Issue #1: Ancient and Modern Reefs

Stephen Mitchell

June 1, 2021

Email: Jesus.inHistandS@gmail.com

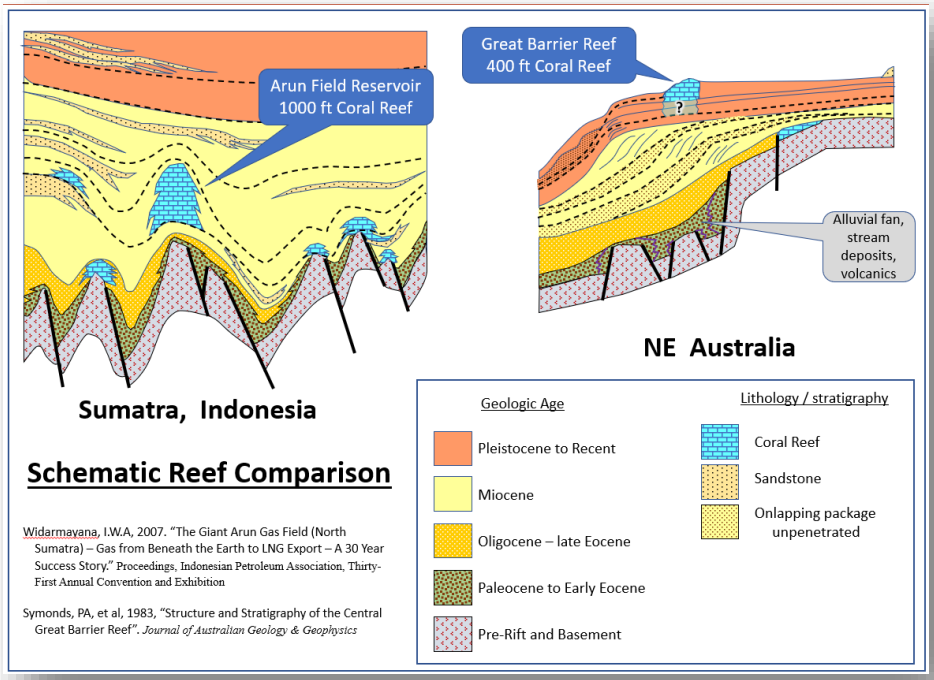

Figure 1. Schematic comparison of reefs in Far East. Many YEC Flood geology papers would take the flood interval to be everything from Miocene to Basement as flood deposits. Others would make flood deposits to be only the sediments in the grey fault blocks. Thus, essentially everything above that would be post-flood deposits, laid down in a period of ~450 years.

Assertions:

1. YEC and Flood Geology (FG) demand that all of the sedimentary rocks with fossils were deposited in the last 6-10,000 years and those deposited during Noah's flood were deposited in 1 year.
2. Reef's grow at or just below sea level and their deposits are formed over periods of time greater than 1 year.
3. Ancient reefs are found through the rock record.
4. Therefore those intervals with ancient reefs were not deposited during Noah's flood.
5. The thicknesses of reef deposits during intervals proposed as post-flood deposits far exceed the time available in the YEC timelines.
6. The cumulative thicknesses of reef intervals, alone demonstrate deposition beyond the total 6-10,000 years in YEC models.

Key assumptions:

a) It is possible to recognize how sediments were deposited and, in this case, recognize that they were not deposited by rapid processes such as debris flows or turbidites.

b) Although the rate of reef accumulation in ancient reefs might have been different from today, thousands of feet of reef were not deposited in 1 year. (as assumed by YEC authors as well)

Discussion:

There are many definitions of reefs for various purposes. For evaluating ancient biologic carbonate accumulations as reefs that took significant time to develop and which are distinct and recognizable, here is the definition that I use (Mitchell, 2019):

1. Represent a concentrated organic accumulation: Many ancient and modern lifeforms, both animals and plants, have left accumulations of lime skeletons. Examples here include algae, corals, and rudists.

