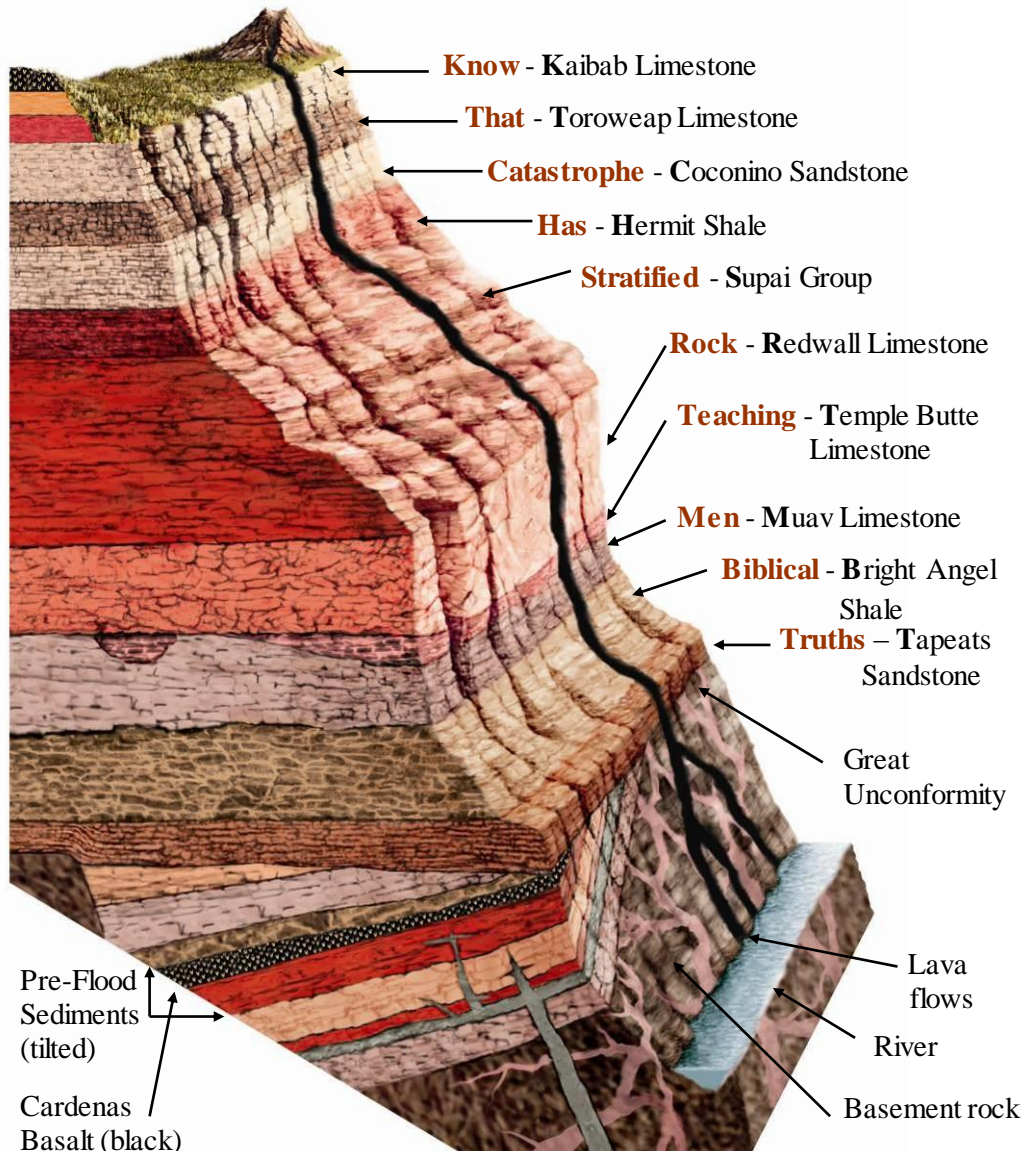
A photograph of a narrow slot canyon with layered red rock walls and a person walking in the distance.

Grand Canyon: Evidence Confirming the Testimony of God's Word

**Bill Barrick
Terry Mortenson
Andrew Snelling
Tom Vail
John Whitmore**

Layers of the Grand Canyon

Know That Catastrophe Has Stratified Rock, Teaching Men Biblical Truths

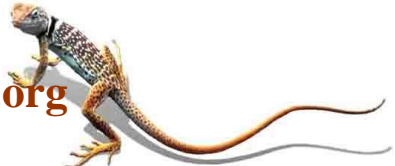


Foundational Teachings of a Young Earth in Grand Canyon



By Bill Barrick, Terry Mortenson,
Andrew Snelling, Tom Vail, and John Whitmore

CanyonMinistries.org



Dedicated to those who have prayerfully and financially
supported the Christian Leaders Trip.

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Redwall Cavern

FOREWORD

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.

The Grand Canyon is often used as *Exhibit A* for a young earth, but is also used as such for an old earth as well. The conflict is found, not in the rocks of the Grand Canyon, or in the contacts between the layers of the canyon, or even in the layers themselves. The carving of the canyon was not witnessed by man, the rocks don't have labels, nor is there a clear record of the material "missing" from the canyon. The conflict is truly a battle of worldviews.

An old-earth geologist looks at the canyon and sees millions of years based on his preconceived ideas about the origins of the earth, and ultimately all life on earth as well. The young-earth geologist sees a totally different picture when he looks at the canyon, as he starts from a different perspective, one based on Scripture, specifically the book of Genesis. They both look at the same canyon, the same rocks, and the same fossils, but their resulting interpretation could not be farther apart.

This booklet will present a *young-earth* interpretation of the canyon, not only from a geological position, but also from a biblical one as well. Other than in a few cases, we will not attempt to present the old-earth position, as there are volumes of materials detailing that position. The material presented here is by no means exhaustive of the young-earth position, but a brief summary given the space available.

We pray you will find this material helpful as you explore the wonders of one of God's grandest cathedrals, the Grand Canyon.

Clarifications

As we delve into this issue, there are some ideas and definitions that will help clarify our conversations. They include the following:

The issue is not “Are science and religion/faith compatible?” nor “Are science and Christianity compatible?” All young-earth creationists appreciate and use operation science and are doing origin science (defined below), just as evolutionists are.

The issue is whether microbe-to-microbiologist evolution (i.e., one kind evolving into a very different kind) and/or millions of years of geological and astronomical change can be harmonized with an exegetically sound interpretation of *all* the relevant verses in the Bible.

It is possible to believe in God or even in Jesus as Savior and Lord and also believe in evolution and/or millions of years. Millions of sincere and genuine Christians do. But is such a position consistent with biblical revelation? Or is it believing in two incompatible, even contradictory, ideas?

A great part of the controversy involves definitions of terms. Fuzzy words and equivocation are very common. As a result, interaction about the real points of debate fails to happen. Here are a couple of the key words that we need to define carefully.

Science:

Science is a method for discovering truth about the physical world. Evolutionists say that evolution is science and creation is religion or faith. But this utilizes vague and misleading words: science, religion, and faith. Furthermore, there are two broad categories of science, which use significantly different methods for discovering truth.

- *Operation* (i.e., experimental or observational) science
 - ✓ Methodology: The use of observable, repeatable experiments in a controlled environment (e.g., a lab) to understand how things operate or function in the present in order to find cures for disease or produce new technology, etc.
 - ✓ Most of biology, chemistry, physics, as well as engineering and medical research are examples of operation science.
- *Origin* (i.e., historical) science
 - ✓ Methodology: The use of reliable eyewitness testimony (if available) and observable evidence to determine the past, unobservable, unrepeatable event(s) which produced the observable evidence we see in the present.
 - ✓ Paleontology, cosmogony, archeology, much of geology, and forensic science are examples of origin science.

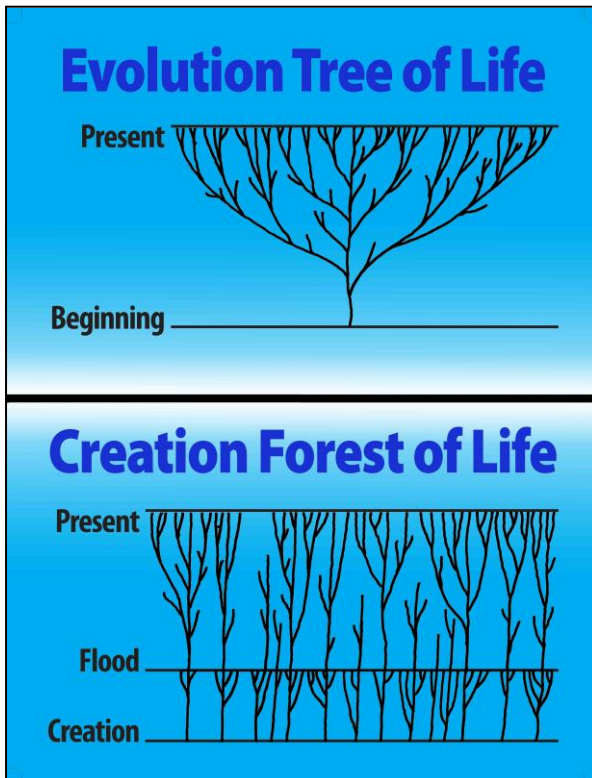
These are two significantly different kinds of science. The first studies the present to manipulate and make things in the present, whereas the other attempts to reconstruct a history of past events. Both creationists and evolutionists attempt to reconstruct the unobserved past and therefore are functioning in origin science, not operation science.

Evolution:

There are only two options for the origin of the physical world. Either everything originated by natural processes OR everything had a supernatural origin.

- Option 1: All living things evolved over millions of years of change from a common ancestor, which itself came into existence from non-living matter by natural processes. In the Evolution Tree of Life the branches represent the different kinds of plants and animals, including man.
- Option 2: The first living plants and animals, and man, were created supernaturally as separate kinds. In the Creation Forest of Life each kind is represented by one of the trees. Since then each kind has produced variety only within its kinds (represented by the branches) by natural procreation, which includes natural selection and mutations. Creation scientists believe there are good scientific reasons to conclude that the original created kinds were roughly equivalent to the modern taxonomic classification of “family” (not “species” or “genus”), except for man.

Adding God to evolution doesn't create a new option. Saying that God providentially guided the process of evolution has no basis in Scripture and such divine guidance is undetectable scientifically.



Evolutionists will often say “evolution is change” and they will often equate evolution with natural selection. But this is vague and misleading. Evolution is change of one kind of creature into a very different kind of creature simply by time and chance and the laws of nature. For example, a single-celled creature changed over millions of years into a multi-celled creature, a fish evolved into an amphibian, a reptile was changed into a bird, and an ape changed through thousands of generations into a human.

Evolution is *not* natural selection. Natural selection is a fact, but nature only selects from what is already there. It does not create new genetic information or new kinds of creatures as required by the hypothesis of microbe-to-man evolution.

Mutations are a fact, but have never been observed to produce new genetic information to make new body parts or body functions. Mutations either move or duplicate existing genetic information, or cause a loss of existing genetic information in the DNA code, whereas microbe-to-man evolution requires a massive increase of new genetic information.

A BIBLICAL FOUNDATION

The Biblical Starting Point

The orthodox Christian premise about the Bible declares that it is the inerrant and inspired Word of God. If we look at the Grand Canyon from that premise, then several verses speak to the issues that canyon explorers consider. One of the most profound verses 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 many believe, but rather on *interpretations* of facts based on those man-made elementary principles (i.e., assumptions).

Instead, in this book we are building our thinking instead on the basis of what is “according to Christ,” that is, according to His Word, the Bible. From that starting point, especially what it teaches in Genesis 1-11, we will examine the rock layers and fossils of the Grand Canyon. Three foundational scriptural truths guide our thinking.

- First, in Genesis 1, the six “days” of creation are six, sequential, literal 24-hour periods of time. Genesis 1:5 says: “...*And there was evening and there was morning, one day.*” This repeated refrain on the next five days and the stated purpose of the sun, moon and stars (to measure years, seasons and days) clearly indicate that these are literal days. 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 (Neh 9:6; Isa 42:5; Act 14:15; Col 1:13-16; and many other passages).
- Second, no human or animal death existed before sin. The first death came as a result of the initial sin that took place in the Garden of Eden. Regarding human death, 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...*” Later the apostle Paul says that the initially “very good” creation is now subject to futility and in bondage to corruption (including animal death, disease, etc.), eagerly waiting to be liberated at the return of Christ (Rom 8:18-25). Just as the first historical Adam brought death into the world and died, so also through the death and resurrection of Jesus Christ, the second Adam, sinful human beings will gain eternal life (1 Cor 15:22, 45; Rom 6:23) and the whole creation will be restored and redeemed (Act 3:21, Col 1:15-20). The accuracy of the New Testament teachings concerning Christ depends upon the integrity and historicity 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.*” Therefore, the Word clearly indicates that this was a global event. Jesus Himself confirms the historicity of the account (Mat 24:37-39). Elsewhere in the New Testament (Heb 11:7; 1 Pet 3:20; and 2 Pet 2:5, 3:3-7), the apostles likewise declare that the Flood was global, resulting in the destruction of all mankind (except for the eight people in the ark) along with the earth.

In light of the points above, we need to realize that what one sees in the Grand Canyon and in the rest of the world is a result of God’s judgment on 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 (Gen 3:14-19, 5:29, and 8:21).

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, which says, “*You shall not add to the Word which I am commanding you...*”

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 processes	show evidence of rapid catastrophic processes
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
Life forms would:	appear gradually	appear suddenly

The table above is a comparison of the two different worldviews used to try to understand the world around us. As you review the table, consider what the physical evidence in the Grand Canyon 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 in the bodily structure of one kind (family) of plant or animal to a different kind and biological systems should show a steady progression of simple to complex life forms.

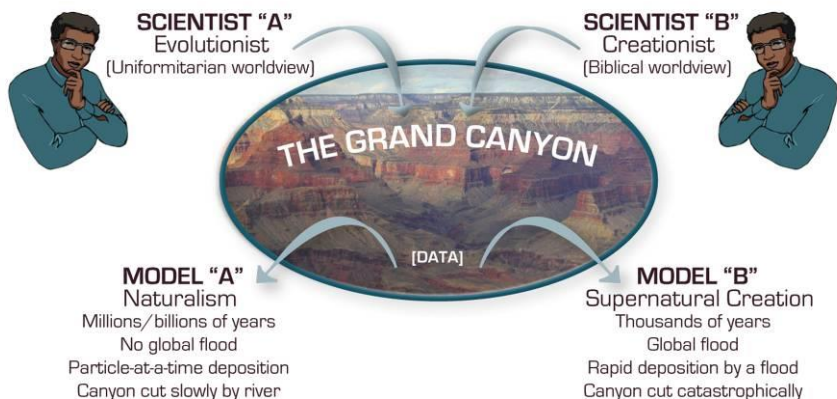
If the biblical creation view is correct, we should expect to see creatures appear in the fossil record fully formed and fully functional and as we come up through the fossil record we should see that different kinds of creatures may show variation (e.g., in the shape of the snout or length of their legs) but not changing into a different kind such as a land animal into a whale or a reptile into a bird. Additionally, we should expect to see continental or intercontinental geological evidence of a global, catastrophic Flood.

So why is the geology of the Grand Canyon often in the center of the creation/evolution (uniformitarian) debate? It is because geological evolution is the foundation of biological evolution, and evolutionists use the Grand Canyon as one of their proofs of millions of years. 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 is morally and spiritually 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 physical evidence as they travel the canyon. But they do so from a different perspective or worldview. Each person looks at the canyon with some preconceived idea of how it was formed. These preconceived ideas are foundational to the way one views the world in which we live.

Take the simple model below depicting 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 significantly affect their interpretations of the observations they make.



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, you will “see” evidence that appears to confirm that. But do those who have studied the canyon from that perspective have the answers to the canyon’s formation? Here is what evolutionary geologist Wayne Ranney said in his 2005 book on the canyon entitled *Carving Grand Canyon* (p. 11):

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.

But if we start with a biblical perspective, we see things differently and come to a very different conclusion. 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 God's eyewitness testimony in Genesis and on 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. We 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, we hope you will thoughtfully examine what you see and hear, and that you will do so from a biblical perspective.

Why is the Grand Canyon Important?

The Grand Canyon offers an amazing opportunity to demonstrate the inconsistencies of modern geology as well as the significance of the biblical Flood for understanding earth history. Its grand scale, beauty, and clear geologic evidences serve as a wonderful platform for discussing the tenets of young-earth creationism as compared to old-earth viewpoints.

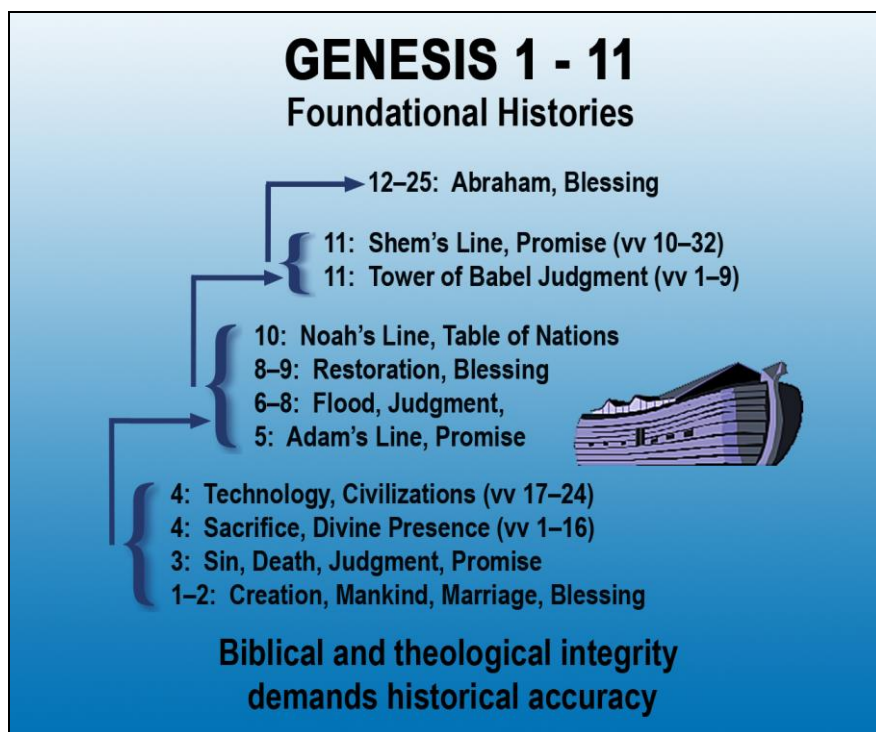
Biblical and Observational Considerations:

- The Grand Canyon presents evidence of a historical divine judgment by means of a cataclysm, but also exhibits God's grace, because the canyon's present beauty shows that the Lord loves to restore.
- Methods of scientific investigation don't make truth claims; human beings using the methods are the ones making truth claims.
- Origin science differs from operation science:
 - ✓ Origin science functions like forensic science used in criminal investigations when one must properly interpret circumstantial evidence to reconstruct what happened in the past.
 - ✓ Operation science employs testable and repeatable experiments to determine how processes function in the present.
- The Bible is the history book of the universe written by the omnipresent eyewitness. God has given us an inerrant historical record about the creation and early history of the earth and about a world-changing, geologically significant event—the Flood.
- A fully biblical worldview enables us to understand reality. That worldview starts with the early chapters of Genesis.
- The present is *not* the key to the past; the past is the key to the present. And biblical revelation is the key to understanding the past and the present.

