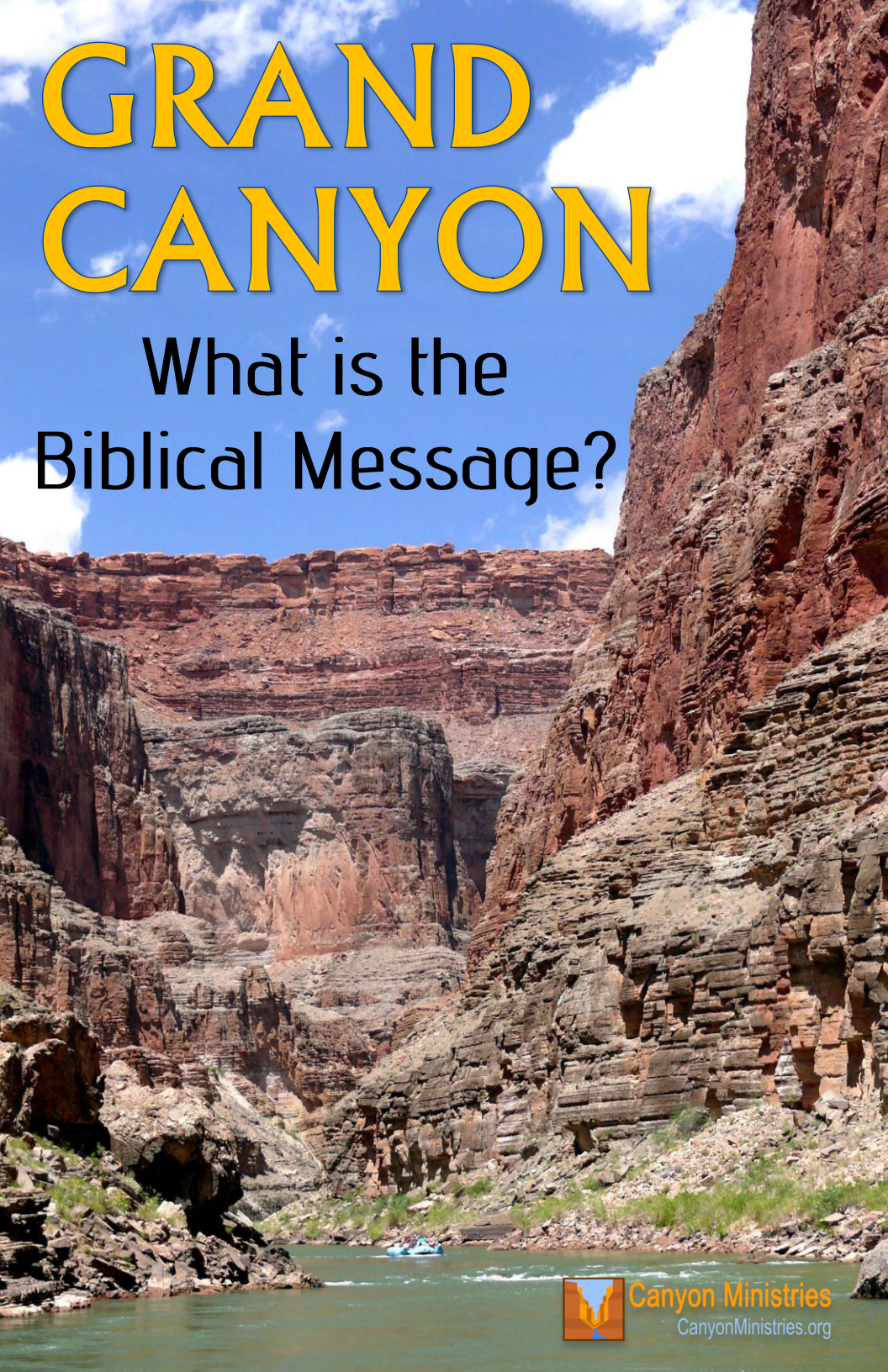
GRAND CANYON

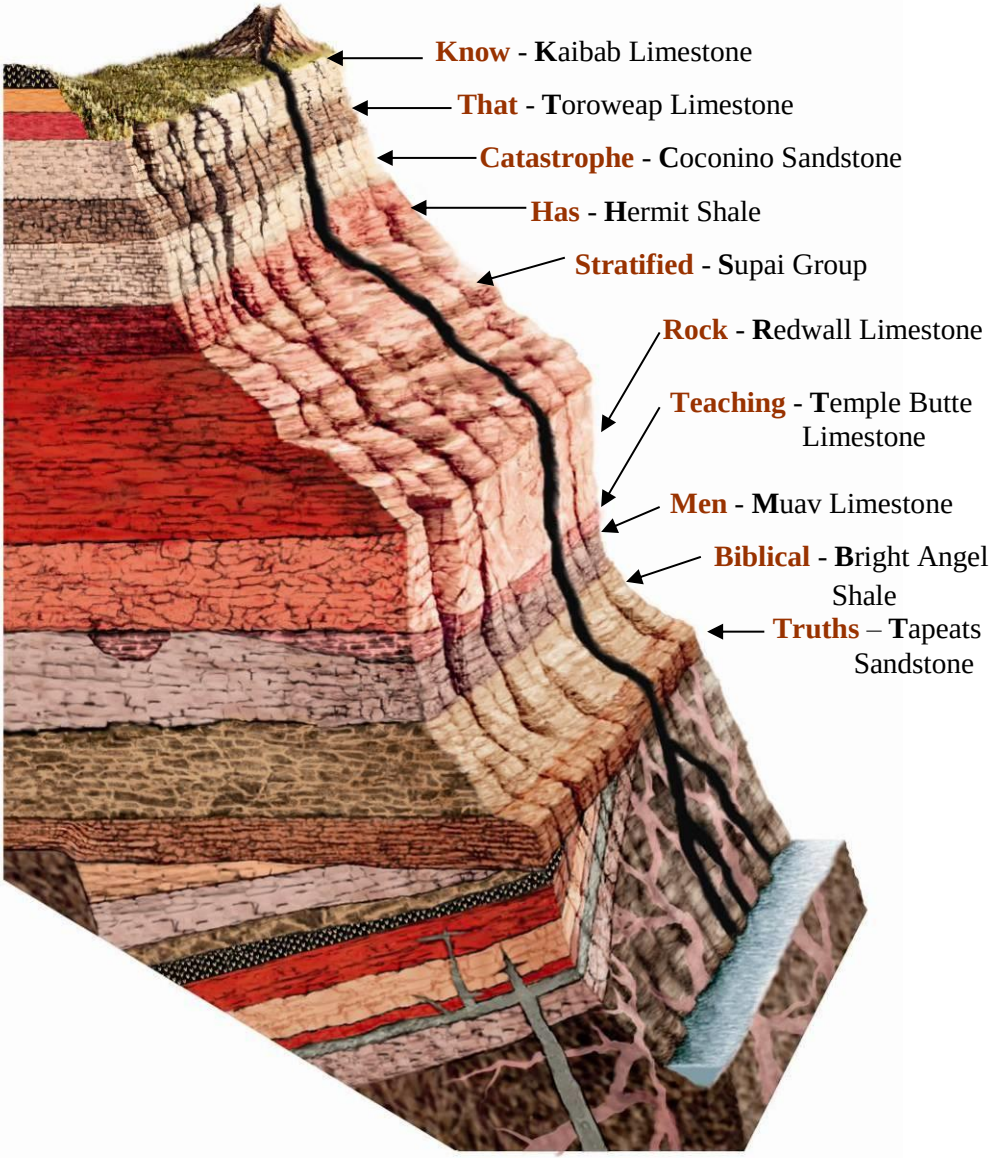
What is the Biblical Message?



Canyon Ministries
CanyonMinistries.org

Layers of the Grand Canyon

Know **T**hat **C**atastrophe **H**as **S**tratified **R**ock, **T**eaching **M**en **B**iblical **T**ruths



GRAND CANYON

What is the Biblical Message?

