A BIBLICAL GEOLOGIC MODEL

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ABSTRACT

This paper describes a geologic model based on a plain reading of the Bible. A simple diagram is presented detailing the model and graphically illustrating the concepts. Each feature of the model is labelled. The terms used are consistent with the Biblical record, are in plain language intelligible to ordinary people, and are sufficiently well defined to enable ongoing discussion and evaluation within the scientific community.

Characteristics of significance to the Biblical model have been identified with a view to classifying the rocks in the field and assisting in geologic research.

The paper proposes that the model be tested against real geological sections and eventually used to reclassify geologic reference materials, such as maps, map commentaries, field guides, and handbooks, in terms of a Biblical model. It is suggested that the model, adapted to suit the needs of the audience, be widely published to help people picture the geologic concepts arising from the Biblical account, and assist scientific research.

KEYWORDS

Bible	Creation Science	Creationism
Geology	Geologic Model	Geologic Classification

1. INTRODUCTION

A geologic model is needed to help explore, classify and understand the geology of the earth.

The basis of a geologic model is a clearly defined history of the earth. Naturally any history of the earth must be an assumed history because no one alive today was present to observe what took place.

Many people believe that a plain reading of the Bible gives an accurate understanding of earth history. The basis for this belief is outside the scope of this paper, but McDowell [4] summarises many of the reasons. If the Bible is taken as accurate, then it should form the basis for an overall understanding of geology.

This paper describes a geologic model based on the belief that the Biblical record of world history is accurate.

2. THE BROAD FRAMEWORK OF THE MODEL

The Biblical history as illustrated in Figure 1 will be used as the basis for the geologic model.

For this paper the dates developed by Ussher [3, p.273-p.283], rounded to the nearest 100 years will be adopted. Ussher's chronology is based on internal evidence from the Bible itself, and is used here because it is well known. Biblical chronologies developed by others differ from Ussher depending on how the chronology was constructed and the Biblical source text used. However the differences are not large compared with non-Biblical chronologies and have no effect on the validity of the model outlined in this paper.

The creation of the earth, therefore, is taken as occurring in 4000 BC. The flood, assumed to be of world wide extent and to involve deposition of a significant portion of all sedimentary rocks, is taken as occurring in 2300 BC.

With these assumptions the creation and flood events, although of short duration, are geologically the most

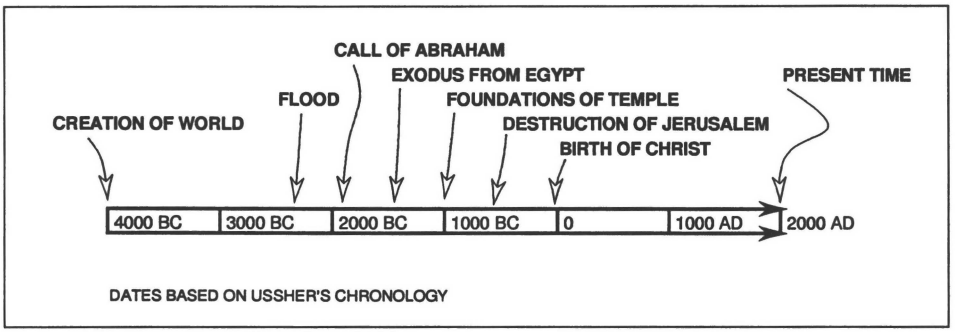

Figure 1 The Bible time-line of world history.

important times for the earth. The creation event is pre-eminent, generating a volume of roughly 1,000,000 x 10^6 cubic kilometres of material when the earth was formed. Of lesser significance was the flood event which would have involved the deposition some 300 to 700 x 10^6 cubic kilometres of material. To produce such large quantities of material in such a short time would require intense geologic processes.

By contrast, the geologic processes observed operating today are orders of magnitude less intense. If the current rates of erosion and deposition are projected over the pre-flood or the post-flood era, then the total quantity of material deposited in either era would be less than 0.05 x 10^6 cubic kilometres. Even if the rates applying during these eras were one or two orders of magnitude different from current rates, the material accumulated during these eras would still be much less than the material generated during the creation or flood event.

From a geological point of view, therefore, the history of the earth as recorded in the Bible can be divided into four parts which we will refer to as the **Creation Event**, the **Lost-World Era** (pre-flood era), the **Flood Event**, and the **New-World Era** (post-flood era). The term "Lost-World Era" refers to the time between the Creation and Flood Events. It is introduced to avoid ambiguity because the term "pre-flood" includes the Creation Event.

The important feature of the Biblical geologic model is that the intensity of geologic processes were different for each of the four parts of world history. Because geologic effects were not uniform with time, it is necessary to transform the time-scale shown in Figure 1 into a rock-scale.

