

**Creation Science Exposed –
Stratigraphy and the Young Earth Global
Flood Model – Part One**



By Greg Neyman
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Is the young earth creation science flood model supported by the rock layers of the earth? In order to examine the young earth creation science model of sedimentation and stratigraphy, we will look at the stratigraphy of the Western United States, and determine its validity within the young earth flood model.

You may be asking what stratigraphy is. Stratigraphy is the study of rock strata, especially the distribution, deposition, and age of sedimentary rocks.

First, lets start out with some definitions:

Disconformity – An unconformity in which beds above and below are parallel. An unconformity is a discontinuity in the succession of rocks, containing a gap in the geologic record. In simple terms, you may have a rock layer below, which is dated at 200 million years old, and the rock layer above is dated as 150 million years. The 50 million year gap is not represented by any rock layers

Formation – A distinctive body of rock that serves as a convenient unit for study and mapping

Limestone – A sedimentary rock composed mostly of calcium carbonate (Ca CO_3), formed from the remnants of organisms, usually in calm, shallow seas

Sandstone – A sedimentary rock composed mostly of sand-size particles, usually cemented by calcite, silica, or iron oxide

Sedimentary Rock – Rock formed by the accumulation and consolidation of sediment

Sediment – Material (such as gravel, sand, mud, and lime) that is transported and deposited by wind, water, ice, or gravity; material that is precipitated from solution; and deposits of organic origin (such as coal and coral reefs)

Shale - A fine-grained clastic sedimentary rock formed by consolidation of clay and mud

Stratum – A layer of sedimentary rock; plural is strata

Stromatolite – Trace fossil pattern left in the rock by algae

Transgression / Regression - The process where the shoreline moves toward land, then out from land. The constantly changing shore means that the deposition zones for sandstone (beaches), siltstones (continental shelf) and limestones are moving. This gives the pattern of interlayered rock types

Now, let's begin by examining the young earth creation science proposal for the deposition of sediments into stratigraphic layers. This can be found in numerous articles, such as the one listed above. Below are all the articles I found on the *Answers in Genesis* and *Institute for Creation Research* websites. (for the links, visit the webpage at www.answersincreation.org/stratigraphy.htm).

[The Sands of Time: A Biblical Model of Deep Sea-Floor Sedimentation](#)

[Can Flood Geology Explain Thick Chalk Layers?](#)

[Grand Canyon: Startling evidence for Noah's Flood!](#)

[Coal Beds and Noah's Flood](#)

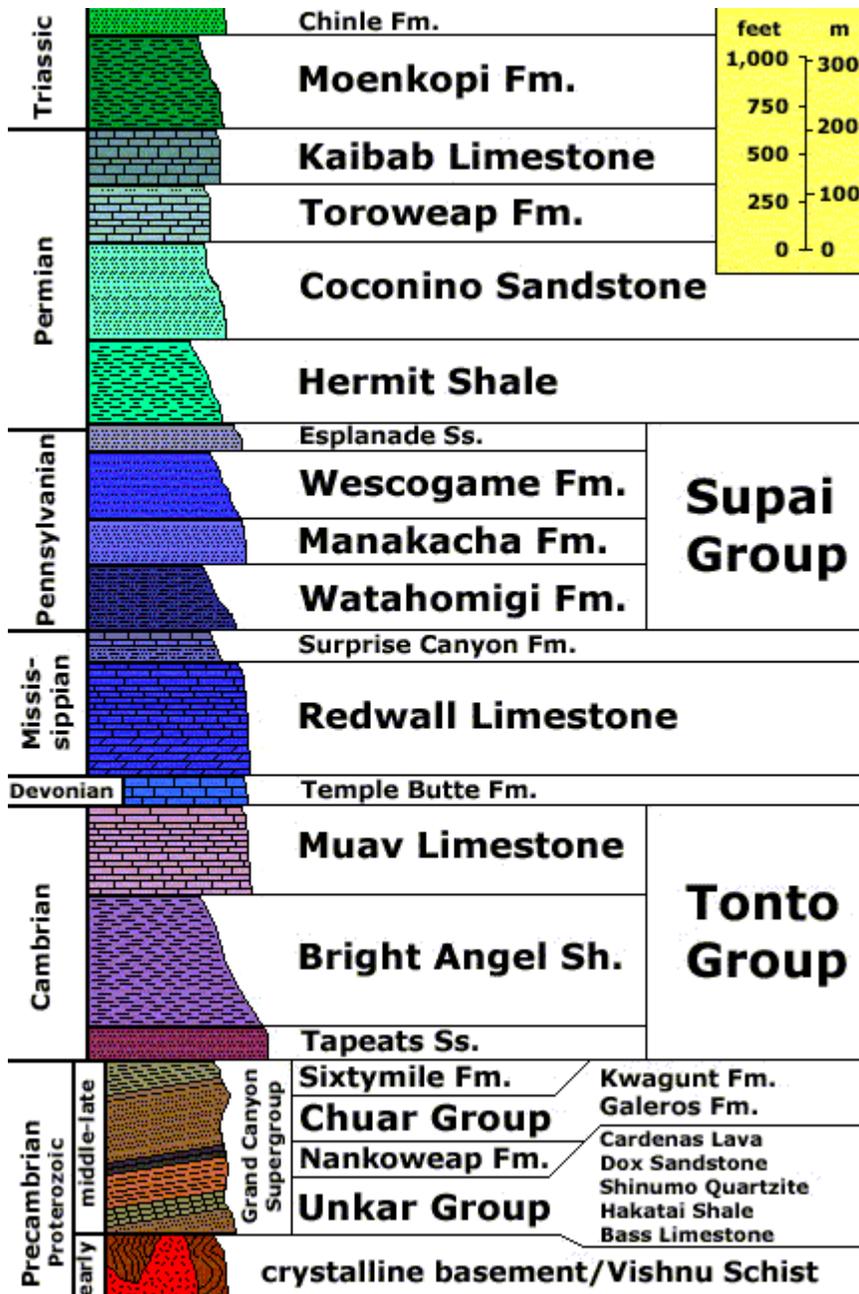
[Were Grand Canyon's Limestones Deposited by Calm and Placid Seas?](#)

