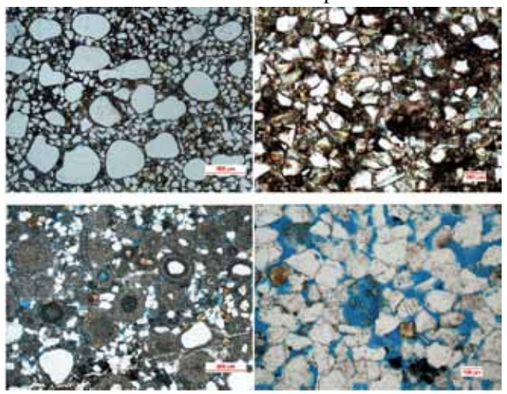
Wind does an excellent job of sorting. As the wind begins to blow, it is able to pick up and move the smallest grains through the air. The larger grains are too heavy to lift. Those small grains are then deposited as the wind dies down farther to the south. Slightly larger grains are rolled across the surface. As wind speed increases, heavier grains are picked up and moved through the air to be deposited on top of the smaller grains. The net result is whether thick or thin, large area or small area, wind driven sand should form very distinct layers of different size grains of sand. It is widely reported that the Coconino is well sorted. That would be good evidence to support a wind deposition because that is exactly what we find in today's sand dunes. Our team made over 100 thin-sections of the Coconino.

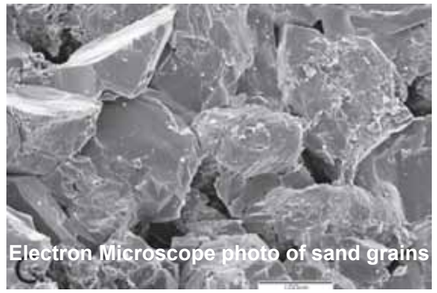
To make a thin-section, a small sample of rock is taken. The sample is 1 to 2 inches across in width, height and depth. It is marked so the original orientation is recorded. The sample is put in a pressure chamber and blue epoxy is forced into all the open pore space in the rock. It is then cut to 60 millionths of an inch thick. That slice is then polished to 30 millionths of an inch thick. Light will now shine through it so we can look at it under a microscope. Here are several thin sections:



What do you notice? That's right! There are not layers of different size sand grains. They are all mixed together. They are NOT sorted. Why do web sites, books and even published papers state that the Coconino is well-sorted? Simple. It is assumed that the Coconino is wind deposited and every geologist knows that wind deposited sand dunes are well sorted. Nobody bothered to look through a microscope!

Now, to their credit, they did look at it through a field lens. I too have looked at the Coconino through a field lens and son-of-a-gun, it usually looks pretty well sorted. But that is because a field glass magnifies only enough to see the larger grins, but not enough to see the smaller grains. Lack of sorting is evidence supporting underwater deposition. So, the second major argument for the Coconino being wind deposited is based on assumption and an observation system (field glass) lacking in the ability to actually determine the data. The lack of good sorting supports underwater deposition.

Well Rounded


Electron Microscope photo of sand grains

Naturalists proclaim that the Coconino is well-rounded. That is what one would expect after the grains have been blasted into each other in the wind. Once again, a field glass doesn't magnify well enough and no papers were found where the geologist actually observed the roundness. It appears the roundness was simply assumed because, after all, everybody knows the Coconino was deposited as sand dunes. But another look at thin sections and through an electron microscope over-rules the assumption. The Coconino sand grains are sub-rounded to sub-angular. Lack of roundedness tends to favor water deposition AND the idea that the grains were never transported long distances by wind before deposition. A detailed look at the Coconino grains supports underwater deposition of the Coconino.

Biggest Discovery

Reviewing what we have found so far, There are two very unexpected discoveries. Looking at the Coconino Formation, naturalists point to (1) Crossbed dip, (2) Grain sorting and (3) Grain roundness as evidence of the Coconino Sandstone being deposited by air.

But, when we look at their argument, we find two problems. In the case of crossbed dip, they used the following logic: **We know that the Coconino was deposited by air. Modern sand dunes exhibit a slope on the leeward side of 29°. Therefore the crossbed dip of the Coconino must be 29°. Then, the statement that the dip is 29° becomes the evidence that the Coconino was deposited by air. The assumption becomes the data which becomes the proof of the assumption!** But real scientific investigation shows the dip is NOT 29°. The accurate slope was even published by a secular geologist in 1966. But the actual data goes against the paradigm so it was ignored. I have seen this happen in many cases. Sadly, they will ignore logic and scientific principles when the data goes against the paradigm. It is human nature. Scientists need to work hard to avoid it.

In the case of grain sorting and roundness they stopped seeking data when they got the data results they wanted even though they should have known they were not looking as hard as they should.

