



Arizona Rocks 76

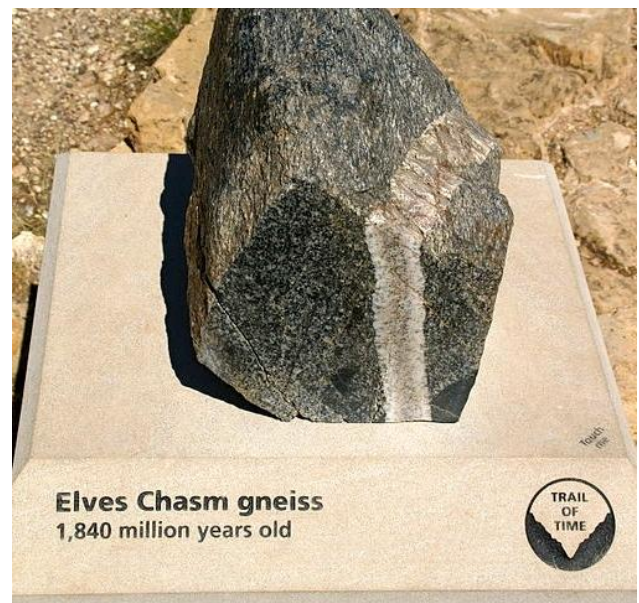
Text and photos by Ray Grant

Here is an Arizona Rocks question: What is the oldest rock found in Arizona and how old is it? The answer is the Elves Chasm Gneiss and it is 1,840 million years old. Remember rock units (formations) are named after a place where they are found. So this rock is found at Elves Chasm, a small side canyon at mile 116 (miles from Lee's Ferry), in the Grand Canyon. The outcrop goes for about six miles along the Colorado River from mile 112 to 118. This is the only place where rocks this old have been found so far in Arizona, so not easy to go and see it. But, there is a specimen on the Trail of Time on the south rim of the Grand Canyon, and you can see it there. (The July 2013 issue of Earthquake has an article about the Trail of Time.)

There are much older rocks on earth. The oldest dated rock is close to 4,000 million years old and is from the Canadian Shield near Hudson Bay. Before the oldest Arizona rock formed, North America was much smaller and Arizona was ocean instead of continent. By 1,400 million years ago all of Arizona had formed from a series of plate tectonic events called orogenies. The timing of these orogenies is shown on the accompanying map. So you can go out and see old rocks many places in Arizona except where they are covered by all the younger rocks. Most of the rocks in the Phoenix Mountains are 1,700 million years old, so not the oldest, but not youngsters either. Impress your friends and neighbors by telling them: I saw something 1,700 million or 1.7 billion years old.

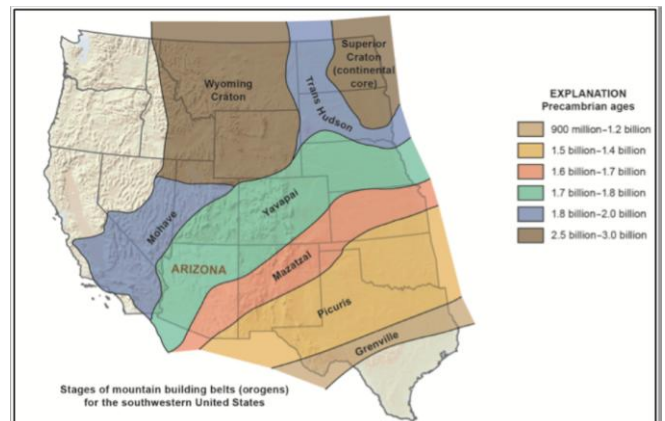


Outcrop of the Elves Chasm gneiss cut by younger granite dikes



Sample of the Elves Chasm gneiss on the Trail of Time at the Grand Canyon

Hermann Luyken [Creative Commons CC0 1.0](https://creativecommons.org/licenses/by/4.0/)



Map showing how North America and Arizona grew over time