## Geology of the Verde Valley

Earth's Ancient Stories Survive in Stone!

Have you read a good book lately? Skilled geologists can read the riveting stories preserved in stone. In the Verde Valley, this story is 1.82 Billion Years Old. And you thought *War and Peace* was a long book!

The Black Hills along the south and west (the photo above), exposes our oldest Precambrian rocks. Some of these rocks contained the copper ore that made Jerome a booming mining town from 1880s until the 1950s. This site bulletin will focus on the 80 million year story of how the Verde Valley was formed.

Long before Humanity, powerful forces shaped this land

80 MYA
Laramide Orogeny, Mogollon Highlands & Rivers Flow North
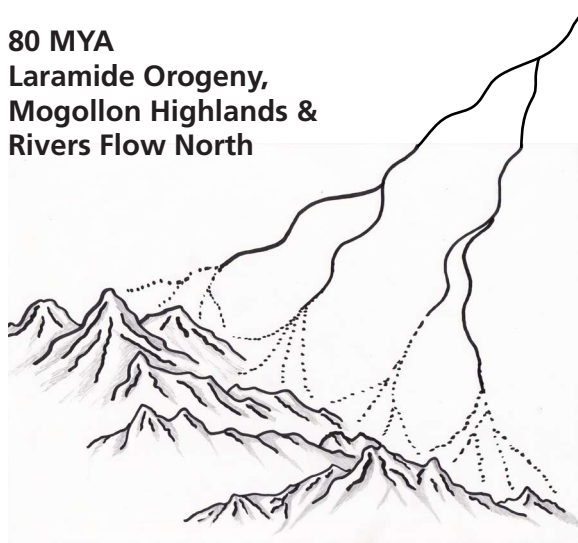
80 - 65 MYA
**During the Late Cretaceous, Dinosaurs Still Roam the Earth**
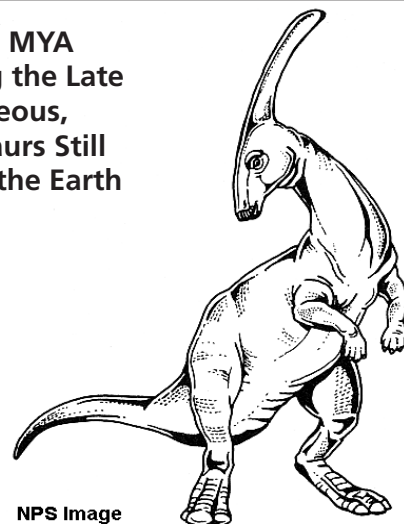
NPS Image

If you were here 80 Million Years ago, you would be underneath a mile of sedimentary rock! The power of water has vastly changed this land. There was a large mountain range at present day Phoenix and Prescott, AZ. North flowing rivers eroded these mountains and rock layers that contained dinosaur fossils.

The Power of Water Destroys Mountains and Carves New Cliffs

40 - 30 MYA
The Ancestral Mogollon Rim Forms & The Ancestral Verde River Flows South
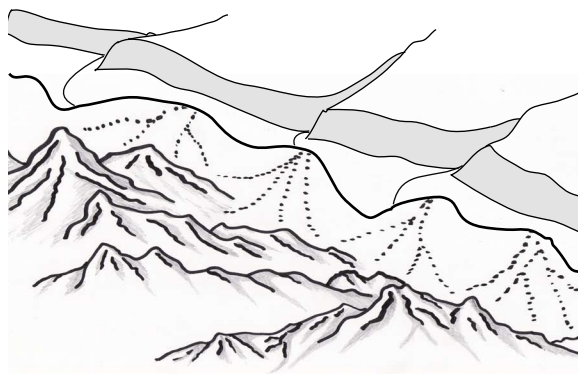
Three chapters of time shaped the landscape surrounding us in the Verde Valley: *1. Erosion, 2. Tectonics and 3. Deposition.*

Chapter One: Erosion is the breakdown of rock and soils mostly by water.

