

The Flood/post-Flood boundary

I write regarding the Flood/post-Flood boundary in the geologic record, as discussed in Oard's paper, 'Defining the Flood/post-Flood boundary in sedimentary rocks'¹ and offer some comments which may be relevant to the discussion.

In a manner reminiscent of Austin and Wise's² development of *ad hoc* criteria which they assumed should characterise the pre-Flood/Flood boundary, Oard assumes that Walker's³ and Froede's⁴ 'biblical geological' models are '... based on Scripture and reasonable deductions of what is expected in a global Flood' and uses Walker's model to develop *ad hoc* 'diagnostic criteria' considered to have characterised the Inundatory (six criteria) and Recessive (five criteria) Stages of the Flood. Oard then uses differences between Recessive Stage 'diagnostic criteria' and thirteen what he calls 'obviously post-Flood' features to determine a likely location for the Flood/post-Flood boundary in the late Cenozoic (Oard's figure 1), thereby assigning the Quaternary (Pleistocene and Holocene) deposits to the post-Flood.

The development and application of *ad hoc* expected 'diagnostic criteria', for both the pre-Flood/Flood boundary^{2,5} and the Flood/post-Flood boundary,¹ based solely on '... reasonable deductions of what is expected in a global Flood ...', may seem like a logical exercise, but tends, I suggest, to preclude consideration of the effects of additional, probably supereminent, geological processes which may have dominated these events. This is particularly applicable to the initiation of the Flood and consequent formation of the pre-Flood/Flood boundary.

For the purpose of this discussion, and fully realising that not all may agree, I assume the following, based on interpretation of the Scriptures.^{6,7} The maximum water level attained by the Flood waters, on Day 40 was 5,172 m (16,964 ft) above present sea level,

by which time all 'air-breathing' life was dead. The water level began to fall on Day 150, and 'post-Flood' dates from Day 371 (*Disembarkation Day*) onwards. Sea level at the end of the Flood (Day 371) was essentially the same as present sea level.

Regarding the Flood/post-Flood boundary, as discussed in Oard's paper, I suggest that it is at least possible, and probably likely, that a variety of depositional environments, the characters of which were probably determined largely by elevation and topography, both above and below sea level, may have occurred in different areas and at different times during the Recessive Stage of the Flood (Day 150 to Day 371), and that many of the thirteen 'surficial features' which Oard claims are 'obviously post-Flood' may have been formed during the Recessive Stage.

The primary criterion for distinguishing any deposit as Flood-deposited may then simply be that it was deposited after the beginning of Day 1 (*Initiation Day*) and before the end of Day 371 (*Disembarkation Day*), regardless of its lithology, lithification, aerial extent, etc.

Assuming a maximum water level of 5,172m (16,964 ft) above sea level on Day 150, when the water level began to fall, the water level would have fallen at an average rate of 23 m. (75 ft) per day, until Day 371 when present sea level was attained. As suggested by Oard, the rate of off-flow of the waters from the land to the sea from Day 150 on may have been initially very high, and tapered off exponentially towards the end of the Recessive Stage.

The transformation from the Sheet Flow to the Channelized Flow phases may have been much more complex than the time only dependant scenario envisioned by Oard; 'The recessive Stage ... began as the Sheet Flow (Abative) Phase and *slowly transformed over 221 days* into the Channelized Flow (Dispersive) Phase [emphasis added]'. The occurrence of Sheet or Channelized Flow would, I suggest, have been not only time dependant, but also elevation and topography dependant.

At any given time during the 221 days of the Recessive Stage of the Flood (Day 150 to Day 371), the existence of Sheet Flow or Channelized Flow in any given area would depend on its elevation and topography, not solely on elapsed time from Day 150, as is suggested in Oard's 'slowly transformed over 221 days' scenario. As the water level fell, Channelized Flow may have been occurring on partially drained higher elevations, while Sheet Flow was still occurring at lower, as yet undrained elevations. Other environments may have developed in other areas where both Sheet and Channelized Flow had ceased.