By Tom Vail

Copyright © 2022 Canyon Ministries

Canyon Ministries
CanyonMinistries.org

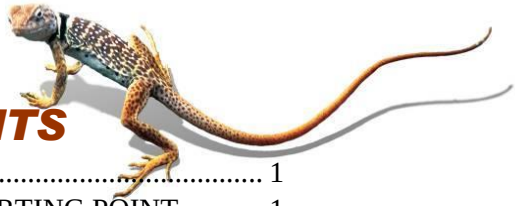


TABLE OF CONTENTS

FORWARD 1
THE BIBLICAL STARTING POINT 1
MILLIONS OF YEARS 5
THE FLOOD 6
GEOLOGY 7
A Biblical Model 7
The Canyon's Formation 12
A Biblical Perspective 12
The Geologic Evidence 13
Sedimentary Layers 0
Dating Sedimentary Layers 0
Extent of the Layers 0
Folding 0
The Great Unconformity 15
Fossils 0
Fossil Tracks 0
Nautiloids 0
Cross-bedding 16
Lack of Rockfall 0
WHAT THE RESEARCH SHOWS 18
Radioisotope Dating 18
Carbon 14 Dating 19
CONCLUSION 21
A Biblical Perspective 21
A Geologic Perspective 22
Bottom Line 23
RESOURCES 24
ABOUT THE AUTHOR 25
CREDITS 25

Acknowledgement: Much of the content of this booklet comes from *Grand Canyon, a Different View* and *Your Guide to the Grand Canyon, a Different Perspective.* Special thanks to the contributors to these books for their willingness to freely share their knowledge. Also to Dr. Bill Barrick, Dr. Terry Mortenson, and Dr. Andrew Snelling for their input and review of the content.

FORWARD

The Grand Canyon is one of the most amazing features on the face of the planet, a classic example of erosion unequaled anywhere on earth. Carved through sedimentary layers of limestone, sandstone, and shale, and into the bedrock of schist and granite, this great chasm stretches 277 miles through the Colorado Plateau. It descends over a mile into the earth and extends as much as 18 miles in width.

But the Grand Canyon is also a place to find and explore the wonders of God's creation. When viewed from a biblical perspective, the Canyon has "God" written all over it, from the splendor and grandeur of the Canyon walls, to the diverse and unique design of the plants and animals that inhabit this magical place. They all display the magnificence of our Creator.

Not only is the Canyon a testimony to creation, but it also presents evidence of God's judgment of the world. It was a judgment by water of a world broken by sin. The Canyon gives us a glimpse of the effects and scale of a catastrophic global flood, the biblical Flood of Noah's day.

I hope you will find this view of the Grand Canyon enlightening and faith-building.

THE BIBLICAL STARTING POINT

If the Grand Canyon is looked at from the premise, or worldview, that the Bible is the inerrant and inspired word of God, then several verses speak to the issues encountered as the Canyon is explored. Possibly the most profound is Colossians 2:8. It says:

> *"See to it that no one takes you captive through philosophy and empty deception, according to the tradition of men, according to the elementary principles of the world, rather than according to Christ."*

That is just what uniformitarian and Darwinian evolutionary teachings are based on – the tradition of men and the elementary principles of the world. They are *not* based on facts of science, as is so often believed.

Since we will look at the rock layers of the Grand Canyon as a product of the global Flood of Noah's day, there are three foundational scriptural truths that should be clarified.

- First, in Genesis, a "day" is a day, which means a literal 24-hour period of time. Genesis 1:5 says: *"…And there was evening and there was morning, one day."* Exodus 20:8-11 affirms that God created *"the heavens and the earth, the sea and all that is in them"* in six literal days. The rest of Scripture confirms the Creation account in Genesis 1 as actual history (Nehemiah 9:6; Isaiah 42:5; Acts 14:15; Colossians 1:13-16; and many other passages).

- Second, there was no death before sin. The first death came as a result of the initial sin that took place in the Garden of Eden. Romans 5:12 says: *"…just as sin entered the world through one man* [Adam], *and death through sin, and in this way death came to all men…"* Indeed, the apostle Paul links sin with death when he writes, *"the wages of sin is death"* (Romans 6:23). Just as the first historical Adam brought death into the world and died, so also in Christ, the second Adam, will sinful human beings gain eternal life (1 Corinthians 15:22, 45; Romans 5:14, 17; 6:23). The accuracy of the New Testament teachings concerning Christ depends upon the integrity of the Genesis account of creation and the fall.
- And third, Noah's Flood was an actual, historical, global event. Genesis 7:19-20 reads: *"The water prevailed more and more upon the earth, so that all the high mountains everywhere under the heavens were covered. The water prevailed fifteen cubits* [about 20 feet] *higher, and the mountains were covered."* By this, the Word clearly says this was a global event. Jesus Himself confirms the account (Matthew 24:37-39). Elsewhere in the New Testament, Hebrews 11:7; 1 Peter 3:20; and 2 Peter 2:5, likewise declare that the Flood was global, resulting in the destruction of all mankind except for the eight people in the ark.

There is a fourth truth which also needs to be remembered. That is, what is seen in the Grand Canyon and in the rest of the world is a result of God's judgment of a sinful world. Nothing around us is the world as God originally made it. Whether geological or biological, all aspects of it have been marred by a real, historical curse on all creation (Genesis 3, Romans 8:19-22).

Uniformitarian/evolutionary interpretations of the Grand Canyon, specifically its geology, require adding to or ignoring the Word of God, which we are warned against in Deuteronomy 4:2. It reads: *"You shall not add to the Word which I am commanding you..."*

These interpretations are compromised positions – compromises made in an attempt to add man's fallible ideas (specifically those of millions of years of evolutionary theory) into what God has told us in His Word. It is important to remember that evolution is a religious belief system that must be accepted by faith, just as a biblical belief is also accepted by faith.

Redwall Cavern

Worldview Expectation Table		
If the earth were the result of processes acting over a long period of time, versus the result of a supernatural creation and a worldwide flood, the following would be expected:	**Evolution**	**Creation**
	long period of time	recent supernatural creation
The worldwide geologic record would:	show abundant evidence for slow, gradual process	show evidence of rapid catastrophic process
The fossil record would:	reveal abundant transitional life forms	lack transitional life forms
Biological systems would:	become more complex with time	be created complex and fully functional initially
Geologic features would be:	local in nature	large-scale in nature

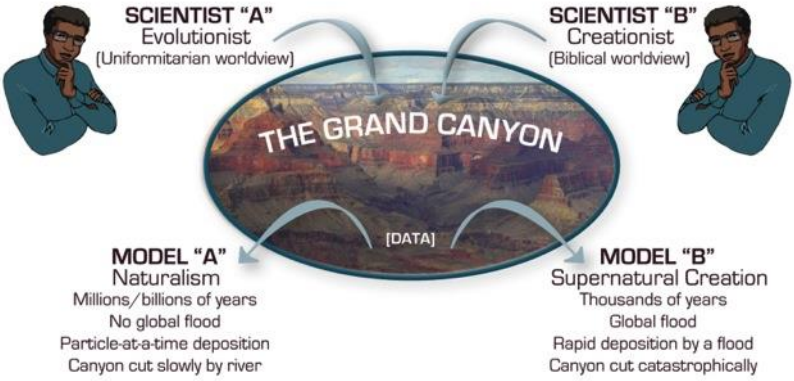
The table above is a comparison of two different worldviews you might expect to encounter in trying to understand the world around you. As you review the table, consider what the physical evidence actually shows and how it might be interpreted.

If the millions of years model is correct, one should expect to find the supporting evidence all around us in the world today. You would not expect to find geologic formations of continental proportions, but rather relatively small formations created by local or regional events. The slow gradual uniformitarian process should be evident everywhere in the geologic record. The fossil record should contain abundant evidence of the transitions from the body plan of one kind (genus or family) to the next, and biological systems should show a steady progression of simple to complex life forms.

So why is the geology of the Grand Canyon often in the center of the creation/evolution (uniformitarian) debate? It is because geology is the foundation of evolution. Without millions of years in the geological record, the entire evolutionary model falls apart.

But adding millions of years to the Bible undermines the authority of the Word of God. If the accounts in Genesis, which are foundational to the entire Bible, are not true, then why should we believe the rest? Without millions of years, man is then forced to consider a Creator, a Creator to whom he just may be accountable, a Creator who tells us in Psalm 19, *"The heavens are telling the glory of God; and the firmament proclaims His handiwork."*

Remember both groups, evolutionists and creationists, look at the same data as they travel the Canyon, only from a different perspective or worldview. Each person looks at the Canyon with some preconceived idea of how it was formed. It is these preconceived ideas that are foundational to the way one views the world in which we live.



Take the simple model above of how a scientist interprets data based on his worldview. Note that both scientists start with preconceived ideas (their worldview) as they interpret the data. These ideas drastically affect the outcomes of their analyses.