As the tens of millions of years pass, the Ancestral Mogollon Highlands disintegrate. Sedimentary rock erodes away and a cliff (Ancestral Mogollon Rim) recedes gradually to the north.

Currently this "Mogollon Rim" is receding north 1 foot every 625 years. At this rate the Mogollon Rim at present-day Sedona, will be at downtown Flagstaff, AZ in 79 million years!

Earth's Forces Build New Mountains & Valleys

8 - 2 MYA Verde Valley Faults Down & A Series of Lakes
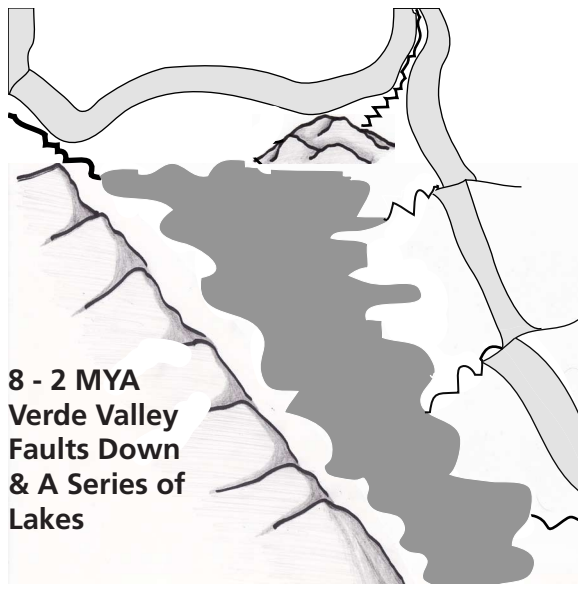
Chapter Two: Tectonics are the Earth's surface movement exhibited by earthquakes & mountain building here.

"Basin and Range" Tectonics cause the Verde Valley to sink down and the Black Hills the the southwest to rise.

A Basin is formed and the Ancestrial Verde River becomes sluggish, causing a series of marshes and lakes to form.

Though people were not yet present here, there were many other facinating mammals abounding at this time...

Stone Tells a Story of Past Landscapes & Past Life-Forms
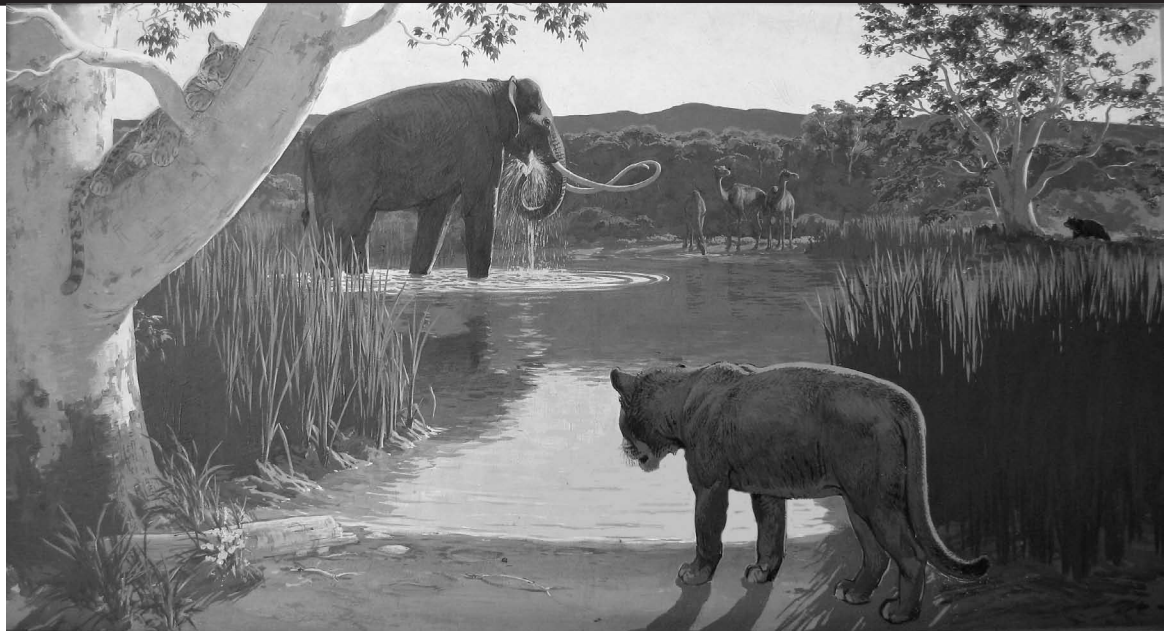
Relatives of the mammals still present in Africa and Asia once existed here in the Verde Valley. In North America, large mammals known as *Mega-Fauna* became extinct shortly after humans arrived 12,000 years ago. Possible causes were hunting, disease or climate.