- Uniformitarian assumptions heavily influence secular geologists, who interpret the evidence from an anti-biblical and pro-evolution perspective.
- The Grand Canyon tells us that this area, indeed the whole earth, was significantly different in the past.
- By means of its millions of buried fossils, the canyon speaks of death.
- The Grand Canyon reveals the Creator (see Rom 1). He is both an Intelligent Designer and a Holy Judge (Nah 1:2–7).
- Scripture teaches the reality of a future judgment by fire relates in some way to the reality of the past judgment of the Flood (Matt 24:37–39; 2 Pet 3:3–7).
- The Great Unconformity (see page 58) is a dual witness to both God’s global judgment and His grace and mercy. As believers we recognize that our Creator is also our spiritual Rock whom we believe and serve.

Foundational Importance of Genesis 1-11

The overall structure and message of Genesis 1–11 demonstrates that biblical and theological integrity demands historical accuracy (see chart below). These chapters form a unified textual unit of great significance to the remainder of Genesis, the Pentateuch, and the rest of Scripture.



Biblical Considerations:

- The early chapters of Genesis present God's universal program for His Kingdom and redemption – His purposes involve all mankind.
- If Genesis 1–11 is not historical, there is no historical foundation for God's program for all of mankind from the very beginning of mankind's history.
- God's promise of a Messiah also originates in these early chapters (Gen 3:15) and must also be taken literally and historically.
- Consider the manner in which the Gospel of Matthew commences with a genealogy and the heading, "the book/record of the generations of Jesus Christ" (1:1). That is exactly as the first Adam's genealogy begins in Genesis 5:1: "this book/record of the generations of Adam."
- The only *toledot* in Genesis that opens with a reference to "book" (Gen 5:1) relates most intimately to creation and the first man.
- Matthew commences the New Testament in the same fashion as Moses began the Old Testament. Jesus' incarnation marks a significant historical event equal to that of creation itself.
- Since Matthew makes such connections, it should be no surprise that Paul identifies Jesus as the "last Adam" (1 Cor 15:45).
- Luke 3:38 also refers to Adam by name in the genealogy of Christ that concludes, "the son of Enosh, the son of Seth, the son of Adam, the son of God."
- Jesus is more than Creator, He is Savior – the one who will ultimately restore and renew fallen creation. He announced the necessity of the new birth and by that means we become a new spiritual creation (2 Cor 5:17).

A Biblical Witness of the Creation

As evangelical scholars and theologians, we must give priority to the biblical creation account. We believe that the Genesis record is inspired and inerrant, thus authoritative for our doctrinal beliefs and for our worldview. The Genesis creation account transcends any human explanation of events because no human being was present to observe and no human being can reproduce the event.

Biblical Considerations:

- The creation account is primarily theological and theocentric. That element needs to be taken into consideration with any interpretation.
- The text of Genesis 1:1–2:3 consists of historical narrative, not epic poetry or saga. But, even if one were to understand the account to be poetry, its message is still historical and accurate (as for example Psalm 106 is).
- Exodus 20:8–11 reveals that God interprets the seven days as literal days (He inscribed the stone tablet Himself).

- The light of Day 1 appears to be best taken as God's light, as in Revelation 21:23 and 22:5.
- We must look at the overall structure of the creation account, which is more like a genealogy in its form than any other form of literature, and note where there are variations that point to intended emphases. One variation involves the placements of "God saw that it was good" (1:4, 10, 12, 18, 21, 25, 31) and another the placements of "and it was so" (= "it happened just that way!": 1:7, 9, 11, 15, 24, 30; cp. 2 Kings 15:12). The former reveals that His creation was good from the very start and "very good" at its conclusion. The latter reveals that the divine author (and the human author) emphatically declares the accuracy, integrity, and historicity of the account of creation.
- Days 1–3 describe the forming of the earth's landscape preparatory to the creation of land animals and man. Days 4–6 describe how God filled the heavens with celestial bodies and how He filled the earth with life forms. This structure follows the statement in Genesis 1:2 ("unformed and unfilled") and does not require taking a framework viewpoint.
- Genesis 1:2 refers to the created condition of the planet, not chaos. There is no gap such an interpretation violates the verse's Hebrew grammar.
- The expanded and repetitive structure of the narrative concerning Day 6 confirms the significance of that day.
- Day 7, the Sabbath, consists of a literal day, not an unending period of time. The unending view destroys the literal meaning of Exodus 20:8–11.
- Hebrews 4:3–6 does not teach that the seventh day continues to the present, but that God has finished and continues to rest from His creation work.

The Panorama and Structure of Scripture

Spiritual authority comprises the core issue: we must accept either the authority of the Lord and His written revelation or the authority of the church and its "infallible pope(s)" or the authority of human reason with its self-styled sovereignty (which is expressed in "what the majority of scientists believe"). The rest of Scripture (outside Gen 1) supports the historical record of creation as recorded in Genesis 1. There are at least 100 references to the events of Genesis 1–11 in the New Testament alone. Denial of the creation account in Genesis 1–2 places in question all of Scripture's teachings.

Biblical Considerations:

- Some of the Old Testament references: Genesis 9:1, 6, 7; Exodus 20:8–11; Deuteronomy 4:32; 32:8; 1 Chronicles 1:1; 16:26; Nehemiah 9:6; Job 9:8; 31:33; 38:1–41:34 (esp. 38:4, 12, 32–33; 40:14); Psalms 8; 89:11–12, 47; 104:2–5, 24; 148:4–5; Proverbs 3:18; 11:30; 13:12; Ecclesiastes 3:20; 7:20, 29; 12:1, 7; Isaiah 40:26, 28; 42:5, 12, 18; Hosea 6:7; Amos 4:13; Malachi 2:10.
- Some of the New Testament references: Matthew 25:34; Mark 10:6; Luke 3:38; John 1:1–5, 9, 10; Acts 14:15; 17:24–26; Romans 1:20, 25; 5:14; 1 Corinthians 8:6; 15:22, 45; 2 Corinthians 4:6; Colossians 1:13–16; 1 Timothy 2:13–14; 1 Peter 1:20; Revelation 4:11; 13:8.
- If it really took millions or billions of years to create the first heavens and earth, how long will we have to wait for the new heavens and the new earth (Isa 65:17)?
- Denial of the Creator is inexcusable, according to the Scriptures (Rom 1:18-20)
- Denial of biblical creation exchanges God's truth for man's lie.
- Denial of biblical creation results in greater depravity and immorality due to the rejection of the Creator's authority and His inerrant revelation.
- The last things in Scripture recapitulate in inverse order the first things in Scripture. E.g.,
 - Genesis 1:1 – Creation
 - Genesis 1:3 – God's Light
 - Genesis 1:26 – Man's Rule
 - ...
 - Revelation 20:4 – Man's Rule
 - Revelation 21:23; 22:5 – God's Light
 - Revelation 21:1 – New Creation
- Putting in question the doctrine of first things (protology) endangers the doctrine of last things (eschatology).
- Without historical, temporal Creation there is no hope for a historical, temporal Restoration.
- The alternative, secular historical science, changes—Scripture does not change.
- When we affirm biblical creationism,
 - ✓ we propose the plain sense of the rest of Scripture;
 - ✓ we provide foundational truths for basic Christian doctrine; and
 - ✓ we preserve the salvific focus of the Christian faith—only the Creator can ultimately save and restore.

Noah's Flood - A Global, Geologically Catastrophic Event

If the Flood of Noah's day was truly global and catastrophic, its consequences must have a significant bearing on how one interprets the geological record.

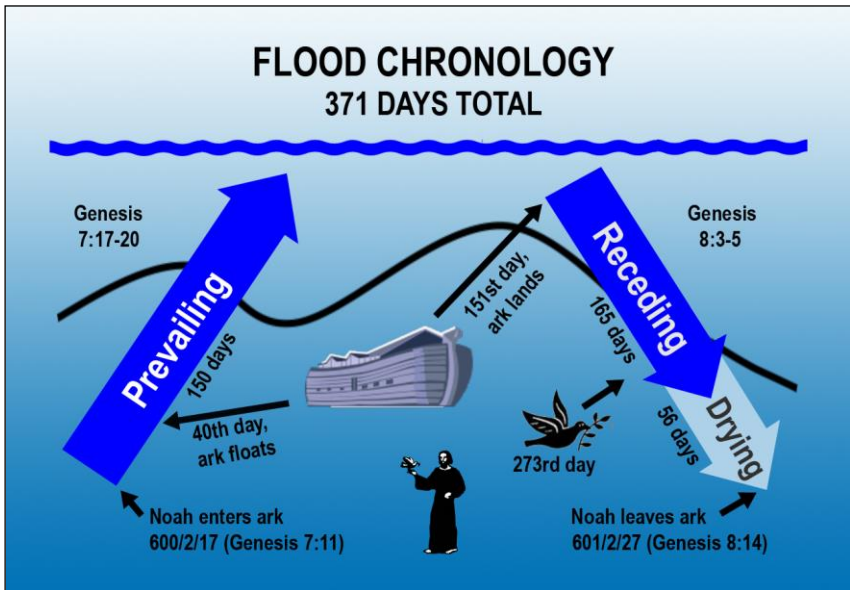
It Was Global

- Purpose of the Flood: to destroy all mankind AND all land animals and birds not in the ark, along with the surface of the earth (Gen 6:5–7, 11–13, 20; 7:1, 3, 13–15; cp. 2 Pet 3:5–7).
- Purpose of the Ark: save two of every kind and seven of the clean kinds to repopulate the earth after the Flood.
- Size and complexity of the Ark (Gen 6:14–16): too large for a local flood.
- Hebrew word for “flood” (*mabbul*, 6:17) speaks of the uniqueness of the Flood.
- Post-Flood human repopulation not needed if it was merely a local flood (6:18; 9:19; 10:1–11:32).
- Provisions for food on behalf of both the human and animal inhabitants (6:21) indicates a longer period of dependence upon such supplies than might be necessary in a mere local flood.
- Use of universal language: “all,” “every,” “under heaven,” “in whose nostrils is the breath of life,” etc.
- Depth of the Flood: covering all the high mountains under the heavens (7:19–20).
- Consequence of the Flood: death of all mankind and all land animals (including all birds) that are not in the Ark (7:21–23).
- Duration of the Flood: 371 days from start to finish (cp. 7:11 and 8:14), too long for local flood, 40-150 days for waters to cover earth, 221 days for the receding of waters.
- “All the fountains of the great deep” (7:11) seem out of place for a mere local or even regional flood. The phenomena represent a reversal of creation, or uncreation.
- Landing of the Ark: on a mountaintop, not in a valley (8:4).
- Mandate to animals (as well as people) to repopulate the earth (8:17; 9:7)—totally unnecessary if the Flood was localized only in the Mesopotamian valley of the Tigris and Euphrates rivers.
- Rainbow promise to man and animals after the Flood (8:21–22; 9:11–17) fits a global catastrophe better than a local event, as many destructive local floods have occurred since Noah.
- Capital punishment for murder applies universally to all who have the image of God as a result of creation (9:6; cf. 1:26–27). It better suits a global flood context than a local or regional flood, since it addresses a universal situation.

It Was Catastrophic

“A worldwide tranquil flood is a contradiction in terms, comparable to a tranquil explosion” (Henry Morris, *The Genesis Record*, 204). Scripture identifies two mechanisms that caused the Flood (Gen 7:11) and resulted in massive erosion and sedimentation:

- “all the fountains of the great deep burst forth” implies tectonic (volcanic and earthquake) rupturing of the ocean floor releasing subterranean water under high pressure (and presumably massive lava flows), with resulting tsunamis. The Hebrew word for “burst forth” (*baqa’*) is also used in Numbers 16:31, Judges 15:19, and Zechariah 14:4.
- “windows of heaven” implies torrential rain on a global scale for at least 40 days, but God does not stop the rain or the fountains of the deep until the 150th day. Such rains would cause massive erosion and landslides on the pre-flood landmass.



When God Himself causes the subterranean waters to erupt from their reservoirs, the consequences upon the surface of the globe follow normal natural laws. In accord with natural consequences, the earth's surface would be terribly eroded and altered by such a massive eruption. In a microcosm, we can look at the release of water and mud at the eruption of Mount St. Helens in 1980. Imagine that kind of volcanic and erosive activity taking place on a global tectonic scale with eruptions of water as well as of steam and lava. Such an event would be far from tranquil.

In the recessional stage of the Flood, Scripture also speaks of the waters going and returning (Gen 8:5), implying more erosion (of sediments deposited in the first 150 days of ascension of the Flood) and sedimentation.

Consider the geological evidences

- Global presence of extensive horizontally bedded sedimentary deposits formed by rapid and continuous deposition processes.

- Rather than showing widespread erosion of these layers, their contiguous surfaces are amazingly smooth, like layers in a multi-layered cake. Had even hundreds of years (much less millions of years) passed between depositions, the contiguous surfaces would have been eroded and uneven, but they are mostly knife-edge clean.
- In many of those same sedimentary deposits large numbers of fossils remain encased, even in vertical orientation (such as some of the nautiloids in the Redwall Limestone of the Grand Canyon) – demonstrating conclusively that the fossilized forms did not have time for decay or scattering by scavengers.
- Superfaults present evidence of such massive geological processes that a catastrophic event provides the only explanation.
- Water-transported boulders of significant size provide evidence of much greater forces at work than are seen today.
- Geologists have studied the deposition of sedimentary strata by means of flume experiments. Results demonstrate that deposition that was assumed to take millions of years actually can happen quickly.
- The Missoula flood in eastern Washington cut thousands of canyons in a matter of just days.

The Historicity of Adam

One of the current hot button topics in Old Testament studies involves the debate over the historicity of Adam and Eve. A variety of views exist which key Old Testament scholars champion. The traditional view has come under fire and its opponents are primarily those who have adopted an old-earth viewpoint founded upon the opinions of modern scientists.

Biblical Considerations:

- Traditional view: Adam was a historical person and the originating head of the entire human race.
- The historicity of Adam is foundational to a biblical understanding of
 - ✓ God's creative activity
 - ✓ History of the human race
 - ✓ Nature of mankind
 - ✓ Origin and nature of sin
 - ✓ Existence and nature of death
 - ✓ Reality of salvation from sin
 - ✓ Historicity of events in all of Genesis
 - ✓ Authority, inspiration, and inerrancy of Scripture
- Assumptions traditionalists make:
 - ✓ Rejection of Documentary Hypothesis
 - ✓ God is the ultimate Author of Scripture.
 - ✓ Scripture is independently accurate.
 - ✓ One uniform hermeneutic should be used throughout Genesis
 - ✓ Universal scope of Genesis 1–11

- Both OT and NT assume the historicity of Adam (Mal 2:10; Acts 17:26).
- Biblical evidence supports only one Adam and one Eve:
 - ✓ God formed a single individual (Gen 2:7).
 - ✓ God breathed the “breath of life” into one individual’s nostrils (2:7).
 - ✓ That individual became a single “living soul/being” (2:7).
 - ✓ God places the individual in a garden (2:8).
 - ✓ God assigns the individual to care for and keep the garden (2:15).
 - ✓ God commands that individual to not eat a certain tree’s fruit (2:16–17).
 - ✓ The individual is “alone” (2:18)—not a “good” thing to be.
 - ✓ God planned to provide an appropriate individual counterpart (2:18), but Adam found no appropriate counterpart among the animals (2:19–20).
 - ✓ God took flesh and bone from the one human being’s side (2:21).
 - ✓ God made one woman from that material (2:22).
 - ✓ God brought the one woman to the man, who expresses the uniqueness of her identity and relationship to him (2:23).
 - ✓ God designs marriage to be the same relationship: one man + one woman (2:24, 25).
 - ✓ Only one man and one woman involved throughout Genesis 3 (verses 1, 4, 6, 7, etc.).
- More biblical evidence of the historicity of Adam and Eve:
 - ✓ 1 Chronicles 1:1; Malachi 2:10; Mark 10:6; Luke 3:38; Acts 17:26; Romans 5:12–21; 1 Corinthians 11: 8-12 and 15:21–22, 45–49; 2 Corinthians 11:3; 1 Timothy 2:13–14; etc.
- “We need to defend the teaching of the text, not a scientific reconstruction of the text or statements that are read between the lines of the text.” — John Walton, *Genesis*, NIVAC, 100
- The biblical record requires that we reject the theory of human evolution.
- God made Adam and Eve “in the beginning” of creation, not millions of years “after the beginning” (Mark 10:6).

Ancient Near Eastern Materials Compared to Genesis

Comparative analysis of Ancient Near Eastern materials provides biblical scholars with valuable insight regarding the contemporary worldviews of ancient secular scholars and ancient pagan theologians. The parallels need to be examined with careful attention to both similarities and dissimilarities, always preserving the uniqueness of biblical revelation.

- Do the biblical writers have a pre-scientific viewpoint of the earth and its origins? Did they believe in a flat earth, an earth floating on the sea, a solid sky above, and a three-stored earth?

