

Theory and practice: field testing biblical geology

A review of
Field Studies in Catastrophic Geology
by Carl R. Froede Jr
Creation Research
Society Books
St Joseph, MO, 1998

Tas Walker

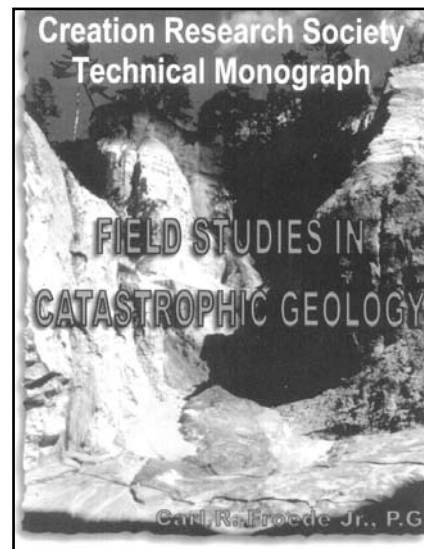
Geology is an observational science and, early in their training, geologists are taught the importance of fieldwork. On our maiden field trip, we students were standing in groups a safe distance from the first outcrop while the professor was expounding the details of the rock face. Finally, in exasperation he called across to us, 'Look, geology is an observational science. Don't stand back in the distance. Get your nose up close to the rocks. Look at them. Touch them.' For all his urging, we students were not much wiser. Even when we got up close we did not know what we were supposed to be looking at.

Emmett Williams encapsulates this dilemma in his introduction to Carl Froede's *Field Studies in Catastrophic Geology* with this truly classic statement: 'Geology is an observational science when not dealing with conceptual models.' In spite of the repeated assertions of professors and lecturers about 'observational science', modern geology is first and foremost conceptual. It is based upon Hutton's concept of uniformitarianism — the notion that the past history of our planet must be explained in terms of processes that can be seen to be happening today. That modern geology is in-

deed primarily conceptual (rather than observational) is borne out by the fact that it was not until Hutton formulated his 'uniformitarian' concept in 1788 that modern geological science came into being. Furthermore, the concept was decided long *before* the rocks of the world had been examined, not after. So modern geology, from its inception, was built on a concept that ignores the revealed truth of Scripture. It disregards the creation of the world in six days as described in Genesis chapters 1 and 2 (and Exodus 20:8–11), and the world-wide Flood described in Genesis chapters 6–8. However, the fact that neither can be seen to be happening today is no justification to disregard both the record of them and the evidence for them.

The uniformitarian principles underlying modern geology are usually not discussed openly at undergraduate levels. Rather, as uniformitarianism is assumed to be a 'basic truth' by lecturers, it is implicit in their teaching and consequently is absorbed by students at a subliminal level. In short, it is assumed, taught and caught. By the time students reach postgraduate level, where the underlying premise of uniformitarianism is paraded more openly, students are as comfortable as their professors in accepting it as a fundamental truth.

The repeated assertions by geologists that 'geology is an observational science' affect their whole institutional culture and outlook. It gives them the false impression that they are dealing with facts, while, unaware of their presuppositions, they are actually dealing with **interpretations**. Because geologists are so often blind to the fallacies of their



own worldview and the assumptions implicit in how they interpret the evidence, they can be stridently anti-biblical in outlook and practice.

Froede's biblical geological model

The term 'field studies' in the title of Carl Froede's book reinforces the perception that geology is an observational science. However the most significant contribution of the book is in the conceptual area. In the first chapter, Froede describes a biblical approach to the geology of the earth (Figure 1). A number of creationist geologists have seen the need for a new conceptual framework. Froede explains how so often creationist geologists have started with the uniformitarian geologic column. So Froede's alternative biblical approach to defining earth history is probably the most important contribution of the book.

The biblical geologic time-scale Froede describes is broadly similar to the one I had published in 1994 at the International Conference on Creationism (Figure 2).¹ This similarity reinforces the fact that geologically the big picture implications of the scriptural account are clear and unambiguous. The Bible is more than adequate to provide an investigative framework for geological science.

The advantage of a geological model such as this is that it covers the whole of earth history from the very beginning to the present. This history is based on the Word of God, so we know that every rock we find on the earth belongs somewhere on the time-scale. However, we cannot be so confident when we work in the reverse direction. We do not yet know whether rocks representing each of the times shown on the model currently exist somewhere on the surface of the earth. It is possible that rocks formed during some periods of earth history, such as the Creation Week, may have been destroyed during subsequent geologic events, such as the world-wide Flood. This question is one that may ultimately be resolved only in the field. However, without a conceptual model such as that presented here, the question could not even be addressed.

