# Lesson 7: Pangea & Plates

The ground beneath your feet feels permanent. Solid. Immovable. But it is not. Earth's outer layer, its crust and the solid rock just below, is broken into about a dozen great puzzle pieces called **tectonic plates**. They float on the hot, slowly flowing rock of the mantle beneath, and they are always moving. Not fast enough to feel, just a few centimeters per year, the speed of a growing fingernail, but moving nonetheless, and they have been moving for billions of years.

The results are written all over the world's map. About 300 million years ago, all of Earth's landmasses were joined in one enormous continent called **Pangea**. Animals could walk from what is now South America to what is now Antarctica. Plants spread freely across the whole connected land. Then the plates began to pull apart. Pangea cracked and drifted into the shapes we recognize today. South America and Africa still look like matching puzzle pieces because they were, in fact, once joined. The same fossils are found on both shorelines, thousands of kilometers apart.

Wherever tectonic plates meet, the Earth's surface is transformed. When plates collide, crust crumples upward into mountain ranges. The Himalayas are still being pushed higher every year by the collision of India and Asia. When plates pull apart, **magma** wells up from below, creating new ocean floor. When plates grind sideways past each other, the stress builds until the ground shakes in an **earthquake**. A **fault** is a crack in the crust where this movement occurs. And where magma forces its way to the surface, a **volcano** erupts, one of the most dramatic reminders that our planet is alive inside.

Every era of life on Earth has been shaped by the plates beneath it. When continents are joined, species can mingle. When they separate, they evolve in different directions, producing the remarkable variety of life we see across different parts of the world. Mountains change rainfall and climate. Volcanic eruptions change the atmosphere. The living world has always danced to the rhythm of the moving ground beneath it, and the dance is still going on.