If you come to the Grand Canyon with the preconceived ideas that it took millions of years to lay down the thousands of vertical feet of sedimentary rock layers and that the Colorado River later carved the canyon, that is what you will see. But do those who have studied the Canyon have the answers to the Canyon's formation? Here is what evolutionary geologist Wayne Ranney said in his 2005 book on the canyon titled *Carving Grand Canyon*:

> "This [Grand] canyon is one of our planet's most sublime and spectacular landscapes, yet to this day it defies complete understanding of how it came to be. It is visited by millions of people a year and not one of them knows precisely how or when it formed. The canyon's birth is shrouded in hazy mystery, cloaked in intrigue, and filled with enigmatic puzzles. And although the Grand Canyon is one of the world's most recognizable landscapes, it is remarkable how little is known about the details of its origin."

Since the one and only true history book, the Bible, does not mention the Grand Canyon, all one can truly do is theorize based on the evidence seen and examined. Does the information in this little booklet, along with all the other creation-based writings on the Grand Canyon, prove the canyon's rock layers are a product of the global Flood of Noah's day? No. But it will show that the uniformitarian/evolutionary model has some very serious flaws, and that the creation model, based on real observational science, provides very plausible answers to the formation of the Grand Canyon.

Few will look at the evidence found in the Grand Canyon with a critical mind. I challenge you to do just that. 1 Thessalonians 5:21 says: "*But examine everything carefully; hold fast to that which is good."* So when you consider the Grand Canyon, I hope you will examine what you see and hear, and that you will do so from a biblical perspective.

MILLIONS OF YEARS

Not too many decades before John Wesley Powell explored the Grand Canyon for the first time in 1869, the dominant view in the Christian world of Europe and America was that God created the world in six 24-hour days about 4,000 BC. According to this view, the earth was subsequently judged with a global catastrophic flood about 1,600 years later during the time of Noah. In the late 18th century, different histories of the earth began to be developed and popularized, most of which were naturalistic in character. These theories sought to explain the origin and history of the earth by appealing only to time (millions of years), chance, and the laws of nature working on matter. God was denied, or at least His Word was ignored, in the process of studying the rocks and constructing these new theories of earth history.

Much of the church quickly accepted one of these old-earth views and tried to fit the millions of years into the Bible. As a result, the gap theory, day-age view, and local flood view became popular in the church. Some even said that Genesis 1-11 is mythology. But the old-earth geological theories and the various Christian compromises were opposed by a number of writers who became known as "scriptural geologists." These scientists and non-scientists raised biblical, philosophical, and geological objections to old-earth theories and defended Genesis 1-11 as the true history of the early period of the creation. The scriptural geologists were not opposed to geological facts or to geology as a science, but to the old-earth interpretations of those facts, which they argued were based on anti-biblical philosophical assumptions and faulty logic.

Charles Lyell (1797-1875) is the best known of these early old-earth theorists who rejected the history revealed in Scripture and operated with the assumptions of philosophical naturalism in his interpretation of the geological evidence. Trained in law at Oxford, Lyell theorized the earth should be explained by gradual processes of erosion, sedimentation, and deformation operating over millions of years at essentially the same rate and power observed today. His uniformitarian assumptions became the ruling dogma in geology, which still controls geological thinking to a large degree. But it is important to note that he was a deist or Unitarian, and not an objective, unbiased observer of the physical evidence, as evolutionists often lead us to believe. His worldview greatly affected his interpretation of the rocks.

So the Genesis/geology debate was, and still is, a conflict of worldviews. The scriptural geologists of today (young-earth creationists) believe there is strong evidence in the Grand Canyon confirming the truth of Genesis. Many use the Canyon as "Exhibit A" in their defense of the authority of Scripture against various anti-biblical worldviews.

THE FLOOD

The Flood is often thought to be a relatively tranquil event resulting from 40 days and nights of rain, while some scholars relegate the extent of the Flood to a "local" event in the Mesopotamian region. But a closer look at Scripture deflates both of these thoughts very quickly.

Genesis 7:19 tells us *"…all the high mountains everywhere under the heavens were covered."* This verse alone speaks to a global event, as does the geologic evidence we see in the Grand Canyon. Continental size geologic formations require a global event (see page 14).

Scripture also gives us a more detailed history of the Flood. Genesis 7:11-12 tells us that the initial rain lasted for 40 days and 40 nights as the "…*floodgates of the sky were opened*." It also tells us in verse 24 that *"The water prevailed upon the earth one hundred and fifty days,"* before receding off the earth as described in chapter 8. In 8:2-3 the text tells us the rain and the fountains of the deep ceased on the 150th day. The 40 days refers to when *"…the ark floated on the surface of the water"* (Genesis 7:18).

Rain was only a fraction of the water causing the Flood, as Genesis 7:11 tells us *"…all the fountains of the great deep burst open."* These "fountains," many creation geologists believe, erupted from the zipper-like rifts which opened up catastrophically in the ocean basins and across the pre-Flood supercontinent. The idea of catastrophic plate tectonics suggests that these rifts would have separated the continents very quickly, i.e. in a matter of weeks – not millions of years.

As the Flood covered *all the high mountains*, the tectonic upheavals produced tsunamis destroying the pre-Flood landscape. As the waters flowed over the mountains they were no longer held back by the continents. Today the tides are created by the moon, but are controlled by the land. Water "sloshes" back and forth in the ocean basins like a big bathtub. But once the land was covered by a global ocean, the tidal currents circled the earth unchecked. Dr. Larry Vardiman at the Institute for Creation Research has estimated these currents would have reached speeds in excess of 100 miles per hour. Consider the erosive power of water moving 100 miles per hour!

Additionally, the submerged continents would have caused the waters to swell up over the mountains with some of the water surging in the opposite direction. This was far from a calm placid sea where a little bathtub ark could have floated around with the giraffe sticking his head out the top and the monkey hanging from the side.

The Flood was a global catastrophic event that radically reshaped the world in which we live. And the ark was a massive well-engineered ship, as described in Genesis 6:14-16. The ark was so well designed that shipbuilders today still use the same basic ratios in designing ocean-going vessels.

Everything we see today has been reworked by a catastrophic global Flood brought on by a loving God who rightfully judged a sin-ridden world.

GEOLOGY

Visitors to the Canyon, or those who read the prevailing interpretive literature about it, will find the views presented are predominantly based on evolutionary theories. These theories tend to deny God's involvement and often His very existence.

But if one looks at the Canyon from a biblical perspective or worldview, a very different conclusion becomes apparent. Before geology can be properly understood, one needs to know the earth's history. Unlike secular geologists, creationist geologists don't need to speculate about history because they accept the accounts of past events preserved in a reliable written record – the Bible.

Although the Bible is not a "geology" book, it allows one to understand the big geological picture when considering the geological data. For each historical event, one simply asks, "How would this have affected the geology of the earth and what should one look for today for confirmation?"

From such a study, one concludes that most rocks seen on earth today would have been formed during two very short periods of time. The first was the six-day creation week, about 6,000 years ago according to genealogies of the Bible, when the entire planet was literally spoken into existence. The second was the one-year Flood when the planet was totally reworked (see prior page). By comparison, not much happened geologically in the period between creation and the Flood, or in the period since.

A Biblical Model

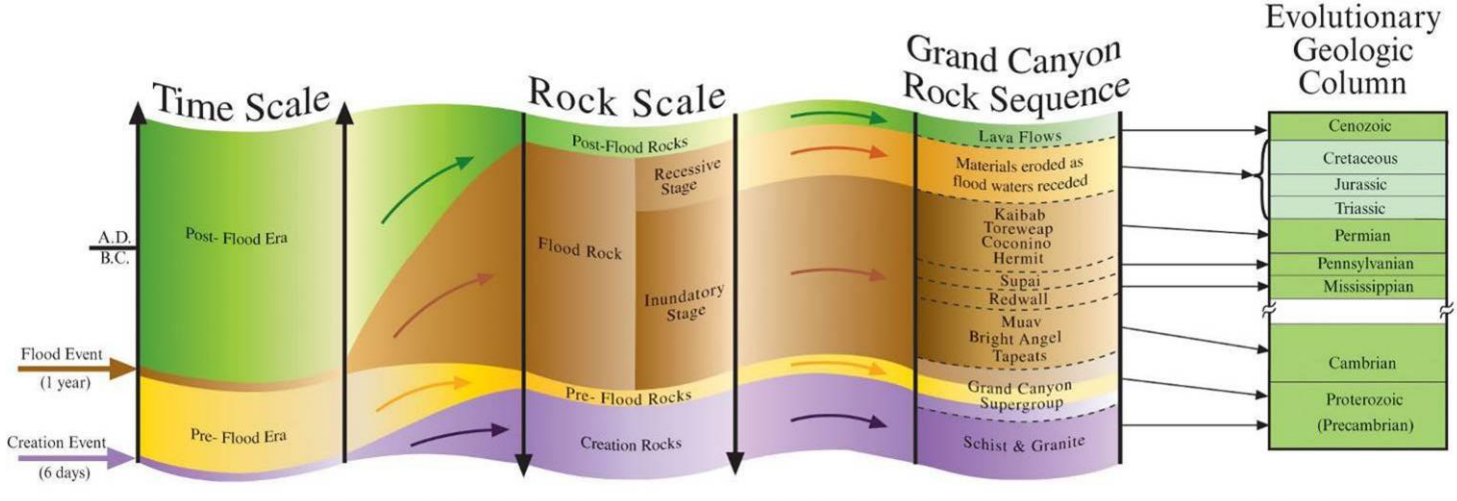
A simplified biblical geological model is illustrated in Figure 1 (page 8). The biblical timeline on the left indicates the most recent time at the top and the earliest at the bottom. The time scale is divided into four parts: the Creation Event, the Pre-Flood Era, the Flood Event, and the Post-Flood Era.

