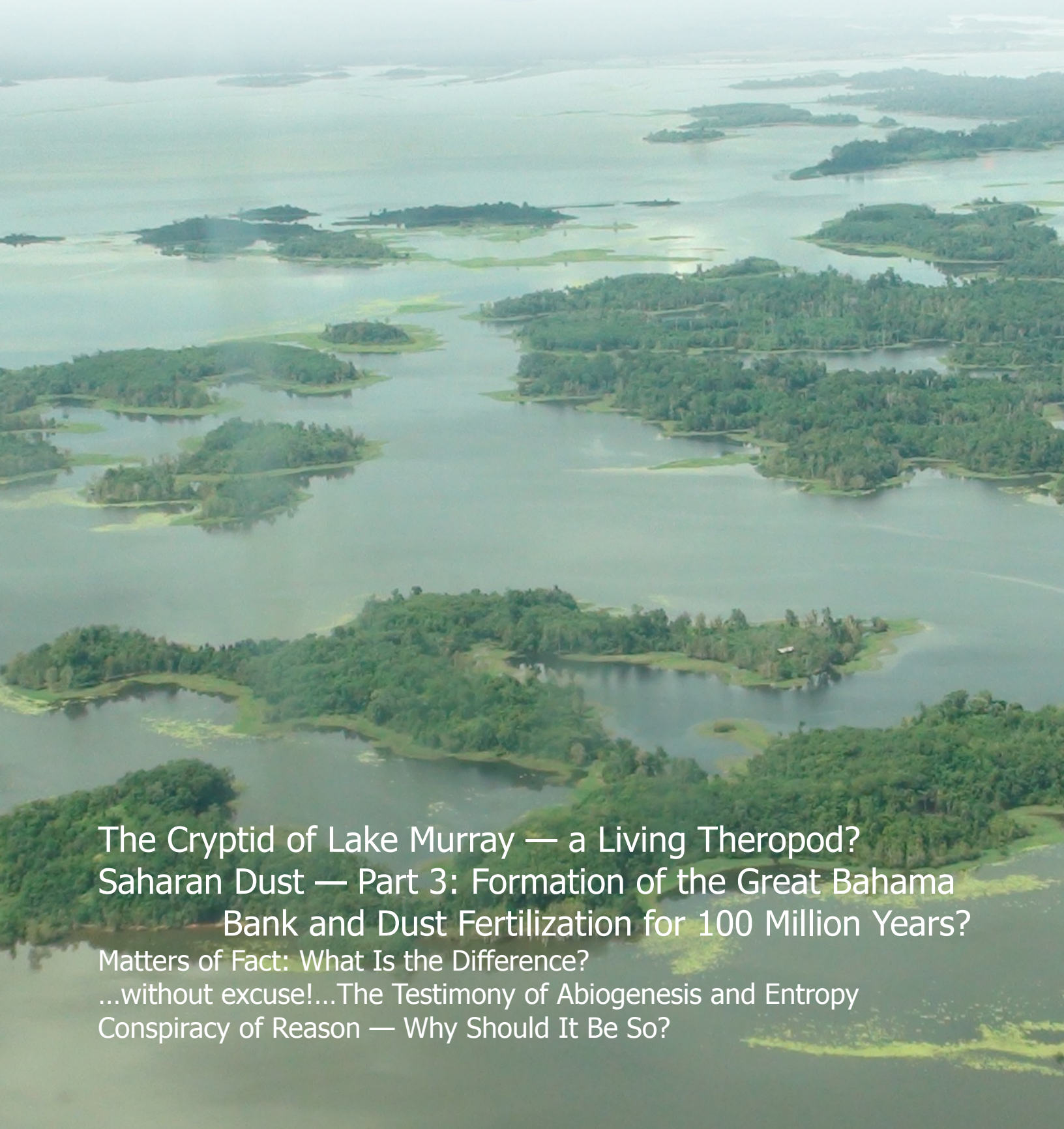


Creation Matters



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The Cryptid of Lake Murray — a Living Theropod?
Saharan Dust — Part 3: Formation of the Great Bahama
Bank and Dust Fertilization for 100 Million Years?
Matters of Fact: What Is the Difference?
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The Cryptid of Lake Murray — a Living Theropod?

by Dave Woetzel

The country of Papua New Guinea (PNG), which occupies the eastern half of the island of New Guinea, may be one of the most fruitful locations on earth to look for animal species that have not yet been documented by scientists (cryptids). In 2009 “[a] team of scientists from Britain, the United States and Papua New Guinea found more than 40 previously unidentified species” as they were exploring Mt. Bosavi in western PNG.¹ Over 780 bird species live in PNG.²

“If you look at New Guinea in terms of biological diversity, it is much more like a continent than an island,” ... [said] Neil Stronach, Program Representative for WWF... “Scientists found an average of two new species each week from 1998 [to] 2008—nearly unheard of in this day and age.”³

“Murray”

Located in PNG’s Western Province, Lake Murray is the country’s largest lake (see cover photo). It covers an area of about 700 square miles (though its surface area varies greatly between the dry and rainy seasons) and creates approximately 1,300 miles of convoluted shoreline.⁴ The serpentine shape encompasses many mysterious inlets, remote swampy coves, and islands. About 5,000 indigenous peoples inhabit the lake region. Tribal villages dot the small islands

and shoreline, sporting houses on stilts and featuring dugout canoes as the main means of transportation.⁵ As has been suggested by some creationists, “... if any dinosaur species are still living, the most likely places to find them would be in biologically rich areas with limited or no human settlement, such as the Congo and Lake Murray regions...”⁶ I have previously investigated the evidence for Mokele-mbembe of the Congo.⁷

A cryptid, known locally as “Murray,” has been reported by natives to live in the swamps on the edges of the lake. This creature had been described as resembling a theropod dinosaur in a report by *The Independent*, a national PNG newspaper. The account has been described thusly:

On December 11, 1999, villagers travelling in a canoe reported seeing the creature wading in shallow water near Boboa. The following day, a Seventh Day Adventist pastor and a church elder say they saw the animal not far from the first sighting. The creature was described as having a body “as long as a dump truck” and nearly two metres wide, with a long neck and a long slender tail. It was walking on two hind legs “as thick as coconut palm tree trunks,” and had two smaller forelegs. The head was similar in shape to a cow’s head, with large eyes and

“sharp teeth as long as fingers.” The skin was likened to that of a crocodile, and the creature had “largish triangular scoops on the back.”⁸

A visit to PNG

After chartering a plane to take us to a grass strip on an island, I led a team, sponsored by Genesis Park, that conducted research in a number of lakeshore communities through February of 2015. Our approach was not to directly ask about the monster, but to discuss wildlife in general and to show them pictures of various animals to ascertain what large creatures inhabited the region. (Pterosaur and hippo pictures were thrown in as a credibility check.) It was not difficult to find people who claim to have seen a large reptilian form that walks erect and is about 12–15 feet tall. Descriptions were surprisingly consistent among the various villages we visited.