- ✓ Biblical writers hold a different worldview than the cultures around them.
- ✓ The Ancient Near Eastern materials themselves give evidence of a variety, rather than a uniformity, of views.
- ✓ For responses to Paul H. Seely and John H. Walton regarding cosmology in the Ancient Near East, see:
 - Noel K. Weeks, “Cosmology in Historical Context,” *Westminster Theological Journal* 68 (2006): 283–293.
 - John F. Henry, “Uniformitarianism in OT Studies,” *Journal of Dispensational Theology* 13 (2009): 21–38.
 - Walter C. Kaiser, Jr., “The Literary Form of Genesis 1–11,” in *New Perspectives on the Old Testament*, ed. by J. Barton Payne (Waco, TX: Word Books, 1970), 55–58).
 - Jeffrey Burton Russell, *Inventing the Flat Earth: Columbus and Modern Historians* (New York: Praeger, 1991).
 - Lesley B. Cormack, “Myth 3: That Medieval Christians Taught That the Earth Was Flat,” in *Galileo Goes to Jail and Other Myths about Science and Religion*, ed. Ronald L. Numbers (Cambridge, MA: Harvard Press, 2009), 28–34.
 - The ancient Israelites recognized descriptions like “the pillars of the earth” or “the windows of heaven” as mere metaphors, not realities (cp. Job 9:6 vs. 26:7 and Gen 7:11 vs. 2 Kgs 7:2).
- Too often, those pursuing comparative studies fail to properly note the differences between the Ancient Near Eastern texts and the Bible:
 - ✓ Polytheism vs. monotheism
 - ✓ Physical images of gods vs. iconoclasm
 - ✓ A low view of gods vs. a high view of God
 - ✓ A low view of humanity vs. a high view of humanity
 - ✓ The existence of an everlasting conflict between forces of chaos and powers of construction vs. an absence of conflict
 - ✓ Eternality of matter vs. Spirit as the eternal first principle
 - ✓ The lack of a uniform standard of ethics vs. the expectation of obedience to a uniform standard of ethics
- Satisfactory explanations for the common themes of the Bible and Ancient Near Eastern materials include:
 - ✓ A shared memory of actual events in antiquity.
 - ✓ Perhaps a shared memory of a singular, God-given revelation.
 - ✓ Fallen mankind skews the memory and produces stories that adapt the original history to the benefit of either themselves or of certain preferred deities.
- Acknowledging that God accommodates His presentation of revelation to human understanding to some extent does not mean that He accommodates His revelation’s truth content to human error or myth.

The Significance of Genre to the Interpretation of Genesis

Biblical studies currently focus on matters of genre, or literary type. It is not surprising that genre issues have arisen in the study of Genesis 1–11. What is surprising is the way that biblical scholars sometimes ignore both the multiplicity of genres within a single text and the overlapping of functions between genres in conveying divine truth.

Biblical Considerations:

- Peter Enns rightly reminds his readers that, “narrative is not an automatic indication of historical veracity, either in the Bible or any other literature, ancient or modern” (*Evolution of Adam*, 53).
 - ✓ Examples of narrative prose literature without historical veracity include works of fiction.
- Poetry provides no automatic confirmation of a lack of historical veracity.
 - ✓ Poetry which conveys accurate historical descriptions of true events includes Exodus 15 (the “Song of Moses”) and Judges 5 (the “Song of Deborah”). See also Psalms 78, 105–106, and 136.
- Therefore, genre could be a red herring in the discussion of the historicity of Genesis 1–3.
 - ✓ Whether Genesis 1 is poetry or narrative, the text conveys accurate historical truth and an actual historical event comprises the basis for the record.
- However, characteristics of Hebrew poetry are absent in Genesis 1:
 - ✓ Poetic parallelism – compare Psalm 104:2–4.
 - ✓ Grammar of Hebrew poetry:
 - Limited use of the definite article (“the”).
 - Limited use of the relative pronoun (“which”).
 - Limited use of sequential verb forms (*wayyiqtol*).
 - ✓ Imagery or metaphor—compare Psalm 104:2–7.
- Genesis 1 contains an ordered chronological sequence of “days.”
- Genesis 1 gives evidence of formulaic repetitions: (1) “God said,” (2) God’s speech, (3) result, (4) God’s work, (5) naming, (6) God’s view, and (7) day.
 - ✓ The creation account approximates the pattern of genealogies.
- Six sequential literal days of creation are descriptive of two *sequential* stages in the development of Earth:

“Unformed”	“Unfilled”
3 acts of forming	3 acts of filling
Preparation of Earth for animal and human life	Provision of light and populating Earth with animal and human life
1. Light from darkness 2. Upper from lower waters 3. Lower waters from dry land	1. Light gives 2. Fish and birds 3. Land animals and man

A HISTORICAL BACKGROUND

Millions of years: where did they come from?

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 North 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 views of earth history began to be developed and popularized, which were naturalistic in character. These hypotheses sought to explain the geological record of rock layers and fossils by appealing only to time (millions of years), chance, and the laws of nature working on matter. God's Word was denied or ignored in the process of studying the rocks and reconstructing the observed past.

Early 19th Christian responses to old-earth views

- Old-earth conservatives: Gap theory (e.g., Thomas Chalmers), day-age view, local flood, global peaceful flood
- Old-earth liberals: Genesis is myth

Early 19TH Century Views of Earth History Comparison of the Historical Timelines

Biblical view (Scriptural geologists)

SCW — F ————— P
(ca. 6,000 years)

Catastrophist view (e.g., Cuvier, Smith)

SB — C — C — *ss* — C — C — P
(millions of years)

Uniformitarian view (e.g., Hutton, Lyell)

SB? ————— *ss* ————— P
(millions of years)

Code: SCW=Supernatural Creation Week, F=Flood (Noah's),
P=Present, SB=Supernatural Beginning, C=Catastrophic flood

- Scriptural geologists: young-earth creationists
 - ✓ They 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.

Age of the Earth: a worldview conflict

- Charles Lyell (1797-1875) is the best known of these early old-earth theorists.
 - ✓ Trained in law at Oxford, Lyell insisted that the earth's history 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 view is called uniformitarianism.
 - ✓ As a Deist (or Unitarian) he consciously sought to “free the science [of geology] from Moses”—that is, he denied the biblical account of the Flood and age of the earth before he ever studied the rocks. On this point see the lengthy quotes by Lyell in chapter 4 of *Coming to Grips with Genesis*.
- There can be no philosophical neutrality when reconstructing the past history of the earth. Worldview assumptions control the interpretation of the present observable physical evidence of the past unobservable events that produced that evidence.
- Paul warns us that we are in a great spiritual war of philosophical ideas that can deceive Christians (Col 2:8) and so we must take every thought captive to the Word of God (2 Cor 10:3–5).
- Facts don't speak for themselves. They must be interpreted (see diagram page 7).
- 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 truth, clarity, and authority of Scripture against various anti-biblical worldviews.

Key old-earth assumptions controlling geology (from early in the 19th century through today)

- **Assumption #1:** absence of evidence = evidence of absence
 Lack of human fossils in lower rocks shows that the lower rocks were formed long before Adam. In other words, the assumption is: absence of fossils of a creature in a particular layer means the non-existence of that creature at the time of deposition of that layer.
 - ✓ This assumption is demonstrably false as we are constantly finding fossils lower or higher in the rock record than previously thought.

- ✓ The order of the fossils in rock layers is the order of *burial* during the Flood and post-Flood period, not the order of when the creatures came into existence.
- **Assumption #2:** uniformitarian naturalism
By about 1840 Lyell's anti-biblical uniformitarianism became the ruling dogma in geology.
 - ✓ Charles Darwin thoroughly absorbed Lyell's thinking in geology and applied the same uniformitarian assumption of slow, gradual change to biology. Just as slow, gradual changes in the earth produced the geological formations, so also slow, gradual biological processes generated all the plants and animals and man from a single (or a few) tiny and simple ancestor(s).
 - ✓ This same geological and biological uniformitarianism was controlling John Wesley Powell's thinking on his trips through the Grand Canyon and it is still dominant in geology and paleontology today.
- **Assumption #3:** The Bible is irrelevant to geology and Noah's Flood could not possibly be the cause of most of the geological record.
By the time of Darwin's *Origin of Species*, virtually the whole church had given up the traditional view of a young earth and a global Flood.

From Darwin to the present

Below are a few of the prominent godly men who accepted millions of years and didn't perceive the role of anti-biblical, religious and philosophical assumptions controlling geology:

- Charles Spurgeon (2 Sept. 1855 sermon on "Election"): gap theory
Can any man tell me when the beginning was? Years ago we thought the beginning of this world was when Adam came upon it; but we have discovered that thousands of years before that God was preparing chaotic matter to make it a fit abode for man, putting races of creatures upon it, who might die and leave behind the marks of his handiwork and marvelous skill, *before he tried his hand on man.* (emphasis added)
- Charles Hodge (Princeton theologian): initially favored gap theory, but after 1860 advocated the day-age view in his *Systematic Theology*.
- C.I. Scofield (1909 study Bible): gap theory—accommodated the geological ages in his marginal note for Genesis 1:2
- James M. Boice (famous pastor and radio Bible teacher): advocated the day-age view in his commentary on Genesis
- Gleason L. Archer (prominent 20th century OT scholar): argued for the day-age view in his *Survey of Old Testament Introduction*
- Gordon Lewis & Bruce Demarest (Denver Seminary professors): advocated the day-age view in their *Integrated Theology* saying, "ultimately, responsible geology must determine the length of the Genesis days."

Unexpected change in geology (rise of modern young-earth creation and old-earth catastrophism)

- Many of the geological and biblical arguments of modern Flood geology are virtually identical to those of the early 19th century Scriptural geologists (though there appears to have been no literary dependence of the latter on the former):

- ✓ George McCready Price (Canadian Seventh Day Adventist), self-taught in geology, wrote several books from 1906 to 1926 against evolution and old-earth geology.
- ✓ Landmark book by Henry Morris & John Whitcomb, *The Genesis Flood* (1961) really launched the modern creationist movement.

- 1970s—the rise of neocatastrophism

- ✓ Derek Ager (1923-1993), prominent British geologist and evolutionist, *The Nature of the Stratigraphical Record* (London: Macmillan, 1981), pp. 46-47.

So it was—as Steve Gould put it—that Charles Lyell ‘managed to convince future generations of geologists that their science had begun with him.’ In other words, we have allowed ourselves to be brain-washed into avoiding any interpretation of the past that involves extreme and what might be termed ‘catastrophic’ processes. However, it seems to me that the stratigraphical record is full of examples of processes that are far from ‘normal’ in the usual sense of the word. In particular we must conclude that sedimentation in the past has often been very rapid indeed and very spasmodic. This may be called the ‘Phenomenon of the Catastrophic Nature of much of the Stratigraphical Record’.

- ✓ Gordon L. Herries Davies, well-known evolutionary geologist in Ireland, “Bangs replace whimpers,” *Nature* Vol. 365 (9 Sept. 1993), p. 115.

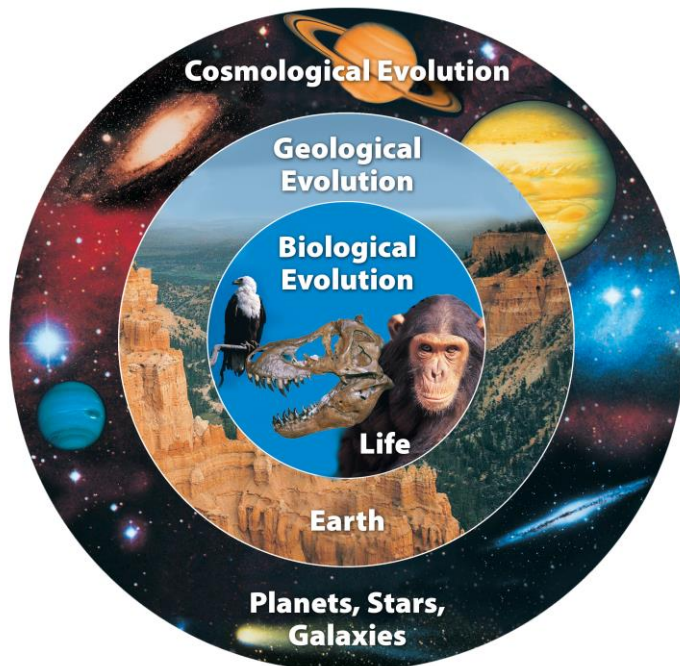
We are rewriting geohistory. ... We live in an age of neocatastrophism. Surely what we know as geohistory originates not within rocks but within the minds of human observers. As a creation of the human intellect, our geohistories may owe more than is commonly supposed to processes acting within our own cerebra.

- ✓ Stephen J. Gould (1941-2002), famous Harvard geologist and evolutionist) “Catastrophes and Steady-State Earth,” *Natural History* (Feb., 1975), pp. 15-17:

Charles Lyell was a lawyer by profession, and his book is one of the most brilliant briefs published by an advocate. ... Lyell relied upon true bits of cunning to establish his uniformitarian views as the only true geology...The geologic record does seem to require catastrophes: rocks are fractured and contorted; whole faunas are wiped out. To circumvent this literal appearance, Lyell imposed his imagination upon the evidence.

Three rings of evolution

Naturalistic uniformitarian assumptions (which began in geology) now control virtually all of science. Evolution is a three-part theory to explain the origin of everything (stars, galaxies, planets, earth, rock layers, and fossils, living creatures, man, language, consciousness, etc.). Astronomers speak of the evolution of stars and galaxies, just as geologists speak of the evolution of the earth and biologists talk about the evolution of life. They insist that everything can and must be explained by *time* (millions of years) and *chance* and the *laws of nature* working on matter. Even if we reject biological evolution, we are still allowing naturalistic uniformitarian assumptions to control our thinking, if we accept millions of years of cosmological and geological evolution.



In 1 Corinthians 5:6 Paul said, “*a little leaven leavens the whole lump of dough.*” The idea of millions of years was the leaven to corrupt science.

Historical Considerations:

- The historical “slippery slide” from the early 19th century: rejection of Noah’s Flood led to the rejection of the Biblical chronology, which led to acceptance of biological evolution, which led to denial of literal Adam and Fall which for many individuals, churches and denominations have led logically to a rejection of the Biblical gospel, which is based on the historical events recorded in Genesis. If Genesis 1-11 is not literal history, then many people will reject the gospel based in that history.

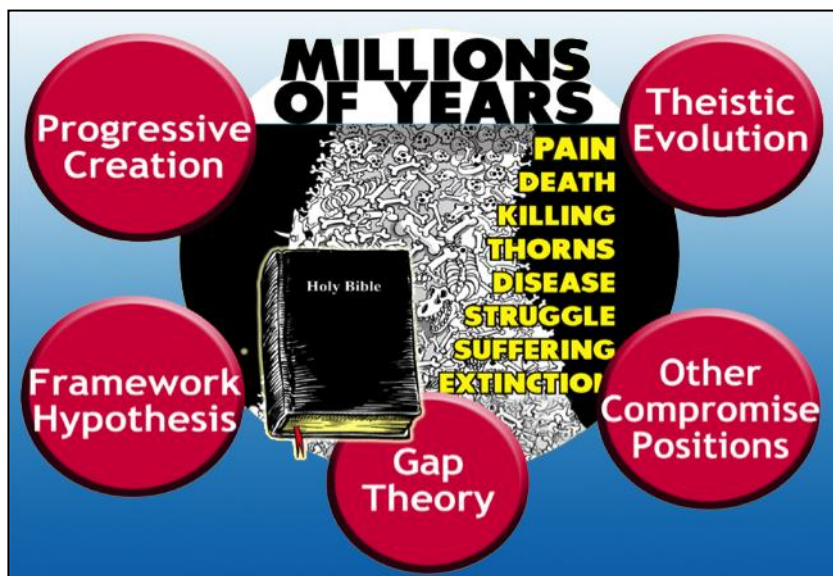
- Many good and godly men only went part way down this “slippery slide,” (Spurgeon, Scofield, etc.) but very often their “disciples” went farther into compromise. The teachers opened the door to unbelief a little and subsequent generations pushed that door open farther.
- Ernst Mayr (Harvard zoologist, one of the greatest American evolutionists of the 20th century), “The Nature of the Darwinian Revolution,” *Science*, vol. 176 (2 June 1972), p. 988:
 The [Darwinian] revolution began when it became obvious that the earth was very ancient rather than having been created only 6,000 years ago. This finding was the snowball that started the whole avalanche.
- But the ancient age of the earth wasn’t a finding of scientific research but rather a necessity flowing out of a deistic or atheistic worldview.
- Our final authority must be the Word of God (Prov 29:25; Ps 40:4). Bible-believing Christians must not accept the assumptions of uniformitarian naturalism in their interpretation of the physical evidence as they seek to reconstruct the history of creation. We must fear God more than man and not give in to peer pressure.
- And we must trust and honor the Word of the One who was there at the beginning and there at the Flood, who knows everything, never makes mistakes, always tells the truth, and who inspired men to write the inerrant Scriptures, more than we trust and honor the words of scientists, who weren’t there in the beginning, don’t know everything, make mistakes, don’t always tell the truth (intentionally or unintentionally) and most of whom are in rebellion against their Creator, trying to explain the world without God so they don’t have to feel morally and spiritually accountable to Him.

Alternative Views of Genesis

Over the past 200 years various reinterpretations of Genesis 1-11 have been proposed in an attempt to accommodate the millions of years, if not also evolution. There are serious hermeneutical, theological, and scientific problems with all of them, not the least of which is that they all accept millions of years of death, disease, bloodshed, and extinction among animals and other natural evils (earthquakes, hurricanes, tornadoes, etc.) before the fall of man. See Terry Mortenson and Thane H. Ury, editors, *Coming to Grips with Genesis* and James B. Jordan, *Creation in Six Days*.

Gap Theory (e.g., Charles Spurgeon, C.I. Scofield):

All the millions of years can fit between Genesis 1:1 and 1:3. Then Genesis gives us six literal days of re-creation. Some gap theorists say that the geological record resulted from a global flood at the fall of Satan sometime during this gap. Many gap theorists would overlook or reject the global Flood of Noah’s day.



All these views accept millions of years of death before the Fall.

Day-Age Progressive Creationist (e.g., Hugh Ross, Gleason Archer):

The days of creation are not literal days but figurative of millions of years each. The creative acts in Genesis 1 are not strictly limited to the days where they are mentioned. Progressive creationists accept astronomical and geological evolution but deny biological evolution. They also deny that Noah's Flood was global.

Day-Age Theistic Evolutionist (e.g., Francis Collins, BioLogos):

The days of creation are not literal days but figurative of millions of years each. The creative acts in Genesis 1 are not strictly limited to the days where they are mentioned. Theistic evolutionists are also known as evolutionary creationists. They believe that cosmological, geological, and biological evolution describes how God created. They deny that Noah's Flood was global or believe it was a myth.

Framework Hypothesis (e.g., Meredith Kline, Mark Futato):

Genesis 1 is not historical narrative but a literary framework for teaching theology. Therefore, no attempt should be made to try to harmonize Genesis with evolutionary theory, which is generally accepted as describing the method God used to create. Proponents would ignore or deny the global Flood of Noah's Day.

Day-Gap-Day (e.g., John Lennox):

The days of Genesis 1 are literal, but there is an indefinitely long period of time between each day. Proponents ignore or deny that Noah's Flood was global. Lennox also thinks there was an indefinitely long gap before Day 1.

