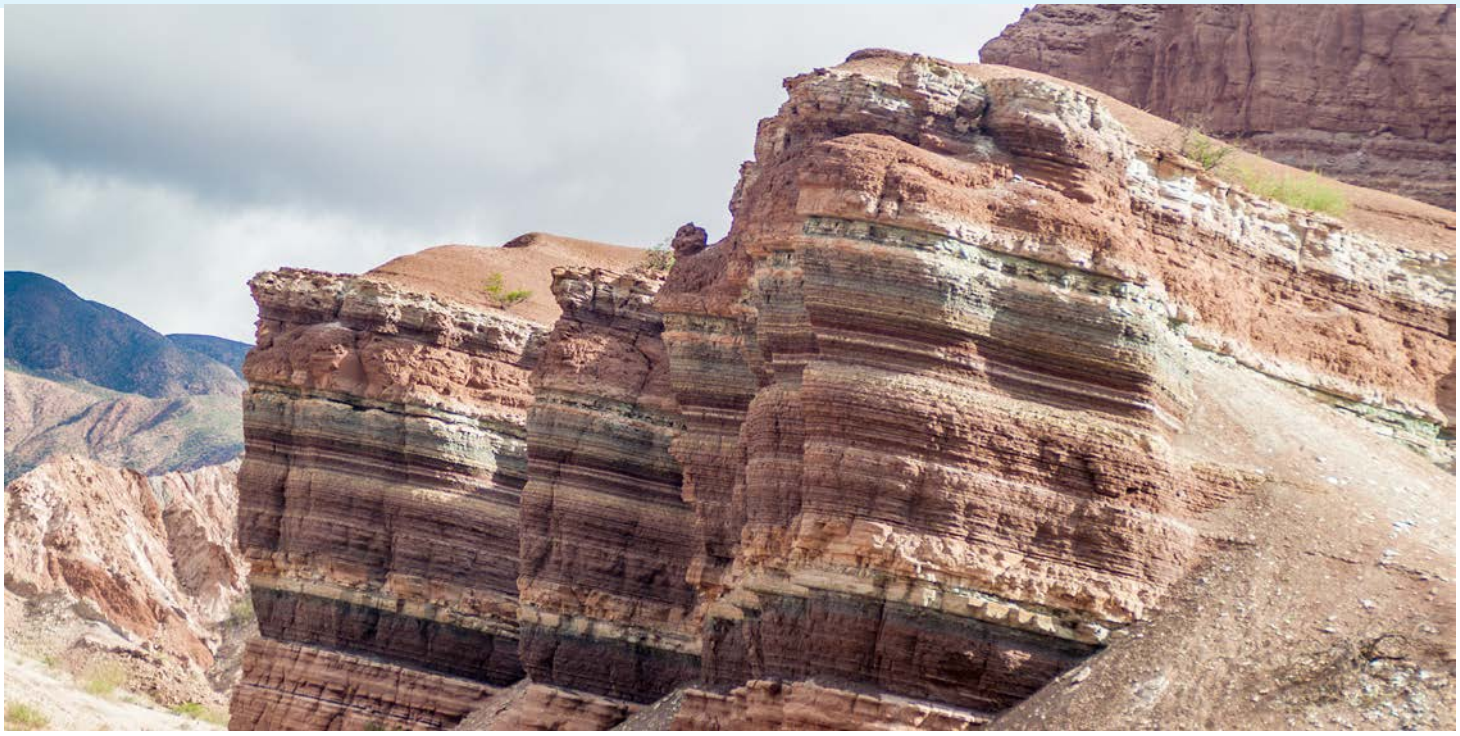


*The fissure or crack in the rocks is so large that a canyon has been formed.*

# Fissure

Imagine you're walking in the forest, and suddenly you see a big crack in the ground. It's called a fissure. Fissures can form because of things like earthquakes, where the ground shakes and shifts, or when molten rock, called magma, pushes its way up from deep inside the Earth.

Fissures come in all shapes and sizes. Some are tiny, like the ones you might see in rocks, while others can be enormous, stretching for miles! Sometimes, when fissures open up, they can even create new landforms, like valleys or canyons.



*Geologists can tell which rock layer is older based on their position in the stack of layers*

## Superposition

When geologists study rocks, they can tell which layer is older or younger by looking at how they're stacked on top of each other. The oldest layer is always at the bottom, and the youngest layer is at the top. This is called superposition. Geologists use the positions of the layers to describe the history of an area.

But forces like earthquakes and volcanoes can cause layers to shift around or even break apart. This can change their original order. That's when geologists need to use other clues, like the direction of the folds in the rock. It's like solving a puzzle to understand the story of the rocks and the earth's history.