

# Geologic history

[Science](#), [Geography](#)



The geology of the Grand Canyon Inserts His/her Inserts Inserts Grade  
(December 02, -Outline

-Introduction

-Names, Composition and Ages of the rocks

-Conclusion

The geology of the grand canyon interprets the beautiful and complicated piece of artwork that nature can present. The Grand Canyon is an expansive phenomenon that sits within the Colorado plateau to the gulf of California. Geology on the other hand can be defined to as the formation of the structure and composition of rocks and fossils in a given area. The geological process of the grand canyon is estimated to have occurred about 75 million years back. This development was initiated by various processes ranging from sedimentary uplift or movements of plates probably as a result of ice movement and volcanic actions. Movement of ice during the ice age pushed away huge rocks on its path while the action of volcanicity eroded several sedimentary material that later formed the Colorado river. The Colorado river with its massive water volume led to severe corrosion of the valley below to set up patterns that in turn became the Grand Canyon. The activity has since been slowed down due to absence of vast ice movement and also reduced human activities around the area since it had been declared a national park(Act of congress, 1919).

Some of the most predominant rocks within the Grand Canyon can be classified as Metamorphic-igneous basement rocks, Grand canyon supergroup, Tonto group, Surprise canyon, Supai group, Coconino and Mesozoic deposition. The Metamorphic and igneous basement rocks are

believed to have been formed 1.8 billion years ago. They mainly contain volcanic deposits like ash, mud and lava-silt. It is also interesting to note that the Grand Canyon super group contains about nine rock formations of small plates. This group was formed about 1.3 billion years ago and covers up flooded sections such as the Inner gorge. The Tonto group rock structure was formed due to explosion dating 500 million years back from conglomerates and sand deposited off shore. These group of rocks might have been carried vastly by the ice movement. Another rock structure within the Grand Canyon is the Surprise canyon.

These rocks comprise of a sedimentary layer of limestone. It is found to be lying on sandy beds of fossils and materials from plants. It was estimated to have been formed during Mississippian period.

The Supai group was deposited about 300 million ago in Mississippian era too. It contains fossils of reptiles, amphibians and plant material deposit. The penultimate rock composition in the Grand Canyon is the Coconino group. It has fossils of species such as insects, plants and the vertebrates too. These rocks were created about 275 million years ago and are about 600 feet high. Finally, the Mesozoic rock deposition completes the rock composition in the grand canyon. These group of rocks were formed as a result of erosion activities by streams flowing upon them. They are 4000-5000 feet high and usually arranged in form of stairs (Stanley, 273). The rocks here are reddish in color and sometimes grey too. The dominant composition are sand, shingles and shales. The rocks are also believed to be much younger compared to the previous rocks we have learnt hence dates 2700 million years back.

Grand Canyon is therefore the resultant erosion and excavation process of about 4200 km<sup>3</sup> by the Colorado river. The river owes its existence to the flow of streams and the earlier uplift of the north and southern plateau plates through volcanic actions. The geological nature of the Grand Canyon has elicited more interest on studies and research that I consider necessary and relevant as far as rock composition plus ages is concerned.

#### Works Cited

Beus, Stanley, and Morales Michael, eds. grand canyon geology. New York: oxford, 2003.

Act of congress. Grand canyon park established as the 17th U. S National park: Washington DC, 1919. print.