Froede specifies five main timeframes for his biblical geological time-scale: Creation Week, the Antediluvian era, the Flood Event, the Ice Age, and the Present Age (Figure 1). Four of these terms link directly to the Bible while one (the Ice Age) comes from outside the Bible. It would be better for the broad framework to use only the four biblical terms and to include concepts outside the Bible at a lower level of classification. While the theories within the broad framework can change, the over-arching biblical record will remain constant.

It would have been clearer if Froede had specified his best estimate for the dates of timeframe boundaries, rather than indicating a range of dates. For example, a date for Creation Week of 6,000 years before present (YBP) would be more straightforward than the 6,000 to 10,000 years actually shown on the diagram, especially since the larger number assumes gaps in the biblical genealogies. The uncertainty could have been flagged in a note.

Because our geological inquiries

start with biblical presuppositions, I prefer to call our scientific discipline 'biblical geology' rather than 'catastrophic geology'. Creationist geologists have a long tradition of using the religiously neutral term 'catastrophic geology'. The tendency to avoid biblical terms seems to be a carry-over from the days when science was erroneously considered a neutral arena and could decide truth independently of religious position. The tradition appears to bow to the claim that creation is religious while science is non-religious. Creationists have tried to make geological points without actually referring to the Bible. However, we now have the situation where uniformitarians at last recognise what creationist

geologists have been saying for decades — that the rock record speaks of catastrophe rather than slow and gradual processes.² Does this mean that we have won our case? Are uniformitarian geologists turning to the Bible for enlightenment? Not so. The new catastrophists are at great pains to distance themselves from creationists. We should fight our battles on our own terms. By using the term 'biblical geology' we state clearly, up-front where we are coming from. We are not about proving catastrophe in the rock record, or even about proving the Bible. We are about understanding and formulating the geology of this planet in terms of what the Bible teaches — no more and no less.

Timeframe	Division	Age (YBP)
Present Age	Upper Middle Lower	3,500 to 6,500
Ice Age	Upper Middle Lower	4,500 to 7,500
Flood Event	Upper Middle Lower	5,000 to 8,000
Antedilu-		6,000 to 10,000
Creation Week	Day Seven	
	Day Six	
	Day Five	
	Day Four	
	Day Three	
	Day Two	
	Day One	

Figure 1. Froede's creationist geological time-scale is based firmly on the Bible. In this model, the Flood event spans a period of 500 years rather than the single year that Noah was on the Ark. The extra time is to allow the floodwaters to withdraw totally from the continents. The time-scale is a two-level geological classification scheme where the second level is indicative only.

Application in the field

A geologic model is only as useful as it can be applied in the field. A deficiency of Froede's model is that the geologic implications of the biblical record have not been thought through beyond the broad framework. That is, the subdivisions of the five broad time-frames have not been considered in detail. Froede has simply divided the broad time-frames into an arbitrary number of parts and has not attempted to be geologically more specific on the basis of Scripture.

For example, seven divisions have been included for Creation Week, one for each of the seven days described in Genesis 1 (Figure 1). The problem is, how can we identify in the field

which rocks were formed on which day? Froede has not specified what geologic processes were likely to have occurred on each of these days, so we cannot formulate criteria that would allow us to identify the rocks in the field. Similarly, an arbitrary threefold division (lower, middle and upper) is applied to each of the Flood Event, the Ice Age, and the Present Age. Threefold divisions are common in geology, but usually at a much lower level of classification. An important point arises from the fact that spatial terms are used for the labels of the three subdivisions (lower, middle, and upper). Since the whole purpose of the model is to set out a biblical time-scale, time terms (rather than spatial terms) should be used (early, middle, and late) to be

consistent.

The use of three arbitrary subdivisions of the broad time-frames means that it is impossible to determine, except in a very general manner, where rocks belong in this scheme. No distinctive processes have been linked with any of the three categories, so there are no distinctive criteria that can be applied to classify rocks into these categories.