There have been relatively few actual sightings in the lake and near the islands where the locals live. More common were reports from men who went hunting in the remote swamplands and rivers that feed into the lake. Some interesting tidbits were gleaned from these hunters, including that the monster has been observed eating large fish (though nobody had actually seen it catch fish), and that these bipedal dinosaurs

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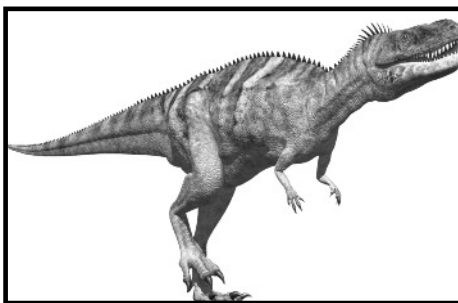
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are adept swimmers (using their tails, like a crocodile). Game appears to be plentiful, as the bush around Lake Murray teems with wildlife, including kangaroos, wallabies, wild pigs, and bandicoots.

Interviewing the locals

After being interviewed, witnesses were presented an array of black-and-white theropod profiles to review. They consistently identified the reptilian monster with a *Tyrannosaurus rex* or a *Ceratosaurus*, with its conspicuous ridge running down its neck and back. The *Ceratosaurus* was the more popular choice, but the head horns gave witnesses pause. They said the monster had more of a flat head, like the *T. rex*. Along with detailing the dermal armor and large toothy head, the witnesses would draw clear tridactyl footprints on the ground. Some indigenous people who had not seen the creature had seen the tracks in the bush. The skin of the creature was likened to that of the crocodile by multiple eye witnesses.

These initial reports from the local Lake Murray witnesses came across as reasoned, consistent, and credible. However, more research is needed, and a follow-up trip is being planned that would press further into the remote areas upstream. It is hoped that



Based on our interviews of natives who reported having seen the creature, this is our best guess of what Murray may look like.

a location can be found where indigenous people see these creatures with some regularity. Clear evidence of Murray could be one more affirmation of the Bible's straightforward account of men and dinosaurs co-existing.

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Math Matters

by
Don DeYoung, PhD

Earth's Circumference

A stubborn urban legend claims that Bible writers and most medieval societies believed in a flat earth. This idea has an anti-Christian origin and has been thoroughly refuted (Russell, 1991). In fact, well over two millennia ago, around 240 B.C., the Greek scholar Eratosthenes (276 – 194 B.C.) measured the circumference of the earth using sun shadows and geometry.

The measurement, which was carried out in Egypt, involves the day of summer solstice, around June 21. The ancient city of Syene, now Aswân, lies just one-half

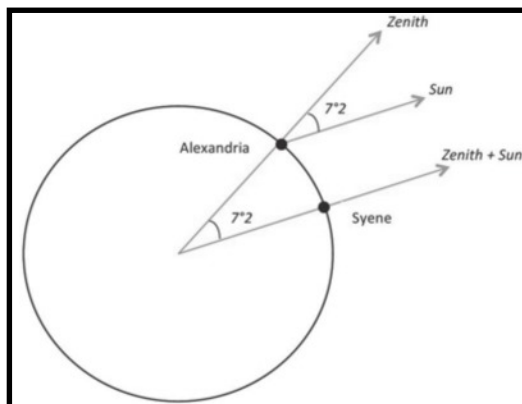


FIGURE 1. The Egyptian cities Syene (Aswân) and Alexandria are separated by 7.2°, or one-fiftieth of a full circle.

degree north of the imaginary line known as the Tropic of Cancer, which is 23 1/2° above the equator. At this latitude at local noon on the day of summer solstice, the sun is directly overhead at its zenith, with no shadows cast. This means that at the Syene location, the noon sun could shine vertically down into a well.

Meanwhile, far to the north in Alexandria, Egypt, near the Nile River delta, at the same date and time, the sun does cast a shadow. The length of shadow made by an

obelisk showed Eratosthenes that the earth's surface was curved and the two cities were separated by an angle of 7.2° as measured from earth's center (Figure 1). He actually measured the angle as "a fiftieth of a circle" since the Greeks had not yet adopted degree measurements. The early distance between the two cities was measured in stadia. For simplicity I will translate the separation distance as 500 miles. A simple proportion then gives the circumference C for the earth,

$$C/500 \text{ miles} = 360^\circ/7.2^\circ$$

The result is $C = 25,000$ miles, which is within one percent of earth's true average circumference of 24,900 miles. The earth is somewhat flattened at the poles, making the planet an oblate spheroid in shape.

We do not know the length of the stadia measurement which Eratosthenes used, and there is no surviving record of his results. His accuracy for the earth's circumference was somewhere between 0.5 and 17 percent. Regardless, this early measure shows a

... continued on p. 4

Conspiracy of Reason — *Why Should It Be So?*

by Michael G. Windheuser, Ph.D.

Proof isn't hiding, it is just tightly defined. When one speaks of "proof" in the context of an argument, he is not strictly correct. Rather, proof is the proper domain of mathematics and geometry. Only in mathematics can there be both certainty and exclusion. Mathematics and geometry allow human beings to know why something is necessarily true and why it is true in all possible cases of the event.

