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**HEBREW AND GEOLOGIC ANALYSES OF THE CHRONOLOGY
AND PARALLELISM OF THE FLOOD:
IMPLICATIONS FOR INTERPRETATION OF THE GEOLOGIC RECORD**

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ABSTRACT

In the Hebrew Flood narrative the syntax is conducive to the identification of the chronological sequence of events. Syntactical sequences confirm that the total time aboard the ark was 371 days. Noah's family and the animals entered the ark the same day the Flood began — the day noted in 7:11 by year, month, and day. The 7 days of 7:10 are a fulfillment of the declaration given in 7:4 and are not part of the overall chronology of the Flood itself. There are two 40-day periods. The first 40 days began on the date given in 7:11 and are part of the first 150 days of the Flood. The second 40-day period began on the day after the mountaintops were seen, day 226. After this second 40-day period, three periods of 1 week are related to the releases of the raven and the dove. On day 315 the surface of the ground was described as drying (8:13) and the earth was dry on day 371, the day the ark's occupants disembarked.

An analysis of the narrative as a unit supports a global cataclysmic Flood. A natural division of the Flood occurs in two main parts: 150 days of prevailing waters and 221 days of subsidence. The purpose of the first 150 days was to obliterate all terrestrial life including the original continent(s). Heavy rains were restrained after those 150 days (not after 40 days) when the fountains of the deep and the windows of heaven were stopped. The significance of the first 40 days is the lifting of the ark off the earth on the 40th day (7:17). The purpose of the 221 days was to make the earth suitable for life—an apparent replication of the third day of Creation (1:9-13). Grammatically the Hebrew description of continuous motion of the receding waters (8:3) is parallel to the grammar used to describe the raven's flight to and fro. Large-scale, back and forth motion would have profound effects in shaping the new landscape.

INTRODUCTION

Geologic processes and Flood chronology along with the interpretation of the stratigraphic record have been subject to considerable debate. Much of the debate centers on incorrect understandings of key word studies and pertinent passages of the Scriptures. This paper addresses these issues. Then the narrative is analyzed regarding the mechanisms and the timing of geologic processes during the event. This is best accomplished by demonstrating the sequential chronology of events exegetically [cf. 4, 5].

SEMANTIC ISSUES

Unfortunately, some scholars have attempted to argue for a catastrophic, global Flood on the basis of isolated word studies in the Flood narrative. For example, Speiser declared that the Hebrew *gešem* refers to a "heavy rain" signifying "abnormal rainfall" [36, p. 53] unlike the normal rain usually intended by *māṭār*. However, as a trained climatologist and Hebraist points out, "[t]he modern reader can discern no difference between *gešem* and *māṭār*" [17, p. 901]. Due to the significance of rain in the moisture-starved regions of the ancient Near East (including Canaan), Hebrew possesses a very rich vocabulary that the Old Testament employs for describing such precipitation. Specialized terms for severe rains include *zerem* (cf. Isa 4:6; 25:4 *bis*; 28:2 *bis*; 30:30; 32:2; Job 24:8), *sagrîr* (cf. Prov 27:13), *sāpîaḥ* (Job 14:19), and *šā'îr* (cf. Deut 32:2) [17, p. 901]—none of which are employed in the Flood narrative.

Another term that has been subject to much speculation and abuse is the word *mabbûl*. According to Koehler and Baumgartner, *mabbûl* is related to the Akkadian *biblu*, *bubbulu*, meaning "deluge" [26, vol. 2, p. 541]. The Hebrew word is probably derived from the Hebrew root *yābal* meaning "pour rain" or "cloudburst" [26, vol. 2, p. 383; see also, 10, pp. 66-67]. The Akkadian *biblu* can have the meaning of a "devastating flood" [18, vol. 2, p. 221]. The same meaning has been identified with *bubbulu* (*bibbulu*, *bumbulu*) [18, vol. 2, p. 298]. It is possible that the word is an example of onomatopoeia, "the imitation of a sound within the rules of the language concerned" [40; p. 234]. If it is onomatopoeic, the word might be

imitating the gurgling or bubbling sound of falling rain or flowing water. Such a sonic derivation would be quite similar to that of *nēbel* (“jar [for wine or oil]”) or *baqbûq/baqbuq*. Both are recognized as onomatopoeic [34, p. 172]. Some earlier semitics experts linked *mabbûl* to the Hebrew root *nbl* [22, vol. 1, p. 724], but such a relationship finds little acceptance today [37, p. 61]. A problem with the association of *mabbûl* with *biblu* is that none of the Akkadian flood stories employ these terms [25, p. 489]. In the Sumerian flood epic of Atrahasis, for example, the word *abûbu* was utilized [27, p. 91 (III i 37)]. *abûbu* was used to refer to a devastating cosmic deluge [18, vol. 1, p. 77]. However, the absence of the phonetic element *l* is problematic for any direct association with *mabbûl*. Therefore, the etymology of *mabbûl* remains uncertain [37, p. 61]. *mabbûl* could be related to the Akkadian *wabālu* (“wash away [by water]”) [19, p. 364]. Other words for “flood” in Akkadian include *butuqtu* (“flood, inundation”) [18, vol. 2, p. 357] and *milu* (“seasonal flooding of the rivers”) [18, vol. 10, p. 221]. In Jewish Aramaic literature the Hebrew term has been borrowed and utilized unaltered [22, vol. 1, p. 725].