Myth (liberal theologians):

Genesis 1-11 is myth, just like the pagan creation and flood myths of Egypt, Babylon, Assyria, etc. It is irrelevant to questions of origin science.

Analogical Day (e.g., C. John Collins):

The days of creation, which start at Genesis 1:3 (following a long period of time after 1:1) are analogical or anthropomorphic—"God's work-days" that are sequential but not literal and are overlapping. This view is essentially a combination of the gap view and day-age view. Proponents ignore or deny that Noah's Flood was global.

Revelatory Day (e.g., Donald Wiseman):

The days of Genesis 1 are not days of creation but rather days of revelation, when God revealed to Moses what He created. Proponents ignore or deny that Noah's Flood was global.

Promised Land (e.g., John Sailhamer):

Genesis 1:1 refers to the creation of the heavens and earth and everything in them (except fruit trees and man) over millions of years and from Genesis 1:2 onwards it describes the preparation of the Promised Land, which is the Garden of Eden. Proponents would ignore or deny the global Flood of Noah's Day.

Functional Cosmic Temple (e.g., John Walton):

God didn't create anything in Genesis 1, but only gave function to things already in existence. Therefore the Bible is silent about the question of origins and science is free to develop its theories with no concern for the Bible. Proponents ignore or deny the global Flood of Noah's Day.

Millions of Years of Death Before Sin?

Grand Canyon is part of a massive graveyard covering the earth's surface. There are marine layers with billions of fossils, high above sea level and blanketing every continent. This global graveyard is a testimony to enormous amounts of death, disease, and extinction in the past. Young-earth creationists believe that this is post-Fall and most of the fossil record is the result of the Flood and residual post-Flood catastrophism.

But most Christians around the world, especially those Christian scholars and leaders who think that Christians should accept the scientific majority's claims about millions of years, have not thought carefully, if at all, about death and other natural evils as it relates to the age of the earth. Those who have pondered this issue have indicated by their writings or oral comments that they have not considered most of the verses discussed below and have largely ignored or overlooked published young-earth technical and popular-level literature on this subject. This is a serious oversight on a vitally important issue.

The real issue

- This issue here is not whether animals died of old age before the Fall, but whether or not the fossil record of death, disease, carnivorous animal behavior, creatures being buried alive, massive extinctions, and the other natural evils such as earthquakes, tornados, asteroid impacts, tsunamis, and hurricanes, could have been occurring over millions of years before Adam sinned.
- In the fossil record (in rock layers claimed to be millions of years old) we find cancer, arthritis, and brain tumors in dinosaurs, these and other diseases in other creatures, thorns and thistles, evidence of carnivorous behavior, etc.

Interpretation of the Fossil Record	
Scriptural View	Millions of Years View
No carnivores before Fall	Carnivores long before man
No thorns and thistles before Fall	Thorns and thistles 300 million years before man
No animal disease before Fall	Cancer, arthritis, etc. found in dinosaurs long before man
No human disease before Fall	Human disease long before any reasonable date for Adam
No animal extinctions before Fall	Five major mass extinction events million of years ago

There was no natural evil before the Fall

- The pre-Fall creation of Genesis 1 is described as “good” (6x) and “very good” (v. 31).
- Man and every animal and bird were originally vegetarian (1:29–30).

The Post-Fall Judgment (Gen 3:14-19): physical judgment on man and the non-human creation

- The serpent and animals were cursed resulting in a change in either physical anatomy or at least in physical behavior.
 - ✓ The ground was cursed (Gen 3:17, cf. 5:29). This was the ground outside the Garden, to which they were expelled (3:23). Thorns and thistles began to grow in that ground (3:18).
- Eve and subsequent women would have increased pain in childbirth.
- Physical death entered the human race (Rom 5:12, 1 Cor 15:21-22). Spiritual death happened immediately at their disobedient (Gen 3:8), not as a result of the pronouncement in Genesis 3:19.

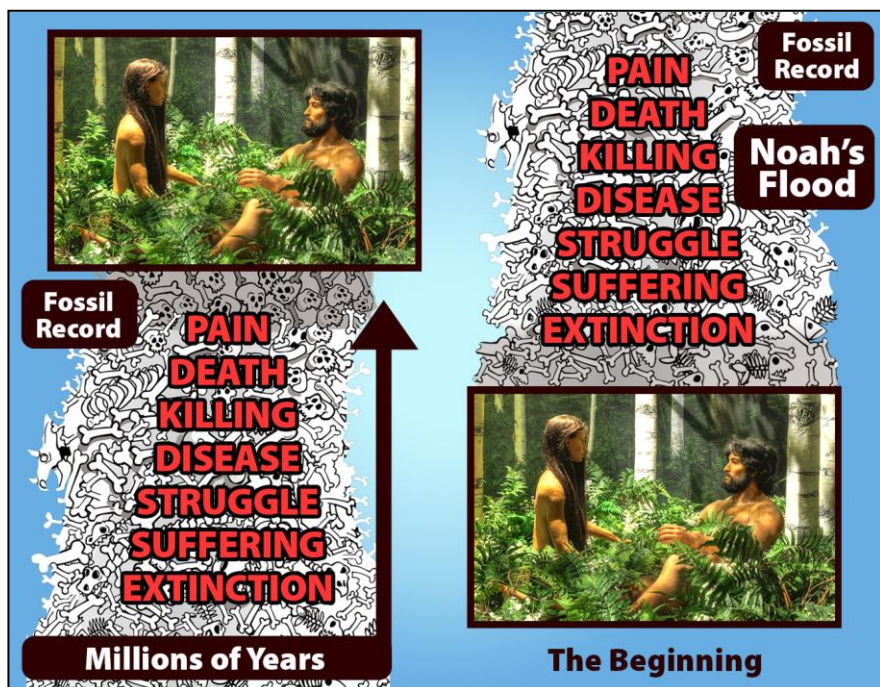
Connection between human sin, God’s curse, and the consequences for non-human creation

- God frequently cursed, or threatened to curse, the non-human creation because of human sin (e.g., Gen 8:21; Deut 28:15-45; Jonah 4:11).

- The whole creation is now subject to futility and in slavery to corruption as a result of God's curse in Genesis 3, not God's "very good" creation work in Genesis 1 (Rom 8:19-23).
- Romans 5:12 and 1 Corinthians 15:21-22 are not relevant to the question of animal death before the fall, as context shows that that these verses are referring only to human physical and spiritual death.
- Psalm 104 and Job 38-39 mention carnivores in the post-Fall, not pre-Fall, creation and therefore do not negate the previous arguments.

The old-earth interpretation of the fossils contradicts Scripture

- If the millions of years claim is true, then God's "very good" creation before the Fall was a much worse place to live than the post-Fall creation under God's curse.
- Either the fossil record was formed before Adam sinned (as evolutionists say) or after he sinned. Both can't be true. If formed after the Fall, then the cause of *most* (but not all) of that record surely must be Noah's Flood (given its purpose in Gen 6:7 & 13). But if the Flood caused most of the fossil record, all of which is post-Fall, then there is no evidence of millions of years of death before Adam (see diagram below).



Only one of these views can be correct. Only the one on the right is compatible with the whole of Scripture.

Restoration from the Fall—Christ came to redeem not just man but the whole creation (Acts 3:21; Rom 8:19-23; Col 1:15-20; Rev 21:3-5, 22:3; Isa 11:6-9 and 65:24-25)

- Acceptance of millions of years of animal death, disease, and extinction and other natural evil is inconsistent with the full redemptive work of Christ in making a new heavens and new earth.

Character of God

- Genesis 1—God called creation “good” and “very good.”
- The God of the post-Fall creation
 - ✓ Exodus 23:12—God commands the Israelites to let their oxen and donkeys rest on the Sabbath.
 - ✓ Deuteronomy 25:4—God commands the Israelites not to muzzle the ox while it is threshing.
 - ✓ Jonah 4:11—God was concerned about the animals in Nineveh, not just the people.
 - ✓ Matthew 6:23—God cares for sparrows and gives animals their food.
 - ✓ Matthew 12:11-12—Helping a sheep out of a pit is “doing good.”
 - ✓ Proverbs 12:10—A righteous man is good, not cruel, to his animals.
- If millions of years really happened, then the pre-Fall God is wicked compared to the post-Fall God.
- The age of the earth matters because the character of God matters. The idea of millions of years of natural evil is a massive assault on the glorious character of our God.

An early 19th century Anglican pastor arguing against the old-earth ideas said this (George Bugg, *Scriptural Geology* [London: Hatchard & Son, 1826], vol. 1, pp. 318-319):

Hence then, we have arrived at the wanton and wicked notion of the Hindoos, viz., that God has ‘*created and destroyed worlds as if in sport, again and again*’!! But will any Christian Divine who regards his Bible, or will any Philosopher who believes that the Almighty works no ‘superfluous miracles,’ and does nothing in vain, advocate the absurdity that a wise, just and benevolent Deity has, ‘numerous’ times, wrought miracles, and gone out of his usual way for the sole purpose of destroying whole generations of animals, that he might *create others* very like them, but yet differing a little from their predecessors?

- This is an enormous theological problem, and no old-earth proponent in the church that we are aware of has even come close to solving it. Most have completely overlooked the problem.
- William Dembski, a leader in the Intelligent Design movement and a philosophy professor at Southern Evangelical Seminary, has tried to develop an argument that would combine millions of years of natural evil before the Fall and yet have it be a consequence of the Fall. See his *The End of Christianity: Finding a Good God in an Evil World*

(2009). He fails for many biblical, exegetical, and logical reasons. See Terry Mortenson's critique of Dembski's view on the AiG web site. In that article is a link to an excellent critique by Tom Nettles at Southern Baptist Theological Seminary.

Non-Christians see the theodicy problem clearly.

- David Hull, evolutionist philosopher, in a review of Phillip Johnson's *Darwin on Trial* ("The God of the Galápagos," *Nature*, vol. 352 [8 Aug. 1991], pp. 485-486) said:

The problem that biological evolution poses for natural theologians is the sort of God that a Darwinian version of evolution implies. ... The evolutionary process is rife with happenstance, contingency, incredible waste, death, pain and horror. ... Whatever the God implied by evolutionary theory and the data of natural history may be like, He is not the Protestant God of waste not, want not. He is also not a loving God who cares about His productions. He is not even the awful God portrayed in the book of Job. The God of the Galápagos is careless, wasteful, indifferent, almost diabolical. He is certainly not the sort of God to whom anyone would be inclined to pray.
- Even if we reject evolution, we still have this contradiction between the Bible and the old-earth story, if we accept the millions of years of death, disease, and other natural evils in the non-human creation.

Young-earth creation is not essential for salvation but foundational to the gospel.

- Like the Bible's teaching about a literal Adam and Fall, its teaching about the age of the earth is a *gospel coherency*—but not a salvation issue.
- A person doesn't have to believe in a literal Adam or a young earth to be saved. He must only believe that Jesus' death and resurrection is what makes him right with God and secures his salvation.
- But a denial of either a literal Adam and Fall, or a young earth, leads logically to a rejection of the truth and authority of Jesus and Paul, who clearly believed in both, which in turn undermines the authority of the Word of God from which we get the gospel.
- As Psalm 11:3 says, "If the foundations are destroyed, what can the righteous do?"
- The issue is not what God *could* do, but what *He said He did do* in creation, as well as in salvation.

If the Foundations Are Destroyed - Why Genesis Matters

In 1988 Carl F. H. Henry wrote in *The Twilight of a Great Civilization: The Drift Toward Neo-Paganism* (Wheaton, IL: Crossways, 1988), p. 15:

Our generation is lost to the truth of God, to the reality of divine revelation, to the content of God's will, to the power of His redemption and to the authority of His Word. For this loss it is paying dearly in a swift relapse to paganism.

Why has this loss taken place? Why is the once Christian West of Europe, Great Britain, and North America now post-Christian, morally decadent and spiritually anemic, and increasingly anti-Christian and the countries most resistant to the gospel and where the church is in such decline? Why does the Bible no longer have moral or spiritual authority in our cultures?

Additional Considerations:

- Psalm 11:3 “*If the foundations are destroyed, what can the righteous do?*”
 - ✓ The single greatest wrecking ball to destroy that foundation has been the secular dogma of millions of years. It destroyed Noah’s Flood and the biblical chronology and undermined biblical authority.
 - ✓ Darwin took Lyell’s ideas of naturalistic uniformitarianism in geology and simply applied it them to biology.

I always feel as if my books came half out of Lyell's brains and that I never acknowledge this sufficiently, nor do I know how I can, without saying so in so many words—for I have always thought that the great merit of the *Principles [of Geology]*, was that it altered the whole tone of one's mind & therefore that when seeing a thing never seen by Lyell, one yet saw it partially through his eyes. Charles Darwin, *The Correspondence of Charles Darwin*, Vol. 3 (Cambridge, UK: Cambridge Univ. Press, 1987), p. 55.
 - ✓ Having abandoned biblical authority regarding chronology and the Flood, the church had no real defense against Darwin’s assault on the doctrine of creation including the creation of man. The acceptance of millions of years paved the way for the acceptance of evolution.
 - ✓ Dr. Michael Denton, an agnostic scientist, wrote in *Evolution: A Theory in Crisis* (London: Burnett Books, 1985), p. 358:

Today it is perhaps the Darwinian view of nature more than any other that is responsible for the agnostic and skeptical outlook of the twentieth century.
 - ✓ By destroying the Bible’s foundational history, the secularists undermined the Bible’s theology and its moral authority, reducing it in most people’s minds to a bunch of myths and ancient religious and moral opinions.
- American Atheists web site, “You KNOW it’s a Myth: This Season, Celebrate REASON!,” (<https://atheists.org/atheism/Christmas>, access 1 June 2011):

No Adam and Eve means no need for a savior. It also means that the Bible cannot be trusted as a source of unambiguous, literal truth. It is completely unreliable, because it all begins with a myth, and builds on that as a basis. No Fall of Man means no need for atonement and no need for a redeemer.
- The acceptance of millions of years is not a salvation issue, but a biblical authority, reliability and perspicuity, and a gospel issue.

- ✓ Accepting the millions of years doesn't make people more open, but rather more resistant to accepting the gospel by undermining the reliability, clarity, and authority of the Bible.
- ✓ Jerry Coyne, atheist professor of evolution at the University of Chicago: "Why reject the story of creation and Noah's Ark because we know that animals evolved, but nevertheless accept the reality of the virgin birth and resurrection of Christ, which are equally at odds with science? After all, biological research suggests the impossibility of human females reproducing asexually, or of anyone reawakening three days after death."
- ✓ Why accept a literal Adam and Eve and a literal fall and reject biological evolution, but at the same time accept the big bang and the geological ages of millions of years?
- ✓ The scientific majority claims that all of evolution (biological, geological, and cosmological) is a fact and all of Genesis 1-11 is myth. To reject one part and accept another part is inconsistent.

Genesis matters. Sound exegesis, solid and growing scientific evidence, and the massive moral and spiritual decay of the former Christian West confirm that Genesis 1-11 is literal history and foundationally important.

Biblical problems with the Big Bang

Many Christians today think that the big bang theory is a wonderful confirmation of "in the beginning God created." And many apologists use the big bang theory to defend theism. But the big bang theory is actually contrary to the Word of God on many points.

The Creation days were six consecutive 24-hour periods only thousands of years ago.

- *Yom* (Hebrew for "day") is defined in Genesis 1:5 with the usual two literal meanings: light portion of light-dark cycle and the whole cycle.
- When *yom* is modified by number, it always means literal days in the rest of the Old Testament (cf. *b^eyom* in Gen 2:4 with Num 7:10-84).
- In Genesis 1 *yom* is associated with night, evening, and morning—the latter three nouns always are literal in the rest of the Old Testament.
- *Yom* is defined literally in Genesis 1:14 in relation to heavenly bodies, which were created so man could measure literal years and days.
- The literal meaning of *yom* is confirmed in Exodus 20:11.
- The acts of creation were instantaneous, by God's Word (Ps 33:6-9).
- Creation Week was only a few thousands of years ago (Gen 5 and 11).

The order of events in Genesis contradicts the big bang story.

- Scripture: earth created before the Sun.
 - ✓ Big bang: stars and galaxies evolved billions of years before the sun and the sun evolved half a billion years before earth.

- Scripture: earth initially completely covered with water and then dry land appeared, and earth completely covered with water at the Flood.
 - ✓ Big bang: earth initially a hot molten ball, then it developed a hard crust, followed by localized oceans. Earth has never been completely covered with water at one time.
- Scripture: land plants were created before the sun, moon, and stars.
 - ✓ Big bang: sun, moon, and stars were created stars before plants.

Sequence of Creation	
Evolution	Genesis
Sun before earth	Earth before sun
Dry land before sea	Sea before dry land
Sun before light on earth	Light on earth before sun
Stars before earth	Earth before stars
Sea creatures before land plants	Land plants before sea creatures
Land animals before trees	Trees before land animals
Death before man	Man before death
Dinosaurs before birds	Birds before dinosaurs
No global ocean ever	Two global oceans (days 1-2 & Noah's Flood)

Genesis 1:14-17 teaches the heavenly bodies were made on Day 4.

- Sun, moon, and stars were placed *IN* the expanse (*raqi'a*) which was made on Day 2.
- *Raqi'a* is where the stars are: Daniel 12:3.
- Waters above the *raqi'a* are evidently still there (Ps 148:4).
- Birds were created to fly “across/upon the face of” (Heb: *al paney*) the expanse (*raqi'a*), not “in” the expanse (Gen 1:20). The same phrase (*al paney*) is used in Genesis 1:2; 7:3, 18, 23; and 11:4.
- Purpose of the celestial bodies: to tell time for humans (Gen 1:14).
 - ✓ A strange purpose, if during virtually all their billions of years of existence before man, the celestial bodies could not serve this created purpose.
- God said He **made** (*'asah*) the sun, moon, and stars on Day 4.
 - ✓ *'Asah* means “made” (not “appear”) in Genesis 1:6-7, 24-25, 26.
 - ✓ If God made them before and they only appeared on Day 4, He had a perfectly good word to use in the context: “appear” (*ra'ah*) in Genesis 1:9.
 - ✓ Genesis 1 was not written from the perspective of someone on the earth. It was written from a divine perspective as “God saw” indicates (seven times in Gen 1).
- If God didn't make the sun, moon and stars on Day 4, then where do we put their creation?
 - ✓ Was it in v. 3 when God said let there be light? If so, then it still can't be harmonized with the big bang theory because Genesis

says that God created the earth *before* the sun, moon and stars.