For example, Pythagoras showed that in a right triangle derived from a square, the square of the hypotenuse equals the sum of the squares of the other two legs of the triangle. Three hundred years later, Euclid produced an elegant proof of Pythagoras' proposition from geometry, which surpassed all other proofs in the universality of its application beyond the right triangle in a square. Euclid proved that the Pythagorean relationship must also be true for any combination of leg lengths in a right triangle derived from any parallelogram.¹

Geometry and mathematics often closely parallel reality. Changes in animal population size and distribution can be accurately modeled using mathematical equations. Gene frequencies can be modeled and predicted using various equations. Even the laws of physics are expressed mathematically in forms which, like the Pythagorean Theorem, have a surprising level of consistency with the real world they are intended to represent.

Many philosophers have noted this apparent conspiracy of reason with surprise and wonder. In his essay, *The Unreasonable Effectiveness of Mathematics in the Natural Sciences*, Eugene Wigner says the "enormous usefulness of mathematics in the

Based on this, rather than randomness, one could reasonably suspect a conspiracy of reason behind it all.

This is, in fact, the conclusion of a great many minds in science and mathematics in centuries past, who were also Christian believers. Galileo encouraged others to learn the language of mathematics to be able to fully appreciate how God had ordered the universe. Kepler, Isaac Newton, and others followed suit and recognized that the effectiveness of mathematics was the result of a conspiracy of One. God, like mathematical proofs, wasn't hiding as some have charged. He is

the mind behind the design, so that what the atheist finds unexplainable is actually God's wisdom and condescension toward man in forming the universe according to a language we can both comprehend and formulate.

A random universe is a pointless, purposeless universe, and what is the point in using mathematics to study a pointless universe?

natural sciences is something bordering on the mysterious."² Others have noted how effective very simple mathematics and geometry have been in describing many significant aspects of nature, and asked the question "Why should it be so?" Why should it be that the universe can be so well-described by humans in mathematical terms when the universe itself is said to have begun in chaos and proceeded in random fashion without having human beings in mind?

A random universe is a pointless, purposeless universe, and what is the point in using mathematics to study a pointless universe? Some have noted that we also continue to develop new types of math, and new applications for old math, which accurately represents the reality of the world.

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Circumference ...continued from page 3

common understanding of the earth's curved surface. We can assume that this information was well known to New Testament writers including the Apostle Paul. The idea of a flat earth is neither taught nor implied in Scripture.

In addition, Job 26:7 describes the earth as suspended in space, an obvious comparison with the spherical sun and moon. When

the Bible touches on scientific subjects, including the spherical earth, it is entirely accurate (DeYoung, 2010).

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...without excuse! THE TESTIMONY OF ABIOGENESIS AND ENTROPY

by Timothy R. Stout

Entropy represents a broad principle whose impact goes far beyond thermodynamics. It poses an insurmountable barrier to abiogenesis. Entropy deals with the relative degree of organization of a system between two states. When a random change is made to a system, there will typically be a number of different possible outcomes. There will also be a probability curve associated with the likelihood for each of the various possibilities. Most of the possibilities will typically be associated with a decrease in order; a few may occasionally represent an increase in order.

Ilya Prigogine won the 1977 Nobel Prize in Chemistry for his discovery that self-organization can appear in a system which is not in equilibrium. This can superficially appear to go against entropy—organization appears out of disorganization. However, the organization is caused by metastable states occurring as a result of the disequilibrium (Stout, 2008). Abiogenists latch onto this as a basis for rejecting creationist arguments of any sort which are based on entropy.

However, when an analysis is performed at the micro-level, of events related to the steps of abiogenesis, one finds that each individual event is still governed by the principle of entropy as applied to the specific local conditions being experienced. The outcome of a large group of similar events will still be in agreement with the expected probability curve. There is no basis to expect the probability curve to suddenly shift and give results which favor abiogenesis. Abiogenists do not account for this, which becomes the fatal flaw of their hypotheses.

Abiogenists have jumped on Prigogine's concept of self-organization as the means for getting the increased organization needed for abiogenesis. They propose that if one adds sunlight or some other energy source to starting chemicals, then self-organization takes place. This self-organization provides a mechanism for a natural appearance of life. However, this proposal breaks down when the details are examined.

From the modern perspective, a natural origin of life would primarily be a chemical process. This is why it is sometimes called *chemical evolution*. In *The Self-Organizing Universe*, astrophysicist Eric Jantsch (1980) wrote,

...But, electric discharges, or lightnings, during short time periods provide extraordinarily high energy

penetration which result in high temperatures (recently measured at up to 30,000 degrees Kelvin) at which chemical reactions can occur in which radicals and ions dominate. The very fast reactions lead to a non-trivial chemical kinetics whose equilibrium distribution includes already highly complex molecules.

Jantsch proposed that chemical evolution starts with an energy source ripping apart existing molecules into radicals and ions. These then randomly combine with each other to produce new, highly complex molecules. In subsequent discussion he went on to include amino acids and nucleotides among the highly complex molecules produced by this process.

Jantsch's hypothesis illustrates the fatal error discussed above. Violently ripping apart molecules into radicals and ions is certainly an uncontrolled process, one which will guarantee the widest possible range of results. Many, many products are potentially capable of being produced by this process. Most of these will work against abiogenesis. A limited number could promote it. Changing the energy source or varying raw materials, however, will not resolve the problem; the problem results from basic principles of physics and chemistry.

According to the principle of entropy, if a large number of potential products are possible for the kinds of molecules appearing in a sample, and if that sample is acted upon with a violent energy source as envisioned by Jantsch, then for a large sample size, these products will appear in their naturally expected ratios. *Self-organization has taken place, but entropy still governs the distribution of the products formed by the self-organization*. Furthermore, any products which might be useful for a special purpose, such as the origin of life, will not appear in sufficient purity and quantity to overcome the effects of the majority, injurious products.

Not only did Jantsch not understand this, but if one browses current web articles on entropy and the origin of life (and also for entropy and macro-evolution), he will see that current evolutionists still do not understand it. They talk about how an energy source such as sunlight can provide the energy to reduce entropy in a system of particles. They then jump to this reduced entropy as being sufficient to account for life and for evolution.