One interpreter decided that the relationship of the verb *gābar* (“prevailed”; 7:18, 19, 20, 24) to warfare depicts the Flood waters as being “on the warpath, on a rampage” and “underscores the fearful results of God’s judgment” [23]. However, the Qal stem’s semantic range includes only “be superior,” “achieve,” and “increase” [26, vol. 1, p. 175]. Going beyond these meanings to impose connotations of warfare and judgment upon its use is an unwarranted extrapolation of the word’s semantic field [see 9, pp. 25-66].

It is abundantly clear from the language that permeates this pericope that the disruption of the earth’s surface was comprehensive and global. Such a description is not dependent upon the imposition of questionable etymological analyses for individual terms employed in the narrative. Rather, it is founded upon the sounder semantic clues provided by phraseology, literary devices, and context. Merism is one of the literary devices that contributes to the readers’ understanding of the global and catastrophic proportions of the Flood: “The immense flood-waters involve the flow of waters from below and from above, a merism indicating the complete transformation of the terrestrial structures” [30, pp. 377-378].

A semantic analysis of the Flood narrative is inconclusive when it comes to determining the geological consequences of Flood mechanisms. Geological implications must be derived from the collective impact of the entire narrative. Indeed, apart from the global and catastrophic description inherent in the entire pericope, the element that requires more attention is that of chronology. Therefore, the correlation between the chronology of the Flood and the geologic record, becomes imperative.

FLOOD CHRONOLOGY

Although there have been some interesting discussions in the periodical literature concerning the Flood’s chronology as revealed in the Flood narrative, most of the attention has been given to source criticism [see 3, 13, 28]. Division of the narrative into two or three hypothetical sources assumes an evolution of the text through a number of redactions before it reached its current canonical form. Such an approach fails to provide an objective exegetical treatment of the text reflecting its inherent unity and integrity. However, even if one were to assume a source-critical approach to the text, the chronological elements cannot be ignored. Barré recognized this fact, declaring that

Contrary to the opinion [of] some commentators, none of the numbers found in Genesis 7–8 can be regarded as ‘approximations’. All of the chronological data contained in both J and P cohere only if they are taken literally. [3, p. 16]

For the purpose of this paper, no detailed defense of the 30-day month will be presented. Support for the 30-day month (and 360-day year) can be found in the available literature [cf. 3, p. 16; 13, p. 256].

Translation with Chronological Notations [see additional grammatical notes in 5, pp. 9-14]

7:6 Noah was 600 years old when the Flood came — waters *came* upon the earth. 7:7 Thus Noah, his sons, his wife, and his sons’ wives went with him into the ark away from the Flood waters. 7:8 The clean beasts and the beasts that were not clean, the flying creatures and all that crept on the ground 7:9 came two by two to Noah into the ark — male and female just as God had commanded Noah. 7:10 Then **7 days passed** [600/02/10-600/02/16] and the Flood waters came upon the earth.

7:11 **In the 600th year of Noah’s life, in the 2nd month, on the 17th day of that month** [600/02/17 – Day 1] — on that day the fountains of the great deep [“fountains of the great deep” = submarine springs on the ocean bottom bursting open, pouring more water into the ocean basin(s)] broke open and the

windows of the sky were opened [abnormal rainfall according to 10, p. 87]. 7:12 When the rain came upon the earth **for 40 days and 40 nights** [600/02/17-600/03/26 – Days 1-40], 7:13 on that very day Noah, Shem, Ham and Japheth (Noah's sons), Noah's wife, and his sons' three wives entered the ark with him — 7:14 they and every animal according to its kind, every land animal according to its kind, every crawler creeping on the earth according to its kind, and every flying creature according to its kind (every flying creature of every sort). 7:15 Thus they came to Noah into the ark; two by two out of all flesh in which was the spirit of life. 7:16 The ones coming were male and female out of all flesh. They came just as God had commanded him. So YHWH shut him in. 7:17 Then the flood occurred **for 40 days** [see 10, p. 93; 23, p. 210] upon the earth. The waters continued to increase so that they bore the ark, raising it up off the ground. 7:18 Then the waters prevailed and increased greatly upon the earth so that the ark moved on the surface of the waters.

7:19 The waters prevailed even more over the earth so that all the highest mountains that were under the entire sky were covered. 7:20 Fifteen cubits upwards the waters prevailed so that they covered the mountains. 7:21 Thus all flesh perished — that which crept upon the earth among flying creatures, beasts, animals, and every swarming thing upon the earth, as well as all mankind. 7:22 Everything possessing the breath of life in its nostrils among everything that was on dry ground — everything — died. 7:23 So He obliterated all living beings from the ground from mankind to beast, to creeping thing, even to flying creatures. They were obliterated from the earth. Then only Noah and those with him in the ark were left. 7:24 Thus the waters prevailed upon the earth **for 150 days** [600/02/17-600/07/16 – Days 1-150] [see 31, p. 376]. 8:1 Then God remembered Noah and all the animals and beasts that were in the ark with him. God caused a wind to blow over the earth so that the waters began to subside. 8:2 So the fountains of the deep and the windows of the sky were blocked and the rain from the sky was withheld. 8:3 Then the waters were turning back from upon the earth, going and returning *little by little* so that they continued to decrease **at the end of those 150 days** [600/07/17 – Day 151]. 8:4 Thus, on the **17th day of the 7th month** the ark came to rest in the mountains of Ararat.