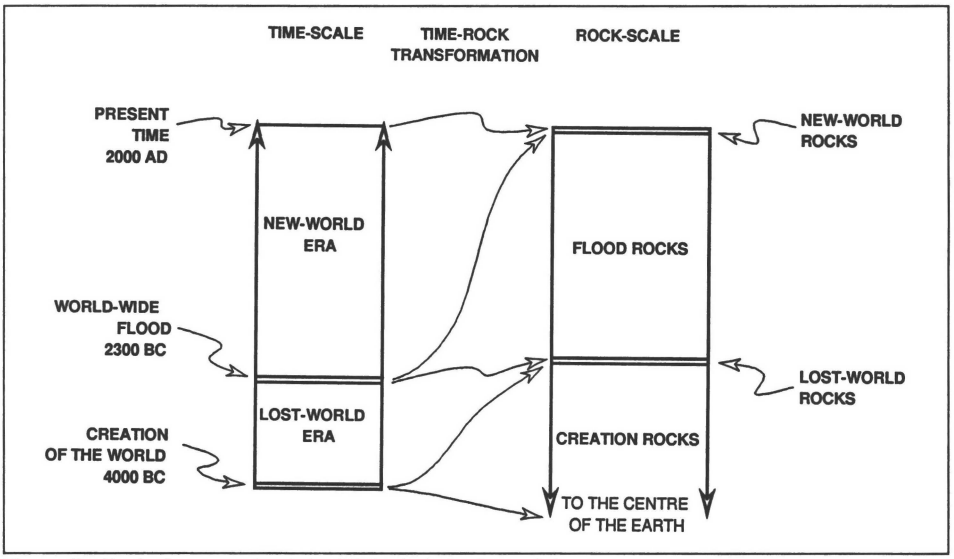

Figure 2 Basic framework of the Biblical geologic model.

The concept of time-rock transformation is illustrated in Figure 2. The time-scale is shown on the left, rotated so that the most recent time is at the top of the figure and the earliest at the bottom. The length of the time-scale reflects the durations of the events and eras.

To the right of the time-scale is a rock-scale with the most recent rocks at the top, and the earliest rocks at the bottom - the same way they occur in the earth. The length of the rock-scale roughly corresponds to the quantity of rock material found on the earth today.

The non-uniform effect of historical events on earth geology is indicated by the time-rock transformation. Arrows point from the Creation and Flood Events on the time scale to the rocks on the rock-scale formed during these events. Even though these events happened quickly, they were responsible for practically all the rocks on the rock-scale. The long eras, which make up virtually the whole time-scale, do not contribute much to the rock-scale. Because these eras have such little impact on the rock-scale, the exact dates of the Creation and Flood are not critical to the model.

Figure 2 represents the basic framework of the Biblical geologic model. The Biblical account is clearly set out in the figure together with the underlying concepts which relate that account to the geology of the earth.

3. DETAILED STRUCTURE OF THE MODEL

To be useful and practical, the broad framework of the model must be expanded to provide specific detail of the events and processes and their time relationships. Distinctive conditions need to be identified to correlate geologic features in the field with the model. In addition the level of detail needs to be scaled such that it bears a useful relationship with the quantity of rocks involved. As we examine the Biblical account more closely, the various processes, events, conditions and features will be defined and named.

3.1 The Creation Event

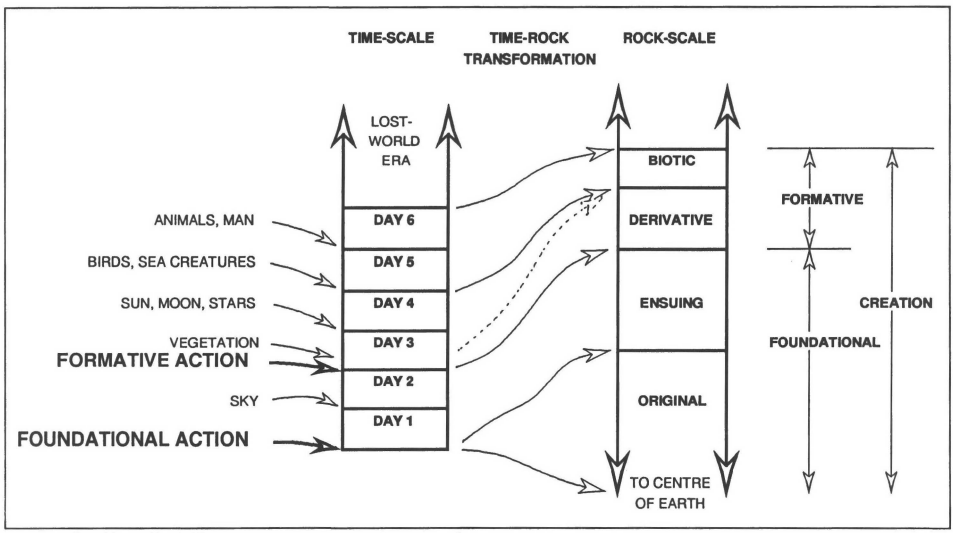

Figure 3 Detailed illustration of the Creation Event.

The Creation Event as recorded in the Bible is illustrated in Figure 3. The time-scale and corresponding rock-scale are shown together with the time-rock transformation. The earliest time is at the bottom of the figure. Details of the events on each of the six days of the Creation Event are summarised below.

Day 1 The first creative act is the most geologically significant, involving the creation of the earth on the first day [Gen 1:1-2]. Hebrews 11:3 indicates that the earth was created out of nothing. We do not know the processes involved in this action because Genesis 2:1-3 indicates that the creative process is finished, and therefore not observable today.

We will assume that the initial creative action occurred instantaneously at the beginning of the first day, and that on completion the solid sphere of the earth was in place. The form of this sphere, whether homogeneous or differentiated is not here proposed. However it is noted that this sphere was initially covered with water until dry land appeared on the third day.

As shown in Figure 3 the first creative act which founded the earth is called the **Foundational Action** and the rocks resulting from this action are called **Original** Rocks. It is envisaged that the waters would have contained additional minerals in solution, or in suspension. It is reasonable to assume that the material in solution would precipitate, and the material in suspension would settle with time. Rocks formed in this way have been termed **Ensuing** - that is rocks which quickly followed on over the next two days. These two types of rock are shown

in Figure 3 and were formed during what is called the **Foundational Stage** of the Creation Event - a stage covering Day 1 and Day 2.