Are you having fun? We find scientific discovery through research to be fascinating and a lot of fun. Next month we will conclude our investigating of the Coconino Formation and begin looking at other formations in the Sedona area. Just to whet your appetite, we'll look at frosting. Supposed frosting of the Coconino grains supports wind deposition. Look closely at the photos in the column to the left. See lots of scratches and pits?

What does the research, using the scientific method, support? God, in the person of Jesus, brought the judgment of Noah's Flood on His creation because of man's evil, with the resulting beauty of the rocks of Sedona, rocks that cry out about the glory of God! CRM

For nothing is hidden that shall not become evident, nor anything secret that shall not be known and come to light. Jesus Christ - Luke 8:17

Creation News Update

Proclaiming the TRUTH of the Bible starting at Genesis 1:1

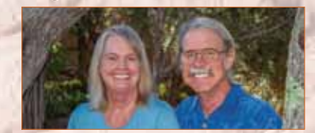
Vol. 22, #2 - Spring 2025 (#88)

PRICE: Free
VALUE: Eternal

But Jesus answered, "I tell you, if these (his followers) become silent, the stones will cry out!" Luke 19:40

We must speak for silence would shame us, and the rocks themselves would cry out... You, O Lord Christ Jesus, must be praised for who You are in the world You have made.

Hello! The latest science is full of new findings that show that God, in the person of Jesus, is Creator of the universe, you and us. Thank you for joining us in learning the Good News.



Guy & Cindy Forsythe

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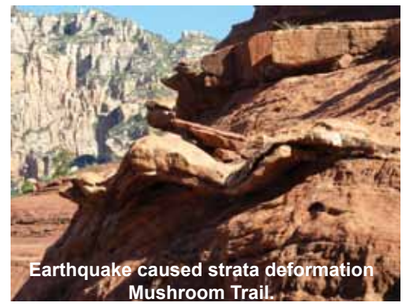
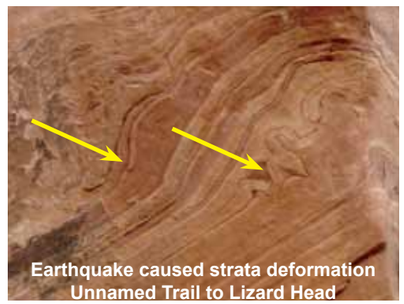
Sedona Geology Series

Creation News Update **is 21 years old this year. We published an important geology series ten years ago, starting in the Spring of 2015, right after our technical paper on a discovery I made in the Coconino formation in Sedona was published. Our paper has drawn the attention of secular geologists. I discovered geological features never before mentioned in any papers or books, not even in *Sedona Through Time,* by Wayne Ranney. The original series was four issues. We have made two important additional discoveries since then so it will take five issues this time.** ***We will show you that what you think about Sedona geology (and geology in general) is mostly incorrect. We will show that only Noah's Flood can explain my findings. We will support that statement with photos, data and references to published papers in the field of geology. Technical references will be linked on our web site***

We're gonna have fun!


Earthquake caused strata deformation
Mushroom Trail


Earthquake caused strata deformation
Unnamed Trail to Lizard Head

Introduction

In 2010, while hiking on the Mushroom Trail (an unofficial trail not maintained by the Forest Service) I discovered features in the Coconino that are impossible to occur unless the Coconino was deposited rapidly in water. On the way up that same trail, is evidence of an earthquake in the Sedona area. Over the next several issues, I will explain the features I found in detail, hopefully without bogging you down too much with the details. The features discovered can only be interpreted if one searches the professional geology literature on sedimentary geology, which I have done, reading nearly 90 published papers that relate to the discoveries. Hopefully you will enjoy the journey as much as I have. Sedona is home to some unique, beautiful and telling geology.

Next Page

History

Before we get started on the Sedona story, we need to take a brief look at the history of geologic discovery.

Before the 1700s, intellectuals were primarily Christian in worldview in the Western World. During late the 1700s, the so-called Enlightenment period started with folks like David Hume making arguments for materialism, the belief that matter, energy and laws of nature can explain everything... That there is no supernatural... You know, like no such thing as God. In the late 1700s, James Hutton wrote a book promoting uniformitarianism in geology. He is credited with the idea that ***The Present is the Key to the Past***. Together the ideas of uniformitarianism and the Key to the Past made the assumption that by observing the geological processes we see in the present, we can explain all geological formations of geological history.

