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

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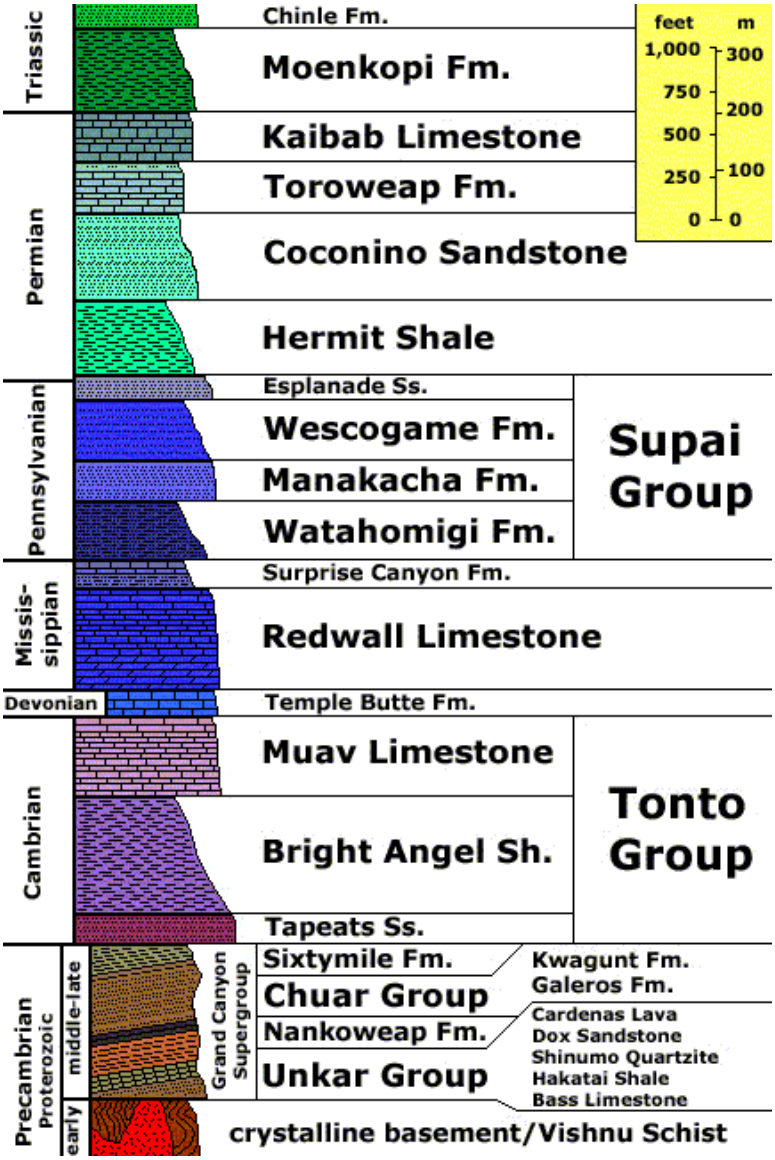
Before we begin, for your reference, here is the graphic of the rock layers we will be discussing in the Grand Canyon.



The Great Unconformity

The Great Unconformity is at the bottom of the horizontal rock layers. It represents the time period from 825 million years ago to 570 million years ago. We are missing 255 million years worth of geologic record.

Tapeats Sandstone

The first horizontal layer is the Tapeats Sandstone. This layer, composed of medium-grained and course-grained sandstone, contains ripple marks in the upper portion. It also contains fossil trilobites, brachiopods, and trilobite trails.

Yes, I said "ripple marks." How do you form ripple marks in sandstone. Andrew Snelling has proved that water velocities above 5.5 feet per second cause flat sand, in his model for the deposition of the Coconino Sandstone (for a discussion of the Coconino, click here.). The water velocity supplied by Baumgardner and Barnette is at a minimum 40 meters per second (or 131 feet per second). While the water velocity would be less in the ocean basins, there is no indication that the Tapeats was deposited in the middle of an ocean basin. If it were, it would overlay ocean shales. Instead, it overlays an unconformity, or erosional surface.

Since this is the first layer for the flood, you would also expect there to be rapidly buried fossils, including mammals, dinosaurs, and plants. There are none. Therefore, based on these factors, the Tapeats could not be related to Noah's Flood.

Bright Angel Shale

This shale is composed primarily of mudstone shale, interbedded with sandstone and sandy limestone, thickness ranges from 325 to 400 feet. Fossils include trilobites and brachiopods. However, being one of the first layers, we should probably see rapidly buried mammals, reptiles, dinosaurs, and plants here. However, there are none. It contains many of the same animals as the rock layer underneath it.

This layer contains alternating layers of sandstone and sandy limestone. This indicates a changing depositional environment, with fluctuating current velocities. This is consistent with the standard geologic model of advancing and retreating shorelines.

However, if the floodwaters were continually getting deeper at the beginning of the flood, we would not see signs of this fluctuating shoreline. Keep in mind this is a "peaceful" shoreline, with low water currents, not the type of currents proposed by Baumgardner and Barnette. Thus the Bright Angel Shale does not fit the young earth flood model.

Mauv Limestone

This limestone also has interbedding of sandstones and shales, indicating fluctuating shorelines. It also contains the same marine fossils from the previous two layers. Limestones form in placid seas. For another example, see the article Can Noah's Flood Make Any Chalk Beds?