The best source of information for the young earth model of the flood within the Grand Canyon is the young earth book *Grand Canyon: Monument to Catastrophe*. I will refer to it often in the Grand Canyon portion of this article.

The basic argument of these articles is that all rock layers were deposited during the Flood of Noah. In fact, they contend that this is the **ONLY** mechanism to create the vast layers of sedimentary rock that we have today. For proof, we turn to Henry M. Morris, and his article titled [Geology and the Flood](#). He says, "*Thus, there is no room anywhere for long ages. Each formation must have been produced rapidly, as evidenced by both its fossils and its depositional characteristics, and each formation must have been followed rapidly by another one, which was also formed rapidly! The whole sequence, therefore, must have been formed rapidly, exactly as the Flood model postulates.*"

Young earth creation scientists go to great lengths to prove this creation science model. However, you may notice that these articles mentioned above discuss single layers of sediment. No creation scientist attempts to tie them together into the bigger picture, that is, nobody claims to know how to deposit all the multiple layers of rock during such a short time as Noah's Flood...they just assume that since they **'think'** they can prove it for one layer, then it must be true of all layers. While they think they have a clue as to how individual layers are formed, they cannot produce a model that deposits all the layers. For the first of our discussion, we will consider the rock layers in the Grand Canyon.

First, look at the picture of the stratigraphy of the Grand Canyon (below). Remember, these are in order of formation (Graphic courtesy of the US Geological Survey).



For starters, the tilted layers of the canyon at the bottom are said by young earth creationists to be creation week and pre-flood. Therefore, since we are discussing the Flood, we will ignore them. However, here is a listing, in case you are interested.

1. Bass Limestone – This is the lowest layer, 120 to 340 feet thick, approximately 1250 million years old. It is primarily limestone, with some interbedded shale. Its fossil record consists of stromatolites.
2. Hakatai Shale – Composed primarily of shale with some sandstone. Averages 1200 million years old
3. Shinumo Quartzite – Originally a sandstone, which was later metamorphosed into a quartzite

4. Dox Sandstone – Composed of sandstone interbedded with shale. Contains stromatolites and algae. Contains ripple marks. Average age is 1190 million years
5. Cardenas Lavas – Layers of dark brown basaltic rocks that flowed as lava. Up to 1000 feet thick, dated between 1250 and 1100 million years old
6. Not Shown – Unconformity above the Cardenas Lavas.
7. Nankoweap Formation – A layer of coarse-grained sandstone, about 1050 million years old
8. Unconformity above the Nankoweap Formation. A gap in the geologic record between the Nankoweap and Galeros formations
9. Galeros Formation – Consists of interbedded sandstone, limestone, and shale. Contains fossil stromatolites.
10. Kwagunt Formation - Primarily black shale and red to purple mudstone with some limestone. Also contains stromatolites.
11. Sixtymile Formation – Tan colored sandstone with small sections of shale.