- ✓ Was it in v. 1? It is illogical and contrary to the big bang to have the sun, moon, and stars created before light was created. Proponents of this theory claim that clouds completely covered the earth for billions of years so that the heavenly objects were not visible on earth until Day 4, but there is no biblical or scientific evidence to support such a position, and it is contrary to secular thinking.
- ✓ Was it before v. 1? No, Exodus 20:11 rules that out because it says that God made the heavens and earth and all that is in them during the six days, and therefore nothing before that.
- If “the heavens and the earth” in Genesis 1:1 is a merism, meaning the whole universe and all it contains, then:
 - ✓ Genesis 2:4; Exodus 20:11; Nehemiah 9:6; Psalms 69:34; 146:6; Jeremiah 51:48; and Haggai 2:6 do not mean the whole universe and all it contains, since things in the heavens and earth are mentioned separately from that phrase in these verses.
 - ✓ We must conclude that all plants, animals, and Adam and Eve were also created in Genesis 1:1.
 - ✓ Genesis 1:1 is a summary statement (rather than a description of the first act of creation of an unformed and unfilled heavens and earth). But the Bible has no statement of the creation of the earth or an absolute beginning, opening the door to an eternal earth and universe.

Genesis 2:1-3 teaches that creation was completed on the 6th day.

- God is still resting from His creation work. He did not resume creating (in the Genesis 1 sense of supernatural and *ex nihilo* creation) on Day 8.
 - ✓ The lack of the refrain (“there was evening and there was morning, the seventh day”) further emphasizes that God completed His creative work.
- If the days are not literal, then the 7th day is still continuing to this day.
- In either case God is not now creating.
- So, the present processes observed by astronomers are NOT the processes God used to create the earth, sun, moon, and stars.
- If we are still in the 7th day, then all human death, disease, wars, etc., have occurred during the “day” that God blessed and sanctified. Or Adam, who was created before the 7th day, is a myth, which then makes Jesus, the son of Adam (Luke 3:23-38), a myth also. Therefore, if Adam and Jesus are a myth, then the gospel is also.

Jesus and Paul believed man has existed essentially as long as the rest of creation (Mark 10:6, Rom 1:20). See arguments in *Coming to Grips with Genesis* (ch. 11 and 12).

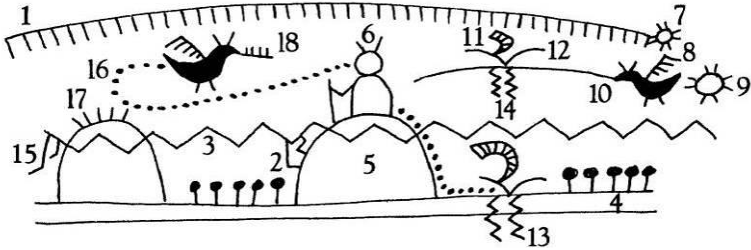
Flood Legends

Flood legends are found in different cultures from around the world. More than 230 stories from Asia, Australia, North and South America, Europe, and Africa all have parallels to the biblical account. They generally agree that:

- It involved an ark, or vessel of some type.
- Everything was destroyed by water.
- The Flood was a judgment of man's sin.
- One person was warned and was able to save himself and his family.
- The animals were saved on a vessel, which came to rest on a mountain.
- A bird was sent out to determine the end of the Flood.

These stories, when viewed as a whole, add additional support to the reality of the biblical account of a worldwide Flood.

Example: Hualapai Flood Pictograph



- (1) Raining 45 days (2) Legs climbing (water rising) (3) Water (4) People wiped out (5) Wikahme' [mountain] (6) Old man on mountain (7) Sun (days) (8) Bird obeying Creator (9) Bird coming from East (10) Bird telling man to dig with ram's horn to drain water (11) Ram's horn (12) Open up (dig) (13) Old man going down and digging hole; water drains out (14) Water going (15) Legs (water) descending (16) Old man telling bird to go; bird finds (17) Grass on mountain (18) Grass in mouth

Source: *Spirit Mountain, an Anthology of Yuman Story and Song*, Univ. of Az Press, P40, 1984



Why do so many people groups have Flood legends?

A GEOLOGIC INTERPRETATION OF THE GRAND CANYON

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?"

One then concludes that most rocks seen on earth today would have been formed during two very short periods of time – the six-days creation week, when the entire planet was literally spoken into existence. The second was the one-year Flood when the surface of the planet was totally reworked. By comparison, not much happened geologically in the period between creation and the Flood, or in the period since.

A Biblical Model

A simplified diagram of the Grand Canyon's geologic column is shown as Figure. The intent of the diagram is to show where the rocks found in the Grand Canyon fit in both the biblical and secular (uniformitarian) model, therefore the diagram does not for example show the intrusions of material into the sedimentary layers or the post-Flood volcanic activity.

The biblical time scale on the left of the diagram indicates the most recent time at the top and initial creation at the bottom. It is divided into four parts: Creation, Pre-Flood, the Flood, and Post-Flood. The Flood can be divided into three stages: early Flood and mid-Flood with the Floodwaters rising onto the land, and late Flood with the waters flowing off the land.

The major rock layers found in the Grand Canyon are shown in the center section with lines indicating when in the time scale they were likely formed. Most of the sedimentary layers found in the Grand Canyon were deposited during the early Flood stage while the waters were advancing, with the exception of the Grand Canyon Supergroup, which would have been part of the original creation events and further developed during the pre-Flood period.

Geological Strata of Grand Canyon

Two Contrasting Timescales

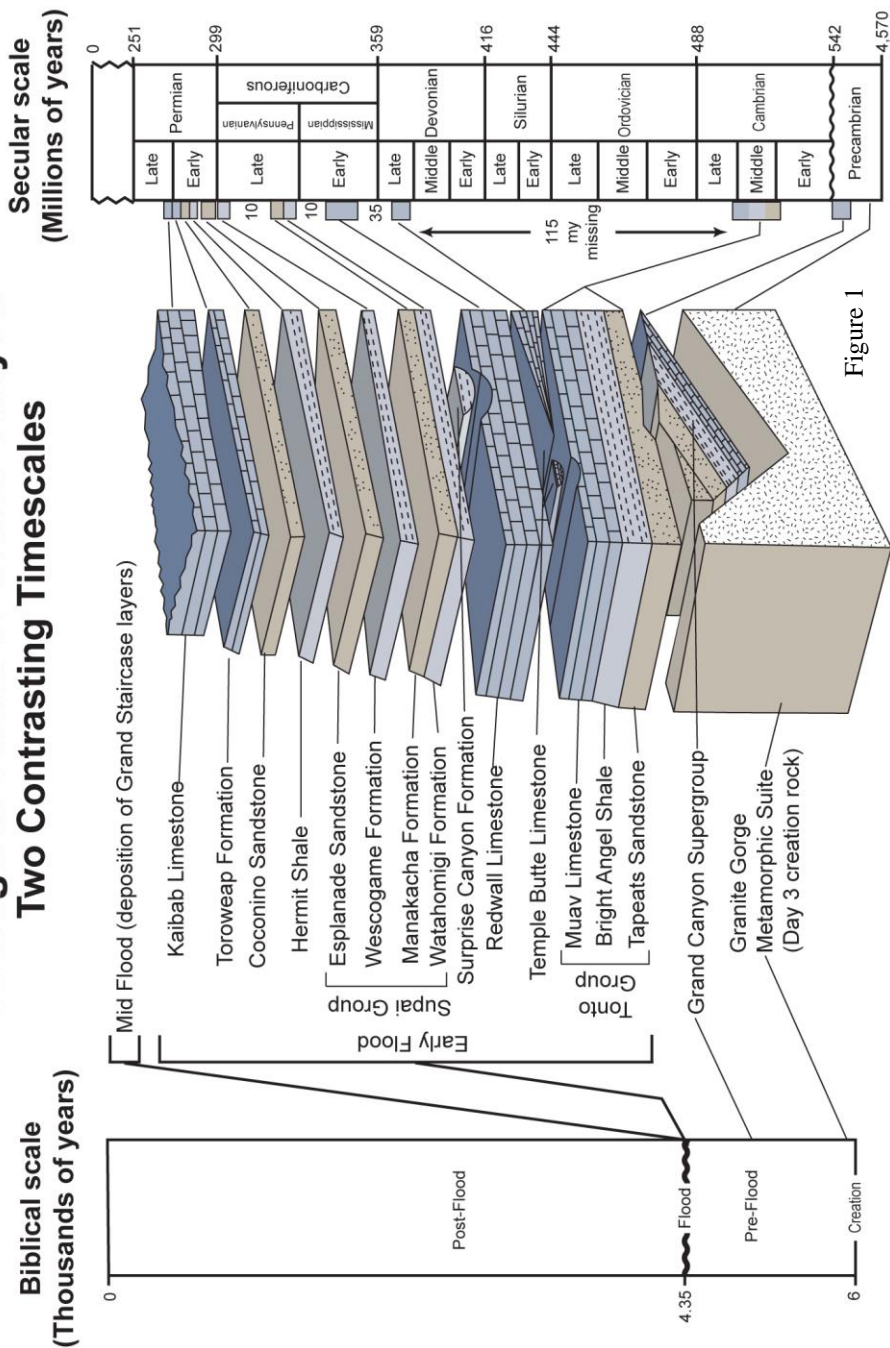
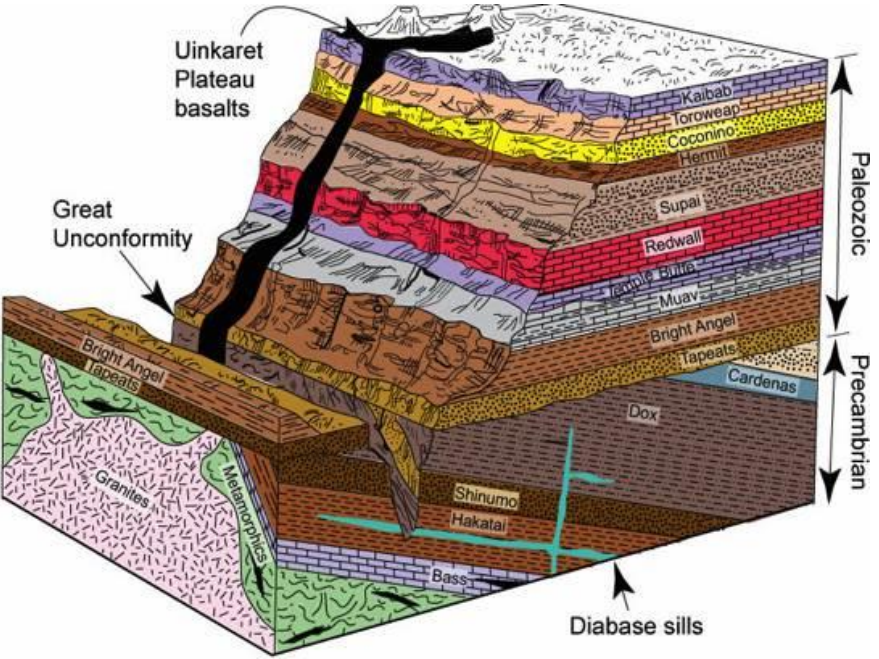


Figure 1

With that in mind, every rock on earth today must fit somewhere in the biblical time scale, because it covers the entire history of the earth. Therefore, one can interpret the rocks in the field utilizing this same general idea. Biblical geology is the key to understanding earth’s history.

In contrast, the uniformitarian model of the canyon’s formation imagines that the rock layers were deposited slowly, usually a particle at a time, over literally hundreds of millions of years (note time scale on right column), with the canyon later carved slowly by the Colorado River.

Figures 2 shows 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’s formations.

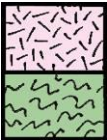


Sedimentary Rocks



Sandstone
Siltstone
Shale
Limestone

Metamorphic Rocks



Granite
Schist & Gneiss

Igneous Rocks



Post-Flood Basalt (Lava)
Diabase (Sills & Dikes)

Figure 2

The basement formations are made up mostly of schists and granites, with the tilted sedimentary layers (most of which, creationists believe, are pre-Flood) above them, overlaid by the first horizontal (Flood) deposit. In the evolutionary model, there are from five to over 100 million years missing between many of these horizontal layers.

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. Additionally, part of the "standard" geologic column representing over 100 million years is missing from the middle of the canyon formations, between the Temple Butte Limestone and the Muav Limestone.

The boundary between the pre-Flood and Flood sediments in some parts of the canyon is not clear, and not all creation scientists agree on where that boundary lies.

It is significant that what is seen in the Grand Canyon does not represent all the Flood deposits laid down in the area. Figure 3 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's formations. 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.

Those layers were eroded away as the Floodwaters receded from the land. Also, note the amount of uplifting that has taken place, "pushing up" the area around the canyon (figure 3). 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.

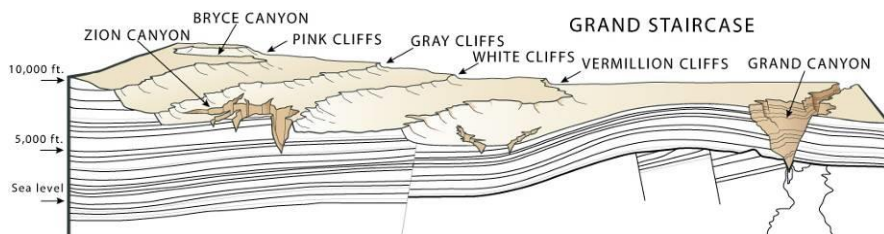


Figure 3

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

Answer: That place is only in the uniformitarian geology textbooks!

Erosion of Grand Canyon

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 4). 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 overwhelming.

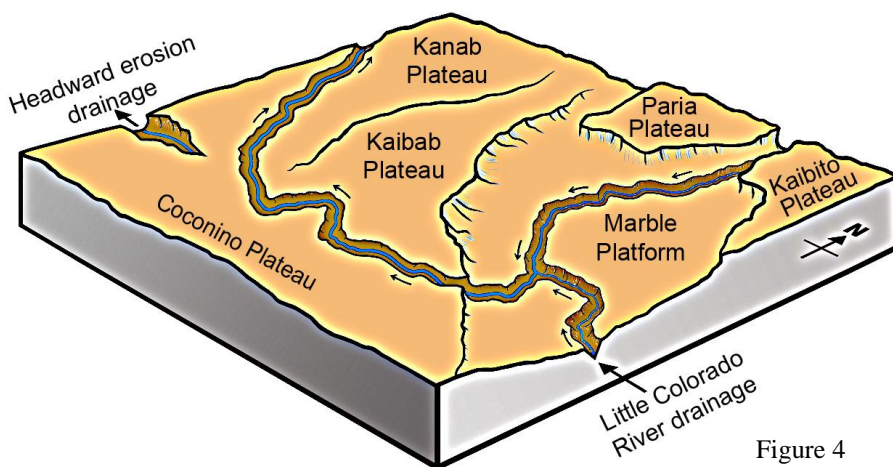


Figure 4

Following is a brief description of the formation of the layers, and subsequent carving of the canyon as seen by the two models. While there are many more details in both models, it shows how diametrically opposed to each other they really are. It was either a little bit of water over a very long period of time, or a great deal of water over a short period of time.

Evolutionary model:

The formation of the layers of the Colorado Plateau are thought to be the result of the entire plateau, 250,000 square miles, being uplifted above sea level for a period of erosion lasting from five to 100 million years. The plateau was then lowered and inundated by an ocean for a period of sediment deposition. This rise and fall cycle took place at least seven times over a period of over 300 million years to produce the sedimentary layers seen in the Grand Canyon today.

When Powell made the first trip by boat through the Grand Canyon, the geology of the canyon was a mystery. Powell, a geologist, theorized that the river carved the canyon slowly, at about the same rate as the Colorado Plateau rose to its current 9,000-foot elevation. Since that time, theories have come and gone, but the mystery remains. Evolutionary geologist Wayne Ranney said in his 2005 book on the canyon, entitled *Carving Grand Canyon: Evidence, Theories, and Mystery*

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. (Page 11)

Grand Canyon is a puzzle, a mystery, an enigma. It appears to have been carved through an uplifted plateau, ignores fault lines, may have been born by a river that once flowed the other way, is possibly quite old or quite young – or both – and is set within a mature landscape.

Some people may wonder why there is still so much controversy among geologists concerning ideas on the origin of the Grand Canyon. Perhaps they suspect that in our modern world, with all of its technologic and scientific advances, questions about the canyon's history have been fully answered. They oftentimes seem surprised to learn that geologists still refer to ongoing "problems" associated with understanding the details of Grand Canyon's origin. "Didn't the river carve it?" people invariably ask. The answer is absolutely yes and the one truth that every geologist agrees upon is that the Colorado River carved the Grand Canyon. But more important are the deeper questions: "How did the river cut the canyon?" "When did it accomplish its task and by which manner of erosion?" Geologists remain perplexed by these more difficult questions and continue to puzzle over the subtle intricacies and lack of meaningful clues about how and when this landscape evolved. Grand Canyon is somewhat unique among our national parks because of the lack of a single, scientific theory regarding its origin. ... But, Grand Canyon's origin remains shrouded in mystery and there are few places visitors can go to obtain even a rudimentary understanding about its beginnings. (Page 19-20)

One of the places visitors have gone to try to understand the origin of this immense landscape is to its depth on a raft. But all that is found here are the rocks; no labels on the rocks telling when they were made; no pictures of what the landscape looked like before the canyon; and no agreement of those who have come to study on exactly what happened.

Just over the last 30 years the theories of the canyon's formation and the course of the river have been batted back and forth like a ping-pong ball. In 1980 the generally accepted model was that the river turned east at the Little Colorado River (river mile 61) and flowed east towards Texas about 70 million years ago. The lack of sediment from the carved canyon brought that theory to its end.

During the 1990s the direction of the river was theorized to have turned west, cutting into the 3,000 foot Kaibab Monocline, and ignoring the lower elevation to the east. The river then turned north at Kanab Creek (river mile 144), flowing into the Great Salt Lake area. And the timeframe went from 70 million years ago down to 17 million, then to just 6 million.

The early 2000's saw the age remained at six years million for several years, but by about 2008 the age was moving up again to 17 million years. And recently there are those who are looking at placing the carving of the Grand Canyon, based on sediments found in caves to the north, back at 70 million years.

Another factor in this debate is when the western Grand Canyon was carved (*western* being downstream of Kanab Creek, river mile 144). For the age of the canyon to be more than six million years, the river had to flow to the north because there are basalt rocks found on both sides of the canyon, which were erupted from a cinder cone (volcano) on the north rim. So for those rocks to be also found on the south rim, the canyon has to be younger than the date given to the basalt, which is six million years.

All of these factors come together to create what Ranney calls “...a puzzle, a mystery, an enigma.”