Day 2 The sky was created on the second day. It is not proposed that this act would produce any significant geologic effects at this time.

Wise [6, p.69] has suggested that the ocean microbiotas (plankton and other tiny sea life) were created on Day 2. The possible significance on the model is discussed under Day 5.

Day 3 On Day 3 the waters covering the earth were gathered together into one place and dry land appeared. If this gathering was brought about by movements of the solid sphere causing the overlying waters to flow over the surface, then this act would have been significant geologically.

In Figure 3 the gathering of the waters to form the ocean basins and the dry land is called the **Formative Action.** This action marks the beginning of the **Formative Stage** of the Creation Event, lasting from the beginning of Day 3 until the end of Day 6. It is reasonable to expect that material would have been eroded and redeposited as a consequence of this action. The rocks so formed are called **Derivative** because they were derived from the Ensuing and Original Rocks.

After the Formative Action the dry land produced all kinds of vegetation, seed bearing plants, and trees with fruit. Note that vegetation was created after the Foundational and Formative Actions. Although I assume that plankton and other microscopic sea life were created on Day 5, such life may have been created on Day 3. The possible significance on rock characteristics is discussed under Day 5.

Day 4 The sun, moon and stars were created on Day 4. I do not consider that these events would have produced any significant geologic effects at this time.

Day 5 All the creatures that fill the water, and the birds of the air were created on Day 5.

An interesting possibility arises in relation to the geologic significance of plankton and other tiny sea life. After they were created, some of this life may have become trapped in rocks forming in the oceans. To allow for this possibility the model includes a category designated **Biotic** for rocks formed during this period. The solid time-rock transformation arrow shown in Figure 3 assumes the tiny sea life was created on Day 5 with the other ocean life. The dotted arrow indicates the possibility that this tiny sea life was created on Day 3 with the vegetation. Whether this life was created on Day 3 or Day 5 does not affect the validity of the model.

The suggestion by Wise [6, p.69], however, that this tiny sea life was created on Day 2 would affect the form of this model. The Biotic category would need to be moved between the Ensuing and Derivative Rocks, just before the Formative Action. However this position is not proposed for the model at this stage because the Bible is silent on the matter of life being created on Day 2. Wise proposed an "aesthetic justification" for the position. Such a modification to the model should only be made if it became clear from the field that it was necessary.

Apart from the tiny sea life, it is not proposed that any other Day 5 creative actions produced significant geologic effects at this time.

Day 6 Animals and man were created on Day 6. It is not proposed that these events produced any significant geologic effects at this time.

As shown on Figure 3, the end of Day 6 marks the end of the Formative Stage of the Creation Event.

3.2 The Lost-World Era

I have called the 1700 year period between the Creation and Flood Events the **Lost-World Era.** A perfectly habitable environment existed on earth at the beginning of this era when every kind of life ever created was present.

Geologic action during the Lost-World Era may have been less intense than today. Even if the intensity were the same, not much of geologic significance would have occurred in the time available. In addition, much of what was deposited during this era may have been destroyed by the Flood. Rocks formed during this time have been called **Lost-World Rocks.** Additional classifications are not included at this stage but can be inserted if the a need is identified as the model is applied to the rocks in the field. Figure 4 shows the relationship of Lost-World Rocks with the Biblical time-scale.

3.3 The Flood Event

The Flood Event is meticulously recorded in the Bible, from which can be developed a detailed chronology. The records are tied to the age of Noah who was in his 600th year when the Flood began. The text indicates that a month consisted of 30 days [Gen 8:3-4 and 7:11]. The time-scale of the Flood Event is shown in Figure 5 with the earliest time at the bottom of the page. Full details of the chronology are as shown in Table 1. The total duration of the Flood Event is a little over one year.

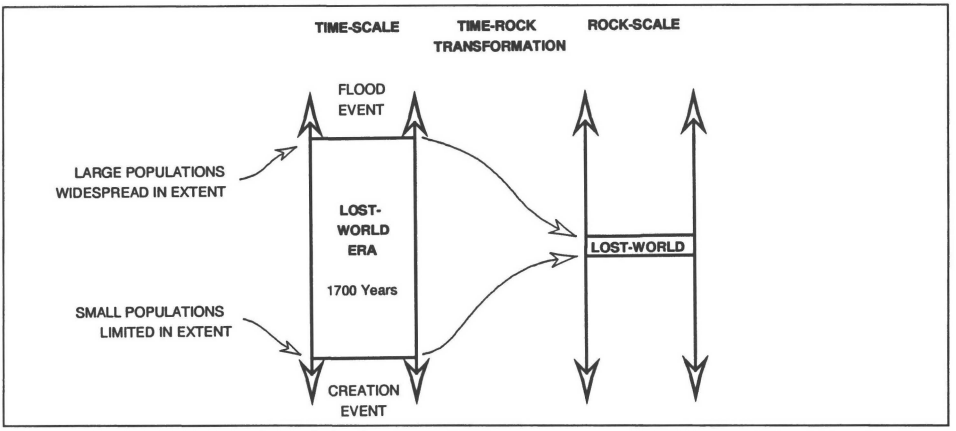

Figure 4 Detailed illustration of the Lost-World Era.