8:5 The waters were continually decreasing until [see 10, p. 106] the **10th month. On the 1st day of the 10th month** [600/10/01 – Day 225] the mountaintops appeared. 8:6 Then **at the end of 40 days** [600/10/02-600/11/11 – Days 226-265] Noah opened the hatch of the ark that he had made 8:7 and he sent a raven out [600/11/12 – Day 266] [see 10, p. 110]. It went back and forth until the water was dried up from upon the earth. 8:8 Then he sent a dove out from him [600/11/19 – Day 273] to see if the waters were scant upon the surface of the ground. 8:9 But the dove did not find a resting place for its foot, so it returned to him in the ark because the waters were over the surface of the whole earth. Thus he reached out and retrieved it and brought it into the ark with him. 8:10 When **another 7 days** [600/11/20-600/11/26 – Days 274-280] had passed, he again sent the dove [600/11/26 – Day 280] from the ark 8:11 and it returned to him at evening with a freshly picked olive leaf in its mouth! Then Noah knew that the waters were scant upon the earth. 8:12 When **yet another 7 days** [600/11/27-600/12/03 – Days 281-287] had passed, he sent out the dove [600/12/03 – Day 287] but it did not return to him any more.

8:13 **On the 1st day of the 1st month of the 601st year** [601/01/01 – Day 315] the waters were drying up [see 31, p. 351; 41, p. 187] from the surface of the ground. So Noah removed the ark's cover. Then he observed that the surface of the ground was drying up.

8:14 **On the 27th day of the 2nd month** [601/02/27 – Day 371] the land was dry.

The above translation reveals the sequential nature of the primary layering of *wayyiqtol* verb forms. These verb forms are characteristic of Hebrew narrative and normally indicate a chronological sequence of the actions presented. The temporal circumstantial clause of 7:11 is paralleled by the same kind of clause in the last verse, 8:14 – an *inclusio* marking the structure of the main Flood narrative. The employment of *way^ehî* in 7:12 parallels that of *way^ehî* in the next to the last verse, 8:13 – another *inclusio* confirming the 7:11 // 8:14 *inclusio* marking the limits of the Flood narrative. Therefore, the introduction to the Flood narrative proper occurs in 7:6-10. The Flood narrative itself is composed of three major sections: (1) 7:11-18; (2) 7:19-8:4; and (3) 8:5-12. The conclusion of the Flood narrative proper occurs in 8:13-14. The *way^ehî* construction in 7:11 is followed by the circumstantial clause in 7:13-14 and suffix conjugation (perfect) verb *bā'*. That suffix verb becomes the lead verb for a chain of nine *wayyiqtol* verbs that follow in 7:15-18, thus:

- (1) The animals *entered* (*wayyābo'û*) the ark (7:15a).
- (2) Then God *shut* (*wayyisgor*) the door (7:16b).
- (3) Then the deluge *came* (*way^ehî*) upon the earth for 40 days (7:17a).

- (4) Then the waters *increased* (*wayyirbû*, 7:17b) – increase following the 40 days.
- (5) Then the ark *became sea borne* (*wayyiš'û*, 7:17c) – the result of that increase.
- (6) Then the ark *rose* (*wattārām*) above the land (7:17d) – the result of the continuing increase of waters.
- (7) Then the waters *prevailed* (*wayyigb^erû*, 7:18a) – all landforms are finally submerged.
- (8) Then the waters *increased* (*wayyirbû*) even more (7:18b) – a clear indicator that the mechanisms for producing water continued.
- (9) Then the ark *sailed* (*wattēlek*) upon the waters (7:18c) – the action of the ark until the day it was grounded on the mountains of Ararat.

Both 7:12 and 7:17 refer to the same 40 days – 7:17 is not redundant repetition. In 7:17 the focus is on the ark's floating in the waters. The ark was lifted off the ground surface on the 40th day, but the mechanisms for submerging the earth continued until the 151st day (8:3). Abraham Ibn Ezra reached the same conclusion nearly a millennium ago (1092 AD) [16, pp. 38-39].

With 7:19 a new section begins through 8:4. The verb form reverts to a suffix conjugation (perfect) since the chain of *wayyiqtol* verbs has been broken. Just as the verb root *gābar* (“prevail”) had been chosen to express the submersion of all land forms in 7:18a (by implication), the same verb root is chosen to express the submersion of all the highest mountains and all terrestrial life in 7:19. As a suffix conjugation verb, it views the action as a whole without reference to relationships. The twofold statement (with the *wayyiqtol* verb *wayy^ekussû* employed as an epexegetical) clarifies the preceding reference [cf. 39, pp. 551-552] to prevailing waters and then moves on to the main topic of this section, the submersion of all life forms so that they “expired” (*wayyigwa*). The difficulty with attempting a chronology regarding the submersion and death of all land-dwelling, air-breathing life forms is that 7:19-22 provide only the submersion of the mountains as the time marker – which occurs sometime between the 40th and the 150th days.

Just as the submersion of the pre-Flood mountains involves a double *wayyiqtol* from one root in 7:19-20, so also a double *wayyiqtol* from one root occurs in 7:23 (*wayyimaḥ* and *wayyimmaḥû*) to describe the obliteration of life forms. These *wayyiqtol*s are likewise epexegetical. From 7:23 the sequential/consequential *wayyiqtol* chain presents ten sequential actions:

- (1) Then only those on the ark *remained* (*wayišša'er*, 7:23b).
- (2) Then the waters *continued to prevail* (*wayyigb^erû*, 7:24) to a total of 150 days.
- (3) Then God *remembered* (*wayyizkor*, 8:1a) Noah.
- (4) Then God *caused a wind to blow* (*wayya'ābēr*, 8:1b).
- (5) Then the waters *began to subside* (*wayyaśokû*, 8:1c) – as an immediate result of the wind.
- (6) Then the sources of water *were blocked up* (*wayyissākrû*, 8:2a).
- (7) Then the rain *was withheld* (*wayyikkālē'*, 8:2b).
- (8) Then the waters *began to recede continually* (*wayyāšubû*, 8:3a).
- (9) Then they *continued to decrease* (*wayyaḥs^erû*, 8:3b).
- (10) Then the ark *came to rest* (*wattānaḥ*, 8:4).