To illustrate how geological process rates varied in the past, another scale is placed alongside the time scale. This is the rock scale (center), with the most recently formed rocks at the top, and the earliest at the bottom (as they occur in the earth). The height of each of the different parts of the rock scale represents the quantity of rock material found on the earth today, and the time scale shows when those rocks would have been created. The major rock layers found in the Grand Canyon are shown on the right, indicating when they were likely formed.

To the far right is a simplified evolutionary geologic column for the Grand Canyon. The arrows show where the layers of the Grand Canyon are generally assigned in that model.

The Bible should be the foundation of our worldview in every area.

Biblical Geologic Time and Rock Scale



Note: The placement of the beginning and end of the Flood at an exact level within the Grand Canyon is debatable. Most creation scientists place the Flood's commencement early within, or at the base of the Grand Canyon Supergroup. The simplified geologic column is shown for reference and is not to scale. Also, the Temple Butte, which sits between the Redwall and the Muav Limestones, is not shown in the diagram as it is not present through the entire Canyon.

Figure 1

For the model to have practical application, the broad framework must be expanded with specific details of the events and processes and their time relationships. This is not difficult. The Flood event, for example, can be divided into two stages: an inundation stage with the floodwaters rising onto the land, and a recession stage with the waters flowing off the land.

Within this geological framework, one can interpret the rocks in the field. Every rock on earth today must fit somewhere in the diagram, because the rock scale covers the entire history of the earth.

So, with this simple model and a little reasoning, one concludes that most of the horizontal layers were deposited in the inundation stage of the Flood while the waters were advancing. The same reasoning can be used with the other parts of the Canyon, such as the schist and granites at the bottom (Creation), the erosion surfaces between the inundation and recession stages, the carving of the Canyon itself (Flood recession and/or post-Flood), and the lava flows (post-Flood). Biblical geology is the key to understanding the rocks.

In contrast, the uniformitarian model of the Canyon's formation imagines that the rock layers were deposited slowly, a particle at a time, over literally hundreds of millions of years and that the Canyon was later carved slowly by the Colorado River.

Figures 2 and 3 show a block diagram of the portion of the geologic column that is seen in the Canyon. The diagram is useful in understanding the sequence of the layers and the type of rocks that make up the Canyon formations. The basement formations are made up mostly of schists and granites, with the tilted sedimentary layers (probably pre-Flood) above them, overlaid by the first horizontal (Flood) deposit. In the evolutionary model, there are from 5 to 100 million years missing between many of these layers. Part of the "standard" geologic column representing 100 million years is missing from the middle of the Canyon formations (see figure 3).

The contact point at the bottom of the first horizontal sedimentary layer (Tapeats Sandstone) is called the Great Unconformity. When evolutionists look at this contact, they imagine anywhere from 0.2 to 1.2 billion years of missing time and material. Creationists, using a biblical worldview, which includes the global Flood of Noah's day, don't see any evidence that material and time are "missing." They see classic flood geology, only on a scale so large that it boggles the minds of the evolutionists.

Figure 3 also shows a cross-section of the Grand Canyon placed next to the Biblical Geologic Time and Rock Scale model. It shows that the horizontal layers, which make up the vast majority of the Canyon and much of the rest of the world for that matter, were laid down as a result of the Flood. The underlying (basement) rocks are a combination of original creation rock and pre-Flood sedimentary layers. (Note that not all creation scientists agree on where the boundary lies between the Flood and pre-Flood sediments.)

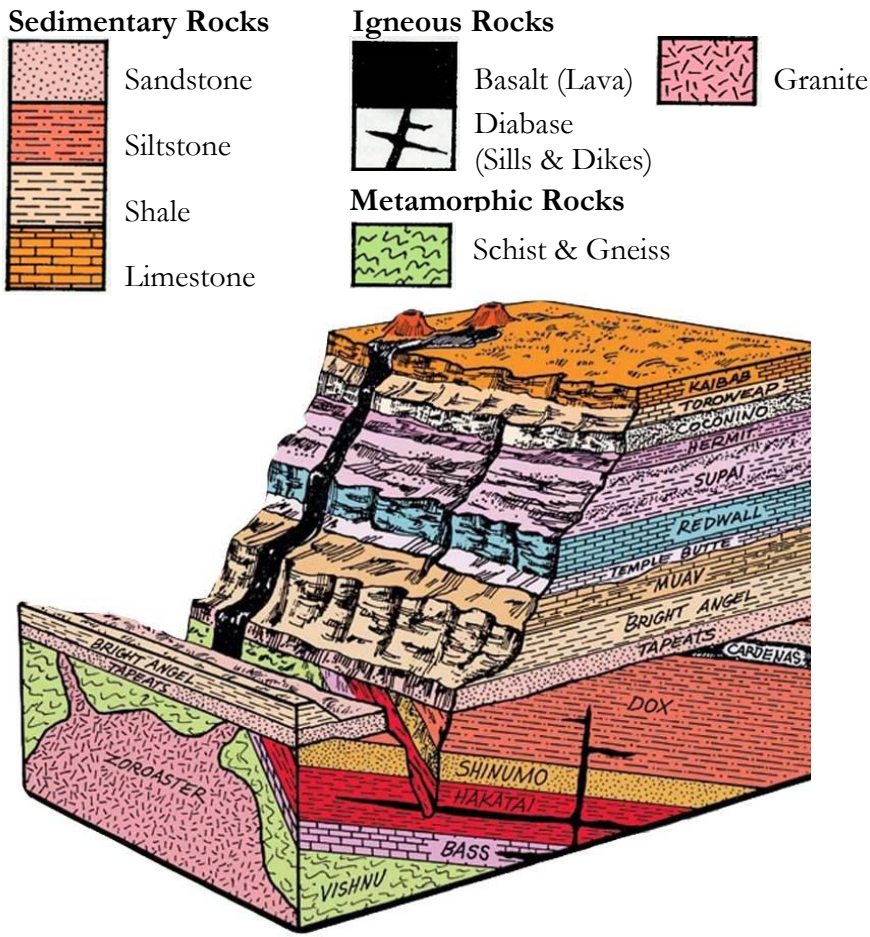


Figure 2

It is significant that what is seen in the Grand Canyon does not represent all the Flood deposits initially laid down in the area. Figure 4 shows a cross-section of the Colorado Plateau between the Grand Canyon and Bryce Canyon to the north. Note that at the Grand Canyon, several thousand feet of material is "missing" (eroded) from the top of the Canyon formations (see Figure 3). But remnants of these are found in areas south of the Canyon, such as Red Butte and the base of the San Francisco Peaks near Flagstaff, Arizona.

Question: Where is the one undisputed place on earth where the entire geologic column can be found intact?

Answer: That place is only an illustration in textbooks!