Many of Oard's thirteen 'surficial post-Flood criteria', which he describes as 'obviously post-Flood', with the probable exceptions of *surficial Ice Age debris* and *modern reefs*, may have formed in a variety of environments, at various locations throughout the globe, and at various times, during the Recessive Stage of the Flood. All of this may have occurred while Noah, his family, and all the animals were still on the Ark, prior to *Disembarkation Day* (Day 371), perhaps being restrained until all these potentially destructive processes were completed, especially in the vicinity of Mount Ararat.

Max J. Hunter
Charters Towers, Queensland
AUSTRALIA

References

- Oard, M.J., Defining the Flood/post-Flood boundary in sedimentary rocks, *Journal of Creation* 21(1):98-110, 2007.
- Austin, S.A. and Wise, K.P., The Pre-Flood/Flood boundary: as defined in Grand Canyon, Arizona and eastern Mojave Desert, California; in: Walsh, R.E. (Ed.), *Proceedings of the Third International Conference on Creationism*, Creation Science Fellowship, Pittsburgh, PA. pp. 37-47, 1994.
- Walker, T.B., A biblical geologic model; in: Walsh, R.E. (Ed.), *Proceedings of the Third International Conference on Creationism*, Creation Science Fellowship, Pittsburgh, PA, pp.581-592, 1994.
- Froede Jr, C.R., A proposal for a creationist geological timescale, *CRSQ* 32(2):90-95, 1995.

- Van Wingerden, C., Initial Flood deposits of the western American Cordillera: California, Utah and Idaho; in: Ivey, R.L. (Ed.), *Proceedings of the Fifth International Conference on Creationism*, Cration Science Fellowship, Pittsburgh, PA, pp. 349–358, 2003.
- Hunter, M.J., Archaean rock strata: Flood deposits—the first 40 days; in: *Proceedings of the 1992 Twin-Cities Creation Conference*, The Twin-Cities Creation Science Association, The Genesis Institute and Northwestern College, Roseville, MN, pp.153–161, 1992.
- Hunter, M.J., Scriptural constraints on variation of water level during the Genesis Flood, *Journal of Creation* 14(2):91–94, 2000.

Michael Oard replies:

I thank Max Hunter for his comments on my initial effort at defining diagnostic criteria for determining the Flood/post-Flood boundary.¹ I agree with almost all his comments relating to the Flood/post-Flood boundary.

For clarification, I averaged the placement of the boundary in the late Cenozoic, assuming the geological column for sake of argument, mainly because of the many complications in defining these uniformitarian epochs. One complication is the simplistic uniformitarian fossil dating scheme for strata that may cause a layer to be dated as Miocene, Pliocene or even Pleistocene. Since these index fossils are often microorganisms, it is difficult to know whether a particular organism was buried in the Flood or afterwards. It is also unknown what is a kind within microorganisms. Besides, the uniformitarian scientists sometimes switch the dates, as for instance a Pleistocene strata may become Pliocene based on new fossil finds.

Therefore, I don't place the boundary at the Pliocene/Quaternary boundary, as implied by Mr Hunter. I consider that it may be variable in the late Cenozoic. I am also attempting to refine those borderline cases. But I am more and more coming around to the conclusion of the late Roy Holt² that the boundary probably would be in the early to mid Quaternary in many areas not associated with glaciation or 'obvious' post-Flood features. This location for the boundary is the very latest Cenozoic.

One location where I would put the boundary in the mid, or possible late, Quaternary is the Santa Clara Valley of California, depending upon the uniformitarian dating details of the Quaternary strata, which I have not analyzed. This valley contains about 1,300 m of Quaternary strata above about 4,000 m of Pliocene strata, all of which has been folded with an *erosion surface* formed on dipping strata.³ It seems obvious that there was way too much geological activity to place the Quaternary strata in the post-Flood period at this location.

The deposition of the strata, its folding and erosion are typical Flood events.