The 150 days of 7:24 includes the first 40 days. Comparing 7:11 and 8:4 makes this inclusion certain [41, p. 180]. The mention of 150 days in 7:24 and 8:3 refer to the same period.

By means of a *waw* + non-verb (disjunctive clause) and a 3-part chiasm (“waters” // “mountaintops,” “were continually receding” // “appeared,” “until the 10th month” // “on the 1st day of the 10th month”), the final major section of the Flood narrative begins at 8:5. The word “until” (*ʿad*) represents the completion of an important part of the receding process rather than the end of it. In this case, the significant event is the emergence of mountaintops on day 225.

“At the end of 40 days” (8:6): If *way^ehî* is macrosyntactical, the following *wayyiqtol* would not be considered sequential and would become the lead verb for the following sequential/consequential *wayyiqtol*s. If the 40 days began on the same day the mountaintops appeared, then the dates would be affected by one day for the sending out of the birds. The *wayyiqtol* verb is the first in a chain laying out three sequential/consequential actions:

- (1) Then Noah *sent out* (*way^ešallaḥ*, 8:7a) the raven.
- (2) Then the raven *flew* (*wayyēšē'*, 8:7b) to and fro.

(3) Then Noah *sent out* (*way^ešallaḥ*, 8:8) the dove.

Apparently “seven days passed between the sending forth of the raven and the first time he sent the dove” [41, p. 186] in accord with 8:10. The birds probably returned on the same day they were sent out.

The negative disjunctive clause of 8:9a interrupts the chain of *wayyiqtol* verbs. The suffix conjugation (perfect) verb (*māṣ^e’ā*) becomes the lead verb for the next chain comprised of ten sequential/consequential actions:

- (1) Then the dove *returned* (*wattāšāb*, 8:9b) to Noah.
- (2) Then Noah *stretched out* (*wayyiš^e’laḥ*, 8:9cα) his hand.
- (3) Then Noah *took* (*wayyiqqāhehā*, 8:9cβ) the dove.
- (4) Then Noah *brought* (*wayyābē’*, 8:9d) the dove into the ark.
- (5) Then 7 more days *passed* (*wayyāhel*, 8:10a).
- (6) Then Noah *again sent out* (*wayyosep šallaḥ*, 8:10b) the dove.
- (7) Then the dove *came back* (*wattābo’*, 8:11α) to him.
- (8) Then Noah *knew* (*wayyēda’*, 8:11b) the condition of the earth’s surface.
- (9) Then 7 more days *passed* (*wayyiyāhel*, 8:12a).
- (10) Then Noah *sent out* (*way^ešallaḥ*, 8:12bα) the dove for the last time.

Another negative disjunctive clause in 8:12c interrupts the flow of the narrative. This time, however, its suffix conjugation (perfect) verb does not become the lead verb for a subsequent *wayyiqtol* chain. It closes the 3rd major section of the Flood narrative proper.

In the conclusion of the Flood (8:13-14), *way^ehî* is followed by the circumstantial clause of 8:13 and suffix conjugation (perfect) verb (*ḥārbū*). That suffix conjugation verb becomes the lead verb for a chain of two verbs that follow it expressing chronologically sequential actions: (1) Then Noah *removed* (*wayyāsar*, 8:13bα) the hatch of the ark; and (2) Then Noah *observed* (*wayyar^e*, 8:13bβ) that the ground was drying up. At this time (day 315) it seems that, although the ground surface lost the layer of the water over it, it was still too saturated to safely walk upon. “The juxtaposition of *hrb* in 8:13 with *yḅš* in 8:14 clearly indicates a distinction between a muddy, boggy mess and firm, hard ground – in which *yḅš* is the term for the complete disappearance of flood waters from the earth” [31, p. 351] on day 371 [e.g. 16, p. 42].

Two-Fold Purpose of the Flood

Overall, the purpose of the Flood is two-fold. The first 150 days of global cataclysmic judgment is followed by 221 days of cleansing and reconstruction [38, p. 140]. “God remembered Noah” (8:1) does not mean that God had forgotten about Noah. It refers to God’s action to make the earth suitable again for the inhabitants of the ark and their descendants [42, p. 441]. This “remembrance” is first demonstrated by the ark coming to rest on the following day (day 151) during the initial stages of subsidence (8:1-4). At the end of 150 days the wind and the blocking of the sources caused the waters to subside and continually decline for 221 days. Thus, the purpose of the first 150 days was to obliterate all terrestrial life and the purpose of the next 221 days was to restore the earth to a livable condition.