A Simplified Biblical Flood Model

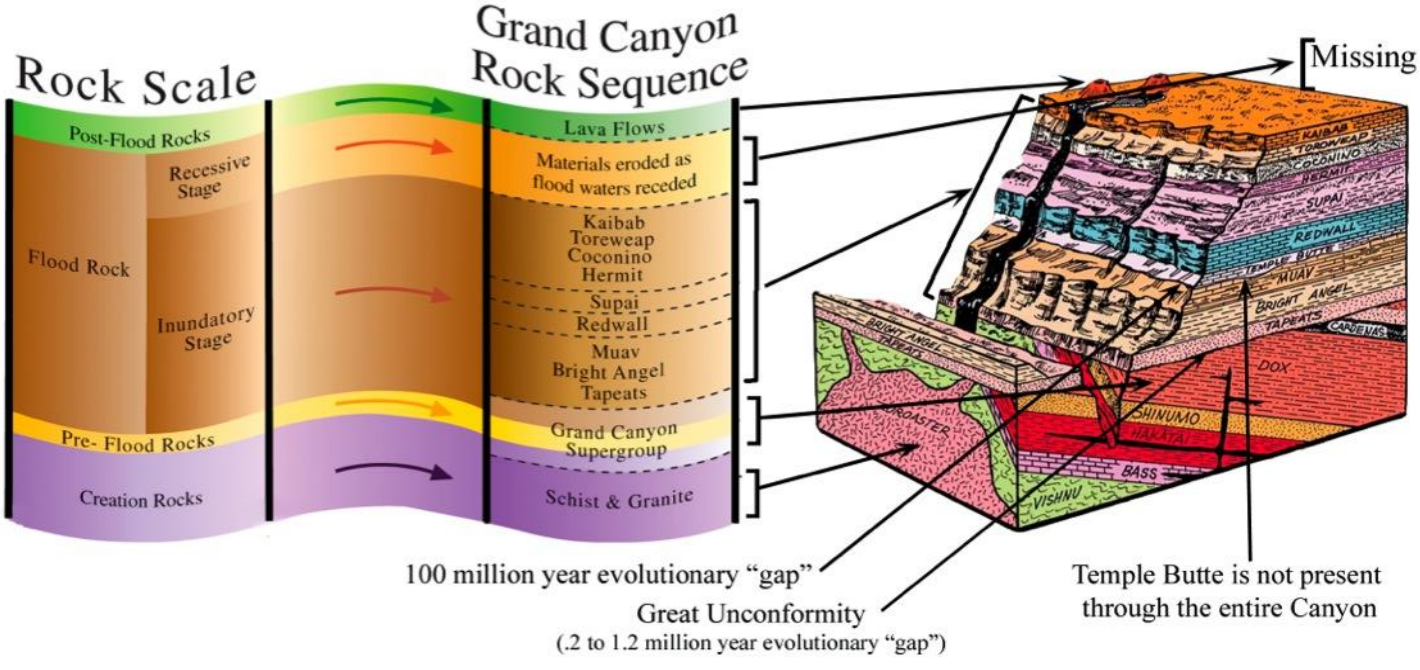


Figure 3

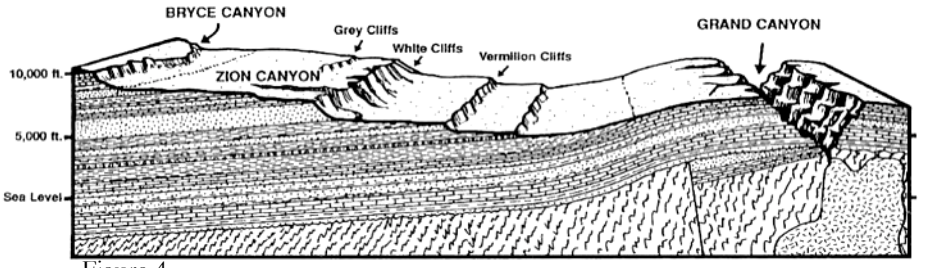


Figure 4

Those layers were eroded away as the Flood receded from the land. Also, note the amount of uplifting that has taken place, "pushing up" the area around the Canyon (figure 4). This uplifting caused a bending of the layers, called a monocline, along the edge of the uplifted area. At its deepest point, the Canyon's North Rim is about 1,000 feet higher than the South Rim.

The Canyon's Formation*

Not everyone agrees on how the Canyon was formed. Its origin has plagued geologists since the time of John Wesley Powell's first voyage down the Colorado River in 1869. Despite an increase in knowledge about its geology, evolutionary geologists have still not been able to explain the Canyon. But creationists do not have a unified view of its formation either. Remember, no one was there to witness this event and thus one should not be too dogmatic on exactly how the Canyon was formed.

Perhaps the most baffling observation is that the Grand Canyon cuts through, not around, a great up-lifted plateau (see figure 5). This is just one of several pieces of evidence, some of which are discussed in the following sections, which suggest the Grand Canyon is a recent or "young" canyon. When considered individually, these are significant challenges to the uniformitarian model; when taken as a whole, they become catastrophic.

A Biblical Perspective

Psalm 104:8 tells us that at the end of the Flood, the mountains rose and the valleys sank down, causing the waters to drain off the continents back into new ocean basins. As the Flood receded, some water would have become trapped behind natural dams, creating large lakes north and east of what is now the Grand Canyon.

As the floodwaters continued to recede, the sheet erosion across the rising Colorado Plateau would have diminished and the water would have started to channelize. This channelization would have then cut the initial path of the canyon into the plateau (see figure 5).

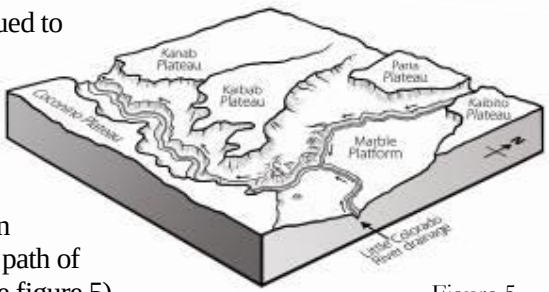


Figure 5

The warming of the oceans by the opening of the "fountains of the great deep" during the Flood would also have resulted in increased rainfall after the Flood. Storms potentially dumped as much as 100 inches of rain at a time in the area just north of the Canyon. This rainfall would have been a powerful erosional force of its own.

The Kaibab Plateau now stands some 3,000 feet above the adjacent Marble Platform, both part of the Colorado Plateau through which the Grand Canyon is carved. But the lack of erosional cliffs on the north and eastern sides of the Kaibab Plateau suggests that the southern end of the plateau continued to be uplifted after the rest of the region had stabilized. If this uplifting occurred just prior to, or even during, the channelization phase of the receding Floodwaters, it would account for this lack of cliffs.

Whether it happened as the Flood year ended, or soon thereafter, the lakes would have soon breached their dams, washing over the plateau and exploiting any channels already there, rapidly carving through the plateau, resulting in a deep canyon very similar to what we see today (see figure 5).

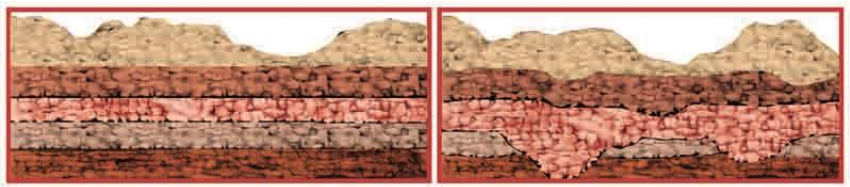
*Summarized from *The New Answers Book 3*, see resources, page 20

The Geologic Evidence

What is some of the evidence found at the Grand Canyon and nearby geological formations? The following sections present an explanation of some of these evidences from a biblical perspective.

Sedimentary Layers: When the evolutionists look at the contact between the sedimentary layers, they see 5 to 100 million years of "missing" time and material. For example, the contact between the Coconino Sandstone and the Hermit Shale (pictured right) is viewed as representing a 5 to 10 million year gap. If this represents millions of years of missing time and material, why aren't there any signs of either physical or chemical erosion?

The sketch below illustrates the problem. The box on the left shows how the layers actually appear – like a stack of pancakes with an uneven top. The sketch on the right presents what would be expected, if significant time had elapsed between the deposition of one layer and the next – more like lasagna after it is cooked; the layers are there, but almost indistinguishable.



Layers as they are.

Layers as they should be, if millions of years were true.

Dating Sedimentary Layers: Let's look at how evolutionists date the sedimentary layers and the fossils found in them. A sedimentary layer is dated by its position relative to other layers and by looking at the fossils found in that layer. Once specific fossils called "index fossils" are identified, all evolutionists have to do is determine the age of the fossil.

The way that is done is by looking at how old the layer is in which the fossil was found. So, evolutionists date fossils by the layer in which they are found, but the layer is dated by the fossils found in it! Isn't there a bit of circular reasoning in this process?