2. Is a build-up or mound: Reef will be used for accumulations that had topographical relief. Other organic lime accumulations also took long times to form but would not here be referred to as reefs.

3. Is locally derived, some growing in place: Modern coral reef deposits include some coral that grew in place but much is broken and much ends up eaten by various animals. Even so, the reefs considered here all have some species that are found in their growth position.

4. Associated facies are consistent with modern reef settings: Surrounding facies should be consistent with modern reef settings. In each of the cases in my area, internal facies of the reefs have been mapped in as much detail as the deposits will allow and they are consistent with reefs and the facies around the reefs have been mapped and are consistent with environments around reefs today.

Such ancient reefs developed over and over through the rock record, dominated by many different organisms. We know the rates that coral reefs accumulate sediment today. Rates in the past might theoretically have been faster, but by how much? For the flood model to be valid, those in the flood interval need to have grown at rates of hundreds of feet per day. Few people argue that actual reefs grew at such rates. Reefs grow at or near sea level but it is demonstrated that many ancient reefs were repeatedly exposed for long periods of time, allowing fresh water to leach through the rock and create porosity and caves that today hold much oil and gas. This took significant amounts of time. To quote YEC author, Ken Coulson (2021), "*You simply cannot have extremely large reefs, for example, growing in just a few months*."

In the area that I focused on, we find stromatolite (algal mat deposits) reefs in the Cambrian; algae & sponges in the Ordovician, coral and bryozoan in the Silurian; phylloid algal-dominated communities in the Pennsylvanian; calcareous sponges, bryozoans, and hydrocorallines in the Permian; coral in the Jurassic; rudists and coral in the Cretaceous; and coral in the Cenozoic. (Mitchell, 2019). Coulson (2021) documented stromatolitic reefs from the Cambrian around the world. His own work in depth on Cambrian reefs in the Notch Peak Formation shows a number of clear examples.

For any proposed flood interval, if any bed or set of beds took longer than 1 year to form, the flood model fails. For the post-flood period, very little time is available to grow reefs. Any significant reef thicknesses cause the young earth age model not to work. The post-flood explanation has to account for the thick reefs such as are deeply buried at the Arun field in Indonesia. It also has to account for the Miocene reefs in the Judean mountains in Israel. It is easy to see that these were solid and exposed before Abraham walked the area. Also, remember that the post-flood time has to account for not just the reefs, but the intervening material as well. Also, important there is no real justification for additional geologic miracles or abnormal rates in the post-flood period.

Somewhat more detailed documentation can be found here:
Ancient Reefs confirm Deep Time and sink Flood Geology

YEC explanations:

YEC cannot consider any of the ancient units to have been reefs. Whitcomb and Morris (1961) proposed this: "During the flood, extensive reefs formed in the warm waters of the antediluvian seas would have been eroded and deposited, often giving the appearance now of an ancient reef of great extent". Thus, these fortuitous deposits remained concentrated and localized to form these deposits of allochthonous calcareous fossils. I guess the story of the Permian Capitan reef would be that it was moved literally from all directions at the same rate to form the reef that encircled the Delaware Basin.

YEC publications and Web sites commonly cite a paper by Stuart E. Nevins titled "*Is the Capitan Limestone a Fossil Reef?*" (Nevins 1972). Nevins was a pseudonym used by Dr. Steven A Austin as a graduate student. He boldly claimed things like:

- *So-called "backreef lagoon" and "forereef talus" deposits were not contemporaneous with "reef" accumulation.*
- *The Capitan lacks large, in situ, organically bound frameworks and deposits of broken debris which can be shown to be derived from an organic framework.*
- *Reef-forming organisms which could bind sediments and build frameworks are either altogether absent or largely inconspicuous*.