Yr	Mth	Day	Event	Duration Days	Genesis Reference
600	2	10	Noah entered the ark		7:7,10,11
600	2	17	Heavens and earth opened		7:11
600	3	27	Rain stopped	40	7:12
600	7	17	Ark rested on Ararat	110	8:3,4
600	10	1	Tops of mountains seen	74	8:5
600	11	10	Raven - did not return	40	8:6,7
600	11	18	Dove - returned	7	8:8
600	11	25	Dove - returned with leaf	7	8:10,11
600	12	2	Dove - did not return	7	8:12
601	1	1	Covering removed - ground dry	29	8:13
601	2	27	Everyone disembarked	56	8:14-16
			Total Duration of the Flood	370	

Table 1 Chronology of the Flood Event.

Geologically two stages are of significance. The first stage, during which the waters "rose and increased greatly" until the whole earth was covered [Gen 7:18], has been called the **Inundatory Stage.** The second stage during which the waters receded from the earth [Gen 8:3,5] has been designated the **Recessive Stage.**

The description "the springs of the great deep burst forth" [Gen 7:11] is taken to mean an intense world-wide geologic disturbance which initiated the Flood. This is shown on the figure as the **Eruptive Action.** Similarly the "springs of the great deep being closed" [Gen 8:2] is assumed to mean an intense world-wide disturbance which started the waters receding from the land and is called the **Abative Action.** Although these disturbances are indicated as a single act on the figure it is possible that a sequence of tectonic activity was involved lasting weeks or months.

The duration of the Inundatory Stage is not entirely clear. If the stopping of "the fountains also of the deep and the windows of heaven" [Gen 8:2 AV] occurred after 150 days [Gen 7:24] then the Inundatory Stage would have been about 150 days long and the Recessive Stage about 220 days. Alternatively, from Genesis 7:12 and 17 the duration of the Inundatory Stage can be equated to the 40 days that the "rain fell" and "the flood kept coming on the earth." In this case the Abative Action would have occurred soon after the 40 days and Genesis 8:2 would be a reference back to when "the springs of the deep and the floodgates of heaven had been closed" [NIV]. Therefore the Inundatory Stage could have been about 40 days long and Recessive Stage about 300 days. If the Inundatory Stage was significantly shorter than the Recessive Stage then the intensity of geological processes and the corresponding quantities of rock material deposited may well have been greater than occurred during the Recessive Stage.

Figure 5 (and Figure 7 too) is drawn assuming an Inundatory Stage a little longer than 40 days - arbitrarily shown as 60 days to allow time for the Flood to peak. Although these figures would need to be modified if the Inundatory Stage were 150 days long, the validity of the model would not be affected.

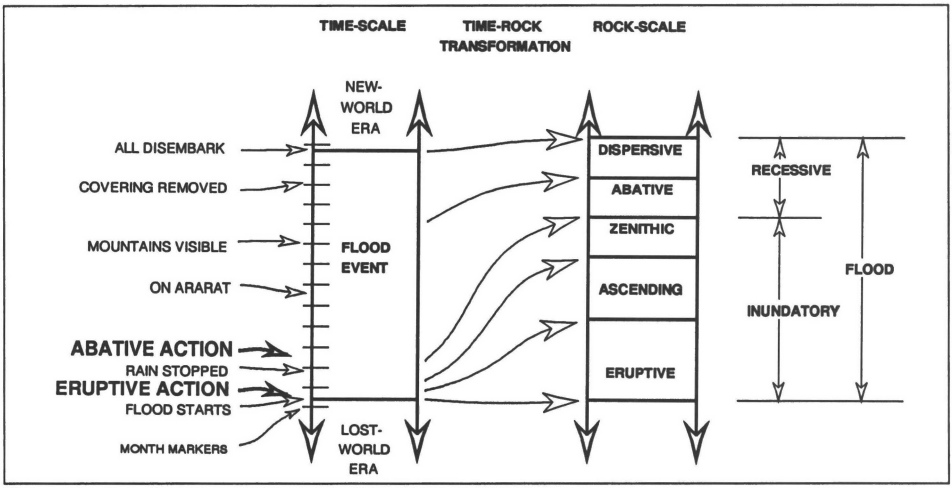

Figure 5 Detailed illustration of the Flood-Event.

As shown in Figure 5, three phases have been assigned to the Inundatory Stage, mainly to provide for the quantity of material assumed to be deposited at this time. No particular conditions are obvious from the Bible text to suggest distinctive features for each phase. Such criteria will need to be formulated as the model is applied in the field. The three phases assigned are:

Eruptive: Eruptive Rocks were formed following the Eruptive Action which involved the bursting forth of the springs of the deep [Gen 7:11], the opening of the floodgates of heaven [Gen 7:11], and rain falling on the earth [Gen 7:12].

Ascending: Ascending Rocks were formed as the rain continued and the waters rose upon the surface of the earth [Gen 7:10].

Zenithic: Zenithic Rocks were formed as the waters continued to rise to their highest point when all the earth was covered [Gen 7:20].

Two phases are designated for the Recessive Stage as indicated in Figure 5:

Abative: Abative Rocks were formed following the Abative Action when the springs of the deep [Gen 8:2], and the floodgates of heaven [Gen 8:2] closed, and after the rain ceased [Gen 8:2]. During this phase the waters covering the earth receded from the earth [Gen 8:3].

Dispersive: Dispersive Rocks were formed as the Recessive Stage continued, and the flow divided into separate water courses. The flow of water during the Dispersive Phase would steadily reduce in intensity until the land was dry [Gen 8:14].

3.4 The New-World Era

I have called the period of time since the Flood Event the **New-World Era.** Figure 6 shows the time-line for this period and the corresponding rock-line. Two phases are included:

Residual: A phase of relatively high levels of tectonic and volcanic activity as a result of residual effects from the Flood. The duration of this phase is shown arbitrarily as about 300 years but needs to be better defined by observable criteria in the rocks.