However, there is no discussion about how to constrain the broad variety of products normally produced, so that only those products

required for abiogenesis will be produced. There is no discussion about how to limit the products to those of the required species, in usable ratios with each other, with proper chirality, without tar being the primary product, and in a suitably high concentration. These requirements represent a very, very narrow subset of the products one would reasonably expect to be produced. A heat engine does not turn lukewarm water into steam and ice cubes. Likewise, prebiotic processes do not turn raw chemicals into those suitable for subsequent steps of abiogenesis.

The above discussion is not just hypothetical conjecture. Miller's experiment (1959) implements the scenario proposed by Jantsch. A spark rips apart methane, ammonia, hydrogen, and water vapor molecules into radicals and ions. As these molecules recombine, they form very complex products. Self-organization has taken place. However, the products of Miller's experiment illustrate entropy in action. A wide variety of products is postulated and a wide variety is formed. Only a few of these would be suitable for abiogenesis. The others would dominate subsequent reactions and work against a natural origin of life. A recent *Creation Matters* article on "Cement Brownies" discusses this aspect in more detail (Stout, 2014a). It is also consistent with Orgel's observation that the formation of complicated molecules requires the use of already existing complicated molecules (Stout, 2014b).

The Bible teaches that scoffers reject the truth about Christ, His coming, judgment, creation, and the Flood because of willful ignorance (2 Peter 3:1-7). An illustration of the truth of this passage is provided by the response of the modern scoffer to the strong testimony about how entropy thwarts abiogenesis.

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He who builds His layers in the sky,... The Lord is His name (Amos 9:6; NKJV)

Few people are aware that the atmosphere carries dust and microscopic biological particulates around the Earth. Little consideration is given to the impact that this may present today or might have created in the past. Two articles in this series have documented the link between Saharan dust and microbiological particulates in the production of snow in the California Sierra Nevada Mountains (Froede, 2015a) and dust-related red tide outbreaks along the West Florida coastline (Froede, 2015b).

This third and final article in this series examines a recent proposal suggesting that Saharan dust contributes to ongoing carbonate sediment production across the Great Bahama Bank (GBB). Naturalists claim that this process has been ongoing possibly over the past 100 million years (ma). How does this idea fit into a Biblical worldview?

Saharan dust

The subject of dust and its potential impact on society was addressed by Holmes (2001). This work provides an excellent overview of dust in our everyday environment. I documented the transport of large volumes of dust and particulates, including plant seeds/spores, insects, and small birds from the Saharan desert and related it to possible post-Flood plant/insect/animal dispersion (Froede, 2003). A year following, young-earth creationist Brian Rucker (2004) reported on the possible Atlantic crossing of the Snowy egret (*Egretta thula*).

Atmospheric precipitants, dust, particulates, and other aerosols can affect humans and our environment in ways that are difficult to discern. For example, recent research suggests that Saharan desert dust may be adding carbonate sediment to the Bahama Islands (Bustos-Serrano et al, 2009; Swart et al., 2014) (Figure 1).

Geologic history

For naturalists, understanding the geologic history of the Bahama Islands is more complex than modern conditions suggest. According to Schlager and Ginsburg (1981, p. 1):

Stratigraphic history of the Bahamas is not simply a projection of the

“Holo-Scene” back in time. Both long-term natural evolution (decrease in subsidence, upbuilding of the banks, submarine erosion) and outside factors (climate, eustasy) have caused significant changes. Since the Jurassic, the Bahamas seem to have evolved from a clastics-evaporite province to a single carbonate-evaporite platform and finally to an array of platforms and troughs. During the platform-trough stage, the rate of upbuilding of the platforms decreased, submarine canyon erosion increased. Platform flanks steepened as they grew higher and changed from accretionary to bypass to erosional slopes. A change imposed by extraneous factors occurred in the Pliocene, when the Great Bahama Bank changed from a giant reef-rimmed atoll to a flat platform covered by oolites and peloid sands. ...The Neogene platform sequence is strongly controlled by eustatic sea-level fluctuations.

Schlager and Ginsburg (1981) cite the development of the Bahama Banks beginning in the Jurassic between 144 ma and 206 ma (Walker and Cohen, 2006). Plate tectonic projections place the corresponding African continent adjacent to North America until between 160 ma and 170 ma, when rifting developed subsiding continental platforms between the North American and African continents, subsequently forming the Bahama Banks (Smith et al, 1994).

Despite this simple conceptualization, an enigma remains for naturalists regarding the origin of the thousands of vertical feet of carbonate sediment which built up the individual platforms over the past 100 ma (Swart et al., 2014). For the purpose of this article we will focus on the conditions across the Great Bahama Bank (Figure 2).

Carbonate sediments

The surface sediment atop the Great Bahama Bank varies in particle size from sand to mud as a function of the original organic or inorganic source (Gischler et al., 2013). The most controversial of the sediment-forming processes involves carbonate “whittings.” The details of this controversial event will be discussed in a future article. A whitening is defined as (Neuendorf et al., 2005, p. 721):

A mass of muddy water in which abundant carbonate material is suspended, producing a white color. Whittings typically occur over shallow carbonate platforms and are elongated by wind or tidal currents.

Swart et al. (2014) propose that iron-enriched Saharan dust stimulates cyanobacterial growth, which changes seawater chemistry, resulting in the inorganic precipitation of calcium carbonate. This process creates whittings on top of the Great Bahama Bank. They also suggest (p. 673):

Such whittings might be responsible for helping to produce vast amounts of sediments....

The idea that cyanobacteria play a role in the precipitation of calcium carbonate is well documented (Robbins and Blackwelder, 1992; Robbins et al., 1997; Hodell et al., 1998; Yates and Robbins, 1998; Lee et al., 2006). However, the exact role it plays in the development of carbonate mud atop the Great Bahama Bank remains controversial (Gischler et al., 2013; Larson and Mylroie, 2014). It should be noted that calcareous algae growing on top of the many carbonate banks at present can supply more than 100 percent of the existing total carbonate sediment, and much of it is transported off the banks (Neumann and Land, 1975).

Stepping beyond the data

Unfortunately, Swart et al. (2014) step beyond their empirical data when they state (p. 671):

One possible source of Fe that might promote such blooms on the GBB is atmospheric dust originating in the Sahara and Sahel regions of Africa. Airborne materials from this and other regions, including North America, are the only likely source of noncarbonate material in the region.

