

The Southern Appalachian Mountains:  
An Example of 6,000 Years  
of Earth History

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ABSTRACT

The geology of the Southern Appalachians is better explained within a creation week (c. 4100 B.C.) /flood year (2500 B.C.) /post-flood, residual catastrophism model of earth history rather than one requiring billions of years. Six divisions of historical geology are proposed. It is also suggested that the Flood had three phases.

INTRODUCTION

The best explanation of the geology of the Southeastern United States is one which involves a fiat creation of the crystalline basement and the subsequent formation of most of the sedimentary rocks by the catastrophic flood of Noah's day. This paper will be divided into two parts. First, we will give an outline of earth history from creation to the present which builds on a framework widely accepted by creationists to divide earth history into six parts. Secondly, using the Southern Appalachians as an example, we will show the superiority of this model of earth history over the conventional view-point of evolutionary uniformitarian geology. For this essay the vocabulary of Biblical historical geology will be used. However, the reader should note that the vocabulary introduced (such as, "Creation Week", "Antediluvian") could be systematically substituted by "Stage A," "Stage B," and so on until "Stage F." In other words a neutral vocabulary could indeed be used to describe the six divisions of earth history proposed herein.

An adequate Flood model which explains the major features of a mountain range can be seen as a consistency argument for a young earth. The choice of this geography, the Southern Appalachian Mountains, can be viewed to have been selected randomly. If a Flood model explains this famous mountain chain's geology better, then it will argue for the general utility of flood geology in a clear and dramatic way.

A FLOOD GEOLOGY MODEL

The reason that outlines of earth history from a creationist viewpoint are termed "flood geology" is that the worldwide, catastrophic, deluge of water which occurred during Noah's life is a centrally important event in understanding geology. During the year-long flood rocks were formed, but this is not the only time when this happened. From Biblical and geological data we have evidence that the core of the earth along with some crustal rocks formed during the creation week also (Genesis 1:1-2, 9-10). In the course of the application of the outline of earth history to the geology of the Appalachians, a "consistency argument" for a 6000-year-old earth will be proposed. The argument from consistency runs as follows: if 80% of the critical aspects of Southern Appalachian geology (lithologic types, stratigraphic sequence, tectonics, mineralization and geomorphology) can be better explained by a creationist/young earth model, then the scientific model is a good one. If more geologic data falls together, as a jigsaw puzzle, using flood geology than evolutionary geology, then it is time to change paradigms and move on to a better framework for historical geology.

CREATION WEEK

Let us assume that God created the earth in the manner described in Genesis. From the first chapter we get the order of events moving through six 24-hour days. Then in chapters 5 and 11, God reveals to us the timing of the Creation Week in relation to the birth of Abraham. The Creation Week is recorded in the chronologies as about 2000 years before Abraham's birth, which Biblical archaeology has placed at about 2100 B.C. This

gives us an approximate 6000 year frame within which to paint earth history. Can it be done without contradiction? The following discussion covers the geologic events of the creation and leaves aside the astronomical, plant, animal, and human aspects.

First of all, time, space, matter and energy were called into existence *ex nihilo*. The earth was the initial planet in the universe with its core and mantle probably being first formed. Genesis 1:2 indicates that the earth's crust was not fully formed at this point in the first day. During the second day we will assume that a water vapor canopy containing the equivalent of 40 feet of liquid water (if condensed at any one point in the shell) was created by our LORD. Using Dillow's model we get not only these figures, but the hypothesis that the base of this canopy would be about 30,000 feet.<sup>1</sup> The third day (Genesis 1:9-13) marks a second time of rock creation and formation. The phrase "the dry land" implies, in my view, two geologically important events: the formation of cratonic (continental) rocks and one world continent. A possible reading of the revelation in this part of Genesis implies that all the continents were together at this time. Since no life has been created at this point the rocks were logically composed of mostly inorganic minerals and certainly devoid of fossils. This writer speculates that some clastic sedimentary rocks may have formed on the margins of the Creation Week continent and in inland basins as the land mass rose from the two-day-old ocean. Granites are a common rock type forming the foundations of continents. Professor Gentry has argued for years that granitic rocks containing zones of radiation damage called polonium halos, are objective evidence of this sort of rapid crustal creation.<sup>2</sup>

In light of this one could predict the first aspects of a flood geology model. The rocks forming the inner gorges of deep canyons or the cores of mountainous areas should be (a) either igneous or metamorphic in lithology and (b) if sedimentary, show no traces of fossil material. What effects would the next period of earth history have on this newly created world? Let us now look at the geologic aspects of the pre-flood world.