Prevailing Phase

The destructive phase of prevailing waters during the first 150 days was caused by the eruptions of the fountains of the great deep and torrential rain. The phrase “windows of heaven” (7:11; 8:2) is a Hebrew idiom or metaphor, which apparently means a great pouring out (e.g., 2 Kings 7:19; Isaiah 24:18; Malachi 3:10). These processes began on day 1 and ended on day 150. During the first 150 days, rising water is mentioned no less than three times. From day 1 torrential rain and flooding caused the water level to increase and rise. On the 40th day the water level was sufficient to lift the ark off the ground surface (Genesis 7:17), as previously recognized by Holt [21]. After this, the waters increased greatly so that the ark floated freely on the water surface (7:18). Then the waters continued to rise and all the pre-Flood mountains were covered (7:19-20). After the highest regions became submerged, all flesh (all land-dwelling, air-breathing creatures) died (7:21). The significance of the first 40 days (7:12,17) is with raising the ark off the ground surface, not when the rain stopped and not when the land creatures died.

Based on a misunderstanding of 7:4, it is a common misconception that rain (and the whole Flood for that matter) ceased after 40 days. In reality the detailed account of the Flood in 7:11-24 is an expansion of the generalized prophecy of 7:4. It is sequential also: that all life would be destroyed at some point after the 40th day as clearly revealed in 7:11-24. Neither the single verse (7:4) nor the detailed

expansion (7:11-24) claim that rain would cease after 40 days. Just as Flood models based upon isolated key word studies are mistaken, so are geologic models based on 7:4 alone.

Subsiding Phase - A Key Interpretative Issue Involving Mechanism

Genesis 8:1 marks the turning point in the Flood. When the mechanisms cease at the end of 150 days, the writer describes a constant back and forth motion of the waters as they return to a relatively stable state over the course of the following 165 days. Studies of the Flood narrative have typically treated 8:3 as though it was nothing but a simple statement of the continuous recession of the waters after the first 150 days. Potentially, this verse has much to contribute to the discussion of Flood hydrodynamics. A recent study of the Noahic Flood in the light of the Sumerian epic of Ziusudra focused on 8:3 in one of its appendixes [7]. Although Best utilizes the text to support his adherence to a localized river flood, he still confirmed that the phraseology is best understood as a reference to “ebbing and flooding” [7, p. 281]. The following three observations lead to the same conclusion.

Observation 1: In the first half of 8:3 the primary verb is *wayyāšubû*, a verb of motion [39, p. 589]. An example of such movement is seen in the description of the cycle of winds in Ecclesiastes 1:6. The same verb root is repeated as the final word in 8:3a augmenting the focus on this particular motion.

Observation 2: The combination of two infinitive absolutes (*hālôk wāšôb*) is an adverbial hendiadys whereby the first infinitive is the adverbial modifier for the second infinitive [33, p. 38]. The resultant meaning is “continually returning.” The main infinitive (*wāšôb*) functions as a gerund expressing the circumstance of the primary verb (*wayyāšubû*): “Then the waters were turning back ... continually returning.” *Hālôk* is an intensifying infinitive absolute (normally paronomastic — playing on the primary verb root or sense) [39, p. 589; cf. 12, sect. 113r-s, u]. When *hālôk* is employed thus, it normally stresses continuous action [39, p. 589; cf. 33, p. 38; 24, pp. 427-428]. Two different interpretations have arisen from this Hebrew construction. Leupold claimed that it “amounts to: ‘they subsided with a very pronounced fall’” [29, vol. 1, p. 310]. This appears to be the view upon which Henry Morris depended when he claimed that the Hebrew expression “indicates a quite rapid subsidence” [32, p. 207]. On the other hand, Wenham [41, p. 153] explained that it places an emphasis on “the long time in which the waters continued to decline.” This view was also offered by Umberto Cassuto:

The process is, of course, protracted: the waters return, *going and returning* — little by little. When the fountains burst forth, the waters gushed out from there with force and speed, and when the windows of the heavens were opened, the water poured down from them fast and furious; but now that these openings, below and above, have been closed, the waters recede slowly, by a gradual and continuous movement, according to the normal way of nature [10, p. 102].

Some commentators have chosen to follow this second option and utilize translations designed to highlight the concept of a steady or gradual recession of the waters [cf. 42, p. 389].

Observation 3: *Hālôk wāšôb* occurs nowhere else in the Hebrew OT. However, There are two similar constructions in the immediate context of 8:5,7:

8:5: *w^hammāyîm hāyû hālôk w^hāsôr* (this construction with *hāyāh* followed by the infinitive absolute *hālôk* occurs only here in the OT): “and the waters were continually decreasing”

8:7: *wayyēšē’ yāšô’ wāšôb*: “[the raven] went back and forth”

The clause in 8:7 is closer in structure and meaning to the clause in 8:3 than 8:5 is. In his discussion of 8:7, Moberly concludes that, no matter how one might take the idiom with the infinitives, “either way the general sense of ceaseless movement is clear” [31, p. 350]. He also observes that the “repeated idiom suggests a possible parallelism between the movement of the receding waters and the flight of the raven” [31, pp. 350, 351]. Therefore, the receding waters are described by the same kind of grammar and phraseology as the raven’s flight — as being in continuous motion “*going and returning* — little by little” [10, p. 102]. It is interesting to observe that the same construction in modern Hebrew (*hālôk wāšôb*) refers to a round trip [7, p. 281].

The first half of 8:3 speaks of the movement of Flood waters. “Returning” or “receding” describes that motion. Since the first verb (*wayyāšubû*) is a *wayyiqtol*, it indicates that this action follows chronologically the cessation of the mechanisms described in 8:2. The description concerns the abating or decreasing of the waters from off the land masses which, at this point, are still submerged. The roots and forms of the last two Hebrew words in 8:3a (*hālôk wāšôb*) present a forceful picture. The two words

together focus on the concept of a continual recession of the water. However, it is not a focus on mere recession or abatement. That concept is specified with a related construction and a different second verb in 8:5. That which is involved here is more parallel to what is stated concerning the raven in 8:7 — it was continually going and returning (flying back and forth). Applying this concept to 8:3 reveals that the waters were in a constant back and forth motion [*contra* 29, vol. 1, p. 310].