Modern: A phase of stable and relatively minor geologic processes of a similar scale of intensity as experienced today lasting approximately 4000 years.

3.5 The Model

Figure 7 shows the complete Biblical geologic model. This model is consistent with a plain reading of the Bible. The diagram illustrates the basic concepts of the Biblical model. The terms used such as era, event, action, stage, and phase are consistent with Biblical concepts. The names assigned to the events, eras, stages and phases are in plain language, faithfully portray the Biblical account, should be intelligible to ordinary people, and are sufficiently well defined to enable ongoing discussion and evaluation within the scientific community. The diagram can be customised to suit any intended audience.

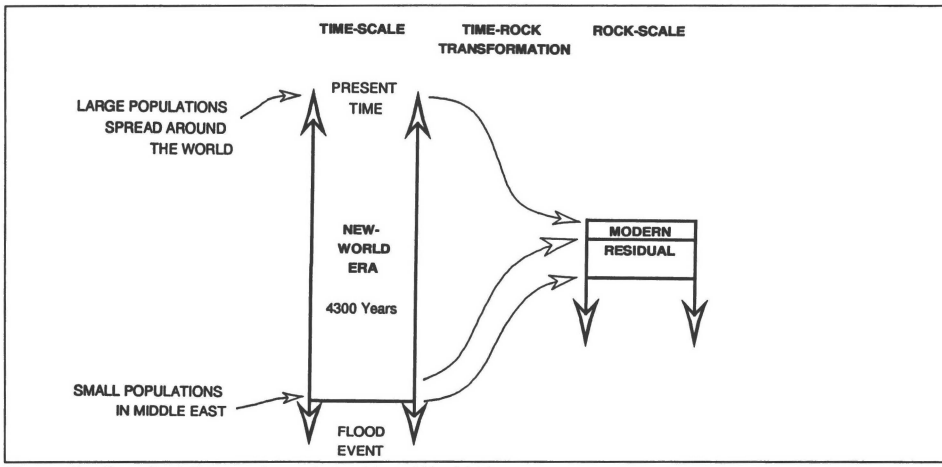

Figure 6 Detailed illustration of the New-World Era.

The concept of time-rock transformation focuses on the geologically significant processes and indicates the relative intensity of those processes. The applicability of the model is not dependent on particular mechanisms, such as a possible pre-flood vapour canopy, meteorite intervention, or plate tectonics.

The model can be used immediately for classification, mapping, and communication of the Biblical geologic concepts.

4. CLASSIFICATION CRITERIA

The Biblical model infers that geologic processes acting in the past varied in nature and intensity from time to time, and were different from what we experience today. Consequently it is anticipated that certain geologic characteristics will help classify rock formations in accordance with the model. In this section some of the characteristics of significance to the Biblical model are described. These have been identified from the detailed description of the nature and sequence of the processes which have been obtained from the Biblical account.

This list should be considered preliminary because as the model is used additional criteria will be identified. It is not intended of these criteria should be applied in isolation or without properly considering all the factors affecting the deposition and modification of a rock structure.

Scale The Biblical model proposes that the intensity of action, and the geographical extent of geologic processes was different at different times in the past. The scale of a geologic structure gives an indication of the intensity and geographical extent of the process involved in forming that structure. A geologic structure can have a world-wide, continental, regional, or local scale. The scale would also reflect in the thickness of the structures. Scale is therefore expected to help classify geologic structures according to the Biblical model.

Disturbance The Biblical model proposes a definite sequence for past geologic events. The major actions of great intensity which have shaped the earth are the:

* Foundational Action
* Formative Action
* Eruptive Action
* Abative Action

The Eruptive and Abative Actions probably involved tectonic activity and may have been spread over weeks or months. There would be other actions of lesser intensity occurring during the Lost-World and New-World Eras, particularly during Residual Phase of the New-World era. These however would be less significant.

The last three of these four actions would disturb structures already formed. The degree of disturbance would depend on the number and intensity of actions to which the structure was exposed. The degree of disturbance of rock structures therefore is expected to assist with their classification.

Response The Biblical model proposes a definite time relationship for past geologic actions as follows:

* Foundational to Formative Action - 2 days
* Formative to Eruptive Action - 1700 years
* Eruptive to Abative Action - 60 (to 150) days
* Abative Action to present - over 4000 years.