I mentioned thirteen 'obvious' post-Flood diagnostic criteria, which I did not develop in the paper. Many of these features can be seen forming today, such as landslides. However, in the next paragraph I mentioned that many of these features have ancient counterparts. Furthermore, I admit that it may be difficult to distinguish some of these features in some locations. These are the borderline cases. This is where diagnostic criteria can help.

I will mention one borderline example and this is the Palouse Formation loess in eastern Washington believed to be a wind blown silt. My initial belief was that this 'loess' was a result of the post-Flood Ice Age and was deposited by strong Ice Age winds blowing silt to the east from the Ice Age flood plain of the Columbia River. But over the years as I learned more about the Palouse Formation,

I discovered some nagging problems.⁴ Although there are Quaternary fossils in the material, the silt is too thick and widespread for formation in one or even 100 ice ages. The uniformitarian scientists have admitted this.

A key observation is the abundant sponge spicules in the silt,^{5,6} implying that the silt was deposited by marine waters. So, the 'loess' could easily be a late Flood deposit, possibly deposited in the bowl-shaped depression or 'slackwater area' of eastern Washington as the Cascade Mountains uplifted

Subdivisions of Geologic Time and Symbols				
ERA	PERIOD AND SUBPERIOD	EPOCH	AGE (Ma)	
CENOZOIC	QUATERNARY	Holocene	0.01	
		Pleistocene	←	
	TERTIARY	NEOGENE SUBPERIOD	Pliocene	5.3
			Miocene	23.7
		PALEOGENE SUBPERIOD	Oligocene	36.6
			Eocene	57.8
			Paleocene	←
MESOZOIC	CRETACEOUS	Late	144	
		Early		
	JURASSIC	Late	208	
		Middle		
	TRIASSIC	Late	245	
		Middle		
		Early		
	PALEOZOIC	PERMIAN	Late	←
			Early	
PENNSYLVANIAN		Late	320	
		Middle		
		Early		
MISSISSIPPIAN		Late	360	
		Early		
DEVONIAN		Late	408	
		Middle		
		Early		
SILURIAN		Late	438	
		Middle		
		Early		
ORDOVICIAN	Late	505		
	Middle			
	Early			
CAMBRIAN	Late	570		
	Middle			
	Early			
PROTEROZOIC			2500	
ARCHEAN			3800	

Figure 1. The uniformitarian geological column and time scale.^{1,9} The three main locations that creationists have postulated for the Flood/post-Flood boundary are in the late Paleozoic, the Mesozoic/Cenozoic boundary, and in the late Cenozoic (shown in age column by arrows). (From Oard⁹).

late in the Flood. There are other indications of water deposition. The top of the Palouse Formation could have been reworked by Ice Age winds to bury Ice Age animals. So, the top of the Palouse Formation would really be loess, reworked from late Flood silt, during the Ice Age and afterwards. The wind regularly causes blowing dust in the area today.

In regard to sheet flow transforming gradually into channelized flow, I agree with Mr Hunter that elevation and topography would be among the many variables. Other variables would include tectonics and water velocity. The transformation would occur quicker at present-day high altitudes than at present-day low altitudes. In my article, I was simply averaging for the whole earth for the entire 221-day period of runoff.

Now in regard to some of Mr. Hunter's ideas on the pre-Flood/Flood boundary and Flood events, I have a different view. I don't believe anyone can be dogmatic as to when the Flood peaked.⁷ In fact, in the last International Conference on Creationism, one paper made a good case that the Ark did not start floating until Day 40 and that the water kept rising until Day 150.⁸

I really don't understand the idea that the Flood was 5,172 m above present sea level between Day 40 and 150, and that the water level would drop an average of 23 m/day after Day 150. Sea level depends upon the bottom topography and other variables. Even if the topography of the earth were flat, the floodwater would be only about 3,000 m deep, much less than 5,172 m. If the upper crust of the earth were hot and the rock much expanded at Day 150, maybe the level of the ocean would be 5,172 m above the current sea level with respect to the center of the earth. But if the bottom were flat, where would the grounding of the Ark on the 'mountains of Ararat' on Day 150 fit into this idea? Furthermore, if the bottom basalt was hot, the ocean water would likely be much too hot for marine life.