Hutton's ideas were mostly overlooked by geologists. Until the early 1800s, geologists interpreted the geology of the world, particularly the sedimentary rock strata, as being the result of Noah's Flood. Between 1830 and 1833, Charles Lyell published his three volume set, ***Principles of Geology***. Hutton's ideas were the focus of the book and uniformitarianism quickly became the accepted underlying principle of geology. ***The Present is the Key to the Past*** was now required for all geological interpretations. UC at Berkeley puts it like this on a web page (you can link to our citations on our Website home page): ***Lyell wanted to find a way to make geology a true science of its own, built on observation and not susceptible to wild speculations or dependent on the supernatural***. UC Berkeley has it backwards. Lyell stated in several letters to friends that his **goal** was to ***...remove Moses from geology***. Lyell was a deist but did not like the God of the Bible. Accurately, famous Harvard Geologist and materialist Stephen Jay Gould stated: ***The geologic record does seem to require catastrophes: rocks are fractured and contorted; whole faunas are wiped out. To circumvent this literal appearance, Lyell imposed his imagination upon the evidence. The geologic record, he argued, is extremely imperfect and we must interpolate into it what we can reasonably infer but cannot see***. Hmmm. There seems to be a contradiction here! The correct interpretation of Lyell's work can be deduced quite easily. Lyell did not call for observation, he called for (wild) speculation. Observation has led to uniformitarianism being abandoned. Geologists are now mostly ***Neo-Catastrophic***. That means they now realize that many of the geological structures we see were formed catastrophically. Not one huge Noah's flood, but acknowledging that slow and gradual processes cannot explain what we see in much of the strata of the rock layers.

Up until about the 1950s, all explanations for geology had to follow the principle of uniformitarianism to be accepted by the geological community... Slow and gradual. Two events changed this. In the 1923, J. Harlen Bretz started publishing papers that concluded the channeled scablands composing the eastern half of Washington state and the Columbia River gorge were created in a few days to weeks. The rock that was cut by water that quickly is basalt, one of the hardest rocks. His explanation was not accepted and was at times ridiculed by the geology community. But he was allowed to continue publishing because he had data that supported his claims. It took until the 1950s, but eventually, his interpretation was accepted as the explanation for the scablands topography. Slow and gradual speculation lost out to observation and evidence.

It is important to note here that it is always the supposed nutjobs that show existing science paradigms are false. Bretz showed that uniformitarianism was false. The difference between then and now is that critiques of the current paradigm can't get published. It does not matter what data you have, you follow the paradigm or you do not get published. This was blatantly exposed when the "climategate" emails were released to the public and they showed that you could not get published, regardless of your data, if the conclusion was that man is not the major cause of global warming. One member of our team was published with one paper, but then it became common knowledge that he is a creationist. Our paper on the Coconino was rejected and the reviewers made it pretty clear that the data didn't matter... You are creationists. See ya!

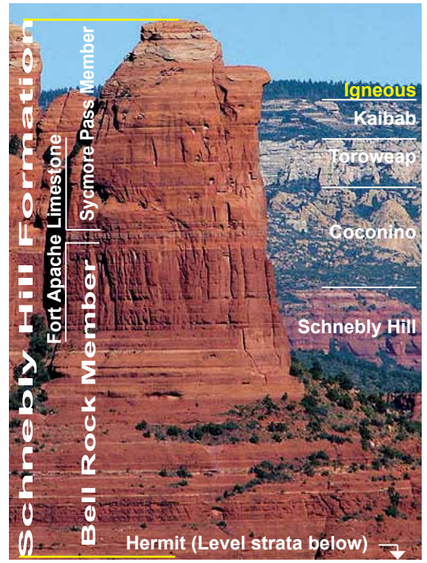
The second event that occurred was in 1929. There was an earthquake off the coast of the Grand Banks. Just after the earthquake, 12 transatlantic telephone cables broke in secession in 28 locations. It was determined that an underwater sediment flow hit the cables, stretching and then breaking them. It was calculated that a sediment flow traveled 400 miles at 60 miles per hour. This was the discovery of turbidity currents, often huge underwater sediment flows.

That brings us to the present. It is now accepted by most geologists that most **mudstone**, including shales, (the Hermit formation that Sedona is built on is primarily mudstone), which is over 60% of sedimentary rock, was probably deposited catastrophically. Some **limestone**, which is about 20% of all strata, is also considered to be deposited catastrophically. **Sandstone** is the third type of sedimentary rock. It makes up about 20% of all strata. Geologists agree that some sandstone was deposited in water, but the consensus is that much of it was deposited by winds forming sand dunes. The dunes were covered in water and more sediment, turning to rock.

In the Old Earth Naturalism - Young Earth Creation debate, the Coconino Sandstone Formation has taken a front seat. Materialists insist that the Coconino had to be deposited by wind over a period of several million years. So, how could it, the materialists ask, be deposited in the middle of a one-year flood, the Flood of Noah? Our research shows it was deposited rapidly in water. That breaks one of the foremost arguments geologist have against Noah's Flood. You can now see why our research was rejected. ***Let the fun begin*** as you see why our research even caused one famous biochemist to write in his blog (since removed) against our research, using character assassination and outright lies as his "data."