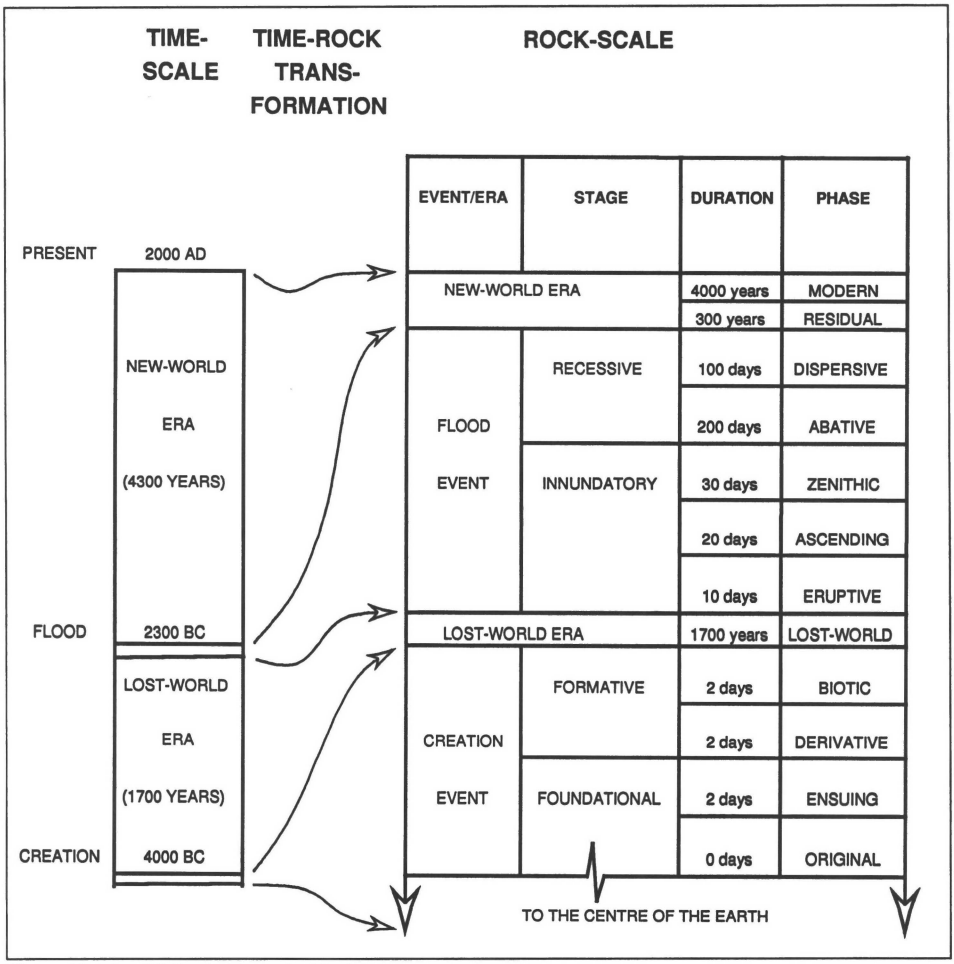

Figure 7 The Biblical Geologic Model.

It is expected that the response of geologic structures to disturbances would depend on how soon they were disturbed after they were formed. Rocks may respond in a:

* plastic manner - oozing, twisting, bending and folding.
* brittle manner - faulting, crushing, and fracturing.

Whether a rock formation shows plastic or brittle behaviour would depend on how quickly the rock lithifies and how long before the formation is disturbed. Pressure, temperature and rate of deformation are also factors. The rate of lithification would depend on such factors as the chemical characteristics of the rock material, the temperature and pressure. Some Creation Rocks could be subject to brittle or plastic deformation, even during the Creation Event depending on the initial created state - crystalline or sediment.

Response to disturbance is therefore expected to help classify rocks.

Texture The model anticipates times when rock formations would be plastic or brittle. This, combined with the intensity of geologic action would affect the texture of geologic formations.

For example, rocks formed from soft and plastic source material would have a fine texture, no matter how intense the water flows.

However the texture of rocks formed from hard and consolidated source material would depend on the intensity of the water flows. Intense water flows on consolidated source material would result in rocks of coarse texture - conglomerates and breccias composed of sharp and angular clasts.

Clasts of soft sediments could be eroded from partially consolidated source rock. These would exhibit plastic behaviour after deposition or be rounded in shape.

Rock texture therefore is expected to be useful for classifying rocks.

Fossils Fossils indicate rapid burial of living creatures before they decompose, and before they are scavenged by other creatures. The state of preservation of the fossil would indicate how quickly the animal was buried, and whether it was subsequently disturbed. The distribution of fossils would, among other things, reflect the distribution of animals on the earth at the time of the Flood. Fossils could not occur before life was created. The requirement for rapid burial would make it more likely for fossils to form during the Flood than during the Lost-World or New-World Eras.

Fossils can be used to guide classification within the model. Fossils can also be used to correlate strata on a regional scale.

Coal It is considered that vegetation buried during the Flood produced coal. Possible mechanisms include:

* Large scale cyclic dumping of floating vegetation on shore lines by tectonically controlled hydraulic deposition [7].
* Lake deposits as observed after the explosion of Mt St Helens [1].
* Deposits in vegetation traps created by ground topology.

Coal rank and quality could indicate when burial took place, whether it was in fresh water or in salty water, how long the vegetation was floating before it was buried, and the presence of suitable catalysts [5].

Coal therefore can be used as a guide for classifying rocks.

Footprints Footprints of animals, birds and humans have often been found in rock formations. Footprints are significant for the Biblical model because the creature must be alive to make a footprint. Footprints would not be found in Creation Rocks. With the exception of the footprints of amphibians, footprints would not be found in Recessive Rocks because no land animals were alive at this time.

Footprints require special conditions for their preservation:

* The texture of the rock material must be suitable to receive the foot impression - e.g. not too wet and not too dry.
* The rock material must either be 'set' before the footprint is covered with new sediment, or covered in such a way that it does not wear away. The time elapsed, the environment, the chemical composition of the rock material, and the mode of covering are all important factors.

These conditions may make it less favourable to preserve footprints in Lost-World or New-World Rocks.

The presence of footprints can help classify rocks.

Raindrops Raindrops have been reported in rock formations. Raindrops are significant for the Biblical model because the surface must be exposed to rain. This would rule out the Foundational Rocks of the Creation Event. Also there would be some period of time during the Flood toward the end of the Inundatory Stage and the beginning of the Recessive stage when raindrops could not form because the surface was covered by water.

In addition, if as hinted in Genesis 2:5 it did not rain before the Flood then the Formative Rocks of the Creation Event and Lost-World Rocks would also be ruled out.