Note that Swart et al. (2014) did not identify any specific past (i.e., Jurassic-to-Pliocene) sources for the iron-enriched dust; rather, they cite modern dust sources (Muhs et al., 2007; Prospero et al., 1970). Swart et

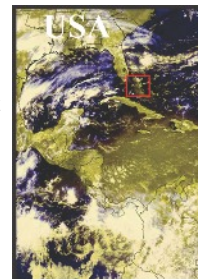


FIGURE 1. Westward dust tints the sky and the Caribbean Sea. This article is on the Great Bahama Bank (the northern end of the red box). Credit: NASA satellite image from MODIS.



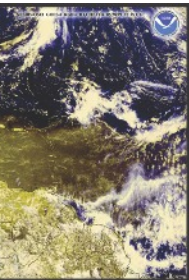
FIGURE 2. Satellite image of the Little Bahama Bank and the Great Bahama Bank in the northern Bahamas. The Tongue of the Devil (TOD) is a narrow channel across the Great Bahama Bank. Credit: NASA Earth Observing Satellite (EOS) Moderate Resolution Imaging Spectroradiometer (MODIS) on the NASA Earth Observing Satellite (EOS).

Bahama Bank and Dust Fertilization for 100 Million Years?

le, Jr., B.S., P.G.

al. (2014, p. 671) also suggest that:

The enigma of the Bahamas is that this highly productive carbonate system has existed for at least 100 m.y., building a vast edifice of carbonates, thousands of meters thick, in an essentially nutrient poor environment. ...We propose that the Great Bahama Bank is currently, and may in the past have been, fertilized by atmospheric dust, promoting the fixation of atmospheric N₂ by cyanobacteria. ... and has been responsible, through the draw-down of CO₂, for initiating the precipitation of carbonate in the shallow waters.



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The oldest African dust deposits occur in Barbados. They have been dated to 700,000 years (Muhs et al., 2007). There is no physical evidence to support the concept that iron-enriched dust has produced carbonate sediment (i.e., mud) across the Bahama Banks from earlier than the Pleistocene (Figure 3).

Implications for biblical history

Perhaps the most intriguing idea is that some portion of the West African Saharan desert existed possibly since the Jurassic. Unfortunately, there is no evidence to support this suggestion. Naturalists must approach their version of earth history in a manner that supports the present. The Bahama Archipelago consists of many submerged platforms covered in thousands of feet of carbonate rock. Naturalistic geohistory must recreate this modern setting from modern organic and inorganic processes operating over millions of years.

Is there any difference in understanding the Bahama Archipelago/Banks from a biblical perspective? The answer lies in what the Bible conveys. God created everything in the first six days of the Creation Week. He covered the Earth with varying eco/geosystems consistent with His original plan. The Genesis Flood destroyed the entire surface of the Earth. So, I believe that we are not required to account for the buildup of all the present-day sedimentary rocks from nothing. Materials were added during the Flood through volcanic, biological, and chemical processes, but the Earth was al-

ready a working eco/geosystem (e.g., Austin, 1994).

As a matter of personal opinion, I believe the Bahama Archipelago was originally created as a more singular carbonate platform (possibly including south Florida). Continental breakup (i.e., rifting) during the Flood likely created the many individual platform blocks. Gaps between the platforms were partially filled with carbonates eroded from the platforms. My understanding is based on a combination of basement rocks and bathymetric maps showing the relationship of the platforms to the surrounding carbonate sediments. Where do we divide the pre- and post-Flood carbonate layers on these platforms? I do not have an answer at present. This is a tentative understanding of the area and much work remains to better understand this geologic setting within the constraints of the Flood.

Today, African dust travels west across the Atlantic Ocean and is deposited mainly during rain events in the spring and early summer. Its effect is still being investigated. I believe this is a post-Flood process, as we have no means of understanding whether "African dust" even existed before the Flood (Figure 3). Does African dust create carbonate particles through whitening events? There is evidence that supports this idea. Can whittings provide the volume of carbonate mud we currently find across the many banks? The debate continues.

The transport of Saharan dust from the African continent presents several areas for further investigation. As Christians, we have a biblical history to discover—one not based in the philosophy of Naturalism. This series of articles has merely skimmed the surface on the topic of Saharan-derived dust, particulates, and aerosols and their impact on the northwestern hemisphere. Hopefully, it will serve to stimulate further study.

Competing Worldviews

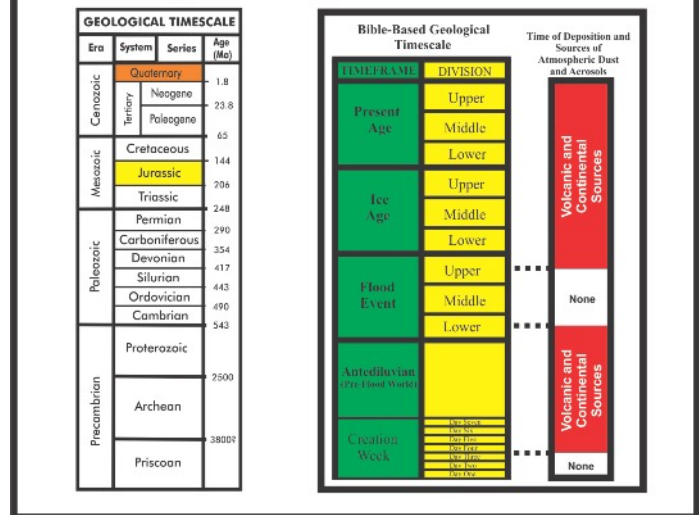


FIGURE 3. Two competing worldviews are shown. Naturalists claim the Bahama Archipelago began with rifting and continental plate separation (i.e., Plate Tectonics) beginning in the Jurassic (highlighted in yellow). However, no physical evidence of dust deposition exists before 700 thousand years ago (i.e., Pleistocene epoch - highlighted in orange). A young earth creationist interpretation suggests two possible periods of atmospheric dust creation, transport, and deposition consistent with the history conveyed in the Bible.