Geologists at the time didn't buy it and even less so now. His comments just don't fit the data. It is true that on the outcrop it is often difficult to determine if fossils are in growth position, but detailed examinations show that even at such locations many are in situ. Beautiful core examples are also published. Peter Scholle summarized this way: "*Overall, the high biological diversity of this environment; the abundance of framework calcareous sponges, bryozoans, and hydrocorallines; the ubiquitous presence of encrusting organisms (Tubiphytes, Archaeolithoporella, Girvanella, and others); the remarkably high productivity of organisms generating vast masses of reef and fore-reef skeletal debris); the distinct internal faunal zonation; the presence of abundant inorganic, radial-fibrous, originally aragonitic cements; and the large-scale fragmentation and disruption of fabrics by wave and current activity are all features of the Permian reef complex which are highly analogous to modern reefs.*" (Scholle 2000)

Snelling (2009) suggested that many fossil "reefs" were actually "*accumulations of sediment swept in by water*" or "*rapidly accumulating debris flows*". Certainly, some limestones and other carbonates formed by such methods. In other cases, we can be confident that that is not how they formed.

Mechanical Engineer and YEC, Tas Walker, in his post, "*Not ancient 'reefs' but catastrophic deposits*", described a Silurian reef this way: "*The 'core' shows no growth structures and is the wrong shape, the angle of the 'reef' is too steep, reef binding organisms are absent, a solid foundation rock is absent, and the reef is riddled with fossil tar, indicating rapid deposition, not slow growth*." One problem is that he doesn't give what characteristics reefs, in his mind must have. The concerns that he listed do prove that the reef that he described is not a modern coral reef. The Thornton reef articles that I found indicate that this reef clearly meets my criteria for a reef.

Coulson,2021 suggests that the Cambrian reefs as pre-flood deposits that grew at enormous rates, because in their age model, only 1600 years are available for all such deposition. Similarly Precambrian reefs are envisioned as part of creation week, again growing at "accelerated "naturalistic-like" processes". As he recognizes, this is a matter of faith, not evidence. If the Cambrian stromatolites reefs are recognized as incompatible with the flood explanation, what about other fossil reefs? He addressed this issue here:

"*Finally, some may cite other reefs in other geologic periods. If we move the boundary based on Cambrian reefs, then what do we do when we get to reefs even higher in the geologic record? This is a great question and one that is difficult to answer. Yes, other reefs exist, and each suite of reefs needs to be addressed and interpreted on its own merits*."

Ancient reefs with organisms that grew in place (autochthonous) are present in regions every geologic period. This makes it difficult to make a case for flood geology models.

References:

Coulson, KP, 2021, "*Using Stromatolites to Rethink the Precambrian-Cambrian Pre-Flood/Flood Boundary*", www.answersingenesis.org/arj/v14/stromatolites_precambrian_cambrian.pdf

Mitchell, SM, 2018, *A Texas-Sized Challenge to Young Earth Creation and Flood Geology*, Meadville, PA, Christian Faith Publishing, Inc

Nevins, S. (1972). "Is the Capitan Limestone a fossil reef?" *Creation Research Society Quarterly*

Scholle, P. 2000. "*An Introduction and Virtual Geologic Field Trip to the Permian Reef Complex, Guadalupe and Delaware Mountains, New Mexico-West Texas*." from New Mexico Bureau of Geology and Mineral Resources, Peter Scholle: http://geoinfo.nmt.edu/staff/scholle/guadalupe.html#genset

Snelling, A. 2009. *Earth's Catastrophic Past, Vol. 1 and 2.* Dallas: Institute for Creation Research.

Symonds, PA, et al, 1983, "Structure and Stratigraphy of the Central Great Barrier Reef". *Journal of Australian Geology & Geophysics*

Whitcomb, J., and Morris, H. 1961. *The Genesis Flood.* Phillipsburg, NJ: Presbyterian and Reformed Publishing Co.

Walker, T., 2003, "Not ancient 'reefs' but catastrophic deposits", Creation, retrieved from TAS WALKER'S BIBLICAL GEOLOGY: http://biblicalgeology.net/2006/Not-ancient-reefs.html

Widarmayana, I.W.A, 2007. "*The Giant Arun Gas Field (North Sumatra) – Gas from Beneath the Earth to LNG Export – A 30 Year Success Story*." Proceedings, Indonesian Petroleum Association, Thirty-First Annual Convention and Exhibition