Sedona Strata

To the right is a diagram of the layers of strata in Sedona.

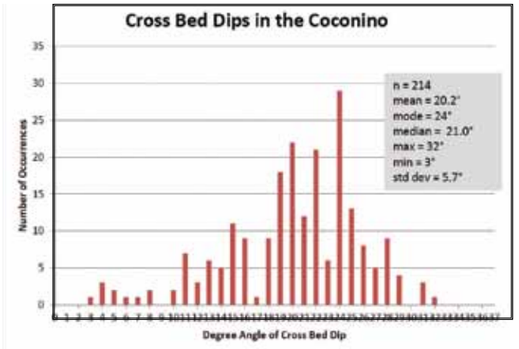


Crossbed Dip

In the picture of **Coffee Pot Rock** to the right, notice that the strata is horizontal. Coffee Pot is in the ***Schnebly Hill Formation*** (the vertical red rocks around us) in Sedona. Below is a photo of the Coconino. Notice how the strata is sloped. That slope is called Crossbedding and the angle of the slope from horizontal is called ***Dip***. The question is: **Is the dip in the Coconino the result of wind deposition or water deposition?**

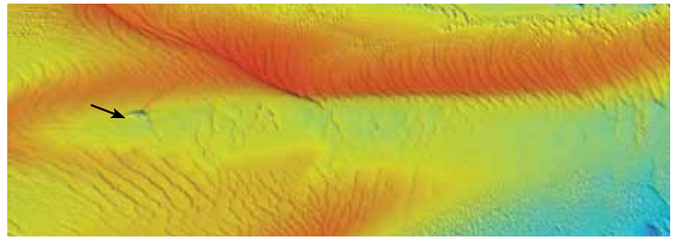
Let's read a short passage from Wayne Ranney's ***Sedona Through Time***. On page 33, in making the argument that the Coconino is deposited by wind, he states, "***Sure enough, the cross-beds in the Coconino are between 29 and 31 degrees***." I asked Wayne, "Where can I go to measure the dip and find 29 to 31 degrees?" His response, "Blakey told me." Ron Blakey is a retired geology professor from Northern Arizona University (ASU) and one of the professors that Ranney studied under.

I mention this for a simple reason... To show you that science is a human undertaking, subject to human frailties. Wayne admitted that he had never measured the dip of the Coconino. Why? In 1934, eminent Colorado Plateau geologist Edwin McKee reported dips of 25 to 30 degrees with an occasional dip as high as 34 degrees. But he did not state where or how many measurements he made. He may have assumed the dip would be the same as White Sand Dunes (in NM) which he had measured in detail. Our team made over 200 measurements of the dip. The dip averages (mean) 20 degrees. We found two places with a dip of 29 degrees and no dips higher than 32 degrees. We are not the only geologists to report an average dip of 20 degrees. That number was in a published paper in the 1990s. **Many papers have been published in geology journals that point out that the strata dip of the Coconino is quite different in appearance and angle of dip from that found in modern sand dunes**.



So, the question is: Why do many web sites and local experts contend that the dip is 29 to 31 degrees when is has long been known that the dip varies from a few degrees to 32 degrees with an average of 20 and a clustering (most of the dip measurements) in the 18 to 24 degree range? Part of the reason is because most people who report these dip angles are reporting the angles on anti-creationist web sites and in books that have used each other as their source. Regardless of where it is repeated, once a "fact" is repeated enough, it simply becomes a fact. New data is ignored. It is just human nature, nothing more. But the "fact" of Coconino dip being 29+° is wrong.

Is there another possibility for the dip angles? Yes! Underwater sand waves also create crossbed dip. Here is a photo of sand waves in Long Island Sound. The arrow points to shipwreck on the bottom. The ship measures 240 feet long.



If you go to an anti-creationist web site you will find they report that underwater sand waves never exceed 10 degrees. Once again they are simply quoting each other. I have yet to see a source cited for this data. As long ago as 1966, Salsman et al. reported sand wave dip as steep as 30 degrees. Many published papers have reported sand waves ranging up to 30 degrees with a few as steep as 34 degrees.

What can we conclude? Crossbed dip, which has long been a primary argument by naturalists in opposition to creationists is non-diagnostic. Both wind deposited sand dunes and underwater sand waves have dips which vary greatly and with about the same angle of dip (though the mean average dip in the Coconino is closer to sand waves than sand dunes and the Coconino strata doesn't look like modern sand dunes).

Sorting

Any given area of a desert tends to have winds blowing primarily from one direction. For example, whether it was wind or water that deposited the Coconino, it was moving from approximately north to south. The high end of the dips are to the north and the low ends are to the south. If it was water that deposited the Coconino, we would expect the Coconino to be poorly sorted and if it was wind, it should be well sorted.

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