Acknowledgments

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... continued on p. 9

Matters of Fact

by

Jean K. Lightner, DVM, MS

What Is the Difference?

Editor's note: You may submit your question to Dr. Jean Lightner at jean@creationresearch.org. It will not be possible to provide an answer for each question, but she will choose those which have a broad appeal and lend themselves to relatively short answers.

Q If evolution is (genetic) change over time, and the creation model accepts some change over time, what is the difference?

A Excellent question! The word evolution can have a broad range of meanings, including a change in the genetic makeup of a population over time. It is helpful to compare the two models of origins to gain a better understanding of where the differences lie.

Evolution commonly refers to the idea that all life on earth shares common ancestry and arose by naturalistic processes. This conflicts with the biblical account which clearly states that God created all (non-human) life forms according to their kinds (Genesis 1:12, 21, 24–25). The Bible also states that humans were created by God in his image (Genesis 1:26–27), separately from other animals (Genesis 2:7, 18–23).

Two views of origins

Table 1a summarizes the basic differences in these two views of origins. The Bible indicates that God created plants and animals according to their kinds. He created them to reproduce and fill the earth because he intended the earth to be inhabited (Genesis 1:11–12, 22; Isaiah 45:18). Today we can see hares in the arctic, hares in the desert, and hares in many other regions of the world. The same is true of foxes and several other animals.

Since we know there was a global Flood (Genesis 6–8), we know we can trace hares back to two individuals on the Ark. Foxes would also trace back to two individuals on the Ark. In fact, since foxes have hybridized with each other and the coyote, they are all considered to be from a single kind: the dog/wolf kind, Canidae (Lightner, 2012). Thus, the creation model accepts limited common ancestry.

In contrast, the evolutionary view of origins has no creator. A naturalistic origin of life is implausible, to say the least. Most

evolutionists believe it happened only once, and that all living things today share a common ancestry. Once life arose, changes are believed to have been the result of the naturalistic mechanisms of random (chance) mutation and natural selection.

Predictions of adaptations

While both models include evolution in the sense of genetic changes occurring over time, the types of changes each model predicts are very different (Table 1b.). In a biblical view, there are two forces that we see operating in the world: the providence of God and the effects of the Curse. Since God intended for creatures to reproduce and fill the earth, there have been changes that have allowed them to do so. The fox in the desert looks different from the fox in the arctic. A look at their relative, the dog, indicates that a number of genetic changes have occurred since the time of the Flood (Lightner, 2009a).

Some changes are clearly adaptive. This includes genetic changes that have allowed animals to adapt to high altitudes (Lightner, 2014). Other changes can cause serious disease. Both types of changes are consistent with the biblical model. However, in order to account for the complexity in living things, evolutionists need for *most* changes to add information or complexity to the genome (Spetner, 1998). When examined carefully, we don't see this, even in changes that are adaptive (Anderson, 2005; Lightner, 2008; Lightner 2014).

Predictions of mechanisms for change

Finally, the major mechanisms by which genetic changes take place differs between the two models (Table 1c.). In the evolutionary model there is no creator, so only naturalistic mechanisms would be expected. Mutations should arise by chance, and not be biased to be useful. Those that are helpful are supposedly retained by natural selection. While one can concoct a great story about how natural selection does this, it is well known by those involved in population genetics research that the math doesn't work out like the stories imply (summarized in Lightner, 2015).

In contrast, the biblical model has a Creator, who has foresight and cares for his

creation, even in its present fallen condition. His desire was that His creatures reproduce and fill the earth, because He intended the earth to be inhabited. Therefore, it is logical to propose that certain portions of the genome were designed to change, and that there are likely various designed mechanisms by which such changes take place. Such a prediction is completely at odds with the commonly accepted naturalistic view.

Nevertheless, scientific research is uncovering evidence that is consistent with creationist predictions. We already know that a number of genes can carry a variety of mutations which are believed to be helpful in certain circumstances. For example, there are hundreds of variants in human major histocompatibility complex (MHC) genes. These genes are involved in immune function, and their polymorphic nature is believed to be protective (Janeway et al., 2001).

It is important to note that adaptive mutations may be beneficial under certain circumstances, but a disadvantage under different conditions. For example, another gene that is highly polymorphic in humans is the *MC1R*, which codes for a receptor that affects skin and hair color. While mutations that damage the receptor and result in a fairer complexion are believed to be an advantage in latitudes farther from the equator, they also come with an increased risk of skin cancer (Lightner, 2008). This may be one reason why it often takes many generations of living in a particular place before adaptive genetic changes begin to show up. They don't appear quickly because they are not easy to reverse.

It is already known that B cells, a critical part of cellular immunity that keeps you alive, undergo multiple types of DNA editing as they mature and do their important work (specifically, DNA editing occurs during V(D)J recombination, somatic hypermutation, and class-switch recombination; Matthews et al., 2014). Since there is a particular pattern seen in the type of editing depending on the enzymes involved, one can look for that pattern among mutations that appear in other places.

Mutational changes are not just part of normal processes in B cells; they also appear in cancer. The pattern associated with

changes from known DNA-editing enzymes, including one that is critical for B cell function, has already been found in some cancers (Nowarski and Kotler, 2013; Rebhandl et al., 2014). Thus, at least some mutations in cancer are the result of loss of control of normal cellular DNA editing function. The logical question to be asking is whether these DNA-editing enzymes have played a role in adaptive mutations. This is one of many important questions that further creation research should attempt to address.

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Table 1.
Understanding Creation and Evolution*

Creation	Evolution
<i>(1a.) Two Views of Origins</i>	
There is a Creator	There are only naturalistic processes (chance, mutations, natural selection)
All life forms were created	Life arose spontaneously
Life forms created according to their kinds (limited common ancestry)	All life forms can be traced back to a single common ancestor
<i>(1b.) Predicted Changes (Overall Trend)</i>	
Adaptive (creatures were to reproduce and fill the Earth; Genesis 1:22, Isaiah 45:18)	Upward (to account for complexity)
Degenerative (result of the Curse; Genesis 3, Romans 8:20-23)	
<i>(1c.) Predicted Mechanisms of Change</i>	
Systems designed for change	DNA changed accidentally/by chance
Mechanisms designed to make the changes	Natural selection

- * (1a.) A summary of the most basic differences between the biblical account and the popular evolutionary view of origins.
- (1b.) Each view of origins predicts that certain types of changes will be common. Adaptive and degenerative changes have been observed, but not the types of upward changes that increase complexity in the sense needed for universal common descent.
- (1c.) Since the biblical view has a Creator, adaptive changes are most likely from design. The evolutionary view has no creator, so only naturalistic processes are expected to be in operation.