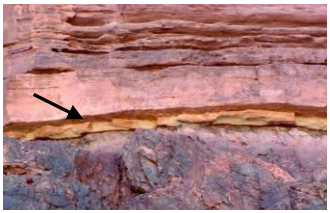
Extent of the Layers: The pancake-like layers of the Grand Canyon are widespread and can be traced for hundreds, and in some cases, thousands, of miles underneath the surface of the continent. The Tapeats Sandstone stretches from Mexico to eastern Canada and also north through the Arctic Circle (pictured right). Like many of the huge layers of the Grand Canyon, it has been labeled with different names. The different names were assigned locally when these layers were first discovered, before they were understood to be the same formation.

Evolutionary explanations for the formation of the Grand Canyon layers are based on the kind of processes we see happening around us today (uniformitarianism). But continent-sized deposition implies continent-wide geologic processes. The enormous horizontal extent of the layers testifies to the catastrophic processes expected in a global flood.

Folding: Sedimentary layers are often found bent, or as the geologist would say – folded. Folding of the Bright Angel Shale, one of the most brittle layers in the Canyon, is clearly seen in the picture to the left. Notice that the folding has taken place without cracking the rock**.** There are several places in the Canyon where sediment layers are found that have been folded while still soft. Folded

rocks like these show that the folding had to happen soon after deposition, indicating that the deposition and the upheaval responsible for the folding were, in fact, subsequent parts of the one event.

Another fold, about 30 feet in height (pictured right), crosses the boundary between two layers, two members of the Muav Formation. The uniformitarian interpretation places a time gap of over 400 million years between their deposition and folding. Yet this fold is a smooth bend, again indicating both layers were pliable at the time of folding.



The Great Unconformity: The contact line between the first horizontal sedimentary layer laid down by the Flood and the underlying formations is called the Great Unconformity (arrow points to the contact line). The underlying formations are made up of the basement rocks, mostly of dark-colored schists and pinkish granites, and the pre-Flood sedimentary layers (see Figure 2, page 10).

The Great Unconformity shows the nearly flat erosion surface of the underlying formations, which theoretically represents anywhere from 0.2 to 1.2 billion years of missing time and material, according to the standard uniformitarian interpretation. This hard surface appears to have been smoothed by a continental-scale flow of water, as would be expected in a global flood.

Fossils: The fossils found in the rock layers are remnants of the plants and animals that perished in the Flood. To create a fossil (like the crinoid seen at right), it must be buried catastrophically.

An evolutionary interpretation of the fossil record requires millions of years. But adding millions of years to the Bible requires death before sin … and not only death, but pain, disease, suffering, and extinction. The fossil record contains evidence of all of these, including a brain tumor found in a dinosaur. Is that the kind of world the Lord would have described as "very good?"

If plants and animals evolved slowly over time, why aren't intermediate forms of life found in the fossil record? They're not there! What is found are complex, fully developed, fully functional creatures right from their very first appearance, which only show variation within kinds, not between kinds.

Fossil Tracks: Fossilized animal trackways (footprints pictured right) are found in the Supai Group and the Coconino Sandstone layers of the Grand Canyon. These tracks provide another important clue. Tracks mean the animals were alive, so the strata must have been deposited before all air-breathing creatures perished, or before the world was completely covered with water.

A uniformitarian interpretation of these tracks says they were laid down on dry sand dunes. But careful observations and laboratory research shows they were more likely made in an underwater environment.

Nautiloids: It is not just the fossils themselves that provide evidence supporting the Flood model, but how the fossils were deposited. For example, the enormous quantities of fossilized nautiloids entombed near the base of the 500-foot thick Redwall Limestone provide strong evidence that the extensive Redwall was not deposited in a placid sea, but in a catastrophic event, such as the Flood.

Nautiloids (above) had a conical-shaped shell and were related to the current-day squid and octopus. They averaged about 18 inches in length, but reached as much as five feet.

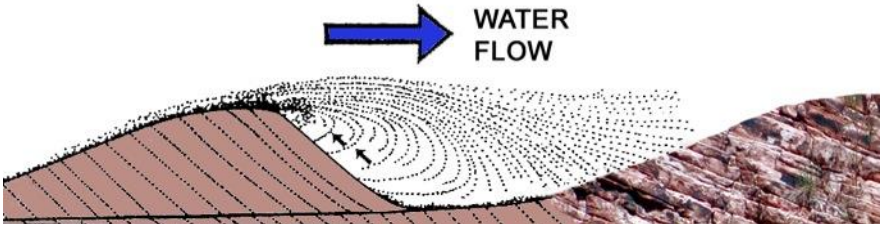
Near the base of the Redwall Limestone formation is a seven-foot thick layer containing, based on the frequency of exposed fossils, billions of fossilized nautiloids. This layer persists throughout most of the Grand Canyon region, northern Arizona, and southern Nevada, occupying an area of as much as 5,700 square miles.

How could this enormous fossil bed be restricted to just seven feet in thickness if, as the uniformitarian interpretation suggests, the Redwall Limestone Formation was laid down a particle at a time over millions of years? The nautiloid bed fits simply, and much better, into a catastrophic biblical Flood interpretation.

Cross-bedding: The cross-bedding found in the sandstones of the Grand Canyon shows additional evidence of flood deposits. Cross-bedding is seen as small parallel sloping beds of sand, formed as the layers were deposited. As shown in the simplified diagram, the layers were laid down perpendicular

to the flow and on the "front face" of the dune being formed, and match with what is really seen.

The angle of cross-beds is different in wind-formed dunes (34° max.) compared to water-formed dunes (25° max.). This fact has led even some uniformitarian scientists to conclude that the Coconino Sandstone is better explained as a marine, not a desert, deposit. The cross-bedded Coconino Sandstone exposed in the Grand Canyon continues across Arizona and New Mexico into Texas, Oklahoma, Colorado, and Kansas. It covers more than 200,000 square miles and has an estimated volume of 10,000 cubic miles.



Theoretical Actual Sandstone

Cross-bedding is clearly seen throughout the Canyon. The "layers" of cross-bedding also show the direction of flow when deposited. The cross-beds dip toward the south and indicate the sand came from the north. When one looks for a possible source for this sand, none is readily apparent. A very distant source seems to be required.

Lack of Rockfall: The Grand Canyon is made up of a network of canyons and amphitheaters (U-shaped canyons, pictured at left), which all feed into the main Canyon. As you view these canyons, one of the first things noticed are the very high cliffs. But what is not seen is the massive amount of rock that had to have collapsed when the cliffs were formed. If formed over millions of years of time, massive amounts of rock at the base of at least most of the cliffs would be expected. However, there is a conspicuous lack of rockfall debris throughout the Canyon. The recent and catastrophic carving of the Canyon is the key to this lack of material.

Note in the picture above the lack of debris on the slope at the base of the cliff. In a millions-of-years model, there is no mechanism for the subsequent removal of the material. But, if there were catastrophic processes involved in the formation of this landscape, then a rapid flow of water would be the mechanism required for the removal of that debris.

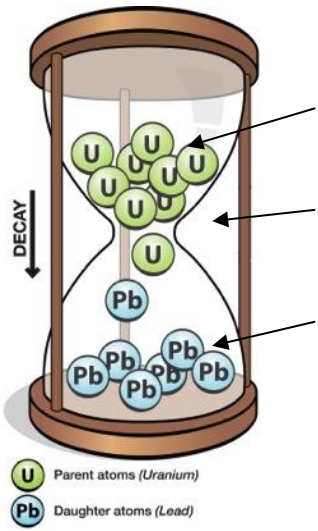
WHAT THE RESEARCH SHOWS

A great deal of scientific research by both evolutionists and creationists has been performed in and around the Grand Canyon trying to "prove" its age and how it was formed. But again, since the only One who was there has not told us about the Grand Canyon, one can only theorize based on the evidence found. That evidence is then interpreted, based on one's worldview, to come to a conclusion. The following are some examples of how current research, done by real scientists and interpreted from a biblical perspective, can show how the age and formation of the Grand Canyon fit well within the biblical Flood interpretation.

Radioisotope Dating: Does radioisotope dating prove the rocks in the Grand Canyon are millions of years old? Geologists use various dating methods to determine the ages of rocks. Evolutionists use radioactive dating methods (other than carbon-14, which is discussed below) on rocks and minerals to determine the theoretical ages of millions and even billions of years.

Radioisotope dating is only useful in igneous and metamorphic rocks, the basement rocks found in the Canyon, and is based on the radioactive decay of a parent element to its daughter element. There are several different elements used for these methods, but the details of how it is accomplished are beyond the scope of this booklet. However, there are some crucial assumptions made in these dating methods.