Evolutionary Overview:

- The age of the carving of the canyon is unknown, with most guesstimates being somewhere between 6 and 70 million years.
- For the river to carve the canyon it would have had to cut through (not flow around) the 3,000 foot high Kaibab Monocline.
- Basalt flows located on the north rim of the western canyon, which have spread to the south rim, indicate the canyon is no older than those flows (estimated to be 6 million years old).

Creation model:

If we start with the presupposition that Genesis 6-9 is a reliable eyewitness historical account of the global Flood event (primarily from God's perspective), then there are far-reaching scientific implications.

The account says the Flood event began with the breaking up of “the fountains of the great deep”, followed by at least 40 days and nights of global torrential rainfall (the floodgates of the sky were not closed till the 150th day so rain fell longer than 40 days), so that the waters “prevailed exceedingly” for 150 days until “all the high hills under the whole heaven... and the mountains were covered”, resulting in all air-breathing, land-dwelling animals being destroyed.

If the biblical description of the Flood is true, what evidence for such an event would we expect to find?

- Sea creatures buried in water-deposited sediment layers found up on the continents, even in mountains, due to the ocean waters having flooded over the continents, just as we find, e.g., in the Grand Canyon, the Himalayas, etc.
- Rapid burial of plants and animals in these sediment layers, often demonstrated by their exquisite preservation, and/or by mass burial in fossil graveyards, just as we find, e.g., the nautiloids in Redwall Limestone, Grand Canyon.
- Rapidly-deposited sediment layers spread across vast areas of the continents, and even between continents, demonstrating Flood conditions, just as we find, e.g., the Tapeats Sandstone and Redwall Limestone seen in the Grand Canyon.
- Sediments in those widespread rapidly-deposited layers have been eroded from distant sources and transported long distances by fast moving waters, just as we find, e.g., Coconino Sandstone, Grand Canyon.
- Evidence of rapid or no erosion between rock layers, indicating not millions of years at the boundaries, but rather continuous deposition, just as we find, e.g., beneath the Coconino Sandstone and Redwall Limestone, Grand Canyon.
- Many sedimentary rock layers deposited in rapid succession, as demonstrated by whole strata sequences that have been bent without fracturing, indicating that all the layers were deposited and folded while still wet and pliable before their final hardening, just as we find, e.g., the whole Grand Canyon sequence folded in some areas.

All of these evidences are clearly seen in the Grand Canyon, which indicates that the creationist's model of the formation of the Grand Canyon is not only consistent with Scripture, but also fits the physical evidence very well.

After the Floodwaters prevailed, the Genesis account describes the waters as abating and returning from off the earth continually. What would that have been like?

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 eroded over 10,000 feet of horizontal sedimentary material from parts of the plateau as evidenced by the Grand Staircase to the north of the Grand Canyon. As the waters diminished they would have started to channelize, cutting the initial path of the canyon into the plateau.

More information is available on the carving of the canyon in *The New Answers Book, Vol. 3, ch. 18*, but here are some of the key points:

Creation Overview:

- The Floodwaters abating and returning from off the earth continually (Gen 8:3-5) is a description of a back and forth movement of the receding waters, movement that would cause erosional effects in the previously deposited Flood sediments.
- In the Grand Canyon area the retreating Floodwaters eroded off over a wide area of the originally overlying 10,000 feet of sedimentary layers of the Grand Staircase.
- As the Flood event ended, the Colorado Plateau (including the Kaibab and Coconino sub-plateaus) was pushed up some 3,000 feet.
- In the currently-preferred model, the last of the retreating Floodwaters left a channel across the plateau, and then they became trapped in huge lakes to the north and east, dammed by the rising plateau.
- Heavy rainfall from intense storms in the immediate post-Flood period quickly filled these lakes, until they overflowed.
- When they overflowed, the water first used the pre-existing channel across the plateau.
- The water flow rapidly increased and down-cutting accelerated, such that a lot of water (estimated at about three times the volume of today's Lake Michigan) in a short time (days to weeks) carved out the Grand Canyon.

The Big Picture of How the Flood Occurred

An often-asked question is how did the ocean waters rise to overflow the continents? To answer that question, one needs to understand how the continents and ocean basins ride on top of the earth's mantle which is beneath them. The continents couldn't sink, as the rocks making up the continental crust are less dense (lighter) than the mantle beneath, so they "float" on top of the mantle. The ocean floor rocks are denser (heavier) than the continental rocks, which is why the ocean floor sinks relative to the continents, the ocean basins thus formed then "accommodating" the ocean waters.

The old-earth geological model imagines that the Grand Canyon region sank so ocean waters could invade it to deposit a layer, and then rose again to expose land before sinking again for the ocean waters to deposit the next layer. This was repeated many times. Creationist geologists and geophysicists contend that this is geophysically almost impossible!

The biblical account of the Flood describes the event beginning with "the fountains of the great deep" breaking up, so what does that mean?

- In 1859 Antonio Snider-Pellegrini published his theory of catastrophic continental break-up and sprint (plate tectonics) during the Flood.
- In the 1960s the evolutionary geological community finally adopted slow-and-gradual plate tectonics as a powerful model for explaining much geological and geophysical data.
- In 1994 geophysicist Dr. John Baumgardner and others revived and expanded the catastrophic plate tectonics model for the Flood,

demonstrating that it has more explanatory power than slow-and-gradual plate tectonics, dealing with what the latter cannot explain and more, including how the ocean waters could rise to flood the continents.

The breaking up of “the fountains of the great deep” accurately describes the initiation of the catastrophic plate tectonics of the Flood, resulting in the release from upwelling molten rock from the mantle of superheated steam in supersonic jets that carried ocean water in them as they shot up into the atmosphere. Heat would have been released into outer space while the entrained ocean water cascaded back to the earth’s surface as global torrential rainfall (perhaps described as “the windows of heaven were opened”).

Geological Implications:

- Once the pre-Flood supercontinental crust was broken into plates, plate motion began and accelerated to a speed of many feet per second (about 6-10 mph).
- Simultaneously melted mantle rock rose to generate new ocean floor crust in the rift zones throughout the ocean basins, concurrent with the subduction of old ocean floor crust at the plates’ leading edges under adjacent continental plates.
- The new ocean floor crust being warm was less dense, so it rose by up to a mile (which is why even today there are still mid-ocean ridges), thus pushing up sea level by a mile so that the ocean waters flooded across the continents.
- At the same time the mantle convection also caused the subducting ocean floor to push down the edges of the adjoining continental plates, helping the water to flood the land.
- The horrendous earthquakes resulting from catastrophic plate movements generated huge tsunamis that, coupled with the enlarged daily tidal fluctuations on a global ocean would have scoured and eroded sediments, and then rapidly deposited sediment layers right across continents, burying animals and plants.
- The fossil and strata sequence on the continents represents the burial order of the Flood, with marine invertebrates buried first exclusively, and followed progressively by continental ecosystems and biologic communities at increasing continental elevations.
- Mountain chains were produced where continental plates collided, such as the Appalachians made out of crumpled early Flood strata (when the African plate collided with the North American plate during the formation of Pangea), followed later by the Rockies, which include later Flood layers (when the Pacific plate collided with the North American plate).
- When all the old ocean floor crust was subducted, plate motion slowed, while the new ocean floor crust cooled, became denser and sank, so that sea level dropped and the Floodwaters retreated off the continents, carving

out much of the present-day topography, including the Grand Canyon in two stages (very late Flood and early post-Flood).

- The warm ocean waters left by the Flood event generated the post-Flood Ice Age, by providing more moisture to be carried by winds to the Polar Regions, where it fell in heavy snowstorms building the ice sheets. It is also possible that leftover ash in the atmosphere from all the volcanic eruptions late in the Flood would have partially blocked sunlight, producing cool summers so that snows didn't melt. These conditions persisted for many decades sustaining the great ice sheets. Then these sheets rather quickly receded as the ocean waters cooled and the atmosphere cleared warming the land.

Earth's History from Creation to the Present

The biblical framework and description of earth history explains far more completely what we see in the canyon, compared to the evolutionary view. As one traverses down through the entire Grand Canyon rock sequence, you are able to place each rock unit where it fits within the earth's history from creation to the present.

The level in the Grand Canyon sequence which gives the clearest unambiguous alignment within the biblical framework of earth history is the Great Unconformity, which is the continent-wide erosion surface resulting from the beginning of the Flood. So all or most of the rock units below the Great Unconformity are pre-Flood rocks, beginning at the deepest level with the crystalline basement schists and granite intrusions, which were eroded off, leaving an unconformity before deposition of mostly non-fossiliferous sedimentary layers (and some basalt lavas).

Was there an event prior to the Flood when there was global-scale erosion that resulted in an unconformity on which sediments were then deposited? Yes, in Genesis 1 we are told that on Day 3 of the Creation week God commanded the waters covering the globe to be gathered into seas so that the dry land was made to appear.

Geological Implications:

- It is consistent with this description that to accomplish this task there had to be great earth movements which raised some of the rocks beneath the globe-covering waters to become the dry land, and caused the designated ocean basins to sink so the waters were gathered into them.
- As the intended land areas were raised by these earth movements the globe-encircling waters were parted and retreated from off the emerging rocks, eroding across them to leave an erosional unconformity, while the retreating waters carrying sediments eventually deposited them on top of that unconformity. But there would be no land plants or animals buried and fossilized in these sediments because they had not yet been created at this point.

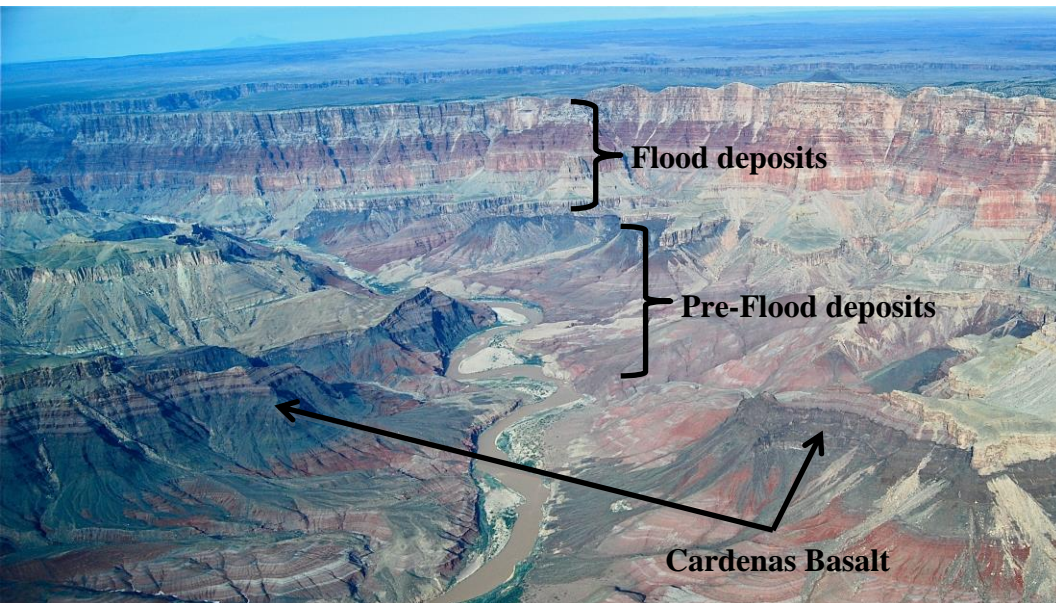
- This closely matches what we see in the Grand Canyon rock sequence (see Figure 2, page 38):
 - ✓ The crystalline basement schists and granite intrusions being the resultant product from the raising of the original rocks to form the dry land on Day 3,
 - ✓ The unconformity across them being the result of erosion by the retreating waters, and
 - ✓ The non-fossiliferous sedimentary layers deposited on that unconformity representing the sediments deposited on Day 3 and onwards beyond the Creation week into the pre-Flood era.
- Towards the top of these pre-Flood sedimentary layers some macroscopic fossils are preserved as what appear to have been former stromatolite reefs that must have been built on the pre-Flood shallow ocean floor fringing the land (a single supercontinent?). These single-celled organisms did not contain the “breath of life” which the Flood was sent to destroy.
- The Great Unconformity marks the commencement of the Flood event. The pre-Flood sedimentary rock layers were tilted, and then the advancing waters eroded their way over the rifting-apart supercontinent.
- The fossil-bearing Flood sedimentary layers were then deposited on that continent-wide erosional unconformity.
- The Flood sediment layers include the 4,500 feet of fossil-bearing layers seen in the canyon walls up to the rim, and above that almost another 10,000 feet of fossil-bearing layers which are exposed in the cliffs of the Grand Staircase to the north.
- Then at the same time as the Floodwaters were retreating the Colorado Plateau region was being pushed up (due to crustal readjustments) so that the waters eroded off large areas of these later Flood layers, including across the Grand Canyon area.
- As the water flow diminished and the water level dropped, it changed from area-wide sheet erosion to restricted flow into channels that eroded across the Kaibab-Coconino Plateau (Grand Canyon area).
- At the same time the Kaibab-Coconino Plateau had risen some 3,000 feet higher than the areas to the north and east, so that residual Floodwaters became trapped there in huge lakes, dammed back by that plateau.
- Heavy rainfall from intense storms in the immediate post-Flood period quickly filled these lakes, until they were ready to overflow.
- When they overflowed, the water first used the pre-existing channels across the plateau.
- The water flow rapidly increased and down-cutting accelerated, such that a lot of water (estimated at about 3 times the volume of today’s Lake Michigan) in a short time (days to weeks) carved out the Grand Canyon through the still hardening sedimentary layers.

- Some years later repeated volcanic eruptions in the western Grand Canyon area produced basalt lavas that cascaded into the canyon, forming successive natural dam walls that temporarily impounded the Colorado River, which broke through and washed away the basalts, except for surviving remnants.
- The average ocean depth today is approximately 12,500 feet and the average land height is approximately 2,750 feet. The ocean is about 4 times deeper than the land is high. There is still plenty of water in the ocean to cover the earth.

Sedimentary Layers

There are two groups of sedimentary layers seen in the Grand Canyon. The upper layers, which lie mostly horizontal like a stack of pancakes, are the Flood deposits. These layers were mostly laid down in early stage of the Flood and are seen throughout the extent of the canyon and across the continent.

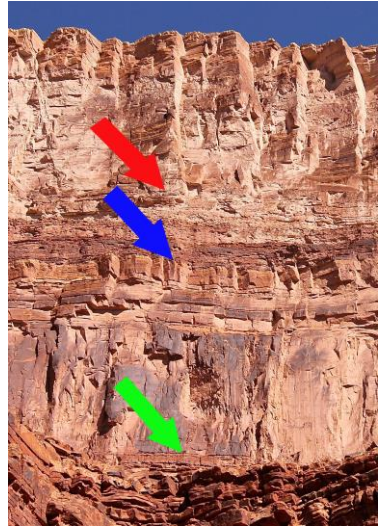
There are also pre-Flood sedimentary layers found in some areas of the canyon, such as the Furnace Flats area. These layers are generally tilted, dipping down about ten degrees to the east and are remnants of the pre-Flood world.



Furnace Flats, so named for its summer temperatures, displays both the horizontal Flood deposits, seen along the rim, and the tilted pre-Flood deposits at river level. Sandwiched between the pre-Flood layers is the black Cardenas Basalt.

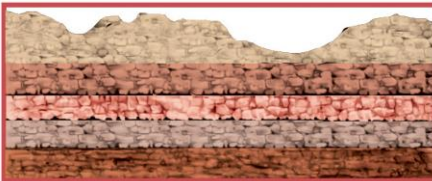
Contacts between the layers

The rapid sequential deposition of sedimentary layers by water can produce an almost “table-top” flat surface, such as seen between the Toroweap Limestone and the Coconino Sandstone (blue arrow), as well as between the Coconino and the Hermit Shale (green arrow). Other boundaries, such as between the Kaibab Limestone and the Toroweap Formation beneath it (red arrow) are very hard to distinguish because there is no observable erosional surface there, but only an almost imperceptible change in the bedding and hardness. While the contact between the Toroweap and the Coconino below it (blue arrow) is more distinct.

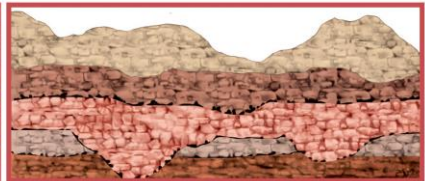


When the evolutionists investigate the contacts between the sedimentary layers, they interpret them as representing from five to over 100 million years of “missing” time and material. For example, the contact between the Coconino Sandstone and the Hermit Shale (green arrow) is viewed as representing a five to ten million-year gap, during which the Schnebly Hill Formation was deposited to the south. The boundary between the Kaibab and the Toroweap (red arrow) is supposed to be evidence of a few million years of erosion when the Toroweap was exposed land between the deposition by different oceans.

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. Modern topography is not flat but has valleys and hills. If long periods of time have elapsed, where are all the valleys and hills along the contact lines between the layers?



Layers as they are



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

Geological Implications:

- The evidence of abundant time and significant erosion is missing, which is more consistent with continuous deposition during the one Flood.
- At the Toroweap Formation boundary with the Coconino Sandstone (blue arrow) there is “intertonguing or interfingering”. That is, the two formations do not always have a sharp contact between them and each formation can often have characteristics of the other, such as thin beds of sandstone alternating with thin beds of limestone.
- This is consistent with continuous deposition from the same body of water, but with the sediment supply changing, rather than the conventional requirement of a significant time break before the Toroweap ocean swept over the last Coconino exposed land surface.

Coconino Sandstone

The Coconino Sandstone is undoubtedly the most debated layer in the Grand Canyon region. The secular interpretation is that the deposit represents fossilized desert sand dunes and therefore it is proof that Noah’s Flood is foolish nonsense. The evidence often cited includes steeply dipping cross-beds (discussed below), well-sorted and rounded sand grains, animal tracks (discussed below), and raindrop impressions. However, new work on this sandstone has shown the following:

- ✓ the cross-beds do not dip at the same angle as desert dunes, but at about 12 degrees less
- ✓ the sand grains are neither well-sorted or well-rounded (as found in modern deserts)
- ✓ the best explanation for the animal tracks is that they were made underwater (discussed later)

Additionally, there have been many new discoveries about the Coconino that suggest it was deposited underwater instead of in a desert. Microscopic studies of the rock show the presence of mica flakes, which are very soft and disintegrate quickly in desert settings, but not when underwater. Dolomite is a marine mineral which has been found as thin beds, cement, ooids (small balls like bb’s) and clasts at many locations within the formation. Large sand-filled cracks can often be found at the base of the Coconino which are now known to be sand injectites (not filled mudcracks) which require water saturation.