Thus ends the formations that make up the bedrock underneath the flat layers of the Grand Canyon. The layers above are tilted about 30 degrees due to the intrusion of the Zorgaster Granite.

Now begins the horizontal rock layers, which the young earth flood model must account for. They are, from bottom to top...

12. Not Shown – The Great Unconformity – at the bottom of these horizontal rock layers there is an unconformity, which lasts from 825 million years ago to 570 million years ago. We are missing 255 million years worth of geologic record.
13. Tapeats Sandstone – 250 to 300 foot thick layer composed of medium-grained and coarse-grained sandstone. Ripple marks are common in the upper portion. It contains fossil trilobites, brachiopods, and trilobite trails. Average age is 545 million years
14. Bright Angel Shale – Composed primarily of mudstone shale, interbedded with sandstone and sandy limestone, thickness ranges from 325 to 400 feet. Average age is 530 million years. Fossils include trilobites and brachiopods.
15. Mauv Limestone – Composed of limestone that is separated by beds of sandstone and shale. Averages 515 million years old, and varies from 250 to 375 feet thick. Contains some trilobites and brachiopods.
16. Unconformity - No geologic layers present for the Ordovician and Silurian periods. A gap of about 165 million years
17. Temple Butte Limestone – Composed of freshwater limestone (in the east) and dolomite (in the west). Much thicker towards the west, the west end contains numerous marine fossils, and the eastern end contains bony plates that once belonged to freshwater fish. From 250 to 375 feet thick, and about 350 million years old
18. Redwall Limestone – Composed of marine limestones and dolomites. Many marine fossils, including brachiopods, clams, snails, corals, fish, and trilobites. It is between 450 and 535 feet thick
19. Surprise Canyon Formation - A sedimentary layer of purplish-red shale, which only exists in isolated lenses up to 40 feet thick.

20. Watahomigi Formation - A slope-forming gray limestone with some red chert bands, sandstone, and purple siltstone. Between 90 and 175 feet thick.
21. Manakacha Formation - Cliff and slope-forming pale red sandstone, between 200 and 275 feet thick.
22. Wescogame Formation - Ledge and slope-forming pale red sandstone and siltstone, between 100 and 225 feet thick.
23. Esplanade Sandstone - Ledge and slope-forming pale red sandstone and siltstone, between 225 and 300 feet thick. NOTE: Layers 19-22 are part of the Supai Group. Numerous fossils of amphibians, reptiles, and terrestrial plants exist in the eastern portion, which are replaced by marine fossils as you move westward.
24. Unconformity - Missing rock layers
25. Hermit Shale – Composed of soft, easily eroded shales. Fossils are ferns, conifers, and other plants, and fossilized tracks of reptiles and amphibians. Represents a swampy environment about 265 million years ago. It is from 160 to 175 feet thick
26. Coconino Sandstone – Composed of pure quartz sand. No fossils, but numerous invertebrate tracks and fossilized burrows. Represents a desert dune environment about 260 million years ago. Ranges from 375 to 650 feet thick. Contains raindrop impressions
27. Toroweap Formation – A 200 to 250 foot thick layer of sandy limestone, containing brachiopods, corals, mollusks, sea lilies, worms, and fish teeth. Averages 250 million years old
28. Kaibab Limestone – The top layer at the Canyon, consisting of sandy limestone with a layer of sandstone below it. Contains brachiopods, corals, mollusks, sea lilies, worms, and fish teeth. Age is about 225 million years

In all, we have a sequence of 28 rock layers and unconformities at the Grand Canyon. The Flood model proposed by young earth scientists must account for the last 17 layers/unconformities (and the layers which are above the Grand Canyon stratigraphically, which is the subject of the following pages of this article, linked below). Therefore, let us try to see if we can come up with a Flood model to match this rock record.

Discussion

Chronologically, here is what must happen for the Noah's Flood model to explain the Grand Canyon.

The first eleven layers, which are tilted, are said to be creation week or pre-flood, thus they can be ignored for the purposes of this discussion.

The rains from Noah's flood start, in the 600th year of his life, in the second month, on the seventeenth day of the month (Gen. 7:11). It rained for forty days, and then stopped. The waters were dried from the land in the 601st year, the second month, on the twenty-seventh of the month. That means the water was on the earth a total of 370 days (some figures vary by 1-2 days). Of course, we couldn't start laying the beds down until the water was high enough, but I'll ignore that. So if we have 370 days, and 17 layers (counting unconformities) to put down, that gives us 21.7 days per layer. (Keep in mind this is only using the Grand Canyon rocks. There are many more layers above the Grand Canyon that must also be accounted for by the Flood. These will be discussed later.)