When scientists date rocks, they don't actually observe the atoms changing. They measure the products of the change, which they assume took place in the past. But what if they are wrong about their assumptions? Using the hourglass diagram below, consider how the assumptions affect the results in the analysis of the decay of Uranium into Lead



Assumptions

First: the original quantities of the radioactive elements (Uranium) in the rock, and their decay products (Lead), are accurately *known*.

Second: the radioactive decay rate has been *constant* at today's measured rate since the rock formed.

Third: *only* radioactive decay has altered the quantities of the radioactive elements and their decay products since the rock formed. In other words, there has been no removal or addition of these elements by ground waters or other alteration processes.

Even though these assumptions are unproven and unprovable, they are commonly accepted as correct because they give evolutionary geologists the desired results. Indeed, because these assumed "definitive dates" are published as fact, many people are convinced. But what if even *one* of these foundational assumptions is wrong? Would that not invalidate the dates?

It should also be noted that different methods using the same rock commonly produce very inconsistent results. For example, the Vishnu Schist found in the lowest sections of the canyon has been dated from 0.7 to 1.7 billion years old by various methods. Also, the Cardenas Basalt lavas found deep within the eastern Grand Canyon are claimed to be 1,070 million years old based on rubidium-strontium dating. However, the same basalt has also been dated using potassium-argon, yielding an age of only 516 million years, less than half the rubidium-strontium calculation.

Seldom do you see the lower numbers quoted in evolutionary publications because it is generally explained away as an anomaly. How "scientific" is a dating method with a 40 to 50% margin of error?

These inconsistencies show these methods are definitely not providing reliable dates. Contrary to a widely held belief, radioactive dating has *not* proven the rocks of the Grand Canyon are millions of years old.

Carbon 14 Dating: Carbon-14 (C-14) dating is not directly related to the canyon, but is discussed here because it is commonly thought to be used to date rocks. That is not true. C-14 is generally only used to date organic matter that came from a former living plant or animal (such as charcoal, cloth, leather, papyrus). Additionally, due to its short half-life (5,730 years), C-14's usefulness is, in uniformitarian terms, limited to 70,000 years or less.

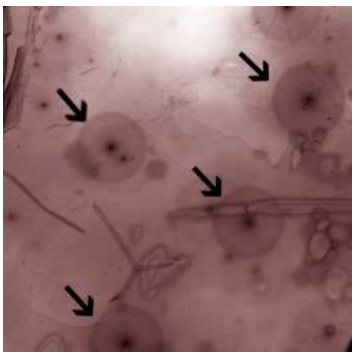
Research shows that C-14 is present in material representing fossilized life throughout the entire geological record! The existence of measurable C-14 levels in all sorts of organic samples that should be devoid of C-14, according to the widely accepted geologic time scale, is abundantly documented in the standard radiocarbon literature. Using the standard C-14 dating assumptions, these analyses seem to require the origin of life on earth to be no older than about 70,000 years. When one takes into account the massive changes a global flood would have caused to the biosphere, the time scale implied by the data collapses to approximately 5,000 years, which is very consistent with the biblical Flood model.

For example, archeologists accredit man's first use of the canyon to the Desert Culture about 500 BC. One of the main evidences of these people is the split-twig figurines found in the canyon (right). It is through C-14 dating of the twigs used to make these figurines that the 500 BC date is obtained, which biblically relates to sometime well after the separation of people from the Tower of Babel.

Basalt: When a certain type of lava cools, it becomes basalt. There are several places where basalt is found in the canyon, including layers of basalt found deep within the sedimentary layers (i.e., the Cardenas Basalt mentioned above) and flows that have come over the rim, some of which have dammed the river.

The significance of the basalt is found in the dating of these rocks. The basalt shown in the picture above (black rock in the middle) flowed over the canyon's rim and is therefore obviously younger than the layers it covers. The Cardenas Basalt is found between two layers very deep in the sedimentary sequence. The rubidium-strontium dating of these two basalts provide dates which are essentially the same, even though the uniformitarian interpretation would have them more than a billion years apart in age. This again shows the dates provided as a result of radioisotope dating are *not* supplying meaningful results.

Radiohalos: Radiohalos are minute spherical zones of discoloration (about 1/3 the thickness of a human hair) formed around microscopic bits of radioactive minerals in rock crystals. They are fossil evidence of radioactive decay. Radiohalos are formed as a result of the subatomic particles produced by radioactive decay penetrating the surrounding host minerals damaging the crystals (pictured at left). Because the subatomic particles emitted by the different elements have different energies, they travel different distances. Where the particles stop, they do the most damage, resulting in a sphere of discoloration, and it is then possible to identify which elements were responsible for producing the observed radiohalos.



"Squashed" polonium-210 radiohalos indicate the upper formations of the Colorado Plateau were deposited within months of one another, not hundreds of millions of years apart as required by the evolutionary time scale. The analysis of "orphan" polonium-218 radiohalos, having no evidence of their mother elements, alongside uranium radiohalos which would have formed at the same time, provide evidence for accelerated nuclear decay and very rapid formation of associated minerals. Therefore, the research of radiohalos has raised a significant challenge to the conventional dating methods as discussed above.

CONCLUSION

Does any of this "prove" the Grand Canyon is the result of a global flood or how it was formed? No! It does show, however, there is a legitimate, scientific alternative to the evolutionary dogma that has permeated our society and is taught, by most, as fact in Grand Canyon National Park.

The Grand Canyon is often called "Exhibit A" in support of a young earth. But why did the Lord create this magnificent place? The Bible tells us in Romans 1:20:

> "*For since the creation of the world His invisible attributes, His eternal power and divine nature, have been clearly seen, being understood through what has been made, so that they are without excuse.*"

And the Grand Canyon confirms that. What we see in the canyon supports and upholds what we read in the Word of God. It reveals God's power, holiness and justice in the rock layers and fossils, as well as His creativity, intelligence, wisdom, and love of beauty in the living plants and animals. And only from down in the canyon can so much of it be seen. Might the Grand Canyon provide skeptics with evidence that may be "clearly seen," if only they are willing to see it?

A Biblical Perspective

In Scripture we learn that in six literal days God supernaturally created a "very good" creation where there would have been no death, disease, extinction, catastrophes, or sin. But Adam and Eve rebelled against the commandment of God which brought His judgment on the whole creation, so that it is now in bondage to futility and corruption awaiting the final redemptive work of Jesus Christ to be completed at His second coming (Rom 8:18-25).

Jesus and the apostles gave plenty of evidence they took the account of Noah's Flood as literal history of a global catastrophic judgment, one that serves as a warning of the judgment to come. Also, God's rainbow covenant in Genesis is additional support of the Flood being a global event.

But when you look at the old-earth evolutionary view, there never was a "very good," fully functional creation without death and other natural evils. There never was a Fall or a global Flood. Sin is a myth and Jesus is not the Redeemer who is coming again. And this universe is headed toward a "big crunch" followed by another big bang or some other naturalistic ending. This view totally contradicts what the Bible teaches.

Thus, some questions follow. Why is it that so many Christians doubt the physical evidence for a global Flood, as we see so impressively in the Grand Canyon, but they unquestionably accept the virgin birth and

resurrection of Jesus Christ, for which we have no lasting physical evidence? The virgin birth and resurrection are even more miraculous than the Flood.

The Bible clearly describes all three events as literal, historical facts, yet the majority of scientists reject them as myths just like they reject the Flood. Their naturalistic theories are an assault on the Word of God. So why do so many Christians reject what the scientific majority says about the virgin birth and resurrection, but accept what that same scientific majority says about the Flood? Isn't that inconsistent? Doesn't it undermine the reliability and authority of the Word of God?

Could it be that this is one of the wedges Satan uses not only to keep the non-believer from the saving knowledge of Christ, but also to split and splinter the body of Christ as well?

Whatever the case, it is important to remember that belief in the Flood and a young earth is ***not*** essential for salvation, which we are told in Scripture is received solely by faith in Jesus Christ as Savior and Lord. The gates to heaven will not be closed to true Christians who believe in millions of years.

To be sure, the virgin birth and resurrection of Jesus are essential to the gospel, whereas the Flood is not. However, the Flood and the age of the earth are important. Why? Because adding millions of years to the Bible undermines the authority of the Word of God, the book that reveals the truth about Jesus and the truth about the origin and early history of creation. If we can't believe the accounts of Genesis, which are foundational to the entire Bible and which Jesus and the apostles took as literal history, why should we believe the rest of the Bible as truth? If its history is not true, how can we trust its theology and morality?