Froede does propose that geologic energy can be used to classify rocks within the biblical geologic time-scale. Figure 3 shows his general geologic energy curve, which reflects how the energy of physical processes changed throughout earth history. This could be a useful concept, but it is not clear how it can be applied in practice because only qualitative

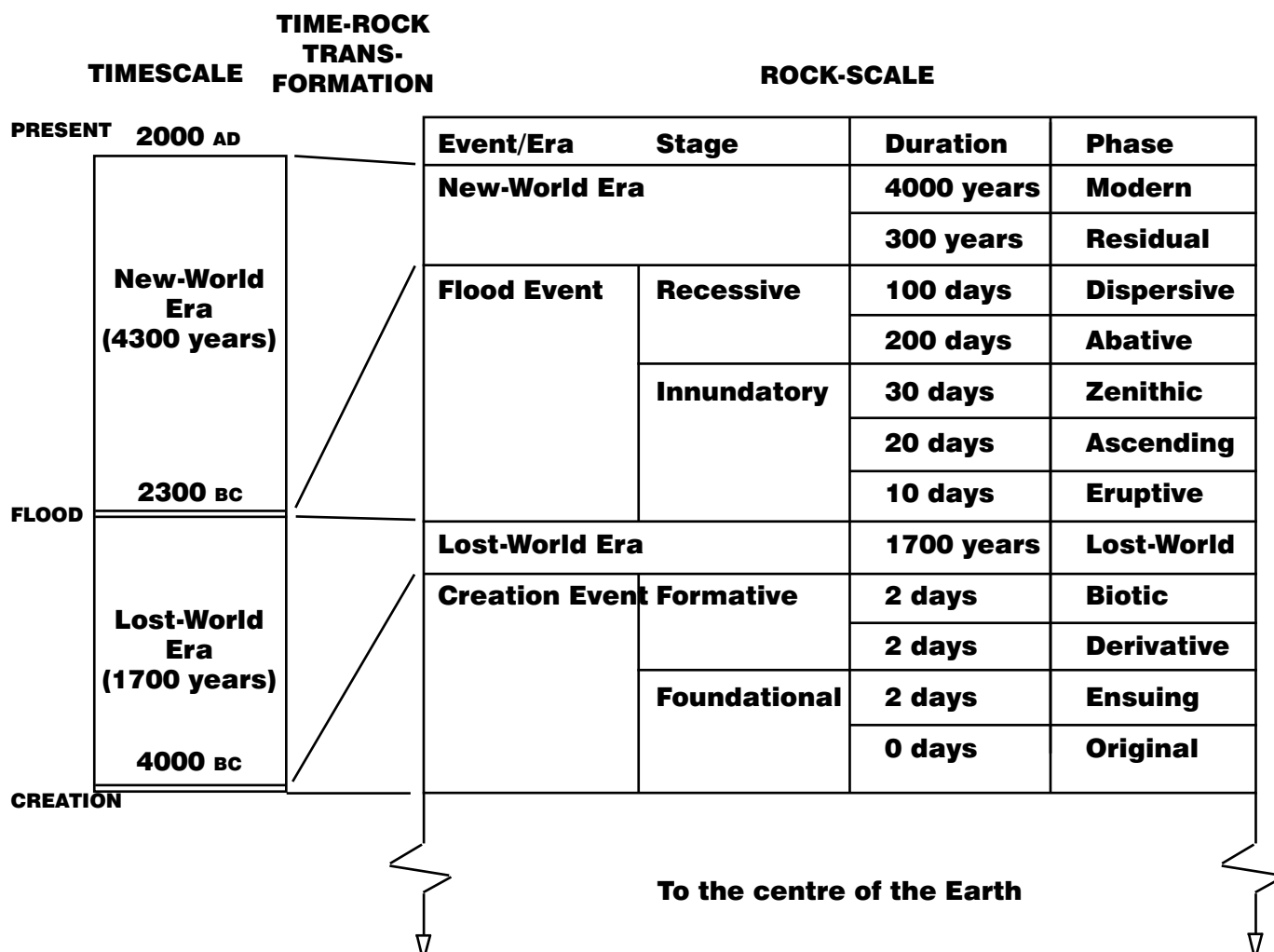


Figure 2. The biblical geologic model of Walker¹ is comparable with the time-scale of Froede in concept and at the broadest level of classification. The classification scheme extends to three levels with geologic processes described to the lowest level.

levels are used to describe geologic energy and no quantitative descriptions are proposed. Froede's concept of geologic energy has been used to determine theoretically where gold placers should occur in the lithostratigraphic column.³ The concept of geologic energy is one with much potential but it needs to be better defined and further developed to be more useful.