Summary of Chronology

The chronology of the Flood is summarized on the following table (also see Figure 1). Read the left side of the table from the bottom to top. Dates are month/day/year – year is based on Noah’s age.

150 DAYS OF DESTRUCTIVE PREVAILING WATERS				221 DAYS OF SUBSIDING/ REGRESSIVE WATERS			
Passage	Date	Day	Stage	Passage	Date	Day	Stage
7:24	7/16/600	150	Waters prevail through this day.	8:1-4 ↓	7/17/600	151	Commencement of subsiding waters; sources are stopped; ark grounded.
7:21-23	?	?	All the creatures of the dry land died.	8:5↓	10/1/600	225	Mountaintops appear.
				8:6↓	11/11/600	265	Noah Opens Hatch
7:19-20	?	?	Waters prevail even more so that the pre-Flood mountains were overwhelmed.	8:7 ↓	11/12/600	266	Raven Released.
↑							
7:18	?	?	Waters rise more and ark moves about on the water surface.	8:8-9 ↓	11/19/600	273	Dove released.
↑							
7:12,17	03/26/600	40	Rising waters lift the ark off the ground.	8:10-11 ↓	11/26/600	280	Dove released & returns with olive leaf.
↑				8:12 ↓	12/3/600	287	Dove released & did not return.
7:11	02/17/600	1	Commencement of prevailing waters by upheavals of the earth’s crust (mostly oceanic) & torrential rain.	8:13 ↓	01/01/601	315	Ground surface free of excess water.
				8:14	02/27/601	371	Earth dry enough to leave the ark.

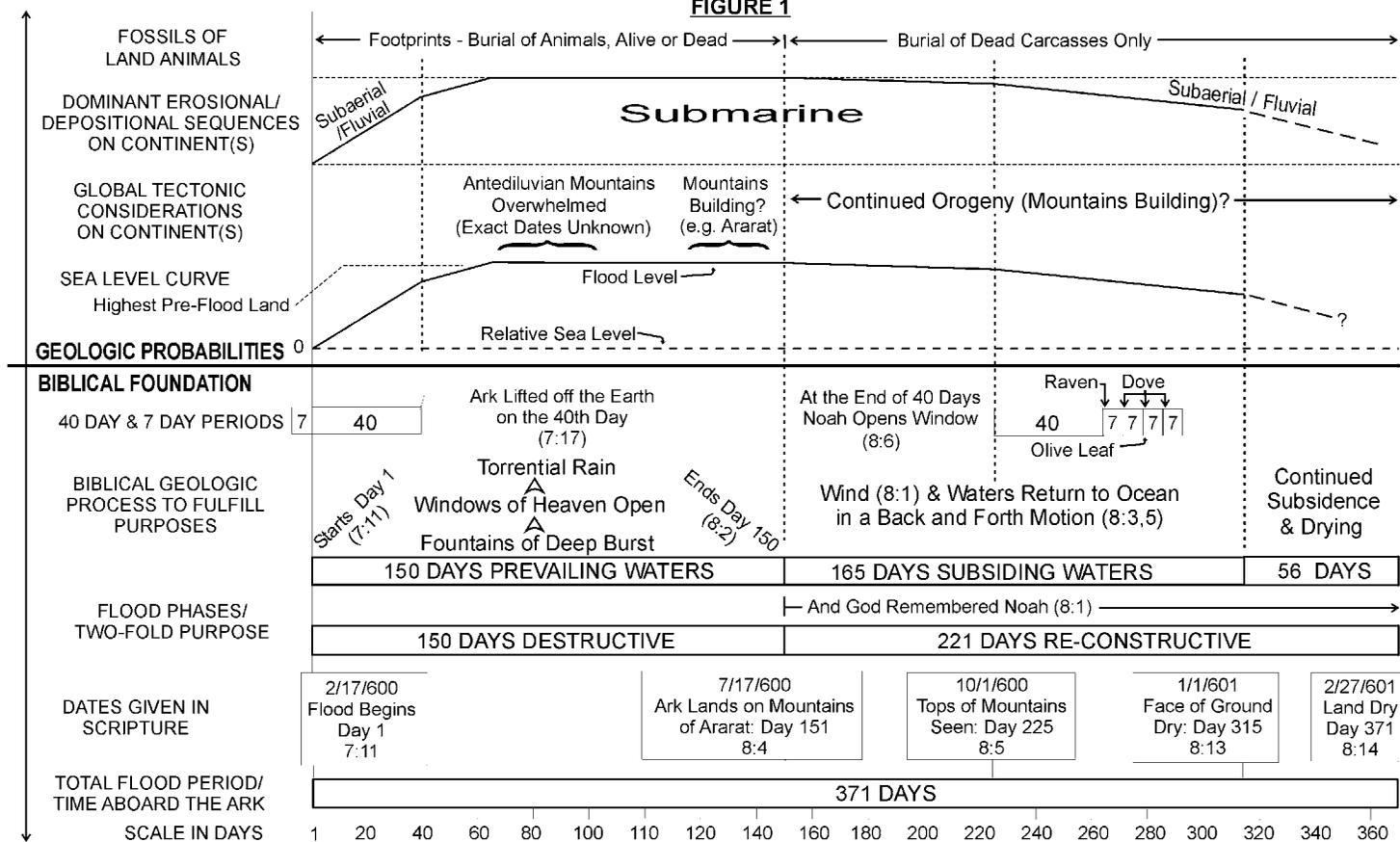
↑ Rising Waters ↓ Falling Waters Dates in **Bold** are given in Scripture.