Folded cross-beds have been found in the Sedona area called parabolic recumbent folds (pictured right) which require strong water currents to not only make the cross-beds, but to overturn them as well. These features are not present in deserts, but have been identified in underwater deposits.



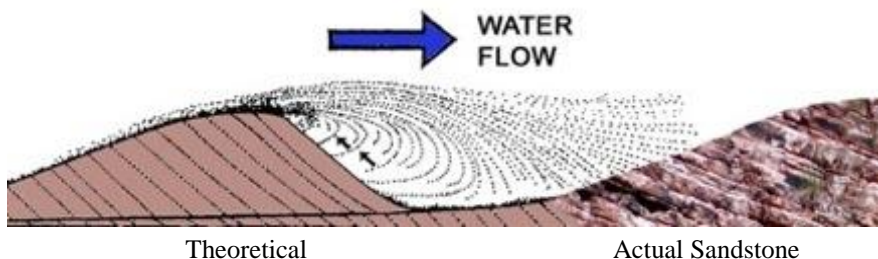
These and other discoveries strongly indicate that the Coconino was deposited in an underwater environment. The data indicate that the Coconino may be a large sand wave deposit. Sand wave deposits are common on continental shelves and estuaries that have strong currents. In many regards sand waves look very much like desert sand dunes, except that they form on the bottom of the ocean.

Geological Implications:

- New studies have shown the cross-bed dips are closer to 20 degrees, more consistent with underwater deposition.
- The sand is not well-rounded and sorted, but rather is angular and poorly sorted.
- Mica, which quickly disintegrates in a desert environment, is shown in microscopic studies.
- Thin beds of dolomite, a marine mineral, are found in the Coconino.
- Parabolic recumbent folds in the Coconino are strongly suggestive that this sandstone was deposited underwater.
- Injectites, sand-filled cracks, found in the Hermit Shale, just below the Coconino Sandstone, require a marine (water) environment.

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 overall horizontal layers were deposited. As shown in the simplified diagram below, 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.



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.

The “layers” of cross-bedding are clearly seen throughout the canyon. They 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.

Geological Implications:

- The cross-bedding in the Coconino Sandstone is claimed by evolutionary old-earth geologists to result from desert sand dune deposition. If true, then it can't be a result of a global Flood.
- But sand waves are also generated underwater by swift water currents (for example, on the floor of the channel under San Francisco's Golden Gate Bridge) and in Long Island Sound off New York.
- The angle of the cross-beds matches the angle of the advancing sand dune or wave fronts, which can be measured in the field and from laboratory flume experiments.
- The angles of desert dune fronts always average 30°-34°, whereas those of sand wave fronts are usually 25° or less.
- The Coconino Sandstone cross-beds are closer to 20°, so underwater sand wave deposition during the Flood is the model that is more consistent with the evidence.

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 to Greenland 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 the global Flood.

Geological Implications:

- The Tapeats Sandstone and its equivalents cover the majority of the North American continent and are also found stretching from southern Israel and Jordan right across northern Africa.
- The Redwall Limestone is also found across much of North America as well as in England and across in the Himalayas.
- The Coconino Sandstone covers parts of seven states with as much as 1,000 feet of pure sand

Dating Sedimentary Layers

How do the 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, they determine the absolute ages of the fossils based on the layer in which

it was found. To date the layer, they may use radiometric dating of underlying and overlying volcanic rocks, or by other “index” fossils found in the layer. The fossils are thus dated by the layer in which they are found. But layers elsewhere with the same fossils in them are then dated by those fossils found in them! Isn't there a bit of circular reasoning in this process?

Conversely, the creationists use fossils only for relative ages based on the burial order during the Flood



Lack of Rockfall



The Grand Canyon is made up of a network of side-canyons and amphitheaters (scalped or U-shaped canyons, pictured at left), which all feed into the main canyon. As you view these canyons, which are often formed by a process called sapping, one of the first things you notice 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.

Geological Implications:

- Looking across to Lees Ferry and beyond to the Vermillion Cliffs (pictured above) there is very little rockfall debris at the bases of all the cliffs.
- If the Colorado River carved out the Grand Canyon over millions of years, then there ought to be a lot of rockfall debris at the bases of these cliffs, and cliffs throughout the canyon.
- However, we consistently see that there is very little rockfall debris at the bases of all the cliffs.
- This is because, even before the dams, the Colorado River was never powerful enough, even in flood stage, to clear out its channel to even just remove the debris making the rapids, let alone the debris at the bases of the cliffs.
- So the small amount of observed rockfall debris only represents a few thousand years' worth, accumulated since the canyon was carved out catastrophically, very late in the Flood and/or soon thereafter.

The Fossil Record

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. Modern experiments have shown that all types of animals and shells decompose quickly if they are not buried rapidly. So, when a rock contains fossils it is automatically testimony to rapid burial. The problem that this causes for evolutionary millions of years models is where to put the



time. Because of the fossils, long time periods can't be put within the layers, so time is then placed between them. However, there is often little evidence of long time periods there either.

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 God would have described as "very good?"

Fossil Tree Fern Log in Shinarump Conglomerate Layer

This fossilized log of a tree fern (about 90 feet long) is buried in the Shinarump Conglomerate Member at the base of the Chinle Formation (recognizable by its Painted Desert colors due to weathering of its volcanic ash beds). It cannot be explained by present geologic processes. In the Petrified Forest National Park to the east of the Grand Canyon, many logs can be found that are all oriented in the same general direction.



Geological Implications:

- The Shinarump Conglomerate averages 50 feet thick and covers an area of more than 100,000 square miles.
- There is no known sedimentary equivalent forming in modern times, so the present is NOT the key to the past.
- For this log to be buried intact within this conglomerate layer containing cobbles and boulders required rapid burial (otherwise the tree would have rotted and disappeared).
- The preferred orientation of the logs indicates deposition by a strong water current.
- The conglomerate layer itself also requires catastrophic formation because of the sizes of the cobbles and boulders it contains.
- Fossilized tree fern leaves have not been found in the Shinarump Conglomerate, but are found in the Hermit Formation and Supai Group at least 600-1,000 feet down and supposedly 50-100 million years beneath this fossilized tree fern log.
- Since the fossilized leaves and logs seem related, the enormous time between them brings the evolutionary timing of deposition into question.
- Yet this evidence is consistent with catastrophic deposition (of the Supai, Hermit, and overlying Coconino, Toroweap, Kaibab, and Moenkopi layers, as well as the Shinarump) and burial (of both the logs and leaves) within weeks during the recent, year-long, global Flood.

Fossilized Trackways in the Coconino Sandstone

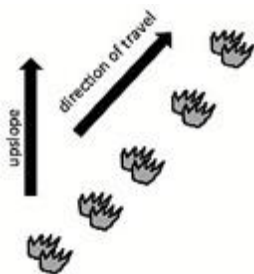
Fossilized animal trackways (footprints pictured below right) are found in the Supai Group and the Coconino Sandstone layers of the Grand Canyon. These tracks provide another important clue. Research indicates these tracks were most likely laid down by some form of amphibian and the trackways mean the animals were alive. If that is correct, then 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.

Geological Implications:

- Fossilized vertebrate footprints are found in trackways preserved on cross-bed surfaces in the Coconino Sandstone (pictured right).
- Evolutionary old-earth geologists cite these footprints as evidence of the desert sand dune model for deposition of the Coconino Sandstone.
- However, well-defined and sharply-delineated footprints like these are *never* preserved on dry, wind-blown desert sand dune surfaces.
- Even desert dews are insufficient to preserve such footprints.
- On the front of the advancing dune the water velocity approaches zero, thus allowing the prints to be covered/preserved and not eroded away.



- The fossilized footprints often show that the line of the trackway was in one direction, while the animals' feet were pointing in a different direction, which is very hard to explain in a desert context but makes very good sense of an underwater context in which the creature was struggling against a water current.
- The observed fossilized trackways show alternating left-right footprints with mounded push-backs at the heels and claw prints at the fronts (pictured above), which indicate the quadrupeds were climbing the sand wave fronts.

- Occasionally the left-right footprint sequence is interrupted and recommences laterally a short distance away, suggesting that the animals temporarily lost their footing and were shifted sideways by cross-currents.
- But always the direction of climbing by the quadrupeds is up the sand wave fronts (cross-beds), indicating they were trying to move towards the water-air surface in order to escape rising waters and get their breath.
- The same features have been reproduced on sand surfaces in water tank laboratory experiments while newts were walking underwater and being pushed by a current.
- So these fossilized trackways are NOT evidence of desert sand dune deposition of the Coconino Sandstone, but are consistent with underwater sand wave deposition during the Flood.

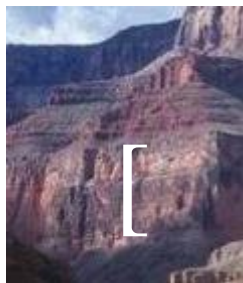
Nautiloid fossils

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 evidence that the extensive Redwall was not deposited in a placid sea, but in a catastrophic event, such as the Flood.



Nautiloids 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 (bracketed in the picture below) is a seven-foot thick layer containing, estimated by the frequency of exposed fossils, hundreds of millions of fossilized nautiloids.



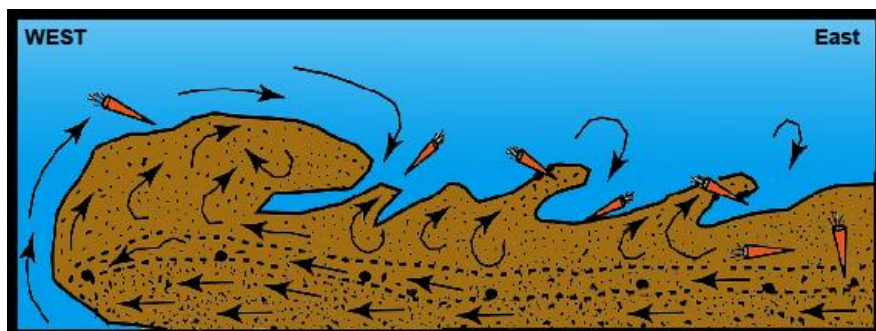
This layer persists throughout most of the Grand Canyon region, northern Arizona, south-eastern Nevada and southern Utah, occupying an area of as much as 11,600 square miles.

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.

Geological Implications:

- Fossilized straight-shelled nautiloids were first reported in Nautiloid Canyon at River Mile 34.8 more than 60 years ago.

- This 7-foot thick bed stretches at least 180 miles east-west and covers an area of at least 11,600 square miles.
- These were investigated by creationist geologists, Dr. Steven Austin and Dr. Kurt Wise, in the 1990s. Their research led to the definition of the Whitmore Nautiloid Bed in which the fossilized nautiloids are exclusively found, and they traced and mapped the extent of this fossil graveyard from Marble Canyon to beyond the suburbs of Las Vegas and north into Utah.
- The nautiloids vary in size from about one to six feet in length, are mostly horizontal in the bed, but are sometimes at angles up to the vertical, and are found in the 70 sampling locations to be at an average density of two or more per ten square feet, suggesting that perhaps hundreds of millions are buried throughout the extent of the bed.
- The evidence is strong that this bed represents a mass kill and burial of an entire living population of nautiloids in 24 cubic miles of lime sand and silt, along with crinoids (sea lilies), corals, brachiopods (lamp shells), gastropods (snails), and bryozoans (lace corals).
- This event had to be catastrophic, because vertical nautiloids up to six feet long could hardly have “stood” upright (with the pointed end down) for thousands of years while being gradually buried.
- From laboratory flume experiments (diagramed below) it can be demonstrated that a hyperconcentrated sediment slurry must have flowed under gravity, travelling at up to 11 miles per hour, out of Colorado south-westwards, sweeping away and progressively burying hundreds of millions or more of these creatures as they were tossed around as debris.



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 (pictured right, 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.



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 eroded and smoothed by a continental-scale flow of water, as would be expected in a global Flood.

Geological Implications:

- An unconformity is a boundary between two rock layers that are not conformable (i.e., they are not parallel to one another) and where there is evidence of a time gap (short or long) between them, often marked by obvious erosion.
- At approximately river mile 62 is the first exposure of the Great Unconformity on our raft trip, which is a continent-wide erosion surface.
- Above the Great Unconformity is the Tapeats Sandstone, the first of the Flood-deposited layers, with the unconformity representing the surface (mostly flat, but with some minor topographic relief where there are harder units) of erosion by the Floodwaters as they advanced over the continent.
- The layer at river mile 62 underneath the Great Unconformity is the Nankoweap Formation (not the Dox Formation as shown incorrectly in the river guide), which in evolutionary old-earth geologists' thinking is supposedly about a billion years old.
- Elsewhere in the canyon the rocks eroded at the Great Unconformity are often granites and metamorphic rocks supposedly as old as 1.6 to 1.8 billion years.
- Since the Tapeats Sandstone is supposedly about 520 million years old, the Great Unconformity variously represents a time gap of supposedly about 200 million to 1.2 billion years.
- But nowhere can we see any evidence of the deep weathering which should mark the passage of such eons of time. On the contrary, the rocks up at the unconformity surface are as chemically and mineralogically fresh as the same rocks at greater depths.
- In the base of the Tapeats Sandstone at this locality and elsewhere are found coarse grains and pebbles of fresh pink feldspar.
- Feldspar is very susceptible to weathering. So its presence in the Tapeats Sandstone indicates both no weathering of the eroded granites underneath (from which it was derived), and very rapid erosion of the granites and deposition of the sandstone.
- Rapid catastrophic deposition of the Tapeats Sandstone is confirmed by boulders (up to 80 feet in diameter) found elsewhere in its base.

Basement Formations and Intrusions

Just below Hance Rapids at river mile 77 we enter the Upper Granite Gorge with its walls of basement formations and intrusions. At this locality above these crystalline basement rocks is another major erosional unconformity, above which are sedimentary rock layers that do not contain macroscopic fossils and also sit below the Great Unconformity which marks the onset of the Flood event, so these are pre-Flood sedimentary rock layers.



Schist (black) intruded by granite (pink)

Geological Implications:

- The crystalline basement rocks of the inner gorge consist of:
 - ✓ Generally gray schists, which are classified as metamorphic rocks, due to heat and pressure metamorphosing (transforming) former shales, siltstones, sandstones and volcanic rocks, and
 - ✓ Generally pink or gray granites, which are classed as plutonic igneous rocks because they cooled and crystallized under the ground from molten rock (magma).
- Deeply buried layers of shales and siltstones are subjected to elevated pressures and temperatures, especially in mountain-forming plate collision belts, so that they are crumpled and metamorphosed into schists containing new minerals, such as micas (black biotite and white muscovite) and garnets, along with quartz (clear-white) and feldspar (often pink).
- If the pressures and temperatures increase, then the rock begins to partially melt, beginning with the lowest melting point minerals, quartz and feldspar.
- As this partial melting occurs, if pressures and temperatures do not continue increasing, then the melted quartz and feldspar mixture, being fluid and less dense than the residuum, is squeezed so that it migrates upwards along fractures and the metamorphic layering until it encounters lower temperatures and there cools and crystallizes as quartz-feldspar veins and small masses, as seen in this locality.
- If, however, the pressures and temperatures continue to increase, then further melting of the whole rock mass occurs, converting most of it into granitic magma, which being fluid and less dense than its surrounding source is squeezed upwards along fractures and so intrudes en-masse into cooler host schists closer to the earth's surface where it crystallizes and cools into the huge bodies called plutons which we see downstream in the inner gorge.

Faulting and Soft-Sediment 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 right. 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 located just below Matkatamiba Canyon is about 30 feet in height, and is found to cross the boundary between the Muav and Temple Butte Limestone formations (pictured left), which in the uniformitarian interpretation has a gap of 140 million years “missing” at the smooth, sharp boundary between these two limestone layers and yet the folding supposedly

occurred hundreds of millions of years later.

A spectacular example of a soft-sediment fold is the 300 foot Monument Fold at river mile 116 (right), where the Tapeats Sandstone is folded without breaking and above it also the Bright Angel Shale, yet the folding event was supposedly hundreds of millions of years after sediment deposition, by which time these rocks would have been hard and brittle so they should have snapped when bent.



Geological Implications:

- Hard rock layers are brittle, so under pressure to bend they fracture and snap, producing a fault line, which is what generates an earthquake.
- Folding (bending) rock layers so they don't fracture and snap requires the rock layers to be still soft and pliable when folded, which is why this is called soft-sediment folding.
- Or the rock layers have to be under so much confining pressures that with accompanying elevated temperatures the rock layers become plastic and pliable.

- *BUT* such elevated pressures and temperatures should also change (metamorphose) the rocks, resulting in transformation either to produce new minerals or recrystallization, or both, yet neither is found in these rocks.
- Examples of both faulting and soft-sediment folding are very evident in the Grand Canyon. Just beyond river mile 65 the Palisades Fault can be seen, particularly on river left where the Nankoweap Formation is bent into the fault line where the rock layers snapped, causing a vertical displacement of 2,400 feet, and bringing the underlying stack of Cardenas Basalt lava flows up high above the river downstream.

Dating Methods

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 (Radiometric) Dating

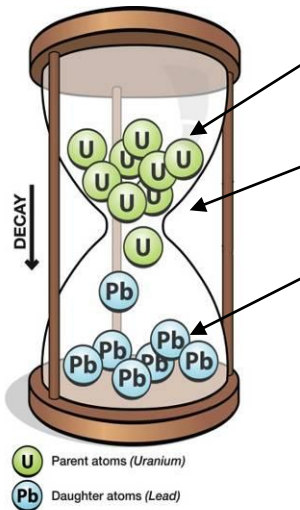
Does radioisotope dating prove the rocks in the Grand Canyon are millions of years old? Geologists use various dating methods to determine the ages of rocks. Evolutionists use radioactive dating methods (other than carbon-14, which is discussed below) on rocks and minerals to determine the theoretical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

Radioisotope dating is only useful in igneous and metamorphic rocks, such as the basement rocks found in the canyon, and is based on the radioactive decay of a “parent” element into 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.

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? This would invalidate the entire process.

Assumptions



First: the original quantities of the radioactive elements (Uranium) and of their decay products (Lead) in the rock 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.

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 they are generally explained away as anomalies. How “scientific” or accurate 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.

Geological Implications:

- Geologists collect suitable samples from rock units and submit them to radiometric dating laboratories for age determinations.
- In the laboratories sophisticated analytical equipment is used to chemically analyze the rock samples for the elements of interest.
- From the resultant chemical analyses the ages of the rocks are then calculated.
- These calculations require three assumptions discussed above.
- The accuracy of the chemical analyses is NOT disputed, but the interpreted ages are, because the required assumptions are unproven, unprovable, and unreasonable.