Saharan Dust, Part 3 ...continued from page 7

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Speaking of Science

from the Creation-Evolution Headlines

by David F. Coppedge

Editor's note: These S.O.S. (Speaking of Science) items have been selected from "Creation-Evolution Headlines" by David F. Coppedge at <http://crev.info> and are used by permission. Unless otherwise noted, emphasis is added in all quotes.

Bombardier Beetle Mechanism Explained

A beetle that has become a creationist icon is examined by evolutionists in a leading journal.

Dr. Duane Gish used the bombardier beetle decades ago to challenge evolution: how could a mechanism that delivers a carefully timed and aimed explosion evolve by stepwise Darwinian processes? In *Science*¹, evolutionists from MIT, U of Arizona, and Brookhaven National Lab learned more about this amazing beetle's firepower—but they had very little to say about how it might have evolved. Emily Demarco, summarizing the paper in the same issue of *Science*², had zilch to say about Darwin, but quite a bit about design. Look first at her parts list, then how they work together:

When threatened, the beetle contracts **muscles** that open a **structure** called the **interchamber valve**, allowing a droplet of a mixture of hydrogen peroxide and chemicals known as hydroquinones to **flow** from one **chamber** in the gland to another, the team reports online today in *Science*. There, the droplet comes into contact with the peroxidase and **catalysts** that create the noxious chemicals and the reactions that explode them out of the insect's rear. Pressure from the explosion distends a **flexible structure** called the **expansion membrane**, closing the **interchamber valve** and disrupting the flow of chemicals. When pressure in the chamber drops after the explosion, however, the **valve opens again**, and a new droplet begins the process once more. **Such new insight could help improve technologies like fuel injectors in internal combustion engines**, the researchers say.

The Editor's Summary is also silent about evolution:

Bombardier beetles shoot a toxic pulse at potential predators and other harassers. The toxic spray is created by a chemical reaction that occurs inside the beetle's body. Although the details of the reaction are known, **how the beetle is able to precisely combine the chemicals at appropriate times and release the pulse at regular intervals** has remained a mystery. Arndt *et al.* used **synchrotron x-ray imagery** to observe the process as it occurs within live beetles. Expansion and contraction of an **internal expansion membrane** facilitate the **precise cyclic injection** of reactants and the subsequent ejection of toxic sprays that keep the beetle's predators at bay.

The only mention of evolution is at the end of the paper, and it only concerns one aspect of the bombardier beetle's mechanism:

The pulsed spray mechanism of brachinine bombardier beetles is **remarkably elegant and effective**, protecting these beetles from nearly all predators (and incautious humans). The **passive mediation of pulsation by mechanical feedback** from the explosion is **advantageous** because it provides **automatic regulation** of reactant use. Further, the **evolutionary change** from a **continuous** defensive spray (exhibited by close relatives of the brachinines) to a pulsed spray **required only relatively minor changes to the reaction**

chamber inlet structures rather than the **evolution of novel valve-closing muscles**.

In other words, they are only talking about how a continuous spray might have evolved into a pulsed spray. This still leaves unaddressed how the reactants could combine without destroying the beetle instead of its target.

An MIT press release³ shows the X-ray videos taken of the firing mechanism, shot at 2,000 frames per second. In the embedded video clip (2 minutes), lead author Eric Arndt, an MIT grad student, begins by saying he wants to understand the beetle and what we can learn from it, but then at the end gives his evolutionary slant about how a continuous spray evolved into a pulsed mechanism by a very "simple" modification.

Five years ago, creation researcher Andrew McIntosh of Leeds University won an award for design of a pressure sprayer inspired by the bombardier beetle.⁴ So how "simple" is the mechanism? Using intelligent design, his team took five years trying to duplicate it for their invention. McIntosh now travels internationally giving scientific evidence for creation.

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Platypus Dinosaur: A Vegetarian T. Rex

A new dinosaur from Chile is as unbelievable as the first reported platypus was to English zoologists: a crazy mix of animals.

Meet Chilesaurus: a theropod from Chile that looks like a combination of other dinosaurs: a small vegetarian *T. rex* with a long neck and two-fingered arms. Martin Ezcurra, one of the paleontologists who announced the find in *Nature*¹, explains in *The Conversation*² how they identified this "weird and wonderful" dinosaur as a new species:

Its skull and neck look like those of primitive long-necked dinosaurs like **Plateosaurus**; the vertebrae resemble those of primitive meat-eating theropods such as **Dilophosaurus**; the pelvis is very similar to that of ornithischian dinosaurs such as **Iguanodon**; and the hand has only two well-developed fingers as in **Tyranosaurus** [sic] **Rex**, but with a longer arm.

However, there is **no possibility that Chilesaurus is simply made up of different dinosaur bones, because we found four partial skeletons**. Working partly in Buenos Aires, Argentina, and partly in Birmingham, our team compared the bones to those of other dinosaur groups. Eventually we decided through different analyses that Chilesaurus belongs to a **completely unknown lineage of dinosaurs that acquired herbivore habits from carnivorous ancestors**. Chilesaurus is the first herbivorous theropod (a lineage that includes mainly predatory dinosaurs) from the southern hemisphere.

Ezcurra likens it to the famous platypus that had some incredulous zoologists thinking at first it was a hoax. How can evolution explain such a mosaic of features?

A **bizarre combination of features** like that seen in Chilesaurus can also be seen in living animal species, such as the platypus, which is a mix of duck, beaver and otter. **Some naturalists even considered it a hoax.** But animals such as Chilesaurus and the platypus **can be explained by an evolutionary process called convergence evolution**, in which two **unrelated species** or groups **acquire similar characteristics** because of living in **similar environments** or having a **similar behaviour**.