A Geologic Perspective

In the Grand Canyon area, we observe marine fossils in sedimentary rock layers that often stretch across the majority of the North American continent. How is this possible, unless the ocean waters rose up and also flooded the entire continent?

Or could the continent sink? Absolutely not! The continental rocks are less dense than ocean floor rocks, and both literally float on top of the earth's mantle. It is because of this difference in the densities of the oceanic and continental crusts that the ocean floor is at a lower elevation than the continents.

So, it is just not physically possible for the ocean waters to rise up and flood over and across the continents by means of any process we observe operating today. There had to be a catastrophic upheaval that altered this crustal balance dramatically on a global scale.

Rather than the continents sinking, the evidence shows the ocean floor rose. Due to rifts splitting open, along which catastrophic outpourings of less dense lavas occurred, new warm ocean floors were generated. Since those

lavas were less dense, they rose and pushed up the sea level so that the ocean waters then flooded onto and across the continents.

In a nutshell, the marine fossils buried in Grand Canyon sedimentary rock layers are testimony to the ocean waters sweeping across the continents, transporting sediments and marine creatures with them. Multiple evidences, such as folding while all the layers were still soft and the lack of erosion between the layers, point to the whole Grand Canyon sequence of horizontal fossil-bearing sedimentary layers being deposited in quick succession.

Due to both daily global tidal fluctuations and earthquake-generated tsunamis during the Flood, the ocean waters repeatedly surged across the continents with different sediment loads each time. Then, as the ocean waters progressively rose across the continents, different habitats were inundated. Thus the fossils found in rock layers are a record of the order of their burial.

Bottom Line

So what is the bottom line, or the "bedrock" message of the Grand Canyon? The Grand Canyon truly is an amazing place. And as you examine the canyon, there are really only two choices: it is either a monument to time, or a monument to the Flood.

If it truly is a monument to the Flood, then remember that it is the consequence, not so much of God's creative design, but of the forces He unleashed in divine judgment on sin. So when you contemplate the canyon's awesome beauty, a simplistic "God made this" is really inadequate.

In fact, the world around us is not the world God made, or at least not in the condition He created it in the beginning. Whether geological or biological, all aspects of it have been marred by a real, historical judgment on all the earth – Noah's Flood. This universal change came about because of a real historical rebellion by a real historical man, Adam.

And because of this, God sent His real, historical Son, the Lord Jesus Christ, into the real world of space and time, to bear our sins on the cross.

That's the real take-home message of the Grand Canyon.

So I challenge you, if you have not already done so, to consider the evidence given here with an open mind. Evaluate it carefully, and do so from a biblical perspective.

1 Thessalonians 5:21 says: *"…examine everything carefully; hold fast to that which is good."* So, examine everything carefully, especially those things that are going to be the foundation of how *you* view the world. Compare it with your current beliefs and consider the things God would have you believe. Does your worldview conform to the principles of the world, or to God's Word? Have you taken heed to what the Lord commanded us in Colossians 2:8?

"See to it that no one takes you captive through philosophy and empty deception, according to the tradition of men, according to the elementary principles of the world, rather than according to Christ."

RESOURCES

Internet: The following Internet sites provide information from a biblical perspective in a wide variety of areas.

Answers in Genesis (AiG): www.answersingenesis.org
Canyon Ministries: www.CanyonMinistries.org
Creation Evolution and Science Ministries: www.creationministries.org
Creation Links.org: www.creationism.org
Institute for Creation Research (ICR): www.icr.org

Books: All of the materials listed here were authored from a biblical worldview. They do, however, represent a range of theories within that worldview.

Coming to Grips with Genesis, Mortenson/Ury, Master Books, 2008
Grand Canyon, a Different View, Vail, Master Books, 2003
Grand Canyon, Monument to Catastrophe, S. Austin, ICR, 1994
Earth's Catastrophic Past: Geology, Creation and the Flood, 2 vols., A. Snelling, ICR, 2009
Evolution Exposed: Earth Science/Biology, Patterson, AiG, 2006
Footprints in the Ash, J. Morris/S. Austin, Master Books, 2003
The Battle for the Beginning, MacArthur, Thomas Nelson, 2001
The Genesis Flood, Whitcomb/H. Morris, P&R Publ., 1961
The Genesis Record, H. Morris, Baker Books, 1976
The Geology Book, J. Morris, Master Books, 2000
The Great Turning Point, Mortenson, Master Books, 2004
The Lie: Evolution & Millions of Years, Ham, Master Books, 2012
The NEW Answers Book (1, 2 & 3), Ham (ed.), Master Books, 2006-10
The New Creationism: Building Scientific Theories on a Biblical Foundation. Garner, Evangelical Press, (UK), 2009
The Young Earth, J. Morris, Master Books, rev. ed. 2007
Thousands…Not Billions, D. DeYoung, Master Books, 2005
Your Guide to the Grand Canyon, a Different Perspective, Vail/Oard/Hergenrather/Bokovoy, Master Books, 2008

Videos: These videos may be ordered from the Internet sites listed above.

Grand Canyon, Testimony to the Biblical Account of Earth's History, A. Snelling
Mount St. Helens: Explosive Evidence for Catastrophe (2012), S. Austin
Rock Strata, Fossils, and the Flood, A. Snelling
The Grand Canyon: Monument to the Flood, S. Austin
The Flood, the Big Picture of its Mechanism and Resulting Evidence, A. Snelling
The Origin of Old-Earth Geology and Christian Compromise, I & II, T. Mortenson

ABOUT THE AUTHOR

Tom Vail started guiding trips in the Grand Canyon in 1980 and is the author of *Grand Canyon, a Different View* and co-author of *Your Guide to the Grand Canyon, a Different Perspective,* both of which provide a creationist perspective of the Grand Canyon. Tom and his wife, Paula, live in Phoenix, Arizona, and together founded Canyon Ministries, providing Christ-centered rafting trips through the Grand Canyon. Once an evolutionist, Tom now welcomes opportunities to share the biblical message of the Grand Canyon, both in the canyon and in churches across the country. You can find out more about the ministry at www.CanyonMinistries.org

Canyon Ministries' Scholarship Fund

We invite you to be a part of our ministry. Canyon Ministries provides scholarships for seminary professors, ministry leaders, teachers, and pastors allowing them to experience the wonders of the Grand Canyon firsthand. There they will personally see the geologic evidence, which supports and upholds the Word of God. As a non-profit organization, tax-deductible donations are welcomed in support of this effort.

For more information, contact:

Canyon Ministries
PO Box 307
Flagstaff, AZ 86002
(928) 251-3000

tours@CanyonMinistries.org **www.CanyonMinistries.org**

CREDITS

All photography by Tom Vail, unless otherwise noted below
Inside cover, worldview diagram page 3, erosion diagram page 11, and Tapeats map page 12 from *Your Guide to the Grand Canyon*
Title page courtesy of Arizona River Runners
Figure 1 from *Grand Canyon, a Different View*
Figure 2, 4 and water flow diagram page 15 from *Grand Canyon: Monument to Catastrophe*
Figure 5 from *The New Answer Book 3, When and How Did the Grand Canyon Form?*
Hourglass diagram, page 18, courtesy of Dr. Andrew Snelling
Radiohalos photo, page 20, courtesy of Mark Armitage

GRAND ADVENTURES AWAIT!

CANYON MINISTRIES
WALKING TOURS

Canyon Ministries offers daily vehicle-based Rim Tours, as well as Hiking and Walking Tours every day except Sunday — year-round.

We also provide multi-day Backpacking Trips and 4 to 9-day River Trips through the Grand Canyon, all from a biblical creation perspective!

Book your next GRAND adventure today!

- NOTES -

Grand Canyon books from a biblical perspective

Grand Canyon, a Different View

Explore the Grand Canyon with 23 creation scientists and theologians from around the world. This 10" X 8", 104 page hardcover book is filled with informative essays and stunning photos. *Grand Canyon, a Different View* will take your breath away, stimulate your imagination, and presents the facts about the Grand Canyon from a biblical perspective. Though educational enough for a home school book, it is equally beautiful as a gift or coffee table book.

True North Series: Your Guide to the Grand Canyon

This guide presents "a different perspective" and is the result of the many requests for material from a creationist perspective for those who visit the rim of the Canyon. With 190 pages, each major overlook on both South and North Rims are featured with a three-page panoramic photo foldout. This one-of-a-kind guidebook to the Grand Canyon also presents well-established information on Canyon formations, climate, fossils, history, and ecology.

Canyon Ministries
CanyonMinistries.org

(928) 251-3000
tours@CanyonMinistries.org