

Bigger than Grand Canyon

A review of
The North American Midcontinent Rift System: An Interpretation Within the Biblical Worldview
 by John K. Reed
 Creation Research Society
 Books, St. Joseph, MO,
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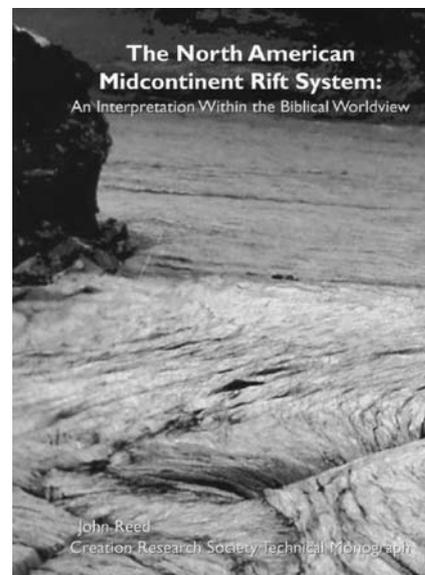
I wonder how many people have heard of the North American Midcontinent Rift System, the topic of John Reed's book. Very few, I suspect. How many people have heard of Grand Canyon? Nearly everyone. Millions of people visit the canyon each year and are impressed by its vastness, the spectacular layers of rock around its rim, and the immensity of the processes that made it. Yet surprisingly, the North American Midcontinent Rift System is many times bigger than Grand Canyon.

The Midcontinent Rift System (MRS) extends in an arc for over 2,200 km, crossing eight states of the USA

and part of Canada (Figure 1). It is up to 150 km wide and 32 km deep. That's a gash five times longer than Grand Canyon, five times wider, and twenty times deeper! In spite of this immense size, the MRS is not an international tourist attraction because, unlike Grand Canyon, it cannot be seen. It is filled with volcanic material and covered with sedimentary rock, lakes, mountains, roads and cities.

The obvious question is, 'If we can't see the rift then how then do we know it's there?' That answer takes up a significant part of the book. John Reed carefully documents the evidence used to interpret the extent and shape of this huge geologic structure.

Geologists can't see kilometres into the Earth to examine the rocks. Rather they rely on different types of data they can access at the surface, each of which has strengths and weaknesses. John Reed analyses the geologic data for the MRS in detail, helping the reader assess the reliability of interpretations based on that data. Any geological interpretation is only as good as the information on which it is based. That's why creationists must always try to



work from the fundamental data and not interpretations of the data based on evolutionary presuppositions.

The structure of the MRS

The first aim of the geologist is to ascertain the size, shape and composition of the rock formation as it exists in the Earth. In other words, strata at location A need to be related to corresponding strata at location B. At Grand Canyon, this is easy because the strata are clearly visible over huge distances. Anyone can see at a glance how the rocks around the canyon are linked. However, the rocks of the MRS are not visible but buried and covered by soil and vegetation. Only isolated outcrops can be observed at the surface and only indirect methods are available to probe at depth. Therefore, geologic investigations must start at the surface, by carefully examining all available rock outcrops. Information at depth is obtained from small rock fragments drilled out of holes (or 'wells'), or from cylindrical cores of rock carefully recovered by special drilling rigs. Wells provide other data too because once they are drilled various rock properties can be measured by lowering probes into the hole. Other types of data include measurements of seismic sound waves, the strength of gravity over the area and the local strength of the Earth's magnetic field.

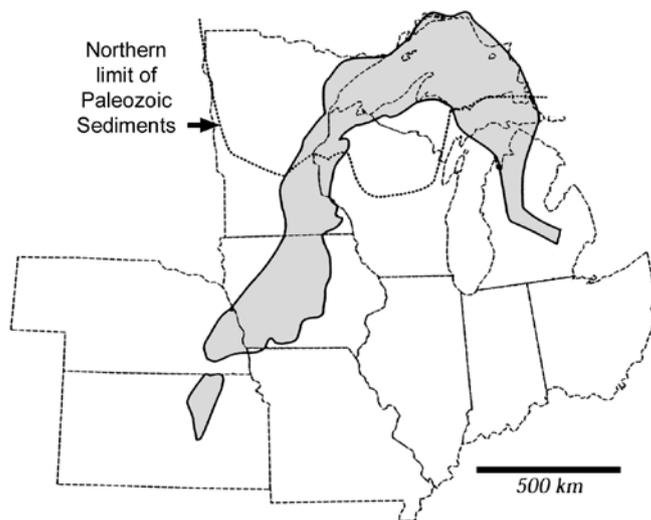


Figure 1. The North American Midcontinent Rift System (MRS) extends over 2,200 km in an arc over eight states of the USA and part of Canada. Paleozoic sediments cover most of the southern part of the MRS as indicated (after Reed).⁷

Even with all these data, the task of relating rocks together and establishing the shape of the MRS is not straightforward. So, before moving to the next level of interpretation, it is important to be sure that the interpreted shape is reliable. That's why John Reed spends so much of the book documenting how geologists have determined the size, shape and composition of the MRS at map scale.