The presence of raindrops is expected to help classify rocks.

Natives Many countries, like Australia, have distinctive animal populations. One would not expect kangaroos, for example, to travel to Noah's Ark from Australia before the Flood, and then return to Australia from the Middle East after the Flood. (Australia, as such did not exist before the Flood.) Consequently, the kinds of animals represented in the fossil record of a country may help distinguish between Flood and New-World Rocks. Such an analysis must ensure that the fossils have been properly identified, allow for variation within created kinds, and consider the possibility of extinctions during the New-World Era.

For example, we would not expect the kinds of fossils found in Flood rocks to correlate strongly with the kinds of native animals in that country. Flood Rocks should contain fossils of some animals from other countries and lack fossils of some native animals.

On the other hand we would expect a good correlation between the kinds of fossils found in New-World Rocks and the kinds of native animals of that country.

The occurrence of native fossils should assist to classify rocks.

5. PROCESSES AND CHARACTERISTICS

We will now consider each of the different geologic phases to decide what characteristics could be expected. Such predictions would be the means by which the rocks in the field would be classified. The features discussed are not exhaustive, nor should the predictions be taken as final, because specific factors may override general expectations.

5.1 Foundational Rocks

Since the Foundational Action involved the creation of the earth, it is expected that Foundational Rocks would be of world scale and extremely thick.

Since the creative process is finished and not operating today, the nature of Original Rocks is not exactly known. We would not immediately suggest an instantaneous creation of sedimentary rocks as this would imply an inbuilt history of once having been deposited from water. Similarly, an instantaneous creation of metamorphic rocks would imply a change from some pre-existing type of rock. Instantaneous creation of crystalline rocks can be envisaged. Indeed, Gentry [2, p.35] has suggested "the Precambrian granites as primordial (or Genesis) rocks."

Original Rocks should show evidence of being subsequently disturbed by the Formative Action and Flood Event. It is possible that crystalline rocks would be hard and solid when created. Original Rocks, therefore, should show signs of being broken, faulted, and eroded by the Formative Action on Day 3 and again by the Flood Event some 1700 years later.

Ensuing Rocks were formed while the whole earth was covered with water, and should show evidence of being deposited or precipitated in a marine environment. Ensuing Rock structures should show evidence of large scale, rapid, and continuous deposition.

Ensuing Rocks should also show evidence of being subsequently disturbed by the Formative Action and Flood Event. It is likely that the Formative Action occurred while the Ensuing Rocks were still soft and pliable. Ensuing Rocks therefore should show signs of plastic deformation and erosion. Since the Flood Event occurred some 1700 years later allowing time for the sediments to lithify, Ensuing Rocks should also show signs of being broken and faulted.

Since life had not been created at the time of the Foundational Action, no trace of life should be found in Foundational Rocks.

5.2 Formative Rocks

Since the Formative Action raised the Lost-World continents from the sea, it is expected that Formative Rocks would be of continental size and thick. The scale would not be as large as the Foundational Rock structures. Formative Rocks should show signs of being deposited under intense hydraulic conditions in a marine environment, perhaps deep sea, but thicker at the margins of the Lost-World continents.

Formative Rocks would have been derived from material eroded from the Foundational Rocks, and material still dissolved and in suspension in the water over the earth. One could expect material so eroded from Original Rocks to produce conglomerates or boulders, whereas material eroded from the soft, pliable Ensuing Rocks would exhibit a fine texture. Derivative Rocks presumably would contain a far greater proportion of material eroded from the Foundational Rocks than Biotic Rocks.

Biotic Rocks would continue to form as sediments settled, but would contain a lesser proportion of material derived from Foundational Rocks. They would not show such severe hydraulic action, and their texture should be finer.

Since Formative Rocks resulted from the Formative Action, they would not be further disturbed before they consolidated. Consequently there should not be signs of plastic deformation. However Formative Rocks should show signs of being disturbed by the Flood Event. Given suitable physical conditions lithification would have ample time to occur, so fractures and faulting would be anticipated.

As the model stands Derivative Rocks would not contain any signs of life. Biotic Rocks would contain microscopic marine life, (and perhaps bacteria and stromatolites) created either on Day 3 or Day 5 and, trapped while the rocks were depositing. (If as Wise [6, p.69] suggested it was found necessary to move the Biotic Phase to Day 2, then in this case Derivative Rocks would also contain microscopic marine life.)

5.3 Lost-World Rocks

The geologic processes and depositional environments of the Lost-World Era may have been similar to the processes and environments experienced today. Therefore the quantity of material formed during the Lost-World Era would have limited area and thickness. In addition, Lost-World Rocks would have been extensively destroyed by the Flood Event. Lost-World Rocks which have survived would be limited in area and thickness and show signs of disturbance by the Flood Event.

It is possible that Lost-World Rocks may contain fossils, perhaps due to such conditions as landslides or collapsing river banks, or stromatolites.

5.4 Inundatory Rocks

The Inundatory Stage commenced with the world densely populated with people [Gen 6:1], animal life and vegetation. It involved the breaking-up of the earth's crust, immense vulcanism, the pouring out of water from under the ground, and intense rainfall. Huge sediment laden rivers scoured the earthquake shaken Lost-World continents depositing sediments in the ocean and inland basins. Water levels on the earth would have risen rapidly. The continental landform would have changed quickly due to severe erosion, deposition and tectonic movements. The oceans and seas would have mixtures of fresh and salt water, hot and cold water, and solutions and sediments of various compositions. Vegetation would have washed down the swollen rivers and floated on the oceans and lakes. Life would have been catastrophically destroyed. Some marine life would have been buried by the rivers of slurry. Air breathing animals would have been herded together on the ever decreasing land areas. In the final phases of the Inundatory Stage the crowded islands of animal life would have been overwhelmed. The corpses would have formed floating graveyards, perhaps being caught in vegetation rafts on the ocean.

