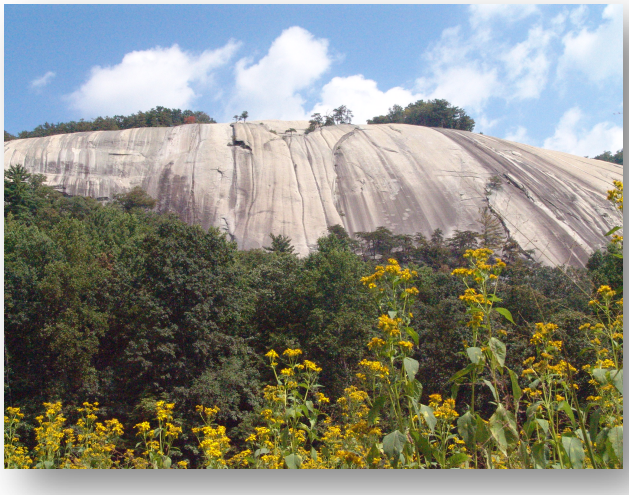
# Stone Mountain is a North Carolina Rock Star

## Rocks Tell Us a Story



North Carolina has many different kinds of rocks and minerals which make it an exciting place to study geology and look for rocks. From our mountains to the sea we can find all three main rock types in our state. The rock types can be identified by the ingredients that make them up. **Igneous** rocks are made of minerals. **Sedimentary** rocks are made mostly of sediments like sand, mud, pebbles and sometimes can include fossils. **Metamorphic** rocks are heated and squeezed versions of igneous and sedimentary rocks. Geologists investigate the rocks to retell the geological story of North Carolina.

## Not all Igneous Rocks are the Same

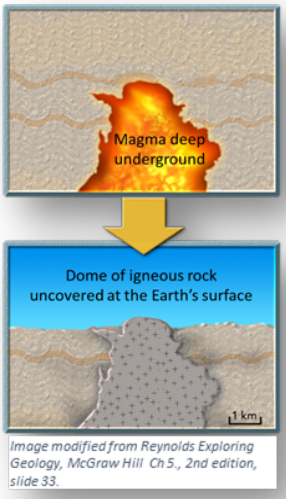


Image modified from Reynolds Exploring Geology, McGraw Hill Ch 5., 2nd edition, slide 33.

All igneous rocks used to be hot, liquid **magma** deep underground. Magma and **lava** are the two main forms of igneous rocks. Magma, deep under ground, pushes, shoves and melts its way up through the surrounding rocks. Since it is intruding its way through the surrounding rocks it is called an **Intrusive** Igneous rock. If the molten magma explodes or oozes on the earth's surface, it is called an **Extrusive** Igneous rocks and can form volcanoes.

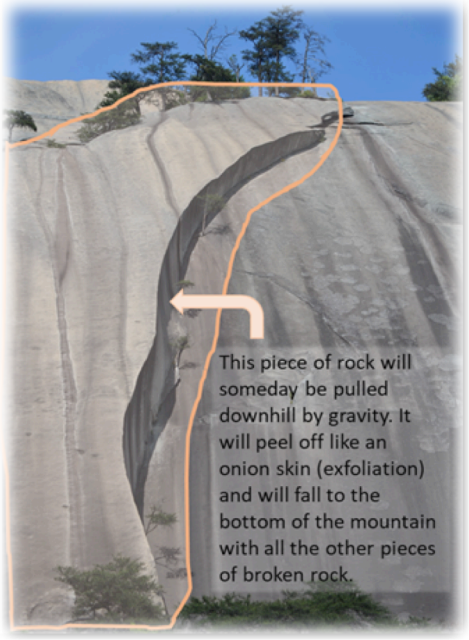
Igneous rocks are made of many different **minerals**. In the picture is a piece of granite rock showing some common minerals that are found in it. These minerals include feldspar, quartz, mica and amphibole. These minerals grew, or **crystallized** from the magma deep underground. It is the combination of minerals that geologists use to figure out the type of the rock. At Stone Mountain the minerals tell a geologist that the dome has the ingredients of both a granite and diorite rock, so we call it granodiorite.

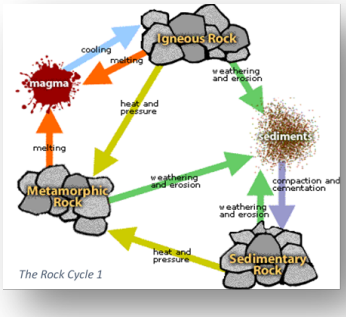
## Stone Mountain Uncovered

Stone Mountain tells an interesting rock story. The dome we see today started out deep underground as hot, molten igneous rock, called magma. While the magma was slowly cooling into hard rock below the earth's surface, **weathering** and **erosion** were uncovering it, eroding all the layers of rock above it. Stone mountain is now a dome-shaped rock that sticks out of the Earth, all the rocks around it are easier to erode away.

### Breaking it All Down

At the bottom of Stone Mountain there are piles of broken rock. Some of these pieces are as small as a grain of sand and some are car-size boulders! **Weathering** is when rocks are broken down into smaller and smaller pieces. Plant roots and ice grow into little cracks and pop off pieces of rock, too. **Erosion** is what carries the pieces to another place. **Deposition** is where the smaller pieces called **sediments** settle down on the ground or on the bottom of a lake, river or ocean. As the layers that were on top were eroded away, the mountain had less weight on it, allowing it to stretch and expand. As that happens, pieces of rock crack and peel off. This is called **exfoliation**, or onion-skin weathering, because of the way the rock peels off like an onion skin.




Throughout Earth's history, rocks have been broken, heated, pressed, and pushed around over and over. This constant change in the form and structure of rocks is called the **rock cycle**. Stone Mountain started out as hot, molten magma deep underground, it slowly cooled to form igneous rock. It is now being weathered and eroded into smaller pieces called sediments. Eventually, these sediments will be compacted into sedimentary rock. The rock cycle continues to write rock stories!