Implications of the model

There are a number of very important consequences that Froede develops from the biblical geological time-scale. He stresses the point that the biblical model is incompatible with the uniformitarian geologic column, based as it is on evolution over millions of years. Therefore, biblical geology cannot be harmonised with the uniformitarian scheme. The rock record needs to be reclassified at each local site into the biblical time-scale. It is important to recognise that the divisions in the biblical geological time-scale are not necessarily chronostratigraphic. By way of illustration, it is unlikely that the Flood waters started to withdraw from every continent on the earth at the same rate and exactly the same time. Similarly, the biblical model does not support the notion, held by uniformitarians, that the occurrence of fossils in the rock record is chronostratigraphic. There is no reason why trilobites, for example, would all be deposited on different continents at the same time during the Flood. The biblical geological model is one of the most powerful advances in biblical geology because it tackles the geologic problem from fundamentals — from biblical presuppositions.

As biblical geologists, we need to reclassify the rocks according to a biblical model. In detail, different rock units can be assigned to different categories in a biblical model on the basis of classification criteria peculiar to the geological processes operating at different times. Once a classification has been made, we

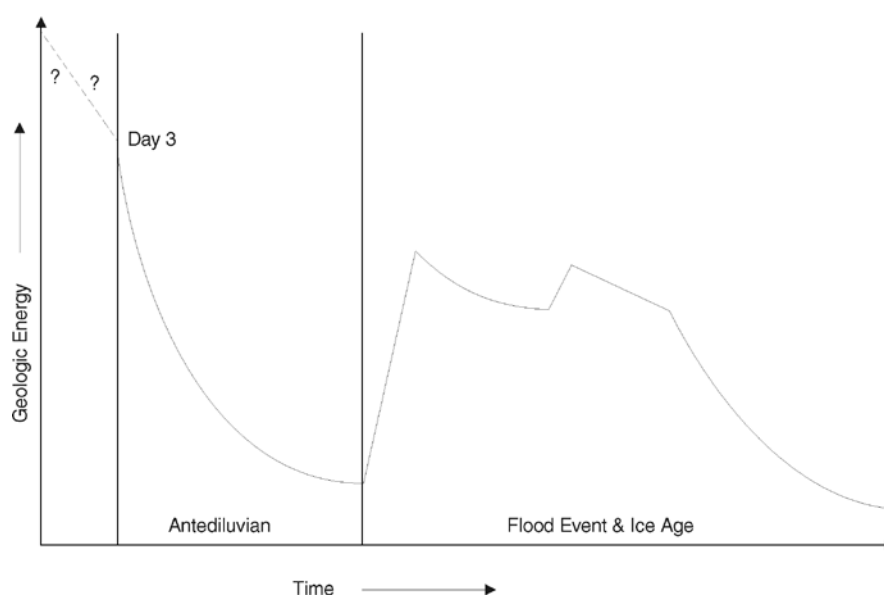


Figure 3. The variation of geologic energy proposed by Froede for different periods of earth history based on the Bible. The geologic energy reflects large-scale, high levels of geologic activity and has a direct bearing on the formation of strata.

should not necessarily regard it as 100% final. Instead we need to recognise that the assignment may need to be changed from one category to another, as more information becomes available. But at least a workable framework is available to allow classification to proceed.

The biblical geological time-scale, like that proposed by Froede, is also a great educational tool. Such a model will enable people who are not geologically trained to understand how the rocks of their area fit with the Bible.

Field testing

One of the great strengths of the model is that we can now clearly envisage the differences between biblical and uniformitarian concepts. These differences can be used as classification criteria within the biblical model, and Froede refers to some excellent examples of these in the rest of his book. Once the differences between the uniformitarian and the biblical models have been established, we are in a position to consider the field evidence where we can actually test the two models. In this way, the differences provide the direction for field investigation and it

is such differences that have formed the basis for Froede's field studies.

The concept of paleoenvironments (chapter 2) is one key difference between the uniformitarian and biblical interpretations of geological history. Uniformitarian geologists have decided that the history of our globe must be explained by what can be seen to be happening today. So they assume that the environments that exist today (for example, lakes, oceans, rivers, glaciers, etc.) have always existed on the earth. Thus the uniformitarian carefully investigates the geological deposits forming in each modern environment and then looks for similar features in the ancient rock record. Although biblical geologists can appreciate the usefulness of such an approach, they are also aware of its limitations. Specifically, we understand that environments similar to today's environments existed only during the Antediluvian and post-Flood eras (Figure 1). Since most of the geology of the earth was formed during the Creation and Flood events, **we should expect to find differences between most ancient rocks and modern environments.** The really interesting aspects of Froede's book are the field examples, which set out geological

evidence consistent with the biblical model and inconsistent with the uniformitarian model.