In general, creationist geologists have no fundamental objection to correlations based on the physical, chemical or isotopic characteristics of rocks, or indirect methods such as seismic, gravity, magnetics, and well logging. However, as John points out, sometimes the rocks are correlated according to their radiometric dates. Creationists are wary of interpretations relying solely on radiometric dates because of the inherent problems with the methods. Nevertheless, in the case of the MRS, John shows that we can be confident of the interpreted size, shape, and composition of the feature.

Tectonic setting

After the geological shape has been worked out, the next goal is to place it within a tectonic setting. If there are problems interpreting the shape, then the tectonic setting is even more problematical. In fact, geologists do not expect to obtain a definitive result but simply use the data to 'constrain' the number of possible solutions. The MRS has been interpreted as a failed rift. Within the Plate Tectonic paradigm—a failed rift means that the lithospheric plates started to split but movement ceased before a new ocean opened up and new sea floor was produced. Creationists could live with the idea of limited rifting but would want to express this concept within a framework consistent with the Bible.

Uniformitarian or Biblical framework?

The 2,200-kilometre fracture of the North American continent (Figure 2) speaks of continent-splitting forces.

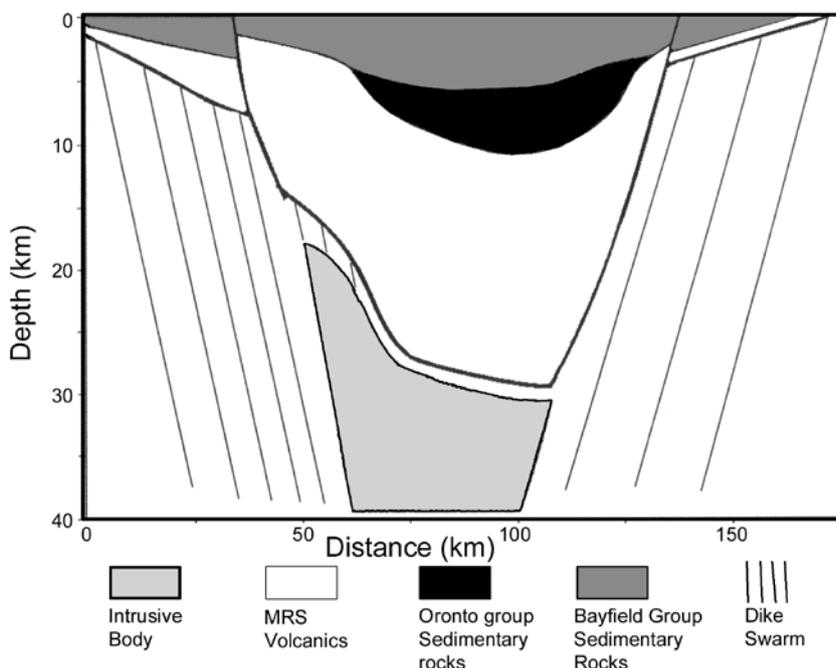


Figure 2. Interpreted cross section of the MRS in the Lake Superior Basin. The vertical exaggeration is 3:1 (from Reed).⁸

Immense volumes of hot, volcanic liquid filled the whole length of the giant gash and spilled as far as 200 kilometres on either side. Then, massive volumes of water eroded even larger quantities of sediment and deposited it into extensive layers of sedimentary rock on top of the rift. When did all this happen, and what caused it? The answer to that question depends on the unifying paradigm used to explain Earth history—whether we adopt a uniformitarian or a Biblical paradigm.

John Reed examines the philosophical basis for Biblical geology and how this is superior to uniformitarianism. He also demonstrates that the Biblical paradigm explains the evidence much better than the uniformitarian paradigm.

A major difference between the two paradigms is the issue of time. It is often claimed that creationists have a time problem, fitting all the geologic processes into a one-year global Flood. However John Reed turns the tables. It is the uniformitarians who have the problem with time. The geologic data reveals continuous, catastrophic processes. Thus, uniformitarians need to answer the challenge, 'Where are you

going to put the millions of years?' There is nowhere that these unimaginably vast periods of time fit.