I would agree that on Day 371, the water would be near the present sea level, although there would be unique

variables that could cause sea level to be either higher or lower than today.

Michael J. Oard
Bozeman, MT

UNITED STATES of AMERICA

References

1. Oard, M.J., Defining the Flood/post-Flood boundary in sedimentary rocks, *Journal of Creation* **21**(1):98–110, 2007.
2. Holt, R.D., Evidence for a late Cainozoic Flood/post-Flood boundary, *Journal of Creation* **10**(1):128–167, 1996.
3. Sharp, R.P., *Southern California: K/H Geology Field Guide Series*, Kendall/Hunt Publishing Company, Dubuque, IA, p. 13, 1975.
4. Oard, M.J., Loess problems, *Journal of Creation* **21**(2):16–19, 2007.
5. Lowry, W.D. and Baldwin, E.M., Late Cenozoic geology of the Lower Columbia River Valley, Oregon and Washington, *GSA Bulletin* **63**, p. 12, 1962.
6. Coffin, H.G., The Miocene/Pleistocene contact in the Columbia Basin: time implications, *Origins* **53**:39–52, 2002.
7. Oard, M.J., Flood level ambiguous? *Journal of Creation* **15**(3):64–65, 2001.
8. Barrick, W.D. and Sigler R., Hebrew and geologic analyses of the chronology and parallelism of the Flood: implications for interpretation of the geologic record; in: Ivey Jr, R.L. (Ed.), *Proceedings of the Fifth International conference on Creationism*, Technical Symposium Sessions, Creation Science Fellowship, Pittsburgh, PA, pp. 397–408, 2003.
9. Oard, M.J., Vertical tectonics and the drainage of Floodwater: a model for the middle and late diluvian period—Part I, *Creation Research Society Quarterly* **38**(1):3–17, 2001.

WMAP 'noisy' data?

Observations of the cosmic microwave background radiation (CMB), despite the weak nature of the signal, have been used to make bold claims about the truth and details of the big bang cosmological model. Not surprisingly, the standard interpretations of these observations are a common target of attack from those who question the big bang. Hartnett¹ recently presented a précis of one such critique, that by Pierre-Marie Robitaille of Ohio State University,

which questioned whether data from WMAP (the Wilkinson Microwave Anisotropy Probe) can be used to make any claims about cosmology.

Care should be taken when dealing with critiques of this nature; certainly we should refrain from hasty triumphalism ('No proof for big bang'). We should of course be prepared to consider all claims on their own merit, but in this case there are signs that special caution should be exercised. First, the results are not published in a reputable journal, as Hartnett rightly pointed out. Secondly, the author (Robitaille) doesn't understand what cosmologists mean by a 'flat' model of the universe, so clearly he is no expert in cosmology.^{2,3} Thirdly, the author has strange ideas about the multipole expansion of the CMB, thinking that the signal averaged over all directions (known as the monopole) can have an independent physical origin from the deviations from this average signal (represented by the higher multipoles, such as the dipole, quadrupole and octopole). Fourthly, the author has the extraordinary belief that the microwave background, which is 'one of the most perfect blackbody spectra ever to be measured',⁴ originates from the oceans, which (he claims) radiate with an apparent characteristic temperature of less than 3 K.⁵ Fifthly, he has an *a priori* assumption that this signal from the oceans (the 'Earth Microwave Background'⁶) should be seen to have precisely the same temperature in all directions, so that even deviations as small as one part in 100,000 are considered to originate from a different (extra-terrestrial) source (these deviations show up in the higher multipoles, but are not seen when the signal is averaged to produce the monopole). And, sixthly, it is no surprise if WMAP fails normal radiological standards—this is precisely why it has taken so much money and effort to analyse the WMAP data!

It is true that the above points do not prove that Robitaille has no valid arguments, but they should make us tread carefully. I would urge