Froede investigates a phenomenon where shell debris accumulates in relatively thin layers in the rock record (chapter 3). Whenever such deposits are found, uniformitarians interpret them as storm deposits. Froede cautions about interpreting all shell debris as storm deposits, because the mode of deposition during the Flood with its high geologic energy was almost certainly different from the way modern storms form layers of shell debris today. Froede argues that storm deposits similar to those forming today would only occur during the late stage of the Flood and during the post-Flood era. Froede compares two field occurrences of shell debris layers — a modern storm deposit and a similar deposit from the ancient rock record. In highlighting the distinguishing characteristics between these two deposits, Froede shows that the shell debris in the fossil record is unlikely to have been laid down by the same mode of deposition as storm deposits today.

Another difference in interpretation between uniformitarian and biblical geologists involves the concept of paleosols — or ancient soil layers (chapter 4). Uniformitarians expect to find hundreds of ancient soil layers in the rock record, because millions of years would have been more than enough time for soils to develop. In stark contrast, the biblical model predicts that the only time available for true soil profiles to develop would have been during the Antediluvian and post-Flood eras. Froede's description of the field evidence and the uniformitarian methodology powerfully shows that paleosols are not present in the ancient record, which is contrary to what the uniformitarians expected. The field evidence is consistent with the biblical geological model. Since paleosols would only occur in the Antediluvian and post-Flood eras, they can be used to help classify rocks within the biblical geological model. But the field data would need to be carefully examined to ensure the paleosol interpretation

is correct.

Other field evidence that Froede discusses includes clastic dykes (chapter 5), which point to large-scale rapid sedimentation consistent with the biblical model. On a similar theme is the occurrence of ball and pillow structures in sedimentary layers (chapter 7). Termed soft sediment deformation, these structures are clear indication of catastrophic processes. The deformation structures show that deposition was so rapid that the thick layers did not have time to dewater or lithify. Deformation occurred when earth movements, such as an earthquake, subsequently disturbed the sediments. The evidence for large scale, rapid, catastrophic processes in the sedimentary record is overwhelming.

One new area that Froede tackles is the occurrence of rounded sedimentary structures such as sedimentary boulders (chapter 6). Froede suggests these are evidence of high-energy formation, with their rounded structure being caused while being transported by water. The idea that such large boulders could be formed in this way needs further discussion and analysis in creationist circles.

Froede has addressed many phenomena in his book, including areas where there is much potential for fruitful creationist research. For example, chapter eight has a description of ripple features in the sedimentary record and how these can be formed. He suggests that ripple marks could be very useful for reconstructing earth history from a young-earth perspective. Another chapter examines the occurrence of volcanically derived clays such as bentonites, metabentonites and tonseteins (chapter 9). He shows how these are best explained in terms of a young-earth framework and how there is much potential for further research. There is also a good review of turbidites (chapter 10), including how they were discovered and researched. Froede demonstrates that these are easily explained in terms of the biblical Flood.

Conclusion

Field Studies in Catastrophic Geology by Carl Froede Jr, is a well-produced and informative treatment of biblical geology. It has a helpful glossary, a comprehensive index and a useful list of references. Henry Morris, one of the catalysts of the resurgence of the modern creationist movement, gives a generous endorsement of the book in an afterword.

The geological model presented by Froede provides a powerful theoretical framework for planning future fieldwork. The field studies reported in the book illustrate how this geological model can be applied in practice. But there is much work still to be done. Froede's geological model can be applied in any field situation to provide insights into geological phenomenon. *Field Studies* is a book full of ideas to expand one's geological mind. It will be an excellent introduction for the creationist just embarking on a geological career, as well as for the person with much experience in the area.

References

1. Walker, T.B., A biblical geologic model; in: Walsh, R.E. (ed.), *The Third International Conference on Creationism*, Creation Science Fellowship, Pittsburgh, pp. 581–592, 1994.
2. Ager, D., *The New Catastrophism: The Importance of the Rare Event in Geological History*, Cambridge University Press, 1993.
3. Lalomov, A.V. and Tabolitch, S.E., Gold placers in Earth history, *CEN Tech. J.* **11**(3):330–334, 1997.