Biblical interpretation

Rather than a failed rift within a uniformitarian Plate Tectonic framework, John Reed relates the MRS to the breaking up of the fountains of the great deep at the start of Noah's Flood. Reed uses a schematic curve showing geologic energy versus Biblical time (Figure 3) to make the classification.¹ Although the concept of geologic energy is not defined or quantified in the diagram, Reed interprets the rapid fracturing of continental crust, vast magmatic explosions and regional scale sedimentation as an abrupt increase in geologic energy. This increase fits best on the schematic energy curve at the start of the Genesis Flood.

Linking the MRS to the start of the Flood has implications. In particular it ties a physical location to the pre-Flood/Flood boundary. The placement of this boundary has been explored by a number of Creation geologists²⁻⁵ and it would have been interesting if John Reed could have made some comparisons.

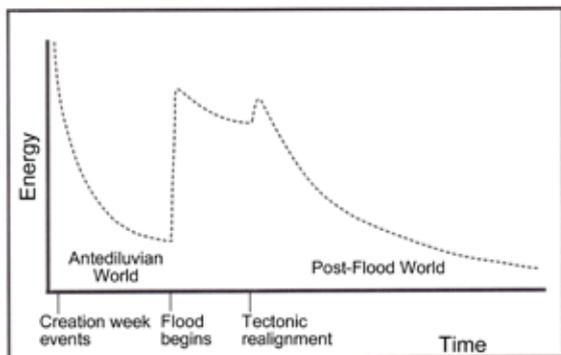


Figure 3. Schematic variation of geologic energy (vertical axis) versus time (horizontal axis) as derived from the Biblical record. High-energy events include Creation and the Flood. A large increase of geologic energy occurs at the beginning of the Flood. Note that the time scale is not linear (from Reed).⁹

Also, the shattered continental crust on either side of the MRS must represent fragments of the pre-Flood continent that were originally formed during Creation Week. Are these rocks consistent with Creation rocks? For example, during Creation Week, we would not expect pyroclastic deposits, which would require explosive volcanic activity with clouds of glowing hot ash.

If the continental fragments are Creation rocks, then they could also provide information about the processes operating during Creation Week and help us understand how the pre-Flood crust was generated. Do the characteristics of these rocks allow them to be classified into one of the geological phases of Creation Week?⁶ It would have been good if some of these issues could have been explored, or even if some of the questions had been noted as areas for further research. No doubt this will be followed up in future research work.

General

For the geologist, *The North American Midcontinent Rift System* by John Reed is a very useful treatment of a significant global feature. He has summarized the geologic data with great care and clearly describes the amazing features of the rift system. Because the Flood was global, it is likely that similar features will be

found elsewhere on the Earth. A detailed understanding of the MRS will help our understanding of these features on other parts of the globe.

An even-handed, two-model approach is used, presumably because John is seeking to persuade the uniformitarian geologist that the Biblical framework is superior. With this approach the data is first presented as objectively as possible and then interpreted using each model in turn. The reader can then decide which framework, uniformitarianism or Biblical Creation, works best. Hopefully we can lend this book to our uniformitarian geological friends and they will read it with an open mind. However, in my experience they usually avoid talking about Biblical ideas, even for the sake of a geologic discussion. We can spend a lot of effort trying to prove the Biblical paradigm to people who are already set against it. There is much to commend a presuppositional approach where we start with the Biblical framework and then advance our understanding of the geological implications.

John Reed's book gave me a new awareness of the scale of Noah's Flood. The word 'Flood' to our modern ears is too small a word. The geological scar of the MRS vividly illustrates something of what really happened—the immensity of the cataclysm that engulfed the Earth due to God's judgment. Unfortunately, most geologists have not appreciated the magnitude of the geologic processes and do not interpret geology within a Biblical framework. That's why modern geology has been lost down a uniformitarian blind alley for over 200 years. *The North American Midcontinent Rift System* by John Reed will help to recover some of that lost ground.

The book is a mixture of detail and overview. It is also a mixture of simple and complex. It would be heavy reading for the average person because

Reed often uses difficult words: words like 'arcuate' ('arc-shaped'), 'intra-cratonic', and 'tectonic front'. The book has a good index, an extensive list of references, and a glossary of terms. Also, at the beginning it lists the common acronyms used.

The North American Midcontinent Rift System will be a very useful addition for the geological bookshelf. It will be valuable for the trained geologist, and indeed, for anyone who would like to understand more about interpreting geology within a Biblical worldview.

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9. Reed, Ref. 7, p. 103.