- The main elements of interest in the dating methods used are:
 - ✓ uranium (U) which decays to lead (Pb)
 - ✓ potassium (K) which decays to argon (Ar)
 - ✓ rubidium (Rb) which decays to strontium (Sr)
 - ✓ samarium (Sm) which decays to neodymium (Nd)
- There are abundant examples documented even in the conventional scientific literature of how all these methods repeatedly failed (gave enormous ages for rocks of known age of decades or centuries) because of the documented problems with the assumptions.
- No scientists were present when most rocks formed, but when they are present and the rocks' true ages are known from observations, the methods invariably fail, e.g.:
 - ✓ Mount St. Helens 1986 lava flow ten years later yielded K-Ar ages of up to 2.8 million years (Ma);
 - ✓ recent Hawaii lavas yield K-Ar ages up to 43 Ma; and
 - ✓ recent basalts on ocean islands yield Pb-Pb ages of 1-2 billion years.
- Many times dating the same rock unit by different methods gives different ages, when the theory behind these methods insists all methods should give the same age, e.g., Cardenas Basalt, Grand Canyon, yields:
 - ✓ a K-Ar age of 516 Ma,
 - ✓ a Rb-Sr age of 1111 Ma, and
 - ✓ a Sm-Nd age of 1588 Ma.
- “Ancient” and “recent” basalt lava flows in the same region are known to yield the same very old ages - e.g. “ancient” Cardenas Basalt and “recent” western Grand Canyon basalts yield Rb-Sr ages of 1111 Ma and 1143 Ma respectively, indicating that they came from the same source with the same chemistry.
- Many granites yielding young whole-rock ages contain very “old” mineral grains that are then claimed to be contamination, e.g.:
 - ✓ Himalayan granite 21 Ma (K-Ar) containing zircon 1753 Ma (U-Pb),
 - ✓ SE Australian granite 426 Ma (Rb-Sr) containing zircon 3500 Ma (U-Pb),
 - ✓ New Zealand granite 370 Ma (Rb-Sr) containing zircon 1638 Ma (U-Pb), and
 - ✓ Himalayan granite 20 Ma (K-Ar) containing zircon 1483 Ma and monazite at minus 97 Ma (U-Pb) (that would be 97 million years into the future.)
- Since the unreliability and unpredictability of the three unproven and unprovable assumptions have been extensively well documented, how can any radiometric date be regarded as reliable and trustworthy?
- The only reason the methods are used is that they yield the desired ages that the old-earth geologists want, but only after selecting those that fit their preconceived expectations.

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 the global Flood would have caused to the biosphere (which would affect the assumptions in C-14 dating – see below), 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.



Geological Implications:

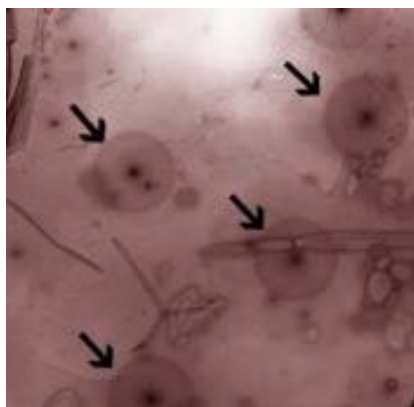
- Radiocarbon is not used to date rocks because most rocks don't contain radiocarbon, which is only used to date former living plants or animals that contain organic carbon.
- But radiocarbon is not normally used to date fossils either, because radiocarbon decays relatively quickly, with a half-life of 5,730 years.
- At that rate, if the earth was made up of only radiocarbon atoms, all of them would have decayed away (to nitrogen) within one million years.
- But fossils are claimed to be millions of years old, so they should be radiocarbon "dead" (i.e., they should have no radiocarbon atoms left in them).
- Yet ever since the method was developed, it has been documented repeatedly in the radiocarbon literature that detectable radiocarbon has been routinely found in every sample of coal, oil, natural gas, limestones, fossil shells, fossil wood, and dinosaur bones that has been tested.

- Indeed, ten samples from US coal beds supposedly from 40 Ma to 310 Ma old all yielded the same radiocarbon age of around 49,000 years, meaning that all the vegetation involved in making these coals lived at the same time (just prior to the Flood) and was buried at the same time (during the Flood year)!
- Radiocarbon ages are based on the assumptions that:
 - ✓ radiocarbon has always been produced in the atmosphere at today's rate, and
 - ✓ radiocarbon in the biosphere has always been in equilibrium with atmospheric radiocarbon.

But the catastrophic changes of the Flood upheaval would have dramatically affected the atmospheric and biosphere radiocarbon. So the further one goes back in history from about 1000 BC, it has been documented that the more the radiocarbon ages are much too old.

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 right are polonium-210 radiohalos). 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 element, alongside uranium radiohalos which would have formed at the same time, provide evidence for accelerated nuclear decay and very rapid formation of associated minerals and rocks. Therefore, the research of radiohalos has raised a significant challenge to the conventional dating methods as discussed above.

Geological Implications:

- Radiohalos are physical evidence that a lot of radioactive decay has occurred within some rocks.
- Some radiohalos were produced by the element polonium, which only has a fleeting existence, from seconds to days.
- Polonium-210 radiohalos in the upper formations of the Colorado Plateau were squashed while forming, indicating that those rock layers were all deposited within months.
- For polonium-218 radiohalos to form alongside uranium radiohalos at the same time in the same mineral grains nuclear decay had to be grossly accelerated, and those mineral grains and the rocks hosting them had to also form rapidly.
- If radioactive decay was grossly accelerated in the past compared to today's measured slow rates, then this challenges the reliability of the conventional millions-of-years dates for rocks and geologic processes.

Lava “Falls” and Dams

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 in the past.



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 sedimentary 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.

Geological Implications:

- Vulcan's Anvil at river mile 178 is the first remnant at river level of the remains of former lava flows that temporarily dammed the Colorado River
- Massive remnants of these basalt lavas are seen downstream all the way to Lake Mead, and also along the canyon walls up to the rim, including even some of the small cinder cone volcanoes and vents from which these lavas erupted.

- These eruptions occurred well after the canyon was carved out, along north-south fault lines primarily on the North Rim. The lavas cascaded over the rim as lava “falls” and quickly ponded and cooled within the canyon building up successive natural dam walls that repeatedly blocked and temporarily dammed the Colorado River.
- Originally estimated as 13 successive dams, there is strong evidence of several overlapping lava flows in some dams, thus reducing the number to only several dams (Rugg and Austin, 1998).
- One of these dams had a wall up to 2,500 feet high, almost filling the canyon with stacked lava flows, with a lake behind it extending all the way back to Nankoweap Creek at river mile 50, more than 120 miles upstream.
- And instead of supposedly surviving thousands of years before these dams failed, because the basalt cools into vertical columns, the fractures between the columns provide a weakness the water pressure behind the dam walls would have exploited, so the dams would have failed catastrophically within days to tens of years.
- The whole episode of repeated volcanic eruptions, dam-building and dam-“busting” would likely have only lasted hundreds of years.
- In spite of the possibility that the last of the volcanic eruptions may have been witnessed by the earliest native Americans in the area (well after the dispersion from Babel and the post-Flood Ice Age), radiometric dating of these basalts has yielded these erroneous ages:
 - ✓ K-Ar ages of 0.44–1.2 Ma,
 - ✓ K-Ar ages of 20–46 Ma (for olivine grains in the basalts),
 - ✓ a Rb-Sr age of 1143 Ma (the same as the Rb-Sr age for the Cardenas Basalt), and
 - ✓ a Pb-Pb age of 2600 Ma.



Lava flow into the canyon near Lava Falls (note river, bottom center)

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, that 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 in 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 risen 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 the virgin birth and resurrection of Jesus 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 reliability, clarity and 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? Wouldn't we just be picking and choosing which parts we want to believe, rather than believe it all? If the Bible's 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 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.

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, 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, not the record of development of life over millions of years.

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 first made it. Whether geological or biological, all aspects of it have been marred by two real, historical judgments on all the earth – the Fall and 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 we challenge you to consider further (through the resources recommended at the end of this booklet), and with an open mind, the evidence given here. 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 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.

Top Ten Evidences

Listed below are the top ten Evidences for a Young Earth and/or a Global Flood from both a biblical and geological perspective:

Biblical

1. **Genesis 1** – Straightforward historical narrative of a literal 6-day creation: *yom* is modified by numbers and evening/morning and linked to sun, moon and stars as chronometers (pp. 32-34).
2. **Exodus 20:11** – Everything in the physical universe was created in six literal days, which are the basis for the Jewish work-week (pp. 10, 32).
3. **Genealogies** – Genesis 5 and 11 and Luke 3 leave no room for more than 6000-10,000 years. Even if some names are missing, we can't insert millions of years to fit evolution (pp. 10-11).
4. **John 2:1-11** – Jesus revealed himself as Creator by his first and subsequent miracles, which were done by His word and were all instantaneous.
5. **God's Curse on Creation at the Fall** – The curse affected the whole creation, not just man. Therefore the death, disease, extinction, etc. we see in the fossil record could not have happened over millions of years (Gen 3:14-19; Rom 8:19-23) (pp. 5, 28-30).
6. **Global Biblical Flood** – Genesis 7 through 8 describes a global catastrophe, which provides the mechanisms for producing the worldwide sedimentary rock layers and fossil record (pp. 12-14).
7. **Universal Terms (Gen 6:5-9:17)** – about 60 uses of “all,” “every,” “under heaven,” “in whose nostrils is the breath of life,” etc., (which includes reference to birds that could easily escape a local/regional flood). (Gen 7:14, 23) (pp. 13).
8. **Flood Duration and Depth** – The Flood lasted 371 days (Gen 7:11; 8:14), lifted the ark to the top of a mountain (Gen 8:4-5) and covered all the high mountains under the heavens (Gen 7:20) (pp. 13).
9. **Rainbow Promise** – It was made to all people, animals and birds and their descendants, and to the earth (Gen 9:8-17). If it was a local flood - God lied, (pp. 13).
10. **New Testament Witness** – Jesus and the apostles took Genesis as literal history and clearly believed in a global Flood and that man was at the beginning of creation, not billions of years after the beginning (Mark 10:6 13:19; Luke 11:50-51, 17:26-30; Rom 1:20, 2 Peter 2:5; 3:3-6; cp. Matt 24:37-39, etc.) (pp. 5-, 9, 11-12).

Geological

1. **Great Unconformity and continent-wide marine inundation** – the Floodwater rose rapidly to erode and flood the continents within forty days, not over millions of years (pp. 57-58, 41-43, and 51-52).
2. **Explosion of fossils in Flood layers (the Cambrian Explosion)** – no evidence for evolution over millions of years is seen in the fossil record. Life was already in abundance, designed and created by God, when the Flood came (pp. 53-57).
3. **Marine rocks on land and layers that extend across continents** (Tapeats, Redwall) – the ocean waters covered the continents only for months during the Flood, not millions of years (pp. 51-52, and 41-43).
4. **Flat contacts between layers** – there is no evidence of millions of years between the layers (pp. 48-49).
5. **Discordant radioactive dates** – these methods are unreliable and cannot provide any certainty that the rocks are millions of years old (pp. 61-65).
6. **Nautiloids in Redwall Limestone** – a powerful example of catastrophic burial of large marine creatures in a massive graveyard that could not have happened over millions of years (pp. 56-57).
7. **Coconino Sandstone** – abundant evidence for rapid underwater deposition, not slow deposition in a desert over millions of years (pp. 49-51, and 55-56).
8. **Missing talus on slopes indicates rapid, unconventional erosion** – catastrophic erosion in weeks as the Flood and residual waters recently removed the debris, which the present river is not capable of removing (pp. 39-43, and 52-53).
9. **Fossils indicate catastrophic burial and formation of rocks** – creatures were rapidly buried as otherwise they would not be preserved (pp. 53-57).
10. **Folds, soft sediment deformation** – indicate not much time has passed between rock formation and deformation. The whole sequence folded while the layer still soft, so no millions of years between deposition and folding (pp. 60-61).

GLOSSARY

The following definitions of terms refer to their usage as related to the Grand Canyon and are not meant to be absolute “scientific” definitions. Many of these terms also have other meanings when used in a different context.

Basement foundation – the rocks below a sedimentary platform or cover, or more generally any rocks below sedimentary layers that are metamorphic or igneous in origin

Bedrock – the solid rock that underlies gravel, soil or other surface material

Brachiopod – a two-shelled marine animal which resembles a clam, though their shells are generally not symmetrical

Carbon-14 dating – a radiometric dating method that uses the naturally occurring isotope carbon-14 to determine the age of carbonaceous materials

Colorado Plateau – a region of plateaus, roughly centered on the Four Corners region (western Colorado, northwestern New Mexico, southeastern Utah, and northern Arizona) which covers an area of approximately 130,000 square miles

Conglomerate – rock consisting of individual rounded stones set in a fine-grained matrix of sand or silt that has become cemented together

Contact – the surface between two types or ages of rock layers, similar to an unconformity, but without the requirement of missing time and erosion

Cross-beds – an inclined arrangement of thin sedimentary beds in a larger horizontal layer, which indicates the direction of the depositional transport

Daughter element – a daughter isotope or daughter nuclide resulting from the radioactive decay of a parent isotope or precursor nuclide (e.g., argon gas is the daughter element of potassium)

Erosion – the displacement of solids (soil, mud, rock and other particles) by the action of wind, water, or ice

Experimental (operation) science – the fields of science (chemistry, physics, most of biology, medical research, engineering, etc.) that use repeatable, observable experiments in the present to learn how material things operate or function so as to develop new technology, new man-made products, cures for disease, etc.

Erosion surface – a land surface shaped by the action of erosion

Fold/folding – an occurrence where originally flat sedimentary layers are bent or curved

Formation – a body of rock layers consisting predominantly of a certain type or combination of types of rock

Fossil – the mineralized or otherwise preserved remains or traces (such as footprints) of an animal or plant preserved primarily in sedimentary rock

Geologic column – a diagram that shows the theoretical sequence of rock formations for a given region or the whole globe, believed to coincide with the subdivisions of geologic time (see diagram inside cover)

Geologic time – a term used by evolutionary geologists to describe the time they believe occurred during earth's history

Granite – a common and widely occurring type of igneous rock, commonly made up mostly of light colored minerals such as quartz and feldspars, “peppered” with darker minerals, often biotite mica

Granite Gorge – three areas of the canyon (upper, middle and lower) where the basement formations are exposed at the river level

Great Unconformity – the contact point between the basement foundation or the Grand Canyon Supergroup and the horizontal sedimentary layers above it

Historical (origin) science – those fields of science (much of geology, paleontology, archeology, cosmogony, etc.) that attempt to reconstruct the unobservable, unrepeatable past origin or history of the universe, earth or life forms on the basis of evidence in the present and eyewitness testimony (if available) from the past that has survived to the present

Igneous rocks – rocks formed when molten rock (magma) cools and solidifies, either below the surface as intrusive (plutonic) rocks; or at or near the surface as extrusive (volcanic) rocks

Index fossil – a fossil that, in evolutionary thinking, identifies and dates the rock in which it is found, based on when that fossil is assumed to have lived

Layer – rock or soil unit with internally consistent characteristics that distinguishes it from those above and below

Limestone – a sedimentary rock composed largely of calcium carbonate (CaCO_3)

Metamorphic rock – the result of the transformation of a pre-existing rock by heat (but below the melting point) and extreme pressure, causing profound physical and/or chemical change

Metamorphism – the alteration or re-crystallization of pre-existing rocks due to changes in heat and/or pressure and/or introduction of high temperature mineral-bearing fluids without melting the rock

Naturalism/naturalistic – the worldview that dominates science today and assumes that 1) nature is all there is (the supernatural does not exist or has no role in the origin or history of the world) and 2) everything can be explained by time and chance and the laws of nature working on matter

Parent element – the parent isotope or precursor nuclide from which a daughter element is derived during radioactive decay (e.g., potassium is the parent element of argon gas)

Radioactive dating – a technique used to date metamorphic and igneous rocks based on the assumed decay rate of the specific elements and the resulting ratio of parent and daughter elements found in the rock today

Radioactive decay – the set of various processes by which an unstable atom (parent element) decays to produce a different atom (daughter element)

Sandstone – a sedimentary rock composed mainly of sand-sized mineral or rock grains cemented together

Sapping – the process in which groundwater exits a bank or hillside laterally in the form of a seep or spring, eroding soil from the slope and often causing the collapse of material above

Schist – a type of metamorphic rock that often contains reflective (shiny) minerals such as mica

Sedimentary rock – a layered rock formed by the accumulation and consolidation of sediments

Shale – a fine-grained sedimentary rock whose original constituents were clay, mud and/or fine silt

Sheet erosion – the erosion of material by water flowing over land as a widespread mass instead of in definite channels or rills

Transitional form/fossil – the fossilized remains of a life form that supposedly illustrates an evolutionary transition from one kind of creature to another kind (e.g., fish to amphibian, reptile to bird, ape to human)

Unconformity – a buried erosion surface separating two rock masses or layers of different ages, indicating that sediment deposition was not continuous; in the evolutionary model this also represents a lengthy interval of missing time

Underfit stream – a stream that appears too small to have eroded the valley or canyon in which it flows and too small to remove the associated rock debris

Uniformitarian/Uniformitarianism, – the worldview which assumes that the processes of geological change (erosion, sedimentation, volcanoes, earthquakes, etc.) have always operated in the past at essentially the same rate, frequency and power, as we observe today. It is often summarized by the statement, "The present is the key to the past."

Worldview – the framework through which an individual interprets the world and interacts in it

- Notes -

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

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, eds., 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

Four Views on the Historical Adam, Barrett/Caneday, eds.,

Zondervan, 2013

Grappling with the Chronology of the Genesis Flood, Boyd/Snelling, eds., Master Books, 2014

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 & 4), Ham (ed.), Master Books, 2013

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/Hergentrather/Bokovoy, Master Books, 2013

Videos: These videos may be ordered from the AiG's website.

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

Millions of Years: Where Did the Idea Come from?, T. Mortenson

GRAND CANYON

Rim Tours

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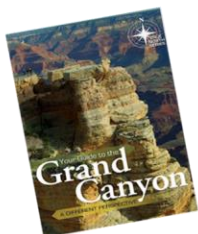
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Receive a free copy of the True North Series guidebook, *Your Guide to the Grand Canyon, a Different Perspective*, with every reservation* (a \$15.99 value)

* One guidebook per group reservation

A Different View Tours is operated by Canyon Ministries