It is expected that the structures formed during the Inundatory Stage would be of continental scale. These sediments would be laid unconformably over the Creation Rocks and show evidence of strong hydraulic action. The stratigraphic layers should be evident.

Inundatory Rocks would have been disturbed by subsequent tectonic action during the Inundatory and Recessive stages. The disturbance would not be as great as for Creation Rocks. Inundatory Rocks should generally exhibit a plastic response. Inundatory Rocks would also show signs of severe erosion during the Recessive Stage, the present day landforms providing a guide.

There would be abundant fossils and buried vegetation. Marine fossils should be plentiful, particularly during the early stages. Fossils of vertebrate land animals would be less abundant. Footprints could be expected because life still existed at this time. There should also be evidence of rain.

The earliest rocks in the Inundatory sequence, Eruptive Rocks, would be expected to rest unconformably on Creation Rocks. The latest in the sequence, Zenithic Rocks, would be anticipated in the central plateau regions of today's continents and to display features characteristic of the Flood zenith such as flat topped topography with relatively fine surface texture. No clear criteria are currently proposed to differentiate between Ascending Rocks and the other two phases, apart from the condition that Ascending Rocks lie in the middle. It is envisaged that distinct criteria for the top and bottom boundary of Ascending Rocks will be identified as the model is applied in the field.

5.5 Recessive Rocks

The Recessive Stage occurred as a result of crustal movements which formed the ocean basins and mountain ranges and saw the water flow off the land. It would also have been a time of vulcanism. Vegetation rafts would have continued to beach on the continents. Erosion of soft Inundatory sediments occurred during this time. The carcasses of animals would have been dumped on the continents.

Regional scale sediments would be expected during the Abative Stage as the floodwaters began to move in large sheets from the continents. Local scale sediments would be formed during the Dispersive Stage as the receding waters separated into complexes of lakes and ponds connected by flowing water courses.

Recessive sediments would exhibit less disturbance than any previous sediments. Coal buried during the Recessive Stage would probably be different from that deposited during the Inundatory Stage. This is because the extra months that the vegetation was exposed to the floodwaters would affect the rank of the coal and the level of impurities within the coal.

It is to be expected that there would be animal graveyards, particularly in Dispersive sediments. The fossils would be poorly preserved. There would be no footprints of land animals.

Today's landscapes and drainage basins would help understand where the water flowed during the Recessive Stage and the location of Recessive deposits. Abative sediments would be expected at the edges of the continents and in the basins of large inland seas. Dispersive sediments would be found in ancient lakes and water courses.

5.6 Residual Rocks

At the start of the New-World Era the land would have been freshly deposited and eroded. Continents would include many inland lakes. Vegetation debris, together with the carcasses of animals would be scattered over the land, and floating on the oceans and lakes which would also contain some living sea creatures. All other surviving animal, bird and human life would be located in the region of Mt Ararat.

With time the animal, human, fish, and bird population would multiply and spread over the earth. Vegetation would possibly start growing in situ from vegetation and seeds deposited on the land.

During the Residual Stage the water would continue to flow off the land. The scale of vulcanism, erosion and deposition of sediments would be larger than today but reduced compared the Flood Event. It is possible that ice sheets covered parts of the continents at this time. The inland seas would have gradually drained, perhaps associated with occasional breaching of lake rims. During this time changes in sea level would have produced raised and lowered beaches. Local scale structures would be expected, but not as large as Recessive structures. There would be minimal disturbance of the structures which formed.

Fossils could be formed at this time due to residual catastrophism such as landslides, breached lakes, or collapsing river banks. Fossil fragments could also be eroded from earlier sediments and redeposited.

Landscapes and drainage patterns would control the location of deposits.

5.7 Modern Rocks

The Modern Phase saw the continued geographic dispersion of animal and human life. There would be limited vulcanism, erosion and deposition of sediments.

Modern Rocks would be of limited scale, located in river courses, river deltas, desert areas, ocean basins, and inland seas. Virtually no disturbance of sediments is expected. Fossils can occasionally form when conditions are suitable. Fossil fragments can be eroded from earlier deposits.

6. CONCLUSION

Starting with the Biblical account a simple and practical geologic model has been formulated. The model has been described and labelled to facilitate scientific communication. Appropriate names and terms have been used which are compatible with the Biblical account.

The model can be represented in a diagram which graphically illustrates the concepts, and relates the Biblical record to the rocks of the earth. The diagram can be adapted to the needs of different audiences to enhance communication of the creation concepts. Frequent use of the diagram will educate people to the geologic significance of the Biblical account.

Criteria have been developed to classify rock structures. The criteria suggest directions for investigation, and they provide clues for how rock structures should be arranged. The Biblical criteria would need to be applied to the raw geologic data.

The model needs to be tested and refined by applying it a section of actual rocks in the field. In this way the validity of the model can be checked and the classification criteria can be strengthened. Ongoing work is required to tighten up the classification criteria to reduce subjectivity and make the model more useful.

Geologic resource material such as maps, explanatory reports, and handbooks need to be made available within the framework a broadly accepted Biblical model.

Confidence in the model will grow as it is applied to more geologic situations around the world. Contributions of other researchers from other continents is eagerly anticipated. It may be necessary to modify the model following wider experience in the field situation.

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