#### ANTEDILUVIAN PERIOD

The Antediluvian Period of earth history covers about 1600 years of mild geologic work. The 1656 year duration is taken from Biblical data, but has been rounded for ease of memorization. Using Genesis 2-6, the following geologic deductions can be made. According to Larry Vardiman, the vapor canopy would have had these atmospheric effects: ". . . light winds, no storms, and no rain! The entire earth, including the poles, would have been much warmer than it is today."<sup>3</sup> Since the most important agent of erosion is moving water, we can conclude from the above that few sedimentary rocks were formed. That is not to say that no sediments at all could be found. As the antediluvian rivers flowed and wave action eroded the coastal areas, some clastic material was produced. But the conditions for extensive blankets of sedimentary rocks to be formed and lithified were not present.

There is no indication that tectonic forces were active in the Antediluvian Period. There were mountains from the Creation Week but no new mountain ranges were forming. There is no evidence of catastrophic volcanic activity, such as plateau basalts, or even volcanic mountains. The geomorphology was stable with no forces operating at an adequate intensity to vastly alter the landscape.

The Antediluvian Period perhaps is marked in the rock record by a major unconformity on top of primarily igneous, metamorphic units, and in places involving sedimentary rocks without fossils. In flood geology we need to recognize the difference between true and false unconformities. A true unconformity is one which is supported by objective criteria such as angular relations or scoured surfaces which undulate. A false unconformity is picked on the basis of an evolutionary bias. In a false unconformity, an ordinary bedding plane is called an "unconformity" because of missing organisms in the evolutionary scheme. Flood geology would predict an almost global unconformity between the Creation week rocks and those of the Flood or, rarely, between the Antediluvian Period and the Flood. In the latter case this surface may only mark the weathering of the pre-flood landscape. The recognition of continental unconformities plays an important role in understanding possible phases of the vitally important Flood year.

#### THE FLOOD

Consider three divisions or phases for the Flood year, which occurred about 2500 B.C. Phase I lasted 40 days and was marked by the break-up of the fountains of the great deep and the initial collapse of a water vapor canopy. In this model the "fountains" consist of at least water and lava. The Bible draws special attention to this 40 day period, even though the rain did not completely stop until about six months into the Flood (Genesis 7:12 and 8:2-3). The geological implications come from the emphasis on the rainfall and

suggest continental erosion and widespread clastic deposition early in Phase I. The worldwide changes in ocean chemistry and the partial pressure of atmospheric gases (such as carbon dioxide) may explain thick carbonate sequences resulting from direct precipitation out of sea water. This mechanism was probably active at times during the rest of the Flood also. This model hypothesizes that the boundaries between phases of the Flood would usually be marked by unconformities. Phase II is the period when the waters maintain their height above mountains for five months. But this does not mean that no geologic work was being done during this phase. In this time many sedimentary rocks were deposited or precipitated, then partial lithification was begun. Currents moving at the base of the Flood's column of water would also erode and rework sediments in some areas. Phase III starts as the Flood waters begin to decrease and lasts six months. Coal deposits would date from late in Phase II until Phase III. Many mountain ranges and thicknesses of poorly consolidated sedimentary rocks date from Phase III. This listing by no means exhausts the geologic activity during the Flood because other events, such as continental separation, were happening along with those mentioned above. To understand the foundations of my model, the serious student must refer to The Genesis Flood by Whitcomb and Morris.<sup>4</sup>

#### POST-FLOOD TO MODERN

It is most convenient to divide the post-flood period into three parts. Because of the magnitude of the Flood, there must have been a time of post-flood residual catastrophism during which the earth adjusted to new conditions. In my opinion, this period of residual catastrophism lasted 333 years, an easily remembered approximate number based on the time between the end of the Flood and the birth of Abraham. This was the part of earth history during which many local catastrophic events occurred. Examples of these events are the production of continental glaciers (North America and Eurasia) and large plateau basalt flows (Pacific Northwest, U.S.A.). The next part of earth history I term, post-flood/post-Abrahamic and consider it to run from 2100 B.C. to 1500 A.D. During this 3,333 year period (again approximated for ease of memorization), the earth settles into its present rate, scale, and intensity of geologic processes. Catastrophic processes have largely stopped by this point. The final period, covering about the last 500 years of earth history, is called, logically, modern. This completes a six-part overall outline of earth history and sets the stage for an analysis of the Southern Appalachians in light of Flood geology.