The Flood lasted one year and 11 days or 371 days based upon a 360-day year (12 months x 30 days/month). It is not known at what hour the Flood began on day 1, nor at what hour Noah left the ark on day 371. But by definition a day can mean either a full day or daylight portion thereof (Genesis 1:5). The 7 days prior to the Flood (7:4,10) do not belong to the Flood chronology per se since they precede the onset of the mechanisms of the Flood. There are two main phases: 150 days of prevailing waters and 221 days of receding waters. The ark was lifted off the earth on the 40th day. After this the waters kept rising until the Antediluvian (pre-Flood) mountains were submerged. Then all land-dwelling, air-breathing creatures were destroyed. By the end of the 150th day only those in ark were left (7:23).

The second mention of 150 days in 8:3 is a reference back to the same 150 days in 7:24. The turning point in the Flood is marked in 8:1. The waters began to abate at the end of the 150th day. The waters subsided just enough to allow the ark to land on high ground – in the mountains of Ararat. This occurred at some unknown hour during day 151. The tops of the mountains emerged on day 225 (8:5). After this, a more narrow perspective of the earth’s condition ensues – the perspective from Noah’s viewpoint. Before 8:5 the language of the narrative is global. After the mountains appear, Noah waits 40 days. Then he sends out the birds over the next 4 weeks. The dove returned with the olive leaf on the 280th day, and did not return after it was released on the 287th day. On day 315, Noah observed that the ground surface was drying up. The earth is declared to be dry on day 371.

Genesis 7:13-16 are not included in the table above because they have no bearing on Flood chronology. "On that very day" (v. 13) is a reference back to the same day previously noted by year, month, and day in 7:11, the day the Flood mechanisms began. The Hebrew is unambiguous in this emphatic declaration.

FIGURE 1



GEOLOGIC INFERENCE

The general biblical geology of the Flood is displayed in Figure 1. The above chronology has resolved many issues regarding geologic mechanisms and the timing of events. The primary geologic mechanisms are the activity of the "fountains of the deep" and the back and forth movements of the receding waters. The timing of events, which have a bearing on geologic interpretations include (1) the first 40 days; (2) the covering of pre-Flood (Antediluvian) mountains; (3) the death of terrestrial life; (4) the emergence of apparent new mountains; and (5) the overall sea level. The following will give the Flood geologist some basic guidelines. A more detailed geologic paper based on the above chronology is planned for the future.

Geographical Considerations

Since the ark was not lifted off the ground surface until the 40th day, it becomes apparent that the ark was constructed in some highland region probably quite distant from the ocean. So the ark remained grounded for 40 days, then it floated for 110 days, then it rested again for another 221 days. For 261 days the ark (with its inhabitants inside) sat on the ground surface. During the first 40 days and the last 221 days of the Flood event, the ark was presumably not destroyed by tectonic upheavals. This may be important for tectonic models of the Flood, especially with regard to the mountains of Ararat.

Sea Level Curve

By the scale of this curve it should be understood to be quite general in nature – it cannot adequately show the greatness of the waters. Likewise, the water level associated with local and regional topographic features cannot be realized. As indicated, the level kept rising until some day between the 40th and 150th day. The level began falling at the end of the first 150 days. A sea level was obtained by the Flood's end. Where this sea level was in relation to the modern-day sea level is presently unknown. Could a search for a static shoreline in the upper levels of strata (towards the oceans) in the geologic record be helpful? Would this get us closer to the controversial Flood / post-Flood boundary?

Global Tectonics

The fountains of the (great) deep (7:11; 8:2) are believed to refer to both terrestrial and oceanic fountains [15; 43, p. 242]. When the fountains erupted there was rain; when they were closed, the rain was withheld. To flood all the land-masses of the former world with both rain and oceanic waters

requires an enormous upheaval of the earth's crust. Thus, the fountains of the deep (that caused the Flood) should remain as prominent structures in the crust. Apparently, some [e.g. 2; 6; 8; 35, p. 18] equate the world rift system (or spreading centers) with the fountains of the deep. Presently, the globe-encompassing world rift system (WRS) does seem to be an obvious choice. Most of the 70,000 km long WRS is below sea level [11, Plate 1; 14, pp. 21-22]. It is a deep-seated feature whether it underlies the land (e.g. Dead Sea Rift; East African Rift) or occurs on the various sea floors (e.g. mid-ocean ridges). Are there any other features of the crust besides the WRS, or in conjunction the WRS, which could be possibilities? Another question is why and how did the fountains of the deep get stopped up?

What about orogeny (mountain building processes) during the Flood? The mountains of Ararat either were already formed or were at some stage in the orogenic processes before the end of the first 150 days. Otherwise, how could the ark land there on day 151? Apparently the mountains of Ararat were forming to some degree during the prevailing phase of the Flood. Could this mean that some other mountain belts of the world were also forming during the prevailing phase? Did the mountains of Ararat continue to grow during the subsiding phase of the Flood and even afterwards? On day 225 the tops of other mountains appeared. How do these relate? Did mountain building processes play a role in continental erosion and deposition, and the regressive large-scale back and forth water motion?