Issue #1: Stokes Law

At this point, it is relevant to mention another factor that must be considered in the young earth creation science model. Young earth creation scientists [Baumgardner and Barnette](#) developed a computer simulation model for patterns of ocean circulation over the continents during a global flood. The model for ocean circulation showed that cyclonic currents averaging 40 to 80 meters per second existed, with a top current of 194 miles per hour (The stronger velocities existed over the continental masses, thus providing the force to erode rock).

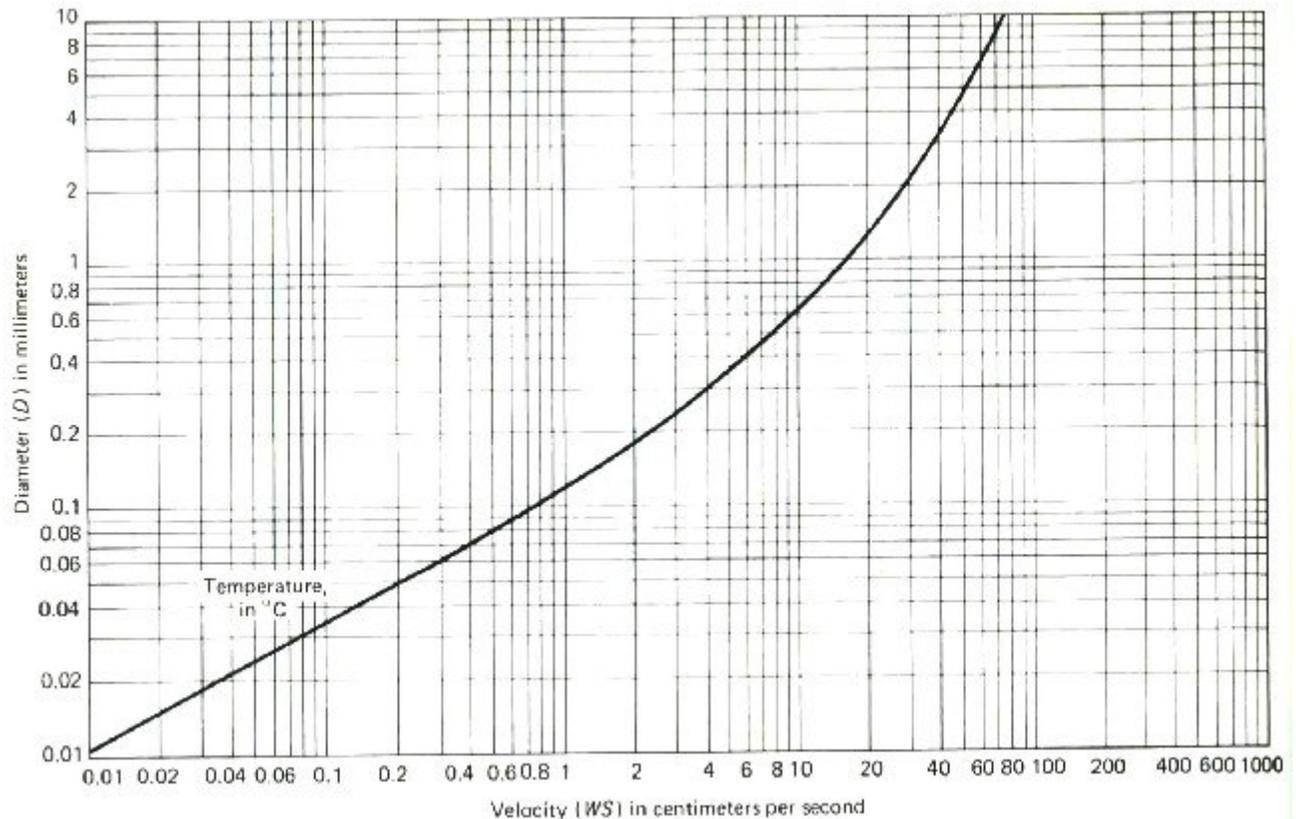
The suspension of particles within a fluid is governed by Stokes Law. Sand varies from fine sand (.05 to .5 mm) to normal sand (up to 2 mm). Given that the larger sizes benefit the young earth model, let's examine 2 mm sand particles.

Stokes Law is:

$$W_s = \left[\frac{(P_s - P)g}{18\mu} \right] d^2$$

where W_s is the settling velocity, d is the particle diameter, $P_s - P$ the density difference between the particle and the fluid, and μ the viscosity of the fluid. In other words, Stokes Law calculates the velocity of the water current necessary to carry a sand grain in suspension. The grain will stay in suspension, moving along with the current, until the water velocity drops below the threshold.