For the same reasons as the two previous layers, this limestone does not fit the young earth flood model.

Unconformity

There is a gap in the geologic history between the Mauv and the next layer, the Temple Butte Limestone. About 165 million years is missing. This is addressed in the creationist book Grand Canyon: Monument to Catastrophe, but only emotional arguments are made, with no scientific data to back them up. Interestingly, the authors address all the unconformities/disconformities in Chapter 4, but they leave this one out, and discuss it superficially in Chapter 5. It gives the indication that they have no evidence against this feature.

In short, we have a gap, which usually indicates that erosion, rather than deposition, was taking place. The young earth believer may suggest that the flood waters did the eroding, and thus he would believe he has a valid argument for it. It would be hard to argue against this, especially since the evidence (the missing layers) are not there.

Temple Butte Limestone

This limestone presents an interesting dilemma for the young earth model. It is composed of freshwater limestone in the east, and dolomite in the west. At best, the waters of the flood would be brackish, and not freshwater. The eastern end contains bony plates that once belonged to freshwater fish. Because of the freshwater origin of this limestone, it fails to fit into the young earth model.

One of the recurring items I run across in young earth literature, is that if something presents a problem, it is usually omitted. For instance, in the young earth book Grand Canyon: Monument to Catastrophe, the discussion on the Temple Butte is on page 71. It is said to be a sandy, dolomitic limestone. Nothing is mentioned about the freshwater limestone, nor the fossil bony plates.

Redwall Limestone

This is composed of marine limestones and dolomites, and, along with the Temple Butte, it introduces new marine life forms to the fossil record, such as corals, fish, and snails. This layer has two strikes against the young earth model. First, limestone forms in calm waters, which is contrasted to the young earth model of turbulent waters. Second, this layer is up to 535 feet thick. This indicates calm water, for an extremely long period of time.

Surprise Canyon Formation

This unit was only recently discovered (about 20 years ago). It consists of lenses up to 40 feet thick. While easy to explain in old earth geology, it is difficult to imagine these lenses being formed within the rapidly changing, turbulent flood waters.

Watahomigi Formation

This gray limestone is interbedded with red chert bands, sandstone, and purple siltstone, indicating shoreline advances and regressions. This does not indicate a steadily increasing water depth as predicted by the young earth model.

Manakacha Formation

Next we go to a pale red sandstone. A clear departure from the limestone underneath it, however, it still contains the occasional limestone and shale bed.

Wescogame Formation

A small formation of sandstone and siltstone, which indicates changing depth/shoreline, again contrary to the young earth model.

Esplanade Sandstone

Here we get into some more interesting fossils. This red sandstone and siltstone contains numerous amphibians, reptiles, and terrestrial plants. While young earth texts mention the marine fossils, they ignore the terrestrial reptiles and plants (Grand Canyon: Monument to Catastrophe, page 72). Counting up the layers beneath it, we have already had a minimum of 1,925 feet of sediment deposited by the flood. There should be no terrestrial reptiles, nor plants, this far up the geologic column. The Esplanade provides solid proof against the young earth creation science model.

Unconformity

This is in question even in the secular literature, therefore will not be discussed here.

Hermit Shale

This shale is soft, and erodes easily. Fossils include many plants, such as ferns and conifers, and the fossilized tracks of reptiles and amphibians, clear indications that it was a swampy environment. The young earth model does not allow for the existence of a swamp, on top of 2000 feet of flood deposited rocks, in the middle of the flood....especially when you consider that the flood will then cover this "swamp" with thousands of feet of additional sediment before the flood is over.

Coconino Sandstone

This is one of the major problems for a young earth interpretation of the Canyon. This pure sandstone is desert in origin. However, having a wind-blown desert, right in the middle of Noah's Flood, is clearly not part of the young earth model. Fossilized tracks of reptiles and amphibians exist, which young earth creationists claim are made underwater, yet their arguments are not valid (see this article for more). For more on the Coconino arguments, see Coconino Sandstone.

Toroweap Formation

A sandy limestone with many marine organisms. Using Stokes law from page 1 of this article, different particle sizes fall out of suspension at different water velocities. The

only way to get a sandy limestone is with varying currents of less than 1 mph, much less than the speed predicted by the young earth model.

Kaibab Limestone

This is the top layer at the Canyon, the one you drive your car on when visiting it. Fossils are marine organisms. Of interest to our debate is the fact that it is a sandy limestone, with thin layers of sandstone and silt. This clear indication of changing depth/shoreline argues against the young earth model.

Part 2 Conclusion

So far, we have clear indications of changes in sea levels, advancing and retreating shorelines, and even a wind-blown desert. There is also a fossil discrepancy. We should see rapidly buried dinosaurs, mammals, reptiles, and plants in the first flood layers at the bottom, but reptiles and plants first appear 2,000 feet up, and there are no dinosaurs or mammals anywhere within the Grand Canyon rocks. They young earth model fails miserably to explain the rocks of the Grand Canyon.

However, the geologic record provides a perfectly valid model for the Grand Canyon rocks. As seas rose and fell, you had a constantly fluctuating environment to produce interbedded limestones, shales, and sandstones, and as you get later in time, you obviously see progressively more advanced lifeforms in the fossil record.

In Part 3, we will examine the rocks above the Grand Canyon.