Seeing Pages of Time With Your Own Eyes & the Story Goes On!

Chapter Three: Deposition includes the settling of sediment & volcanic materials.

15 million years ago widespread volcanic activity in the area created the lava Flows of the "Hicky Formation" that can be seen topping the Black Hills & the eruption of the House Mountain shield volcano southwest of present-day Sedona, AZ.

Evidence of a series of lakes and marshes in the valley are exhibited by 3,000 feet of limestones and siltstones deposited here. Numerous veretibrate fossils have been discovered within these sedimentary layers. The Ancestrial Pueblo culture called *Sinagua* had taken avantage of the wonderful caves, sinkhole-springs, and rocky summits of the Verde Formation for shelter, water and excellent vistas. Your own eyes can behold these pages of time at Montezuma Castle, Montezuma Well and Tuzigoot National Monuments! How will the story be told in future chapters?

Verde Valley Records a Story Within a Giant Layer-Cake
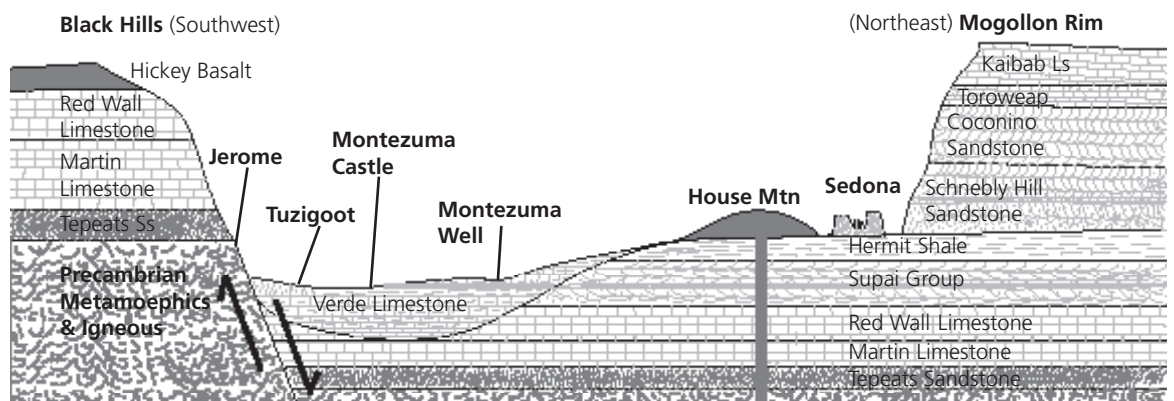
This is a stratigraphic cross-section of the Verde Valley. The two opposite facing black arrows represent the Verde Fault, which separates the Black Hills and the Verde Valley. Montezuma Castle, Montezuma Well & Tuzigoot National Monuments are on the ancient lake deposits called the Verde Formation (limestone, gravels, silt, clay, salts & travertine).