Continental Erosion and Deposition

Sometimes rock formations are debated in creationist journals over the issue of whether the deposits occurred in a subaerial or submarine environment. The Bible is very clear that waters rose progressively until all the high hills that were under the whole heavens were covered. Later the waters receded in a back and forth manner until mountaintops appeared. This means that both subaerial (including fluvial) and submarine erosional and depositional sequences have occurred on the continent(s). But this does not necessarily mean that all the sequences were preserved. Likewise, the great ups and downs, and back and forth nature of waves could have temporarily exposed land surfaces during the prevailing phase and the subsiding stage of the Flood [e.g. 20].

The prevailing phase of the Flood destroyed the earth along with its terrestrial inhabitants. In the earliest stages of the Flood, it is probable that the pre-Flood world was wiped out by severe erosion. The torrential rain and subaerial/fluvial geologic processes were probably the most effective during the first 40 days, before oceanic processes prevailed. At the same time the oceans progressively transgressed the continent(s). Severe erosion was followed by submarine deposition [e.g. 1, p. 69]. Do any depositional remnants of the subaerial/fluvial processes (during the Flood's earliest stages) exist? Or were the eroded sediments (carried by fluvial waters) dispersed into oceanic waters when the two met? If so, what are the deposits' characteristics? Perhaps these deposits (if they exist) are buried under transgressive submarine sediments? If they do not exist, were they subducted [e.g. 2; 6]? From an oceanic perspective, the prevailing phase of the Flood should be evidenced by an initial transgressive sequence(s) of submarine deposits - any regressions should be scant. This initial sequence should be followed by other sequences of strata that show an Earth submerged most of the time. Another issue involves the destruction or alteration of the Antediluvian landscape (topographical features and the underlying structures of the crust). When the Antediluvian mountains were covered, what was their fate?

As previously discussed, the subsiding phase of the Flood could be referred to (in large part) as the ebb and flow (or ebbing and flooding) stage [see also 43, p. 100]. According to [1, p. 77] the receding waters of the Flood "were rushing back and forth with an action resembling tidal movement, as the overall level of water progressively declined." Such movement on a grand (up to continental) scale, augmented by either the absence and/or emergence of land barriers (8:5), would doubtless have a profound effect in the shaping of the earth's surface [43, p. 269]. This process occurred for at least 165 days.

The back and forth pattern should reveal itself in large-scale regressive and transgressive sedimentary sequences. Overall, the general trend should be primarily regressive. But 75 days occurred from the time the ark landed until the mountaintops appeared. Apparently, most of the land surface was still submerged most of the time during these 75 days. Why did the waters keep returning? Could increases of submarine sedimentation (on land and in the oceans) with each regression play a role in continued transgressions? If so, could this repetitive process have continued until more volumetric places became available for the waters (e.g. deeper basins: oceanic or continental; land based rifts; caverns and voids within various strata)? After the mountains appeared the coastlines changed constantly for the remainder of the Flood. Once the water had receded below the highest landforms, waves and currents would naturally rework those forms and rework sediments deposited previously during the Flood. Erosional and depositional sequences moved seaward, left some waters trapped in basins, and

eventually gave way to the creation of new river systems. Does an overall regressive sequence exist in the geologic record?

Paleontological Considerations

Fossilization of land creatures including ichnofossils (i.e., tracks indicating the animal was still alive) may prove to be a key to help determine when certain sedimentary strata were deposited. This study demonstrates that all land-dwelling, air-breathing creatures died by the 150th day of the Flood. Therefore, the types of terrestrial fossils, which are possible during the first 150 days include (1) burial while still alive; (2) burial of dead carcasses; and (3) tracks or footprints. Over the course of the next 221 days of the Flood, the lone possibility of potential fossilization (of land creatures) was that of dead carcasses only including probable by-products (e.g. excrement). As far as footprints by various land animals are concerned, the following questions must be answered in any interpretation of the earth's strata:

- (1) Were the tracks definitely made in Flood sediments during the first 150 days of the event?
- (2) Could the tracks have been made after the Flood (i.e., after the animals left the ark), but **within Flood sediments** while they were still soft (i.e., not lithified)?
- (3) Were the tracks made during post-Flood catastrophes and within post-Flood deposits?

It is possible that all three scenarios exist in the geologic rock record. Therefore, proper interpretation of the rock record must be based on many criteria.

CONCLUSION

The determination of the nature and extent of the geological consequences of the Noahic Flood are best derived from the primary witness: the scriptural narrative itself. Word studies provide little upon which to construct a Flood model because the Hebrew terms are more constrained by context and usage within bound phrases than by etymological considerations. Lexical analyses too often pay too little attention to entire phrases and the overall context — both being the better determiners of an individual word's meaning. An objective reading of the Flood narrative in its context cannot fail but to impress the reader with the global and cataclysmic nature of the Flood even if the terminology employed within the text is deemed ordinary.

Genesis 8:2 provides one of the principal contributions of the text to the chronology of the Flood. That text describes the reversal of the mechanisms that were first activated in 7:11. If language has any meaning, there can be little doubt that the biblical record presents a full 150 days in which the dual sources (rain and submarine "fountains") continued to provide water for the flooding process. In addition, there is the key factor concerning the ebbing and flowing of the receding waters as described in 8:3. Such hydrologic forces on a global scale (over a period of at least 165 days) would have profound significance for constructing a geological model of the Flood.

This detailed chronology will aid in the best possible placement of stratigraphic Flood boundaries in the earth's rock record. It should not be assumed that exact correlations can be made to the various rock system boundaries of the uniformitarian geologic column. Existing Flood models should be revised to reflect the chronology herein.

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