#### SOUTHERN APPALACHIAN EXAMPLE

Rather than attempting to treat the whole range of Southern Appalachian geology in this brief study, let us focus on one area. The Blockhouse quadrangle area of eastern Tennessee will provide a specific example of the local geologic column. This Blockhouse quadrangle map is part of a series of geologic maps published by the U.S. Geological Survey and covers the geology near Maryville, Tennessee.<sup>5</sup> The northeastern corner of this map is located at 35°45' N and 83°52'30" W. The rocks in this area have a general dip of 45° to the SE. This dip is due to the Appalachian orogeny, which this model places during Phase III of the Flood. Other details of the structural geology of this area are beyond the scope of this paper.

Figure 1 lists the stratigraphy of the Blockhouse quadrangle. The total local geologic column is about 18,000 feet in thickness, with 17,000 feet dating from the Flood. The Ocoee Series and the Chilhowee Group, shown here separated by a fault, are in other parts of the Southern Appalachians separated by an unconformity. The Ocoee Series is an unfossiliferous, clastic sequence. In applying the model outlined earlier, the Ocoee would date from the third day of the Creation Week. The Chilhowee Group contains the first brachiopods and trilobites and therefore mark the earliest rocks of Flood, Phase I in this region. Trilobites continue to appear abruptly and fully formed in the Conasauga Group which is younger than the Chilhowee Group. This is what the creation/flood model would predict. No transitional forms of any sort are found in the rocks of this section of Tennessee. The unconformity on the top of the Knox Group is recognized on a physical, not a paleontological basis and therefore can be used to mark the end of Phase I. The "middle Ordovician" to "Mississippian" (using the terms objectively, stripped of their geologic age connotation) formations represent the second Phase of the deluge. Other rock units not found in the Blockhouse quadrangle deserve mention at this point.

Found north of this area and stratigraphically above the highest rocks of the Blockhouse quadrangle are the Pennsylvanian clastics which contain the major coal deposits of the Appalachians. These rocks probably date from the later part of Phase II. Using data from Thornbury, these deposits are at least 10,000 feet thick in the Southern Appalachians.<sup>6</sup> The poorly consolidated, fossiliferous rocks of the Mississippi embayment and the Coastal Plain overlap found surrounding the Southern Appalachians date from the latter part of the third Phase or from the post-flood/residual catastrophe time. A flood model provides an

adequate framework to organize the data found in the Blockhouse quadrangle and other areas of the Appalachians.

#### SUPERIORITY OF THE FLOOD MODEL

Within the framework outlined above let us pull out several specific areas where a young earth, flood model is superior to an old earth, evolutionary model.

#### Fossil Record

The fossil record of brachiopods and trilobites found in the Chilhowee Group are evidence of catastrophic sedimentation. From this writer's own field work in the Chilhowee group rocks one finds fine preservation of some organisms, broken masses of the brachiopods and trilobite at other stratigraphic intervals, zones of bioturbation, and ripple marks. All of these sedimentary features and structures indicate catastrophic sedimentation. An ecological zone of marine organisms such as are found would be predicted in Flood, Phase I. The uniformitarian interpretation of these units as due to epicontinental seas provides no adequate mechanism for the transport or fossilization of these organisms. The Flood provides a mechanism for the death, transport and sedimentation of these organisms. The completed complexity of these creatures (and others) provides an argument for creative design, a central concept of creationism.