To simplify matters, here is a plot of Stokes Law, showing the current at which particles settle out of suspension.



Looking at the largest sand grains, which are 2 mm, they require a current of 30 cm per second to remain in suspension. This equates to a current of .67 miles per hour, or 2/3 of a mile per hour. This is not even 1 mile per hour current. Looking back at Baumgardner and Barnette, their minimum ocean current velocity (over the continents) is 40 meters per second, which equates to 89 miles per hour. It is difficult to imagine that the current in the open ocean at this time could be less than 1 mile an hour.

Because of Stokes Law, sand particles (and the silt from the shales, and the limestones) would stay in suspension at the current speeds proposed by young earth creationists. In essence, during the prevailing portion of the flood (when water covered the entire earth, a period of 150 days, Genesis 7:24), with high water currents, no rock layers would be formed, because the particles would not fall out of suspension. Since rock layers could not form during this time, we must subtract it from the time available. If we subtract the 150 days which the waters prevailed upon the earth during the middle of the flood, the young earth flood model now has only 221 days to create the rock layers...the time before and after the middle part of the flood. (To be fair, they could claim that it was eroding over the continents and depositing in the deep ocean basins, but they have not addressed this, and it does not appear that their model would support it).

To this, another adjustment must be made. In reality, there would be a period of time on each end of the 150 days, that would also be unusable for forming rock layers. During the first 40 days, a reasonable assumption would be 20 days, and during the recessive period of the flood (the final 180 days), anyone's guess is as good as any. However, since it took 40 days to "fill up" and 180 to "empty," this gives us a ratio of 4.5 to 1, thus 90 days would be eliminated from the end of the flood period, leaving us 20 days at the start of the flood, and 90 more days at the end (these are estimates only).

In reality, the young earth model must divide the rock layers into these two time periods. This is further complicated with the fact that most fossils are in the upper rock layers. If there were two rock forming episodes during the so-called global flood, as Stokes Law indicates there must have been, then the fossils should all be in the lower layers. This is contrary to what we would see in the fossil record, as you will see in the discussion of the Grand Canyon layers.

To be fair, I have not seen any young earth literature claim that there had to be two periods of rock-forming during the flood. This is an issue which they need to address. (Another point to consider...according to many young earth scientists, the continental masses did not have towering mountains. This is so that there is sufficient water to cover them during the flood (there is no evidence to support this claim...it is merely a requirement of the young earth model). With this massive erosion going on over the continents, the ocean basins would then fill up, and there would be a point in time when the earth's landmass during the flood were a smooth, even surface underneath the water.)

Issue #2: Fossils

One of the main problems for the young earth creationist is the fossil record. The young earther believes that all the animals we see fossilized in the rock record were killed during the Flood. Why is this? First, they claim there was no death before the fall of man. That means that no rocks from the original creation events of the first six days can contain any fossils, because no animals died.

One only need look at fossil distribution to disprove the young earth creation science model. If you have a global flood, then all species of fossils would appear suddenly in the rock record. In other words, you would have trilobites (which went extinct 300 million years ago) in the same rocks as dinosaurs (extinct 65 million years ago) and humans. But, we can't find any trilobites with dinosaurs, nor with humans. The fact that species are separated in the fossil record supports an old age, and proves that these animals were killed at different times. The young earth scientist will argue that the fossil record is getting more random all the time...but is it? Look at my [rebuttal on this issue](#).

If we look at the rocks of the Grand Canyon, the first 11 layers that we numbered above (the tilted, pre-flood layers, by the young earth model), only have the trace fossil stromatolite. The first flood layers (all the horizontal Grand Canyon layers) contain marine organisms, but no dinosaurs, mammals, or reptiles, or plants. The first reptiles and plants appear in the Esplanade Sandstone, or, if you add it up, about 2,000 feet of sediment was deposited by the flood before the first plants and reptiles appeared.

Young earth creationists are fond of showing off examples of fossils which were buried rapidly. They do this to show that a great flood killed these organisms. In that case, the bottom layers of the Grand Canyon should show many examples of rapid burials of dinosaurs, mammals, plants, reptiles, etc. However, there are none! If the flood killed all those animals, where are their fossils? The only way the young earth creation science model can explain this is to say these animals treaded water for the first couple months of the flood! (Incidentally, there are no dinosaur fossils at all in the Grand Canyon rocks.)

For the sake of this article, we will proceed anyway, ignoring the fact that the fossil record is completely contrary to the young earth model. Now that we have examined some problems, let us move on to look at the rock layers themselves, and the problems they present to the young earth model.