Similarly, the bizarre anatomy of Chilesaurus will probably open a heated discussion about its relationships. Ultimately, the discovery reveals how much data is still completely unknown about dinosaurs and that there is still much waiting to be discovered in the rocks that tell the story of our planet in deep time.

Notice that evolutionary and deep time assumptions remain, regardless of the evidence that is unearthed or might be in the future.

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Geologists Have Underestimated Catastrophes

One Colorado storm in 2013 caused hundreds or thousands of years' worth of mountain erosion. This is causing a rethink on the power of catastrophic events.

A big storm hit Colorado in September 2013. Scott, Suzanne and Robert Anderson of the University of Colorado went looking for geological changes that resulted to the Front Range of the Rockies. In the journal *Geology*, they report 1100 landslides and debris flows in a "historically sedate landscape."

Comparing our results against published long-term erosion rates, we find that **these mass movements evacuated the equivalent of hundreds to thousands of years of hillslope weathering products.** We conclude that (1) **rare debris flows perform the majority of sediment transport and channel erosion** within steep channels along the eastern edge of the Front Range, **potentially explaining discrepancies** between modern sediment yields and long-term erosion rates in such settings, and (2) the **high spatial density of debris flows** along the corridors bounding steep canyons **suggests that the landscape switches to debris-flow dominance as knickpoints pass headward along the canyons.**

As dramatic as this one storm was, its impact on geological thinking may be more monumental. Recounting centuries-old debates about the rate of geological change, Scott McCoy of the University of Nevada in Reno comments on the paper in the same issue of *Geology*²:

How do surface processes shape the landscapes in which we live? **Is it the everyday flow of rivers that gently, yet persistently, erodes and transports sediment** from highlands to ocean basins, dissecting the land surface into networks of ridges and valleys? **Or is it cataclysmic events of incredible magnitude** that, despite their infrequency, **conspire to shape Earth's surface?** These questions highlight the **debate** over the relative importance of extreme events in sculpting Earth's surface, and are **as old as the science of geology.** Although geologists have gathered data and proposed theories supporting both **Hutton's (1795) and Lyell's (1830) uniformitarianism** and **Cuvier's (1818)**

catastrophism for over 200 years, the **paper by Anderson et al. (2015, p. 391 in this issue of *Geology*) shows that the debate is still active** and that, **even with new tools, we have much to learn** about the degree to which observations of modern sediment transport processes quantify the full range of formative geomorphic events.

If infrequent storms like the one in 2013 dominate the mass movements in geology, then **"historic records of sediment flux that have not captured an extreme event might grossly underestimate the actual long-term sediment flux."** We must keep in mind that formal historical records only go back a little more than a century in America. Before the west was settled, and geological pioneers like John Wesley Powell came after the Civil War to study the canyons of the Colorado Plateau, there would have been only Indian legends and word-of-mouth records by scattered populations of settlers. Events of this magnitude in Colorado could have been completely unobserved by settlers in Arizona or Oregon, and vice versa. The problem continues to this day; McCoy says that the Andersons used tools and models that didn't exist just 20 years ago.

McCoy realizes that the consequences of underestimating actual erosion rates are huge:

Misunderstanding such a discrepancy between modern and long-term erosion rates can lead to **inaccuracies in:** predicting the life span of reservoirs; **determining the impact of changing land use;** setting attainable water-quality standards; and mitigating sediment-related hazards, such as rapid mass movements like landslides or debris flows, and **extreme river channel aggradation.** At **longer time scales,** accurate portrayal of the magnitudes and spatial-temporal patterns of sediment fluxes is **critical for understanding how landscapes evolve, how sediment fluxes might change with a changing climate,** and what flux of sediment and nutrients is required to maintain healthy ecosystems.

Nothing can replace actually being present to measure what happens in an extreme event. Based on their empirical observations, Anderson et al. conclude that debris flows account for the majority of geomorphic work along steep mountain slopes. But **"there is no agreed-upon mechanistic framework** to describe the controls of **bedrock incision by debris flows,"** McCoy says, "unlike rivers, which in turn **raises questions about the accuracy of predictions** regarding the **pace** and spatial pattern of steep land evolution from **models that do not consider the effects of episodic debris flows."**

McCoy ends on an optimistic note, basically saying that geologists' models and tools are getting better. It's clear, though, that he was surprised himself: **"The intriguing result is that, in a single event, debris flows transported hundreds to thousands of years worth** of accumulated hillslope material into the main stem rivers."

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Nonprofit Org.
US Postage
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Kansas City, MO
Mail Works

All by Design

by Jonathan C. O'Quinn, D.P.M., M.S.

Throughout nature, countless examples exist of living things possessing skills that make one wonder, “How did this [living thing of your choice] ever learn how to do that?”

Let us look at the national bird of Argentina, the red ovenbird. Though not a very flashy bird, at 16–23 cm in length the red ovenbird makes up for that with an intricately constructed house for incubating eggs and raising hatchlings. Yes, I wrote the word “house.” During the breeding season, male and female red ovenbirds work together to make a rounded adobe house about the size of a large cantaloupe. They mix grass or straw with mud, and they apply up to two thousand mouthfuls of this mixture meticulously as they construct their home, smoothing it as they go and producing a perfect dome that does not collapse.

The walls can range from 3–5 cm thick. A narrow entrance, just big enough for the red ovenbird, is the only way in, leading in a circular fashion into the back of the structure, where there is a single “room” for the eggs to be laid and hatched. Both parents



Furnarius rufus (red ovenbird) next to nest.

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http://commons.wikimedia.org/wiki/File:Furnarius_rufus_nest.jpg

share in the incubation of the eggs and the feeding of the chicks. The adobe material insulates against cold and heat. Both the tight curvature of the opening leading to the eggs and the concrete-like hardness of the dried adobe present a serious obstacle for predators.

It is interesting to note that although not necessary, the addition of grass or straw

Red Ovenbirds

to the mud allows the material to shrink more uniformly with less risk of cracking as it dries. My question is this—if living things evolved by chance, how did this species know to mix grass or straw with mud in order to create a more stable building material? The red ovenbird testifies to a planned creation by an intelligent Creator.

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