#### Regional Rock Units

Most of the stratigraphic units shown on Figure 1 from this Tennessee locality can be found over a broad region. This regional persistence of units would be predicted by a worldwide flood covering continental areas. One example which illustrates this point is shown in Figure 2. This is Harris' map showing facies of the Knox Group and equivalent rocks covering about half of the eastern United States.<sup>7</sup> I propose that portions of thick carbonates, such as the Knox Group, were precipitated directly from the Flood ocean due to regional changes in temperature, partial pressure of gasses, pH, and Eh. Such regional persistence is also the characteristic of most of the other stratigraphic units of the Blockhouse quadrangle.

#### Mineral Deposits

Many mineral deposits show evidence of being formed by hydrothermal brines bearing metals. Deposits of zinc are found in the Knox Group and are interpreted by Crawford and Hoagland as having a hydrothermal source.<sup>8</sup> Many other sorts of deposits (copper, lead, gold, silver, etc.) in the Southern Appalachian region also have mineralization from hot, salty water.<sup>9</sup> A global, catastrophic Flood provides a mechanism for water to become heated up (from the fountains of the great deep adding lava to the Flood year ocean floor) and to leach salts and metals from previously existing rocks.

#### Sequence Stratigraphy and Unconformities

A stratigraphic sequence is a group of rock units bound by major unconformities at the top and the bottom. The sequence viewpoint minimizes evolutionary, nomenclatural, and small scale aspects of stratigraphy and therefore holds promise for Flood modeling. Wheeler<sup>10</sup> and Sloss<sup>11</sup> recognized the basal Cambrian unconformity as the base of what they called the Sauk sequence. This unconformity tends to be continental and ranges from Precambrian to middle Ordovician formations. This type of unconformity is best explained by a worldwide catastrophic process. This reasoning allows us to divide the Blockhouse Quadrangle's stratigraphy into Ocoee (Creation Week), Chilhowee to Knox (Flood, Phase I), and the last 9,400 feet of "middle Ordovician" to "Mississippian" (Flood, Phase II).

#### CONCLUSIONS

An area such as the Blockhouse quadrangle in the Southern Appalachians provides a data set to test a Flood model. The stratigraphic, fossil, regional, and metallogenic aspects can be adequately explained by a young earth, flood model. This whole process of research builds a "consistency argument" for a young earth. If the major aspects of the Appalachians can be explained without recourse to millions of years and evolution then we have an evidence for young earth, Flood geology.

## References

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Name	Thickness (feet)	Lithology
End of Section		
Mississippian Formations	1,400	siltstone to limestone
Chattanooga Shale (Devonian)	25	black shale
Middle Ordovician Formations	7,900	calcareous clastics
Knox Group (Cambrian/Ordovician)	3,100	dolomite
Conasauga Group	1,300	shale, some carbonate
Chilhowee Group (Cambrian)	2,900	clastics
Fault		
Ocoee Series (Precambrian)	1,200	unfossiliferous clastics

Figure 1. Stratigraphy of the Blockhouse Quadrangle, Tennessee (see reference 5)

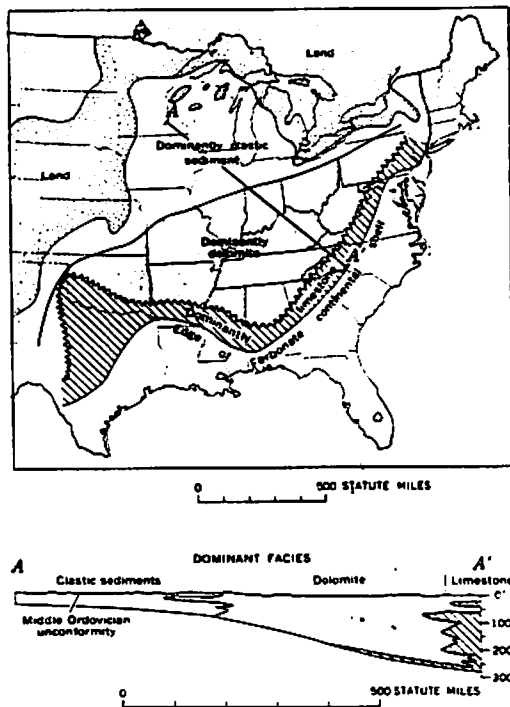


Figure 2. Regional Facies of the Knox Group and Equivalent rocks (taken from reference 7).